STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

March 19, 2007

MEMORANDUM TO: Mr. Mike Mills, PE
Division Seven Engineer

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

SUBJECT: Guilford and Randolph Counties, US 311 High Point East Beltway from US 29-70 to North of NC 62 North of Archdale to US 220; T.I.P. Number R-609/ R-2606; Federal Aid Project MAF-F-119-1(1); State Project 8.1570601

Attached is the U. S. Army Corps of Engineers 404 Individual Permit and the 401 Water Quality Certification for the above referenced project. All environmental permits have been received for the construction of this project.

PSH/gyb

Attachment

Cc:

Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Jay Bennett, P.E., Roadway Design
Dr. David Chang, P.E., Hydraulics
Mr. Randy Garris, P.E. State Contract Officer
Mr. Art McMillan, P.E., Highway Design
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. John F. Sullivan, FHWA
Mr. Eric Midkiff, P.E., PDEA Central Region Unit Head
Mr. Jerry Parker, Division Environmental Officer

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MAR 15 2007

DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

IN REPLY REFER TO

March 14, 2007

Regulatory Division

Action ID: SAW-2004-00340, US 311 (High Point East Beltway), Transportation Improvements Project R-2606A, B, C and R-0609IA, IB

Dr. Gregory J. Thorpe, PhD, Manager
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
Division of Highways
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Enclosed is a Department of the Army permit to directly discharge dredged and/or fill material into Taylor Branch, Muddy Creek, Bob Branch, unnamed tributaries to the aforementioned waters, Mile Branch, Richland Creek, Deep River, Caraway Creek and Back Creek to facilitate the construction of US 311, Transportation Improvement Project (TIP) R-2606A, B, C and R-0609IA, IB, State Project Number 8.1570601 and 8. 1571501, in Guilford and Randolph Counties, North Carolina. The proposed roadway is approximately 23 miles in length and begins at the existing four-lane divided highway at US 311 (LAT. DD 35.7895; LONG DD 79.9649) just south of US 29/70 in Guilford County and ends at the intersection with US 220 in Randolph County (LAT. DD 35.7895; LONG DD 79.8279).

Any deviation in the authorized work will likely require modification of this permit. If a change in the authorized work is necessary, you should promptly submit revised plans to the Corps showing the proposed changes. You may not undertake the proposed changes until the Corps notifies you that your permit has been 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 conditions require that:

a. You must complete construction before December 31, 2012.

b. 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.

You must notify this office in advance as to when you intend to commence and complete work.

Should you have questions, contact Mr. Richard K. Spencer of my Wilmington Field Office regulatory staff at telephone (910) 251-4172.

Sincerely,

John E. Pulliam, Jr.
Colonel, U.S. Army
District Commander

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. Ronald J. Mikulak, Chief
Wetlands Regulatory Section
61 Forsyth Street
Atlanta, Georgia 30303

Mr. Pete Benjamin
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
Pivers Island
Beaufort, North Carolina 28516

Mr. Doug Huggett
Division of Coastal Management
North Carolina Department of
Environment and Natural Resources
400 Commerce Avenue
Morehead City, North Carolina 28557

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

DEPARTMENT OF THE ARMY PERMIT

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REGULATORY
WILM. FLD. OFC.

Permittee **NC DEPARTMENT OF TRANSPORTATION**

Permit No. **SAW-2004-00340**

Issuing Office **USAED, Wilmington**

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: **Directly discharge dredged and/or fill material into Taylor Branch, Muddy Creek, Bob Branch, unnamed tributaries to the aforementioned waters, Mile Branch, Richland Creek, Deep River, Caraway Creek and Back Creek and adjacent wetlands impacting 30,307 linear feet of stream channel and 3.40 acres of wetlands to facilitate the construction of US 311, Transportation Improvement Project (TIP) R-2606A, B, C and R-0609IA, IB, State Project Numbers 8.1570601 and 8.1571501.**

Project Location: **In the Cape Fear and Yadkin River basins, beginning at the existing four-lane divided highway at US 311 (LAT. DD 35.7895; LONG DD 79.9649) just south of US 29/70 in Guilford County and ends at the intersection with US 220 in Randolph County (LAT. DD 35.7895; LONG DD 79.8279)., Guilford and Randolph Counties, 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.

E. L. Lusk for Gregory Thorpe, PhD 3-8-07

(PERMITTEE) **NC DEPARTMENT OF TRANSPORTATION** *(DATE)*

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

Scott McLendon Jr. 3/14/07

(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)*

*U.S. GOVERNMENT PRINTING OFFICE: 1986 - 717-425

SPECIAL CONDITIONS (Action ID. 2004-00340, US 311 (High Point East Beltway), Transportation Improvements Project R-2606A, B, C and R-0609IA, IB)

1. Failure to institute and carry out the details of the following special conditions below will result in a directive to cease all ongoing and permitted work within waters of the United States, including wetlands, associated with the permitted project, or such other remedies and/or fines as the U.S. Army Corps of Engineers District Commander or his authorized representatives may seek.

2. All work authorized by this permit must be preformed in strict compliance with the attached plans, which are a part of this permit. 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. The permittee shall ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Any deviation in the construction design plans shall be brought to the attention of the Corps of Engineers, Mr. Richard Spencer, Wilmington Regulatory Field Office prior to any active construction in waters or wetlands and any modification to the permit plans must be approved by the Corps of Engineers prior to implementation.

3. The permittee shall schedule a preconstruction meeting between its representatives, the contractor's representatives, and the Corps of Engineers, Mr. Richard Spencer, Wilmington Regulatory Field Office, 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 notify the Corps of Engineers Project Manager a minimum of thirty (30) days in advance of the scheduled meetings in order to provide that individual with ample opportunity to schedule and participate in the required meetings. One copy of the final half-size construction drawings shall be furnished to the Corps of Engineers, Mr. Richard Spencer, Wilmington Regulatory Field Office prior to the pre-construction meeting.

4. The permittee shall 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, Mr. Richard Spencer, Wilmington Regulatory Field Office prior to any active construction in waters or wetlands.

5. 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. Copies of this permit and any modifications authorized by the USACE shall be available for review at the construction site at all times. All violations, including non-compliance of these conditions, of the authorized permit shall be reported to the District Engineer within 24 hours of the violation.

6. The permittee shall abide by the conservation measures identified in the Biological Assessment prepared for the Schweinitz's sunflower (*Helianthus schweinitzii*) dated 9 November

2006 and the three recommended conservation measures identified by the US Fish and Wildlife Service in the Biological Opinion dated 30 November 2006.

7. The permittee shall maintain stream base flow through crossings with multiple culverts by use of pipe sills installed on the upstream end of all pipe barrels except the main conveyance culvert, which shall be aligned with the stream thalweg.

8. The permittee shall mitigate for 1,230 linear feet of unavoidable impact to streams with important aquatic function, associated with the R-2606 project, by completing 1,230 linear feet of onsite stream restoration, as described in the "Stream and Wetland Mitigation Plan for UT to Muddy Creek (CF-16 Site) Randolph County, North Carolina", Dated August 2006. Furthermore, 1 acre of riparian wetlands impact associated with the R-2606 project will be mitigated for by the preservation of the wetlands and old stream channels located at the CF-16 mitigation site. The existing wetlands shall remain intact and shall not be planted as stated in the mitigation plan. The old stream channels shall be plugged only and allowed to fill with water creating a vernal pool. The permittee shall complete an as-built survey of the mitigation site within sixty days of completion of the site construction. The permittee shall document the final grade elevations as compared to the existing undisturbed grades, water surface elevations, and any structures installed. The permittee shall also include in the as-built survey: photo documentation at representative segments and structures; and a plan view diagram. The permittee shall monitor the mitigation site for five year following completion of the mitigation project. Monitoring shall follow the Monitoring Level 1 protocol outlined in the "Stream Mitigation Guidelines", dated April 2003.

9. The permittee shall mitigate for 659 linear feet of unavoidable impact to streams with important aquatic function, associated with this project, by completing 659 linear feet of onsite stream restoration at site number 6 on R-0609IA, as described in the mitigation plan submitted on 18 October 2006. The permittee shall complete an as-built survey of the mitigation site within sixty days of completion of the site construction. The permittee shall document the final grade elevations as compared to the existing undisturbed grades, water surface elevations, and any structures installed. The permittee shall also include in the as-built survey: photo documentation at representative segments and structures; and a plan view diagram. The permittee shall monitor the mitigation site for five year following completion of the mitigation project. Monitoring shall follow the Monitoring Level 1 protocol outlined in the "Stream Mitigation Guidelines", dated April 2003.

10. Compensatory mitigation for the unavoidable impacts to 1.42 acres of riparian wetlands, 1.98 acres of non-riparian wetlands, and 26,944 linear feet of stream associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP). The following is a breakdown of the impacts to be mitigated within each Cataloging Units:

Cape Fear River CU 03030003:	Stream – 18,626 linear feet
	Riparian wetland – 1.21 acres
	Non-riparian wetland – 1.95 acres

Yadkin River CU 03040103	Stream – 8,318 linear feet Riparian wetland – 0.21 acre Non-riparian wetland – 0.03

The EEP will provide 2.84 acres of riparian wetlands, 3.96 acres of non-riparian wetlands, and 53,888 linear feet of stream restoration equivalent in the Central Piedmont Eco-Region, pursuant to Section X of the MOA signed 22 July 2003. 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.

11. The permittee shall continue coordination of design for R-2606 Sections B and C through the NEPA/Section 404 Merger 01 Process – Concurrence points 2A, 4B and 4C. The final design shall incorporate appropriate avoidance, minimization and mitigation of aquatic resource impacts to the fullest extent practicable. The applicant shall not commence any work within waters of the United States within R-2606 Section B or C until after the submittal of a modified application with final design plans reflecting the appropriate avoidance, minimization and mitigation within these sections and has received final approval from Wilmington District Corps of Engineers.

12. The permittee shall continue to pursue on-site mitigation opportunities within R-2606 Sections B and C.

13. 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, or shall any activities take place that cause the degradation of waters or wetlands. There shall be no excavation from, waste disposal into, or degradation of, jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit, including appropriate compensatory mitigation. This prohibition applies to all borrow and fill activities connected with this project. 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.

14. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area.

15. To ensure that all borrow and waste activities occur on high ground and do not result in loss or 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 ensure that all such areas comply with the preceding condition (#13) 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 preceding condition (#13). 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.

16. The permittee shall comply with the conditions specified in the water quality certification, No. 3592, issued by the North Carolina Division of Water Quality on 20 December 2006.

17. 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. Culverts shall be set in such a manner as to promote a continuum of water depth through the structure to facilitate aquatic life movement. If necessary, the permittee shall install alternating or notched baffles within the culvert barrel to provide the necessary depth within the structure to facilitate aquatic life movement. 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.

18. 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. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. 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.

19. The permittee shall take appropriate measure to control any bottom sediment that may be sluiced by the draining of impacted ponds on the project site. Sediment sluicing from ponds is not authorized by this permit.

20. 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.

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

22. The permittee shall install barrier fencing or other acceptable forms of barrier around all wetlands that are not to be disturbed to make them readily visible and prevent construction equipment from inadvertently entering and disturbing the wetland areas that are to remain undisturbed.

23. 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.

24. If the permittee discovers any previously unknown historic or archeological sites while accomplishing the authorized work, he shall immediately stop work and notify the Wilmington District Engineer who will initiate the required State/Federal coordination.

25. The permittee shall maintain the authorized work in good condition and in conformance with the terms and conditions of this permit. The permittee is not relieved of this requirement if he abandons the permitted activity without transferring it to a third party.

26. 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.

27. This Department of the Army permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

28. In issuing this permit, the Federal Government does not assume any liability for:

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 Federal activities initiated on behalf of the general public.

c. Damages to other permitted or un-permitted activities or structures caused by the authorized activity.

d. Design and construction deficiencies associated with the permitted work.

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

DIVISION OF WATER QUALITY DWQ

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

December 16, 2006

RECEIVED
DEC 20 2006
REGULATORY
WILM. FLD. OFC.

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

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act, Randleman Buffer Rules, and Randleman Rules General Major Variance with ADDITIONAL CONDITIONS for new construction of the High Point East Beltway, US 311 from south of US 29/70 to US 220, in Guilford and Randolph Counties, Federal Aid Project No. MAF-F-119-1(1) and MAF-F-119-1-(1), State Project No. 8.1570601 and 8.1571501, TIP R-0609IA, IB, and R-2606A, B, and C.
DWQ Project No. 2006-0331

Dear Dr. Thorpe:

Attached hereto is a copy of Certification No. WQC003592 issued to The North Carolina Department of Transportation dated December 18, 2006.

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

Sincerely,

John E. Hennessy

Alan W. Klimek, P.E.
Director

Attachments

cc: Brett Feulner, NCDOT-PDEA
Richard Spencer, US Army Corps of Engineers, Wilmington Field Office
Jerry Parker, Division 7 Environmental Officer
Kathy Matthews, Environmental Protection Agency
Travis Wilson, NC Wildlife Resources Commission
Gary Jordan, US Fish and Wildlife Service
William D. Gilmore, PE, Ecosystem Enhancement Program
DWQ Winston-Salem Regional Office
DWQ Transportation Permitting Unit

Dr. Greg Thorpe, PhD
December 18, 2006
DWQ # 2006-0331
WQC003592

401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and RANDLEMAN) BUFFER RULES with 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 .0500 and 15A NCAC 2B.0250 for Randleman This certification authorizes the NCDOT to impact the following in Guilford and Randolph Counties:

Cape Fear River Basin

Jurisdictional Wetlands	4.16 acres
Open Waters	10.57 acres
Jurisdictional Streams	23,022 linear feet
Randleman Watershed Riparian Buffer	2,444,596 square feet

Yadkin River Basin

Jurisdictional Wetlands	0.24 acres
Open Waters	1.64 acres
Jurisdictional Streams	8,318 linear feet

The project shall be constructed pursuant to the application dated February 27, 2006, and additional information dated April 17, 2006, May 4, 2006, June 2, 2006, October 5, 2006, October 18, 2006, and November 15, 2006.

The authorized impacts are as further described below:

R-0609IA Stream Impacts in the Cape Fear River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
2			461	69	530	461
3				69	69	
4			363	46	409	363
5			231	49	280	231
6 (Main)			967		967	967
6 (Trib 1)			152		152	152
6 (Trib 2)			384		384	384
7			146		146	146
8			591		591	591
10 (Trib 1)			634		634	634
10 (Trib 2)			68		68	68
10 (Trib 3)			1838		1838	1838
10 (Trib 4)			452		452	452
11 (Trib 1)			1495	69	1564	1495
11 (Trib 2)			438		438	438
12			390		390	390
13			5		5	5
14			79	38	117	79
15			75		75	75
16			177	66	243	177
Total			**8946**	**406**	**9352**	**8946**

R-0609IA Wetland Impacts in the Cape Fear River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Riverine (R) or Non-Riverine (NR)	Total Wetland Impact (ac)
1			0.04	0.01		NR	0.05
3	0.03					R	0.03
4	0.16			0.03		R	0.19
11 (Trib 1)	0.20		0.03	0.04		R	0.27
12	0.12			0.007		R	0.127
17	0.012					NR	0.012
Total	**0.522**		**0.07**	**0.087**			**0.679**

Total Riverine Wetland Impact for R-0609IA Project: 0.617 acres
Total Non-Riverine Wetland Impact for R-0609IA Project: 0.062 acres

R-0609IA Open Water (Ponds) Impacts in the Cape Fear River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
1	0.12		0.12
9	2.37		2.37
15	0.026		0.026
Total	**2.516**		**2.516**

Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands

Dr. Greg Thorpe, PhD
December 18, 2006
DWQ # 2006-0331
WQC003592

R-0609IA Randleman Riparian Buffer Impacts
(Impacts not labeled as allowable are approved through the General Major Variance From the Randleman Buffer Rule)

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Mitigation Required (using 3:1 ratio)	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Mitigation Required (using 1.5:1 ratio)
1 (sewer line)	182		182	Allowable	445		445	Allowable
1	28578		28578	85734	18697		18697	28045.5
2	25858	3597	22261	66783	14759	3112	11647	17470.5
3 (Trib)	13738		13738	41214	11028		11028	16542
3 (Main)	8618		8618	n/a - Hand clear below bridge	8487		8487	n/a - Hand clear below bridge
4 (Trib 1)	7266		7266	21798	4601		4601	6901.5
4 (Trib 2)	19786		19786	59358	9486		9486	14229
4 (Main)	57809		57809	173427	30408		30408	45612
5	8962		8962	26886	7934		7934	11901
6	33645		33645	100935	21562		21562	32343
7	28472		28472	85416	19278		19278	28917
8 (Trib 1)	32336		32336	97008	20640		20640	30960
8 (Trib 2)	8291		8291	24873	7406		7406	11109
8 (Trib 3)	102950		102950	308850	64581		64581	96871.5
8 (Trib 4)	21234		21234	63702	16759		16759	25138.5
8 (Trib 5)	84514	6807	77707	233121	59469	1842	57627	86440.5
8 (Trib 6)	24586		24586	73758	16981		16981	25471.5
9	29915	5532	24383	73149	16227		16227	24340.5
10	5935		5935	*	5056		5056	*
11	6325		6325	*	4294		4294	*
12	22575		22575	67725	15354		15354	23031
Totals	**571575**	**15936**	**555639**	**1603737**	**373452**	**4954**	**368498**	**525324**

* n/a = Total for Site is less than 1/3 acre and 150 linear feet of impact, no mitigation required

Total Buffer Mitigation Required for R-0609IA Project: 2,129,061 square feet

R-0609IB Stream Impacts in the Cape Fear River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1			850		850	850
2			483	42	525	483
3			453	134	587	453
4	282		0		282	0
5			151		151	151
6			207	49	256	207
9			233		233	233
Total	**282**		**2377**	**225**	**2884**	**2377**

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R-0609IB Wetland Impacts in the Cape Fear River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Riverine (R) or Non-Riverine (NR)	Total Wetland Impact (ac)
6	0.082			0.032		R	0.114
7	0.296					R	0.296
8	0.007					R	0.007
9	0.002			0.005		R	0.007
Total	**0.387**			**0.037**			**0.424**

R-0609IB Open Water (Ponds) Impacts in the Cape Fear River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
1	0.445		0.445
4	1.581		1.581
5	0.543		0.543
Total	**2.569**		**2.569**

R-0609IB Randleman Riparian Buffer Impacts
(Impacts not labeled as allowable are approved through the General Major Variance From the Randleman Buffer Rule)

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Mitigation Required (using 3:1 ratio)	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Mitigation Required (using 1.5:1 ratio)
1	66177		66177	198531	31777		31777	47665.5
2				*	774		774	*
3	33164		33164	99492	20425		20425	30637.5
4	32497		32497	97491	18178		18178	27267
4A	53352		53352	160056	33769		33769	50653.5
5	9203		9203	27609	6128		6128	9192
6	21600		21600	64800	15749		15749	23623.5
7	14717		14717	44151	13868		13868	20802
Totals	**230710**		**230710**	**692130**	**140668**		**140668**	**209841**

* n/a = Total for Site is less than 1/3 acre and 150 linear feet of impact, no mitigation required

Total Buffer Mitigation Required for R-0609IB Project: 901,971 square feet

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December 18, 2006
DWQ # 2006-0331
WQC003592

R-2606A Stream Impacts in the Cape Fear River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
2			350	100	450	350
3 (Sta 63+06L)			790	115	905	790
3 (Sta 59+48L)			310	20	330	310
4 (Sta 82-75L)	185	20			205	0
4 (Sta 84+40L)			580	65	645	580
5			472	0	472	472
6			200	50	250	200
7			1490	32	1522	1490
Total	**185**	**20**	**4192**	**382**	**4779**	**4192**

R-2606A Wetland Impacts in the Cape Fear River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Riverine (R) or Non-Riverine (NR)	Total Wetland Impact (ac)
2	0.277					R	0.277
6	0.241		0.04			R	0.281
7	0.240		0.016			NR	0.256
Total	**0.758**		**0.056**				**0.814**

Total Riverine Wetland Impact for R-2606A Project: 0.558 acres
Total Non-Riverine Wetland Impact for R-2606A Project: 0.256 acres

R-2606A Open Water (Ponds) Impacts in the Cape Fear River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
5	0.262		0.262
6	0.634		0.634
8	2.820		2.820
Total	**3.716**		**3.716**

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December 18, 2006
DWQ # 2006-0331
WQC003592

R-2606A Randleman Riparian Buffer Impacts
(Impacts not labeled as allowable are approved through the General Major Variance From the Randleman Buffer Rule)

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Mitigation Required (using 3:1 ratio)	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Mitigation Required (using 1.5:1 ratio)
1	10996		10996	n/a - Hand clear below bridge	7131		7131	n/a - Hand clear below bridge
1A	939		939	*	1985		1985	*
2	29846	1250	28596	85788	16473	3560	12913	19369.5
3	55664		55664	166992	34704		34704	52056
4	46952		46952	140856	28059		28059	42088.5
5	44530		44530	133590	21659		21659	32488.5
6	115059	13723	101336	304008	76153	3834	72319	108478.5
Totals	**303987**	**14973**	**289013**	**831234**	**186164**	**7394**	**178770**	**254481**

* n/a = Total for Site is less than 1/3 acre and 150 linear feet of impact, no mitigation required

Total Buffer Mitigation Required for R-2606A Project: 1,085,715 square feet

R-2606B Stream Impacts in the Cape Fear River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)*	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft) *	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
13			738		738	738
14 (Sta 51+50L)	466				466	
14 (Sta 53+90L)			338		338	338
15			430		430	430
16	75				75	
17 (Sta 74+00L)			469		469	469
17 (Sta 76+60L)			344		344	344
18 (Sta 84+80L)	49				49	
18 (Sta 88+90L)	417				417	
19			420		420	420
20 (Sta 101+40L)			315		315	315
20 (Sta 105+20L)			404		404	404
21			1542		1542	1542
Total	**1007**		**5000**		**6007**	**5000**

* Temporary Impacts will be calculated in future detailed designs submitted for permit modification

Dr. Greg Thorpe, PhD
December 18, 2006
DWQ # 2006-0331
WQC003592

R-2606B Wetland Impacts in the Cape Fear River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Riverine (R) or Non-Riverine (NR)	Total Wetland Impact (ac)
13	0.3076			0.0096		NR	0.3172
14	0.4510			0.0420		NR	0.4930
15	0.1707					NR	0.1707
16	0.4193			0.0173		R	0.4366
19	0.1779					R	0.1779
20	0.6279			0.0213		NR	0.6492
Total	**2.1544**			**0.0902**			**2.2446**

Total Riverine Wetland Impact for R-2606B Project: 0.6145 acres.
Total Non-Riverine Wetland Impact for R-2606B Project: 1.6302 acres.

R-2606B Open Water (Ponds) Impacts in the Cape Fear River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
13	1.0119		1.0119
17	0.7534		0.7534
Total	**1.7653**		**1.7653**

R-2606B Randleman Riparian Buffer Impacts
(Impacts not labeled as allowable are approved through the General Major Variance From the Randleman Buffer Rule)

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Mitigation Required (using 3:1 ratio)	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Mitigation Required (using 1.5:1 ratio)
13	49535		49535	148605	24563		24563	36844.5
14 (Sta 51+26L)	33099		33099	99297	11141		11141	16711.5
14 (Sta 53+50L)	24003		24003	72009	13390		13390	20085
15	30839		30839	92517	16856		16856	25284
16	21818		21818	65454	34671		34671	52006.5
17 (Sta 72+70L)	37674		37674	113022	18417		18417	27625.5
17 (Sta 76+10L)	22895		22895	68685	11991		11991	17986.5
18 (Sta 85+40L)	3444		3444	10332	1744		1744	2616
18 (Sta 88+55L)	29881		29881	89643	15446		15446	23169
19	29881		29881	89643	15446		15446	23169
20	22335		22335	67005	11377		11377	17065.5
21	105314		105314	315942	52280		52280	78420
Totals	**410718**		**410718**	**1232154**	**227322**		**227322**	**340983**

Total Buffer Mitigation Required for R-2606B Project: 1,573,137 square feet

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Dr. Greg Thorpe, PhD
December 18, 2006
DWQ # 2006-0331
WQC003592

R-2606C Stream Impacts in the Yadkin River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)*	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft) *	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
23 (Sta 117+70L)			433		433	433
23 (Sta 119+50L)	121				121	0
23 (Sta 115+95L)			617		617	617
24 (Sta 121+15L)			630		630	630
24 (Sta 122+10L)	256				256	0
25 (Sta 127+00L)			1296		1296	1296
25 (Sta 129+00L)			427		427	427
27 (Sta 139+30L)			164		164	164
27 (Sta 140+85L)			279		279	279
27 (Sta 142+50L)			135		135	135
28 (Sta 147+30L)			341		341	341
28 (Sta 4+55RP)			276		276	276
28 (Sta 6+50RP)			285		285	285
28 (Sta 149+30L)			420		420	420
29 (Sta 11+10RP)			427		427	427
29 (Sta 14+20RP)			984		984	984
29 (Sta 5+30 RP)			548		548	548
30			551		551	551
30 (Sta 16+00RP)			128		128	128
Total	**377**		**7941**		**8318**	**7941**

* Temporary Impacts will be calculated in future detailed designs submitted for permit modification

R-2606C Wetland Impacts in the Cape Fear River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Riverine (R) or Non-Riverine (NR)	Total Wetland Impact (ac)
24	0.0274					NR	0.0274
25	0.0064					NR	0.0064
27	0.2100					R	0.2100
Total	**0.2438**						**0.2438**

Total Riverine Wetland Impact for R-2606C Project: 0.2100 acres.
Total Non-Riverine Wetland Impact for R-2606C Project: 0.0338 acres.

R-2606C Open Water (Ponds) Impacts in the Cape Fear River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
26	1.6373		1.6373
Total	**1.6373**		**1.6373**

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Dr. Greg Thorpe, PhD
December 18, 2006
DWQ # 2006-0331
WQC003592

The application provides adequate assurance that the discharge of fill material into the waters of the Cape Fear River Basin and the Yadkin 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 February 27, 2006, and additional information dated April 17, 2006, May 4, 2006, June 2, 2006, October 5, 2006, October 18, 2006, and November 15, 2006. 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.

1. When final design plans are completed for R-2606 Section(s) B & C a modification to the 401 Water Quality Certification and the Randleman Watershed Riparian Buffer Certification shall be submitted with five copies and fees to the NC Division of Water Quality. Final designs shall be reviewed through the Merger 01 Process - Concurrence Points 2A, 4B, & 4C. Final designs shall reflect all appropriate avoidance, minimization, and mitigation for impacts to wetlands, streams, and other surface waters, and buffers. No construction activities that impact any wetlands, streams, surface waters, or buffers located in R-2606 Section(s) B & C shall begin until after the NCDOT applies for, and receives a written modification of the 401 Water Quality Certification and the Randleman Watershed Riparian Buffer Certification from the NC Division of Water Quality.

2. Compensatory mitigation for impacts to 20,515 linear feet of streams in the Cape Fear River Basin at a replacement ratio of 1:1 is required.

   On-Site Stream Mitigation:
   Compensatory mitigation for a portion of the impacts to jurisdictional streams shall be provided by:

Site identifier	Type of mitigation	Stream	Length (linear feet)
R-0609IA Site 6	Stream relocation	Unnamed tributary to Richland Creek	659
R-2606WM	Stream restoration	Unnamed tributary to Muddy Creek	1230

Total onsite mitigation credit 1,889

   The onsite stream relocation and restoration shall be constructed in accordance with the designs submitted in your October 18, 2006 application addendum. Please be reminded that as-builts for the completed streams shall be submitted to the North Carolina Division of Water Quality 401 Wetlands Unit with the as-builts for the rest of the project. If the parameters of this condition are not met, then the permittee shall supply additional stream mitigation for the 1,889 linear feet of impacts. All channel relocations and restorations will be constructed in a dry work area, will be completed and stabilized, and must be approved on site by DWQ staff, prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. All stream relocations shall have a 50-foot wide native wooded buffer planted on both sides of the stream unless otherwise authorized by this Certification. 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. A transitional phase incorporating rolled erosion control product (RECP) and appropriate temporary ground cover is allowable.

Dr. Greg Thorpe, PhD
December 18, 2006
DWQ # 2006-0331
WQC003592

Both onsite stream mitigation sites listed above shall be monitored annually for five years or until success criteria are satisfied. Monitoring protocols shall follow the Monitoring Level I outlined in the *Stream Mitigation Guildelines, April 2003.*

Off-Site Stream Mitigation:
Compensatory mitigation for the remaining 18,626 linear feet of impact to streams is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated May 15, 2006 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004.

3. Compensatory mitigation for impacts to 7,941 linear feet of streams in the Yadkin River Basin at a replacement ratio of 1:1 is required.

Off-Site Stream Mitigation:
Compensatory mitigation for 7,941 linear feet of impact to streams in the Yadkin River Basin is required. On-site mitigation will be investigated by the NCDOT during project final design phases. A permit modification will be requested should the NCDOT identify any on-site mitigation opportunities. Until final design is complete, we understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated December 8, 2006 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004.

4. Compensatory mitigation for impacts to the amounts below shall be required.

Zone 1 Buffer Impacts (ft^2)	Multiplier	Zone 1 mitigation required (ft^2)
1,453,085	3	4,359,255

Zone 2 Buffer Impacts (ft^2)	Multiplier	Zone 2 mitigation required (ft^2)
887,086	1.5	1,330,629

Total Buffer Mitigation Required: 5,689,884 ft^2

On-site Buffer Mitigation
Compensatory mitigation for a portion of the impacts to riparian buffers shall be provided by onsite vegetation re-establishment of:

Site identifier	Type of mitigation	Stream	Buffer replacement area (square feet)
R-0609IA Buffer Site 4	Stream relocation	Unnamed tributary to Richland Creek	72,221
R-2606WM	Buffer Restoration	Unnamed tributary to Muddy Creek	116,496

Total onsite mitigation credit 188,717

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December 18, 2006
DWQ # 2006-0331
WQC003592

The onsite buffer restoration shall be conducted in accordance with the buffer restoration plans and drawings submitted in your June 2, 2006, and November 15, 2006 application addendums. Compensatory mitigation for impacts in accordance with the General Major Variance for Randleman riparian vegetation reestablishment shall include a minimum of at least 2 native hardwood tree species planted at a density sufficient to provide 320 trees per acre at maturity. In addition, within one year proof shall be submitted that the riparian buffer has been restored and an annual report will be submitted for a period of 5 years showing that the trees and vegetation have survived and that diffuse flow through the riparian buffer has been maintained. Failure to achieve the 320 trees per acre after 5 years will require reporting by the DOT to DWQ. The report shall provide appropriate remedial actions to be implemented. Approval of the plan by the DWQ is required. The mitigation area shall be placed under a perpetual conservation.

Onsite buffer mitigation sites listed above shall be visually and photographically monitored annually for five years after final planting. Health of vegetation and presence of nuisance species should be noted. Stem counts shall be performed at each buffer mitigation site in year five of the annual monitoring to ensure that the above density requirements are met.

Off-Site Buffer Mitigation
Compensatory mitigation for the remaining impacts to 5,501,167 square feet of protected riparian buffers shall be required. We understand that you have chosen to perform compensatory mitigation for impacts to protected buffers through use of the North Carolina Ecosystem Enhancement Program (EEP). Mitigation for unavoidable impacts to Randleman Riparian Buffers shall be provided in Randleman Watershed of the Cape Fear River Basin and done in accordance with the Randleman General Major Variance. EEP has indicated in a letter dated October 10, 2006 that they will assume responsibility for satisfying the compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004.

5. Compensatory mitigation for jurisdictional wetland impacts as listed below is required at a offsite replacement ratio of 2:1.

Cape Fear River Basin

Wetland Impacts	Replacement Ratio	Offsite Wetland Mitigation Required
2.21 acres Riverine	2	4.42 acres
1.95 acres Non-Riverine	2	3.90 acres

Yadkin River Basin

Wetland Impacts	Replacement Ratio	Offsite Wetland Mitigation Required
0.21 acres Riverine	2	0.42 acres
0.03 acres Non-Riverine	2	0.06 acres

Off-Site Wetland Mitigation
We understand that you have chosen to perform compensatory mitigation for impacts to wetlands through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated May 15, 2006 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004

6. Upon completion of this project, the permittee shall maintain a Stormwater Management Plan that addresses perpetual maintenance of the stormwater management facilities, including hazardous spill basins, approved with this Certification, and necessary to meet the Randleman Rules General Major Variance.

7. The permittee shall conduct a pre-construction meeting, with all relevant parties and regulatory agencies prior to commencing work on any portion of this project. Two copies of the final construction drawings shall be furnished to NCDWQ Central Office prior to the pre-construction meeting. The permittee shall provide written verification that the final construction drawings comply with the permit drawings contained in the application dated February 27, 2006 and any amendments and modifications subsequently submitted to DWQ and approved with this certification. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Quality.

Dr. Greg Thorpe, PhD
December 18, 2006
DWQ # 2006-0331
WQC003592

8. The permittee 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 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.

9. 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.

10. The permittee shall follow the *NCDOT Best Management Practices for Construction and Maintenance Activities, August 2003* throughout final design and construction activities associated with this project.

11. 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.

12. The permittee shall use *Design Standards in Sensitive Watersheds* [15A NCAC 4B.0124(a)-(e)]. Temporary cover (wheat, millet, or similar annual grain) or permanent herbaceous cover should be planted on all bare soil within 15 working days of ground disturbing activities to provide long-term erosion control. Tall Fescue should not be used in riparian areas. We encourage NCDOT to utilize onsite vegetation and materials for riverbank stabilization when practicable. Erosion control matting should be used on stream banks and riparian areas with steeper slopes and should be well anchored with 12 inch staples or 12 inch wooden survey stakes.

13. 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 protect surface waters standards:

    a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
    b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The 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.
    c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
    d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

14. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved as impacted areas by this Certification. Measures may be placed in areas identified as temporary or permanently impacted by this certification even if not shown on the impact drawings.

15. Bridge deck drains should not discharge directly into the stream. Stormwater should be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of *Stormwater Best Management Practices*.

Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands

16. Placement of culverts and other structures in waters, streams, and wetlands shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. 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 is being maintained if requested in writing by DWQ. If this condition is unable to be met due to bedrock, extreme slopes, or other limiting features encountered during final design and/or construction, please contact the NC DWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.

17. For stream crossings with multiple pipes or barrels, they should be installed to mimic the natural stream cross section as closely as possible including pipes or barrels at flood plain elevation, flood plain benches, and/or sills where appropriate. Widening the stream channel shall be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

18. Riprap should not be placed in the active thalweg channel unless approved in this certification. Approved riprap for stream crossing stabilization should not be placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.

19. The dimension, pattern and profile of the stream above and below the crossing should not be modified. Disturbed floodplains and streams should be restored to natural geomorphic conditions.

20. If concrete is used during construction, a dry work area should be maintained to prevent direct contact between curing concrete and stream water. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other dewatering and diversion structures shall be used to maintain a dry work area. Water that inadvertently contacts uncured concrete should not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.

21. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.

22. At locations where ponds will be drained, proper measures will be taken to drain the pond with limited impact to aquatic species. If typical pond draining techniques will create significant disturbance to native aquatic species, additional measures such as collection and relocation may be necessary to prevent a significant fish kill. NCDOT shall consult with NC Wildlife Resources staff to determine if there are any sensitive species, and the most appropriate measures to limit impacts to these species. The permittee shall observe any natural channel re-establishment, or utilize natural channel construction techniques, to ensure that the jurisdictional stream channel above and below the drained pond remain stable, and that no secondary impacts occur within the channel as a result of draining the pond.

23. 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.

24. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream.

25. 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.

26. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.

27. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.

28. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification..

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29. Native riparian vegetation (ex. list trees and shrubs native to your geographic region) must be reestablished within the construction limits of the project by the end of the growing season following completion of construction.

30. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.

31. All stormwater runoff shall be directed as sheetflow through stream buffers at nonerosive velocities, unless otherwise approved by this certification.

32. All riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated. Maintained buffers shall be permanently revegetated with non-woody species by the end of the growing season following completion of construction. For the purpose of this condition, maintained buffer areas are defined as areas within the transportation corridor that will be subject to regular DOT maintenance activities including mowing. The area with non-maintained buffers shall be permanently revegetated, with native woody species before the next growing season following completion of construction.

33. Pursuant to NCAC15A 2B.0250 for Randleman Watershed, sediment and erosion control devices shall not be placed in Zone 1 of any Randleman Buffer without prior approval by the NCDWQ. At this time, the NCDWQ has approved no sediment and erosion control devices in Zone 1 outside of the approved project impacts anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.

34. Upon completion of the project, the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify DWQ when all work included in the 401 Certification has been completed.

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 or CAMA permit.

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, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. 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 December 2006

DIVISION OF WATER QUALITY

Alan W. Klimek, P.E.
Director

WQC No. WQC003592

Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: North Carolina Department of Transportation	File Number: 2004-00340	Date: March 7, 2007

Attached is:		See Section below
X	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

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

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

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

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

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

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

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

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

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

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

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

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

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Mr. Richard K. Spencer, Regulatory Project Manager U.S. Army Corps of Engineers, Wilmington District Wilmington Regulatory Field Office 69 Darlington Avenue Wilmington, North Carolina 228402	If you only have questions regarding the appeal process you may also contact: Mr. Michael Bell, Administrative Appeal Review Officer CESAD-ET-CO-R U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 9M15 Atlanta, Georgia 30303-8801

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

______________________________ Signature of appellant or agent.	Date:	Telephone number:

DIVISION ENGINEER:
Commander
U.S. Army Engineer Division, South Atlantic
60 Forsyth Street, Room 9M15
Atlanta, Georgia 30303-3490

PROJECT: 8.1571501 R–2606

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

LOCATION: US 311 FROM N OF SR 1929 TO S OF US 311

METRIC

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
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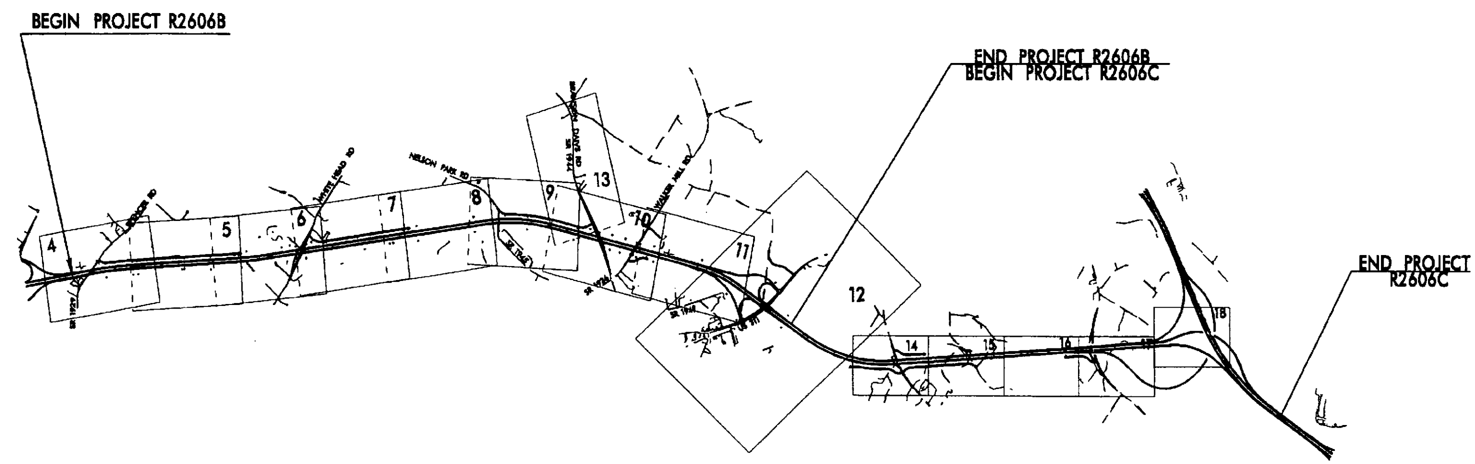
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
8.1571501	STP-NHF-311(3)		



RECEIVED
FEB 09 2006
DIVISION OF HIGHWAYS
HYDRAULICS UNIT

DIVISION OF HIGHWAYS
OFFICE OF NATURAL ENVIRONMENT

INCOMPLETE PLANS

GRAPHIC SCALES
PLANS
PROFILE (HORIZONTAL)
PROFILE (VERTICAL)

DESIGN DATA
ADT =
ADT =
DHV = %
D = %
T = % *
V = km/h
* TTST % DUAL %

PROJECT LENGTH

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

1995 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
PROJECT ENGINEER

LETTING DATE:
PROJECT DESIGN ENGINEER

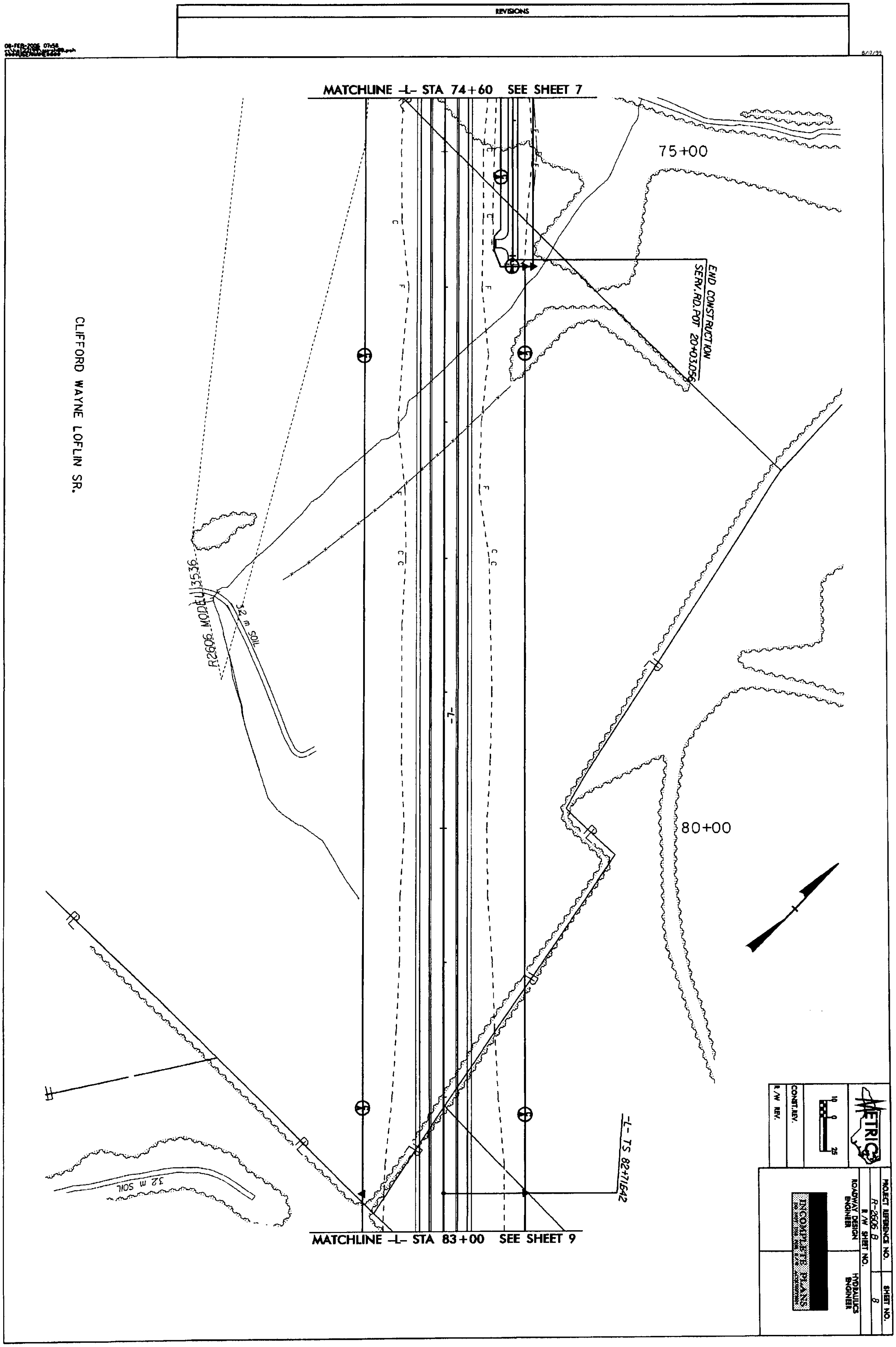
HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ADMINISTRATOR DATE

08-FEB-2006 09:00
09/09/99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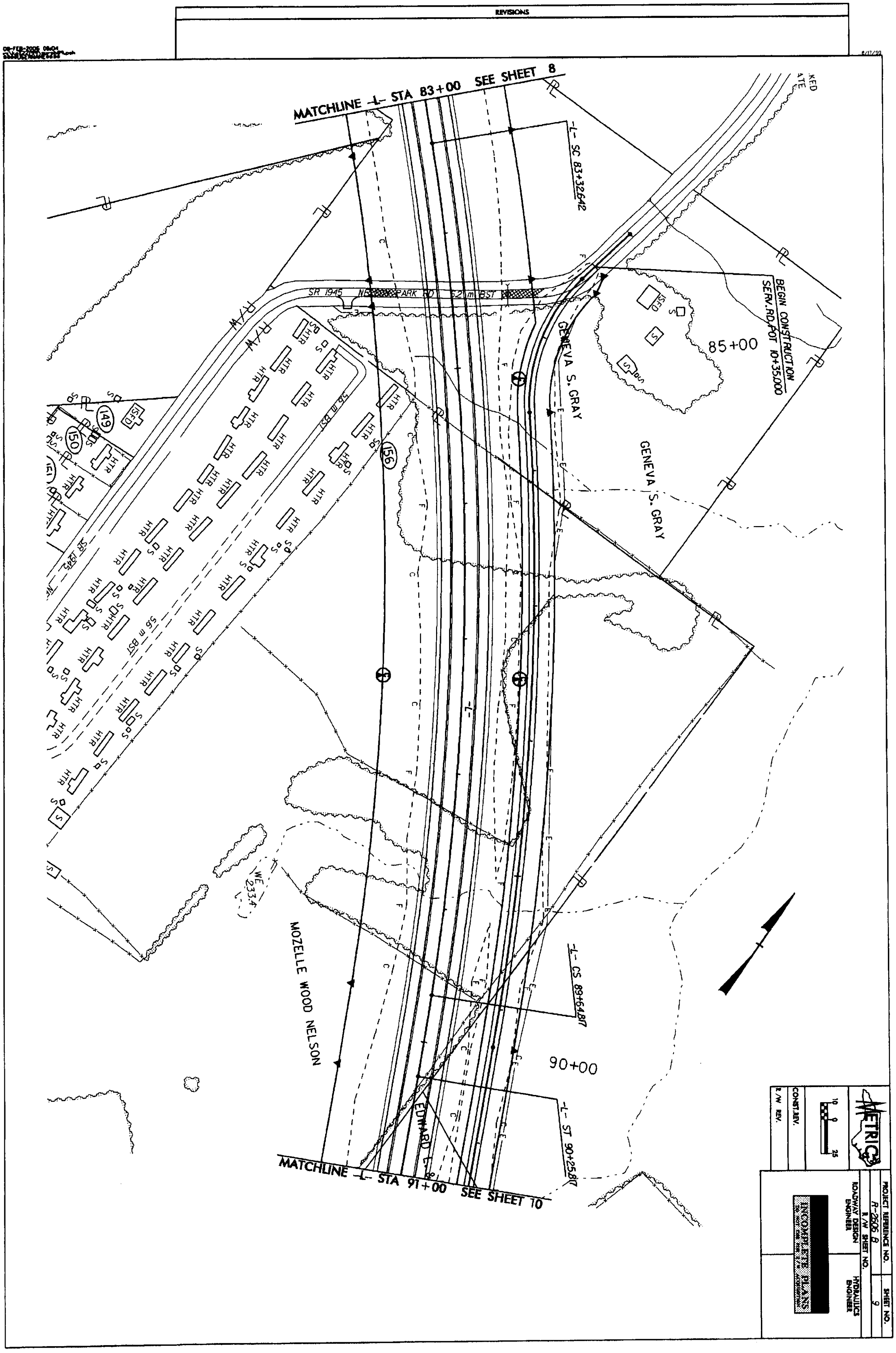
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GENEVA S. GRAY
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150
151
156
HTR
5.6 m BST
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R/W
WE 233.4
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R-2606 B
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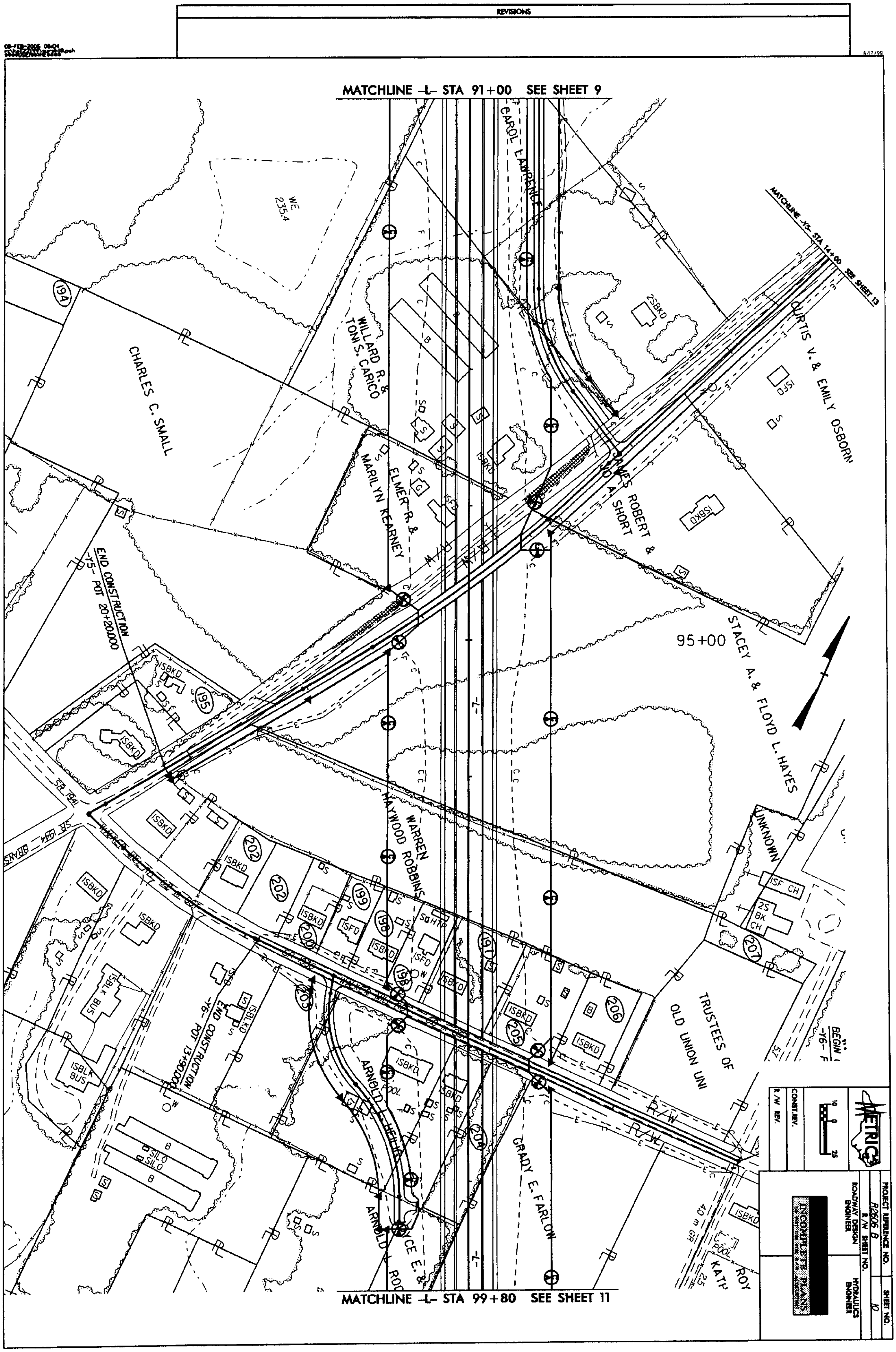

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WE 2354
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CHARLES C. SMALL
CURTIS V. & EMILY OSBORN
ELMER R. & MARILYN KEARNEY
JAMES ROBERT & JO A SHORT
STACEY A. & FLOYD L. HAYES
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END CONSTRUCTION -Y6- POT 13+90.000
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ARNOLD L. HEIDA
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1SFD
2SBKD
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B
SILO
POOL
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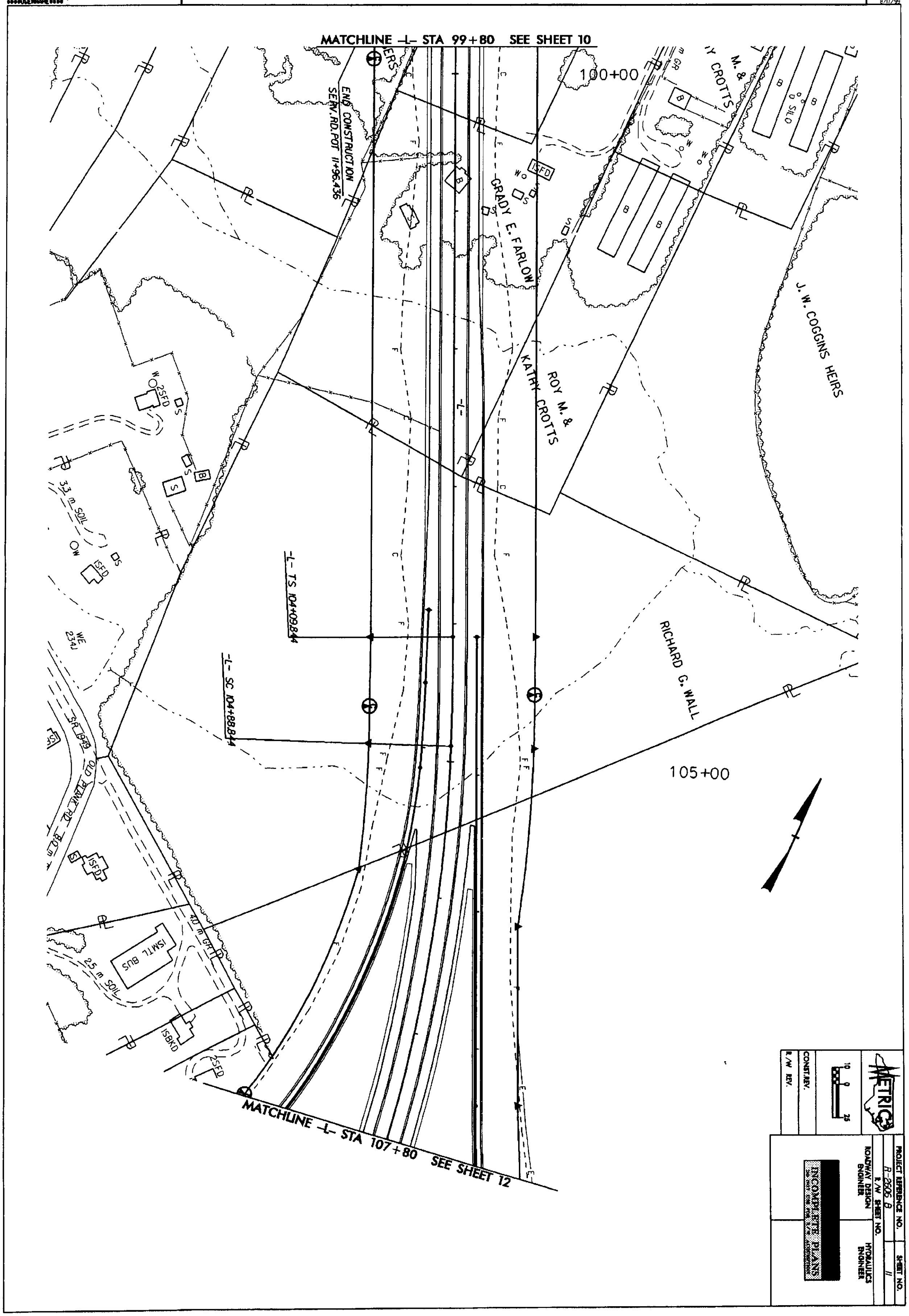
R/W REV.

REVISIONS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M. &
CROTTS
J. W. COGGINS HEIRS
ROY M. &
KATHY CROTTS
RICHARD G. WALL
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2SFD
1SMTL BUS
1SBKD
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R-2606 B
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ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS

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ELENOR HARTLEY
SOPHIA BAPTIST CHURCH
W. A. JOHNSON HEIRS
JAMES A. WALLS & OTHERS
RICHARD C. WALL
CRAWFORD BROS & METAL COM.
DIXIE J. WAY
ARTHUR D. WAY
PERRY J. GARNER
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R/W
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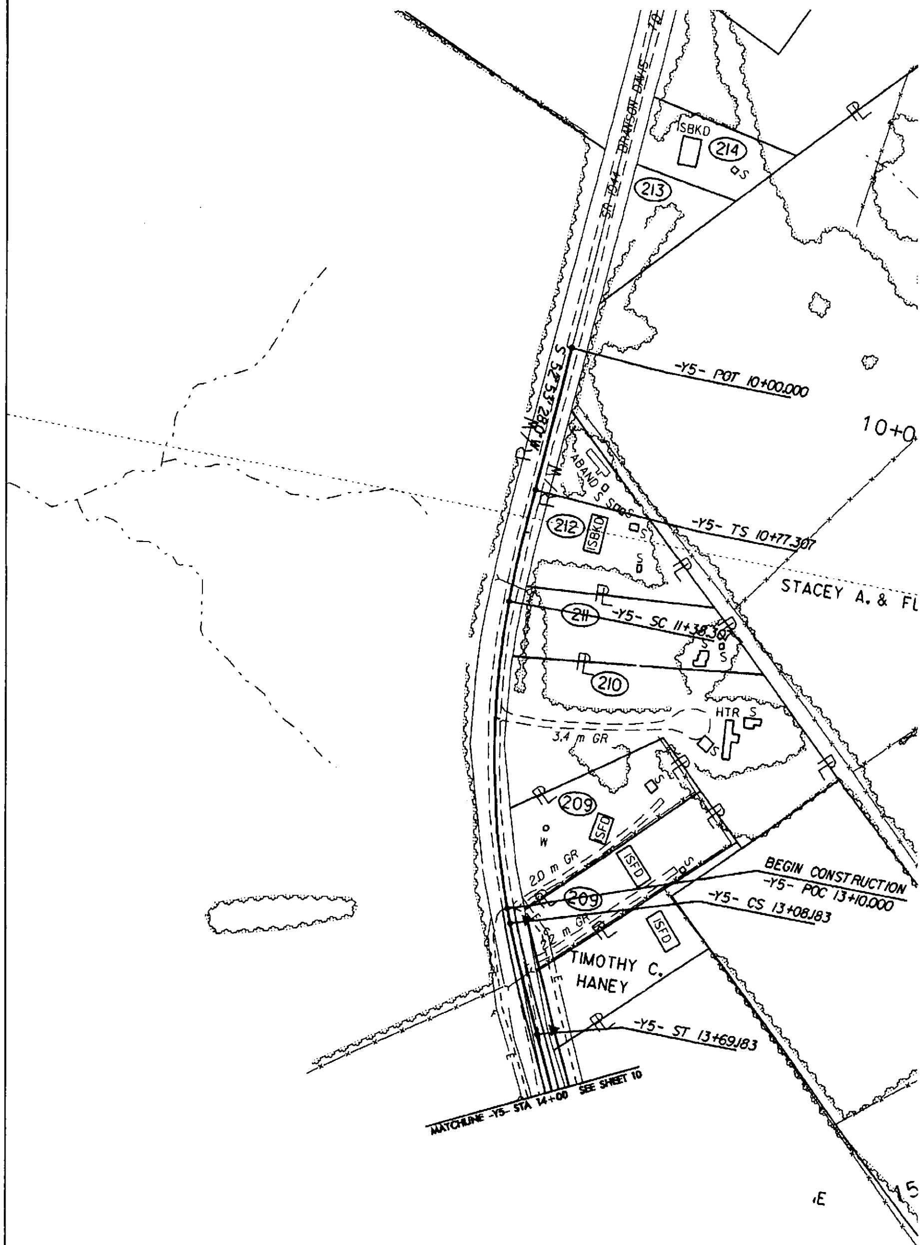
REVISIONS



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CONST. REV.

R/W REV.

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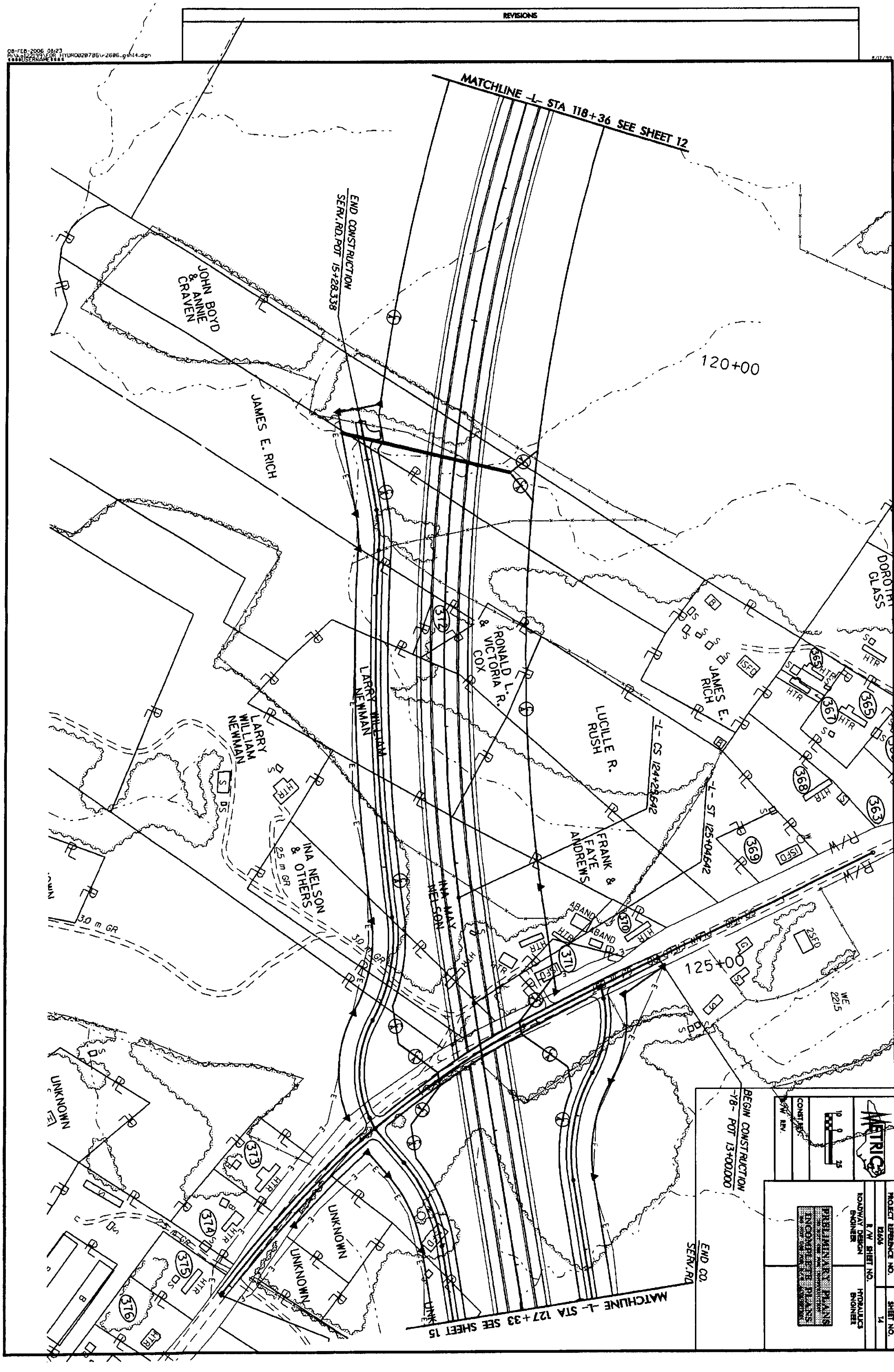
R-2606	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION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FRANK & FAYE ANDREWS
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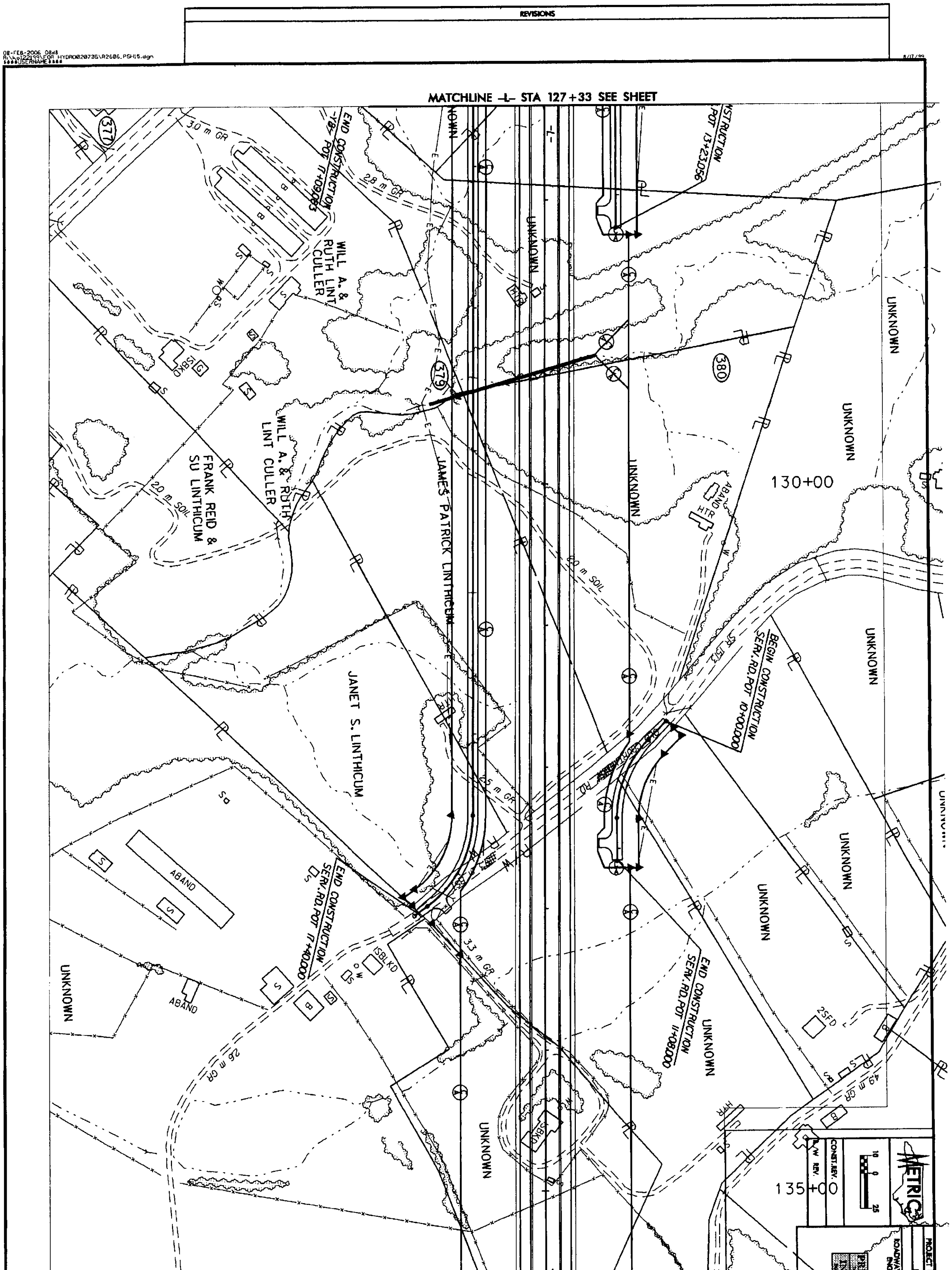

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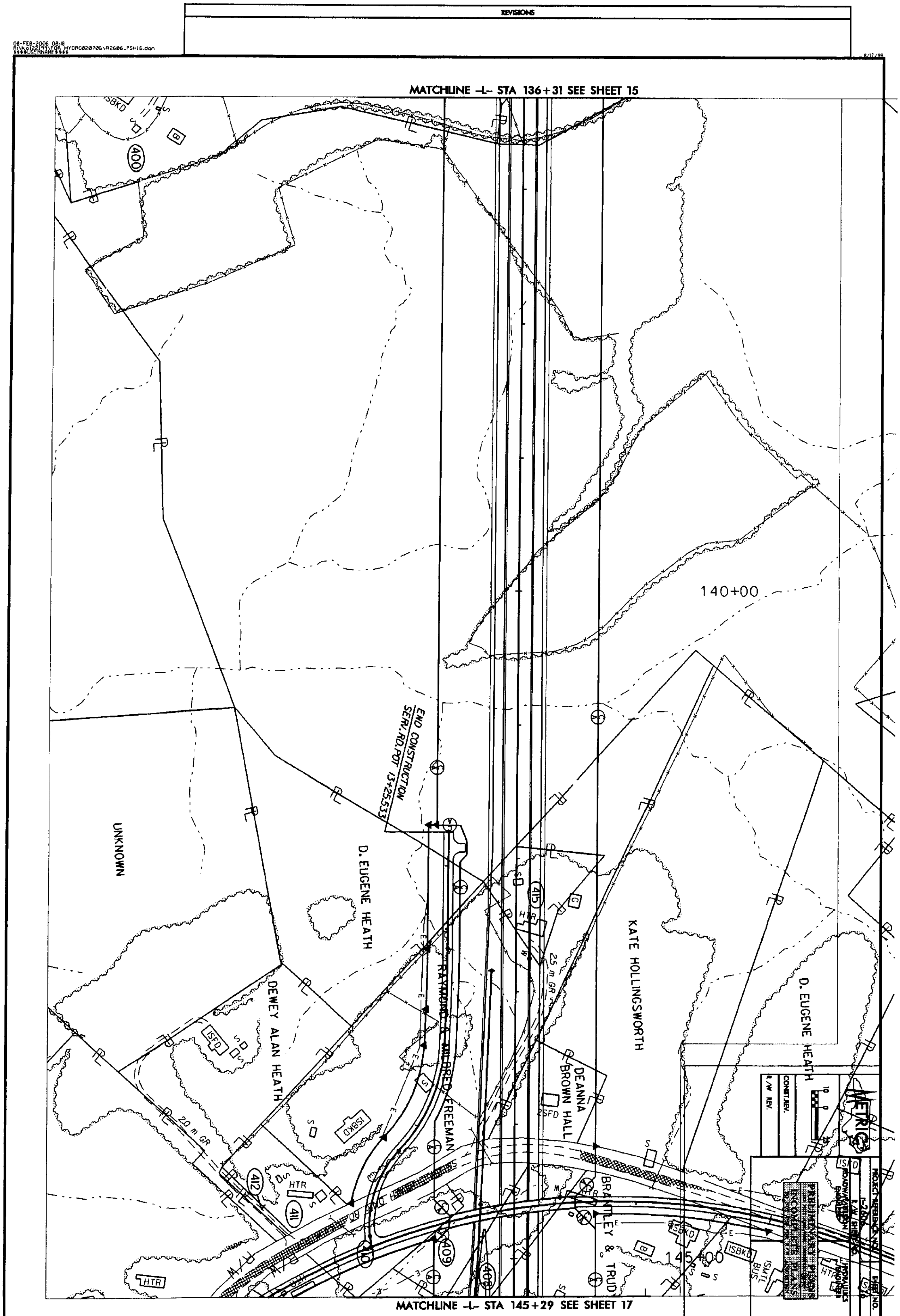
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RAYMOND & MILDRED FREEMAN
DEANNA BROWN HALL
BRANTLEY & TRUD
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REVISIONS

08-FEB-2006 08:18

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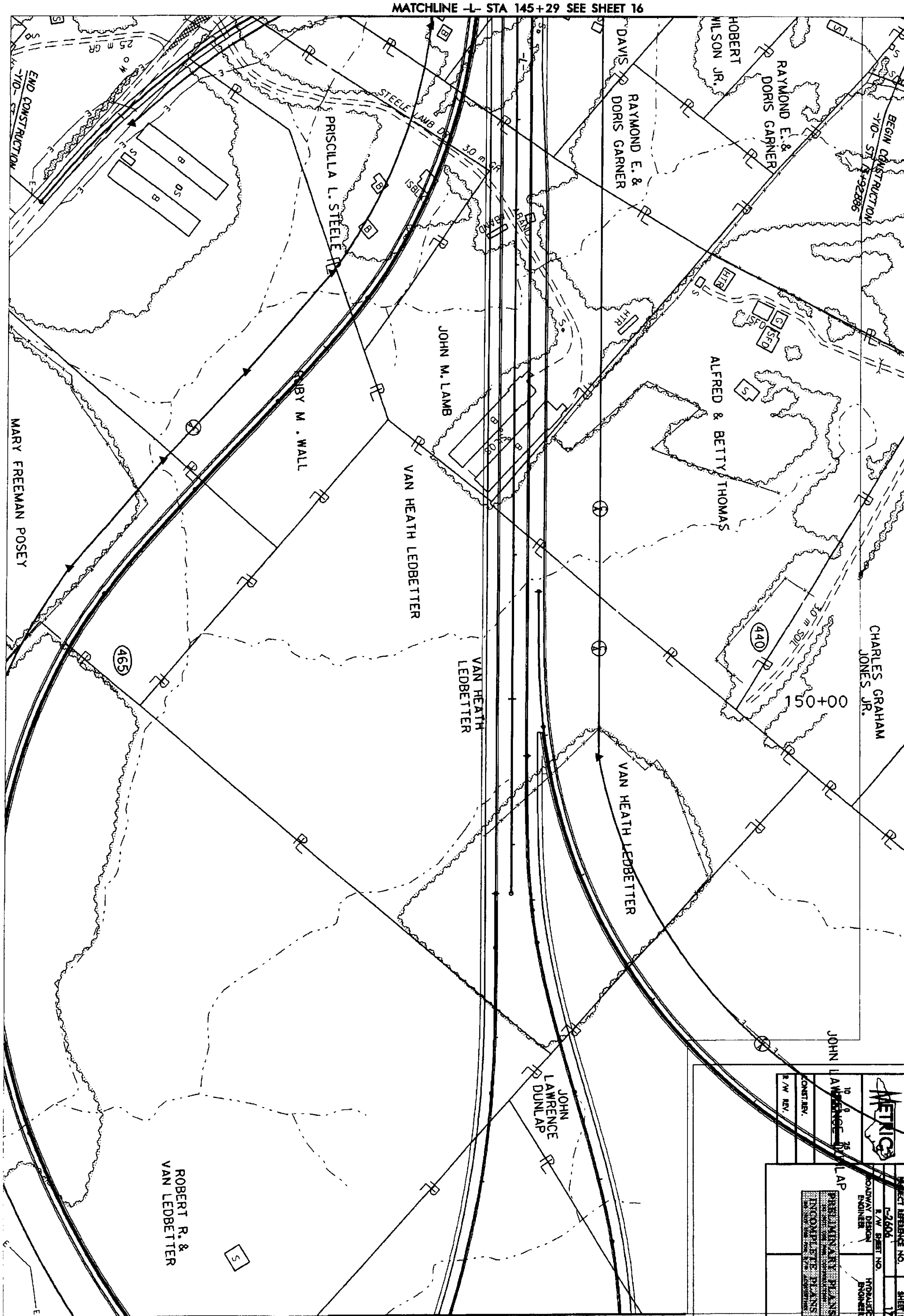

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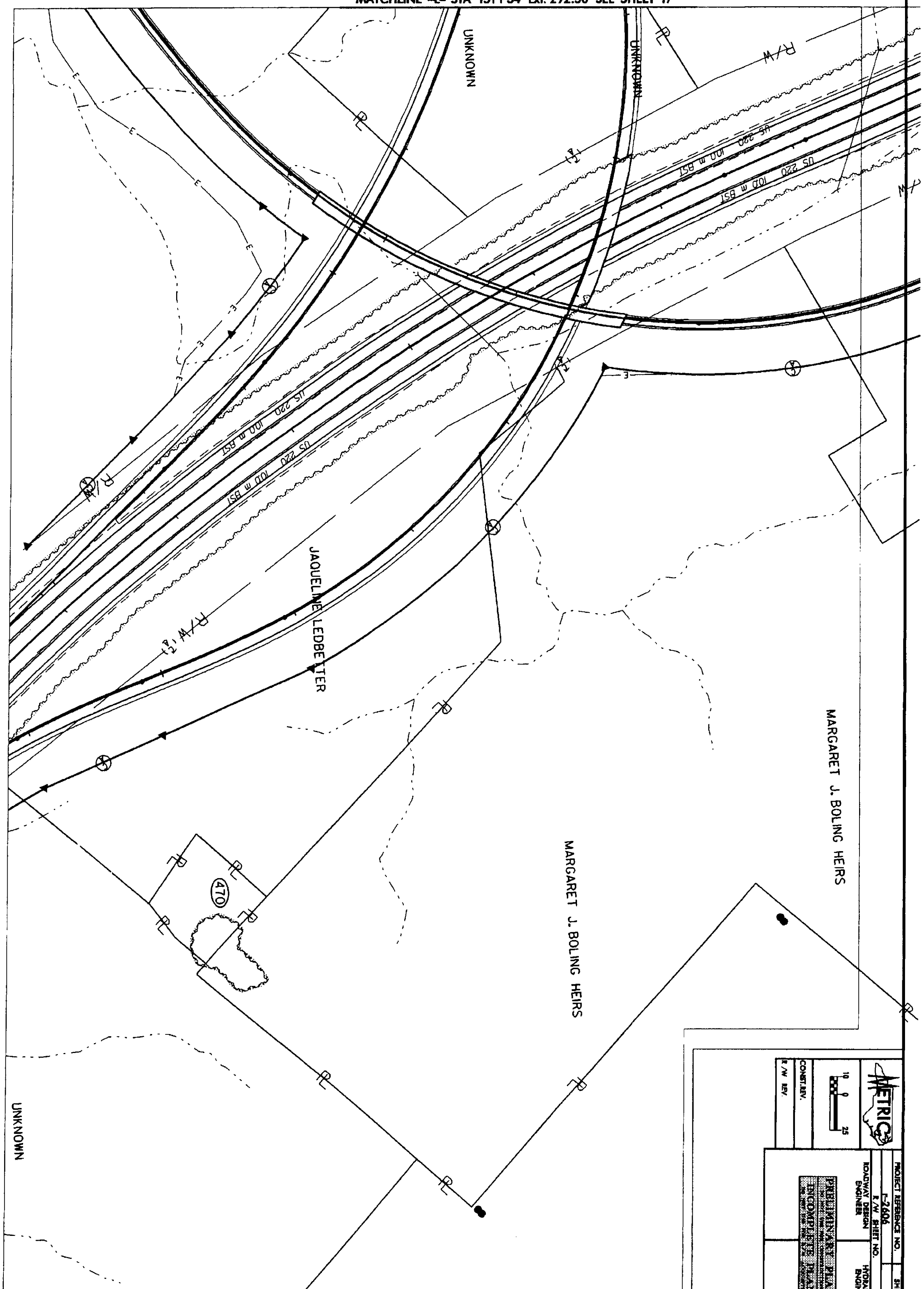

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RECEIVED
MAR 15 2007
DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT

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34480.1.1	STP-NHF-311(3)	PE	
34480.2.2	NHF-311(17)	R/W, UTIL.	
34480.3.2	NHF-311(18)	CONSTRUCTION	

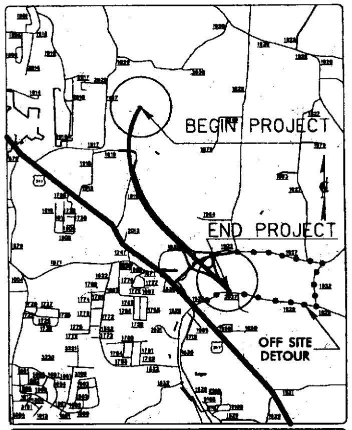
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

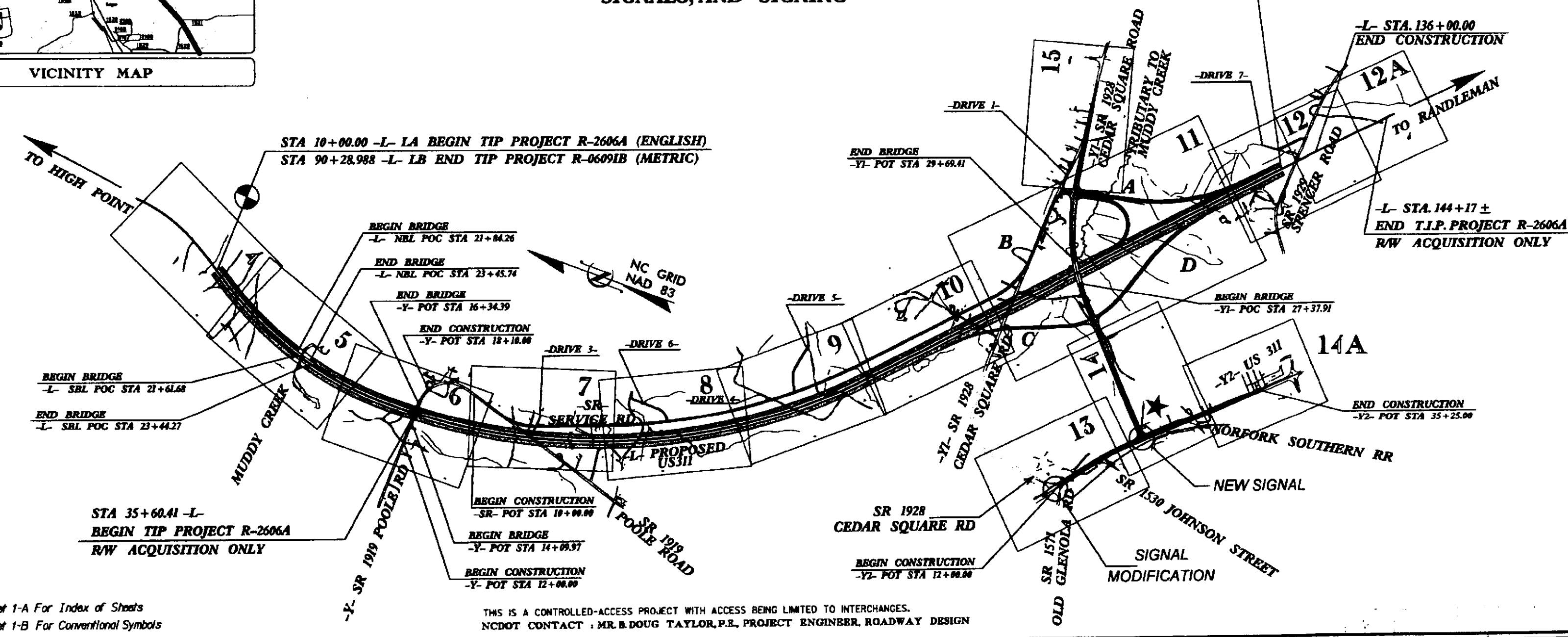
RANDOLPH COUNTY

LOCATION: ***US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, WIDENING, STRUCTURES, CULVERTS, SIGNALS, AND SIGNING***



VICINITY MAP



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

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
NCDOT CONTACT : MR. B. DOUG TAYLOR, P.E., PROJECT ENGINEER, ROADWAY DESIGN

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2006 = xxxxxx
ADT 2026 = xxxxxx
DHV = 10%
D = 60%
T = 20%
(TTST 6% & DUAL 14%)
V = 70 mph

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2606A	= 2.281 MILES
LENGTH STRUCTURES TIP PROJECT R-2606A	= 0.030 MILES*
TOTAL LENGTH TIP PROJECT R-2606A	= 2.311 MILES
*LENGTH BASED ON NBL BRIDGE	

2006 STANDARD SPECIFICATIONS

R/W DATE : August 4, 2003
LETTING DATE : September 16, 2006

TOM SHEARIN, P.E.
EARTH TECH PROJECT MANAGER

Prepared In the Office of:

EarthTech
A Tyco International Ltd. Company

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
701 Corporate Center Drive
Suite 475
Raleigh, N.C. 27607
(919)-854-6200
FAX (919)-854-6259

HYDRAULICS ENGINEER

JOHN NICHOLS, P.E.
SIGNATURE:
ROADWAY DESIGN ENGINEER

G. T. SHEARIN, P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ART McMILLIAN, P.E.
STATE HIGHWAY DESIGN ENGINEER

CONTRACT: C201296 TIP PROJECT: R-2606A

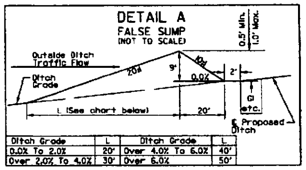
7/01/99

DRAINAGE DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

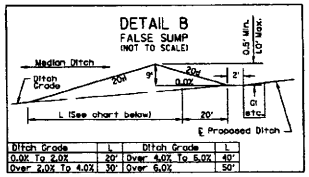
Prepared in the Office of: EarthTech, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 · (919) 854-6259 FAX

NOT TO SCALE



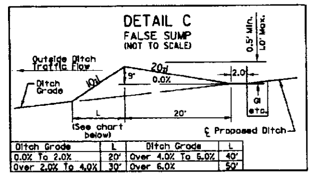
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 16+14 L
-L- 21+19 L
-L- 25+16 R
-L- 29+86 R
-L- 29+86 R (BERM)
-Y- 14+00 L
-Y- 14+00 R
-Y- 16+56 R
-L- 54+36 R
-L- 79+14 L
-SR- 55+43.61R
-L- 105+14 L



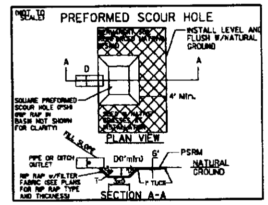
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 16+24 M
-L- 21+64 M
-L- 23+57 M
-L- 29+76 M
-L- 43+26 M
-L- 47+76 M
-L- 54+26 M
-SR- 34+29.93 R
-L- 56+76 M
-L- 62+76 L
-L- 62+76 M
-L- 68+76 M
-L- 81+74 M
-DRIVE5- 10+45 R
-DRIVE5- 10+45 L
-L- 87+26 M
-L- 92+76 M
-L- 118+06 M
-L- 123+76 M

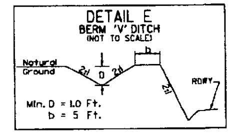


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

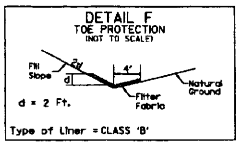
-L- 16+24 R
-L- 21+64 R
-L- 25+76 L
-L- 29+76 L
-L- 31+26 L
-L- 37+36 L
-L- 40+56 L
-L- 43+26 L
-L- 47+76 L
-SR-31+37.78 L
-L- 65+76 L
-L- 68+76 L
-L- 85+27 L
-L- 87+26 L
-L- 92+76 L



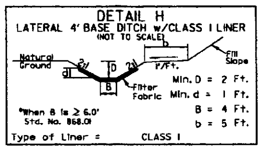
-L- 31+05 L
-L- 46+80 R
-L- 59+48 L
-L- 112+05 L
-SR- 48+00 L
-SR- 24+90 L
-DRIVE5- 15+60 R
-DRIVE6- 13+63 L
-RAMPC- 9+67 R
-RAMPD- 14+00 R



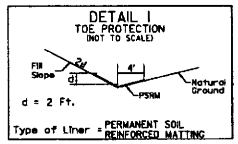
-L- 30+00 - 35+12 R
(DDE = 847 CY)



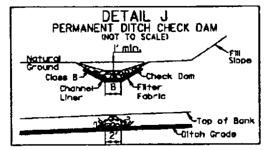
-L- 46+40 - 46+80 R
-L- 47+16 - 47+50 R
-L- 70+50 - 72+00 R
-SR- 49+90 - 51+00 L
-RAMPC- 10+25 - 15+00 R
-RAMPD- 14+28 - 14+80 L



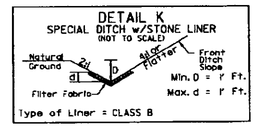
-L- 47+89 - 52+50 R
DDE = 458 CY



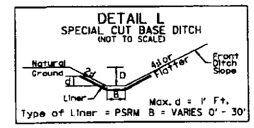
-SR- 14+45 - 15+75 L
-L- 58+10 - 59+48 R
-L- 60+00 - 61+50 L



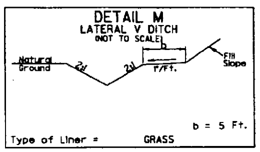
-L- 47+95 R
-L- 48+09 R
-L- 48+23 R
-L- 48+37 R



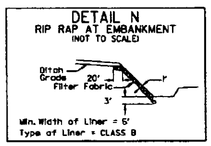
-SR- 10+00 - 11+85.62 R



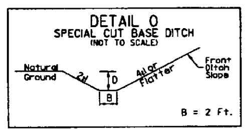
-SR- 11+85.62 - 13+30 R



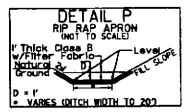
-L- 72+00 - 73+50 R (DDE = 31CY)
-RAMPA- 3+30 - 7+90 R (DDE = 236 CY)
-DRIVE 6- 12+50 - 13+20 R (DDE = 22 CY)
-DRIVE 6- 12+50 - 13+60 L (DDE = 62 CY)



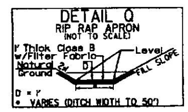
-SR- 45+60 - 46+30 L



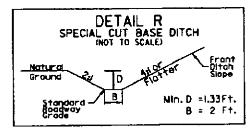
-L- 78+50 - 82+00 R



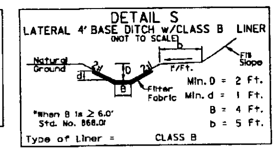
-L- 82+00 - 82+65 R



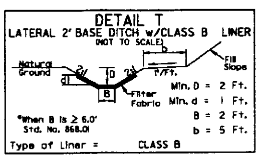
-SR- 50+95 - 52+00 L



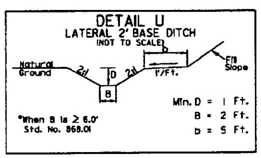
-SR- 76+50 - 77+80 L
-SR- 56+57.61- 63+50 L
-SR- 69+50 - 76+50 L



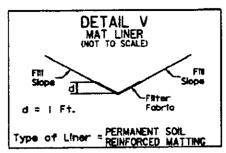
-L- 90+80 - 92+50 R (DDE = 408 CY)
-SR- 52+00 - 56+57.61L (DDE = 1578 CY)



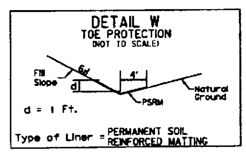
-RAMPD- 14+80 - 16+75 L (DDE = 56 CY)
-Y1- 19+50 - 22+93 R (DDE = 232 CY)



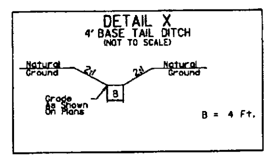
-Y1- 29+55 - 35+50 L (DDE = 1220 CY)
-DRIVE 6- 13+25 - 15+35 R (DDE = 110 CY)



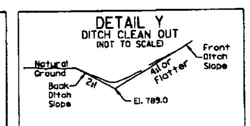
-L- 118+08 - 120+50 L
-L- 59+48 L



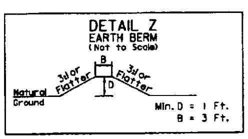
-L- 77+75 - 78+50 R
-RAMPC- 9+65 - 10+15 R
-RAMPD- 11+80 - 14+28 L
-SR- 77+80 - 80+20 L
-Y1- 18+75 - 22+80 L
-Y1- 38+00 - 39+10 L



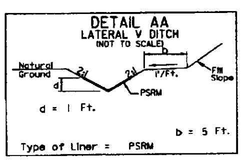
-Y1- 37+98 R
(DDE = 165 CY)



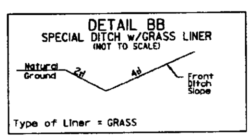
-Y2- 16+74 R
(2-24" RCP OUTLET INVERT TO RAILROAD R/W)



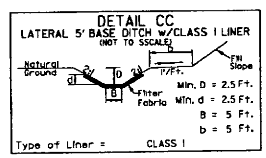
-L- 115+15 R
-Y1- 25+90 R
-Y1- 27+31R



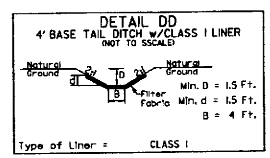
-Y2- 30+83 - 32+25 L
(DDE = 35 CY)



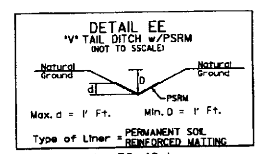
-Y2- 29+15 - 30+83 R
-Y2- 30+83 - 31+50 R
-Y2- 32+50 - 34+00 L



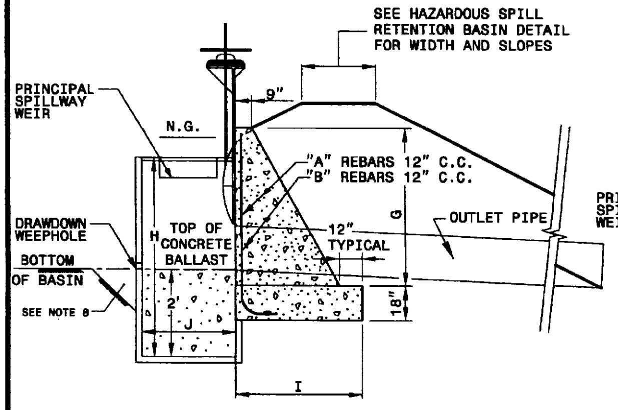
-Y1- 30+75 - 34+15 R
(DDE = 658 CY)



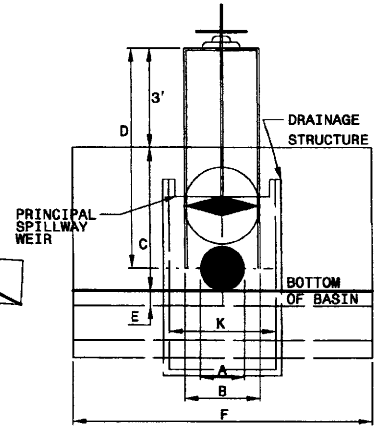
-RAMP C- 10+67 L
(DDE = 434 CY)



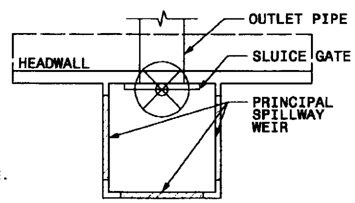
-L- 59+48 L
(DDE = 5 CY)



SECTION VIEW



ELEVATION VIEW



PLAN VIEW

GENERAL NOTES:
1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND HEADWALL SHALL BE PAID FOR ON YD^3 BASIS.
2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.
4- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.
5- INCORPORATE DRAINAGE STRUCTURE WALL INTO HEADWALL.
6- PAYMENT FOR DRAINAGE STRUCTURE IS TO BE PAID FOR AS "MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE".
7- FOR BALLAST, FILL STRUCTURE WITH CONCRETE TO PIPE INVERT. HOWEVER, DO NOT OBSTRUCT SLUICE GATE FROM FULLY CLOSING OVER PIPE. CONRETE BALLAST SHALL BE INCIDENTAL TO MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE.
8- TO AVOID CLOGGING OF THE DRAWDOWN WEEPHOLE, EXCAVATE 1' BELOW BASIN BOTTOM ELEVATION IN THE IMMEDIATE VICINITY OF THE SPILLWAY.
9- SEE STANDARD 838.02 FOR ADDITIONAL INFORMATION, INCLUDING REBAR SPECIFICATIONS.

BASIN #		1	2
SLUICE GATE DIMENSIONS			
PIPE DIAMETER	A	30"	30"
GATE DIAMETER	B	36"	36"
HEADWALL HT.	C	8'-0"	7'-0"
FRAME HEIGHT	D	9'-9"	8'-9"
INVERT HEIGHT	E	7"	7"
HEADWALL WIDTH	F	9'-4"	9'-4"
HEADWALL DIMENSIONS			
PIPE DIAMETER	A	30"	30"
HEADWALL HT.	G	8'-7"	7'-7"
HEADWALL DEP.	I	5'-0"	4'-0"

DRAINAGE STRUC. DIMENSIONS			
DRAWDOWN DIA.		1 1/8"	1 3/4"
DRAWDOWN INV.		724.00	716.00
STRUCTURE INV.		722.00	714.00
STRUCTURE DEP.	H	9'-0"	7'-0"
STRUCTURE DIM.	J	5'-0"	5'-0"
STRUCTURE DIM.	K	5'-0"	5'-0"
PRINCIPAL SPILLWAY ELEV.		729.00	720.00
PRINCIPAL WEIR SPILLWAY WIDTH		9'	9'

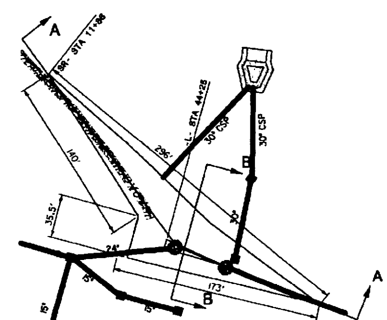
PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-H
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech

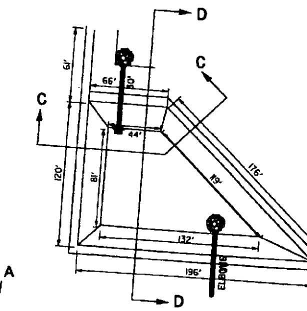
GRAPHIC SCALE

50 25 0 50 100

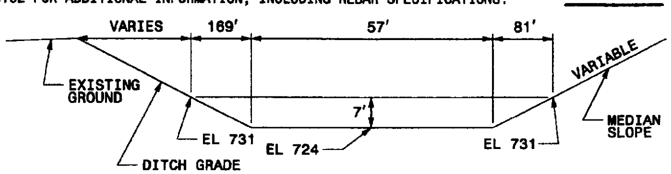
PLANS



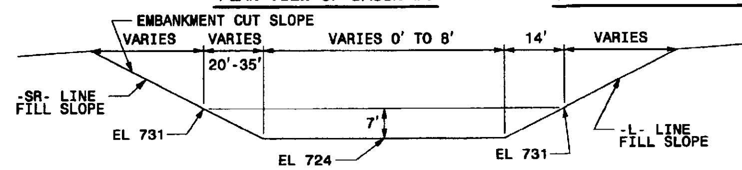
PLAN VIEW OF BASIN #1



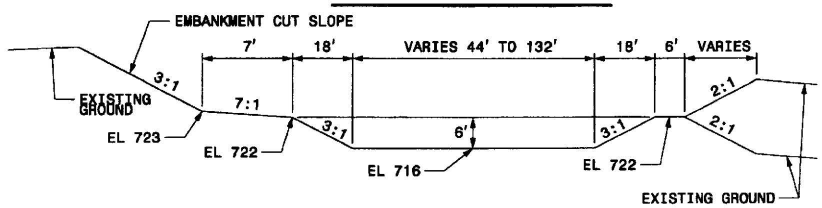
PLAN VIEW OF BASIN #2



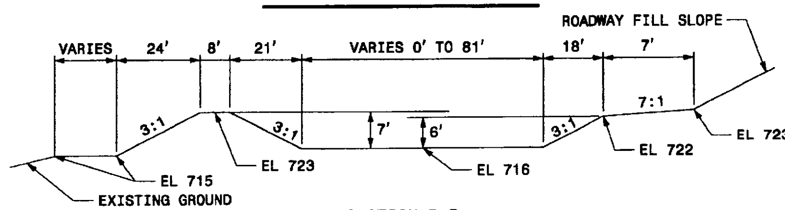
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

HAZARDOUS SPILL/DRY DETENTION BASIN							
BASIN #	PIPE SIZE	TOP ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
1	30"	731.00	724.00	7'		50264+ CF	-L- 44+50 LT
2	30"	722.00	716.00	6'		57934+ CF	-L- 57+00 LT

Hazardous Spill Retention Basins are provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

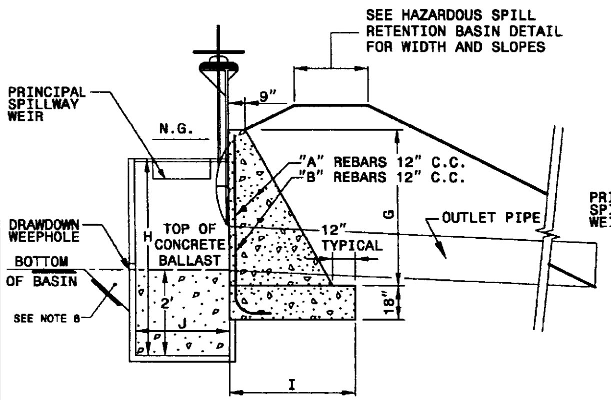
HAZARDOUS SPILL/ DRY DETENTION BASIN

ORIGINAL BY: JDRN DATE: 2/21/01
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

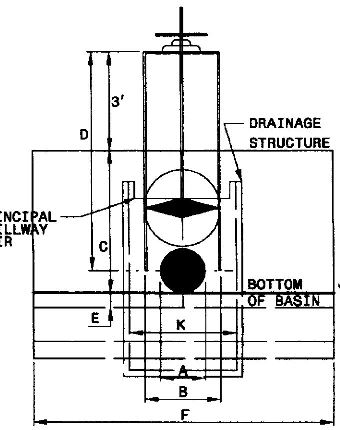
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607

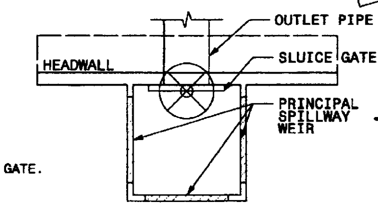
GRAPHIC SCALE
50 25 0 50 100
PLANS



SECTION VIEW



ELEVATION VIEW

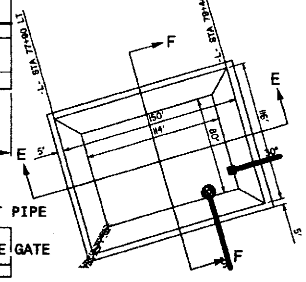


PLAN VIEW

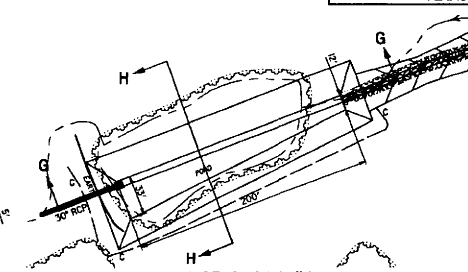
GENERAL NOTES:
1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND HEADWALL SHALL BE PAID FOR ON YD^3 BASIS.
2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.
4- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.
5- INCORPORATE DRAINAGE STRUCTURE WALL INTO HEADWALL.
6- PAYMENT FOR DRAINAGE STRUCTURE IS TO BE PAID FOR AS "MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE".
7- FOR BALLAST, FILL STRUCTURE WITH CONCRETE TO PIPE INVERT. HOWEVER, DO NOT OBSTRUCT SLUICE GATE FROM FULLY CLOSING OVER PIPE. CONRETE BALLAST SHALL BE INCIDENTAL TO MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE.
8- TO AVOID CLOGGING OF THE DRAWDOWN WEEPHOLE, EXCAVATE 1' BELOW BASIN BOTTOM ELEVATION IN THE IMMEDIATE VICINITY OF THE SPILLWAY.
9- SEE STANDARD 838.02 FOR ADDITIONAL INFORMATION, INCLUDING REBAR SPECIFICATIONS.

BASIN #		3	4
SLUICE GATE DIMENSIONS			
PIPE DIAMETER	A	30"	30"
GATE DIAMETER	B	36"	36"
HEADWALL HT.	C	7'-0"	7'-0"
FRAME HEIGHT	D	8'-9"	8'-9"
INVERT HEIGHT	E	7"	7"
HEADWALL WIDTH	F	9'-4"	9'-4"
HEADWALL DIMENSIONS			
PIPE DIAMETER	A	30"	30"
HEADWALL HT.	G	7'-7"	7'-7"
HEADWALL DEP.	I	4'-0"	4'-0"

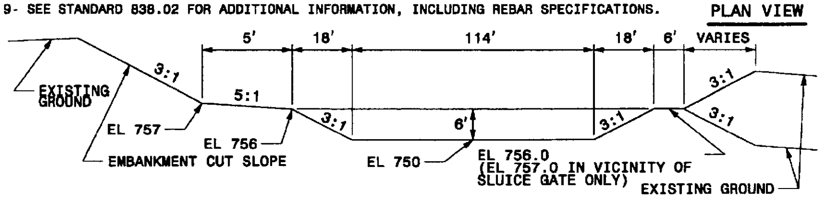
DRAINAGE STRUC. DIMENSIONS			
DRAWDOWN DIA.		2"	1 7/8"
DRAWDOWN INV.		750.00	756.50
STRUCTURE INV.		748.00	754.50
STRUCTURE DEP.	H	6'-6"	6'-6"
STRUCTURE DIM.	J	3'-0"	3'-0"
STRUCTURE DIM.	K	3'-0"	3'-0"
PRINCIPAL SPILLWAY ELEV.		753.50	760.00
PRINCIPAL WEIR SPILLWAY WIDTH		7'	5'



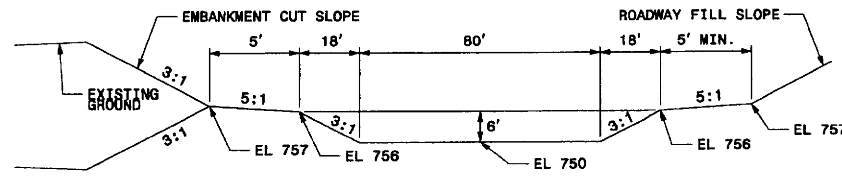
PLAN VIEW OF BASIN #3



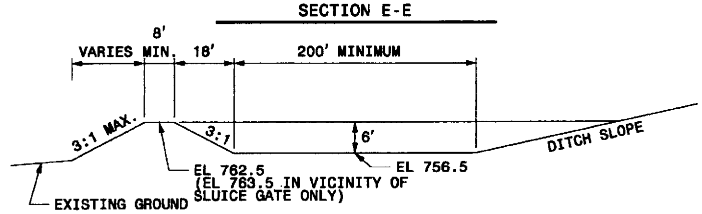
PLAN VIEW OF BASIN #4



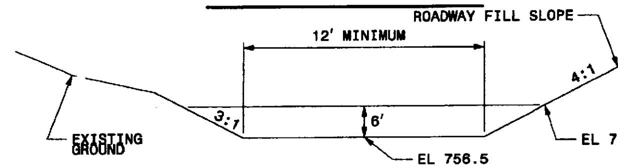
SECTION E-E



SECTION F-F



SECTION G-G



SECTION H-H

HAZARDOUS SPILL/DRY DETENTION BASIN							
BASIN #	PIPE SIZE	TOP ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
3	30"	756.00	750.00	6'		70968+ CF	-L- 79+00 LT
4	30"	762.5	756.5	6'		33500+ CF	-L- 89+00 RT

Hazardous Spill Retention Basins are provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL/ DRY DETENTION BASIN

ORIGINAL BY: JDBN DATE: 2/21/01
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

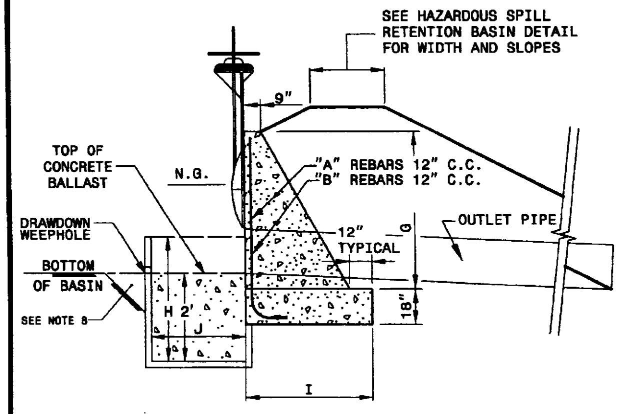
PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-J

RW SHEET NO.

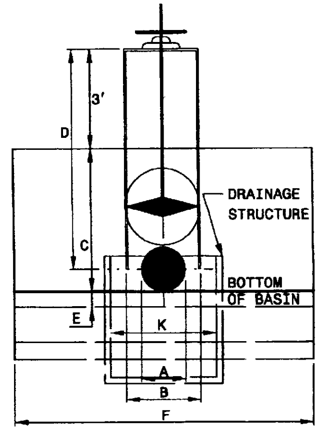
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607

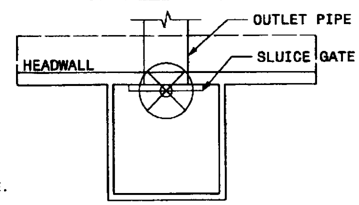
GRAPHIC SCALE 50 25 0 50 100 PLANS



SECTION VIEW

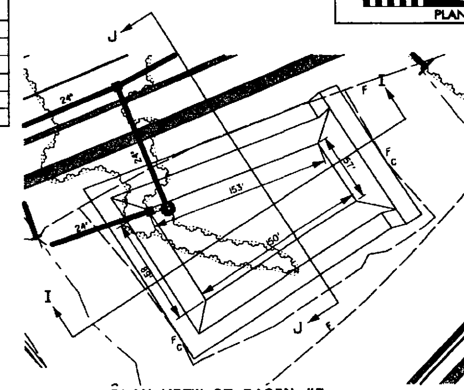


ELEVATION VIEW



PLAN VIEW

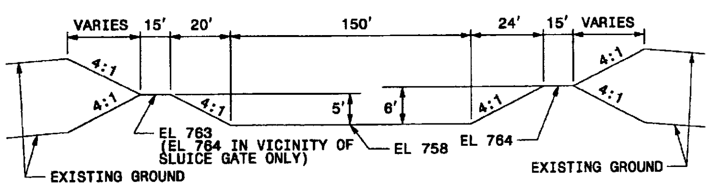
BASIN #		5	
SLUICE GATE DIMENSIONS			
PIPE DIAMETER	A	24"	
GATE DIAMETER	B	30"	
HEADWALL HT.	C	6'-0"	
FRAME HEIGHT	D	8'-0"	
INVERT HEIGHT	E	7"	
HEADWALL WIDTH	F	8'-2"	
HEADWALL DIMENSIONS			
PIPE DIAMETER	A	24"	
HEADWALL HT.	G	6'-7"	
HEADWALL DEP.	I	4'-0"	
DRAINAGE STRUC. DIMENSIONS			
DRAWDOWN DIA.		1 ½"	
DRAWDOWN INV.		758.00	
STRUCTURE INV.		756.00	
STRUCTURE DEP.	H	2'-6"	
STRUCTURE DIM.	J	2'-0"	
STRUCTURE DIM.	K	3'-0"	



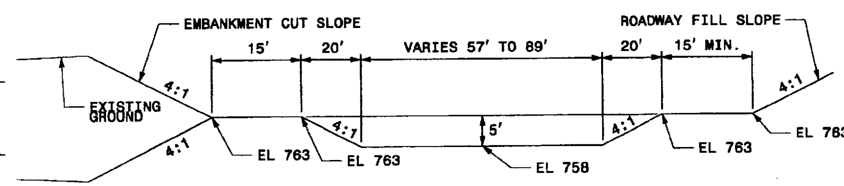
PLAN VIEW OF BASIN #5

GENERAL NOTES:

1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND HEADWALL SHALL BE PAID FOR ON YD^3 BASIS.
2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.
4- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.
5- INCORPORATE DRAINAGE STRUCTURE WALL INTO HEADWALL.
6- PAYMENT FOR DRAINAGE STRUCTURE IS TO BE PAID FOR AS "MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE".
7- FOR BALLAST, FILL STRUCTURE WITH CONCRETE TO PIPE INVERT. HOWEVER, DO NOT OBSTRUCT SLUICE GATE FROM FULLY CLOSING OVER PIPE. CONRETE BALLAST SHALL BE INCIDENTAL TO MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE.
8- TO AVOID CLOGGING OF THE DRAWDOWN WEEPHOLE, EXCAVATE 1' BELOW BASIN BOTTOM ELEVATION IN THE IMMEDIATE VICINITY OF THE SPILLWAY.
9- SEE STANDARD 838.02 FOR ADDITIONAL INFORMATION, INCLUDING REBAR SPECIFICATIONS.



SECTION I-I



SECTION J-J

HAZARDOUS SPILL/DRY DETENTION BASIN							
BASIN #	PIPE SIZE	TOP ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
5	24"	763.0	758.0	5.0'		79730 CF	-L- 112+00 RT

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DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL/ DRY DETENTION BASIN

ORIGINAL BY: JDRN DATE: 2/21/01
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-K

BW SHEET NO.

ROADWAY DESIGN ENGINEER

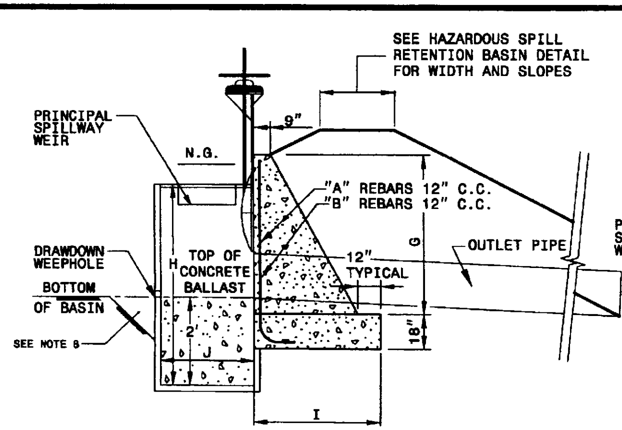
HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607

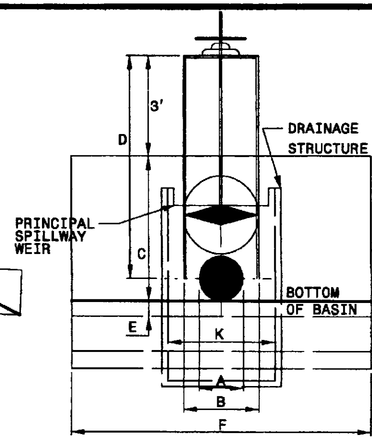
GRAPHIC SCALE

50 25 0 50 100

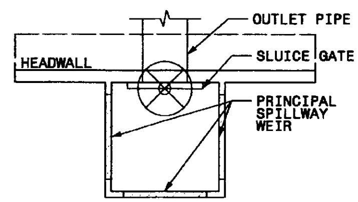
PLANS



SECTION VIEW



ELEVATION VIEW



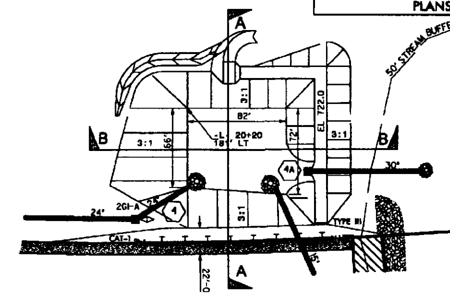
PLAN VIEW

BASIN #		6	7
SLUICE GATE DIMENSIONS			
PIPE DIAMETER	A	30"	24"
GATE DIAMETER	B	36"	30"
HEADWALL HT.	C	8'-0"	5'-5"
FRAME HEIGHT	D	9'-9"	7'-6"
INVERT HEIGHT	E	7"	7"
HEADWALL WIDTH	F	9'-4"	8'-2"
HEADWALL DIMENSIONS			
PIPE DIAMETER	A	30"	24"
HEADWALL HT.	G	7'-7"	6'-1"
HEADWALL DEP.	I	5'-0"	4'-0"

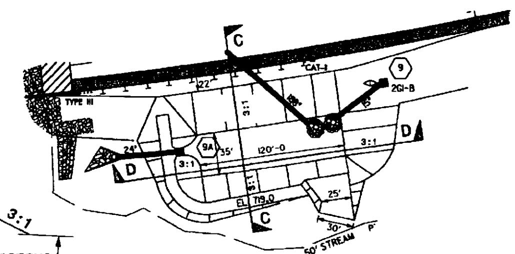
DRAINAGE STRUC. DIMENSIONS			
DRAWDOWN DIA.		3"	2"
DRAWDOWN INV.		714.00	713.00
STRUCTURE INV.		712.00	711.00
STRUCTURE DEP.	H	9'-0"	7'-6"
STRUCTURE DIM.	J	5'-0"	5'-0"
STRUCTURE DIM.	K	5'-0"	5'-0"
PRINCIPAL SPILLWAY ELEV.		720.00	717.50
PRINCIPAL WEIR SPILLWAY WIDTH		10'	9'

GENERAL NOTES:

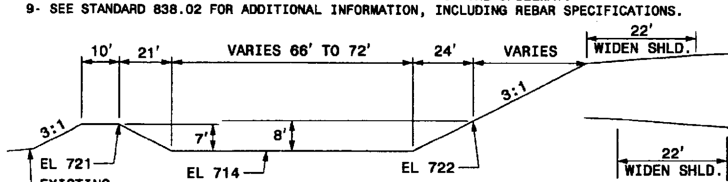
1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND HEADWALL SHALL BE PAID FOR ON YD³ BASIS.
2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.
4- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.
5- INCORPORATE DRAINAGE STRUCTURE WALL INTO HEADWALL.
6- PAYMENT FOR DRAINAGE STRUCTURE IS TO BE PAID FOR AS "MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE".
7- FOR BALLAST, FILL STRUCTURE WITH CONCRETE TO PIPE INVERT. HOWEVER, DO NOT OBSTRUCT SLUICE GATE FROM FULLY CLOSING OVER PIPE. CONRETE BALLAST SHALL BE INCIDENTAL TO MASONRY DRAINAGE STRUCTURE FOR SLUICE GATE.
8- TO AVOID CLOGGING OF THE DRAWDOWN WEEPHOLE, EXCAVATE 1' BELOW BASIN BOTTOM ELEVATION IN THE IMMEDIATE VICINITY OF THE SPILLWAY.
9- SEE STANDARD 838.02 FOR ADDITIONAL INFORMATION, INCLUDING REBAR SPECIFICATIONS.



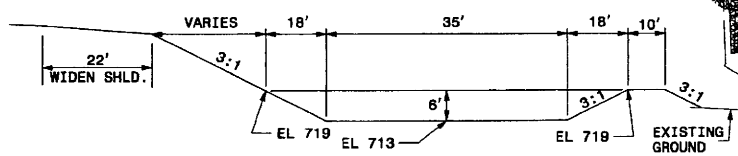
PLAN VIEW OF BASIN #6



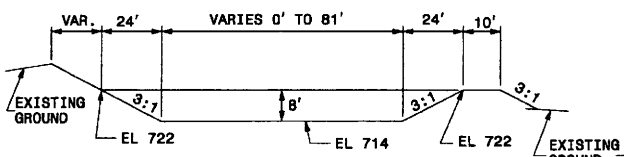
PLAN VIEW OF BASIN #7



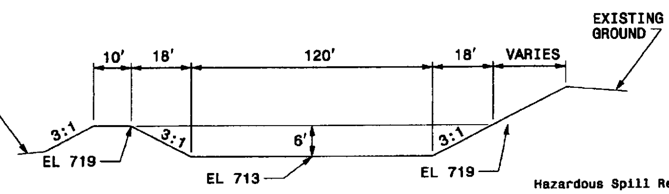
SECTION A-A



SECTION C-C



SECTION B-B



SECTION D-D

HAZARDOUS SPILL/DRY DETENTION BASIN							
BASIN #	PIPE SIZE	SPILLOVER ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
6	30"	721.00	714.00	8'		66069+ CF	-L- 20+50 LT
7	24"	718.50	713.00	6'		36950+ CF	-L-25+00 RT

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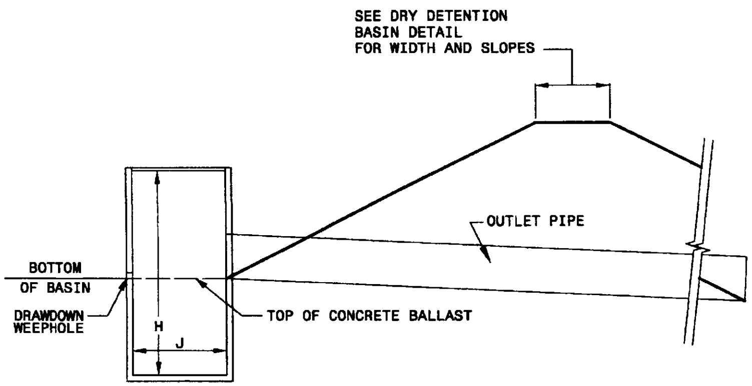
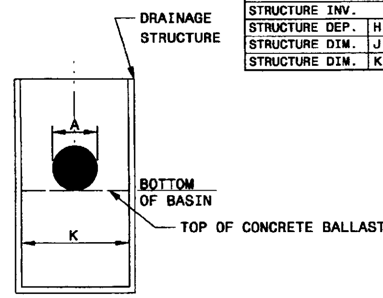
DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL/ DRY DETENTION BASIN

ORIGINAL BY: RWS DATE: 10/27/04
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:



SECTION VIEW



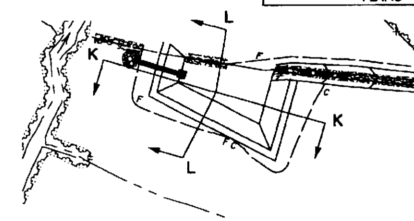
ELEVATION VIEW

DRAINAGE STRUC. DIMENSIONS			
PIPE DIAMETER	A	24"	
DRAWDOWN DIA.		7/8"	
DRAWDOWN INV.		713.00	
STRUCTURE INV.		710.00	
STRUCTURE DEP.	H	7'-0"	
STRUCTURE DIM.	J	2'-0"	
STRUCTURE DIM.	K	3'-0"	

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-M
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607

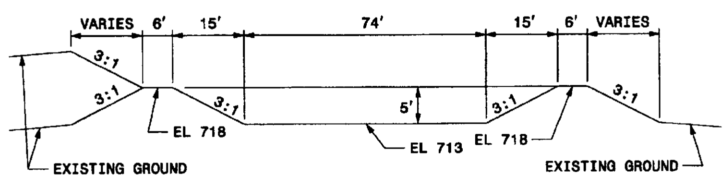
GRAPHIC SCALE
50 25 0 50 100
PLANS



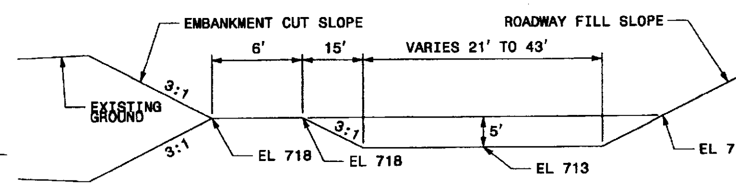
PLAN VIEW OF BASIN

GENERAL NOTES:

1- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH DRAINAGE STRUCTURE.
2- PAYMENT FOR DRAINAGE STRUCTURES IS INCLUDED UNDER DRAINAGE STRUCTURES.
3- FOR BALLAST, FILL STRUCTURE WITH CONCRETE TO PIPE INVERT.
4- TO AVOID CLOGGING OF THE DRAWDOWN WEEPHOLE, EXCAVATE 1' BELOW BASIN BOTTOM ELEVATION IN THE IMMEDIATE VICINITY OF THE SPILLWAY.



SECTION K-K



SECTION L-L

DRY DETENTION BASIN						
PIPE SIZE	TOP ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
24"	718.0	713.0	5.0'		14818 CF	-L- 47+00 RT

Hazardous Spill Retention Basins are provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

DRY DETENTION BASIN

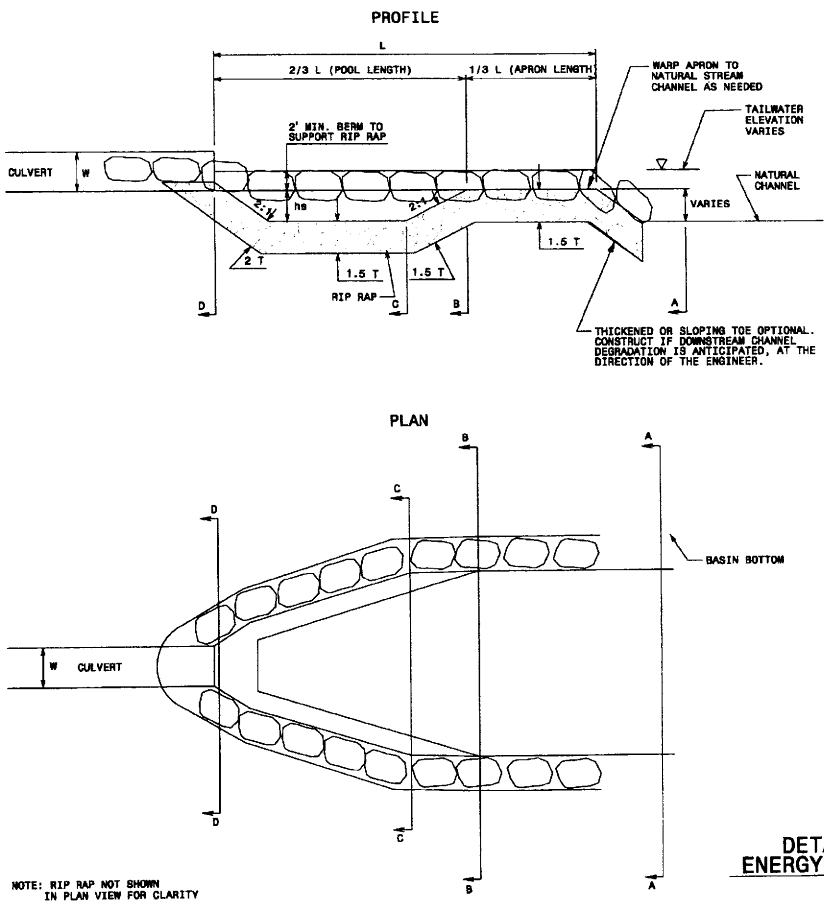
ORIGINAL BY: JDRN DATE: 2/21/01
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

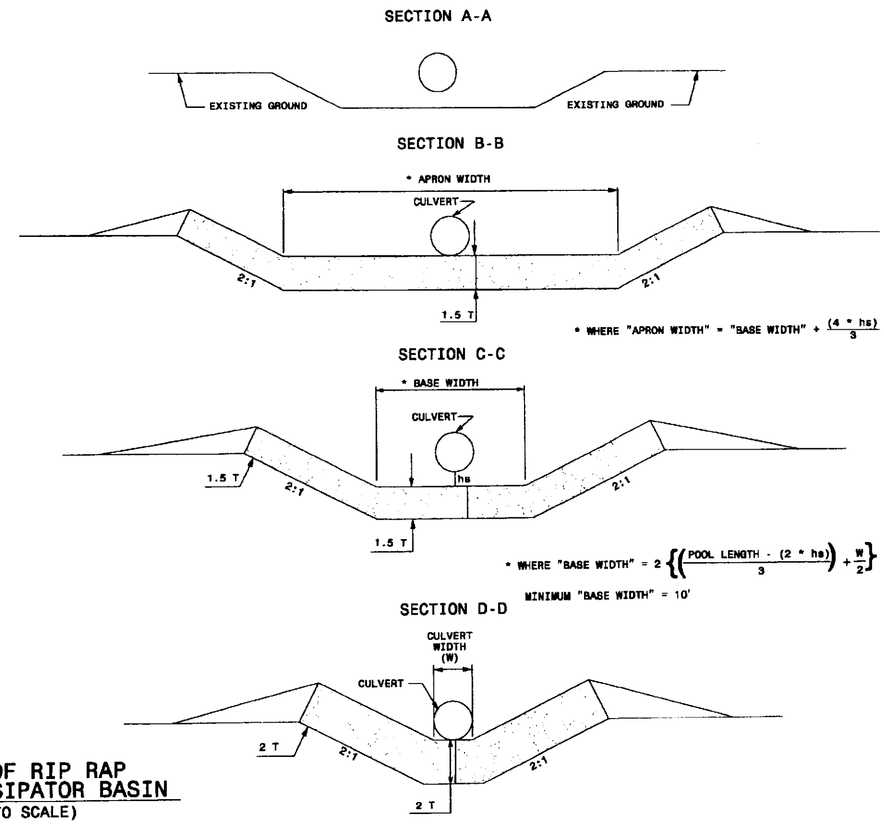
PROJECT REFERENCE NO.	SHEET NO.
R-2606A	2-N
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607

GRAPHIC SCALE
50 25 0 50 100
PLANS

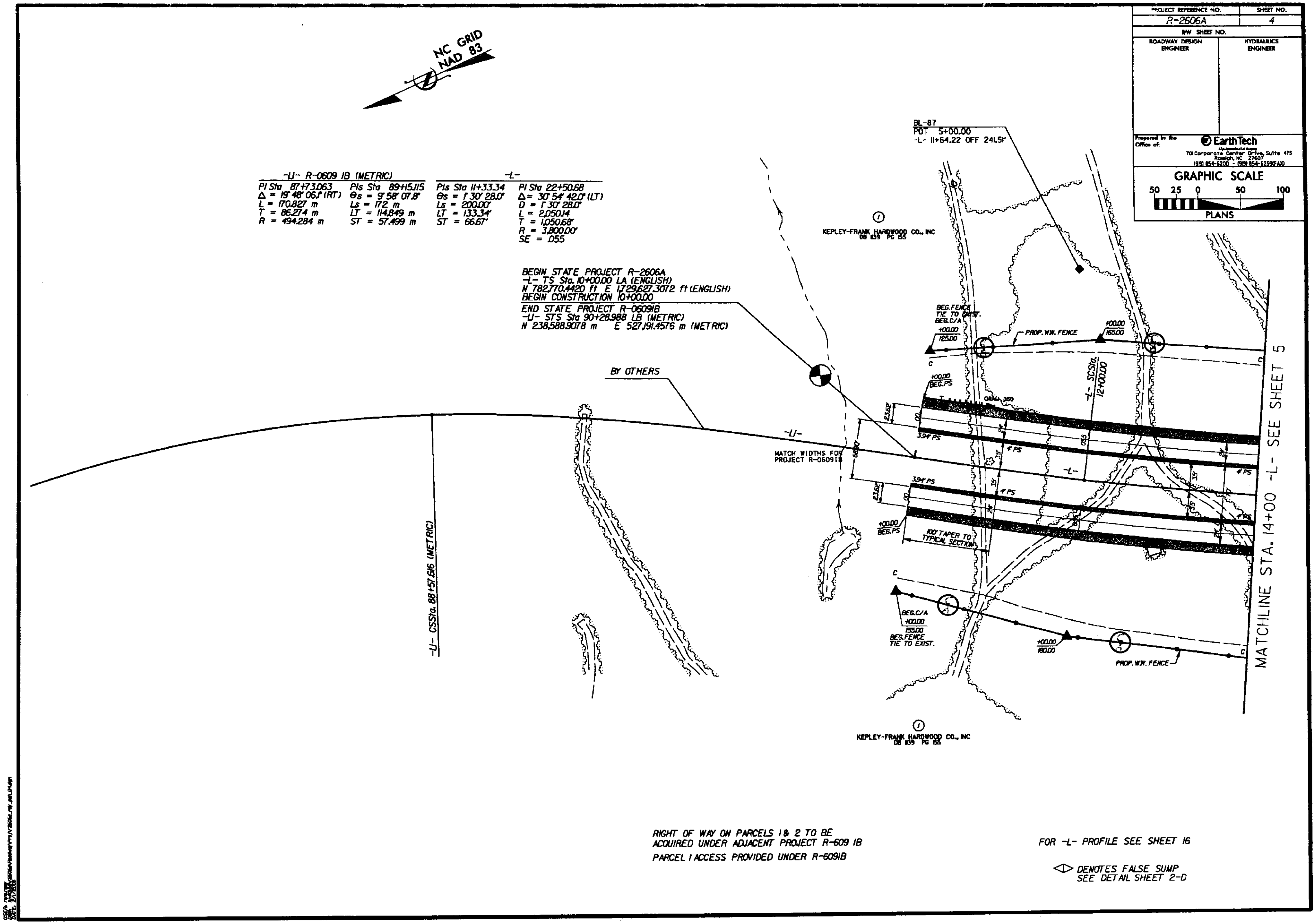
RIP RAP BASIN	LOCATION	L (feet)	POOL LENGTH (feet)	APRON LENGTH (feet)	BASE WIDTH (feet)	APRON WIDTH (feet)	RIP RAP THICKNESS T (inches)	RIP RAP CLASS	DEPTH hs (feet)
#1	-SR- 13+11 LT	24	16	8	11	13	23	II	1.66

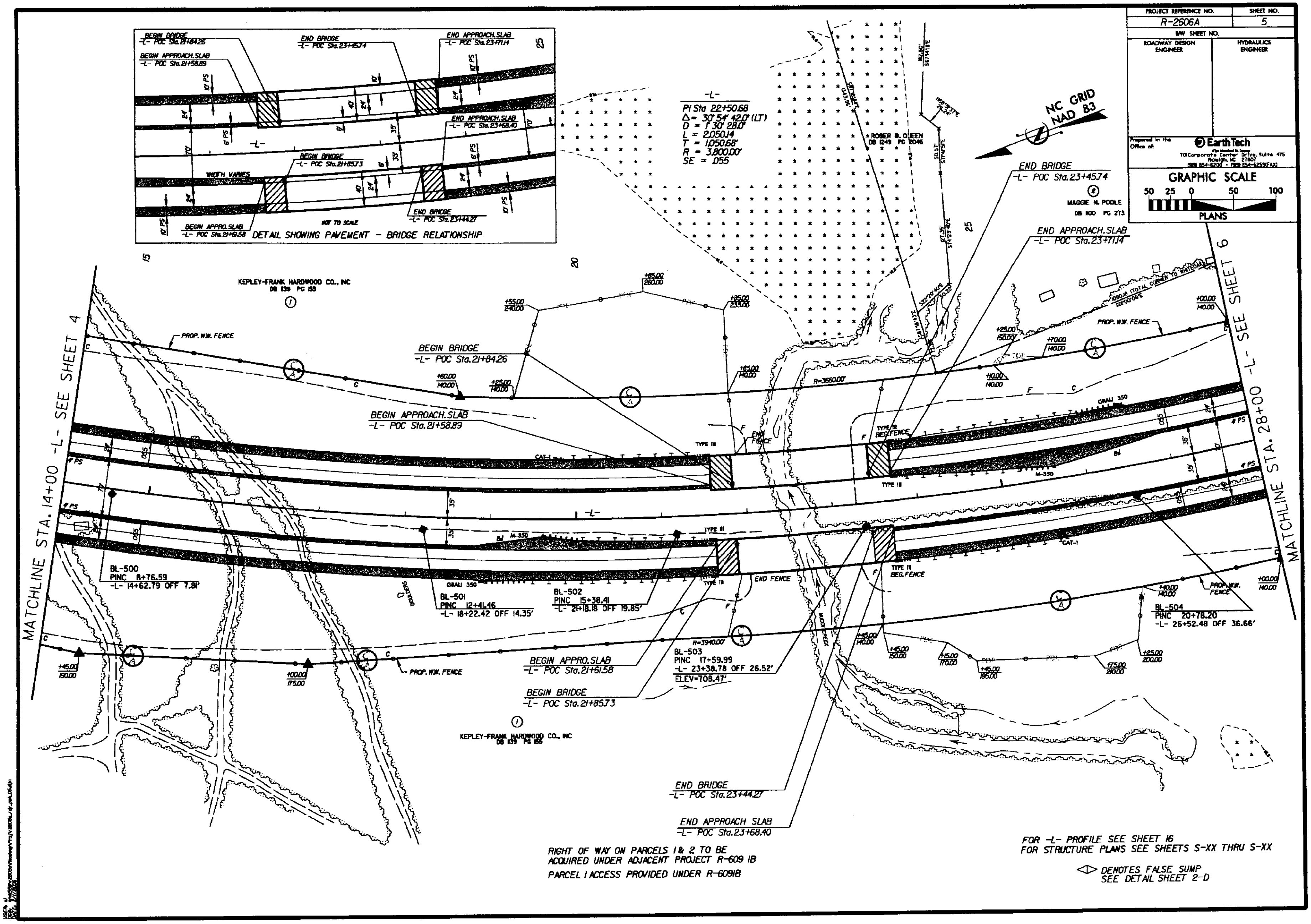




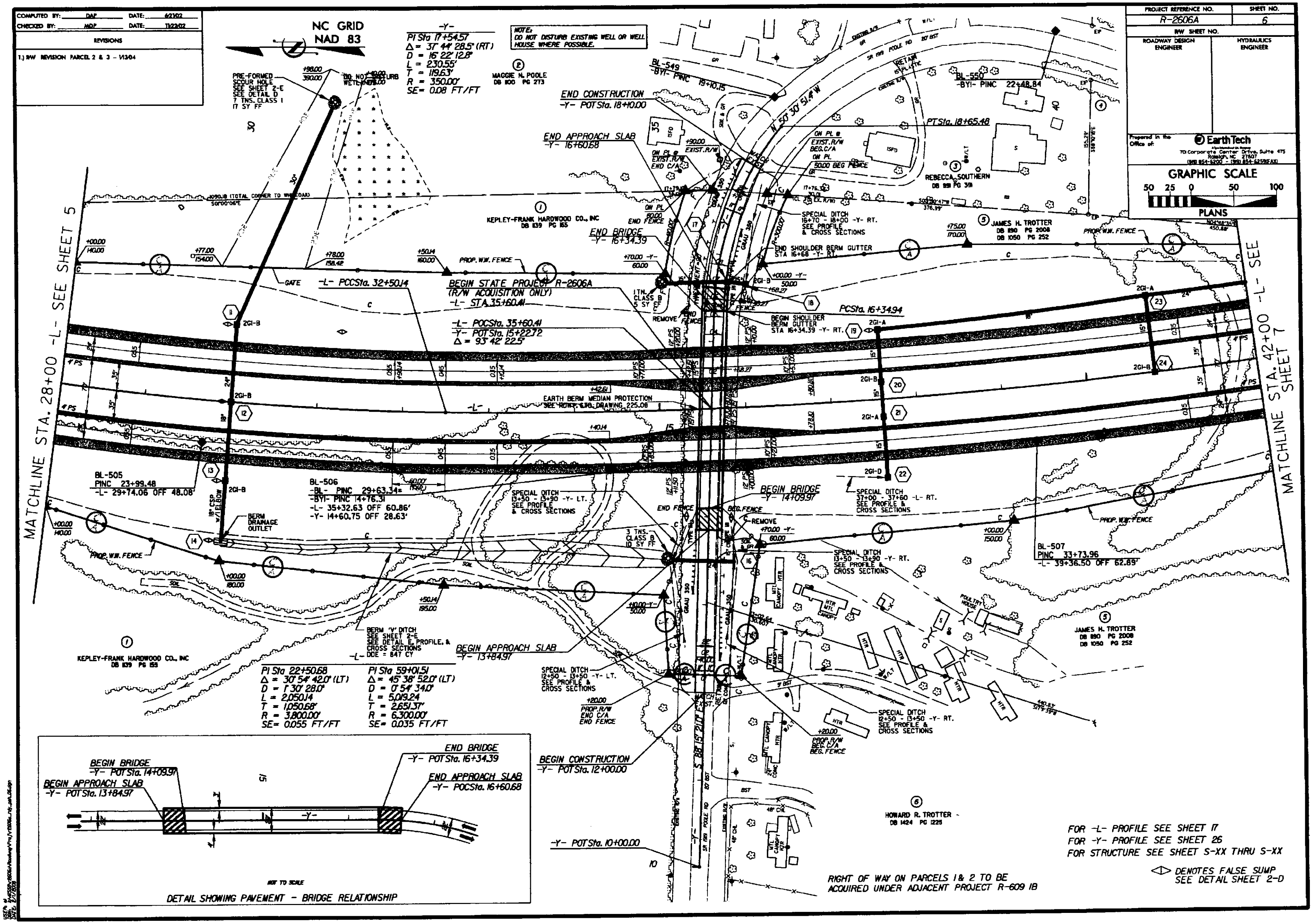
DETAIL OF RIP RAP ENERGY DISSIPATOR BASIN

(NOT TO SCALE)

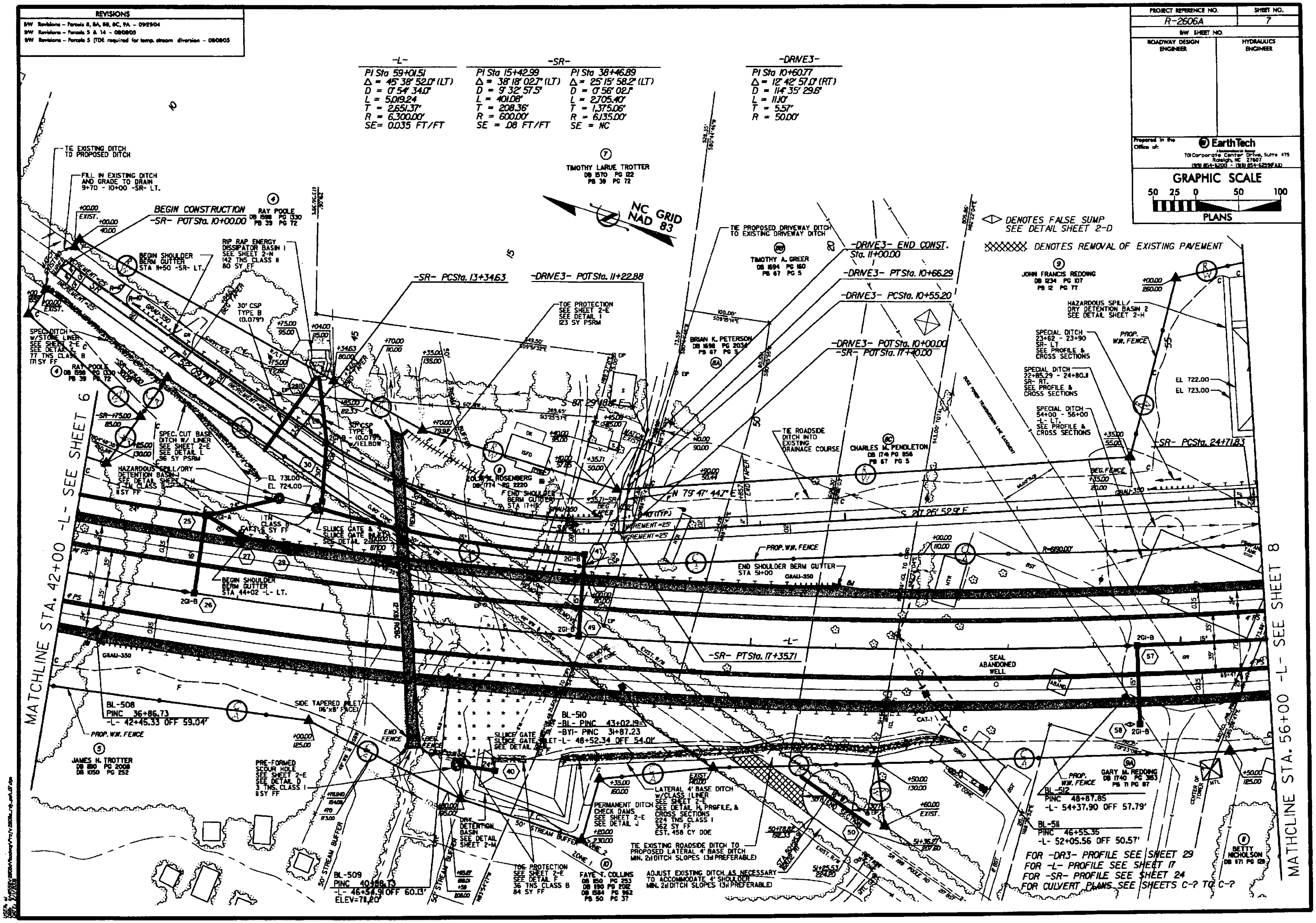

PROJECT REFERENCE NO.
R-2606A
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Prepared in the Office of:
EarthTech
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
GRAPHIC SCALE
50 25 0 50 100
PLANS
NC GRID NAD 83
-U- R-0609 IB (METRIC)
PI Sta 87+73.063
Δ = 19° 48' 06.1" (RT)
L = 170.827 m
T = 86.274 m
R = 494.284 m
PIs Sta 89+15.115
θs = 9° 58' 07.8"
Ls = 172 m
LT = 114.849 m
ST = 57.499 m
-L-
PIs Sta 11+33.34
θs = 1° 30' 28.0"
Ls = 200.00'
LT = 133.34'
ST = 66.67'
PI Sta 22+50.68
Δ = 30° 54' 42.0" (LT)
D = 1° 30' 28.0"
L = 2,050.14
T = 1,050.68'
R = 3,800.00'
SE = .055
BEGIN STATE PROJECT R-2606A
-L- TS Sta. 10+00.00 LA (ENGLISH)
N 782,770.4420 ft E 1,729,627.3072 ft (ENGLISH)
BEGIN CONSTRUCTION 10+00.00
END STATE PROJECT R-0609IB
-U- STS Sta 90+28.988 LB (METRIC)
N 238,588.9078 m E 527,191.4576 m (METRIC)
BY OTHERS
-U-
-U- CSSta. 88+57.616 (METRIC)
MATCH WIDTHS FOR PROJECT R-0609IB
BL-87
POT 5+00.00
-L- 11+64.22 OFF 241.51'
KEPLEY-FRANK HARDWOOD CO., INC
DB 839 PG 155
BEG. FENCE TIE TO EXIST.
BEG. C/A
+00.00
125.00
PROP. W.W. FENCE
+00.00
165.00
-L- SCSta. 12+00.00
+00.00 BEG. PS
3.94' PS
4' PS
-L-
100' TAPER TO TYPICAL SECTION
BEG. C/A
+00.00
155.00
BEG. FENCE TIE TO EXIST.
+00.00
180.00
MATCHLINE STA. 14+00 -L- SEE SHEET 5
RIGHT OF WAY ON PARCELS 1 & 2 TO BE
ACQUIRED UNDER ADJACENT PROJECT R-609 IB
PARCEL 1 ACCESS PROVIDED UNDER R-609IB
FOR -L- PROFILE SEE SHEET 16
DENOTES FALSE SUMP
SEE DETAIL SHEET 2-D



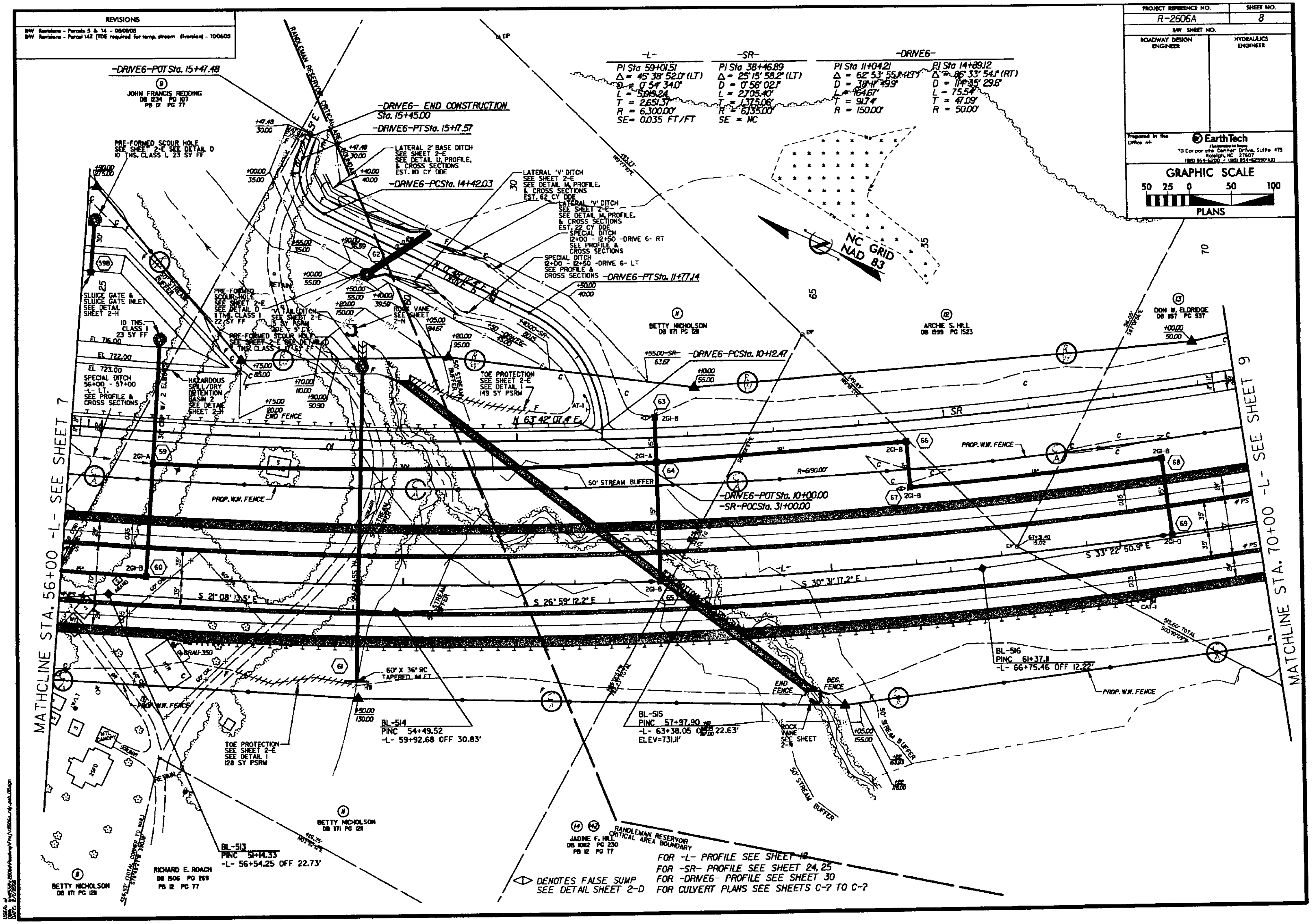
PROJECT REFERENCE NO. R-2606A
SHEET NO. 5
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Prepared in the Office of: EarthTech
GRAPHIC SCALE
50 25 0 50 100
PLANS
NC GRID NAD 83
-L-
PI Sta 22+50.68
Δ = 30° 54' 42.0" (LT)
D = 1° 30' 28.0"
L = 2,050.14'
T = 1,050.68'
R = 3,800.00'
SE = .055
DETAIL SHOWING PAVEMENT - BRIDGE RELATIONSHIP
NOT TO SCALE
BEGIN BRIDGE -L- POC Sta. 21+84.26
BEGIN APPROACH. SLAB -L- POC Sta. 21+58.89
END BRIDGE -L- POC Sta. 23+45.74
END APPROACH. SLAB -L- POC Sta. 23+71.14
BEGIN APPRO. SLAB -L- POC Sta. 21+61.58
BEGIN BRIDGE -L- POC Sta. 21+85.73
END BRIDGE -L- POC Sta. 23+44.27
END APPROACH SLAB -L- POC Sta. 23+68.40
KEPLEY-FRANK HARDWOOD CO., INC DB 139 PG 155
MAGGIE N. POOLE DB 800 PG 273
ROBER B. OLEEN DB 1249 PG 2046
MATCHLINE STA. 14+00 -L- SEE SHEET 4
MATCHLINE STA. 28+00 -L- SEE SHEET 6
PROP. W.W. FENCE
R=3660.00'
R=3940.00'
BL-500 PINC 8+76.59 -L- 14+62.79 OFF 7.81'
BL-501 PINC 12+41.46 -L- 18+22.42 OFF 14.35'
BL-502 PINC 15+38.41 -L- 21+18.18 OFF 19.85'
BL-503 PINC 17+59.99 -L- 23+38.78 OFF 26.52' ELEV=708.47'
BL-504 PINC 20+78.20 -L- 26+52.48 OFF 36.66'
TYPE III
END FENCE
BEG. FENCE
MUDDY CREEK
RIGHT OF WAY ON PARCELS 1 & 2 TO BE ACQUIRED UNDER ADJACENT PROJECT R-609 IB
PARCEL 1 ACCESS PROVIDED UNDER R-609IB
FOR -L- PROFILE SEE SHEET 16
FOR STRUCTURE PLANS SEE SHEETS S-XX THRU S-XX
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D



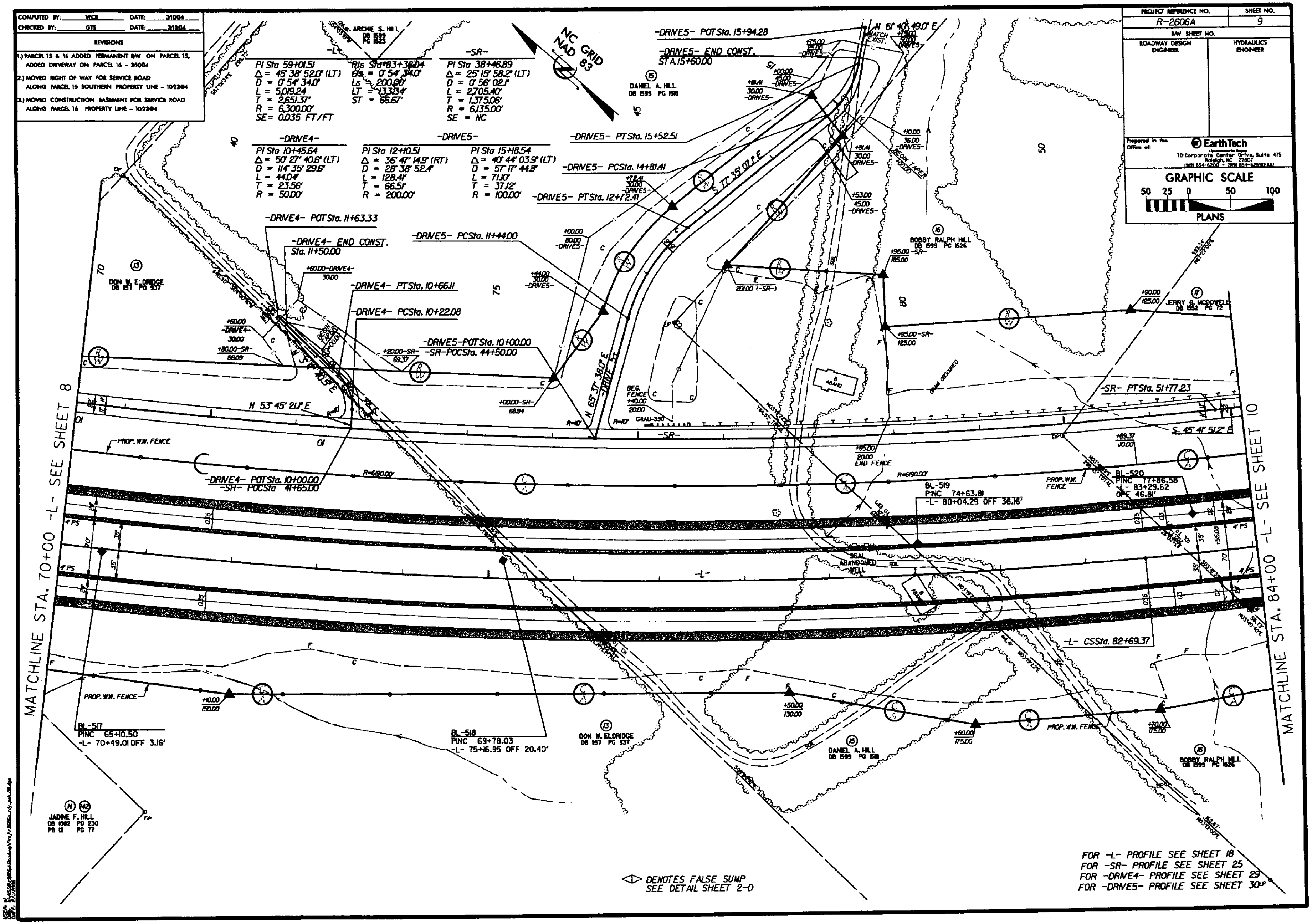
COMPUTED BY: DAP DATE: 6/21/02
CHECKED BY: MDP DATE: 11/22/02
REVISIONS
1.) RW REVISION PARCEL 2 & 3 - 1/13/04
NC GRID NAD 83
PROJECT REFERENCE NO. R-2606A
SHEET NO. 6
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
EarthTech
GRAPHIC SCALE
50 25 0 50 100
PLANS
MATCHLINE STA. 28+00 -L- SEE SHEET 5
MATCHLINE STA. 42+00 -L- SEE SHEET 7
NOTE: DO NOT DISTURB EXISTING WELL OR WELL HOUSE WHERE POSSIBLE.
-Y-
PI Sta 17+54.57
Δ = 37° 44' 28.5" (RT)
D = 16° 22' 12.8"
L = 230.55'
T = 119.63'
R = 350.00'
SE= 0.08 FT/FT
PRE-FORMED SCOUR HOLE SEE SHEET 2-E SEE DETAIL D 7 TNS. CLASS I 17 SY FF
MAGGIE N. POOLE DB 800 PG 273
KEPLEY-FRANK HARDWOOD CO., INC DB 839 PG 155
REBECCA SOUTHERN
JAMES H. TROTTER DB 890 PG 2008 DB 1050 PG 252
HOWARD R. TROTTER DB 1424 PG 1225
END CONSTRUCTION -Y- POT Sta. 18+00.00
END APPROACH SLAB -Y- 16+60.68
END BRIDGE -Y- 16+34.39
BEGIN STATE PROJECT R-2606A (R/W ACQUISITION ONLY) -L- STA. 35+60.41
-L- PCCSta. 32+50.14
-L- POCSta. 35+60.41
-Y- POT Sta. 15+22.72
Δ = 93° 42' 22.5"
PT Sta. 18+65.48
PCSta. 16+34.94
BL-549 -BYI- PINC 19+10.15
BL-550 -BYI- PINC 22+48.84
BL-505 PINC 23+99.48 -L- 29+74.06 OFF 48.08'
BL-506 -BL- PINC 29+63.34 -BYI- PINC 14+76.31 -L- 35+32.63 OFF 60.86' -Y- 14+60.75 OFF 28.63'
BL-507 PINC 33+73.96 -L- 39+36.50 OFF 62.89'
EARTH BERM MEDIAN PROTECTION SEE RDWY. STD. DRAWING 225.08
SPECIAL DITCH 16+70 - 18+00 -Y- RT. SEE PROFILE & CROSS SECTIONS
END SHOULDER BERM GUTTER STA 16+68 -Y- RT.
BEGIN SHOULDER BERM GUTTER STA 16+34.39 -Y- RT.
SPECIAL DITCH 37+00 - 37+60 -L- RT. SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 13+50 - 13+90 -Y- RT. SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 13+50 - 13+90 -Y- LT. SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 12+50 - 13+50 -Y- LT. SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 12+50 - 13+50 -Y- RT. SEE PROFILE & CROSS SECTIONS
BEGIN BRIDGE -Y- 14+09.97
BERM DRAINAGE OUTLET
BERM "V" DITCH SEE SHEET 2-E SEE DETAIL E, PROFILE, & CROSS SECTIONS -L- DDE = 847 CY
BEGIN APPROACH SLAB -Y- 13+84.97
BEGIN CONSTRUCTION -Y- POT Sta. 12+00.00
-Y- POT Sta. 10+00.00
PI Sta 22+50.68
Δ = 30° 54' 42.0" (LT)
D = 1° 30' 28.0"
L = 2,050.14
T = 1,050.68'
R = 3,800.00'
SE= 0.055 FT/FT
PI Sta 59+01.51
Δ = 45° 38' 52.0" (LT)
D = 0° 54' 34.0"
L = 5,019.24
T = 2,651.37'
R = 6,300.00'
SE= 0.035 FT/FT
PROP. W.W. FENCE
GATE
BEGIN BRIDGE -Y- POT Sta. 14+09.97
BEGIN APPROACH SLAB -Y- POT Sta. 13+84.97
END BRIDGE -Y- POT Sta. 16+34.39
END APPROACH SLAB -Y- POCSta. 16+60.68
NOT TO SCALE
DETAIL SHOWING PAVEMENT - BRIDGE RELATIONSHIP
RIGHT OF WAY ON PARCELS 1 & 2 TO BE ACQUIRED UNDER ADJACENT PROJECT R-609 IB
FOR -L- PROFILE SEE SHEET 17
FOR -Y- PROFILE SEE SHEET 26
FOR STRUCTURE SEE SHEET S-XX THRU S-XX
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D

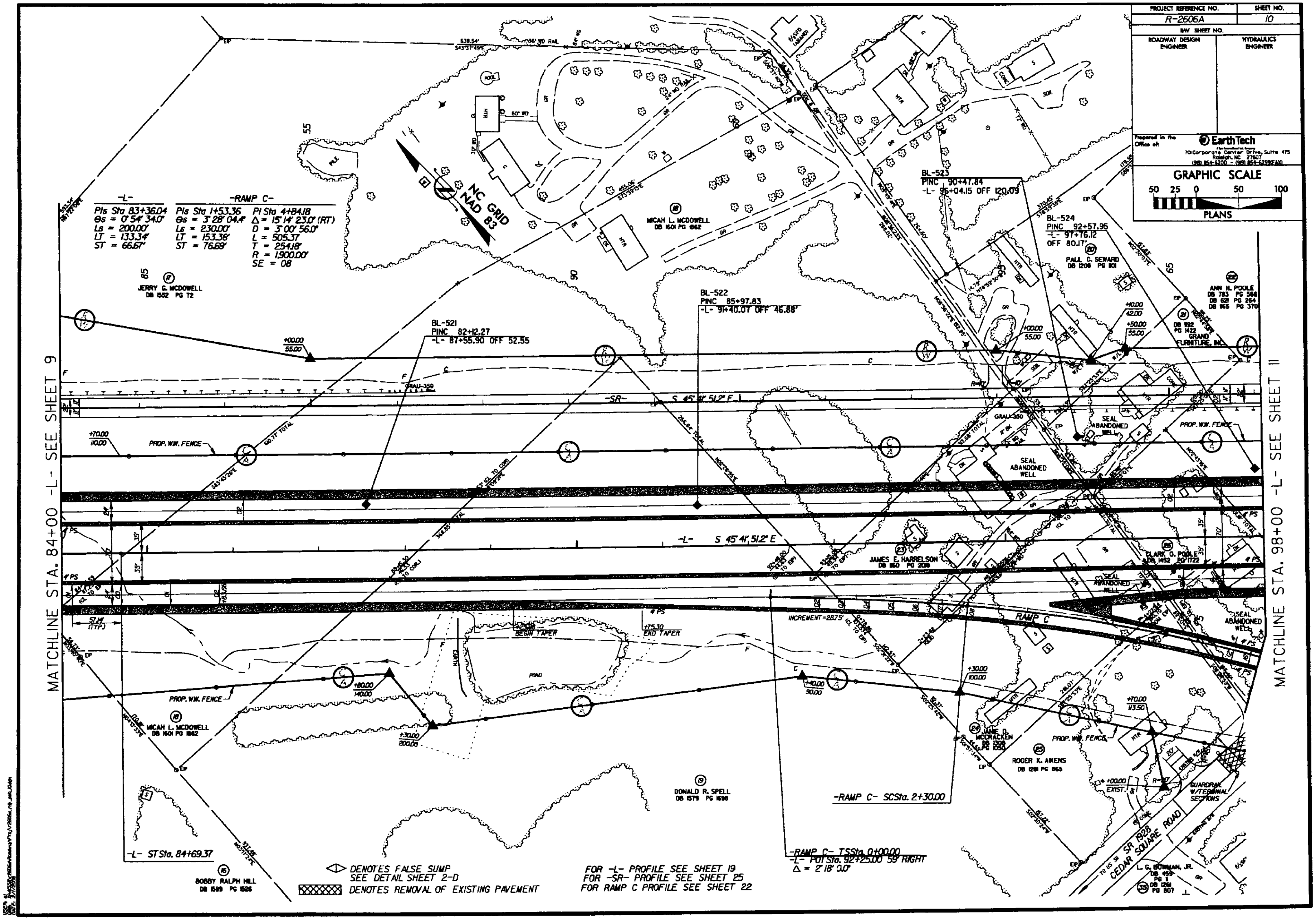


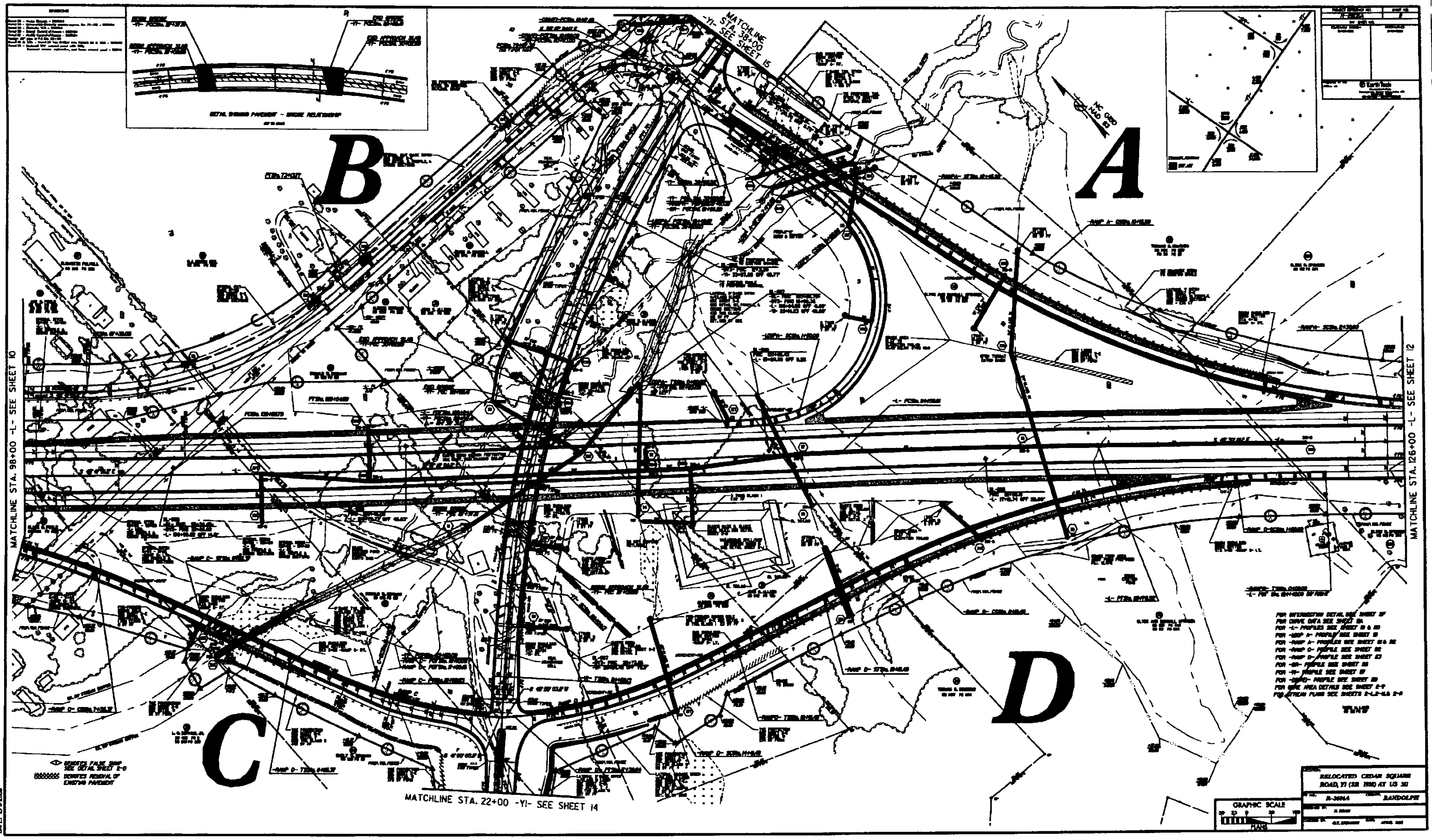
REVISIONS
R/W Revisions - Parcels 8, 8A, 8B, 8C, 9A - 092904
R/W Revisions - Parcels 5 & 14 - 080805
R/W Revisions - Parcels 5 (TDE required for temp. stream diversion - 080805
PROJECT REFERENCE NO. R-2606A
SHEET NO. 7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
EarthTech
GRAPHIC SCALE
50 25 0 50 100
PLANS
-L-
PI Sta 59+01.51
Δ = 45° 38' 52.0" (LT)
D = 0° 54' 34.0"
L = 5,019.24'
T = 2,651.37'
R = 6,300.00'
SE= 0.035 FT/FT
-SR-
PI Sta 15+42.99
Δ = 38° 18' 02.7" (LT)
D = 9° 32' 57.5"
L = 401.08'
T = 208.36'
R = 600.00'
SE = .08 FT/FT
PI Sta 38+46.89
Δ = 25° 15' 58.2" (LT)
D = 0° 56' 02.1"
L = 2,705.40'
T = 1,375.06'
R = 6,135.00'
SE = NC
-DRIVE3-
PI Sta 10+60.77
Δ = 12° 42' 57.0" (RT)
D = 114° 35' 29.6"
L = 11.10'
T = 5.57'
R = 50.00'
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D
DENOTES REMOVAL OF EXISTING PAVEMENT
NC GRID NAD 83
TIMOTHY LARUE TROTTER DB 1570 PG 122 PB 39 PG 72
BEGIN CONSTRUCTION -SR- POT Sta. 10+00.00
RAY POOLE DB 1598 PG 1330 PB 39 PG 72
TIE EXISTING DITCH TO PROPOSED DITCH
FILL IN EXISTING DITCH AND GRADE TO DRAIN 9+70 - 10+00 -SR- LT.
BEGIN SHOULDER BERM GUTTER STA 11+50 -SR- LT.
RIP RAP ENERGY DISSIPATOR BASIN 1 SEE SHEET 2-N 142 TNS CLASS II 80 SY FF
-SR- PC Sta. 13+34.63
-DRIVE3- POT Sta. 11+22.88
TOE PROTECTION SEE SHEET 2-E SEE DETAIL I 123 SY PSRM
TIE PROPOSED DRIVEWAY DITCH TO EXISTING DRIVEWAY DITCH
TIMOTHY A. GREER DB 1694 PG 160 PB 67 PG 5
BRIAN K. PETERSON DB 1698 PG 2034 PB 67 PG 5
-DRIVE3- END CONST. Sta. 11+00.00
-DRIVE3- PT Sta. 10+66.29
-DRIVE3- PC Sta. 10+55.20
-DRIVE3- POT Sta. 10+00.00
-SR- POT Sta. 17+40.00
JOHN FRANCIS REDDING DB 1234 PG 107 PB 12 PG 77
HAZARDOUS SPILL/ DRY DETENTION BASIN 2 SEE DETAIL SHEET 2-H
SPECIAL DITCH 23+62 - 23+90 SR- LT SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 22+85.29 - 24+80.11 SR- RT. SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 54+00 - 56+00 -L- LT. SEE PROFILE & CROSS SECTIONS
PROP. W.W. FENCE
EL 722.00
EL 723.00
-SR- PC Sta. 24+71.83
TIE ROADSIDE DITCH INTO EXISTING DRAINAGE COURSE
CHARLES M. PENDLETON DB 1714 PG 856 PB 67 PG 5
SPEC. DITCH w/STONE LINER SEE SHEET 2-E SEE DETAIL K 77 TNS CLASS B 111 SY FF
SPEC. CUT BASE DITCH W/ LINER SEE SHEET 2-E SEE DETAIL L 56 SY PSRM
HAZARDOUS SPILL/DRY DETENTION BASIN 1 SEE DETAIL SHEET 2-H
EL 731.00
EL 724.00
30" CSP TYPE B (0.079")
SLUICE GATE & SLUICE GATE INLET SEE DETAIL
END SHOULDER BERM GUTTER STA 17+15
BEGIN SHOULDER BERM GUTTER STA 44+02 -L- LT.
END SHOULDER BERM GUTTER STA 54+00
-SR- PT Sta. 17+35.71
SEAL ABANDONED WELL
BL-508 PINC 36+86.73 -L- 42+45.33 OFF 59.04'
PROP. W.W. FENCE
JAMES H. TROTTER DB 890 PG 2008 DB 1050 PG 252
SIDE TAPERED INLET
PRE-FORMED SCOUR HOLE SEE SHEET 2-E SEE DETAIL D 3 TNS. CLASS I 11 SY FF
BL-510 -BL- PINC 43+02.19 -BY1- PINC 31+87.23 -L- 48+52.34 OFF 54.01'
PERMANENT DITCH CHECK DAMS SEE SHEET 2-E SEE DETAIL J
LATERAL 4' BASE DITCH w/CLASS I LINER SEE SHEET 2-E SEE DETAIL H, PROFILE, & CROSS SECTIONS 224 TNS CLASS I 362 SY FF EST. 458 CY DDE
TIE EXISTING ROADSIDE DITCH TO PROPOSED LATERAL 4' BASE DITCH MIN. 2:1 DITCH SLOPES (3:1 PREFERABLE)
ADJUST EXISTING DITCH AS NECESSARY TO ACCOMMODATE 4' SHOULDER MIN. 2:1 DITCH SLOPES (3:1 PREFERABLE)
DRY DETENTION BASIN SEE DETAIL SHEET 2-M
TOE PROTECTION SEE SHEET 2-E SEE DETAIL F 36 TNS CLASS B 84 SY FF
FAYE T. COLLINS DB 150 PG 253 DB 190 PG 202 DB 1584 PG 962 PB 50 PG 37
BL-509 PINC 40+88.13 -L- 46+54.91 OFF 60.13' ELEV=711.20'
50' STREAM BUFFER
GARY M. REDDING DB 1740 PG 383 PB 71 PG 87
BL-512 PINC 48+87.85 -L- 54+37.90 OFF 57.79'
BL-511 PINC 46+55.35 -L- 52+05.56 OFF 50.57'
BETTY NICHOLSON DB 1171 PG 129
FOR -DR3- PROFILE SEE SHEET 29
FOR -L- PROFILE SEE SHEET 17
FOR -SR- PROFILE SEE SHEET 24
FOR CULVERT PLANS SEE SHEETS C-? TO C-?
MATCHLINE STA. 42+00 -L- SEE SHEET 6
MATCHLINE STA. 56+00 -L- SEE SHEET 8



PROJECT REFERENCE NO. R-2606A
SHEET NO. 8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
EarthTech
GRAPHIC SCALE
50 25 0 50 100
PLANS
REVISIONS
-L-
PI Sta 59+01.51
Δ = 45° 38' 52.0" (LT)
D = 0° 54' 34.0"
L = 5,019.24
T = 2,651.37
R = 6,300.00'
SE= 0.035 FT/FT
-SR-
PI Sta 38+46.89
Δ = 25° 15' 58.2" (LT)
D = 0° 56' 02.1"
L = 2,705.40'
T = 1,375.06'
R = 6,135.00'
SE = NC
-DRIVE6-
PI Sta 11+04.21
Δ = 62° 53' 55.1" (LT)
D = 38° 11' 49.9"
L = 164.67'
T = 91.74'
R = 150.00'
PI Sta 14+89.12
Δ = 86° 33' 54.1" (RT)
D = 114° 35' 29.6"
L = 75.54'
T = 47.09'
R = 50.00'
NC GRID NAD 83
-DRIVE6-POT Sta. 15+47.48
JOHN FRANCIS REDDING
DB 1234 PG 107
PB 12 PG 77
-DRIVE6- END CONSTRUCTION
Sta. 15+45.00
-DRIVE6-PT Sta. 15+17.57
-DRIVE6-PC Sta. 14+42.03
-DRIVE6-PT Sta. 11+77.14
-DRIVE6-PC Sta. 10+12.47
-DRIVE6-POT Sta. 10+00.00
-SR-POC Sta. 31+00.00
RANDLEMAN RESERVOIR CRITICAL AREA BOUNDARY
PRE-FORMED SCOUR HOLE SEE SHEET 2-E SEE DETAIL D 10 TNS. CLASS I, 23 SY FF
LATERAL 2' BASE DITCH SEE SHEET 2-E SEE DETAIL U, PROFILE, & CROSS SECTIONS EST. 80 CY DDE
LATERAL 'V' DITCH SEE SHEET 2-E SEE DETAIL M, PROFILE, & CROSS SECTIONS EST. 62 CY DDE
LATERAL 'V' DITCH SEE SHEET 2-E SEE DETAIL M, PROFILE, & CROSS SECTIONS EST. 22 CY DDE
SPECIAL DITCH 12+00 - 12+50 -DRIVE 6- RT SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 12+00 - 12+50 -DRIVE 6- LT SEE PROFILE & CROSS SECTIONS
SLUICE GATE & SLUICE GATE INLET SEE DETAIL SHEET 2-H
SPECIAL DITCH 56+00 - 57+00 -L- LT. SEE PROFILE & CROSS SECTIONS
HAZARDOUS SPILL/DRY DETENTION BASIN 2 SEE DETAIL SHEET 2-H
TOE PROTECTION SEE SHEET 2-E SEE DETAIL 1 149 SY PSRM
TOE PROTECTION SEE SHEET 2-E SEE DETAIL 1 128 SY PSRM
BETTY NICHOLSON DB 871 PG 128
ARCHIE S. HILL DB 1599 PG 1523
DON W. ELDRIDGE DB 157 PG 537
N 63° 42' 07.4" E
S 33° 22' 50.9" E
S 30° 31' 17.2" E
S 26° 59' 12.2" E
S 21° 08' 13.5" E
50' STREAM BUFFER
PROP. W.W. FENCE
MATCHLINE STA. 56+00 -L- SEE SHEET 7
MATCHLINE STA. 70+00 -L- SEE SHEET 9
60" X 36" RC TAPERED INLET
BL-514 PINC 54+49.52 -L- 59+92.68 OFF 30.83'
BL-515 PINC 57+97.90 -L- 63+38.05 OFF 22.63' ELEV=731.11'
BL-516 PINC 61+37.11 -L- 66+75.46 OFF 12.22'
BL-513 PINC 51+14.33 -L- 56+54.25 OFF 22.73'
RICHARD E. ROACH DB 1506 PG 265 PB 12 PG 77
JADINE F. HILL DB 1062 PG 230 PB 12 PG 77
END FENCE
BEG. FENCE
ROCK VANE SEE SHEET 2-N
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D
FOR -L- PROFILE SEE SHEET 18
FOR -SR- PROFILE SEE SHEET 24, 25
FOR -DRIVE6- PROFILE SEE SHEET 30
FOR CULVERT PLANS SEE SHEETS C-? TO C-?

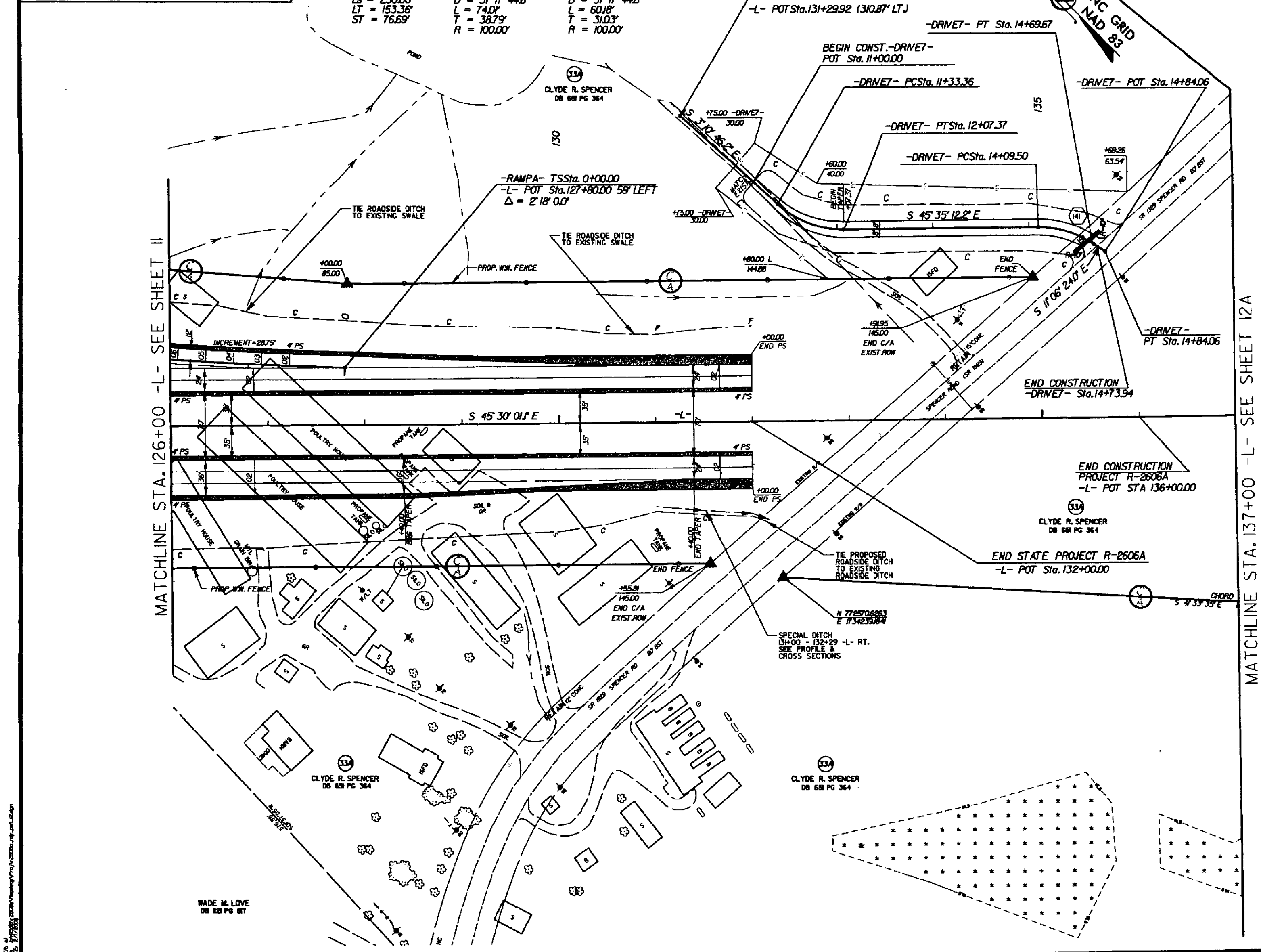

COMPUTED BY: WCB DATE: 3/10/04
CHECKED BY: GTS DATE: 3/10/04
REVISIONS
1.) PARCEL 15 & 16 ADDED PERMANENT R/W ON PARCEL 15, ADDED DRIVEWAY ON PARCEL 16 - 3/10/04
2.) MOVED RIGHT OF WAY FOR SERVICE ROAD ALONG PARCEL 15 SOUTHERN PROPERTY LINE - 10/22/04
3.) MOVED CONSTRUCTION EASEMENT FOR SERVICE ROAD ALONG PARCEL 16 PROPERTY LINE - 10/22/04
PROJECT REFERENCE NO. R-2606A
SHEET NO. 9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Prepared in the Office of: EarthTech
10 Corporate Center Drive, Suite 475 Raleigh, NC 27607
GRAPHIC SCALE
50 25 0 50 100
PLANS
NC GRID NAD 83
-L-
PI Sta 59+01.51
Δ = 45° 38' 52.0" (LT)
D = 0° 54' 34.0"
L = 5,019.24'
T = 2,651.37'
R = 6,300.00'
SE = 0.035 FT/FT
RIs Sta 83+36.04
θs = 0° 54' 34.0"
Ls = 200.00'
LT = 133.34'
ST = 66.67'
-SR-
PI Sta 38+46.89
Δ = 25° 15' 58.2" (LT)
D = 0° 56' 02.1"
L = 2,705.40'
T = 1,375.06'
R = 6,135.00'
SE = NC
-DRIVE4-
PI Sta 10+45.64
Δ = 50° 27' 40.6" (LT)
D = 114° 35' 29.6"
L = 44.04'
T = 23.56'
R = 50.00'
-DRIVE5-
PI Sta 12+10.51
Δ = 36° 47' 14.9" (RT)
D = 28° 38' 52.4"
L = 128.41'
T = 66.51'
R = 200.00'
PI Sta 15+18.54
Δ = 40° 44' 03.9" (LT)
D = 57° 17' 44.8"
L = 71.10'
T = 37.12'
R = 100.00'
-DRIVE5- POT Sta. 15+94.28
-DRIVE5- END CONST. STA.15+60.00
-DRIVE5- PT Sta. 15+52.51
-DRIVE5- PC Sta. 14+81.41
-DRIVE5- PT Sta. 12+72.41
-DRIVE5- PC Sta. 11+44.00
-DRIVE5- POT Sta. 10+00.00
-SR- POC Sta. 44+50.00
-DRIVE4- POT Sta. 11+63.33
-DRIVE4- END CONST. Sta. 11+50.00
-DRIVE4- PT Sta. 10+66.11
-DRIVE4- PC Sta. 10+22.08
-DRIVE4- POT Sta. 10+00.00
-SR- POC Sta 41+65.00
-SR- PT Sta. 51+77.23
N 61° 40' 49.0" E
N 65° 37' 38.0" E
N 53° 45' 21.1" E
S 45° 41' 51.2" E
ARCHIE S. HILL DB 1599 PG 1523
DANIEL A. HILL DB 1599 PG 1518
BOBBY RALPH HILL DB 1599 PG 1526
JERRY G. MCDOWELL DB 1552 PG 72
DON W. ELDRIDGE DB 157 PG 537
JADINE F. HILL DB 1082 PG 230 PB 12 PG 77
PROP. W.W. FENCE
BEG. FENCE
END FENCE
SEAL ABANDONED WELL
BL-517 PINC 65+10.50 -L- 70+49.01 OFF 3.16'
BL-518 PINC 69+78.03 -L- 75+16.95 OFF 20.40'
BL-519 PINC 74+63.81 -L- 80+04.29 OFF 36.16'
BL-520 PINC 77+86.58 -L- 83+29.62 OFF 46.81'
-L- CS Sta. 82+69.37
R=6190.00'
MATCHLINE STA. 70+00 -L- SEE SHEET 8
MATCHLINE STA. 84+00 -L- SEE SHEET 10
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D
FOR -L- PROFILE SEE SHEET 18
FOR -SR- PROFILE SEE SHEET 25
FOR -DRIVE4- PROFILE SEE SHEET 29
FOR -DRIVE5- PROFILE SEE SHEET 30


PROJECT REFERENCE NO. R-2606A
SHEET NO. 10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Prepared in the Office of: EarthTech
701 Corporate Center Drive, Suite 475 Raleigh, NC 27607
GRAPHIC SCALE
50 25 0 50 100
PLANS
MATCHLINE STA. 84+00 -L- SEE SHEET 9
MATCHLINE STA. 98+00 -L- SEE SHEET 11
NC GRID NAD 83
-L-
PIs Sta 83+36.04
Θs = 0°54' 34.0"
Ls = 200.00'
LT = 133.34'
ST = 66.67'
-RAMP C-
PIs Sta 1+53.36
Θs = 3°28' 04.4"
Ls = 230.00'
LT = 153.36'
ST = 76.69'
PI Sta 4+84.18
Δ = 15°14' 23.0" (RT)
D = 3°00' 56.0"
L = 505.37
T = 254.18'
R = 1,900.00'
SE = .08
BL-521
PINC 82+12.27
-L- 87+55.90 OFF 52.55
BL-522
PINC 85+97.83
-L- 91+40.07 OFF 46.88'
BL-523
PINC 90+47.84
-L- 95+04.15 OFF 120.09
BL-524
PINC 92+57.95
-L- 97+76.12
OFF 80.17'
-SR- S 45°41' 51.2" E
-L- S 45°41' 51.2" E
RAMP C
JERRY G. MCDOWELL DB 852 PG 72
MICAH L. MCDOWELL DB 1601 PG 1862
PAUL C. SEWARD DB 1206 PG 101
ANN H. POOLE DB 783 PG 568 DB 621 PG 264 DB 165 PG 370
GRAND FURNITURE, INC.
JAMES E. HARRELSON DB 1160 PG 2016
CLARK O. POOLE DB 1452 PG 1722
SEAL ABANDONED WELL
JANE D. MCCRACKEN DB 1506 PG 1050
ROGER K. AIKENS DB 1281 PG 865
DONALD R. SPELL DB 1579 PG 1698
BOBBY RALPH HILL DB 1599 PG 1526
L. G. BOWMAN, JR.
SR 1928 CEDAR SQUARE ROAD
PROP. W.W. FENCE
BEGIN TAPER
END TAPER
POND
GUARDRAIL W/TERMINAL SECTIONS
-L- ST Sta. 84+69.37
-RAMP C- SC Sta. 2+30.00
-RAMP C- TS Sta. 0+00.00
-L- POT Sta. 92+25.00 59' RIGHT
Δ = 2°18' 0.0"
INCREMENT = 28.75'
DENOTES FALSE SUMP
SEE DETAIL SHEET 2-D
DENOTES REMOVAL OF EXISTING PAVEMENT
FOR -L- PROFILE SEE SHEET 19
FOR -SR- PROFILE SEE SHEET 25
FOR RAMP C PROFILE SEE SHEET 22



A
B
C
D
MATCHLINE STA. 38+00 -Y1- SEE SHEET 15
MATCHLINE STA. 98+00 -L- SEE SHEET 10
MATCHLINE STA. 126+00 -L- SEE SHEET 12
MATCHLINE STA. 22+00 -Y1- SEE SHEET 14
NC GRID NAD 83
GRAPHIC SCALE
PLANS
RELOCATED CEDAR SQUARE ROAD, Y1 (SR 1910) AT US 311
RANDOLPH

REVISIONS
R/W Revision - Extended Parcel 33 taking - 09/29/04
R/W Revision - Changed R/W on Parcel 33 from Curve to a Chord; Added bearing and distance - 02/08/05
R/W Revision - Parcel 33 has divided into Parcels 33 & 33A; reduced R/W taking on Parcel 33A to avoid a new storage building - 10/06/05



PROJECT REFERENCE NO.	SHEET NO.
R-2606A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

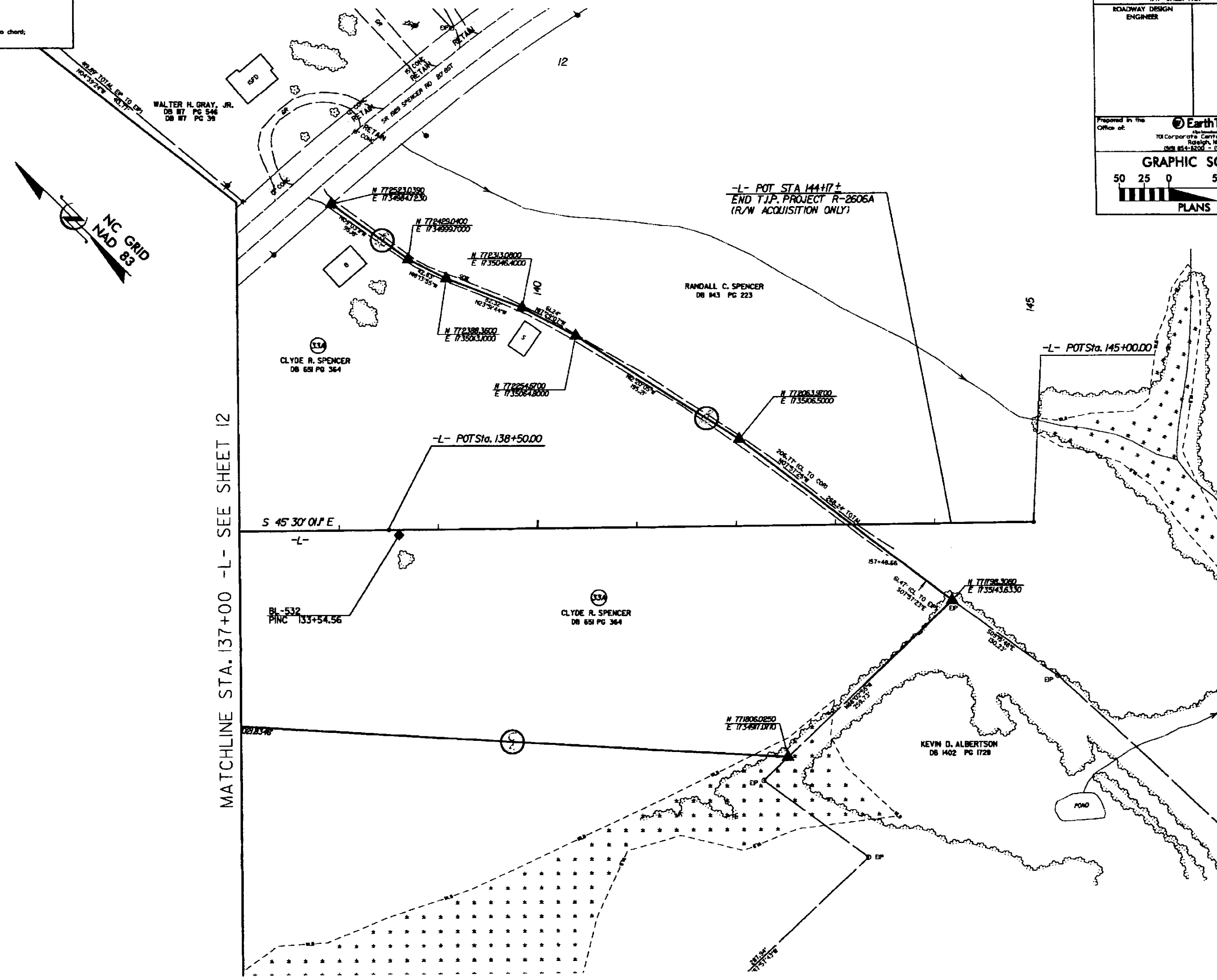
FOR RAMP A PROFILE SEE SHEET 21
FOR DRIVE 7 PROFILE SEE SHEET 30

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	12A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607

GRAPHIC SCALE
50 25 0 50 100
PLANS

REVISIONS
R/W Revision - Parcel 33 has divided into parcels 33 & 33A; reduce R/W taking on Parcel 33 to avoid a new storage building - 10/06/05
R/W Revision - Extended Parcel 33 taking - 09/29/04 Added Sheet 12A - 09/29/04
R/W Revision - Changed R/W on Spencer Parcel from curve to chord; Added bearing & distance - 02/08/05

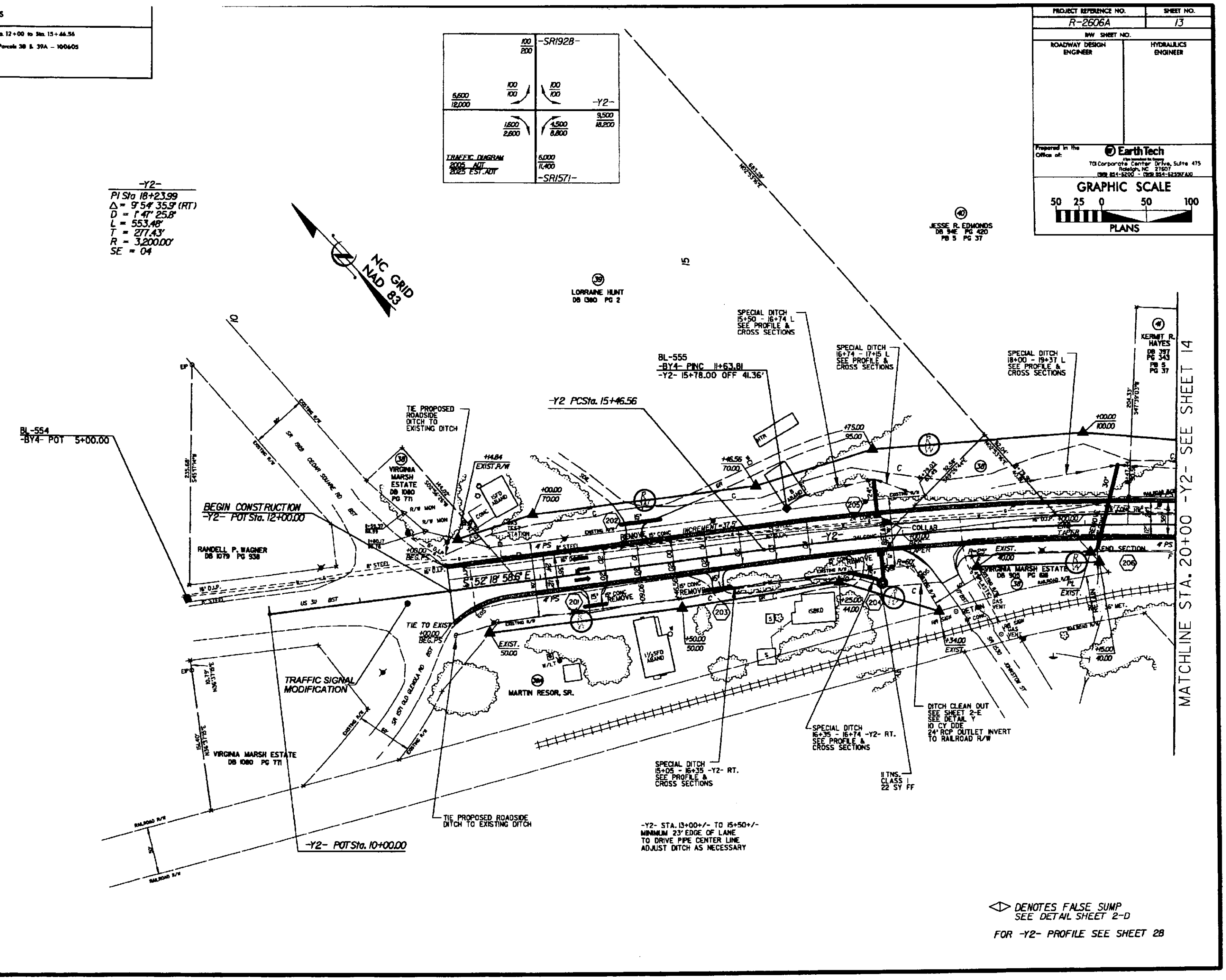


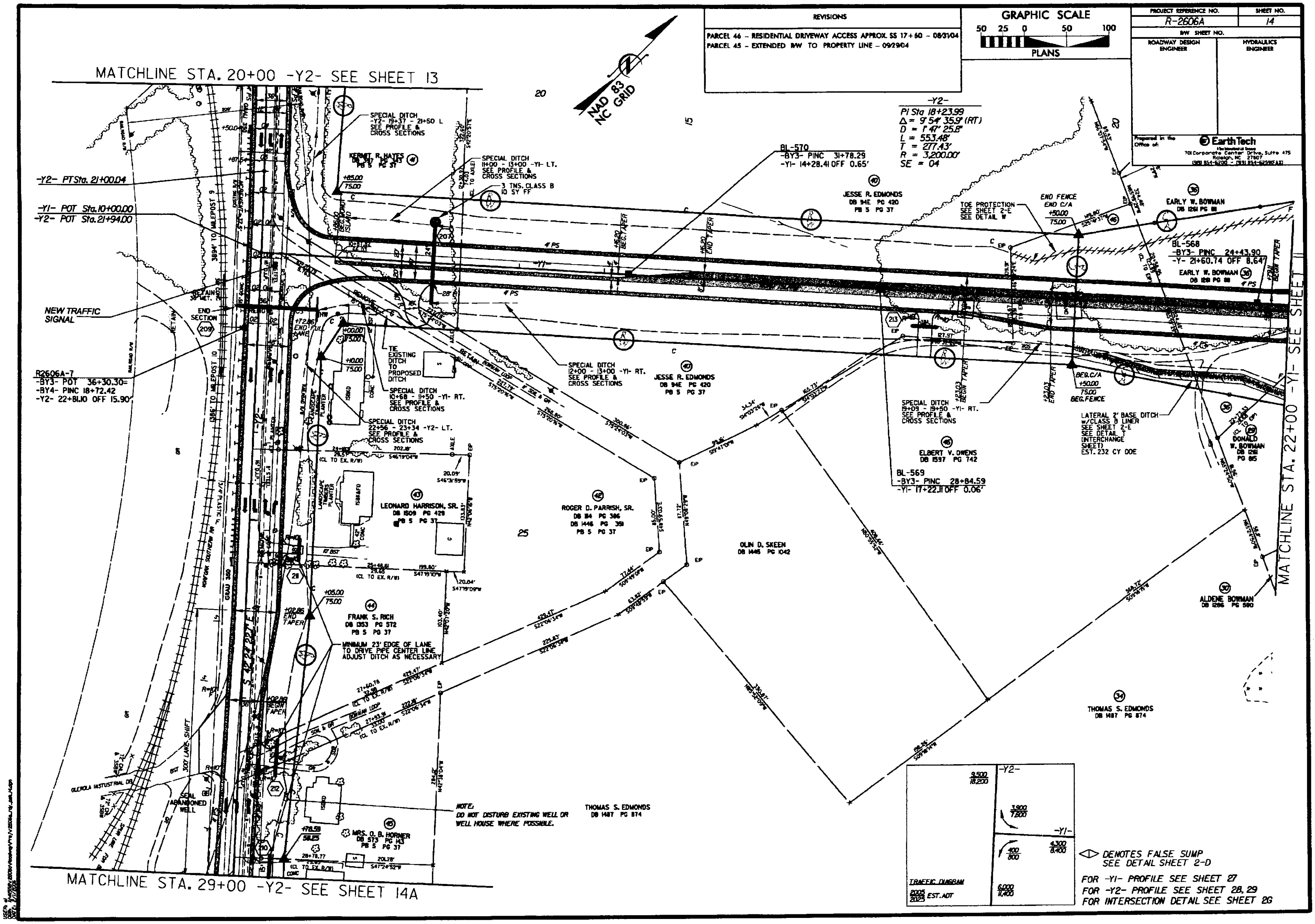
MATCHLINE STA. 137+00 -L- SEE SHEET 12

REVISIONS

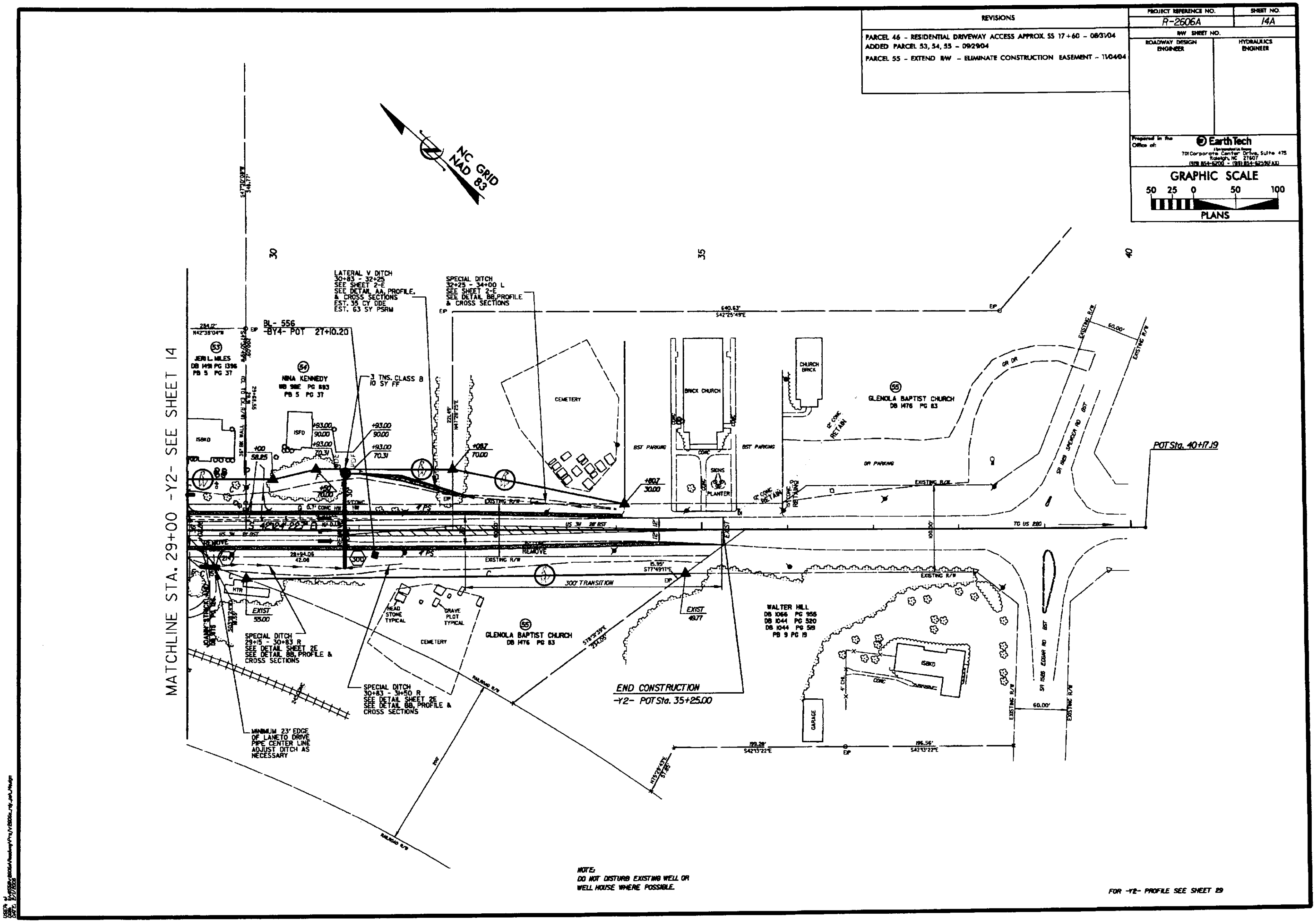
Parcels 38 & 39 - Revised R/W, Lt. side, from Sta. 12+00 to Sta. 15+46.56

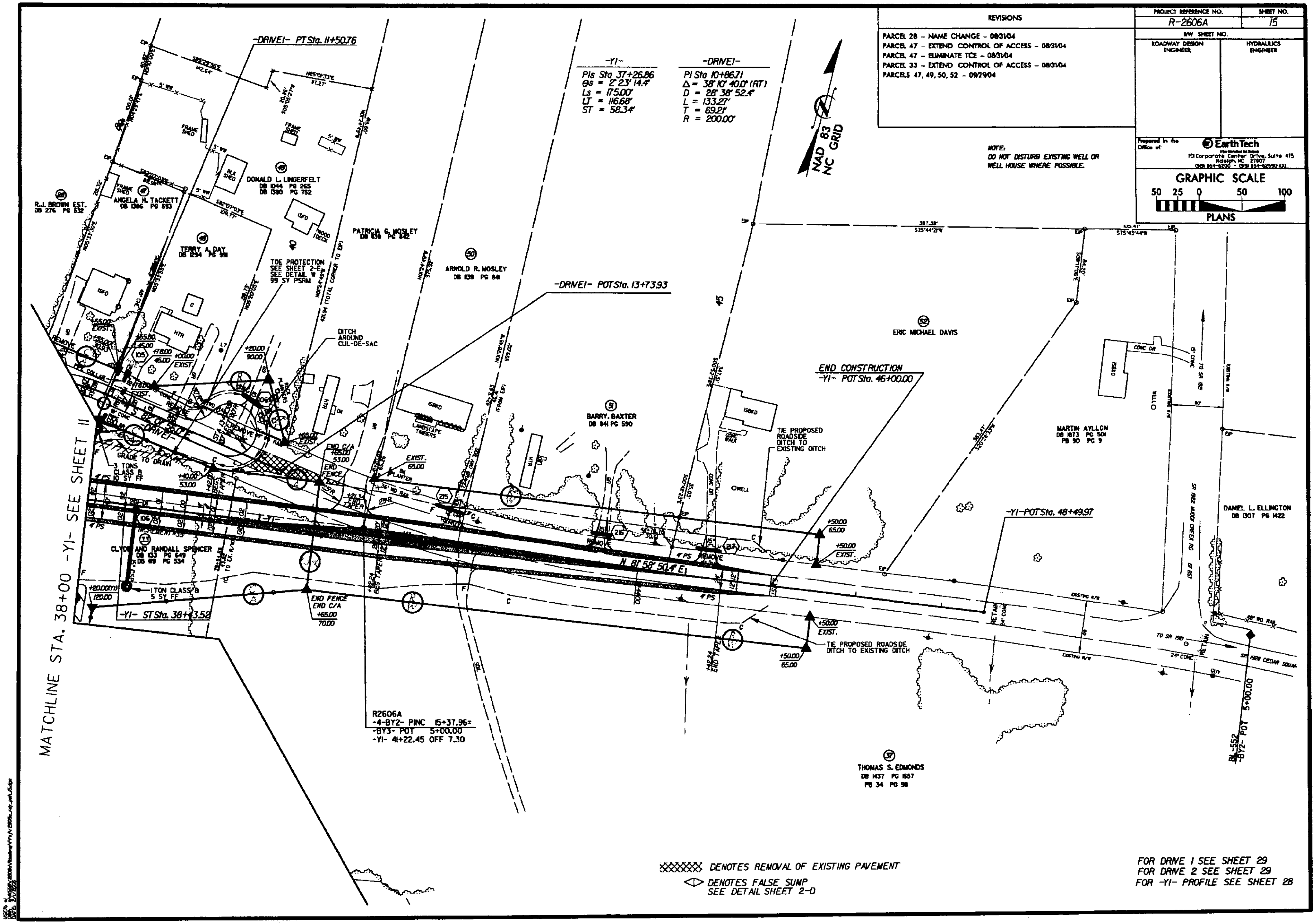
Parcels 38 & 39A - parcel 38 has divided into Parcels 38 & 39A - 100605



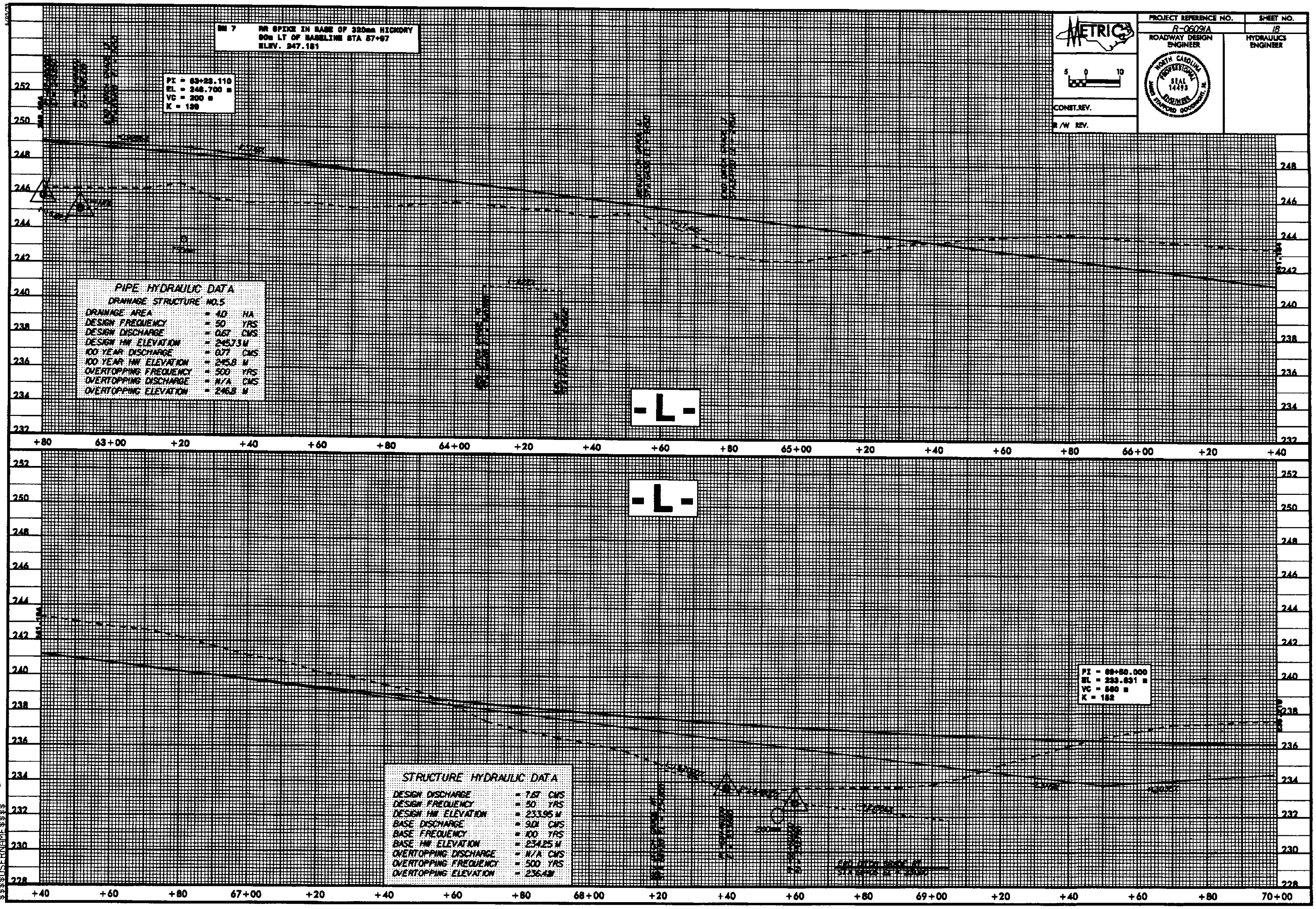


REVISIONS
PARCEL 46 - RESIDENTIAL DRIVEWAY ACCESS APPROX. SS 17+60 - 08/31/04
PARCEL 45 - EXTENDED R/W TO PROPERTY LINE - 09/29/04
GRAPHIC SCALE
50 25 0 50 100
PLANS
PROJECT REFERENCE NO. R-2606A
SHEET NO. 14
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Prepared in the Office of:
EarthTech
701 Corporate Center Drive, Suite 475 Raleigh, NC 27607
NAD 83 NC GRID
MATCHLINE STA. 20+00 -Y2- SEE SHEET 13
MATCHLINE STA. 29+00 -Y2- SEE SHEET 14A
MATCHLINE STA. 22+00 -Y1- SEE SHEET 11
-Y2-
PI Sta 18+23.99
Δ = 9° 54' 35.9" (RT)
D = 1° 47' 25.8"
L = 553.48'
T = 277.43'
R = 3,200.00'
SE = .04
BL-570
-BY3- PINC 31+78.29
-Y1- 14+28.41 OFF 0.65'
-Y2- PT Sta. 21+00.04
-Y1- POT Sta. 10+00.00
-Y2- POT Sta. 21+94.00
NEW TRAFFIC SIGNAL
R2606A-7
-BY3- POT 36+30.30=
-BY4- PINC 18+72.42
-Y2- 22+81.10 OFF 15.90'
SPECIAL DITCH -Y2- 19+37 - 21+50 L SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 11+00 - 13+00 -Y1- LT. SEE PROFILE & CROSS SECTIONS
3 TNS. CLASS B 10 SY FF
SPECIAL DITCH 12+00 - 13+00 -Y1- RT. SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 10+68 - 11+50 -Y1- RT. SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 22+56 - 23+34 -Y2- LT. SEE PROFILE & CROSS SECTIONS
SPECIAL DITCH 19+09 - 19+50 -Y1- RT. SEE PROFILE & CROSS SECTIONS
TIE EXISTING DITCH TO PROPOSED DITCH
TOE PROTECTION SEE SHEET 2-E SEE DETAIL W
END FENCE END C/A
BEG. C/A BEG. FENCE
LATERAL 2' BASE DITCH w/CLASS B LINER SEE SHEET 2-E SEE DETAIL T (INTERCHANGE SHEET) EST. 232 CY DDE
MINIMUM 23' EDGE OF LANE TO DRIVE PIPE CENTER LINE ADJUST DITCH AS NECESSARY
KERMIT R. HAYES
JESSE R. EDMONDS DB 94E PG 420 PB 5 PG 37
EARLY W. BOWMAN DB 1261 PG 88
BL-568
-BY3- PINC 24+43.90
-Y1- 21+60.74 OFF 8.64'
ELBERT V. OWENS DB 1597 PG 742
BL-569
-BY3- PINC 28+84.59
-Y1- 17+22.11 OFF 0.06'
DONALD W. BOWMAN DB 1261 PG 85
LEONARD HARRISON, SR. DB 1509 PG 429 PB 5 PG 37
ROGER D. PARRISH, SR. DB 114 PG 386 DB 1446 PG 351 PB 5 PG 37
OLIN D. SKEEN DB 1446 PG 1042
ALDENE BOWMAN DB 1286 PG 580
FRANK S. RICH DB 1353 PG 572 PB 5 PG 37
THOMAS S. EDMONDS DB 1487 PG 874
MRS. O. B. HORNER DB 573 PG 143 PB 5 PG 37
NOTE: DO NOT DISTURB EXISTING WELL OR WELL HOUSE WHERE POSSIBLE.
SEAL ABANDONED WELL
300' LANE SHIFT
GLENOLA INDUSTRIAL DR.
TRAFFIC DIAGRAM
2005 2025 EST. ADT
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D
FOR -Y1- PROFILE SEE SHEET 27
FOR -Y2- PROFILE SEE SHEET 28, 29
FOR INTERSECTION DETAIL SEE SHEET 2G


REVISIONS
PARCEL 46 - RESIDENTIAL DRIVEWAY ACCESS APPROX SS 17+60 - 08/31/04
ADDED PARCEL 53, 54, 55 - 09/29/04
PARCEL 55 - EXTEND R/W - ELIMINATE CONSTRUCTION EASEMENT - 11/04/04
PROJECT REFERENCE NO.
R-2606A
SHEET NO.
14A
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Prepared in the Office of:
EarthTech
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
GRAPHIC SCALE
50 25 0 50 100
PLANS
NC GRID NAD 83
MATCHLINE STA. 29+00 -Y2- SEE SHEET 14
LATERAL V DITCH
30+83 - 32+25
SEE SHEET 2-E
SEE DETAIL AA, PROFILE,
& CROSS SECTIONS
EST. 35 CY DDE
EST. 63 SY PSRM
SPECIAL DITCH
32+25 - 34+00 L
SEE SHEET 2-E
SEE DETAIL BB PROFILE
& CROSS SECTIONS
BL- 556
-BY4- POT 27+10.20
JERI L. MILES
DB 1491 PG 1396
PB 5 PG 37
NINA KENNEDY
PB 5 PG 37
3 TNS. CLASS B
10 SY FF
CEMETERY
BRICK CHURCH
CHURCH BRICK
GLENOLA BAPTIST CHURCH
DB 1476 PG 83
BST PARKING
GR PARKING
SIGNS
PLANTER
EXISTING R/W
TO US 220
POT Sta. 40+17.19
SR 1923 SPENCER RD
SR 1505 EDGAR RD
300' TRANSITION
REMOVE
EXIST
55.00
49.77
SPECIAL DITCH
29+15 - 30+83 R
SEE DETAIL SHEET 2E
SEE DETAIL BB, PROFILE &
CROSS SECTIONS
HEAD STONE TYPICAL
GRAVE PLOT TYPICAL
SPECIAL DITCH
30+83 - 31+50 R
SEE DETAIL SHEET 2E
SEE DETAIL BB, PROFILE &
CROSS SECTIONS
MINIMUM 23' EDGE
OF LANETO DRIVE
PIPE CENTER LINE
ADJUST DITCH AS
NECESSARY
END CONSTRUCTION
-Y2- POT Sta. 35+25.00
WALTER HILL
DB 1066 PG 956
DB 1044 PG 520
DB 1044 PG 519
PB 9 PG 19
GARAGE
RAILROAD R/W
NOTE:
DO NOT DISTURB EXISTING WELL OR
WELL HOUSE WHERE POSSIBLE.
FOR -Y2- PROFILE SEE SHEET 29



PROJECT REFERENCE NO. R-2606A
SHEET NO. 15
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Prepared in the Office of:
EarthTech
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
GRAPHIC SCALE
50 25 0 50 100
PLANS
REVISIONS
PARCEL 28 - NAME CHANGE - 08/31/04
PARCEL 47 - EXTEND CONTROL OF ACCESS - 08/31/04
PARCEL 47 - ELIMINATE TCE - 08/31/04
PARCEL 33 - EXTEND CONTROL OF ACCESS - 08/31/04
PARCELS 47, 49, 50, 52 - 09/29/04
NOTE:
DO NOT DISTURB EXISTING WELL OR WELL HOUSE WHERE POSSIBLE.
NAD 83 NC GRID
-Y1-
PIs Sta 37+26.86
θs = 2° 23' 14.4"
Ls = 175.00'
LT = 116.68'
ST = 58.34'
-DRIVE1-
PI Sta 10+86.71
Δ = 38° 10' 40.0" (RT)
D = 28° 38' 52.4"
L = 133.27'
T = 69.21'
R = 200.00'
-DRIVE1- PT Sta. 11+50.76
-DRIVE1- POT Sta. 13+73.93
END CONSTRUCTION
-Y1- POT Sta. 46+00.00
-Y1- POT Sta. 48+49.97
-Y1- ST Sta. 38+73.52
R2606A
-4-BY2- PINC 15+37.96=
-BY3- POT 5+00.00
-Y1- 41+22.45 OFF 7.30
BL-552
-BY2- POT 5+00.00
N 81° 58' 50.4" E
TIE PROPOSED ROADSIDE DITCH TO EXISTING DITCH
TOE PROTECTION SEE SHEET 2-E SEE DETAIL W 99 SY PSRM
DITCH AROUND CUL-DE-SAC
GRADE TO DRAIN
3 TONS CLASS B 10 SY FF
1 TON CLASS B 5 SY FF
END FENCE
END C/A
R.J. BROWN EST. DB 276 PG 532
ANGELA H. TACKETT DB 1306 PG 553
DONALD L. LINGERFELT DB 1044 PG 265 DB 1390 PG 752
TERRY A. DAY DB 1294 PG 991
PATRICIA G. MOSLEY DB 839 PG 842
ARNOLD R. MOSLEY DB 839 PG 841
BARRY. BAXTER DB 841 PG 590
ERIC MICHAEL DAVIS
MARTIN AYLLON DB 1873 PG 501 PB 90 PG 9
DANIEL L. ELLINGTON DB 1307 PG 1422
CLYDE AND RANDALL SPENCER DB 133 PG 649 DB 119 PG 534
THOMAS S. EDMONDS DB 1437 PG 1557 PB 34 PG 98
SR 1922 MUDDY CREEK RD
SR 1928 CEDAR SQUARE
MATCHLINE STA. 38+00 -Y1- SEE SHEET 11
DENOTES REMOVAL OF EXISTING PAVEMENT
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D
FOR DRIVE 1 SEE SHEET 29
FOR DRIVE 2 SEE SHEET 29
FOR -Y1- PROFILE SEE SHEET 28



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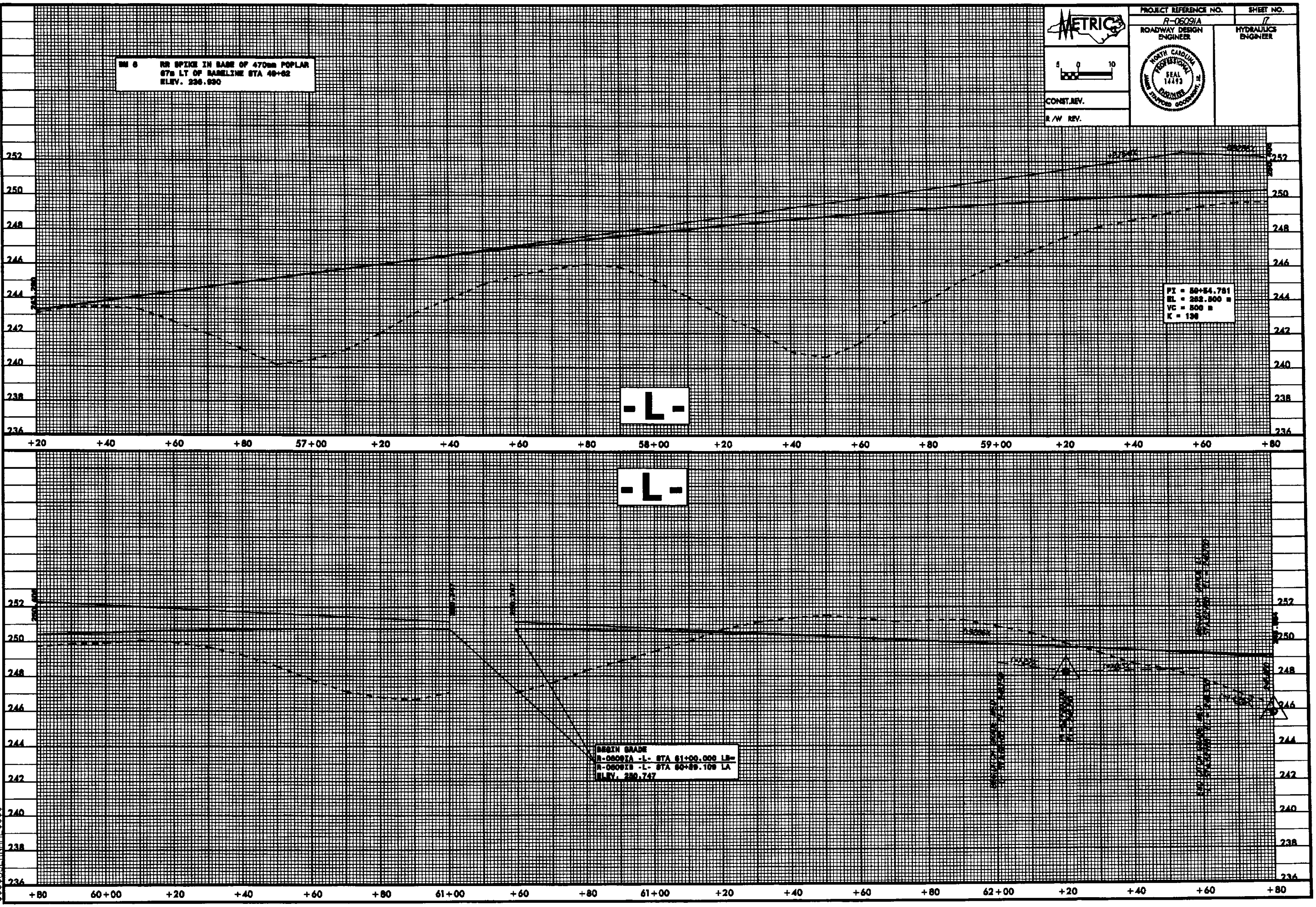

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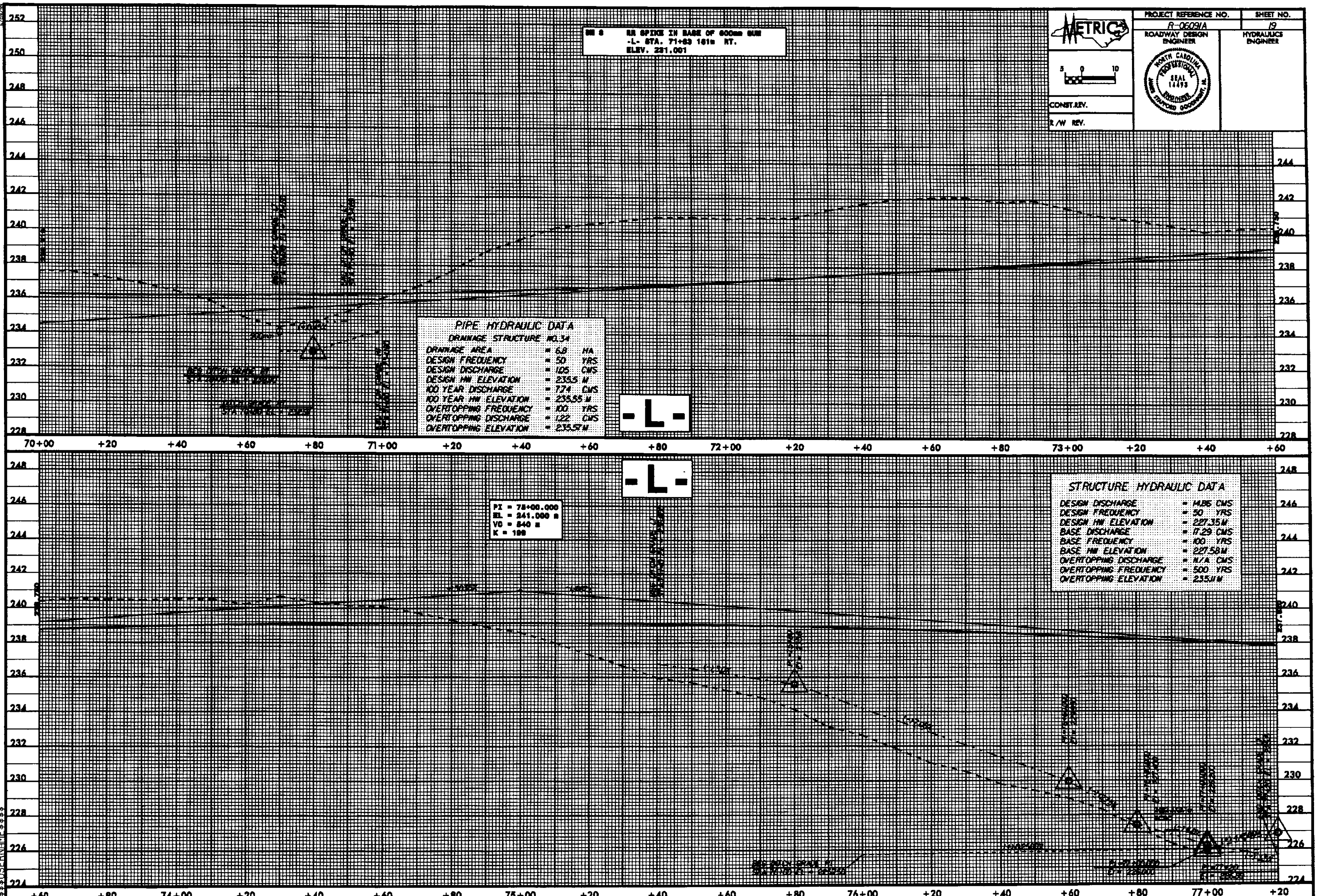
PROJECT REFERENCE NO. R-0609IA | SHEET NO. 19

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

CONST. REV.

R/W REV.



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.34

DRAINAGE AREA	= 6.8 HA
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 1.05 CMS
DESIGN HW ELEVATION	= 235.5 M
100 YEAR DISCHARGE	= 7.74 CMS
100 YEAR HW ELEVATION	= 235.55 M
OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING DISCHARGE	= 1.22 CMS
OVERTOPPING ELEVATION	= 235.57 M

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 14.86 CMS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 227.35 M
BASE DISCHARGE	= 17.29 CMS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 227.58 M
OVERTOPPING DISCHARGE	= N/A CMS
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING ELEVATION	= 235.11 M

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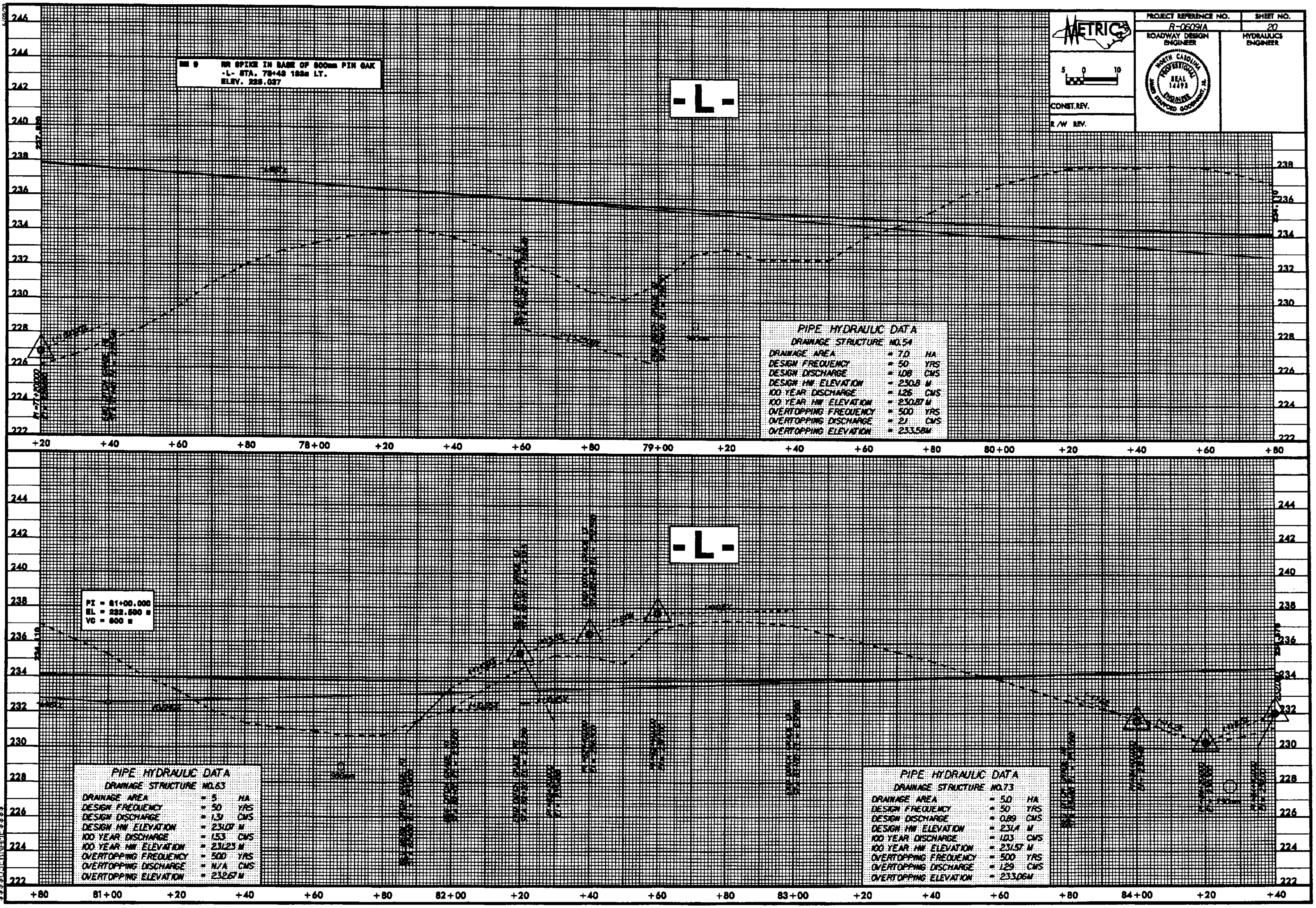


PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.54

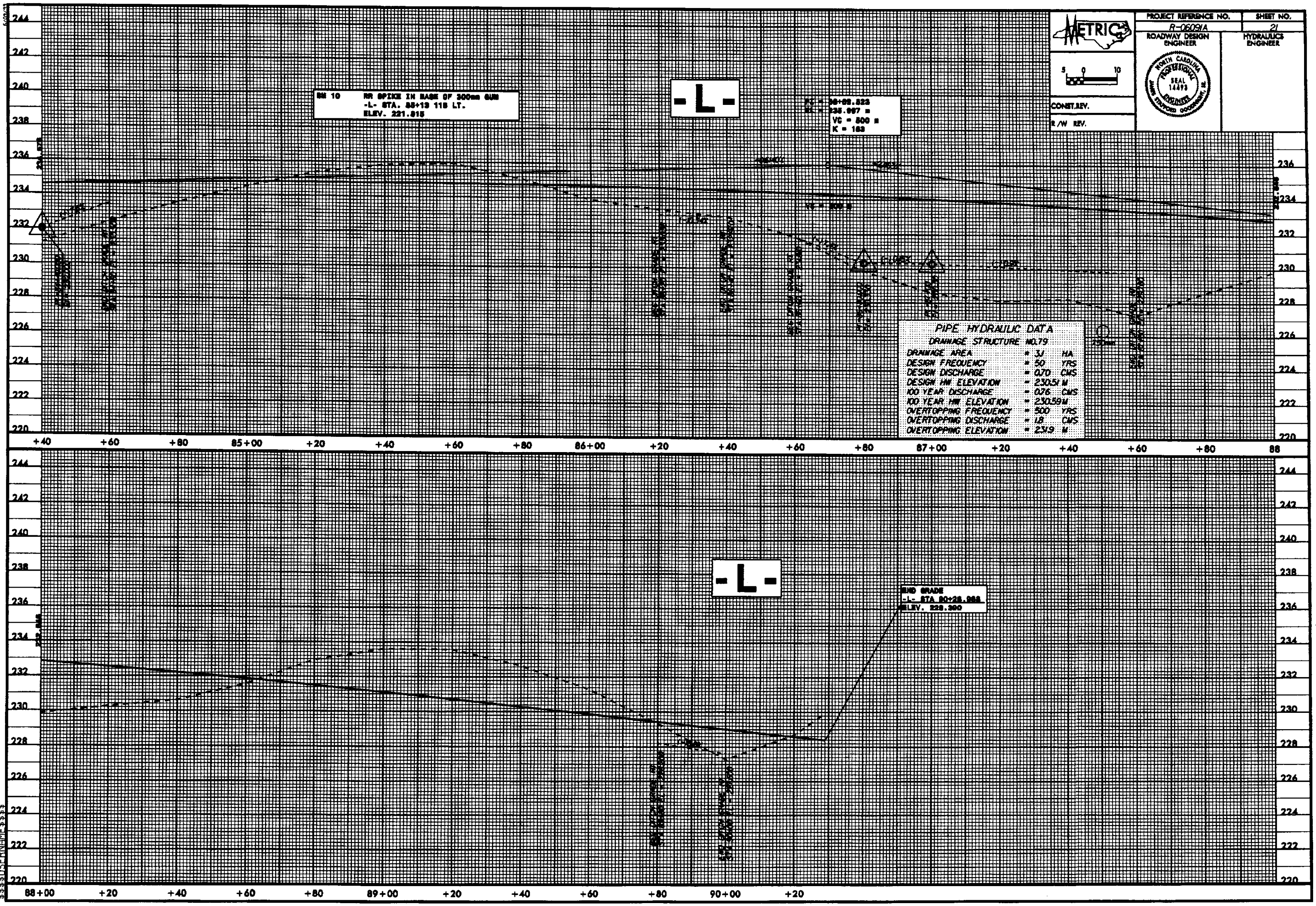
DRAINAGE AREA	= 7.0	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 1.08	CMS
DESIGN HW ELEVATION	= 230.8	M
100 YEAR DISCHARGE	= 1.26	CMS
100 YEAR HW ELEVATION	= 230.87	M
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 2.1	CMS
OVERTOPPING ELEVATION	= 233.58M	

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.63

DRAINAGE AREA	= 5	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 1.31	CMS
DESIGN HW ELEVATION	= 231.07	M
100 YEAR DISCHARGE	= 1.53	CMS
100 YEAR HW ELEVATION	= 231.23	M
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= N/A	CMS
OVERTOPPING ELEVATION	= 232.67	M

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.73

DRAINAGE AREA	= 5.0	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 0.89	CMS
DESIGN HW ELEVATION	= 231.4	M
100 YEAR DISCHARGE	= 1.03	CMS
100 YEAR HW ELEVATION	= 231.57	M
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 1.29	CMS
OVERTOPPING ELEVATION	= 233.06M	



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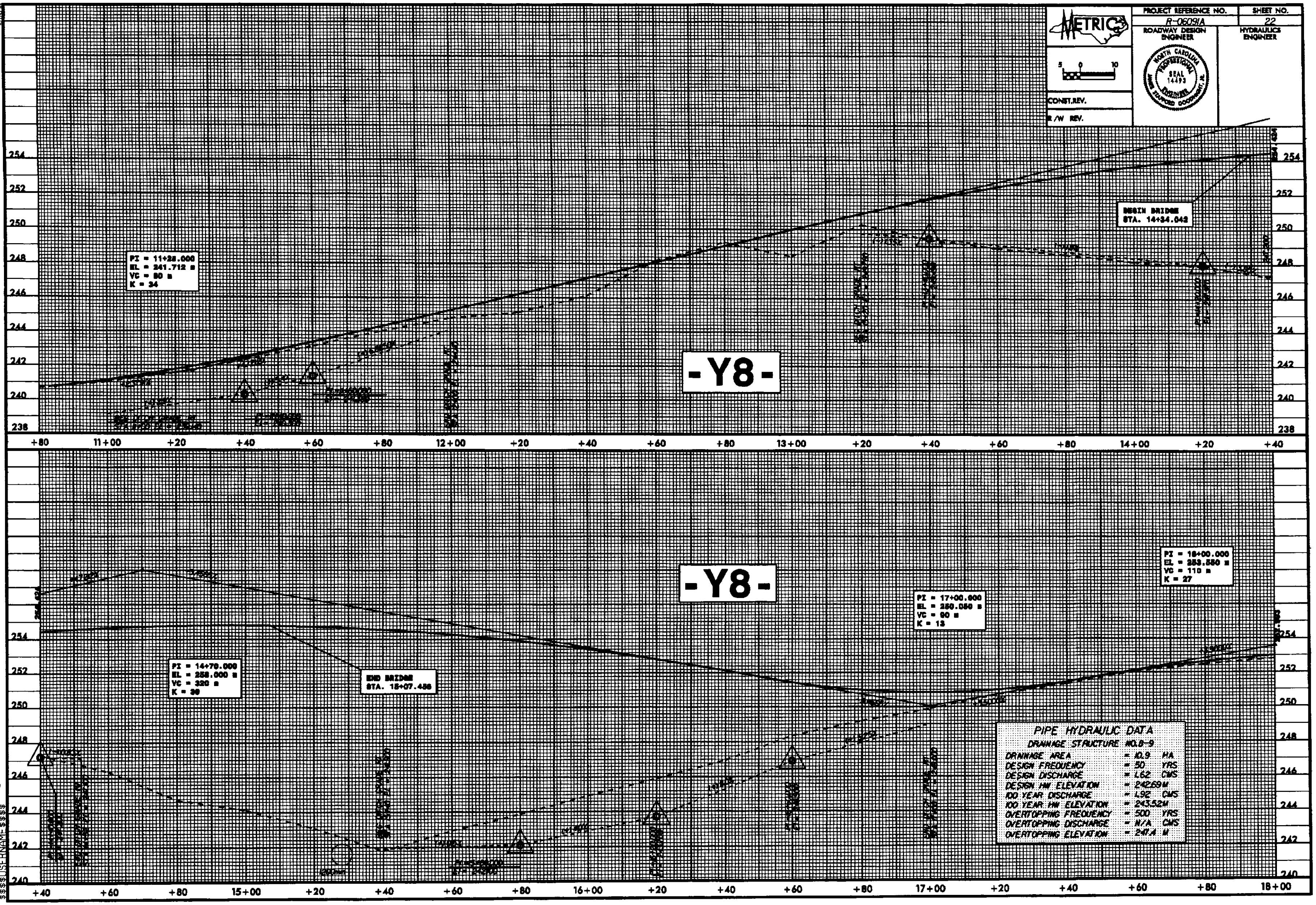

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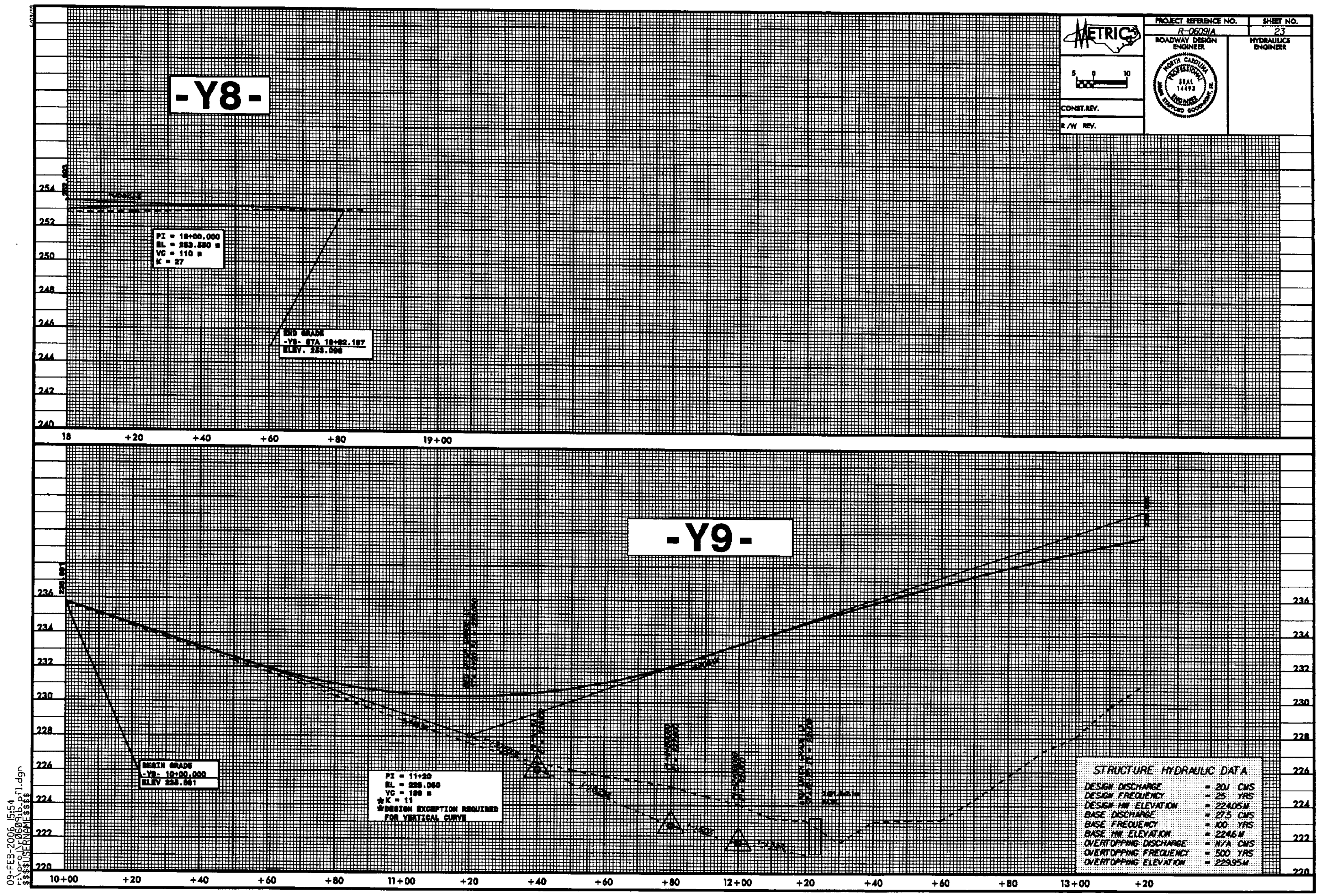

METRIC
PROJECT REFERENCE NO.
R-0609IA
SHEET NO.
23
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER
CONST.REV.
R/W REV.
-Y8-
PI = 18+00.000
EL = 253.550 m
VC = 110 m
K = 27
END GRADE
-Y8- STA 18+82.187
ELEV. 253.066
-Y9-
BEGIN GRADE
-Y9- 10+00.000
ELEV 235.861
PI = 11+20
EL = 228.060
VC = 130 m
*K = 11
*DESIGN EXCEPTION REQUIRED FOR VERTICAL CURVE
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 20.1 CMS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 224.05 M
BASE DISCHARGE = 27.5 CMS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 224.6 M
OVERTOPPING DISCHARGE = N/A CMS
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING ELEVATION = 229.95 M
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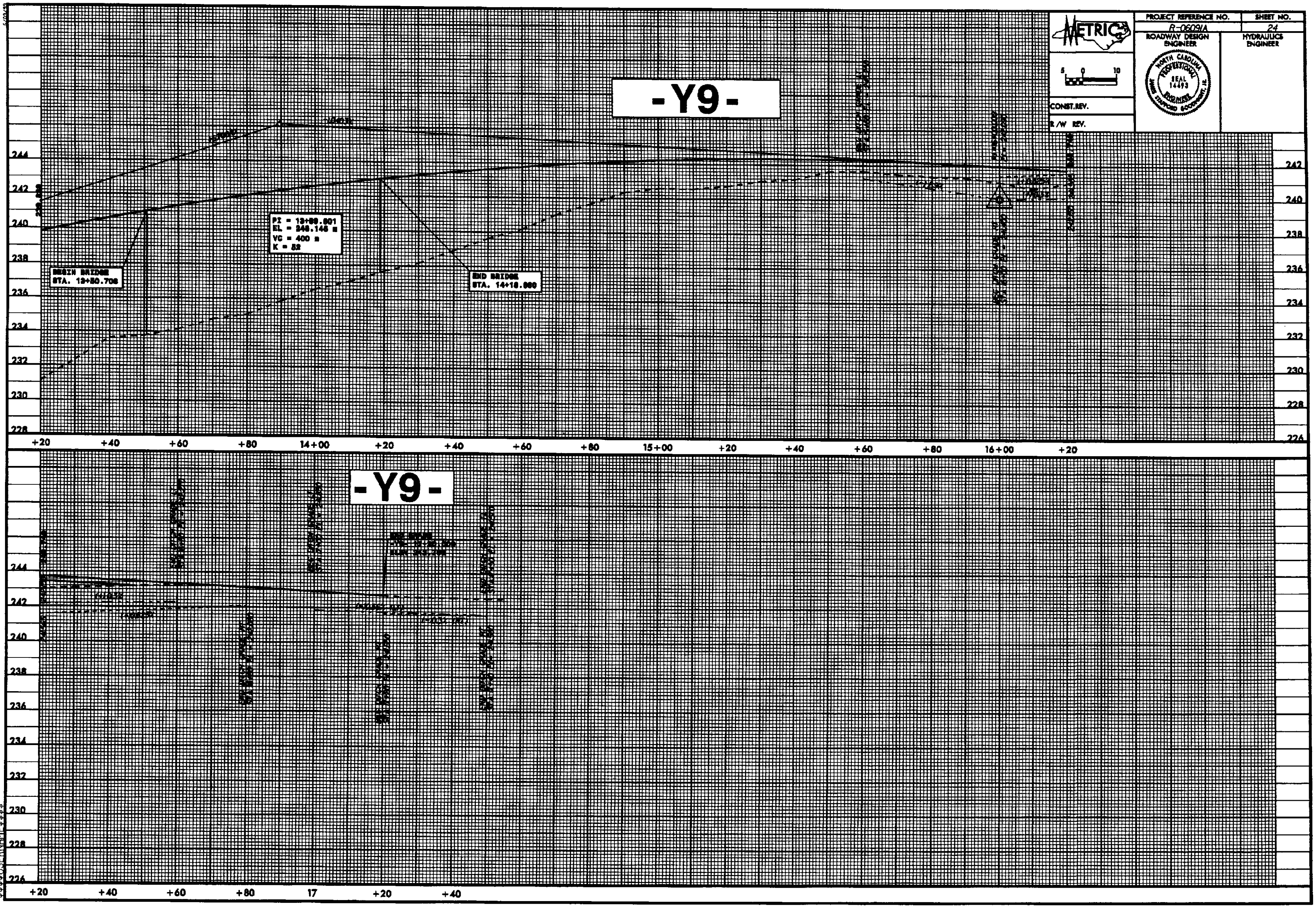

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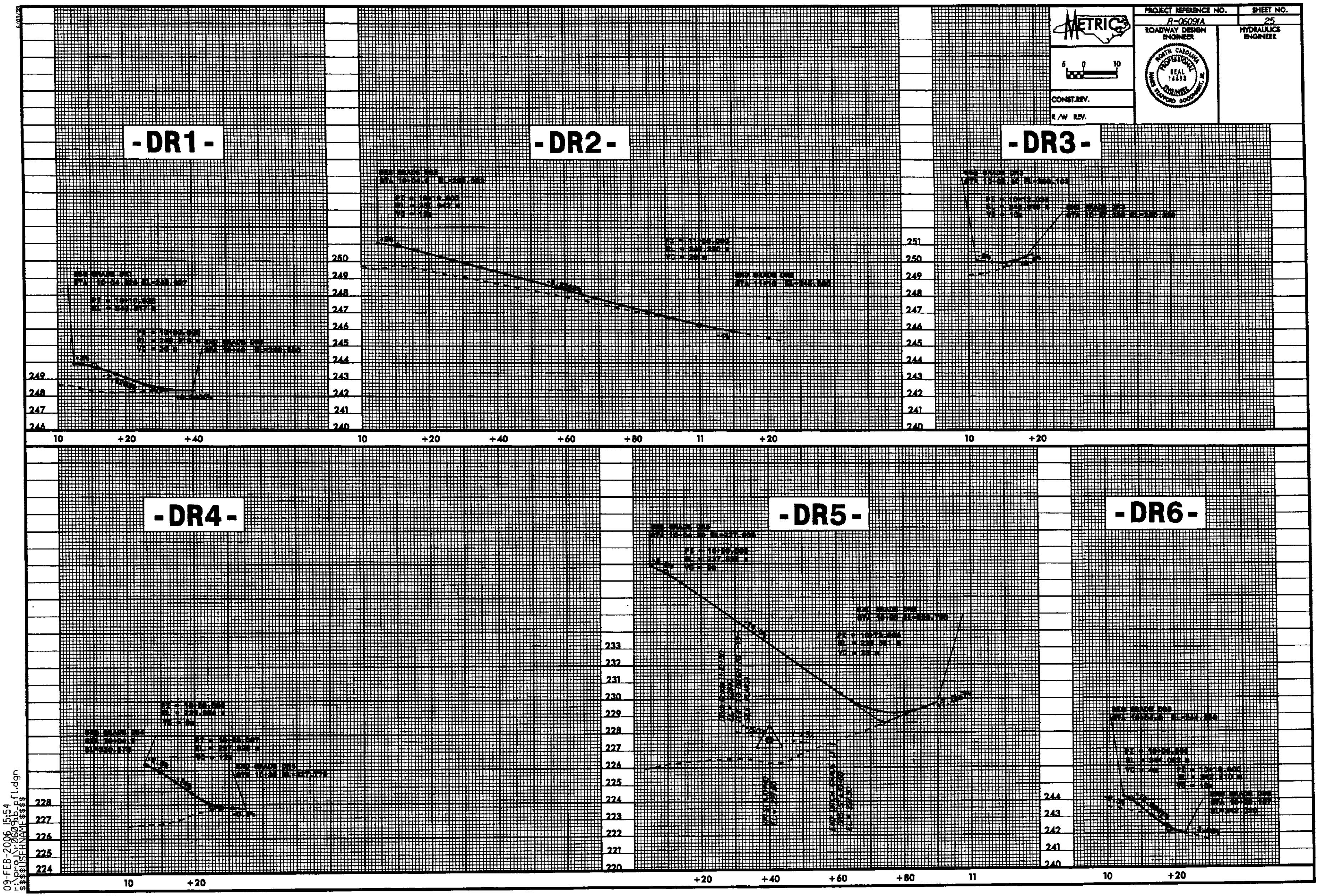
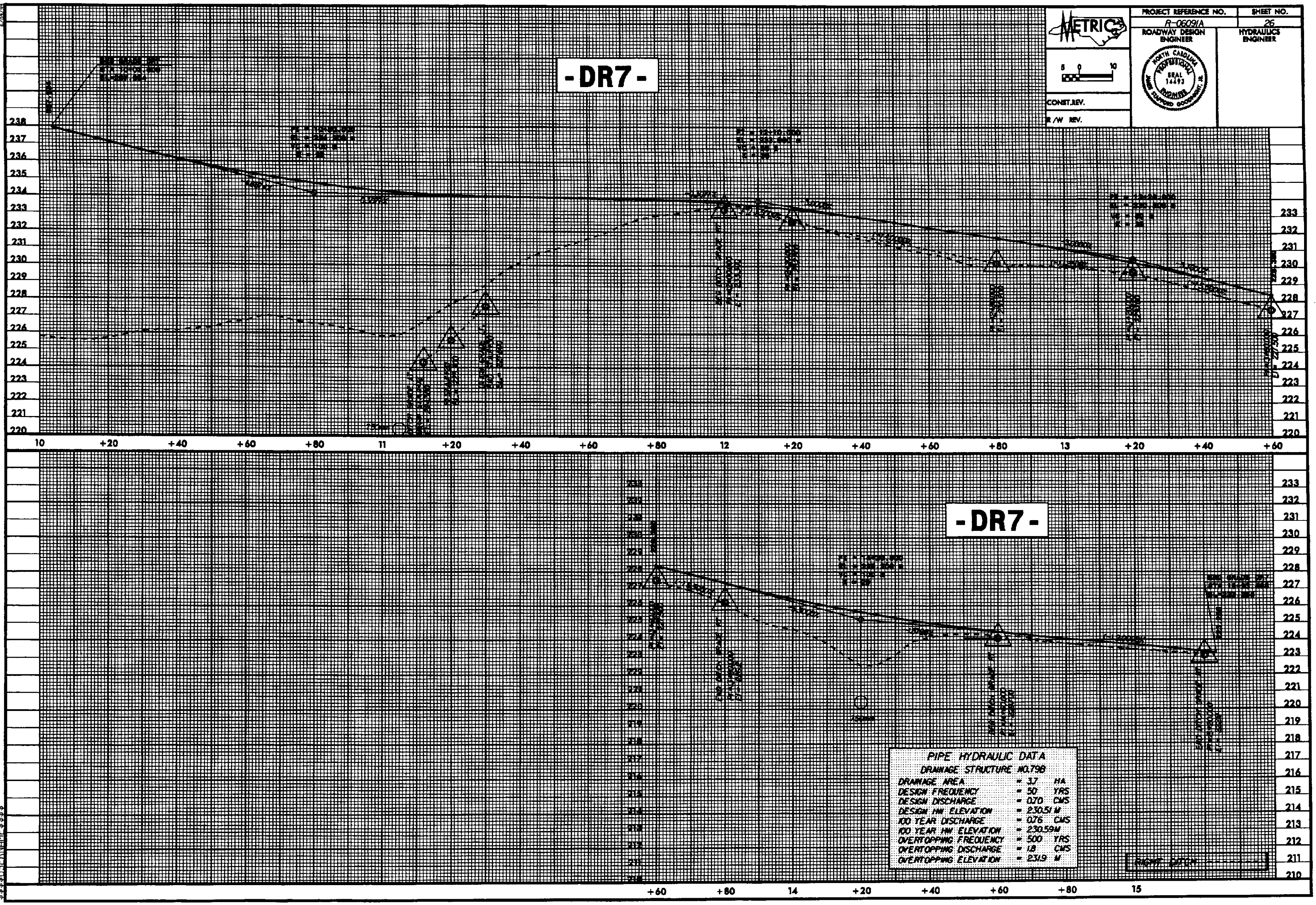


PROJECT REFERENCE NO.
SHEET NO.
25
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST. REV.
R/W REV.
-DR1-
-DR2-
-DR3-
-DR4-
-DR5-
-DR6-
09-FEB-2006 15:54



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CONTRACT:

TIP: R-0609IA

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-0609IA	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34345.1.1	MAF-F-119-1(1)	PE	
34345.2.7	STP-NHF-119-1(11)	ROW & UTILITIES	

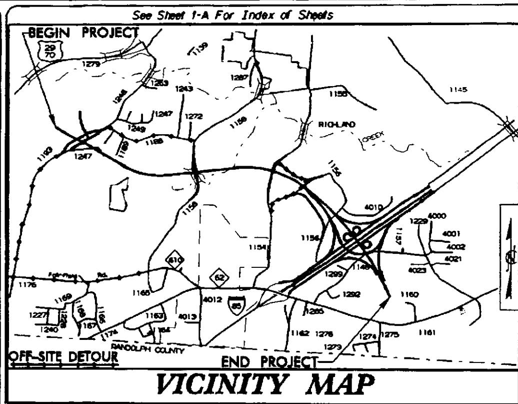
ALL DIMENSIONS IN THESE PLANS ARE IN METERS

GUILFORD COUNTY

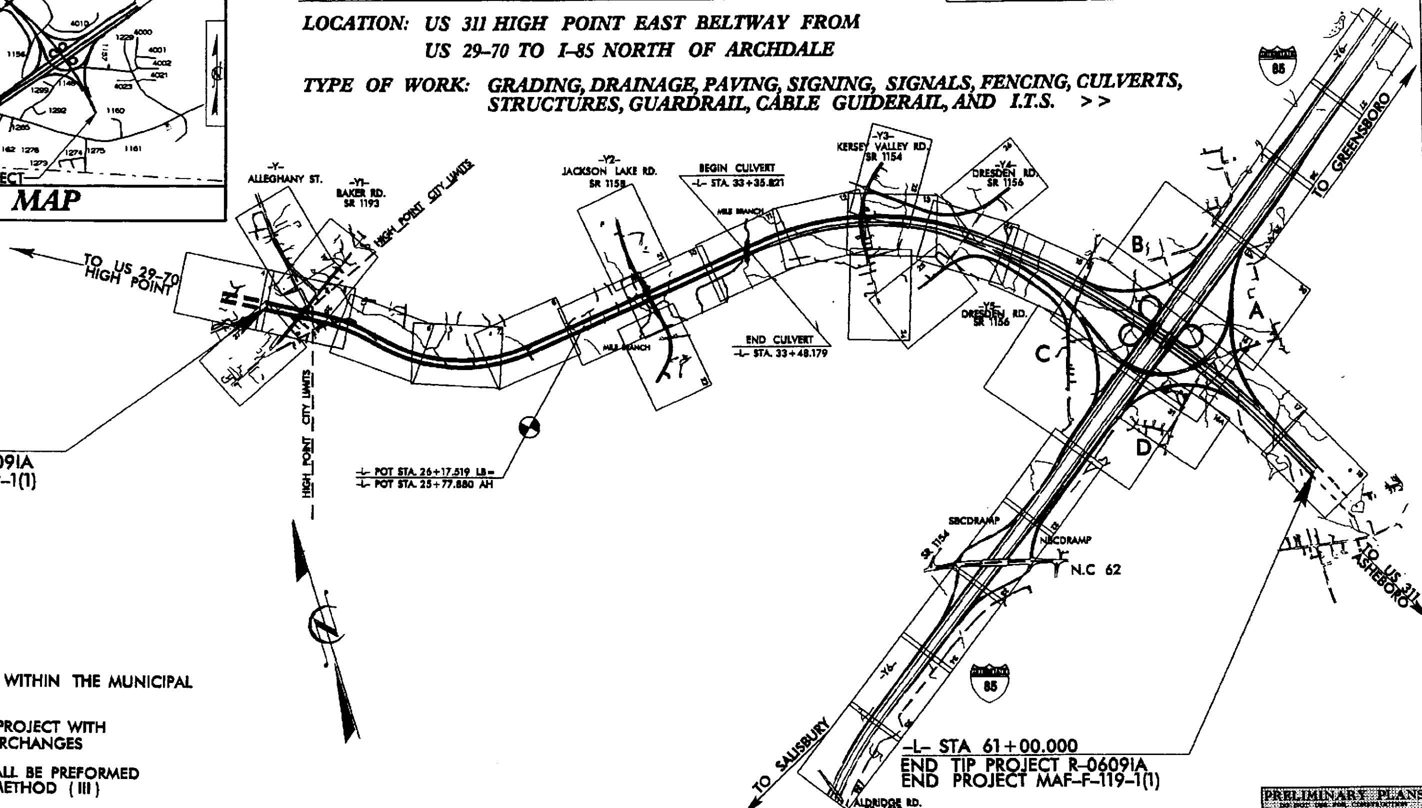
LOCATION: *US 311 HIGH POINT EAST BELTWAY FROM US 29-70 TO I-85 NORTH OF ARCHDALE*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, SIGNING, SIGNALS, FENCING, CULVERTS, STRUCTURES, GUARDRAIL, CABLE GUIDERAIL, AND I.T.S. >>*

See Sheet 1-A For Index of Sheets



VICINITY MAP



-L- STA 11+98.805
BEGIN TIP PROJECT R=0609IA
BEGIN PROJECT MAF-F-119-1(1)

-L- STA 61+00.000
END TIP PROJECT R-0609IA
END PROJECT MAF-F-119-1(1)

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF HIGH POINT

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

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

PRELIMINARY PLANS

GRAPHIC SCALES

5 0 10
PLANS

5 0 10
PROFILE (HORIZONTAL)

1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 27,000
ADT 2025 = 39,000
DHV = 10 %
D = 60 %
T = 13 % *
V = 110 km/h
* TTST 7 % DUAL 6 %
FUNC CLASS - FREEWAY

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-0609IA = 4.929 KM
LENGTH STRUCTURE TIP PROJECT R-0609IA = 0.012 KM
TOTAL LENGTH TIP PROJECT R-0609IA = 4.941 KM

Prepared In the Office of:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER, 2003

LETTING DATE:
SEPTEMBER 19, 2006

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

STEVE KENDALL
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

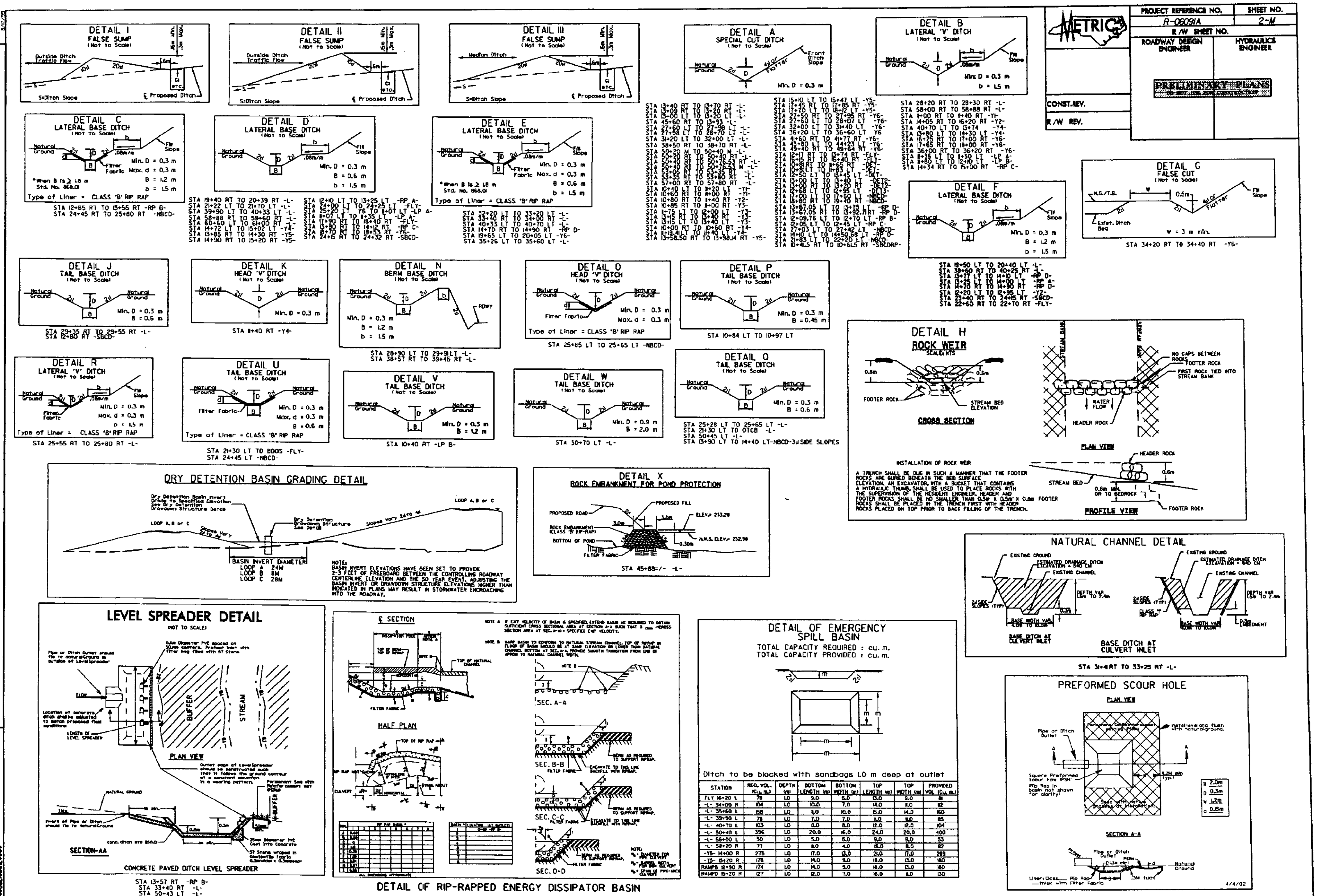
STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

31-JAN-2006 13:35

9/09/99



Ditch to be blocked with sandbags 1.0 m deep at outlet

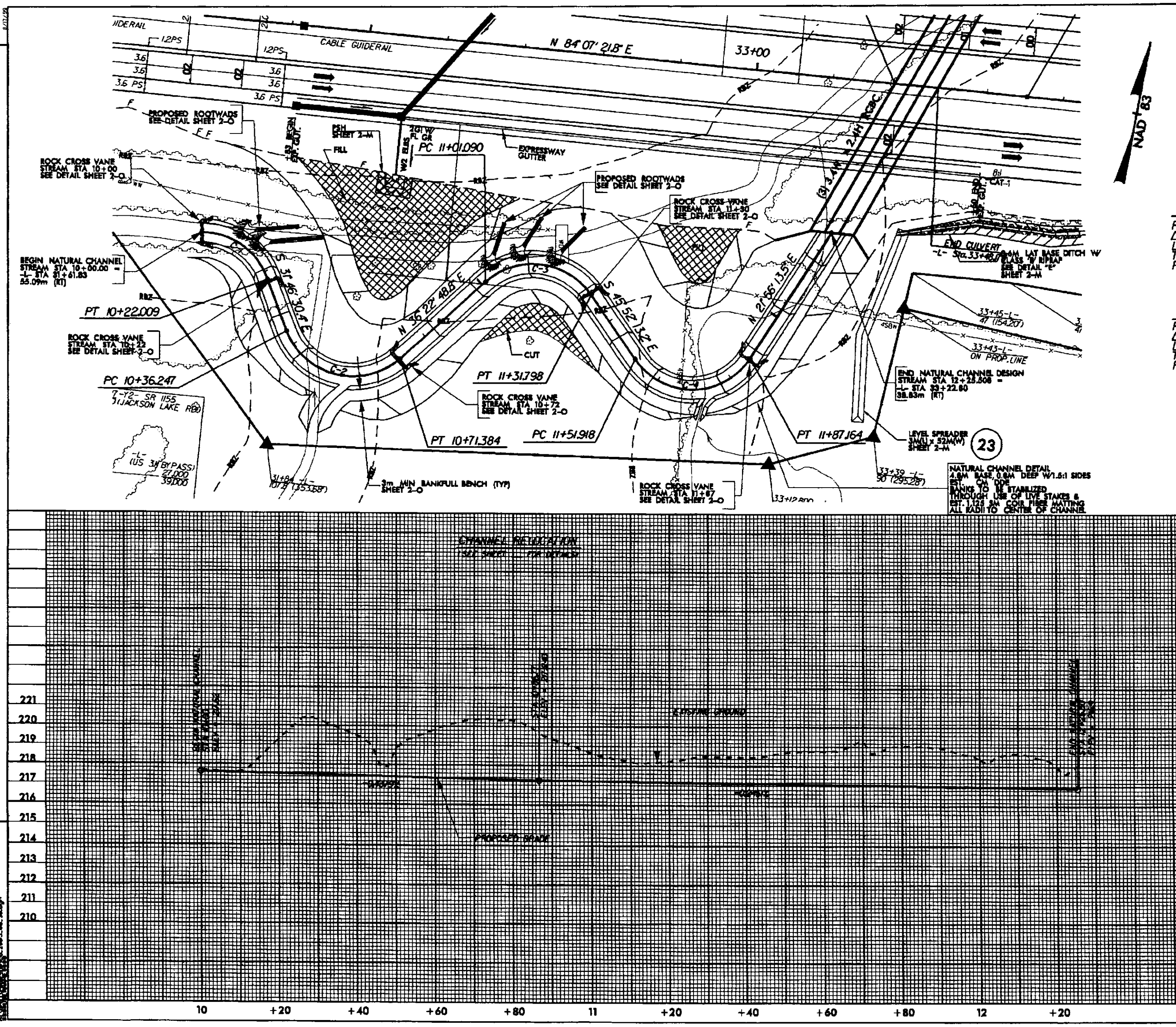
STATION	REQ. VOL. (Cu. m.)	DEPTH (m)	BOTTOM LENGTH (m)	BOTTOM WIDTH (m)	TOP LENGTH (m)	TOP WIDTH (m)	PROVIDED VOL. (Cu. m.)
FLY 16+20 L	78	1.0	9.0	5.0	13.0	9.0	81
-L- 34+00 R	104	1.0	10.0	7.0	14.0	11.0	112
-L- 35+60 L	158	1.0	11.0	10.0	15.0	14.0	160
-L- 39+90 L	78	1.0	7.0	7.0	11.0	11.0	85
-L- 40+70 L	103	1.0	8.0	8.0	12.0	12.0	104
-L- 50+40 L	396	1.0	20.0	16.0	24.0	20.0	400
-L- 56+00 L	50	1.0	5.0	5.0	9.0	9.0	53
-L- 58+20 R	77	1.0	11.0	4.0	15.0	8.0	82
-Y5- 14+00 R	275	1.0	17.0	13.0	21.0	17.0	289
-Y5- 15+20 R	178	1.0	14.0	9.0	18.0	13.0	180
RAMPB 12+90 R	174	1.0	14.0	9.0	18.0	13.0	180
RAMPD 15+20 R	127	1.0	12.0	7.0	16.0	11.0	130

PROJECT REFERENCE NO.	SHEET NO.
R609IA	2-N
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
[redacted]	

METRIC

CONST. REV.

R/W REV.



C-1	C-2
PI Sta 10+12.617	PI Sta 10+62.855
Δ = 70° 03' 22.2" (RT)	Δ = 111° 50' 40.8" (LT)
L = 22.009	L = 35.137
T = 12.617	T = 26.608
R = 18.000	R = 18.000

C-3	C-4
PI Sta 11+21.705	PI Sta 11+78.701
Δ = 97° 44' 58.0" (RT)	Δ = 112° 11' 33.3" (LT)
L = 30.709	L = 35.246
T = 20.615	T = 26.783
R = 18.000	R = 18.000

REVISIONS

SEE SHEET 11 FOR -L- PLAN

PROJECT REFERENCE NO.	SHEET NO.
R6091A	2-0
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
[redacted]	

NOT TO SCALE

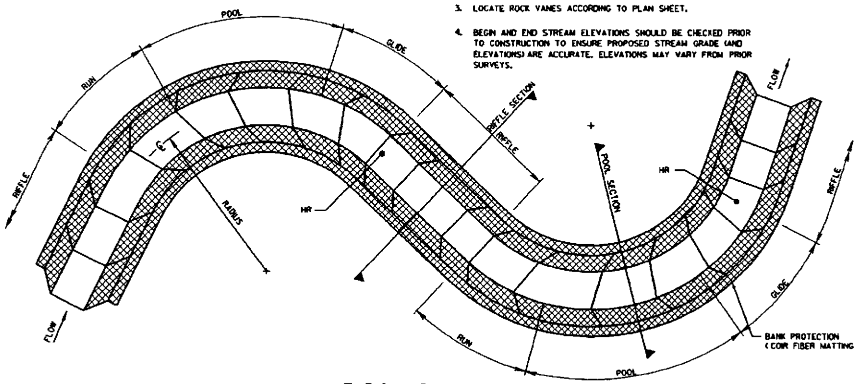
CONST.REV.

R/W REV.

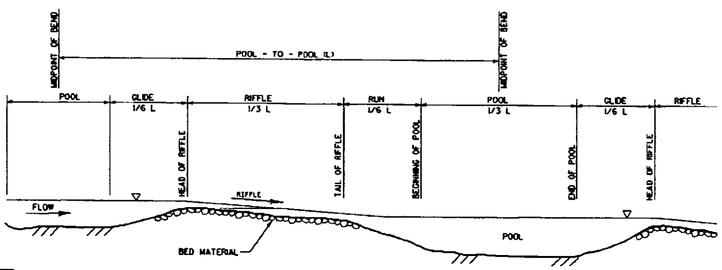
REVISIONS

NOTES:

1. THE CONTRACTOR SHALL LAYOUT THE CHANNEL ALIGNMENT WHICH SHALL CONSIST OF STAKING OUT THE CENTER OF EACH RADIUS, SCRIBING THE CENTER LINE OF THE CHANNEL FOR EACH BEND USING THE INDICATED RADIUS, AND SCRIBING CENTERLINE OF THE TANGENT SECTIONS BY CONNECTING SUCCESSIVE BENDS WITH A STRAIGHT LINE. R= +/-18m.
2. FIELD ADJUSTMENTS OF THE ALIGNMENT MAY BE REQUIRED TO AVOID CERTAIN OBSTACLES. APPROVAL BY THE ENGINEER OF THE STAKE-OUT ALIGNMENT SHALL BE REQUIRED PRIOR TO INITIATION OF THE CONSTRUCTION OF THE CHANNEL.
3. LOCATE ROCK VANES ACCORDING TO PLAN SHEET.
4. BEGIN AND END STREAM ELEVATIONS SHOULD BE CHECKED PRIOR TO CONSTRUCTION TO ENSURE PROPOSED STREAM GRADE (AND ELEVATIONS) ARE ACCURATE. ELEVATIONS MAY VARY FROM PRIOR SURVEYS.



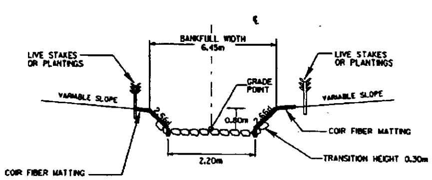
TYPICAL PLAN
NOT TO SCALE



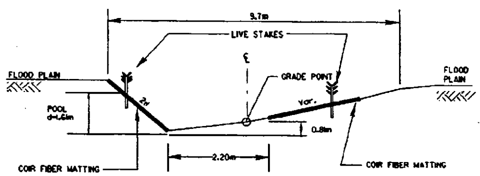
NOTES:

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

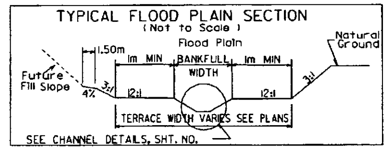
TYPICAL PROFILE
NOT TO SCALE



TYPICAL RIFFLE SECTION
NOT TO SCALE



TYPICAL POOL SECTION
NOT TO SCALE



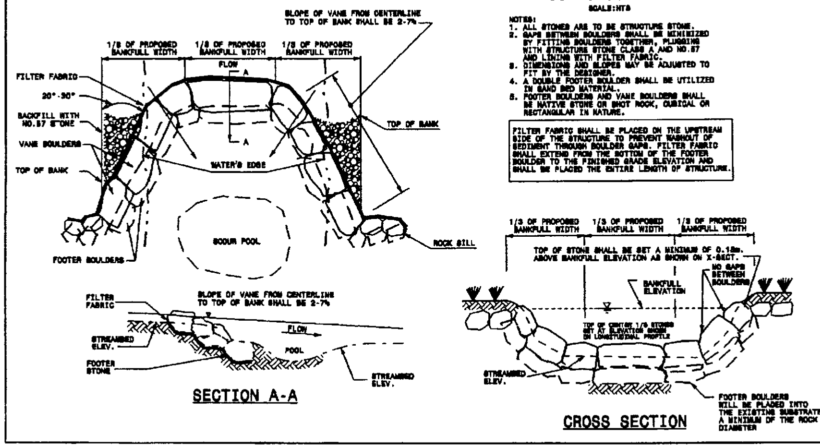
ROCK CROSS VANE

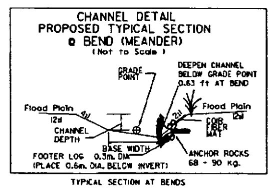
SCALE:NTS

NOTES:

1. ALL STONES ARE TO BE STRUCTURE STONE.
2. GAPS BETWEEN BOULDERS SHALL BE MINIMIZED BY FITTING BOULDERS TOGETHER, PLUGGING WITH STRUCTURE STONE CLASS A AND NO.57 AND LINING WITH FILTER FABRIC.
3. DIMENSIONS AND SLOPES MAY BE ADJUSTED TO FIT BY THE DESIGNER.
4. A DOUBLE FOOTER BOULDER SHALL BE UTILIZED IN SAND BED MATERIAL.
5. FOOTER BOULDERS AND VANE BOULDERS SHALL BE NATIVE STONE OR SHOT ROCK, CUBICAL OR RECTANGULAR IN NATURE.

FILTER FABRIC SHALL BE PLACED ON THE UPSTREAM SIDE OF THE STRUCTURE TO PREVENT WASHOUT OF SEDIMENT THROUGH BOULDER GAPS. FILTER FABRIC SHALL EXTEND FROM THE BOTTOM OF THE FOOTER BOULDER TO THE FINISHED GRADE ELEVATION AND SHALL BE PLACED THE ENTIRE LENGTH OF STRUCTURE.





NOTES:

NUMBER OF ROOTWADS INSTALLED TO BE DETERMINED ON SITE

NUMBER OF LOW STAGE CHECK DAMS TO BE DETERMINED ON SITE

ROOTWADS TO BE SPACED 4x DIAMETER OF ROOT BASE

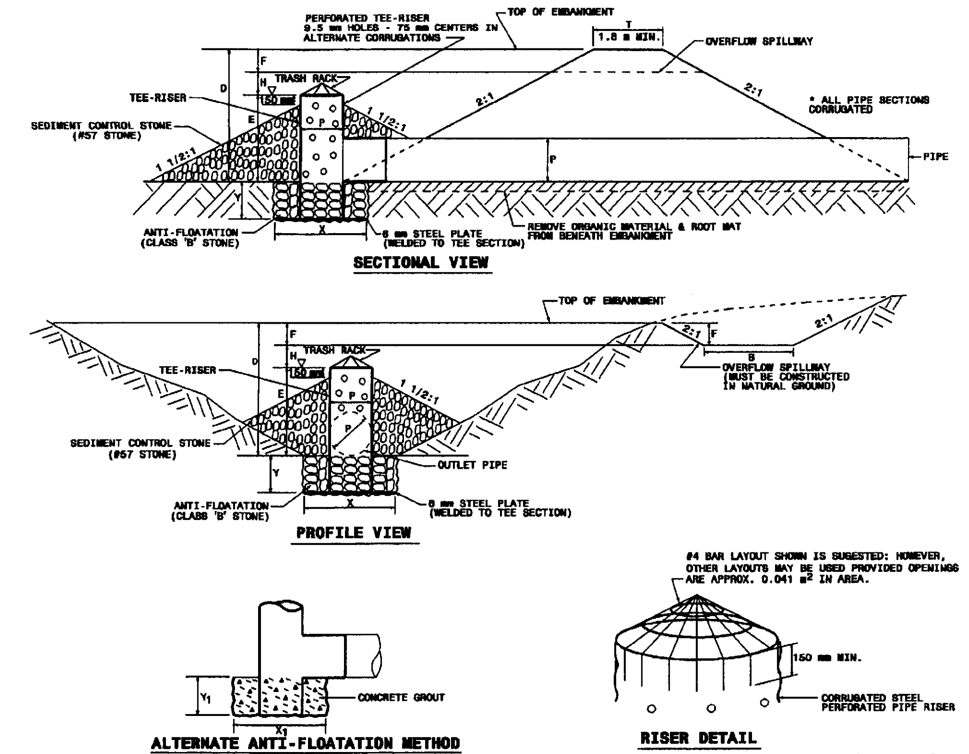
FOOTER LOG ANCHOR ROCK TO BE PLACED ON THE DOWNSTREAM END OF EACH FOOTER LOG SO THAT IT IS LEANING AGAINST THE LOG ON THE SIDE AWAY FROM THE CHANNEL.

WHEN BACKFILLING OVER AND AROUND FOOTER LOGS, ROOTWAD LOGS AND ANCHOR ROCKS FIRMLY SECURE ALL COMPONENTS INCLUDING JOINTS, CONNECTIONS AND GAPS.

PLANTINGS SHOULD BE PLACED ABOVE BANKFULL DEPTH

MORPHOLOGICAL MEASUREMENT TABLE

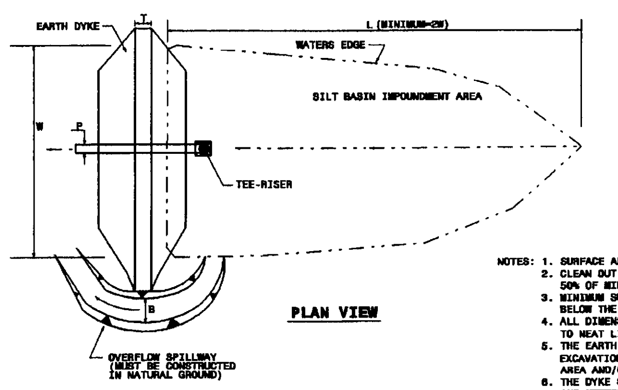
VARIABLES	EXISTING CHANNEL	PROPOSED REACH I	REFERENCE REACH
1) STREAM TYPE	B4c	C4	C5
2) DRAINAGE AREA	581.03Ha	581.03Ha	162.69Ha
3) BANKFULL WIDTH	5.75m	6.45m	4.63m
4) BANKFULL MEAN DEPTH	0.92m	0.54m	0.46m
5) WIDTH/DEPTH RATIO	6.23	12.00	10.13
6) BANKFULL CROSS-SECTIONAL AREA	5.32sm	3.45sm	2.11sm
7) BANKFULL MEAN VELOCITY	1.15mps	1.77mps	0.86mps
8) BANKFULL DISCHARGE, cfs	6.09cm	6.10cm	1.81cm
9) BANKFULL MAX. DEPTH	1.37m	0.80m	0.49m
10) WIDTH OF FLOODPRONE AREA	42.40m	45.00m	39.62m
11) ENTRENCHMENT RATIO	7.37	6.98	8.55
12) MEANDER LENGTH	9.5m	75m	10 - 22m
13) RATIO OF MEANDER LENGTH TO BANKFULL WIDTH	1.65	12	2.2 - 4.7
14) RADIUS OF CURVATURE	10.0m	18m	2 - 3m
15) RATIO OF RADIUS OF CURVATURE TO BANKFULL WIDTH	1.7	2.8	0.4
16) BELT WIDTH	16.0	45.2	9.14
17) MEANDER WIDTH RATIO	2.8	7.0	2.0
18) SINUOSITY (STREAM LENGTH/VALLEY LENGTH	1.24	1.40	1.19
19) VALLEY SLOPE	0.004m/m	0.0034m/m	0.018m/m
20) AVERAGE SLOPE	0.003m/m	0.0024m/m	0.015 m/m
21) POOL SLOPE	0.005m/m	0.0005m/m	0.003 - 0.012m/m
22) RATIO OF POOL SLOPE TO AVERAGE SLOPE	1.78	0.20	0.19 - 0.83
23) MAXIMUM POOL DEPTH	1.86m	1.6m	0.58 - 2m
24) RATIO OF POOL DEPTH TO AVERAGE BANKFULL DEPTH	2.01	3.00	1.3 - 3.9
25) POOL WIDTH	10.98m	9.68m	9m
26) RATIO OF POOL WIDTH TO BANKFULL WIDTH	1.91	1.50	2.04
27) POOL TO POOL SPACING	30.00m	32.3m	5 -9m
28) RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	5.21	5.0	1.2 - 2.0



SHEET 2 OF 2

SPECIAL DETAIL FOR TYPE "A" SILT BASIN

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
RALEIGH, N.C.



PLAN VIEW

NOTES:
1. SURFACE AREA AND VOLUME ARE TO BE SITE SPECIFIC.
2. CLEAN OUT SEDIMENT WHEN STORAGE VOLUME REACHES 50% OF MIN. STORAGE VOLUME.
3. MINIMUM SURFACE AREA AND MINIMUM VOLUME ARE MEASURED BELOW THE TOP OF PRINCIPLE SPILLWAY (TOP OF RISER).
4. ALL DIMENSIONS OF BASIN WILL NOT REQUIRE CONSTRUCTION TO NEAT LINES.
5. THE EARTH DYKE MAY BE CONSTRUCTED ALONG ONE OR MORE SIDES. EXCAVATION MAY BE REQUIRED TO PROVIDE MINIMUM SURFACE AREA AND/OR MINIMUM STORAGE VOLUME.
6. THE DYKE SHALL BE CONSTRUCTED OF MATERIAL SUITABLE FOR AND MEETING ROADWAY EMBANKMENT SPECIFICATIONS.
7. TO FACILITATE DETERMINATION OF MAINTENANCE CLEANOUT REQUIREMENT A MARKER SHOULD BE PLACED IN THE BASIN INDICATING THE 50% VOLUME LEVEL.

BASIN #	APPROX. STA.	P	H	T (min)	D*	E	F	B (min)	X (min)	Y (min)	X_1 (min)	Y_1 (min)	SURFACE AREA (min)	STORAGE VOLUME (min)
		mm	m	m	m	m	m	m	m	m	m	m	m^2	m^3
1	33+40 (LT)	600	0.3	1.8	2.11	1.20	0.61	1.81	1.2	0.45	1.1	0.45	332	370
2	35+30 (LT)	600	0.3	1.8	2.41	1.50	0.61	2.92	1.3	0.45	1.2	0.45	534	513

* SHALL NOT EXCEED 3.7 m

HYDRAULICS ENGINEER

P.E.
SIGNATURE

SHEET 1 OF 2

SPECIAL DETAIL FOR TYPE "A" SILT BASIN

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC

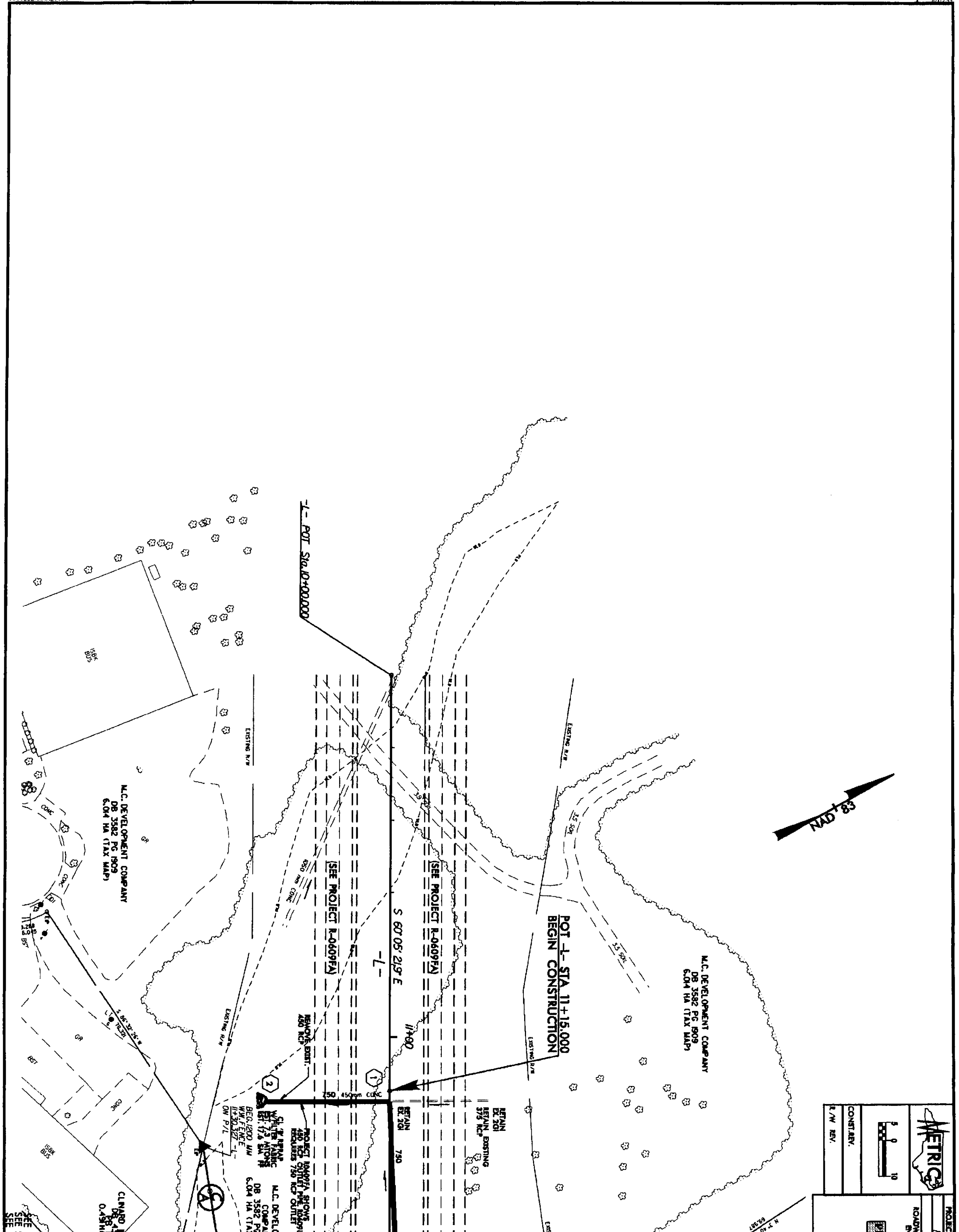
PROJECT REFERENCE NO. R-0609 IA

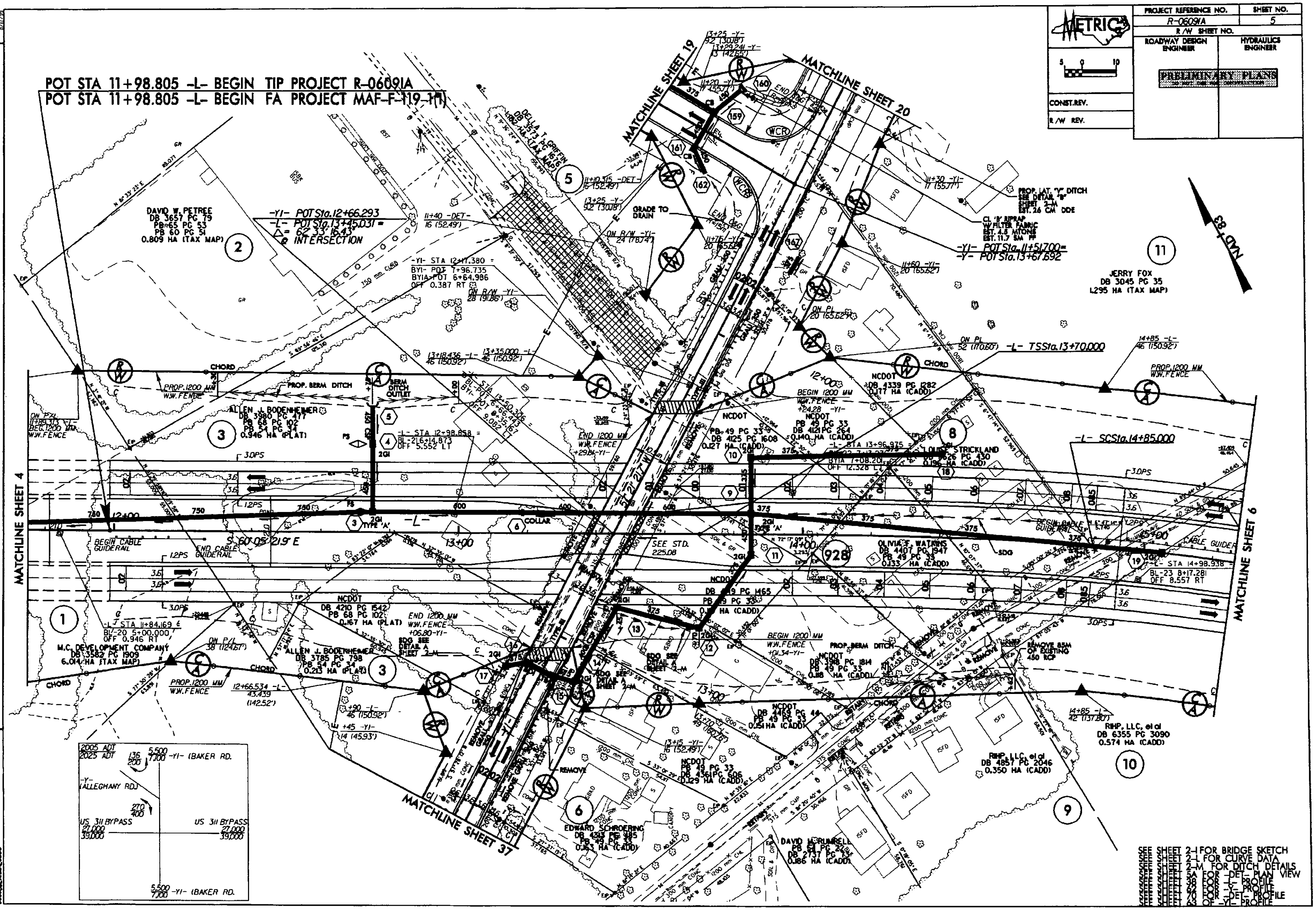
SHEET NO. 20

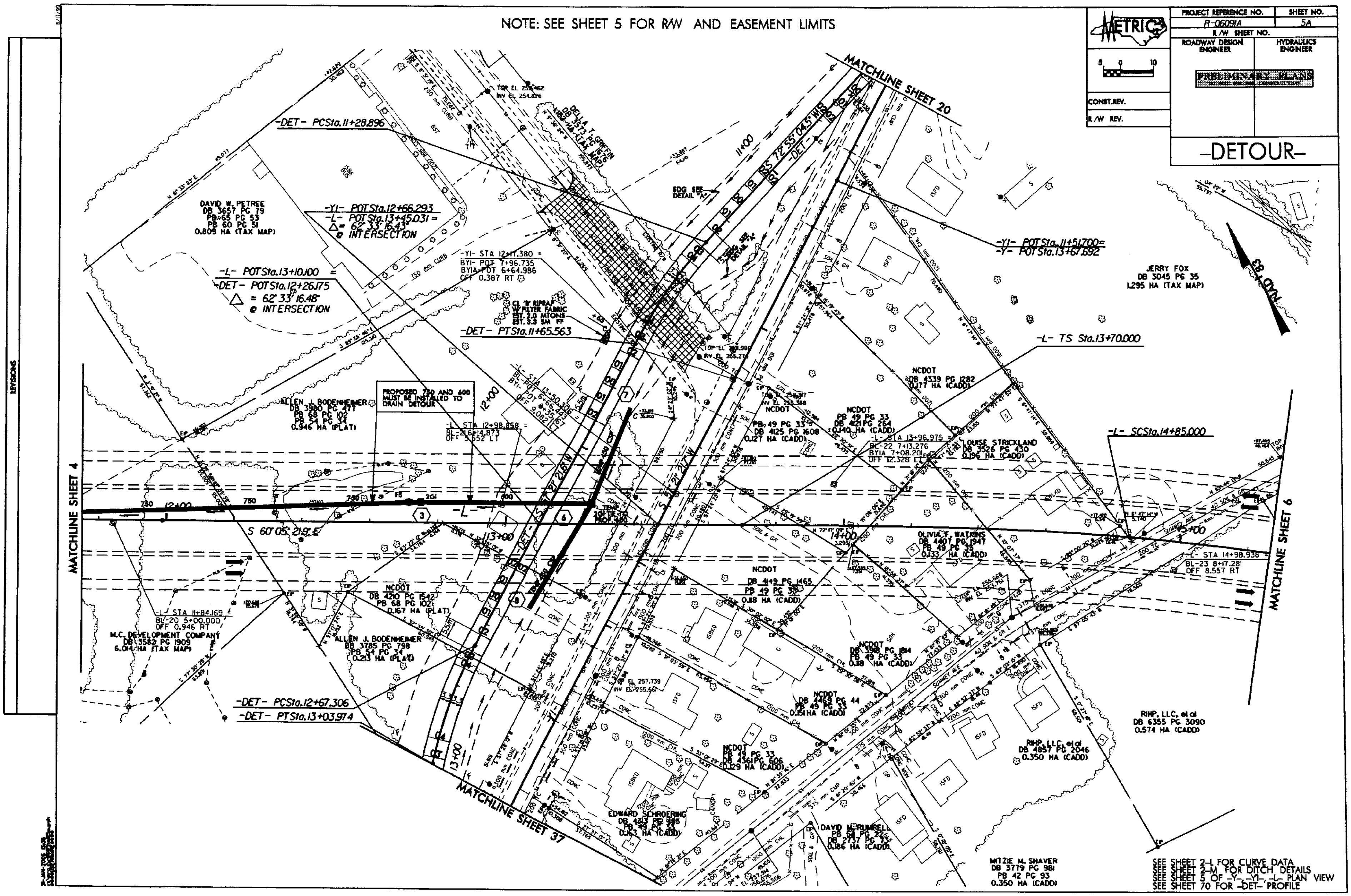
REVISIONS

ROW REVSION. THIS REVISION CONSISTS OF ADDING EXISTING ROW TO PARCEL 1.
WPW 03-17-2005

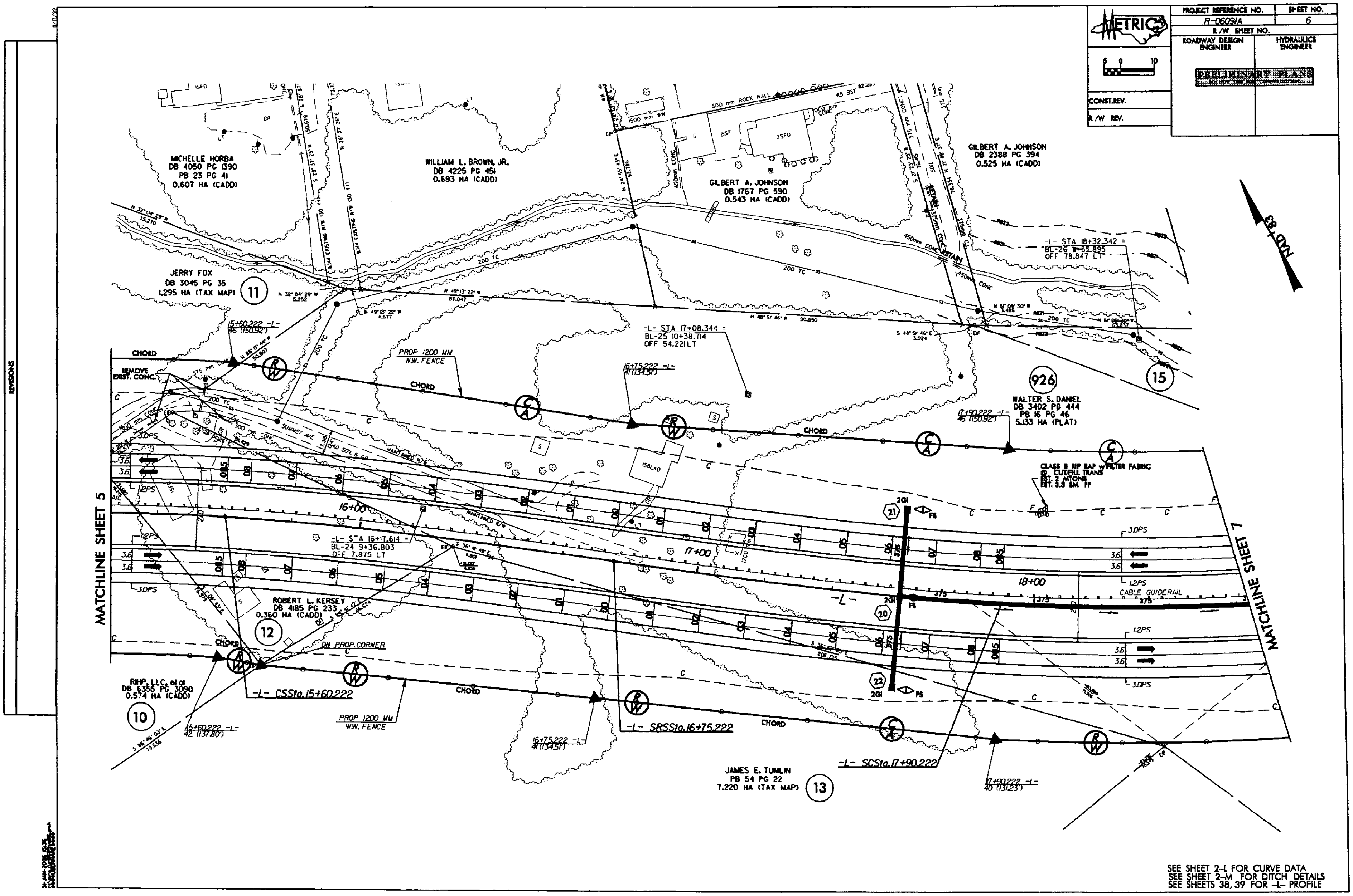
31-JAN-2006 13:35




POT STA 11+98.805 -L- BEGIN TIP PROJECT R-0609IA
POT STA 11+98.805 -L- BEGIN FA PROJECT MAF-F-119-1(1)
PROJECT REFERENCE NO. R-0609IA
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
CONST.REV.
R/W REV.
METRIC
MATCHLINE SHEET 4
MATCHLINE SHEET 6
MATCHLINE SHEET 19
MATCHLINE SHEET 20
MATCHLINE SHEET 37
NAD 83
DAVID W. PETREE
DB 3657 PG 79
PB 65 PG 53
PB 60 PG 51
0.809 HA (TAX MAP)
-Y1- POT Sta. 12+66.293
-L- POT Sta. 13+45.031
INTERSECTION
ALLEN J. BODENHEIMER
DB 3980 PG 477
PB 68 PG 102
PB 54 PG 34
0.946 HA (PLAT)
M.C. DEVELOPMENT COMPANY
DB 3582 PG 1909
6.014 HA (TAX MAP)
ALLEN J. BODENHEIMER
DB 3785 PG 798
PB 54 PG 34
0.213 HA (PLAT)
NCDOT
DB 4210 PG 1542
PB 68 PG 102
0.167 HA (PLAT)
EDWARD SCHROERING
DAVID M. RUMBELL
OLIVIA S. WATKINS
DB 4407 PG 1947
PB 49 PG 33
0.133 HA (CADD)
RIHP, LLC, et al
DB 4857 PG 2046
0.350 HA (CADD)
RIHP, LLC, et al
DB 6355 PG 3090
0.574 HA (CADD)
JERRY FOX
DB 3045 PG 35
1.295 HA (TAX MAP)
-Y1- POT Sta. 11+51.700 =
-Y- POT Sta. 13+67.692
-L- TS Sta. 13+70.000
-L- SC Sta. 14+85.000
PROP. BERM DITCH
BEGIN CABLE GUIDERAIL
END CABLE GUIDERAIL
S 60°05'21.9" E
SEE SHEET 2-I FOR BRIDGE SKETCH
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 5A FOR -DET- PLAN VIEW
SEE SHEET 38 FOR -L- PROFILE
SEE SHEET 39 FOR -Y- PROFILE
SEE SHEET 70 FOR -DET- PROFILE
SEE SHEET 63 OF -Y1- PROFILE
2005 ADT
2025 ADT
-Y1- (BAKER RD.
-Y- (ALLEGHANY RD.)
US 311 BYPASS

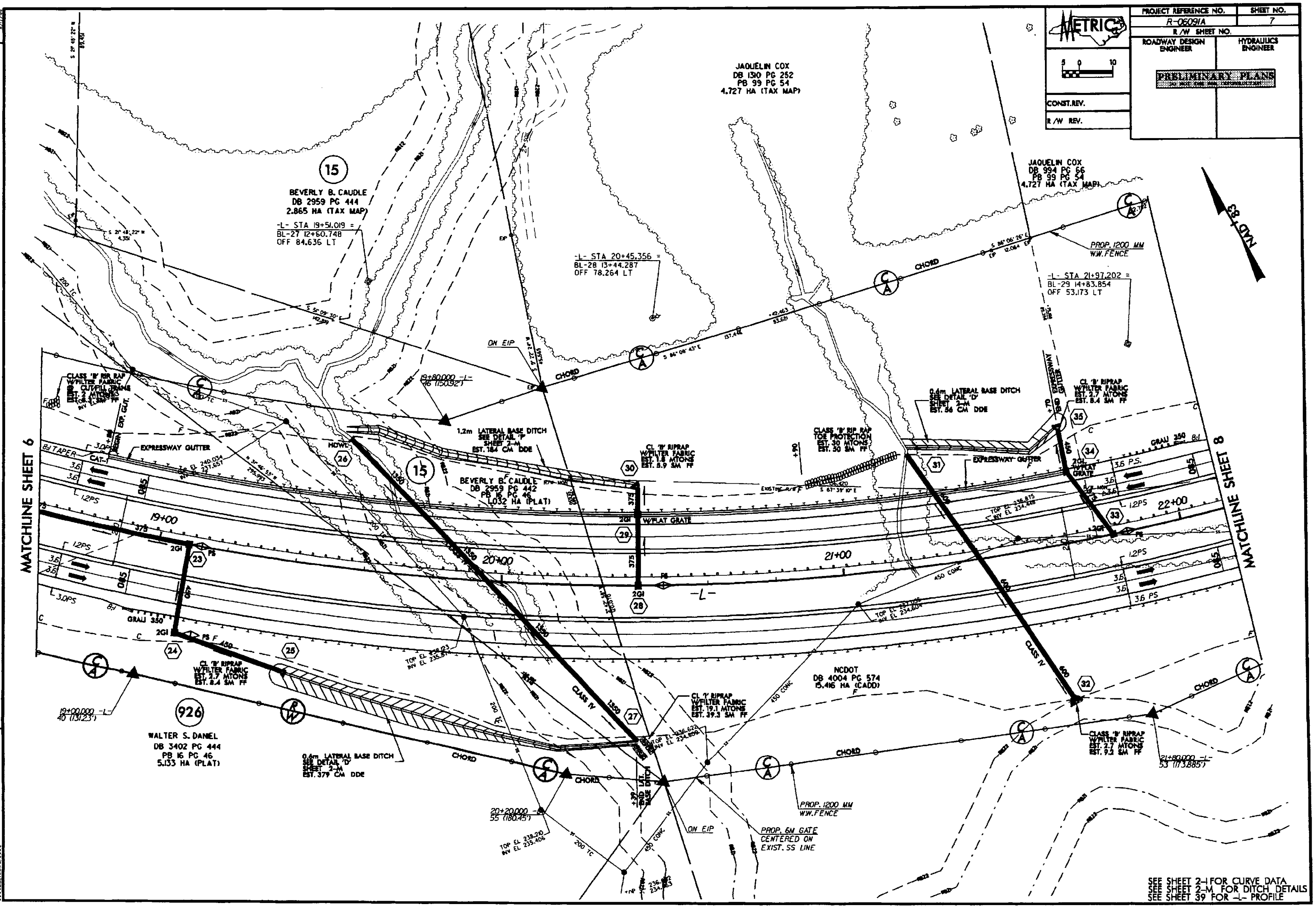


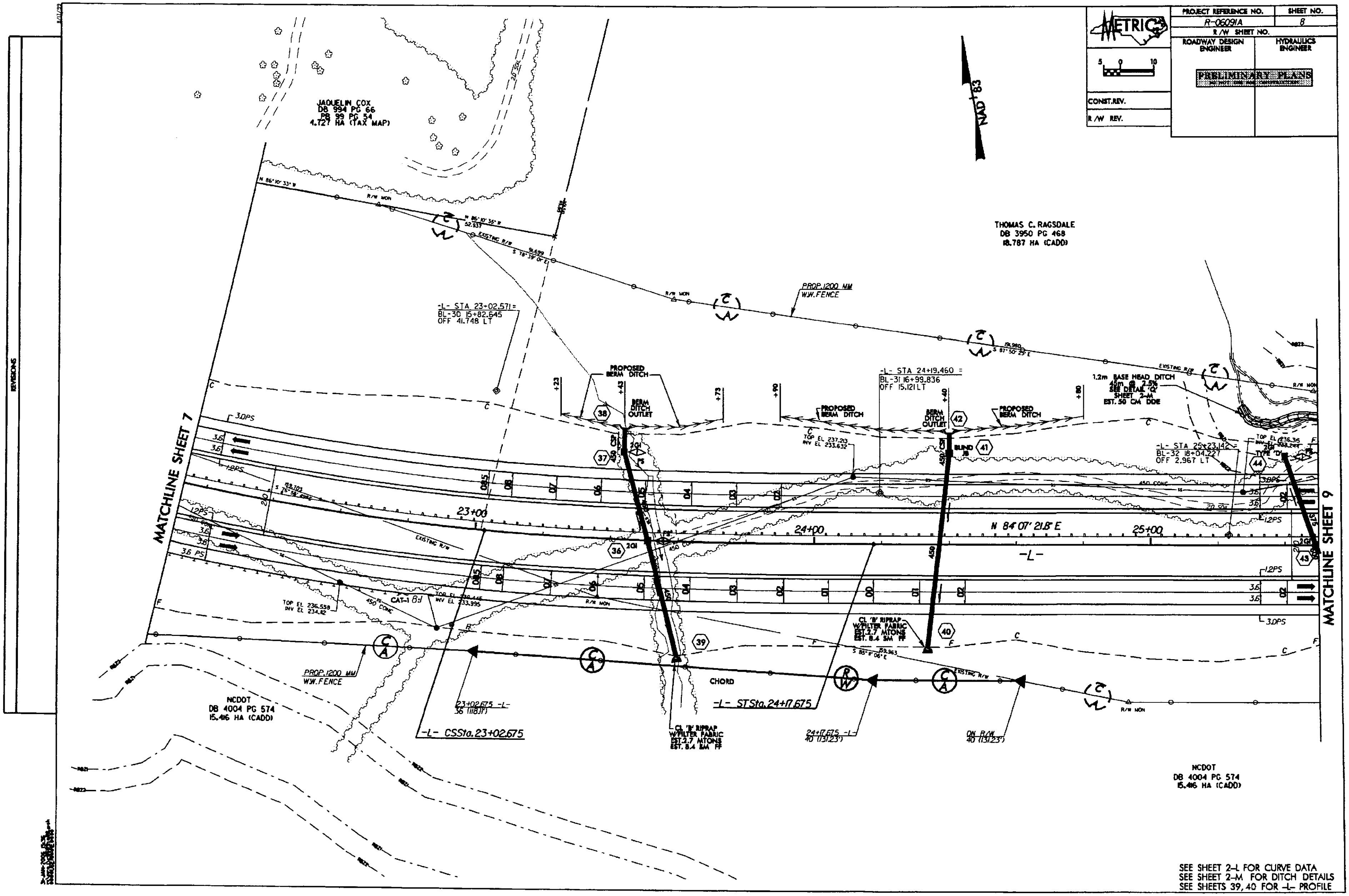
NOTE: SEE SHEET 5 FOR R/W AND EASEMENT LIMITS
METRIC
PROJECT REFERENCE NO.
R-0609IA
SHEET NO.
5A
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
CONST. REV.
R/W REV.
-DETOUR-
REVISIONS
MATCHLINE SHEET 4
MATCHLINE SHEET 20
MATCHLINE SHEET 37
MATCHLINE SHEET 6
NAD 83
-DET- PCSta.11+28.896
-Y1- POTSta.12+66.293
-L- POTSta.13+45.031 =
△= 62°33'16.43"
@ INTERSECTION
-L- POTSta.13+10.100 =
-DET- POTSta.12+26.175
△ = 62°33'16.48"
@ INTERSECTION
-DET- PTSta.11+65.563
-Y1- POTSta.11+51.700=
-Y- POTSta.13+67.692
-L- TS Sta.13+70.000
-L- SCSta.14+85.000
-DET- PCSta.12+67.306
-DET- PTSta.13+03.974
DAVID W. PETREE
DB 3657 PG 79
PB 65 PG 53
PB 60 PG 51
0.809 HA (TAX MAP)
JERRY FOX
DB 3045 PG 35
1.295 HA (TAX MAP)
PROPOSED 750 AND 600 MUST BE INSTALLED TO DRAIN DETOUR
ALLEN J. BODENHEIMER
DB 3590 PG 477
PB 68 PG 102
PB 54 PG 34
0.946 HA (PLAT)
M.C. DEVELOPMENT COMPANY
DB 3582 PG 1909
6.014 HA (TAX MAP)
NCDOT
DB 4210 PG 1542
PB 68 PG 102
0.167 HA (PLAT)
ALLEN J. BODENHEIMER
DB 3785 PG 798
PB 54 PG 34
0.213 HA (PLAT)
NCDOT
DB 4339 PG 1282
0.177 HA (CADD)
LOUISE STRICKLAND
DB 3526 PG 430
0.156 HA (CADD)
OLIVIA F. WATKINS
DB 4407 PG 1947
PB 49 PG 33
0.133 HA (CADD)
NCDOT
DB 4149 PG 1465
PB 49 PG 33
0.118 HA (CADD)
EDWARD SCHROERING
MITZIE M. SHAVER
DB 3779 PG 981
PB 42 PG 93
0.350 HA (CADD)
RIHP, LLC, et al
DB 6355 PG 3090
0.574 HA (CADD)
RIHP, LLC, et al
DB 4857 PG 2046
0.350 HA (CADD)
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 5 OF -Y-, -Y1-, -L- PLAN VIEW
SEE SHEET 70 FOR -DET- PROFILE


REVISIONS
PROJECT REFERENCE NO.
R-0609IA
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
METRIC
CONST.REV.
R/W REV.
MATCHLINE SHEET 5
MATCHLINE SHEET 7
MICHELLE HORBA
DB 4050 PG 1390
PB 23 PG 41
0.607 HA (CADD)
WILLIAM L. BROWN, JR.
DB 4225 PG 451
0.693 HA (CADD)
GILBERT A. JOHNSON
DB 1767 PG 590
0.543 HA (CADD)
GILBERT A. JOHNSON
DB 2388 PG 394
0.525 HA (CADD)
JERRY FOX
DB 3045 PG 35
L295 HA (TAX MAP)
WALTER S. DANIEL
DB 3402 PG 444
PB 16 PG 46
5.133 HA (PLAT)
ROBERT L. KERSEY
DB 4185 PG 233
0.360 HA (CADD)
RIHP, LLC, et al
DB 6355 PG 3090
0.574 HA (CADD)
JAMES E. TUMLIN
PB 54 PG 22
7.220 HA (TAX MAP)
-L- STA 17+08.344 =
BL-25 10+38.714
OFF 54.221LT
-L- STA 16+17.614 =
BL-24 9+36.803
OFF 7.875 LT
-L- STA 18+32.342 =
BL-26 11+55.895
OFF 78.847 LT
PROP 1200 MM
W.W. FENCE
-L- CSSta.15+60.222
-L- SRSSta.16+75.222
-L- SCSta.17+90.222
CLASS B RIP RAP w/FILTER FABRIC
CABLE GUIDERAIL
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 38, 39 FOR -L- PROFILE
NAD 83

REVISIONS

ROW REVISONS. ADDED PARCEL #15. LETTER DATED.10-05-2004
WPW 10-25-2004




PROJECT REFERENCE NO.
SHEET NO.
R-0609IA
8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
METRIC
CONST.REV.
R/W REV.
NAD 83
MATCHLINE SHEET 7
MATCHLINE SHEET 9
JAQUELIN COX
DB 994 PG 66
PB 99 PG 54
4.727 HA (TAX MAP)
THOMAS C. RAGSDALE
DB 3950 PG 468
18.787 HA (CADD)
NCDOT
DB 4004 PG 574
15.416 HA (CADD)
-L- STA 23+02.571=
BL-30 15+82.645
OFF 41.748 LT
-L- STA 24+19.460 =
BL-31 16+99.836
OFF 15.121 LT
-L- STA 25+23.142 =
BL-32 18+04.227
OFF 2.967 LT
PROPOSED BERM DITCH
BERM DITCH OUTLET
BLIND
1.2m BASE HEAD DITCH
45m @ 2.5%
SEE DETAIL 'Q'
SHEET 2-M
EST. 50 CM DDE
PROP. 1200 MM
W.W. FENCE
TOP EL 237.20
INV EL 233.632
TOP EL 236.538
INV EL 234.42
CAT-1 BJ
CL 'B' RIPRAP
W/FILTER FABRIC
EST. 2.7 MTONS
EST. 8.4 SM FF
CHORD
-L- CSSta. 23+02.675
-L- STSta. 24+17.675
23+02.675 -L-
36 (118.17')
24+17.675 -L-
40 (131.23')
ON R/W
40 (131.23')
N 84° 07' 21.8" E
-L-
23+00
24+00
25+00
3.0PS
3.6 PS
1.2PS
EXISTING R/W
R/W MON
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 39, 40 FOR -L- PROFILE

REVISIONS

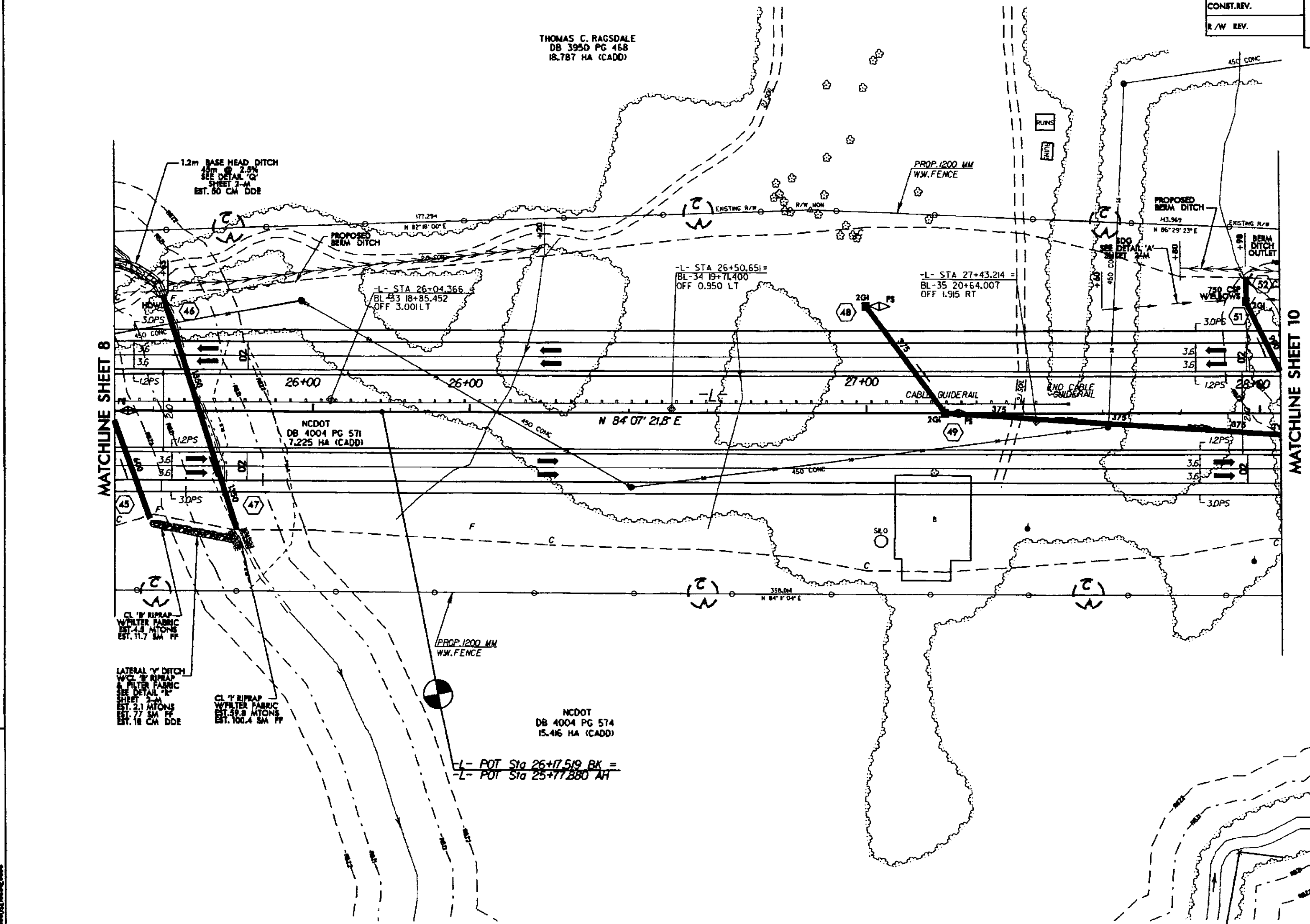
PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS

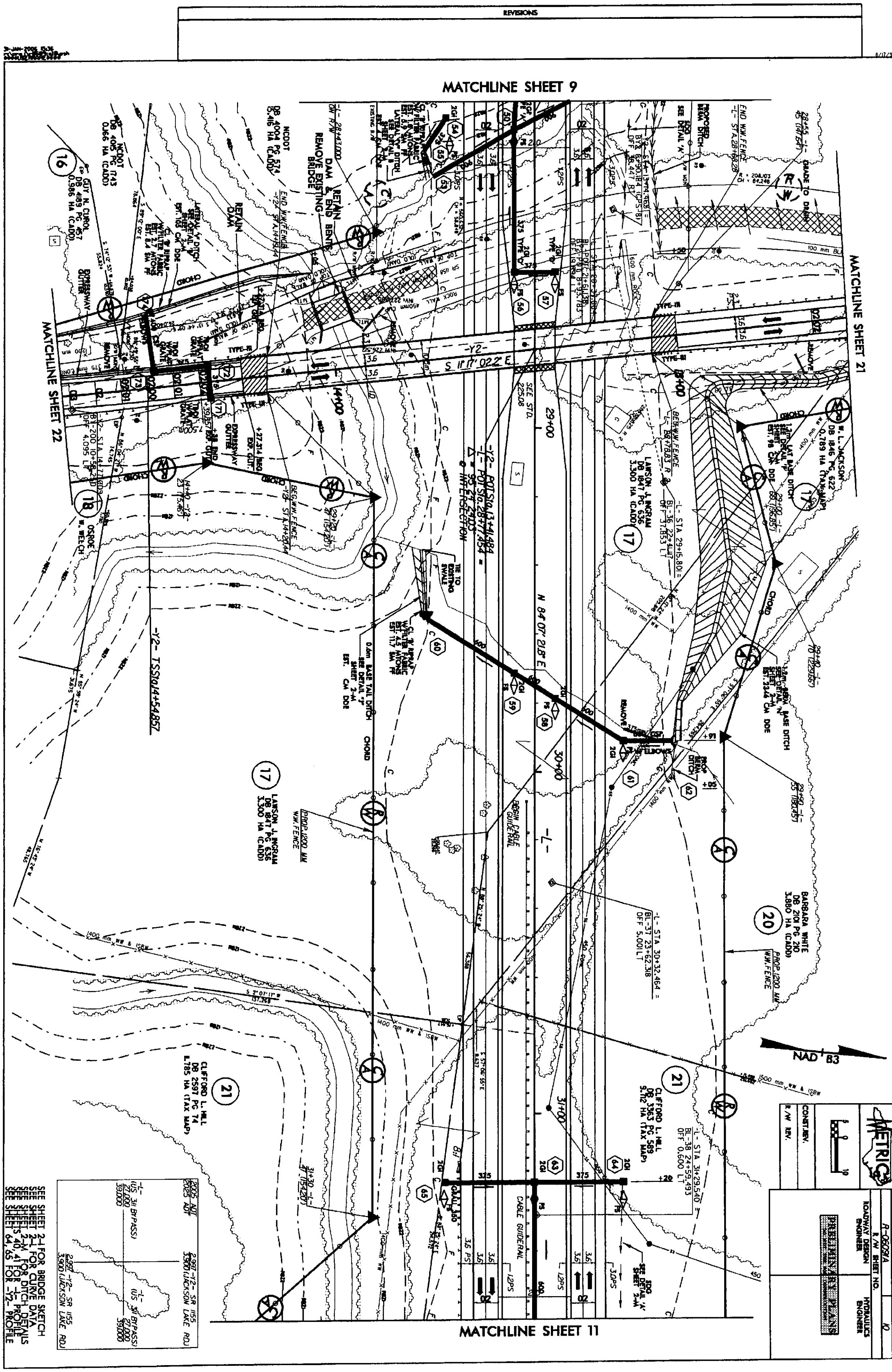
METRIC

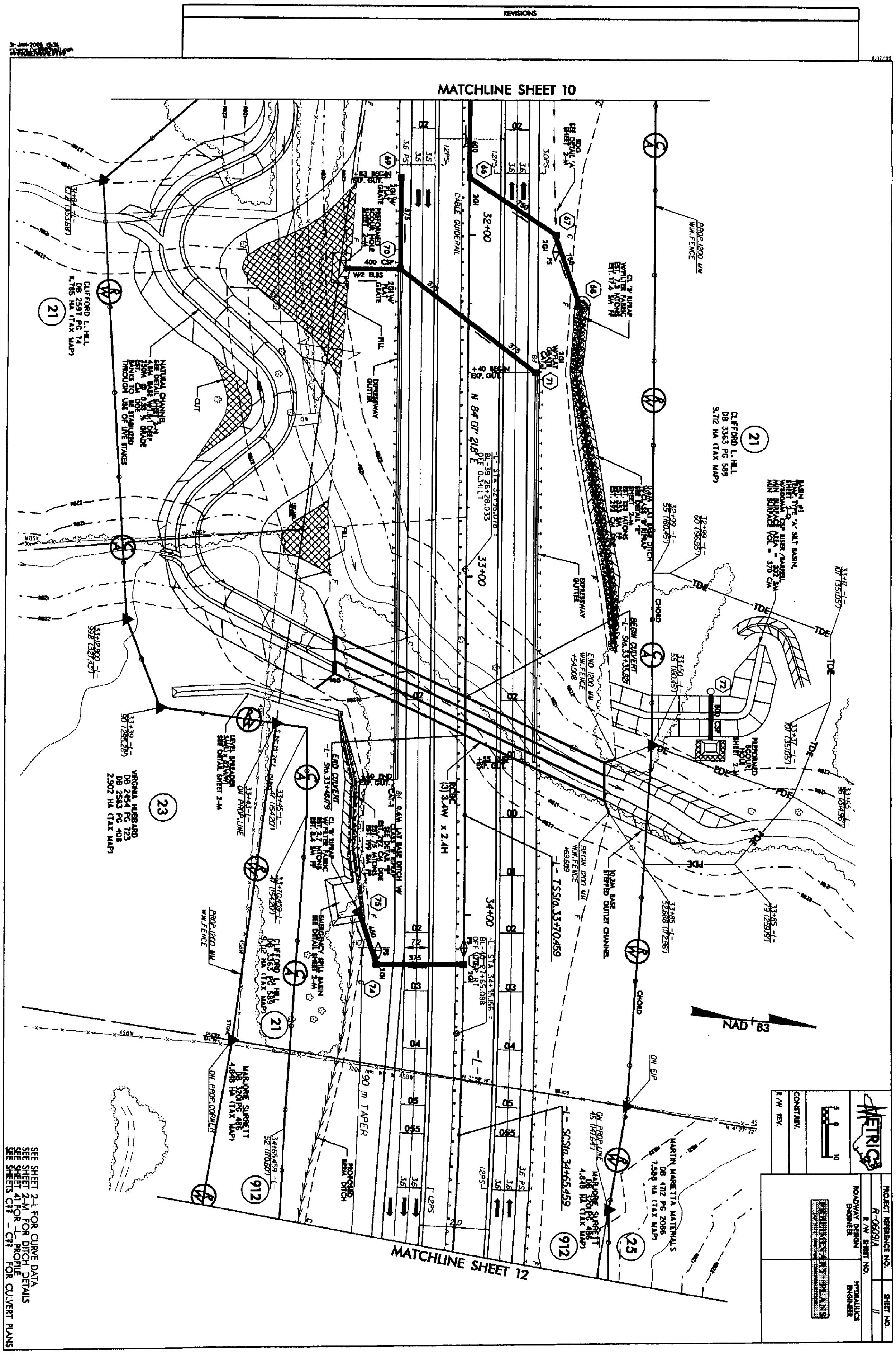
CONST. REV.

R/W REV.

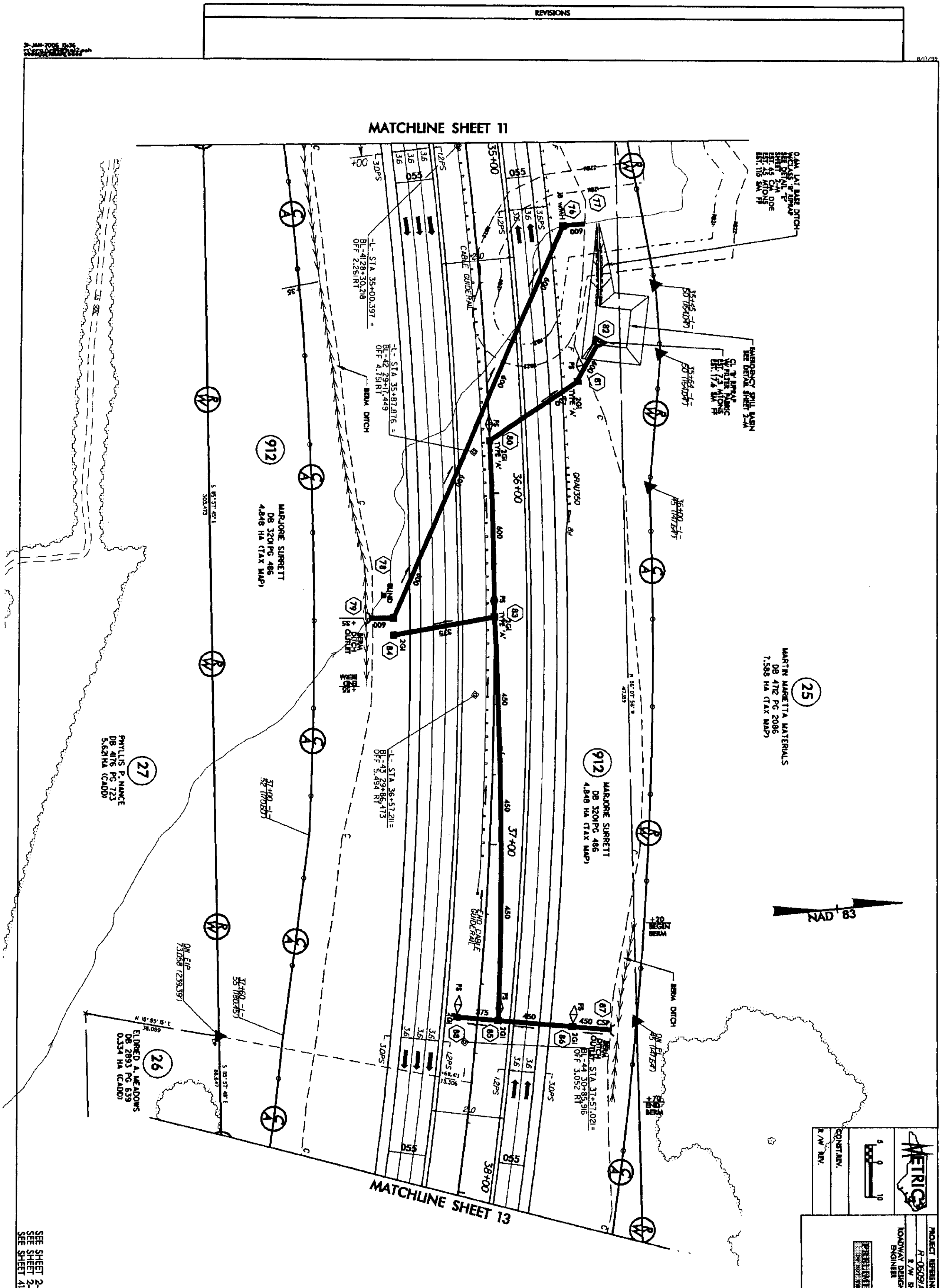


SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 40 FOR -L- PROFILE

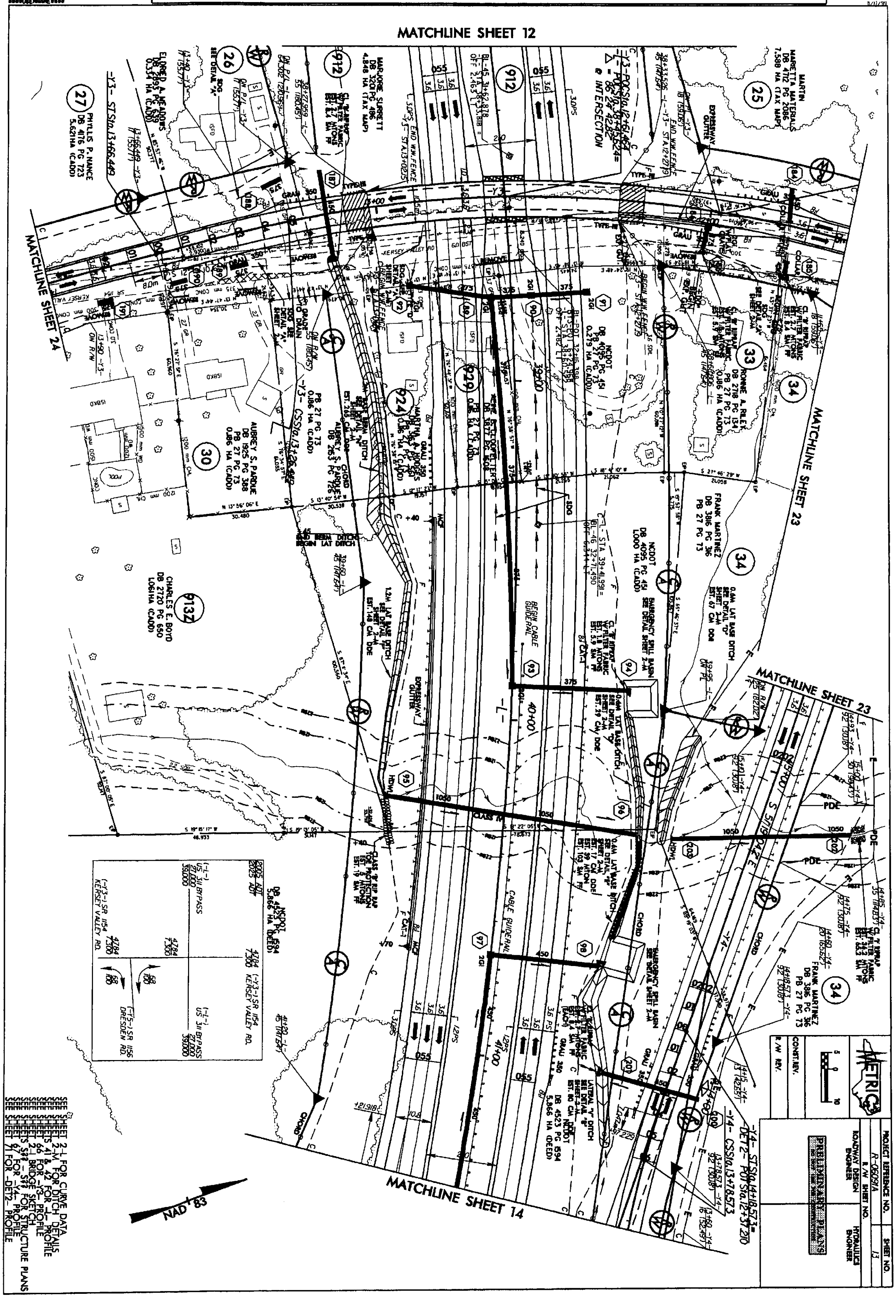

REVISIONS
MATCHLINE SHEET 9
MATCHLINE SHEET 11
MATCHLINE SHEET 21
MATCHLINE SHEET 22
PROJECT REFERENCE NO.
R-0609A
SHEET NO.
10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
METRIC
CONST. REV.
R/W REV.
NAD 83
SEE SHEET 2-I FOR BRIDGE SKETCH
SEE SHEET 2-J FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 40, 41 FOR -L- PROFILE
SEE SHEET 64, 65 FOR -Y2- PROFILE
LAWSON J. INGRAM
DB 1847 PG 636
3.300 HA (CADD)
CLIFFORD L. HILL
BARBARA WHITE
DB 2110 PG 210
3.880 HA (CADD)
NCDOT
-Y2- TSS10+54.857
N 84°07'21.8" E
S 11°17'02.2" E



REVISIONS
MATCHLINE SHEET 10
MATCHLINE SHEET 12
CABLE GUIDERAIL
EXPRESSWAY GUTTER
PROP. 1200 WW W.W. FENCE
CLIFFORD L. HILL DB 3363 PG 589 9.712 HA (TAX MAP)
CLIFFORD L. HILL DB 2597 PG 74 8.785 HA (TAX MAP)
VIRGINIA HUBBARD DB 2454 PG 723 DB 2563 PG 408 2.502 HA (TAX MAP)
MARTIN MARIETTA MATERIALS DB 4112 PG 2086 7.508 HA (TAX MAP)
MARJORIE SURRETT DB 1209 PG 486 4.848 HA (TAX MAP)
N 84° 01' 21.8" E
RCBC (3) 3.4W x 2.4H
90 m TAPER
NAD 83
PROPOSED BERM DITCH
NATURAL CHANNEL
END CULVERT
BEGIN CULVERT
CUT
FILL
CHORD
TDE
PDE
METRIC
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
CONST. REV.
R/W REV.
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 41 FOR -L- PROFILE
SEE SHEETS C?? - C?? FOR CULVERT PLANS


REVISIONS
MATCHLINE SHEET 11
MATCHLINE SHEET 13
MARJORIE SURRETT
DB 3201 PG 486
4.848 HA (TAX MAP)
MARTIN MARIETTA MATERIALS
DB 4712 PG 2086
7.588 HA (TAX MAP)
PHYLLIS P. NANCE
DB 4176 PG 723
5.621 HA (CADD)
ELDRED A. MEADOWS
DB 2893 PG 639
0.334 HA (CADD)
CABLE GUIDERAIL
BERM DITCH
NAD 83
36+00
37+00
38+00
METRIC
PROJECT REFERENCE NO.
R-0609A
SHEET NO.
12
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 41 FOR -L- PROFILE

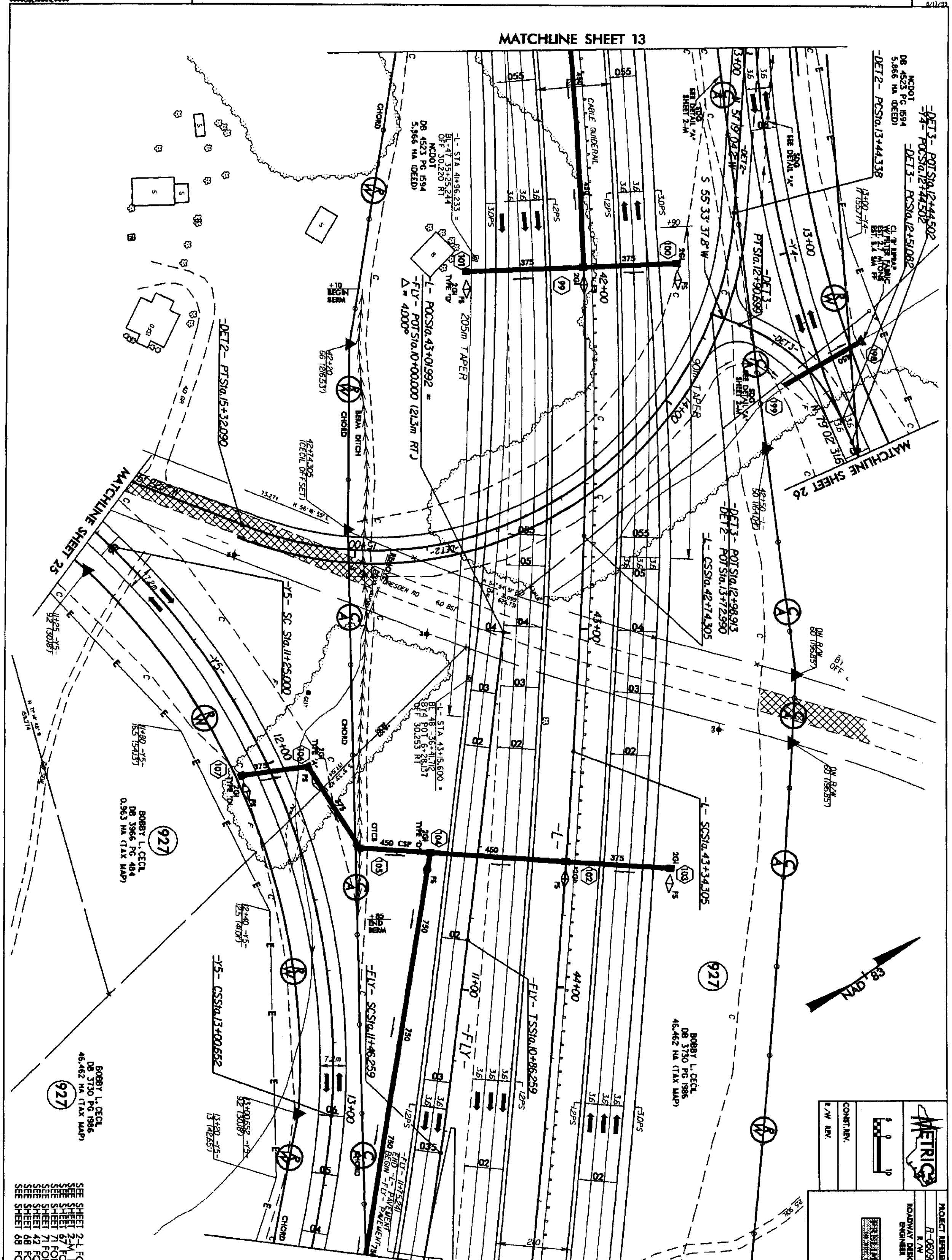
REVISIONS

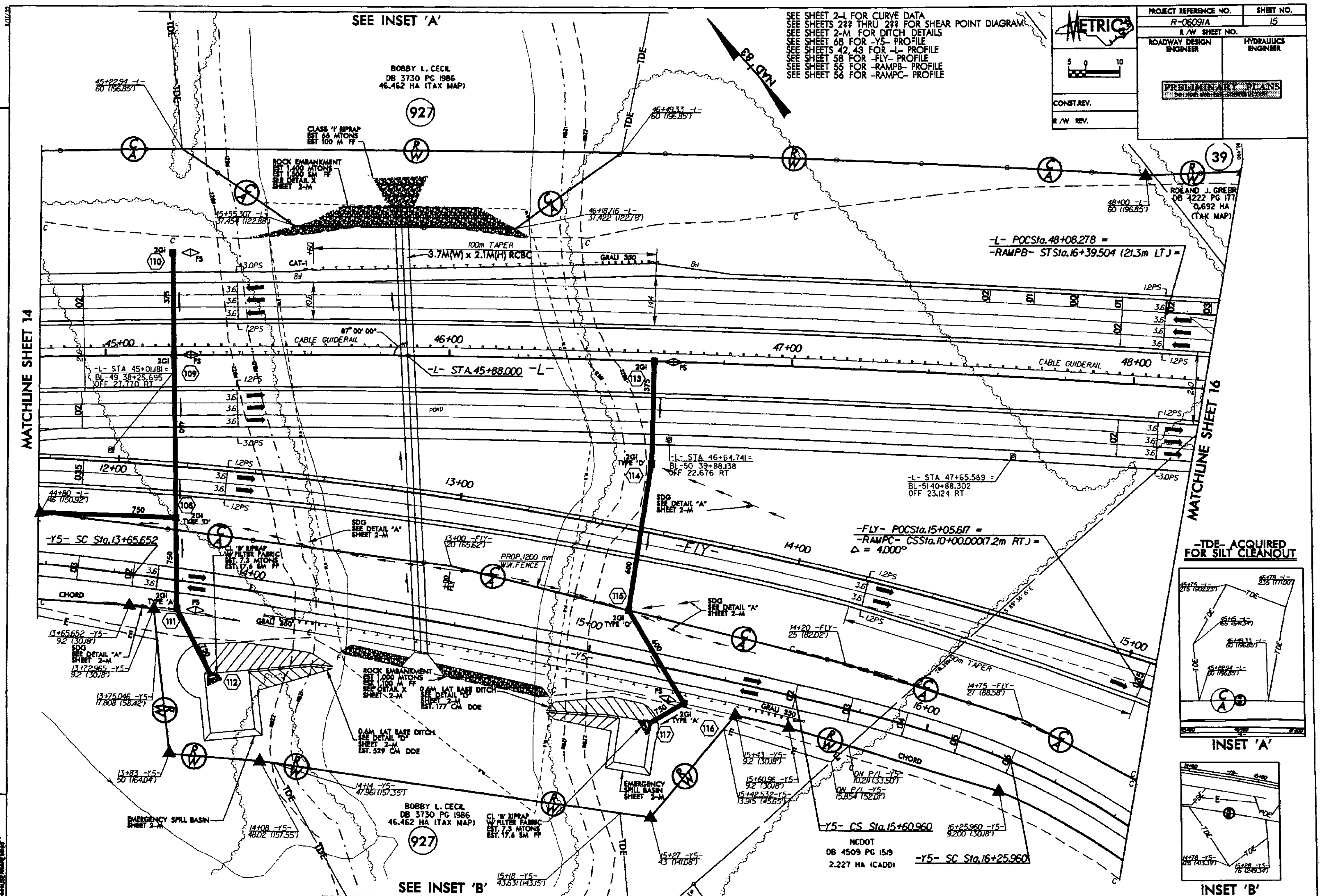


MATCHLINE SHEET 12
MATCHLINE SHEET 24
MATCHLINE SHEET 23
MATCHLINE SHEET 14
NAD 83
METRIC
PRELIMINARY PLANS
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS

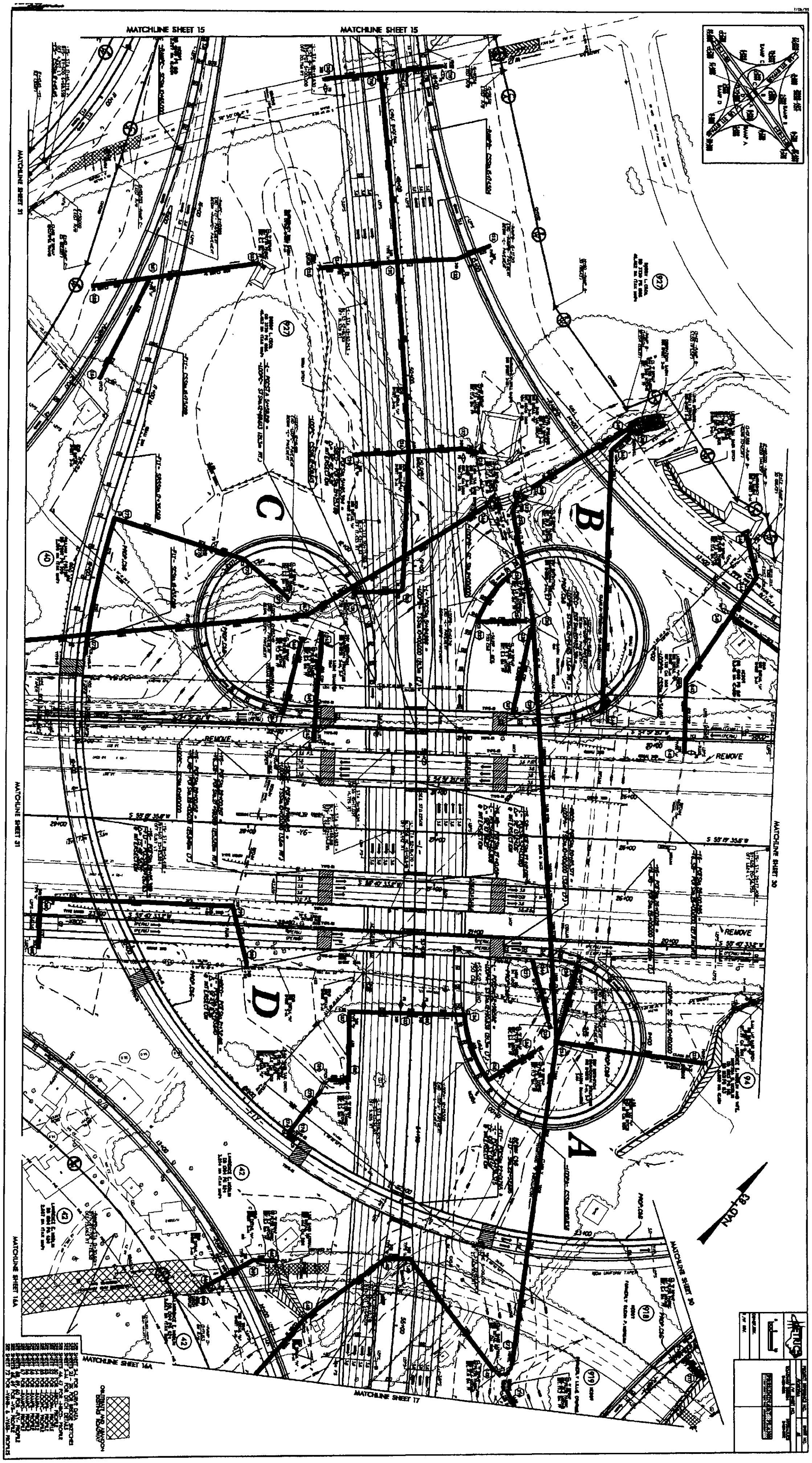
REVISIONS

ROW REVISIONS, PARCELS 37,38,73 COMBINED INTO PARCEL 927, LETTER DATED 3-2-2004
WPW 04-20-2004



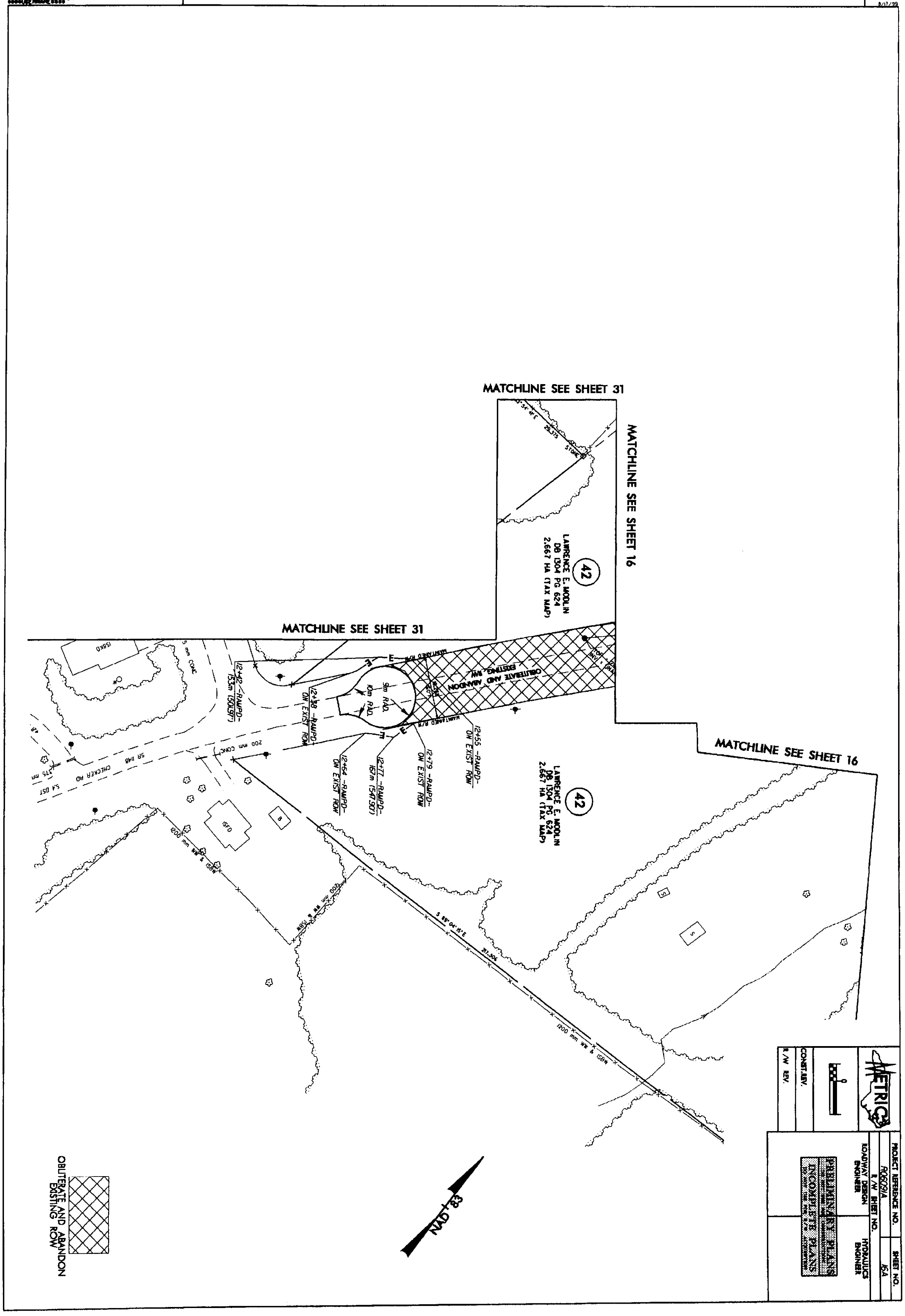


PROJECT REFERENCE NO.
R-0609IA
SHEET NO.
15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
METRIC
CONST.REV.
R/W REV.
SEE SHEET 2-L FOR CURVE DATA
SEE SHEETS 2?? THRU 2?? FOR SHEAR POINT DIAGRAM
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 68 FOR -Y5- PROFILE
SEE SHEETS 42,43 FOR -L- PROFILE
SEE SHEET 58 FOR -FLY- PROFILE
SEE SHEET 55 FOR -RAMPB- PROFILE
SEE SHEET 56 FOR -RAMPC- PROFILE
NAD 83
SEE INSET 'A'
SEE INSET 'B'
MATCHLINE SHEET 14
MATCHLINE SHEET 16
BOBBY L. CECIL
DB 3730 PG 1986
46.462 HA (TAX MAP)
927
ROLAND J. GREER
DB 4222 PG 177
0.692 HA
(TAX MAP)
39
NCDOT
DB 4509 PG 1519
2.227 HA (CADD)
CLASS 'I' RIPRAP
EST 66 MTONS
EST 100 M FF
ROCK EMBANKMENT
EST 1,400 MTONS
EST 1,500 SM FF
SEE DETAIL X
SHEET 2-M
100m TAPER
3.7M(W) x 2.1M(H) RCBC
CABLE GUIDERAIL
-L- STA.45+88.000 -L-
-L- STA 45+01.181 =
BL-49 38+25.695
OFF 27.710 RT
-L- STA 46+64.741 =
BL-50 39+88.138
OFF 22.676 RT
-L- STA 47+65.569 =
BL-51 40+88.302
OFF 23.124 RT
-L- POCSta.48+08.278 =
-RAMPB- STSta.16+39.504 (21.3m LT) =
-FLY- POCSta.15+05.617 =
-RAMPC- CSSta.10+00.000(7.2m RT) =
Δ = 4.000°
-Y5- SC Sta.13+65.652
-Y5- CS Sta.15+60.960
-Y5- SC Sta.16+25.960
PROP. 1200 mm W.W. FENCE
EMERGENCY SPILL BASIN
SHEET 2-M
CL 'B' RIPRAP
W/FILTER FABRIC
EST. 7.5 MTONS
EST. 17.6 SM FF
0.6M LAT BASE DITCH
SEE DETAIL "D"
SHEET 2-M
EST. 529 CM DDE
EST. 177 CM DDE
SDG
SEE DETAIL "A"
SHEET 2-M
-TDE- ACQUIRED FOR SILT CLEANOUT
INSET 'A'
INSET 'B'

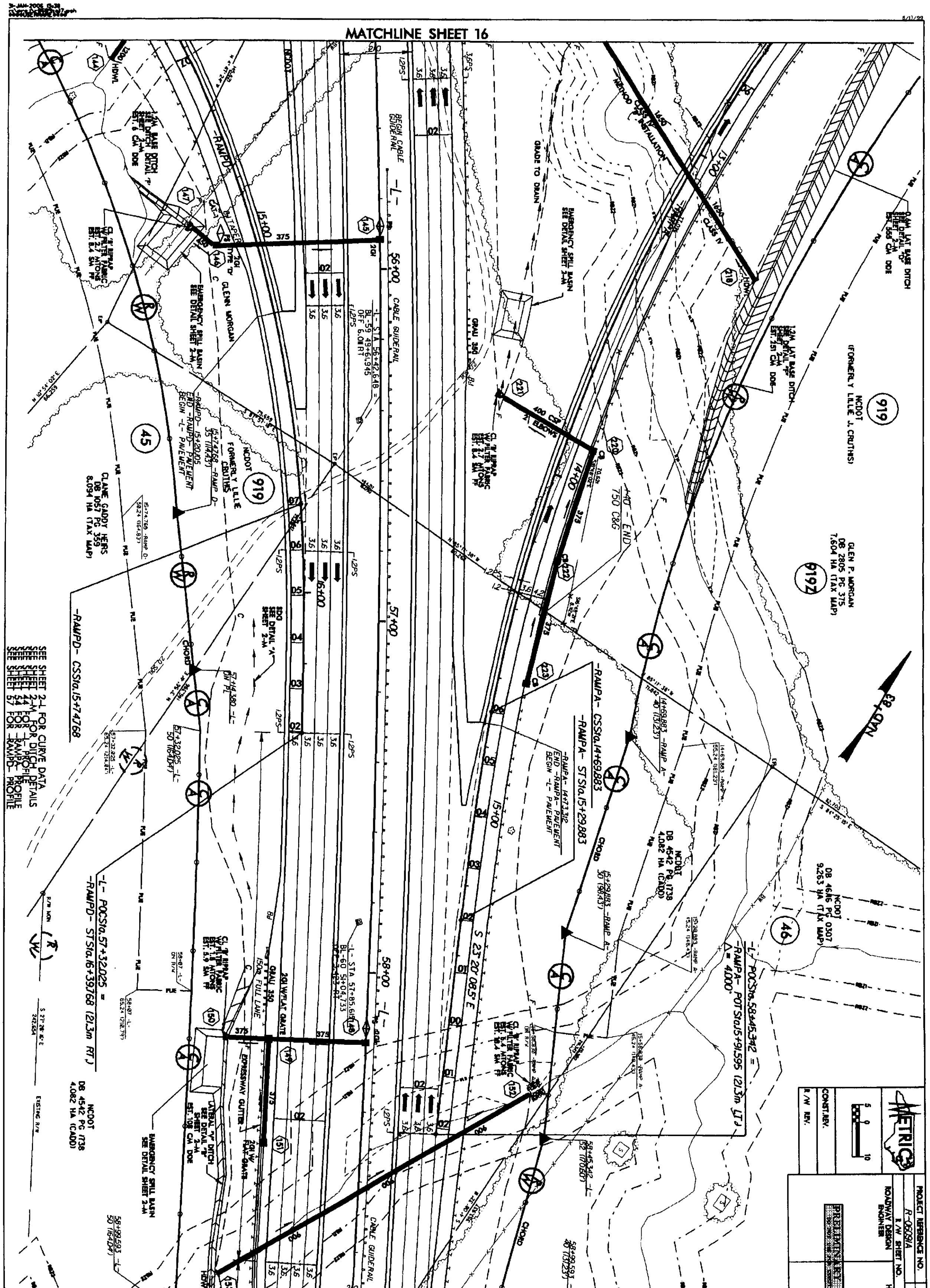

MATCHLINE SHEET 15
MATCHLINE SHEET 15
MATCHLINE SHEET 31
MATCHLINE SHEET 31
MATCHLINE SHEET 30
MATCHLINE SHEET 30
MATCHLINE SHEET 16A
MATCHLINE SHEET 16A
MATCHLINE SHEET 17
C
B
D
A
REMOVE
REMOVE
REMOVE
NAD 83

REVISIONS

ROW REVISIONS,MOVED CUL-DE-SAC SOUTHWEST,ADDED EASEMENT,ADDED NOTES TO OBLITERATE AND ABANDON EXISTING ROW.
COMBINED PARCELS 42 AND 43 AS PARCEL 42,LETTER DATED 3-2-2004 >>
WPW 04-20-2004

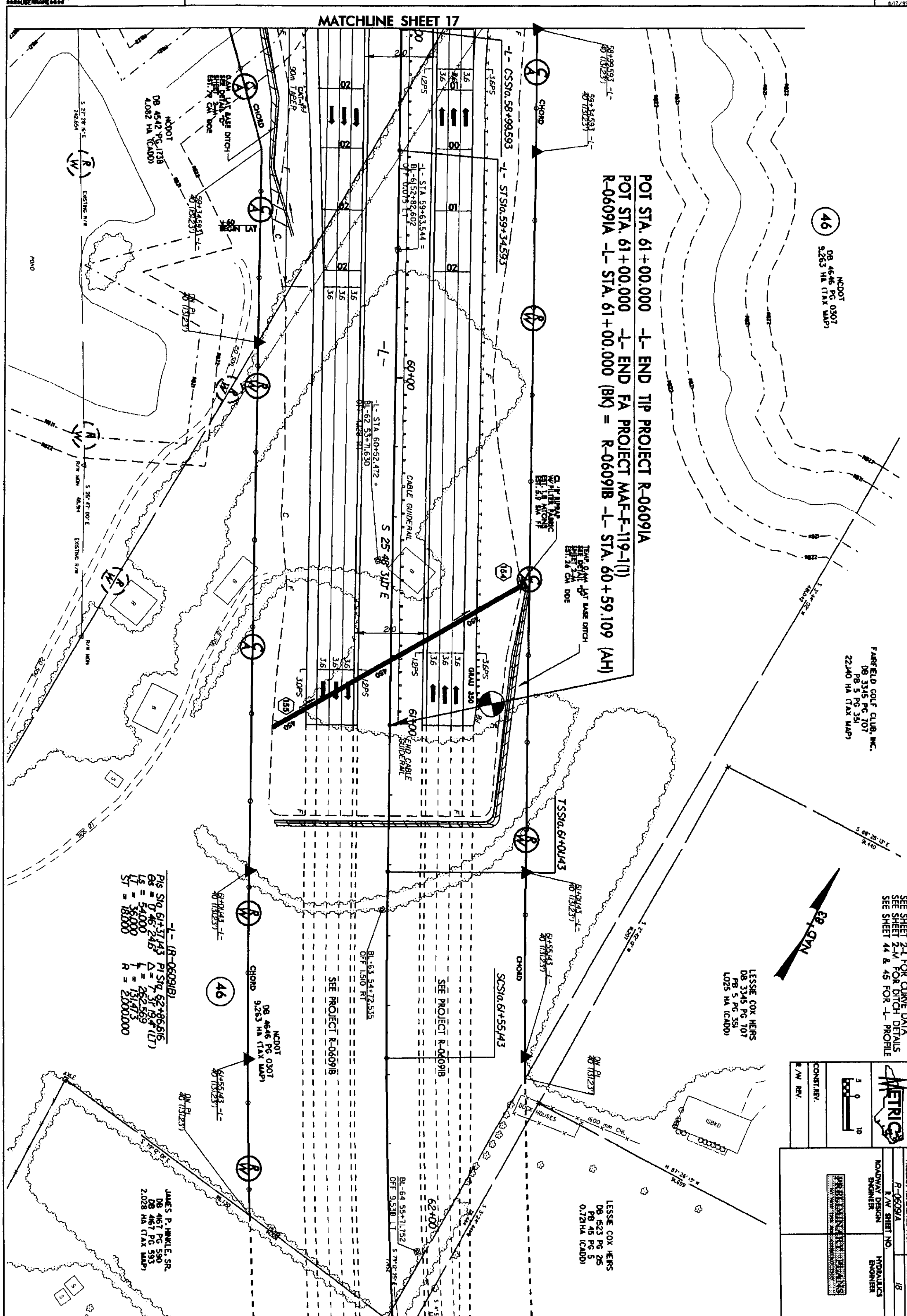


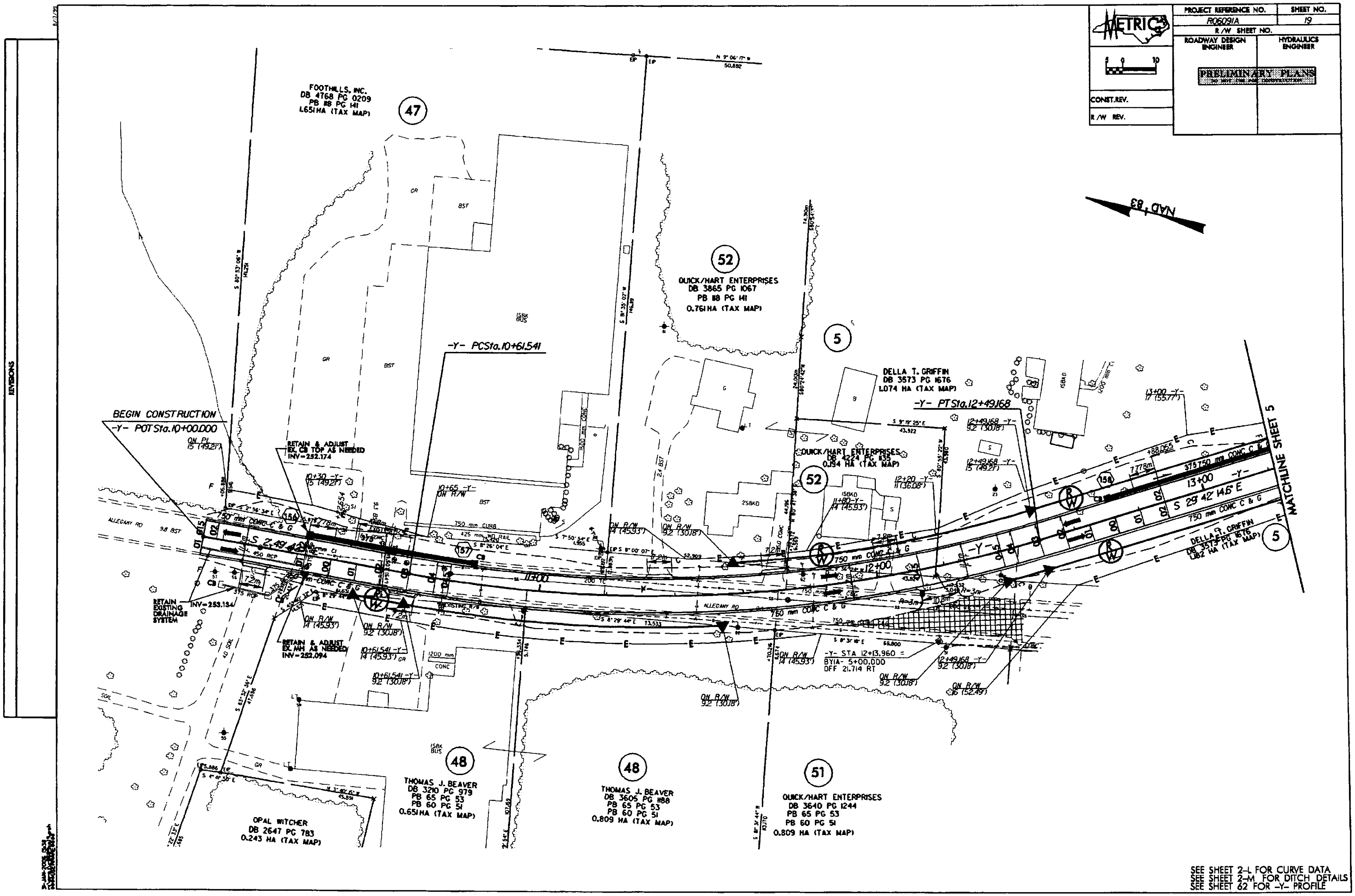
REVISIONS



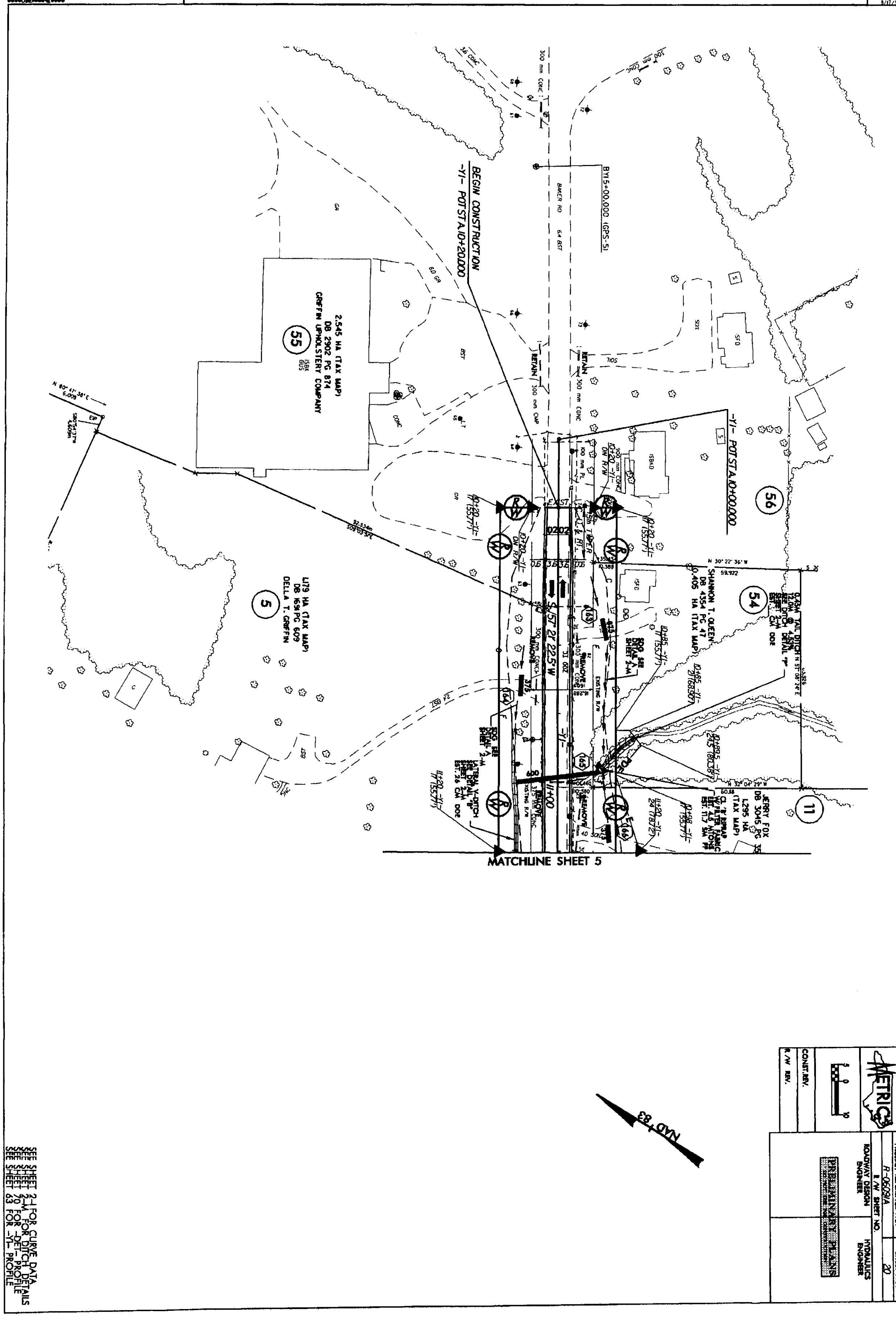
REVISIONS

ROW REVISIONS, PARCEL 46 PROPERTY OWNER CHANGED, LETTER DATED 1-22-2004
WPW 04-20-2004




PROJECT REFERENCE NO. R0609IA
SHEET NO. 19
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
METRIC
CONST.REV.
R/W REV.
REVISIONS
NAD 83
FOOTHILLS, INC.
DB 4768 PG 0209
PB 18 PG 141
1.651 HA (TAX MAP)
47
QUICK/HART ENTERPRISES
DB 3865 PG 1067
PB 18 PG 141
0.761 HA (TAX MAP)
52
5
DELLA T. GRIFFIN
DB 3573 PG 1676
L074 HA (TAX MAP)
-Y- PCSta.10+61.541
BEGIN CONSTRUCTION
-Y- POTSta.10+00.000
-Y- PTSta.12+49.168
QUICK/HART ENTERPRISES
DB 4224 PG 835
0.194 HA (TAX MAP)
RETAIN & ADJUST
EX. CB TOP AS NEEDED
INV=252.174
RETAIN EXISTING DRAINAGE SYSTEM
INV=253.134
RETAIN & ADJUST
EX. MH AS NEEDED
INV=252.094
S 2° 49' 43" E
S 29° 42' 14.6" E
11+00
12+00
13+00
ALLEGANY RD
750 mm CONC C & G
-Y- STA 12+13.960 =
BYIA- 5+00.000
OFF 21.714 RT
MATCHLINE SHEET 5
48
THOMAS J. BEAVER
DB 3210 PG 979
PB 65 PG 53
PB 60 PG 51
0.651 HA (TAX MAP)
48
THOMAS J. BEAVER
DB 3605 PG 1188
PB 65 PG 53
PB 60 PG 51
0.809 HA (TAX MAP)
51
QUICK/HART ENTERPRISES
DB 3640 PG 1244
PB 65 PG 53
PB 60 PG 51
0.809 HA (TAX MAP)
OPAL WITCHER
DB 2647 PG 783
0.243 HA (TAX MAP)
DELLA T. GRIFFIN
DB 3573 PG 1676
L082 HA (TAX MAP)
5
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 62 FOR -Y- PROFILE

REVISIONS
ROW REVISIONS. CHANGED PARCEL 56 OWNER INFORMATION. LETTER DATED 04-29-2004
WPW 08-31-2004



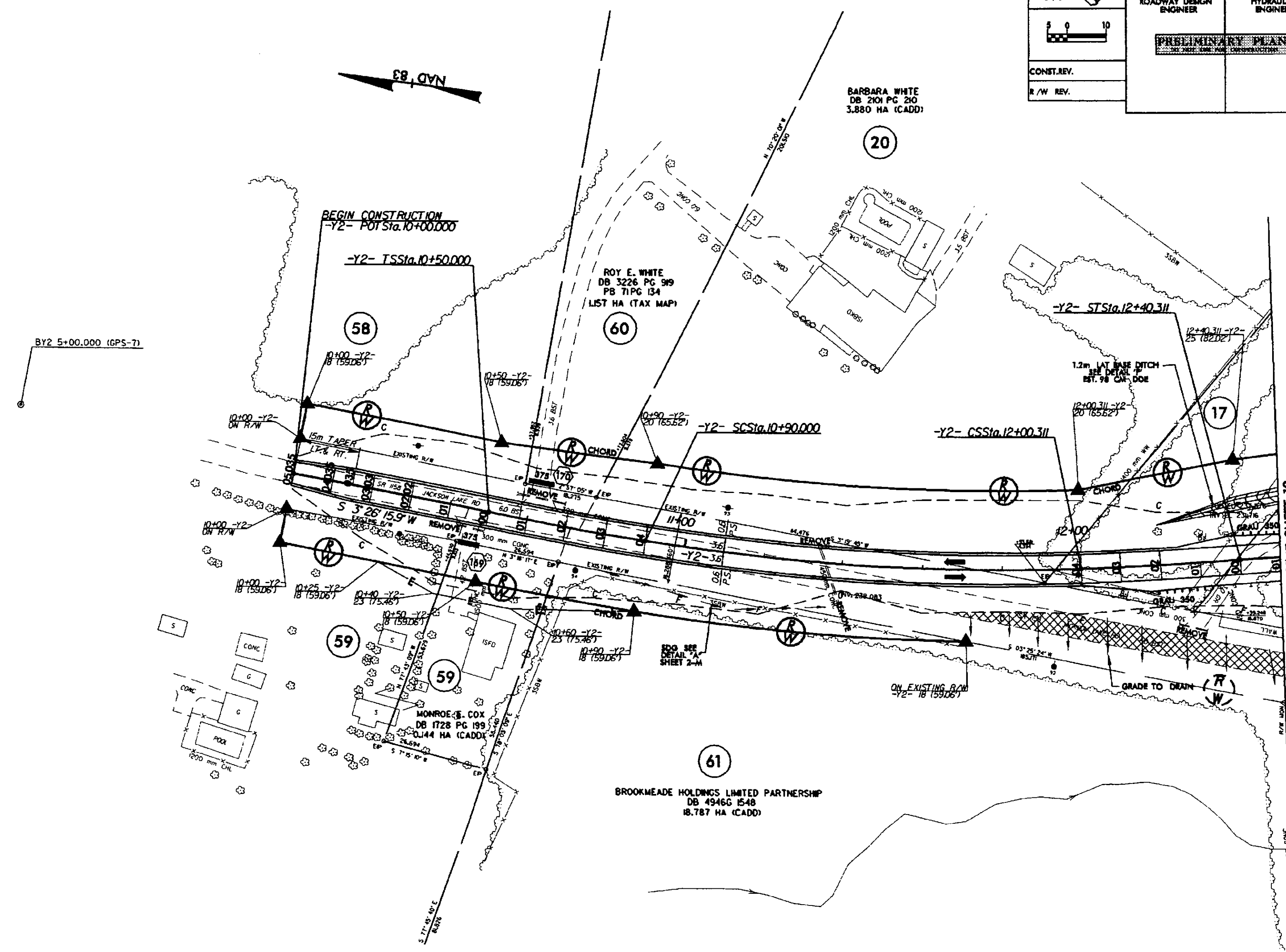
PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS

CONST. REV.

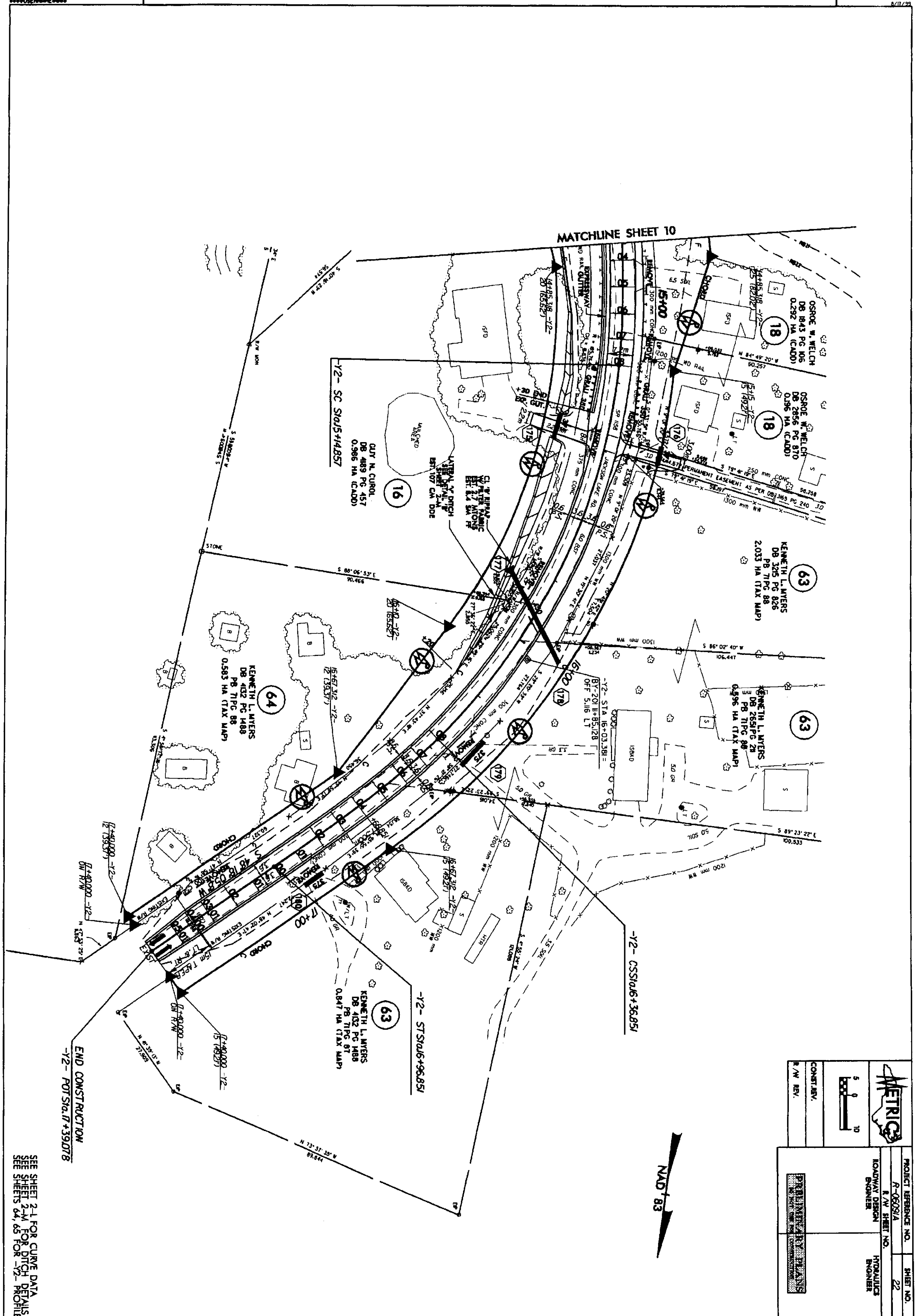
R/W REV.

REVISIONS



SEE SHEET 2-I FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 64 FOR -Y2- PROFILE

REVISIONS
ROW REVISONS,PARCELS 18 AND 62 COMBINED,PARCELS 63,65,AND 66 COMBINED,LETTER DATED 1-22-2004
WPW 04-20-2004



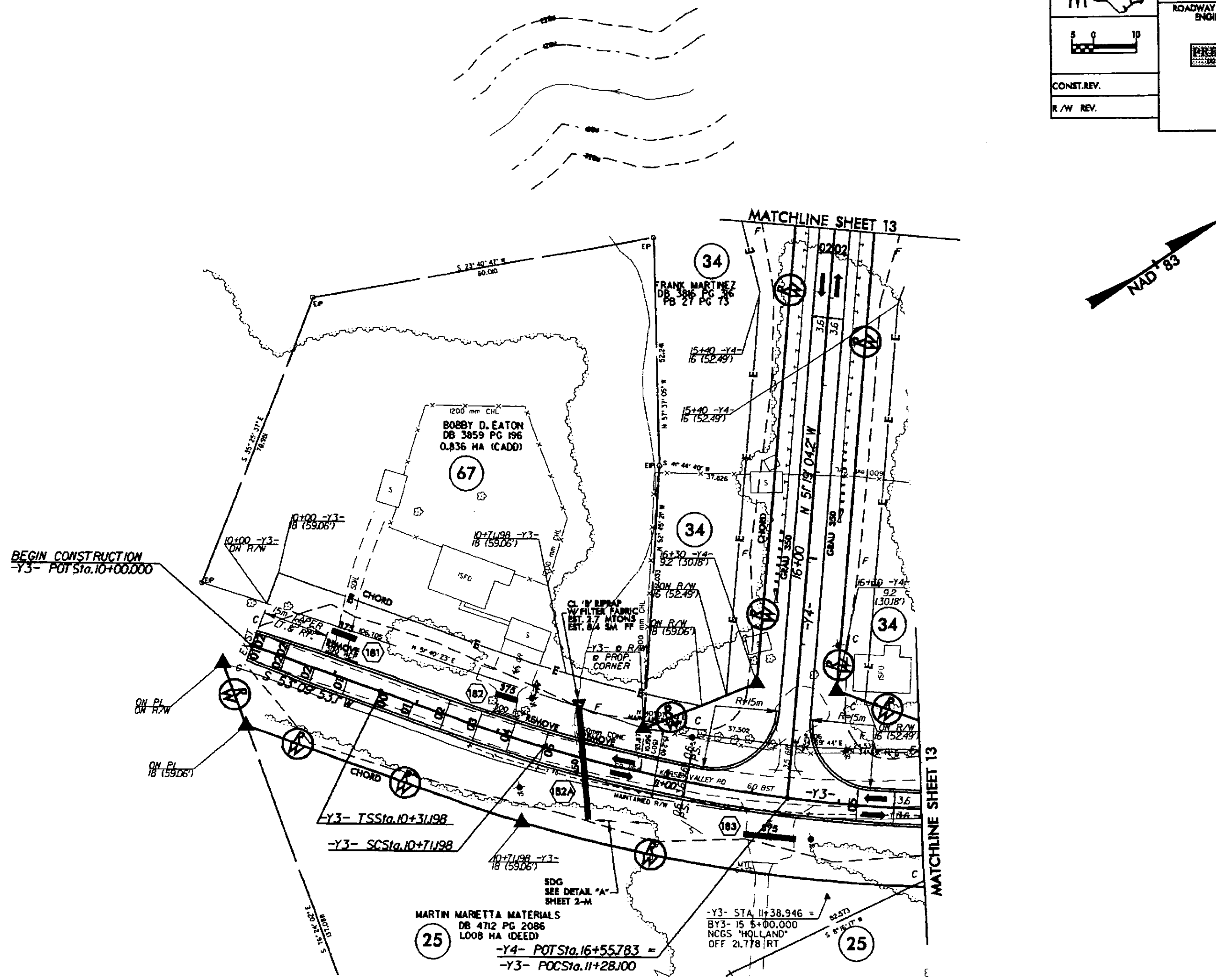
PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS

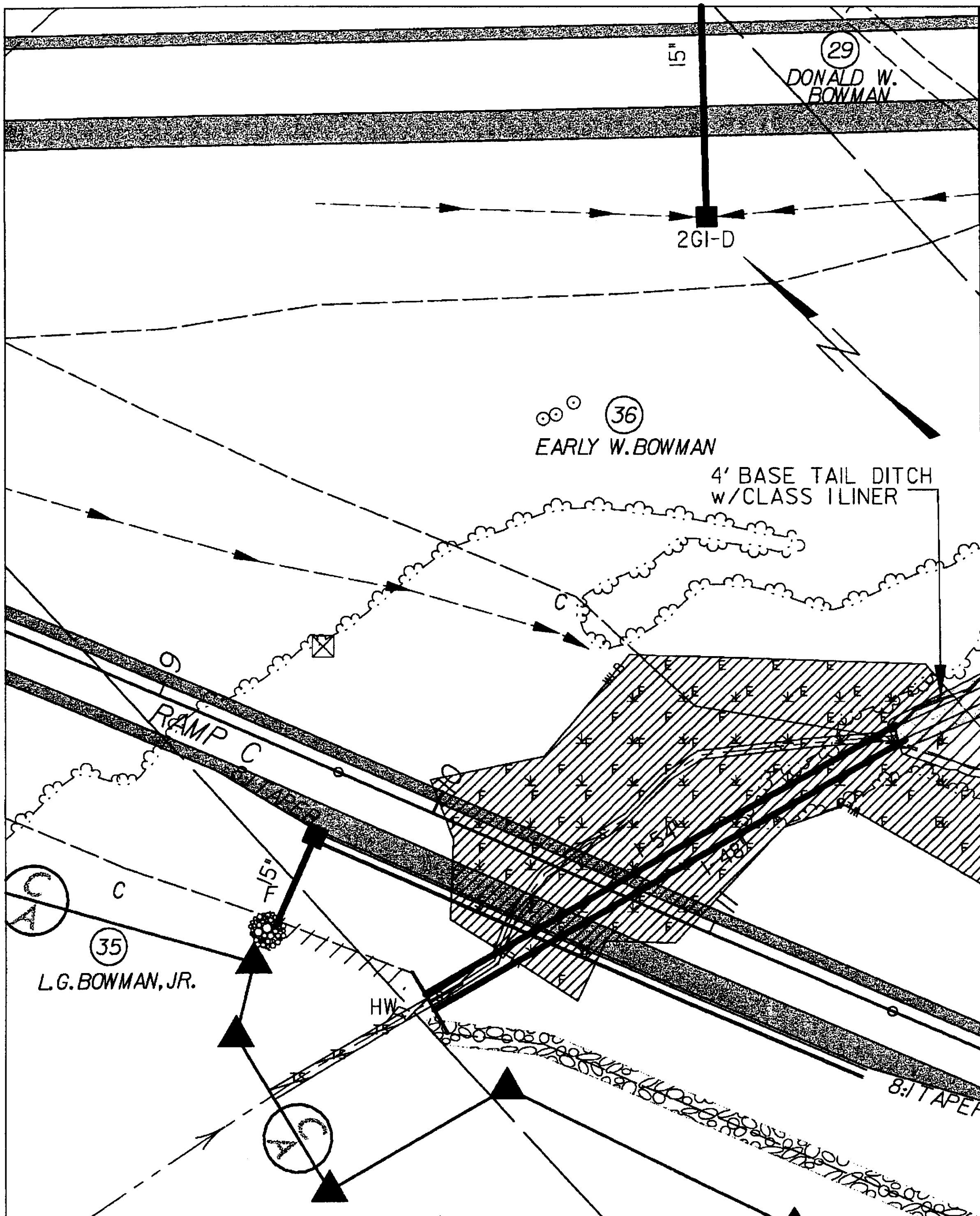
CONST. REV.

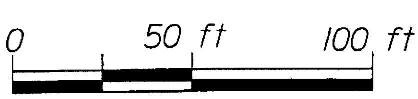
R/W REV.

REVISIONS



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 66 FOR -Y3- PROFILE
SEE SHEET 67 FOR -Y4- PROFILE





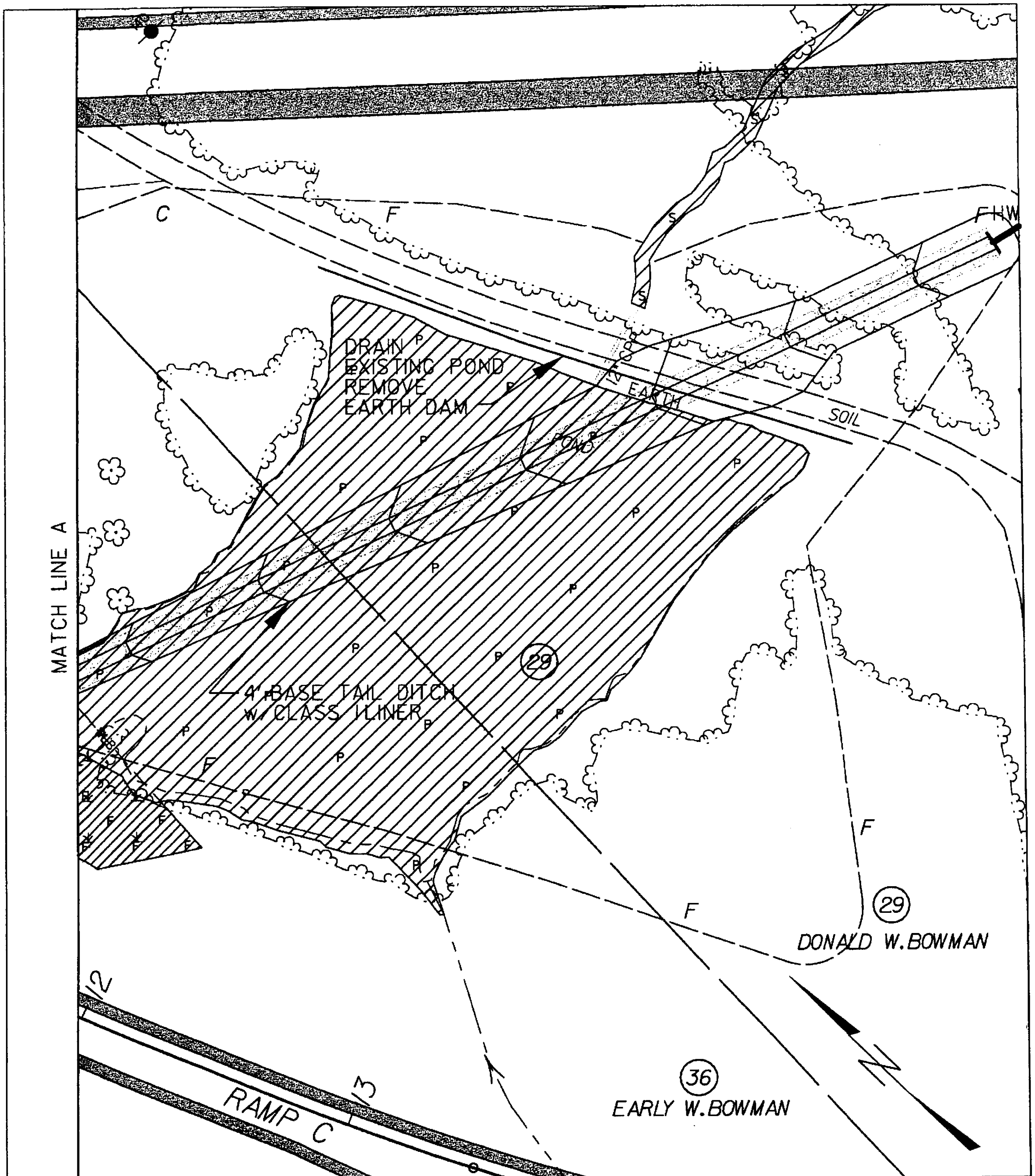
PLAN VIEW SITE 6

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 37 **OF** 46 / /2006



0 50 ft 100 ft

PLAN VIEW SITE 6

NCDOT

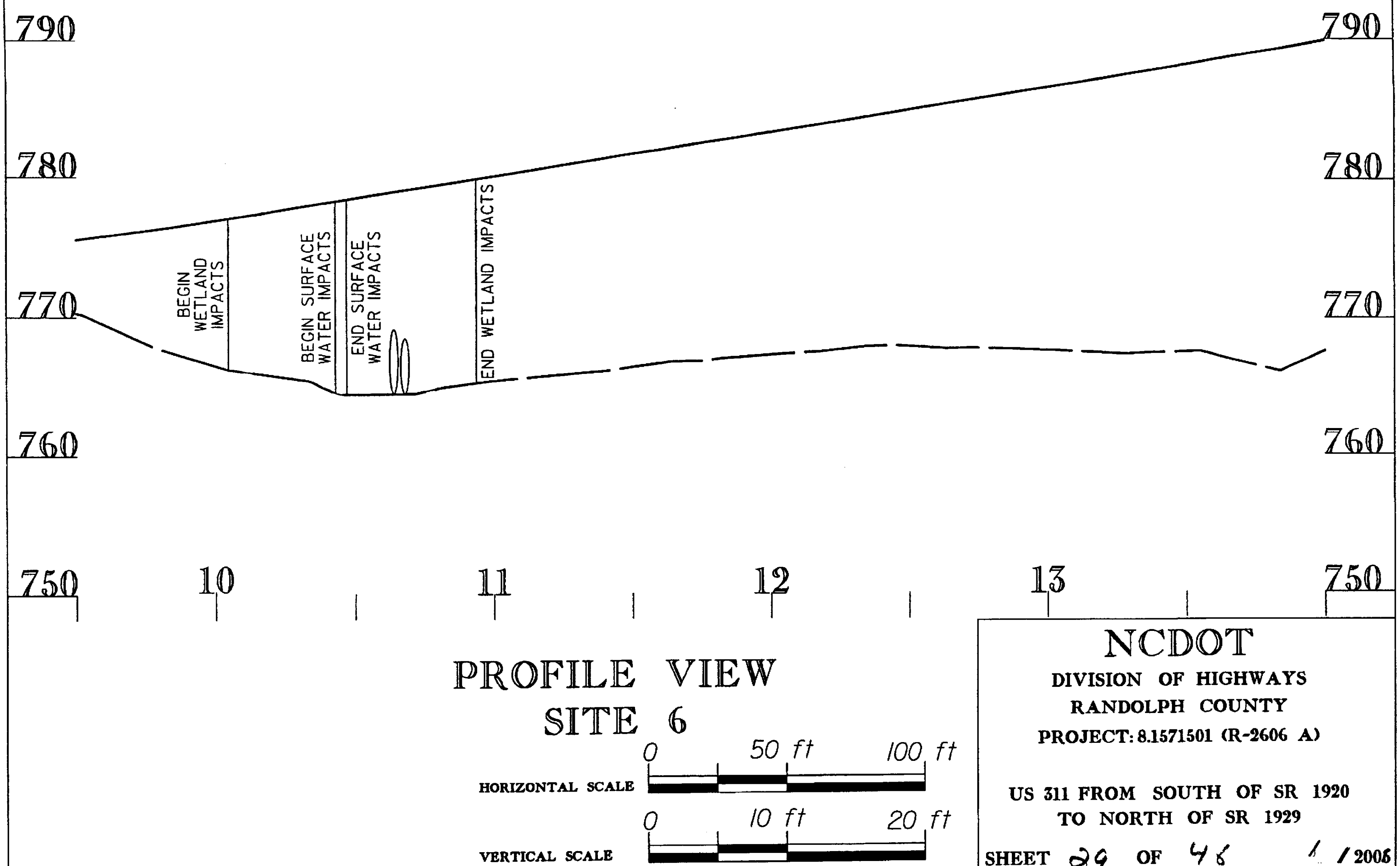
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 28 **OF** 46 1 / **2006**

USER: rrany
DGN: k:\4558\r2606a\Hydraulics\6CpWET
DATE: 07/14/2005

-RAMP C-

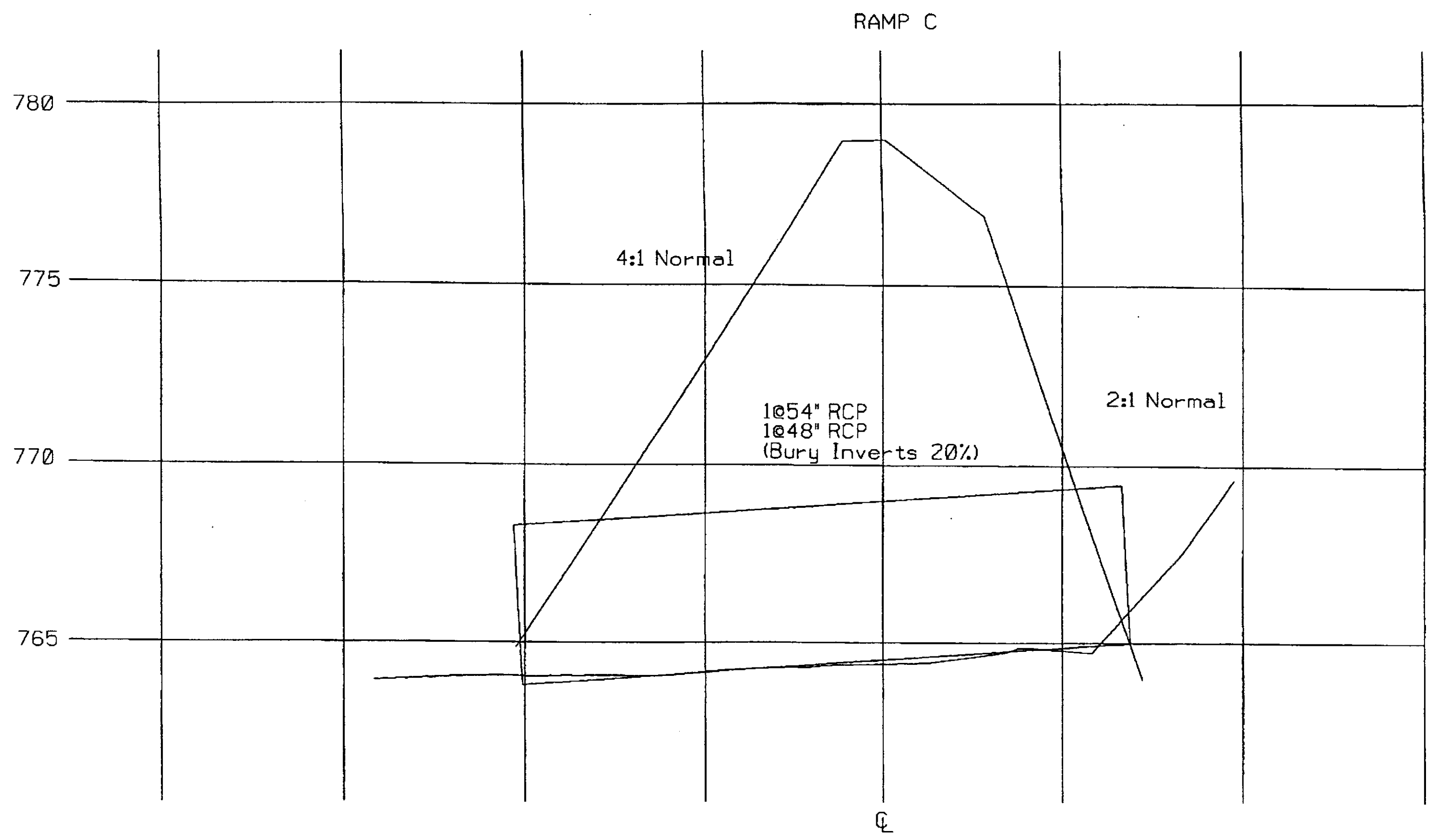


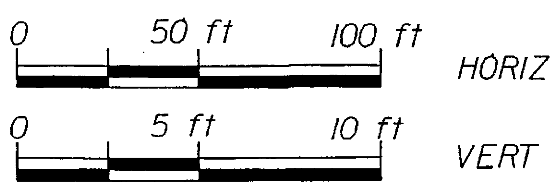
PROFILE VIEW
SITE 6

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 29 OF 46 1 / 2005



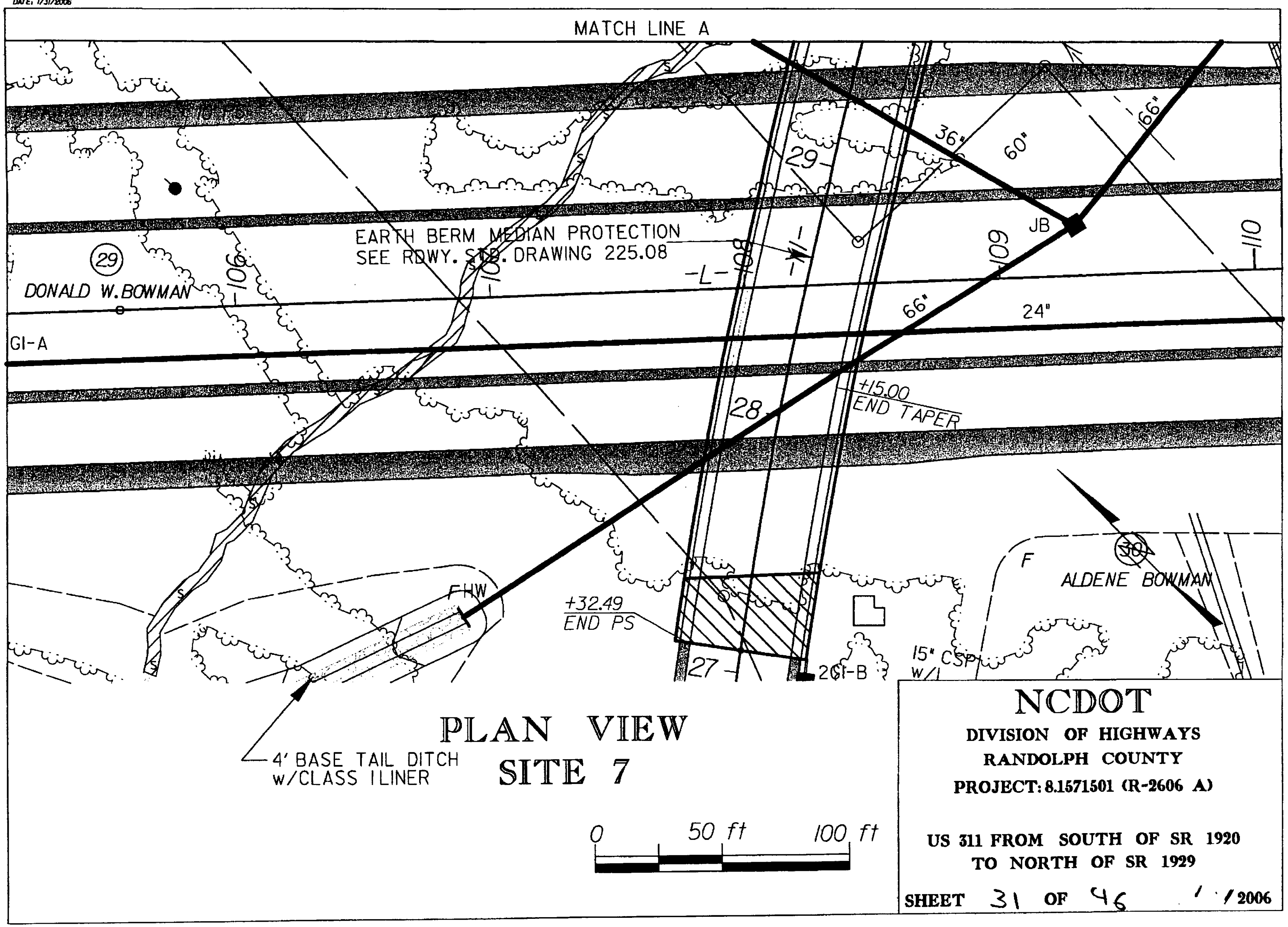


PROFILE VIEW
SITE 6

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 30 **OF** 46 1/06

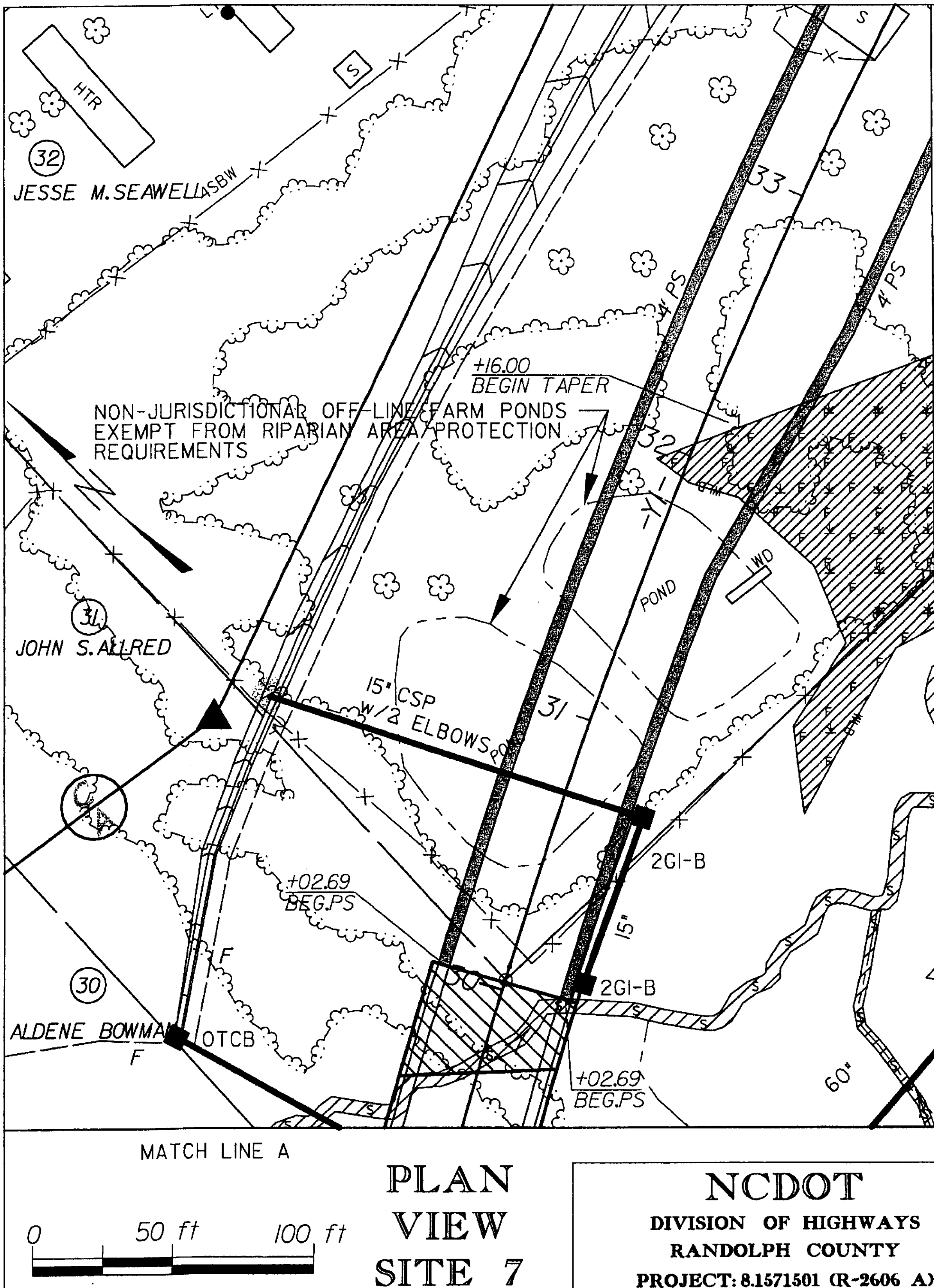


PLAN VIEW
SITE 7

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 31 **OF** 46 / /2006



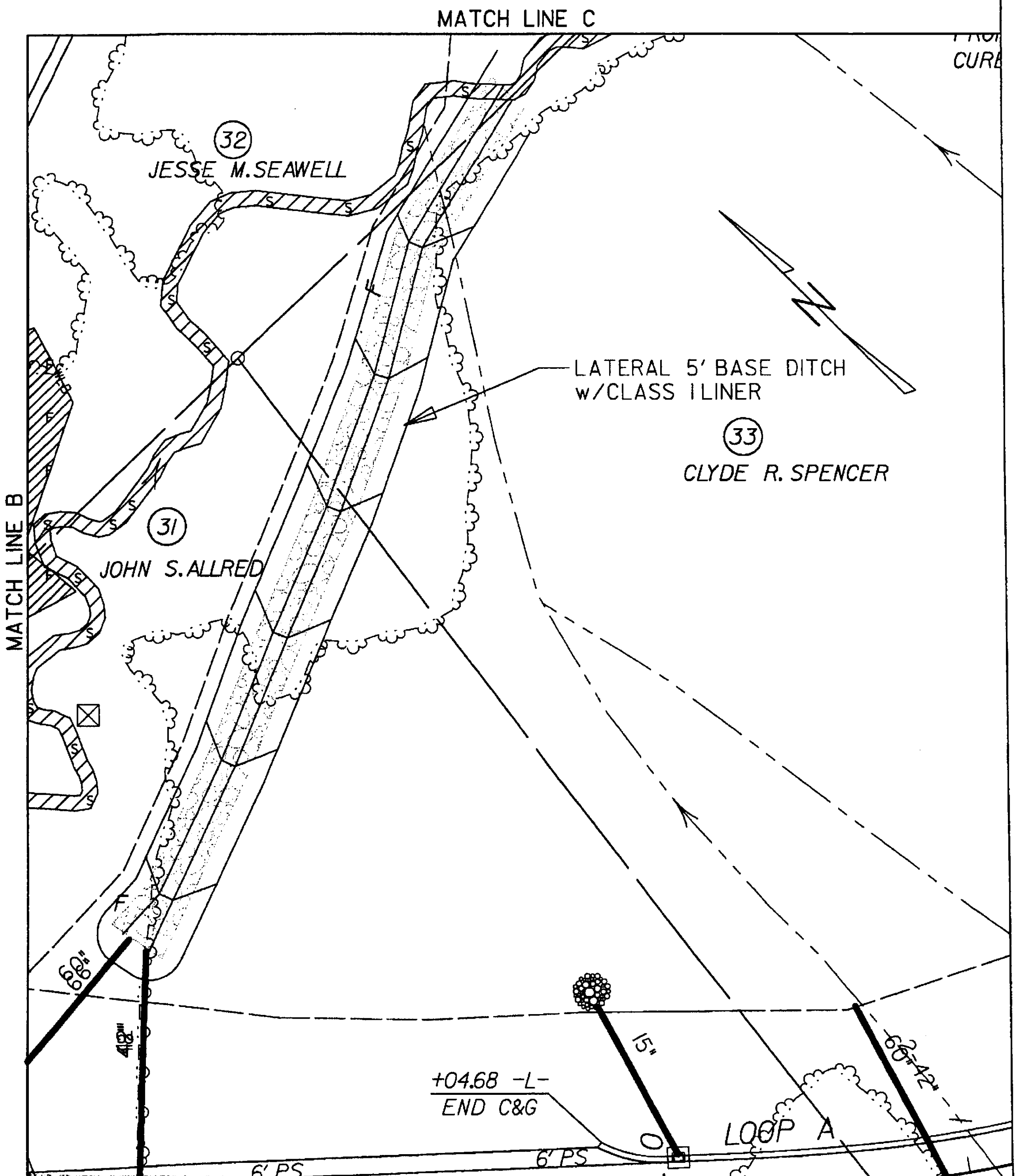
PLAN VIEW SITE 7

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 32 **OF** 46 / **2006**



0 50 ft 100 ft

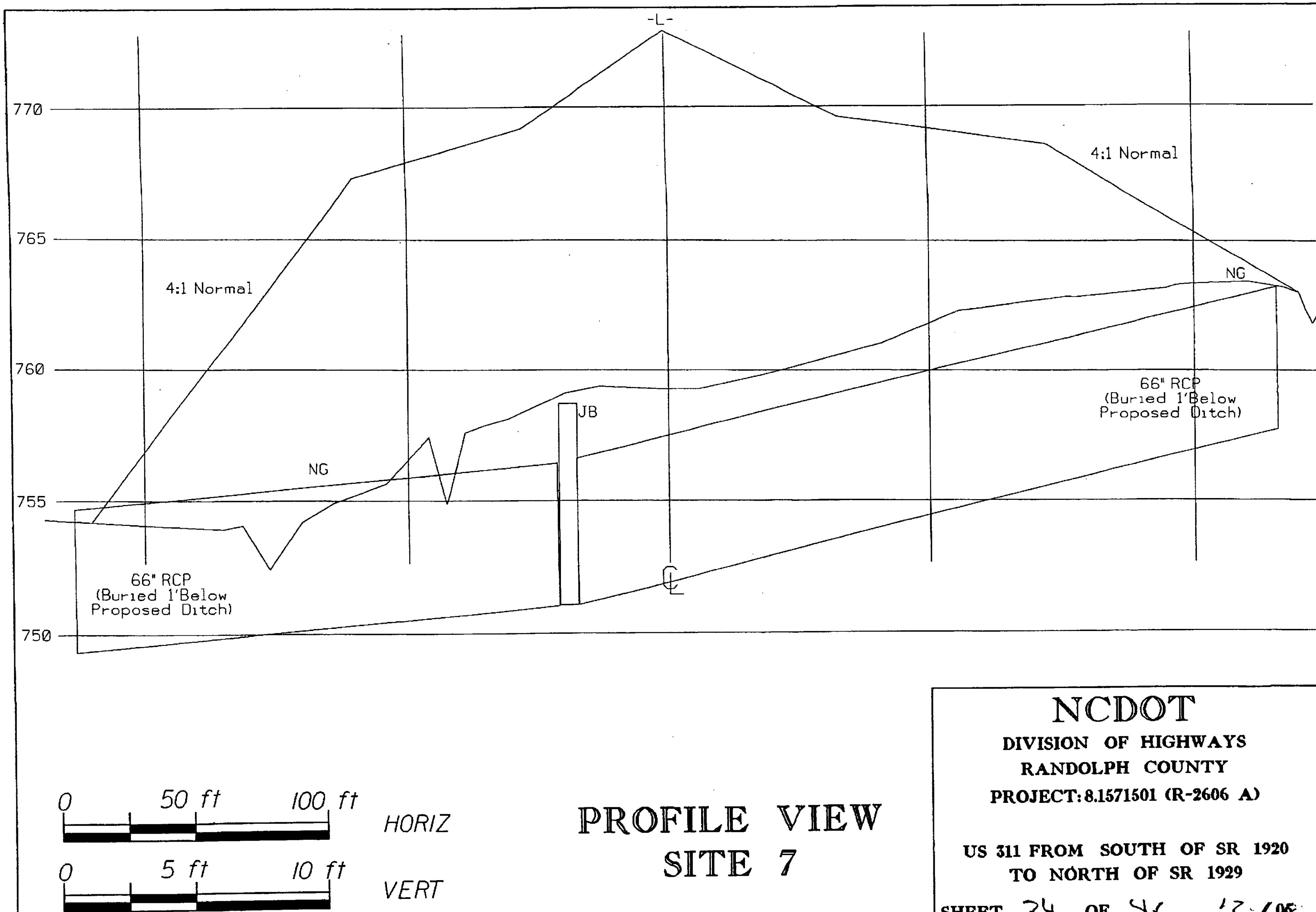
PLAN VIEW SITE 7

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 33 **OF** 46 1 / **2006**

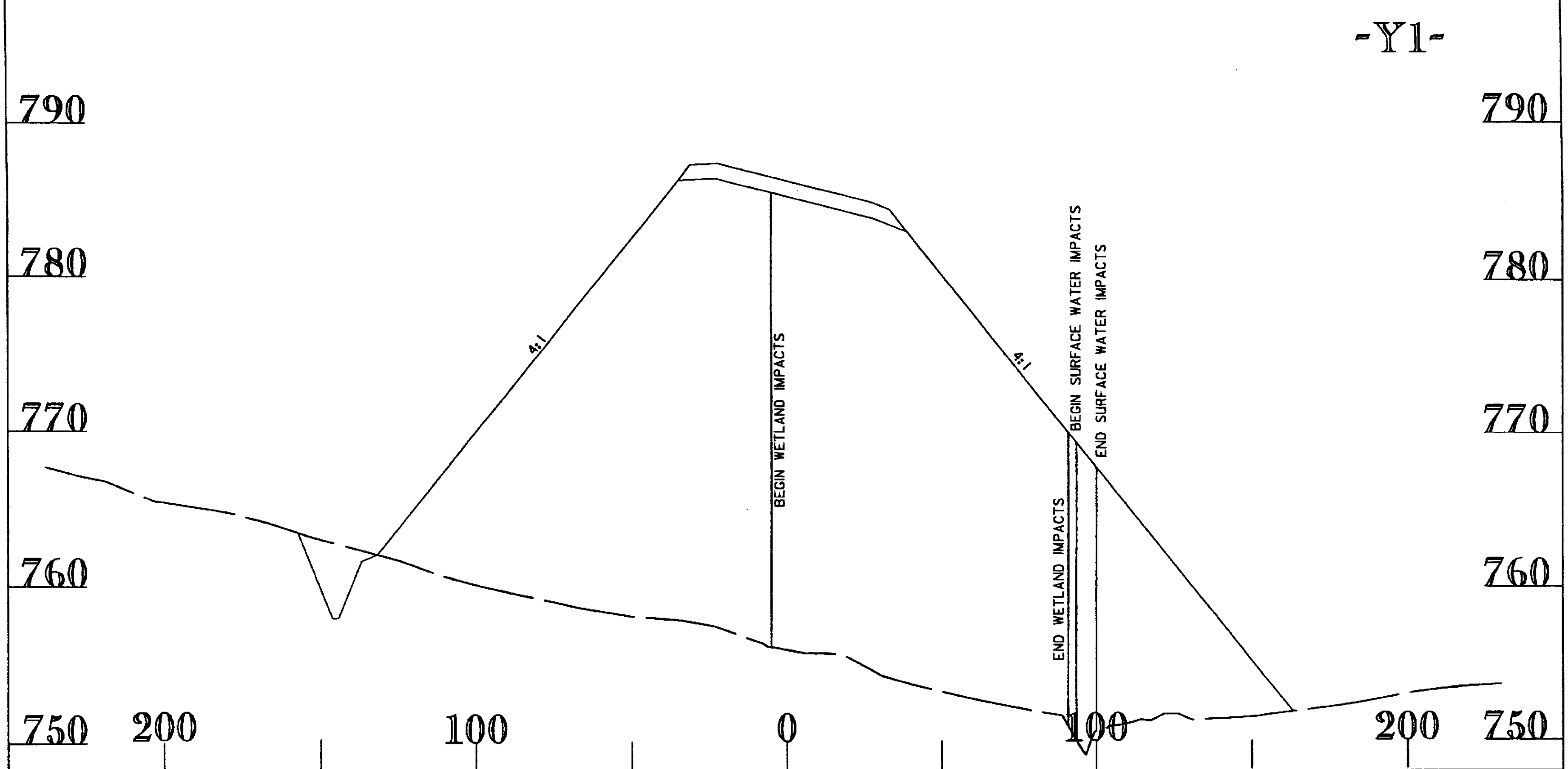


PROFILE VIEW
SITE 7

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 34 **OF** 46 12/05



CROSS SECTION 32 + 00
SITE 7

HORIZONTAL SCALE 0 50 ft 100 ft

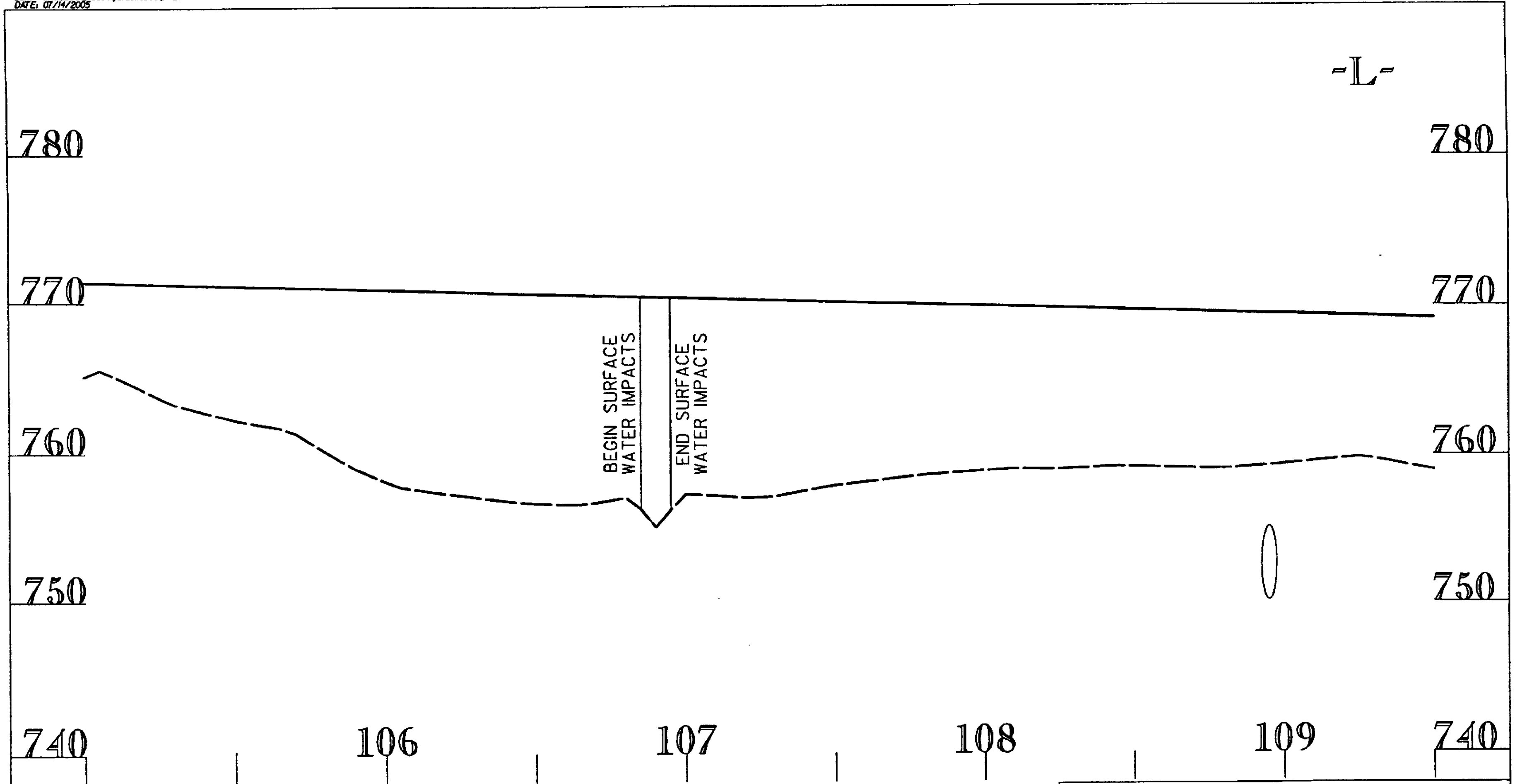
VERTICAL SCALE 0 10 ft 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 35 OF 46 / /2006

USER: rrany
DGN: k:\4\558\r2606a\Hydraulics\7F.pWET
DATE: 07/14/2005



PROFILE VIEW
SITE 7

HORIZONTAL SCALE 0 50 ft 100 ft

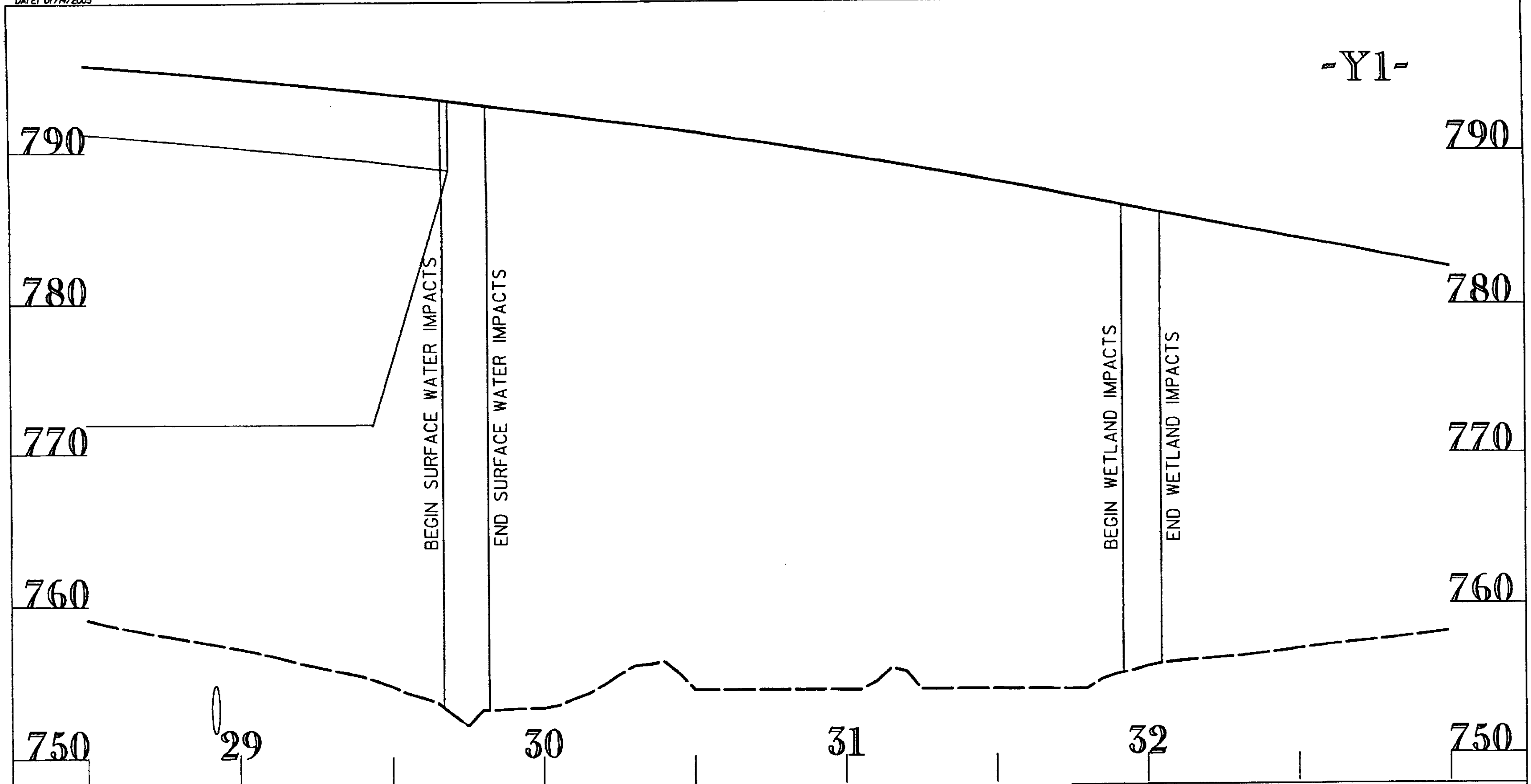
VERTICAL SCALE 0 10 ft 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 36 OF 46 / /2006

USER: rrwny
DGN: k:\4\556\r2606a\Hydraulics\7Gp.WET
DATE: 07/14/2005



PROFILE VIEW
SITE 7

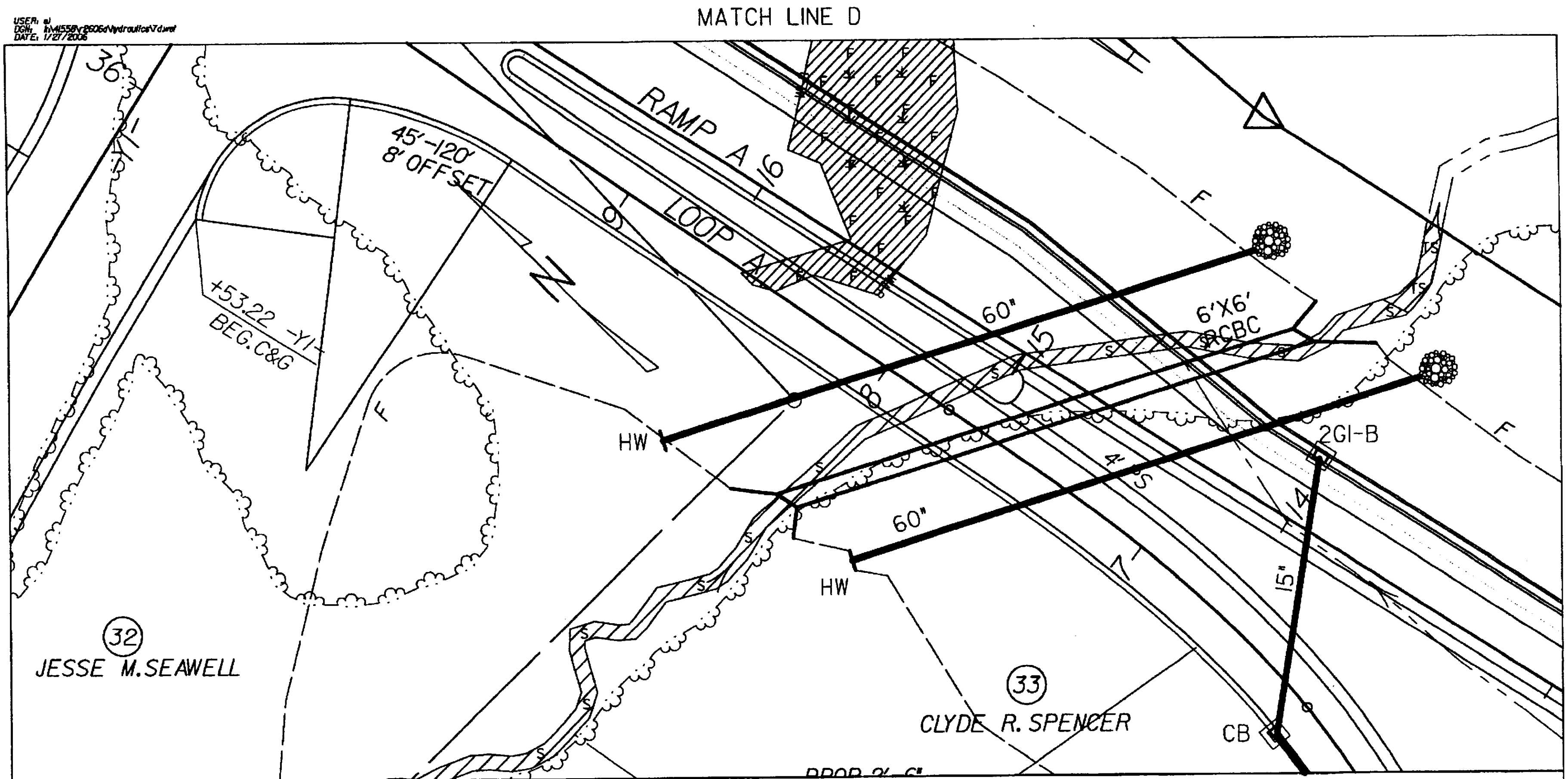
HORIZONTAL SCALE: 0 — 50 ft — 100 ft

VERTICAL SCALE: 0 — 10 ft — 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 37 **OF** 46 / /2006



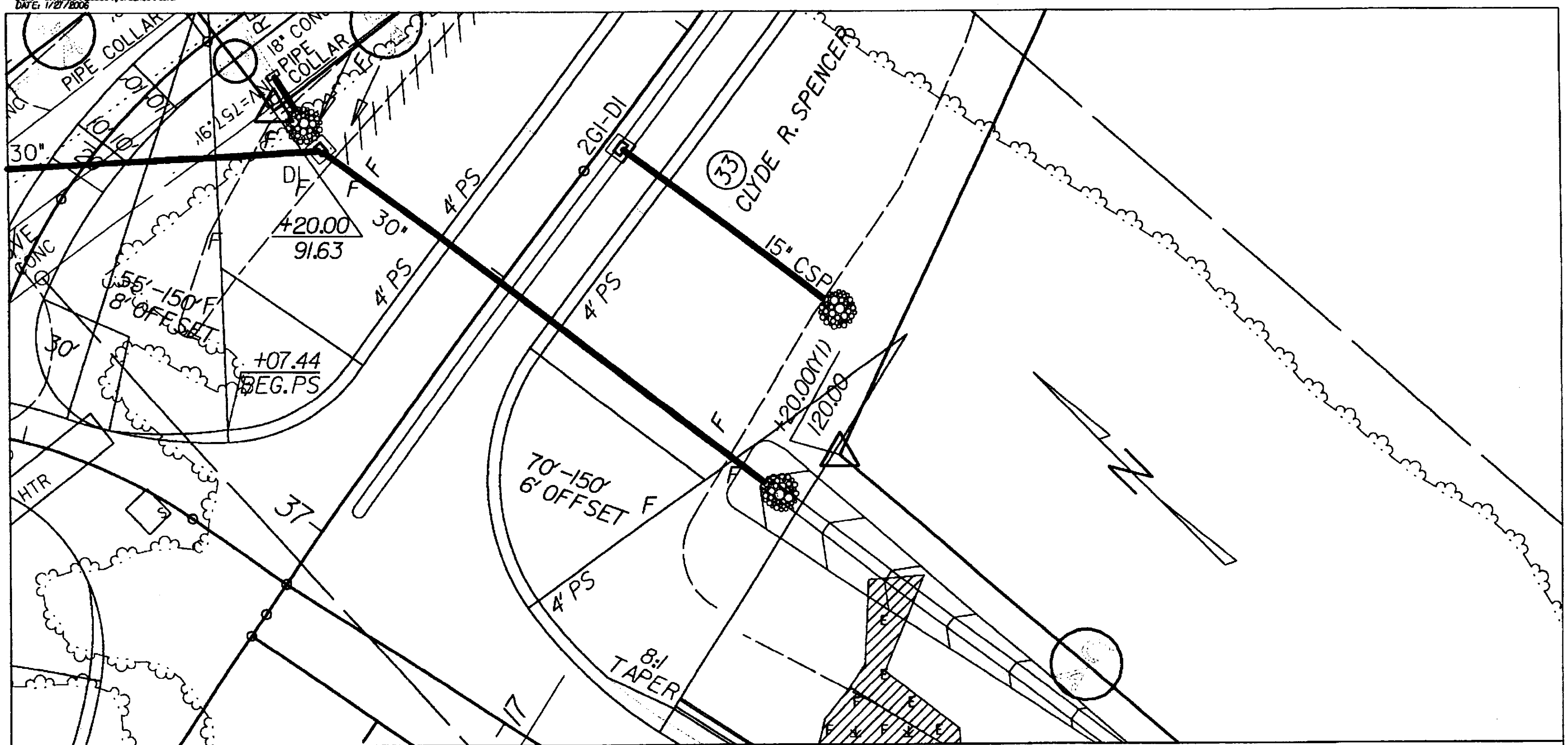
PLAN VIEW
SITE 7

0 50 ft 100 ft

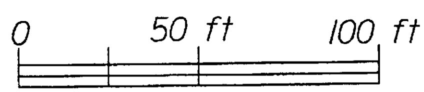
NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 38 OF 46 1/ /2006



PLAN VIEW
SITE 7

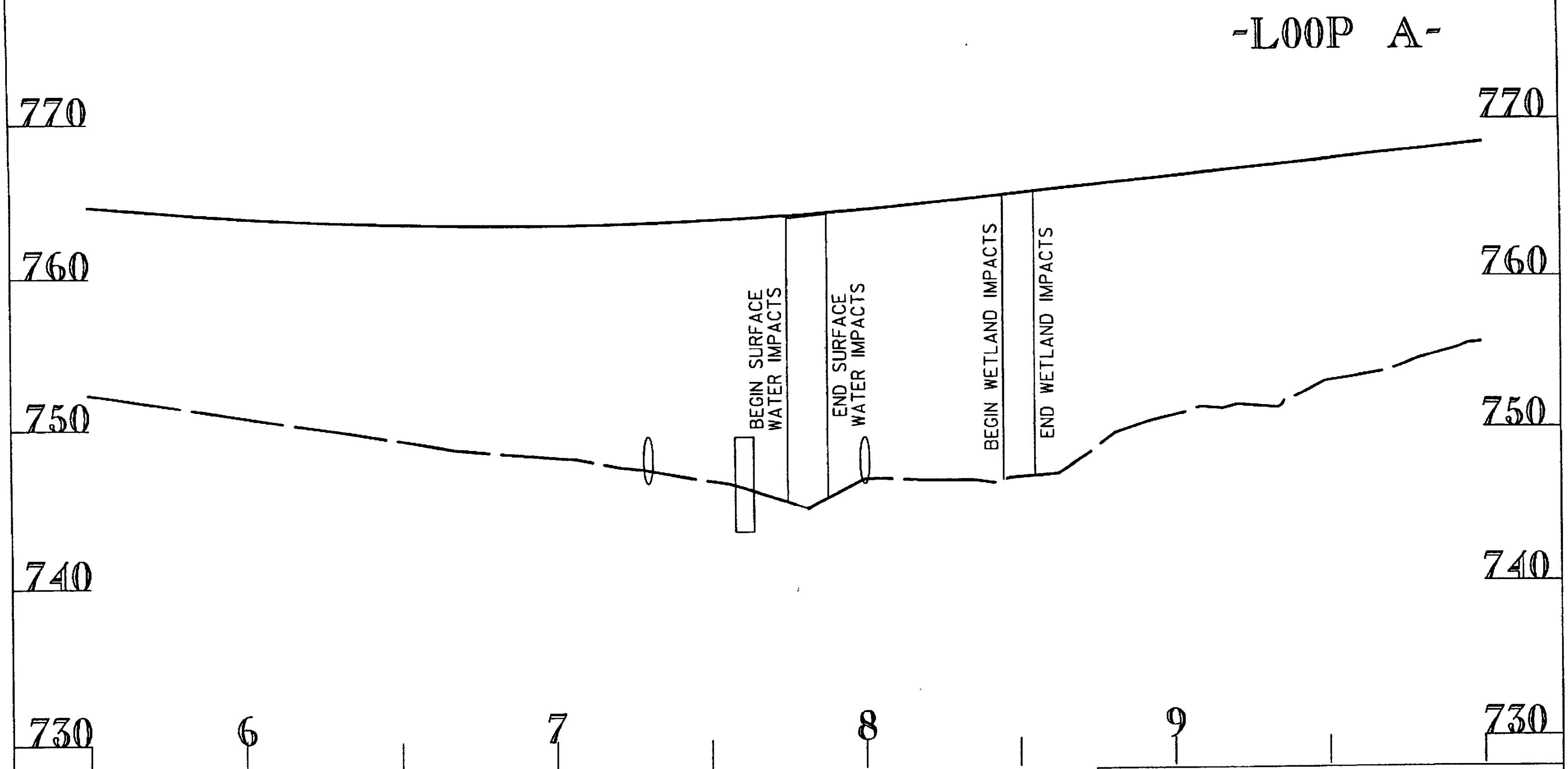


NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 39 **OF** 46 / /2006

USER: rrwny
DGN: [illegible]\Hydraulics\7HpWET
DATE: 07/14/2005



PROFILE VIEW
SITE 7

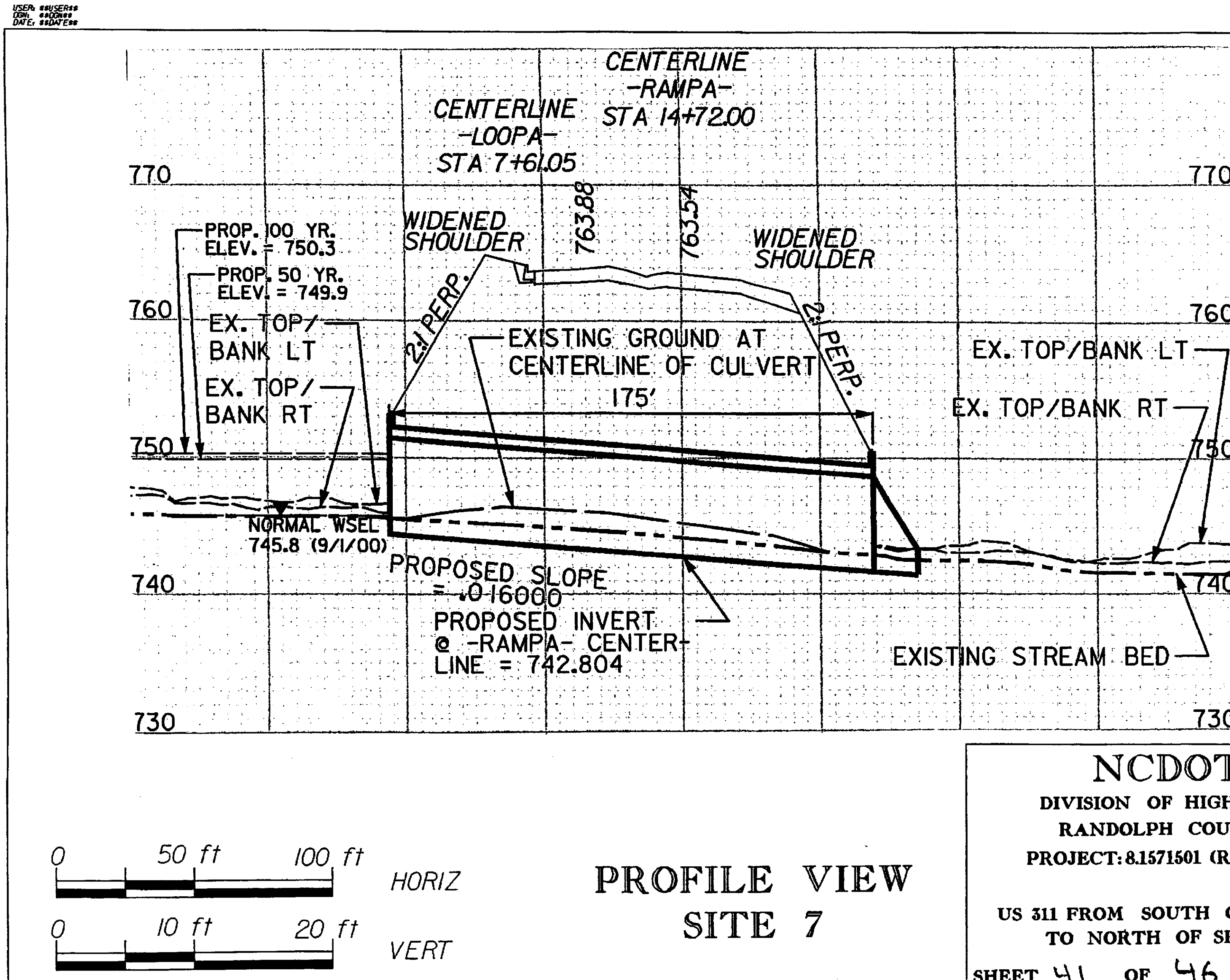
HORIZONTAL SCALE 0 50 ft 100 ft

VERTICAL SCALE 0 10 ft 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 40 OF 46 1/ /2006



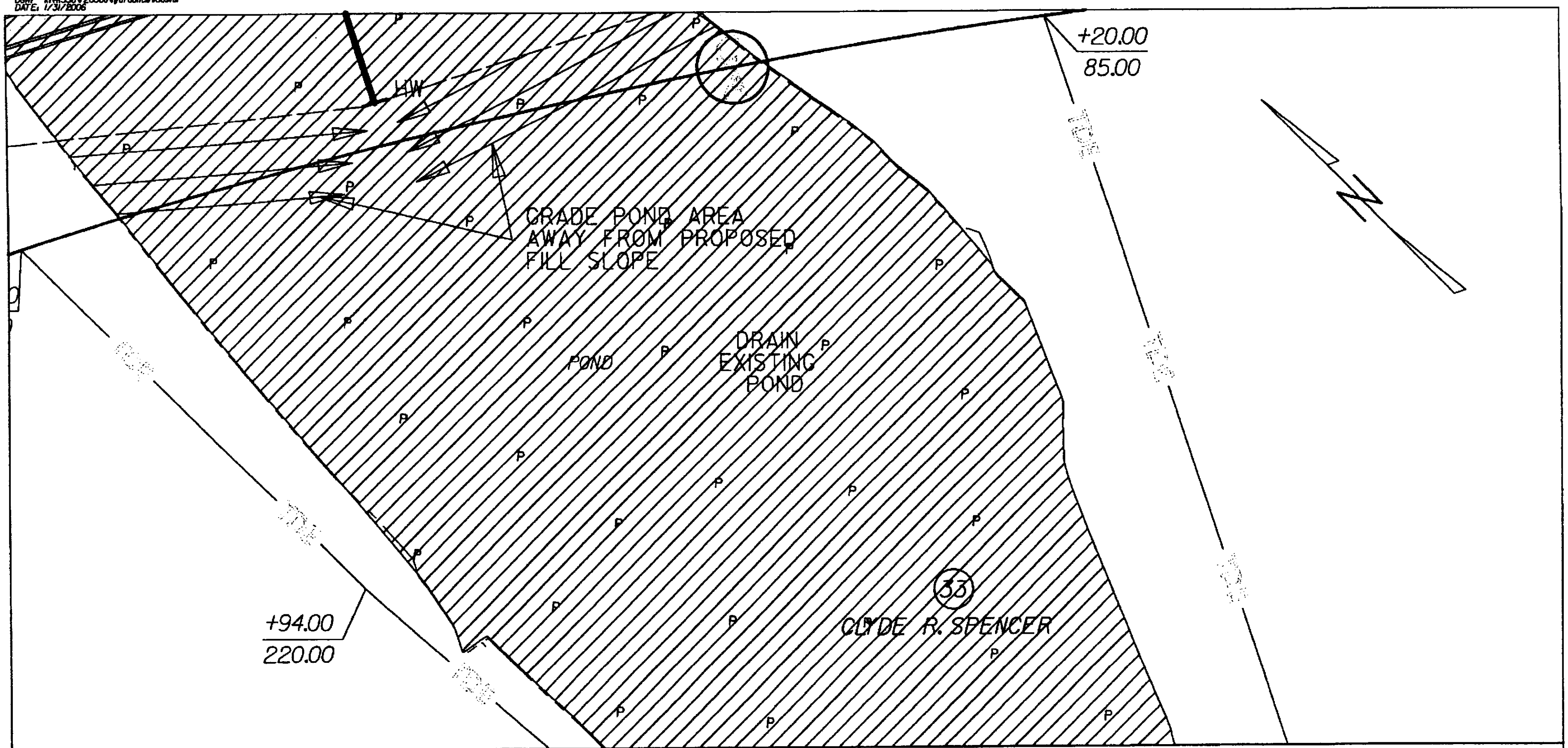
PROFILE VIEW
SITE 7

NCDOT

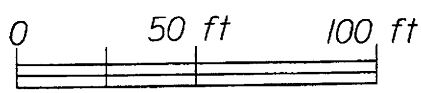
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 41 **OF** 46 1/06



PLAN VIEW
SITE 8

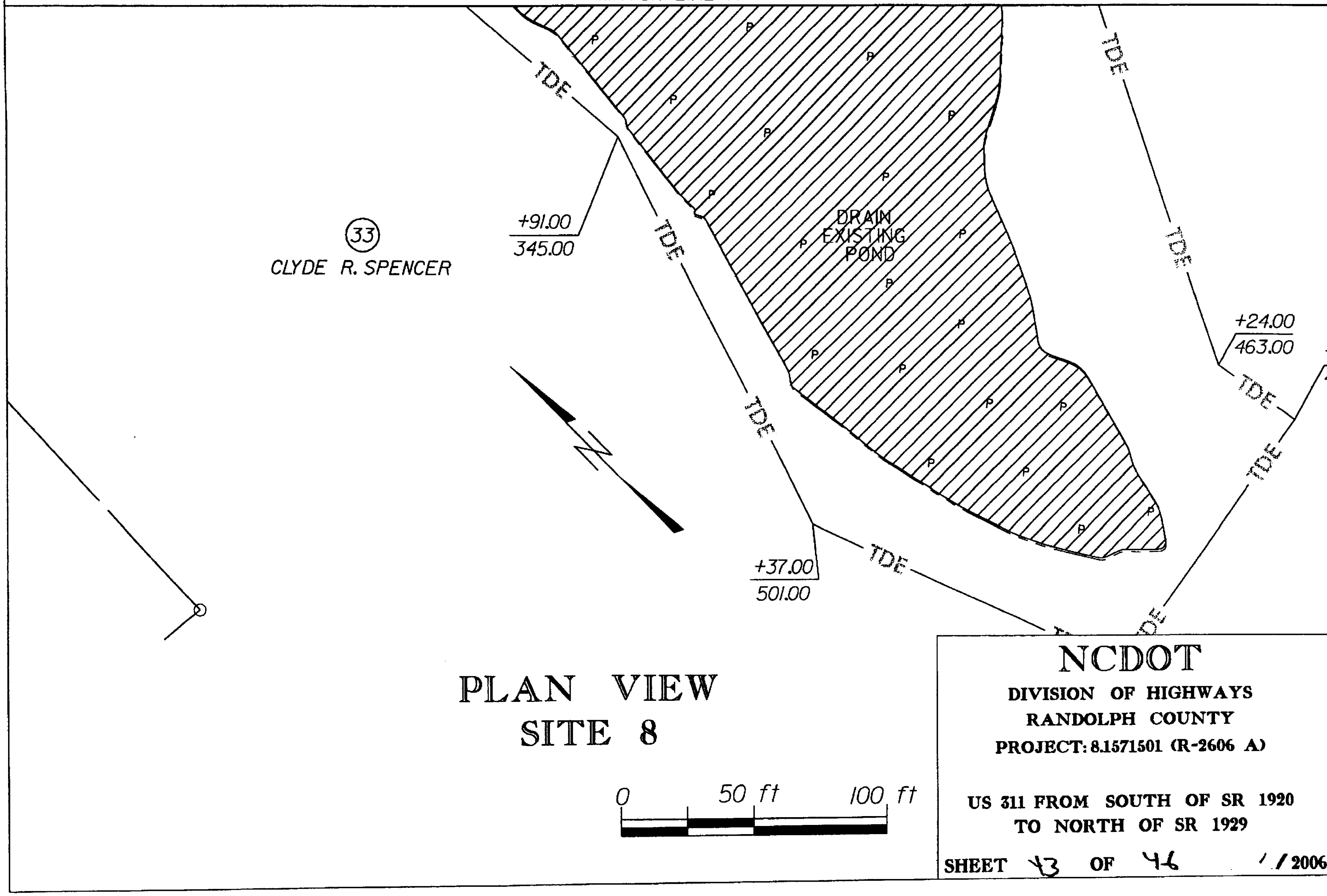


NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 42 OF 46 / /2006

USER: al
DGN: ...hydraulics...
DATE: 1/31/2006



PLAN VIEW
SITE 8

0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 43 **OF** 46 / /2006

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	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	22+65 -L-	1@160' Dual Bridges										
2	45+99 -L-	1@12'x8' RCBC	0.277					0.079	0.020	350	100	
3	63+06 -L-	1@8'x5' Bottomless Struc						0.112	0.020	790	115	
	59+48 -L- **	36" RCP						0.037	0.002	310	20	
4	82+75 -L- **	36" RCP						0.013	0.002	185	20	
	84+40 -L-	42" RCP						0.084	0.006	580	65	
5	87+80-93+50 -L- Rt *	Perm. A Basin w/ 36" Riser						0.291		472		
6	10+50 -RAMPC-	1@54"; 1@ 48" RCP	0.241		0.040			0.648	0.004	200	50	
	12+50 -RAMPC- Lt *											
7	106+90 -L-	1@ 66" RCP	0.240		0.016			0.171	0.004	1490	32	
	14+72 -RAMPA-	1@6'x6' RCBC & 2@60" RCP										
8	5+45 -RAMPD- Rt *	Drain Pond						2.820				
TOTALS:			0.76	0.00	0.06	0.00	0.00	4.26	0.06	4377	402	0

** Impacts to Tributaties

* Includes Impact to Surface Water to Ponds (Site 5- 0.262 Ac, Site 6- 0.634 Ac; Site 8- 2.82 Ac)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RANDOLPH COUNTY
R-2606A 1/06

SHEET 44 of 46 ########

ATN Revised 3/31/05

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	KEPLEY-FRANK HARDWOOD CO., INC.	975 CONRAD HILL MINE ROAD LEXINGTON, NC 27292
2	MAGGIE N. POOLE	6020 POOLE ROAD ARCHDALE, NC 27263
4	RAY POOLE	P.O. BOX 14411 ARCHDALE, NC 27263
5	JAMES H. TROTTER	6191 POOLE ROAD ARCHDALE, NC 27263
7	TIMOTHY LARUE TROTTER	5930 POOLE ROAD ARCHDALE, NC 27263
8	ZOLA ROSENGERG	5930 POOLE ROAD ARCHDALE, NC 27263-7850
11	BETTY NICHOLSON	5848 POOLE ROAD ARCHDALE, NC 27263-7850
14	JADINE F. HILL	6461 LEWIS DAVID ROAD RANDLEMAN, NC 27317-7219
16	BOBBY RALPH HILL	3638 HOOVER HILL ROAD TRINITY, NC 27370
17	JERRY G. McDOWELL	5597 GODNICK LANE ARCHDALE, NC 27263
18	MICAH L. McDOWELL	3310 MOUNT OLIVE CHURCH ROAD SOPHIA, NC 27350
19	DONALD R. SPELL	214 ASHLAND STREET ARCHDALE, NC 27263
23	JAMES E. HARRELSON	5557 GODNICK LANE ARCHDALE, NC 27263
24	JANIE D. McCRACKEN	5547 GODNICK LANE ARCHDALE, NC 27263
29	DONALD W. BOWMAN	323 KENDALL MILL ROAD THOMASVILLE, NC 27360
30	ALDENE BOWMAN	ROUTE 2, BOX 264 TRINITY, NC 27370

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DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 45 OF 46 1/06

USER: rremy
DGN: k:\41558\r2606a\Hydraulics\OWNERWET
DATE: 07/14/2005

PROPERTY OWNERS

NAMES AND ADDRESSES

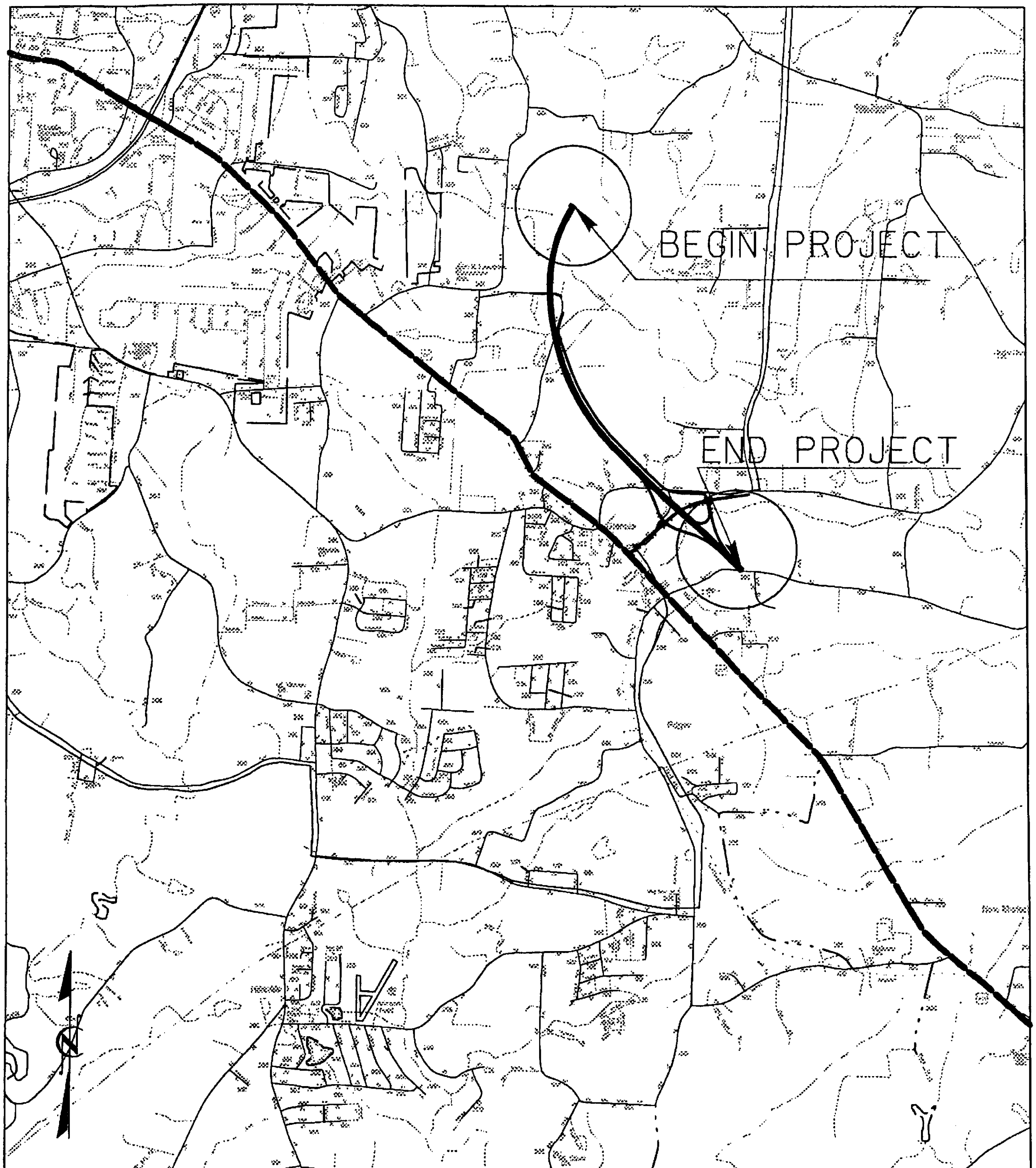
PARCEL NO.	NAMES	ADDRESSES
31	JOHN S. ALLRED	ROUTE 3, BOX 393 HIGH POINT, NC 27263
32	JESSE M. SEAWELL	ROUTE 3, BOX 392 HIGH POINT, NC 27263
33	CLYDE R. SPENCER	ROUTE 3, BOX 518 HIGH POINT, NC 27263
35	L. G. BOWMAN, JR.	5590 CEDAR SQUARE ROAD ARCHDALE, NC 27263-8222
36	EARLY W. BOWMAN	215 LINDA DRIVE ARCHDALE, NC 27263-3313

USER: rremy
DGN: k:\4155\r2606a\Hydraulics\OWNER.WET
DATE: 07/14/2005

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 46 OF 46 1/06



RANDLEMAN LAKE
WATER SUPPLY
BUFFER

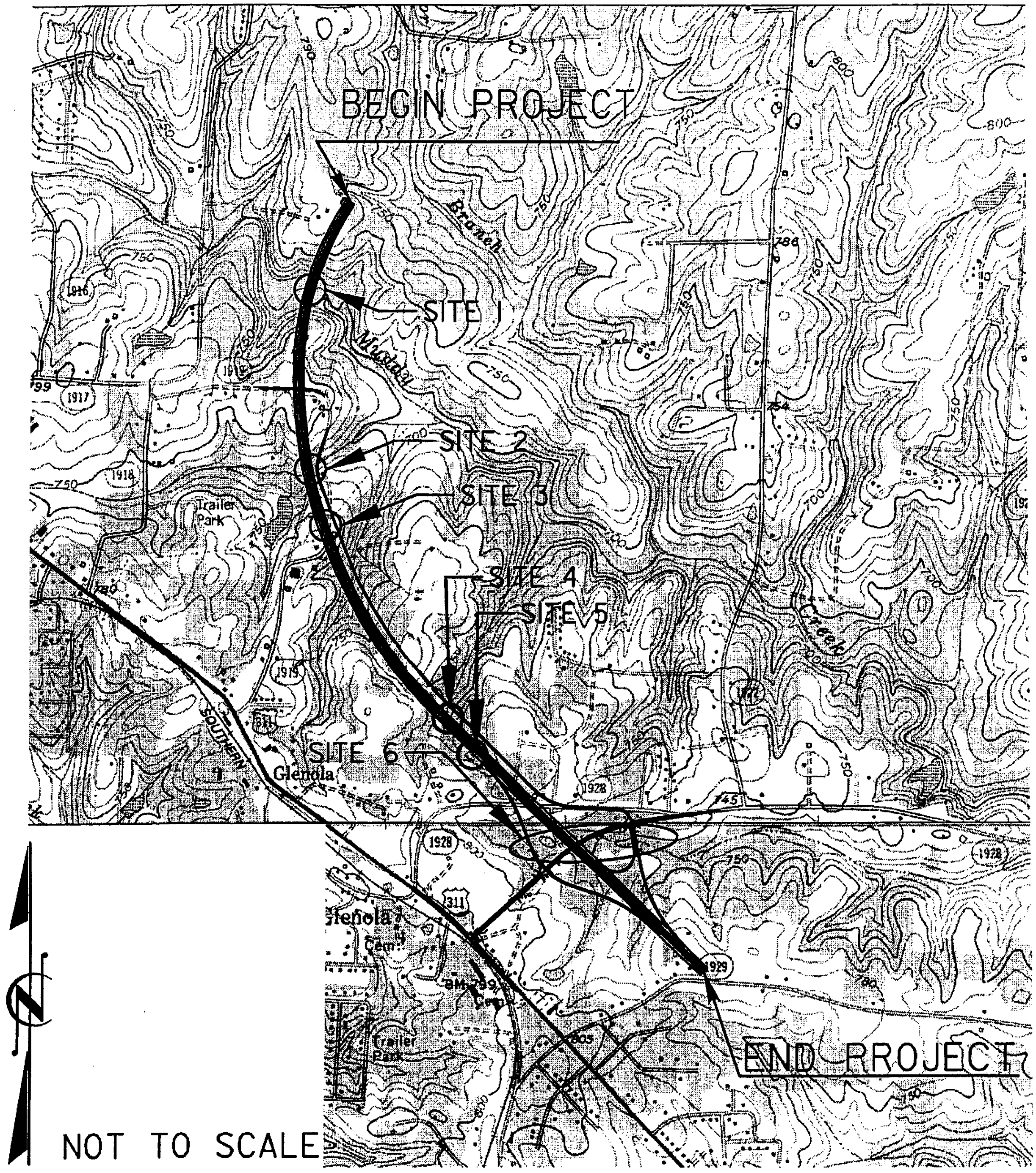
VICINITY MAP

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 1 **OF** 26 - 1/06



RANDLEMAN LAKE
WATER SUPPLY
BUFFER

LOCATION MAP

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 2 OF 26 1/06

USER: rremy
DGN: k:\4155\r2606a\Hydraulics\BUFILOCWET
DATE: 07/14/2005

BUFFER LEGEND

WLB	WETLAND BOUNDARY
WLB WLB	WETLAND
	ALLOWABLE IMPACTS ZONE 1
	ALLOWABLE IMPACTS ZONE 2
	MITIGABLE IMPACTS ZONE 1
	MITIGABLE IMPACTS ZONE 2
BZ	RIPARIAN BUFFER ZONE
BZ1	RIPARIAN BUFFER ZONE 1 30 ft (9.2m)
BZ2	RIPARIAN BUFFER ZONE 2 20 ft (6.1m)
	FLOW DIRECTION
TB	TOP OF BANK
WE	EDGE OF WATER
C	PROP. LIMIT OF CUT
F	PROP. LIMIT OF FILL
	PROP. RIGHT OF WAY
NG	NATURAL GROUND
PL	PROPERTY LINE
TDE	TEMP. DRAINAGE EASEMENT
PDE	PERMANENT DRAINAGE EASEMENT
EAB	EXIST. ENDANGERED ANIMAL BOUNDARY
EPB	EXIST. ENDANGERED PLANT BOUNDARY
▽	WATER SURFACE
x x x x x x x	LIVE STAKES
	BOULDER
	CORE FIBER ROLLS

	PROPOSED BRIDGE
	PROPOSED BOX CULVERT
	PROPOSED PIPE CULVERT 12"-48" PIPES 54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

	SINGLE TREE
	WOODS LINE
	DRAINAGE INLET
	ROOTWAD
	RIP RAP
5	ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE
	PREFORMED SCOUR HOLE (PSH)
	LEVEL SPREADER (LS)
	GRASS SWALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1029

SHEET 3 **OF** 26 1/06

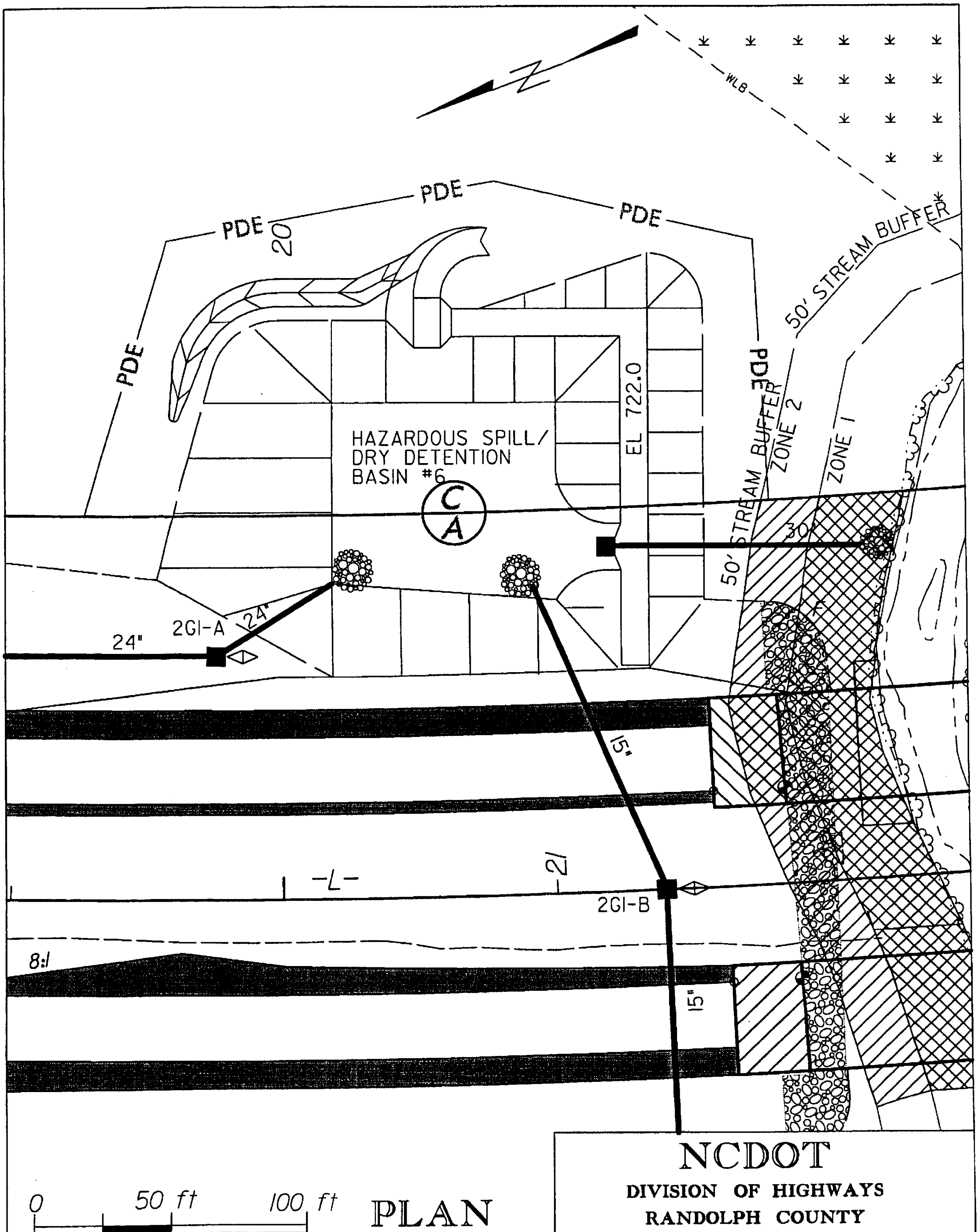
USER: rremy
DGN: k:\4155B\r2606a\Hydraulics\new_legend.dgn
DATE: 07/14/2005

R-2606A

HAZARDOUS SPILL BASINS

Location	Drainage Areas (Acres)	Basin Surface Area (SF)	Qp2 (cfs)
-L-Sta. 21+50 LT	8.15	13764	15.94
-L- Sta. 24+50 RT	3.96	10400	8.2
-L- Sta. 44+50 RT	11.63	10435	28.9
-L- Sta. 47+50 RT	7.01	3632	17.9
-L- Sta. 57+00 LT	13.23	10486	28.3
-L- Sta. 79+00 LT	13.08	21126	22.7
-L- Sta. 89+00 RT	15.4	9689	**(Qp5) 15.4**
-L- Sta. 111+34 RT	9.91	12878	16.5

Location	Qp2 Velocity (fps)	Treatment Provided	Comments
-L- Sta. 31+02 LT	**1.55**	Preformed Scour Hole	
-Y- Sta. 16+60 LT	Exempt due to existing drainage way		
-SR- Sta. 13+20 LT		Dissipator Basin	Exempt
-L- Sta. 59+44 LT			Cross Pipe/ Exempt
-L- Sta. 81+70 LT			Cross Pipe/ Exempt
-L- Sta. 81+78 LT			Cross Pipe/ Exempt
-SR-Sta. 56+57 LT to	Exempt due to existing drainage way		
-SR- Sta. 63+50 LT	Exempt due to existing drainage way		
-L- Sta 110+55 LT			Cross Pipe/Exempt
-L- Sta. 110+50 LT	No Buffer 6/12/2001 Field Inspection		
-L- Sta. 112+90 LT			Cross Pipe/Exempt
-L- Sta. 116+63 RT	**0.68**	Earth Berm W/ Level Spreader	
-Ramp A- Sta 10+44 RT		Dry Det. Basin	Exempt
'-Ramp A- Sta 13+88 RT	-		Cross Pipe/Exemp
'-Ramp A- Sta 14+55 RT	-		Cross Pipe/Exemp
-Y1- Sta. 37+96 RT	**3.01**	Exempt due to existing ditch	
-Y1- Sta. 38+56 RT	Exempt due to entering ditch before buffer		
-Loop A- Sta. 4+10 RT	Exempt due to existing drainage way		



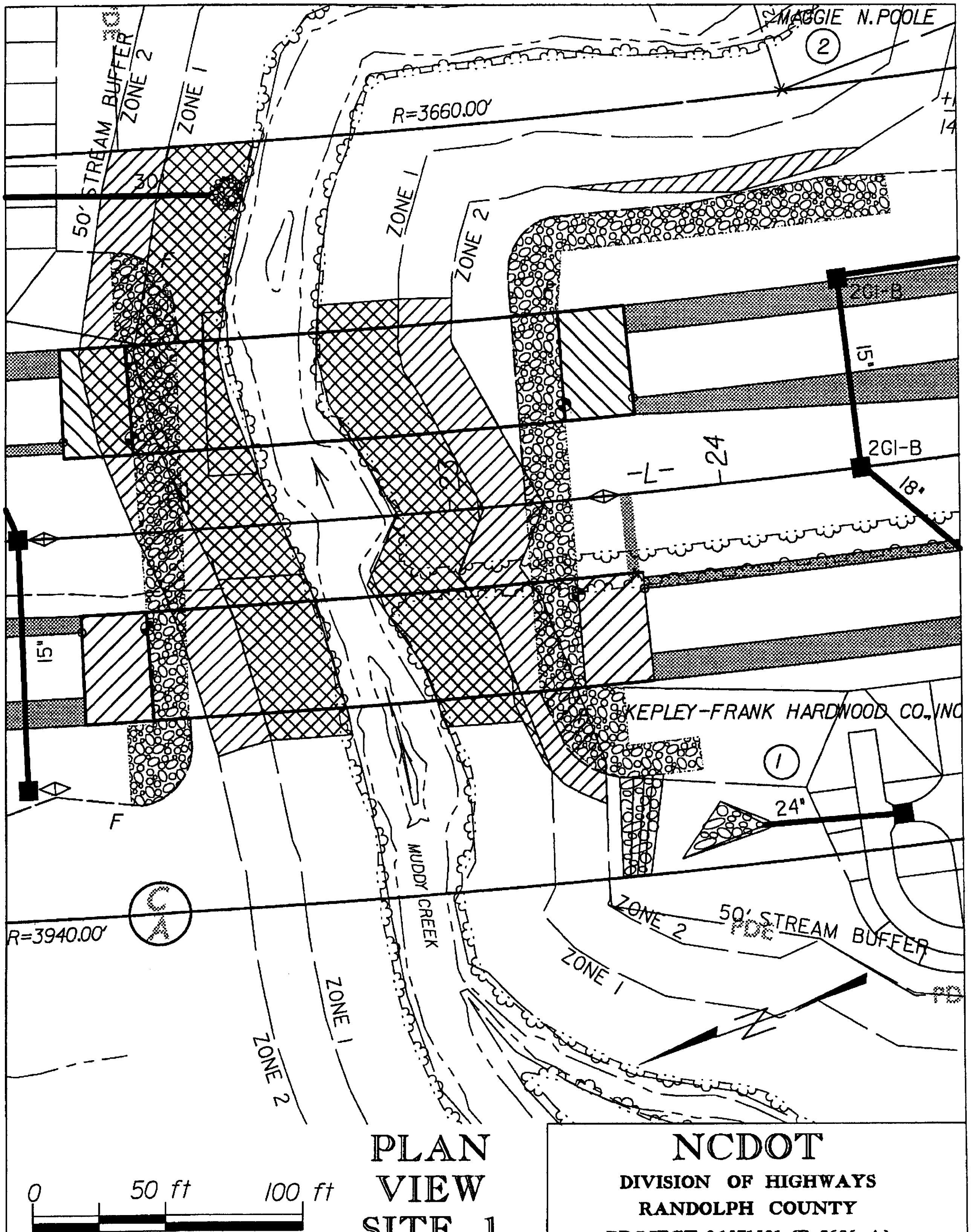
PLAN VIEW SITE 1

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 5 **OF** 26 / **/2006**



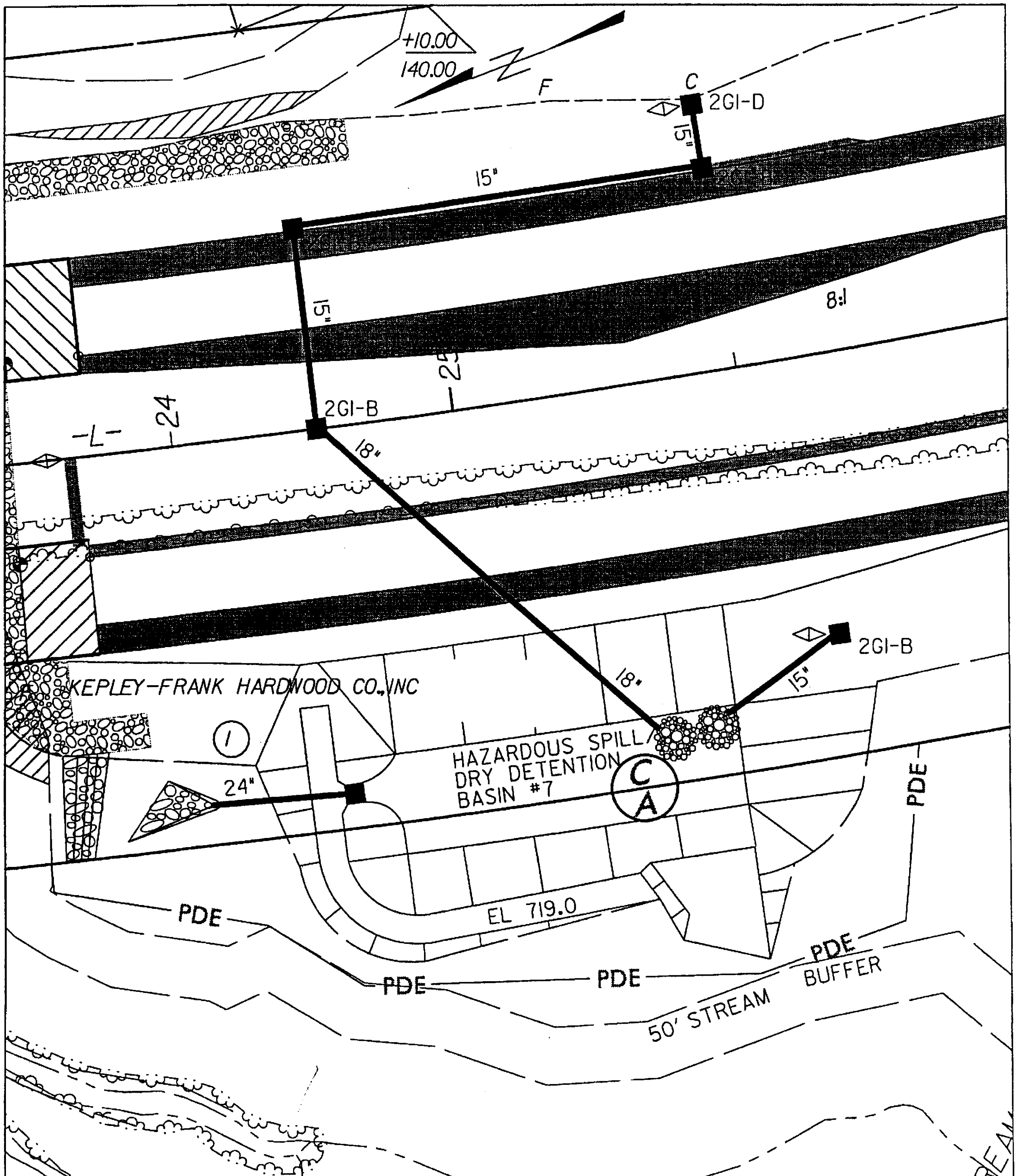
PLAN VIEW SITE 1

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 6 **OF** 26 / /2006



0 50 ft 100 ft

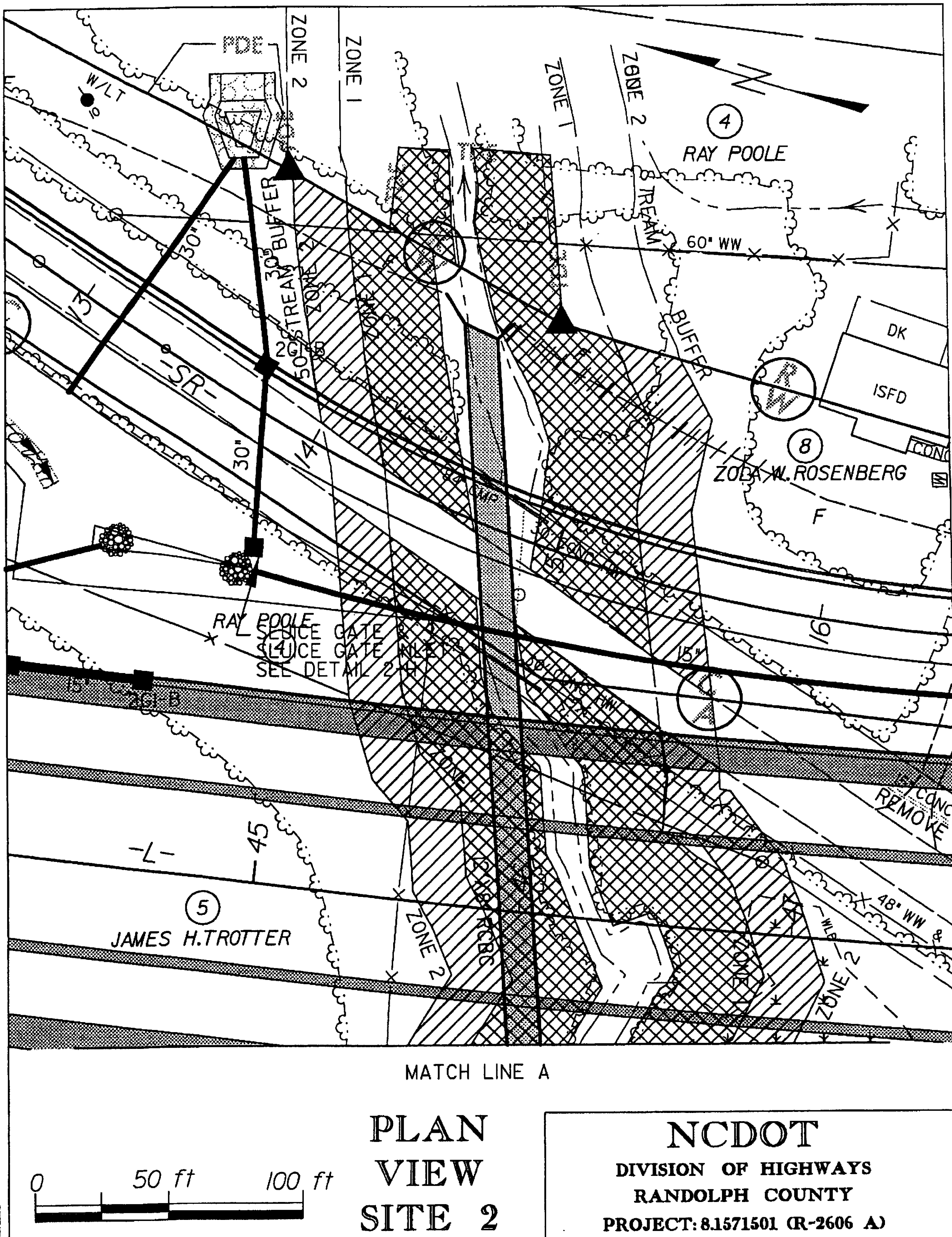
PLAN VIEW SITE 1

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 7 OF 26 1 / 2006



PLAN VIEW SITE 2

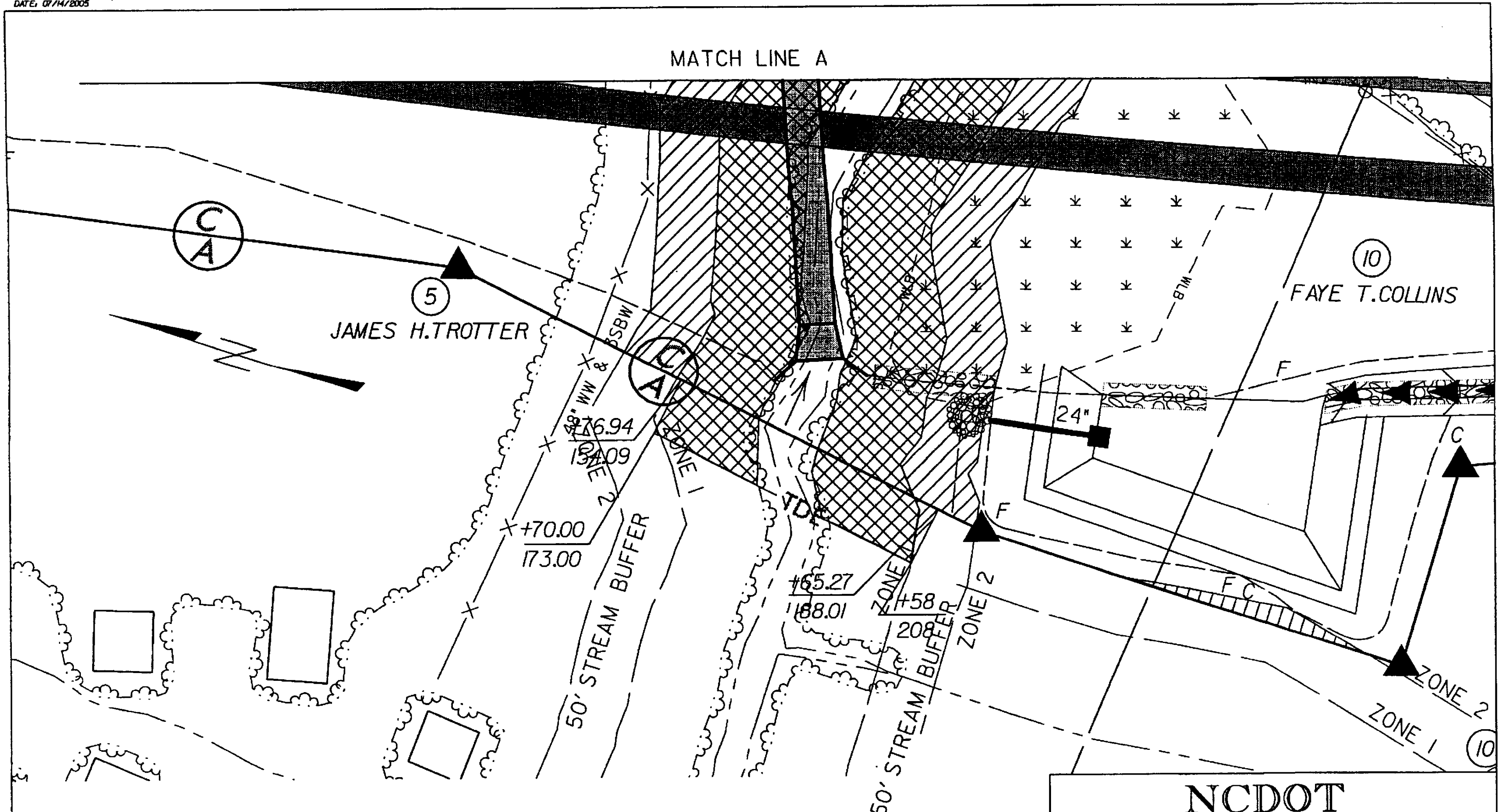
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 8 **OF** 26 **/ 2006**

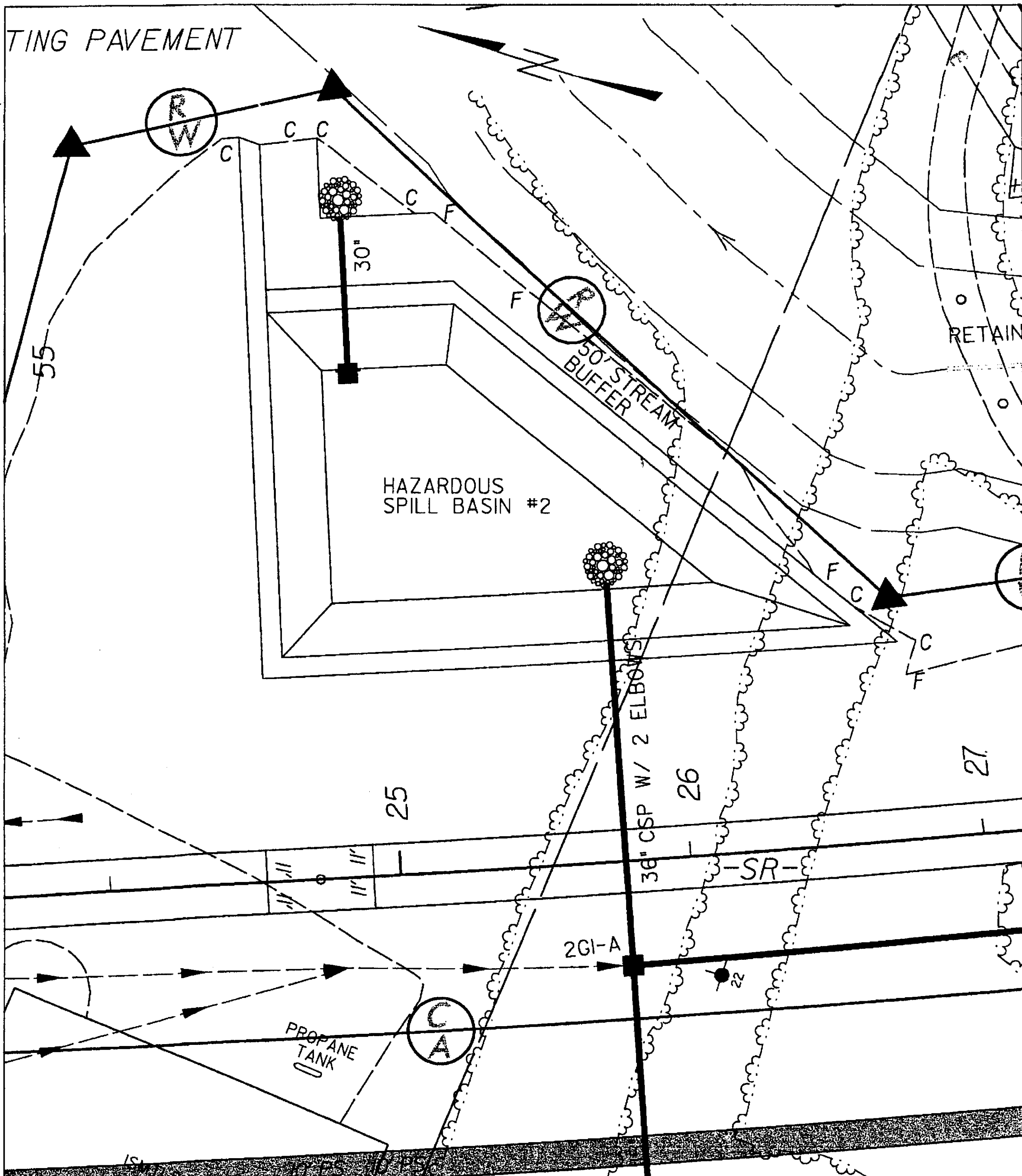
USER: rremy
DGN: ...\r2606a\Hydraulics\buf2b.wrd
DATE: 07/14/2005

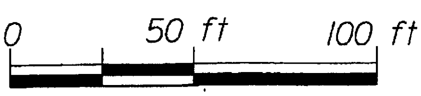


PLAN VIEW
SITE 2

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)
US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929
SHEET 9 OF 26 /2005

1/06





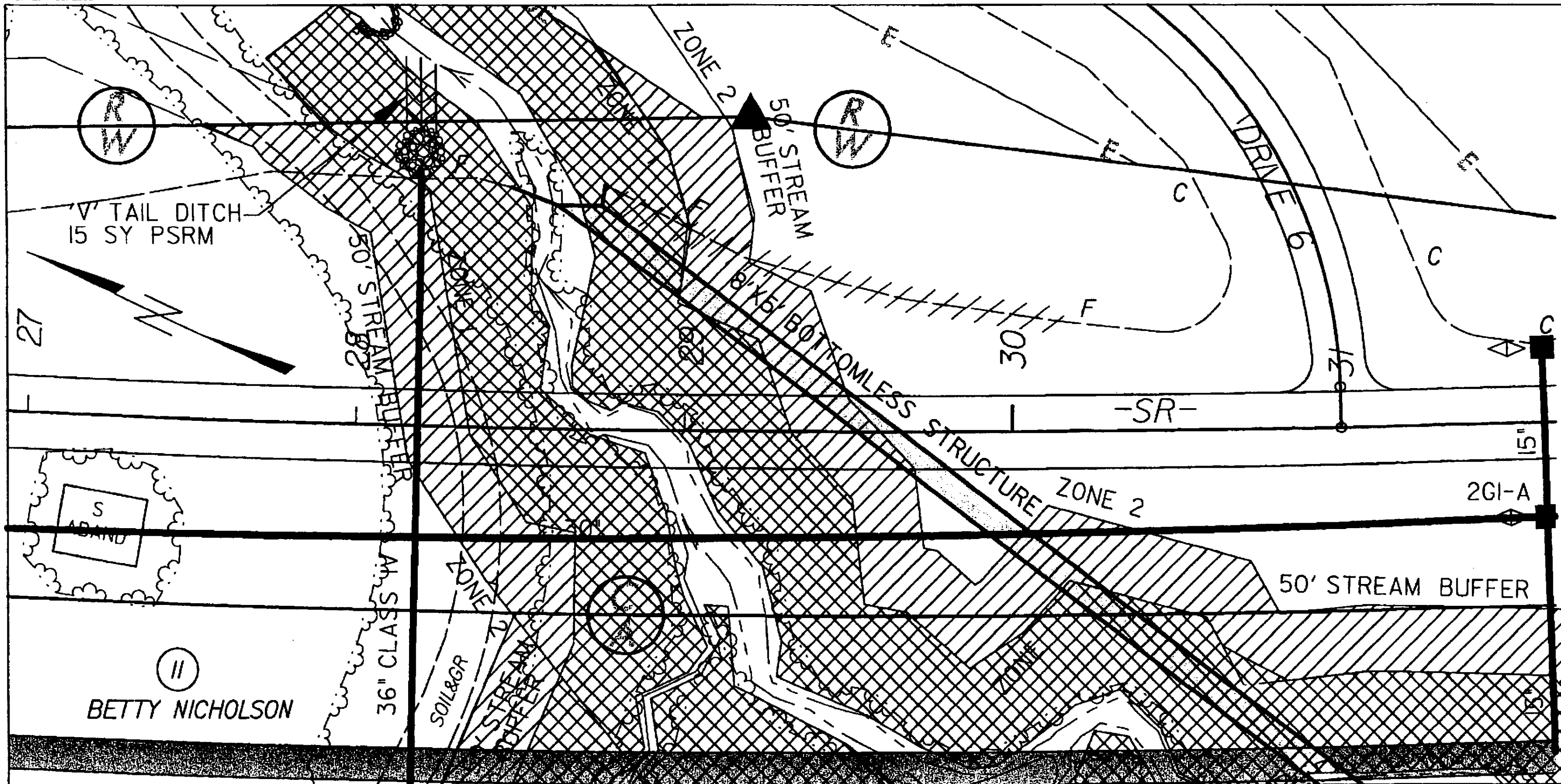
PLAN
VIEW
SITE 3

NCDOT

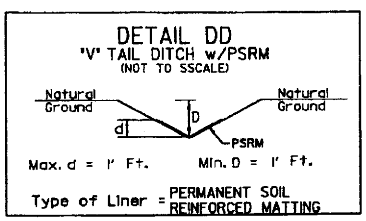
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 10 **OF** 26 / / **2006**



PLAN VIEW
SITE 3



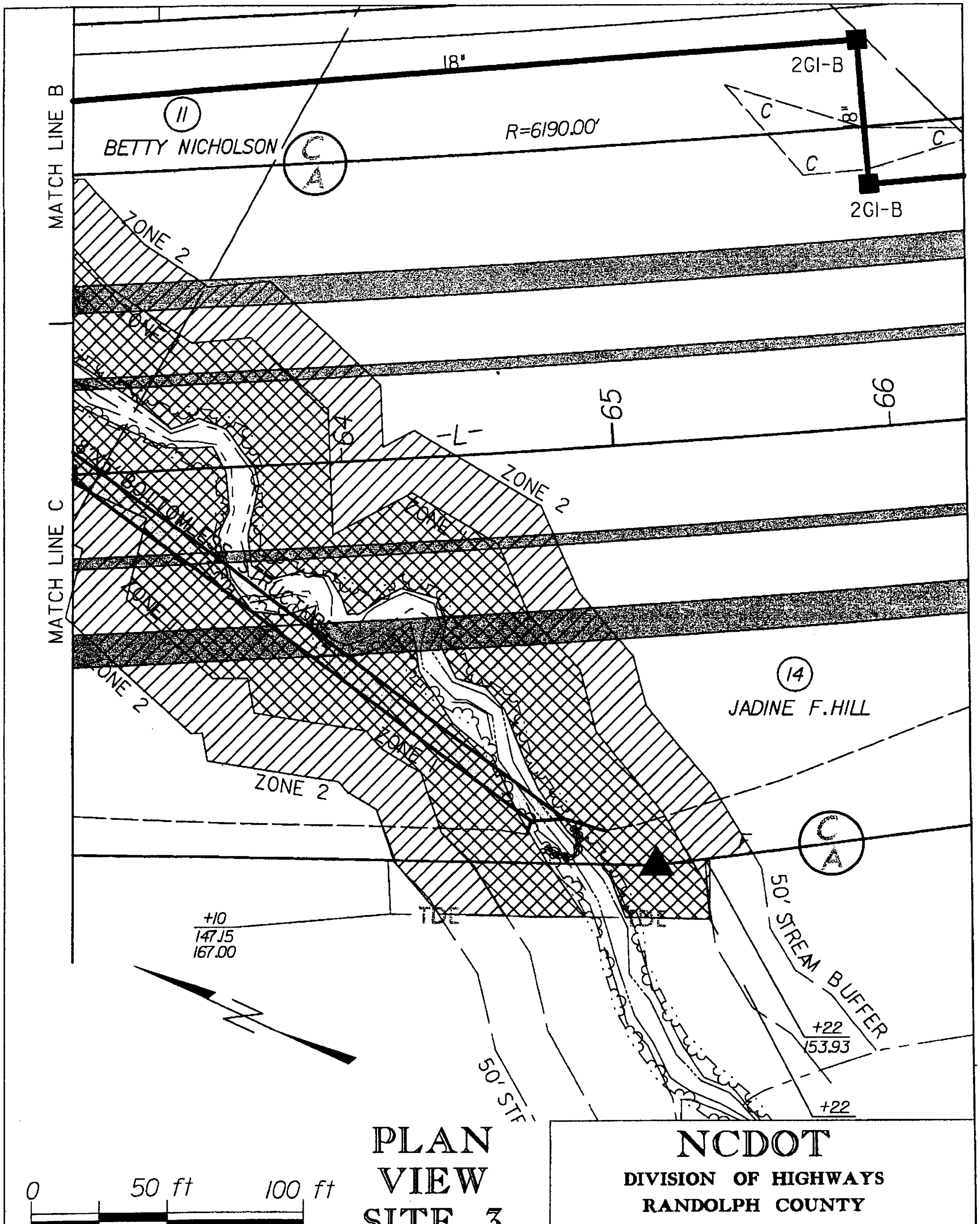
-L- 59+48 L

0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 11 **OF** 26 1 / 1 / **2006**



PLAN VIEW SITE 3

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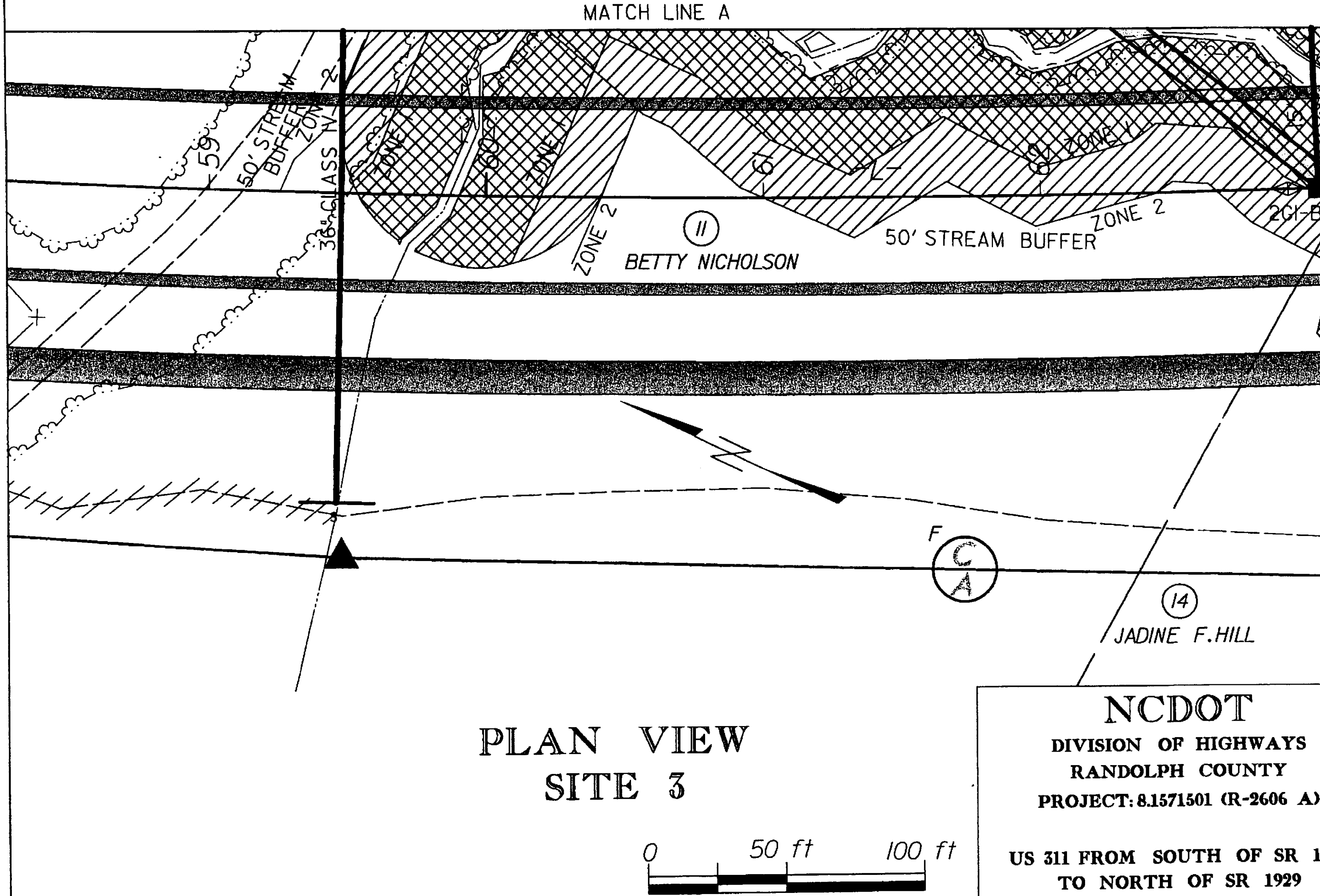
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 12 **OF** 26 1 / 2006



PLAN VIEW
SITE 3

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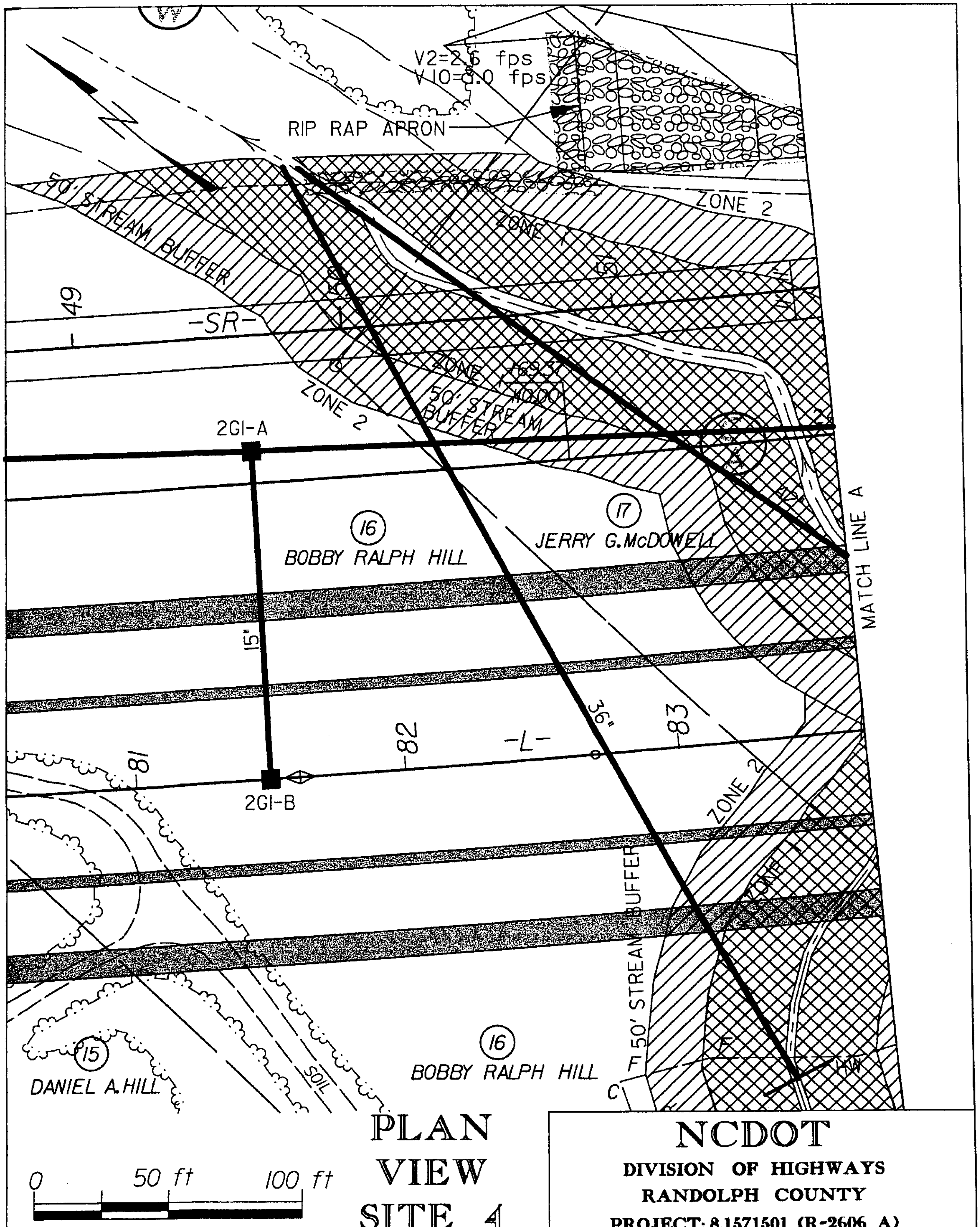
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 13 OF 28 1 / 2006



PLAN VIEW SITE 4

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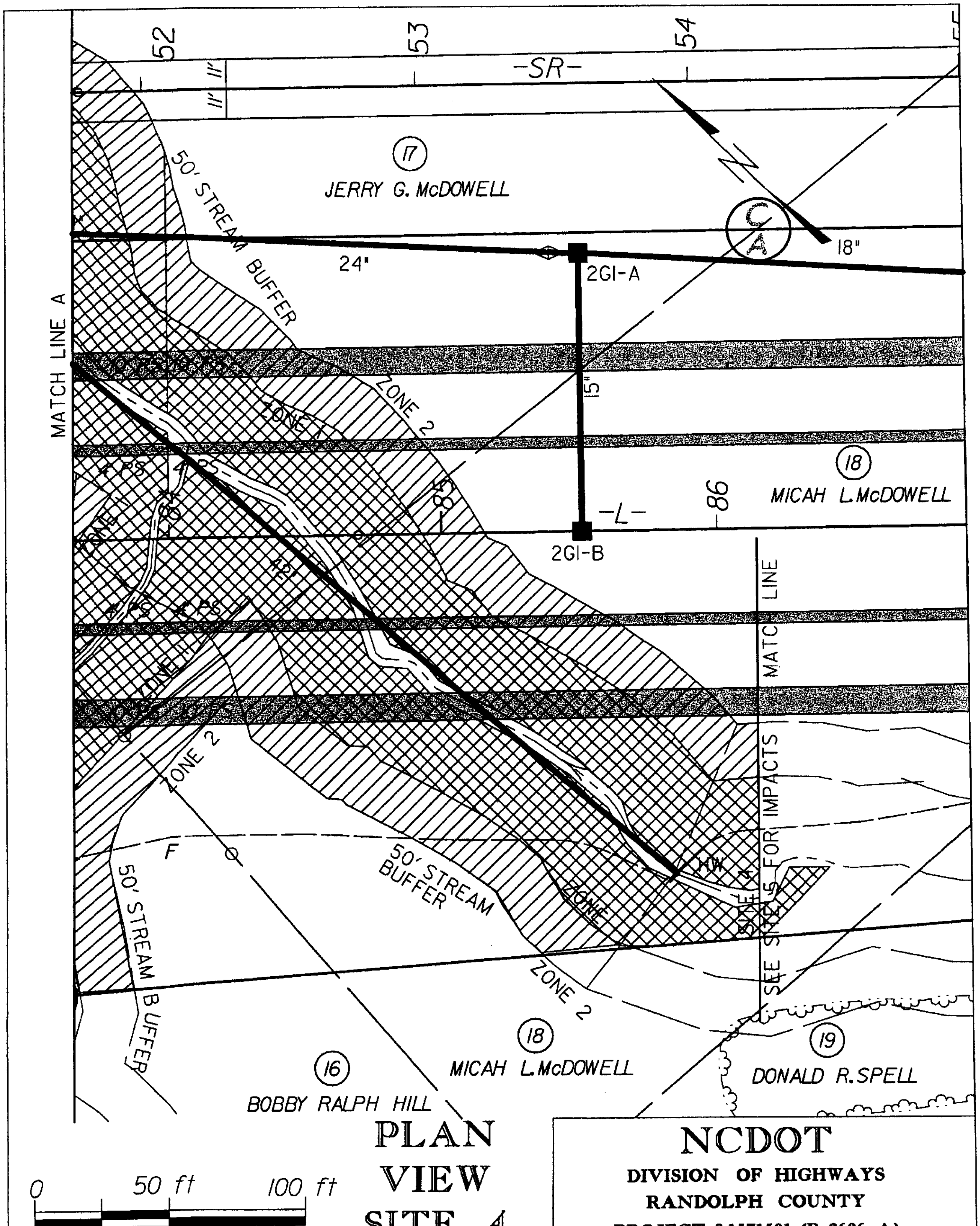
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 14 **OF** 26 / /2006



PLAN VIEW SITE 4

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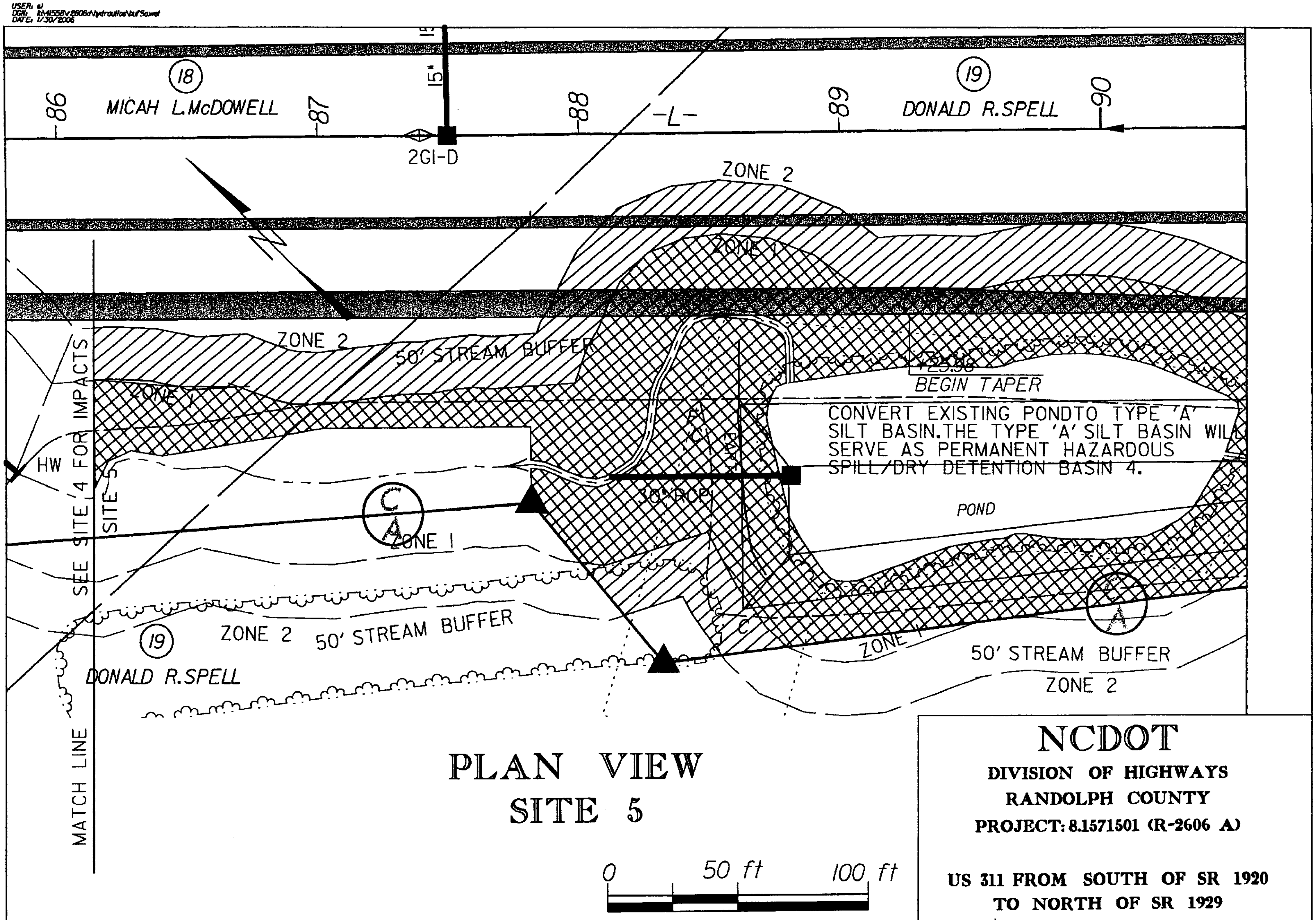
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 15 **OF** 26 / **2006**



PLAN VIEW
SITE 5

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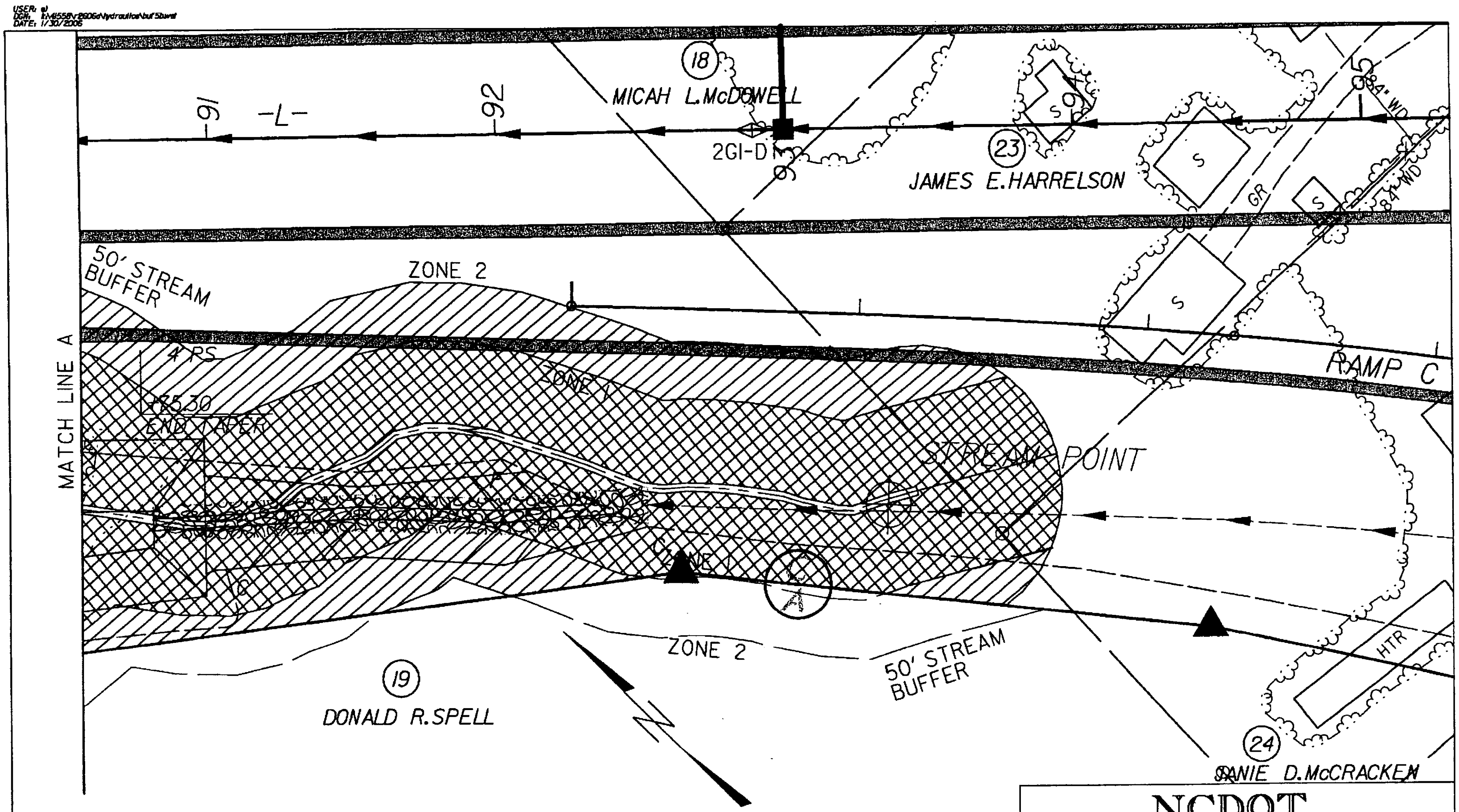
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 16 **OF** 26 / / **2006**

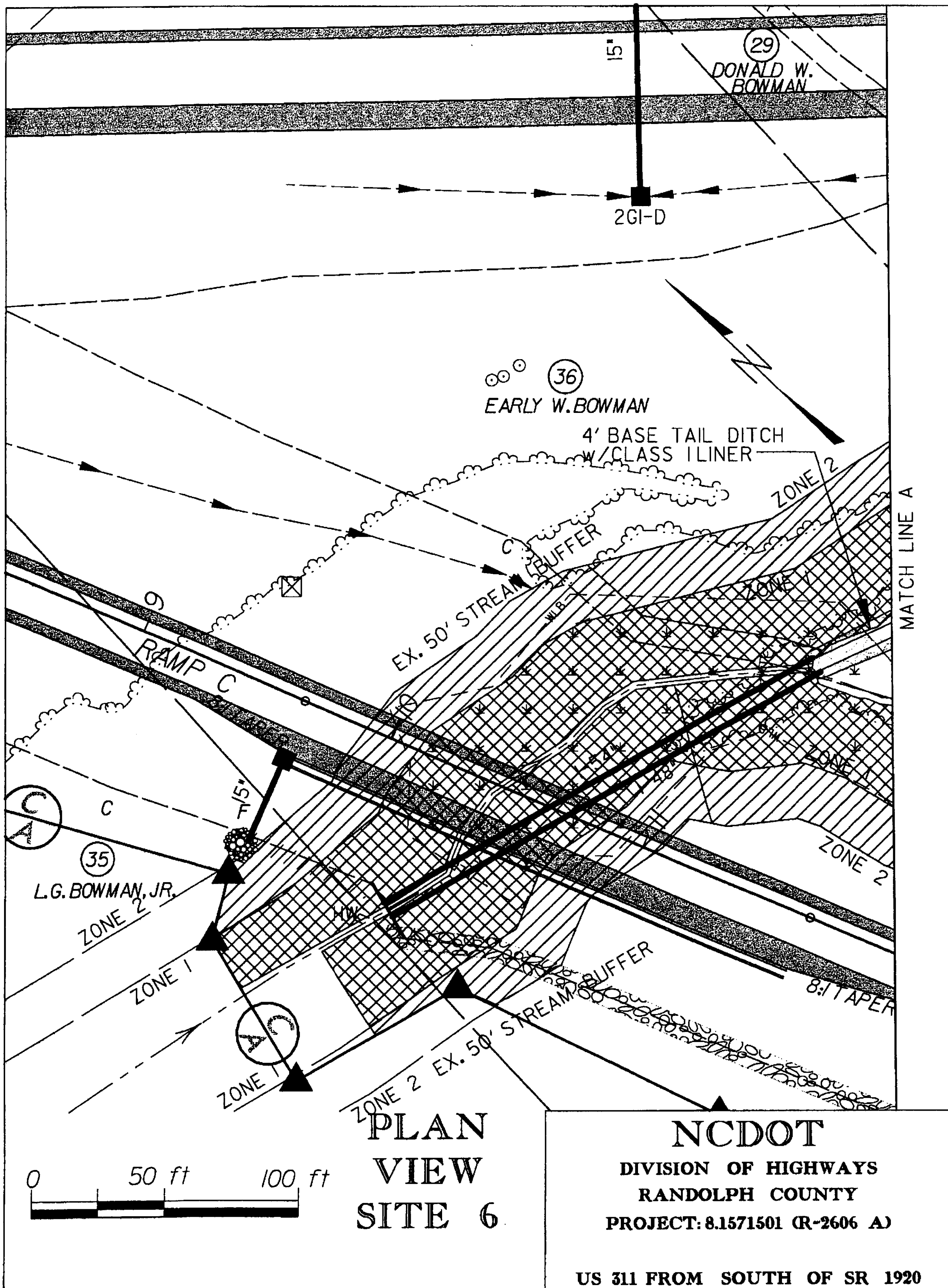


PLAN VIEW
SITE 5

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 17 OF 28 1/ /2006



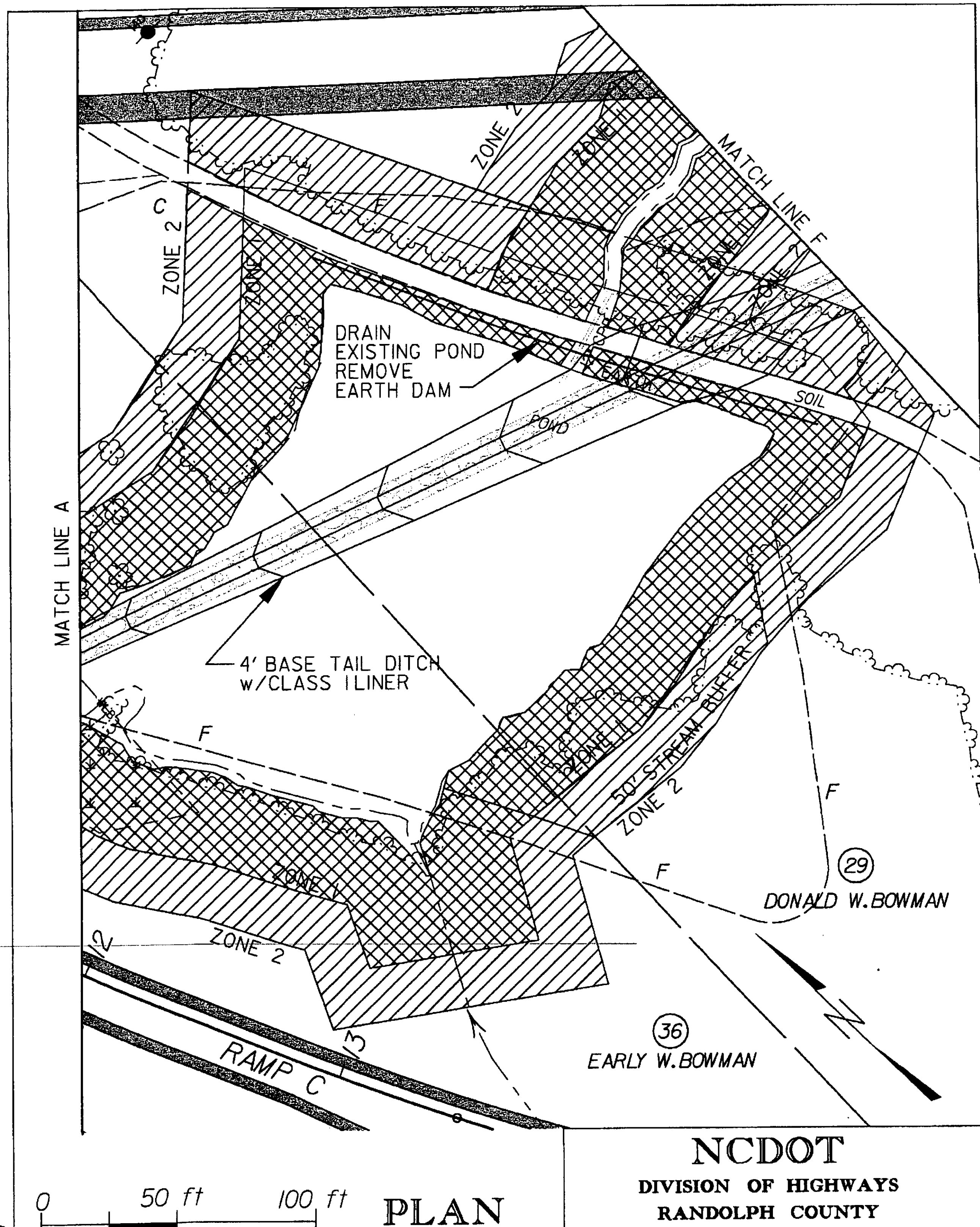
PLAN VIEW SITE 6

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 18 **OF** 26 1 / **2006**



PLAN VIEW SITE 6

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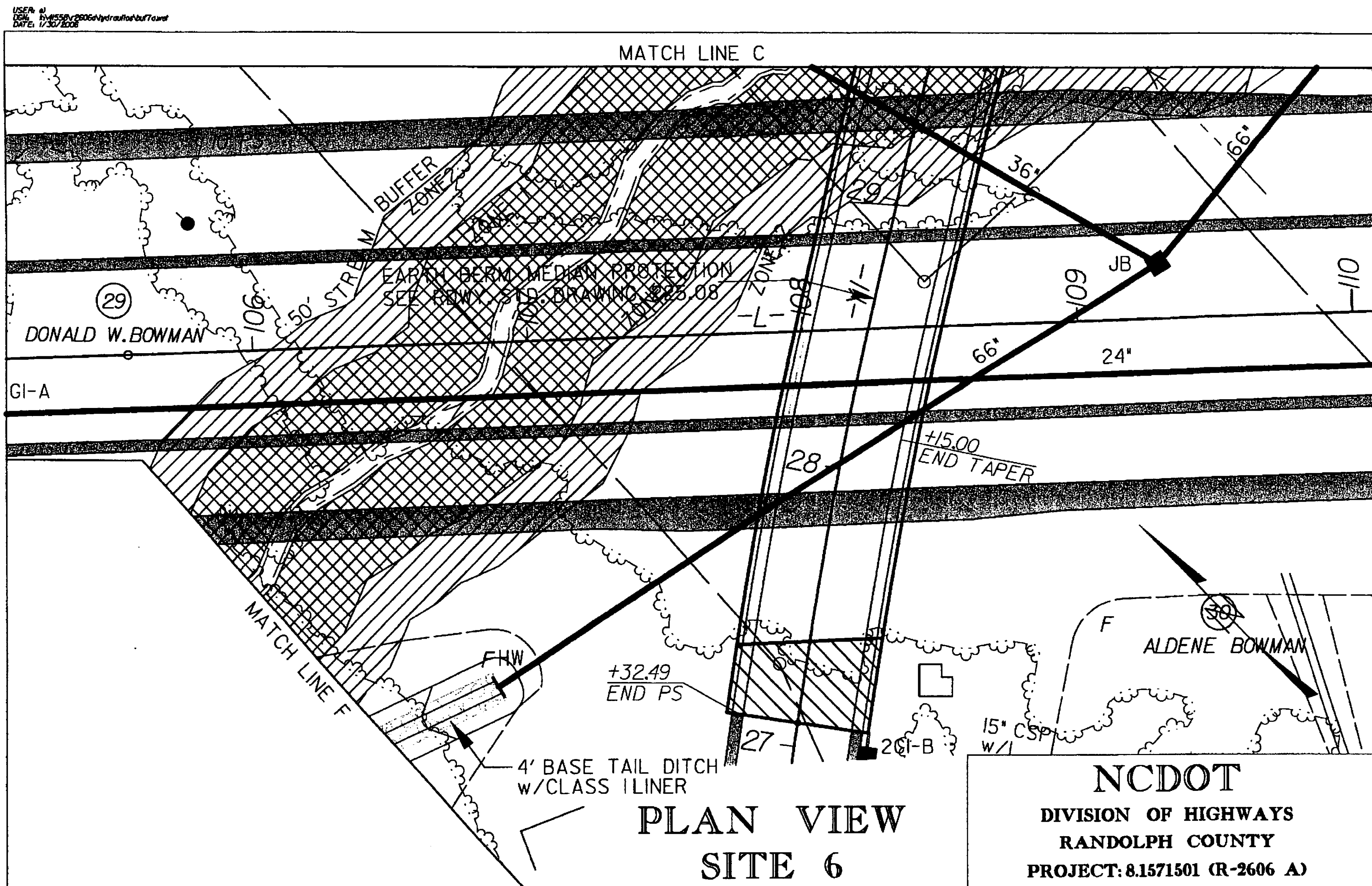
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 19 **OF** 26 **1/31/2006**



PLAN VIEW
SITE 6

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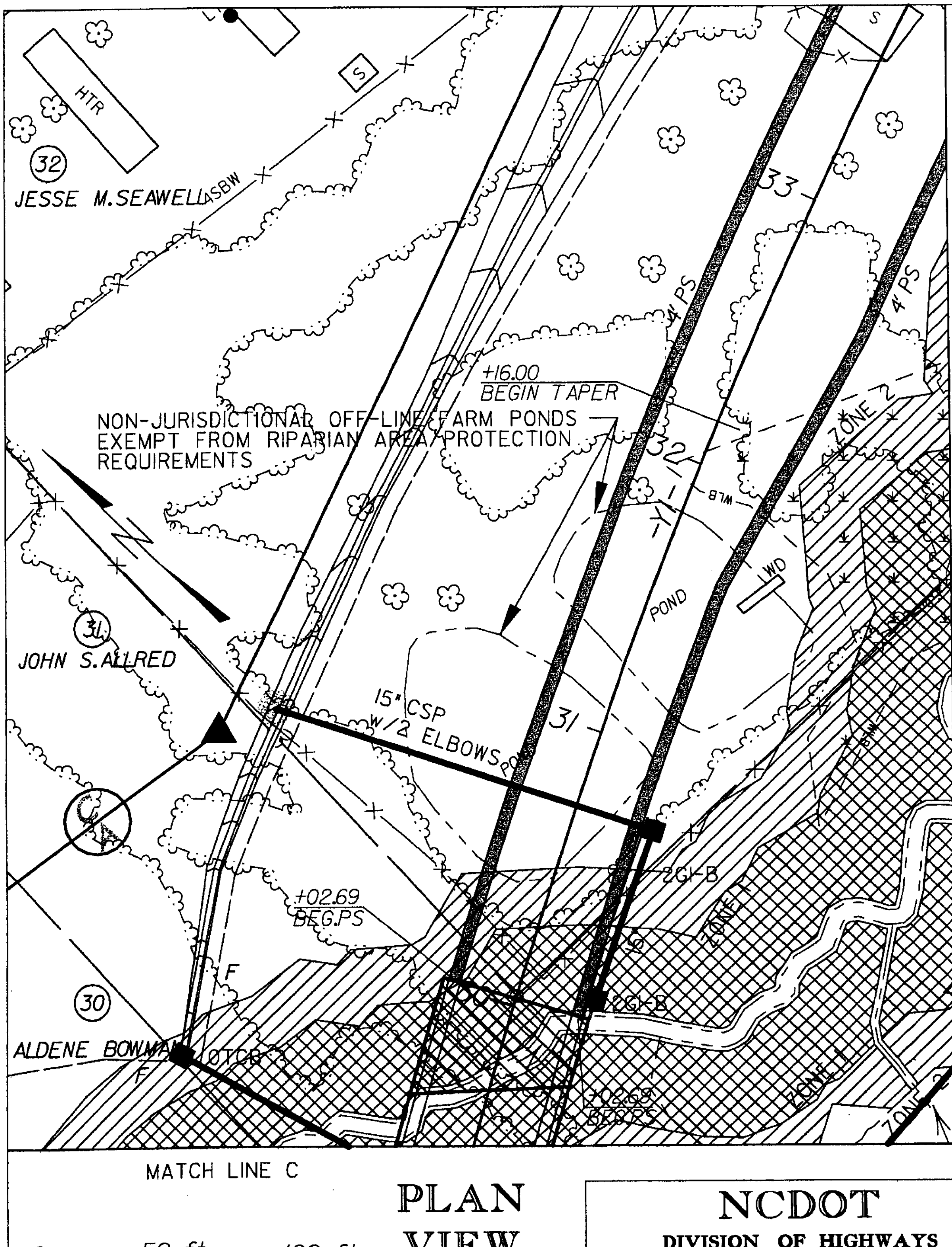
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 20 OF 26 / /2006



PLAN VIEW SITE 6

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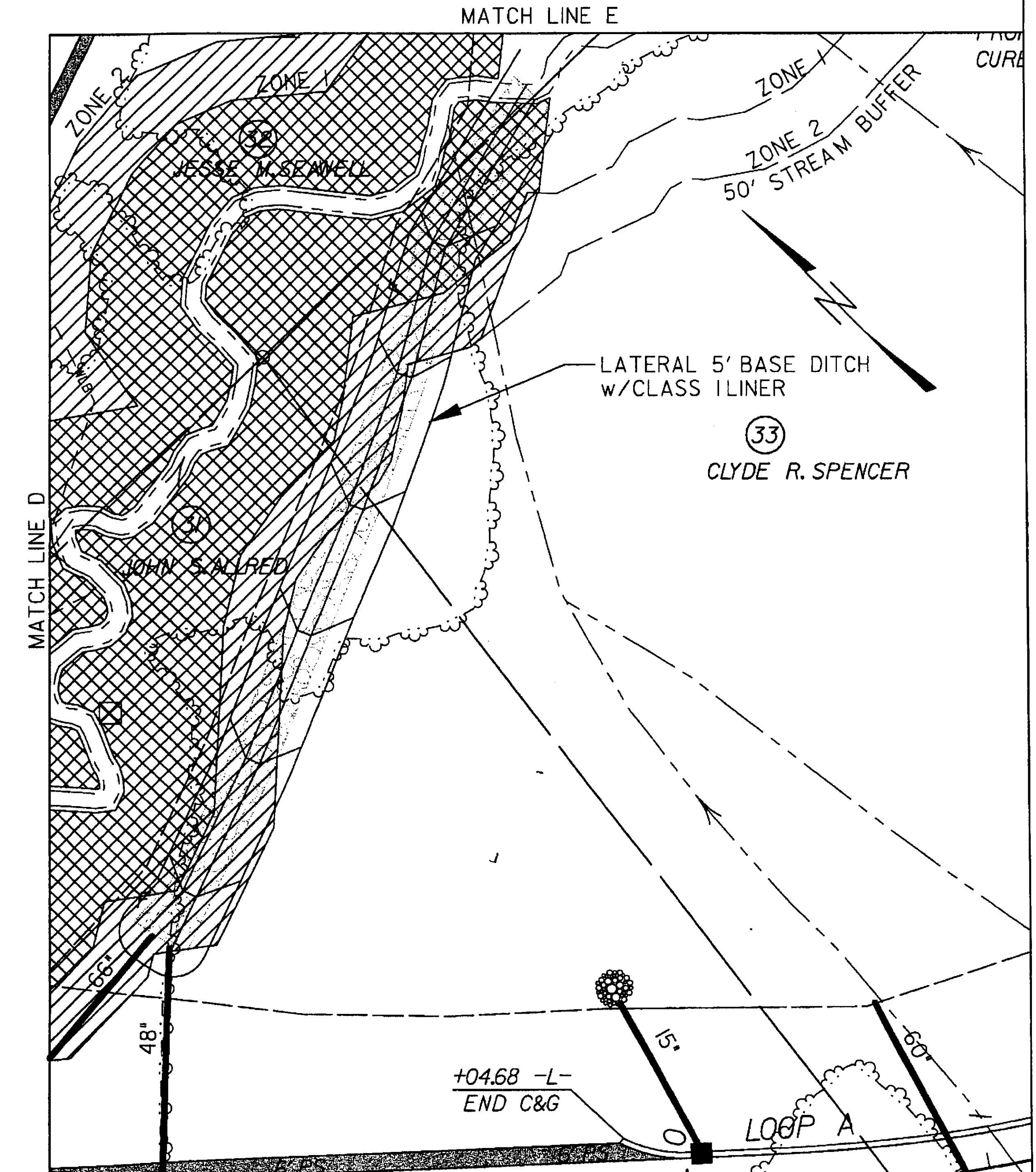
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 21 **OF** 26 / / **2006**



PLAN VIEW SITE 6

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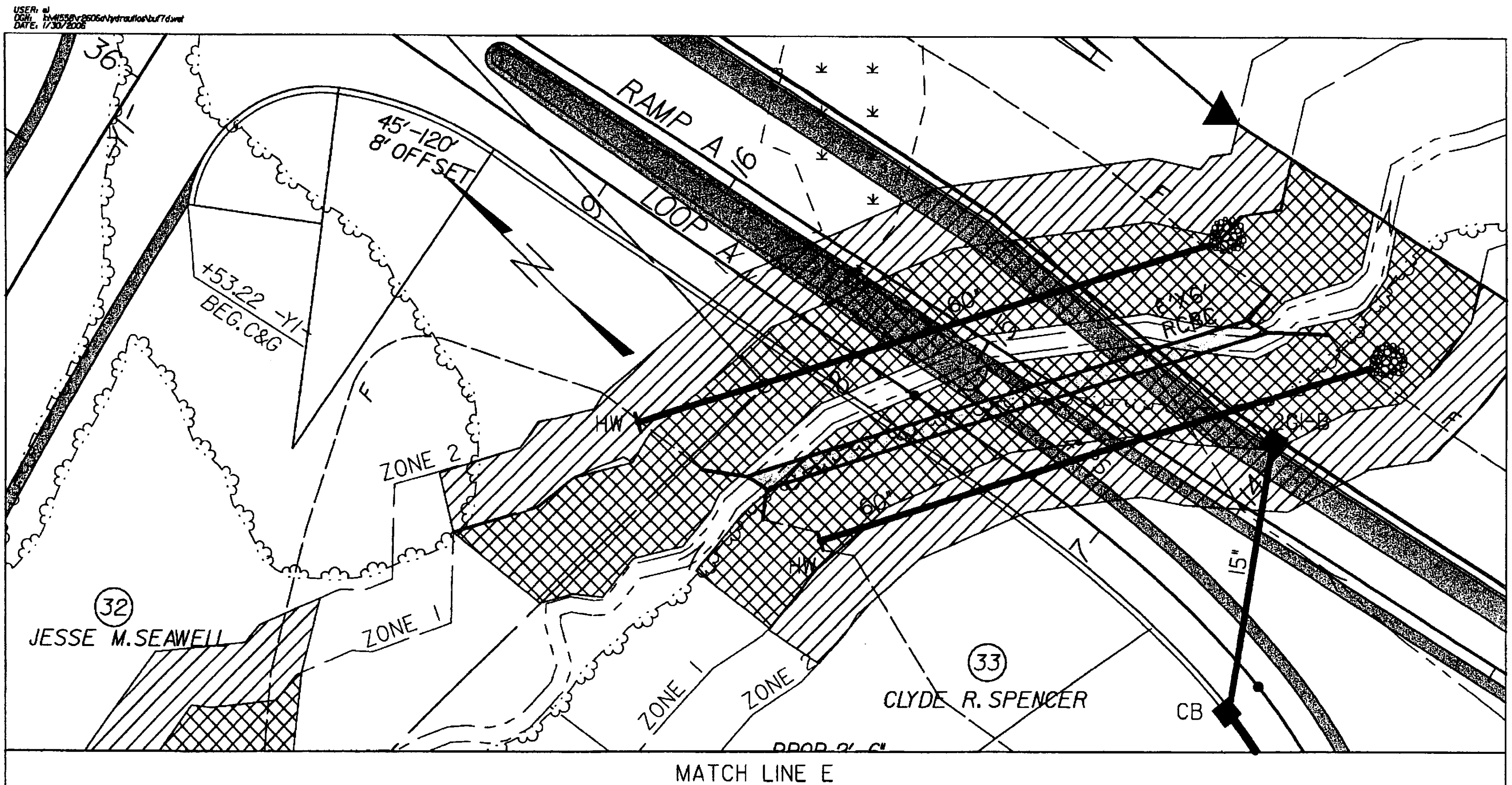
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 22 **OF** 26 / / **2006**



PLAN VIEW
SITE 6

0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 23 **OF** 28 / /**2006**

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (s.f.)	ZONE 2 (s.f.)	TOTAL (s.f.)	ZONE 1 (s.f.)	ZONE 2 (s.f.)	TOTAL (s.f.)	ZONE 1 (s.f.)	ZONE 2 (s.f.)
1	Bridge	-L- Sta 21+85	X		11935	9116	21051			0		
		TO 23+45					0			0		
							0			0		
2	1-12'x8' RCBC	-L- 45+99	X				0	29846	16473	46319		
	Note: 1250 sf (0.029ac) and 3560 sf (0.082 ac) of wetlands are within Zone1 and 2, respectively.						0			0		
							0			0		
3	1-8'x5' BOTTOMLESS STRUCTUR	-L- 63+06	X				0	55664	34704	90368		
	& 36" RCP						0			0		
4	1-36" RCP &	-L- 80+68	X				0	46952	28059	75011		
	1-42" RCP	TO 86+05					0			0		
5	30" RCP w/RISER	-L- 85+50	X				0	44530	21659	66189		
	IN PERM. A BASIN	TO 94+04					0			0		
							0			0		
							0			0		
6	1@54" RCP & 1@48" RCP	RAMP C 9+65	X				0	115059	76153	191212		
	66" RCP	-L- 106+90	X				0			0		
	1@6'x6' RCBC & 2@60" RCP	-RAMPA- 14+72	X				0			0		
							0			0		
	Note: 13723 sf (0.315 ac) and 3834 sf (0.088 ac) of wetlands are within Zone 1 and 2, respectively.						0			0		
TOTAL:					11935	9116	21051	292051	177048	469099	0	0

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

Jan-06
SHEET 24 OF 26

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	KEPLEY-FRANK HARDWOOD CO., INC.	975 CONRAD HILL MINE ROAD LEXINGTON, NC 27292
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16	BOBBY RALPH HILL	3638 HOOVER HILL ROAD TRINITY, NC 27370
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23	JAMES E. HARRELSON	5557 GODNICK LANE ARCHDALE, NC 27263
24	JANIE D. McCRACKEN	5547 GODNICK LANE ARCHDALE, NC 27263
29	DONALD W. BOWMAN	323 KENDALL MILL ROAD THOMASVILLE, NC 27360
30	ALDENE BOWMAN	ROUTE 2, BOX 264 TRINITY, NC 27370

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 25 OF ~~2~~ 26 1/06

USER: rremy
DGN: k:\41558\r2606a\Hydraulics\OWNER.WET
DATE: 07/14/2005

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
31	JOHN S. ALLRED	ROUTE 3, BOX 393 HIGH POINT, NC 27263
32	JESSE M. SEAWELL	ROUTE 3, BOX 392 HIGH POINT, NC 27263
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35	L. G. BOWMAN, JR.	5590 CEDAR SQUARE ROAD ARCHDALE, NC 27263-8222
36	EARLY W. BOWMAN	215 LINDA DRIVE ARCHDALE, NC 27263-3313

USER: rremy
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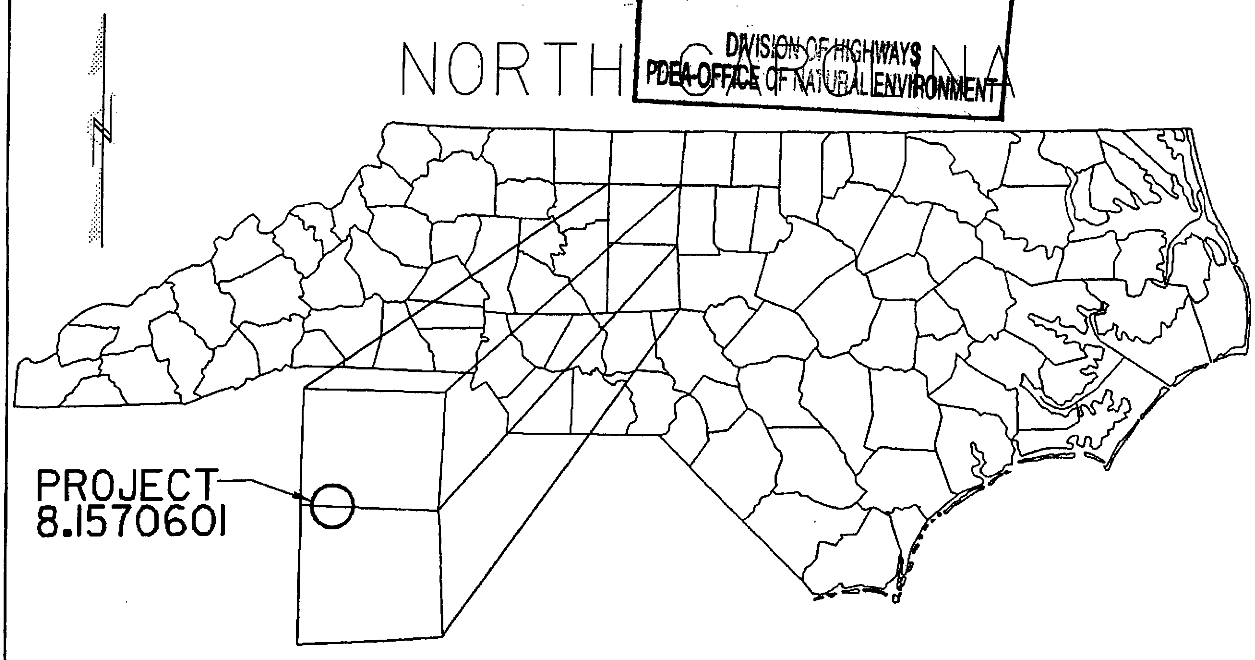
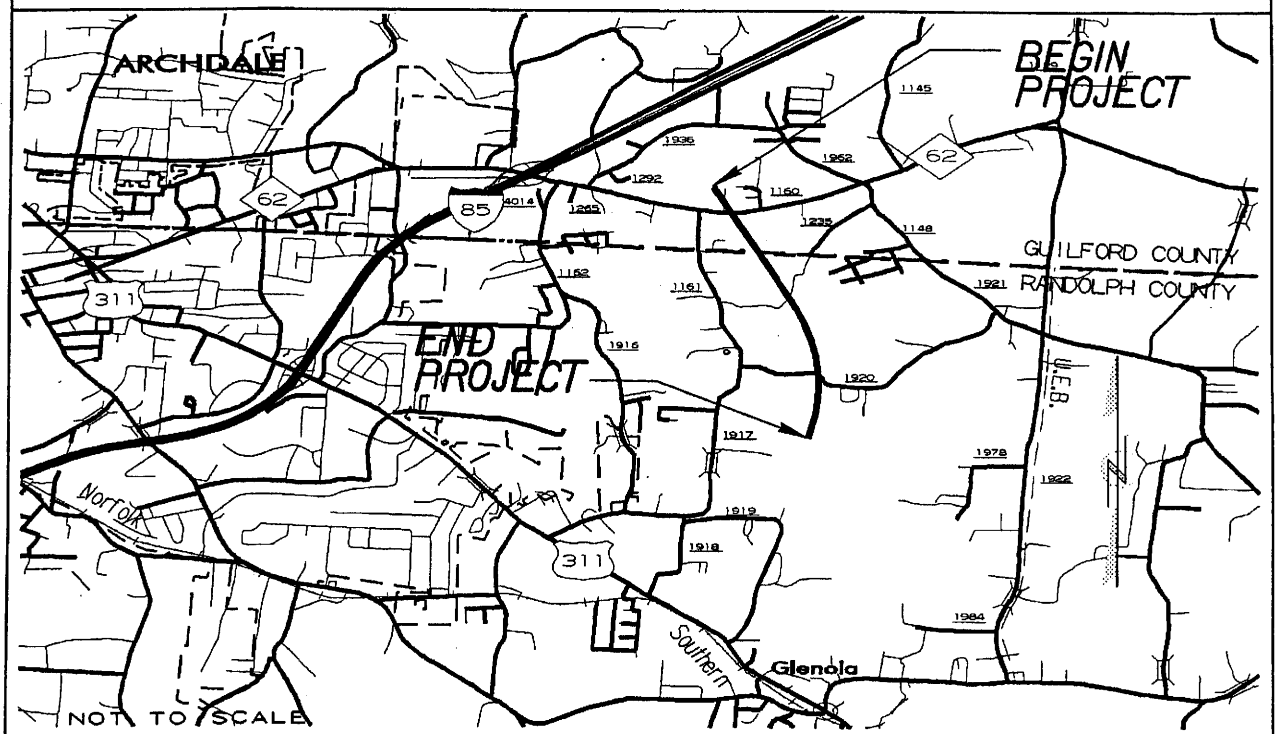
NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 26 OF 26 1-06





WETLAND AND STREAM IMPACTS VICINITY MAPS

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

SHEET 1 OF 17 9/27/04

WETLAND LEGEND

- WLB — WETLAND BOUNDARY
- WLB / WLB — WETLAND
- F / F — DENOTES FILL IN WETLAND
- S / S — DENOTES FILL IN SURFACE WATER
- P / P — DENOTES FILL IN SURFACE WATER (POND)
- T / T — DENOTES TEMPORARY FILL IN WETLAND
- E / E — DENOTES EXCAVATION IN WETLAND
- TS / TS — DENOTES TEMPORARY FILL IN SURFACE WATER
- DENOTES MECHANIZED CLEARING
- FLOW DIRECTION
- TB — TOP OF BANK
- WE — EDGE OF WATER
- C — PROP. LIMIT OF CUT
- F — PROP. LIMIT OF FILL
- PROP. RIGHT OF WAY
- NG — NATURAL GROUND
- PL — PROPERTY LINE
- TDE — TEMP. DRAINAGE EASEMENT
- PDE — PERMANENT DRAINAGE EASEMENT
- EAB — EXIST. ENDANGERED ANIMAL BOUNDARY
- EPB — EXIST. ENDANGERED PLANT BOUNDARY
- WATER SURFACE
- LIVE STAKES
- BOULDER
- CORE FIBER ROLLS

- PROPOSED BRIDGE
- PROPOSED BOX CULVERT
- PROPOSED PIPE CULVERT
  - 12"-48" PIPES
  - 54" PIPES & ABOVE
- (DASHED LINES DENOTE EXISTNG STRUCTURES)
- SINGLE TREE
- WOODS LINE
- DRAINAGE INLET
- ROOTWAD
- RIP RAP
- 5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE
- PREFORMED SCOUR HOLE
- LEVEL SPREADER (LS)
- DITCH / GRASS SWALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

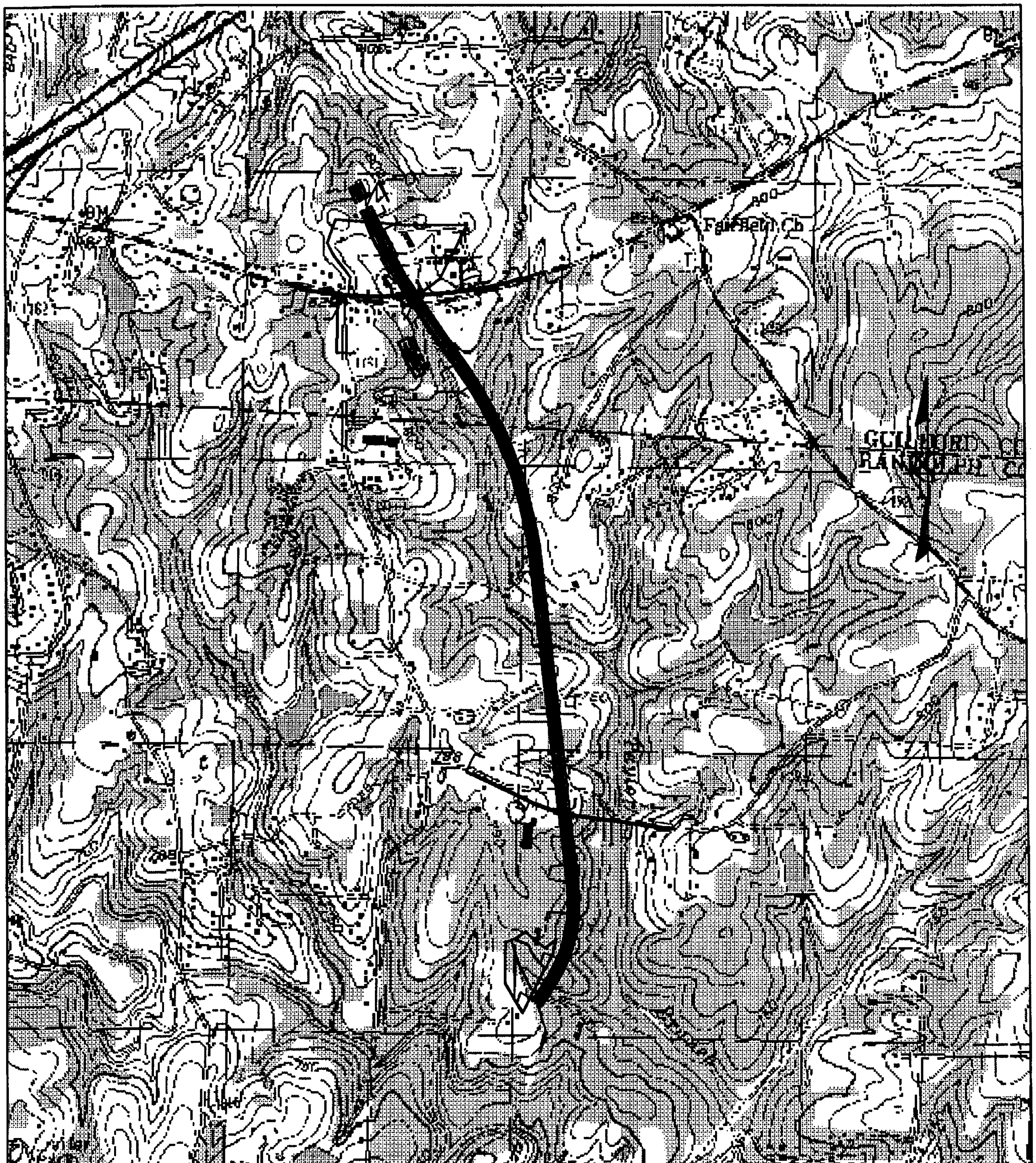
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 2 OF 17 9/27/04



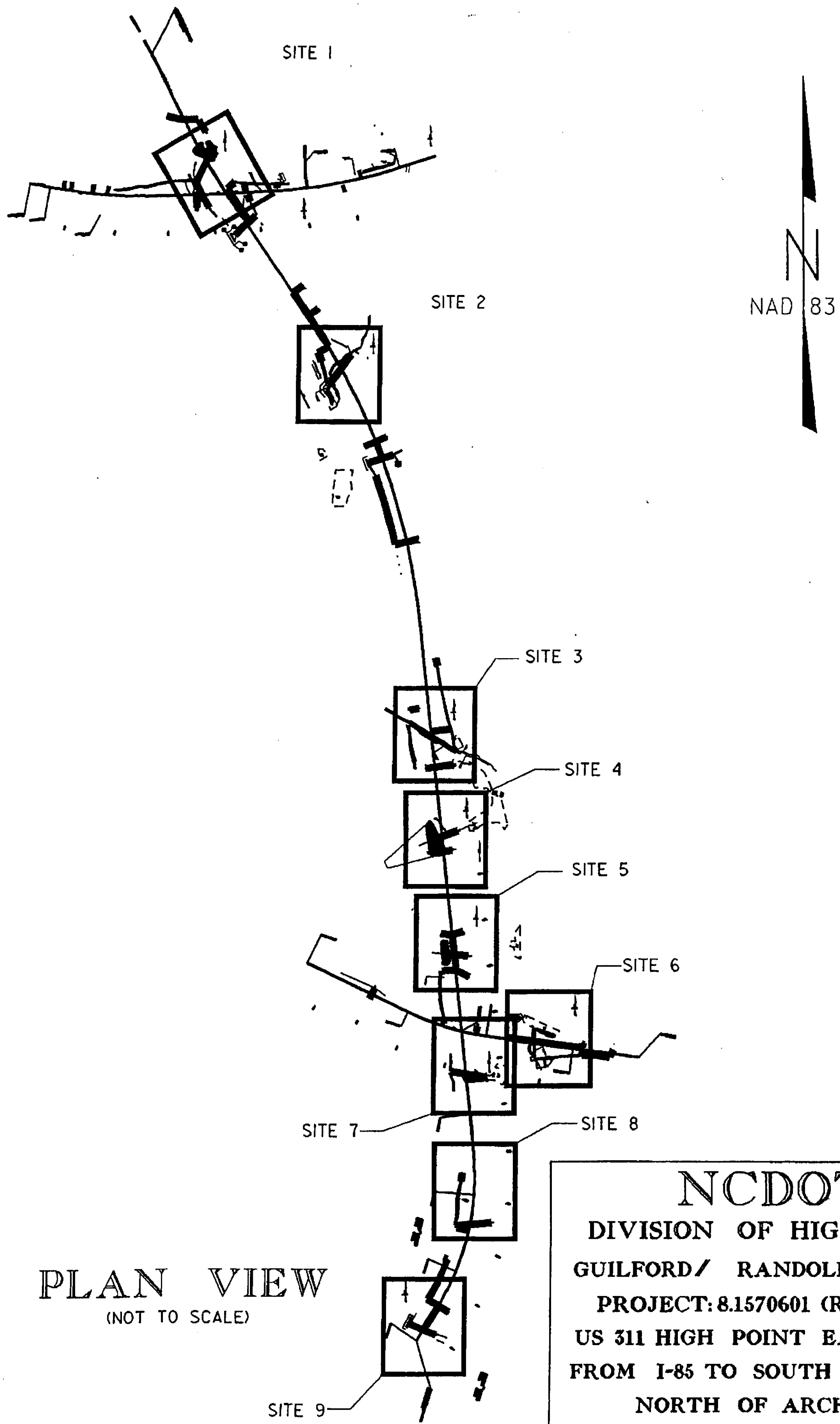
LOCATION MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD / RANDOLPH COUNTIES

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

SHEET 3 OF 12 / 31 / 02



PLAN VIEW

(NOT TO SCALE)

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

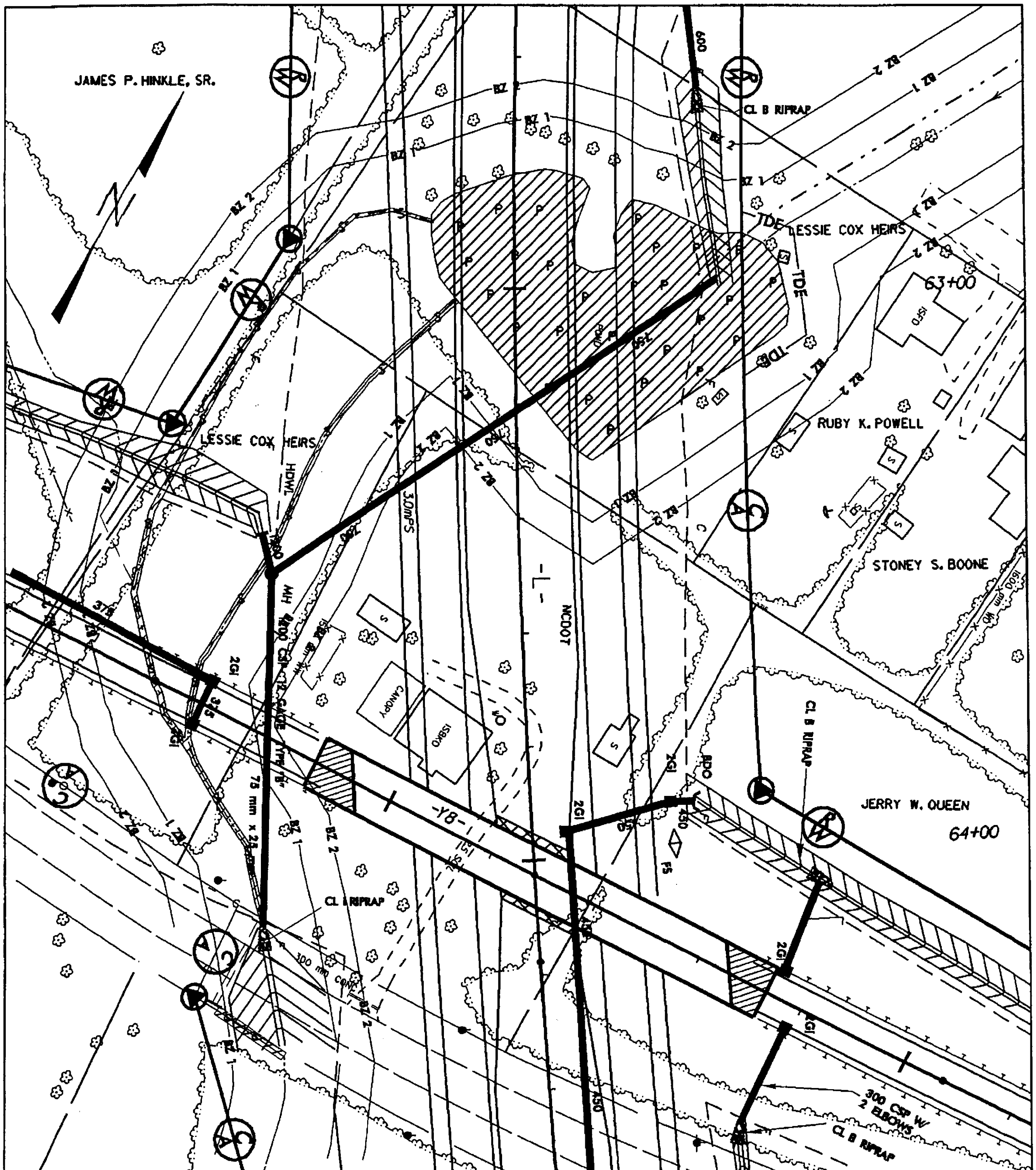
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 4 OF 17 **9/27/04**



PLAN VIEW
SITE 1

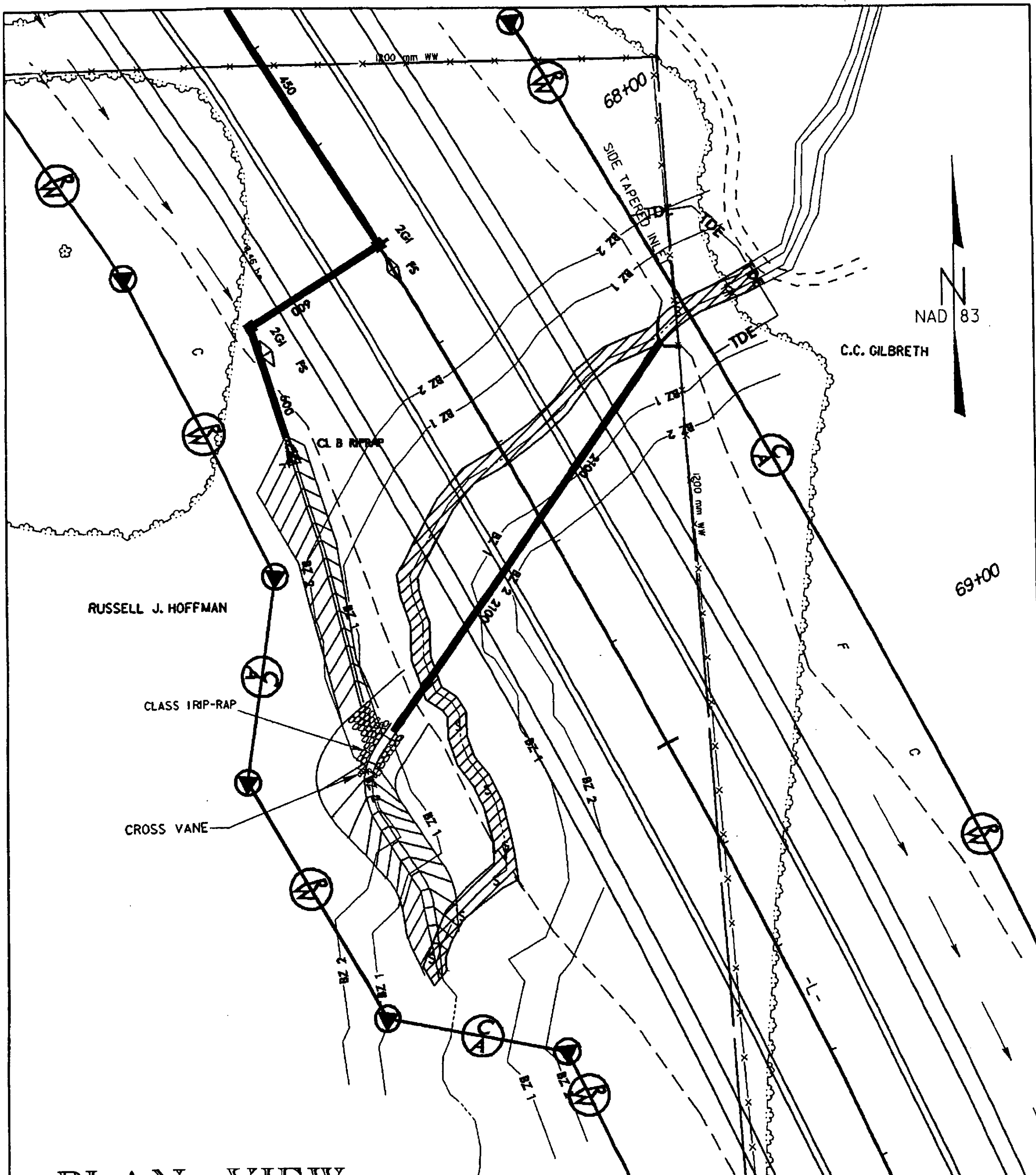
DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

10m 20m
HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

SHEET 5 OF 17 11/12/04

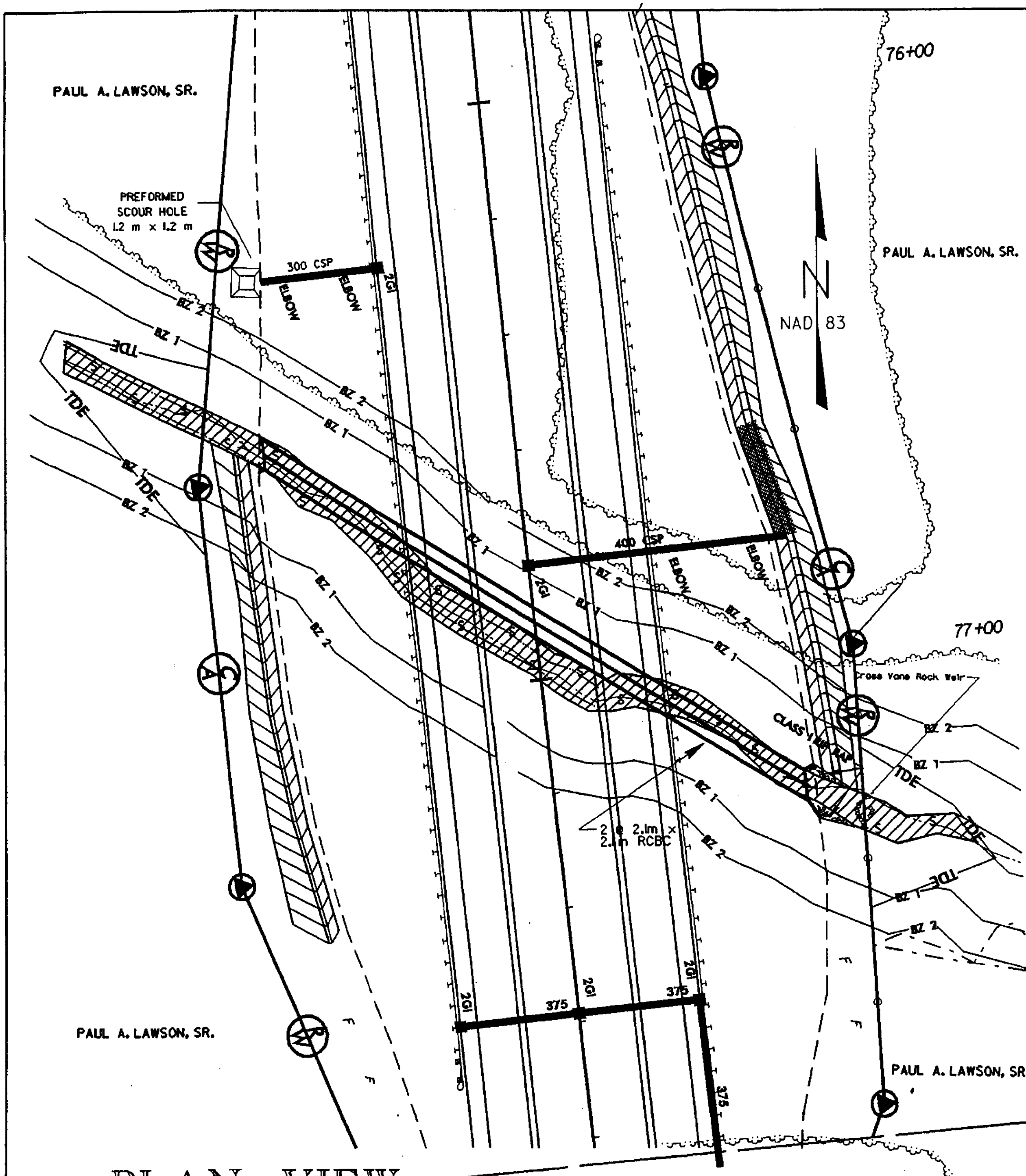


PLAN VIEW
SITE 2

DENOTES FILL IN SURFACE WATER

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 6 OF 17 9/27/04

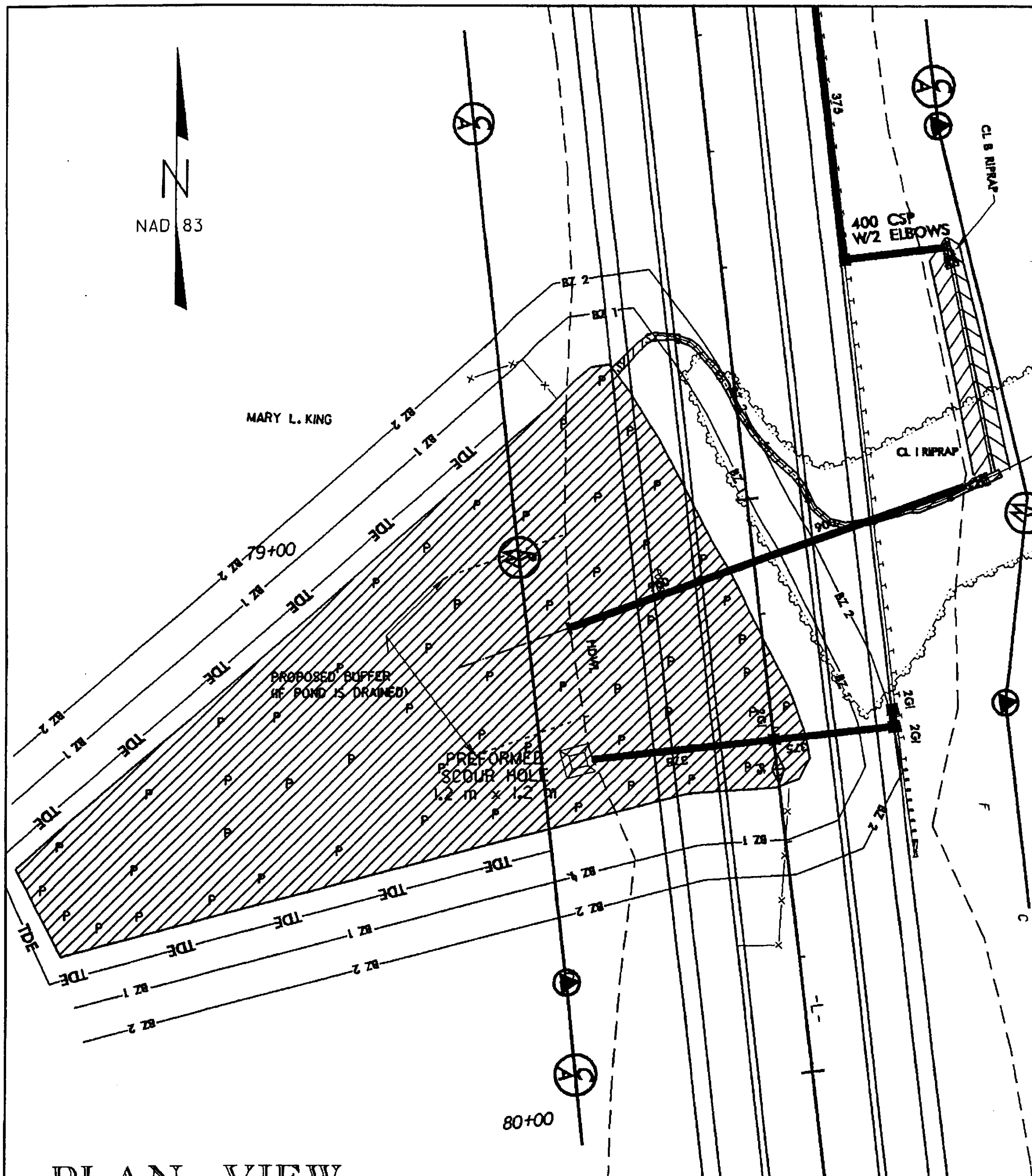


PLAN VIEW
SITE 3

DENOTES FILL IN SURFACE WATER

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 7 OF 17 9/27/04



PLAN VIEW
SITE 4

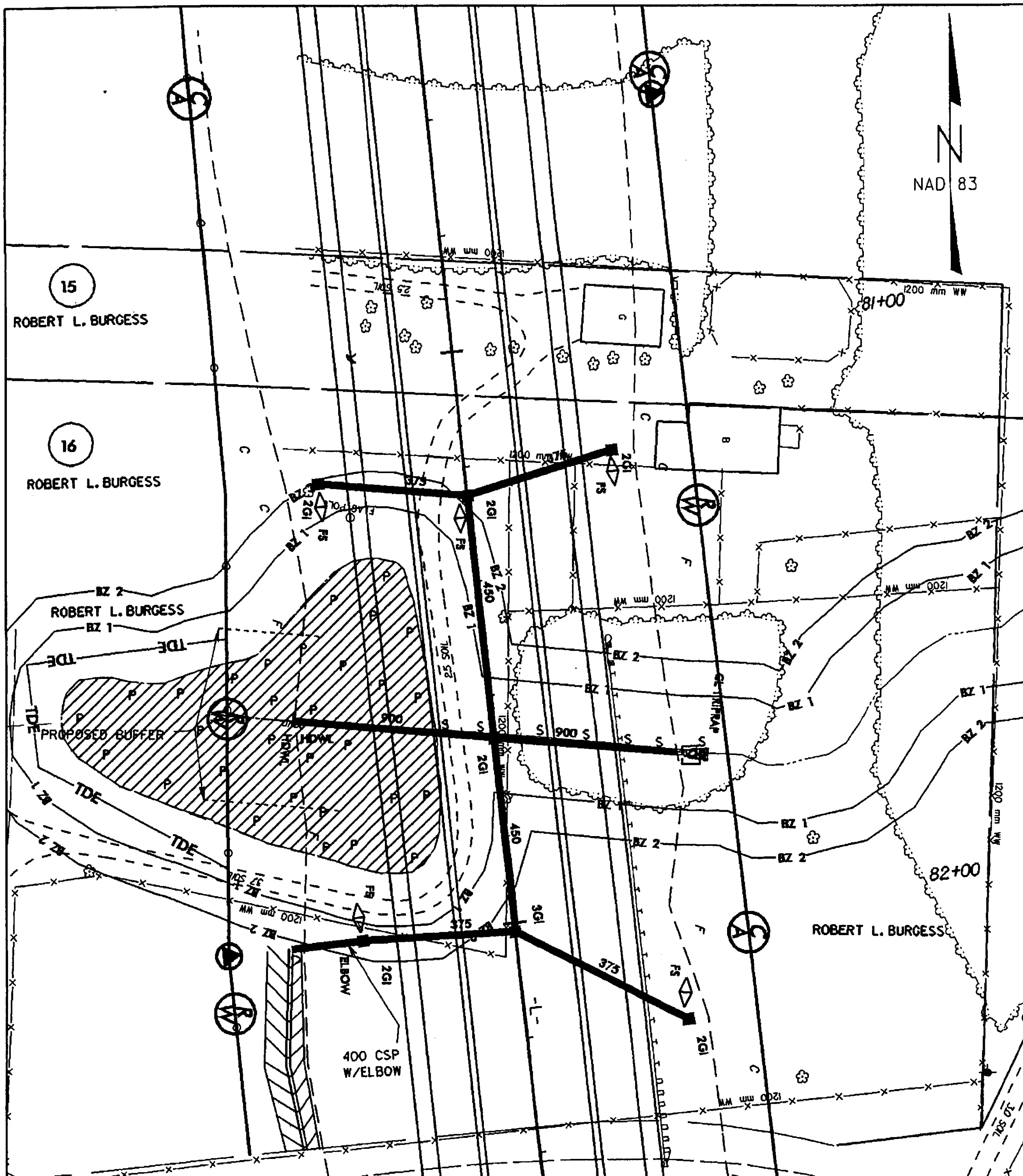
S S — DENOTES FILL IN SURFACE WATER

P P — DENOTES FILL IN SURFACE WATER (POND)

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

SHEET 8 OF 17 9/27/04



PLAN VIEW
SITE 5

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

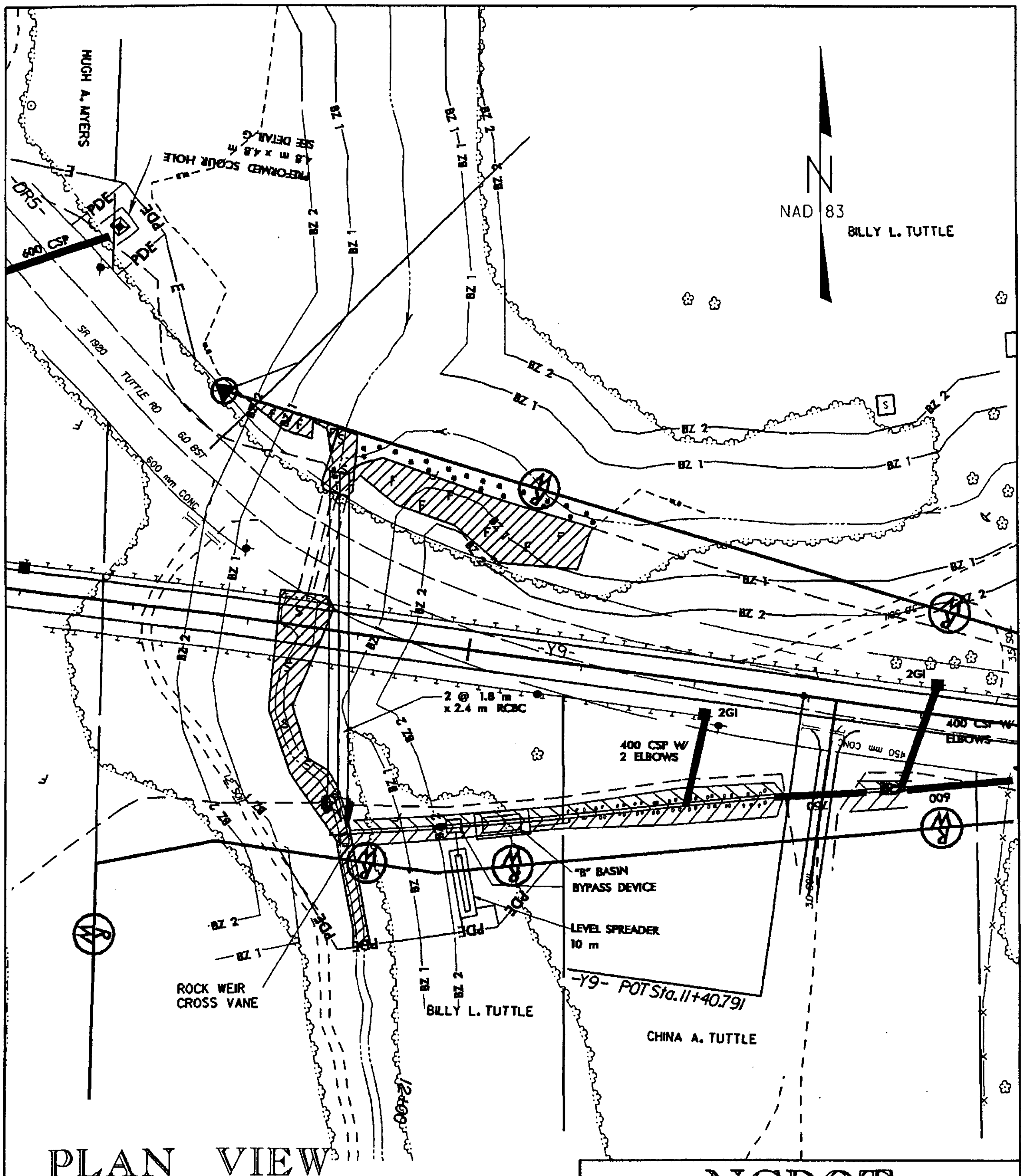
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 9 OF 17 1/10/06



PLAN VIEW
SITE 6

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

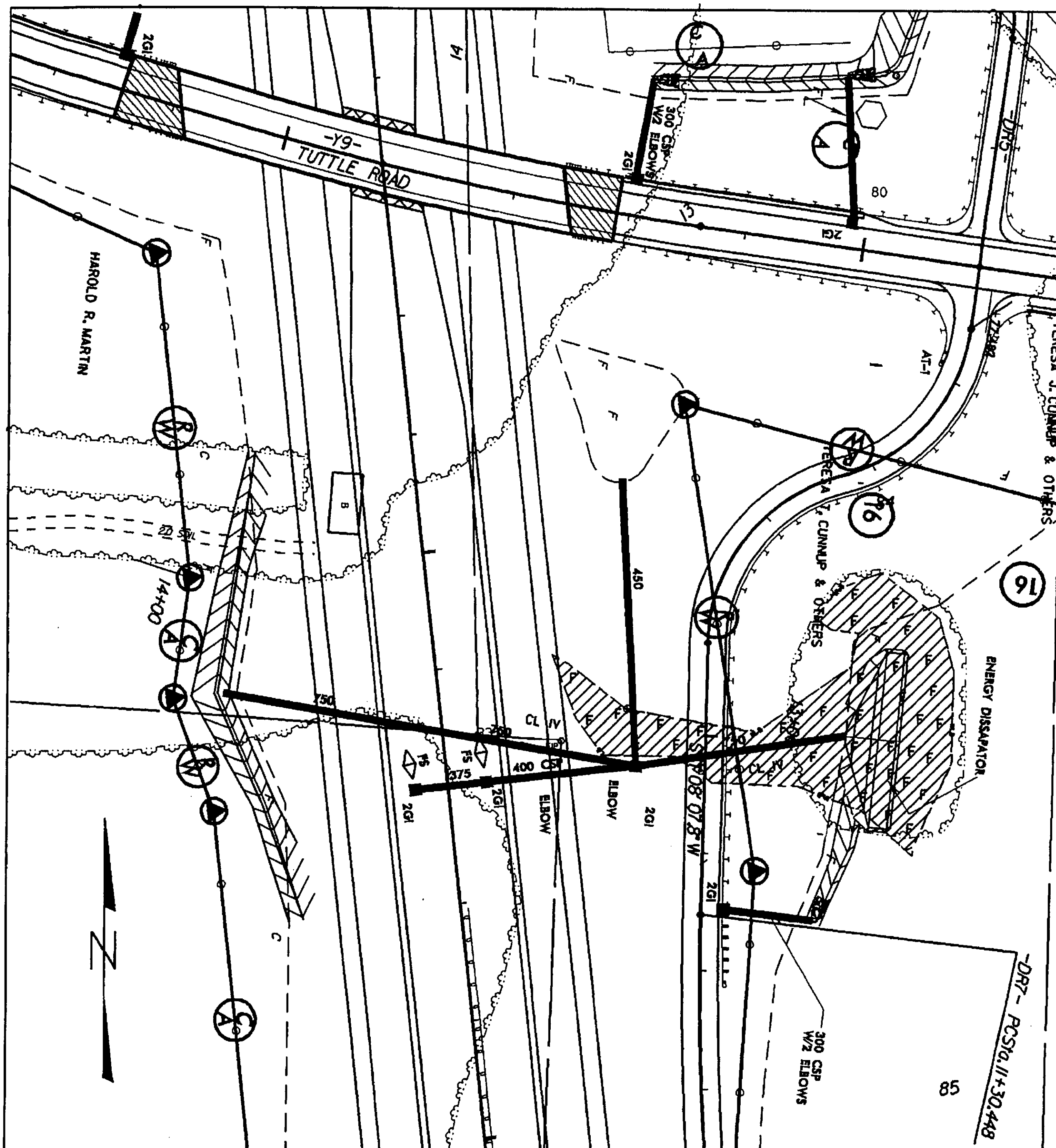
DENOTES MECHANIZED CLEARING

10m 20m

HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

SHEET 10 OF 17 9/27/04



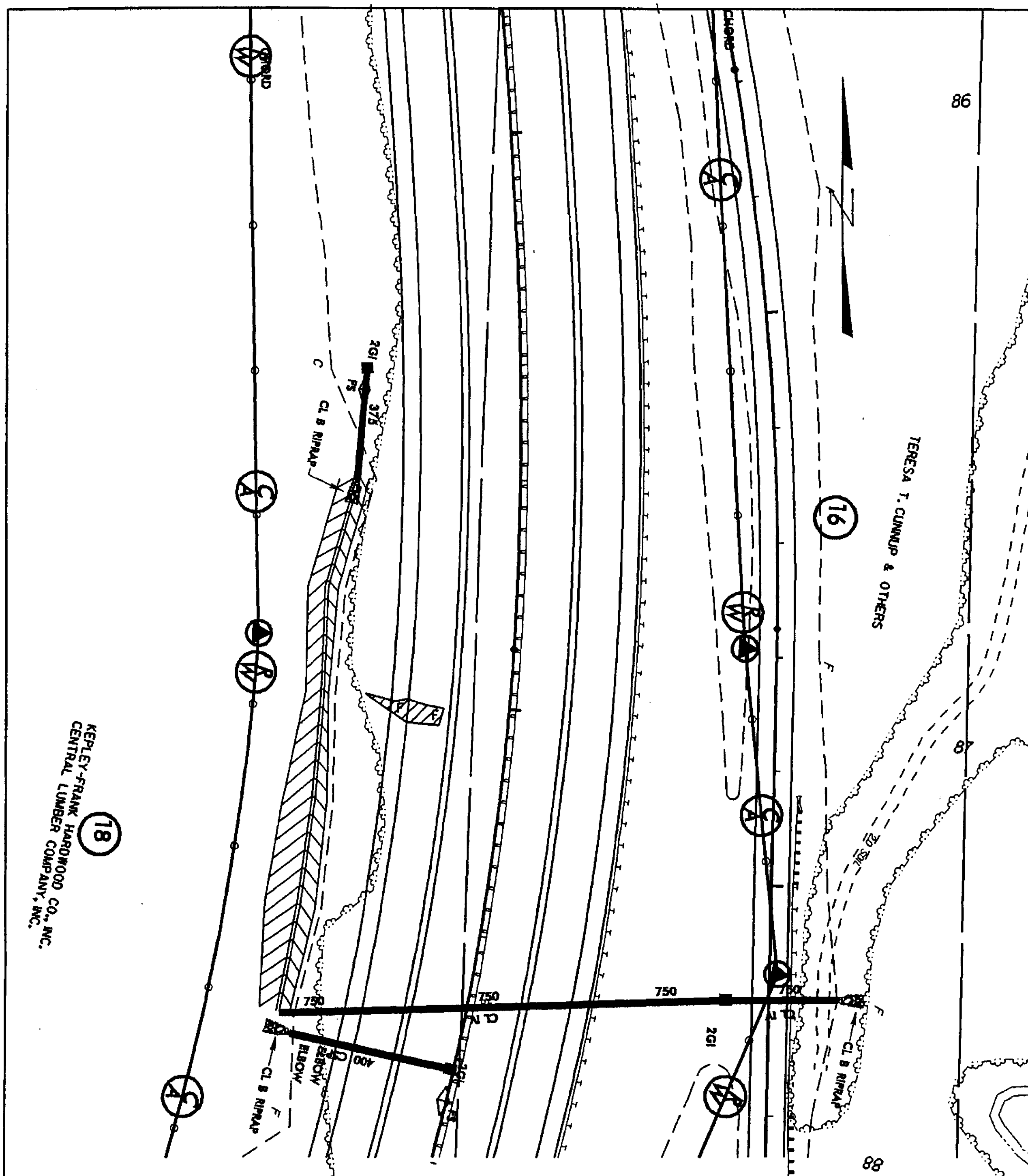
PLAN VIEW
SITE 7

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 11 OF 17 11/9/04



PLAN VIEW
SITE 8

DENOTES FILL IN WETLAND

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

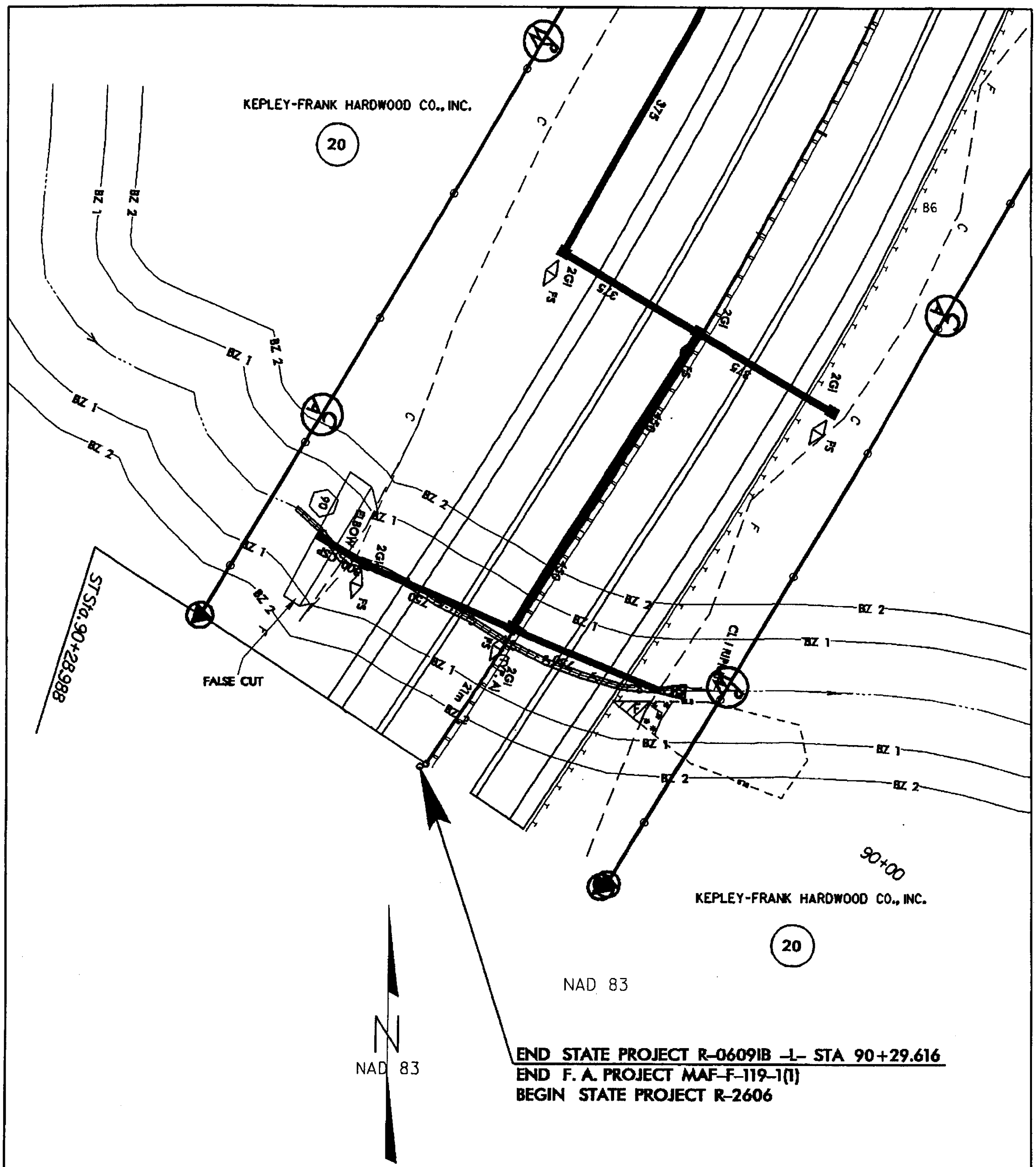
US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 12 OF 17 **11/12/04**

NAD 83



PLAN VIEW
SITE 9

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 13 OF 17 1/10/06

PROPERTY OWNERS
NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
	Lessie Cox	5905 Hyde Park Drive High Point, N.C. 27263
	C. C. Gilbreth	Rt. 4 Box 252 High Point, N.C. 27260
	Margaret Haney	1625 NC 62 West High Point, N.C. 27263
	James Hinkle, Sr.	1515 Sheldon Ct High Point, N.C. 27263
	Russell J. Hoffman	P. O. Box 4250 Archdale, N.C. 27263
	Robert Burgess	P.O. Box 405 Dover Plains, NY 12522
	Kepley-Frank Hardwood Co	975 Conrad Mine Rd Lexington, N.C. 27292
	Mary King	6891 Suits Road Arcdale, N.C. 27263
	Paul Lawson, Sr.	7082 Suits Road Arcdale, N.C. 27263
	Harold Tuttle	921 West Sixth Street Siler City, N.C. 27344

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 14 OF 17 9/27/04

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
	Billy Tuttle	3180 Tuttle Road Archdale, N.C. 27263
	China Tuttle	3193 Tuttle Road Archale, N.C. 27263

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 15 OF 17 9/27/04

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Fill In Wetlands (ha)	WETLAND IMPACTS: Temp. Fill In Wetlands (ha)	WETLAND IMPACTS: Excavation In Wetlands (ha)	WETLAND IMPACTS: Mechanized Clearing (Method III) (ha)	SURFACE WATER IMPACTS: Fill In SW (Natural) (ha)	SURFACE WATER IMPACTS: Fill In SW (Pond) (ha)	SURFACE WATER IMPACTS: Temp. Fill In SW (ha)	SURFACE WATER IMPACTS: Existing Channel Impacted (m)	SURFACE WATER IMPACTS: Natural Stream Design (m)
1	63+20 -L- TO 64+00 -L-	750 RCP					0.022	0.18		259	
2	68+55 -L-	2100 RCP					0.055			160	
3	76+90 -L-	2@ 2.1m x 2.1m RCBC					0.09			179	
4	79+10 -L-	900 RCP					0.009	0.64		86	
5	81+67	900 RCP					0.005	0.22		46	
6	12+23 -Y9-	2@ 1.8m x 2.4m RCBC	0.037			0.02	0.038			78	
7	84+28 -L-	750 RCP	0.12								
8	87+00 -L-	ROADWAY FILL	0.003								
9	90+00 -L-	750 RCP	0.001			0.002	0.08			71	
TOTALS:			0.161	0	0	0.022	0.299	1.04	0	879	0

NCDOT

DIVISION OF HIGHWAYS
GUILFORD/RANDOLPH COUNTY
PROJECT 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

SHEET 16 OF 17 11/22/2004

Form Revised 3/22/01

WETLAND PERMIT IMPACT SUMMARY

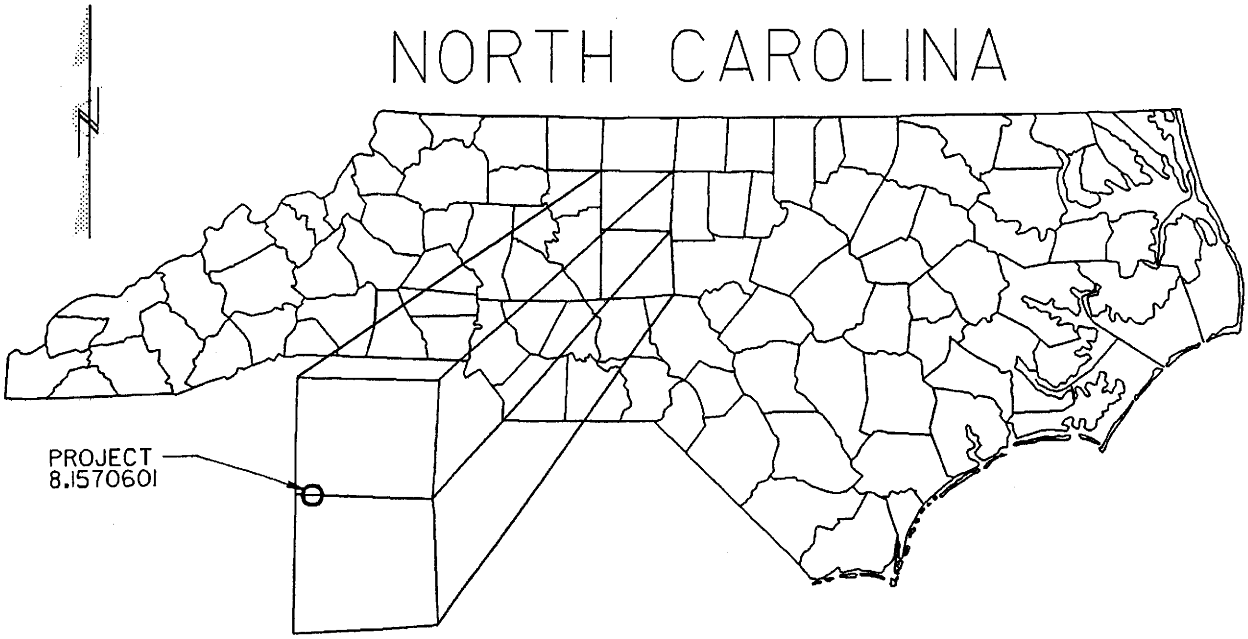
			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	63+20 -L- TO 64+00 -L-	30" RCP					0.054	0.445		850	
2	68+55 -L-	84" RCP					0.136			525	
3	76+90 -L-	2@ 7 ft x 7 ft RCBC					0.222			587	
4	79+10 -L-	36" RCP					0.022	1.581		282	
5	81+67	36" RCP					0.012	0.543		151	
6	12+23 -Y9-	2@ 6 ft x 8 ft RCBC	0.091			0.049	0.094			256	
7	84+28 -L-	30" RCP	0.296								
8	87+00 -L-	ROADWAY FILL	0.007								
9	90+00 -L-	30" RCP	0.002			0.005	0.198			233	
TOTALS:			0.398	0	0	0.054	0.738	2.569	0	2884	0

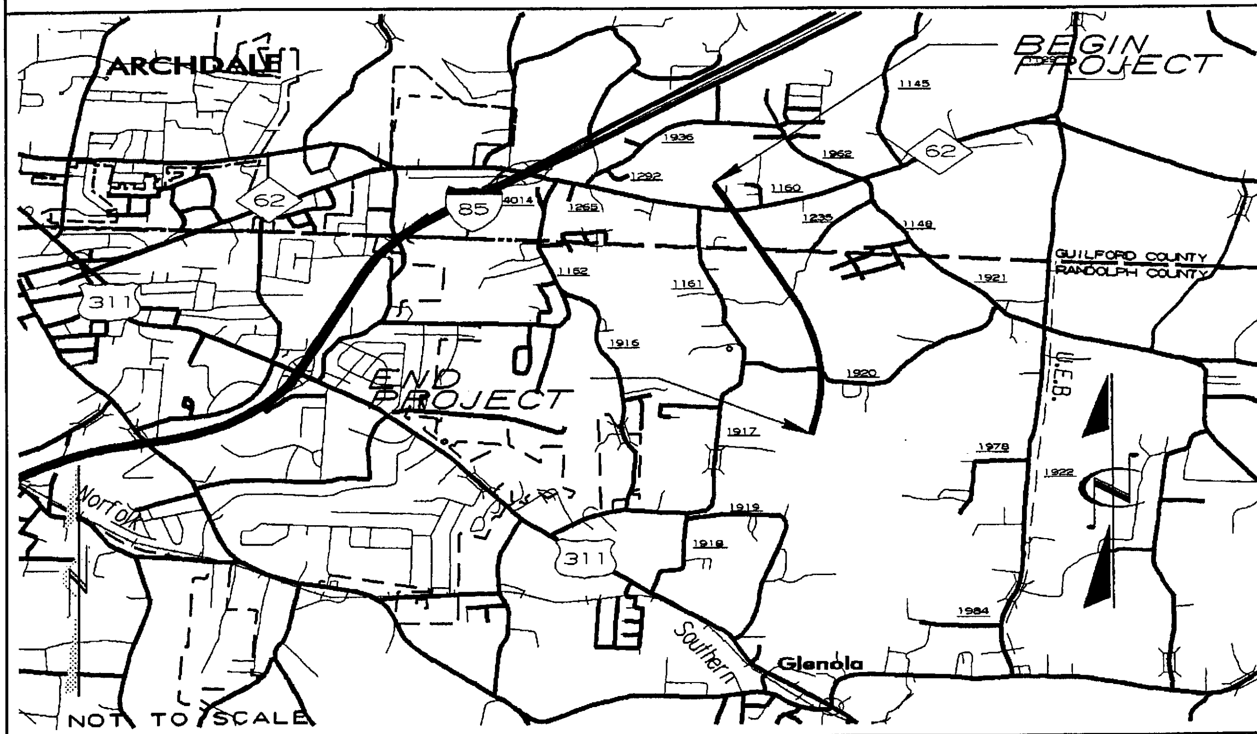
NCDOT

DIVISION OF HIGHWAYS
GUILFORD/RANDOLPH COUNTY
PROJECT 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

 1/25/2005

Form Revised 3/22/01





BUFFER VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 1 OF ~~13~~ 14 10/15/03

BUFFER LEGEND

WLB — WETLAND BOUNDARY

WETLAND

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

— BZ — RIPARIAN BUFFER ZONE

— BZ1 — RIPARIAN BUFFER ZONE 1
30 ft (9.2m)

— BZ2 — RIPARIAN BUFFER ZONE 2
20 ft (6.1m)

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

— NG — NATURAL GROUND

PL — PROPERTY LINE

— TDE — TEMP. DRAINAGE EASEMENT

— PDE — PERMANENT DRAINAGE EASEMENT

— EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

— EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

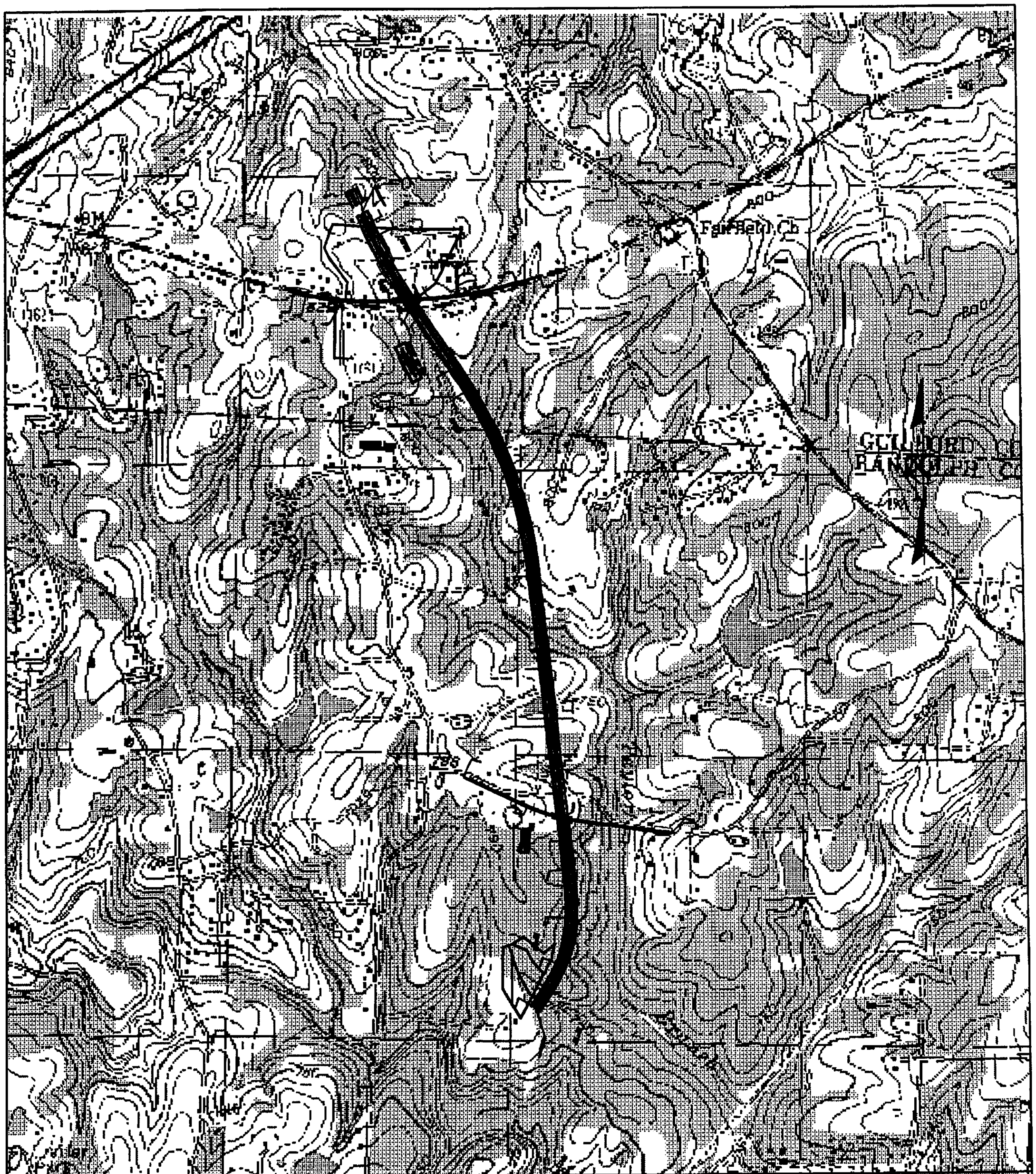
5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 1 OF 14 10/15/03



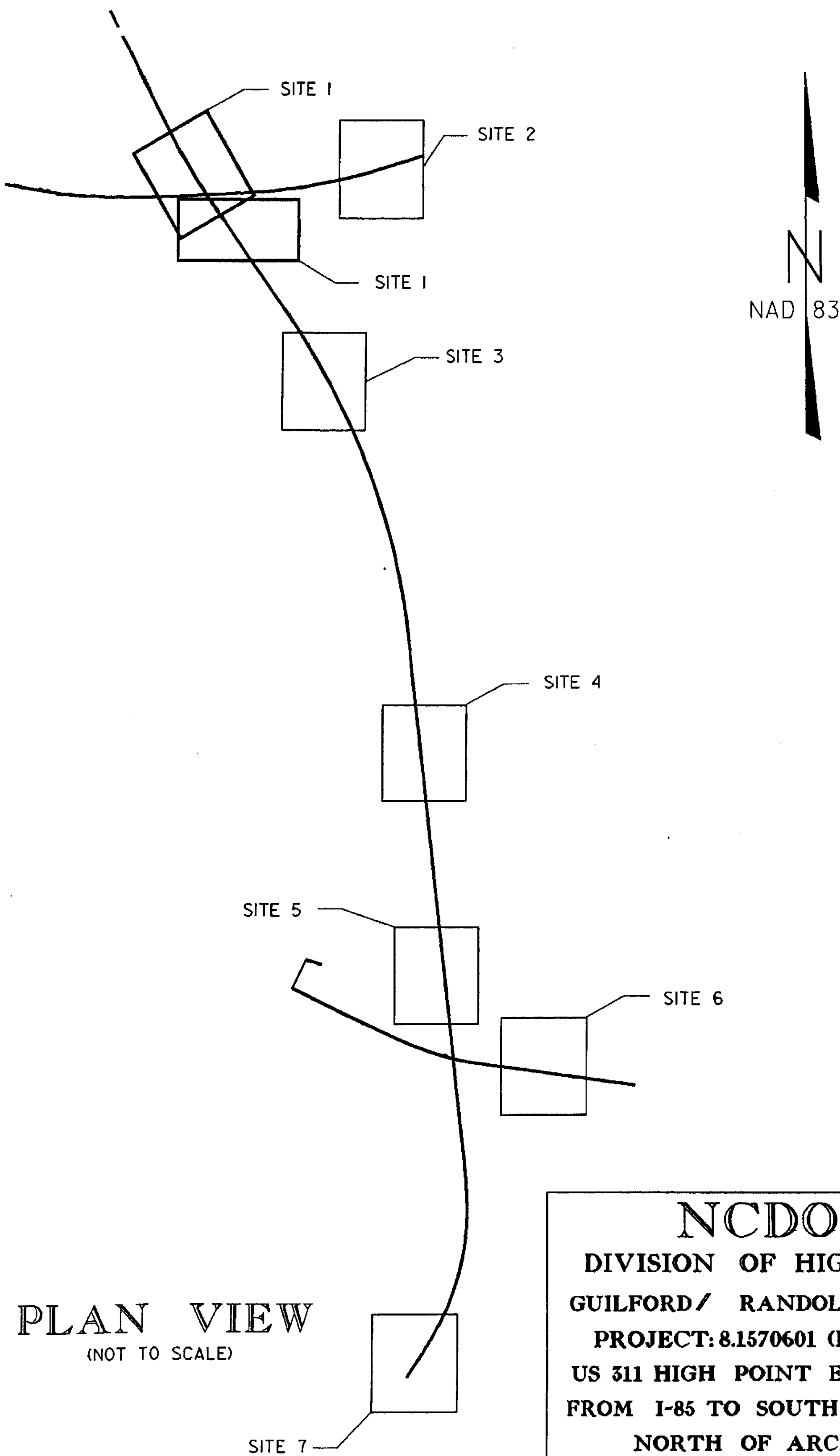
LOCATION MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD/RANDOLPH COUNTIES

PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

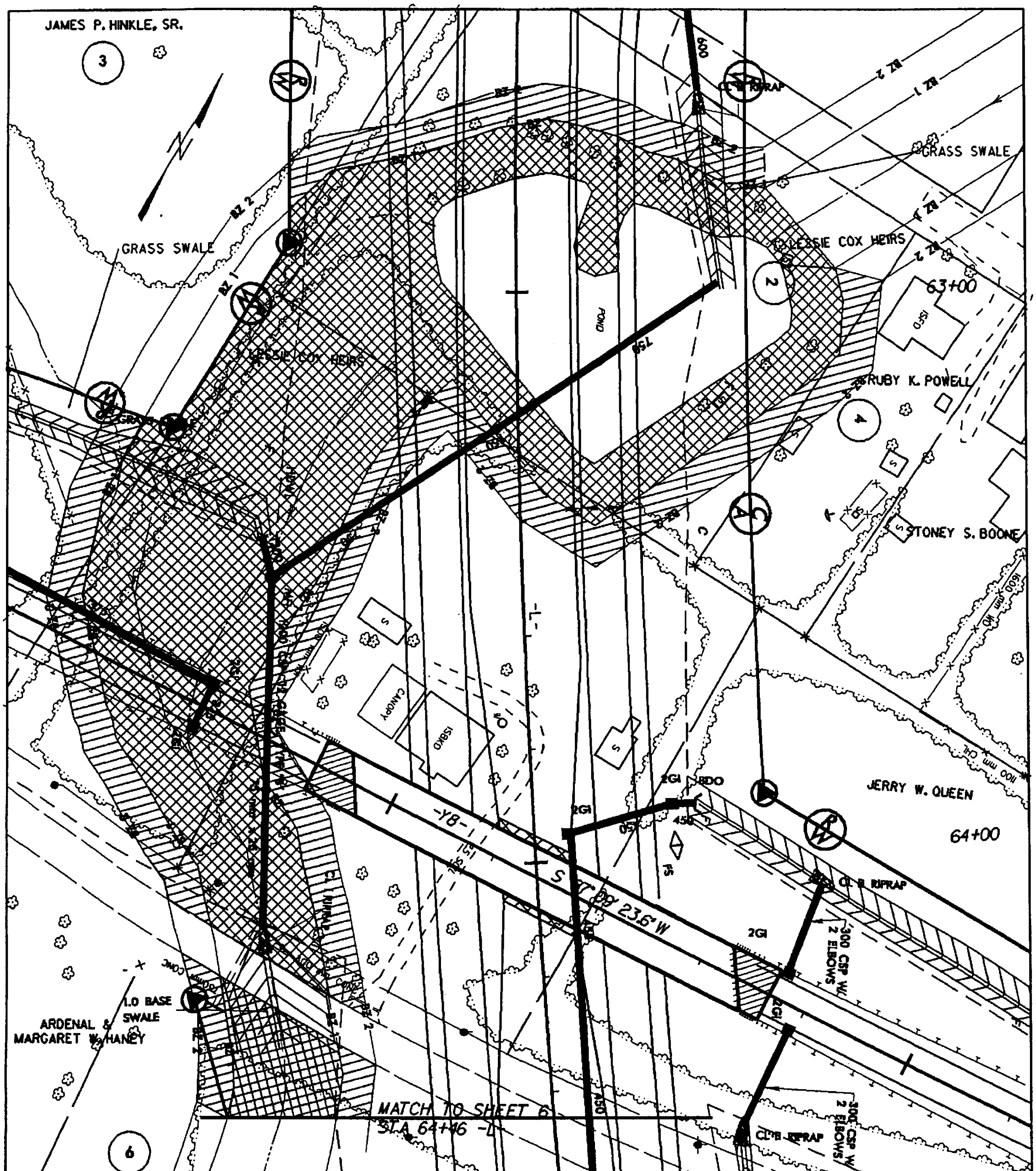
SHEET 3 OF 14 12/31/02



PLAN VIEW
(NOT TO SCALE)

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE

SHEET 4 OF ~~13~~ 14 10/15/03



PLAN VIEW SITE 1

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

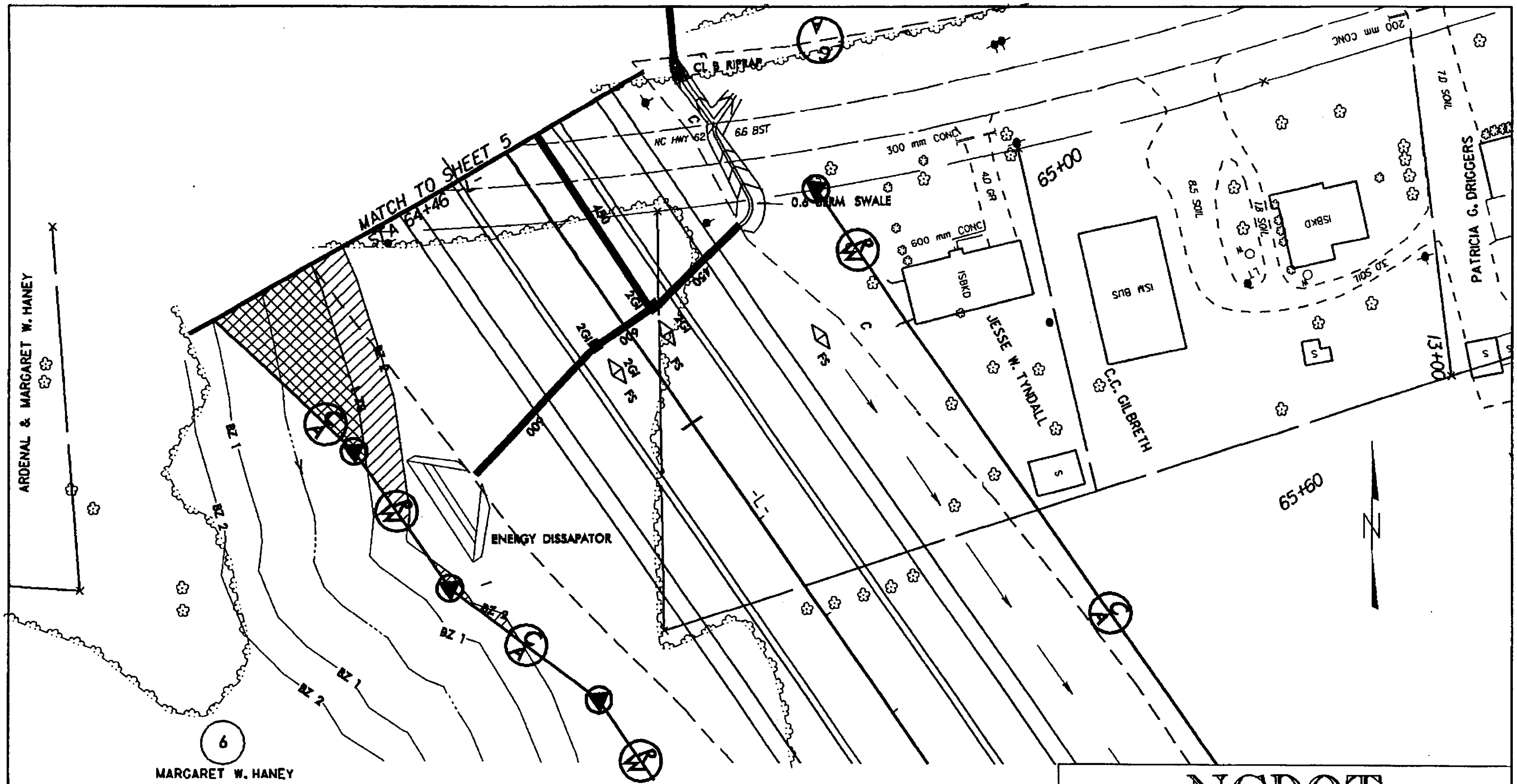
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 5 OF ~~17~~ 14 7/8/2005



PLAN VIEW

SITE 1

MITIGABLE IMPACTS ZONE I

MITIGABLE IMPACTS ZONE 2

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

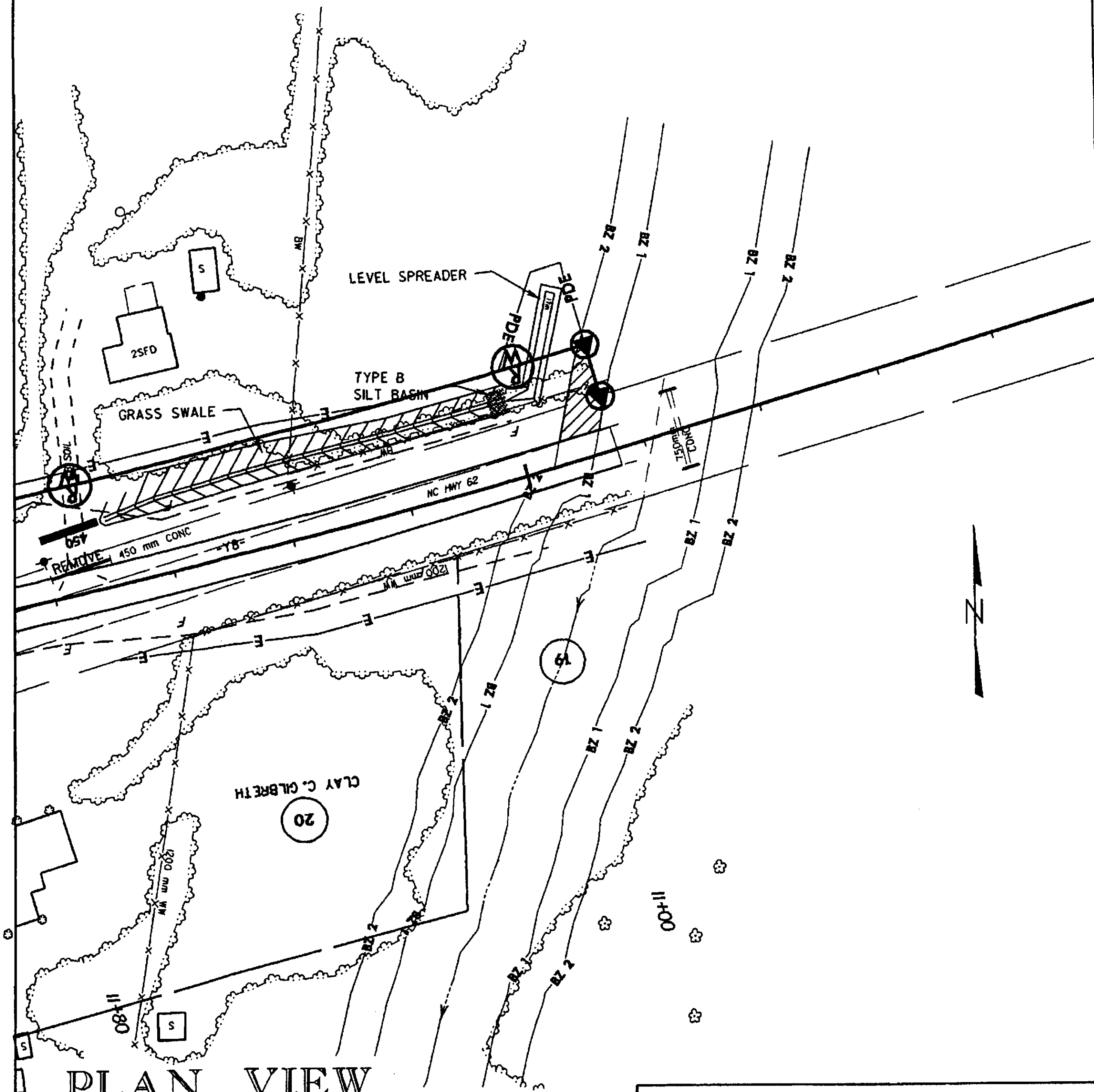
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 6 OF ~~9~~ 14 10/15/03



PLAN VIEW
SITE 2

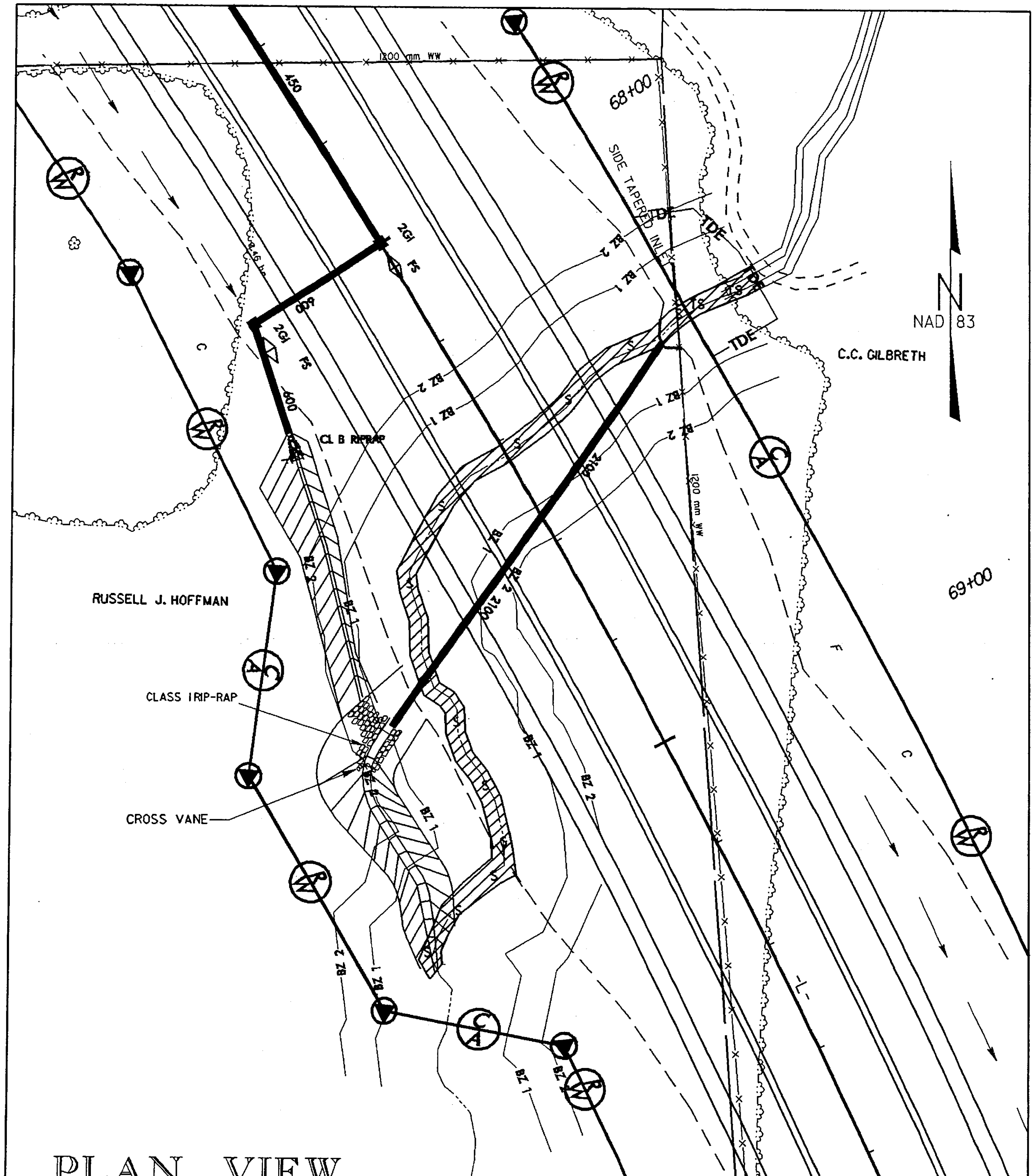
MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

10m 20m

HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 7 OF 14 10/15/03



PLAN VIEW
SITE 2

S S DENOTES FILL IN SURFACE WATER

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

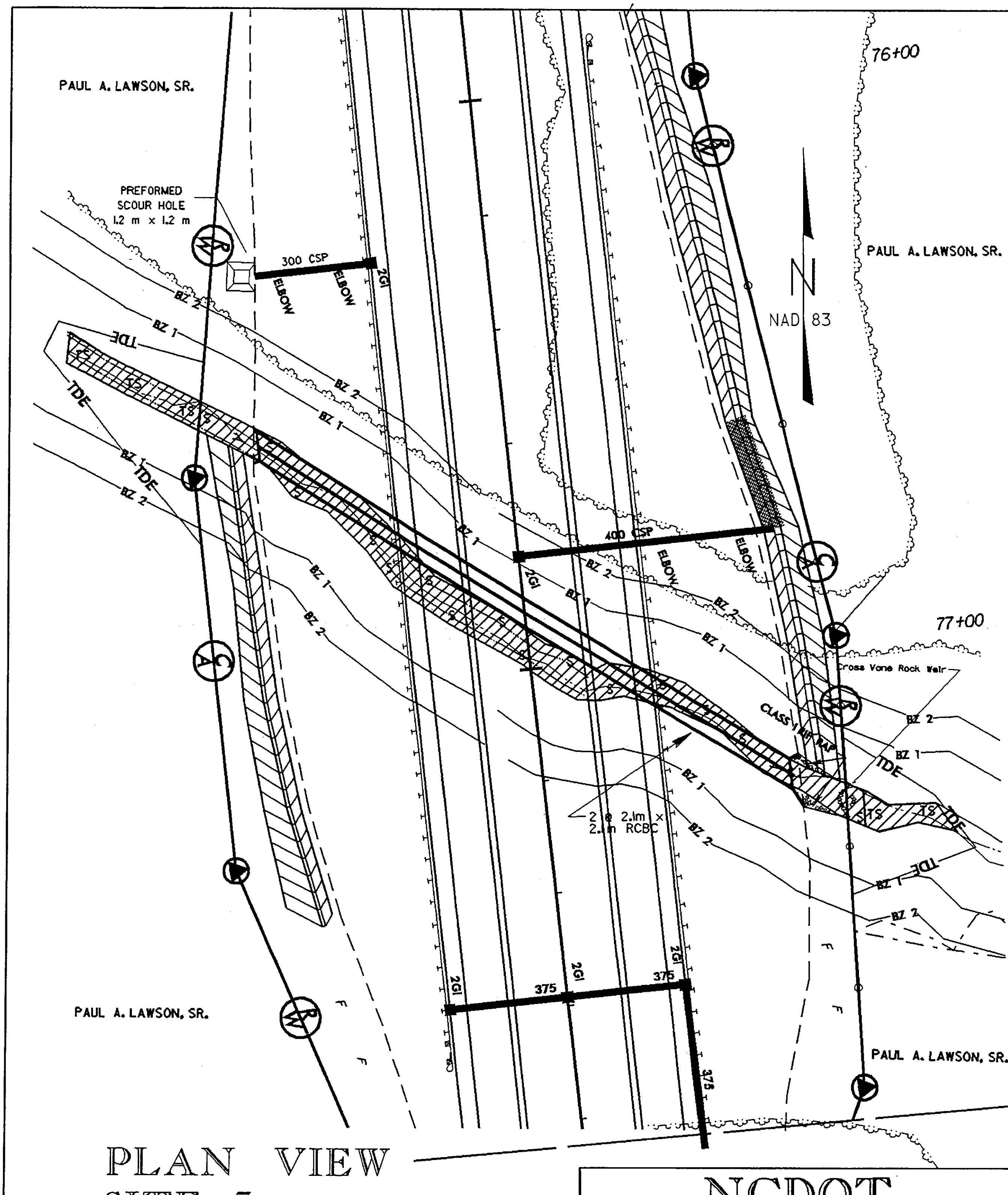
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 8 OF 14 5/24/06



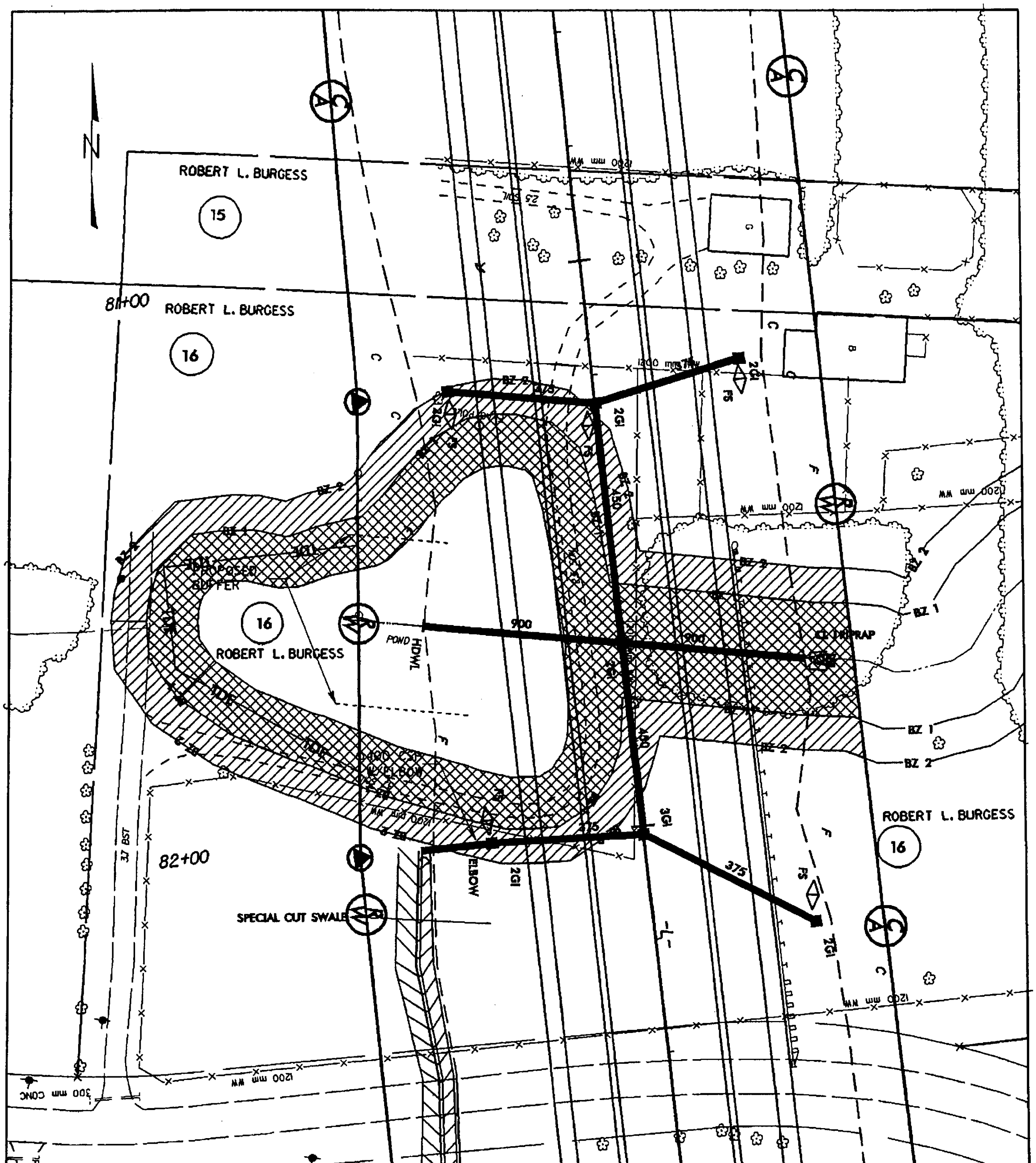
PLAN VIEW
SITE 3

S S DENOTES FILL IN SURFACE WATER

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 9 OF ~~13~~ 14 5/24/06



PLAN VIEW
SITE 5

MITIGABLE IMPACTS ZONE I

MITIGABLE IMPACTS ZONE 2

10m 20m

HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

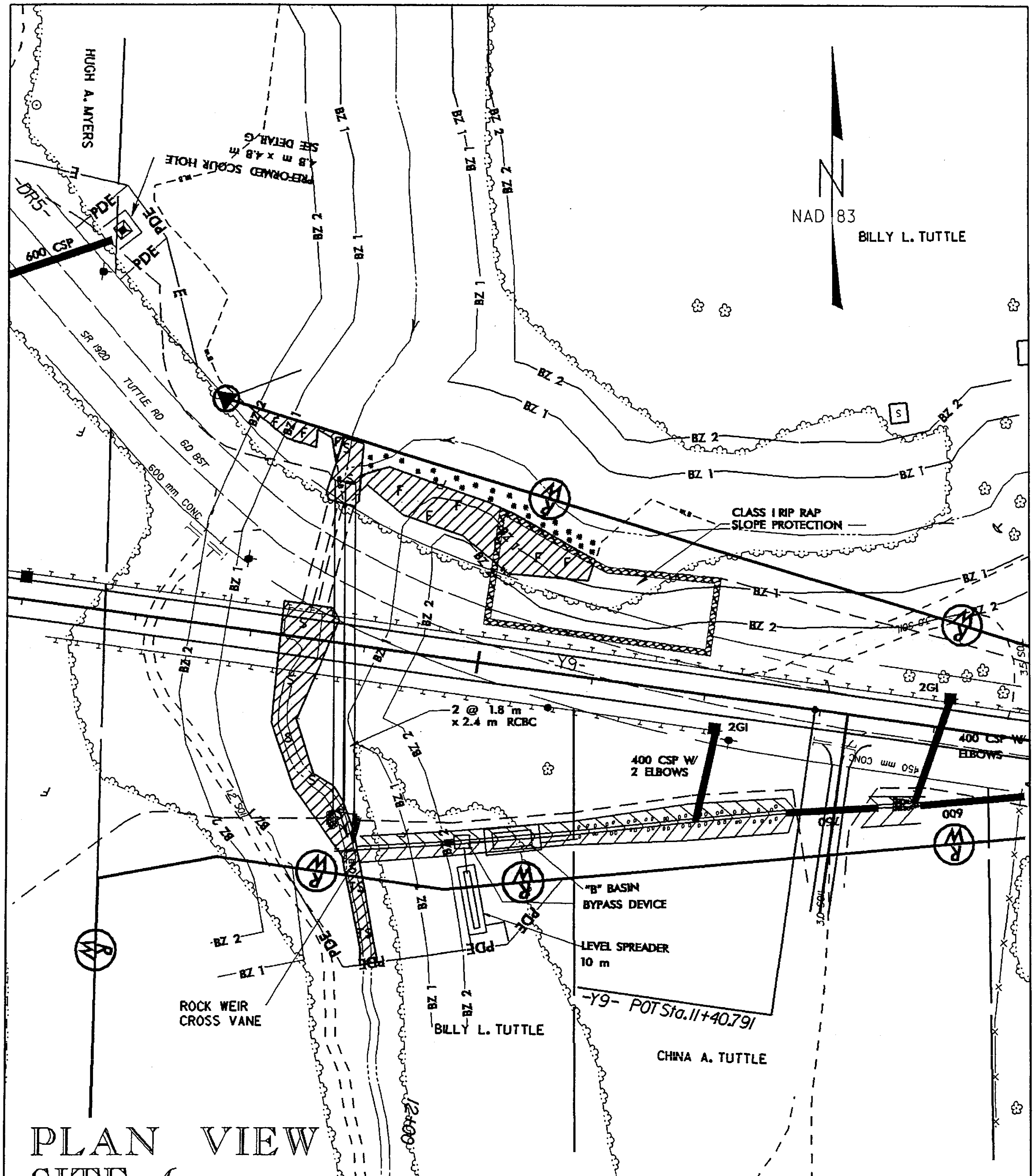
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 10 OF ~~13~~ 14 3/14/05

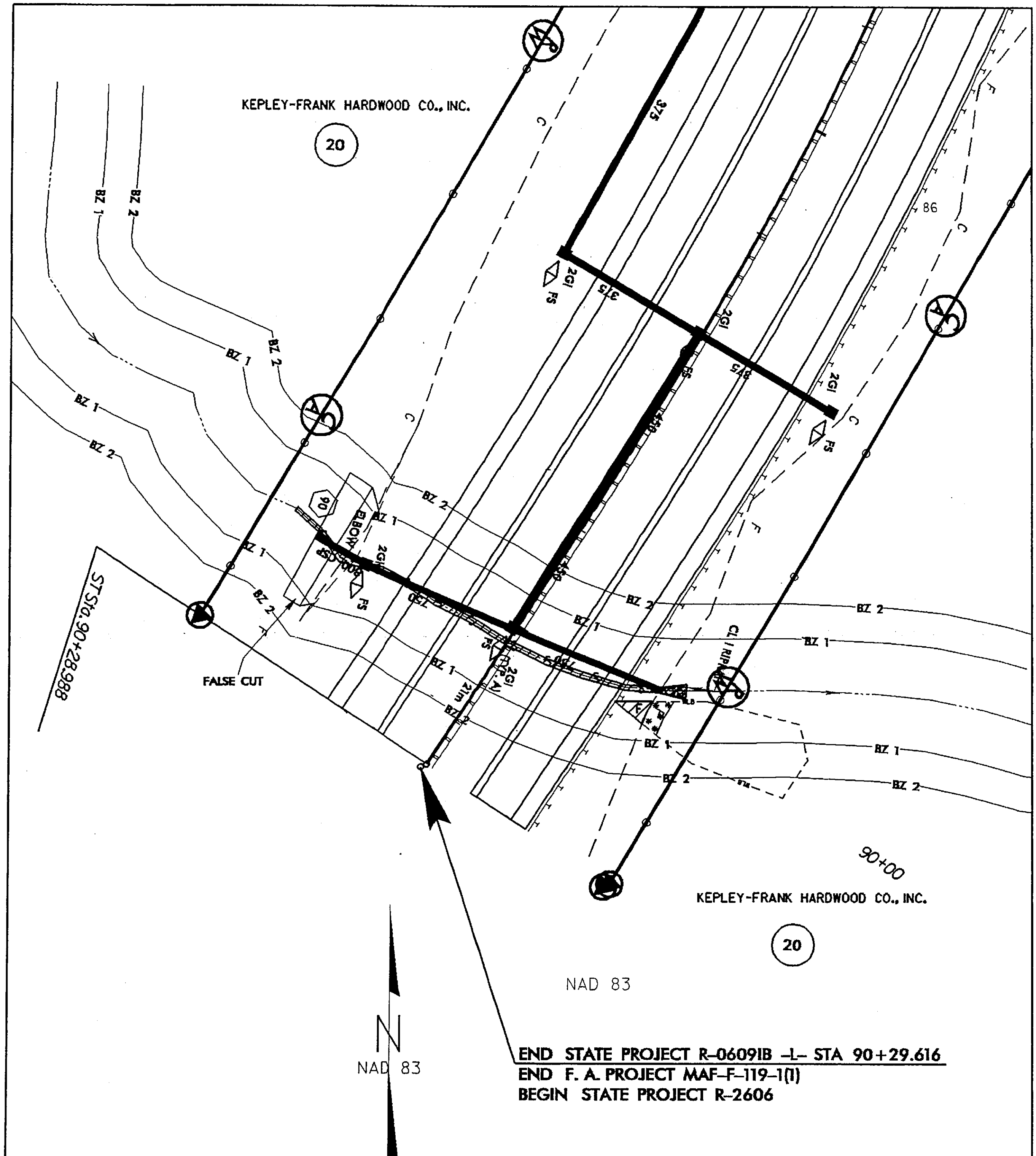


PLAN VIEW
SITE 6

F F	DENOTES FILL IN WETLAND
S S	DENOTES FILL IN SURFACE WATER
TS TS	DENOTES TEMPORARY FILL IN SURFACE WATER
* * *	DENOTES MECHANIZED CLEARING

10m 20m
HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 10 OF ~~18~~ 14 5/24/06



PLAN VIEW
SITE 9

F F	DENOTES FILL IN WETLAND
S S	DENOTES FILL IN SURFACE WATER
* * *	DENOTES MECHANIZED CLEARING

10m 20m
HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT: 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 12 OF 14 5/24/06

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ha)	WETLAND IMPACTS: Temp. Fill In Wetlands (ha)	WETLAND IMPACTS: Excavation in Wetlands (ha)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ha)	WETLAND IMPACTS: Hand Clearing in Wetlands (ha)	SURFACE WATER IMPACTS: Permanent SW impacts (ha)	SURFACE WATER IMPACTS: Temp. SW impacts (ha)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (m)	SURFACE WATER IMPACTS: Natural Stream Design (m)
1 *	63+20 -L- TO 64+00	750 RCP						0.202		259	
2 **	68+55 -L-	2100 RCP						0.050	0.005	147	
3 **	76+90 -L-	2 @ 2.1m X 2.1m RCBC						0.072	0.018	138	
4 *	79+10 -L-	900 RCP						0.649		86	
5 *	81+67 -L-	900 RCP						0.225		46	
6 **	12+23 -Y9-	2 @ 1.8m X 2.4m RCBC	0.033			0.013		0.034	0.004	63	
7	84+28 -L-	750 RCP	0.120								
8	87+00 -L-	ROADWAY FILL	0.003								
9	90+00 -L-	750 RCP	0.001			0.002		0.008		71	
TOTALS:			0.157			0.015		1.240	0.027	810	

* Includes impact to surface waters ponds
Site #1 0.18 ha Site # 4 0.64 ha Site # 5 0.22 ha

** Existing Channel Impact Temporary:
Site # 2 13 m
Site #3 41 m
Site #6 15 m

JMD Revised 2/03/05

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET OF ~~12~~ of ~~13~~ 5/24/2006
13 14

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS			
Site No.	Station (From/To)	Structure Size / Type	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)	Natural Stream Design (ft)
1 *	63+20 -L- TO 64+00	750 RCP						0.499		850	
2 **	68+55 -L-	2100 RCP						0.124	0.012	483	
3 **	76+90 -L-	2 @ 2.1m X 2.1m RCBC						0.178	0.044	453	
4 *	79+10 -L-	900 RCP						1.604		282	
5 *	81+67 -L-	900 RCP						0.556		151	
6 **	12+23 -Y9-	2 @ 1.8m X 2.4m RCBC	0.082			0.032		0.084	0.010	207	
7	84+28 -L-	750 RCP	0.296								
8	87+00 -L-	ROADWAY FILL	0.007								
9	90+00 -L-	750 RCP	0.002			0.005		0.020		233	
TOTALS:			0.387			0.037		3.064	0.066	2659	

* Includes impact to surface waters ponds
Site #1 0.445 ac Site # 4 1.581 ac Site # 5 0.543 ac

** Existing Channel Impact Temporary:
Site # 2 42 ft
Site #3 134 ft
Site #6 49 ft

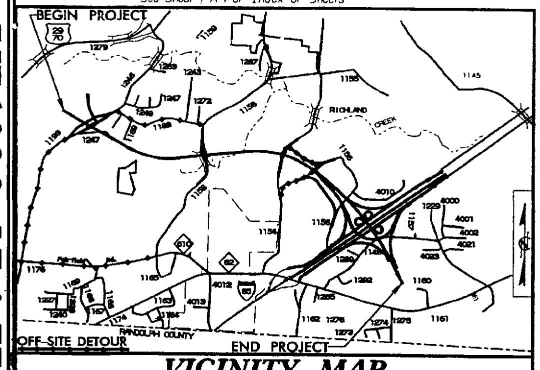
JMD Revised 2/03/05

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD/ RANDOLPH COUNTY
PROJECT 8.1570601 (R-0609IB)
US 311 HIGH POINT EAST BELT
FROM I-85 TO SOUTH OF SR 1920
NORTH OF ARCHDALE
SHEET 14 OF 14 5/24/2006

1/19/2006
9/09/99

CONTRACT: 34345.1.1 TIP: R-0609IA

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

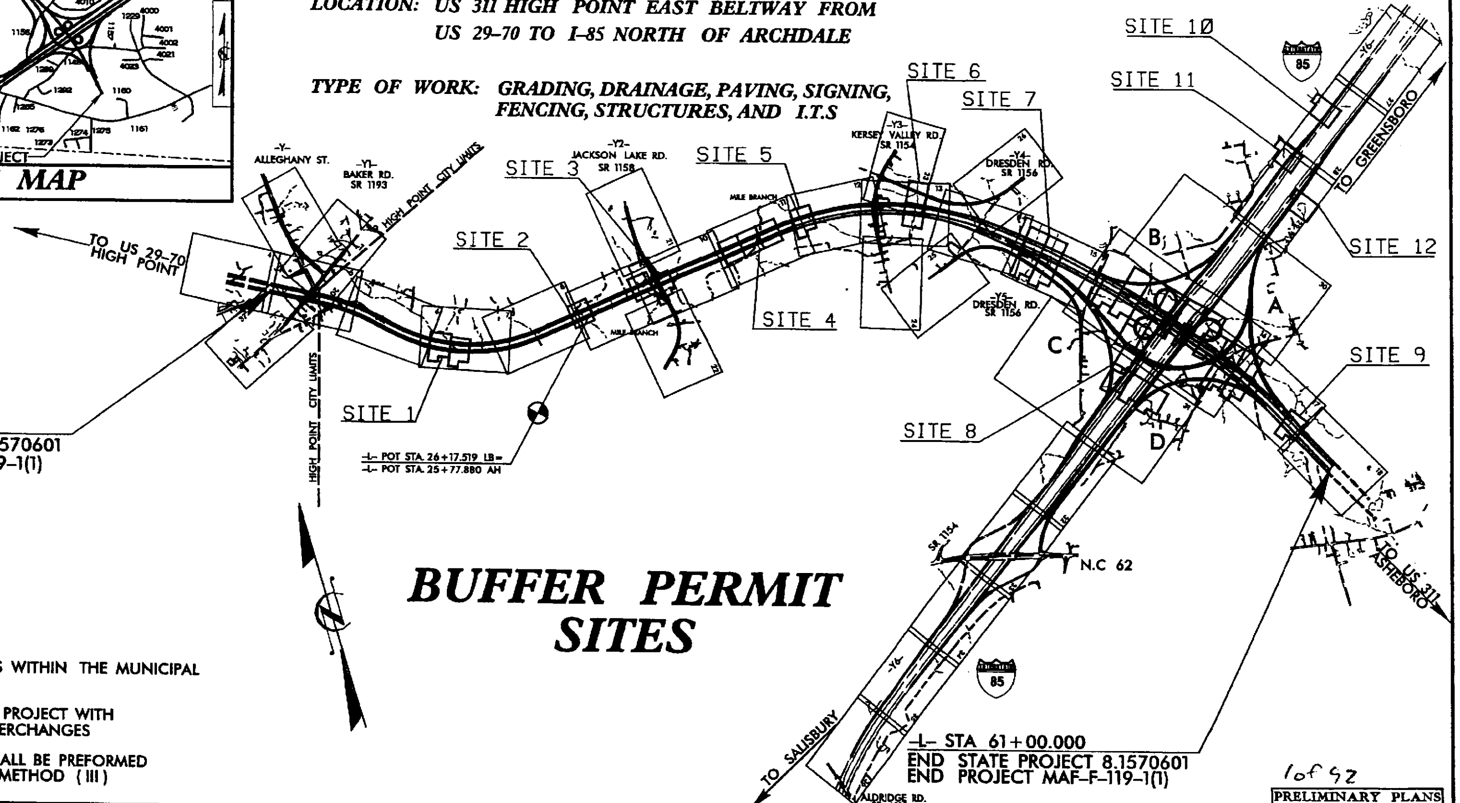
LOCATION: *US 311 HIGH POINT EAST BELTWAY FROM US 29-70 TO I-85 NORTH OF ARCHDALE*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, SIGNING, FENCING, STRUCTURES, AND I.T.S*

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS

STATE	STATE PROJECT REFERENCE NO.		SHEET NO.	TOTAL SHEETS
N.C.	R-0609IA		1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION		
34345.1.1	MAF-F-119-1(1)	PE		
34345.2.7	STP-NHF-119-1(11)	ROW & UTILITIES		



BUFFER PERMIT SITES

1 of 92

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF HIGH POINT

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

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

GRAPHIC SCALES

PLANS

PROFILE (HORIZONTAL)

PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 27,000
ADT 2025 = 39,000
DHV = 10 %
D = 60 %
T = 13 % *
V = 110 km/h
* TTST 7 % DUAL 6 %
FUNC CLASS – FREEWAY

PROJECT LENGTH

LENGTH ROADWAY F.A PROJECT MAF-F-119-1(1) = 4.901 KM
LENGTH STRUCTURE F.A PROJECT MAF-F-119-1(1) = KM
TOTAL LENGTH STATE PROJECT 8.1570601 = 4.901 KM

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER, 2003

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

LETTING DATE: MARCH 15, 2005

STEVE KENDALL
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

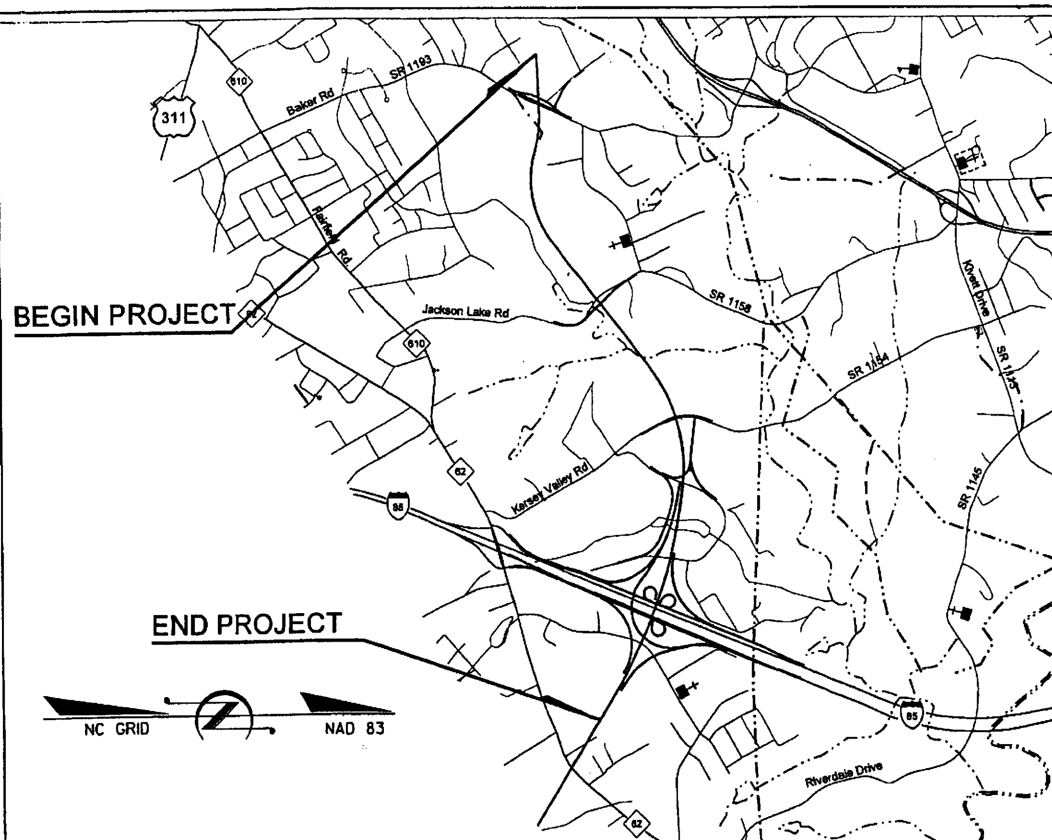
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

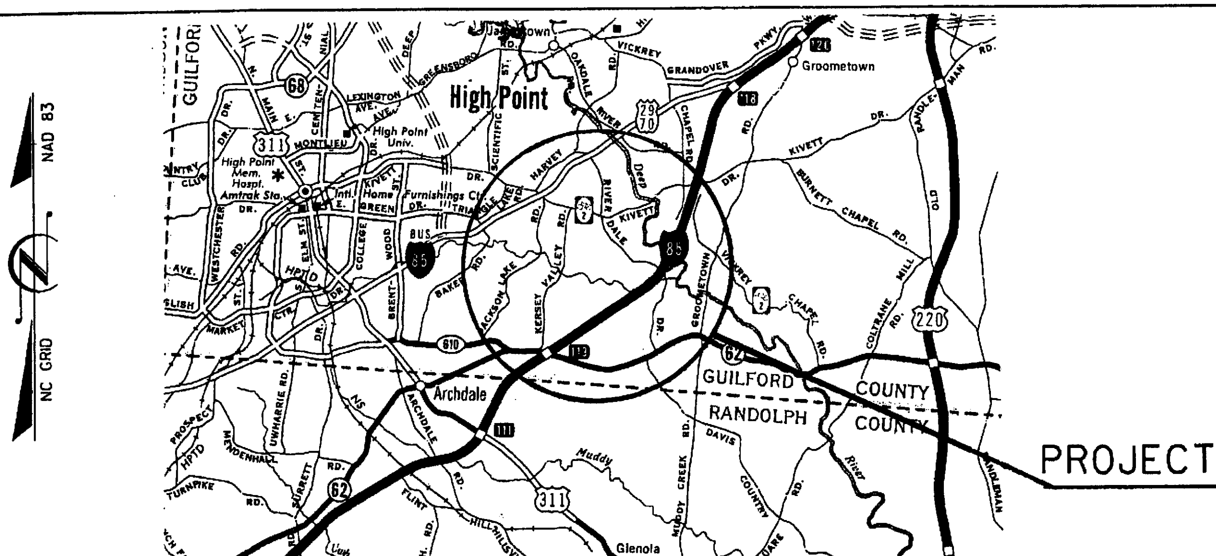
STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE



PORTION OF GUILFORD COUNTY MAP



PORTION OF STATE MAP

METRIC

BUFFER IMPACTS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 2 OF 22

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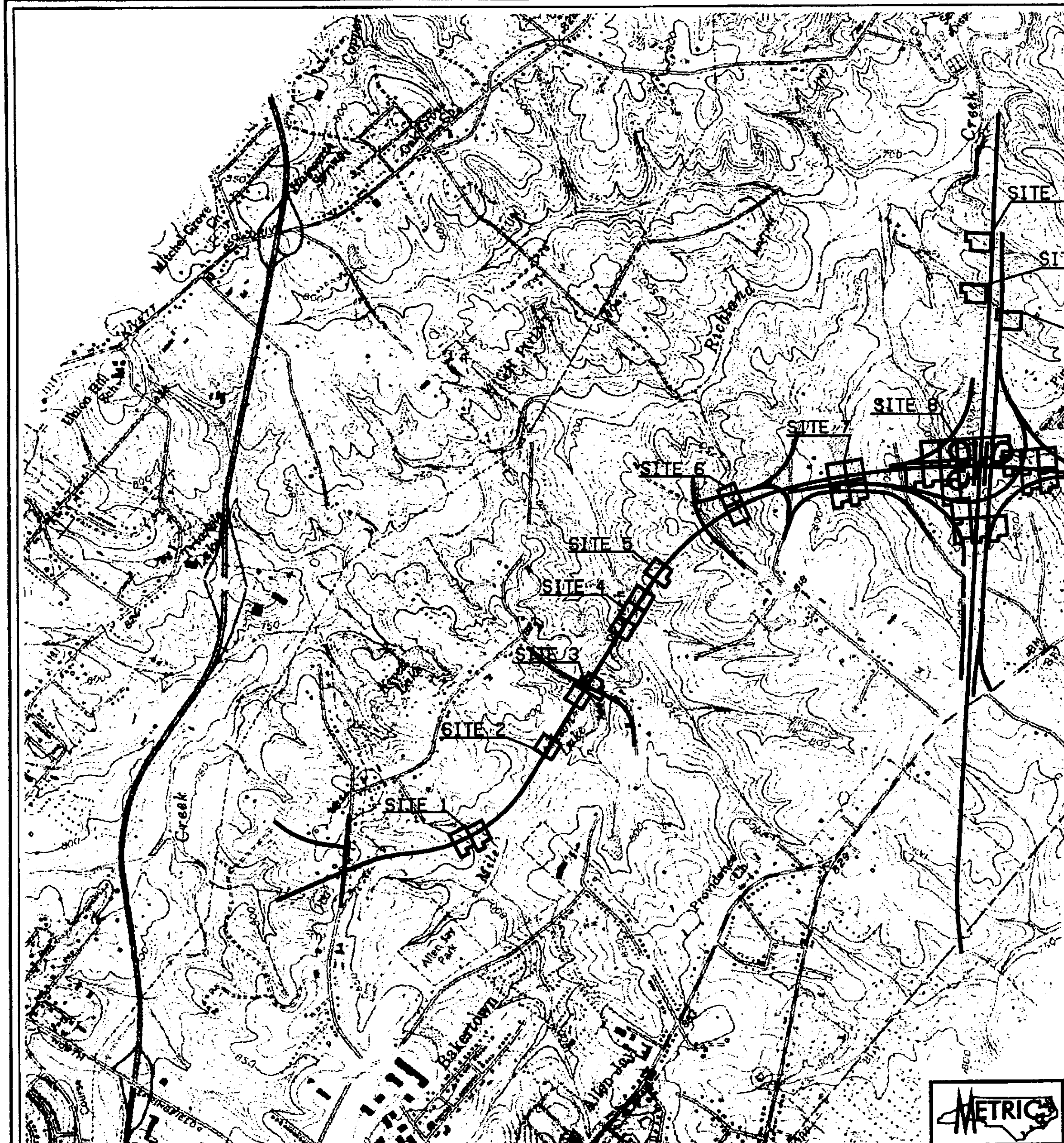

BUFFER IMPACTS SITE MAP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

NOT TO SCALE

SHEET 3 OF 92

BUFFER LEGEND

WLB — WETLAND BOUNDARY

WLB WLB — WETLAND

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

— RBZ — RIPARIAN BUFFER ZONE

— RBZ1 — RIPARIAN BUFFER ZONE 1
30 ft (9.2m)

— RBZ2 — RIPARIAN BUFFER ZONE 2
20 ft (6.1m)

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

— NG — NATURAL GROUND

PL — PROPERTY LINE

— TDE — TEMP. DRAINAGE EASEMENT

— PDE — PERMANENT DRAINAGE EASEMENT

— EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

— EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTING STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

METRIC

SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 4 OF 92

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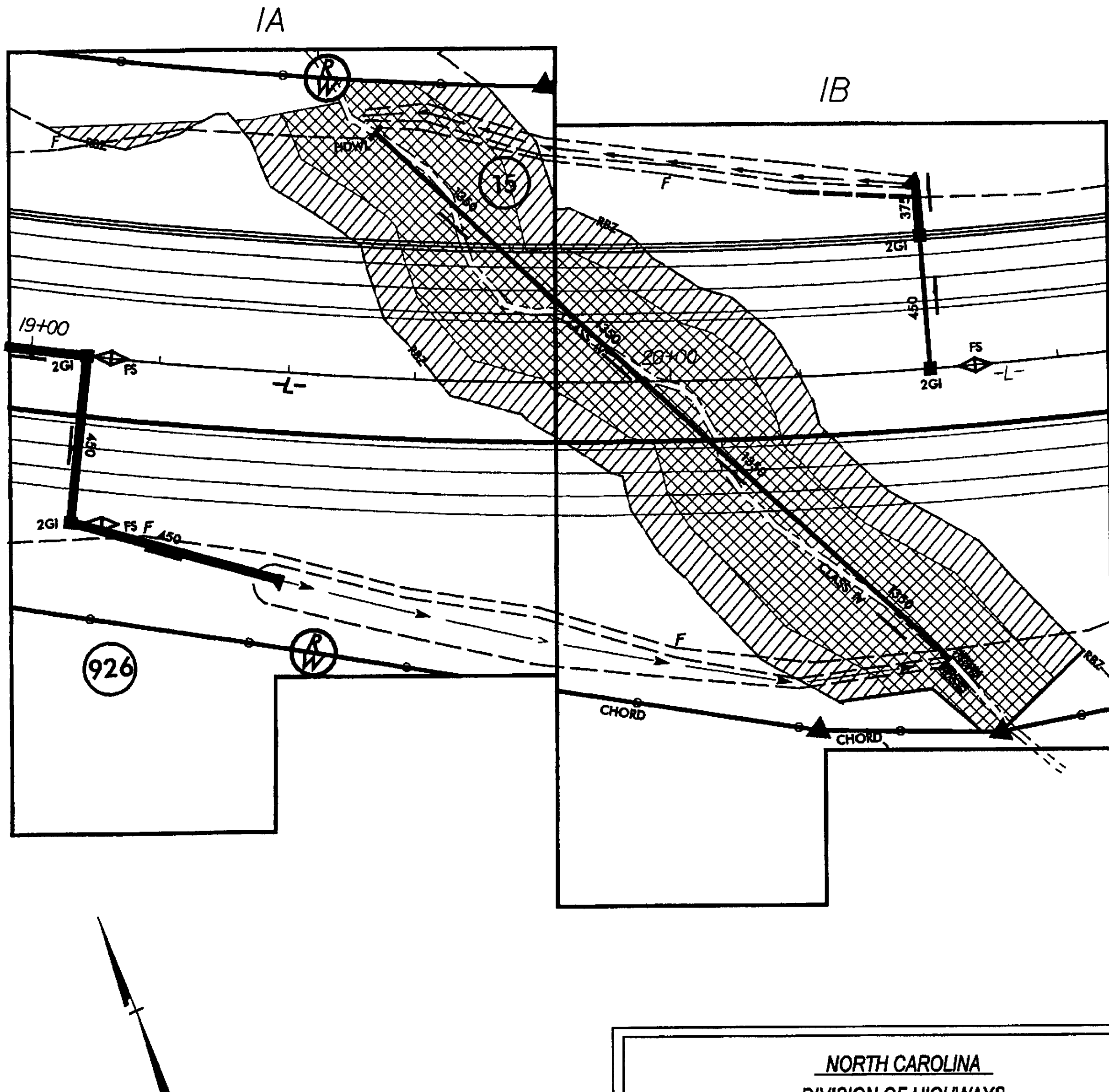

SHEET LAYOUT
PLAN VIEW
SITE 1

METRIC

10 0 20
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 5 OF 92

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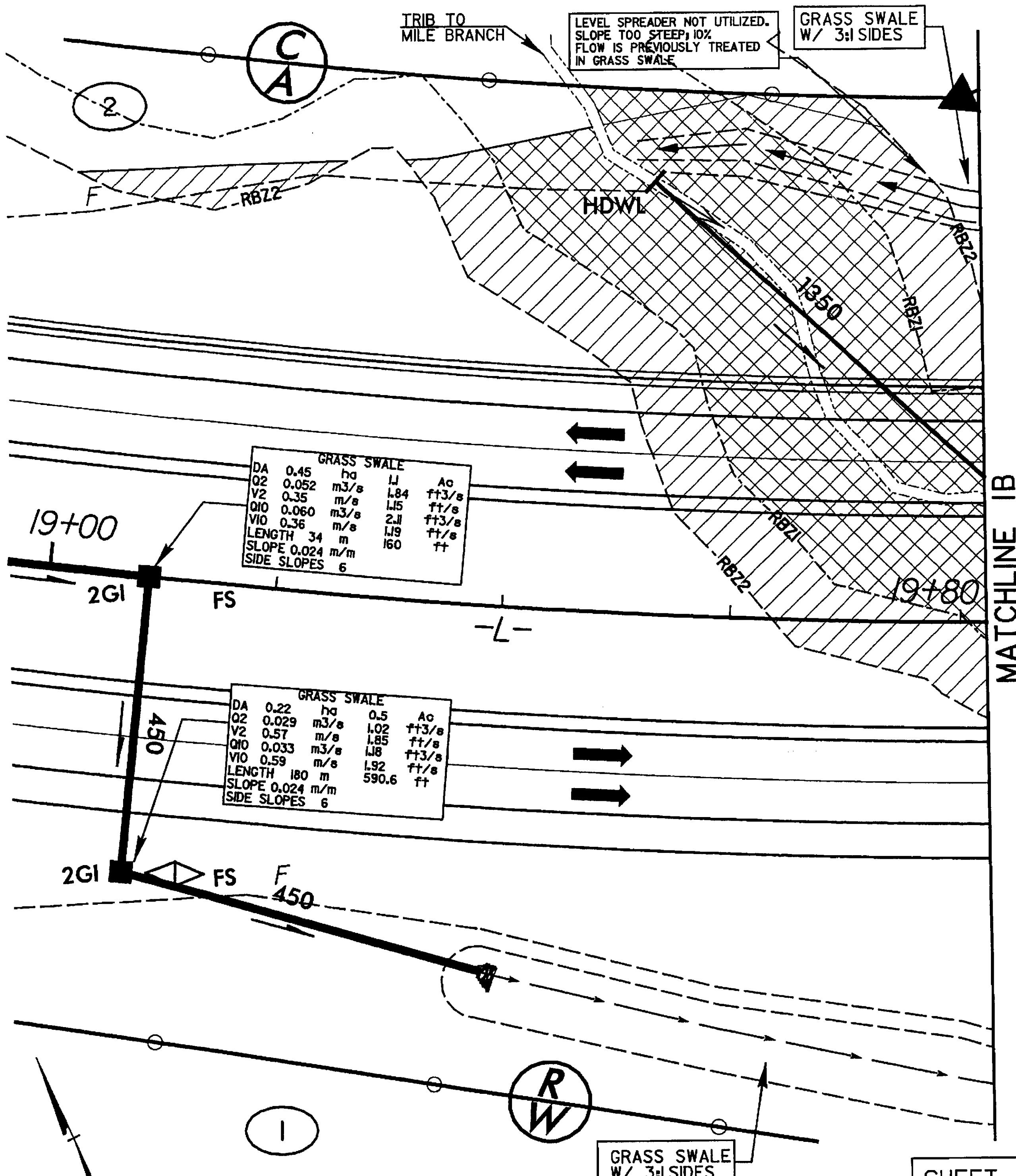

SHEET 1A

PLAN VIEW
SITE 1

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 6 OF 92

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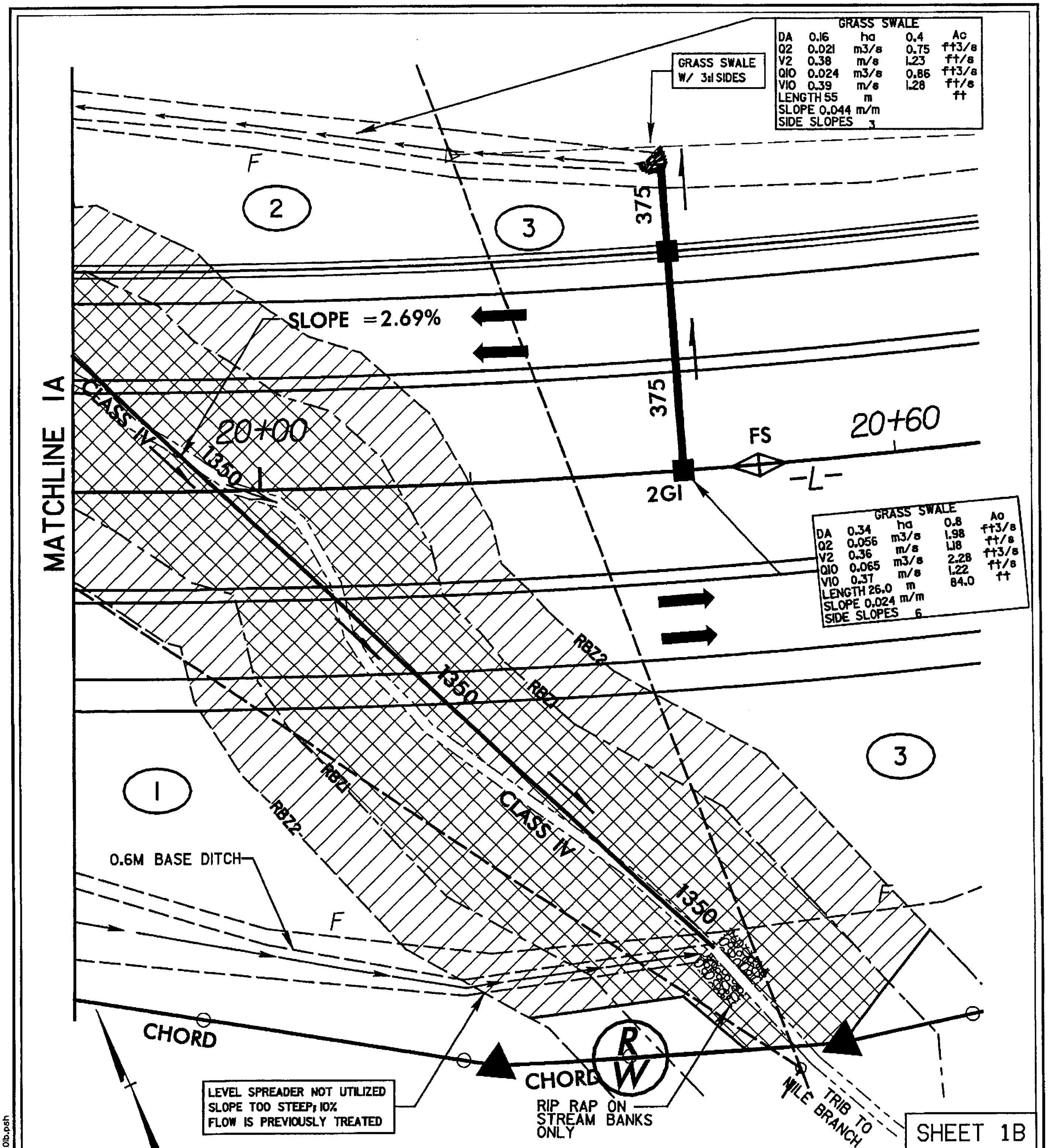


SHEET 1B

PLAN VIEW
SITE 1

LEGEND

RBZ1 — RIPARIAN BUFFER - ZONE 1

RBZ2 — RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

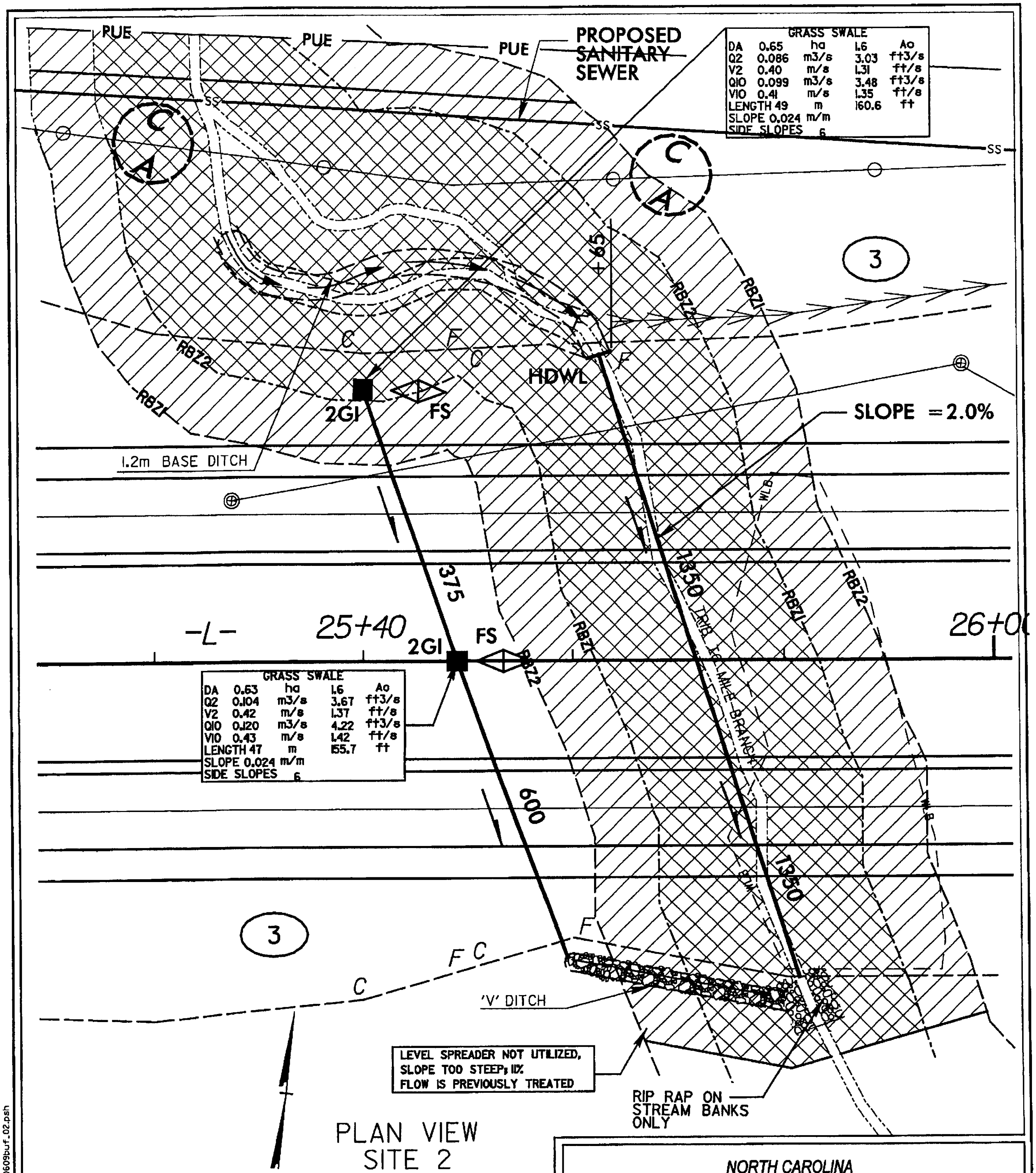
5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 2 OF 92



LEGEND

- RBZ1 RIPARIAN BUFFER - ZONE 1
- RBZ2 RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

5 0 5 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

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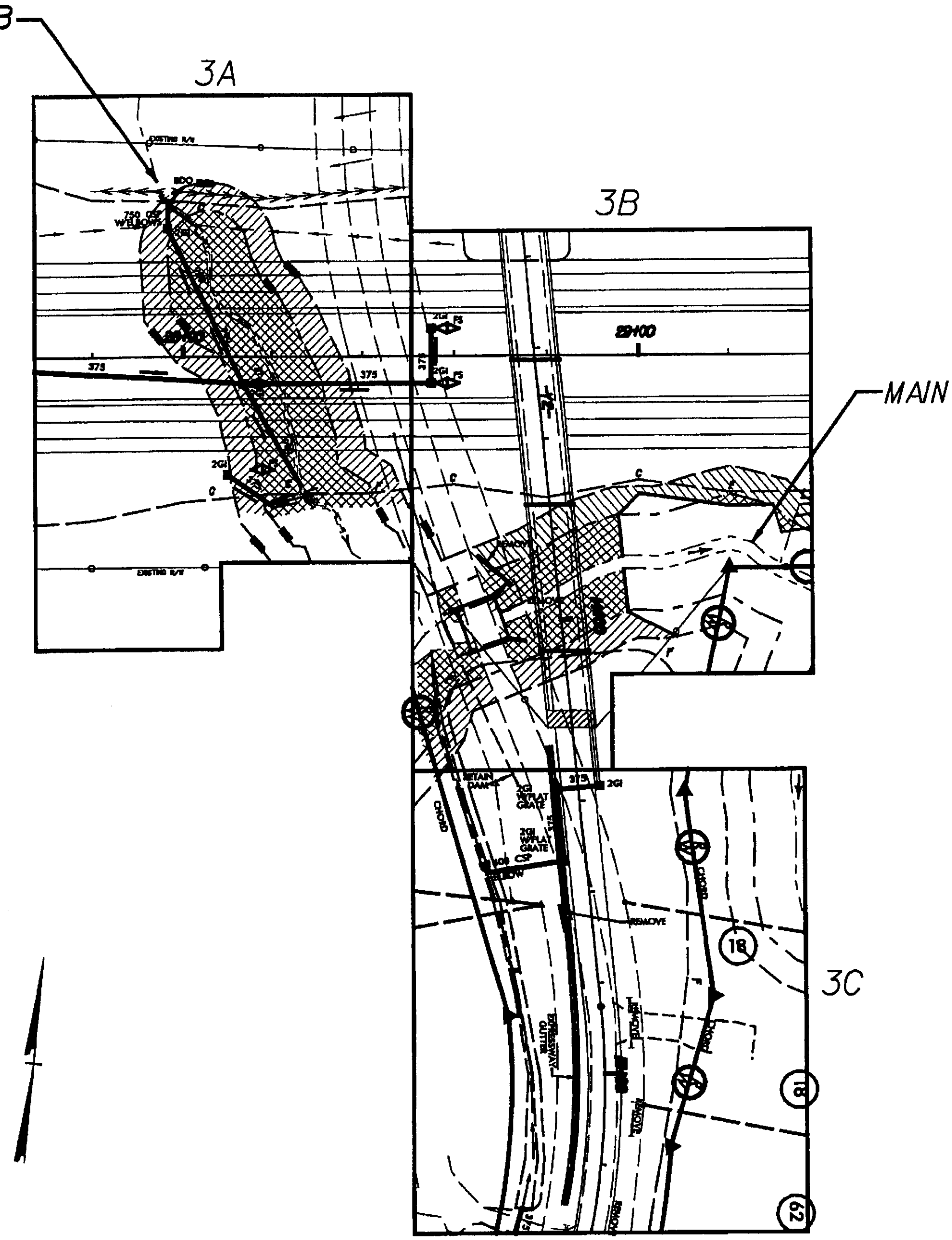

SHEET LAYOUT
PLAN VIEW
SITE 3

METRIC

10 0 20
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 9 OF 12

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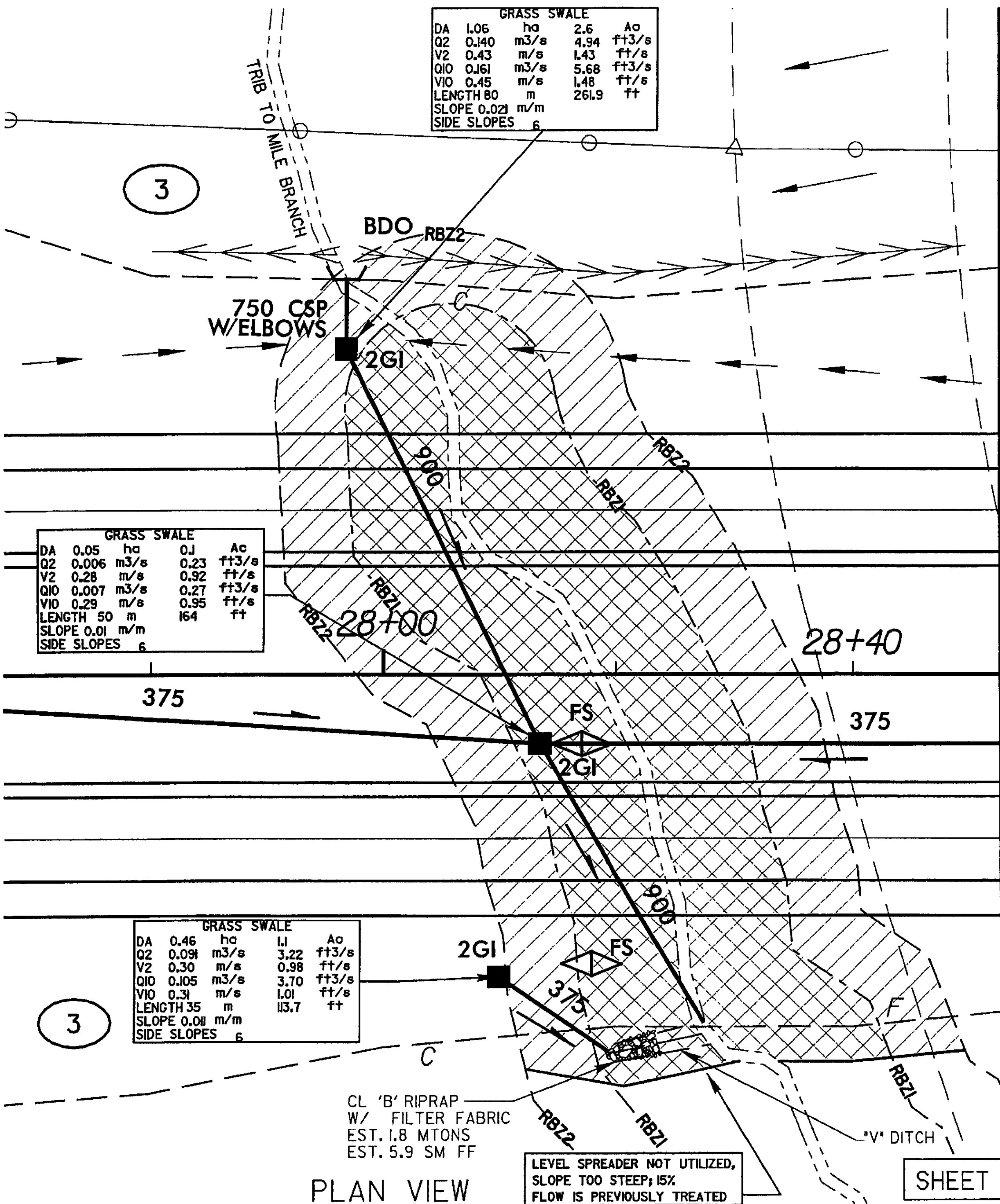

PLAN VIEW
SITE 3

LEGEND

- RBZ1 RIPARIAN BUFFER - ZONE 1
- RBZ2 RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 10 OF 92

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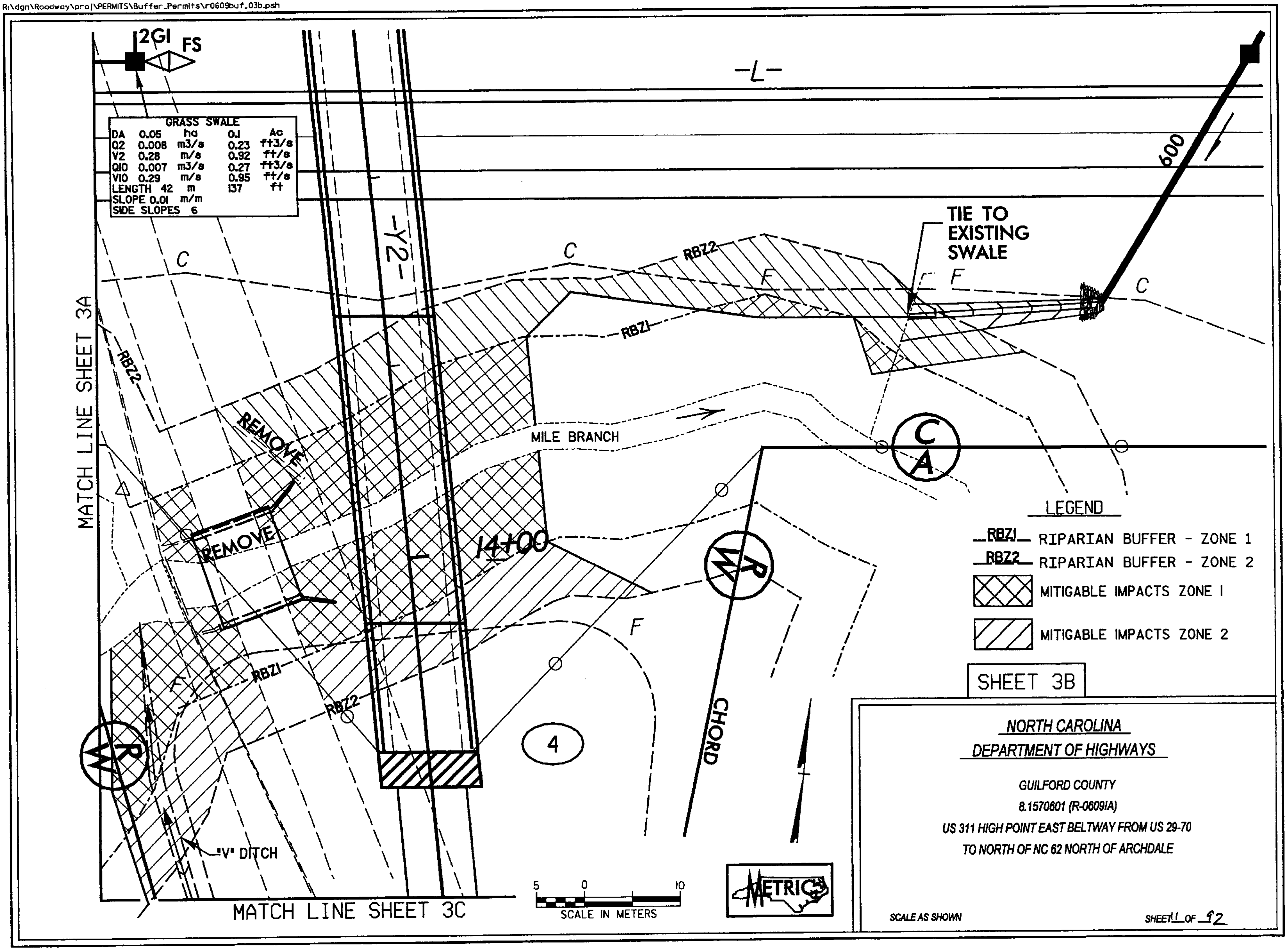

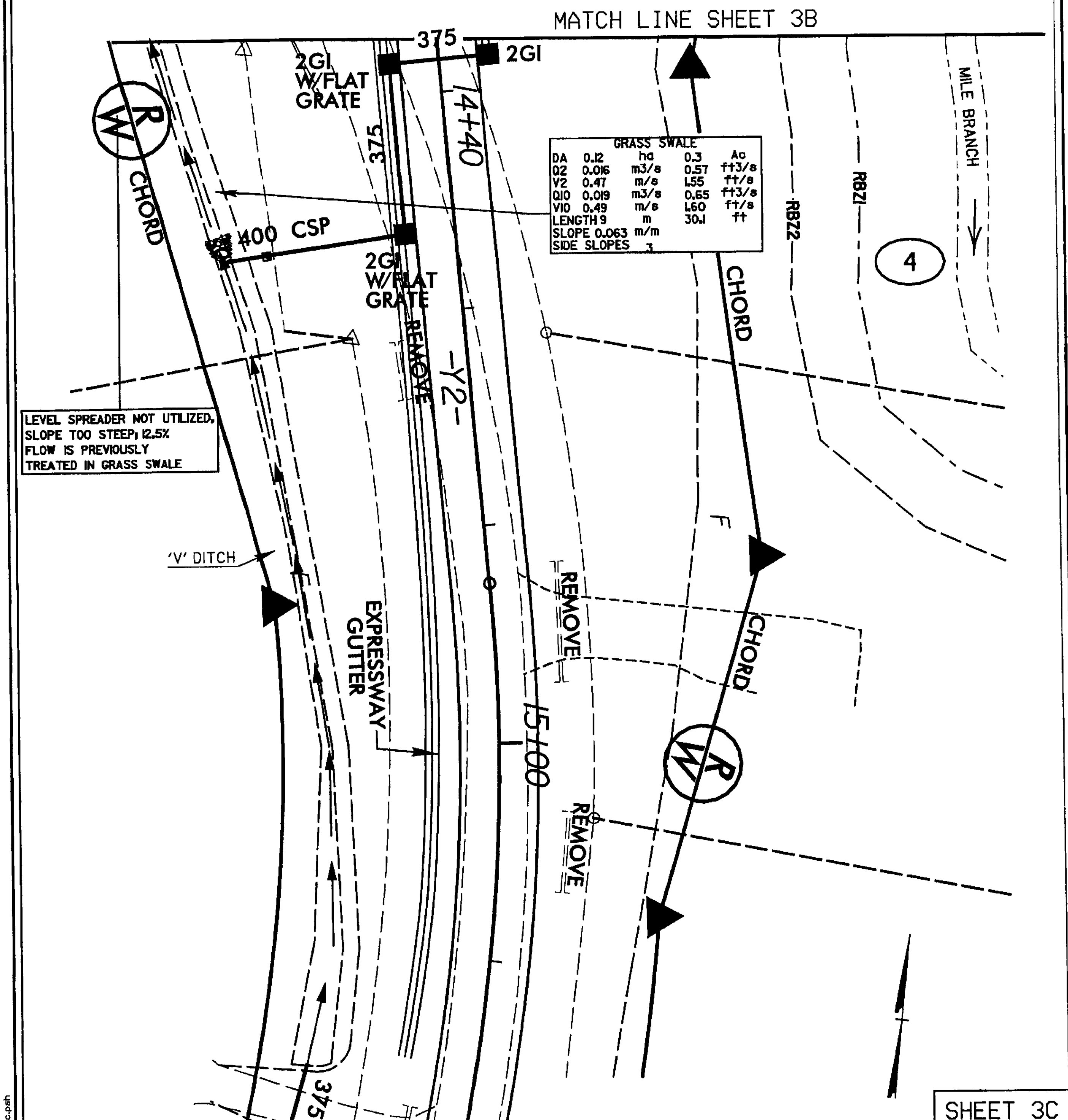

SHEET 3C

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10

SCALE IN METERS

NORTH CAROLINA

DIVISION OF HIGHWAYS

GUILFORD COUNTY

8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70

TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 12 OF 92

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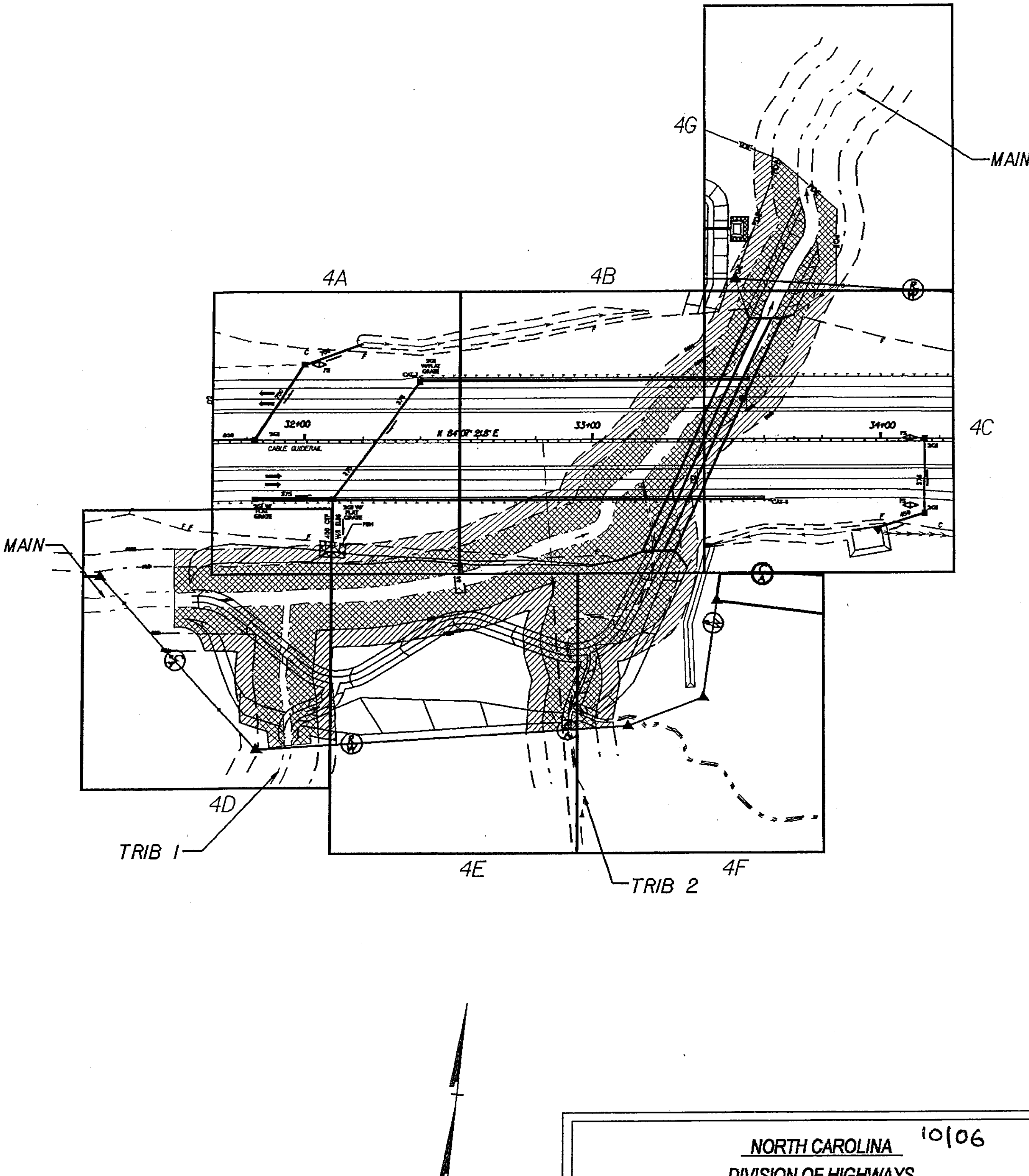


SHEET LAYOUT
PLAN VIEW
SITE 4

METRIC

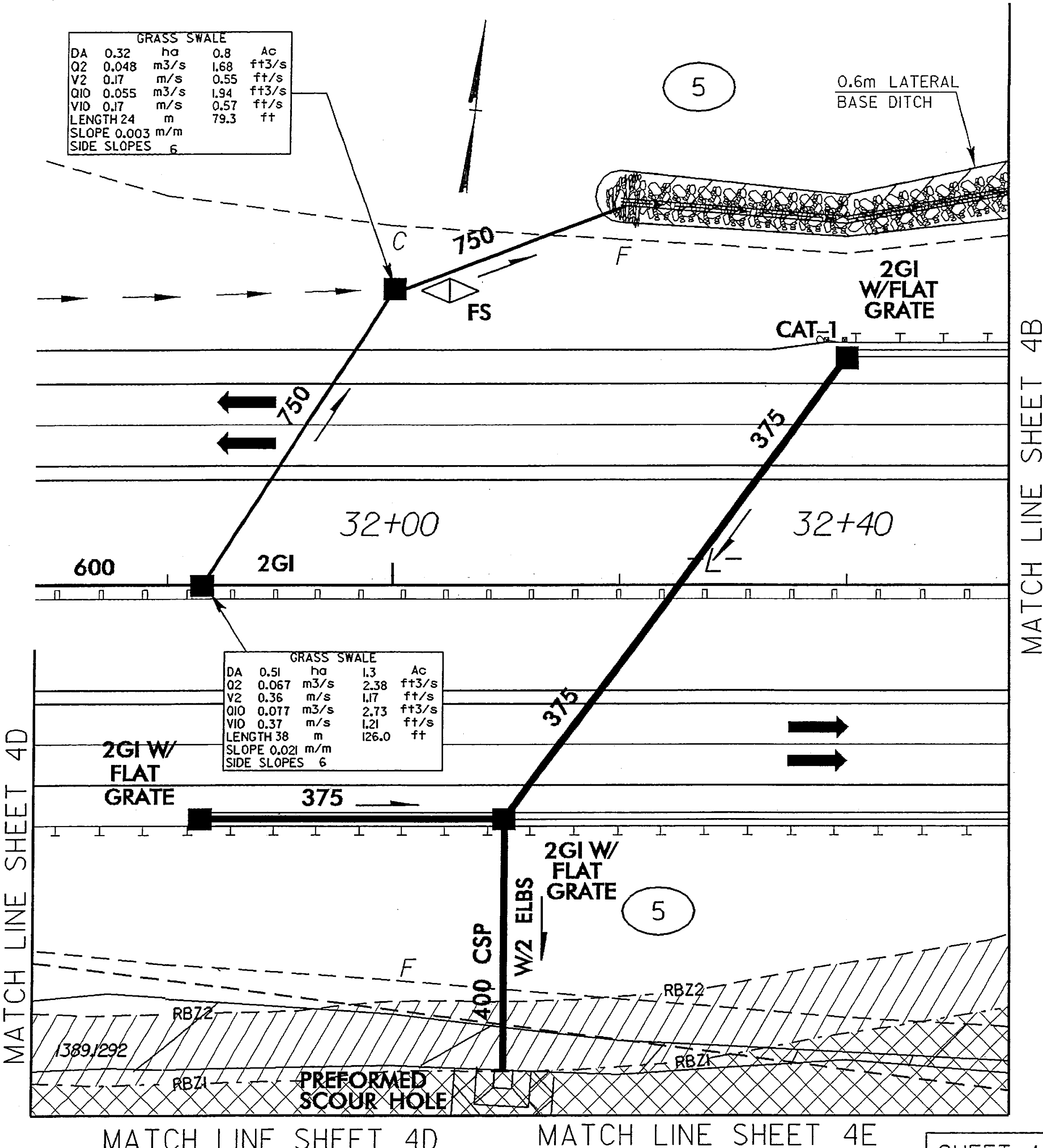
NORTH CAROLINA
DIVISION OF HIGHWAYS

10/06

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 13 OF 92



GRASS SWALE

DA	0.32	ha	0.8	Ac
Q2	0.048	m3/s	1.68	ft3/s
V2	0.17	m/s	0.55	ft/s
Q10	0.055	m3/s	1.94	ft3/s
V10	0.17	m/s	0.57	ft/s
LENGTH	24	m	79.3	ft
SLOPE	0.003	m/m		
SIDE SLOPES	6			

GRASS SWALE

DA	0.51	ha	1.3	Ac
Q2	0.067	m3/s	2.38	ft3/s
V2	0.36	m/s	1.17	ft/s
Q10	0.077	m3/s	2.73	ft3/s
V10	0.37	m/s	1.21	ft/s
LENGTH	38	m	126.0	ft
SLOPE	0.021	m/m		
SIDE SLOPES	6			

SHEET 4A

LEGEND

RBZ1 · RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE I

MITIGABLE IMPACTS ZONE 2

PLAN VIEW
SITE 4

METRIC

SCALE IN METERS

10/06

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET H OF 92

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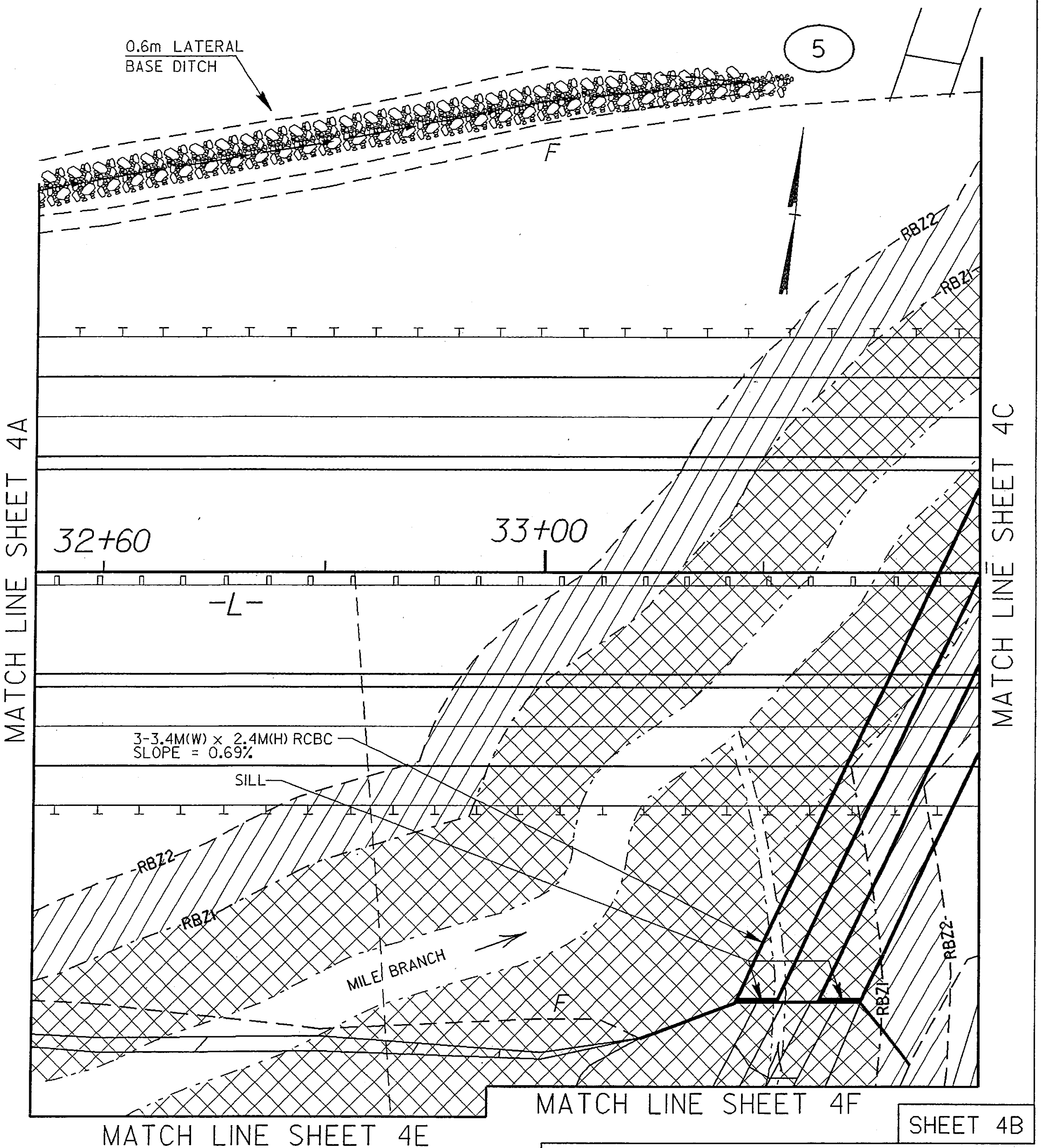

SHEET 4B

PLAN VIEW
SITE 4

LEGEND

RBZ1 . RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE I

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

10/06

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 15 OF 92

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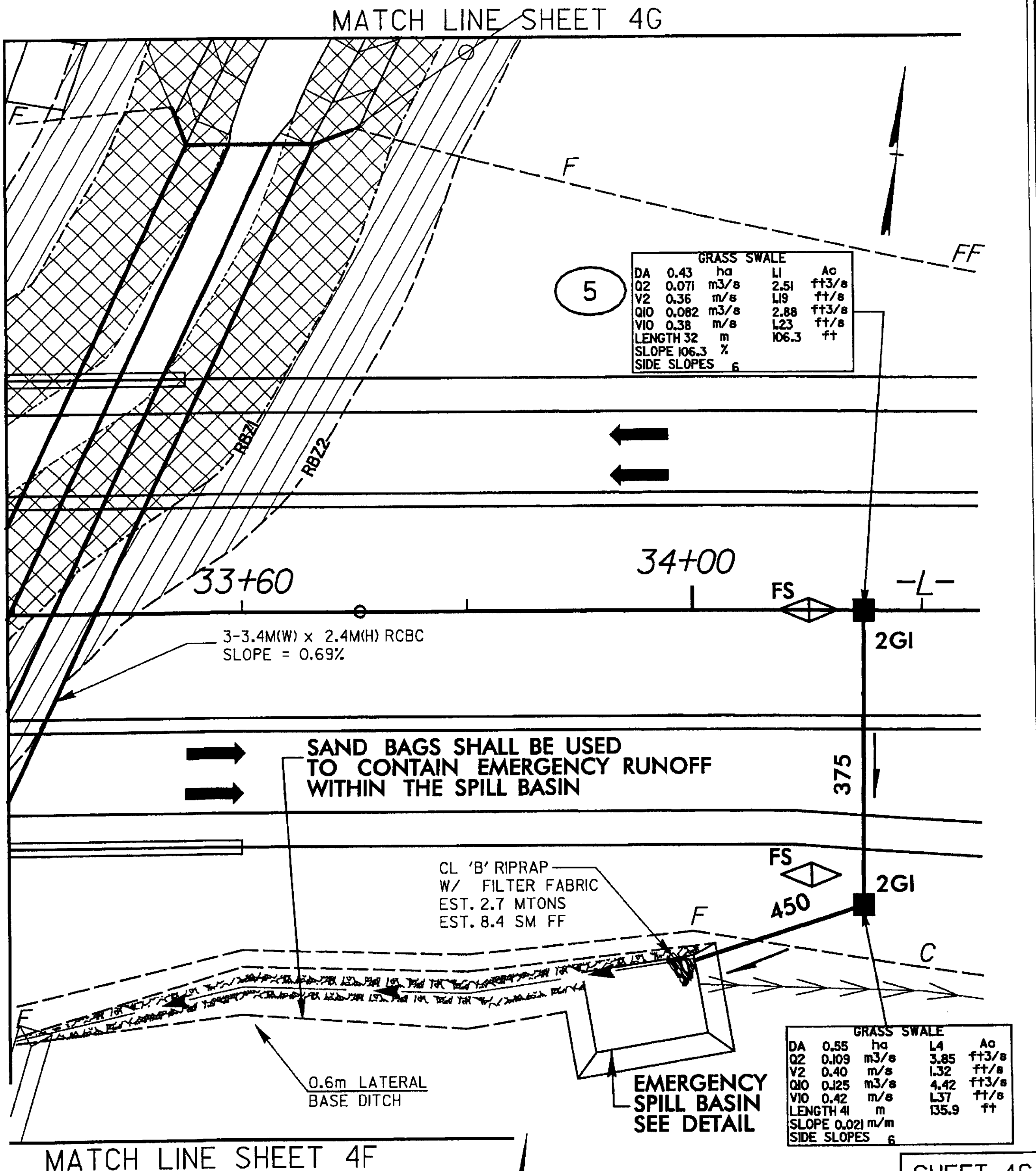

GRASS SWALE				
DA	0.43	ha	1.1	Ac
Q2	0.071	m3/s	2.51	ft3/s
V2	0.36	m/s	1.19	ft/s
Q10	0.082	m3/s	2.88	ft3/s
V10	0.38	m/s	1.23	ft/s
LENGTH	32	m	106.3	ft
SLOPE	106.3	%		
SIDE SLOPES		6		

GRASS SWALE				
DA	0.55	ha	1.4	Ac
Q2	0.109	m3/s	3.85	ft3/s
V2	0.40	m/s	1.32	ft/s
Q10	0.125	m3/s	4.42	ft3/s
V10	0.42	m/s	1.37	ft/s
LENGTH	41	m	135.9	ft
SLOPE	0.021	m/m		
SIDE SLOPES		6		

SHEET 4C

PLAN VIEW
SITE 4

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN
SHEET 16 OF 92

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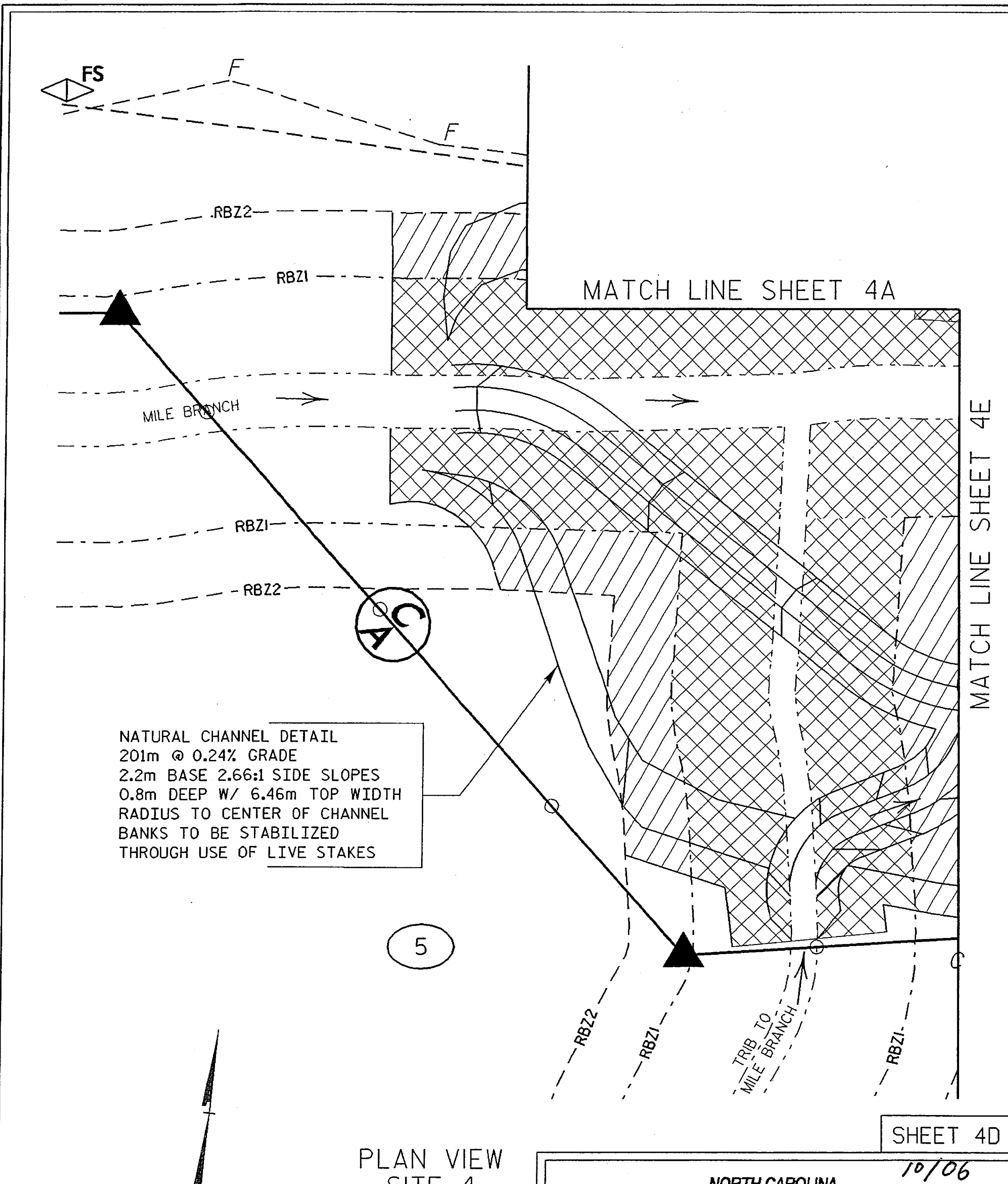


SHEET 4D

PLAN VIEW
SITE 4

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

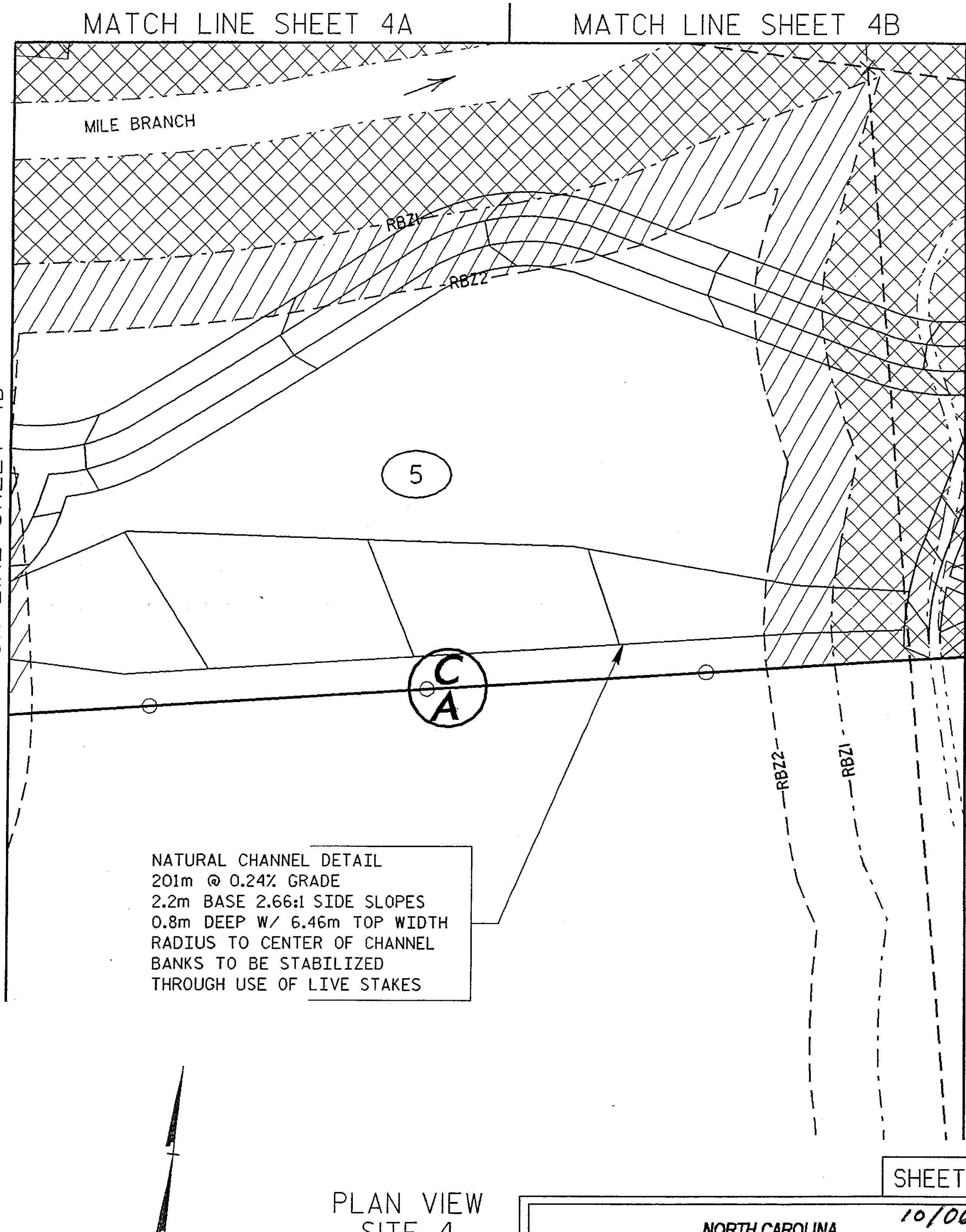
10/06

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 17 OF 92



SHEET 4E

PLAN VIEW
SITE 4

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

10/06

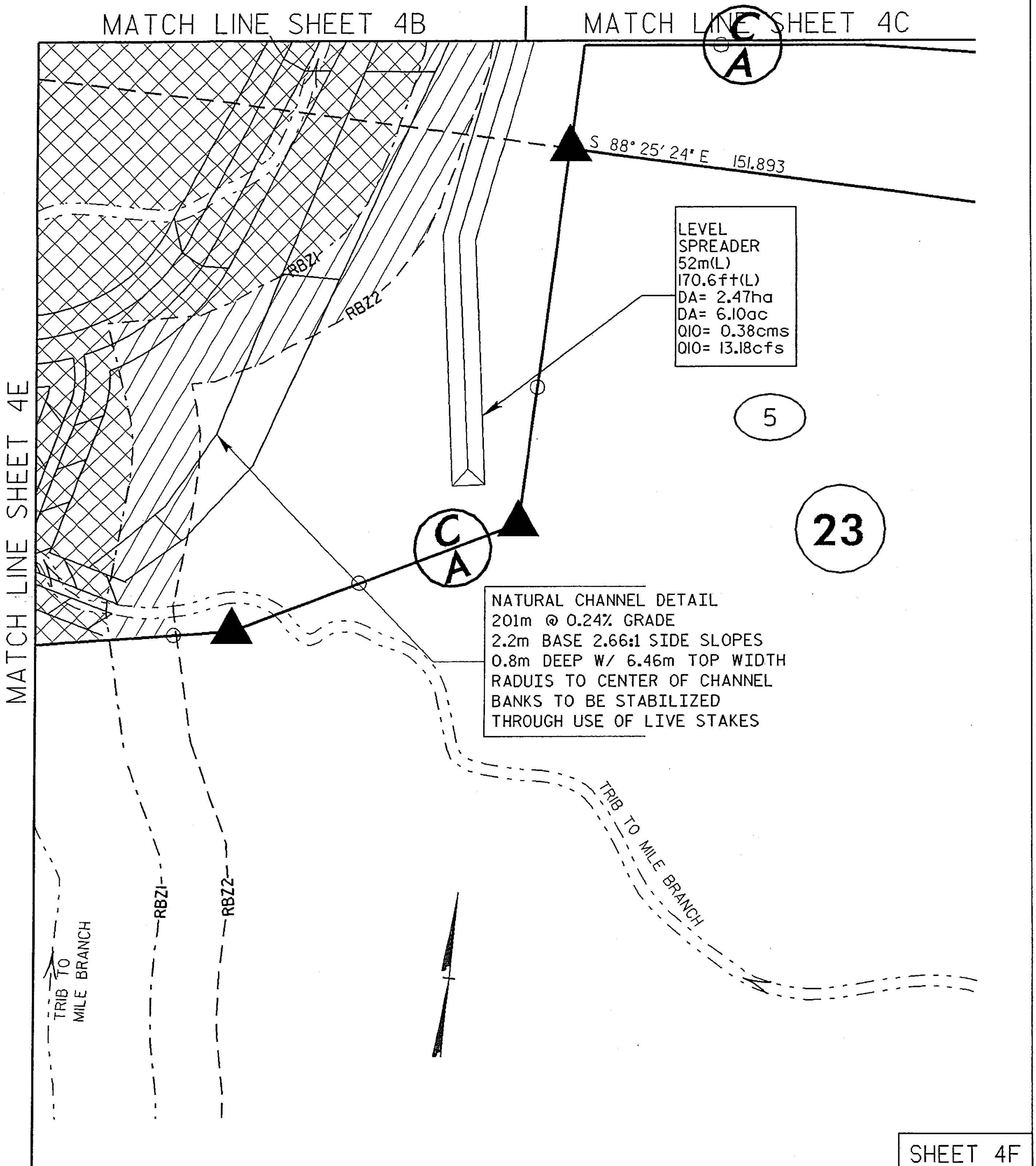
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 18 OF 92

$DATE$
$TIME$
$FILE$



SHEET 4F

PLAN VIEW
SITE 4

LEGEND

- RBZ1 RIPARIAN BUFFER - ZONE 1
- RBZ2 RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

10/06

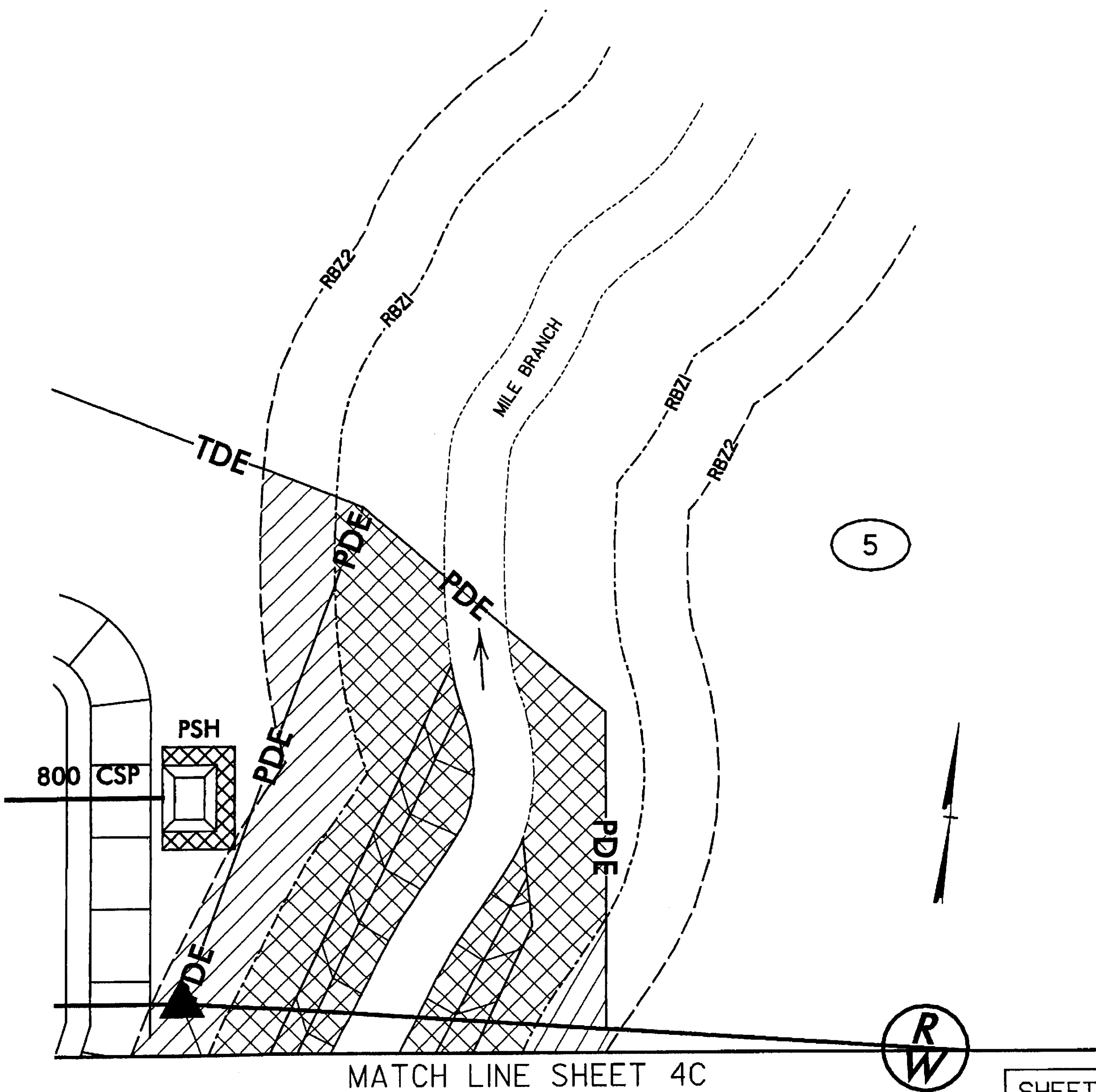
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 14 OF 92

$DATE$
$TIME$
$FILE$



SHEET 4G

PLAN VIEW
SITE 4

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 20 OF 42

/12/2006
:11:32 PM
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3/12/2005
3:57:31 PM
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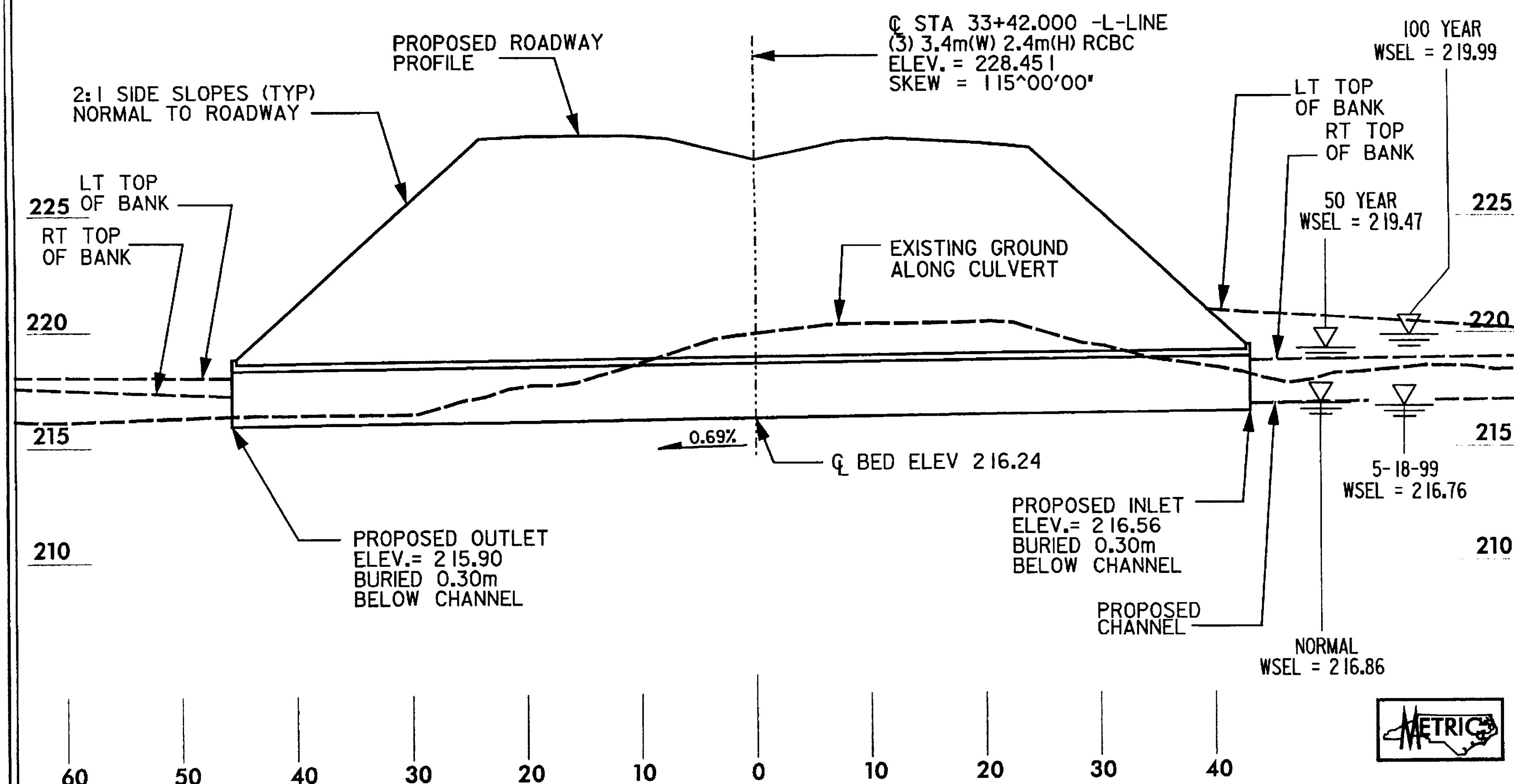


NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

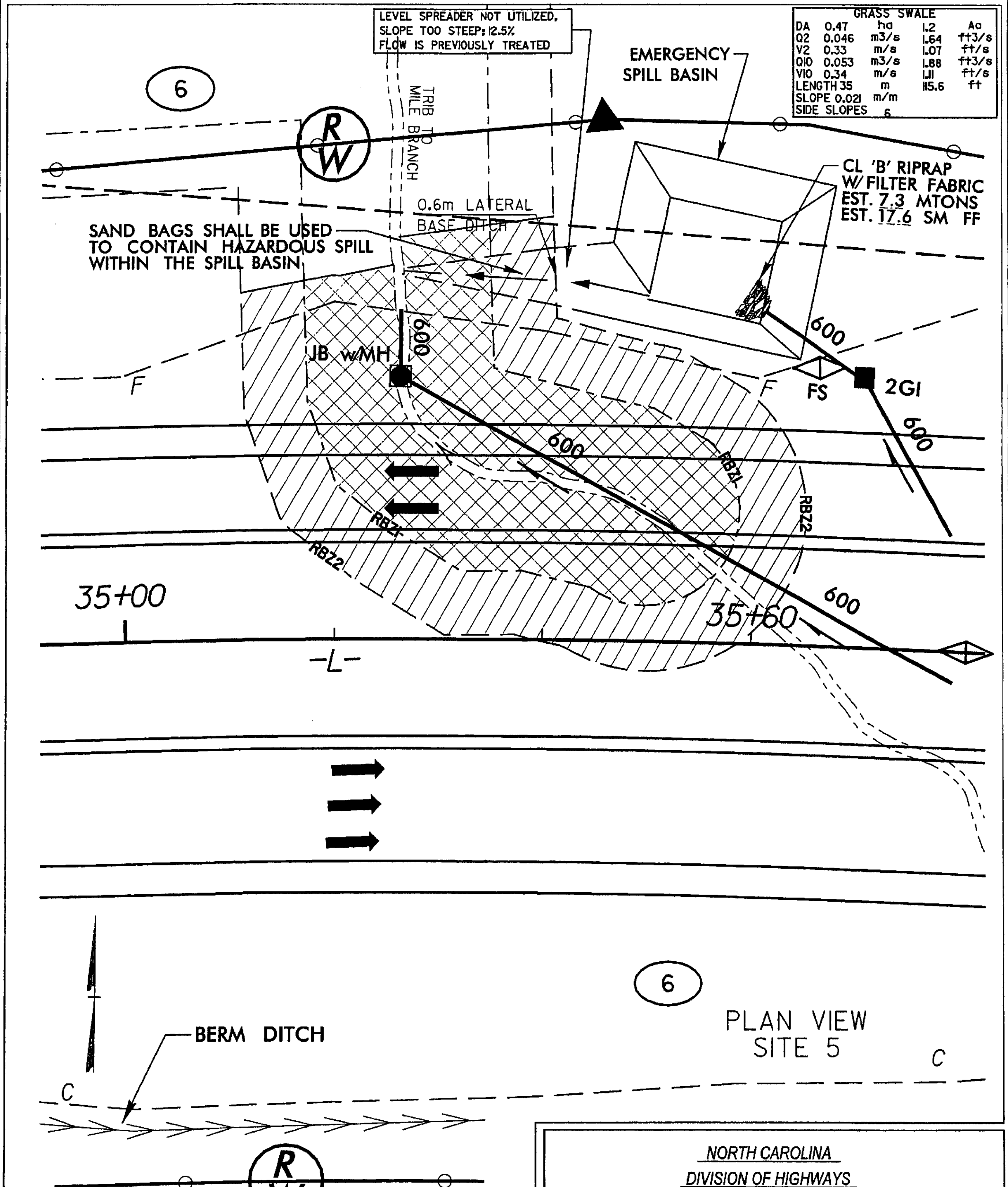
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 26 OF 92

SCALE:
1 = 500 HORIZONTAL
1 = 250 VERTICAL

PROFILE
PERMIT SITE 4 (4B & 4C)
(3) 3.4m X 2.4m RCBC



LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE I

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10

SCALE IN METERS

NORTH CAROLINA

DIVISION OF HIGHWAYS

GUILFORD COUNTY

8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70

TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 22 OF 92

01/09/2005
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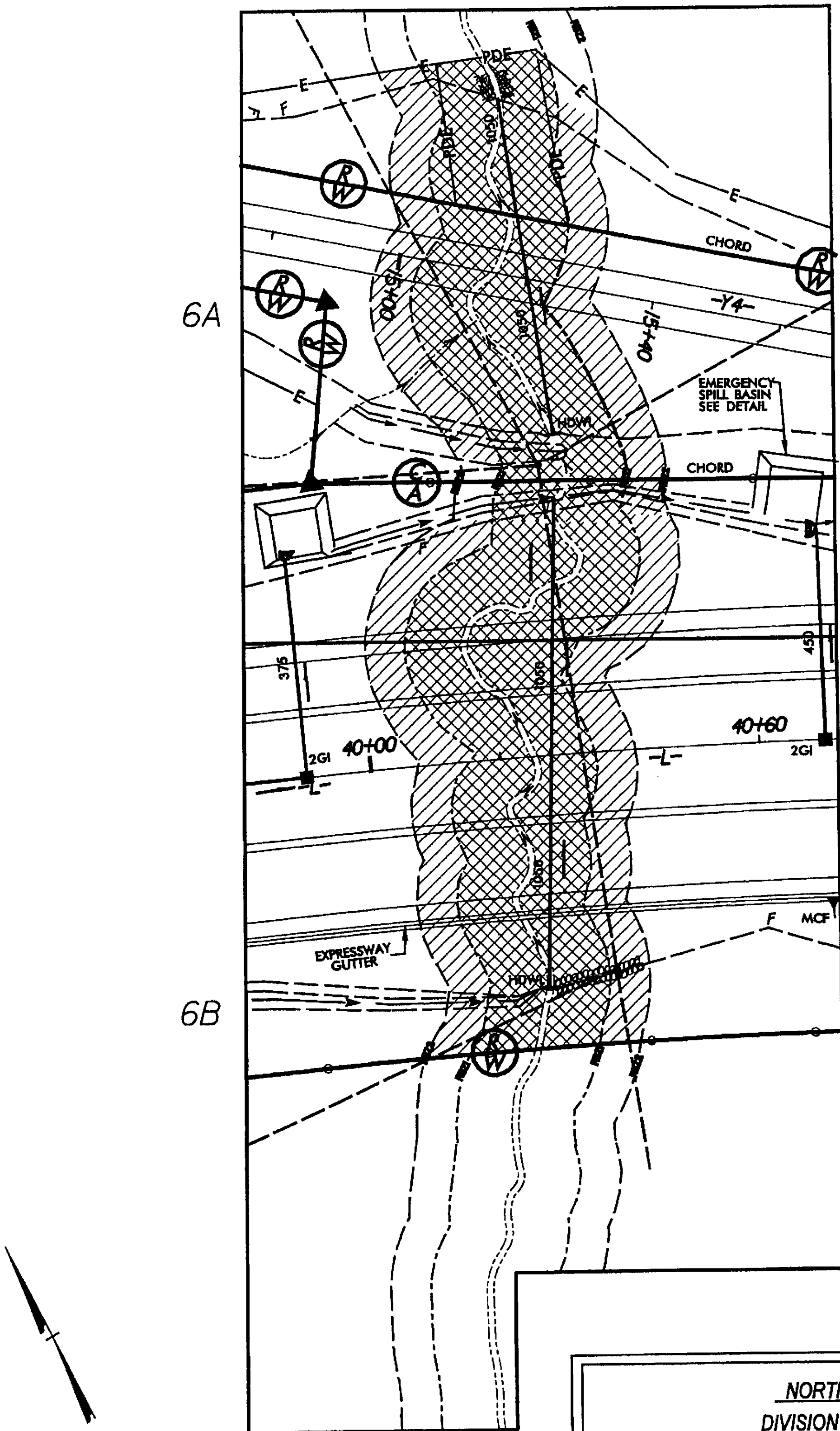

SHEET LAYOUT
PLAN VIEW
SITE 6

10 0 20
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 23 OF 92

1/12/2006
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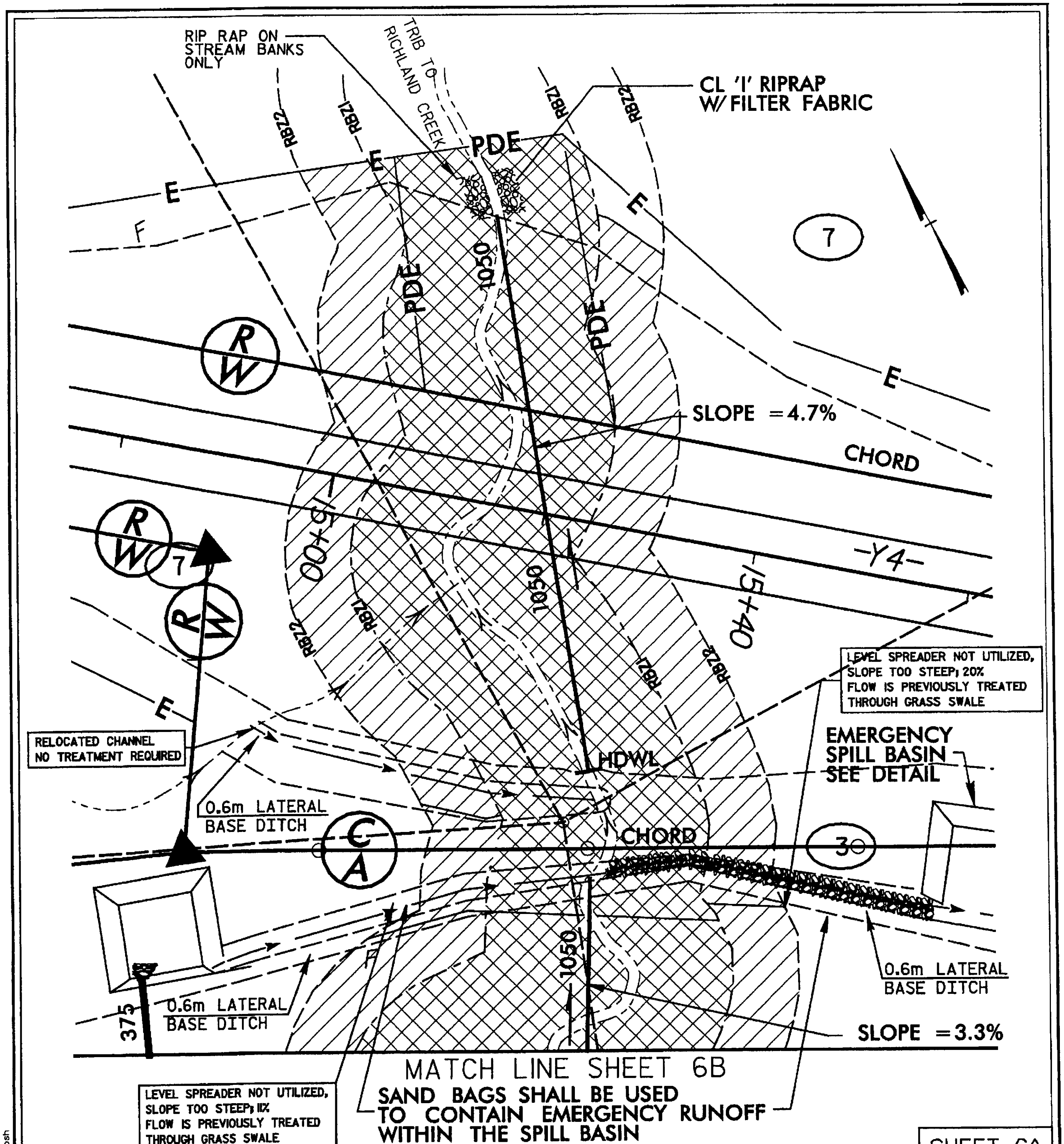

SHEET 6A

LEGEND

RBZ1 — RIPARIAN BUFFER - ZONE 1

RBZ2 — RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PLAN VIEW
SITE 6

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 21 OF 92

/8/2005
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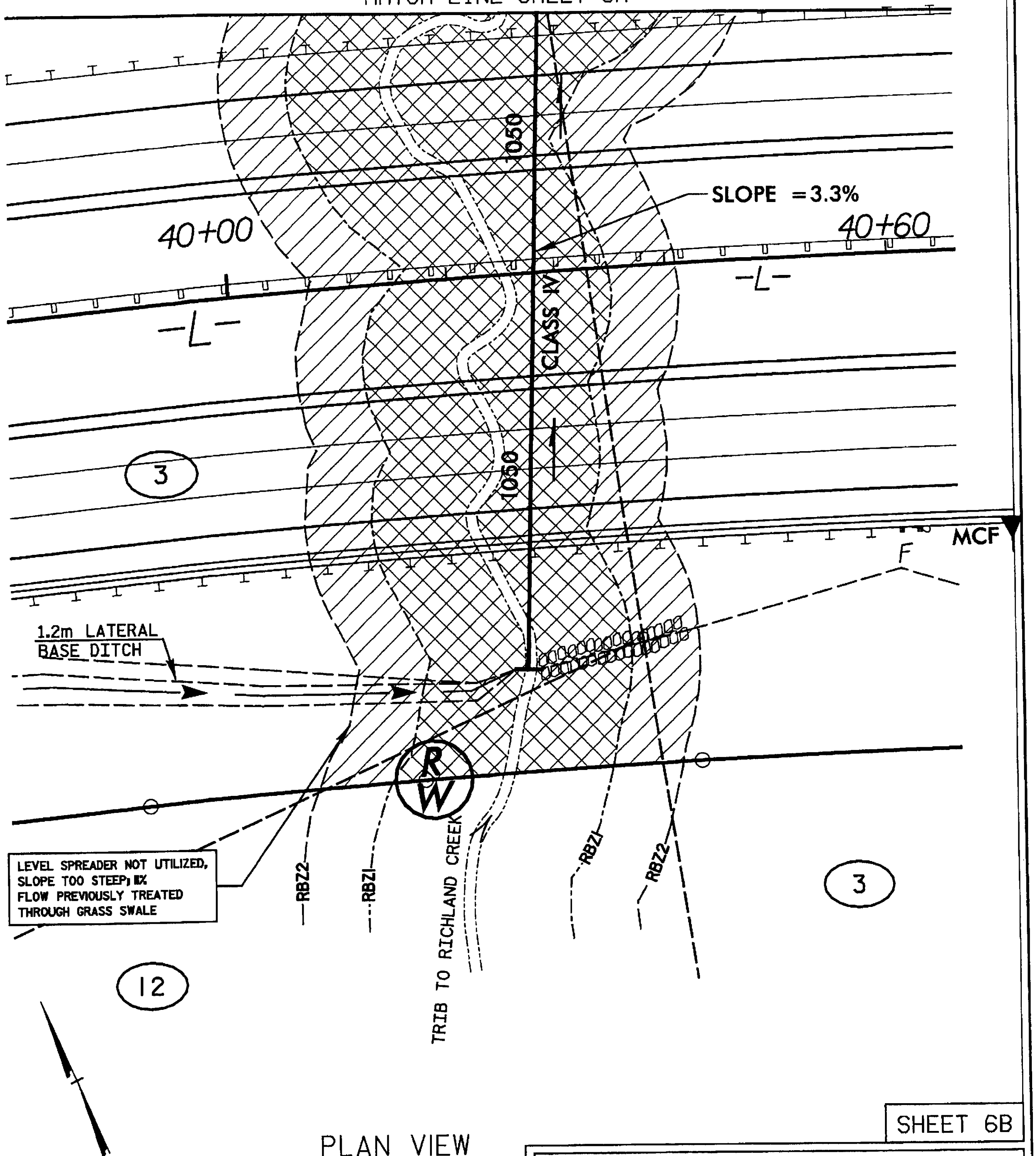
MATCH LINE SHEET 6A



SHEET 6B

PLAN VIEW
SITE 6

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 25 OF 92

/12/2006
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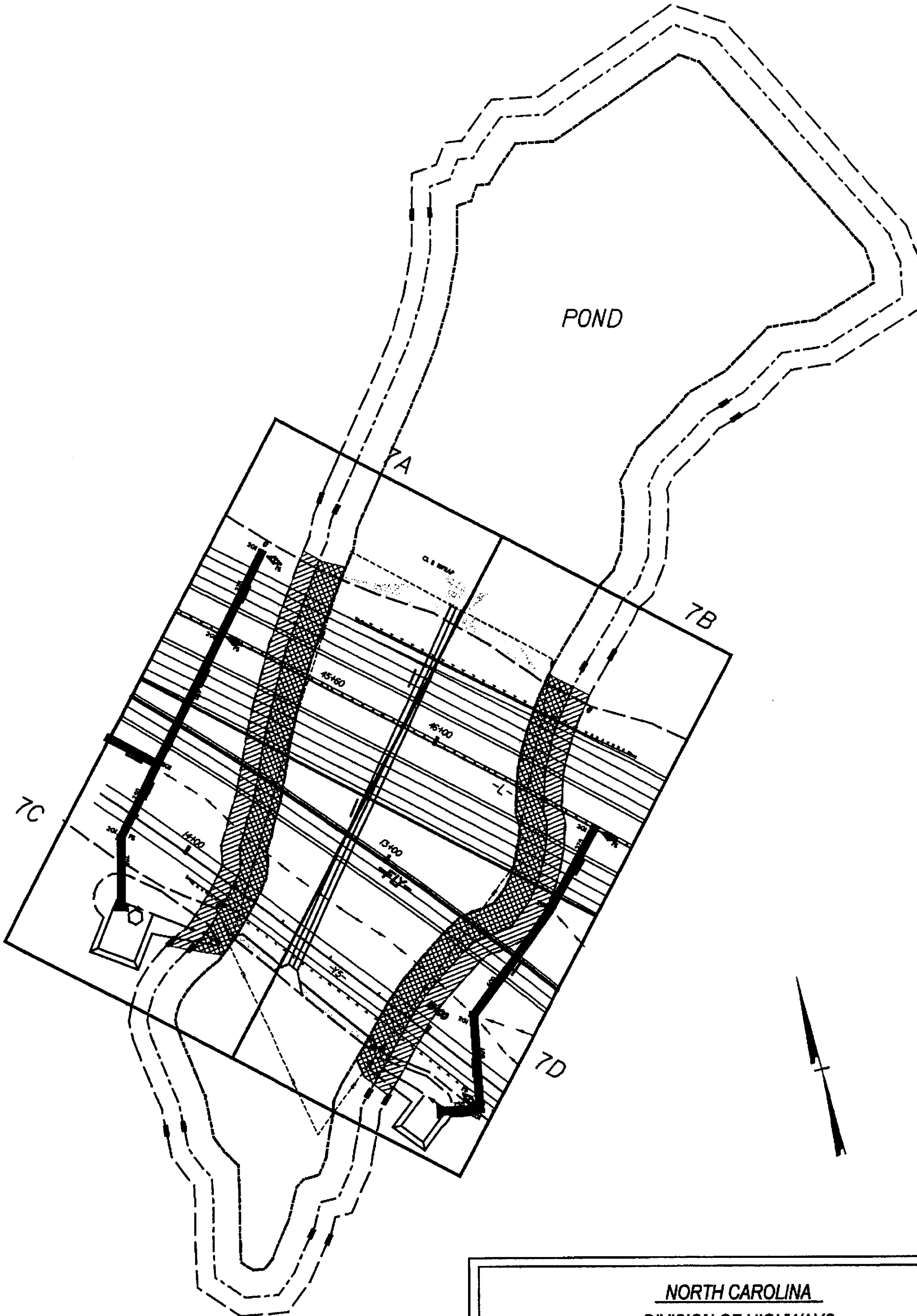

SHEET LAYOUT
PLAN VIEW
SITE 7

20 0 30
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 26 OF 92

1/19/2006
11:48:07 AM
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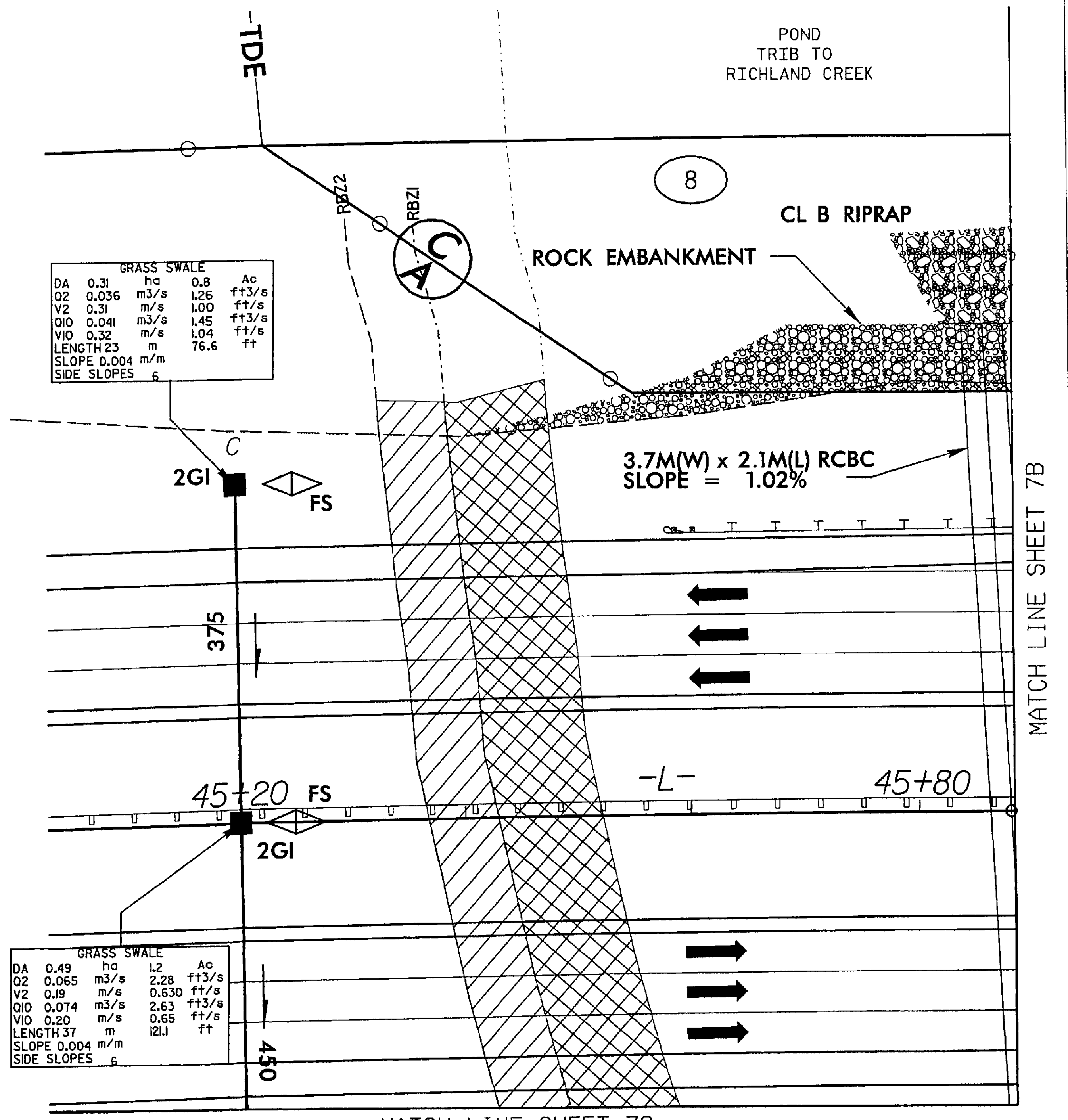

MATCH LINE SHEET 7C

SHEET 7A

PLAN VIEW
SITE 7

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 27 OF 92

12/9/2004
4:26:59 PM
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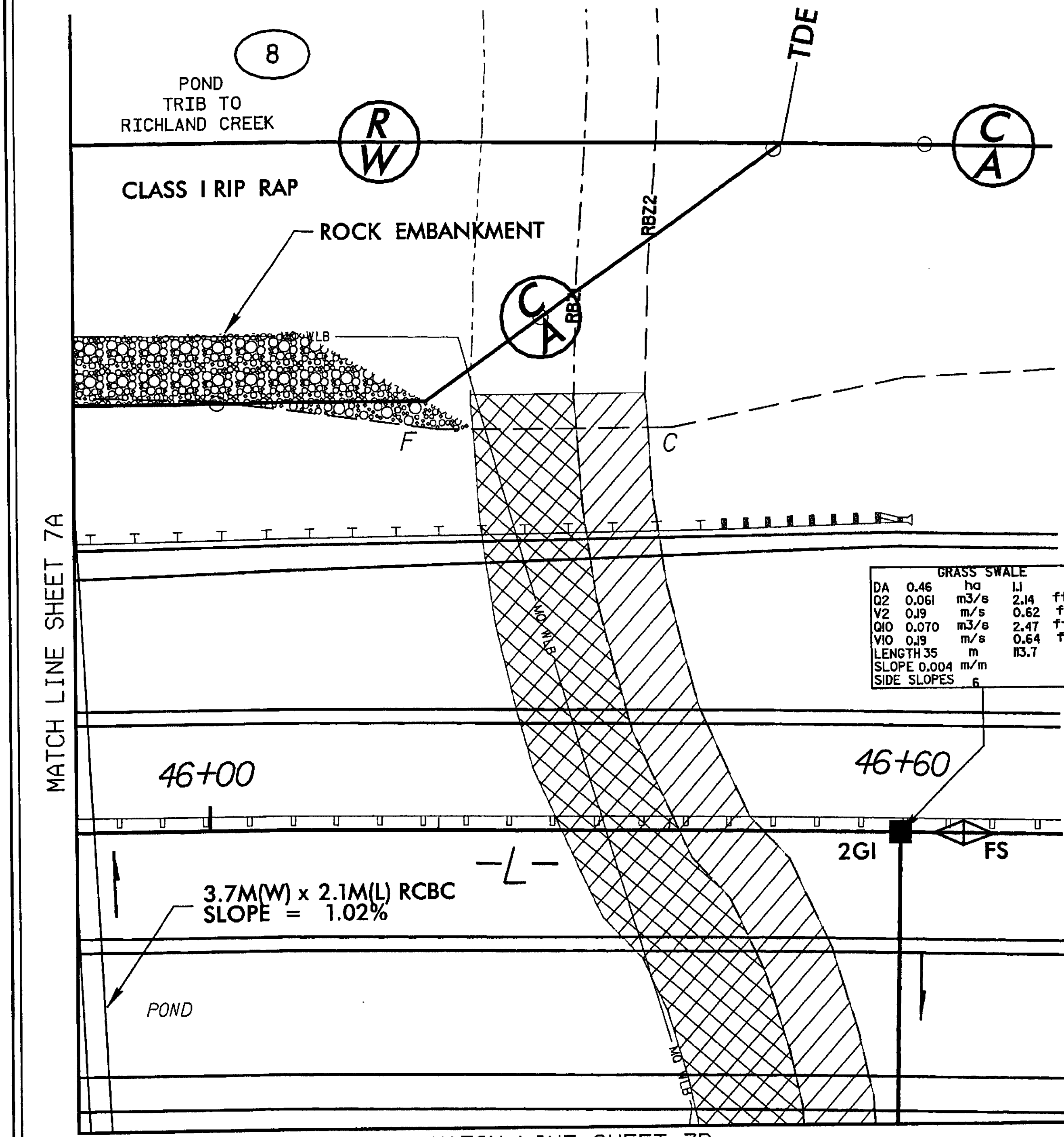

GRASS SWALE				
DA	0.46	ha	1.1	Ac
Q2	0.061	m3/s	2.14	ft3/s
V2	0.19	m/s	0.62	ft/s
Q10	0.070	m3/s	2.47	ft3/s
V10	0.19	m/s	0.64	ft/s
LENGTH	35	m	113.7	ft
SLOPE	0.004	m/m		
SIDE SLOPES		6		

SHEET 7B

PLAN VIEW
SITE 7

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 28 OF 42

12/13/2004
3:46:22 PM
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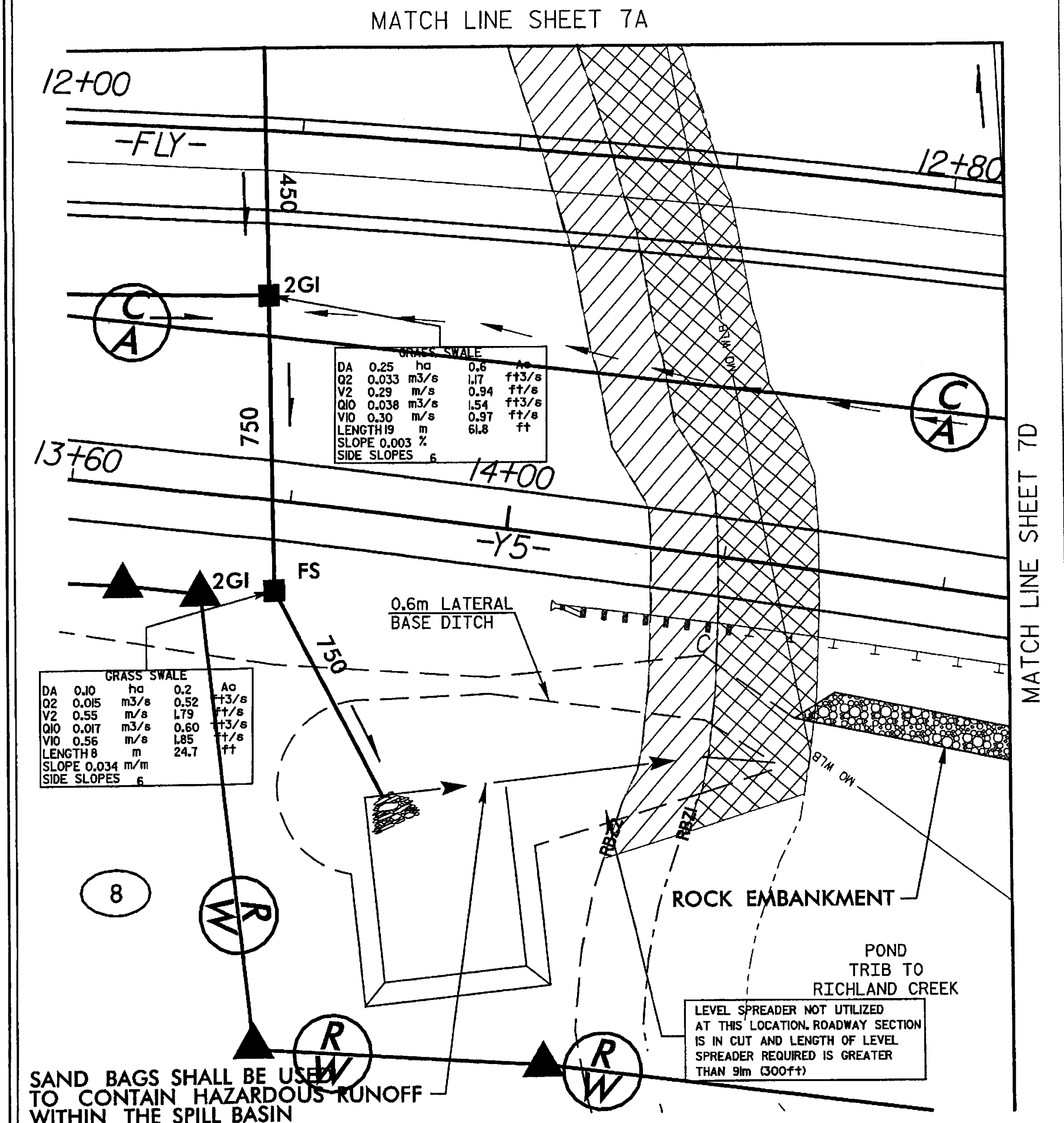

GRASS SWALE				
DA	0.25	ha	0.6	Ac
Q2	0.033	m3/s	1.17	ft3/s
V2	0.29	m/s	0.94	ft/s
Q10	0.038	m3/s	1.54	ft3/s
V10	0.30	m/s	0.97	ft/s
LENGTH	19	m	61.8	ft
SLOPE	0.003	%		
SIDE SLOPES	6			

GRASS SWALE				
DA	0.10	ha	0.2	Ac
Q2	0.015	m3/s	0.52	ft3/s
V2	0.55	m/s	1.79	ft/s
Q10	0.017	m3/s	0.60	ft3/s
V10	0.56	m/s	1.85	ft/s
LENGTH	8	m	24.7	ft
SLOPE	0.034	m/m		
SIDE SLOPES	6			

LEVEL SPREADER NOT UTILIZED AT THIS LOCATION. ROADWAY SECTION IS IN CUT AND LENGTH OF LEVEL SPREADER REQUIRED IS GREATER THAN 9m (300ft)

SHEET 7C

PLAN VIEW
SITE 7

LEGEND
- RBZ1 — RIPARIAN BUFFER - ZONE 1
- RBZ2 — RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE I
- MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 29 OF 92

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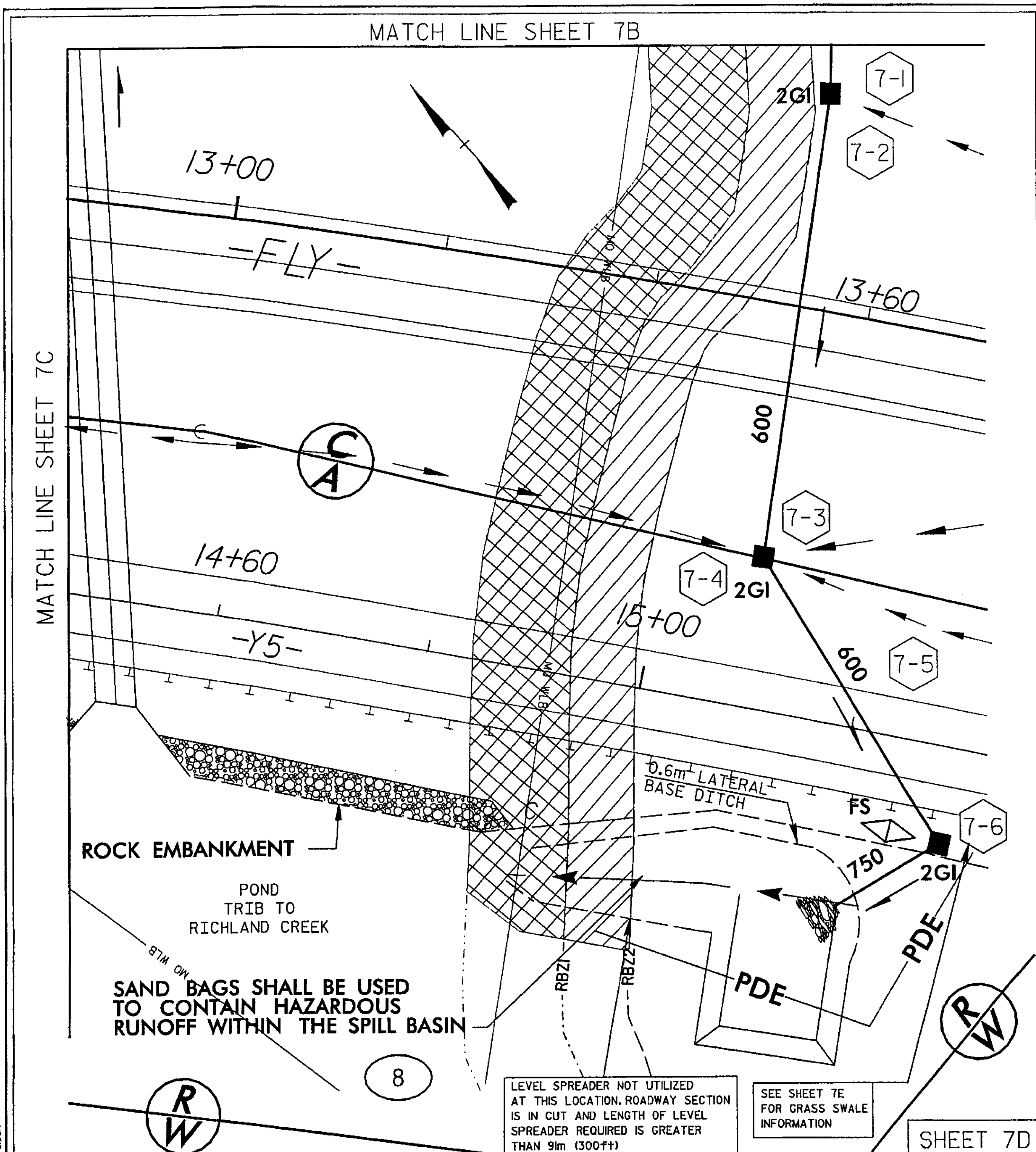

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PLAN VIEW
SITE 7

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 30 OF 92

12/10/2004
9:06:11 AM
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7-1

GRASS SWALE				
DA	0.40	ha	1.0	Ac
Q2	0.066	m3/s	2.33	ft3/s
V2	0.19	m/s	0.63	ft/s
Q10	0.076	m3/s	2.68	ft3/s
V10	0.20	m/s	0.65	ft/s
LENGTH	30	m	98.8	ft
SLOPE	0.004	m/m		
SIDE SLOPES	6			

7-2

GRASS SWALE				
DA	0.44	ha	1.1	Ac
Q2	0.058	m3/s	2.05	ft3/s
V2	0.49	m/s	1.61	ft/s
Q10	0.067	m3/s	2.36	ft3/s
V10	0.51	m/s	1.66	ft/s
LENGTH	33	m	108.7	ft
SLOPE	0.054	m/m		
SIDE SLOPES	6			

7-3

GRASS SWALE				
DA	0.60	ha	1.5	Ac
Q2	0.099	m3/s	3.50	ft3/s
V2	0.69	m/s	2.26	ft/s
Q10	0.114	m3/s	4.02	ft3/s
V10	0.71	m/s	2.34	ft/s
LENGTH	45	m	148.3	ft
SLOPE	0.094	m/m		
SIDE SLOPES	6			

7-4

GRASS SWALE				
DA	0.18	ha	0.4	Ac
Q2	0.030	m3/s	1.05	ft3/s
V2	0.40	m/s	1.30	ft/s
Q10	0.034	m3/s	1.21	ft3/s
V10	0.41	m/s	1.34	ft/s
LENGTH	14	m	44.5	ft
SLOPE	0.009	m/m		
SIDE SLOPES	6			

7-5

GRASS SWALE				
DA	0.24	ha	0.6	Ac
Q2	0.032	m3/s	1.12	ft3/s
V2	0.48	m/s	1.57	ft/s
Q10	0.036	m3/s	1.29	ft3/s
V10	0.50	m/s	1.63	ft/s
LENGTH	18	m	59.3	ft
SLOPE	0.076	m/m		
SIDE SLOPES	6			

7-6

GRASS SWALE				
DA	0.12	ha	0.3	Ac
Q2	0.020	m3/s	0.70	ft3/s
V2	0.71	m/s	2.33	ft/s
Q10	0.023	m3/s	0.80	ft3/s
V10	0.73	m/s	2.41	ft/s
LENGTH	9	m	29.7	ft
SLOPE	0.056	m/m		
SIDE SLOPES	6			

SHEET 7E

NORTH CAROLINA

DIVISION OF HIGHWAYS

GUILFORD COUNTY

8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70

TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 4 OF 92

12/10/2004
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12/2005
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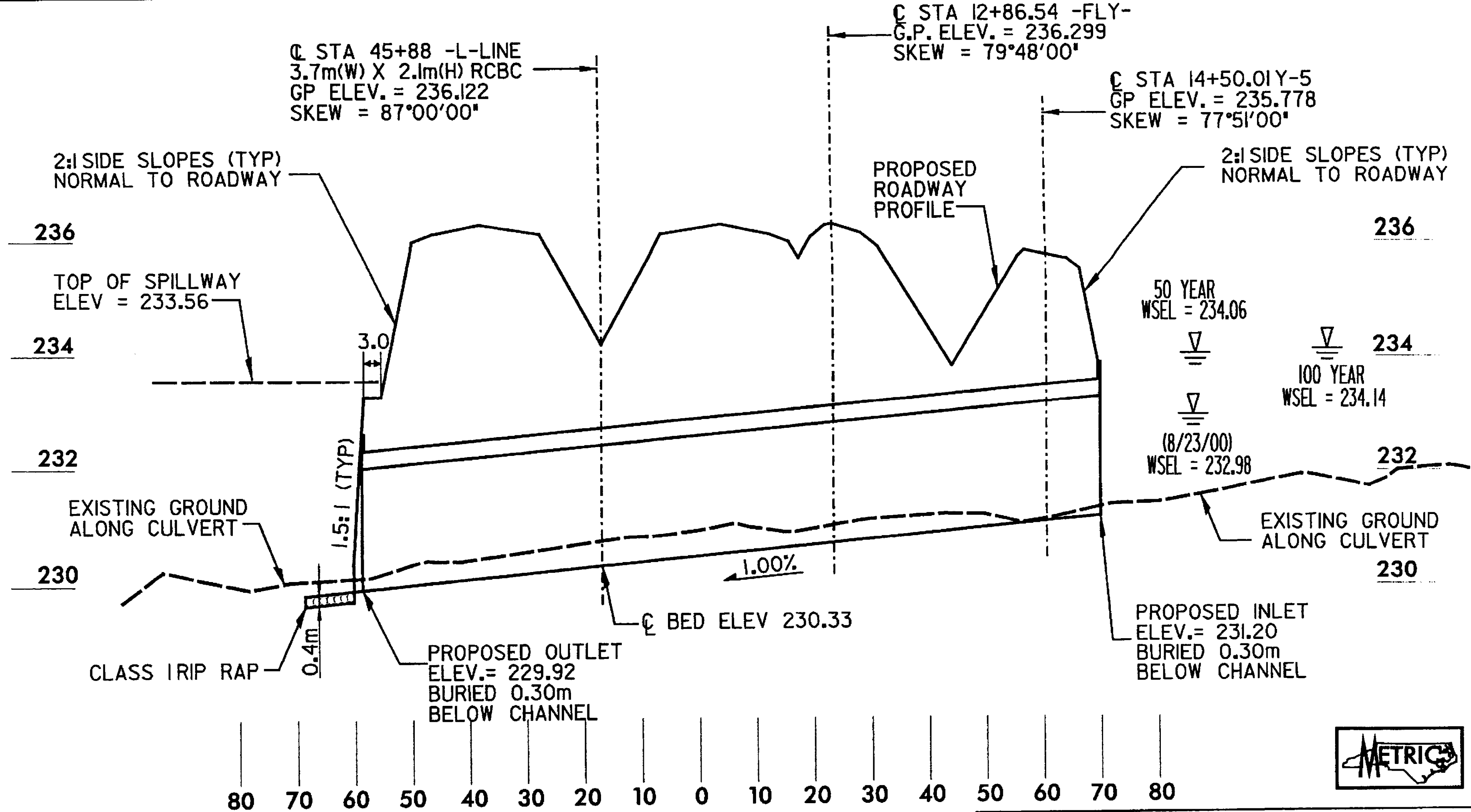


METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

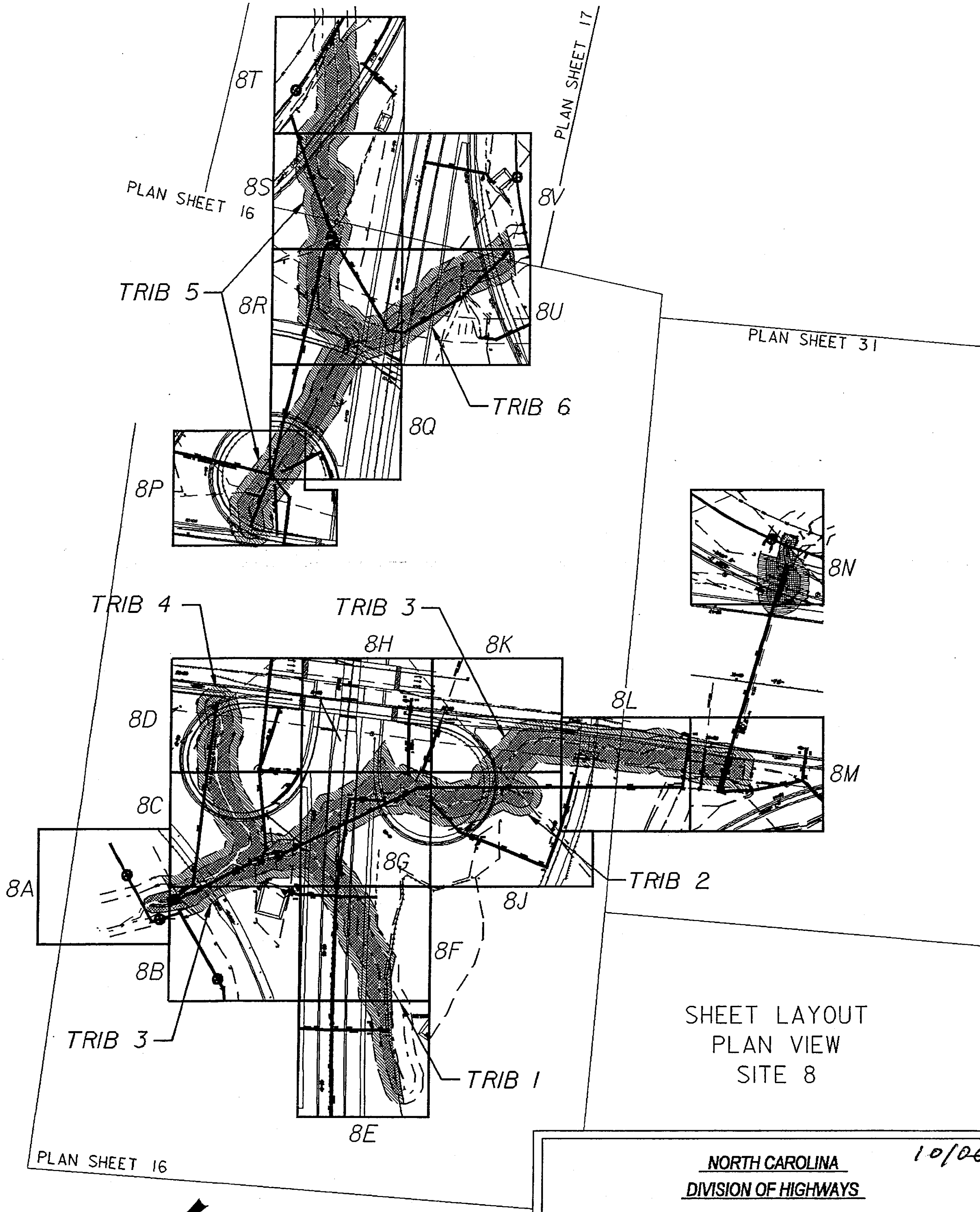
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 32 OF 92

SCALE:
1 = 100 HORIZONTAL
1 = 100 VERTICAL

PROFILE
PERMIT SITE 7 (7A - 7D)
2100mm RCP



SHEET LAYOUT
PLAN VIEW
SITE 8

METRIC

40 0 80
SCALE IN METERS

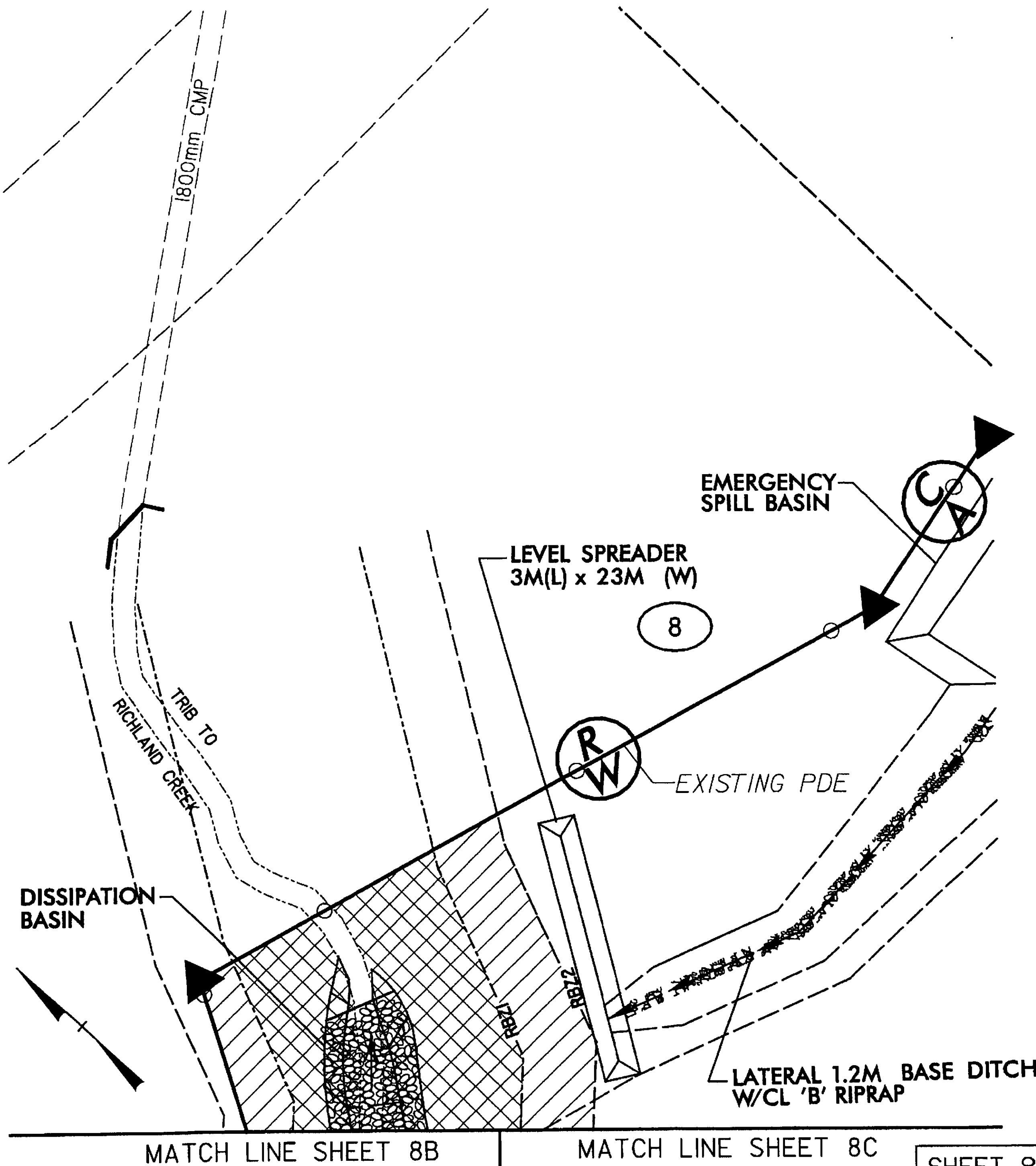
10/06

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 33 OF 92



SHEET 8A

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 51 OF 92

12/2006
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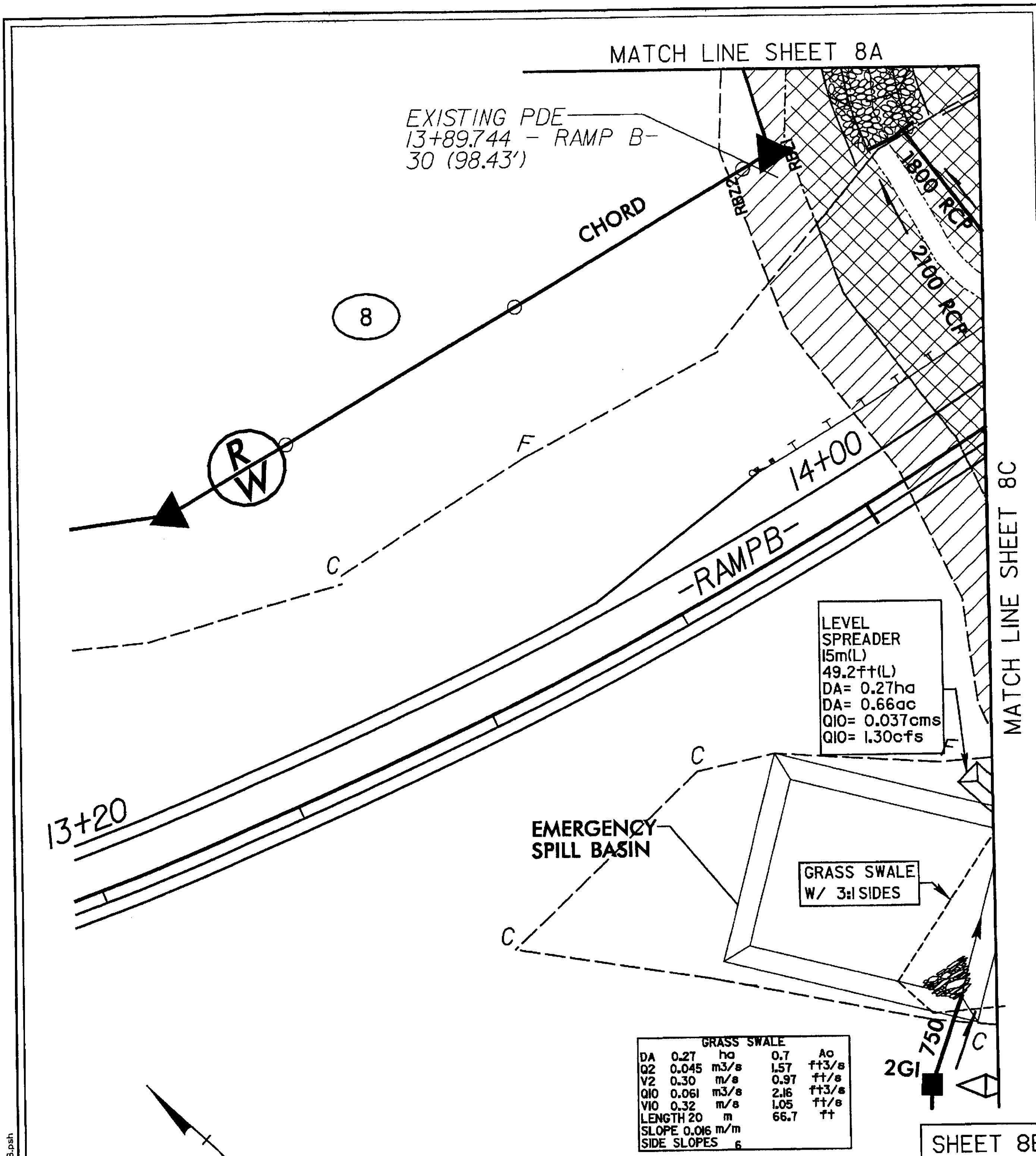

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 25 OF 92

3/2006
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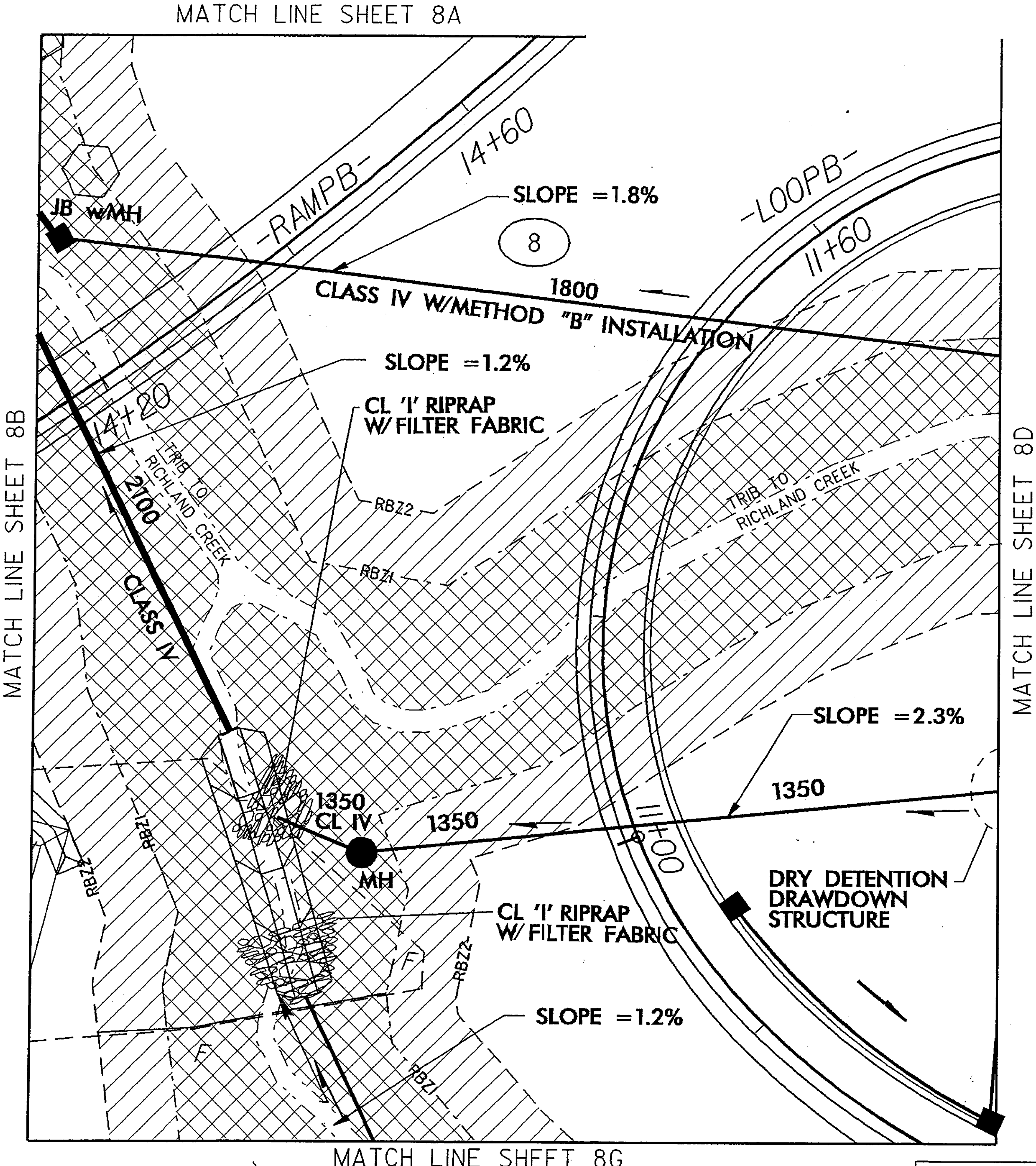


SHEET 8C

PLAN VIEW
SITE 8

LEGEND

RBZ1 . RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

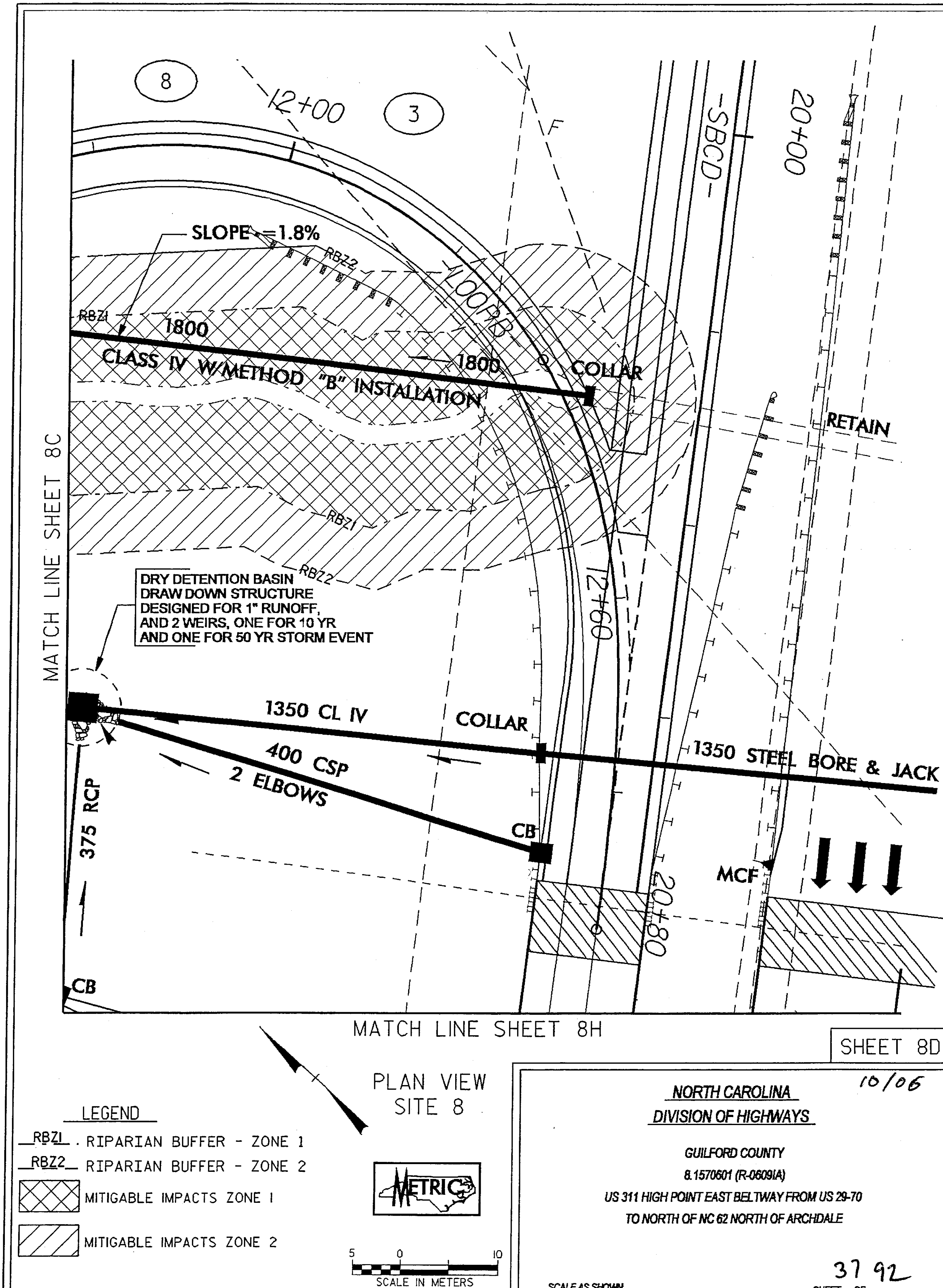
10/06

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 36 OF 92



SHEET 8D

PLAN VIEW
SITE 8

10/06

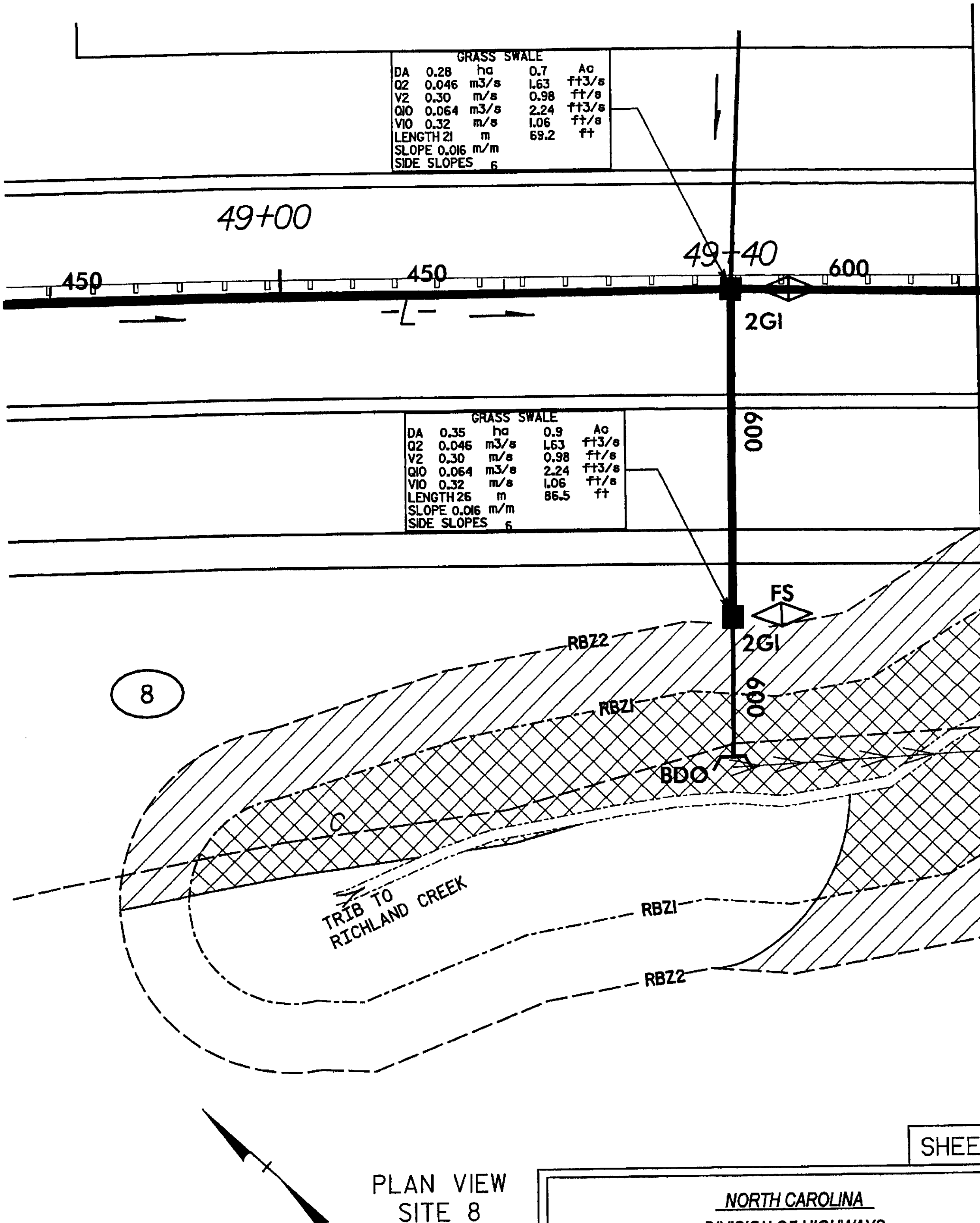
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 37 OF 92

$DATE$ $TIME$ $FILE$



SHEET 8E

PLAN VIEW
SITE 8

LEGEND

- RBZ1 — RIPARIAN BUFFER - ZONE 1
- RBZ2 — RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

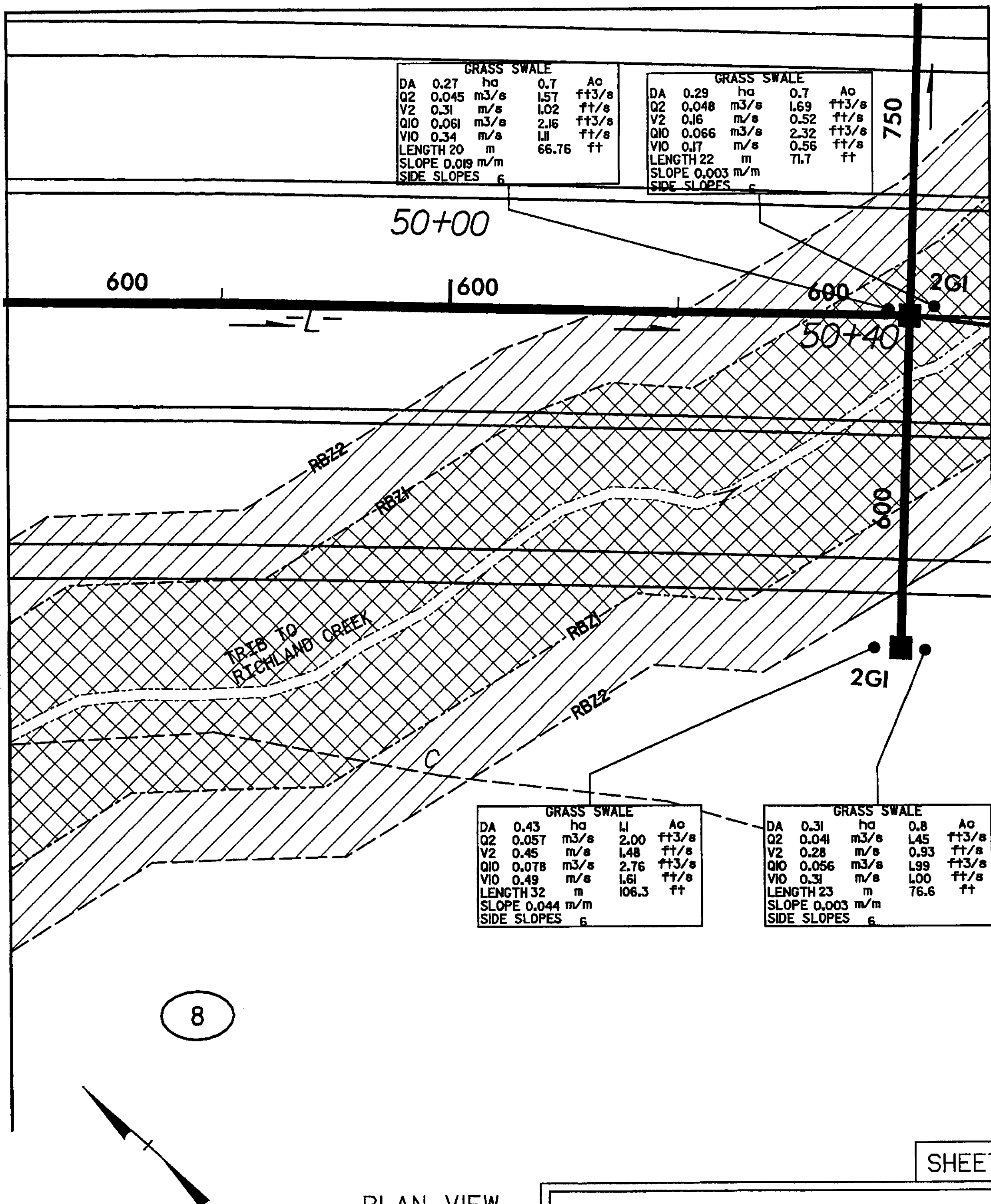
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 58 OF 72

MATCH LINE SHEET 8B



MATCH LINE SHEET 8E

MATCH LINE SHEET 8G

SHEET 8F

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PLAN VIEW
SITE 8

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 31 OF 92

12/2006
23:27 PM
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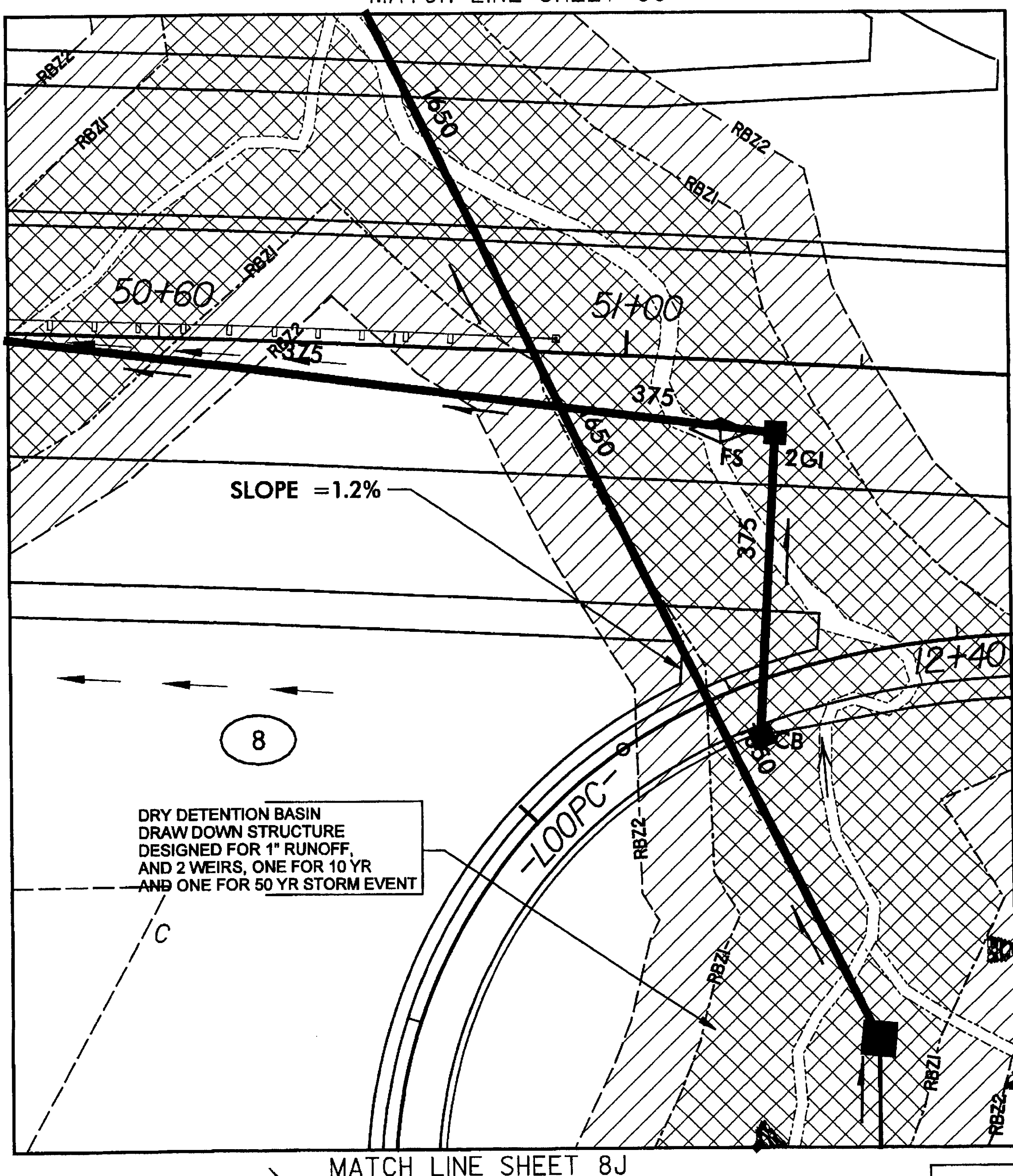

SHEET 8G

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE I

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 40 OF 92

12/2006
29:30 PM
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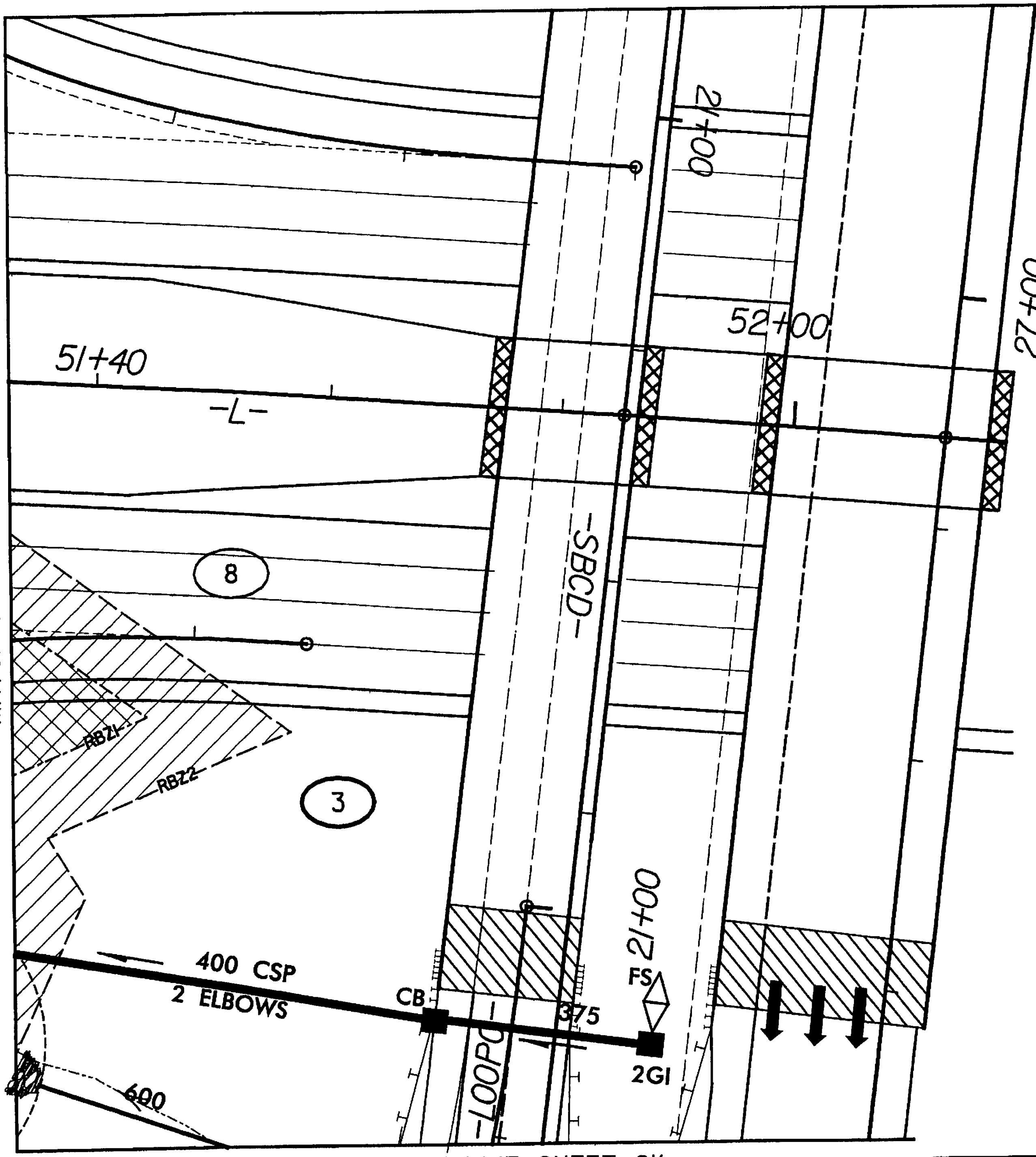
MATCH LINE SHEET 8D



MATCH LINE SHEET 8K

SHEET 8H

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE I

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 41 OF 92

12/2006
3:12 PM
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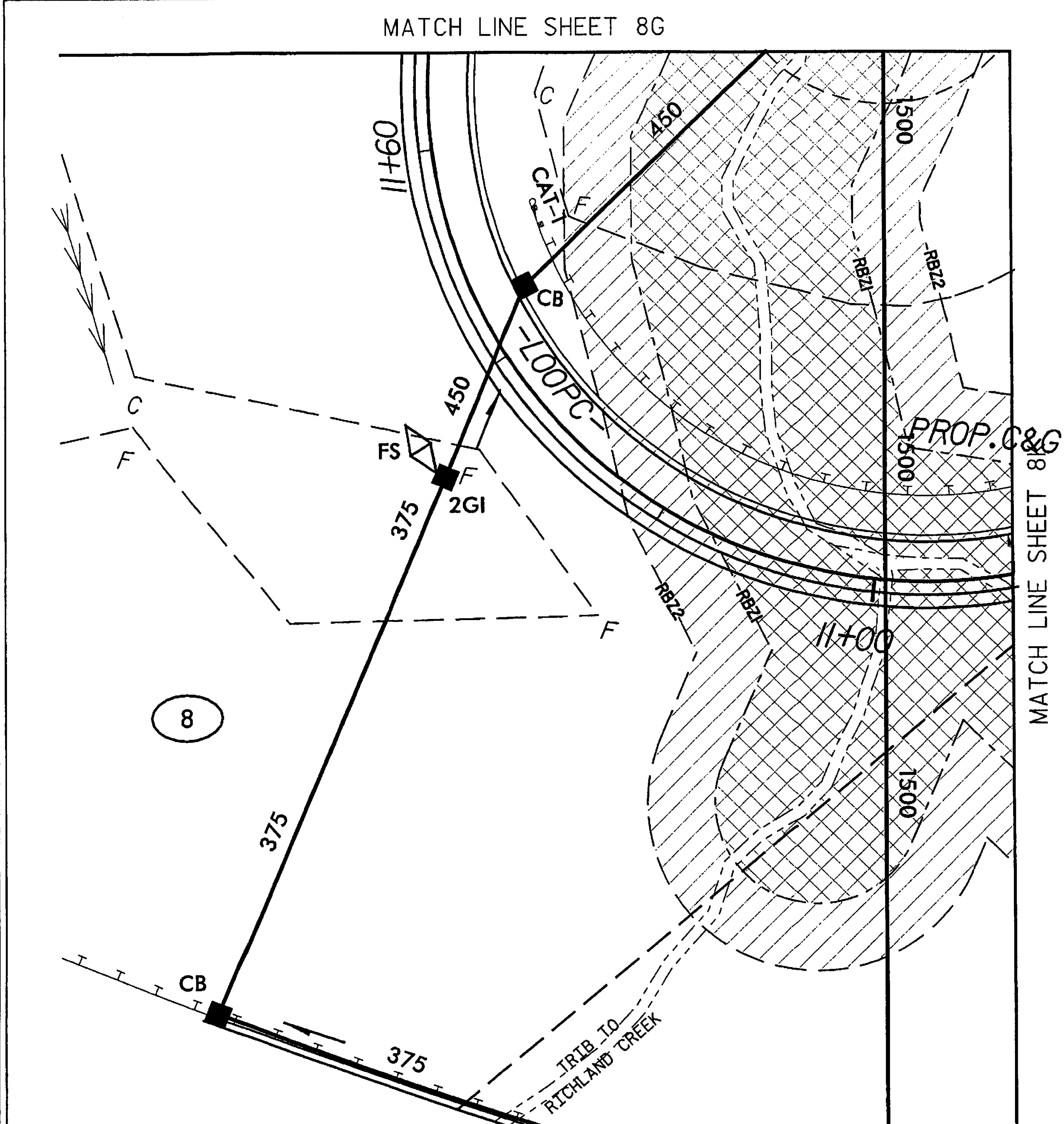

SHEET 8 J

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE I
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 42 OF 62

01/09/2005
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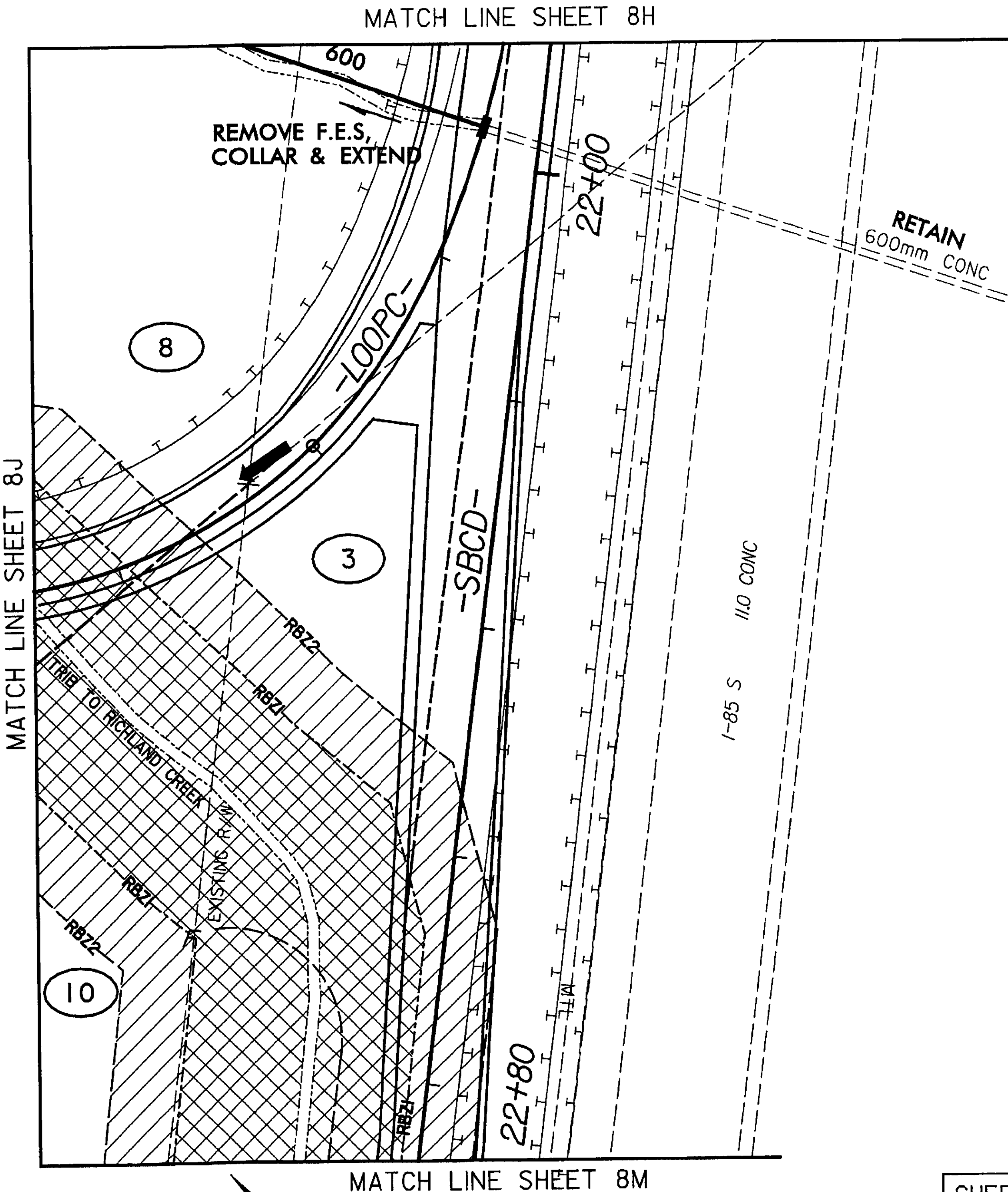

SHEET 8K

PLAN VIEW
SITE 8

LEGEND

- RBZ1 RIPARIAN BUFFER - ZONE 1
- RBZ2 RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 13 OF 93

3/2006
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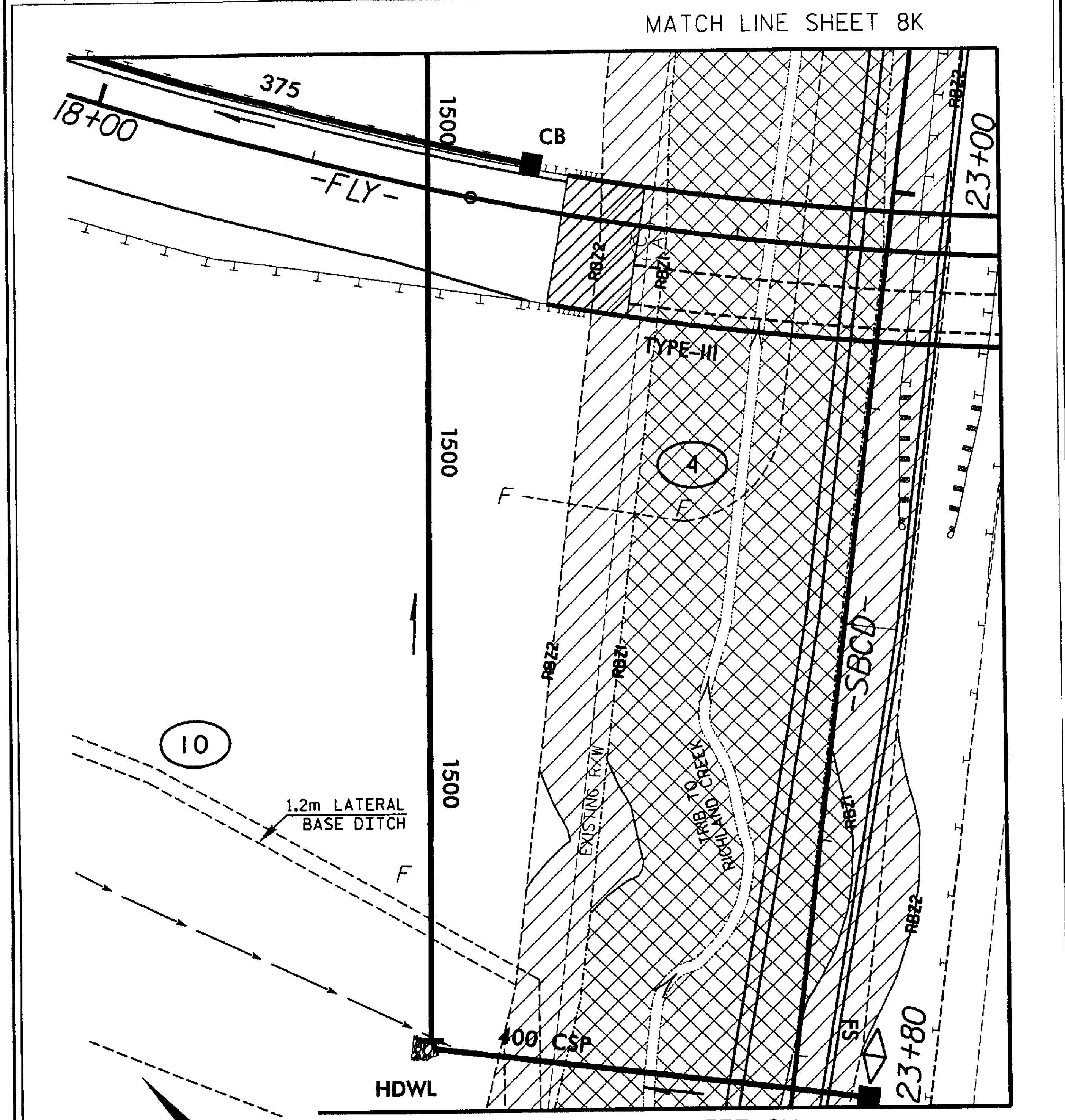

SHEET 8L

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 41 OF 62

10/2005
06:01PM
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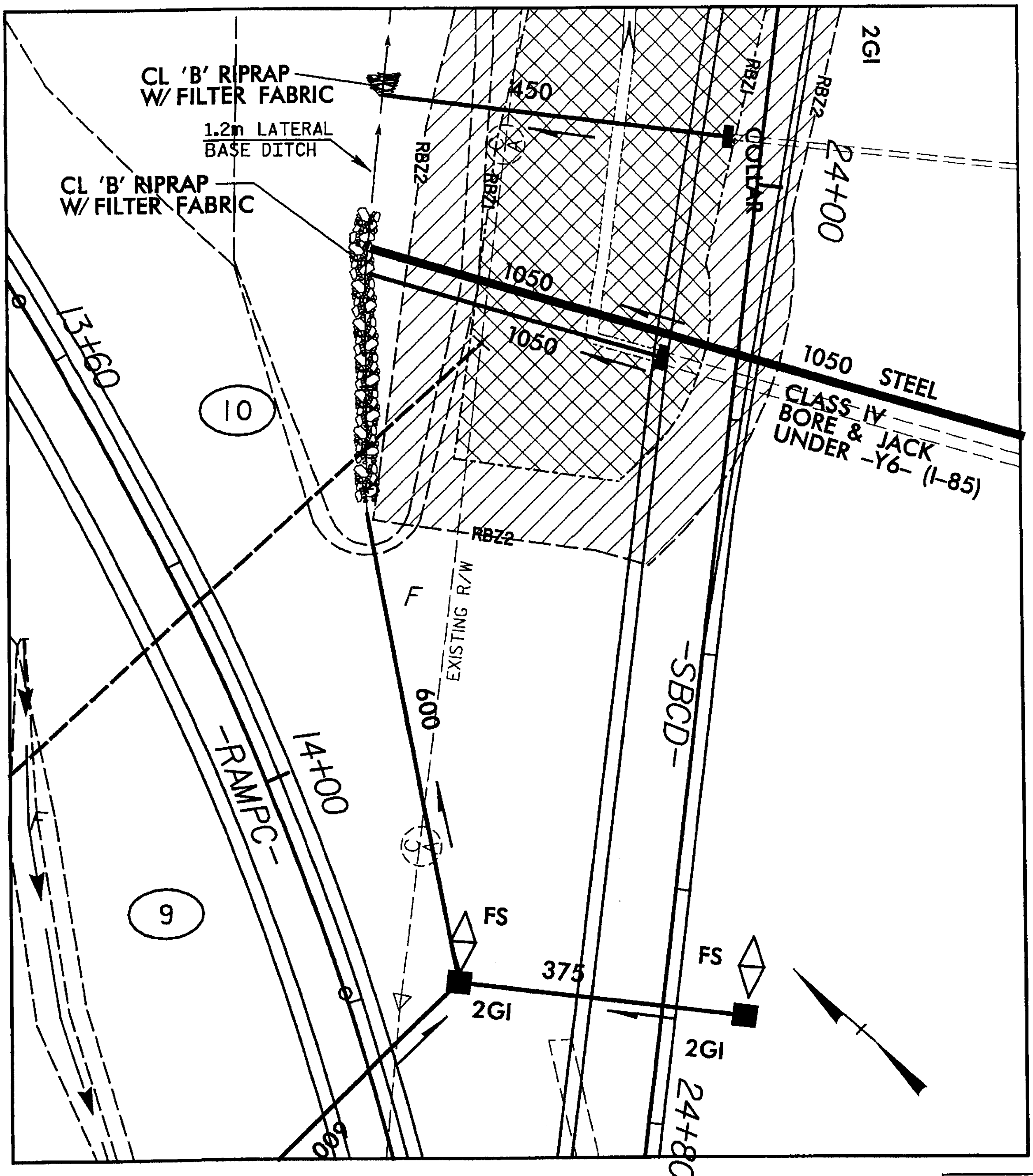
MATCH LINE SHEET 8L



SHEET 8M

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 45 OF 47

7/19/2006
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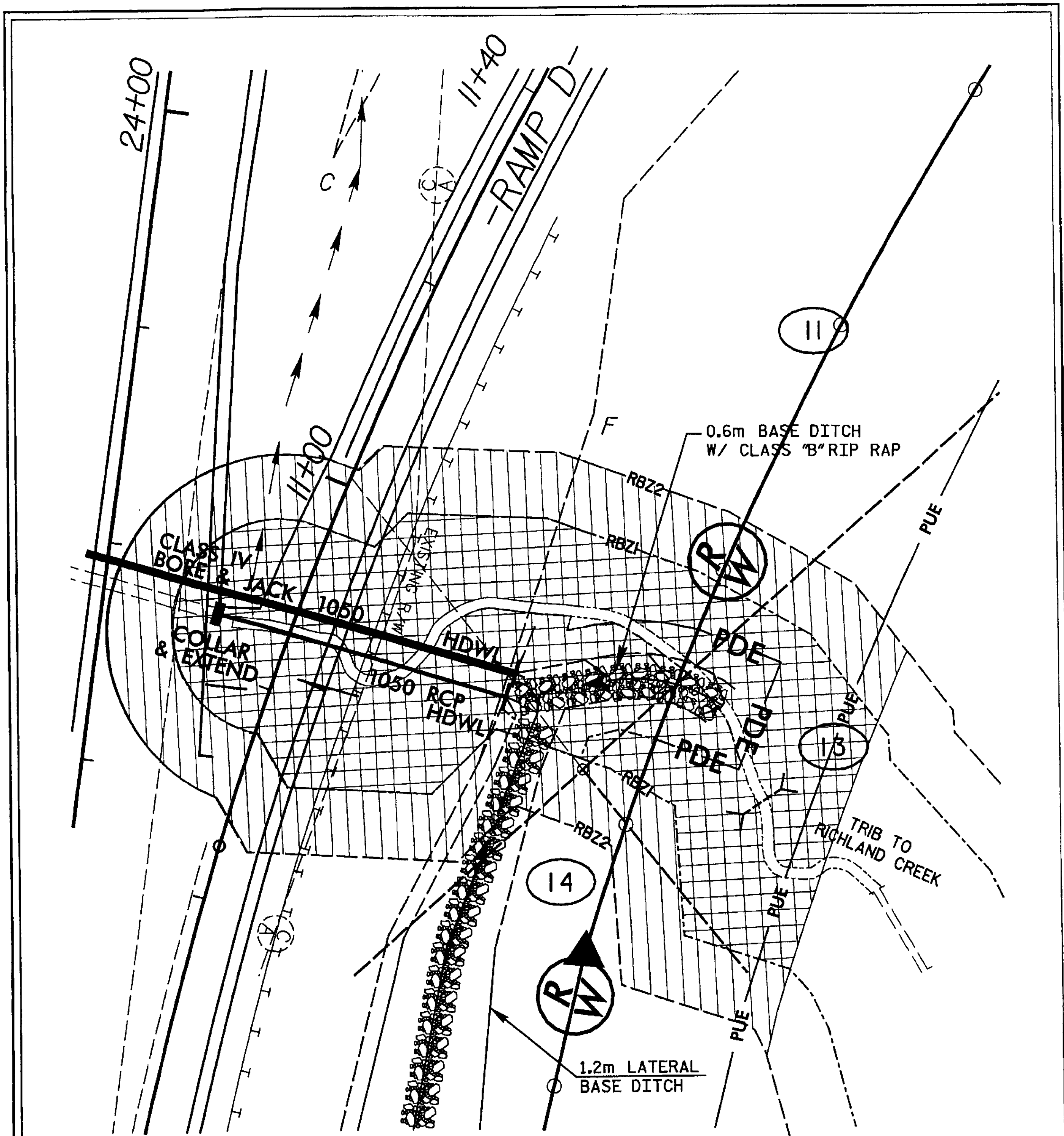

SHEET 8N

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 46 OF 92

19/2006
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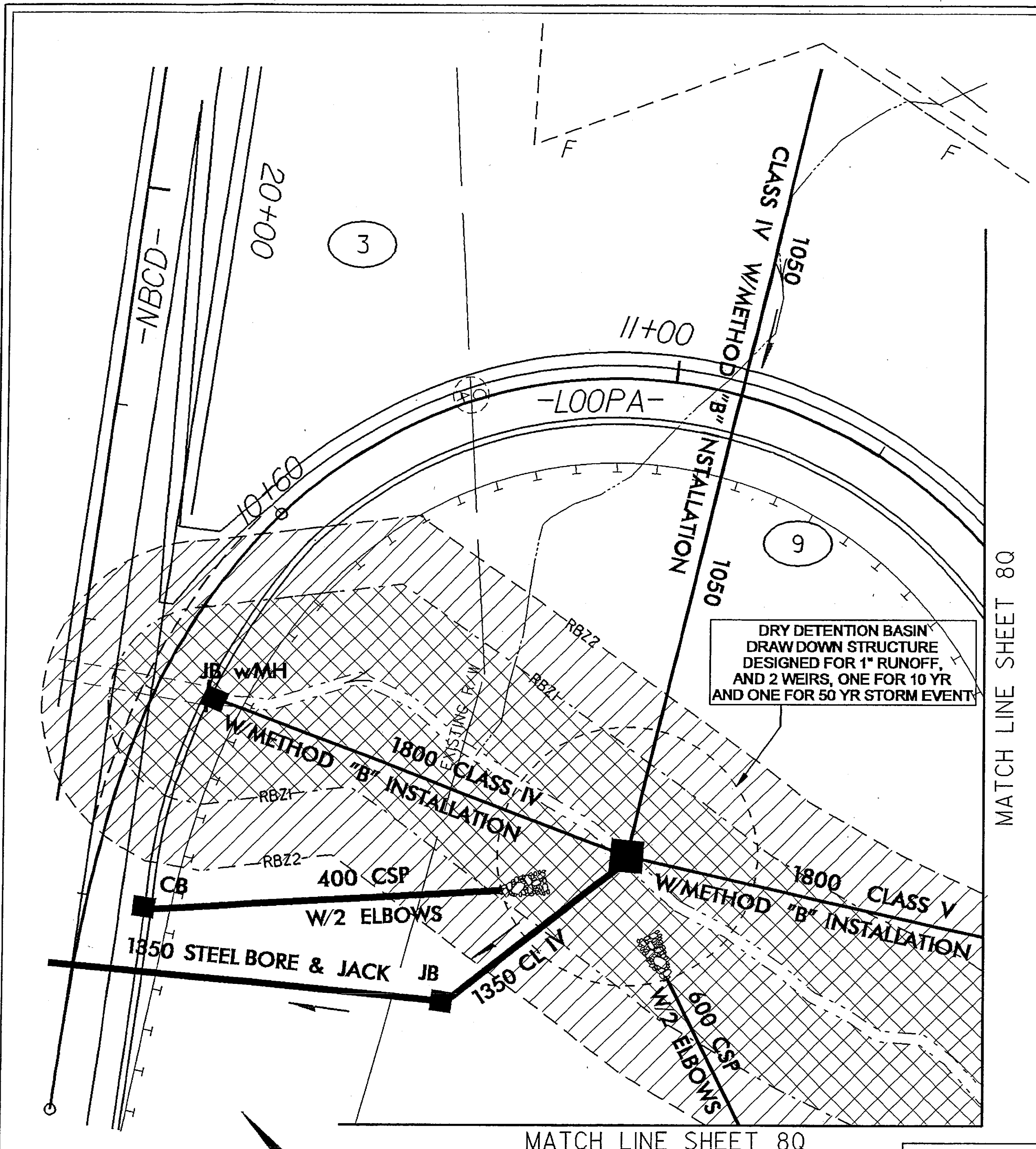


SHEET 8P

PLAN VIEW
SITE 8

LEGEND

RBZ1 . RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE I

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

10/06

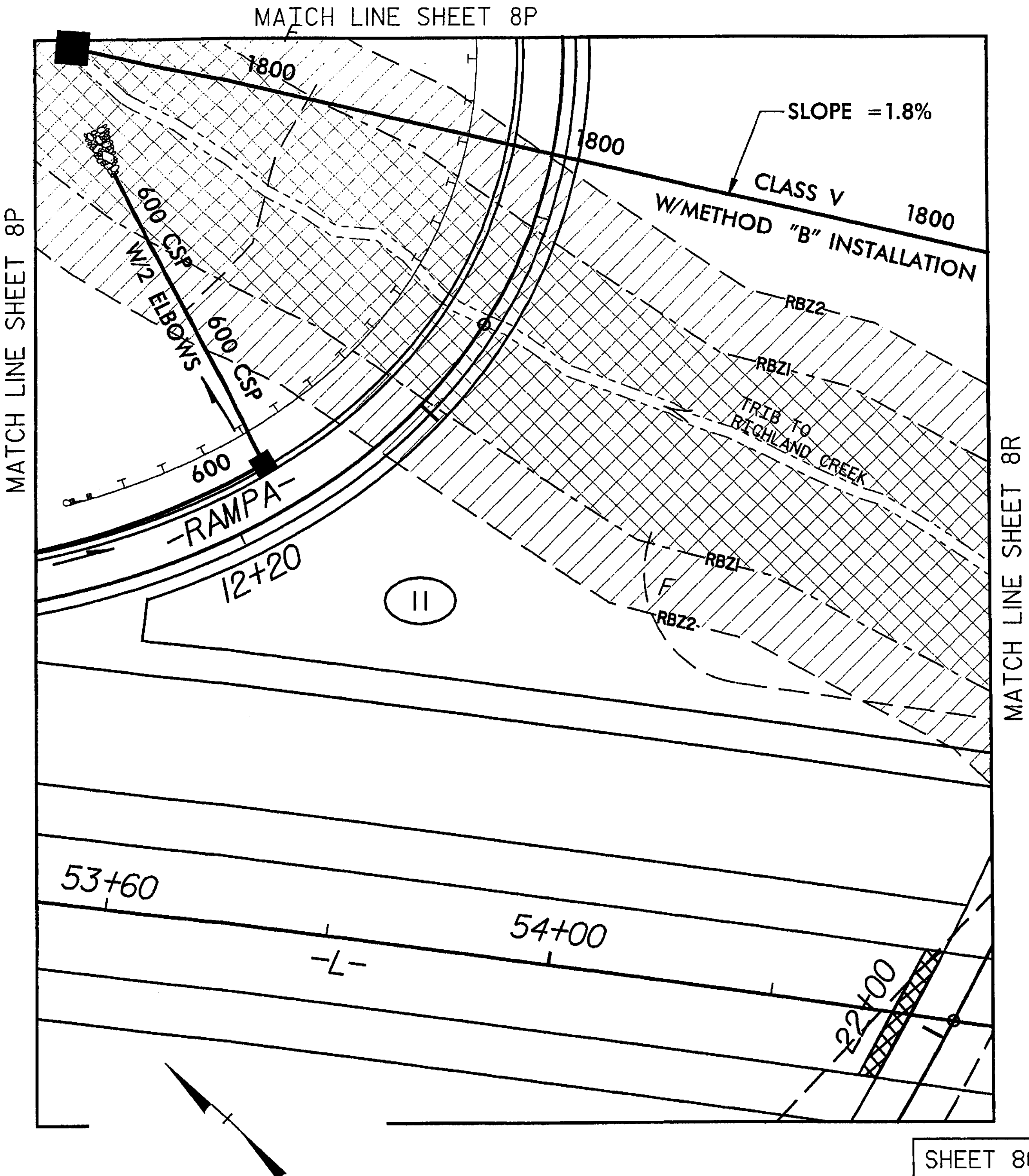
NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 47 OF 92

DATE$ TIME$ FILE$



SHEET 8Q

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 48 OF 92

01/09/2005
04:54:44 PM
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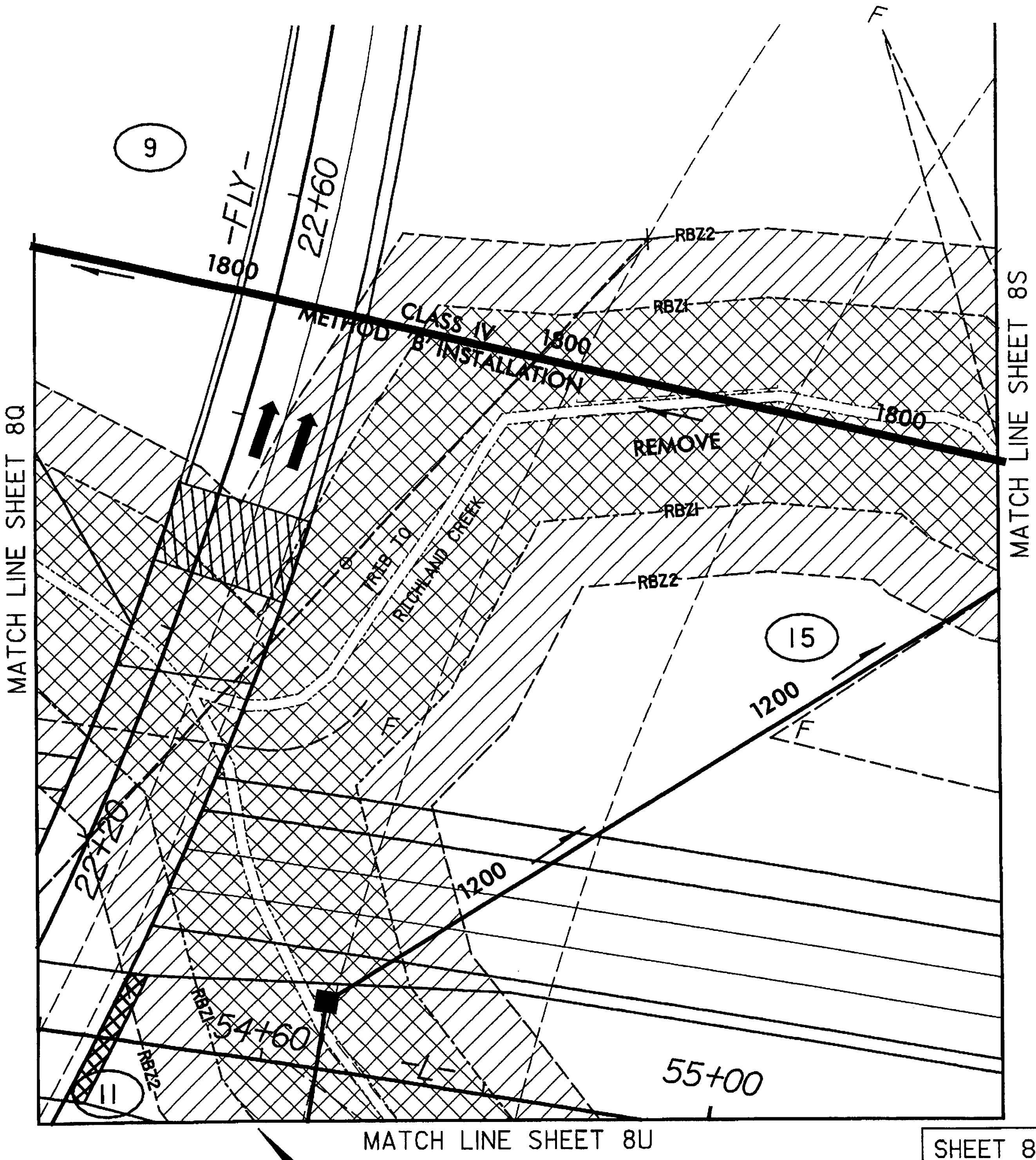

SHEET 8R

PLAN VIEW
SITE 8

LEGEND

- RBZ1 RIPARIAN BUFFER - ZONE 1
- RBZ2 RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 49 OF 92

12/2006
4:00 PM
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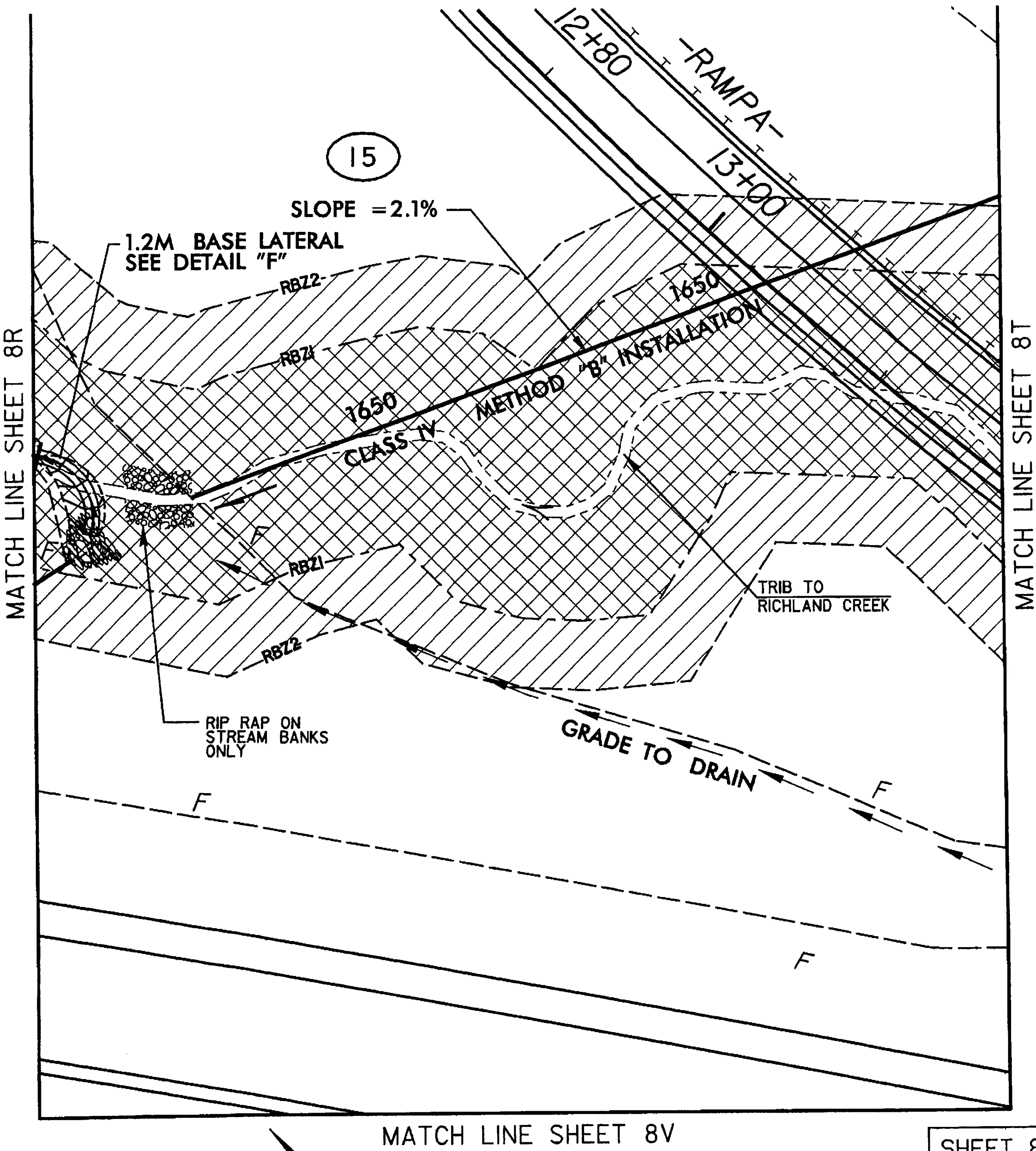

SHEET 8S

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 50 OF 92

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10/2005
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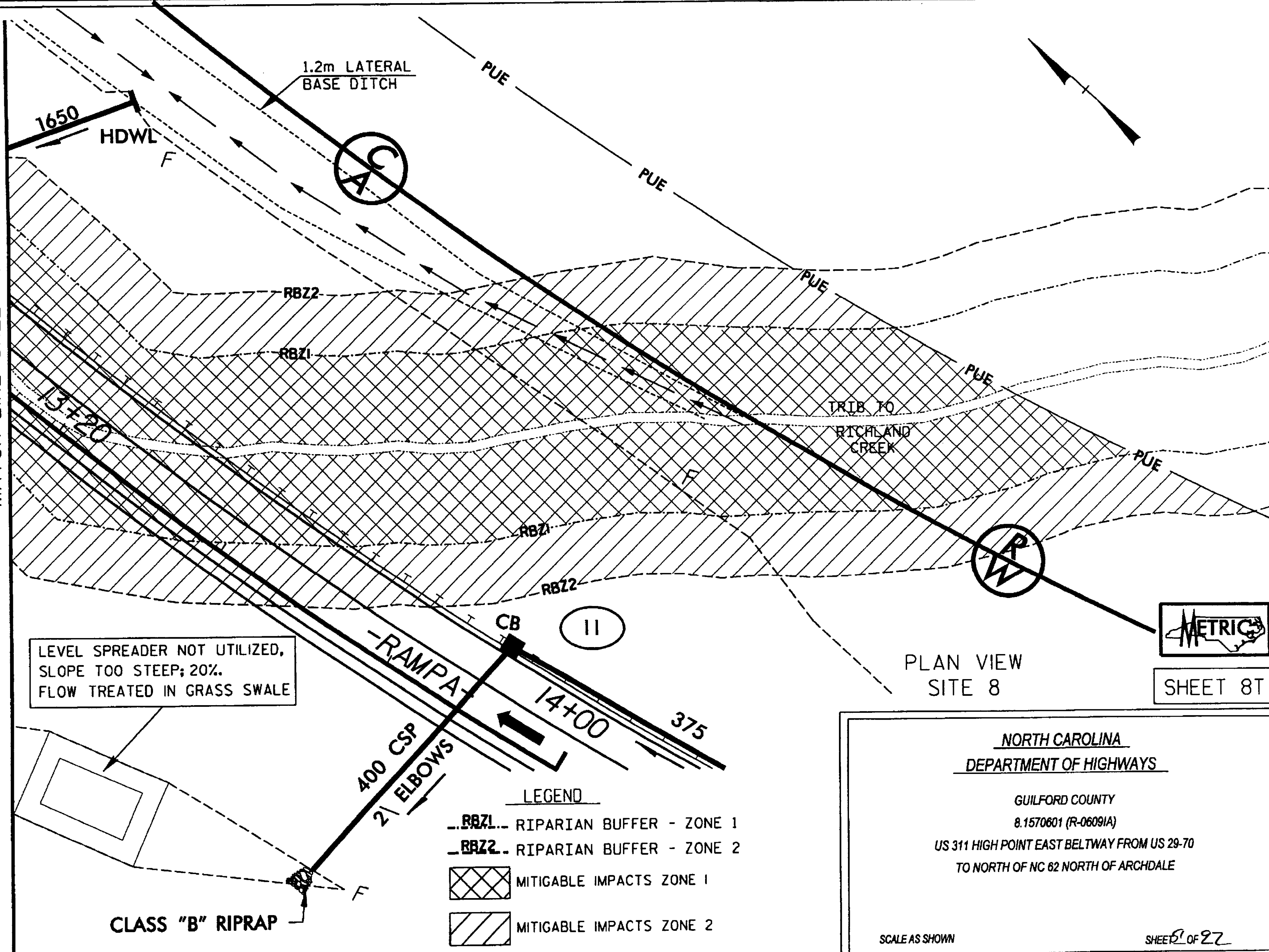
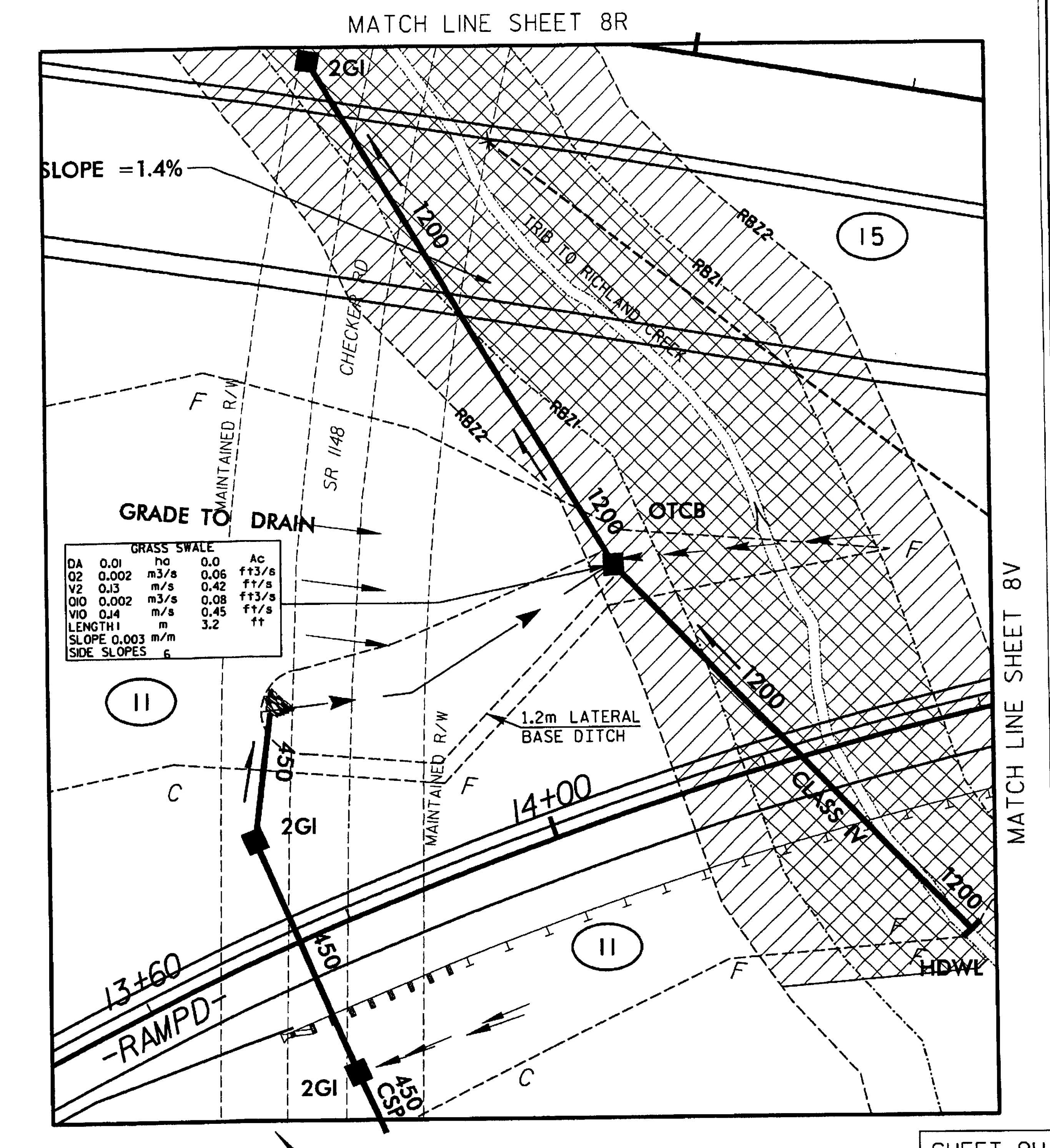


NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 21 OF 22



SHEET 8U

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 12 OF 92

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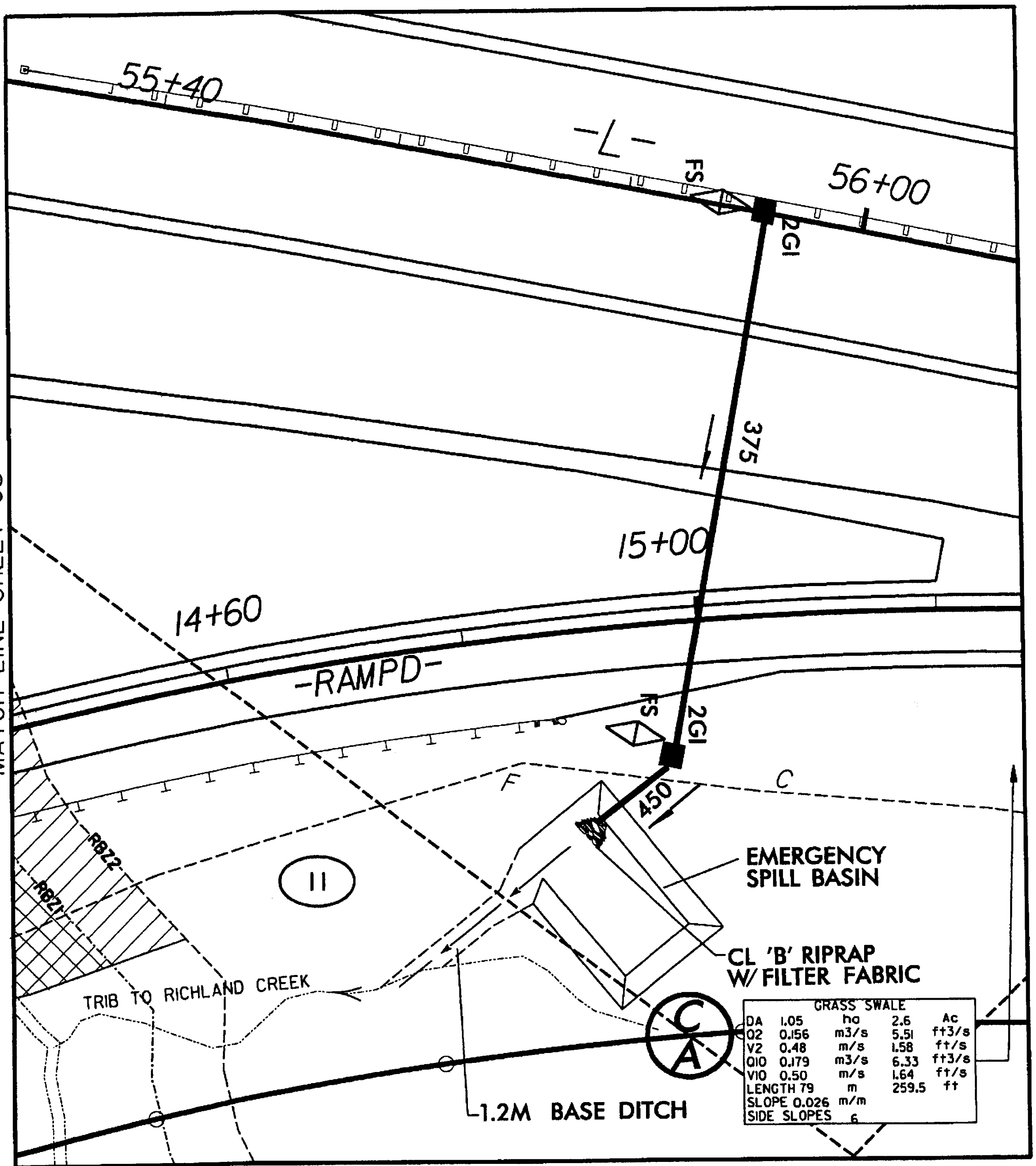
MATCH LINE SHEET 8S



GRASS SWALE				
DA	1.05	ha	2.6	Ac
Q2	0.156	m3/s	5.51	ft3/s
V2	0.48	m/s	1.58	ft/s
Q10	0.179	m3/s	6.33	ft3/s
V10	0.50	m/s	1.64	ft/s
LENGTH	79	m	259.5	ft
SLOPE	0.026	m/m		
SIDE SLOPES	6			

SHEET 8V

PLAN VIEW
SITE 8

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 53 OF 92

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12/2005
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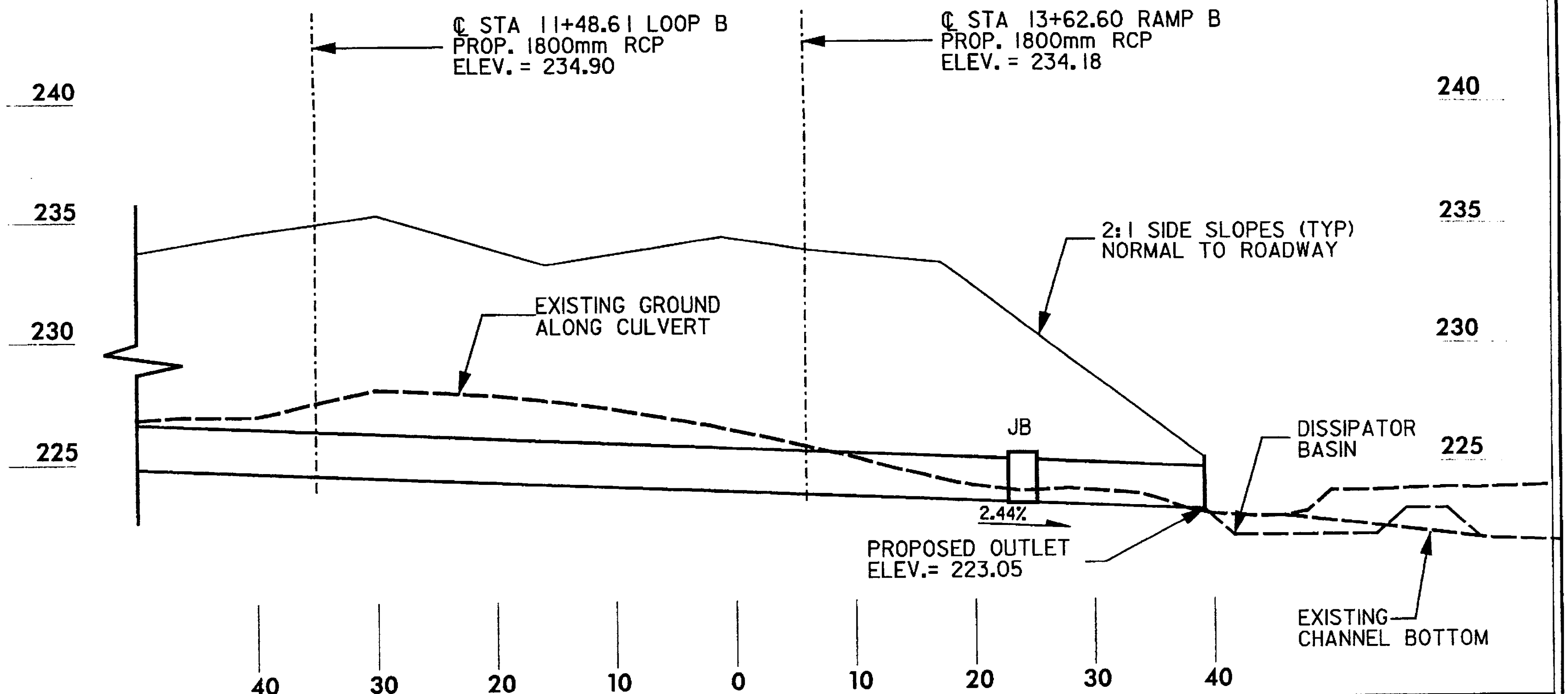

SCALE:
1 = 500 HORIZONTAL
1 = 250 VERTICAL

METRIC

PROFILE
PERMIT SITE 8 (8B & 8C)
1800mm RCP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 54 OF 92

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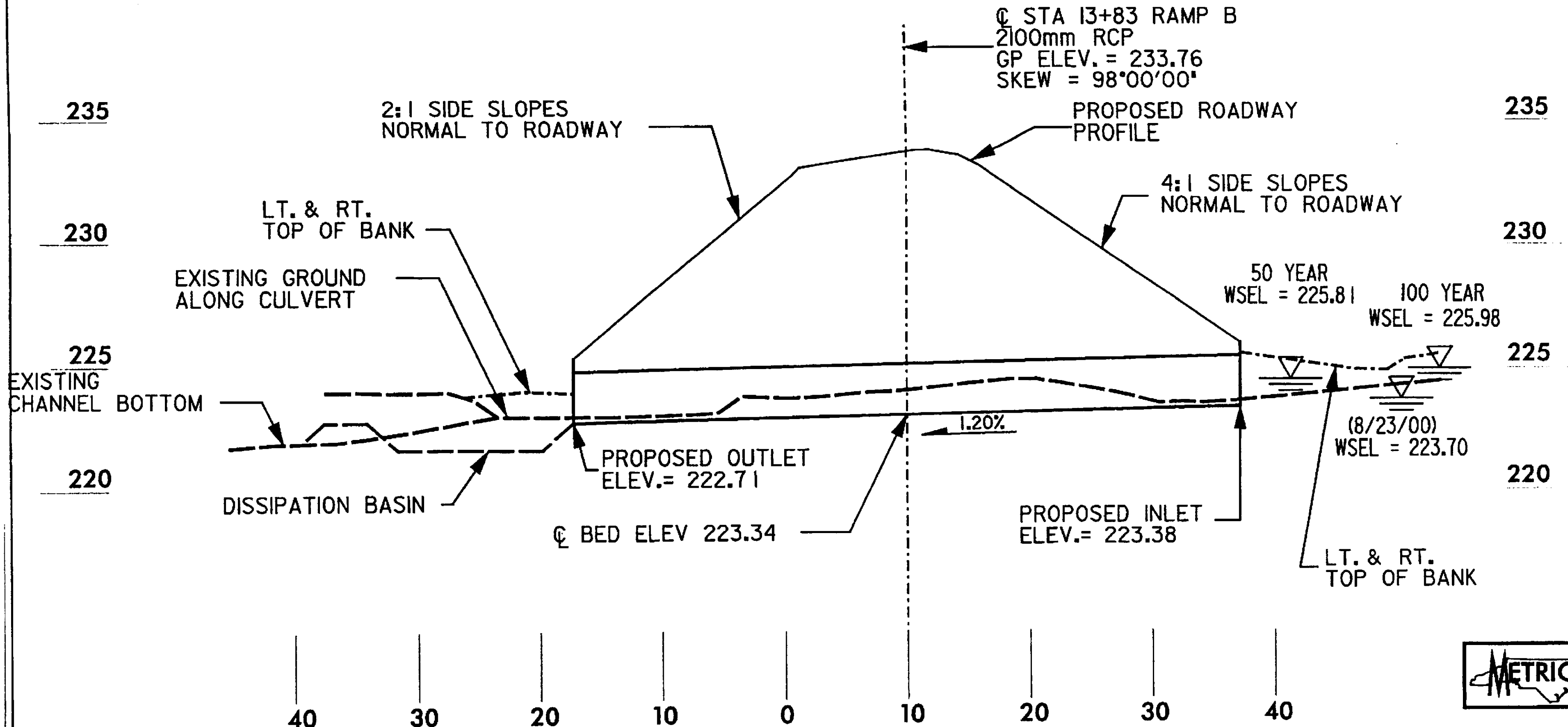

SCALE:
1 = 500 HORIZONTAL
1 = 250 VERTICAL

PROFILE
PERMITE SITE 8 (8B & 8C)
2100mm RCP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 55 OF 92

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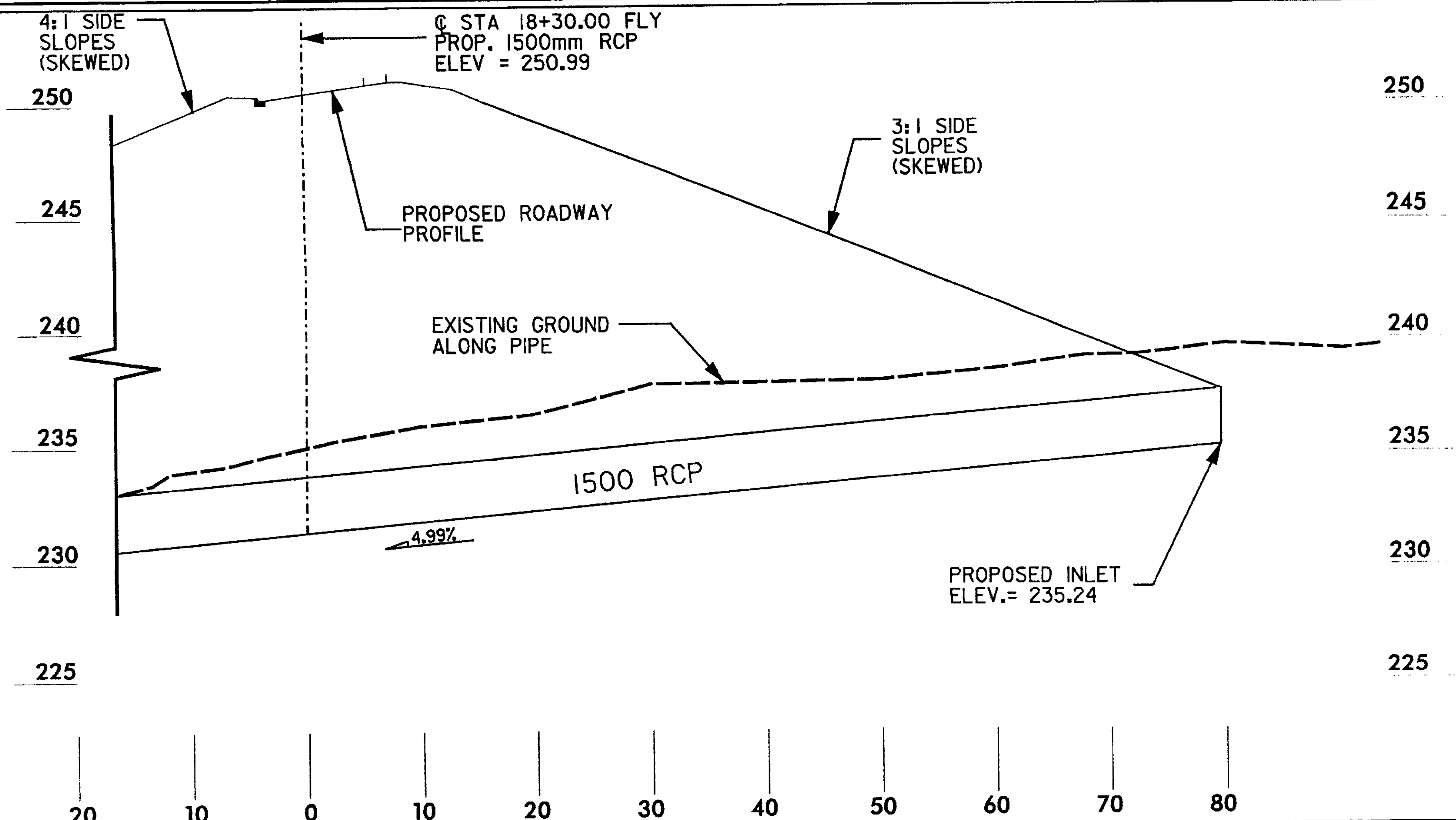

SCALE:
1 = 500 HORIZONTAL
1 = 250 VERTICAL

METRIC

PROFILE
PERMIT SITE 8 (8L)
1500mm RCP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 56 OF 92

8/12/2005
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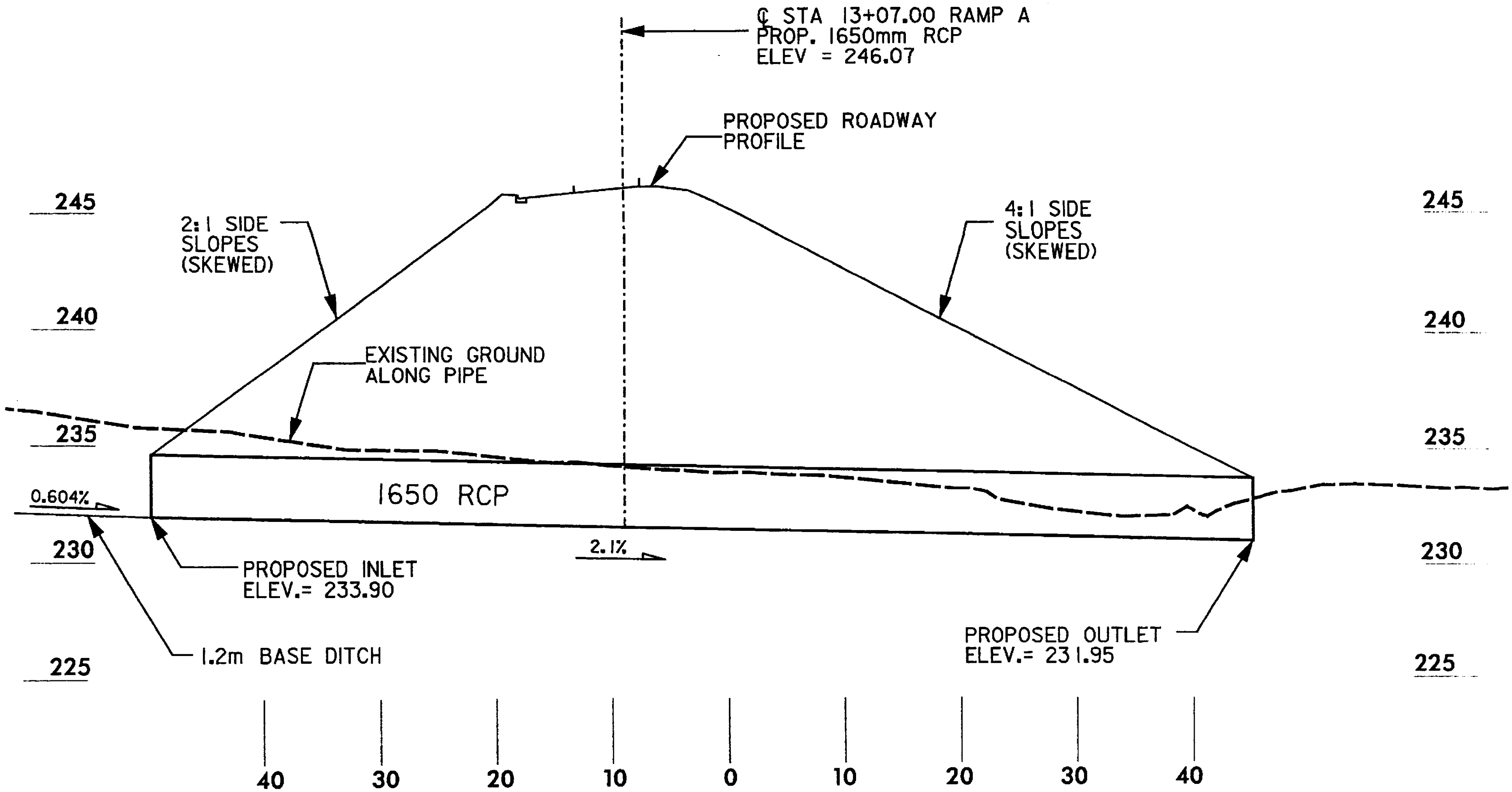


SCALE:
1 = 500 HORIZONTAL
1 = 250 VERTICAL

METRIC

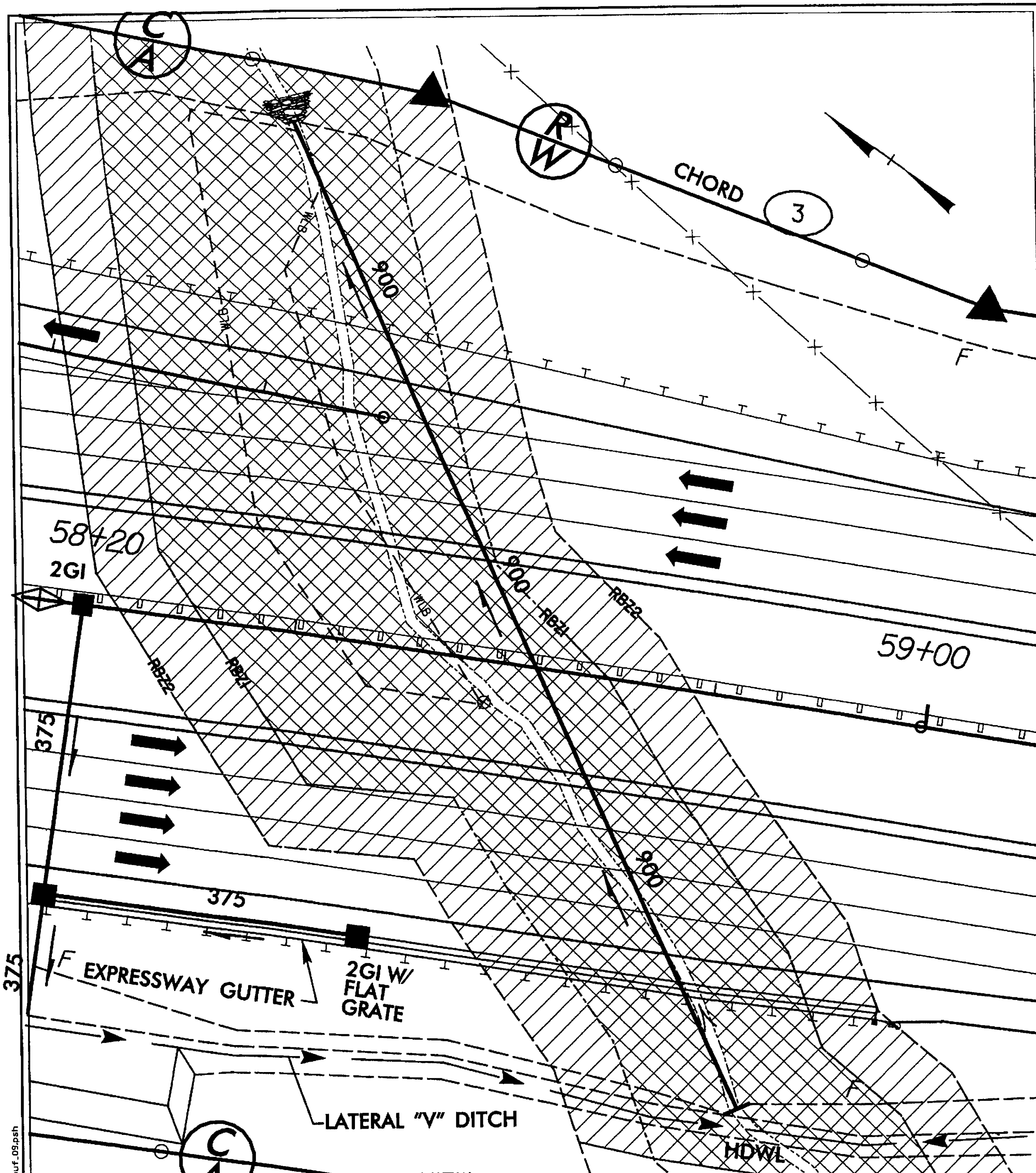
PROFILE
PERMIT SITE 8 (8S & 8T)
1650mm RCP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 57 OF 92



PLAN VIEW
SITE 9

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

METRIC

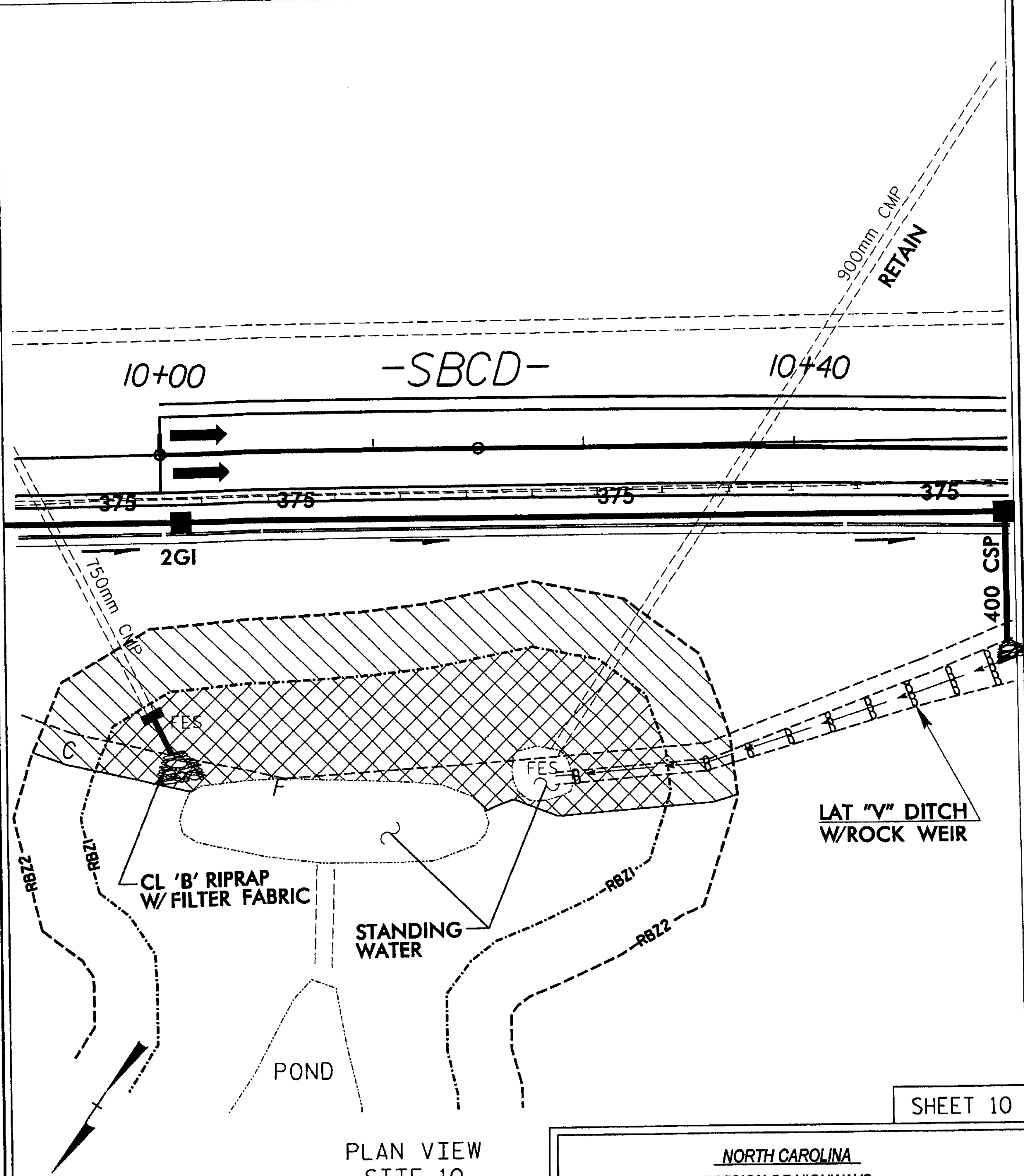
5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 58 OF 92



SHEET 10

PLAN VIEW
SITE 10

LEGEND

- RBZ1 RIPARIAN BUFFER - ZONE 1
- RBZ2 RIPARIAN BUFFER - ZONE 2
- MITIGABLE IMPACTS ZONE I
- MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 59 OF 92

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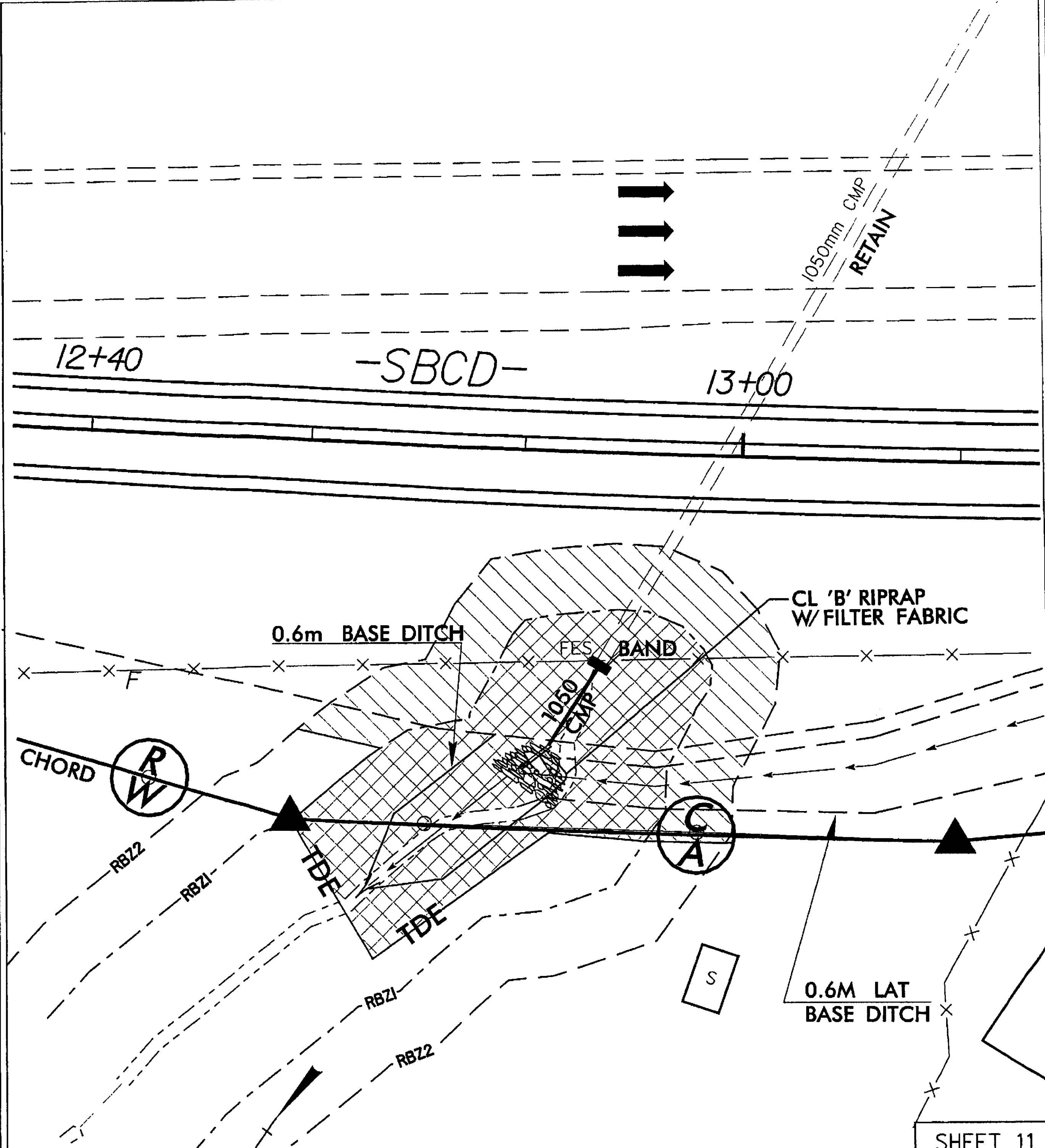

SHEET 11

PLAN VIEW
SITE 11

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1
RBZ2 RIPARIAN BUFFER - ZONE 2
MITIGABLE IMPACTS ZONE I
MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 60 OF 92

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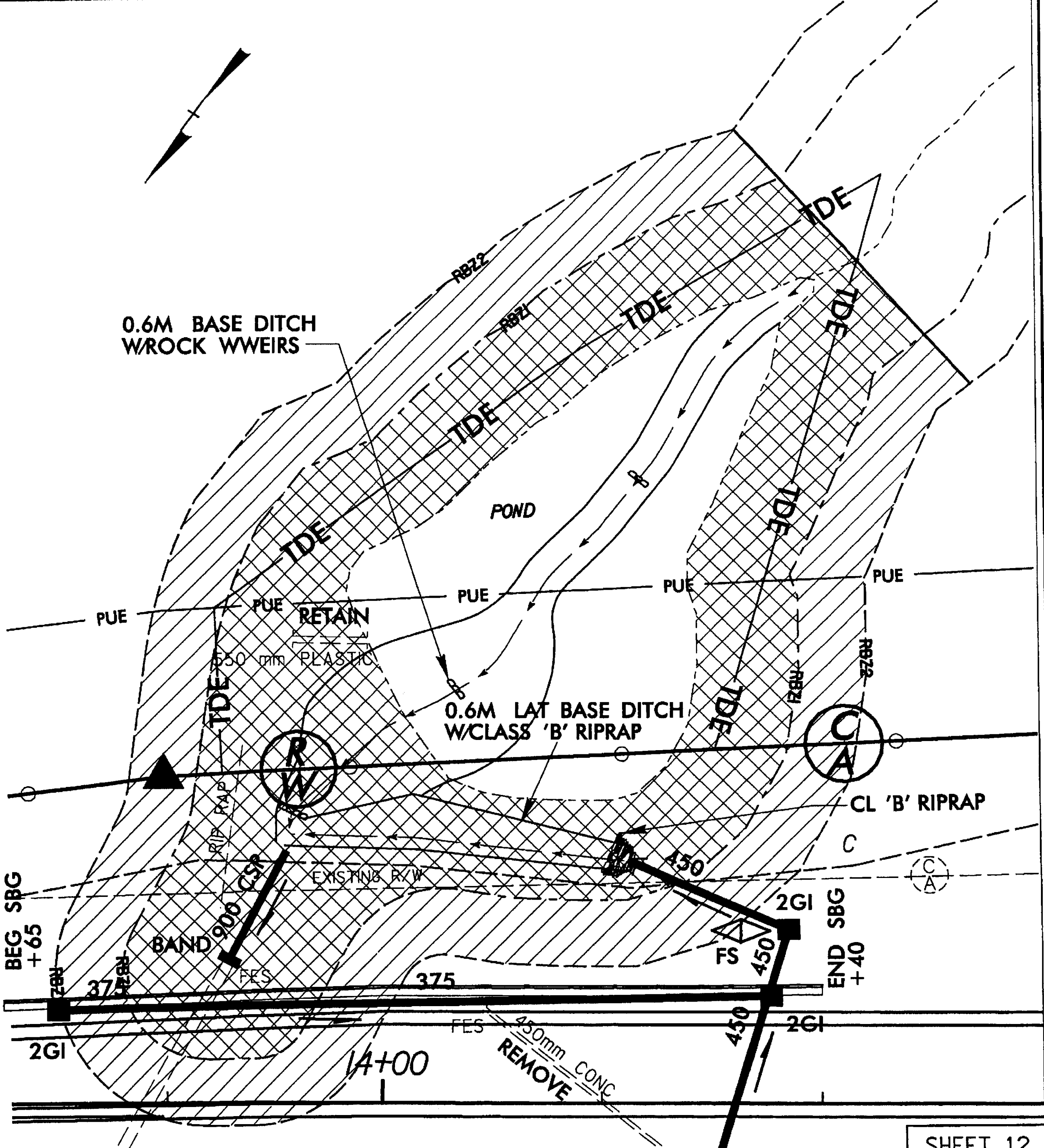

SHEET 12

PLAN VIEW
SITE 12

LEGEND

RBZ1 RIPARIAN BUFFER - ZONE 1

RBZ2 RIPARIAN BUFFER - ZONE 2

MITIGABLE IMPACTS ZONE I

MITIGABLE IMPACTS ZONE 2

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 61 OF 92

3/8/2005
0:33:45 AM
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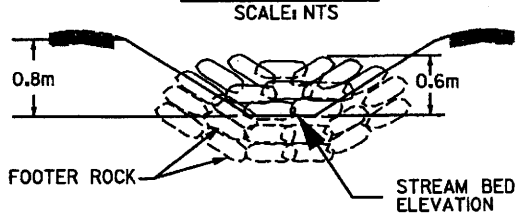
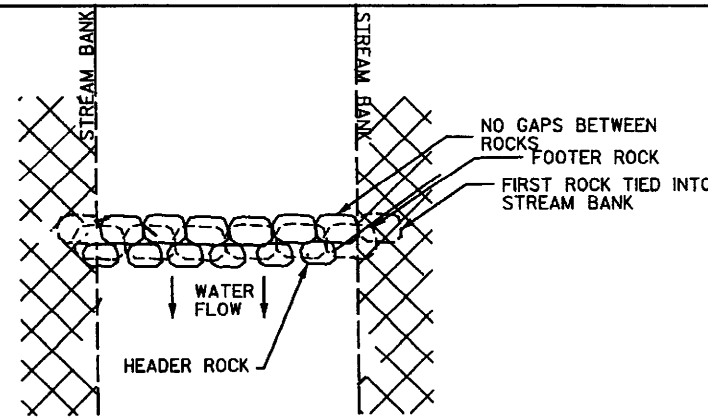
ROCK WEIR

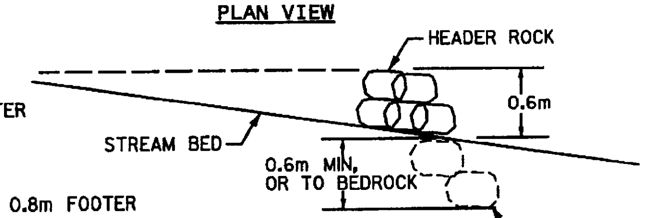
SCALE: NTS



CROSS SECTION



PLAN VIEW



PROFILE VIEW

INSTALLATION OF ROCK WEIR

A TRENCH SHALL BE DUG IN SUCH A MANNER THAT THE FOOTER ROCKS ARE BURIED BENEATH THE BED SURFACE ELEVATION. AN EXCAVATOR, WITH A BUCKET THAT CONTAINS A HYDRAULIC THUMB, SHALL BE USED TO PLACE ROCKS WITH THE SUPERVISION OF THE RESIDENT ENGINEER. HEADER AND FOOTER ROCKS SHALL BE NO SMALLER THAN 0.5m X 0.5m' X 0.8m FOOTER ROCKS SHALL BE PLACED IN THE TRENCH FIRST WITH HEADER ROCKS PLACED ON TOP PRIOR TO BACK FILLING OF THE TRENCH.

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 62 OF 92

/30/2005
:52:47 AM
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R-0609IA GUILFORD COUNTY Co. Level Spreaders

Date: 8/11/2005
Dsn. By: RKW
Check:

PLAN SHT.	Align	Station	Total D.A. Ha	(ac)	Ex Ground Slope (%)	Rational C	Q10 138 mm/hr	Q10 5.4 in/hr	Ground Cover None - Forested	Thick - Grass	Level Spreader Design for	Level Spreader Length Required in meters	REMARKS
13	L	40+10R	1.9	4.6	11	0.4	0.284	9.981	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
13	L	40+10L	0.2	0.4	11	0.4	0.023	0.801		X	13 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
13	L	40+15L	0.70	1.73	10	0.4	0.106	3.736		X	13 ft/cfs	**Too Steep for Level Spreader**	**Relocated Channel, No Treatment Required**
13	L	40+50L	1.58	3.90	20	0.7	0.420	14.758		X	13 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
15	L	45+20R	6.46	15.96	10	0.28	0.686	24.136	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
15	L	46+50R	3.02	7.46	11	0.45	0.516	18.134	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
16	RpB	14+50R	0.14	0.35	6	0.4	0.021	0.747	X		100 ft/cfs	23	**Flow previously treated in grass swale**
17	RpA	13+60R	34.56	85.40	7	0.2	2.623	92.230	X		100 ft/cfs	**Too Steep for Level Spreader**	**Relocated Channel, No Treatment Required**
17	L	58+70R	1.23	3.04	7	0.5	0.233	8.206	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
17	L	59+10R	0.30	0.74	10	0.6	0.068	2.402	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-609IA)

8/10/2005
SHEET 63 OF 92

R-0609IA GUILFORD COUNTY Co. Level Spreaders

Date: 8/11/2005
Dsn. By: RKW
Check:

PLAN SHT.	Align	Station	Total D.A. Ha	(ac)	Ex Ground Slope (%)	Rational C	Q10 138 mm/hr	Q10 5.4 in/hr	Ground Cover None - Forested	Thick - Grass	Level Spreader Design for	Level Spreader Length Required in meters	REMARKS
7	L	19+80L	2.7	6.6	14	0.4	0.407	14.304	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
7	L	20+20R	0.4	0.9	19	0.4	0.058	2.028	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
9	L	25+65R	1.58	3.90	10	0.7	0.420	14.758	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
10	L	28+20R	0.46	1.14	15	0.6	0.105	3.683	X		100 ft/cfs	**Too Steep for Level Spreader**	**Discharge point is inside of Zone 1 and previously treated**
10	Y2	14+30R	0.29	0.72	12	0.5	0.055	1.935	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
10	L	29+40R	2.32	5.73	15	0.36	0.317	11.144	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**
11	L	33+40L	4.13	10.21	6	0.4	0.627	22.043		X	13 ft/cfs	**87**	**Level Spreader not utilized due to Basin and PSH**
11	L	33+40R	2.47	6.10	8	0.4	0.375	13.183		X	13 ft/cfs	**52**	**USE LEVEL SPREADER**
12	L	35+40L	2.71	6.70	12.5	0.45	0.463	16.272	X		100 ft/cfs	**Too Steep for Level Spreader**	**Flow previously treated in grass swale**

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-609IA)

8/10/2005
SHEET 64 OF 92

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R-609 IA Guilford Co. Affected Buffer Areas **Site #1**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 10/1/2003
Dsn. By: HAH/SNR
Check: RKW

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
5	L		11+80L	GS	0.24	0.6	60.0	18	95	0.0035	6	YES	1.42	0.53	1.63	0.54	GS
5	L	2	12+75L	2GI	0.22	0.5	54.4	17	70	0.0035	6	YES	1.28	0.51	1.47	0.53	GS
5	L	6	13+45L	2GI	0.11	0.3	27.2	8	95	0.0275	3	YES	0.51	1.03	0.59	1.07	GS
5	L	9	13+80L	2GI	0.51	1.3	126.0	38	194	0.003	6	YES	2.67	0.58	3.08	0.60	GS
5	L	9	13+80L	SDG	0.03	0.1	7.4	2	20	0.0371	6	YES	0.24	1.53	0.28	1.58	GS
																	GS
5	L	8B	15+05M	2GI	0.21	0.5	51.9	16	69	0.0028	6	YES	1.35	0.89	1.55	0.92	GS
5	L	8	13+85ML	2GI	0.24	0.6	59.3	18	85	0.003	6	YES	1.79	0.98	2.06	1.01	GS
5	L	3	12+75ML	2GI	0.13	0.3	32.1	10	110	0.003	6	YES	0.67	0.76	0.77	0.79	GS
5	L		11+85ML	GS	0.09	0.2	22.2	7	90	0.008	6	YES	0.37	0.95	0.42	0.98	GS
5	L		11+80R	GS	0.31	0.8	77.2	24	145	0.0035	6	YES	2.37	0.60	2.72	0.62	GS
5	L		13+70R	SDG	0.09	0.2	22.2	7	30	0.0271	6	YES	0.52	1.64	0.60	1.70	GS
5	L	7	13+70R	2GI	0.40	1.0	98.8	30	194	0.0035	6	YES	2.33	0.59	2.68	0.62	GS
5	L		14+62R	BERM	0.30	0.7	72.9	22	237	0.07	3	YES	1.03	1.74	1.19	1.80	GS
5	Y1		11+83L	SDG	0.30	0.7	73.6	22	103	0.003	3	YES	1.39	0.58	1.60	0.60	GS
5	Y1	5	13+00L	2GI	0.11	0.3	28.2	9	20	0.0176	3	YES	0.66	0.93	0.76	0.96	GS
5	Y1		13+20L	SDG	0.11	0.3	28.2	9	20	0.0145	6	YES	0.66	1.38	0.76	1.43	GS
5	Y1		13+41L	GS	0.09	0.2	21.0	6	40	0.0298	6	YES	0.50	1.68	0.57	1.74	GS
5	Y1		14+04L	GS	0.02	0.1	5.1	2	20	0.0115	6	YES	0.12	0.82	0.14	0.85	GS
5	Y1		11+65R	SDG	0.13	0.3	30.9	9	86	0.003	3	YES	0.58	0.86	0.67	0.89	GS
5	Y1	4	13+09R	2GI	0.07	0.2	16.3	5	20	0.0184	3	YES	0.38	1.53	0.44	1.59	GS
5	Y1		13+20R	SDG	0.07	0.2	16.3	5	20	0.0145	6	YES	0.38	1.20	0.44	1.24	GS
5	Y1		13+41R	GS	0.04	0.1	10.6	3	40	0.0298	6	YES	0.25	1.41	0.29	1.46	GS
5	L	8A	13+85MR	2GI	0.12	0.3	29.7	9	115	0.004	6	YES	0.49	0.79	0.56	0.82	GS
5	L		11+85MR	GS	0.20	0.5	49.4	15	200	0.005	6	YES	0.82	0.97	0.94	1.01	GS
5	L	470	11+18M	2GI	0.13	0.3	32.1	10	67	0.01	6	YES	0.53	1.13	0.61	1.17	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 65 OF 92

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R-609 IA Guilford Co. Affected Buffer Areas **Site #2**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

					Total D.A.		equired length for treatme		Actual	Channel	Side	Treated	Q2	Q2 vel.	Q10	Q10 vel.	Treatment
SHT.	Align	Structure	Station	Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (m/m)	Slopes	Discharge?	cfs	fps	cfs	fps	Provided
6	L	10	17+60L	2G	0.45	1.1	111.2	34	187	0.024	6	YES	2.62	1.26	3.02	1.31	GS
6	L		18+00L	GS	0.05	0.1	12.8	4	40	0.024	6	YES	0.30	1.37	0.35	1.42	GS
6	L		18+60L	GS	0.05	0.1	12.8	4	40	0.024	6	YES	0.30	1.37	0.35	1.42	GS
6	L	12	17+60M	2GI	0.44	1.1	108.7	33	187	0.024	6	YES	1.54	1.10	1.77	1.14	GS
6	L	11	17+60R	2GI	0.51	1.3	126.0	38	187	0.024	6	YES	3.86	1.39	4.44	1.44	GS
6	L	13A	19+30R	2GI	0.37	0.9	91.4	28	180	0.024	6	YES	1.29	1.06	1.49	1.09	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

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PSH = PRE FORMED SCOUR HOLE
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METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 66 OF 92

5/14/2002
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R-609 IA Guilford Co. Affected Buffer Areas **Site #3**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
7	L		19+52L	LAT	0.86	2.1	212.5	65	83	0.0444	3	**YES**	4.01	1.86	4.61	1.94	PT
7	L	15	20+40L	2GI	0.16	0.4	39.5	12	55	0.044	3	**YES**	0.75	1.23	0.86	1.28	GS
7	L		21+22L	LAT	0.92	2.3	227.3	69	48	0.085	3	**NO**	4.29	2.87	4.93	2.98	PT
7	L	18	21+70L	2GI	0.31	0.8	76.6	23	48	0.08	3	**YES**	1.45	1.85	1.66	1.93	GS
7	L	13	19+20M	2GI	0.45	1.1	111.2	34	160	0.024	6	**YES**	1.84	1.15	2.11	1.19	GS
7	L	16	20+40M	2GI	0.34	0.8	84.0	26	120	0.024	6	**YES**	1.98	1.18	2.28	1.22	GS
7	L	19	21+80M	2GI	0.39	1.0	96.4	29	120	0.024	6	**YES**	2.27	1.22	2.61	1.26	GS
7	L	13A	19+30R	2GI	0.22	0.5	54.4	17	180	0.024	6	**YES**	1.03	1.85	1.18	1.92	GS
7	L		20+35R	LAT	0.37	0.9	91.4	28	95	0.1233	3	**NO**	1.72	2.45	1.98	2.53	PT

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

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R-609 IA Guilford Co. Affected Buffer Areas — **Site #4**

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

SHT	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
8	L	21	23+43L	2GI	0.96	2.4	237.2	72	163	0.024	6	YES	4.48	1.44	5.15	1.49	GS
8	L	26	25+60L	2GI	0.65	1.6	160.6	49	120	0.024	6	YES	3.03	1.31	3.48	1.35	GS
8	L	22	23+51M	2GI	0.48	1.2	118.6	36	171	0.024	6	YES	2.80	1.28	3.22	1.33	GS
8	L	27	25+45M	2GI	0.63	1.6	155.7	47	225	0.024	6	YES	3.67	1.37	4.22	1.42	GS
8	L		25+40R	GS	0.20	0.5	49.4	15	100	0.024	6	YES	1.17	1.03	1.34	1.07	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
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METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 68 OF 92

R-609 IA Guilford Co. Affected Buffer Areas **Site #5**
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 10/1/2003
Dsn. By: HAH/SNR
Check: RKW

					Total D.A.		Required length for treatment		Actual	Channel	Side	Treated	Q2	Q2 vel.	Q10	Q10 vel.	Treatment
SHT.	Align	Structure	Station	Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (m/m)	Slopes	Discharge?	cfs	fps	cfs	fps	Provided
9	L		25+25L	TAIL D	0.98	2.4	242.2	74	45	0.0106	3	NO	5.14	1.30	5.91	1.34	PT
9	L	28	26+90L	2GI	0.77	1.9	190.3	58	160	0.01	6	YES	4.04	1.01	4.64	1.05	GS
9	L		27+60L	GS	0.20	0.5	49.4	15	60	0.01	6	YES	1.05	1.34	1.21	1.39	PT
9	L	31	28+00L	2GI	0.30	0.7	74.1	23	100	0.022	6	YES	1.40	1.04	1.61	1.08	GS
9	L		25+80R	TAIL D	2.26	5.6	558.4	170	15	0.003	3	NO	10.01	0.95	11.51	0.98	PT
9	L	33	28+10R	2GI	0.49	1.2	121.1	37	214	0.01	6	YES	3.43	0.97	3.94	1.01	GS
9	L	29	27+20M	2GI	0.44	1.1	108.7	33	210	0.01	6	YES	2.05	0.85	2.36	0.88	GS
9	L	29	27+20M	2GI	0.05	0.1	12.4	4	44	0.009	6	YES	0.23	0.89	0.27	0.92	GS
9	L	32A	28+55ML	2GI	0.12	0.3	29.7	9	91	0.01	6	YES	0.56	1.15	0.64	1.19	GS

2GI = 2 GRATED INLET
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METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 68 OF 92

R-609 IA Guilford Co. Affected Buffer Areas Site #6
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 10/1/2003
Dsn. By: HAH/SNR
Check: RKW

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
10	L	31	27+98L	SDG	0.15	0.4	38.1	12	100	0.003	6	YES	1.08	0.46	1.24	0.48	GS
10	L		28+50L	BASE BERM	3.80	9.4	939.0	286	50	0.016	3	NO	13.29	2.28	15.28	2.37	PT
10	L	33D	29+91L	2GI	0.36	0.9	89.0	27	111	0.01	6	YES	1.89	0.84	2.17	0.87	GS
10	L	34A	31+20L	2GI	0.45	1.1	111.2	34	130	0.01	6	YES	2.36	0.88	2.71	0.92	GS
10	L	33C	32+91LL	2GI	1.48	3.7	365.7	111	140	0.0031	3	YES	7.76	0.90	8.93	0.93	GS
10	L	37	32+00L	SDG	0.32	0.8	79.3	24	80	0.0035	6	YES	1.68	0.55	1.94	0.57	GS
10	L	33E	29+78ML	2GI	0.10	0.2	24.7	8	93	0.01	6	YES	0.47	1.10	0.54	1.14	GS
10	L		30+20M	GS	0.05	0.1	12.4	4	42	0.009	6	YES	0.23	0.89	0.27	0.92	GS
10	L	32	28+14MR	2GI	0.05	0.1	12.4	4	50	0.01	6	YES	0.23	0.92	0.27	0.95	GS
10	L	32B	28+55MR	2GI	0.05	0.1	12.4	4	42	0.01	6	YES	0.23	0.92	0.27	0.95	GS
10	L	33F	29+71MR	2GI	0.09	0.2	22.2	7	86	0.01	6	YES	0.42	1.07	0.48	1.11	GS
10	L		31+20M	GS	0.05	0.1	12.4	4	49	0.01	6	YES	0.23	0.92	0.27	0.95	GS
10	L	34B	31+20M	2GI	0.31	0.8	76.6	23	100	0.019	6	YES	1.45	1.00	1.66	1.03	GS
10	L		28+20R	SDG	0.50	1.2	123.6	38	20	0.074	6	NO	2.91	1.98	3.35	2.05	PT
10	L		28+37R	LAT	12.90	31.9	3187.6	972	17	0.003	3	NO	52.62	1.86	60.51	1.93	PT
10	L		29+55R	LAT	2.32	5.7	573.3	175	20	0.026	3	NO	9.73	2.53	11.19	2.62	PT
10	L	34	31+20R	2GI	0.42	1.0	103.8	32	160	0.01	6	YES	2.69	0.91	3.10	0.95	GS
10	Y2		14+52R	LAT	0.12	0.3	30.1	9	177	0.063	3	YES	0.57	1.44	0.65	1.49	GS
10	Y2		14+00R	LAT	0.33	0.8	81.5	25	52	0.063	3	YES	1.54	1.85	1.77	1.91	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
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PSH = PRE FORMED SCOUR HOLE
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METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

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R-609 IA Guilford Co. Affected Buffer Areas **Site #7**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	(ac)	Required length for treatment (ft.)	(m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated ischarge	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
11	L		33+00L	LAT	3.19	7.9	788.2	240	80	0.0741	3	NO	14.87	4.62	17.10	4.80	PT
11	L		33+20L	LAT	4.13	10.2	1020.5	311	20	0.01	3	NO	11.55	1.76	13.28	1.82	PT
11	L	36	31+84M	2GI	0.51	1.3	126.0	38	231	0.0211	6	YES	2.38	1.17	2.73	1.21	GS
11	L	39	34+15M	2GI	0.43	1.1	106.3	32	155	0.0211	6	YES	2.51	1.19	2.88	1.23	GS
11	L		33+40R	LAT	2.47	6.1	610.3	186	60	0.095	3	NO	11.51	4.64	13.24	4.81	PT
11	L	40	34+15R	2GI	0.55	1.4	135.9	41	120	0.0211	6	YES	3.85	1.32	4.42	1.37	GS

2GI = 2 GRATED INLET
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METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 71 OF 82

R-609 IA Guilford Co. Affected Buffer Areas **Site #8**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
12	L		35+23L	LAT	6.76	16.7	1670.4	509	15	0.0226	3	NO	18.00	2.99	20.70	3.10	PT
12	L	48	37+50L	2GI	0.45	1.1	111.2	34	125	0.0211	6	YES	1.57	1.06	1.81	1.10	GS
12	L	42	35+70L	2GI	0.47	1.2	115.6	35	180	0.0211	6	YES	1.64	1.07	1.88	1.11	GS
12	L	41	35+70M	2GI	0.18	0.4	44.5	14	65	0.0211	6	YES	1.05	0.96	1.21	0.99	GS
12	L	43	36+35M	2GI	0.28	0.7	69.2	21	105	0.0211	6	YES	1.63	1.07	1.88	1.11	GS
12	L	46	37+40M	2GI	0.35	0.9	86.5	26	130	0.0211	6	YES	3.06	1.25	3.52	1.29	GS
12	L	44	36+35R	2GI	0.47	1.2	116.1	35	235	0.0211	6	YES	4.11	1.34	4.72	1.39	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 72 OF 92

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R-609 IA Guilford Co. Affected Buffer Areas **Site #9**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 10/1/2003
Dsn. By: HAH/SNR
Check: RKW

					Total D.A.		Required length for treatment		Actual	Channel	Side	Treated	Q2	Q2 vel.	Q10	Q10 vel.	Treatment
SHT.	Align	Structure	Station	Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (m/m)	Slopes	Discharge?	cfs	fps	cfs	fps	Provided
13	L	49	38+75L	2GI	0.15	0.4	37.8	12	85	0.0211	6	YES	0.71	1.61	0.82	1.67	GS
13	L	49	38+75L	SDG	0.02	0.0	4.9	2	22	0.0368	6	YES	0.09	1.20	0.11	1.24	GS
13	L		40+10L	LAT	0.04	0.1	8.6	3	20	0.14	3	NO	0.20	2.80	0.23	2.90	PT
13	L		40+30L	LAT	0.04	0.1	8.6	3	20	0.07	3	NO	0.20	2.16	0.23	2.23	PT
13	L		40+30L	LAT	0.18	0.4	44.5	14	20	0.14	3	NO	1.26	2.37	1.45	2.46	PT
13	L		40+50L	LAT	0.18	0.4	44.5	14	20	0.09	3	YES	0.84	1.82	0.96	1.88	GS
13	L	49A	38+75ML	2GI	0.26	0.6	64.2	20	80	0.0029	6	YES	1.97	0.53	2.26	0.55	GS
13	L	51	38+75MR	2GI	0.13	0.3	32.1	10	80	0.003	6	YES	0.61	0.75	0.70	0.77	GS
13	L	51B	40+70M	2GI	0.44	1.1	108.7	33	80	0.0075	6	YES	2.05	0.77	2.36	0.79	GS
13	L	50	38+70R	2GI	0.25	0.6	62.3	19	90	0.0211	6	YES	1.17	0.98	1.35	1.02	GS
13	L	50	38+70R	SDG	0.03	0.1	7.4	2	20	0.0135	6	YES	0.17	0.96	0.20	0.99	GS
13	L		39+00R	LAT	1.12	2.8	276.8	84	40	0.0975	3	NO	7.83	3.55	9.01	3.70	PT
13	L		39+45R	LAT	1.12	2.8	276.8	84	45	0.077	3	NO	5.22	2.64	6.00	2.76	PT
13	L		40+25R	LAT	1.87	4.6	462.1	141	80	0.0562	3	NO	8.72	3.01	10.02	3.13	PT
13	L		39+95R	LAT	1.87	4.6	462.1	141	86	0.04	3	NO	8.72	2.62	10.02	2.73	PT
13	L		40+25R	LAT	1.87	4.6	462.1	141	66	0.0405	3	NO	8.72	2.64	10.02	2.75	PT
13	Y-3		11+75L	SDG	0.08	0.2	19.8	6	25	0.0512	6	YES	0.33	1.85	0.38	1.92	GS
13	Y-3		13+15L	SDG	0.03	0.1	7.4	2	20	0.0435	6	YES	0.10	1.31	0.12	1.36	GS
13	Y-3		13+15L	SDG	0.40	1.0	98.8	30	125	0.0385	3	YES	2.33	1.71	2.68	1.77	GS
13	Y-3		13+46L	GS	0.35	0.9	86.5	26	94	0.0145	6	YES	1.22	0.86	1.41	0.89	GS
13	Y-3		13+15R	SDG	0.02	0.0	4.9	2	22	0.0468	6	YES	0.07	1.22	0.08	1.26	GS
13	Y-3		13+15R	SDG	0.31	0.8	76.6	23	25	0.0404	3	YES	1.45	1.54	1.66	1.60	GS
13	Y-3		13+46R	GS	0.28	0.7	69.2	21	94	0.0042	6	YES	1.63	0.58	1.88	0.60	GS
13	Y-4		14+72L	LAT	0.85	2.1	210.0	64	30	0.0462	3	NO	3.96	2.13	4.56	2.22	PT
13	Y-4	53	13+73L	SDG	0.17	0.4	42.0	13	15	0.072	6	YES	0.99	1.49	1.14	1.55	GS
13	Y-4	52	13+95R	2GI	0.18	0.4	44.5	14	115	0.0077	6	YES	1.05	0.65	1.21	0.68	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
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OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 73 OF 92

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R-609 IA Guilford Co. Affected Buffer Areas **Site #10**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
14	L	302	42+00M	2GI	0.55	1.4	135.9	41	198	0.00405	6	**YES**	3.85	0.71	4.42	0.74	GS
14	L	301	42+00L	2GI	0.20	0.5	49.4	15	100	0.00405	6	**YES**	0.82	0.90	0.94	0.93	GS
14	L	303	42+00R	2GI	0.64	1.6	158.1	48	140	0.00405	6	**YES**	2.98	0.67	3.43	0.69	GS
14	L	308	43+65M	2GI	0.51	1.3	126.4	39	165	0.00405	6	**YES**	3.28	0.68	3.77	0.71	GS
14	L	309	43+65L	2GI	0.49	1.2	121.1	37	165	0.00405	6	**YES**	2.00	0.60	2.30	0.63	GS
14	L	307	43+65R	2GI	0.83	2.0	203.9	62	165	0.00405	6	**YES**	5.29	0.77	6.08	0.80	GS
14	Y-4		13+40L	GS	0.10	0.2	23.5	7	75	0.0388	6	**YES**	0.33	1.67	0.38	1.73	GS
14	Y-4	53	13+73L	SDG	0.10	0.2	23.5	7	33	0.0341	6	**YES**	0.33	1.60	0.38	1.65	GS
14	Y-4	313	13+80R	2GI	0.10	0.2	24.7	8	33	0.0341	6	**YES**	0.52	1.79	0.60	1.85	GS
14	Y-4	52	14+00R	2GI	0.21	0.5	51.9	16	130	0.0388	6	**YES**	0.73	1.10	0.84	1.14	GS
14	Y-5	305	12+05L	2GI	0.22	0.6	55.1	17	84	0.0697	6	**YES**	0.78	1.39	0.90	1.44	GS
14	Y-5	304	12+00R	2GI	0.64	1.6	158.6	48	81	0.0697	6	**YES**	2.62	1.88	3.01	1.95	GS
14	Y-5		13+80R	GS	0.67	1.7	166.5	51	140	0.0481	6	**YES**	3.14	1.71	3.61	1.77	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
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METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 74 OF 92

06/14/2002
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R-609 IA Guilford Co. Affected Buffer Areas Site #11
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

					Total D.A.		Required length for treatment		Actual	Channel	Side	Treated	Q2	Q2 vel.	Q10	Q10 vel.	Treatment
SHT.	Align	Structure	Station	Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (m/m)	Slopes	Discharge?	cfs	fps	cfs	fps	Provided
15	L	310	45+20L	2GI	0.31	0.8	76.6	23.	155	0.00405	6	YES	1.26	1.00	1.45	1.04	GS
15	L		48+40L	GS	0.60	1.5	148.3	45	200	0.0168	6	YES	2.80	1.12	3.22	1.16	GS
15	L	311	45+20M	2GI	0.49	1.2	121.1	37	155	0.00405	6	YES	2.28	0.63	2.63	0.65	GS
15	L	314	46+60M	2GI	0.46	1.1	113.7	35	140	0.00405	6	YES	2.14	0.62	2.47	0.64	GS
15	L		48+40M	GS	0.63	1.6	155.7	47	180	0.0168	6	YES	4.41	1.26	5.07	1.30	GS
15	L	315	46+60R	SDG	0.44	1.1	108.7	33	40	0.054	6	YES	2.05	1.61	2.36	1.66	GS
15	L	315	46+60R	2GI	0.40	1.0	98.8	30	160	0.00405	6	YES	2.33	0.63	2.68	0.65	GS
15	L		48+40R	GS	0.77	1.9	190.3	58	180	0.0169	6	YES	4.49	1.26	5.16	1.31	GS
15	Y5		15+30L	GS	0.54	1.3	133.4	41	217	0.0341	6	YES	3.15	1.51	3.62	1.56	GS
15	Y5		14+14R	GS	0.03	0.1	6.2	2	36	0.0481	6	YES	0.15	1.48	0.17	1.53	GS
15	Y5		14+30R	LAT	6.46	16.0	1596.3	487	30	0.003	3	NO	33.12	1.57	38.09	1.63	PT
15	Y5		14+90R	LAT	3.02	7.5	746.2	227	30	0.003	3	NO	15.84	1.18	18.21	1.22	PT
15	Y5		15+11R	GS	0.01	0.0	3.2	1	19	0.0568	6	YES	0.08	1.34	0.09	1.38	GS
15	Y5	317	15+30R	2GI	0.12	0.3	29.7	9	175	0.0568	6	NO	0.70	2.33	0.80	2.41	PT
15	FLY		13+93L	GS	0.40	1.0	98.8	30	175	0.0341	6	YES	1.86	1.32	2.14	1.37	GS
15	FLY		13+74R	GS	0.22	0.5	54.4	17	222	0.0568	6	YES	1.03	1.38	1.18	1.43	GS
15	FLY	312	12+17R	SDG	0.25	0.6	61.8	19	83	0.0036	6	YES	1.17	0.94	1.34	0.97	GS
15	FLY	316	13+54R	SDG	0.18	0.4	44.5	14	54	0.0091	6	YES	1.05	1.30	1.21	1.34	GS
15	FLY	316	13+54R	SDG	0.24	0.6	59.3	18	20	0.076	6	YES	1.12	1.57	1.29	1.63	GS
15	FLY	316	13+54R	SDG	0.60	1.5	148.3	45	176	0.094	6	NO	3.50	2.26	4.02	2.34	PT

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
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METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 15 OF 92

06/14/2002
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R-609 IA Guilford Co. Affected Buffer Areas **Site #12**
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

					Total D.A.		Required length for treatment		Actual	Channel	Side	Treated	Q2	Q2 vel.	Q10	Q10 vel.	Treatment
SHT.	Align	Structure	Station	Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (m/m)	Slopes	Discharge?	cfs	fps	cfs	fps	Provided
16	L	60	48+40L	2GI	0.60	1.5	148.3	45	180	0.0168	6	YES	3.50	1.19	4.81	1.28	GS
16	L	71	50+40L	2GI	0.27	0.7	66.7	20	120	0.0168	6	YES	1.57	0.97	2.16	1.05	GS
16																	
16	L	61	48+40M	2GI	0.63	1.6	155.7	47	180	0.0168	6	YES	2.94	1.14	4.04	1.23	GS
16	L	65	49+40M	2GI	0.28	0.7	69.2	21	100	0.0168	6	YES	1.63	0.98	2.24	1.06	GS
16	L		50+20M	GS	0.22	0.5	54.4	17	80	0.0168	6	YES	1.28	0.92	1.76	1.00	GS
16	L	72	50+40M	SDG	0.27	0.7	66.7	20	20	0.0194	6	YES	1.57	1.02	2.16	1.11	GS
16	L		50+70M	GS	0.21	0.5	51.9	16	55	0.0303	6	YES	1.22	1.14	1.68	1.23	GS
16	L	72	50+40M	SDG	0.29	0.7	71.7	22	30	0.003	6	YES	1.69	0.52	2.32	0.56	GS
16	L	82	51+15M	2GI	0.53	1.3	131.0	40	220	0.0276	6	YES	3.09	1.38	4.25	1.50	GS
16	L	98	53+35M	2GI	0.38	0.9	93.9	29	135	0.0276	6	YES	2.21	1.27	3.04	1.38	GS
16	L	109	54+70M	2GI	0.42	1.0	103.8	32	150	0.0276	6	YES	2.45	1.31	3.37	1.41	GS
16																	
16	L	62	48+40R	2GI	0.77	1.9	190.3	58	180	0.0169	6	YES	3.59	1.20	4.94	1.30	GS
16	L	66	49+40R	2GI	0.35	0.9	86.5	26	100	0.0168	6	YES	1.63	0.98	2.24	1.06	GS
16	L		50+20R	GS	0.32	0.8	79.1	24	80	0.0168	6	YES	1.49	0.96	2.05	1.04	GS
16	L	73	50+40R	SDG	0.31	0.8	76.6	23	30	0.003	6	YES	1.45	0.93	1.99	1.00	GS
16	L	73	50+40R	SDG	0.43	1.1	106.3	32	100	0.0443	6	YES	2.00	1.48	2.76	1.61	GS
16	L		50+70R	GS	0.21	0.5	51.9	16	30	0.0275	6	YES	0.98	1.04	1.35	1.12	GS
16	L	99	53+35R	SDG	0.11	0.3	27.2	8	30	0.003	6	YES	0.51	0.71	0.71	0.77	GS
16	L	101	53+72R	2GI	0.16	0.4	39.5	12	47	0.0276	6	YES	0.75	0.97	1.03	1.05	GS
16	L	99	53+35R	SDG	0.22	0.5	54.4	17	35	0.034	6	YES	1.03	1.14	1.41	1.23	GS
16	L	110	54+95R	2GI	0.30	0.7	74.1	23	205	0.0276	6	YES	1.40	1.14	1.92	1.23	GS
16	L		54+60R	SDG	0.12	0.3	29.7	9	30	0.0033	6	YES	0.56	0.76	0.77	0.82	GS
16	L	110	54+95R	SDG	0.32	0.8	79.1	24	35	0.0057	6	YES	1.49	0.64	2.05	0.69	GS

2GI = 2 GRATED INLET
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OTCB = OPEN THROAT CATCH BASIN
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PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
NOTE 1: Actual Length includes distance of entire swale from the structure located upstream.
PT=PREVIOUSLY TREATED

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 76 OF 92

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R-609 IA Guilford Co. Affected Buffer Areas **Site #12**
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/14/2002
Dsn. By: HAH
Check: RKW/SNR

					Total D.A.		Required length for treatment		Actual	Channel	Side	Treated	Q2	Q2 vel.	Q10	Q10 vel.	Treatment
SHT.	Align	Structure	Station	Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (m/m)	Slopes	Discharge?	cfs	fps	cfs	fps	Provided
16	Ramp B	75	12+70L	SDG	0.18	0.4	44.5	14	61	0.003	6	YES	0.84	0.81	1.15	0.88	GS
16	Ramp B	64	15+06L	2GI	0.10	0.2	24.7	8	81	0.016	6	YES	0.47	1.31	0.64	1.42	GS
16	Ramp B	64	15+06L	2GI	0.03	0.1	7.4	2	81	0.021	6	YES	0.14	1.07	0.19	1.16	GS
16	Ramp B	74	12+70R	2GI	0.29	0.7	71.7	22	130	0.0217	6	YES	1.35	1.03	1.86	1.11	GS
16	Ramp B		13+75R	LAT	3.09	7.6	763.5	233	30	0.0567	3	NO	14.40	4.16	19.81	4.51	PT
16	Ramp B	63	15+06R	2GI	0.40	1.0	98.8	30	101	0.0096	6	YES	1.86	0.82	2.56	0.89	GS
16	Ramp B	63	15+06R	2GI	0.18	0.4	44.5	14	59	0.0217	6	YES	0.84	1.70	1.15	1.84	GS
16	Ramp D		13+67L	2GI	0.44	1.1	108.7	33	220	0.0256	6	YES	2.05	1.22	2.82	1.32	GS
16	Ramp D	105	13+75L	SDG	0.01	0.0	3.2	1	8	0.003	6	YES	0.06	0.42	0.08	0.45	GS
16	Ramp D	110	14+10L	LAT	1.15	2.8	284.2	87	33	0.403	3	NO	5.36	6.72	7.37	7.28	PT
16	Ramp D																
16	Ramp D		13+67R	2GI	0.44	1.1	108.7	33	220	0.0256	6	YES	2.05	1.22	2.82	1.32	GS
16	Ramp D	106	13+75R	SDG	0.01	0.0	2.5	1	8	0.003	6	YES	0.05	0.39	0.06	0.43	GS
16	Ramp D	106	13+75R	SDG	0.03	0.1	7.4	2	17	0.0048	3	YES	0.14	0.72	0.19	0.78	GS
* 16	Loop A		11+35L	LAT	0.54	1.3	133.4	41	42	0.003	3	YES	2.52	0.67	3.46	0.72	GS
16	Loop A		11+07L	LAT	0.13	0.3	32.1	10	28	0.1133	3	YES	0.61	1.83	0.83	1.98	GS
16	Loop A		11+07L	LAT	0.64	1.6	158.1	48	15	0.074	3	NO	2.98	2.46	4.10	2.66	PT
16	Loop B		12+15L	LAT	0.34	0.8	84.0	26	50	0.01	3	YES	1.58	0.93	2.18	1.01	GS
16	Loop C	85	11+35L	2GI	0.18	0.4	44.5	14	55	0.1	4	YES	0.84	1.78	1.15	1.93	GS
16	Loop C		50+90R	GS	0.10	0.2	24.7	8	80	0.066	4	YES	0.47	1.31	0.64	1.42	GS
16	Ramp C	68	11+33L	2GI	0.06	0.1	14.3	4	26	0.0341	6	YES	0.27	1.52	0.37	1.64	GS
16	Ramp C		12+45L	SDG	0.16	0.4	39.5	12	40	0.0325	6	YES	0.75	1.03	1.03	1.12	GS
16	Ramp C	68	11+33L	2GI	0.10	0.2	24.7	8	57	0.0164	6	YES	0.47	1.32	0.64	1.43	GS
16	NBCD		19+98L	LAT	0.55	1.4	135.7	41	58	0.13	3	NO	3.20	3.27	4.40	3.54	PT
16	NBCD	92	22+20L	2GI	0.11	0.3	27.2	8	40	0.008	6	YES	0.64	1.09	0.88	1.18	GS
16	NBCD	94	23+30L	SDG	0.07	0.2	17.3	5	35	0.003	6	YES	0.41	0.68	0.56	0.73	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

* NOTE 1: Actual Length includes distance of entire swale from the structure located upstream.

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 77 OF 92

06/14/2002
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R-609 IA Guilford Co. Affected Buffer Areas **Site #12**
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

					Total D.A.		Required length for treatment		Actual	Channel	Side	Treated	Q2	Q2 vel.	Q10	Q10 vel.	Treatment
SHT.	Align	Structure	Station	Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (m/m)	Slopes	Discharge?	cfs	fps	cfs	fps	Provided
16	Y6	162	25+20L	2GI	0.63	1.6	155.7	47	155	0.0107	6	**YES**	3.67	1.01	5.05	1.10	GS
16	Y6	91	28+07L	2GI	0.30	0.7	74.1	23	99	0.009	6	**YES**	1.75	0.79	2.40	0.85	GS
16	Y6	91	28+07L	SDG	0.14	0.3	34.6	11	47	0.0019	6	**YES**	0.82	0.68	1.12	0.73	GS
16																	
16	Y6	77	25+70R	2GI	0.28	0.7	69.2	21	100	0.0095	6	**YES**	1.63	0.79	2.24	0.86	GS
16	Y6	89	27+60R	2GI	0.48	1.2	118.6	36	170	0.0095	6	**YES**	2.80	0.91	3.85	0.98	GS
16	Y6	90	27+90M	SGD	0.24	0.6	59.3	18	40	0.003	6	**YES**	1.40	0.49	1.92	0.54	GS

2GI = 2 GRATED INLET
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METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET -73 OF 92

06/14/2002
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R-609 IA Guilford Co. Affected Buffer Areas   Site #13

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
17	L		56+40L	RDWY	0.30	0.7	74.1	23	80	0.0275	6	YES	1.75	1.20	2.01	1.24	GS
17	L	112	55+90M	2GI	0.79	1.9	194.7	59	250	0.0275	6	YES	5.51	1.60	6.34	1.65	GS
17	L	113	55+90R	SDG	1.05	2.6	259.5	79	110	0.0268	6	YES	5.51	1.58	6.33	1.64	GS
17	L		57+00R	SDG	0.84	2.1	207.6	63	40	0.003	4	NO	3.92	0.70	4.50	0.73	PT
17	L		57+40R	SDG	0.42	1.0	103.8	32	20	0.045	5	NO	1.96	1.55	2.25	1.60	PT
17	L		57+60R	SDG	0.16	0.4	39.5	12	40	0.0914	6	YES	0.84	1.57	0.96	1.62	GS
17	L		57+80R	GS	0.05	0.1	12.8	4	20	0.0275	6	YES	0.39	1.54	0.45	1.59	GS
17	L		58+40R	LAT	0.12	0.3	29.7	9	40	0.08	3	YES	0.84	1.74	0.96	1.80	GS
17	L		58+72R	LAT	1.23	3.0	303.9	93	32	0.031	3	NO	7.17	2.42	8.24	2.50	PT
17	A		12+80L	LAT	0.46	1.1	113.7	35	70	0.06	3	YES	2.14	1.88	2.47	1.95	GS
17	A		13+25L	LAT	0.70	1.7	173.0	53	45	0.0466	3	NO	3.26	1.95	3.75	2.03	PT
17	A		13+25L	LAT	34.56	85.4	8539.8	2603	75	0.006	3	NO	120.83	3.35	138.95	3.47	PT
17	D		14+70R	LAT	1.90	4.7	469.5	143	20	0.0511	3	NO	11.07	3.23	12.73	3.37	PT

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 79 OF 92

R-609 IA Guilford Co. Affected Buffer Areas Site #14
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
18	L		60+60L	LAT	2.16	5.3	533.7	163	40	0.05	3	NO	8.81	3.15	10.13	3.27	PT
18	L		61+00L	LAT	2.11	5.2	521.4	159	70	0.0333	3	NO	8.61	2.62	9.90	2.72	PT
18	L	116	58+40M	2GI	0.58	1.4	142.1	43	177	0.0275	6	YES	3.02	1.37	3.47	1.42	GS
18	L		61+00M	GS	0.17	0.4	42.0	13	95	0.0193	6	YES	0.65	1.53	0.75	1.58	GS
18	L		59+15R	LAT	0.18	0.4	44.5	14	45	0.066	3	YES	1.26	1.79	1.45	1.85	GS
18	L		59+40R	GS	0.30	0.7	74.1	23	65	0.0275	6	YES	2.10	1.26	2.41	1.30	GS
18	L		61+00R	GS	0.55	1.4	135.9	41	95	0.0193	6	YES	2.88	1.19	3.32	1.23	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
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METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

06/14/2002
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R-609 IA Guilford Co. Affected Buffer Areas Site #15
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
20	Y1		10+40L	GS	0.20	0.5	49.4	15	20	0.0298	6	**YES**	0.93	1.96	1.07	2.03	GS
20	Y1		10+80L	SDG	0.25	0.6	61.3	19	40	0.0656	3	**YES**	1.30	1.80	1.50	1.86	GS
20	Y1		10+97L	SDG	0.26	0.6	64.2	20	57	0.003	3	**YES**	1.36	0.57	1.57	0.59	GS
20	Y1		10+97L	SDG	0.15	0.4	36.3	11	23	0.0767	6	**NO**	0.77	2.67	0.89	2.76	PT
20	Y1		11+20L	GS	0.12	0.3	29.7	9	80	0.0114	6	**YES**	0.56	1.21	0.64	1.25	GS
20	Y1		10+60R	GS	0.10	0.2	23.5	7	40	0.0298	6	**YES**	0.50	1.68	0.57	1.74	GS
20	Y1		11+00R	SDG	0.32	0.8	79.8	24	40	0.0369	6	**YES**	1.51	1.29	1.73	1.34	GS
20	Y1		11+00R	LAT	0.35	0.9	85.7	26	240	0.0148	3	**YES**	1.62	1.09	1.86	1.13	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
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PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 81 OF 92

R-609 IA Guilford Co. Affected Buffer Area Site #15
Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

					Total D.A.		Required length for treatment		Actual	Channel	Side	Treated	Q2	Q2 vel.	Q10	Q10 vel.	Treatment
SHT.	Align	Structure	Station	Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (m/m)	Slopes	Discharge?	cfs	fps	cfs	fps	Provided
21	Y2		10+45L	GS	0.10	0.2	24.0	7	45	0.0523	6	**YES**	0.40	1.96	0.45	2.03	GS
21	Y2		10+77L	GS	0.23	0.6	56.8	17	32	0.0672	6	**YES**	1.07	1.48	1.23	1.54	GS
21	Y2		11+57L	GS	1.00	2.5	246.6	75	80	0.0493	6	**YES**	4.65	1.91	5.35	1.97	GS
21	Y2		12+20L	GS	1.15	2.8	284.2	87	67	0.00815	6	**NO**	5.36	1.01	6.16	1.04	PT
21	Y2		12+60L	LAT	1.22	3.0	301.5	92	40	0.093	3	**NO**	6.40	3.76	7.36	3.90	PT
21	Y2		13+00L	LAT	1.40	3.5	345.9	105	40	0.003	3	**NO**	7.34	0.87	8.44	0.90	PT
21	Y2		12+50R	GS	0.43	1.1	106.3	32	80	0.04	6	**YES**	2.00	1.43	2.31	1.48	GS
21	Y2		10+80R	GS	0.11	0.3	27.7	8	80	0.0672	6	**NO**	0.65	2.44	0.75	2.52	DGS
21	Y2		11+40R	SDG	0.16	0.4	38.8	12	20	0.0725	6	**NO**	0.73	2.58	0.84	2.67	DGS
21	Y2		11+20R	SDG	0.16	0.4	38.8	12	40	0.0725	6	**NO**	0.73	2.58	0.84	2.67	DGS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
CB = CATCH BASIN
DDB = DRY DETENTION BASIN
B = BASIN
GS = GRASS SWALE
DGS=DOWNSTREAM GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
PT=PREVIOUSLY TREATED

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 8 OF 12

R-609 IA Guilford Co. Affected Buffer Areas Site #15

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By: HAH
Check: RKW/SNR

SHT.	Align	Structure	Station	Type	Total D.A. ha	(ac)	Required length for treatment (ft.)	(m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
22	Y2		16+00L	GS	0.04	0.1	9.9	3	56	0.00127	6	YES	0.19	0.40	0.21	0.42	GS
22	Y2		17+40L	GS	0.11	0.3	27.7	8	84	0.0224	6	YES	0.52	1.53	0.60	1.58	GS
22	Y2		14+00R	LAT	0.12	0.3	30.1	9	40	0.063	3	NO	0.78	2.90	0.90	3.00	PT
22	Y2		15+00R	GS	0.18	0.4	44.5	14	156	0.046	6	NO	0.63	2.09	0.72	2.17	PT
22	Y2		16+20R	GS	0.09	0.2	22.2	7	40	0.00127	6	YES	0.63	0.55	0.72	0.56	GS

2GI = 2 GRATED INLET
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METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

R-609 IA Guilford Co. Affected Buffer Areas **Site # 12**

Discharge is considered to be treated if it meets the following criteria:
100 ft. of grass swale for every 1 acre of drainage area. AND
2 yr. velocity is less than or equal to 2 ft./sec.

Date: 6/13/02
Dsn. By:
Check:

SHT.	Align	Structure	Station	Type	Total D.A. ha	(ac)	Required length for treatment (ft.)	(m.)	Actual Length (m)	Channel Slope (m/m)	Side Slopes	Treated Discharge?	Q2 cfs	Q2 vel. fps	Q10 cfs	Q10 vel. fps	Treatment Provided
31		166	23+40R	2GI	0.35	0.9	86.5	26	130	0.0087	6	YES	2.04	0.81	2.80	0.88	GS

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
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GS = GRASS SWALE

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METRIC

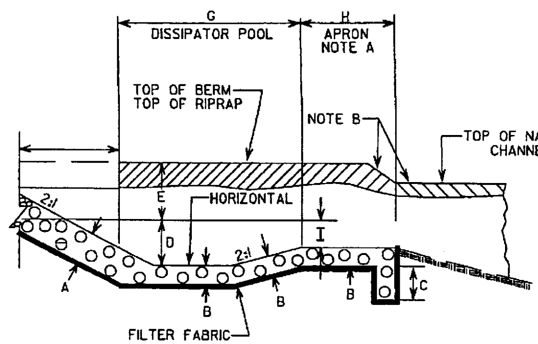
NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

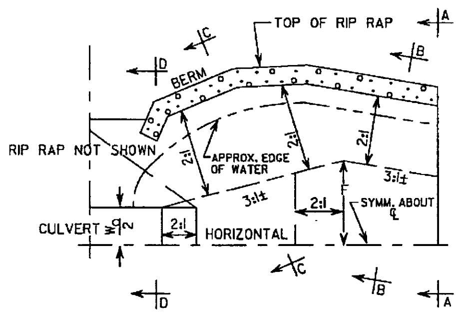
SCALE AS SHOWN

DETAIL OF RIP-RAPPED ENERGY DISSIPATOR BASIN

℄ SECTION

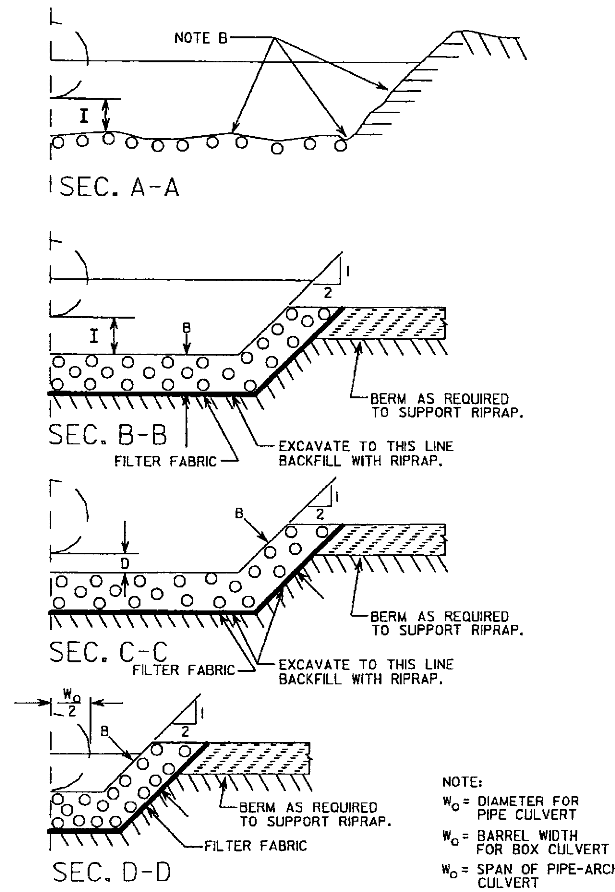


HALF PLAN



NOTE A IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q_{des} /(CROSS SECTION AREA AT SEC. A-A) = SPECIFIED EXIT VELOCITY.

NOTE B WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



NOTE:
W_o = DIAMETER FOR PIPE CULVERT
W_o = BARREL WIDTH FOR BOX CULVERT
W_o = SPAN OF PIPE-ARCH CULVERT

DIM.	RIP RAP BASIN # 1	2	3	4	5	6	7	8
A	0.68							
B	0.68							
C	0							
D	1.19							
E	0.30							
F	7.95							
G	11.94							
H	5.97							
I	0.55							

ALL DIMENSIONS APPROXIMATE

BASIN #	LOCATION (AT OUTLET)
1	13+80 -RP B-
2	
3	
4	
5	
6	
7	
8	

85 of 92

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

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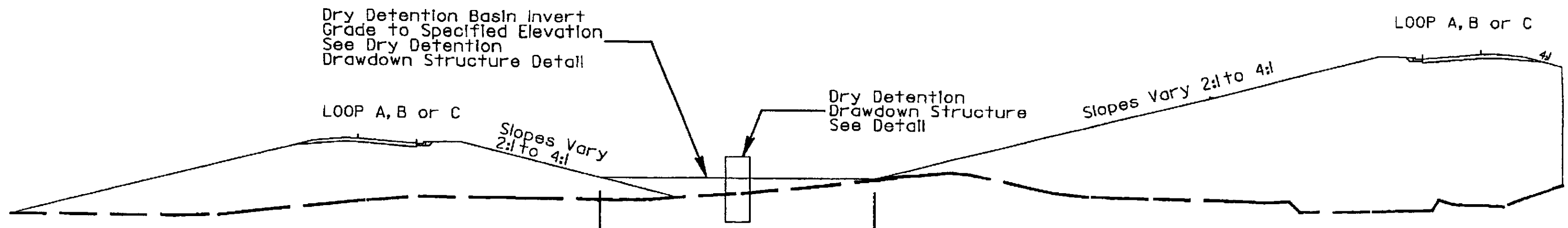
DRY DETENTION BASIN GRADING DETAIL



BASIN INVERT	DIAMETER
LOOP A	24M
LOOP B	8M
LOOP C	28M

NOTE:
BASIN NVERT ELEVATIONS HAVE BEEN SET TO PROVIDE 2-3 FEET OF FREEBOARD BETWEEN THE CONTROLLING ROADWAY CENTERLINE ELEVATION AND THE 50 YEAR EVENT. ADJUSTING THE BASIN INVERT OR DRAWDOWN STRUCTURE ELEVATIONS HIGHER THAN INDICATED IN PLANS MAY RESULT IN STORMWATER ENCROACHING INTO THE ROADWAY.

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 86 OF 92

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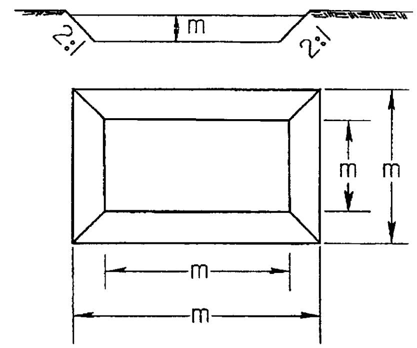
DETAIL OF EMERGENCY SPILL BASIN

TOTAL CAPACITY REQUIRED : cu. m.
TOTAL CAPACITY PROVIDED : cu. m.



Ditch to be blocked with sandbags 1.0 m deep at outlet

STATION	REQ. VOL. (Cu. m.)	DEPTH (m)	BOTTOM LENGTH (m)	BOTTOM WIDTH (m)	TOP LENGTH (m)	TOP WIDTH (m)	PROVIDED VOL (Cu. m.)
FLY 16+20 L	78	1.0	9.0	5.0	13.0	9.0	81
-L- 34+00 R	104	1.0	10.0	7.0	14.0	11.0	112
-L- 35+60 L	158	1.0	11.0	10.0	15.0	14.0	160
-L- 39+90 L	78	1.0	7.0	7.0	11.0	11.0	85
-L- 40+70 L	103	1.0	8.0	8.0	12.0	12.0	104
-L- 50+40 L	396	1.0	20.0	16.0	24.0	20.0	400
-L- 56+00 L	50	1.0	5.0	5.0	9.0	9.0	53
-L- 58+20 R	77	1.0	11.0	4.0	15.0	8.0	82
-Y5- 14+00 R	275	1.0	17.0	13.0	21.0	17.0	289
-Y5- 15+20 R	178	1.0	14.0	9.0	18.0	13.0	180
RAMPB 12+90 R	174	1.0	14.0	9.0	18.0	13.0	180
RAMPD 15+20 R	127	1.0	12.0	7.0	16.0	11.0	130

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 87 OF 92

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
1	WALTER S. DANIEL	1620 EASTCHESTER DIVE HIGH POINT, NC 27265	1
2	BEVERLY B. CAUDLE	1308 COX AVE HIGH POINT, NC 27263	1
3	NCDOT	P. O. BOX 14996 GEENSBORO, NC 27415	1,2,3,6,8,9
4	LAWSON INGRAM	1603 JACKSON LAKE RD HIGH POINT, NC 27263	3
5	CLIFFORD L. HILL	RT. 4 BOX 385 HIGH POINT, NC 27263	4
6	MARJORIE SURRETT	6802 DRESDEN RD HIGH POINT, NC 27263	5
7	FRANK MARTINEZ	1539 KESEY VALLEY RD HIGH POINT, NC 27263	6
8	BOBBY L. CECIL	1119 LIBERTY RD ARCHDALE, NC 27263	7,8
9	GLENN P. MORGAN	6027 CHECKER RD HIGH POINT, NC 27263	8
10	MR. FOSTER	6861 DRESDEN RD HIGH POINT, NC 27263	8
11	LAWRENCE E. MODLIN	6132 CHECKER RD HIGH POINT, NC 27263	8
12	CHARLES BOYD	1553 KESEY VALLEY RD HIGH POINT, NC 27263	6
13	ROBERT L. SLATE	7008 WINDCREEK CT HIGH POINT, NC 27263	8
14	JERRY W. LEWIS	7010 WINDCREEK CT HIGH POINT, NC 27263	8
15	LILLIE CRUTHERS	6027 CRUTHERS RD HIGH POINT, NC 27263	8
16	W. GERALD LEONARD	6801 JOPLIN DRIVE HIGH POINT, NC 27263	12

SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 38 OF 92

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BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT: TYPE: ROAD CROSSING	IMPACT: TYPE: PARALLEL IMPACT	IMPACT: ALLOWABLE: ZONE 1 (m^2)	IMPACT: ALLOWABLE: ZONE 2 (m^2)	IMPACT: ALLOWABLE: TOTAL (m^2)	IMPACT: MITIGABLE: ZONE 1 (m^2)	IMPACT: MITIGABLE: ZONE 2 (m^2)	IMPACT: MITIGABLE: TOTAL (m^2)	BUFFER REPLACEMENT: ZONE 1 (m^2)	BUFFER REPLACEMENT: ZONE 2 (m^2)
1	1350mm	19+60 to 20+20	X					2655.0	1737.1	4392.1		
2	1350mm	25+55 to 25+90	X					2402.3	1371.2	3773.5		
3 (Trib)	900mm	27+95 to 28+35	X					1276.4	1024.6	2300.9		
3 (Main)	Bridge	28+60 to 29+00	X		800.7	788.5	1589.2					
4 (Trib 1)	Stream	32+00		X				675.1	427.5	1102.6		
4 (Trib 2)	Stream	33+00		X				1838.2	881.3	2719.5		
4 (Main)	3@3.4m x 2.4m	31+60 to 33+80	X					5370.7	2825.1	8195.8	4042.6	2667.2
5	600mm	35+10 to 35+65	X					832.6	737.1	1569.8		
6	1050mm	40+00 to 40+40	X					3125.8	2003.2	5129.0		
7	1@3.8m x 3.8m	45+30 to 46+50	X					2645.2	1791.0	4436.3		
8 (Trib 1)	Interchange	48+85 to 50+75	X					3004.2	1917.6	4921.8		
8 (Trib 2)	Interchange	51+20	X					770.3	688.1	1458.4		
8 (Trib 3)	Interchange	50+20 to 51+60	X					9564.6	5999.9	15564.5		
8 (Trib 4)	Interchange	50+70 to 51+90	X					1972.7	1557.0	3529.7		
8 (Trib 5)	Interchange	53+00 to 56+75	X					7851.8	5525.0	13376.8		
8 (Trib 6)	Interchange	54+40 to 55+45	X					2284.1	1577.7	3861.8		
9	900mm	58+20 to 59+00	X					2779.3	1507.6	4286.9		
10	900mm	10+20 R -SBCD-	X		551.3	469.7	1021.0					
11	1050mm	12+80 R -SBCD-	X		587.6	398.9	986.5					
12	900mm	14+00 -NBCD-	X					2097.3	1426.5	3523.8	1538.0	1232.0
TOTAL:					1939.6	1657.1	3596.7	51145.8	32997.3	84143.1	5580.6	3899.2

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-609IA)

October-06
SHEET 89 OF 92

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	54 inch	19+60 to 20+20	X					28578	18697	47275		
2	54 inch	25+55 to 25+90	X					25858	14759	40617		
3 (Trib)	36 inch	27+95 to 28+35	X					13738	11028	24766		
3 (Main)	Bridge	28+60 to 29+00	X		8618	8487	17105					
4 (Trib 1)	Stream	32+00		X				7266	4601	11867		
4 (Trib 2)	Stream	33+00		X				19786	9486	29272		
4 (Main)	3@ 11.2 ft x 7.8 ft	31+60 to 33+80	X					57809	30408	88217	43513	28708
5	24 inch	35+10 to 35+65	X					8962	7934	16896		
6	42 inch	40+00 to 40+40	X					33645	21562	55207		
7	1@12.5 ft x 12.5 ft	45+30 to 46+50	X					28472	19278	47750		
8 (Trib 1)	Interchange	48+85 to 50+75	X					32336	20640	52976		
8 (Trib 2)	Interchange	51+20	X					8291	7406	15697		
8 (Trib 3)	Interchange	50+20 to 51+60	X					102950	64581	167531		
8 (Trib 4)	Interchange	50+70 to 51+90	X					21234	16759	37993		
8 (Trib 5)	Interchange	53+00 to 56+75	X					84514	59469	143983		
8 (Trib 6)	Interchange	54+40 to 55+45	X					24586	16981	41567		
9	36 inch	58+20 to 59+00	X					29915	16227	46142		
10	900mm	10+20 R -SBCD-	X		5935	5056	10991					
11	1050mm	12+80 R -SBCD-	X		6325	4294	10619					
12	900mm	14+00 -NBCD-	X					22575	15354	37929	16554	13261
TOTAL:					20878	17837	38715	550515	355170	905685	60067	41969

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-609IA)

October-06
SHEET 90 OF 92

BUFFER IMPACTS SUMMARY

		WETLANDS IN BUFFER	
Site	Station	ZONE 1 (m^2)	ZONE 2 (m^2)
2	25+75 to 25+95	334.2	289.1
8 (Trib 5)	55+70 to 56+60	632.4	171.1
9	58+20 to 59+00	2780.6	0.0
		3747.2	460.2

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 8.1570601 (R-609IA)

2/19/2004
SHEET 91 OF 92

BUFFER IMPACTS SUMMARY

		WETLANDS IN BUFFER	
Site	Station	ZONE 1 (ft^2)	ZONE 2 (ft^2)
Buffer Site 2	25+75 - 25+95	3597.2	3111.8
Buffer Site 8 (Trib 5)	55+70 - 56+60	6806.9	1841.7
Buffer Site 9	58+20 - 59+00	5532.0	0.0
		15936.1	4953.5

Stream/Wetland Site 4

Stream/Wetland Site 11 @ -RAMPA-

Stream/Wetland Site 12

NC DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD CO
PROJECT: R-0609IA
US 311 HIGH POINT EAST BELTWAY

Sheet 92 of 92
Revised 10/06

TIP: R-0609IA

CONTRACT: 34345.1.1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

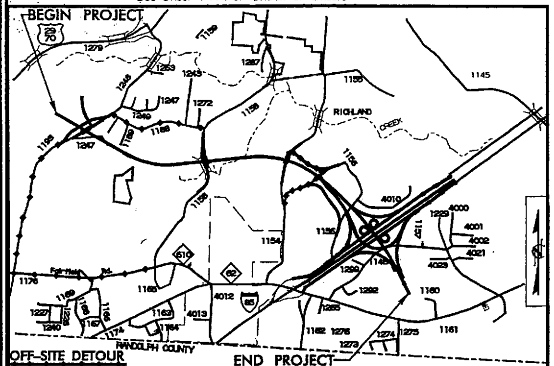
LOCATION: US 311 HIGH POINT EAST BELTWAY FROM US 29-70 TO I-85 NORTH OF ARCHDALE

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING, FENCING, STRUCTURES, AND I.T.S

METRIC
ALL DIMENSIONS IN THESE PLANS ARE IN METERS

STATE	STATE PROJECT REFERENCE NO.		SHEET NO.	TOTAL SHEETS
N.C.	R-0609IA		1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION		
34345.1.1	MAF-F-119-1(1)	PE		
34345.2.7	STP-NHF-119-1(1)	ROW & UTILS		

See Sheet 1-A For Index of Sheets



VICINITY MAP

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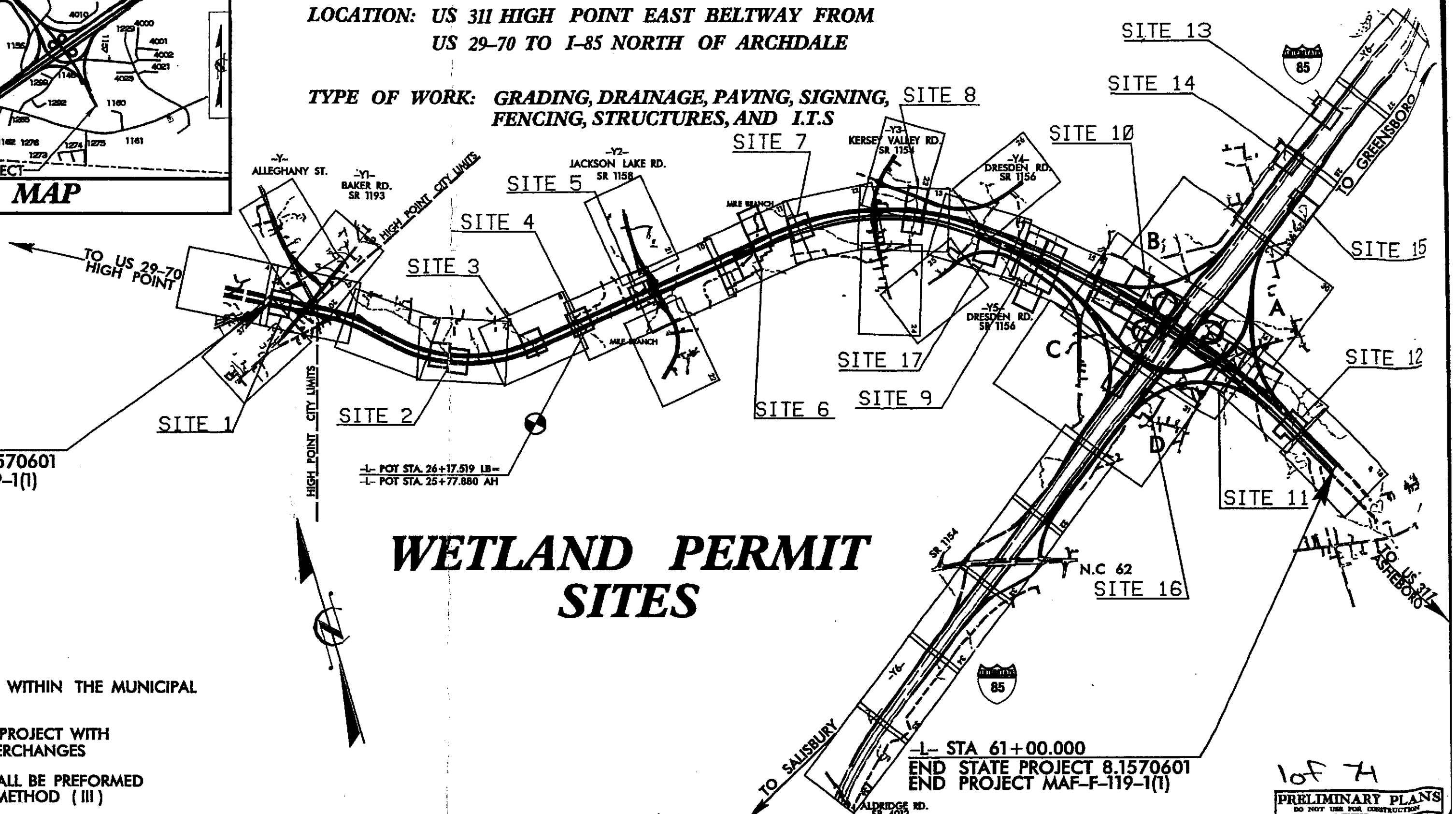

-L- STA 11+98.805
BEGIN STATE PROJECT 8.1570601
BEGIN PROJECT MAF-F-119-1(1)

-L- STA 61+00.000
END STATE PROJECT 8.1570601
END PROJECT MAF-F-119-1(1)

WETLAND PERMIT SITES

1 of 74

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF HIGH POINT

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

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

GRAPHIC SCALES

PLANS

PROFILE (HORIZONTAL)

PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 27,000
ADT 2025 = 39,000
DHV = 10 %
D = 60 %
T = 13 % *
V = 110 km/h
* TTST 7 % DUAL 6 %
FUNC CLASS – FREEWAY

PROJECT LENGTH

LENGTH ROADWAY F.A PROJECT MAF-F-119-1(1) =	4.901 KM
LENGTH STRUCTURE F.A PROJECT MAF-F-119-1(1) =	KM
TOTAL LENGTH STATE PROJECT 8.1570601 =	4.901 KM

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER, 2003

LETTING DATE: MARCH 15, 2005

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

STEVE KENDALL
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E. SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E. SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

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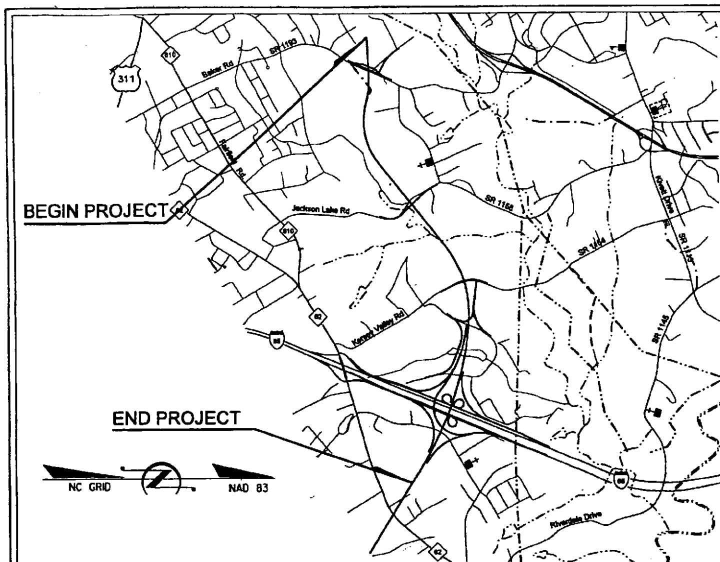
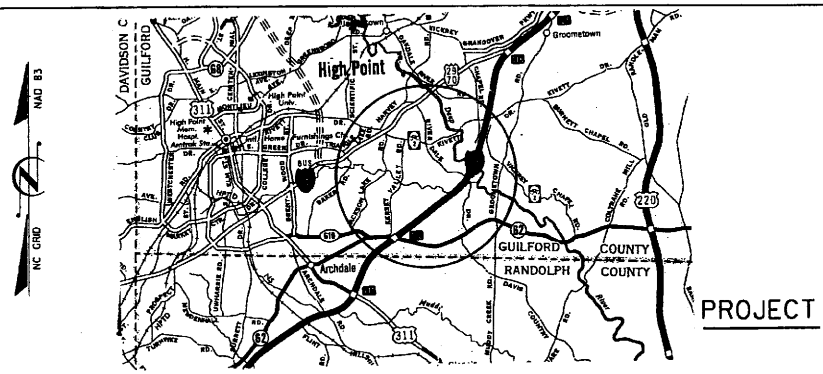
DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT



PORTION OF GUILFORD COUNTY MAP



PORTION OF STATE MAP

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 2 OF 74

WETLAND IMPACTS

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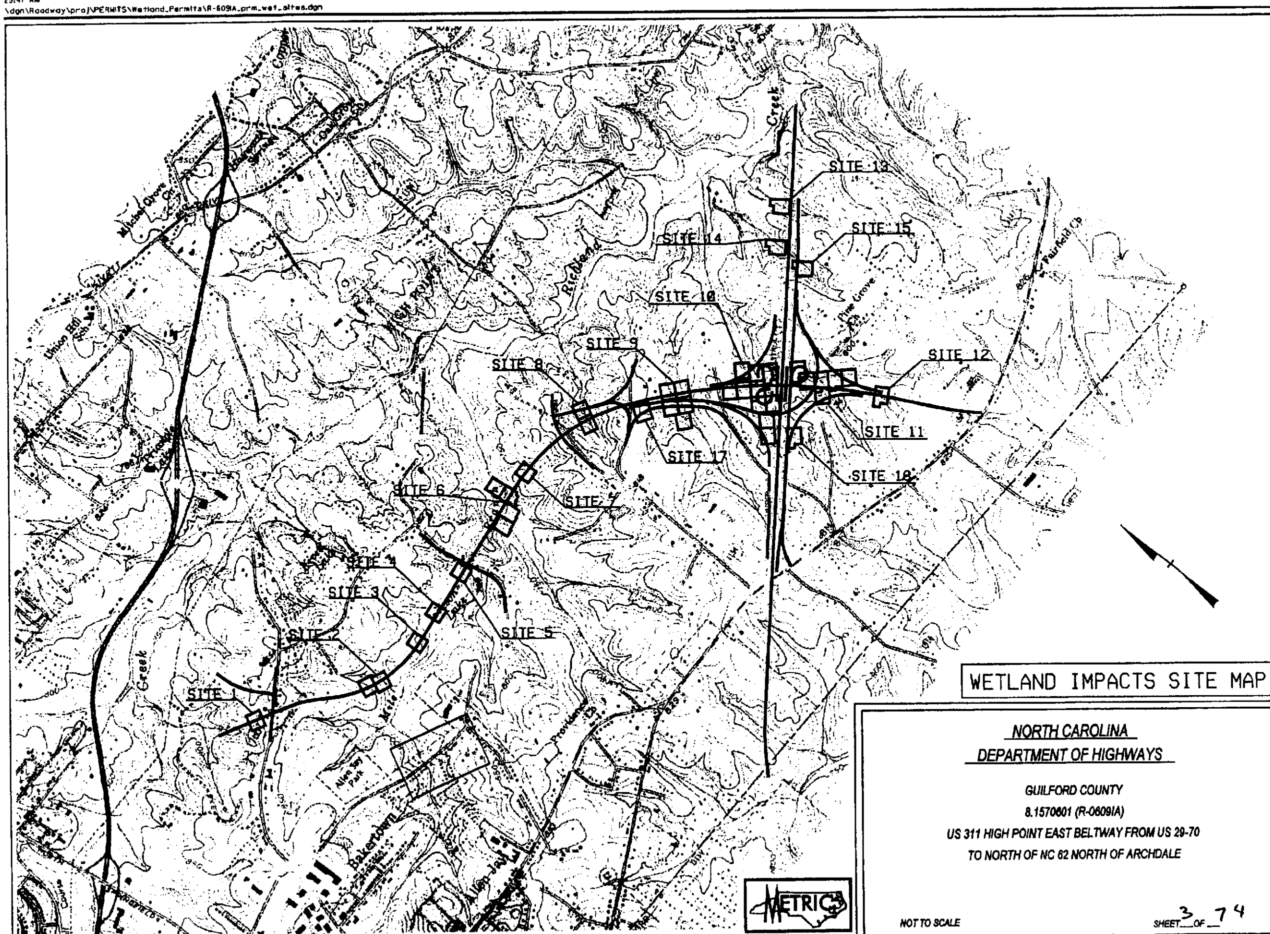


WETLAND IMPACTS SITE MAP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

NOT TO SCALE

SHEET 3 OF 74

WETLAND LEGEND

WLB — WETLAND BOUNDARY

WLB WETLAND

F DENOTES FILL IN WETLAND

S DENOTES FILL IN SURFACE WATER

P DENOTES FILL IN SURFACE WATER (POND)

T DENOTES TEMPORARY FILL IN WETLAND

E DENOTES EXCAVATION IN WETLAND

TS DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG NATURAL GROUND

PL PROPERTY LINE

TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

12"-48" PIPES

54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTING STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

METRIC

SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

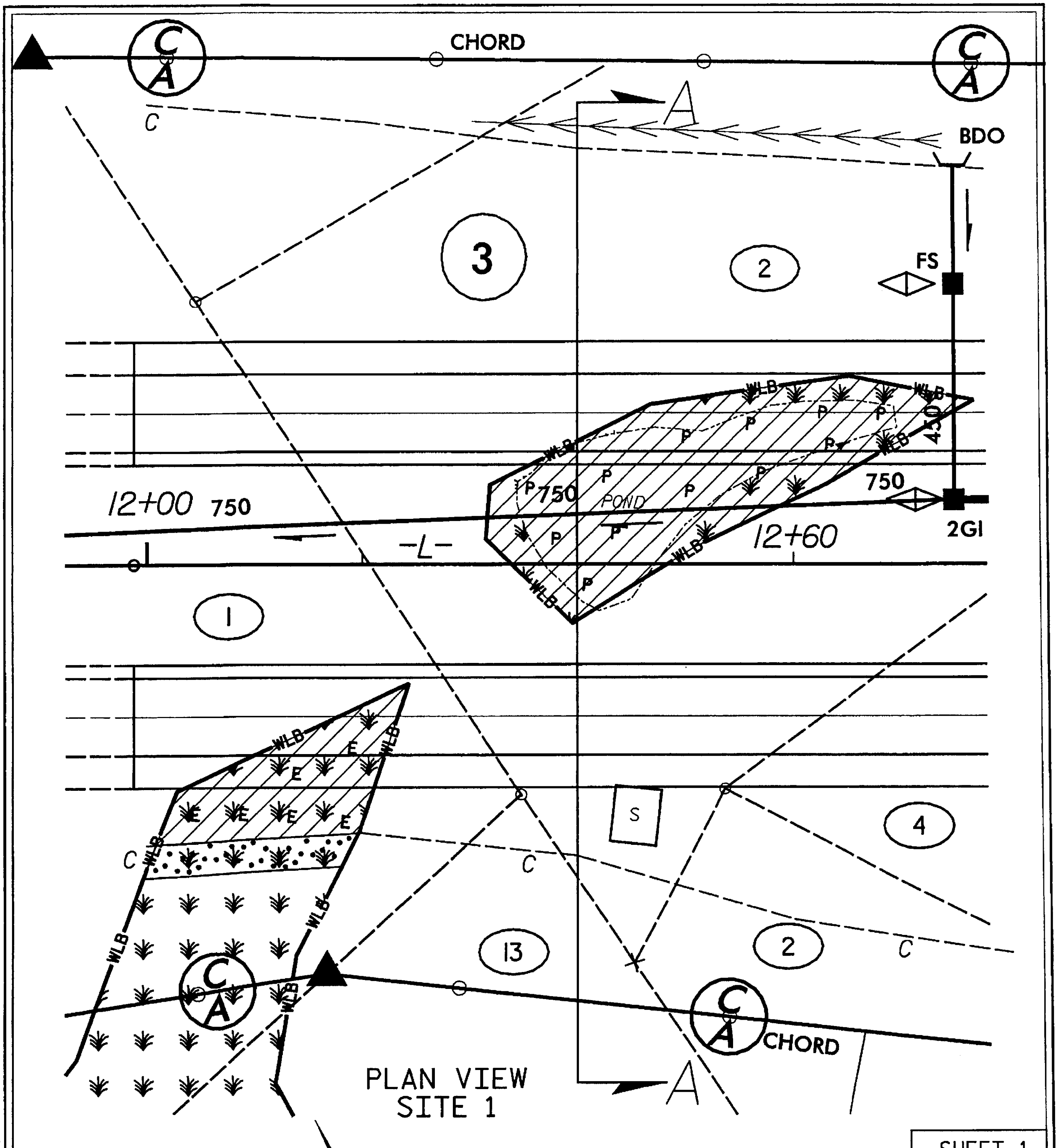
GUILFORD COUNTY

8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70 TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 4 OF 74



PLAN VIEW
SITE 1

SHEET 1

LEGEND

—WLB— WETLAND

E E — DENOTES EXCAVATION IN WETLAND

P P — DENOTES FILL IN SURFACE WATER (POND)

DENOTES MECHANIZED CLEARING

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 5 OF 74

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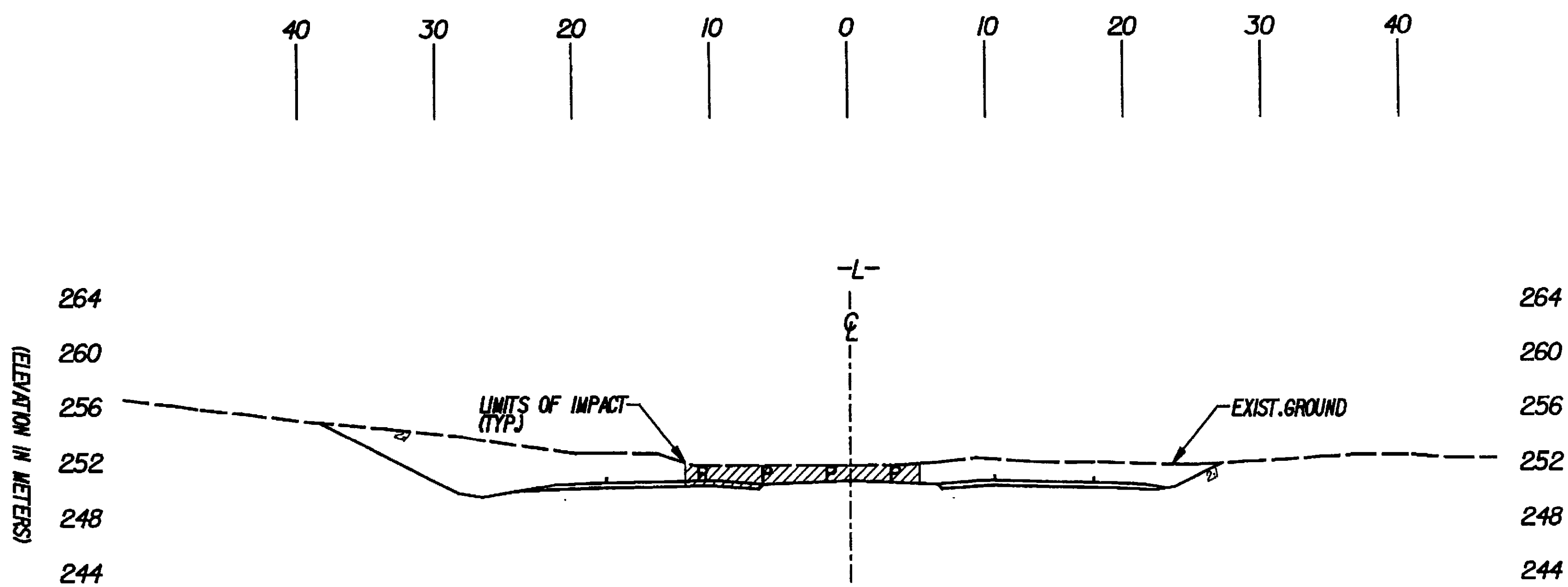

SECTION "A-A"

SITE 1
CROSS SECTION
(-L- 12+40)

LEGEND

P P DENOTES FILL IN SURFACE WATER (POND)

METRIC

5 0 10

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 6 OF 74

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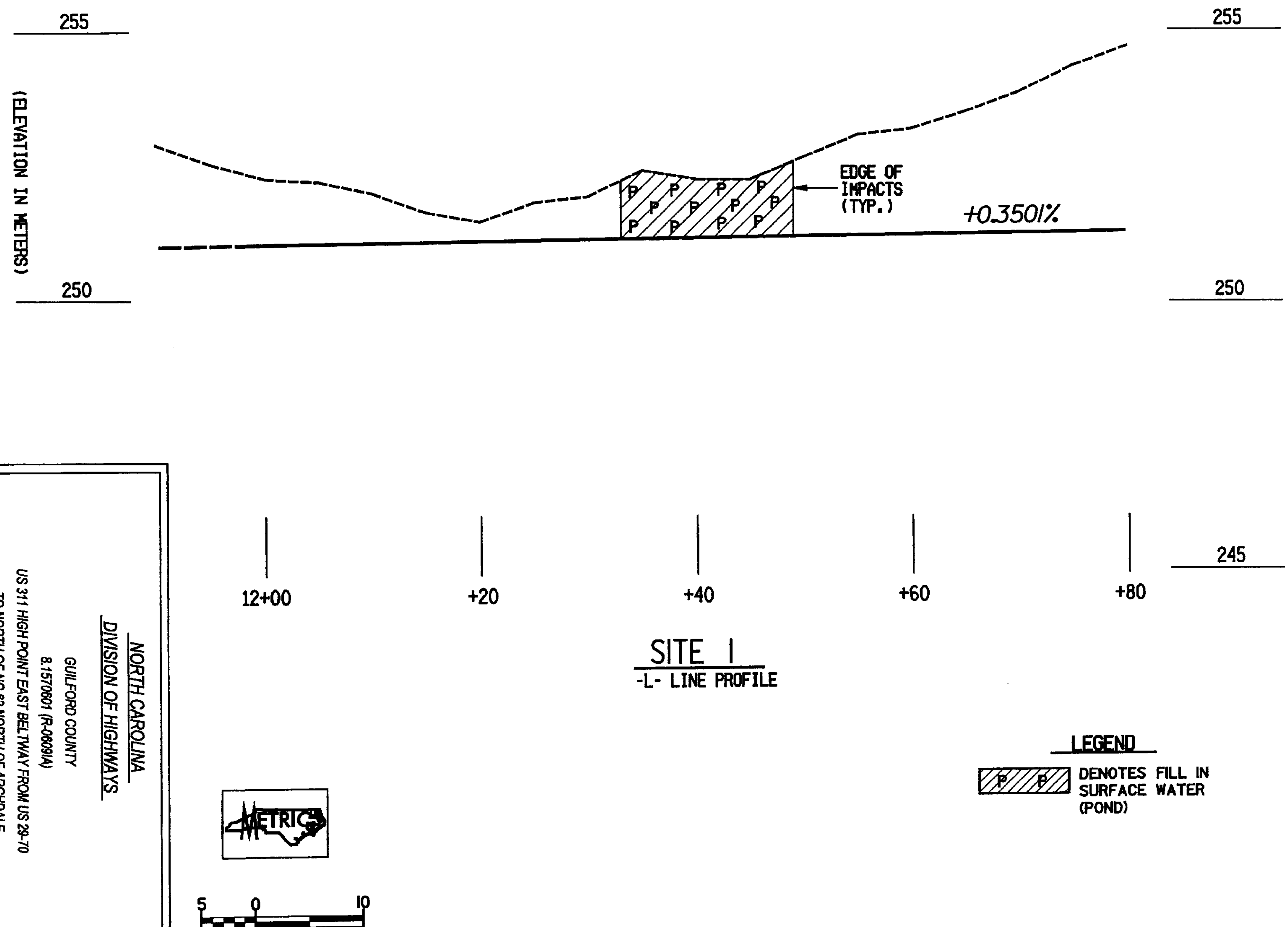


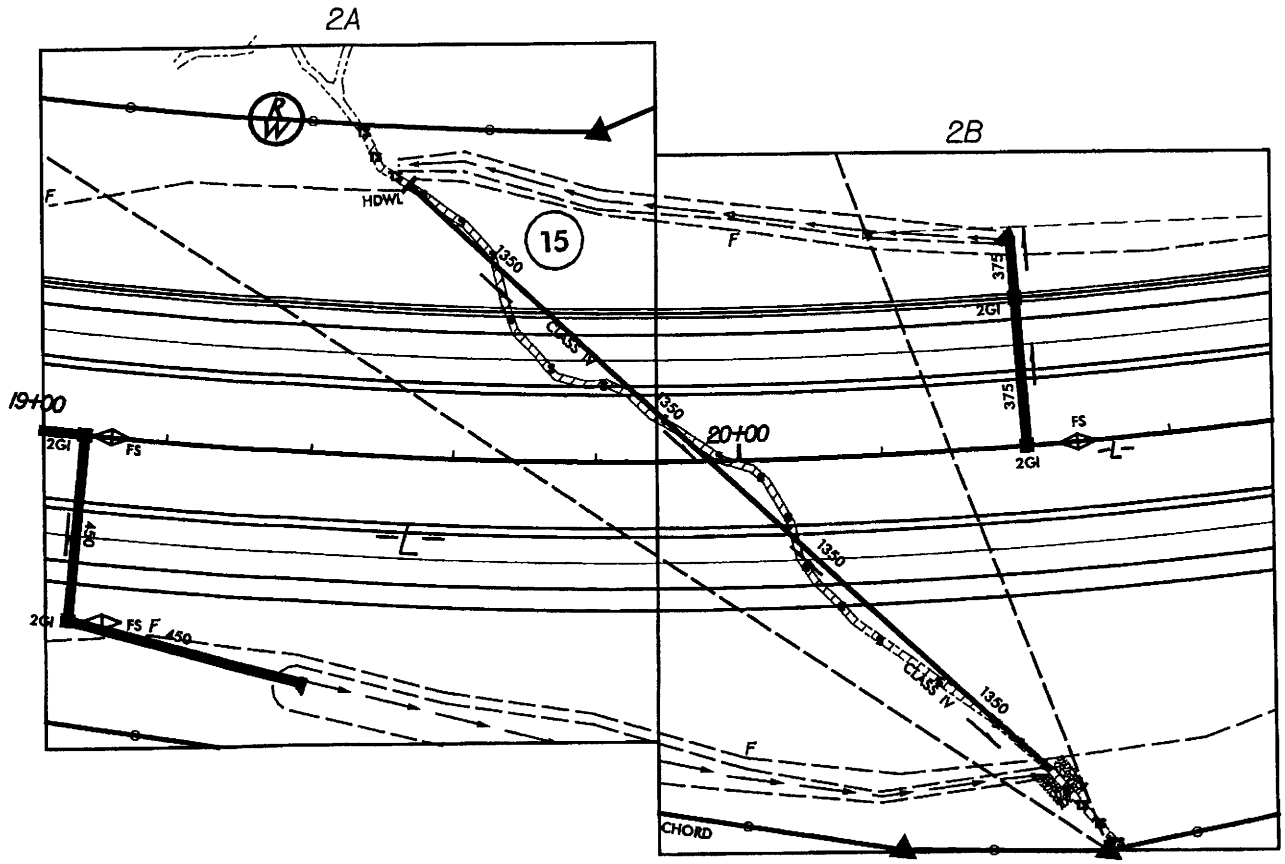
SITE 1
-L- LINE PROFILE

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 7 OF 34



SHEET LAYOUT
PLAN VIEW
SITE 2

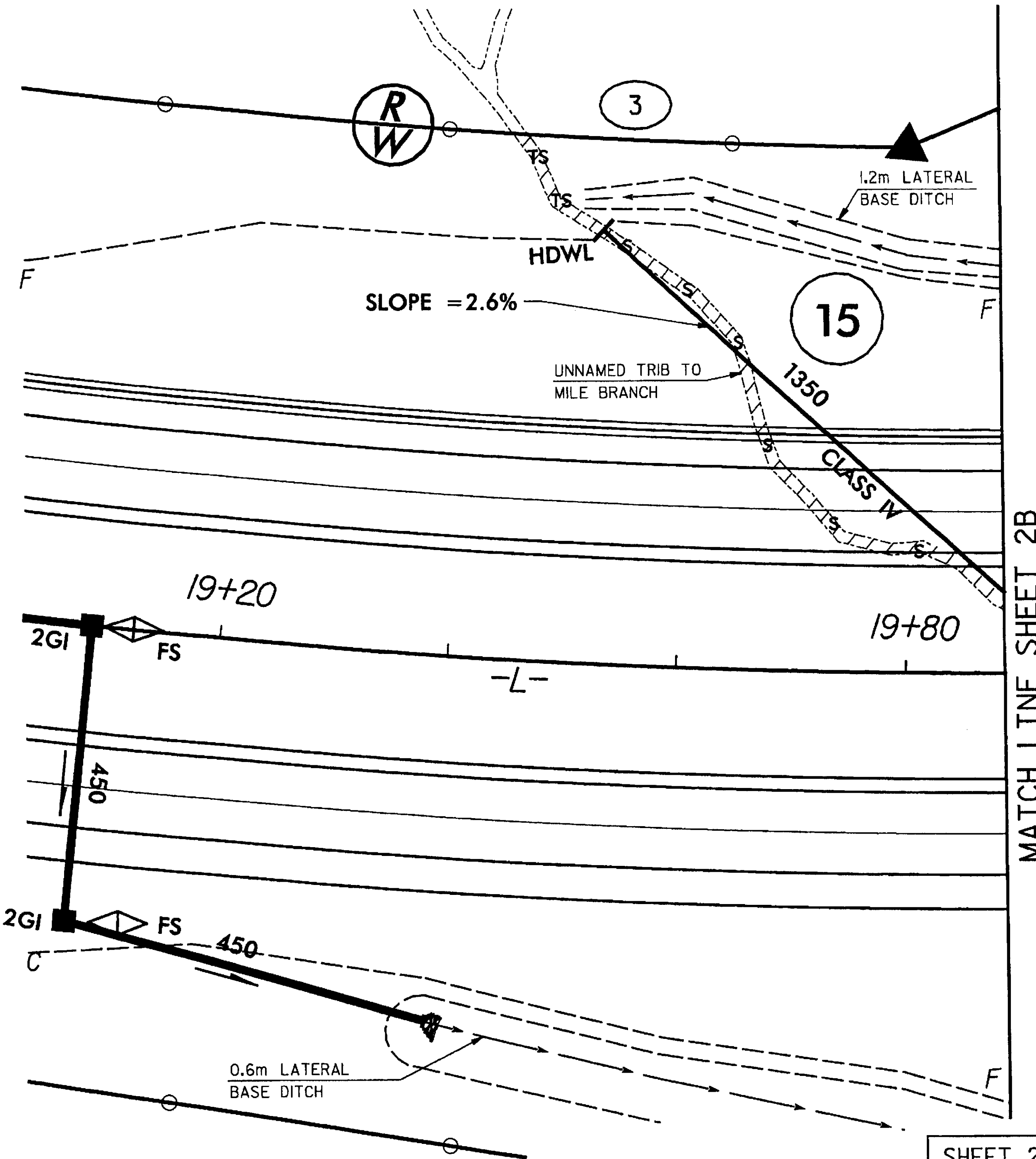
10 0 10 20
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 8 OF 14



SHEET 2A

PLAN VIEW
SITE 2

LEGEND

S S	DENOTES SURFACE WATER LOSS
TS TS	DENOTES TEMPORARY SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

9 of 74

SCALE AS SHOWN

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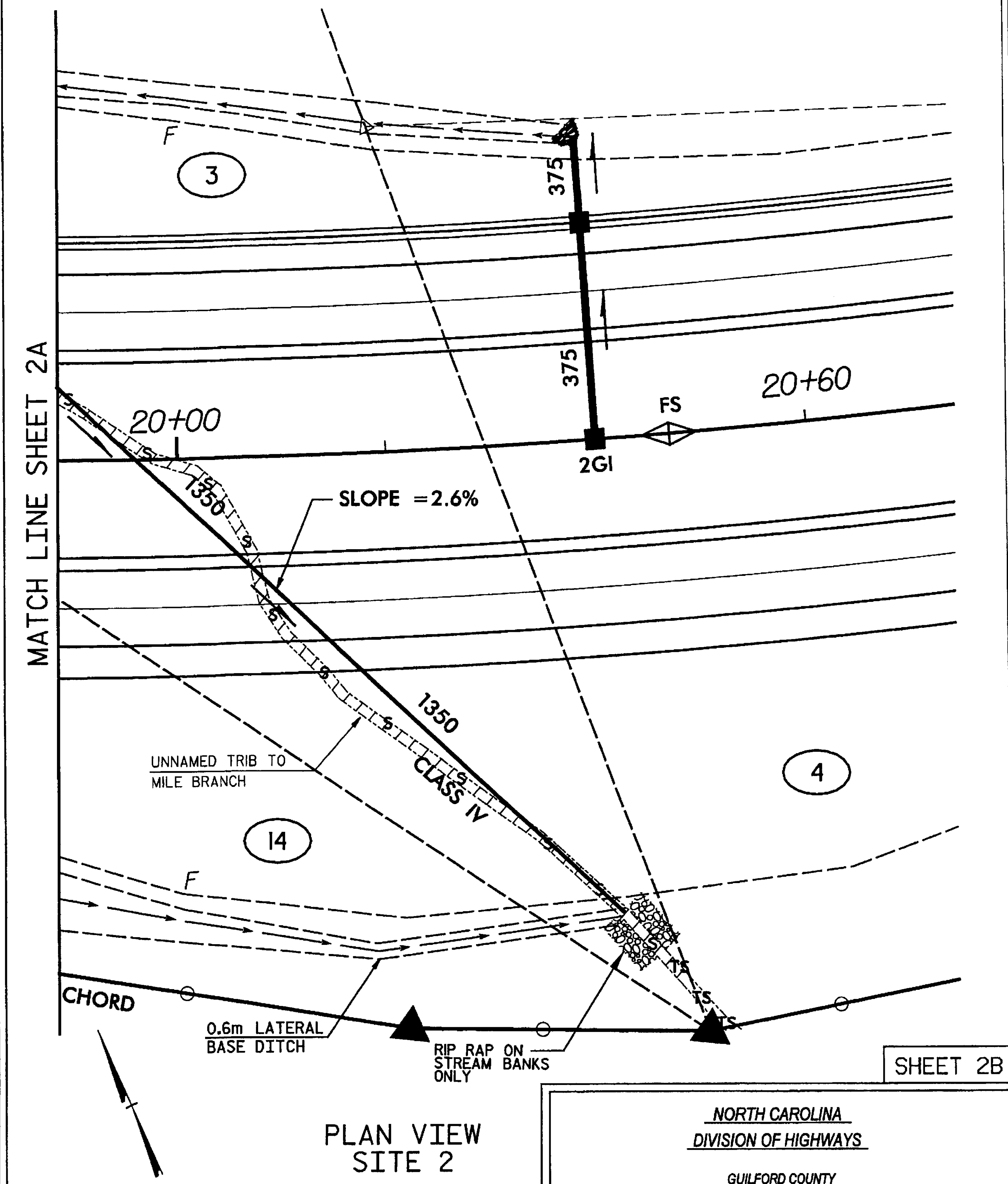

SHEET 2B

PLAN VIEW
SITE 2

LEGEND

S S	DENOTES SURFACE WATER LOSS
TS TS	DENOTES TEMPORARY SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

10 of 74

SCALE AS SHOWN

SHEET___OF___

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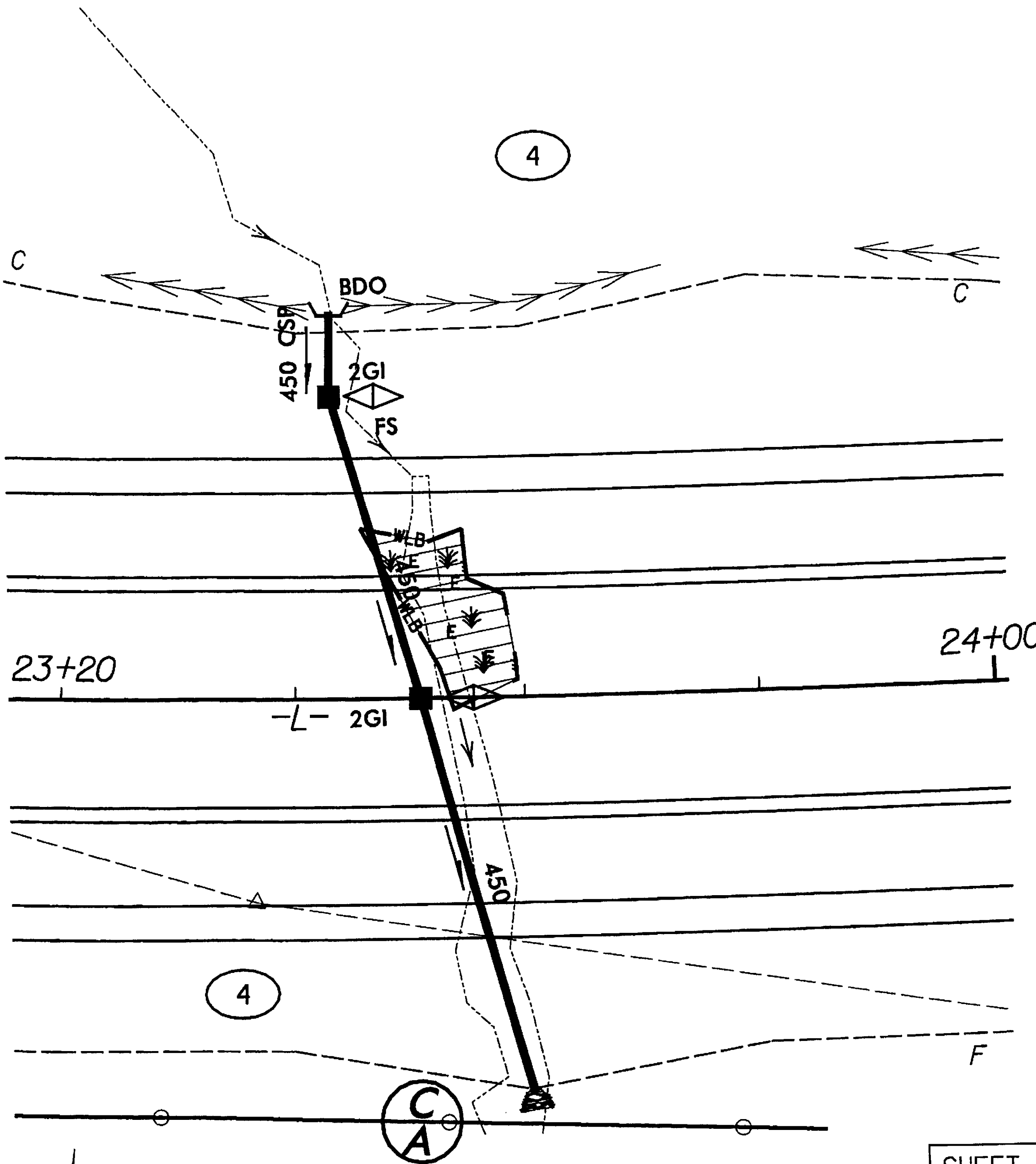


SHEET 3

PLAN VIEW
SITE 3

LEGEND

—WLB— WETLAND

E E DENOTES EXCAVATION IN WETLAND

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

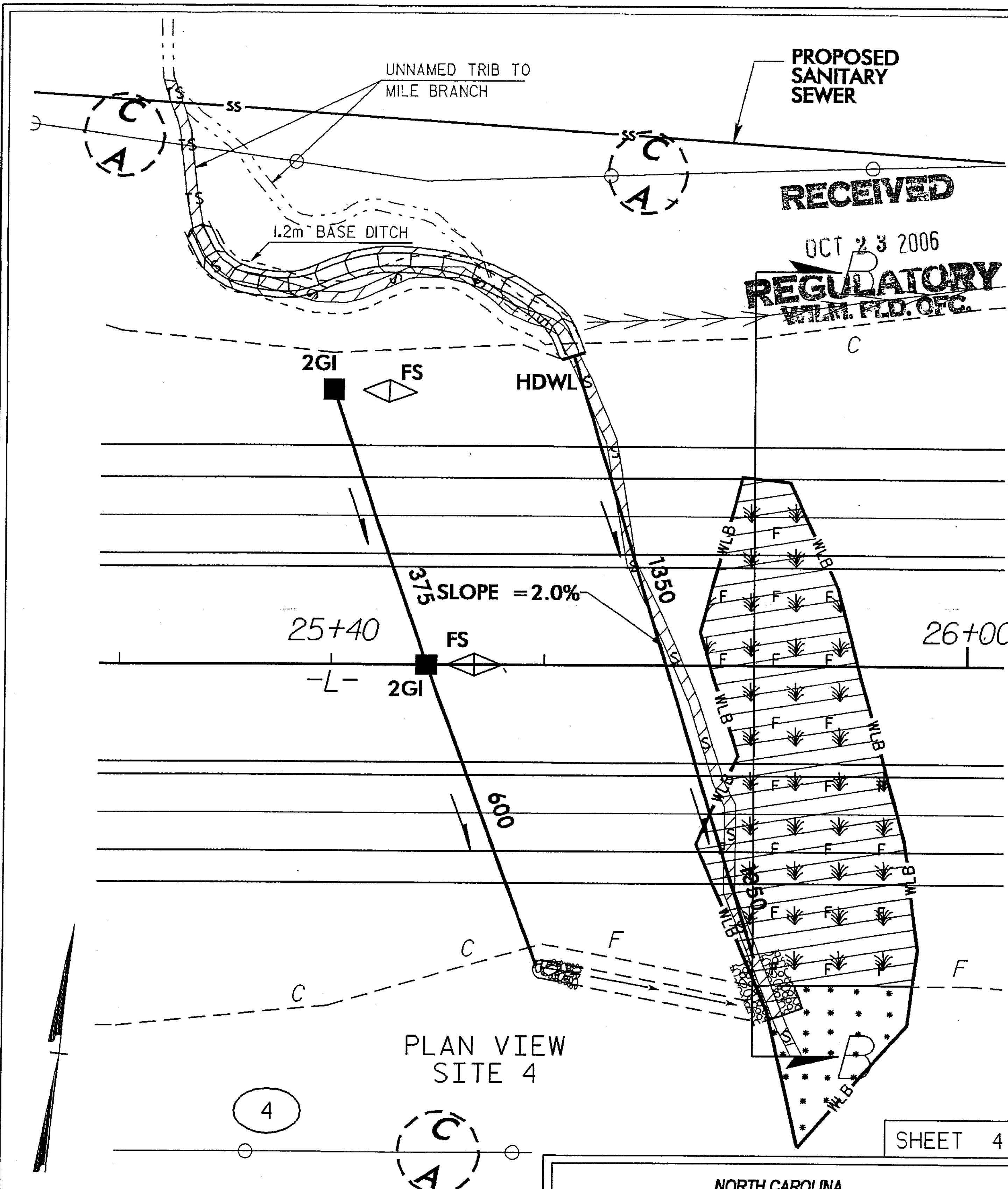
8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

11 of 74

SCALE AS SHOWN

SHEET ___ OF ___



LEGEND

—WLB— WETLAND

DENOTES FILL IN WETLAND

DENOTES SURFACE WATER LOSS

DENOTES MECHANIZED CLEARING

METRIC

5 0 10

SCALE IN METERS

NORTH CAROLINA

DIVISION OF HIGHWAYS

GUILFORD COUNTY

8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70 TO NORTH OF NC 62 NORTH OF ARCHDALE

Revised May '06

SCALE AS SHOWN

SHEET 17 OF 74

$DATE$ $TIME$ $FILE$

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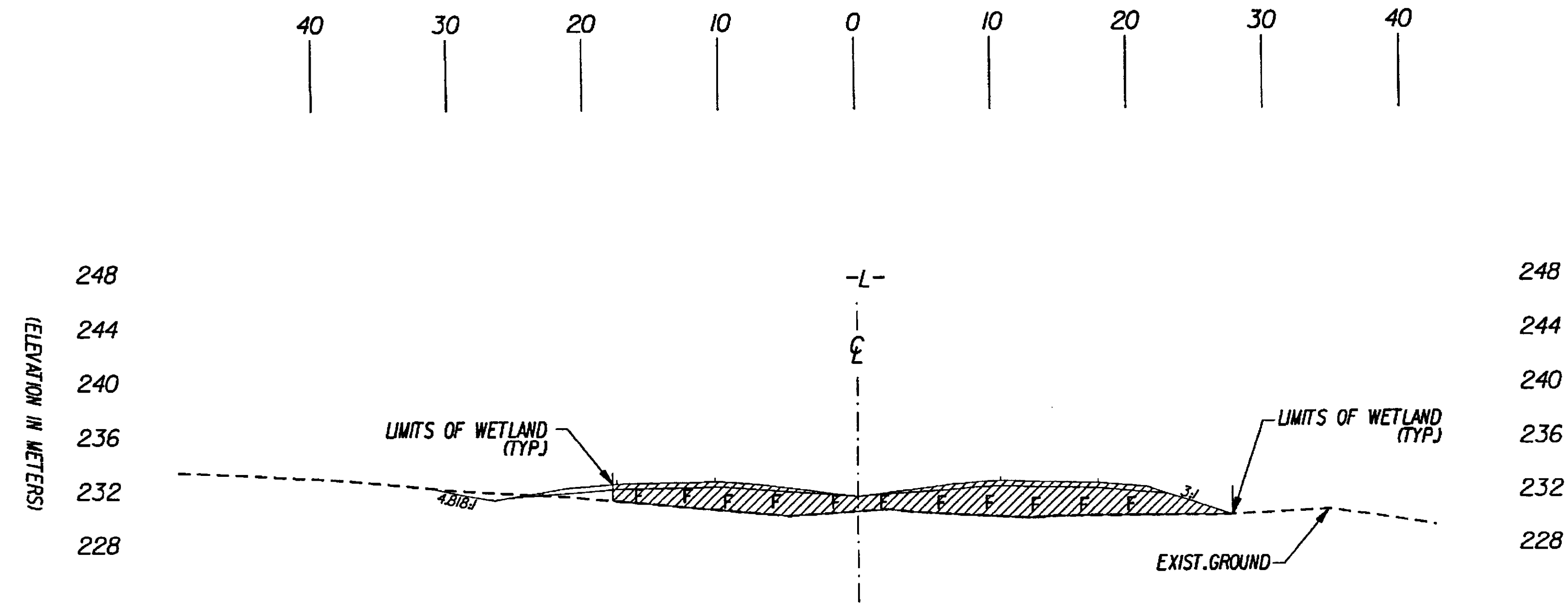

SECTION "B-B"

SITE 4

CROSS SECTION
(-L- 25+80)

LEGEND

DENOTES FILL IN WETLAND

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET __ OF __ 13 of 74

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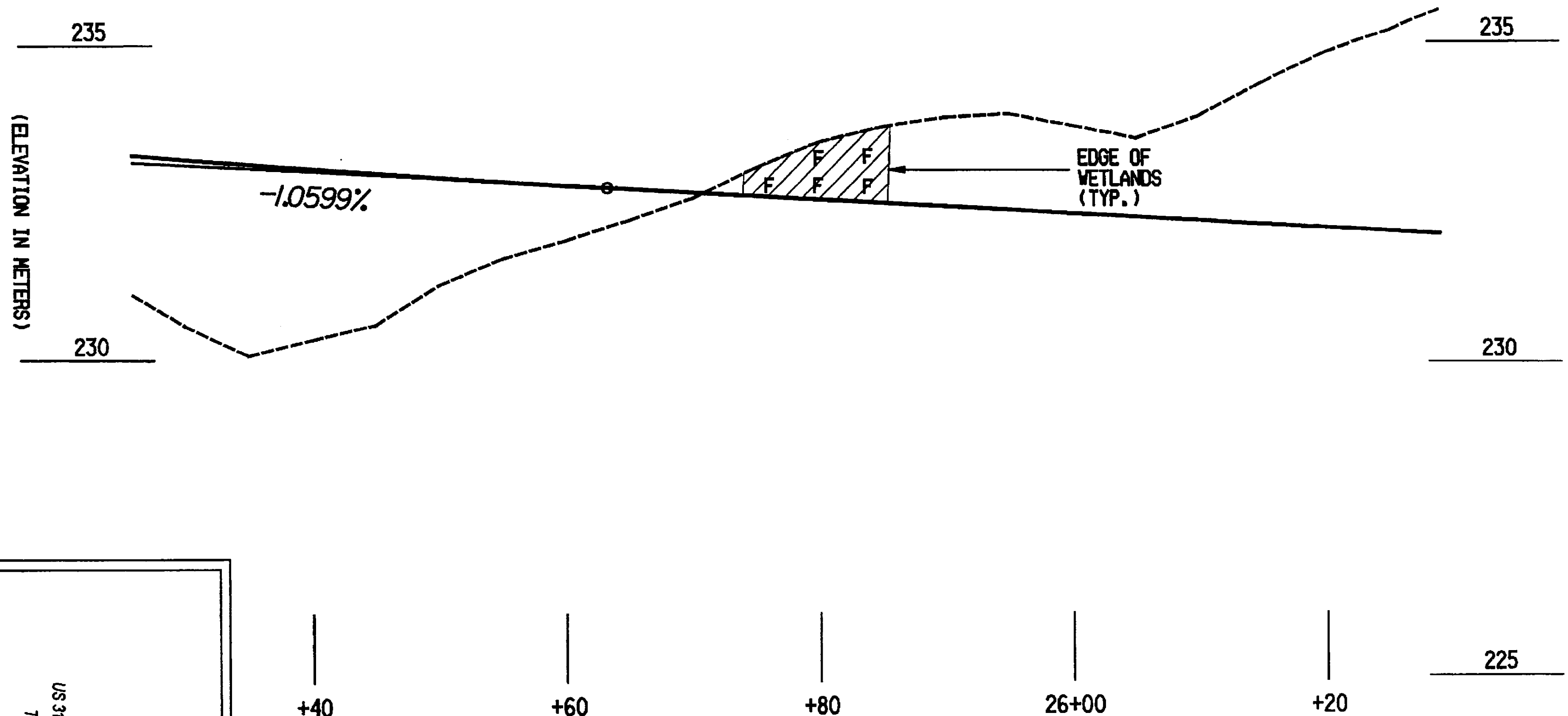


SITE 4

-L- LINE PROFILE

LEGEND

F F DENOTES FILL IN WETLAND

METRIC

5 0 10

NORTH CAROLINA

DIVISION OF HIGHWAYS

GUILFORD COUNTY

8.1570601 (R-0609IA)

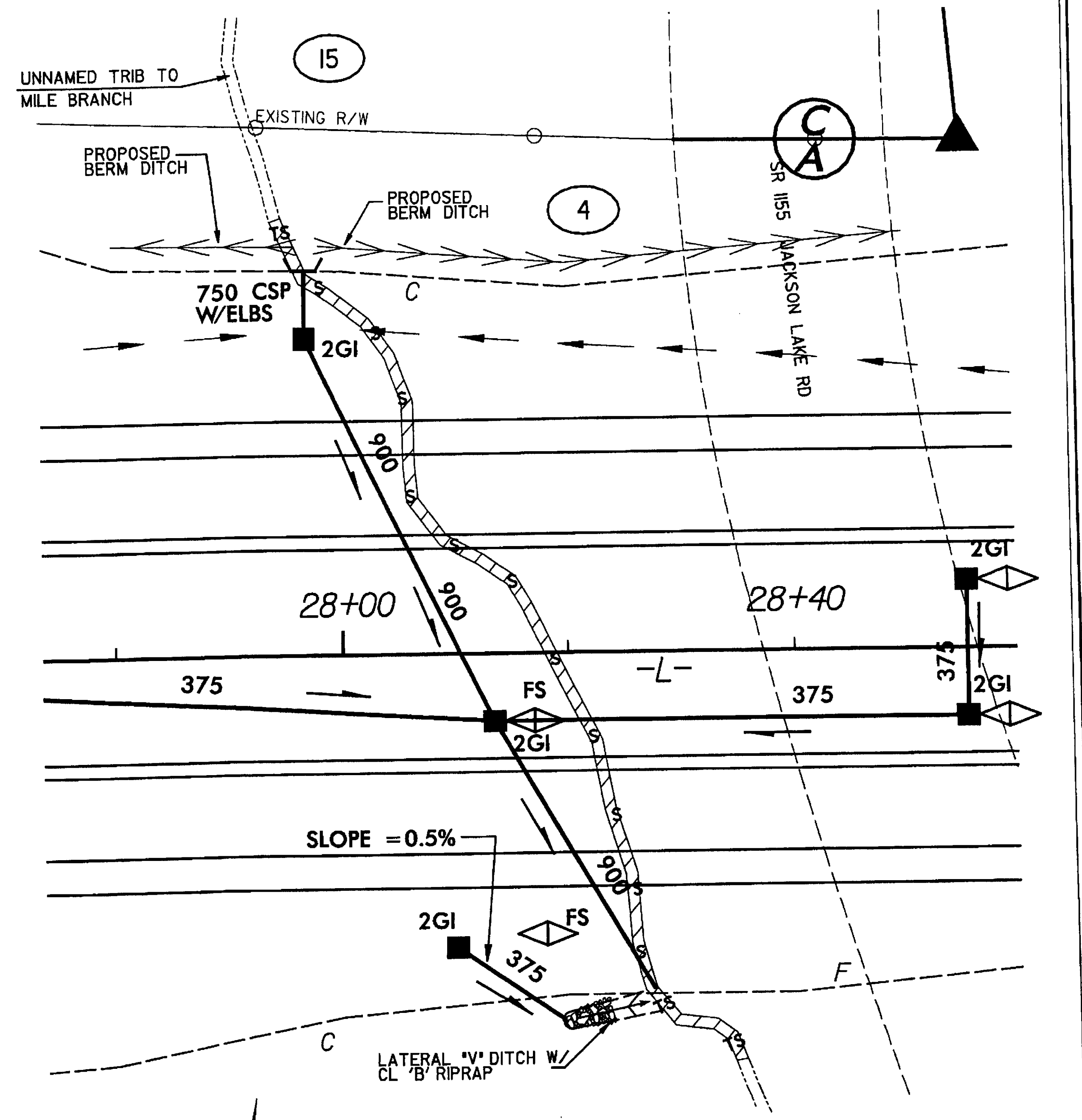
US 311 HIGH POINT EAST BELTWAY FROM US 29-70

TO NORTH OF NC 62 NORTH OF ARCHDALE

14 of 74

SCALE AS SHOWN

SHEET__OF__



SHEET 5

PLAN VIEW
SITE 5

LEGEND

S S	DENOTES SURFACE WATER LOSS
TS TS	DENOTES TEMPORARY SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

15 of 74

SCALE AS SHOWN

SHEET__OF__

13/2006
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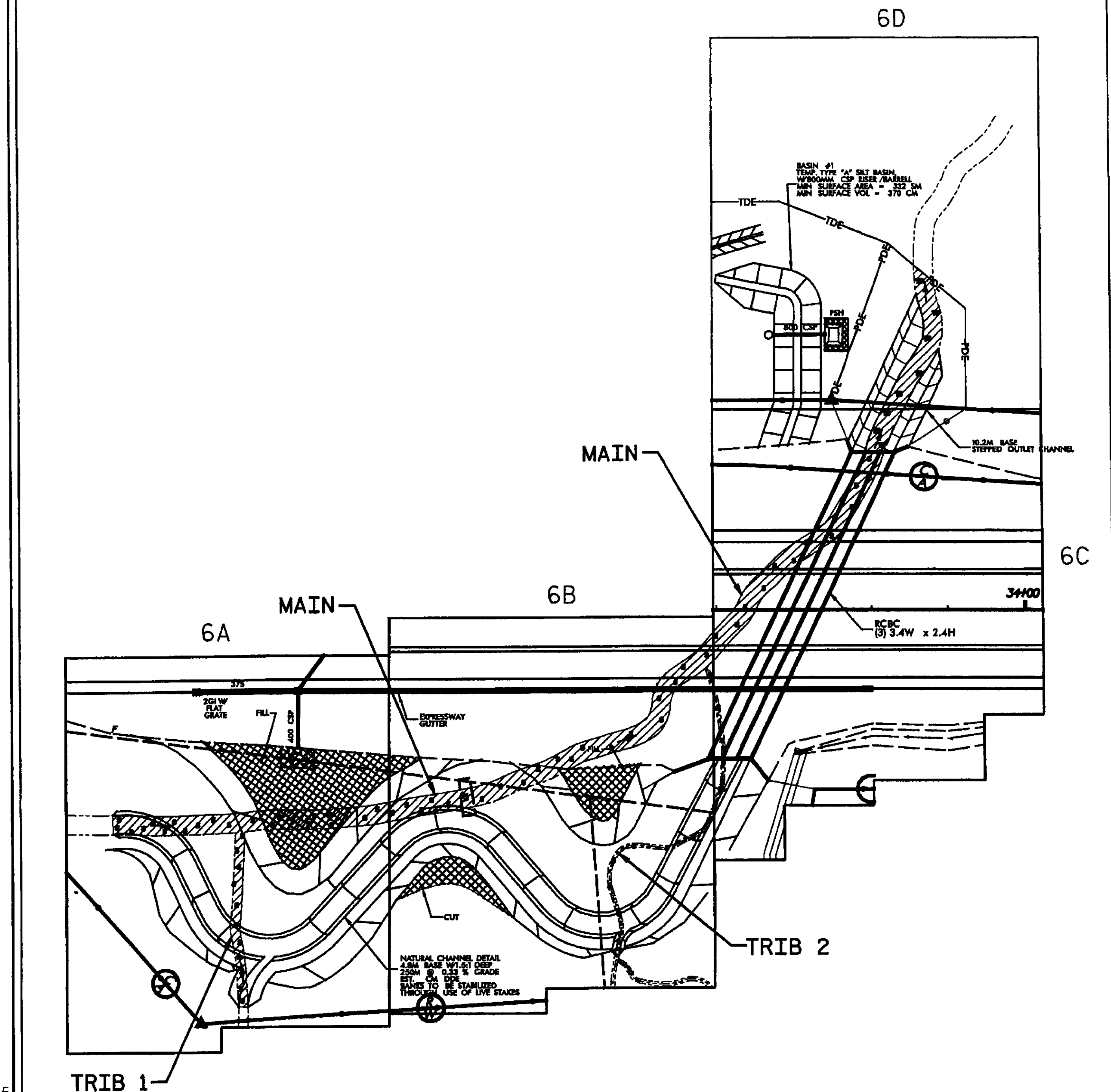

SHEET LAYOUT
PLAN VIEW
SITE 6

METRIC

15 0 15 30
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

16 of 74
SHEET__OF__

1/2006
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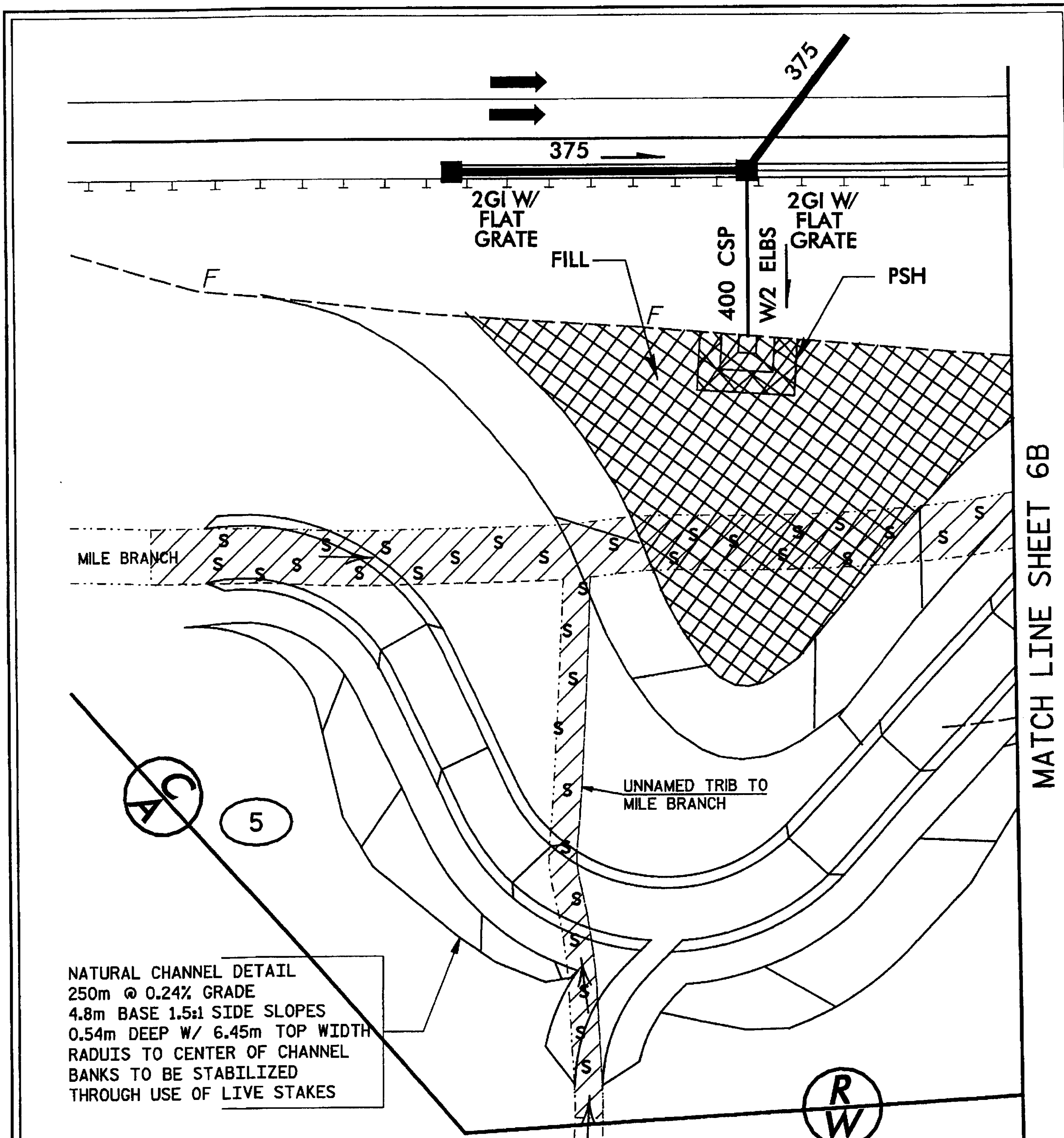

SHEET 6A

PLAN VIEW
SITE 6

METRIC

5 0 10
SCALE IN METERS

LEGEND

S S DENOTES SURFACE WATER LOSS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 17 OF 74

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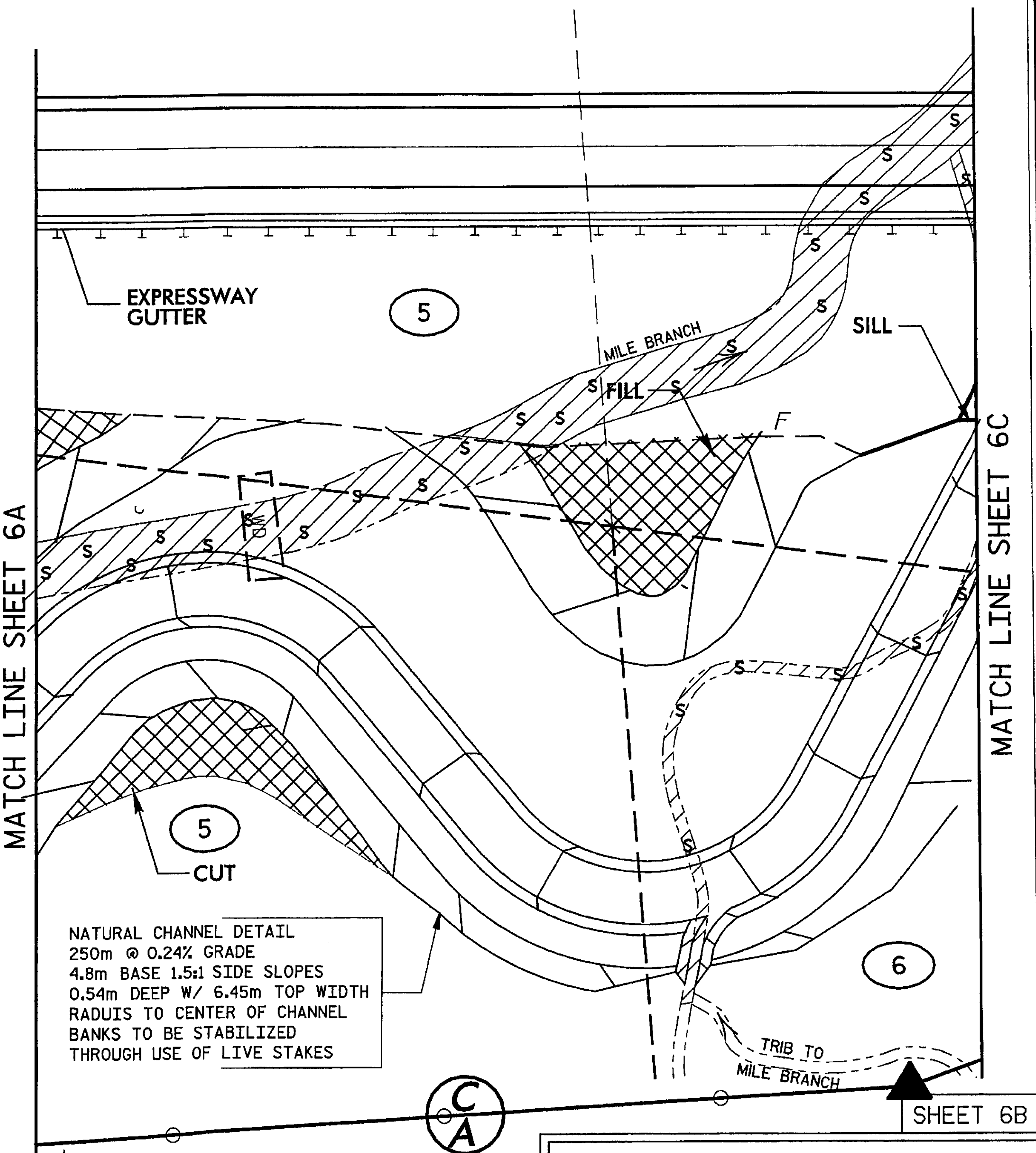


PLAN VIEW
SITE 6

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

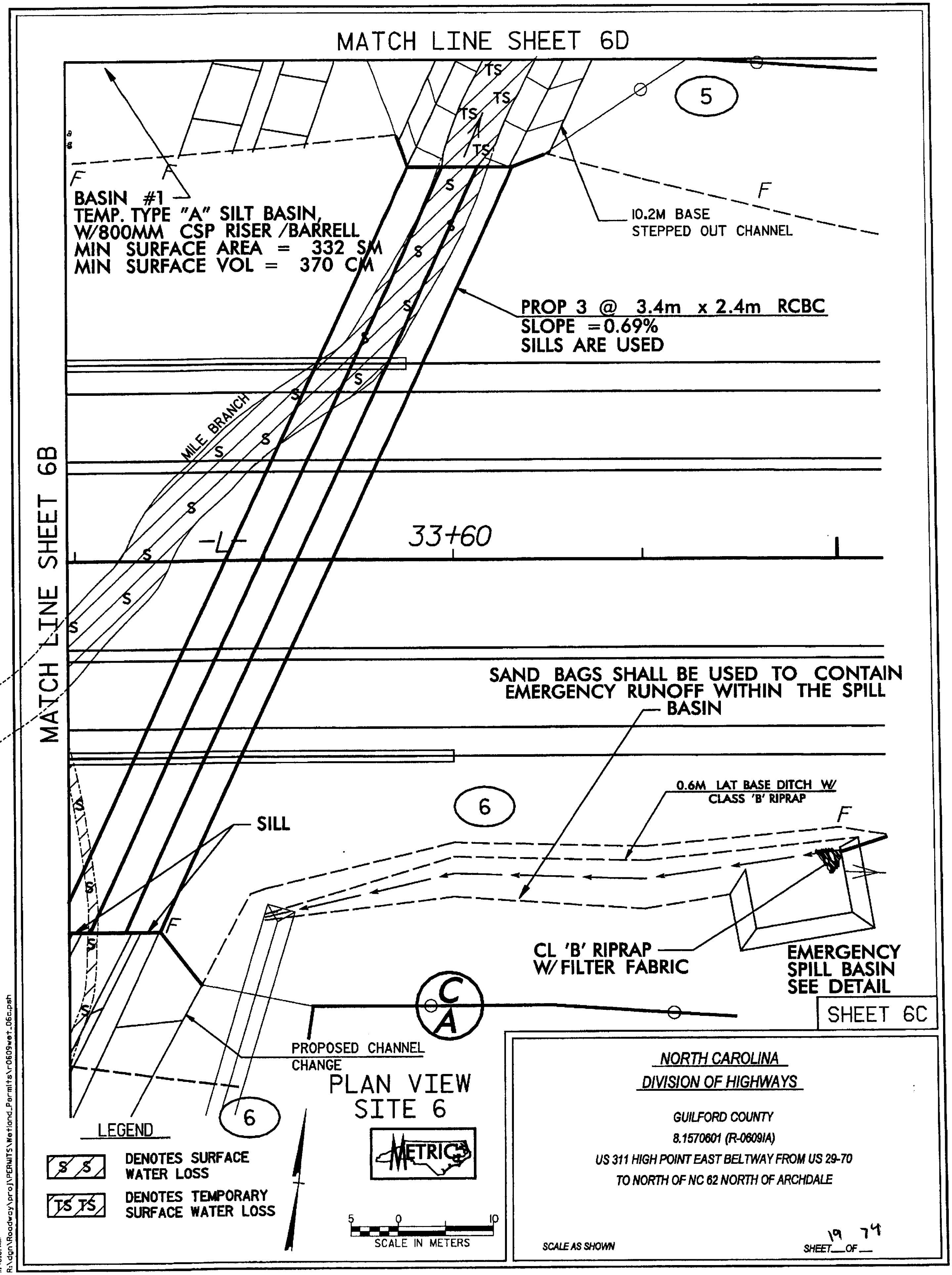
5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 8 OF 14



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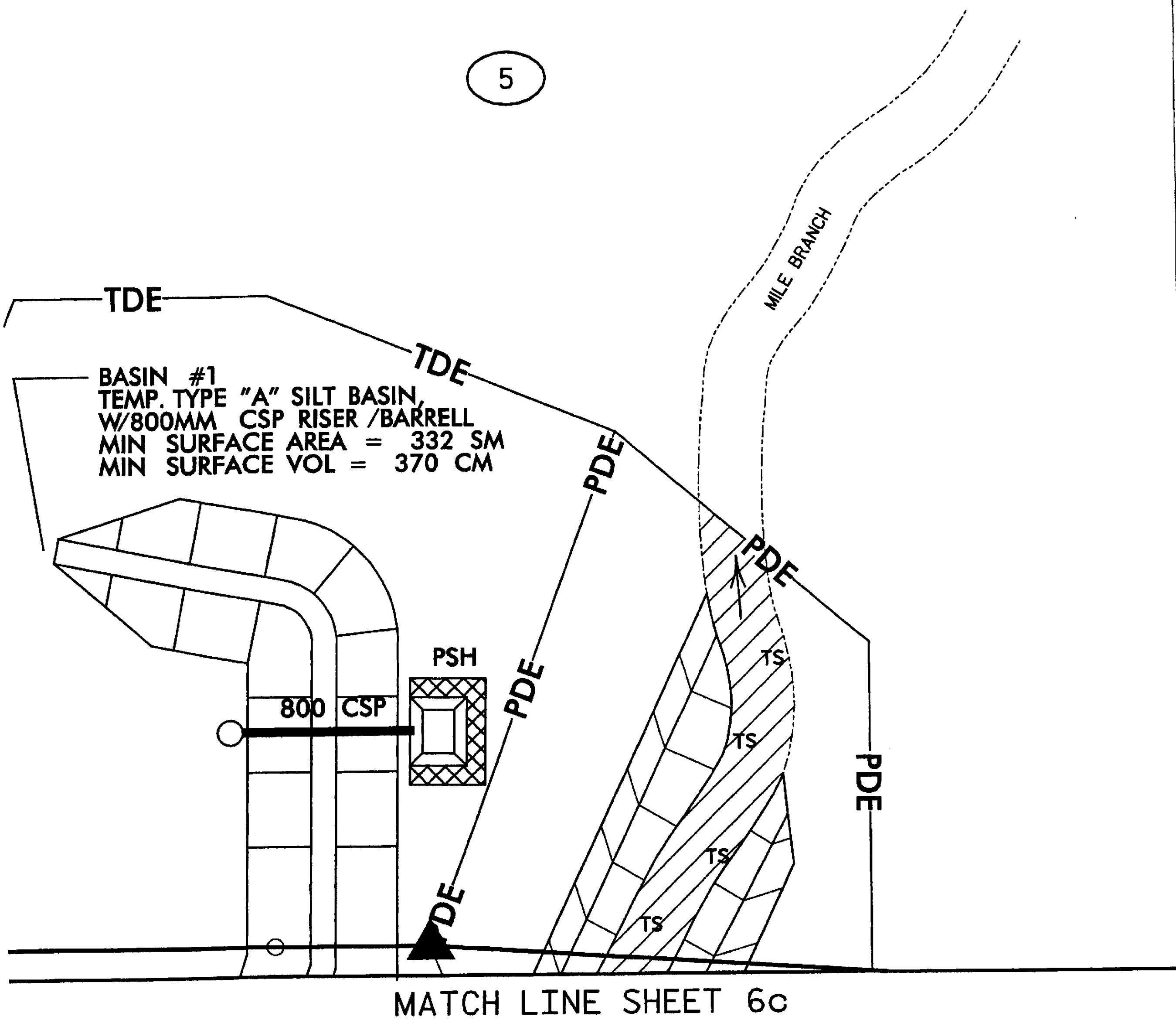


PLAN VIEW
SITE 6

LEGEND

S S	DENOTES SURFACE WATER LOSS
TS TS	DENOTES TEMPORARY SURFACE WATER LOSS

METRIC

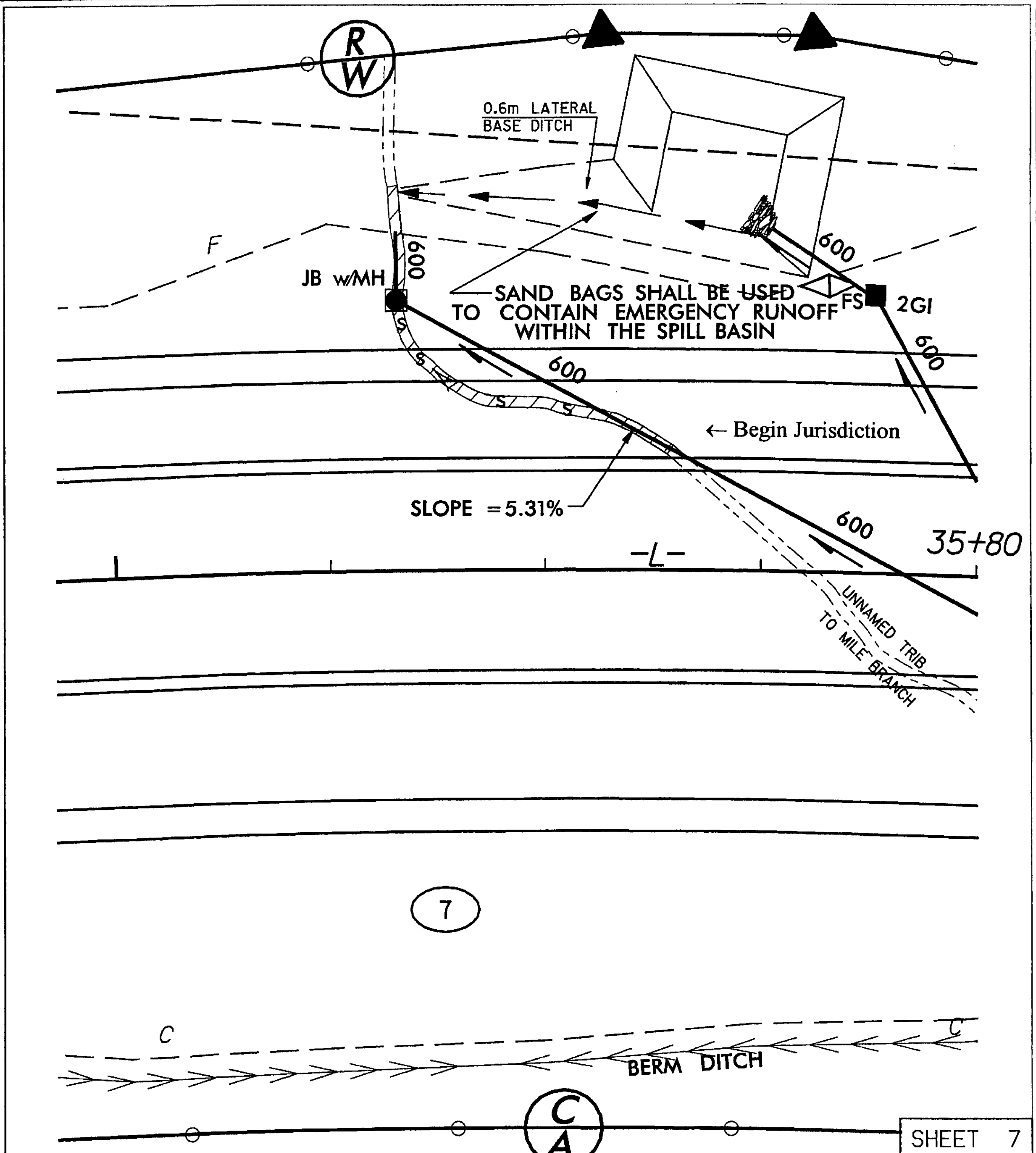
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 20 OF 74



SHEET 7

PLAN VIEW
SITE 7

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

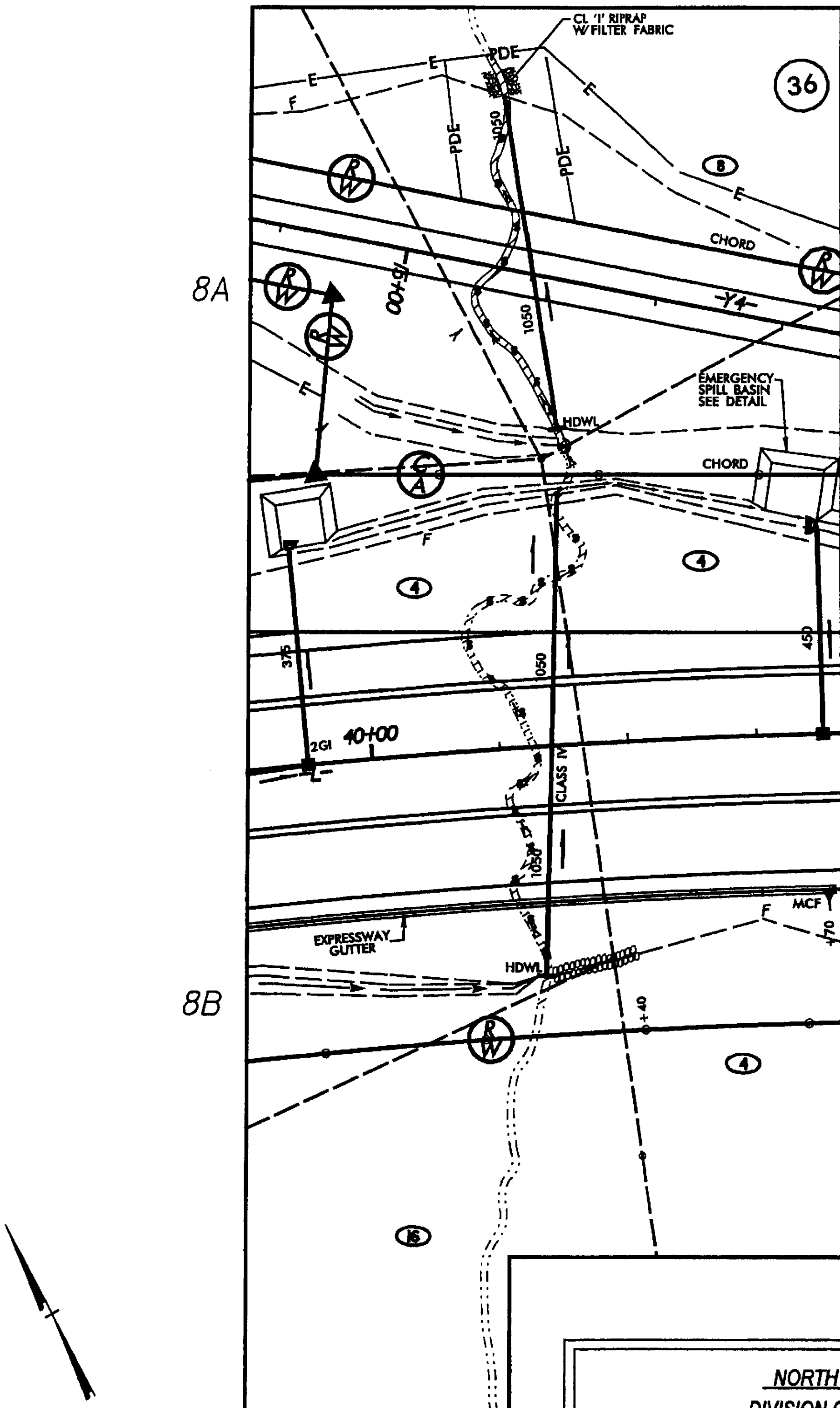
5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 21 OF 74



SHEET LAYOUT
PLAN VIEW
SITE 8

METRIC

10 0 20
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 72 OF 174

8/9/2005
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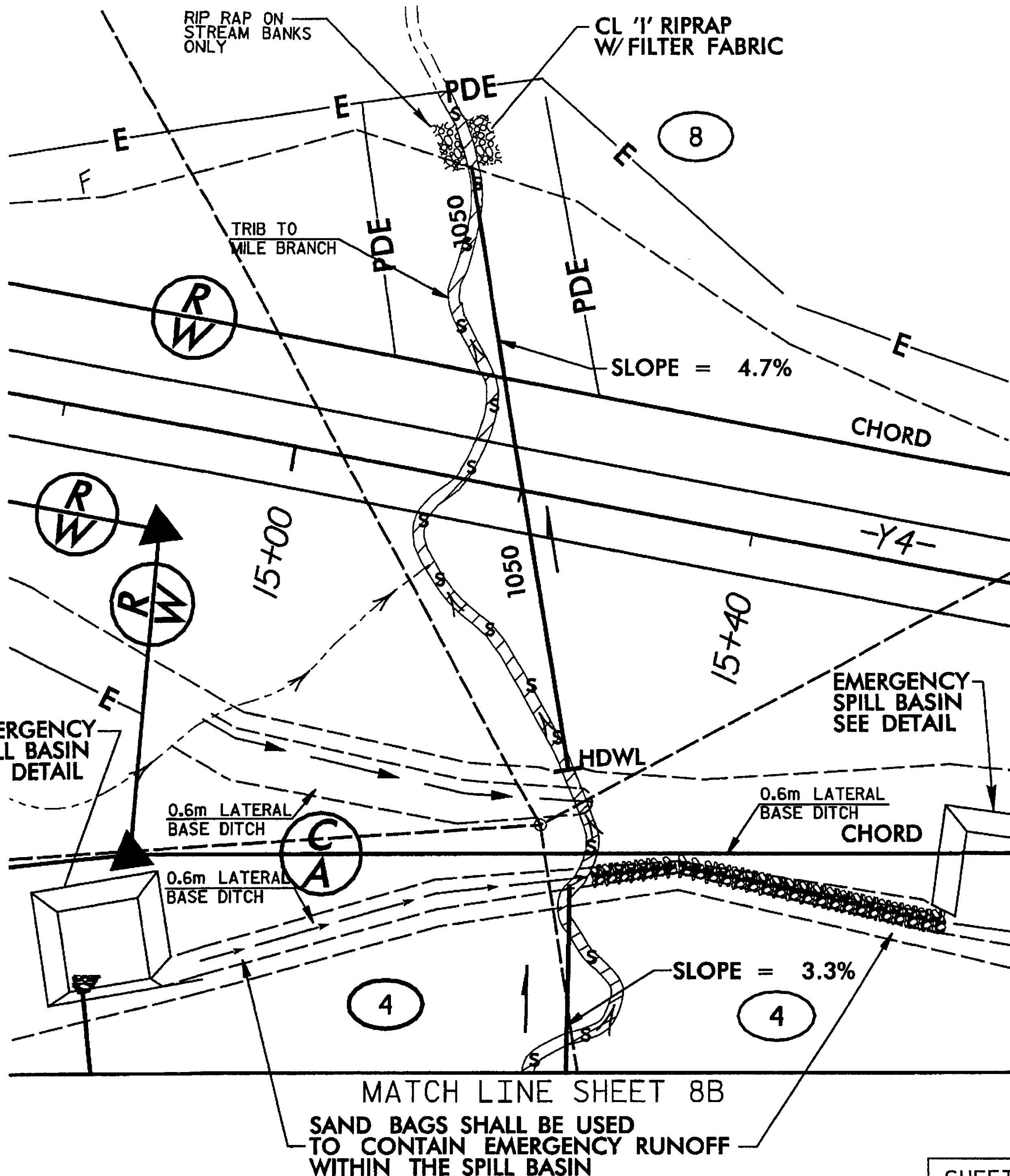

SHEET 8A

PLAN VIEW
SITE 8

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 123 OF 174

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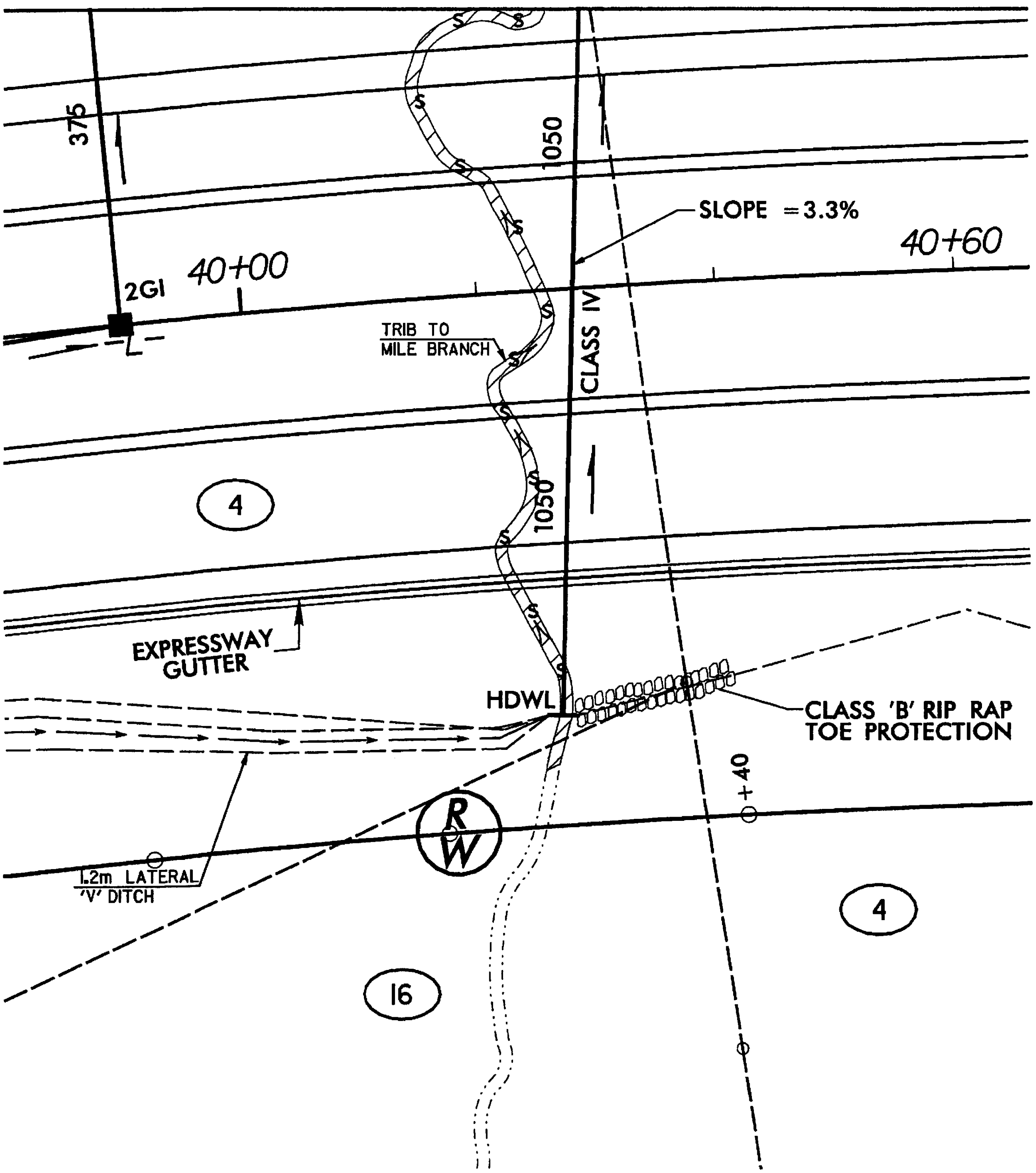

SHEET 8B

PLAN VIEW
SITE 8

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

SCALE AS SHOWN

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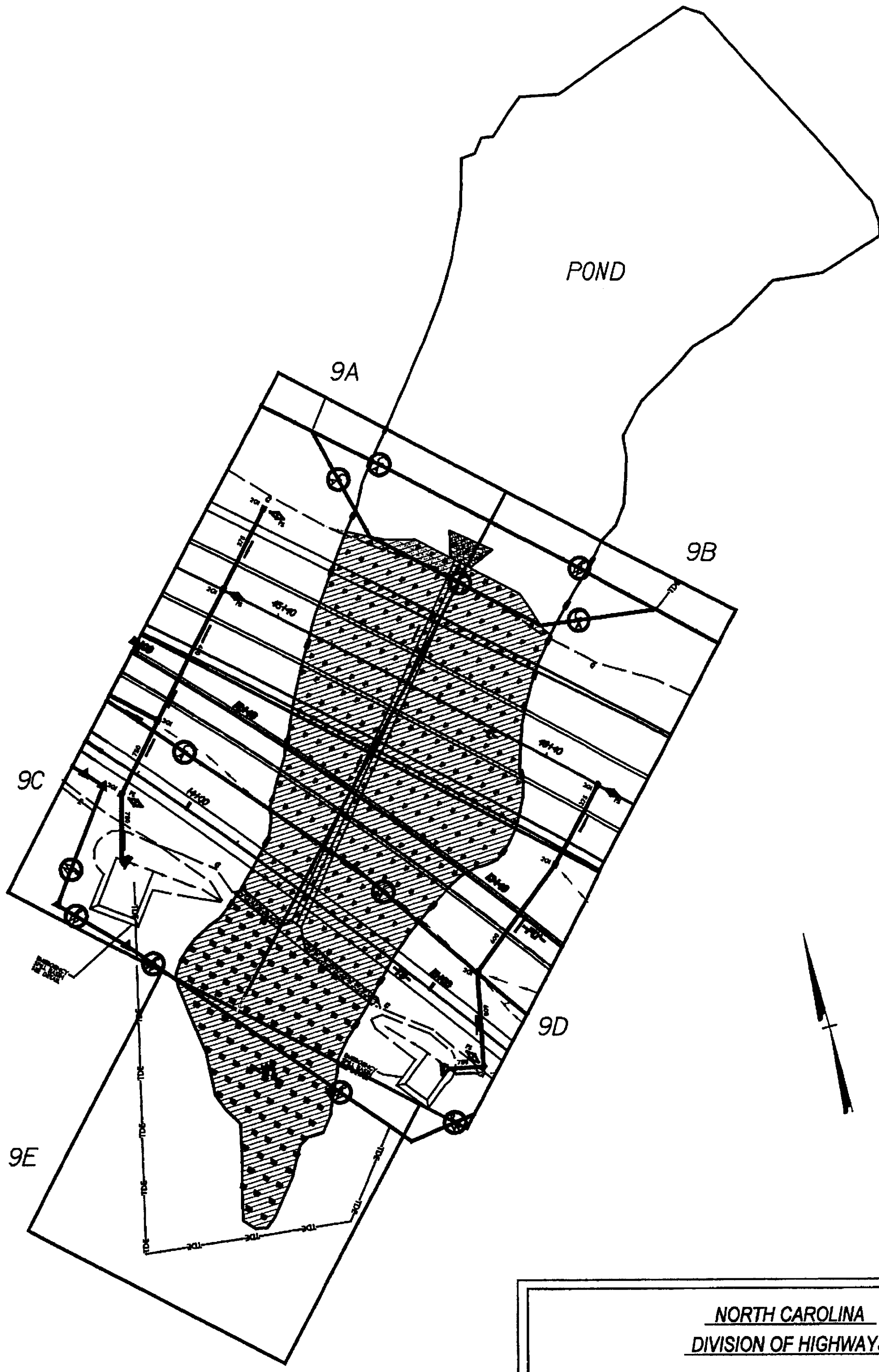

SHEET LAYOUT
PLAN VIEW
SITE 9

METRIC

20 0 30
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 25 OF 74

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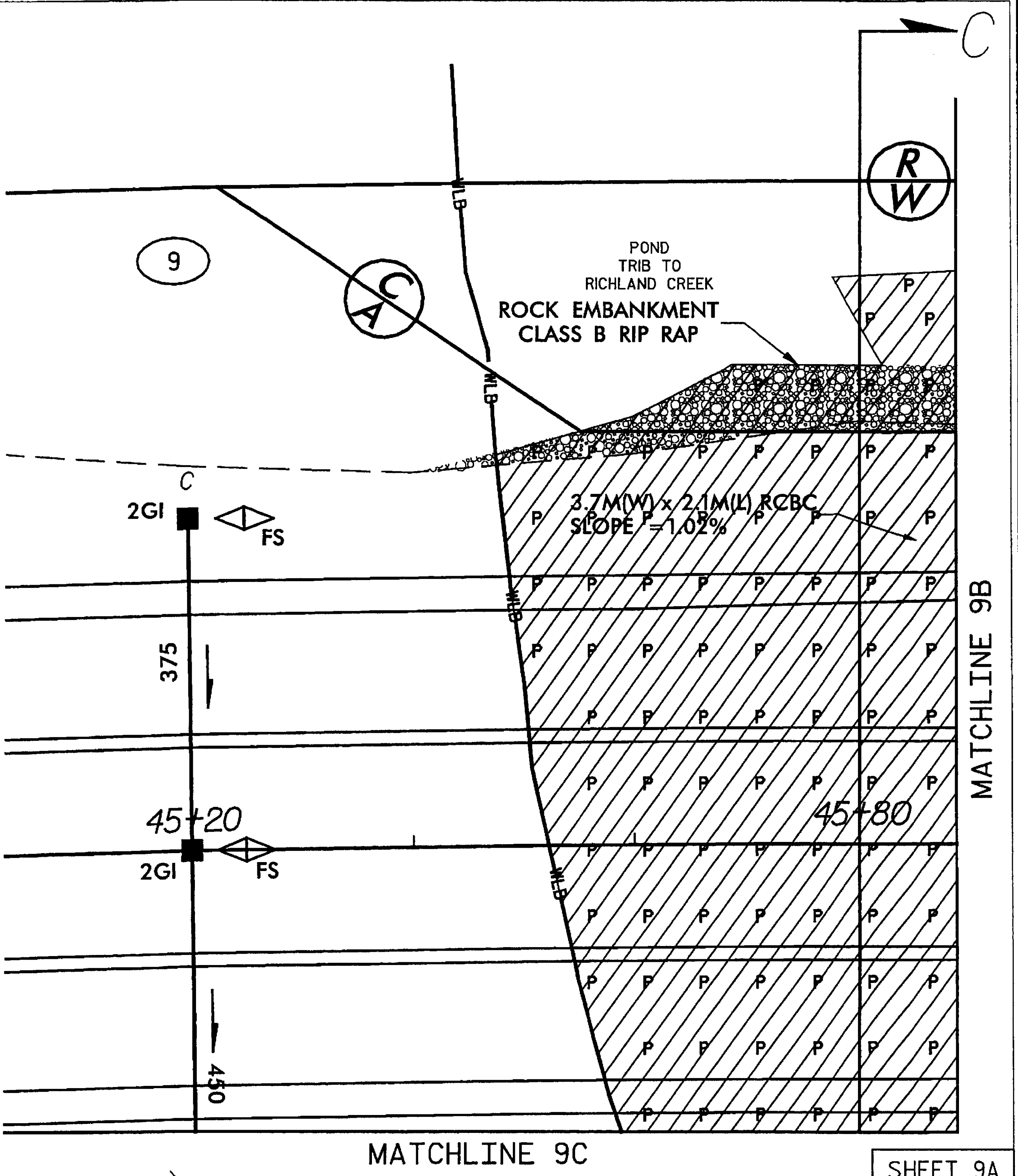

PLAN VIEW
SITE 9

LEGEND

—WLB— WETLAND

P P DENOTES FILL IN POND

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

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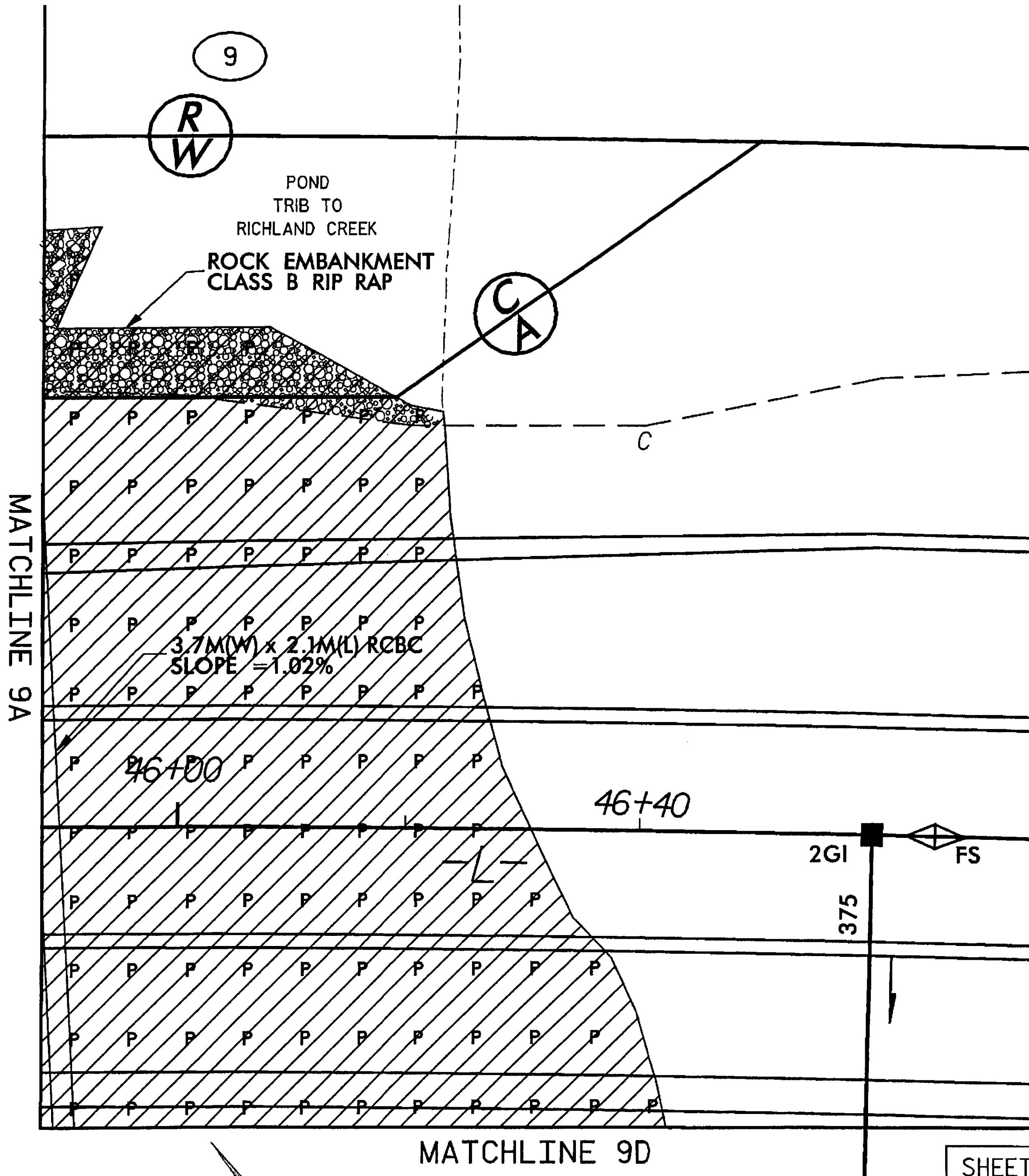

SHEET 9B

PLAN VIEW
SITE 9

LEGEND

—WLB— WETLAND

P P DENOTES FILL IN POND

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 27 OF 74

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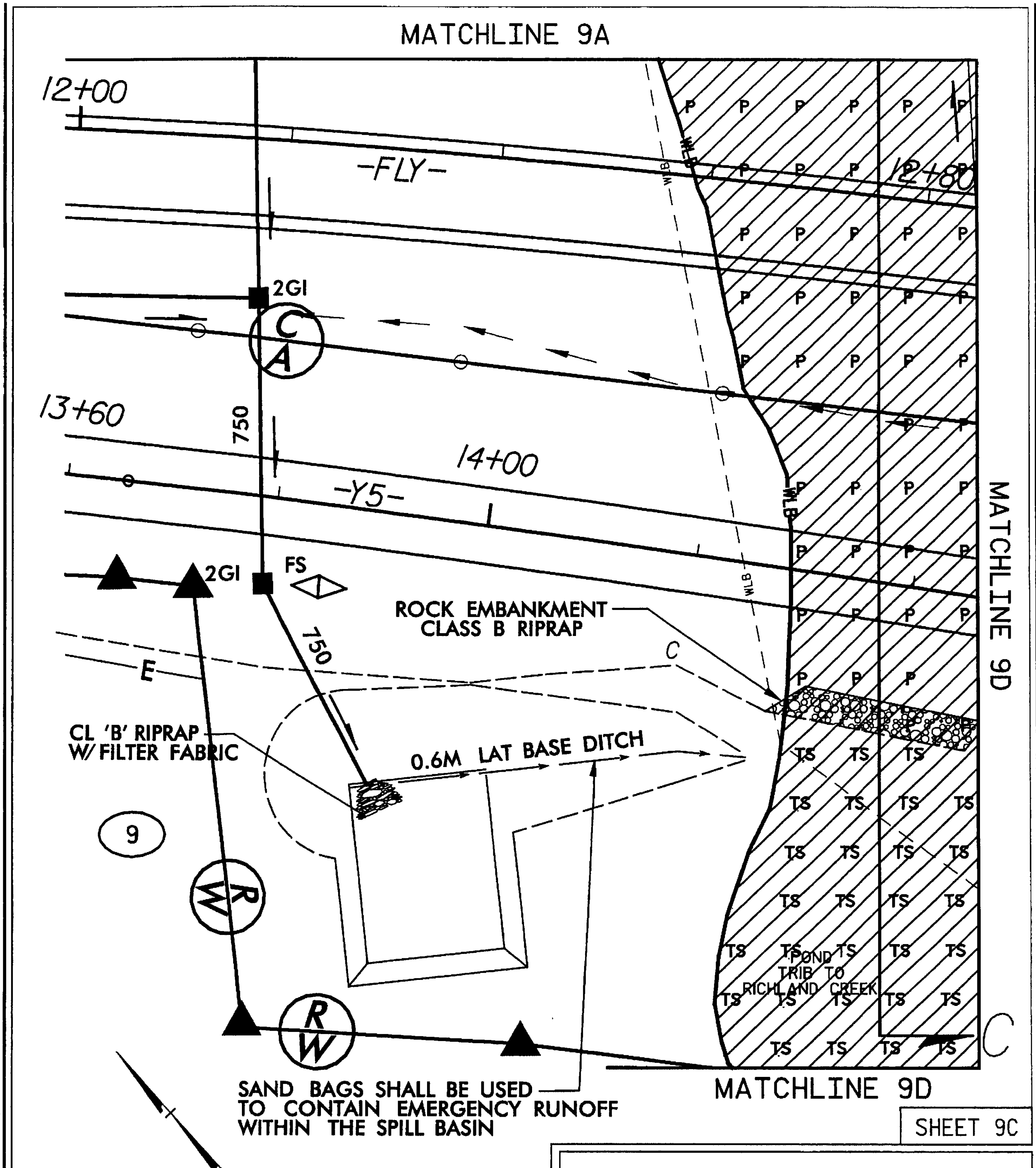


SHEET 9C

PLAN VIEW
SITE 9

LEGEND

WLB — WETLAND

P P — DENOTES FILL IN POND

TS TS — DENOTES TEMPORARY FILL IN SURFACE WATER (POND)

METRIC

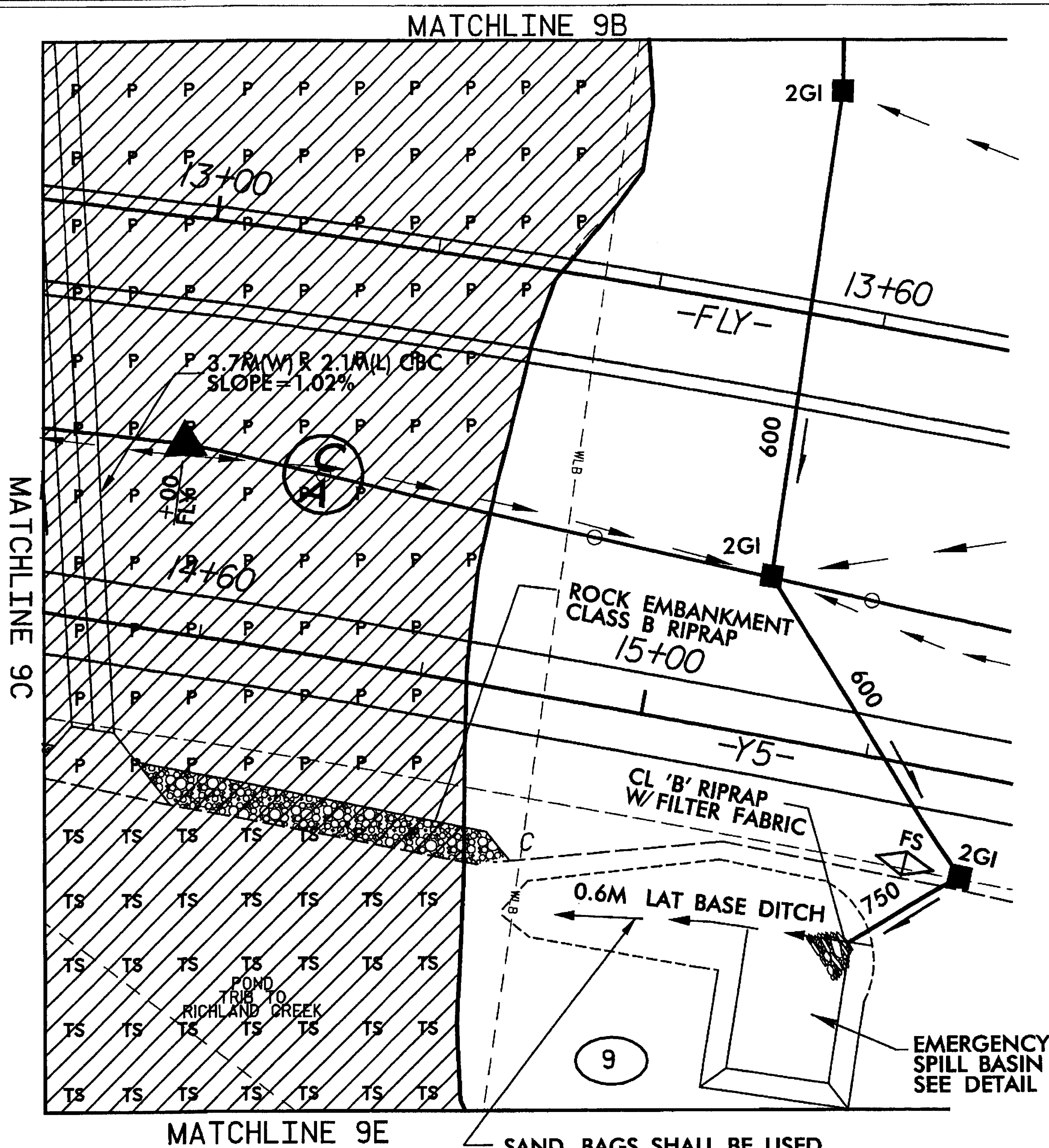
5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 27 OF 74



SAND BAGS SHALL BE USED
TO CONTAIN EMERGENCY
RUNOFF WITHIN THE SPILL BASIN

SHEET 9D

PLAN VIEW
SITE 9

LEGEND

—WLB— WETLAND

P P DENOTES FILL IN POND

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER (POND)

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 15 OF 14

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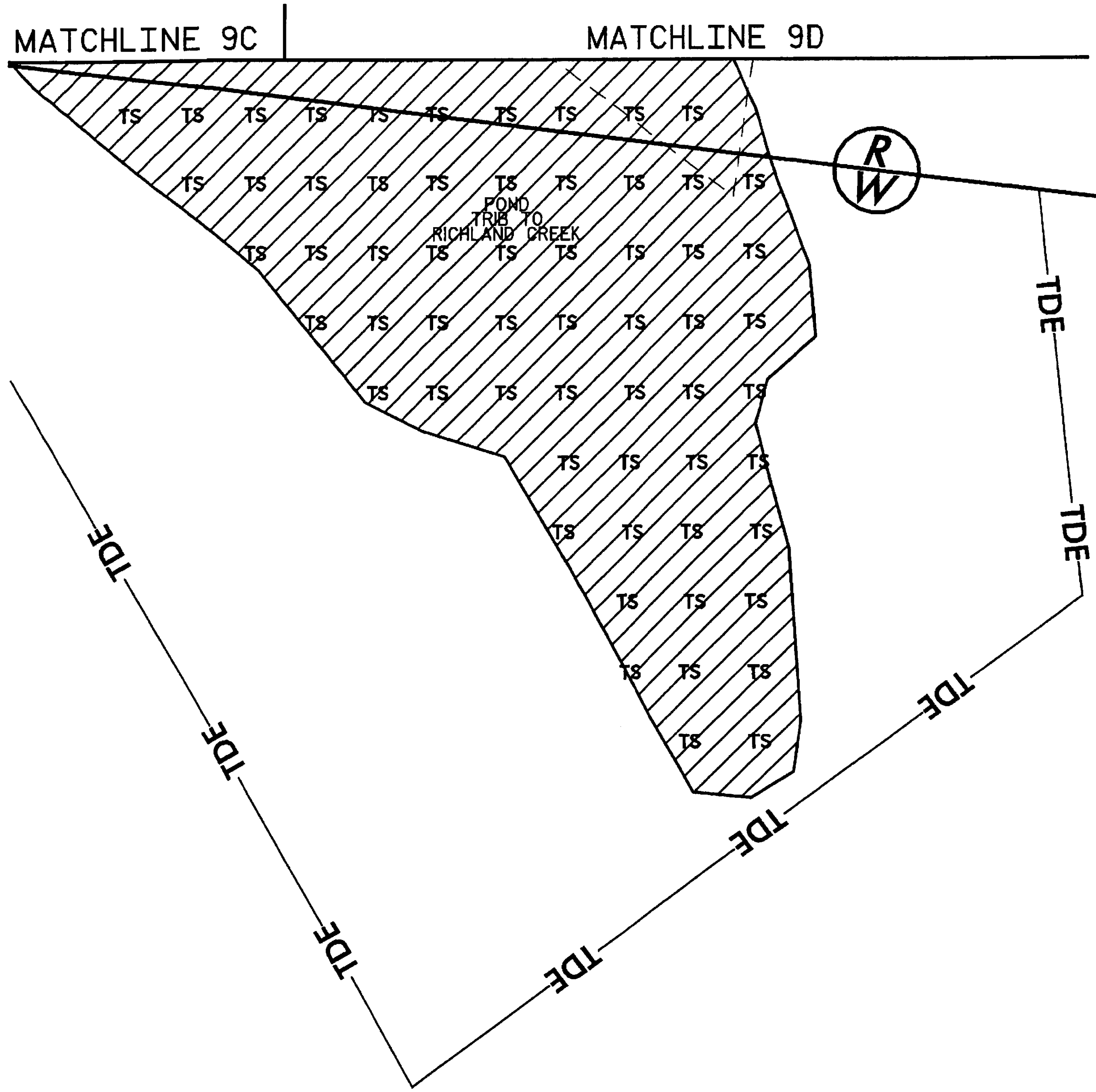

PLAN VIEW
SITE 9

SHEET 9E

LEGEND

—WLB— WETLAND

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER (POND)

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

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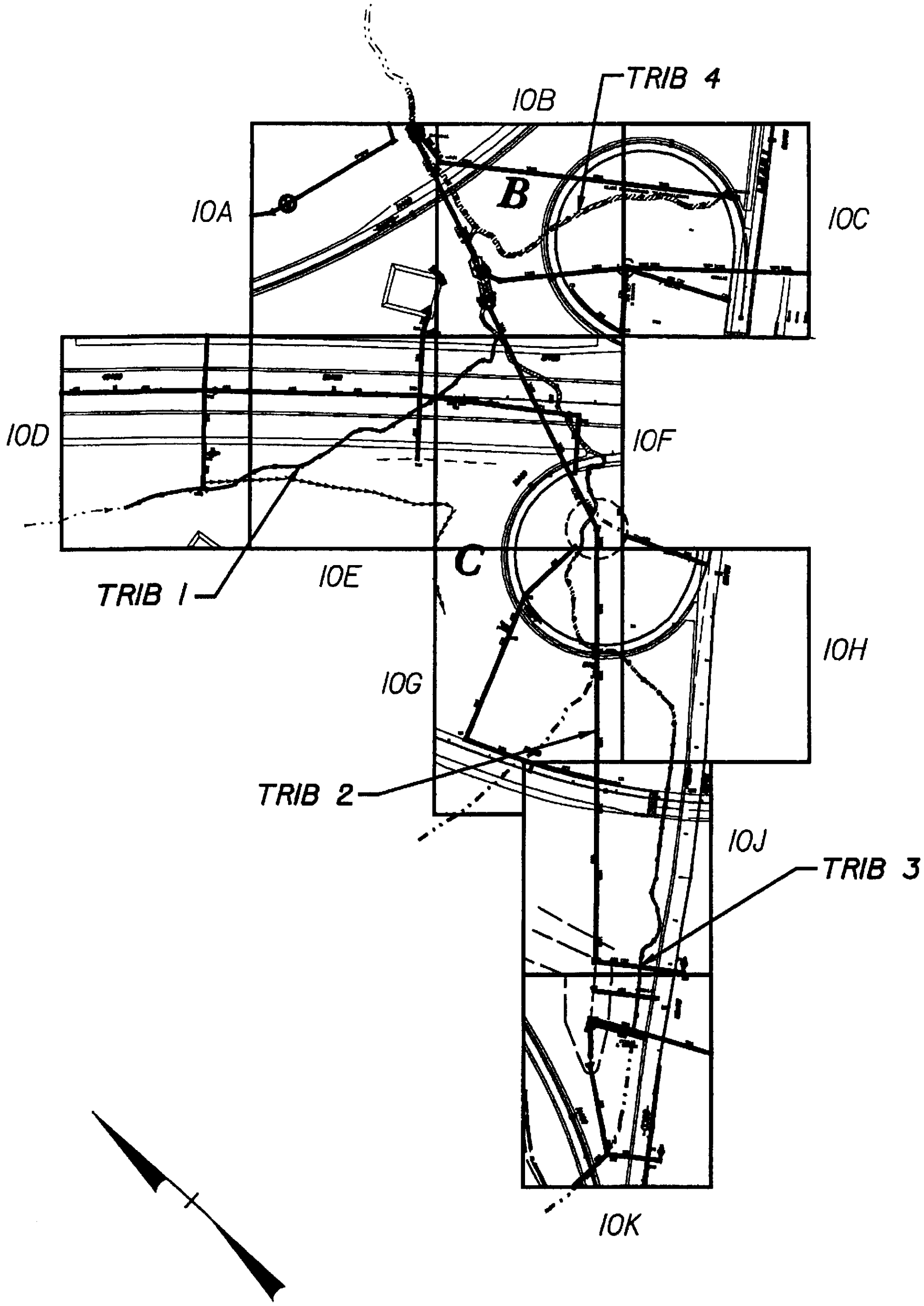

SHEET LAYOUT
PLAN VIEW
SITE 10

METRIC

30 0 30 60
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

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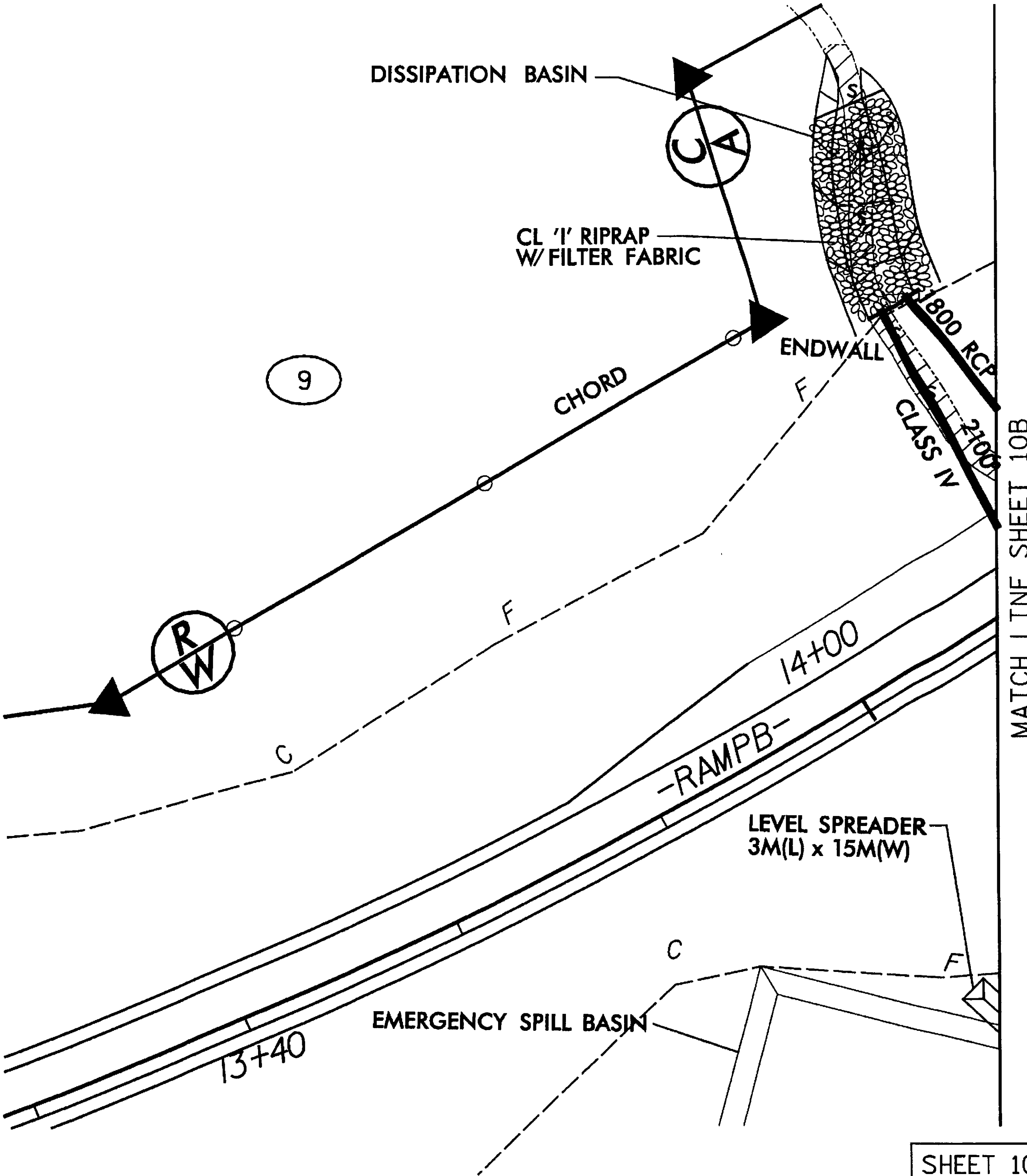

SHEET 10A

PLAN VIEW
SITE 10

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 32 OF 74

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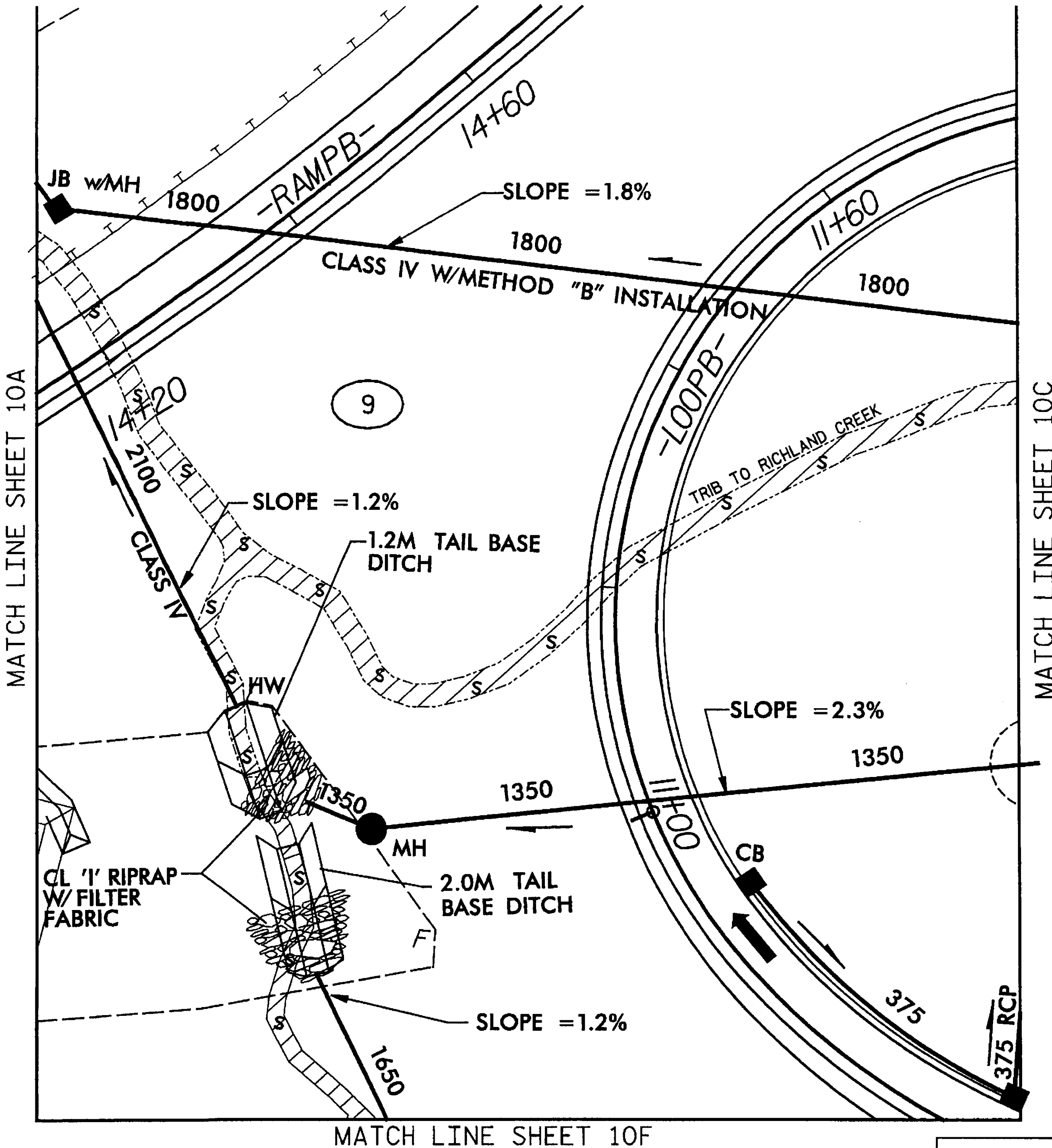

SHEET 10B

PLAN VIEW
SITE 10

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 33 OF 74

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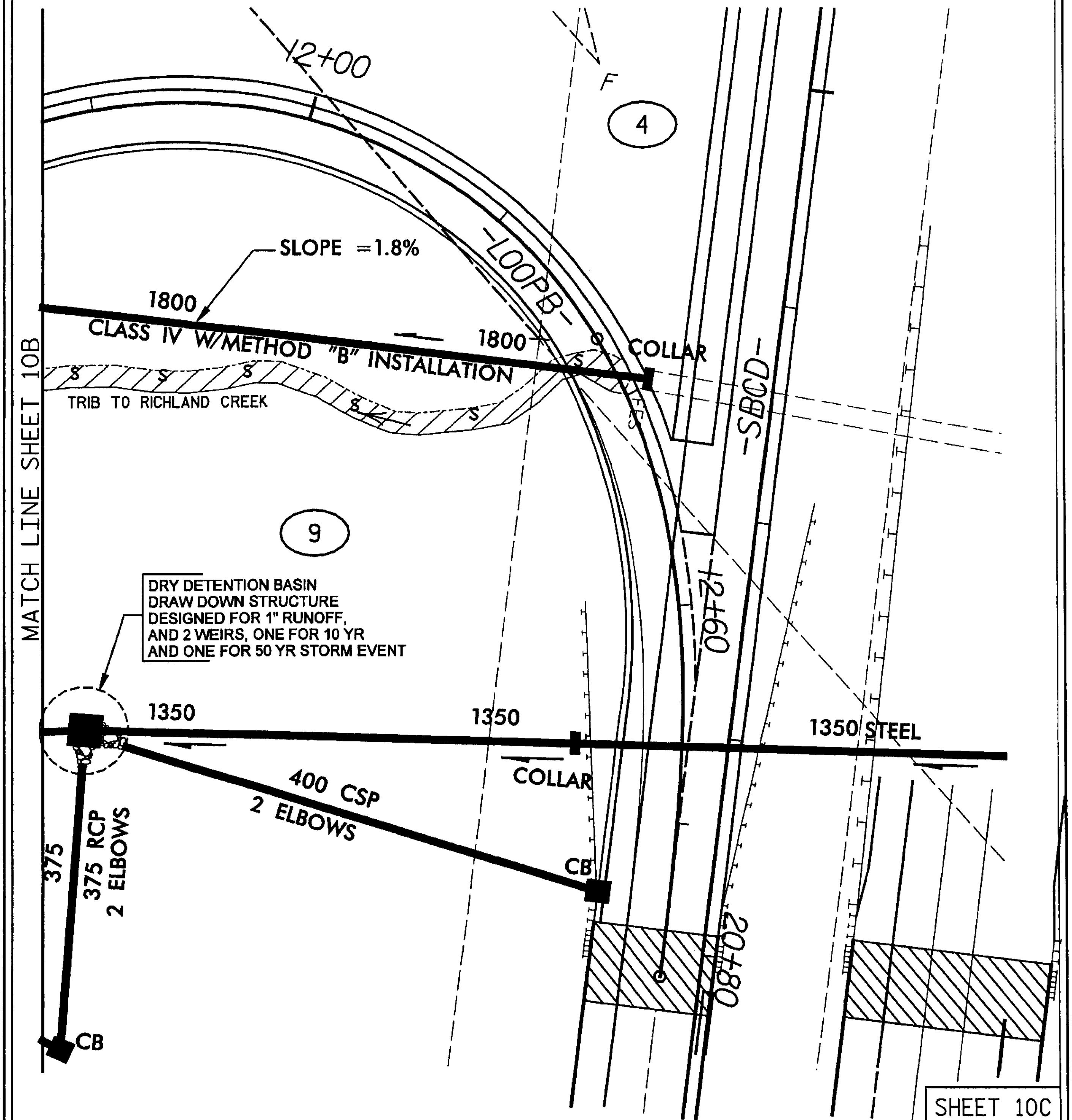

PLAN VIEW
SITE 10

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

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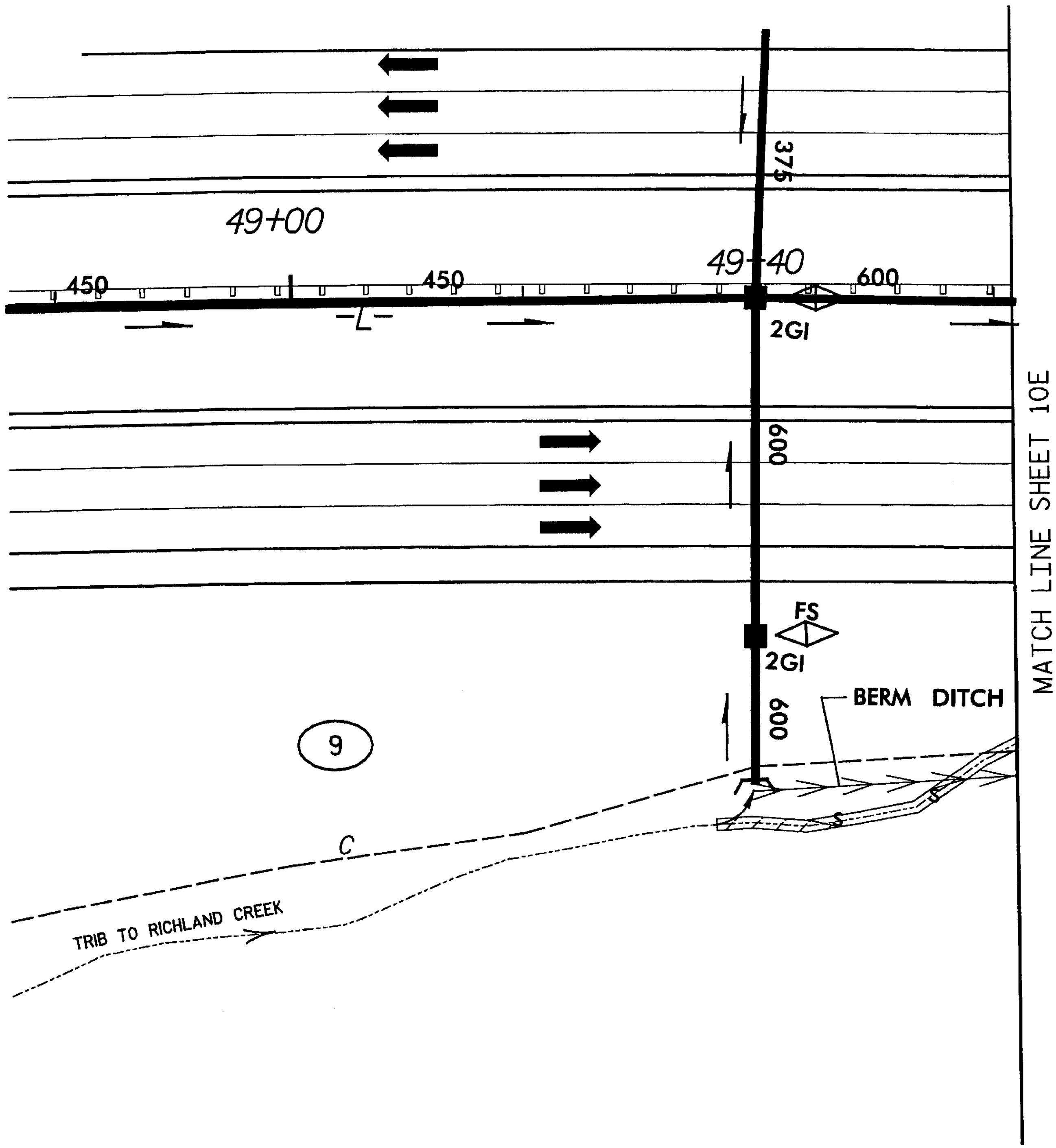

SHEET 10D

PLAN VIEW
SITE 10

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 35 OF 74

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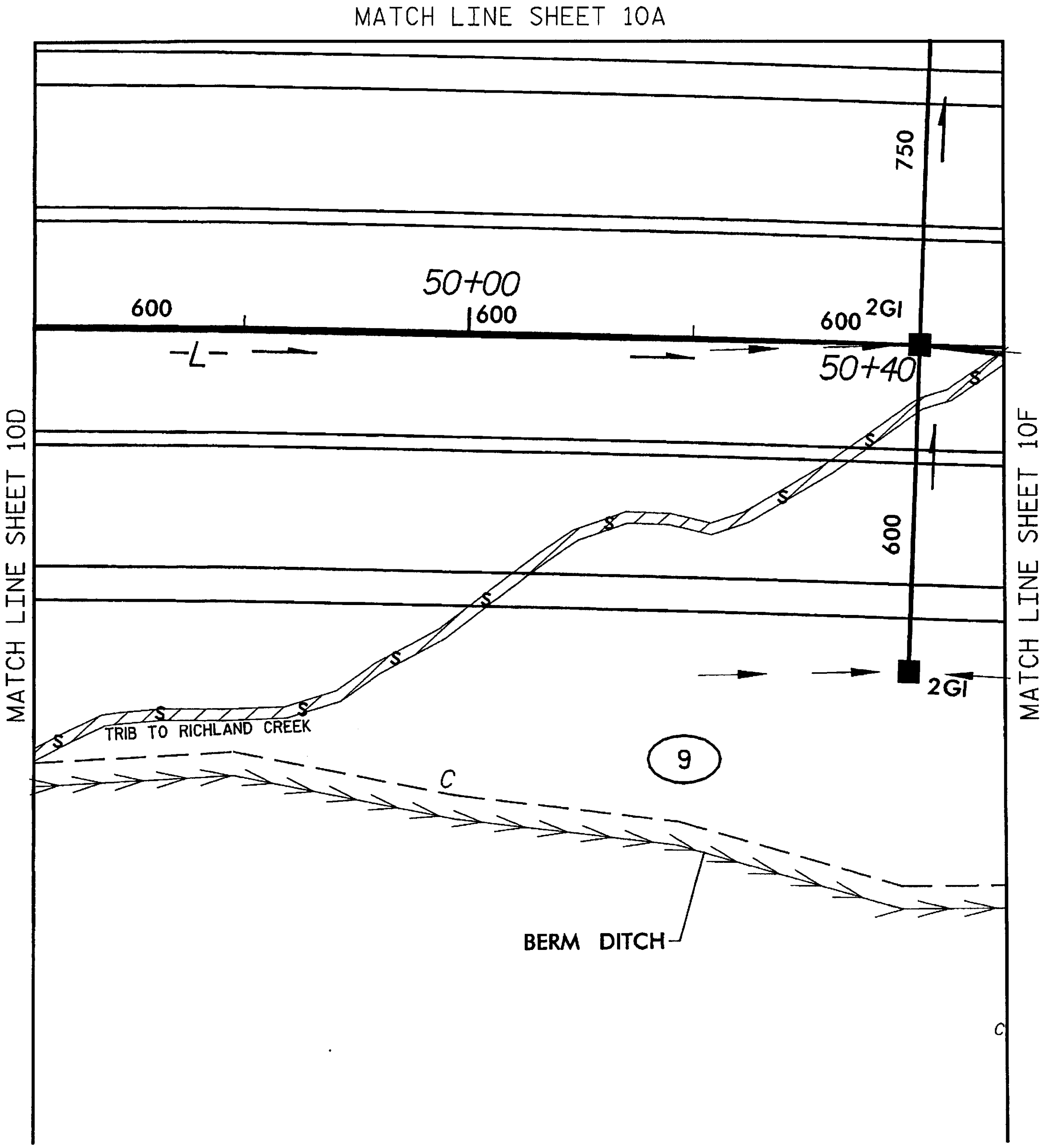

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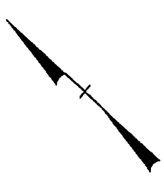
PLAN VIEW
SITE 10



METRIC

LEGEND

DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

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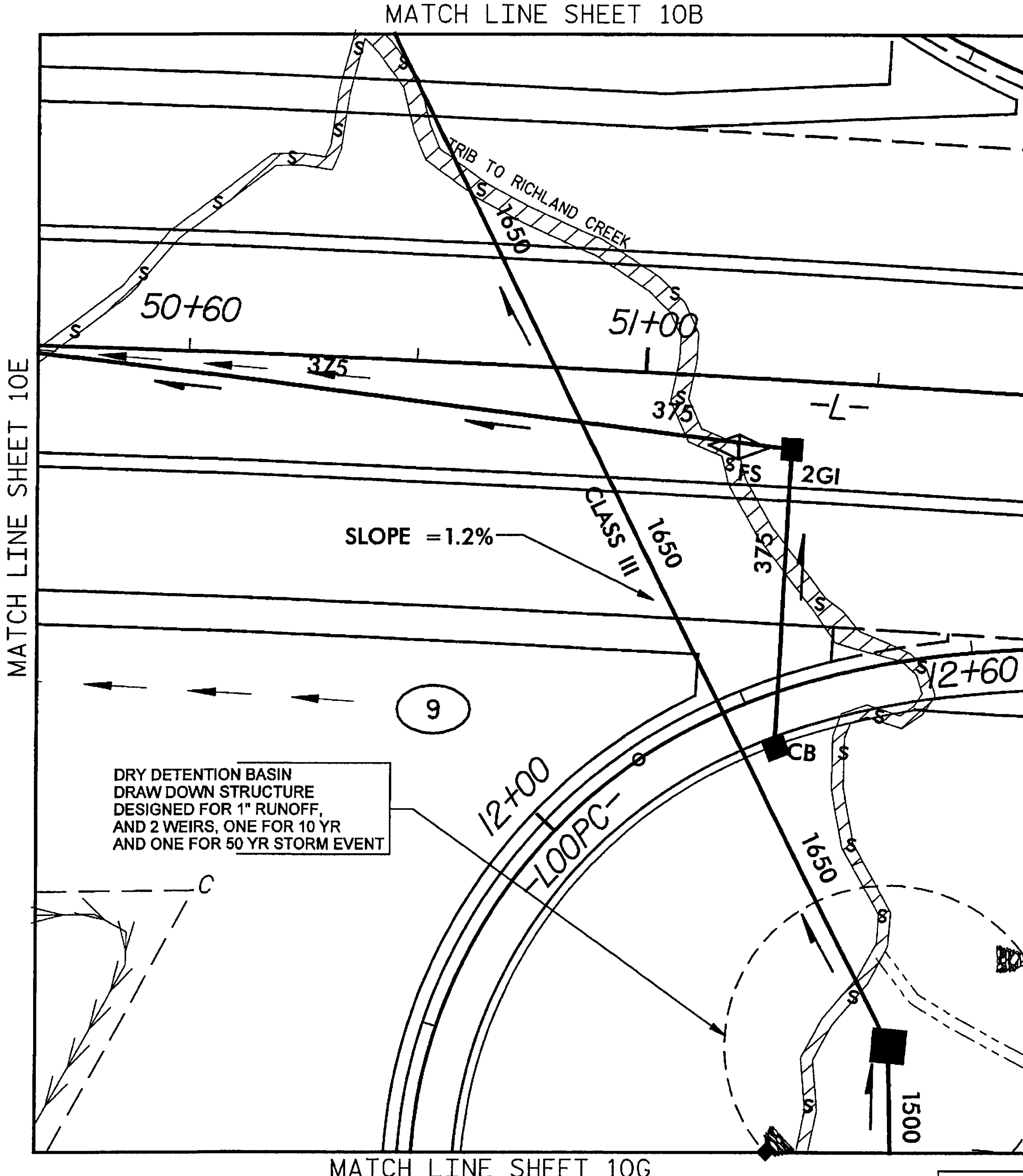

SHEET 10F

PLAN VIEW
SITE 10

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 37 OF 74

01/09/2005
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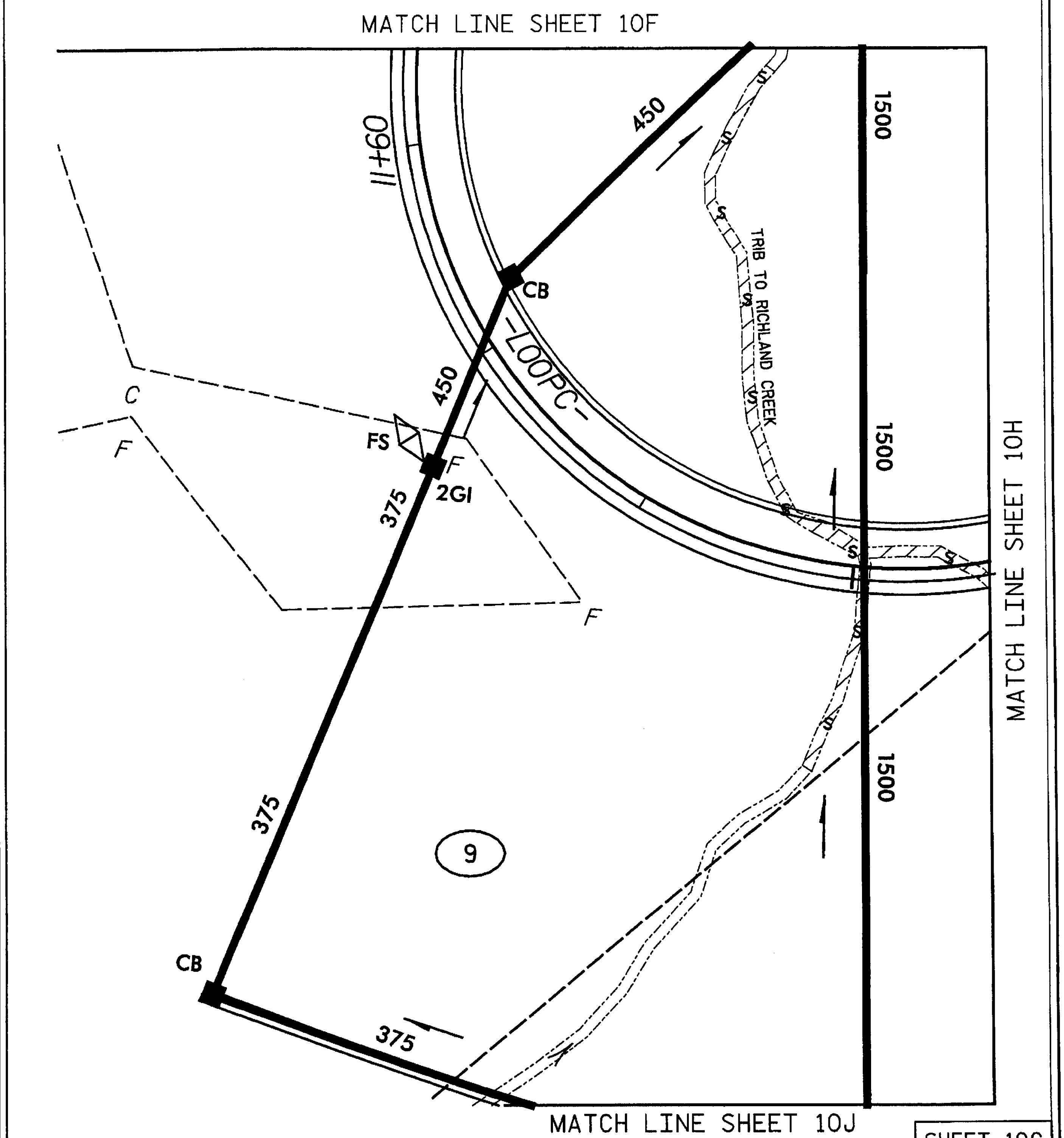

SHEET 10G

PLAN VIEW
SITE 10

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 37 OF 74

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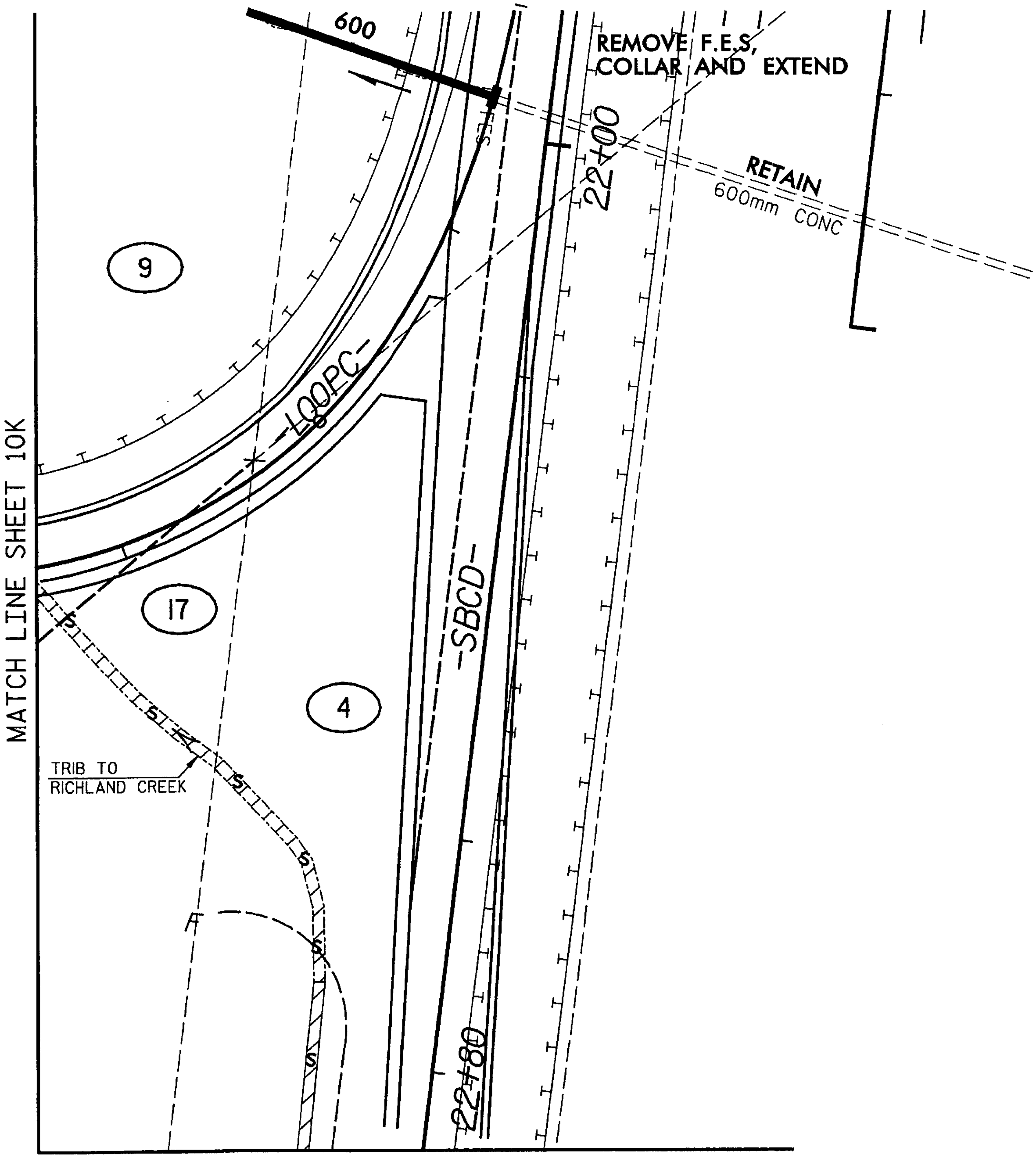

SHEET 10H

PLAN VIEW
SITE 10

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 39 OF 74

1/13/2006
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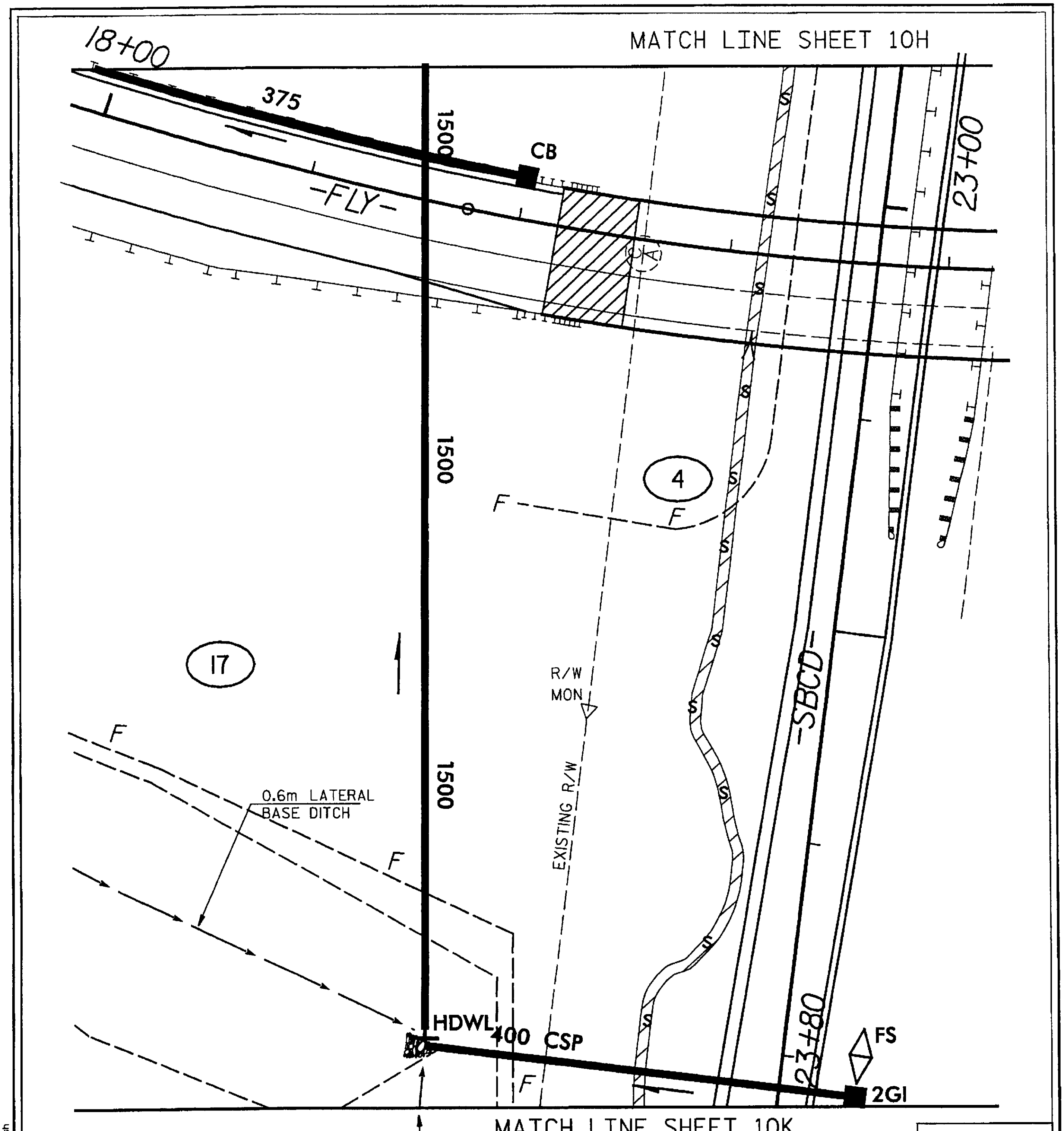

SHEET 10J

PLAN VIEW
SITE 10

METRIC

LEGEND

DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 40 OF 74

1/19/2006
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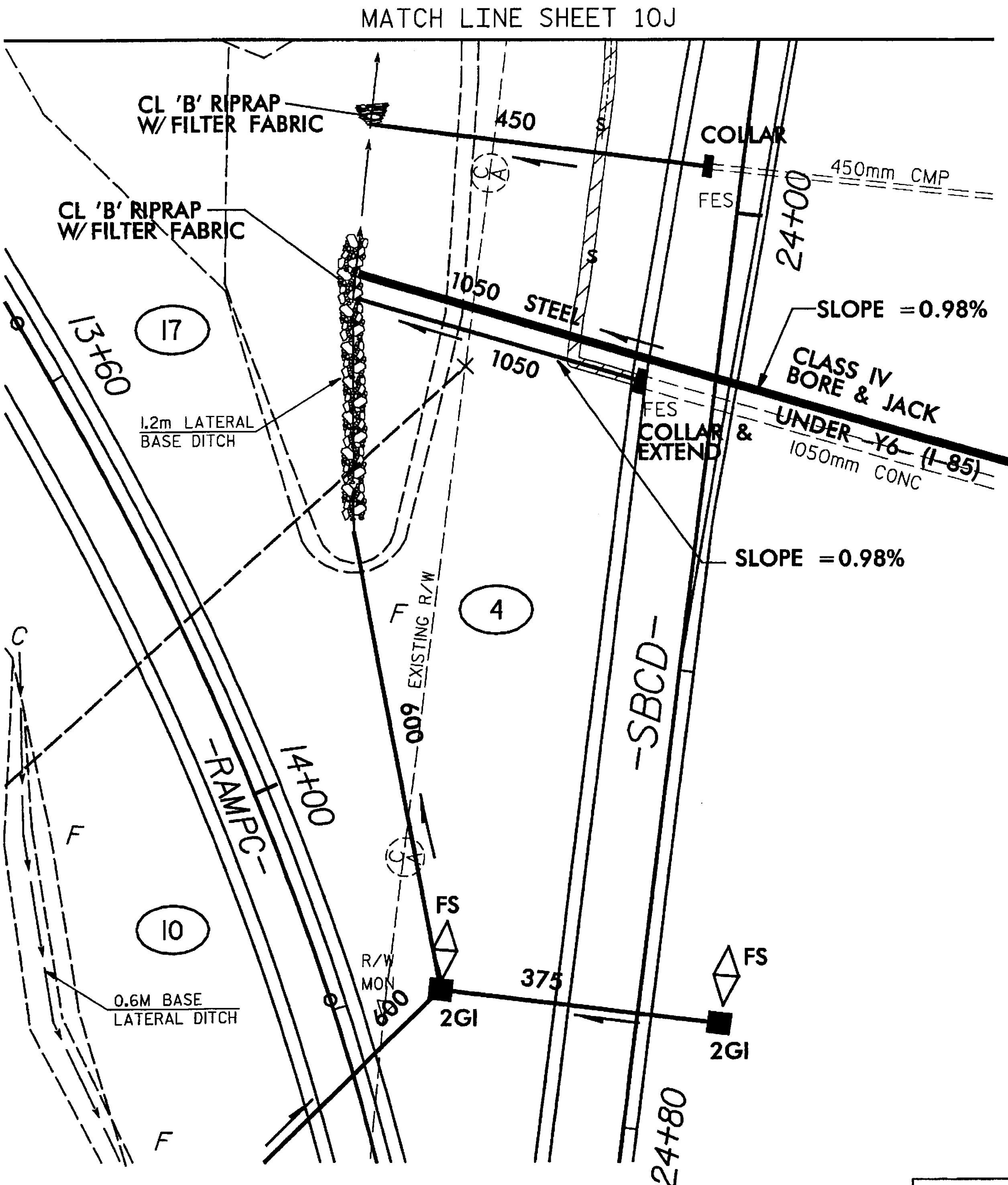

SHEET 10K

PLAN VIEW
SITE 10

METRIC

5 0 10
SCALE IN METERS

LEGEND

S S DENOTES SURFACE WATER LOSS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 41 OF 74

/13/2006
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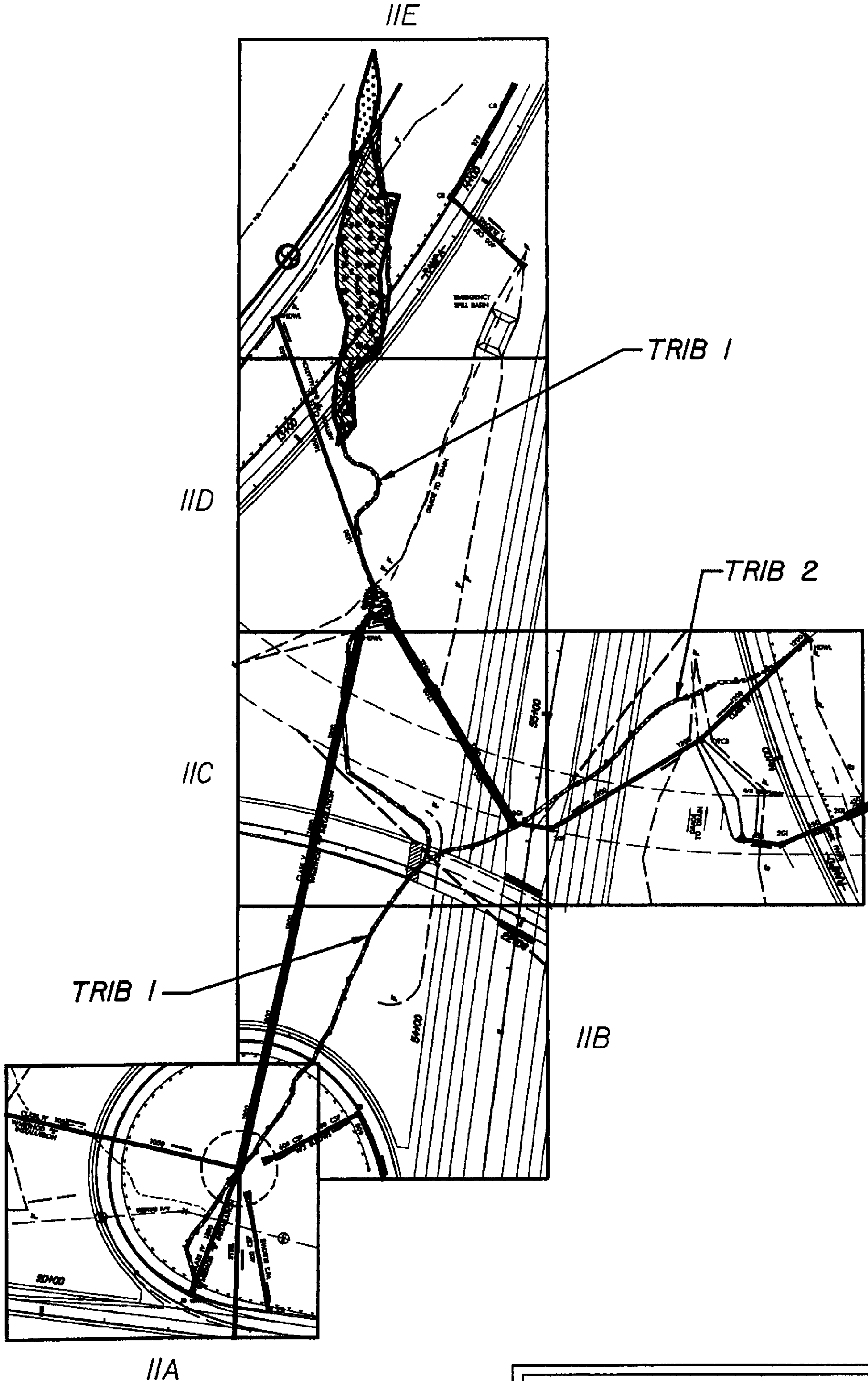

SHEET LAYOUT
PLAN VIEW
SITE 11

20 0 20 40
SCALE IN METERS

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 47 OF 74

1/13/2006
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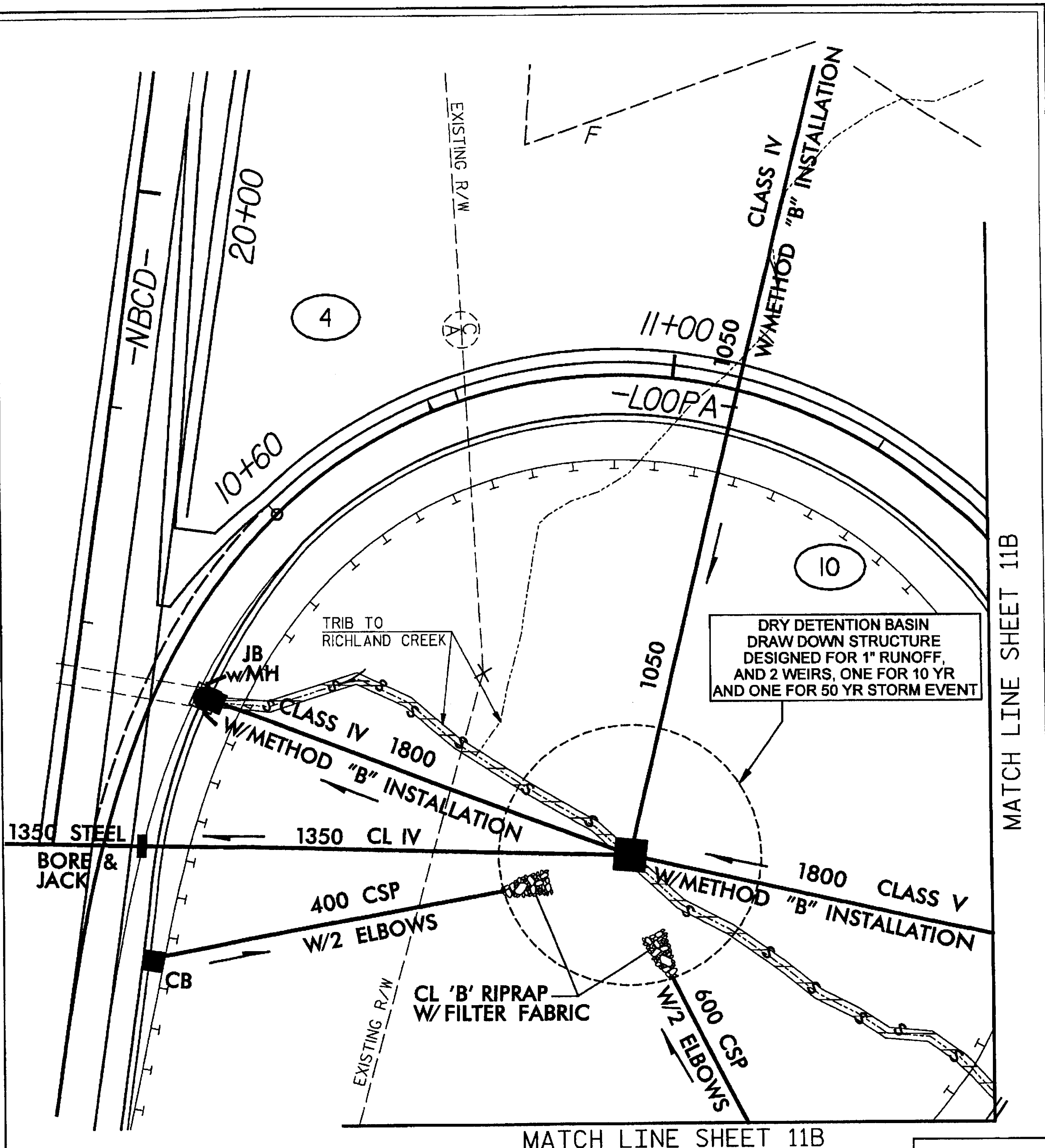

SHEET 11A

PLAN VIEW
SITE 11

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 43 OF 74

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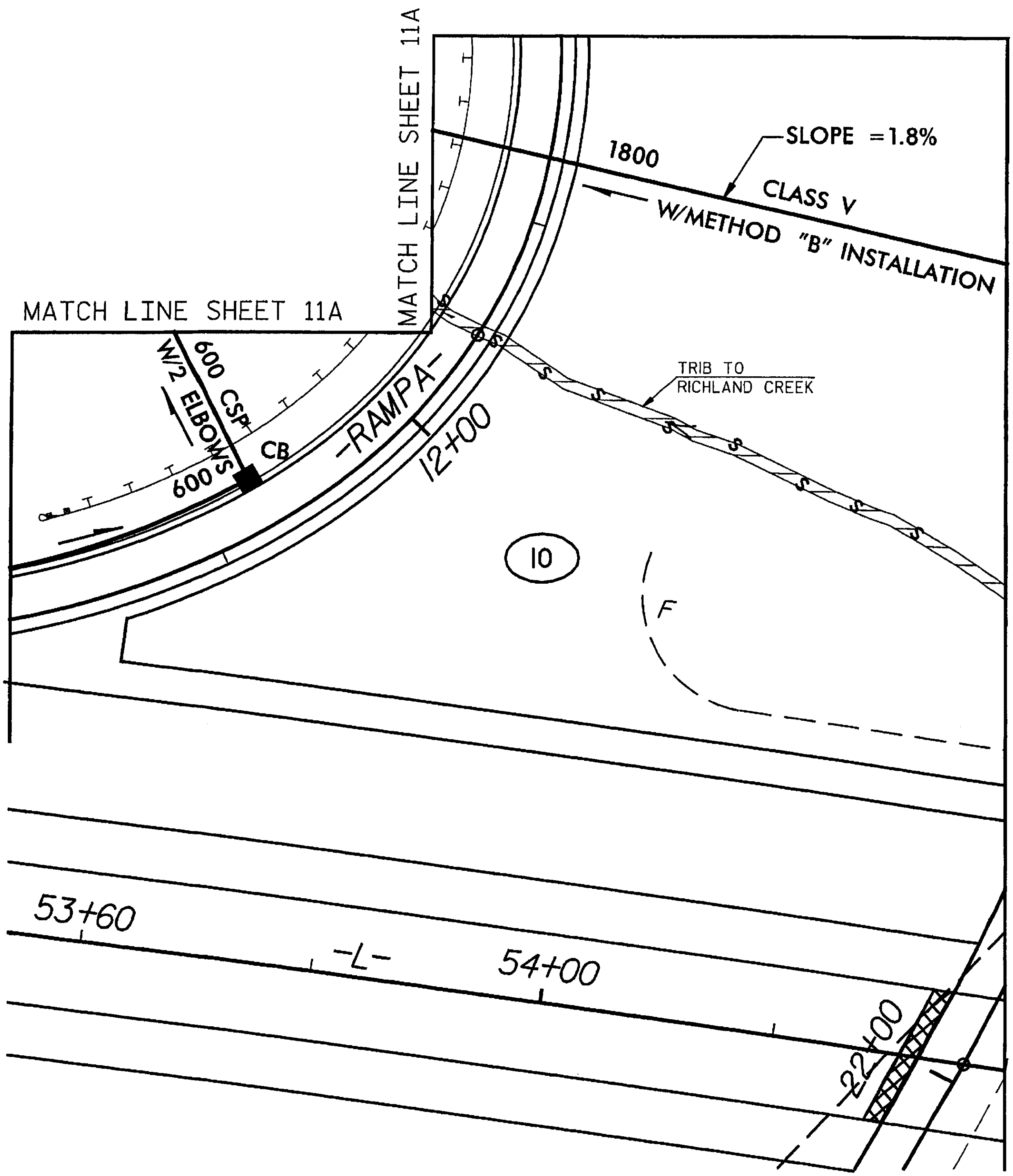

SHEET 11B

PLAN VIEW
SITE 11

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

5 0 10
SCALE IN METERS

SCALE AS SHOWN

SHEET 44 OF 74

LEGEND

S S DENOTES SURFACE WATER LOSS

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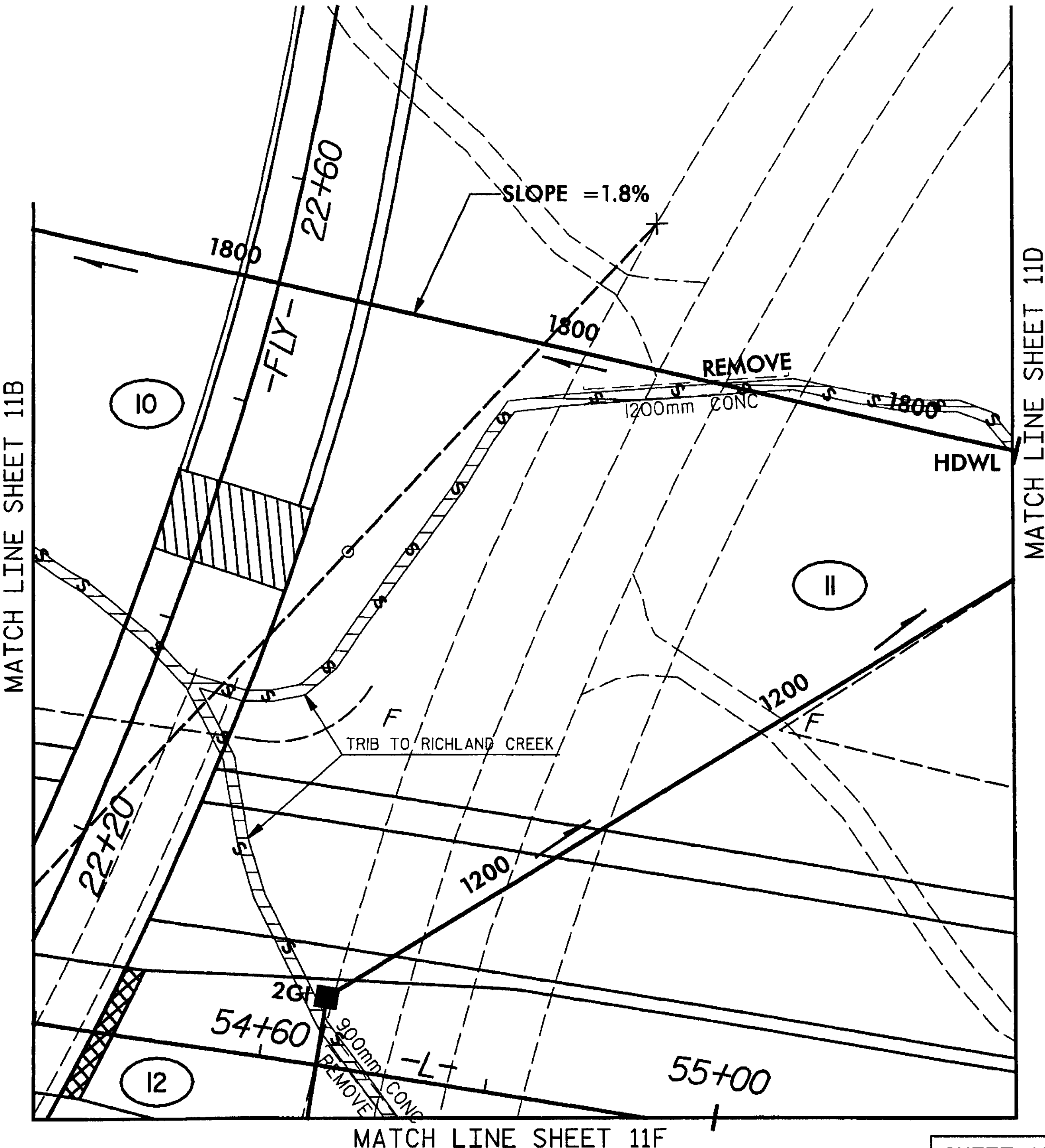

SHEET 11C

PLAN VIEW
SITE 11

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 45 OF 74

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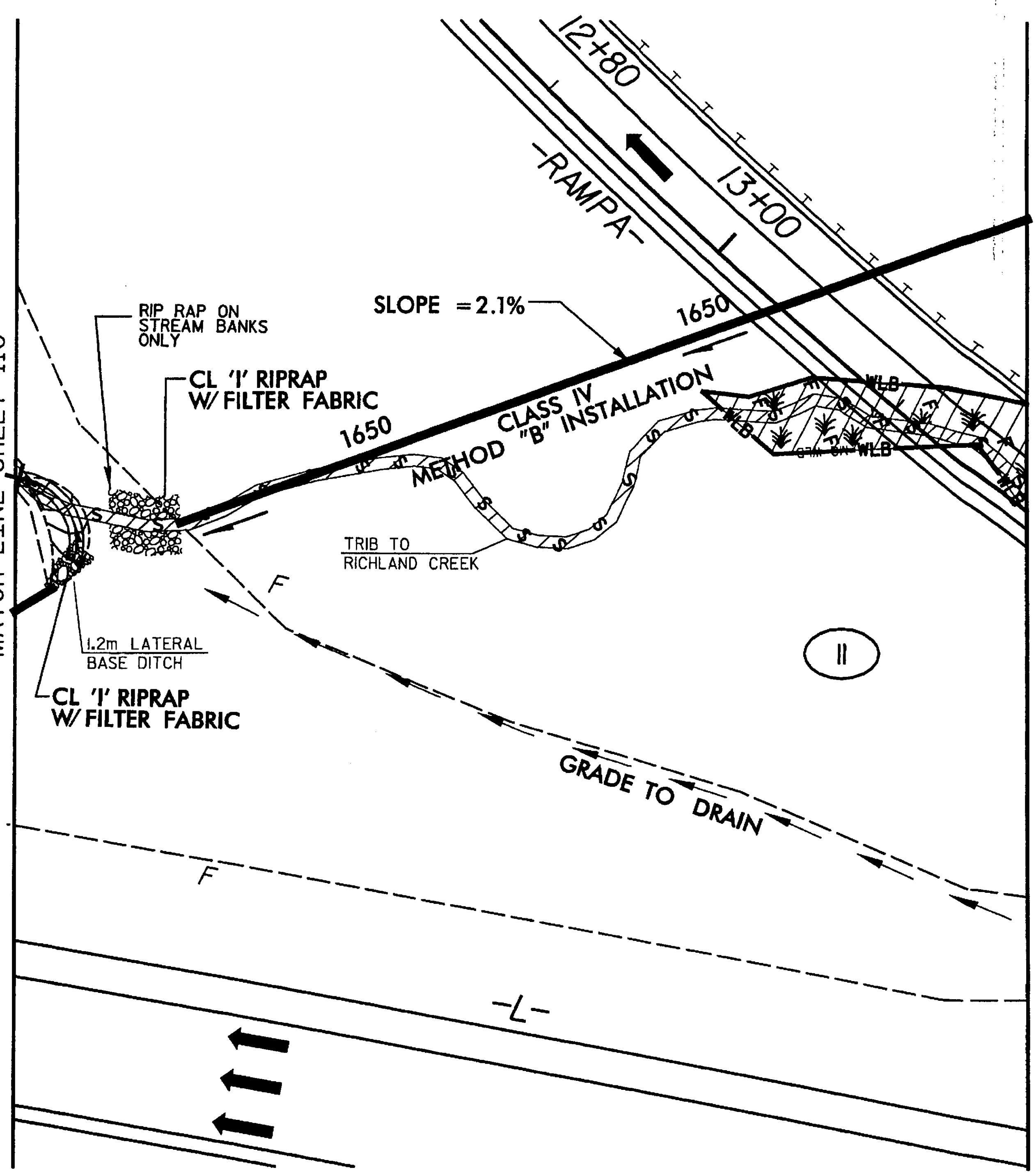

SHEET 11D

PLAN VIEW
SITE 11

METRIC

LEGEND

F F	DENOTES FILL IN WETLAND
S S	DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 46 OF 74

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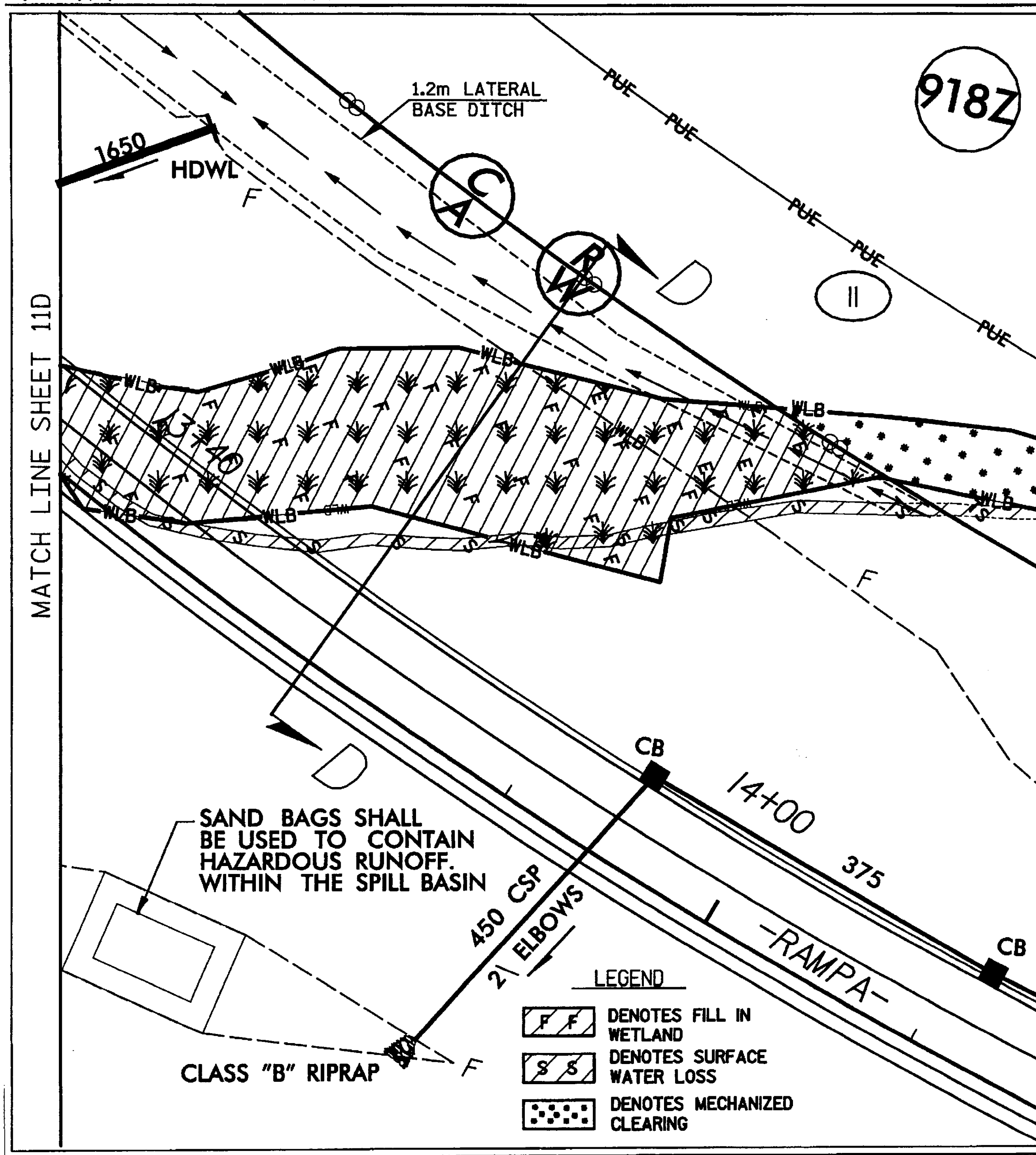


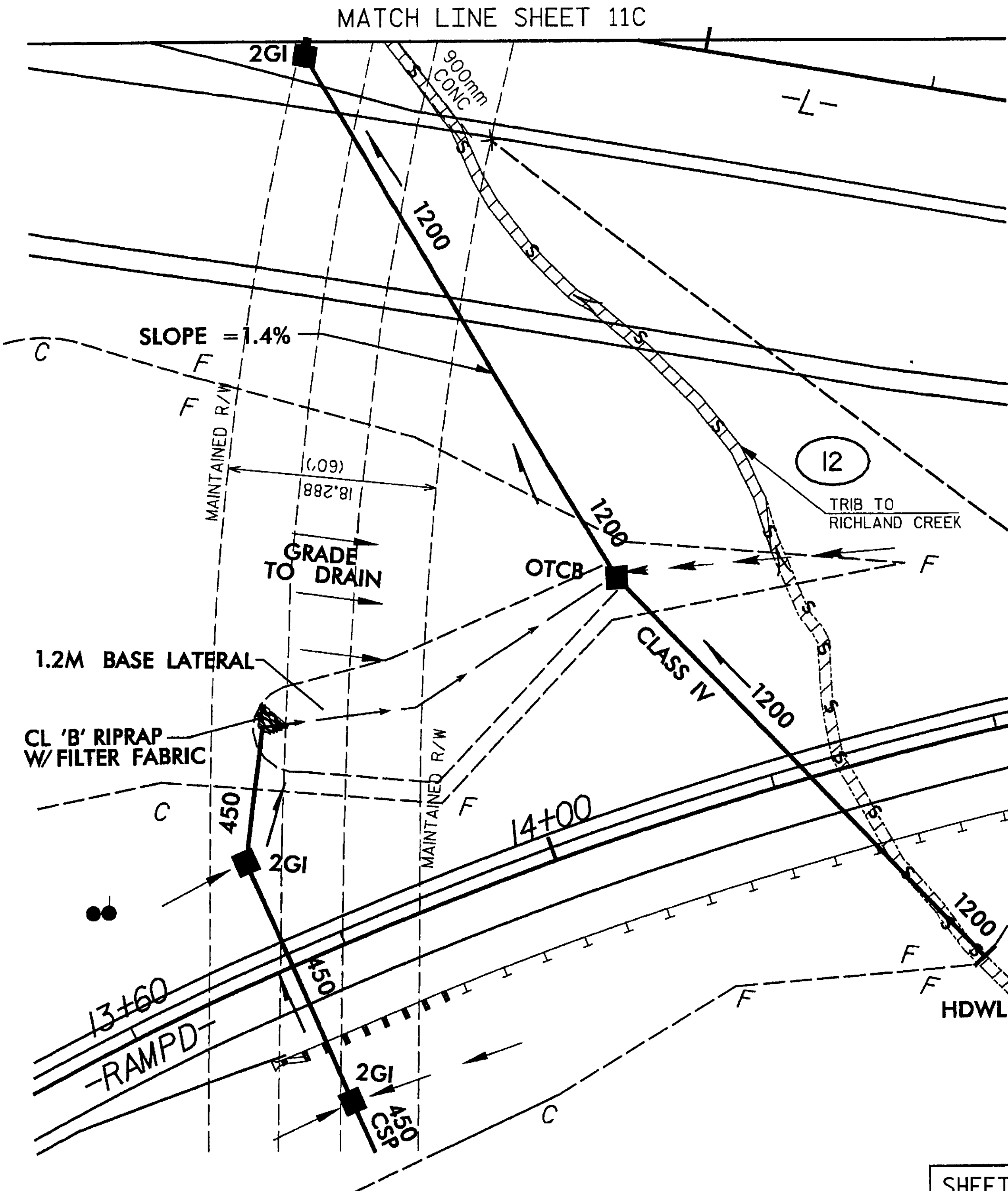
PLAN VIEW
SITE 11

SHEET 11E

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SHEET 47 OF 74



SHEET 11F

PLAN VIEW
SITE 11

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 47 OF 74

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01:41:03 PM
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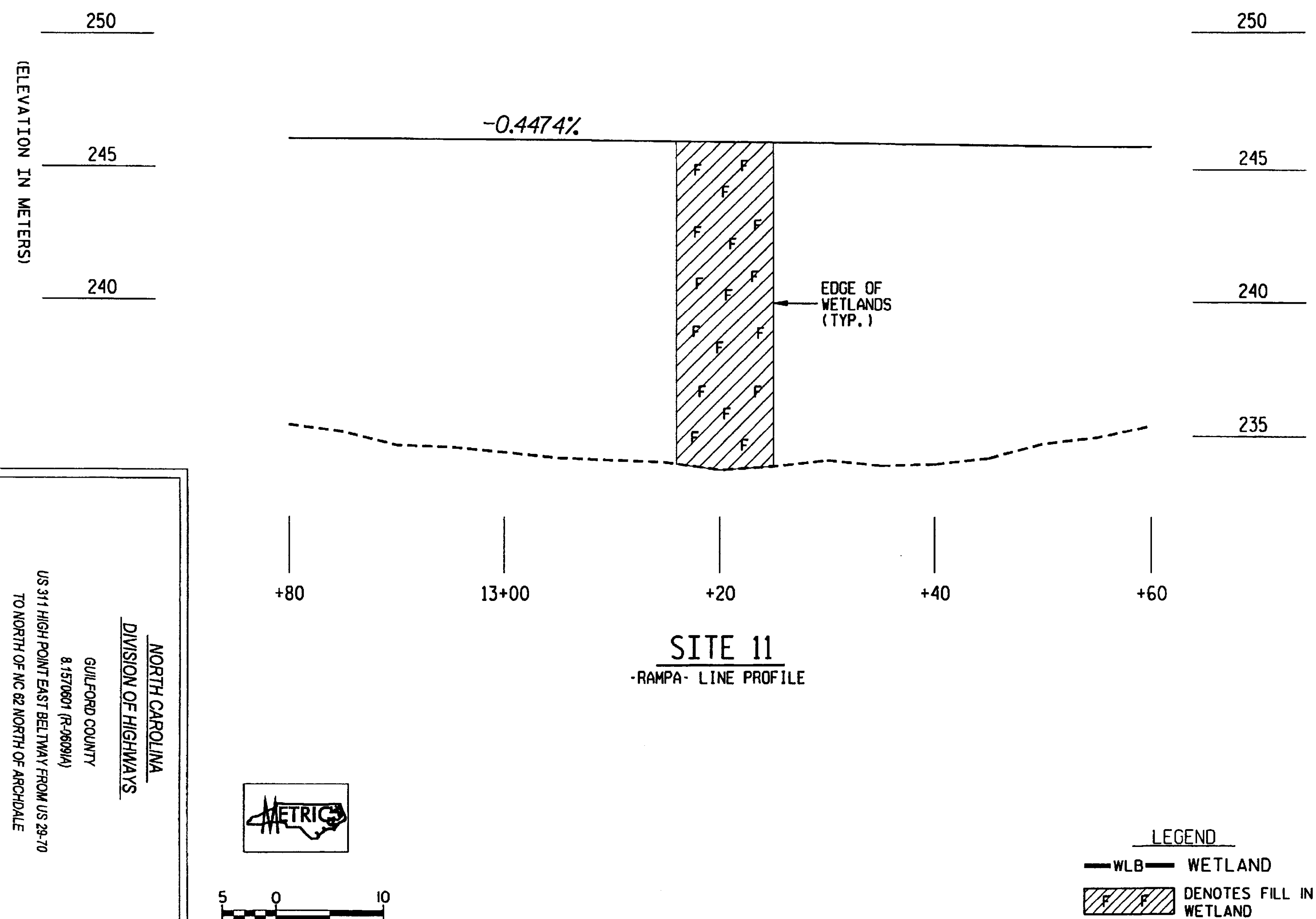

SITE 11

-RAMPA- LINE PROFILE

NORTH CAROLINA

DIVISION OF HIGHWAYS

GUILFORD COUNTY

8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70

TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 49 OF 74

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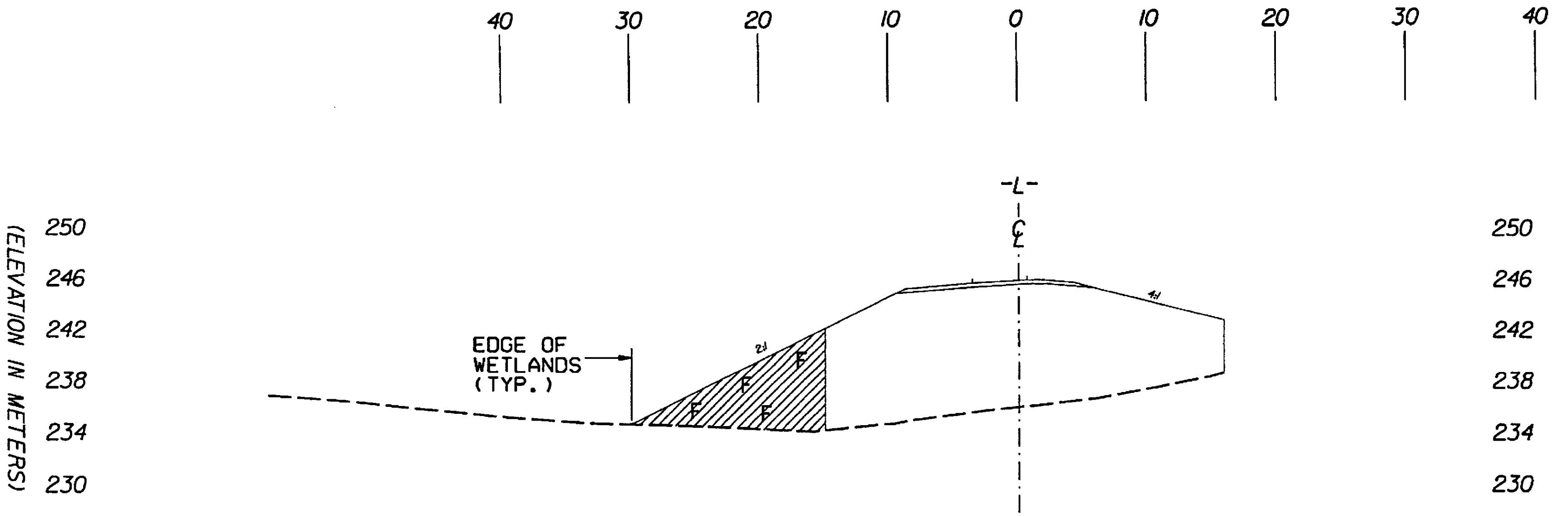


SECTION "D-D"

SITE II

CROSS SECTION
(-RAMPA- 13+60)

LEGEND

—WLB— WETLAND

F F DENOTES FILL IN WETLAND

5 0 10

NORTH CAROLINA
DIVISION OF HIGHWAYS

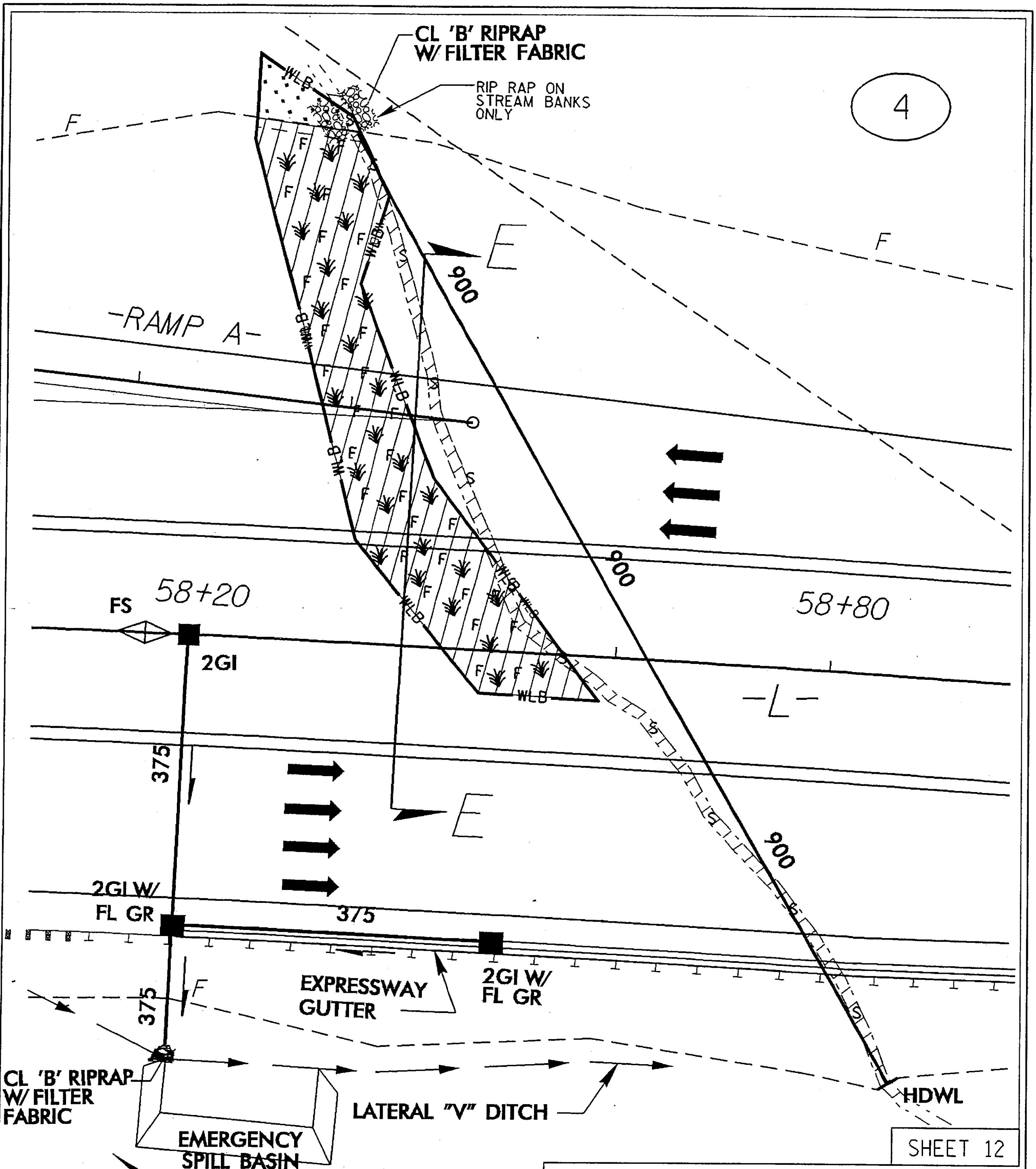
GUILFORD COUNTY

8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 50 OF 74



PLAN VIEW
SITE 12

LEGEND

F F	DENOTES FILL IN WETLAND
S S	DENOTES SURFACE WATER LOSS
. . .	DENOTES MECHANIZED CLEARING

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE
Revised May '06

SCALE AS SHOWN

SHEET 57 OF 74

02/20/2004
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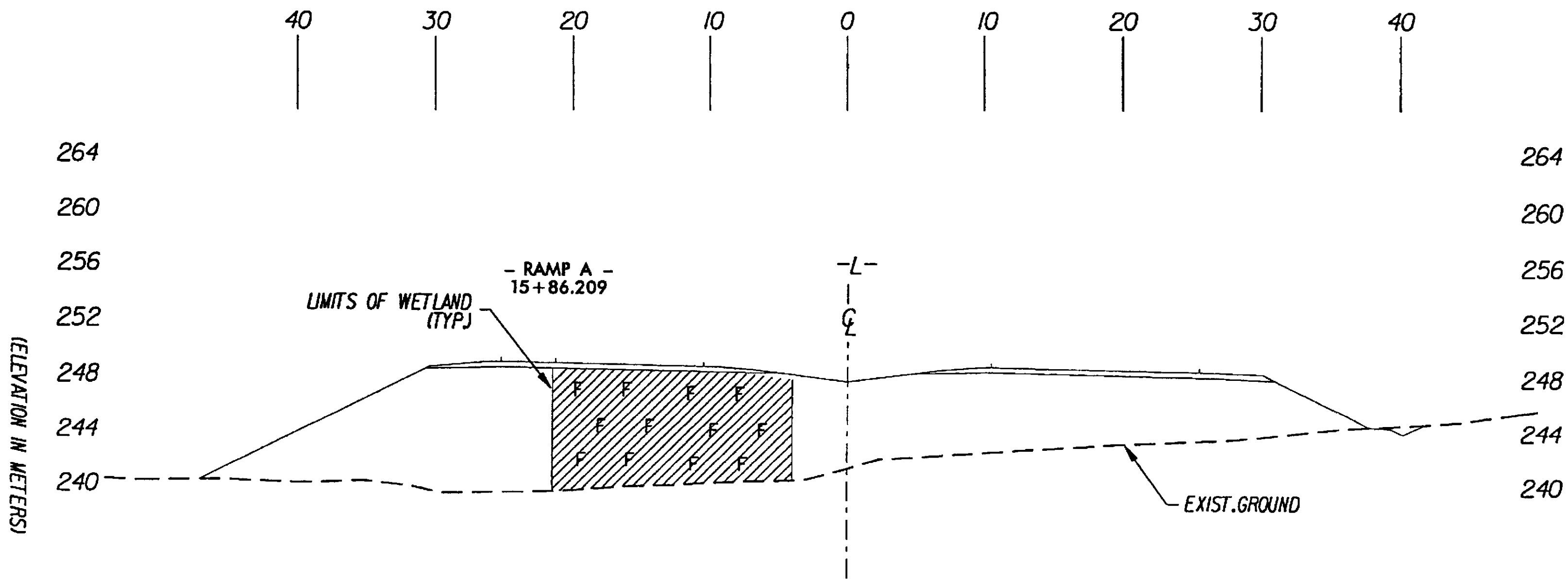

SECTION "E-E"

SITE 12

CROSS SECTION
(-L- 58+40)

LEGEND

F F DENOTES FILL IN WETLAND

METRIC

5 0 10

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 57 OF 74

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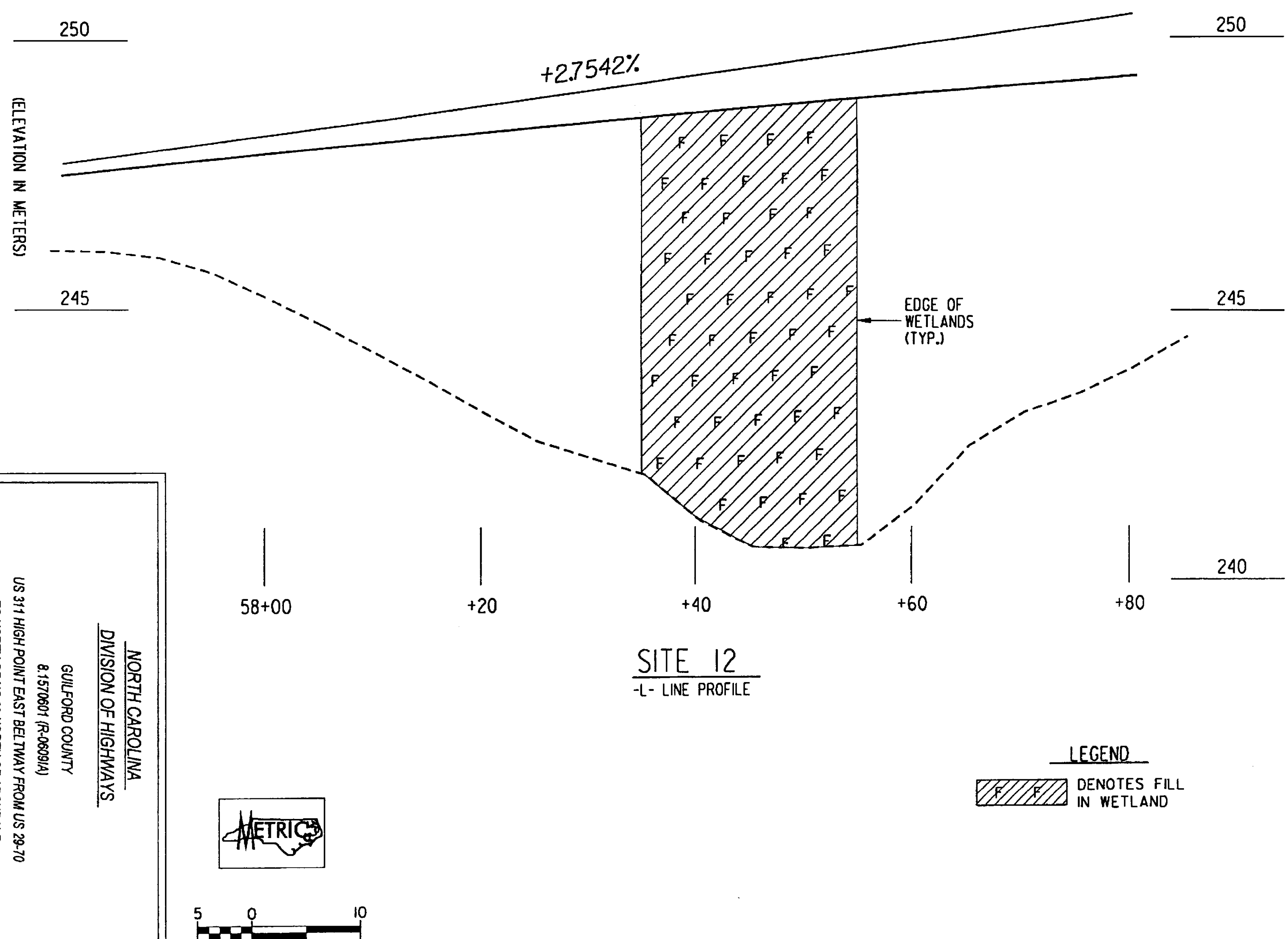
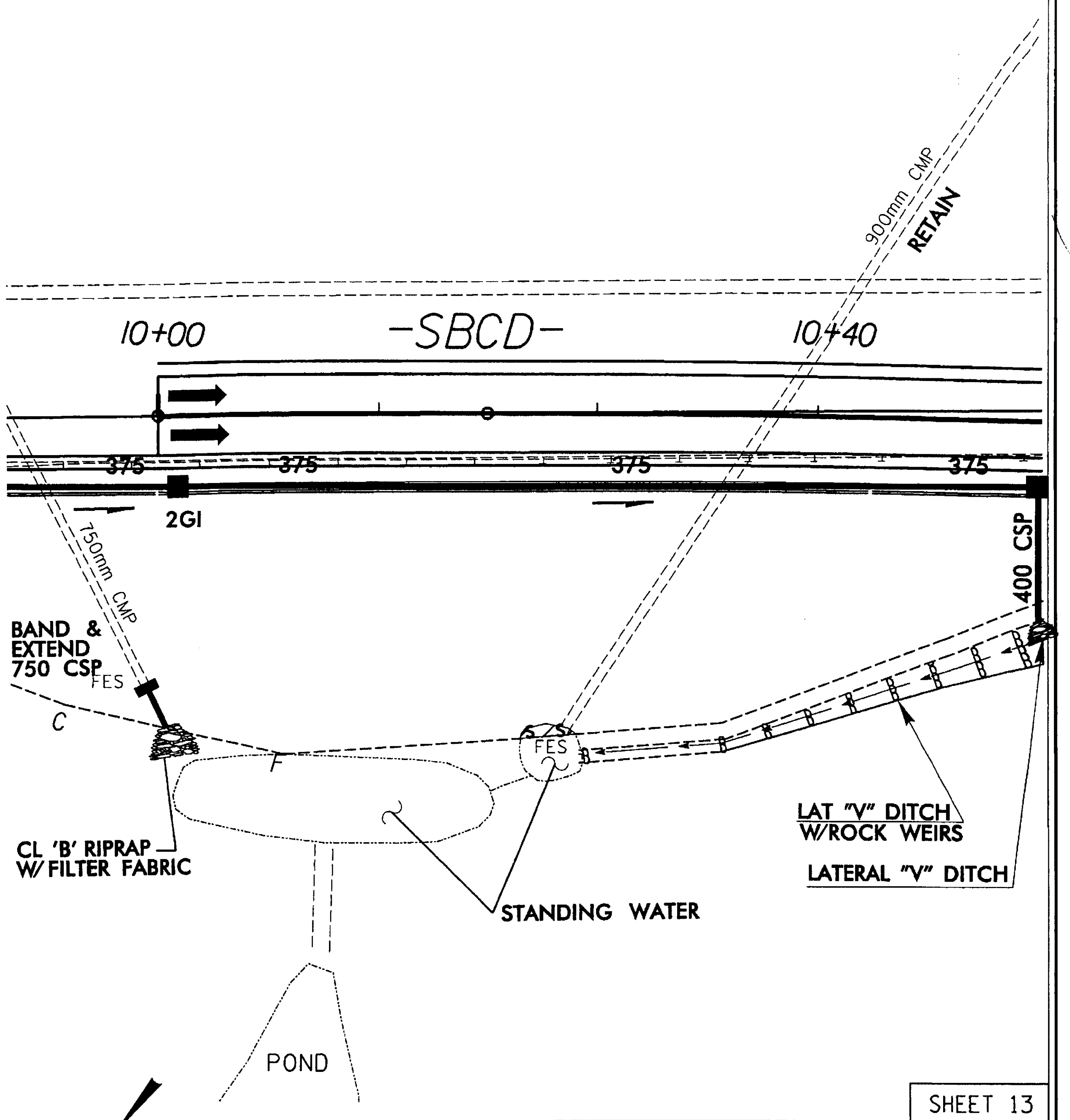


NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 53 OF 74



PLAN VIEW
SITE 13

SHEET 13

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 54 OF 74

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

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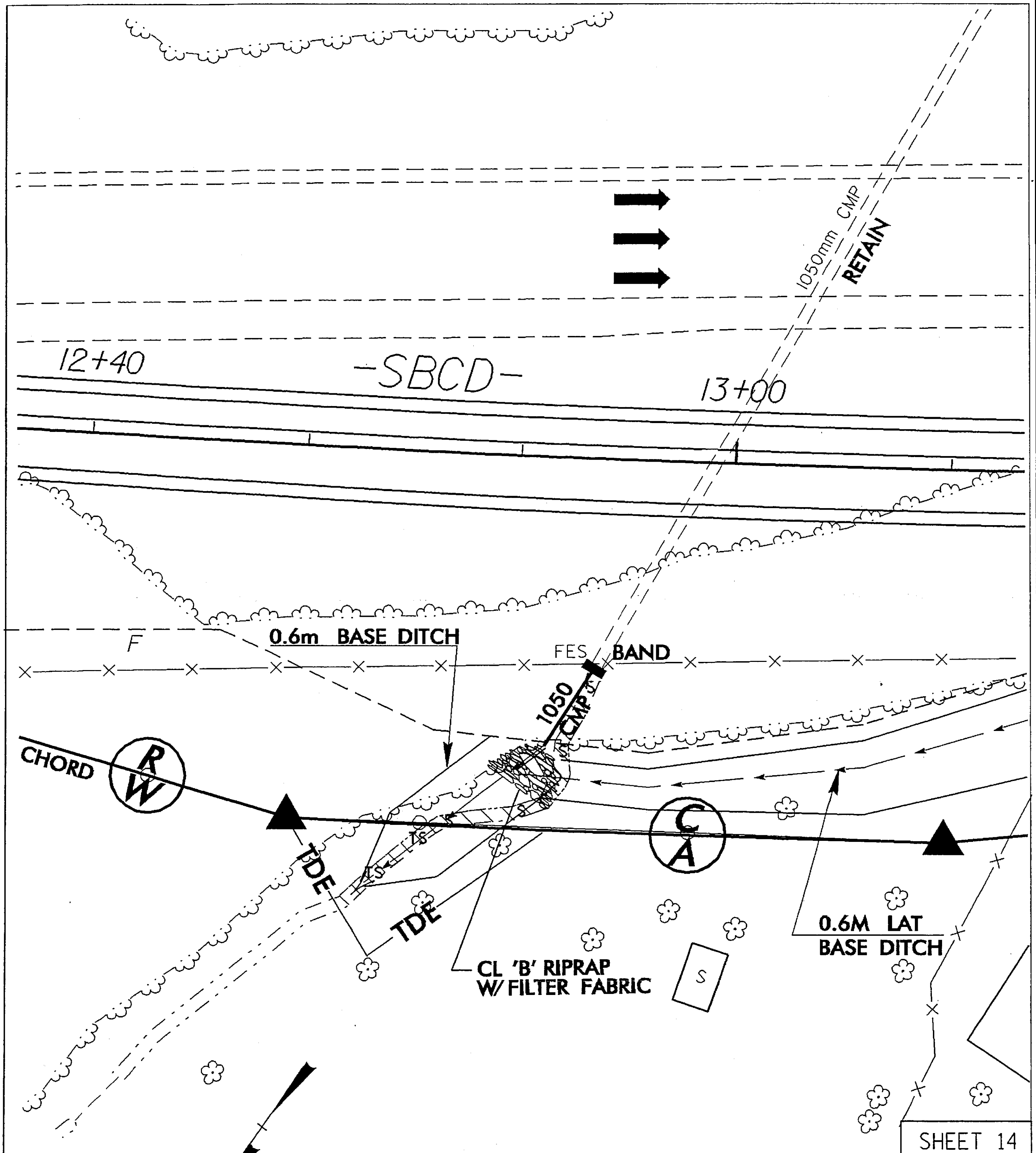

SHEET 14

PLAN VIEW
SITE 14

METRIC

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 55 OF 74

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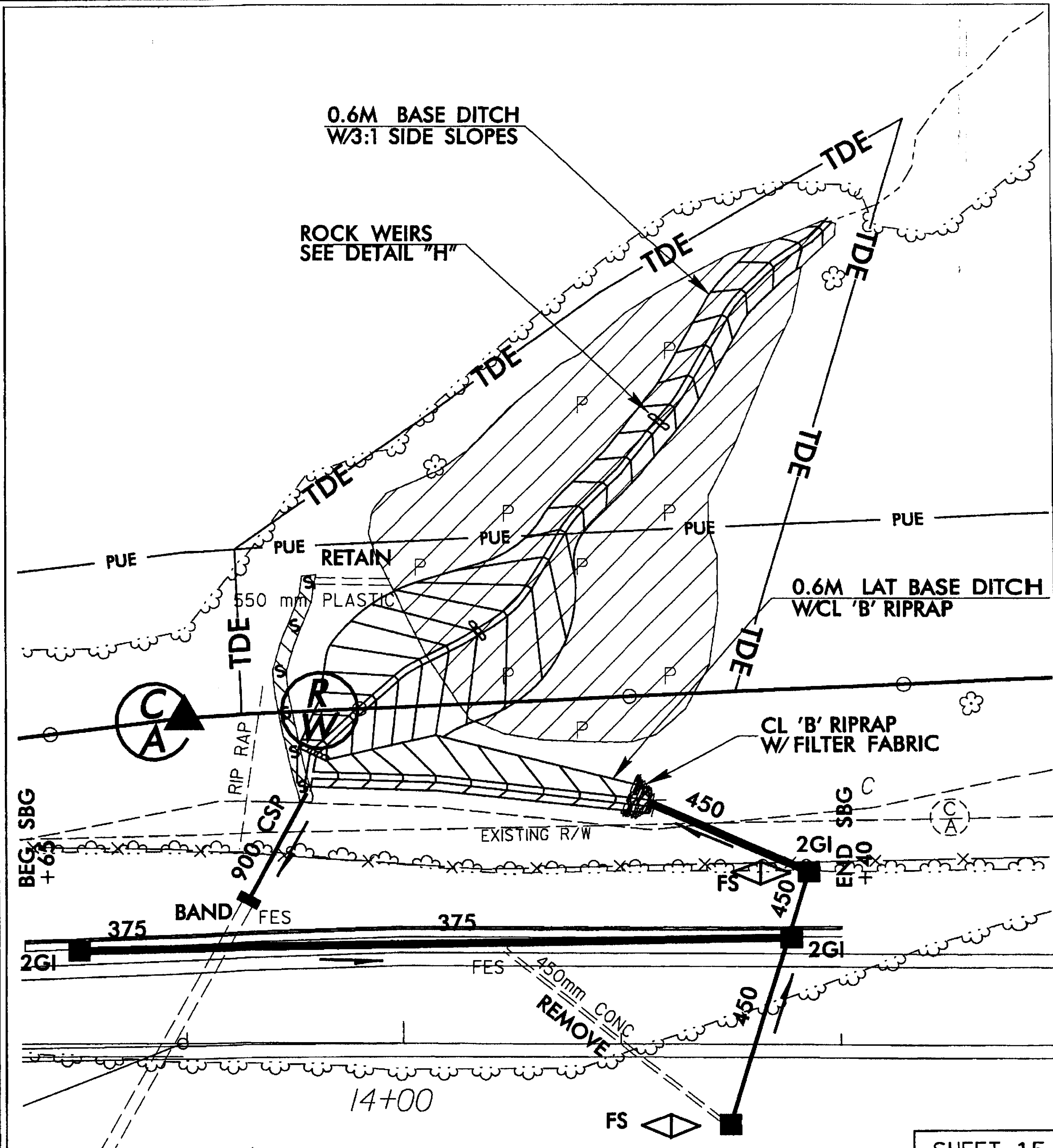
$FILE$



SHEET 15

PLAN VIEW
SITE 15

LEGEND

S S	DENOTES SURFACE WATER LOSS
P P	DENOTES SURFACE WATER LOSS (POND)

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 59 OF 74

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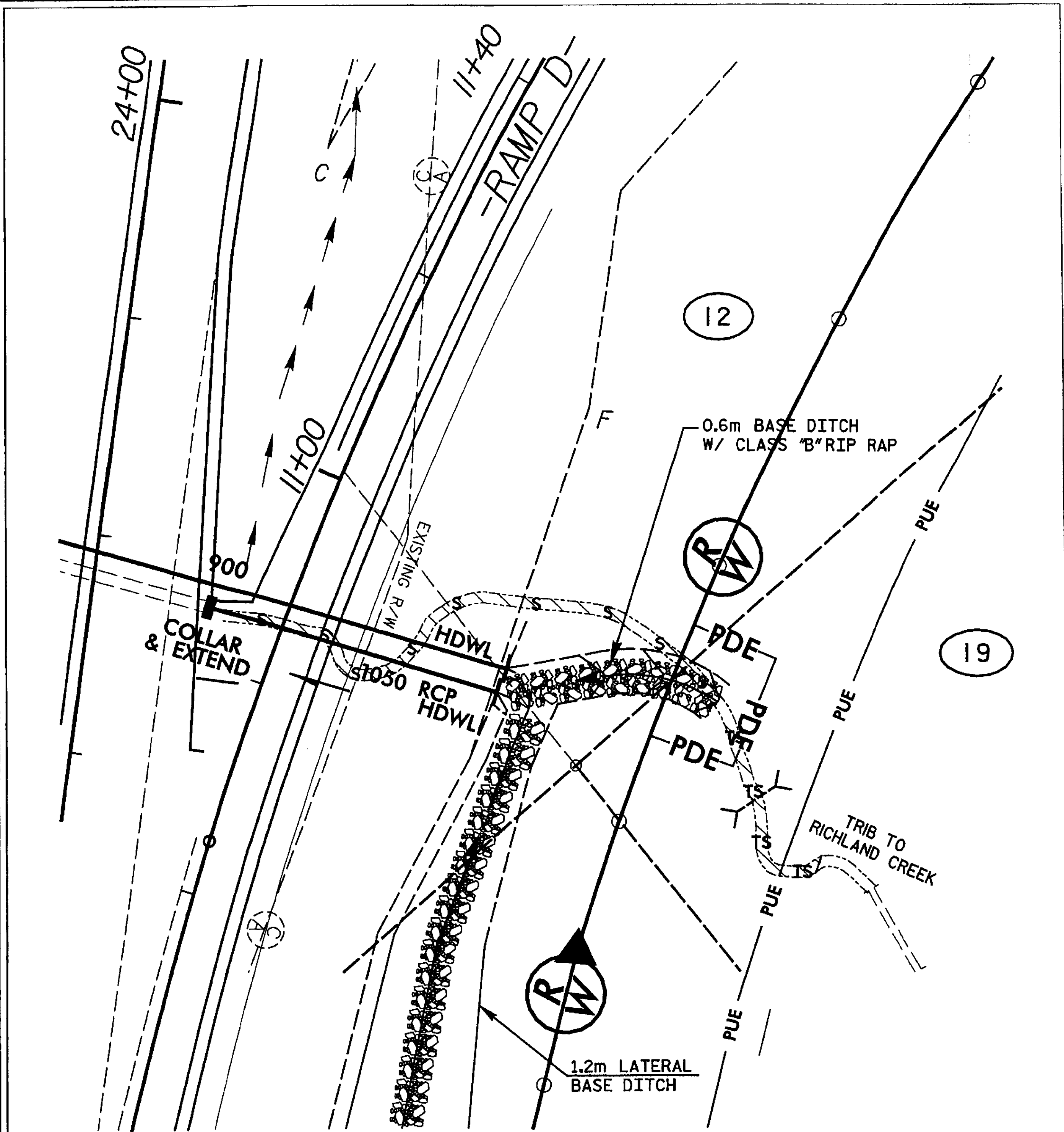

SHEET 16

PLAN VIEW
SITE 16

LEGEND

S S DENOTES SURFACE WATER LOSS

METRIC

5 0 10
SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 57 OF 74

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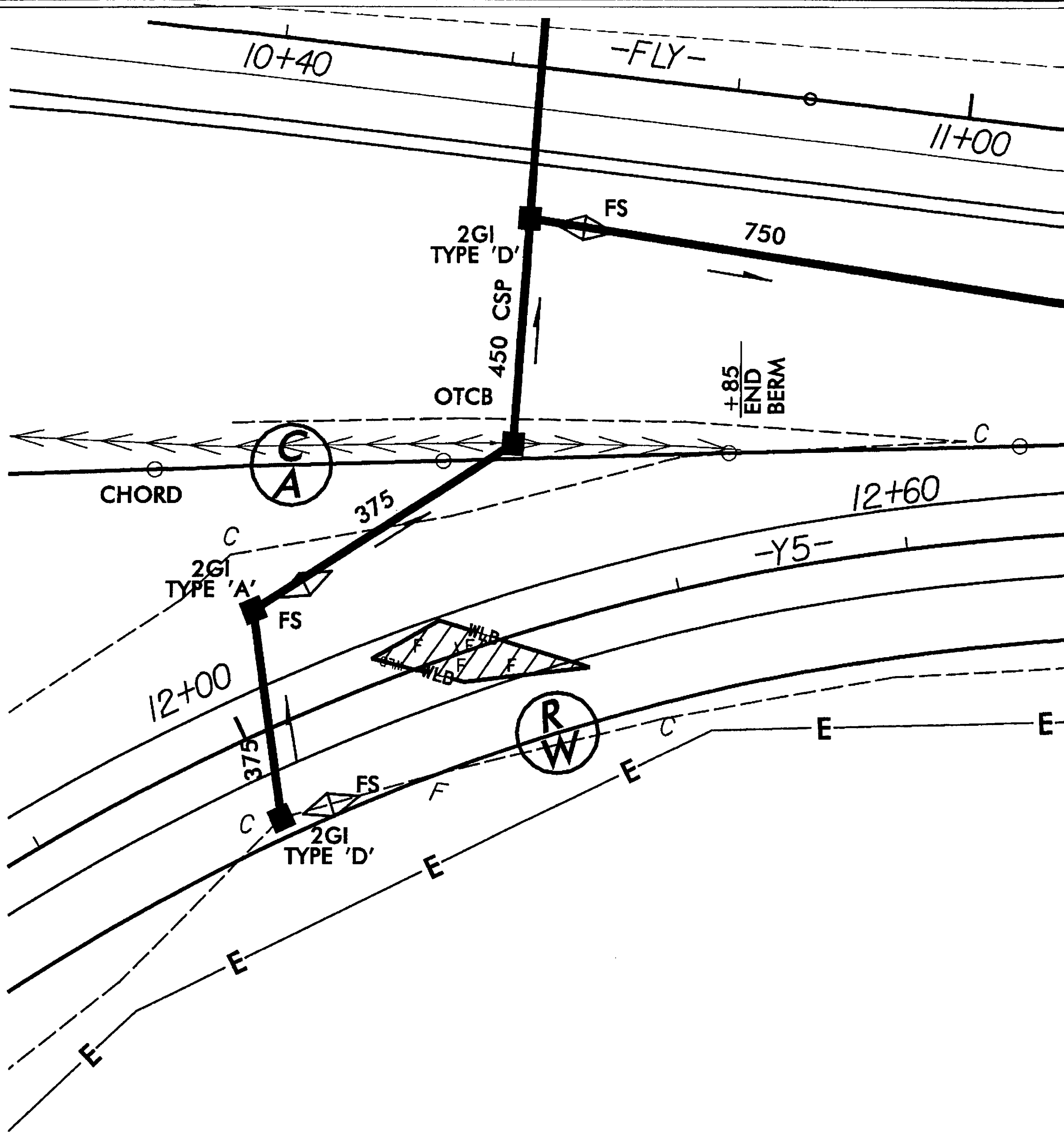

PLAN VIEW
SITE 17

LEGEND

F F DENOTES FILL IN WETLAND

5 0 10
SCALE IN METERS

SHEET 17

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 58 OF 74

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NCDOT Project I.D. R-609IA
Guildford County, NC
US 311 High Point East Beltway From US 29-70
To North of NC 62 North of Archdale

Prepared by: Stantec Consulting
801 Jones Franklin Road Suite 300
Raleigh, NC 27606

May 20, 2002

NATURAL CHANNEL DESIGN

MILE BRANCH

Right of Project Station 31+60
through
Right of Project Station 33+25
Permit Site 6

The alignment of US 311 (High Point East Beltway) will require that a portion of Mile Branch be relocated south from Project Station 31+60 Rt. to 33+25 Rt. of L-Line for approximately 165 meters in length. The proposed channel relocation is designed according to "natural channel" design principles proposed by Dave Rosgen.

The stream was found to be perennial in nature, having flow through the riffles and pools.

There is no hydraulic gage data available on this stream nor on nearby streams. Current discharges were estimated using the NCDOT procedures for rural watersheds.

EXISTING CHANNEL

A representative portion of the existing channel (around station 32+20) was surveyed in detail for the purpose of channel classification. The existing channel was measured to have an entrenchment ratio of 7.37, a width/depth ratio of 6.23, a sinuosity of 1.24 and an average slope of 0.003 m/m. A pebble count was preformed and the channel was found to have a concentration of sand in the pools, gravel in the riffles and a classification of gravel bottom. The channel was found to be a B4c stream type according to the Rosgen classification system.

REFERENCE REACH

The reference reach was surveyed in detail for the purpose of channel classification and use in natural channel design. A 143 ft long reach was surveyed in detail. The reference reach channel was measured to have an entrenchment ratio of 8.55, a width/depth ratio of 10.13, a sinuosity of 1.19 and an average slope of 0.015 ft/ft. A pebble count was preformed and the channel was found to have a classification of sand bottom. The channel was found to be a C5 stream type according to the Rosgen classification system.

PROPOSED CHANNEL

Based upon the existing valley type and the flood prone width desired, the proposed channel design has a C4 stream type classification. Design data is given in the attached table along with existing reach and reference reach data. Channel gradient is controlled by the natural channel tie upstream and by the three 3.4m by 2.4m reinforced concrete box culverts downstream. Mean "bankfull" depth was set at 0.54 meters. This gives a maximum bankfull depth of 0.80 meters. Above bankfull depth it is proposed to excavate an approximately 45 meter wide flood plain (including the channel).

It is believed that by forming a flood plain above bankfull depth channel stability will be enhanced by reducing velocities for those discharges above the bankfull discharge. This should lead to a more stable channel during and after watershed development. It is anticipated that the proposed channel will have a natural gravel bottom. Maximum pool depths of 1.61 meters are proposed at outside bends of meanders.

Using the proposed channel geometry, sediment transport computations were performed to determine whether the bankfull discharge would be able to initiate movement of the D50 particle obtained. The proposed bankfull shear stress has been reduced from 2.39 to 1.24 kg/m2 (0.49 to 0.254 lbs/ft sq). The D50 particle recorded during the bar sample was 16mm. Using Rosgen's version of Shields Curve the shear stress to initiate movement of a 16mm particle can be a low as 0.97 kg/m2 (0.20 lbs/ft sq). Therefore since the proposed shear stress for the Type C channel is less than the existing conditions the proposed channel should be stable.

Proposed channel stabilization is shown on the attached detail sheet. It is anticipated that channel banks will be planted with native trees and shrubs above bankfull depth. Rock Vanes, Cross Vanes and Root Wads will be utilized to control the near bank shear stress in the meanders, along the proposed roadway.

Stantec

Location: WETLAND PERMIT SITE 6

Site #1b Sta 32+20-L-R to 33+25 -L-R

Design by: C. Heath Wadsworth, EI 12/1/2000

Checked by: Kevin Williams, PE 12/2/2000

ITEM	EXISTING CHANNEL	PROPOSED REACH	REFERENCE REACH (English)	REFERENCE REACH (Metric)
STREAM NAME	Mile Branch	Mile Branch	Dixon Branch	Dixon Branch
STREAM TYPE	B4c	C4	C5	C5
DRAINAGE AREA (DA)	581.03 ha	581.03 ha	402 Ac	162.69 ha
BANKFULL WIDTH (W_{bkf})	5.75 m	6.45 m	15.20 ft	4.63 m
BANKFULL MEAN DEPTH (d_{bkf})	0.92 m	0.54 m	1.50 ft	0.46 m
WIDTH/DEPTH RATIO (W_{bkf}/d_{bkf})	6.23	12.00	10.13	10.13
BANKFULL X-SECTION AREA (A_{bkf})	5.32 m^2	3.45 m^2	22.70 ft^2	2.11 m^2
BANKFULL MEAN VELOCITY, m/s	1.15 mps	1.77 mps	2.81 fps	0.86 mps
BANKFULL DISCHARGE, m^3/s	6.09 m^3/s	6.10 m^3/s	64 cfs	1.81 m^3/s
BANKFULL MAX DEPTH (d_{max})	1.37 m	0.80 m	1.60 ft	0.49 m
WIDTH Flood-Prone Area (W_{fpa})	42.40 m	45.00 m	130.0 ft	39.62 m
ENTRENCHMENT RATIO (ER)	7.37	6.98	8.55	8.55
MEANDER LENGTH (Lm)	9.5 m	75 m	33 - 71 ft	10 - 22 m
RATIO OF Lm TO W_{bkf}	1.65	12	2.2 - 4.7	2.2 - 4.7
RADIUS OF CURVATURE	10.0 m	18 m	6 - 9 ft	2 - 3 m
RATIO OF Rc TO W_{bkf}	1.7	2.8	0.37	0.4
BELT WIDTH	16.0	45.2	30	9.14
MEANDER WIDTH RATIO	2.8	7.0	2.0	2.0
SINUOSITY (K)	1.24	1.40	1.19	1.19
VALLEY SLOPE	0.004 m/m	0.0034 m/m	0.018 ft/ft	0.018 m/m
AVERAGE SLOPE (S)	0.003 m/m	0.0024 m/m	0.015 ft/ft	0.015 m/m
POOL SLOPE	0.005 m/m	0.0005 m/m	0.003 - 0.012 ft/ft	0.003 - 0.012m/m
RATIO OF POOL SLOPE TO AVERAGE SLOPE	1.78	0.20	0.19 - 0.83	0.19 - 0.83
MAX POOL DEPTH	1.86 m	1.61 m	1.90 - 5.80 ft	0.58 - 2 m
RATIO OF POOL DEPTH TO AVERAGE BANKFULL WIDTH	2.01	3.00	1.3 - 3.9	1.3 - 3.9
POOL WIDTH	10.98 m	9.68 m	31 ft	9 m
RATIO OF POOL WIDTH TO BANKFULL WIDTH	1.91	1.50	2.04	2.04
POOL TO POOL SPACING	30.00 m	32.3 m	18 - 30 ft	5 - 9 m
RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	5.21	5	1.2 - 2.0	1.2 - 2.0

NORTH CAROLINA

DEPARTMENT OF HIGHWAYS

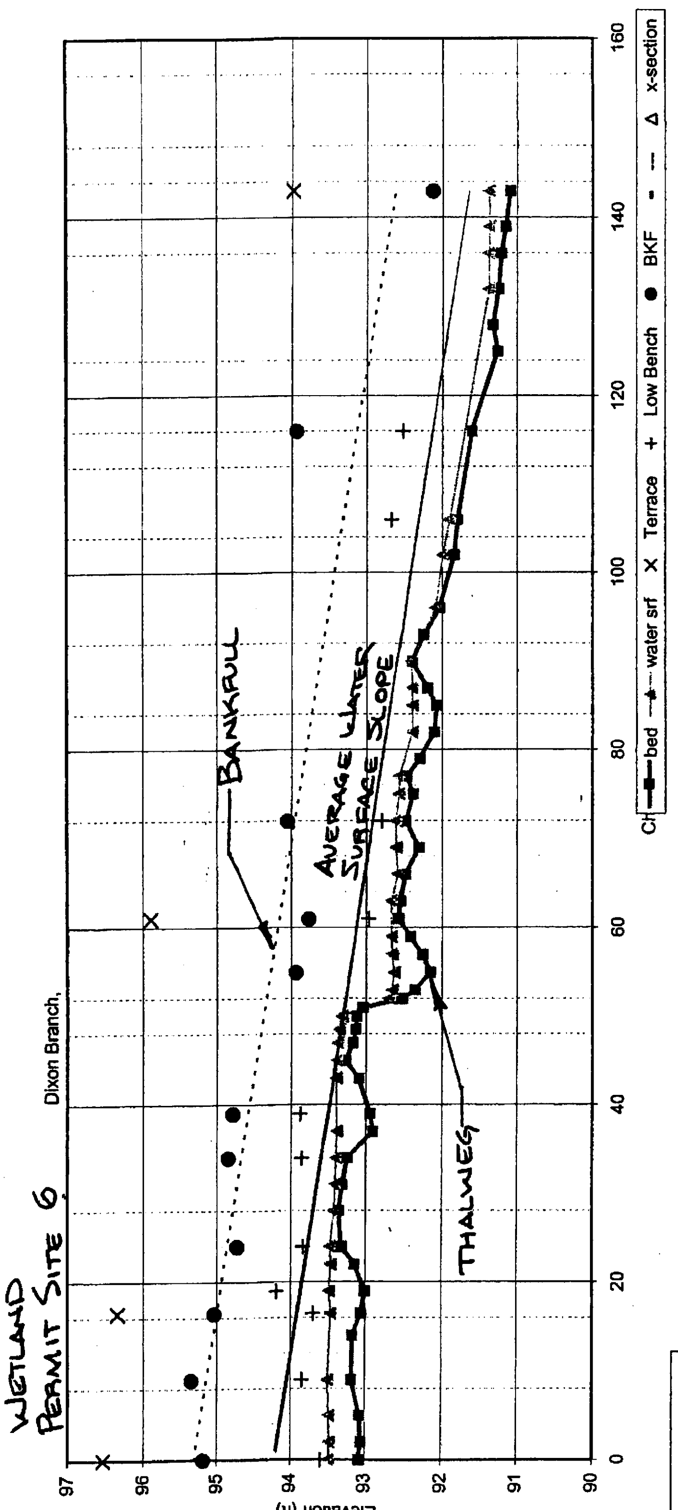
GUILFORD COUNTY

8.1570601 (R-0609IA)

US 311 HIGH POINT EAST BELTWAY FROM US 29-70

TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN



NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 62 OF 74

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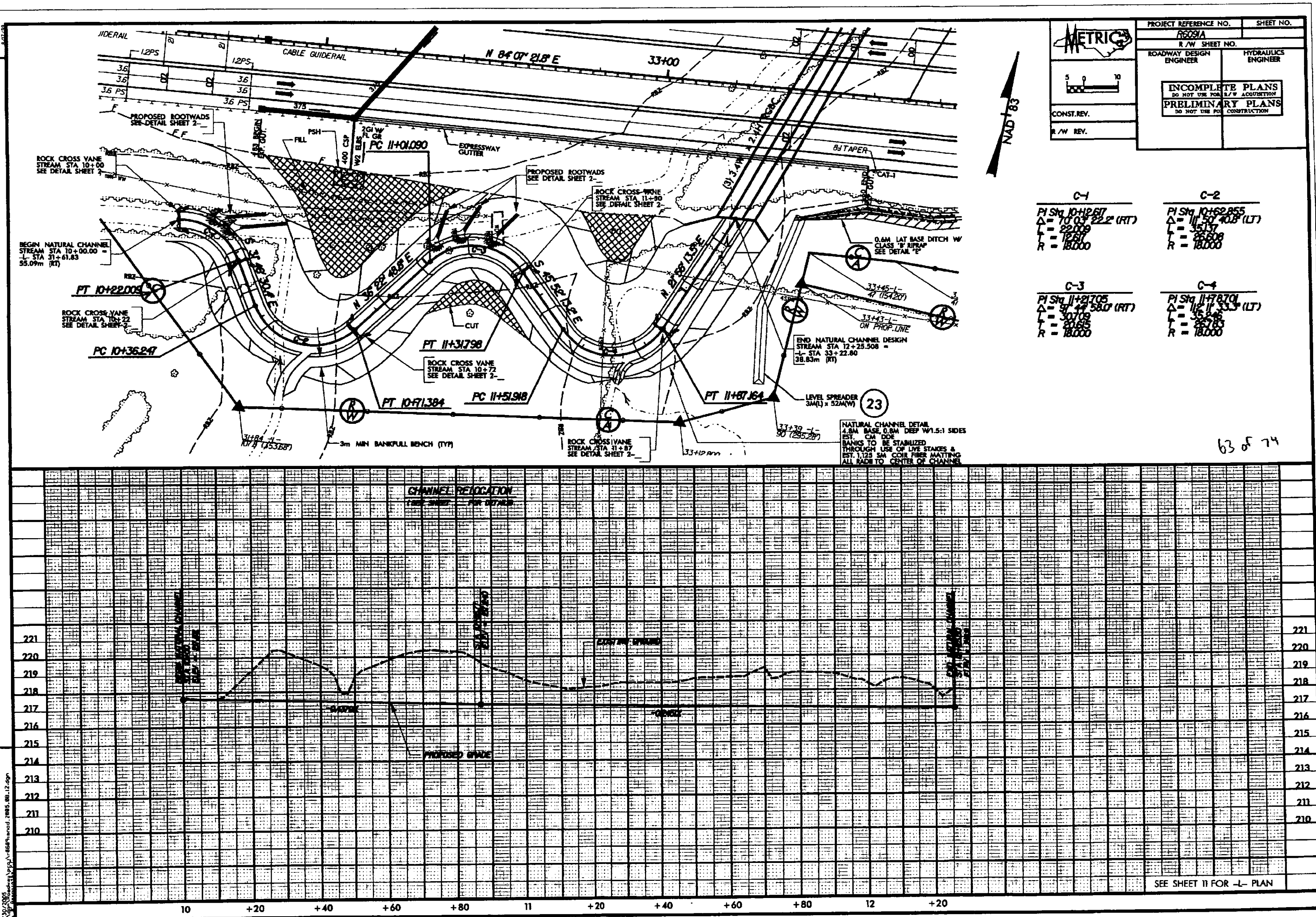
PROJECT REFERENCE NO.
R609IA
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
CONST. REV.
R/W REV.
NAD 83
C-1
PI Sta 10+11.617
R = 18.000
C-2
PI Sta 10+62.855
R = 18.000
C-3
PI Sta 11+21.705
R = 18.000
C-4
PI Sta 11+78.701
R = 18.000
N 84° 07' 21.8" E
33+00
CABLE GUIDERAIL
EXPRESSWAY GUTTER
PROPOSED ROOTWADS SEE DETAIL SHEET 2-
ROCK CROSS VANE STREAM STA 10+00 SEE DETAIL SHEET 2-
BEGIN NATURAL CHANNEL STREAM STA 10+00.00 = -L- STA 31+61.83 55.09m (RT)
PT 10+22.009
ROCK CROSS VANE STREAM STA 10+22 SEE DETAIL SHEET 2-
PC 10+36.247
PC 11+01.090
PT 11+31.798
ROCK CROSS VANE STREAM STA 10+72 SEE DETAIL SHEET 2-
PT 10+71.384
PC 11+51.918
ROCK CROSS VANE STREAM STA 11+87 SEE DETAIL SHEET 2-
PT 11+87.164
ROCK CROSS VANE STREAM STA 11+80 SEE DETAIL SHEET 2-
0.6M LAT BASE DITCH W CLASS 'B' RIPRAP SEE DETAIL 'E'
END NATURAL CHANNEL DESIGN STREAM STA 12+25.508 = -L- STA 33+22.80 38.83m (RT)
LEVEL SPREADER 3M(L) x 52M(W)
23
NATURAL CHANNEL DETAIL
4.8M BASE, 0.8M DEEP W/1.5:1 SIDES
EST. CM DDE
BANKS TO BE STABILIZED THROUGH USE OF LIVE STAKES & EST. 1,125 SM COIR FIBER MATTING
ALL RADII TO CENTER OF CHANNEL
3m MIN BANKFULL BENCH (TYP)
FILL
CUT
63 of 74
CHANNEL RELOCATION
EXISTING GROUND
PROPOSED GRADE
SEE SHEET 11 FOR -L- PLAN
10
+20
+40
+60
+80
11
+20
+40
+60
+80
12
+20

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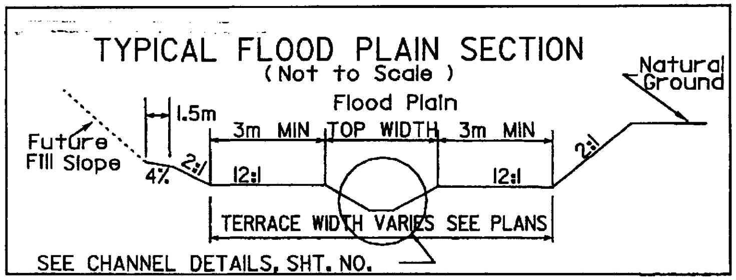
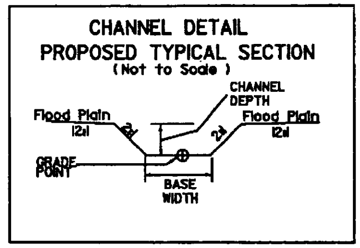
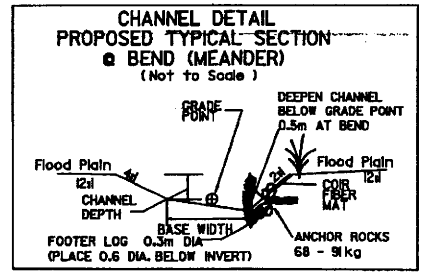
NATURAL CHANNEL DESIGN TYPICALS





TYPICAL SECTION 1 BETWEEN BENDS



TYPICAL SECTION 2 AT BENDS

NOTES:

NUMBER OF ROOTWADS INSTALLED TO BE DETERMINED ON SITE

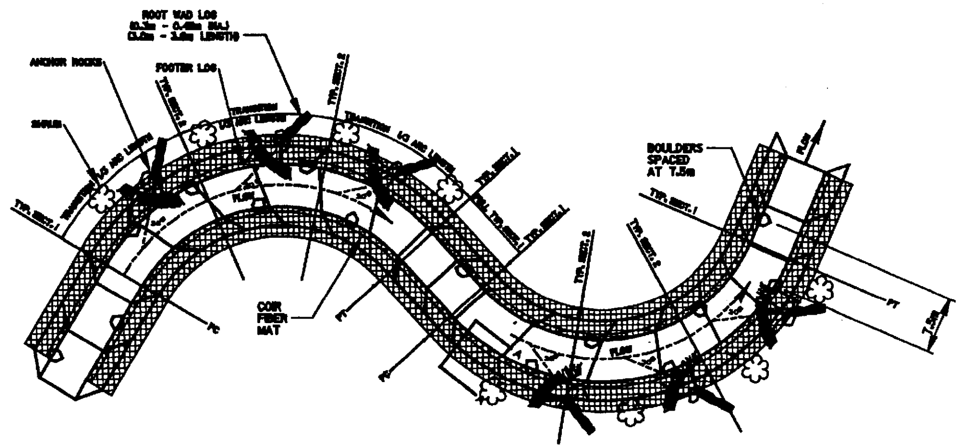
NUMBER OF LOW STAGE CHECK DAMS TO BE DETERMINED ON SITE

ROOTWADS TO BE SPACED 4x DIAMETER OF ROOT BASE

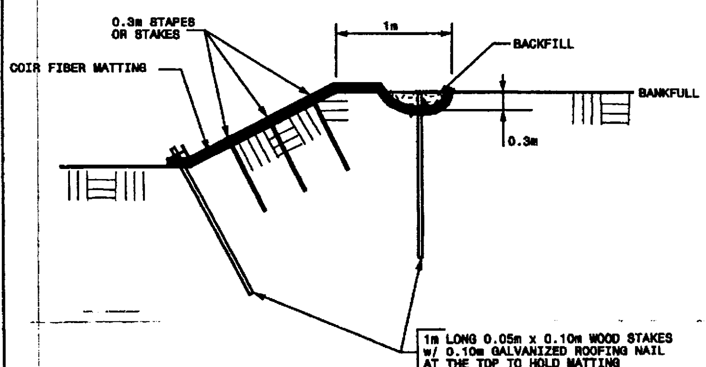
FOOTER LOG ANCHOR ROCK TO BE PLACED ON THE DOWNSTREAM END OF EACH FOOTER LOG SO THAT IT IS LEANING AGAINST THE LOG ON THE SIDE AWAY FROM THE CHANNEL.

WHEN BACKFILLING OVER AND AROUND FOOTER LOGS, ROOTWAD LOGS AND ANCHOR ROCKS FIRMLY SECURE ALL COMPONENTS INCLUDING JOINTS, CONNECTIONS AND GAPS.

PLANTINGS SHOULD BE PLACED ABOVE BANKFULL DEPTH



CHANNEL PLAN VIEW



SECTION A-A

NOTES:
1. USE WOOD STAKES (NOT METAL) FOR MATTING INSTALLED IN PUMP AROUNDS OR IN THE WET.
2. USE OF METAL STAPLES IS ACCEPTABLE WHEN CONSTRUCTING IN THE DRY AND VEGETATION IS ESTABLISHED PRIOR TO DIVERTING WATER.

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 5 OF 14

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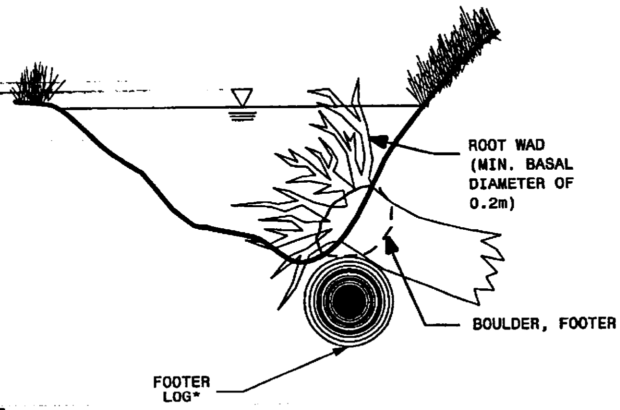
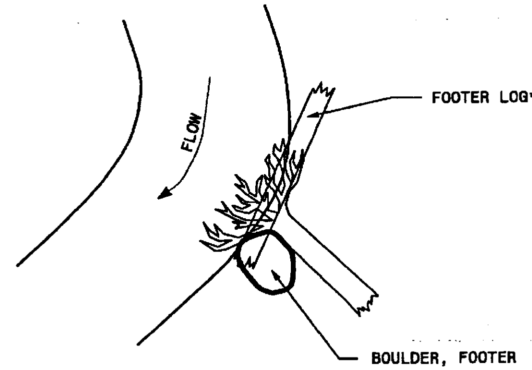


CROSS SECTION



PLAN VIEW

SCALE IN METERS
5 0 10

METRIC

*FOOTER LOGS SHALL HAVE A MINIMUM BASAL DIAMETER OF 0.2m AND HAVE A LENGTH OF 2.1m -3.0m.

ROOT WAD

SCALE: NTS

PLACEMENT OF ROOT WAD STRUCTURES

A TRENCH SHALL BE DUG ALONG THE TOE OF THE BANK TO A DEPTH OF ½ THE DIAMETER OF THE FOOTER LOG. A PRUNED FOOTER LOG SHALL BE PLACED AT THE TOE OF THE CHANNEL AND THE ROOT WAD SHALL BE PLACED DIRECTLY ABOVE IT. THE ROOT MASS SHALL BE ORIENTED IN SUCH A WAY THAT THE VELOCITY VECTORS OF THE WATER WILL INTERSECT THE ROOT MASS AT A 90-DEGREE ANGLE. THERE SHALL BE NO VOID BETWEEN THE ROOT MASS AND THE BANK ON THE UPSTREAM SIDE OF THE CHANNEL. A BOULDER SHALL BE PLACED ON THE DOWNSTREAM SIDE BETWEEN THE ROOT MASS AND THE BANK TO PROVIDE EROSION CONTROL. THE BOULDER, FOOTER SHALL BE APPROXIMATELY 0.9m X 0.9m X 0.6m.

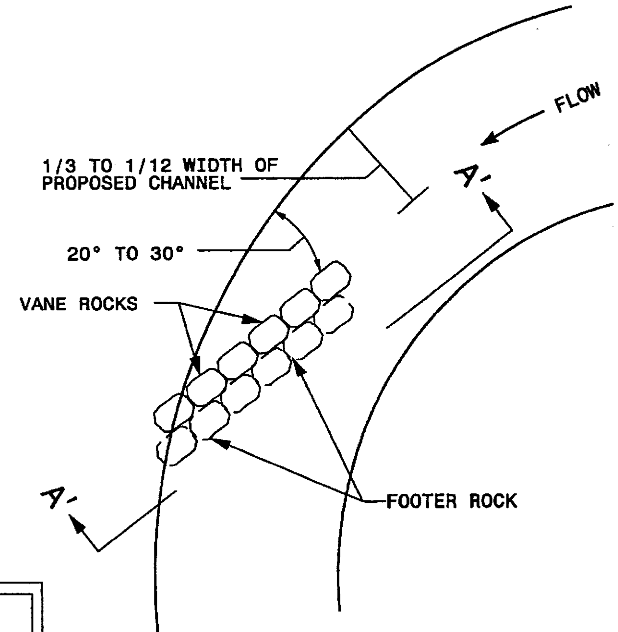
THE PREFERRED METHOD FOR INSTALLATION OF A ROOT WAD IS TO DRIVE THE SHARPENED TRUNK OF THE ROOT WAD INTO THE STREAMBANK USING A BACKHOE. IF IT IS DEEMED NOT POSSIBLE TO DRIVE THE TRUNK INTO THE BANK, A TRENCH SHALL BE DUG IN THE BANK AND THE TRUNK SHALL BE PLACED IN THE TRENCH. THE TRENCH SHALL BE BACK FILLED AND COMPACTED.

NORTH CAROLINA
DIVISION OF HIGHWAYS

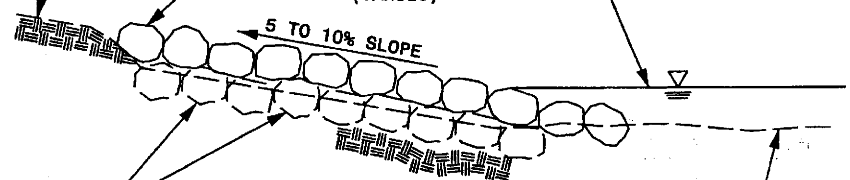
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 65 OF 74



PLAN VIEW



SECTION A A' VIEW

NOTE: ALL ROCKS OR STONE ARE NATURAL STONE BOULDERS

ROCK VANE

SCALE: NTS

SCALE IN METERS 5 0 10

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 66 OF 74

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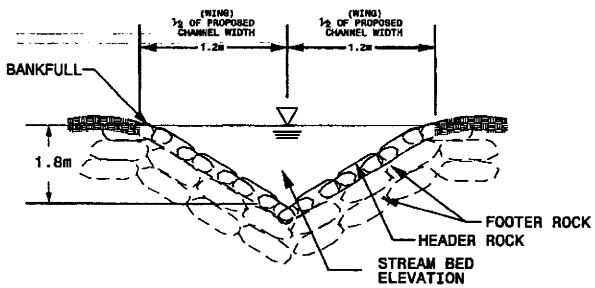
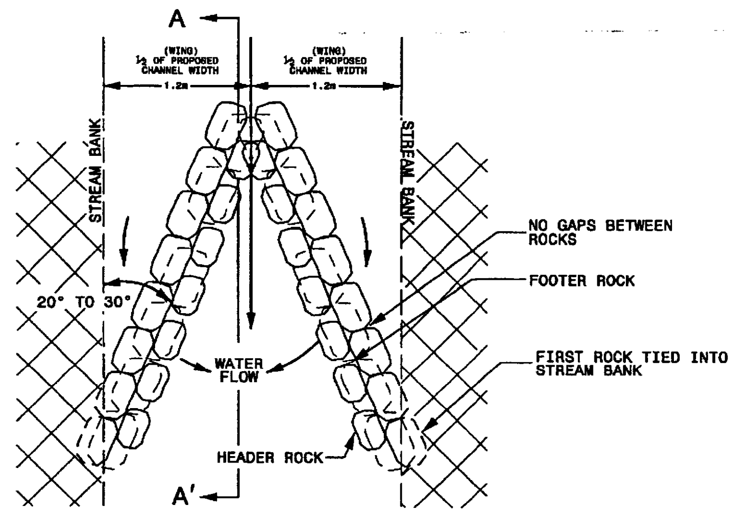
"V" CROSS VANE

SCALE: NTS

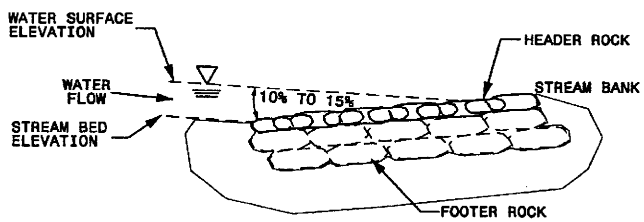


CROSS SECTION

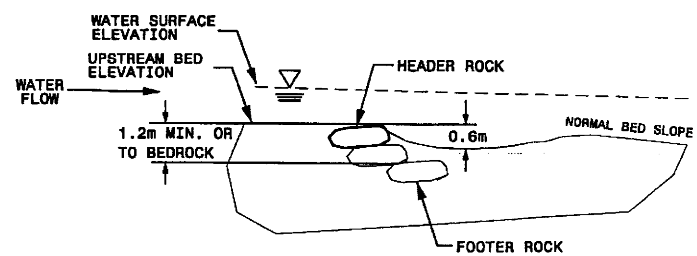


PLAN VIEW

SCALE IN METERS
5 0 10



PROFILE VIEW



SECTION A A' VIEW

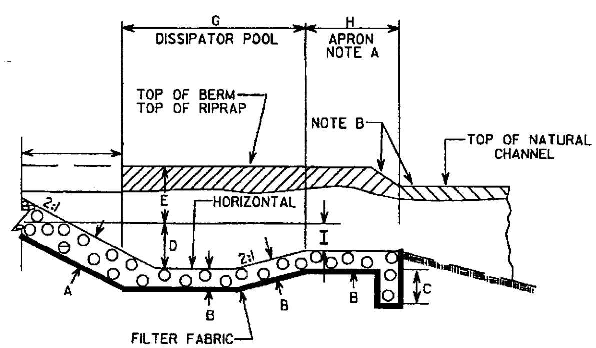
INSTALLATION OF CROSS VANE

A TRENCH SHALL BE DUG IN SUCH A MANNER THAT THE FOOTER ROCKS, THE CROSS HEADER ROCKS AND AT LEAST 1/3 OF THE WING HEADER ROCKS ARE BURIED BENEATH THE BED SURFACE ELEVATION. AN EXCAVATOR, WITH A BUCKET THAT CONTAINS A HYDRAULIC THUMB, SHALL BE USED TO PLACE ROCKS WITH THE SUPERVISION OF THE RESIDENT ENGINEER. HEADER AND FOOTER ROCKS SHALL BE NO SMALLER THAN 0.9m X 0.9m X0.6m FOOTER ROCKS SHALL BE PLACED IN THE TRENCH FIRST WITH HEADER ROCKS PLACED ON TOP PRIOR TO BACK FILLING OF THE TRENCH. IN THE CENTER, OR CROSS, PORTION OF THE CHANNEL, THE HEADER ROCKS SHALL BE PLACED SUCH THAT THE TOP OF THE HEADER ROCK IS PLACED AT AN ELEVATION EQUAL TO THE BED ELEVATION. THE HEADER ROCKS ON THE SIDE, OR WING, PORTION SHALL BE PLACED IN SUCH A MANNER AS THEY SLOPE UP FROM BED ELEVATION AT THE CROSS PORTION TO THE TOP OF THE BANK AT A 10-15% SLOPE.

NORTH CAROLINA
DIVISION OF HIGHWAYS
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

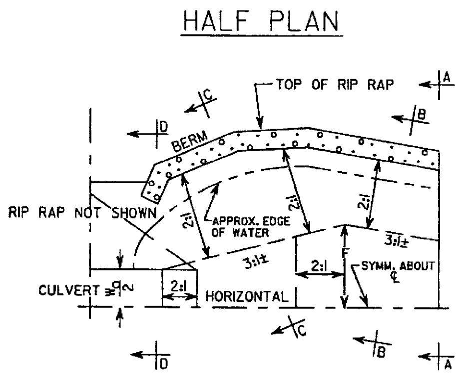
SCALE AS SHOWN

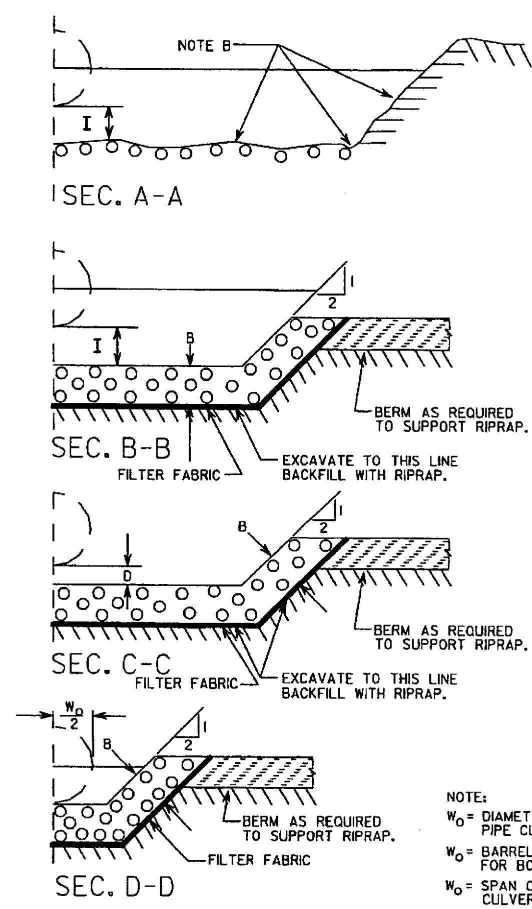
SHEET 67 OF 74



NOTE A IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q des /(CROSS SECTION AREA AT SEC. A-A) = SPECIFIED EXIT VELOCITY.

NOTE B WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.





DIM.	RIP RAP BASIN # 1	2	3	4	5	6	7	8
A	0.68							
B	0.68							
C	0							
D	1.19							
E	0.30							
F	7.95							
G	11.94							
H	5.97							
I	0.55							

ALL DIMENSIONS APPROXIMATE

BASIN #	LOCATION (AT OUTLET)
1	13+80 -RP B-
2	
3	
4	
5	
6	
7	
8	

NOTE:
W_o = DIAMETER FOR PIPE CULVERT
W_o = BARREL WIDTH FOR BOX CULVERT
W_o = SPAN OF PIPE-ARCH CULVERT

DETAIL OF RIP-RAPPED ENERGY DISSIPATOR BASIN

NORTH CAROLINA
DIVISION OF HIGHWAYS
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

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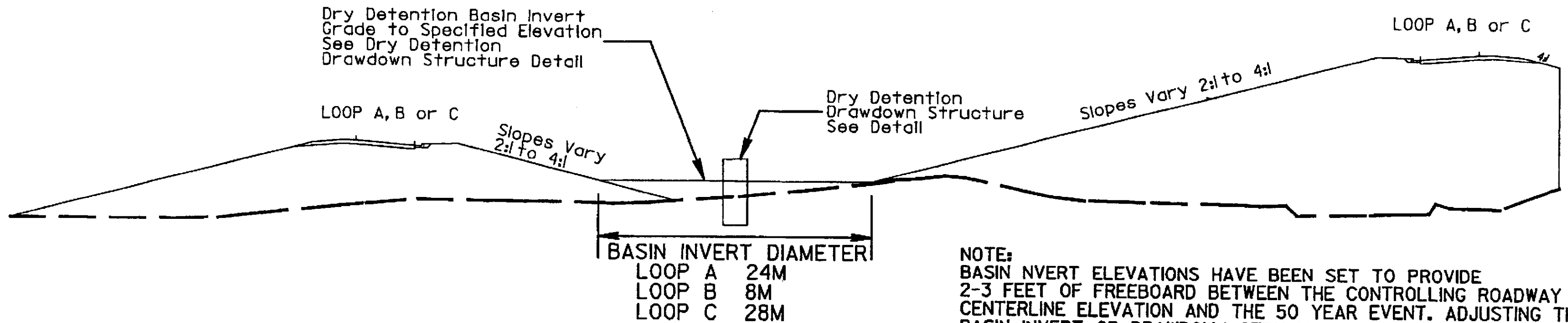
DRY DETENTION BASIN GRADING DETAIL



NOTE:
BASIN NVERT ELEVATIONS HAVE BEEN SET TO PROVIDE 2-3 FEET OF FREEBOARD BETWEEN THE CONTROLLING ROADWAY CENTERLINE ELEVATION AND THE 50 YEAR EVENT. ADJUSTING THE BASIN INVERT OR DRAWDOWN STRUCTURE ELEVATIONS HIGHER THAN INDICATED IN PLANS MAY RESULT IN STORMWATER ENCROACHING INTO THE ROADWAY.

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 66 OF 74

METRIC

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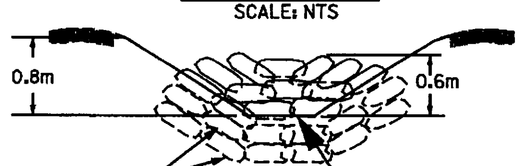
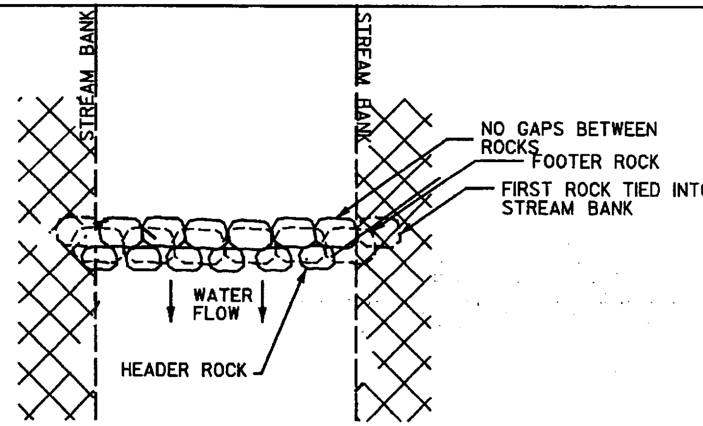
ROCK WEIR

SCALE: NTS



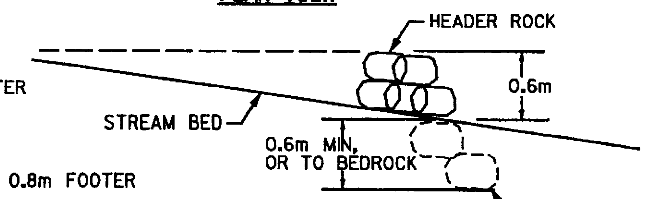
CROSS SECTION



PLAN VIEW

INSTALLATION OF ROCK WEIR

A TRENCH SHALL BE DUG IN SUCH A MANNER THAT THE FOOTER ROCKS ARE BURIED BENEATH THE BED SURFACE ELEVATION. AN EXCAVATOR, WITH A BUCKET THAT CONTAINS A HYDRAULIC THUMB, SHALL BE USED TO PLACE ROCKS WITH THE SUPERVISION OF THE RESIDENT ENGINEER. HEADER AND FOOTER ROCKS SHALL BE NO SMALLER THAN 0.5m X 0.5m' X 0.8m FOOTER ROCKS SHALL BE PLACED IN THE TRENCH FIRST WITH HEADER ROCKS PLACED ON TOP PRIOR TO BACK FILLING OF THE TRENCH.



PROFILE VIEW

NORTH CAROLINA
DIVISION OF HIGHWAYS
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 70 OF 74

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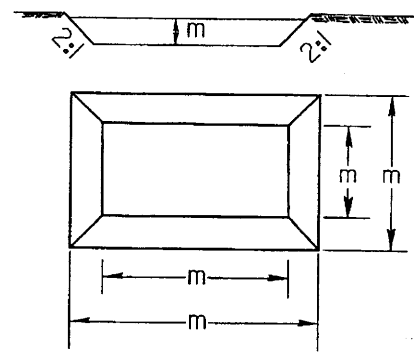
DETAIL OF EMERGENCY SPILL BASIN

TOTAL CAPACITY REQUIRED : cu. m.
TOTAL CAPACITY PROVIDED : cu. m.



Ditch to be blocked with sandbags 1.0 m deep at outlet

STATION	REQ. VOL. (Cu. m.)	DEPTH (m)	BOTTOM LENGTH (m)	BOTTOM WIDTH (m)	TOP LENGTH (m)	TOP WIDTH (m)	PROVIDED VOL (Cu. m.)
FLY 16+20 L	78	1.0	9.0	5.0	13.0	9.0	81
-L- 34+00 R	104	1.0	10.0	7.0	14.0	11.0	112
-L- 35+60 L	158	1.0	11.0	10.0	15.0	14.0	160
-L- 39+90 L	78	1.0	7.0	7.0	11.0	11.0	85
-L- 40+70 L	103	1.0	8.0	8.0	12.0	12.0	104
-L- 50+40 L	396	1.0	20.0	16.0	24.0	20.0	400
-L- 56+00 L	50	1.0	5.0	5.0	9.0	9.0	53
-L- 58+20 R	77	1.0	11.0	4.0	15.0	8.0	82
-Y5- 14+00 R	275	1.0	17.0	13.0	21.0	17.0	289
-Y5- 15+20 R	178	1.0	14.0	9.0	18.0	13.0	180
RAMPB 12+90 R	174	1.0	14.0	9.0	18.0	13.0	180
RAMPD 15+20 R	127	1.0	12.0	7.0	16.0	11.0	130

METRIC

NORTH CAROLINA
DIVISION OF HIGHWAYS
GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 7L OF 7H

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Hand Clearing in Wetlands (ha)	Permanent SW Impacts (ha)	Temporary SW Impacts (ha)	Existing Channel Impacts Permanent (m)	Existing Channel Impacted Temporary (m)	Natural Stream Design (m)
1	12+00 to 12+80 *	750mm			0.017	0.006		0.048				
2	19+30 to 20+40	1350mm						0.013	0.003	140.600	21.0	
3	23+45 to 23+60	450mm	0.011						0.003		21.0	
4	25+65 to 25+95	1350mm	0.066			0.011		0.008	0.006	124.800	50.0	
5	28+00 to 28+30	900mm						0.006	0.001	70.300	15.0	
6 (Main)	31+70 to 33+60	3@3.4m x 2.4m RCBC						0.024		294.600		288.2
6 (Trib 1)	32+00	Stream						0.025		51.200		
6 (Trib 2)	33+00	Stream						0.010		98.500		
7	35+20 to 35+50	600mm						0.004		44.600		
8	40+20 to 40+40	1050mm						0.018		180.000		
9	45+30 to 46+30 **	1 @ 3.7m x 3.7m						0.958				
10 (Trib 1)	48+85 to 50+75	Interchange						0.015		193.200		
10 (Trib 2)	51+20	Interchange						0.002		20.600		
10 (Trib 3)	50+20 to 51+60	Interchange						0.056		560.100		
10 (Trib 4)	900 mm	Interchange						0.027		137.800		
11 (Trib 1)	53+00 to 56+75	Interchange	0.081		0.013	0.014		0.042	0.003	455.600	21.0	
11 (Trib 2)	54+40 to 55+45	Interchange						0.013		133.400		
12	58+20 to 59+00	900mm	0.050			0.002		0.012		118.800		
13	10+20 R -SBCD-	900mm						0.001		1.500		
14	12+80 R -SBCD-	1050						0.001	0.002	31.900	17.0	
15	14+00 -NBCD- **	900 mm						0.108		22.800		
16	10+90 -RPD-	900mm& 1050mm						0.005	0.002	54	20.0	
17	12+20 -Y5-	Roadway Fill	0.005									
TOTALS:			0.212	0.000	0.013	0.028		1.397	0.020	2734.300	165.0	288.2

* Excavation in Pond (0.048 ha)
** Fill in Surface Water (Pond): Site 9 = 0.958 ha; Site 15 = 0.105 ha

Form Revised 3/22/01

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 34345.1.1 (R-609IA)
Jan-06
SHEET 72 OF 74

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 (Method III) (Ac)	Hand Clearing in Wetlands (Ac)	Permanent SW impacts (Ac)	Temp. SW impacts (Ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temporary (ft)	Natural Stream Design (ft)
1	12+00 to 12+80 *	750mm			0.04	0.01		0.12		0		
2	19+30 to 20+40	1350mm						0.03	0.01	461	69	
3	23+45 to 23+60	450mm	0.03						0.01	0	69	
4	25+65 to 25+95	1350mm	0.16			0.03		0.02	0.01	409	164	
5	28+00 to 28+30	900mm						0.01	0.00	231	49	
6 (Main)	31+70 to 33+60	3@3.4m x 2.4m RCBC						0.06		967	0	946
6 (Trib 1)	32+00	Stream						0.06		168	0	
6 (Trib 2)	33+00	Stream						0.02		323	0	
7	35+20 to 35+50	600mm						0.01		146	0	
8	40+20 to 40+40	1050mm						0.04		591	0	
9	45+30 to 46+30 **	1 @ 3.7m x 3.7m						2.37		0		
10 (Trib 1)	48+85 to 50+75	Interchange						0.04		634	0	
10 (Trib 2)	51+20	Interchange						0.00		68	0	
10 (Trib 3)	50+20 to 51+60	Interchange						0.14		1838	0	
10 (Trib 4)	50+70 to 51+90	Interchange						0.07		452	0	
11 (Trib 1)	53+00 to 56+75	Interchange	0.20		0.030	0.04		0.10	0.01	1495	69	
11 (Trib 2)	54+40 to 55+45	Interchange						0.03		438	0	
12	58+20 to 59+00	900mm	0.12					0.03		390	0	
13	10+20 R -SBCD-	900mm						0.00		5	0	
14	12+80 R -SBCD-	1050						0.00	0.00	105	56	
15	14+00 -NBCD- **	900 mm						0.27		75	0	
16	10+90 -RPD-	900mm& 1050mm						0.01	0.00	177	66	
17	12+20 -Y5-	Roadway Fill	0.012					0.00		0	0	
TOTALS:			0.52	0.00	0.03	0.07		3.43	0.04	8971	541	946

* Excavation in Pond (0.12 ac)
** Fill in Surface Water (Pond): Site 9 = 2.37 ac; Site 15 = 0.026 ac)

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 34345.1.1 (R-609IA)

Jan-06
SHEET 73 OF 74

Form Revised 3/22/01

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
1	M.C. DEVELOPMENT COMPANY	P.O. BOX 506 HIGH POINT,NC 27263	1
2	ALLEN J. BODENHEIMER	400 FORESTDALE DR JAMESTOWN,NC 27282	1
3	BEVERLY B. CAUDLE	1308 COX AVE HIGH POINT,NC 27263	2
4	NCDOT	P.O. BOX 14996 GREENSBORO,NC 27145	3,4,5,8,12
5	CLIFFORD L. HILL	RT. 4 BOX 345 HIGH POINT,NC 27263	6
6	VIRGINIA HUBBARD	1566 KERSEY VALLEY RD HIGH POINT,NC 27263	6
7	MARJORIE SURRETT	6802 DRESDEN RD HIGH POINT,NC 27263	7
8	FRANK MARTINEZ	1539 KERSEY VALLEY RD HIGH POINT,NC 27263	9
9	BOBBY L. CECIL	1119 LIBERTY RD ARCGDALE,NC 27263	10
10	GLENN P. MORGAN	6027 CHECKER RD HIGH POINT,NC 27263	11
11	LILLIE L. CRUTHIS	6027 CHECKER RD HIGH POINT,NC 27263	11
12	LAWRENCE E. MODLIN	6132 CHECKER RD HIGH POINT,NC 27263	11 & 16
13	ROBERT WARD	3001 ALAMANCE RD GEENSBORO,NC 27407	1
14	WALTER DANIEL	1620 EASTCHESTER DR HIGH POINT,NC 27263	2
15	THOMAS RAGSDALE	P.O. BOX 757 JAMESTOWN,NC 27282	5
16	CHARLES BOYD	1553 KERSEY VALLEY RD HIGH POINT,NC 27263	8
17	MR. FOSTER	6861 DRESDEN RD HIGH POINT,NC 27263	10
18	W. GERALD LEONARD	6801 JOPLIN RD HIGH POINT,NC 27263	15
19	ROBERT L. SLATE		16

METRIC

SCALE IN METERS

NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY
8.1570601 (R-0609IA)
US 311 HIGH POINT EAST BELTWAY FROM US 29-70
TO NORTH OF NC 62 NORTH OF ARCHDALE

SCALE AS SHOWN

SHEET 74 OF 74

8/12/2005
12:26:19 PM
R:\dgn\Roadway\proj\PERMITS\Wetland_Permits\r0609wet_prop.sum

TIP: R-0609IB

CONTRACT: C201225

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD - RANDOLPH

LOCATION: US 311 HIGH POINT EAST BELT FROM I-85 TO SOUTH OF SR 1920 (TUTTLE RD) NORTH OF ARCHDALE

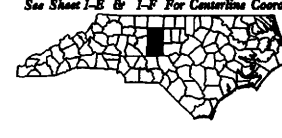
TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING, AND STRUCTURES

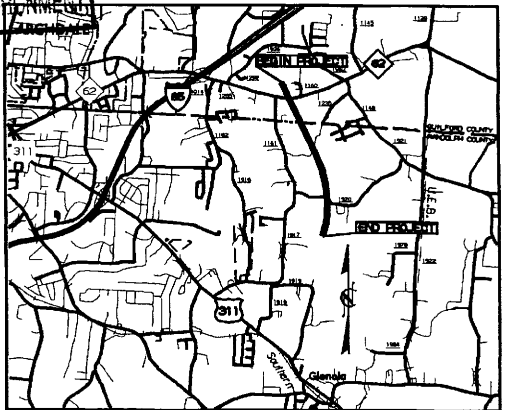
METRIC
ALL DIMENSIONS IN THESE PLANS ARE IN METERS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-0609IB	1	

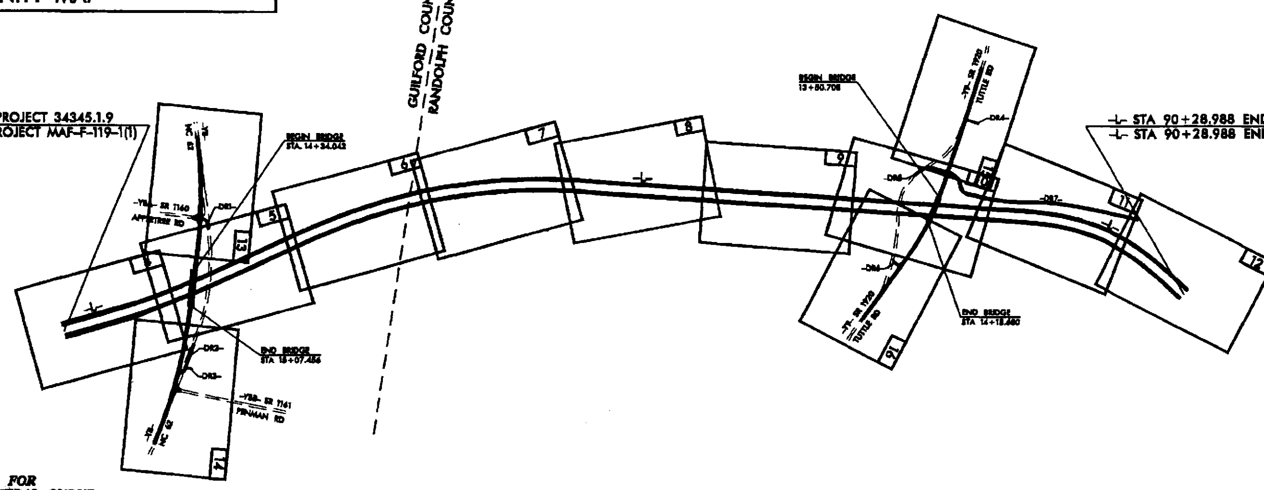
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34345.1.1	MAF-F-119-(1)	PE
34345.2.8	NHF-119-1(12)	R/W, UTIL.

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols
See Sheet 1-C & 1-D For Survey Control Sheets
See Sheet 1-E & 1-F For Centerline Coordinate List





VICINITY MAP



DESIGN EXCEPTION REQUIRED FOR BRIDGE WIDTH AND SAG VERTICAL CURVE ON SR 1920 TUTTLE ROAD (-Y9-)

THIS IS A CONTROLLED ACCESS PROJECT

GRAPHIC SCALES
PLANS
PROFILE (HORIZONTAL)
PROFILE (VERTICAL)

DESIGN DATA
ADT 2000 = 18,000
ADT 2025 = 29,000
DHV = 10 %
D = 60 %
T = 13 % *
V = 110 km/h
* TTST 7% DUAL 6%
FUNC CLASS - FREEWAY

PROJECT LENGTH

LENGTH ROADWAY PROJECT R-0609IB = 2.970 Km

TOTAL LENGTH ROADWAY PROJECT R-0609IB = 2.970 Km

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 30, 2003

LETTING DATE: MAY 16, 2005

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

STEVE KENDALL
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

09-FEB-2006

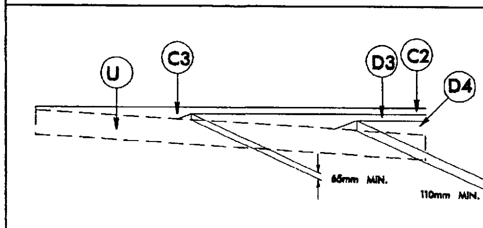
PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

METRIC

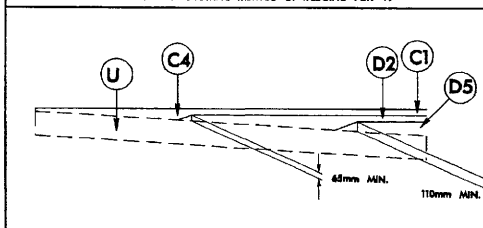
PAVEMENT SCHEDULE

C1	PROP. APPROX. 50 mm ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 117.5 kg PER SQ. METER.	E2	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 mm IN DEPTH.
C2	PROP. APPROX. 80 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 96 kg PER SQ. METER IN EACH OF TWO LAYERS.	J1	PROP. 250 mm AGGREGATE BASE COURSE.
C3	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 2.4 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 40 mm IN DEPTH OR GREATER THAN 50 mm IN DEPTH.	J2	PROP. 200 mm AGGREGATE BASE COURSE.
C4	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 2.4 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 40 mm IN DEPTH OR GREATER THAN 50 mm IN DEPTH.	J3	PROP. 150 mm AGGREGATE BASE COURSE.
D1	PROP. APPROX. 70 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 171.5 kg PER SQ. METER.	K	CEMENT STABILIZATION; 60% OF PROJECT; 30 kg/sm @ 180mm DEPTH. ALSO, 135 kg/sm OF ABC FOR 5% OF CEMENT AREA. LIME STABILIZATION (method-slurry): 40% OF PROJECT; 11kg/sm @ 200mm DEPTH.
D2	PROP. APPROX. 70 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 171.5 kg PER SQ. METER.	P	PRIME COAT; 1.58 LITERS PER SQUARE METER
D3	PROP. APPROX. 110 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 249.5 kg PER SQ. METER.	T	EARTH MATERIAL.
D4	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 65 mm OR GREATER THAN 110 mm IN DEPTH.	U	EXISTING PAVEMENT.
D5	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 65 mm OR GREATER THAN 110 mm IN DEPTH.	V	RUMBLE STRIPS
E1	PROP. APPROX. 80 mm ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 196 kg PER SQ. METER.	W	WEDGING

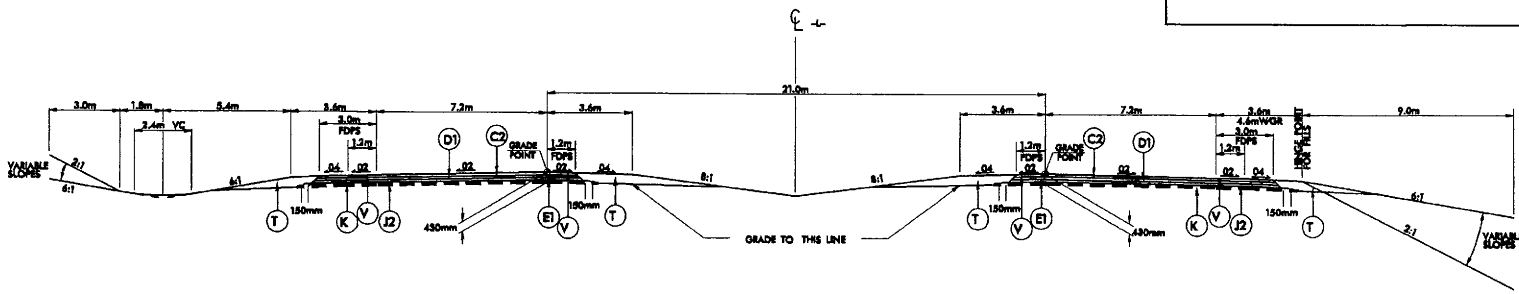
DETAIL FOR SHOWING METHOD OF WEDGING FOR -Y8-



DETAIL FOR SHOWING METHOD OF WEDGING FOR -Y9-



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



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA 60+59.109 TO 90+28.988

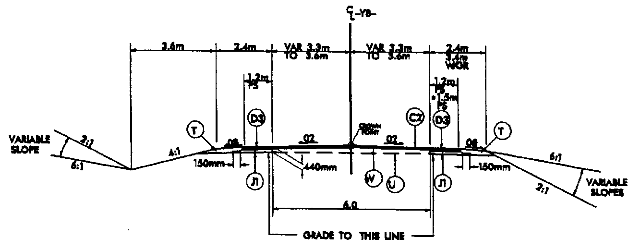
PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2-A

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

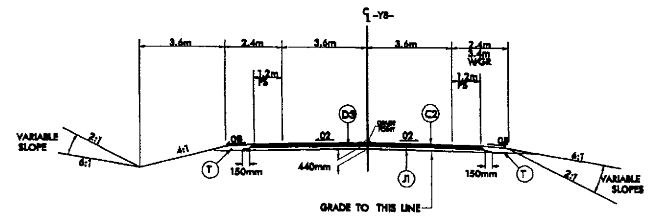
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER

PAVEMENT SCHEDULE	
C1	50 mm SP9.5A
C2	80 mm S9.5C
D2	70 mm I19.0B
D3	110 mm I19.0C
J1	250 mm ABC
J2	200 mm ABC
J3	150 mm ABC
P	PRIME COAT
W	WEDGING
U	EXIST PAVEMENT
T	EARTH MATERIAL



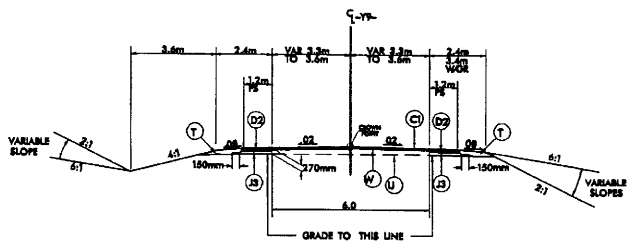
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
-Y8- STA 10+84.660 TO STA 11+99.545 (WIDENING & RESURFACING)
-Y8- STA 17+04.269 TO STA 18+82.197 (WIDENING & RESURFACING)
* -Y8- STA 17+00 TO STA 17+18 (RT.)



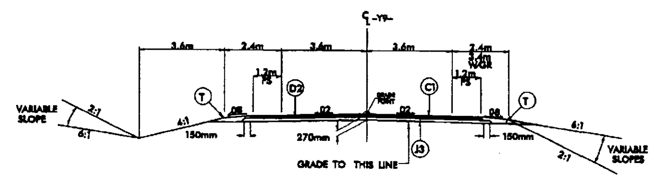
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
-Y8- STA 11+99.545 TO 14+34.042 (BEG BRIDGE)
-Y8- STA 15+07.456 (END BRIDGE) TO 17+04.269



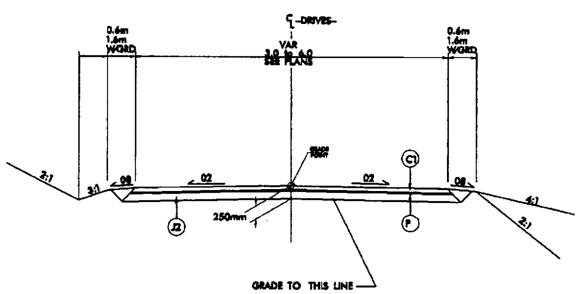
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:
-Y9- STA 10+00 TO 10+62.134 (RESURFACING&WIDENING)
-Y9- STA 16+48.008 TO 17+20 (RESURFACING & WIDENING)



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS:
-Y9- STA 10+62.134 TO 13+50.708 (BEG BRIDGE)
-Y9- STA 14+18.680 (END BRIDGE) TO 16+48.008

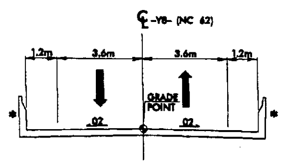


TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS:
DRIVE -DR1- STA 10+03.620 TO 10+40
DRIVE -DR2- STA 10+03.400 TO 10+90
DRIVE -DR3- STA 10+02.400 TO 10+17.035
DRIVE -DR4- STA 10+03.300 TO 10+35
DRIVE -DR5- STA 10+03.600 TO 10+90
DRIVE -DR6- STA 10+03.600 TO 10+23.187
DRIVE -DR7- STA 10+03.600 TO 15+23.485

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

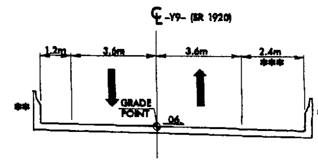
METRIC



TYPICAL SECTION ON STRUCTURE

*BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN

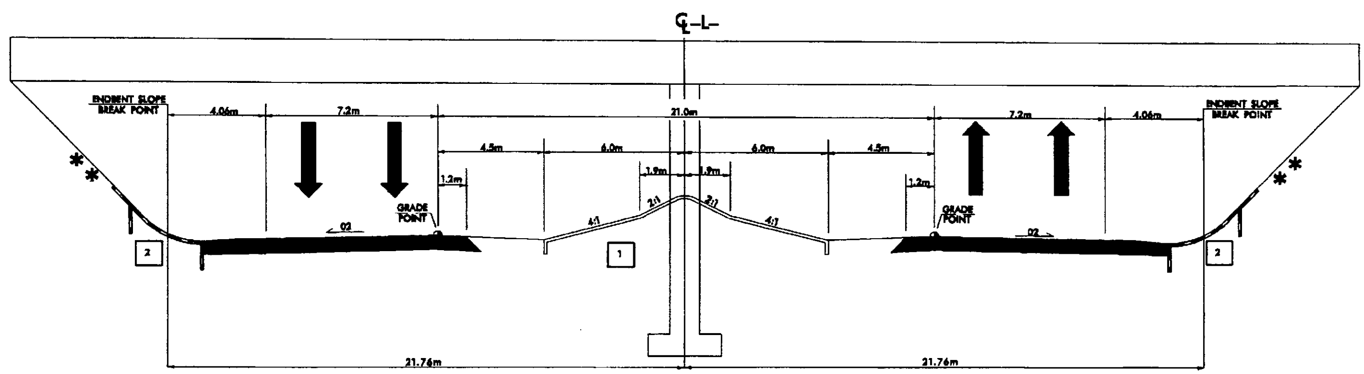
DESIGN DATA -YB-
ADT 2000 = 10,600
ADT 2025 = 20,000
D = 60%
DHV = 10%
TTST = 3%
DUAL = 2%
V = 100 km/h
FUNC CLASS-COLLECTOR



TYPICAL SECTION ON STRUCTURE

**BICYCLE SAFE RAIL REQUIRED
***WIDEN FOR STOPPING SIGHT DISTANCE

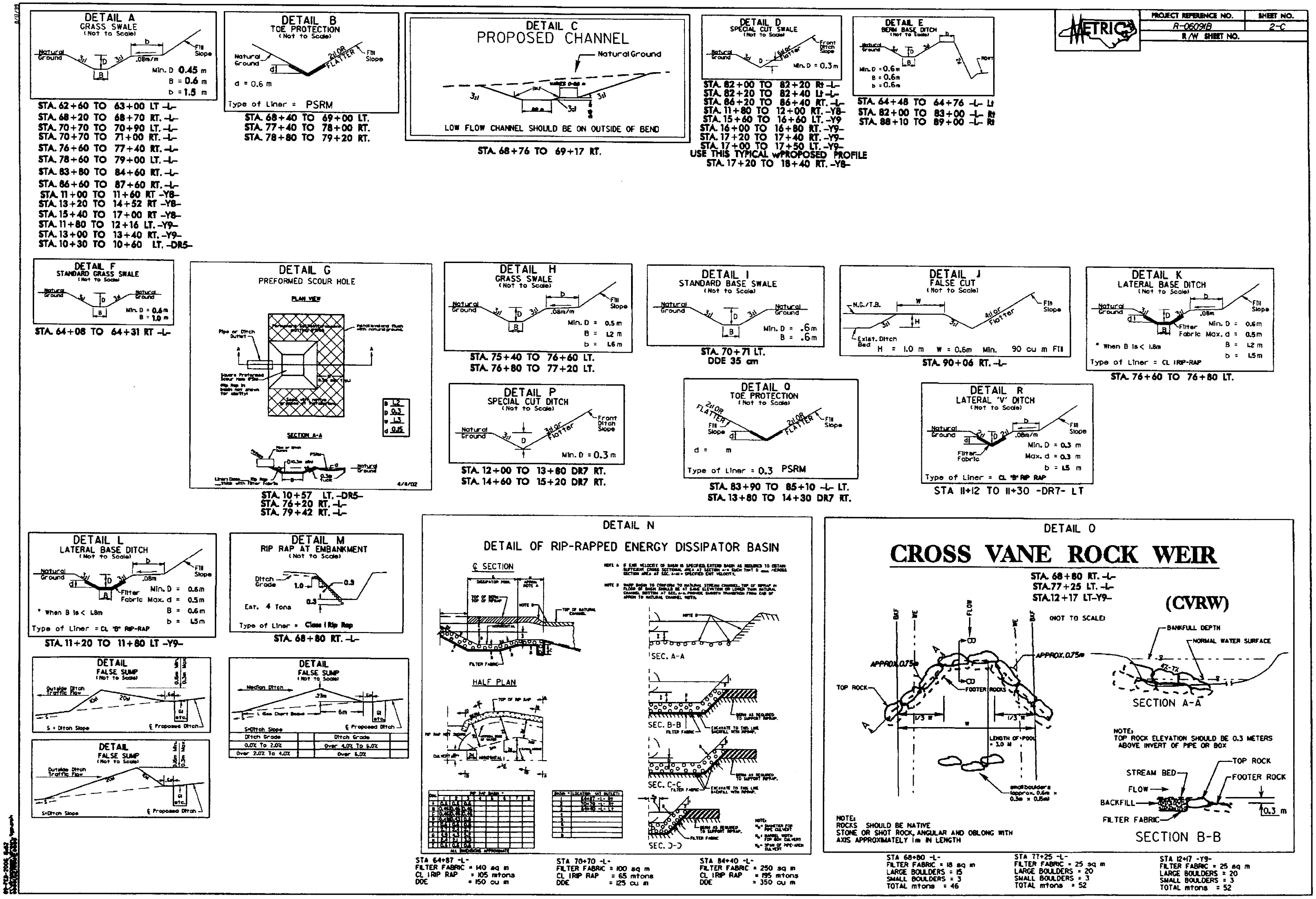
DESIGN DATA -Y9-
ADT 2000 = 1,000
ADT 2025 = 2,700
D = 60%
DHV = 10%
TTST = 3%
DUAL = 2%
V = 100 km/h
FUNC CLASS-LOCAL



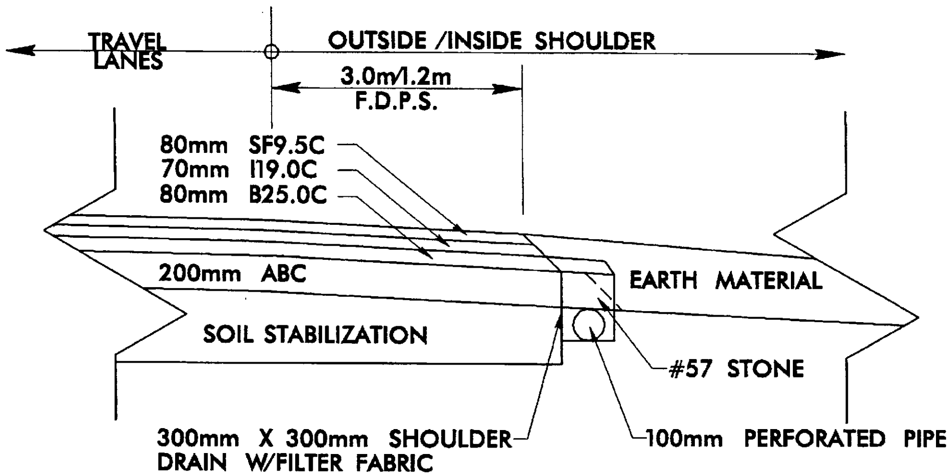
DETAIL OF TYPICAL SECTION UNDER STRUCTURE

MINIMUM VERTICAL CLEARANCE = 5.2m
**SLOPES DETERMINED BY SOILS AND FOUNDATIONS UNIT

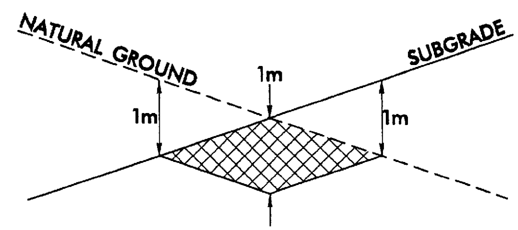
1	SEE STD. 225.08
2	SEE STD. 610.03


PROJECT REFERENCE NO. R-0609IB
SHEET NO. 2-C
R/W SHEET NO.
METRIC
DETAIL A
GRASS SWALE
(Not to Scale)
Natural Ground
Fill Slope
Min. D 0.45 m
B = 0.6 m
b = 1.5 m
STA. 62+60 TO 63+00 LT -L-
STA. 68+20 TO 68+70 RT. -L-
STA. 70+70 TO 70+90 LT. -L-
STA. 70+70 TO 71+00 RT. -L-
STA. 76+60 TO 77+40 RT. -L-
STA. 78+60 TO 79+00 LT. -L-
STA. 83+80 TO 84+60 RT. -L-
STA. 86+60 TO 87+60 RT. -L-
STA. 11+00 TO 11+60 RT -Y8-
STA. 13+20 TO 14+52 RT -Y8-
STA. 15+40 TO 17+00 RT -Y8-
STA. 11+80 TO 12+16 LT. -Y9-
STA. 13+00 TO 13+40 RT. -Y9-
STA. 10+30 TO 10+60 LT. -DR5-
DETAIL B
TOE PROTECTION
(Not to Scale)
Natural Ground
2:1 OR FLATTER
Fill Slope
d = 0.6 m
Type of Liner = PSRM
STA. 68+40 TO 69+00 LT.
STA. 77+40 TO 78+00 RT.
STA. 78+80 TO 79+20 RT.
DETAIL C
PROPOSED CHANNEL
Natural Ground
LOW FLOW CHANNEL SHOULD BE ON OUTSIDE OF BEND
STA. 68+76 TO 69+17 RT.
DETAIL D
SPECIAL CUT SWALE
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D = 0.3 m
STA. 82+00 TO 82+20 Rt -L-
STA. 82+20 TO 82+40 Lt -L-
STA. 86+20 TO 86+40 RT. -L-
STA. 11+80 TO 12+00 RT. -Y8-
STA. 15+60 TO 16+60 LT. -Y9
STA. 16+00 TO 16+80 RT. -Y9-
STA. 17+20 TO 17+40 RT. -Y9-
STA. 17+00 TO 17+50 LT. -Y9-
USE THIS TYPICAL w/PROPOSED PROFILE
STA. 17+20 TO 18+40 RT. -Y8-
DETAIL E
BERM BASE DITCH
(Not to Scale)
Min. D = 0.6 m
B = 0.6 m
b = 0.6 m
STA. 64+48 TO 64+76 -L- Lt
STA. 82+00 TO 83+00 -L- Rt
STA. 88+10 TO 89+00 -L- Rt
DETAIL F
STANDARD GRASS SWALE
(Not to Scale)
Natural Ground
Min. D = 0.6 m
B = 1.0 m
STA. 64+08 TO 64+31 RT -L-
DETAIL G
PREFORMED SCOUR HOLE
PLAN VIEW
SECTION A-A
4/4/02
STA. 10+57 LT. -DR5-
STA. 76+20 RT. -L-
STA. 79+42 RT. -L-
DETAIL H
GRASS SWALE
(Not to Scale)
Natural Ground
Fill Slope
Min. D = 0.5 m
B = 1.2 m
b = 1.6 m
STA. 75+40 TO 76+60 LT.
STA. 76+80 TO 77+20 LT.
DETAIL I
STANDARD BASE SWALE
(Not to Scale)
Natural Ground
Min. D = .6 m
B = .6 m
STA. 70+71 LT.
DDE 35 cm
DETAIL J
FALSE CUT
(Not to Scale)
N.C./T.B.
Exist. Ditch Bed
4:1 or Flatter
Fill Slope
H = 1.0 m W = 0.6 m Min. 90 cu m Fill
STA. 90+06 RT. -L-
DETAIL K
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Filter Fabric
Min. D = 0.6 m
Max. d = 0.5 m
B = 1.2 m
b = 1.5 m
* When B is < 1.8 m
Type of Liner = CL I RIP-RAP
STA. 76+60 TO 76+80 LT.
DETAIL P
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1 or Flatter
Front Ditch Slope
Min. D = 0.3 m
STA. 12+00 TO 13+80 DR7 RT.
STA. 14+60 TO 15+20 DR7 RT.
DETAIL O
TOE PROTECTION
(Not to Scale)
2:1 OR FLATTER
Fill Slope
d = m
Type of Liner = 0.3 PSRM
STA. 83+90 TO 85+10 -L- LT.
STA. 13+80 TO 14+30 DR7 RT.
DETAIL R
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Filter Fabric
Fill Slope
Min. D = 0.3 m
Max. d = 0.3 m
b = 1.5 m
Type of Liner = CL "B" RIP RAP
STA 11+12 TO 11+30 -DR7- LT
DETAIL L
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Filter Fabric
Min. D = 0.6 m
Max. d = 0.5 m
B = 0.6 m
b = 1.5 m
* When B is < 1.8 m
Type of Liner = CL "B" RIP-RAP
STA. 11+20 TO 11+80 LT -Y9-
DETAIL M
RIP RAP AT EMBANKMENT
(Not to Scale)
Ditch Grade
Est. 4 Tons
Type of Liner = Class I Rip Rap
STA. 68+80 RT. -L-
DETAIL
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
S = Ditch Slope
℄ Proposed Ditch
DETAIL
FALSE SUMP
(Not to Scale)
Median Ditch
S=Ditch Slope
℄ Proposed Ditch
Ditch Grade | Ditch Grade
0.0% To 2.0% | Over 4.0% To 6.0%
Over 2.0% To 4.0% | Over 6.0%
DETAIL
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
S=Ditch Slope
℄ Proposed Ditch
DETAIL N
DETAIL OF RIP-RAPPED ENERGY DISSIPATOR BASIN
℄ SECTION
HALF PLAN
SEC. A-A
SEC. B-B
SEC. C-C
SEC. D-D
FILTER FABRIC
STA 64+87 -L-
FILTER FABRIC = 140 sq m
CL I RIP RAP = 105 mtons
DDE = 150 cu m
STA 70+70 -L-
FILTER FABRIC = 100 sq m
CL I RIP RAP = 65 mtons
DDE = 125 cu m
STA 84+40 -L-
FILTER FABRIC = 250 sq m
CL I RIP RAP = 195 mtons
DDE = 350 cu m
DETAIL O
CROSS VANE ROCK WEIR
(CVRW)
STA. 68+80 RT. -L-
STA. 77+25 LT. -L-
STA. 12+17 LT-Y9-
(NOT TO SCALE)
FLOW
APPROX. 0.75m
TOP ROCK
FOOTER ROCKS
LENGTH OF POOL = 3.0 M
small boulders (approx. 0.6m x 0.3m x 0.5m)
BANKFULL DEPTH
NORMAL WATER SURFACE
SECTION A-A
NOTE:
TOP ROCK ELEVATION SHOULD BE 0.3 METERS ABOVE INVERT OF PIPE OR BOX
STREAM BED
FLOW
BACKFILL
FILTER FABRIC
TOP ROCK
FOOTER ROCK
0.3 m
SECTION B-B
NOTE:
ROCKS SHOULD BE NATIVE STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH AXIS APPROXIMATELY 1m IN LENGTH
STA 68+80 -L-
FILTER FABRIC = 18 sq m
LARGE BOULDERS = 15
SMALL BOULDERS = 3
TOTAL mtons = 46
STA 77+25 -L-
FILTER FABRIC = 25 sq m
LARGE BOULDERS = 20
SMALL BOULDERS = 3
TOTAL mtons = 52
STA 12+17 -Y9-
FILTER FABRIC = 25 sq m
LARGE BOULDERS = 20
SMALL BOULDERS = 3
TOTAL mtons = 52

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



DETAIL OF SHOULDER DRAIN PLACEMENT
FOR MEDIAN AND OUTSIDE PAVED SHOULDERS



DETAIL OF PROPOSED UNDERCUT AT GRADE POINT

RECOMMENDED SHOULDER DRAINS:

-L- STA. 67+60 TO 73+60 (RT., OUTSIDE)
OUTLETS: 68+60, 69+50, 70+31+/- (2GI), 71+20 (2GI), 72+60 (2GI)

-L- STA. 80+20 TO 83+00 (RT., OUTSIDE)
OUTLETS: 81+20 (2GI), 82+00+/- (2GI)

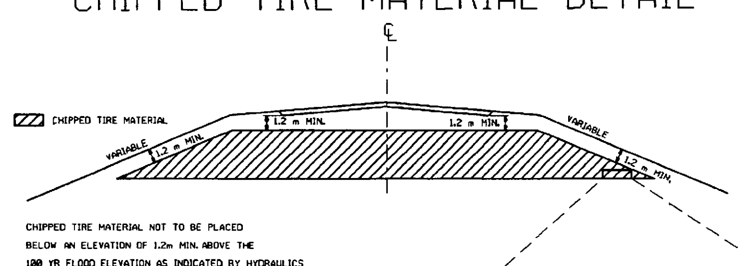
-L- STA. 85+50 TO 88+40 (RT., OUTSIDE)
OUTLETS: 86+40 (2GI), 87+40, 88+40 (2GI)

-L- STA. 69+30 TO 71+70 (LT., MEDIAN)
OUTLETS: 70+31+/- (2GI), 70+70 (2GI)

-L- STA. 80+20 TO 83+20 (LT., OUTSIDE)
OUTLETS: 81+20 (2GI), 82+20+/- (2GI)

NOTE:
STATION +/- : INDICATES VERTICAL SAG WHICH HAS TWO OUTLETS.
(EXAMPLE: -L- STA. 82+20 +/-)

CHIPPED TIRE MATERIAL DETAIL

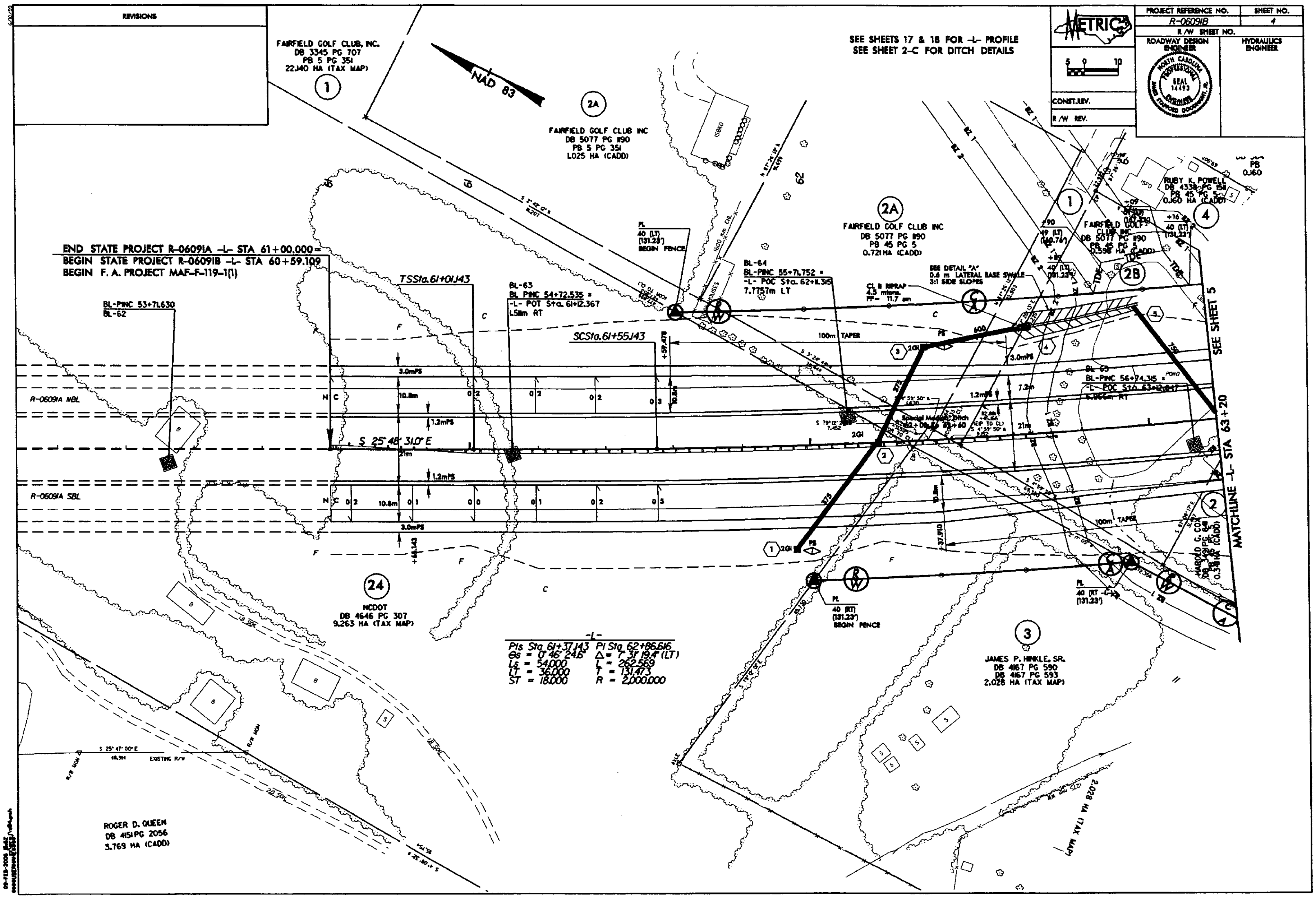


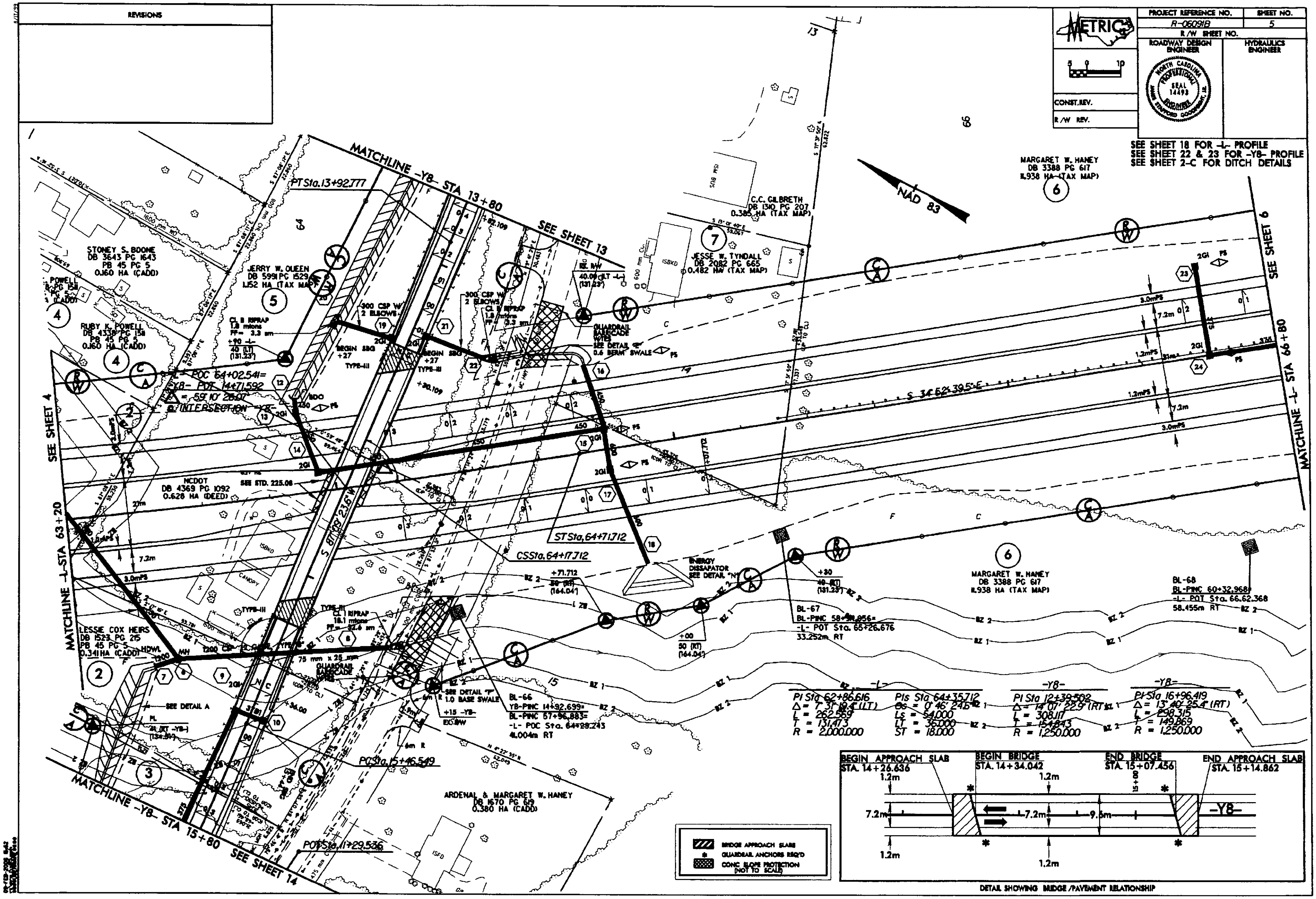
30-60% CHIPPED TIRE MATERIAL PER 250 mm LIFT
100% EMBANKMENT SOIL PER 250 mm LIFT
30-60% CHIPPED TIRE MATERIAL PER 250 mm LIFT
100% EMBANKMENT SOIL PER 250 mm LIFT

CHIPPED TIRE MATERIAL NOT TO BE PLACED
BELOW AN ELEVATION OF 1.2m MIN. ABOVE THE
100 YR FLOOD ELEVATION AS INDICATED BY HYDRAULICS

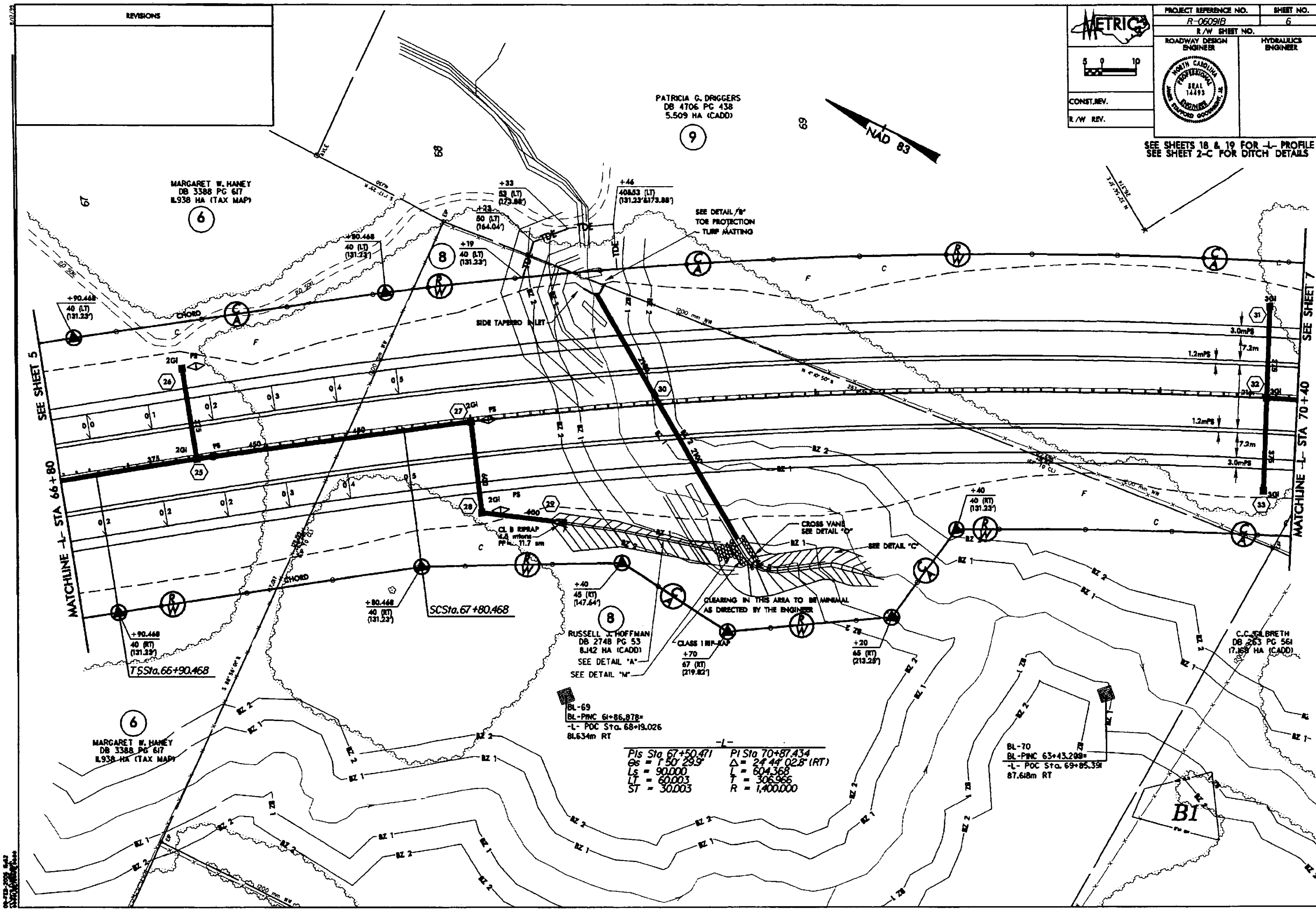
ESTIMATED CHIP TIRE MATERIAL = 72,244 m^3

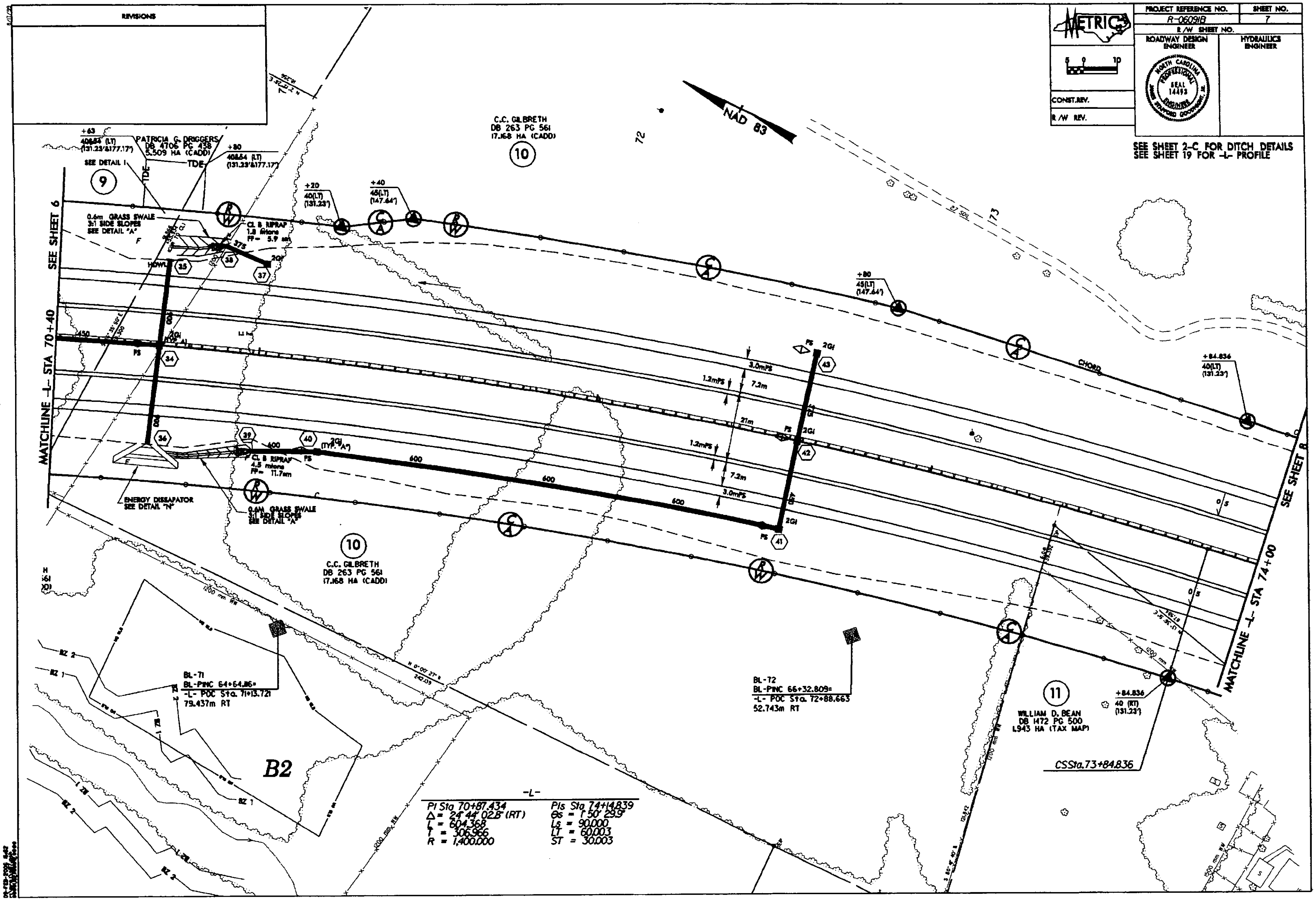
USE DETAIL AS FOLLOWS:
-Y8- 13+20 TO 14+18.802
-Y8- 15+22.282 TO 16+80
-Y9- 11+00 TO 13+35.468
-Y9- 14+33.920 TO 15+00

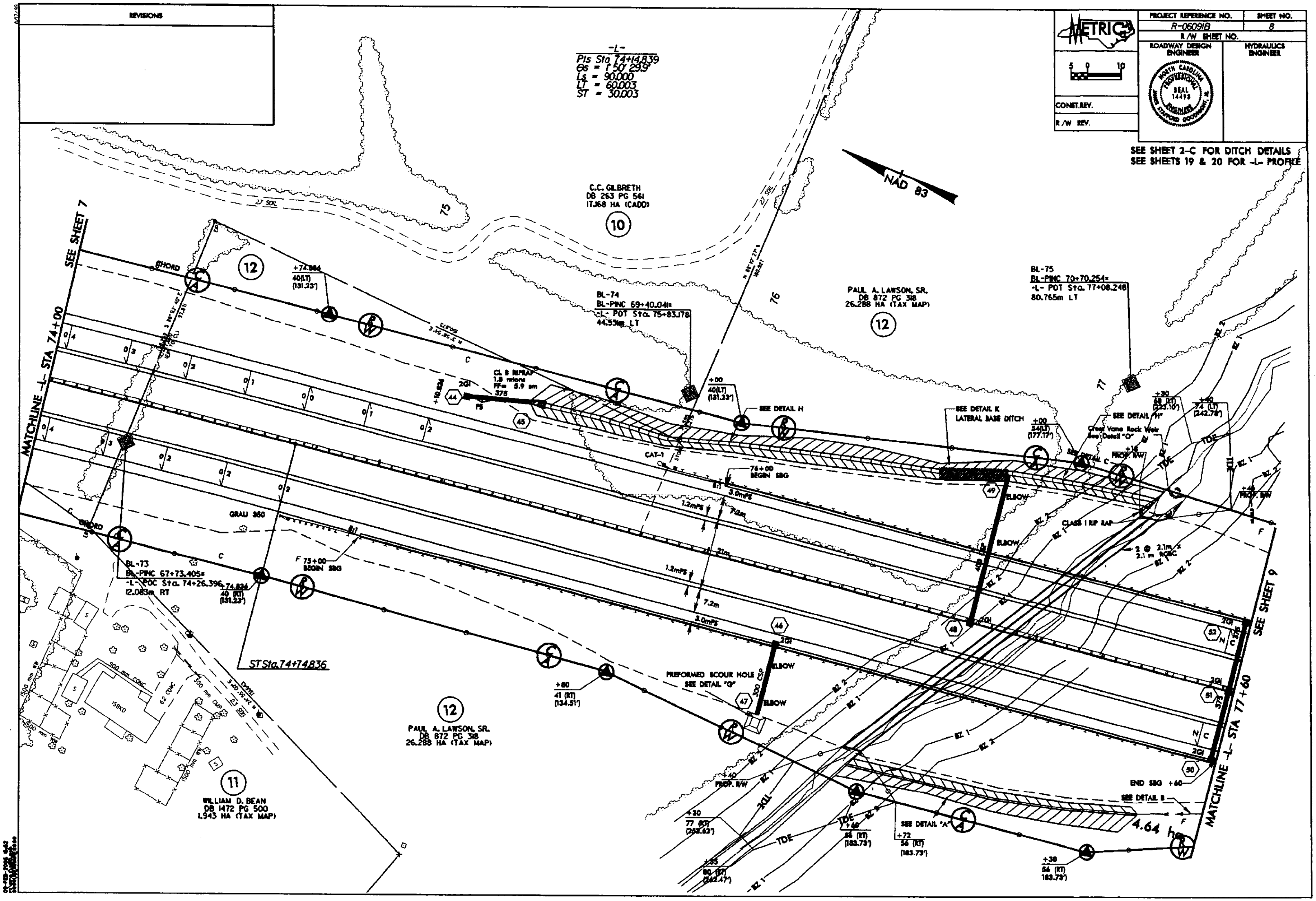

REVISIONS
PROJECT REFERENCE NO. R-0609IB
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.
METRIC
SEE SHEETS 17 & 18 FOR -L- PROFILE
SEE SHEET 2-C FOR DITCH DETAILS
NAD 83
FAIRFIELD GOLF CLUB, INC. DB 3345 PG 707 PB 5 PG 351 22.140 HA (TAX MAP)
FAIRFIELD GOLF CLUB INC DB 5077 PG 190 PB 5 PG 351 1.025 HA (CADD)
FAIRFIELD GOLF CLUB INC DB 5077 PG 190 PB 45 PG 5 0.721 HA (CADD)
RUBY K. POWELL
END STATE PROJECT R-0609IA -L- STA 61+00.000 =
BEGIN STATE PROJECT R-0609IB -L- STA 60+59.109
BEGIN F. A. PROJECT MAF-F-119-1(1)
BL-PINC 53+71.630
BL-62
TSSta.61+01.143
SCSta.61+55.143
BL-63
BL PINC 54+72.535 =
-L- POT Sta. 61+12.367
1.58m RT
BL-64
BL-PINC 55+71.752 =
-L- POC Sta. 62+11.315
7.7757m LT
BL-65
BL-PINC 56+74.315 =
SEE DETAIL "A"
0.6 m LATERAL BASE SWALE
3:1 SIDE SLOPES
CL B RIPRAP
4.5 mtons
BEGIN FENCE
R-0609IA NBL
R-0609IA SBL
S 25° 48' 31.0" E
100m TAPER
SEE SHEET 5
MATCHLINE -L- STA 63+20
NCDOT DB 4646 PG 307 9.263 HA (TAX MAP)
-L-
PIs Sta 61+37.143
θs = 0° 46' 24.6"
Ls = 54.000
LT = 36.000
ST = 18.000
PI Sta 62+86.616
Δ = 7° 31' 19.4" (LT)
L = 262.569
T = 131.473
R = 2,000.000
JAMES P. HINKLE, SR. DB 4167 PG 590 DB 4167 PG 593 2.028 HA (TAX MAP)
2.028 HA (TAX MAP)
ROGER D. QUEEN DB 4151 PG 2056 3.769 HA (CADD)
EXISTING R/W



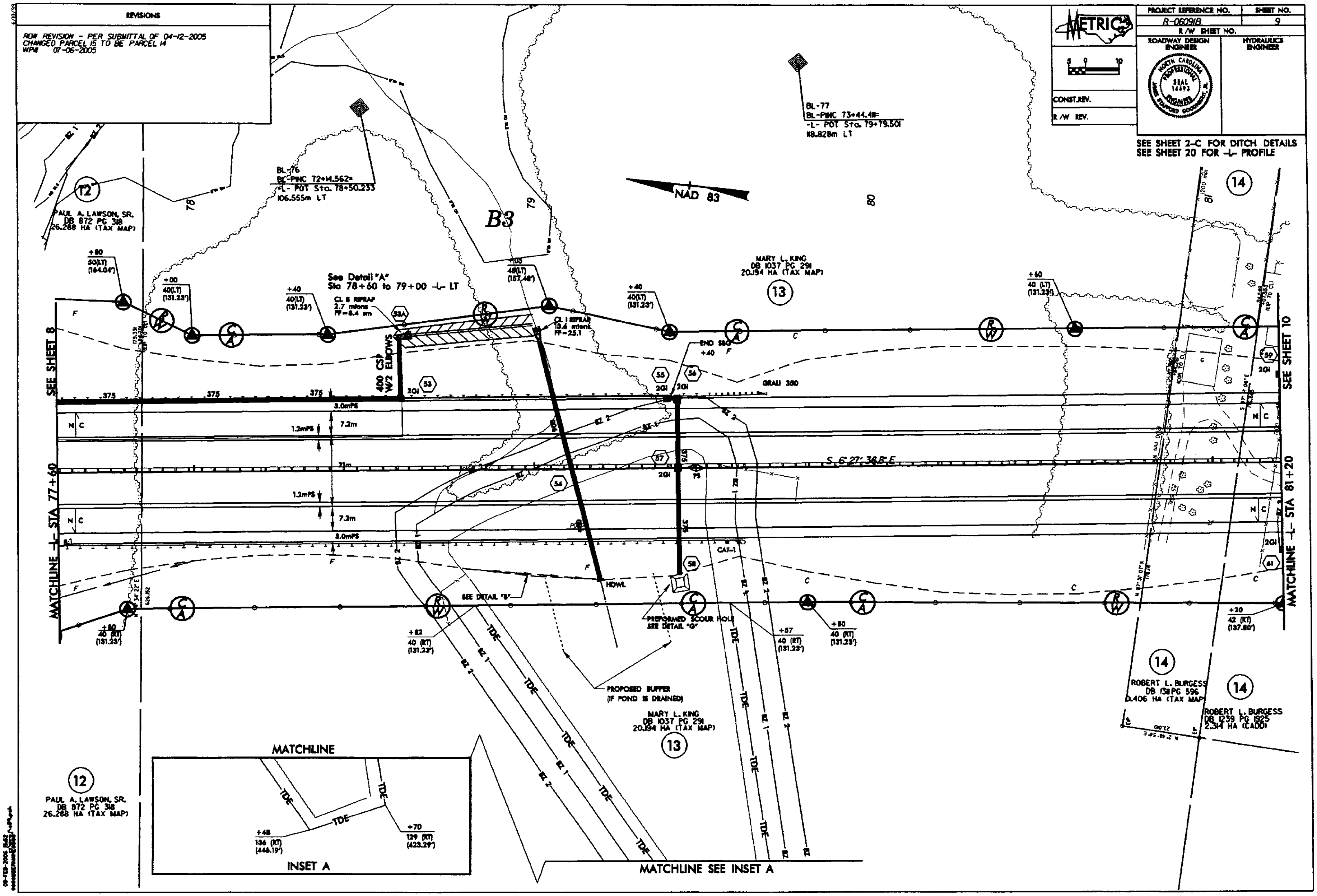
PROJECT REFERENCE NO. R-0609IB
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST. REV.
R/W REV.
REVISIONS
SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 22 & 23 FOR -Y8- PROFILE
SEE SHEET 2-C FOR DITCH DETAILS
NAD 83
MATCHLINE -Y8- STA 13+80 SEE SHEET 13
MATCHLINE -Y8- STA 15+80 SEE SHEET 14
MATCHLINE -L- STA 63+20 SEE SHEET 4
MATCHLINE -L- STA 66+80 SEE SHEET 6
MARGARET W. HANEY DB 3388 PG 617 11.938 HA (TAX MAP)
C.C. GILBRETH DB 1310 PG 207 0.385 HA (TAX MAP)
JESSE W. TYNDALL DB 2082 PG 665 0.482 HA (TAX MAP)
STONEY S. BOONE DB 3643 PG 1643 PB 45 PG 5 0.160 HA (CADD)
RUBY K. POWELL DB 4338 PG 158 PB 45 PG 5 0.160 HA (CADD)
JERRY W. QUEEN DB 5991 PG 1529 1.152 HA (TAX MAP)
NCDOT DB 4369 PG 1092 0.628 HA (DEED)
LESSIE COX HEIRS DB 1523 PG 215 PB 45 PG 5 0.341 HA (CADD)
ARDENAL & MARGARET W. HANEY DB 1670 PG 619 0.380 HA (CADD)
PT Sta. 13+92.777
POC 64+02.541= -Y8- POT 14+71.592
Δ = 59°10' 28.0" INTERSECTION
S 34°52'39.5" E
ST Sta. 64+71.712
CS Sta. 64+17.712
PC Sta. 15+46.549
POT Sta. 11+29.536
ENERGY DISSIPATOR SEE DETAIL "N"
BL-66 Y8-PINC 14+92.699= BL-PINC 57+96.883= -L- POC Sta. 64+28.243 4.004m RT
BL-67 BL-PINC 58+91.856= -L- POT Sta. 65+26.676 33.252m RT
BL-68 BL-PINC 60+32.968= -L- POT Sta. 66.62.368 58.455m RT
-L-
PI Sta 62+86.616
Δ = 7°31' 19.4" (LT)
L = 262.569
T = 131.473
R = 2,000.000
PIs Sta 64+35.712
θs = 0°46' 24.6"
Ls = 54.000
LT = 36.000
ST = 18.000
-Y8-
PI Sta 12+39.502
Δ = 14°07' 22.9" (RT)
L = 308.117
T = 154.843
R = 1,250.000
-Y8-
PI Sta 16+96.419
Δ = 13°40' 25.4" (RT)
L = 298.315
T = 149.869
R = 1,250.000
BEGIN APPROACH SLAB STA. 14+26.636
BEGIN BRIDGE STA. 14+34.042
END BRIDGE STA. 15+07.456
END APPROACH SLAB STA. 15+14.862
DETAIL SHOWING BRIDGE/PAVEMENT RELATIONSHIP
BRIDGE APPROACH SLAB
GUARDRAIL ANCHORS REQ'D
CONC SLOPE PROTECTION (NOT TO SCALE)

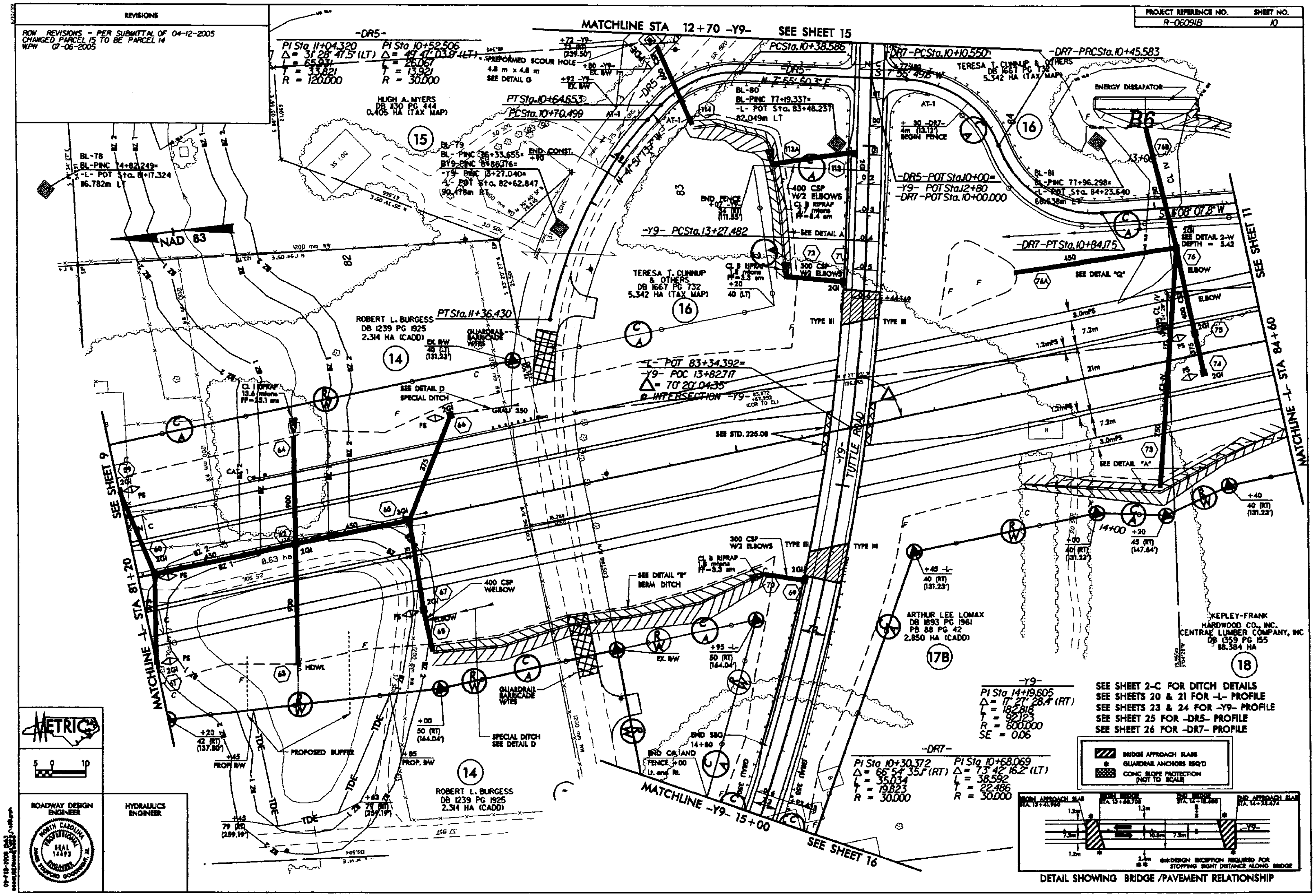

REVISIONS
METRIC
PROJECT REFERENCE NO. R-0609IB
SHEET NO. 6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.
SEE SHEETS 18 & 19 FOR -L- PROFILE
SEE SHEET 2-C FOR DITCH DETAILS
NAD 83
PATRICIA G. DRIGGERS
DB 4706 PG 438
5.509 HA (CADD)
MARGARET W. HANEY
DB 3388 PG 617
11.938 HA (TAX MAP)
RUSSELL J. HOFFMAN
DB 2748 PG 53
8.142 HA (CADD)
SEE DETAIL "A"
SEE DETAIL "M"
C.C. GILBRETH
DB 263 PG 561
SEE DETAIL "B"
TOE PROTECTION
TURF MATTING
SIDE TAPERED INLET
CROSS VANE
SEE DETAIL "O"
SEE DETAIL "C"
CLEARING IN THIS AREA TO BE MINIMAL
AS DIRECTED BY THE ENGINEER
CL B RIPRAP
CLASS 1 RIP-RAP
SEE SHEET 5
SEE SHEET 7
MATCHLINE -L- STA 66+80
MATCHLINE -L- STA 70+40
TSSta.66+90.468
SCSta.67+80.468
BL-69
BL-PINC 61+86.878=
-L- POC Sta. 68+19.026
81.634m RT
BL-70
BL-PINC 63+43.209=
-L- POC Sta. 69+85.391
87.618m RT
-L-
PIs Sta 67+50.471
θs = 1° 50' 29.3"
Ls = 90.000
LT = 60.003
ST = 30.003
PI Sta 70+87.434
Δ = 24° 44' 02.8" (RT)
L = 604.368
T = 306.966
R = 1,400.000
B1

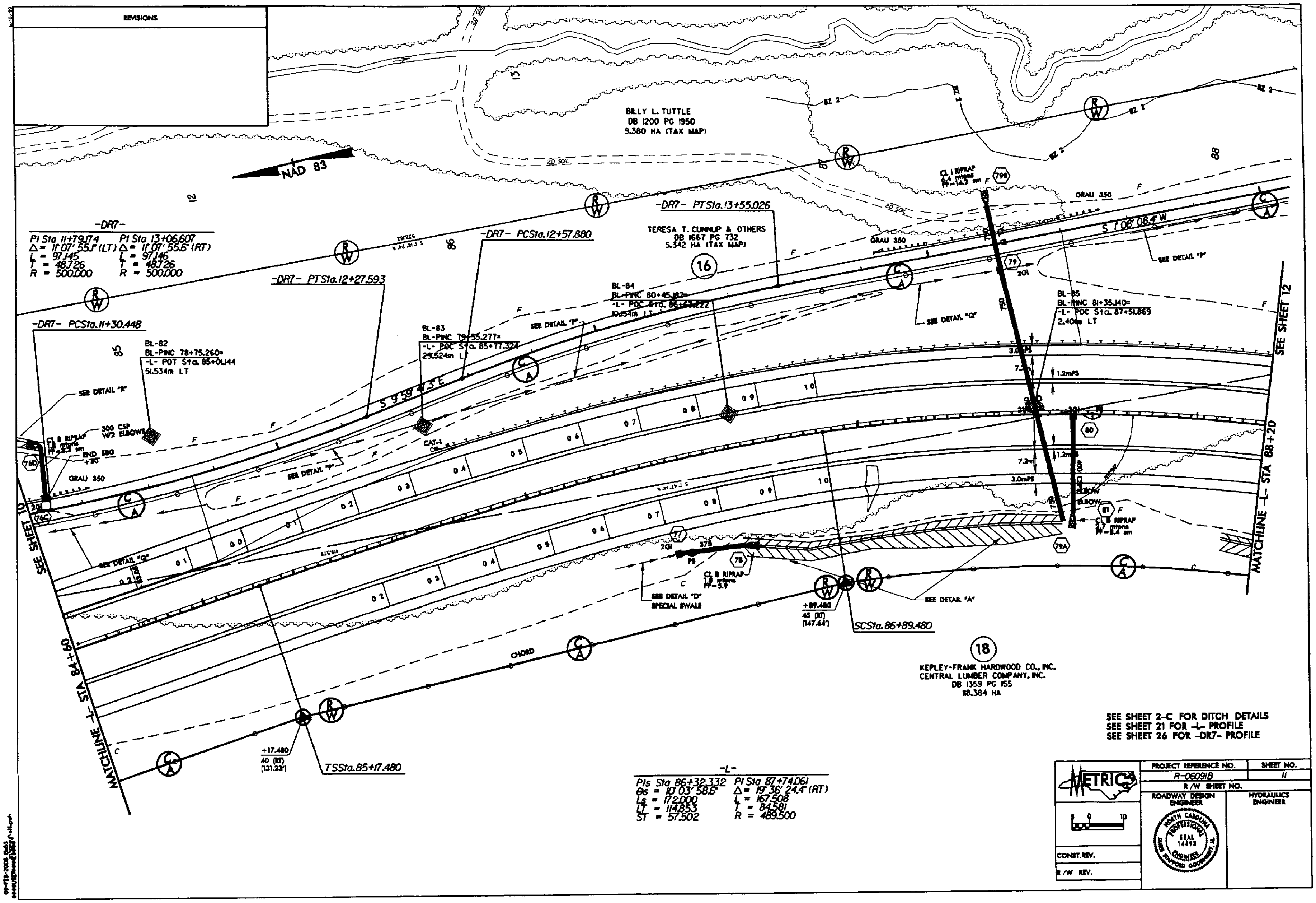

PROJECT REFERENCE NO.
R-0609IB
SHEET NO.
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST.REV.
R/W REV.
REVISIONS
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 19 FOR -L- PROFILE
NAD 83
C.C. GILBRETH
DB 263 PG 561
17.168 HA (CADD)
PATRICIA G. DRIGGERS
DB 4706 PG 438
5.509 HA (CADD)
SEE DETAIL 1
0.6m GRASS SWALE
3:1 SIDE SLOPES
SEE DETAIL "A"
CL B RIPRAP
ENERGY DISSIPATOR
SEE DETAIL "N"
MATCHLINE -L- STA 70+40
SEE SHEET 6
MATCHLINE -L- STA 74+00
SEE SHEET 8
CHORD
WILLIAM D. BEAN
DB 1472 PG 500
1.943 HA (TAX MAP)
CSSta.73+84.836
BL-T1
BL-PINC 64+64.116=
-L- POC Sta. 71+13.721
79.437m RT
BL-T2
BL-PINC 66+32.809=
-L- POC Sta. 72+88.663
52.743m RT
B2
-L-
PI Sta 70+87.434
Δ = 24° 44' 02.8" (RT)
L = 604.368
T = 306.966
R = 1,400.000
PIs Sta 74+14.839
θs = 1° 50' 29.9"
Ls = 90.000
LT = 60.003
ST = 30.003



REVISIONS
PROJECT REFERENCE NO.
R-0609IB
SHEET NO.
8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 19 & 20 FOR -L- PROFILE
NAD 83
-L-
PIs Sta 74+14.839
Θs = 1° 50' 29.9"
Ls = 90.000
LT = 60.003
ST = 30.003
C.C. GILBRETH
DB 263 PG 561
17.168 HA (CADD)
PAUL A. LAWSON, SR.
DB 872 PG 318
26.288 HA (TAX MAP)
WILLIAM D. BEAN
DB 1472 PG 500
1.943 HA (TAX MAP)
BL-73
BL-PINC 67+73.405=
-L- POC Sta. 74+26.396
12.083m RT
BL-74
BL-PINC 69+40.041=
-L- POT Sta. 75+83.178
44.55m LT
BL-75
BL-PINC 70+70.254=
-L- POT Sta. 77+08.248
80.765m LT
ST Sta. 74+74.836
MATCHLINE -L- STA 74+00
SEE SHEET 7
MATCHLINE -L- STA 77+60
SEE SHEET 9
SEE DETAIL K
LATERAL BASE DITCH
PREFORMED SCOUR HOLE
SEE DETAIL "G"
CLASS I RIP RAP
END SBG +60
4.64 ha


REVISIONS
ROW REVISION - PER SUBMITTAL OF 04-12-2005
CHANGED PARCEL 15 TO BE PARCEL 14
WP# 07-06-2005
PROJECT REFERENCE NO.
R-0609IB
SHEET NO.
9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST. REV.
R/W REV.
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 20 FOR -L- PROFILE
BL-77
BL-PINC 73+44.418=
-L- POT Sta. 79+79.501
118.828m LT
BL-76
BL-PINC 72+14.562=
-L- POT Sta. 78+50.233
106.555m LT
NAD 83
B3
PAUL A. LAWSON, SR.
DB 872 PG 318
26.288 HA (TAX MAP)
MARY L. KING
DB 1037 PG 291
20.194 HA (TAX MAP)
ROBERT L. BURGESS
DB 1311 PG 596
0.406 HA (TAX MAP)
ROBERT L. BURGESS
DB 1239 PG 1925
2.314 HA (CADD)
See Detail "A"
Sta 78+60 to 79+00 -L- LT
CL. II RIPRAP
2.7 mtons
FF=8.4 sm
CL. I RIPRAP
13.6 mtons
FF=25.1
400 CSP W/2 ELBOWS
END SBG +40
GRAU 350
S 6°27'38.8" E
SEE SHEET 8
SEE SHEET 10
MATCHLINE -L- STA 77+60
MATCHLINE -L- STA 81+20
SEE DETAIL "B"
PREFORMED SCOUR HOLE
SEE DETAIL "G"
PROPOSED BUFFER
(IF POND IS DRAINED)
HDWL
MATCHLINE
INSET A
MATCHLINE SEE INSET A


PROJECT REFERENCE NO. SHEET NO.
R-0609IB 10
REVISIONS
ROW REVISIONS - PER SUBMITTAL OF 04-12-2005
CHANGED PARCEL 15 TO BE PARCEL 14
WPW 07-06-2005
MATCHLINE STA 12+70 -Y9- SEE SHEET 15
MATCHLINE -L- STA 84+60 SEE SHEET 11
MATCHLINE -L- STA 81+20 SEE SHEET 9
MATCHLINE -Y9- 15+00 SEE SHEET 16
-DR5-
PI Sta 11+04.320
Δ = 31° 28' 47.5" (LT)
L = 65.931
T = 33.821
R = 120.000
PI Sta 10+52.506
Δ = 49° 47' 03.8" (LT)
L = 26.067
T = 13.921
R = 30.000
HUGH A. MYERS
DB 830 PG 444
0.405 HA (TAX MAP)
TERESA T. CUNNUP & OTHERS
DB 1667 PG 732
5.342 HA (TAX MAP)
ROBERT L. BURGESS
DB 1239 PG 1925
2.314 HA (CADD)
ARTHUR LEE LOMAX
DB 1893 PG 1961
PB 88 PG 42
2.850 HA (CADD)
KEPLEY-FRANK HARDWOOD CO., INC.
CENTRAL LUMBER COMPANY, INC
DB 1359 PG 155
88.384 HA
-L- POT 83+34.392=
-Y9- POC 13+82.717
Δ = 70° 20' 04.35"
INTERSECTION
TUTTLE ROAD
NAD 83
-Y9-
PI Sta 14+19.605
Δ = 17° 27' 28.4" (RT)
L = 182.818
T = 92.123
R = 600.000
SE = 0.06
-DR7-
PI Sta 10+30.372
Δ = 66° 54' 35.5" (RT)
L = 35.034
T = 19.823
R = 30.000
PI Sta 10+68.069
Δ = 73° 42' 16.2" (LT)
L = 38.592
T = 22.486
R = 30.000
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 20 & 21 FOR -L- PROFILE
SEE SHEETS 23 & 24 FOR -Y9- PROFILE
SEE SHEET 25 FOR -DR5- PROFILE
SEE SHEET 26 FOR -DR7- PROFILE
BRIDGE APPROACH SLABS
GUARDRAIL ANCHORS REQ'D
CONC SLOPE PROTECTION (NOT TO SCALE)
DETAIL SHOWING BRIDGE /PAVEMENT RELATIONSHIP
METRIC
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER


REVISIONS
BILLY L. TUTTLE
DB 1200 PG 1950
9.380 HA (TAX MAP)
NAD 83
-DR7-
PI Sta 11+79.174
Δ = 11° 07' 55.1" (LT)
L = 97.145
T = 48.726
R = 500.000
PI Sta 13+06.607
Δ = 11° 07' 55.6" (RT)
L = 97.146
T = 48.726
R = 500.000
-DR7- PTSta.13+55.026
TERESA T. CUNNUP & OTHERS
DB 1667 PG 732
5.342 HA (TAX MAP)
-DR7- PCSta.12+57.880
-DR7- PTSta.12+27.593
-DR7- PCSta.11+30.448
S 1° 08' 08.4" W
S 9° 59' 41.3" E
BL-82
BL-PINC 78+75.260=
-L- POT Sta. 85+01.144
51.534m LT
BL-83
BL-PINC 79+55.277=
-L- POC Sta. 85+77.324
29.524m LT
BL-84
BL-PINC 80+45.182=
-L- POC Sta. 86+63.222
10.154m LT
BL-85
BL-PINC 81+35.140=
-L- POC Sta. 87+51.869
2.40m LT
SEE DETAIL "P"
SEE DETAIL "Q"
SEE DETAIL "R"
SEE DETAIL "A"
SEE DETAIL "D"
SPECIAL SWALE
300 CSP
W/2 ELBOWS
END SBG
GRAU 350
CL B RIPRAP
CL I RIPRAP
CAT-1
CHORD
SEE SHEET 10
SEE SHEET 12
MATCHLINE -L- STA 84+60
MATCHLINE -L- STA 88+20
TSSta.85+17.480
SCSta.86+89.480
+17.480
40 (RT)
(131.23')
+89.480
45 (RT)
(147.64')
KEPLEY-FRANK HARDWOOD CO., INC.
CENTRAL LUMBER COMPANY, INC.
DB 1359 PG 155
118.384 HA
-L-
PIs Sta 86+32.332
θs = 10° 03' 58.6"
Ls = 172.000
LT = 114.853
ST = 57.502
PI Sta 87+74.061
Δ = 19° 36' 24.4" (RT)
L = 167.508
T = 84.581
R = 489.500
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -DR7- PROFILE
METRIC
PROJECT REFERENCE NO.
R-0609IB
SHEET NO.
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST. REV.

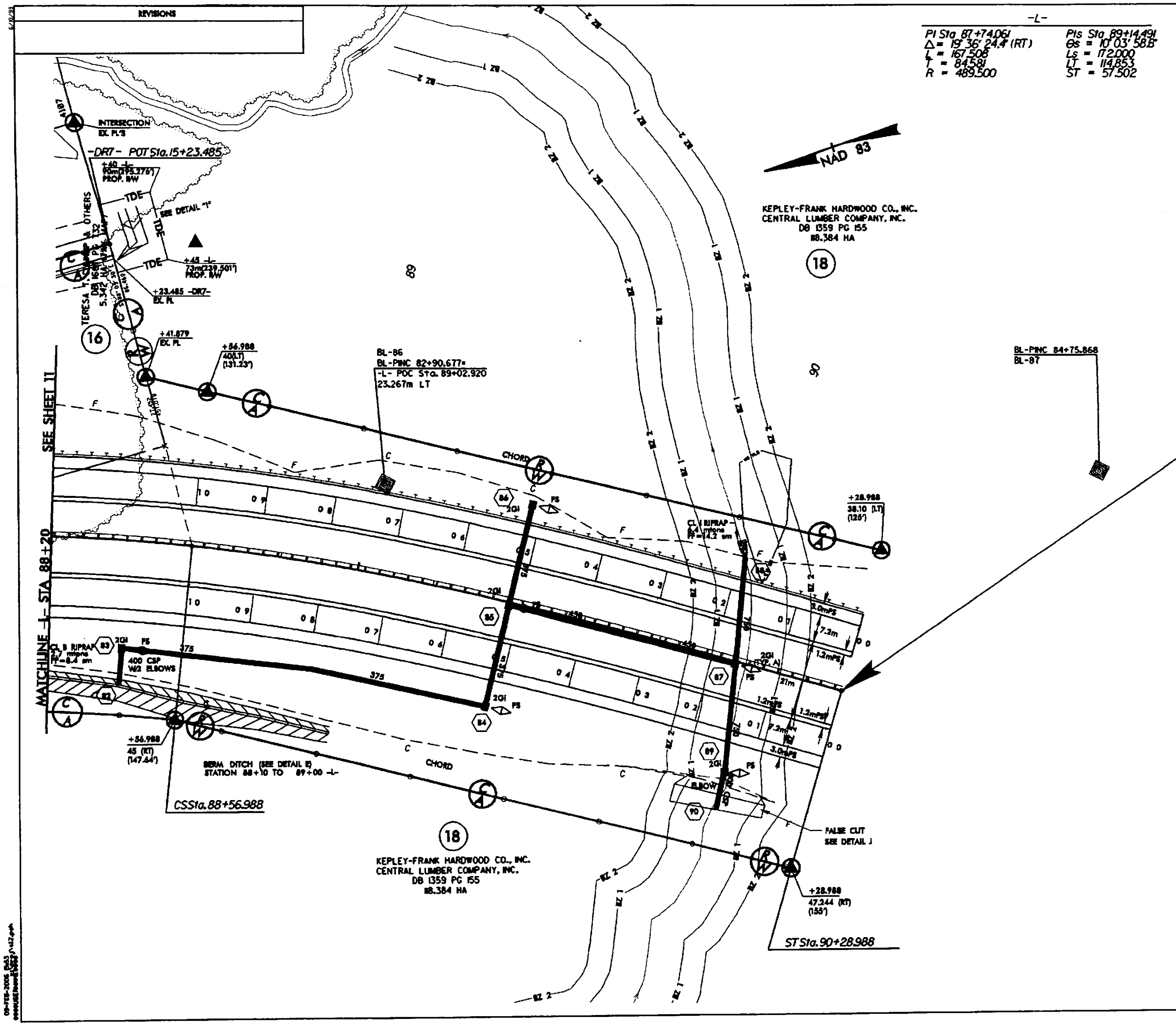
R/W REV.

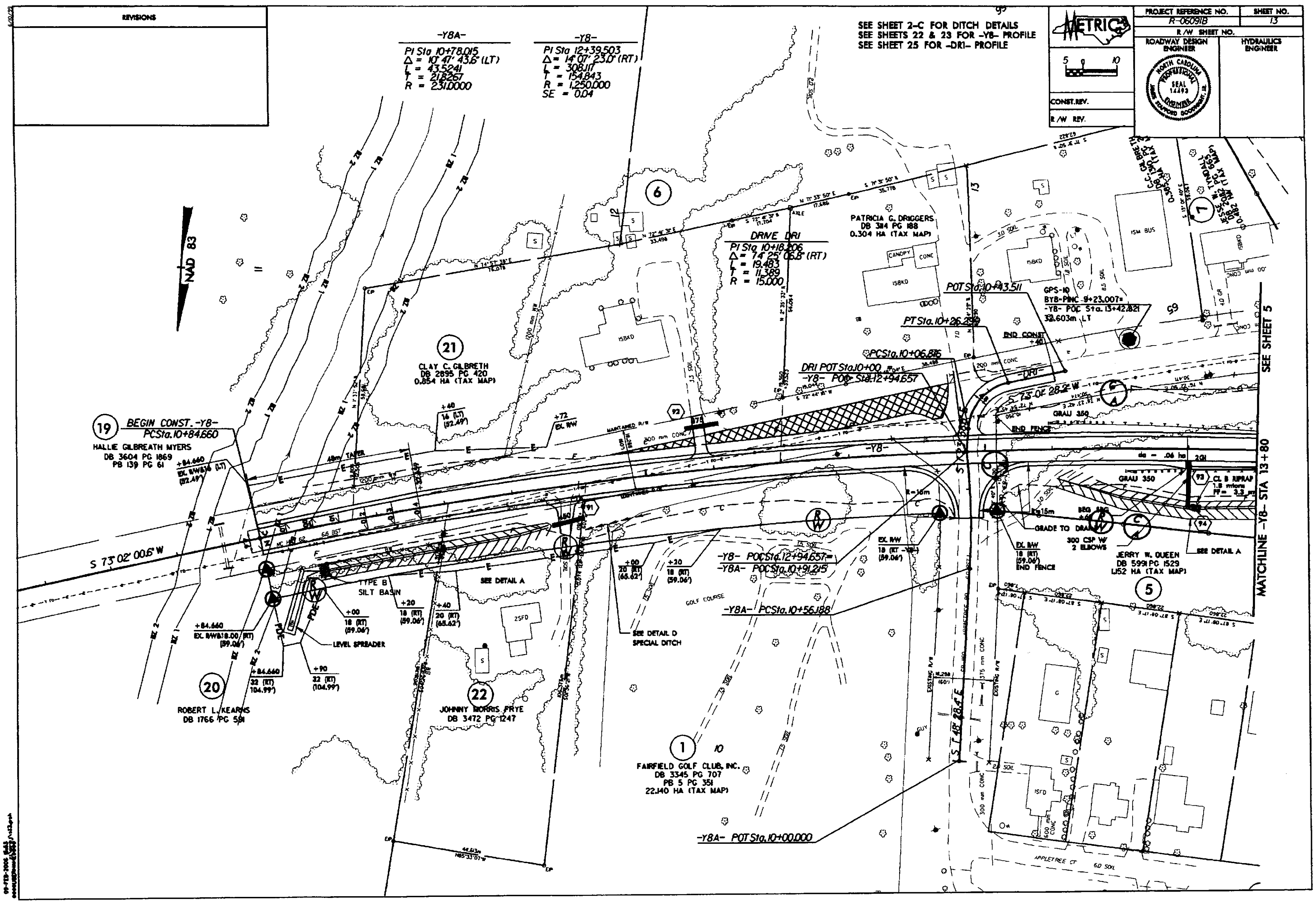
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -DR7- PROFILE

-L-

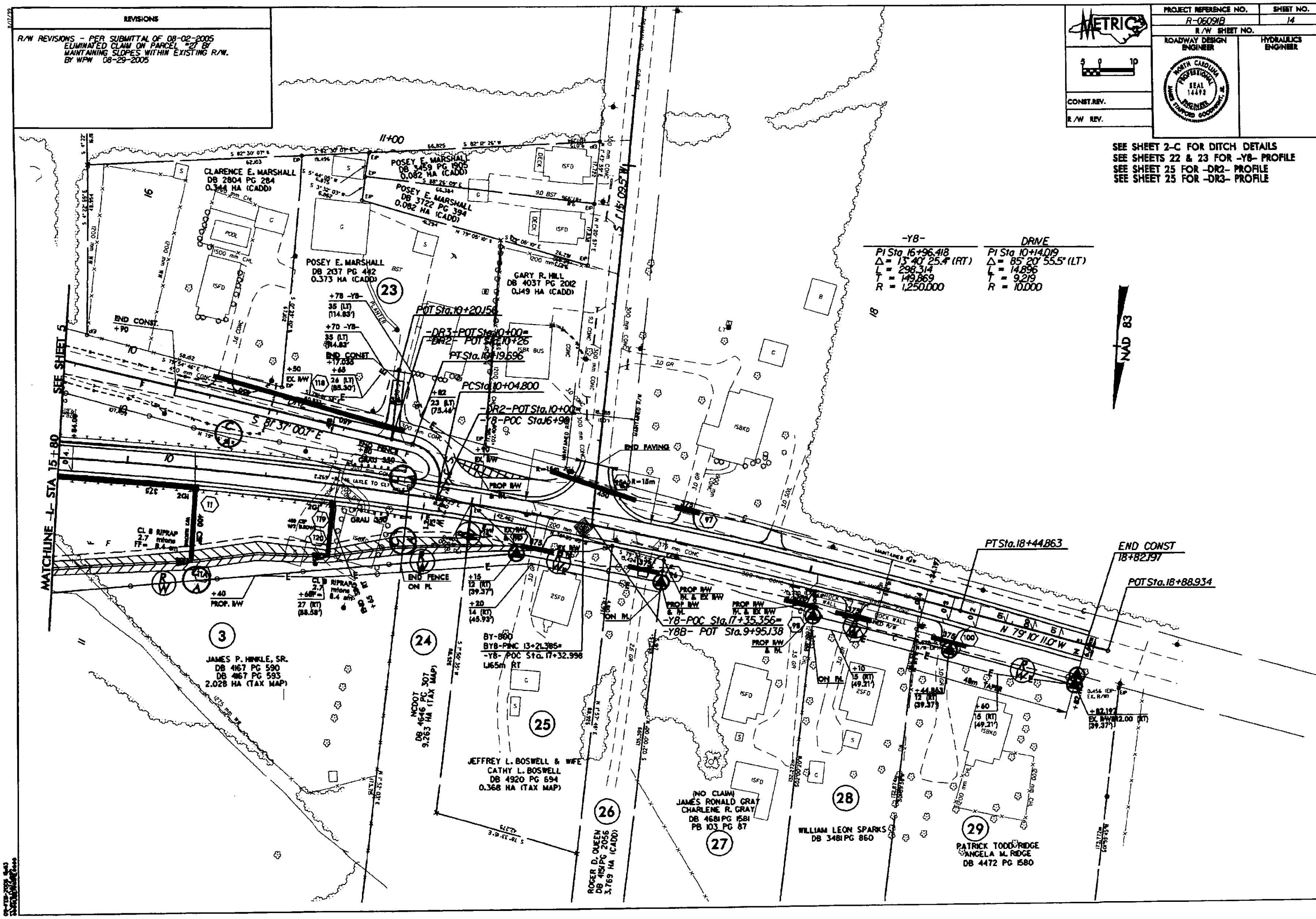
PI Sta 87+74.061
Δ = 19° 36' 24.4" (RT)
L = 167.508
T = 84.581
R = 489.500

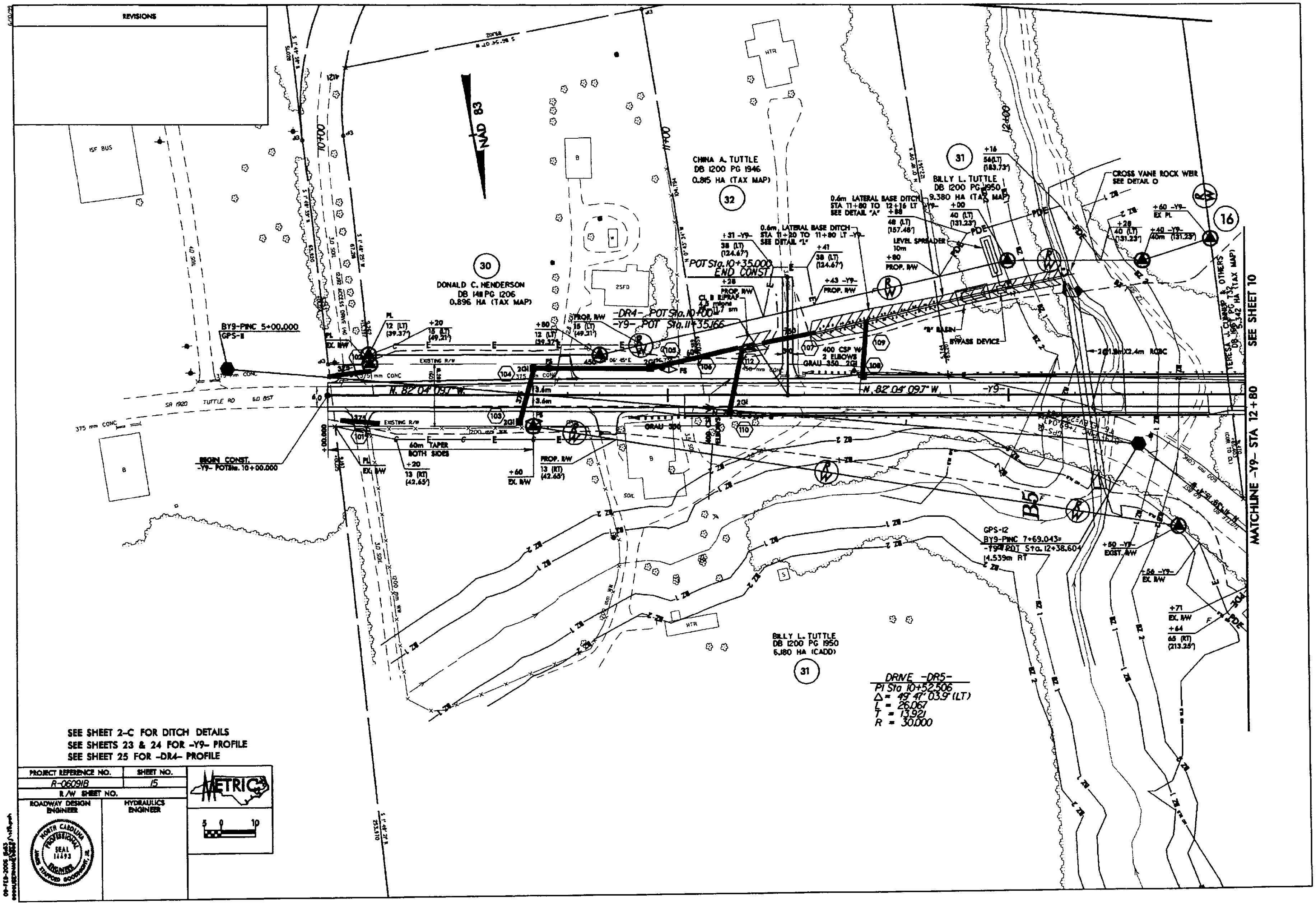
PIs Sta 89+14.491
θs = 10° 03' 58.8"
Ls = 172.000
LT = 114.853
ST = 57.502





REVISIONS
-Y8A-
PI Sta 10+78.015
Δ = 10° 47' 43.6" (LT)
L = 43.5241
T = 21.8267
R = 231.0000
-Y8-
PI Sta 12+39.503
Δ = 14° 07' 23.0" (RT)
L = 308.117
T = 154.843
R = 1,250.000
SE = 0.04
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 22 & 23 FOR -Y8- PROFILE
SEE SHEET 25 FOR -DRI- PROFILE
METRIC
CONST. REV.
R/W REV.
PROJECT REFERENCE NO.
R-0609IB
SHEET NO.
13
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NAD 83
DRIVE DRI
PI Sta 10+18.206
Δ = 74° 25' 05.8" (RT)
L = 19.483
T = 11.389
R = 15.000
PATRICIA G. DRIGGERS
DB 314 PG 188
0.304 HA (TAX MAP)
CLAY C. GILBRETH
DB 2895 PG 420
0.854 HA (TAX MAP)
BEGIN CONST. -Y8-
PCSta.10+84.660
HALLIE GILBREATH MYERS
DB 3604 PG 1869
PB 139 PG 61
POT Sta.10+43.511
PT Sta.10+26.239
PCSta.10+06.816
DRI POT Sta.10+00
-Y8- POC Sta.12+94.657
GPS-10
BY8-PINC 9+23.007=
-Y8- POC Sta. 13+42.821
33.603m LT
END CONST
S 73° 02' 00.6" W
-Y8-
-Y8- POCSta.12+94.657=
-Y8A- POCSta.10+91.215
-Y8A- PCSta.10+56.188
SEE DETAIL D
SPECIAL DITCH
SEE DETAIL A
TYPE B
SILT BASIN
LEVEL SPREADER
ROBERT L. KEARNS
DB 1766 PG 581
JOHNNY MORRIS FRYE
DB 3472 PG 1247
FAIRFIELD GOLF CLUB, INC.
DB 3345 PG 707
PB 5 PG 351
22.140 HA (TAX MAP)
-Y8A- POT Sta.10+00.000
GOLF COURSE
APPLETREE CT
JERRY W. QUEEN
DB 5991 PG 1529
1.152 HA (TAX MAP)
300 CSP W
2 ELBOWS
GRADE TO DRAIN
END FENCE
CL B RIPRAP
MATCHLINE -Y8- STA 13+80
SEE SHEET 5


REVISIONS
R/W REVISIONS - PER SUBMITTAL OF 08-02-2005 ELIMINATED CLAIM ON PARCEL "27" BY MAINTAINING SLOPES WITHIN EXISTING R/W. BY WPW 08-29-2005
PROJECT REFERENCE NO. R-0609IB
SHEET NO. 14
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST.REV.
R/W REV.
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 22 & 23 FOR -Y8- PROFILE
SEE SHEET 25 FOR -DR2- PROFILE
SEE SHEET 25 FOR -DR3- PROFILE
-Y8-
PI Sta 16+96.418
Δ = 13° 40' 25.4" (RT)
L = 298.314
T = 149.869
R = 1,250.000
DRIVE
PI Sta 10+14.019
Δ = 85° 20' 55.5" (LT)
L = 14.896
T = 9.219
R = 10.000
NAD 83
MATCHLINE -L- STA 15+80
SEE SHEET 5
CLARENCE E. MARSHALL
DB 2804 PG 284
0.344 HA (CADD)
POSEY E. MARSHALL
DB 3459 PG 905
0.082 HA (CADD)
POSEY E. MARSHALL
DB 3722 PG 394
0.082 HA (CADD)
POSEY E. MARSHALL
DB 2137 PG 442
0.373 HA (CADD)
GARY R. HILL
DB 4037 PG 2012
0.149 HA (CADD)
JAMES P. HINKLE, SR.
DB 4167 PG 590
DB 4167 PG 593
2.028 HA (TAX MAP)
NCDOT
DB 4646 PG 307
9.263 HA (TAX MAP)
JEFFREY L. BOSWELL & WIFE
CATHY L. BOSWELL
DB 4920 PG 694
0.368 HA (TAX MAP)
ROGER D. QUEEN
DB 4151 PG 2056
3.769 HA (CADD)
(NO CLAIM)
JAMES RONALD GRAY
CHARLENE R. GRAY
DB 4681 PG 1581
PB 103 PG 87
WILLIAM LEON SPARKS
DB 3481 PG 860
PATRICK TODD RIDGE
ANGELA M. RIDGE
DB 4472 PG 1580
POT Sta.10+20.156
-DR3- POT Sta.10+00=
-DR2- POT Sta.10+26
PT Sta.10+19.696
PC Sta.10+04.800
-DR2- POT Sta.10+00=
-Y8- POC Sta.16+90
S 81° 37' 00.7" E
-Y8- POC Sta.17+35.356=
-Y8B- POT Sta.9+95.138
BY-860
BY8-PINC 13+21.385=
-Y8- POC Sta.17+32.996
11.165m RT
PT Sta.18+44.863
END CONST
18+82.197
POT Sta.18+88.934
N 79° 10' 11.0" W
END CONST.
+90
END CONST
+17.058
+68
END FENCE ON PL
END PAVING
CL B RIPRAP
PROP. R/W
PROP R/W
ROCK WALL
3 16 23 24 25 26 27 28 29

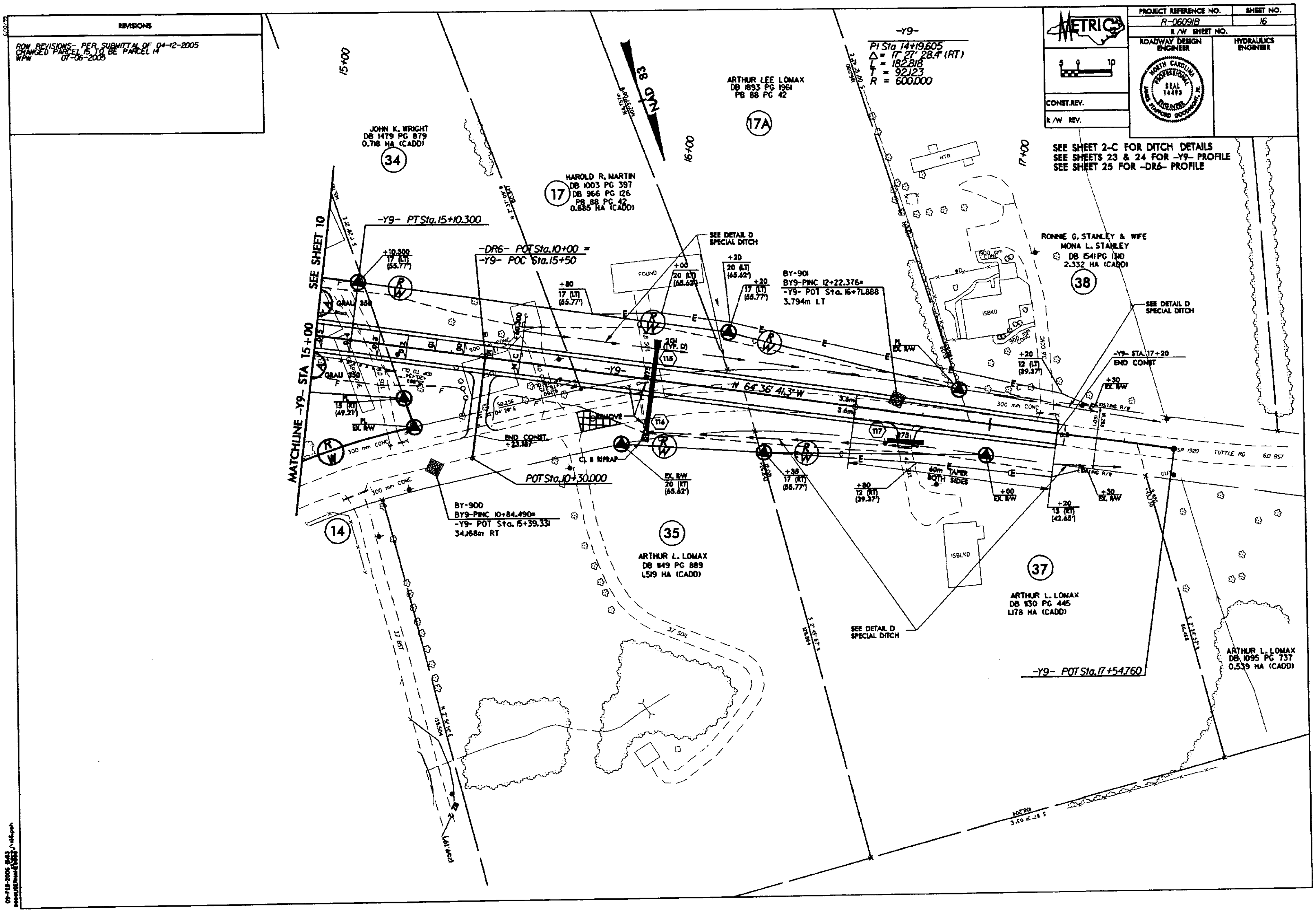


SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 23 & 24 FOR -Y9- PROFILE
SEE SHEET 25 FOR -DR4- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-0609IB	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14493


PROJECT REFERENCE NO. R-0609IB
SHEET NO. 16
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST.REV.
R/W REV.
REVISIONS
ROW REVISIONS- PER SUBMITTAL OF 04-12-2005
CHANGED PARCEL 15 TO BE PARCEL 14
WPW 07-06-2005
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 23 & 24 FOR -Y9- PROFILE
SEE SHEET 25 FOR -DR6- PROFILE
-Y9-
PI Sta 14+19.605
Δ = 17° 27' 28.4" (RT)
L = 182.818
T = 92.123
R = 600.000
NAD 83
ARTHUR LEE LOMAX
DB 1693 PG 1961
PB 88 PG 42
17A
JOHN K. WRIGHT
DB 1479 PG 879
0.718 HA (CADD)
34
HAROLD R. MARTIN
DB 1003 PG 397
DB 966 PG 126
PB 88 PG 42
0.685 HA (CADD)
17
RONNIE G. STANLEY & WIFE
MONA L. STANLEY
DB 1541 PG 1310
2.332 HA (CADD)
38
-Y9- PT Sta. 15+10.300
-DR6- POT Sta. 10+00 =
-Y9- POC Sta. 15+50
BY-901
BY9-PINC 12+22.376=
-Y9- POT Sta. 16+71.888
3.794m LT
SEE DETAIL D
SPECIAL DITCH
N 64° 36' 41.3" W
-Y9- STA. 17+20
END CONST
SEE SHEET 10
MATCHLINE -Y9- STA 15+00
END CONST. +23.187
POT Sta. 10+30.000
BY-900
BY9-PINC 10+84.490=
-Y9- POT Sta. 15+39.331
34.168m RT
60m TAPER BOTH SIDES
CL B RIPRAP
REMOVE
TUTTLE RD
SR 1920
60 BST
300 mm CONC
14
35
ARTHUR L. LOMAX
DB 1149 PG 889
1.519 HA (CADD)
37
ARTHUR L. LOMAX
DB 1130 PG 445
1.178 HA (CADD)
ARTHUR L. LOMAX
DB 1095 PG 737
0.539 HA (CADD)
-Y9- POT Sta. 17+54.760
15+00
16+00
17+00

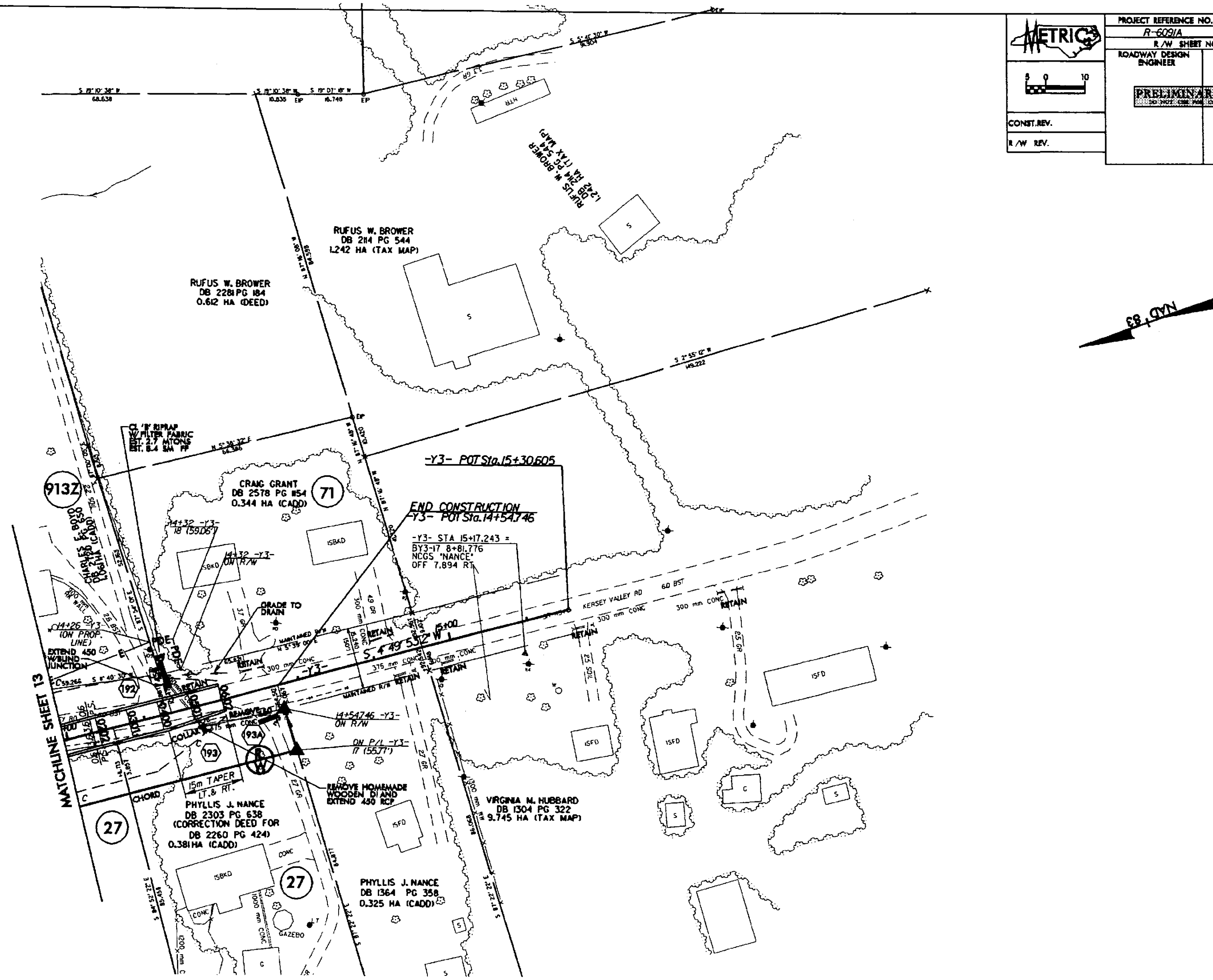
PROJECT REFERENCE NO.	SHEET NO.
R-609IA	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST. REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

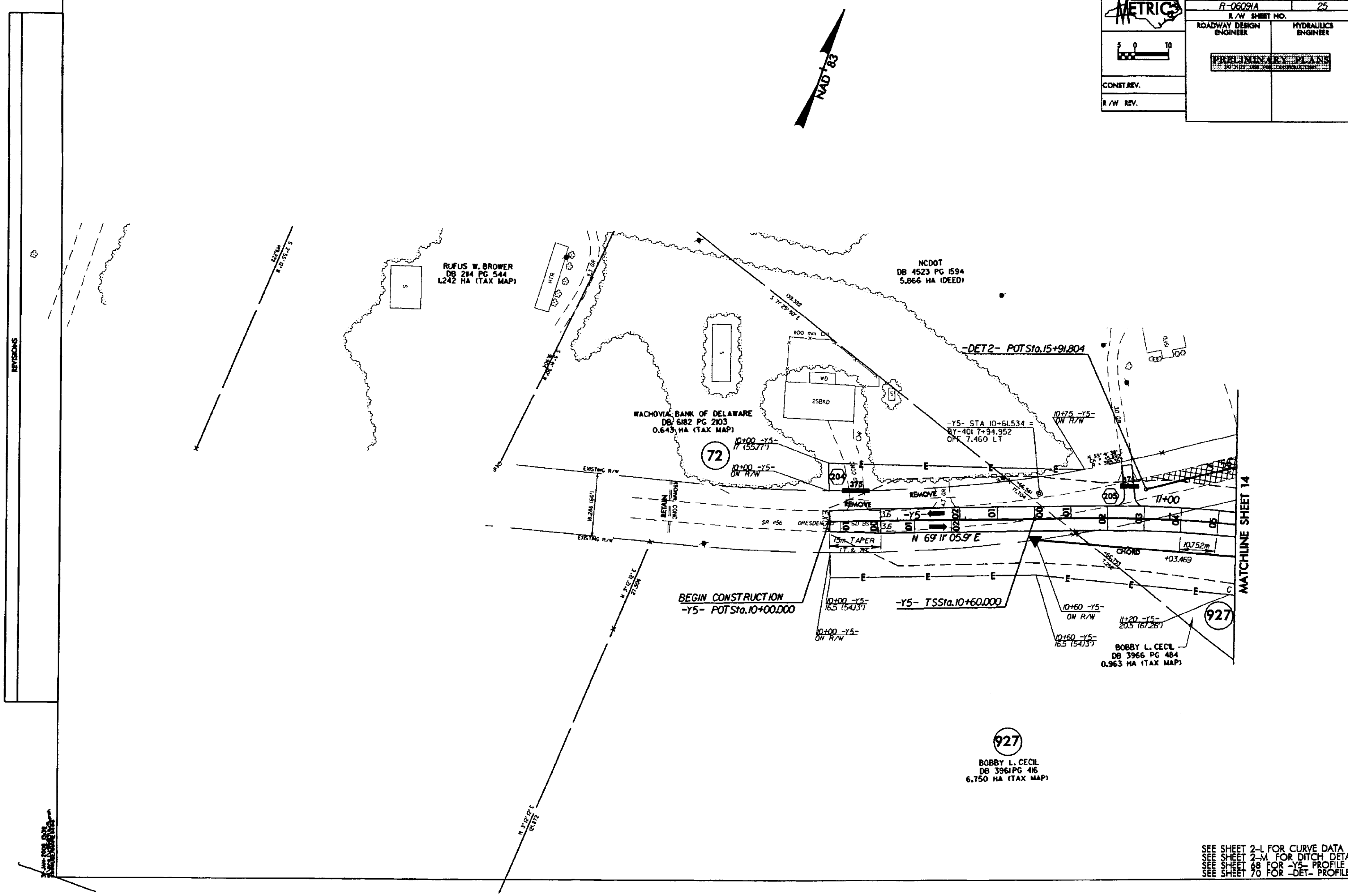


SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 66 FOR -Y3- PROFILE

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 68 FOR -Y5- PROFILE
SEE SHEET 70 FOR -DET- PROFILE

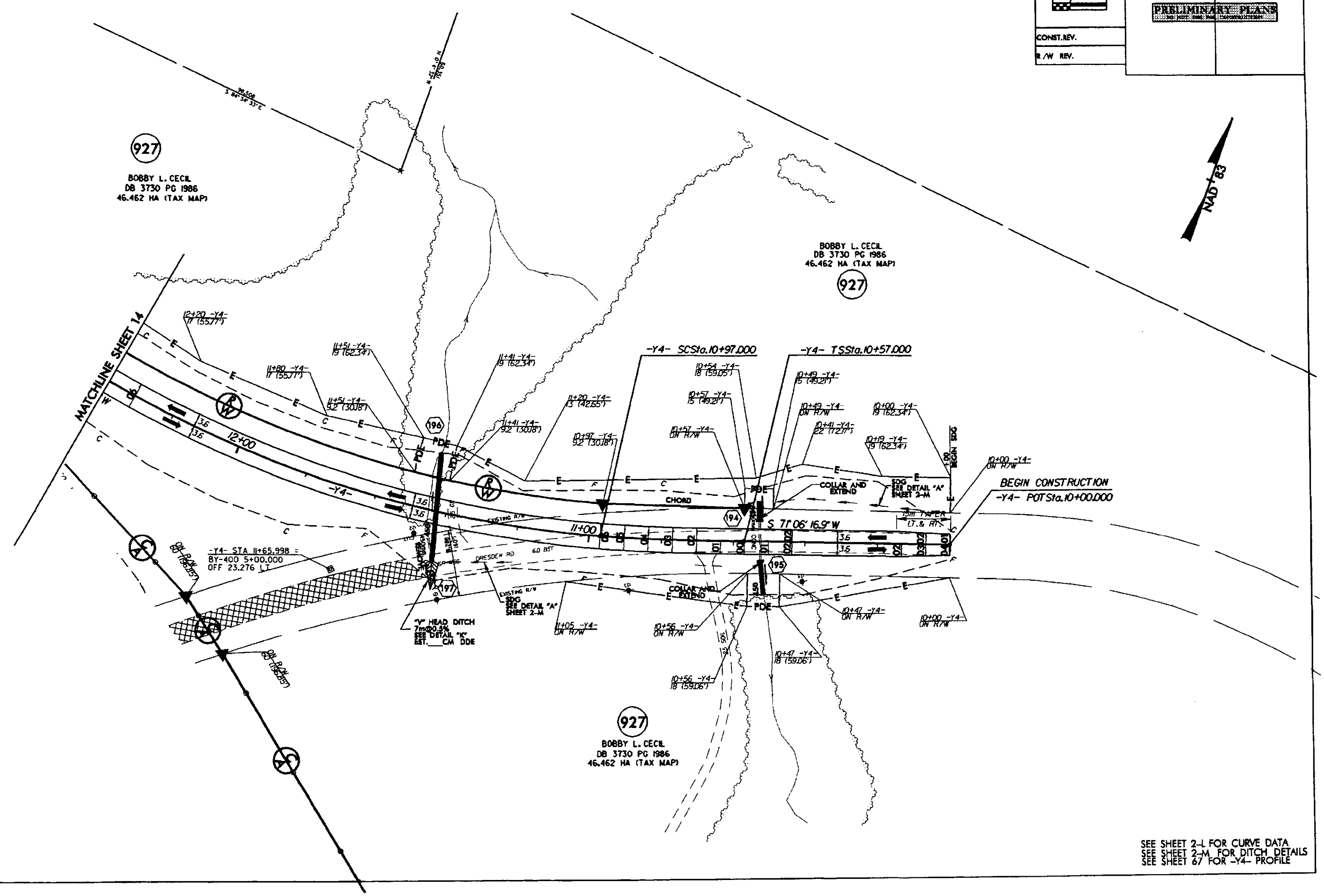
PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST. REV.

R/W REV.

PRELIMINARY PLANS



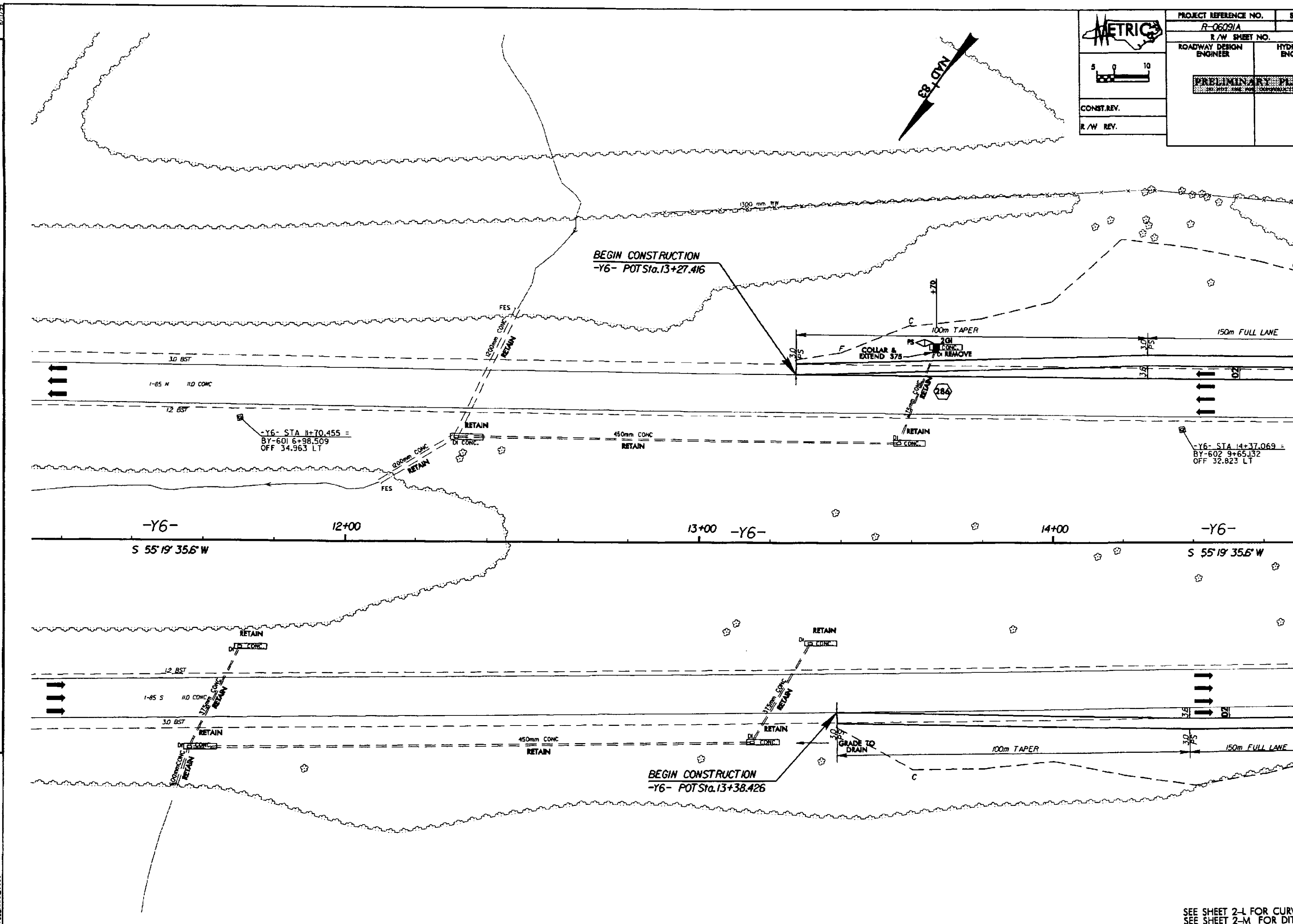
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 67 FOR -Y4- PROFILE

REVISIONS

ROW REVISIONS, PARCELS 37, 3873, AND 927 COMBINED INTO PARCEL 927, LETTER DATED 3-24-2004
WPW 04-20-2004

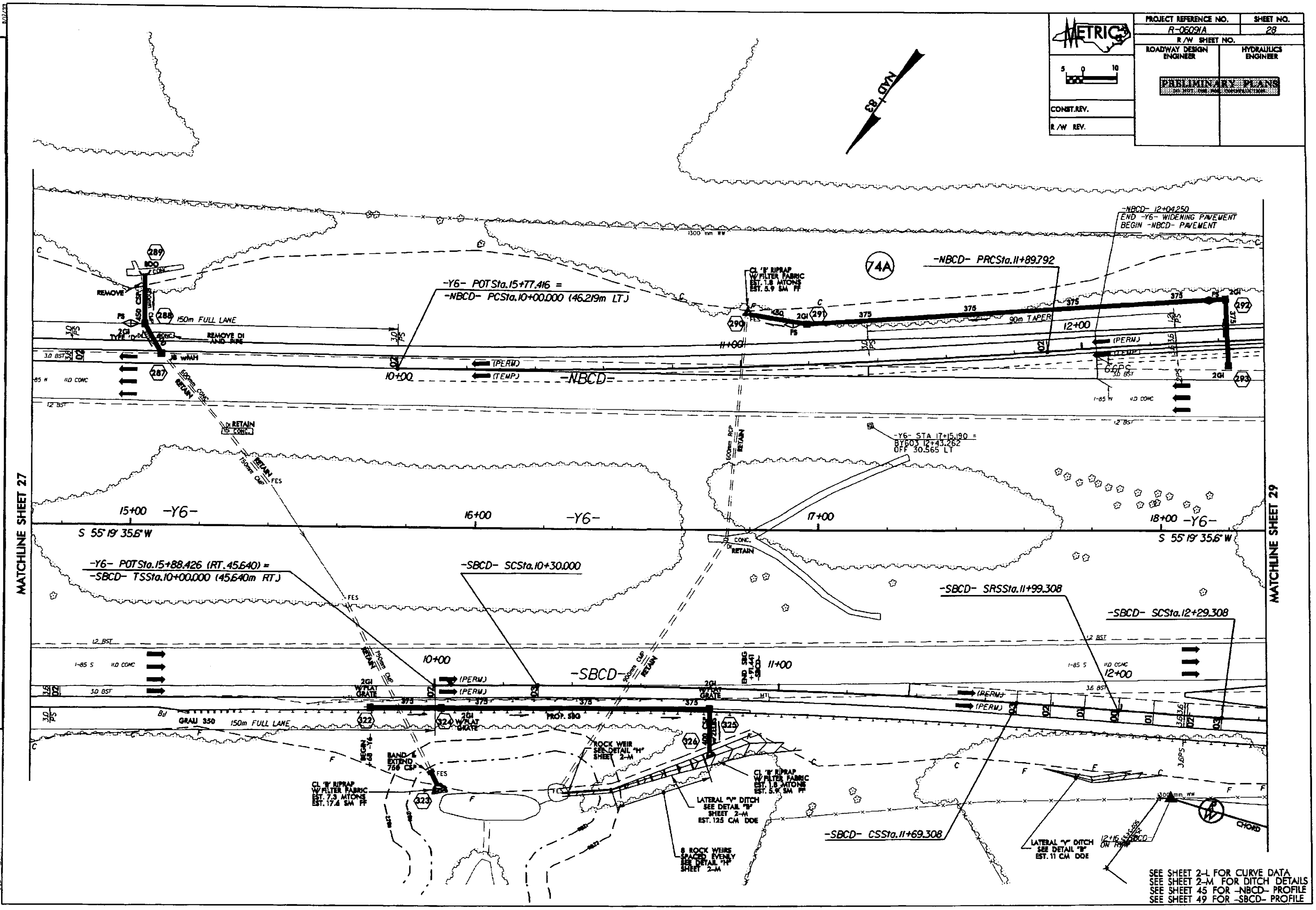
PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS



SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS

REVISIONS



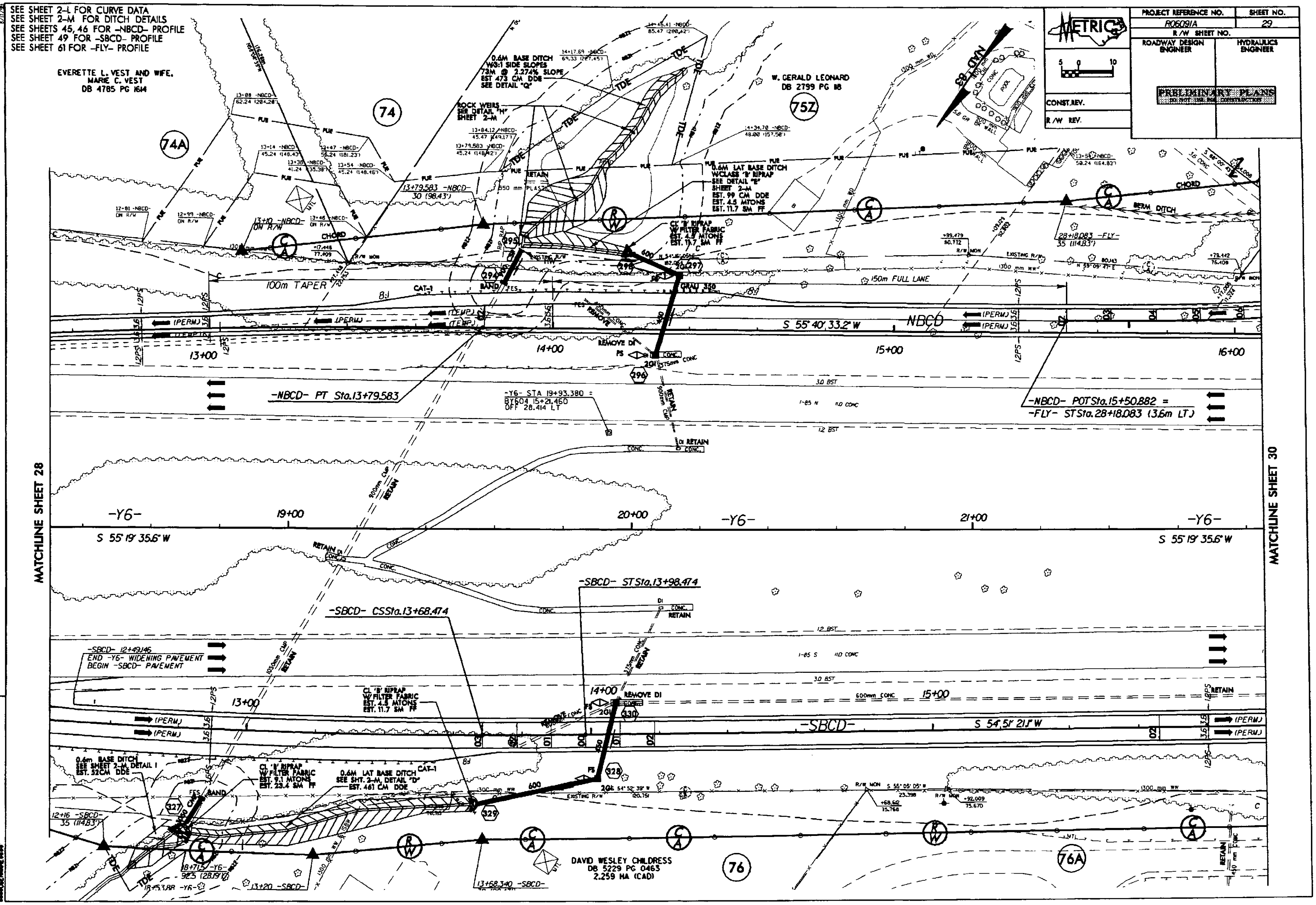
REVISIONS

ROW REVISIONS,PROPOSED ROW ADJUSTED,PARCEL 76 PROPERTY LINES CHANGED,LETTER DATED 1-22-2004
WPW 04-20-2004

PROJECT REFERENCE NO.	SHEET NO.
R0609IA	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

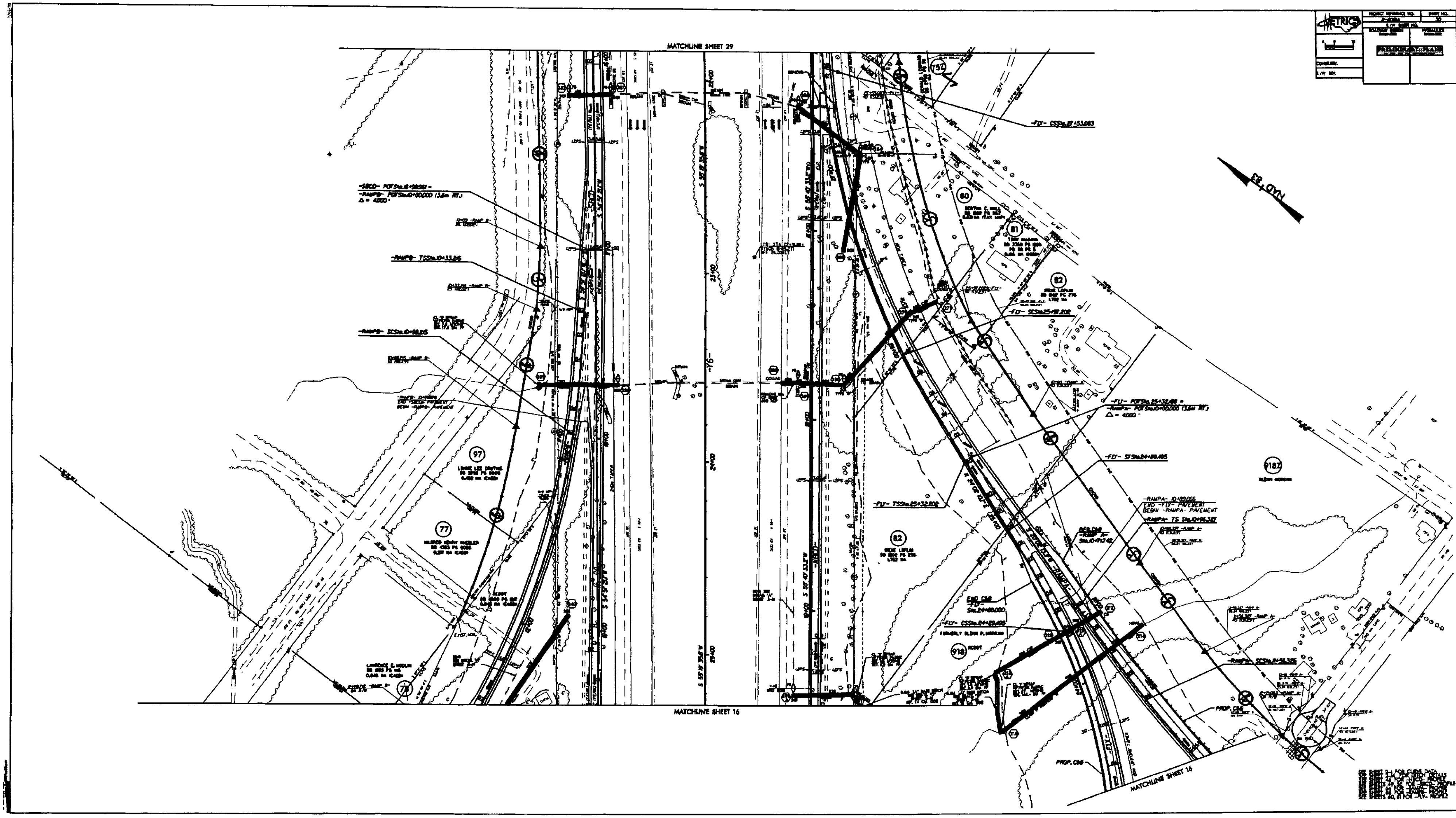
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

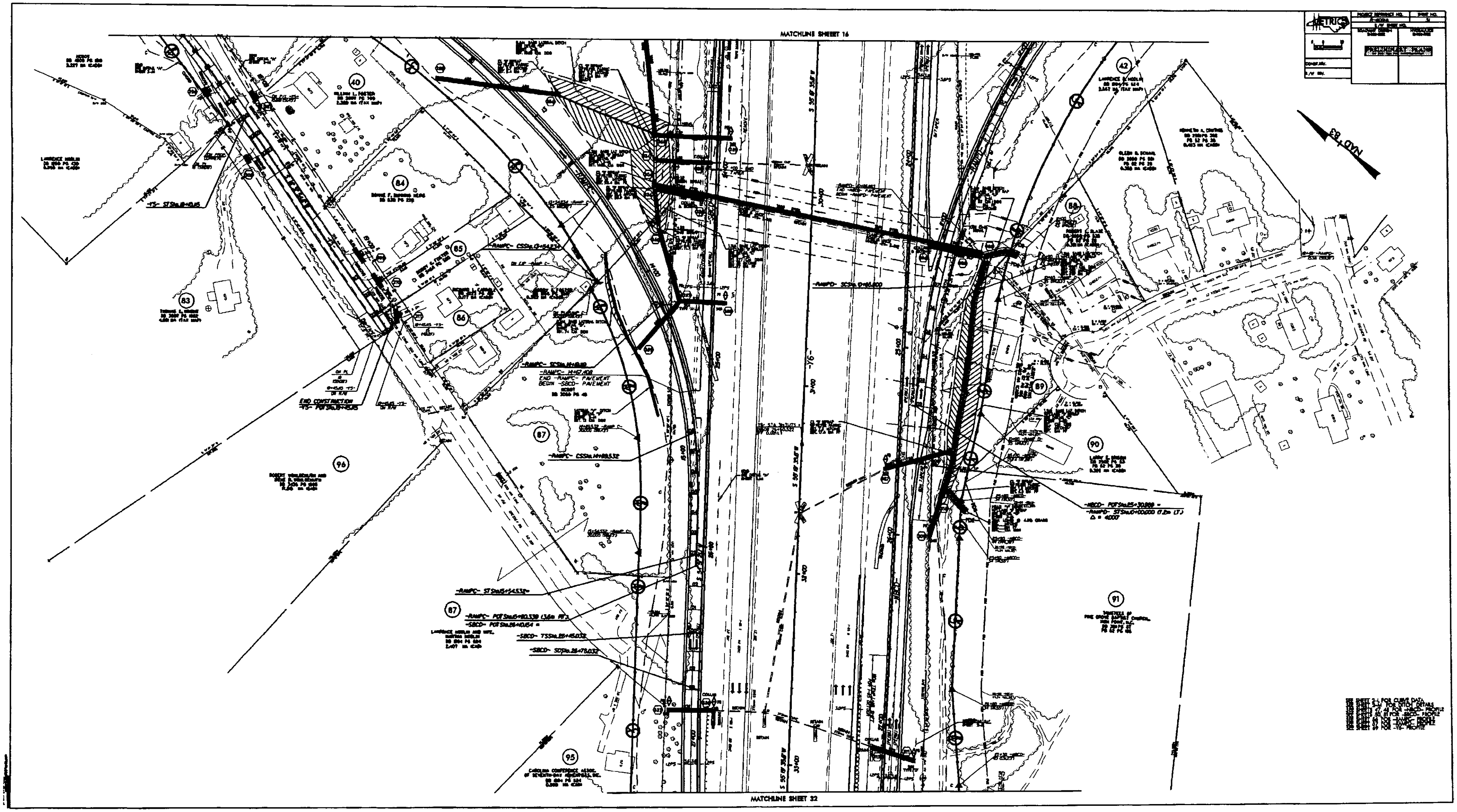
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEETS 45, 46 FOR -NBCD- PROFILE
SEE SHEET 49 FOR -SBCD- PROFILE
SEE SHEET 61 FOR -FLY- PROFILE

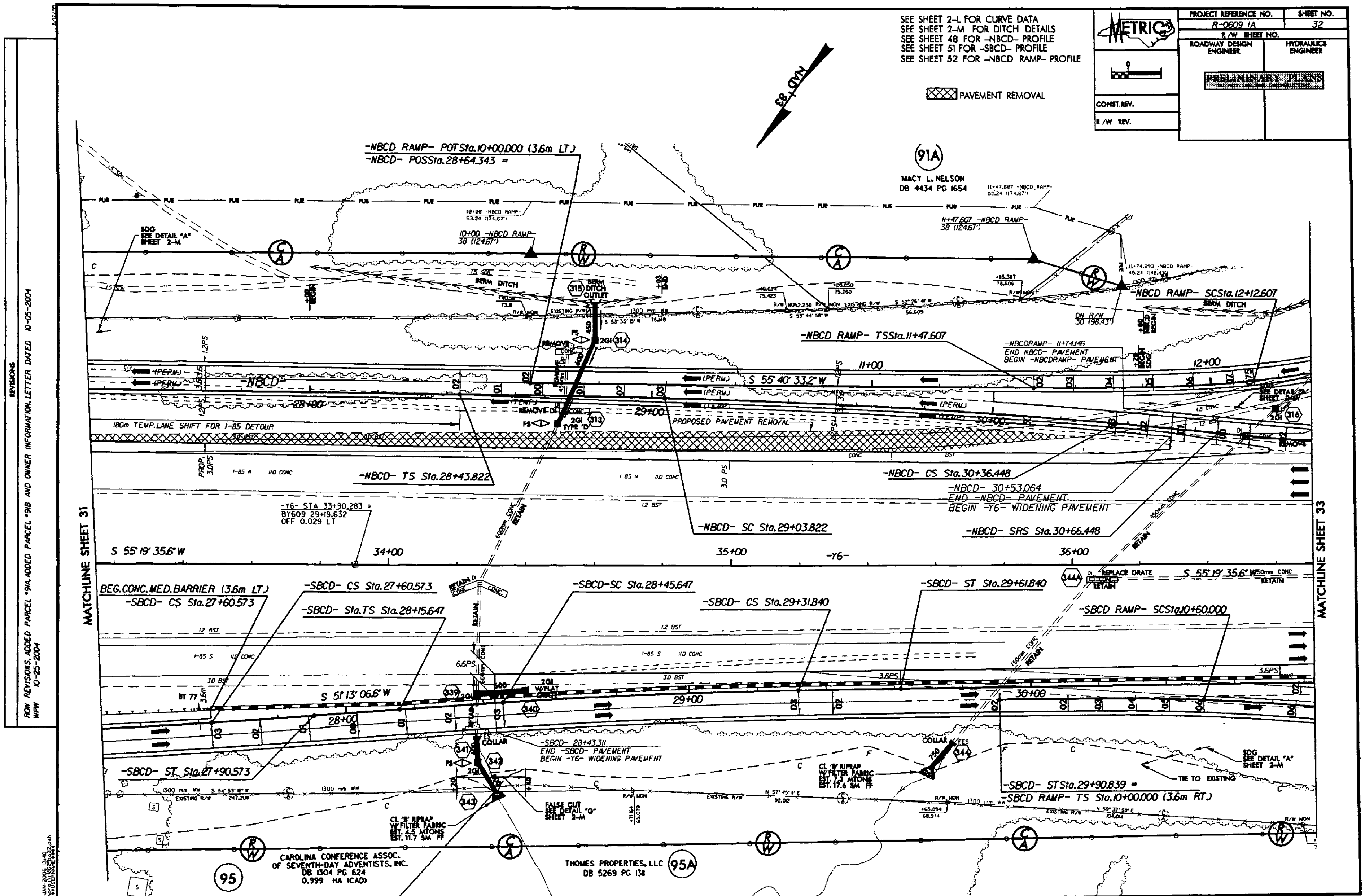


REVISIONS

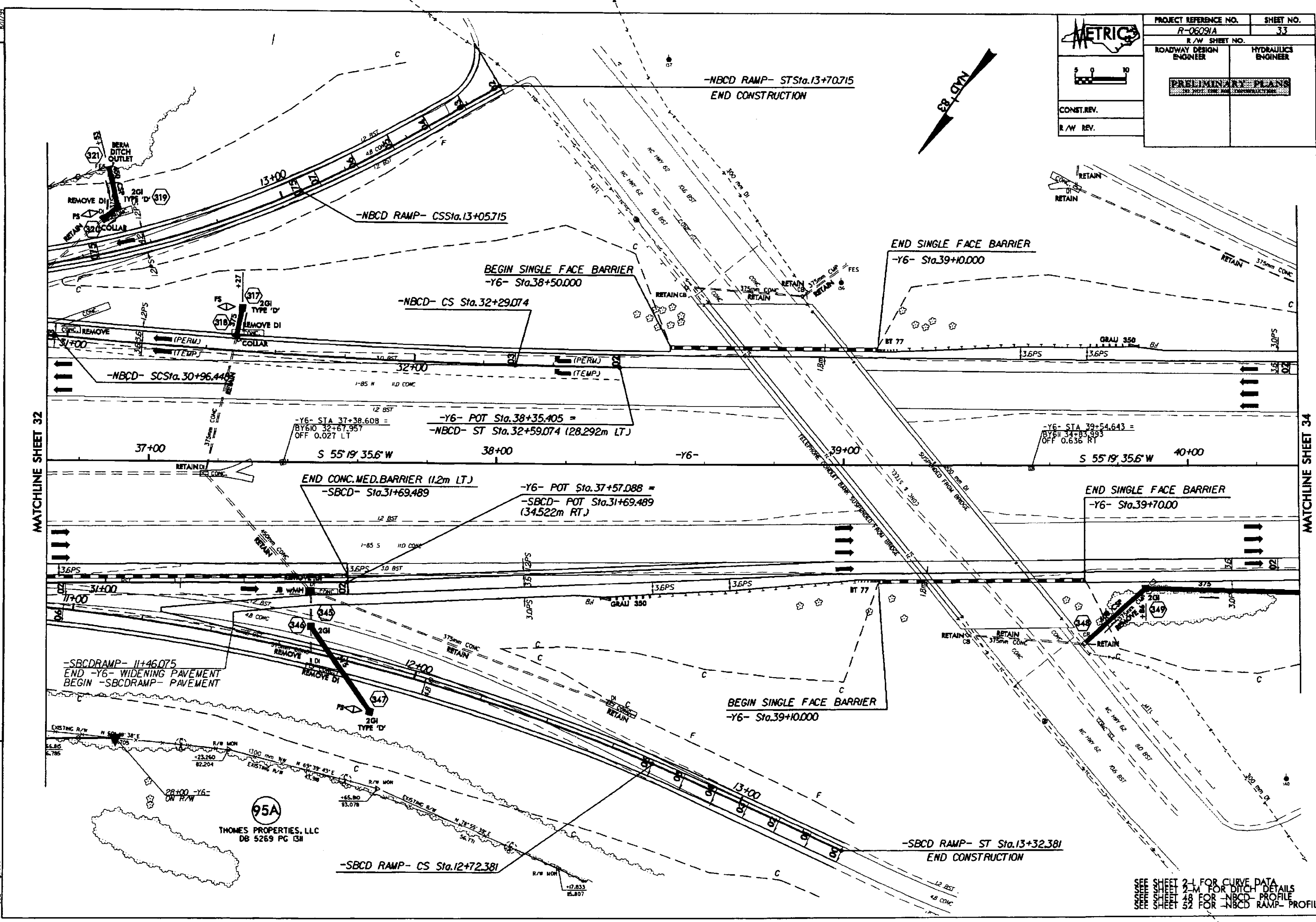
ROW REVISIONS, ADDED TDE AND CHANGED PARCEL NUMBER TO 75Z, ELECTRONIC FILE FROM HYDROLOGY DATED 09-15-2005.
WPW 09-22-2005


MATCHLINE SHEET 29
MATCHLINE SHEET 16
NAD 83


MATCHLINE SHEET 16
MATCHLINE SHEET 32
METRIC
NAD 83
END CONSTRUCTION
-Y5- POT Sta.10+10.65
-Y5- ST Sta.10+10.65
-RAMPC- CS Sta.13+19.532
-RAMPC- SC Sta.14+17.408
END -RAMPC- PAVEMENT
BEGIN -SBCD- PAVEMENT
-RAMPC- CS Sta.14+99.532
-RAMPC- ST Sta.15+54.532
-RAMPC- POT Sta.15+80.539
-SBCD- POT Sta.26+40.154
-SBCD- TS Sta.26+45.032
-SBCD- SC Sta.26+75.032
-RAMPD- SC Sta.12+65.600
-NBCD- POT Sta.25+30.888
-RAMPD- ST Sta.10+00.000
-Y6-
S 55°18' 35.8" W
40
42
83
84
85
86
87
88
89
90
91
95
96



PROJECT REFERENCE NO. R-0609 IA
SHEET NO. 32
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
METRIC
CONST.REV.
R/W REV.
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 48 FOR -NBCD- PROFILE
SEE SHEET 51 FOR -SBCD- PROFILE
SEE SHEET 52 FOR -NBCD RAMP- PROFILE
PAVEMENT REMOVAL
NAD 83
91A
MACY L. NELSON
DB 4434 PG 1654
-NBCD RAMP- POT Sta.10+00.000 (3.6m LT)
-NBCD- POS Sta.28+64.343 =
-NBCD RAMP- TS Sta.11+47.607
-NBCD RAMP- SC Sta.12+12.607
-NBCDRAMP- 11+74.146
END NBCD- PAVEMENT
BEGIN -NBCDRAMP- PAVEMENT
180m TEMP. LANE SHIFT FOR I-85 DETOUR
PROPOSED PAVEMENT REMOVAL
S 55° 40' 33.2" W
-NBCD- TS Sta.28+43.822
-NBCD- SC Sta.29+03.822
-NBCD- CS Sta.30+36.448
-NBCD- 30+53.064
END -NBCD- PAVEMENT
BEGIN -Y6- WIDENING PAVEMENT
-NBCD- SRS Sta.30+66.448
-Y6- STA 33+90.283 =
BY609 29+19.632
OFF 0.029 LT
S 55° 19' 35.6" W
34+00
35+00
-Y6-
36+00
MATCHLINE SHEET 31
MATCHLINE SHEET 33
BEG.CONC.MED.BARRIER (3.6m LT)
-SBCD- CS Sta.27+60.573
-SBCD- Sta.TS Sta.28+15.647
-SBCD-SC Sta.28+45.647
-SBCD- CS Sta.29+31.840
-SBCD- ST Sta.29+61.840
-SBCD RAMP- SC Sta.10+60.000
S 51° 13' 06.6" W
-SBCD- ST Sta.27+90.573
-SBCD- 28+43.311
END -SBCD- PAVEMENT
BEGIN -Y6- WIDENING PAVEMENT
-SBCD- ST Sta.29+90.839 =
-SBCD RAMP- TS Sta.10+00.000 (3.6m RT)
REPLACE GRATE
FALSE CUT
SEE DETAIL "G"
SHEET 2-M
CL 'B' RIPRAP
W/FILTER FABRIC
EST. 4.5 MTONS
EST. 11.7 SM FF
CL 'B' RIPRAP
W/FILTER FABRIC
EST. 7.3 MTONS
EST. 17.6 SM FF
TIE TO EXISTING
SDG
SEE DETAIL "A"
SHEET 2-M
CAROLINA CONFERENCE ASSOC.
OF SEVENTH-DAY ADVENTISTS, INC.
DB 1304 PG 624
0.999 HA (CAD)
95
THOMES PROPERTIES, LLC
DB 5269 PG 138
95A
REVISIONS
ROW REVISIONS, ADDED PARCEL #91A, ADDED PARCEL #91B AND OWNER INFORMATION, LETTER DATED 10-05-2004
WPW 10-25-2004



REVISIONS

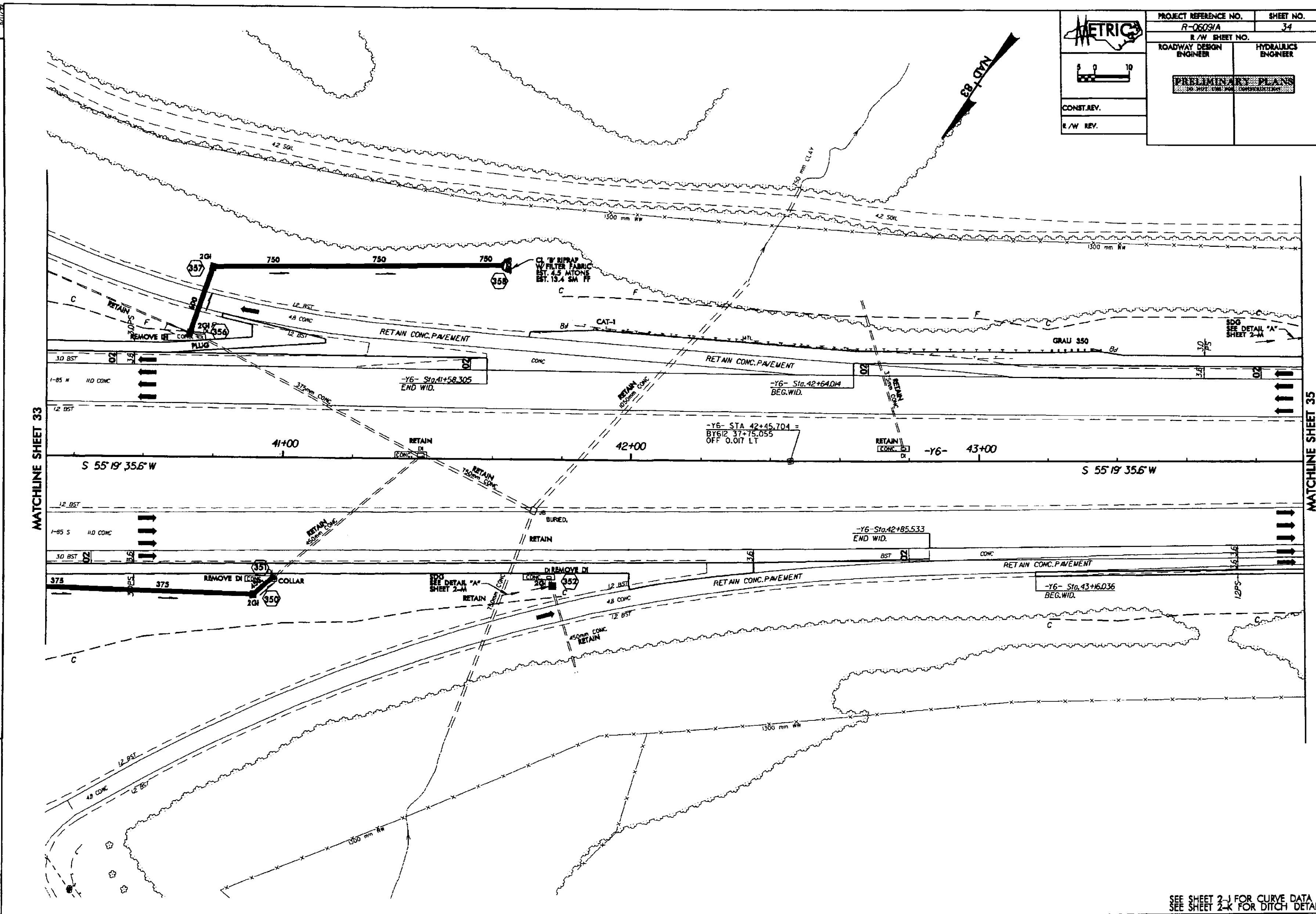
ROW REVISONS, ADDED PARCEL 95A AND OWNER INFORMATION, LETTER DATED 07-22-2004
WPW 08-31-2004

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS

CONST. REV.

R/W REV.



SEE SHEET 2-J FOR CURVE DATA
SEE SHEET 2-K FOR DITCH DETAILS

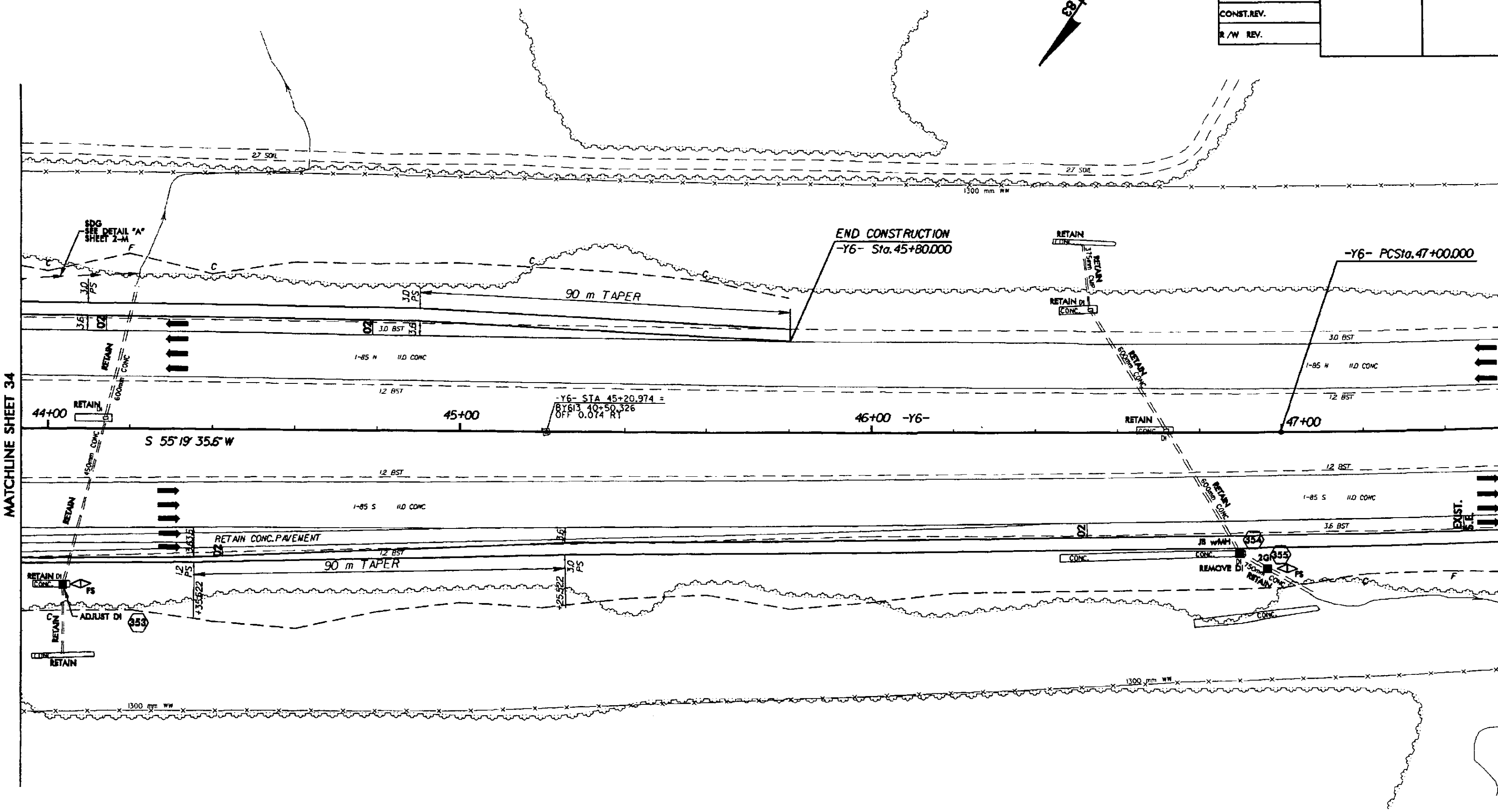
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS

CONST. REV.

R/W REV.



SEE SHEET 2-J FOR CURVE DATA
SEE SHEET 2-K FOR DITCH DETAILS

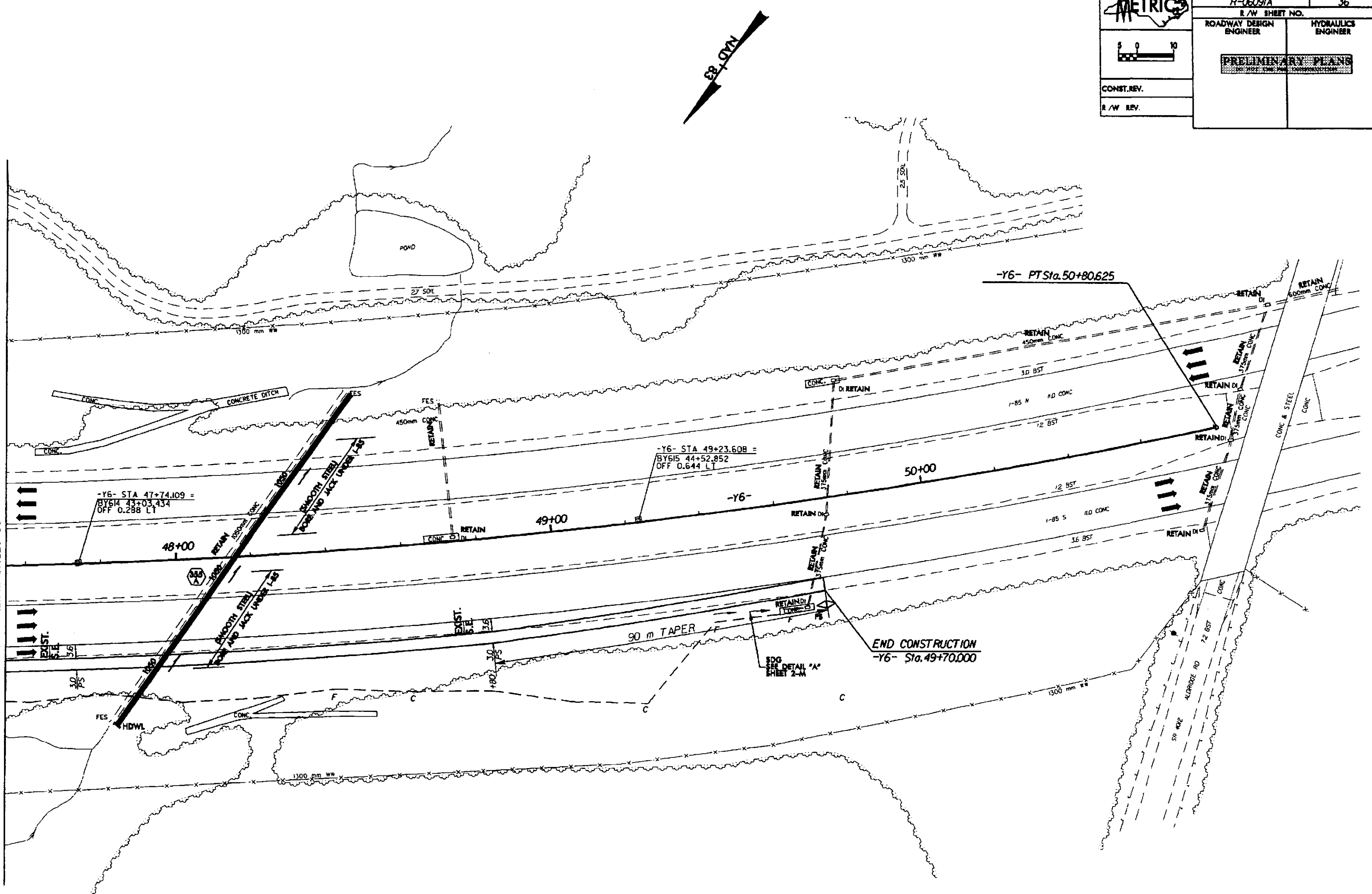
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-0609IA	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS

CONST. REV.

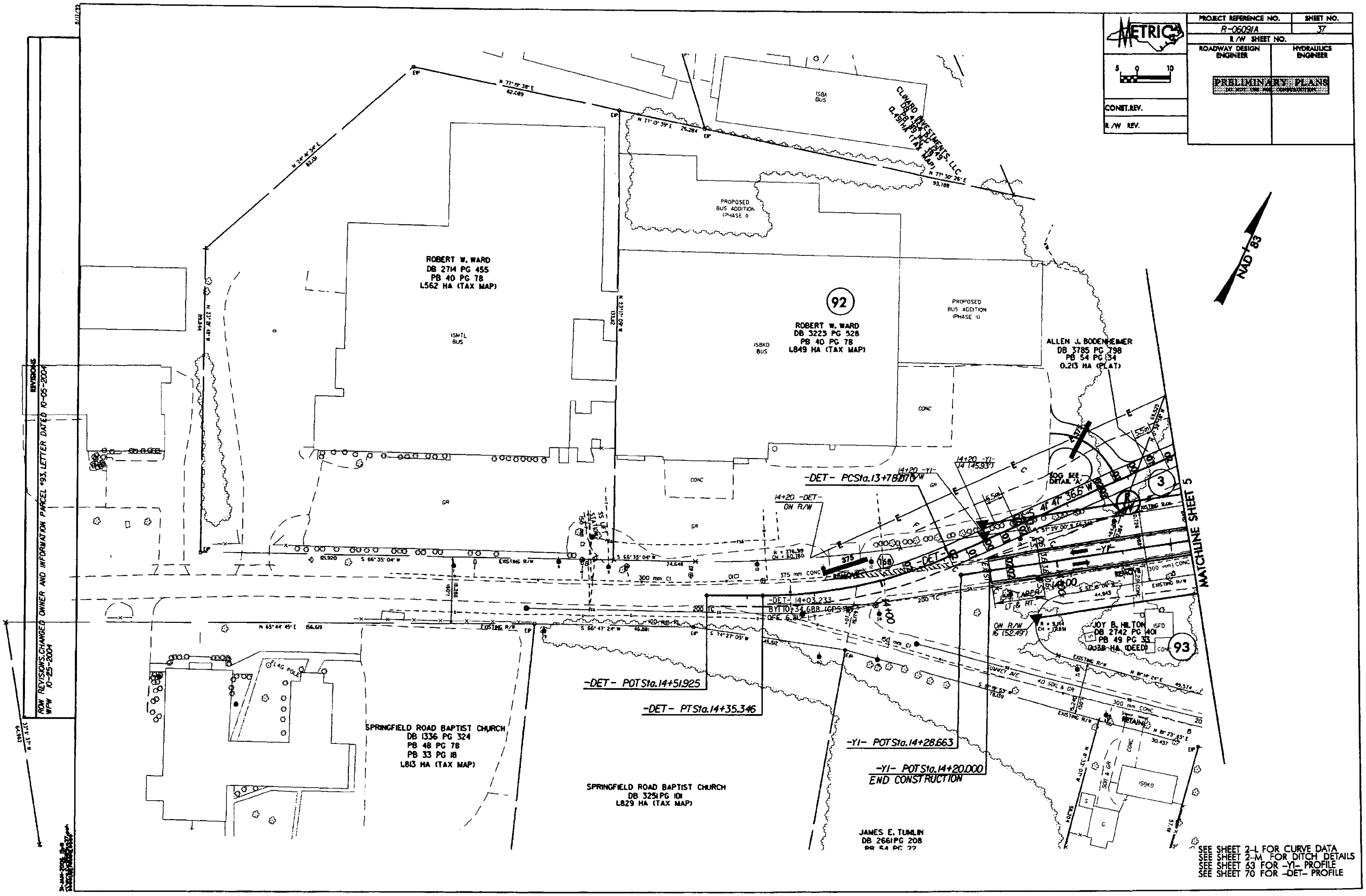
R/W REV.

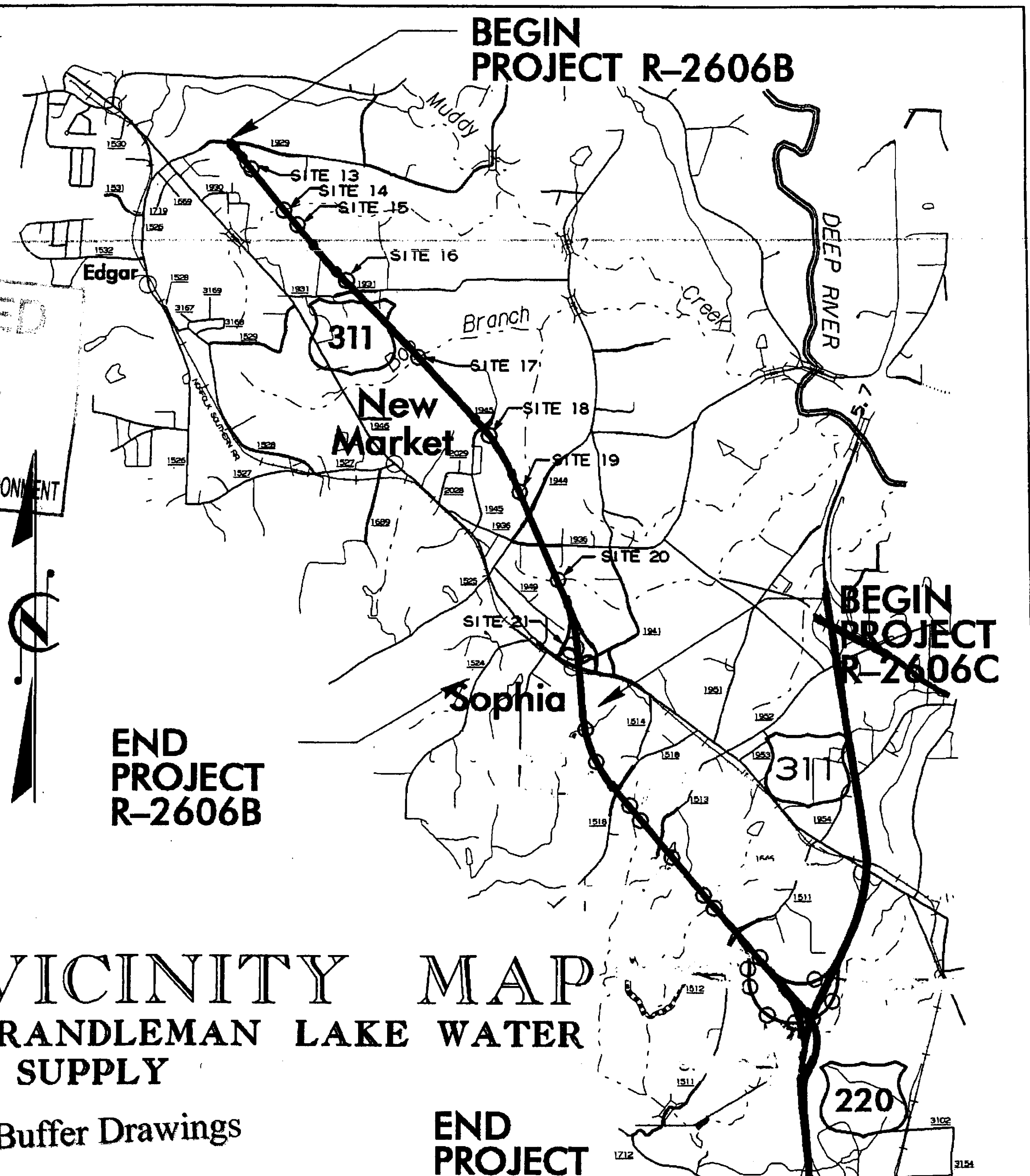


MATCHLINE SHEET 35

REVISIONS

SEE SHEET 2-J FOR CURVE DATA
SEE SHEET 2-K FOR DITCH DETAILS


PROJECT REFERENCE NO.
R-0609IA
SHEET NO.
37
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
METRIC
CONST. REV.
R/W REV.
NAD 83
MATCHLINE SHEET 5
ROBERT W. WARD
DB 2714 PG 455
PB 40 PG 78
1.562 HA (TAX MAP)
ROBERT W. WARD
DB 3223 PG 528
PB 40 PG 78
1.849 HA (TAX MAP)
PROPOSED BUS ADDITION (PHASE II)
PROPOSED BUS ADDITION (PHASE I)
CLINARD INVESTMENTS, LLC
ALLEN J. BODENHEIMER
DB 3785 PG 798
PB 54 PG 134
0.213 HA (PLAT)
JOY B. HILTON
DB 2742 PG 401
PB 49 PG 33
0.138 HA (DEED)
SPRINGFIELD ROAD BAPTIST CHURCH
DB 1336 PG 324
PB 48 PG 78
PB 33 PG 18
1.813 HA (TAX MAP)
SPRINGFIELD ROAD BAPTIST CHURCH
DB 3251 PG 101
1.829 HA (TAX MAP)
JAMES E. TUMLIN
DB 2661 PG 208
-DET- PCSta.13+78.070
14+20 -DET- ON R/W
14+20 -Y1- 14 (45.93')
ON R/W 16 (52.49')
-DET- 14+03.233
-DET- POT Sta.14+51.925
-DET- PT Sta.14+35.346
-Y1- POT Sta.14+28.663
-Y1- POT Sta.14+20.000
END CONSTRUCTION
SEE SHEET 2-L FOR CURVE DATA
SEE SHEET 2-M FOR DITCH DETAILS
SEE SHEET 63 FOR -Y1- PROFILE
SEE SHEET 70 FOR -DET- PROFILE
REVISIONS
ROW REVISIONS, CHANGED OWNER AND INFORMATION PARCEL #93, LETTER DATED 10-05-2004
WPW 10-25-2004

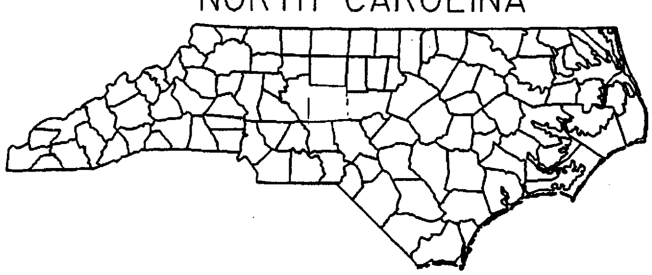


VICINITY MAP

RANDLEMAN LAKE WATER SUPPLY

Buffer Drawings

NOT TO SCALE



NCDOT

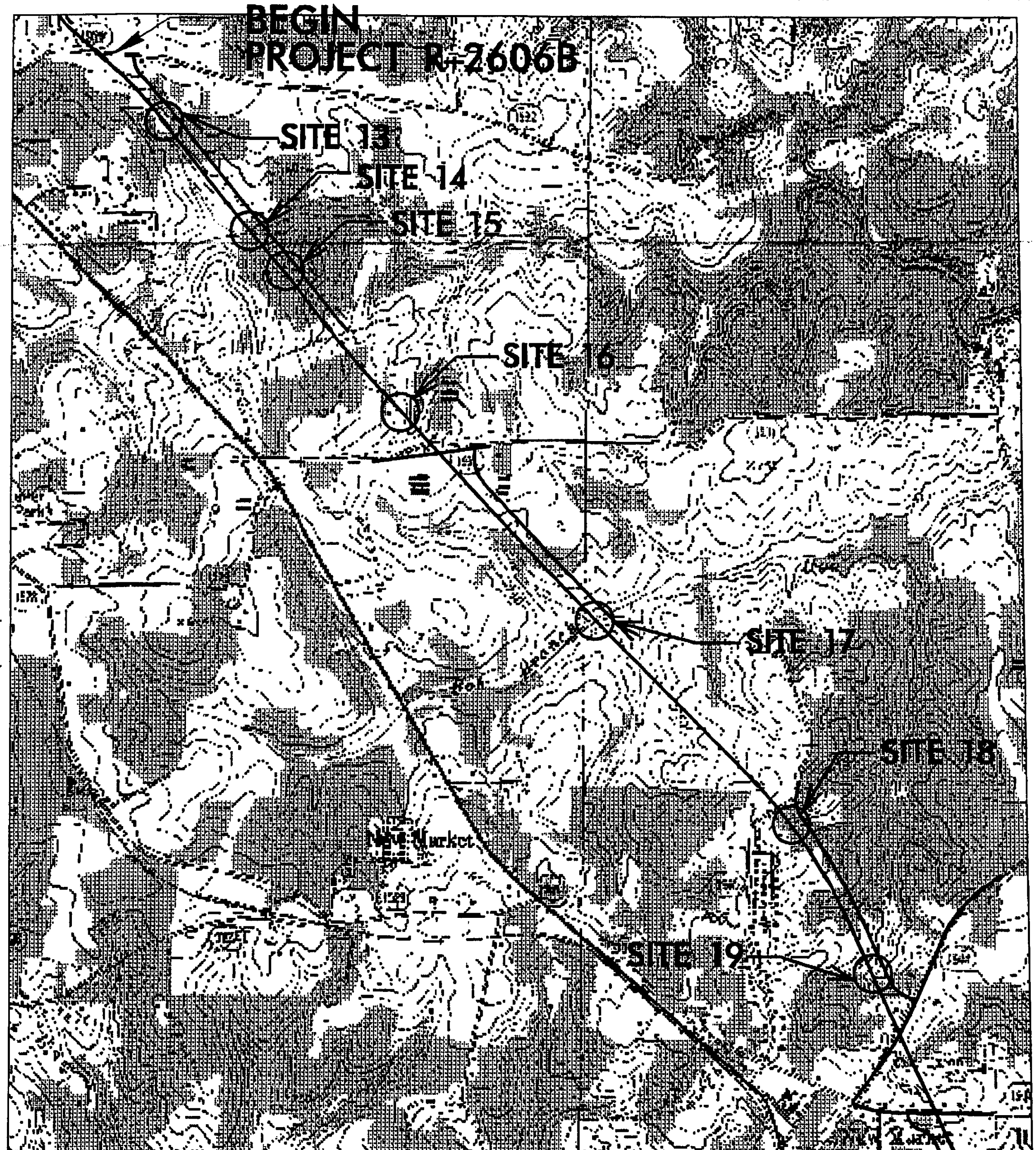
DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

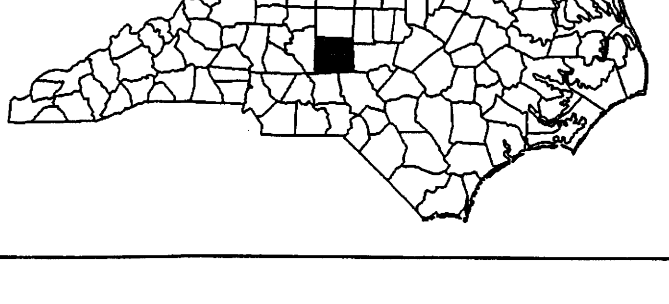
SHEET 1 OF 16 AUGUST 9, 2002



VICINITY MAP

0 ½ 1.0 mile

RANDLEMAN, NC QUAD MAP
GLENOLA, NC QUAD MAP



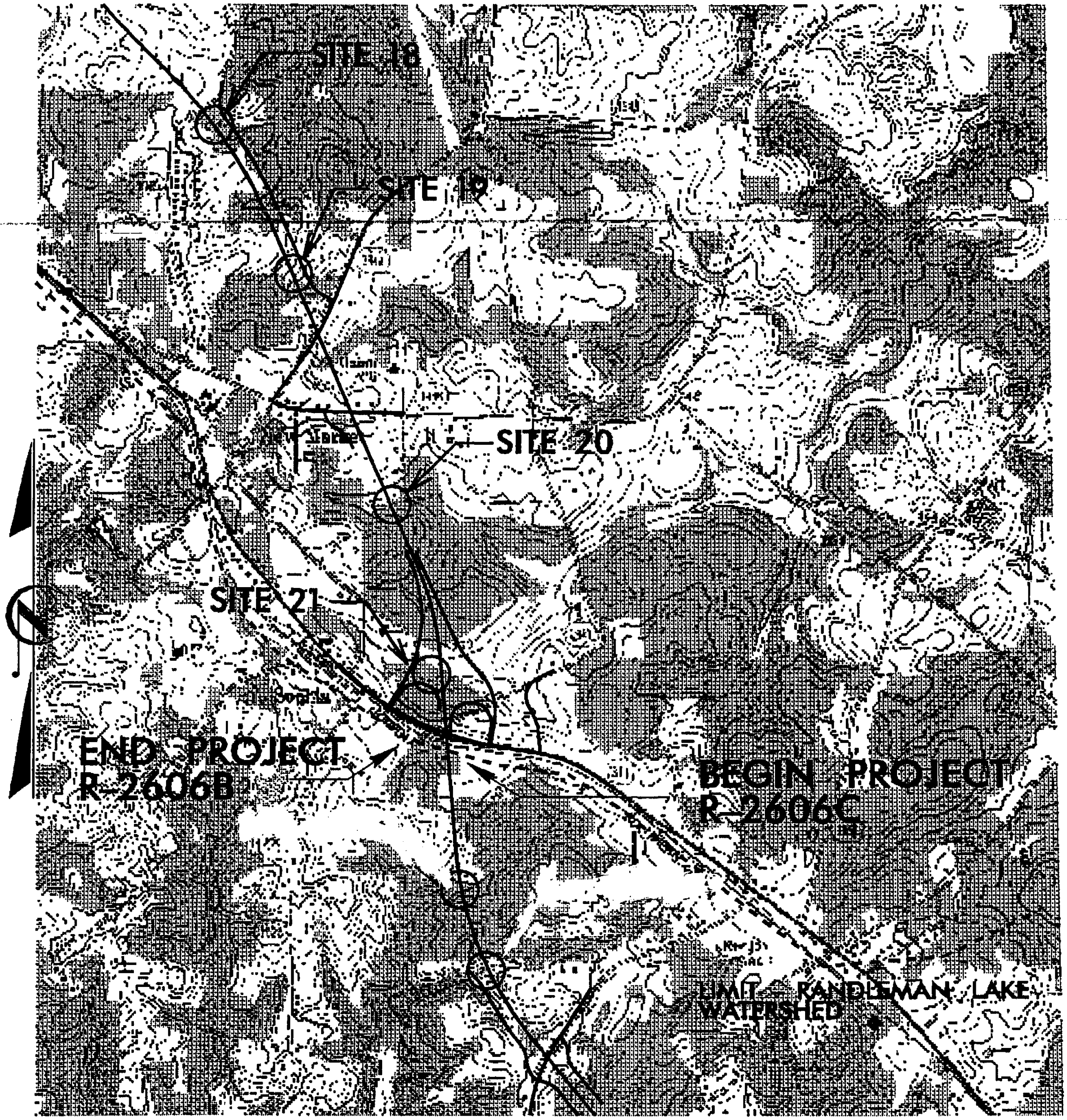
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 2 OF 16 AUGUST 9, 2002

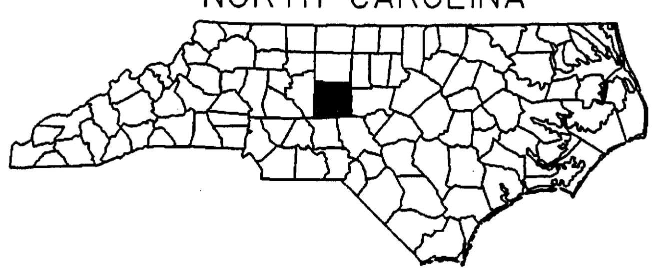


VICINITY MAP

0 ½ 1.0 mile

RANDLEMAN, NC QUAD MAP

NORTH CAROLINA



NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

SHEET 3 OF 16 AUGUST 9, 2002

BUFFER LEGEND

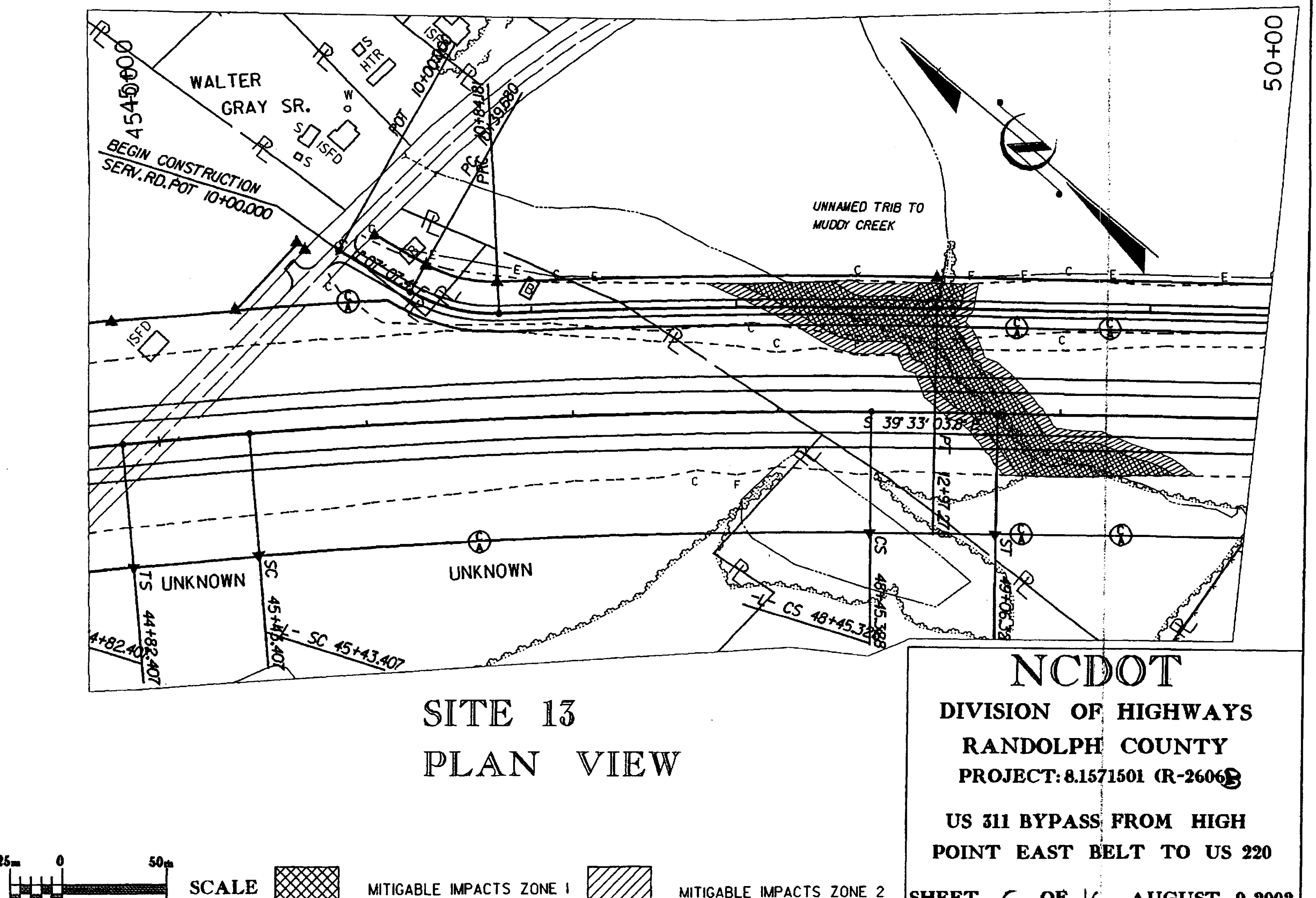
—WLB—	WETLAND BOUNDARY		PROPOSED BRIDGE
WLB / WLB	WETLAND		PROPOSED BOX CULVERT
	ALLOWABLE IMPACTS ZONE I		PROPOSED PIPE CULVERT 12"-48" PIPES 54" PIPES & ABOVE
	ALLOWABLE IMPACTS ZONE 2		(DASHED LINES DENOTE EXISTNG STRUCTURES)
	MITIGABLE IMPACTS ZONE I		SINGLE TREE
	MITIGABLE IMPACTS ZONE 2		WOODS LINE
—BZ—	RIPARIAN BUFFER ZONE		DRAINAGE INLET
—BZ1—	RIPARIAN BUFFER ZONE 1 30 ft (9.2m)		ROOTWAD
—BZ2—	RIPARIAN BUFFER ZONE 2 20 ft (6.1m)		RIP RAP
	FLOW DIRECTION	5	ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE
TB	TOP OF BANK		PREFORMED SCOUR HOLE (PSH)
WE	EDGE OF WATER		LEVEL SPREADER (LS)
— —C— —	PROP. LIMIT OF CUT		GRASS SWALE
— —F— —	PROP. LIMIT OF FILL		
	PROP. RIGHT OF WAY		
— —NG— —	NATURAL GROUND		
— —PL—	PROPERTY LINE		
—TDE—	TEMP. DRAINAGE EASEMENT		
—PDE—	PERMANENT DRAINAGE EASEMENT		
—EAB— ·	EXIST. ENDANGERED ANIMAL BOUNDARY		
—EPB— ·	EXIST. ENDANGERED PLANT BOUNDARY		
	WATER SURFACE		
x x x x x x x x	LIVE STAKES		
	BOULDER		
— — —	CORE FIBER ROLLS		

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 4 **OF** 16 **AUGUST 9, 2002**

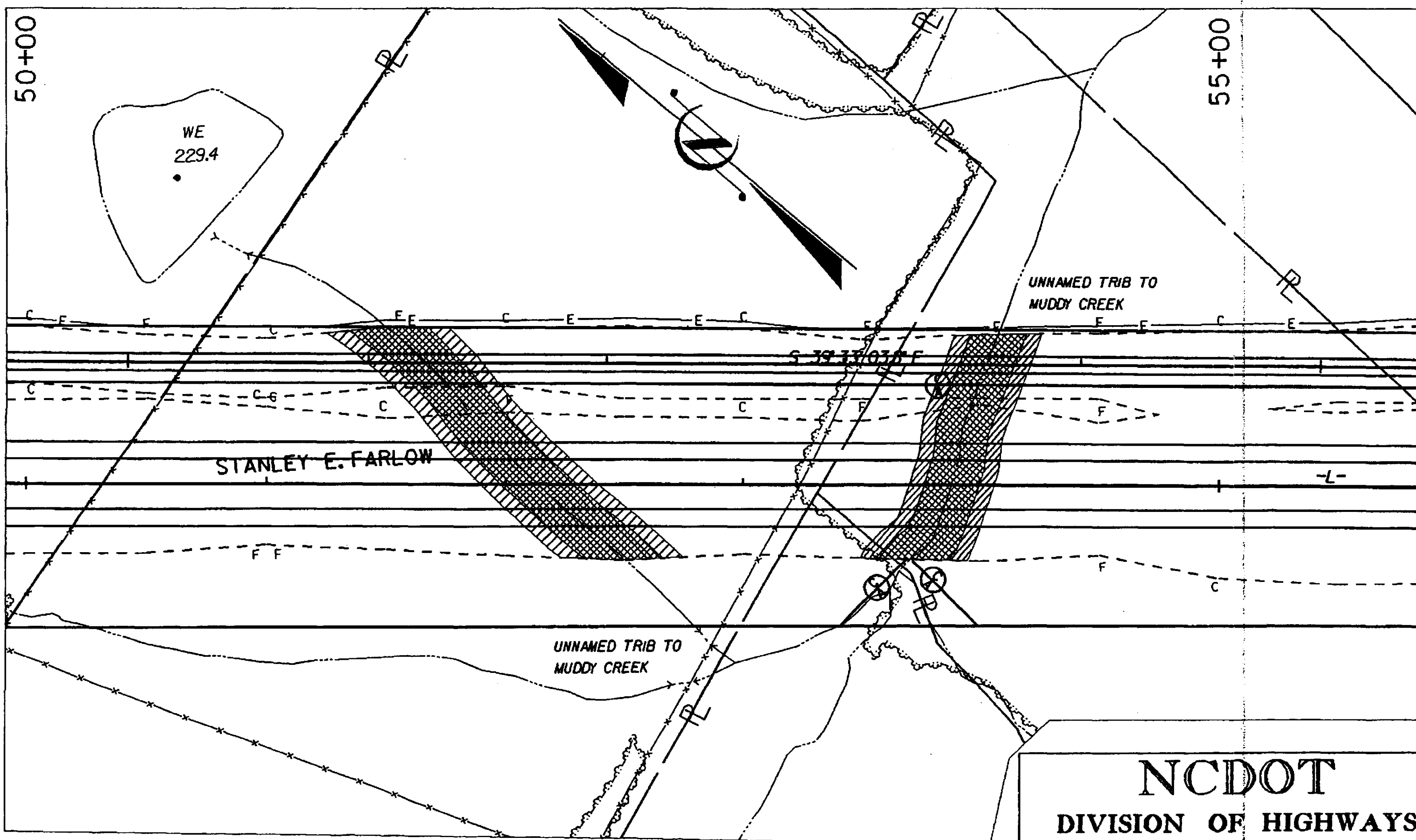


SITE 13
PLAN VIEW

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 5 OF 16 AUGUST 9, 2002



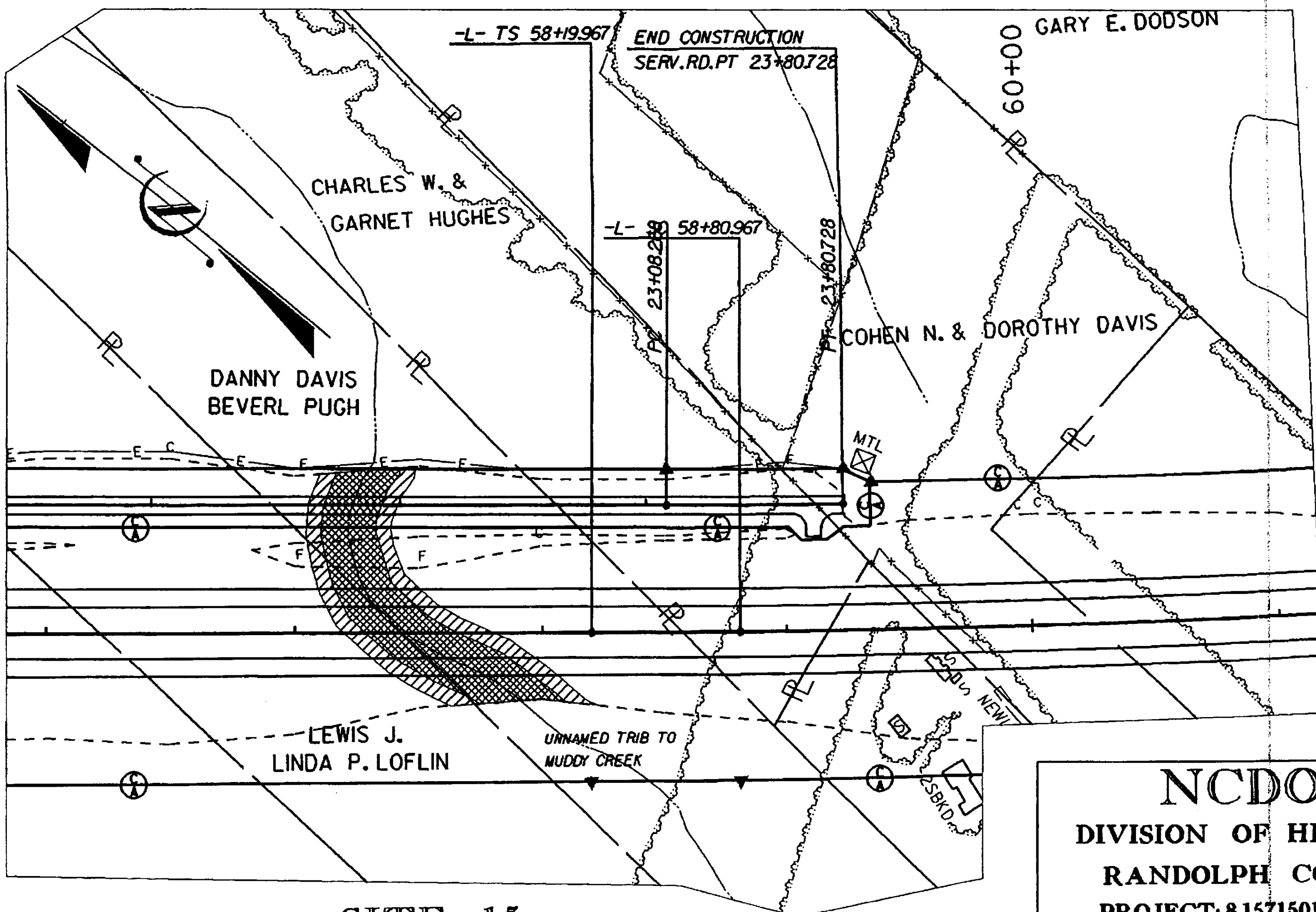
SITE 14
PLAN VIEW

25m 0 50m SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B
US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220
SHEET 6 **OF** 16 **AUGUST 9, 2002**



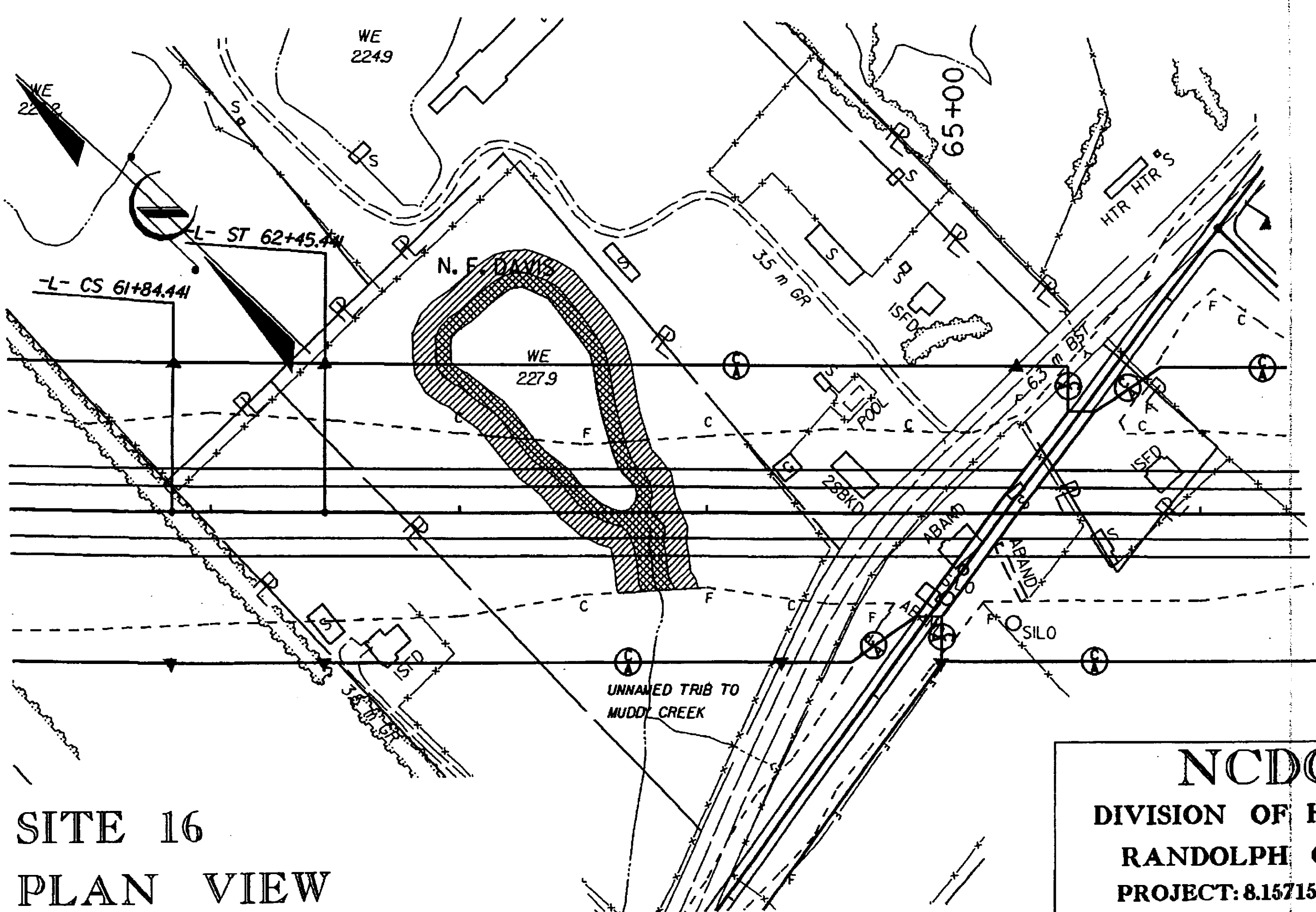
SITE 15
PLAN VIEW

25m 0 50m SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B
US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220
SHEET 7 OF 16 AUGUST 9, 2002



SITE 16
PLAN VIEW

25m 0 50m
SCALE

MITIGABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

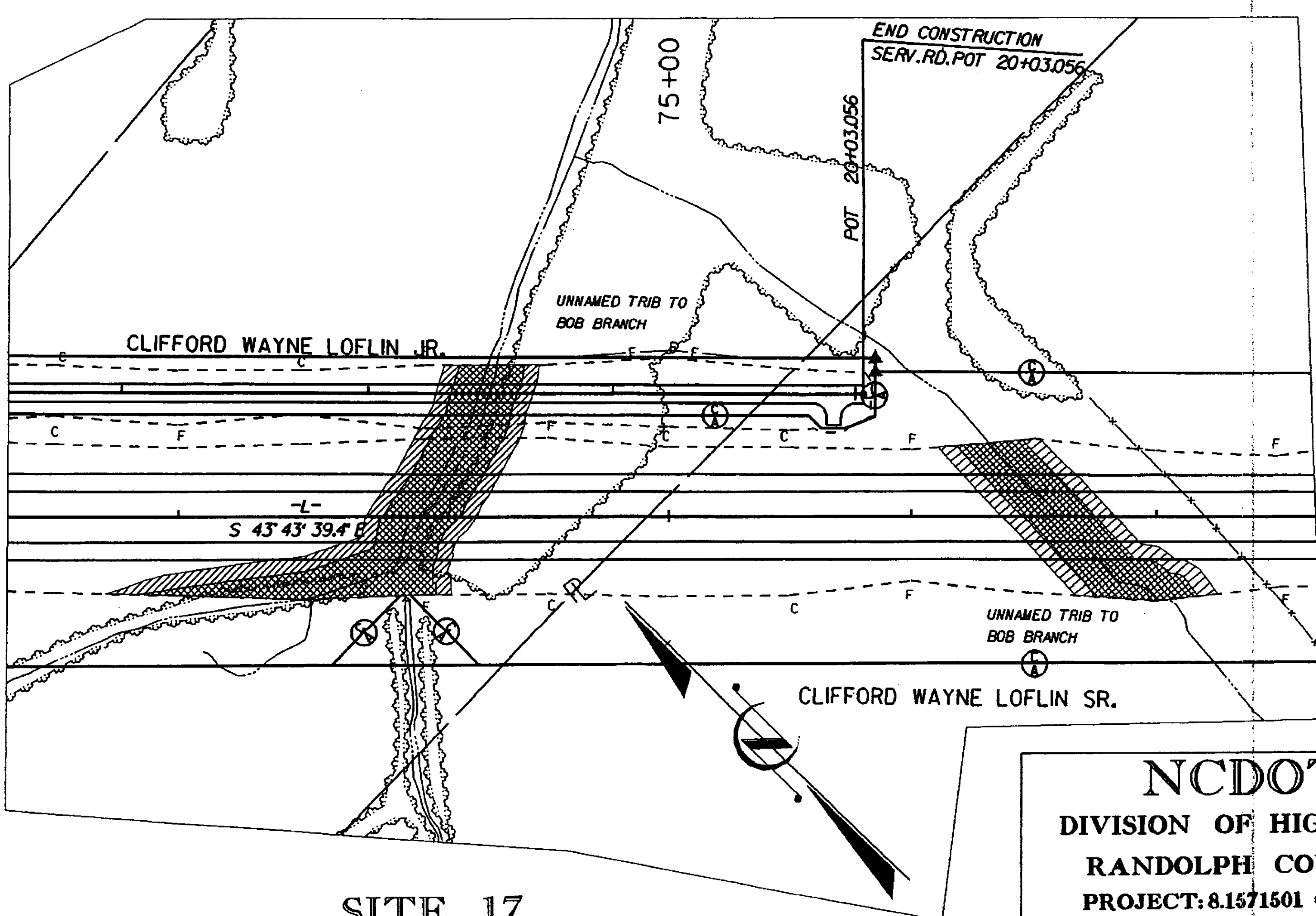
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2004

SHEET 8 **OF** 16 **AUGUST 9, 2002**

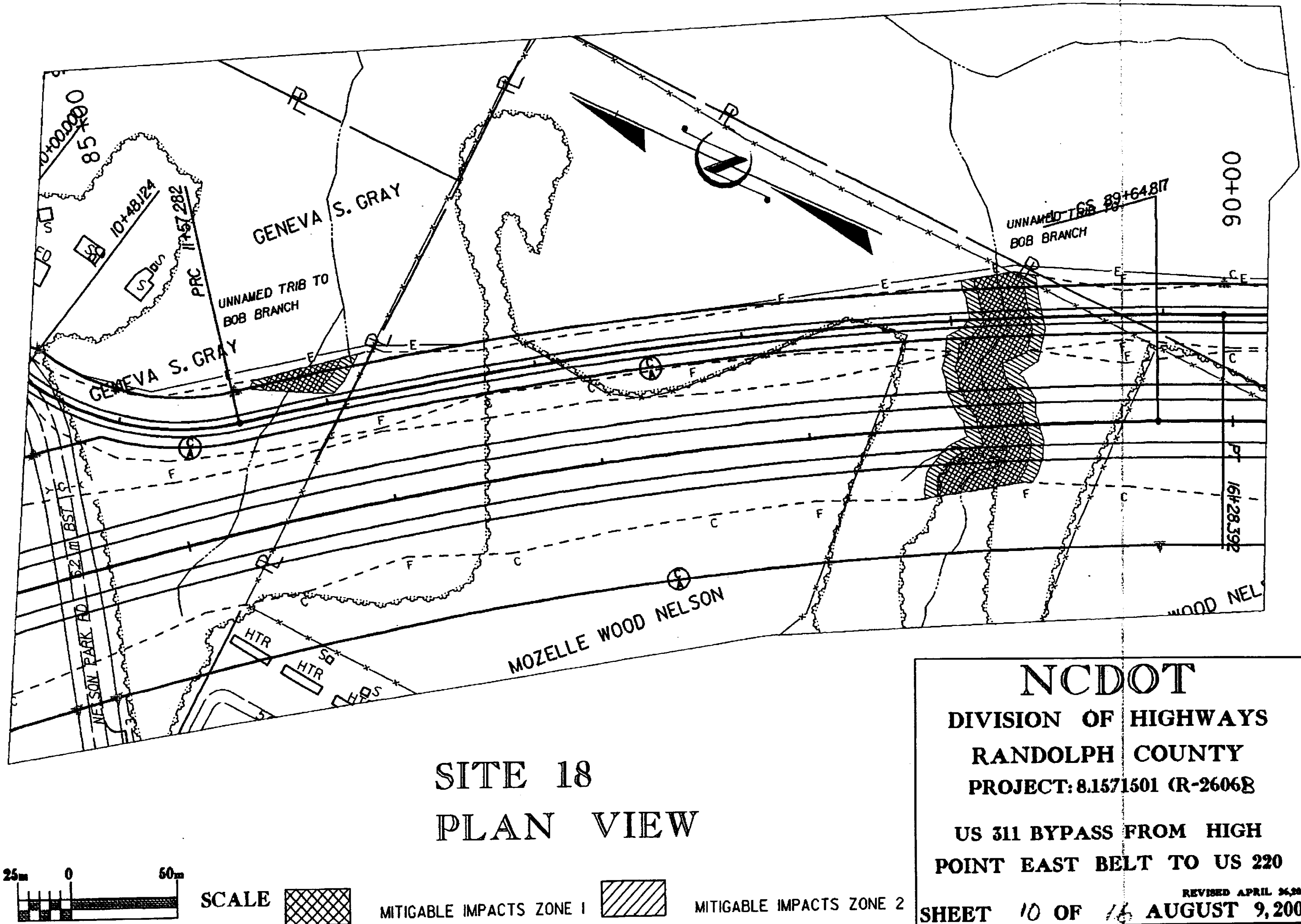


SITE 17
PLAN VIEW

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 9 OF 16 AUGUST 9, 2002



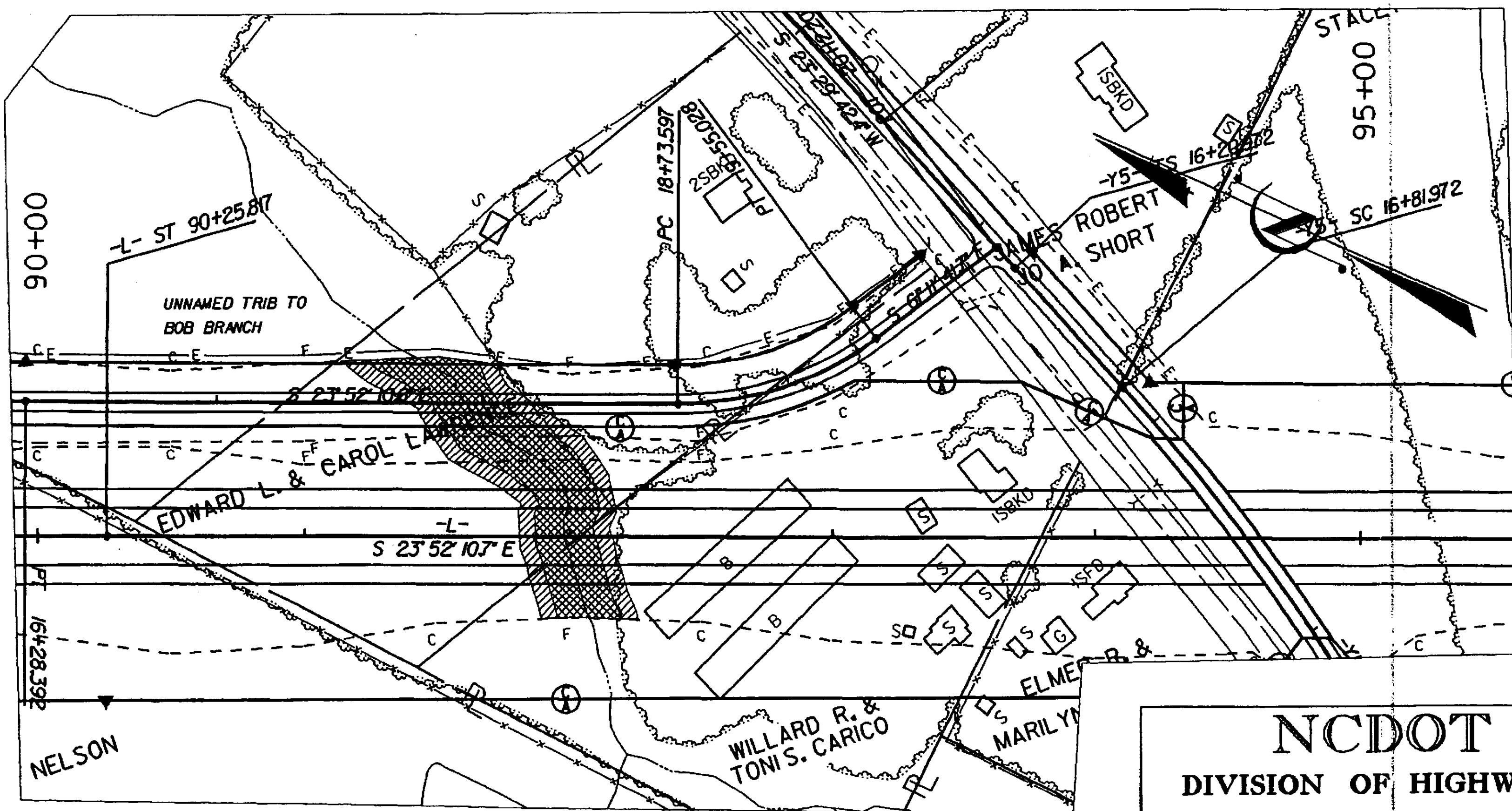
SITE 18
PLAN VIEW

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26,2004

SHEET 10 **OF** 16 **AUGUST 9, 2002**



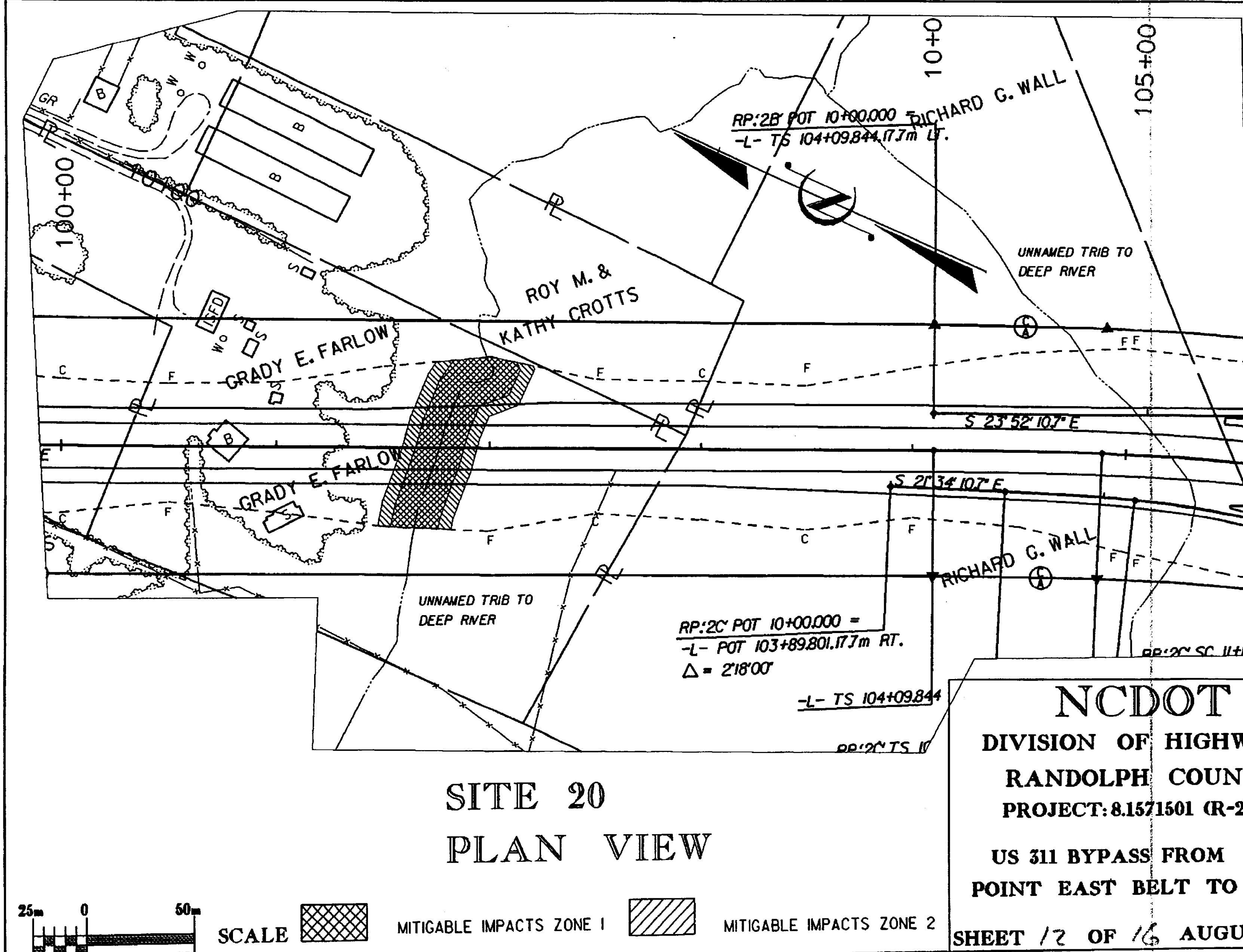
SITE 19
PLAN VIEW

25m 0 50m SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B
US 311 BYPASS FROM HIGH
POINT EAST BELT TO US 220
SHEET 11 OF 16 AUGUST 9, 2002

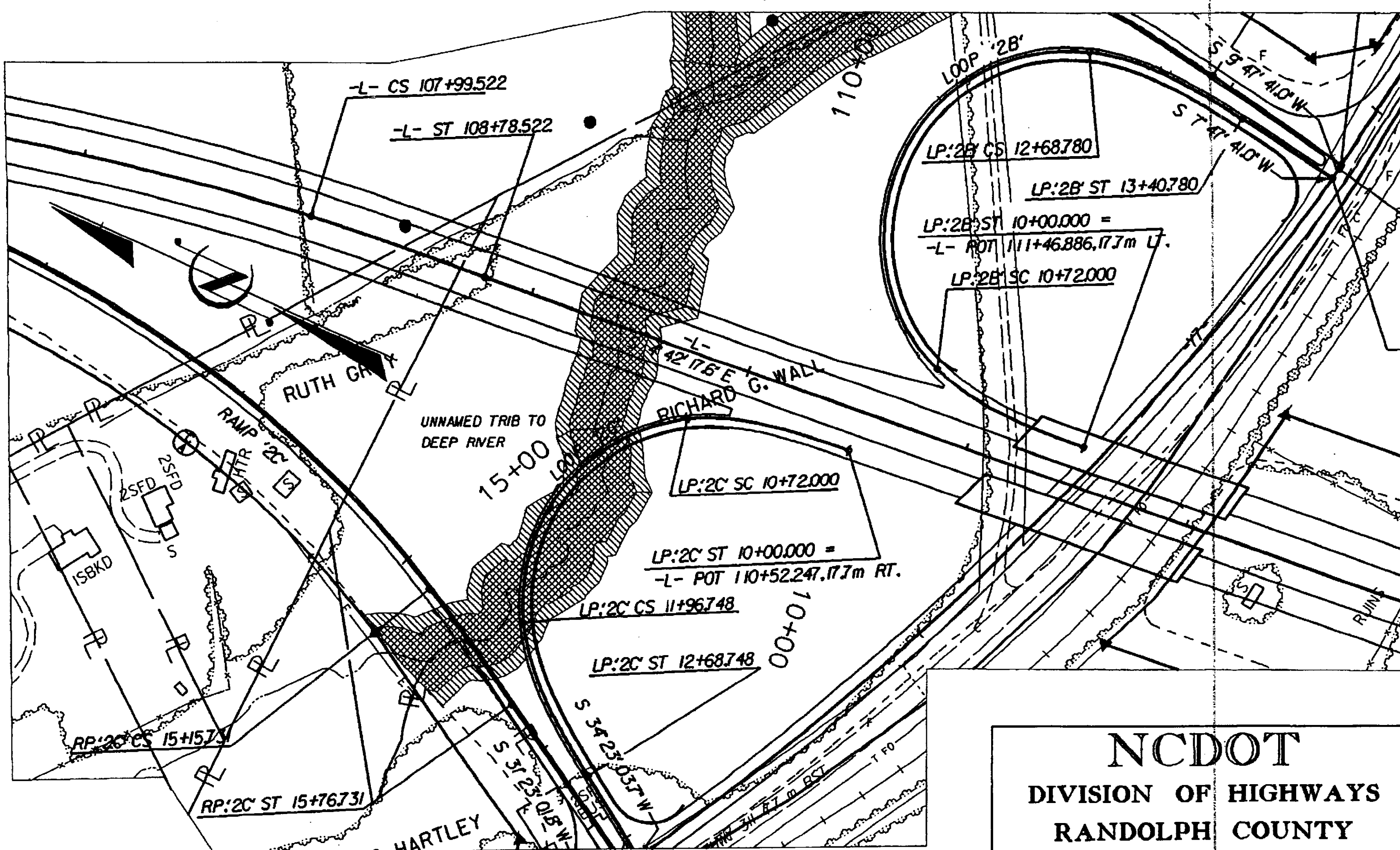


SITE 20
PLAN VIEW

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 12 OF 16 AUGUST 9, 2002



SITE 21
PLAN VIEW

25m 0 50m SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 13 **OF** 16

REVISED APRIL 26, 2004
AUGUST 9, 2002

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT: TYPE: ROAD CROSSING	IMPACT: TYPE: PARALLEL IMPACT	IMPACT: ALLOWABLE: ZONE 1 (m^2)	IMPACT: ALLOWABLE: ZONE 2 (m^2)	IMPACT: ALLOWABLE: TOTAL (m^2)	IMPACT: MITIGABLE: ZONE 1 (m^2)	IMPACT: MITIGABLE: ZONE 2 (m^2)	IMPACT: MITIGABLE: TOTAL (m^2)	BUFFER REPLACEMENT: ZONE 1 (m^2)	BUFFER REPLACEMENT: ZONE 2 (m^2)
13		47+70 - 50+00 -L-	X					4602	2282	6884		
14		51+26 - 52+74 -L-	X					3075	1035	4110		
		53+50 - 54+26 -L-	X					2230	1244	3474		
15		57+05 - 58+20 -L-	X					2865	1566	4431		
16		62+85 - 63+90 -L-						2027	3221	5248		
17		72+70 - 74+45 -L-	X					3500	1711	5211		
		76+10 - 77+25 -L-	X					2127	1114	3241		
18		85+40 - 85+95 -L-	X					320	162	482		
		88+55 - 89+10 -L-	X					2776	1435	4211		
19		91+10 - 92+28-L-	X					2822	1630	4452		
20		101+50 - 102+20 -L-	X					2075	1057	3132		
21		109+50 -L-	X					9784	4857	14641		
TOTAL:								38203	21314	59517		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

8/9/2002
SHEET 11 OF 12

Revised 4/26/05

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
13		47+70 - 50+00 -L-	X					49535	24563	74099		
14		51+26 - 52+74 -L-	X					33099	11141	44240		
		53+50 - 54+26 -L-	X					24003	13390	37394		
15		57+05 - 58+20 -L-	X					30839	16856	47695		
16		62+85 - 63+90 -L-						21818	34671	56489		
17		72+70 - 74+45 -L-	X					37674	18417	56091		
		76+10 - 77+25 -L-	X					22895	11991	34886		
18		85+40 - 85+95 -L-	X					3444	1744	5188		
		88+55 - 89+10 -L-	X					29881	15446	45327		
19		91+10 - 92+28-L-	X					29881	15446	45327		
20		101+50 - 102+20 -L-	X					22335	11377	33713		
21		109+50 -L-	X					105314	52280	157594		
TOTAL:								410718	227323	638041		

Revised 4/26/05

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

8/9/2002
SHEET 15 OF 16

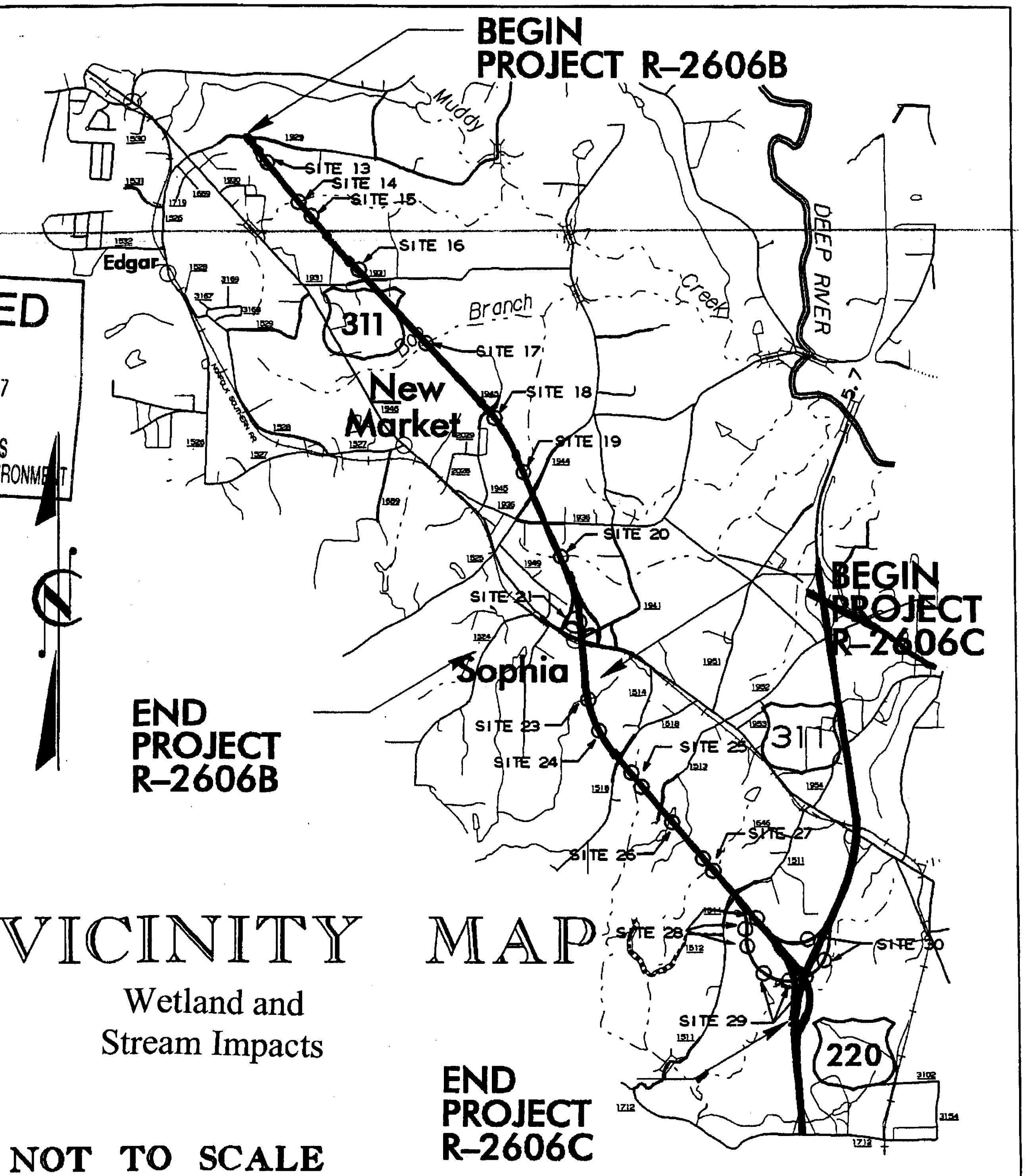
Site No.	Property Owner Name	Property Owner Address
13	Clyde R. & Randall Spencer	N/A
14	Stanley E. Farlow	N/A
15	Danny Davis & Beverly Pugh Lewis J. & Linda P. Loflin	N/A N/A
16	N. F. Davis	2709 Banner Withehead Rd., Sophia, NC 27350
17	Clifford Wayne Loflin, Jr. Clifford Wayne Loflin, Sr.	2410 Loflin Dairy Rd., Sophia, NC 27350 2410 Loflin Dairy Rd., Sophia, NC 27350
18	Geneva S. Gray Mozelle Wood Nelson	6590 US Hwy 311, Sophia, NC 27350 4570 Nelson Park Rd., Sophia, NC 27350
19	Edward L. & Carol Lawrence Willard R. & Toni S. Carico	4875 Branson Davis Rd., Sophia, NC 27350 4833 Branson Davis Rd., Sophia, NC 27350
20	Grady E. Farlow	5080 Walker Mill Rd., Sophia, NC 27350
21	Richard G. Wall	N/A

List of Property Owners

NC Dept. of Transportation
Division of Highways
Randolph County
Project:8.1571501 (R-2606B

US 311 Bypass From High Point East Belt to US 220

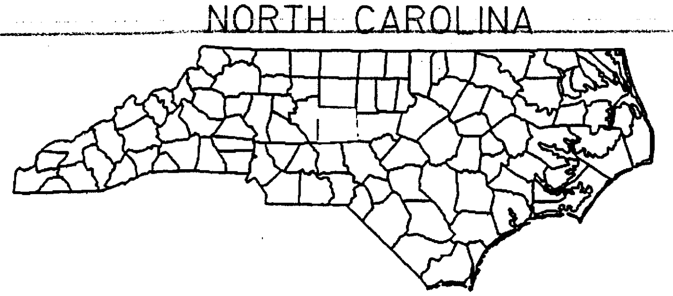
Sheet 16 of 16 08/09/02



VICINITY MAP

Wetland and
Stream Impacts

NOT TO SCALE



NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606)B+C

US 311 BYPASS FROM HIGH
POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

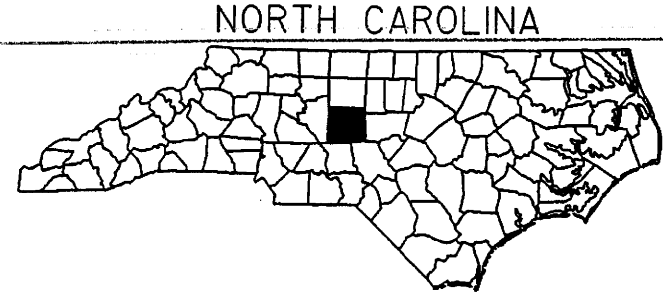
SHEET 1 OF 30 AUGUST 9, 2002

VICINITY MAP

0 1/2 1.0 mile

RANDLEMAN, NC QUAD MAP
GLENOLA, NC QUAD MAP

NORTH CAROLINA



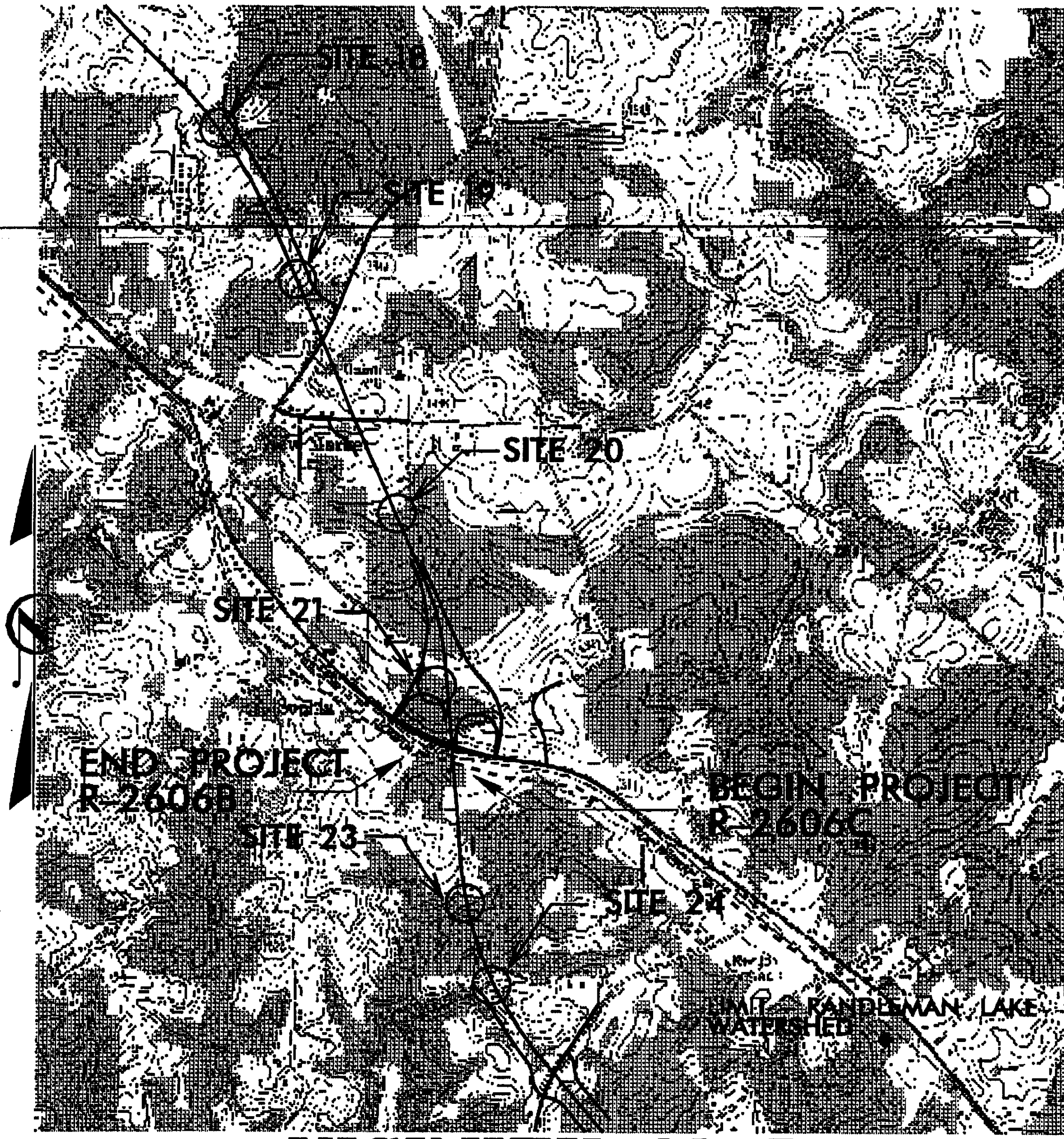
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B and C

US 311 BYPASS FROM HIGH
POINT EAST BELT TO US 220

SHEET 2 OF 30 AUGUST 9, 2002

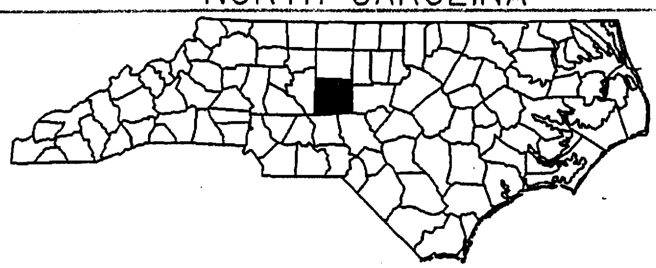


VICINITY MAP

0 ½ 1.0 mile

RANDLEMAN, NC QUAD MAP

NORTH CAROLINA



NCDOT

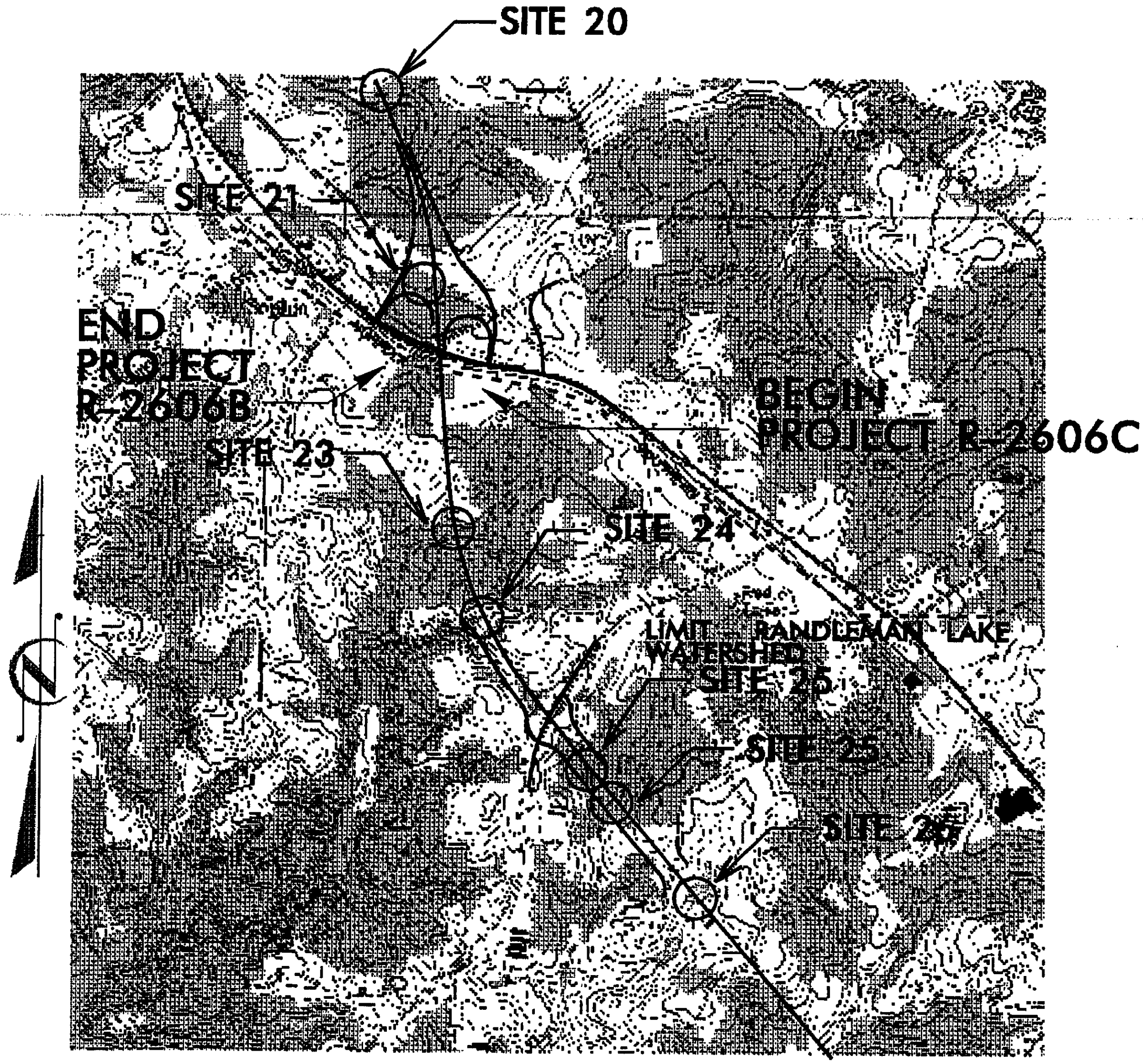
DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B and C

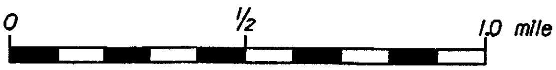
US 311 BYPASS FROM HIGH
POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

SHEET 3 OF 30 AUGUST 9, 2002

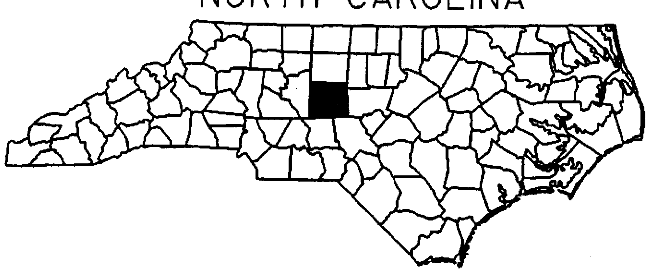


VICINITY MAP



RANDLEMAN, NC QUAD MAP

NORTH CAROLINA



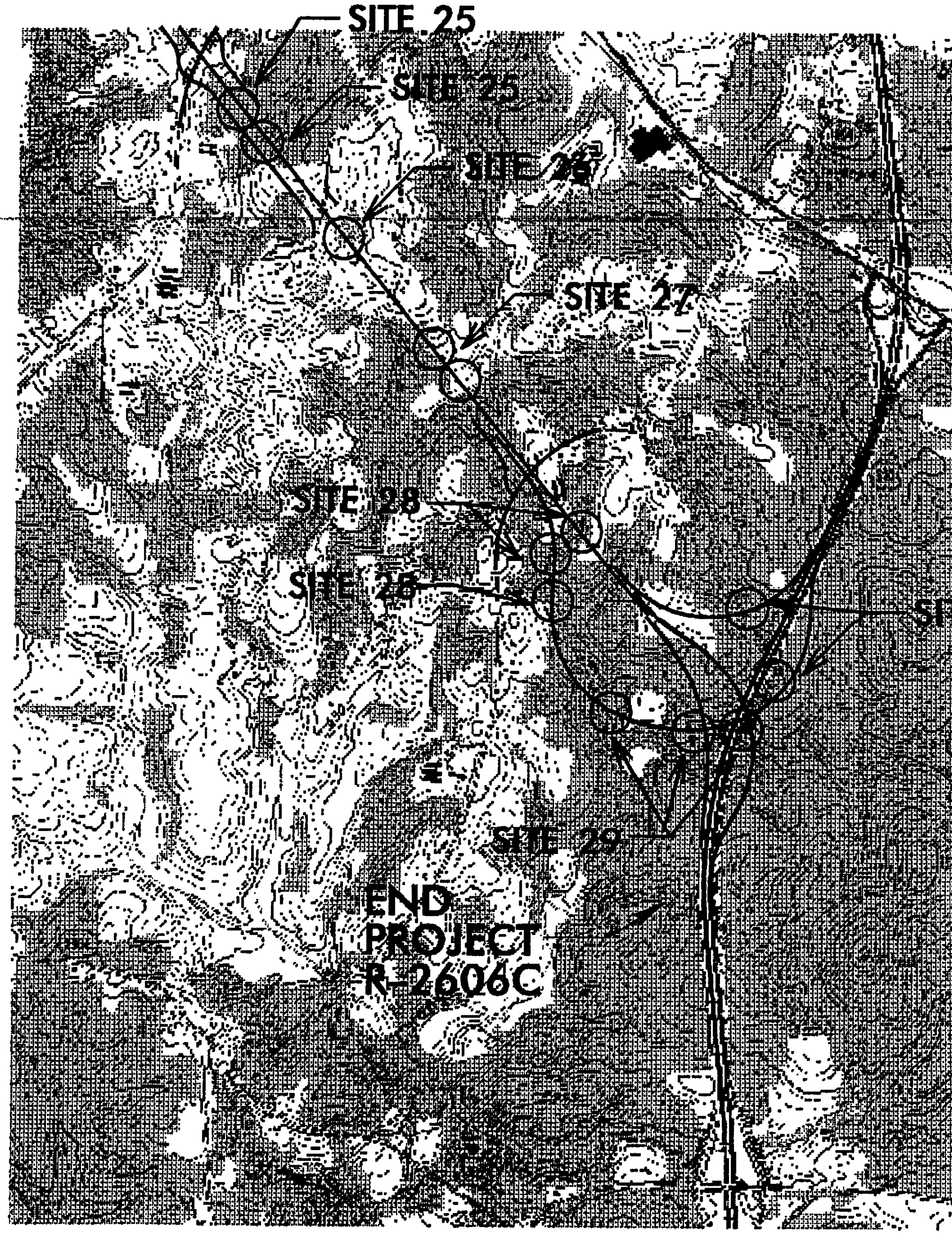
NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B and C

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2005

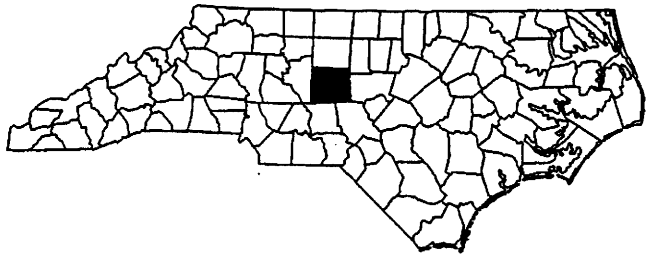
SHEET 4 OF 30 AUGUST 9, 2002



VICINITY MAP

0 ½ 1.0 mile

RANDLEMAN, NC QUAD MAP



NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606C

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 5 OF 30 AUGUST 9, 2002

WETLAND LEGEND

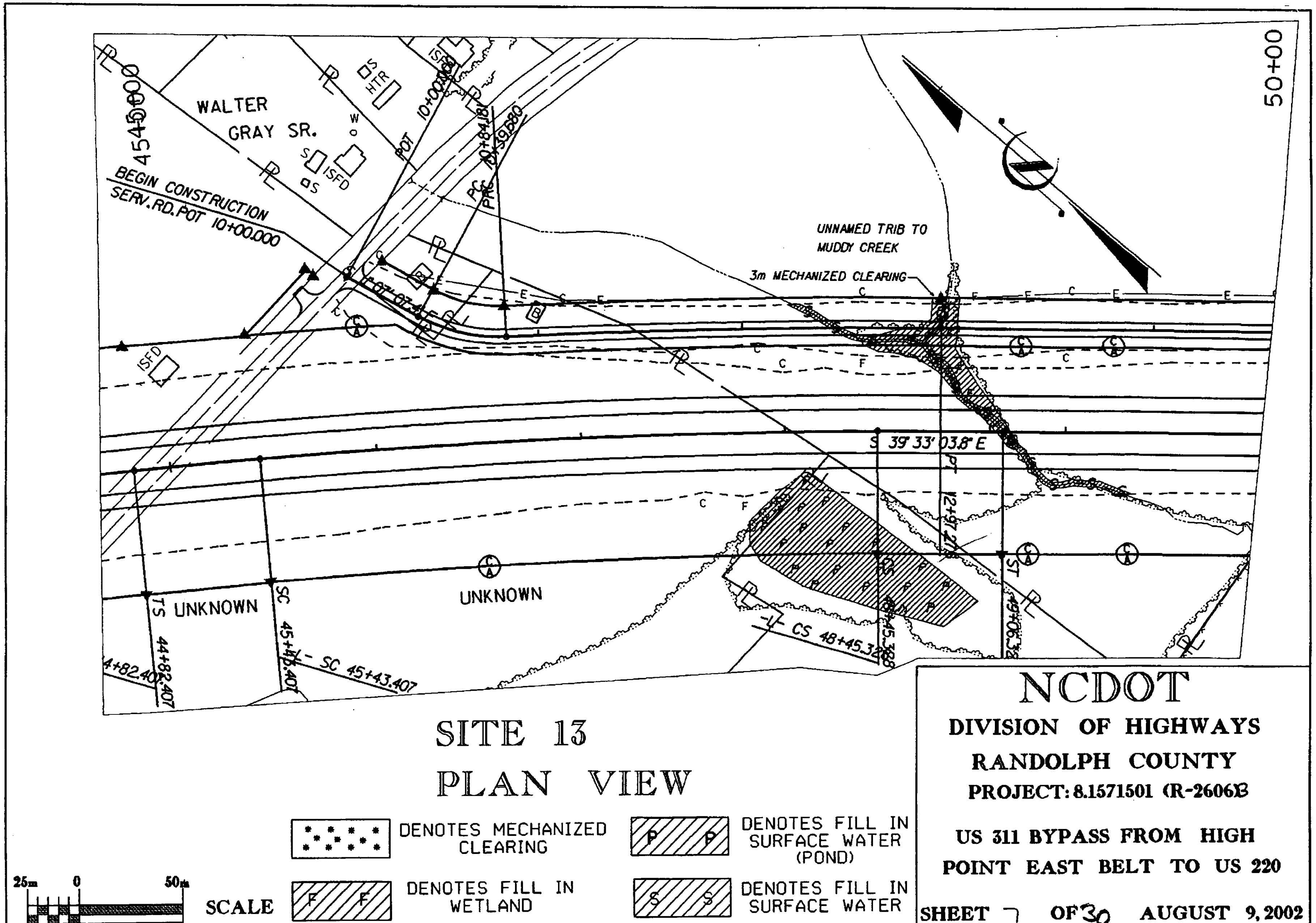
WLB	WETLAND BOUNDARY
WLB / WLB	WETLAND
F F	DENOTES FILL IN WETLAND
S S	DENOTES FILL IN SURFACE WATER
P P	DENOTES FILL IN SURFACE WATER (POND)
T T	DENOTES TEMPORARY FILL IN WETLAND
E E	DENOTES EXCAVATION IN WETLAND
TS TS	DENOTES TEMPORARY FILL IN SURFACE WATER
	DENOTES MECHANIZED CLEARING
	FLOW DIRECTION
TB	TOP OF BANK
WE	EDGE OF WATER
C	PROP. LIMIT OF CUT
F	PROP. LIMIT OF FILL
	PROP. RIGHT OF WAY
NG	NATURAL GROUND
PL	PROPERTY LINE
TDE	TEMP. DRAINAGE EASEMENT
PDE	PERMANENT DRAINAGE EASEMENT
EAB	EXIST. ENDANGERED ANIMAL BOUNDARY
EPB	EXIST. ENDANGERED PLANT BOUNDARY
	WATER SURFACE
X X X X X X X X	LIVE STAKES
	BOULDER
	CORE FIBER ROLLS

	PROPOSED BRIDGE
	PROPOSED BOX CULVERT
	PROPOSED PIPE CULVERT
	12"-48" PIPES
	54" PIPES & ABOVE
	(DASHED LINES DENOTE EXISTNG STRUCTURES)
	SINGLE TREE
	WOODS LINE
	DRAINAGE INLET
	ROOTWAD
	RIP RAP
5	ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE
	PREFORMED SCOUR HOLE
	LEVEL SPREADER (LS)
	DITCH / GRASS SWALE

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 6 **OF** 30 **AUGUST 9, 2002**



SITE 13

PLAN VIEW

NCDOT

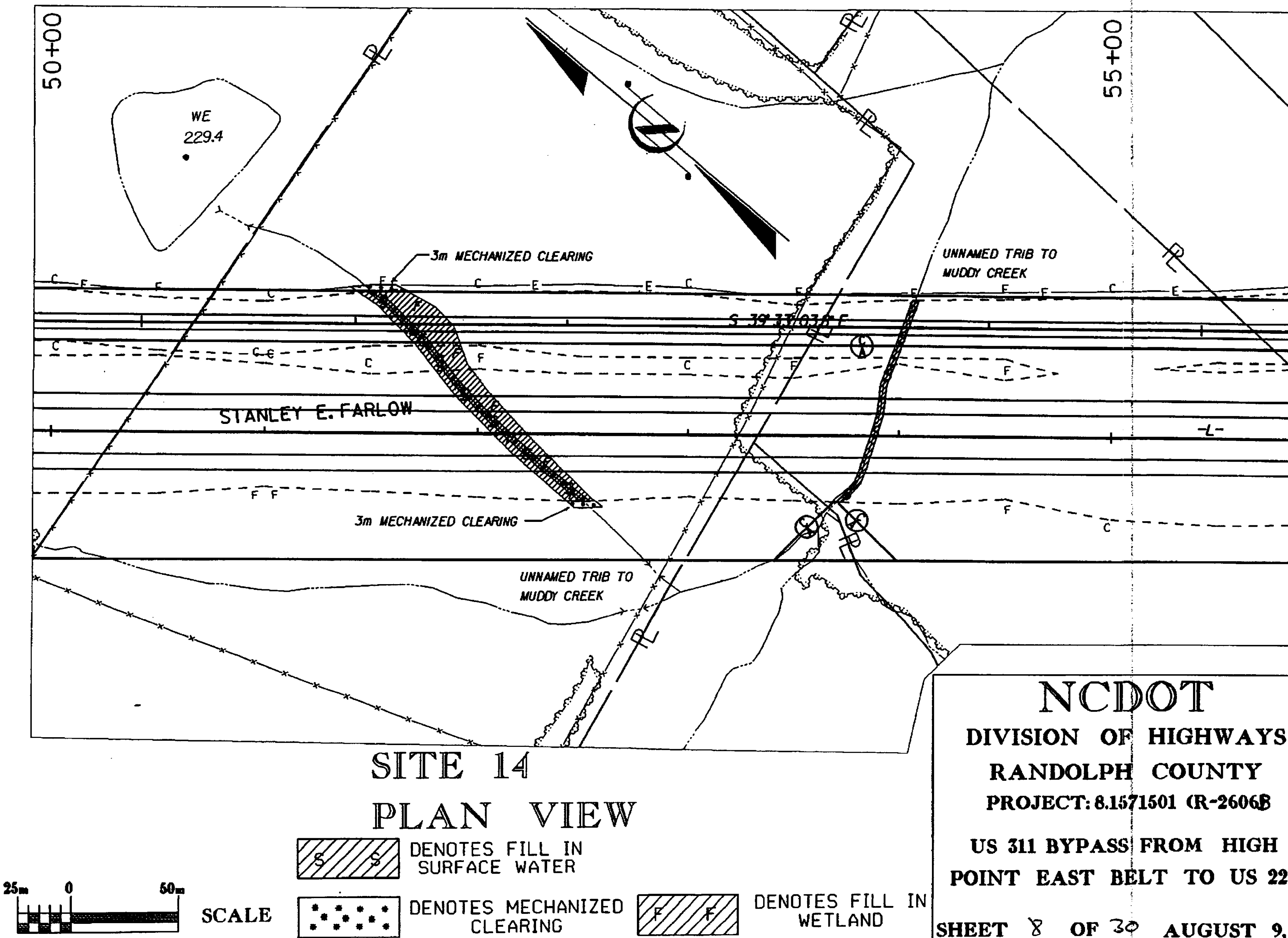
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 7 OF 30 AUGUST 9, 2002



SITE 14

PLAN VIEW

DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

NCDOT

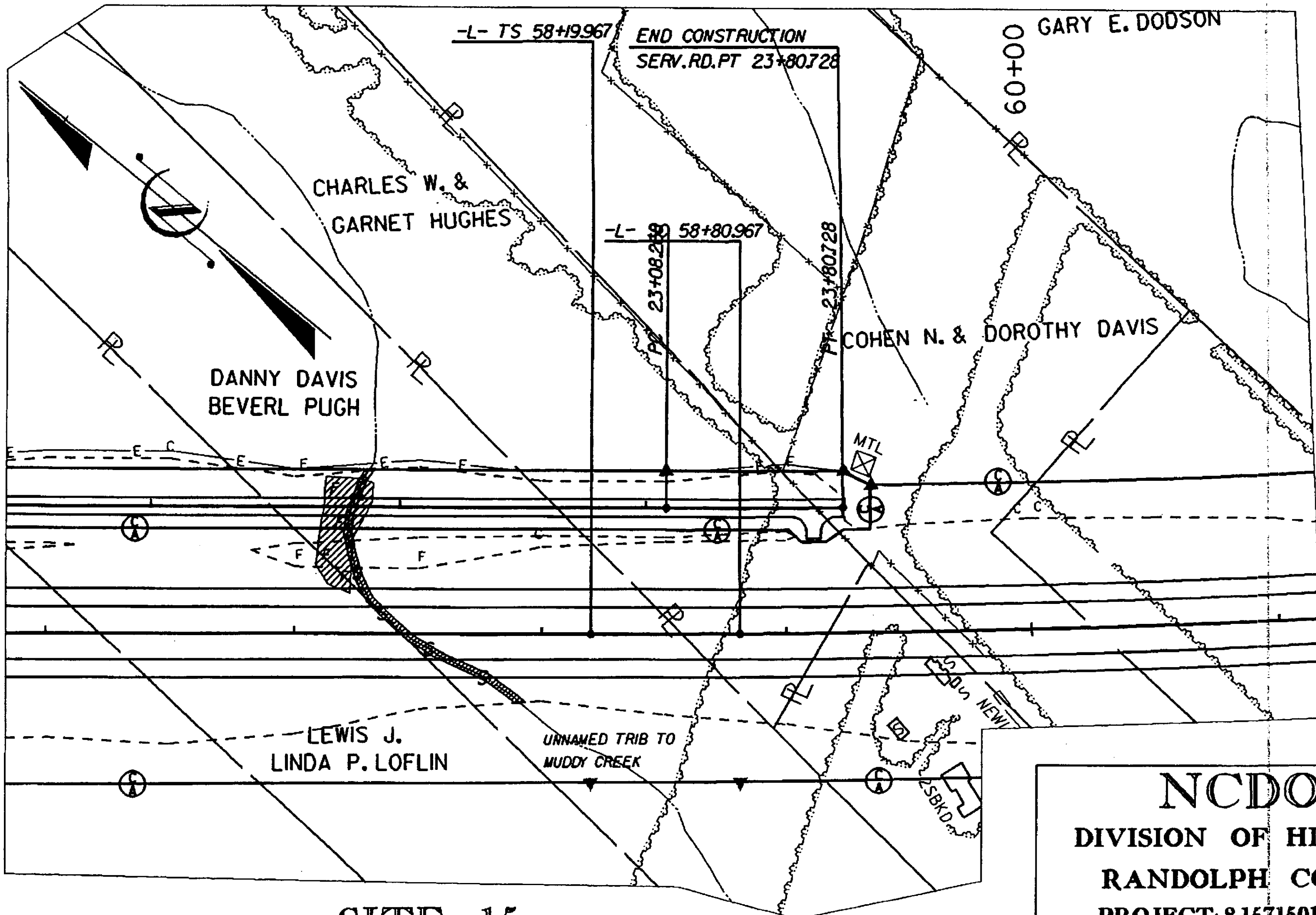
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 8 OF 30 AUGUST 9, 2002



SITE 15
PLAN VIEW

SCALE 25m 0 50m

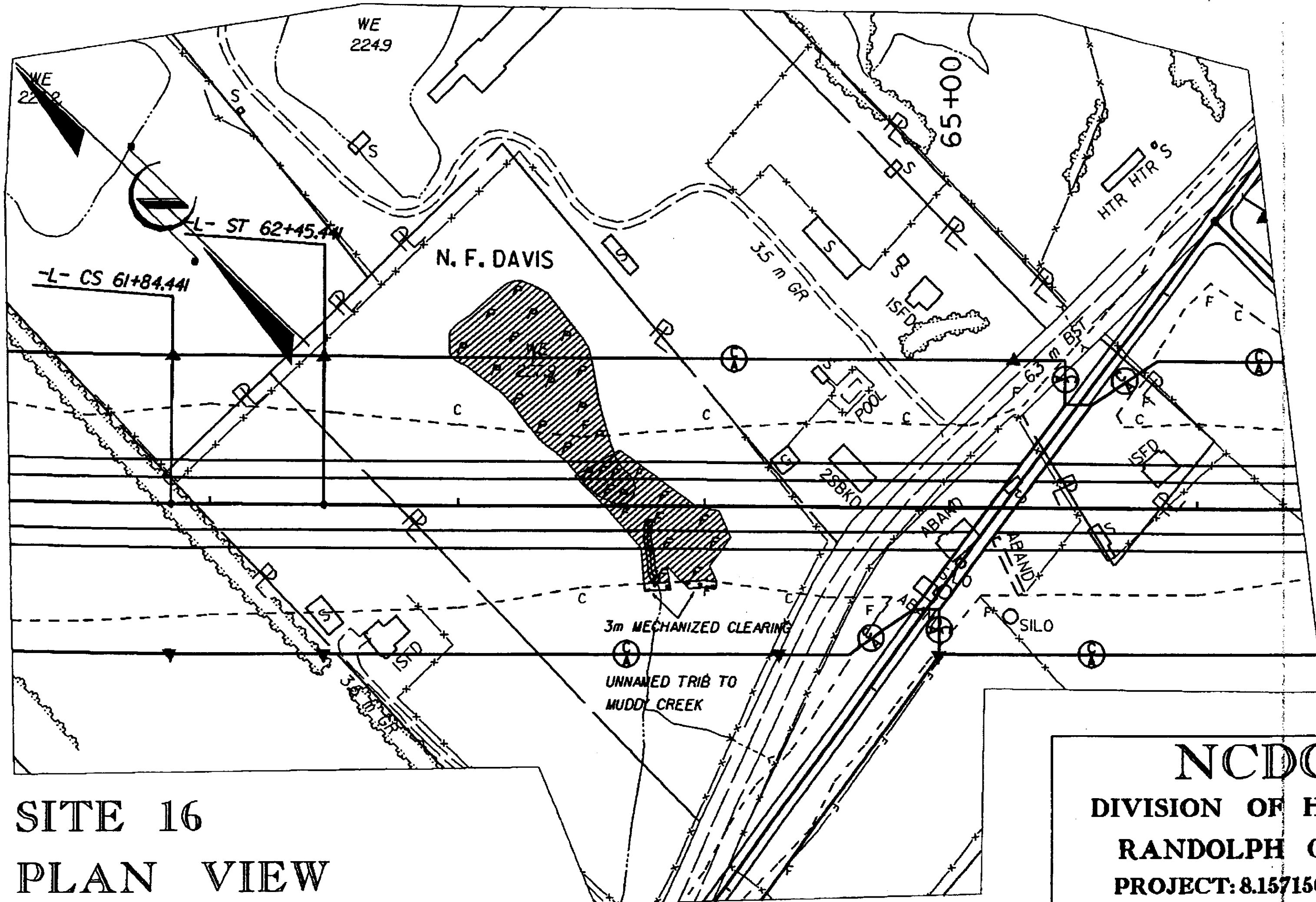
DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 9 OF 30 AUGUST 9, 2002



SITE 16
PLAN VIEW

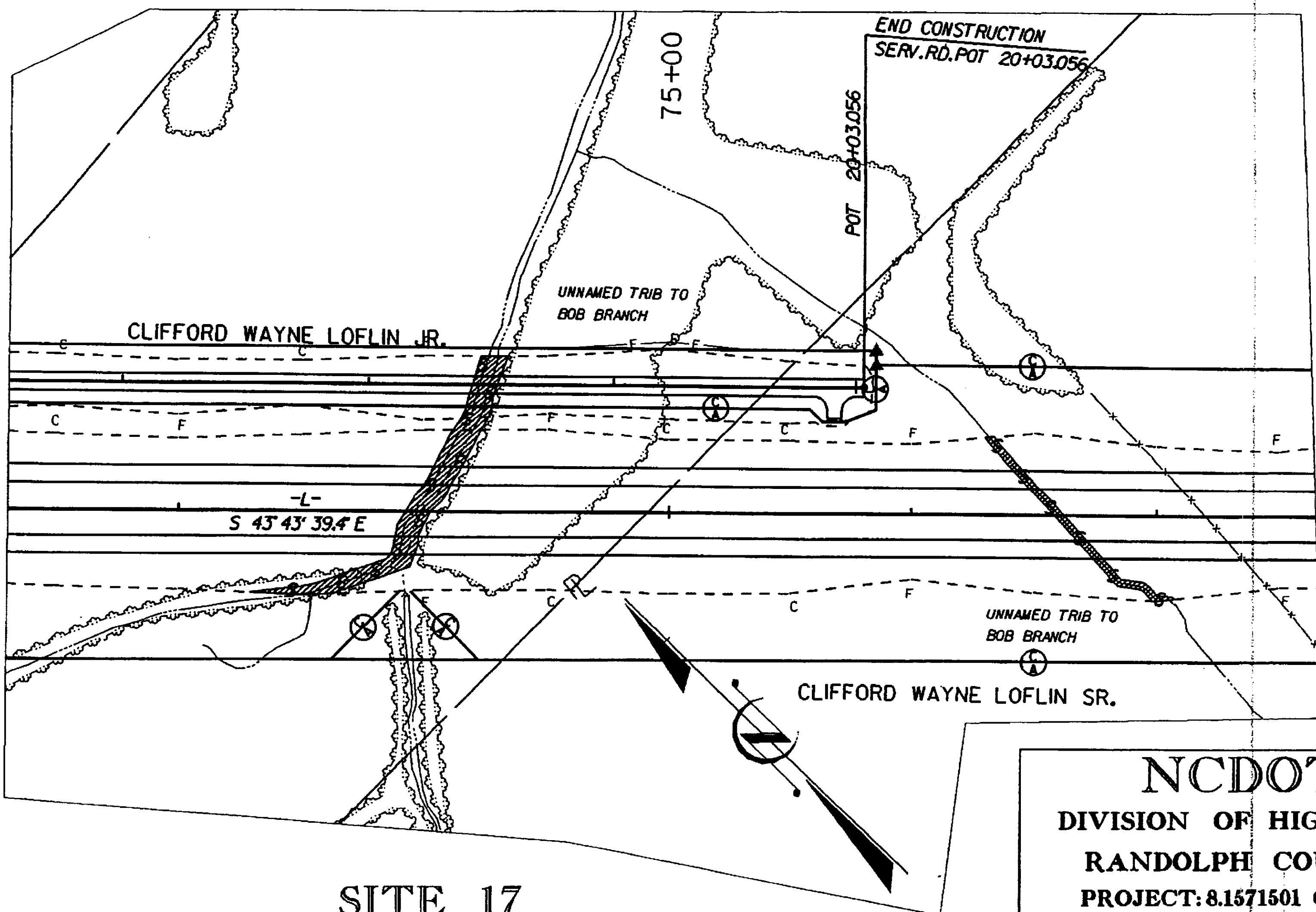
DENOTES MECHANIZED CLEARING	DENOTES FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER (POND)	DENOTES FILL IN WETLAND

SCALE 25m 0 60m

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 26, 2004
SHEET 10 OF 30 AUGUST 9, 2002



SITE 17
PLAN VIEW

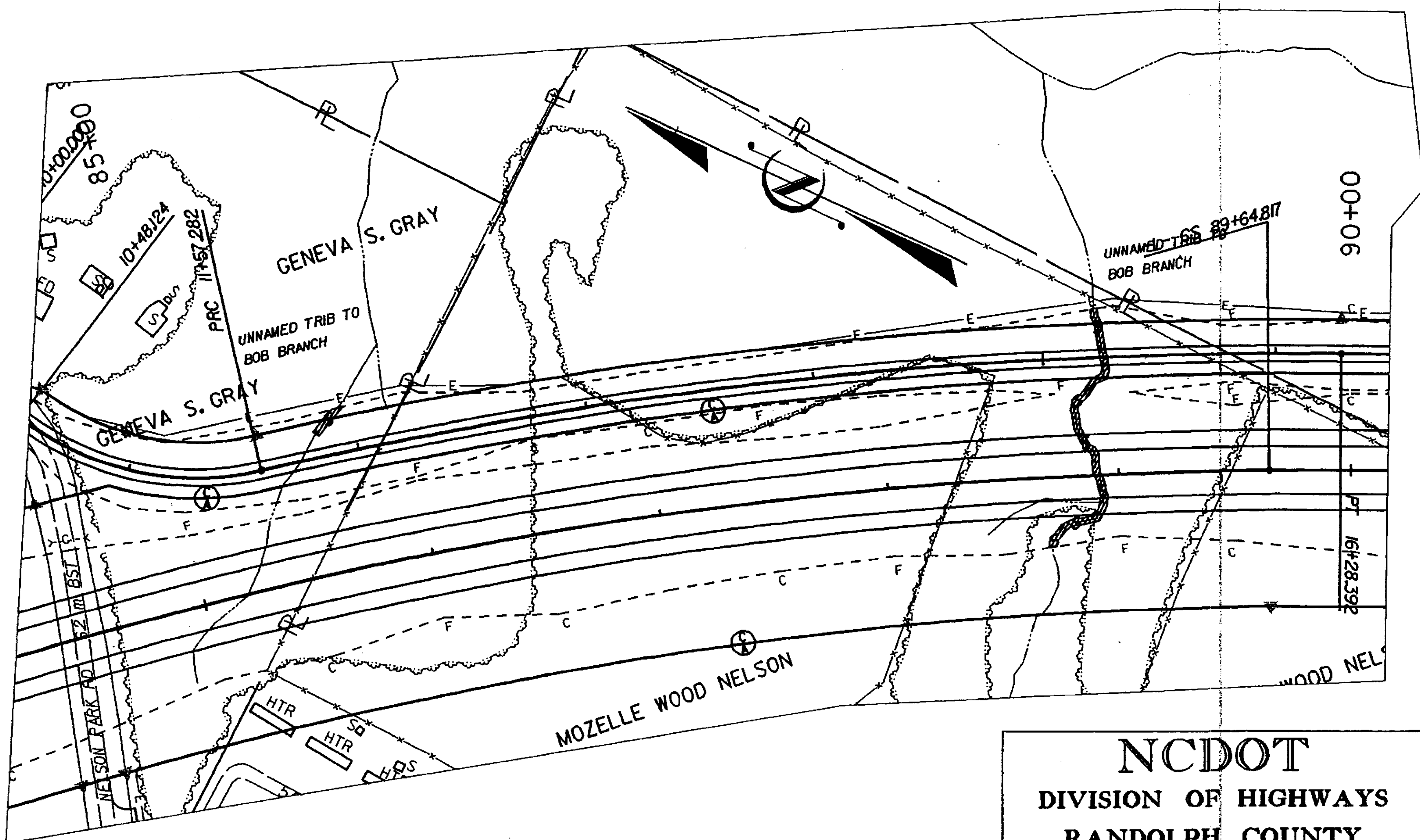
25m 0 50m SCALE

DENOTES FILL IN SURFACE WATER

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 11 OF 30 AUGUST 9, 2002



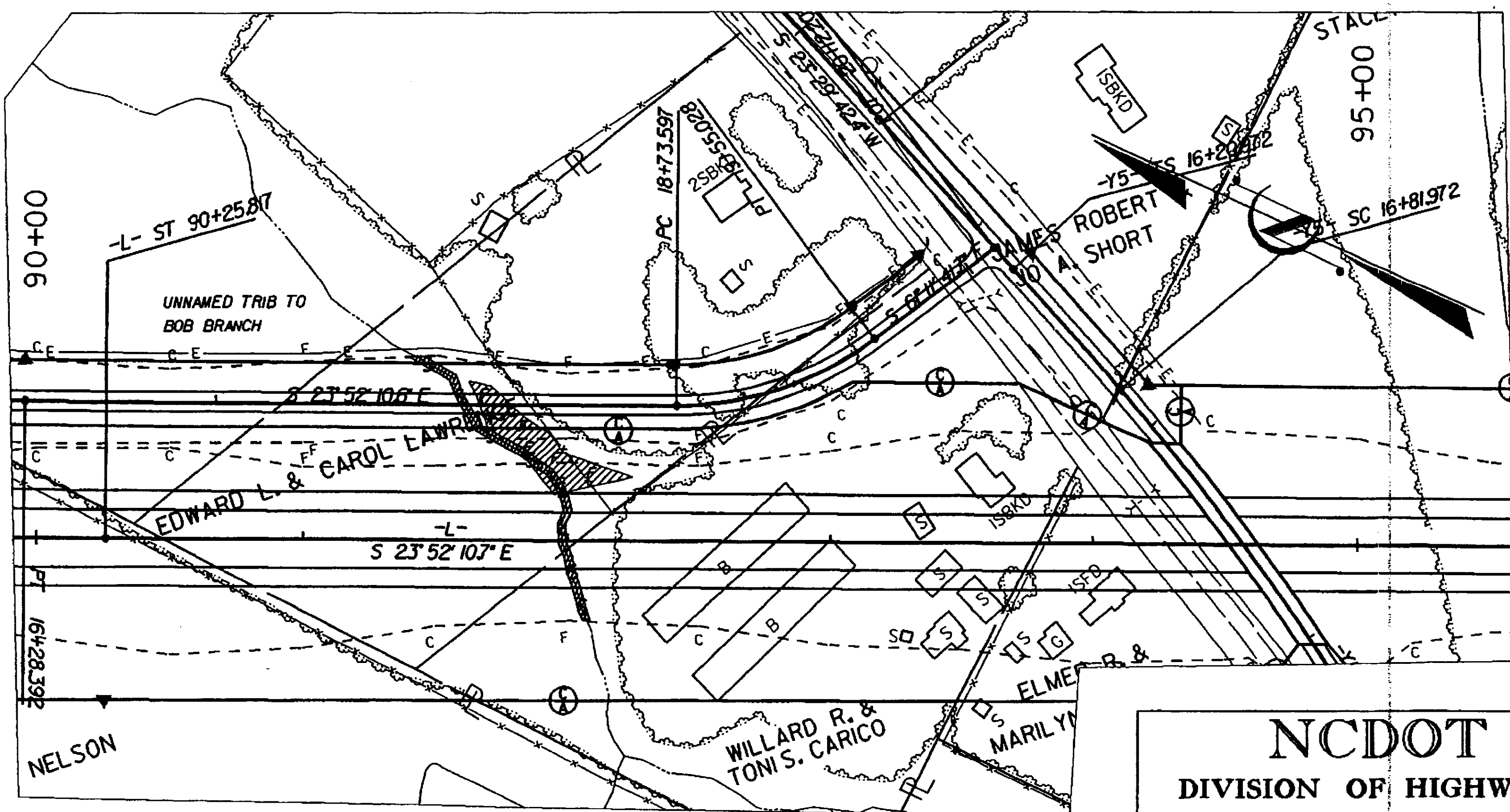
SITE 18
PLAN VIEW

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH
POINT EAST BELT TO US 220

REVISED APRIL 26,2006

SHEET 12 OF 30 AUGUST 9, 2002



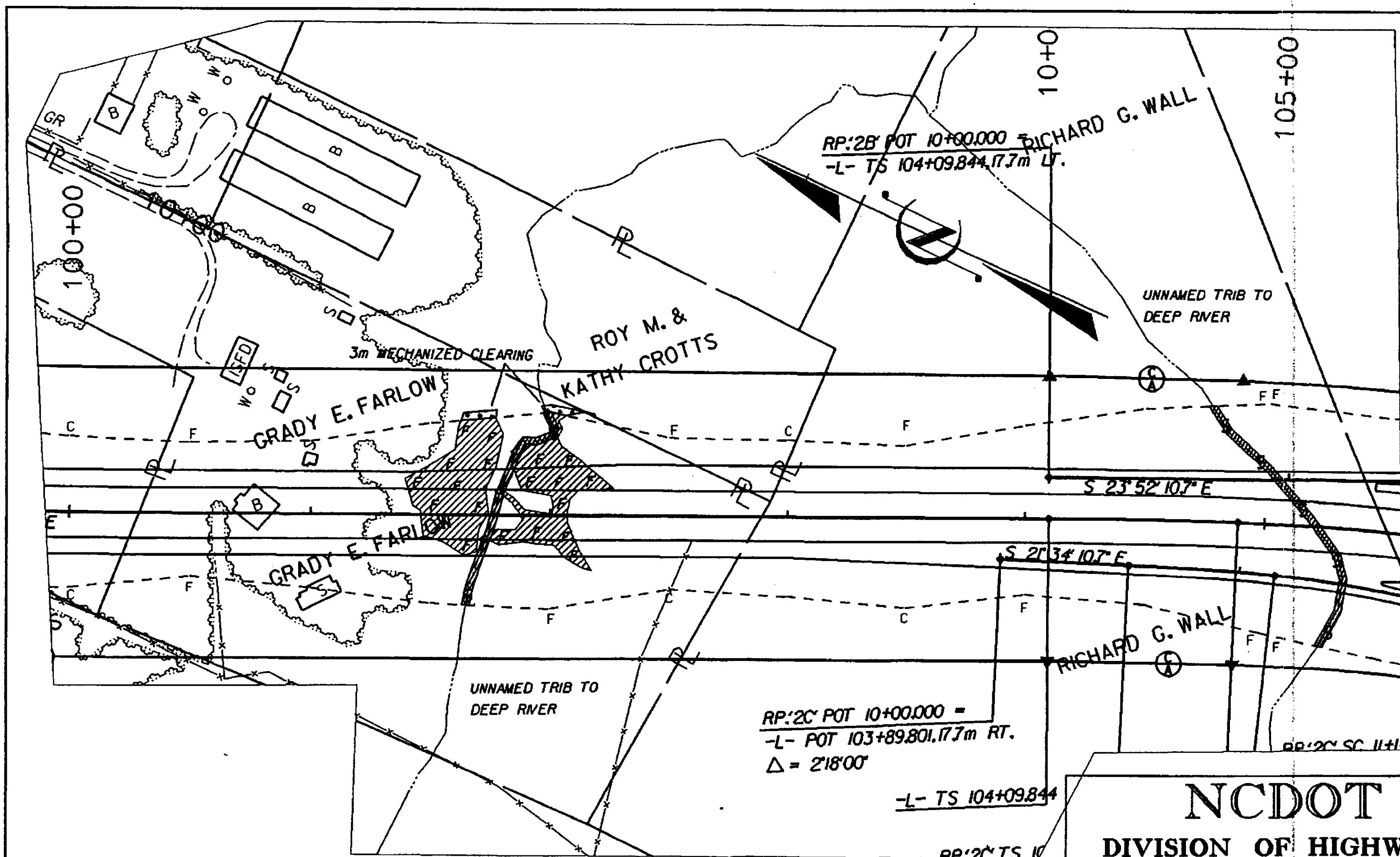
SITE 19
PLAN VIEW

SCALE 25m 0 50m

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)
US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220
SHEET 13 OF 30 AUGUST 9, 2002



SITE 20
PLAN VIEW

DENOTES MECHANIZED CLEARING

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN WETLAND

25m 0 50m SCALE

NCDOT

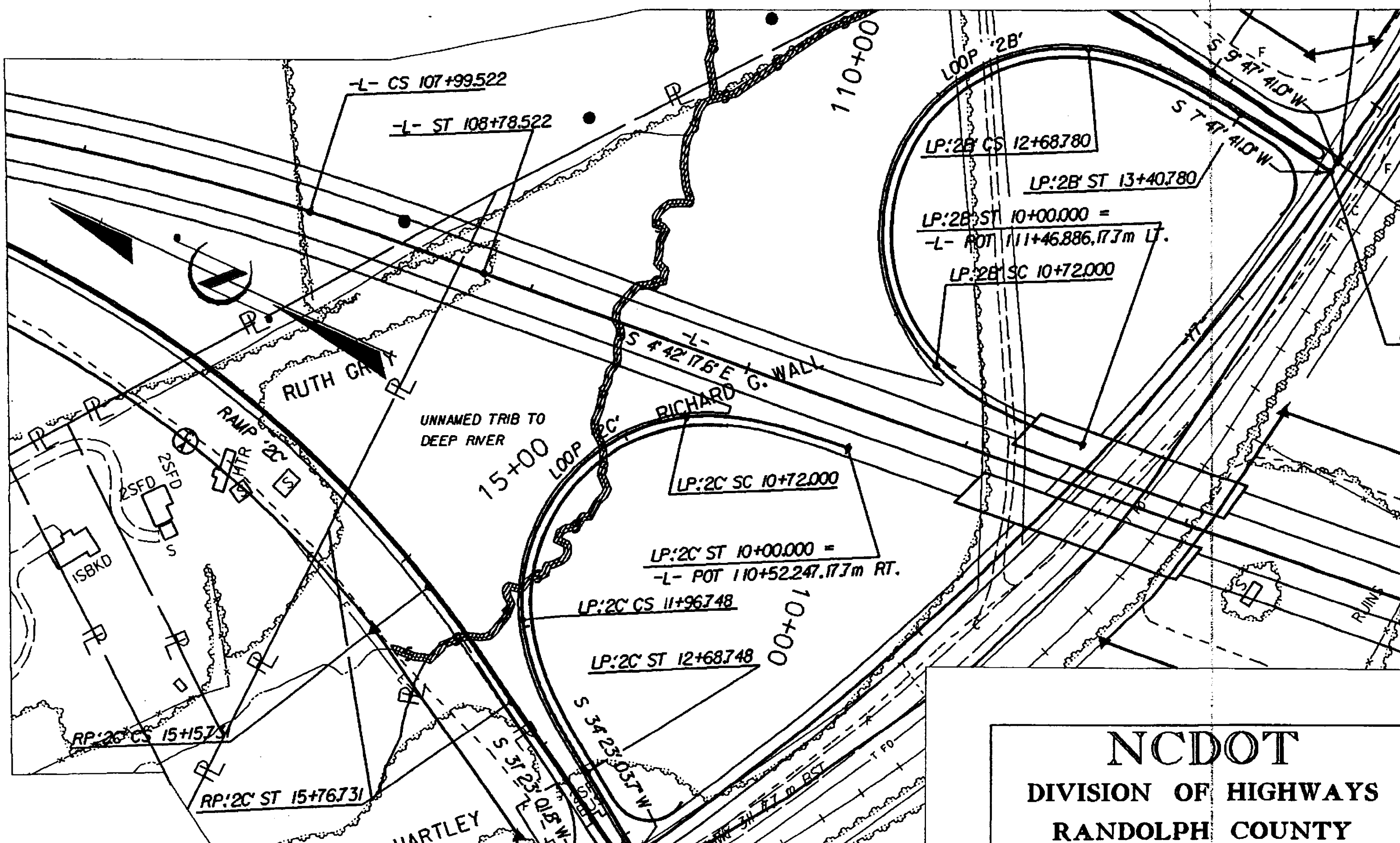
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 11 OF 30 AUGUST 9, 2002



SITE 21
PLAN VIEW

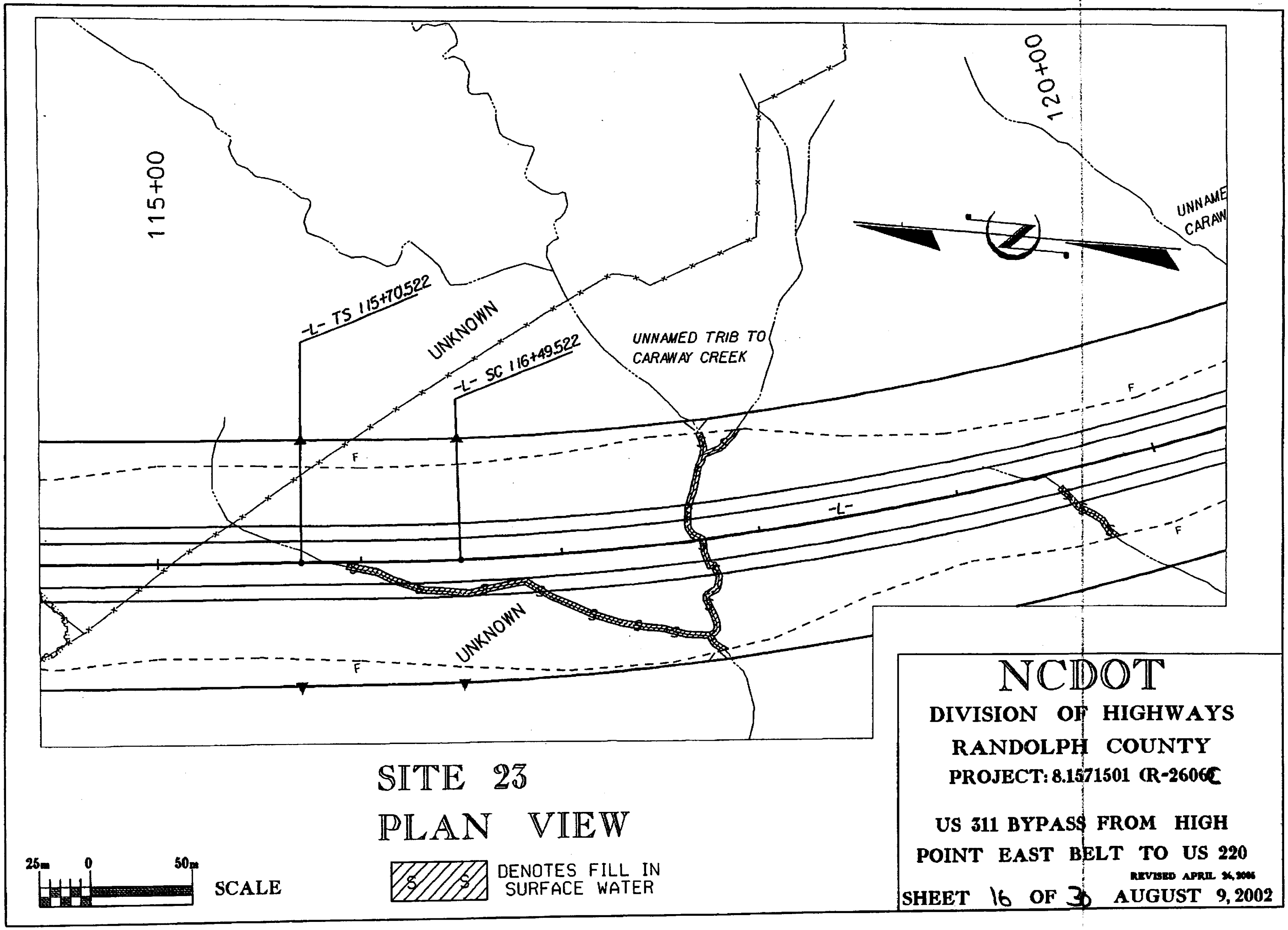
25m 0 50m
SCALE

DENOTES FILL IN SURFACE WATER

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 24, 2004
SHEET 15 OF 30 AUGUST 9, 2002



SITE 23

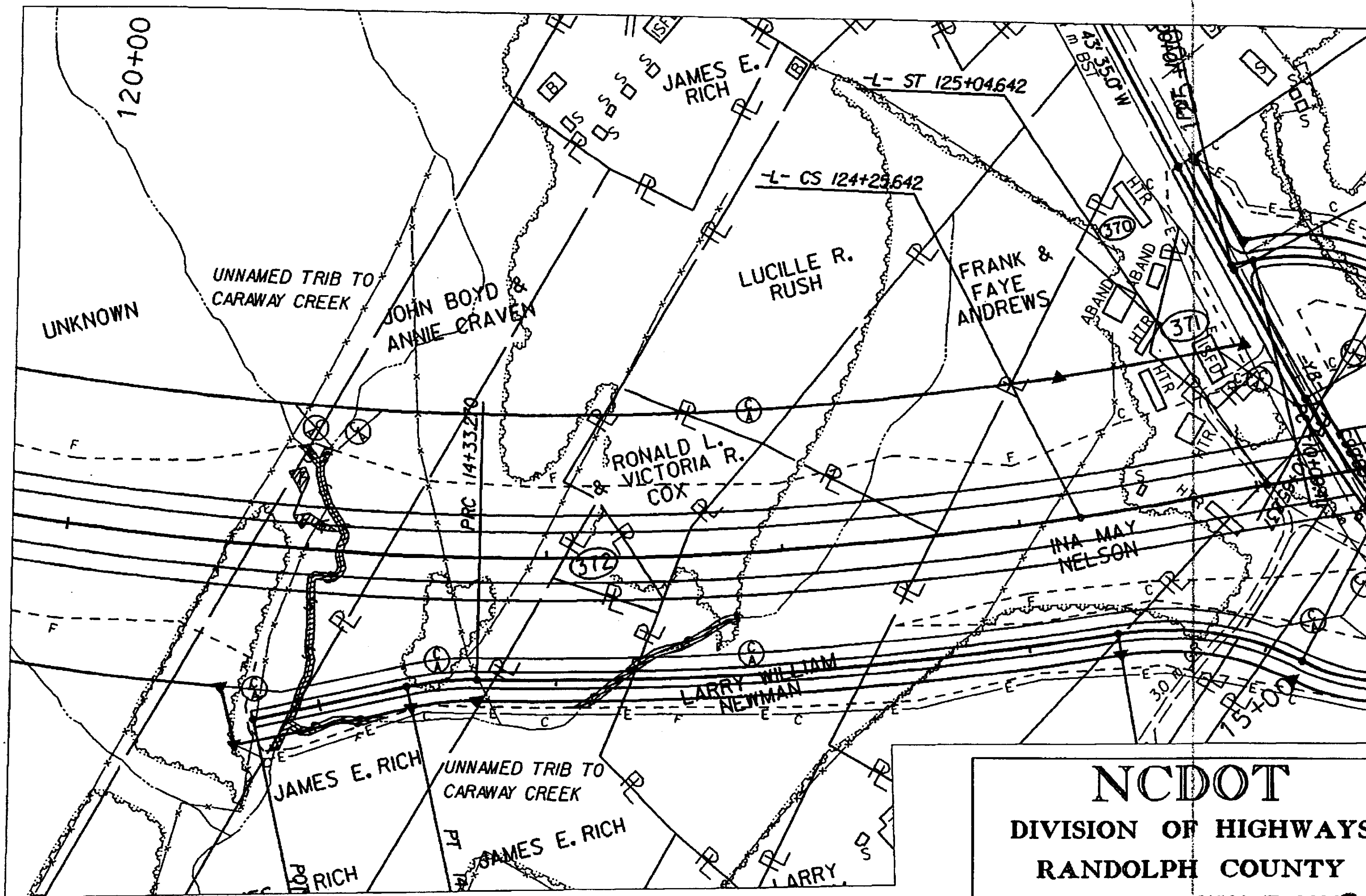
PLAN VIEW

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 24, 2006

SHEET 16 OF 30 AUGUST 9, 2002



SITE 24

PLAN VIEW

25m 0 50m
SCALE

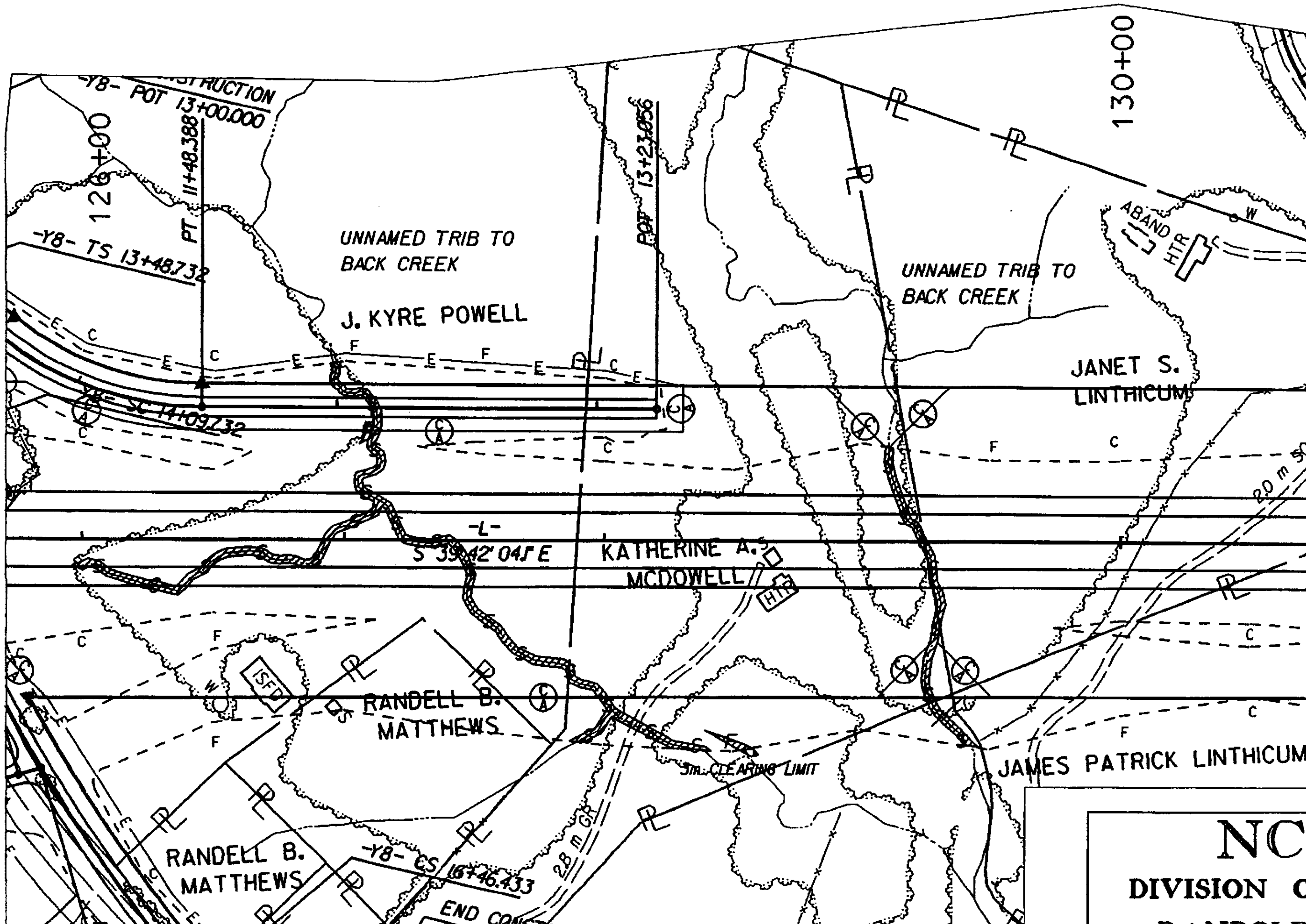
DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606C)

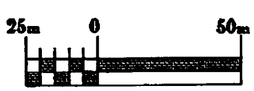
US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

REVISED APRIL 24, 2006
SHEET 17 OF 30 AUGUST 9, 2002



SITE 25

PLAN VIEW



SCALE

DENOTES FILL IN SURFACE WATER

NCDOT

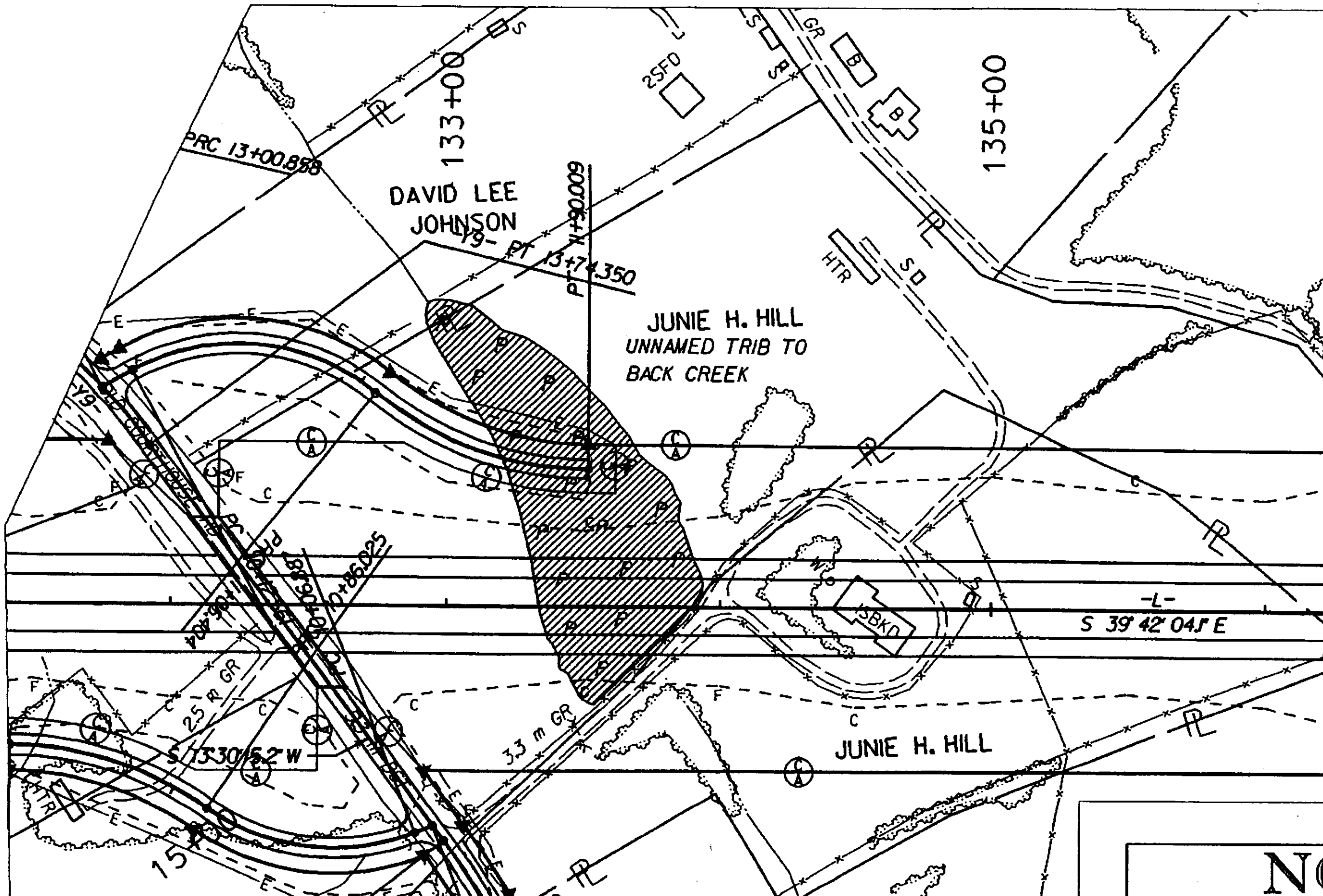
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 19 OF 30 AUGUST 9, 2002



SITE 26
PLAN VIEW

25m 0 50m SCALE

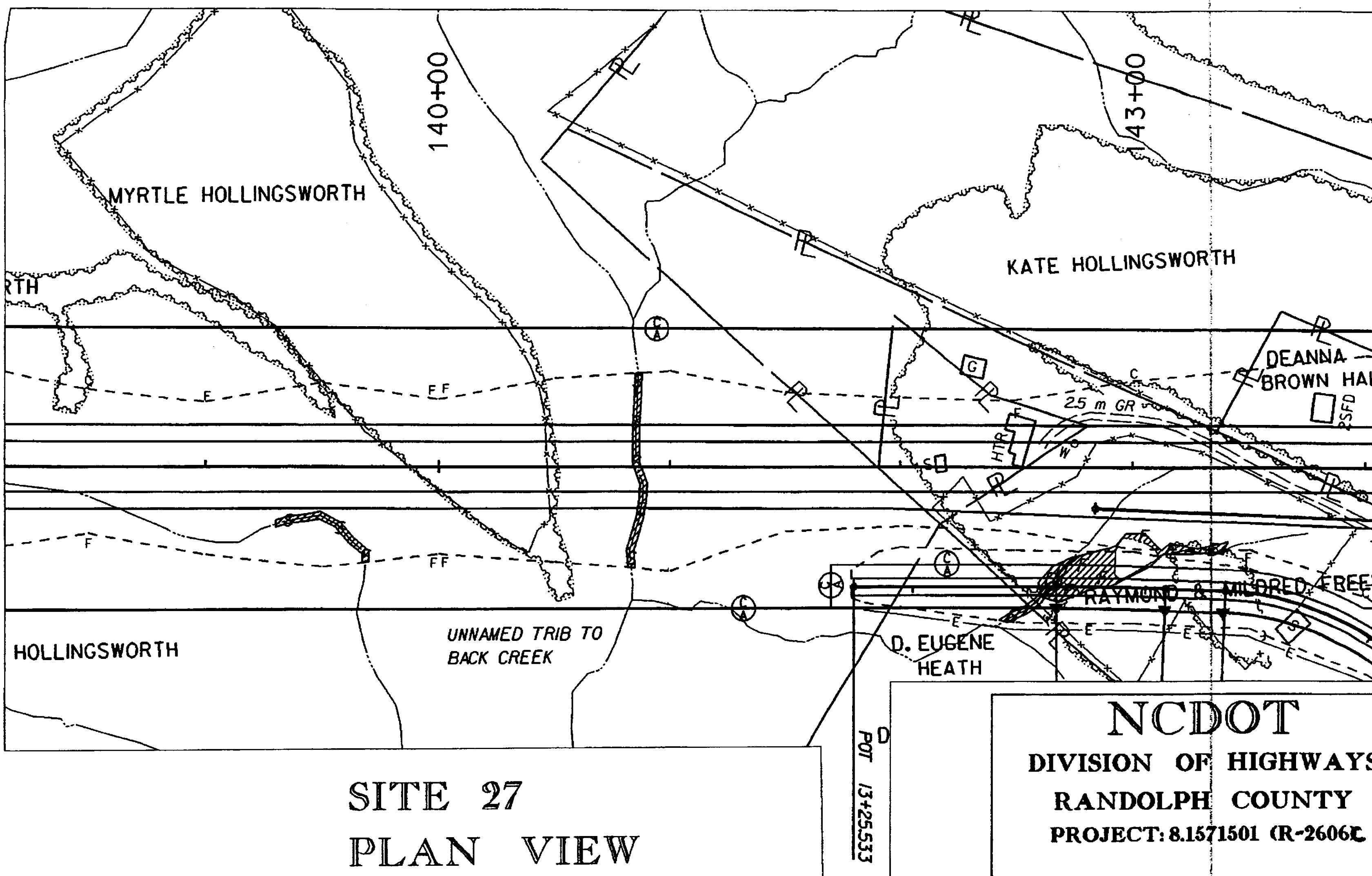
P P DENOTES FILL IN SURFACE WATER (POND)

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606B)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 19 **OF** 30 **AUGUST 9, 2002**



SITE 27
PLAN VIEW

SCALE 25m 0 50m

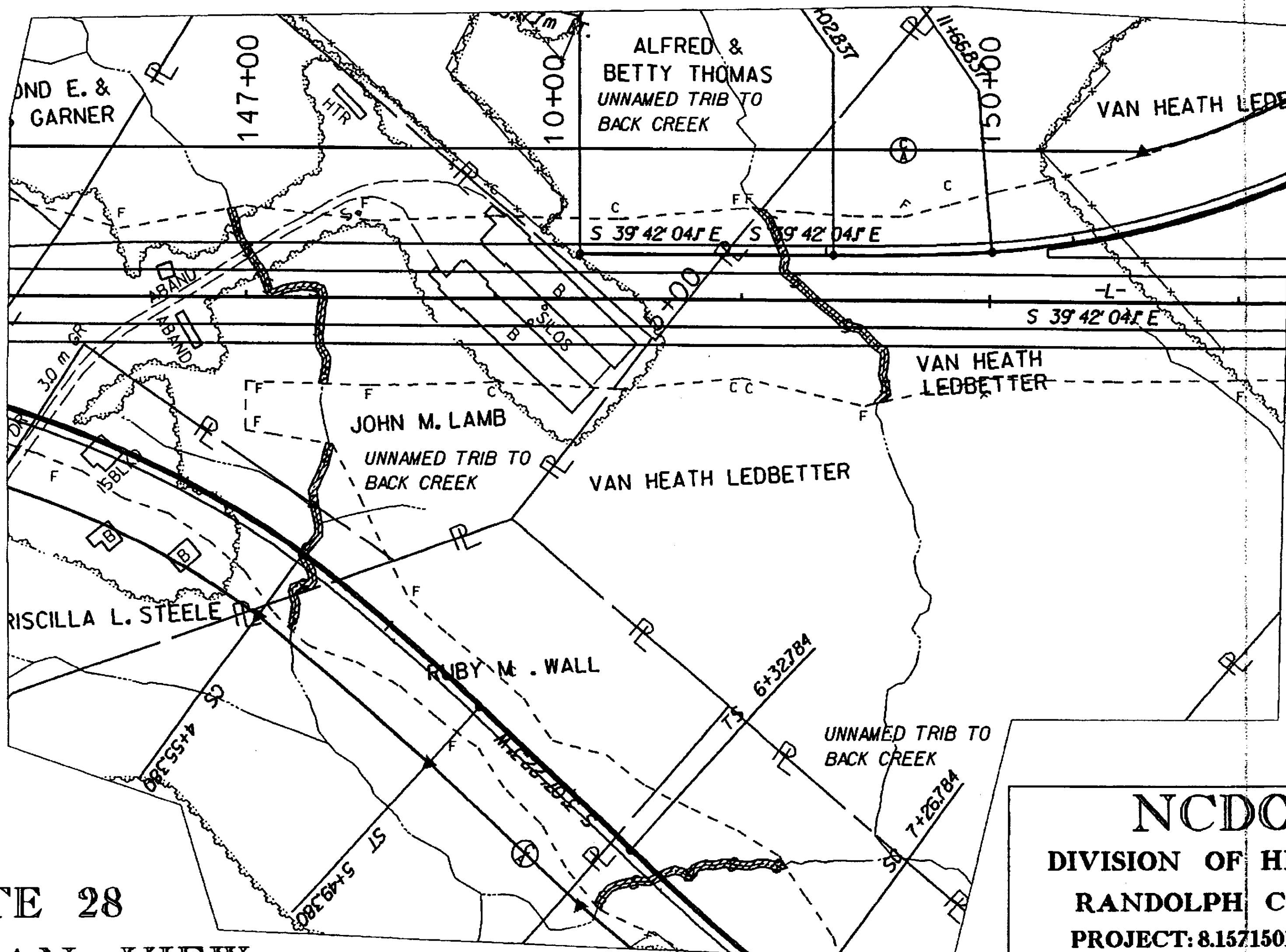
DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

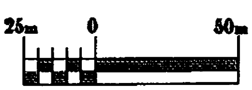
NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 20 OF 30
REVISED APRIL 26, 2006
AUGUST 9, 2002



SITE 28
PLAN VIEW



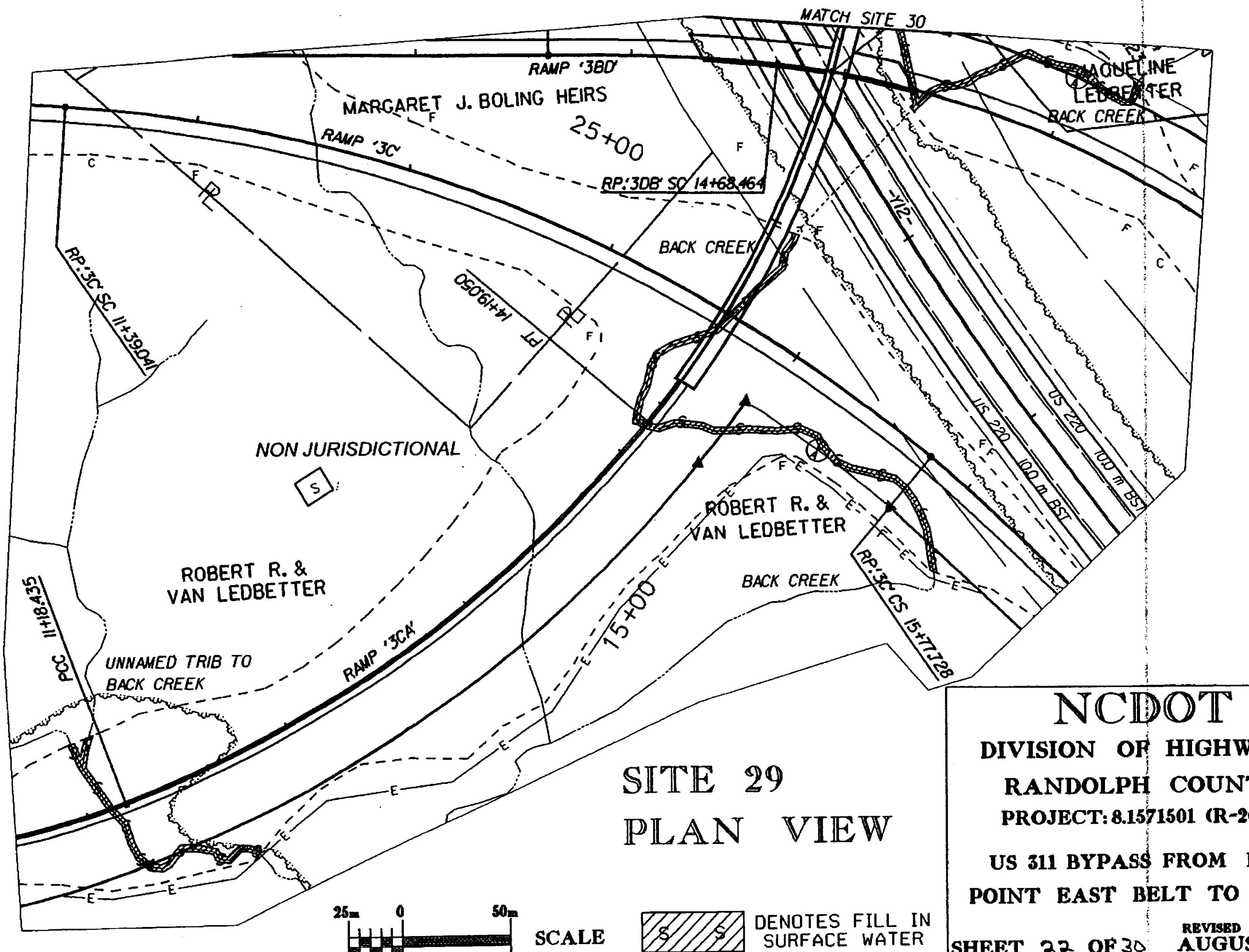
SCALE

DENOTES FILL IN SURFACE WATER

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606C)

US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 21 OF 30 REVISED APRIL 26, 2006 AUGUST 9, 2002

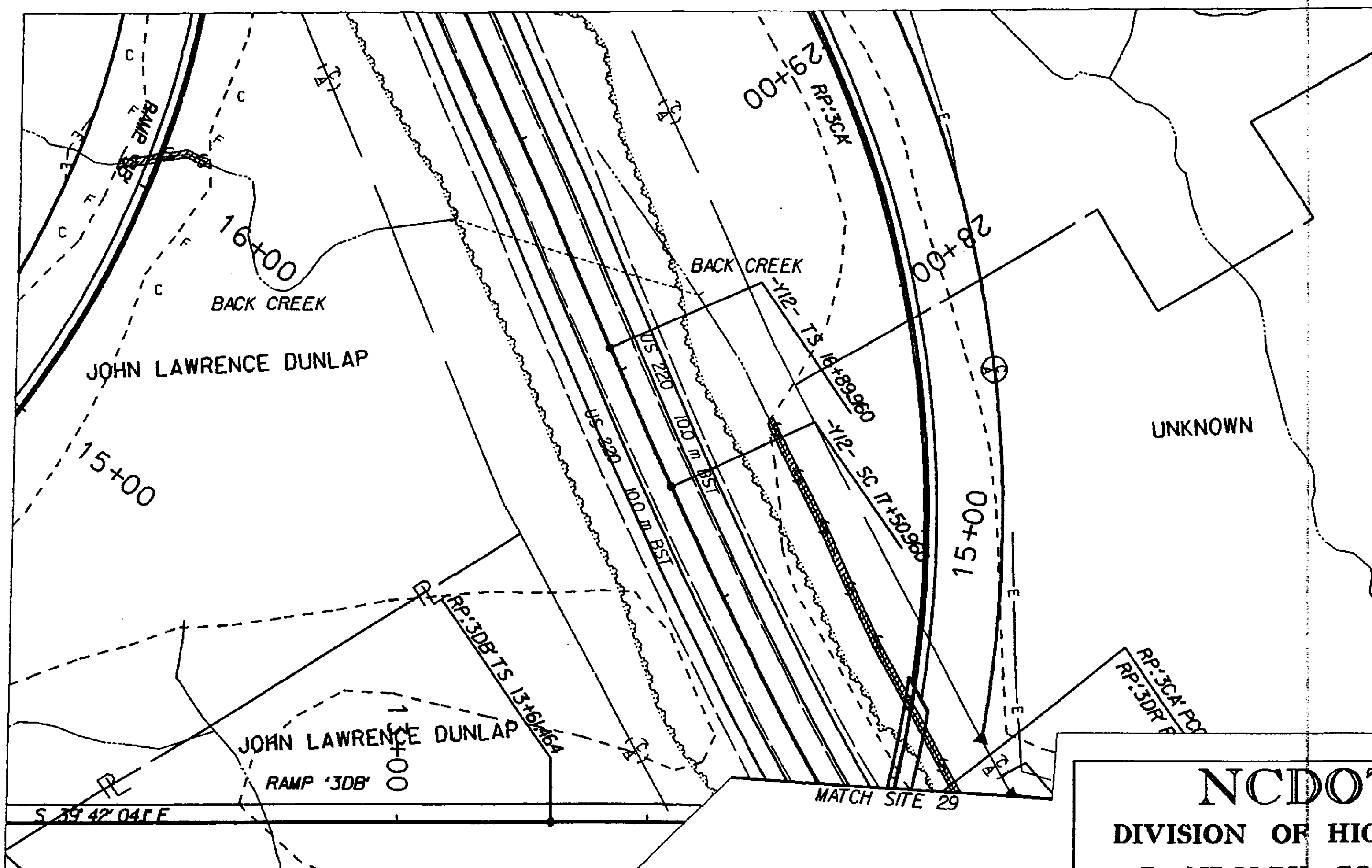


SITE 29
PLAN VIEW

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606C)
US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220

SHEET 22 OF 30

REVISED APRIL 26, 2006
AUGUST 9, 2002



SITE 30
PLAN VIEW

25m 0 50m SCALE

DENOTES FILL IN SURFACE WATER

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606E)
US 311 BYPASS FROM HIGH POINT EAST BELT TO US 220
SHEET 23 OF 30 AUGUST 9, 2002

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				
			Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Temp. Fill In SW (ha)	Existing Channel Impacted (m)	Natural Stream Design (m)
13	47+80 - 48+90 -L-							0.4095			
	48+00 - 49+70 -L-		0.1245			0.0039	0.0667			225	
14	51+50 - 52+60 -L-		0.1825			0.0170	0.0423			142	
	53+90 -L-						0.0314			103	
15	57+07 - 53+30 L-		0.0691								
	57+50 -L-						0.0390			131	
16	63+00 - 63+70 -L-							0.3049			
	63+50 - 64+10 -L-		0.1697			0.0070					
	63+80 -L-						0.0070			23	
17	74+00 -L-						0.1162			143	
	76+60 -L-						0.0301			105	
18	84+80 -L-						0.0042			15	
	88+90 -L-						0.0385			127	
19	92+00 -L-						0.0385			128	
	91+60 - 92+24 -L-		0.0720								
20	101+75 -L-						0.0289			96	
	105+20 -L-						0.0368			123	
	101+40 - 102+30 -L-		0.2541			0.0086					
21	109+40 -L-						0.1400			470	
TOTALS:			0.872	0	0	0.037	0.620	0.714	0	1831	0

Form Revised 3/22/01

NCDOT

DIVISION OF HIGHWAYS
RANDLOPH COUNTY
PROJECT 8.1571501 (R-2606B

US 311BYPASS FROM HIGH
POINT EAST BELT TO US 220

SHEET 21 OF 30

Revised 4/26/05
8/9/2002

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Fill In Wetlands (ha)	WETLAND IMPACTS: Temp. Fill In Wetlands (ha)	WETLAND IMPACTS: Excavation In Wetlands (ha)	WETLAND IMPACTS: Mechanized Clearing (Method III) (ha)	SURFACE WATER IMPACTS: Fill In SW (Natural) (ha)	SURFACE WATER IMPACTS: Fill In SW (Pond) (ha)	SURFACE WATER IMPACTS: Temp. Fill In SW (ha)	SURFACE WATER IMPACTS: Existing Channel Impacted (m)	SURFACE WATER IMPACTS: Natural Stream Design (m)
23	117+70 -L-						0.0432			132	
	119+50 -L-						0.0112			37	
	115+95 - 117+70 -L-						0.0565			188	
24	120+90 - 121+10 -L-		0.0111								
	121+15 -L-						0.0570			192	
	122+10 - 122+80 -L-						0.0235			78	
25	127+00 -L-						0.1207			395	
	128+40 - 128+60 -L-		0.0026								
	129+00 -L-						0.0383			130	
26	133+00 - 133+90 -L-							0.6626			
27	139+30 - 139+70 -L-						0.0145			50	
	140+85 -L-						0.0255			85	
	142+50 -L-						0.0123			41	
	142+60 - 143+40 -L-		0.0850								
28	147+30 -L-						0.0286			104	
	4+55 RP						0.0248			84	
	6+50 RP						0.0256			87	
	149+30 -L-						0.0307			128	
29	11+10 RP						0.0416			130	
	14+20 RP						0.0897			300	
	15+30 RP -'3DB'-						0.0472			167	
30	MATCH SHEET '3CA'						0.0505			168	
	MATCH SHEET '3CA'						0.0114			39	
TOTALS:			0.099	0	0	0.000	0.753	0.663	0	2535	0

Form Revised 3/22/01

NCDOT
DIVISION OF HIGHWAYS
RANDLOPH COUNTY
PROJECT 8.1571501 (R-2606C

US 311BYPASS FROM HIGH
POINT EAST BELT TO US 220

Revised 4/26/05
SHEET 25 OF 30 8/9/2002

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
13	47+80 - 48+90 -L-							1.0119			
	48+00 - 49+70 -L-		0.3076			0.0096	0.1648			738	
14	51+50 - 52+60 -L-		0.4510			0.0420	0.1045			466	
	53+90 -L-						0.0776			338	
15	57+07 - 53+30 L-		0.1707								
	57+50 -L-						0.0964			430	
16	63+00 - 63+70 -L-							0.7534			
	63+50 - 64+10 -L-		0.4193			0.0173					
	63+80 -L-						0.0173			75	
17	74+00 -L-						0.2871			469	
	76+60 -L-						0.0744			344	
18	84+80 -L-						0.0104			49	
	88+90 -L-						0.0951			417	
19	92+00 -L-						0.0951			420	
	91+60 - 92+24 -L-		0.1779								
20	101+75 -L-						0.0714			315	
	105+20 -L-						0.0909			404	
	101+40 - 102+30 -L-		0.6279			0.0213					
21	109+40 -L-						0.3459			1542	
TOTALS:			2.155	0	0	0.090	1.531	1.765	0	6007	0

Form Revised 3/22/01

NCDOT

DIVISION OF HIGHWAYS
RANDLOPH COUNTY
PROJECT 8.1571501 (R-2606C

US 311BYPASS FROM HIGH
POINT EAST BELT TO US 220

Revised 4/26/05

SHEET 26 OF 30 8/9/2002

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	SURFACE WATER IMPACTS: Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
23	117+70 -L-						0.1067			433	
	119+50 -L-						0.0277			121	
	115+95 - 117+70 -L-						0.1396			617	
24	120+90 - 121+10 -L-		0.0274								
	121+15 -L-						0.1408			630	
	122+10 - 122+80 -L-						0.0581			256	
25	127+00 -L-						0.2983			1296	
	128+40 - 128+60 -L-		0.0064								
	129+00 -L-						0.0946			427	
26	133+00 - 133+90 -L-							1.6373			
27	139+30 - 139+70 -L-						0.0358			164	
	140+85 -L-						0.0630			279	
	142+50 -L-						0.0304			135	
	142+60 - 143+40 -L-		0.2100								
28	147+30 -L-						0.0707			341	
	4+55 RP						0.0613			276	
	6+50 RP						0.0633			285	
	149+30 -L-						0.0759			420	
29	11+10 RP						0.1028			427	
	14+20 RP						0.2217			984	
	15+30 RP -'3DB'-						0.1166			548	
30	MATCH SHEET '3CA'						0.1248			551	
	MATCH SHEET '3CA'						0.0283			128	
TOTALS:			0.244	0	0	0.00	1.860	1.637	0	8318	0

Form Revised 3/22/01

NCDOT

DIVISION OF HIGHWAYS
RANDLOPH COUNTY
PROJECT 8.1571501 (R-2606)

US 311BYPASS FROM HIGH
POINT EAST BELT TO US 220

SHEET 27 OF 30

Revised 4/26/05
8/9/2002

Revised 10/06

Site No.	Property Owner Name	Property Owner Address
13	Clyde R. & Randall Spencer	N/A
14	Stanley E. Farlow	N/A
15	Danny Davis & Beverly Pugh Lewis J. & Linda P. Loflin	N/A N/A
16	N. F. Davis	2709 Banner Withehead Rd., Sophia, NC 27350
17	Clifford Wayne Loflin, Jr. Clifford Wayne Loflin, Sr.	2410 Loflin Dairy Rd., Sophia, NC 27350 2410 Loflin Dairy Rd., Sophia, NC 27350
18	Geneva S. Gray Mozelle Wood Nelson	6590 US Hwy 311, Sophia, NC 27350 4570 Nelson Park Rd., Sophia, NC 27350
19	Edward L. & Carol Lawrence Willard R. & Toni S. Carico	4875 Branson Davis Rd., Sophia, NC 27350 4833 Branson Davis Rd., Sophia, NC 27350
20	Grady E. Farlow	5080 Walker Mill Rd., Sophia, NC 27350
21	Richard G. Wall	N/A
22	Richard G. Wall	N/A

List of Property Owners

NC Dept. of Transportation
Division of Highways
Randolph County
Project:8.1571501 (R-2606)

US 311 Bypass From High Point East Belt to US 220

Sheet 28 of 30 08/09/02

Site No.	Property Owner Name	Property Owner Address
23		
24	John Boyd & Annie Craven	4025 Old Way Rd., Sophia, NC 27350
	James E. Rich	1630 Tower View Ln., Sophia, NC 27350
	Ronald L. & Victoria Cox	2601 Pinecroft Rd., Greensboro, NC 27407
	Larry William Newman	4609 Plainfield Rd., Sophia, NC 27350
	Frank & Faye Andrews	1111 Mackie Ave, Asheboro, NC 27203
25	J. Kyre Powell	N/A
	Katherine A. McDowell	4534 Plainfield Rd., Sophia, NC 27350
	Janet S. Linthicum	102 Brittany Lane, Randleman, NC 27317
	James Patrick Linthicum	3779 Old Courthouse Rd., Sophia, NC 27350
26	David Lee Johnson	3739 Old Courthouse Rd., Sophia, NC 27350
	Junie H. Hill	3754 Old Courthouse Rd., Sophia, NC 27350
27	Myrtle Hollingsworth	N/A
	D. Eugene Heath	1350 Turner Dairy Rd., Randleman, NC 27317
	Raymond & Mildred Freeman	3833 Heath Dairy Rd., Randleman, NC 27317

List of Property Owners

NC Dept. of Transportation
Division of Highways
Randolph County
Project:8.1571501 (R-2606)

US 311 Bypass From High Point East Belt to US 220

Sheet 24 of 30 08/09/02

Site No.	Property Owner Name	Property Owner Address
28	John M. Lamb	849 Steele Lamb Dr., Randleman, NC 27317
	Ruby M. Wall	3757 Heath Dairy Rd., Randleman, NC 27317
	Van Heath Ledbetter	3221 Heath Dairy Rd., Randleman, NC 27317
	~~Alfred & Betty Thomas~~	~~3568 Dairy Breeze Dr., Randleman, NC 27317~~
29	Robert R. & Van Ledbetter	3337 Heath Dairy Rd., Randleman, NC 27317
	Jaqueline Ledbetter	5101 Hoover Hill Rd., Trinity, NC 27370
30	John Lawrence Dunlap	3800 Stanley Snow Camp Rd., Staley, NC 27355

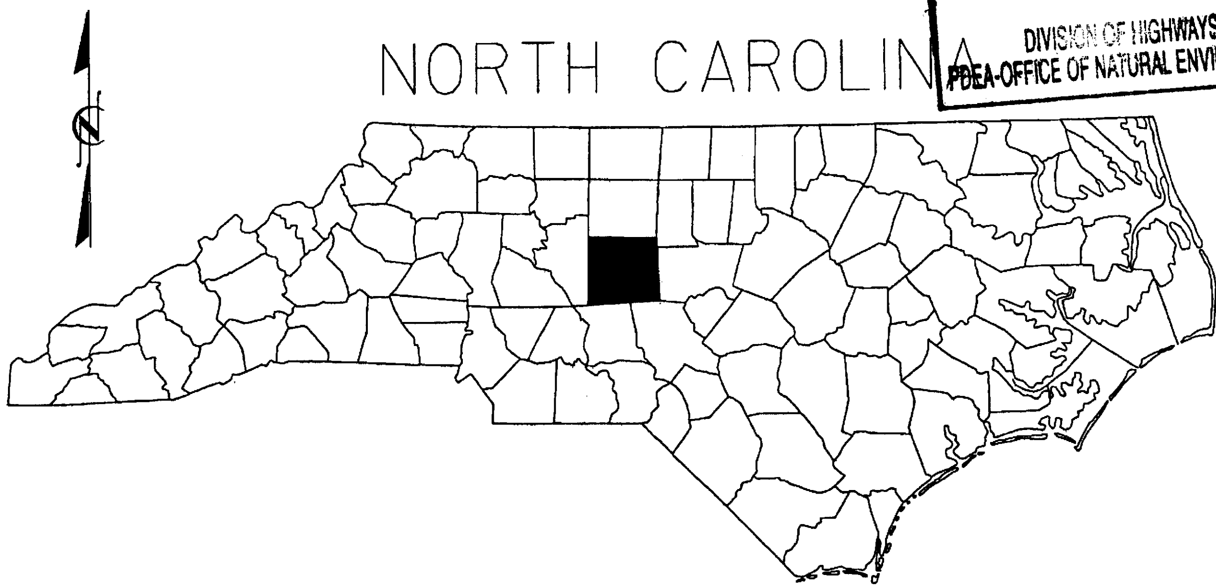
List of Property Owners

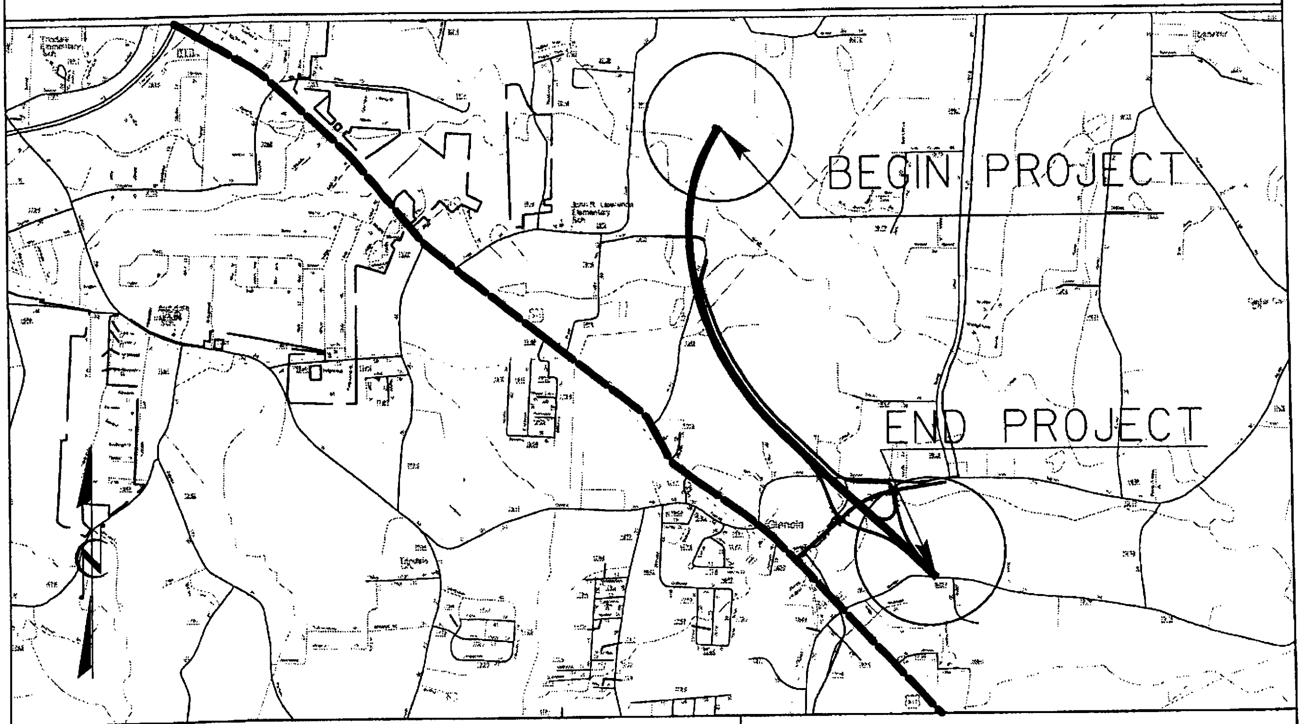
NC Dept. of Transportation
Division of Highways
Davidson County
Project:8.1571501 (R-2606)

US 311 Bypass From High Point East Belt to US 220

Sheet 30 of 30 08/09/02

NORTH CAROLINA





VICINITY MAPS

NCDOT

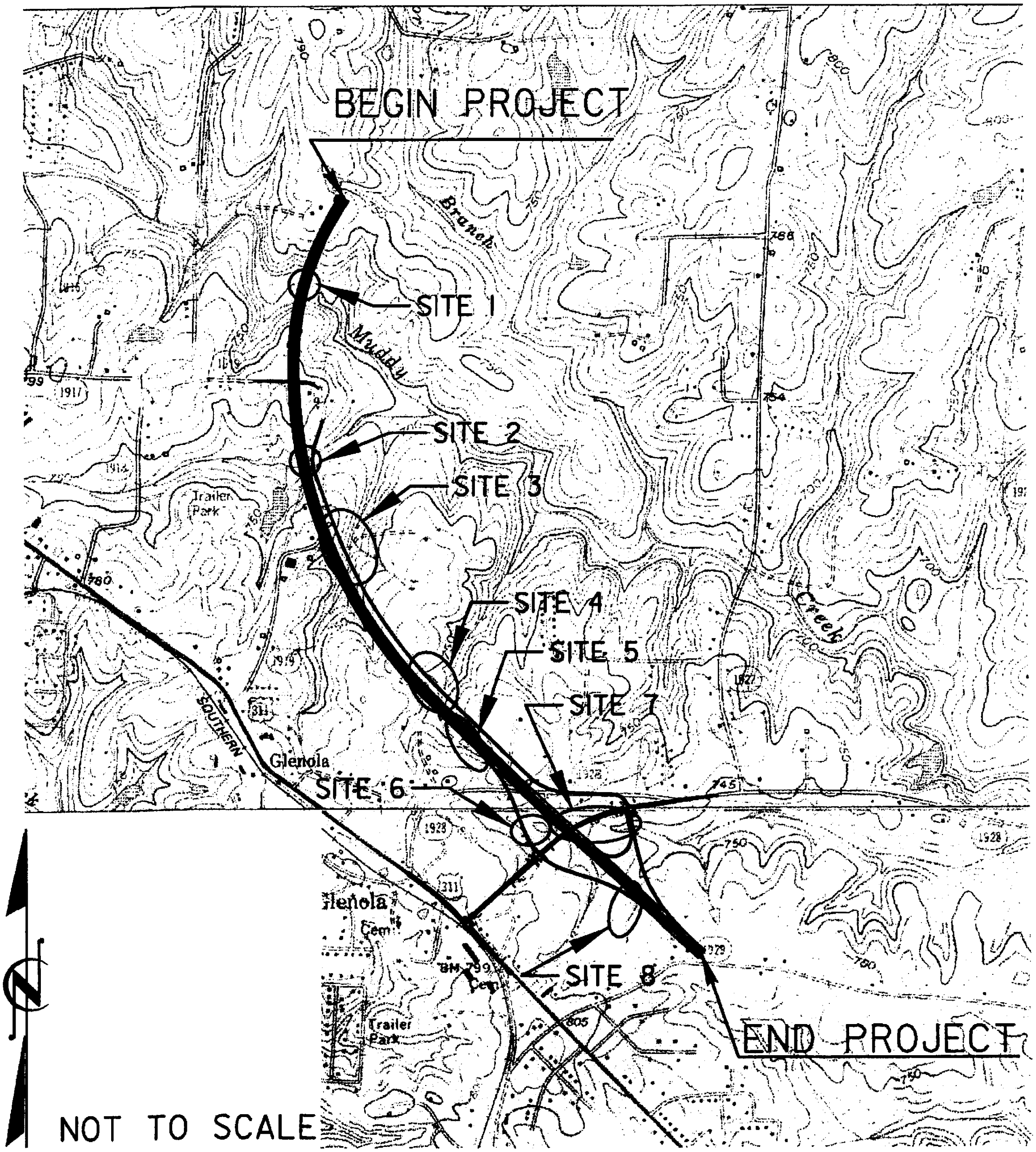
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 1 OF 46

USER: rramy
DGN: k:\4155\r2606a\Hydraulics\VICINITY.WET
DATE: 07/14/2005

106



RANDLEMAN LAKE
WATER SUPPLY
SURFACE WATERS

LOCATION MAP

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 2 **OF** 46 1 **/ 2006**

USER: ej
DGN: k:\4i558\r2606a\Hydraulics\LOCWET
DATE: 1/30/2006

WETLAND LEGEND

WLB	WETLAND BOUNDARY
WLB WLB	WETLAND
F F	DENOTES FILL IN WETLAND
S S	DENOTES FILL IN SURFACE WATER
P P	DENOTES FILL IN SURFACE WATER (POND)
T T	DENOTES TEMPORARY FILL IN WETLAND
E E	DENOTES EXCAVATION IN WETLAND
TS TS	DENOTES TEMPORARY FILL IN SURFACE WATER
	DENOTES MECHANIZED CLEARING
	FLOW DIRECTION
TB	TOP OF BANK
WE	EDGE OF WATER
C	PROP. LIMIT OF CUT
F	PROP. LIMIT OF FILL
	PROP. RIGHT OF WAY
NG	NATURAL GROUND
PL	PROPERTY LINE
TDE	TEMP. DRAINAGE EASEMENT
PDE	PERMANENT DRAINAGE EASEMENT
EAB	EXIST. ENDANGERED ANIMAL BOUNDARY
EPB	EXIST. ENDANGERED PLANT BOUNDARY
▽	WATER SURFACE
x x x x x x x x	LIVE STAKES
	BOULDER
	CORE FIBER ROLLS
	PROPOSED BRIDGE
	PROPOSED BOX CULVERT
	PROPOSED PIPE CULVERT 12"-48" PIPES 54" PIPES & ABOVE
	(DASHED LINES DENOTE EXISTNG STRUCTURES)
	SINGLE TREE
	WOODS LINE
	DRAINAGE INLET
	ROOTWAD
	RIP RAP
5	ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE
	PREFORMED SCOUR HOLE (PSH)
	LEVEL SPREADER (LS)
	GRASS SWALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 3 OF 46 1/106

USER: rremy
DGN: k:\4155B\r2606a\Hydraulics\new_legend.dgn
DATE: 07/14/2005

R-2606A

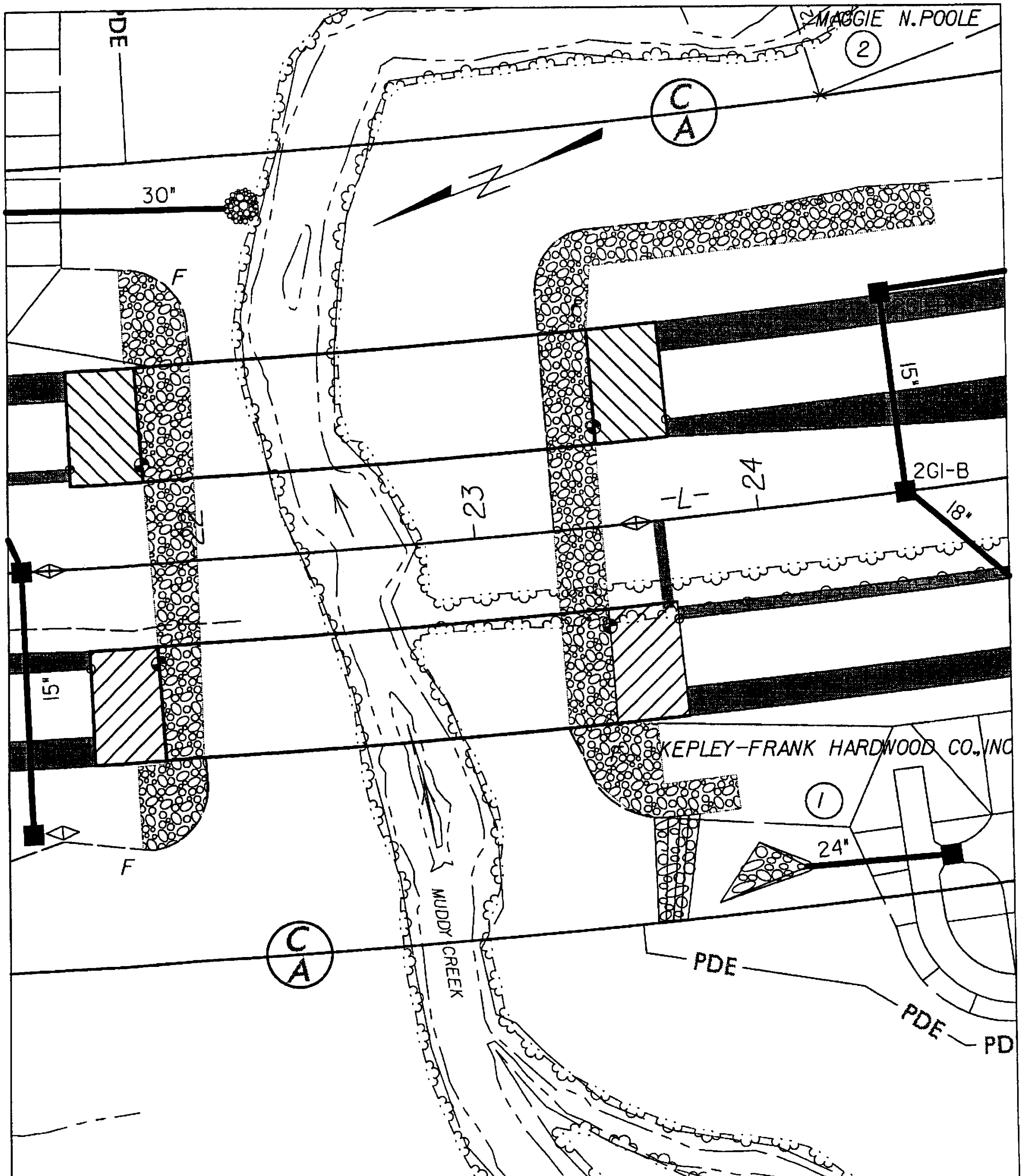
HAZARDOUS SPILL BASINS

Location	Drainage Areas (Acres)	Basin Surface Area (SF)	Qp2 (cfs)
-L-Sta. 21+50 LT	8.15	13764	15.94
-L- Sta. 24+50 RT	3.96	10400	8.2
-L- Sta. 44+50 RT	11.63	10435	28.9
-L- Sta. 47+50 RT	7.01	3632	17.9
-L- Sta. 57+00 LT	13.23	10486	28.3
-L- Sta. 79+00 LT	13.08	21126	22.7
-L- Sta. 89+00 RT	15.4	9689	**(Qp5) 15.4**
-L- Sta. 111+34 RT	9.91	12878	16.5

Location	Qp2 Velocity (fps)	Treatment Provided	Comments
-L- Sta. 31+02 LT	**1.55**	Preformed Scour Hole	
-Y- Sta. 16+60 LT	Exempt due to existing drainage way		
-SR- Sta. 13+20 LT		Dissipator Basin	Exempt
-L- Sta. 59+44 LT			Cross Pipe/ Exempt
-L- Sta. 81+70 LT			Cross Pipe/ Exempt
-L- Sta. 81+78 LT			Cross Pipe/ Exempt
-SR-Sta. 56+57 LT to	Exempt due to existing drainage way		
-SR- Sta. 63+50 LT	Exempt due to existing drainage way		
-L- Sta 110+55 LT			Cross Pipe/Exempt
-L- Sta. 110+50 LT	No Buffer 6/12/2001 Field Inspection		
-L- Sta. 112+90 LT			Cross Pipe/Exempt
-L- Sta. 116+63 RT	**0.68**	Earth Berm W/ Level Spreader	
-Ramp A- Sta 10+44 RT		Dry Det. Basin	Exempt
'-Ramp A- Sta 13+88 RT	-		Cross Pipe/Exemp
'-Ramp A- Sta 14+55 RT	-		Cross Pipe/Exemp
-Y1- Sta. 37+96 RT	**3.01**	Exempt due to existing ditch	
-Y1- Sta. 38+56 RT	Exempt due to entering ditch before buffer		
-Loop A- Sta. 4+10 RT	Exempt due to existing drainage way		

1/06

4 of 46



0 50 ft 100 ft

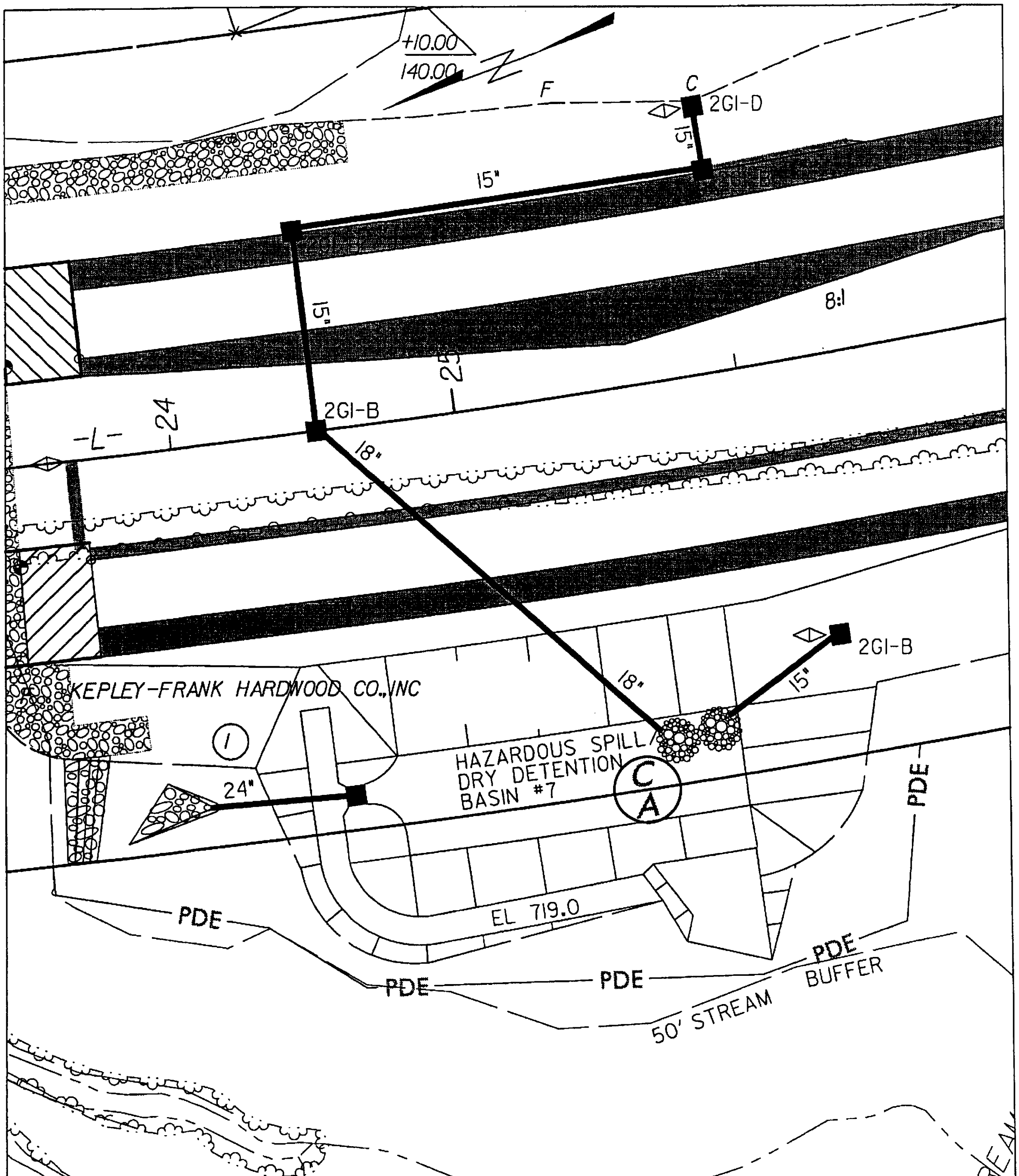
PLAN VIEW SITE 1

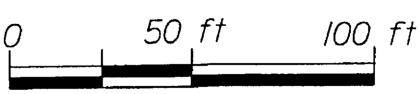
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 5 **OF** 46 1.106





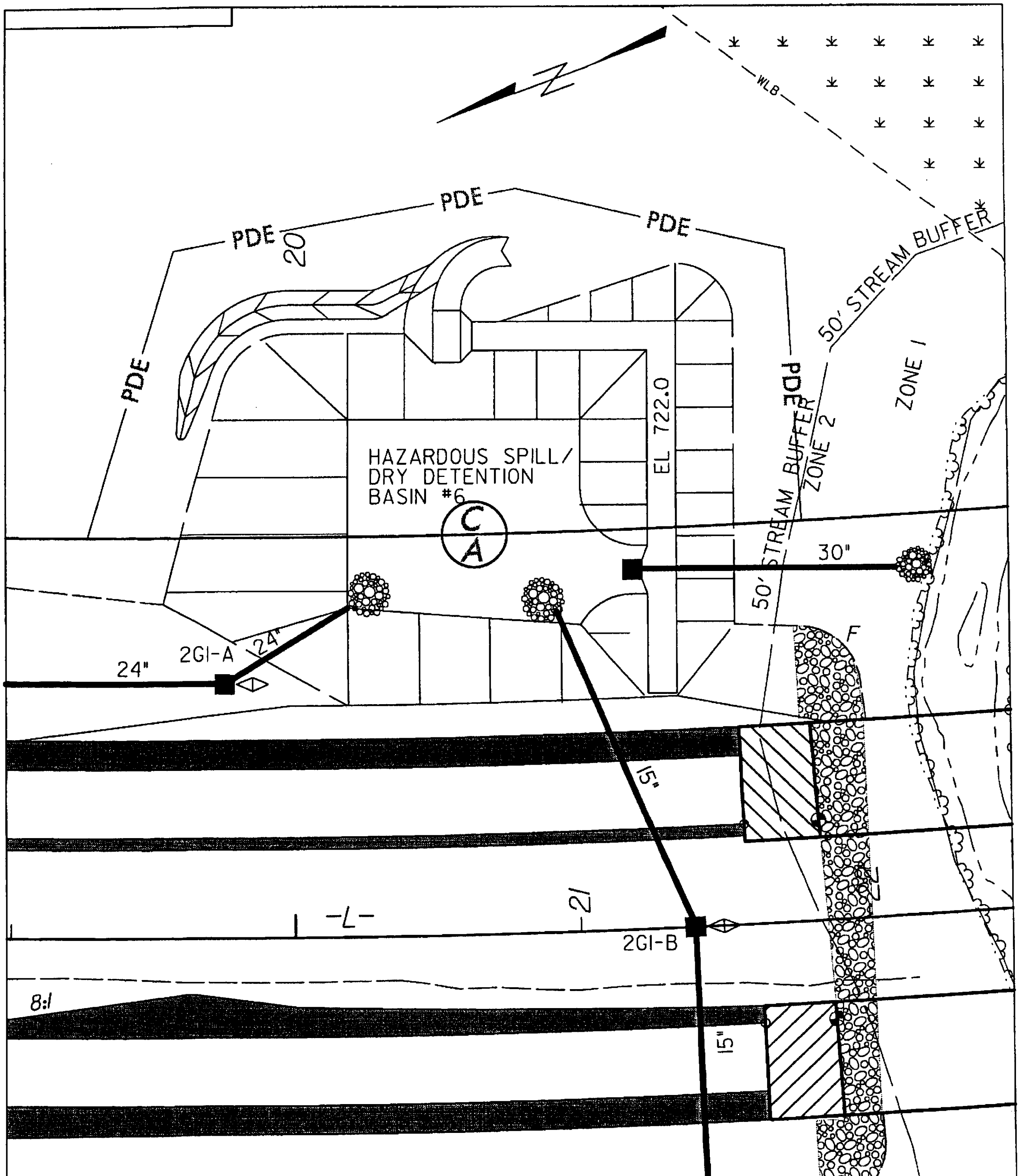
PLAN VIEW SITE 1

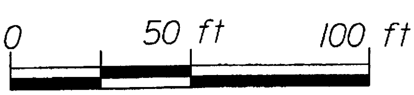
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 6 **OF** 46 1 / 06





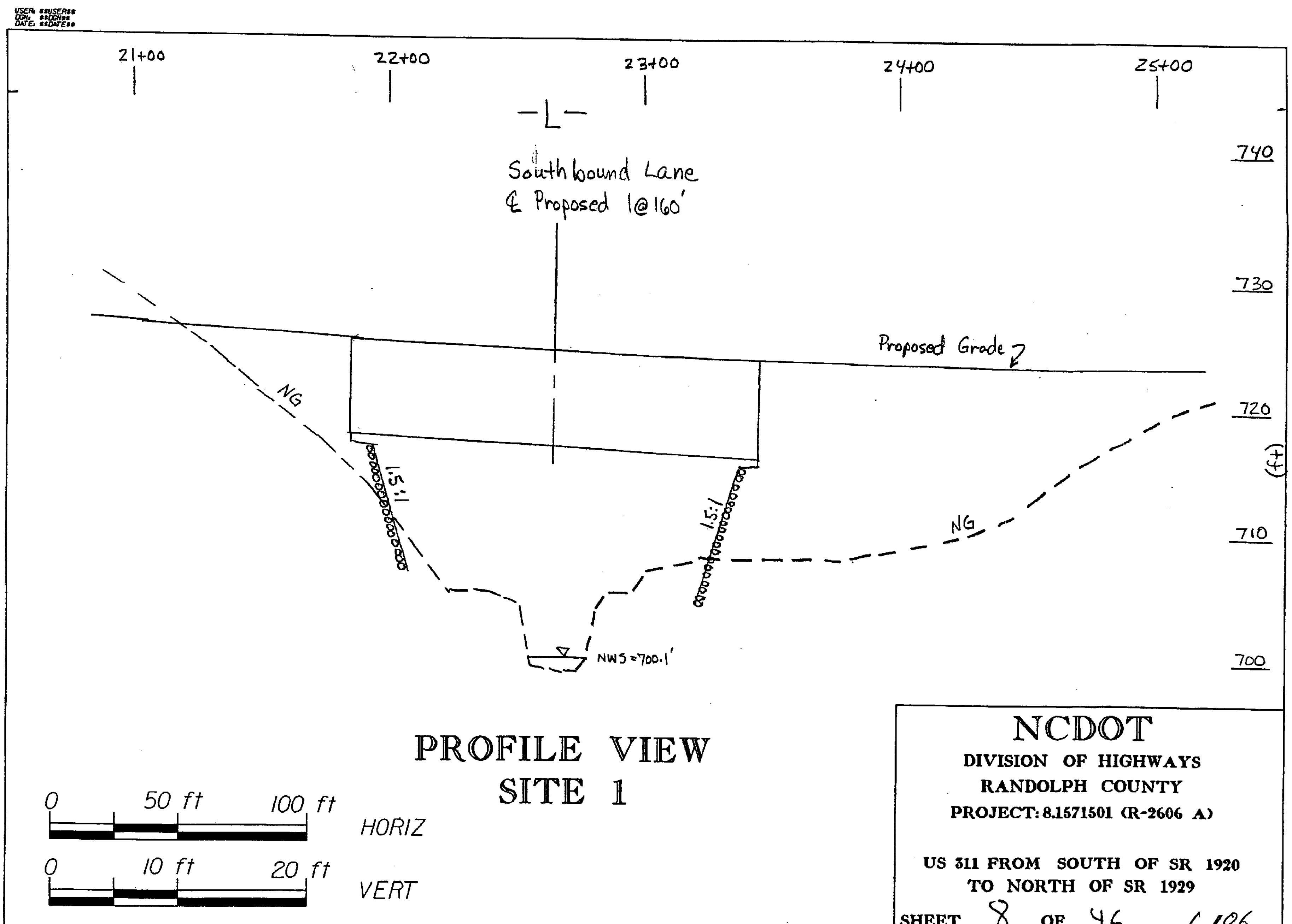
PLAN VIEW SITE 1

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 7 **OF** 46 1106

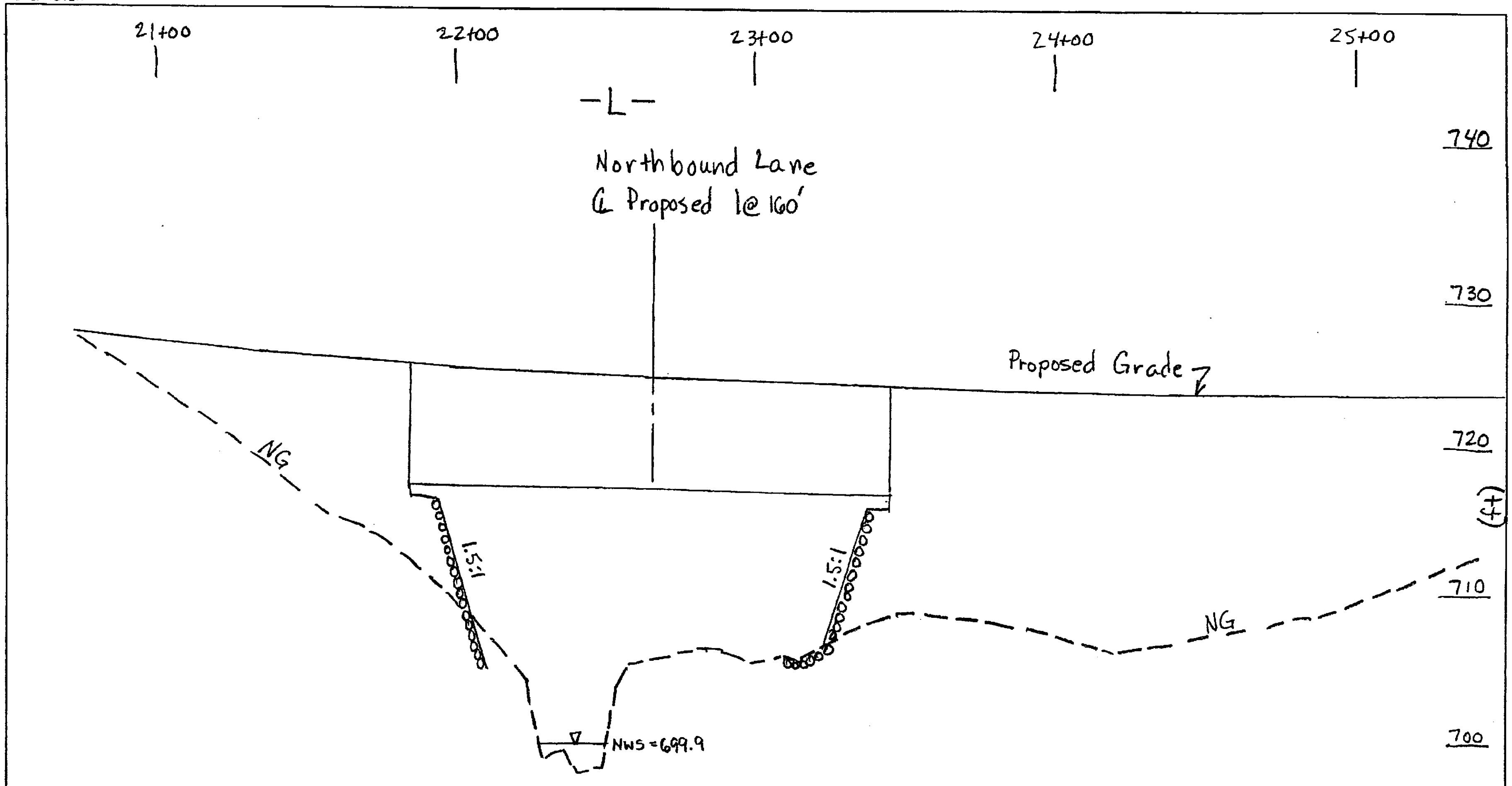


PROFILE VIEW
SITE 1

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 8 OF 46 1/106



PROFILE VIEW
SITE 1

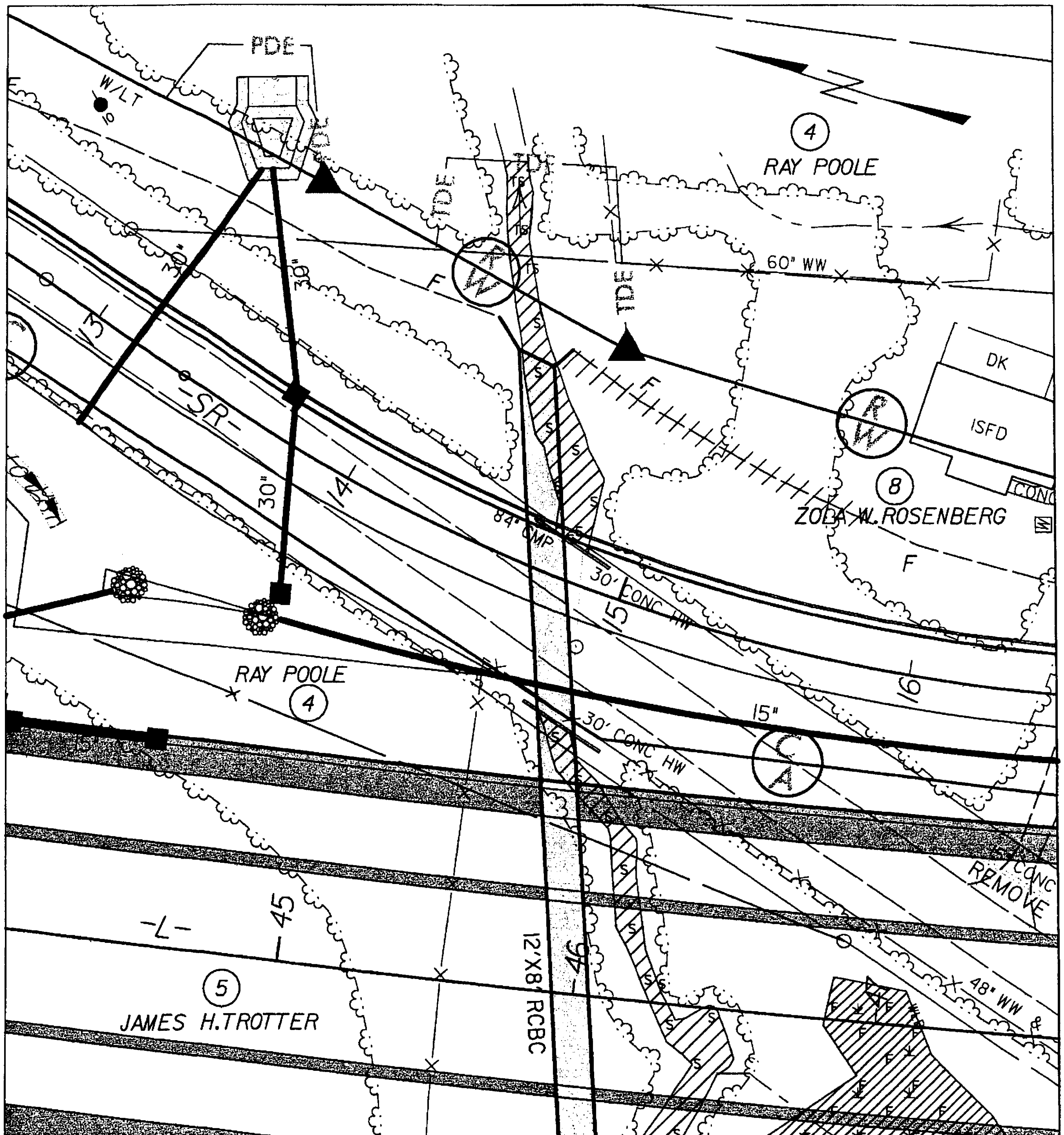
0 50 ft 100 ft HORIZ

0 10 ft 20 ft VERT

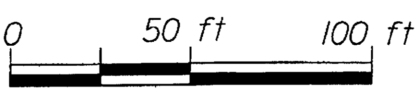
NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 9 **OF** 46 / 106



MATCH LINE A



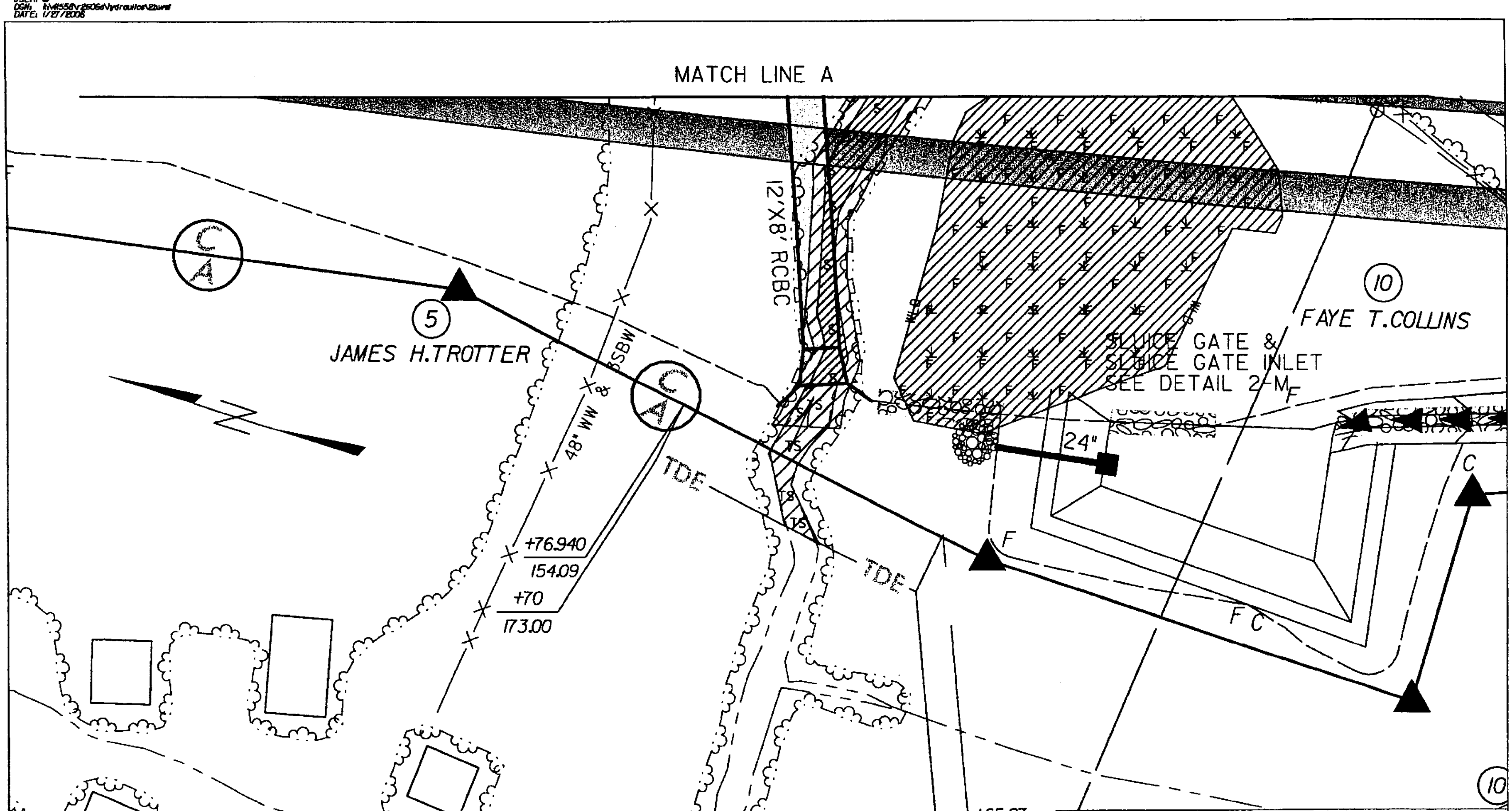
PLAN VIEW SITE 2

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 10 **OF** 46 1/2006



PLAN VIEW
SITE 2

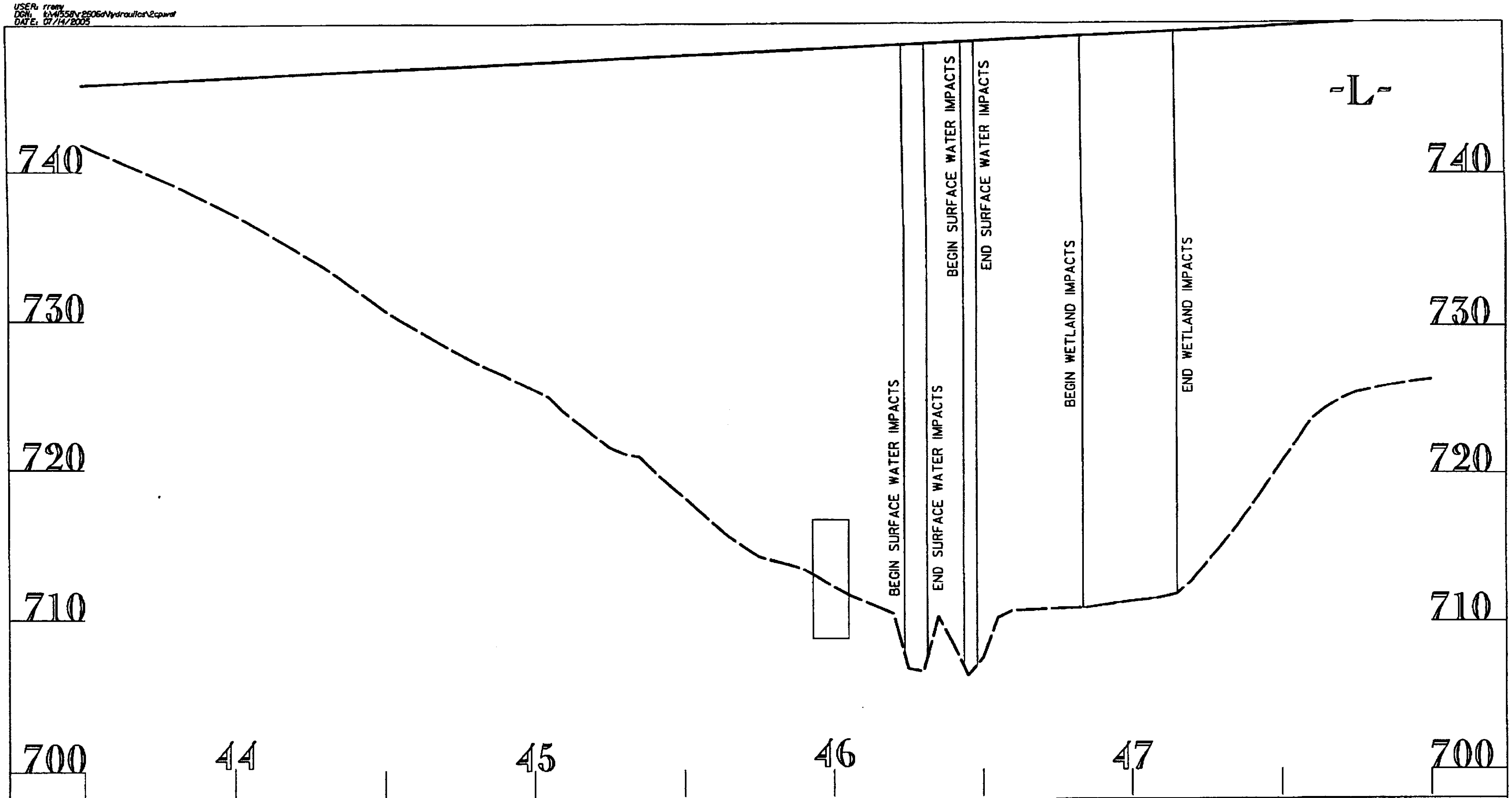
0 50 ft 100 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 11 **OF** 46 / / **2006**

USER: rramy
DGN: k:\4\558\r2606d\hydraulics\2cp.wrd
DATE: 07/14/2005



PROFILE VIEW
SITE 2

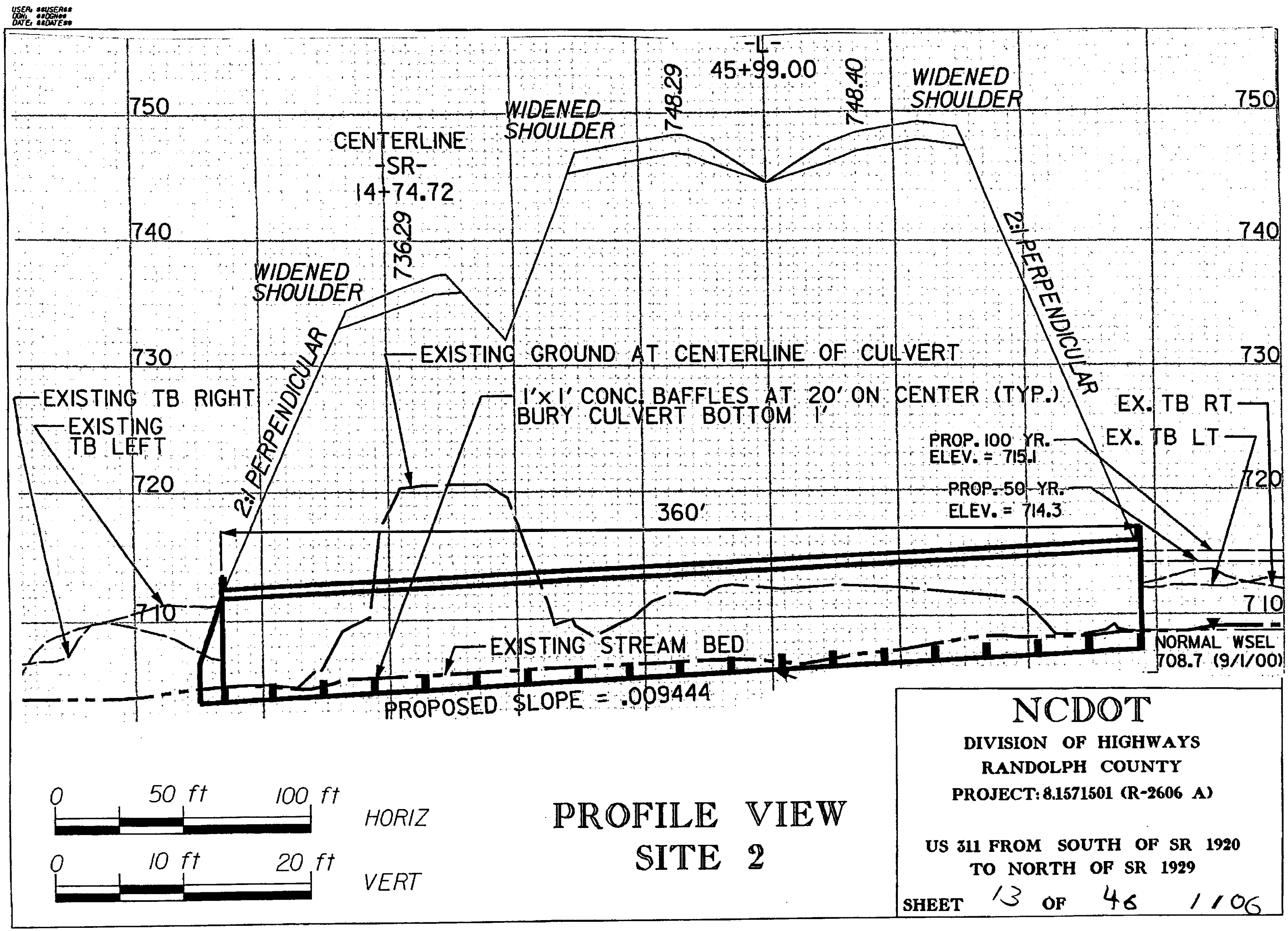
HORIZONTAL SCALE 0 50 ft 100 ft

VERTICAL SCALE 0 10 ft 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 12 OF 46 1/06



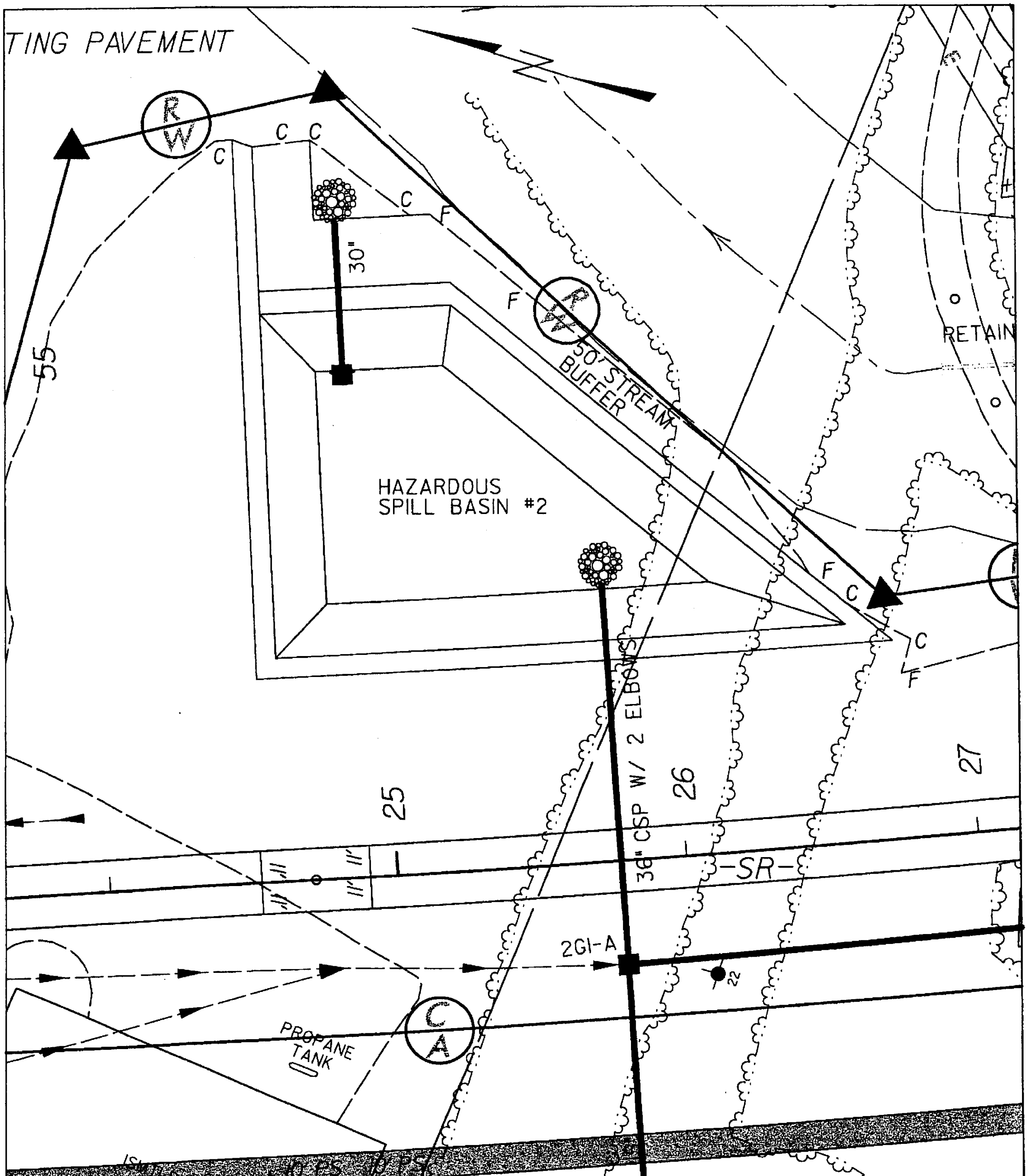
PROFILE VIEW
SITE 2

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 13 OF 46 1/06



0 50 ft 100 ft

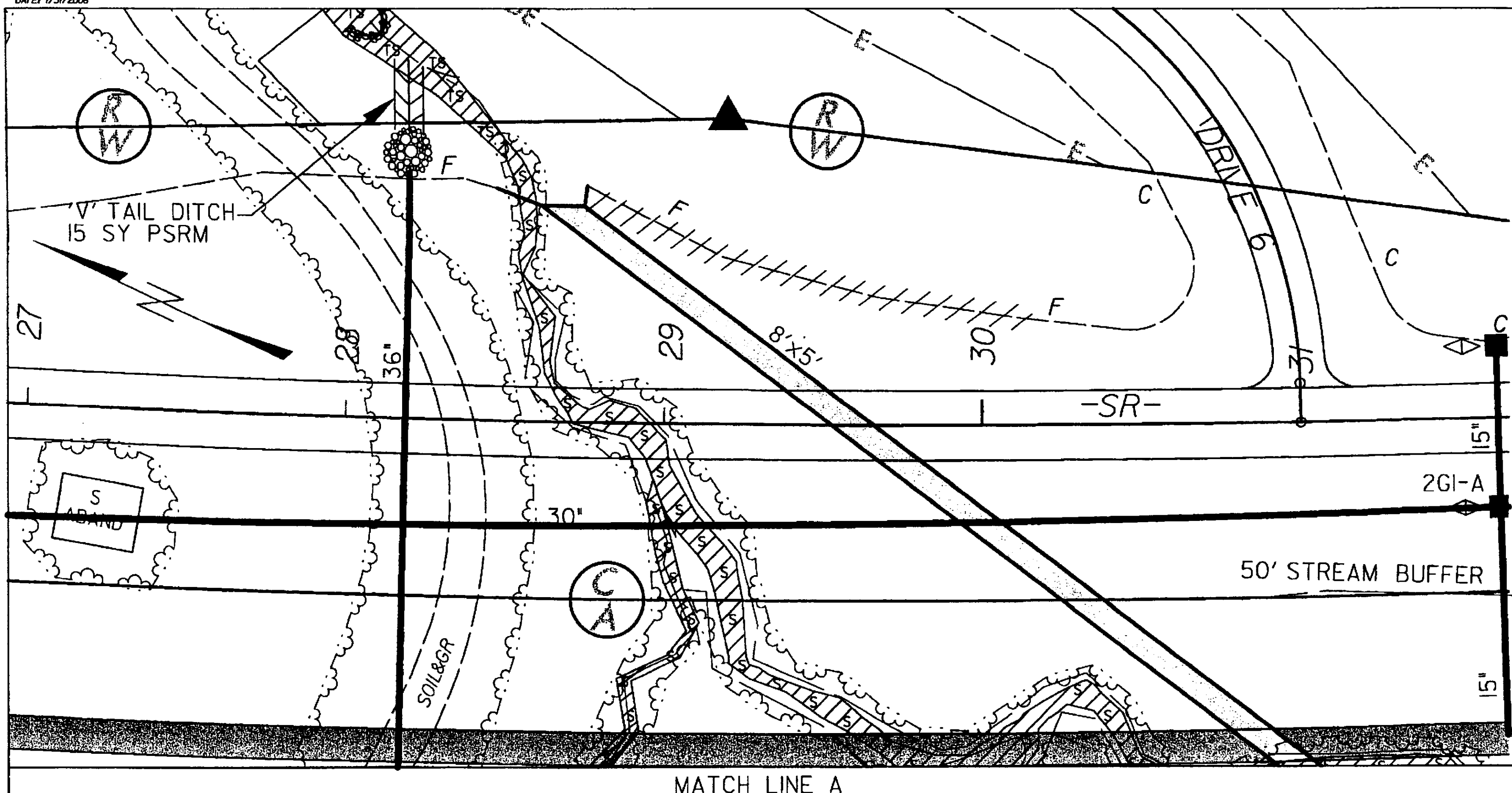
PLAN VIEW SITE 3

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 14 **OF** 46 1 **/2006**



DETAIL DD
'V' TAIL DITCH w/PSRM
(NOT TO SSCALE)

Natural Ground — Natural Ground — D — d — PSRM

Max. d = 1' Ft.   Min. D = 1' Ft.

Type of Liner = PERMANENT SOIL REINFORCED MATTING

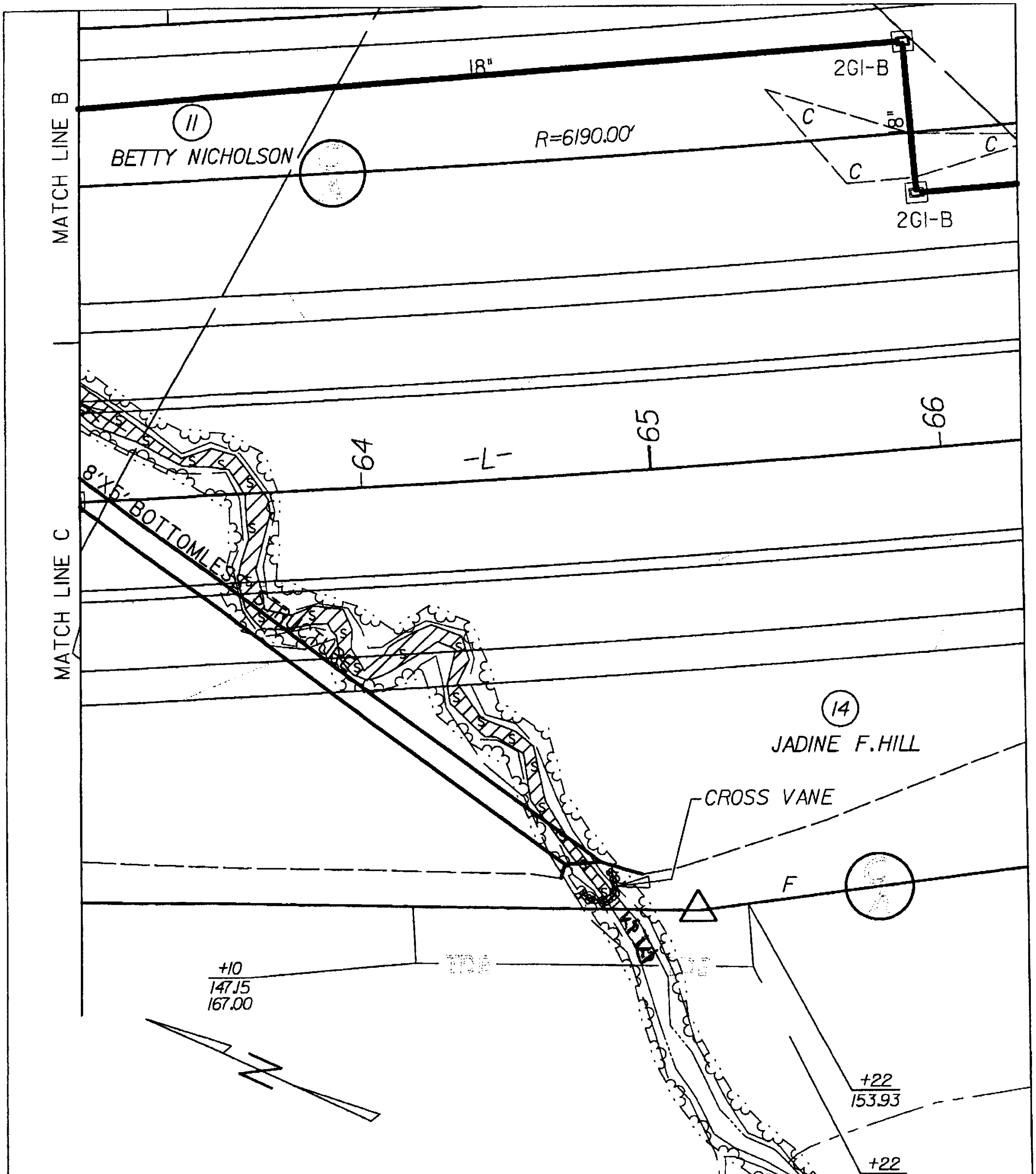
-L- 59+48 L

PLAN VIEW
SITE 3

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 15 **OF** 46 / /2006



0 50 ft 100 ft

PLAN VIEW SITE 3

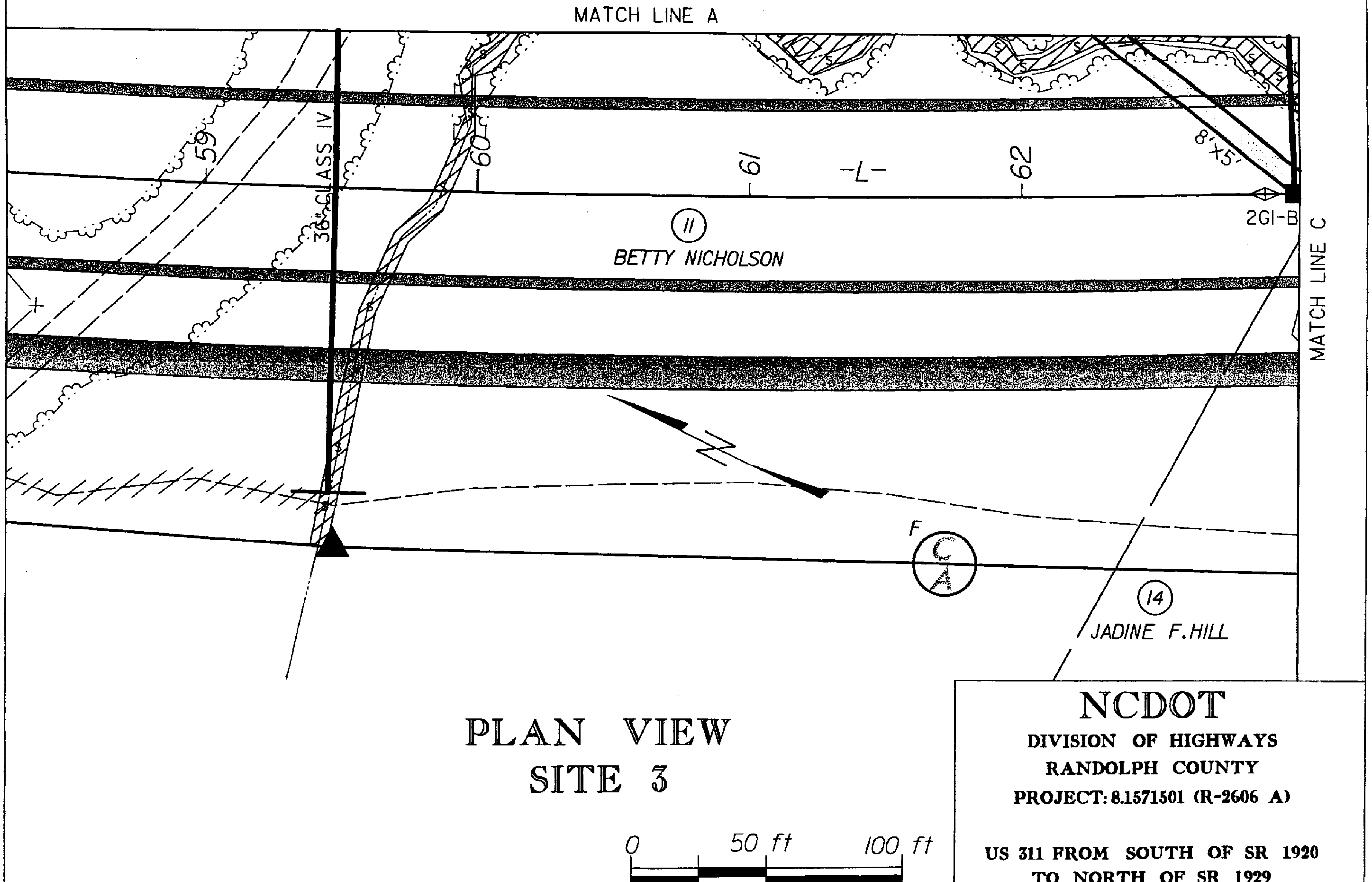
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 16 OF 46 / /2006

USER: el
DGN: r2606d\hydraulics\3.dgn
DATE: 1/31/2006



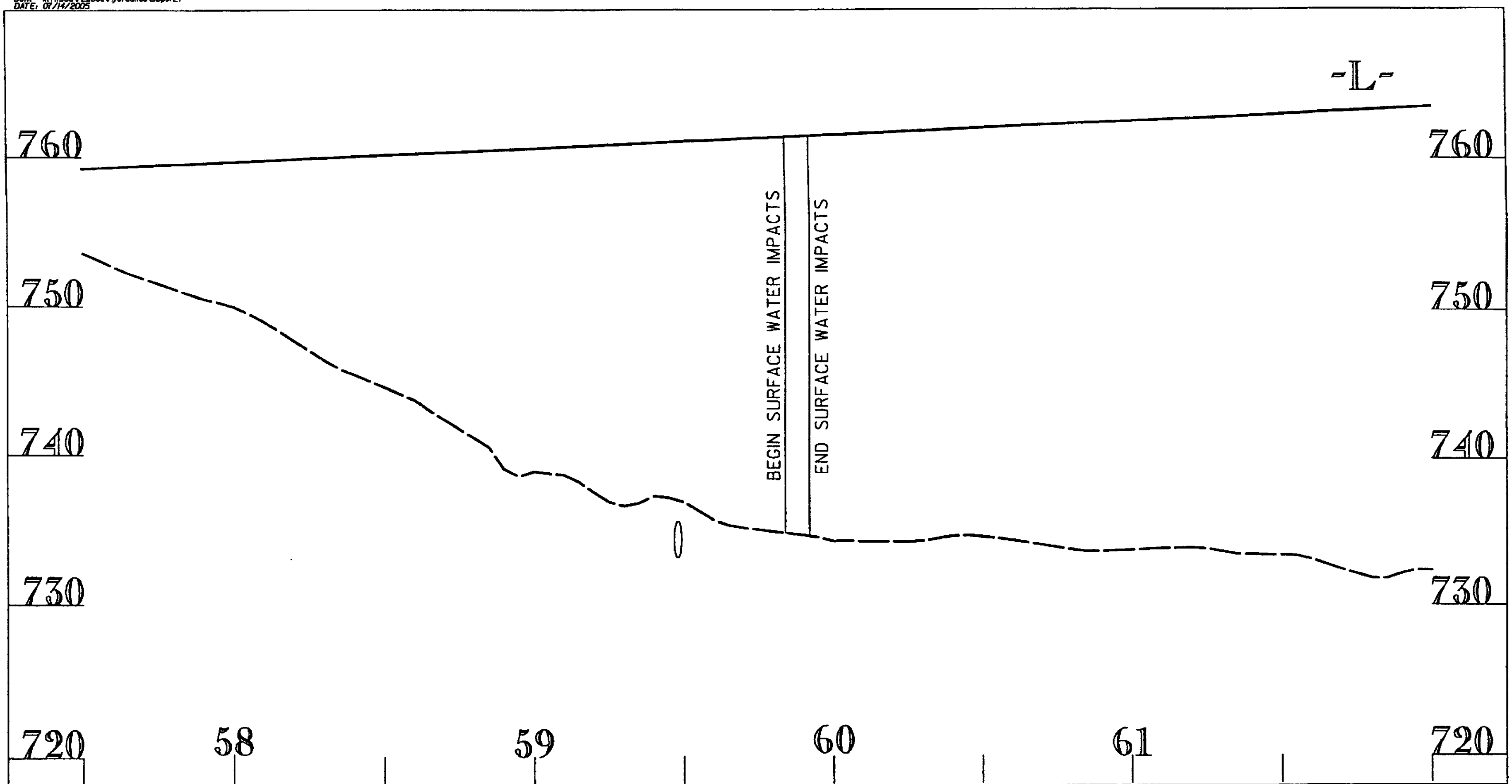
PLAN VIEW
SITE 3

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 17 **OF** 46 1 / **/2006**

USER: rramy
DGN: k:\4558\r2606\Hydraulics\3DpWET
DATE: 07/14/2005



PROFILE VIEW
SITE 3

HORIZONTAL SCALE 0 50 ft 100 ft

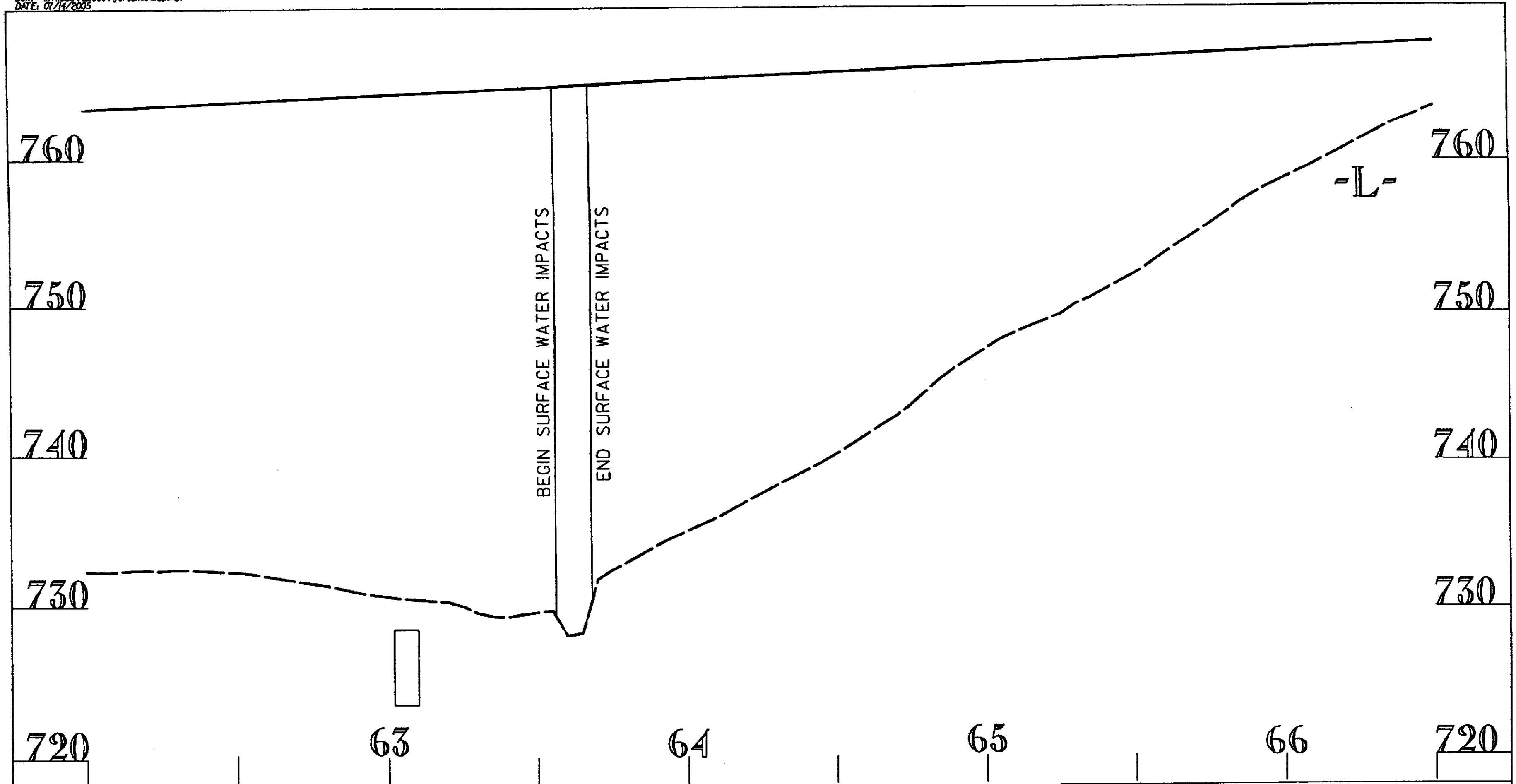
VERTICAL SCALE 0 10 ft 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 18 OF 48 1/1/08

USER: rremy
DGN: ...\r2606a\Hydraulics\3EpWET
DATE: 07/14/2005



PROFILE VIEW
SITE 3

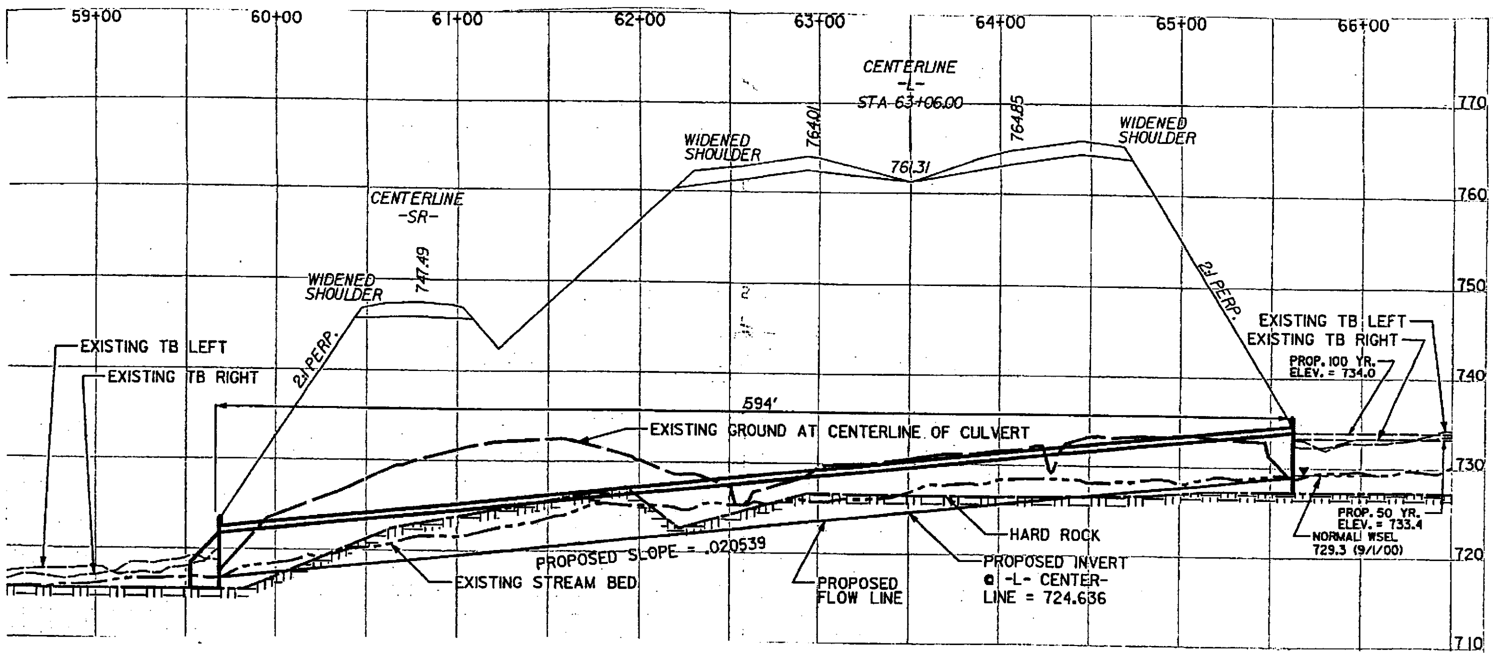
HORIZONTAL SCALE 0 50 ft 100 ft

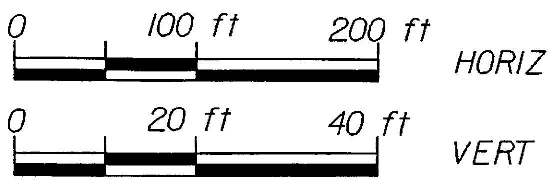
VERTICAL SCALE 0 10 ft 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 19 OF 46 1106



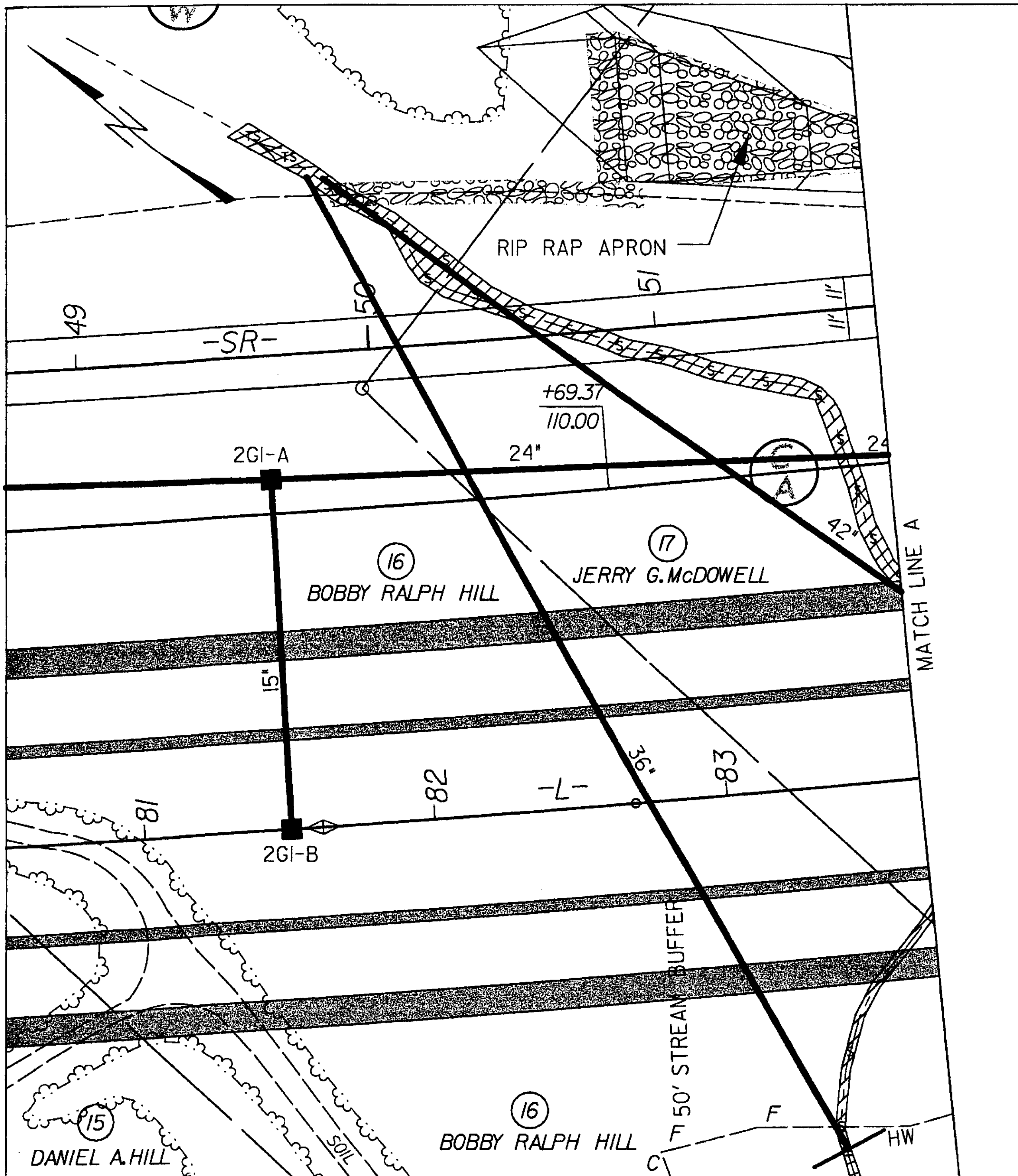


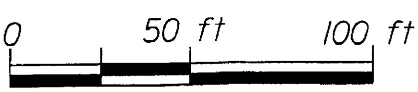
PROFILE VIEW
SITE 3

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 26 **OF** 46 1:106





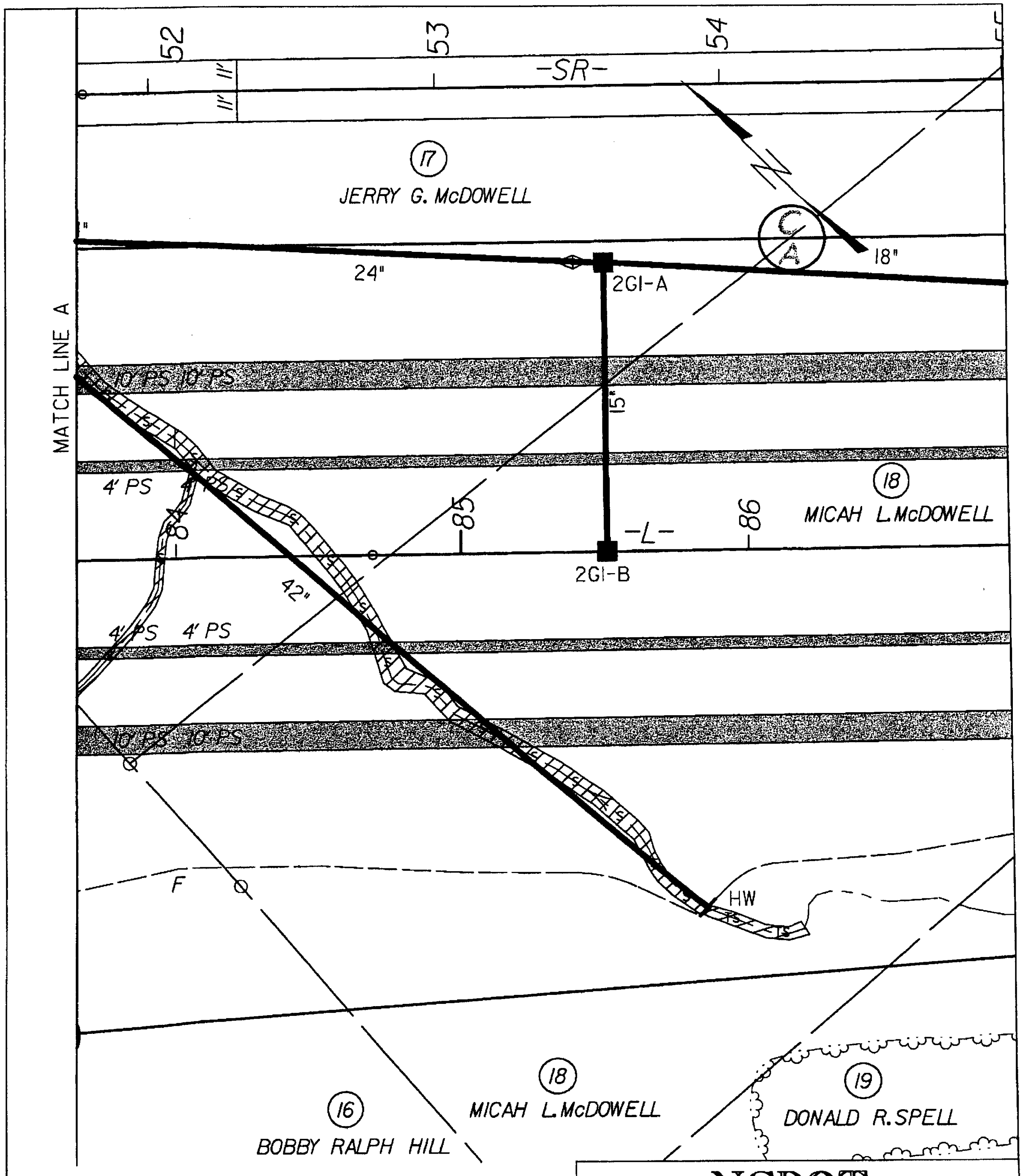
PLAN VIEW SITE 4

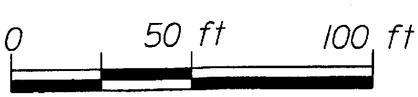
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 21 **OF** 46 . / /2006





PLAN VIEW SITE 4

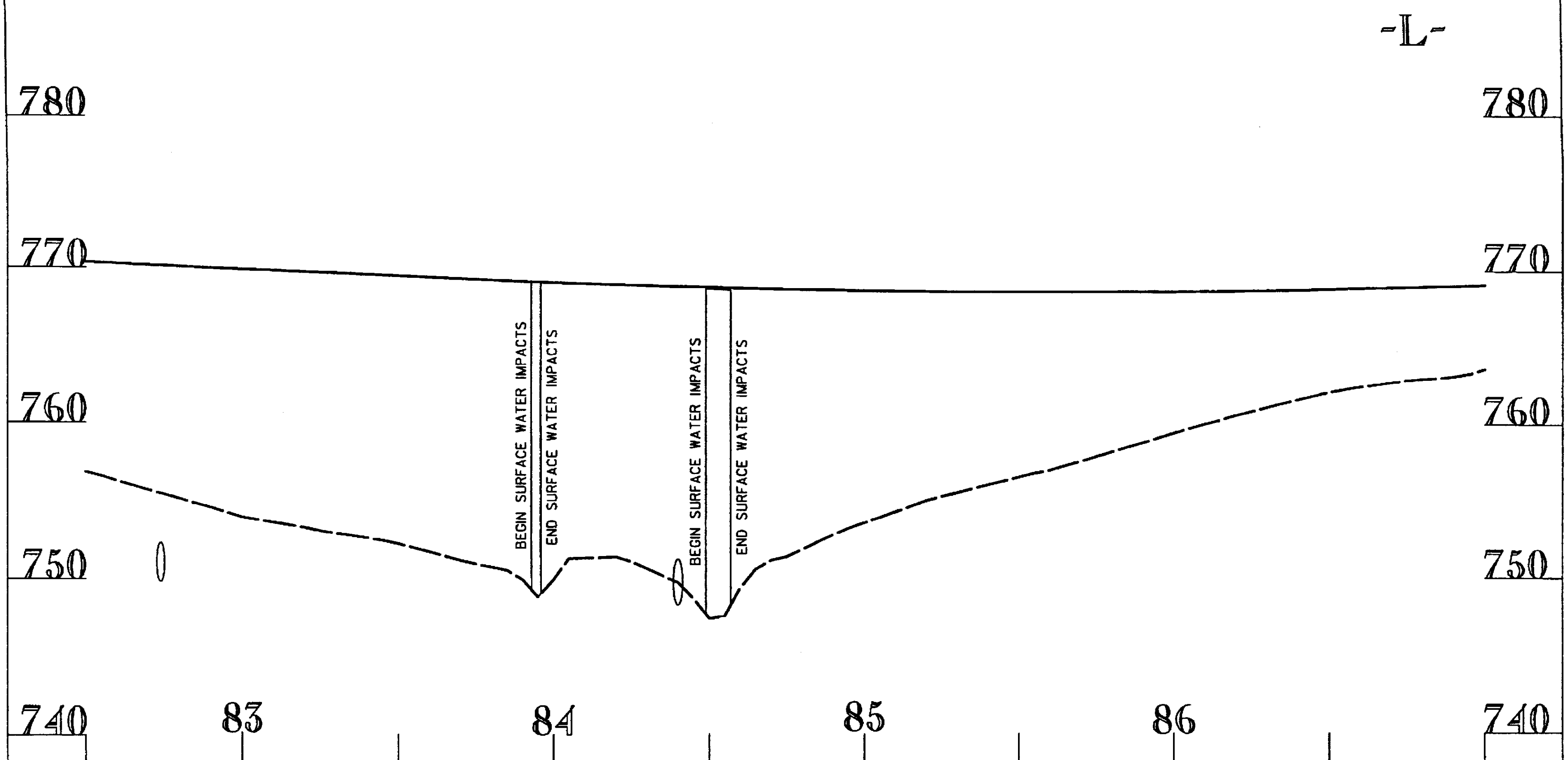
NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 22 **OF** 46 1 / **2006**

USER: rrem
DGN: k:\4558\r2606a\Hydraulics\4Dp.WET
DATE: 07/14/2005



PROFILE VIEW
SITE 4

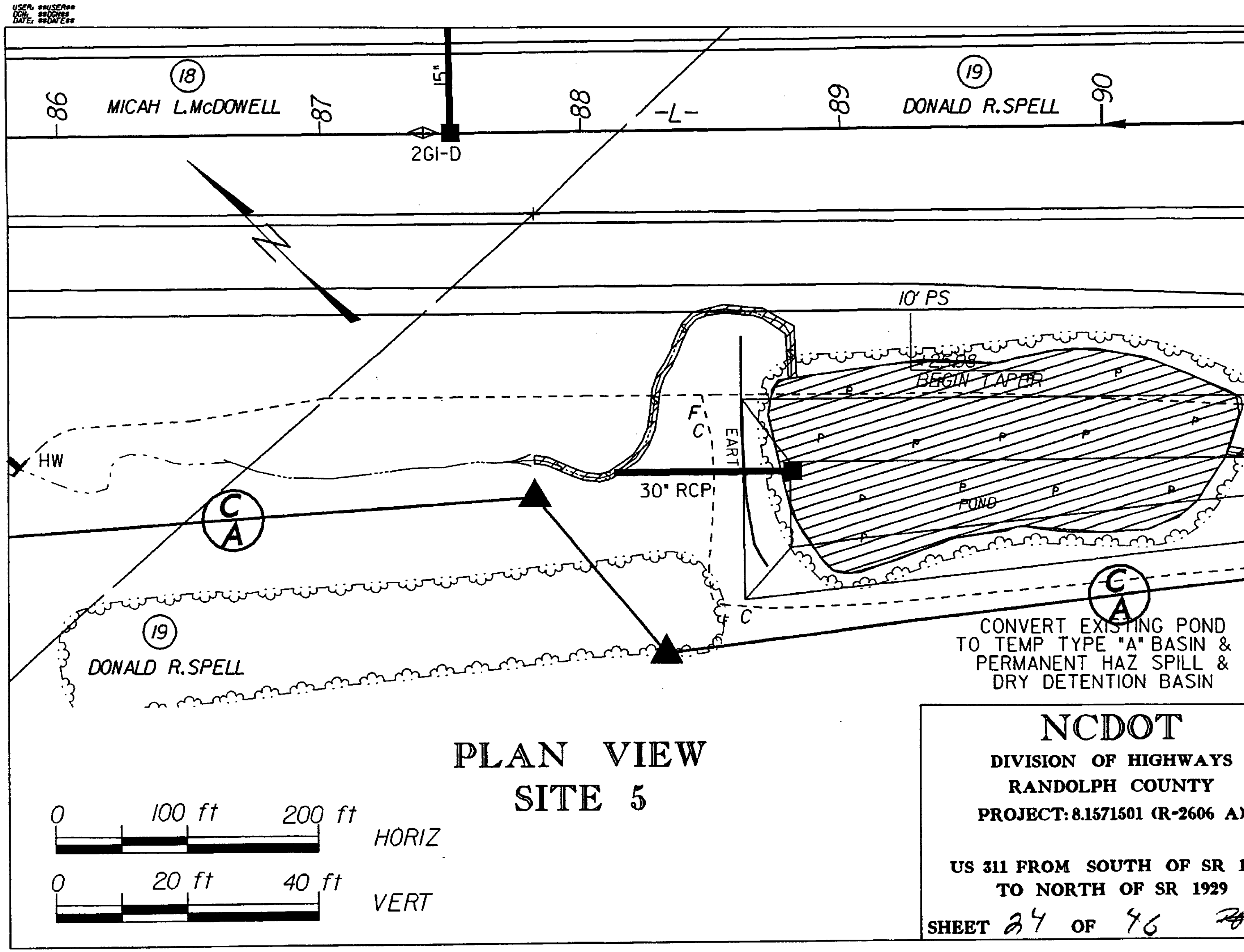
HORIZONTAL SCALE 0 50 ft 100 ft

VERTICAL SCALE 0 10 ft 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 23 **OF** 46 / /2005



PLAN VIEW
SITE 5

NCDOT

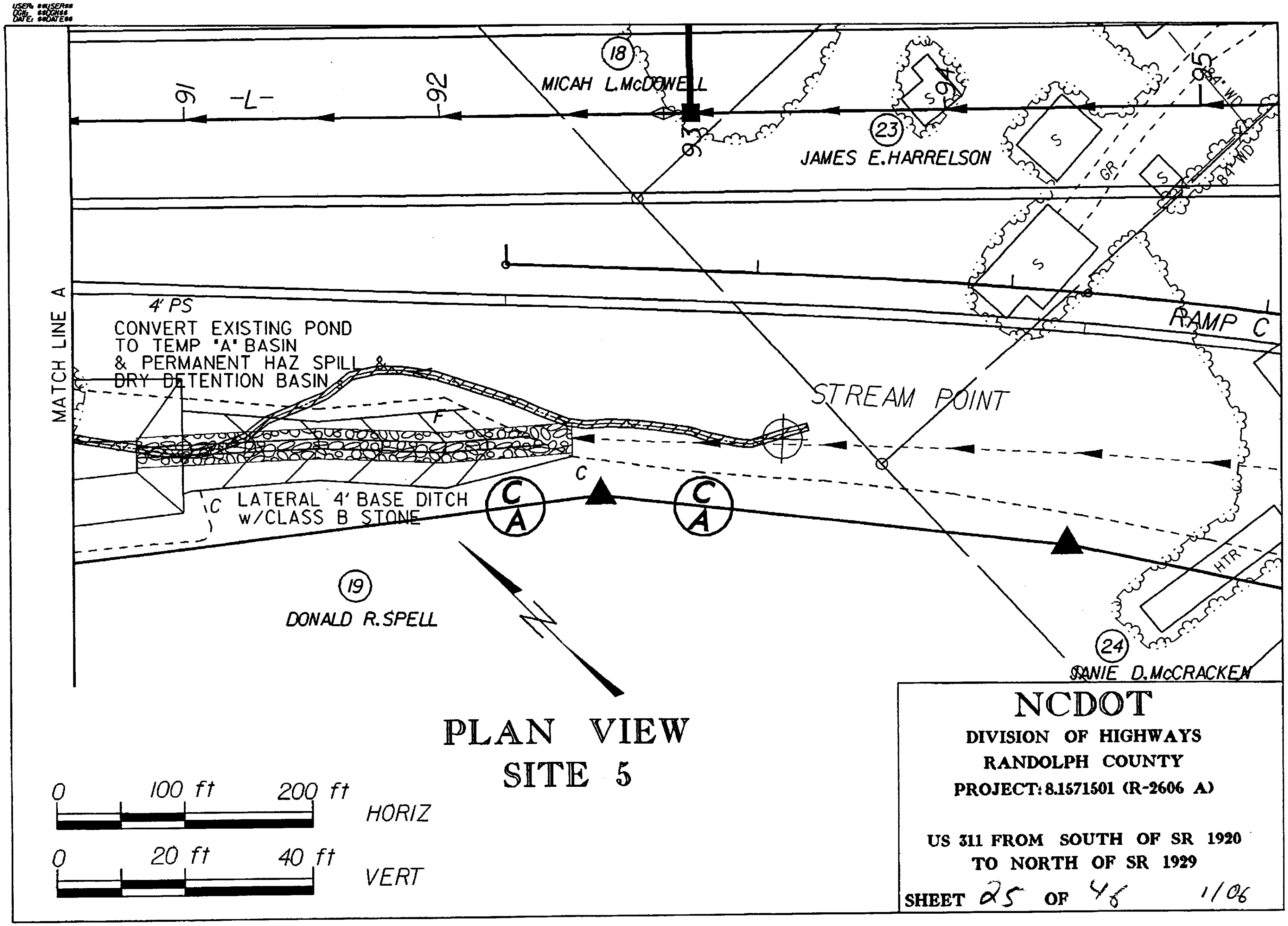
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

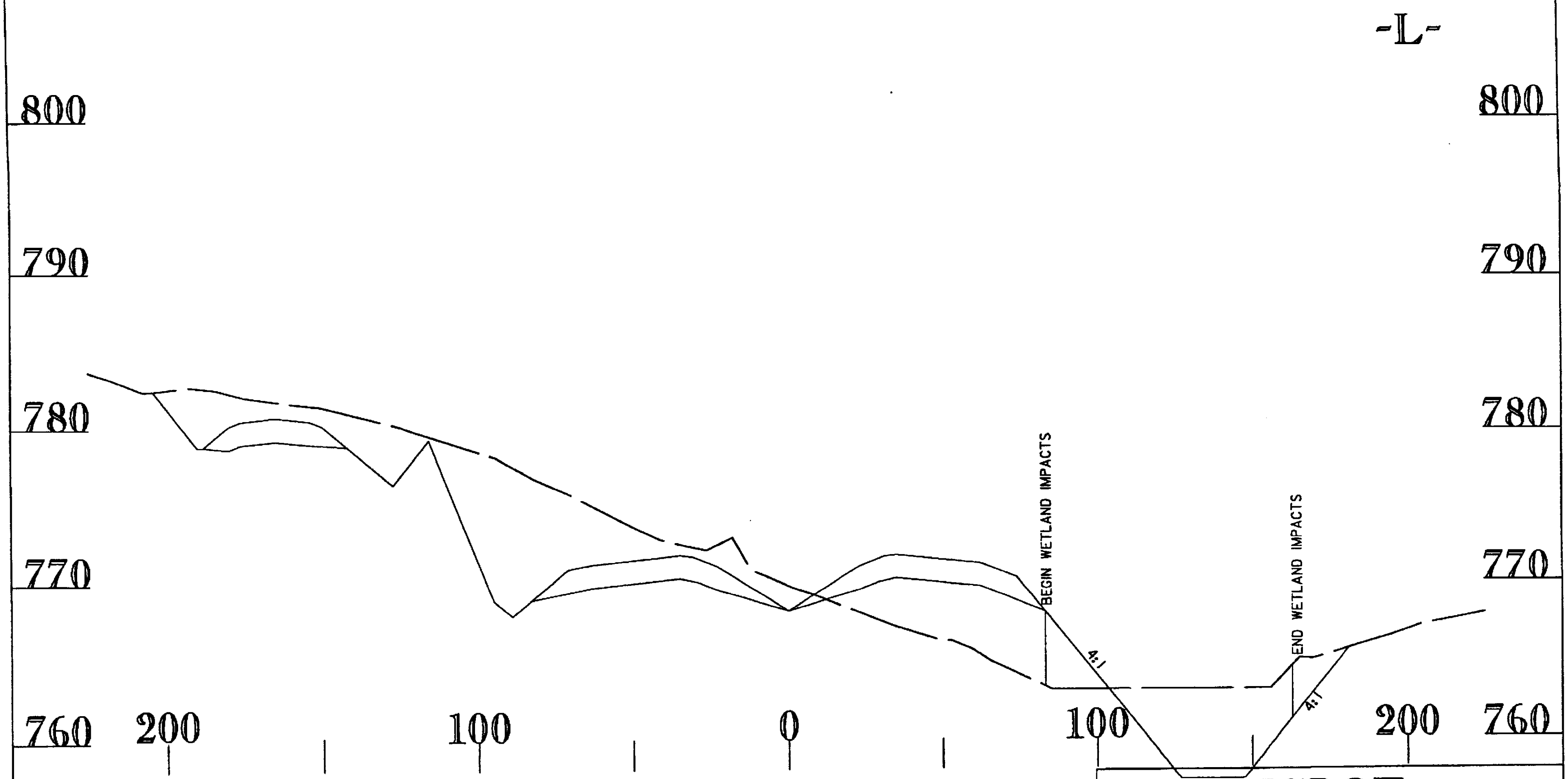
SHEET 24 **OF** 46



PLAN VIEW
SITE 5

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929
SHEET 25 OF 46 1/06



CROSS SECTION 90 + 00
SITE 5

HORIZONTAL SCALE 0 50 ft 100 ft

VERTICAL SCALE 0 10 ft 20 ft

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929

SHEET 26 OF 48 2006