PROJECT SPECIAL PROVISION

(10-18-95) Z-1

PERMITS

The Contractor's attention is directed to the following permits, which have been issued to the Department of Transportation by the authority granting the permit.

PERMIT	AUTHORITY GRANTING THE PERMIT
Dredge and Fill and/or Work in Navigable Waters (404)	U. S. Army Corps of Engineers
Water Quality (401)	Division of Environmental Management, DENR State of North Carolina

The Contractor shall comply with all applicable permit conditions during construction of this project. Those conditions marked by * are the responsibility of the department and the Contractor has no responsibility in accomplishing those conditions.

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Contractor's attention is also directed to Articles 107-10 and 107-14 of the *Standard Specifications* and the following:

Should the Contractor propose to utilize construction methods (such as temporary structures or fill in waters and/or wetlands for haul roads, work platforms, cofferdams, etc.) not specifically identified in the permit (individual, general, or nationwide) authorizing the project it shall be the Contractor's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Contractor shall also be responsible for initiating the request for the authorization of such construction method by the permitting agency. The request shall be submitted through the Engineer. The Contractor shall not utilize the construction method until it is approved by the permitting agency. The request normally takes approximately 60 days to process; however, no extensions of time or additional compensation will be granted for delays resulting from the Contractor's request for approval of construction methods not specifically identified in the permit.

Where construction moratoriums are contained in a permit condition which restricts the Contractor's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the waters or wetlands provided that activities outside those areas is done in such a manner as to not affect the waters or wetlands.

271

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

273

DEPARTMENT OF THE ARMY PERMIT

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. Fuck 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 M Clendon 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.

282

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

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

283

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**

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

284

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**

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

285

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**

One NorthCarolina Naturally

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

286

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

One North Carolina Naturally

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

287

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**

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

288

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

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

289

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

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

290

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**

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

291

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.

X 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

292

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

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

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.

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

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..

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

296

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.

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

297

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:	If you only have questions regarding the appeal process you may also 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	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.

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

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

300

CONTRACT: C201225 TIP: R-0609IB

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD – RANDOLPH

ALL DIMENSIONS IN THESE PLANS ARE IN METERS

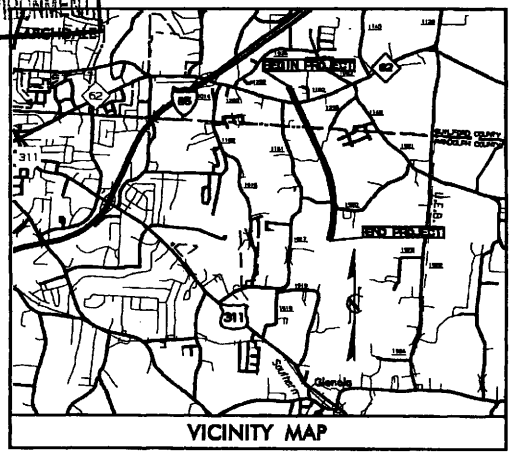
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-0609IB	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34345.1.1	MAF-F-119-(1)	PE
34345.2.8	NHF-119-1(12)	RW, UTIL

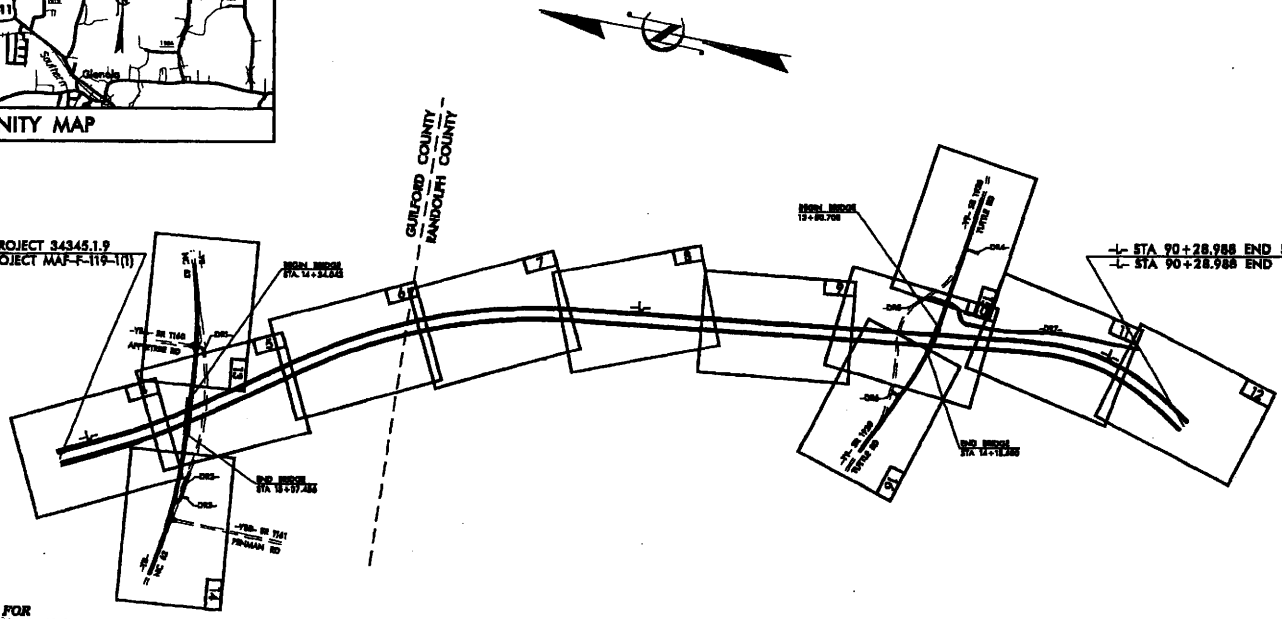
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols
See Sheet 1-C & 1-D For Survey Control Sheets
See Sheet 1-E & 1-F For Centerline Coordinate List

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*



VICINITY MAP



STA 60+59.109 BEGIN STATE PROJECT 34345.1.9
STA 60+59.109 BEGIN F. A. PROJECT MAF-F-119-1(1)

STA 90+28.988 END STATE PROJECT 34345.1.9
STA 90+28.988 END F. A. PROJECT MAF-F-119-1(1)

DESIGN EXCEPTION REQUIRED FOR BRIDGE WIDTH AND SAG VERTICAL CURVE ON SR 1920 TUTTLE ROAD (-V9-)

THIS IS A CONTROLLED ACCESS PROJECT

GRAPHIC SCALES

PLANS 5 0 10

PROFILE (HORIZONTAL) 5 0 10

PROFILE (VERTICAL) 0 2

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

2006 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

SEAL 14493 PROFESSIONAL ENGINEER

SIGNATURE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

09-FEB-2006 8:51
c:\projects\0609ib\sh
R-0609IB_SHEET.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-0609B	P
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

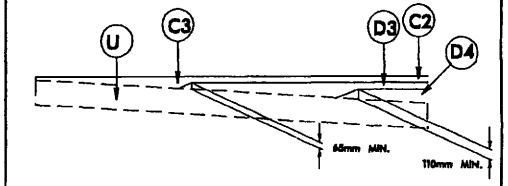
301

PAVEMENT SCHEDULE

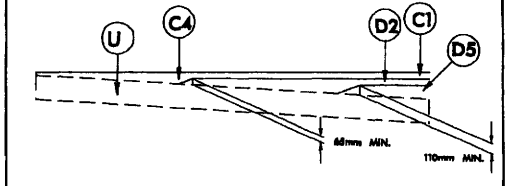
C1	PROP. APPROX. 50 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 117.5 kg PER SQ. METER.	E2	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 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/m @ 180mm DEPTH. ALSO, 135 kg/m OF ABC FOR 5% OF CEMENT AREA. LIME STABILIZATION (method-slurry): 40% OF PROJECT; 11kg/m @ 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 269.5 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

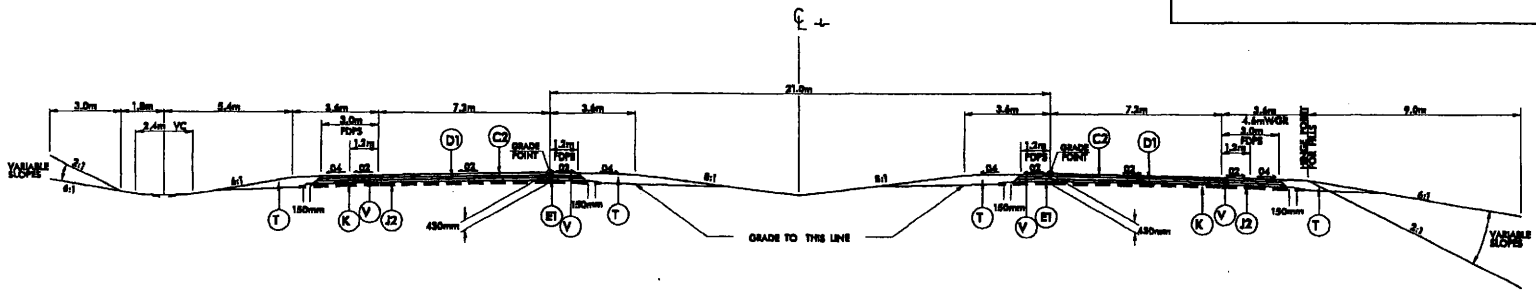
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

DETAIL FOR SHOWING METHOD OF WEDGING FOR -Y8-



DETAIL FOR SHOWING METHOD OF WEDGING FOR -Y9-





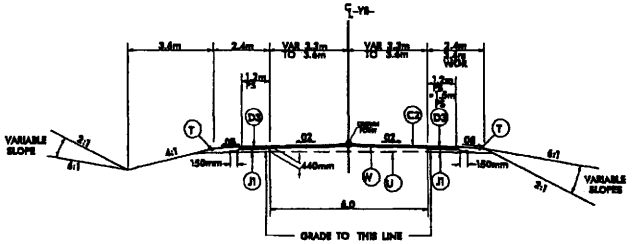
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA 60+59.109 TO 90+28.988

302

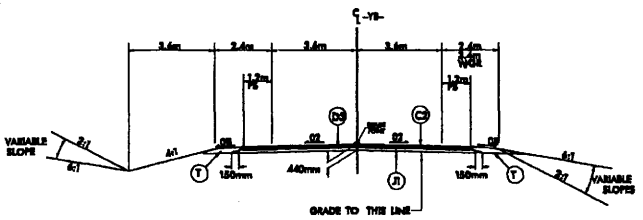
PROJECT REFERENCE NO.	SHEET NO.
R-0609(B)	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PAVEMENT SCHEDULE	
C1	50 mm S9.5A
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



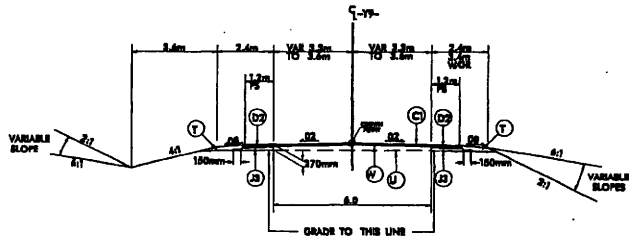
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
-Y5- STA 10+84.660 TO STA 11+99.545 (WIDENING & RESURFACING)
-Y5- STA 17+84.369 TO STA 18+82.197 (WIDENING & RESURFACING)
-Y5- STA 17+00 TO STA 17+19 (RT.)



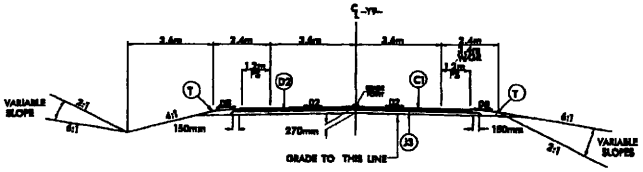
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
-Y5- STA 11+99.545 TO 14+34.042 (BRG BRIDGE)
-Y5- STA 15+07.456 (END BRIDGE) TO 17+84.369



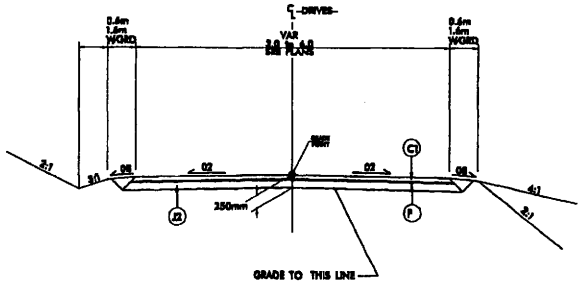
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:
-Y5- STA 10+00 TO 10+62.134 (RESURFACING&WIDENING)
-Y5- STA 15+48.008 TO 17+30 (RESURFACING & WIDENING)



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS:
-Y5- STA 10+62.134 TO 15+50.708 (BRG BRIDGE)
-Y5- STA 14+12.660 (END BRIDGE) TO 15+48.008



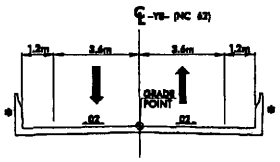
TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS:

DRIVE1	-DR1-	STA	10+00.000	TO	10+48
DRIVE2	-DR2-	STA	10+00.000	TO	10+79
DRIVE3	-DR3-	STA	11+00.000	TO	11+17.035
DRIVE4	-DR4-	STA	11+00.000	TO	11+15
DRIVE5	-DR5-	STA	11+00.000	TO	11+15
DRIVE6	-DR6-	STA	11+00.000	TO	11+17
DRIVE7	-DR7-	STA	11+00.000	TO	11+15.488

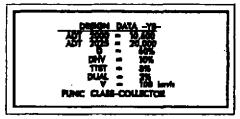
METRIC

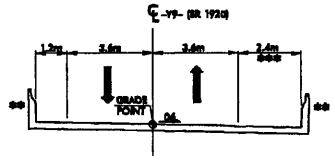
PROJECT REFERENCE NO.	SHEET NO.
R-0609B	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



TYPICAL SECTION ON STRUCTURE

*BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN

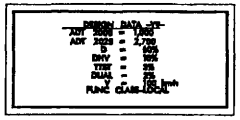


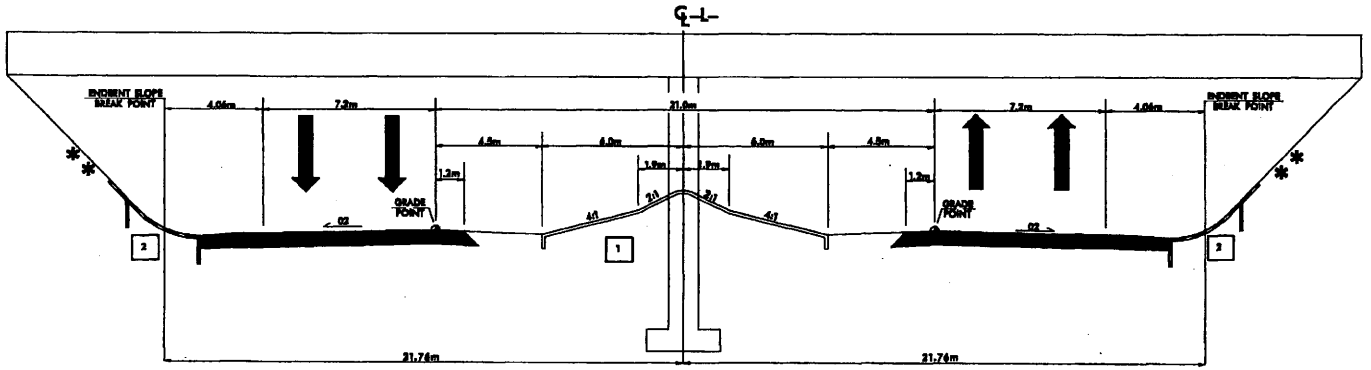


TYPICAL SECTION ON STRUCTURE

**BICYCLE SAFE RAIL REQUIRED

***WIDEN FOR STOPPING SIGHT DISTANCE





DETAIL OF TYPICAL SECTION UNDER STRUCTURE

MINIMUM VERTICAL CLEARANCE = 5.3m

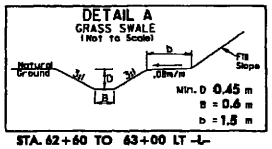
**SLOPES DETERMINED BY SOILS AND FOUNDATIONS UNIT

1	SEE STD. 235.08
2	SEE STD. 610.05

304

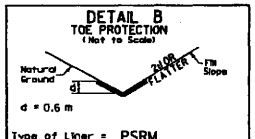
PROJECT REFERENCE NO.	SHEET NO.
R-0609B	2-C
R/W SHEET NO.	

DETAIL A
GRASS SWALE
(Not to Scale)



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-

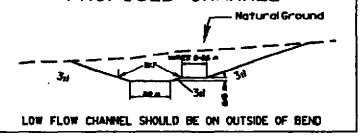
DETAIL B
TOE PROTECTION
(Not to Scale)



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.

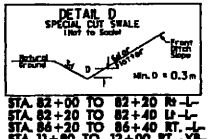
DETAIL C
PROPOSED CHANNEL



LOW FLOW CHANNEL SHOULD BE ON OUTSIDE OF BEND

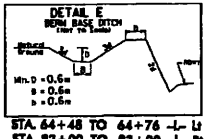
STA. 68+76 TO 69+17 RT.

DETAIL D
SPECIAL CUT SWALE
(Not to Scale)



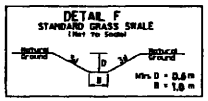
STA. 82+00 TO 82+20 Rt -L-
STA. 82+20 TO 82+40 Lt -L-
STA. 86+20 TO 86+40 RT. -L-
STA. 11+80 TO 12+00 RT. -Y8-
STA. 15+60 TO 16+60 LT. -Y9
STA. 16+00 TO 16+80 RT. -Y9-
STA. 17+20 TO 17+40 RT. -Y8-
STA. 17+00 TO 17+50 LT. -Y9-
USE THIS TYPICAL w/PROPOSED PROFILE
STA. 17+20 TO 18+40 RT. -Y8-

DETAIL E
BERM BASE DITCH
(Not to Scale)



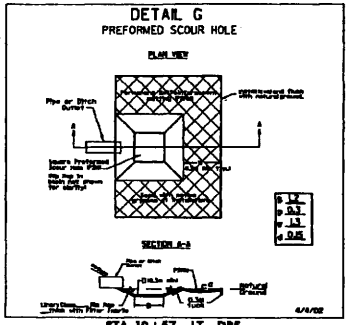
STA. 64+48 TO 64+76 -L- Lt
STA. 82+00 TO 83+00 -L- Rt
STA. 88+10 TO 89+00 -L- Rt

DETAIL F
STANDARD GRASS SWALE
(Not to Scale)



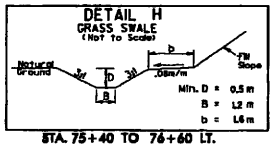
STA. 64+08 TO 64+31 RT -L-

DETAIL G
PREFORMED SCOUR HOLE



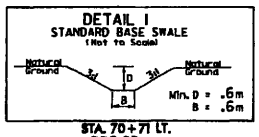
STA. 10+57 LT. -DR5-
STA. 76+20 RT. -L-
STA. 79+42 RT. -L-

DETAIL H
GRASS SWALE
(Not to Scale)



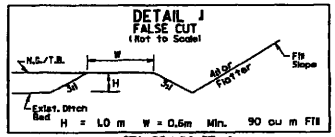
STA. 75+40 TO 76+60 LT.
STA. 76+80 TO 77+20 LT.

DETAIL I
STANDARD BASE SWALE
(Not to Scale)



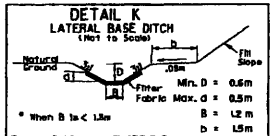
STA. 70+71 LT.
DDE 35 cm

DETAIL J
FALSE CUT
(Not to Scale)



STA. 90+06 RT. -L-

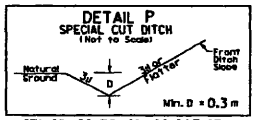
DETAIL K
LATERAL BASE DITCH
(Not to Scale)



Type of Liner = CL I RIP-RAP

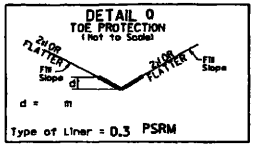
STA. 76+60 TO 76+80 LT.

DETAIL P
SPECIAL CUT DITCH
(Not to Scale)



STA. 12+00 TO 13+80 DR7 RT.
STA. 14+60 TO 15+20 DR7 RT.

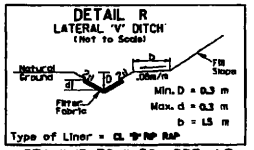
DETAIL O
TOE PROTECTION
(Not to Scale)



Type of Liner = 0.3 PSRM

STA. 83+90 TO 85+10 -L- LT.
STA. 13+80 TO 14+30 DR7 RT.

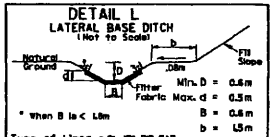
DETAIL R
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = CL 'B' RIP RAP

STA 11+12 TO 11+30 -DR7- LT

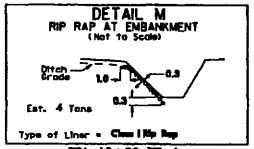
DETAIL L
LATERAL BASE DITCH
(Not to Scale)



Type of Liner = CL 'B' RIP-RAP

STA. 11+20 TO 11+80 LT -Y9-

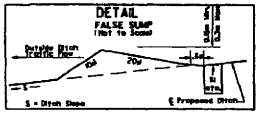
DETAIL M
RIP RAP AT EMBANKMENT
(Not to Scale)



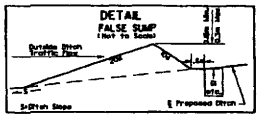
Type of Liner = Class I Rip Rap

STA. 68+80 RT. -L-

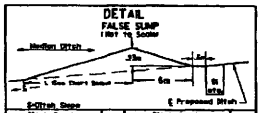
DETAIL
FALSE SUMP
(Not to Scale)



DETAIL
FALSE SUMP
(Not to Scale)

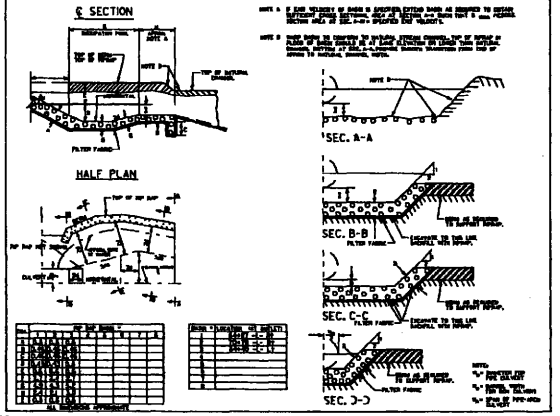


DETAIL
FALSE SUMP
(Not to Scale)



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 N
DETAIL OF RIP-RAPPED ENERGY DISSIPATOR BASIN



STA 64+87 -L-
FILTER FABRIC = 140 sq m
CL I RIP RAP = 105 mtons
DDE = 150 cu m

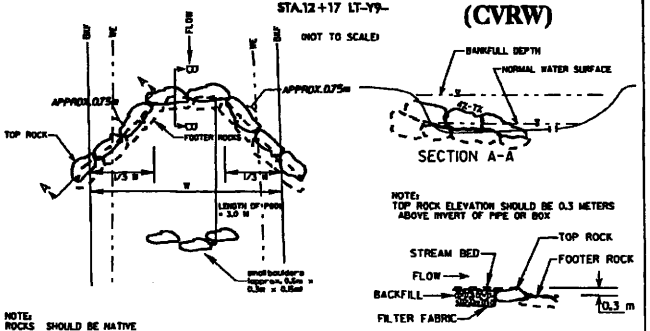
STA 70+70 -L-
FILTER FABRIC = 100 sq m
CL I RIP RAP = 88 mtons
DDE = 125 cu m

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

STA. 68+80 RT. -L-
STA. 77+25 LT. -L-
STA. 12+17 LT-Y9-

(CVRW)



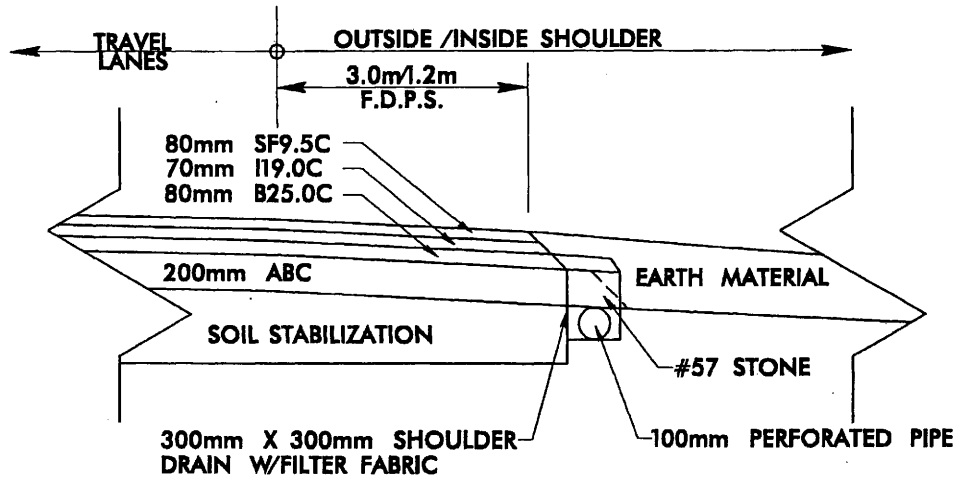
NOTE:
ROCKS SHOULD BE NATIVE STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH AXIS APPROXIMATELY 1m IN LENGTH

STA 68+80 -L-
FILTER FABRIC = 18 sq m
LARGE BOULDERS = 15
SMALL BOULDERS = 3
TOTAL mtons = 46

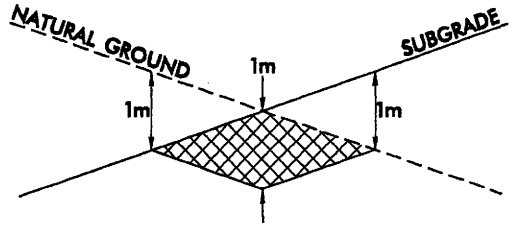
STA 77+25 -L-
FILTER FABRIC = 25 sq m
LARGE BOULDERS = 20
SMALL BOULDERS = 3
TOTAL mtons = 52

STA 12+17 -Y9-
FILTER FABRIC = 25 sq m
LARGE BOULDERS = 20
SMALL BOULDERS = 3
TOTAL mtons = 52

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-0609R	2-0
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)

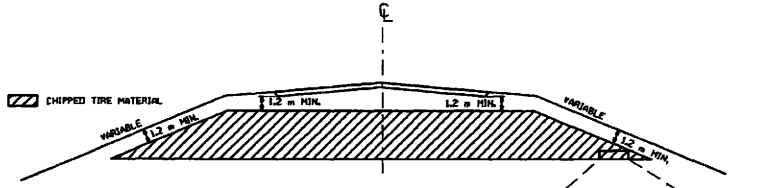
-L- STA. 85+50 TO 88+40 (RT., OUTSIDE)
OUTLETS: 86+40 (2GI), 87+40, 88+40 (2GI)

-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

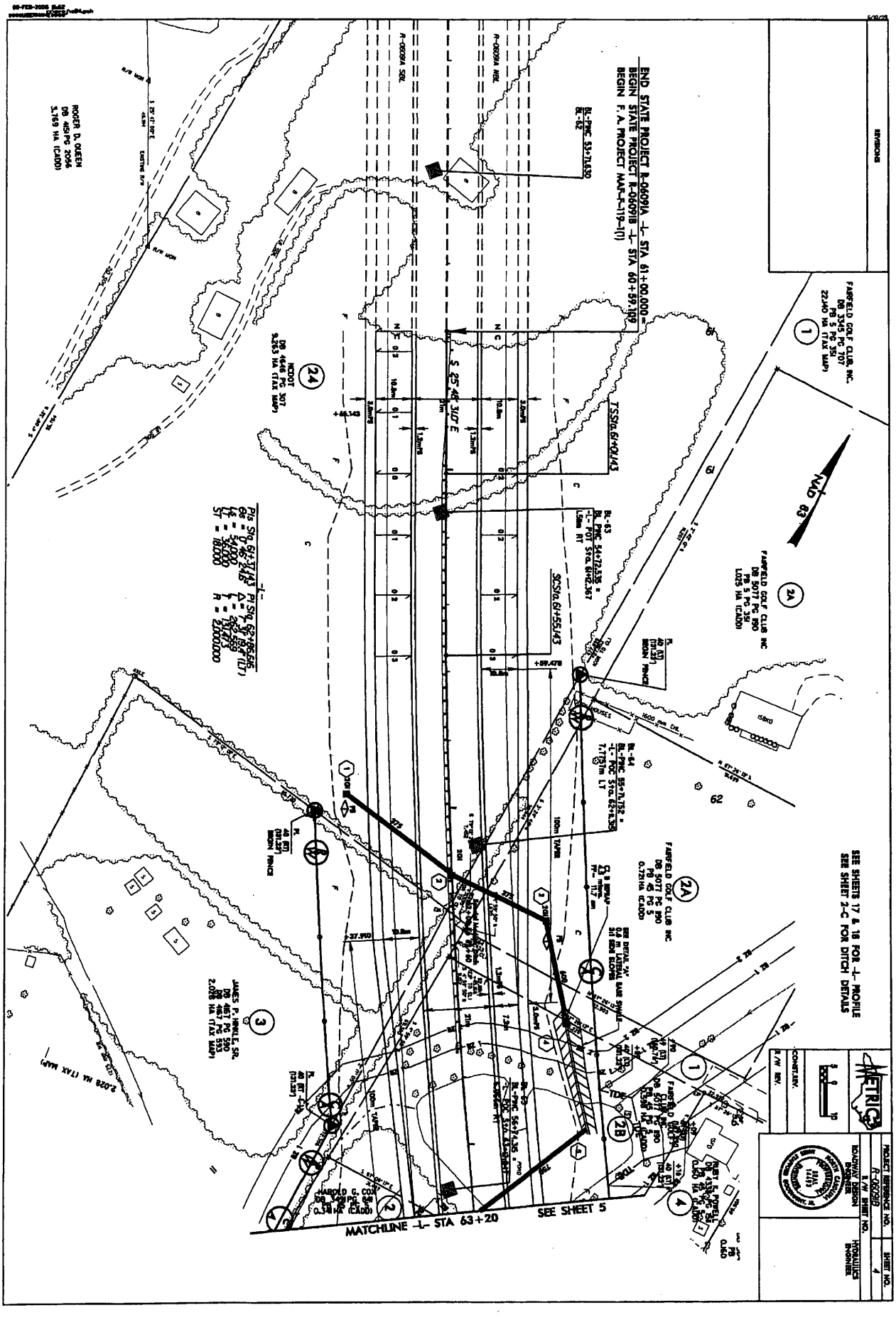


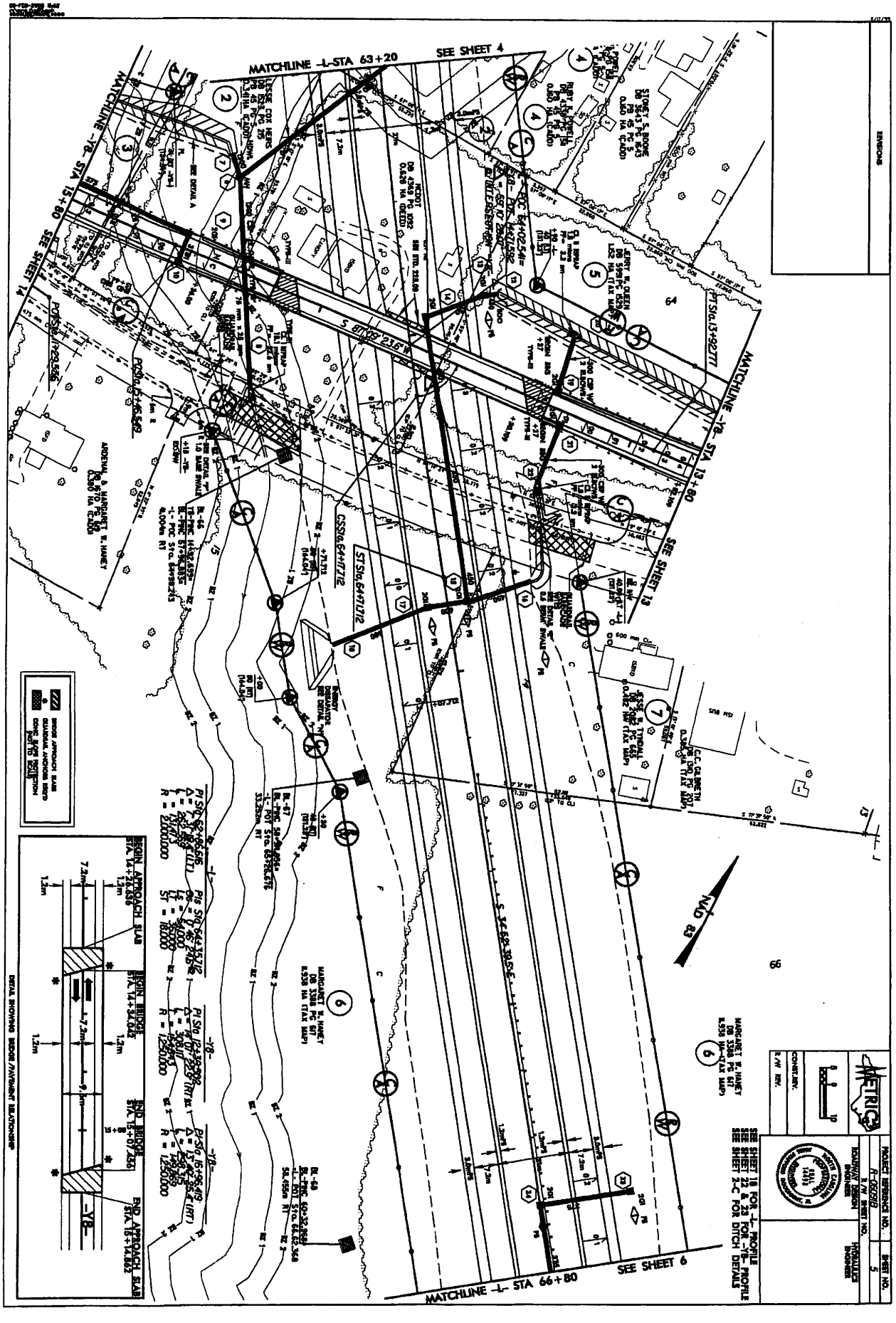
CHIPPED TIRE MATERIAL NOT TO BE PLACED BELOW AN ELEVATION OF 1.2m MIN. ABOVE THE 100 YR FLOOD ELEVATION AS INDICATED BY HYDRAULICS

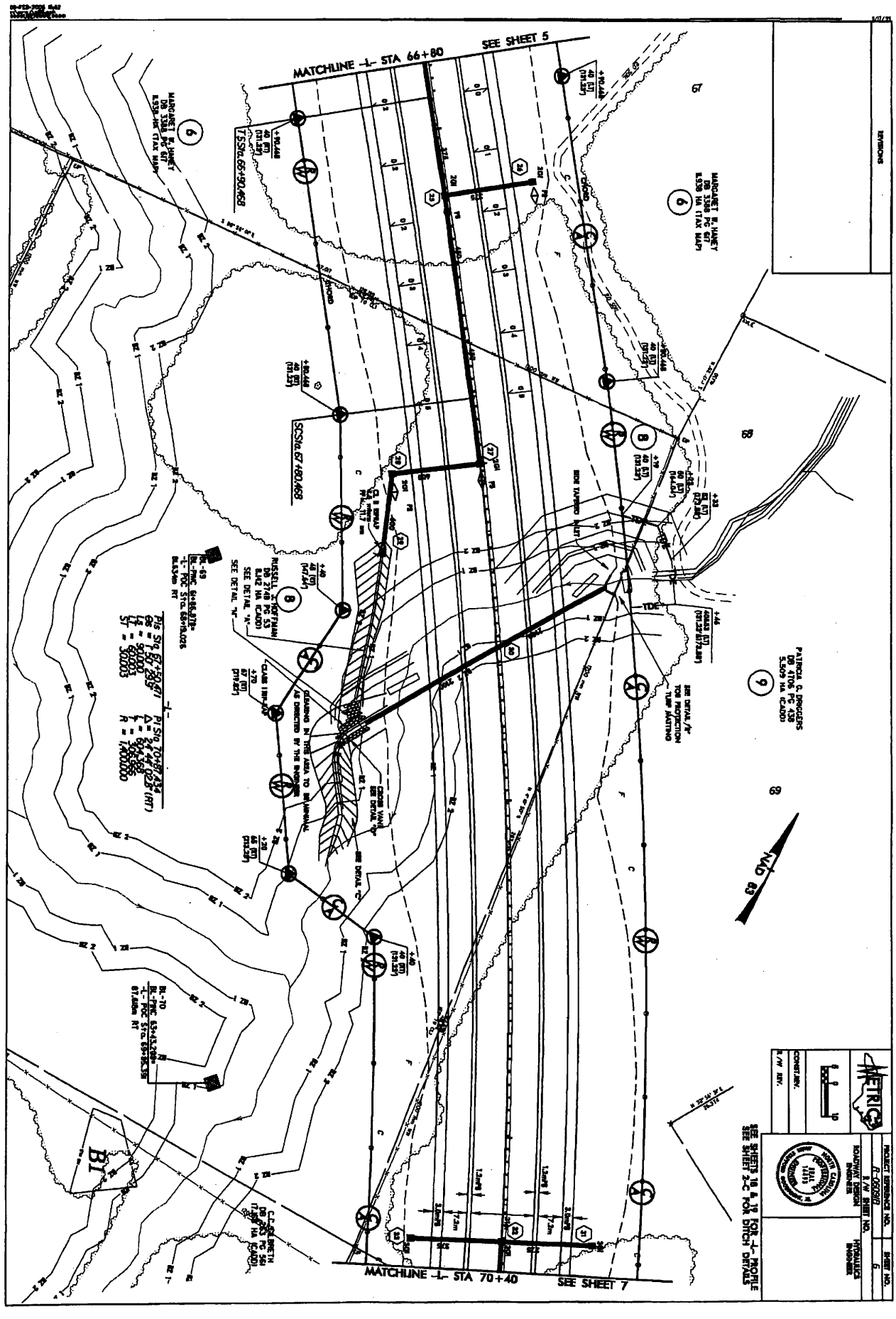
ESTIMATED CHIP TIRE MATERIAL = 72,244 m³

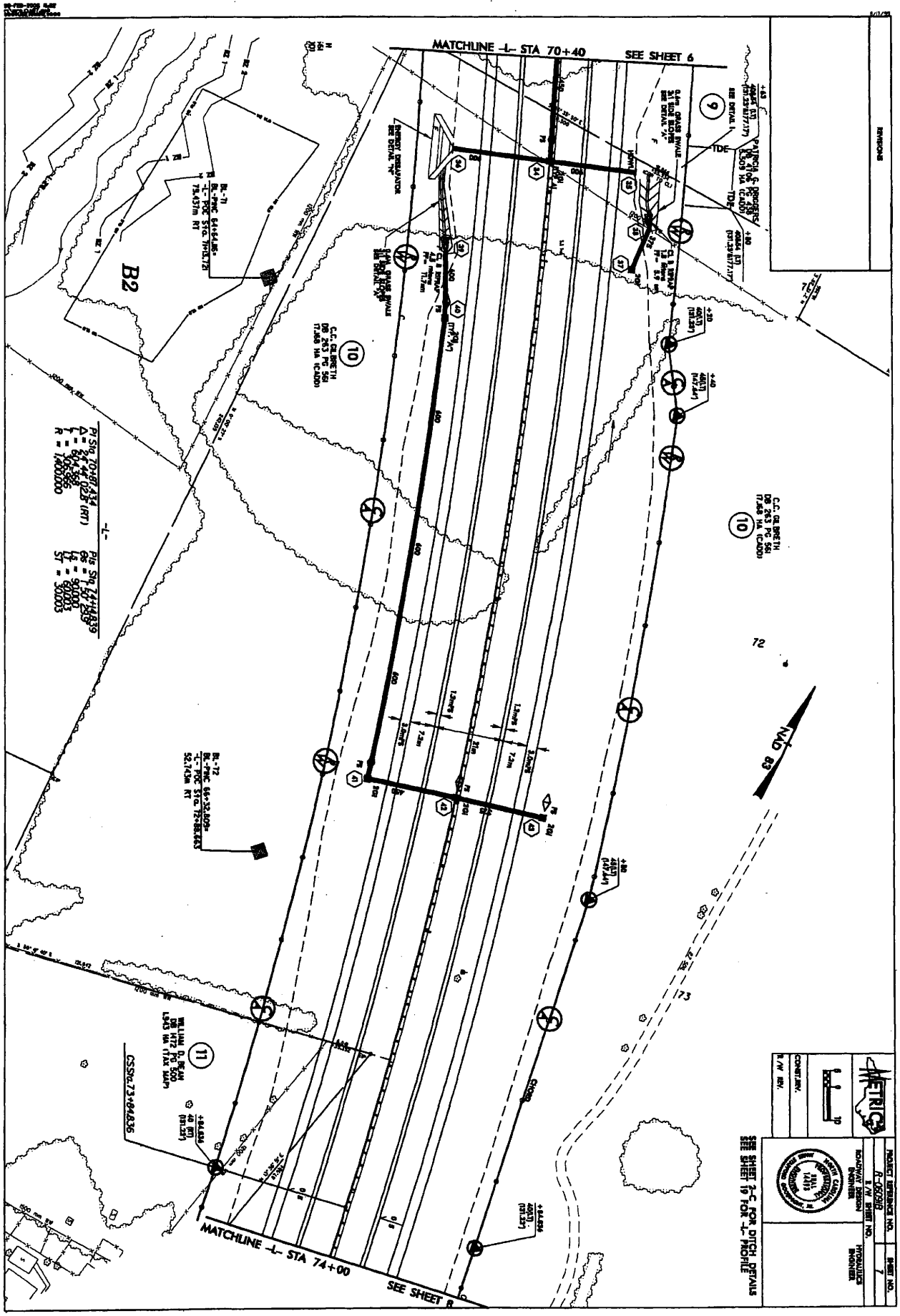
30-50% CHIPPED TIRE MATERIAL PER 250 mm LIFT
100% EMBANKMENT SOIL PER 250 mm LIFT
30-50% CHIPPED TIRE MATERIAL PER 250 mm LIFT
100% EMBANKMENT SOIL PER 250 mm LIFT

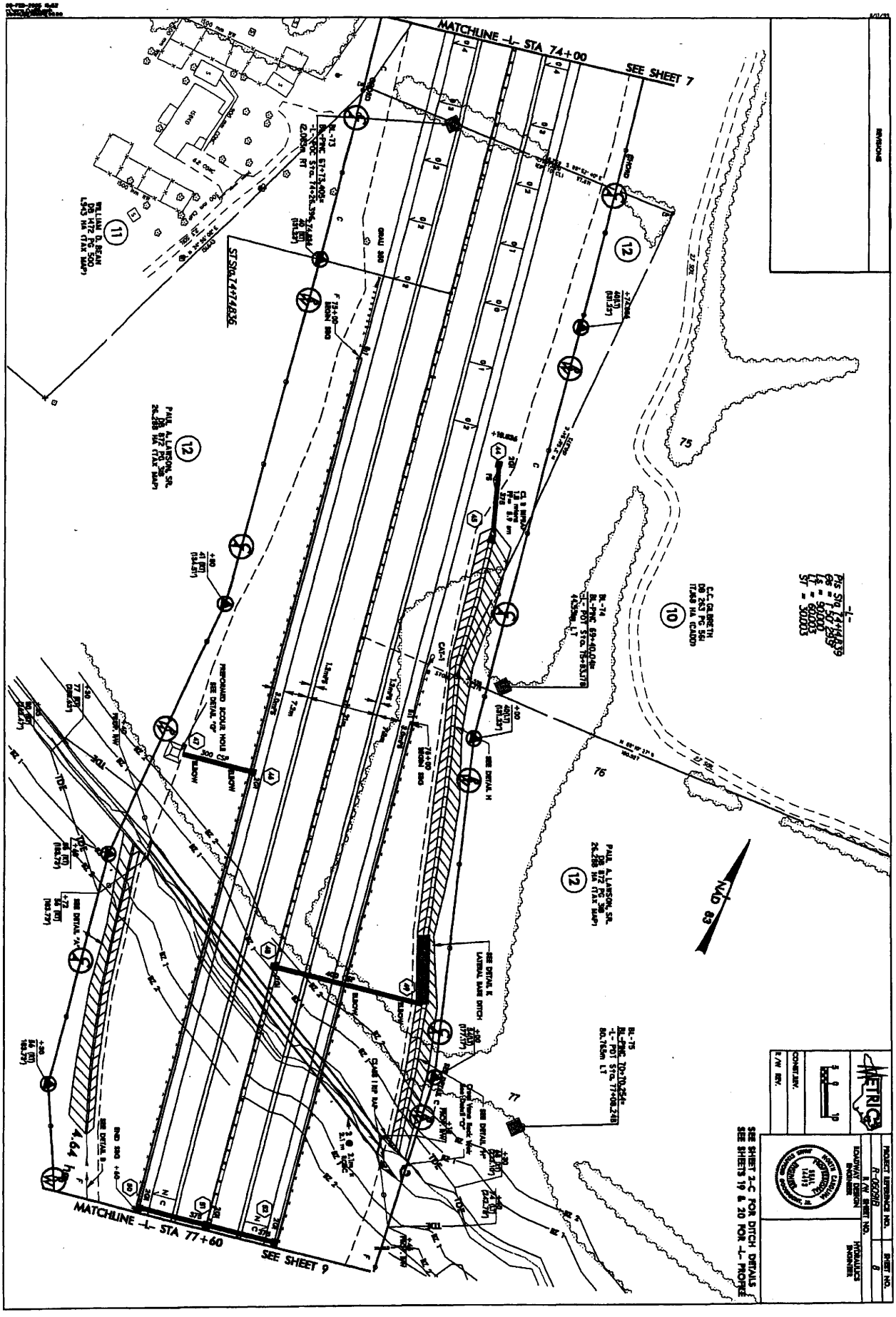
USE DETAIL AS FOLLOWS:
-Y8- 13+29 TO 14+18.892
-Y8- 15+22.282 TO 15+88
-Y9- 11+88 TO 13+35.458
-Y9- 14+33.928 TO 15+69

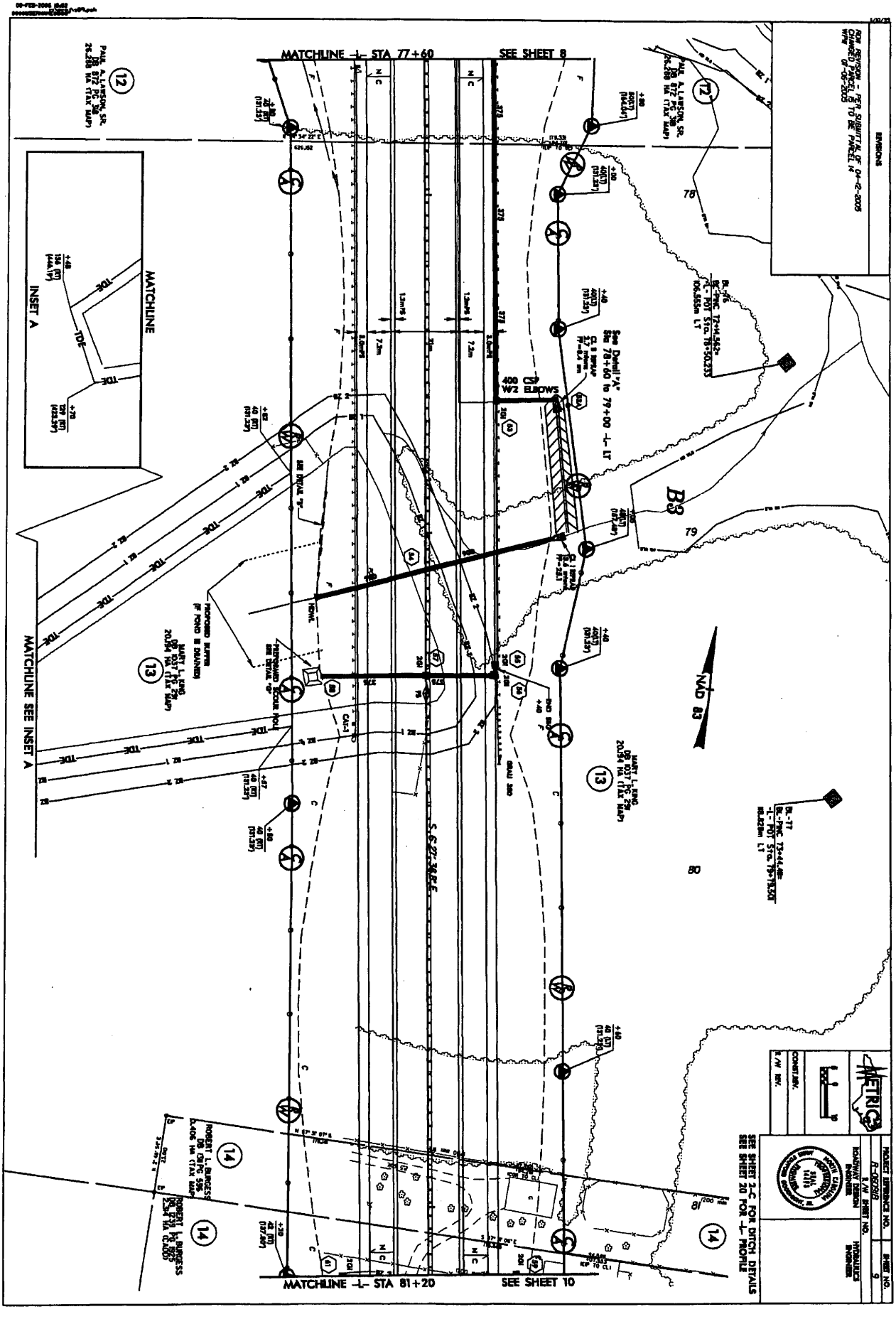

END STATE PROJECT R-0609IA -L- STA 61+00.000
BEGIN STATE PROJECT R-0609IB -L- STA 60+59.109
BEGIN F. A. PROJECT MAF-F-119-1(1)
S 25° 45' 30" E
TSSTA 61+09.143
SCSTA 61+55.143
-L- PI STA 62+85.85
Δ = 4° 46' 24" (LT)
D = 2° 52' 59"
L = 340.00
T = 170.03
R = 2000.000
SEE SHEETS 17 & 18 FOR -L- PROFILE
SEE SHEET 2-C FOR DITCH DETAILS
MATCHLINE -L- STA 63+20
SEE SHEET 5
MAP 63
FAIRFIELD GOLF CLUB, INC.
DB 3345 PG 707
PB 5 PG 351
22.240 HA (TAX MAP)
FAIRFIELD GOLF CLUB INC
DB 5077 PG 950
PB 45 PG 5
1.025 HA (CADD)
FAIRFIELD GOLF CLUB INC
DB 5077 PG 950
PB 45 PG 5
0.725HA (CADD)
ROGER D. QUEEN
DB 450 PG 2056
5.769 HA (CADD)
NCDOT
DB 4648 PG 307
9.263 HA (TAX MAP)
JAMES P. HEWELL, SR.
DB 4851 PG 590
2.028 HA (TAX MAP)
HAROLD G. COX, SR.
DB 3 PG 5
0.34 HA (CADD)
PROJECT REFERENCE NO.
R-0609B
SHEET NO.
4
HYDRAULICS ENGINEER
METRIC

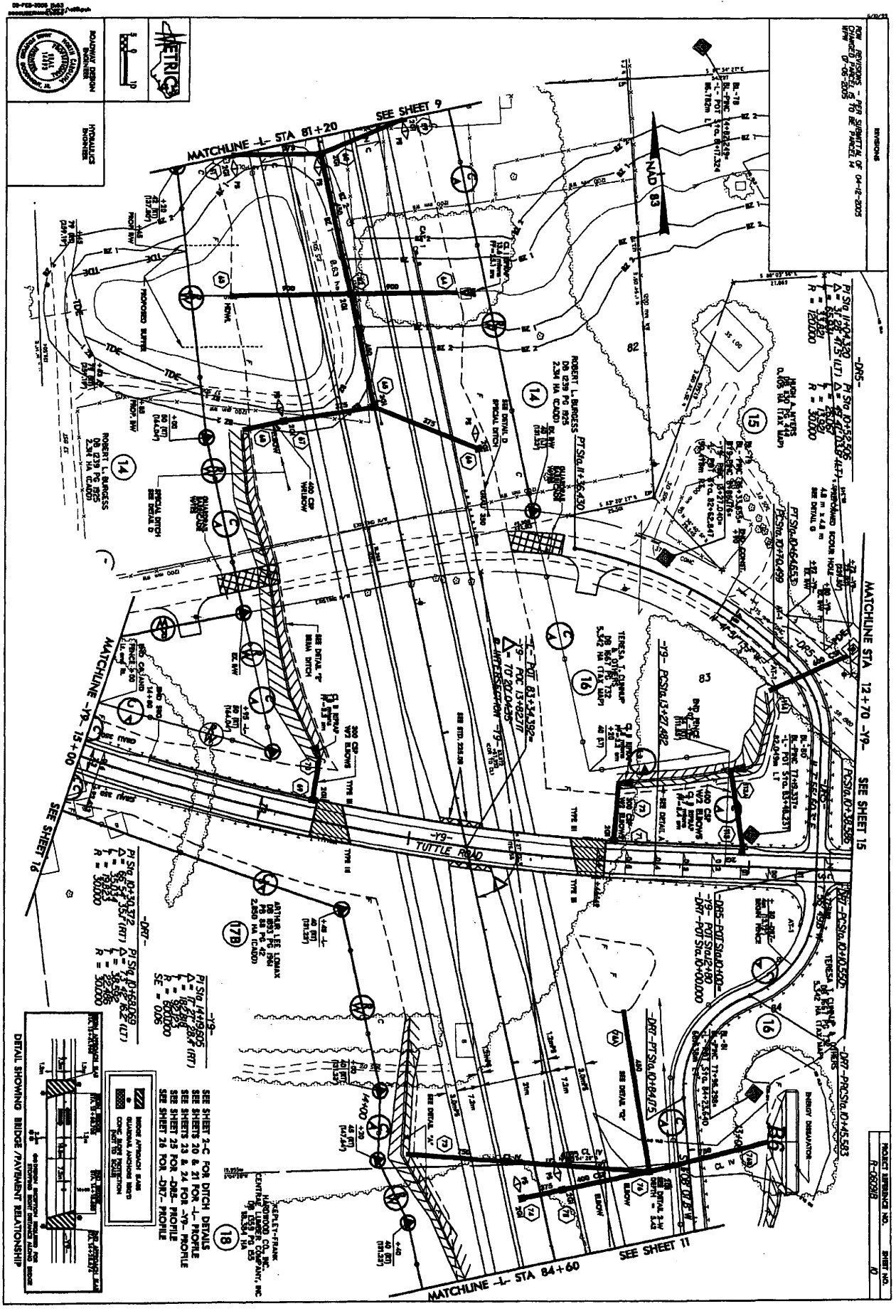

MATCHLINE -L- STA 63+20
SEE SHEET 4
MATCHLINE -PL- STA 13+80
SEE SHEET 14
MATCHLINE -PL- STA 13+80
SEE SHEET 13
MATCHLINE -L- STA 66+80
SEE SHEET 6
SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 12 & 13 FOR -Y1- PROFILE
SEE SHEET 21-C FOR DITCH DETAILS
REVISIONS
PROJECT REFERENCE NO.
R-2628B
SHEET NO.
5
HIGHWAYS ENGINEER
DIVISION ENGINEER
METRIC
CONVERSION
R/W REV.
BEGIN APPROACH SLAB
STA 14+71.438
BEGIN BRIDGE
STA 14+84.062
END BRIDGE
STA 15+07.750
END APPROACH SLAB
STA 15+14.362
DETAIL SHOWING BRIDGE/PAVEMENT RELATIONSHIP
BRIDGE APPROACH SLAB
GUARDRAIL ANCHOR UNITS
CONCRETE SECTION
SLOPE PROTECTION
PT Sta 13+92.771
PC -L- Sta 64+02.541
PT -L- Sta 64+17.712
CSS Sta 64+17.712
STS Sta 64+17.712
PI Sta 62+56.66 (LT)
PI Sta 63+39.92 (RT)
PI Sta 65+56.49 (RT)
PI Sta 64+35.12
MATCHLINE -Y2- STA 13+92.771
MATCHLINE -Y2- STA 15+08.595
POT Sta 14+46.596
POT Sta 14+46.596
RL-45 RT-PVC Sta 63+82.595 LT-PVC Sta 63+82.835 +/- PVC Sta. 64+00.00 RT
RL-46 RT-PVC Sta 64+00.00 LT-PVC Sta 64+00.00 +/- PVC Sta. 64+00.00 RT
RL-47 RT-PVC Sta 64+00.00 LT-PVC Sta 64+00.00 +/- PVC Sta. 64+00.00 RT
RL-48 RT-PVC Sta 65+82.568 LT-PVC Sta 65+82.568 +/- PVC Sta. 65+82.568 RT
MAP 83
ARDENIA S. MARGARET W. HANEY DB 3380 PG 67 6.30 HA (TAX MAP)
MARGARET W. HANEY DB 3380 PG 67 8.930 HA (TAX MAP)
STONEY S. BOONE DB 5643 PG 645 DB 45 PG 5 0.060 HA (CADD)
JESSE COX HEIRS DB 5643 PG 645 DB 45 PG 5 0.060 HA (CADD)
JERRY R. QUEEN DB 5591 PG 0529 1.82 HA (TAX MAP)
NCDOT DB 4340 PG 0352 0.628 HA DEED
C.C. GILBREATH DB 1901 PG 207 0.360 HA (TAX MAP)
JESSE B. TYNDALL DB 2082 PG 645 0.012 HA (TAX MAP)
MARGARET W. HANEY DB 3380 PG 67 8.930 HA (TAX MAP)
MARGARET W. HANEY DB 3380 PG 67 8.930 HA (TAX MAP)
64
66

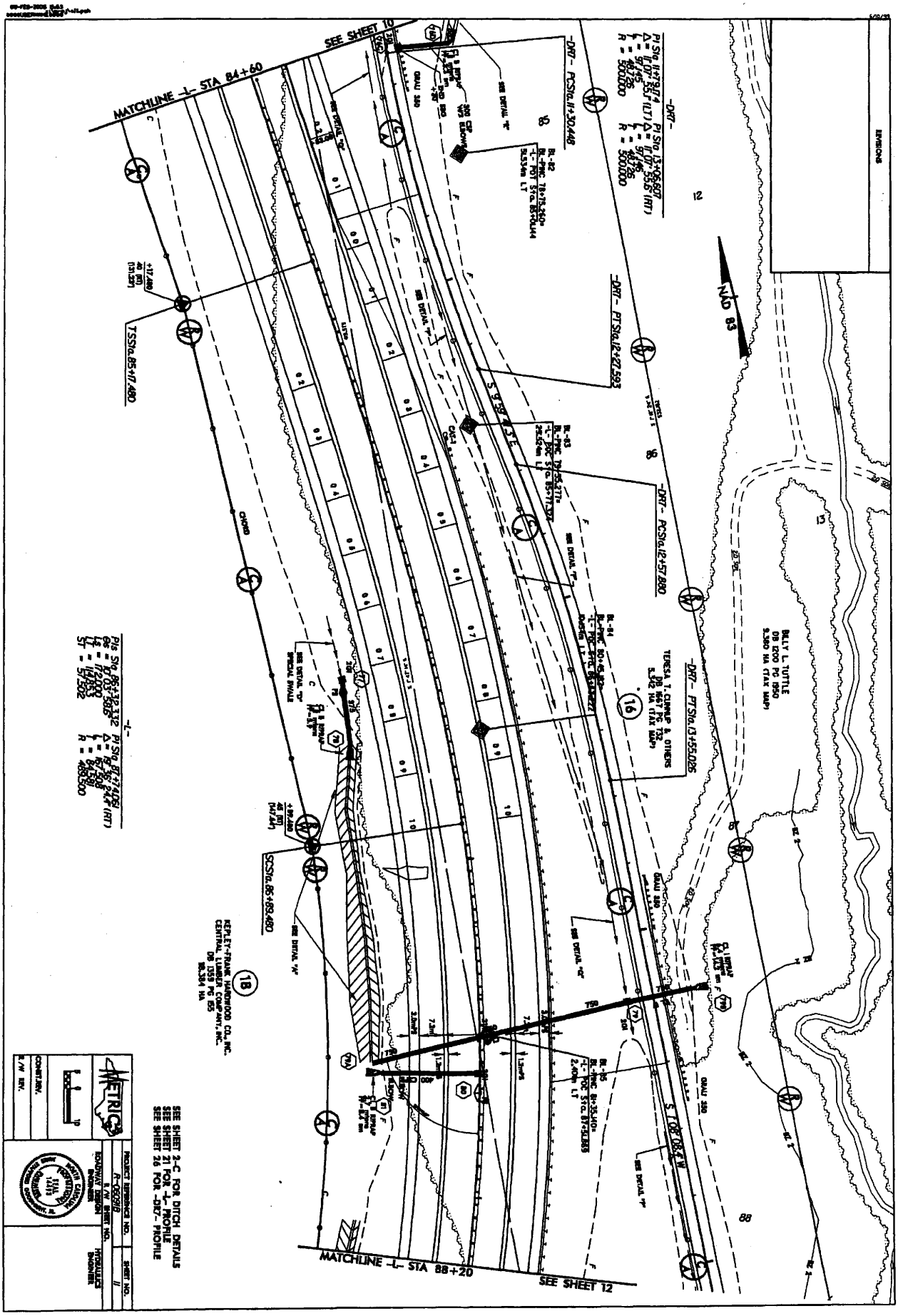

MATCHLINE -L- STA 66+80
SEE SHEET 5
MATCHLINE -L- STA 70+40
SEE SHEET 7
SEE SHEETS 10 & 19 FOR -L- PROFILE
SEE SHEET 24 FOR DITCH DETAILS
REVISIONS
PROJECT REFERENCE NO.
R-0628B
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST. REV.
R/W REV.
MARGARET R. HANEY DB 3388 PG 617 5.936 HA (TAX MAP)
PATRICIA G. DRIGGERS DB 4706 PG 438 5.909 HA (C.A.D.)
RUSSELL A. MOFFITT ET AL DB 2 PG 430 (C.A.D.)
C.F. BRETH DB 2265 PG 556 (C.A.D.)
SSS'ta.65+90.468
SSS'ta.67+80.468
SEE DETAIL "A" FOR PROTECTION TEMP. ANCHORING
SEE DETAIL "B"
SEE DETAIL "C"
GRADING IN THIS AREA TO BE MINIMAL AS DIRECTED BY THE ENGINEER
CROSS VANE SEE DETAIL "D"
CLASS II RIP-RAP
BL-69 -L- PROC. STA. 68+18.02± 84.43m RT
BL-70 -L- PROC. STA. 68+18.02± 87.68m RT
PI STA. 70+47.83±
Δ = 64°36'36" (RT)
D = 9°00'00"
Ls = 90.00
T = 60.36
R = 636.62
Δ = 90°00'00"
D = 9°00'00"
Ls = 90.00
T = 90.00
R = 636.62
PI STA. 67+50.67±
Δ = 90°00'00"
D = 9°00'00"
Ls = 90.00
T = 90.00
R = 636.62
N 32°30'00" W
N 57°30'00" E
N 32°30'00" W
N 57°30'00" E
MAG 63
TIDE
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B13
B14
B15
B16
B17
B18
B19
B20
B21
B22
B23
B24
B25
B26
B27
B28
B29
B30
B31
B32
B33
B34
B35
B36
B37
B38
B39
B40

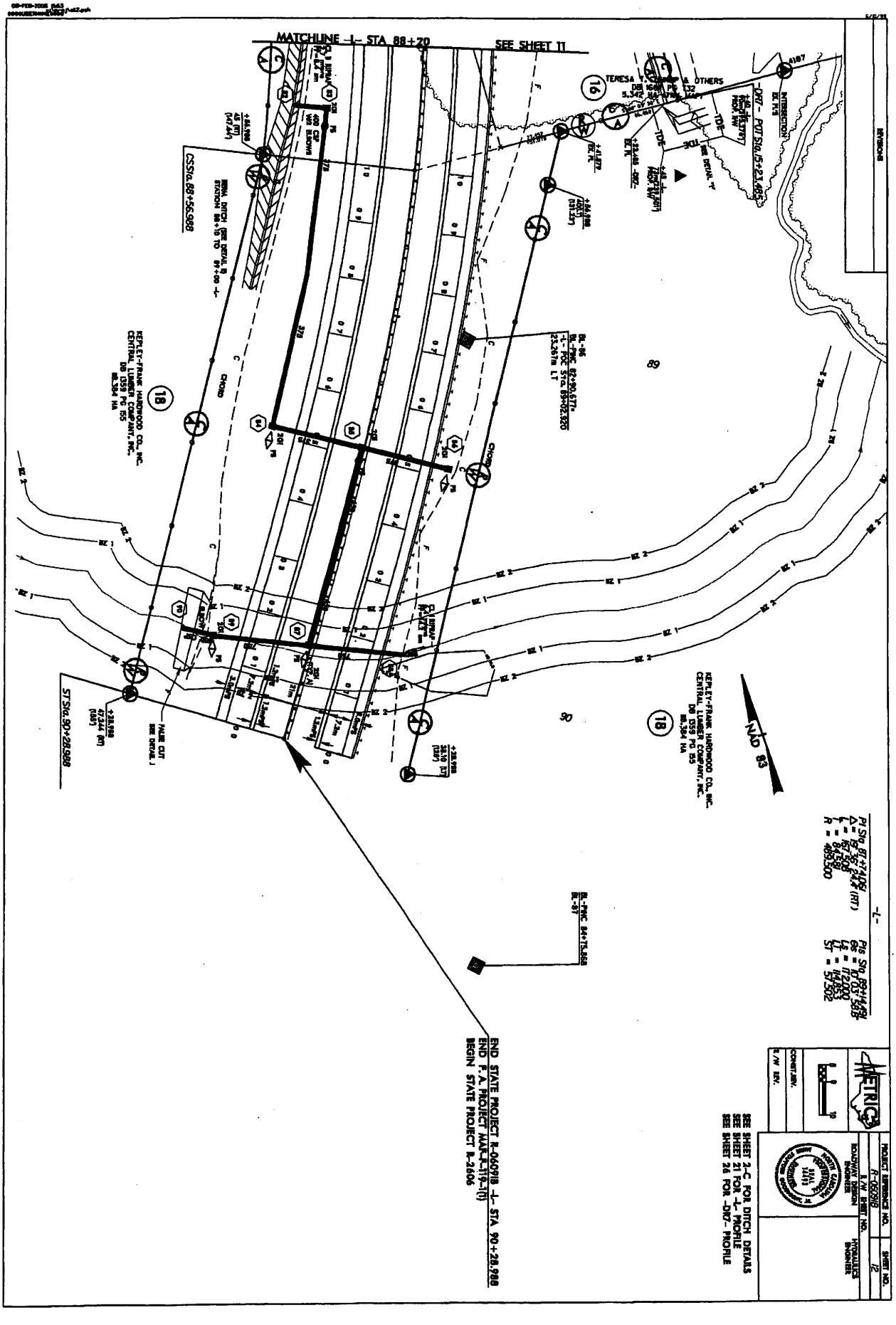

MATCHLINE -L- STA 70+40
SEE SHEET 6
MATCHLINE -L- STA 74+00
SEE SHEET 8
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 19 FOR -L- PROFILE
B2
PI Sta 70+97.434
Δ = 24°44'02" (RT)
D = 6°41'58"
R = 1000.000
T = 219.839
L = 431.689
PI Sta 74+44.839
PC = 71+67.273
PT = 75+99.003
-L-
NC 68
72
73
C.C. GILBRETH
DB 263, PG 561
17.548 HA (TAX MAP)
WILLIAM D. BEAM
DB 412, PG 500
1.943 HA (TAX MAP)
PATRICIA A. ROGERS
1.503 HA (TAX MAP)
BL-71
BL-PMC 64+64.486
-L- POC Sta. 71+01.78
75.457m RT
BL-72
BL-PMC 66+32.809
-L- POC Sta. 72+88.663
52.743m RT
CSS@ 73+94.836
PROJECT REFERENCE NO.
R-2635B
R/W SHEET NO.
7
SHEET NO.
HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER
DRAWN BY:
CHECKED BY:
DATE:
R/W ENG.

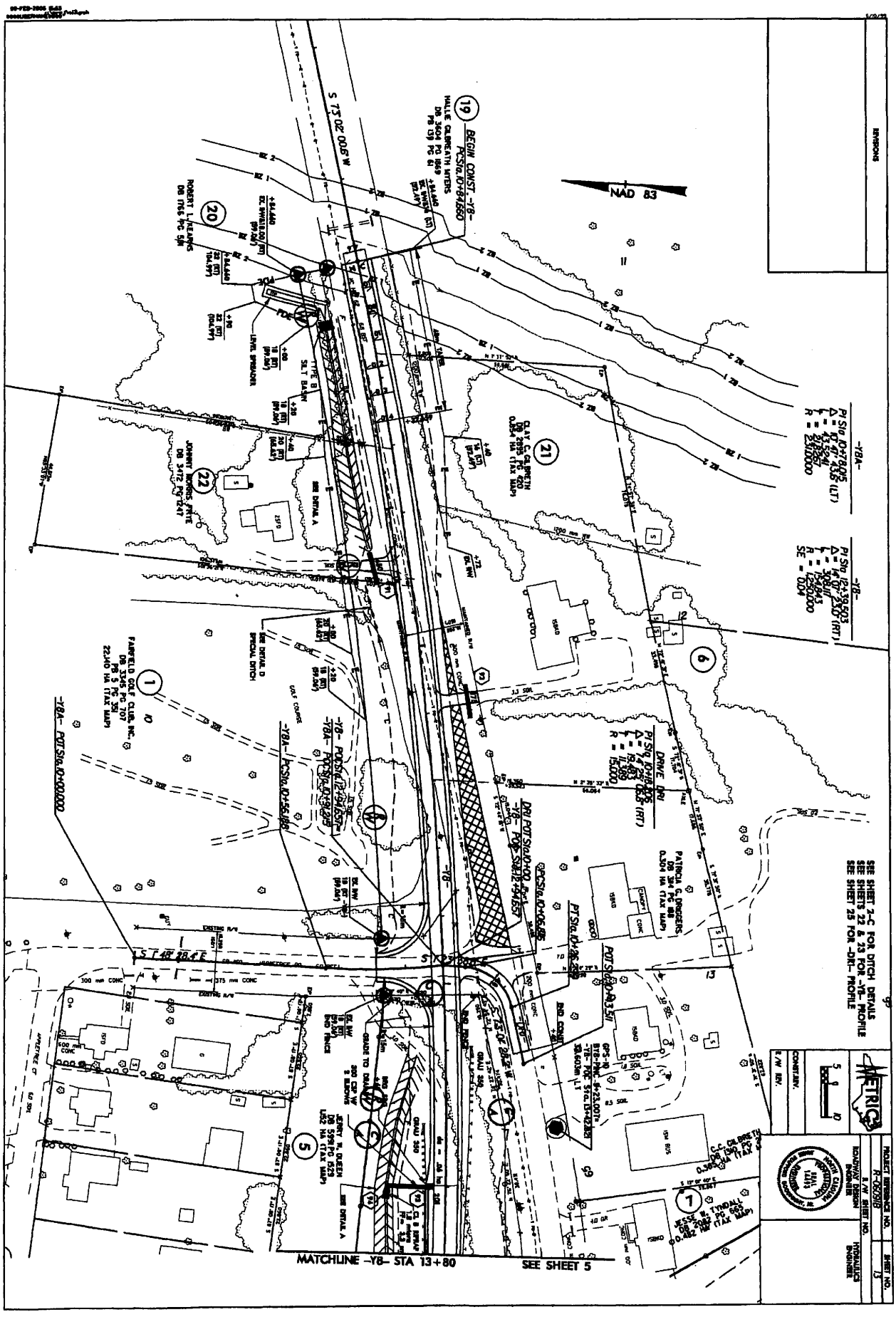

MATCHLINE -L- STA 74+00
SEE SHEET 7
MATCHLINE -L- STA 77+60
SEE SHEET 9
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 19 & 20 FOR -L- PROFILE
NAD 83
REVISIONS
PROJECT REFERENCE NO.
R-0000B
SHEET NO.
8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONSTRUCTION
R/W REV.
METRIC
4.64 ac

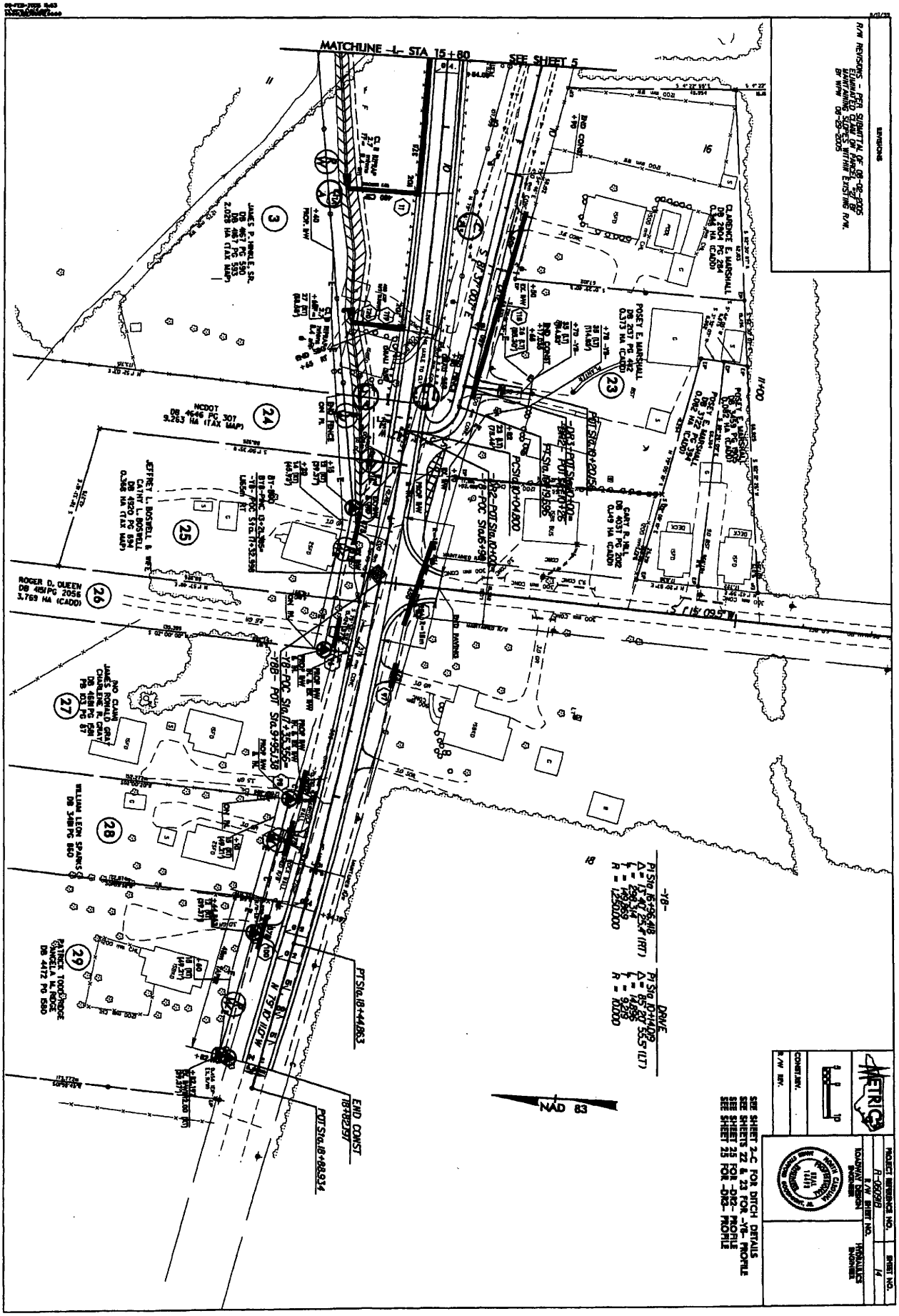

MATCHLINE -L- STA 77+60
SEE SHEET 8
MATCHLINE -L- STA 81+20
SEE SHEET 10
INSET A
MATCHLINE
MATCHLINE SEE INSET A
NAD 83
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 2-C FOR -L- PROFILE
REVISIONS
PROJECT REFERENCE NO.
R-0626B
SHEET NO.
9
ROADWAY DESIGN ENGINEER
R/W SHEET NO.
HYDRAULICS ENGINEER
METRO
CONST. REV.
R/W REV.

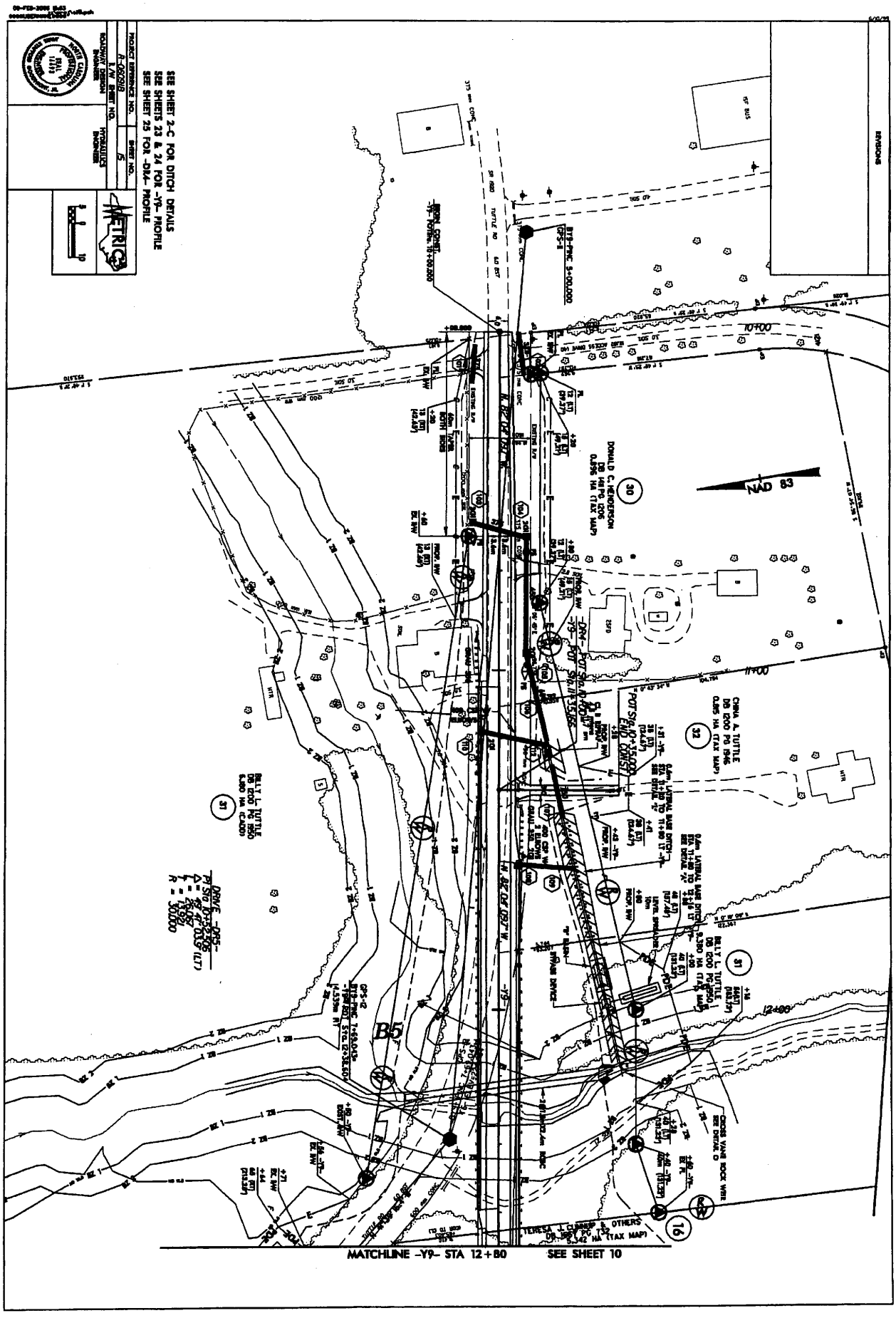

MATCHLINE -L- STA 81+20
SEE SHEET 9
MATCHLINE -L- STA 12+70 -Y9-
SEE SHEET 15
MATCHLINE -Y9- 13+00
SEE SHEET 16
MATCHLINE -L- STA 84+60
SEE SHEET 11
-Y9-
TUTTLE ROAD
-DR5-
-DR7-
-DR5-PC Sta.0+38.586
-DR7-PC Sta.0+10.500
-DR7-PRC Sta.0+45.583
-DR5-PRC Sta.0+80.499
-DR5-PT Sta.0+46.465
-DR7-PT Sta.0+84.075
-DR5-PI Sta.0+64.400
-DR7-PI Sta.0+27.482
-Y9- PC Sta.13+27.482
-Y9- PT Sta.11+36.430
-Y9- PI Sta.12+34.392
-Y9- PC Sta.13+49.277
-Y9- PI Sta.14+19.825
-Y9- PI Sta.14+59.059
-Y9- PI Sta.15+30.372
-DR7- PI Sta.14+00.357 (RT)
-DR7- PI Sta.14+19.825 (LT)
NAD 83
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
DETAIL SHOWING BRIDGE / PAVEMENT RELATIONSHIP
BRIDGE APPROACH SLABS
GUARDRAIL ANCHORS WIDTH
CONCRETE BARRIER
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
PROJECT REFERENCE NO.
R-2609B
SHEET NO.
10

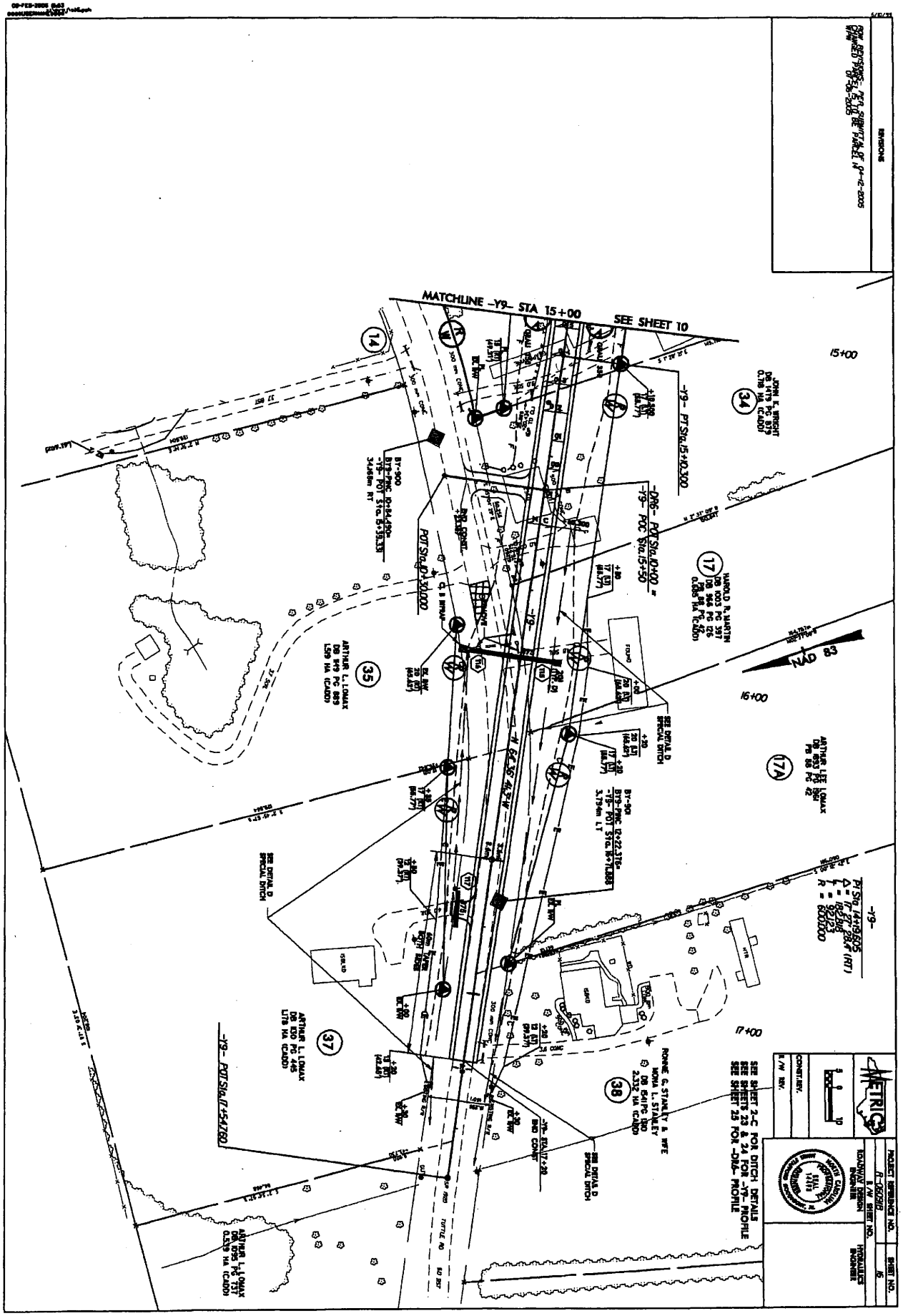

MATCHLINE -L- STA 84+60
SEE SHEET 10
MATCHLINE -L- STA 88+20
SEE SHEET 12
-DRT- PI Sta 11+79.74
-DRT- PI Sta 13+06.07
-DRT- PC Sta 11+30.48
-DRT- PT Sta 12+27.593
-DRT- PC Sta 12+57.880
-DRT- PT Sta 13+55.025
-L- PI Sta 85+74.42
-L- PI Sta 86+32.32
TS Sta 85+17.490
SC Sta 86+69.490
CHORD
NAD 83
BILLY L TUTTLE
DB 2200 PG 0950
9.380 HA (TAX MAP)
TERESA T. CRUMP & OTHERS
DB 1857 PG 0755
5.26 HA (TAX MAP)
KEPLEY-FRANK HARDWOOD CO., INC.
CENTRAL SURGICAL SUPPLY, INC.
DB 1559 PG 0705
8.384 HA
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -DRT- PROFILE
METRIC
PROJECT REFERENCE NO.
R-0609B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
SHEET NO.
11
HYDRAULICS ENGINEER
CONSTRUCTION
R/W AGENT


MATCHLINE -L- STA 88+20
SEE SHEET 11
-DR7- POT STA 15+23.465
TERESA
OTHERS
KEPLEY-FRANK HARDWOOD CO., INC.
CENTRAL LUMBER COMPANY, INC.
DB 1359 PG 55
85.384 HA
CSS STA 88+56.988
STS STA 90+28.988
HAUL CUT
SEE DETAIL
NAD 83
PI STA 87+74.05
Δ = 19°36'24.4" (RT)
D = 6°15'00"
L = 87.500
R = 458.500
PTS STA 89+14.84
Δs = 10°03'58.8"
Ls = 117.200
Ls = 114.952
ST = 57.502
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 26 FOR -DR7- PROFILE
END STATE PROJECT R-0609B -L- STA 90+28.988
END F.A. PROJECT MAF-R-119-1(1)
BEGIN STATE PROJECT R-2606
PROJECT REFERENCE NO.
R-0609B
SHEET NO.
12
ROADWAY DESIGN ENGINEER
R/W BRET NO.
HYDRAULICS ENGINEER
CONST. ENG.
R/W ENG.


NAD 83
-Y8A-
PI Sta 10+78.05
Δ = 13°52'41" (LT)
D = 4.583662
R = 1250.000
-Y8-
PI Sta 12+39.503
Δ = 14°07'25" (RT)
D = 4.583662
R = 1250.000
SE = 0.04
-Y8A- POT Sta 10+00.000
-Y8A- PCSta 10+56.88
-Y8- POB Sta 12+94.57
-Y8- POT Sta 12+94.57
-Y8- POB Sta 13+34.57
-Y8- POT Sta 13+34.57
-Y8- PCSta 10+96.85
PI Sta 10+18.05
DRIVE DRI
Δ = 14°55'08" (RT)
R = 15.000
PT Sta 10+28.25
POT Sta 10+43.51
END CONST.
-Y8- POE Sta 13+42.85
GPS-N
838.603m LT
-Y8- POE Sta 13+23.00
BEGIN CONST. -Y8-
PCSta 10+84.60
S 73° 02' 00.6" W
1ST AB 28.4 E
MATCHLINE -Y8- STA 13+80
SEE SHEET 5
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 22 & 23 FOR -Y8- PROFILE
SEE SHEET 25 FOR -DRI- PROFILE
HALLIE GILBREATH MYERS
DB 3604 PG 1869
PB 139 PG 61
ROBERT L. KEARNS
DB 1165 PG 526
JOHNNY MORRIS ESTATE
DB 3472 PG 247
FAIRFIELD GOLF CLUB, INC.
DB 3345 PG 707
PB 15 PG 34
22.40 HA (TAX MAP)
CLAY G. GILBREATH
DB 2695 PG 420
0.884 HA (TAX MAP)
PATRICIA G. DIGGERS
DB 364 PG 88
0.304 HA (TAX MAP)
JERRY W. OLSEN
DB 5591 PG 823
1.352 HA (TAX MAP)
C.C. GILBREATH
0.368 HA (TAX MAP)
JESSE W. TYNDALL
DB 2062 PG 665
0.482 HA (TAX MAP)
TYPE B SILT BASIN
LEVEL SPREADER
SEE DETAIL A
SEE DETAIL D
SPECIAL DITCH
GRADE TO DRAIN
END FENCE
CONST. REV.
E/W REV.
METRIC
PROJECT REFERENCE NO.
R-0608B
E/W SHEET NO.
13
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SHEET NO.


MATCHLINE -L- STA 15+80
SEE SHEET 5
PT STa.18+44863
END CONST
18+82257
PT STa.18+68934
NAD 83
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 22 & 23 FOR -Y8- PROFILE
SEE SHEET 25 FOR -DR2- PROFILE
SEE SHEET 25 FOR -DR2- PROFILE


SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 23 & 24 FOR -Y9- PROFILE
SEE SHEET 25 FOR -DR4- PROFILE
PROJECT REFERENCE NO.
R-2000B
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
REVISIONS
NAD 83
-Y9- STA 10+00.000
-Y9- POT Sta 10+35.000
END CONST.
DR4- POT Sta 10+40.00
-Y9- STA 11+35.55
DRIVE -DR5-
POT Sta 10+52.08
Δ = 85°47'03.9" (LT)
L = 45.00
R = 30.00
B5
MATCHLINE -Y9- STA 12+80
SEE SHEET 10
DONALD C. HENDERSON
DB 149 PG 206
0.696 HA (TAX MAP)
CHINA A. TUTTLE
DB 1200 PG 1946
0.895 HA (TAX MAP)
BILLY L. TUTTLE
DB 1200 PG 1946
0.830 HA (TAX MAP)
TERESA L. CLARKE & OTHERS
DB 1867 PG 342
1.32 HA (TAX MAP)
10+00
11+00
12+00


MATCHLINE -Y9- STA 15+00
SEE SHEET 10
-Y9- PT Sta.15+10.300
-D96- POT Sta.10+00
-Y9- POC Sta.15+50
POT Sta.10+30.000
-Y9- POT Sta.14+98.605
-Y9- POT Sta.17+54.780
N 64°35'43.4" W
NAD 83
SEE SHEET 2-C FOR DITCH DETAILS
SEE SHEETS 23 & 24 FOR -D96- PROFILE
SEE SHEET 25 FOR -Y9- PROFILE
METRIC
PROJECT REFERENCE NO.
R-2508B
SHEET NO.
15
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2606A	1	

W.B.S. NO.	F.A. PROJ. NO.	DESCRIPTION
34480.1.1	STP-NHF-311(3)	PE
34480.2.2	NHF-311(17)	R/W, UTIL
34480.3.2	NHF-311(18)	CONSTRUCTION

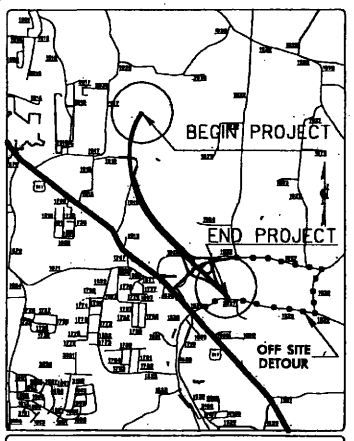
PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

RANDOLPH COUNTY

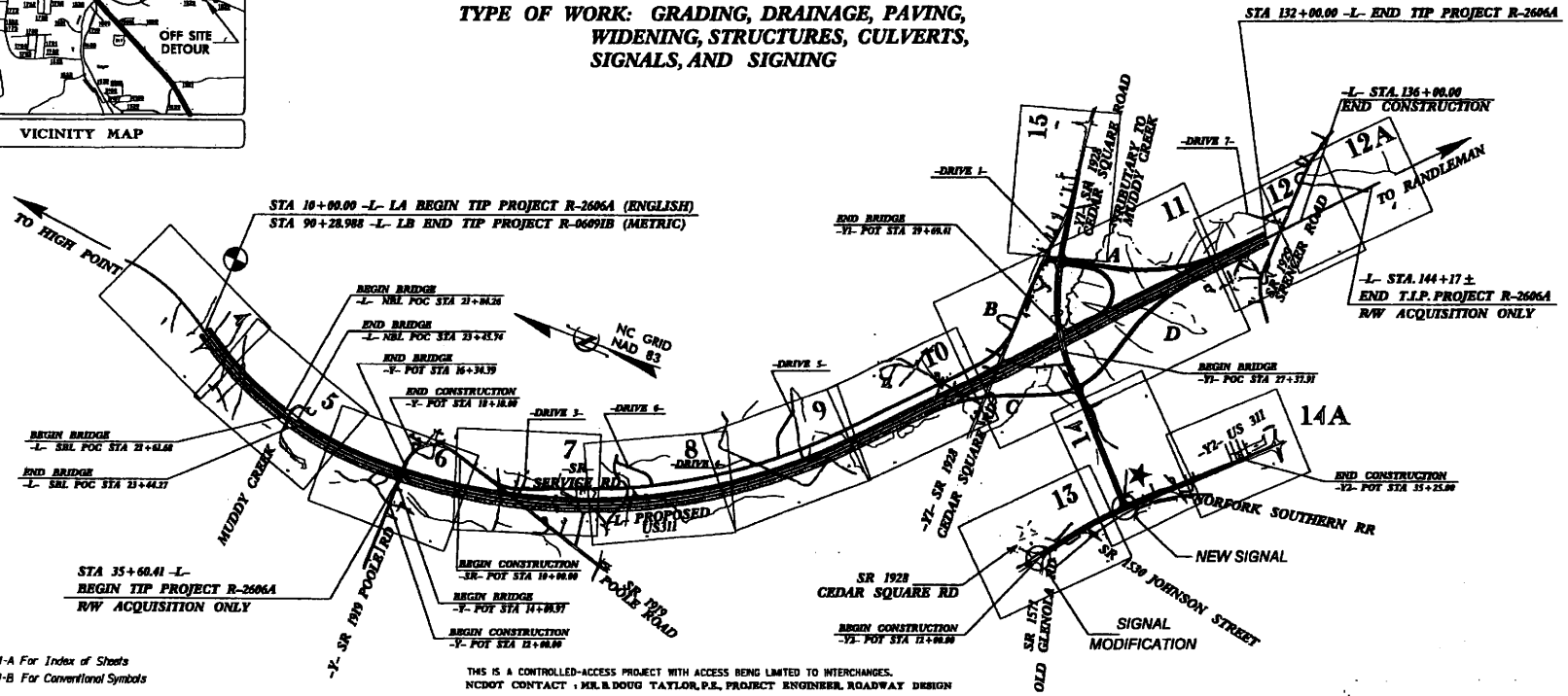
LOCATION: *US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929*

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

CONTRACT: C201296 TIP PROJECT: R-2606A



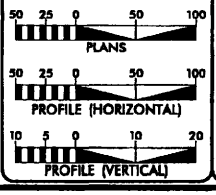
VICINITY MAP



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



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 McMILLAN, P.E.
STATE HIGHWAY DESIGN ENGINEER

319

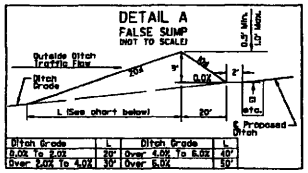
DRAINAGE DETAILS

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

Prepared for the Office of: Earth Tech, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 • (800) 368-7031FAX

NOT TO SCALE

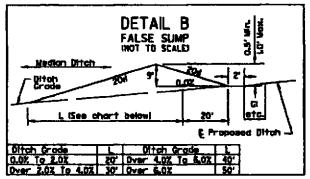
DETAIL A
FALSE SUMP (NOT TO SCALE)



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

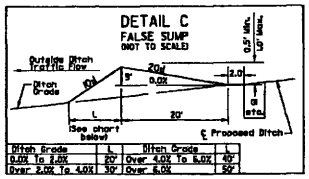
DETAIL B
FALSE SUMP (NOT TO SCALE)



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+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

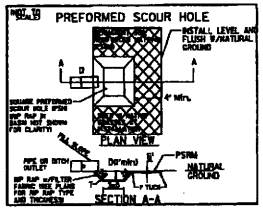
DETAIL C
FALSE SUMP (NOT TO SCALE)



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'

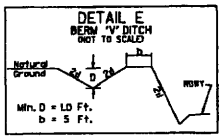
-L- 16+24 R
-L- 21+64 R
-L- 25+76 L
-L- 29+76 L
-L- 31+26 L
-L- 37+36 L
-L- 40+56 L
-L- 43+26 L
-L- 47+76 L
-SR-31+37.78 L
-L- 65+76 L
-L- 68+76 L
-L- 85+27 L
-L- 87+26 L
-L- 92+76 L

PREFORMED SCOUR HOLE



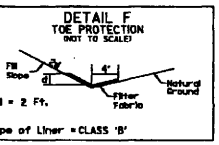
-L- 31+05 L
-L- 46+80 R
-L- 59+48 L
-L- 112+05 L
-SR- 48+00 L
-SR- 24+90 L
-DRIVE5- 15+60 R
-DRIVE6- 13+63 L
-RAMPC- 9+67 R
-RAMPD- 14+00 R

DETAIL E
BERM 'V' DITCH (NOT TO SCALE)



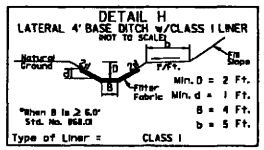
-L- 30+00 - 35+12 R
(DDE = 847 CY)

DETAIL F
TOE PROTECTION (NOT TO SCALE)



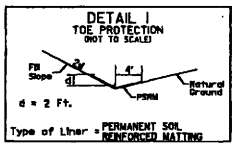
-L- 46+40 - 46+80 R
-L- 47+16 - 47+50 R
-L- 70+50 - 72+00 R
-SR- 49+90 - 51+00 L
-RAMPC- 10+25 - 15+00 R
-RAMPD- 14+28 - 14+80 L

DETAIL H
LATERAL 4' BASE DITCH w/CLASS I LINER (NOT TO SCALE)



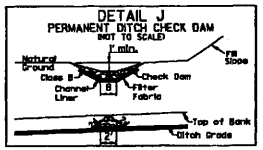
-L- 47+89 - 52+50 R
DDE = 458 CY

DETAIL I
TOE PROTECTION (NOT TO SCALE)



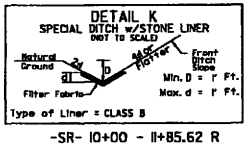
-SR- 14+45 - 15+75 L
-L- 58+10 - 59+48 R
-L- 60+00 - 61+50 L

DETAIL J
PERMANENT DITCH CHECK DAM (NOT TO SCALE)



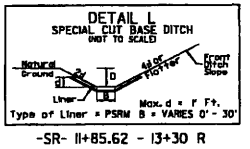
-L- 47+95 R
-L- 48+09 R
-L- 48+23 R
-L- 48+37 R

DETAIL K
SPECIAL DITCH w/STONE LINER (NOT TO SCALE)



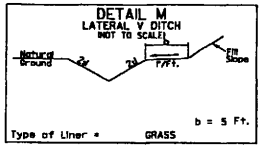
-SR- 10+00 - 11+85.62 R

DETAIL L
SPECIAL CUT BASE DITCH (NOT TO SCALE)



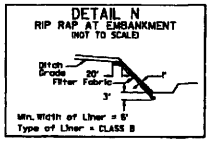
-SR- 11+85.62 - 13+30 R

DETAIL M
LATERAL V DITCH (NOT TO SCALE)



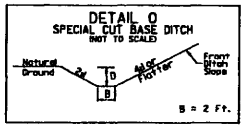
-L- 72+00 - 73+50 R (DDE = 31 CY)
-RAMPA- 3+30 - 7+90 R (DDE = 236 CY)
-DRIVE 6- 12+50 - 13+20 R (DDE = 22 CY)
-DRIVE 6- 12+50 - 13+60 L (DDE = 62 CY)

DETAIL N
RIP RAP AT EMBANKMENT (NOT TO SCALE)



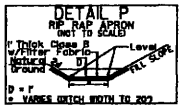
-SR- 45+60 - 46+30 L

DETAIL O
SPECIAL CUT BASE DITCH (NOT TO SCALE)



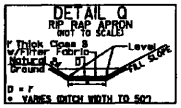
-L- 78+50 - 82+00 R

DETAIL P
RIP RAP APRON (NOT TO SCALE)



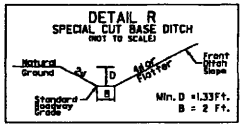
-L- 82+00 - 82+65 R

DETAIL Q
RIP RAP APRON (NOT TO SCALE)



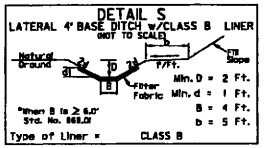
-SR- 50+95 - 52+00 L

DETAIL R
SPECIAL CUT BASE DITCH (NOT TO SCALE)



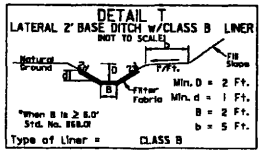
-SR- 76+50 - 77+80 L
-SR- 56+57.61- 63+50 L
-SR- 69+50 - 76+50 L

DETAIL S
LATERAL 4' BASE DITCH w/CLASS B LINER (NOT TO SCALE)



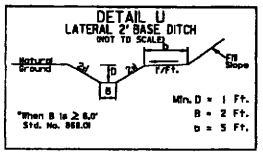
-L- 90+80 - 92+50 R (DDE = 408 CY)
-SR- 52+00 - 56+57.61 L (DDE = 1578 CY)

DETAIL T
LATERAL 2' BASE DITCH w/CLASS B LINER (NOT TO SCALE)



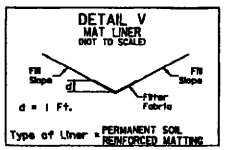
-RAMPD- 14+80 - 16+75 L (DDE = 56 CY)
-Y1- 19+50 - 22+93 R (DDE = 232 CY)

DETAIL U
LATERAL 2' BASE DITCH (NOT TO SCALE)



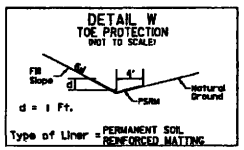
-Y1- 29+55 - 35+50 L (DDE = 220 CY)
-DRIVE 6- 13+25 - 15+35 R (DDE = 110 CY)

DETAIL V
MAT LINER (NOT TO SCALE)



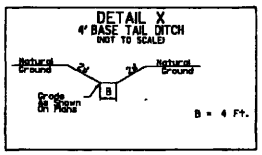
-L- 118+08 - 120+50 L
-L- 59+48 L

DETAIL W
TOE PROTECTION (NOT TO SCALE)



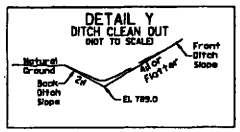
-L- 77+75 - 78+50 R
-RAMPC- 9+65 - 10+15 R
-RAMPD- 11+80 - 14+28 L
-SR- 77+80 - 80+20 L
-Y1- 18+75 - 22+80 L
-Y1- 38+00 - 39+10 L

DETAIL X
4' BASE TAIL DITCH (NOT TO SCALE)



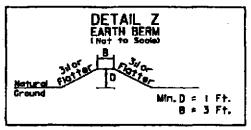
-Y1- 37+98 R
(DDE = 165 CY)

DETAIL Y
DITCH CLEAN OUT (NOT TO SCALE)



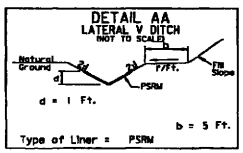
-Y2- 16+74 R
(2-24" RCP OUTLET INVERT TO RAILROAD R/W)

DETAIL Z
EARTH BERM (Not to Scale)



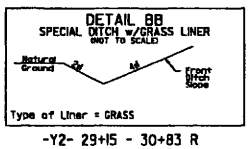
-L- 115+15 R
-Y1- 25+90 R
-Y1- 27+31 R

DETAIL AA
LATERAL V DITCH (NOT TO SCALE)



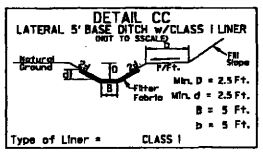
-Y2- 30+83 - 32+25 L
(DDE = 35 CY)

DETAIL BB
SPECIAL DITCH w/GRASS LINER (NOT TO SCALE)



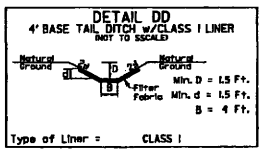
-Y2- 29+15 - 30+83 R
-Y2- 30+83 - 31+50 R
-Y2- 32+50 - 34+00 L

DETAIL CC
LATERAL 5' BASE DITCH w/CLASS I LINER (NOT TO SCALE)



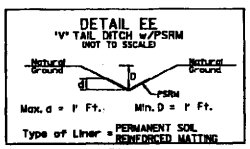
-Y1- 30+75 - 34+15 R
(DDE = 658 CY)

DETAIL DD
4' BASE TAIL DITCH w/CLASS I LINER (NOT TO SCALE)



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

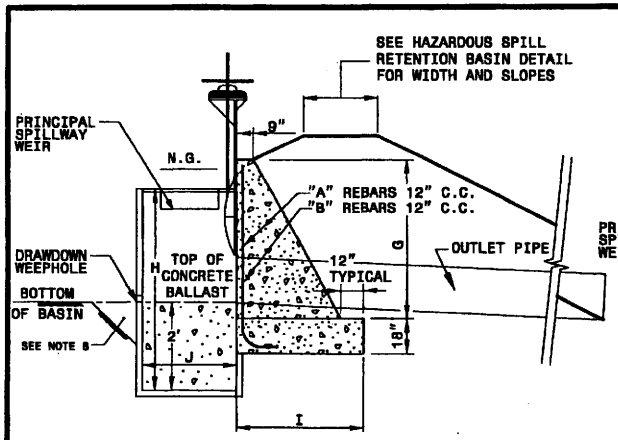
DETAIL EE
'V' TAIL DITCH w/PSRM (NOT TO SCALE)



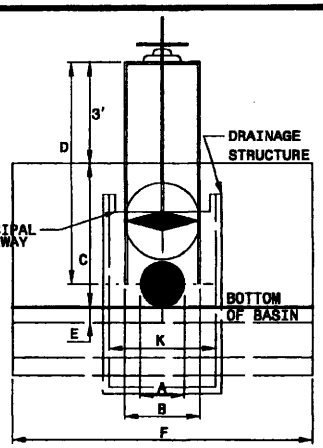
-L- 59+48 L
(DDE = 5 CY)

320

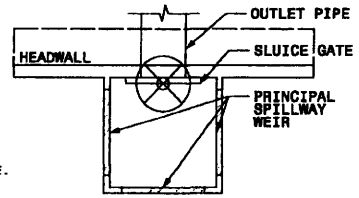
321



SECTION VIEW



ELEVATION VIEW



PLAN VIEW

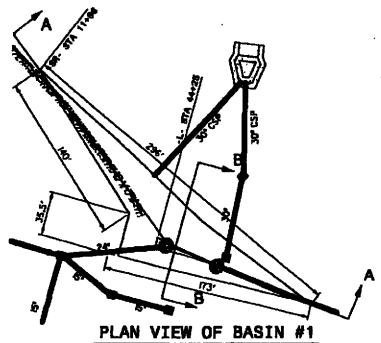
BASIN #		1	2
SLUICE GATE DIMENSIONS			
PIPE DIAMETER	A	30"	30"
GATE DIAMETER	B	38"	38"
HEADWALL HT.	C	8'-0"	7'-0"
FRAME HEIGHT	D	9'-9"	8'-9"
INVERT HEIGHT	E	7"	7"
HEADWALL WIDTH	F	9'-4"	9'-4"
HEADWALL DIMENSIONS			
PIPE DIAMETER	A	30"	30"
HEADWALL HT.	G	8'-7"	7'-7"
HEADWALL DEP.	I	5'-0"	4'-0"

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	8'-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'

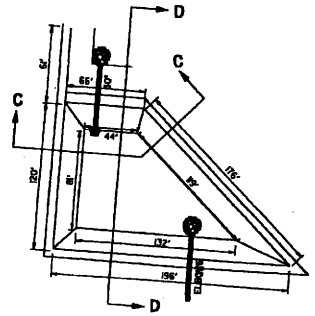
PROJECT REFERENCE NO. R-2606A | SHEET NO. 2-H | NW SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER
Prepared in the Office of: EarthTech

GRAPHIC SCALE
50 25 0 50 100
PLANS

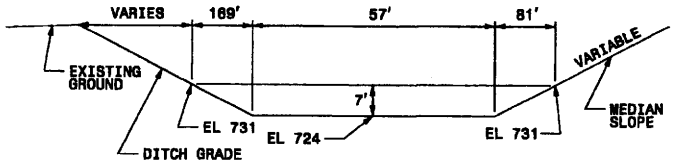
GENERAL NOTES:
1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND HEADWALL SHALL BE PAID FOR ON YD³ BASIS.
2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.
4- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.
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.



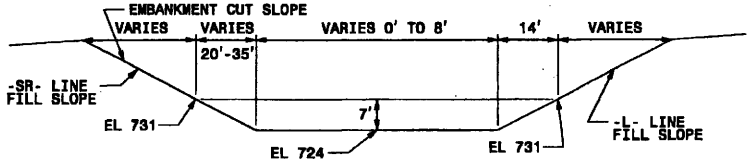
PLAN VIEW OF BASIN #1



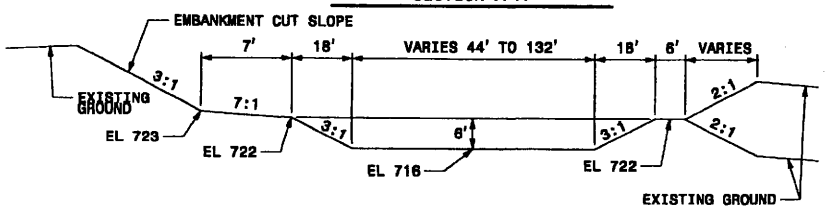
PLAN VIEW OF BASIN #2



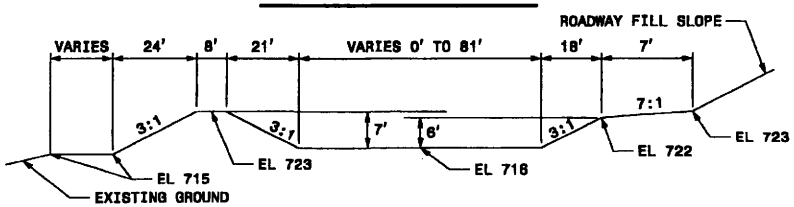
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

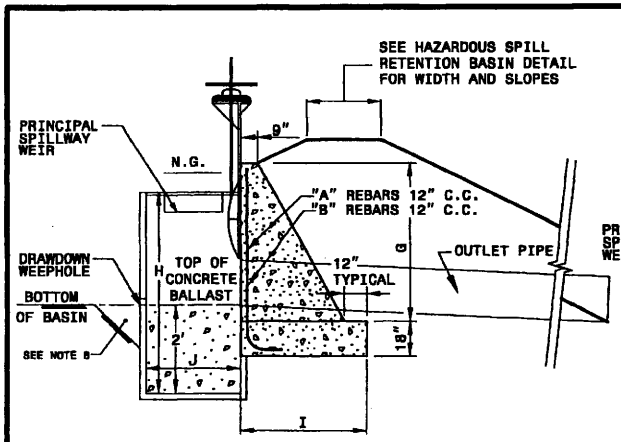
HAZARDOUS SPILL/DRY DETENTION BASIN							
BASIN #	PIPE SIZE	TOP ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
1	30"	731.00	724.00	7'		50264+ CF	-L- 44+50 LT
2	30"	722.00	716.00	6'		57934+ CF	-L- 57+00 LT

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.

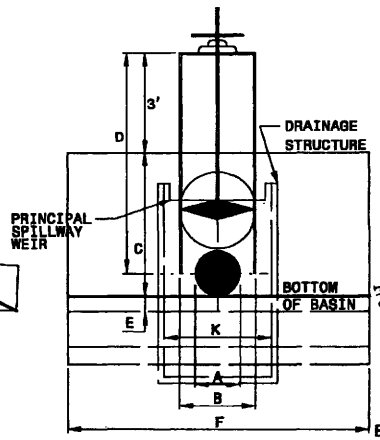
DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL/
DRY DETENTION BASIN

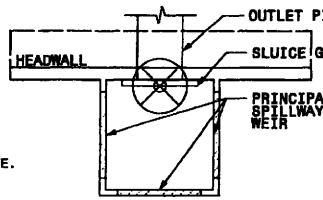
ORIGINAL BY: JDRN DATE: 2/21/01
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:



SECTION VIEW



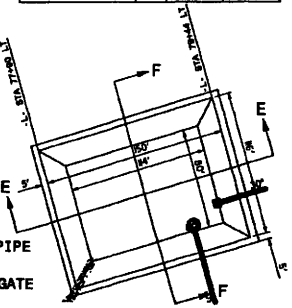
ELEVATION VIEW



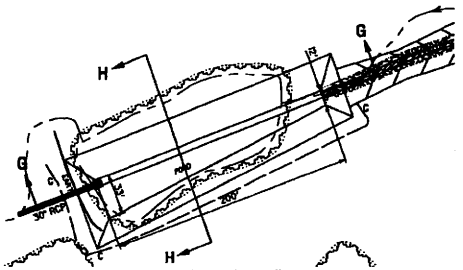
PLAN VIEW

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 1/8"
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'

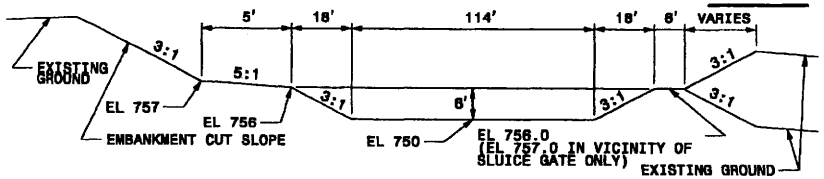


PLAN VIEW OF BASIN #3

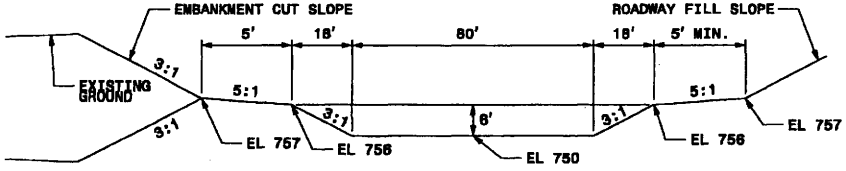


PLAN VIEW OF BASIN #4

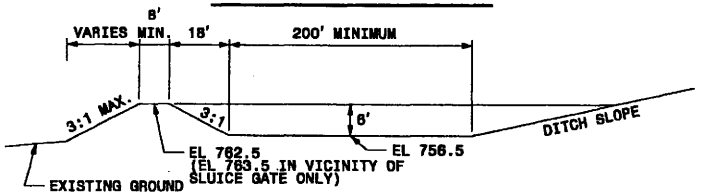
GENERAL NOTES:
1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND HEADWALL SHALL BE PAID FOR ON YD^3 BASIS.
2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.
4- SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.
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.



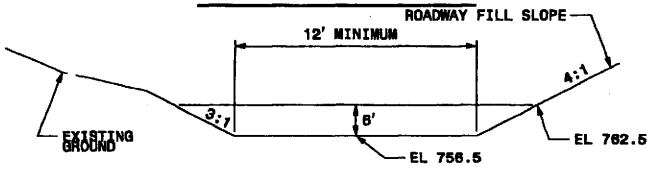
SECTION E-E



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'		33600+ 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.

PROJECT REFERENCE NO. R-2606A | SHEET NO. 2-1

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

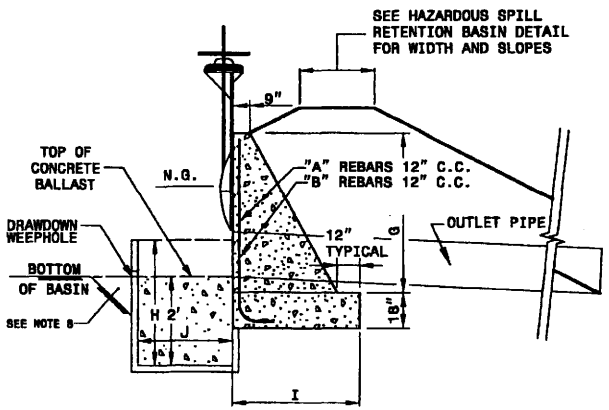
Prepared in the Office of: EarthTech

GRAPHIC SCALE
50 25 0 50 100
PLANS

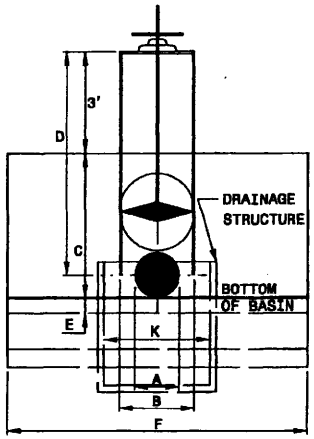
DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL/ DRY DETENTION BASIN

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

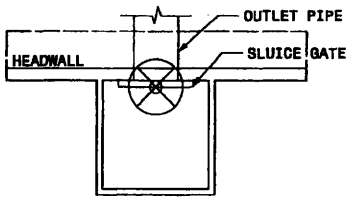


SECTION VIEW

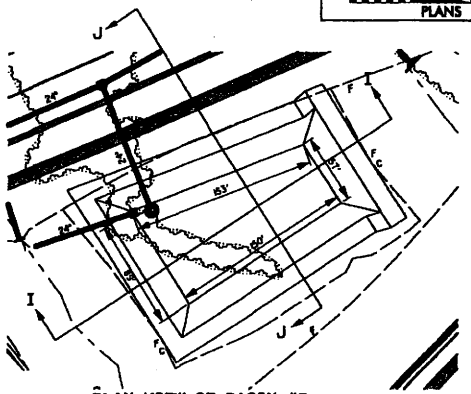


ELEVATION VIEW

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.		756.00
STRUCTURE INV.		756.00
STRUCTURE DEP.	H	2'-6"
STRUCTURE DIM.	J	2'-0"
STRUCTURE DIM.	K	3'-0"

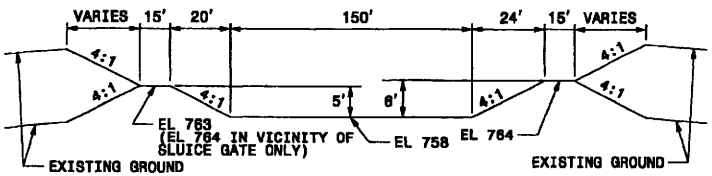


PLAN VIEW

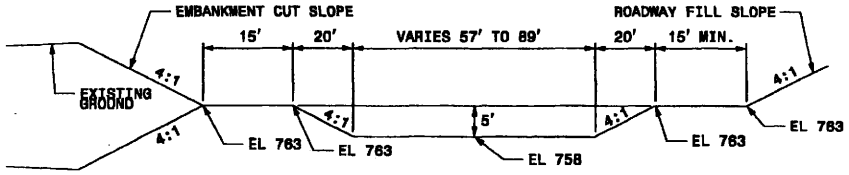


PLAN VIEW OF BASIN #5

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.



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

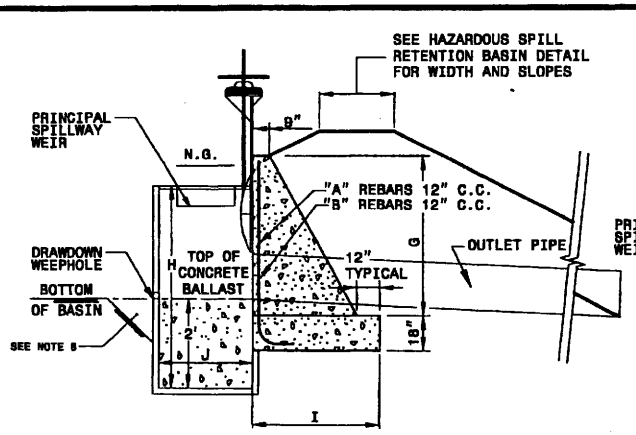
Hazardous Spill Retention Basins are provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

PROJECT REFERENCE NO. R-2606A | SHEET NO. 2-J
RW SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER
Prepared in the Office of: EarthTech
GRAPHIC SCALE
50 25 0 50 100
PLANS

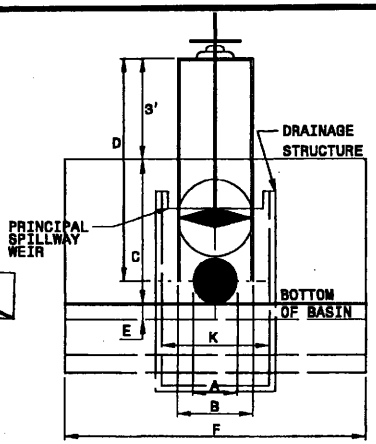
DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL/ DRY DETENTION BASIN

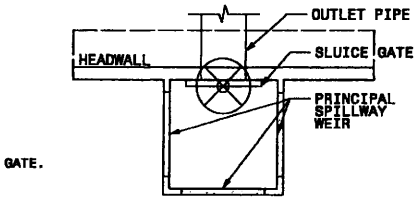
ORIGINAL BY: JDAN DATE: 2/21/01
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:



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.

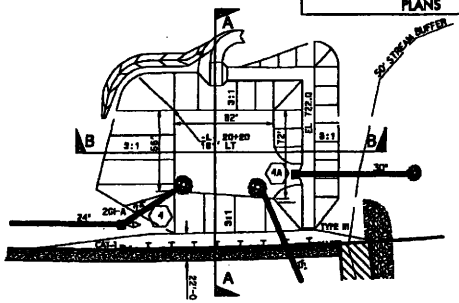
BASIN #		6	7
SLUICE GATE DIMENSIONS			
PIPE DIAMETER	A	30"	24"
GATE DIAMETER	B	36"	30"
HEADWALL HT.	C	8'-0"	5'-5"
FRAME HEIGHT	D	9'-9"	7'-8"
INVERT HEIGHT	E	7"	7"
HEADWALL WIDTH	F	9'-4"	8'-2"
HEADWALL DIMENSIONS			
PIPE DIAMETER	A	30"	24"
HEADWALL HT.	G	7'-7"	6'-1"
HEADWALL DEP.	I	5'-0"	4'-0"

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'

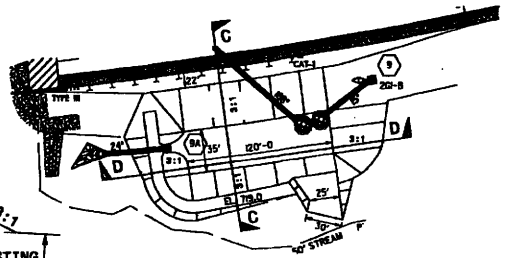
PROJECT REFERENCE NO.	SHEET NO.
R-2506A	2-K
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech

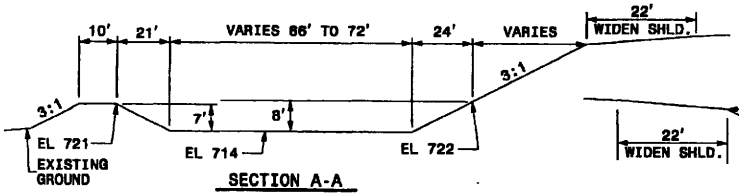
GRAPHIC SCALE
50 25 0 50 100
PLANS



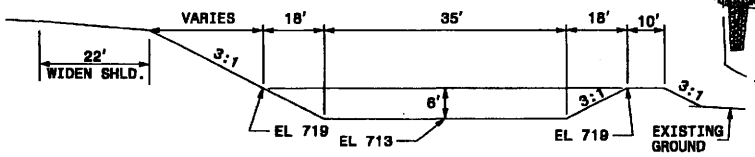
PLAN VIEW OF BASIN #6



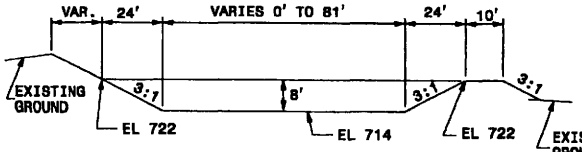
PLAN VIEW OF BASIN #7



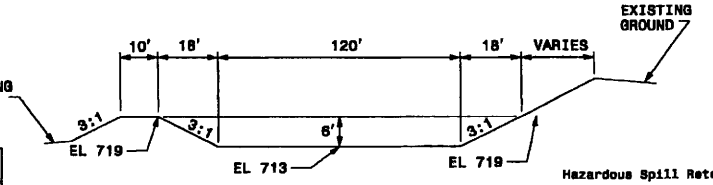
SECTION A-A



SECTION C-C



SECTION B-B



SECTION D-D

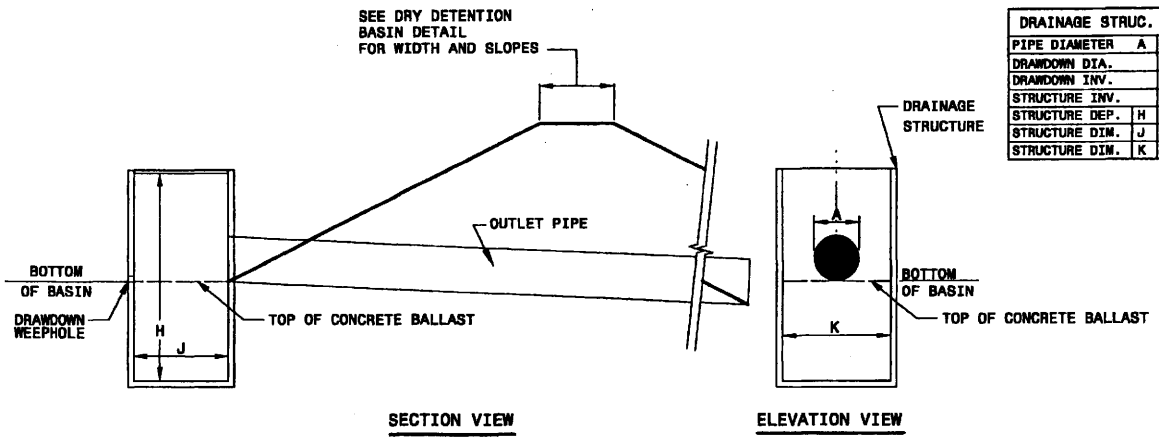
HAZARDOUS SPILL/DRY DETENTION BASIN							
BASIN #	PIPE SIZE	SPILLOVER ELEV.	BOTTOM ELEV.	D		CAPACITY	STATION
6	30"	721.00	714.00	8'		66069+ CF	-L- 20+50 LT
7	24"	718.50	713.00	6'		38950+ CF	-L-25+00 RT

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

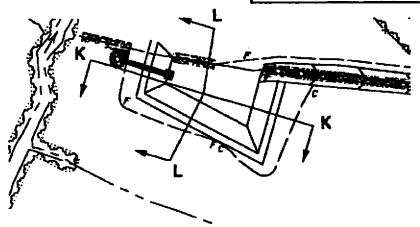


DRAINAGE STRUC. DIMENSIONS		
PIPE DIAMETER A		24"
DRAWDOWN DIA.		7/8"
DRAWDOWN INV.		713.00
STRUCTURE INV.		710.00
STRUCTURE DEP.	H	7'-0"
STRUCTURE DIM.	J	2'-0"
STRUCTURE DIM.	K	3'-0"

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

Prepared In the Office of: Earth Tech

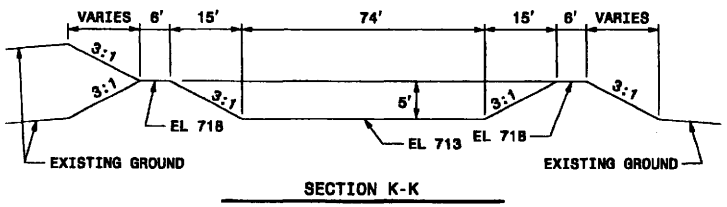
GRAPHIC SCALE
50 25 0 50 100
PLANS



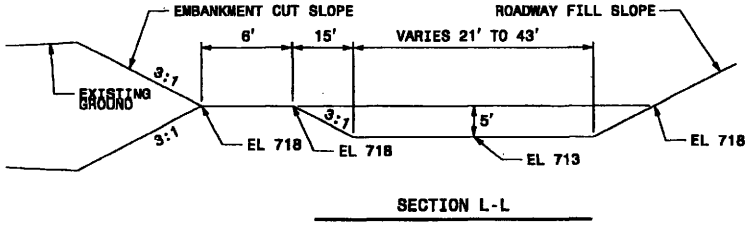
PLAN VIEW OF BASIN

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.:

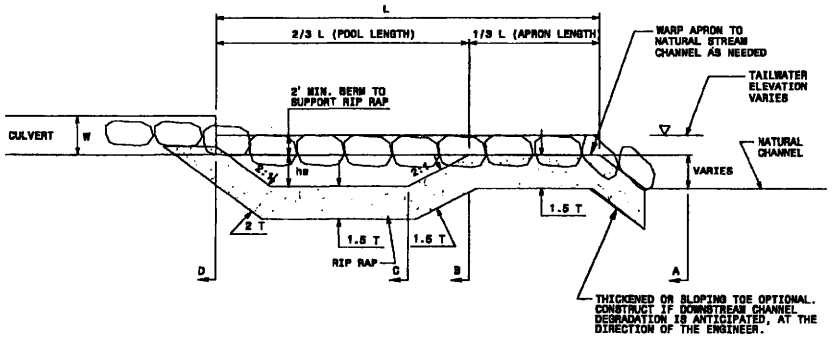
PROJECT REFERENCE NO.	SHEET NO.
R-2506A	2-H
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: EarthTech

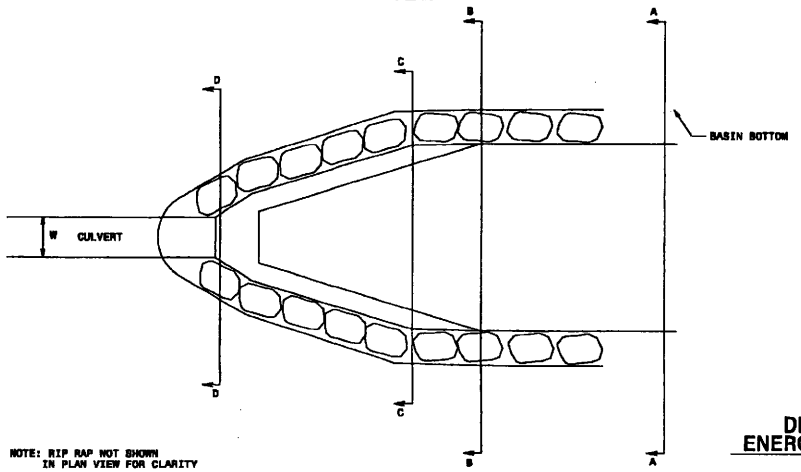
GRAPHIC SCALE
50 25 0 50 100
PLANS

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

PROFILE

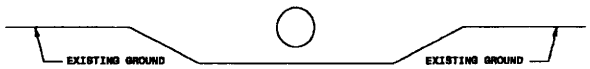


PLAN

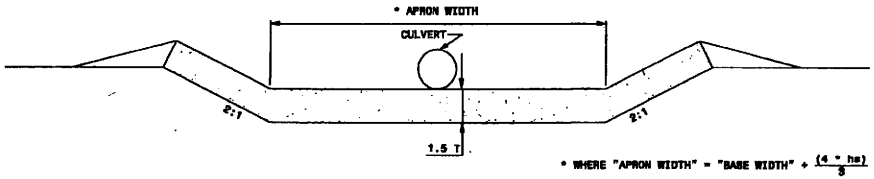


NOTE: RIP RAP NOT SHOWN IN PLAN VIEW FOR CLARITY

SECTION A-A

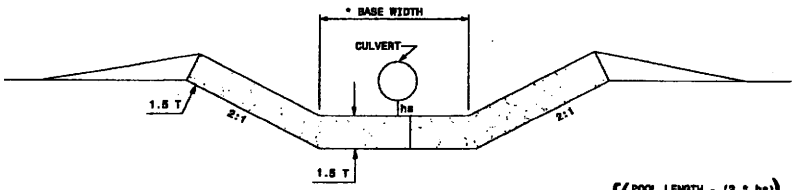


SECTION B-B



* WHERE "APRON WIDTH" = "BASE WIDTH" + $\frac{(4 * hs)}{3}$

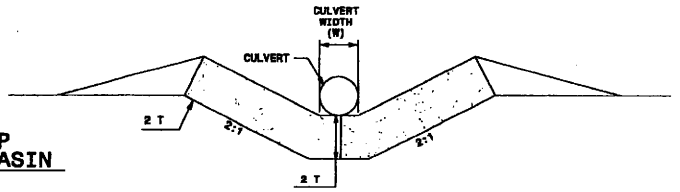
SECTION C-C



* WHERE "BASE WIDTH" = $2\left\{\left(\frac{\text{POOL LENGTH} - (2 * hs)}{3}\right) + \frac{W}{2}\right\}$

MINIMUM "BASE WIDTH" = 10'

SECTION D-D



DETAIL OF RIP RAP ENERGY DISSIPATOR BASIN
(NOT TO SCALE)

PROJECT REFERENCE NO.	SHEET NO.
R-2606A	4
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

-U- R-0609 IB (METRIC)

PI Sta 87+73.063	Pls Sta 89+15.115	
Δ = 19° 48' 06.2" (RT)	Θs = 9° 58' 07.8"	
L = 170.827 m	Ls = 172 m	
T = 86.274 m	LT = 114.849 m	
R = 494.284 m	ST = 57.499 m	

-L-

Pls Sta 111+33.34	PI Sta 122+50.68	
Θs = 1° 30' 28.0"	Δ = 30° 54' 42.0" (LT)	
Ls = 200.00'	D = 1° 30' 28.0"	
LT = 133.34'	L = 2,050.14	
ST = 66.67'	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 1,769,627.3072 ft (ENGLISH)
BEGIN CONSTRUCTION 10+00.00

END STATE PROJECT R-0609B
-U- STS Sta 90+28.988 LB (METRIC)
N 238,588.9078 m E 527,191.4576 m (METRIC)

BL-87
POT 5+00.00
-L- 11+84.22 OFF 241.51'

KEPLEY-FRANK HARDWOOD CO., INC
DB 439 PG 855

BEG. FENCE TIE TO EXIST.
BEG.C/A
+00.00
115.00
PROP. W.R. FENCE
+00.00
165.00
-L- SSSTa 14+00.00
+00.00
BEG.PS
394' PS
4' PS
100' TAPER TO TYPICAL SECTION
BEG.C/A
+00.00
155.00
BEG.FENCE TIE TO EXIST.
+00.00
180.00
PROP. W.R. FENCE

BY OTHERS

-U-

MATCH WIDTHS FOR PROJECT R-0609B

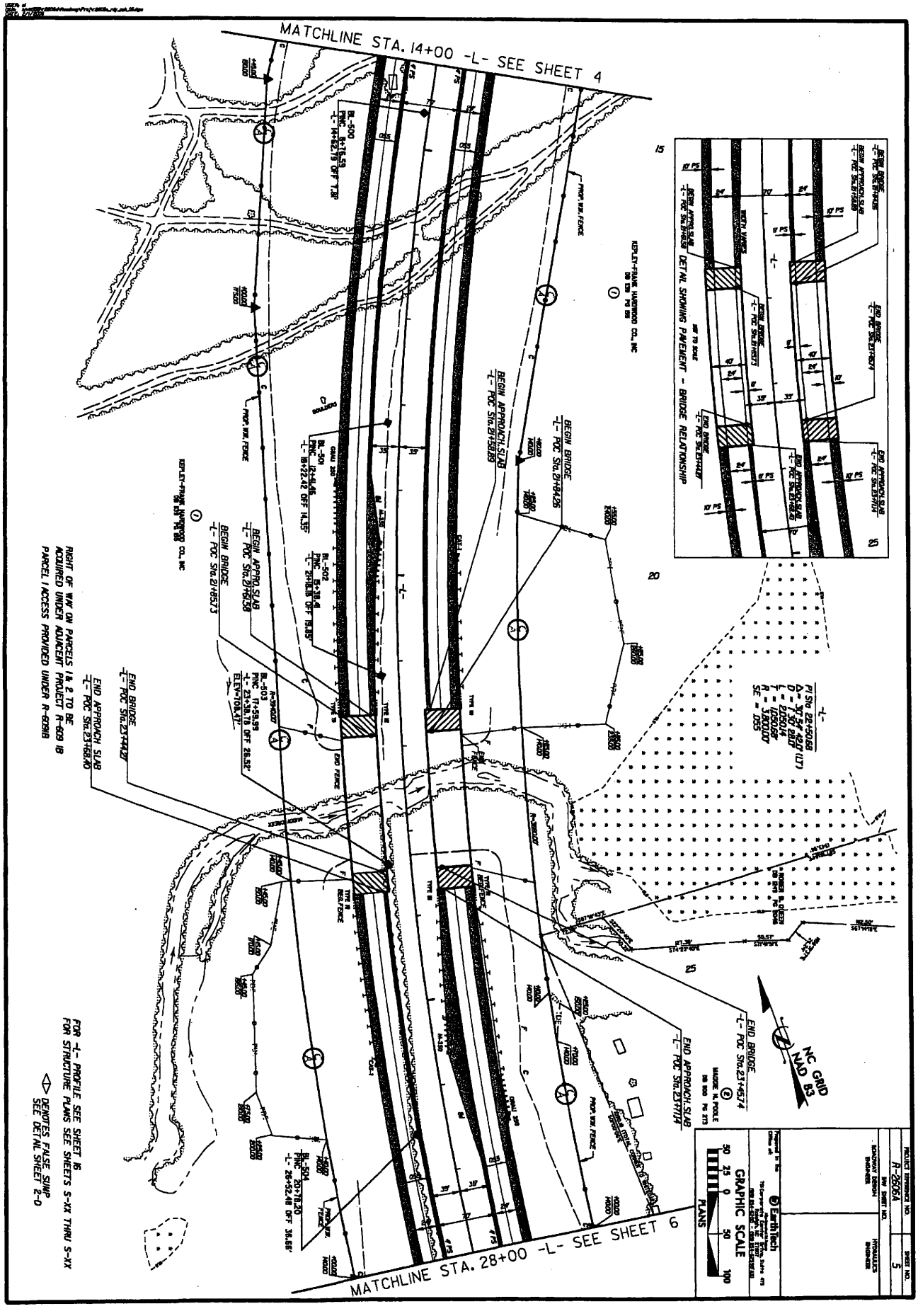
-U- CSSTa. 88+57.585 (METRIC)

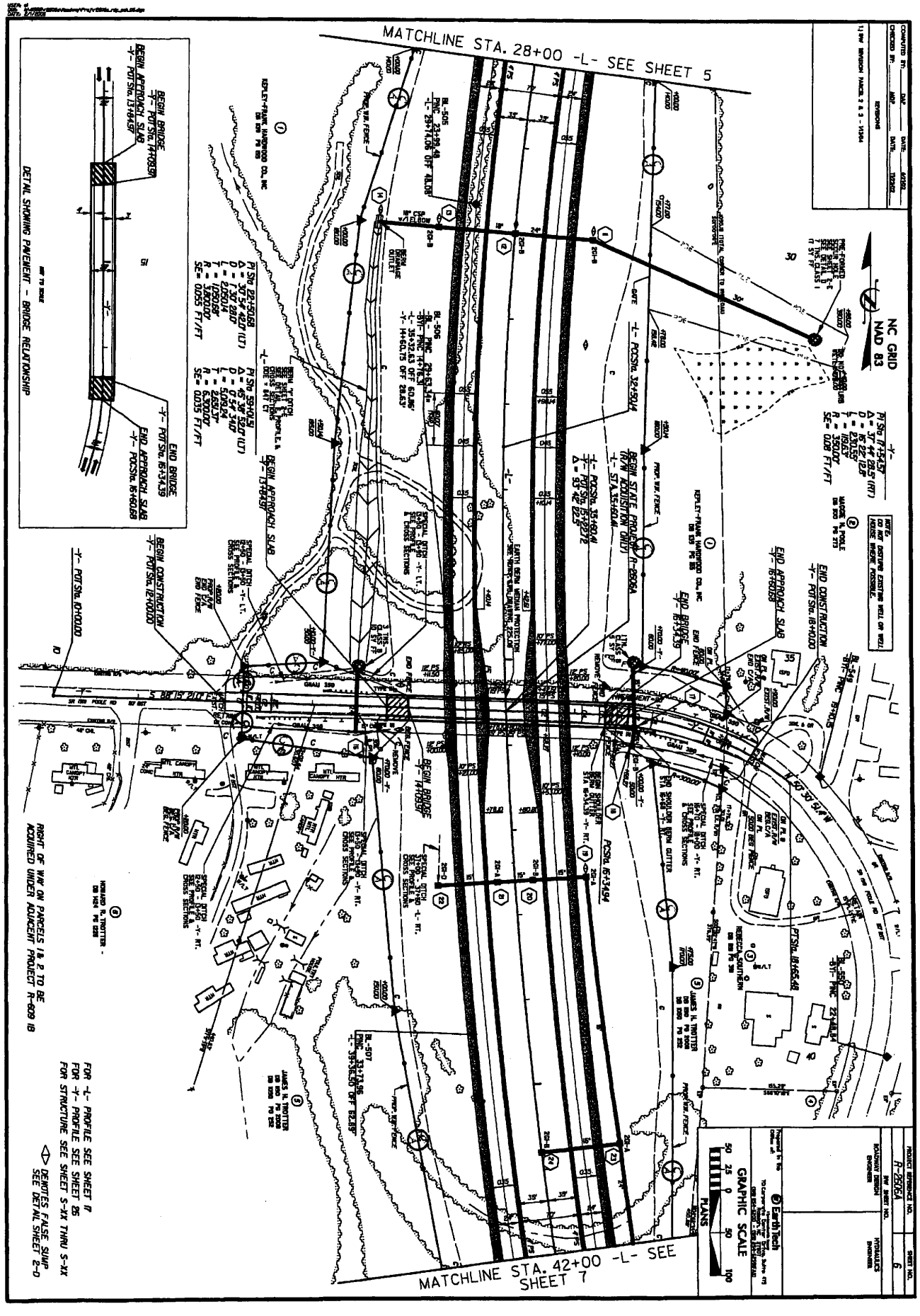
MATCHLINE STA. 14+00 -L- SEE SHEET 5

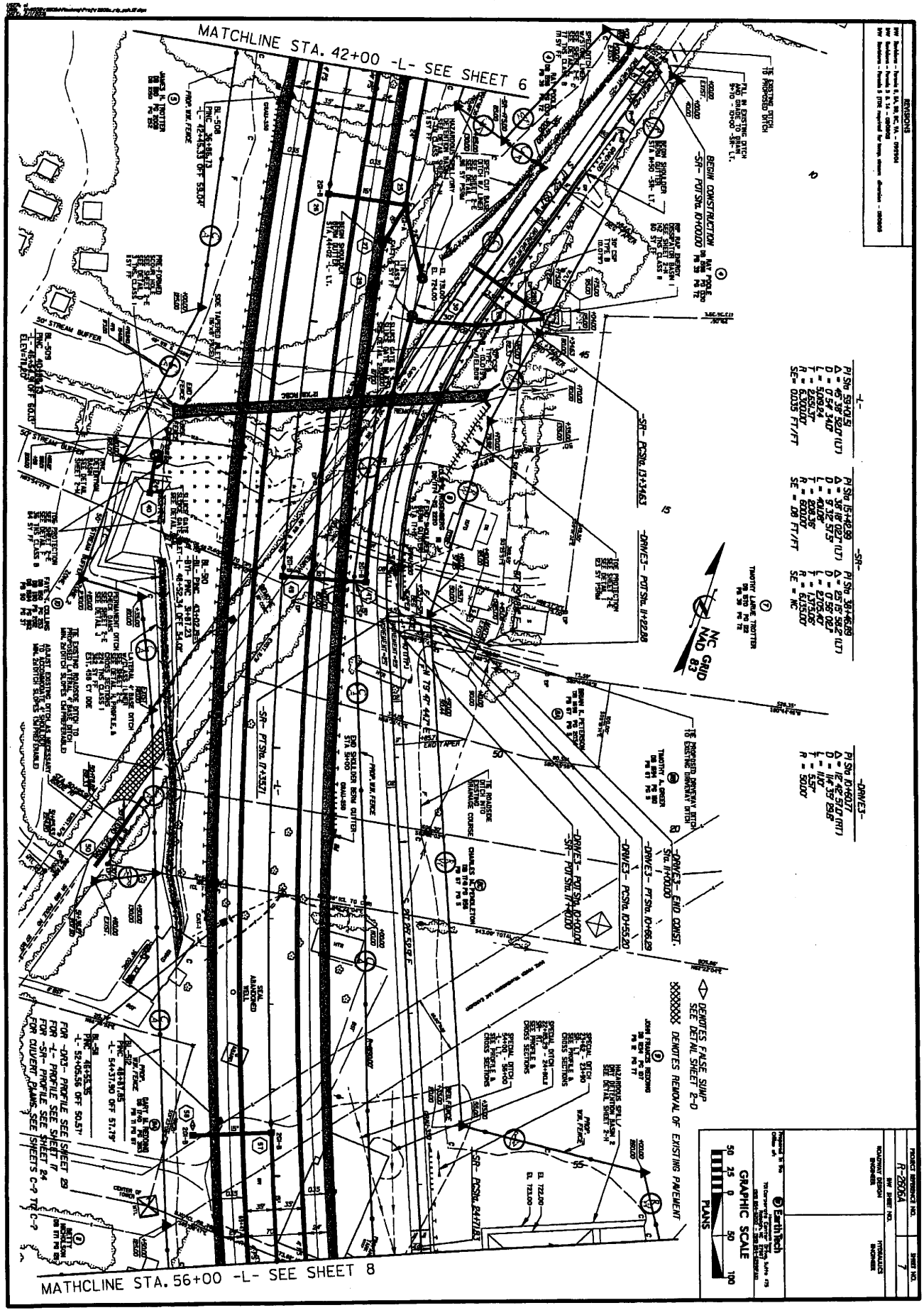
RIGHT OF WAY ON PARCELS 1 & 2 TO BE ACQUIRED UNDER ADJACENT PROJECT R-609 1B
PARCEL 1 ACCESS PROVIDED UNDER R-6091B

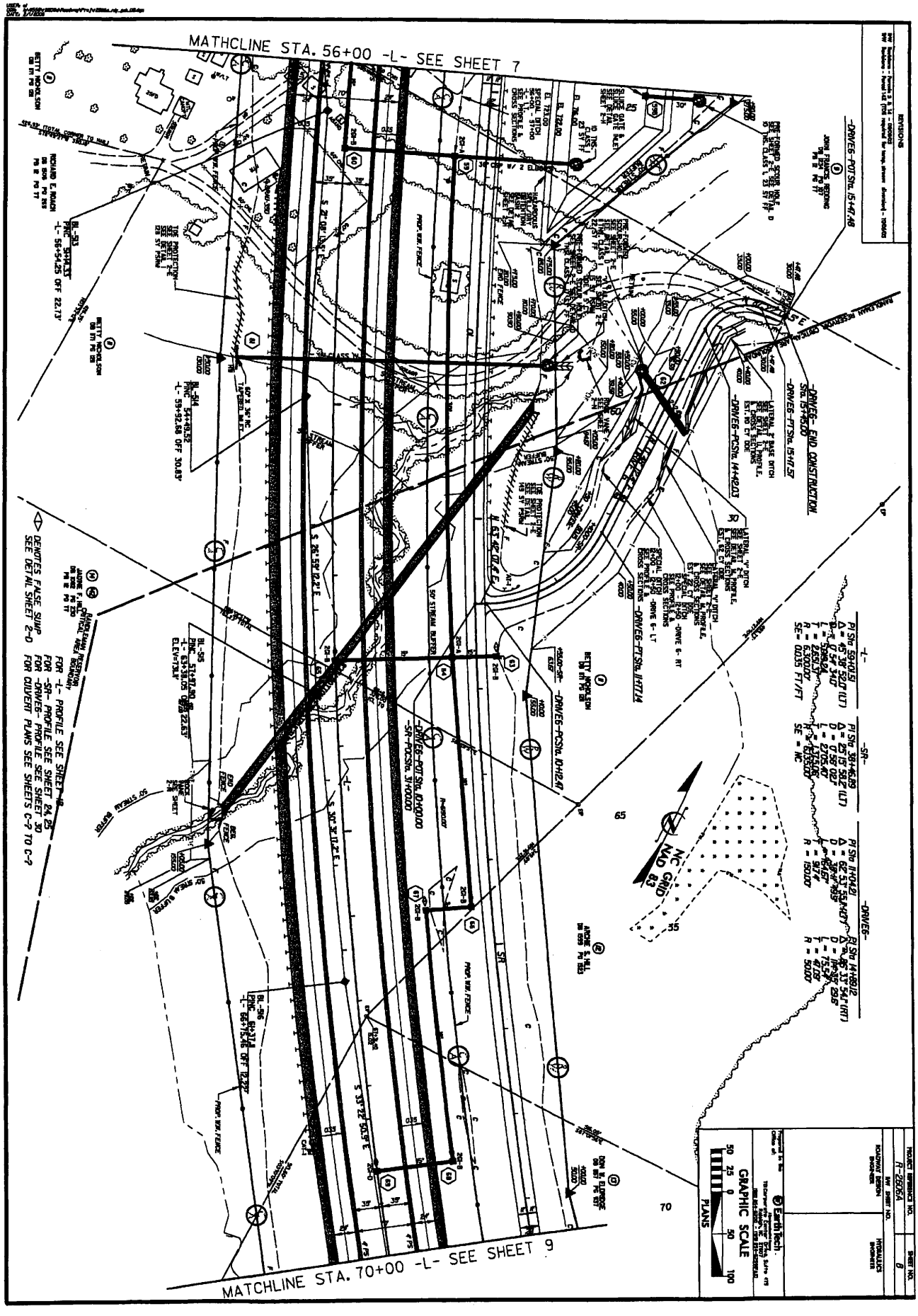
FOR -L- PROFILE SEE SHEET 16

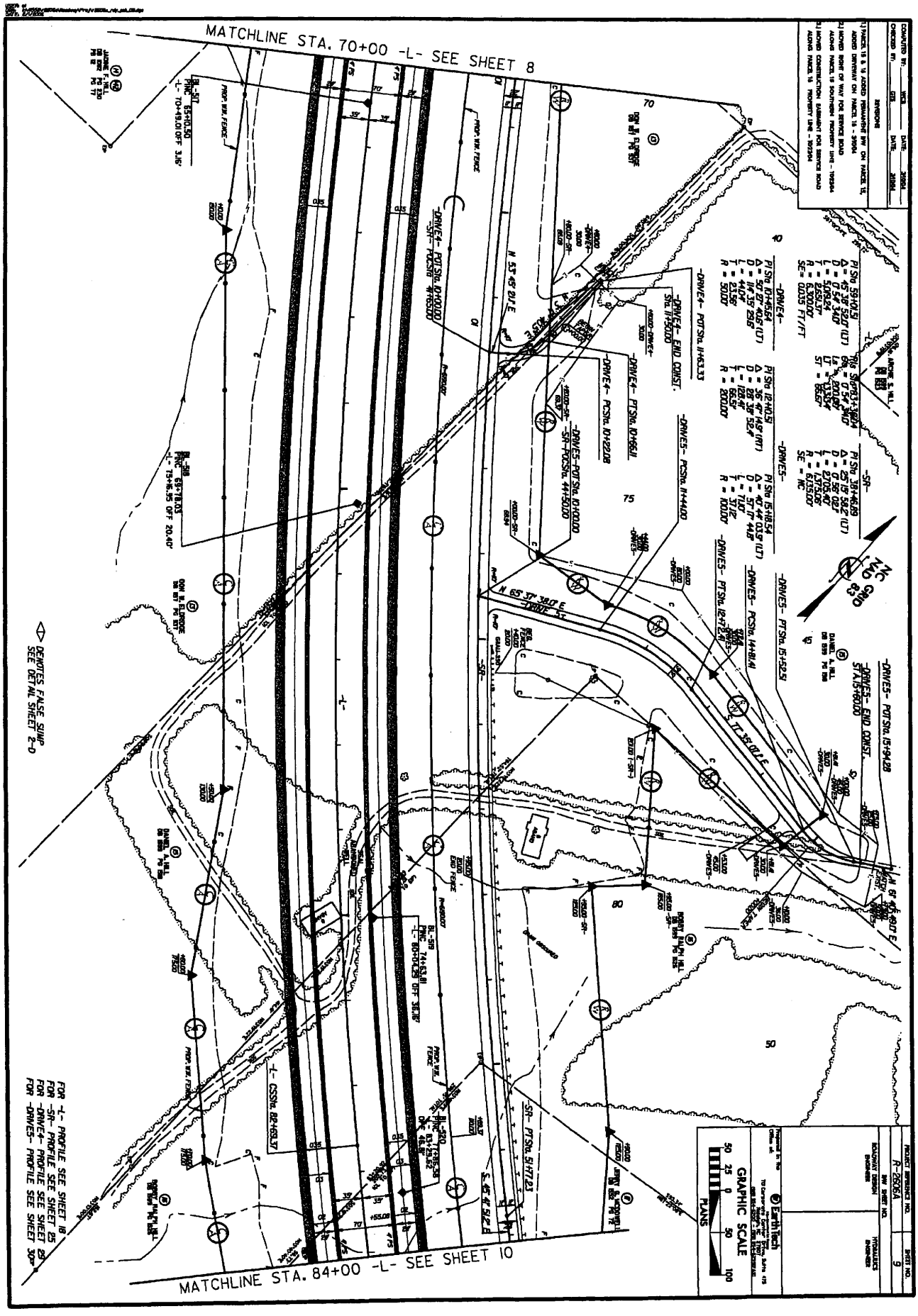
◇ DENOTES FALSE SUMP SEE DETAIL SHEET 2-D

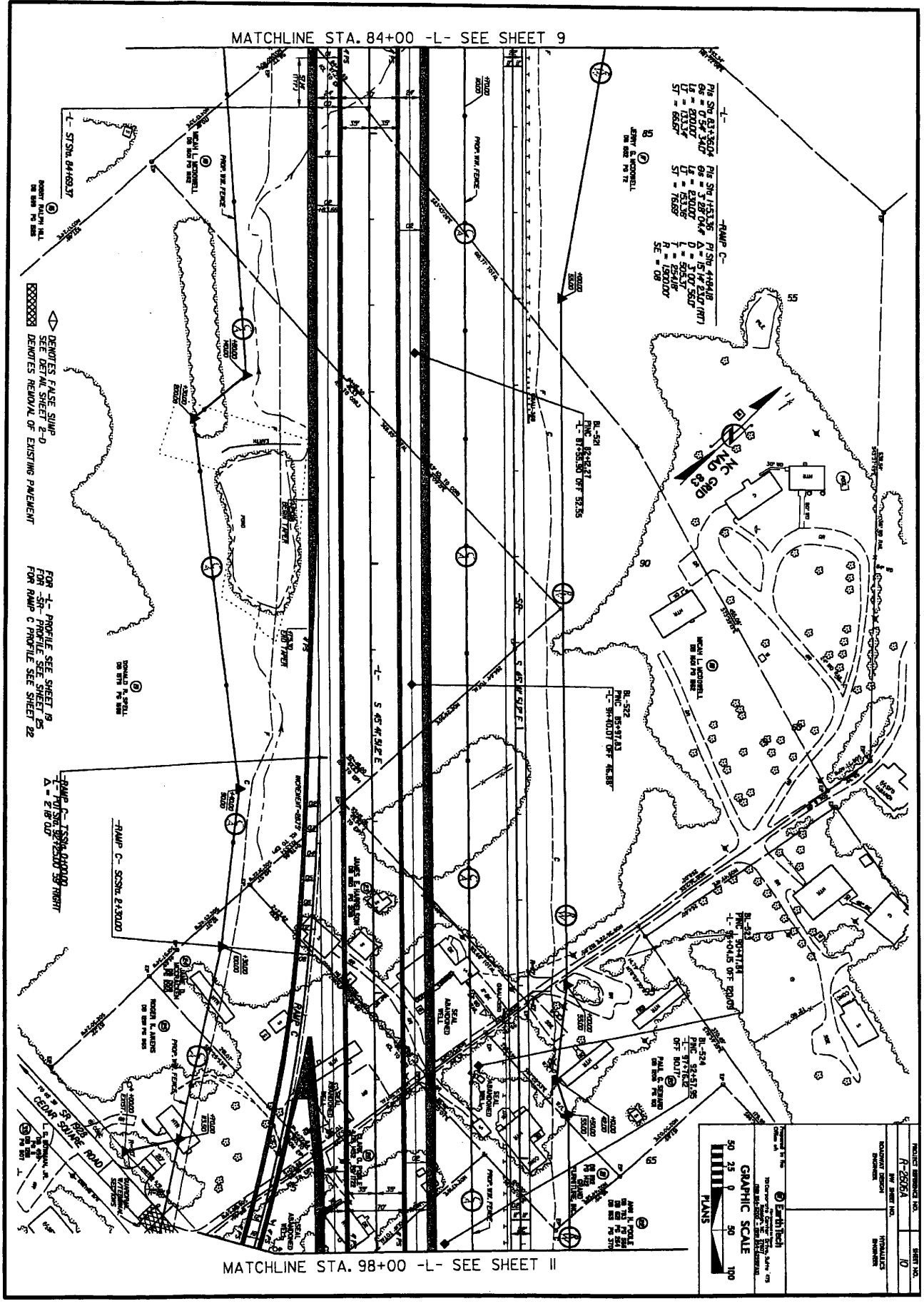

MATCHLINE STA. 14+00 -L- SEE SHEET 4
MATCHLINE STA. 28+00 -L- SEE SHEET 6
DETAIL SHOWING PAVEMENT - BRIDGE RELATIONSHIP
BEGIN BRIDGE -L- POC Sta.21+50.89
BEGIN APPROACH SLAB -L- POC Sta.21+84.26
END BRIDGE -L- POC Sta.23+44.27
END APPROACH SLAB -L- POC Sta.23+68.40
END BRIDGE -L- POC Sta.23+45.74
END APPROACH SLAB -L- POC Sta.23+77.14
PI Sta 22+50.68
Δ = 37°-54'-40" (LT)
D = 7°-30'-00"
L = 525.14'
T = 269.68'
R = 764.00'
SE = .05'
NC GRID NAD 83
GRAPHIC SCALE
50 25 0 50 100
PLANS
RIGHT OF WAY ON PARCELS 1 & 2 TO BE ACQUIRED UNDER ADJACENT PROJECT R-609 B
PARCEL 1 ACCESS PROVIDED UNDER R-609B
FOR -L- PROFILE SEE SHEET 16
FOR STRUCTURE PLANS SEE SHEETS S-XX THRU S-XX
◇ DENOTES FALSE SUMP SEE DETAIL SHEET 2-D
Earth Tech
PROJECT REFERENCE NO.
R-2606A
SHEET NO.
5
HYDRAULICS ENGINEER
ROADWAY DESIGNER

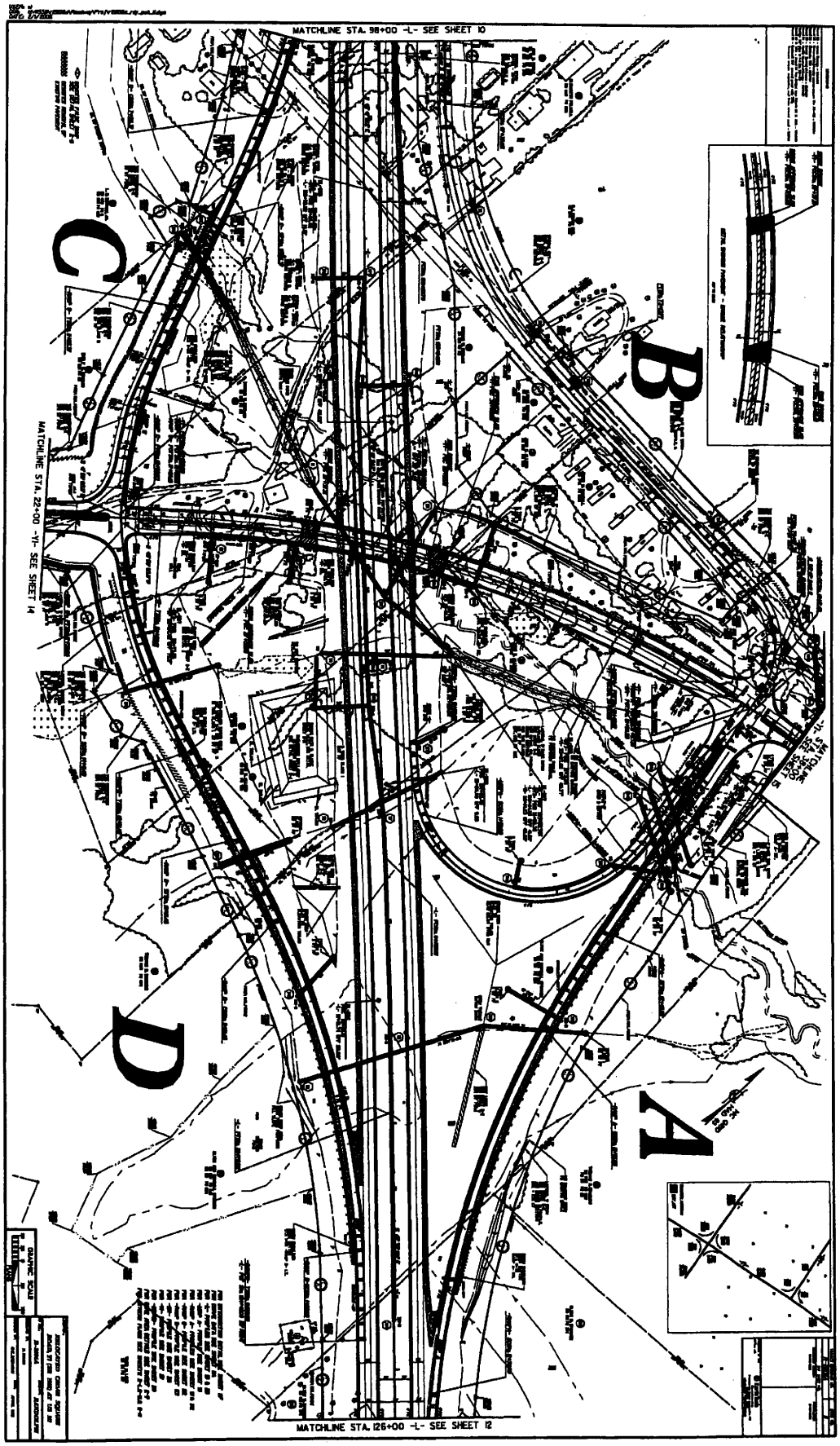

MATCHLINE STA. 28+00 -L- SEE SHEET 5
MATCHLINE STA. 42+00 -L- SEE SHEET 7
NC GRID NAD 83
GRAPHIC SCALE
PLANS
R-2606A
BEGIN BRIDGE +/- PI STA. 13+46.57
END BRIDGE +/- PI STA. 15+34.39
BEGIN APPROACH SLAB +/- PI STA. 13+46.57
END APPROACH SLAB +/- PI STA. 15+60.68
BEGIN CONSTRUCTION +/- PI STA. 12+40.00
END CONSTRUCTION +/- PI STA. 16+40.00
DETAIL SHOWING PAVEMENT - BRIDGE RELATIONSHIP
RIGHT OF WAY ON PARCELS 1A, 2, TO BE ACQUIRED UNDER ADJACENT PROJECT R-609 B
FOR -L- PROFILE SEE SHEET 17
FOR +/- PROFILE SEE SHEET 25
FOR STRUCTURE SEE SHEET S-XX THRU S-XX
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D

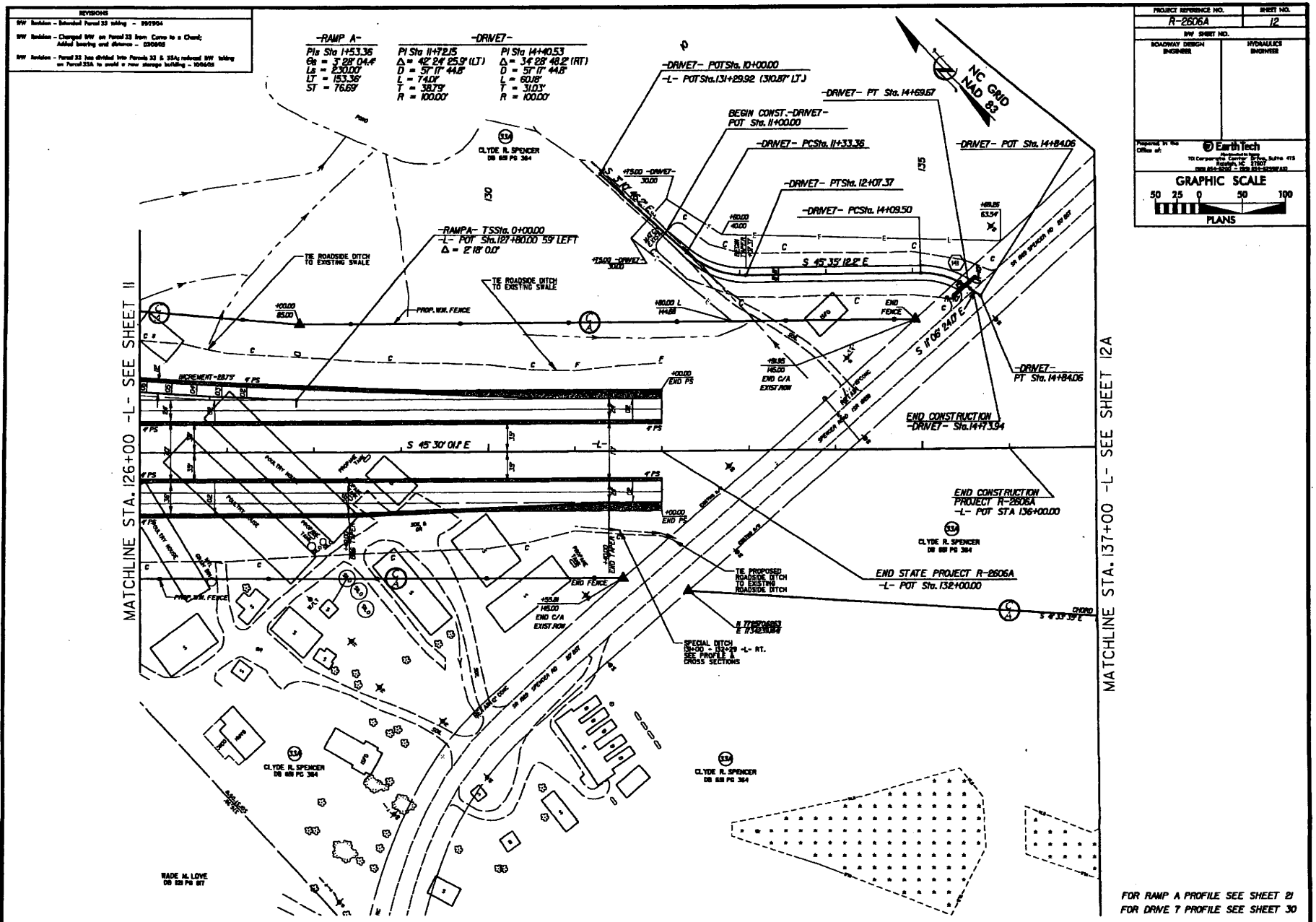

MATCHLINE STA. 42+00 -L- SEE SHEET 6
MATCHLINE STA. 56+00 -L- SEE SHEET 8
-L-
PI Sta 53+05.51
Δ = 45° 38' 52.0" (LT)
D = 0° 54' 34.0"
L = 509.24
T = 265.47
R = 6300.00'
SE = 0.035 FT/FT
-SR-
PI Sta 15+42.89
Δ = 35° 18' 02.7" (LT)
D = 9° 32' 57.5"
L = 401.09'
T = 208.35'
R = 600.00'
SE = .06 FT/FT
PI Sta 38+46.89
Δ = 25° 15' 58.2" (LT)
D = 0° 58' 09.1"
L = 1705.40'
T = 847.06'
R = 5850.00'
SE = NC
-DRIVE3-
PI Sta 10+60.77
Δ = 12° 42' 51.0" (RT)
D = 14° 39' 29.6"
L = 110'
T = 55.7'
R = 500.0'
BEGIN CONSTRUCTION -SR- POT Sta. 10+00.00
-SR- POT Sta. 13+34.63
-DRIVE3- POT Sta. 11+22.88
-SR- POT Sta. 17+35.71
-DRIVE3- POT Sta. 10+00.00
-SR- POT Sta. 17+40.00
-DRIVE3- END CONST. Sta. 11+00.00
-DRIVE3- PI Sta. 10+55.29
-DRIVE3- PI Sta. 10+66.29
-SR- PC Sta. 84+17.87
NC GRID NAD 83
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D
DENOTES REMOVAL OF EXISTING PAVEMENT
GRAPHIC SCALE
50 25 0 50 100
PLANS
Earth Tech
PROJECT REFERENCE NO. R-2606A
SHEET NO. 7
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

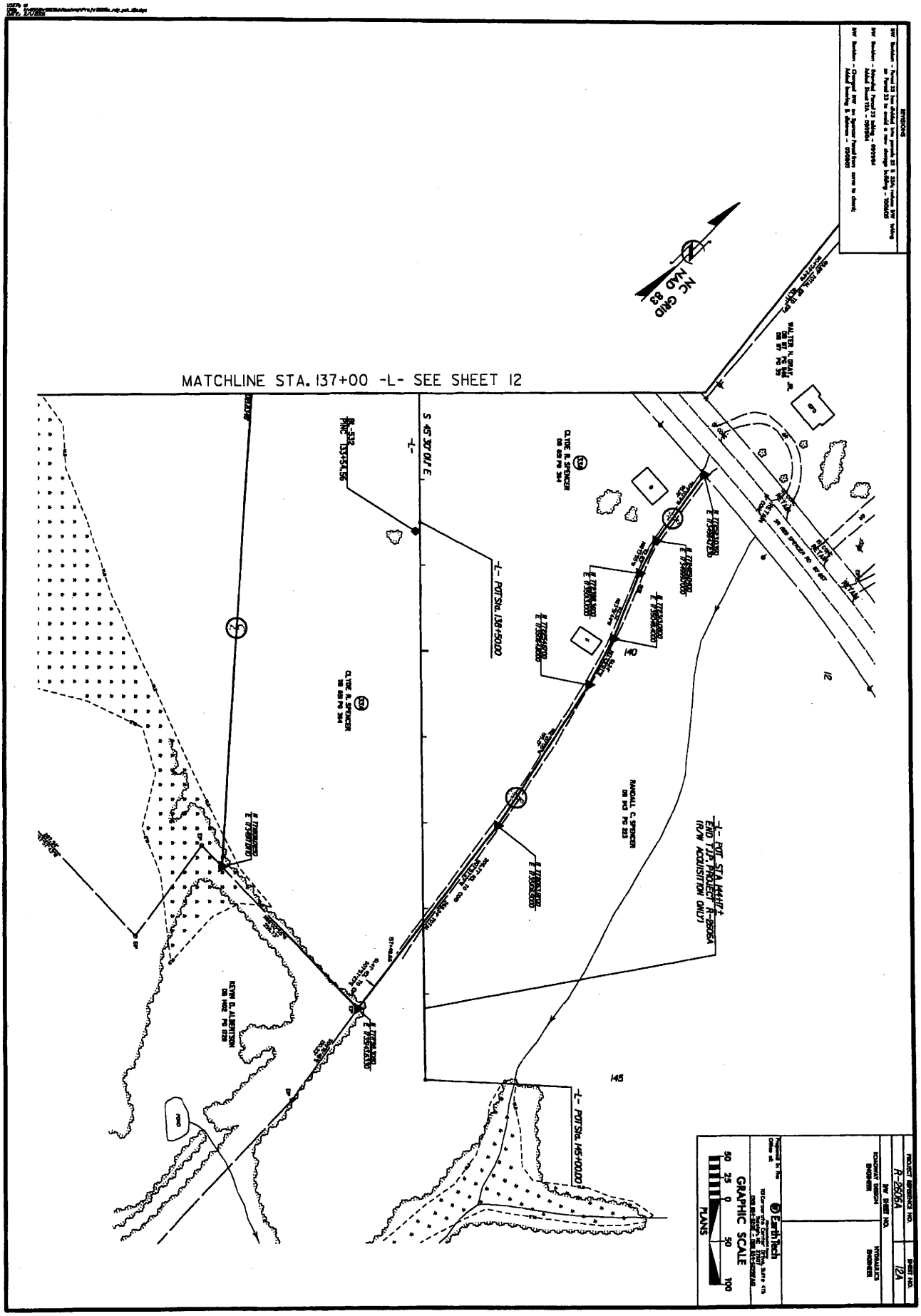

MATHCLINE STA. 56+00 -L- SEE SHEET 7
MATCHLINE STA. 70+00 -L- SEE SHEET 9
-DRIVE6-
-SR-
-L-
-DRIVE6- END CONSTRUCTION
-DRIVE6-PT STA. 15+47.48
-DRIVE6-PC STA. 14+49.03
-DRIVE6-PT STA. 15+17.57
-DRIVE6-PC STA. 0+12.47
-DRIVE6-PT STA. 1+77.14
-SR-PC STA. 39+00.00
-SR-PT STA. 41+00.00
PI STA 59+40.59
Δ = 45° 39' 52.0" (LT)
D = 4° 46' 24.0"
T = 225.59
L = 456.40
R = 1200.00
SE = 0.035 FT/FT
PI STA 38+46.89
Δ = 23° 15' 38.2" (LT)
D = 3° 58' 02"
T = 170.06
L = 331.96
R = 1500.00
SE = NC
PI STA 1+49.12
Δ = 62° 35' 59.4" (RT)
D = 38° 11' 49.3"
T = 59.47
L = 109.57
R = 150.00
PI STA 1+89.12
Δ = 24° 31' 36.6" (RT)
D = 11° 27' 33.9"
T = 108.96
L = 214.39
R = 500.00
NC GRID
GRAPHIC SCALE
50 25 0 50 100
PLANS
Earth Tech
HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER
PROJECT REFERENCE NO.
R-2206A
SHEET NO.
8
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-7 TO C-9

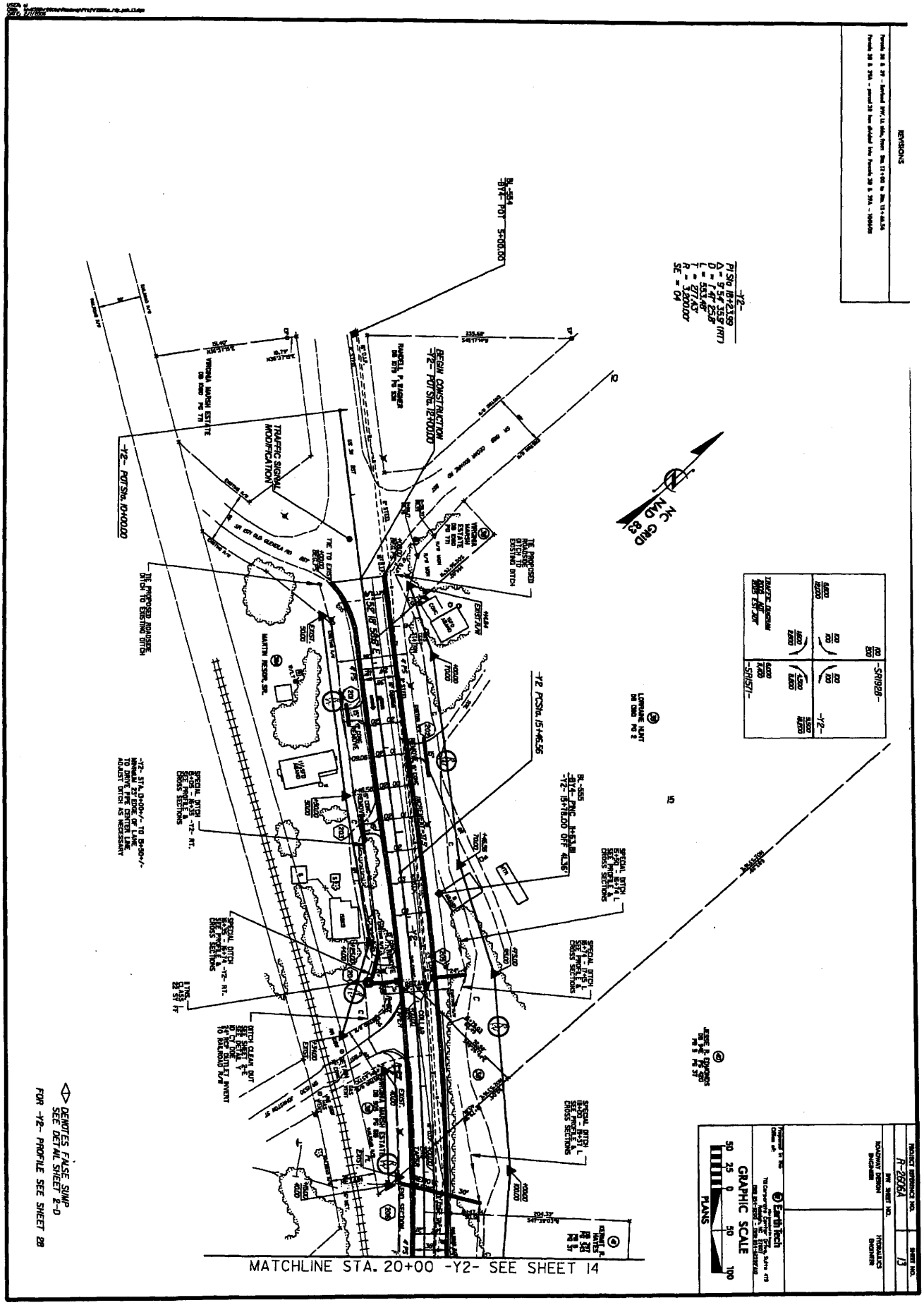

MATCHLINE STA. 70+00 -L- SEE SHEET 8
MATCHLINE STA. 84+00 -L- SEE SHEET 10
-DRIVE4-
-DRIVE5-
-SR-
-L-
PROJECT REFERENCE NO.
R-2606A
SHEET NO.
9
GRAPHIC SCALE
50 25 0 50 100
PLANS
Earth Tech

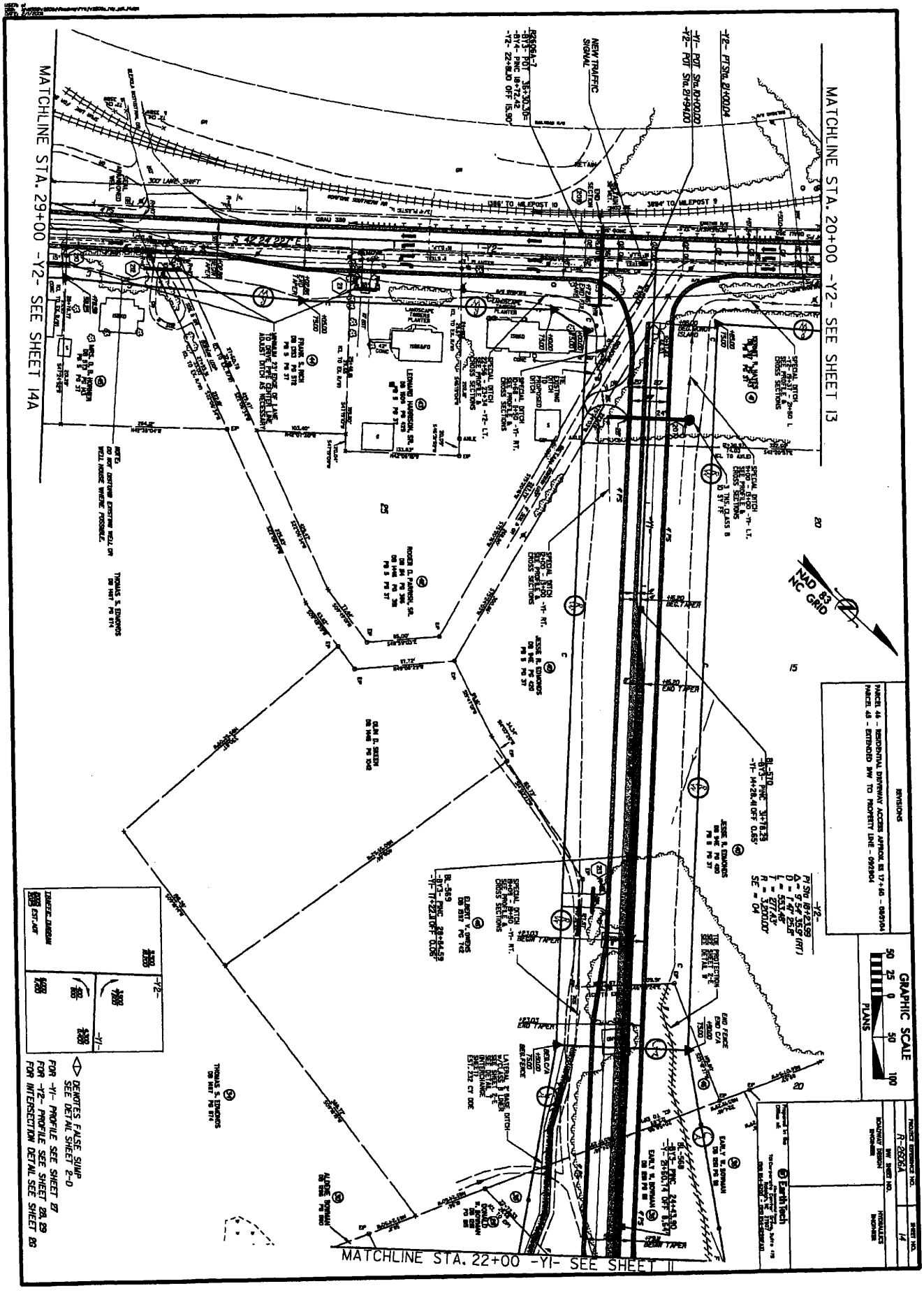

MATCHLINE STA. 84+00 -L- SEE SHEET 9
MATCHLINE STA. 98+00 -L- SEE SHEET 11
-L- STA. 84+69.37
-L- S 45°41'52" E
-SR- S 45°41'52" E
-RAMP C-
-RAMP C- STA. 84+48.18
-RAMP C- SC STA. 84+30.00
-RAMP C- ST STA. 84+00.00
-RAMP C- Pt STA. 83+36.04
-RAMP C- Pt STA. 83+36.36
GRID N.A.D. 83
GRAPHIC SCALE
50 25 0 50 100
PLANS
PROJECT REFERENCE NO.
R-2506A
SHEET NO.
10
TOTAL SHEETS
11
HIGHWAYS
BRIDGES
STRUCTURES
ENGINEERING DESIGN
RIGHT OF WAY
ROADWAY DESIGN
HYDRAULICS
ENGINEERING
Earth Tech
CEDAR SQUARE ROAD

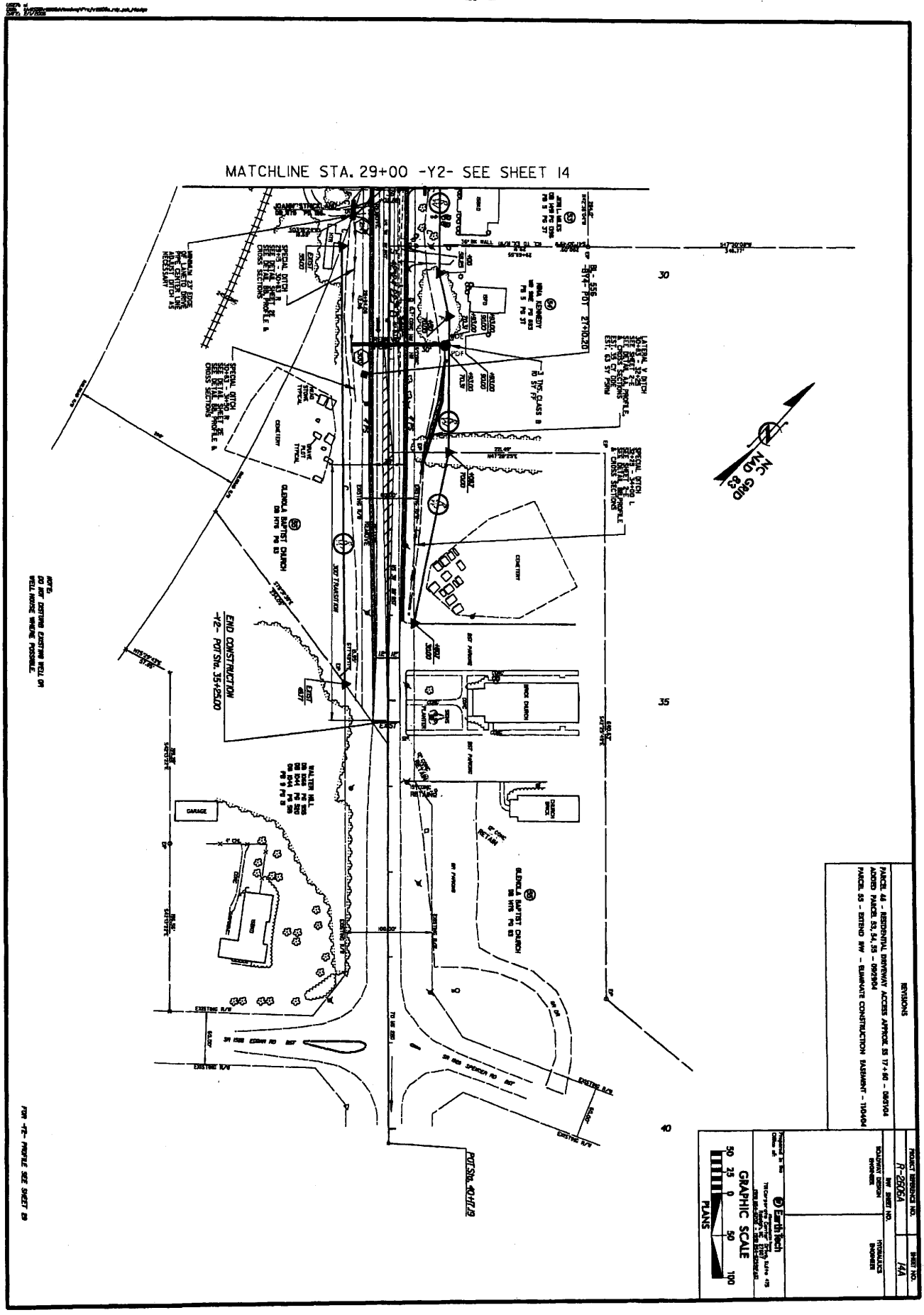

MATCHLINE STA. 98+00 -L- SEE SHEET 10
MATCHLINE STA. 22+00 -Y- SEE SHEET 14
MATCHLINE STA. 126+00 -L- SEE SHEET 12
A
B
C
D

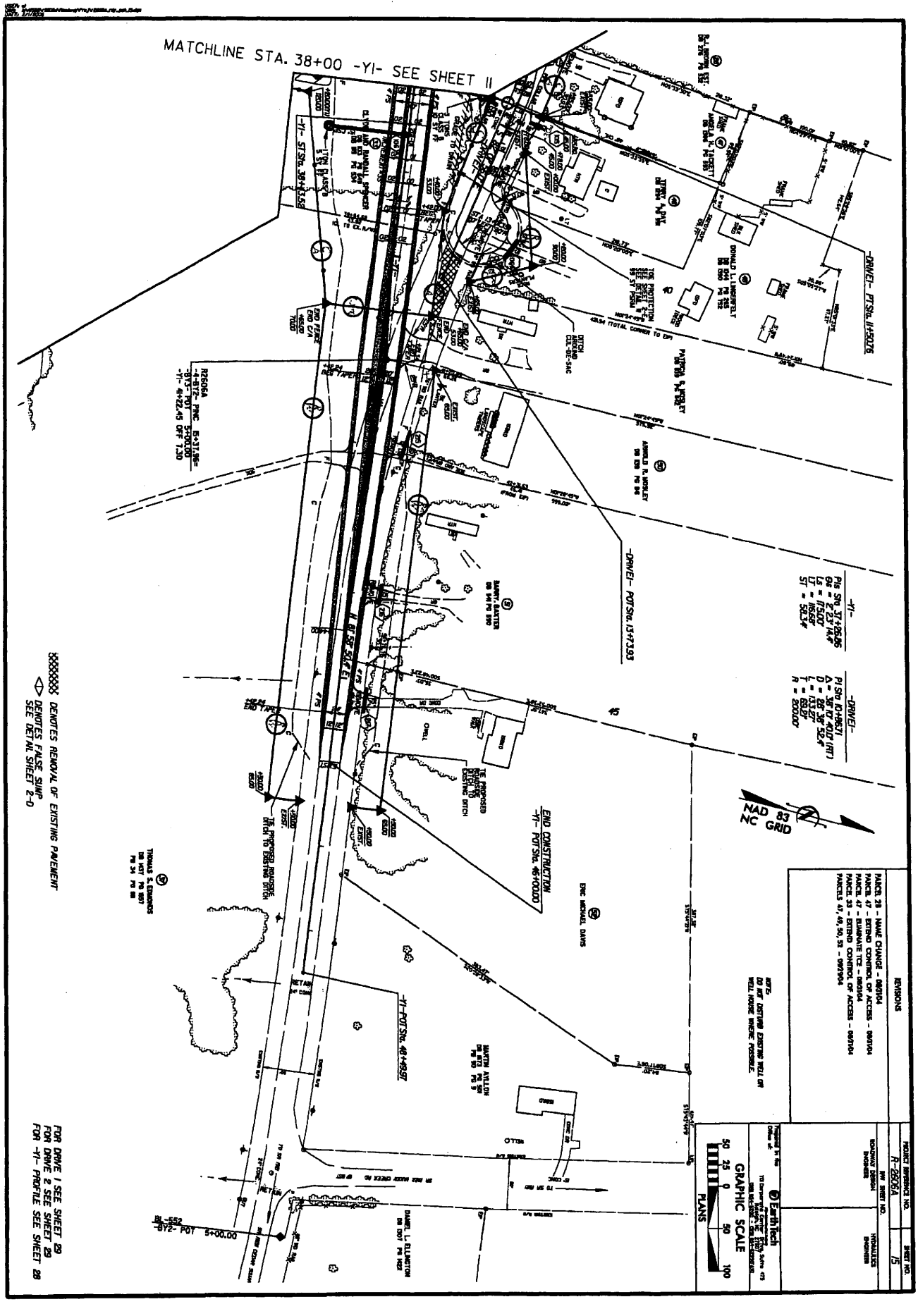

REVISIONS
-RAMP A-
PI Sta 1+53.36
θs = 3°28'04.4"
Ls = 230.00'
LT = 153.36'
ST = 76.69'
-DRIVE7-
PI Sta 11+72.15
Δ = 42°24'25.9" (LT)
D = 57°17' 44.8"
L = 74.01'
T = 38.79'
R = 100.00'
PI Sta 14+40.53
Δ = 34°28'48.2" (RT)
D = 57°17' 44.8"
L = 60.18'
T = 31.03'
R = 100.00'
-DRIVE7- POT Sta. 10+00.00
-L- POT Sta. 13I+29.92 (310.87' LT)
-DRIVE7- PT Sta. 14+69.67
BEGIN CONST.-DRIVE7- POT Sta. 11+00.00
-DRIVE7- PC Sta. 11+33.36
-DRIVE7- POT Sta. 14+84.06
-DRIVE7- PT Sta. 12+07.37
-DRIVE7- PC Sta. 14+09.50
-RAMP A- TS Sta. 0+00.00
-L- POT Sta. 127+80.00 59' LEFT
Δ = 2°18' 00"
NC GRID NAD 83
S 45°35'12.2" E
S 11°06'24.0" E
S 45°30'01.1" E
TIE ROADSIDE DITCH TO EXISTING SWALE
PROP. WIR. FENCE
END FENCE
END C/A EXIST. ROW
-DRIVE7- PT Sta. 14+84.06
END CONSTRUCTION -DRIVE7- Sta. 14+73.94
END CONSTRUCTION PROJECT R-2606A -L- POT STA 136+00.00
END STATE PROJECT R-2606A -L- POT Sta. 132+00.00
TIE PROPOSED ROADSIDE DITCH TO EXISTING ROADSIDE DITCH
SPECIAL DITCH 136+00 - 134+29 -L- RT. SEE PROFILE & CROSS SECTIONS
CLYDE R. SPENCER DB 688 PG 384
WADE M. LOVE DB 839 PG 817
MATCHLINE STA. 126+00 -L- SEE SHEET 11
MATCHLINE STA. 137+00 -L- SEE SHEET 12A
PROJECT REFERENCE NO. R-2606A
SHEET NO. 12
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Prepared in the Office of: Earth Tech
GRAPHIC SCALE
50 25 0 50 100
PLANS
FOR RAMP A PROFILE SEE SHEET 21
FOR DRIVE 7 PROFILE SEE SHEET 30

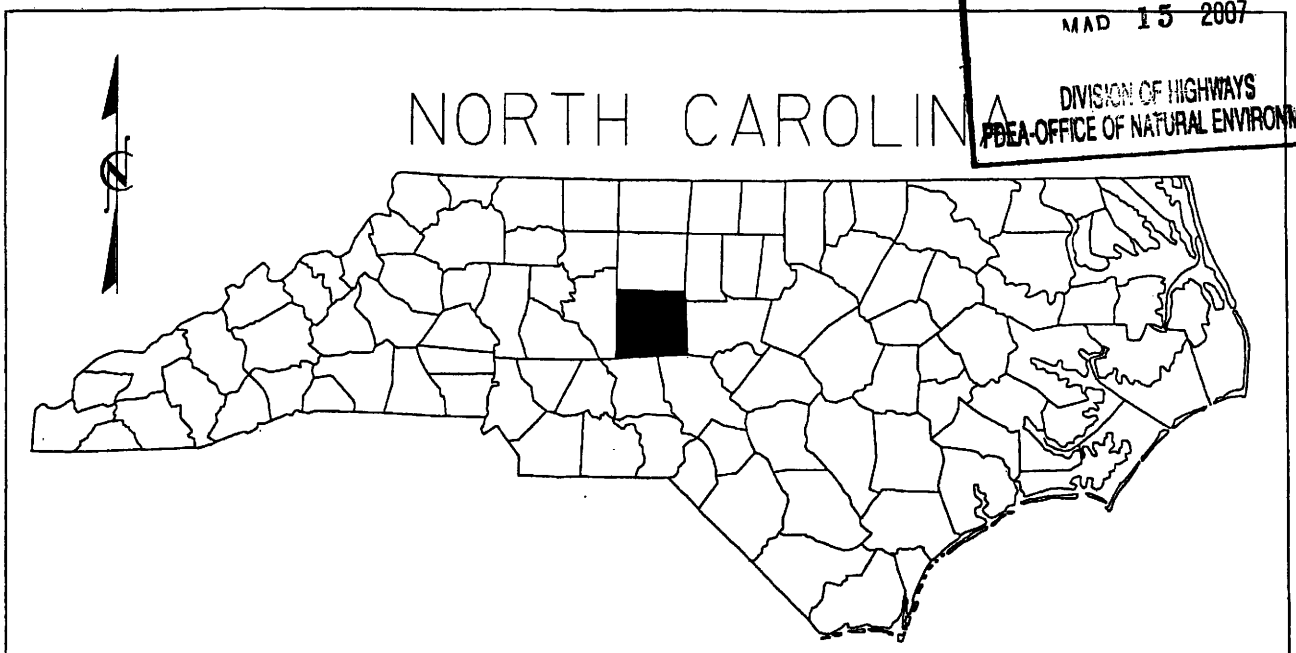

MATCHLINE STA. 137+00 -L- SEE SHEET 12
NC GRID NAD 83
S 45°30'00"E
-L- POT Sta. 136+50.00
-L- POT Sta. 145+00.00
-L- POT STA. 144+87.00
END TIP, PROJECT R-2606A
(R/W ACQUISITION ONLY)
CLYDE R. SPENCER
RANDALL C. SPENCER
KEITH G. ALBERTSON
12
145
GRAPHIC SCALE
50 25 0 50 100
PLANS
PROJECT REFERENCE NO.
R-2606A
SHEET NO.
12A
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Earth Tech

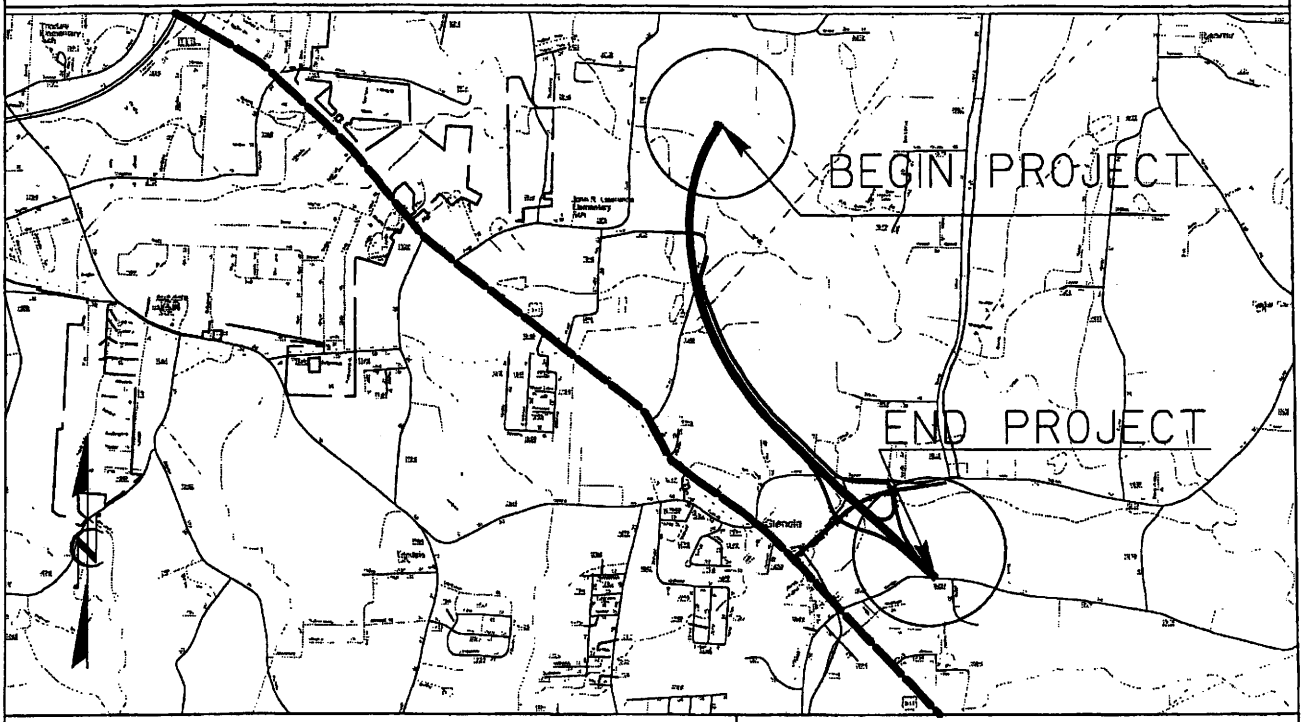

REVISIONS
-Y2- P.I. Sta 18+21.89
Δ = 9°54'35.59" (RT)
D = 5°43'46"
L = 277.47'
T = 138.90'
R = 1200.00'
SE = .04
-Y2- POT Sta. 12+00.00
BEGIN CONSTRUCTION -Y2- POT Sta. 12+00.00
TRAFFIC SIGNAL MODIFICATION
-Y2- POT Sta. 10+00.00
-Y2 POT Sta. 15+46.56
MATCHLINE STA. 20+00 -Y2- SEE SHEET 14
GRAPHIC SCALE
50 25 0 50 100
PLANS
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D
FOR -Y2- PROFILE SEE SHEET 28


MATCHLINE STA. 20+00 -Y2- SEE SHEET 13
MATCHLINE STA. 29+00 -Y2- SEE SHEET 14A
MATCHLINE STA. 22+00 -Y1- SEE SHEET 11
NAD 83 NC GRID
GRAPHIC SCALE
50 25 0 50 100
PLANS
REVISIONS
PARCEL 46 - RESIDENTIAL DRIVEWAY ACCESS APPROVED 12-16-03 - 08/09/04
PARCEL 45 - EXTENDED RW TO PROPERTY LINE - 08/23/04
PROJECT REFERENCE NO. R-2606A
SHEET NO. 14
RW SHEET NO.
ROADWAY DESIGN ENGINEER
PROJECT ENGINEER
Earth Tech
DENOTES FALSE SUMP SEE DETAIL SHEET 2-D
FOR -Y1- PROFILE SEE SHEET 17
FOR -Y2- PROFILE SEE SHEET 28, 29
FOR INTERSECTION DETAIL SEE SHEET 28


MATCHLINE STA. 29+00 -Y2- SEE SHEET 14
END CONSTRUCTION
-Y2- POT STA. 35+25.00
POT STA. 40+47.19
GRID NORTH
GRAPHIC SCALE
50 25 0 50 100
PLANS
REVISIONS
PARCEL 49 - RESIDENTIAL DRIVEWAY ACCESS APPROX. ST 17+80 - 08/3104
ADDED PARCEL 53, 54, 55 - 09/2004
PARCEL 53 - EXTEND RW - ELIMINATE CONSTRUCTION EASEMENT - 10/0404
PROJECT REFERENCE NO.
R-2606A
SHEET NO.
14A
Earth Tech
TRIGON ENGINEERING CONSULTANTS, INC.
SOUTHWEST DESIGN DIVISION
HYDRAULICS ENGINEER
RW SHEET NO.


MATCHLINE STA. 38+00 -Y1- SEE SHEET 11
-DRIVE1- PT STA. 11+50.76
-Y1-
PI Sta 37+29.95
Δ = 2°23'14.4"
Ls = 175.00'
LT = 166.68'
ST = 50.14'
-DRIVE1-
PI Sta 10+98.71
Δ = 38°10'40.0" (RT)
D = 28°38'52.4"
L = 133.27'
T = 69.01'
R = 200.00'
-DRIVE1- POT STA. 13+73.93
R2606A
-4-BY2- PNC 5+37.96=
-Y1- 4+22.45 OFF 7.30
R2606A
-BY2- POT 5+00.00
-Y1- POT STA. 46+00.00
-Y1- POT STA. 48+49.87
END CONSTRUCTION
-Y1- POT STA. 46+00.00
NAD 83
NC GRID
NOTE:
DO NOT DISTURB EXISTING WELL OR WELL HOUSE WHERE POSSIBLE.
TIE PROPOSED RIGHT TO EXISTING DITCH
TIE PROPOSED RIGHT TO EXISTING DITCH
DITCH AROUND CUL-DE-SAC
TOE PROTECTION SEE SHEET 11 FOR DETAIL
TOTAL CORNER TO DP
DONALD L. LANGSFELT
PATRICIA A. MOSLEY
ARNOLD R. MOSLEY
BARRY L. BAXTER
ERIC MICHAEL DAVIS
THOMAS S. EDWARDS
MARTIN AVELON
DANIEL L. ELLINGTON
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
GRAPHIC SCALE
50 25 0 50 100
PLANS
REVISIONS
PARCEL 28 - NAME CHANGE - 08/31/04
PARCEL 47 - EXTEND CONTROL OF ACCESS - 09/31/04
PARCEL 47 - ELIMINATE TCE - 09/31/04
PARCEL 33 - EXTEND CONTROL OF ACCESS - 09/31/04
PARCELS 47, 49, 50, 51 - 09/23/04
PROJECT REFERENCE NO.
R-2606A
SHEET NO.
15
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Earth Tech





VICINITY MAPS

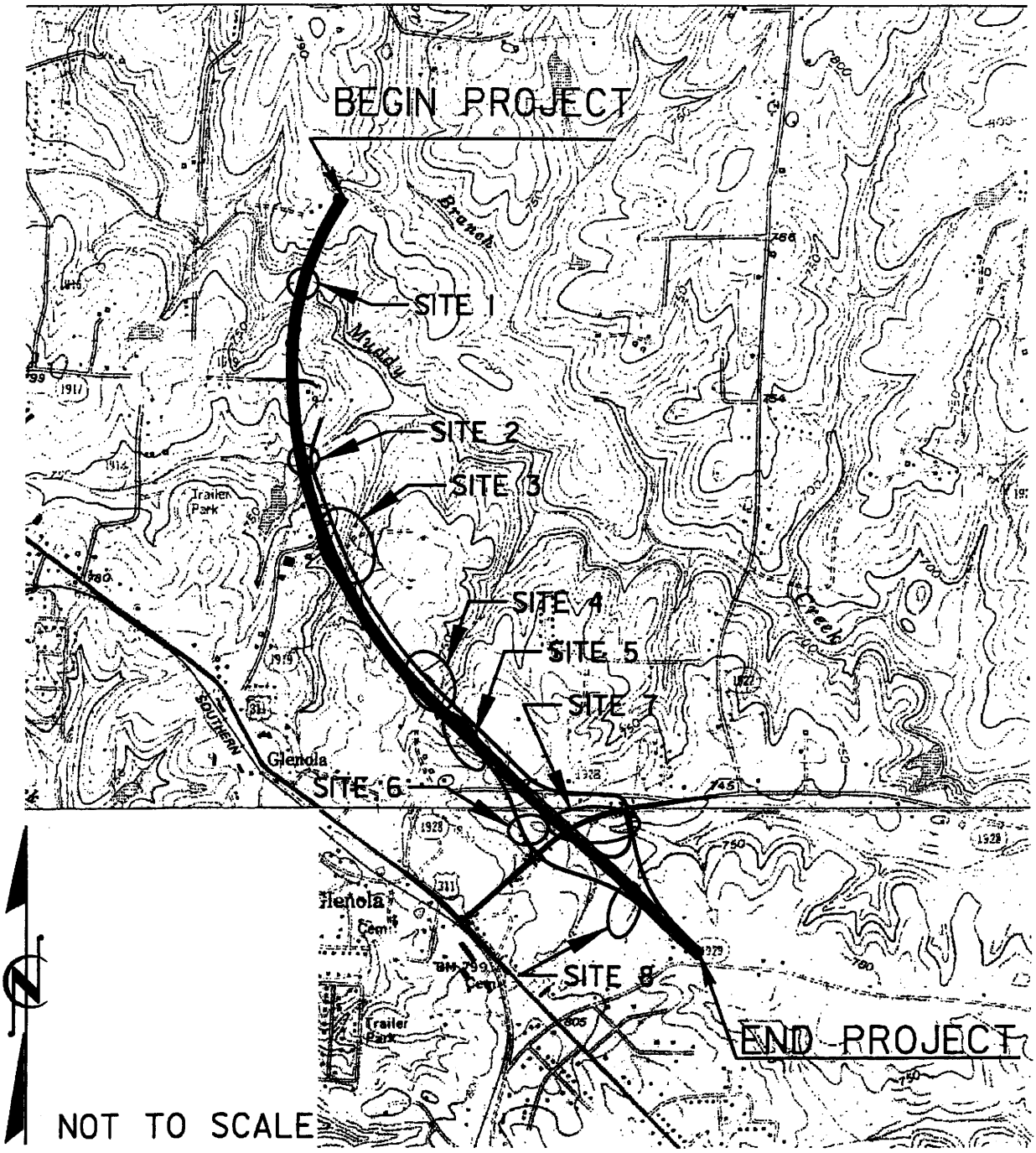
NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

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

SHEET 1 **OF** 96

USER: rmay
DGN: k:\45580\r2606\Hydraulics\VICINITY.WET
DATE: 07/14/2005

1/06



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:\41558\r-2606a\Hydraulics\LOCMET
DATE: 1/30/2006

WETLAND LEGEND

WLB — WETLAND BOUNDARY

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

(DASHED LINES DENOTE EXISTNG STRUCTURES)

12"-48" PIPES

54" PIPES & ABOVE

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 1106

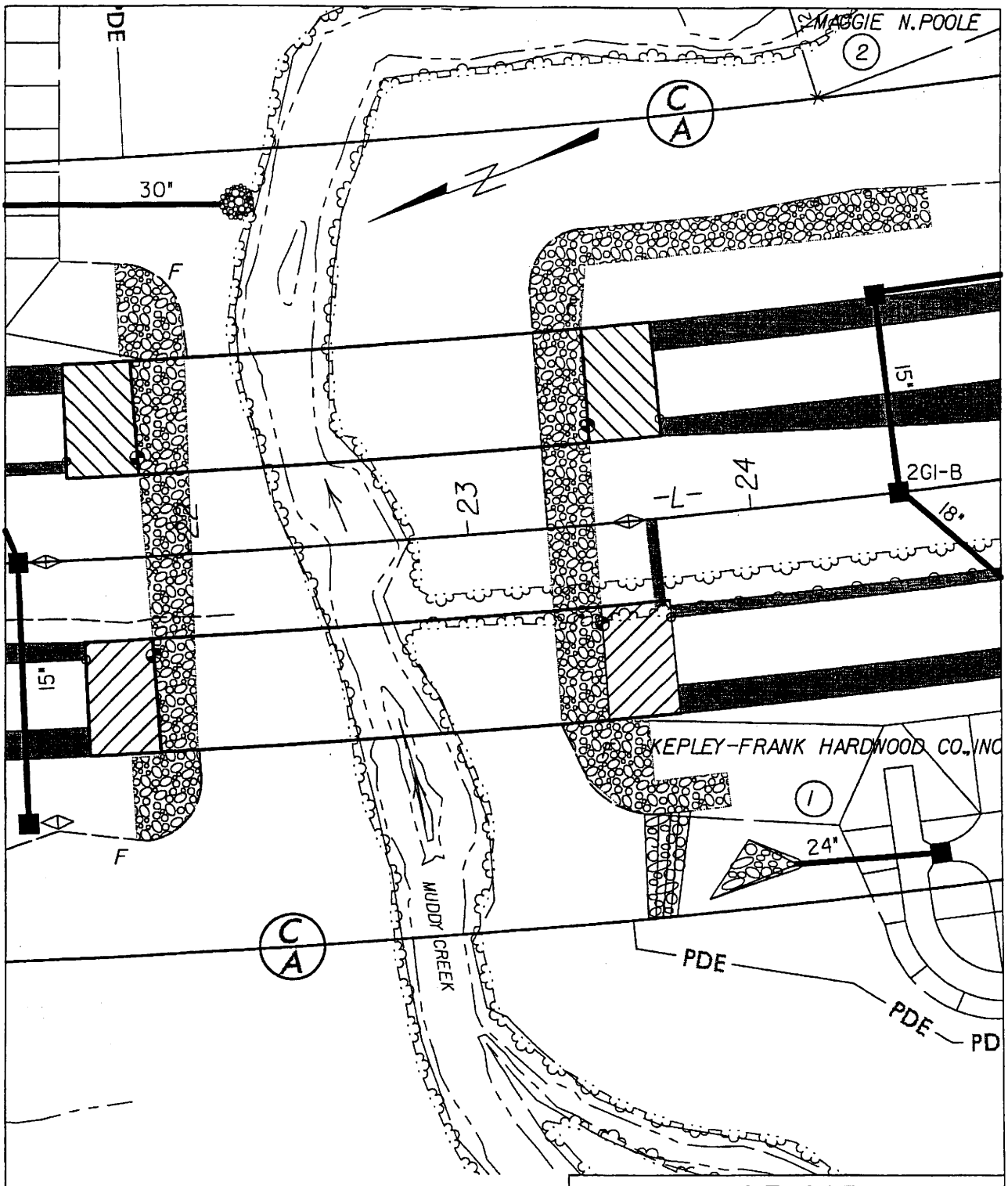
USER: rmay
DGN: k:\1571501r\2606a\Hydraulics\new_legend.dgn
DATE: 07/14/2005

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		



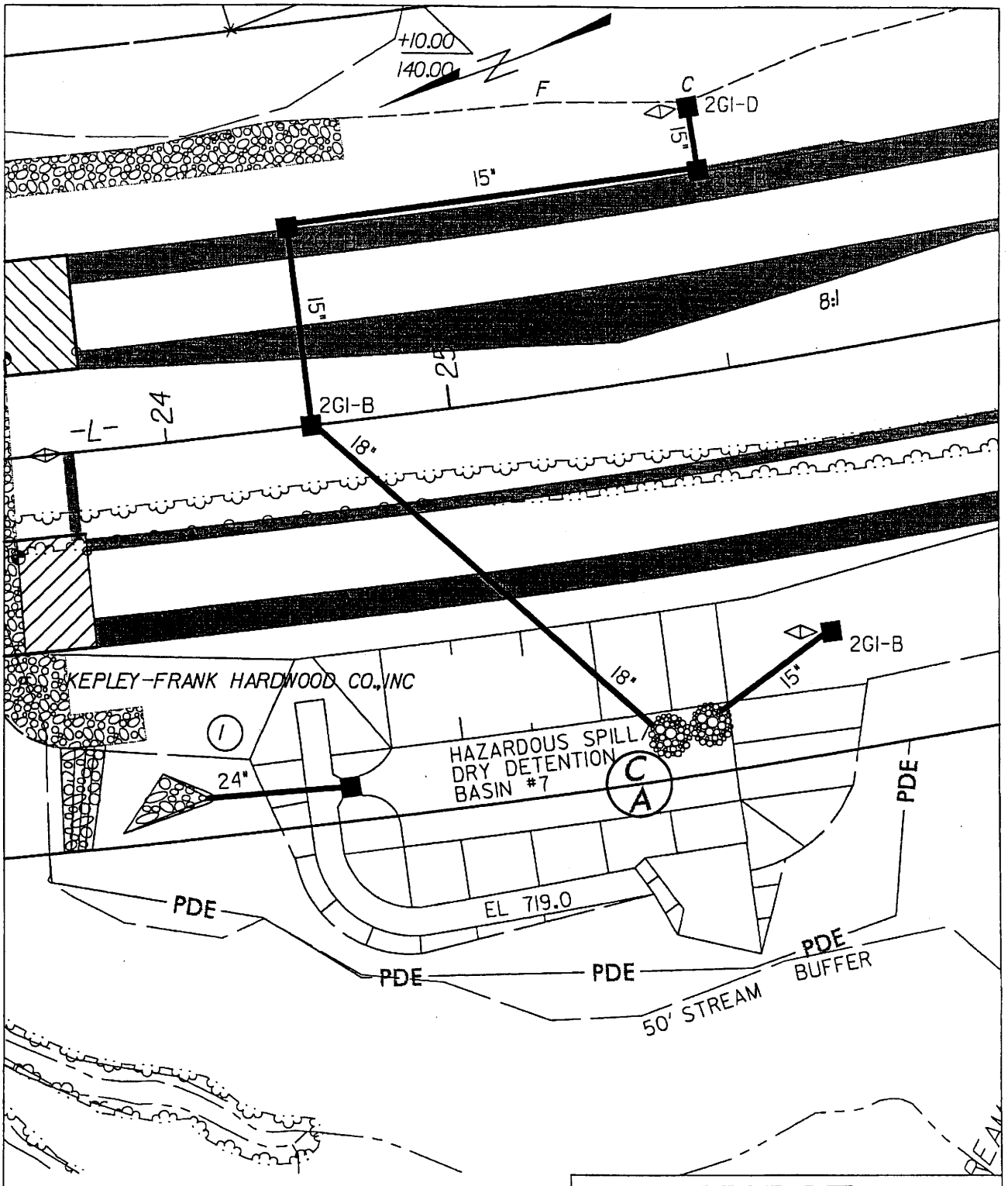
PLAN VIEW SITE 1

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** 46 1.106



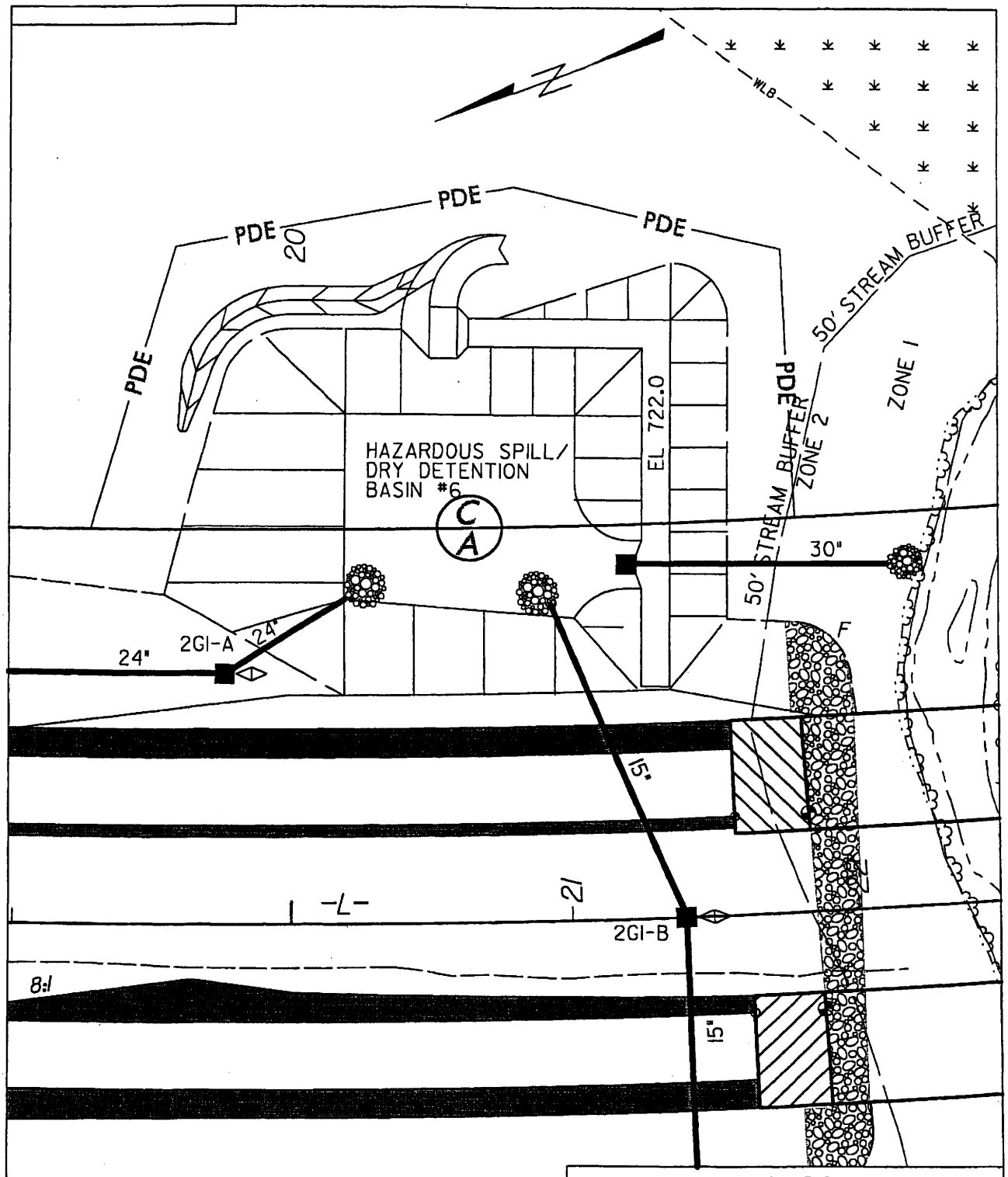
PLAN VIEW SITE 1

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 11 06



PLAN VIEW SITE 1

NCDOT

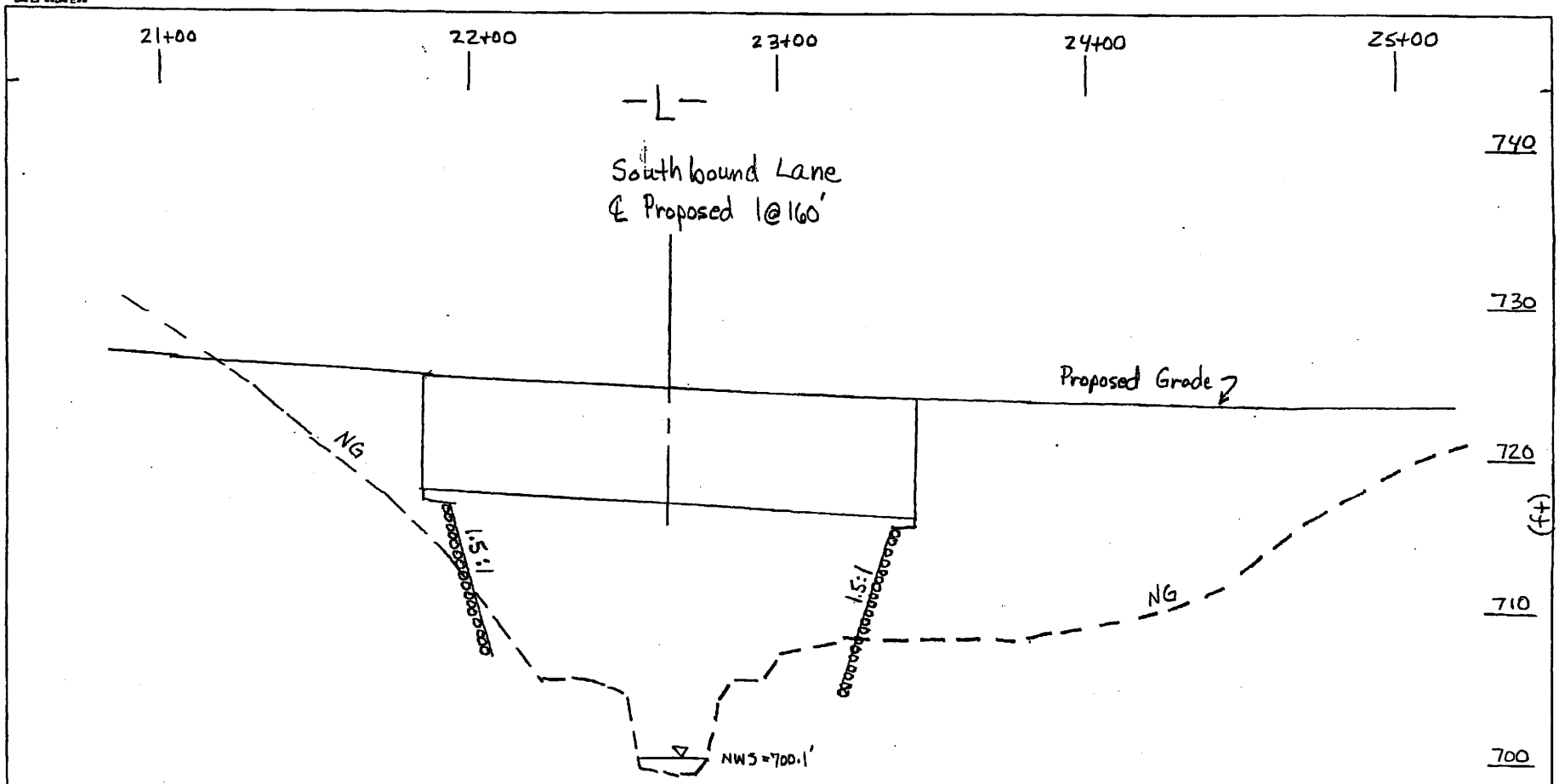
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

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

SHEET 7 **OF** 46 / 106



PROFILE VIEW
SITE 1

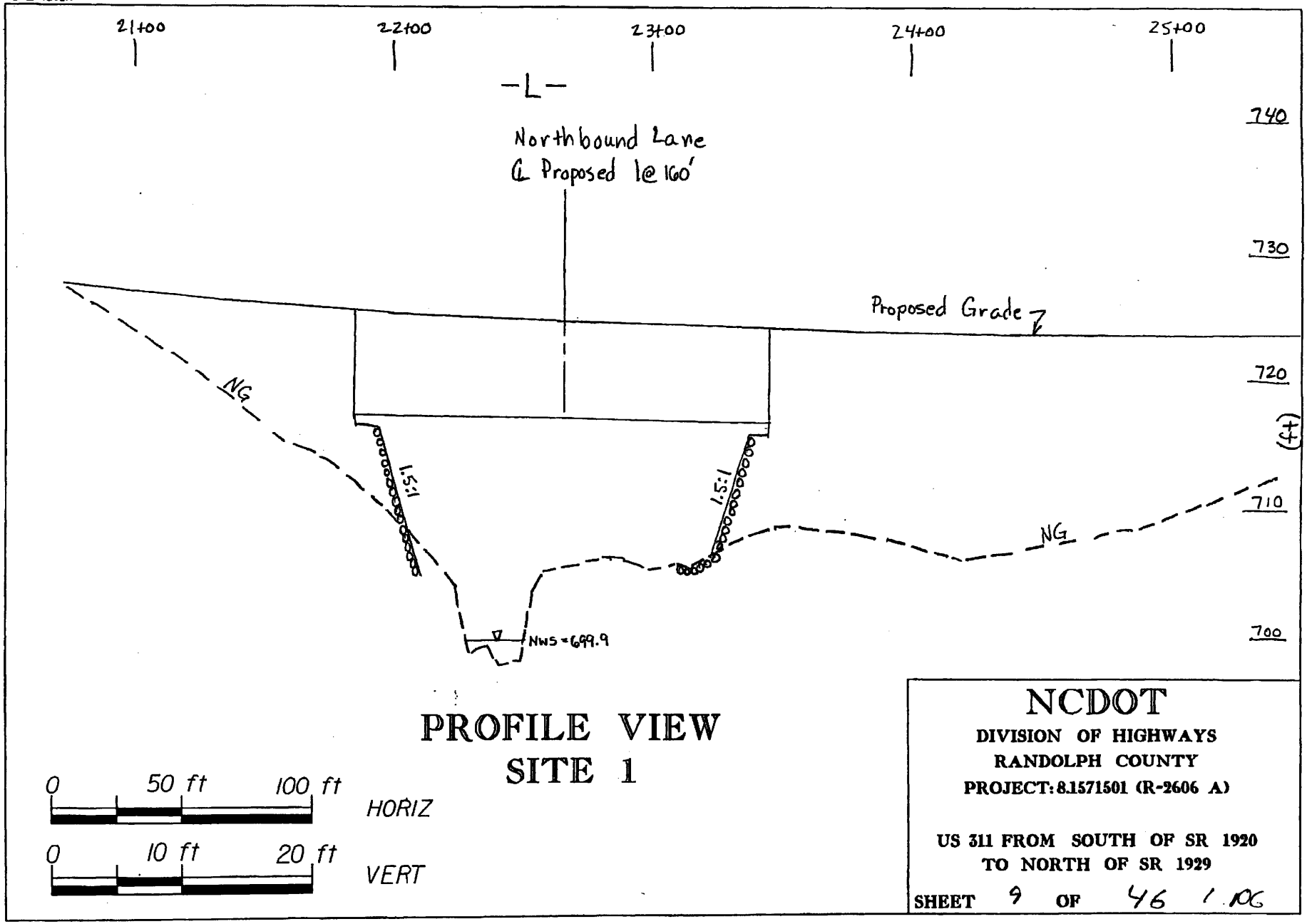
0 50 ft 100 ft HORIZ

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 8 **OF** 46 1106



PROFILE VIEW
SITE 1

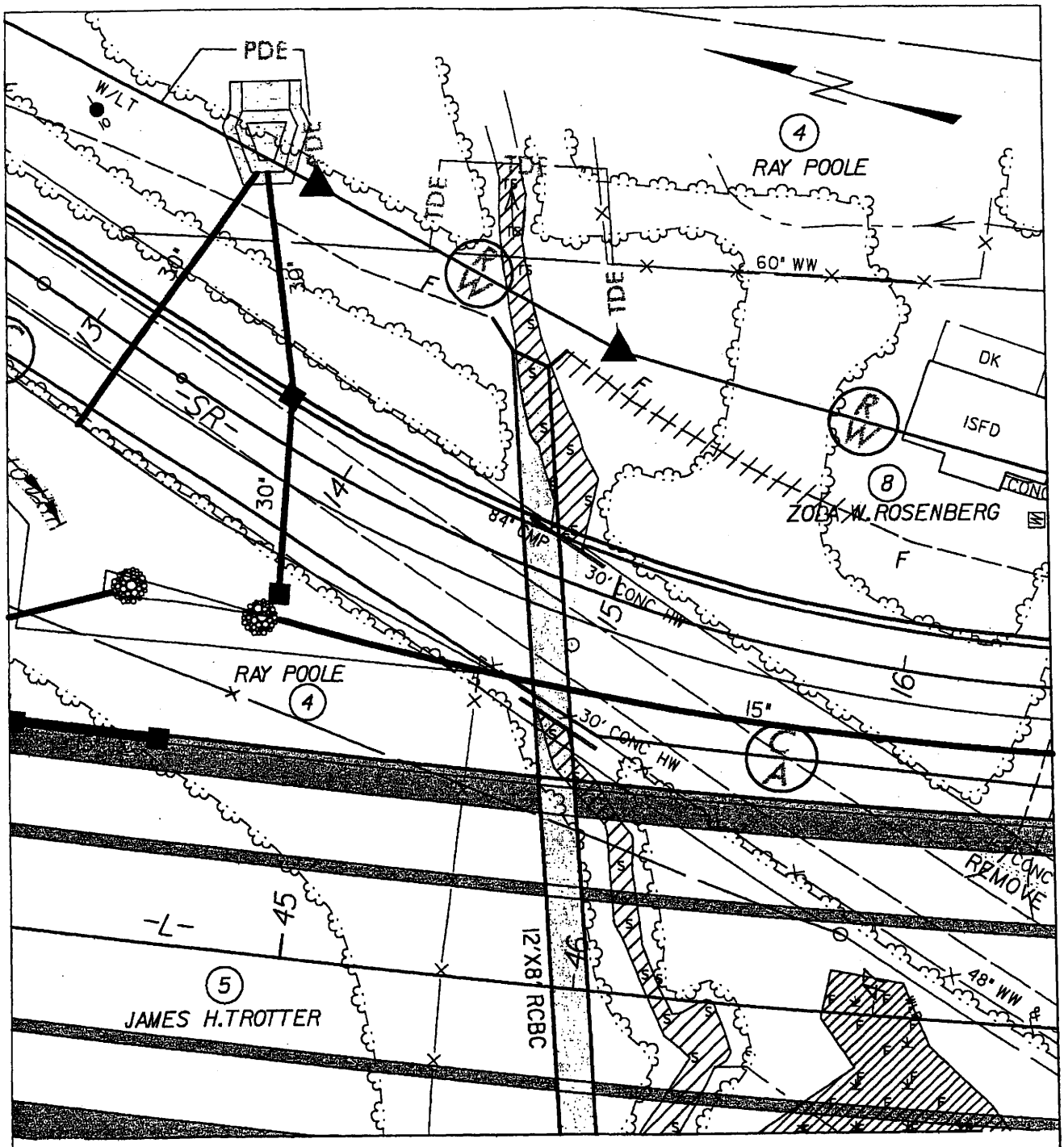
0 50 ft 100 ft HORIZ

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



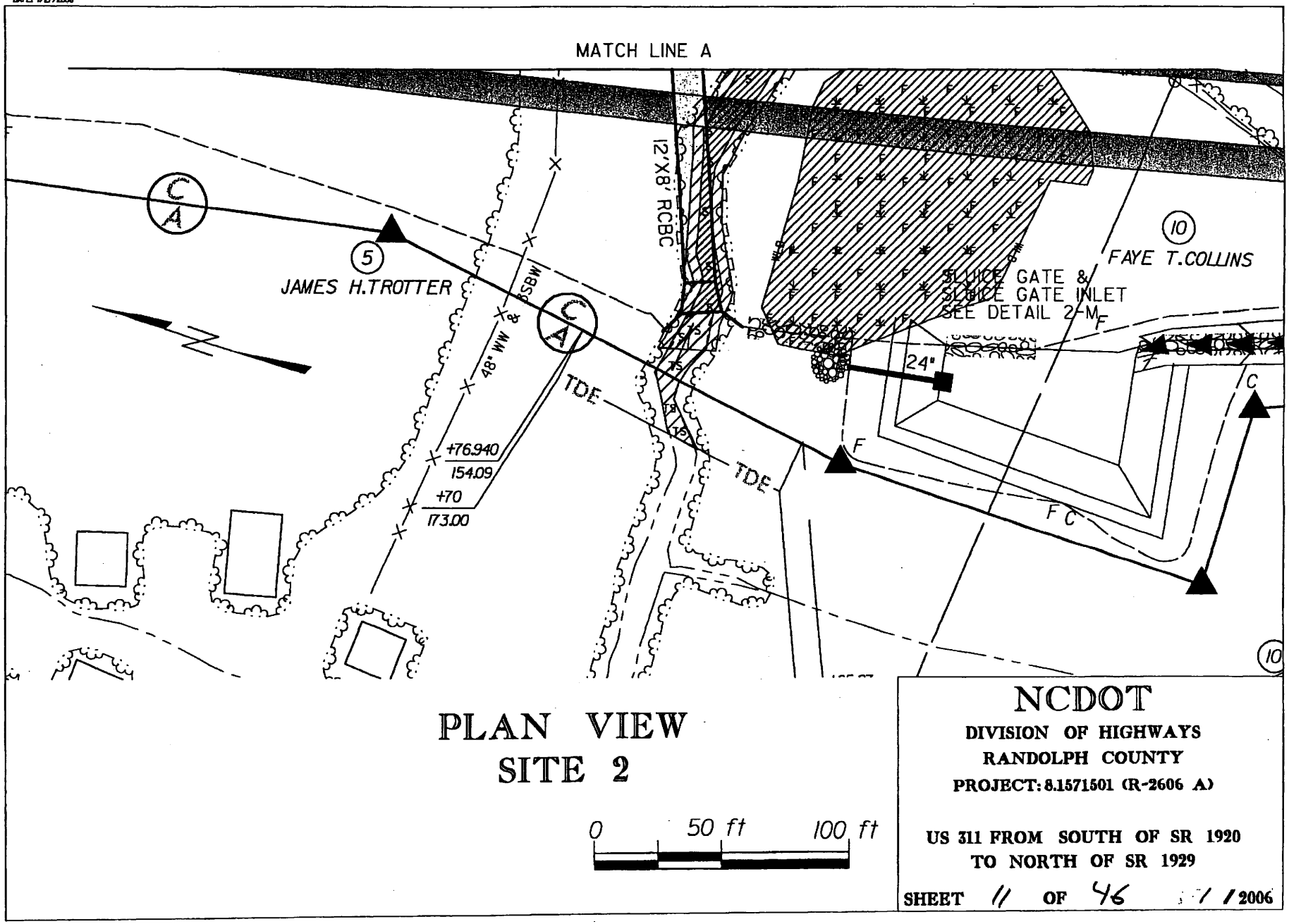
PLAN VIEW SITE 2

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**

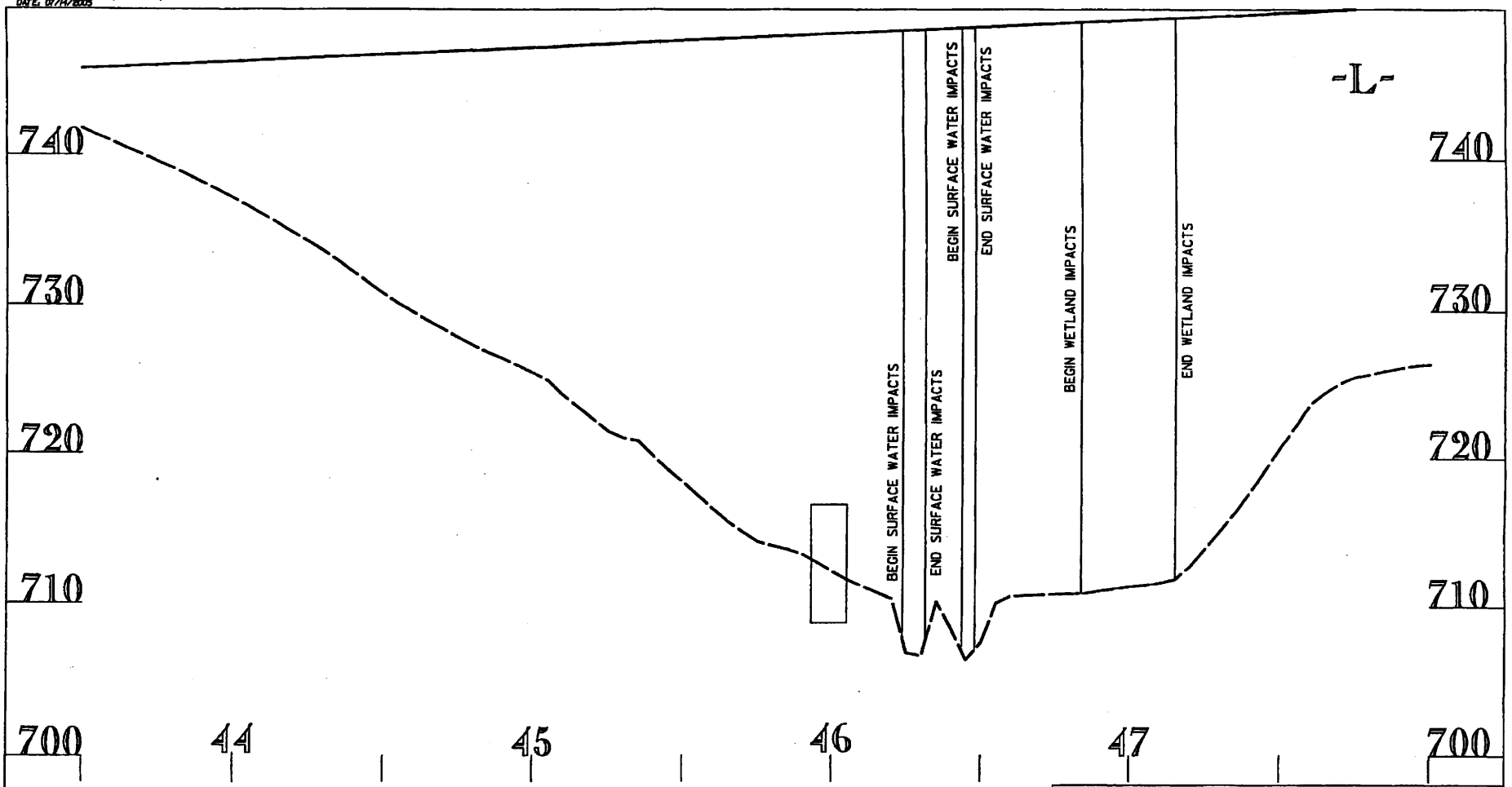


PLAN VIEW
SITE 2

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 1 / 1 / 2006



PROFILE VIEW
SITE 2

HORIZONTAL SCALE 0 50 ft 100 ft

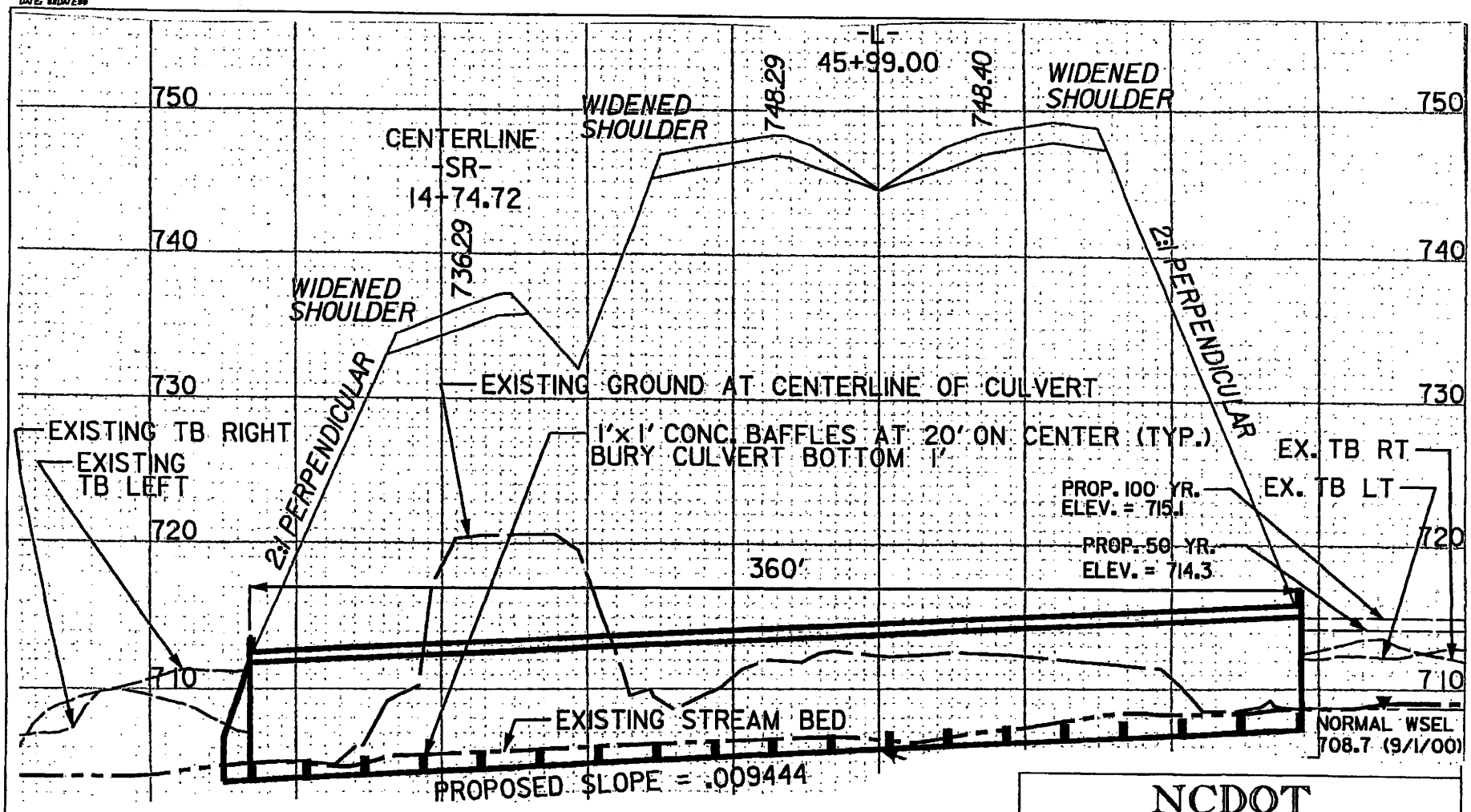
VERTICAL SCALE 0 10 ft 20 ft

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

352



0 50 ft 100 ft HORIZ

0 10 ft 20 ft VERT

PROFILE VIEW
SITE 2

NCDOT

DIVISION OF HIGHWAYS

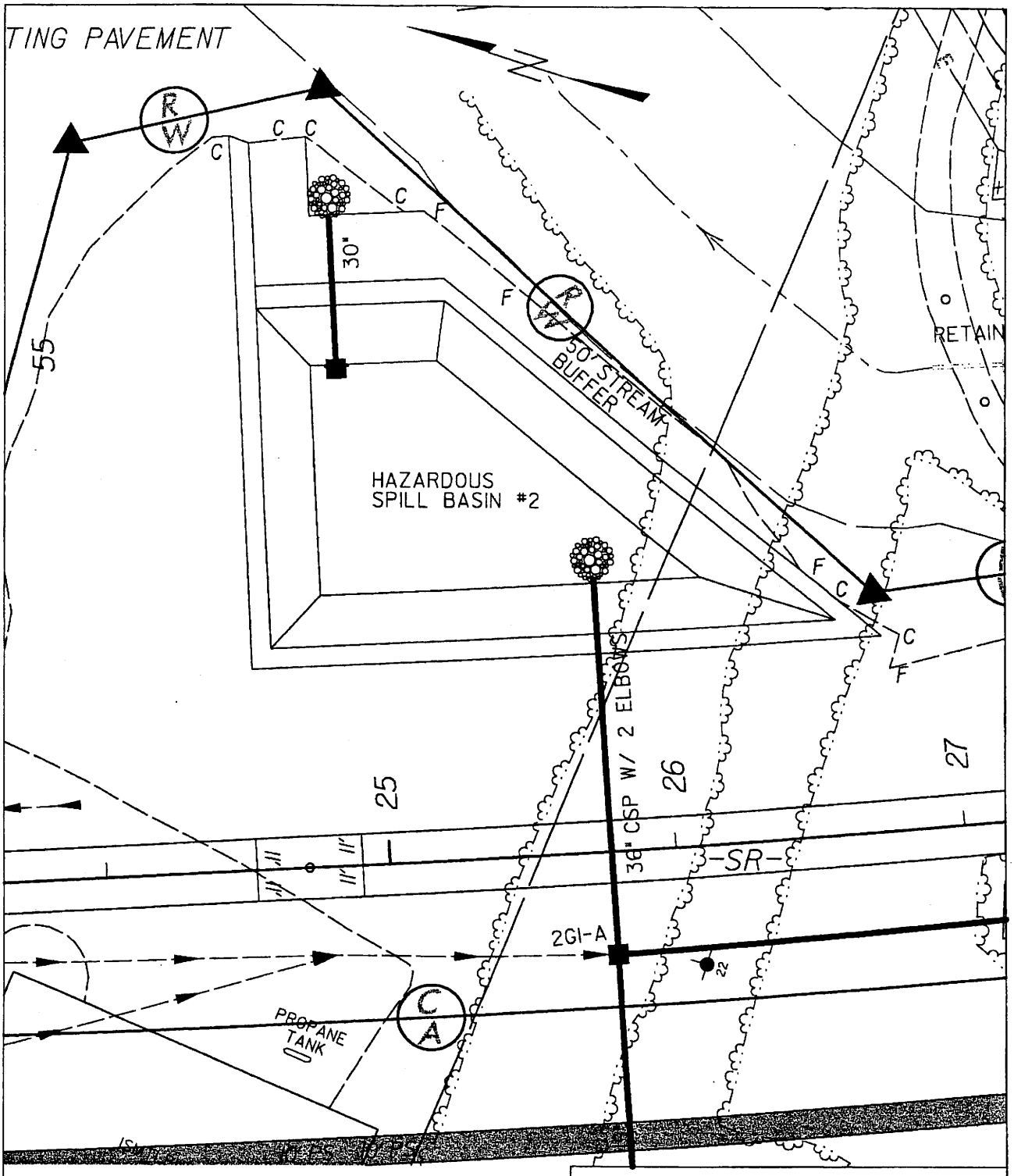
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

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

SHEET 13 **OF** 46 1/06

353



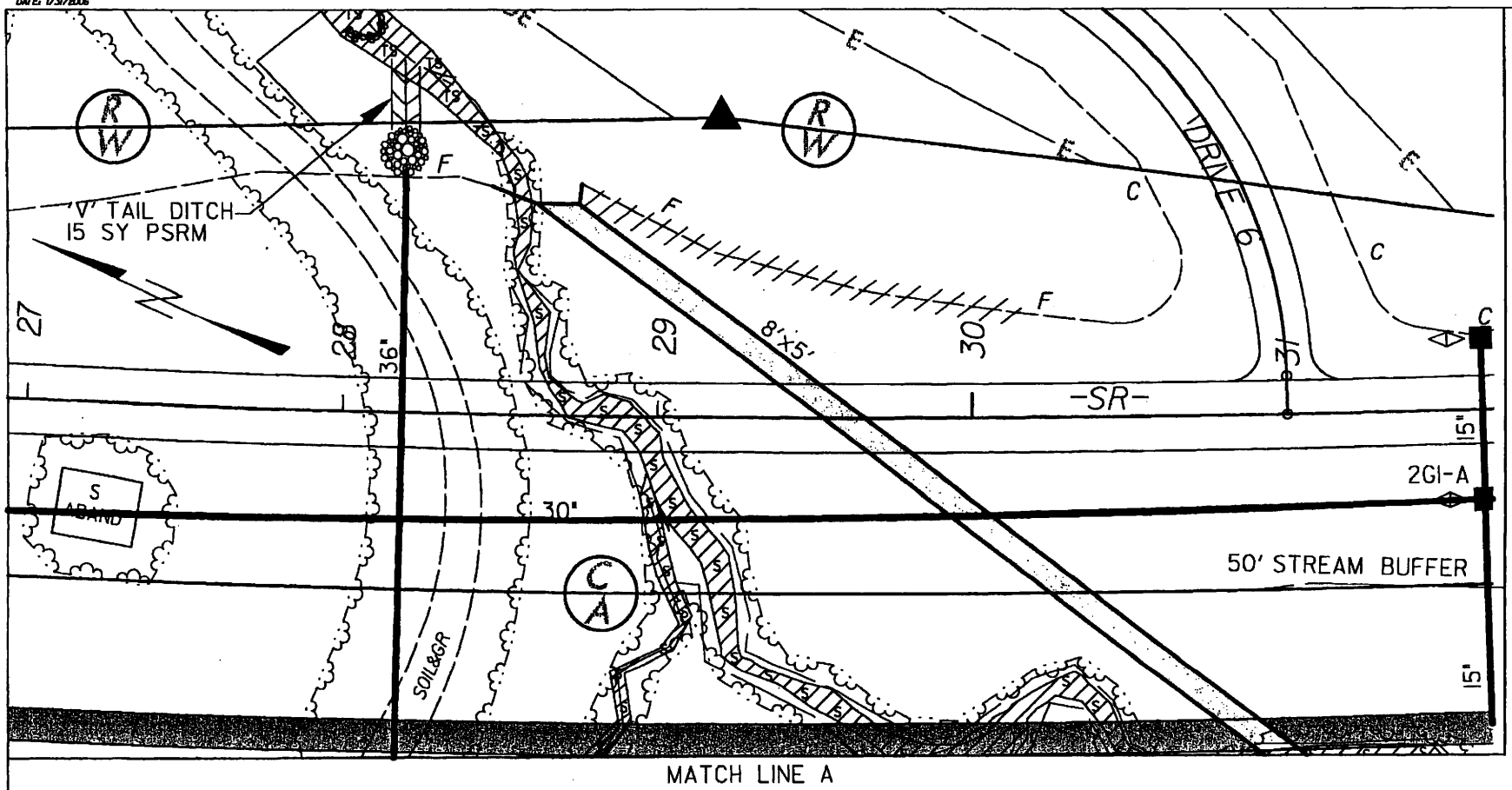
PLAN VIEW SITE 3

NCDOT

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

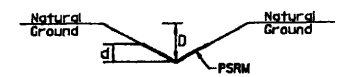
US 311 FROM SOUTH OF SR 1920 TO NORTH OF SR 1929

SHEET 14 **OF** 96 **1 / 2006**



PLAN VIEW
SITE 3

DETAIL DD
"V" TAIL DITCH w/PSRM
(NOT TO SSCALE)



Max. d = 1' Ft. Min. D = 1' Ft.

Type of Liner = PERMANENT SOIL REINFORCED MATTING

-L- 59+48 L

0 50 ft 100 ft

NCDOT

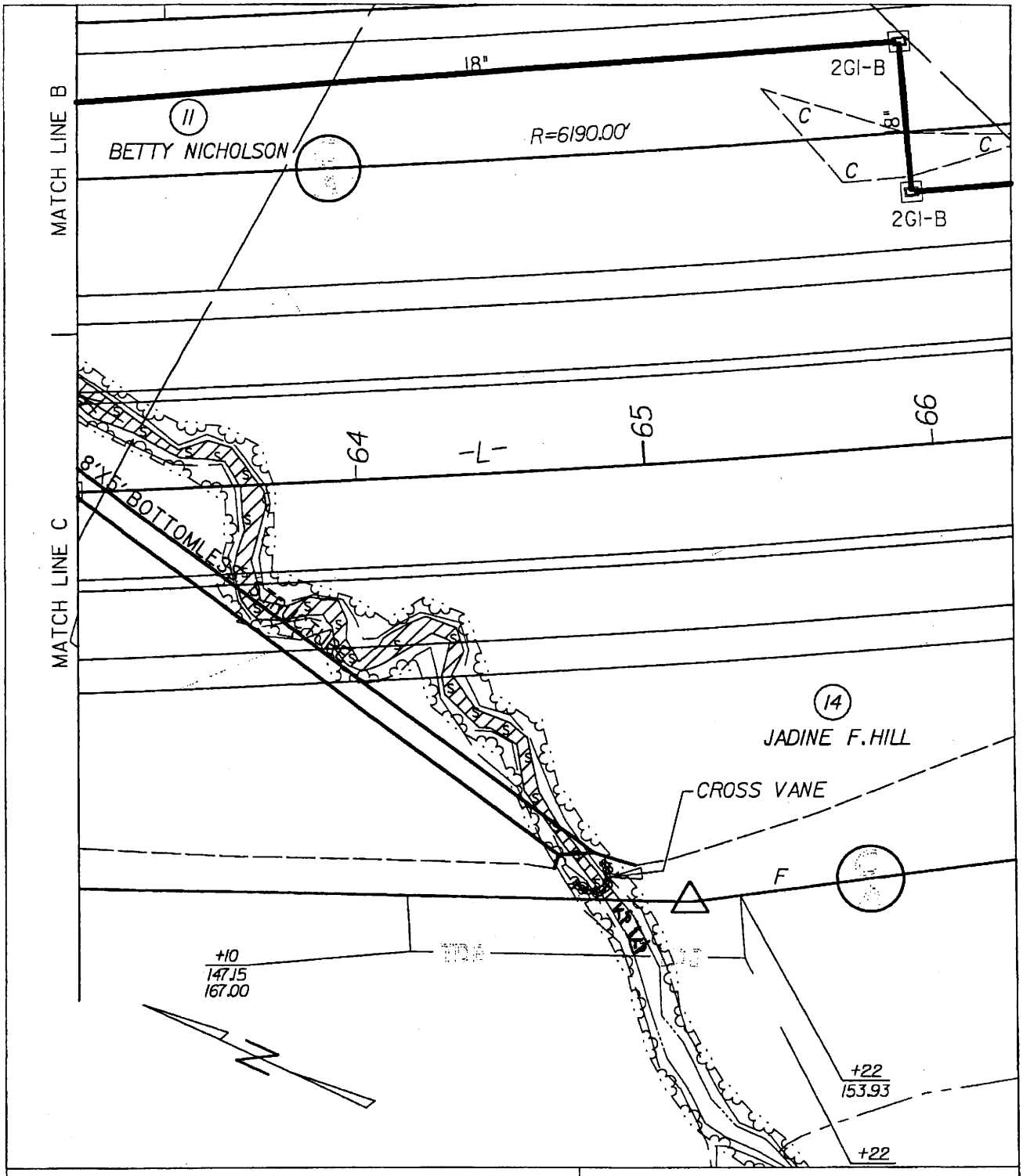
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

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

SHEET 15 **OF** 46 1/1/2006



0 50 ft 100 ft

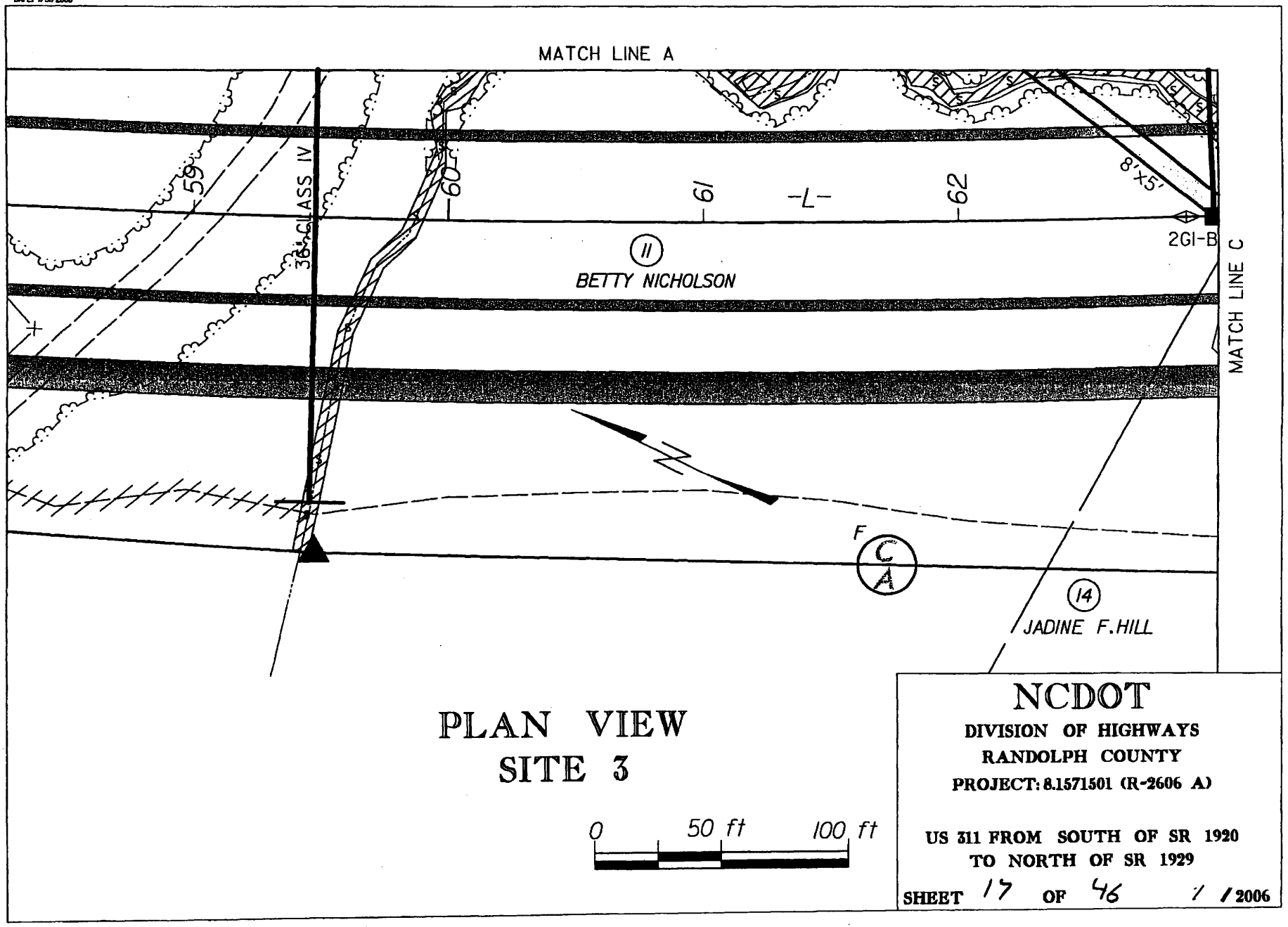
PLAN VIEW SITE 3

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 1 / 2006

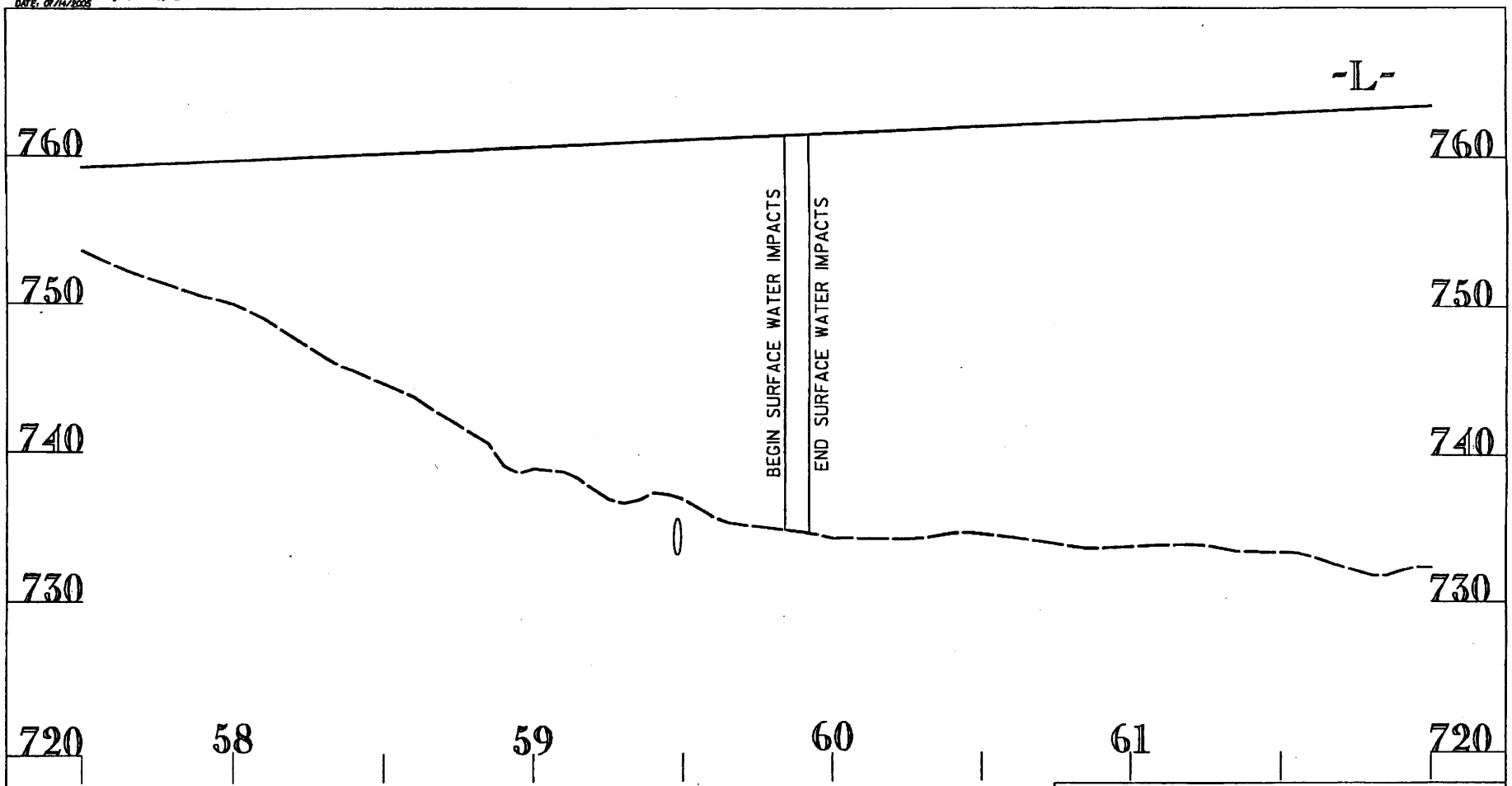


PLAN VIEW
SITE 3

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 / 1 **2006**



PROFILE VIEW
SITE 3

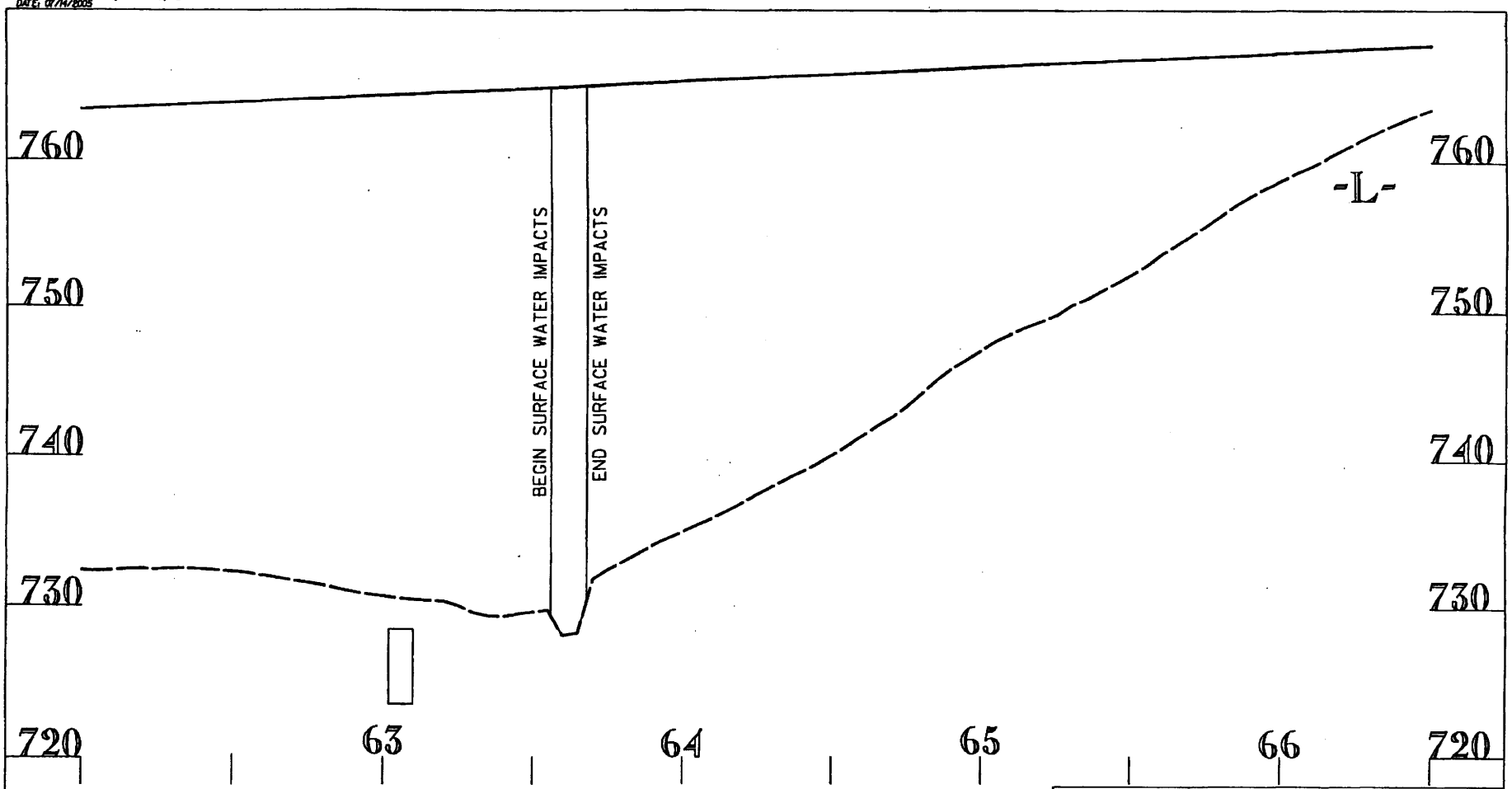
HORIZONTAL SCALE 0 50 ft 100 ft

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** 46 / 108



PROFILE VIEW
SITE 3

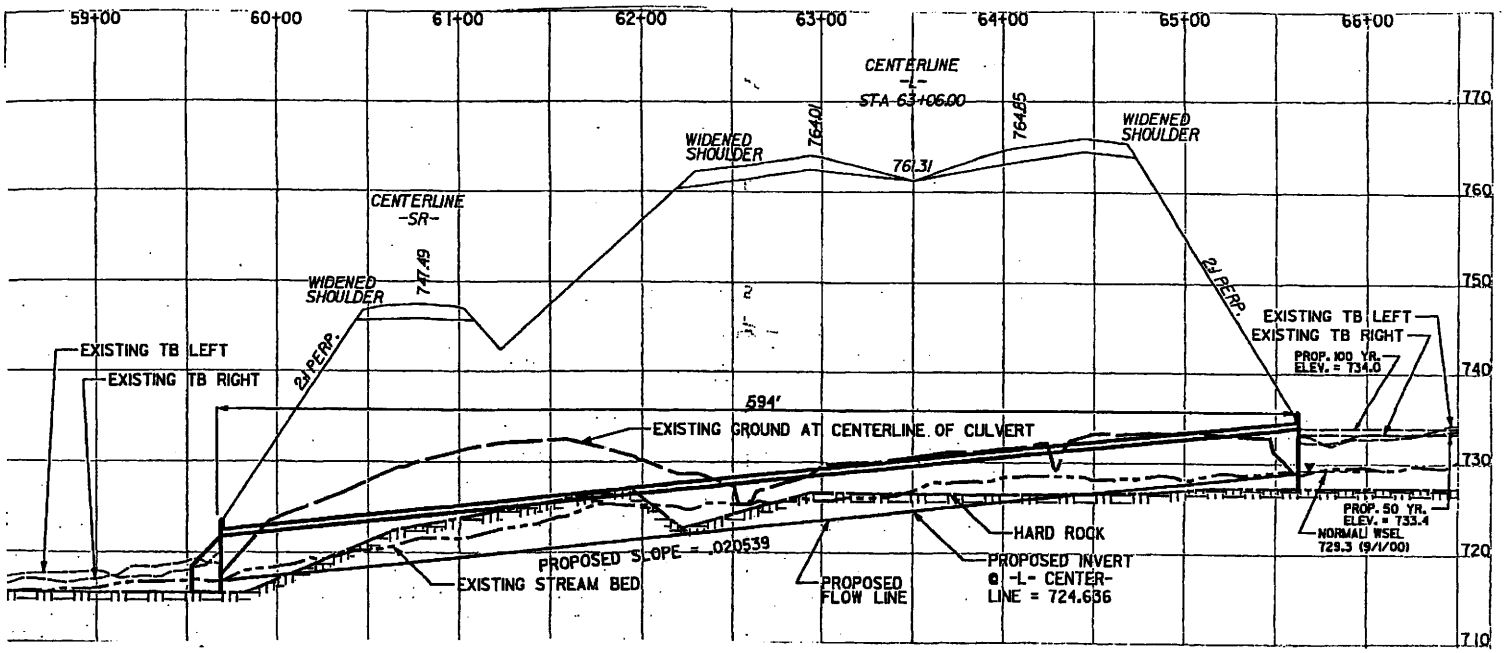
HORIZONTAL SCALE 0 50 ft 100 ft

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 / 106



0 100 ft 200 ft HORIZ

0 20 ft 40 ft VERT

PROFILE VIEW
SITE 3

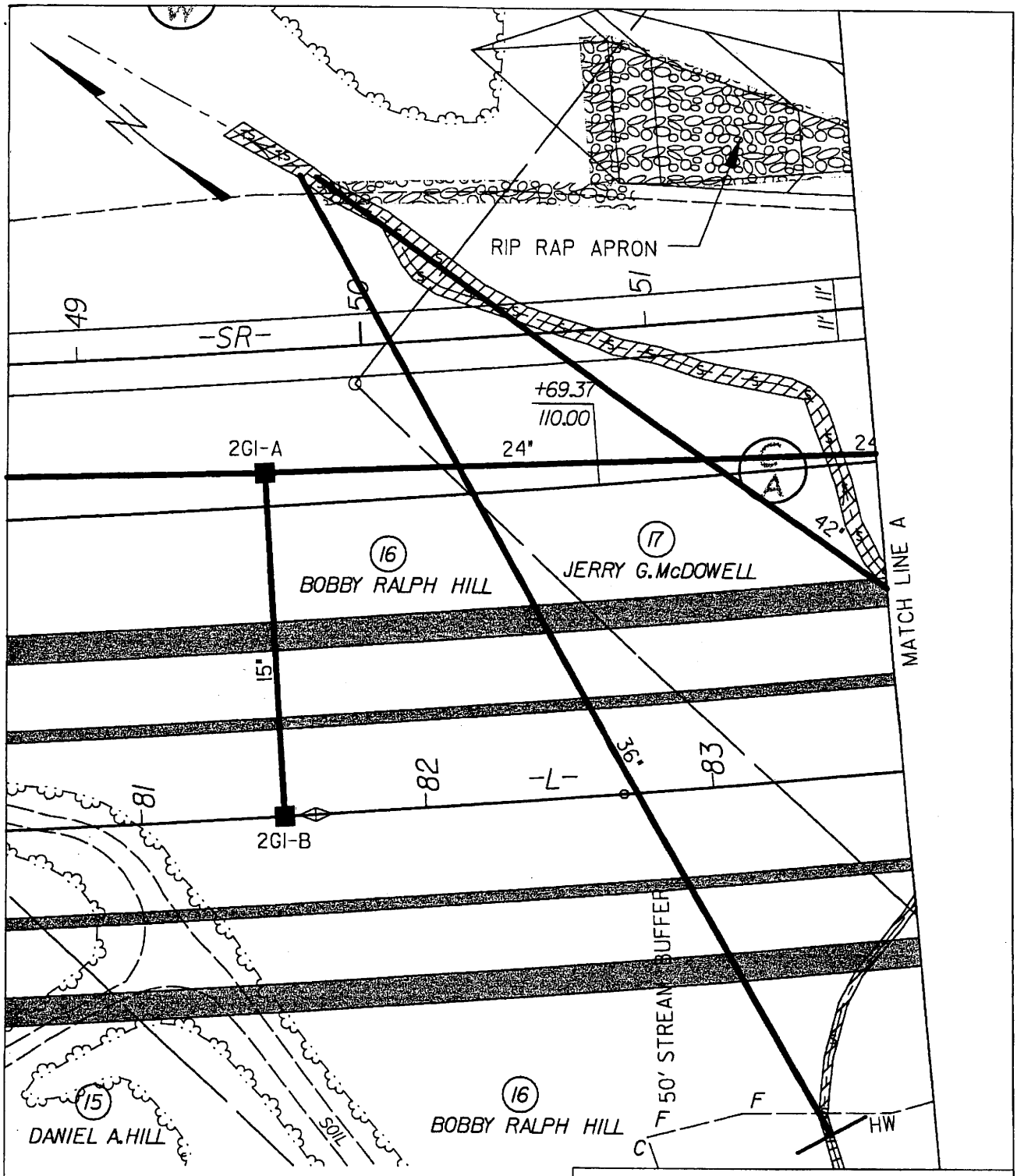
NCDOT

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

360



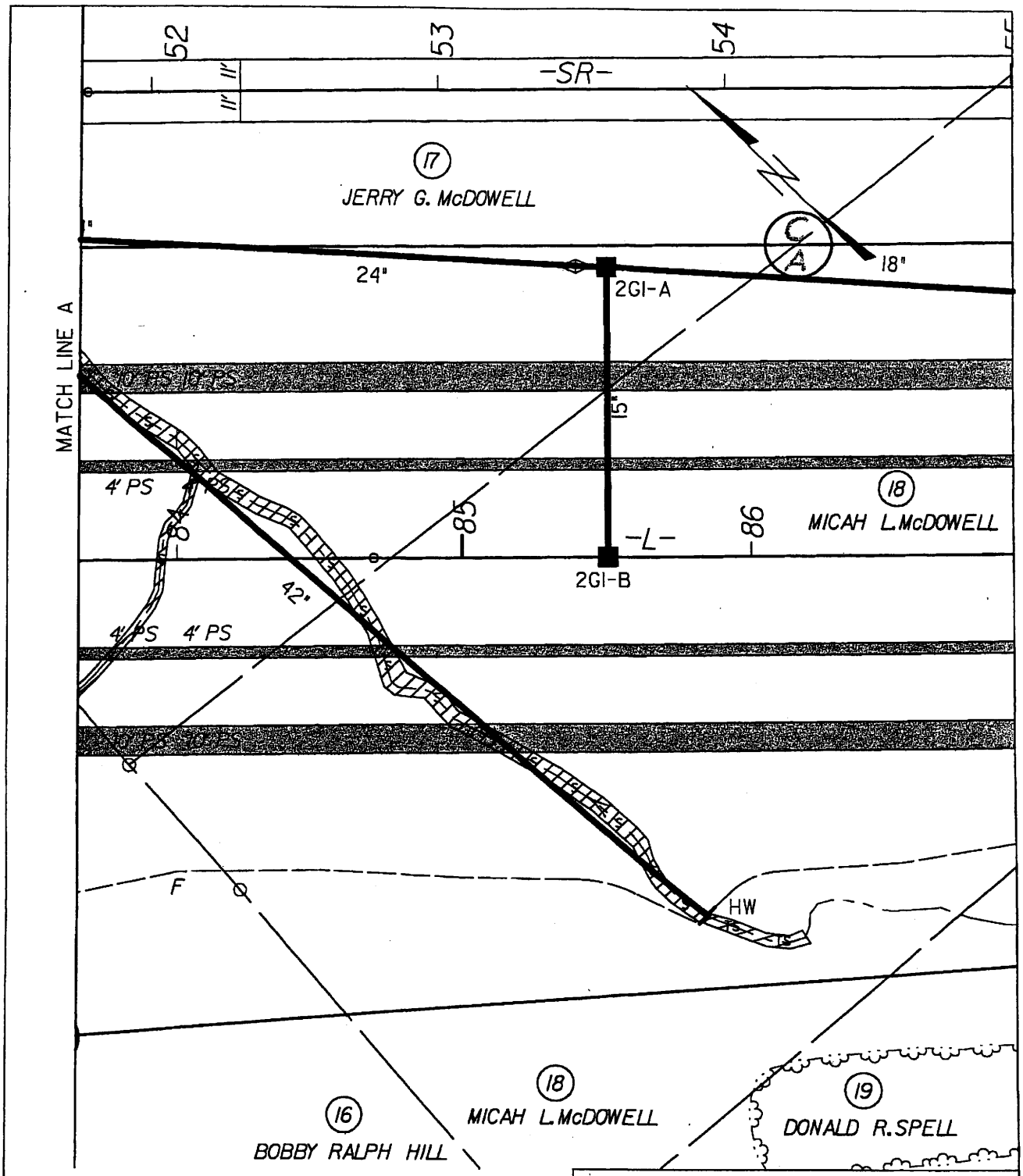
PLAN VIEW SITE 4

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 , 1 / **2006**



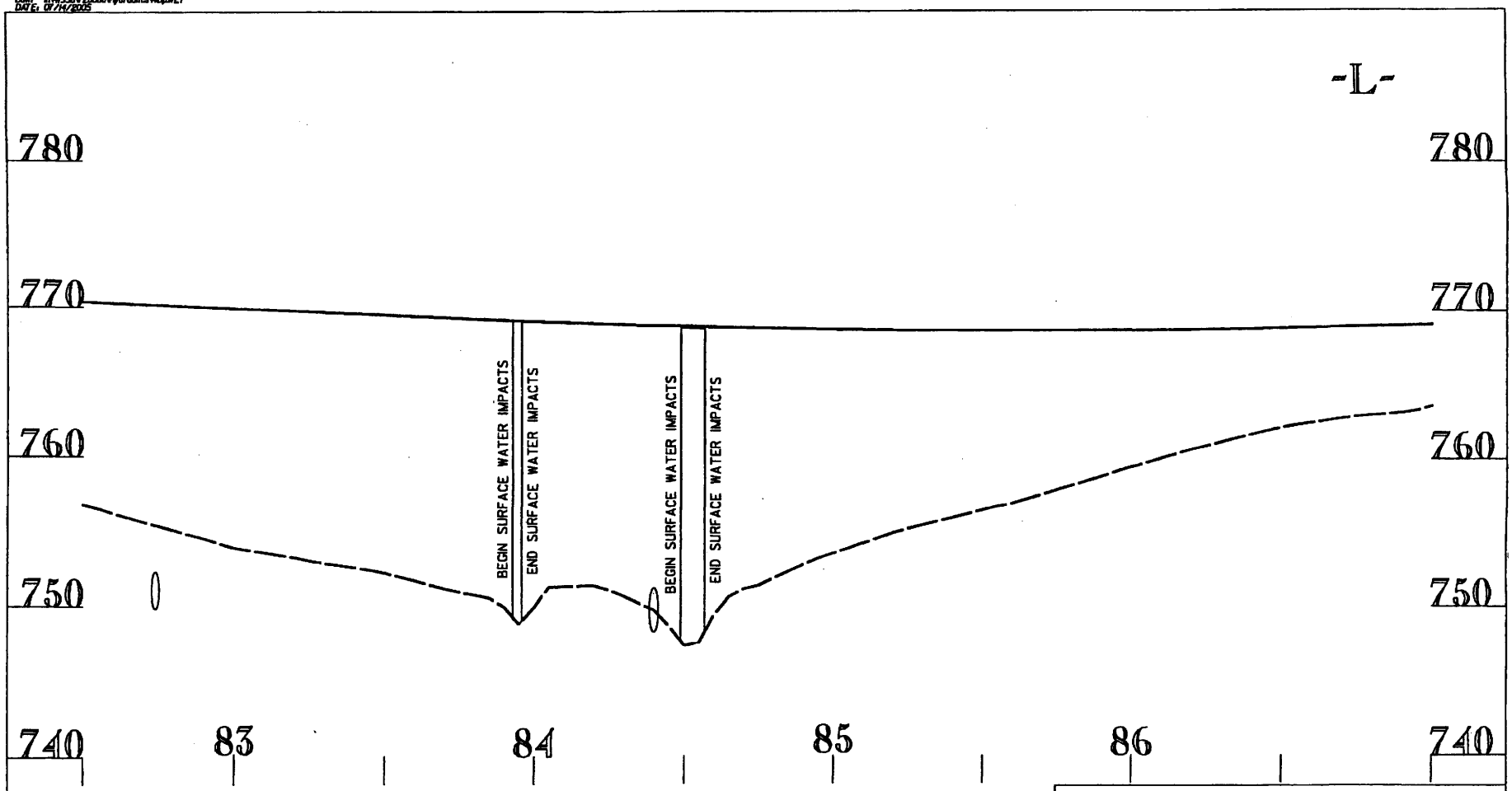
PLAN VIEW SITE 4

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: rtmiy
DGN: h:\4556v2606\Hydraulics\d0pltET
DATE: 07/14/2005



PROFILE VIEW
SITE 4

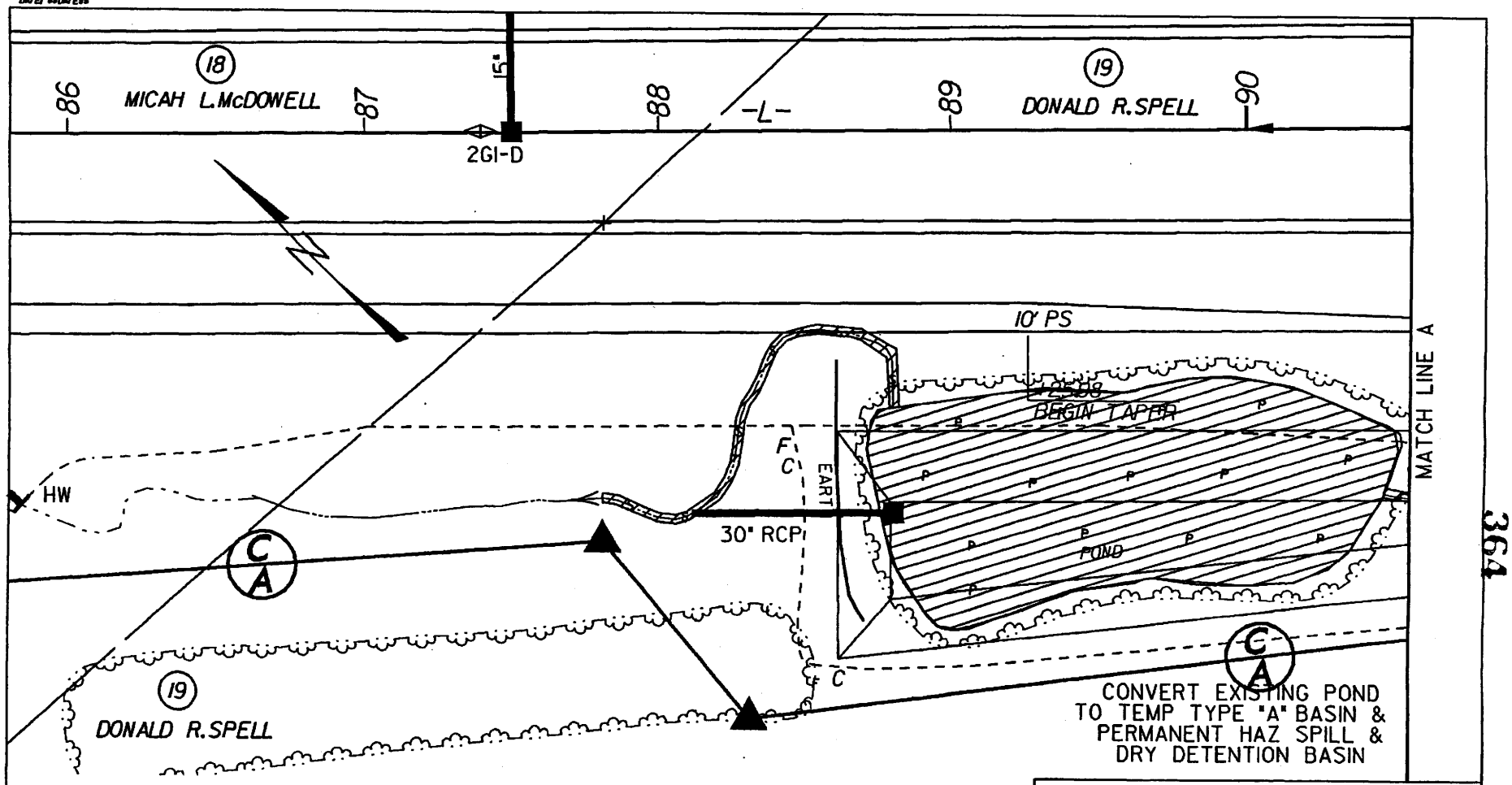
HORIZONTAL SCALE 0 50 ft 100 ft

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 1/1/2006



PLAN VIEW
SITE 5

0 100 ft 200 ft HORIZ

0 20 ft 40 ft VERT

NCDOT

DIVISION OF HIGHWAYS

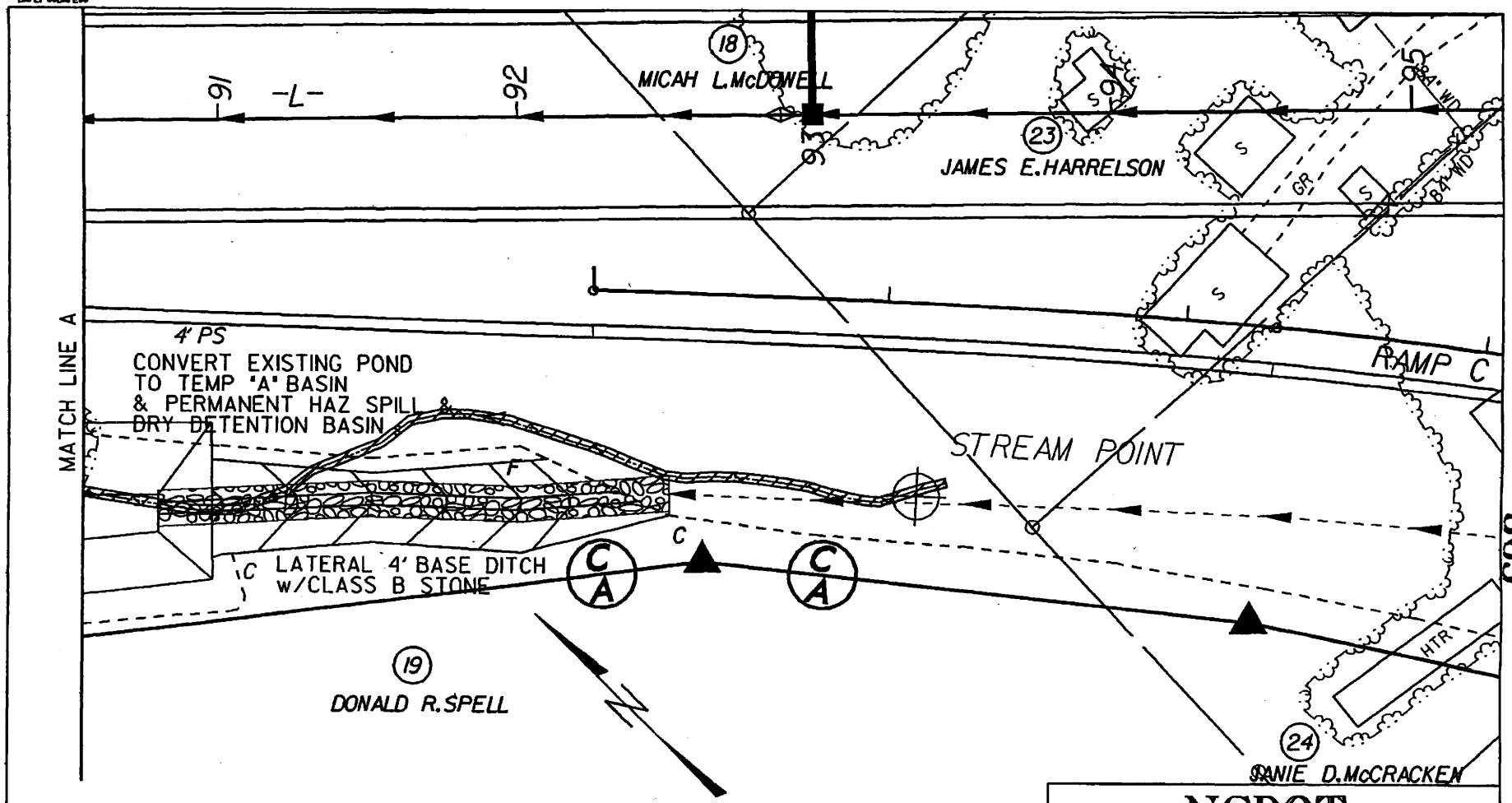
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

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

SHEET 24 **OF** 46

364



PLAN VIEW
SITE 5

0 100 ft 200 ft HORIZ

0 20 ft 40 ft VERT

NCDOT

DIVISION OF HIGHWAYS

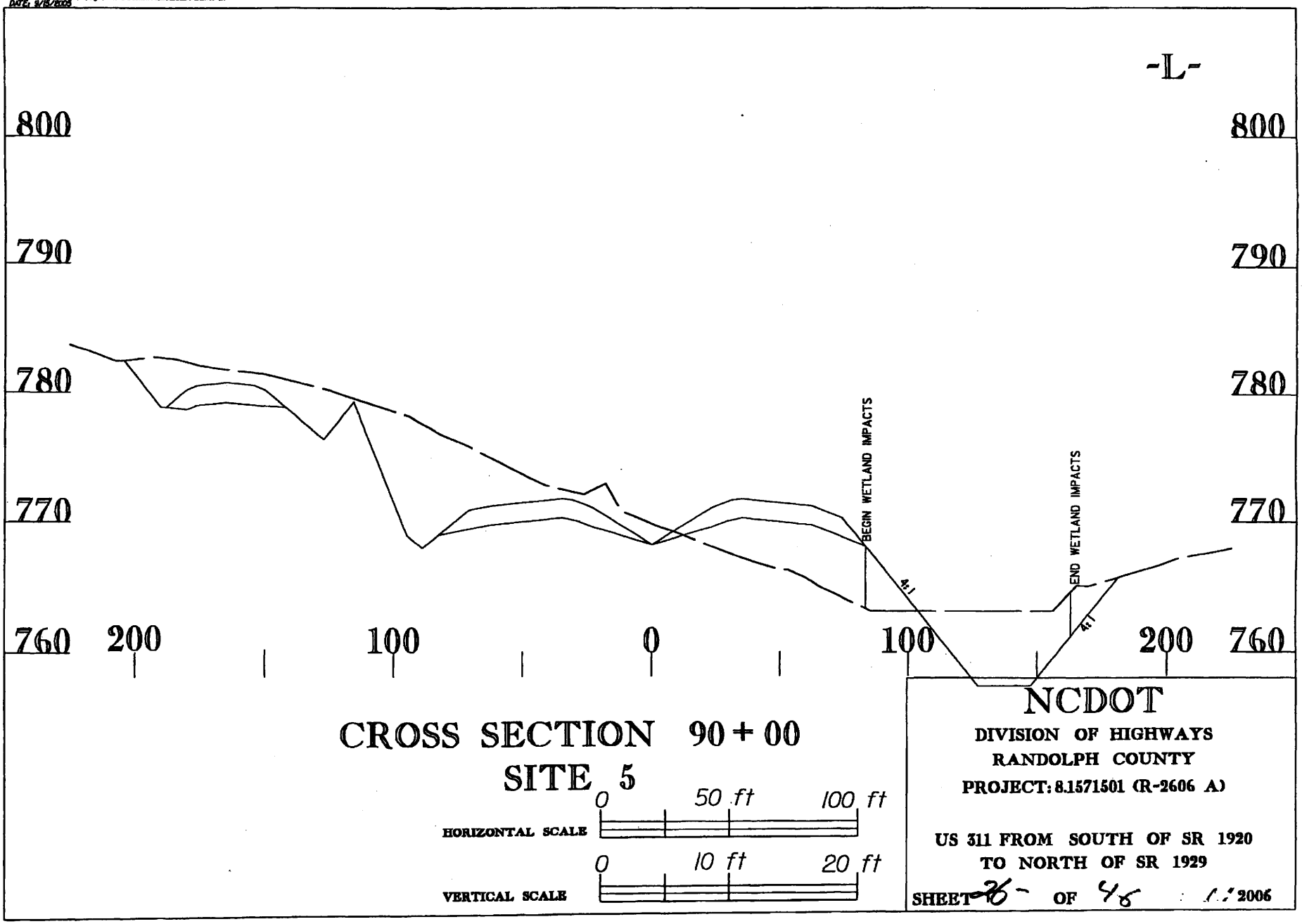
RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

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

SHEET 25 **OF** 46 1/06

365



CROSS SECTION 90 + 00
SITE 5

HORIZONTAL SCALE 0 50 ft 100 ft

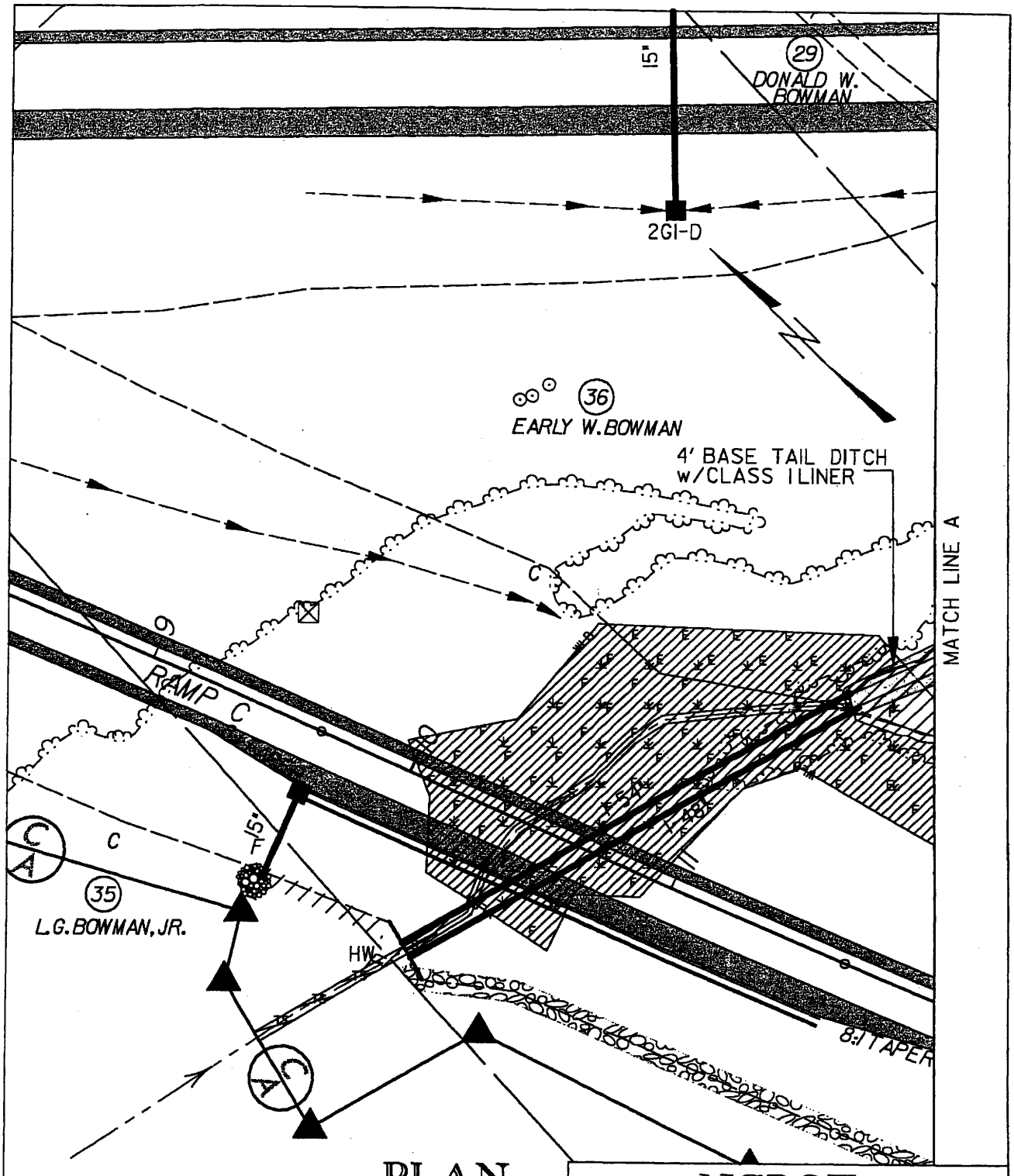
VERTICAL SCALE 0 10 ft 20 ft

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 36 OF 46 1.1 2006

366

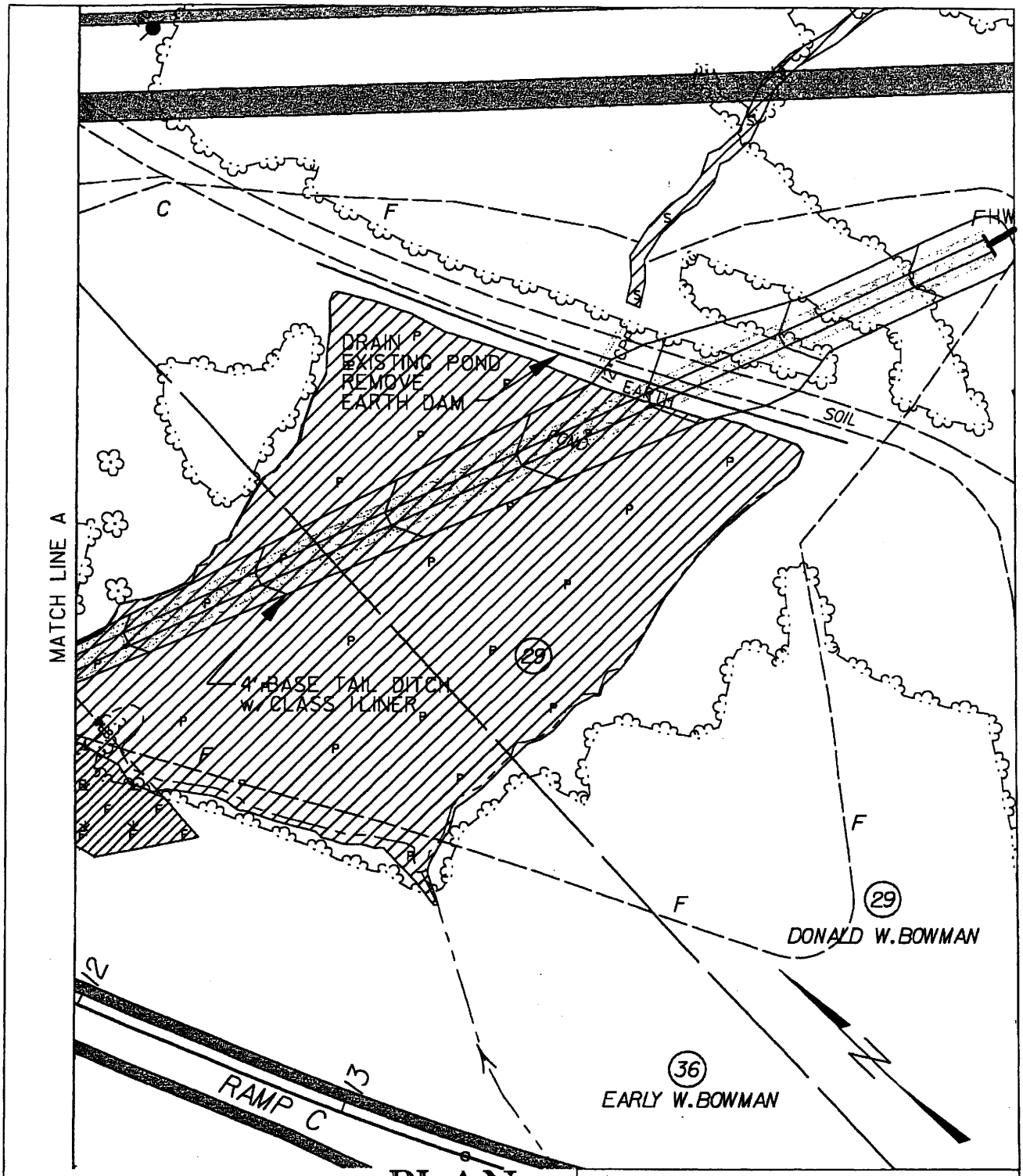


PLAN VIEW SITE 6

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 30 OF 46 1/2006



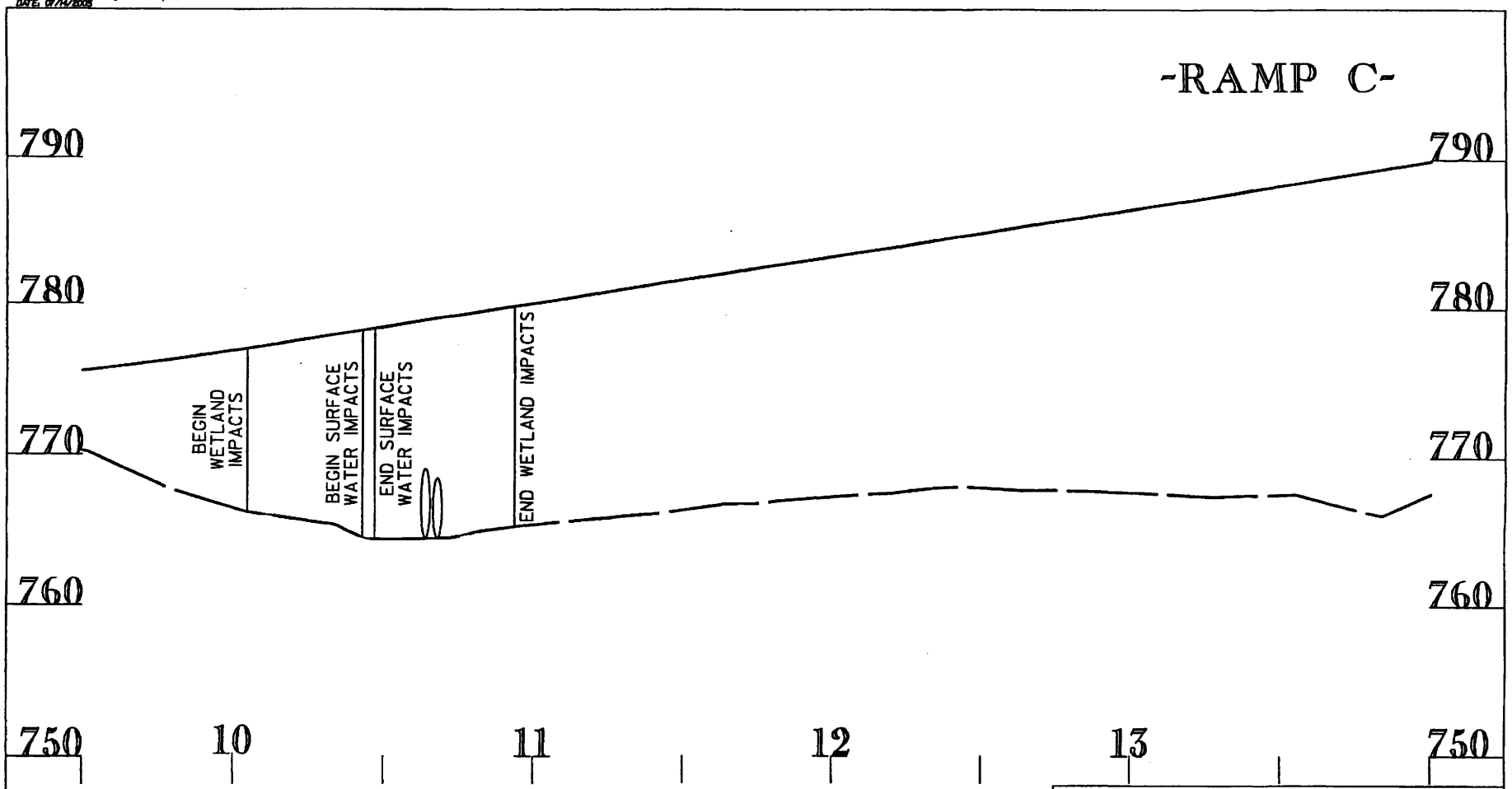
PLAN VIEW SITE 6

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 28 OF 46 1/2006



PROFILE VIEW
SITE 6

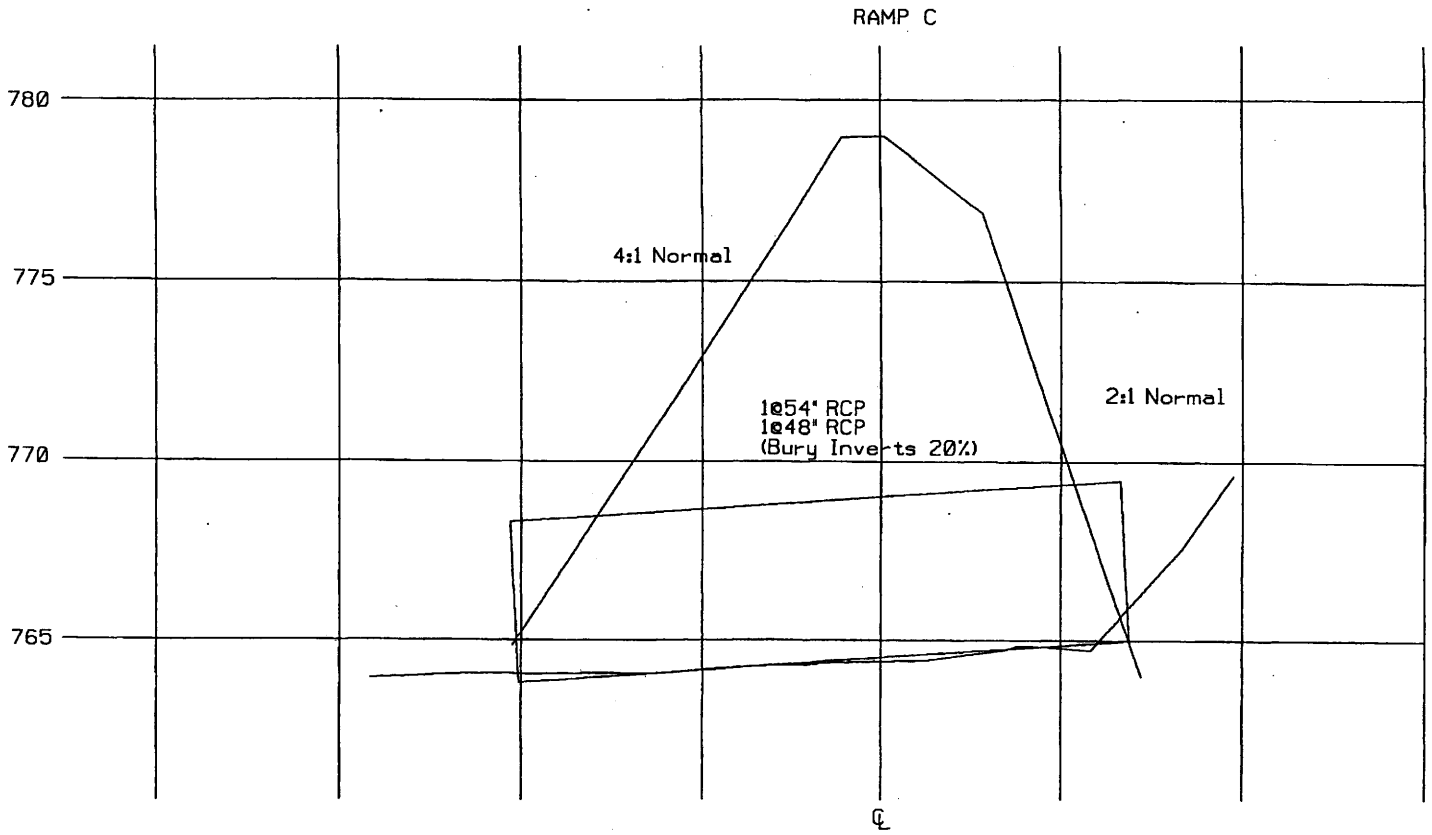
HORIZONTAL SCALE 0 50 ft 100 ft

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 29 OF 46 1 / 2006



370

0 50 ft 100 ft HORIZ

0 5 ft 10 ft VERT

PROFILE VIEW
SITE 6

NCDOT

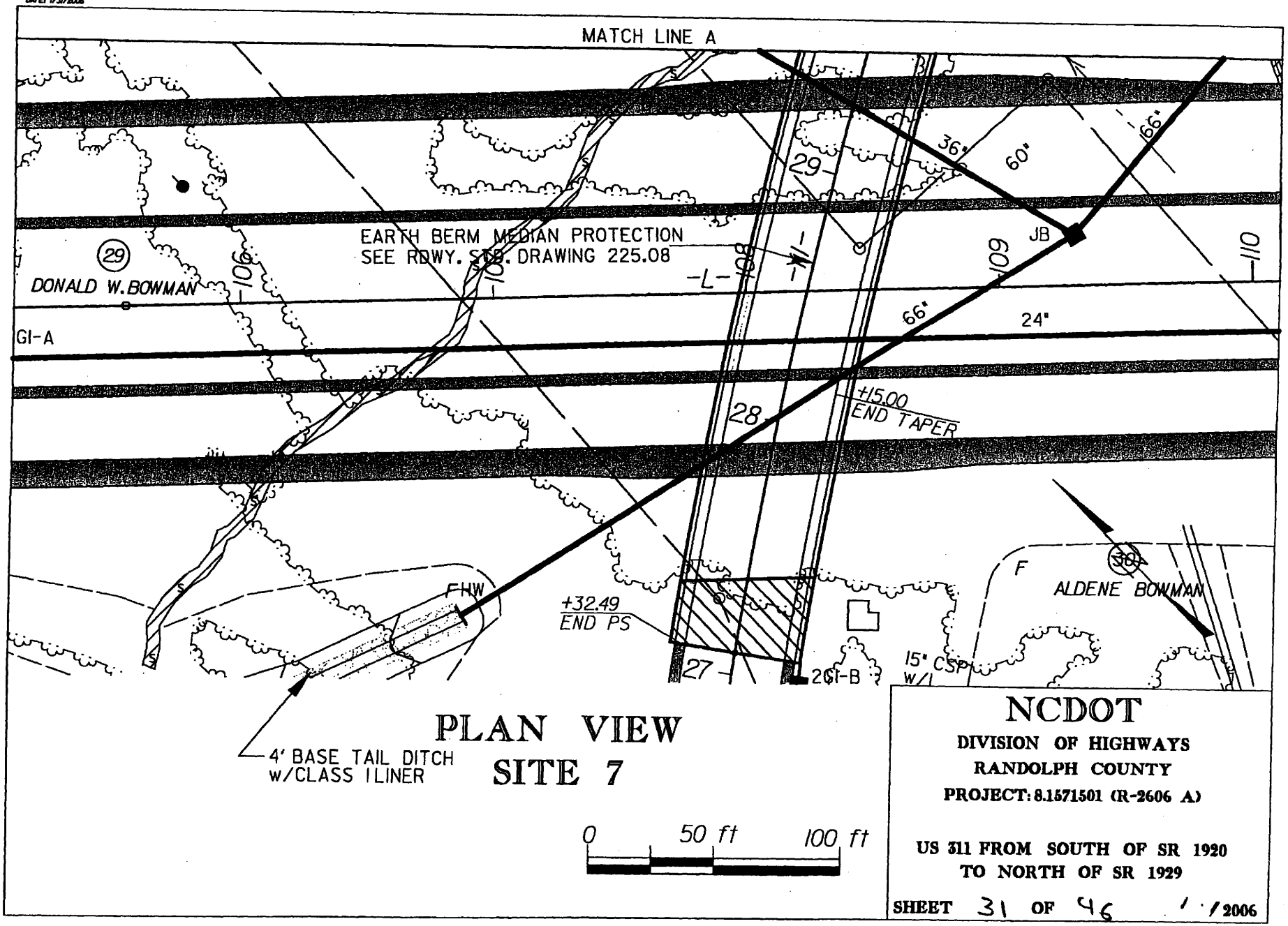
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

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

SHEET 30 **OF** 46 1/08

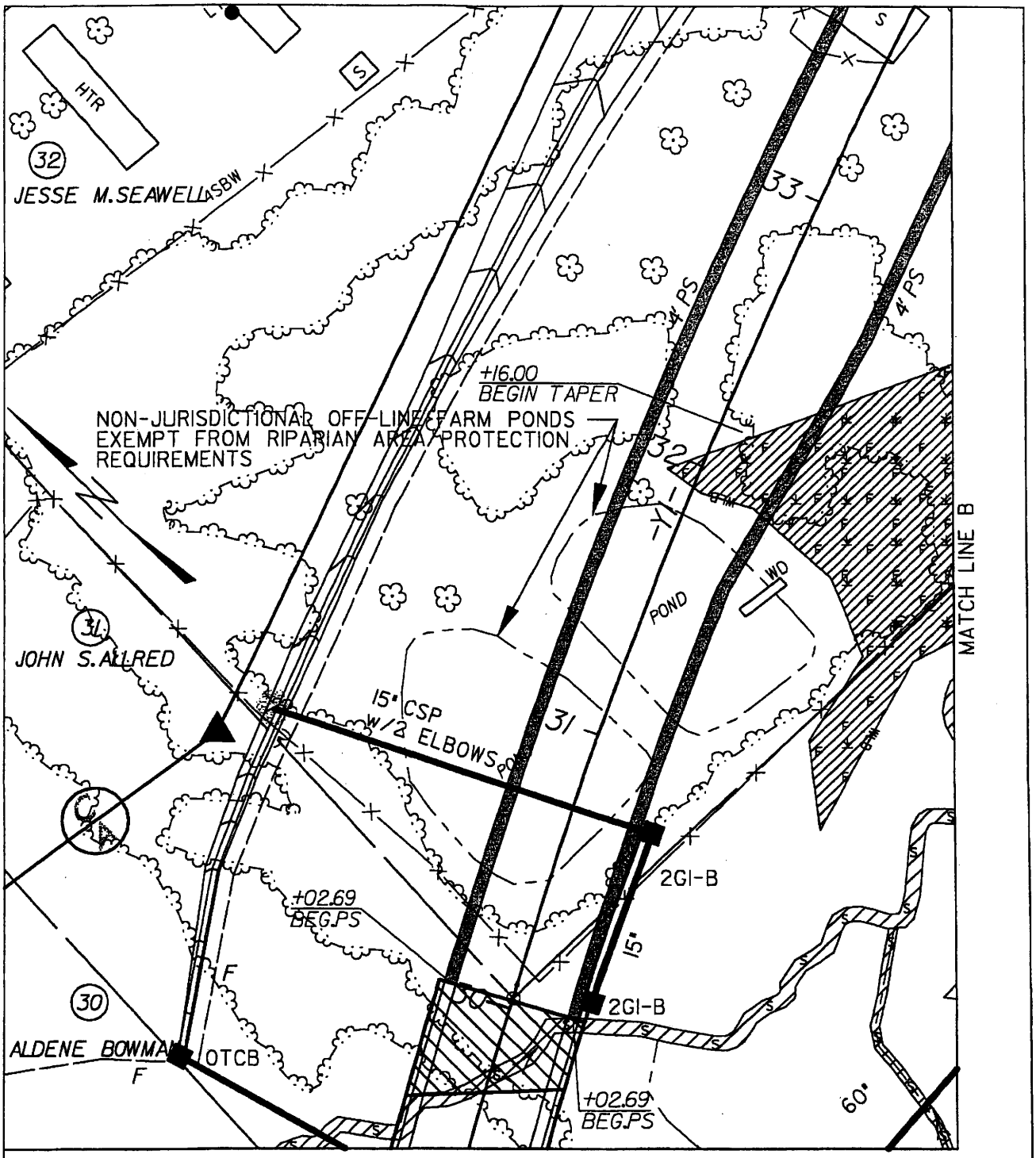


PLAN VIEW
SITE 7

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 1/1/2006



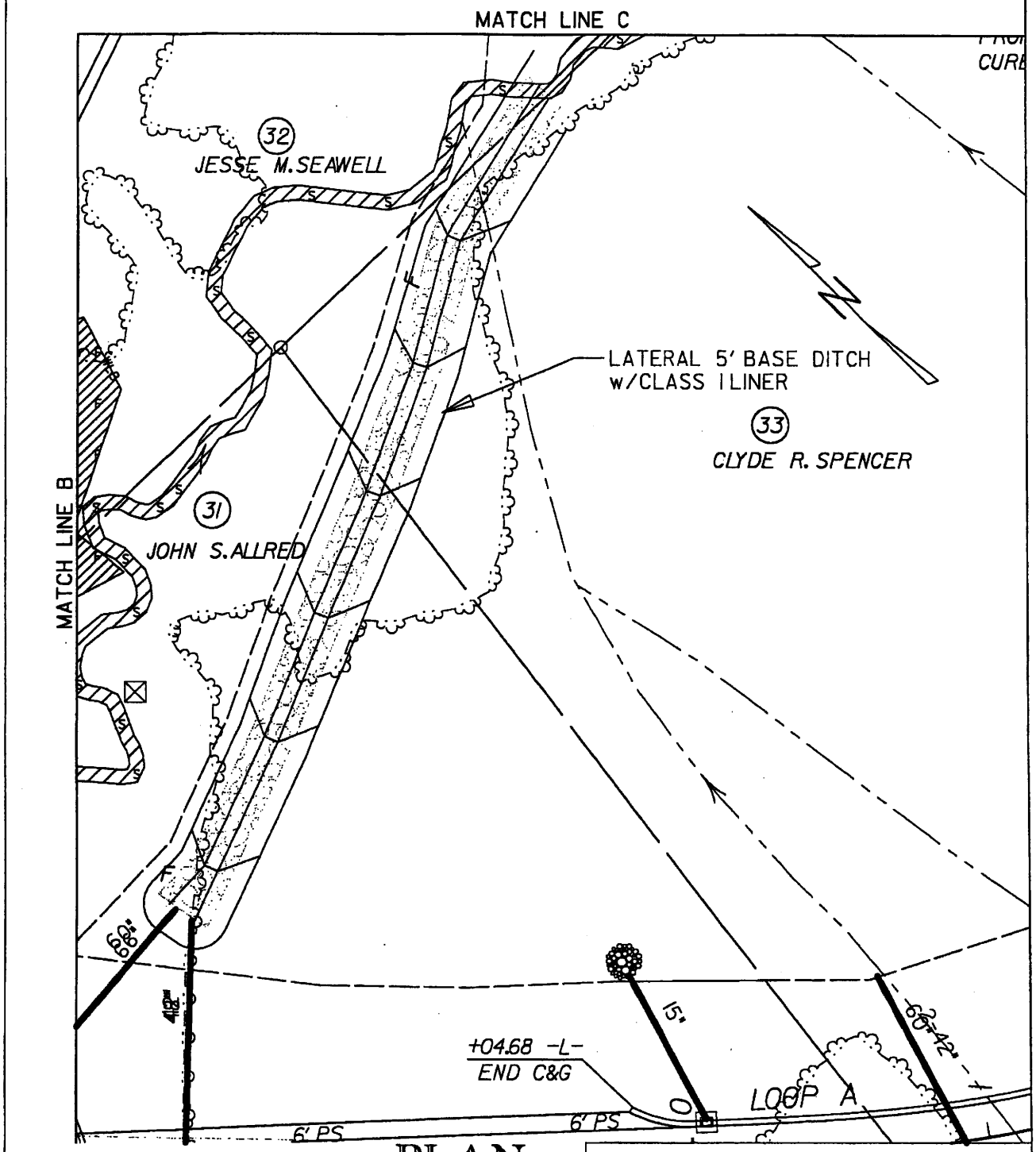
PLAN VIEW SITE 7

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

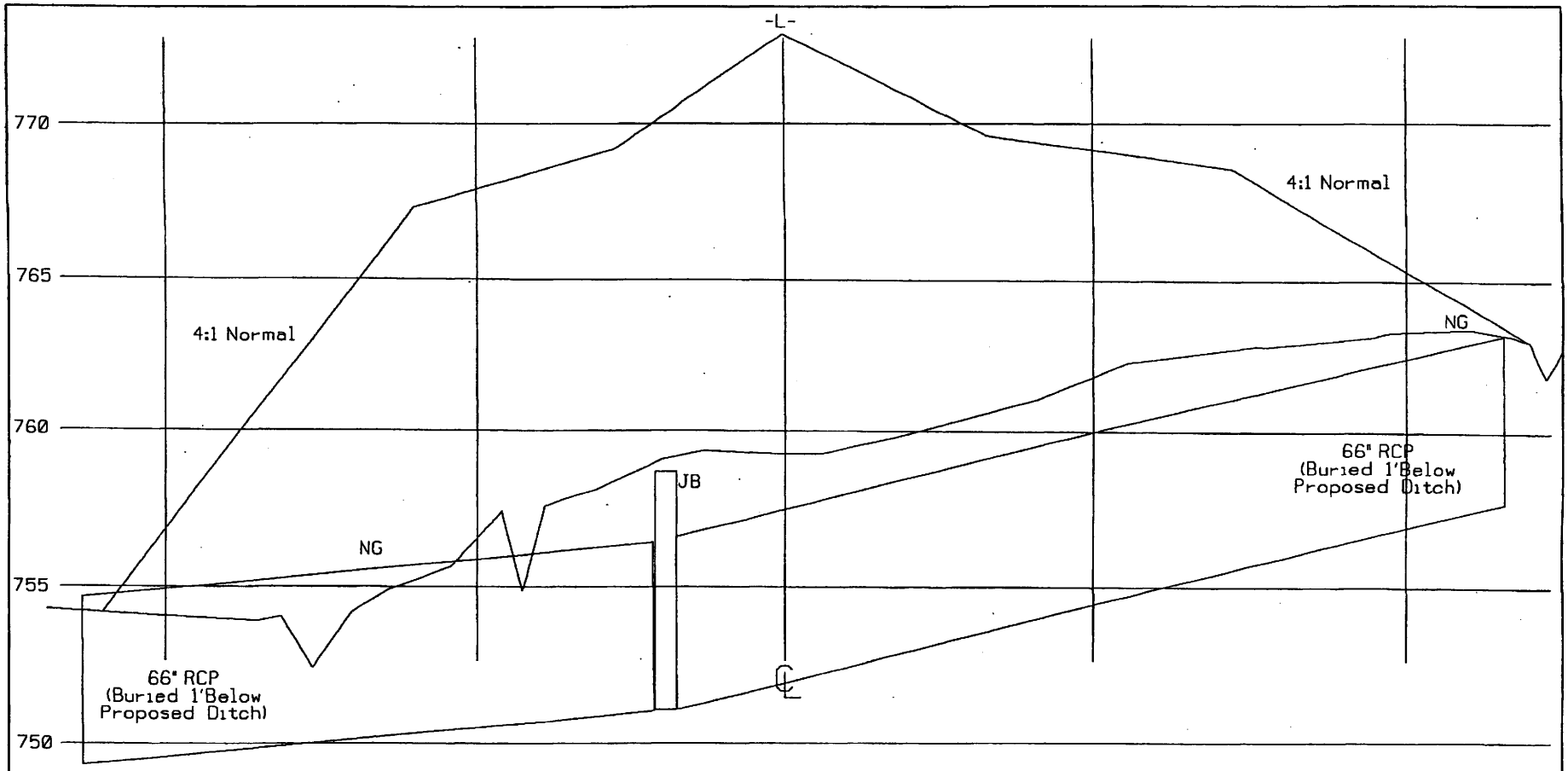


PLAN VIEW SITE 7

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 33 OF 46 1/2006



0 50 ft 100 ft HORIZ

0 5 ft 10 ft VERT

PROFILE VIEW
SITE 7

NCDOT

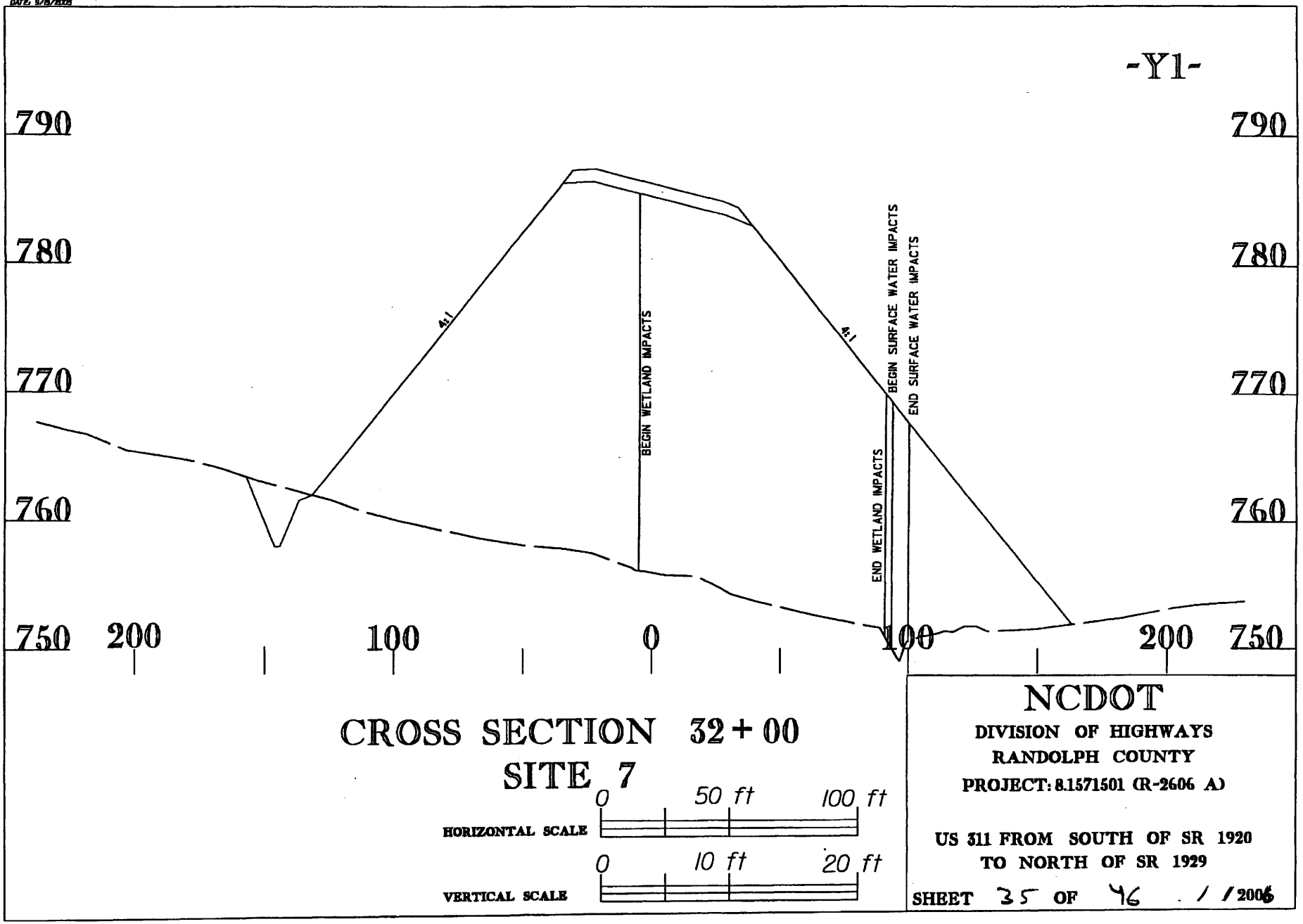
DIVISION OF HIGHWAYS

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

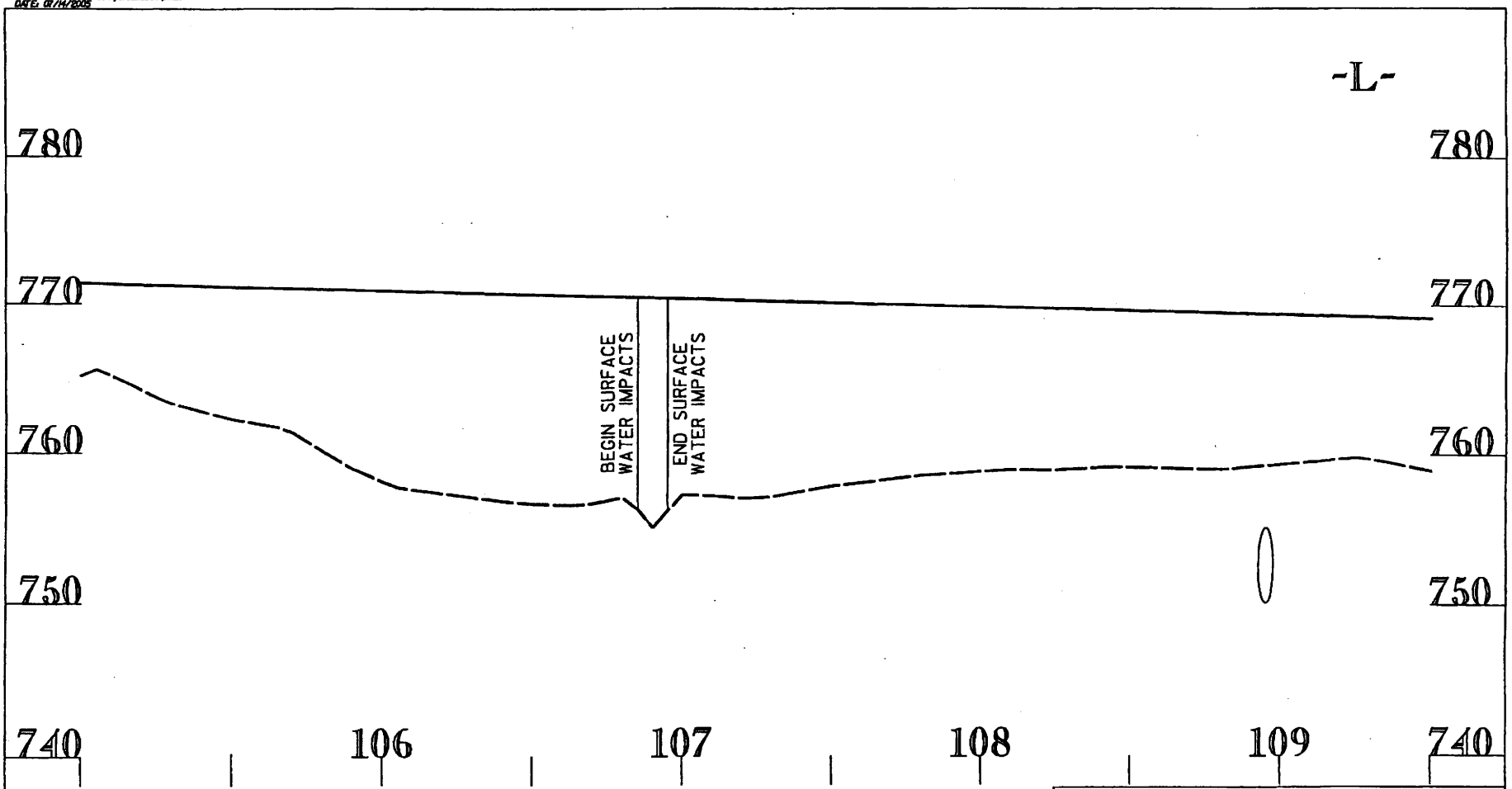
NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

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

SHEET 35 OF 46 . / /2006

375

USER: rtray
DGN: U:\NCDOT\2606\Hydraulics\7Fp.MET
DATE: 07/14/2015



PROFILE VIEW
SITE 7

HORIZONTAL SCALE: 0 — 50 ft — 100 ft

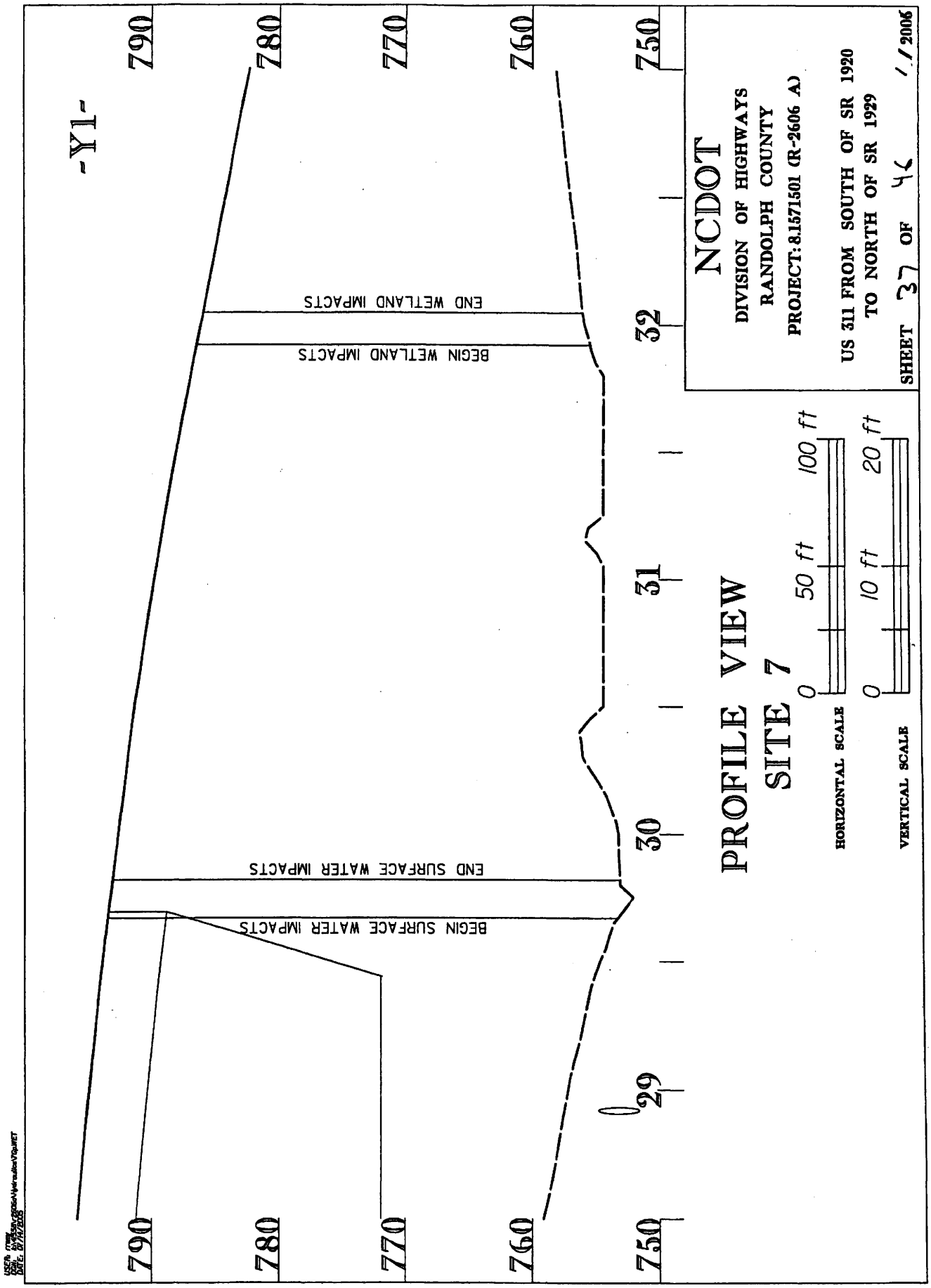
VERTICAL SCALE: 0 — 10 ft — 20 ft

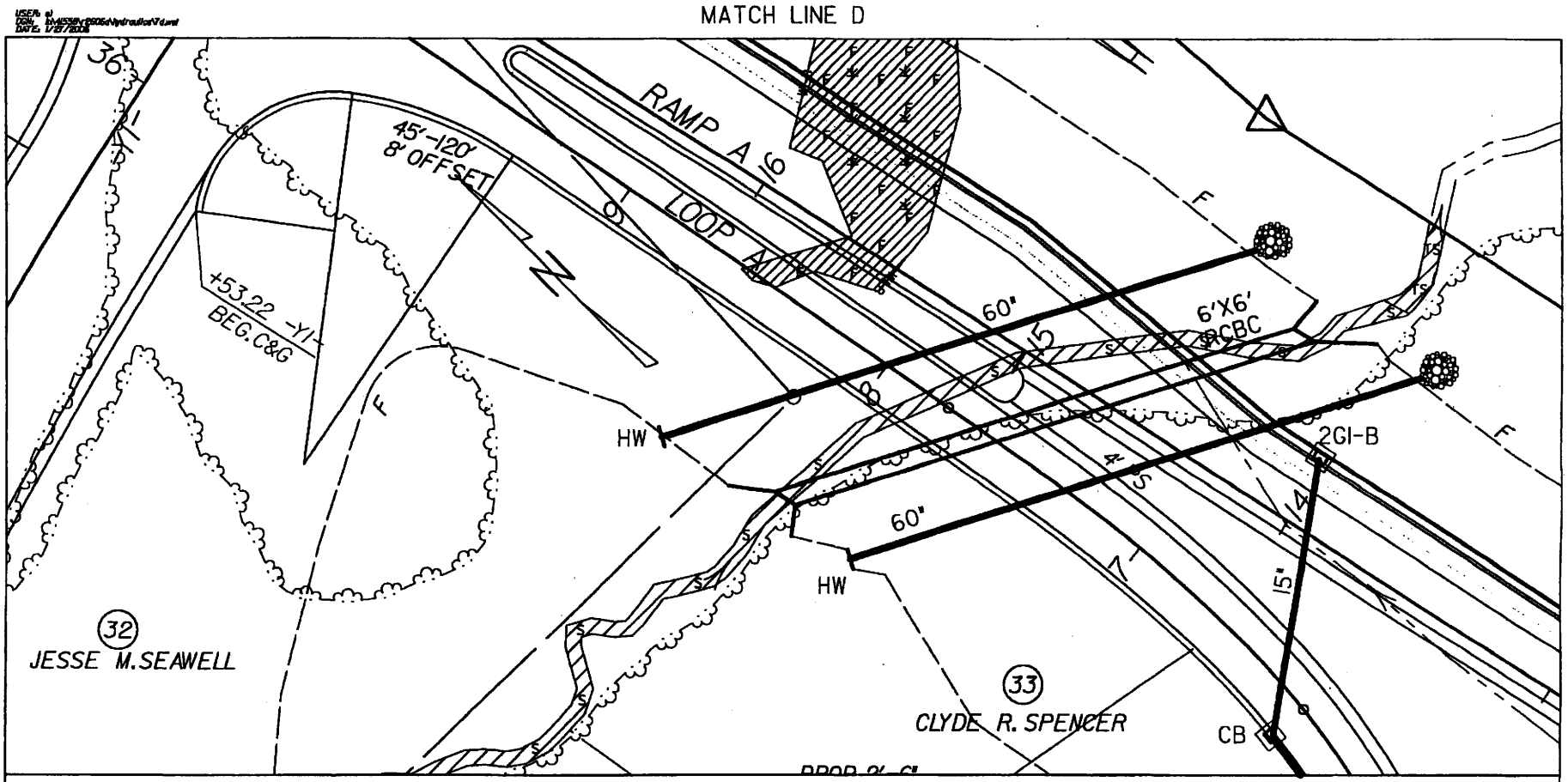
NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.1571501 (R-2606 A)

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

SHEET 36 **OF** 46 1 / 2006

376


-Y1-
790
780
770
760
750
END WETLAND IMPACTS
BEGIN WETLAND IMPACTS
END SURFACE WATER IMPACTS
BEGIN SURFACE WATER IMPACTS
32
31
30
29
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
1/1/2006



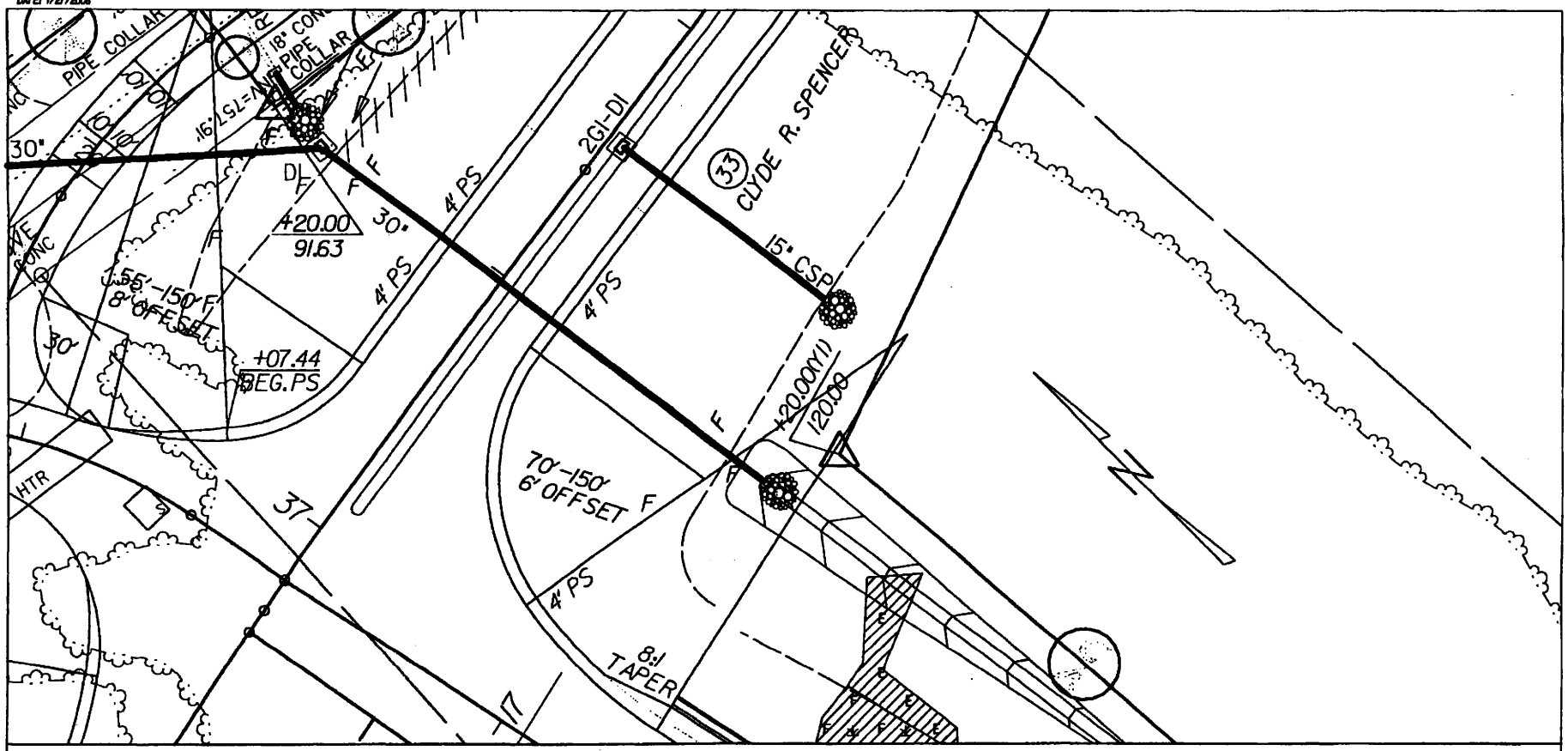
PLAN VIEW
SITE 7

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



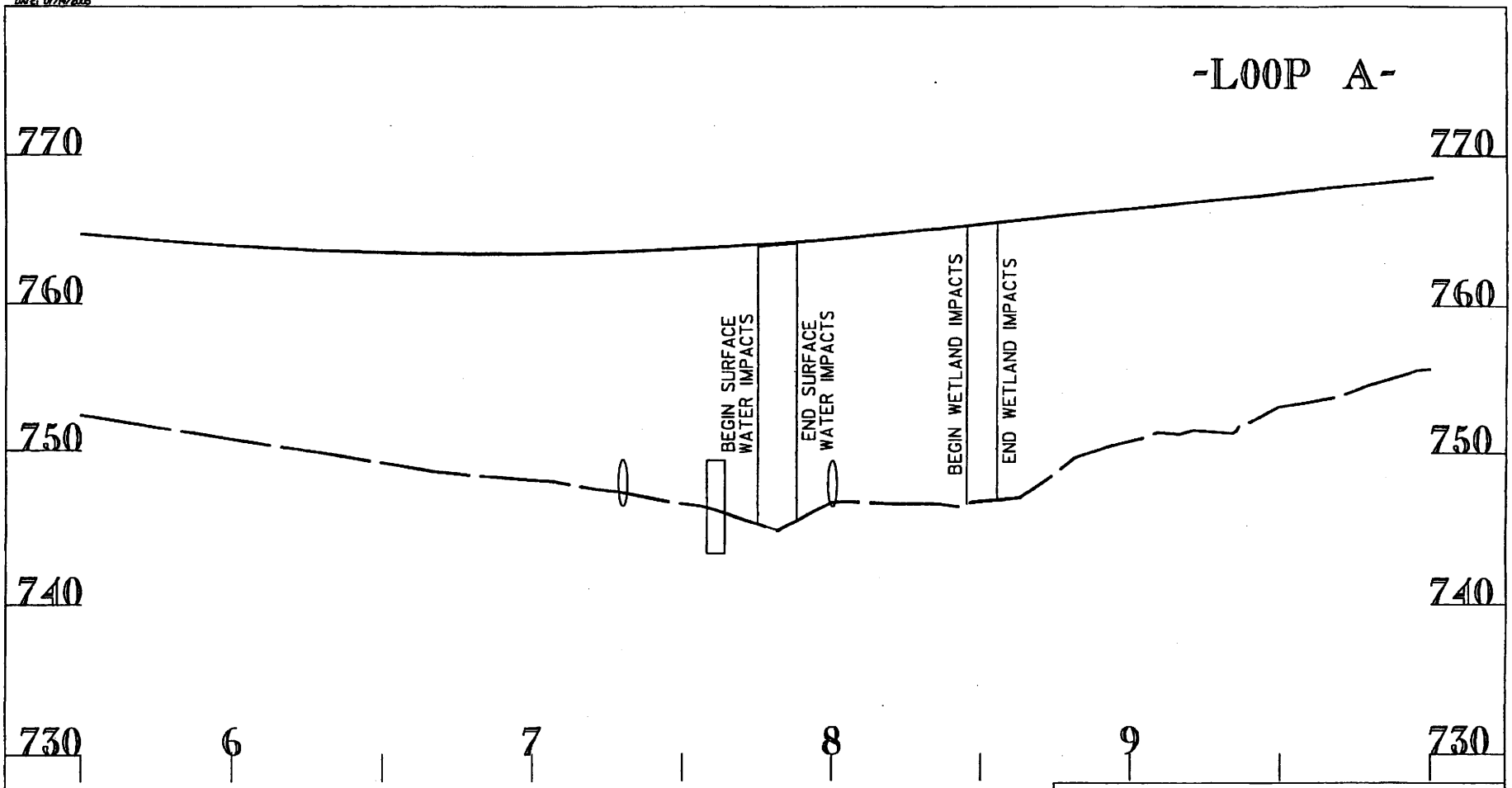
PLAN VIEW
SITE 7

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 39 **OF** 46 1 / 2006



PROFILE VIEW
SITE 7

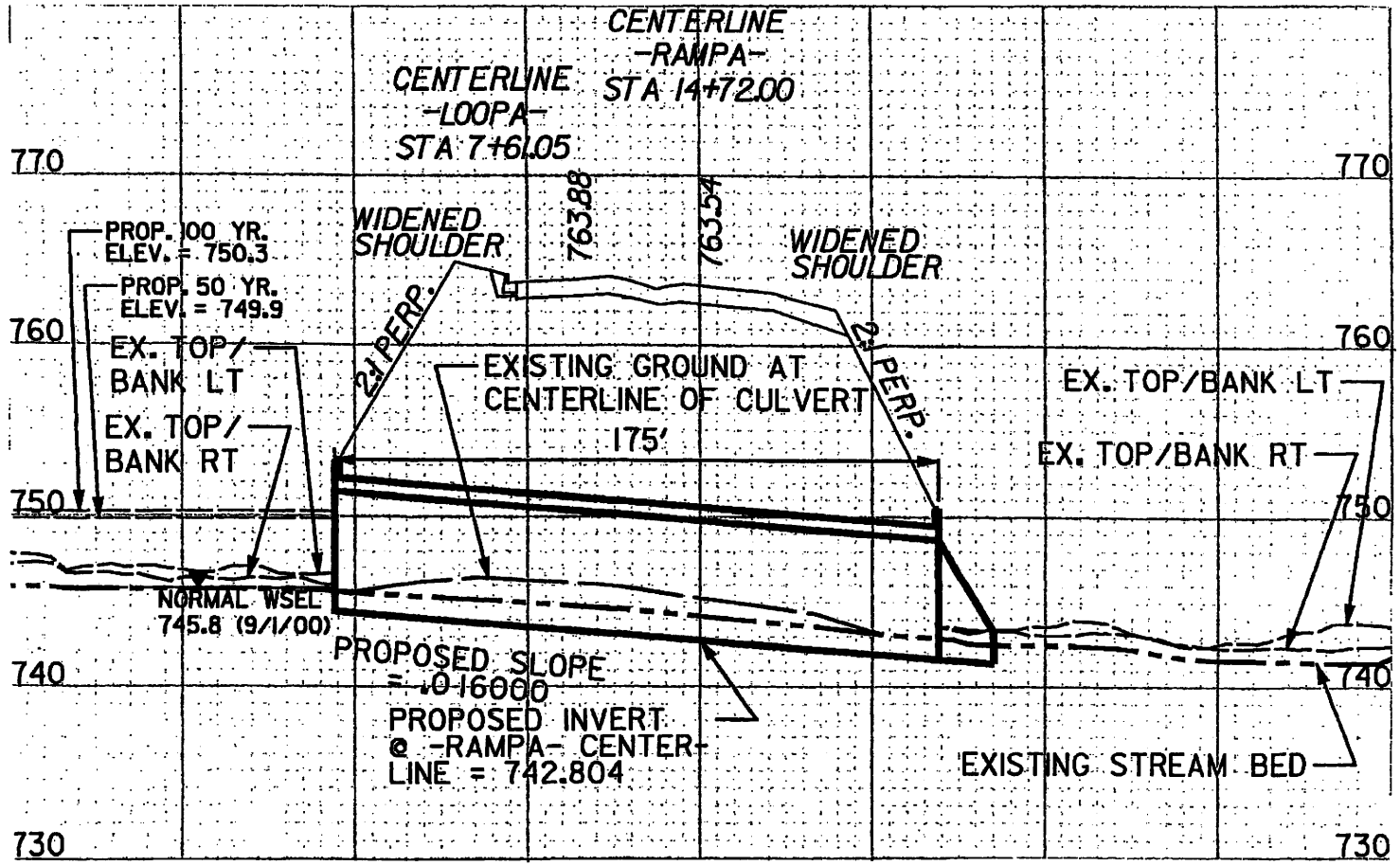
HORIZONTAL SCALE: 0 — 50 ft — 100 ft

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 **1/1/2006**



0 50 ft 100 ft HORIZ

0 10 ft 20 ft VERT

PROFILE VIEW
SITE 7

NCDOT

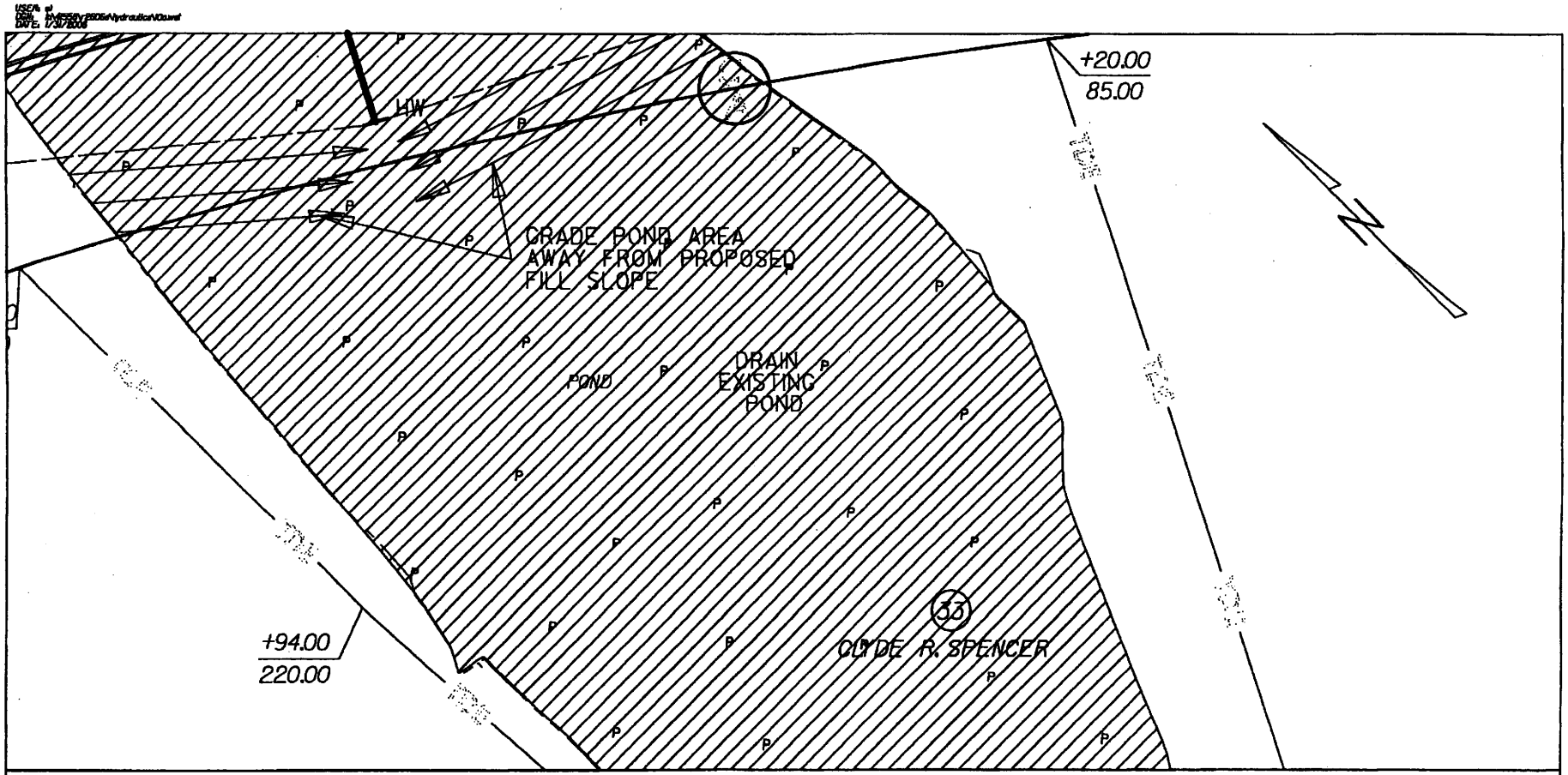
DIVISION OF HIGHWAYS

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



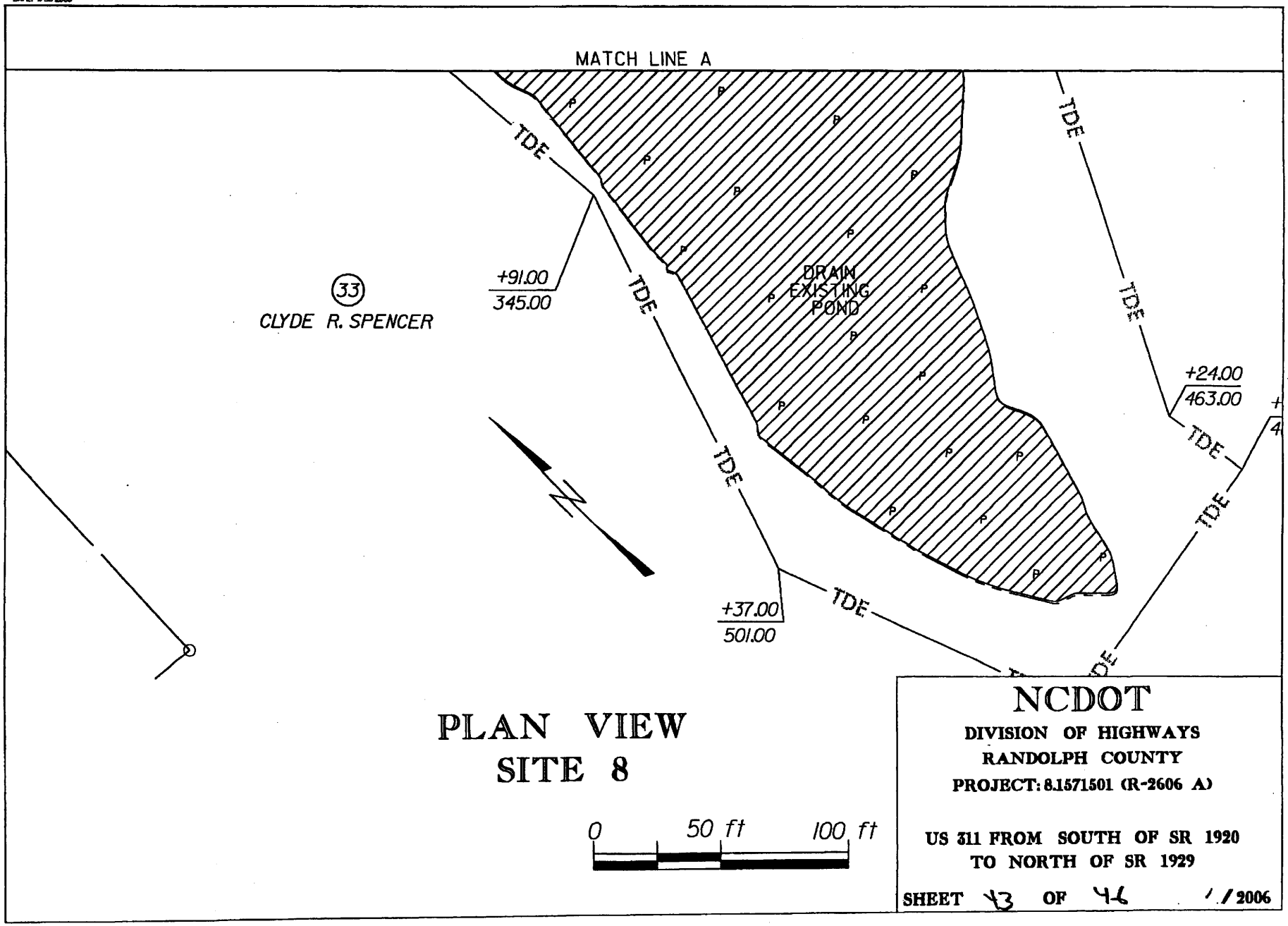
PLAN VIEW
SITE 8

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 42 OF 46 1 / 2006



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 43 OF 46 1/2006

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	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

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 45 OF 46 1/06

USER: rremy
DGN: k:\41558\r-2606a\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

NCDOT

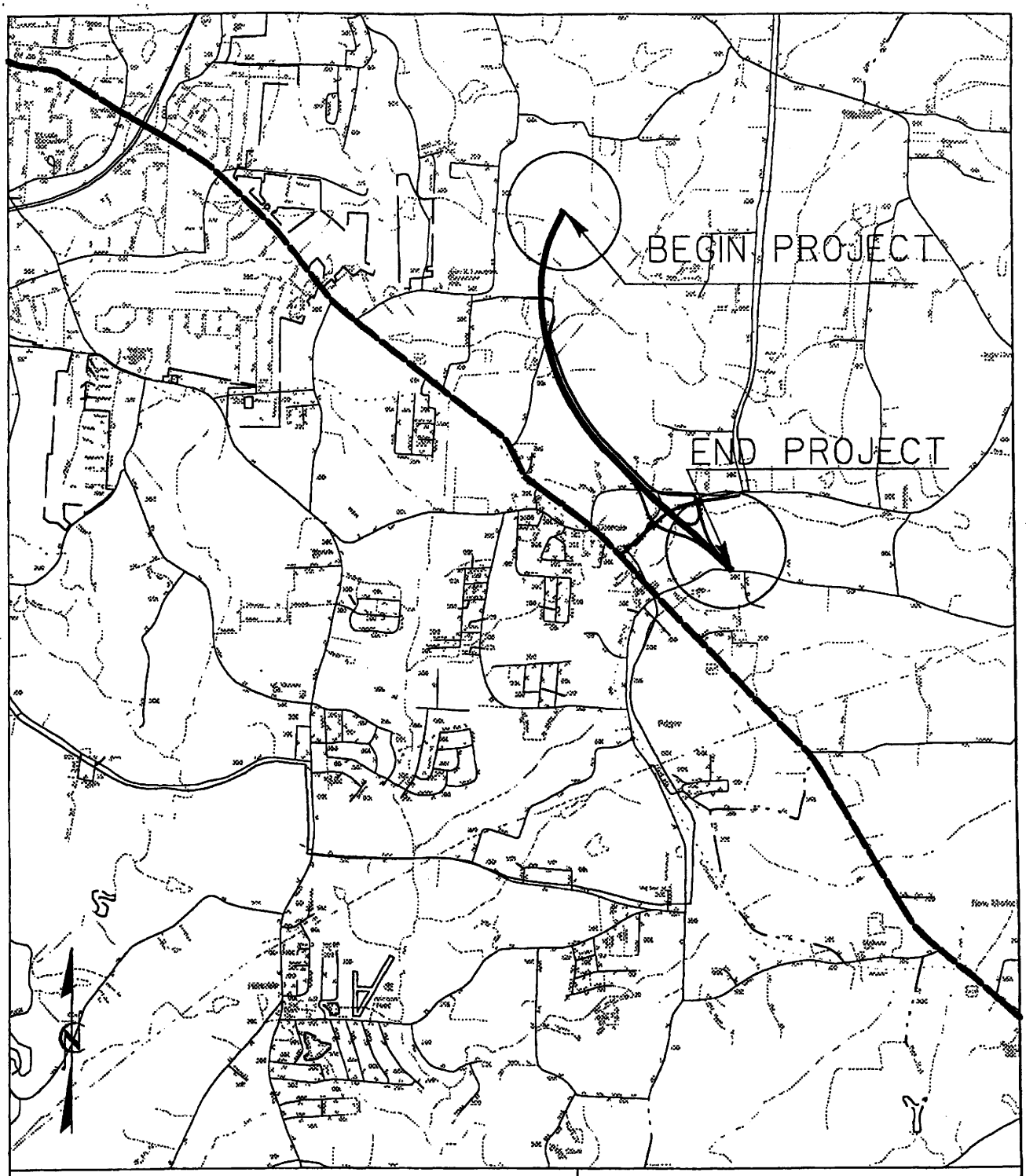
DIVISION OF HIGHWAYS

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

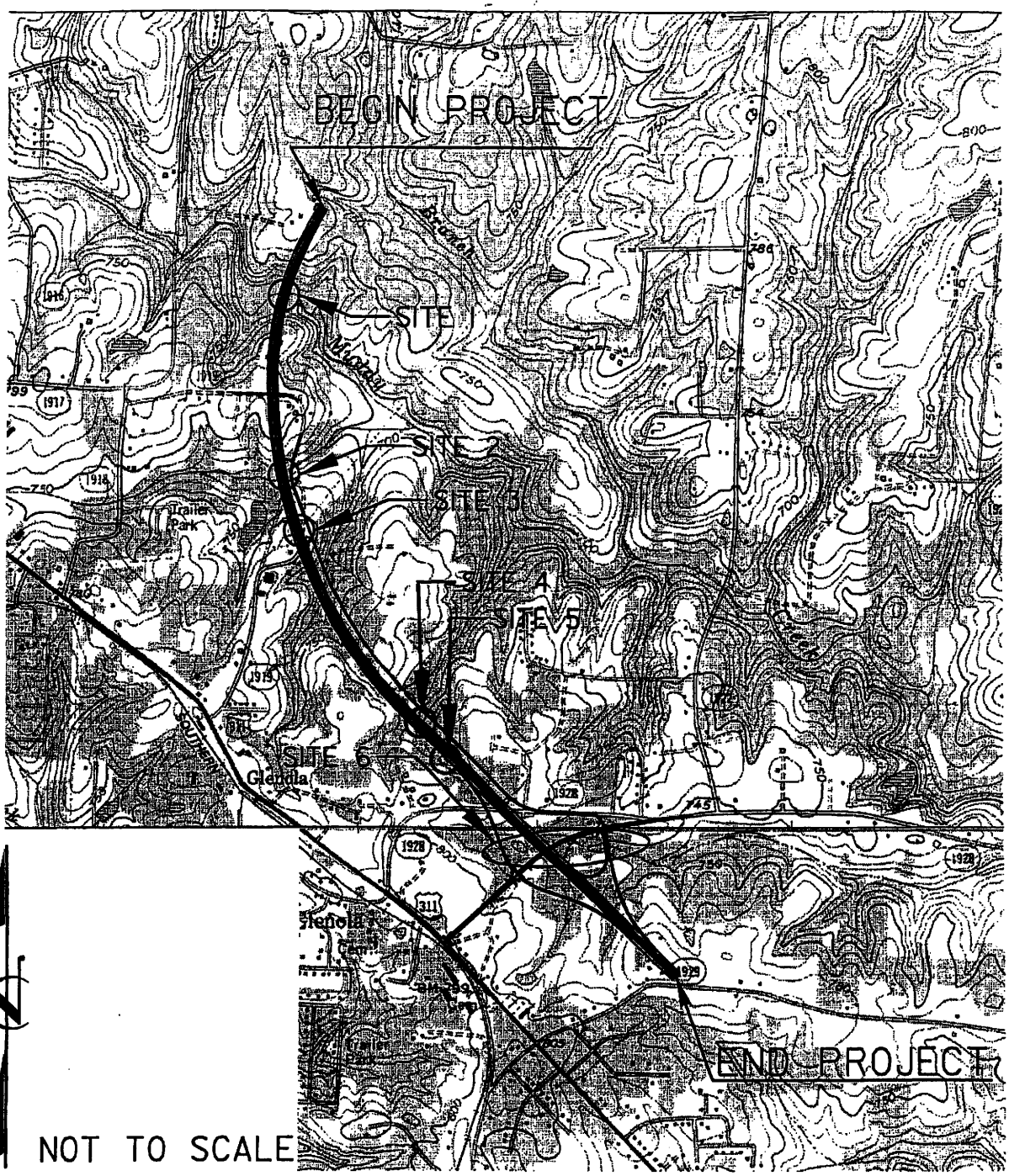
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.1571501 (R-2606 A)

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

SHEET 1 OF 26 -1106



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: rramy
DGN: k:\8155b\r2606a\Hydraulics\BUFFLOC.MET
DATE: 07/14/2005

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

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

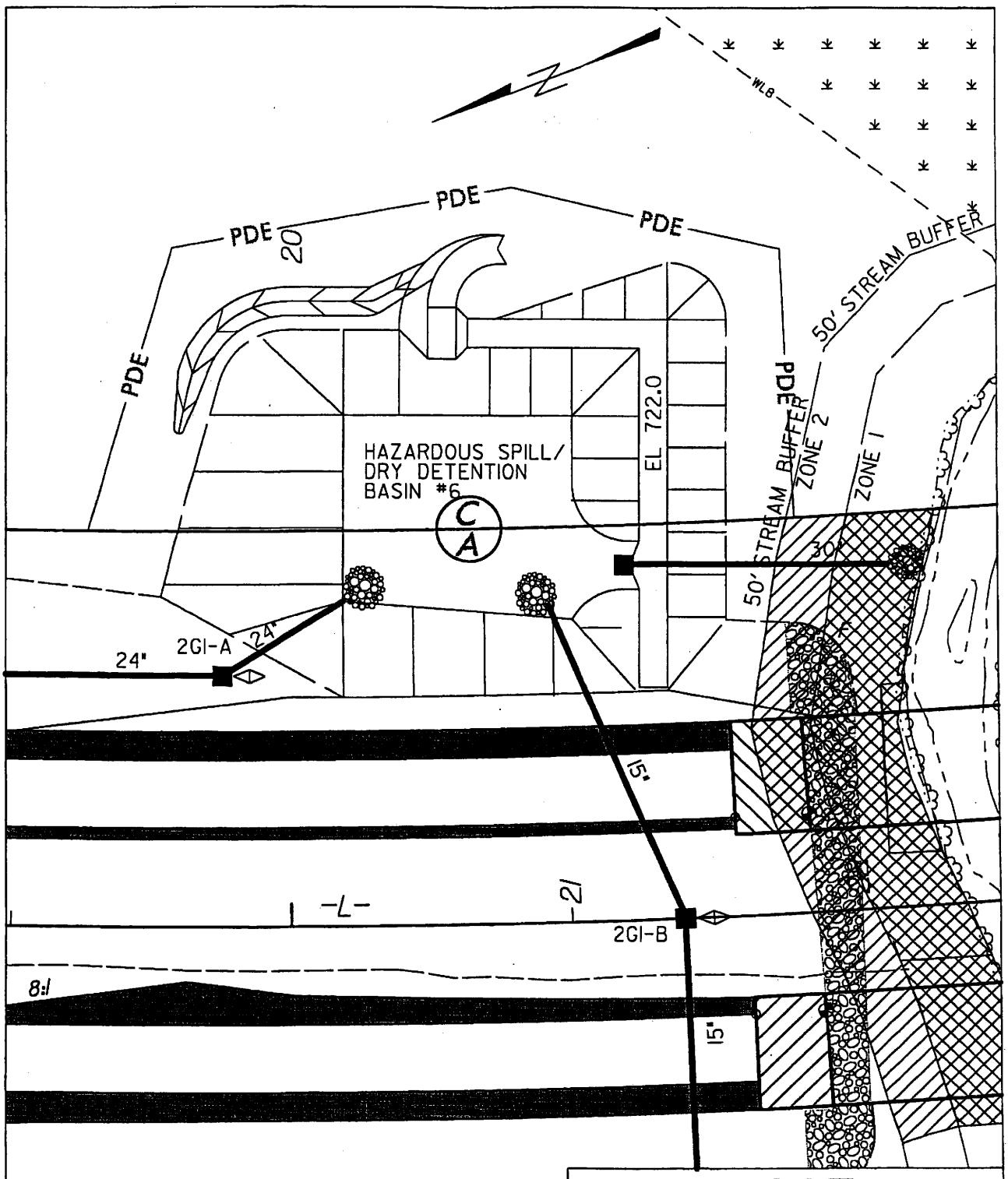
USER: rmm
DGN: kN1558v2606Ahydraulicsview_legend.dgn
DATE: 07/14/2005

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		



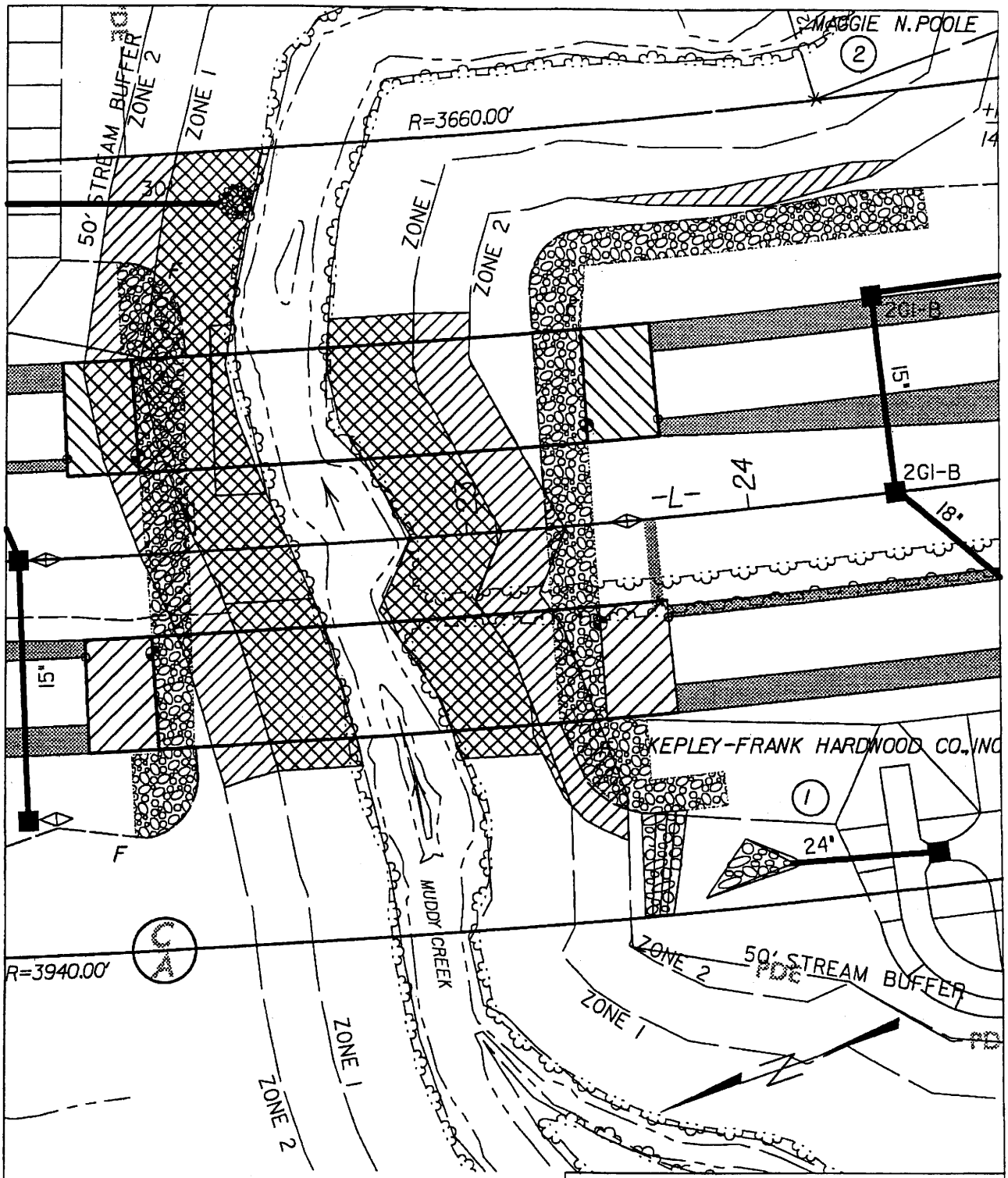
PLAN VIEW SITE 1

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**



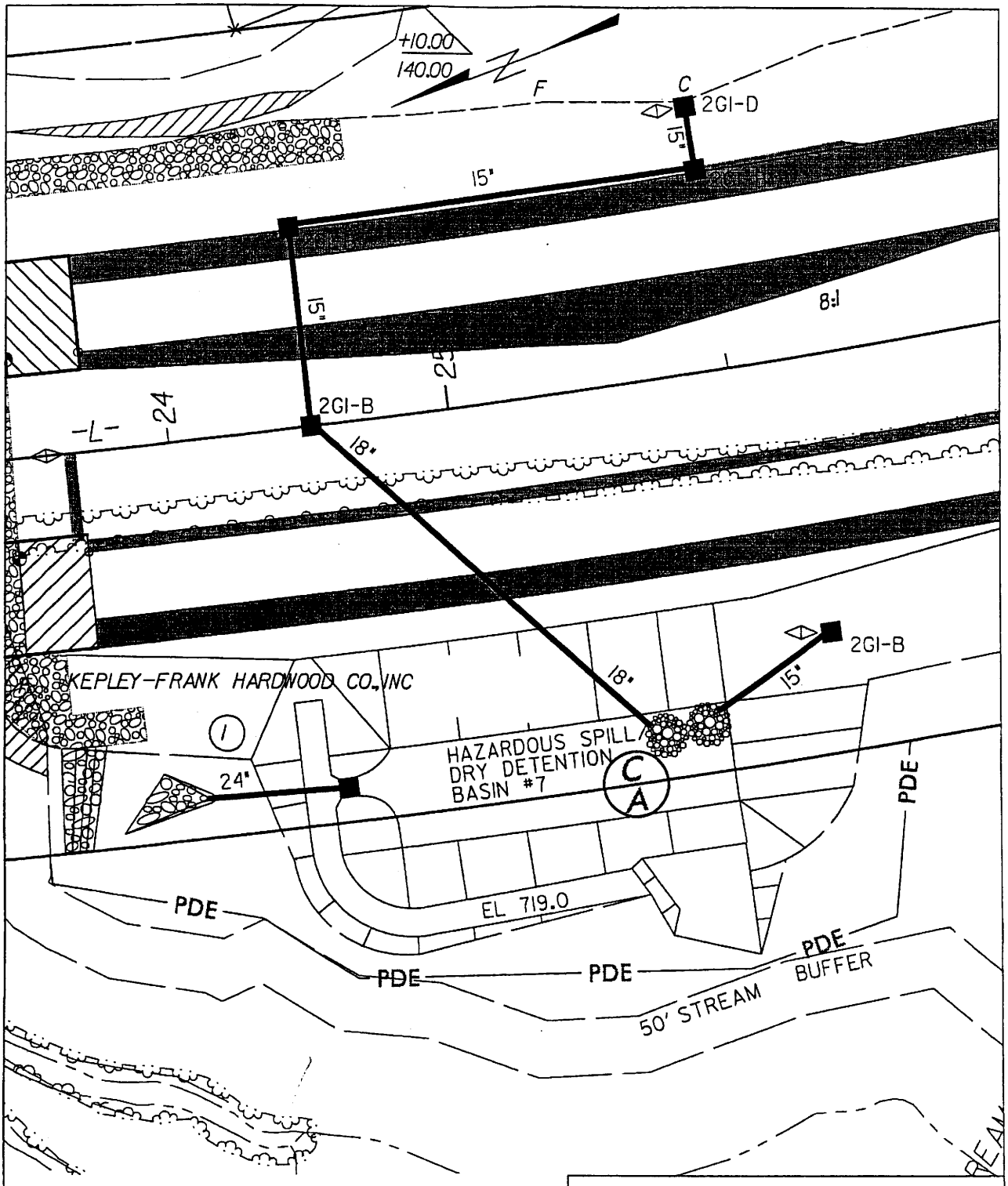
PLAN VIEW SITE 1

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 1/1/2006



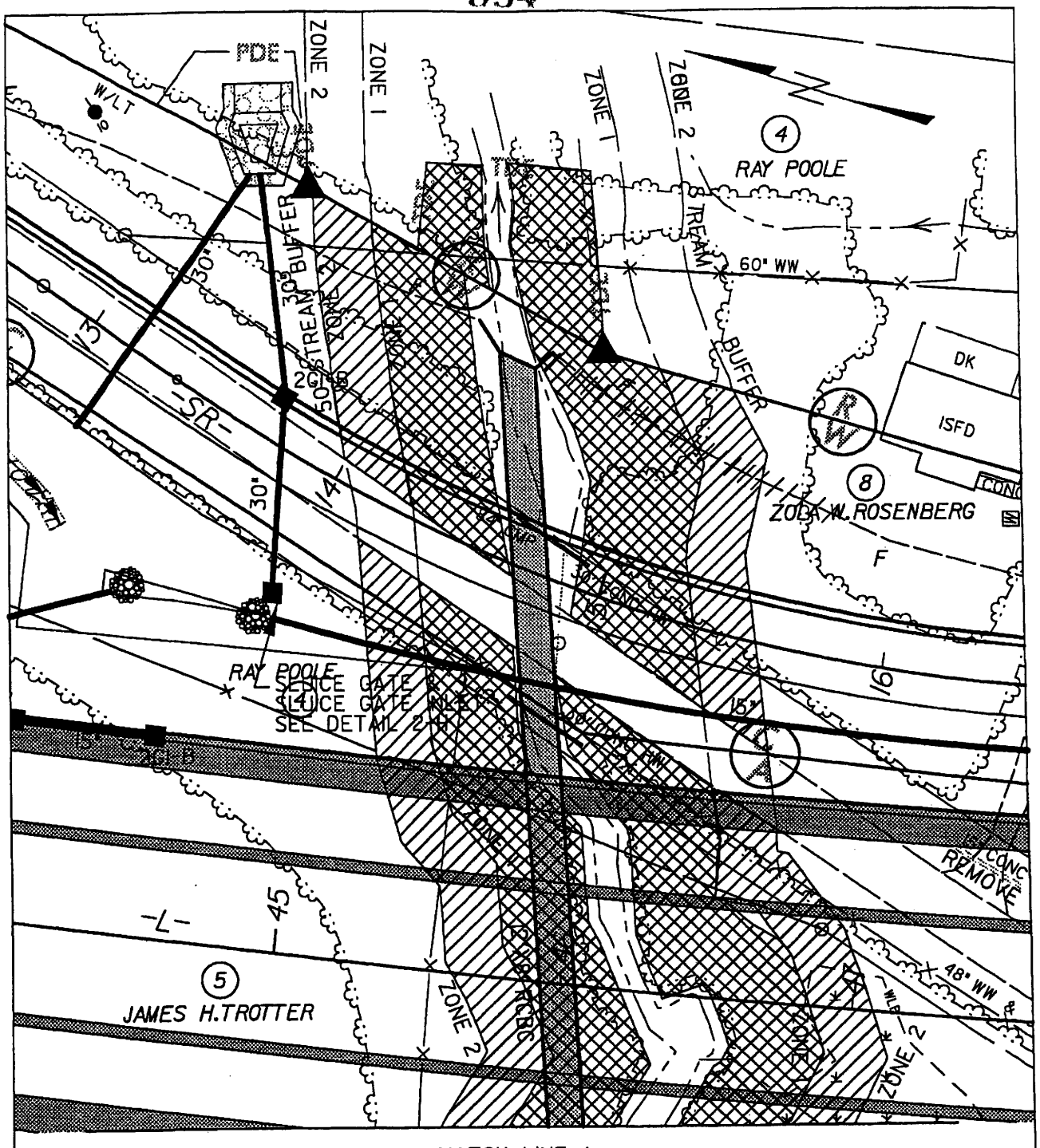
PLAN VIEW SITE 1

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 7 **OF** 26 1./2006



0 50 ft 100 ft

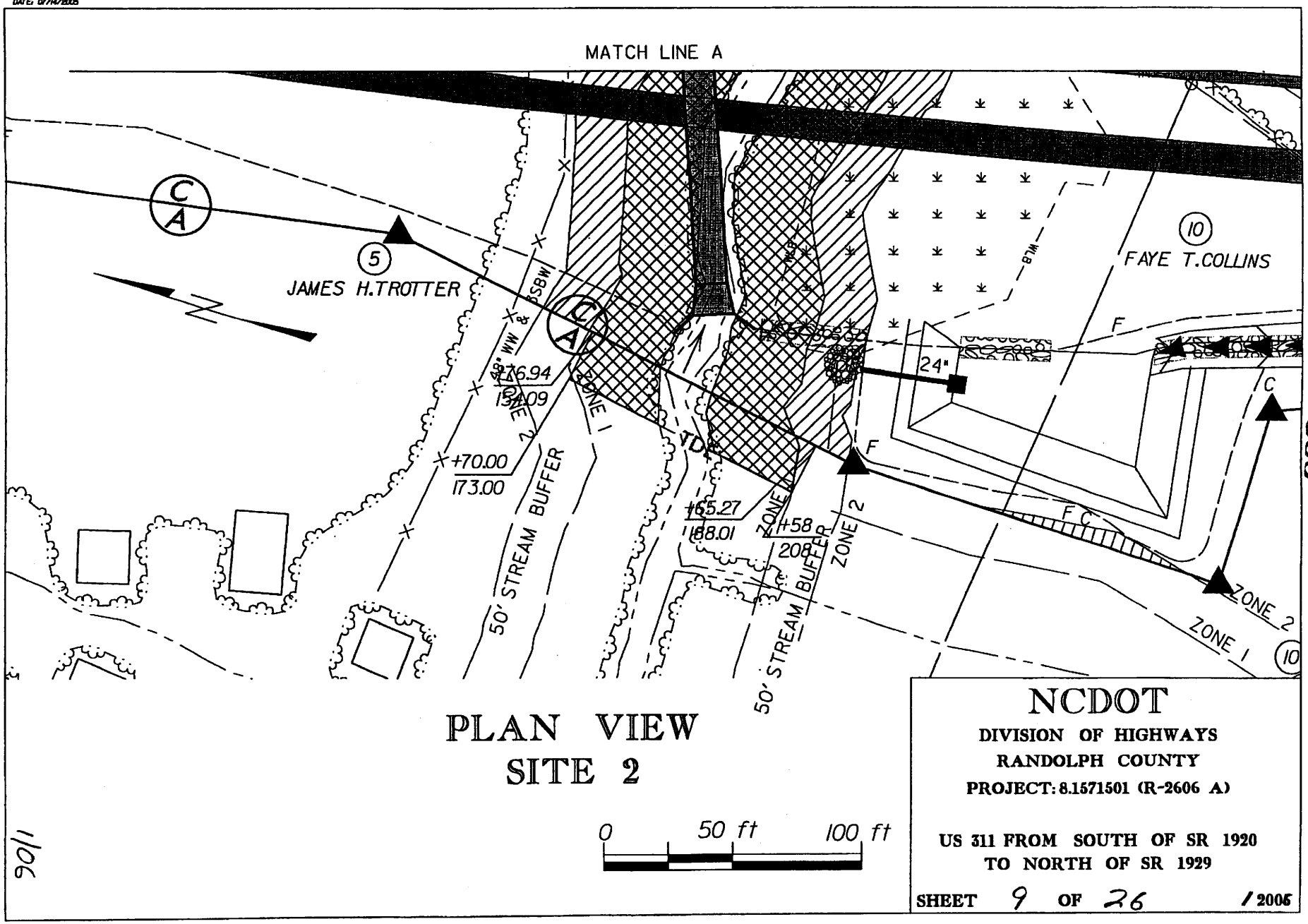
PLAN VIEW SITE 2

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 1/2006



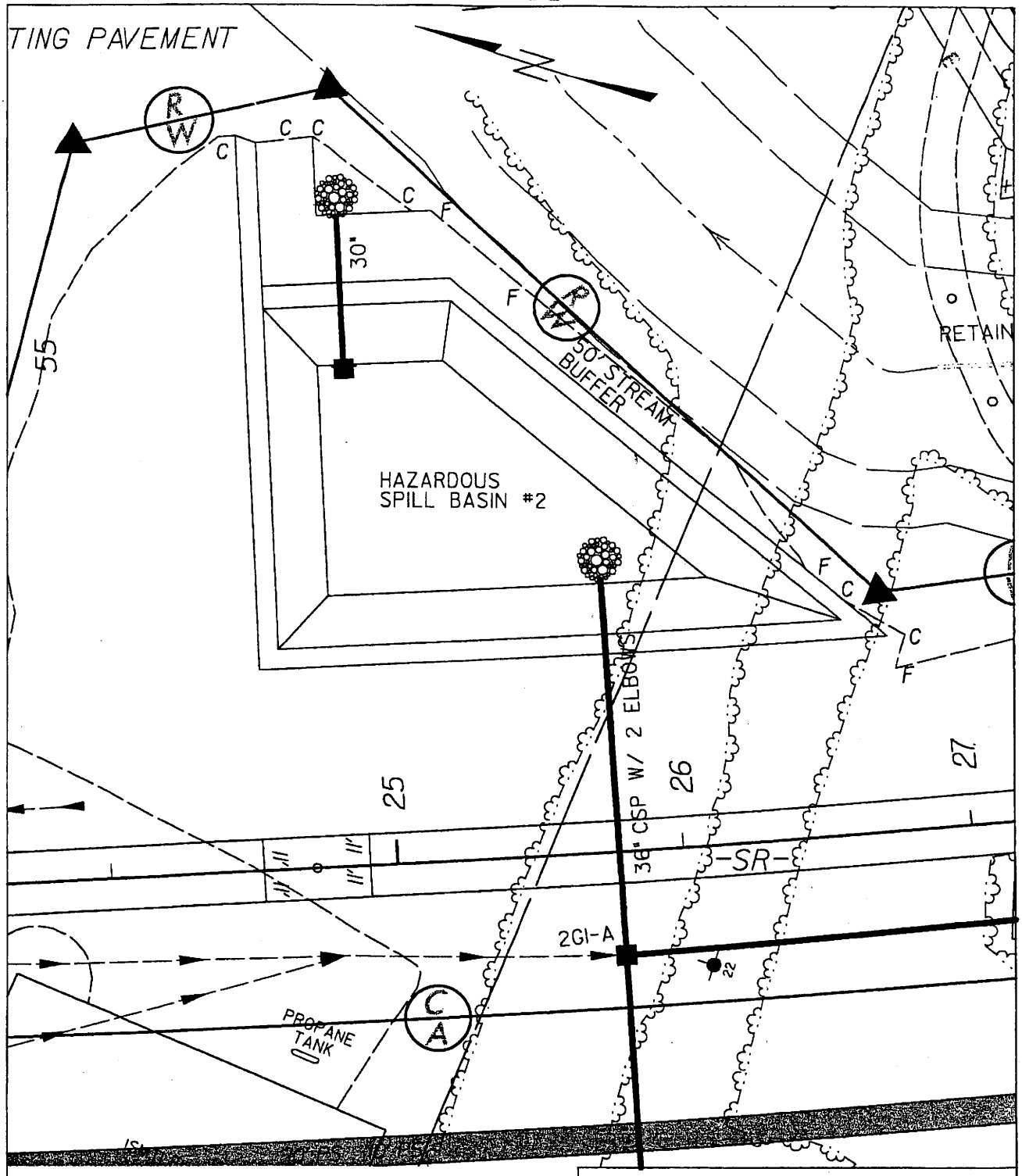
PLAN VIEW
SITE 2

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 9 **OF** 26 **/ 2006**

395

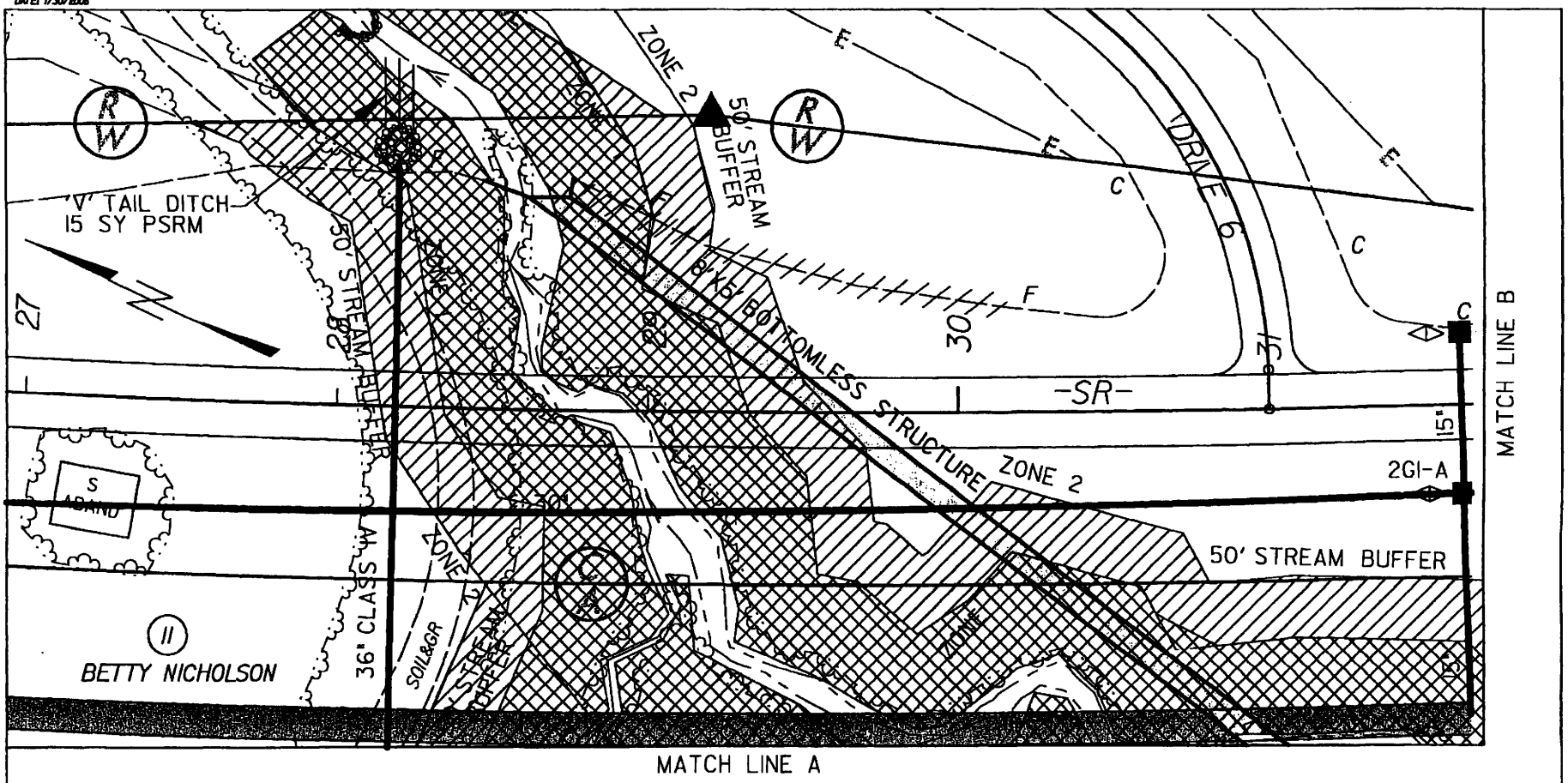


PLAN VIEW SITE 3

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**



DETAIL DD
'V' TAIL DITCH w/PSRM
(NOT TO SSCALE)

Max. d = 1' Ft. Min. D = 1' Ft.

Type of Liner = PERMANENT SOIL REINFORCED MATTING

-L- 59+48 L

PLAN VIEW
SITE 3

0 50 ft 100 ft

NCDOT

DIVISION OF HIGHWAYS

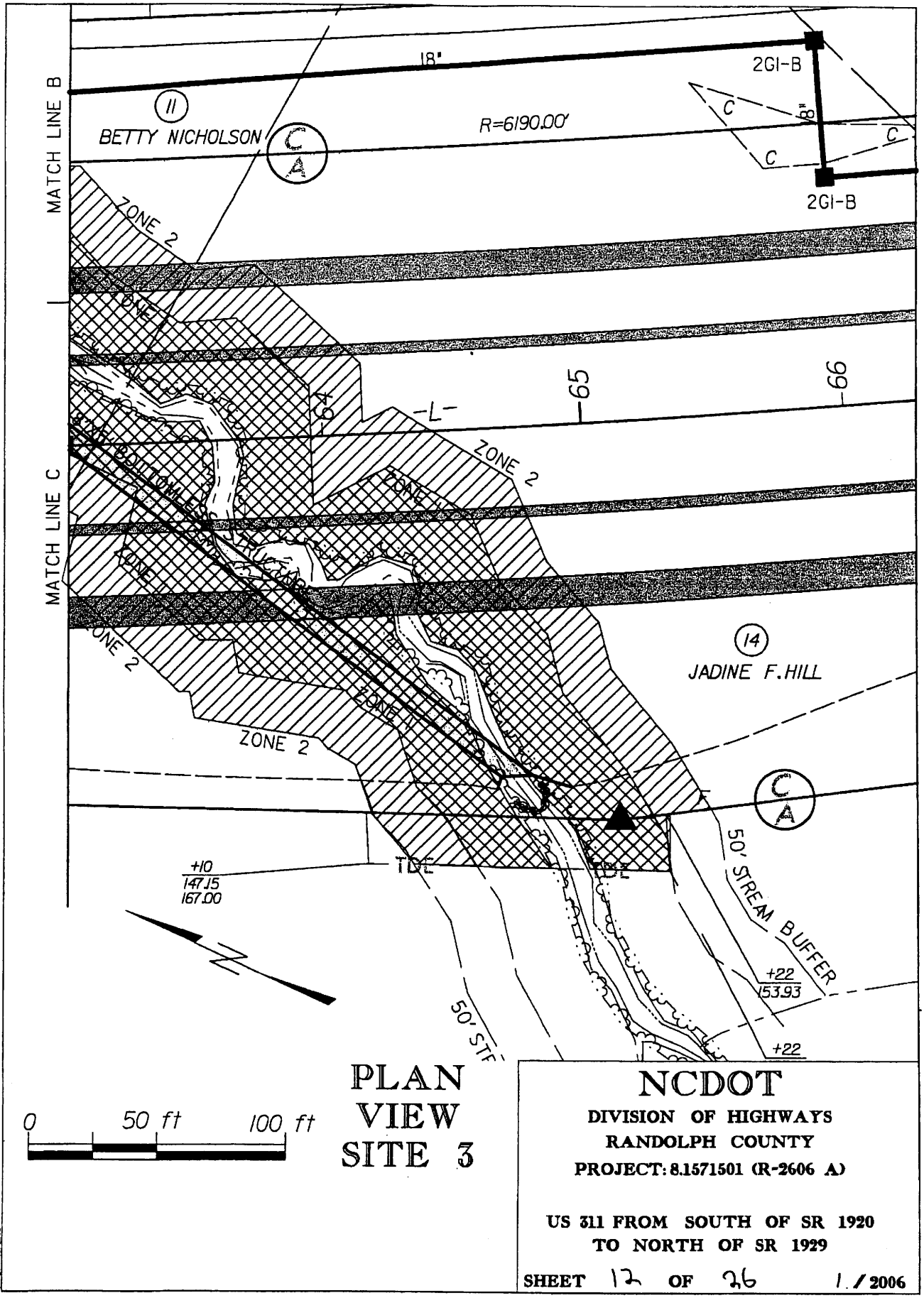
RANDOLPH COUNTY

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**

397



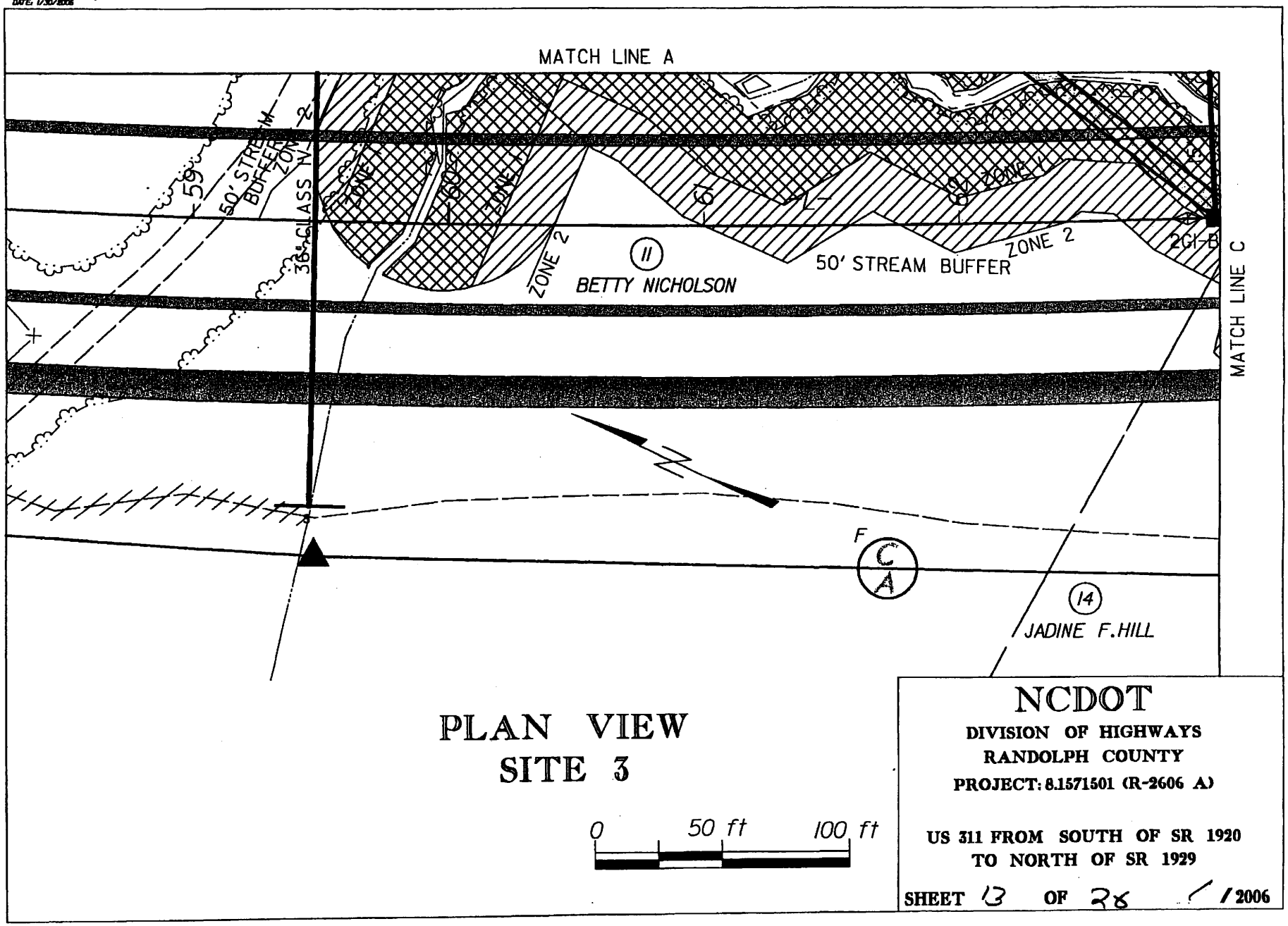
PLAN VIEW SITE 3

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 12 **OF** 26 **1./2006**

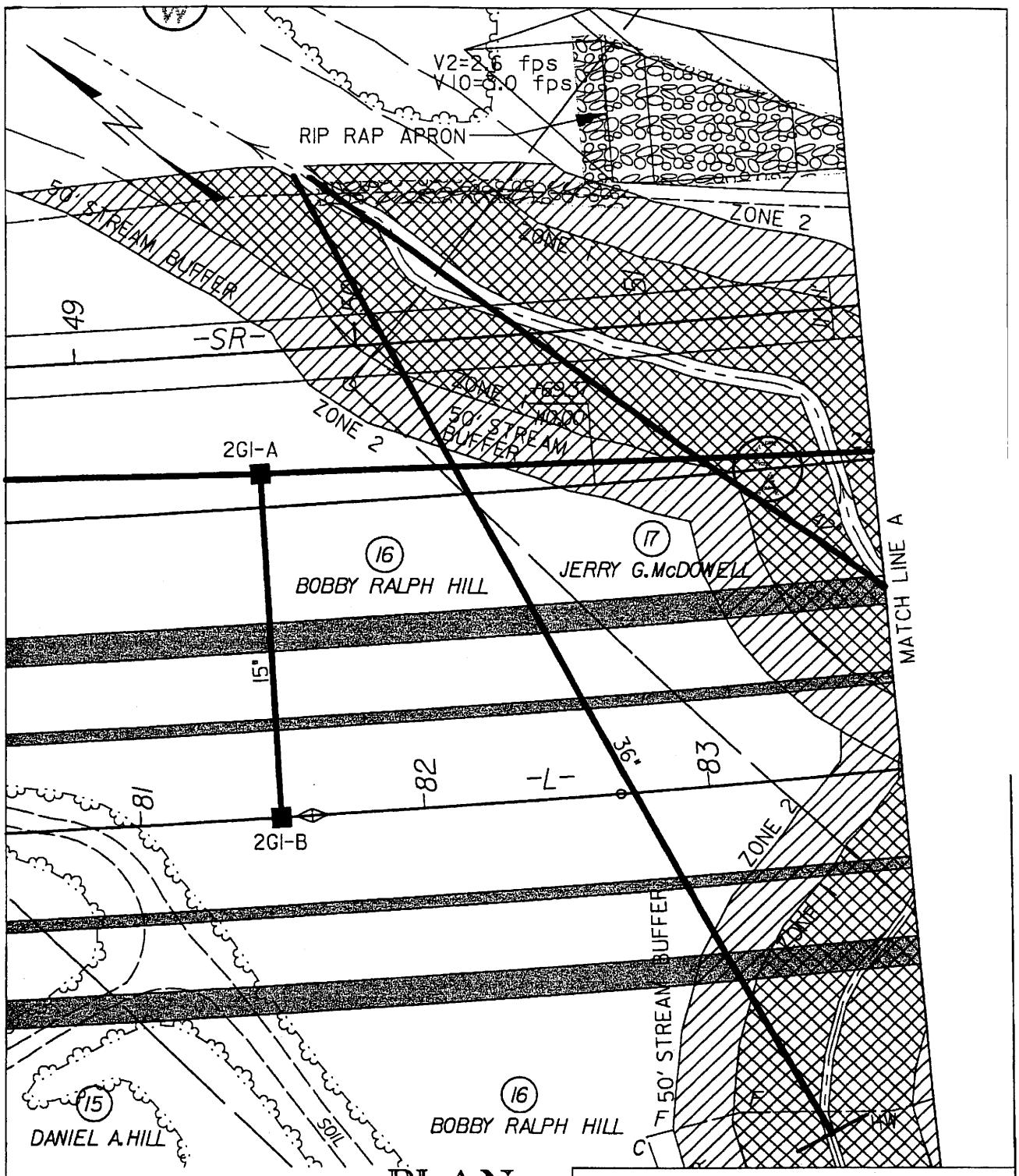


PLAN VIEW
SITE 3

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 13 **OF** 28 / **2006**



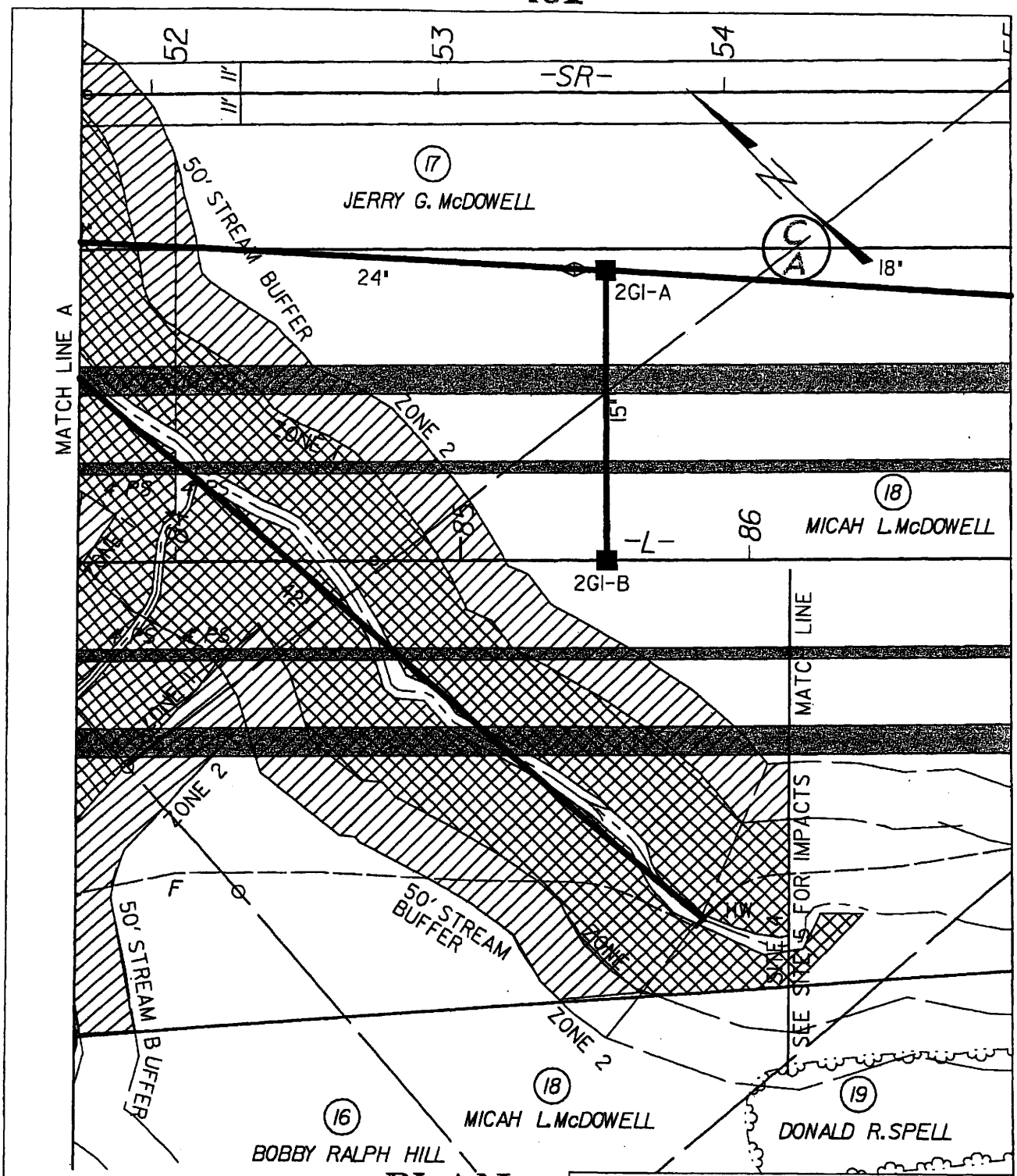
PLAN VIEW SITE 4

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 14 OF 26 / / 2006



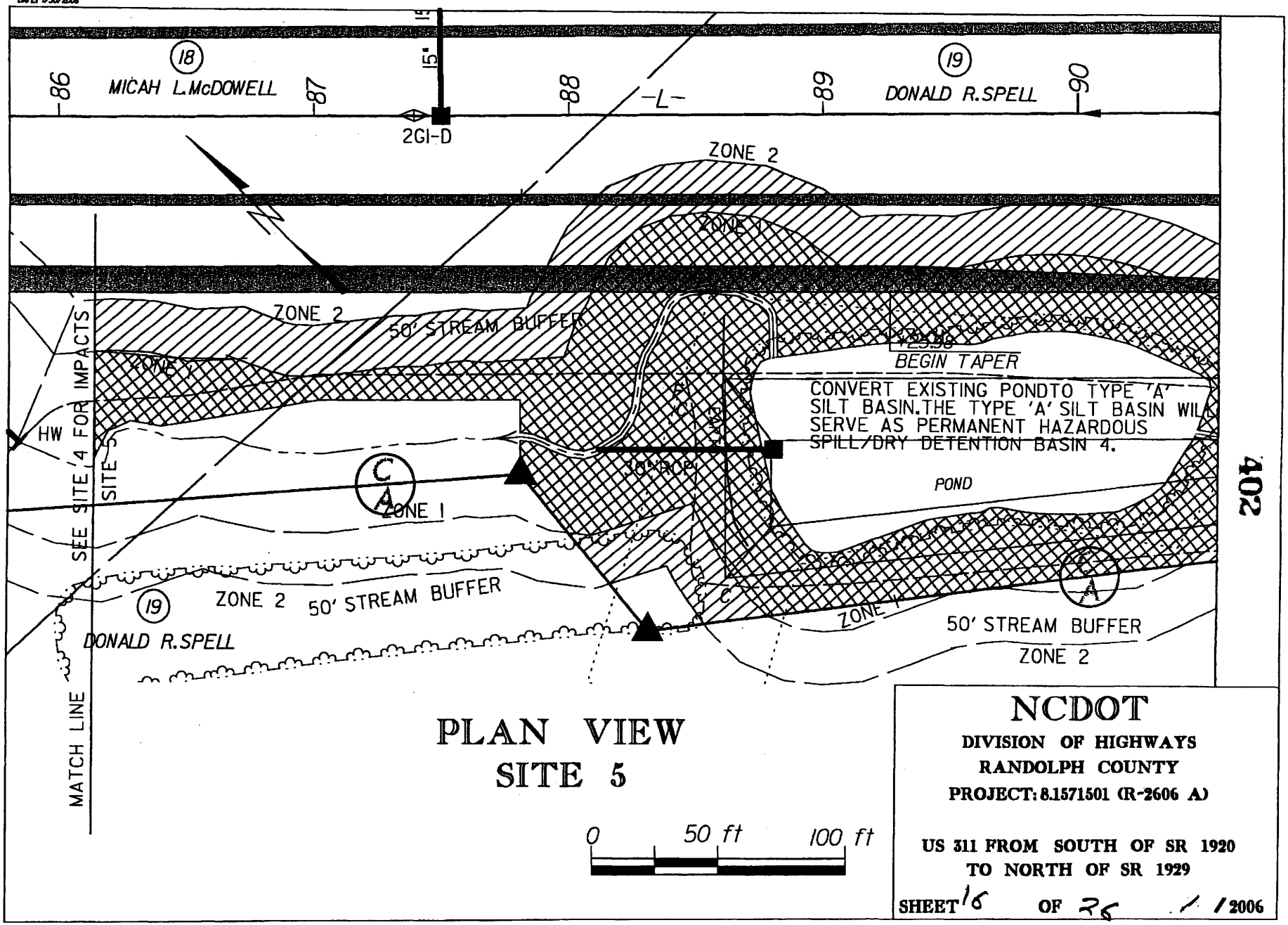
PLAN VIEW SITE 4

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 15 OF 26 / **2006**



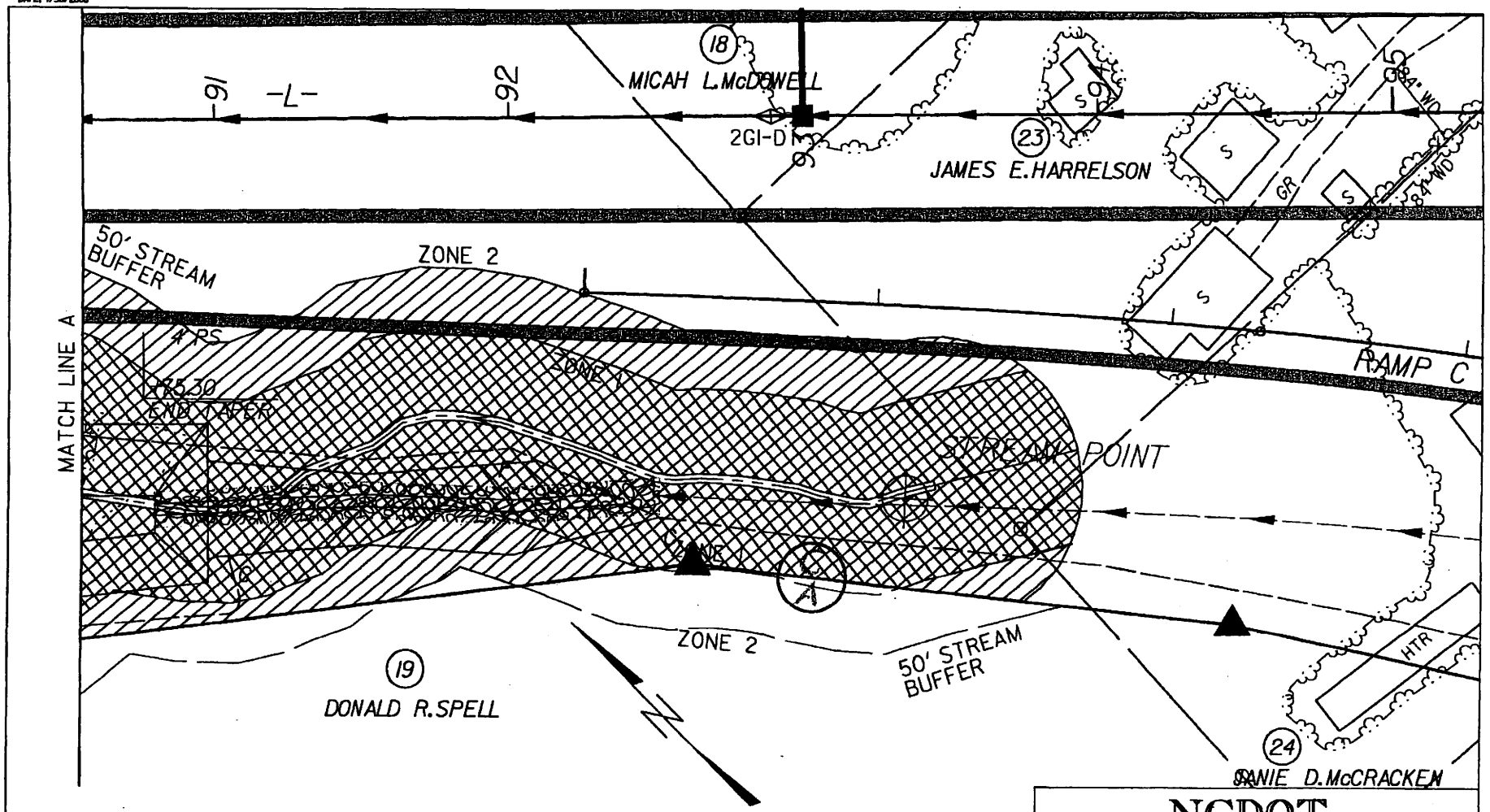
PLAN VIEW
SITE 5

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 16 **OF** 25 / /**2006**

402

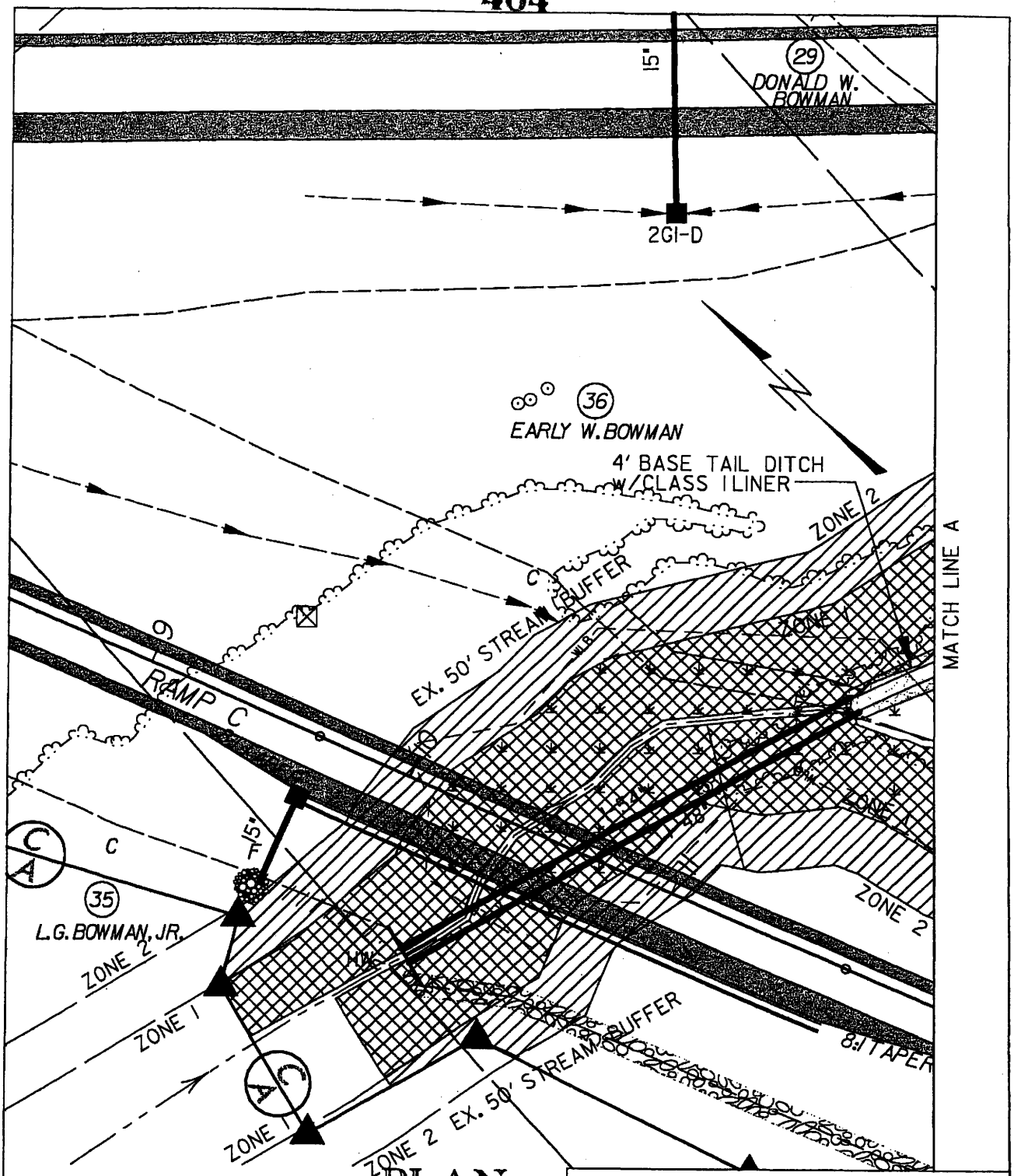


PLAN VIEW
SITE 5

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** 26 1/ /2006



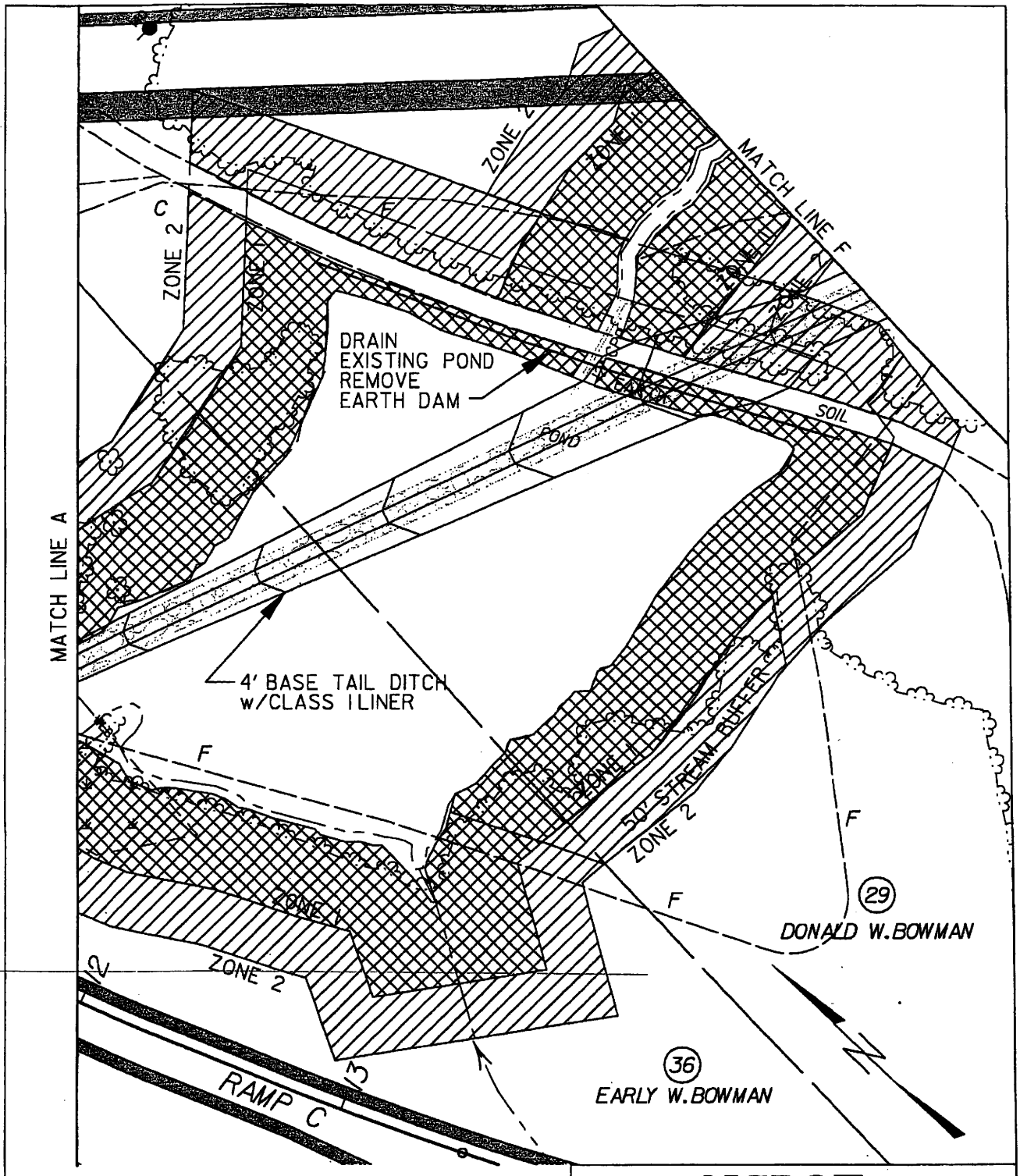
PLAN VIEW SITE 6

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



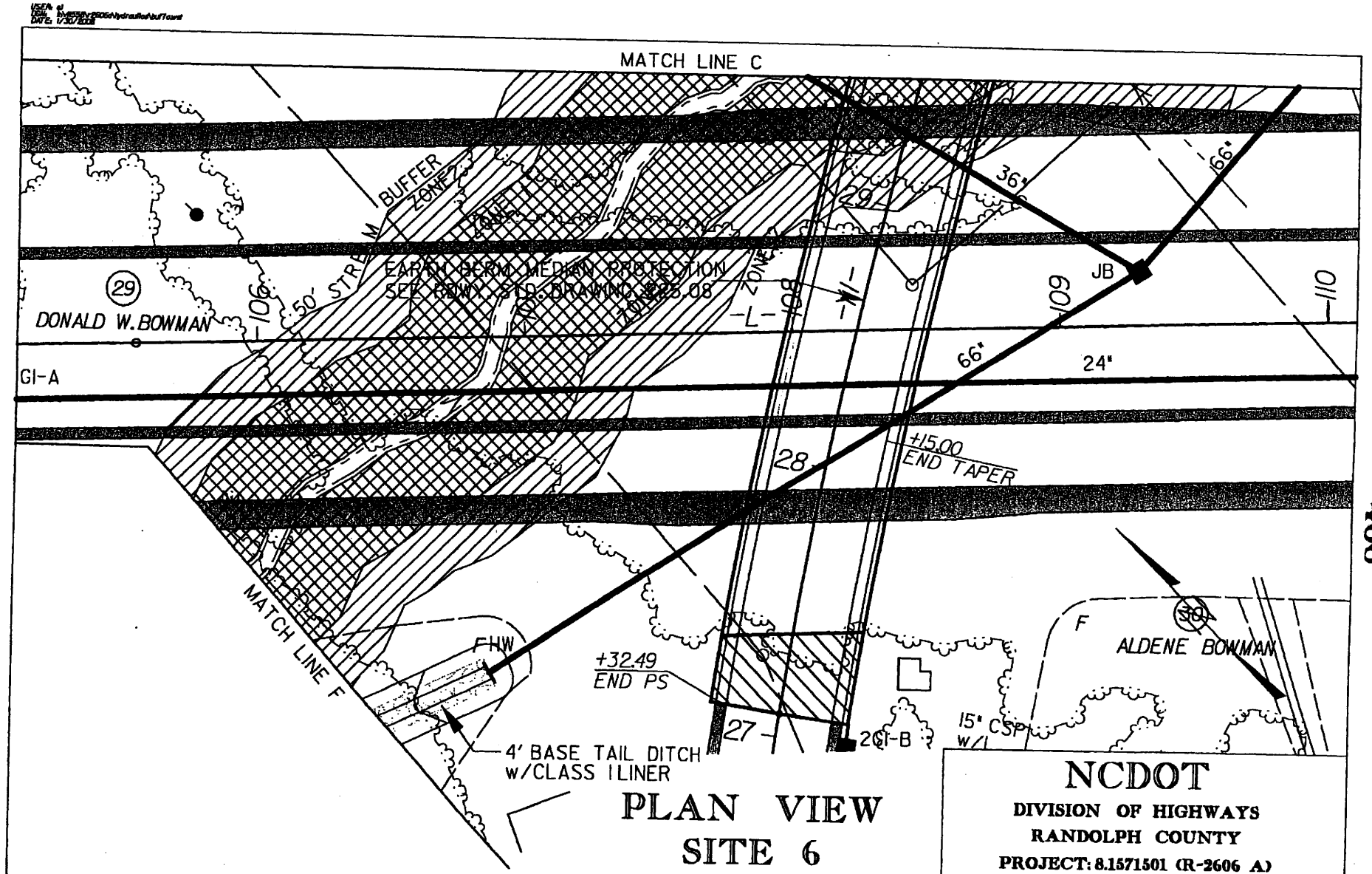
PLAN VIEW SITE 6

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** 26 1/31/2006



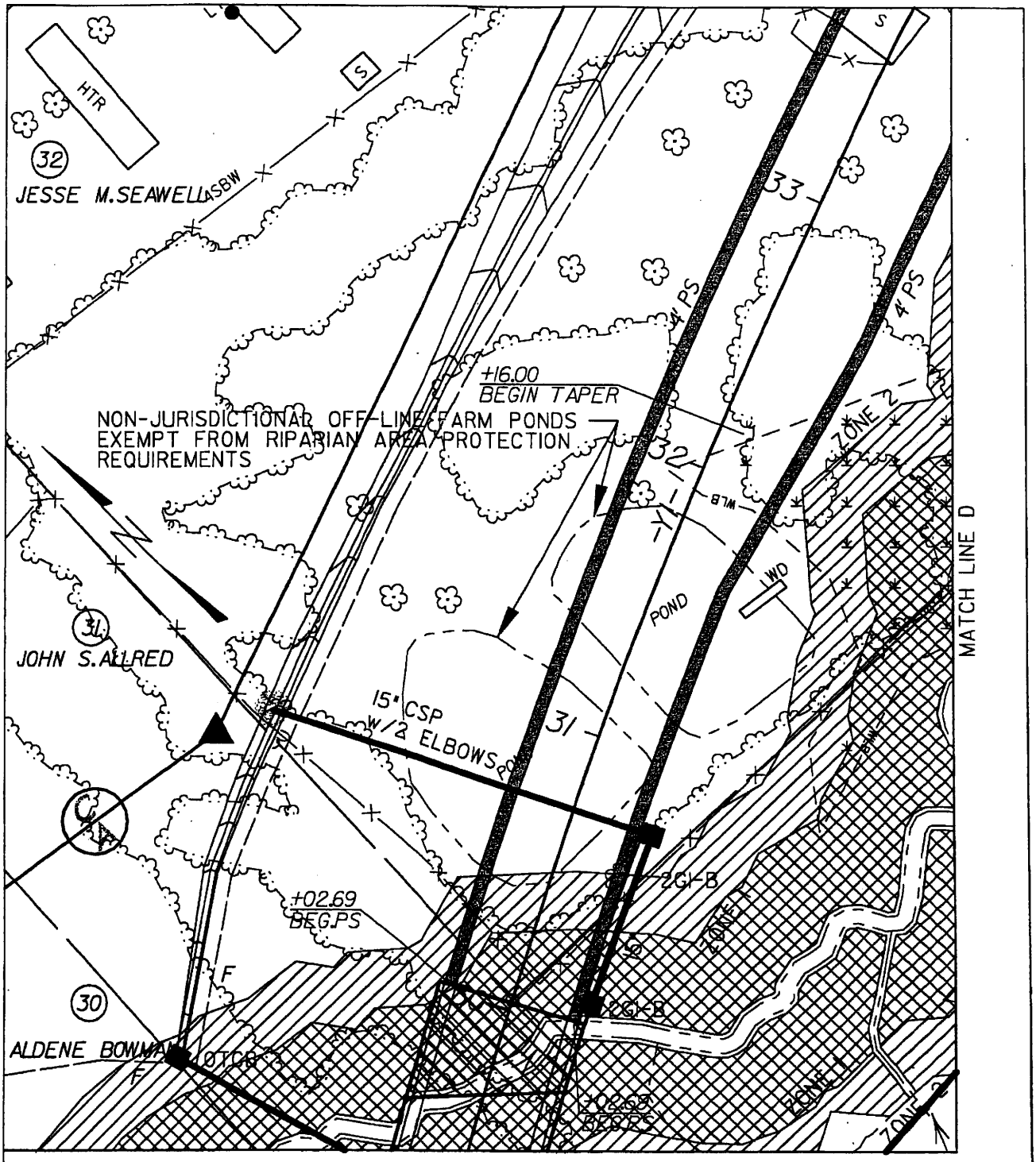
PLAN VIEW
SITE 6

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 20 **OF** 26 **/ 2006**

406



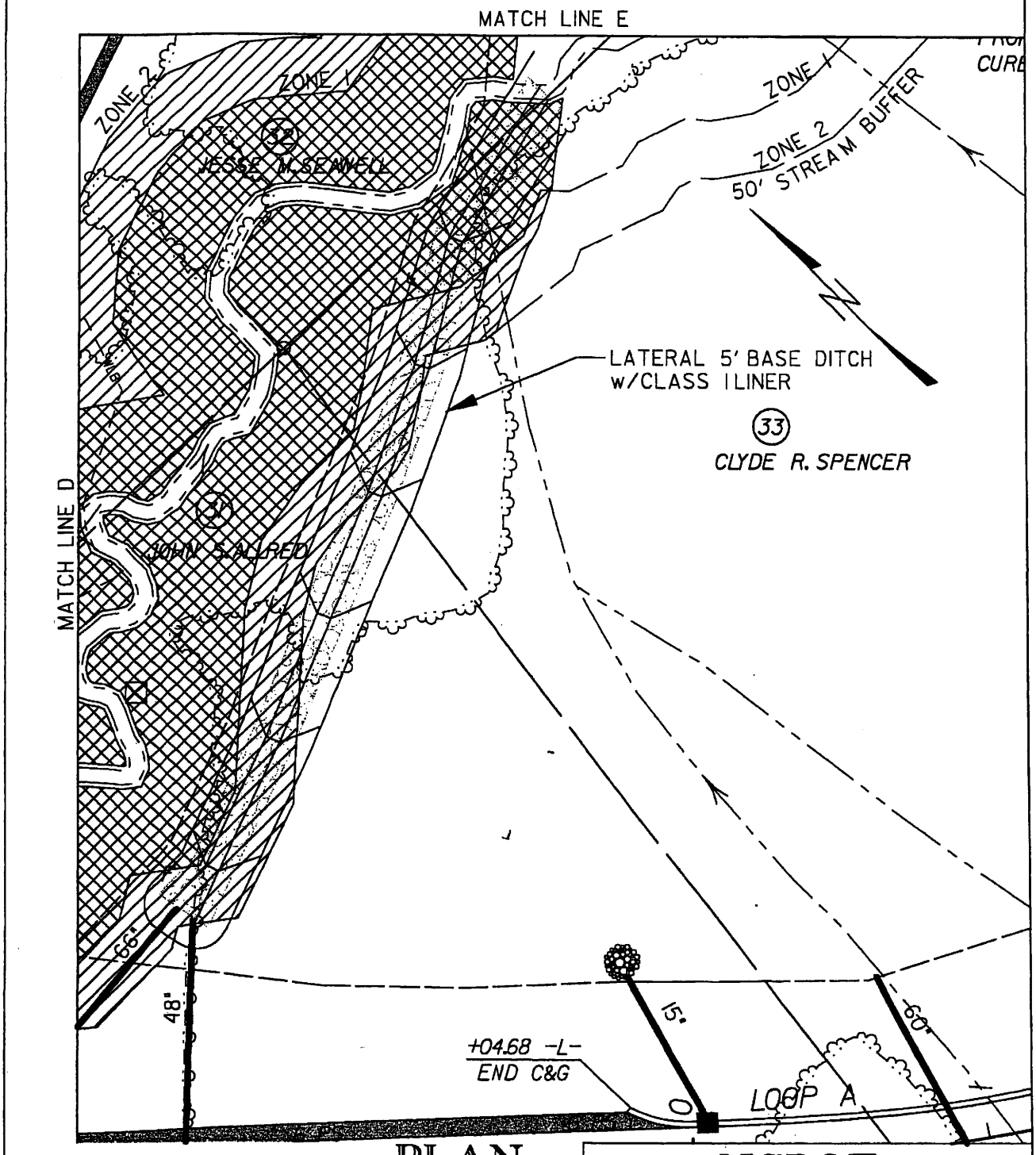
PLAN VIEW SITE 6

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 21 OF 26 / / 2006

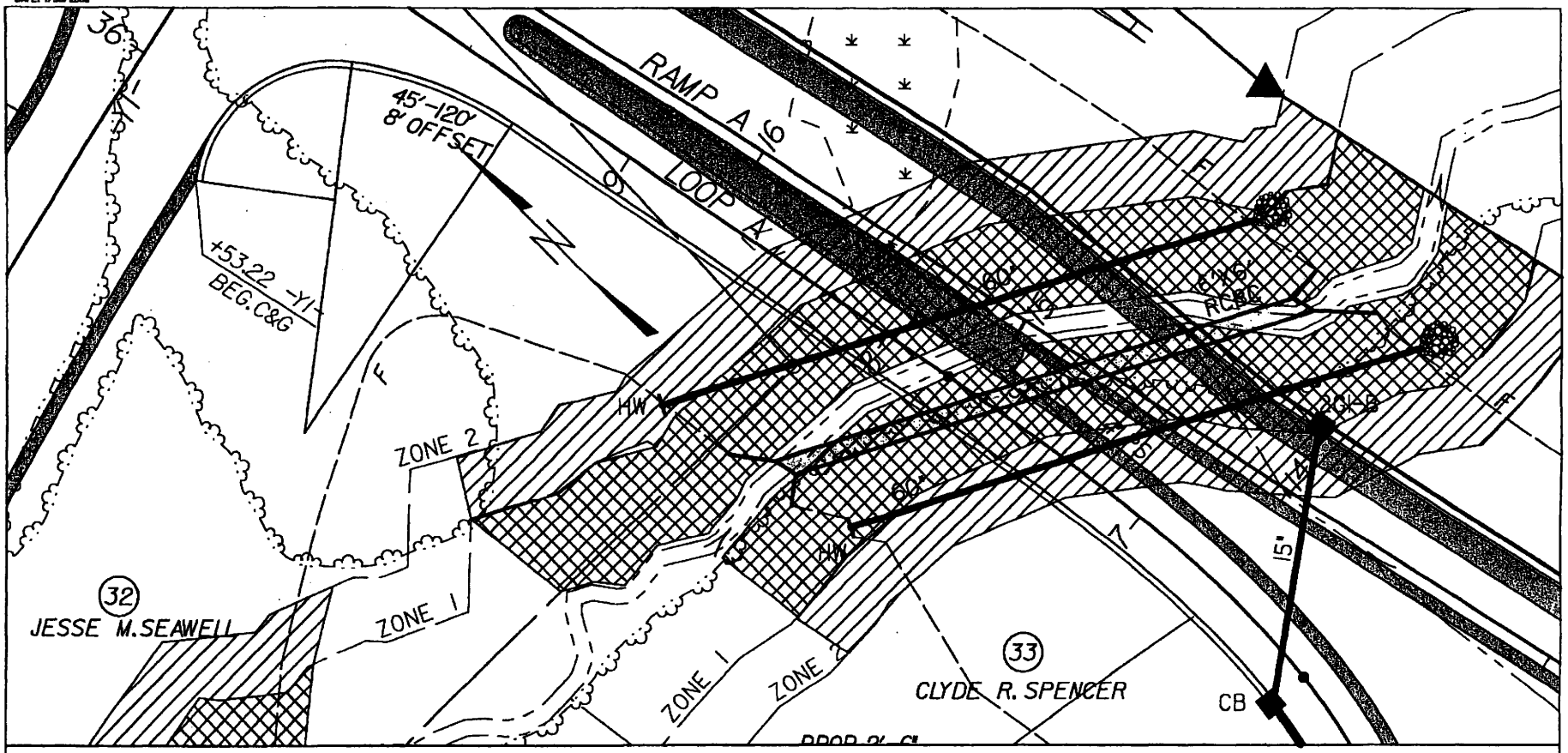


PLAN VIEW SITE 6

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 22 **OF** 26 **1/1/2006**



MATCH LINE E

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 26 1/1/2006

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
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

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 36 1/06

USER: rramy
DGN: k:\4155\8\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
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

NCDOT

DIVISION OF HIGHWAYS

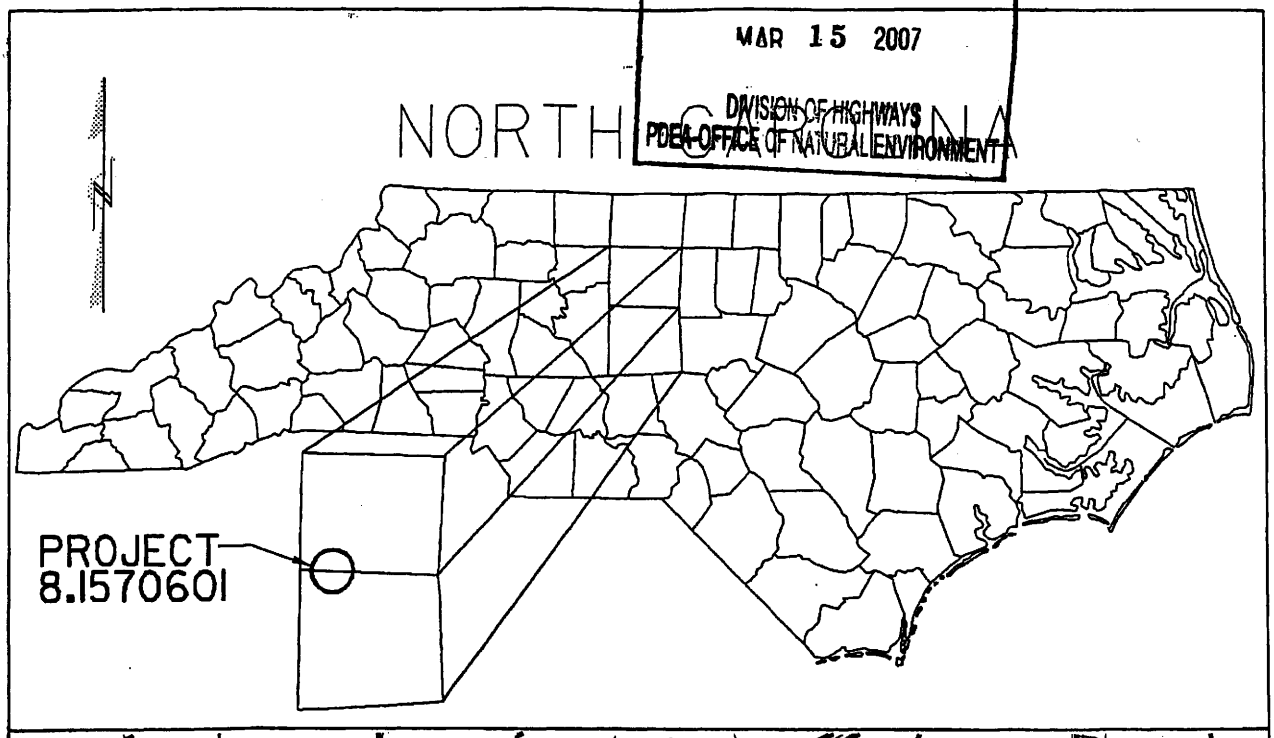
RANDOLPH COUNTY

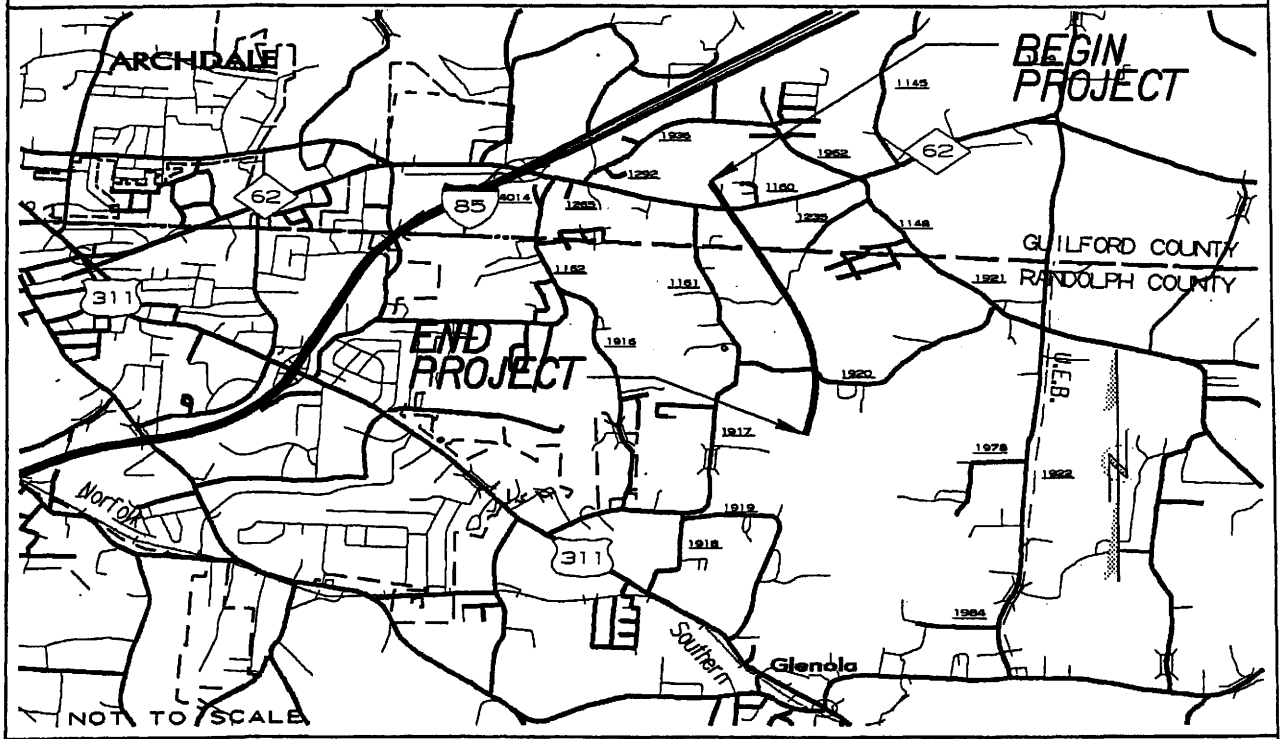
PROJECT: 8.1571501 (R-2606 A)

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

SHEET 26 OF 26

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





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

WETLAND

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

DENOTES TEMPORARY FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

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

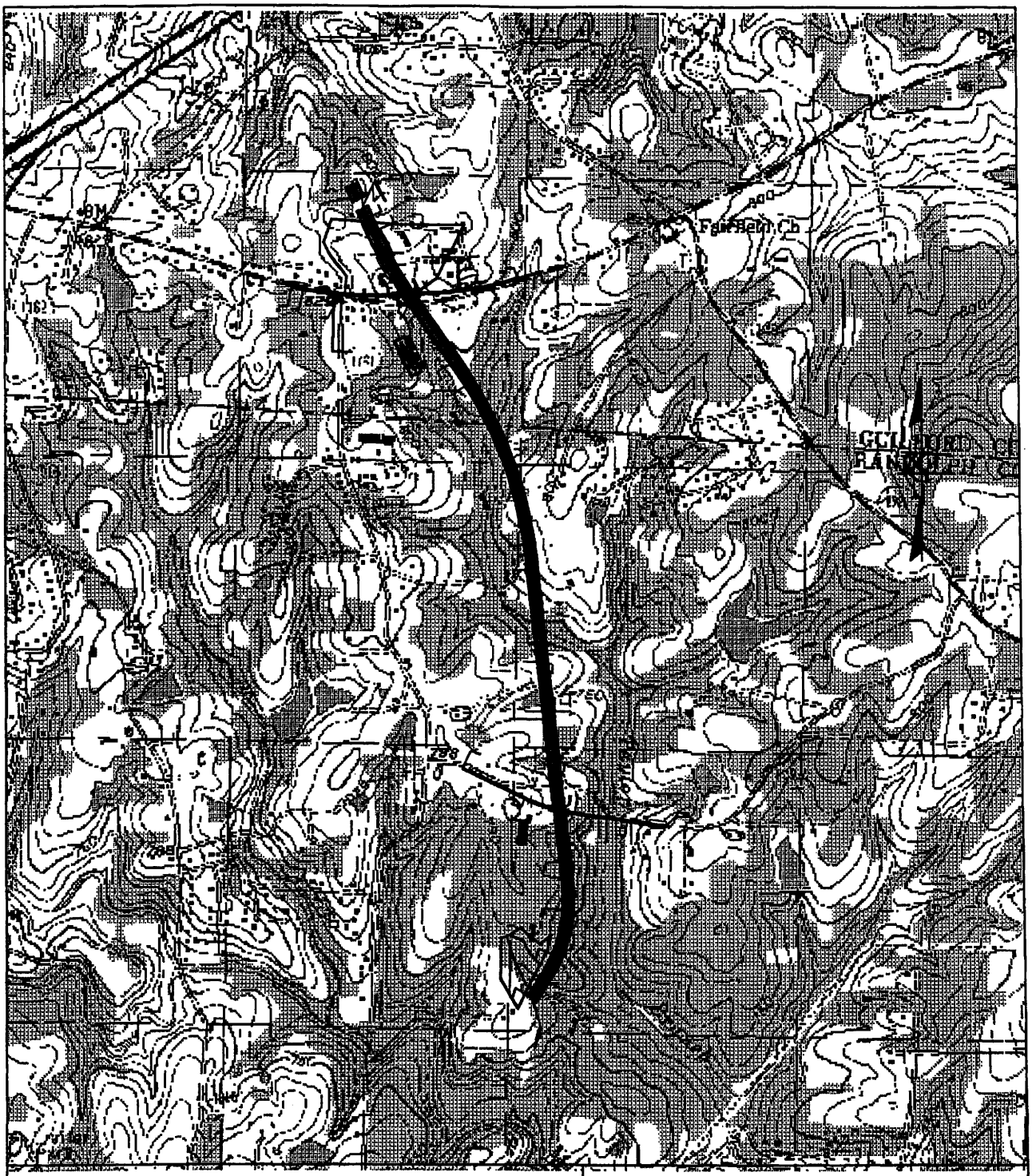
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 2 OF 17 **9/27/04**



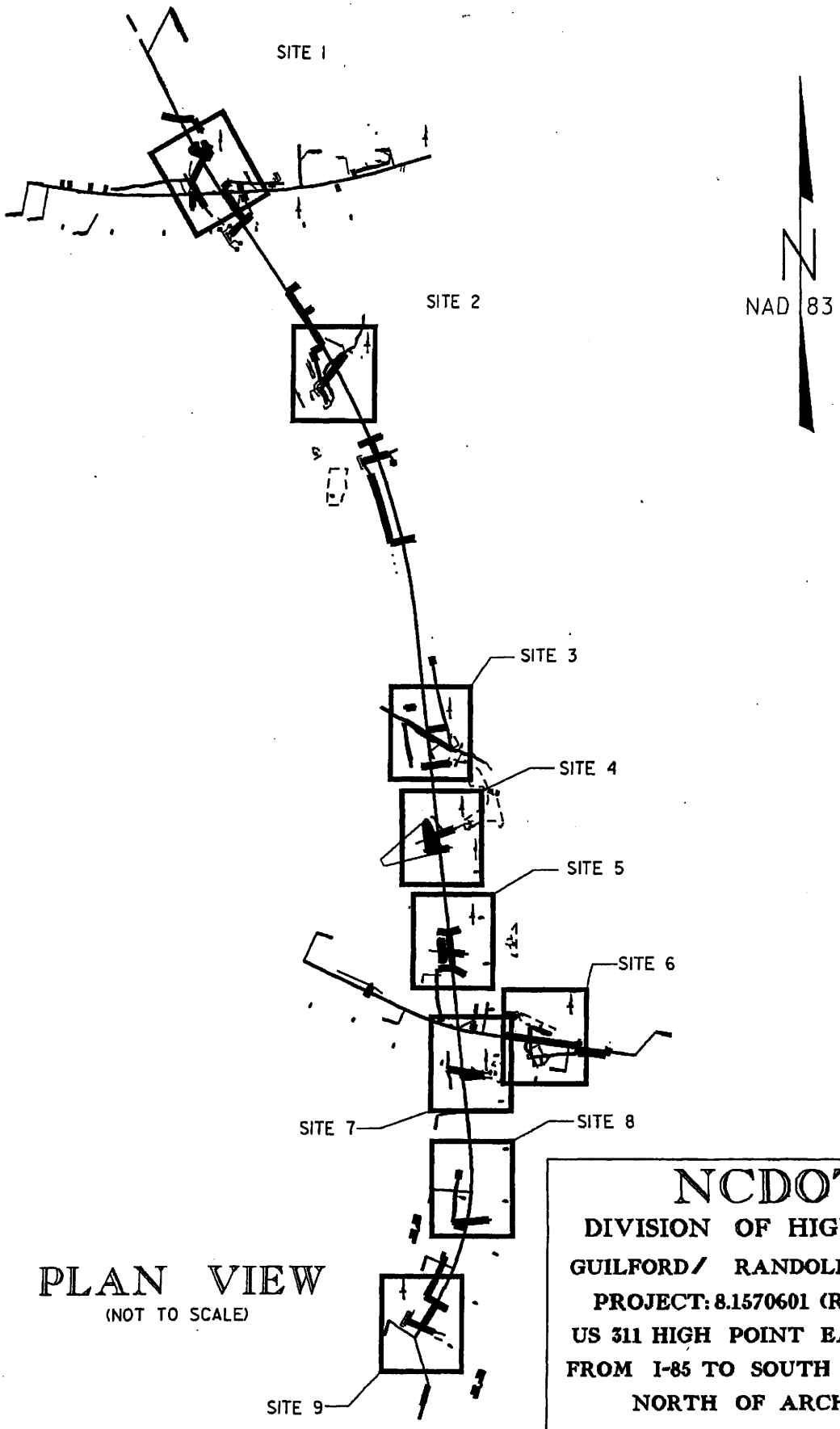
LOCATION MAPS

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

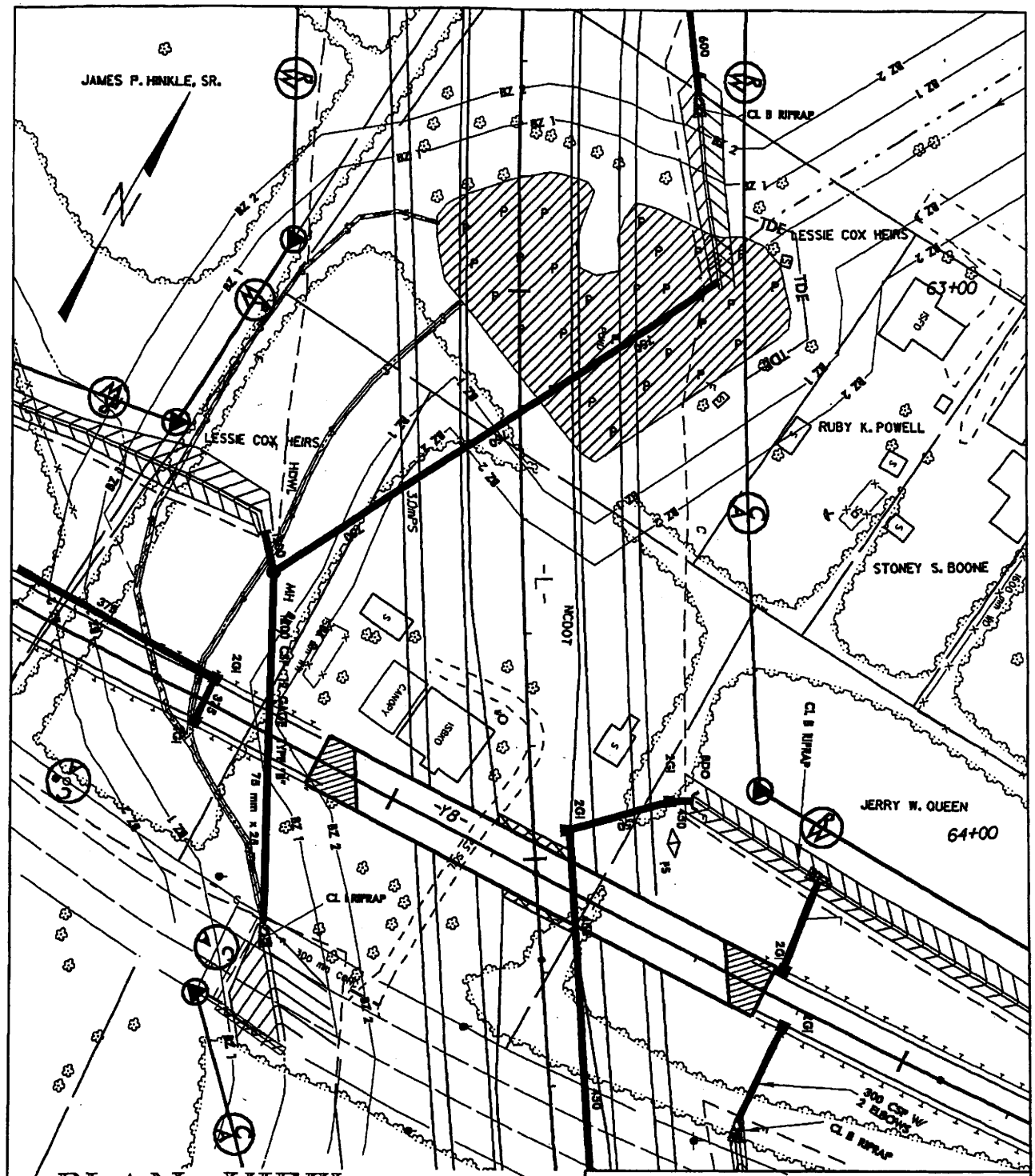
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

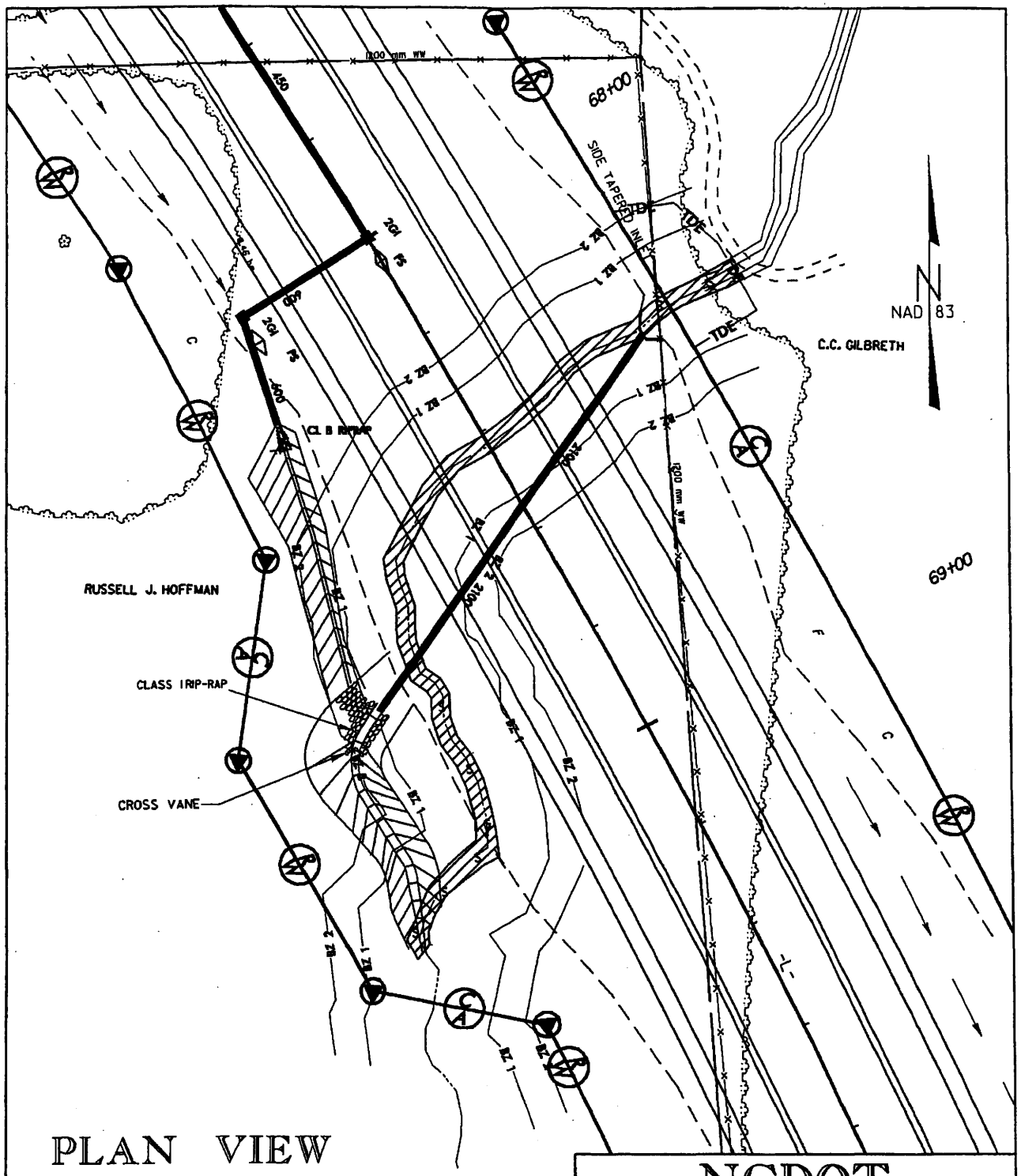
NORTH OF ARCHDALE

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



PLAN VIEW
SITE 1

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

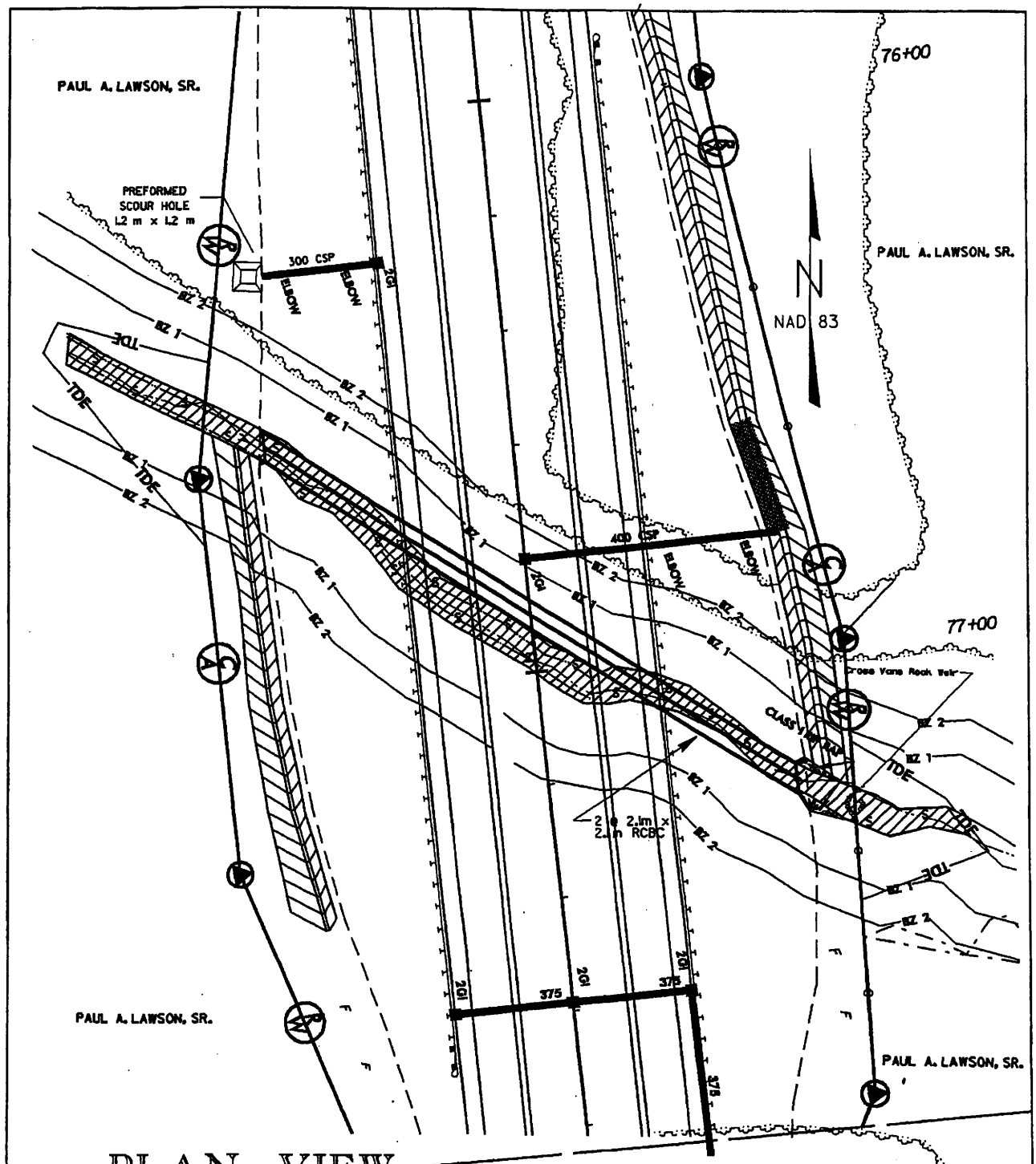


PLAN VIEW
SITE 2

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

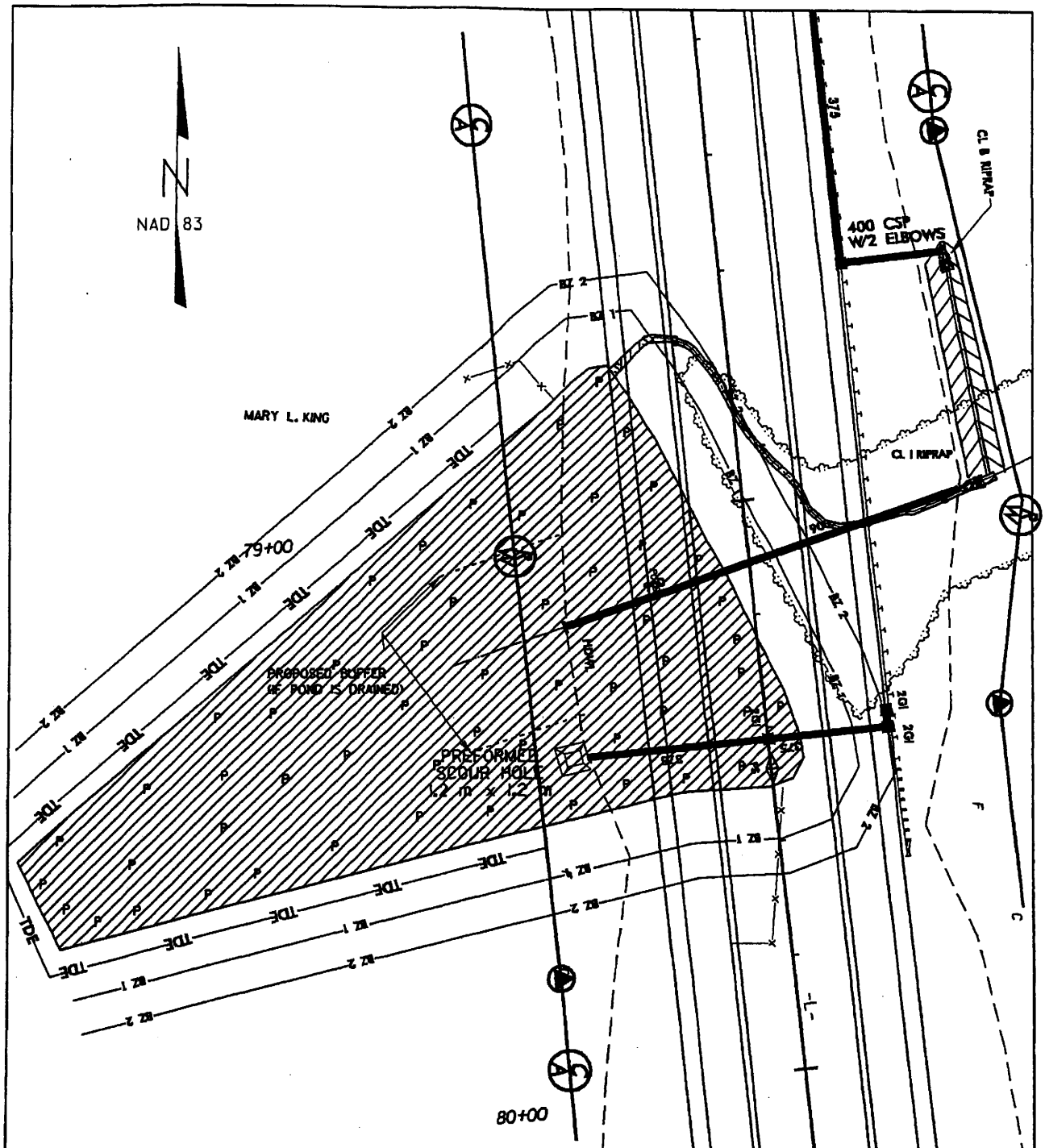
PROJECT: 8.1570601 (R-0609IB)

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

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

10m 20m HORIZONTAL SCALE

NCDOT
DIVISION OF HIGHWAYS

GUILFORD/ RANDOLPH COUNTY

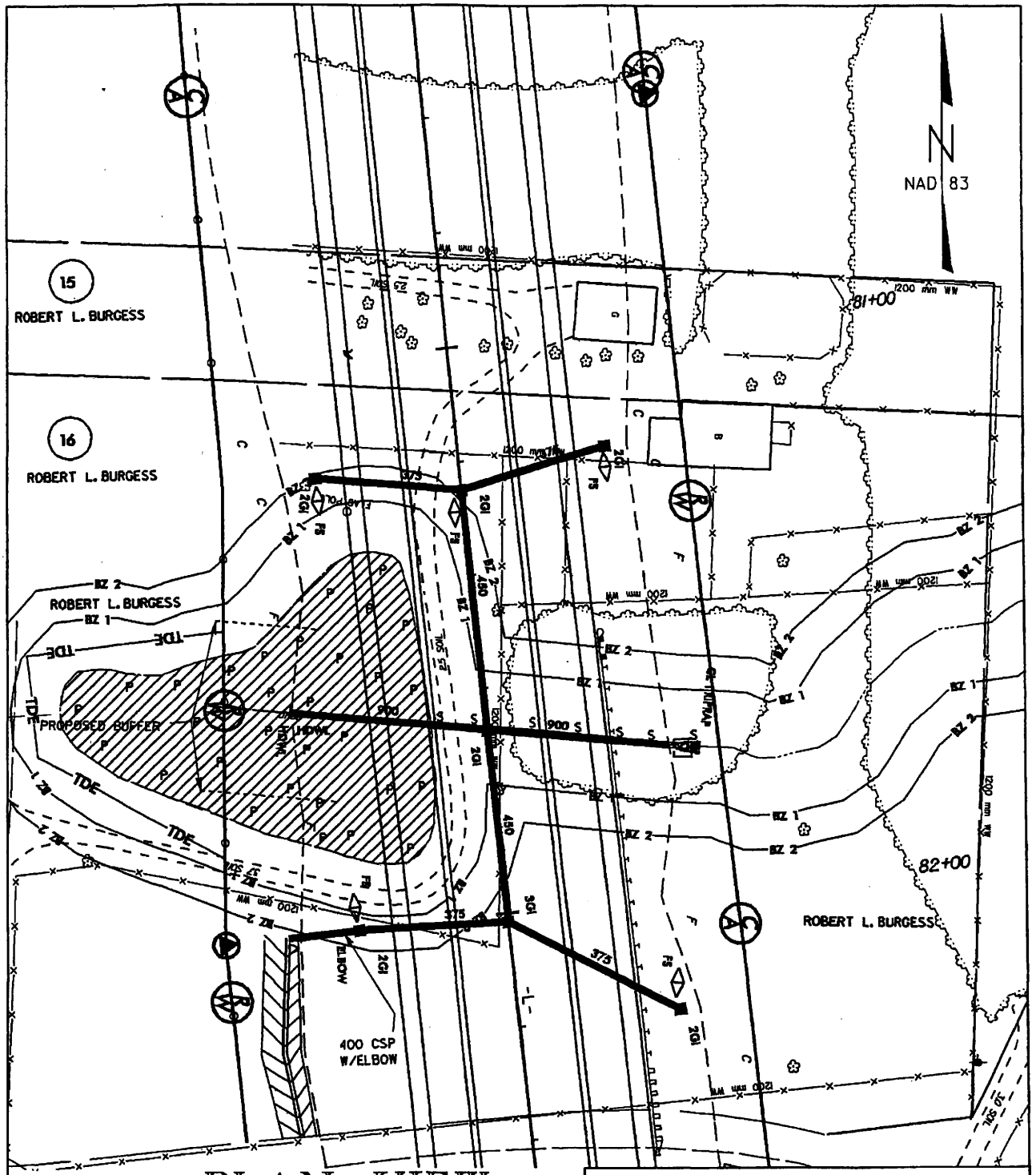
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 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

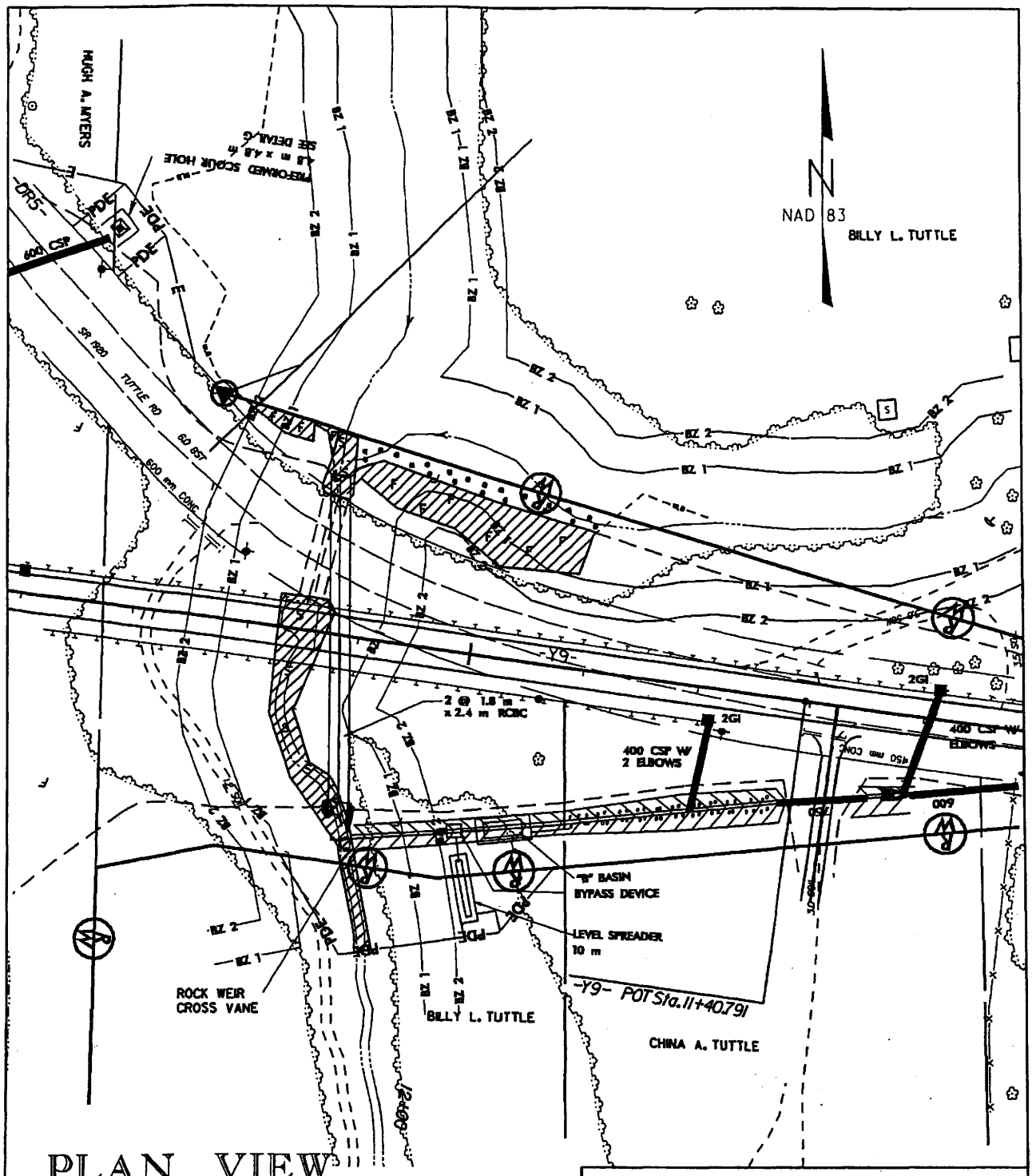
PROJECT: 8.1570601 (R-0609IB)

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

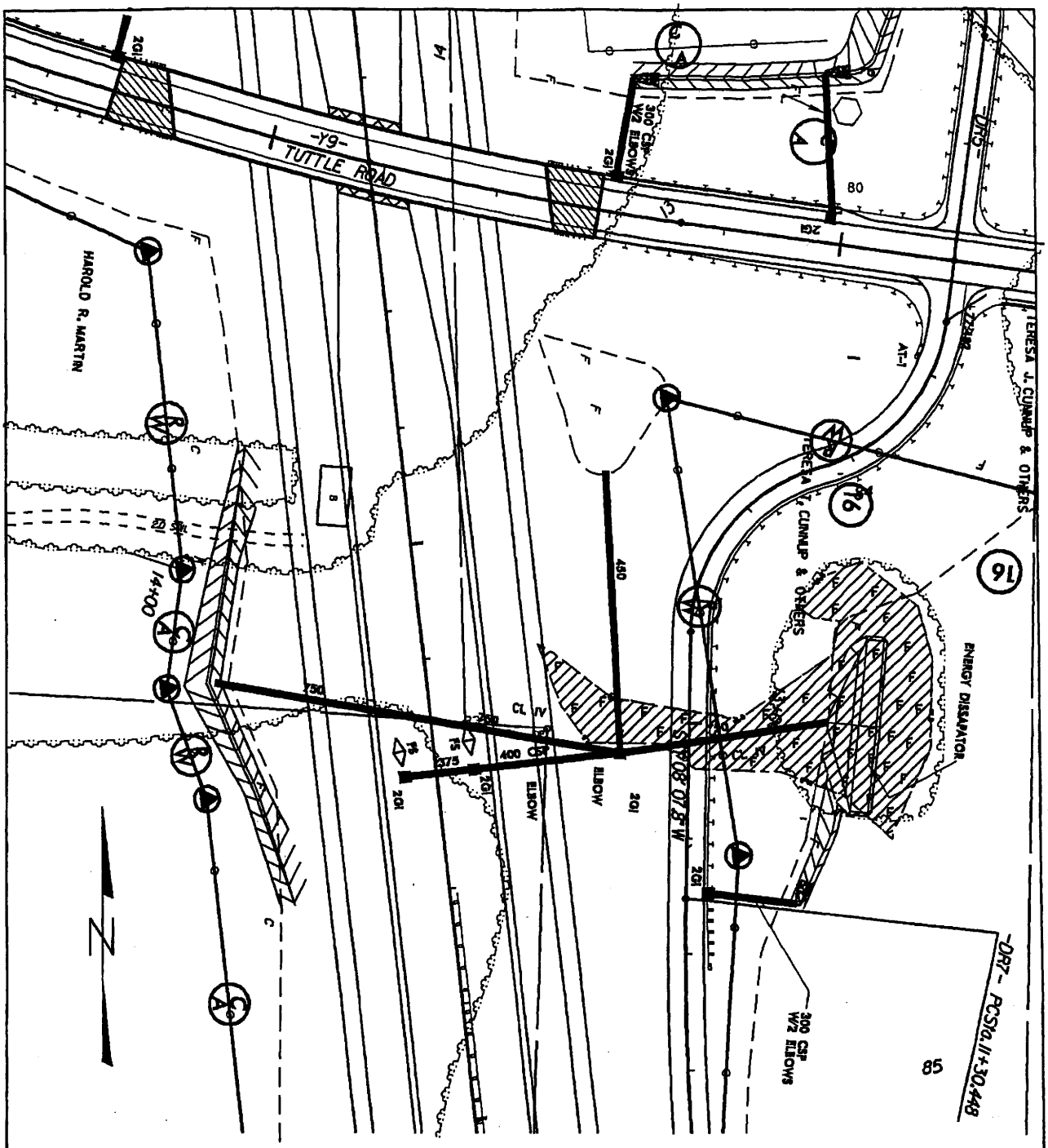
PROJECT: 8.1570601 (R-0609IB)

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

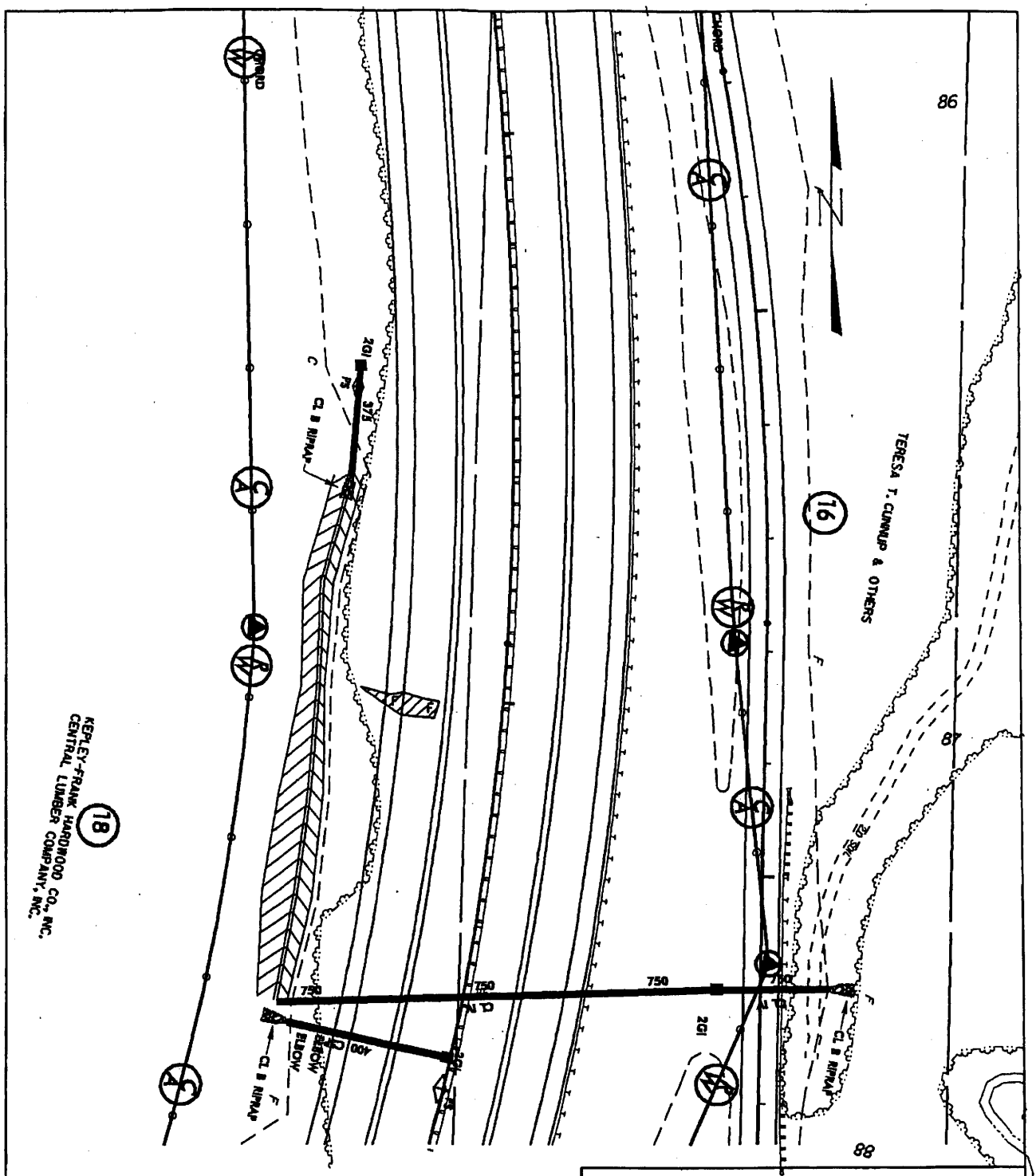
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 11 OF 17 **11/9/04**



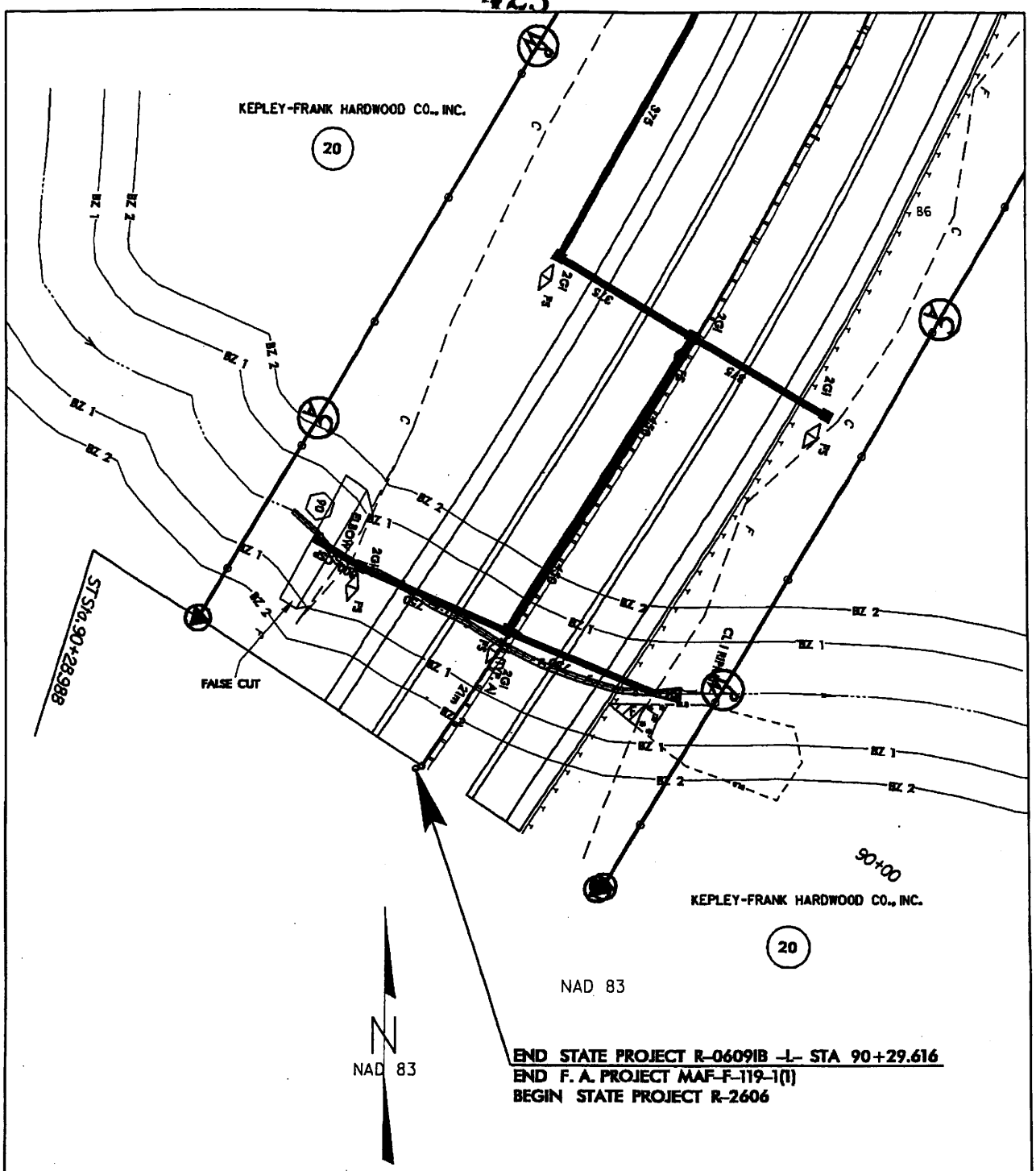
PLAN VIEW
SITE 8

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				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)
1	63+20 -L- TO	750 RCP					0.022	0.18		259	
	64+00 -L-										
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

Form Revised 3/22/01

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

WETLAND PERMIT IMPACT SUMMARY

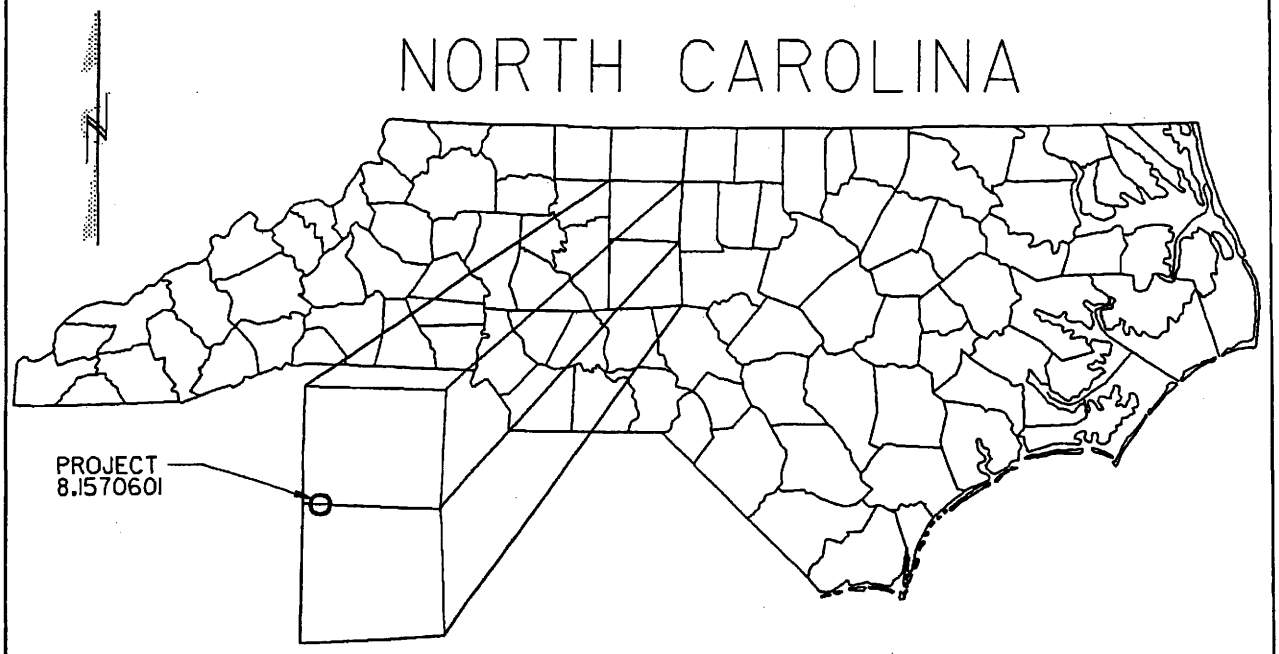
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				
			Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	63+20 -L- TO	30" RCP					0.054	0.445		850	
	64+00 -L-										
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

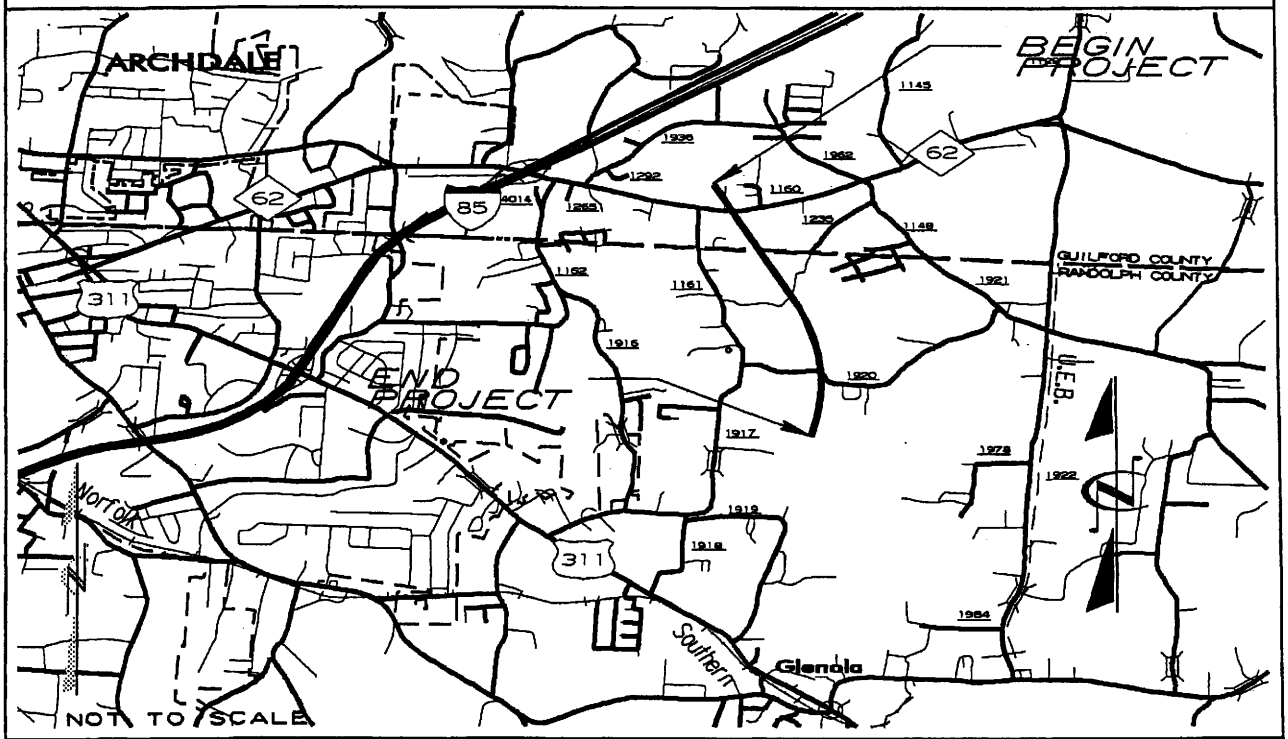
NCDOT

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

SHEET 17 OF 17 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

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

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

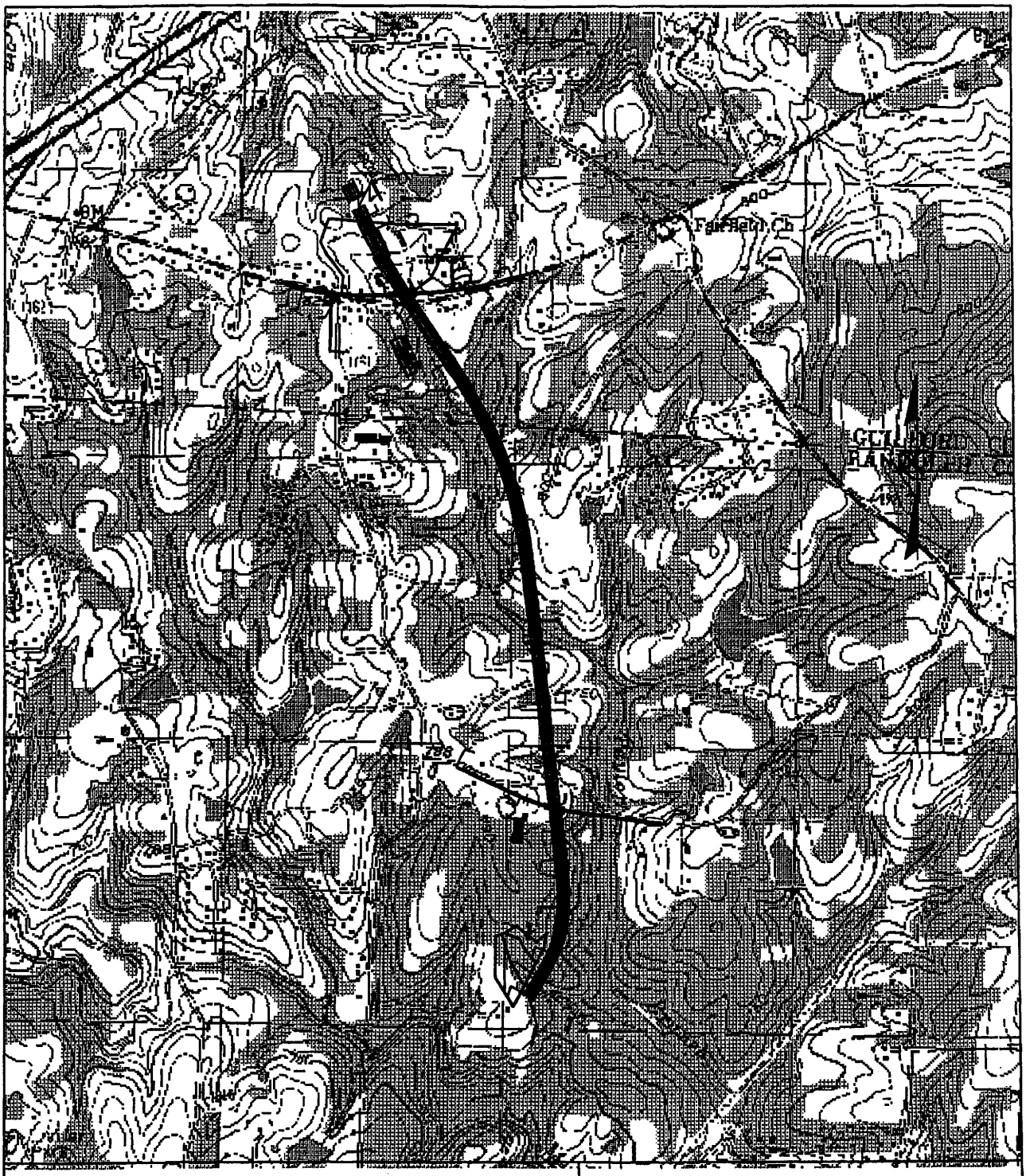
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 2 OF ~~13~~ 14 10/15/03



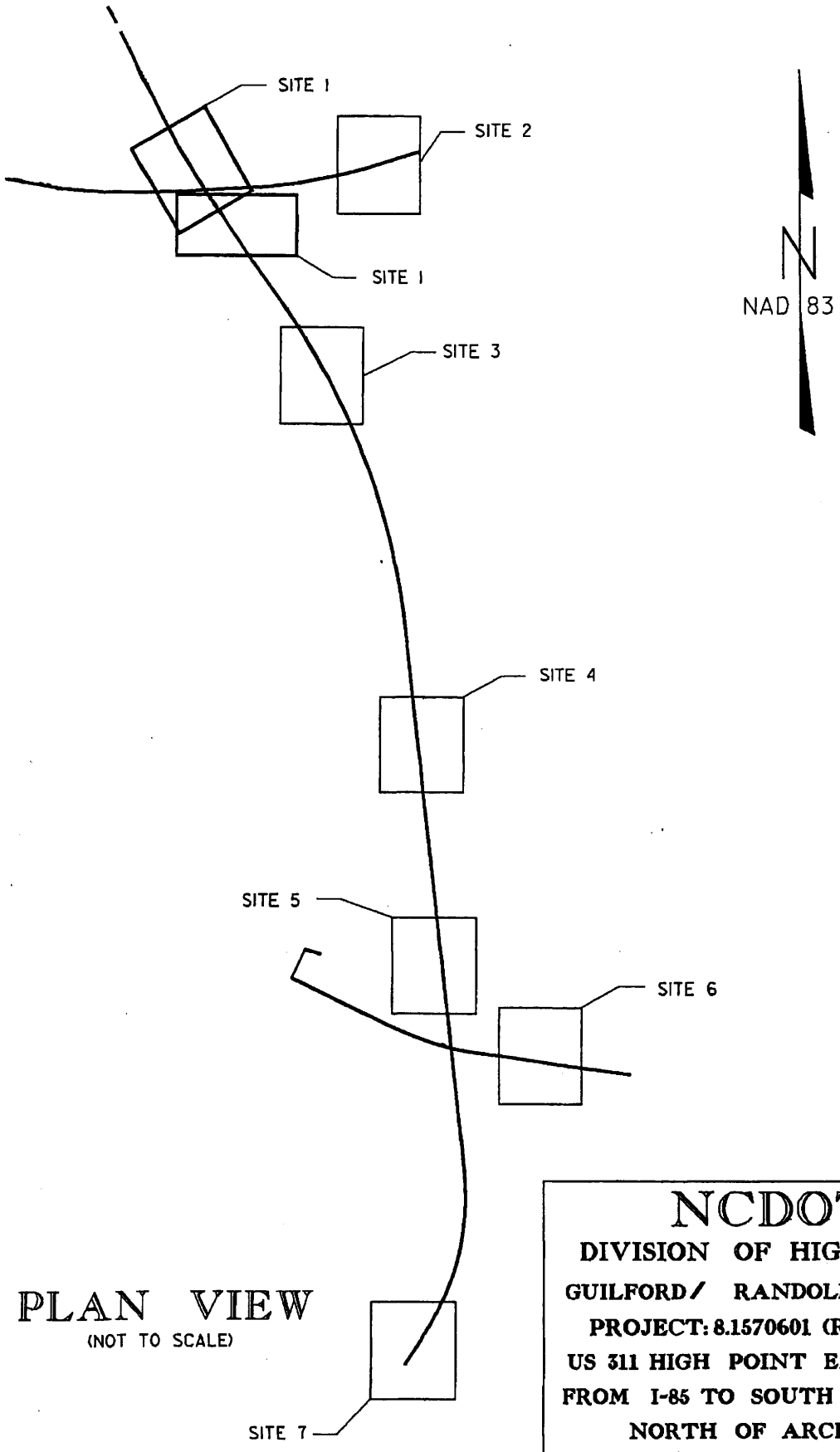
LOCATION MAPS

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

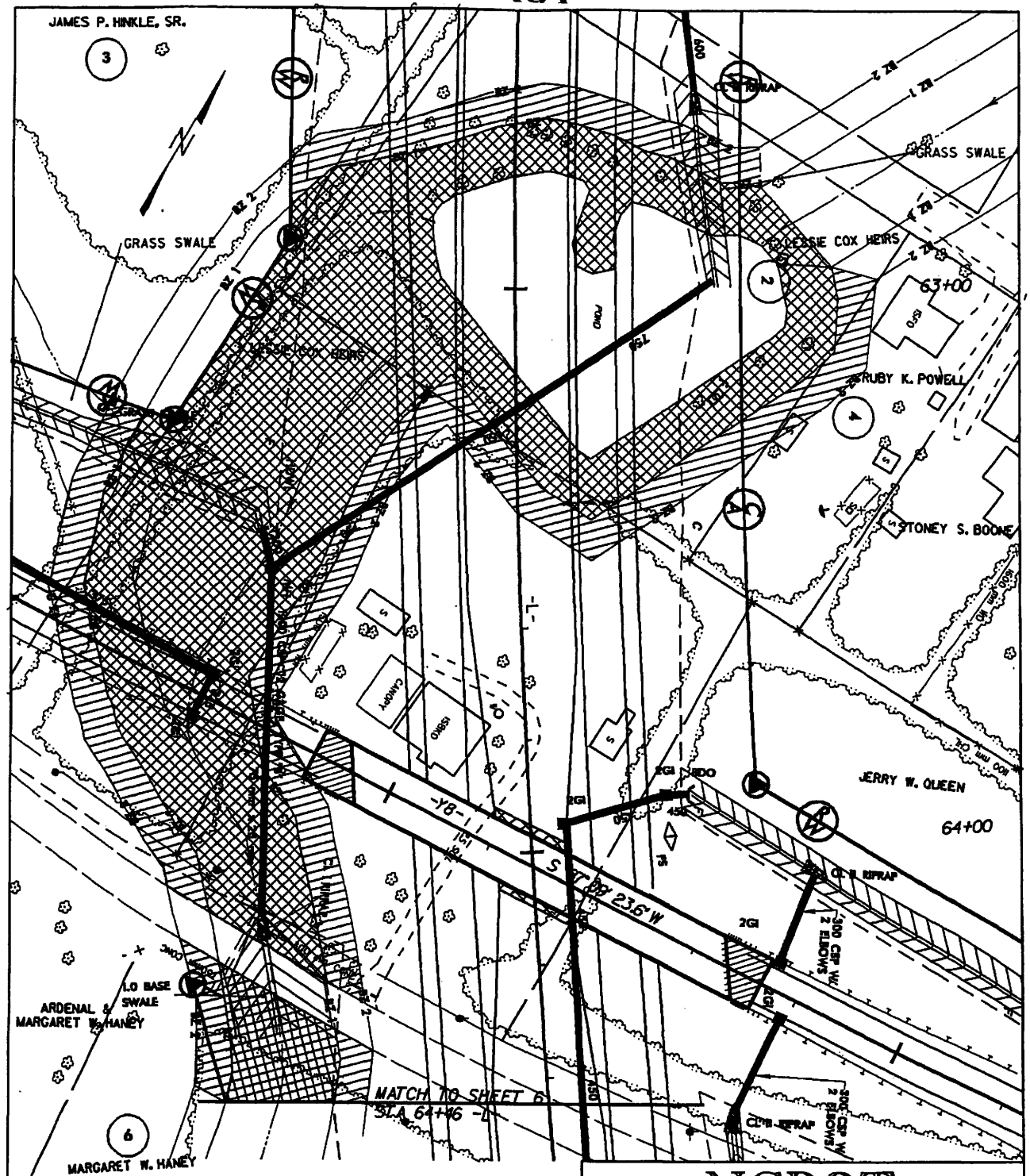
PROJECT: 8.1570601 (R-0609IB)

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

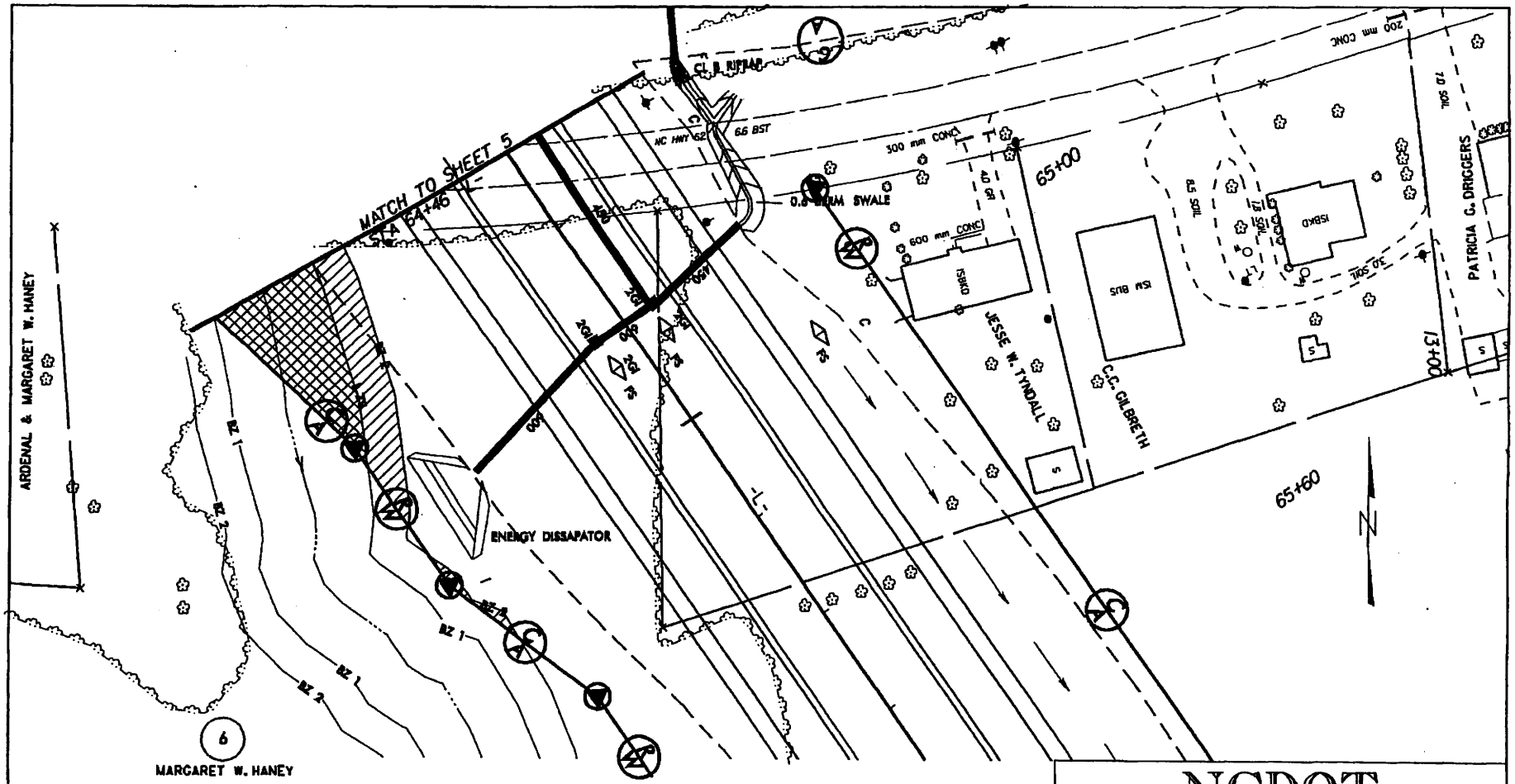
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 5 OF 14 7/8/2005



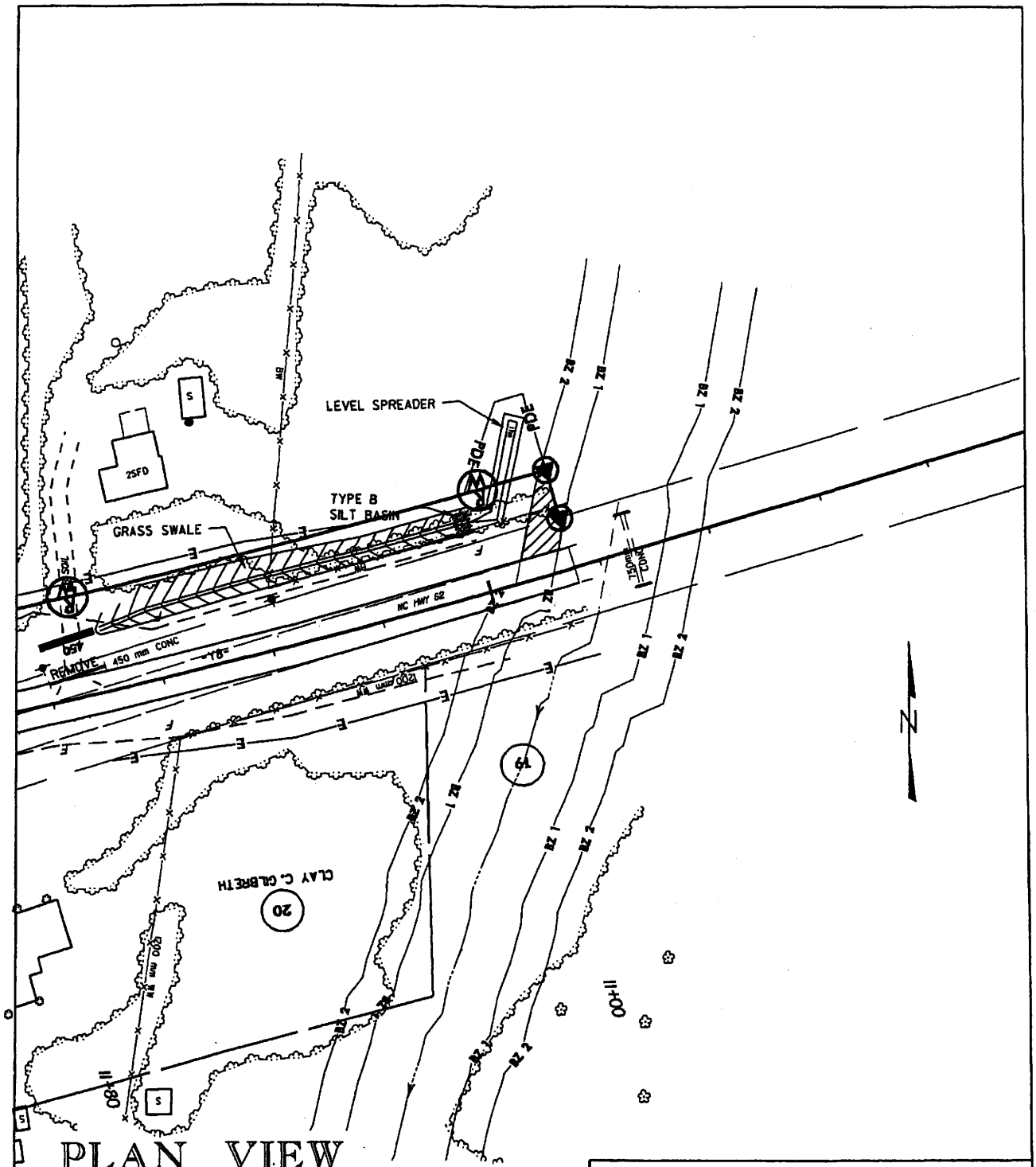
PLAN VIEW
SITE 1

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 6 OF 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

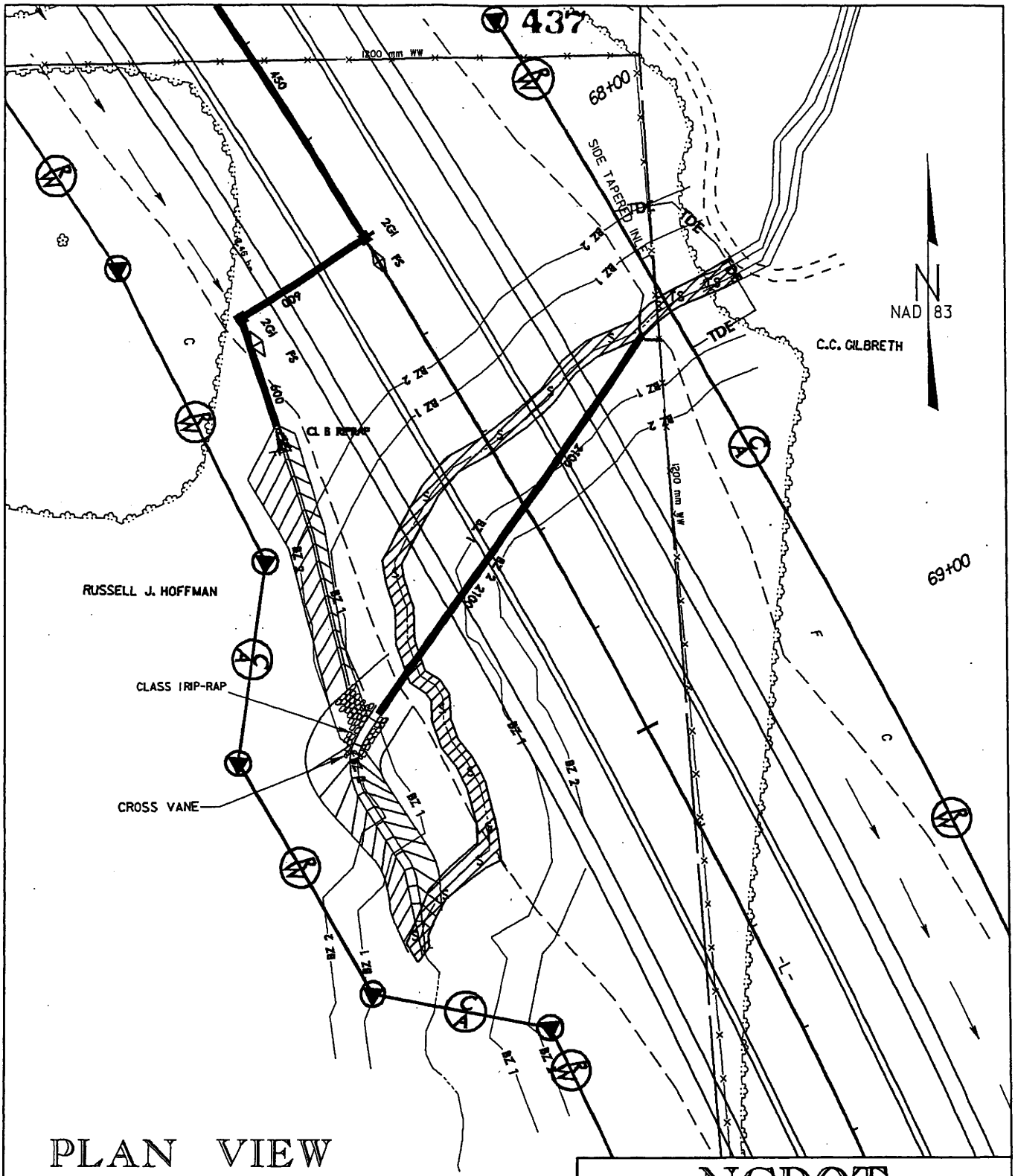
PROJECT: 8.1570601 (R-0609IB)

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

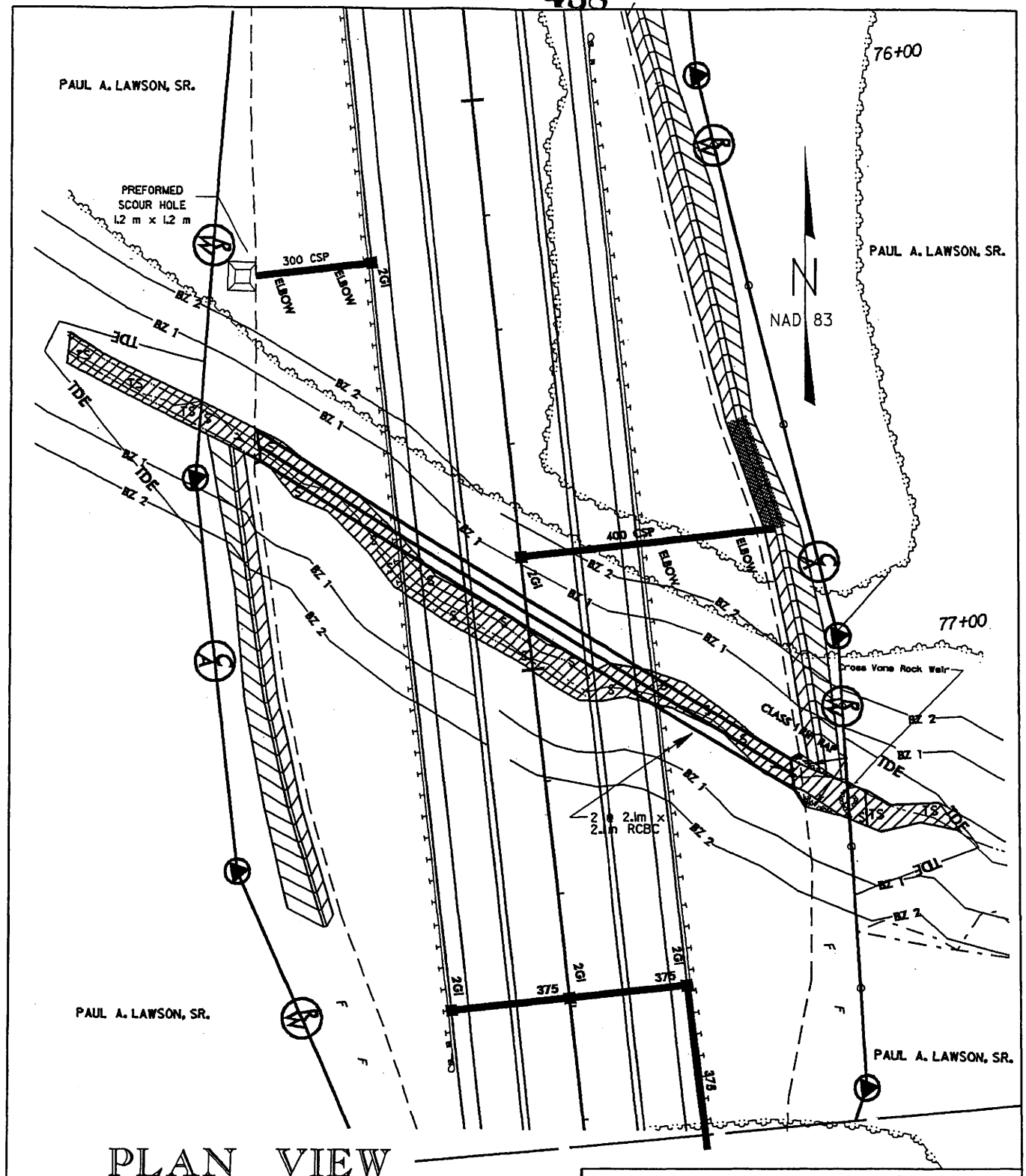
PROJECT: 8.1570601 (R-0609IB)

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

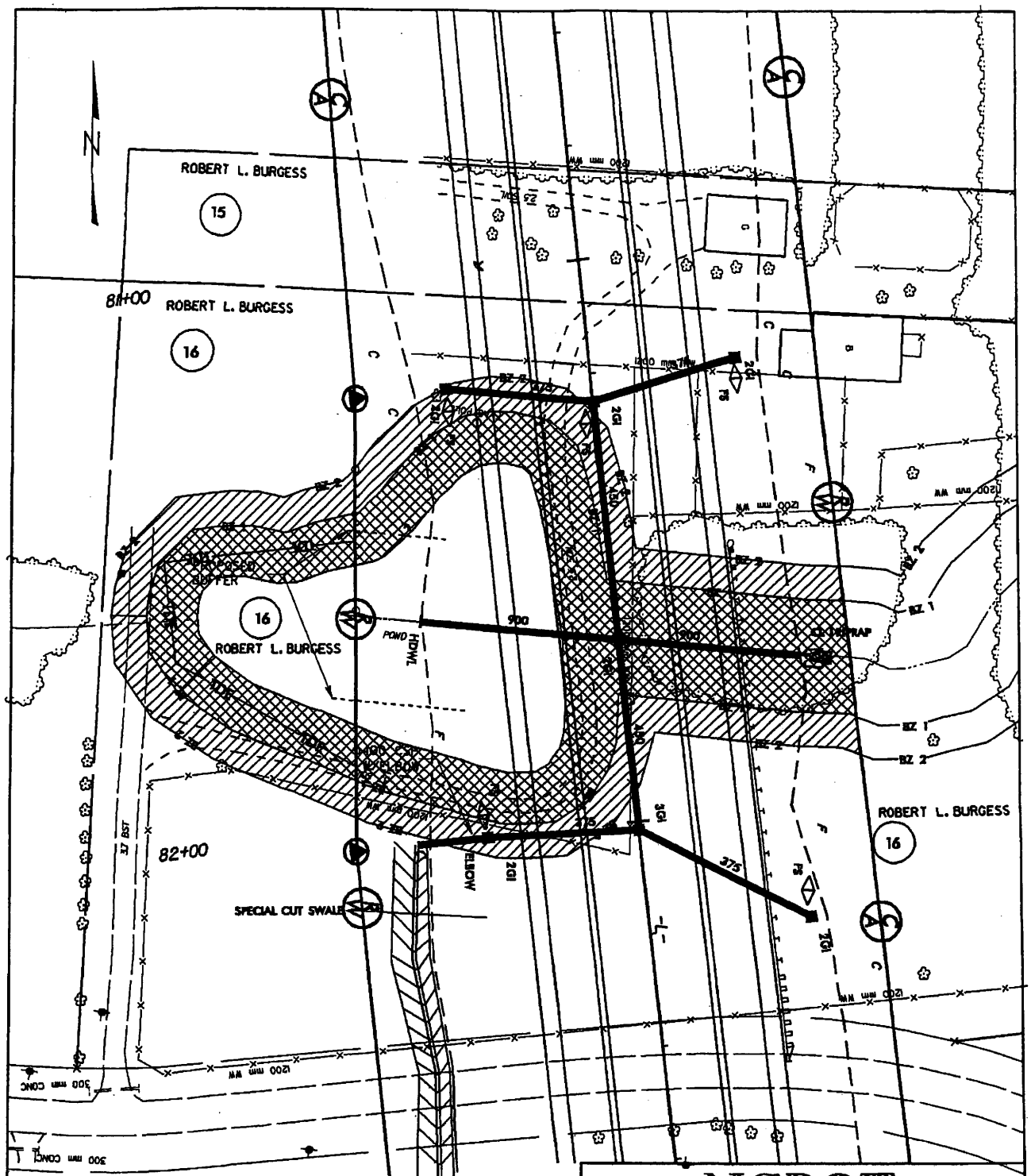
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 9 OF 14 5/24/06



PLAN VIEW
SITE 5

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD / RANDOLPH COUNTY

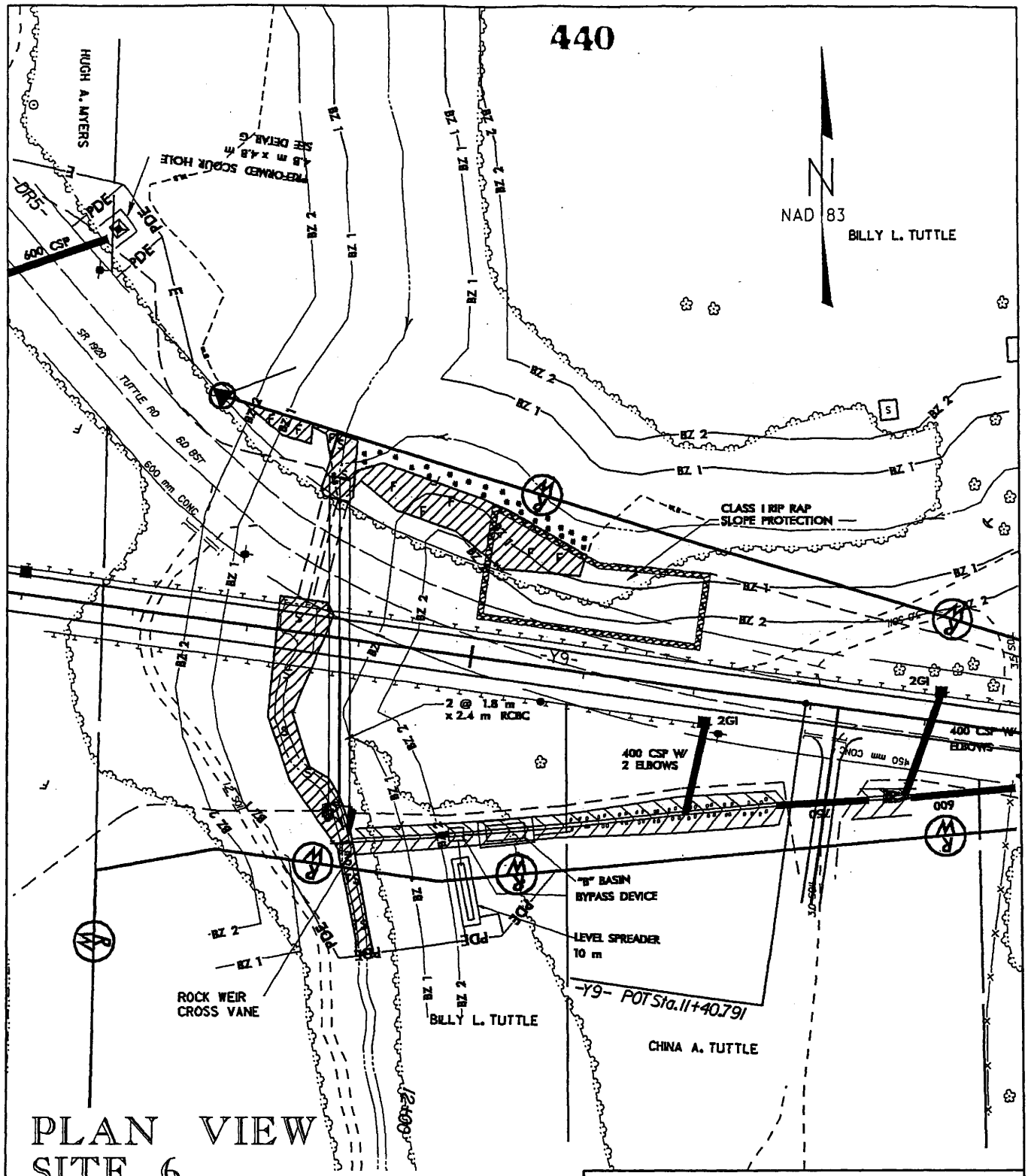
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 10 OF 14 3/14/05



PLAN VIEW
SITE 6

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

10m 20m HORIZONTAL SCALE

NCDOT

DIVISION OF HIGHWAYS

GUILFORD / RANDOLPH COUNTY

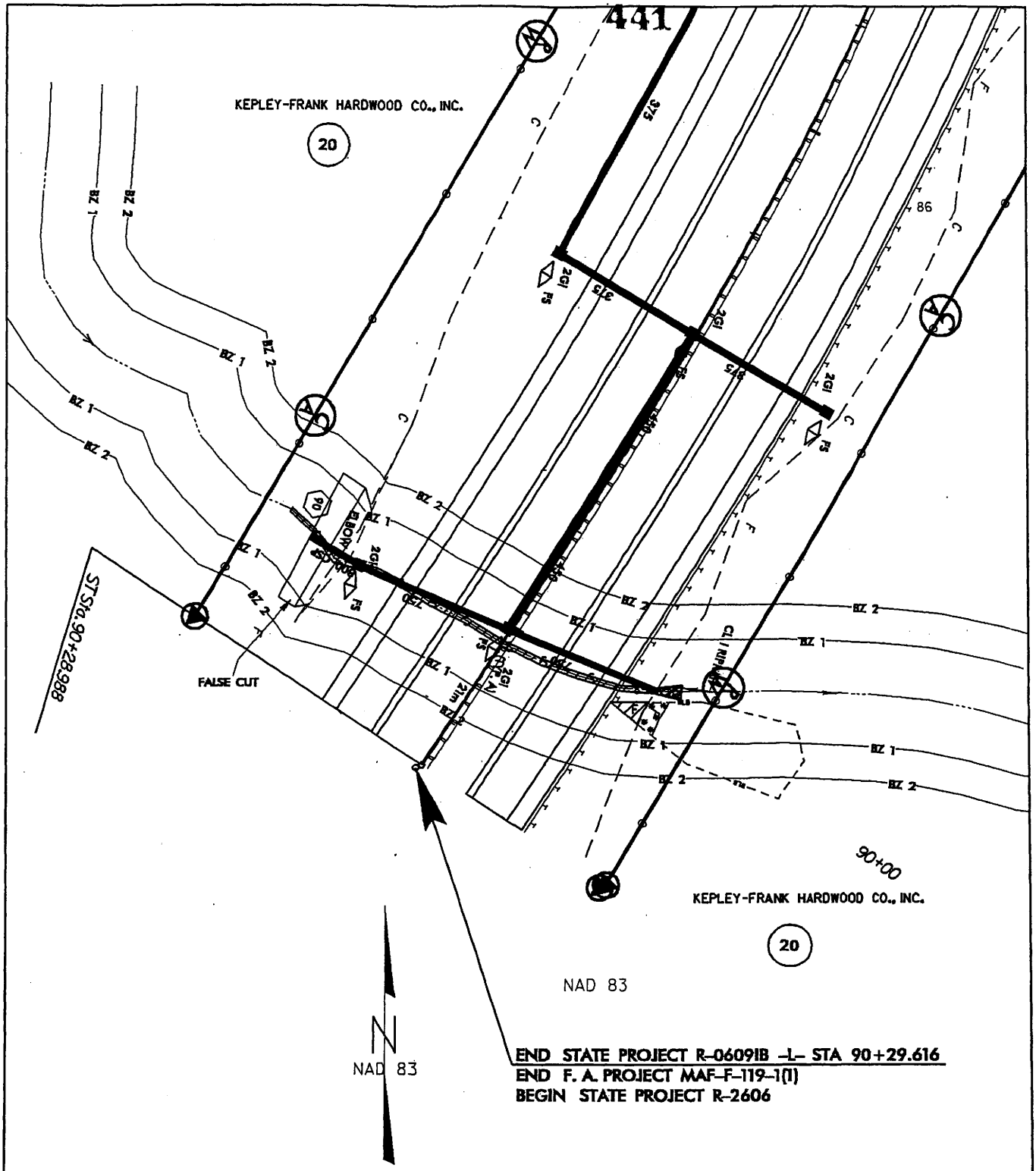
PROJECT: 8.1570601 (R-0609IB)

US 311 HIGH POINT EAST BELT

FROM I-85 TO SOUTH OF SR 1920

NORTH OF ARCHDALE

SHEET 10 OF 14 5/24/06



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 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)	Temp. Fill In Wetlands (ha)	Excavation in Wetlands (ha)	Mechanized Clearing in Wetlands (ha)	Hand Clearing in Wetlands (ha)	SURFACE WATER IMPACTS: Permanent SW impacts (ha)	Temp. SW impacts (ha)	Existing Channel Impacts Permanent (m)	Natural Stream Design (m)
1 *	63+20 -L- TO	750 RCP						0.202		259	
	64+00										
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 13 of 14 6/24/2006

13 14

442

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Natural Stream Design (ft)
1 *	63+20 -L- TO	750 RCP						0.499		850	
	64+00										
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