



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

February 1, 2006

MEMORANDUM TO: Mr. D. R. Conner, P.E.
Division One Engineer

FROM: Philip S. Harris, III, P.E. *PSH*
Natural Environment Unit Head
Project Development and
Environmental Analysis Branch

SUBJECT: Bertie County; Windsor Bypass; US 17 (Windsor Bypass) from
US 13-17 to east of SR 1503 (Davis Road); T.I.P. Number
R-2404 A

Attached is the U. S. Army Corps of Engineers Individual Section 404 Permit, the general conditions for the DWQ 401 Water Quality Certification and the CAMA permit from the Division of Coastal Management for the above referenced project. All environmental permits have been received for the construction of this project.

PSH/gyb

Attachment

cc: Mr. Art McMillan, P.E.
Mr. Jay Bennett, P.E.
Mr. David Chang, P.E.
Mr. Randy Garris, P.E.
Mr. Greg Perfetti, P.E.
Mr. Mark Staley
Mr. Omar Sultan
Mr. John F. Sullivan, FHWA
Mr. Clay Willis, Division 1 DEO

PROJECT COMMITMENTS

Windsor Bypass
US 17 (Windsor Bypass) from US 13-17 to east of SR 1503 (Davis Road)
Bertie County
Contract ID No. C201236
W.B.S. 34424.3.7
TIP No. R-2404A

In addition to the standard Individual Section 404 and 401 Permit Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for Protection of Surface Waters, the following special commitments have been agreed to by NCDOT:

Record of Decision

Cultural

An intensive archaeological survey of permit areas within the Preferred Alternative will be conducted, and a report prepared and submitted to the State Historic Preservation Office (SHPO) for review prior to construction. **ACTION:** *An Intensive Cultural Resource Assessment Survey for the Proposed Corridor: US 17 Windsor Bypass, Bertie County, North Carolina was completed for the study corridor in November 2001. A total of 23 archaeological sites, including 2 isolated finds, were recorded as a result of this investigation (31BR193** and 31R201/201**). The remaining sites were avoided or determined not eligible for the National Register. Sites 31BR192** and 31BR201/201** will be impacted by the Preferred Alternative and a Memorandum of Agreement will be prepared to develop a satisfactory data recovery program for these sites. The NCDOT, in a letter to the SHPO dated February 4, 2003, committed to prepare a Memorandum of Agreement for the recovery efforts on these two sites and will implement a satisfactory data recovery program.*

401 Water Quality Certification

Pipes and Culverts

At Site 1, the culvert will be extended with the bottom of the stream channel rather than be buried one (1) foot to prevent headcutting upstream. This was the agreement reached during Concurrence Point 4B on May 19, 2005.

Borrow Site Impact

Site IP # 1 is one of the approved Borrow Sites for the proposed project. Within the site are 2 isolated wetlands as determined by the US Army Corps of Engineers on May 25, 2005. The isolated wetlands (see Isolated Wetlands Impact table) amount to 0.66 acres (0.21 and 0.45 acres respectively). In addition, there will be 49 linear feet of temporary

stream impact (see Surface Water and Stream Impact table) and 0.02 acres of temporary wetland impact (see Wetlands Impact table) associated with upgrading the existing logging-road to a haul road.

Sedimentation and Erosion Control

Per the agreement reached at the August 17, 005 Concurrence 4C meeting, special sediment control fencing will be comprised of #57 stone on top of geotextile fabric to minimize disturbance during removal. In addition, it will be noted on the plans where and when this special sediment control fencing will be used and a detail will be provided to improve plan clarity.

Cashie River and Moratorium

The NCDOT will need to adhere to all appropriate in-water work moratoriums (including the use of pile driving or vibration techniques) prescribed by the NC Wildlife Resources Commission, the US Fish and Wildlife Service, and National Marine Fisheries Service. No in-water work is permitted between February 15 and September 30 of any year, without prior approval from the NC Division of Water Quality and the NC Wildlife Resources Commission. In addition, NCDOT shall conform with the NCDOT policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997) at all times. Per the agreement between NCDOT and WRCS in a letter dated August 9, 2004,, construction activities in the wetlands adjacent to the Cashie River, only if the area has been contained by silt fence prior to the beginning of the moratorium and NCDOT agrees to utilize a turbidity curtain to contain all construction activities in the wetlands adjacent to the Cashie River. This applies only to the wetlands directly adjacent to the Cashie River. The NCDOT will adhere to the original moratorium of February 15 to September 30 within the waters of the Cashie River and its adjacent wetlands during periods of inundation.

Mitigation

Compensatory mitigation for impacts to 68.58 acres of jurisdictional wetlands shall be done. Total mitigation shall be provided as described below:

Offsite Compensatory Mitigation

Compensatory mitigation for the unavoidable impacts to 4.05 acres of riverine wetlands and 65.17 acres of non-riverine wetlands in the Roanoke River Basin in the Hydrologic Cataloging Unit 03010107, associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated September 20, 2005 (received September 30, 2005), and in accordance with the Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003.

Compensatory mitigation for impacts to 1,354 linear feet of streams shall be done at a replacement ratio of 5:1 for High Quality Stream Preservation in the Roanoke River

Basin, Hydrologic Cataloging Unit 03010107. Applying a replacement ratio of 5:1, total mitigation for 6,770 linear feet of streams shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated September 20, 2005 (received September 30, 2005), and in accordance with the Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003.

The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.

CAMA Major Permit No. 5-06

Cashie River and Moratorium

No land disturbing activities shall take place within 30 feet of the normal water level of the Cashie River, except for that which is absolutely necessary for construction of the bridge over the Cashie River, as depicted on the attached workplan drawings. All staging, borrow and waste areas shall be located a minimum of 30 feet landward of the normal water level of the Cashie River.

No in-water work shall be permitted between February 15 through September 30 of any year without the prior approval of the N.C. Division of Coastal Management (DCM), in consultation with the N.C. Wildlife Resources Commission. For the purposes of this moratorium, in-water is defined as those areas that are inundated at normal water level.

In accordance with the commitment made on page 10 of the permittee's cover letter dated 9/13/05, during the in-water work moratorium silt fences shall be used in wetlands that are not inundated at normal water level during construction to completely contain the construction zone and a turbidity curtain shall be used to separate the construction area from the Cashie River. These measures shall be in place prior to commencement of the moratorium.

Turbidity curtains and silt fences shall be used to isolate all work areas from the Cashie River, including pile or casement installation, placement of riprap, excavation or filling. The turbidity curtains shall be installed parallel to the banks on each side of the river. The turbidity curtains shall extend past the construction limits and be attached to the silt fences containing the work site. The turbidity curtains shall not fully encircle the work area or extend across the Cashie River. The turbidity curtains shall be properly maintained and retained in the water until construction is complete and all of the work area contained by the turbidity curtains has been stabilized by vegetation or other means. The turbidity curtains shall be promptly removed when turbidity within the curtains reaches ambient levels.

Borrow Area Impact

The temporary placement or double handling of fill materials within waters or vegetated wetlands is not authorized, with the exception of that necessary for the on-site detour of Wakelon Road at Site 14, and the haul road for the borrow site located south of Greens Cross Road.

Bridge Construction

The bridge shall be constructed using top down construction methodologies. Any other construction methodology shall require additional review and may require additional authorization.

The pile installation for the bridge shall be accomplished using pile driving. Should any other type of pile installation, such as jetting or drilled shaft construction, become necessary, additional authorization from DCM shall be required.

All materials and debris associated with the construction of the new bridge and associated materials shall be disposed of at an approved upland site or shall be recycled in an environmentally appropriate manner provided appropriate authorizations from any relevant state, federal, or local authorities are obtained.

Pipes and Culverts

All pipe and culvert inverts shall be buried at least one foot below normal bed elevation to allow for passage of water and aquatic life when they are placed within streams appearing as blue lines on United States Geological Survey (USGS) quad sheets, except for the culvert at Site 1 which shall be buried in accordance with the design depicted on the attached workplan drawings.

Staging, Borrow and Waste Area Impacts

The haul road for the borrow site located south of Greens Cross Road will result in approximately 0.02 acres of temporary impacts due to fill and a pipe extension along 49 linear feet of perennial stream channel. Stream banks shall be returned to existing conditions and revegetated in accordance with the attached reforestation detail.

Sedimentation and Erosion Control

In accordance with the statement on page 13 of the permittee's cover letter dated 9/13/05, the project shall employ sediment and erosion control measures equal to or exceeding the requirements of High Quality Waters regulations (i.e. Design Standards in Sensitive Watersheds, 15A NCAC 4B .0124.)

Mitigation

In accordance with the commitment in the permittee's cover letter dated 9/13/05 on page 9, the temporary impact area at Site 14 shall be graded to original contours and reforested as shown in the attached plans and reforestation detail.

Compensatory mitigation for permanent jurisdictional impacts shall be provided in accordance with the letter dated 9/20/05 from the Ecosystem Enhancement Program (EEP), and in accordance with the 7/22/03 Memorandum of Agreement (MOA) between the N.C. Department of Transportation (NCDOT), N.C. Department of Environment and Natural Resources (DENR) and the U.S. Army Corps of Engineers (USACE). Specifically, the EEP shall provide mitigation for the following impacts of this project that are located in CU 03010107 of the Roanoke River Basin in the Northern Outer Coastal Plain Eco-Region: 4.05 acres of riverine wetland impacts; 65.17 acres of non-riverine wetland impacts; and 1,354 feet of stream impacts.

Historical and Cultural Resource Protection

In accordance with the commitment on page 10 of the permittee's cover letter dated 9/13/05, a Memorandum of Agreement for Recovery of Significant Information from Archaeological Sites shall be completed and signed prior to initiation of any construction activities.

In accordance with the statement on page 10 and 11 of the permittee's cover letter dated 9/13/05, staging and borrow areas outside the original study limits are currently being reviewed for archaeological resources. The results of these surveys will be submitted to the State Historic Preservation Office (SHPO) for review and concurrence prior to initiation of construction activities.

404 Permit

SECTION 106 (NATIONAL HISTORIC PRESERVATION ACT)

r) Project construction shall not commence within the site locations as shown in the Archaeological Data Recovery Plan (DNR) for sites 31BR192** and 31BR201/201** located in the proposed corridor for the US 17 Windsor Bypass until NCDOT has completed all the requirements and implemented the stipulations of the Memorandum of Agreement (MOA) between the U.S. Army Corps of Engineers, the State Historic Preservation Officer, and NCDOT.

EEP MITIGATION

s) Compensatory mitigation for the unavoidable impacts to 4.05 acres of riverine wetlands, 68.56 acres of non-riverine wetlands, and 1,354 linear feet of stream associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated September 20, 2005 from William D. Gilmore, EEP Director. Pursuant to the EEP Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003, the EEP

will provide 8.1 acres of restoration equivalent riverine wetlands, 129.02 acres of restoration equivalent non-riverine wetlands, preservation of 6,770 linear feet of high quality stream, and 1,354 linear feet of restoration equivalent warm water stream channel in the Roanoke River basin (Hydrologic Cataloging Unit 03010107) by one year of the date of this permit. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration. The NCDOT shall, within 30 days of the issue date of this permit, certify that sufficient funds have been provided to EEP to complete the required mitigation, pursuant to Paragraph V. of the MOA.



IN REPLY REFER TO

**DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS**

P. O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

January 18, 2006

Regulatory Division

Action ID. 199400453; Tip Project No. R-2404A

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

Dear Mr. Thorpe:

In accordance with the written request of September 22, 2005, and the ensuing administrative record, enclosed is a permit to relocate and widen approximately 9.6 miles of US Highway 17 (Windsor Bypass), starting from US 13/17 intersection south of Windsor, in Bertie County and ending just east of NCSR 1503 (Davis Road), east of Windsor, crossing over and adjacent to the Cashie River and unnamed tributaries to the Cashie River and Hoggard Mill Creek, in Bertie County, North Carolina (T.I.P. No. R-2404A).

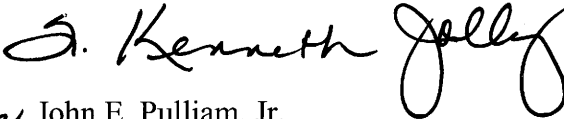
If any change in the authorized work is required because of unforeseen or altered conditions or for any other reason, the plans revised to show the change must be sent promptly to this office. Such action is necessary, as revised plans must be reviewed and the permit modified.

Carefully read your permit. The general and special conditions are important. Your failure to comply with these conditions could result in a violation of Federal law. Certain significant general conditions require that:

- a. You must complete construction before December 31, 2010.
- b. You must notify this office in advance as to when you intend to commence and complete work.
- c. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.

If you have questions, please contact Mr. William Biddlecome at the Washington Regulatory Field Office, telephone 252-975-1616, extension 26.

Sincerely,


for John E. Pulliam, Jr.
Colonel, U.S. Army
District Engineer

Enclosures

Copy Furnished with enclosures:

Chief, Source Data Unit
NOAA/National Ocean Service
ATTN: Sharon Tear N/CS261
1315 East-West Hwy., Rm 7316
Silver Spring, MD 20910-3282

Copies Furnished with special conditions and plans:

Mr. Pete Benjamin, Field Supervisor
U.S. Fish and Wildlife Service
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. Ron Sechler
National Marine Fisheries
Service, NOAA
Pivers Island
Beaufort, North Carolina 28516

Mr. David Rackley
National Marine Fisheries
Service, NOAA
219 Fort Johnson Road
Charleston, South Carolina 29412-9110

Mr. Ronald Mikulak, Chief
Wetlands Section - Region IV
Water Management Division
U.S. Environmental Protection Agency
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303

Mr. Doug Huggett
NC Division of Coastal Management
Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557-3421

NC Department of Transportation
ATTN: Beth Harmon
1652 Mail Service Center
Raleigh, NC 27699-1652

DEPARTMENT OF THE ARMY PERMIT

Permittee **North Carolina Department of Transportation, Dr. Gregory Thorpe**

Permit No. **199400453**

Issuing Office **CESAW-RG-W**

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: **Widen and relocate approximately 9.6 miles of US Highway 17 (Windsor Bypass, T.I.P. No. R-2404A). The project involves widening 2.3 miles of existing road from 2 to 4 lanes and 7.3 miles of new alignment 4-lane divided highway, including dual 1,700-foot bridges crossing the Cashie River.**

Project Location: **The project starts at the US Highway 13/17 intersection south of Windsor, in Bertie County and ends just east of NCSR 1503 (Davis Road), east of Windsor, crossing over and adjacent to the Cashie River and unnamed tributaries to the Cashie River and Hoggard Mill Creek, in Bertie County, North Carolina.**

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2010**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit,

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - () Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
 - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
 - a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit, Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Reps H 1/12/06
(PERMITTEE) North Carolina Department of Transportation (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

S. Kenneth Kelly 1/18/06
(DISTRICT ENGINEER) JOHN E. PULLIAM, JR., COLONEL (DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) (DATE)



Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources
Alan W. Klimek, P.E. Director
Division of Water Quality

November 18, 2005

Dr. Gregory J. Thorpe, PhD., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548

RECEIVED
NOV 25 2005
REGULATORY BRANCH

Dear Dr. Thorpe:

Re: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and Isolated Wetlands Permit Pursuant to IWGP100000 for Proposed US 17 (Windsor Bypass) from US 13-17 to east of SR 1503 (Davis Road) in Bertie County, TIP No. R-2404 A, State Project No. 6019001T, USACOE Action ID No. 199400453.
DWQ Project No. 051765

Attached hereto is a copy of Certification No. 3548 issued to The North Carolina Department of Transportation dated November 15, 2005.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

Alan W. Klimek, P.E.
Director

Attachments

cc: Wilmington District Corps of Engineers
Mr. Bill Biddlecome, Corps of Engineers Washington Field Office
Mr. Christopher Militscher, US EPA, Region IV
Mr. Anthony Roper, Division 1 Engineer, 113 Airport Drive, Suite 100, Edenton, NC 27932
Mr. Clay Willis, Division 1 Environmental Officer, 113 Airport Drive, Suite 100, Edenton, NC 27932
Mr. Chris Rivenbark, NEU, 2728-168 Capital Blvd., Parker Lincoln Bldg., Raleigh, NC 27604
Mr. William Gilmore, Ecosystem Enhancement Program
Mr. Garcy Ward, NCDWQ Washington Regional Office
Central Files
File Copy

**APPROVAL OF 401 Water Quality Certification and ISOLATED WETLANDS PERMIT and
ADDITIONAL CONDITIONS**

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15 NCAC 2H, Section .0500. The project shall be constructed pursuant to the application dated received September 21, 2005, to construct US 17 (Windsor Bypass) from US 13-17 to east of SR 1503 (Davis Road) in Bertie County. The approved design is that submitted in your application dated September 13, 2005 (dated received September 21, 2005). This certification authorizes the NCDOT to impact 69.90 acres of jurisdictional wetlands (68.58 acres of permanent impact and 1.32 acres of temporary impact), 5.07 acres of hand clearing in wetlands, 0.66 acres of isolated wetlands, 2,035 linear feet of stream, and 1.07 acres of surface water (1.06 acres of permanent impact and 0.01 acres of temporary impact) in Bertie County. The authorized impacts are as described below:

Section A Wetland Impacts in the Roanoke River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under the Bridge (ac)
1	0.28		0.02	0.09		
2				0.01		
3	0.01			0.01		
4	2.53		0.07	1.02		
5	0.01				0.05	
6	0.24			0.02		
7	0.01				5.02	2.53
8	0.27			0.01		
9	0.17		0.01	0.02		
10	9.73			1.25		
12	5.95			0.77		
13	4.10			0.50		
14	25.39	1.30		5.27		
15	0.52			0.10		
16	8.20			1.09		
17	0.71			0.10		
18	0.01			0.01		
19	0.05			0.03		
IP#1		0.02				
Total	58.18	1.32	0.10	10.30	5.07	2.53

Section A Isolated Wetland Impacts in the Roanoke River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)
IP #1	0.66				
Total	0.66				

Section A Surface Water and Stream Impacts in the Roanoke River Basin

Site	Permanent Fill in Surface Water (ac)	Temporary Fill in Surface Water (ac)	Permanent Stream Impacts (ft)	Temporary Stream Impacts (ft)	Stream Impacts Requiring Mitigation (ft)
1	0.76		286		89
2	0.01		39		
4	0.10		1,450		1,265
11	0.09	0.01	180	31	
14	0.10				
IP #1				49	
Total	1.06	0.01	1,955	80	1,354

The application provides adequate assurance that the discharge of fill material into the waters of the Roanoke River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application dated September 13, 2005 (dated received September 21, 2005), as described in the Public Notice. Should your project change, you are required to notify the DWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Project Specific Conditions:

1. At Site 1, the culvert will be extended with the bottom of the stream channel rather than be buried one (1) foot to prevent headcutting upstream. This was the agreement reached during Concurrence Point 4B on May 19, 2005.
2. Site IP #1 is one of the approved Borrow Site for the proposed project. Within the site are 2 isolated wetlands as determined by the US Army Corps of Engineers on May 25, 2005. The isolated wetlands (see Isolated Wetlands Impact table) amount to 0.66 acres (0.21 and 0.45 acres respectively). In addition, there will be 49 linear feet of temporary stream impact (see Surface Water and Stream Impact table) and 0.02 acres of temporary wetland impact (see Wetlands Impact table) associated with upgrading the existing logging-road to a haul road.
3. Per the agreement reached at the August 17, 2005 Concurrence 4C meeting, special sediment control fencing will be comprised of #57 stone on top of geotextile fabric to minimize disturbance during removal. In addition, it will be noted on the plans where and when this special sediment control fencing will be used and a detail will be provided to improve plan clarity.

Condition(s) of Certification:

4. Construction will be conducted in such a manner as to prevent a significant increase in turbidity outside the area of construction or construction-related discharge. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to assure compliance with the appropriate turbidity water quality standard.
 - a. The erosion and sediment control measures for the project must equal or exceed the proper design, installation, operation and maintenance outlined in the most recent version of the North Carolina Sediment and Erosion Control Planning and Design Manual. These devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - b. For borrow pit sites, the erosion and sediment control measures must equal or exceed the proper design, installation, operation and maintenance outlined in the most recent version of the North Carolina Surface Mining Manual. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
5. All sediment and erosion control measures shall not be placed in wetlands or waters to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored after the Division of Land Resources has released the project.
6. If an environmental document is required, this Certification is not valid until a FONSI or ROD is issued by the State Clearinghouse. All water quality-related conditions of the FONSI or ROD shall become conditions of this Certification.
7. No live or fresh concrete shall come into contact with waters of the state until the concrete has hardened.
8. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit. Should waste or borrow sites be located in wetlands or stream, compensatory mitigation will be required since it is a direct impact from road construction activities.
9. All channel relocations will be constructed in a dry work area, and stabilized before stream flows are diverted. Channel relocations will be completed and stabilized prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. Vegetation used for bank stabilization shall be limited to native woody species, and should include establishment of a 30 foot wide wooded and an adjacent 20 foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical. A transitional phase incorporating coir fiber and seedling establishment is allowable. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested.
10. Upon completion of the project, the NCDOT shall complete and return the enclosed "Certification of Completion Form" to notify DWQ when all work included in the 401 Certification has been completed. The responsible party shall complete the attached form and return it to the 401/Wetlands Unit of the Division of Water Quality upon completion of the project.
11. Placement of culverts and other structures in waters, streams, and wetlands must be placed below the elevation of the streambed, unless otherwise authorized by this certification, to allow low flow passage of water and aquatic life unless it can be shown to DWQ that providing passage would be impractical. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or

upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium shall be maintained if requested in writing by DWQ.

12. The NCDOT will need to adhere to all appropriate in-water work moratoriums (including the use of pile driving or vibration techniques) prescribed by the NC Wildlife Resources Commission, the US Fish and Wildlife Service, and National Marine Fisheries Service. No in-water work is permitted between February 15 and September 30 of any year, without prior approval from the NC Division of Water Quality and the NC Wildlife Resources Commission. In addition, NCDOT shall conform with the NCDOT policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997) at all times. Per the agreement between NCDOT and WRCS in a letter dated August 9, 2004, construction activities in the wetlands adjacent to the Cashie River, only if the area has been contained by silt fence prior to the beginning of the moratorium and NCDOT agrees to utilize a turbidity curtain to contain all construction activities in the wetlands adjacent to the Cashie River. This applies only to the wetlands directly adjacent to the Cashie River. The NCDOT will adhere to the original moratorium of February 15 to September 30 within the waters of the Cashie River and its adjacent wetlands during periods of inundation.

13. Compensatory mitigation for impacts to 68.58 acres of jurisdictional wetlands shall be done. Total mitigation shall be provided as described below:

Offsite Compensatory Mitigation

Compensatory mitigation for the unavoidable impacts to 4.05 acres of riverine wetlands and 65.17 acres of non-riverine wetlands in the Roanoke River Basin in the Hydrologic Cataloging Unit 03010107, associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated September 20, 2005 (received September 30, 2005), and in accordance with the Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003.

14. Compensatory mitigation for impacts to 1,354 linear feet of streams shall be done at a replacement ratio of 5:1 for High Quality Stream Preservation in the Roanoke River Basin, Hydrologic Cataloging Unit 03010107. Applying a replacement ratio of 5:1, total mitigation for 6,770 linear feet of streams shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated September 20, 2005 (received September 30, 2005), and in accordance with the Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003.
15. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.
16. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1.
17. All temporary fills in wetlands and surface waters shall be removed upon completion of the project. In addition, the post-construction removal of any temporary bridge structures or fill will need to return the project site to its preconstruction contours and elevations. The revegetation of the impacted areas with appropriate native species will be required.
18. Due to the possibility that compaction, mechanized clearing and/or other site alterations might prevent the temporary wetland impact area from re-attaining jurisdictional wetland status, the permittee shall provide an annual update on the wetland areas temporarily impacted by this project. This annual update will consist of photographs provided during the agency monitoring report meeting and a brief report on the progress of these temporarily impacted areas in re-attaining wetland jurisdictional status. Three years after project completion, the permittee shall schedule an agency field meeting with DCM, the NC Division of Water Quality and the NC Wildlife Resources Commission to determine if the wetland areas temporarily impacted by this project have re-attained jurisdictional wetland status. If at the end of 3 years the wetland areas temporarily impacted by this project have not re-attained jurisdictional wetland status, NC DCM and the above listed agencies shall determine whether a compensatory wetland mitigation plan will be required.

19. The dimension, pattern and profile of the stream above and below the crossing should not be modified by widening the stream channel or reducing the depth of the stream. Disturbed floodplains and streams should be restored to natural geomorphic conditions.
20. Any riprap used must not interfere with thalweg performance and aquatic life passage during low flow conditions.
21. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.
22. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.
23. All work shall be performed during low or normal flow conditions.
24. Two copies of the final construction drawings shall be furnished to NCDWQ prior to the pre-construction meeting. Written verification shall be provided to the NC Division of Water Quality that the final construction drawings comply with the attached permit drawings contained in your application dated September 13, 2005 (dated received September 21, 2005).
25. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.
26. NCDOT, and its authorized agents, shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State law and Federal law. If DWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, DWQ may reevaluate and modify this certification to include conditions appropriate to assure compliance with such standards and requirements in accordance with 15A NCAC 2H.0507(d).
27. A copy of this Water Quality Certification shall be posted on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.
28. DOT shall schedule a preconstruction meeting for this project prior to incurring any impacts in jurisdictional waters including wetlands. The Division of Water Quality shall be notified a minimum of 30 days prior to the preconstruction conference.
29. Culverts that are less than 48-inch in diameter should be buried to a depth equal to or greater than 20% of their size to allow for aquatic life passage, unless otherwise authorized by this certification. Culverts that are 48-inch in diameter or larger should be buried at least 12 inches below the stream bottom to allow natural stream bottom material to become established in the culvert following installation and to provide aquatic life passage during periods of low flow. These measurements must be based on natural thalweg depths.
30. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit. Should waste or borrow sites be located in wetlands or stream, compensatory mitigation will be required since it is a direct impact from road construction activities.

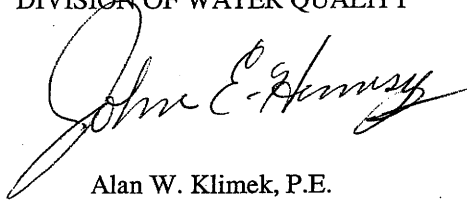
31. Any violations, during the construction of the approved project, of this 401 Water Quality Certification or the North Carolina State Water Quality Standards as defined in 15A NCAC 2B .0200 Rules, shall be reported immediately to the North Carolina Division of Water Quality.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 permit issued by the US Army Corps of Engineers.

If this Certification is unacceptable to you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, P.O. Box 27447, Raleigh, N.C. 27611-7447. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 18th day of November 2005

DIVISION OF WATER QUALITY

A handwritten signature in cursive script, appearing to read "Alan W. Klimek", is written over the typed name.

Alan W. Klimek, P.E.
Director

WQC No. 3548

SPECIAL CONDITIONS

COMPLIANCE WITH PLANS

a) All work must be performed in strict compliance with the attached plans, which are a part of this permit. Any modification to the permit plans must be approved by the USACE prior to implementation.

ACTIVITIES NOT AUTHORIZED

b) Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill, or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands, nor shall any activities take place that cause the degradation of waters or wetlands. In addition, except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within, into, or out of waters or wetlands or to reduce the reach of waters or wetlands.

This permit does not authorize temporary placement or double handling of excavated or fill material within jurisdictional waters, including wetlands, outside the permitted area. Additionally, no construction materials or equipment will be placed or stored within jurisdictional waters, including wetlands.

CONSTRUCTION PLANS

c) The permittee will ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Written verification shall be provided that the final construction drawings comply with the attached permit drawings prior to any active construction in waters of the United States, including wetlands. Any deviation in the construction design plans will be brought to the attention of the Corps of Engineers, Washington Regulatory Field Office prior to any active construction in waters or wetlands.

d) Prior to commencing construction within jurisdictional waters of the United States for any portion of the proposed project, the permittee shall forward the latest version of project construction drawings to the Corps of Engineers, Washington Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings will be acceptable.

POLLUTION SPILLS

e) All mechanized equipment will be regularly inspected and maintained to prevent

contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. No equipment staging or storage of construction material will occur in wetlands. Hydro-seeding equipment will not be discharged or washed out into any surface waters or wetlands. In the event of a spill of petroleum products or any other hazardous waste, the permittee shall immediately report it to the N.C. Division of Water Quality at (919) 733-5083 or (800) 662-7956 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.

NOTIFICATION

f) The permittee shall advise the Corps in writing at least two weeks prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.

CLEAN FILL MATERIAL

g) Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used.

IN-WATER MORATORIUM

h) A construction moratorium for anadromous fish from February 15 through September 30 will be adhered to for in-water work.

i) The permittee will follow NCDOT adopted anadromous fish stream crossing guidelines.

CONTRACTOR COMPLIANCE

j) The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit, and any authorized modifications. A copy of this permit, and any authorized modifications, including all conditions, shall be available at the project site during construction and maintenance of this project.

SEDIMENTATION AND EROSION CONTROL MEASURES

k) The permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" to assure compliance with the appropriate turbidity water quality standard. Erosion and sediment control practices must be in full compliance with all

specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to assure compliance with the appropriate turbidity water quality standards. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).

Adequate sedimentation and erosion control measures must be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. These measures must be inspected and maintained regularly, especially following rainfall events. All fill material must be adequately stabilized at the earliest practicable date to prevent sediment from entering into adjacent waters or wetlands.

The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.

During the clearing phase of the project, heavy equipment must not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of nonerodable materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.

No fill or excavation for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless it is included on the plan drawings and specifically authorized by this permit.

REPORTING OF VIOLATIONS

l) The permittee will report any violation of these conditions or violations of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act in writing to the Corps of Engineers, Washington Regulatory Field Office NCDOT Regulatory Project Manager, within 24 hours of the permittee's discovery of the violation.

COMPLIANCE WITH SPECIAL CONDITIONS

m) Failure to institute and carry out the details of these special conditions, will result in a directive to cease all ongoing and permitted work within waters and/or wetlands associated with the permitted project, or such other remedies and/or fines as the District Engineer or his authorized representatives may seek.

WET CONCRETE

n) The permittee shall take measures to prevent live or fresh concrete from coming into contact with any surface waters until the concrete has hardened.

CULVERTS

o) All authorized culverts will be installed to allow the passage of low stream flows and the continued movement of fish and other aquatic life as well as to prevent headcutting of the streambed. For all box culverts and for pipes greater than 48 inches in diameter, the bottom of the pipe will be buried at least one foot below the bed of the stream unless burial would be impractical and the Corps of Engineers has waived this requirement. For culverts 48 inches in diameter or smaller, the bottom of the pipe must be buried below the bed of the stream to a depth equal to or greater than 20 percent of the diameter of the culvert. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in disequilibrium of wetlands or streambeds or banks, adjacent to, upstream or downstream of the structures. In order to allow for the continued movement of bed load and aquatic organisms, existing stream channel widths and depths will be maintained at the inlet and outlet ends of culverts. Riprap armoring of streams at culvert inlets and outlets shall be minimized above the ordinary high water elevation in favor of bioengineering techniques such as bank sloping, erosion control matting and revegetation with deep-rooted, woody plants.

PRECONSTRUCTION MEETING

p) The permittee shall schedule a preconstruction meeting between its representatives, the contractor's representatives, and the Corps of Engineers, Washington Regulatory Field Office, NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all of the terms and conditions contained within this Department of the Army Permit. The permittee shall provide the Corps of Engineers, Washington Regulatory Field Office, NCDOT Regulatory Project Manager, with a copy of the final plans at least two weeks prior to the preconstruction meeting along with a description of any changes that have been made to the project's design, construction methodology or construction timeframe. The permittee shall schedule the preconstruction meeting for a time when the Corps of Engineers and North Carolina Division of Water Quality (NCDWQ) Project Managers can attend. The permittee shall invite the Corps and NCDWQ Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedule and participate in the required meeting.

BORROW AND WASTE

q) To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall provide the Corps of Engineers with appropriate maps indicating the locations of proposed borrow or waste sites as soon as the

permittee has that information. The permittee will coordinate with the Corps of Engineers before approving any borrow or waste sites that are within 400 feet of any streams or wetlands. All jurisdictional wetland boundaries on borrow and waste sites shall be verified by the Corps of Engineers and shown on the approved reclamation plans. The permittee shall ensure that all such areas comply with Special Condition b) of this permit, and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This information will include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with the Special Condition b). All information will be available to the Corps of Engineers upon request. NCDOT shall require its contractors to complete and execute reclamation plans for each waste and borrow site and provide written documentation that the reclamation plans have been implemented and all work is completed. This documentation will be provided to the Corps of Engineers within 30 days of the completion of the reclamation work.

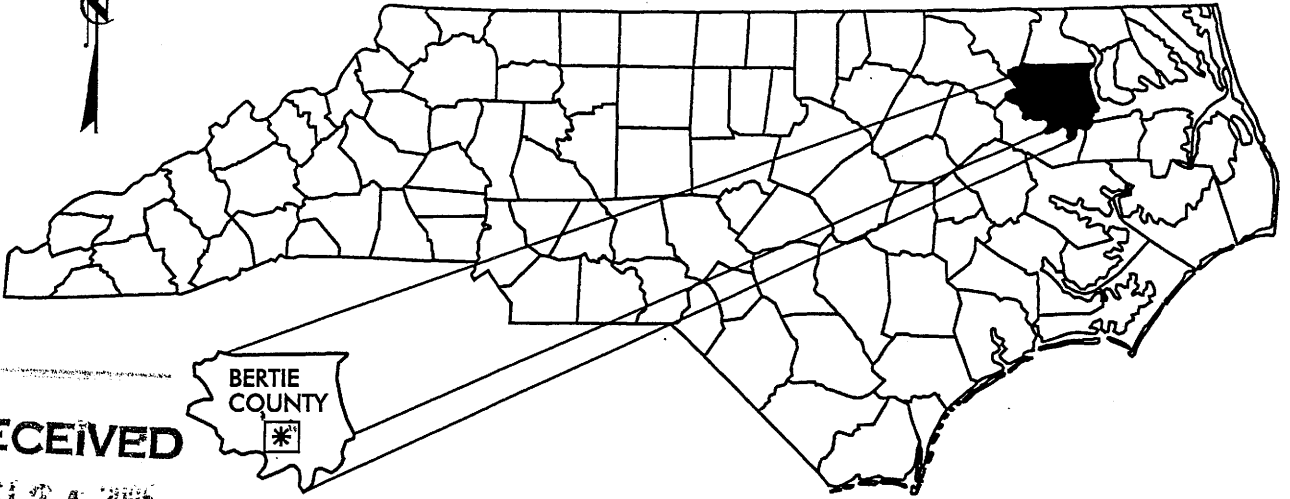
SECTION 106 (NATIONAL HISTORIC PRESERVATION ACT)

r) Project construction shall not commence within the site locations as shown in the Archaeological Data Recovery Plan (DNR) for sites 31BR192** and 31BR201/201** located in the proposed corridor for the US 17 Windsor Bypass until NCDOT has completed all the requirements and implemented the stipulations of the Memorandum of Agreement (MOA) between the U.S. Army Corps of Engineers, the State Historic Preservation Officer, and NCDOT.

EEP MITIGATION

s) Compensatory mitigation for the unavoidable impacts to 4.05 acres of riverine wetlands, 68.56 acres of non-riverine wetlands, and 1,354 linear feet of stream associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated September 20, 2005 from William D. Gilmore, EEP Director. Pursuant to the EEP Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003, the EEP will provide 8.1 acres of restoration equivalent riverine wetlands, 129.02 acres of restoration equivalent non-riverine wetlands, preservation of 6,770 linear feet of high quality stream, and 1,354 linear feet of restoration equivalent warm water stream channel in the Roanoke River basin (Hydrologic Cataloging Unit 03010107) by one year of the date of this permit. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration. The NCDOT shall, within 30 days of the issue date of this permit, certify that sufficient funds have been provided to EEP to complete the required mitigation, pursuant to Paragraph V. of the MOA.

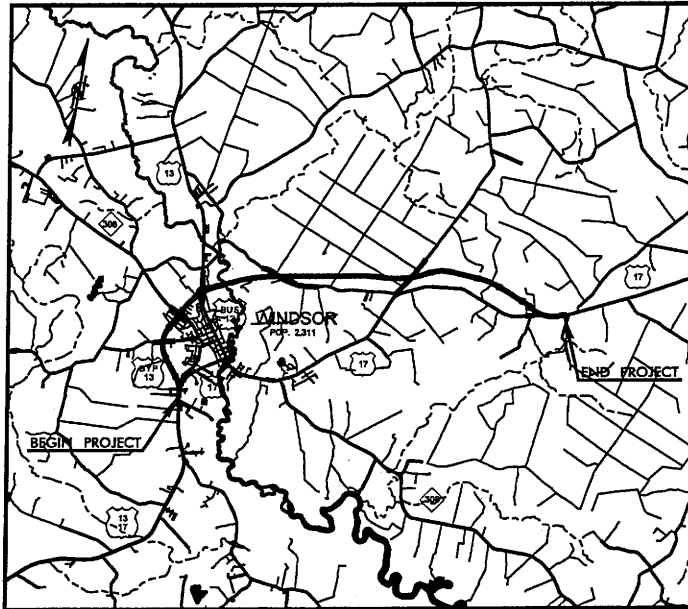
NORTH CAROLINA



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REGULATORY BRANCH



VICINITY MAPS

NORTH CAROLINA

DIVISION OF HIGHWAYS

BERTIE COUNTY

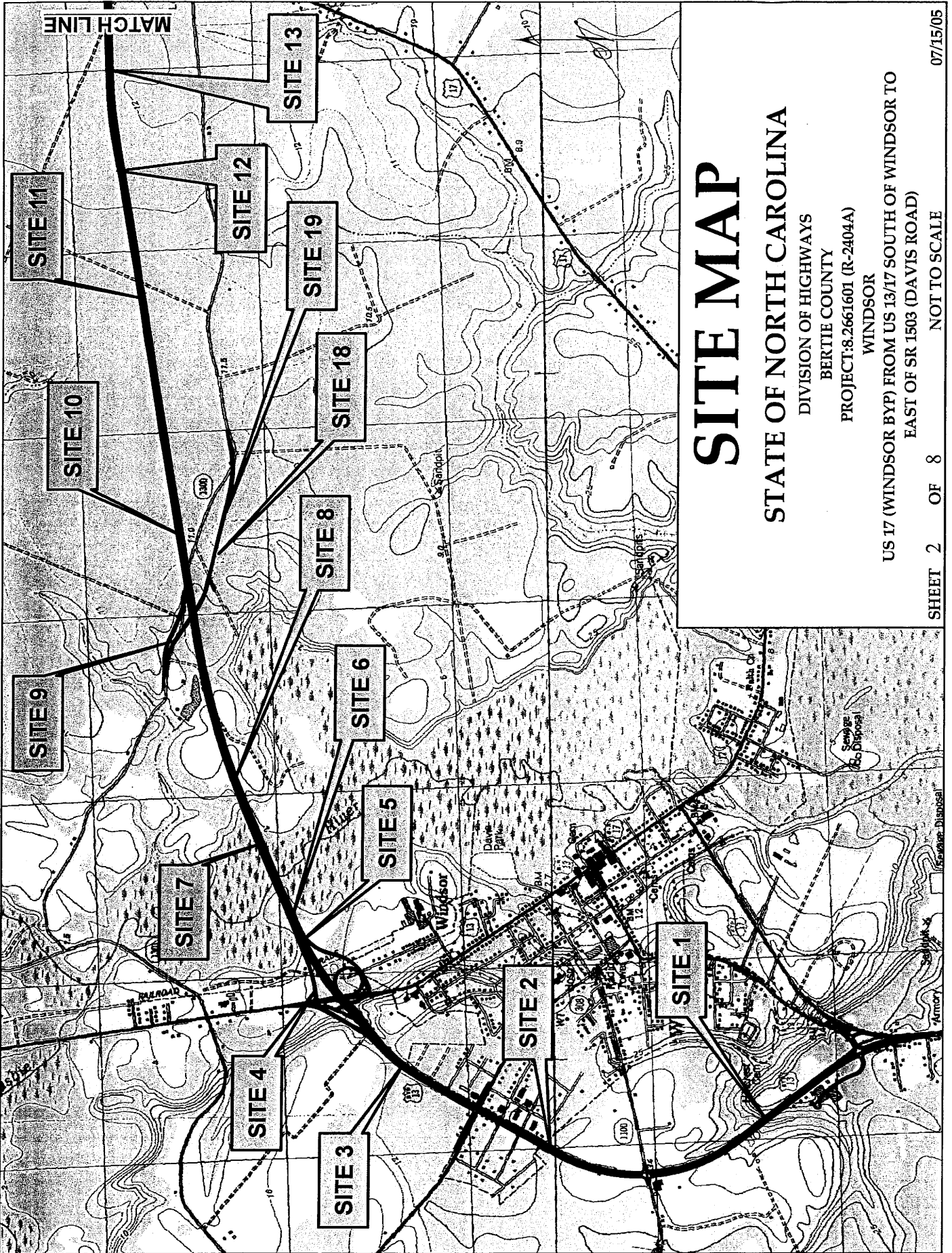
PROJECT: C201236 (R-2204A)

WINDSOR

US 17 (WINDSOR BYP) FROM US 13/17,
SOUTH OF WINDSOR, TO EAST OF
SR 1503 (DAVIS ROAD)

SHEET 1 OF 8

7/15/05



SITE MAP

STATE OF NORTH CAROLINA

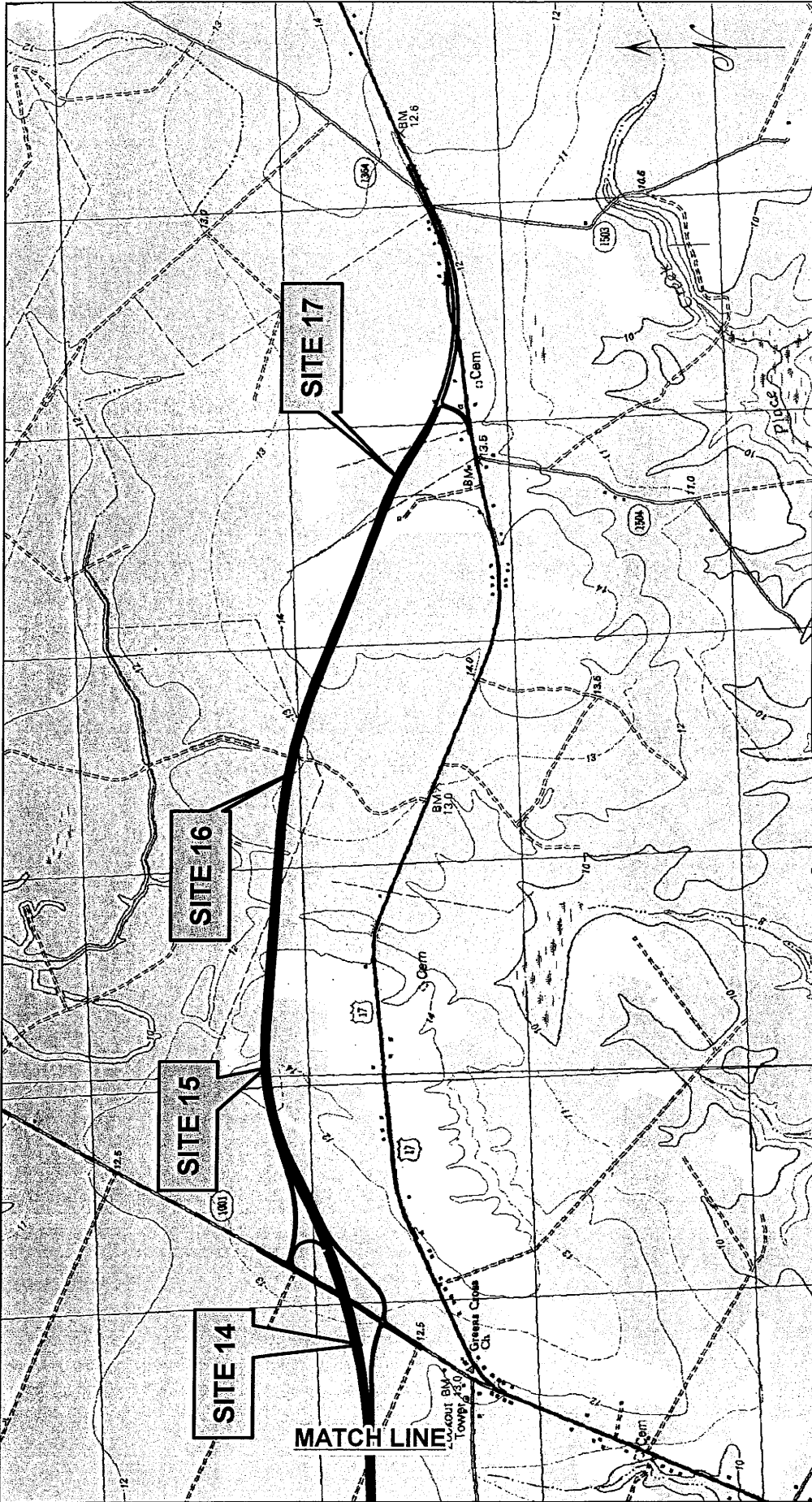
DIVISION OF HIGHWAYS

BERTIE COUNTY

PROJECT: 8.2661601 (R-2404A)

WINDSOR

US 17 (WINDSOR BYP) FROM US 13/17 SOUTH OF WINDSOR TO
EAST OF SR 1503 (DAVIS ROAD)



SITE MAP

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

BERKIE COUNTY

PROJECT: 8.2661601 (R-2404A)

WINDSOR

US 17 (WINDSOR BYP) FROM US 13/17 SOUTH OF WINDSOR TO
EAST OF SR 1503 (DAVIS ROAD)

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)	
1	41+50-49+00	8'x6' RCBC	0.277	0.000	0.016	0.087	0.000	0.000	0.758	0.000	286	0	0
2	85+10-88+00	48" RCP	0.000	0.000	0.000	0.011	0.000	0.000	0.005	0.000	39	0	0
3	115+60-117+90	30" RCP	0.004	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0	0	0
4	129+00-141+80	INTERCHANGE	2.525	0.000	0.067	1.021	0.000	0.103	0.000	1450	0	0	0
5	144+00-146+10	ROADWAY FILL	0.014	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0	0	0
6	149+00-153+50	ROADWAY FILL	0.241	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0	0	0
7*	155+00-172+00	BRIDGE	0.001	0.000	0.000	0.000	5.019	0.000	0.000	0.000	0	0	0
8	175+80-180+00	ROADWAY FILL	0.270	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0	0	0
9	16+50-21+00 -Y5-	30" RCP	0.165	0.000	0.006	0.018	0.000	0.000	0.000	0.000	0	0	0
10	217+10-258+60	8-36" EQ PIPES	9.726	0.000	0.000	1.249	0.000	0.000	0.000	0.000	0	0	0
11	264+20-267+00	36" RCP	0.000	0.000	0.000	0.000	0.000	0.086	0.003	180	31	0	0
12	267+30-298+40	5-36" EQ PIPES	5.951	0.000	0.000	0.772	0.000	0.000	0.000	0	0	0	0
13	299+20-314+70	2-36" EQ PIPES	4.096	0.000	0.000	0.495	0.000	0.000	0.000	0	0	0	0
14	315+00-370+30	INTERCHANGE	25.393	1.304	0.000	5.269	0.000	0.095	0.000	0	0	0	0
15	375+50-380+20	ROADWAY FILL	0.524	0.000	0.000	1.099	0.000	0.000	0.000	0	0	0	0
16	397+30-428+90	2-30" RCP, 3-36" EQ	8.199	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0
17	466+50-470+10	1-36" EQ PIPE	0.711	0.000	0.000	0.102	0.000	0.000	0.000	0	0	0	0
18	35+10-35+50 -Y5-	ROADWAY FILL	0.001	0.000	0.000	0.006	0.000	0.000	0.000	0	0	0	0
19	41+60-42+80 -Y5-	18" RCP	0.046	0.000	0.000	0.027	0.000	0.000	0.000	0	0	0	0
TOTALS:			58.144	1.304	0.089	10.286	5.064	1.047	0.003	1955	31	0	

*Additional "shading effect" equal to 2.53 acres of wetland and 127' or 0.41 acres of stream

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BERTIE COUNTY
WBS - 34424.3.7 (R-2404A)

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NORTH CAROLINA

DIVISION OF HIGHWAYS

BERTIE COUNTY

PROJECT: C201236 (R-2204A)

WINDSOR

US 17 (WINDSOR BYP) FROM US 13/17,
SOUTH OF WINDSOR, TO EAST OF
SR 1503 (DAVIS ROAD)

SHEET 8 OF 8

7/15/05

Legend

R-2404A_rdy_dsn ———— Raritan Basin 1:24K Hydrography

R-2404A_hvl_wet ———— NMI Wetlands

Borrow Study Sites

——— Stream & Rivers

——— Wetlands

——— Open Water

——— Unavailable Site Conditions

——— Unimproved Landowner

DOT Roads

——— Interstate

——— US Highway

——— NC Highway

——— NC Secondary Road

——— Non-State Maintained Road



HDR
Hydrologic Design Resources, Inc.

BARHILL
CONTRACTING
COMPANY

Sources: NCDOT GIS Data, USFWS, NCGIA, field data

R-2404A Borrow Site Search

Date: 08/22/2005 Project #: R-2404A Exhibit: A

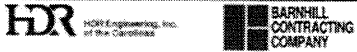
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0.20 ac. Pond Fill

Proposed Haul Road Corridor
(~12' existing road surface, ~46' road expansion,
~10' for fill slopes)

Proposed Borrow Pit Grading
(proposed contours tie to
existing 2' LIDAR contours)

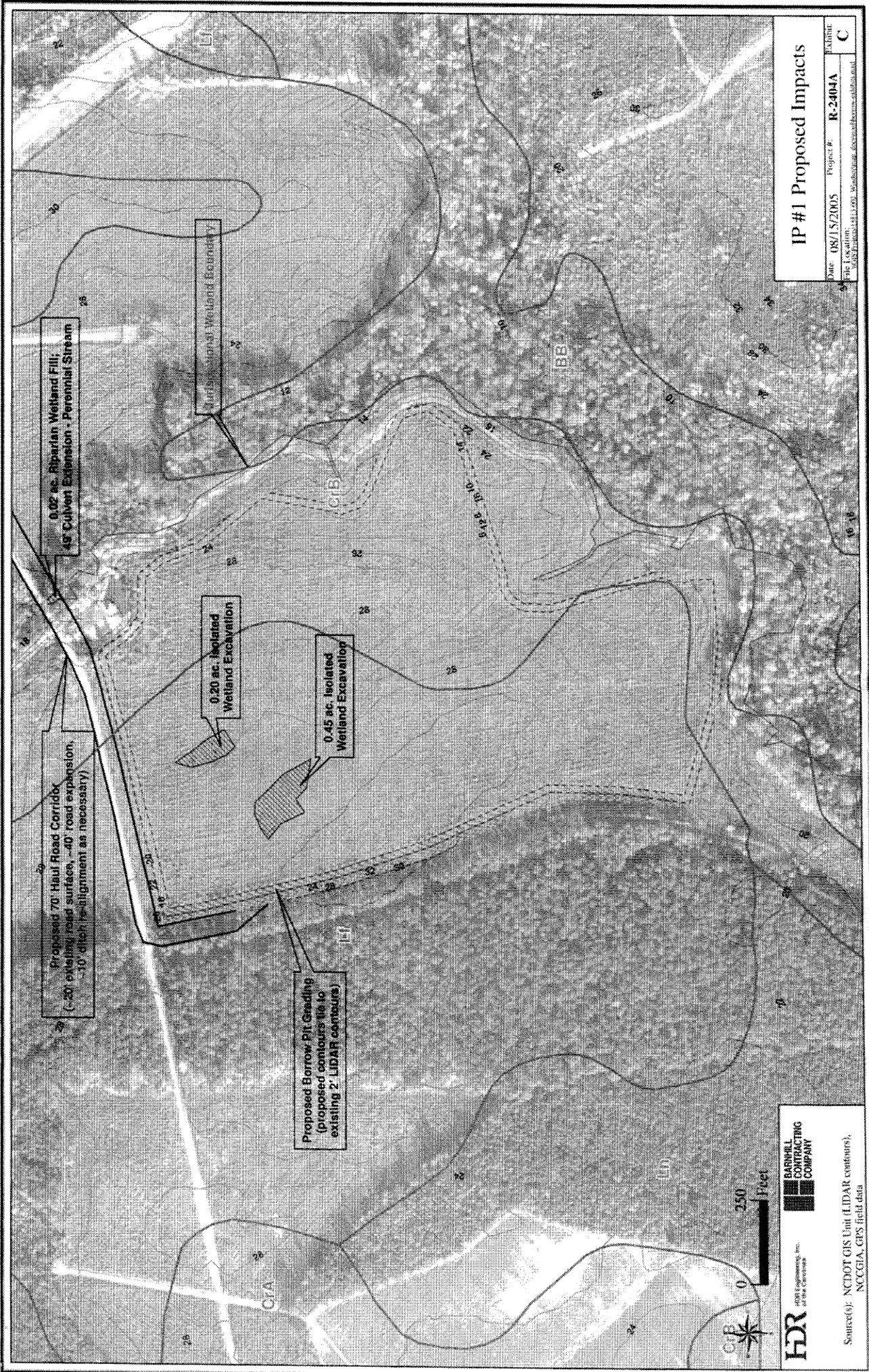
Proposed Grading System 0.50 acre borrow pit



Source(s): NCDOT GIS Unit (LIDAR contours),
NCCGIA GPS field data

Sessoms Haul Road Proposed Impacts

Date: 08/15/2005 Project #: R-2404A Exhibit: B
File Location: I:\GIS\Projects\15815-002_Water\plan_views\plan_views_exhibit.mxd



0.02 ac. Riparian Wetland Fill;
45' Culvert Extension - Perennial Stream

Dispositional Wetland Boundary

Proposed 70' Haul Road Corridor
(-20' existing road surface, -40' road expansion,
-10' ditch realignment as necessary)

0.20 ac. Isolated
Wetland Excavation

0.45 ac. Isolated
Wetland Excavation

Proposed Borrow Pit Grading
(proposed contours 1/8' to
existing 2' LIDAR contours)

IP #1 Proposed Impacts

Date: 08/15/2005
Project #: R-2404A
File Location: \\GIS\Projects\05081505_R2404A\IP#1\IP#1.mxd
BA/Map: C



HDR
HDR Engineering, Inc.
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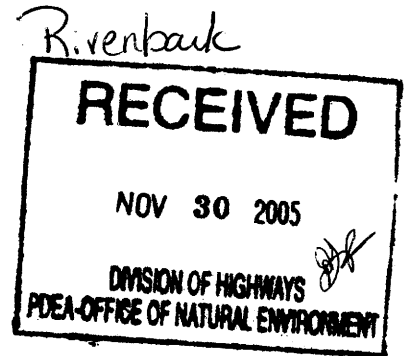
Source(s): NCDOT GIS Unit (LIDAR contours),
NCCGIA, GPS field data



Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

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

November 18, 2005



Dr. Gregory J. Thorpe, PhD., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548

Dear Dr. Thorpe:

Re: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and Isolated Wetlands Permit Pursuant to IWGP100000 for Proposed US 17 (Windsor Bypass) from US 13-17 to east of SR 1503 (Davis Road) in Bertie County, TIP No. R-2404 A, State Project No. 6019001T, USACOE Action ID No. 199400453.
DWQ Project No. 051765

Attached hereto is a copy of Certification No. 3548 issued to The North Carolina Department of Transportation dated November 15, 2005.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

Alan W. Klimek, P.E.
Director

Attachments

cc: Wilmington District Corps of Engineers
Mr. Bill Biddlecome, Corps of Engineers Washington Field Office
Mr. Christopher Militscher, US EPA, Region IV
Mr. Anthony Roper, Division 1 Engineer, 113 Airport Drive, Suite 100, Edenton, NC 27932
Mr. Clay Willis, Division 1 Environmental Officer, 113 Airport Drive, Suite 100, Edenton, NC 27932
Mr. Chris Rivenbark, NEU, 2728-168 Capital Blvd., Parker Lincoln Bldg., Raleigh, NC 27604
Mr. William Gilmore, Ecosystem Enhancement Program
Mr. Garcy Ward, NCDWQ Washington Regional Office
Central Files
File Copy

**APPROVAL OF 401 Water Quality Certification and ISOLATED WETLANDS PERMIT and
ADDITIONAL CONDITIONS**

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15 NCAC 2H, Section .0500. The project shall be constructed pursuant to the application dated received September 21, 2005, to construct US 17 (Windsor Bypass) from US 13-17 to east of SR 1503 (Davis Road) in Bertie County. The approved design is that submitted in your application dated September 13, 2005 (dated received September 21, 2005). This certification authorizes the NCDOT to impact 69.90 acres of jurisdictional wetlands (68.58 acres of permanent impact and 1.32 acres of temporary impact), 5.07 acres of hand clearing in wetlands, 0.66 acres of isolated wetlands, 2,035 linear feet of stream, and 1.07 acres of surface water (1.06 acres of permanent impact and 0.01 acres of temporary impact) in Bertie County. The authorized impacts are as described below:

Section A Wetland Impacts in the Roanoke River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under the Bridge (ac)
1	0.28		0.02	0.09		
2				0.01		
3	0.01			0.01		
4	2.53		0.07	1.02		
5	0.01				0.05	
6	0.24			0.02		
7	0.01				5.02	2.53
8	0.27			0.01		
9	0.17		0.01	0.02		
10	9.73			1.25		
12	5.95			0.77		
13	4.10			0.50		
14	25.39	1.30		5.27		
15	0.52			0.10		
16	8.20			1.09		
17	0.71			0.10		
18	0.01			0.01		
19	0.05			0.03		
IP#1		0.02				
Total	58.18	1.32	0.10	10.30	5.07	2.53

Section A Isolated Wetland Impacts in the Roanoke River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)
IP #1	0.66				
Total	0.66				

Section A Surface Water and Stream Impacts in the Roanoke River Basin

Site	Permanent Fill in Surface Water (ac)	Temporary Fill in Surface Water (ac)	Permanent Stream Impacts (ft)	Temporary Stream Impacts (ft)	Stream Impacts Requiring Mitigation (ft)
1	0.76		286		89
2	0.01		39		
4	0.10		1,450		1,265
11	0.09	0.01	180	31	
14	0.10				
IP #1				49	
Total	1.06	0.01	1,955	80	1,354

The application provides adequate assurance that the discharge of fill material into the waters of the Roanoke River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application dated September 13, 2005 (dated received September 21, 2005), as described in the Public Notice. Should your project change, you are required to notify the DWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Project Specific Conditions:

1. At Site 1, the culvert will be extended with the bottom of the stream channel rather than be buried one (1) foot to prevent headcutting upstream. This was the agreement reached during Concurrence Point 4B on May 19, 2005.
2. Site IP #1 is one of the approved Borrow Site for the proposed project. Within the site are 2 isolated wetlands as determined by the US Army Corps of Engineers on May 25, 2005. The isolated wetlands (see Isolated Wetlands Impact table) amount to 0.66 acres (0.21 and 0.45 acres respectively). In addition, there will be 49 linear feet of temporary stream impact (see Surface Water and Stream Impact table) and 0.02 acres of temporary wetland impact (see Wetlands Impact table) associated with upgrading the existing logging-road to a haul road.
3. Per the agreement reached at the August 17, 2005 Concurrence 4C meeting, special sediment control fencing will be comprised of #57 stone on top of geotextile fabric to minimize disturbance during removal. In addition, it will be noted on the plans where and when this special sediment control fencing will be used and a detail will be provided to improve plan clarity.

Condition(s) of Certification:

4. Construction will be conducted in such a manner as to prevent a significant increase in turbidity outside the area of construction or construction-related discharge. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to assure compliance with the appropriate turbidity water quality standard.
 - a. The erosion and sediment control measures for the project must equal or exceed the proper design, installation, operation and maintenance outlined in the most recent version of the North Carolina Sediment and Erosion Control Planning and Design Manual. These devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - b. For borrow pit sites, the erosion and sediment control measures must equal or exceed the proper design, installation, operation and maintenance outlined in the most recent version of the North Carolina Surface Mining Manual. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
5. All sediment and erosion control measures shall not be placed in wetlands or waters to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored after the Division of Land Resources has released the project.
6. If an environmental document is required, this Certification is not valid until a FONSI or ROD is issued by the State Clearinghouse. All water quality-related conditions of the FONSI or ROD shall become conditions of this Certification.
7. No live or fresh concrete shall come into contact with waters of the state until the concrete has hardened.
8. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit. Should waste or borrow sites be located in wetlands or stream, compensatory mitigation will be required since it is a direct impact from road construction activities.
9. All channel relocations will be constructed in a dry work area, and stabilized before stream flows are diverted. Channel relocations will be completed and stabilized prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. Vegetation used for bank stabilization shall be limited to native woody species, and should include establishment of a 30 foot wide wooded and an adjacent 20 foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical. A transitional phase incorporating coir fiber and seedling establishment is allowable. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested.
10. Upon completion of the project, the NCDOT shall complete and return the enclosed "Certification of Completion Form" to notify DWQ when all work included in the 401 Certification has been completed. The responsible party shall complete the attached form and return it to the 401/Wetlands Unit of the Division of Water Quality upon completion of the project.
11. Placement of culverts and other structures in waters, streams, and wetlands must be placed below the elevation of the streambed, unless otherwise authorized by this certification, to allow low flow passage of water and aquatic life unless it can be shown to DWQ that providing passage would be impractical. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or

upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium shall be maintained if requested in writing by DWQ.

12. The NCDOT will need to adhere to all appropriate in-water work moratoriums (including the use of pile driving or vibration techniques) prescribed by the NC Wildlife Resources Commission, the US Fish and Wildlife Service, and National Marine Fisheries Service. No in-water work is permitted between February 15 and September 30 of any year, without prior approval from the NC Division of Water Quality and the NC Wildlife Resources Commission. In addition, NCDOT shall conform with the NCDOT policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997) at all times. Per the agreement between NCDOT and WRCS in a letter dated August 9, 2004, construction activities in the wetlands adjacent to the Cashie River, only if the area has been contained by silt fence prior to the beginning of the moratorium and NCDOT agrees to utilize a turbidity curtain to contain all construction activities in the wetlands adjacent to the Cashie River. This applies only to the wetlands directly adjacent to the Cashie River. The NCDOT will adhere to the original moratorium of February 15 to September 30 within the waters of the Cashie River and its adjacent wetlands during periods of inundation.

13. Compensatory mitigation for impacts to 68.58 acres of jurisdictional wetlands shall be done. Total mitigation shall be provided as described below:

Offsite Compensatory Mitigation

Compensatory mitigation for the unavoidable impacts to 4.05 acres of riverine wetlands and 65.17 acres of non-riverine wetlands in the Roanoke River Basin in the Hydrologic Cataloging Unit 03010107, associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated September 20, 2005 (received September 30, 2005), and in accordance with the Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003.

14. Compensatory mitigation for impacts to 1,354 linear feet of streams shall be done at a replacement ratio of 5:1 for High Quality Stream Preservation in the Roanoke River Basin, Hydrologic Cataloging Unit 03010107. Applying a replacement ratio of 5:1, total mitigation for 6,770 linear feet of streams shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated September 20, 2005 (received September 30, 2005), and in accordance with the Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003.
15. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.
16. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1.
17. All temporary fills in wetlands and surface waters shall be removed upon completion of the project. In addition, the post-construction removal of any temporary bridge structures or fill will need to return the project site to its preconstruction contours and elevations. The revegetation of the impacted areas with appropriate native species will be required.
18. Due to the possibility that compaction, mechanized clearing and/or other site alterations might prevent the temporary wetland impact area from re-attaining jurisdictional wetland status, the permittee shall provide an annual update on the wetland areas temporarily impacted by this project. This annual update will consist of photographs provided during the agency monitoring report meeting and a brief report on the progress of these temporarily impacted areas in re-attaining wetland jurisdictional status. Three years after project completion, the permittee shall schedule an agency field meeting with DCM, the NC Division of Water Quality and the NC Wildlife Resources Commission to determine if the wetland areas temporarily impacted by this project have re-attained jurisdictional wetland status. If at the end of 3 years the wetland areas temporarily impacted by this project have not re-attained jurisdictional wetland status, NC DCM and the above listed agencies shall determine whether a compensatory wetland mitigation plan will be required.

19. The dimension, pattern and profile of the stream above and below the crossing should not be modified by widening the stream channel or reducing the depth of the stream. Disturbed floodplains and streams should be restored to natural geomorphic conditions.
20. Any riprap used must not interfere with thalweg performance and aquatic life passage during low flow conditions.
21. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.
22. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.
23. All work shall be performed during low or normal flow conditions.
24. Two copies of the final construction drawings shall be furnished to NCDWQ prior to the pre-construction meeting. Written verification shall be provided to the NC Division of Water Quality that the final construction drawings comply with the attached permit drawings contained in your application dated September 13, 2005 (dated received September 21, 2005).
25. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.
26. NCDOT, and its authorized agents, shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State law and Federal law. If DWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, DWQ may reevaluate and modify this certification to include conditions appropriate to assure compliance with such standards and requirements in accordance with 15A NCAC 2H.0507(d).
27. A copy of this Water Quality Certification shall be posted on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.
28. DOT shall schedule a preconstruction meeting for this project prior to incurring any impacts in jurisdictional waters including wetlands. The Division of Water Quality shall be notified a minimum of 30 days prior to the preconstruction conference.
29. Culverts that are less than 48-inch in diameter should be buried to a depth equal to or greater than 20% of their size to allow for aquatic life passage, unless otherwise authorized by this certification. Culverts that are 48-inch in diameter or larger should be buried at least 12 inches below the stream bottom to allow natural stream bottom material to become established in the culvert following installation and to provide aquatic life passage during periods of low flow. These measurements must be based on natural thalweg depths.
30. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit. Should waste or borrow sites be located in wetlands or stream, compensatory mitigation will be required since it is a direct impact from road construction activities.

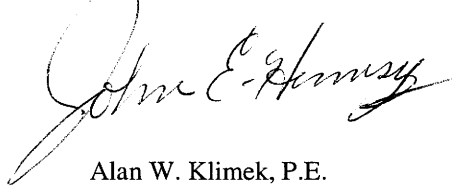
31. Any violations, during the construction of the approved project, of this 401 Water Quality Certification or the North Carolina State Water Quality Standards as defined in 15A NCAC 2B .0200 Rules, shall be reported immediately to the North Carolina Division of Water Quality.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 permit issued by the US Army Corps of Engineers.

If this Certification is unacceptable to you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, P.O. Box 27447, Raleigh, N.C. 27611-7447. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 18th day of November 2005

DIVISION OF WATER QUALITY

A handwritten signature in black ink, appearing to read "Alan W. Klimek", is written over the typed name below.

Alan W. Klimek, P.E.
Director

WQC No. 3548

Permit Class
NEW

Permit Number
5-06

STATE OF NORTH CAROLINA
Department of Environment and Natural Resources
and
Coastal Resources Commission

Permit

for

Major Development in an Area of Environmental Concern
pursuant to NCGS 113A-118

Excavation and/or filling pursuant to NCGS 113-229

Issued to N.C. Department of Transportation, 1548 Mail Service Center, Raleigh, NC 27699-1548

Authorizing development in Bertie County at Cashie River, US 13/17 intersection southwest of Windsor to east of SR 1503 (Davis Road), as requested in the permittee's application dated 9/13/05, including the attached workplan drawings (126) as referenced in Condition No. 1 of this permit.

This permit, issued on 1/6/06, is subject to compliance with the application (where consistent with the permit), all applicable regulations, special conditions and notes set forth below. Any violation of these terms may be subject to fines, imprisonment or civil action; or may cause the permit to be null and void.

TIP No. R-2404A, Windsor Bypass

1) All work authorized by this permit shall be carried out in accordance with the following workplan drawings:

½ Size Permit Impact Sheets (58): 26 dated 8/24/05; 19 dated 9/7/05; 12 dated 9/8/05; and 1 dated 9/9/05.

Roadway Plans (66): 1 dated 7/15/05; 1 dated 8/22/05; 56 dated 8/29/05; 2 dated 9/7/05; 5 dated 9/8/05; and 1 dated as received 9/21/05.

Borrow Sites (2): 2 dated 8/15/05.

(See attached sheets for Additional Conditions)

This permit action may be appealed by the permittee or other qualified persons within twenty (20) days of the issuing date. An appeal requires resolution prior to work initiation or continuance as the case may be.

This permit must be accessible on-site to Department personnel when the project is inspected for compliance.

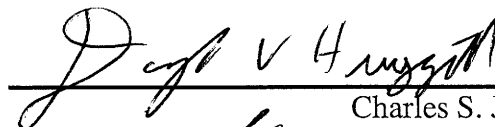
Any maintenance work or project modification not covered hereunder requires further Division approval.

All work must cease when the permit expires on

No expiration date, pursuant to GS 136-44.7B

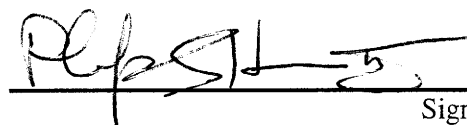
In issuing this permit, the State of North Carolina agrees that your project is consistent with the North Carolina Coastal Management Program.

Signed by the authority of the Secretary of DENR and the Chairman of the Coastal Resources Commission.



Charles S. Jones, Director
Division of Coastal Management

This permit and its conditions are hereby accepted.



Signature of Permittee

ADDITIONAL CONDITIONS

- 2) No land disturbing activities shall take place within 30 feet of the normal water level of the Cashie River, except for that which is absolutely necessary for construction of the bridge over the Cashie River, as depicted on the attached workplan drawings. All staging, borrow and waste areas shall be located a minimum of 30 feet landward of the normal water level of the Cashie River.
- 3) No in-water work shall be permitted between February 15 through September 30 of any year without the prior approval of the N.C. Division of Coastal Management (DCM), in consultation with the N.C. Wildlife Resources Commission. For the purposes of this moratorium, in-water is defined as those areas that are inundated at normal water level.
- 4) In accordance with the commitment made on page 10 of the permittee's cover letter dated 9/13/05, during the in-water work moratorium silt fences shall be used in wetlands that are not inundated at normal water level during construction to completely contain the construction zone and a turbidity curtain shall be used to separate the construction area from the Cashie River. These measures shall be in place prior to commencement of the moratorium.
- 5) Turbidity curtains and silt fences shall be used to isolate all work areas from the Cashie River, including pile or casement installation, placement of riprap, excavation or filling. The turbidity curtains shall be installed parallel to the banks on each side of the river. The turbidity curtains shall extend past the construction limits and be attached to the silt fences containing the work site. The turbidity curtains shall not fully encircle the work area or extend across the Cashie River. The turbidity curtains shall be properly maintained and retained in the water until construction is complete and all of the work area contained by the turbidity curtains has been stabilized by vegetation or other means. The turbidity curtains shall be promptly removed when turbidity within the curtains reaches ambient levels.
- 6) The placement of riprap shall be limited to the areas as depicted on the attached workplan drawings. The riprap material shall be clean and free from loose dirt or any pollutant except in trace quantities and shall consist of clean rock or masonry materials such as, but not limited to, granite, marl or broken concrete.
- 7) No excavation shall take place at any time in any vegetated wetlands or surrounding waters outside of the alignment of the areas indicated on the attached workplan drawing(s), without permit modification.
- 8) No excavated or fill material shall be placed at any time in any vegetated wetlands or surrounding waters outside of the alignment of the fill area indicated on the attached workplan drawing(s), without permit modification.
- 9) All excavated materials shall be confined above normal water level and landward of regularly or irregularly flooded wetlands behind adequate dikes or other retaining structures to prevent spillover of solids into any wetlands or surrounding waters.
- 10) All fill material shall be obtained from an upland source, and shall be clean and free of any pollutants except in trace quantities.
- 11) Fill slopes in wetlands shall be 3:1 or steeper.

ADDITIONAL CONDITIONS

- 12) The temporary placement or double handling of fill materials within waters or vegetated wetlands is not authorized, with the exception of that necessary for the on-site detour of Wakelon Road at Site 14, and the haul road for the borrow site located south of Greens Cross Road.
- 13) No vegetation clearing associated with this project shall occur outside the areas as indicated on the workplan drawings, without permit modification.
- 14) Wetland areas to be hand cleared shall not be grubbed.
- 15) Live concrete shall not be allowed to contact the water in or entering into waters of the State.

Bridge Construction

- 16) The bridge shall be constructed using top down construction methodologies. Any other construction methodology shall require additional review and may require additional authorization.
- 17) The pile installation for the bridge shall be accomplished using pile driving. Should any other type of pile installation, such as jetting or drilled shaft construction, become necessary, additional authorization from DCM shall be required.
- 18) All materials and debris associated with the construction of the new bridge and associated materials shall be disposed of at an approved upland site or shall be recycled in an environmentally appropriate manner provided appropriate authorizations from any relevant state, federal, or local authorities are obtained.

Pipes and Culverts

- 19) All pipe and culvert inverts shall be buried at least one foot below normal bed elevation to allow for passage of water and aquatic life when they are placed within streams appearing as blue lines on United States Geological Survey (USGS) quad sheets, except for the culvert at Site 1 which shall be buried in accordance with the design depicted on the attached workplan drawings.

Staging, Borrow and Waste Area Impacts

- NOTE:** Impacts to jurisdictional areas will occur at two borrow sites: the borrow site located south of Green Cross Road and the haul road at Site 1 through the pond that will be drained for roadway construction. These impacts have been included in the total project impact calculations.
- 20) All staging and waste areas shall be located entirely in uplands.
 - 21) The haul road for the borrow site located south of Greens Cross Road will result in approximately 0.02 acres of temporary impacts due to fill and a pipe extension along 49 linear feet of perennial stream channel. Stream banks shall be returned to existing conditions and revegetated in accordance with the attached reforestation detail.

ADDITIONAL CONDITIONS

Sedimentation and Erosion Control

- 22) In accordance with the statement on page 13 of the permittee's cover letter dated 9/13/05, the project shall employ sediment and erosion control measures equal to or exceeding the requirements of High Quality Waters regulations (i.e. Design Standards in Sensitive Watersheds, 15A NCAC 4B .0124.)
- 23) In order to protect water quality, runoff from construction shall not visibly increase the amount of suspended sediments in adjacent waters.
- 24) Appropriate sedimentation and erosion control devices, measures or structures shall be implemented to ensure that eroded materials do not enter adjacent wetlands, watercourses and property (e.g. silt fence, diversion swales or berms, etc.).
- 25) This project shall conform to all requirements of the NC Sedimentation Pollution Control Act and NC DOT's Memorandum of Agreement with the Division of Land Resources.
- 26) The permittee shall follow Best Management Practices for the protection of Surface Waters and sedimentation and erosion control measures sufficient to protect aquatic resources.

Mitigation

NOTE: Permanent impacts to wetlands due to this project are as follows: approximately 71.10 acres of 404 wetlands (58.14 acres due to fill, 0.09 acres due to excavation, 10.29 acres due to mechanized clearing, 2.53 acres due to shading under the Cashie River bridge and 0.01 acres due to bridge piles); and approximately 0.66 acres of isolated wetlands.

NOTE: Permanent impacts to surface waters due to this project are as follows: approximately 1.04 acres of surface waters and approximately 2,035 linear feet of streams. Approximately 1,354 linear feet of these stream impacts will require mitigation. In addition, 127 linear feet (0.41 acres) of the Cashie River will be permanently impacted due to shading.

NOTE: Temporary impacts to jurisdictional areas due to this project are as follows: approximately 1.32 acres of 404 wetlands due to fill; approximately 0.003 acres of surface waters; approximately 5.06 acres due to hand clearing of the forested wetlands under the Cashie River bridge; and hand clearing of approximately 1.95 acres or less of forested wetlands on 25 feet to either side of the bridge.

- 27) In accordance with the commitment in the permittee's cover letter dated 9/13/05 on page 9, the temporary impact area at Site 14 shall be graded to original contours and reforested as shown in the attached plans and reforestation detail.

ADDITIONAL CONDITIONS

- 28) Compensatory mitigation for permanent jurisdictional impacts shall be provided in accordance with the letter dated 9/20/05 from the Ecosystem Enhancement Program (EEP), and in accordance with the 7/22/03 Memorandum of Agreement (MOA) between the N.C. Department of Transportation (NCDOT), N.C. Department of Environment and Natural Resources (DENR) and the U.S. Army Corps of Engineers (USACE). Specifically, the EEP shall provide mitigation for the following impacts of this project that are located in CU 03010107 of the Roanoke River Basin in the Northern Outer Coastal Plain Eco-Region: 4.05 acres of riverine wetland impacts; 65.17 acres of non-riverine wetland impacts; and 1,354 feet of stream impacts.
- 29) Due to the possibility that compaction, mechanized clearing, hand clearing and/or other site alterations might prevent the temporary wetland impact areas from re-attaining pre-project wetland functions, the permittee shall provide an annual update on any wetland areas temporarily impacted by this project. This annual update shall consist of photographs and a brief written report on the progress of these temporarily impacted areas in re-attaining wetland jurisdictional status. Three years after project completion, the permittee shall schedule an agency field meeting with DCM to determine if the wetland areas temporarily impacted by this project have re-attained pre-project wetland functions. If at the end of 3 years DCM determines that the wetland areas temporarily impacted by this project have not re-attained pre-project wetland functions, DCM in coordination with other review agencies shall determine whether additional compensatory wetland mitigation shall be required.

Historical and Cultural Resource Protection

NOTE: The proposed project will impact two archaeological sites eligible for listing on the National Register of Historic Places.

- 30) In accordance with the commitment on page 10 of the permittee's cover letter dated 9/13/05, a Memorandum of Agreement for Recovery of Significant Information from Archaeological Sites shall be completed and signed prior to initiation of any construction activities.
- 31) In accordance with the statement on page 10 and 11 of the permittee's cover letter dated 9/13/05, staging and borrow areas outside the original study limits are currently being reviewed for archaeological resources. The results of these surveys will be submitted to the State Historic Preservation Office (SHPO) for review and concurrence prior to initiation of construction activities.

General

- 32) If it is determined that additional permanent and/or temporary impacts (such as but not limited to temporary access roads, detours, or matting to transport equipment across wetlands) are necessary that are not shown on the attached workplan drawing(s), a permit modification and/or additional authorization from DCM shall be required. In addition, any changes in the approved plan may also require a permit modification and/or additional authorization from DCM. The permittee shall contact a representative of DCM prior to commencement of any such activity for this determination and any permit modification.
- 33) Development authorized by this permit shall only be conducted within N.C. Department of Transportation Right-of-Ways and/or easements.

ADDITIONAL CONDITIONS

- 34) Unless specifically altered herein, any mitigative measures or environmental commitments specifically made by the permittee in the CAMA permit application, the Final Environmental Impact Statement dated 8/29/03, the Record of Decision dated 8/26/04 and/or during the NEPA/404 Merger Process, shall be implemented, regardless of whether or not such commitments are addressed by individual conditions of this permit.

NOTE: In accordance with the statement on page 11 of the permittee's cover letter dated 9/13/05, utility impacts have been accounted for within the attached permit impact sheets and the impact summary tables.

- 35) Any relocation of utility lines that is not specifically depicted on the attached workplan drawing(s), or described within the attached permit application, shall require approval from DCM, either under the authority of this permit, or by the utility company obtaining separate authorization.
- 36) Permanent reflectors shall be attached to the permanent bridge structure over open waters in order to make it more visible during hours of darkness or inclement weather.
- 37) No attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the authorized work.
- 38) The N.C. Division of Water Quality (DWQ) authorized the proposed project on 11/18/05 (DWQ Project No. 05-1765) under Water Quality Certification No. 3548 and under an Isolated Wetlands Permit pursuant to IWGP100000. Any violation of the Certification and Permit approved by DWQ shall be considered a violation of this CAMA permit.
- 39) The N.C. Division of Water Quality (DWQ) approved this project under stormwater management rules of the Environmental Management Commission under Stormwater Permit No. SW7050834. Any violation of the permit approved by the DWQ shall be considered a violation of this CAMA permit.

NOTE: The U.S. Army Corps of Engineers is reviewing this project as an Individual Permit (Action ID No. 199400453).

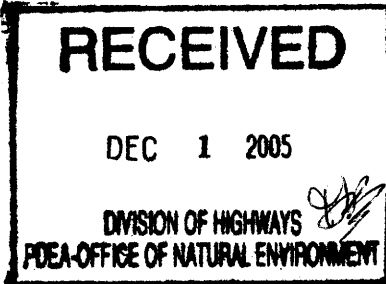


Michael F. Easley, Governor

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

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

Rivenbark



DIVISION OF WATER QUALITY
November 16, 2005



NC Dept of Transportation
Attn: Mr. Gregory J. Thorpe
1548 Mail Service Center
Raleigh, NC 27699

Subject: Stormwater Permit No. SW7050834
US17 Windsor ByPass Project
TIP No. R-2404A
State Stormwater Permit
Bertie County

Dear Mr. Thorpe:

The Washington Regional Office received your Stormwater Application and supporting information on August 17, 2005. Staff review of the plans and specifications has determined that the project, as proposed, will comply with the Stormwater Regulations set forth in Title 15A NCAC 2H.1000. We are forwarding Permit No. SW7050834 dated November 16, 2005 to NC Dept of Transportation.

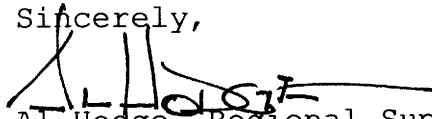
This permit shall be effective from the date of issuance until rescinded and shall be subject to the conditions and limitations as specified therein. Any future development at this site will require an additional Stormwater review and a permit for any Stormwater control measures deemed appropriate.

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing upon written request within thirty (30) days following receipt of this permit. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the office of Administrative Hearings, P.O. Drawer 27447, Raleigh, NC 27611-7447. Unless such demands are made this permit shall be final and binding.

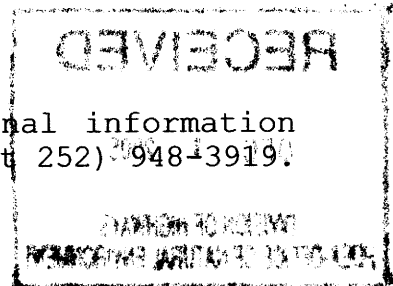
NC Dept of Transportation
November 16, 2005
Page Two

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

Sincerely,



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



cc: Washington Regional Office
Central Files

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

STATE STORMWATER MANAGEMENT PERMIT

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

PERMISSION IS HEREBY GRANTED TO

NC Dept of Transportation
Bertie County
FOR THE

construction, operation and maintenance of stormwater management systems in compliance with the provisions of 15A NCAC 2H.1000 (hereafter referred to as the "*stormwater rules*") and the approved stormwater management plans and specifications, and other supporting data as attached and on file with and approved by the Division of Water Quality and considered a part of this permit for multiple BMP's to serve the US17 Windsor ByPass Project located near Windsor, NC.

The Permit shall be effective from the date of issuance until rescinded and shall be subject to the following specific conditions and limitations.

I. DESIGN STANDARDS

1. The US17 Windsor ByPass is a linear roadway project that involves the construction of multiple BMP's including a dry detention basin, grass swales, preformed scour holes, vegetated filter strips and wetland equalizer pipes.
2. Approved plans and specifications for projects covered by this permit are incorporated by reference and are enforceable parts of the permit.
3. No stormwater piping in addition to the existing piping shall be allowed except:

- a. That minimum amount necessary to direct runoff beneath an impervious surface such as a road.
- b. That minimum amount needed under driveways to provide access to lots.

II. SCHEDULE OF COMPLIANCE

1. Grasslined swales, vegetated buffers and other Best Management Practices used for stormwater runoff control shall be adequately maintained throughout the life of the project.
2. The permittee shall at all times provide adequate erosion control measures in conformance with the approved Erosion Control Plan.
3. The permittee shall submit all information requested by the Director or his representative within the time frame specified in the written information request.

III. GENERAL CONDITIONS

1. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to an enforcement action by the Division of Water Quality, in accordance with North Carolina General Statutes 143-215.6A to 143.215.6C.
2. The permit may be modified, revoked or terminated for cause. The filing of a request for a permit modification, or termination does not void any permit condition.
3. The issuance of this permit does not prohibit the Director from reopening and modifying laws, rules, and regulations contained in Title 15A of the North Carolina Administrative Code, Subchapter 2H.1000; and North Carolina General Statute 143-215.1 et.al.
4. The following items will require a modification to the permit:
 - a. Any revision to the approved plans, regardless of size
 - b. Project name change
 - c. Change of ownership
 - d. Redesign or addition to the approved amount of built-upon area.
 - e. Further subdivision of the project area

- f. In addition, the Director may determine that other revisions to the project should require a modification to the permit.
5. For any additions or modifications of the previously permitted built-upon area, the permittee shall submit to the Director revised plans and specifications and shall receive approval prior to construction.
 6. The Director may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the Director for modifying the site to meet minimum requirements. The permittee shall provide copies of revised plans and certification in writing to the Director that the changes have been made.
 7. The permit is not transferable to any person except after notice to and approval by the Director. The Director may require modification or revocation and reissuance of the permit to change the name and incorporate such other requirements as may be necessary. A formal permit request must be submitted to the Division of Water Quality accompanied by the appropriate fee, documentation from both parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits, and may or may not be approved.
 8. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state and federal) which have jurisdiction.

Permit issued this the 16 th day of November 2005.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION



Alan W. Klimek, PE, Director
Division of Water Quality
By Authority of the Environmental Management Commission

Permit Number SW7050834

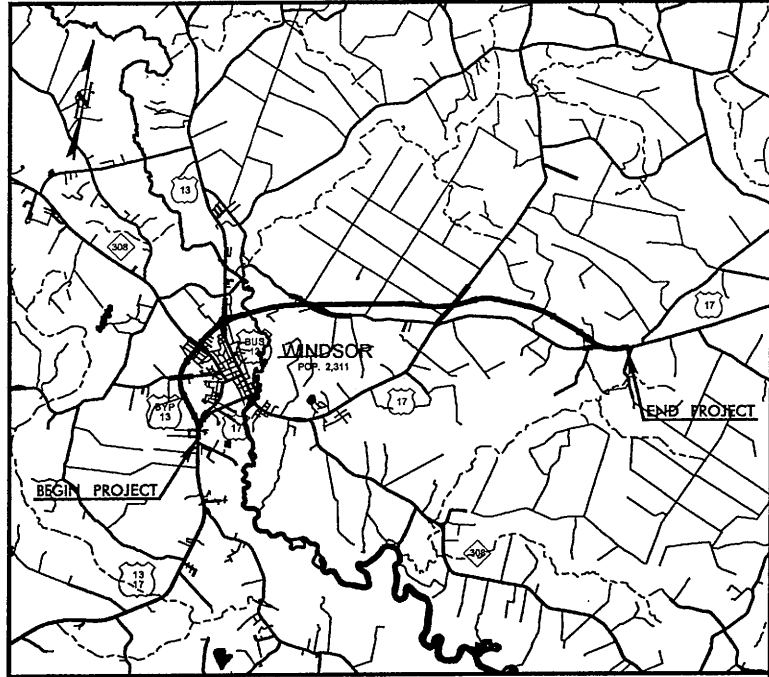
STATE	STATE PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
N.C.	R-2404A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
C201236		CONTRACT NO.	
6.01900IT & 34424.1.1		PLANNING & PE	
34424.3.7		CONST.	

See Sheet 1-A For Index of Sheets

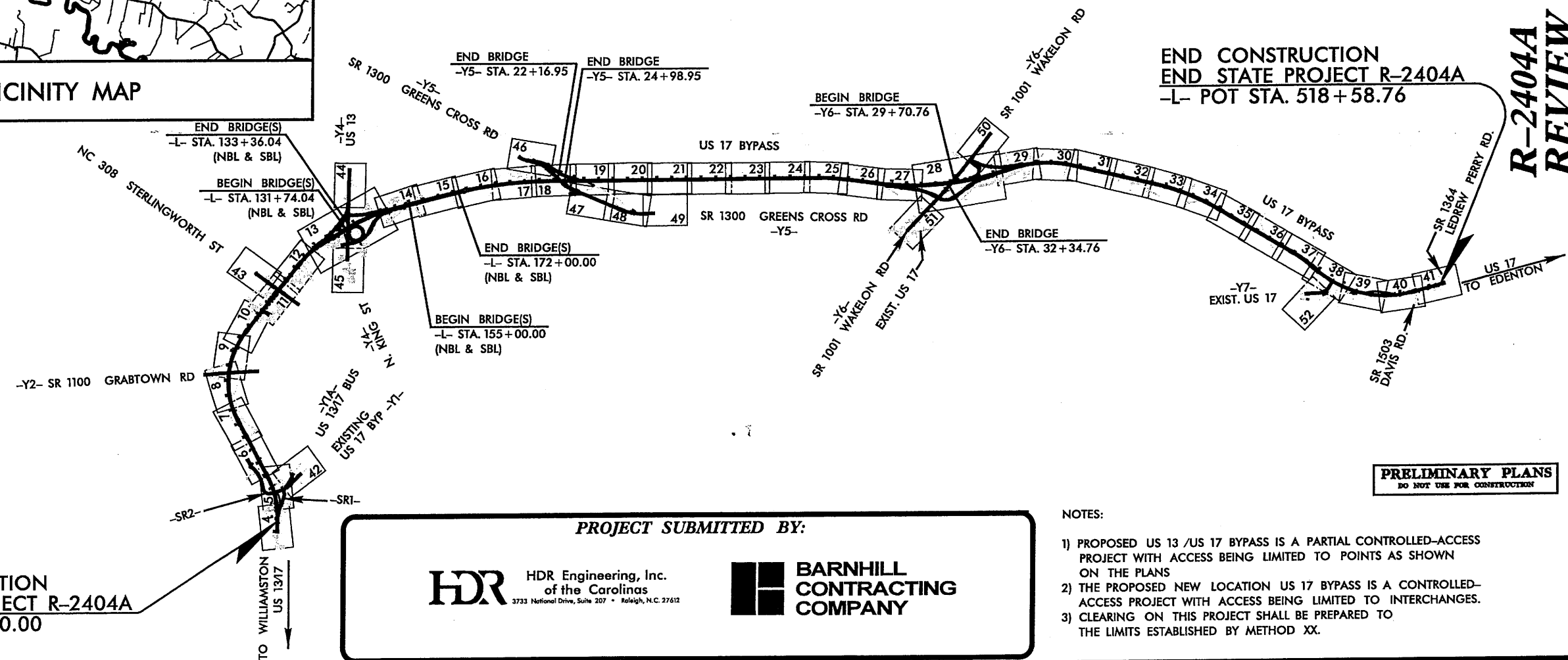
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BERTIE COUNTY

LOCATION: US 17 (WINDSOR BYPASS) FROM US 1317, SOUTH OF WINDSOR, TO EAST OF SR 1503 (DAVIS ROAD)

TYPE OF WORK: DESIGN-BUILD AS SPECIFIED IN THE SCOPES OF WORK CONTAINED IN THE DESIGN-BUILD PACKAGE



VICINITY MAP



END CONSTRUCTION
END STATE PROJECT R-2404A
-L- POT STA. 518 + 58.76

BEGIN CONSTRUCTION
BEGIN STATE PROJECT R-2404A
-L- POT STA. 12 + 00.00

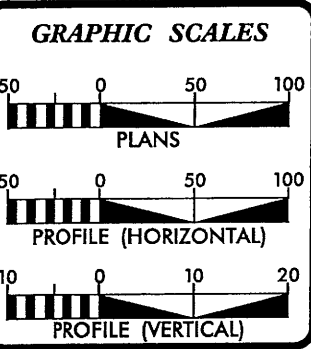
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT SUBMITTED BY:

HDR Engineering, Inc.
of the Carolinas
3733 National Drive, Suite 207 • Raleigh, N.C. 27612

BARNHILL CONTRACTING COMPANY

- NOTES:
- 1) PROPOSED US 13 /US 17 BYPASS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS
 - 2) THE PROPOSED NEW LOCATION US 17 BYPASS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
 - 3) CLEARING ON THIS PROJECT SHALL BE PREPARED TO THE LIMITS ESTABLISHED BY METHOD XX.



DESIGN DATA

ADT 2004 =	12,500
ADT 2025 =	21,300
DHV =	12 %
D =	55 %
T =	12 % *
V =	70 mph (NEW LOC.)
* TTST 8% DUAL 4%	
Functional Class:	Freeway

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2404A	=	9.241 MILES
LENGTH BRIDGE TIP PROJECT R-2404A	=	0.353 MILES
TOTAL LENGTH STATE PROJECT R-2404A	=	9.594 MILES

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

2002 STANDARD SPECIFICATIONS NCDOT CONTACT:

LETTING DATE:
DECEMBER 23, 2004

RODGER ROCHELLE, PE
STATE ALTERNATIVE DELIVERY SYSTEMS ENGINEER
DESIGN-BUILD PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA





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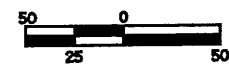
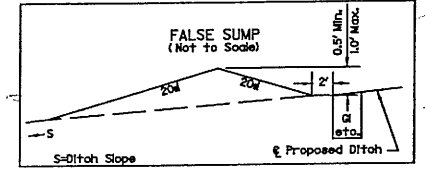
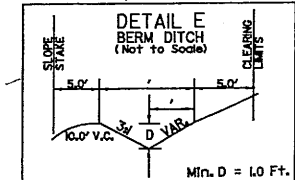
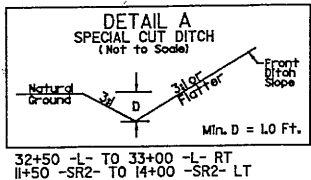
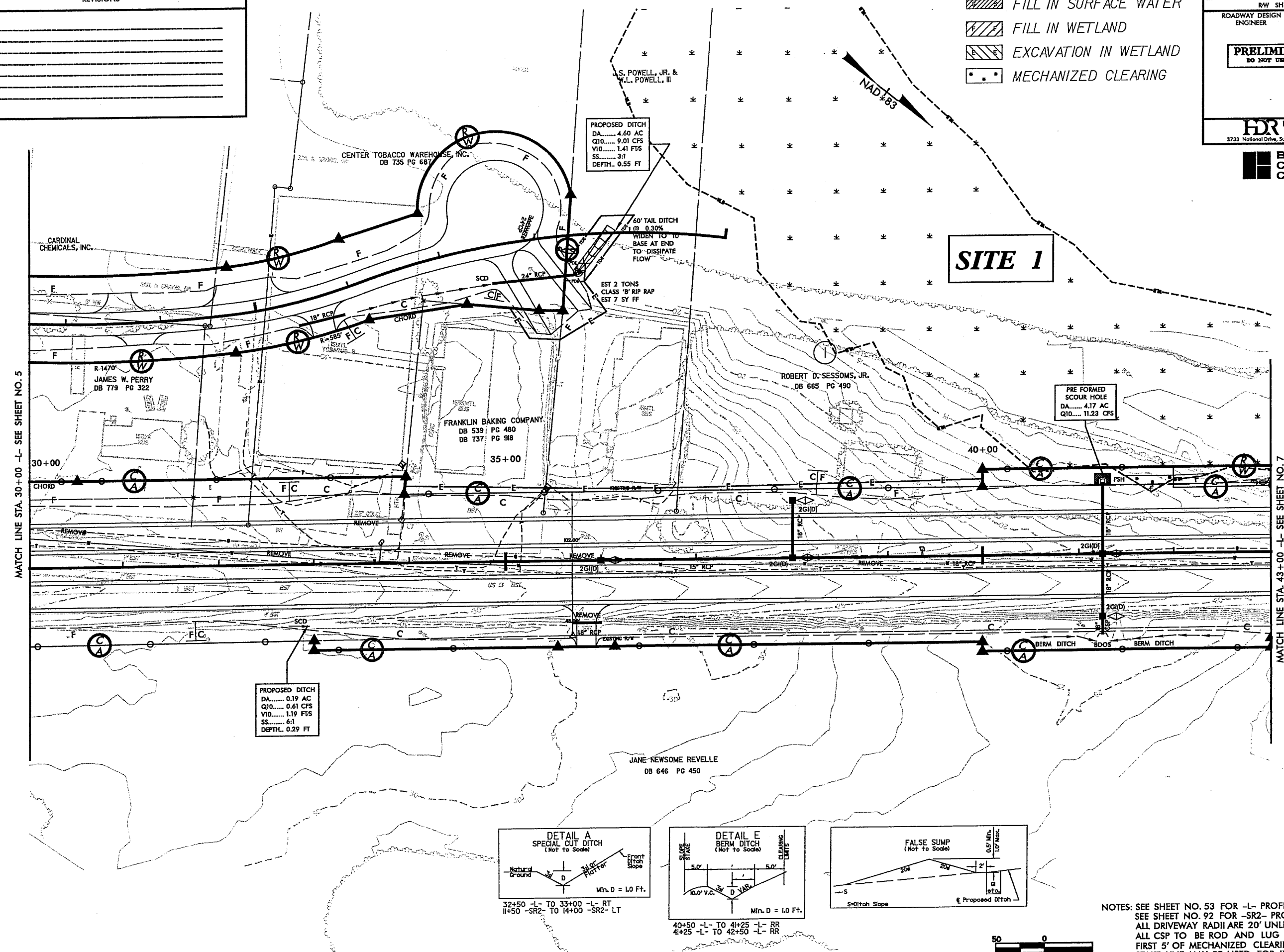
STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR
DATE

9/8/2005 9:44:13 AM 404A\Fermitting\Impact_Sheets\R2404A_hyl_impacts_tsh.dgn
PROJECT: C201236
R-2404A

REVISIONS

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING

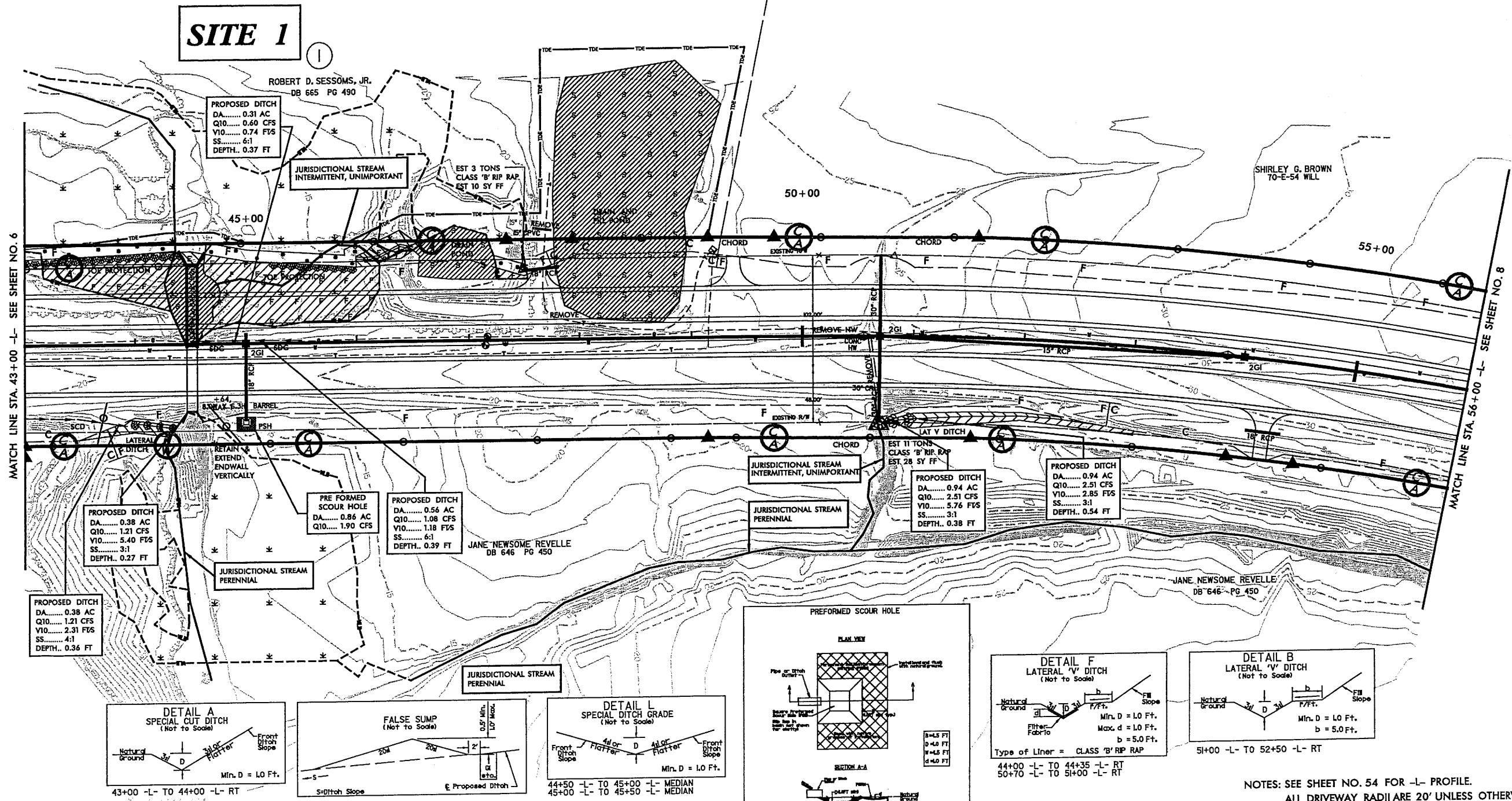


NOTES: SEE SHEET NO. 53 FOR -L- PROFILE.
 SEE SHEET NO. 92 FOR -SR2- PROFILE.
 ALL DRIVEWAY RADII ARE 20' UNLESS OTHERWISE NOTED.
 ALL CSP TO BE ROD AND LUG CONNECTED.
 FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

1/23/2005 11:55 AM I:\Projects\2404A\Drawings\2404A_rwl_insects.pst 08.dgn

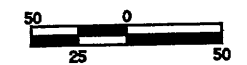
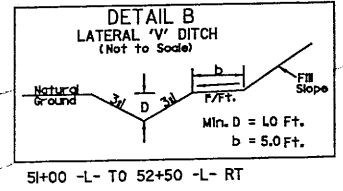
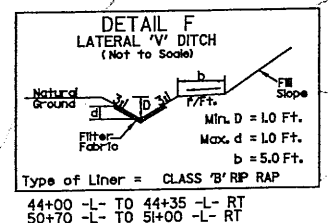
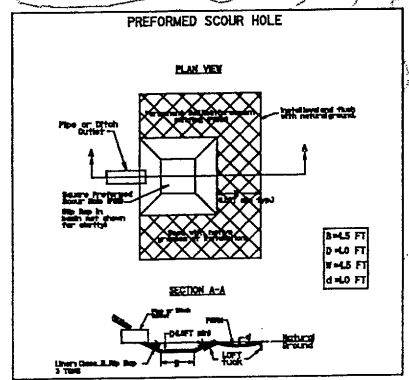
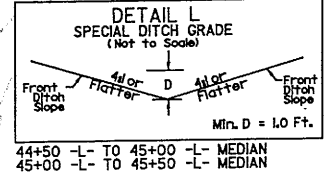
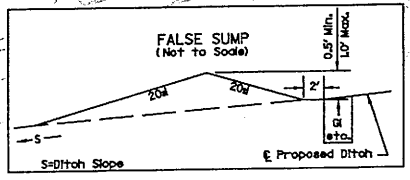
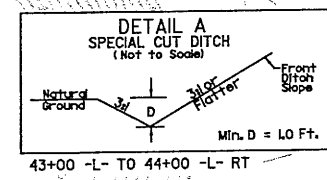
- SURFACE WATER IMPACTS
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING

REVISIONS



MATCH LINE STA. 43+00 -L- SEE SHEET NO. 6

MATCH LINE STA. 56+00 -L- SEE SHEET NO. 8



NOTES: SEE SHEET NO. 54 FOR -L- PROFILE.
ALL DRIVEWAY RADII ARE 20' UNLESS OTHERWISE NOTED.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

1/2/2005 10:40 AM P:\2404\10\2404A.rvt Inroads.mxd QT.dgn

PLAN SUMMARY DATA
44+51.50 -L-

DRAINAGE AREA _____ 218 SQ. MI.
DESIGN FREQUENCY _____ 50 YR.
DESIGN DISCHARGE _____ 580 CFS
DESIGN HW. ELEVATION _____ 18.0 FT
Q100 DISCHARGE _____ 730 CFS
Q100 HW. ELEVATION _____ 20.10 FT
OVERTOPPING FREQUENCY _____ 100+ YR
OVERTOPPING DISCHARGE _____ 761 CFS
OVERTOPPING ELEVATION _____ 20.60 FT

PI = 44+70.00
EL = 18.87'
K = 195
VC = 520.00'

PI = 49+50.00
EL = 25.56'
K = 7056
VC = 200.00'

8" x 8" RCBC
STA 44+51.50
INV IN = 9.40
INV OUT = 7.30

SITE 1

BEGIN SDG
STA 44+50.00
EL = 18.35'
MEDIAN

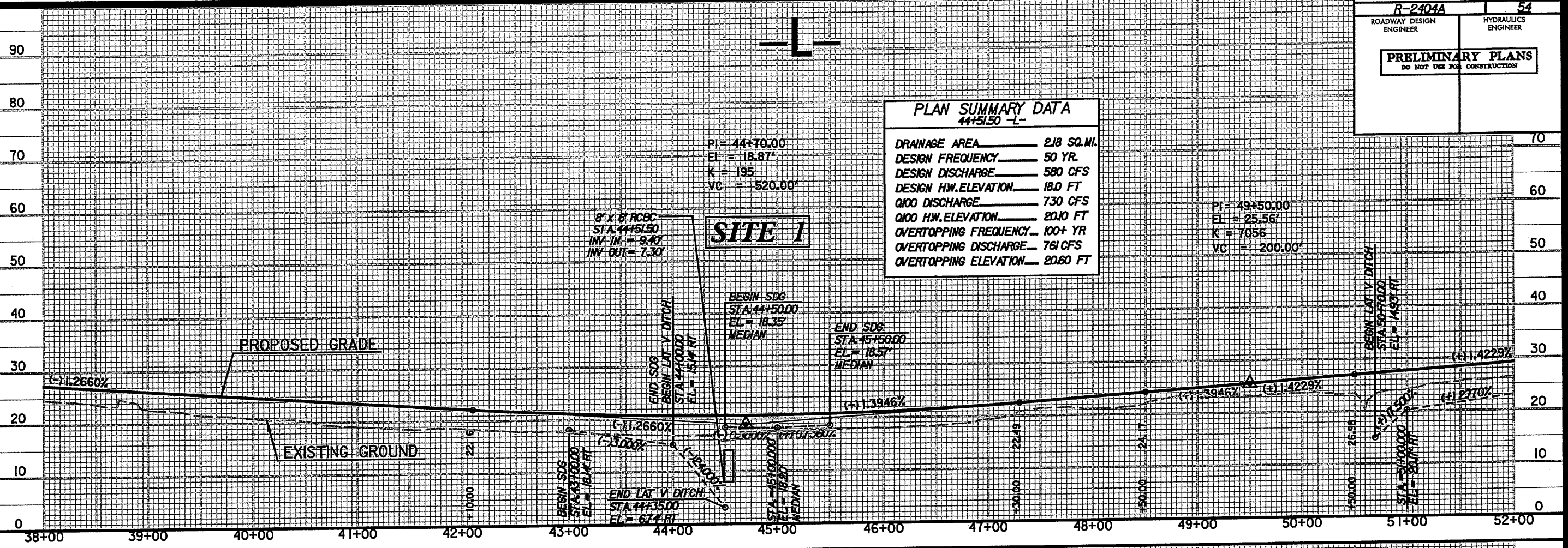
END SDG
STA 45+50.00
EL = 18.57'
MEDIAN

BEGIN SDG
STA 43+00.00
EL = 18.14'
MEDIAN

END LAT V DITCH
STA 44+35.00
EL = 6.74'
RT

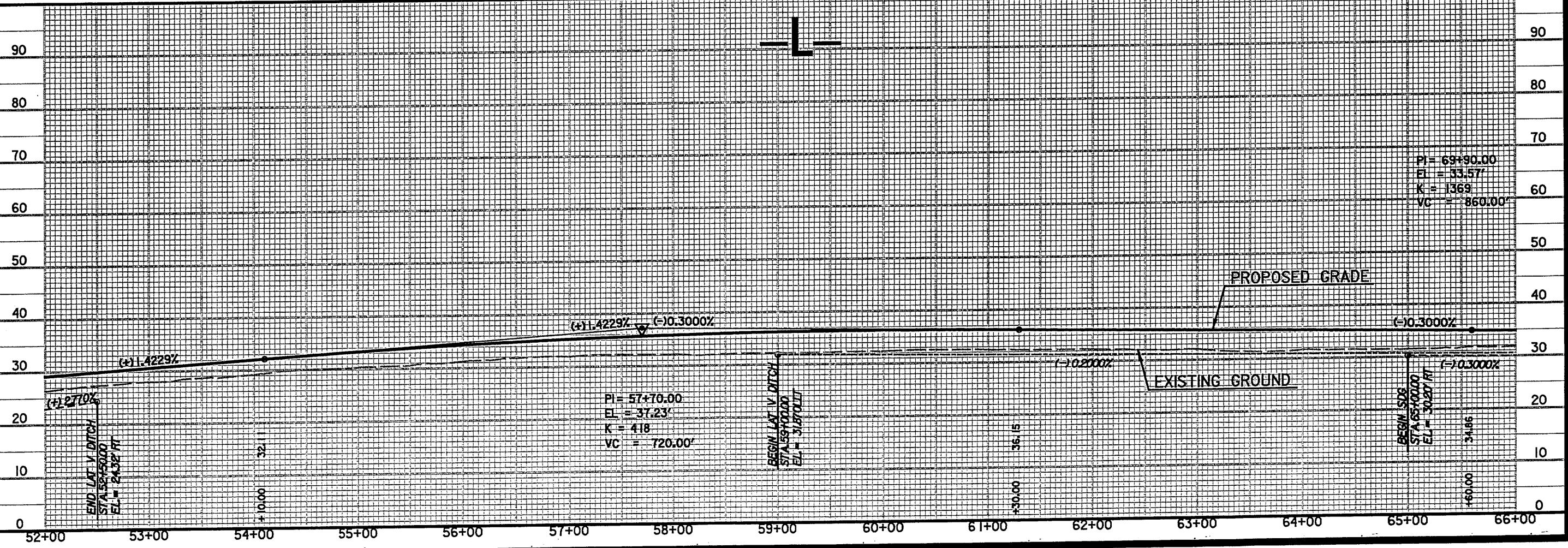
BEGIN LAT V DITCH
STA 50+70.00
EL = 14.93'
RT

BEGIN SDG
STA 50+00.00
EL = 20.17'
RT



PI = 69+90.00
EL = 33.57'
K = 1369
VC = 860.00'

PI = 57+70.00
EL = 37.23'
K = 418
VC = 720.00'



5/28/99
18/2005
3:35:59 AM

5/28/05

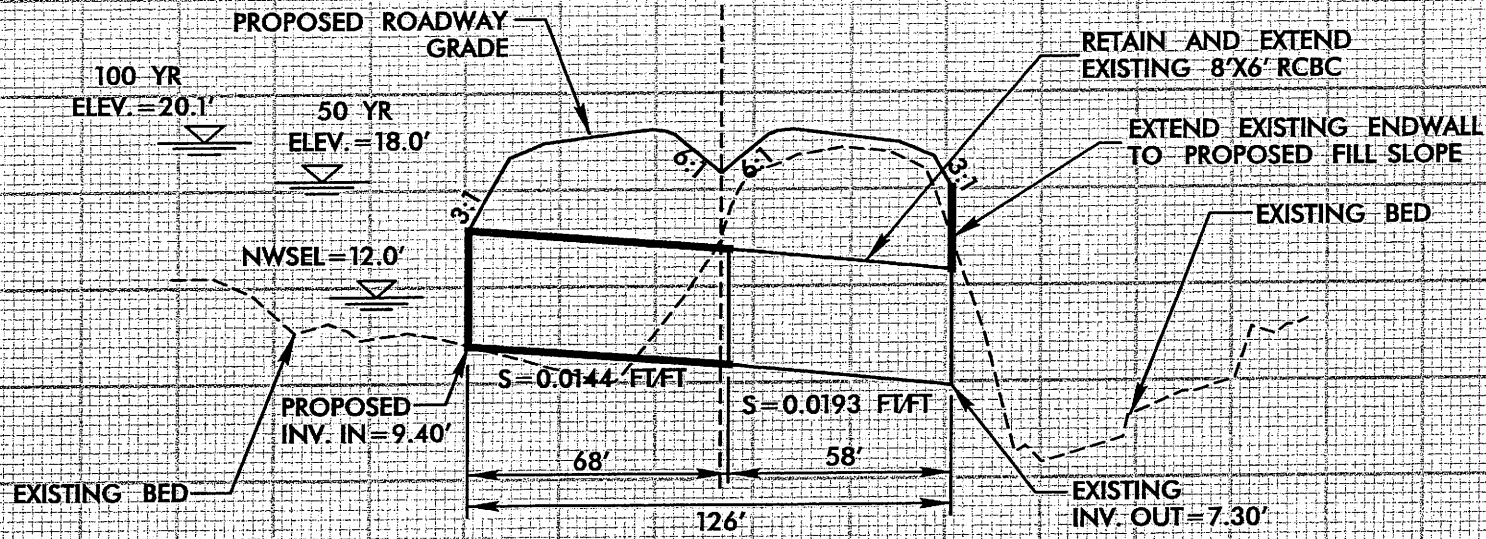
5/28/05

PROJECT REFERENCE NO. R-2404A	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

SITE 1 R-2404A

C STA. 44+51.50 -L-
 GRADE POINT ELEV. = 20.59'
 SKEW = 90°
 RETAIN AND EXTEND
 8'X6' RCBC

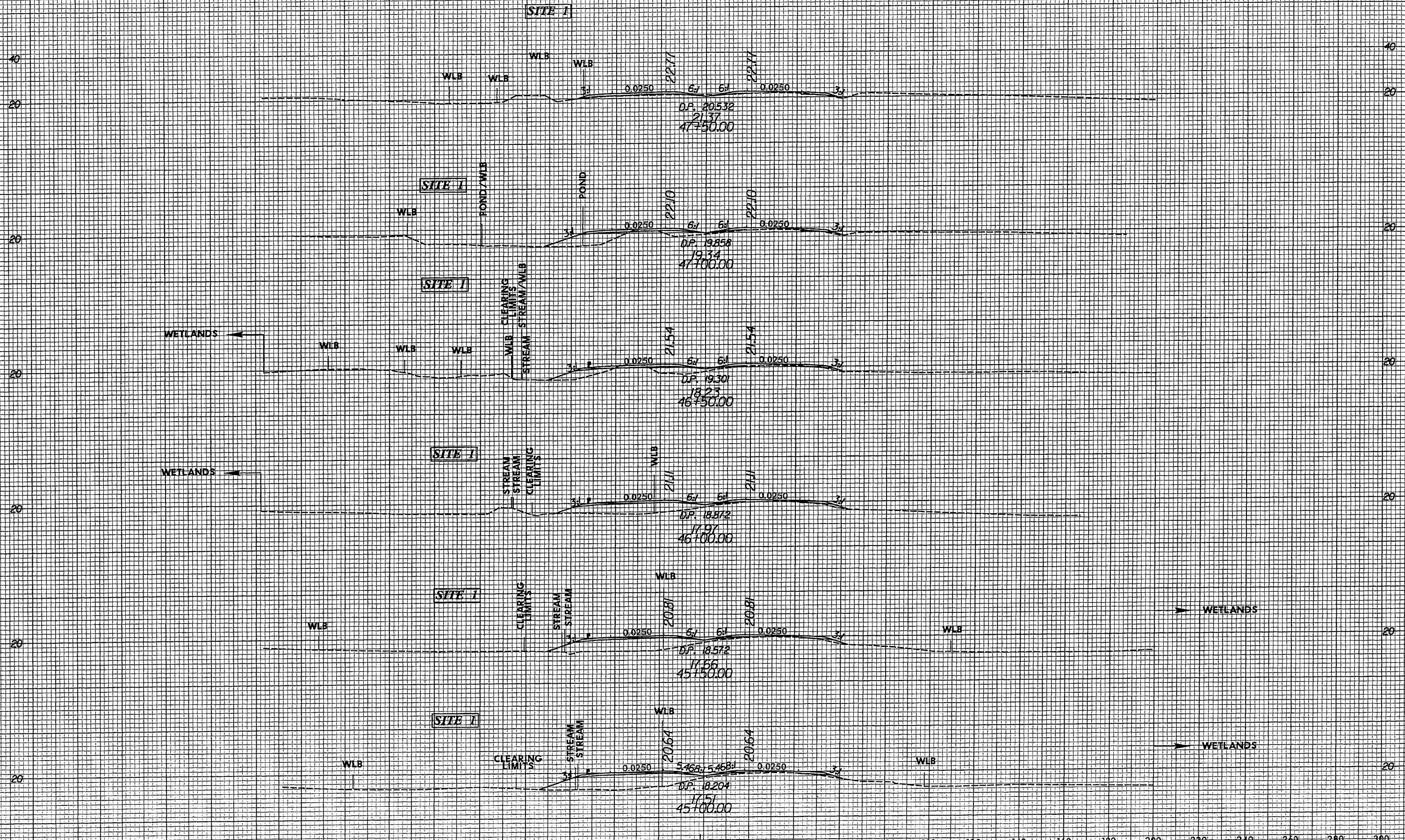
CUVERT HYDRAULIC DATA	
STA. 44+51.50 -L-	
DRAINAGE AREA.....	2.18 SQ. MI.
DESIGN DISCHARGE.....	580 CFS
DESIGN FREQUENCY.....	50 YR
DESIGN HIGH WATER ELEV.....	18.0 FT
BASE DISCHARGE.....	730 CFS
BASE HIGH WATER ELEV.....	20.1 FT
OVERTOPPING FREQUENCY.....	100 YR +
OVERTOPPING DISCHARGE.....	761 CFS
OVERTOPPING ELEV.....	20.6 FT



PROFILE ALONG C OF CULVERT

8/23/99

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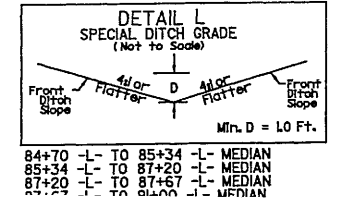
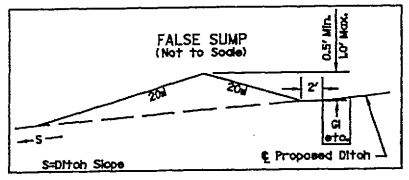
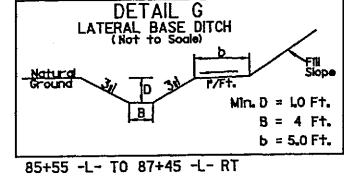
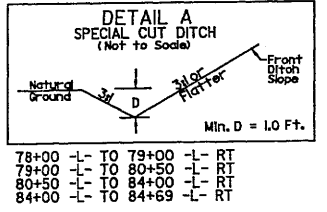
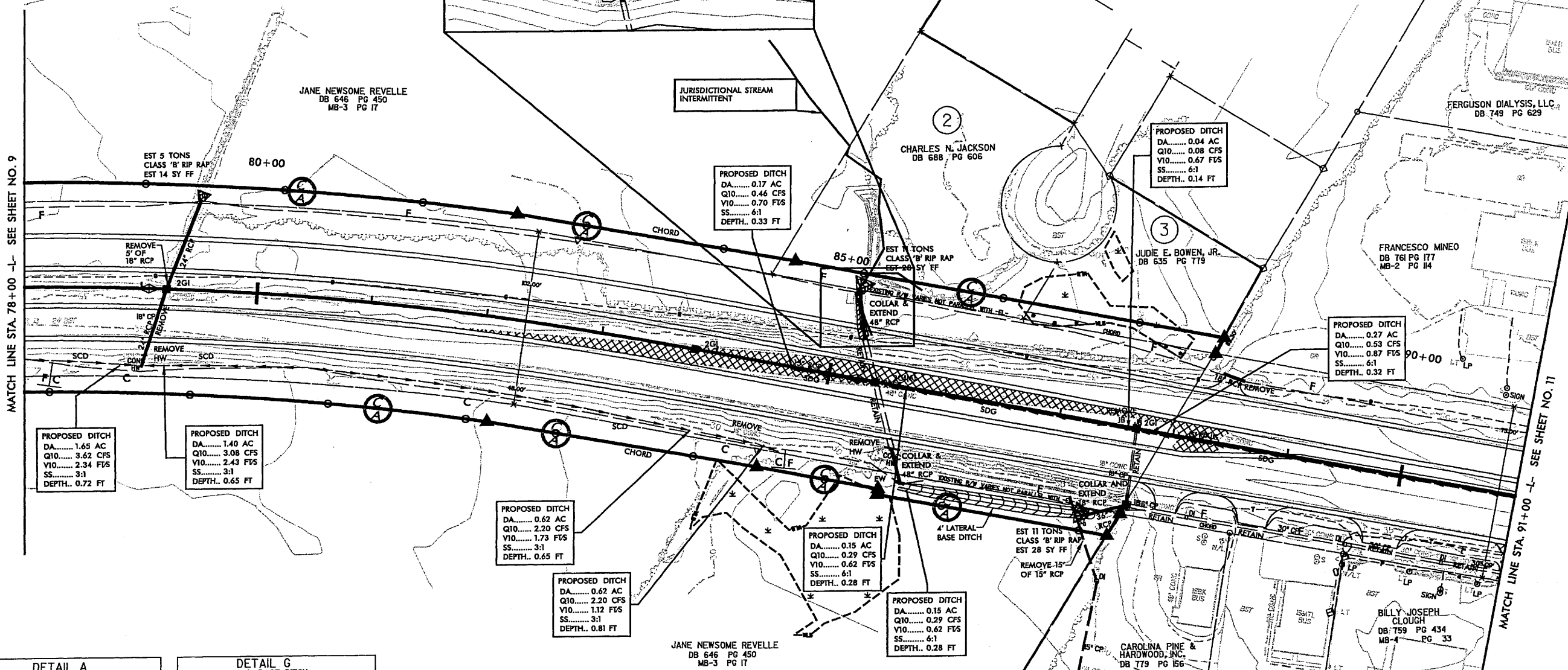
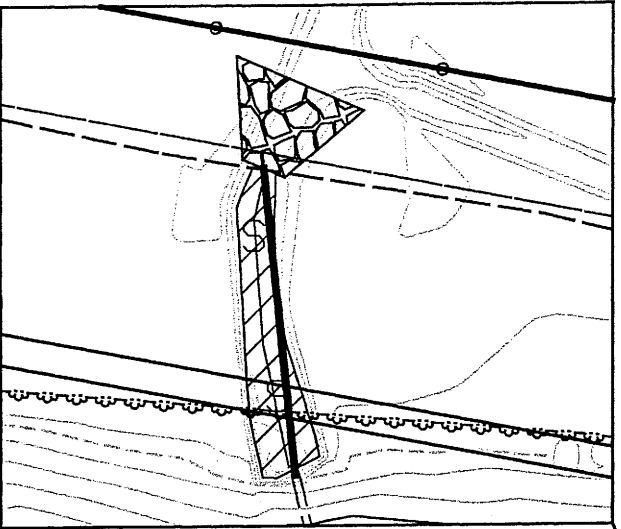


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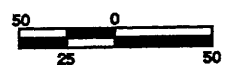
- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING

REVISIONS



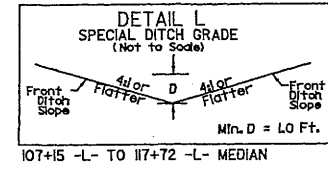
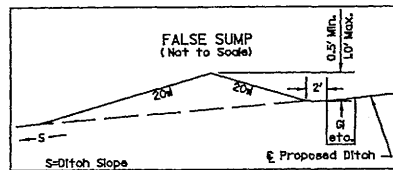
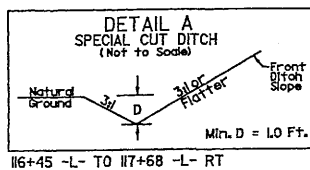
SITE 2

NOTES: SEE SHEET NO. 55-56 FOR -L- PROFILE.
ALL DRIVEWAY RADII ARE 20' UNLESS OTHERWISE NOTED.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

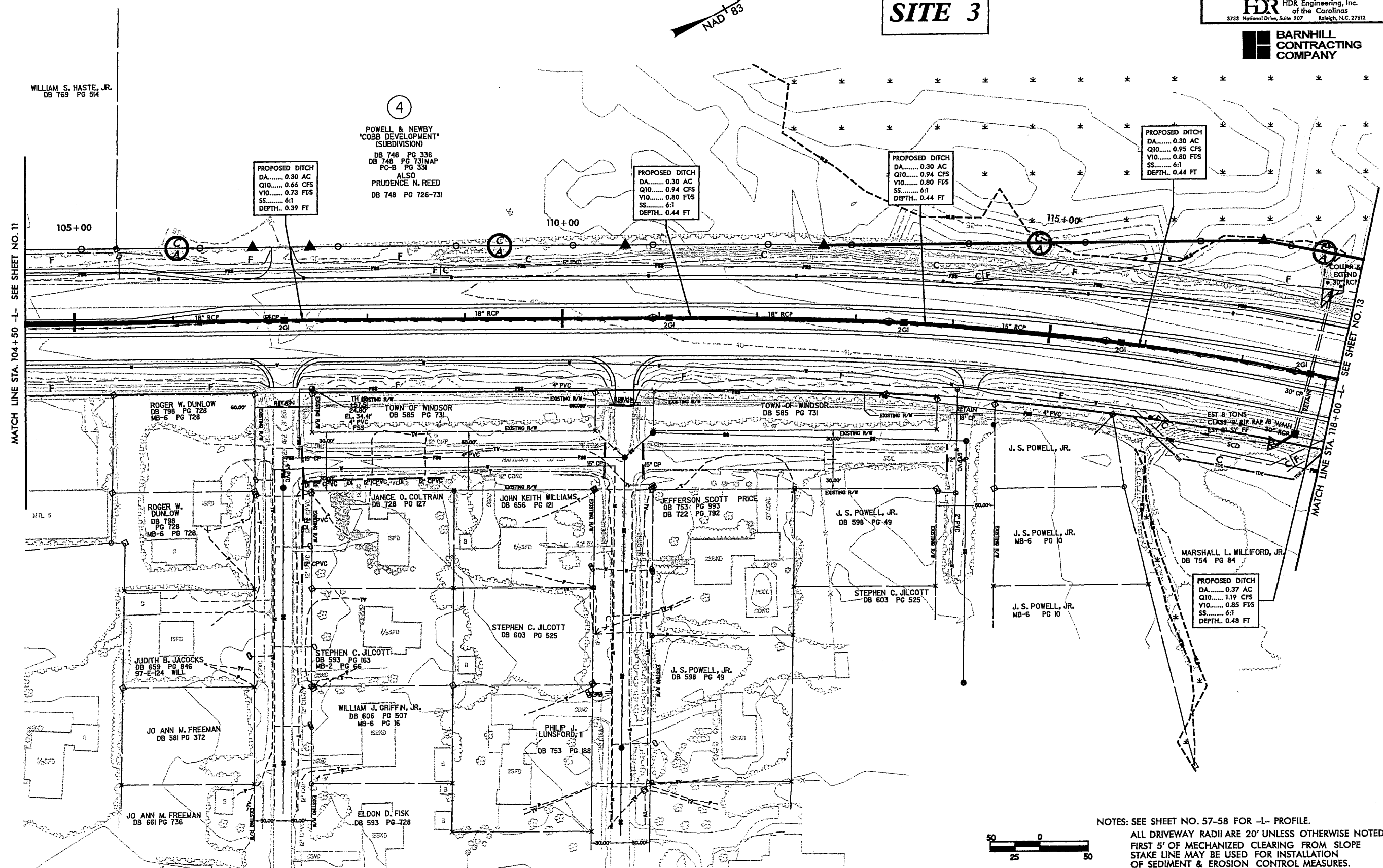
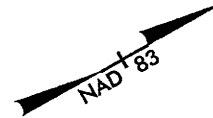


4/2005 HDR Engineering, Inc. R-2404A.tbl, jms, sct, k, p, 10.dwg

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING

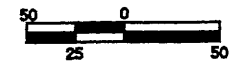


SITE 3






MATCH LINE STA. 104+50 -L- SEE SHEET NO. 11






MATCH LINE STA. 118+00 -L- SEE SHEET NO. 13

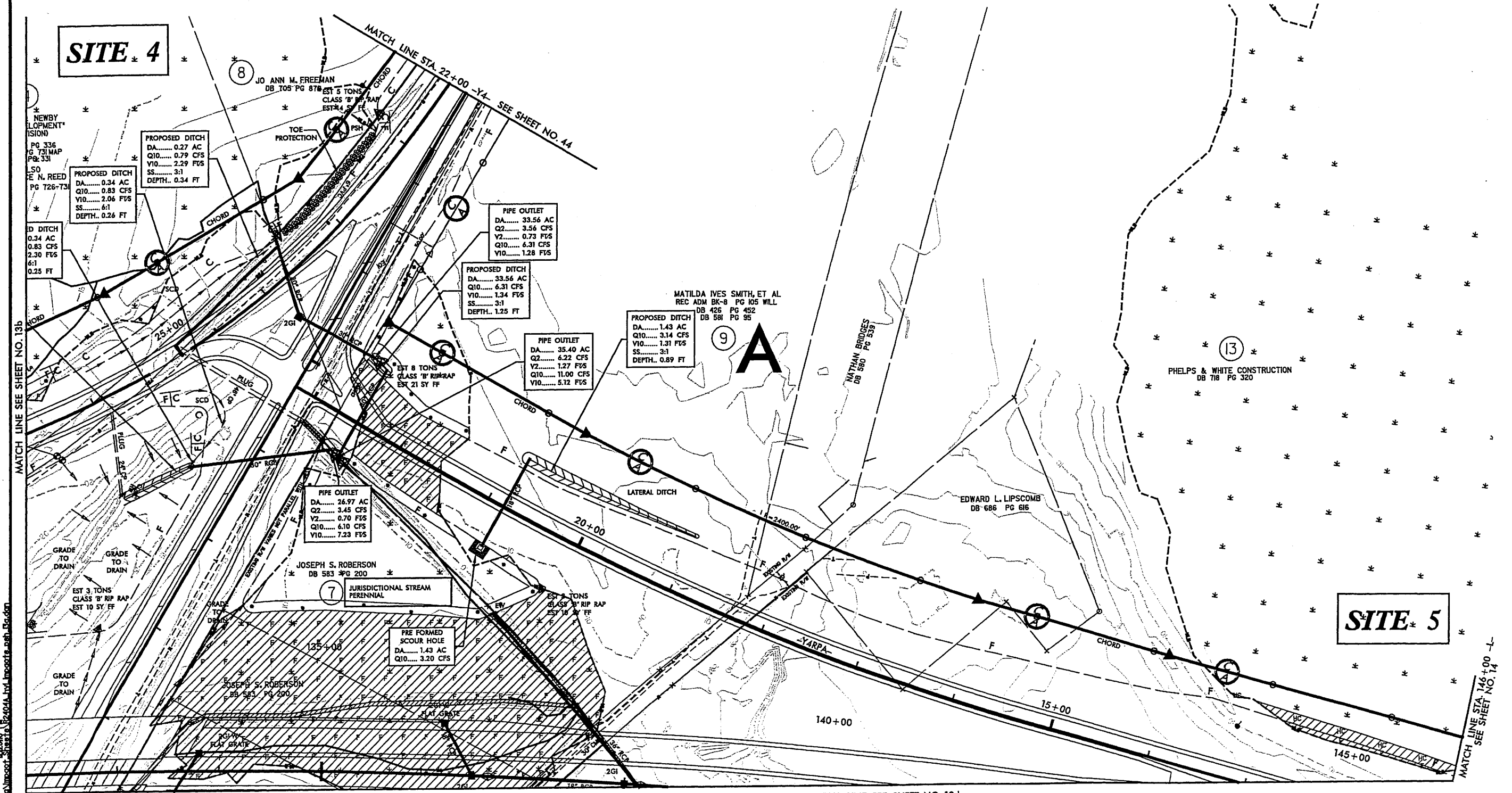
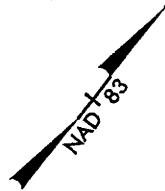
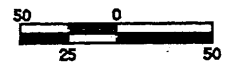


NOTES: SEE SHEET NO. 57-58 FOR -L- PROFILE.
ALL DRIVEWAY RADII ARE 20' UNLESS OTHERWISE NOTED.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

PROJECT REFERENCE NO. R-2404A	SHEET NO. 13a
RW SHEET NO.	
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	
 BARNHILL CONTRACTING COMPANY	

 PAVEMENT TO BE OBLITERATED
 NOTES: SEE SHEETS NO. 58-59 FOR -L- PROFILE.
 SEE SHEET NO. 76 FOR -Y4- PROFILE.
 SEE SHEET NO. 77 FOR -Y4RPA- PROFILE.
 SEE SHEET NO. 78 FOR -Y4RPB- PROFILE.
 SEE SHEET NO. 79 FOR -Y4RPD- PROFILE.
 SEE SHEET NO. 80 FOR -Y4LPD- PROFILE.
 SEE SHEET NO. 81 FOR -Y4LPDSPUR- PROFILE.
 SEE SHEET NO. 2-J FOR STRUCTURE DETAIL.
 ALL CSP TO BE ROD AND LUG CONNECTED.
 DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.
 FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

 FILL IN SURFACE WATER
 FILL IN WETLAND
 EXCAVATION IN WETLAND
 MECHANIZED CLEARING
 HAND CLEARING



2015 HDR Engineering, Inc. R-2404A-13a.mxd
 12/28/10

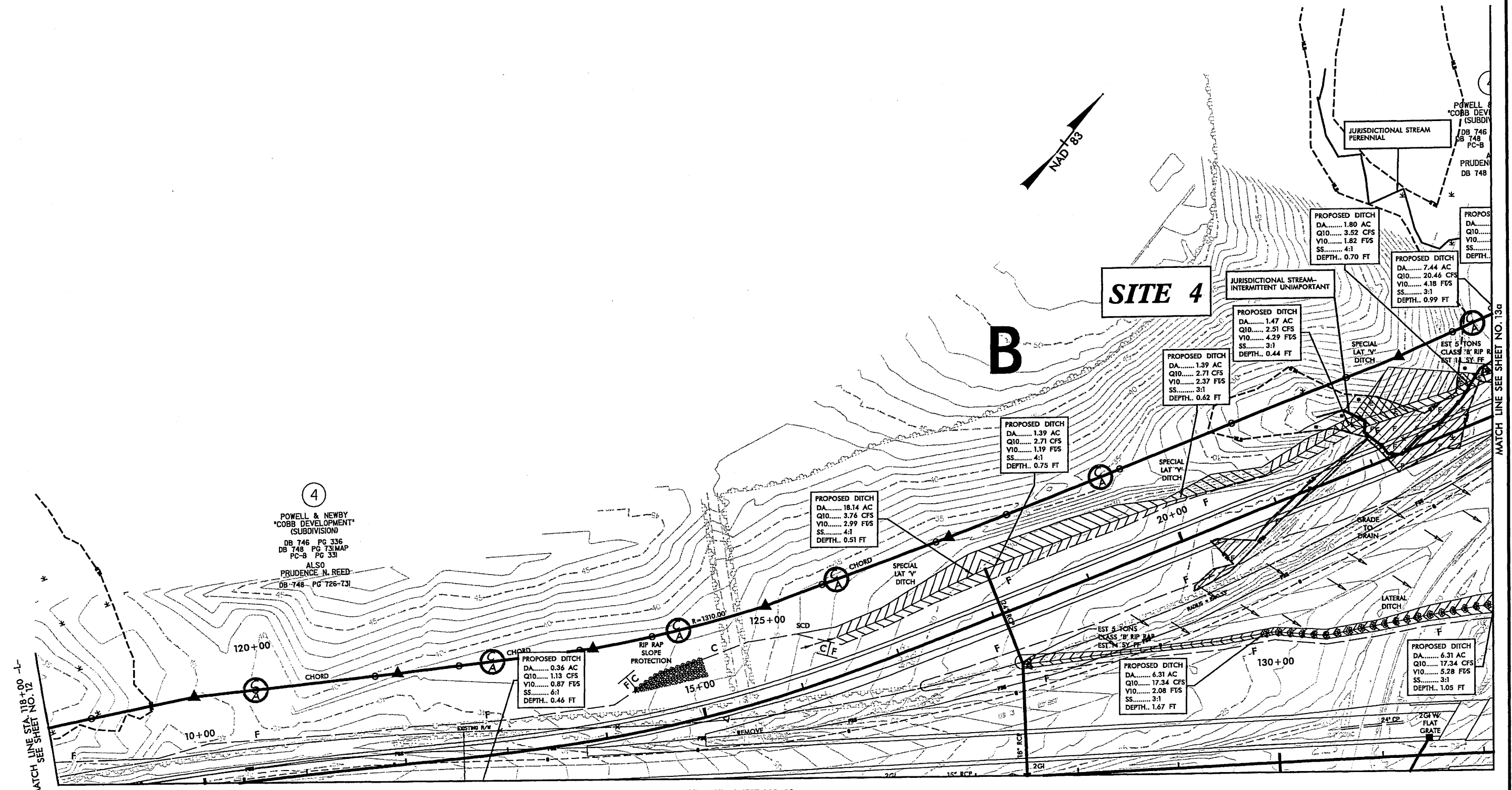
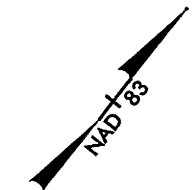
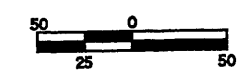
PROJECT REFERENCE NO. R-2404A	SHEET NO. 13b
R/W SHEET NO.	
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	

BARNHILL CONTRACTING COMPANY

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING

NOTES:

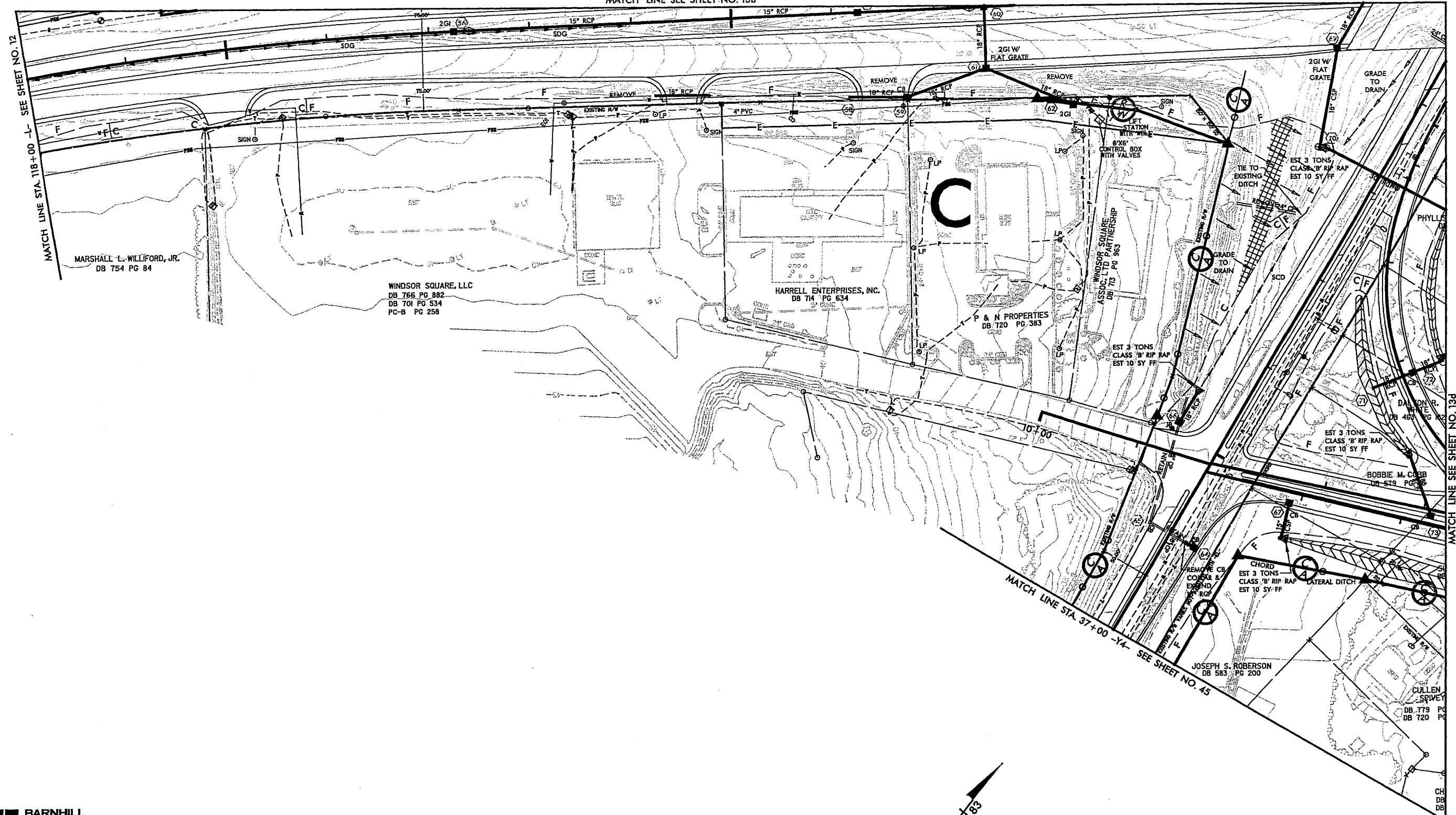
- PAVEMENT TO BE OBLITERATED
- SEE SHEETS NO. 58-59 FOR -L- PROFILE.
- SEE SHEET NO. 76 FOR -Y4- PROFILE.
- SEE SHEET NO. 77 FOR -Y4RPA- PROFILE.
- SEE SHEET NO. 78 FOR -Y4RPB- PROFILE.
- SEE SHEET NO. 79 FOR -Y4RPD- PROFILE.
- SEE SHEET NO. 80 FOR -Y4LPD- PROFILE.
- SEE SHEET NO. 81 FOR -Y4LPDSPUR- PROFILE.
- SEE SHEET NO. 2-J FOR STRUCTURE DETAIL.
- ALL CSP TO BE ROD AND LUG CONNECTED.
- DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.
- FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.



MATCH LINE SEE SHEET NO. 13c

14:0005 P:\2404A\13b.dgn

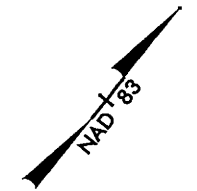
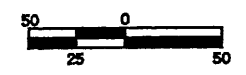
MATCH LINE SEE SHEET NO. 13b



PROJECT REFERENCE NO. R-2404A	SHEET NO. 13c
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR HDR Engineering, Inc. of the Contractors	

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING

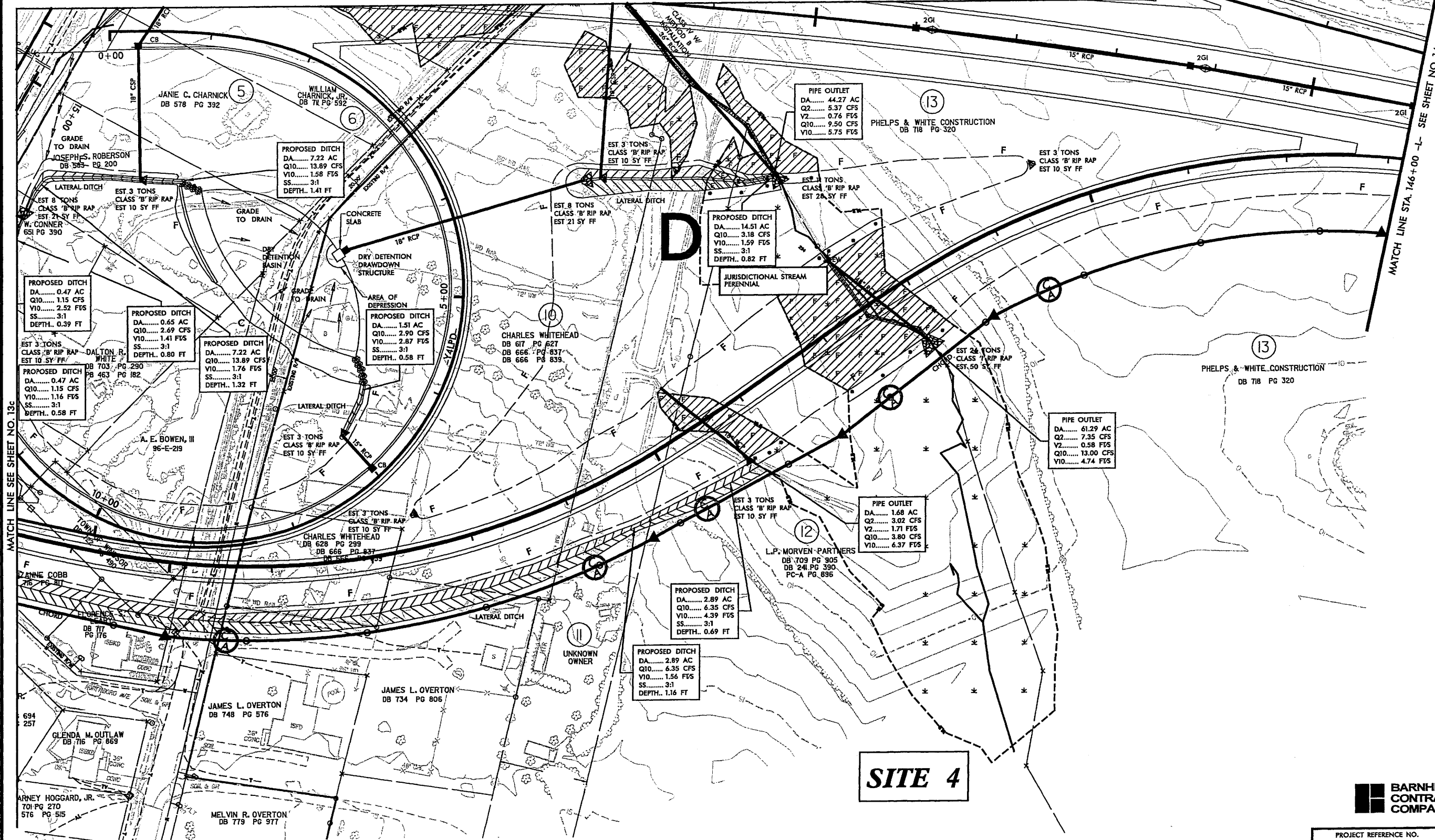
NOTES:
 ■■■ PAVEMENT TO BE OBLITERATED
 SEE SHEETS NO. 58-59 FOR -L- PROFILE.
 SEE SHEET NO. 76 FOR -Y4- PROFILE.
 SEE SHEET NO. 77 FOR -Y4RPA- PROFILE.
 SEE SHEET NO. 78 FOR -Y4RPB- PROFILE.
 SEE SHEET NO. 79 FOR -Y4RPD- PROFILE.
 SEE SHEET NO. 80 FOR -Y4LPD- PROFILE.
 SEE SHEET NO. 81 FOR -Y4LPDSPUR- PROFILE.
 SEE SHEET NO. 2-J FOR STRUCTURE DETAIL.
 ALL CSP TO BE ROD AND LUG CONNECTED.
 DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.
 FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.



4/20/05 10:42:01 AM C:\projects\2404a\2404a.dwg

MATCH LINE SEE SHEET NO. 13b

MATCH LINE STA. 37+00 -Y4- SEE SHEET NO. 45

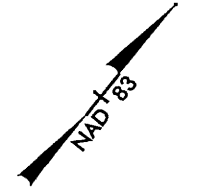
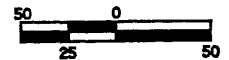


MATCH LINE SEE SHEET NO. 13c

SITE 4

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING

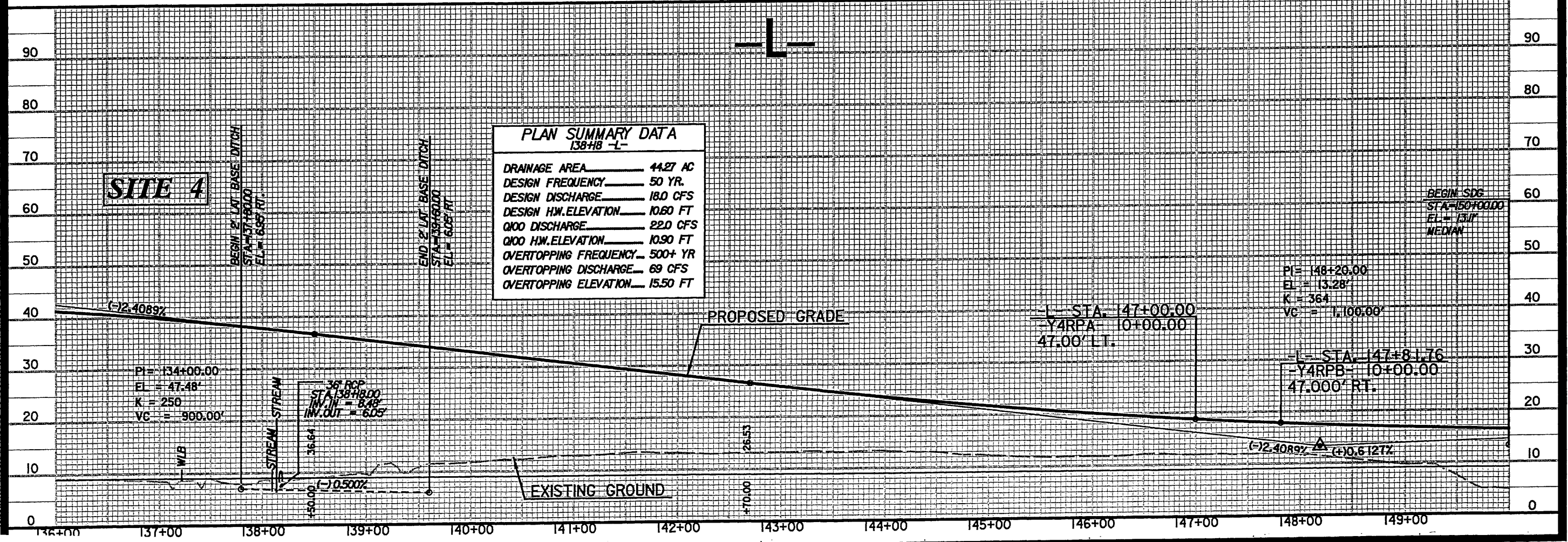
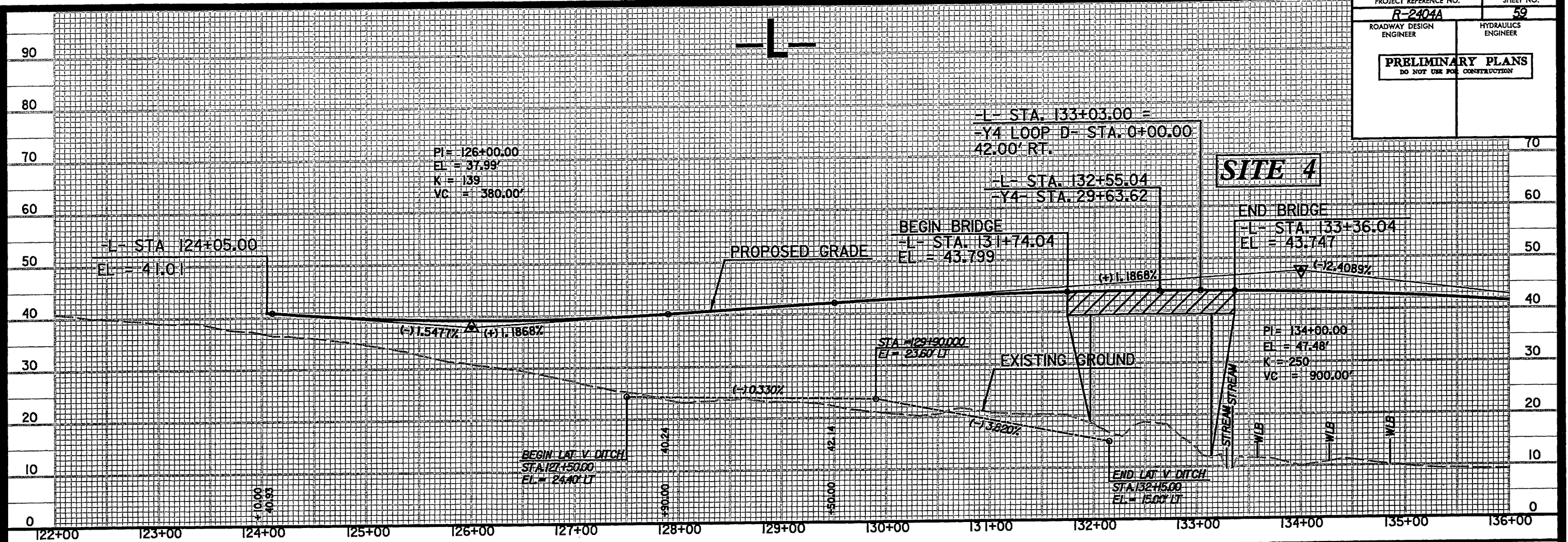
NOTES: FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.



BARNHILL CONTRACTING COMPANY

PROJECT REFERENCE NO. R-2404A	SHEET NO. 13d
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	

12/24/2011 10:44:31 AM C:\projects\122404A\122404A.dwg



PLAN SUMMARY DATA	
138+80 -L-	
DRAINAGE AREA	44.27 AC
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	18.0 CFS
DESIGN HW. ELEVATION	10.60 FT
Q100 DISCHARGE	22.0 CFS
Q100 HW. ELEVATION	10.90 FT
OVERTOPPING FREQUENCY	500+ YR
OVERTOPPING DISCHARGE	69 CFS
OVERTOPPING ELEVATION	15.50 FT

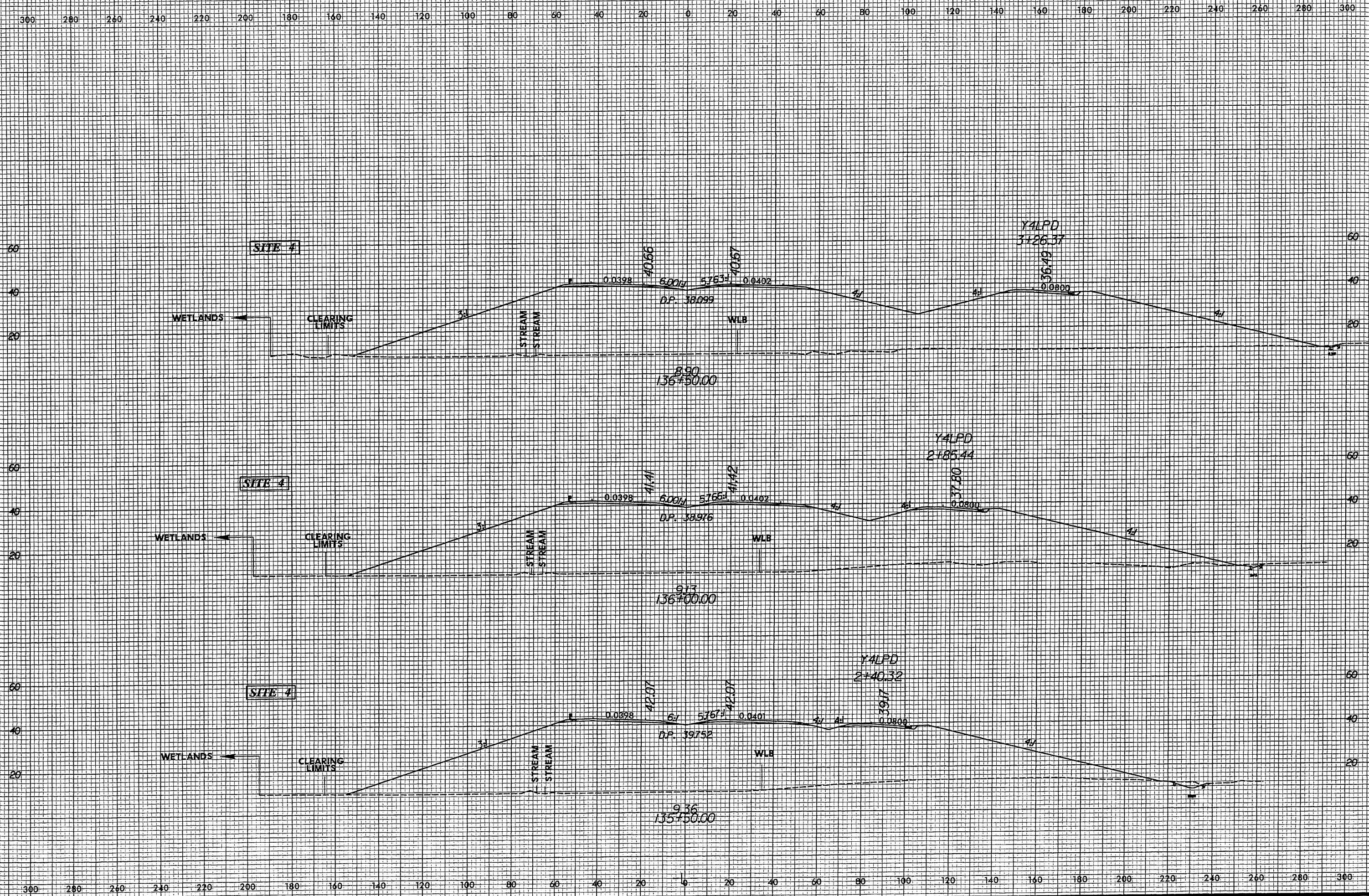
SITE 4

SITE 4

5/28/99






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8/23/99



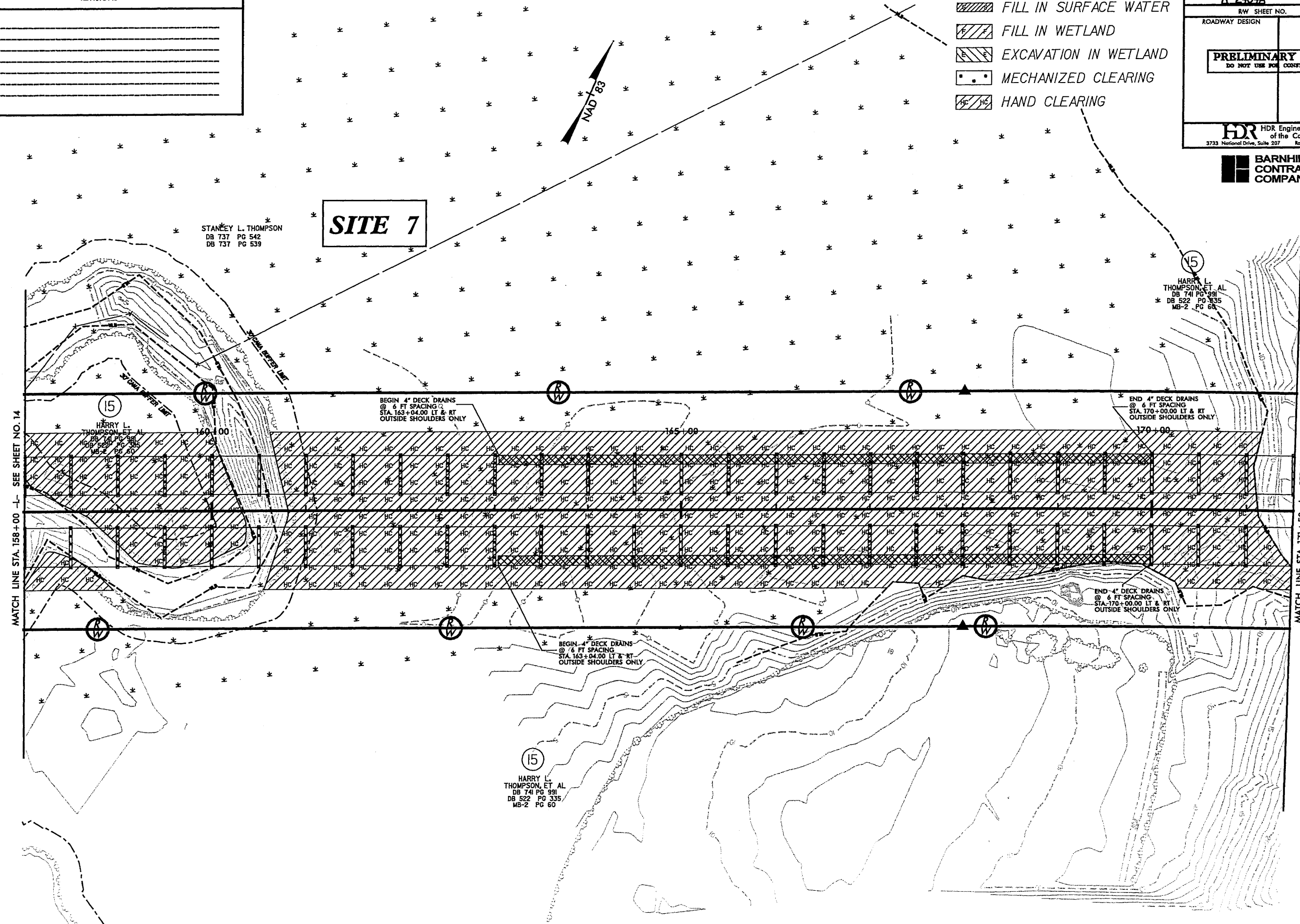
7/20/05 7:25 PM
 R-2404A Permitting Impact Sheets v2404a.rdu.l.xpl.dgn

REVISIONS

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING
-  HAND CLEARING

PROJECT REFERENCE NO. R-2404A	SHEET NO. 15
RW SHEET NO.	
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	

BARNHILL CONTRACTING COMPANY



MATCH LINE STA. 158+00 -L- SEE SHEET NO. 14

MATCH LINE STA. 171+50 -L- SEE SHEET NO. 16

BEGIN 4" DECK DRAINS @ 6 FT SPACING STA. 163+04.00 LT & RT OUTSIDE SHOULDERS ONLY

END 4" DECK DRAINS @ 6 FT SPACING STA. 170+00.00 LT & RT OUTSIDE SHOULDERS ONLY

END 4" DECK DRAINS @ 6 FT SPACING STA. 170+00.00 LT & RT OUTSIDE SHOULDERS ONLY

HARRY L. THOMPSON, ET AL
DB 741 PG 991
DB 522 PG 335
MB-2 PG 60

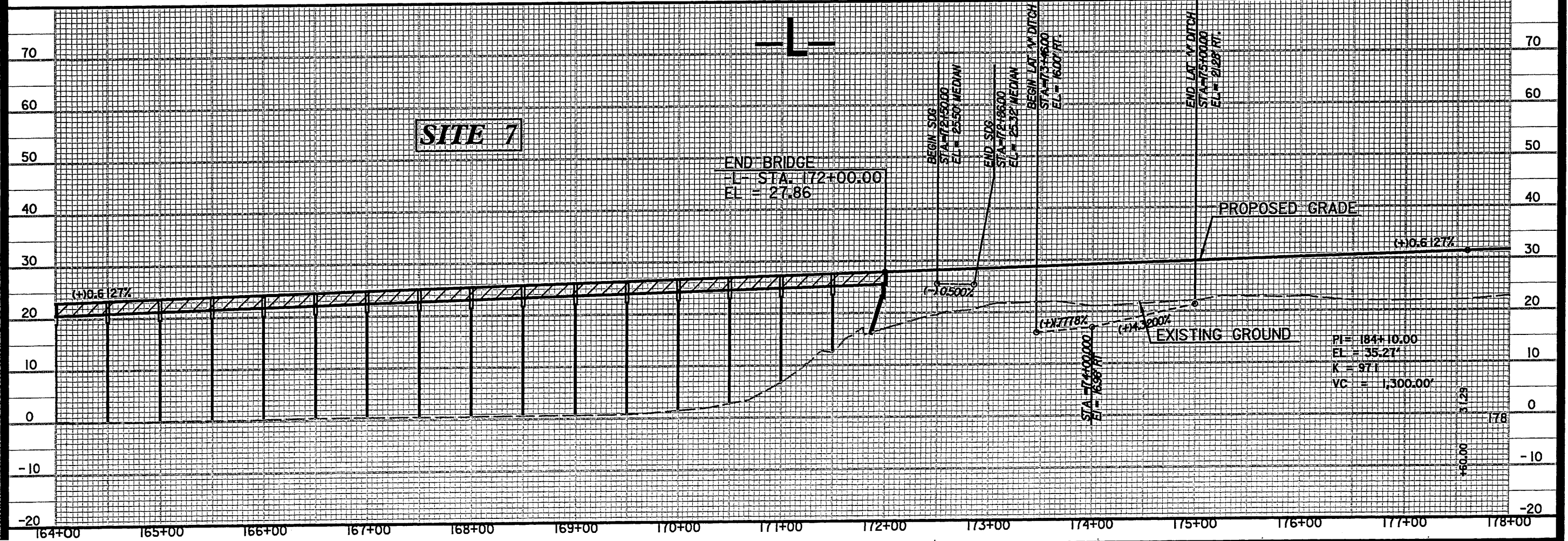
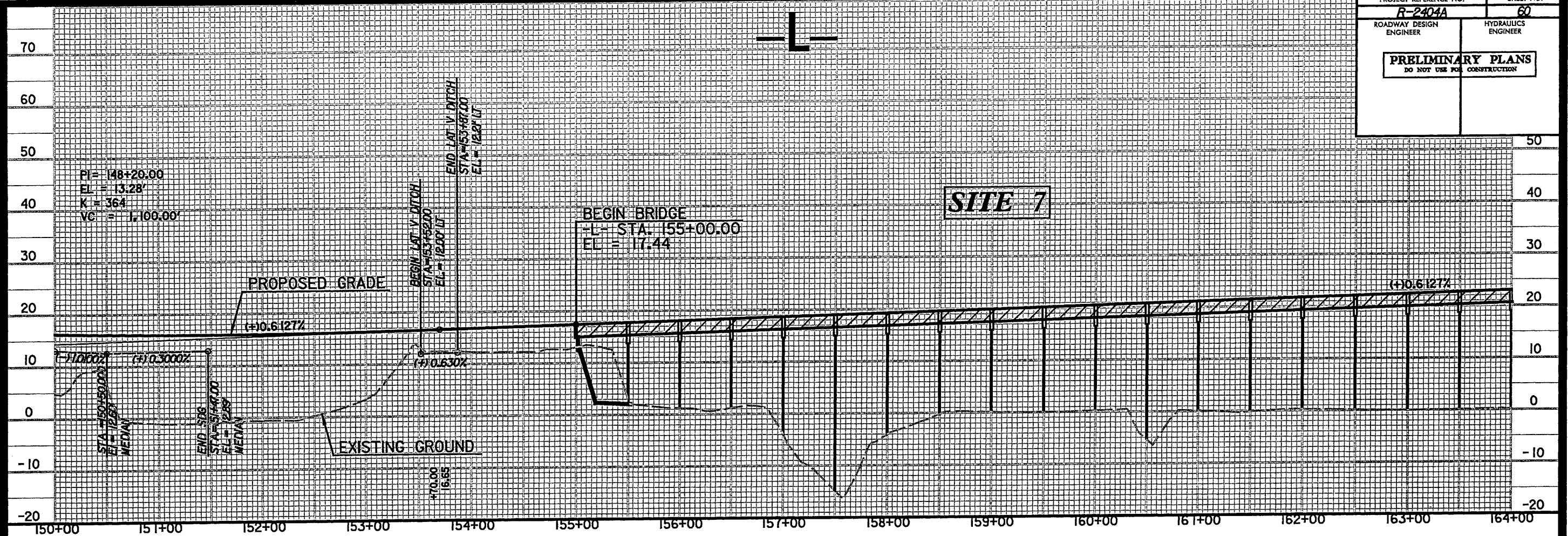
STANLEY L. THOMPSON
DB 737 PG 542
DB 737 PG 539

SITE 7

HARRY L. THOMPSON, ET AL
DB 741 PG 991
DB 522 PG 335
MB-2 PG 60

7/2005
Barnhill Contracting Company
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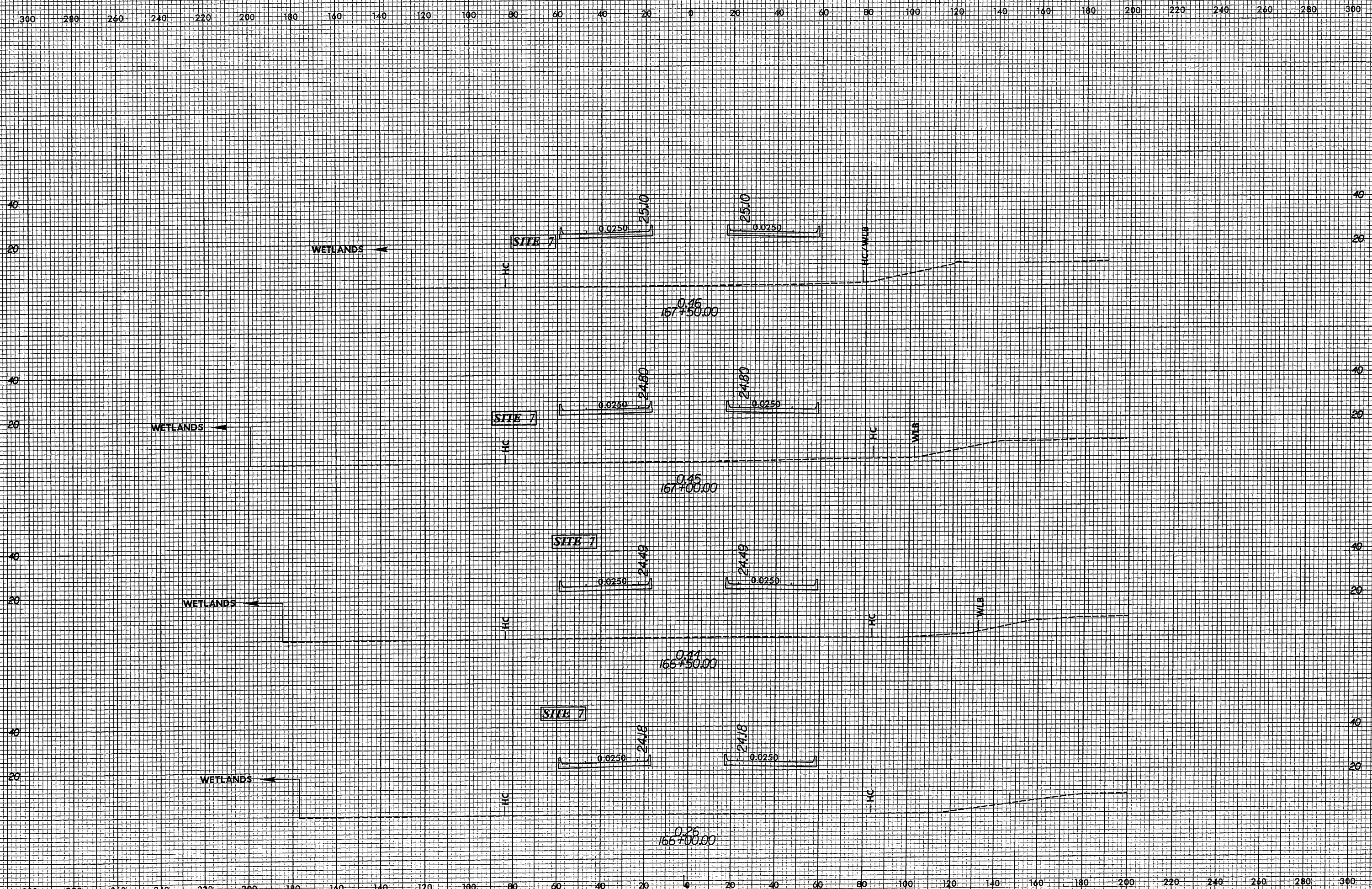
NOTES: SEE SHEET NO. 60 FOR -L- PROFILE.



5/28/98

5/28/98

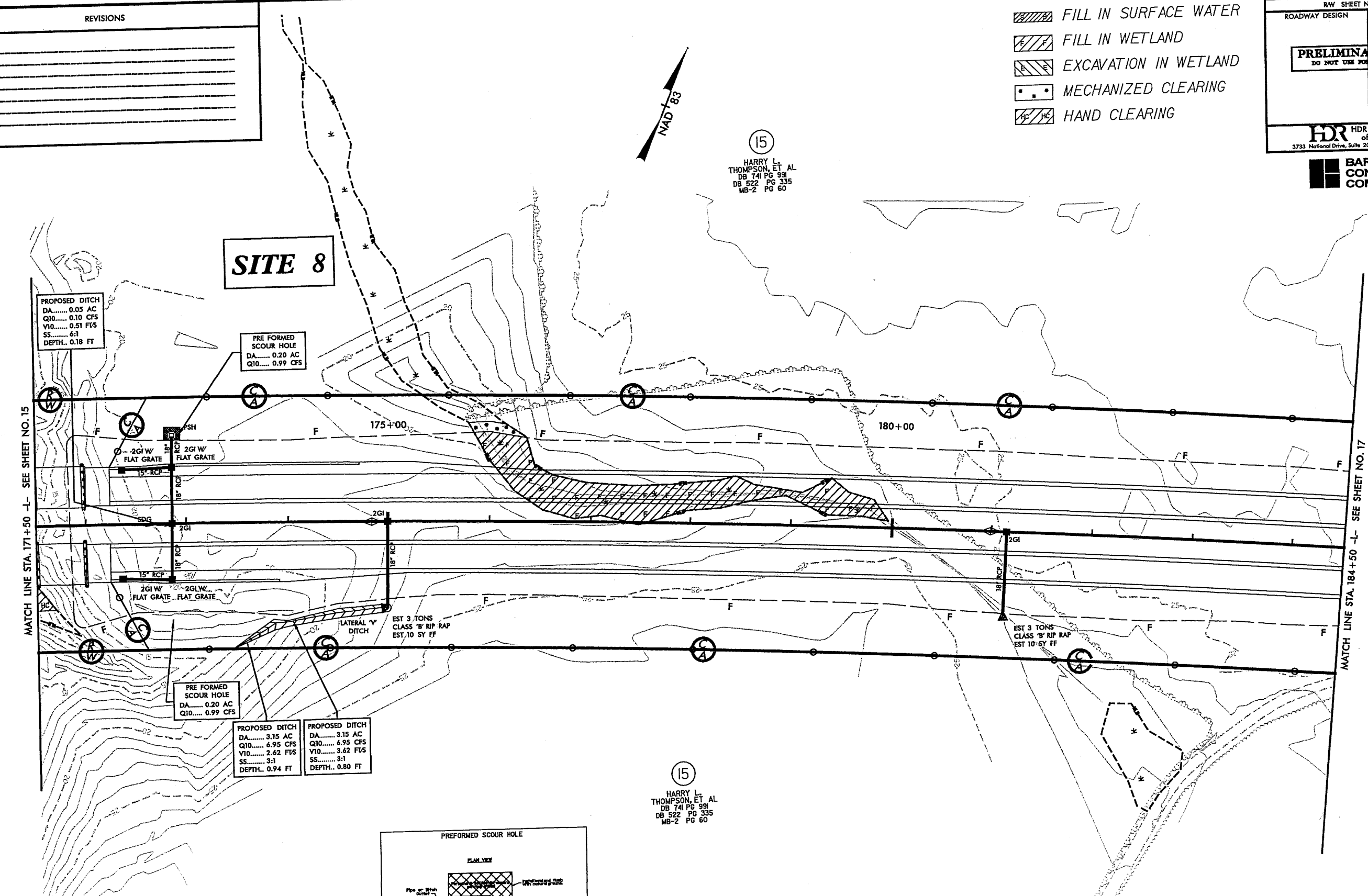
8/23/99



1/2005 8:34 PM R-2404A Permitting Impact Sheets (r2404a_rdy).xpl.dgn

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING
- HAND CLEARING

REVISIONS

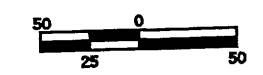
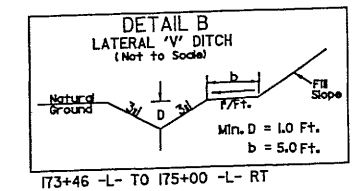
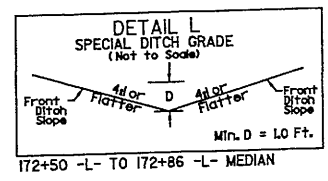
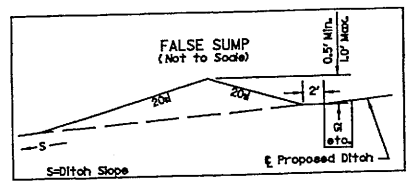
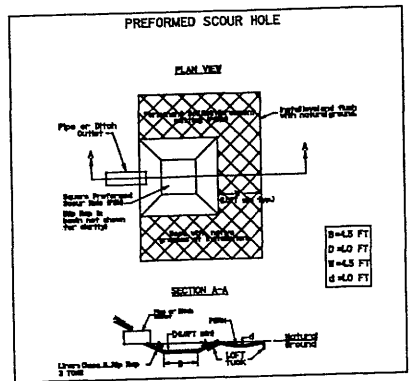


PROPOSED DITCH
DA..... 0.05 AC
Q10..... 0.10 CFS
V10..... 0.51 FVS
SS..... 6:1
DEPTH.. 0.18 FT

PRE FORMED SCOUR HOLE
DA..... 0.20 AC
Q10..... 0.99 CFS

PROPOSED DITCH
DA..... 3.15 AC
Q10..... 6.95 CFS
V10..... 2.62 FVS
SS..... 3:1
DEPTH.. 0.94 FT

PROPOSED DITCH
DA..... 3.15 AC
Q10..... 6.95 CFS
V10..... 3.62 FVS
SS..... 3:1
DEPTH.. 0.80 FT



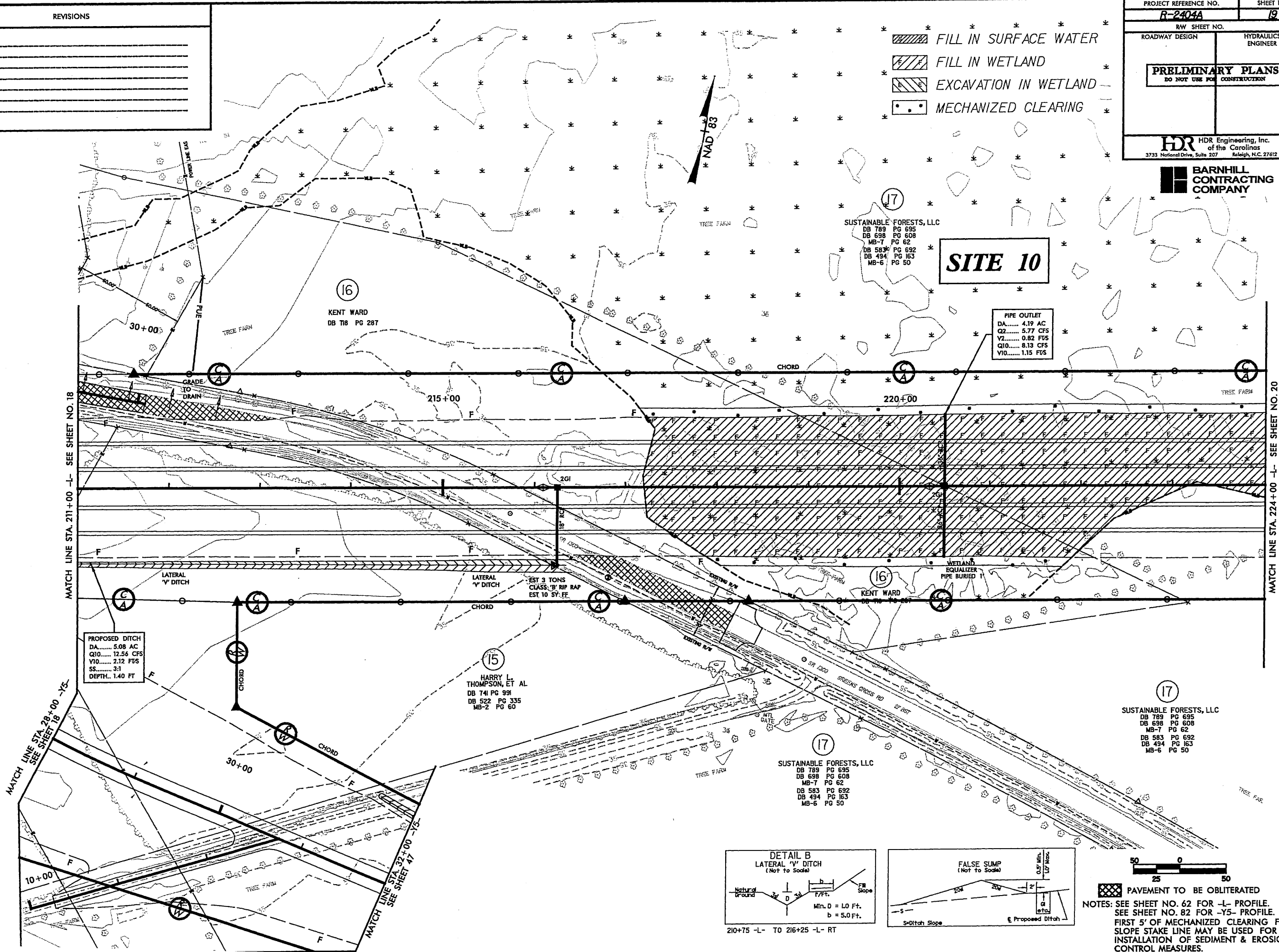
NOTES: SEE SHEET NO. 60-61 FOR -L- PROFILE.
SEE SHEET NO. 2-J FOR STRUCTURE DETAIL.
ALL CSP TO BE ROD AND LUG CONNECTED.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE
STAKE LINE MAY BE USED FOR INSTALLATION
OF SEDIMENT & EROSION CONTROL MEASURES.

2005 Barnhill Contracting Company R-2404A-bvd.msc.ctb.psh.16.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2404A	19
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	
BARNHILL CONTRACTING COMPANY	

REVISIONS

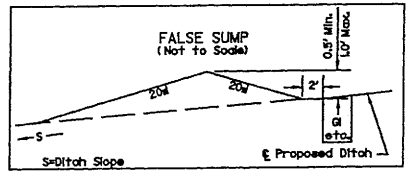
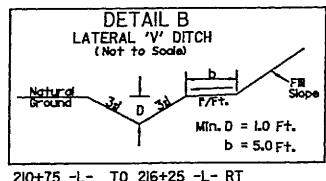
- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING



SITE 10

PIPE OUTLET
 DA..... 4.19 AC
 Q2..... 5.77 CFS
 V2..... 0.82 FVS
 Q10..... 8.13 CFS
 V10..... 1.15 FVS

PROPOSED DITCH
 DA..... 5.08 AC
 Q10..... 12.56 CFS
 V10..... 2.12 FVS
 SS..... 3:1
 DEPTH..... 1.40 FT



50 0 50

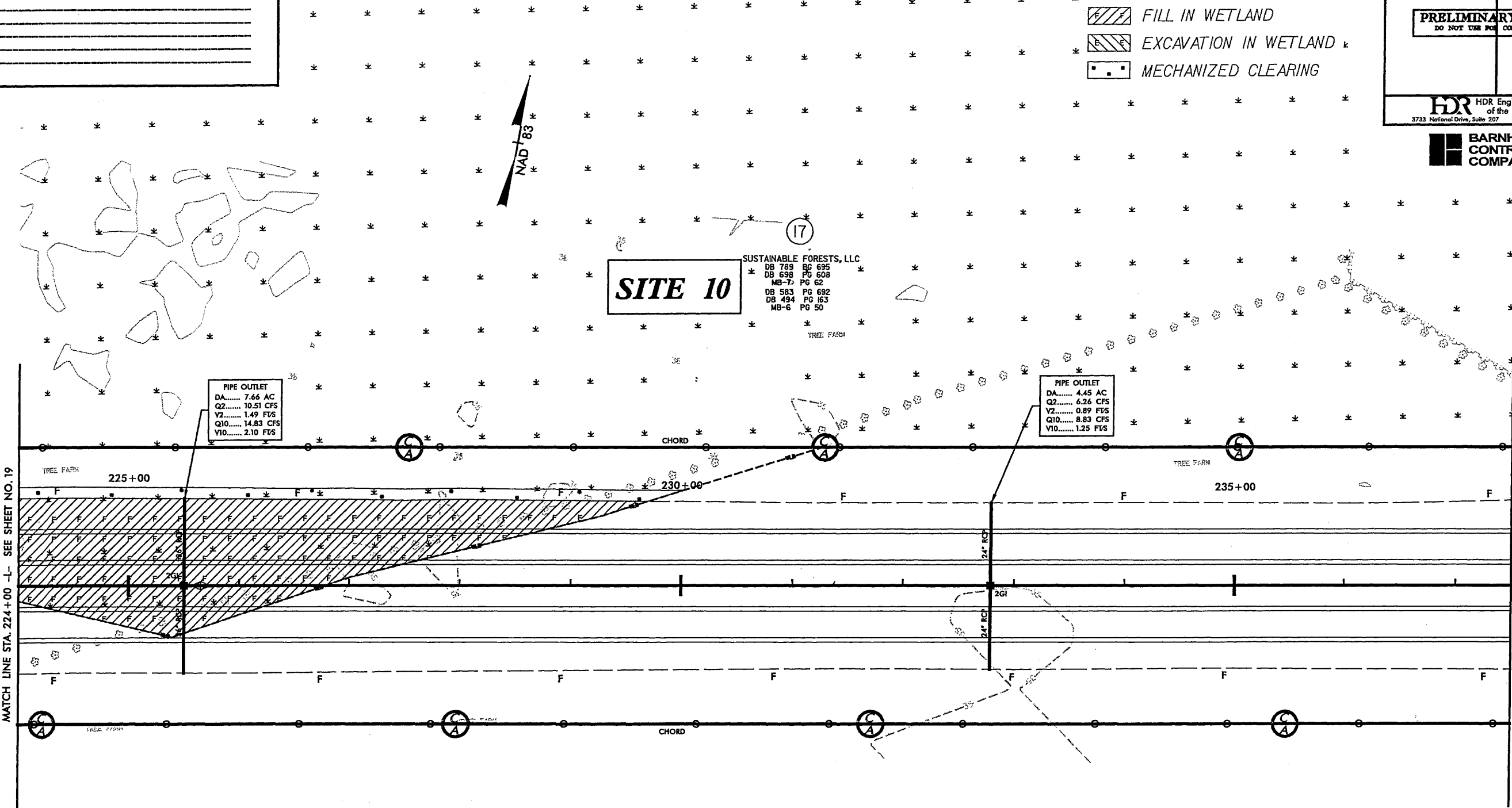
PAVEMENT TO BE OBLITERATED

NOTES: SEE SHEET NO. 62 FOR -L- PROFILE.
SEE SHEET NO. 82 FOR -Y5- PROFILE.
FIRST 5' OF MECHANIZED CLEARING FROM
SLOPE STAKE LINE MAY BE USED FOR
INSTALLATION OF SEDIMENT & EROSION
CONTROL MEASURES.

P:\2404A\2404A.dwg
 12/18/08
 R:\2404A\2404A.dwg
 12/18/08
 R:\2404A\2404A.dwg
 12/18/08

REVISIONS

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING

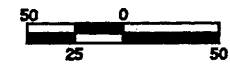
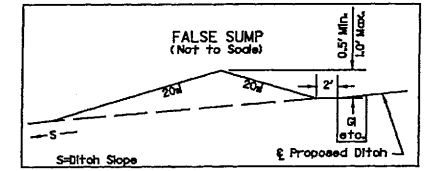


SITE 10

SUSTAINABLE FORESTS, LLC
 DB 789 PG 695
 DB 698 PG 608
 MB-7 PG 62
 DB 583 PG 692
 DB 494 PG 163
 MB-6 PG 50

(17)

SUSTAINABLE FORESTS, LLC
 DB 789 PG 695
 DB 698 PG 608
 MB-7 PG 62
 DB 583 PG 692
 DB 494 PG 163
 MB-6 PG 50



NOTE: FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

NOTES: SEE SHEET NO. 61-62 FOR -L- PROFILE.

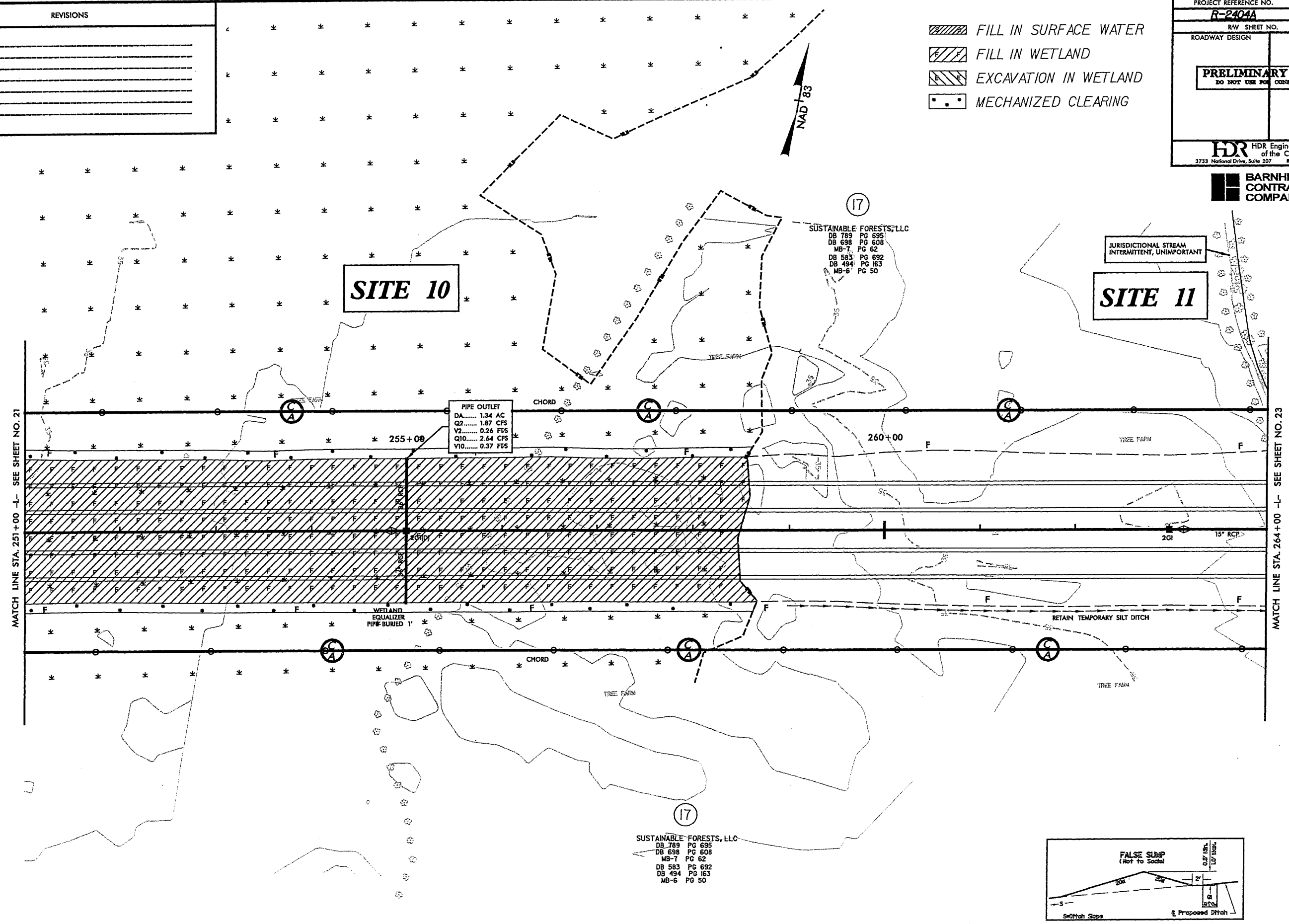
3/20/09
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 jmc

PROJECT REFERENCE NO.	SHEET NO.
R-2404A	22
R/W SHEET NO.	REVISIONS
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	

REVISIONS

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING

BARNHILL CONTRACTING COMPANY



MATCH LINE STA. 251+00 -L- SEE SHEET NO. 21

MATCH LINE STA. 264+00 -L- SEE SHEET NO. 23

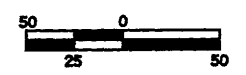
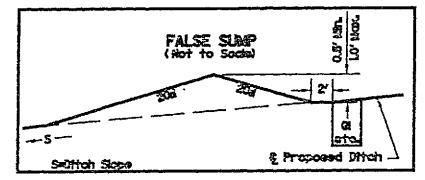
SITE 10

SITE 11

PIPE OUTLET
 DA..... 1.34 AC
 Q2..... 1.87 CFS
 Y2..... 0.26 FFS
 Q10..... 2.64 CFS
 Y10..... 0.37 FFS

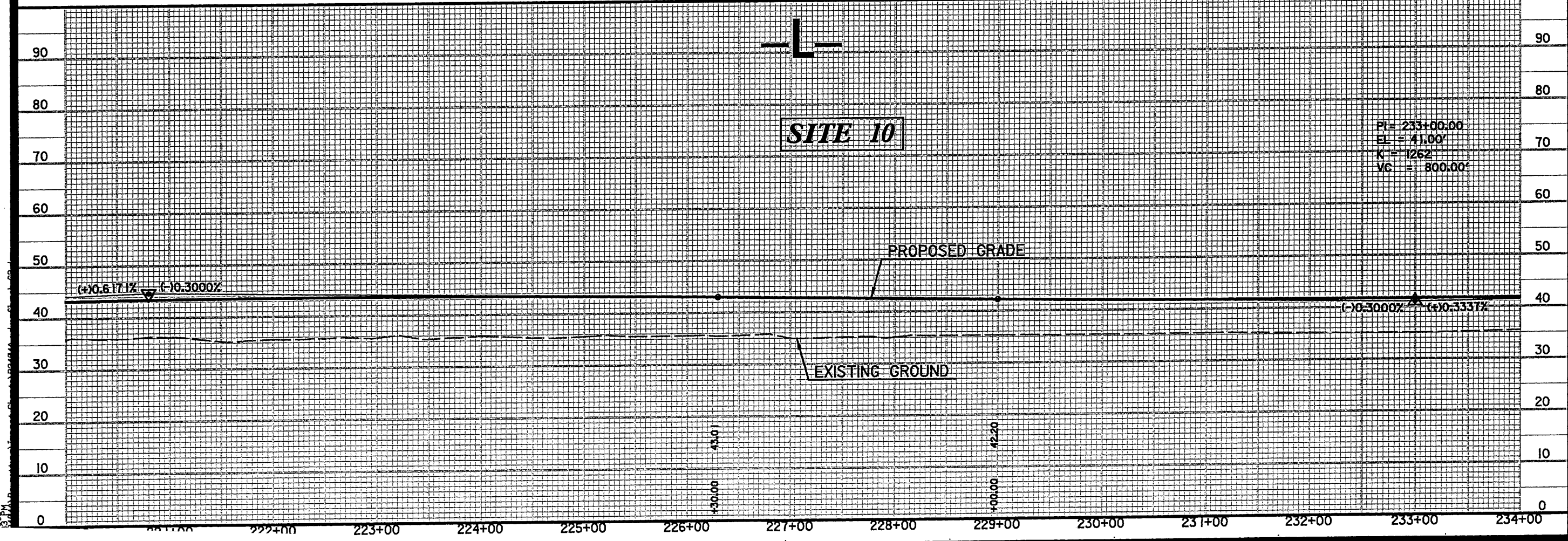
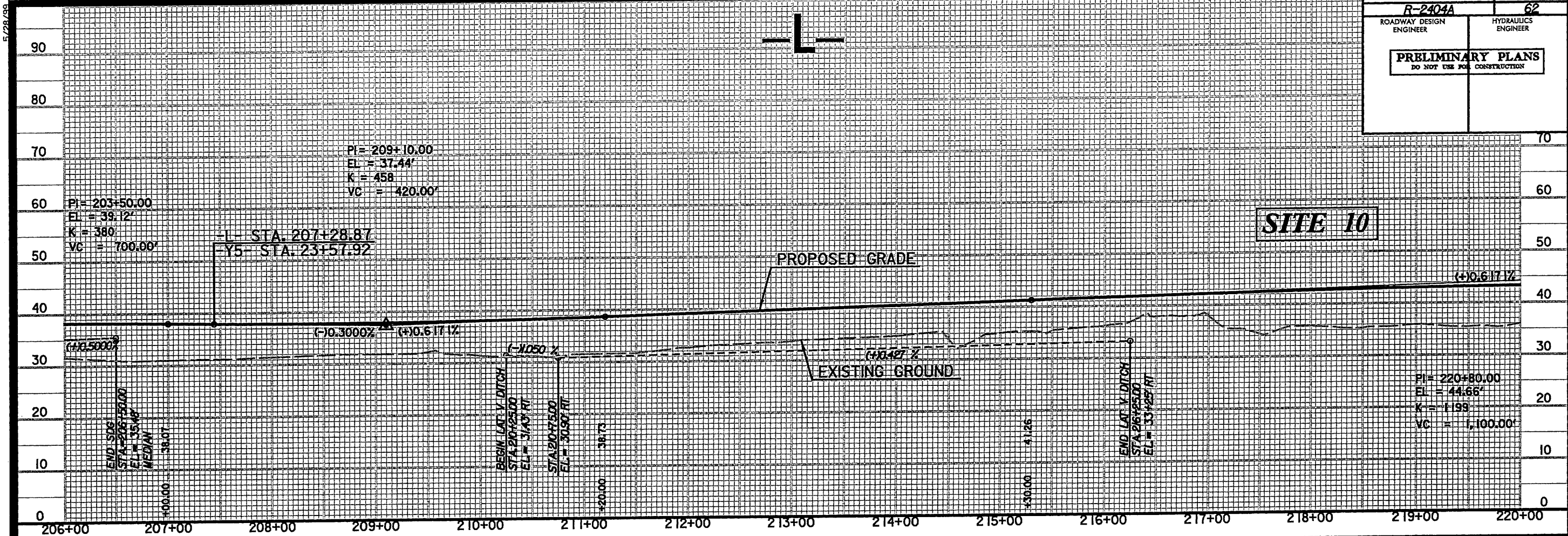
SUSTAINABLE FORESTS, LLC
 DB 789 PG 695
 DB 698 PG 608
 MB-7 PG 62
 DB 583 PG 692
 DB 494 PG 163
 MB-6 PG 50

SUSTAINABLE FORESTS, LLC
 DB 789 PG 695
 DB 698 PG 608
 MB-7 PG 62
 DB 583 PG 692
 DB 494 PG 163
 MB-6 PG 50



NOTES: SEE SHEET NO. 62-63 FOR -L- PROFILE
 DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.
 FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

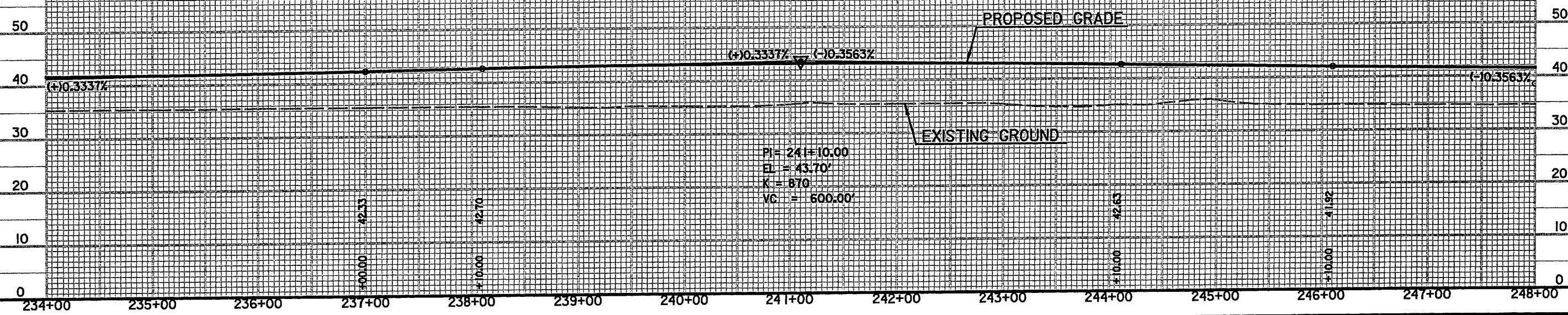
005 Milling\msoor\Specs\2404A_hy\msoor\en_22.dwg 10/23/19 AM



SITE 10

PI = 233+00.00
EL = 41.00'
K = 1262
VC = 800.00'

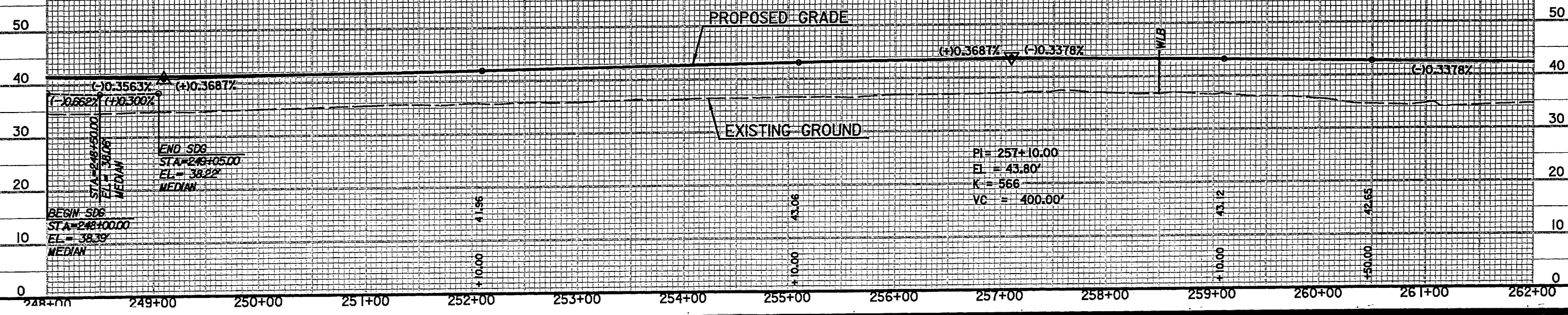
PI = 249+10.00
EL = 40.85'
K = 828
VC = 600.00'



SITE 10

PI = 249+10.00
EL = 40.85'
K = 828
VC = 600.00'

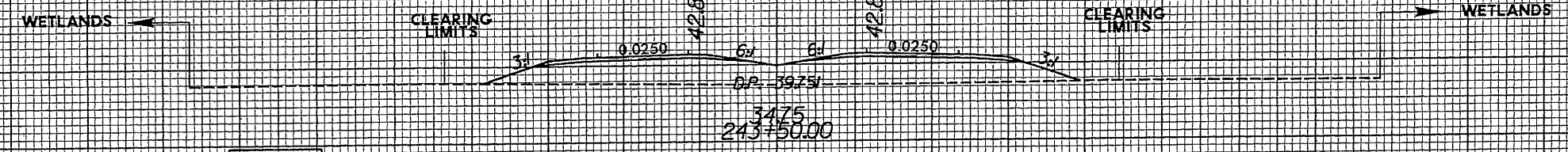
PI = 264+50.00
EL = 41.30'
K = 1246
VC = 800.00'



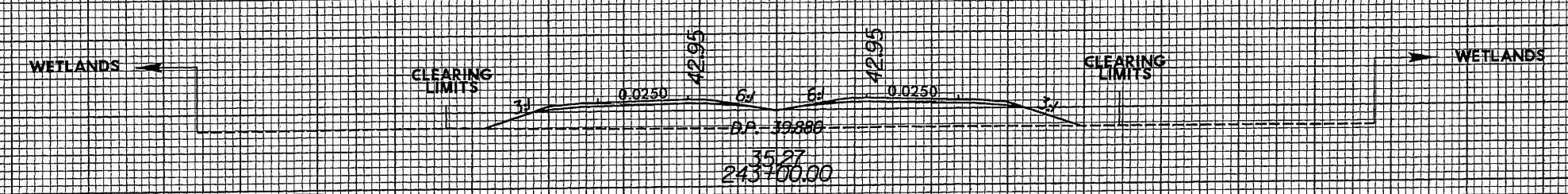
8/23/99

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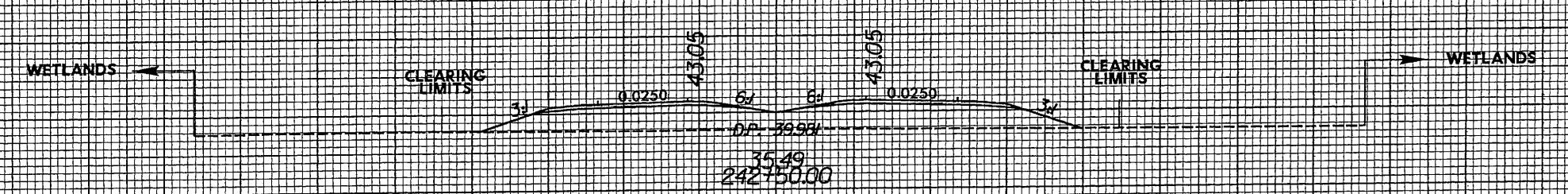
SITE 10



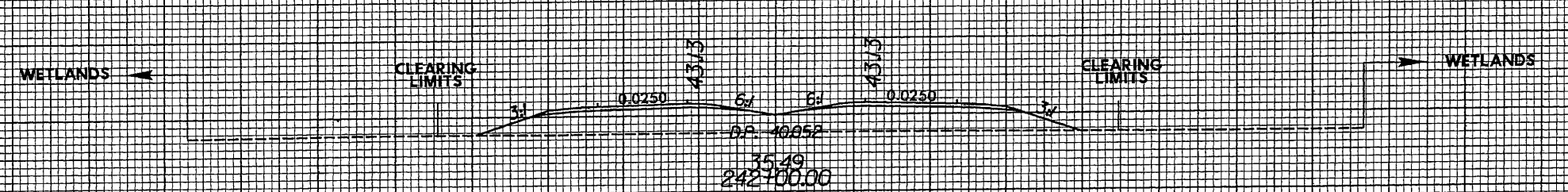
SITE 10



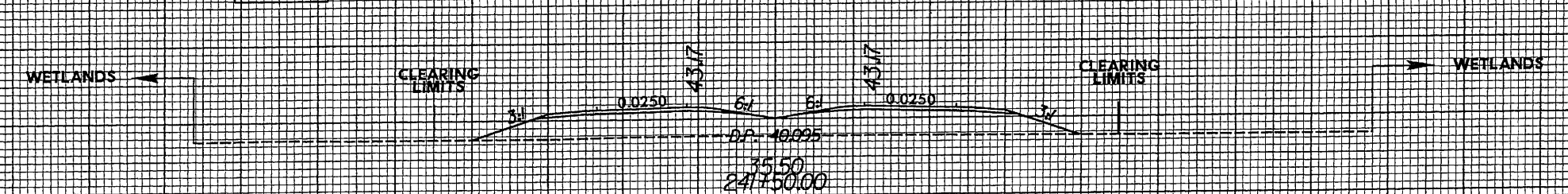
SITE 10



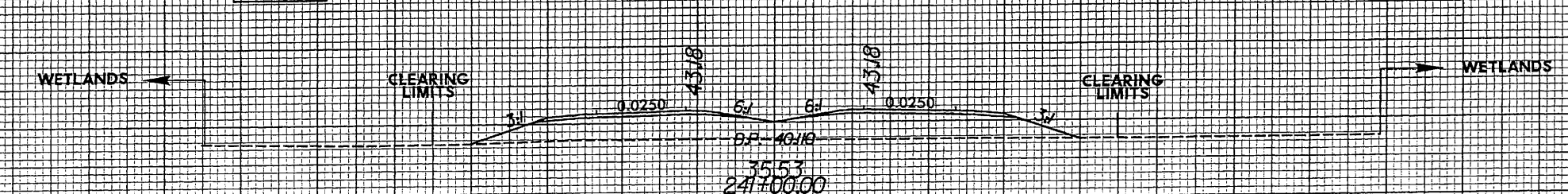
SITE 10



SITE 10







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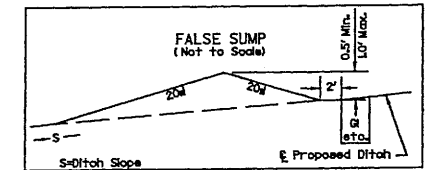
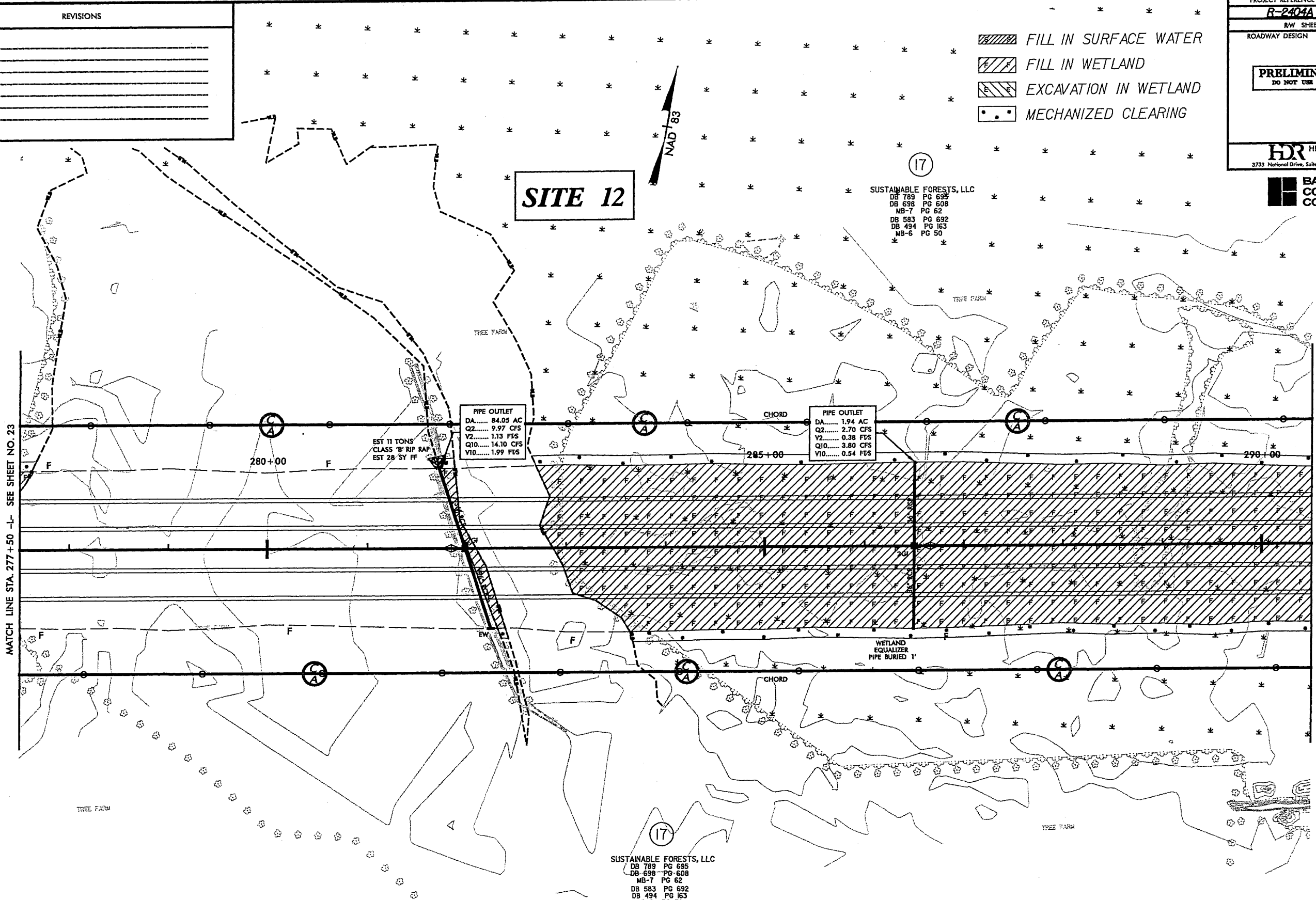


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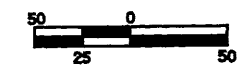
005
24044\Permitting\moet.Sheets\2404a_r.dwg

REVISIONS

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING



NOTES: SEE SHEET NO. 63-64 FOR -L- PROFILE
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.



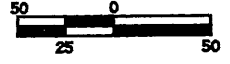
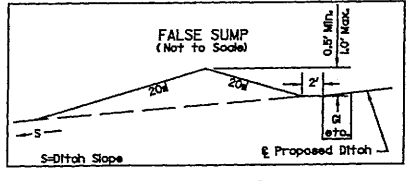
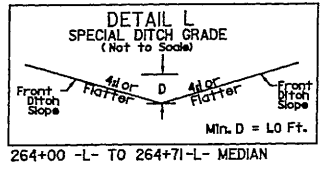
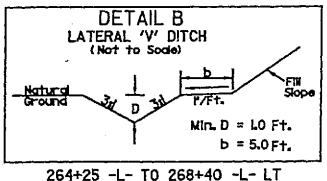
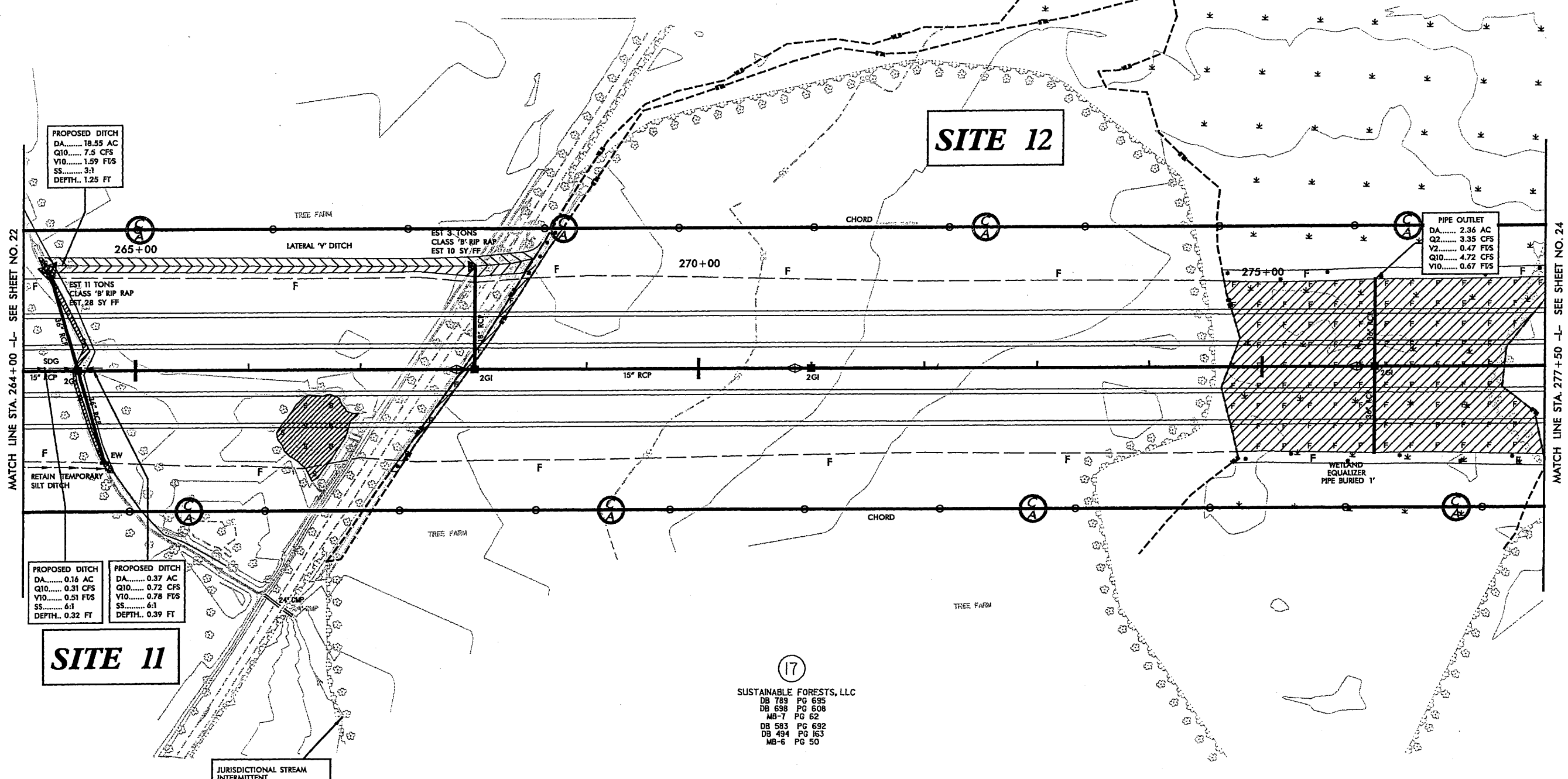
2005 5:35 PM C:\temp\impost\Sheet24\04A.dwg 24.dgn

REVISIONS

PROJECT REFERENCE NO. R-2404A	SHEET NO. 23
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	
BARNHILL CONTRACTING COMPANY	

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING

(17)
SUSTAINABLE FORESTS, LLC
DB 789 PG 695
DB 698 PG 608
MB-7 PG 62
DB 583 PG 692
DB 494 PG 163
MB-6 PG 50



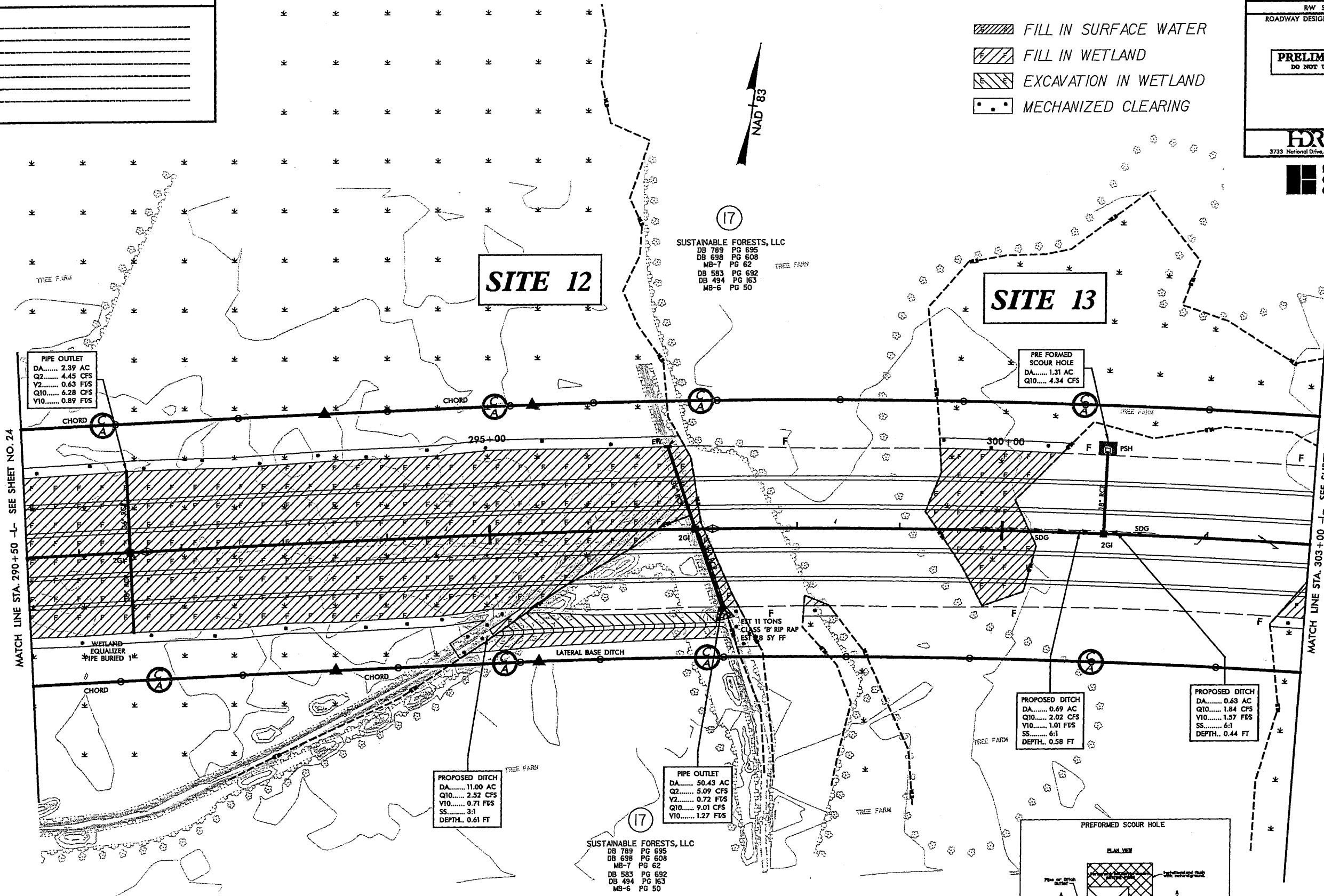
NOTES: SEE SHEET NO. 63 FOR -L- PROFILE.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

09/23/2011 10:53 AM
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 23.dgn

REVISIONS

PROJECT REFERENCE NO. R-2404A	SHEET NO. 25
RW SHEET NO.	
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	
BARNHILL CONTRACTING COMPANY	

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING



MATCH LINE STA. 290+50 -L- SEE SHEET NO. 24

MATCH LINE STA. 303+00 -L- SEE SHEET NO. 26

SITE 12

SITE 13

(17)
SUSTAINABLE FORESTS, LLC
DB 789 PG 695
DB 698 PG 608
MB-7 PG 62
DB 583 PG 692
DB 494 PG 163
MB-5 PG 50

(17)
SUSTAINABLE FORESTS, LLC
DB 789 PG 695
DB 698 PG 608
MB-7 PG 62
DB 583 PG 692
DB 494 PG 163
MB-5 PG 50

PIPE OUTLET
DA..... 2.39 AC
Q2..... 4.45 CFS
Y2..... 0.63 FVS
Q10..... 6.28 CFS
V10..... 0.89 FVS

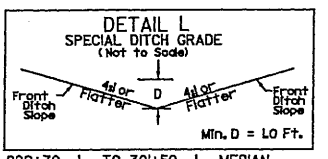
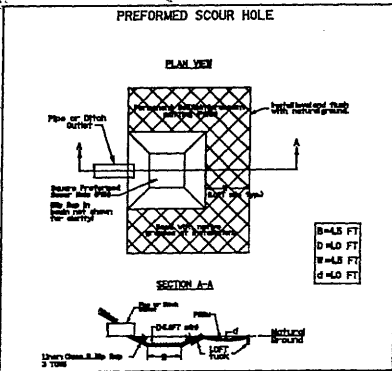
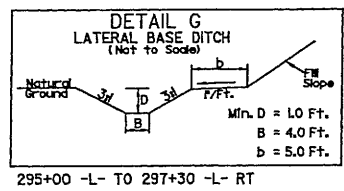
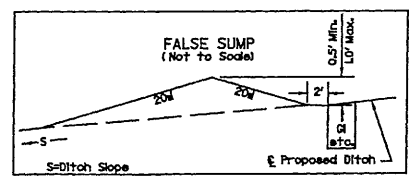
PRE FORMED SCOUR HOLE
DA..... 1.31 AC
Q10..... 4.34 CFS

PROPOSED DITCH
DA..... 11.00 AC
Q2..... 2.52 CFS
V10..... 0.71 FVS
SS..... 3:1
DEPTH.. 0.61 FT

PIPE OUTLET
DA..... 50.43 AC
Q2..... 5.09 CFS
Y2..... 0.72 FVS
Q10..... 9.01 CFS
V10..... 1.27 FVS

PROPOSED DITCH
DA..... 0.69 AC
Q10..... 2.02 CFS
V10..... 1.01 FVS
SS..... 6:1
DEPTH.. 0.58 FT

PROPOSED DITCH
DA..... 0.63 AC
Q10..... 1.84 CFS
V10..... 1.57 FVS
SS..... 6:1
DEPTH.. 0.44 FT

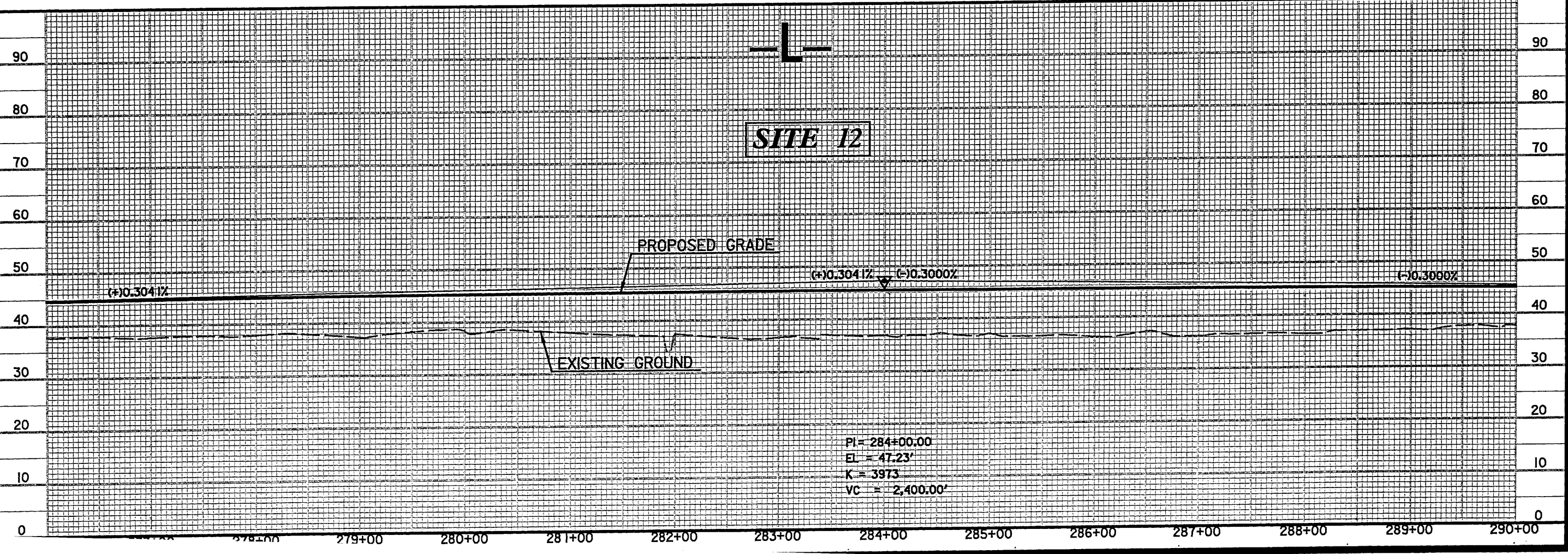
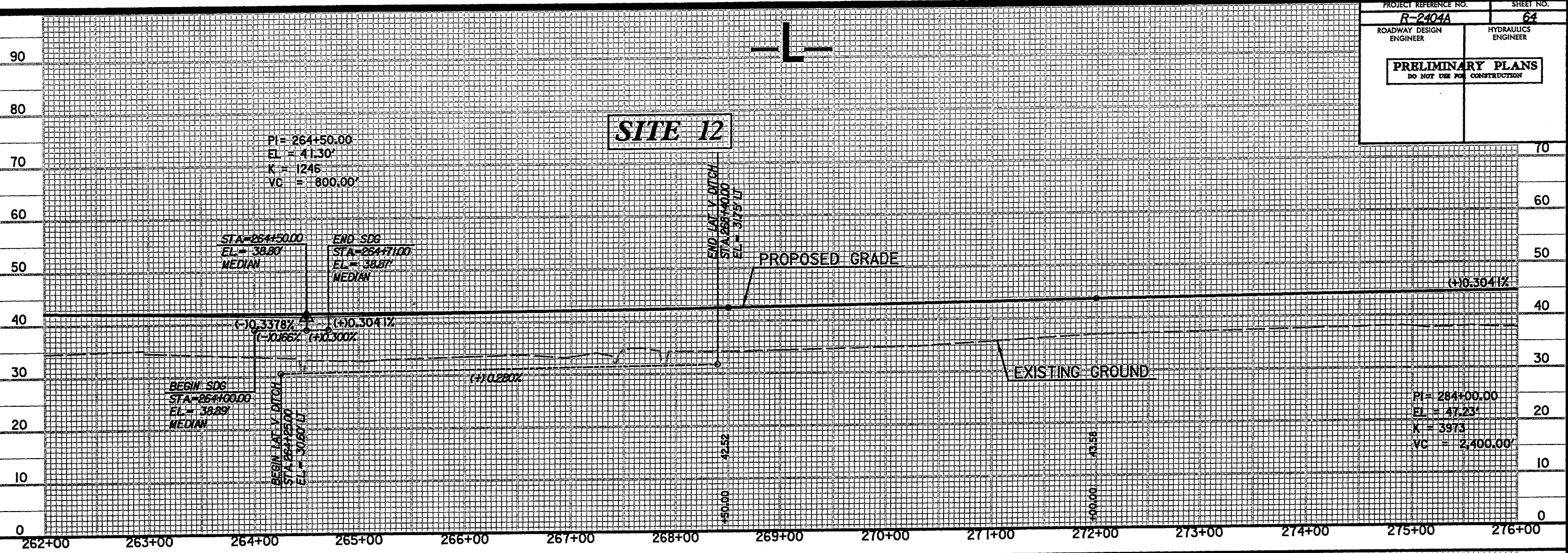


299+70 -L- TO 301+50 -L- MEDIAN
NOTES: SEE SHEET NO. 64 FOR -L- PROFILE.
FIRST 5' OF MECHANIZED CLEARING
FROM SLOPE STAKE LINE MAY BE
USED FOR INSTALLATION OF
SEDIMENT & EROSION CONTROL
MEASURES.



5/28/99

PROJECT REFERENCE NO. R-2404A	SHEET NO. 64
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

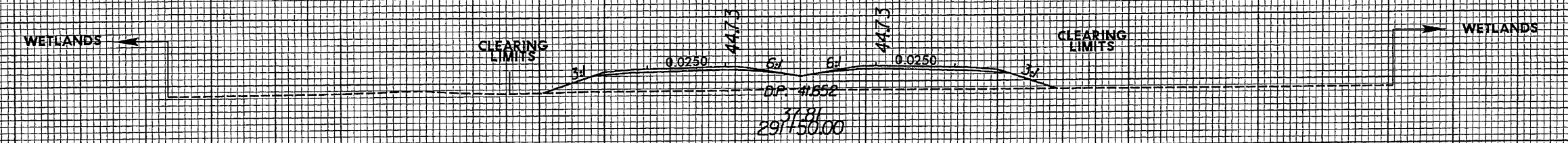


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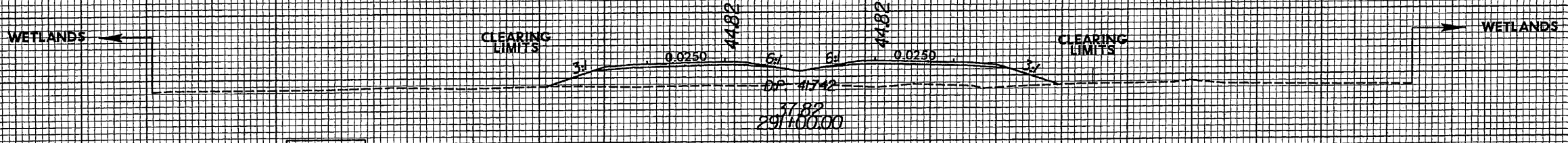
8/23/99

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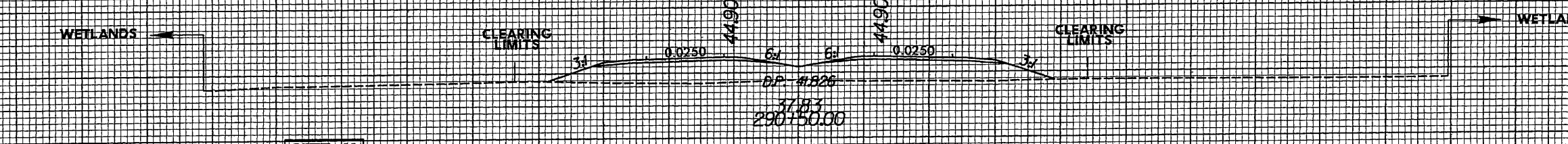
SITE 12



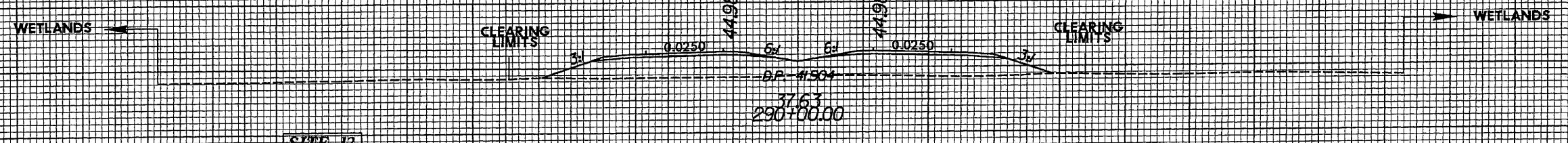
SITE 12



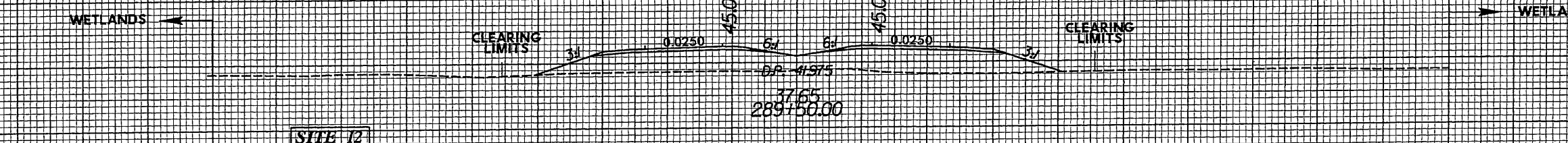
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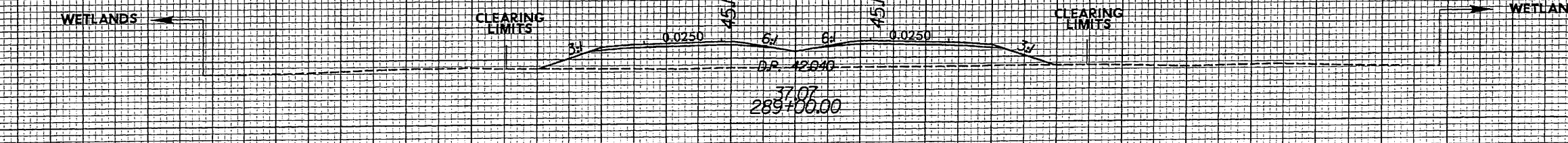
SITE 12



SITE 12



SITE 12

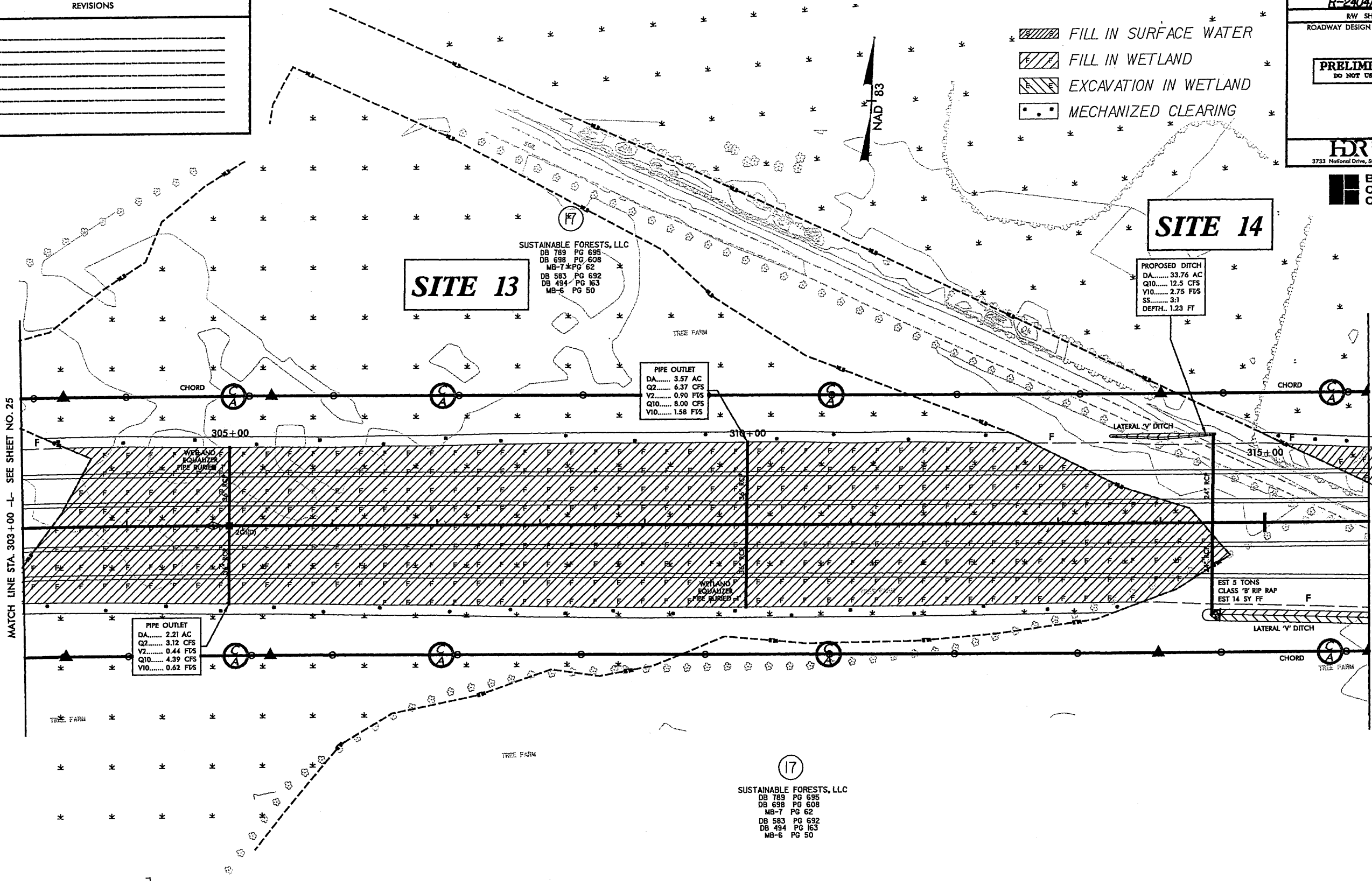


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REVISIONS

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING



SITE 13

SUSTAINABLE FORESTS, LLC
DB 789 PG 695
DB 698 PG 608
MB-7 PG 62
DB 583 PG 692
DB 494 PG 163
MB-6 PG 50

SITE 14

PROPOSED DITCH
DA..... 33.76 AC
Q2..... 12.5 CFS
Q10..... 2.75 FFS
SS..... 31
DEPTH..... 1.23 FT

PIPE OUTLET
DA..... 3.57 AC
Q2..... 6.37 CFS
V2..... 0.90 FFS
Q10..... 8.00 CFS
V10..... 1.58 FFS

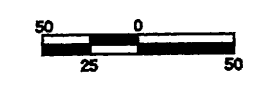
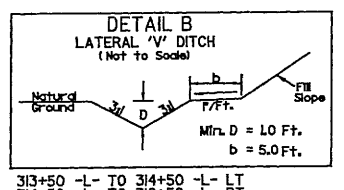
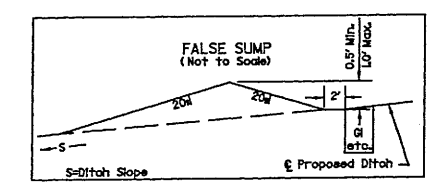
PIPE OUTLET
DA..... 2.21 AC
Q2..... 3.12 CFS
V2..... 0.44 FFS
Q10..... 4.39 CFS
V10..... 0.62 FFS

SITE 17

SUSTAINABLE FORESTS, LLC
DB 789 PG 695
DB 698 PG 608
MB-7 PG 62
DB 583 PG 692
DB 494 PG 163
MB-6 PG 50

MATCH LINE STA. 303+00 -L- SEE SHEET NO. 25

MATCH LINE STA. 316+00 -L- SEE SHEET NO. 27



NOTES: SEE SHEET NO. 65 FOR -L- PROFILE.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

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5/28/99

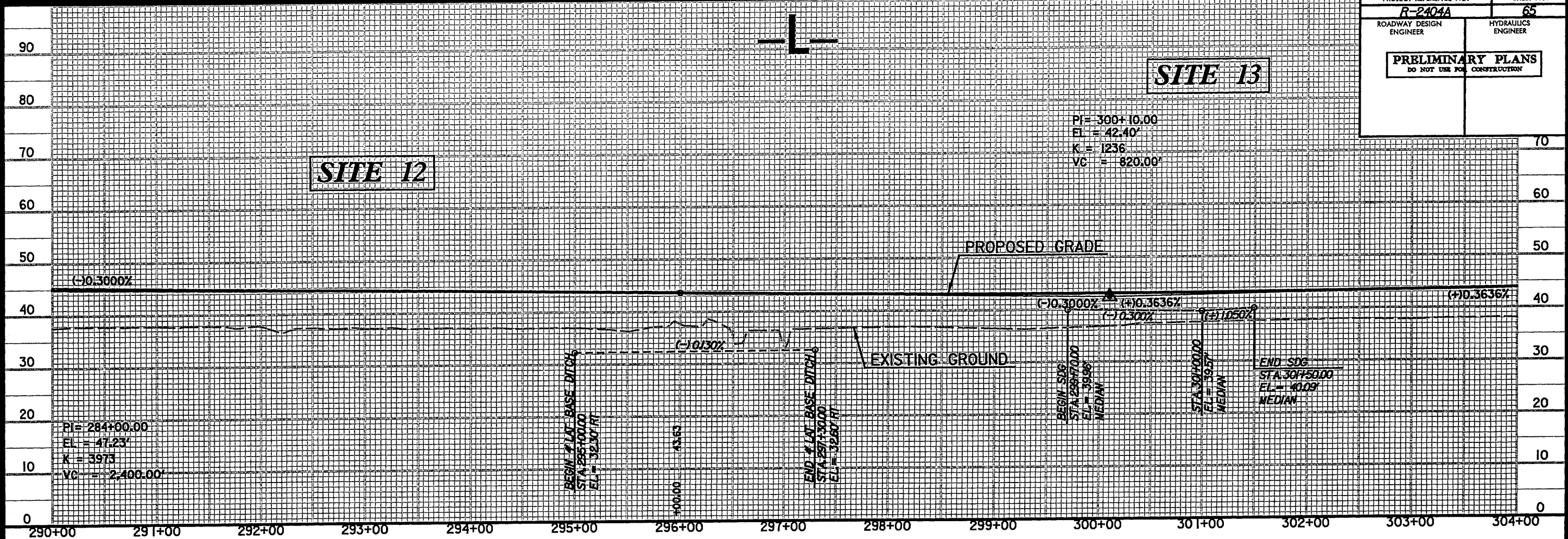
PROJECT REFERENCE NO. R-2404A	SHEET NO. 65
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

SITE 13

SITE 12

PI = 300+10.00
 EL = 42.40'
 K = 1236
 VC = 820.00'

PI = 284+00.00
 EL = 47.23'
 K = 3973
 VC = 2,400.00'



PLAN SUMMARY DATA
310+00 -L-

DRAINAGE AREA	3.57 AC
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	11.00 CFS
DESIGN HW. ELEVATION	38.66 FT.
Q100 DISCHARGE	11.00 CFS
Q100 HW. ELEVATION	38.66 FT.
OVERTOPPING FREQUENCY	500+ YR.
OVERTOPPING DISCHARGE	90 CFS
OVERTOPPING ELEVATION	45.50 FT.

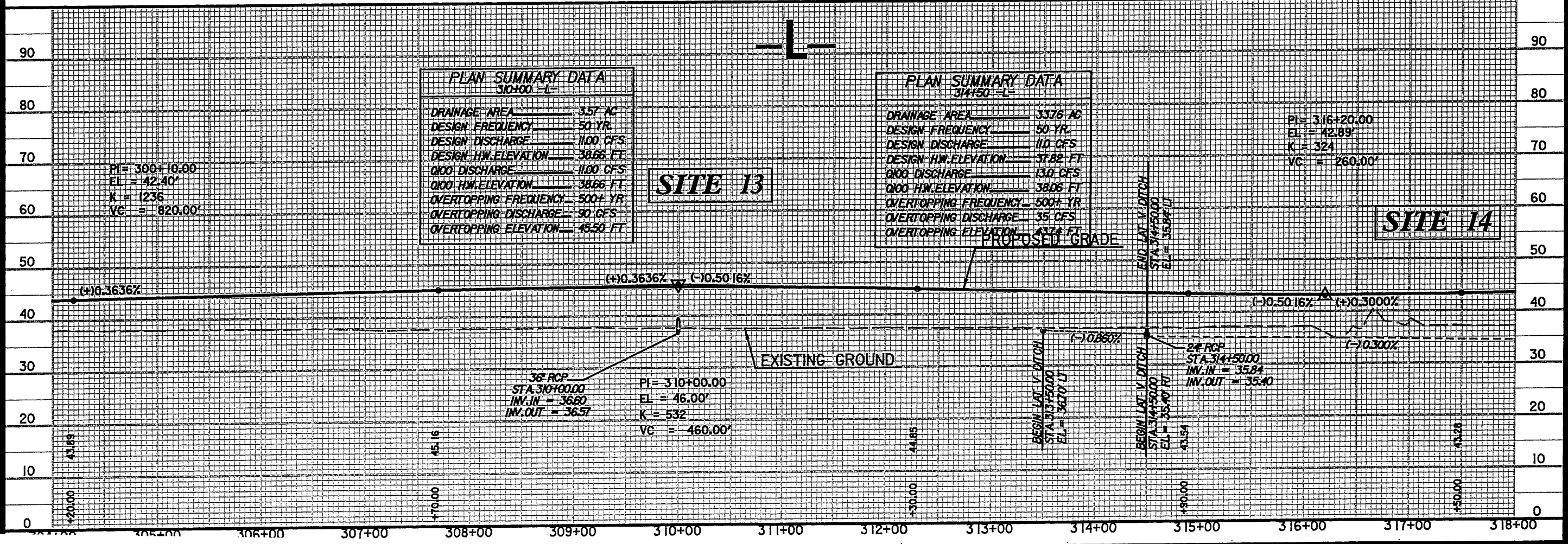
PLAN SUMMARY DATA
314+50 -L-

DRAINAGE AREA	3.376 AC
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	11.0 CFS
DESIGN HW. ELEVATION	37.82 FT.
Q100 DISCHARGE	13.0 CFS
Q100 HW. ELEVATION	38.06 FT.
OVERTOPPING FREQUENCY	500+ YR.
OVERTOPPING DISCHARGE	35 CFS
OVERTOPPING ELEVATION	43.74 FT.

PI = 316+20.00
 EL = 42.89'
 K = 324
 VC = 260.00'

SITE 13

SITE 14



36" RCP
 STA. 310+00.00
 INV. IN = 36.60
 INV. OUT = 36.57

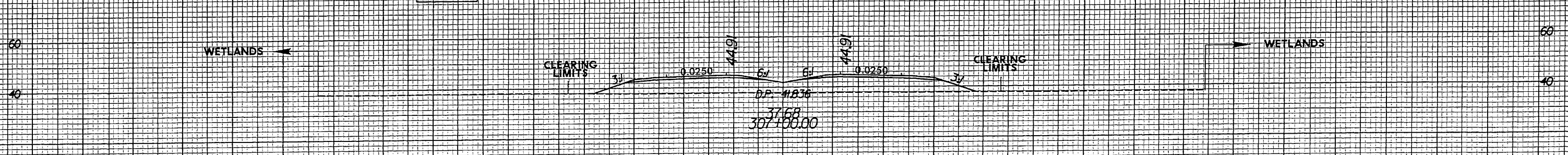
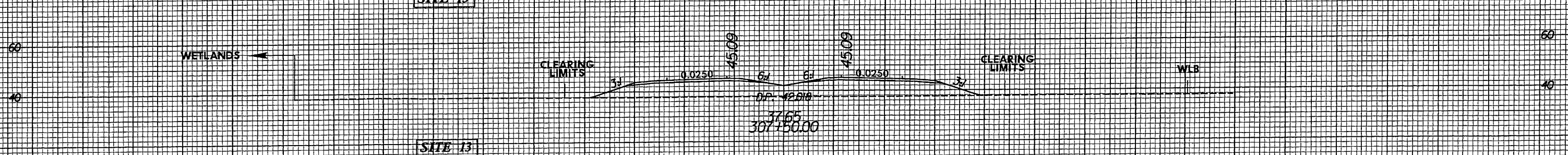
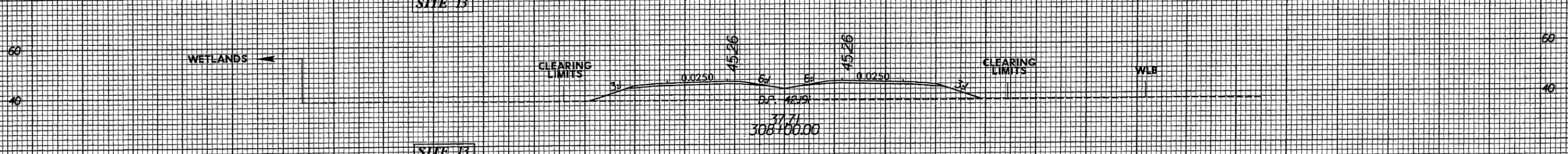
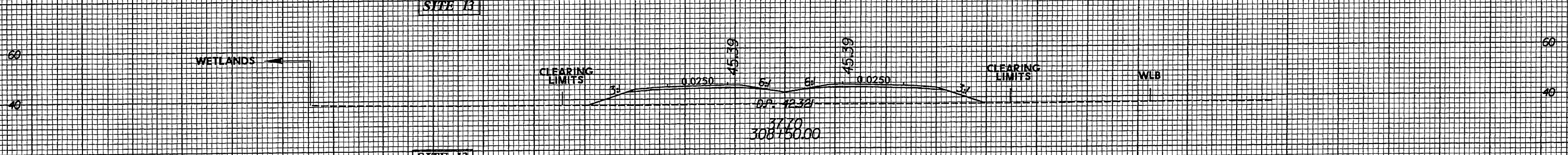
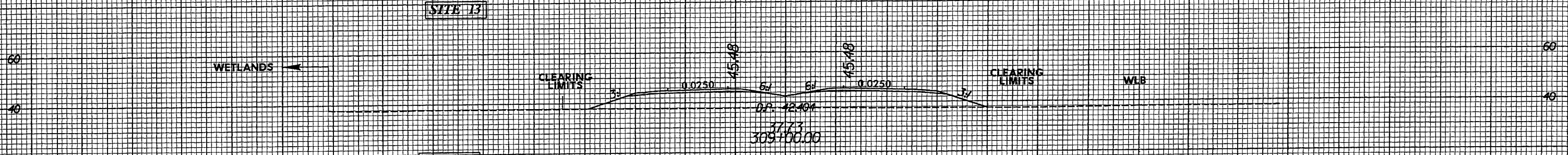
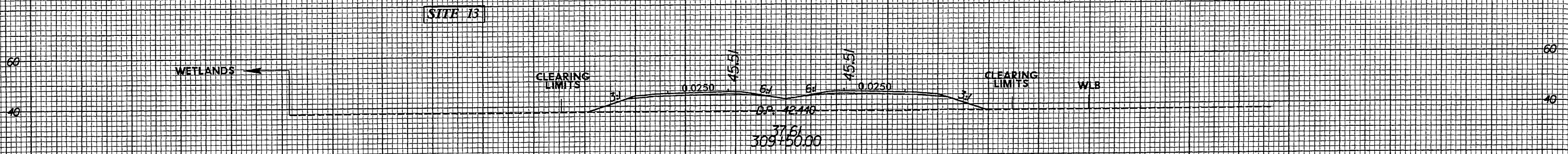
PI = 310+00.00
 EL = 46.00'
 K = 532
 VC = 460.00'

24" RCP
 STA. 314+50.00
 INV. IN = 35.84
 INV. OUT = 35.40

2005

8/23/99



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




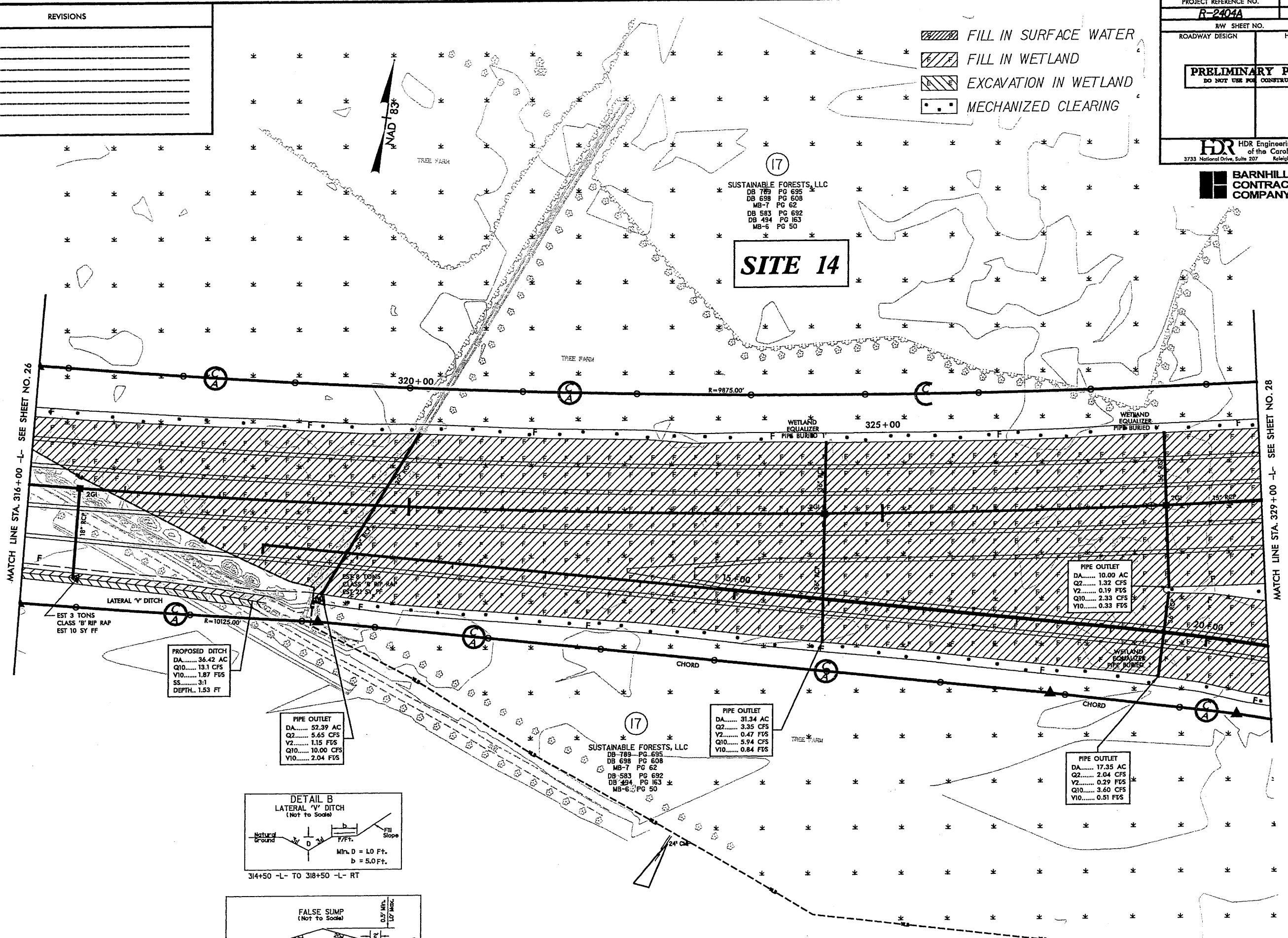
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REVISIONS

PROJECT REFERENCE NO. R-2404A	SHEET NO. 27
RW SHEET NO.	
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	
 BARNHILL CONTRACTING COMPANY	

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING



SITE 14

SUSTAINABLE FORESTS, LLC
DB 789 PG 695
DB 698 PG 608
MB-7 PG 62
DB 583 PG 692
DB 494 PG 163
MB-6 PG 50

MATCH LINE STA. 316+00 -L- SEE SHEET NO. 26

MATCH LINE STA. 329+00 -L- SEE SHEET NO. 28

LATERAL 'V' DITCH
EST 3 TONS CLASS 'B' RIP RAP EST 10 SY FF

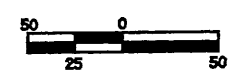
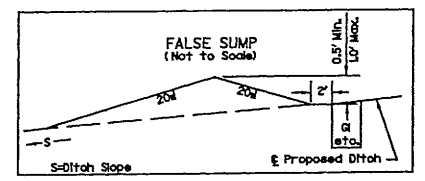
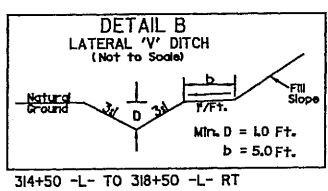
PROPOSED DITCH
DA..... 36.42 AC
Q2..... 13.1 CFS
V2..... 1.87 FVS
SS..... 3:1
DEPTH.. 1.53 FT

PIPE OUTLET
DA..... 52.39 AC
Q2..... 5.65 CFS
V2..... 1.15 FVS
Q10..... 10.00 CFS
V10..... 2.04 FVS

PIPE OUTLET
DA..... 31.34 AC
Q2..... 3.35 CFS
V2..... 0.47 FVS
Q10..... 5.94 CFS
V10..... 0.84 FVS

PIPE OUTLET
DA..... 10.00 AC
Q2..... 1.32 CFS
V2..... 0.19 FVS
Q10..... 2.33 CFS
V10..... 0.33 FVS

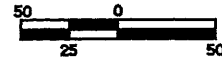
PIPE OUTLET
DA..... 17.35 AC
Q2..... 2.04 CFS
V2..... 0.29 FVS
Q10..... 3.60 CFS
V10..... 0.51 FVS



NOTES: SEE SHEET NO. 65-66 FOR -L- PROFILE.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

1/2005 Barnhill Contracting Company, Sheets R-2404A, R-2404B, R-2404C, R-2404D, R-2404E, R-2404F, R-2404G, R-2404H, R-2404I, R-2404J, R-2404K, R-2404L, R-2404M, R-2404N, R-2404O, R-2404P, R-2404Q, R-2404R, R-2404S, R-2404T, R-2404U, R-2404V, R-2404W, R-2404X, R-2404Y, R-2404Z

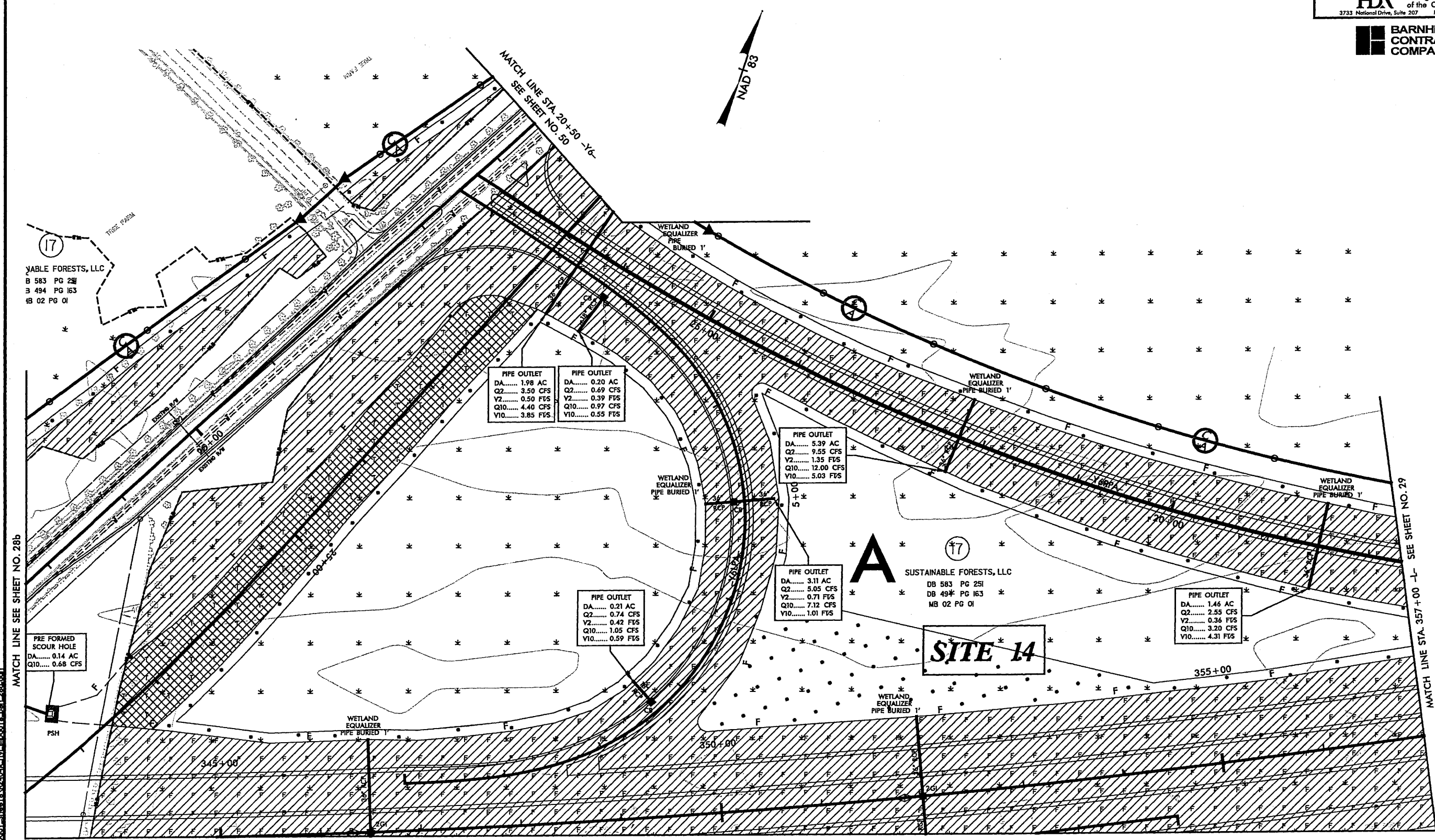
NOTES: SEE SHEETS NO. 66-67 FOR -L- PROFILE.
 SEE SHEET NO. 84 FOR -Y6- PROFILE.
 SEE SHEET NO. 86 FOR -Y6RPA- PROFILE.
 SEE SHEET NO. 87 FOR -Y6RPC- PROFILE.
 SEE SHEET NO. 88 FOR -Y6RPD- PROFILE.
 SEE SHEET NO. 89 FOR -Y6LPA- PROFILE.
 SEE SHEET NO. 2-J FOR STRUCTURE DETAIL.
 ALL CSP TO BE ROD AND LUG CONNECTED.
 FIRST 5' OF MECHANIZED CLEARING FROM SLOPE
 STAKE LINE MAY BE USED FOR INSTALLATION
 OF SEDIMENT & EROSION CONTROL MEASURES.



- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING
- TEMPORARY FILL IN WETLAND

PROJECT REFERENCE NO. R-2404A	SHEET NO. 28a
RW SHEET NO.	
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	

BARNHILL CONTRACTING COMPANY



YABLE FORESTS, LLC
 B 583 PG 25I
 B 494 PG 163
 MB 02 PG 01

PIPE OUTLET
 DA..... 1.98 AC
 Q2..... 3.50 CFS
 Y2..... 0.50 FVS
 Q10..... 4.40 CFS
 V10..... 3.85 FVS

PIPE OUTLET
 DA..... 0.20 AC
 Q2..... 0.69 CFS
 Y2..... 0.39 FVS
 Q10..... 0.97 CFS
 V10..... 0.55 FVS

PIPE OUTLET
 DA..... 5.39 AC
 Q2..... 9.55 CFS
 Y2..... 1.35 FVS
 Q10..... 12.00 CFS
 V10..... 5.03 FVS

PIPE OUTLET
 DA..... 0.21 AC
 Q2..... 0.74 CFS
 Y2..... 0.42 FVS
 Q10..... 1.05 CFS
 V10..... 0.59 FVS

PIPE OUTLET
 DA..... 3.11 AC
 Q2..... 5.05 CFS
 Y2..... 0.71 FVS
 Q10..... 7.12 CFS
 V10..... 1.01 FVS

PIPE OUTLET
 DA..... 1.46 AC
 Q2..... 2.55 CFS
 Y2..... 0.36 FVS
 Q10..... 3.20 CFS
 V10..... 4.31 FVS

PRE FORMED SCOUR HOLE
 DA..... 0.14 AC
 Q10..... 0.68 CFS

A SUSTAINABLE FORESTS, LLC
 DB 583 PG 25I
 DB 494 PG 163
 MB 02 PG 01


SITE 14

2005 11:00:33 PM I:\proj\2404\2404a_rwd_inpsort.plt_28a.dgn






MATCH LINE SEE SHEET NO. 28d

MATCH LINE SEE SHEET NO. 28b

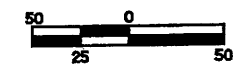
MATCH LINE STA. 357+00 -L- SEE SHEET NO. 29

PROJECT REFERENCE NO. R-2404A		SHEET NO. 28b	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612			

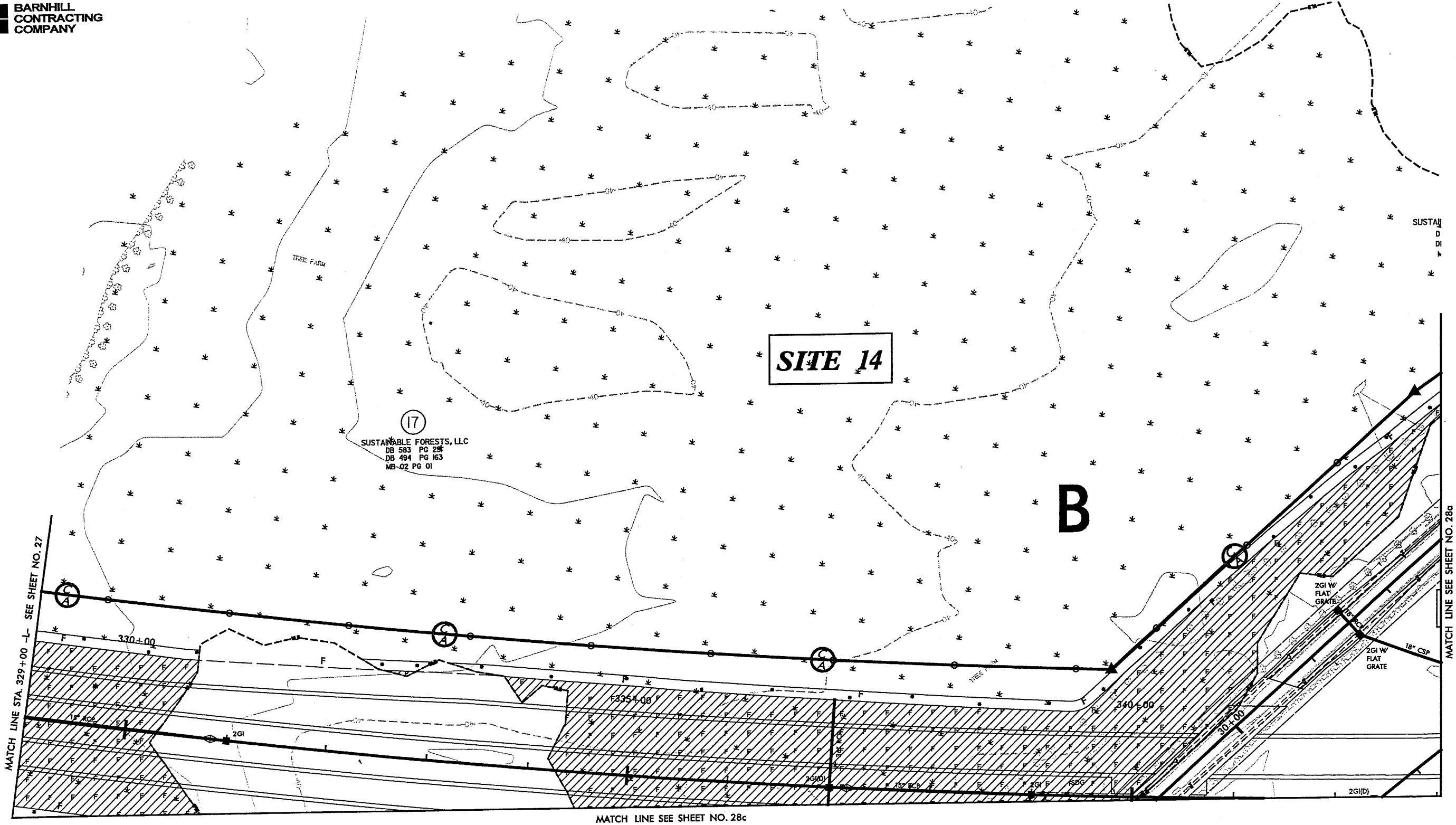
BARNHILL CONTRACTING COMPANY

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING
-  TEMPORARY FILL IN WETLAND

NAD 83



NOTES: SEE SHEETS NO. 66-67 FOR -L- PROFILE.
SEE SHEET NO. 84 FOR -Y6- PROFILE.
SEE SHEET NO. 86 FOR -Y6RPA- PROFILE.
SEE SHEET NO. 87 FOR -Y6RPC- PROFILE.
SEE SHEET NO. 88 FOR -Y6RPD- PROFILE.
SEE SHEET NO. 89 FOR -Y6LPA- PROFILE.
SEE SHEET NO. 2-J FOR STRUCTURE DETAIL.
ALL CSP TO BE ROD AND LUG CONNECTED.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.



24/2005
 Barnhill Contracting Company
 R-2404A.dwg
 28b.dwg

MATCH LINE SEE SHEET NO. 28b

MATCH LINE STA. 329+00 -L- SEE SHEET NO. 27

MATCH LINE SEE SHEET NO. 28c

SITE 14

17
SUSTAINABLE FORESTS, LLC
DB 583 PG 231
DB 494 PG 163
MB 02 PG 01

19
RAYMOND G. MIZELLE & SON
DB 676 PG 424*

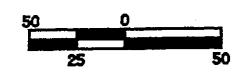
20
ARC, INC.
DB 666 PG 419



PROJECT REFERENCE NO. R-2404A	SHEET NO. 28c
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING
- TEMPORARY FILL IN WETLAND

NOTES: SEE SHEETS NO. 66-67 FOR -L- PROFILE.
 SEE SHEET NO. 84 FOR -Y6- PROFILE.
 SEE SHEET NO. 86 FOR -Y6RPA- PROFILE.
 SEE SHEET NO. 87 FOR -Y6RPC- PROFILE.
 SEE SHEET NO. 88 FOR -Y6RPD- PROFILE.
 SEE SHEET NO. 89 FOR -Y6LPA- PROFILE.
 SEE SHEET NO. 2-J FOR STRUCTURE DETAIL.
 ALL CSP TO BE ROD AND LUG CONNECTED.
 FIRST 5' OF MECHANIZED CLEARING FROM SLOPE
 STAKE LINE MAY BE USED FOR INSTALLATION
 OF SEDIMENT & EROSION CONTROL MEASURES.



PROPOSED DITCH
 DA..... 0.08 AC
 Q10..... 0.16 CFS
 V10..... 0.53 FVS
 SS..... 6:1
 DEPTH..... 0.22 FT
 24" W PLAT GRATE

PIPE OUTLET
 DA..... 3.74 AC
 Q2..... 6.47 CFS
 V2..... 0.92 FVS
 Q10..... 9.13 CFS
 V10..... 1.29 FVS
 WETLAND EQUALIZER
 PIPE BURIED 1'

PRE FORMED SCOUR HOLE
 DA..... 0.27 AC
 Q10..... 1.35 CFS

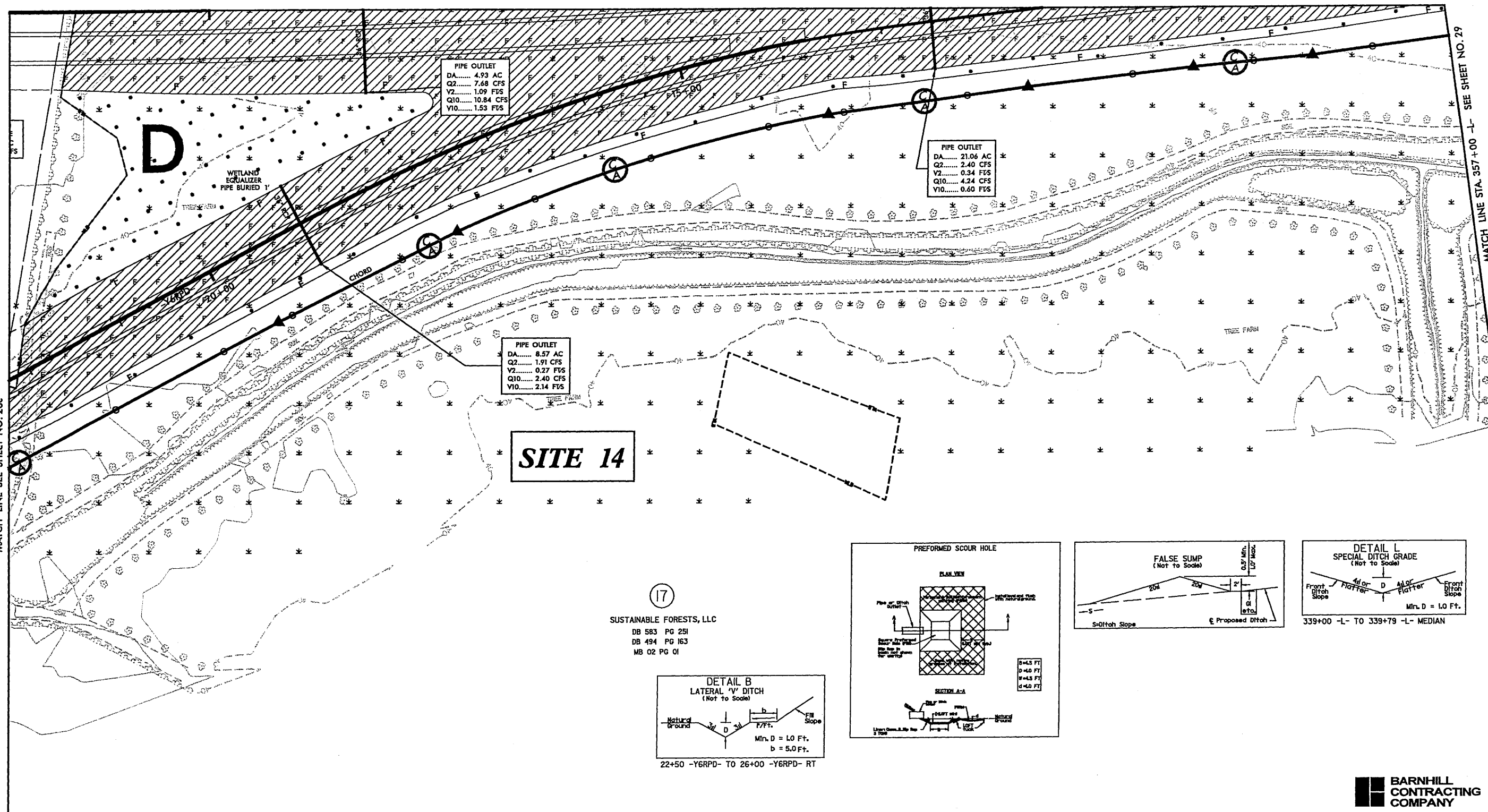
PROPOSED DITCH
 DA..... 3.76 AC
 Q10..... 8.27 CFS
 V10..... 1.67 FVS
 SS..... 3:1
 DEPTH..... 1.28 FT

PROPOSED DITCH
 DA..... 1.63 AC
 Q10..... 3.59 CFS
 V10..... 1.36 FVS
 SS..... 3:1
 DEPTH..... 0.94 FT

EST 3 TONS
 CLASS 'B' RIP RA
 EST 11 SY FF

2005 11:42 PM J:\proj\2404\shdw\2404a.dwg, h:\project\2404\shdw\2404a.dwg

MATCH LINE SEE SHEET NO. 28a



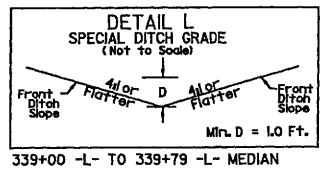
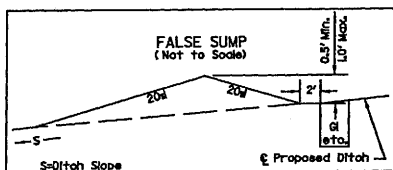
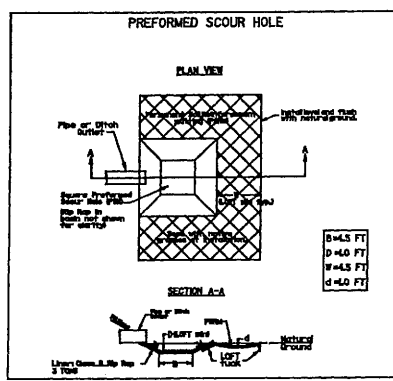
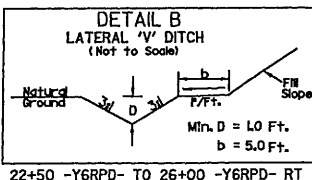
PIPE OUTLET
DA..... 4.93 AC
Q2..... 7.68 CFS
V2..... 1.09 FVS
Q10..... 10.84 CFS
V10..... 1.53 FVS

PIPE OUTLET
DA..... 21.06 AC
Q2..... 2.40 CFS
V2..... 0.34 FVS
Q10..... 4.24 CFS
V10..... 0.60 FVS

PIPE OUTLET
DA..... 8.57 AC
Q2..... 1.91 CFS
V2..... 0.27 FVS
Q10..... 2.40 CFS
V10..... 2.14 FVS

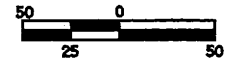
SITE 14

17
SUSTAINABLE FORESTS, LLC
DB 583 PG 251
DB 494 PG 163
MB 02 PG 01



205
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 12:40:41
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NOTES: SEE SHEETS NO. 66-67 FOR -L- PROFILE.
SEE SHEET NO. 84 FOR -Y6- PROFILE.
SEE SHEET NO. 86 FOR -Y6RPA- PROFILE.
SEE SHEET NO. 87 FOR -Y6RPC- PROFILE.
SEE SHEET NO. 88 FOR -Y6RPD- PROFILE.
SEE SHEET NO. 89 FOR -Y6LPA- PROFILE.
SEE SHEET NO. 2-J FOR STRUCTURE DETAIL.
ALL CSP TO BE ROD AND LUG CONNECTED.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE
STAKE LINE MAY BE USED FOR INSTALLATION
OF SEDIMENT & EROSION CONTROL MEASURES.



- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING
- TEMPORARY FILL IN WETLAND

BARNHILL CONTRACTING COMPANY

PROJECT REFERENCE NO. R-2404A	SHEET NO. 28d
ROADWAY DESIGN	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

HDR HDR Engineering, Inc.
of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612

REVISIONS

PROJECT REFERENCE NO. R-2404A	SHEET NO. 29
RW SHEET NO.	
ROADWAY DESIGN	HYDRAULICS ENGINEER
<p align="center">PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION</p>	
<p align="right">HDR HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612</p>	

BARNHILL CONTRACTING COMPANY

SITE 14

17

SUSTAINABLE FORESTS, LLC
DB 583 PG 25I
DB 494 PG 163
MB 02 PG 0I

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING

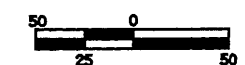
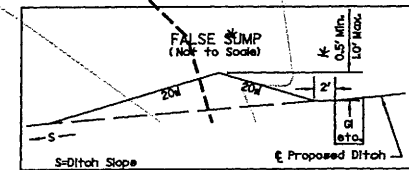
PIPE OUTLET
DA..... 157.25 AC
Q2..... 13.54 CFS
V2..... 1.91 FTS
Q10..... 23.96 CFS
V10..... 3.39 FTS

21
WANDA JENKINS, LLC

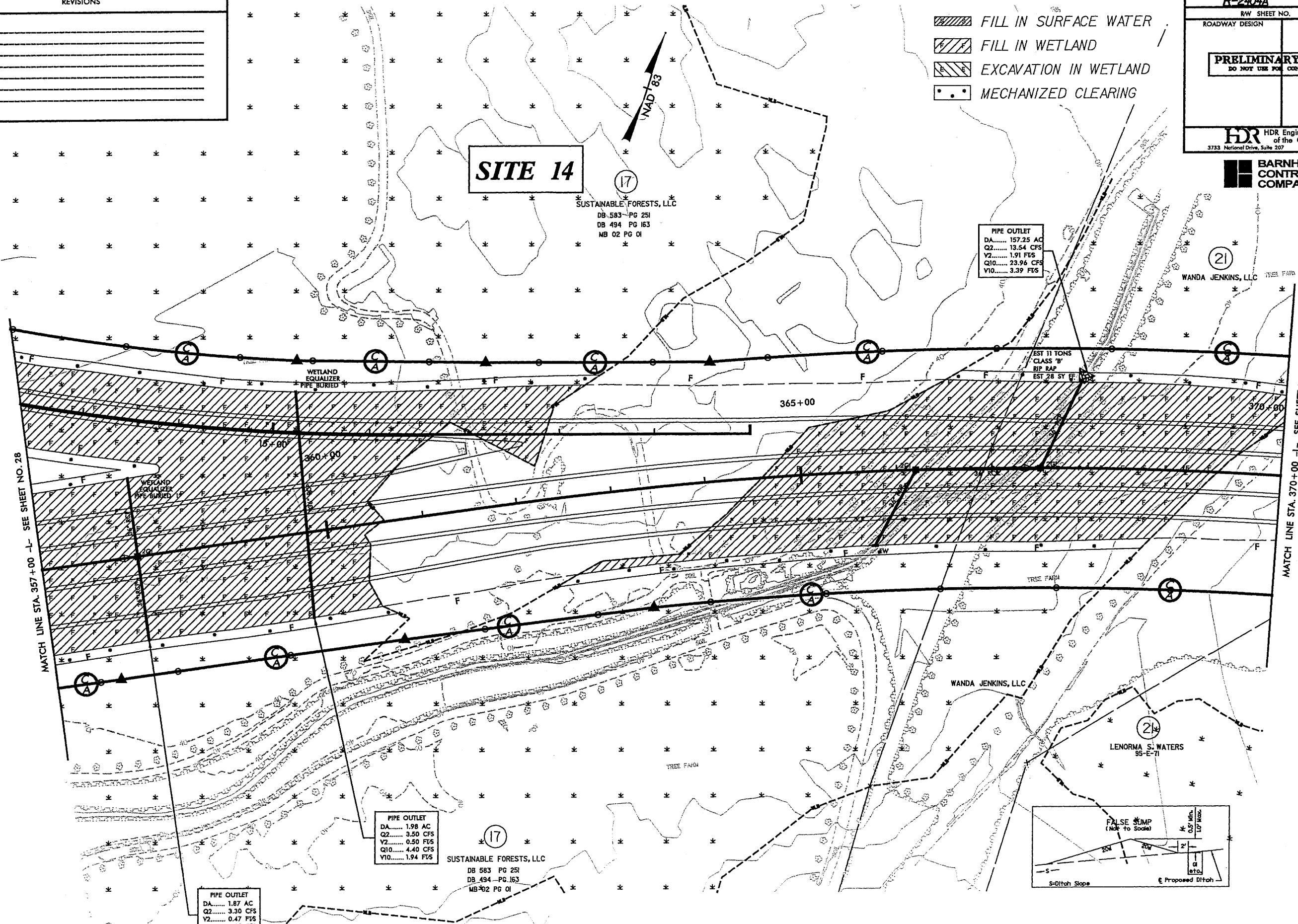
PIPE OUTLET
DA..... 1.98 AC
Q2..... 3.50 CFS
V2..... 0.50 FTS
Q10..... 4.40 CFS
V10..... 1.94 FTS

17
SUSTAINABLE FORESTS, LLC
DB 583 PG 25I
DB 494 PG 163
MB 02 PG 0I

PIPE OUTLET
DA..... 1.87 AC
Q2..... 3.30 CFS
V2..... 0.47 FTS
Q10..... 4.66 CFS
V10..... 0.66 FTS







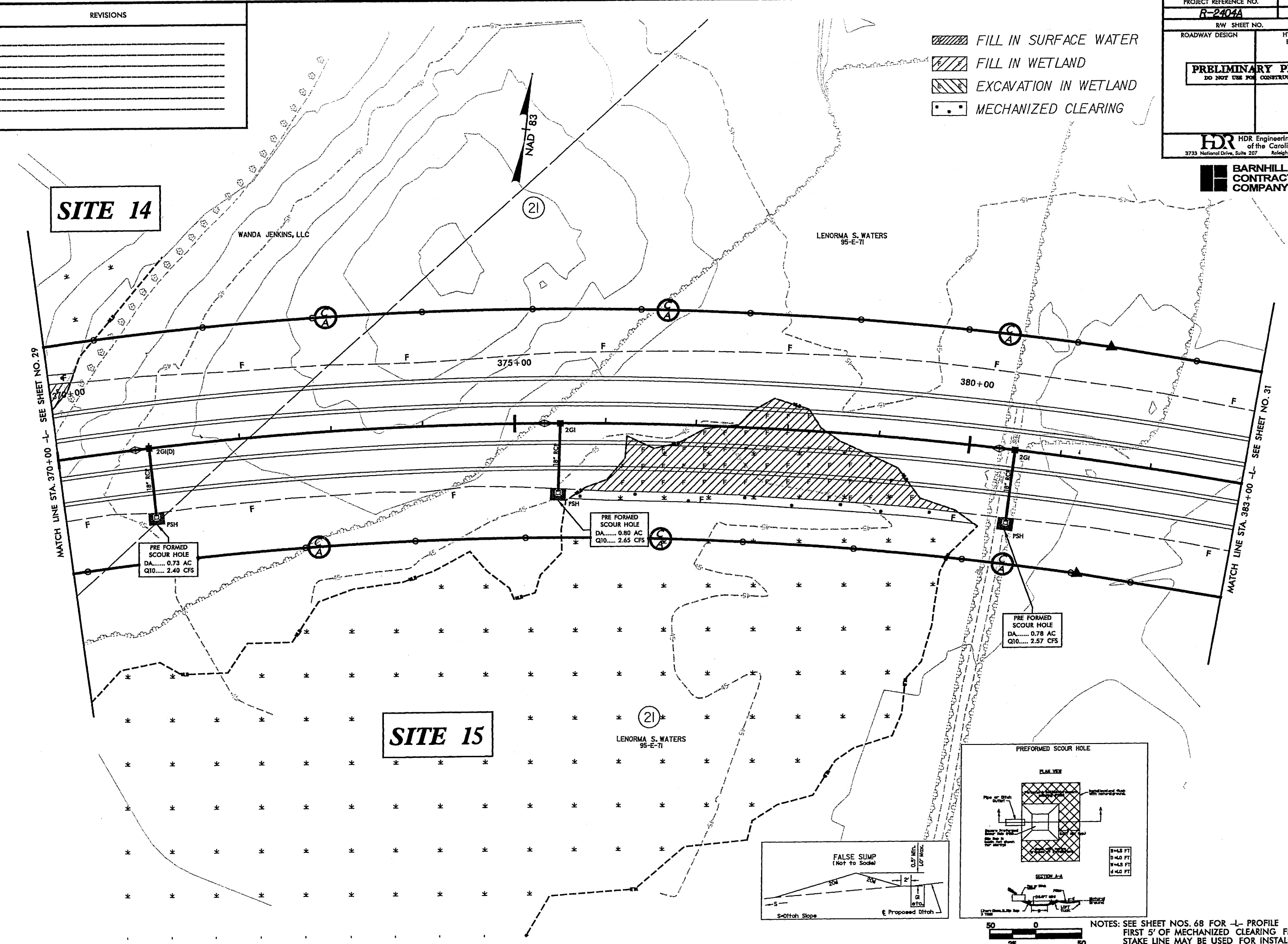
NOTES: SEE SHEET NO. 67 FOR -L- PROFILE.
SEE SHEET NO. 86 FOR -YRPA- PROFILE.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE
STAKE LINE MAY BE USED FOR INSTALLATION
OF SEDIMENT & EROSION CONTROL MEASURES.



P:\66371 AN
 2006 07 13 09:31:13 R-2404A-bv-jmsocra.dwg 29.dgn

REVISIONS

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING



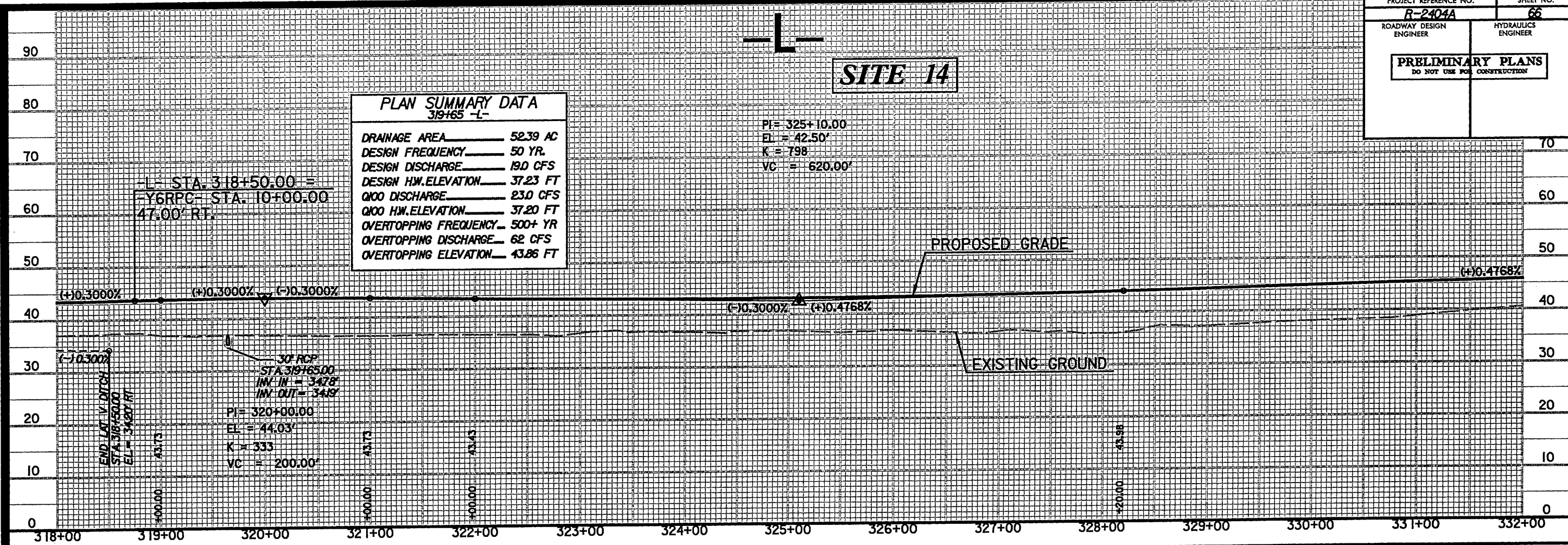
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SITE 14

PLAN SUMMARY DATA 319+65 -L-	
DRAINAGE AREA	52.39 AC
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	19.0 CFS
DESIGN HW. ELEVATION	37.23 FT
Q100 DISCHARGE	23.0 CFS
Q100 HW. ELEVATION	37.20 FT
OVERTOPPING FREQUENCY	500+ YR
OVERTOPPING DISCHARGE	62 CFS
OVERTOPPING ELEVATION	43.86 FT

PI = 325+10.00
 EL = 42.50'
 K = 798
 VC = 620.00'

L- STA. 318+50.00 =
 -Y6RPC- STA. 10+00.00
 47.00' RT.

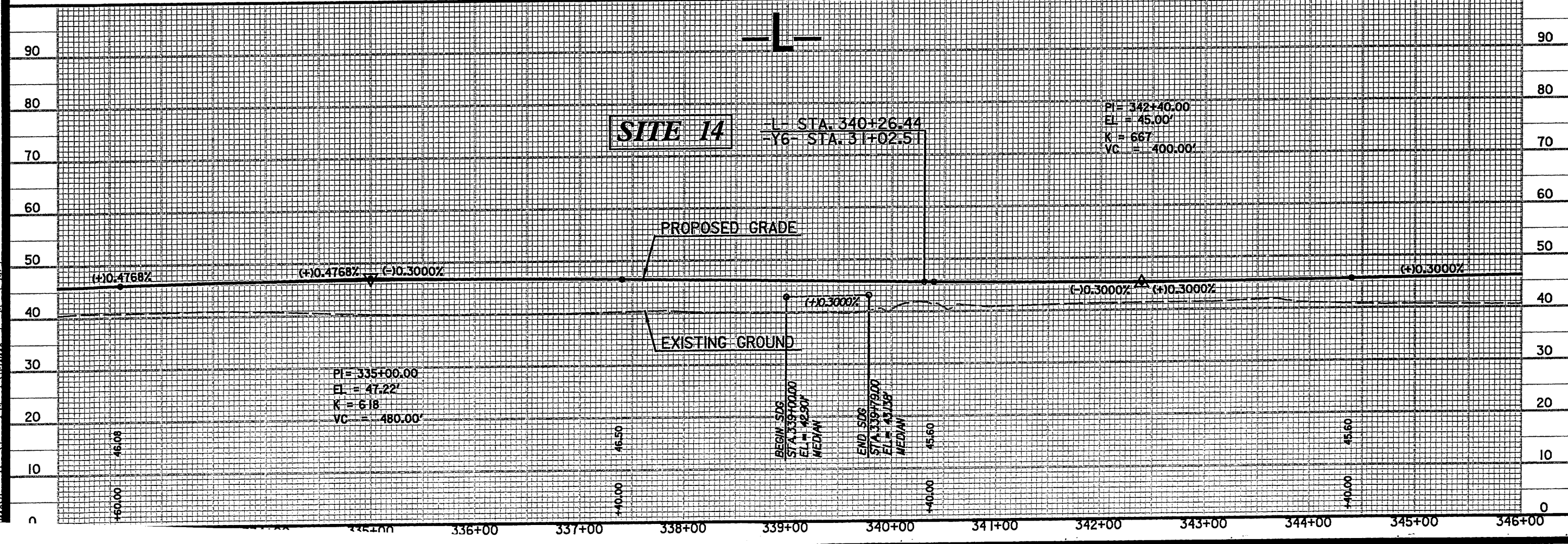


SITE 14

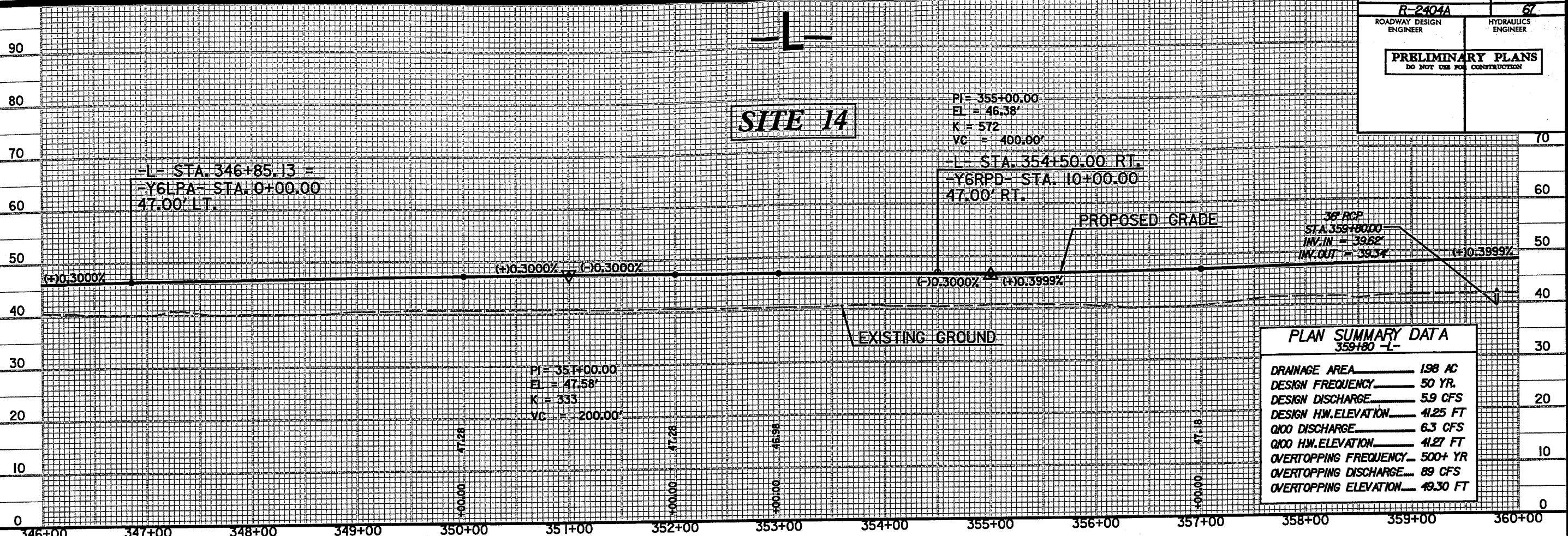
L- STA. 340+26.44
 -Y6- STA. 31+02.51

PI = 342+40.00
 EL = 45.00'
 K = 667
 VC = 400.00'

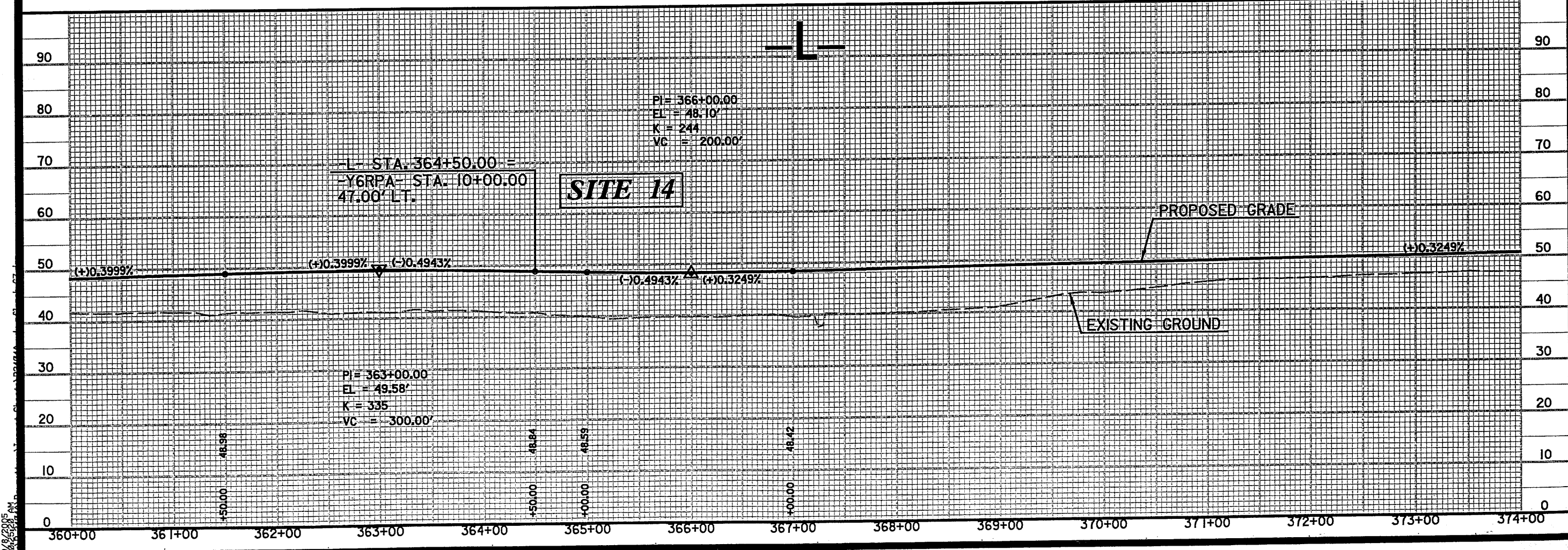
PI = 335+00.00
 EL = 47.22'
 K = 618
 VC = 480.00'



5/28/99

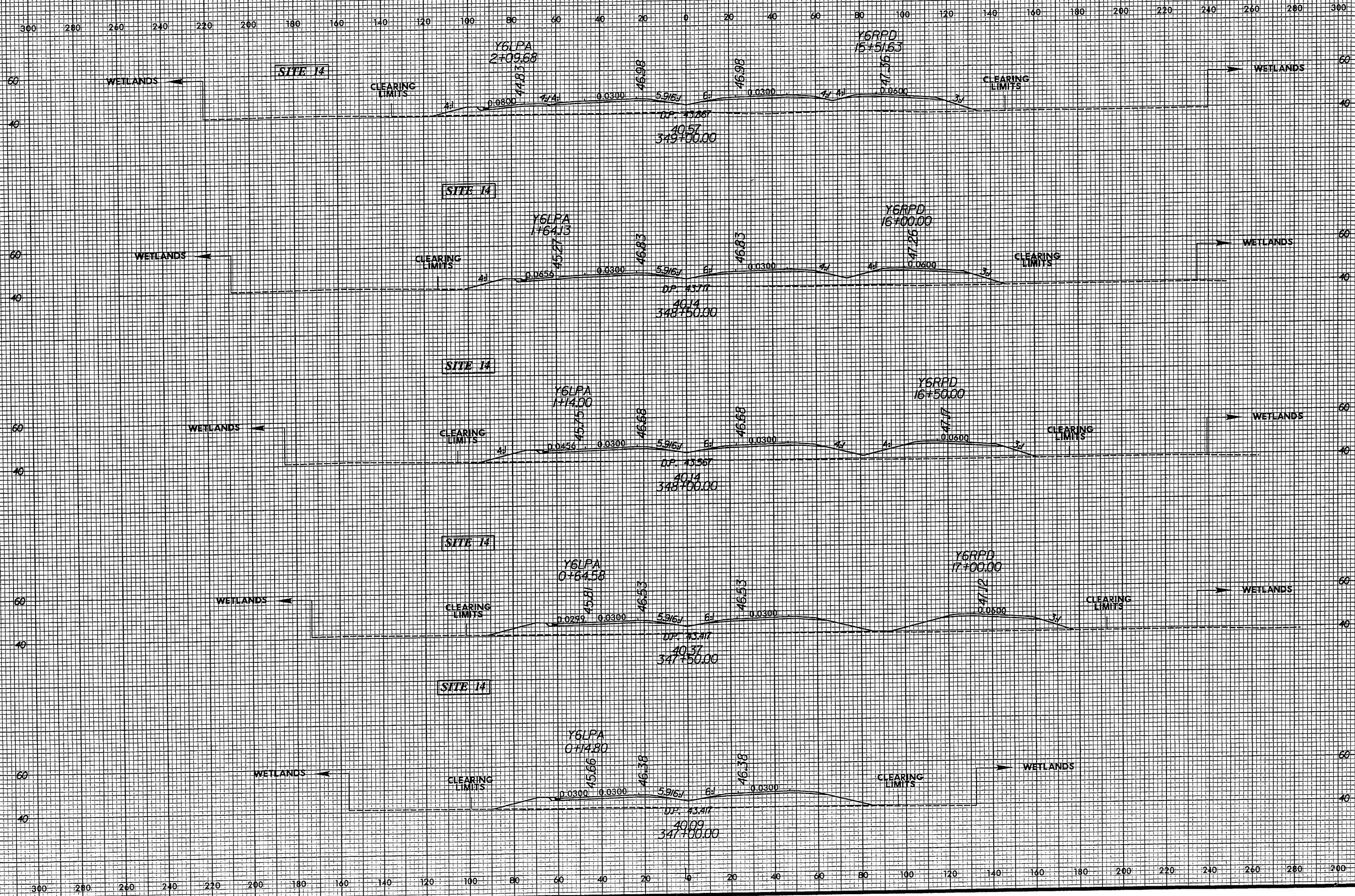


PLAN SUMMARY DATA	
359+80 -L-	
DRAINAGE AREA	198 AC
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	5.9 CFS
DESIGN HW. ELEVATION	41.25 FT
Q100 DISCHARGE	6.3 CFS
Q100 HW. ELEVATION	41.27 FT
OVERTOPPING FREQUENCY	500+ YR
OVERTOPPING DISCHARGE	89 CFS
OVERTOPPING ELEVATION	49.30 FT



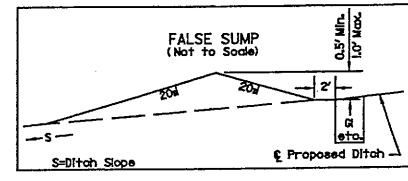
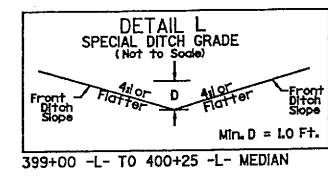
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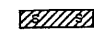

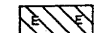

8/23/99

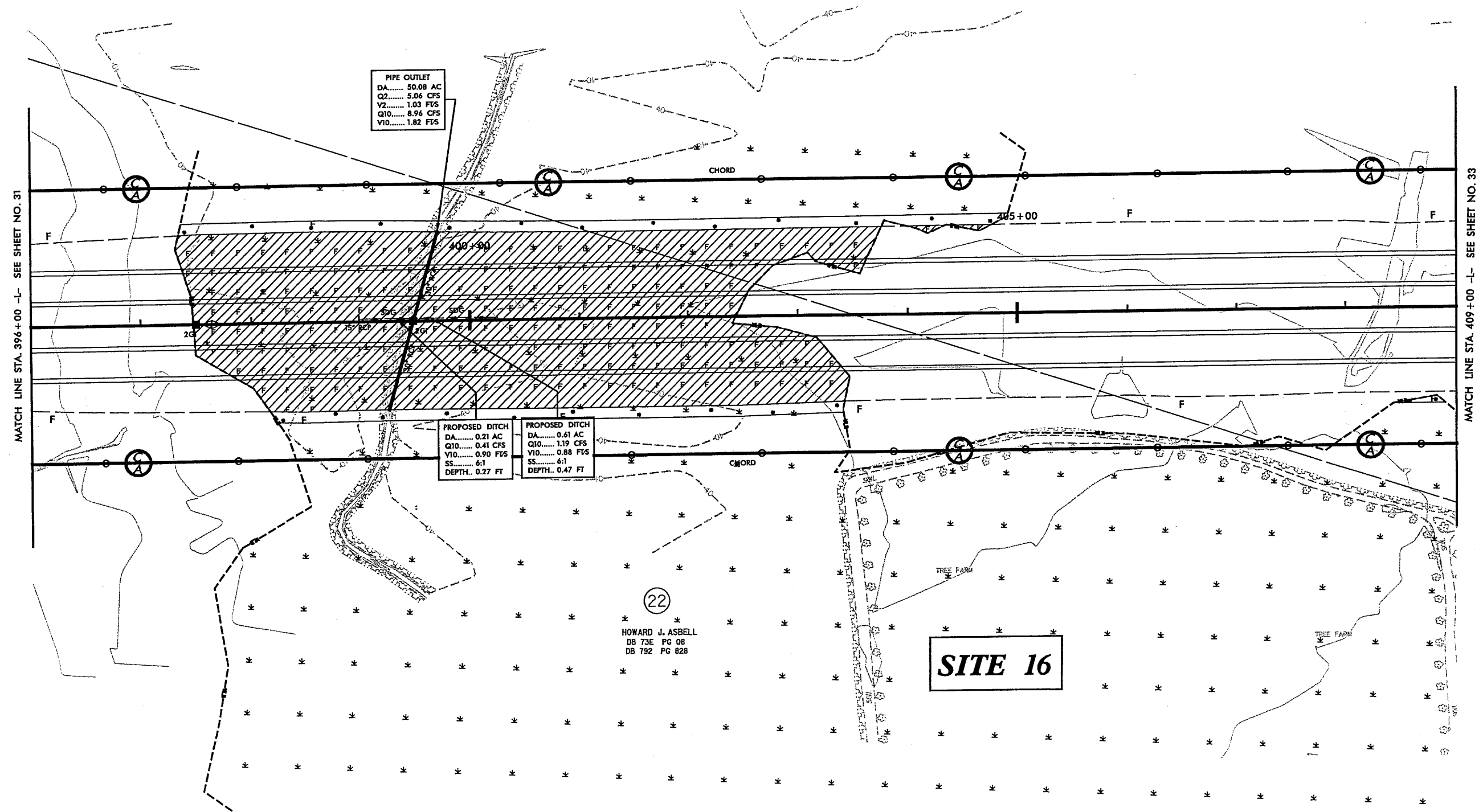


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REVISIONS

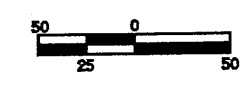


-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING



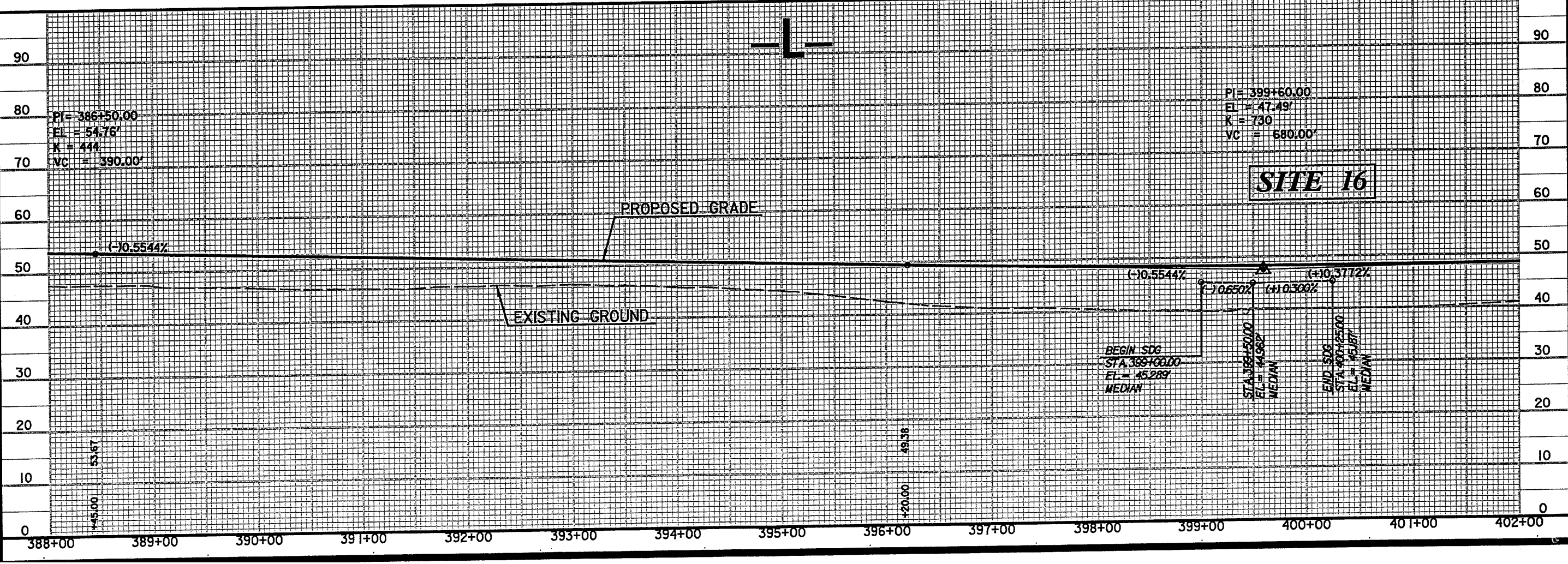
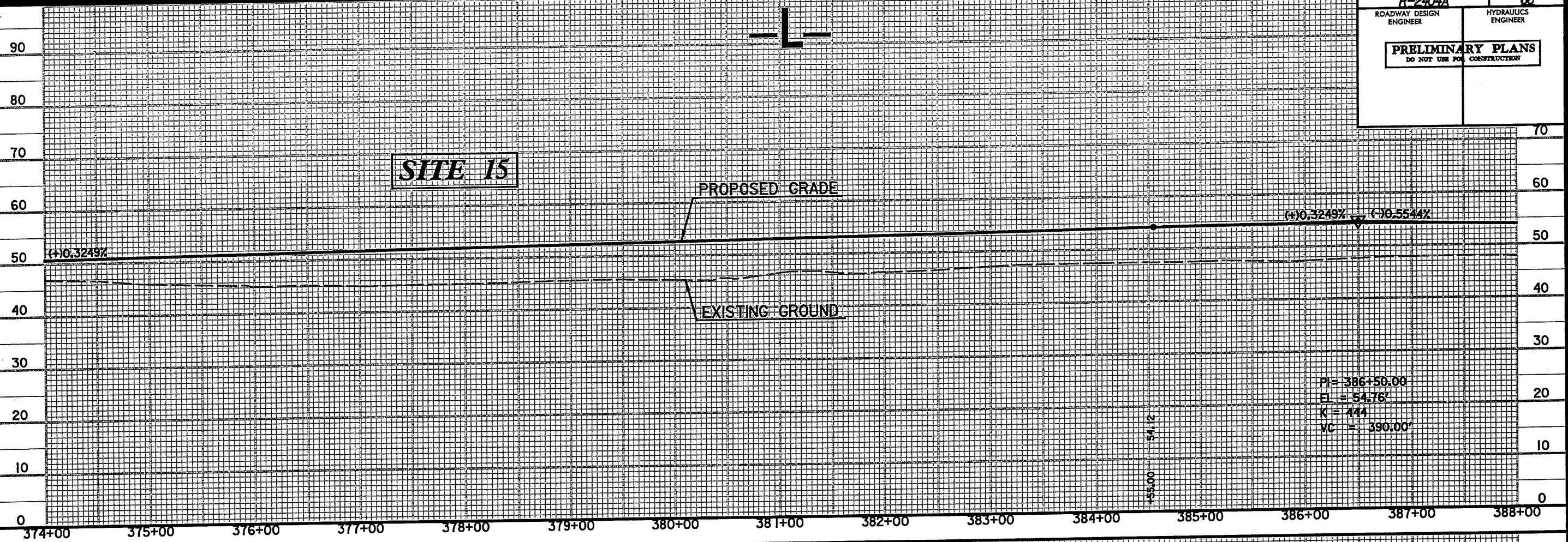
(22)
HOWARD J. ASBELL
DB 73E PG 08
DB 792 PG 028

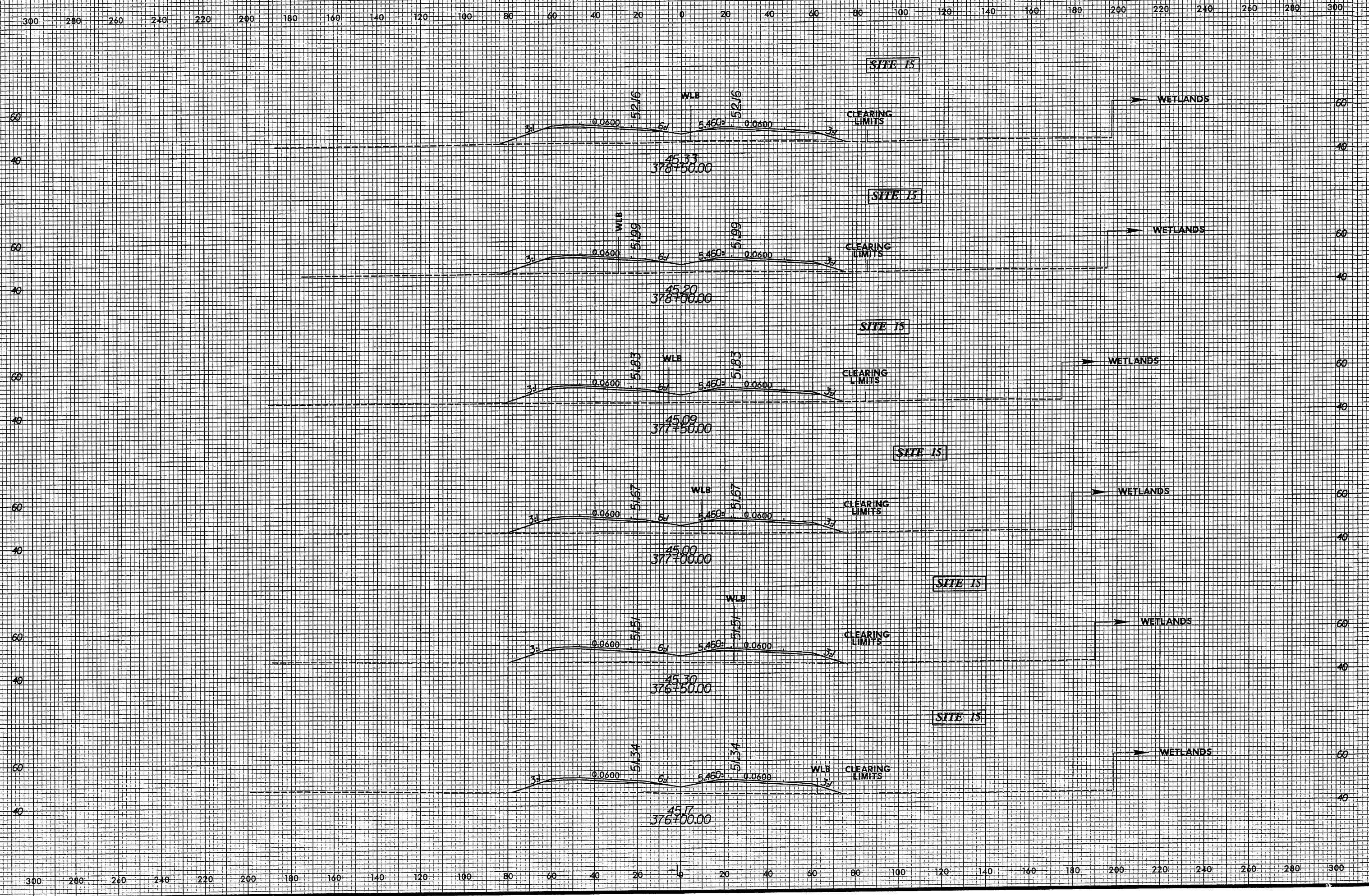
SITE 16



NOTES: SEE SHEET NOS. 68-69 FOR -L- PROFILE
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE
STAKE LINE MAY BE USED FOR INSTALLATION
OF SEDIMENT & EROSION CONTROL MEASURES.

9/24/2009 1:30 PM
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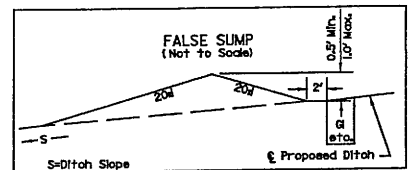




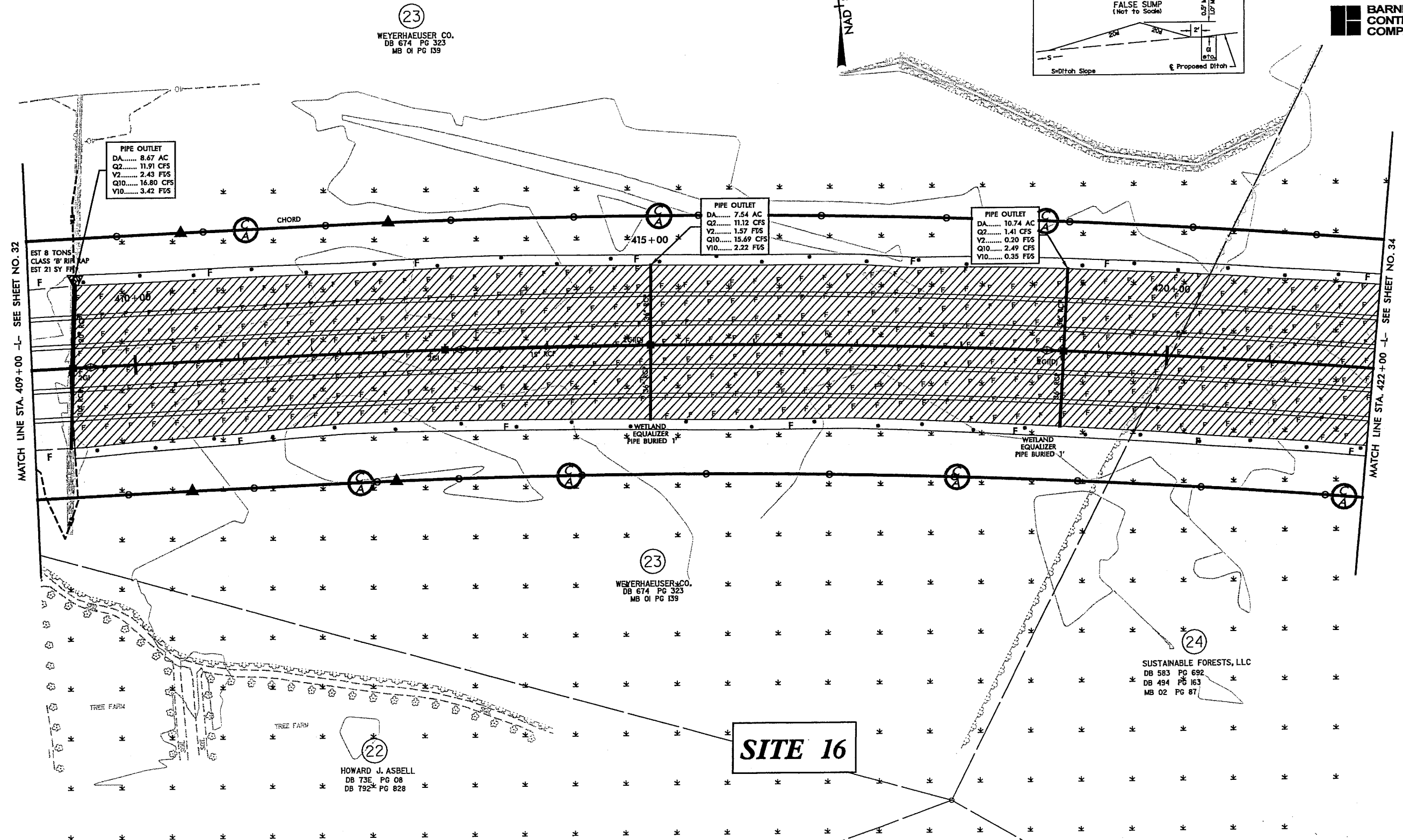
PROJECT REFERENCE NO. R-2404A	SHEET NO. 33
RW SHEET NO.	
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	

BARNHILL CONTRACTING COMPANY

- FILL IN SURFACE WATER
- FILL IN WETLAND
- EXCAVATION IN WETLAND
- MECHANIZED CLEARING



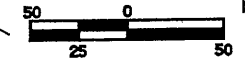
REVISIONS



NAD 83

8/24/2005 14:05 PM C:\Barnhill\1104\1104001\1104001.dwg J:\mccarty\ash-33.dwg

SITE 16



NOTES: SEE SHEET NO. 69 FOR -L- PROFILE
 FIRST 5' OF MECHANIZED CLEARING FROM SLOPE
 STAKE LINE MAY BE USED FOR INSTALLATION
 OF SEDIMENT & EROSION CONTROL MEASURES.

MATCH LINE STA. 409+00 -L- SEE SHEET NO. 32

MATCH LINE STA. 422+00 -L- SEE SHEET NO. 34

(23)
 WEYERHAEUSER CO.
 DB 674 PG 323
 MB 01 PG 139





(23)
 WEYERHAEUSER CO.
 DB 674 PG 323
 MB 01 PG 139

(24)
 SUSTAINABLE FORESTS, LLC
 DB 583 PG 692
 DB 494 PG 163
 MB 02 PG 87

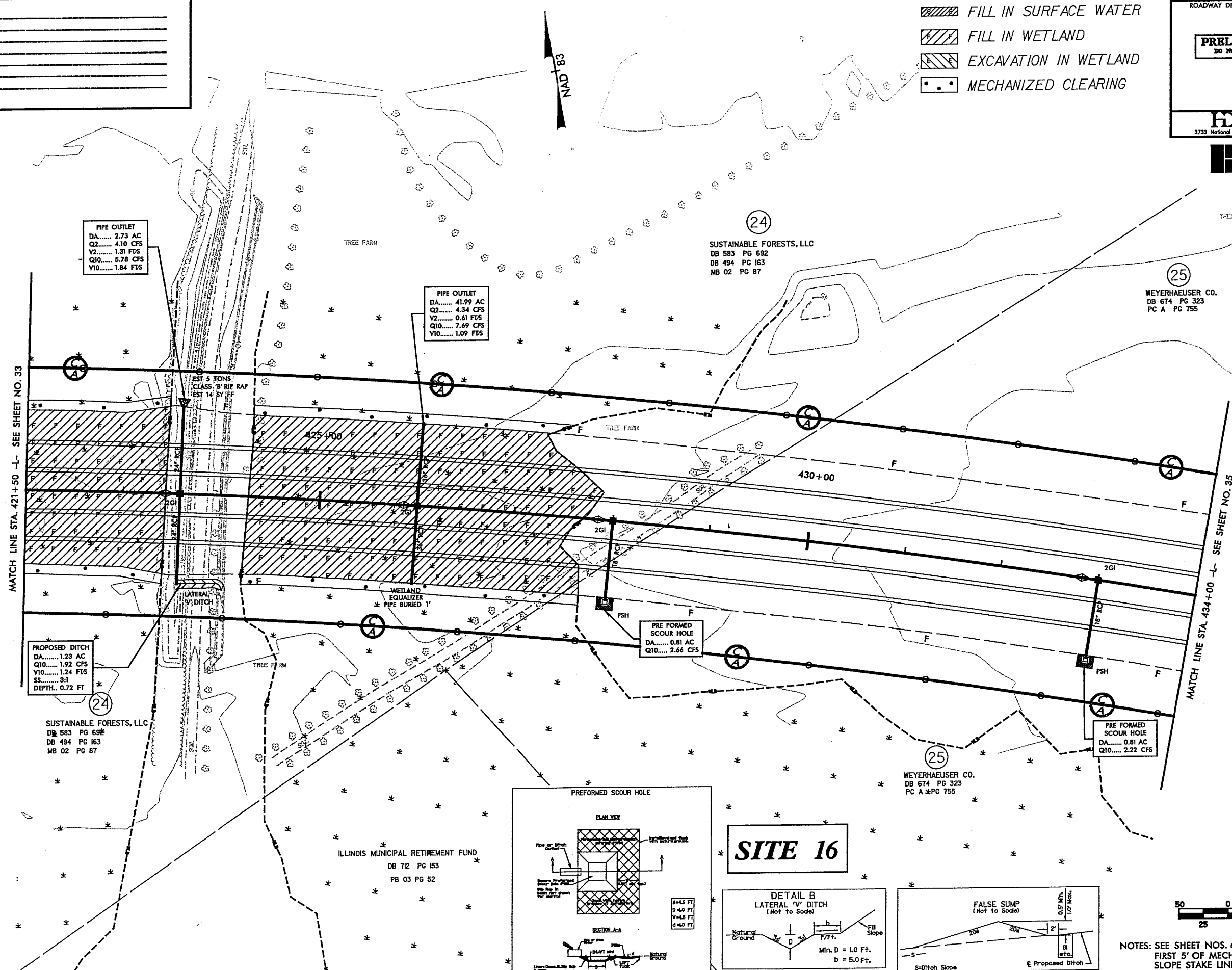
(22)
 HOWARD J. ASBELL
 DB 73E PG 08
 DB 792 PG 828

ILLINOIS MUNICIPAL RETIREMENT FUND
 DB 712 PG 153
 PB 03 PG 52

BARNHILL CONTRACTING COMPANY

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING

REVISIONS



PIPE OUTLET
DA..... 2.73 AC
Q2..... 4.10 CFS
V2..... 1.31 FTS
Q10..... 5.78 CFS
V10..... 1.84 FTS

PIPE OUTLET
DA..... 41.99 AC
Q2..... 4.34 CFS
V2..... 0.61 FTS
Q10..... 7.69 CFS
V10..... 1.09 FTS

PROPOSED DITCH
DA..... 1.23 AC
Q10..... 1.92 CFS
V10..... 1.24 FTS
SS..... 3:1
DEPTH..... 0.72 FT

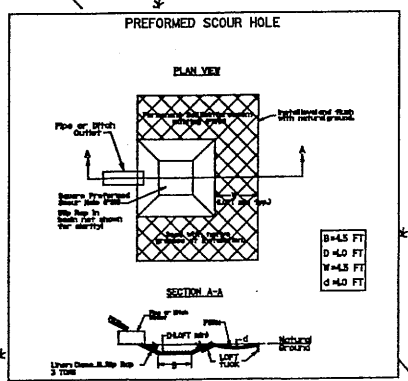
PRE FORMED SCOUR HOLE
DA..... 0.81 AC
Q10..... 2.66 CFS

PRE FORMED SCOUR HOLE
DA..... 0.81 AC
Q10..... 2.22 CFS

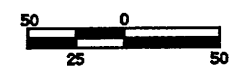
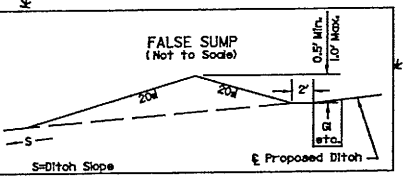
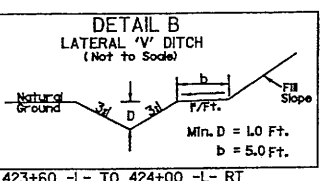
SUSTAINABLE FORESTS, LLC
DB 583 PG 692
DB 494 PG 163
MB 02 PG 87

WEYERHAEUSER CO.
DB 674 PG 323
PC A & PG 755

ILLINOIS MUNICIPAL RETIREMENT FUND
DB 712 PG 153
PB 03 PG 52

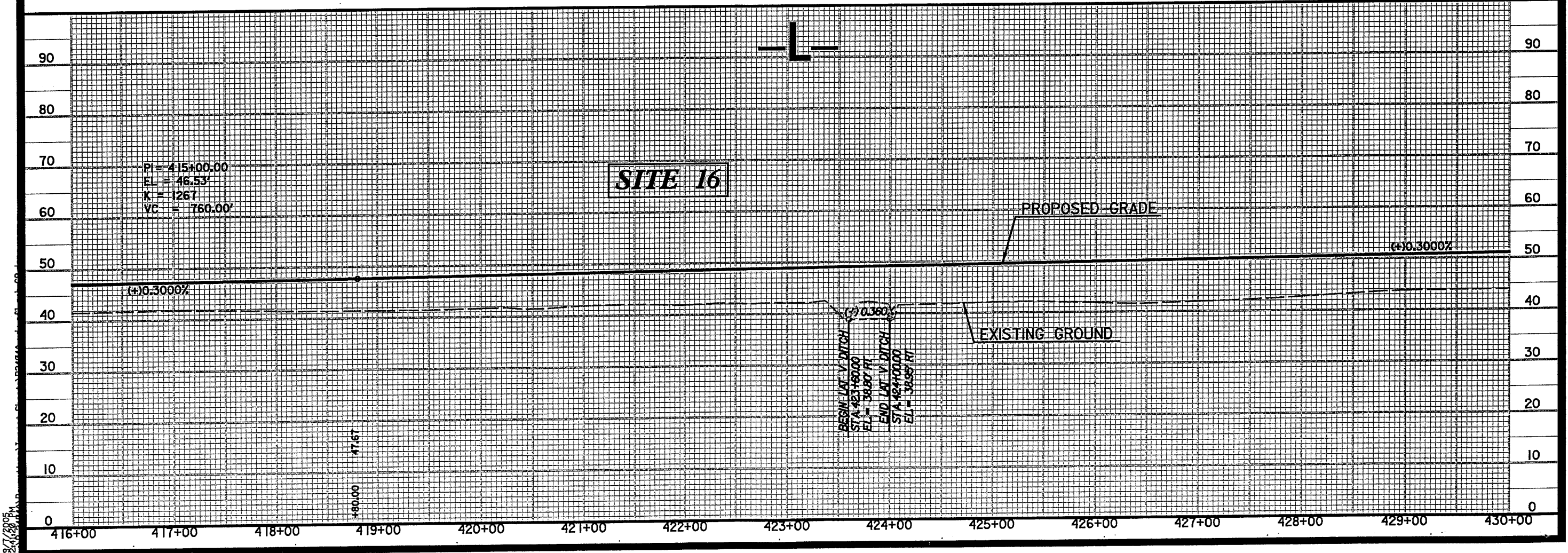
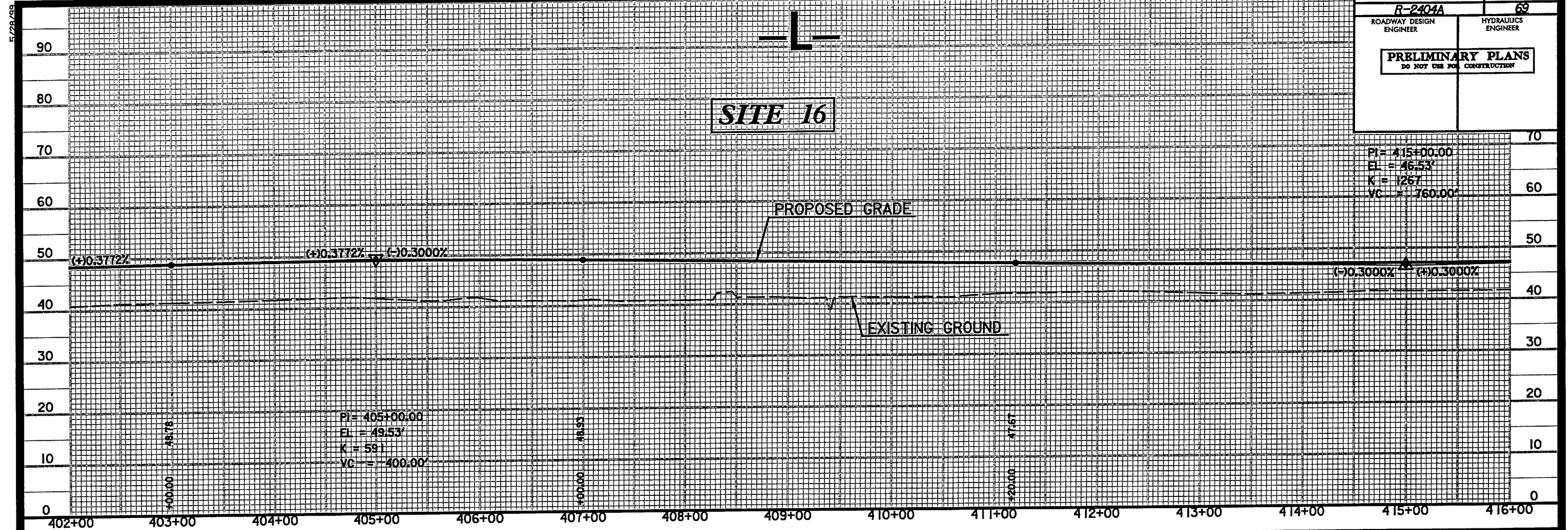


SITE 16



NOTES: SEE SHEET NOS. 69-70 FOR -L- PROFILE FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

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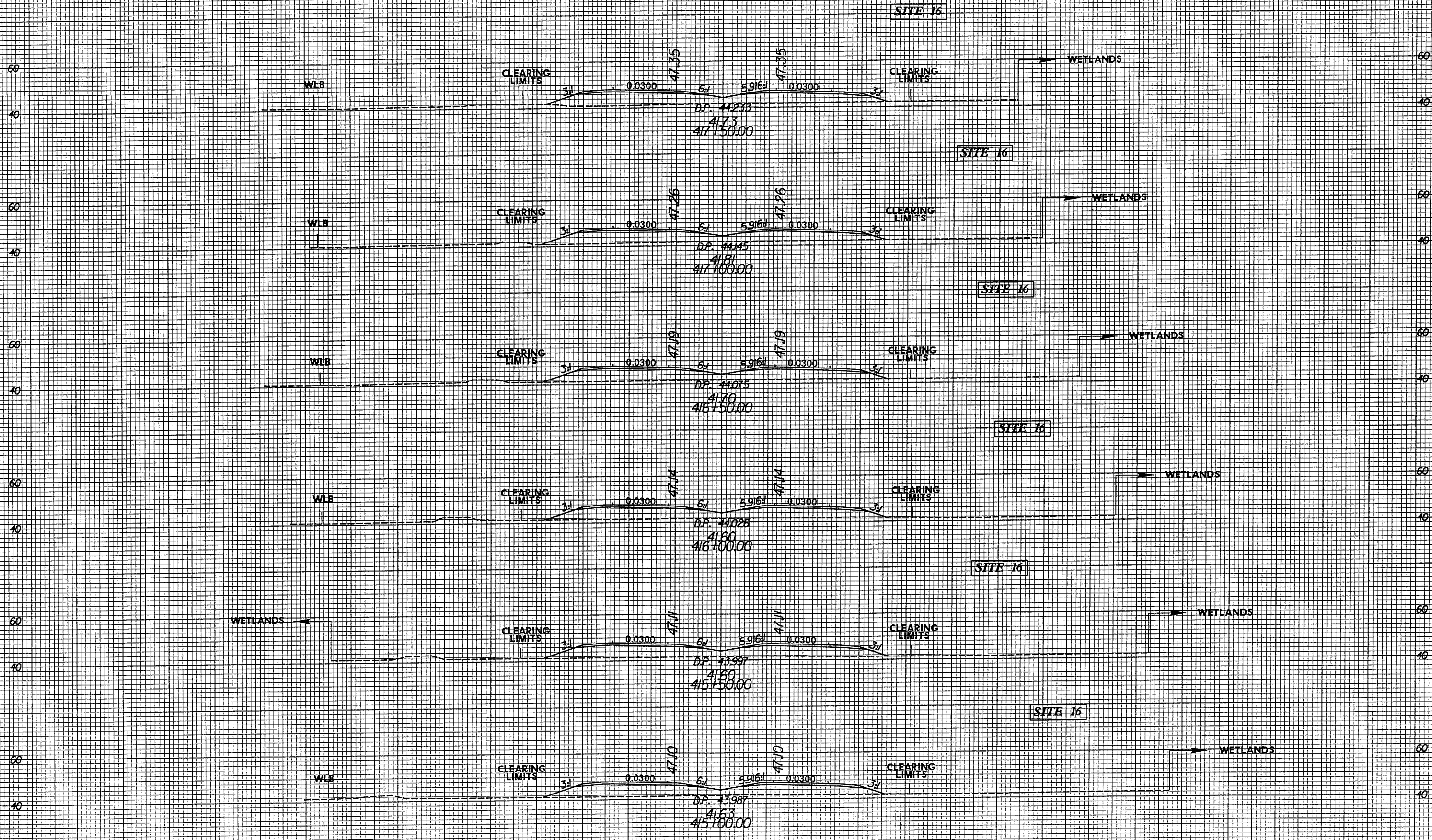


5/28/58

8/7/2005

8/23/99

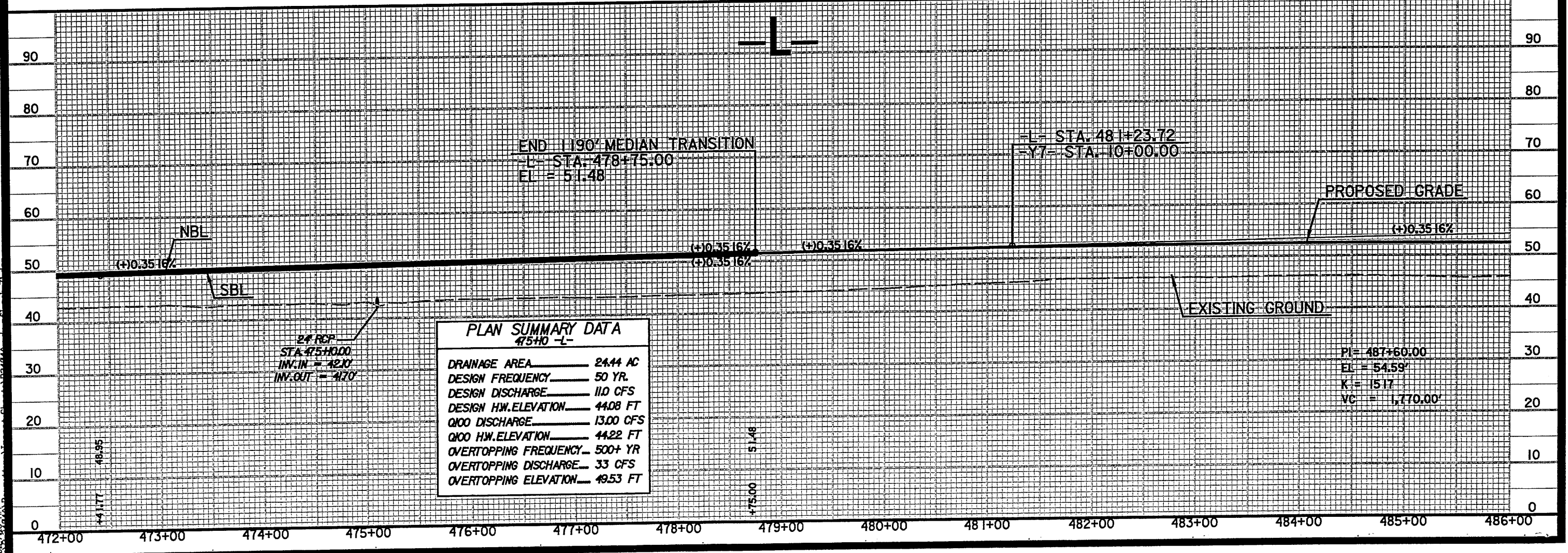
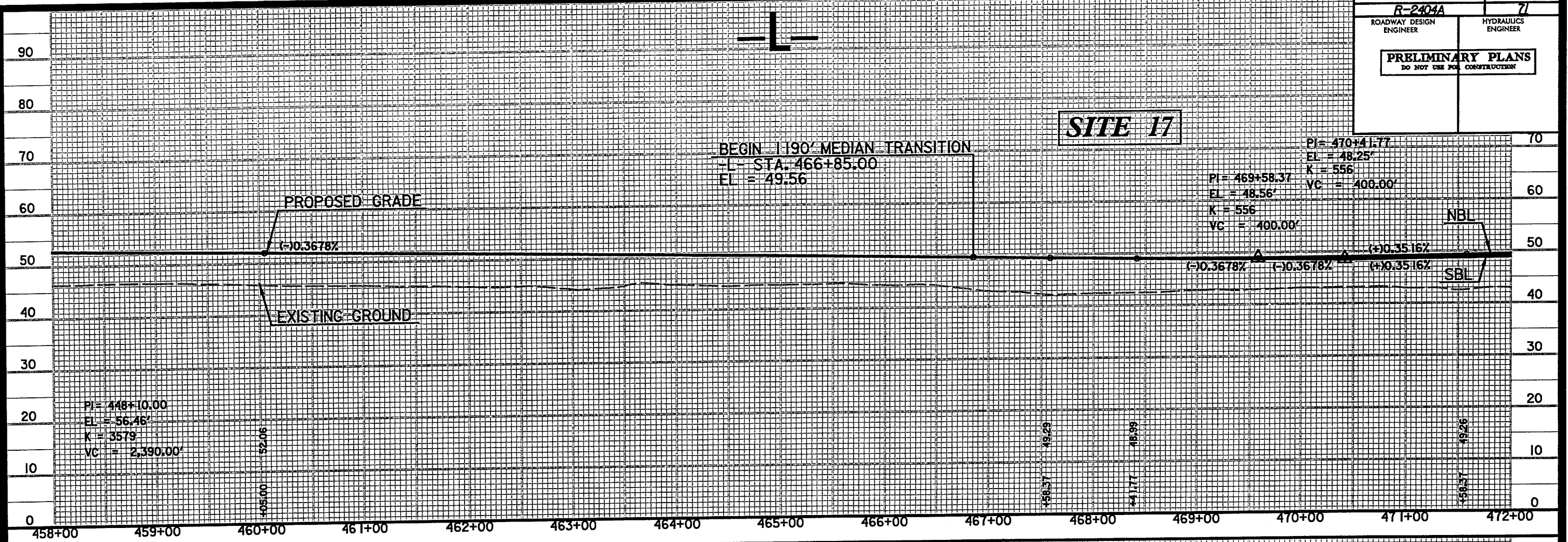
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SITE 17

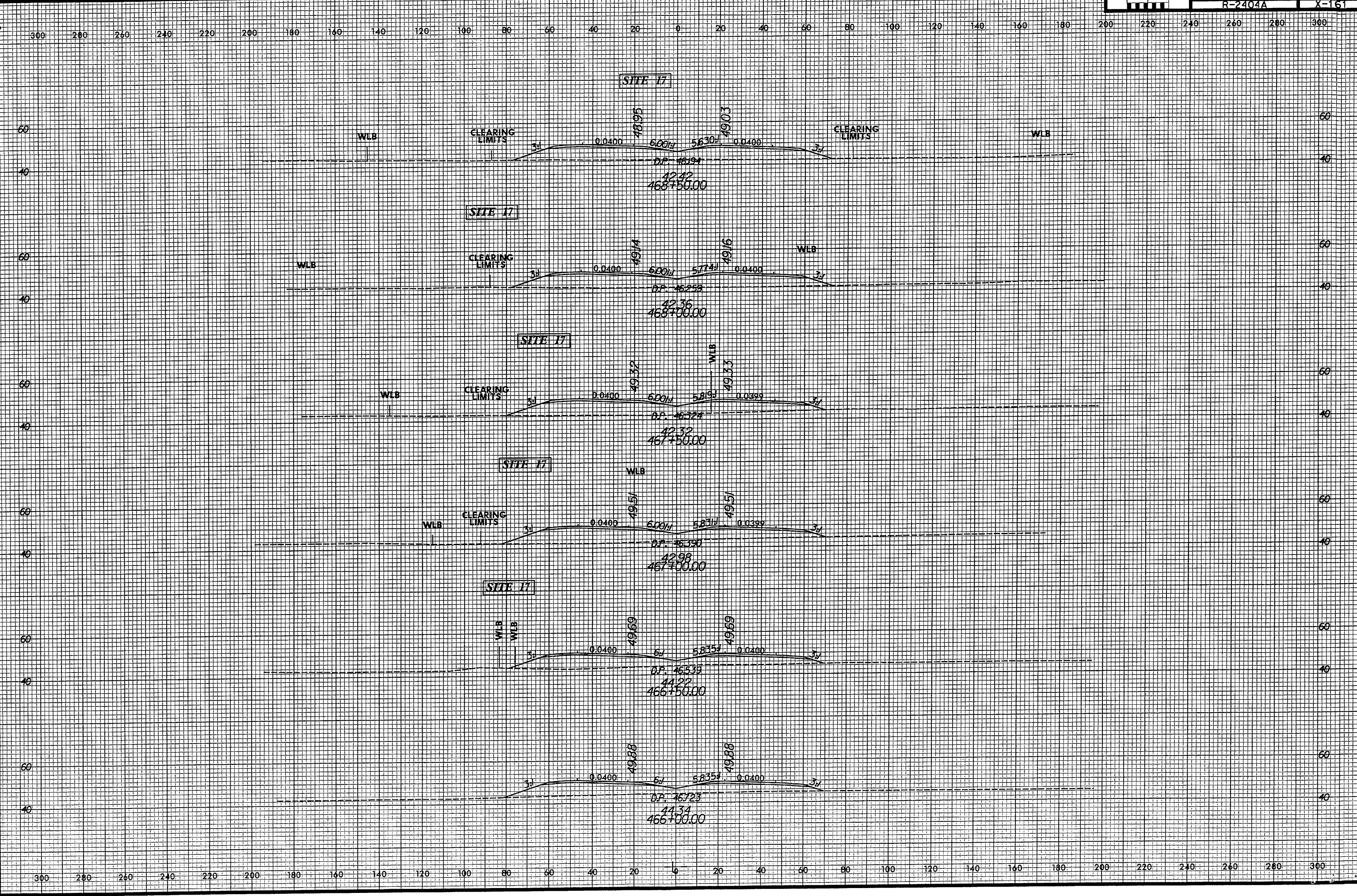


PLAN SUMMARY DATA	
475+00 -L-	
DRAINAGE AREA	24.44 AC
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	110 CFS
DESIGN HW.ELEVATION	44.08 FT
Q100 DISCHARGE	13.00 CFS
Q100 HW.ELEVATION	44.22 FT
OVERTOPPING FREQUENCY	500+ YR
OVERTOPPING DISCHARGE	33 CFS
OVERTOPPING ELEVATION	49.53 FT

24\"/>





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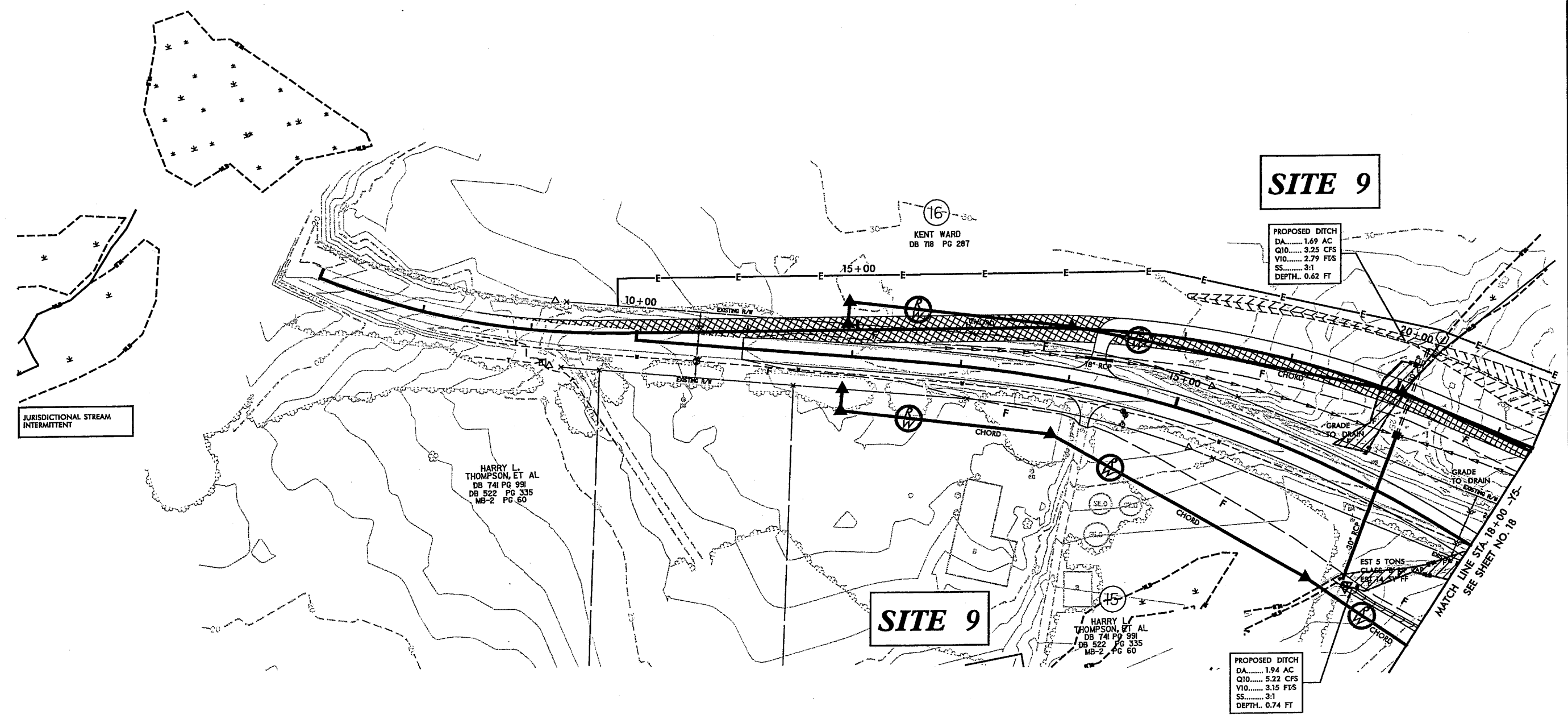
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BARNHILL CONTRACTING COMPANY

REVISIONS

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING



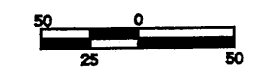
SITE 9

SITE 9

PROPOSED DITCH
DA.....1.69 AC
Q10.....3.25 CFS
V10.....2.79 FFS
SS.....3:1
DEPTH..0.62 FT

PROPOSED DITCH
DA.....1.94 AC
Q10.....5.22 CFS
V10.....3.15 FFS
SS.....3:1
DEPTH..0.74 FT





NOTES: SEE SHEET NO. 82 FOR -Y5- PROFILE.
ALL DRIVEWAY RADII ARE 20' UNLESS OTHERWISE NOTED.
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

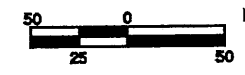
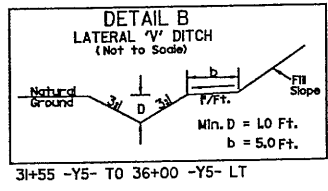
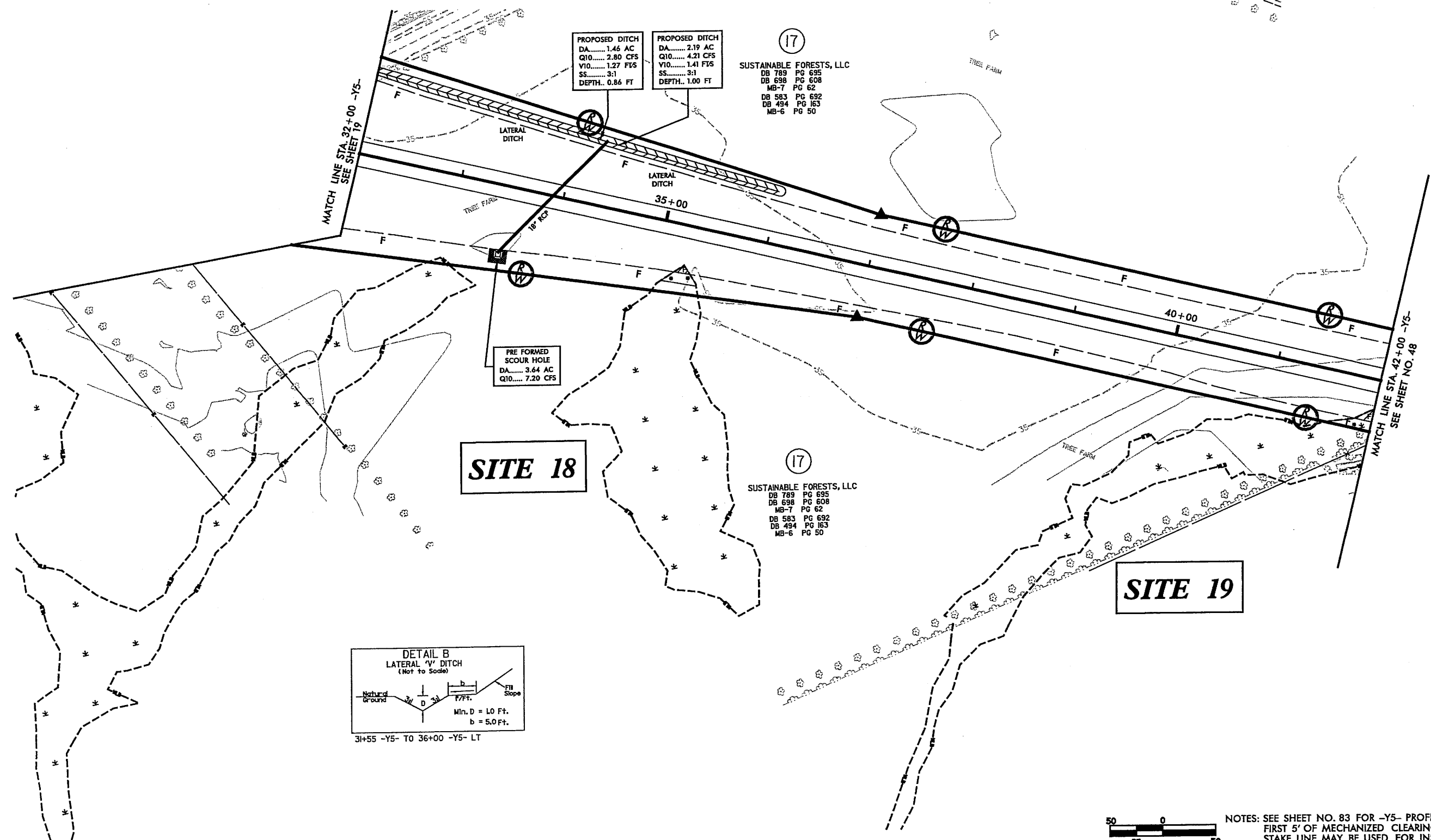


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BARNHILL CONTRACTING COMPANY

REVISIONS

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING



NOTES: SEE SHEET NO. 83 FOR -Y5- PROFILE.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

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REVISIONS

PROJECT REFERENCE NO. SHEET NO.

R-2404A 48





RW SHEET NO.

ROADWAY DESIGN HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

HDR HDR Engineering, Inc.
of the Carolinas
3733 National Drive, Suite 207 Raleigh, N.C. 27612

BARNHILL CONTRACTING COMPANY

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING

NAD '83

17

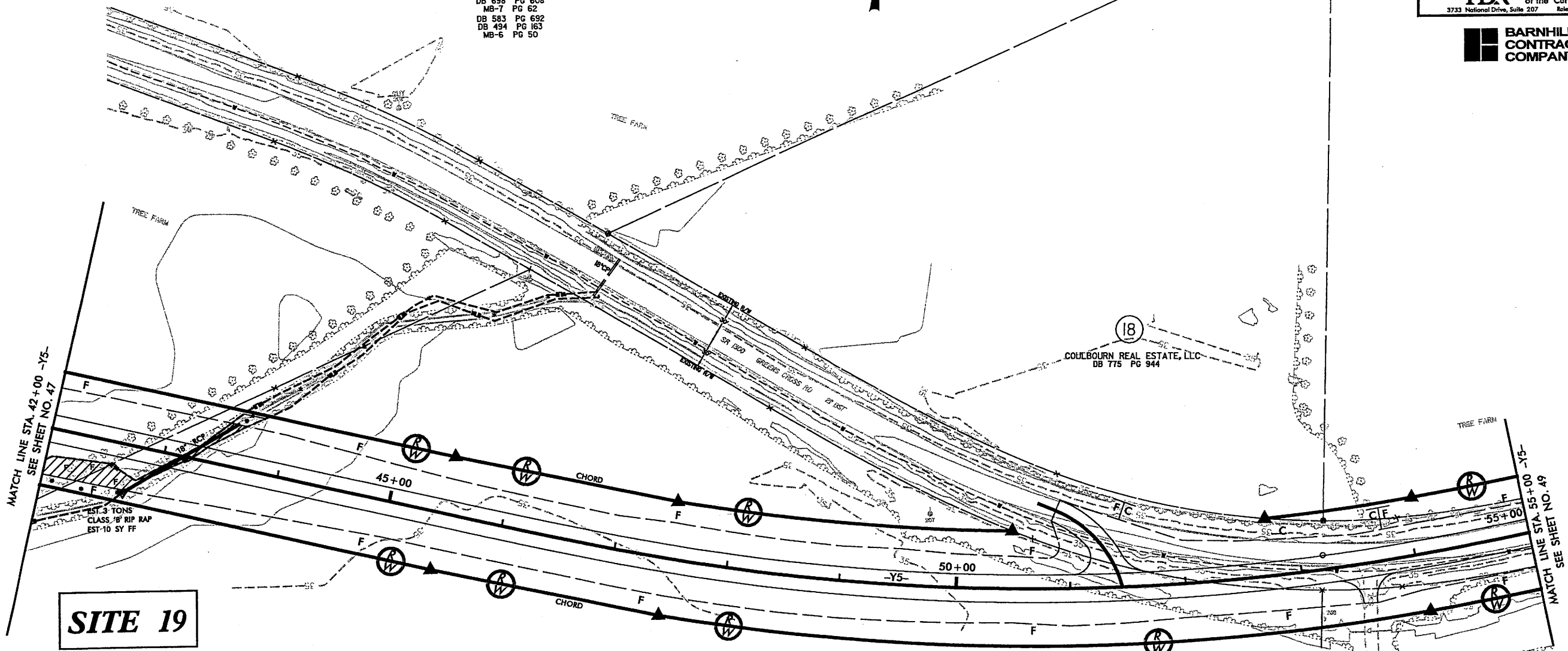
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DB 789 PG 655
DB 698 PG 608
MB-7 PG 62
DB 583 PG 692
DB 494 PG 163
MB-6 PG 50

18

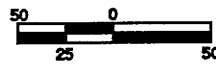
COULBOURN REAL ESTATE, LLC
DB 775 PG 944

18

COULBOURN REAL ESTATE, LLC
DB 775 PG 944




SITE 19








NOTES: SEE SHEET NO. 83 FOR -Y5- PROFILE.
ALL DRIVEWAY RADII ARE 20' UNLESS OTHERWISE NOTED.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

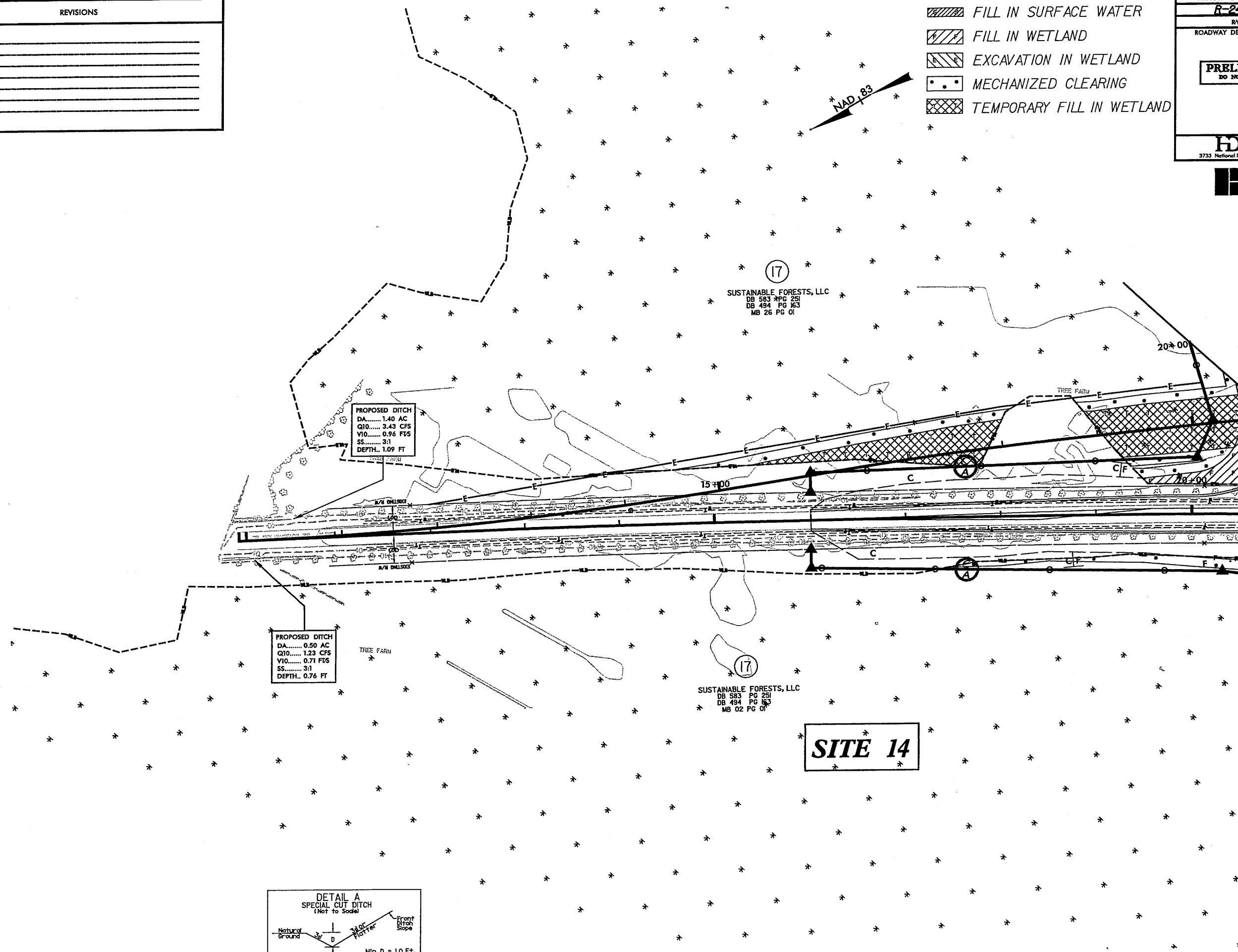
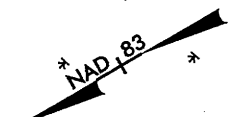
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PROJECT REFERENCE NO.	SHEET NO.
R-2404A	50
RW SHEET NO.	REVISIONS
ROADWAY DESIGN	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 HDR Engineering, Inc. of the Carolinas 3733 National Drive, Suite 207 Raleigh, N.C. 27612	

BARNHILL CONTRACTING COMPANY

REVISIONS

-  FILL IN SURFACE WATER
-  FILL IN WETLAND
-  EXCAVATION IN WETLAND
-  MECHANIZED CLEARING
-  TEMPORARY FILL IN WETLAND



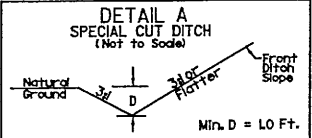
PROPOSED DITCH
DA.....1.40 AC
Q10.....3.43 CFS
V10.....0.96 FTS
SS.....3:1
DEPTH..1.09 FT

PROPOSED DITCH
DA.....0.50 AC
Q10.....1.23 CFS
V10.....0.71 FTS
SS.....3:1
DEPTH..0.76 FT

(17)
SUSTAINABLE FORESTS, LLC
DB 583 PG 25
DB 494 PG 63
MB 26 PG 01

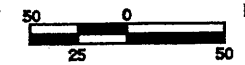
(17)
SUSTAINABLE FORESTS, LLC
DB 583 PG 25
DB 494 PG 63
MB 02 PG 01

SITE 14



10+50 -Y6DET- TO 14+00 -Y6DET- LT
10+00 -Y6DET- TO 12+00 -Y6DET- RT

MATCH LINE STA. 20+50 -Y6- SEE SHEET NO. 28



NOTES: SEE SHEET NO. 84 FOR -Y6- PROFILE.
FIRST 5' OF MECHANIZED CLEARING FROM SLOPE STAKE LINE MAY BE USED FOR INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.

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