

PROJECT SPECIAL PROVISIONS
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.

DEPARTMENT OF THE ARMY PERMIT

NC Department of Transportation

Permittee _____

200220745

Permit No. _____

USAED, Wilmington

Issuing Office _____

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:

Place fill material impacting a total of 24.03 acres of wetlands and 11.337 linear feet of stream, for construction of the US 70 Clayton Bypass (T.I.P. No. R-2552), crossing White Oak Creek, Little Creek, Cooper Branch, Reedy Branch and unnamed tributaries to Swift Creek.

Project Location:

From I-40 in Wake County to US 70 Business, in Wake and Johnston Counties, North Carolina.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2009. 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 enclosed sheet.

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).
- ☒ 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:

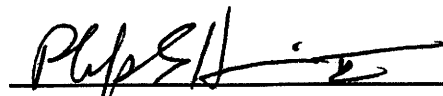
- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
- b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
- 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.


 (PERMITEE)


 (DATE)

NC DEPARTMENT OF TRANSPORTATION

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

 (DISTRICT ENGINEER)

 (DATE)

CHARLES R. ALEXANDER, JR. COLONEL

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)



RECEIVED

JAN 27 2005

RALEIGH REGULATORY FIELD OFFICE

COPY

North Carolina Department of Environment and Natural Resources

372

Michael F. Easley, Governor
William G. Ross Jr., Secretary

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

January 14, 2005

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

Dear Dr. Thorpe:

Re: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and Neuse River Buffer Authorization Proposed Construction of US 70 (Clayton Bypass) from I-40 to US 70 Business in Wake and Johnston Counties, TIP No. R-2552AA, AB, B and C, State Project No. 8.T311002, Federal Aid Project No. NHF-60-1(9).
WQC Project No. 041760

Attached hereto is a copy of Certification No. 3496 issued to The North Carolina Department of Transportation dated January 14, 2005.

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

Sincerely,

Alan W. Klimek, P.E.
Director

Attachments

cc: Wilmington District Corps of Engineers
Mr. Mike Bell, Corps of Engineers Washington Field Office
Mr. Eric Alsmeyer, Corps of Engineers Raleigh Field Office
Mr. Christopher Militscher, US EPA, Region IV
Mr. Jim Trogdon, PE, Division 4 Engineer, PO Box 3165, Wilson, NC 27895
Mr. Jamie Shern, Division 4 Environmental Officer, PO Box 3165, Wilson, NC 27895
Mr. Jon Nance, PE, Division 5 Engineer, 2612 N. Duke St., Durham, NC 27704
Mr. Chris Murray, Division 5 Environmental Officer, 2612 N. Duke St., Durham, NC 27704
Mr. Matt Haney, ONE, 2728-168 Capital Blvd., Parker Lincoln Bldg., Raleigh, NC 27604
Mr. William Gilmore, Ecosystem Enhancement Program
NCDWQ Raleigh Regional Office
Central Files
File Copy

**APPROVAL OF 401 Water Quality Certification and ADDITIONAL CONDITIONS
And Neuse River Buffer Rules**

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15 NCAC 2H, Section .0500. The project shall be constructed pursuant to the application dated received November 1, 2004, to construct US 70 (Clayton Bypass) from I-40 to US 70 Business in Wake and Johnston Counties. The approved design is that submitted in your application dated received November 1, 2004 and subsequent additional information dated received January 6 and 7 2005. This certification authorizes the NCDOT to impact 24.02 acres of jurisdictional wetlands, permanently impact 9,921 linear feet of stream, temporarily impact 1,416 linear feet of stream and impact 27.82 acres of protected Neuse Riparian Buffers (15.94 acres in Zone 1 and 11.88 acres in Zone 2) in Wake and Johnston Counties. This authorization also authorizes a minor variance on the AA section at Station L 68+80 for a level spreader in Buffer Zone 2 and a minor variance at Station Y 11 REV 15+00 for two preformed scour holes in Buffer Zone 2. The authorized impacts are as described below:

Section AA Wetland Impacts in the Neuse River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)
AA1b				0.01	
AA2b	0.01			0.01	
AA4b				0.01	
AA5b	0.03			0.02	
AA6	0.03			0.01	
AA7	0.03			0.01	
AA8	0.05			0.02	
AA9	0.01			0.01	
AA10a	0.01			0.01	
AA10b					0.12
AA11a, 11b, 11c	2.31			0.06	
AA12	0.01				
AA14	0.16	0.02			1.48
AA16	0.04			0.02	
Total	2.69	0.02		0.19	1.60

Section AB Wetland Impacts in the Neuse River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)
AB1	0.11			0.01	
AB3	0.04			0.01	
AB4	0.01	0.01			0.08
AB5b	0.07			0.02	
AB5c	0.08			0.01	
AB7	0.09				
AB6a	0.01		0.01		
AB8	0.17			0.05	
AB9	0.09			0.01	
AB10	0.45			0.02	
AB11	0.47			0.03	
Total	1.59	0.01	0.01	0.16	0.08

Section B Wetland Impacts in the Neuse River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)
1	0.16			0.045	
2	0.429			0.046	
3	1.203			0.081	
4	1.217			0.028	
5	1.899		0.175	0.117	
12	0.117				
Total	5.025		0.175	0.317	

Section C Wetland Impacts in the Neuse River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)
C1	0.04	0.03		0.04	
C2				0.06	
C3	2.26			0.11	
C6	1.77		0.01	0.40	
C7	1.18		0.36	0.13	
C8	1.06				
C9	0.01			0.02	
C10	0.02			0.04	
C11	0.97		0.36	0.27	
C12				0.03	
C13	0.97			0.22	
C14	0.12		0.02	0.21	
C15	1.09			0.29	
C16			0.01	0.05	
Total	9.49	0.03	0.76	1.87	

Section AA Surface Water and Stream Impacts in the Neuse River Basin

Site	Permanent Fill in Surface Water (ac)	Temporary Fill in Surface Water (ac)	Permanent Stream Impacts (ft)	Temporary Stream Impacts (ft)	Natural Channel Design (ft)
AA1b				10	
AA3a	0.01		26	13	
AA3b	0.01		13	10	
AA4b	0.02		128	30	
AA5a	0.01		236		
AA5b	0.05		391	10	
AA10a	0.07		30	20	
AA10b			10	10	
AA11a	0.05		437		
AA11b	0.04		417	20	
AA11c	0.04		407		
AA14		0.01			
AA15a	0.01		85	10	
AA15b	0.01		98	20	
AA16	0.79		10	10	
AA17	0.03		240		
AA18a	0.45		355	10	
AA18b	0.03		167	20	
Total	1.62	0.01	3,050	193	

Section AB Surface Water and Stream Impacts in the Neuse River Basin

Site	Permanent Fill in Surface Water (ac)	Temporary Fill in Surface Water (ac)	Permanent Stream Impacts (ft)	Temporary Stream Impacts (ft)	Natural Channel Design (ft)
AB2		0.05	325	98	
AB4	0.01	0.02			
AB5b			128	26	
AB5c	0.06		364	108	
AB5d	0.13		561	13	
AB7	0.13				
AB6a	0.02		102	10	
AB6b	0.09		226		
AB8	0.01		118	23	
AB11	0.06		351	131	
Total	0.51	0.07	2,175	409	

Section B Surface Water and Stream Impacts in the Neuse River Basin

Site	Permanent Fill in Surface Water (ac)	Temporary Fill in Surface Water (ac)	Permanent Stream Impacts (ft)	Temporary Stream Impacts (ft)	Natural Channel Design (ft)
1	0.043	0.024	191	105	
2	0.063	0.020	276	88	
3	0.071	0.009	475	62	
4	0.103	0.010	673	71	
5	0.245	0.024	722	73	410
6	0.103	0.008	443	46	
7	0.025		163		
8		0.002	6	30	
9	0.081	0.026	354	115	
10	0.024	0.011	127	58	
11	0.274				
12	0.065	0.031	388	166	
Total	1.097	0.165	3,818	814	410

Section C Surface Water and Stream Impacts in the Neuse River Basin

Site	Permanent Fill in Surface Water (ac)	Temporary Fill in Surface Water (ac)	Permanent Stream Impacts (ft)	Temporary Stream Impacts (ft)	Natural Channel Design (ft)
C1		0.28	115		
C2	1.54				
C4			26		
C5	0.03	0.01	282		
C6	0.06	0.02	272		
C7	0.06				
C10	0.02		52		
C12			16		
C13	0.01		30		
C14	0.01	0.01	33		
C16	0.01	0.01	52		
Total	1.74	0.33	878		

Section AA Neuse Riparian Buffer Impacts

Site	Zone 1 (sq. ft.)	Zone 2 (sq. ft.)	Wetlands in Zone 1 (sq. ft.)	Wetlands in Zone 2 (sq. ft.)	Mitigation Required Zone 1 (sq. ft.)	Mitigation Required Zone 2 (sq. ft.)
AA1a	431	2,611				
AA1b	2,125	1,765	108			
AA3a	3,718	4,049			3,718	4,049
AA3b	4,112	4,392			4,112	4,392
AA4a	11,348	8,145			11,348	8,145
AA4b	8,830	6,470	108		8,722	6,470
AA5a	41,581	32,338	194	108	41,387	32,230
AA5b	-see AA5a for site totals-					
AA6			108	323		
AA10a	11,797	9,601	215		11,582	9,601
AA10b	18,156	14,594	538	108		
AA11b	46,633	32,446	39,339	15,193	7,294	17,253
AA11c	-see AA11b for site totals-					
AA13	3,720	5,909				
AA14	18,514	15,334	17,776	11,976		
AA15a	5,572	4,048				
AA15b	6,284	8,148				
AA16	27,649	19,749	2,690		24,959	19,749
AA18a	28,646	18,336			28,646	18,336
AA18b	8,818	6,899			8,818	6,899
AA19	2,165	1,922			2,165	1,922
Total	239,124	196,756	61,076	27,708	152,751	129,046

Section AB Neuse Riparian Buffer Impacts

Site	Zone 1 (sq. ft.)	Zone 2 (sq. ft.)	Wetlands in Zone 1 (sq. ft.)	Wetlands in Zone 2 (sq. ft.)	Mitigation Required Zone 1 (sq. ft.)	Mitigation Required Zone 2 (sq. ft.)
AB2	24,211	15,173			24,211	15,173
AB4	18,478	13,016	8,229			
AB5c	58,509	44,230			58,509	44,230
AA5d	-see AB5c for site totals-					
AB7			9,272			
AB8	7,294	4,831				
AB11	20,326	13,775	14,761		5,565	13,775
Total	128,818	91,025	32,262		88,285	73,178

Section B Neuse Riparian Buffer Impacts

Site	Zone 1 (sq. ft.)	Zone 2 (sq. ft.)	Wetlands in Zone 1 (sq. ft.)	Wetlands in Zone 2 (sq. ft.)	Onsite Buffer Replacement Zone 1 (sq. ft.)	Onsite Buffer Replacement Zone 2 (sq. ft.)	Mitigation Required Zone 1 (sq. ft.)	Mitigation Required Zone 2 (sq. ft.)
1	11,250	12,196	5,985	1,715			5,265	10,481
2	14,866	11,954	10,382	4,527			4,484	7,427
3	24,801	19,088	19,247	10,620			5,554	8,468
4	36,511	30,223	27,400	11,569			9,111	18,654
5	37,785	37,688	21,034	17,609	9,671	7,494	7,080	12,585
6	25,889	12,148					25,889	12,148
7	4,845	5,626						
8	1,147	2,138						
9	20,306	18,380					20,306	18,380
10	14,886	11,323			5,566	4,911	9,320	6,412
11	11,071	5,718					11,071	5,718
12	36,491	12,865	3,498	1,787	5,770	3,111	27,223	7,967
Total	239,848	179,347	87,546	47,827	21,007	15,516	125,303	108,240

Section C Neuse Riparian Buffer Impacts

Site	Zone 1 (sq. ft.)	Zone 2 (sq. ft.)	Wetlands in Zone 1 (sq. ft.)	Wetlands in Zone 2 (sq. ft.)	Mitigation Required Zone 1 (sq. ft.)	Mitigation Required Zone 2 (sq. ft.)
C1	25,272	13,712		86		
C4	2,097	861				
C5	19,889	13,157			19,889	13,157
C6	19,472	13,196	19,472	12,454		742
C9	549	958			549	958
C10	5,479	2,099	1,929	75		
C12	2,712	1,087	1,119	75		
C13	1,937	850	1,676	829		
C14	4,801	2,390	2,863	1,454		
C16	4,176	2,153	593	321		
Total	86,384	50,463	27,652	15,294	20,438	14,857

Mitigation Requirements for Neuse Riparian Buffers Project Wide

	Impact (sq. ft.)	Replacement Ratio	Total Impact (sq. ft.)	Fee schedule	Payment amount for Mitigation
Zone 1	386,777	3:1	1,160,331	\$0.96/sq. ft.	\$1,113,917.76
Zone 2	325,321	1.5:1	487,981.5	\$0.96/sq. ft.	\$468,462.24
Total Mitigation Payment Required					\$1,582,380.00

The application provides adequate assurance that the discharge of fill material into the waters of the Neuse 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 received November 1, 2004 and subsequent revisions dated received January 6 and 7, 2005, as described in the Public Notice. Should your project change, you are required to notify the DWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire three years from the date of the cover letter from DWQ or on the same day as the expiration date of the corresponding Corps of Engineers Permit, whichever is sooner.

Condition(s) of Certification:

1. Construction will be conducted in such a manner as to prevent a significant increase in turbidity outside the area of construction or construction-related discharge. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to assure compliance with the appropriate turbidity water quality standard.
 - a. The erosion and sediment control measures for the project must equal or exceed the proper design, installation, operation and maintenance outlined in the most recent version of the North Carolina Sediment and Erosion Control Planning and Design Manual. These devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - b. For borrow pit sites, the erosion and sediment control measures must equal or exceed the proper design, installation, operation and maintenance outlined in the most recent version of the North Carolina Surface Mining Manual. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
2. All sediment and erosion control measures shall not be placed in wetlands or waters to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored after the Division of Land Resources has released the project;
3. If an environmental document is required, this Certification is not valid until a FONSI or ROD is issued by the State Clearinghouse. All water quality-related conditions of the FONSI or ROD shall become conditions of this Certification;
4. No live or fresh concrete shall come into contact with waters of the state until the concrete has hardened.
5. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit. Should waste or borrow sites be located in wetlands or stream, compensatory mitigation will be required since it is a direct impact from road construction activities.
6. All channel relocations will be constructed in a dry work area, and stabilized before stream flows are diverted. Channel relocations will be completed and stabilized prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. Vegetation used for bank stabilization shall be limited to native woody species, and should include establishment of a 30 foot wide wooded and an adjacent 20 foot wide vegetated buffer on both

sides of the relocated channel to the maximum extent practical. A transitional phase incorporating coir fiber and seedling establishment is allowable. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested.

- ✕7. Upon completion of the project, the NCDOT shall complete and return the enclosed "Certification of Completion Form" to notify DWQ when all work included in the 401 Certification has been completed. The responsible party shall complete the attached form and return it to the 401/Wetlands Unit of the Division of Water Quality upon completion of the project.
8. Placement of culverts and other structures in waters, streams, and wetlands must be placed below the elevation of the streambed, unless otherwise authorized by this certification, to allow low flow passage of water and aquatic life unless it can be shown to DWQ that providing passage would be impractical. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium shall be maintained if requested in writing by DWQ.
- ✕9. Compensatory mitigation for impacts to 712,098 square feet of Neuse Riparian Buffers shall be provided for as described below.

Zone of Impact	Impacts (Square Feet)	Replacement Ratio	Total Square Feet of Mitigation Required
Zone 1	386,777	3:1	1,160,331
Zone 2	325,321	1.5:1	487,981.5
Total	712,098		1,648,312.5

We understand that you have chosen to perform compensatory mitigation for impacts to protected buffers through an in lieu payment to the North Carolina Ecosystem Enhancement Program (NCEEP), and that the EEP has agreed to implement the mitigation for the project. Mitigation for unavoidable impacts to Neuse Riparian Buffers shall be provided through an in-lieu payment to the North Carolina Ecosystem Enhancement Program (NCEEP) at a rate of \$0.96 per square foot. Therefore, a total payment of \$1,582,380.00 shall be submitted to the NCEEP to offset the impacts. No construction activities in Neuse River Riparian buffers shall begin until payment for buffer mitigation is made and the Ecosystem Enhancement Program receives and clears your check (made payable to DENR Ecosystem Enhancement Program). The payment to NCEEP shall be sent within two months of issuance of the 404 permit. If you have any questions concerning the Ecosystem Enhancement Program please contact them at 919-733-5208.

10. Compensatory mitigation for impacts to 22.28 acres of jurisdictional wetlands shall be done. Total mitigation shall be provided as described below:

✕ *Offsite Compensatory Mitigation*

Compensatory mitigation for the unavoidable impacts to 2.44 acres of riverine wetlands and 0.18 acres of non-riverine wetlands in the Central Piedmont in the Hydrologic Cataloging Unit 03020201 and 9.51 acres of riverine wetlands and 10.04 acres of non-riverine wetlands in the Northern Inner Coastal Plain in the Hydrologic Cataloging Unit 03020201, associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated 26 October 2004, and in accordance with the Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003. In addition, NCDOT will be responsible for supplying additional mitigation for the remaining impacts to 0.12 acres of wetlands not covered by the above letter

from the Ecosystem Enhancement Program (EEP). DOT shall submit a mitigation plan to, and get approval from, the NC Division of Water Quality to provide the additional 0.12 acres of wetland mitigation prior to incurring any impacts anywhere on the project. A letter from the EEP agreeing to accept the mitigation will constitute an acceptable mitigation plan.

11. Compensatory mitigation for impacts to 9,921 linear feet of streams shall be done at a replacement ratio of 1:1. Applying a replacement ratio of 1:1, total mitigation for 9,921 linear feet of streams shall be provided as described below:

Onsite Compensatory Mitigation

410 linear feet of onsite mitigation shall be provided for unavoidable impacts to streams through the construction of the onsite stream relocation at Site 5, Section B of the project. The stream restoration shall be constructed in accordance with the approved design received in your application dated received November 1, 2004.

✱ *Offsite Compensatory Mitigation*

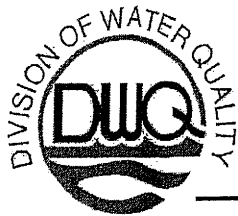
Compensatory mitigation for the unavoidable impacts to 2,095 linear feet of streams in the Central Piedmont in the Hydrologic Cataloging Unit 03020201 and 7,342 linear feet of streams in the Northern Inner Coastal Plain in the Hydrologic Cataloging Unit 03020201 associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated 26 October 2004, and in accordance with the Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003. In addition, NCDOT will be responsible for supplying additional mitigation for the remaining impacts to 74 linear feet of streams not covered by the above letter from the Ecosystem Enhancement Program (EEP). DOT shall submit a mitigation plan to, and get approval from, the NC Division of Water Quality to provide the additional 74 linear feet of stream mitigation prior to incurring any impacts anywhere on the project. A letter from the EEP agreeing to accept the mitigation will constitute an acceptable mitigation plan.

12. 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.
13. All temporary fills in wetlands and surface waters shall be removed upon completion of the project. In addition, the post-construction removal of any temporary bridge structures or fill will need to return the project site to its preconstruction contours and elevations. The revegetation of the impacted areas with appropriate native species will be required.
14. Riparian vegetation must be reestablished within the construction limits of the project by the end of the growing season following completion of construction.
15. The dimension, pattern and profile of the stream above and below the crossing should not be modified by widening the stream channel or reducing the depth of the stream. Disturbed floodplains and streams should be restored to natural geomorphic conditions.
16. Any riprap used must not interfere with thalweg performance and aquatic life passage during low flow conditions.
17. 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.
18. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.

- ✱ 19. Two copies of the final construction drawings shall be furnished to NCDWQ prior to the pre-construction meeting. Written verification shall be provided to the NC Division of Water Quality that the final construction drawings comply with the attached permit drawings contained in your application dated July 22, 2004.
- 20. 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.
- 21. NCDOT, and its authorized agents, shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State law and Federal law. If DWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, DWQ may reevaluate and modify this certification to include conditions appropriate to assure compliance with such standards and requirements in accordance with 15A NCAC 2H.0507(d). Before modifying the certification, DWQ shall notify NCDOT and the US Army Corps of Engineers, provide public notice in accordance with 15A NCAC 2H.0503 and provide opportunity for public hearing in accordance with 15A NCAC 2H.0504. Any new or revised conditions shall be provided to NCDOT in writing, shall be provided to the United States Army Corps of Engineers for reference in any permit issued pursuant to Section 404 of the Clean Water Act, and shall also become conditions of the 404 Permit for the project.
- 22. 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.
- 23. DOT shall schedule a preconstruction meeting for this project prior to incurring any impacts in jurisdictional waters including wetlands. The Division of Water Quality shall be notified a minimum of 30 days prior to the preconstruction conference.
- 24. Culverts that are less than 48-inch in diameter should be buried to a depth equal to or greater than 20% of their size to allow for aquatic life passage, unless otherwise authorized by this certification. Culverts that are 48-inch in diameter or larger should be buried at least 12 inches below the stream bottom to allow natural stream bottom material to become established in the culvert following installation and to provide aquatic life passage during periods of low flow. These measurements must be based on natural thalweg depths.
- 25. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit. Should waste or borrow sites be located in wetlands or stream, compensatory mitigation will be required since it is a direct impact from road construction activities.
- 26. Any violations, during the construction of the approved project, of this 401 Water Quality Certification or the North Carolina State Water Quality Standards as defined in 15A NCAC 2B .0200 Rules, shall be reported immediately to the North Carolina Division of Water Quality.
- 27. Pursuant to NCAC15A 2B.0233(6), sediment and erosion control devices shall not be placed in Zone 1 of any Neuse 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.

Project Specific Conditions:

28. 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.
29. Upland clearing limits must be approved by the Division of Land Resources prior to any land disturbing activities. A copy of the final clearing method and plan for upland areas shall be submitted to the Division of Land Resources for approval prior to incurring impacts on the project.
30. At Sites AA11a, AA11b and AA11c 4:1 side slopes will be utilized due to concerns for public safety.
31. At site C11 the pipe will be buried to the extent possible without draining the nearby wetland.
32. In accordance with your application, the following sediment and erosion controls measures will be implemented in accordance with the plan submitted to, and approved by, the Division of Land Resources. Failure to comply with the conditions listed below, will constitute violation of the 401 Water Quality Certification if that failure results in a violation of state water quality standards:
 - Basins will be designed to meet the surface area requirement for the peak runoff event for a 25-year storm.
 - Basins located at critical discharge points on the project will utilize the Faircloth Skimmer with jute baffles and polyacrylamides (PAMs) to improve settling efficiency
 - Exposed areas located adjacent to critical areas will utilize erosion control matting to assist in stabilization.
 - Erosion control matting will be utilized in ditchlines to reduce accelerated erosion.
 - An onsite inspector will review the sedimentation and erosion control devices daily to insure compliance with the sedimentation and erosion control plan.
 - The Roadside Environmental Unit will provide drive through inspections weekly to insure compliance with the Sedimentation Pollution Control Act.
 - DOT will propose a hydroseeding timeline for less than 14 days to insure that all exposed erodable areas are protected from storm events.
 - Hazardous Spill Catch Basin installation will be phased on Ramp D and temporary sediment traps will be utilized during the installation to insure that sediment laden runoff is not transported offsite.
 - Field changes to the Sediment and Erosion Control Plan will go through Roadside Environmental.
 - A water quality monitoring program will be in place to identify any sources of sediment discharge to Swift Creek from construction activities.



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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

DWQ Project No.: _____

County: _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

X Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401/Wetlands Unit, North Carolina Division of Water Quality, 1621 Mail Service Center, Raleigh, NC, 27699-1621. This form may be returned to DWQ by the applicant, the applicant's authorized agent, or the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Engineer's Certification

_____ Partial _____ Final

I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project, for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature _____ Registration No. _____

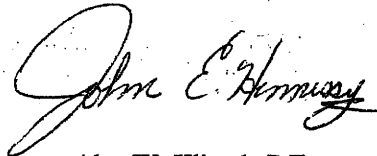
Date _____

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, P.O. Box 27447, Raleigh, N.C. 27611-7447. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 14th day of January 2005

DIVISION OF WATER QUALITY

A handwritten signature in black ink, appearing to read "Alan W. Klimek", written over a horizontal line.

Alan W. Klimek, P.E.
Director

WQC No. 3496

SPECIAL CONDITIONS (Action ID. 200220745; NCDOT/TIP R-2552)**COMPLIANCE WITH PLANS**

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

ACTIVITIES NOT AUTHORIZED

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

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

CONSTRUCTION PLANS

- ✕ c) The permittee will ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Written verification shall be provided that the final construction drawings comply with the attached permit drawings prior to any active construction in waters of the United States, including wetlands. Any deviation in the construction design plans will be brought to the attention of the Corps of Engineers, Raleigh Regulatory Field Office prior to any active construction in waters or wetlands.
- ✕ d) Prior to commencing construction within jurisdictional waters of the United States for any portion of the proposed project, the permittee shall forward the latest version of project construction drawings to the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings will be acceptable.

POLLUTION SPILLS

e) All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic

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

NOTIFICATION

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

CLEAN FILL MATERIAL

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

CONTRACTOR COMPLIANCE

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

SEDIMENTATION AND EROSION CONTROL MEASURES

i) The permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" to assure compliance with the appropriate turbidity water quality standard. . Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to assure compliance with the appropriate turbidity water quality standards. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).

Adequate sedimentation and erosion control measures must be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. These measures must be inspected and maintained regularly, especially following rainfall events. All fill material must

be adequately stabilized at the earliest practicable date to prevent sediment from entering into adjacent waters or wetlands. The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.

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

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

REPORTING OF VIOLATIONS

j) The permittee will report any violation of these conditions or violations of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act in writing to the Wilmington District, U. S Army Corps of Engineers, within 24 hours of the permittee's discovery of the violation.

COMPLIANCE WITH SPECIAL CONDITIONS

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

WET CONCRETE

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

CULVERTS

m) All authorized culverts will be installed to allow the passage of low stream flows and the continued movement of fish and other aquatic life as well as to prevent headcutting of the streambed. For all box culverts and for pipes greater than 48 inches in diameter, the bottom of the pipe will be buried at least one foot below the bed of the stream unless burial would be impractical and the Corps of Engineers has waived this requirement. For culverts 48 inches in diameter or smaller, the bottom of the pipe must be buried below the bed of the stream to a depth equal to or greater than 20 percent of the diameter of the culvert. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in disequilibrium of wetlands or streambeds or banks, adjacent to, upstream or downstream of the structures. In order to allow for the continued

movement of bed load and aquatic organisms, existing stream channel widths and depths will be maintained at the inlet and outlet ends of culverts. Riprap armoring of streams at culvert inlets and outlets shall be minimized above the ordinary high water elevation in favor of bioengineering techniques such as bank sloping, erosion control matting and revegetation with deep-rooted, woody plants.

PRECONSTRUCTION MEETING

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

BORROW AND WASTE

o) To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall provide the USACE with appropriate maps indicating the locations of proposed borrow or waste sites as soon as the permittee has that information. The permittee will coordinate with the USACE before approving any borrow or waste sites that are within 400 feet of any streams or wetlands. All jurisdictional wetland lines on borrow and waste sites shall be verified by the Corps of Engineers and shown on the approved reclamation plans. The permittee shall ensure that all such areas comply with Special Condition b) of this permit, and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This information will include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with the Special Condition b). All information will be available to the USACE 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.

MITIGATION

STREAM RELOCATIONS PERFORMED BY NCDOT

p) IMPLEMENTATION: The permittee shall mitigate for 410 linear feet of unavoidable impact to streams with important aquatic function, associated with this project, by completing 410 linear feet of onsite stream relocation/restoration, as described in the permit application. The stream relocation/restoration shall be constructed in accordance with the North Carolina Wildlife Resources Commission's (NCWRC) "Stream Relocation Guidelines." NCDOT shall consult with NCWRC on the stream relocation/restoration and implement all practicable recommendations in the design of specific site requirements for re-establishment of bank vegetation, and placement of meanders and habitat structures. Vegetation shall be used to the maximum extent practicable to stabilize banks, and riprap and other man-made structural measures shall be minimized. The permittee shall construct all channel relocations/restoration in a dry work area, and stabilize the new channel before stream flows are diverted. Whenever possible, the permittee shall allow new channels to stabilize for an entire growing season. The Corps of Engineers, Raleigh Regulatory Field Office will be notified in advance by facsimile transmission or electronic mail of the intended diversion of water into the new channel and approval must be obtained from the USACE prior to the diversion taking place. The banks and buffer area of the relocated channel will be planted with appropriate species of deep-rooted, woody vegetation. A final inspection of the channel relocation by a representative of the Corps of Engineers, Ashville Regulatory Field Office will be conducted prior to completion of the road project. No clearing and grubbing of the existing channel shall take place until the stream has been diverted into the new channel.

* q) AS-BUILT SURVEY: The permittee shall complete an as-built channel survey within sixty days of completion of the stream relocation construction. The permittee shall document changes in the dimension, pattern, profile, vegetation plantings, and structures installed, of the relocated channel from the proposed design. The permittee shall also include in the as-built survey: photo documentation at representative segments and structures; and a plan view diagram.

X r) MONITORING SCHEDULE: The permittee shall perform the following components of Level I monitoring each year for the 5-year monitoring period: Reference photos; plant survival (i.e., identify specific problem areas (missing, stressed, damaged or dead plantings), estimated causes, and proposed/required remedial action); visual inspection of channel stability. Physical measurements of channel stability/morphology will not be required. The permittee shall submit the monitoring reports to the USACE, Raleigh Regulatory Field Office Project Manager, within sixty days after completing the monitoring. If less than two bankfull events occur during the first 5 years, the permittee shall continue monitoring until the second bankfull event is documented. The bankfull events must occur during separate monitoring years. In the event that the required bankfull events do not occur during the five-year monitoring period, the USACE, in consultation with the resource agencies, may determine that further monitoring is not required. It is suggested that all bankfull occurrences be monitored and reported through the required monitoring period. The permittee shall perform and submit photo documentation twice each year (summer and winter) for the 5-year monitoring period, and for any subsequently required monitoring period.

*s) MONITORING DATA/REPORT: The permittee shall include the following information in the Level I monitoring report for the site: reference photos; plant survival notes and recommendations, as appropriate; and a report on the visual inspection of channel stability. Physical measurements of channel stability/morphology will not be required. The permittee shall complete the Monitoring Data Record, Sections 1, 2 and 3 (pages 1, 2 and 3, attached), for each representative segment of the channel, and for each year of monitoring (twice each year, summer and winter, for reference photos). The permittee shall include in the monitoring reports a discussion of any deviations from as-built and an evaluation of the significance of these deviations and whether they are indicative of a stabilizing or destabilizing situation.

t) STREAM MITIGATION SUCCESS CRITERIA: The mitigation success criteria, and required remediation actions, will be generally based on the attached Appendix II, and the Photo Documentation, Ecological Function, and Channel Stability criteria in the "Stream Mitigation Guidelines", dated April, 2003 (available on the internet at http://www.saw.usace.army.mil/wetlands/Mitigation/stream_mitigation.html), pages 24 and 25, under "Success Criteria: ".

SECTION 7 COMPLIANCE

u) NCDOT shall implement and enforce all the conservation measures for "Direct Effects" described in Sections 4.1 and 4.3 of NCDOT's "Addendum to the Biological Assessment; Clayton Bypass; Johnston and Wake County, North Carolina; R-2552", dated March, 2005, to avoid an adverse effect to the endangered dwarf wedgemussel (*Alasmodonta heterodon*) and Tar spiny mussel (*Elliptio steinstansana*). As stated in the Addendum, NCDOT shall not begin construction on the Clayton Bypass until after all the proposed ordinances and ordinance amendments, which are the conservation measures for "Indirect and Cumulative Effects" (Sections 4.2 and 4.4), are adopted.

EEP MITIGATION

*v) Compensatory mitigation for the unavoidable impacts to 12.00 acres of riverine wetlands, 10.29 acres of non-riverine wetlands, and 9,511 linear feet of perennial stream associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letter dated March 24, 2005 from William D. Gilmore, EEP Director. The EEP will provide the compensatory mitigation as follows:

Central Piedmont, CU 03020201 (2.48 acre riverine; 0.18 acres non-riverine; and 2,095 feet of stream):

Riverine Wetland Mitigation:

High Quality Riverine Wetland Preservation (10:1) in same eco-region (24.80 acres)

Langley Cypress Creek, Franklin County	18.92 acres
Allen Site, Wake County	5.88 acres

Non-Riverine Wetland Mitigation:High Quality Non-Riverine Wetland Preservation (10:1) in same eco-region (1.80 acres)

Stevens Pennys Bend, Durham County	1.80 acres
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Stream Mitigation:High Quality Stream Preservation (10:1) in same eco-region (20,950 feet)

Flat River (Treyburn), Durham County	18,750 feet
Harper Sandy/Swift, Franklin County	2,200 feet

Northern Inner Coastal Plain, CU 03020201 (9.52 acres riverine, 10.11 acres non-riverine; and 7,416 feet of stream):**Riverine Wetland Mitigation:**High Quality Riverine Wetland Preservation (10:1) in same eco-region (95.20 acres)

Roanoke River, Halifax County

Non-Riverine Wetland Mitigation:

20.22 acres of non-riverine restoration-equivalent wetland mitigation within CU 03020201 of the Neuse River Basin will be provided using EEP's existing compensatory non-riverine wetland mitigation assets. A minimum of 1:1 (impact to mitigation) must be in the form of wetlands restoration.

Stream Mitigation:High Quality Stream Preservation (10:1) in same eco-region (41,188 feet)

Roanoke River, Halifax County	36,432 feet
Edwards Tract, Nash County	4,756 feet

6,594 linear feet of restoration-equivalent warm water stream mitigation within CU 03020201 of the Neuse River Basin will be provided using EEP's existing compensatory stream mitigation assets.

Pursuant to the EEP Memorandum of Agreement (MOA) between the State of North Carolina and the US Army Corps of Engineers signed on July 22, 2003, the EEP will provide a total minimum of 12.00 acres of restoration of riverine wetlands, 10.29 acres of restoration of non-riverine wetlands, and 9,511 linear feet of restoration of warm water stream channel in the Neuse River basin (Hydrologic Cataloging Unit 03020201) by July 22, 2005 and half of the proposed preservation mitigation would be available at that time for mitigation for other project impacts. 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.

**Channel Mitigation Monitoring Sheets I, II, III, AND IV
Monitoring Data Record**

Project Title: _____ COE Action ID: _____

Stream Name: _____ DWQ Number: _____

City, County and other Location Information: _____

Date Construction Completed: _____ Monitoring Year: () of 5

Ecoregion: _____ 8 digit HUC unit _____

USGS Quad Name and Coordinates: _____

Rosgen Classification: _____

Length of Project: _____ Urban or Rural: _____ Watershed Size: _____

Monitoring DATA collected by: _____ Date: _____

Applicant Information:

Name: _____

Address: _____

Telephone Number: _____ Email address: _____

Consultant Information:

Name: _____

Address: _____

Telephone Number: _____ Email address: _____

Project Status: _____

Monitoring Level required by COE and DWQ (404/Sect. 10 permit/ 401 Cert.): Level 1 2 3

Monitoring Level 3 requires completion of *Section 1* (circle one)

Monitoring Level 2 requires completion of *Section 1 and Section 2*

Monitoring Level 1 requires completion of *Section 1, Section 2 and Section 3*

If biological monitoring is required by DWQ, then Section 4 should also be completed

Section 1. PHOTO REFERENCE SITES

(Monitoring at all levels must complete this section)

Attach site map showing the location and angle of all reference photos with a site designation (name, number, letter, etc.) assigned to each reference photo location. Photos should be provided for all structures and cross section locations, should show both banks and include an upstream and downstream view. Photos taken to document physical stability should be taken in winter. Photos taken to document vegetation should be taken in summer (at representative locations). Attach photos and a description of each reference photo or location. We recommend the use of a photo identification board in each photo to identify location.

Total number of reference photo locations at this site: _____

Dates reference photos have been taken at this site: _____

Individual from whom additional photos can be obtained (name, address, phone): _____

Other Information relative to site photo reference: _____

If required to complete Level 3 monitoring only stop here; otherwise, complete section 2.

Section 2. PLANT SURVIVAL

Attach plan sheet indicating plots and sample area locations and reference photos.

Survival plots:

DATE:					
Area within the easement is:					
Area sampled by survival plots:					
Number of survival plots sampled:					
Random or nonrandom site selection:					
% Coverage within survival plots is:					
Photos of reference plots taken:					
yes/no					

Provide a written description of specific data or findings and photos as needed for clarity.

Live Stake counts:

DATE:					
Area within the easement is:					
Area sampled for stake survival:					
Number of plots sampled:					
Random or nonrandom site selection:					
Average number of surviving stakes:					
Range of survival for all plots:					

Provide a written description of specific data or findings as needed for clarity.

Tree counts:

DATE:					
Area within the easement is:					
Area sampled for tree survival:					
Number of plots sampled:					
Random or nonrandom site selection:					
Average number of surviving trees:					
Range of survival for all plots:					

Provide a written description of specific data or findings as needed for clarity.

Bankfull Events:

Date measured:					
Method of Verification:					

COMMENTS: _____

If required to complete Level 1 and Level 2 monitoring only stop here; otherwise, complete section 3.

Section 3. CHANNEL STABILITY

Attach plan sheet(s) indicating the locations of cross-sections and beginning and ending of longitudinal profiles if the entire reach is not profiled. Year to year changes in cross-sections, longitudinal profile and bed material should be plotted and submitted. Comparison overlays from previous years for profile and cross-section monitoring should be provided.

Cross-sections: attach plots of each cross-section showing year to year changes.

Provide the following data for each cross-section:

Date measured					
Cross-section being measured					
Cross-sectional area: as-built/present					
Bankfull width: as-built/present					
Floodprone Width: as-built/present					
Width/depth: as-built/present					
Entrenchment ratio: as-built/present					
Stream Type: as-built/present*					

* only required for riffle cross-sections

Longitudinal profiles: attach plots of the longitudinal profile showing year to year changes and the locations of installed or natural structures that affect profile.

Date measured	
Avg. slope riffles: as-built/present	
Avg. slope pools: as-built/present	
Number of riffles: as-built/present	
Number of pools: as-built/present	

Pebble counts: Attach a printout of pebble count data and a graphical plot of bed material showing the cumulative % finer than X millimeters and the number of particles in standard size classes. Year to year changes in bed material should also be plotted and provided.

Date measured					
Cross-section being measured					
D16: as-built/present					
D50: as-built/present					
D84: as-built/present					

Visual Inspection: The entire stream project as well as each instream structure and bank stabilization/revetment structure must be evaluated and problems addressed.

Date Inspected	Station Number	Station Number	Station Number	Station Number	Station Number
Structure Type					
Is water piping through or around structure?					
Head cut or down cut present?					
Bank or scour erosion present?					
Other problems noted?					

NOTE: Attach separate narrative sheets to each monitoring report describing/discussing the overall monitoring results. Include the identification of specific problem areas/channel failures, estimated cause and proposed/required remedial action. This should include a brief discussion of any parameter that has changed significantly from as-built. (See success criteria discussion in Section 11.)

Appendix II. General criteria used to evaluate the success or failure of activities at mitigation sites and required remedial actions to be implemented should monitoring indicate failure of a component.

Mitigation Component	Success (requires no action)	Failure →	Action
(1a) Photo Reference Sites Longitudinal photos Lateral photos	No substantial* aggradation, degradation or bank erosion.	Substantial aggradation, degradation or bank erosion.	When substantial aggradation, degradation or bank erosion occurs, remedial actions will be planned, approved, and implemented.
(2a) Plant Survival Survival plots Stake counts Tree counts	≥ 75% Coverage in Photo Plots Survival and growth of at least 320 trees/acre through year 3, then 10% mortality allowed in year 4 (288 trees/acre) and additional 10% mortality in year 5 for 260 trees/acre through year 5.	< 75% coverage in photo plots for herbaceous cover. Survival of less than 320 trees per acre through year 3 and then less than the success criteria for years 4 and 5.	Areas of less than 75% coverage will be re-seeded and or fertilized. live stakes and bare rooted trees will be planted to achieve desired densities.
(3a) Channel Stability Cross-sections Longitudinal profiles Pebble counts	Minimal evidence of instability (down-cutting, deposition, bank erosion, increase in sands or finer substrate material).	Substantial* evidence of instability.	When Substantial evidence of instability occurs, remedial actions will be planned, approved, and implemented.
(4a) Biological Indicators Invertebrate populations Fish populations	Population measurements remain the same or improve, and species composition indicates a positive trend.	Population measurements and species composition indicate a negative trend.	Reasons for failure will be evaluated and remedial action plans developed, approved, and implemented.

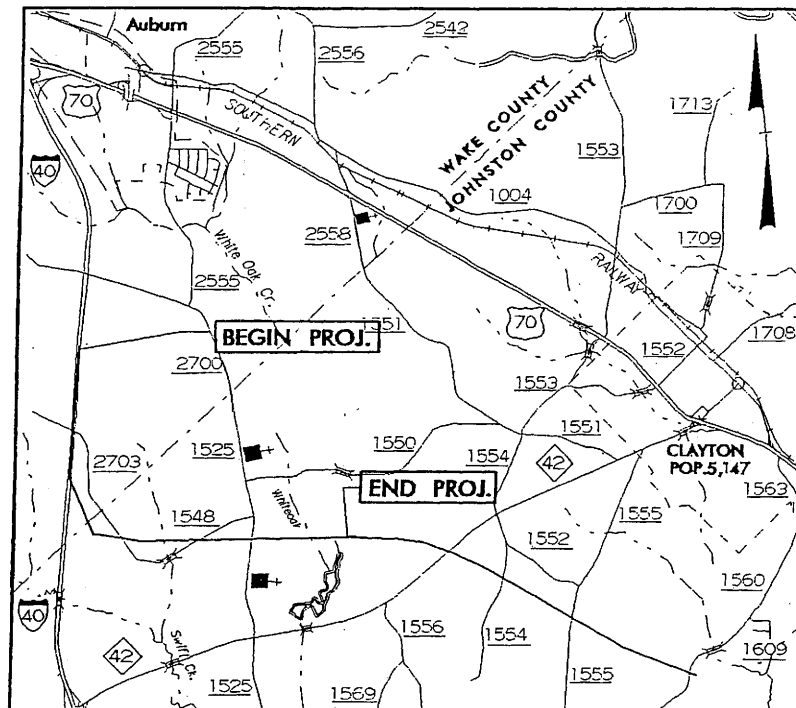
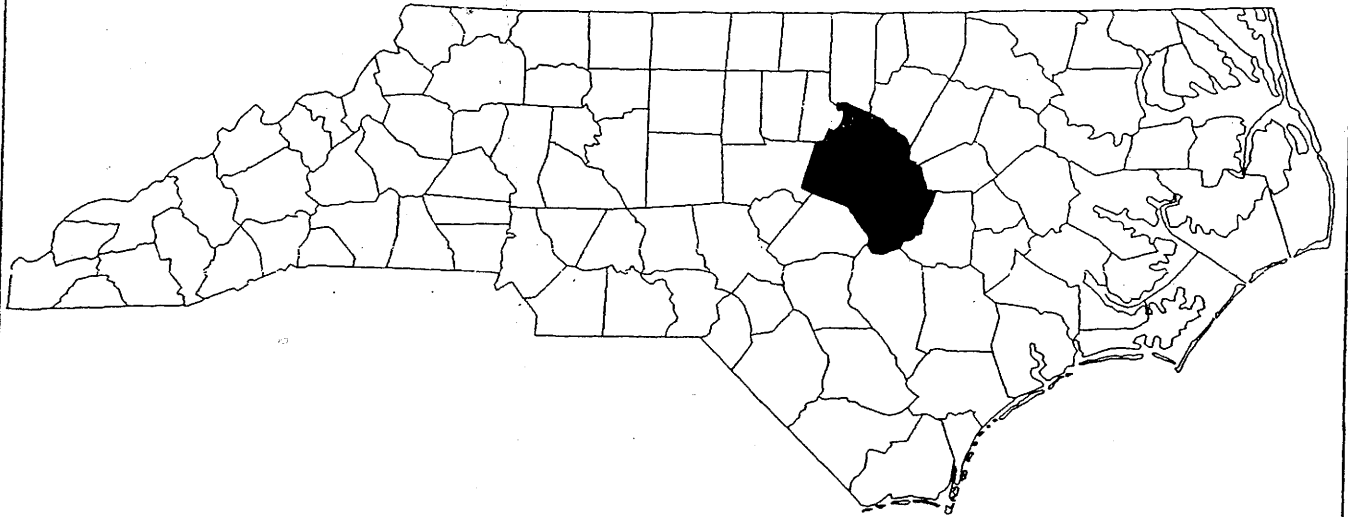
*Substantial or subjective determinations of success will be made by the mitigation sponsor and confirmed by COE and review agencies.
 Monitoring Level 1 will include items 1, 2, and 3, and may include item 4 based on the project review.
 Monitoring Level 2 will include items 1 and 2, and may include item 3 based on the project review.
 Monitoring Level 3 will include only item 1.

Revised 11/1/01 EA

398

COPY

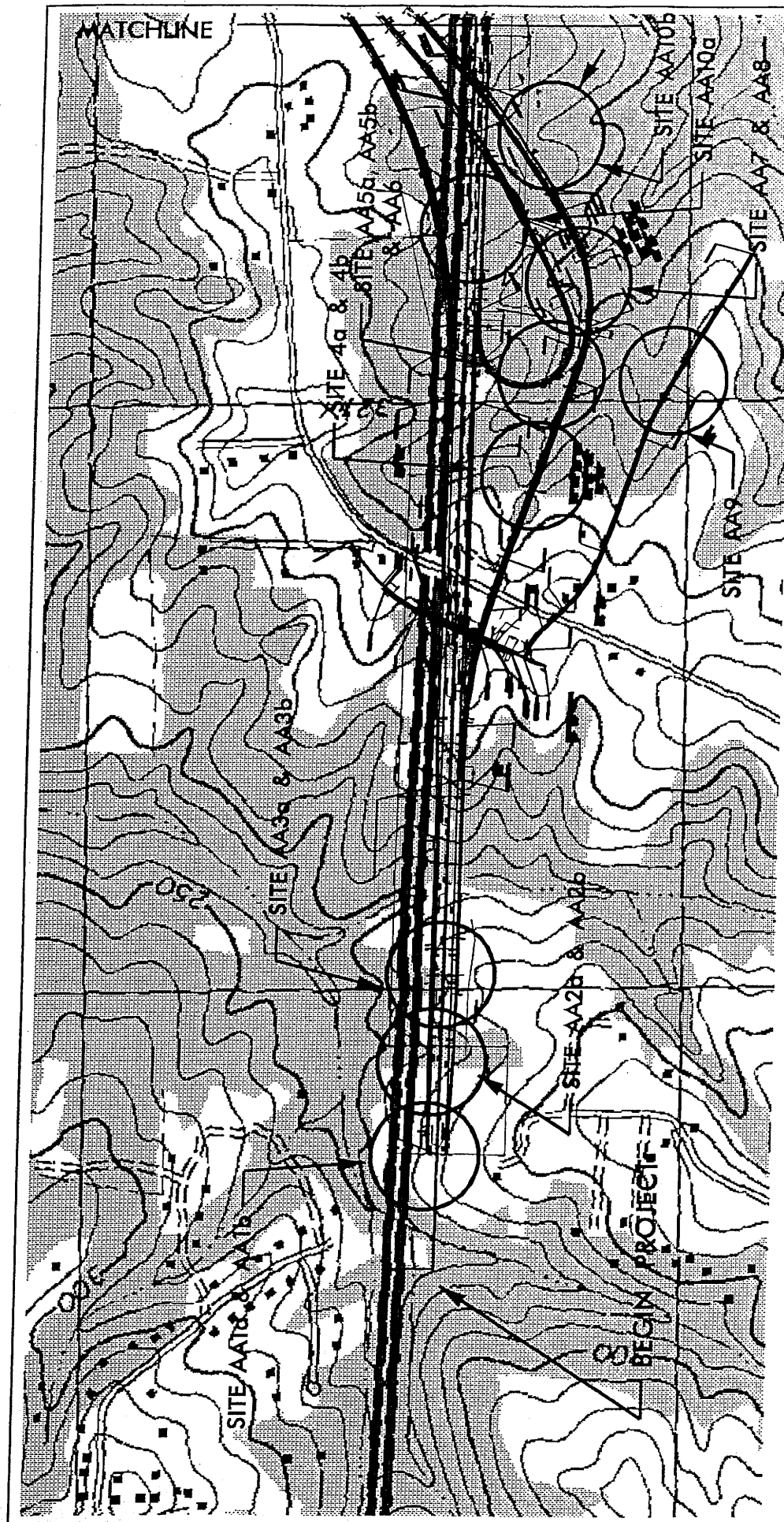
NORTH CAROLINA



VICINITY MAP

NCDOT
DIVISION OF HIGHWAYS

JOHNSTON COUNTY
PROJECT: WBS 34459.1.1 (R-2552AA)
US 70 CLAYTON BYPASS



NOTED

DIVISION OF HIGHWAYS

WAKE//JOHNSTON COUNTY

PROJECT: 34459.1.1 (R-252AA)

US 70 CLAYTON BYPASS

SHEET **OF** **50**

10/01/04

SITE MAP

DIVISION OF HIGHWAYS

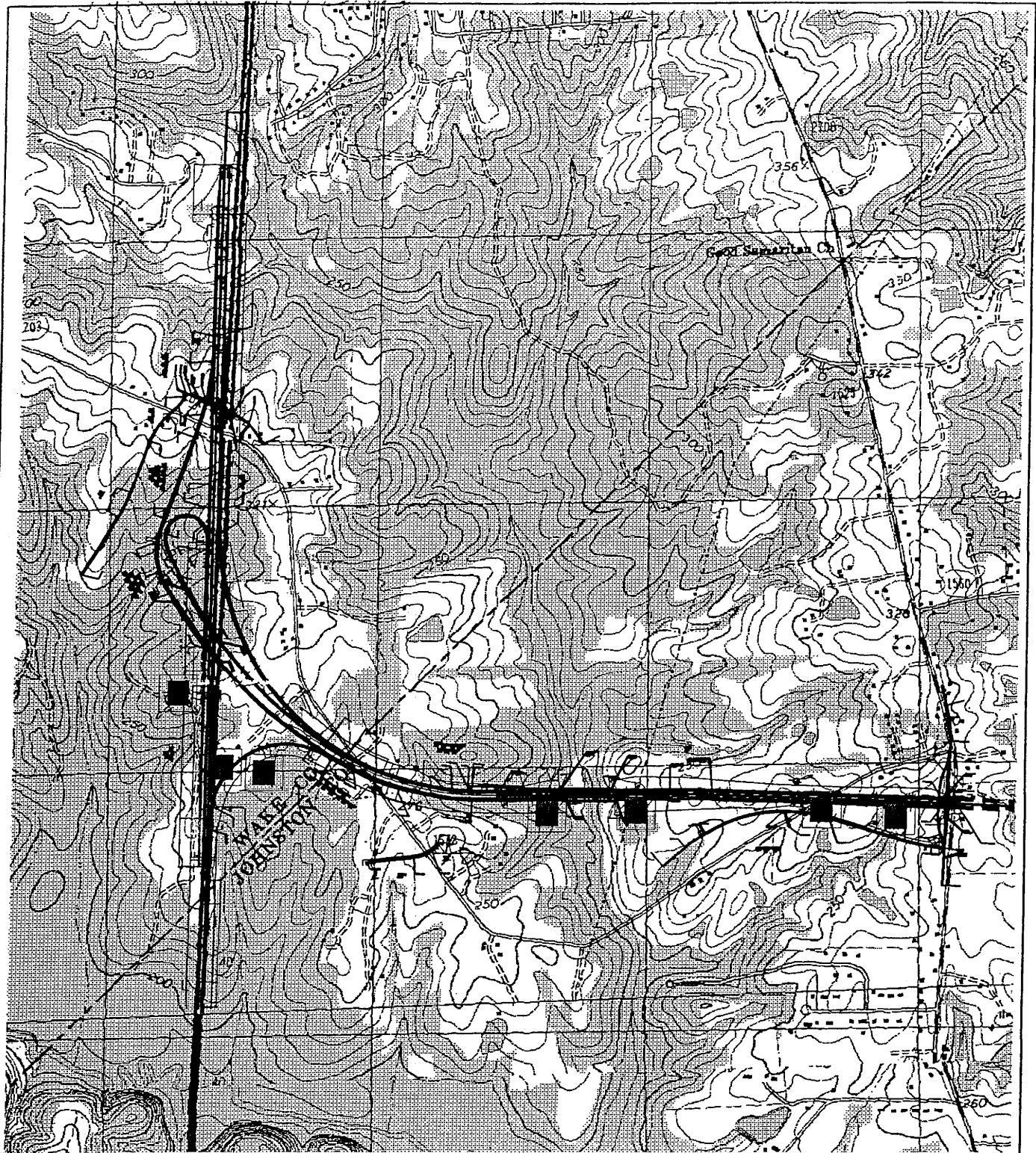
WAKE/JOHNSTON COUNTY

PROJECT: 34459.1.1 (R-252AA)

US 70 CLAYTON BYPASS

SHEET 5 OF 50

SITE MAP



■ HAZARDOUS SPILL BASIN

HAZARDOUS SPILL BASIN
LOCATION SITE MAP

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WAKE/JOHNSTON COUNTY
PROJECT: 34459.1.1 (R-252AA)
US 70 CLAYTON BYPASS

SHEET 1 OF 50 10/01/04

WETLAND PERMIT IMPACT SUMMARY

WETLAND AND PERMIT IMPACT SUMMARY											
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS			SURFACE WATER IMPACTS					
			Fill In Wetlands Permanent (ac)	Fill In Wetlands Temporary (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) Permanent (ac)	Fill In SW (Natural) Temporary (ac)	Existing Channel Impacted Permanent (ft)	Existing Channel Impacted Temporary (ft)	Natural Stream Design (ft)
AA1b	I1Y1 10+90 RT	600 RCP				0.01				10	
AA2b	I1Y1 12+10 RT	450 RCP	0.01			0.01					
AA3a	I1Y1 13+70 LT	1650 CSP									
AA3b	I1Y1 13+70 LT	1650 CSP					0.01			26	13
AA4b	FLYLEREV 29+50	900 RCP					0.01			13	10
AA5a	LPB 23+00	750 RCP				0.01	0.02			128	30
AA5b	LPB 21+90	900 RCP	0.03				0.01			236	
AA6	FLYLEREV 27+40	600 RCP	0.03			0.02	0.05			391	10
AA7	FLYLEREV 27+20	N/A	0.03			0.01					
AA8	FLYLEREV 26+20	450 RCP	0.05			0.02					
AA9	YREV 15+30	1050 RCP	0.01			0.01					
AA10a	FLYLWREV 23+20		0.01			0.01	0.01			30	20
SHEET TOTALS:			0.17			0.11	0.17			824	90

*NOTE: SURFACE WATER (POND)

SITE AA10a = 0.06 ac

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 WAKE / JOHNSTON COUNTY
 PROJECT # - WBS 344591.1 (R2552AA)
 US 70 - CLAYTON BYPASS

SHEET 5 OF 50

01/06/05

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				Natural Stream Design (ft)
			Fill In Wetlands Permanent (ac)	Fill In Wetlands Temporary (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) Permanent (ac)	Fill In SW (Natural) Temporary (ac)	Existing Channel Impacted Permanent (ft)	Existing Channel Impacted Temporary (ft)	
AA10b	FLYLEREV 24+45	BRIDGE				*			10	10	
AA11a	FLYLWREV 18+50	N/A	2.31			0.06	0.05		437		
AA11b	FLYLEREV 18+00	1500 RCP		SEE SITE AA11a FOR DATA			0.04		417	20	
AA11c	FLYLEREV 18+40 LT	450 RCP		SEE SITE AA11a FOR DATA			0.04		407		
AA12	RPD 13+90	900 RCP	0.01								
AA14	LREV 14+50	BRIDGE	0.15			*					
AA15a	L 21+10	1050 RCP					0.01		85	10	
AA15b	Y2B 12+70	1050 RCP					0.01		98	20	
AA16	L 23+00	750 RCP	0.04			0.02			10	10	
AA17	L 25+20	N/A					0.03		240		
AA18a	L 25+80	1200 RCP					0.08		355	10	
AA18b	Y2B 16+00	1350 RCP					0.03		167	20	
SHEET TOTALS:			2.46			0.09	1.13		2223	100	
PROJECT TOTALS			2.63			0.20	1.30		3043	190	

NOTE: HAND-CLEARING IN WETLANDS
 HAND-CLEARING IN WETLANDS
 PERM FILL IN SURFACE WATER (PERM BRIDGE PIERS)
 TEMP FILL IN SURFACE WATER (TEMP BRIDGE PIERS)
 PERM FILL IN WETLANDS (PERM BRIDGE PIERS)
 TEMP FILL IN WETLANDS (TEMP BRIDGE PIERS)
 SURFACE WATER FILL (POND)
 SURFACE WATER FILL (POND)

SITE AA10b = 0.12 ac
 SITE AA14 = 1.48 ac
 SITE AA14 = 0.00 ac
 SITE AA14 = 0.01 ac
 SITE AA14 = 0.01 ac
 SITE AA14 = 0.02 ac
 SITE AA16 = 0.79 ac
 SITE AA18A = 0.37 ac

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 WAKE / JOHNSTON COUNTY
 PROJECT # - WBS 34459.1.1 (R2552AA)
 US 70 - CLAYTON BYPASS

SHEET 6 OF 50

01/06/05

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	EVA WALTERS	RR 6 BOX 11 FUQUAY-VARINA, NC 27526
2	THOMAS PENNY	RR 3 BOX 194 GARNER, NC 27529
7	MARY POWELL WARD WHITE	920 WELLINGTON RD. WINSTON SALEM, NC 27106
8	B. T. HENDERSON	P. O. BOX 31627 RALEIGH, NC 27622
9	J. PEELE JOHNSON	5160 NC 42 WEST CLAYTON, NC 27520
16	ALAN A. HARPER	410 PINE KNOLL DR. KINSTON, NC 28504
17	ALAN A. HARPER	410 PINE KNOLL DR. KINSTON, NC 28504

NCDOT

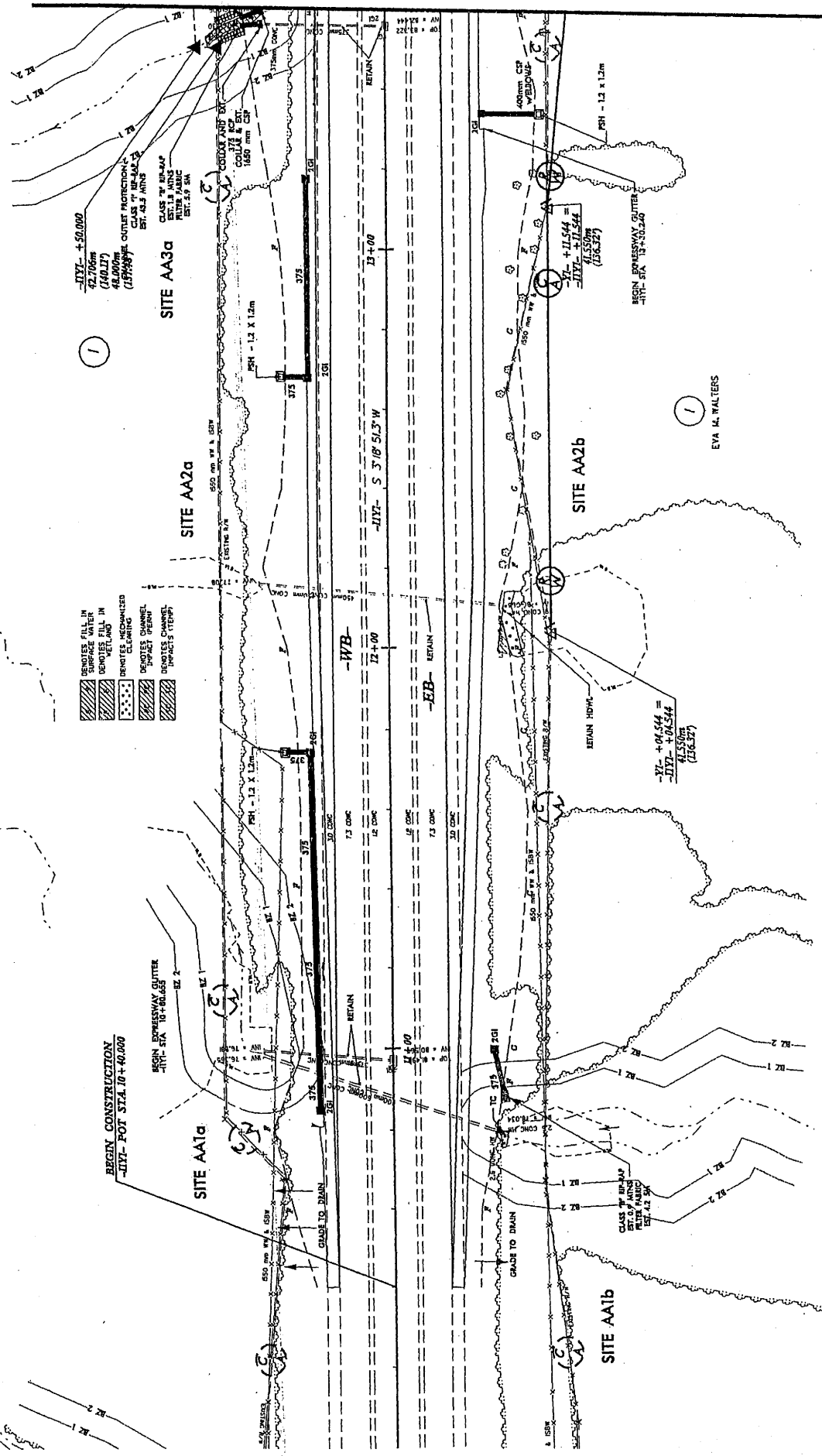
DIVISION OF HIGHWAYS
WAKE/JOHNSTON COUNTY
PROJECT: WBS 34459.1.1 (R-2552 AA)
US 70 CLAYTON BYPASS

PROPERTY OWNERS
NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
26	WILFREY F. GRANT	205 RED FIELD ST. CARY, NC 27513
28	WILLIS UMSTEAD	6580 CORNWALLIS RD. GARNER, NC 27529
30	CHARLES A. LEE	719 NEW BETHEL CURCH RD. GARNER, NC 27529
31	JERRY I. WILSON	251 NEW BETHEL CURCH RD. GARNER, NC 27529
32	WILLIS C. UMSTEAD	6580 CORNWALLIS RD. GARNER, NC 27529

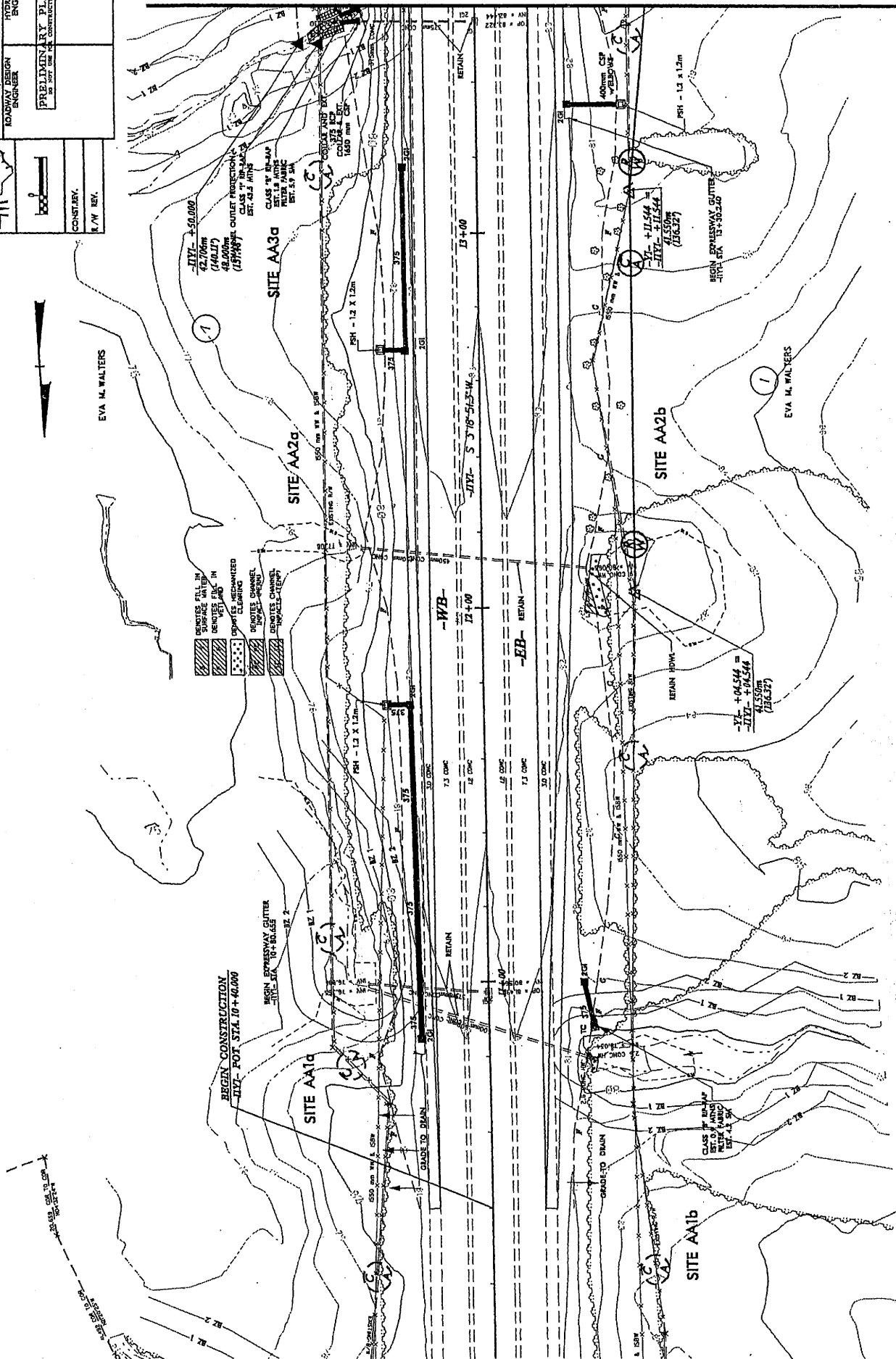
NCDOT
DIVISION OF HIGHWAYS
WAKE/JOHNSTON COUNTY
PROJECT: WBS 34459.1.1 (R-2552 AA)
US 70 CLAYTON BYPASS

PROJECT REFERENCE NO.	SHEET NO.
1. IN SHEET NO.	1
ROADWAY DESIGN ENGINEER	ROADWAYS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	
CONST. BY	E/W BY
EVA M. WALTERS	

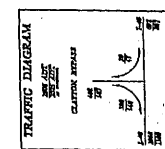
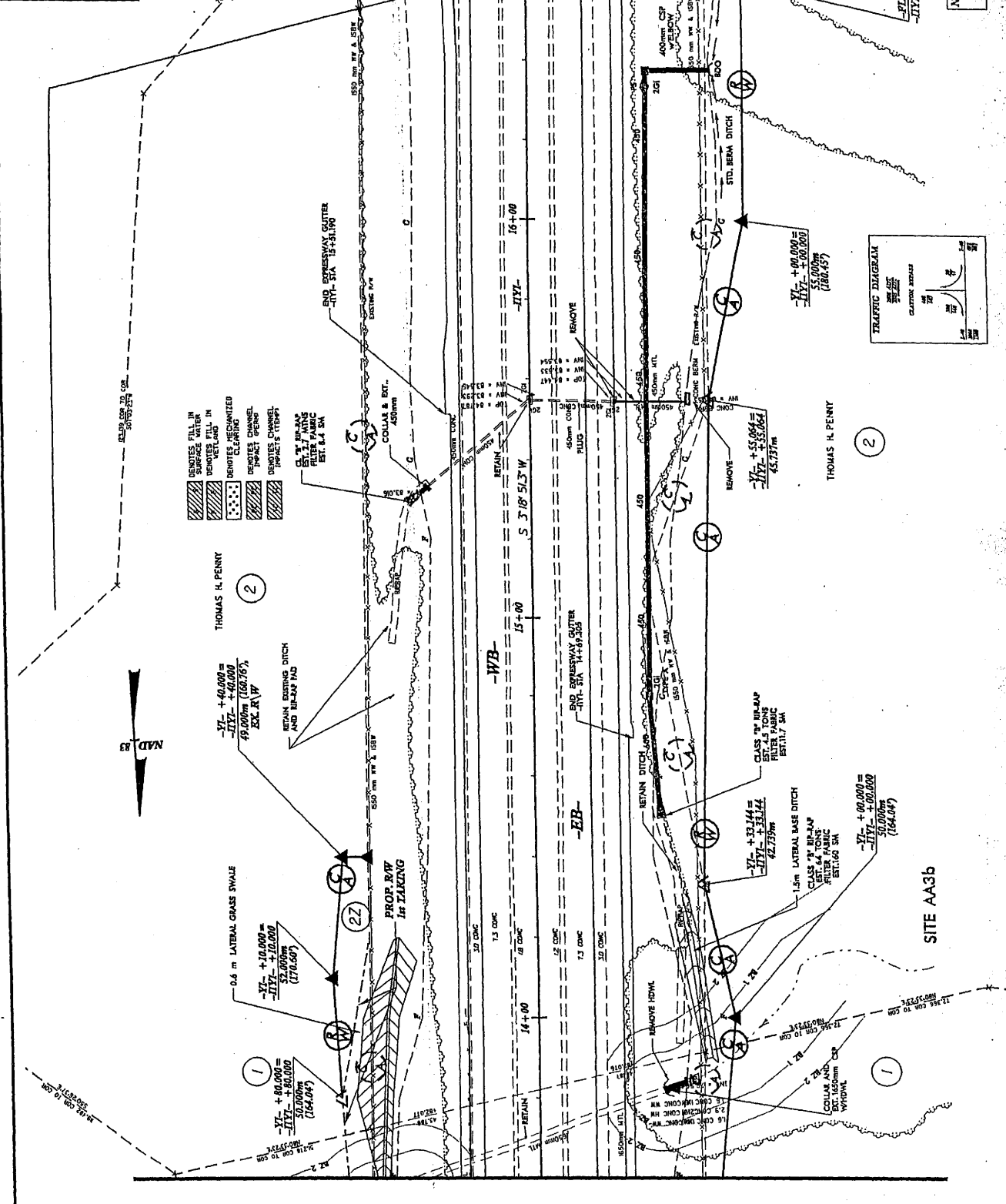


EVA M. WALTERS

EVA M. WALTERS



PROJECT REFERENCE NO.	SHEET NO.
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3/11/17 SHEET NO.	
ROADWAY DESIGN ENGINEER	
PRELIMINARY PLANS	
CONTRACT NO.	
R/W REV.	

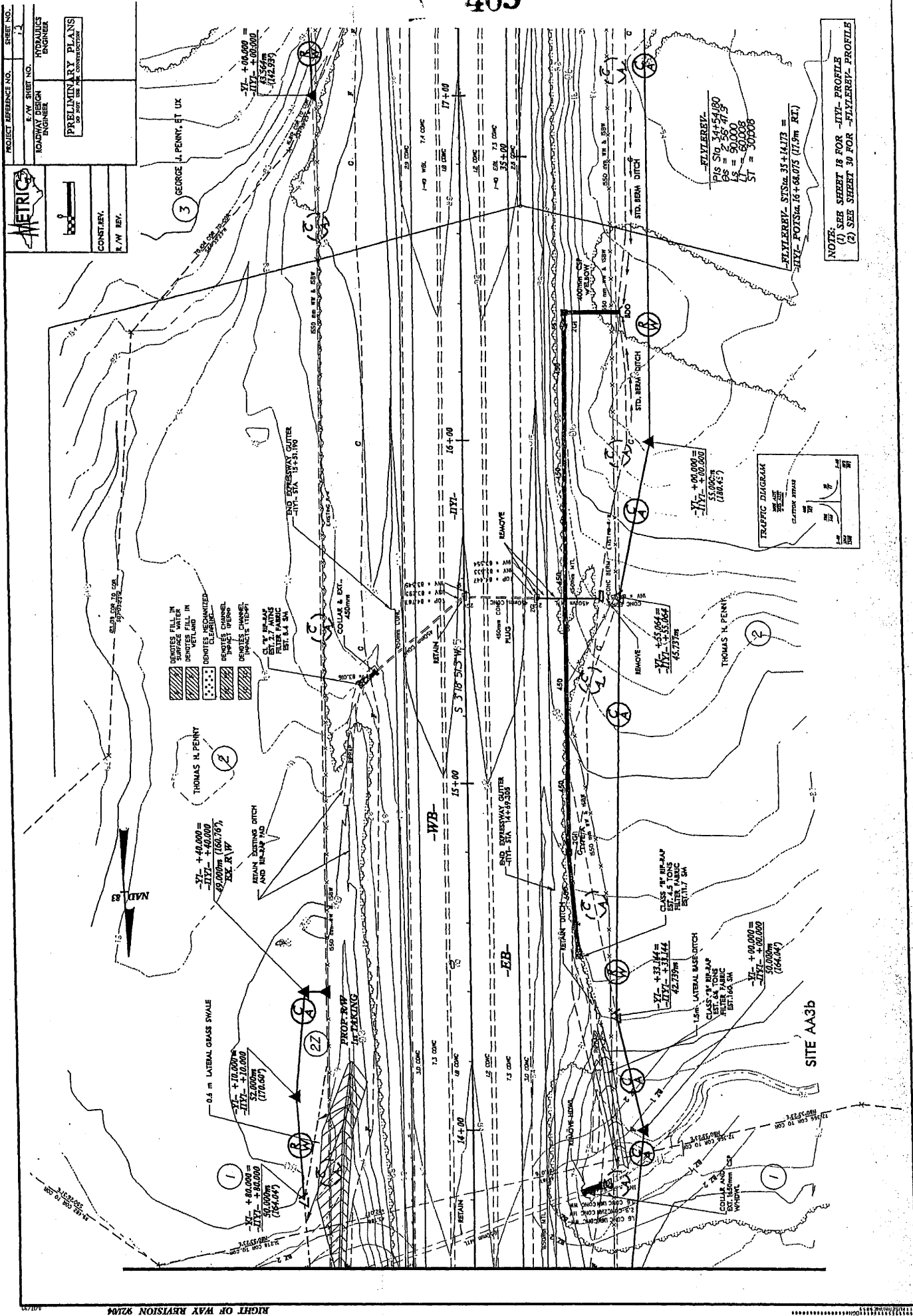


NOTES:
(1) SEE SHEET 18 FOR -11Y- PROFILE
(2) SEE SHEET 30 FOR -FLYERBY- PROFILE

-FLYERBY-
PIS STA 34+54.80
GS = 255.47'g
LS = 90.000
LT = 60.008
ST = 30.008

-FLYERBY- STA 35+14.73 =
-11Y- POTSta 16+68.075 (175m RT.)

SITE AA3b

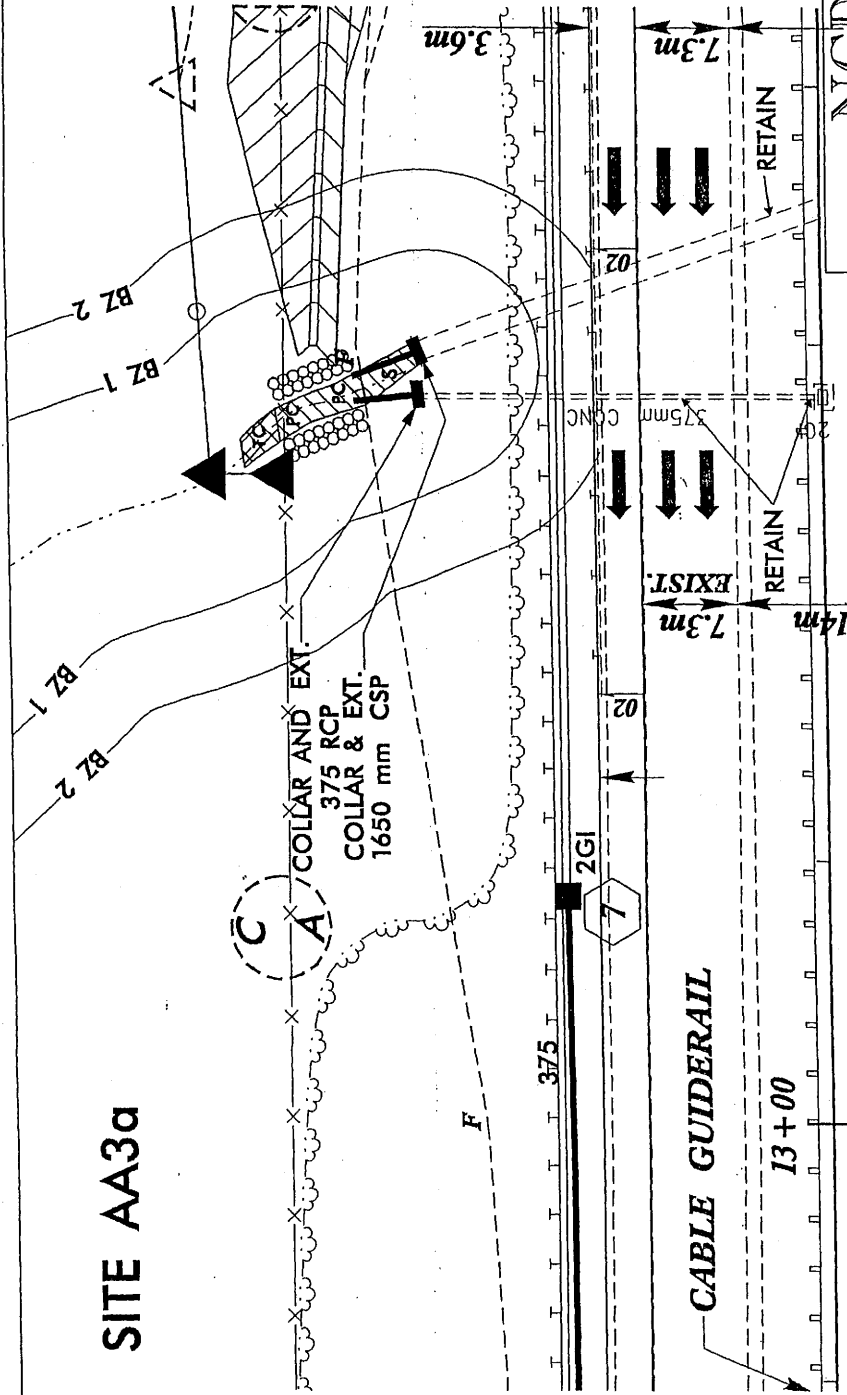


NOTE:
(1) SEE SHEET 18 FOR -IIVL- PROFILE
(2) SEE SHEET 30 FOR -FLYTEREV- PROFILE

SITE AA3b

RIGHT OF WAY REVISION 92104

SITE AA3a



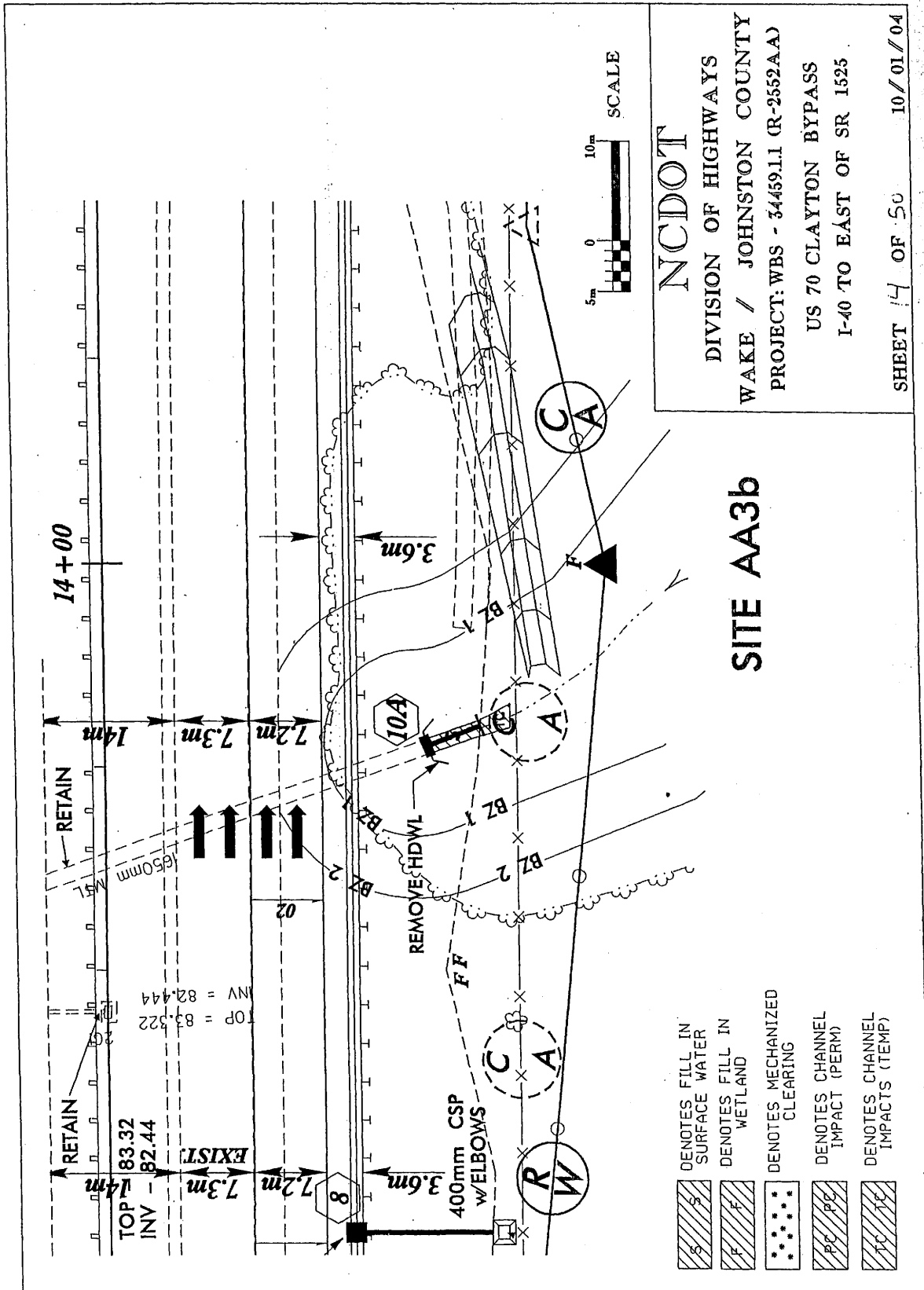
- DENOTES FILL IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES CHANNEL IMPACT (PERM)
- DENOTES CHANNEL IMPACTS (TEMP)



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DIVISION OF HIGHWAYS
 WAKE / JOHNSTON COUNTY
 PROJECT: WBS - 34459.1.1 (R-2552AA)
 US 70 CLAYTON BYPASS
 I-40 TO EAST OF SR 1525

SHEET 13 OF 50 10/01/04

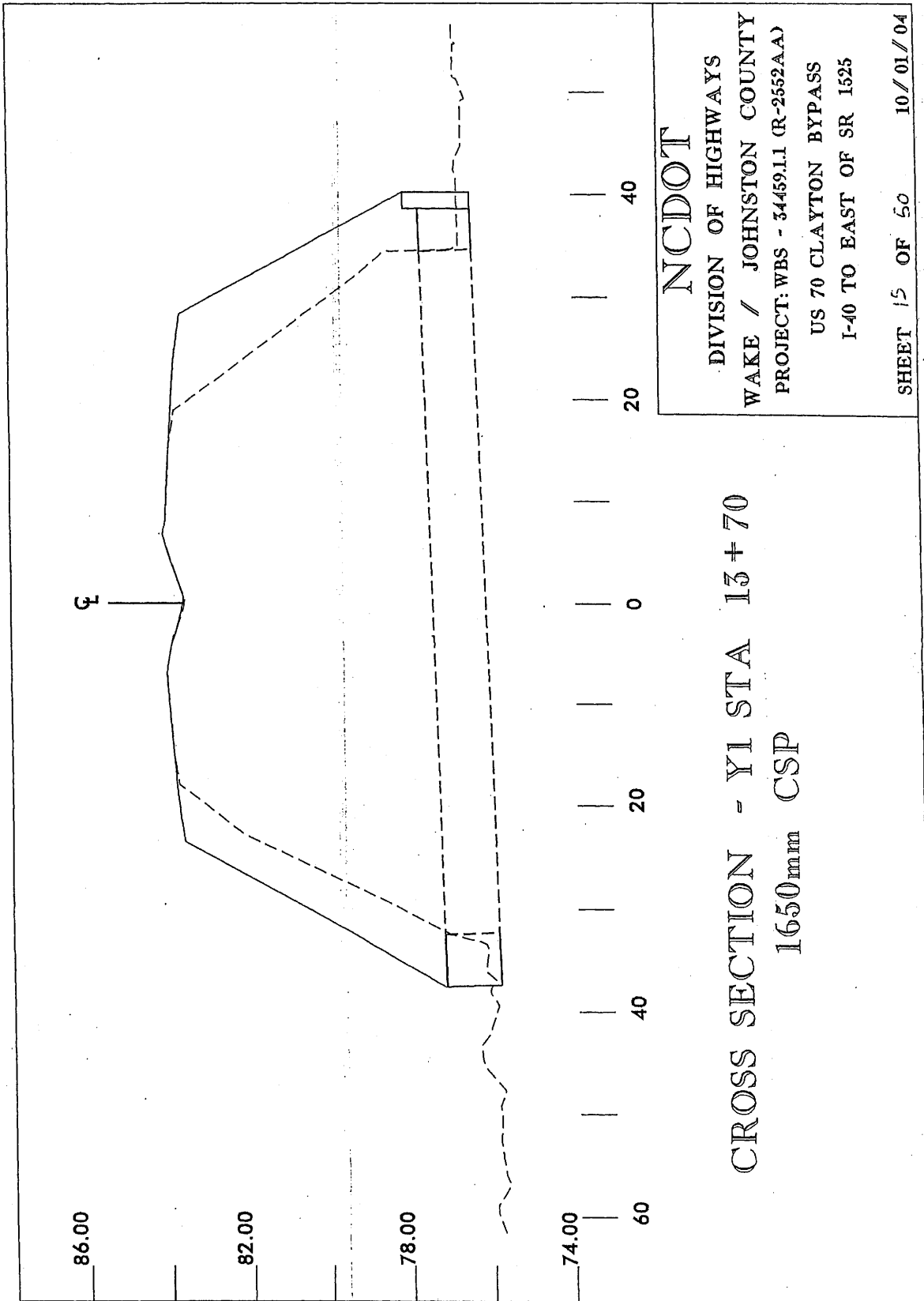




SITE A426



413



PROJECT REFERENCE NO. R-2592A
ROADWAY DESIGN ENGINEER
SHEET NO. 1/2
PROJECTS ENGINEER



INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
PRELIMINARY CONSTRUCTION

CONSTANT
R/W BY

LEFT DITCH
RIGHT DITCH

-IIIYI- (WB)

* BM # BY 102 PL 84.002
1.45m RT -TY- STA 14+32.772

STATION 14+33

WATER MARKS GROUP
BY 111 PL 84.002
1.45m RT -TY- STA 14+32.772

WATER MARKS GROUP
BY 111 PL 84.002
1.45m RT -TY- STA 14+32.772

NOTE: SEE SHEET 5 FOR -IIIYI- (WB) ALIGNMENT
* BENCH MARKS REAR WITH
* ADDITIONAL CAP STAMPED WITH
* THE BM NUMBER

* BM # BY 102 PL 84.002
1.45m RT -TY- STA 16+96.594

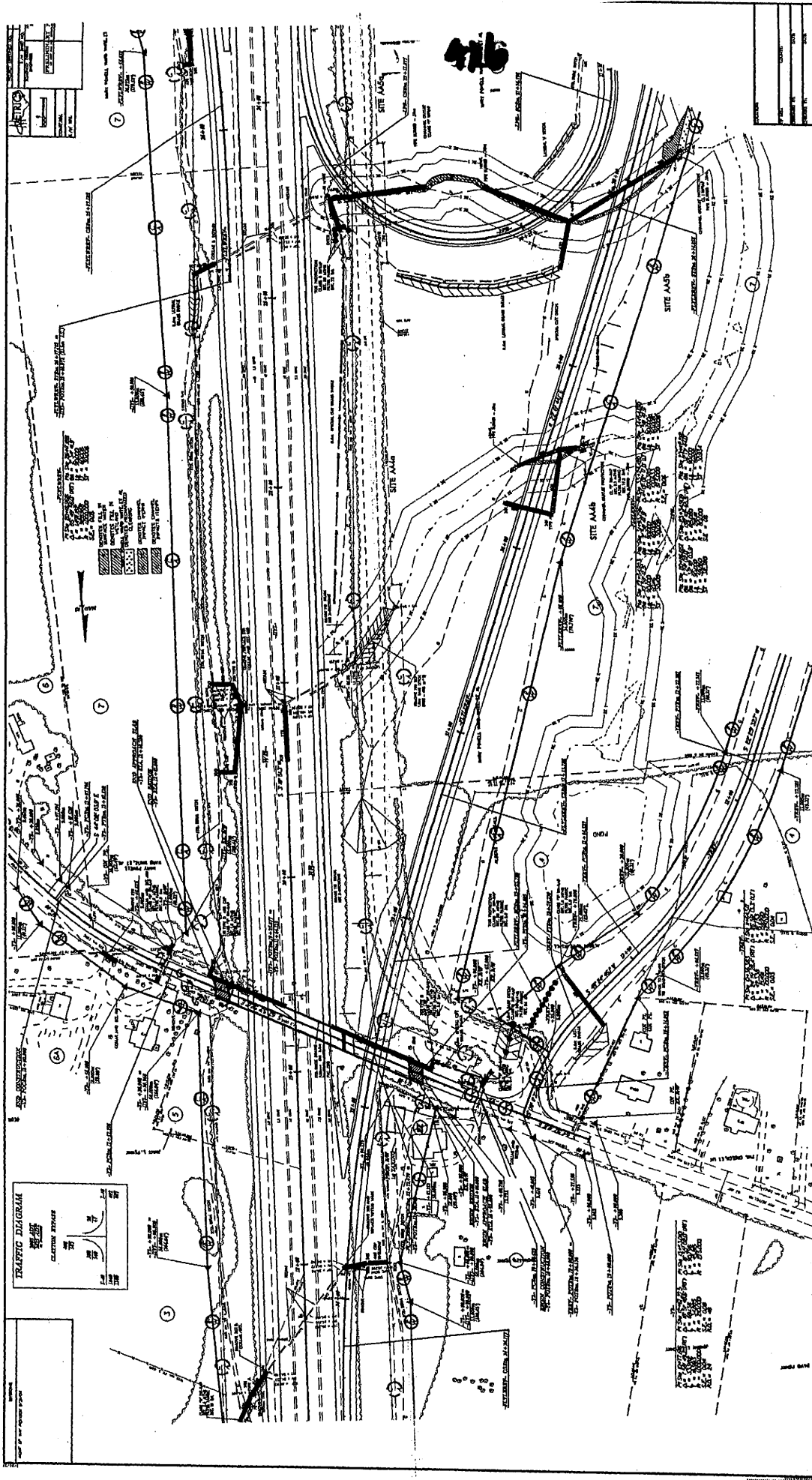
* BM # BY 102 PL 84.002
1.45m RT -TY- STA 14+32.772

-IIIYI- (EB)

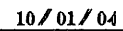
WATER MARKS GROUP
BY 111 PL 84.002
1.45m RT -TY- STA 14+32.772

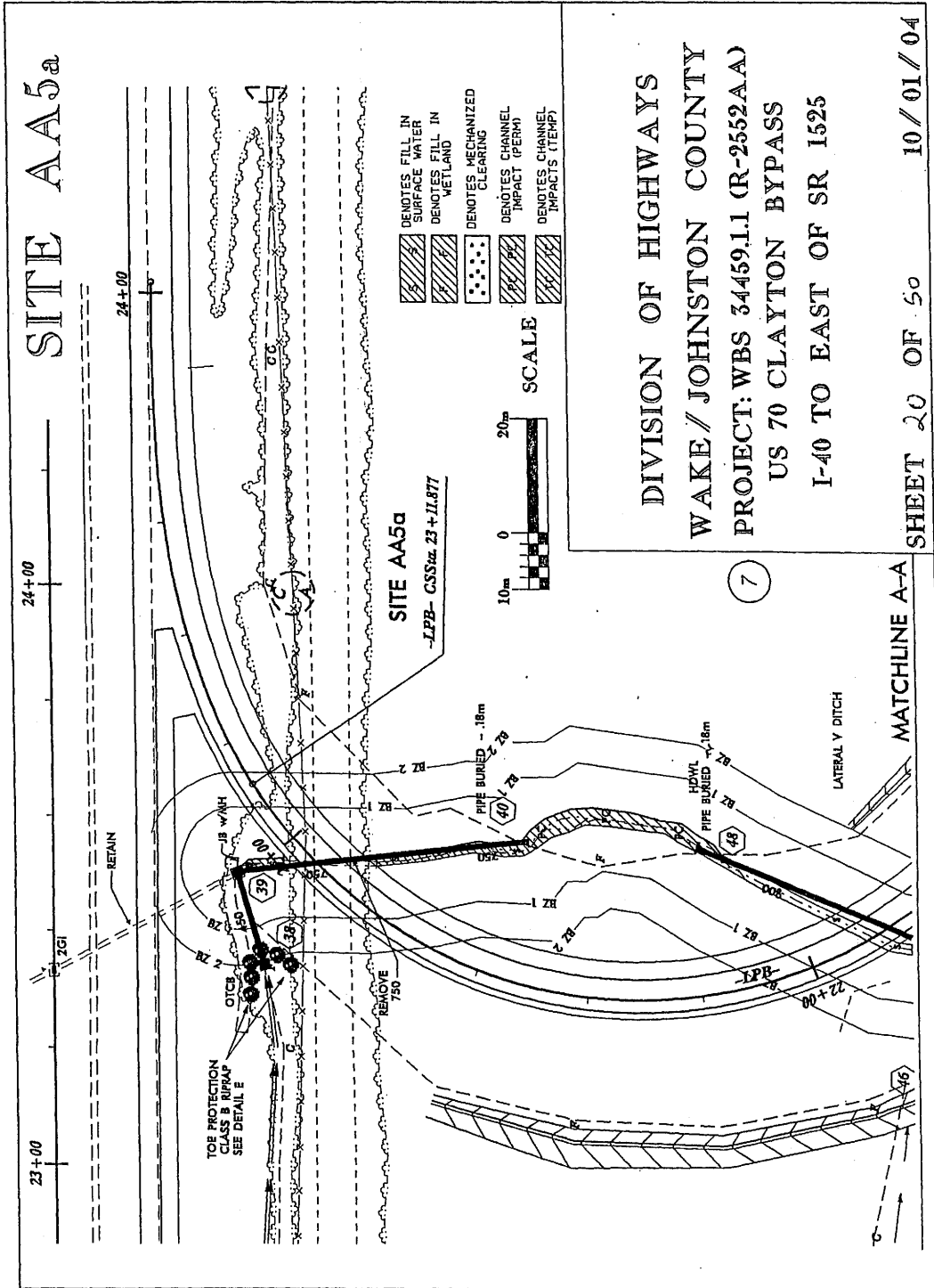
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* BENCH MARKS REAR WITH
* ADDITIONAL CAP STAMPED WITH
* THE BM NUMBER

415



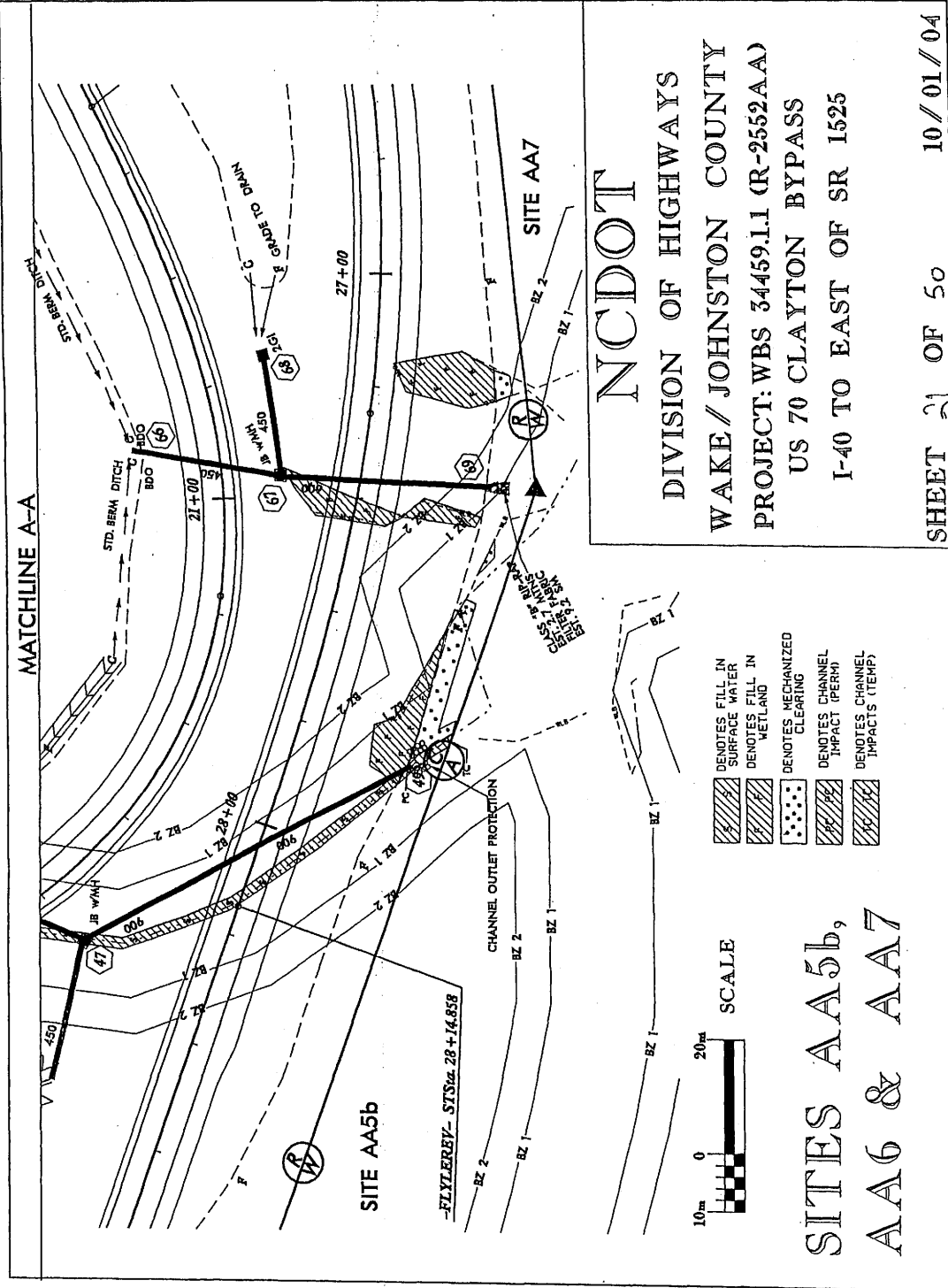






DIVISION OF HIGHWAYS
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 PROJECT: WBS 34459.1.1 (R-2552AA)
 US 70 CLAYTON BYPASS
 I-40 TO EAST OF SR 1525

SHEET 20 OF 50 10/01/04





R-2532A

4.3

SITE AA56

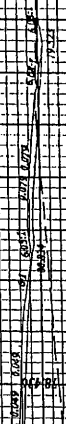
EPB
21+57.02



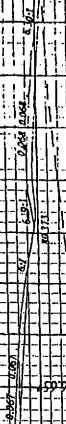
TPK
21+57.200



EPB
22+00.000



EPB
22+50.000



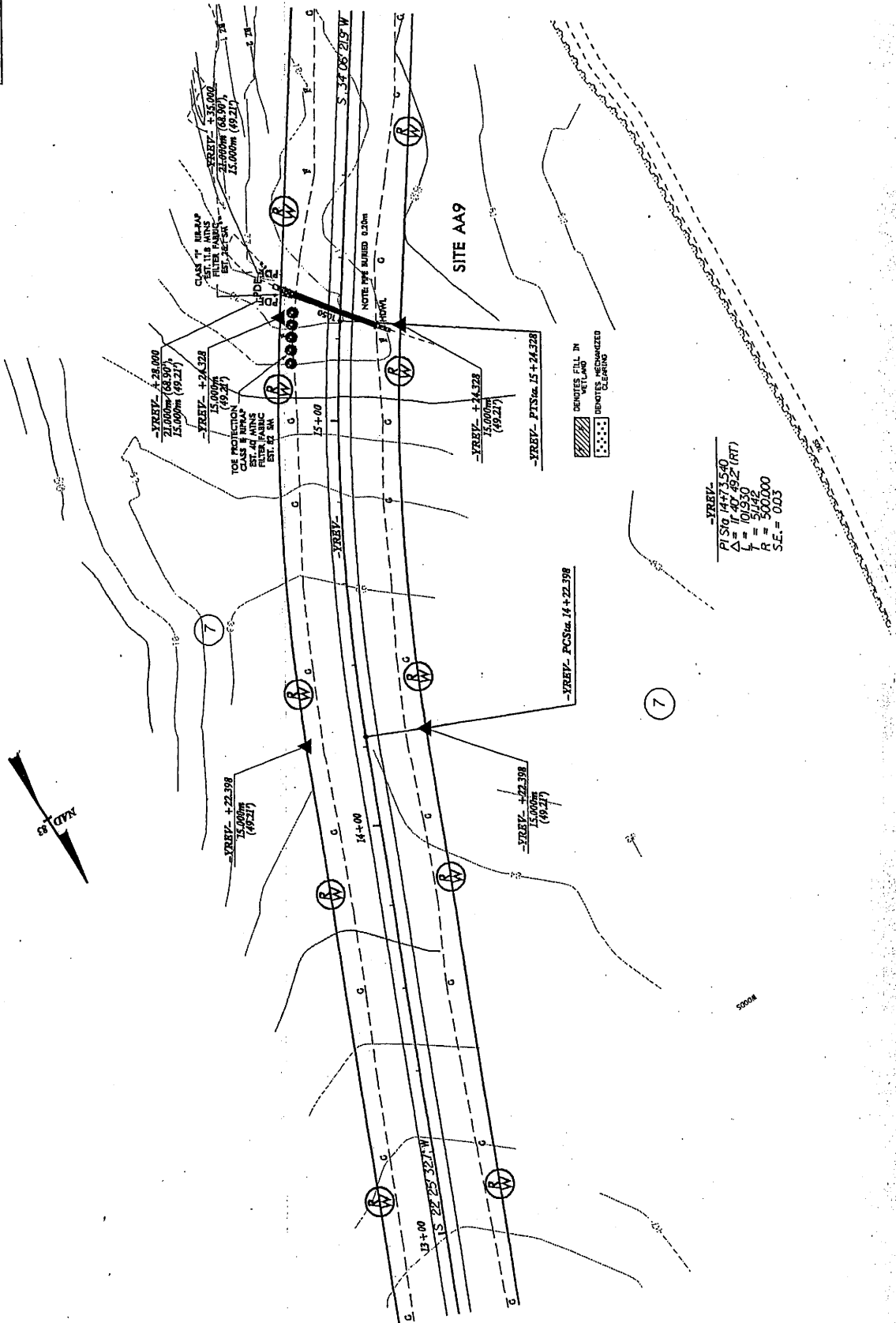
23+00.000

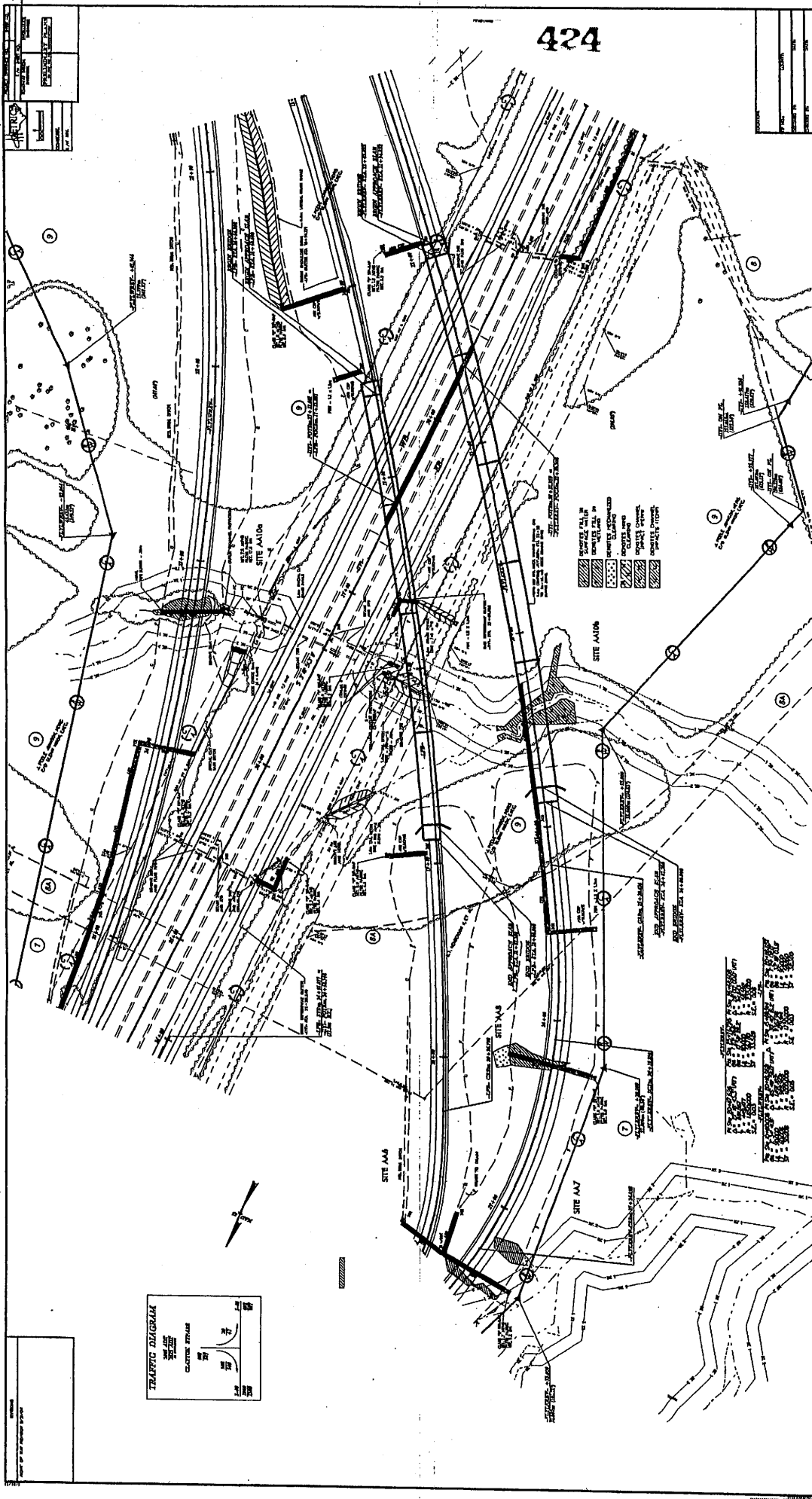
FLY CREW

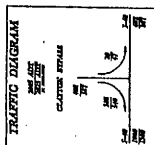
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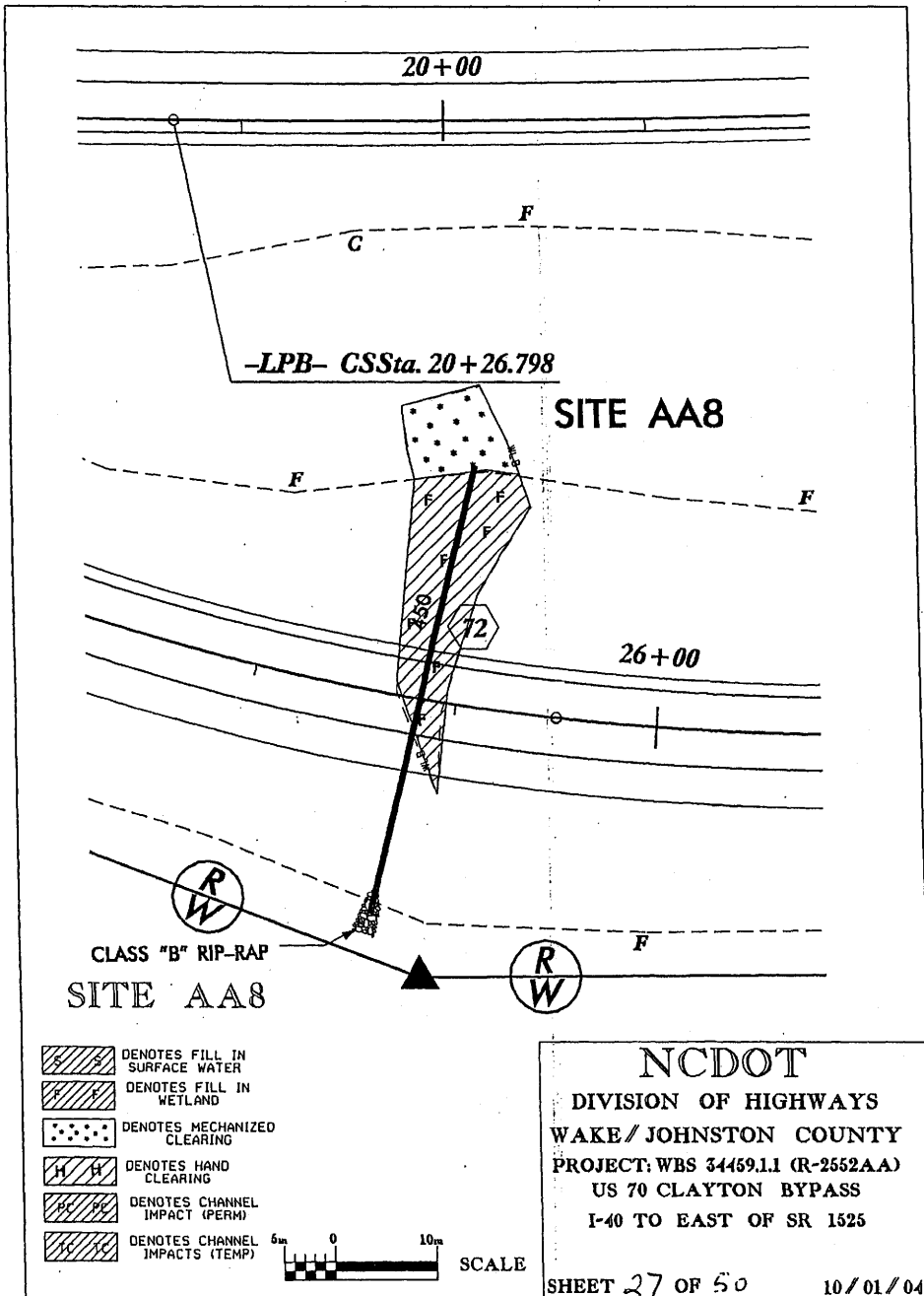
	PROJECT REFERENCE NO.	SHEET NO.
	1/4" SHEET NO.	4
	DESIGNER	FORALLIS
	ENGINEER	ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
CONST. REV. R/W REV.		

423



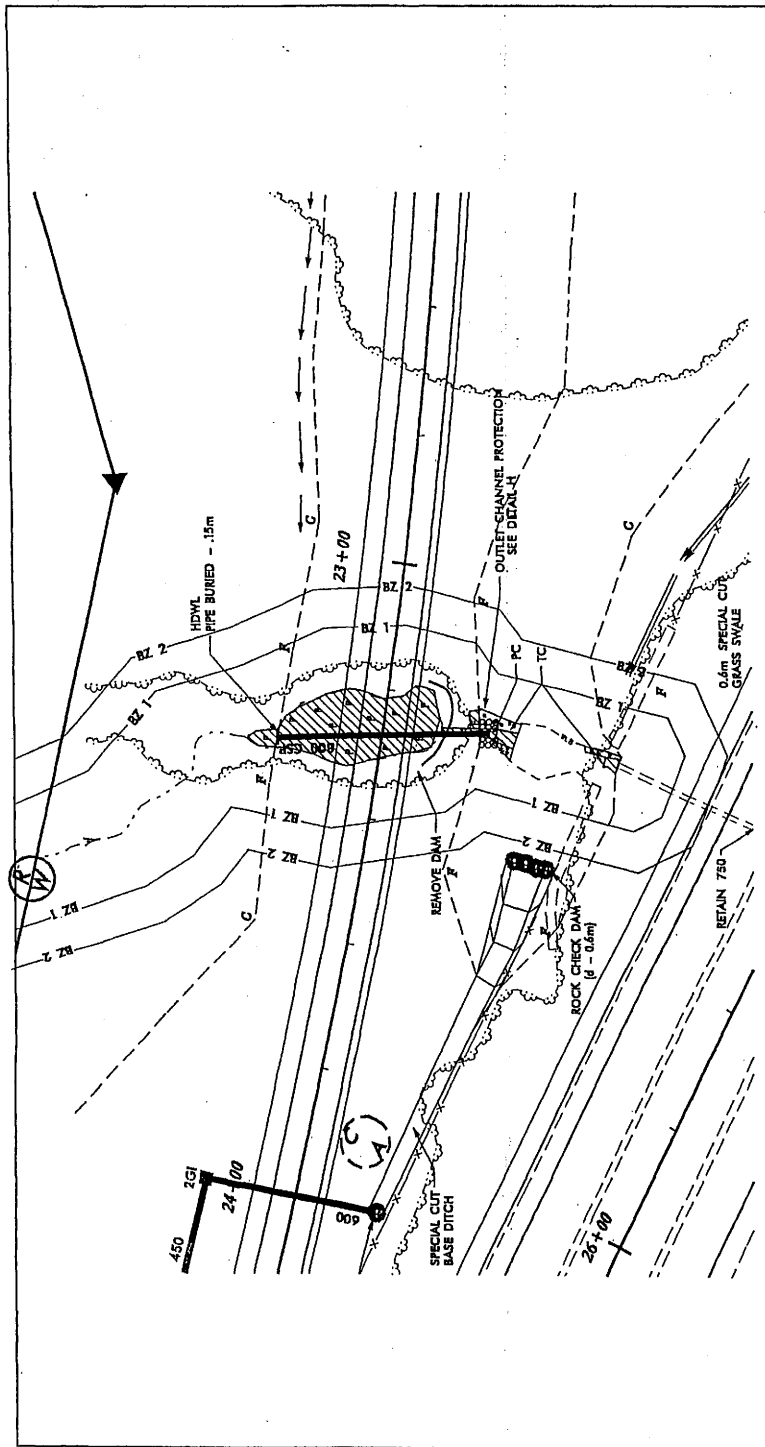






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PROJECT: WBS 34459.1.1 (R-2552AA)
US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525

SHEET 27 OF 50 10/01/04



SITE AA10a

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DIVISION OF HIGHWAYS

WAKE/JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

LEGEND

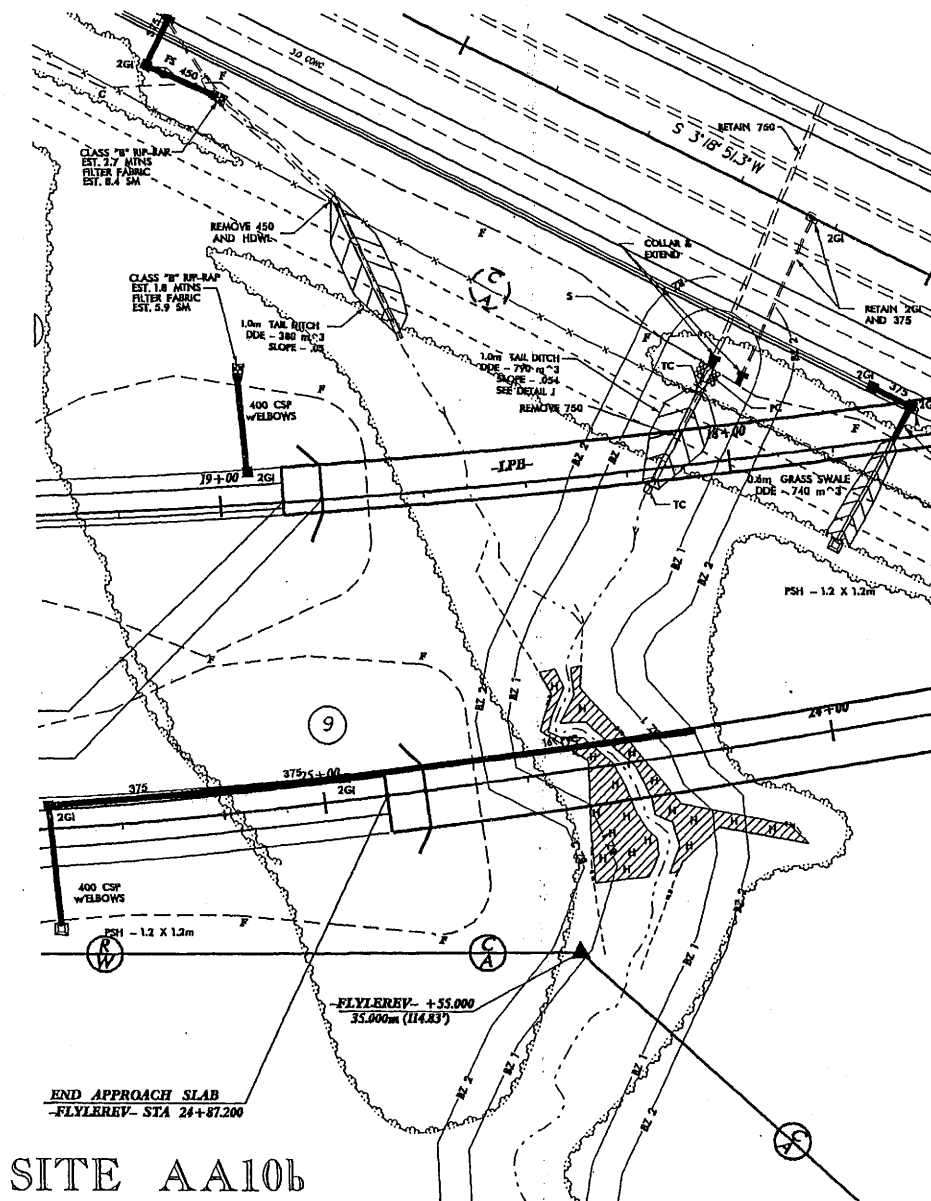
- DENOTES FILL IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES HAND CLEARING
- DENOTES CHANNEL IMPACT (PERM)
- DENOTES CHANNEL IMPACTS (TEMP)

SCALE

10m 0 20m

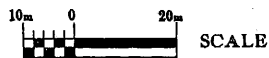
SHEET 28 OF 50

10/01/04



SITE AA10b

-  DENOTES FILL IN SURFACE WATER
-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES HAND CLEARING
-  DENOTES CHANNEL IMPACT (PERM)
-  DENOTES CHANNEL IMPACTS (TEMP)



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WAKE/JOHNSTON COUNTY
PROJECT: WBS 34459.1.1 (R-2552AA)
US 70 CLAYTON BYPASS

SHEET 29 OF 50

10/01/04



SITE AA8

1774
201516.000

1774
201516.000

1774
201516.000

1774
201516.000

429

2640000

2640000

2640000

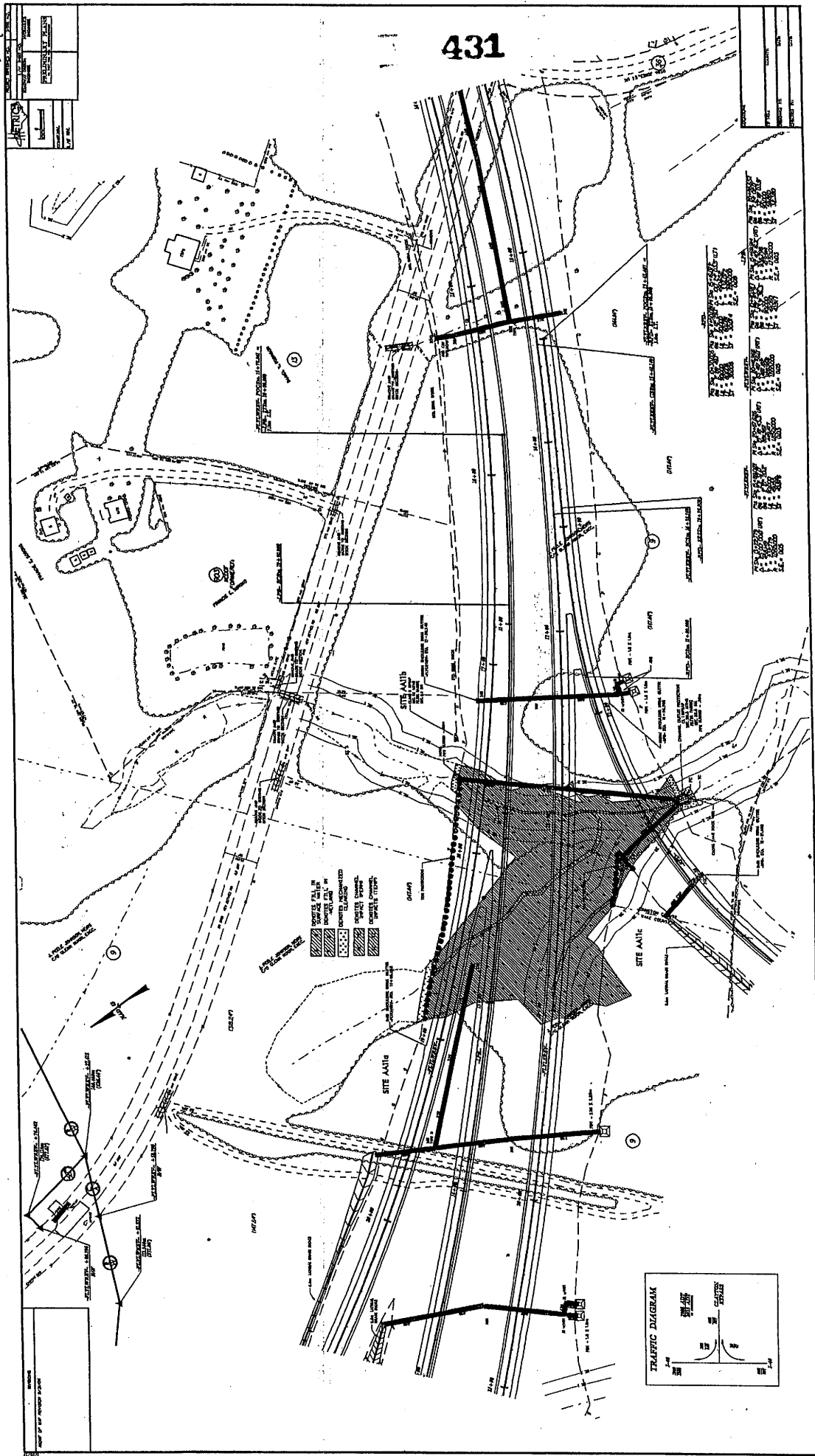
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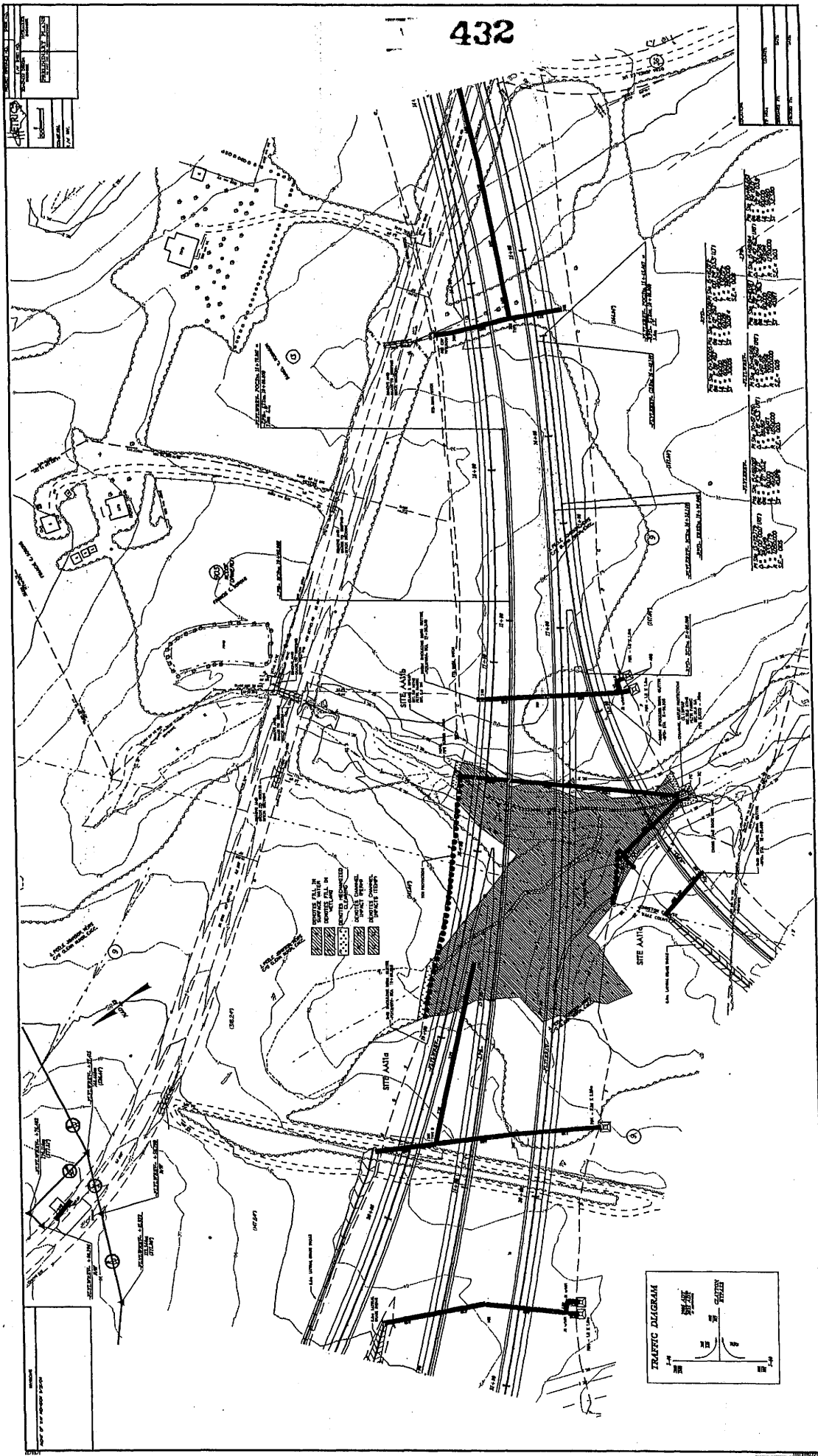
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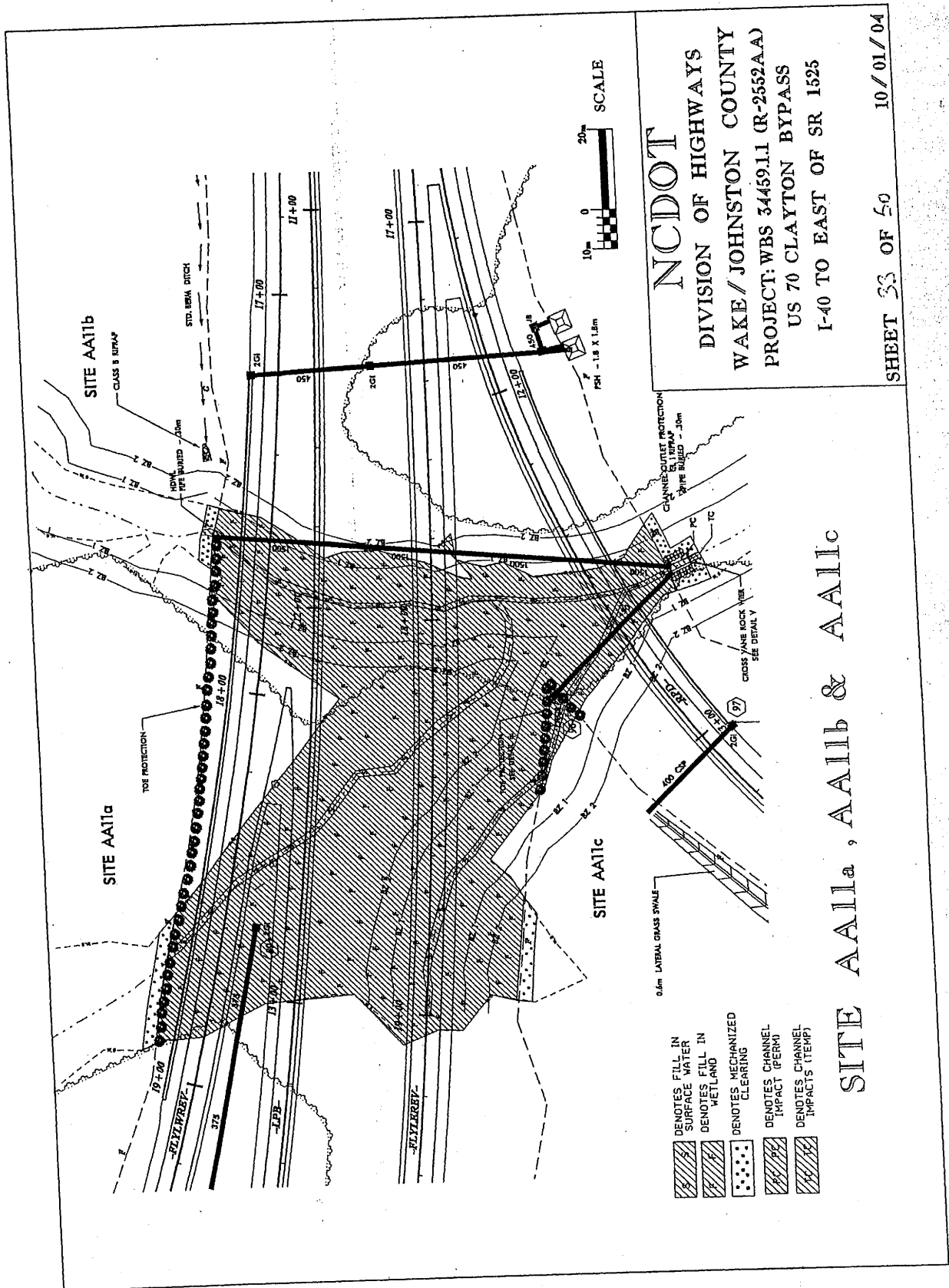


SITE AAI10a









SITE AA11a, AA11b & AA11c



SITE AAIL G & B)

TPB
13+20.871
18+58.540

TPB
13+01.246
18+30.321

TPB
12+61.593
18+55.769

TPB
12+61.931
18+40.001

034



SITE A A H (& D)

EPB POTAWARREY
12+42.264
18+20.157

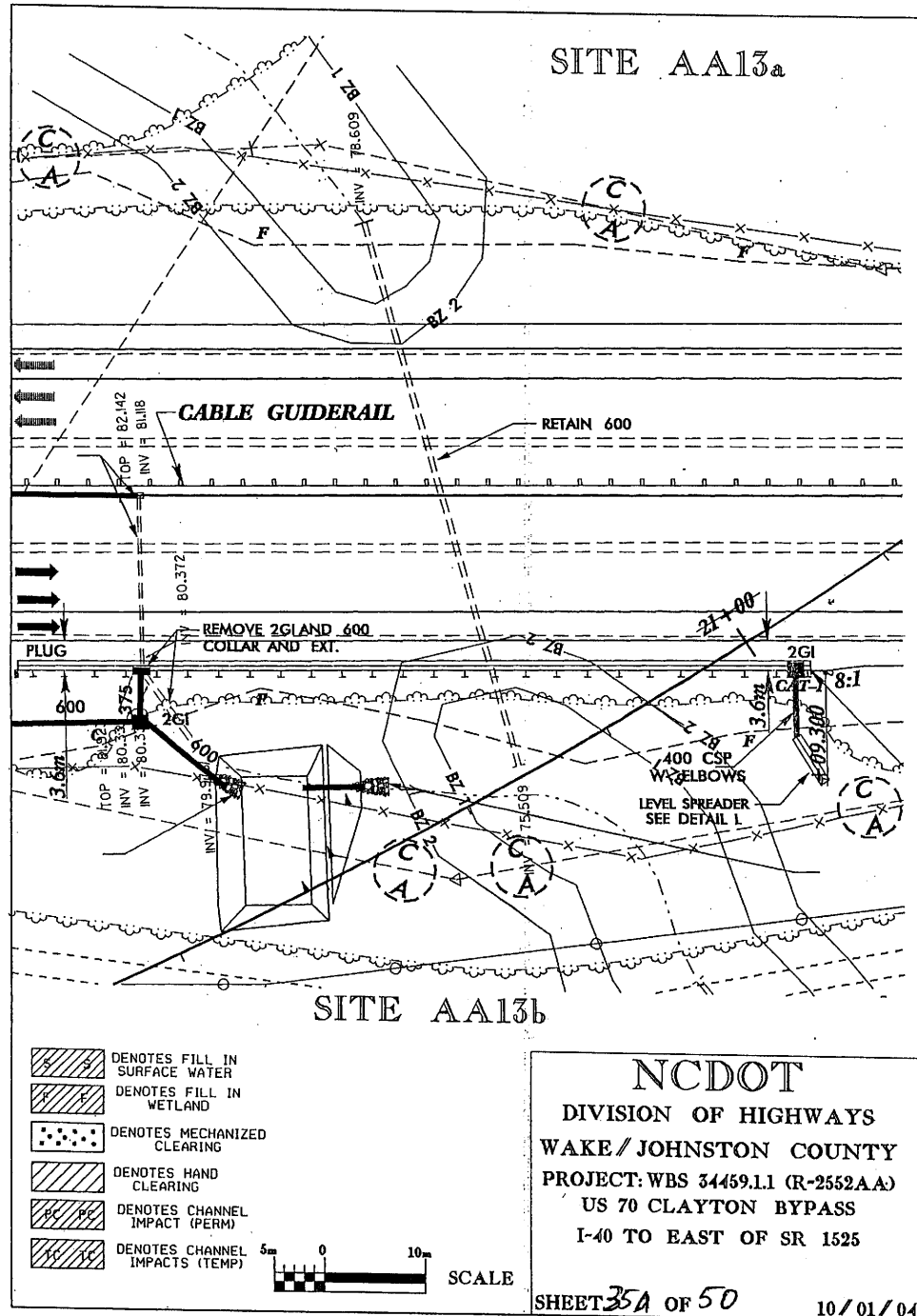
EPB POTAWARREY
12+42.264
18+20.157

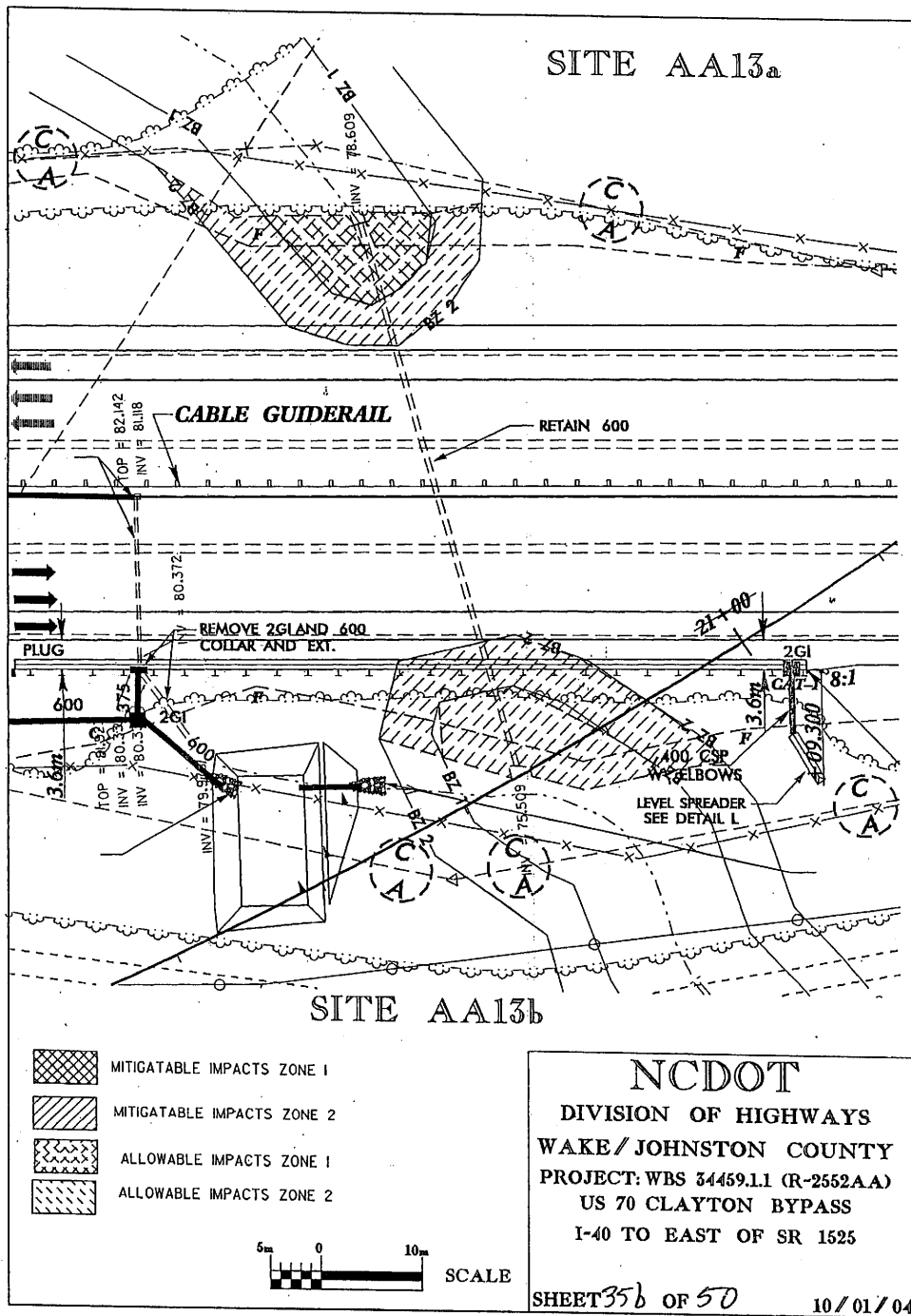
EPB POTAWARREY
12+42.264
18+20.157

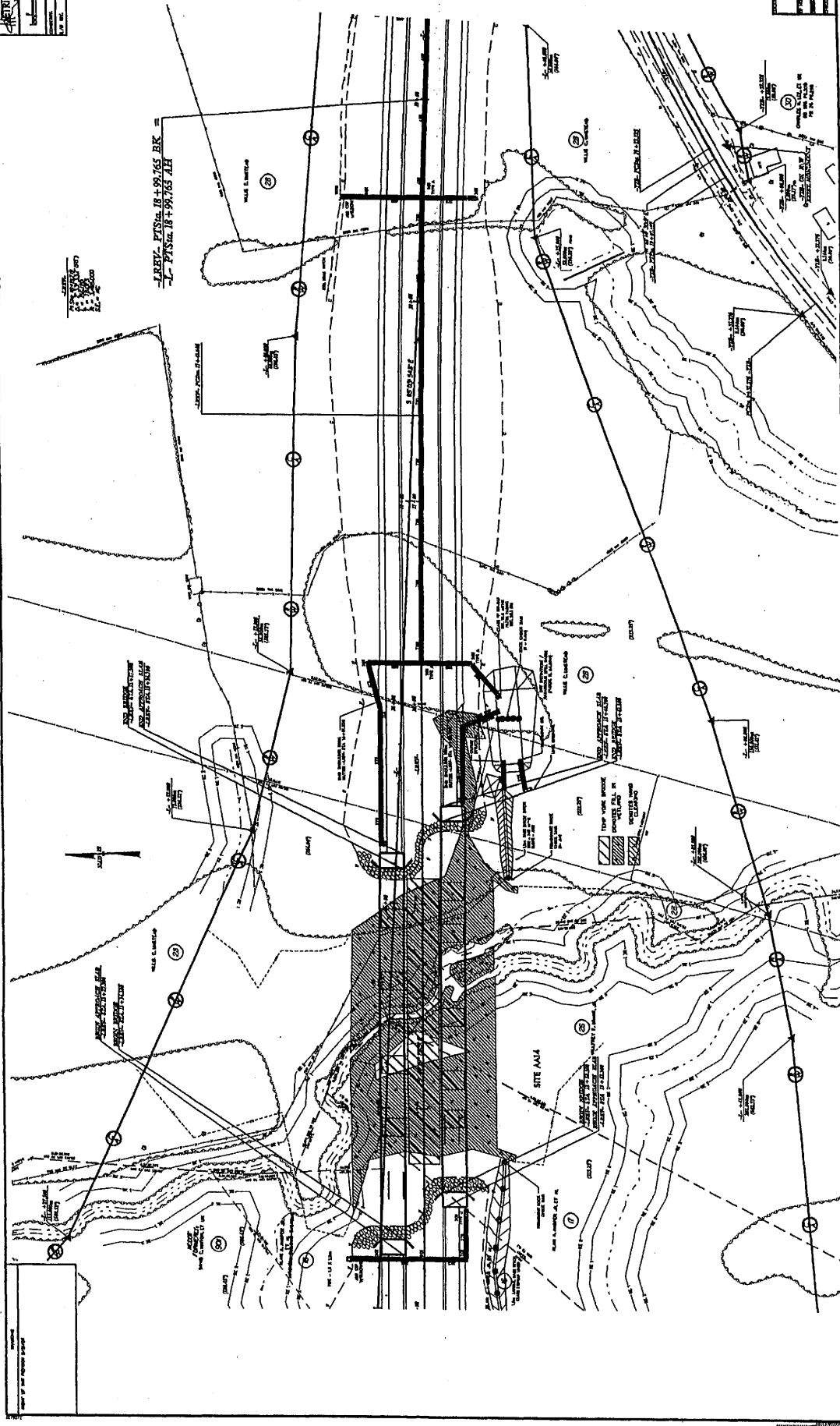
EPB POTAWARREY
12+42.264
18+20.157

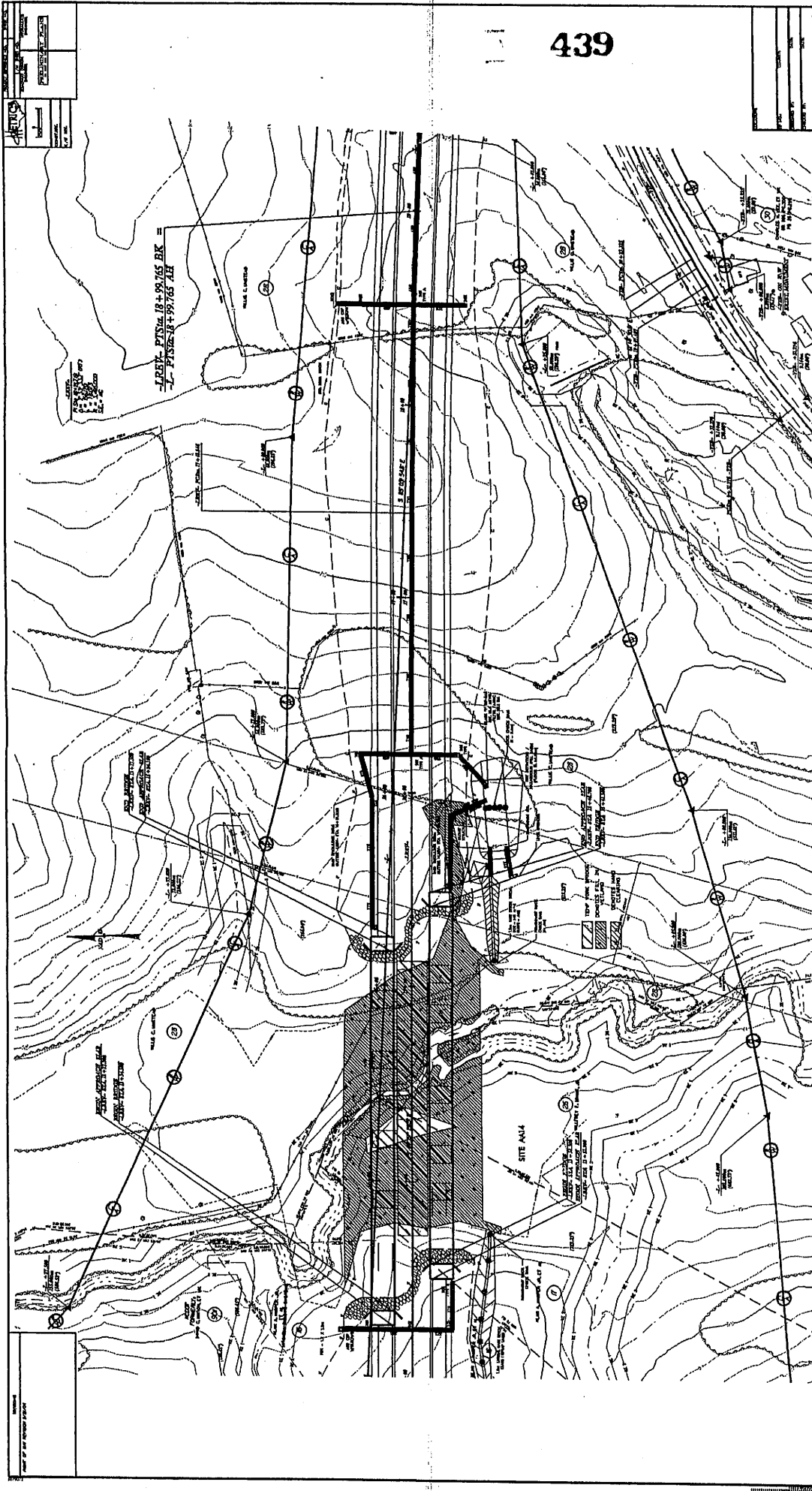
EPB POTAWARREY
12+42.264
18+20.157

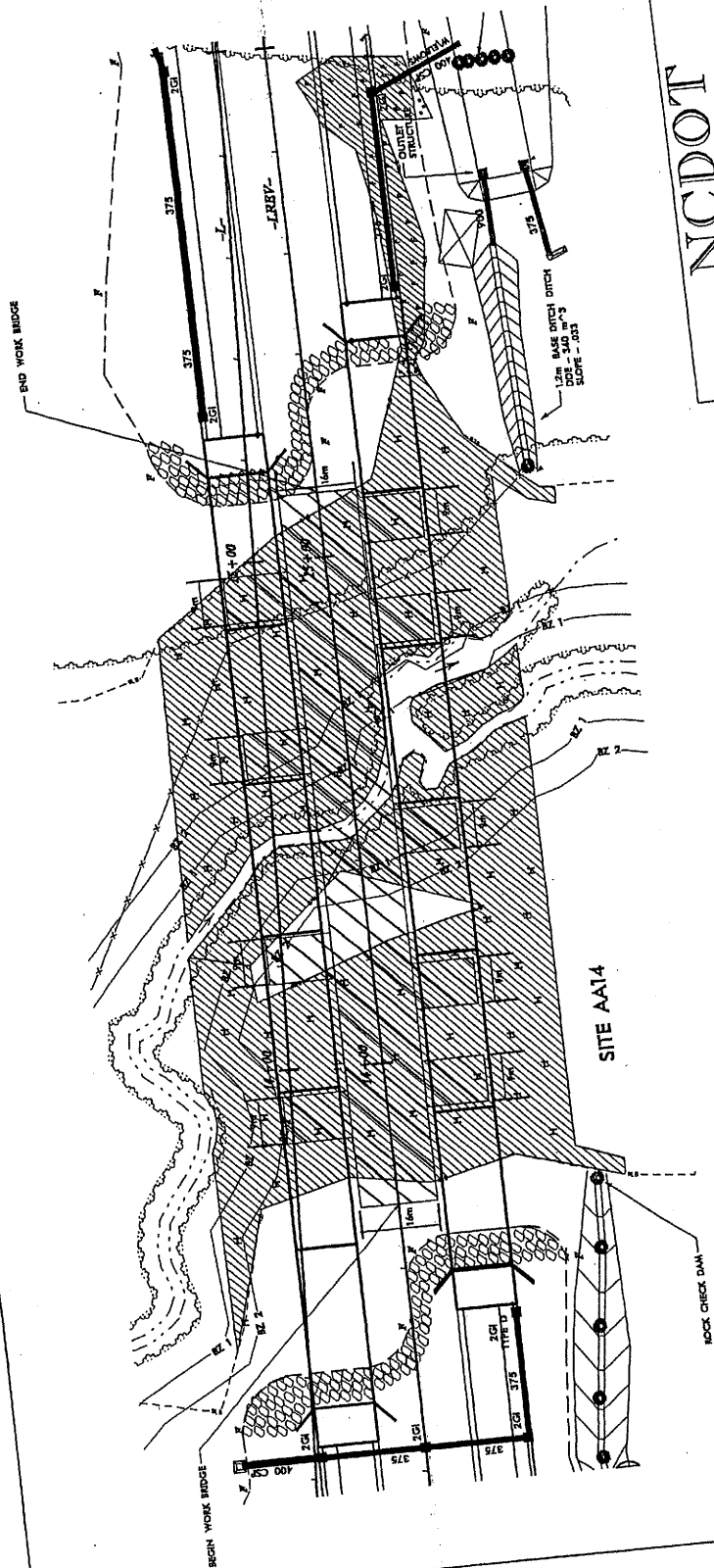
435











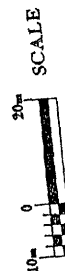
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WAKE / JOHNSTON COUNTY
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US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525

10/01/04

SHEET 37 OF 50

SITE AA14

- TEMP WORK BRIDGE
- DENOTES FILL IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES HAND CLEARING IN WETLANDS
- DENOTES MECHANIZED CLEARING IN WETLANDS
- DENOTES CHANNEL IMPACT (PERM)
- DENOTES CHANNEL IMPACTS (TEMP)



	PROJECT REFERENCE NO. R-25727A	SHEET NO. 1
	ROADWAY DESIGN ENGINEER	ROADWAYS ENGINEER
INCOMPLETE PLANS PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
CONST. BY R.W. BY		

LEFT DITCH
RIGHT DITCH

*BM # BL-13 BL 68.14
24.50m LT LREV STA 12+23.97

*BM # BL-10 BL 70.81
24.00m LT LREV STA 11+17.51

REGION GRADE DATA
STA 11+00.00 BL = 71.60

-LREV-
EASTBOUND

*BM # BL-14 BL 63.56
24.50m LT LREV STA 13+64.73

NOTE: SEE SHEET 10 FOR LREV ALIGNMENT
BENCH MARK IS A 750mm REBAR WITH
NCOT TRAVERSE CAP STAMPED WITH
THE BM NUMBER

*BM # BL-11 BL 62.84
24.17m LT LREV STA 14+51.254

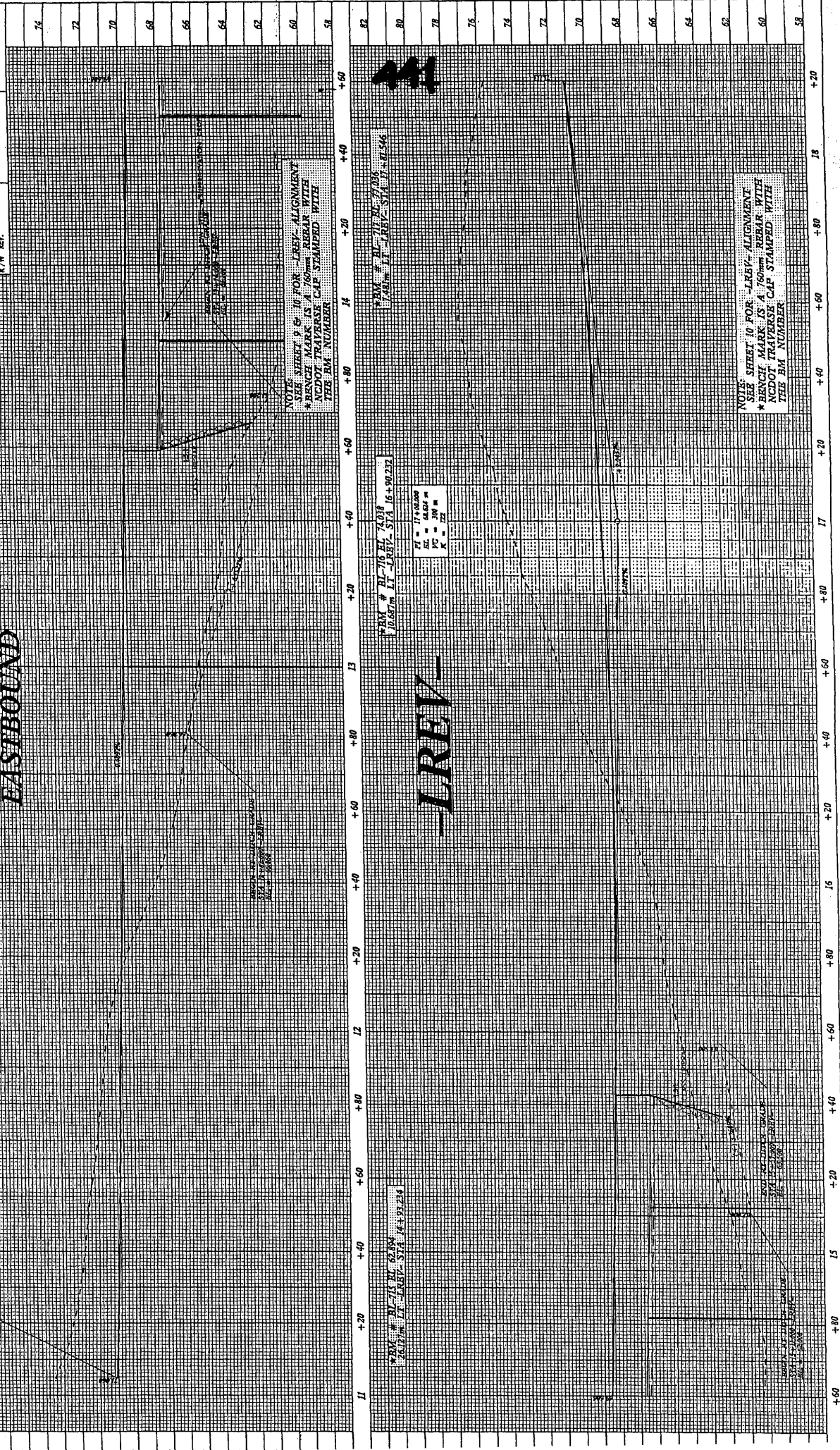
*BM # BL-16 BL 74.08
24.67m LT LREV STA 16+90.232

PI = 17+00.00
BL = 64.64 m
PC = 30 m
PT = 17+30.00

-LREV-

NOTE: SEE SHEET 10 FOR LREV ALIGNMENT
BENCH MARK IS A 750mm REBAR WITH
NCOT TRAVERSE CAP STAMPED WITH
THE BM NUMBER

200' (60.96m) GRADE
STA 15+00.00 BL = 62.00
24.00m LT LREV STA 15+00.00



PROJECT REFERENCE NO.
R-2597A

ROADWAY DESIGN
ENGINEER

SHEET NO.
HYDRAULICS

INCOMPLETIVE PLANS
FOR CONSTRUCTION
DO NOT USE FOR CONSTRUCTION

CONST. BY
10

A/W REV.

LEFT DITCH
RIGHT DITCH

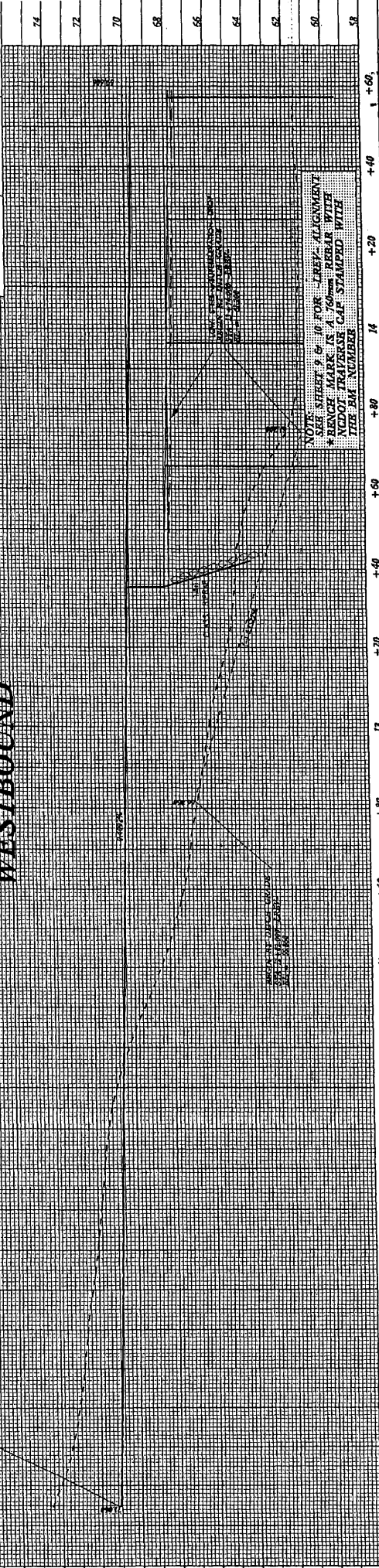
* BM # 11-13 EL. 62.55
28.50m L.R. LREV STA 13+54.71

-LREV- WESTBOUND

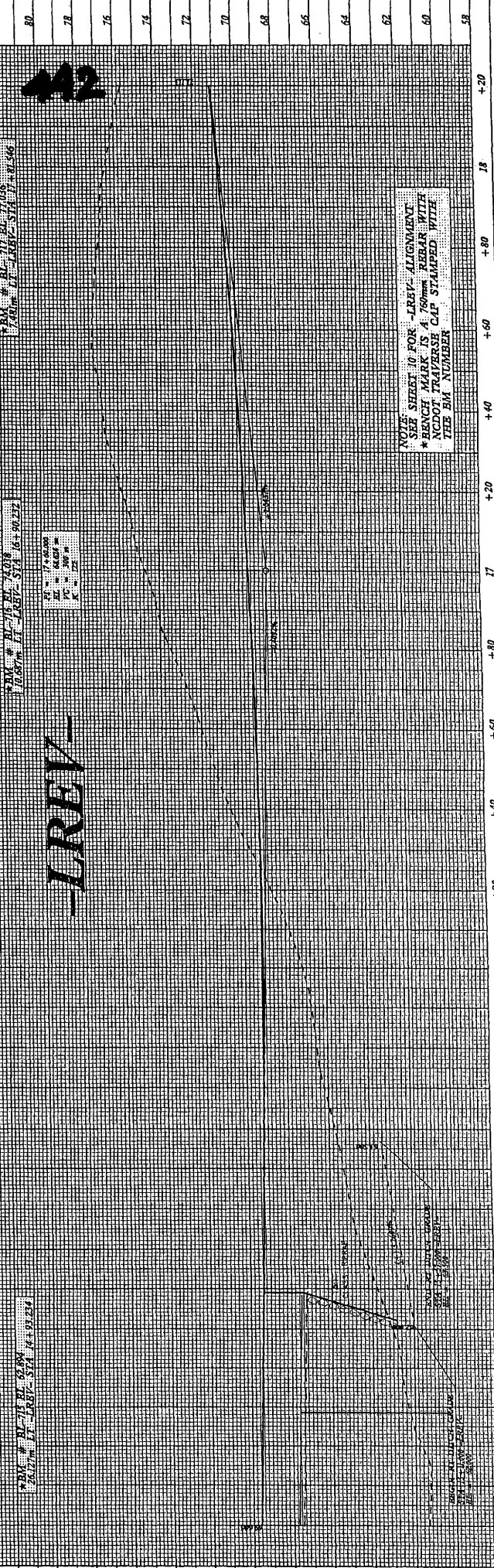
* BM # 11-13 EL. 62.55
28.50m L.R. LREV STA 13+54.71

DESIGN GRADE LAGB
STA 13+54.71 EL. 62.55

* BM # 11-13 EL. 62.55
28.50m L.R. LREV STA 13+54.71



NOTE:
SEE SHEET 9 & 10 FOR LREV ALIGNMENT
* BENCH MARK IS A 750mm REBAR WITH
NCOT TRAVERSE CAP STAMPED WITH
THE BM NUMBER



NOTE:
SEE SHEET 10 FOR LREV ALIGNMENT
* BENCH MARK IS A 750mm REBAR WITH
NCOT TRAVERSE CAP STAMPED WITH
THE BM NUMBER

DESIGN GRADE LAGB
STA 15+00 EL. 62.55

* BM # 11-13 EL. 62.55
28.50m L.R. LREV STA 13+54.71

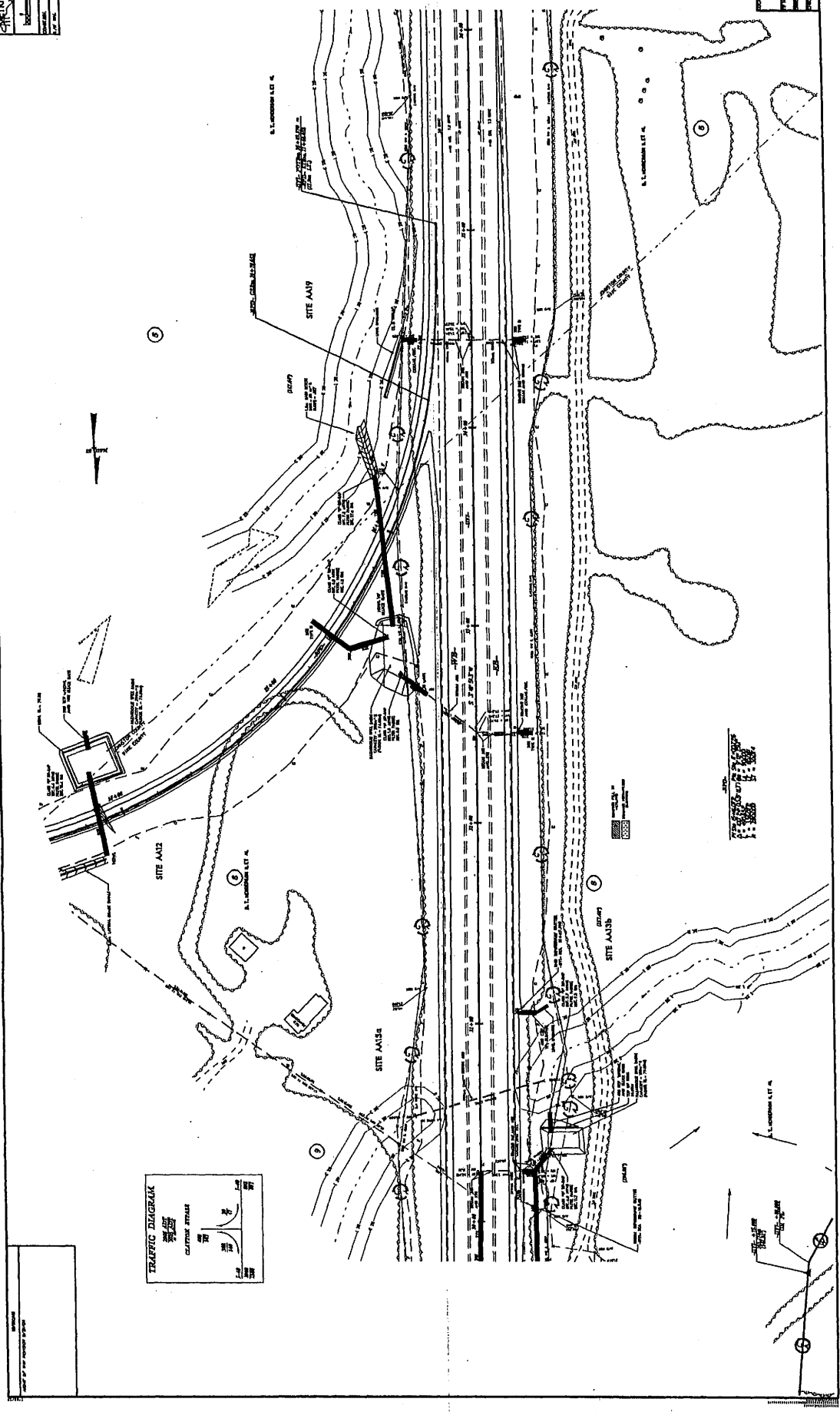


SITE 14

442

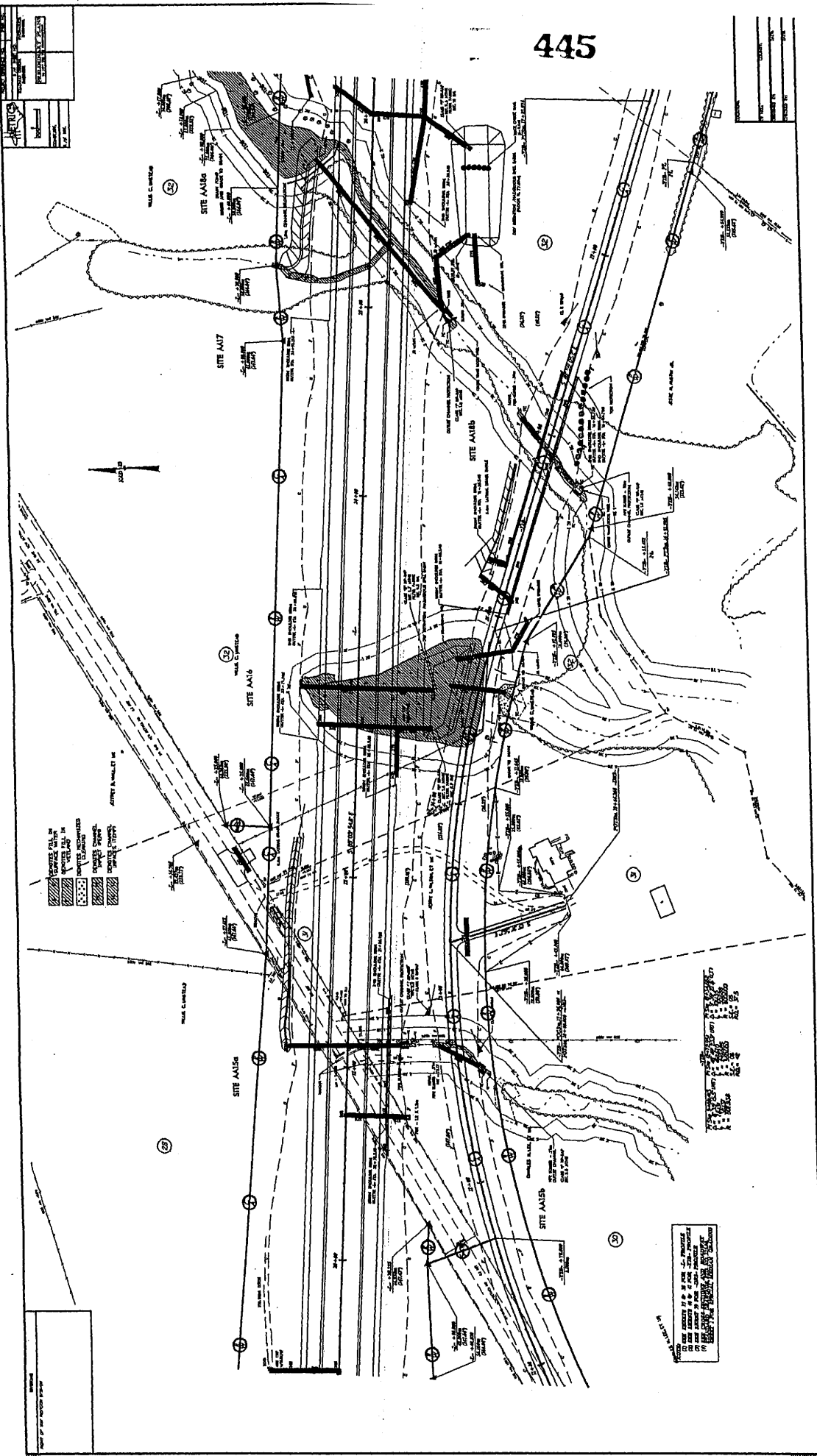
PROJECT	NO. 1
DATE	10/1/68
BY	J. J. J.
CHECKED	J. J. J.
APPROVED	J. J. J.

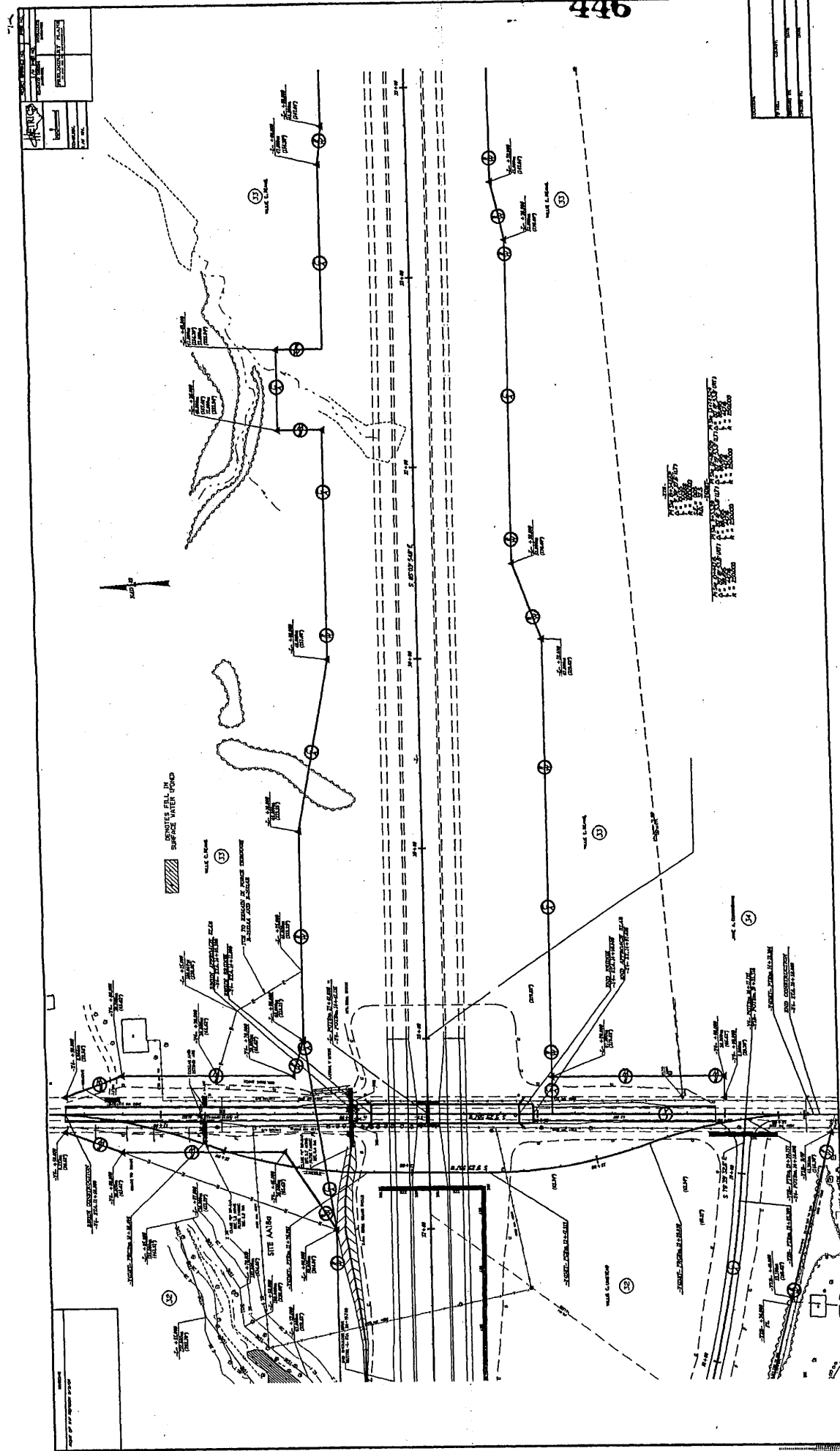
NO.	1
DATE	10/1/68
BY	J. J. J.
CHECKED	J. J. J.
APPROVED	J. J. J.

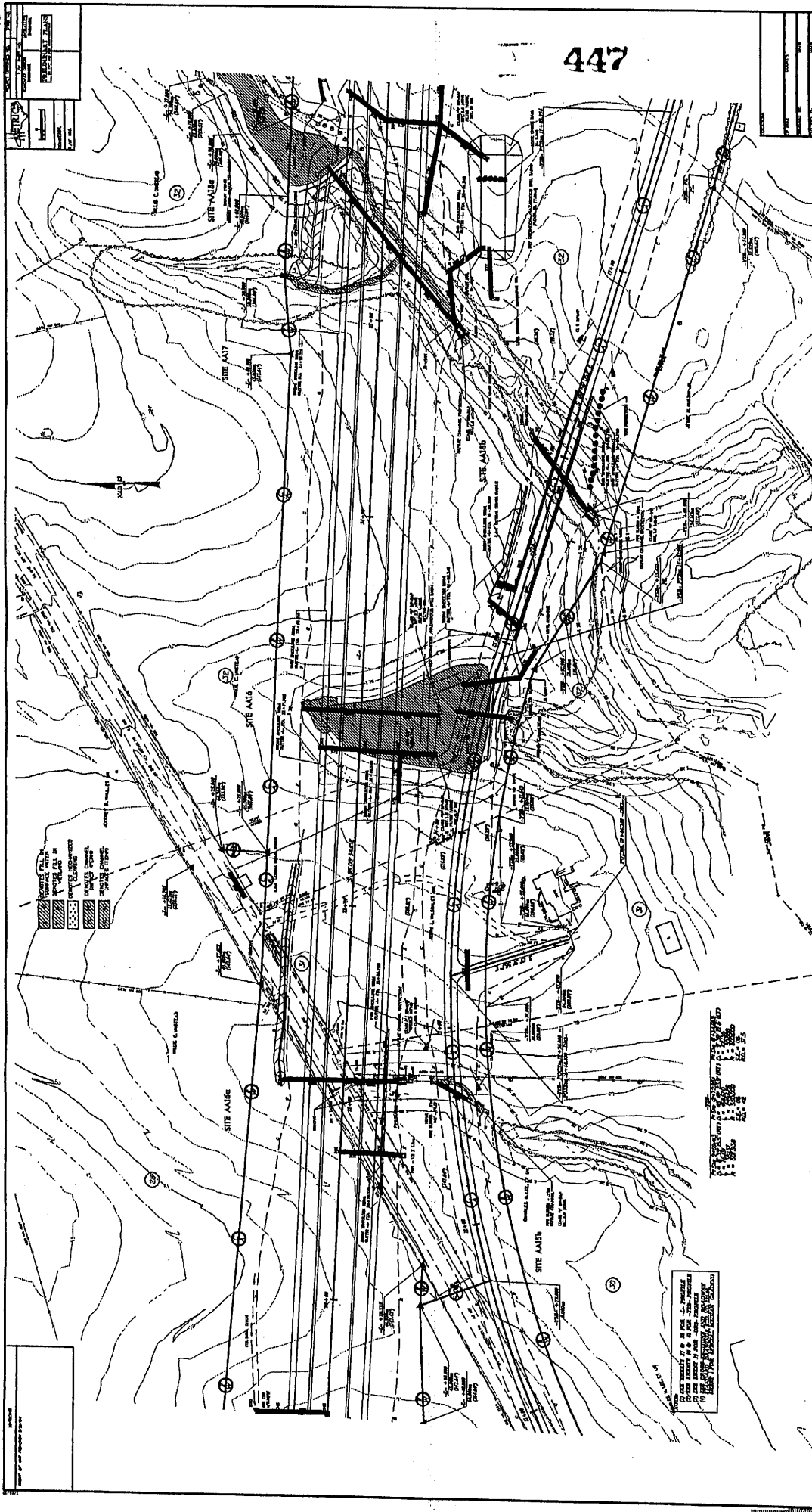


TRAFFIC DIAGRAM
TRAFFIC SIGNAL
TRAFFIC SIGNAL

NO.	1
DATE	10/1/68
BY	J. J. J.
CHECKED	J. J. J.
APPROVED	J. J. J.

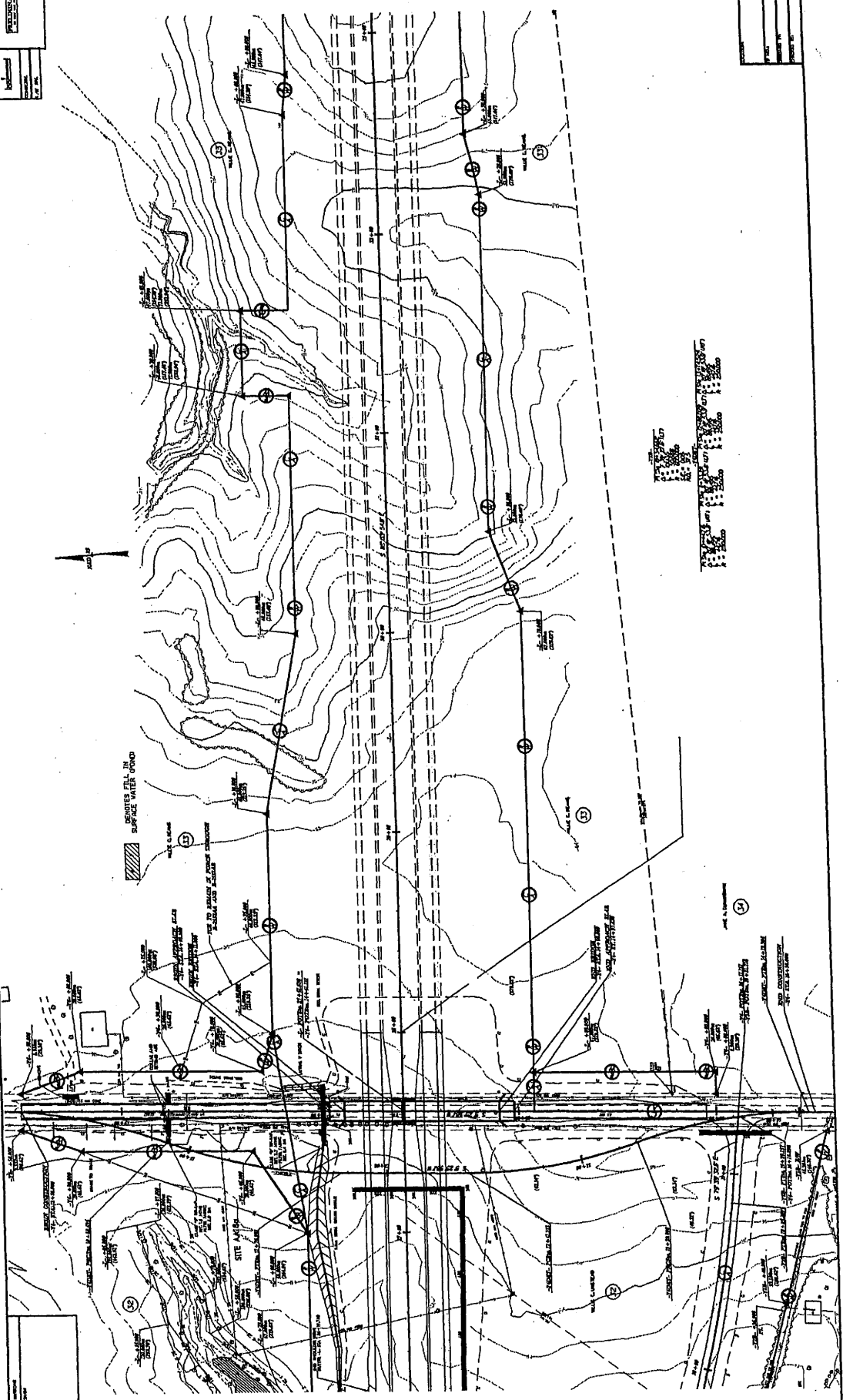






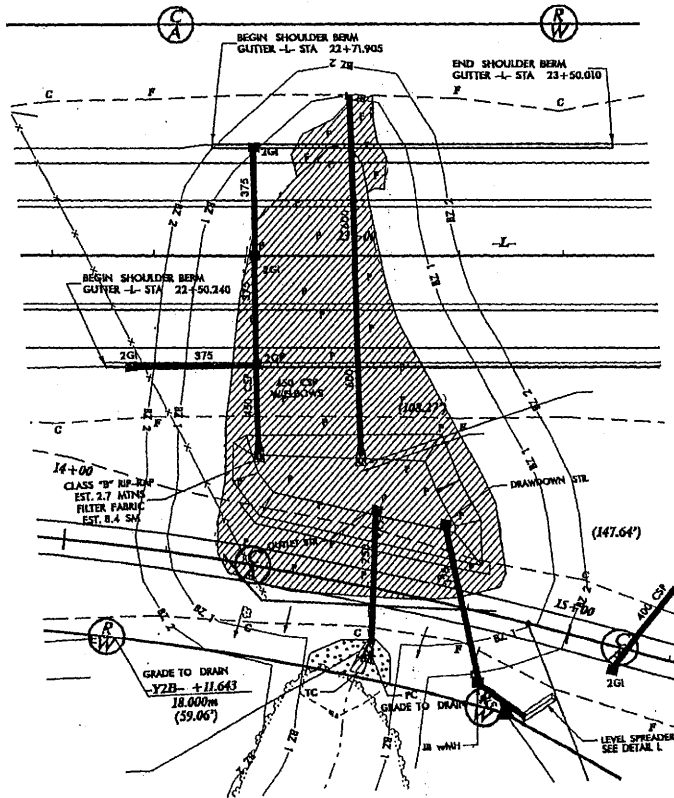
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SECTION NO.	100-100-100
DATE	10/1/10
BY	100-100-100
CHECKED BY	100-100-100
APPROVED BY	100-100-100

PROJECT NO.	100-100-100
SECTION NO.	100-100-100
DATE	10/1/10
BY	100-100-100
CHECKED BY	100-100-100
APPROVED BY	100-100-100



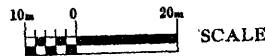
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SECTION NO.	100-100-100
DATE	10/1/10
BY	100-100-100
CHECKED BY	100-100-100
APPROVED BY	100-100-100

SITE AA16



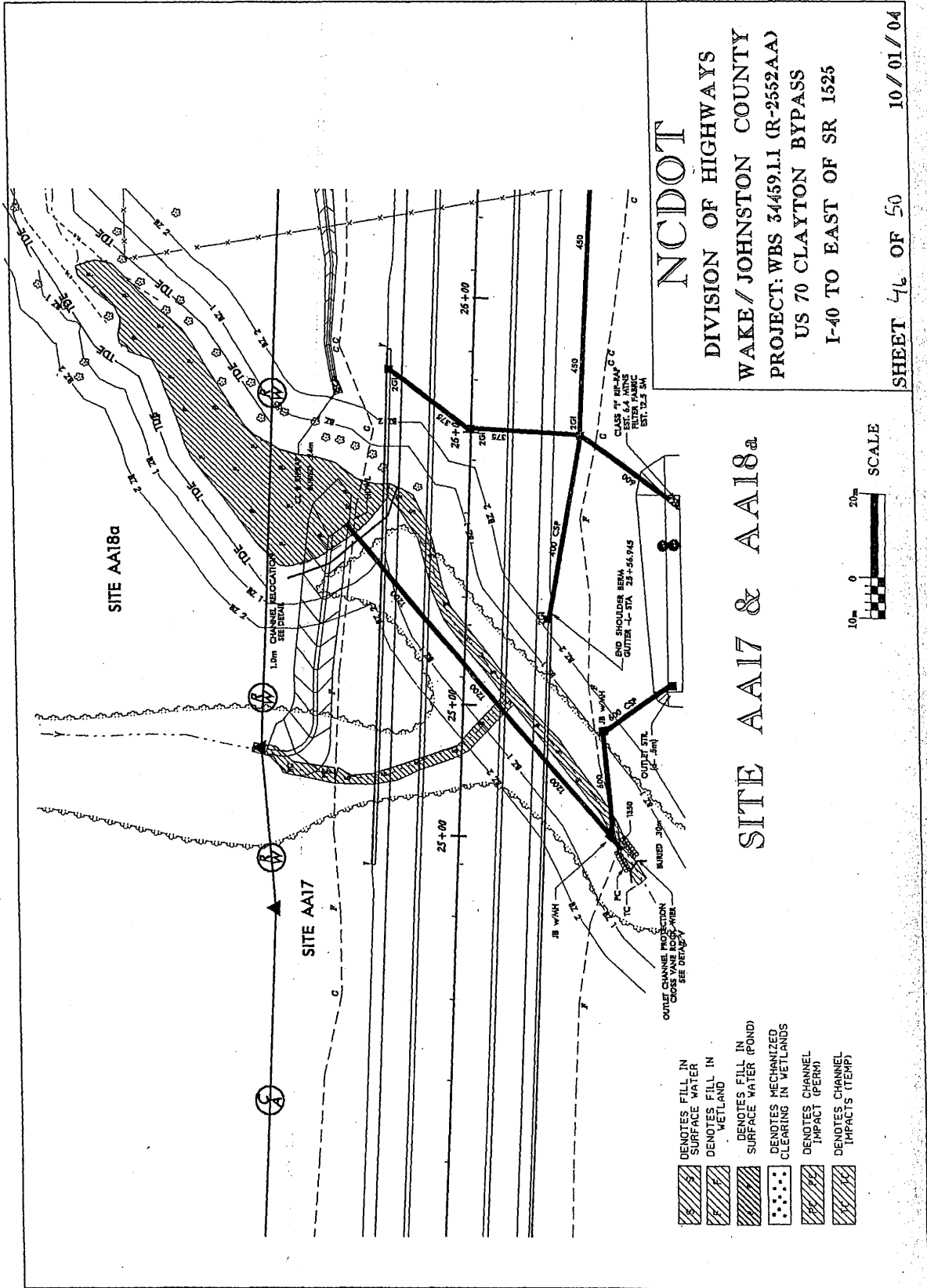
SITE AA16

- DENOTES FILL IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER (POND)
- DENOTES MECHANIZED CLEARING IN WETLANDS
- DENOTES CHANNEL IMPACT (PERM)
- DENOTES CHANNEL IMPACTS (TEMP)



NCDOT
 DIVISION OF HIGHWAYS
 WAKE/JOHNSTON COUNTY
 PROJECT: WBS 34459.1.1 (R-2552AA)
 US 70 CLAYTON BYPASS
 I-40 TO EAST OF SR 1525

SHEET 45 OF 50 10/01/04

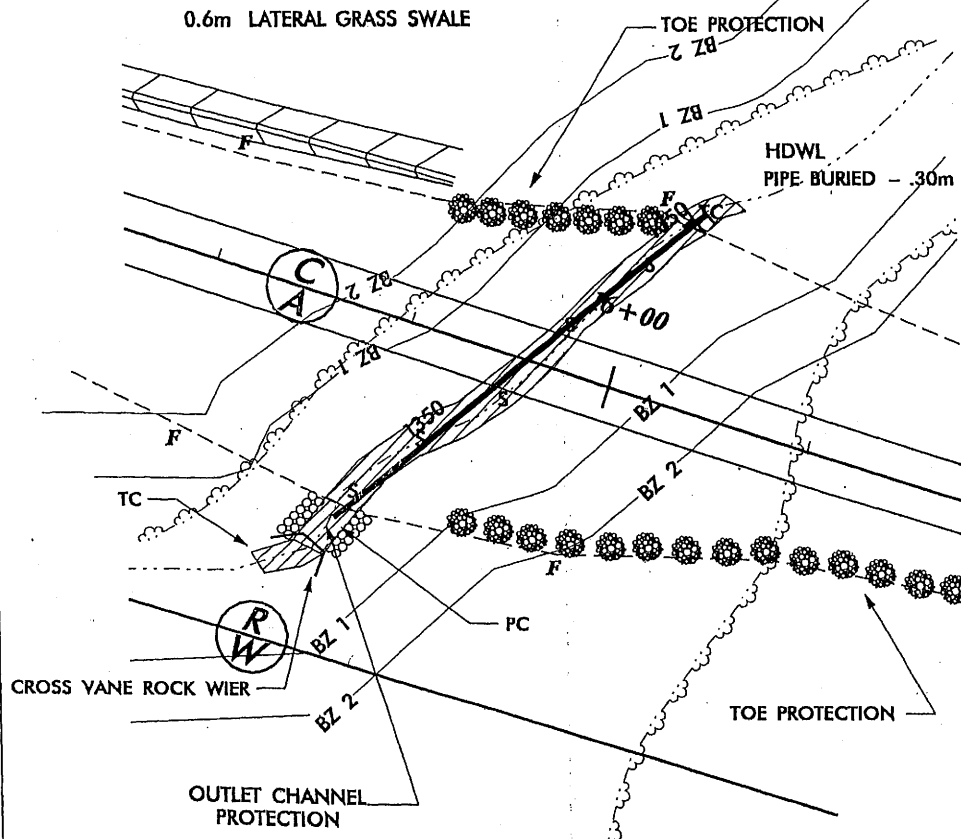


NCDOT
DIVISION OF HIGHWAYS
WAKE/JOHNSTON COUNTY
PROJECT: WBS 344591.1 (R-2552AA)
US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525

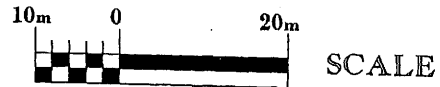
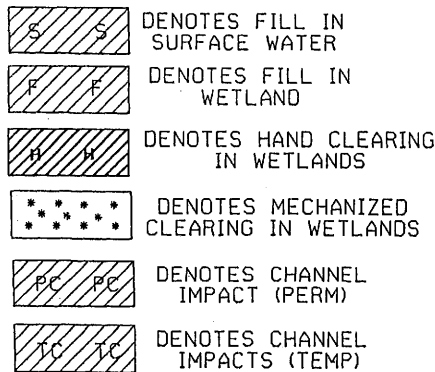
SHEET 46 OF 50 10/01/04

SITE AA17 & AA18a

SITE AA18b



SITE AA18b



NCDOT
 DIVISION OF HIGHWAYS
 WAKE/JOHNSTON COUNTY
 PROJECT: 8.2661601 (R-2466)
 US 70 CLAYTON BYPASS
 I-40 TO EAST OF SR 1525

SHEET 47 OF 50

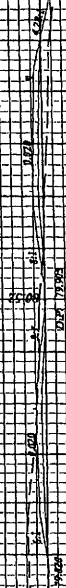
10/01/04



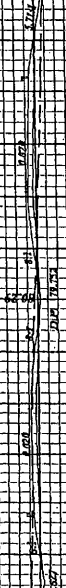
SITE 16



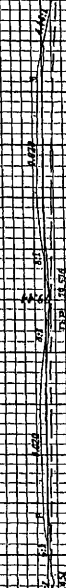
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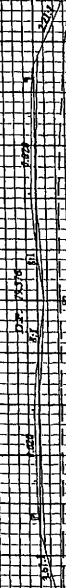
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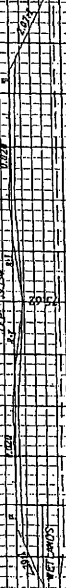
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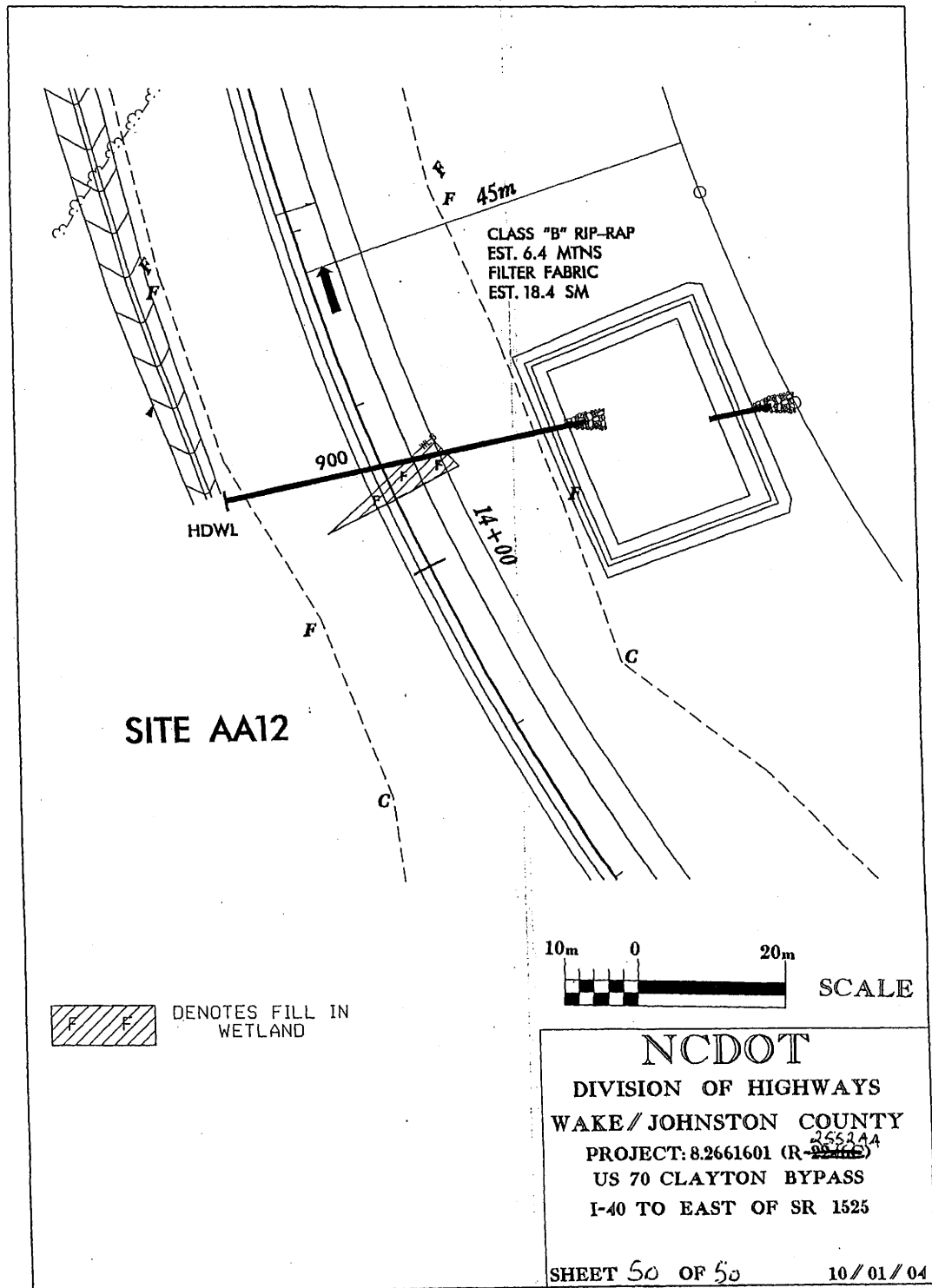
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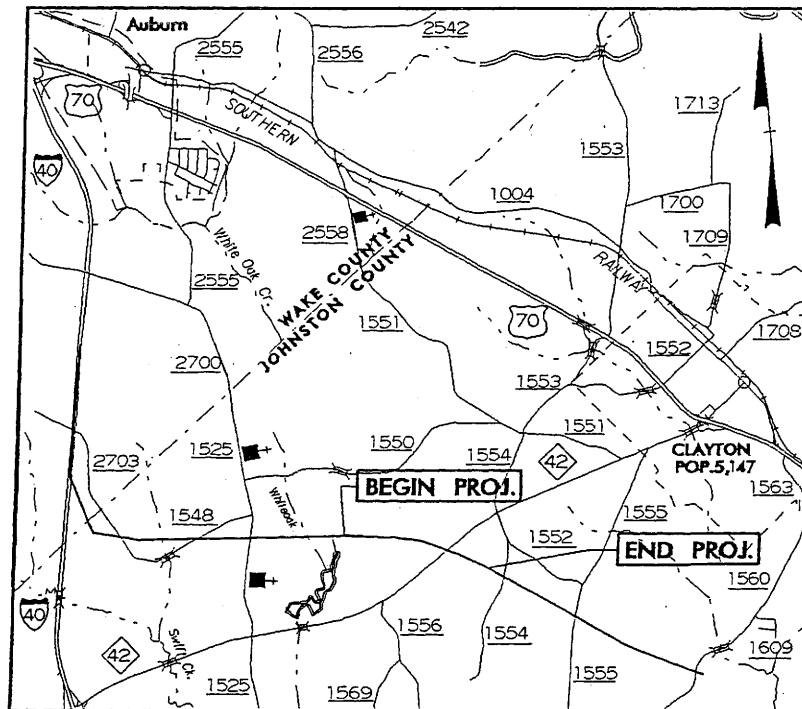
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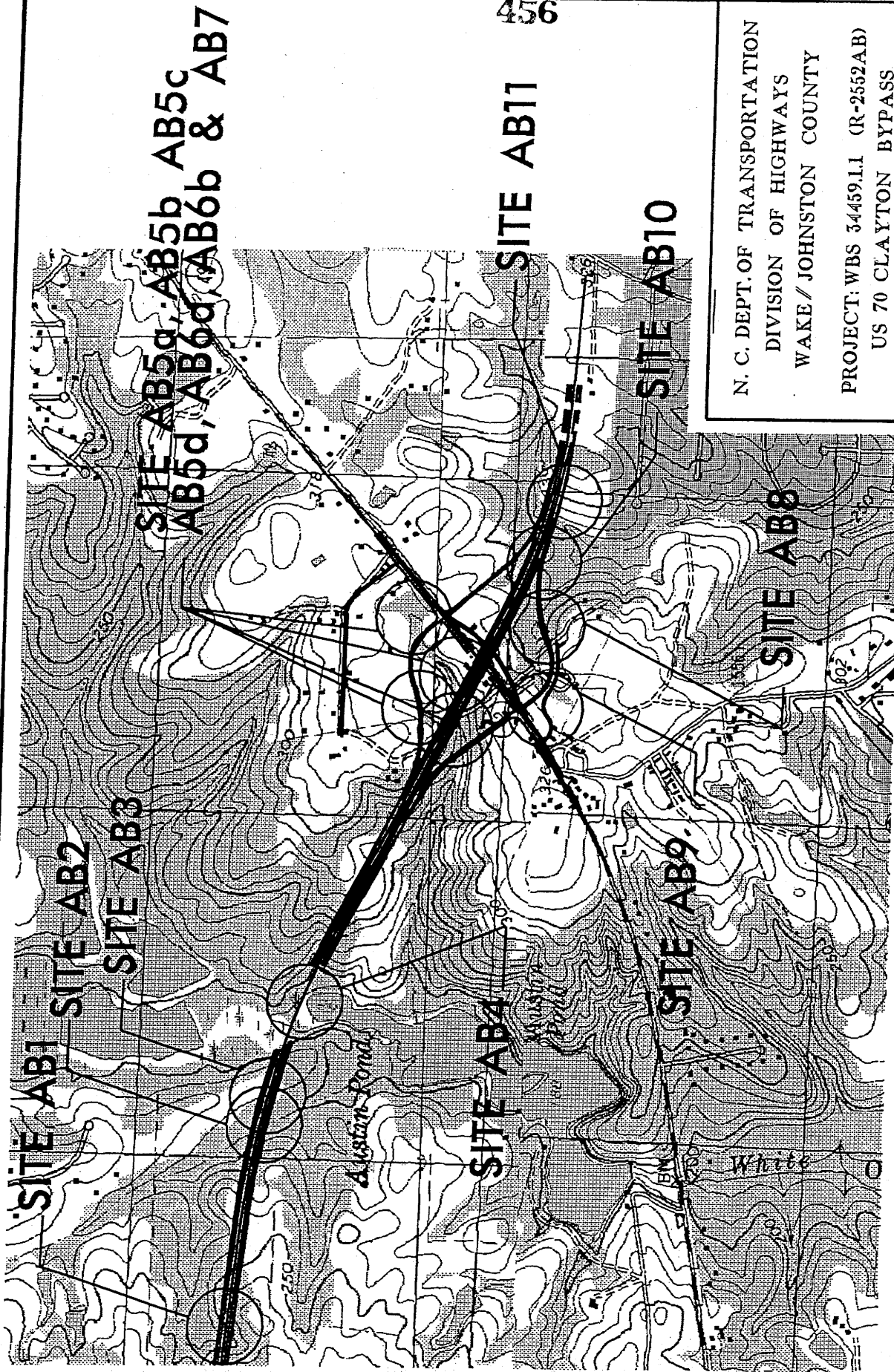




NORTH CAROLINA



SHEET 1 OF 23 10/01/04



SITE MAP

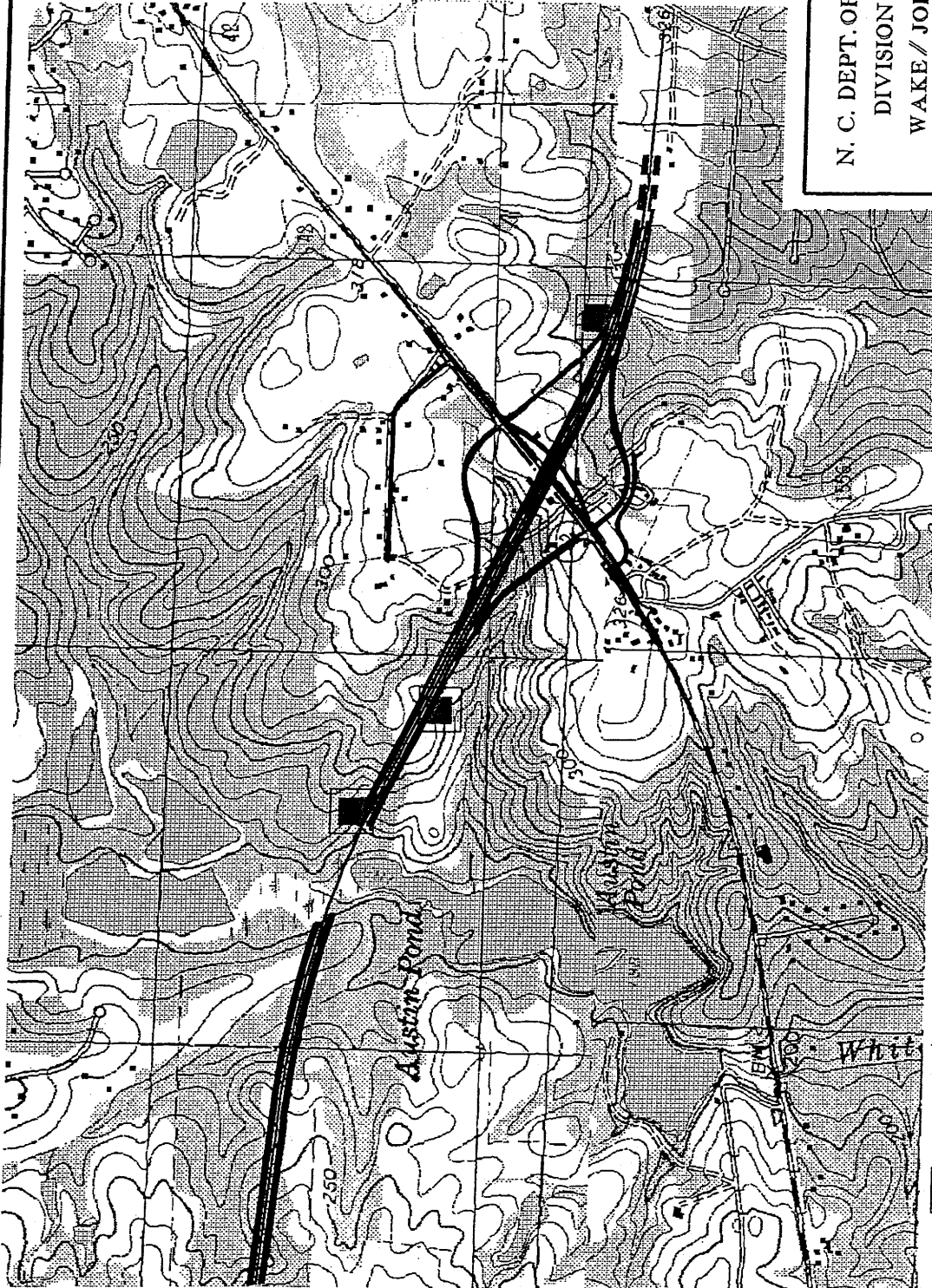
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 WAKE / JOHNSTON COUNTY
 PROJECT: WBS 34459.1.1 (R-2552AB)
 US 70 CLAYTON BYPASS

457

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AB)
US 70 CLAYTON BYPASS

SHEET 3 OF 23 10/01/04



■ HAZARDOUS SPILL BASIN

HAZARDOUS SPILL BASINS SITE MAP

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS			SURFACE WATER IMPACTS					Natural Stream Design (ft)
			Fill In Wetlands Permanent (ac)	Fill In Wetlands Temporary (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) Permanent (ac)	Fill In SW (Natural) Temporary (ac)	Existing Channel Impacted Permanent (ft)	Existing Channel Impacted Temporary (ft)	
AB1	L 31+20	750 RCP	0.11			0.01					
AB2	L 37+10	RCBC									
AB3	L 37+60	N/A	0.04			0.01		0.05	325	98	
AB4	L 41+00	BRIDGE									
AB5b	RPB 14+80	900 RCP	0.07			0.02					
AB5c	L 50+70	1050 RCP	0.08				0.06		128	26	
AB7		POND	0.09						364	108	
AB5d	RPC 12+50	1350 RCP					0.13		561	13	
AB6a	RPB 12+90	900 RCP	0.01		0.01		0.02		102	10	
AB6b	L 50+30	900 RCP					0.09		226		
AB8	RPD 13+00	1350 RCP	0.17			0.05	0.01		118	23	
AB9	RPD 15+50	1050 RCP	0.09			0.01					
AB10	L 55+70	NONE	0.45			0.02					
AB11	L 57+30	RCBC	0.47			0.03	0.06		351	131	
PROJECT TOTALS:			1.52		0.01	0.16	0.50	0.05	2173	410	

NOTE: HAND-CLEARING IN WETLAND

PERM FILL IN SURFACE WATER (PERM BRIDGE PIER)

TEMP FILL IN SURFACE WATER (TEMP BRIDGE PIER)

PERM FILL IN WETLAND (PERM BRIDGE PIER)

TEMP FILL IN WETLAND (TEMP BRIDGE PIER)

SURFACE WATER FILL (POND)

SITE AB4 = 0.08 ac

SITE AB4 = 0.01 ac

SITE AB4 = 0.02 ac

SITE AB4 = 0.01 ac

SITE AB4 = 0.01 ac

SITE AB7 = 0.13 ac

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE / JOHNSTON COUNTY
PROJECT # - WBS 34459.1.1 (R2552AB)
US 70 - CLAYTON BYPASS

SHEET

4 OF 23

01/06/05

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
33	WILLIE REAMS	6484 CORNWALLIS RD. GARNER, NC 27529
34	JANE CUNNINGHAM	P. O. BOX 965 MONTREAT, NC 28757
1	WILLIAM WESTON	806 LAWNDALE ST GARNER, NC 27529
2	SON-LAN SHIPWASH, LLC	5160 NC 42 WEST CLAYTON, NC 27520
3	CHARLES H. COATS	2279 NC 42 WEST CLAYTON, NC 27520
4	NETTIE ERDINE JOHNSON LIFE ESTATE	2740 NC 42 W CLAYTON, NC 27520
5	JOE BABOUR	3700 HWY 42 WEST CLAYTON, NC 27520

NCDOT

DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552 AB)

US 70 CLAYTON BYPASS

FROM EAST OF SR 1525

TO EAST OF NC 42

SHEET 5 OF 23

10/01/04

PROPERTY OWNERS
NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
7	NETTIE ERDINE JOHNSON LIFE ESTATE	2740 NC 42 W CLAYTON, NC 27520
8	LEE BORTHERS RENTAL	400 W. MAIN ST. CLAYTON, NC 27520
9	CHARLES H. COATS, ET UX	2279 NC 42 WEST CLAYTON, NC 27520
10	JERRY M. COATS	2648 NC 42 WEST CLAYTON, NC 27520
14	JAMES H. SIMS	225-A S. A10 10TH ST. NEWARK, NJ 07103
15	SAMUEL SIMS	313 S. 9TH ST NEWARK, NJ 07103

NCDOT
DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: WBS 34459.1.1 (R-2552 AB)
US 70 CLAYTON BYPASS
FROM EAST OF SR 1525
TO EAST OF NC 42
SHEET 6 OF 23 10/01/04

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
17	JERRY M. COATS	2648 NC 42 WEST CLAYTON, NC 27520
18	LILLIAN LADD	987 NAPOLEAN RD.. SELMA, NC 27576-7701
19	NETTIE ERDINE JOHNSON LIFE ESTATE	2740 NC 42 W CLAYTON, NC 27520
20	MURIEL PENNY	2375 NC 42 WEST CLAYTON, NC 27520

NCDOT

DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552 AB)

US 70 CLAYTON BYPASS

FROM EAST OF SR 1525

TO EAST OF NC 42

SHEET 7 OF 23

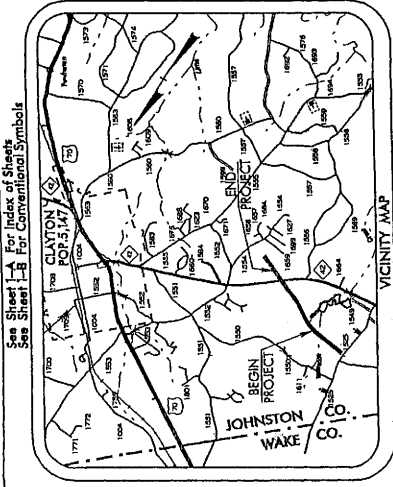
10/01/04

19 of 23

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

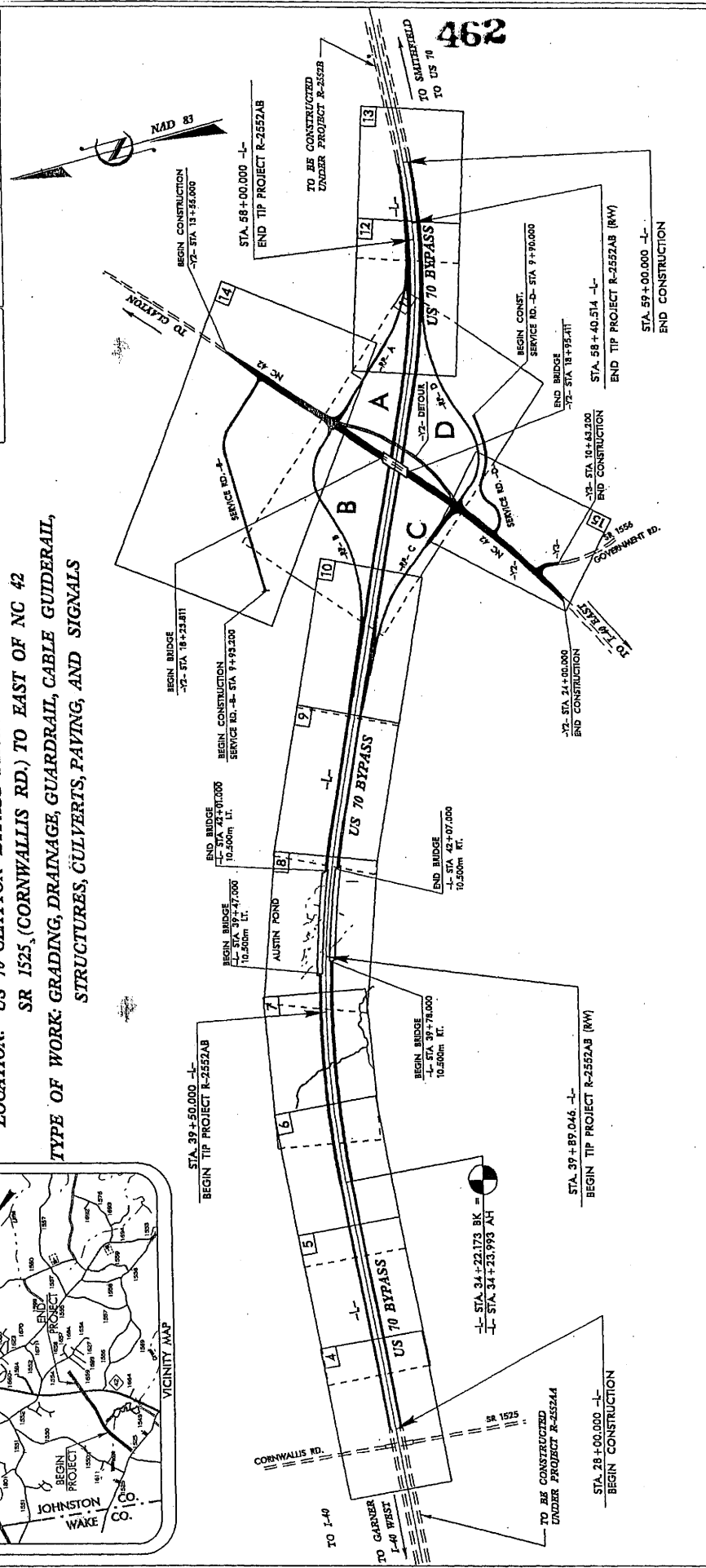
LOCATION: US 70 CLAYTON BYPASS FROM EAST OF
SR 1525 (CORNWALLIS RD.) TO EAST OF NC 42
TYPE OF WORK: GRADING, DRAINAGE, GUARDRAIL, CABLE GUIDERAIL,
STRUCTURES, CULVERTS, PAVING, AND SIGNALS



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

R-2552AB

PROJECT	N.C.	R-2552AB	SHEET	1	TOTAL SHEETS
DESIGNER	34491.1	NHE-60-1 (9)	PE	PE	
DRAWN	34492.2	NA	BY & UTL	CONSTR.	
CHECKED	34493.3	NA			
APPROVED					
ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND OR MILLIMETERS UNLESS OTHERWISE SHOWN					



CONTRACT: C201227

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES
THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

GRAPHIC SCALES	DESIGN DATA
PLANS 0 10 0 10 0 2	ADT 2005 = 35,400 TO 40,800 ADT 2025 = 68,800 TO 85,000 DRY = 10 % D = 65 % T = 16 % V = 110 km/h (TTST 10% & DUAL 6%)
PROFILE (HORIZONTAL)	
PROFILE (VERTICAL)	

PROJECT LENGTH
LENGTH ROADWAY TIP PROJECT R-2552AB
LENGTH STRUCTURES TIP PROJECT R-2552AB
TOTAL LENGTH OF TIP PROJECT R-2552AB

1,600 km
= 0.250 km
= 1,850 km

RIGHT OF WAY DATE: OCTOBER 31, 2002
LETTING DATE: MAY 17, 2005

JASON MOORE, PE PROJECT ENGINEER
KEVIN E. MOORE, PE PROJECT DESIGN ENGINEER

ROADWAY DESIGN ENGINEER
APPROVED DISTRICT ADMINISTRATOR

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

7B.423

469

PROJ. REFERENCE NO. R-255248
SHEET NO. 1 - 8



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

*S.U.E. = SUBSURFACE UTILITY ENGINEER

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

Edge of Pavement	MINOR
Curb	Head & End Wall
Prop. Slope Stakes Cut	Pipe Culvert
Prop. Slope Stakes Fill	Footbridge
Prop. Woven Wire Fence	Drainage Boxes
Prop. Chain Link Fence	Paved Ditch Gutter
Prop. Barbed Wire Fence	
Prop. Wheelchair Ramp	
Curb Cut For Future Wheelchair Ramp	
Prop. Guardrail	
Exist. Cable Guidrail	
Prop. Cable Guidrail	
Equality Symbol	
Pavement Removal	

RIGHT OF WAY

Baseline Control Point	
Existing Right of Way Marker	
Exist. Right of Way Line w/Marker	
Prop. Right of Way Line with Proposed	
R/W marker (Iron Pin & Cap)	
Prop. Right of Way Line with Proposed	
(Concrete or Granite) R/W Marker	
Exist. Control of Access Line	
Prop. Control of Access Line	
Exist. Easement Line	
Prop. Temp. Construction Easement Line	
Prop. Temp. Drainage Easement Line	
Prop. Perm. Drainage Easement Line	

HYDROLOGY

Stream or Body of Water	
River Basin Buffer	
Flow Arrow	
Disappearing Stream	
Spring	
Swamp Marsh	
Shoreline	
Falls, Rapids	
Prop. Lateral, Tail, Head Ditches	

STRUCTURES

MAJOR	
Bridge, Tunnel, or Box Culvert	
Bridge, Wing Wall, Head Wall	
and End Wall	

UTILITIES

Exist. Pole	
Exist. Power Pole	
Prop. Power Pole	
Exist. Telephone Pole	
Prop. Telephone Pole	
Exist. Joint Use Pole	
Prop. Joint Use Pole	
Telephone Pedestal	
Cable TV Pedestal	
Hydrant	
Satellite Dish	
Exist. Water Valve	
Sewer Clean Out	
Power Manhole	
Telephone Booth	
Water Manhole	
Light Pole	
H-Frame Pole	
Power Line Tower	
Pole with Base	
Gas Valve	
Gas Meter	
Telephone Manhole	
Power Transformer	
Sanitary Sewer Manhole	
Storm Sewer Manhole	
Tank, Water, Gas, Oil	
Water Tank With Legs	
Traffic Signal Junction Box	
Fiber Optic Splice Box	
Television or Radio Tower	
Utility Power Line Connects to Traffic	
Signal Lines Cut into the Pavement	

BUILDINGS & OTHER CULTURE

Buildings	
Foundations	
Area Outline	
Gate	
Gas Pump Vent or UG Tank Cap	
Church	
School	
Park	
Cemetery	
Dam	
Sign	
Well	
Small Mine	
Swimming Pool	

TOPOGRAPHY

Loose Surface	
Hard Surface	
Changes in Road Surface	
Curb	
Right of Way Symbol	
Guard Post	
Paved Walk	
Bridge	
Box Culvert or Tunnel	
Ferry	
Culvert	
Footbridge	
Trail, Footpath	
Light House	

VEGETATION

Single Tree	
Single Shrub	
Hedge	
Woods Line	
Orchard	
Vineyard	

RAILROADS

Standard Gauge	
RR Signal Milepost	
Switch	

BOUNDARIES & PROPERTIES

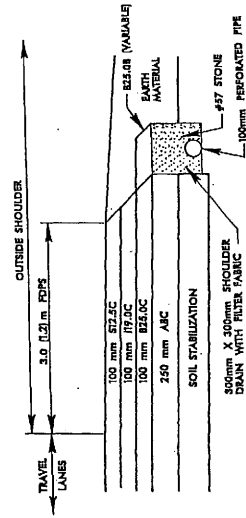
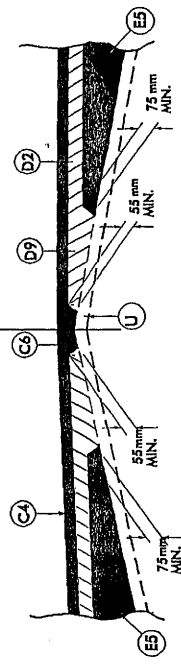
State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Property Line Symbol	
Exist. Iron Pin	
Property Corner	
Property Monument	
Property Number	
Parcel Number	
Fence Line	
Existing Wetland Boundaries	
Proposed Wetland Boundaries	
Existing Endangered Animal Boundaries	
Existing Endangered Plant Boundaries	

PAVEMENT SCHEDULE

C1	PROP. APPROX. 70 mm ASPHALT CONC. SURFACE COURSE, TYPE S8.5B, AT AN AVERAGE RATE OF 64 kg PER SQ. METER IN EACH OF TWO LAYERS.	E4	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 135 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 S8.5C, AT AN AVERAGE RATE OF 96 kg PER SQ. METER IN EACH OF TWO LAYERS.	J1	PROP. 200 mm AGGREGATE BASE COURSE.
C3	PROP. APPROX. 100 mm ASPHALT CONC. SURFACE COURSE, TYPE S12.5C, AT AN AVERAGE RATE OF 120 kg PER SQ. METER IN EACH OF TWO LAYERS.	J2	PROP. 250 mm AGGREGATE BASE COURSE.
C4	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 100 KG. PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 30 mm IN DEPTH OR GREATER THAN 40 mm IN DEPTH.	J3	PROP. VAR. DEPTH AGGREGATE BASE COURSE.
D1	PROP. APPROX. 65 mm ASPHALT CONC. INTERMEDIATE COURSE TYPE F19.0B, AT AN AVERAGE RATE OF 159.25 kg PER SQ. METER.	L	SUBBASE TO BE TREATED WITH LIME TO A DEPTH OF 200mm, AT A RATE OF 11 KG. PER SQ.METER, AS DIRECTED BY THE ENGINEER OR SUBBASE TO BE TREATED WITH CEMENT TO A DEPTH OF 180mm, AT A RATE OF 30 KG. PER SQ.METER, AS DIRECTED BY THE ENGINEER.
D2	PROP. APPROX. 65 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE F19.0C, AT AN AVERAGE RATE OF 159.25 kg PER SQ. METER.		
D3	PROP. APPROX. 90 mm ASPHALT CONC. INTERMEDIATE COURSE TYPE F19.0C, AT AN AVERAGE RATE OF 195.00 kg PER SQ. METER.	P	PRIME COAT AT THE RATE OF 1.8 L PER SQ. METER.
D4	PROP. APPROX. 100 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE F19.0C, AT AN AVERAGE RATE OF 245.00 kg PER SQ. METER.		
D5	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE F19.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 55 mm IN DEPTH OR GREATER THAN 110 mm IN DEPTH.	R	125 mm MONOLITHIC CONCRETE ISLAND.
E1	PROP. APPROX. 90 mm ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 220.50 kg PER SQ. METER.	T	EARTH MATERIAL.
E2	PROP. APPROX. 100 mm ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 245.00 kg PER SQ. METER.	U	EXISTING PAVEMENT.
E3	PROP. APPROX. 180 mm ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 220.50 kg PER SQ. METER, IN EACH OF TWO LAYERS.	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE BIDDING DETAIL)

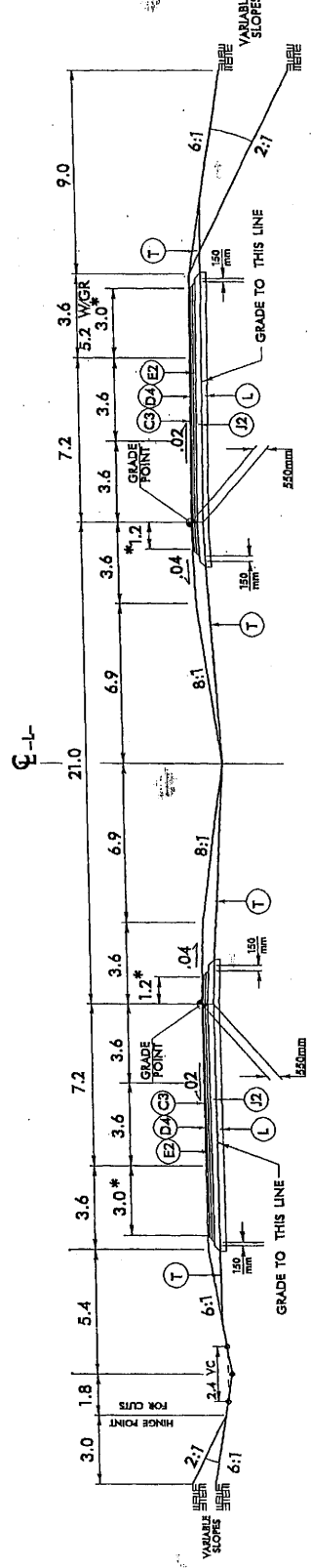
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

DETAIL OF WEDGING



SHOULDER DRAIN DETAIL

NOTE: ALL OUTLET PIPES SHALL USE A 1% GRADE
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1 & 2



TYPICAL SECTION NO. 1

NOTE: USE DITCH DETAIL U IN CONJUNCTION WITH TS NO. 1
 -L- 46+00 TO 47+00
 SEE CROSS-SECTION AND ROADWAY STANDARD DRAWING
 STD. 225.08 FOR SPECIAL MEDIAN GRADING -L- 28+00
 TO 29+00

USE TYPICAL SECTION NO.1 AS FOLLOWS:

USE TYPICAL SECTION NO. 1A-1.5

-L- 28+00.000 TO (BEGIN BRIDGE)

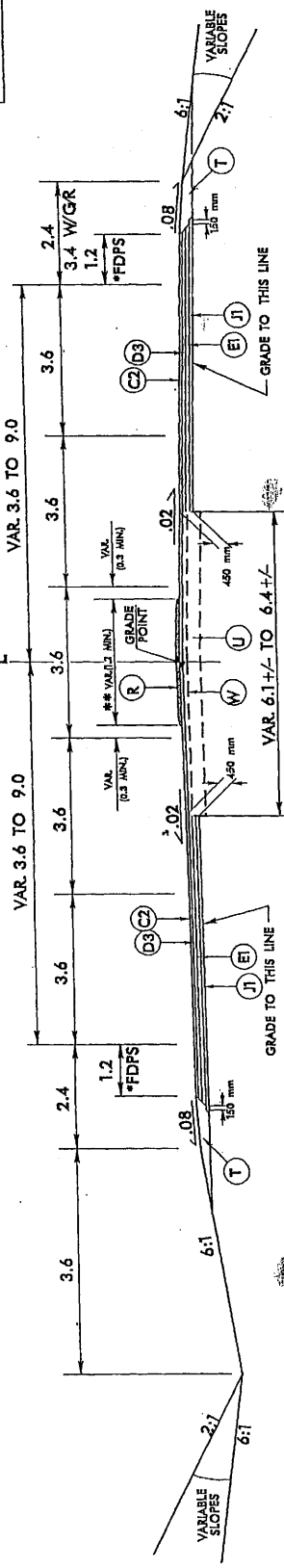
-L- (END BRIDGE) TO 58+00.000

7E of 23

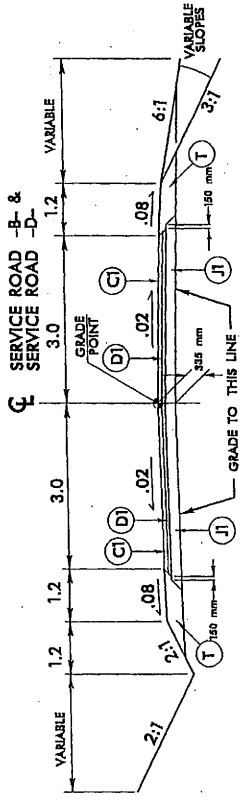
PROJECT REFERENCE NO. 1-2557AB
 ROADWAY DESIGN ENGINEER
 METRIC

SHEET NO. 2-3
 PAVEMENT DESIGN ENGINEER

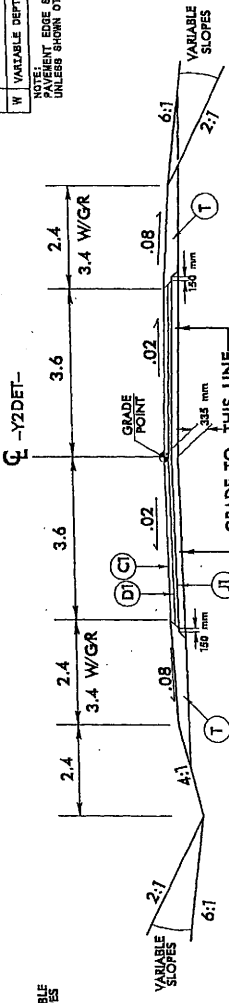
PAVEMENT SCHEDULE	
C1	70 mm 59.50
C2	90 mm 59.50
C3	100 mm 612.50
C4	VAR. DEPTH 59.50
D1	65 mm 119.00
D2	85 mm 119.00
D3	80 mm 119.00
D4	VAR. DEPTH 119.00
E1	80 mm 325.00
E2	100 mm 325.00
E3	140 mm 325.00
E4	VAR. DEPTH 325.00
J1	200 mm AGGREGATE BASE COURSE
J2	250 mm AGGREGATE BASE COURSE
J3	VAR. DEPTH AGGREGATE BASE COURSE
L	SUBGRADE STABILIZATION
P	PRIME COAT
R	125 mm MING. CONC. ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VAR. DEPTH ASPHALT PAVEMENT



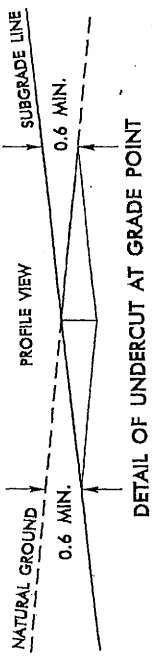
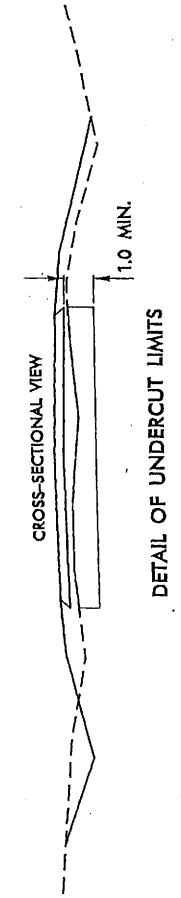
USE TYPICAL SECTION NO. 5 AS FOLLOWS:
 -Y2- 15+05 +/- TO (BEGIN BRIDGE)
 -Y2- (END BRIDGE) TO 21+75 +/-
 TYPICAL SECTION NO. 5
 *FULL DEPTH PAVED SHOULDER



USE TYPICAL SECTION NO. 6 AS FOLLOWS:
 SERVICE ROAD -B- 9+93.200 TO 15+67.450
 SERVICE ROAD -D- 9+90.000 TO 13+00.920
 TYPICAL SECTION NO. 6



USE TYPICAL SECTION NO. 7 AS FOLLOWS:
 -Y2DET- 16+58.778 TO 20+78.437
 TYPICAL SECTION NO. 7



7F623

PROJECT REFERENCE NO. **R-2552AD** SHEET NO. **2-C**

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS

NOTES:
SEE SHEETS 4 THRU 15 FOR DESIGN
SEE SHEETS 16 THRU 33 FOR PROFILES

DETAIL D
PERM ROCK SILT CHECK DAM
SEE METRIC STD 1633.02

STA 13+00 TO 13+60 -RFB- LT
STA 12+80 TO 13+60 -RFB- LT
STA 13+00 TO 14+60 -RPC- RT

DETAIL C
STREAM RELOCATION
(NOT TO SCALE)

Min. D = 0.3 m B = 0.6 m
B₁ = 0.6 m
B₂ = 0.6 m

STA 50+20 -L- 30 TO 85 m LT

DETAIL B
PREFORMED SCOUR HOLE

PLAN VIEW

SECTION A-A

STA 33+70 -L- RT
STA 37+60 -L- RT
STA 37+80 -L- RT
STA 38+00 -L- RT
STA 38+20 -L- RT
STA 38+40 -L- RT

DETAIL A
SPECIAL CUT DITCH
(NOT TO SCALE)

See X-Sect. Min. D = 0.5 m
STA 39+00 TO 39+20 -L- RT
STA 32+60 TO 33+80 -L- RT
STA 51+40 TO 51+80 -Y2- RT
STA 18+5 TO 12+25 -RPA- RT

DETAIL J
LATERAL BASE DITCH
(NOT TO SCALE)

Min. D = 0.5 m
Max. d = 0.5 m
Type of Liner = CLASS B
STA 12+20 TO 12+80 -RPC- RT

DETAIL E
SPECIAL DITCH
(NOT TO SCALE)

See X-Sect.
STA 48+80 TO 49+80 -L- LT
STA 17+00 TO 17+60 -Y2- LT
STA 17+20 TO 18+20 -Y2- RT

DETAIL P
SPECIAL LATERAL DITCH
(NOT TO SCALE)

Min. D = 0.5 m
B = 0.5 m
STA 33+00 TO 33+60 -L- LT

DETAIL N
SPECIAL CUT BASE DITCH
(NOT TO SCALE)

See X-Sect.
STA 13+00 TO 13+60 -RFB- LT
STA 12+80 TO 13+60 -RFB- LT

DETAIL Z
LATERAL GRASS SWALE
(NOT TO SCALE)

See X-Sect.
Min. D = 0.5 m
B = 0.5 m
STA 18+75 TO 12+80 -SERVRO D- RT

DETAIL W
TAIL DITCH
(NOT TO SCALE)

Min. D = 0.5 m
B = 1.0 m
STA 51+95 -L- RT
STA 18+38 -SERVRO B- RT

DETAIL O
LEVEL SPREADER DETAIL
(NOT TO SCALE)

PLAN VIEW

SECTION A-A

DETAIL I
STREAM DIVERSION
(NOT TO SCALE)

Min. D = 0.5 m
B = 1.0 m
STA 13+00 TO 13+04 -RPC- LT

DETAIL V
BASE DITCH
(NOT TO SCALE)

Min. D = 0.3 m
Max. d = 0.3 m
B = 1.0 m
Type of Liner = CLASS B RRPAP
STA 42+20 TO 42+60 -L- LT

DETAIL U
SPECIAL CUT GRASS SWALE
(NOT TO SCALE)

Min. D = 0.3 m
B = 0.5 m
STA 46+00 TO 47+00 -L- RT
STA 13+00 TO 14+60 -RPC- RT
STA 13+80 TO 14+20 -RPD- RT

DETAIL AB
PIPE OUTLET CHANNEL
(NOT TO SCALE)

Length = 40.0 m
D = PIPE DIA.
STA 50+20 -L- RT
STA 50+35 -L- RT
STA 18+5 -RPC- RT
STA 13+00 -RPD- LT

DETAIL AA
CHANNEL IMPROVEMENTS
AT INLET AND OUTLET OF ROBC

Min. D = 2.0 ft
d = 0.5 ft
B = 10 ft
STA 37+41 -L- LT/RT

467

STATION	LENGTH	D	B	TOP ELEV.
STA 44+00 -L- LT	3.0	.45	1.2	60.75
STA 45+85 -L- RT	3.0	.45	1.2	73.95
STA 54+10 -L- RT	23.8	.45	1.2	89.85
STA 55+88 -L- LT	3.0	.45	1.2	86.41

REVIEWS

740423

470

PROJECT REFERENCE NO.	SHEET NO.
P-255248	5
E/M SHEET NO.	7-255248-79 & 70
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
NOT FOR CONSTRUCTION	

CONST. REV.
E/M REV.

5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
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5	0	10
---	---	----

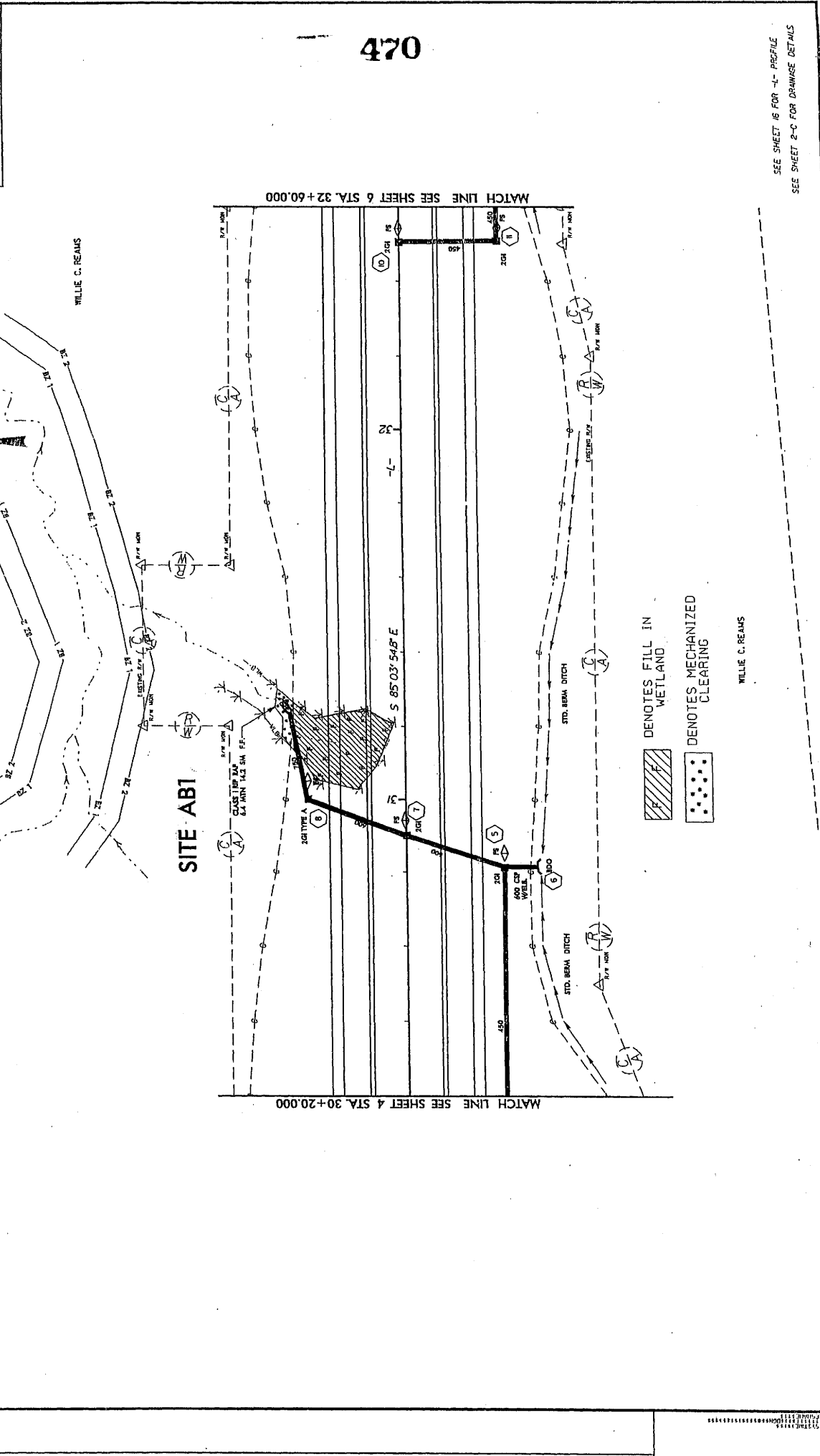
5	0	10
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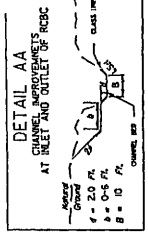
SEE SHEET 18 FOR "L" PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS

7K-423

PROJECT REFERENCE NO.	SHEET NO.
R-255248	7
R/W SHEET NO. R-255248	7 OF 22
DESIGNER	ENGINEER
ROADWAY DESIGN	ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	

CONTRACT	R/W REV.
CONTRACT	R/W REV.

PI = 38+81.923
Δ = 20° 44' 47.5" (RT)
L = 505.237
T = 457.630
R = 2500.000
SE = D3
Vmax = 110 km/hr



- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER
- DENOTES EXISTING CHANNEL IMPACTS (TEMP)
- DENOTES EXISTING CHANNEL IMPACTS (PERM)

WILLE C. REAMS

BEGIN CULVERT
-L- POC 37+05.250

END CULVERT
-L- POC 37+22.33

SITE AB2

SITE AB3

FOR PROTECTION
SEE DETAIL K

PROPOSED STREAM
IMPROVEMENTS
SEE DETAIL AA

MATCH LINE SEE SHEET 6 STA. 35+60.000

MATCH LINE SEE SHEET 8 STA. 38+65.000

2.27 X 2.1m ROBC
W/ Baffles

FOR PROTECTION
SEE DETAIL K

WILLE C. REAMS

PROPOSED STREAM
IMPROVEMENTS
SEE DETAIL AA

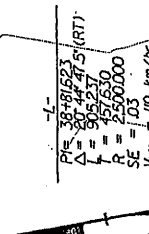
JANE A. CUMMINGS

NOTE: SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS
SHEET 8-65501 SHEET 2 FOR SPECIAL MEDIAN GRADING.
SEE SHEET 17 AND 18 FOR "L" PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SEE SHEET 2-C TO C-7 FOR CULVERT PLANS

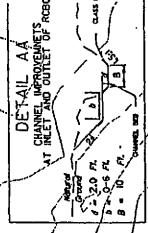
72-0523

PROJECT REFERENCE NO.	SHEET NO.
C-255245	7
1. IN. SET NO.	P-255245 - 27 & 28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	

METRIC	CONST./REV.
1" = 10'	
1" = 10'	
1" = 10'	
1" = 10'	



$P = 38+81.523$
 $\Delta = 80.44^\circ 51'(RT)$
 $L = 905.270$
 $R = 2500.000$
 $SE = 10.3$
 $V_{max} = 100 \text{ km/hr}$



STA 37+41.17

SITE AB3

SITE AB2

BEGIN CULVERT
-L- POC 37+06.250

END CULVERT
-L- POC 37+12.233

- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES FILL IN SURFACE WATER
- DENOTES EXISTING CHANNEL IMPACTS (TEMP)
- DENOTES EXISTING CHANNEL IMPACTS (PERM)

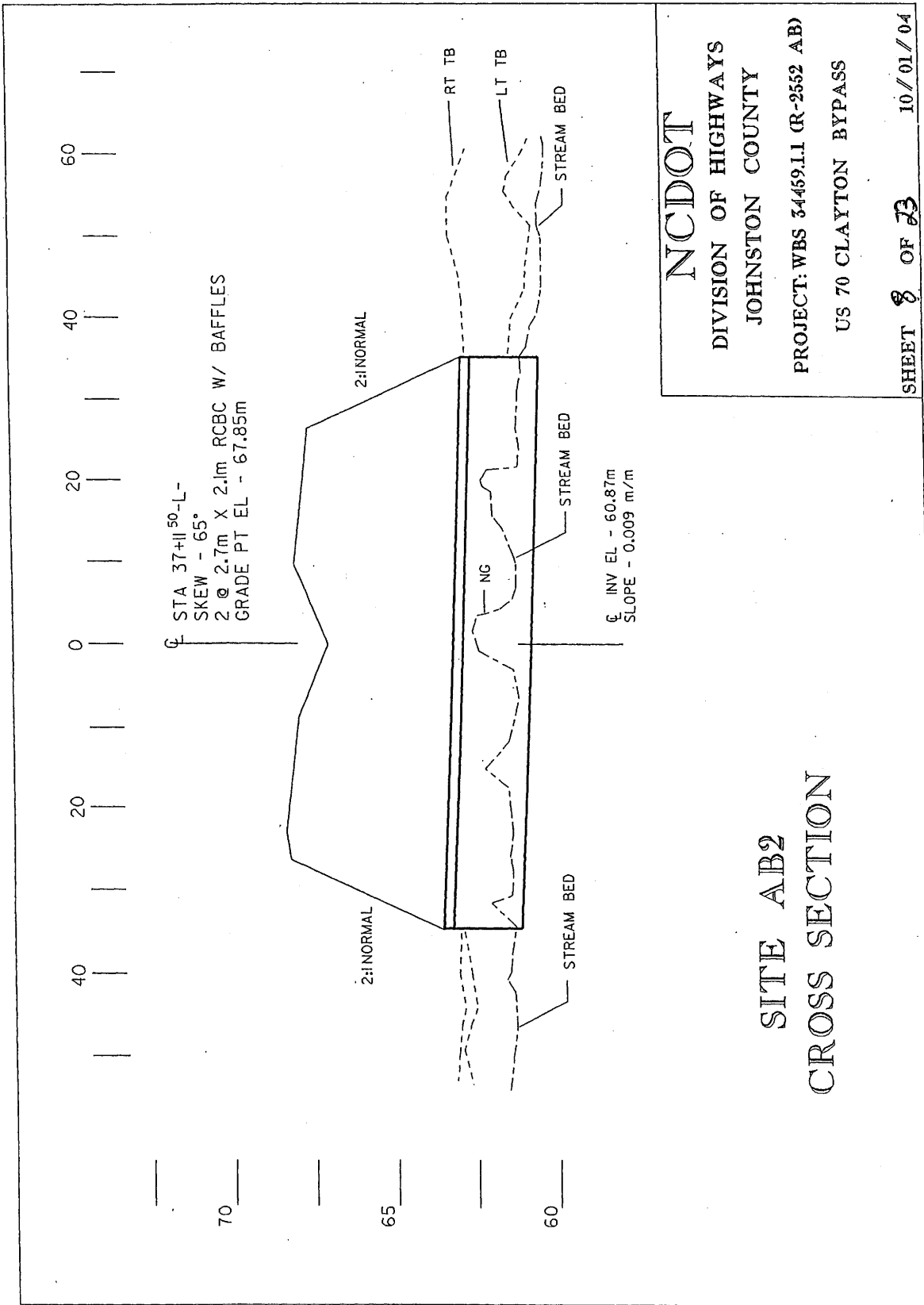
PROPOSED STREAM IMPROVEMENTS SEE DETAIL AA

TOP PROTECTION CLASS 1" IN 1" MAP SEE DETAIL K

MATCH LINE SEE SHEET 6 STA. 35+60.000

MATCH LINE SEE SHEET 8 STA. 38+65.000

NOTE: SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS
 FOR BEDROCK, SOILS, AND FOUNDATION DATA.
 SEE SHEET P-6 FOR PROFILE
 SEE SHEET P-6 FOR DRAINAGE DETAILS
 SEE SHEET P-7 TO P-7 FOR CULVERT PLANS



PROJECT REFERENCE NO. SHEET NO.
 R-2552AB 8
 R/W SHEET NO. R-2552A 22 & R-2552AB 23
 ROADWAY DESIGN ENGINEER
 PRELIMINARY PLANS
 NOT FOR USE FOR CONSTRUCTION

CONST. KEY
 R/W KEY
 10'

Sheet 19A.03
 PI = 39+81.623
 Δ = 20.44° (S) (RT)
 L = 805.231
 T = 857.630
 R = 2500.000
 SE = 1.03
 Vmax = 110 km/hr

STA 39+89.046 -L-
 BEGIN TIP PROJECT R-2552AB (R/W)

WILLIAM A. HESTON, JR.

BEGIN APPROACH SLAB
 -L- POC 39+33.344
 10500m LT.

BEGIN BRIDGE
 -L- POC 39+46.974
 10500m LT.

WILLIE C. REAMS

* NOTE STD. DRAIN USED ON VRL
 BRIDGE W/ W/ PVC SYSTEM ON BRIDGE

476
 MATCH LINE SEE SHEET 9 STA. 42+20.000

STA 39+50.000 -L-
 BEGIN TIP PROJECT R-2552AB

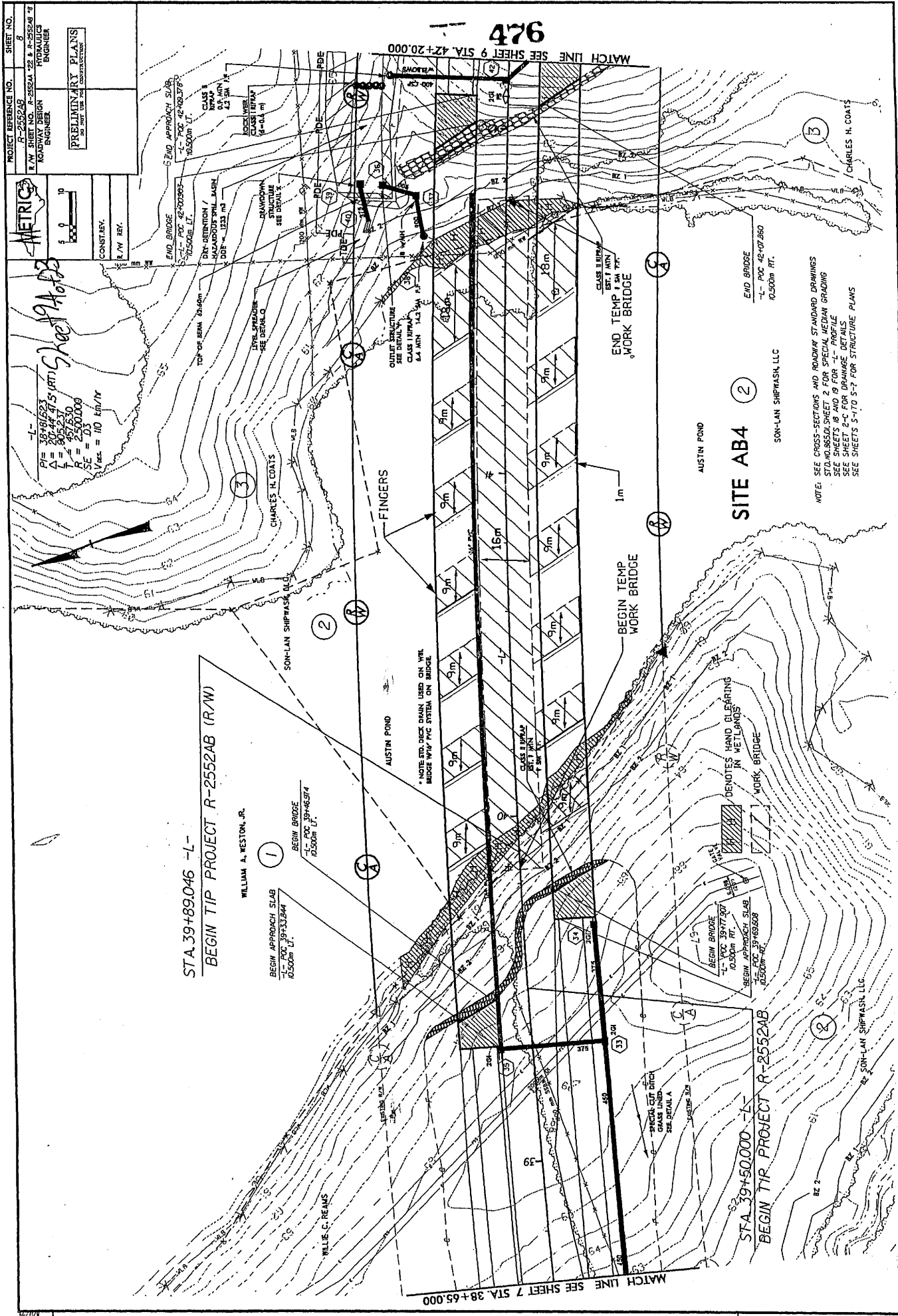
SITE AB4 ②

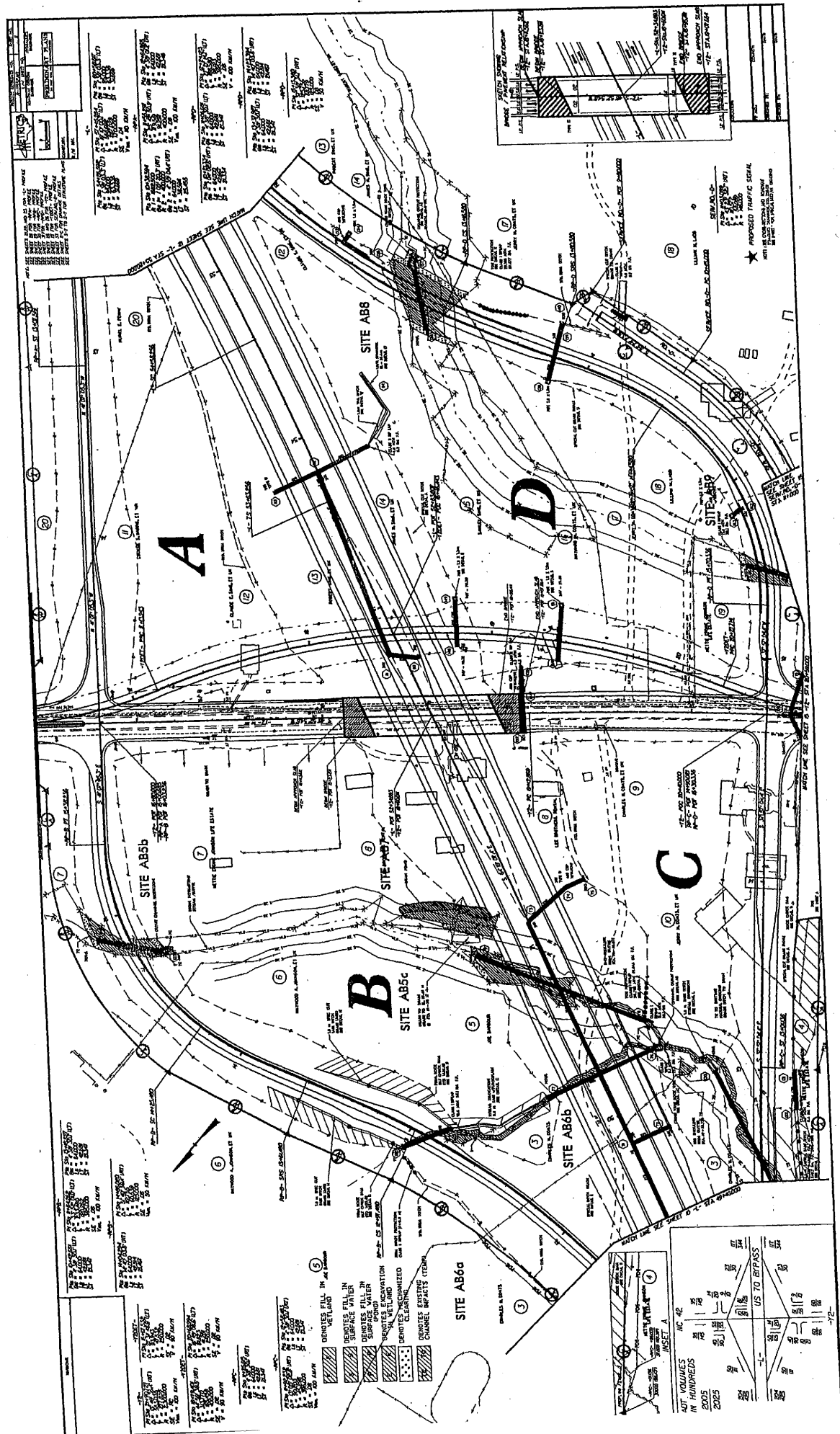
SON-LAN SURFPAK, LLC

NOTE: SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS
 STD. NO. 865.0, SHEET 2 FOR SPECIAL MEDIAN GRADING
 SEE SHEETS 18 AND 19 FOR -L- PROFILE
 SEE SHEET 2-C FOR DRAINAGE DETAILS
 SEE SHEETS 5-1 TO 5-7 FOR STRUCTURE PLANS

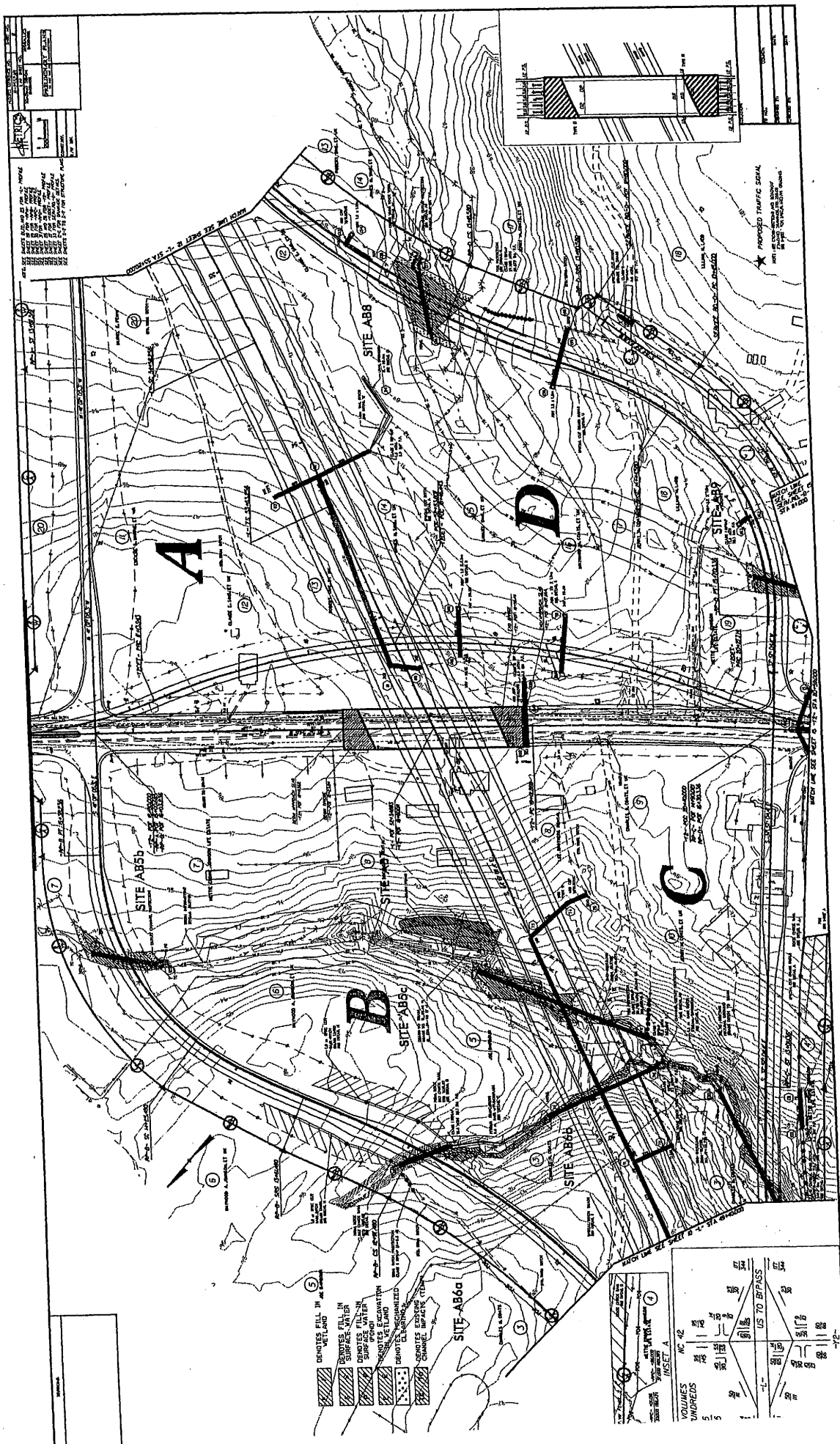
CHARLES H. COATS

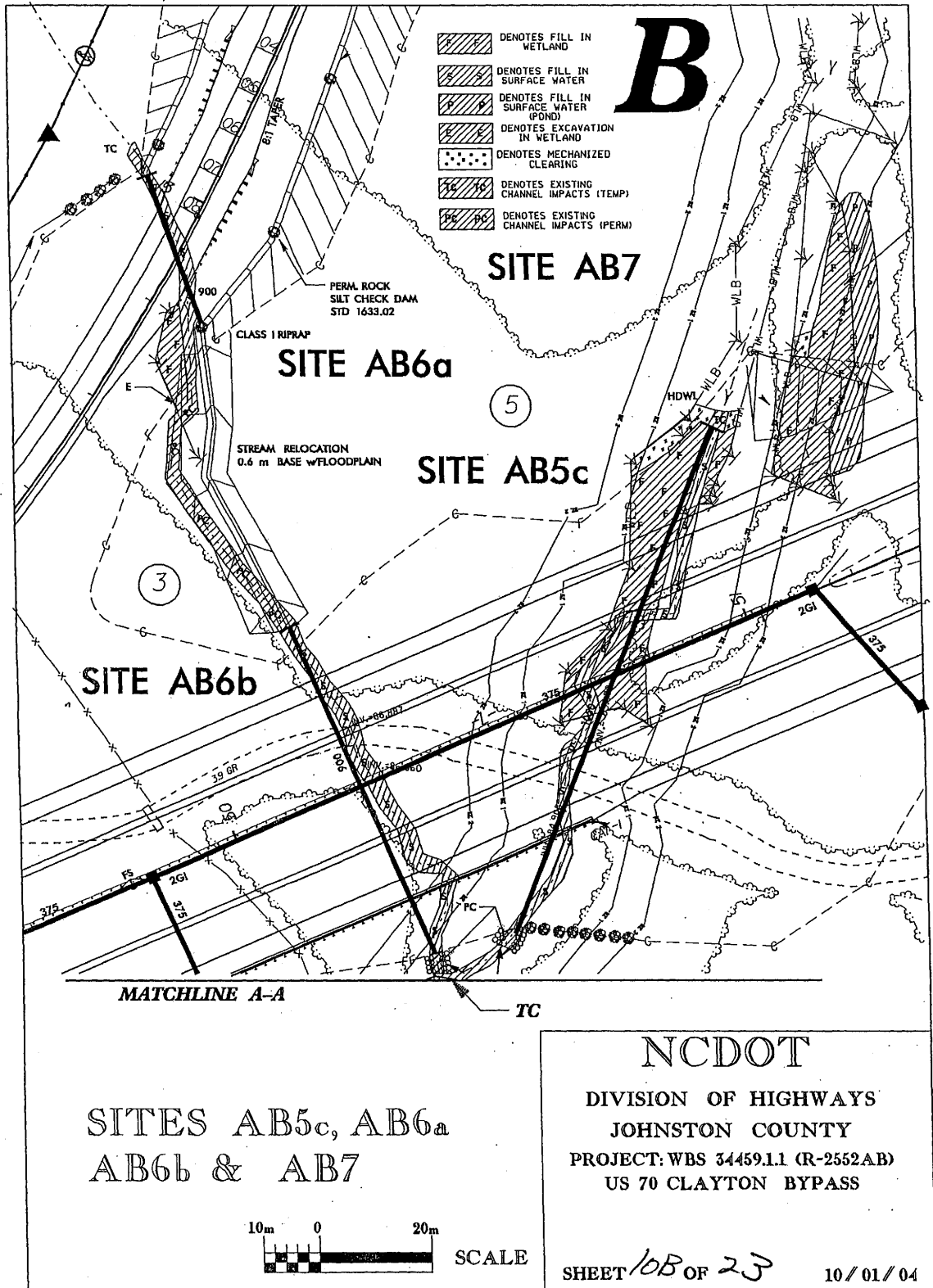
SON-LAN SURFPAK, LLC





Sheet 10A of 23



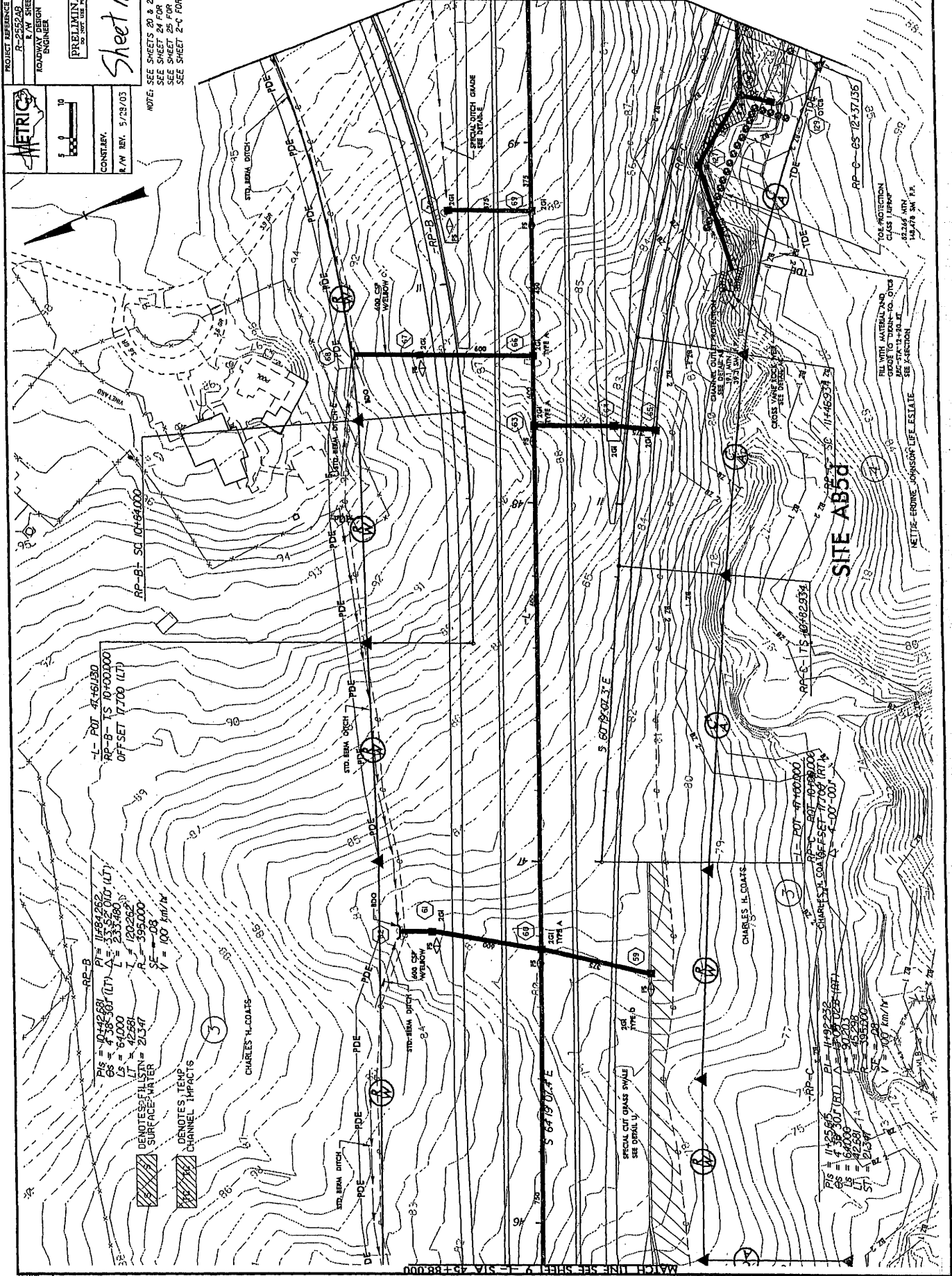


PROJECT REFERENCE NO. R-2552AB
SHEET NO. 10
ROADWAY DESIGN ENGINEER
PRELIMINARY PLANS
5/23/03
CONST. REV. 5/23/03
Sheet 1A of 23

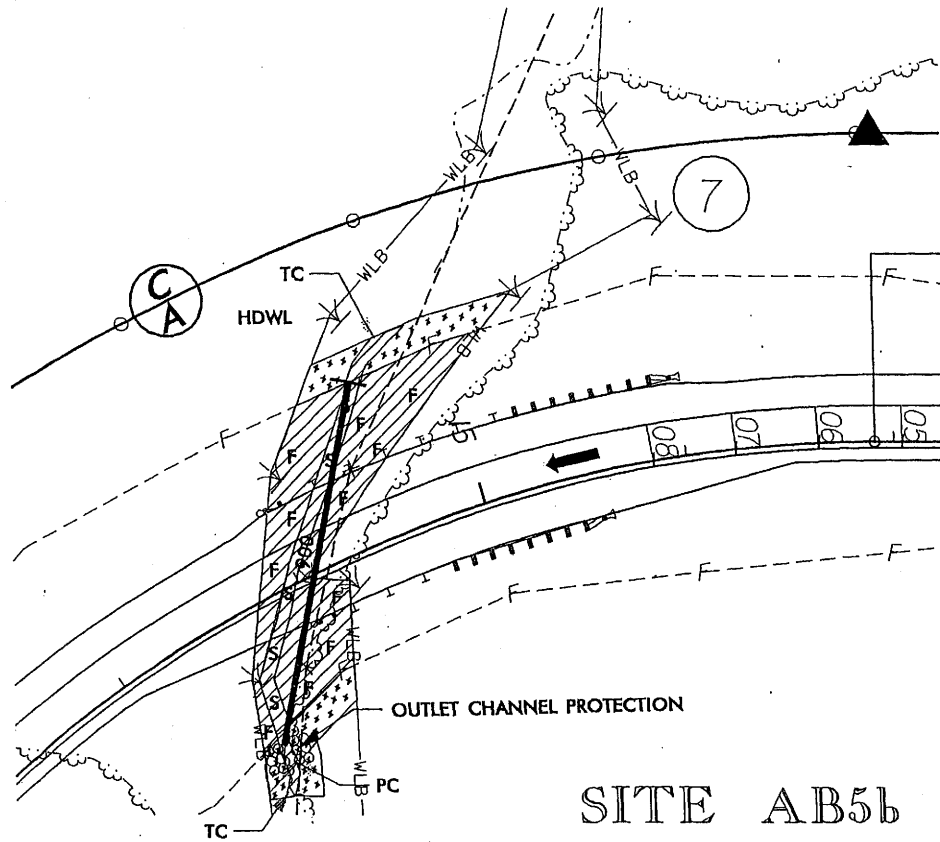
NOTE: SEE SHEETS 10 & 21 FOR 1" PROFILE
SEE SHEET 24 FOR RP-B PROFILE
SEE SHEET 25 FOR RP-C PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS

METRIC
1" = 100'
CONST. REV. 5/23/03

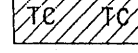
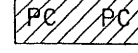
MATCH LINE SEE SHEET 11 - STA 49+40.00

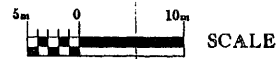


MATCH LINE SEE SHEET 9 - STA 45+88.00

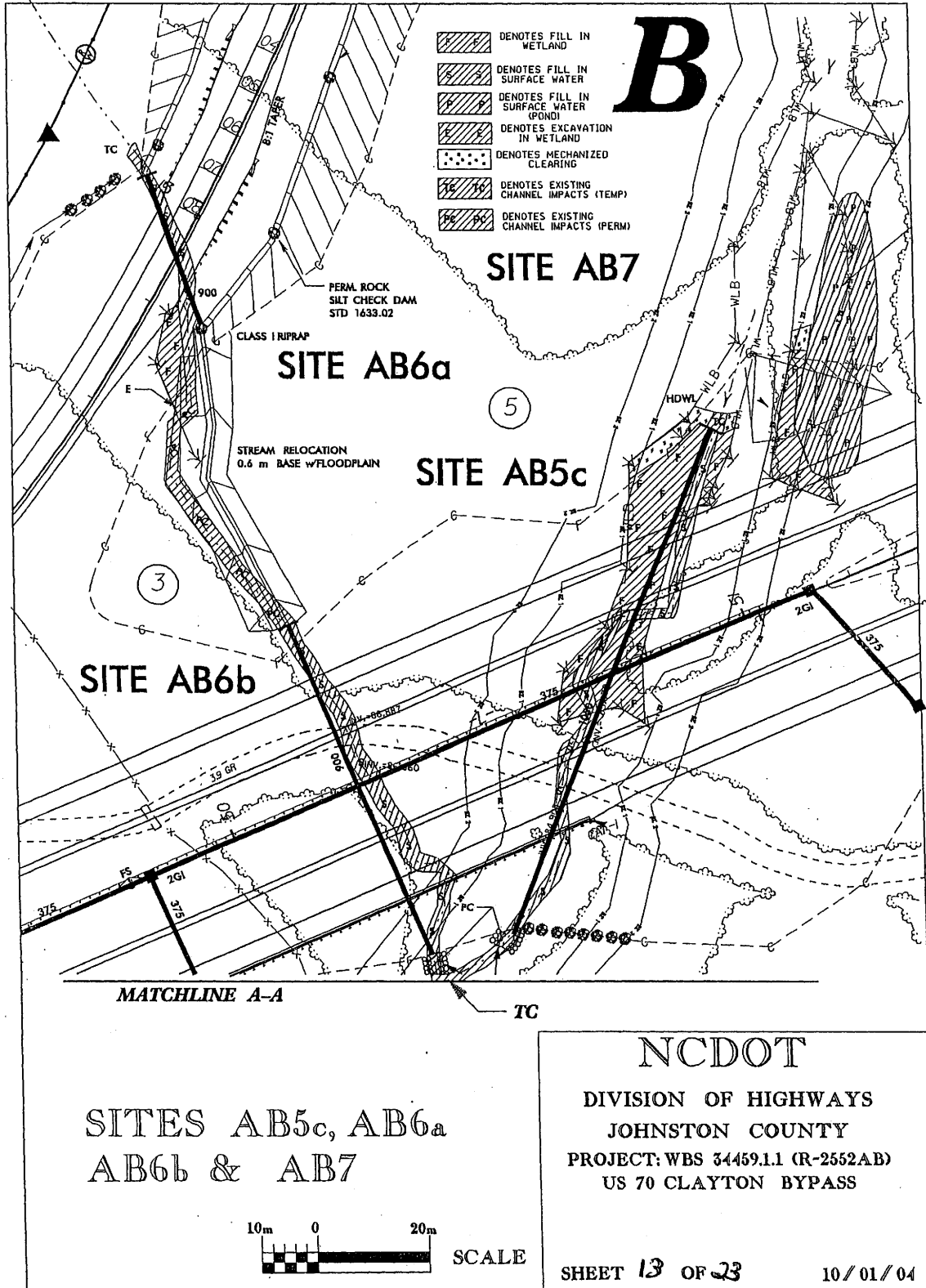


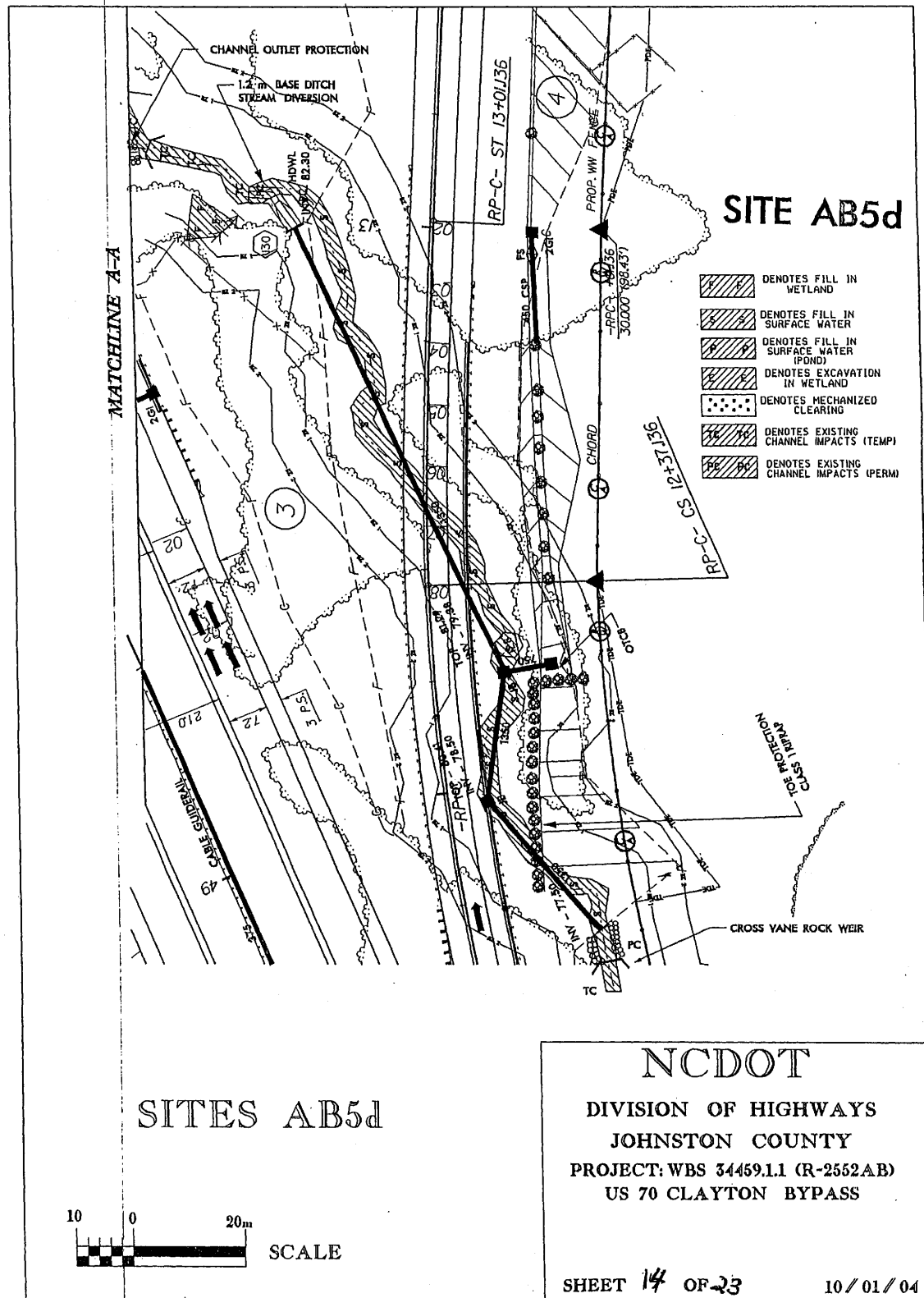
SITE AB5b

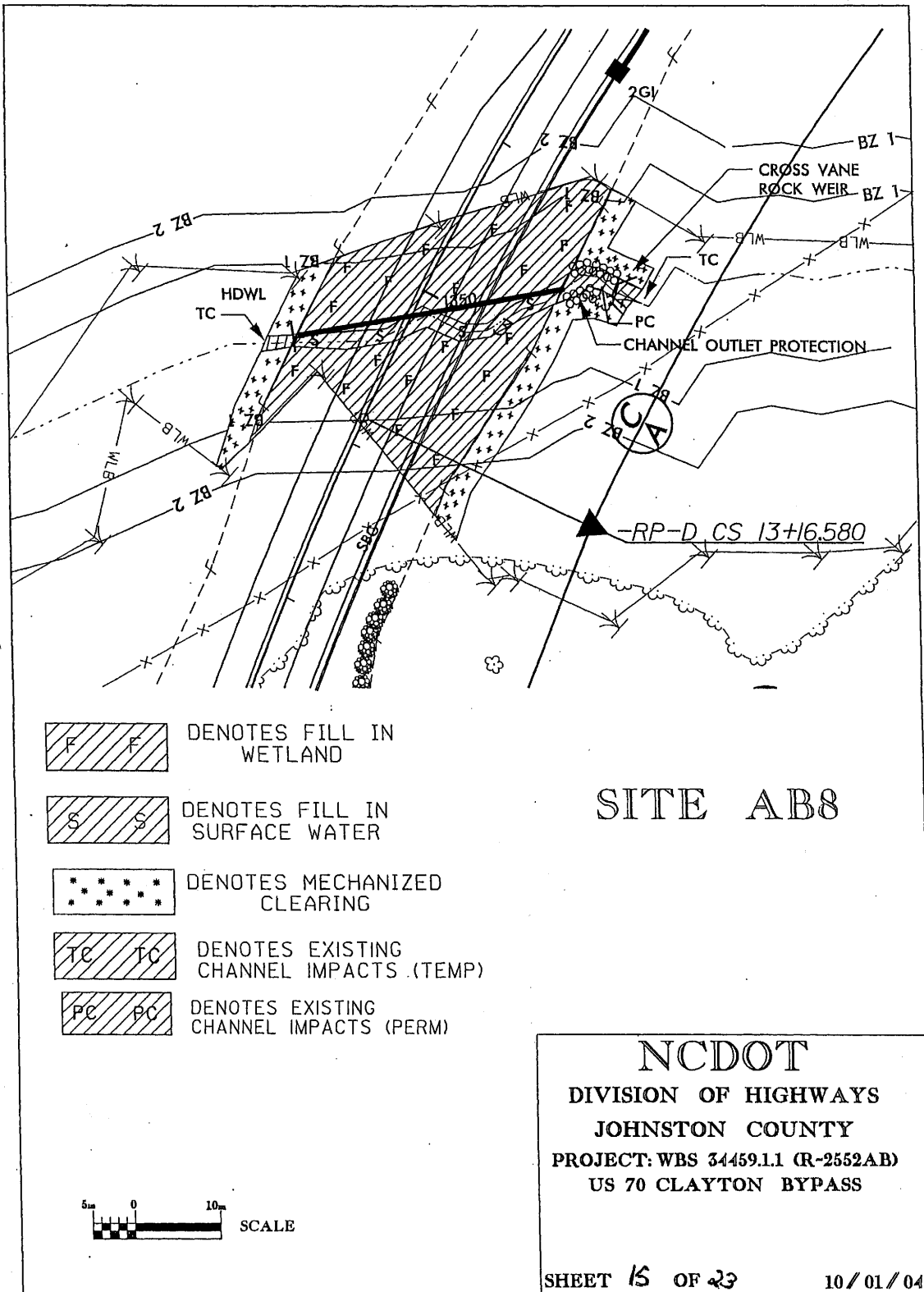
-  DENOTES FILL IN WETLAND
-  DENOTES FILL IN SURFACE WATER
-  DENOTES MECHANIZED CLEARING
-  DENOTES EXISTING CHANNEL IMPACTS (TEMP)
-  DENOTES EXISTING CHANNEL IMPACTS (PERM)

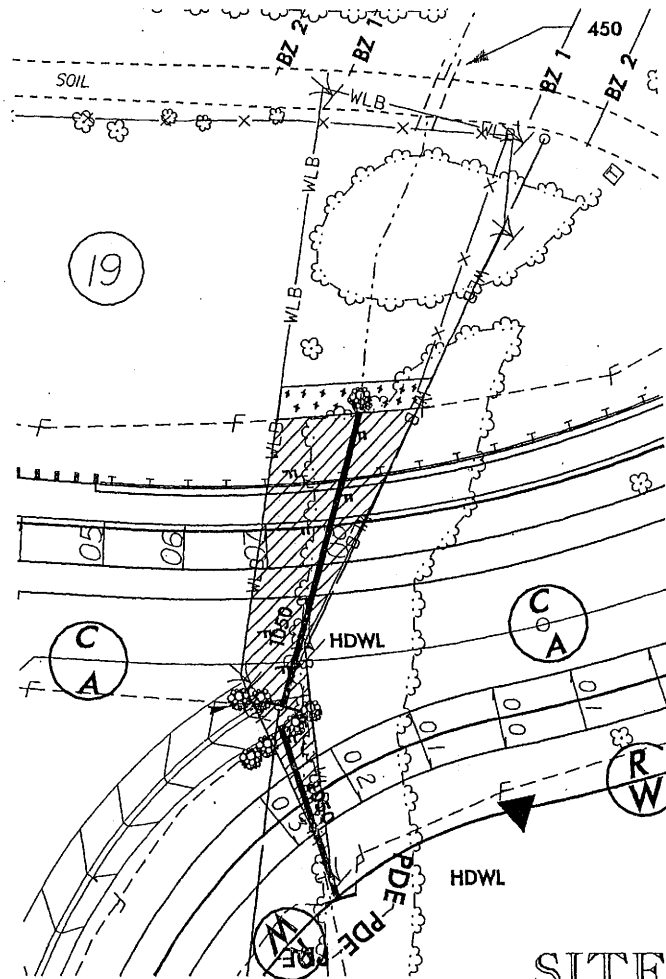


NCDOT
 DIVISION OF HIGHWAYS
 JOHNSTON COUNTY
 PROJECT: WBS 34459.1.1 (R-2552AB)
 US 70 CLAYTON BYPASS









SITE AB9



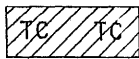
DENOTES FILL IN
WETLAND



DENOTES FILL IN
SURFACE WATER



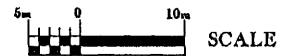
DENOTES MECHANIZED
CLEARING



DENOTES EXISTING
CHANNEL IMPACTS (TEMP)



DENOTES EXISTING
CHANNEL IMPACTS (PERM)



SCALE

NCDOT

DIVISION OF HIGHWAYS

JOHNSTON COUNTY

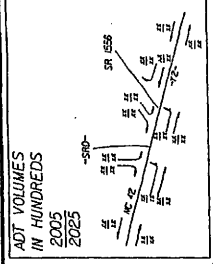
PROJECT: WBS 34459.1.1 (R-2552AB)

US 70 CLAYTON BYPASS

SAT 170523

PROJECT REFERENCE NO.	SHEET NO.
R-255248	10
ROADWAY DESIGN ENGINEER	TRAFFIC ENGINEER
PRELIMINARY PLANS NO SURVEY OR CONSTRUCTION	

CONTRACT	DATE
10	6/10/04



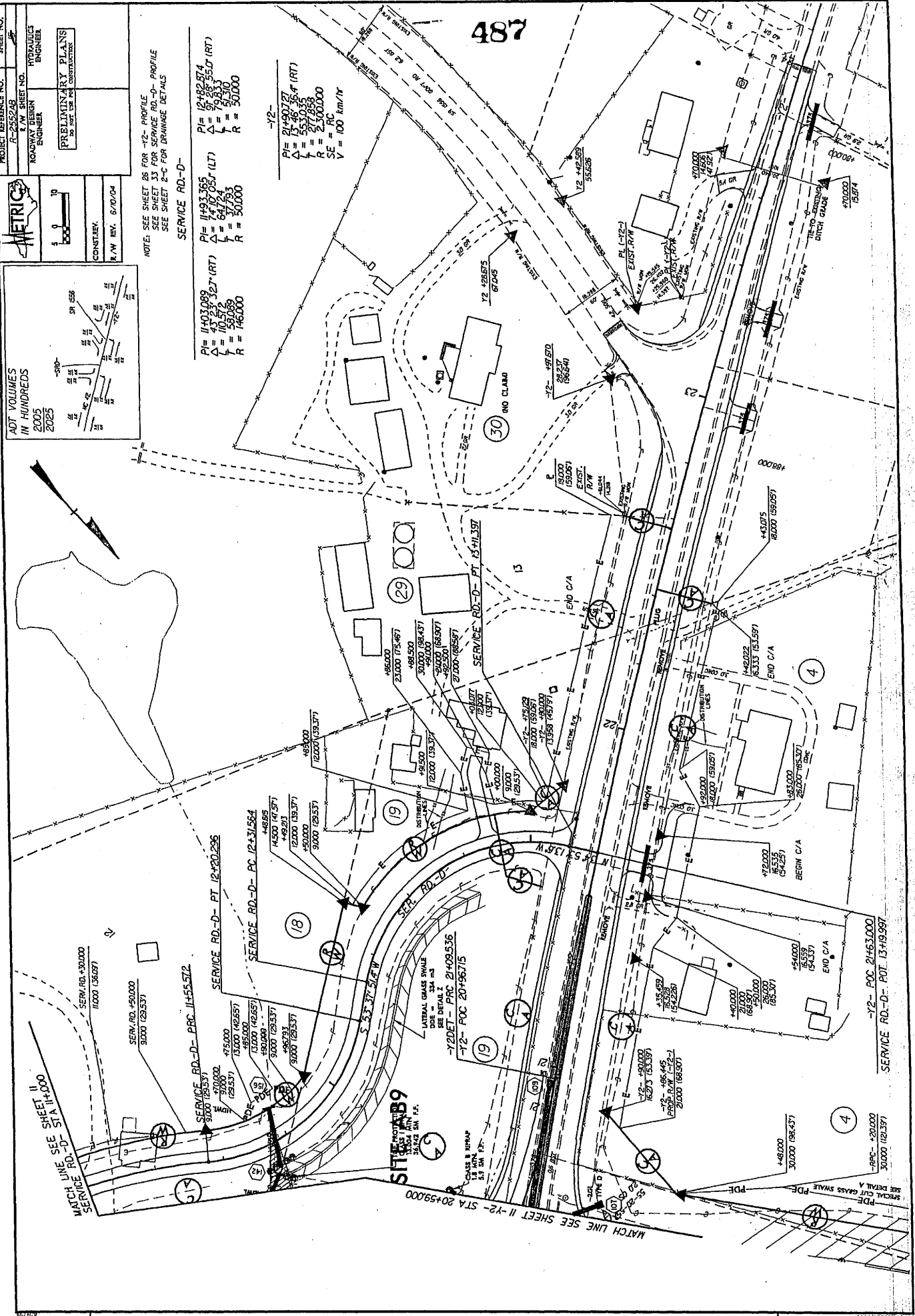
NOTE: SEE SHEET 26 FOR -Y2- PROFILE
SEE SHEET 33 FOR SERVICE RD-D- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS

SERVICE RD-D-

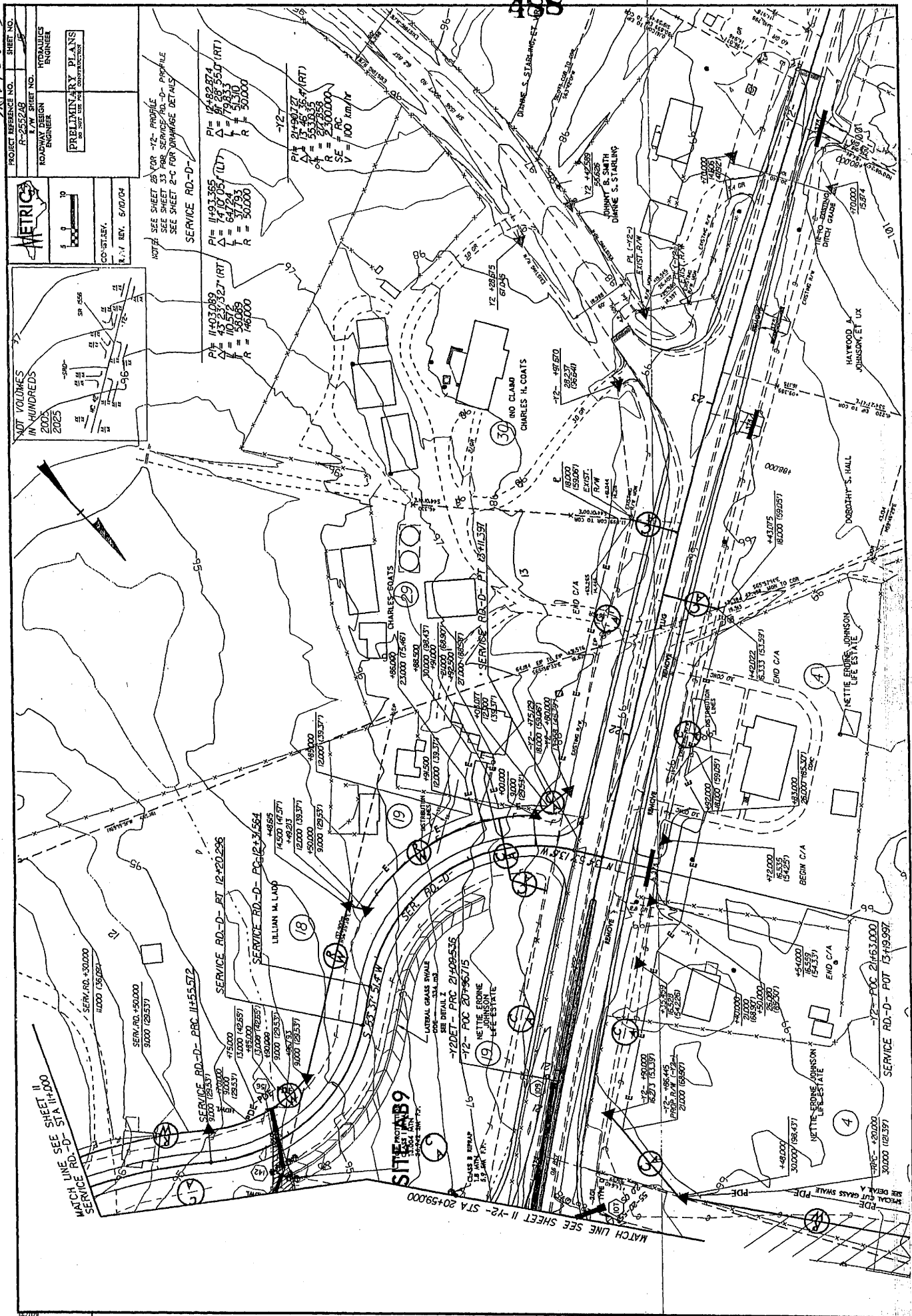
PI= 11403.089
Δ= 43.53
L= 193.78
R= 76000
PI= 11493.365
Δ= 43.53
L= 193.78
R= 76000
PI= 12482.874
Δ= 43.53
L= 193.78
R= 76000
PI= 12482.874
Δ= 43.53
L= 193.78
R= 76000

-Y2-
PI= 21497.77
Δ= 43.53
L= 193.78
R= 76000
PI= 21497.77
Δ= 43.53
L= 193.78
R= 76000

487



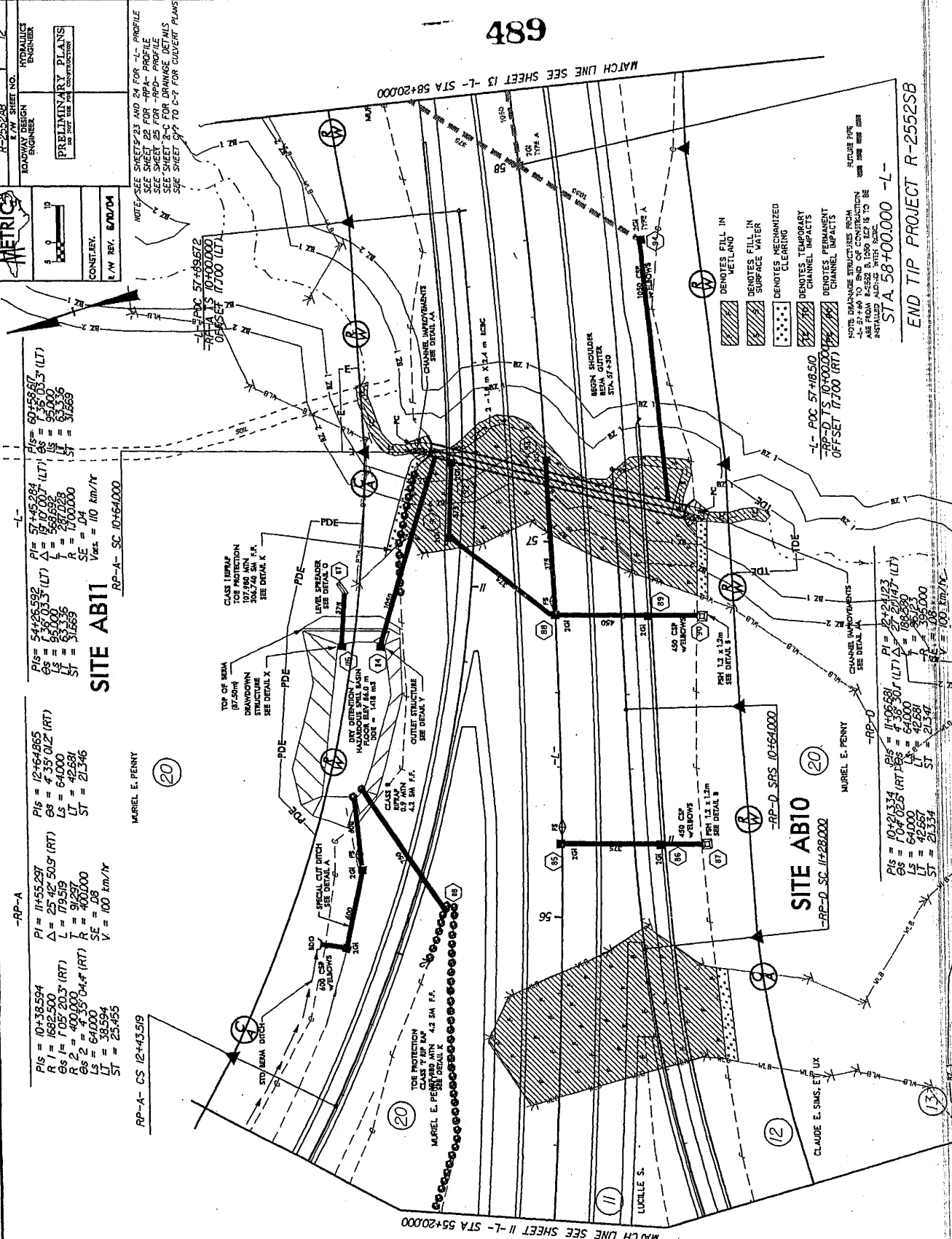
488



3/17/93

PROJECT REFERENCE NO.	SHEET NO.
R-2552SB	12
DESIGNER	ENGINEER
PRELIMINARY PLANS	DO NOT USE FOR CONSTRUCTION
CONST. BY	DATE
6/10/04	

489



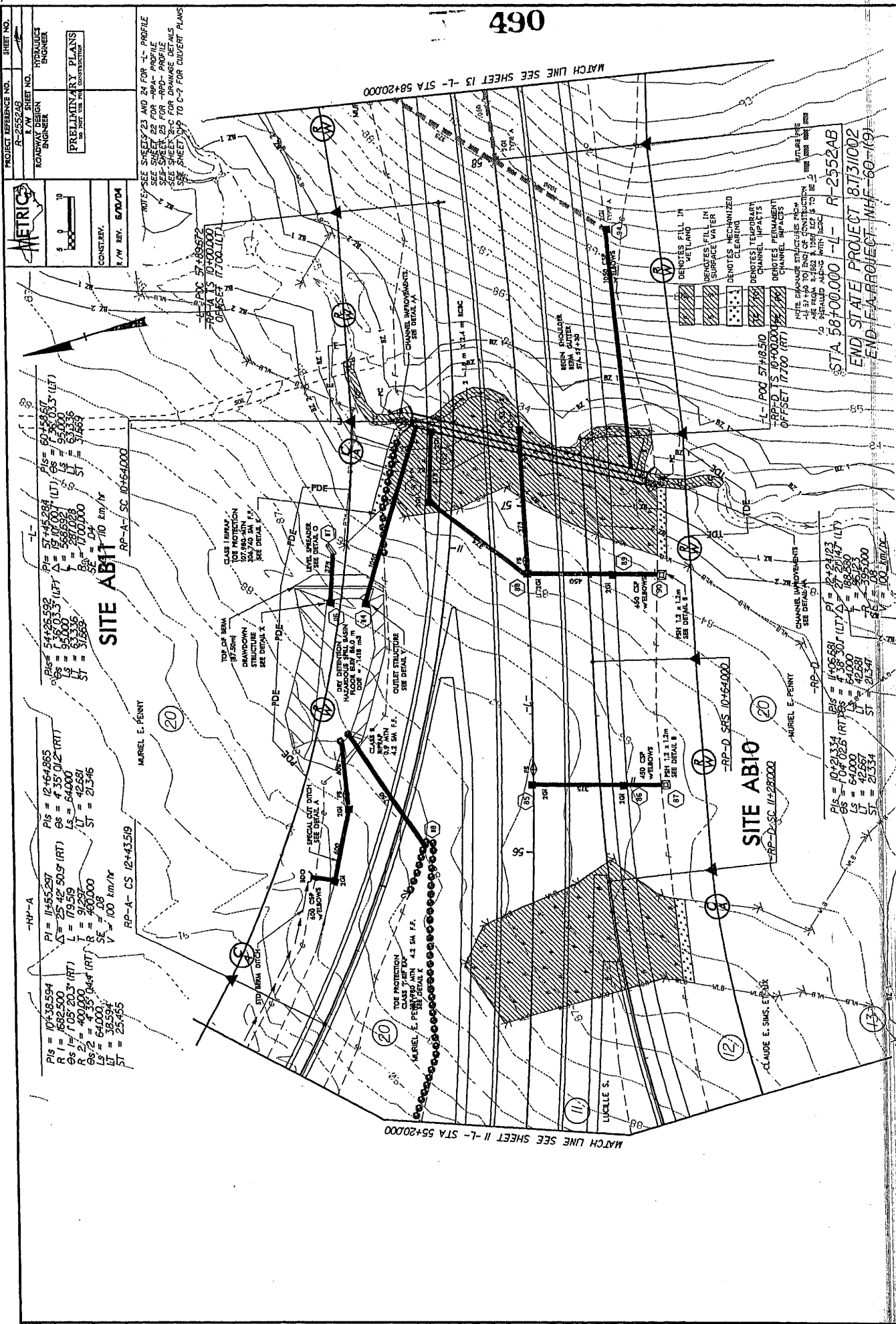
SITE AB11
RP-A-SC 10+64.000
PIS = 54,265.902
G8 = 54,265.902 (LT)
L = 10,000.000
T = 287.028
R = 17,000.000
SE = 14
V = 110 km/hr

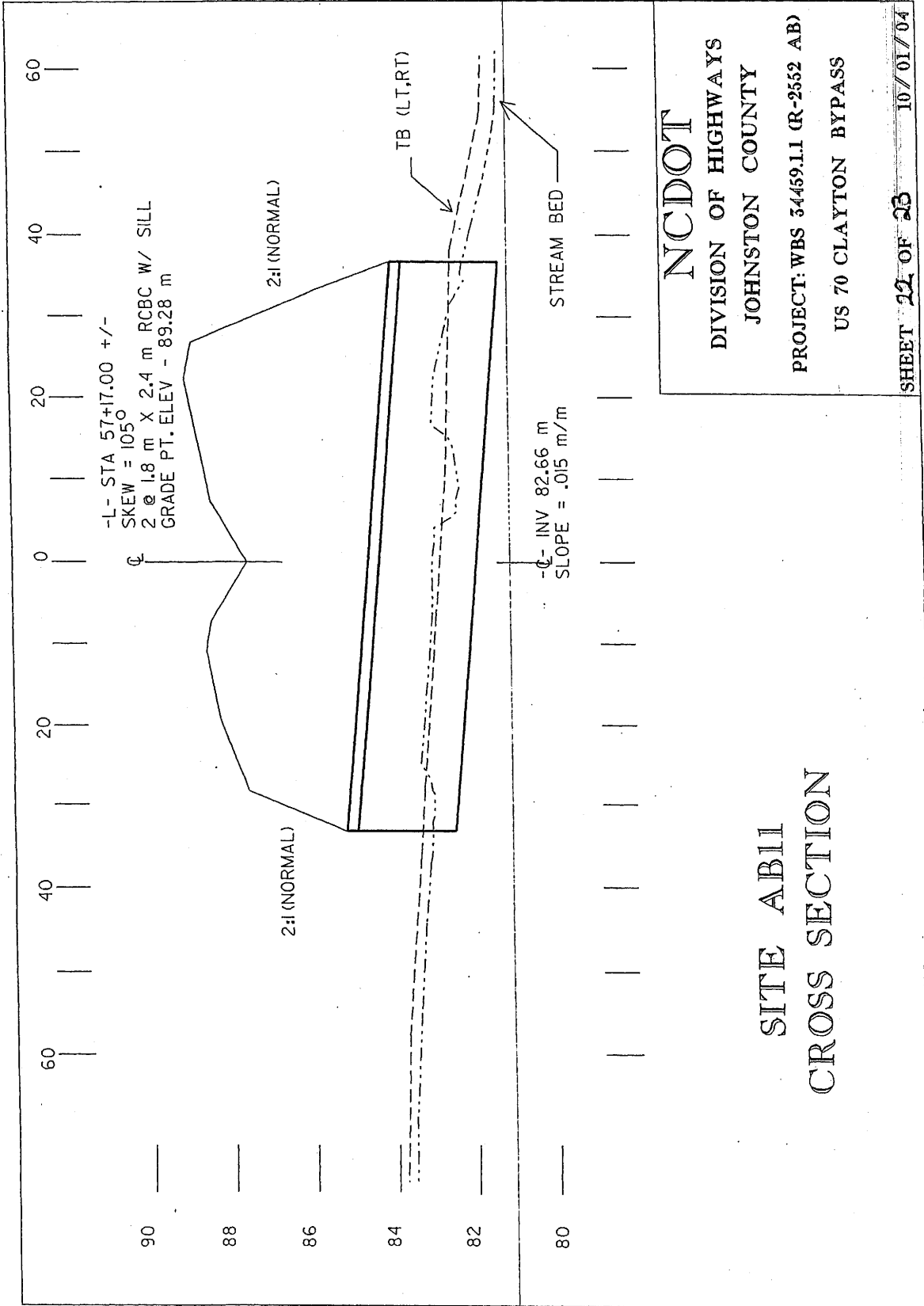
SITE AB10
RP-A-SC 12+43.519
PIS = 10+38.594
G8 = 10+38.594 (RT)
L = 10,000.000
T = 287.028
R = 17,000.000
SE = 14
V = 110 km/hr

LEGEND:
DENOTES FILL IN
SURFACE WATER
DENOTES MECHANIZED
CLEARING
DENOTES TEMPORARY
CHANNEL IMPACTS
DENOTES PERMANENT
CHANNEL IMPACTS

END TIP PROJECT R-2552SB
STA 58+00.000 -L-

CLAUDE E. SIMS, ET UX
MURIEL E. PENNY





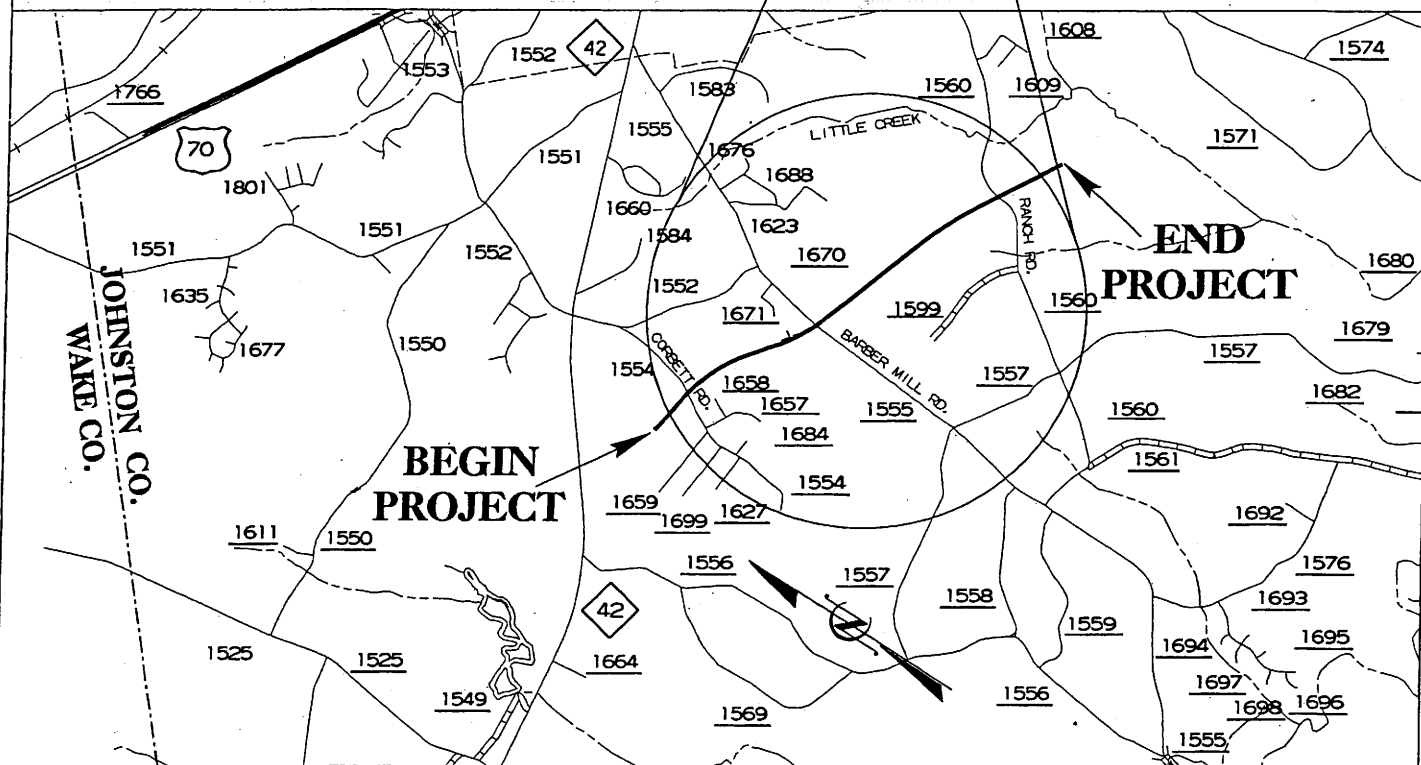
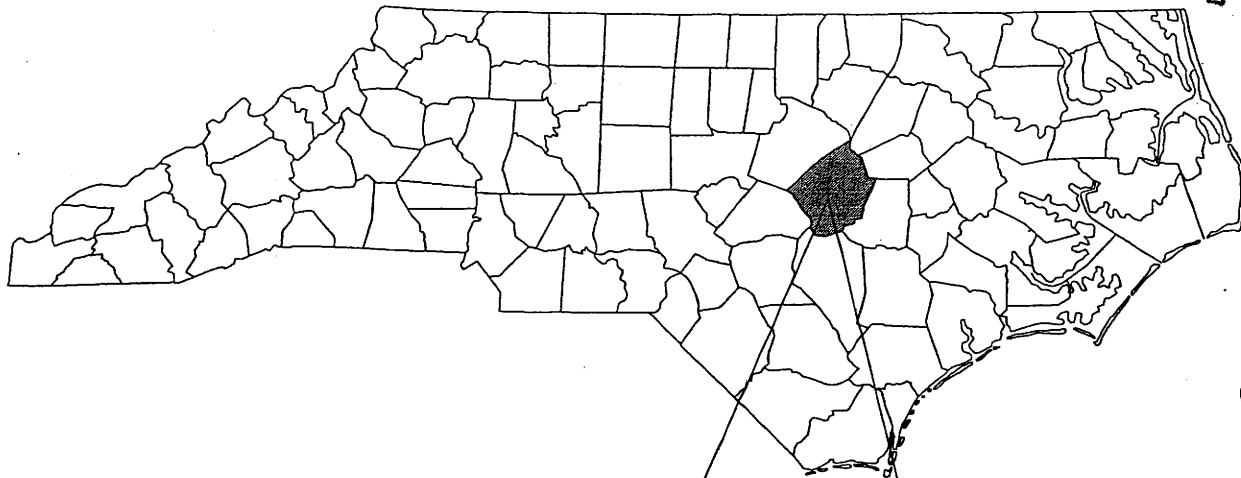
NCDOT
DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: WBS 34459.1.1 (R-2552 AB)
US 70 CLAYTON BYPASS
SHEET 22 OF 23 10/01/04

SITE AB11
CROSS SECTION

494

Rec'd 11/1/01
GB

NORTH CAROLINA COPY



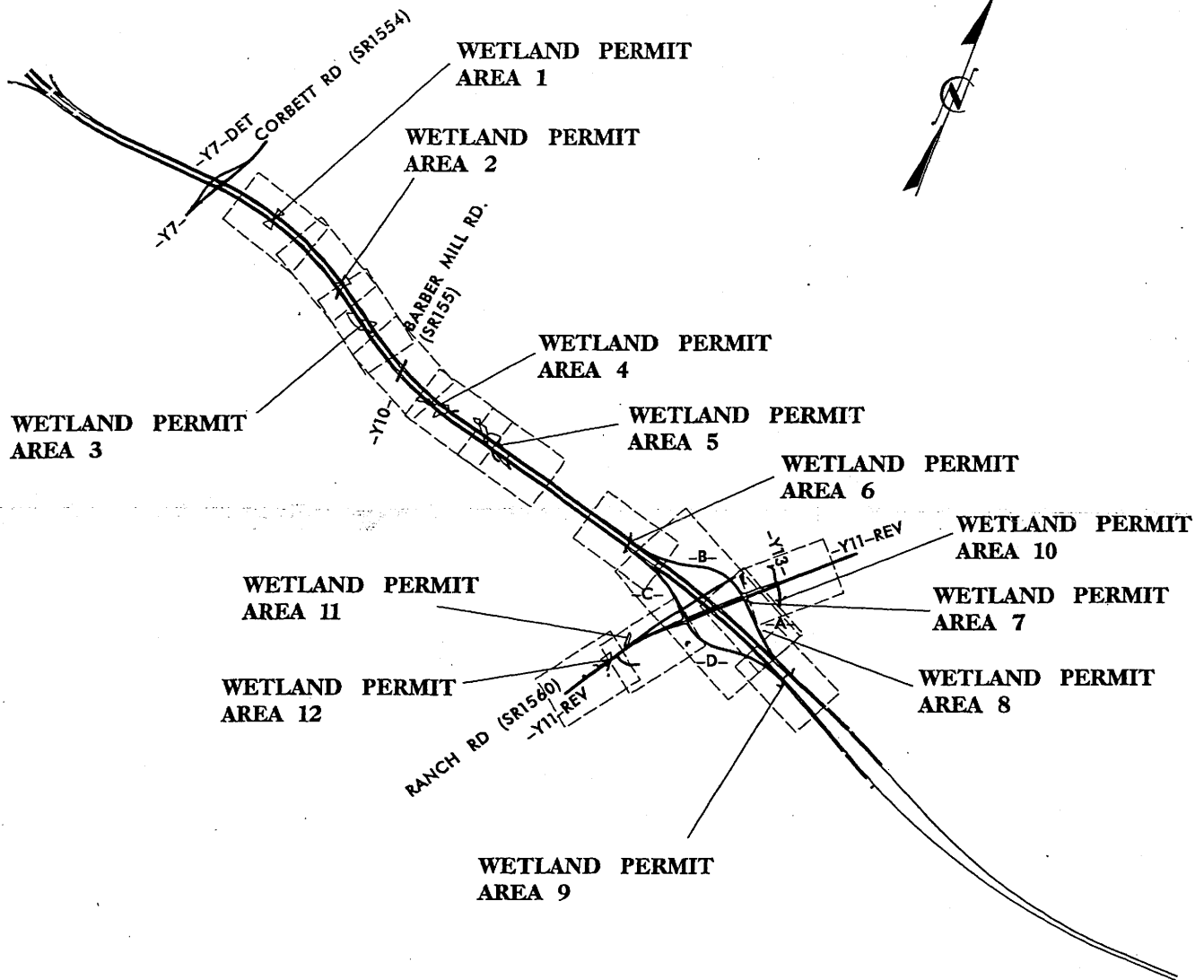
WETLAND PERMIT DRAWING VICINITY MAP R-2552B

NCDOT
DIVISION OF HIGHWAYS
JOHNSTON COUNTY

PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)

SHEET 1 OF 23 9/23/2004

SITE MAP



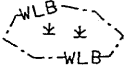
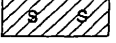
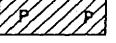
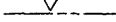
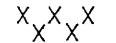
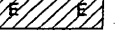
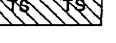
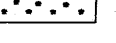
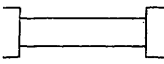
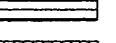
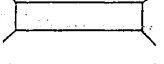
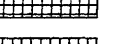
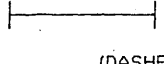
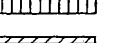
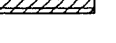
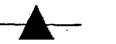
WETLAND PERMIT DRAWING VICINITY MAP

DIVISION OF HIGHWAYS
JOHNSTON COUNTY

PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)

SHEET 2 OF 23 9/23/2004

LEGEND

---WLB---	WETLAND BOUNDARY	—TDE—	TEMP. DRAINAGE EASEMENT
	WETLAND	—PDE—	PERMANENT DRAINAGE EASEMENT
	DENOTES FILL IN WETLAND	—EAB—	EXIST. ENDANGERED ANIMAL BOUNDARY
	DENOTES FILL IN SURFACE WATER	—EPB—	EXIST. ENDANGERED PLANT BOUNDARY
	DENOTES FILL IN SURFACE WATER (POND)		WATER SURFACE
	DENOTES TEMPORARY WETLAND IMPACTS (HAND CLEARING ONLY)		LIVE STAKES
	DENOTES EXCAVATION IN WETLAND		BOULDER
	DENOTES TEMPORARY SURFACE WATER IMPACTS	---	CORE FIBER ROLLS
	DENOTES MECHANIZED CLEARING		PROPOSED BRIDGE
	DENOTES MITIGABLE BUFFER IMPACTS ZONE 1		PROPOSED BOX CULVERT
	DENOTES MITIGABLE BUFFER IMPACTS ZONE 2		PROPOSED PIPE CULVERT
	DENOTES ALLOWABLE BUFFER IMPACTS ZONE 1	(DASHED LINES DENOTE EXISTING STRUCTURES)	
	DENOTES ALLOWABLE BUFFER IMPACTS ZONE 2		SINGLE TREE
	FLOW DIRECTION		WOODS LINE
	TOP OF BANK		DRAINAGE INLET
	EDGE OF WATER		ROOTWAD
	PROP. LIMIT OF CUT		RIP RAP
	PROP. LIMIT OF FILL		ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE
	PROP. RIGHT OF WAY		
	NATURAL GROUND		
	PROPERTY LINE		

WETLAND PERMIT DRAWING VICINITY MAP

DIVISION OF HIGHWAYS JOHNSTON COUNTY

PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)

SHEET 4 OF 23 9/17/2004

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS			SURFACE WATER IMPACTS						
			Fill In Wetlands (ac)	Temp. Wetland Impacts (hand clearing) (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. SW Impacts (ac)	Existing Channel Impacted (ft)	Existing Channel Temporary Impacts (ft)	Natural Stream Design (ft)
1	-L- Sta 68+60	66 in RCP	0.160	0.000		0.045	0.043		0.024	191.3	105.0	
2	-L- Sta 73+30	54 in RCP	0.429	0.000		0.046	0.063		0.020	276.3	88.3	
3	-L- Sta 74+60 TO Sta 76+00	60 in RCP	1.203	0.000		0.081	0.071		0.009	474.8	62.3	
4	-L- Sta 79+80 TO Sta 81+80	42 in RCP	1.217	0.000		0.028	0.103		0.010	672.6	70.5	
5	-L- Sta 82+60 TO Sta 85+50	10' x 7' RCBC	1.899	0.000	0.175	0.117	0.245		0.024	721.5	73.2	410.1
6	-L- Sta 92+20	10' x 7' RCBC					0.103		0.008	442.9	46.3	
7	-RPA- Sta 4+00	48 in RCP					0.025		0.000	163.4	0.0	
8	-RPA- Sta 2+50	24 in RCP					0.000		0.002	5.9	30.1	
9	-L- Sta 102+30	48 in RCP					0.081		0.026	354.3	114.5	
10	-Y13-REV Sta 9+30	48 in RCP					0.024		0.011	127.0	57.7	
11	-Y11-REV Sta 23+20	POND						0.274				
12	-Y11-REV Sta 24+30 TO Sta 25+20	10' x 9' RCBC & 8' x 8' RCBC	0.117	0.000		0.000	0.065		0.031	388.1	166.0	

NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT 8.T311002 (R-2552B)
US-70 CLAYTON BYPASS
EAST OF NC 42 TO
EAST OF SR 1560 (RANCH RD.)

SHEET 5 OF 23

1/6/2005

Red 1/10/05

OWNER'S NAME	ADDRESS
(14) Romero, Rubel	2012 Scott Court Clayton, NC 27520
(15) Stephenson, Clennis	5524 Rolling Field Dr. Garner, NC 27529
(16) Harris, Joseph L.	514 N. East St. Raleigh, NC 27604
(17) Gilbert, Jennifer P.	273-C Blue Pond Rd. Clayton, NC 27520
(18) Parrish, Samuel Clarence	377 Short Johnson Rd. Clayton, NC 27520
(19) Lane, Angela Yopp	606 S. 5th St. Mebane, NC 27302
(20) Poole, Reginald M., Sr.	3907 Barber Mill Rd. Clayton, NC 27520
(26) Delaine, Blanche Jean	3960 Barber Mill Rd. Clayton, NC 27520
(29) Johnson, Roland H.	2433 Tweedmore Ct. High Point, NC 27625
(30) Bolyard, Gypsy Rochelle	3047 Jack Rd. Clayton, NC 27520
(31) Edwards, Honey H.	216 E. Horne St. Clayton, NC 27520
(32) Canady, Kenneth R.	203 Blanche St. Clayton, NC 27520
(34) Langford, Taylor Morton, Jr.	2100 Twin Acres Rd. Clayton, NC 27520
(35) Haden, James Sullivan	1120 Ranch Rd. Clayton, NC 27520
(36) Whitley, Joseph M.	740 Ranch Rd. Clayton, NC 27520
(39) Carolina Packers, Inc.	P.O. Drawer 1109 Smithfield, N.C. 27577
(40) Ontiveros, Lynda Triplett	411 Pleasant Hill Ave. North Sebestopol, CA 95472
(58) Shand, Annie	PO Box 32 Clayton, NC 27520
(59) Whittemore, Joseph Franklin, Jr.	140 Canyon Rd. Clayton, NC 27520
(64) Jones, John A., Jr.	1357 Ranch Rd. Clayton, NC 27520
(68) Langford, Phillip E.	2130 Twin Acres Rd. Clayton, NC 27520
(69) Rethemeyer, J.W.	1521 Ranch Rd. Clayton, NC 27520
(902) Carolina Packers, Inc.	P.O. Drawer 1109 Smithfield, N.C. 27577

**PROPERTY OWNER
NAME AND ADDRESS**

**DIVISION OF HIGHWAYS
JOHNSTON COUNTY**

**PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)**

SHEET 6 OF 23

9/17/2004

PROJECT REFERENCE NO. 7-25529
 SHEET NO. 7 OF 23
 RW SHEET NO.



PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

5 0 10
 1:1000

JOSEPH I. HARRIS
 DEED NOT AVAILABLE

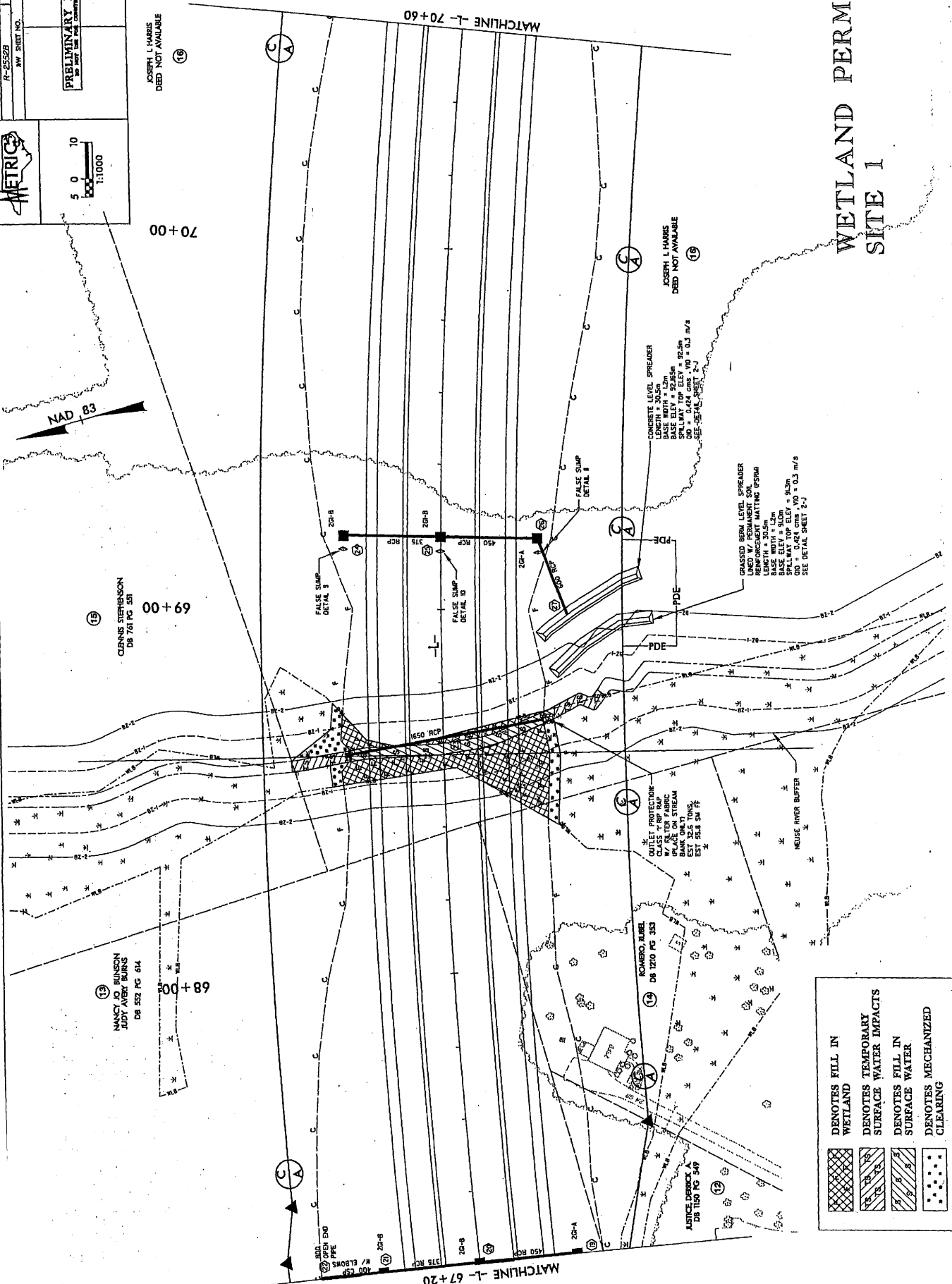
NAD 83

CLARENCE STEPHENSON
 DB 761 PG 501

NANCY JO JOHNSON
 DB 532 PG 614

500

WETLAND PERMIT SITE 1



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

PROJECT REFERENCE NO.

R-25523

SHEET NO.

17-033

PRELIMINARY PLANS

NO POST CONSTRUCTION

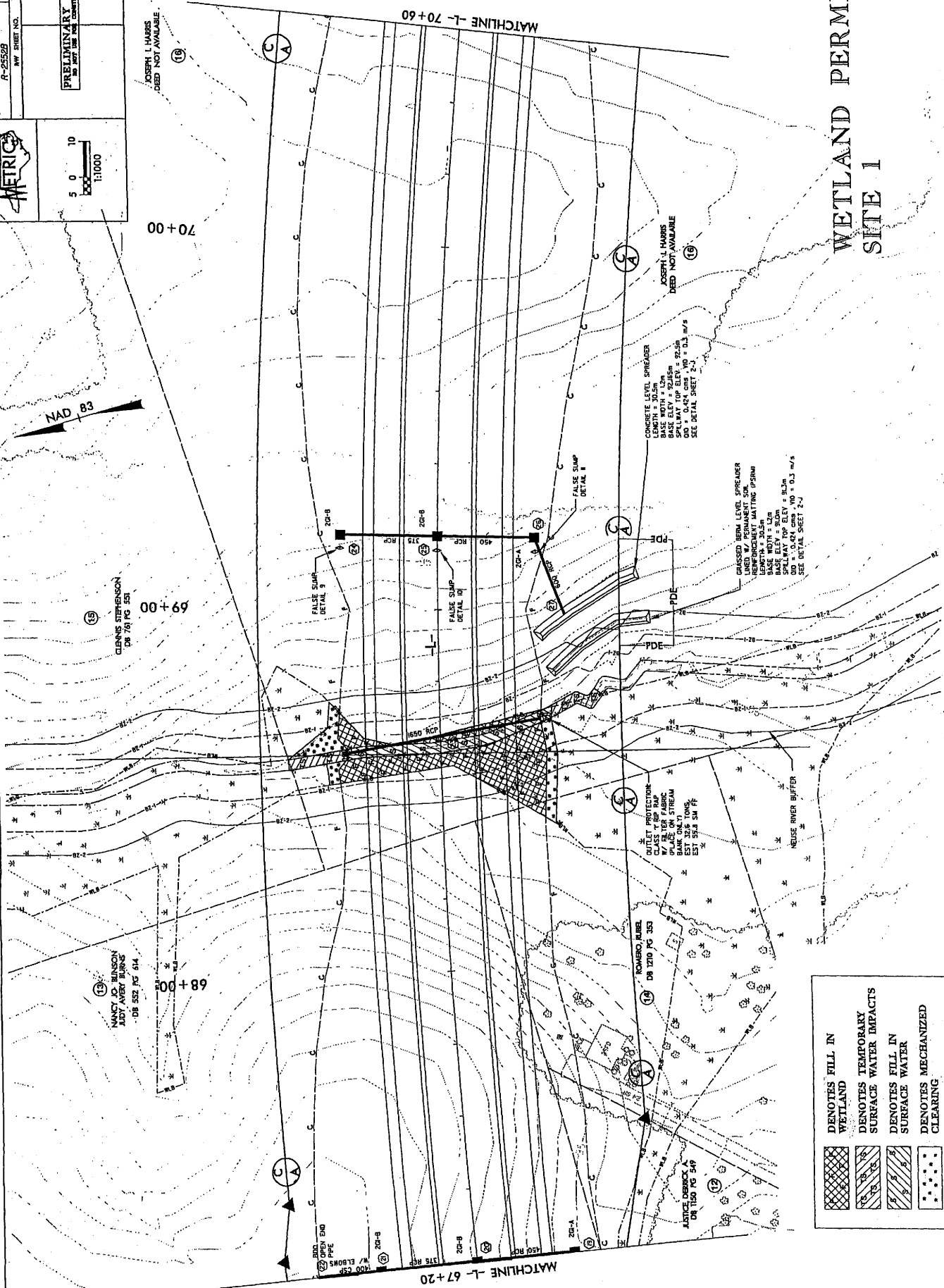
5 0 10

1:1000

1:1000

501

WETLAND PERMIT SITE 1



DENOTES FILL IN WETLAND

DENOTES TEMPORARY SURFACE WATER IMPACTS

DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

9/24/2004 1:101056065\an\p\an\17\wetland\25523\wetland\plan

502

C STA 68+64.73 -L-
GRADE POINT ELEV = 940.19
1650 mm RCP
W/ BEVELED INLET

SCALE
1:500 HORIZ
1:100 VERT

NORMAL TO -L-
(206' ±) ALONG CULVERT
+050 WSEL = 93.44 +0100 WSEL = 93.57
+010 WSEL = 92.82

NORMAL TO -L-
(208' ±) ALONG CULVERT

NATURAL GROUND
RCP

G INV = 90.72

0.025 m/m

NCDOT

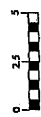
DIVISION OF HIGHWAYS
JOHNSTON COUNTY

PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)

9/16/2004

SHEET 7 OF 23

WETLAND PERMIT DRAWING
PROFILE of 1650mm RCP at 68+65 -L-
R-2552B



EDGE OF MECHANIZED CLEARING

EDGE OF FILL IN WETLANDS

WIDENED SHOULDER

0.040

94.999

8.1 93.993 7.788.1

94.999

0.040

WIDENED SHOULDER

EDGE OF FILL IN WETLANDS

EDGE OF MECHANIZED CLEARING

90

95

100

105

90

95

100

105

503

SITE 1

-L- STA 68+60

40

30

20

10

0

10

20

30

40

50



PROJECT REFERENCE NO.
R-2552B
NW SHEET NO.

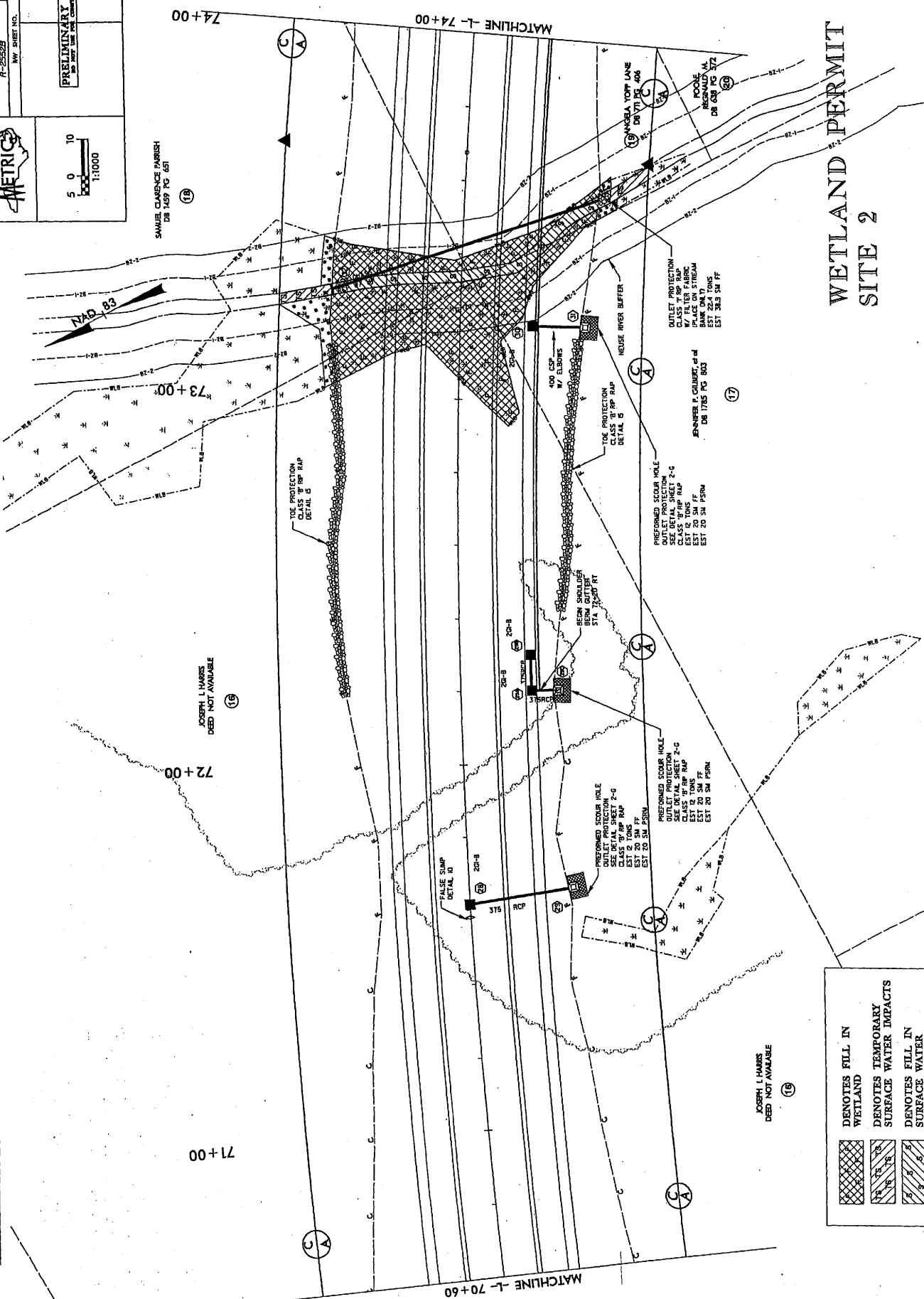
REFERENCE NO. 5528
DRAWING SHEET NO. 1

REFERENCE NO. 5528
DRAWING SHEET NO.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

504

~~WETLAND PERMIT~~
~~SITE 2~~



JOSEPH L HARRIS
DEED NOT AVAILABLE

16

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



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SAMUEL CLARENCE PARRISH
DB 1459 PG 651

505

WETLAND PERMIT
SITE 2

74+00

MATCHLINE -L- 74+00

$$\vec{O} + \epsilon \vec{Z}_1$$

72+00

71+00

MATCHLINE -L- 70+60

DENOTES FILL IN
WETLAND

DENOTES TEMPORARY
SURFACE WATER IMPACTS

DENOTES FILL IN
SURFACE WATER

DENOTES MECHANIZED
CLEARING

JOSEPH L HARRIS

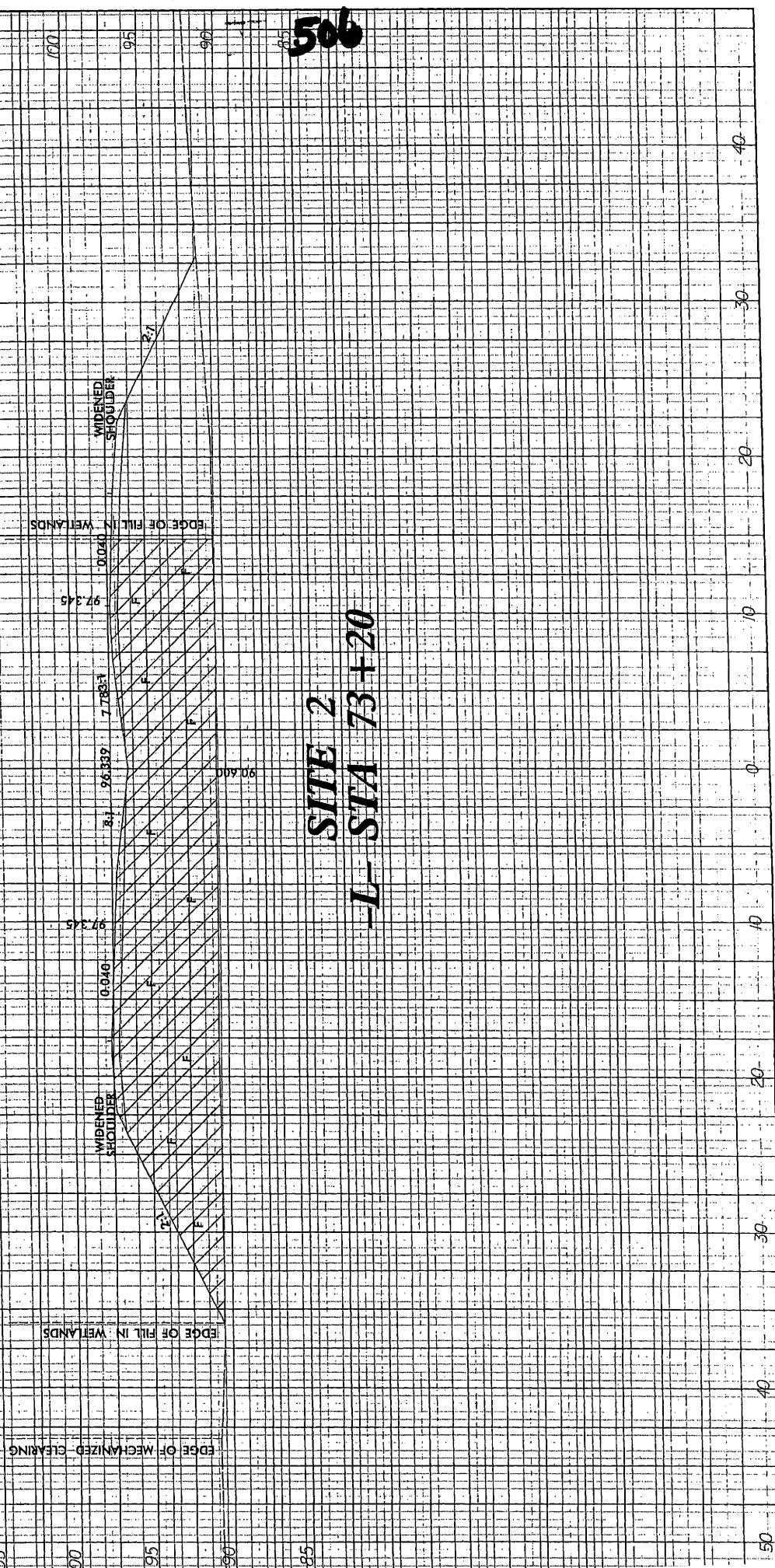
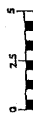
JOSEPH L. HARRIS
DEED NOT AVAILABLE

ANNEX P. GILBERT, et al.

PREFORMED SCOUR HOLE -
OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS 'B' RIP RAP
EST 12 TONS
EST 20 SM FF

REFORMED SCOUR HOLE
OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS 'B' RP RAP
EST. 12 TONS

Wandoozosh



506

9/24/2004
 9/24/2004
 9/24/2004

PROJECT REFERENCE NO.
 R-25529

PRELIMINARY PLANS
 FOR THE
 WETLAND PERMIT

5 0 10
 1:1000

ANGELA VOIP LANE
 DB 638 PG 406

REGAUD AL MOOLE SR
 DB 638 PG 572

WETLAND PERMIT
 SITE 3

WATER L'WOLEY
 DB 634 PG 473

WOLLEY/AUDREY LANE
 DB 634 PG 256

REGAUD AL MOOLE SR
 DB 638 PG 572

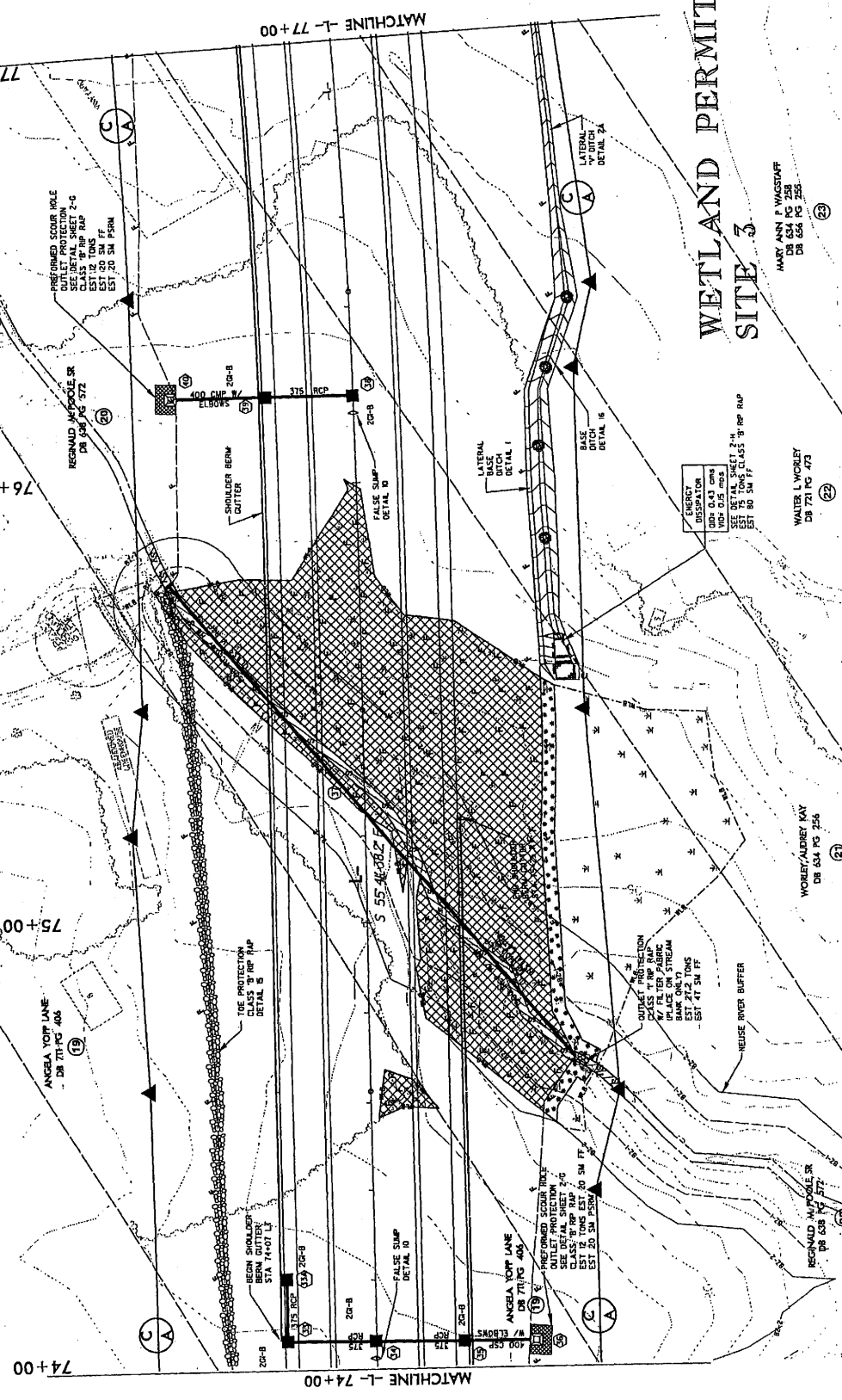
ANGELA VOIP LANE
 DB 638 PG 406

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

SANBIE CLAIRANCE MARKISH
 DB 637 PG 451

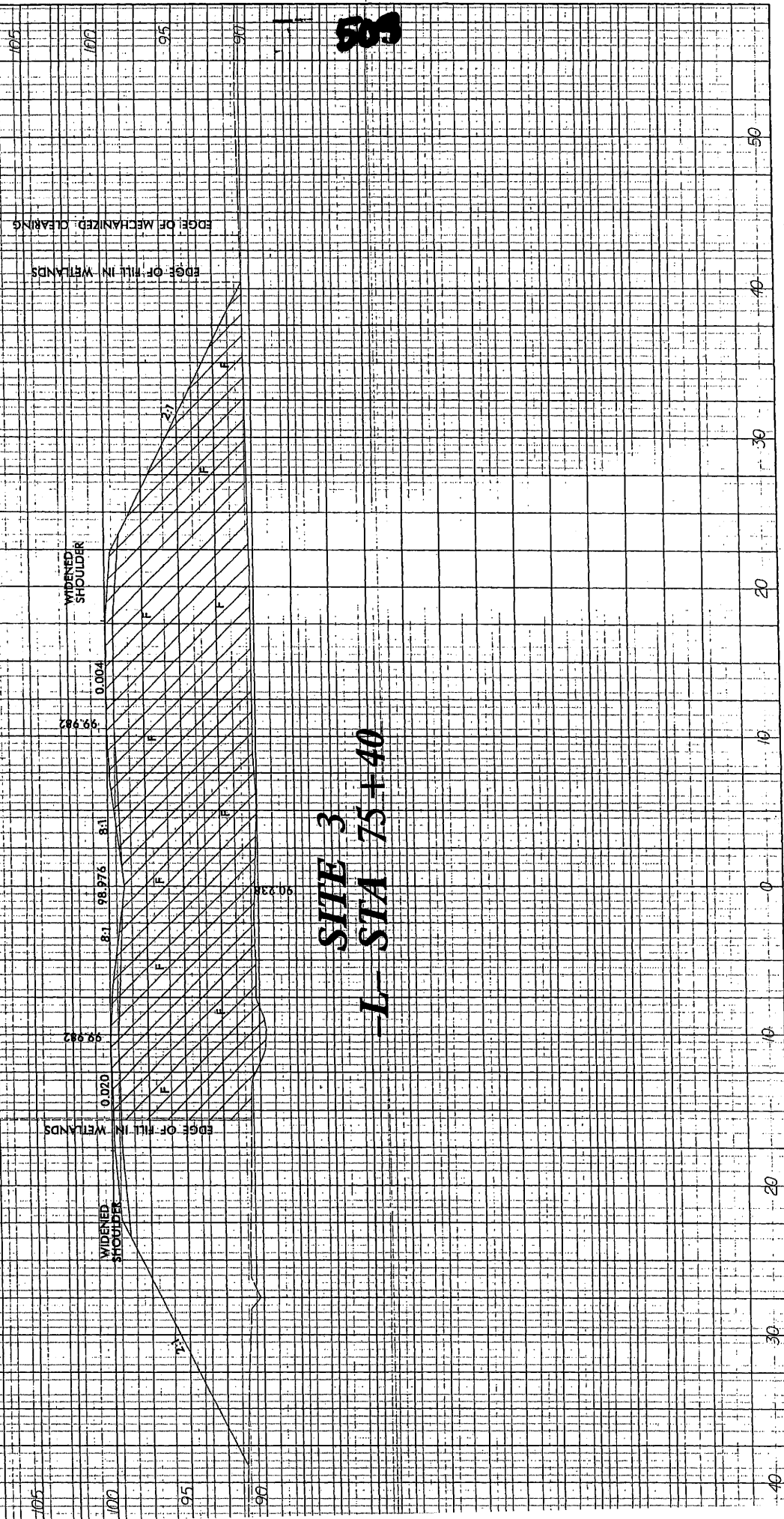
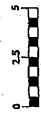
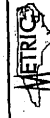
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508

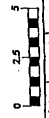


SHEET NO. 13-23

PROJECT REFERENCE NO. R-25529



SITE 3
-L- STA 75+40



105

100

95

90

85

513

50

40

30

20

10

0

10

20

30

40

WIDENED SHOULDER

EDGE OF FILL IN WETLANDS

0.040

100.531

8:1

7.7831 - 99.524'

100.531

0.040

WIDENED SHOULDER

EDGE OF FILL IN WETLANDS

3:1

90.200

90.100

3.7

2.7

1.5

SITE 4
-L- 80 + 80.00

PROJECT REFERENCE NO. R-25529
 SHEET NO. 11 A of 33
 NW SHEET NO.



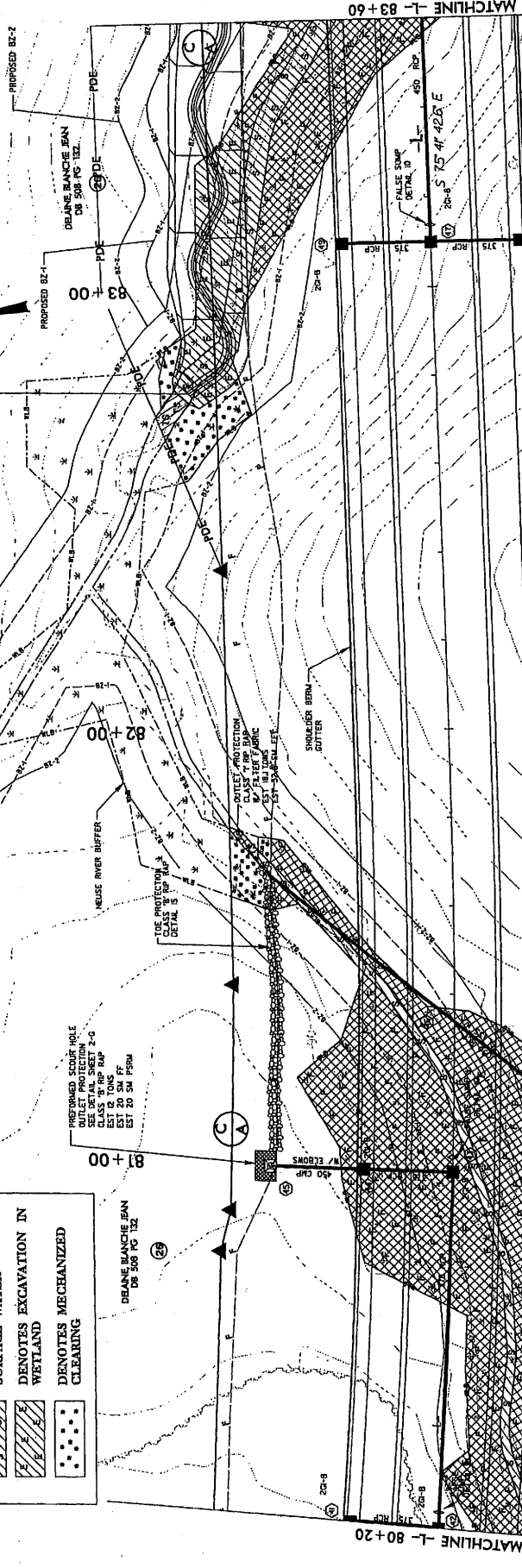
PRELIMINARY PLANS
 FOR THE PROPOSED HIGHWAY

5 0 10
 1:1000

BEGIN STREAM RELOCATION
 S-374 10+00
 S-374 10+00
 SEE DETAILS 2-4 THROUGH 2-8

NAD 83

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



WETLAND PERMIT
 SITE 4

WETLAND PERMIT
 SITE 5

JOHNSON ROUND H.
 DB 1043 PG 718
 DB 1060 PG 294

MARGARET H. JOHNSON
 DB 590 PG 358

JOHNSON ROUND H.
 DB 1043 PG 718
 DB 1060 PG 294

PECKY Y. LEE
 DB 937 PG 379

WETLAND PERMIT
SITE 5

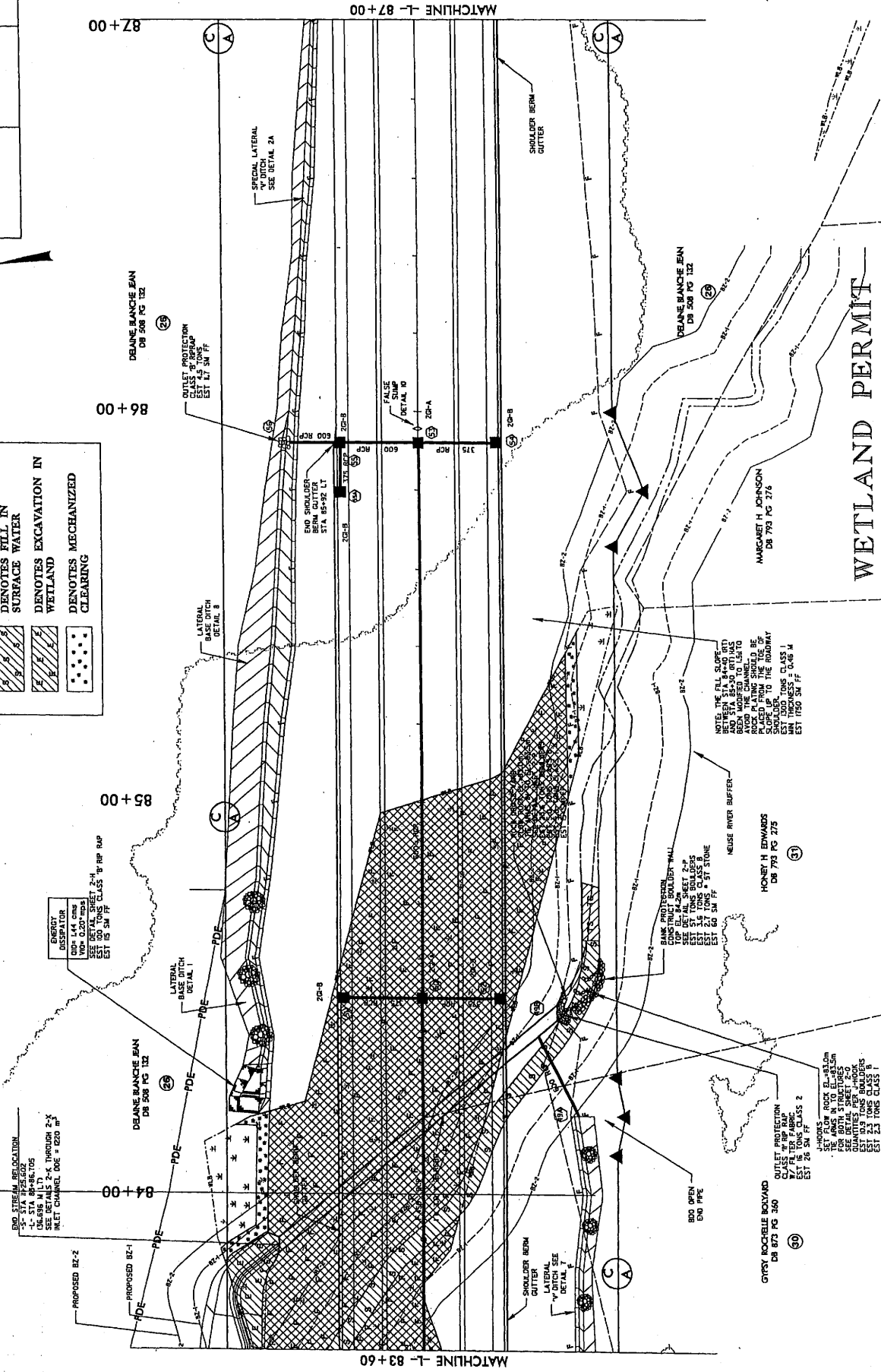
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACTS
- DENOTES FILL IN SURFACE WATER
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING



PRELIMINARY PLANS
BY THE DESIGN ENGINEER

5 0 10
1:1000

PROJECT REFERENCE NO. R-25529
SHEET NO. 12 OF 23



END SITE PLAN
L- STA 83+00
L- STA 84+00
L- STA 85+00
L- STA 86+00
L- STA 87+00
SEE DETAILS 2-4 THROUGH 2-8
WET CHANNEL DOW = 1200 M²

DEANE BLANCHE EAN
DN 508 PG 132
DEANE BLANCHE EAN
DN 508 PG 132

DEANE BLANCHE EAN
DN 508 PG 132
DEANE BLANCHE EAN
DN 508 PG 132

DEANE BLANCHE EAN
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DN 508 PG 132

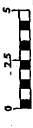
DEANE BLANCHE EAN
DN 508 PG 132
DEANE BLANCHE EAN
DN 508 PG 132

DEANE BLANCHE EAN
DN 508 PG 132
DEANE BLANCHE EAN
DN 508 PG 132

DEANE BLANCHE EAN
DN 508 PG 132
DEANE BLANCHE EAN
DN 508 PG 132

DEANE BLANCHE EAN
DN 508 PG 132
DEANE BLANCHE EAN
DN 508 PG 132

DEANE BLANCHE EAN
DN 508 PG 132
DEANE BLANCHE EAN
DN 508 PG 132



WIDENED SHOULDER
 0.020
 95.729
 EDGE OF FILL IN WETLANDS

WIDENED SHOULDER
 0.020
 95.729
 EDGE OF FILL IN WETLANDS

WIDENED SHOULDER
 0.020
 95.729
 EDGE OF FILL IN WETLANDS

WIDENED SHOULDER
 0.020
 95.729
 EDGE OF FILL IN WETLANDS

WIDENED SHOULDER
 0.020
 95.729
 EDGE OF FILL IN WETLANDS

WIDENED SHOULDER
 0.020
 95.729
 EDGE OF FILL IN WETLANDS

WIDENED SHOULDER
 0.020
 95.729
 EDGE OF FILL IN WETLANDS

SITE 5
-I- STA 84+00

318

40
30
20
10
0
-10
-20
-30
-40
-50

NOTE: THERE ARE NO STRUCTURES
UPSTREAM THAT WILL BE AFFECTED
BY THE PROPOSED CULVERT

SCALE:
1:500 HORIZ
1:100 VERT

G STA 84+7.500
GRADE POINT ELEV = 94.461
TO 30m x 2m RCBC
W/ BEVELED INLET
SKIRM = 5000

NOTE: THE FILL SLOPE
BETWEEN STA 84+40 (RT)
AND STA 85+30 (RT) HAS
BEEN MODIFIED TO 1.5H:1V
TO AVOID THE CHANNEL
ROCK PLACING SHOULD BE
PLACED FROM THE TOE OF
SLOPE UP TO THE ROADWAY
SHOULDER
EST 100 TONS CLASS-1
MIN THICKNESS = 0.46m
EST 1250 SW FE

800 mm RCP TIED
INTO CULVERT AT
STA 84+40.47
OFFSET 29.77 FT
INVERT = 83.55

PROPOSED & RT
TOP OF BANK

PROPOSED STREAM BED

NORMAL TO 1:1

TOP OF BANK (BANKFULL)
SEE STREAM RESTORATION
PLANS AND CROSS SECTIONS
FOR MORE DETAIL

1000 WSEL = 87.26

1050 WSEL = 87.26

1100 WSEL = 86.58

1150 WSEL = 85.4

1200 WSEL = 84.26

PROPOSED STREAM
RELOCATION
GROUND PROFILE

0.25 m/m

G INVERT = 83.83

519

NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY

PROJECT: 8 T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)

SHEET 12 OF 23

9/16/2004

WETLAND PERMIT DRAWING
CSR 1 of 4 PROFILE
R-2552B

WETLAND PERMIT
SITE 6

MATCHLINE L- 93+60

MATCHLINE L- 90+40

DENOTES TEMPORARY
SURFACE WATER IMPACTS



5 0 10
1:1000

PRELIMINARY PLANS
NO PART OF THIS DRAWING TO BE CONSTRUCTION

PROJECT OFFICE NO.
P-25528

SHEET NO.
134 OF 133



MAD 83

93+00

0+00

92+00

91+00

KORSETH & CANADY
ON 1915 PG. 811

JAMES SULLIVAN-HADEN
ON 1367 PG. 802

ENERGY
DISSEMINATOR
000- 0.22 Cms
VDS 0.15 Mps
SHEET 7-1
EST. 2 TONS
EST. 20 SM FF
EST. 20 SM FF

SPECIAL LATERAL DIVISION
SEE DETAIL 1
SPECIAL OUT DITCH
SEE DETAIL 2

1:13.0 2' RADIUS

FALSE SWAMP
DETAIL 9

20-A

20-B

20-C

20-D

20-E

20-F

20-G

20-H

20-I

20-J

20-K

20-L

20-M

20-N

20-O

20-P

20-Q

20-R

20-S

20-T

20-U

20-V

20-W

20-X

20-Y

20-Z

20-AA

20-AB

20-AC

20-AD

ROCK CROSS VANE
CL. 100' TO 110' 1/2"
SHEET 7-1
EST. 2 TONS
EST. 20 SM FF
EST. 20 SM FF

PREPARED SCOR HOLE
OUTLET PROTECTION
CLASS 1.5 TONS
EST. 2 TONS
EST. 20 SM FF
EST. 20 SM FF

OUTLET CHANNEL
CLASS 1.5 TONS
EST. 2 TONS
EST. 20 SM FF
EST. 20 SM FF

REUSE RIVER BUFFER

TAYLOR MORTON LANSFORD, JR.
ON 1915 PG. 775

ALAN ELMWOOD MUEHLBURN, JR.
ON 1025 PG. 540

JOSEPH A. VENTRE
ON 1345 PG. 470

ENERGY
DISSEMINATOR
000- 0.50 Cms
VDS 0.15 Mps
SHEET 7-1
EST. 2 TONS
EST. 20 SM FF
EST. 20 SM FF

EST. 2 TONS
EST. 20 SM FF
EST. 20 SM FF

KORSETH & CANADY
ON 1915 PG. 811

ALAN ELMWOOD MUEHLBURN, JR.
ON 1025 PG. 540

THERE ARE NO STRUCTURES
UPSTREAM THAT WILL BE
AFFECTED BY PROPOSED CULVERT

SCALE:
1500 HORIZ
1400 VERT.

STA = 92+23.50 - L
GRADE POINT ELEV = 77.45
SKEM = 820000 @ - L
10' 30m x 12m RCBC
W/ BEVELED INLET

NORMAL TO - L
(222' ALONG CULVERT)

600mm RCP TIED
INTO CULVERT AT
STA 92+23.50
OFFSET 246' RT
INW EL = 73.60

050 WSEL = 75.53
000 WSEL = 75.37
NORMAL WSEL = 74.39
NATURAL GROUND
@ RCBC

ELEV = 73.2

NATURAL GROUND
@ CREEK

NATURAL GROUND @
LEFT TOP OF BANK

NATURAL GROUND @
RIGHT TOP OF BANK

532

NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY

PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)

SHEET # OF 23
138

9/16/2004

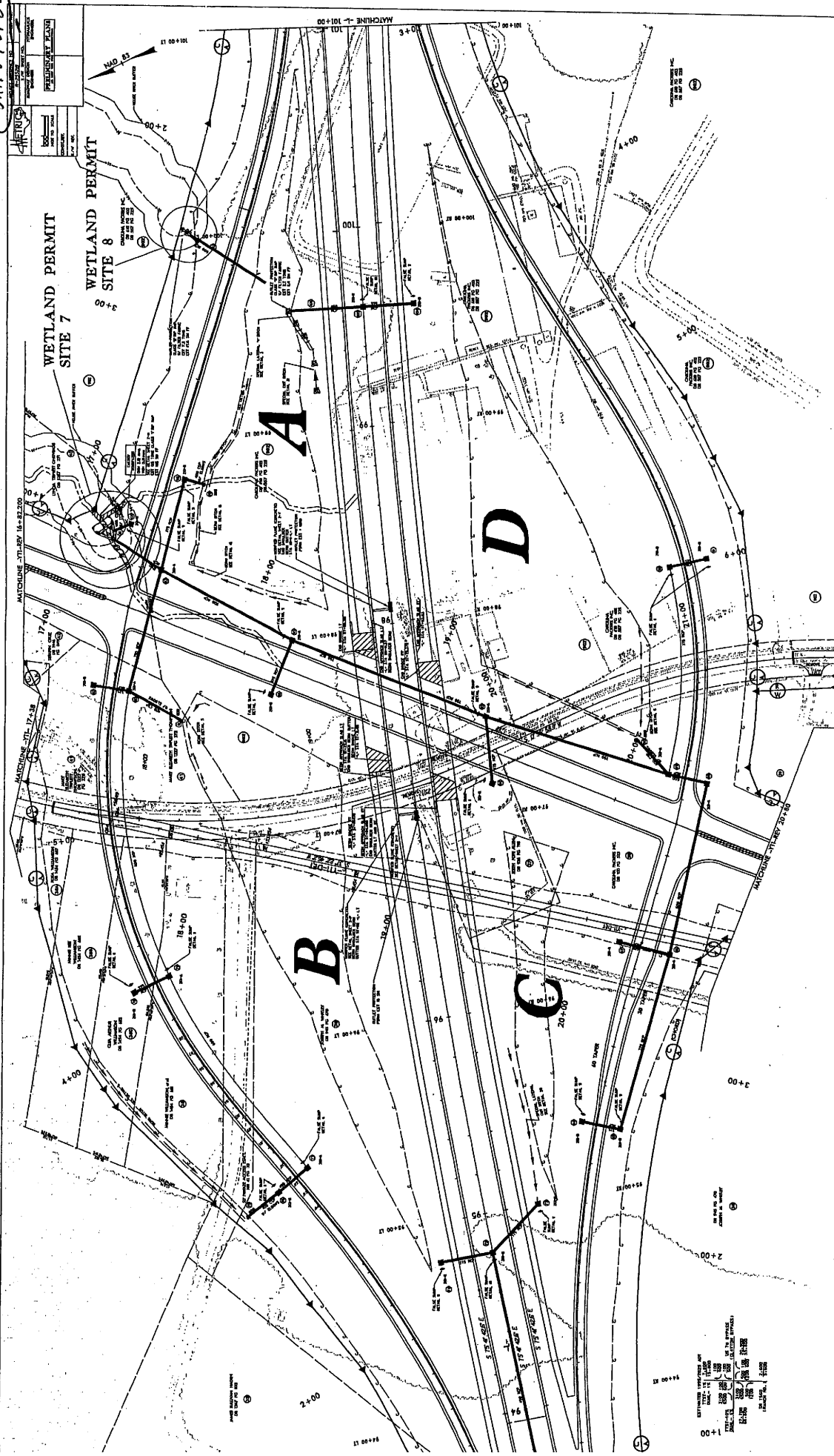
WETLAND PERMIT DRAWING

CSR 2 of 4 PROFILE

R-2552B

Site 6

Sht. 14 of 23



SEE NEXT 2 SHEETS FOR WETLAND PERMIT SITES 7 AND 8

NEUSE RIVER BUFFER

902

~~JAN 10 2005~~

~~OUTLET PROTECTION~~
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 7.3 TONS
EST 17.6 SM. FF

DENOTES TEMPORARY
SURFACE WATER IMPACTS

DENOTES FILL IN
SURFACE WATER

17. C.

-Y11-REV

900 RCP

BDO

2 CSP
ELBOWS

-RPA-

SEE DETAIL SHEET 2-H
EST 125 TONS CLASS 'I' RIP RAP
EST 105 SM FF

ENERGY DISSIPATOR	Q10= 2.12 cms V10= 0.21mps
----------------------	-------------------------------

00+00

40

17-00

00

42

42

PROJECT REFERENCE NO. R-25528
SHEET NO. 154-23



2.5 0 5
1:500

PRELIMINARY PLANS
DO NOT BE USED FOR CONSTRUCTION

525

WETLAND PERMIT SITE 7

NEUSE RIVER BUFFER

902

17+00

00+00

ENERGY
DISSIPATOR
D10= 2.12' cms
V10= 0.21 mps
SEE DETAIL SHEET 2-H
EST 125 TONS; CLASS '1' RIP RAP
EST 105 SM FF

OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 7.3 TONS
EST 17.6 SM FF

DENOTES TEMPORARY
SURFACE WATER IMPACTS
DENOTES FILL IN
SURFACE WATER

Dec 11/05

-Y11-REV

42

42

17+00

900 RCP

FALSE SUMP
DETAIL 9

FALSE SUMP
DETAIL 9

200 RCP

200 RCP

200 RCP

200 RCP

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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETLAND PERMIT
SITE 8

DENOTES TEMPORARY
SURFACE WATER IMPACTS

DENOTES FILL IN
SURFACE WATER

JFFER.

902

00+3

~~2 + 00~~

527
17 00 + 101

-NEUSE RIVER BUFFER

902

RPA-

~~OUTLET PROTECTION~~
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 7.3 TONS
EST 17.6 SM FF

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 3

OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 2.7 TONS
EST 8.4 SM FF

ICIAL CUT DITCH
DETAIL 21

26/11/73

PROJECT REFERENCE NO.

R-2552B

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83

WETLAND PERMIT
SITE 9

902
CAROLINA PACKERS INC.
DB 610 PG 403
DB 557 PG 225

CAROLINA PACQUERS INC.
DB 610 PG 403
DB 557 PG 225

—RIVER BUFFER—

102+00 LT

MATCHLINE -L- 101+00

MATCHLINE -L- 104 + 40

-7- 303

00 + 1 ✓

DENOTES TEMPORARY
SURFACE WATER IMPACTS

PROJECT REFERENCE NO. R-25529
SHEET NO. 174/23
PRELIMINARY PLANS
FOR THE
CONSTRUCTION OF
A
NEW
DRAINAGE
SYSTEM



5 0 10
1:1000

NAD 83

WETLAND PERMIT SITE 9

CAROLINA PACERS INC.
DB 500 PG 403
DB 557 PG 225

CAROLINA PACERS INC.
DB 500 PG 403
DB 557 PG 225

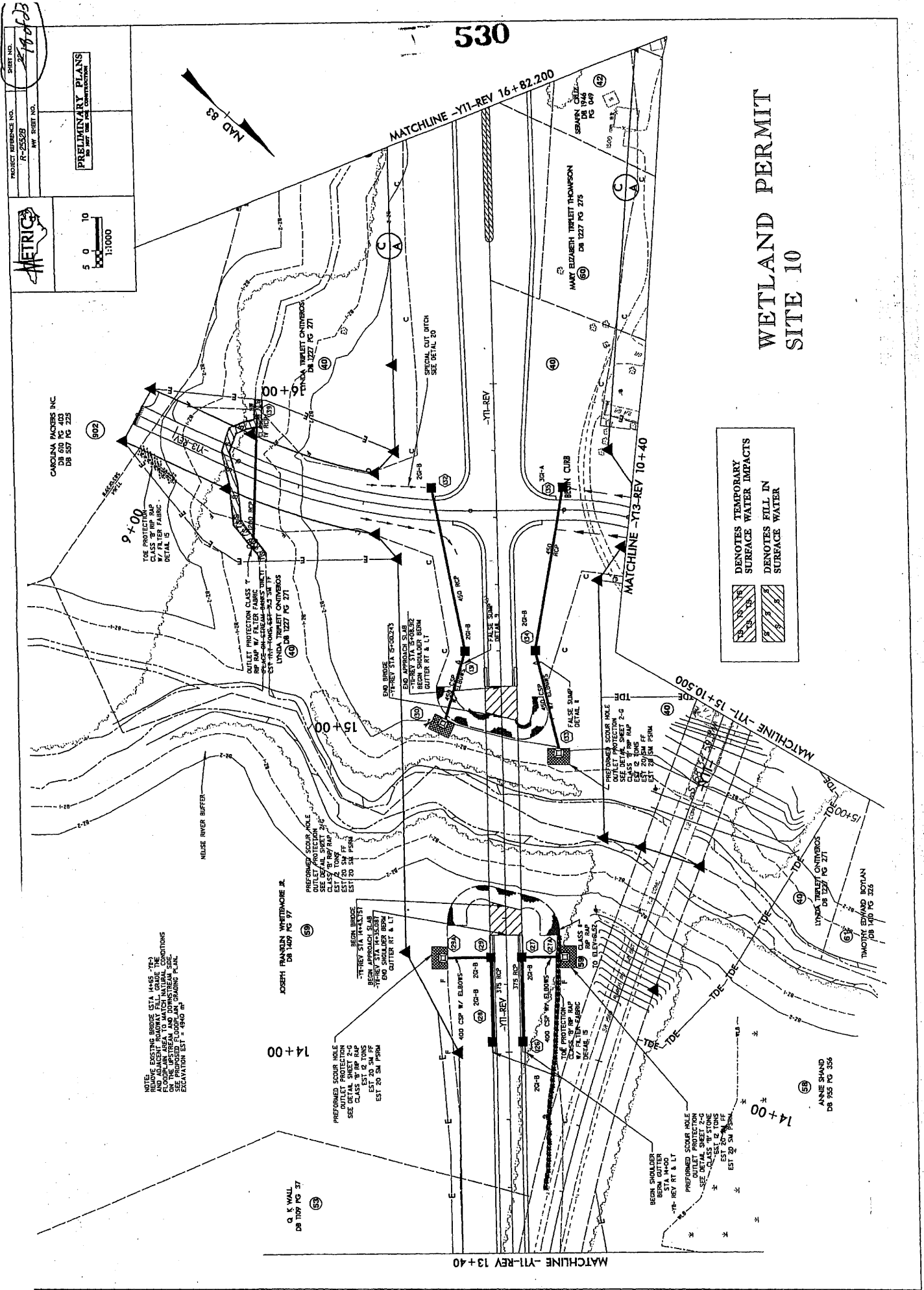
OUTLET PROTECTION
CLOSE TYPED RUP
W/ FILTER FABRIC
BANK ON Y'S STREAM
EST 17.7 TONS
EST 30.54 FF

MATCHLINE -L- 104+40

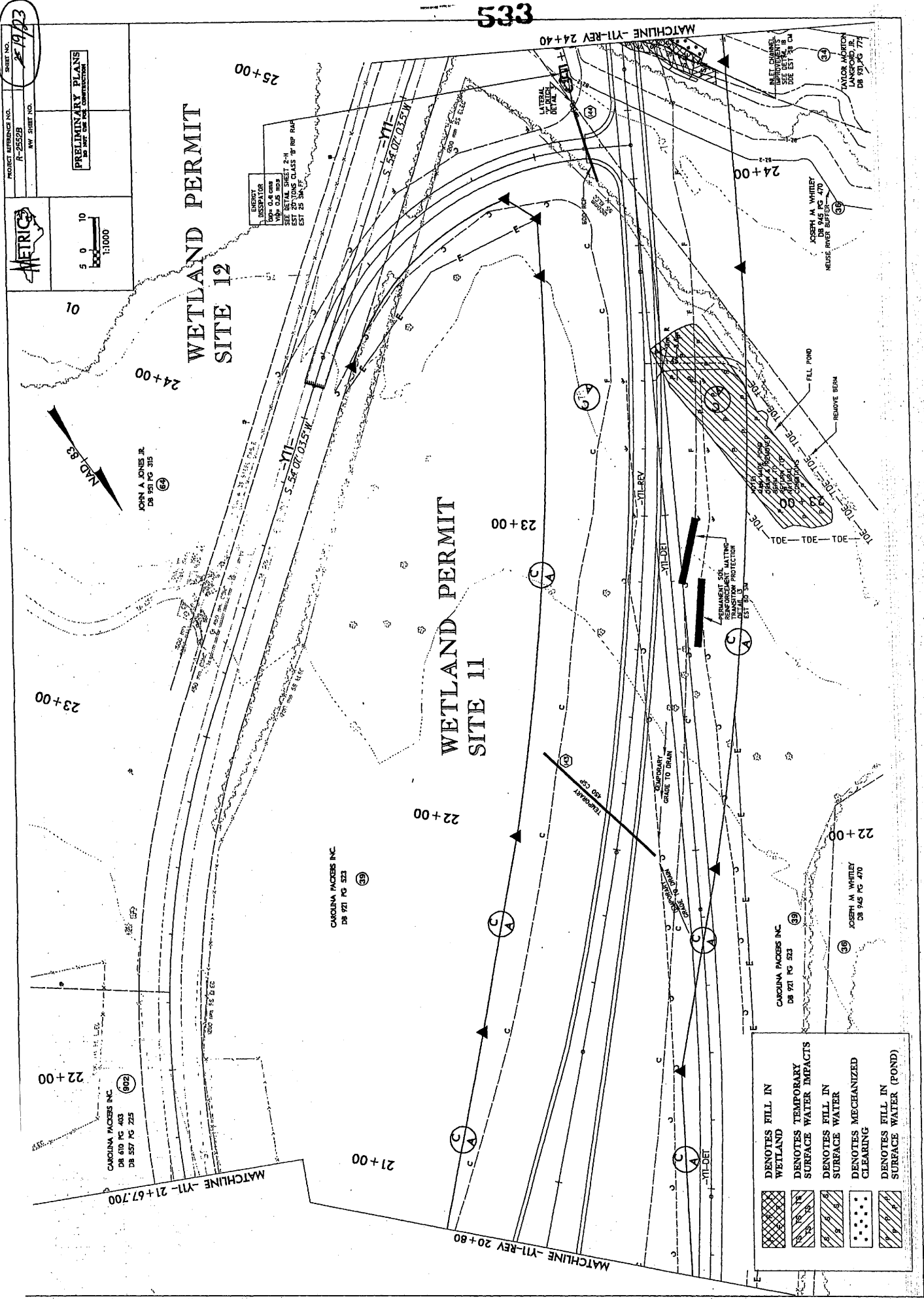
MATCHLINE -L- 101+00

DENOTES TEMPORARY
SURFACE WATER IMPACTS
DENOTES FILL IN
SURFACE WATER

REMOVE EXISTING
DAM ASSE PROPOSED
RIGHT OF WAY
AND DRAIN POND



	DENOTES FILL IN WETLAND
	DENOTES TEMPORARY SURFACE WATER IMPACTS
	DENOTES FILL IN SURFACE WATER
	DENOTES MECHANIZED CLEARING
	DENOTES FILL IN SURFACE WATER (POND)



PROJECT REFERENCE NO. R-255259
SHEET NO. 19 of 22
WV. SHEET NO.

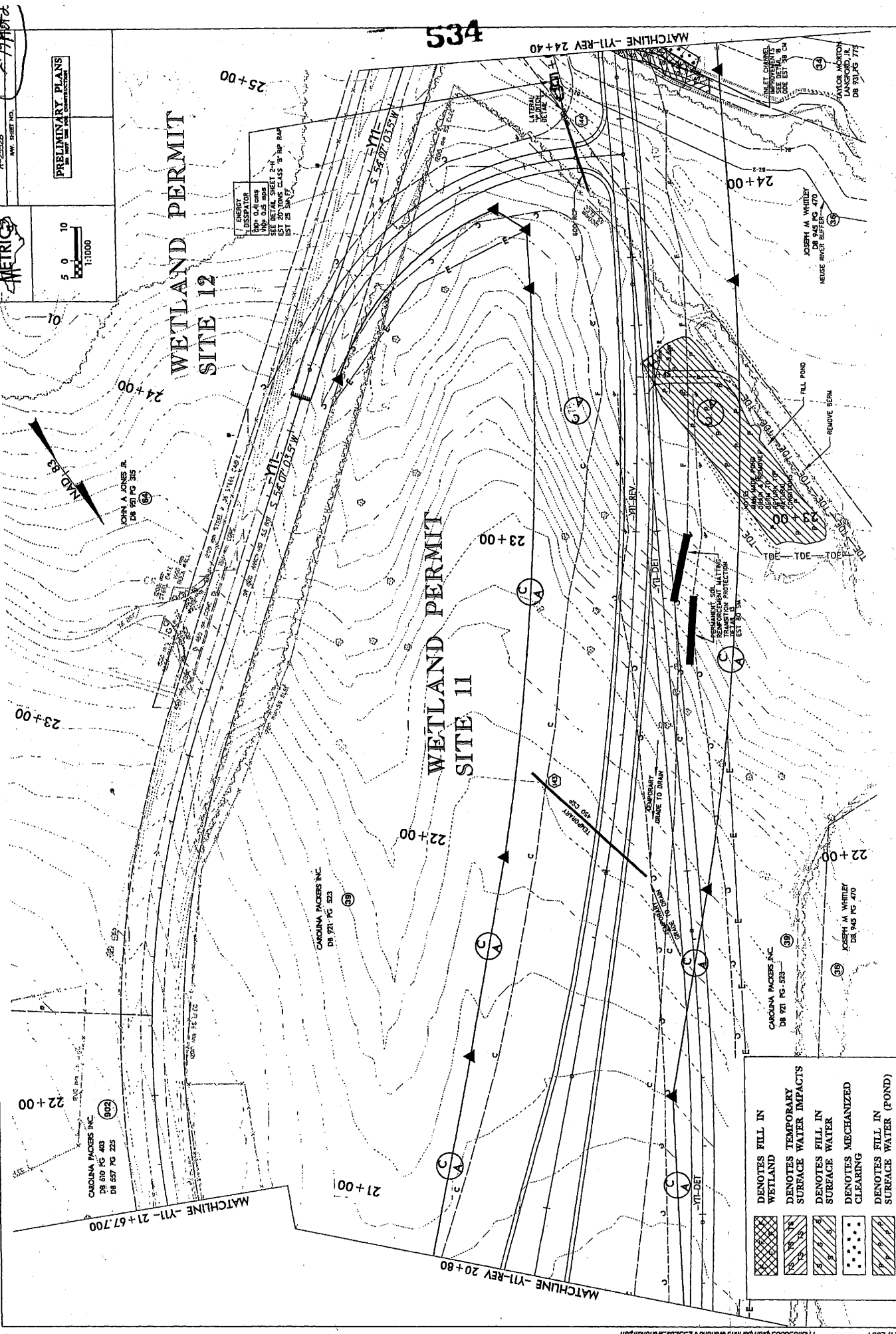
PRELIMINARY PLANS
2010-2011



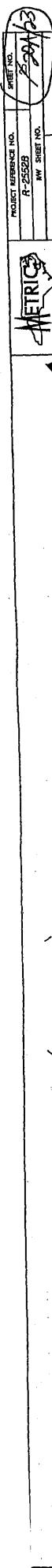
5 0 10
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WETLAND PERMIT SITE 12

WETLAND PERMIT SITE 11



	DENOTES FILL IN WETLAND
	DENOTES TEMPORARY SURFACE WATER IMPACTS
	DENOTES FILL IN SURFACE WATER
	DENOTES MECHANIZED CLEARING
	DENOTES FILL IN SURFACE WATER (POND)



CULVERT HAS NO HISTORY OF
OVERTOPPING EXCEPT DURING
SEPTEMBER 1996
HURRICANE FRANK
WSEL-709

NOTE: THERE ARE NO STRUCTURES
UPSTREAM THAT WILL BE AFFECTED
BY PROPOSED CULVERT

0 STA = 24+48.77 - VII-REV
GRADE POINT ELEV = 72.39
SKEW = 133.00' @ -VII-REV
1 @ 30m x 27m RCBC
W/BEVELED INLET

72 0100 WSEL=71.82 NORMAL TO -VII-REV
1273' -ALONG CULVERT

050 WSEL=71.01

025 WSEL=70.62

010 WSEL=69.84

NORMAL WSEL=67.8
1720' -99

EXISTING -VII- EMBANKMENT
TO BE REMOVED

NATURAL GROUND
LEFT TOP OF BANK

NATURAL GROUND
RIGHT TOP OF BANK

CREEK

NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY

PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)

SHEET 28 OF 23 9162004

31st 21 of 23

WETLAND PERMIT DRAWING

CSR 3 of 4 PROFILE

R-2552B

Site 1298

NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY

PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)

9/16/2004

SHEET 2 OF 23

WETLAND PERMIT DRAWING

CSR 4 of 4 PROFILE

Site 12_{SA}

R-2552B

NOTE: THERE ARE NO STRUCTURES
UPSTREAM THAT WILL BE AFFECTED
BY PROPOSED CULVERT

SCALE:
1"=500' HORIZ.
1"=50' VERT.

NORMAL TO -YII-REV
(24'-11" ALONG CULVERT)

0+00 W.S.E.L.=71.26
0+50 W.S.E.L.=70.93

0+25 W.S.E.L.=70.60

0+62 W.S.E.L.=69.94

NORMAL W.S.E.L.=68.50
(04/20/01)
PROPOSED CHANNEL
IMPROVEMENT

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

0+62 W.S.E.L.=68.50

EXISTING -YII- EMBANKMENT
TO BE REMOVED

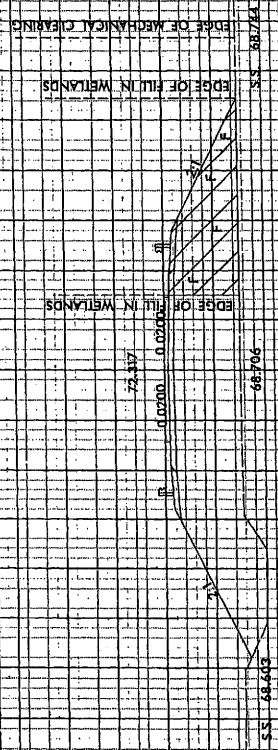
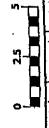
NATURAL GROUND -
LEFT TOP OF BANK

PROPOSED CREEK

NATURAL GROUND -
RIGHT TOP OF BANK

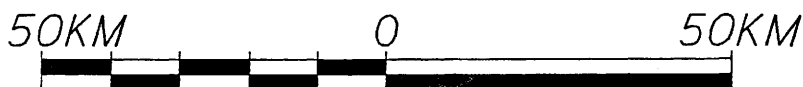
SHEET NO.
23

PROJECT REFERENCE NO.
A-25528

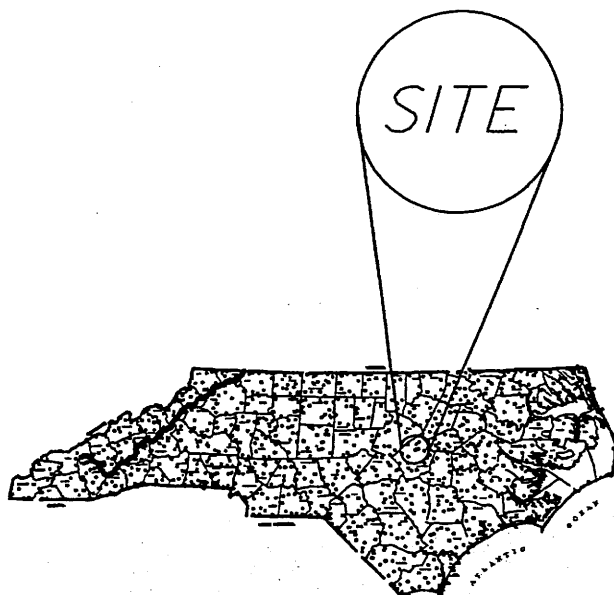


SITE 12
-YII-REV 24 + 60.00

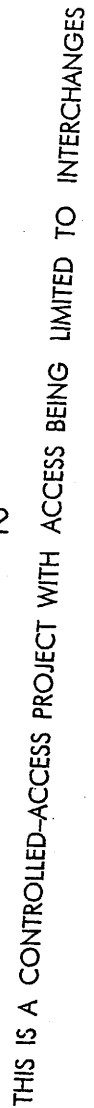
539



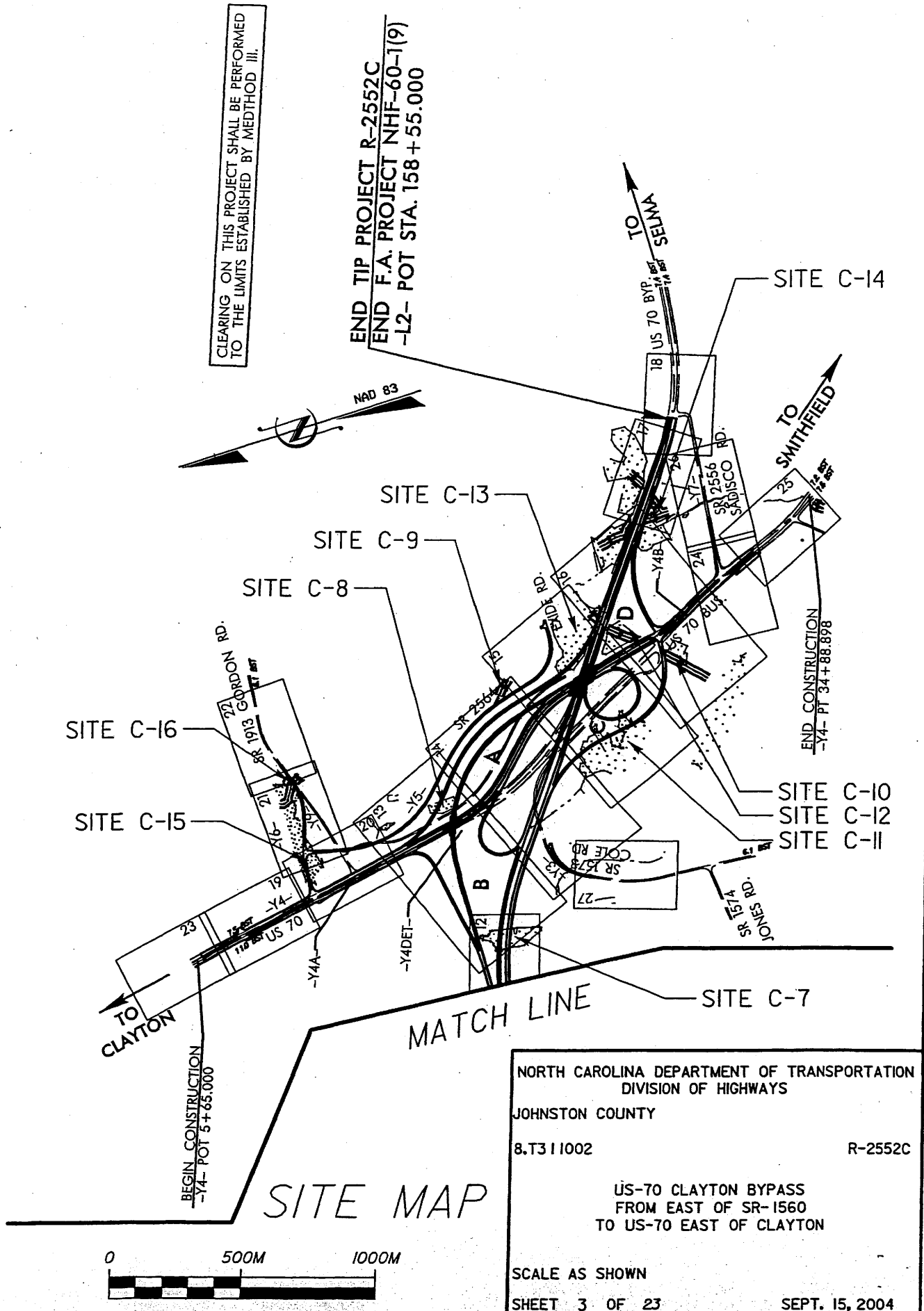
VICINITY MAP



SEPT. 15, 2004



SEPT. 15, 2004



**PROPERTY OWNERS
NAME AND ADDRESS**

PARCEL No.	OWNER'S NAME	ADDRESS
902	Carolina Packers, Inc.	P. O. Drawer 1109 Smithfield, NC 27577
2	Luther Shelby Durham	4483 Little Creek Church Road Clayton, NC 27520
14	Teresa Montgomery	3731 Peele Road Clayton, NC 27520
15	TAP Properties, LLC	273-D Blue Pond Road Clayton, NC 27520
16	Brenda C. Holt & Connie M. Boykin	3687 Peele Road Clayton, NC 27520
20	John Jennings-Williams, Heirs	4335 Little Creek Church Road Clayton, NC 27520
21	Robert Hatcher, Jr.	2498 Peele Road Clayton, NC 27520
26	Scott D. Overbee	P. O. Box 1051 Clayton, NCD LK27520
30	W. J. C. Blinson	7595F US 70W Clayton, NC 27520
31	Vergie B. Wood	616 Barbour St. Clayton, NC 27520
32	Lola's Beauty Shop Limited Partnership	3307 Little Creek Church Road Clayton, NC 27520
35	Norwood Godwin Jones, Jr., et. al.	804 Chestnut Drive Smithfield, NC 27577
38	Carl B. Dean	2000 Neuse Colony Drive Clayton, NC 27520
39	Donald H. Williamson	P. O. Box 605 1546 Piney Grove Church Road Kenly, NC 27542

**N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 8.T311002 R-2552C**

**US-70 CLAYTON BYPASS
FROM EAST OF SR-1560 TO US-70 EAST OF CLAYTON**

**PROPERTY OWNERS
NAME AND ADDRESS**

PARCEL No.	OWNER'S NAME	ADDRESS
43	William R. Jones	P. O. Box 393 Pine Level, NC 27568
45	Daniel L. Heavner	P. O. Box 2346 Smithfield, NC 27577
47	W. E. Lancaster	31 Sadisco Road Clayton, NC 27520
34	Worth Gurley	318 S. McDowell St. Raleigh, NC 27601
52	Theodore James Cihos	7744 U.S. Hwy. 70 West Clayton, NC 27520
56	Elbert D. Mitchell	2367 Gordon Road Clayton, NC 27520
N.C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS JOHNSTON COUNTY PROJECT: 8.T311002 R-2552C US-70 CLAYTON BYPASS FROM EAST OF SR-1560 TO US-70 EAST OF CLAYTON		
SHEET 5 OF 23 September 15, 2004		

WETLAND PERMIT IMPACT SUMMARY (English)

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	L2 108+50/ 111+00	DUAL BRIDGES	0.04	0.03		0.04			0.28	115	
2	L2 117+92/ 118+80	900 RCP				0.06		1.54			
3	L2 118+87/ 120+07	1050 RCP	2.26			0.11					
4	Y1 11+17 RT.	750 RCP					0.00		0.00	26	
5	L2 126+23	1500 RCP					0.03		0.01	282	
6	L2 133+86/ 134+59	DBL. 2.7 x 1.8 RCBC & 1200 RCP & 3.7 x 2.4 RCBC	1.77		0.01	0.40	0.06		0.02	272	
7	L2 137+41/ 138+19	1200 RCP	1.18		0.36	0.13		0.06			
8	Rp. A 9+59/ 10+09	750 RCP	1.06								

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

JOHNSTON COUNTY
PROJECT 8.T311002 (R-2552C)
US-70 CLAYTON BYPASS
FROM EAST OF SR-1560
TO US-70 EAST OF CLAYTON

SHEET 18 OF 23 November 15, 2004

WETLAND PERMIT IMPACT SUMMARY (English)

PROJECT TOTALS:											
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
9	Y5 20+00 LT	600 RCP	0.01			0.02			0.00		
10	Rp. C 8+00 RT	2.7 x 1.8 RCBC & 1800 RCP	0.02			0.04	0.02		0.00	52	
11	Rp C 2+80/ 5+30	1200 RCP & 600 RCP	0.97		0.36	0.27					
12	Y4 25+12/ 26+57	1200 RCP				0.03	0.00		0.00	16	
13	Rp. A 0+00/ 2+92	1050 RCP	0.97			0.22	0.01			30	
14	L2 152+63/ 156+08	2.44 x 1.82 RCBC 1600 STEEL PIPE 900 RCP 600 RCP	0.12		0.02	0.21	0.01		0.01	33	
15	Y6 10+71/ 12+50	750 RCP & 600 RCP	1.09		0.00	0.29					
16	Y6 13+95/ 14+90	DBL. 1500 RCP			0.01	0.05	0.01		0.01	52	

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

JOHNSTON COUNTY
PROJECT 8.T311002 (R-2552C)

US-70 CLAYTON BYPASS
FROM EAST OF SR-1560
TO US-70 EAST OF CLAYTON

SHEET 7 OF 23 November 15, 2004

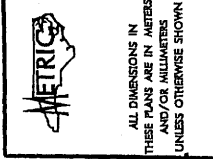
TIP PROJECT: R-2552C

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

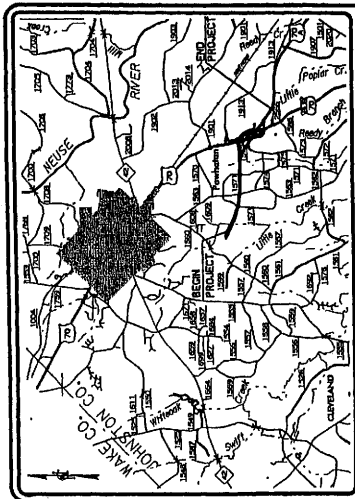
JOHNSTON COUNTY

LOCATION: US 70 (CLAYTON BYPASS) FROM EAST
OF SR 1560 TO US 70 EAST OF CLAYTON
TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL,
SIGNALS, STRUCTURES AND CULVERTS



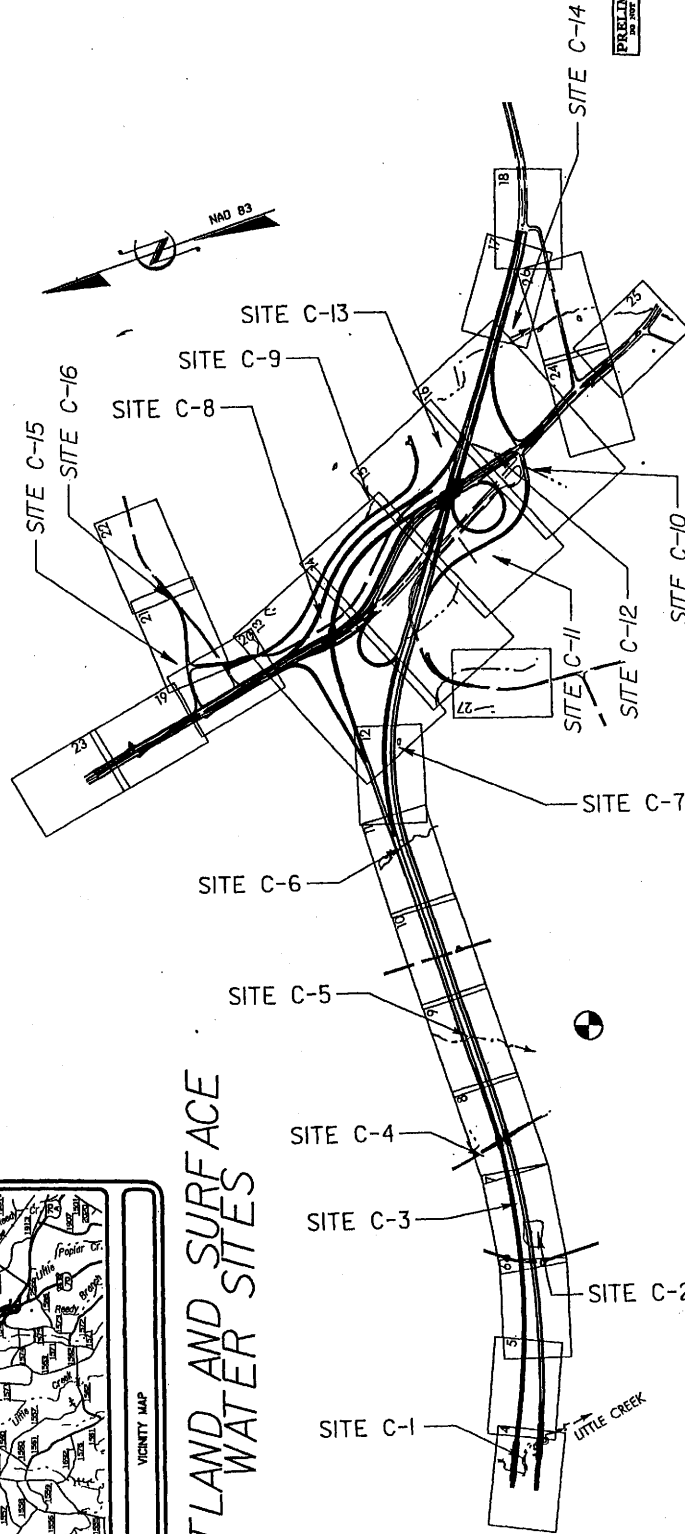
PROJECT NUMBER	R-2552C	SHEET	1
PROJECT LOCATION	NHE-00-109	P.E.	R.W. & UTIL
PROJECT DATE	34459.2.7		

SH-1 8/23



VICINITY MAP

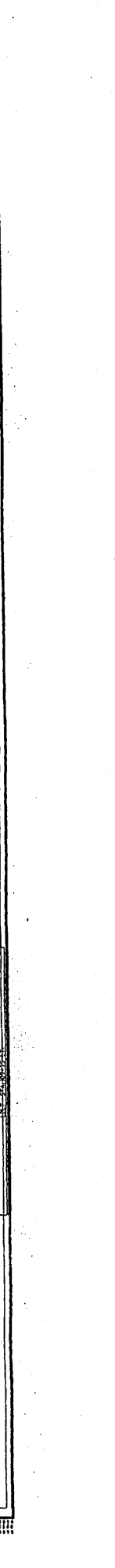
WETLAND AND SURFACE
WATER SITES

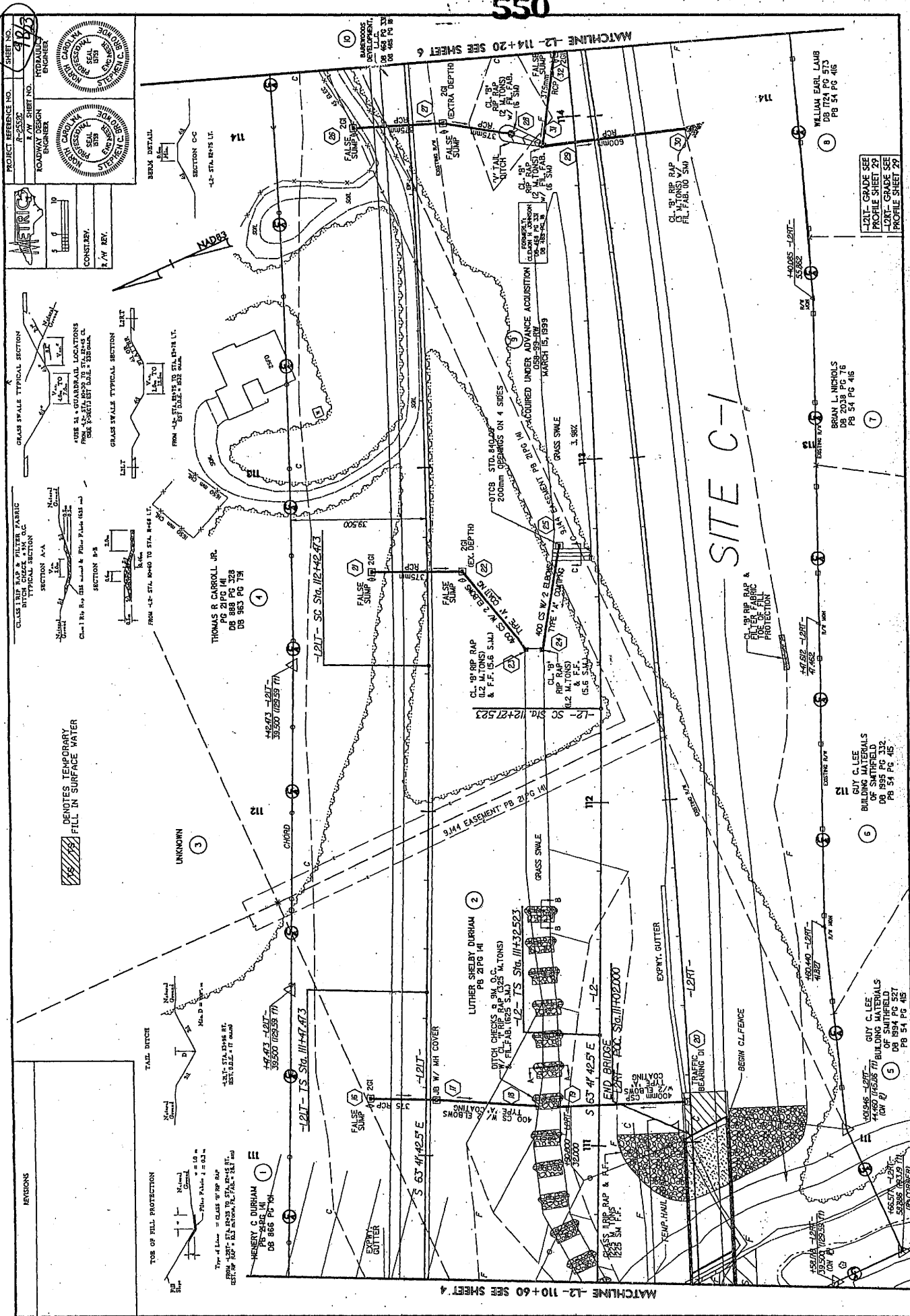


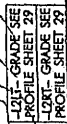
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

547

DESIGN DATA ADT 2005 = 29,500 ADT 2025 = 55,800 DHV = 10 % D = 65 % T = 16 % V = 110 km/h * TIST 10% + DUAL 6%		PROJECT LENGTH LENGTH ROADWAY TIP PROJECT R-2552C = 4.842 km LENGTH STRUCTURE TIP PROJECT R-2552C = 0.160 km TOTAL LENGTH TIP PROJECT R-2552C = 5.002 km -L2-RT WAS USED TO DETERMINE STRUCTURE LENGTH		GRAPHIC SCALE PLANS 1" = 100' 1" = 100' PROFILE (HORIZONTAL) 1" = 100' PROFILE (VERTICAL) 1" = 20'	
Prepared in the Office of: LOCHNER N.W. LOCHNER, INC., SUITE 202 2400 N.W. 17th Ave., Fort Lauderdale, FL 33309 FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS		RIGHT OF WAY DATE: May 16, 2003 LETTING DATE: May 17, 2005		HYDRAULICS ENGINEER STATE DESIGN ENGINEER ROADWAY DESIGN ENGINEER PROJECT DESIGN ENGINEER PROJECT ENGINEER - DESIGN SERVICES	
Stephen C. Browde, P.E. PROJECT ENGINEER		Thomas A. McCloskey, P.E. PROJECT DESIGN ENGINEER		Teresa Bruton, P.E. PROJECT ENGINEER - DESIGN SERVICES	
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA		STATE DESIGN ENGINEER DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION		APPROVED DIVISION ADMINISTRATOR	

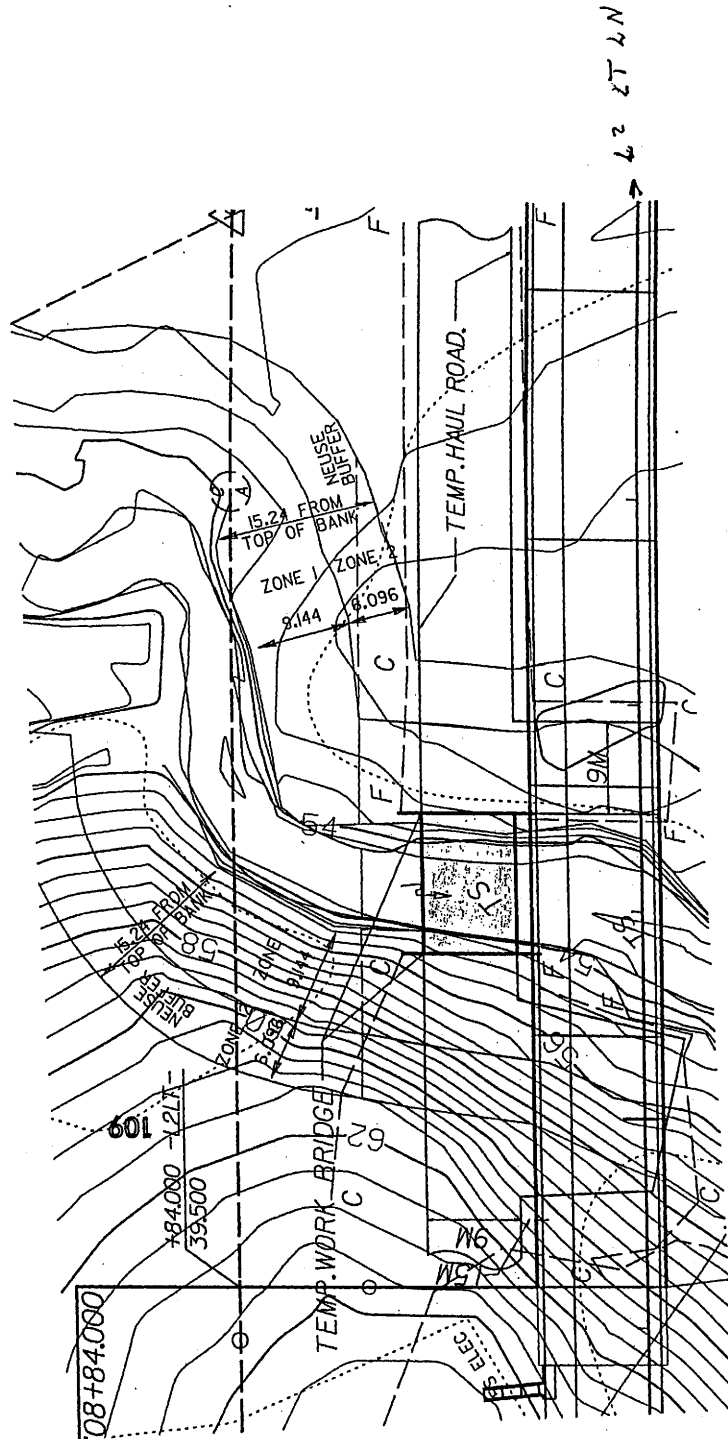






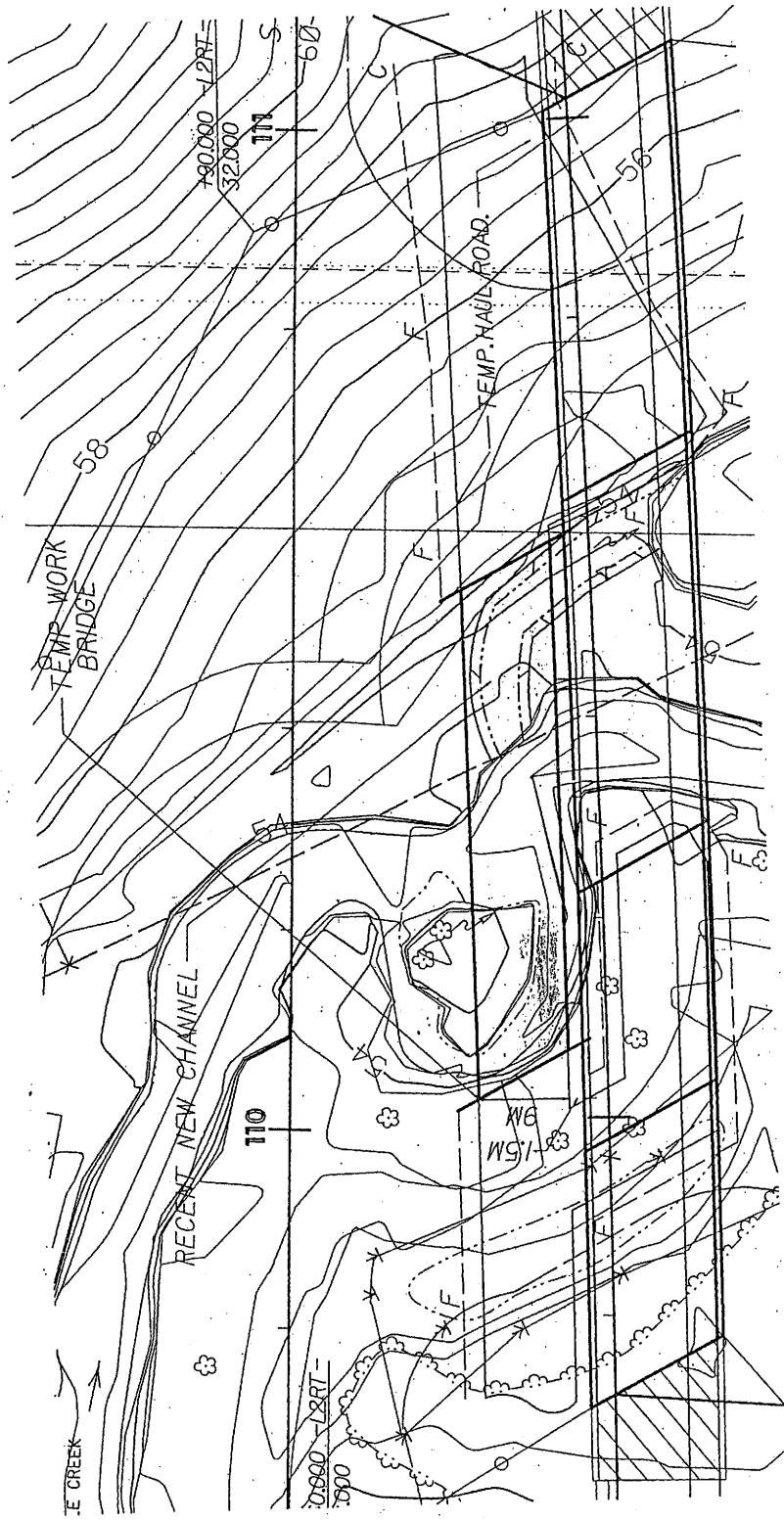
Sh. 9Dof23

552



51+95 of 23

553

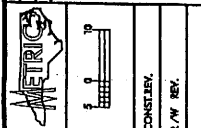


RECEIVED

JAN 10 2005

RALEIGH REGULATORY FIELD OFFICE

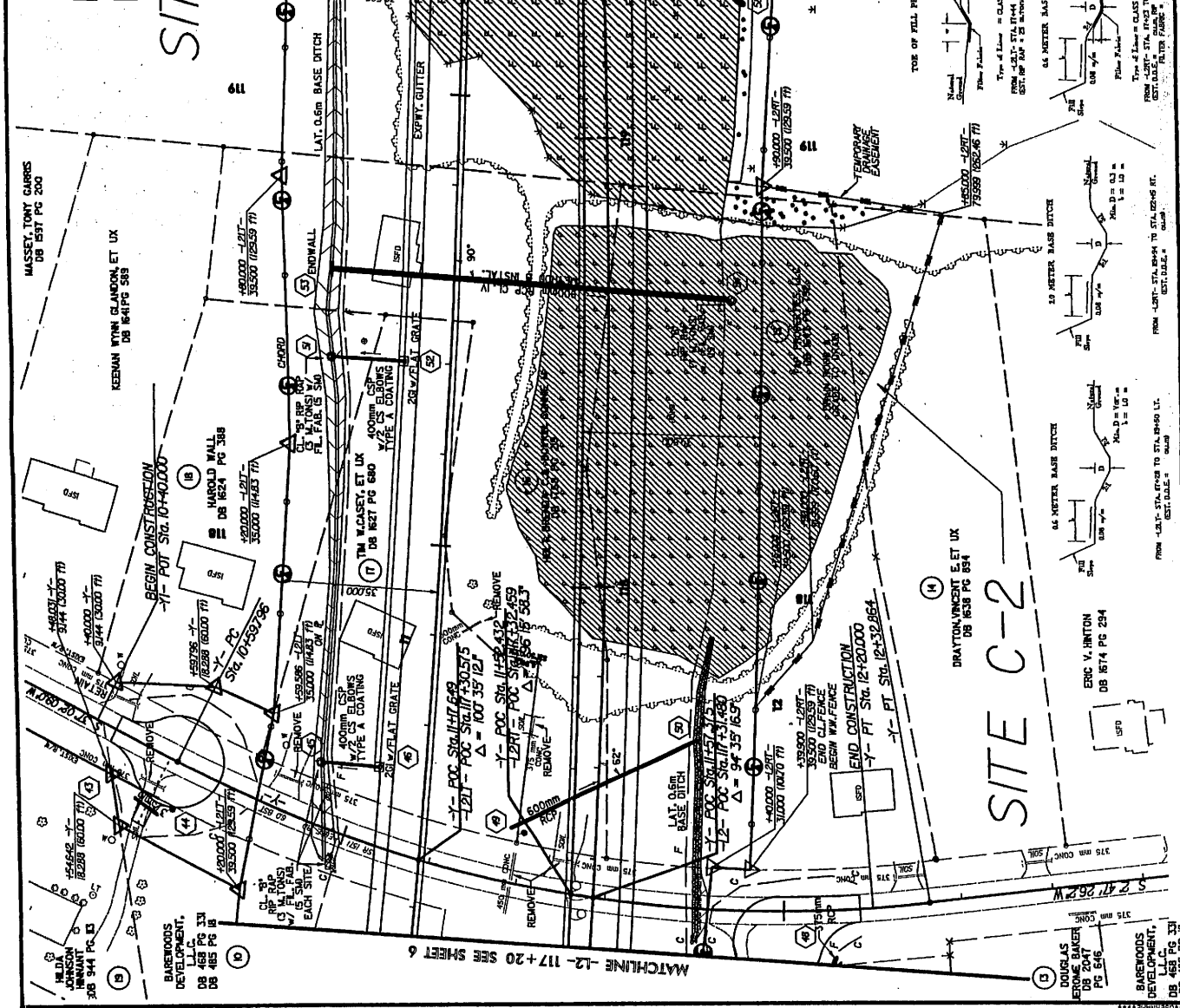
PROJECT REFERENCE NO.	1-2552
SHEET NO.	10
DESIGNER	ROADWAY DESIGN ENGINEER
CHECKER	TORALUIS ENGINEER
DATE	10/1/88
PRELIMINARY PLANS	AS SHOWN ON THESE PLANS
CONST. REV.	



DENOTES FILL IN WETLAND
 DENOTES MECHANIZED CLEARING
 DENOTES FILL IN SURFACE WATER (POND)

SITE C-3

JOHN JENNINGS WILLIAMS, HERS
DB 922 PG 682



SITE C-2

BRATTON WILSON, ET UX
DB 835 PG 651

ERIC V. HINTON
DB 874 PG 234

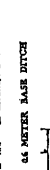
DOUGLAS JOHNSON
DB 2047 PG 546

BARBOODS DEVELOPMENT,
DB 463 PG 131

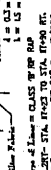
TOE OF FILL PROTECTION



64 METER BASE DITCH



64 METER BASE DITCH



64 METER BASE DITCH

PI STA 114+00.00
Δ = 114.423 (17)
Δ = 114.423
R = 289.561
SE = EXIST.

-L21- GRADE SEE
PROFILE SHEET 31
 -L22- GRADE SEE
PROFILE SHEET 50
 -L23- GRADE SEE
PROFILE SHEET 31

JOHN JENNINGS WILLIAMS, HERS
DB 922 PG 682

D.A. = 1.3 No.
 9 = 1.67
 55 = 0.48 cmg
 V2 = 0.46 cmg
 C10 = 0.51 M/S

554
MATCHLINE -L2- 120+00 SEE SHEET 9

MATCHLINE -L2- 117+20 SEE SHEET 6

PROJECT REFERENCE NO. 10123
 SHEET NO. 10123
 R/W SHEET NO. 10123
 ROADWAY DESIGN
 ENGINEER
 PRELIMINARY PLANS
 FOR THE
 CONSTRUCTION



CONTRACT NO. 10123
 R/W REV. 1

DENOTES FILL IN
 WETLAND
 DENOTES MECHANIZED
 CLEARING
 DENOTES FILL IN
 SURF
 (POND)

SITE C-3

JOHN JENNINGS WILLIAMS, HEIRS
 DB 922 PG 682

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ENDWALL

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MASSEY, TONY GARRIS
 DB 581 PG 200

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BEGIN CONSTRUCTION
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END CONSTRUCTION
 1/1 - POT STA 12+00.00

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DOUGLAS
 DB 485 PG 12

485 PG 12

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 DB 485 PG 12

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485 PG

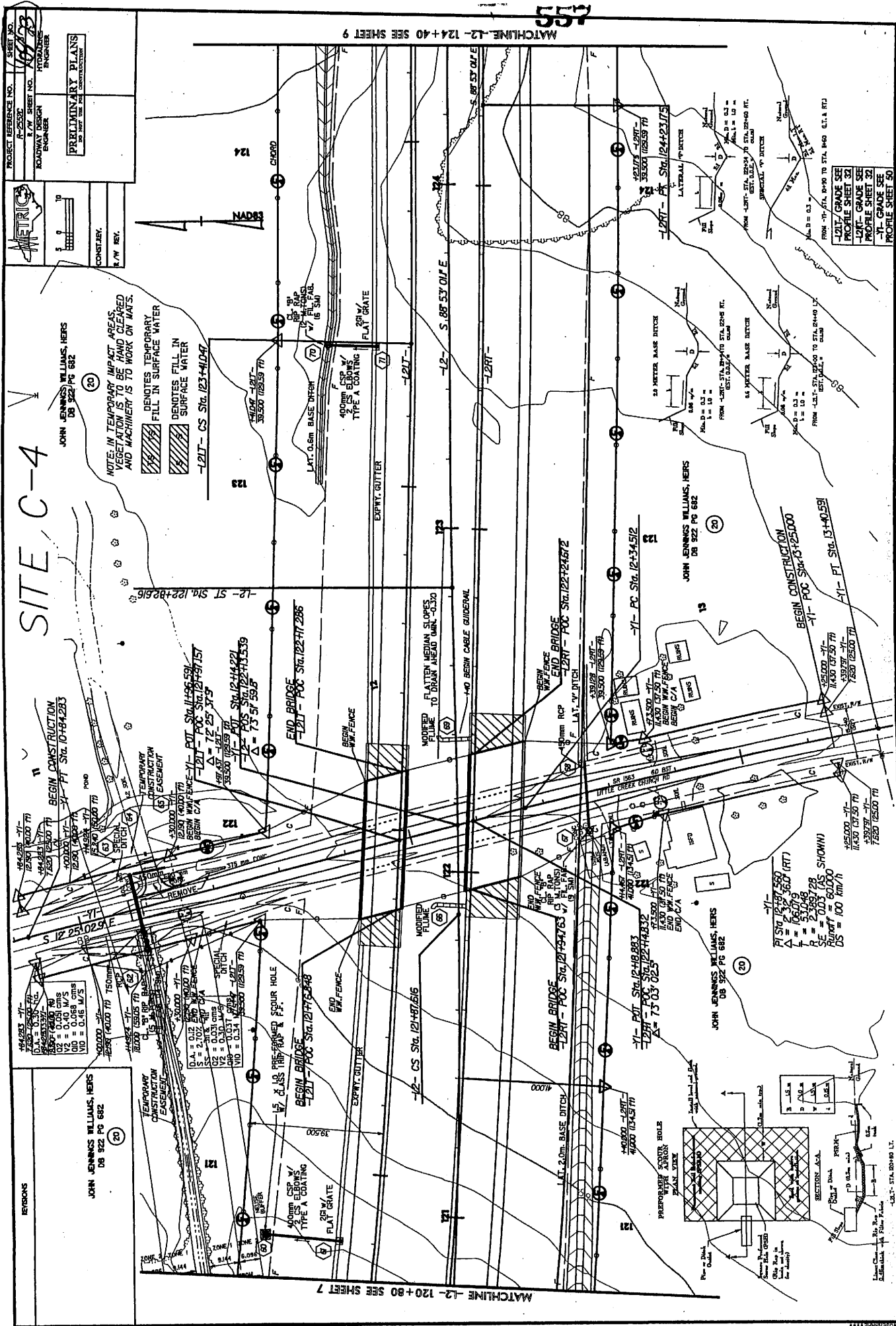
REVISED

$\overline{DS} = 100 \text{ km/h}$

Line Class 1
0.45m thick - 11

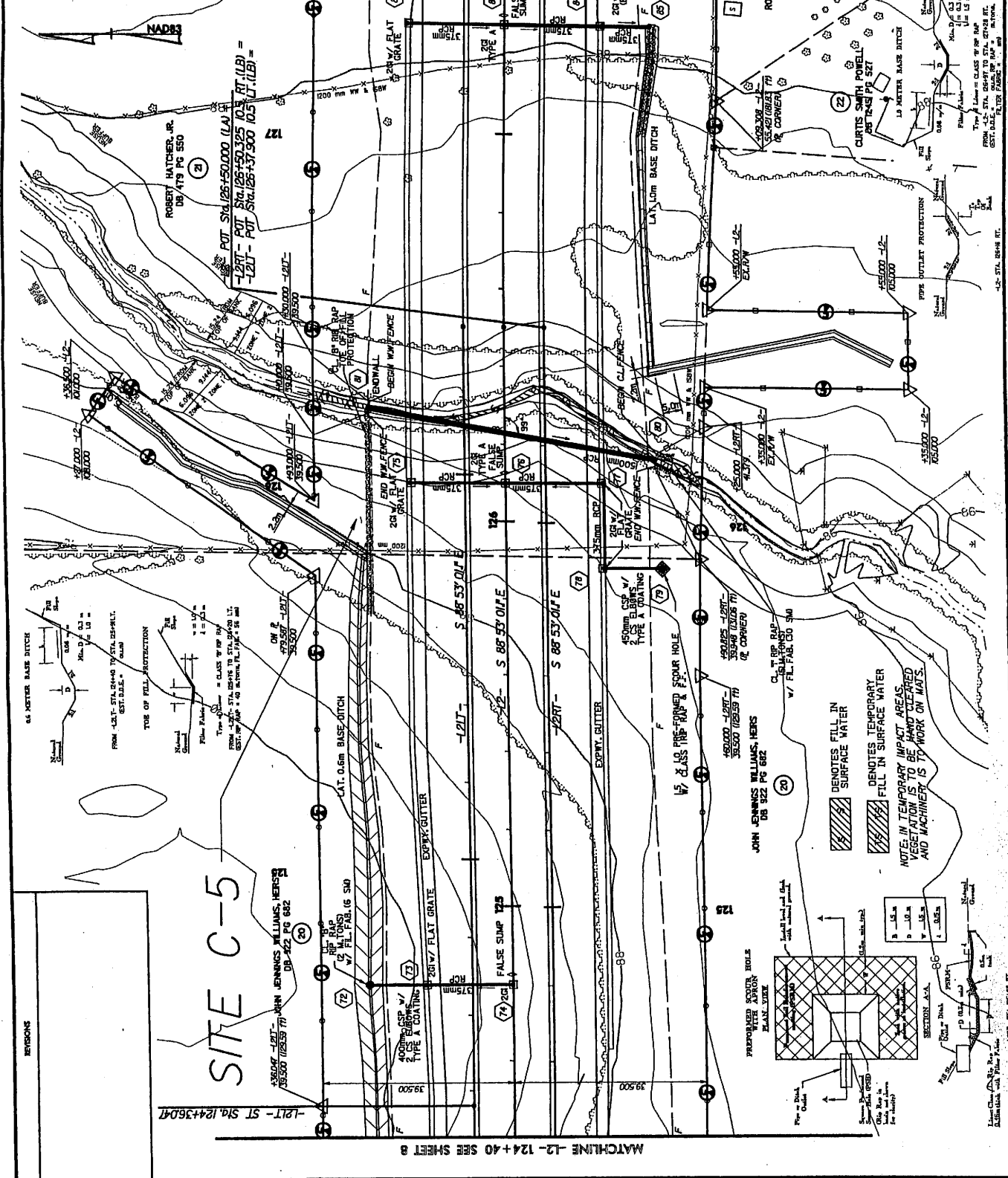
SITE, C-4

JOHN JENNINGS WILLIAMS, HERS
DB 922 PG 682

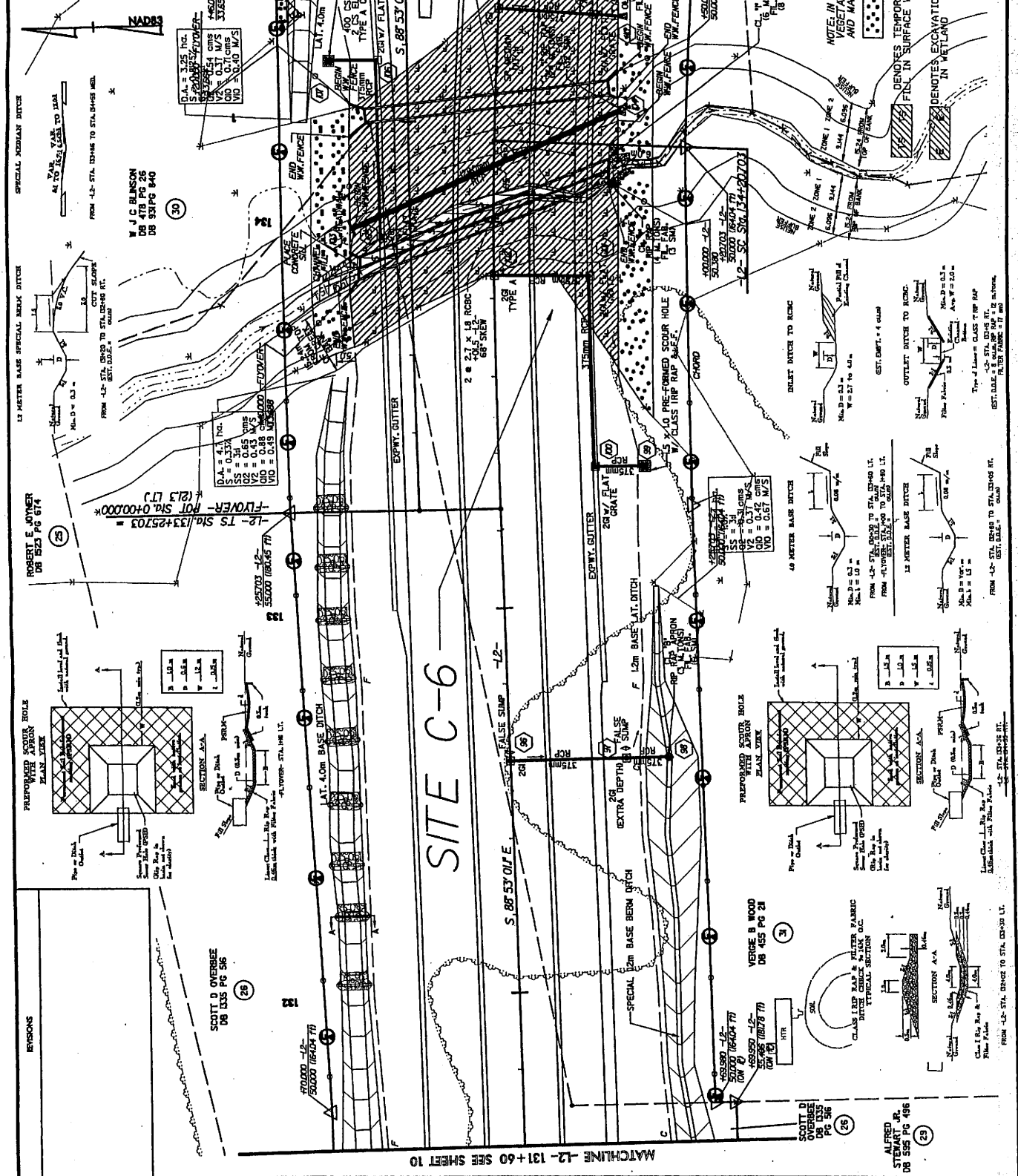


-L2LT- GRADE SEE PROFILE SHEET 32
-L2RT- GRADE SEE PROFILE SHEET 32
-Y1- GRADE SEE PROFILE SHEET 50

-L.T.- STA. 20+80 L.T.



		PROJECT REFERENCE NO.	SHEET NO.
		1. PROJECT 2. I. M. SHEET NO. 3. ROADWAY DESIGN 4. ENGINEER	1. 11B/23 2. HYDRAULICS 3. ENGINEER
		PRELIMINARY PLANS	
		DO NOT USE FOR CONSTRUCTION	
			11B/23
		CONSENT.	
		I. M. REV.	

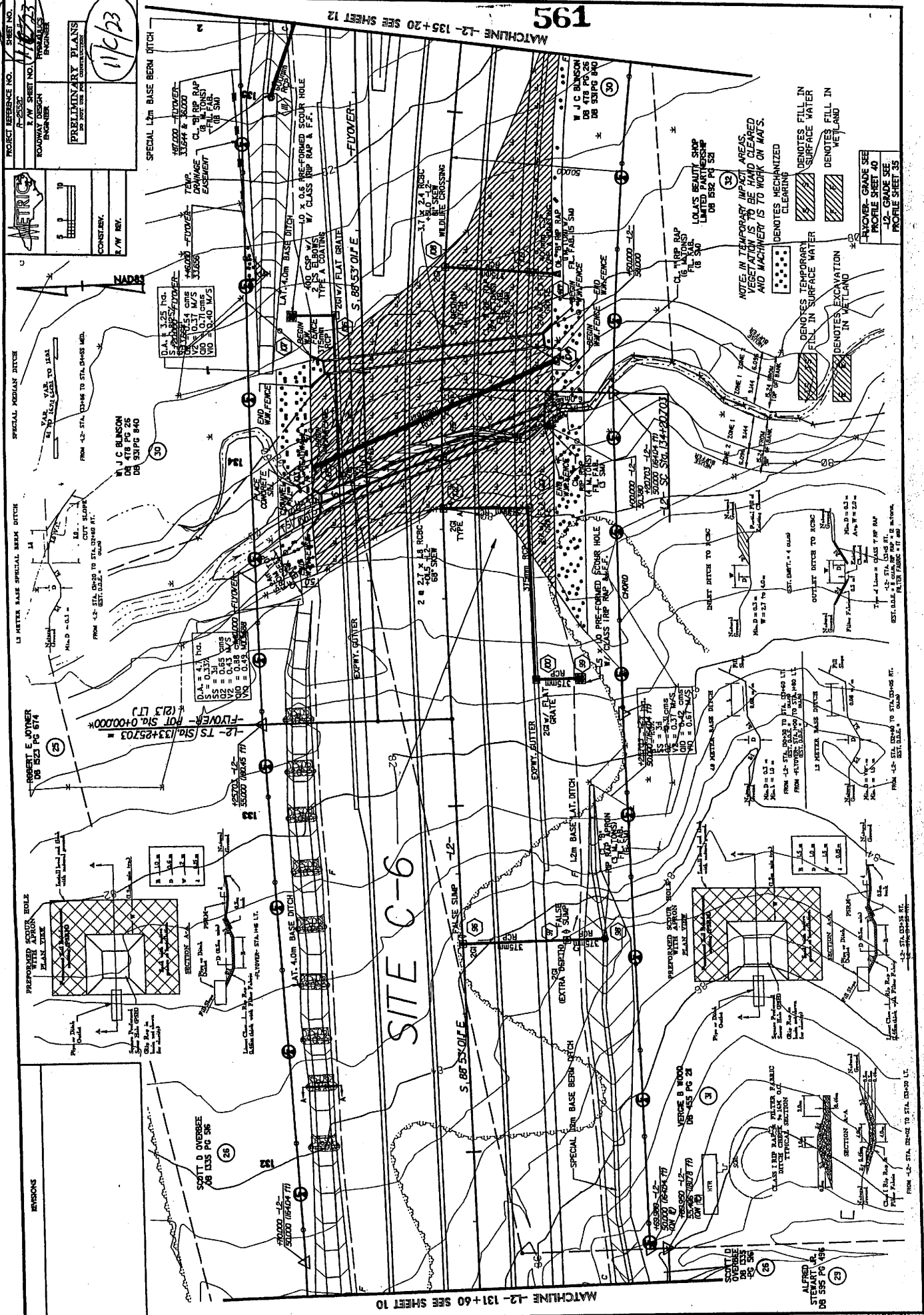


NOTE: IN TEMPORARY IMPACT AREAS, VEGETATION IS TO BE HAND CLEARED AND MACHINERY IS TO WORK ON MATS.


 DENOTES FILL IN SURFACE WATER


 DENOTES FILL IN WETLAND

-FLYOVER- GRADE SEE PROFILE SHEET 40
-I2- GRADE SEE PROFILE SHEET 35



PROJECT REFERENCE NO.	SHEET NO.
	172/23
R-2555C	HYDRAULIC ENGINEER
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

172/23

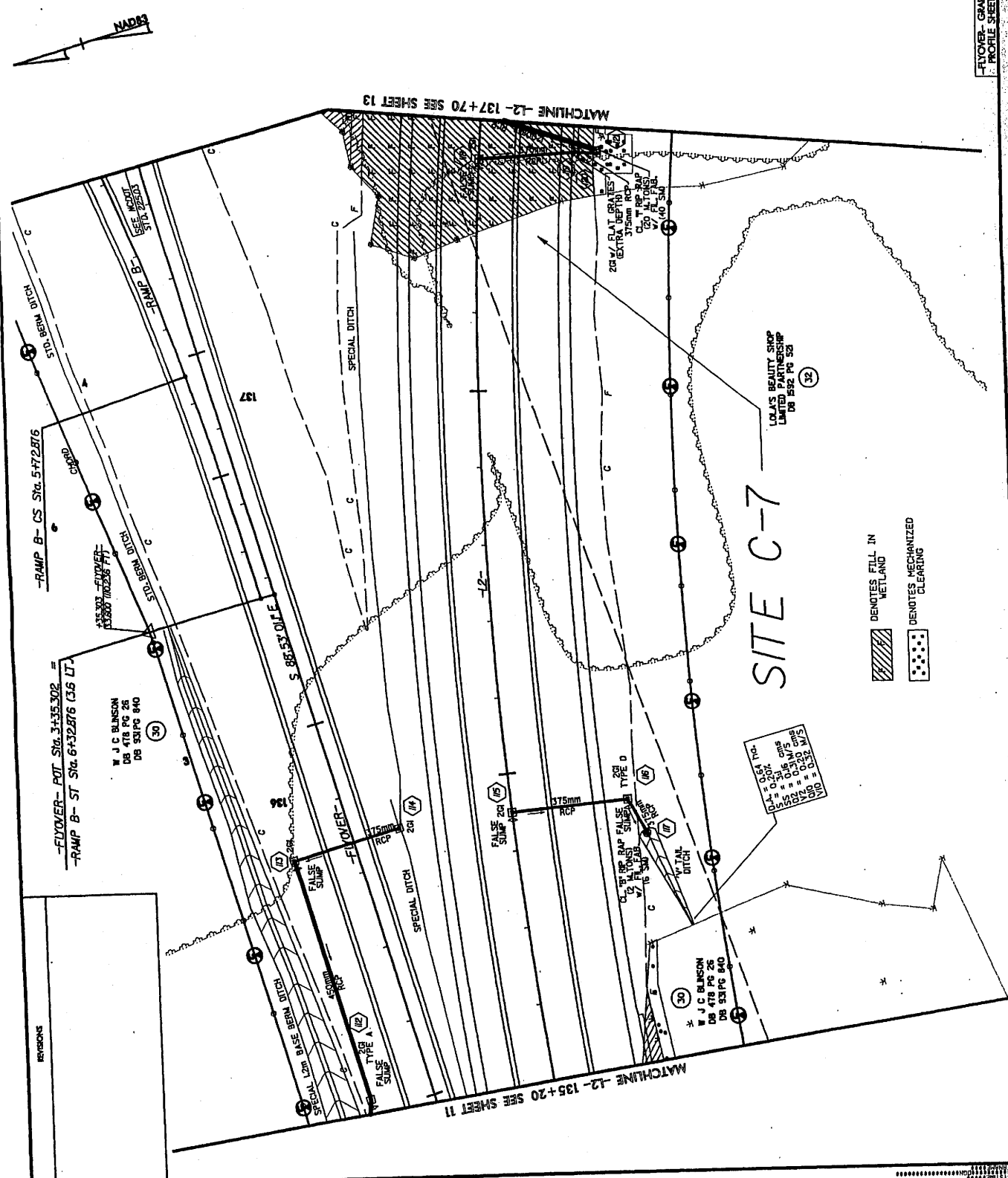




CONSENY.

R/W REV.

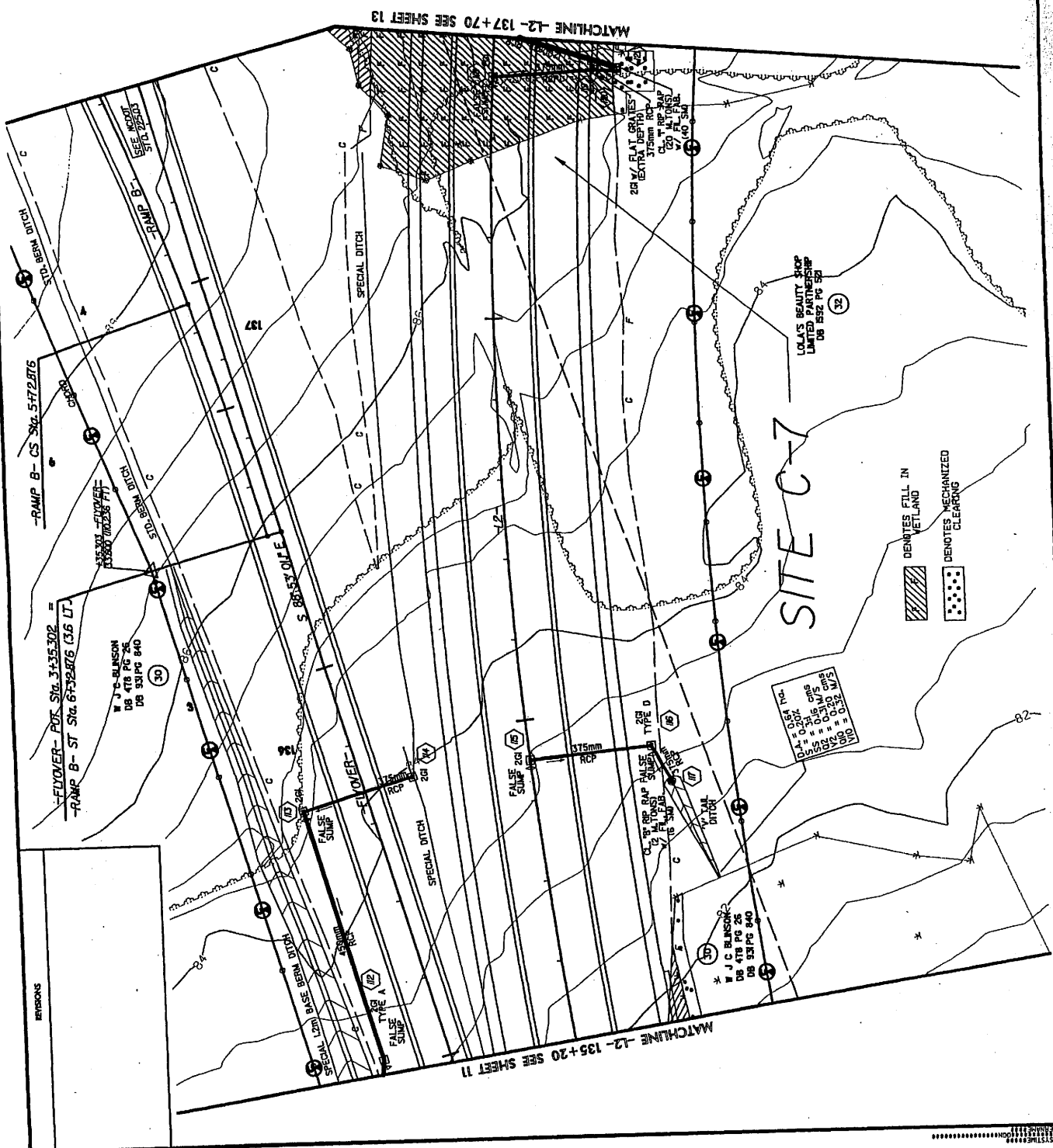
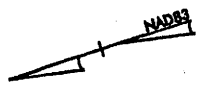
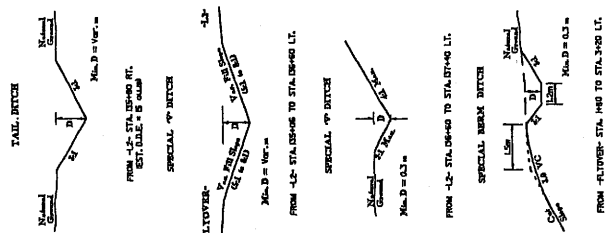
172/23



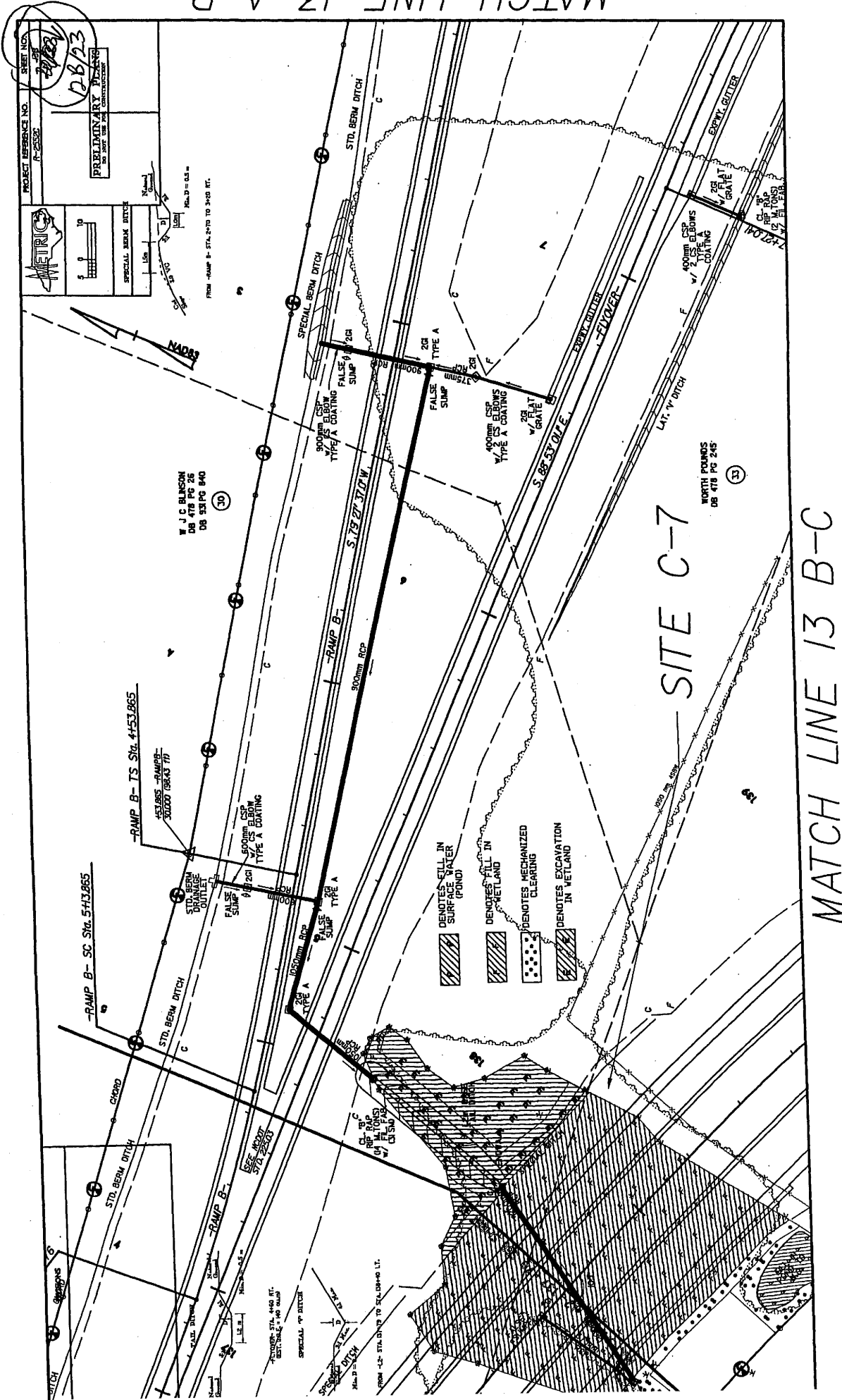
-FLYOVER- GRADE SEE PROFILE SHEET 40	-RAMP B- GRADE SEE PROFILE SHEET 45
	-L2- GRADE SEE PROFILE SHEET 35

562

A graphic showing a metric ruler with markings for 5, 9, and 10. The word "METRIC" is written vertically along the ruler.



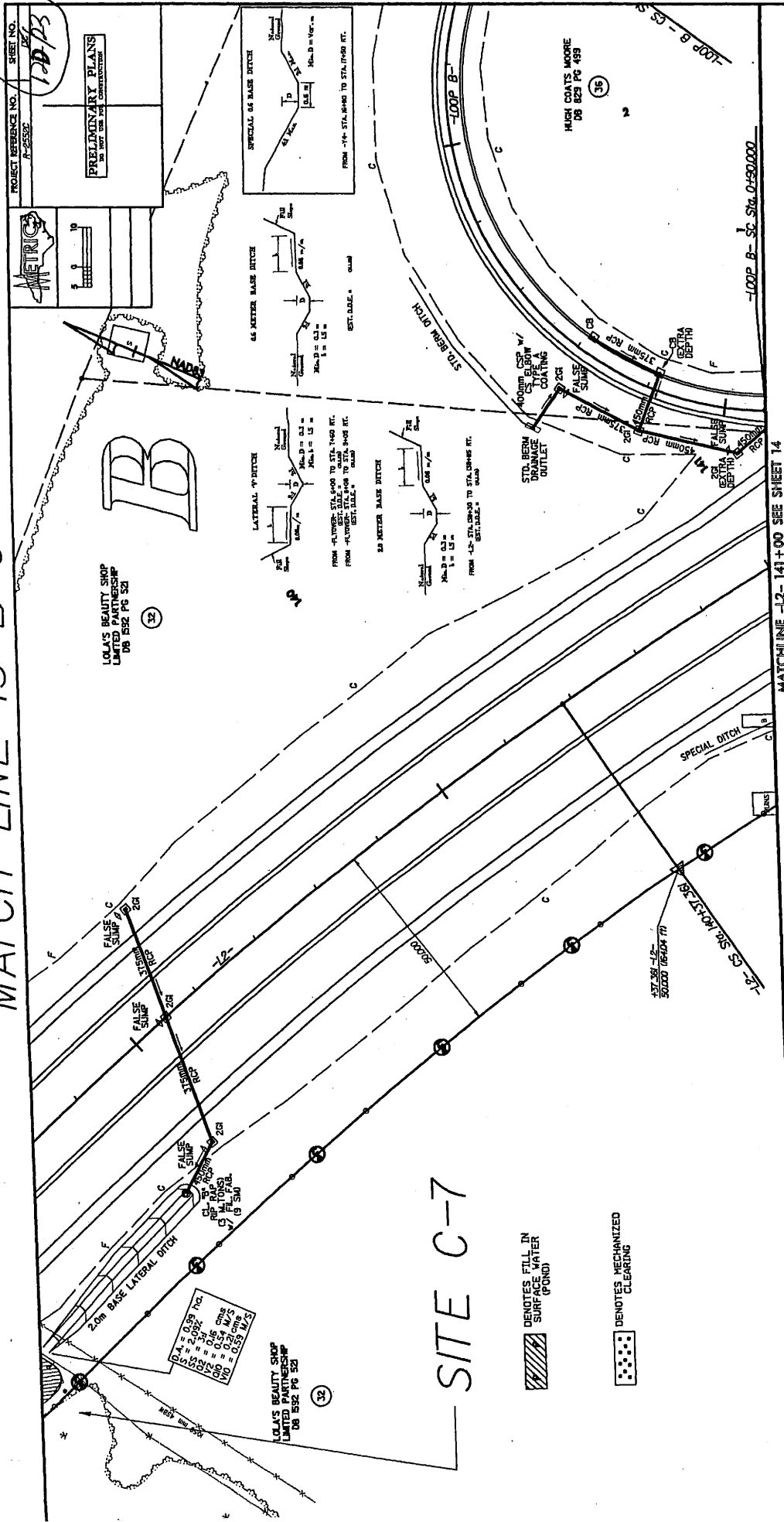
FLYOVER- GRADE SEE PROFILE SHEET 40	-RAMP B- GRADE SEE PROFILE SHEET 45
	-I2- GRADE SEE PROFILE SHEET 35



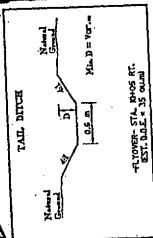


MATCH LINE 13 B-C

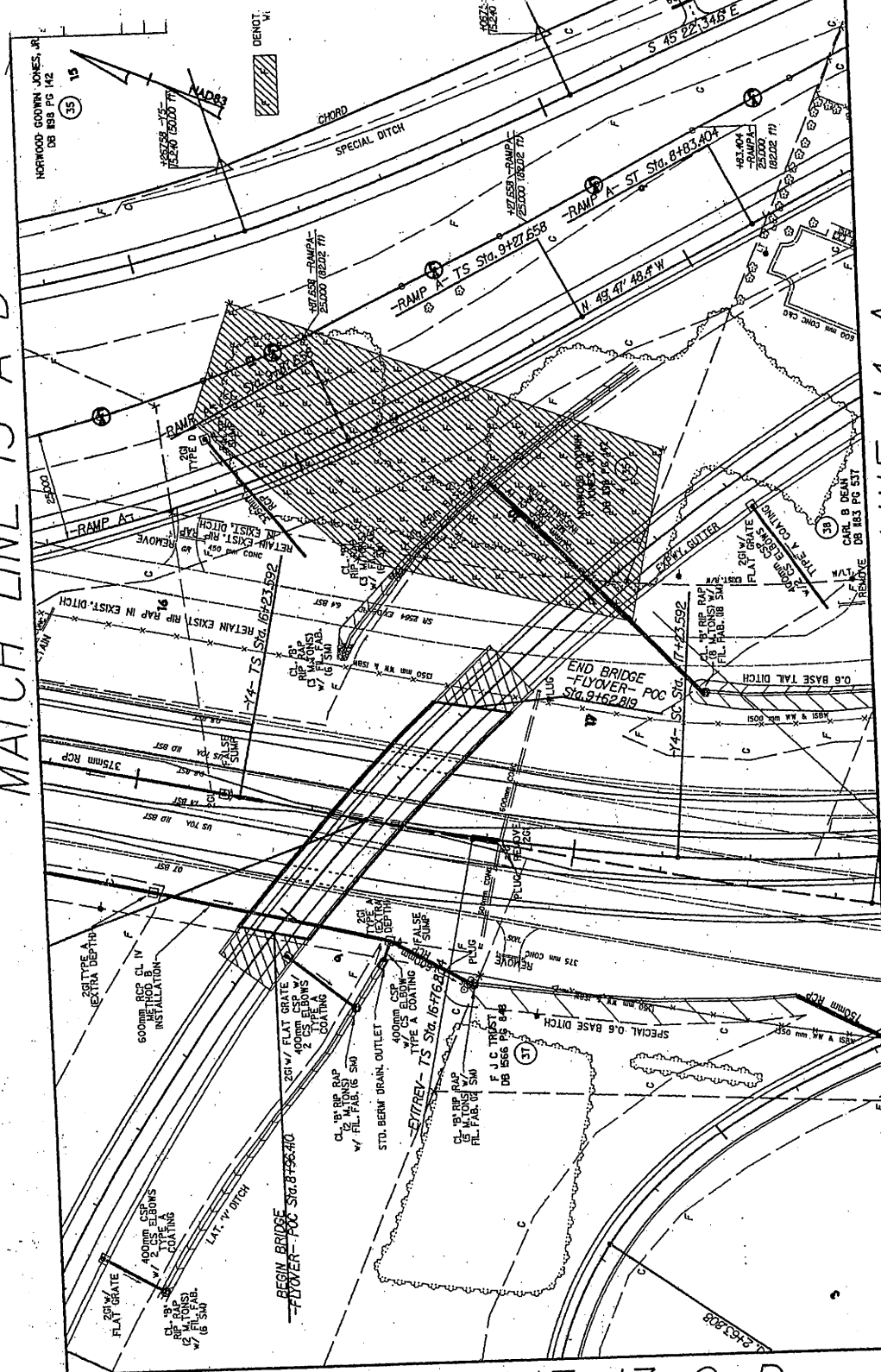
SITE C-7



567



MATCH LINE 13 A-D

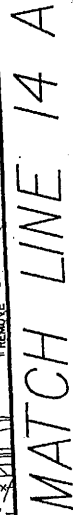


FLYOVER- GRADE SEE PROFILE SHEETS 40.41	-Y4- GRADE SEE PROFILE SHEET 55	RAMP A- GRADE SEE PROFILE SHEETS 43.44	RAMP B- GRADE SEE PROFILE SHEETS 44.45	-12- GRADE SEE PROFILE SHEET 36	-LOOP B- GRADE SEE PROFILE SHEET 45
--	------------------------------------	---	---	------------------------------------	--

MATCH LINE 14 A

SITE C-8

MATCH LINE 13 C-D

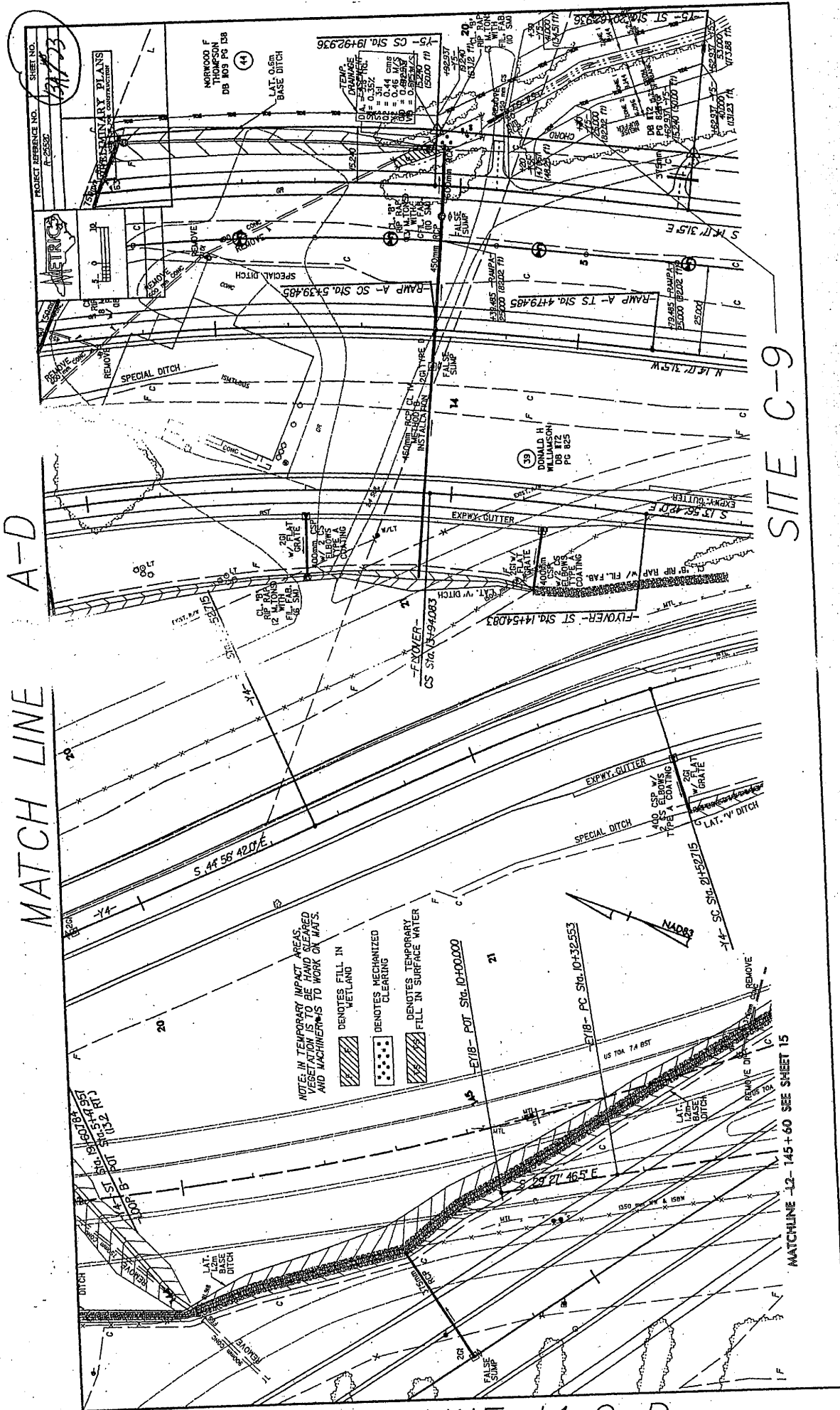


SITE C-8

MATCH LINE 13 C-D

MATCH LINE

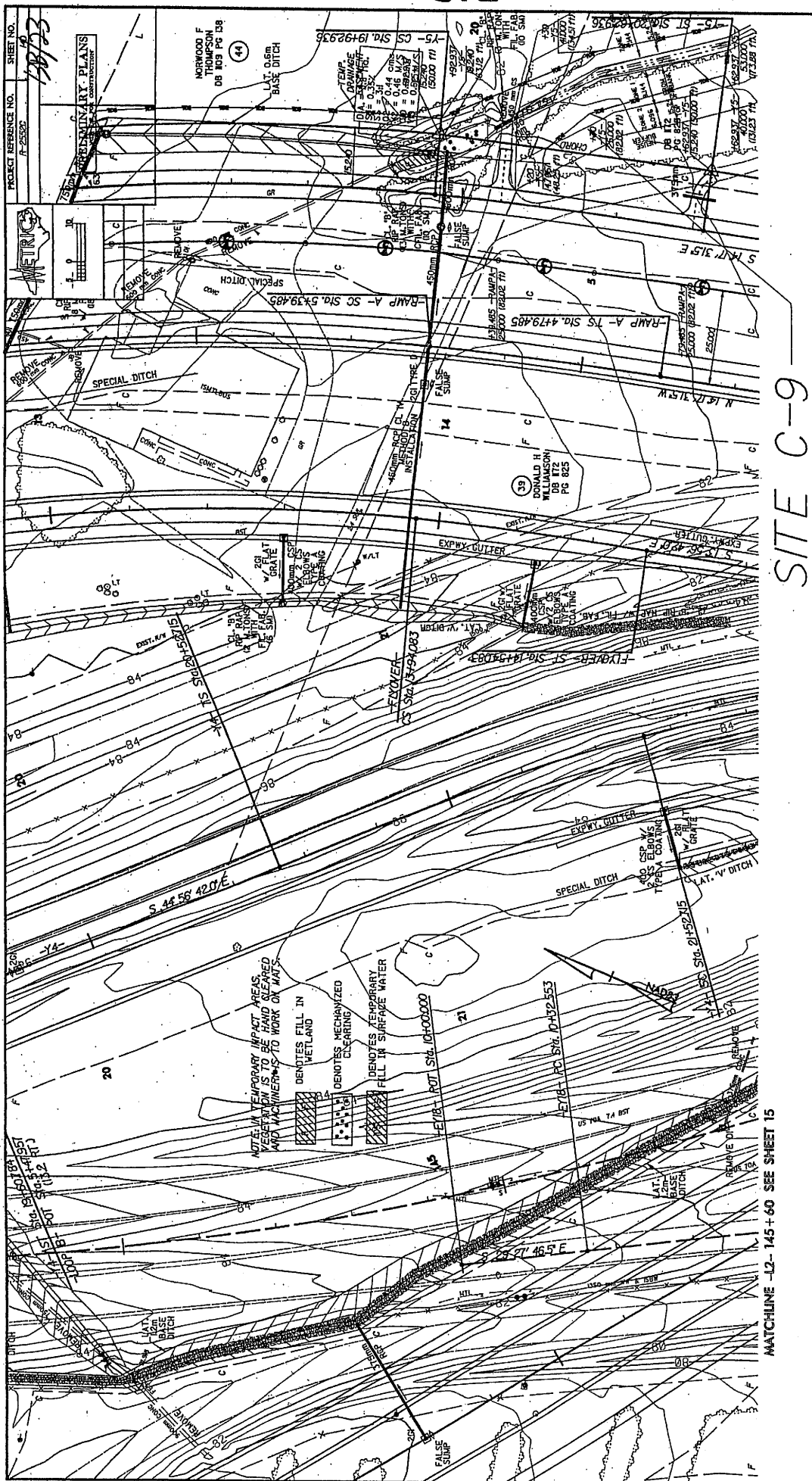
A-D



SITE C-9

MATCHLINE 12-145+60 SEE SHEET 15

MATCH LINE 14.C-D



WATERMACHINE -12- 145+60 SEE SHEET 15

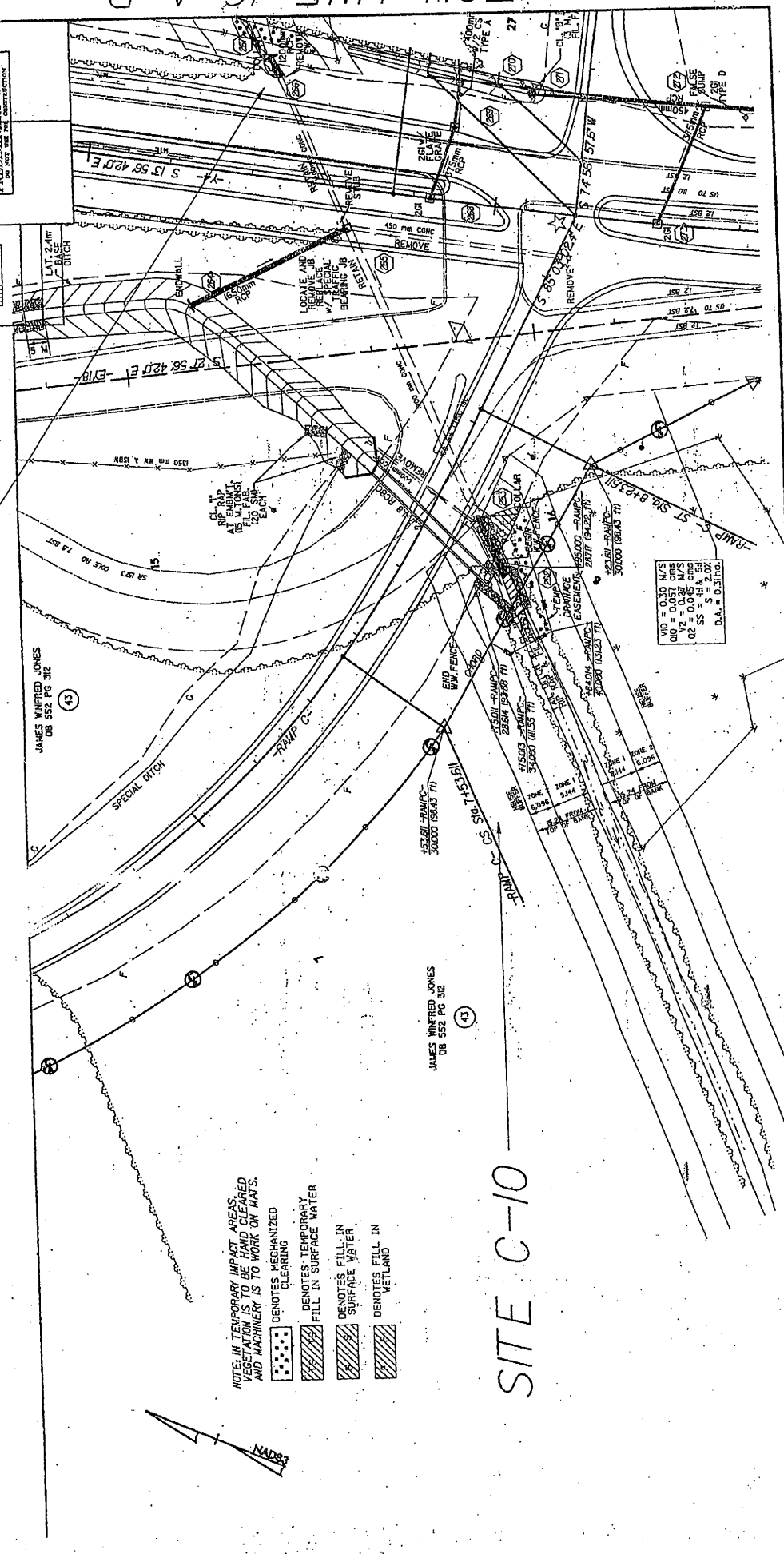
MATCH LINE 14 C-D

PROJECT REFERENCE NO. R-255C
SHEET NO. 4/23



PRELIMINARY PLANS
FOR THE
CONSTRUCTION

SITE C-12



- NOTE: IN TEMPORARY IMPACT AREAS,
VEGETATION IS TO BE HAND CLEARED
AND MACHINERY IS TO WORK ON MATS.
- DENOTES MECHANIZED CLEARING
 - ▨ DENOTES TEMPORARY FILL IN SURFACE WATER
 - ▨ DENOTES FILL IN SURFACE WATER
 - ▨ DENOTES FILL IN WETLAND

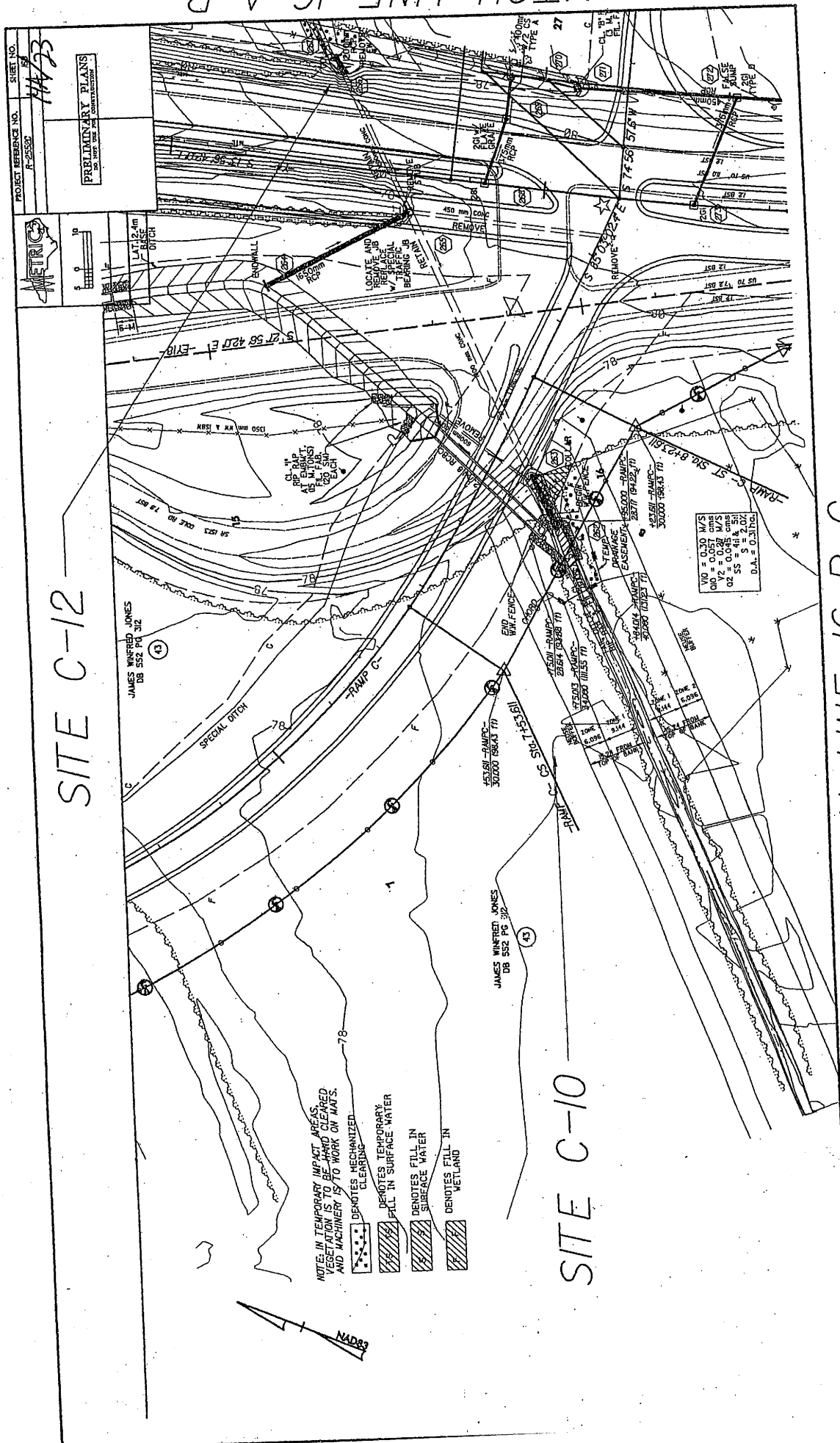
SITE C-10

MATCH LINE 16 B-C

MATCH LINE 16 A-B

275

0.00 = 0.10 V/S
0.00 = 0.05 H/S
V2 = 0.37 W/S
02 = 0.045 C/S
SS = 5' ± 2.02'
D.A. = 0.31ho



SITE C-12

SITE C-10

MATCH LINE 16 B-C

PROJECT REFERENCE NO. 1423

PRELIMINARY PLANS
NO PART OF THIS DOCUMENTATION

MATCH LINE 16 A-B

375

- NOTE: IN TEMPORARY IMPACT AREAS, VEGETATION IS TO BE HAND CLEARED AND MACHINERY IS TO WORK ON MATS.
- DENOTES MECHANIZED CLEARING
 - ▨ DENOTES TEMPORARY FILL IN SURFACE WATER
 - ▨ DENOTES FILL IN SURFACE WATER
 - ▨ DENOTES FILL IN WETLAND

VIO = 0.30 M/S
ORO = 0.03 M/S
O2 = 0.045 c/s
SS = 41.2 c/s
D.A. = 0.3170

MATCH LINE 15 A-B

PROJECT REFERENCE NO. 15733
SHEET NO. 15733

PRELIMINARY PLANS
FOR THE USE OF THE CONTRACTOR



MATCHLINE -L2- 145+60 SEE SHEET 14

DONALD H. WILLIAMS
DB 112 PG 825

DENOTES MECHANIZED
CLEARING

DENOTES FILL IN
WETLAND

RAMP C- CS STA 3+437.71
4000' RAMP
3000' RAMP

SITE C-II

JAMES WINFRED JONES
DB 552 PG 302

RAMP C- ST STA 4+403.71
4000' RAMP
3000' RAMP

RAMP C- TS STA 4+49.41

RETAIN EXIST. RIP RAP IN EXIST. DITCH

ET/IE- PT STA 12+65.023

GRADE TO DRAIN

FALSE CUT

SPECIAL DITCH

REMOVE

REMOVE

MATCH LINE 15 B-C

12' BASE HEAD DITCH

44' METER BASE DITCH

LOOP C- STA 120.00
EST. 120.00' TO 120.00'

LOOP C- STA 120.00
EST. 120.00' TO 120.00'

THE STEPHENS CENTER
DB 112 PG 825

SITE C-11

MATCH LINE 15 C-D 577

PROJECT REFERENCE NO.	SHEET NO.
R-2552C	15116

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REMOVE
375 mm. COKE

400mm CSP
W/ 2 CS
ELBOWS
TYPE A
COATING

100P C-6
Ra. 5-44-50
CL "B"

JAMES WINFRED JONES
DB 552 PG 312

12 METER BASE DITCH

FROM -LOGS C- STA. 0467 TO STA. 0482 17
ESTD 2-2-57

HELD BY THE DITCH

1
RUP RAP AT ENLIGHTENMENT

EXP MAP = 20 IN. FORM, FILTER FABRIC = 30 IN. L.



DENOTES MECHANIZED CLEARING

**ENDOTES EXCAVATION
IN WETLAND**

 DENOTES FILL IN WETLAND.

PROJECT REFERENCE NO.	SHEET NO.
R-25552	1773
ROADWAY DESIGN	ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
CONST. NO.	R/W REV.

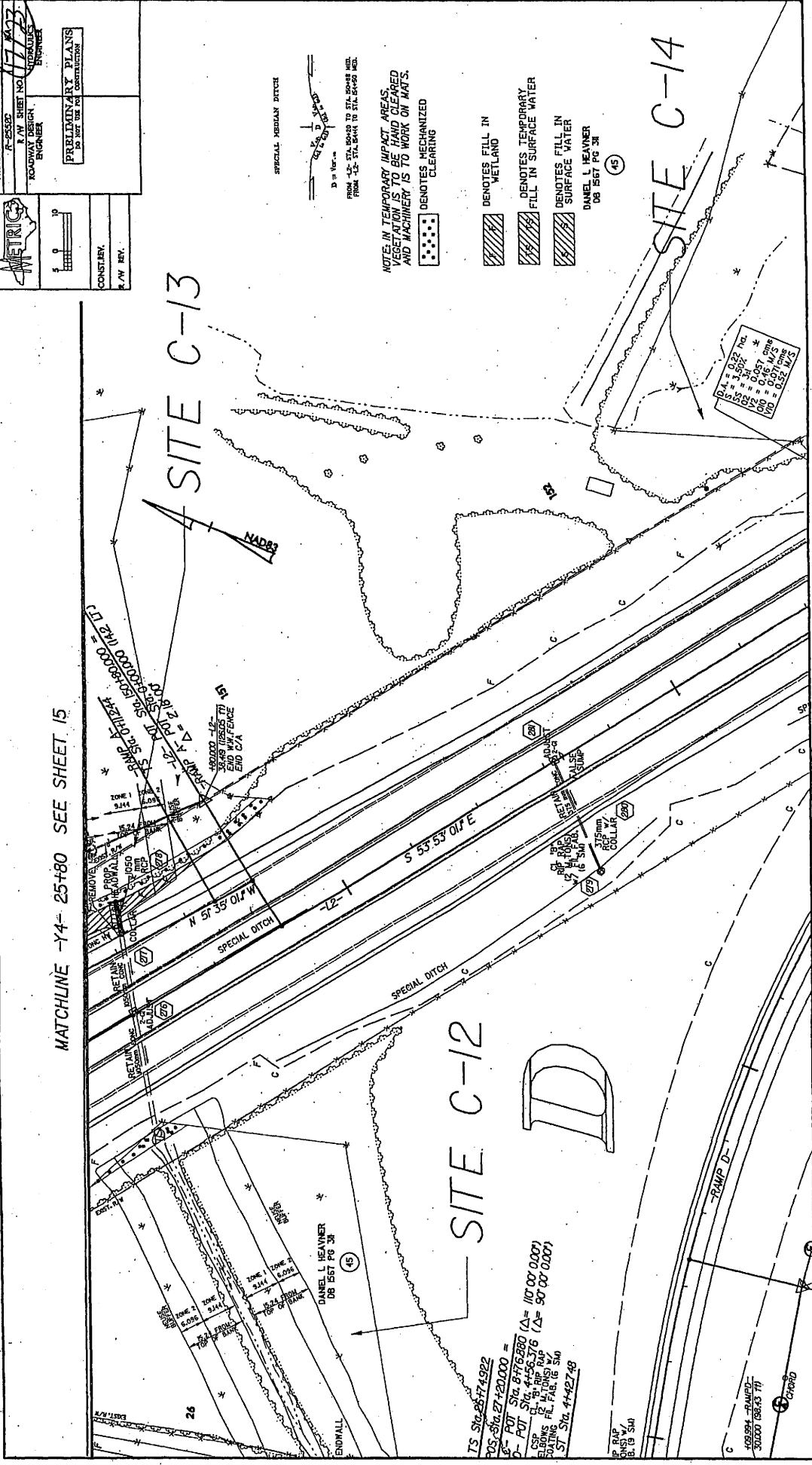
MATCHLINE -Y4- 25+80 SEE SHEET 15

SITE C-13

SITE C-14

SITE C-12

MATCH LINE 16 A-D



NOTE: IN TEMPORARY IMPACT AREAS,
VEGETATION IS TO BE HAND CLEARED
AND MACHINERY IS TO WORK ON MATS.
DENOTES MECHANIZED
CLEARING

DENOTES FILL IN
WETLAND

DENOTES TEMPORARY
FILL IN SURFACE WATER

DENOTES FILL IN
SURFACE WATER

DANIEL L HEAVNER
DB 557 PG 38

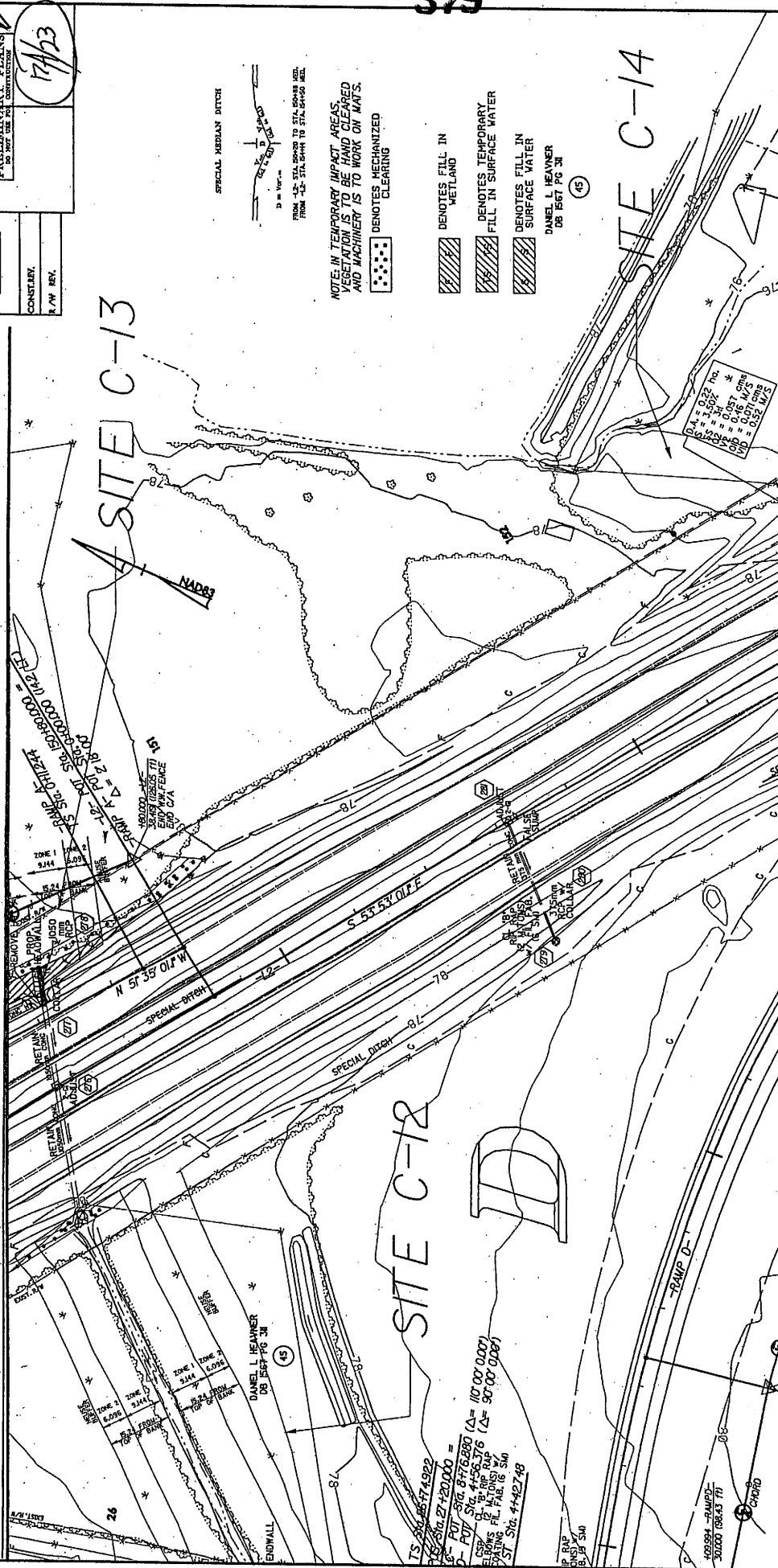
NO.	DATE	DESCRIPTION
0022	10/22/00	REVISED
0023	10/22/00	REVISED
0024	10/22/00	REVISED
0025	10/22/00	REVISED
0026	10/22/00	REVISED
0027	10/22/00	REVISED
0028	10/22/00	REVISED
0029	10/22/00	REVISED
0030	10/22/00	REVISED

TS Sta 65+74.992
POS Sta 67+20.000 =
D- POI Sta 67+53.880
D- POI Sta 4+56.376 (Δ= 10' 00" 0.00)
ELEVATION 12.11' RHP 74.4' (Δ= 50' 00" 0.00)
FLYING FL 14.1' (Δ= 50' 00" 0.00)
ST Sta 4+42.748

459.994 -RAMP D-
30.000 (58.43 71)

	PROJECT MESSAGE NO.	SHEET NO.
	1-2580	17/23
	ROADWAY DESIGN ENGINEER	17/23
	17/23	17/23
	PRELIMINARY PLANS	17/23
	17/23	17/23
	CONST. REV.	17/23
	17/23	17/23

MATCHLINE -Y4- 25+80 SEE SHEET 15

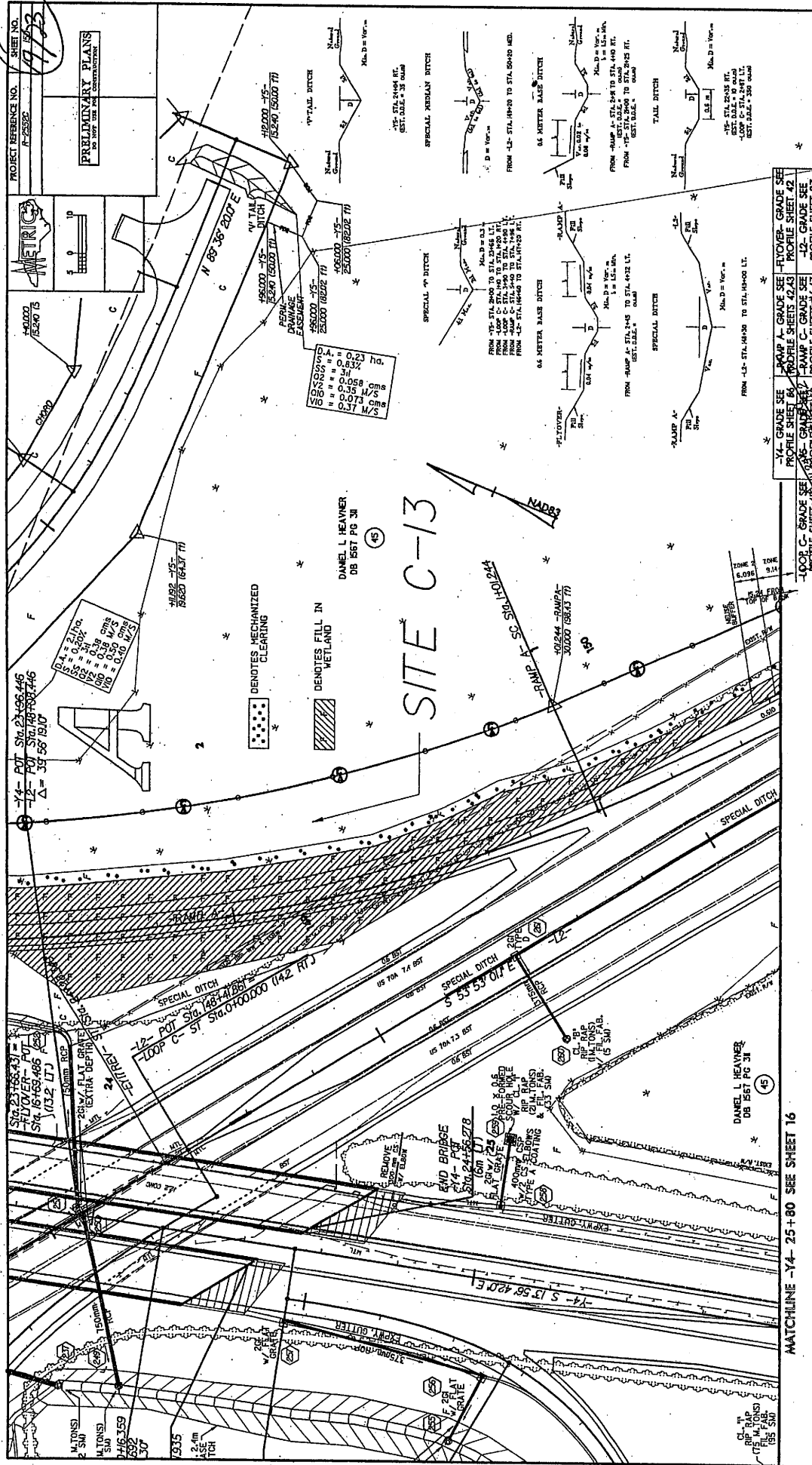


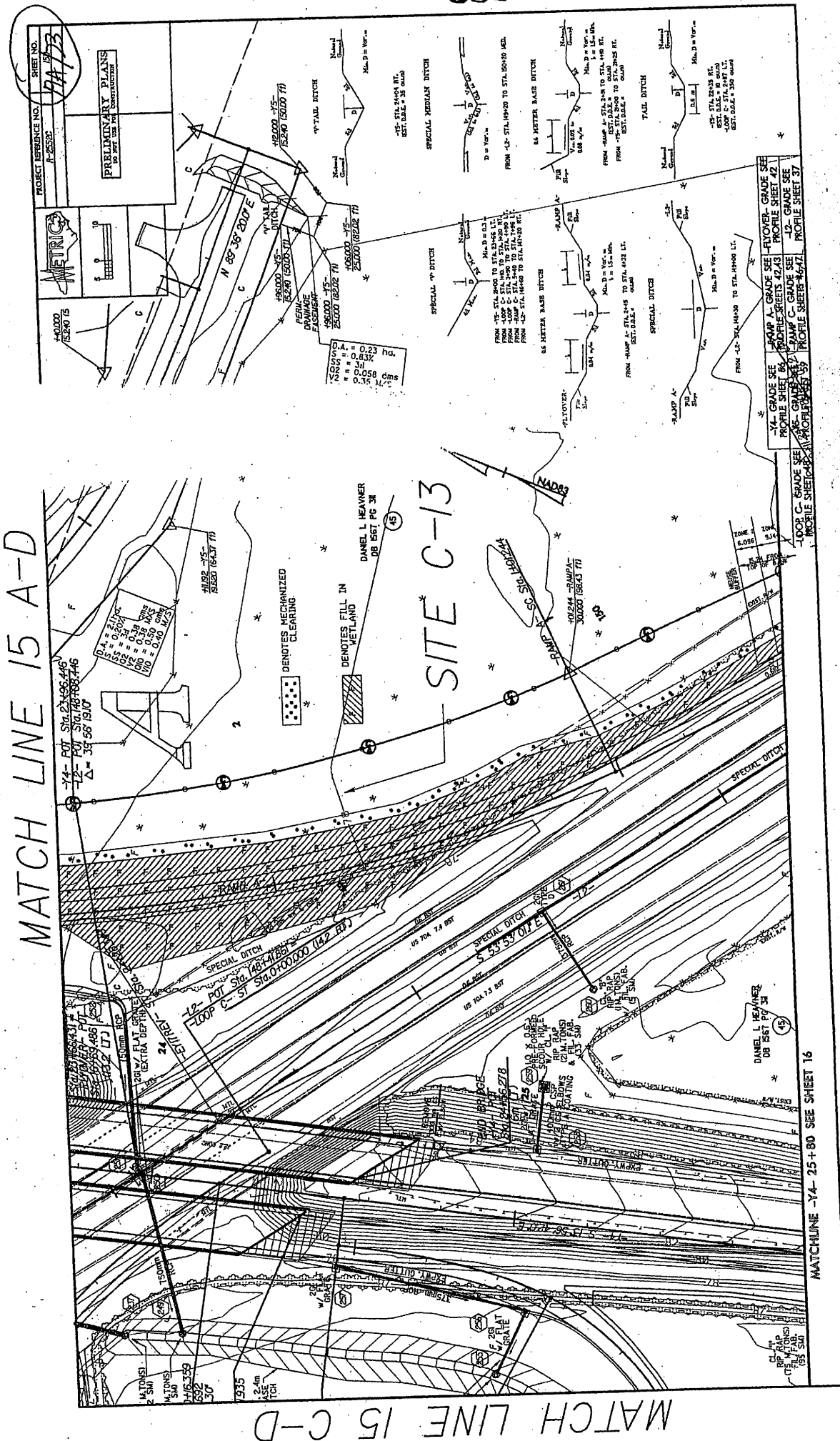
MATCH LINE 16 A-B

MATCH LINE 16 A-D

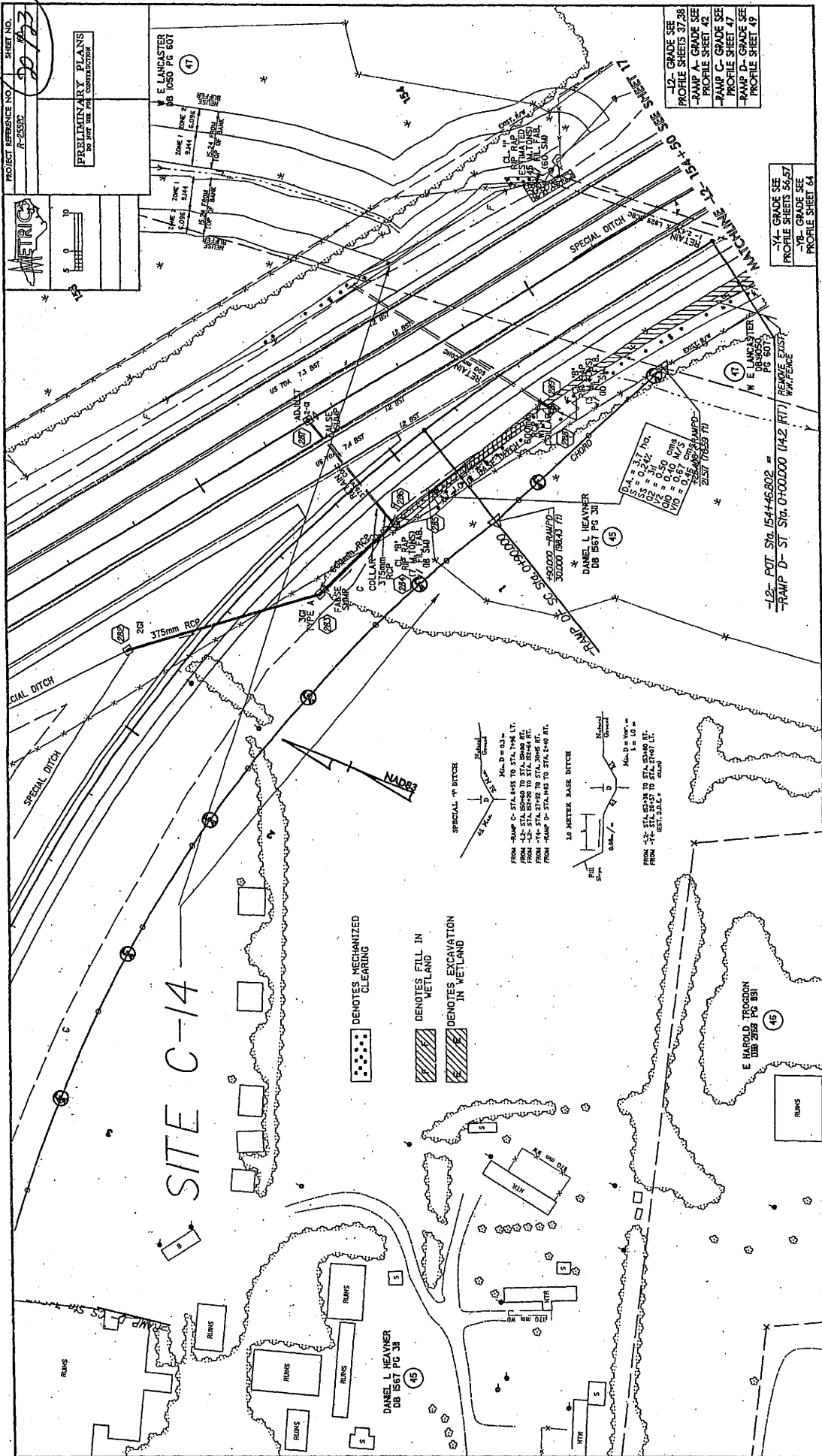
MATCH LINE 15 A-D

MATCH LINE 15 C-D

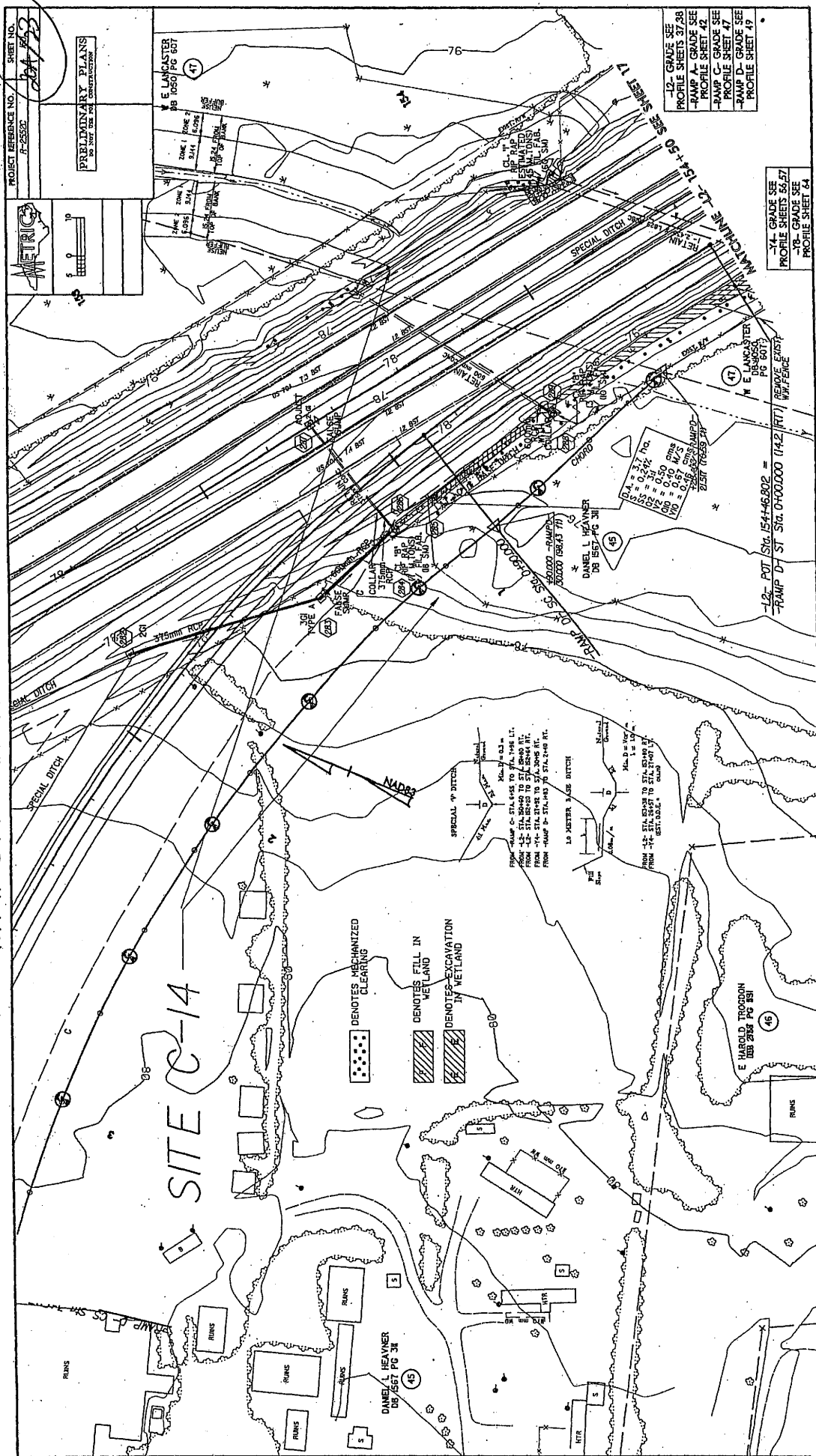




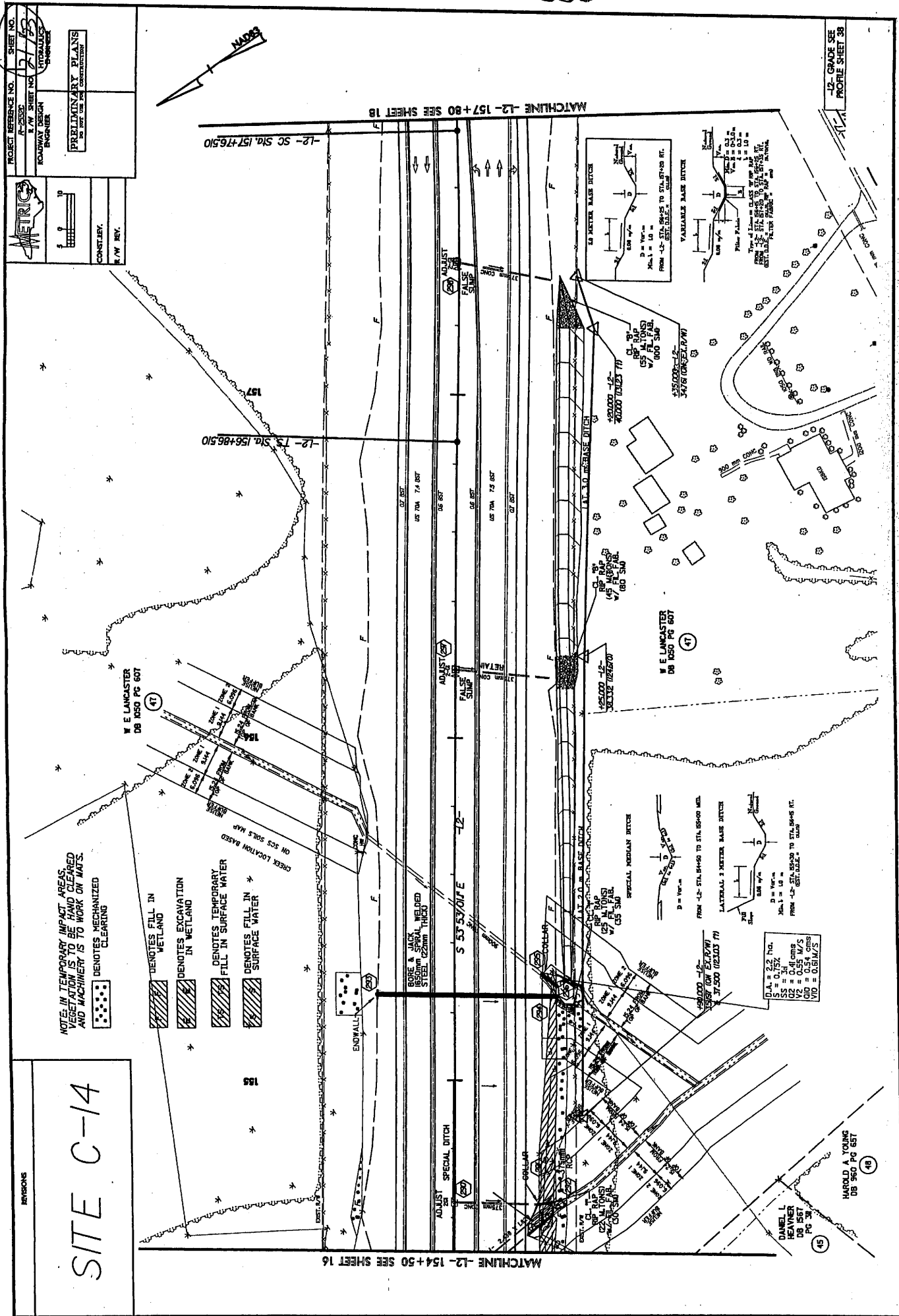
MATCH LINE 16 A-D



MATCH LINE 16 C-D



MATCH LINE 16 C-D



REVISIONS

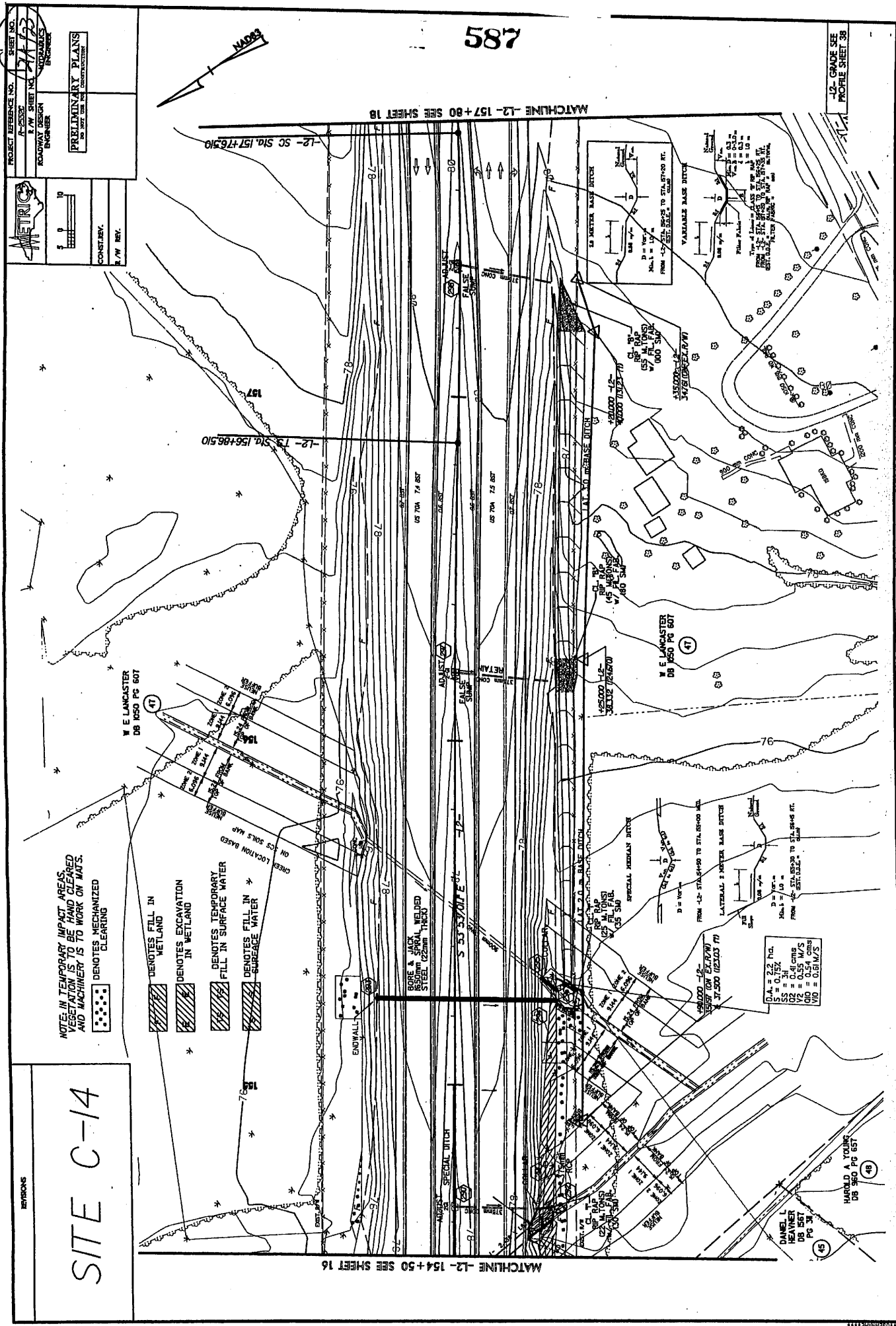

 DENOTES FILL IN WETLAND
 DENOTES EXCAVATION IN WETLAND
 DENOTES TEMPORARY FILL IN SURFACE WATER
 DENOTES FILL IN SURFACE WATER *

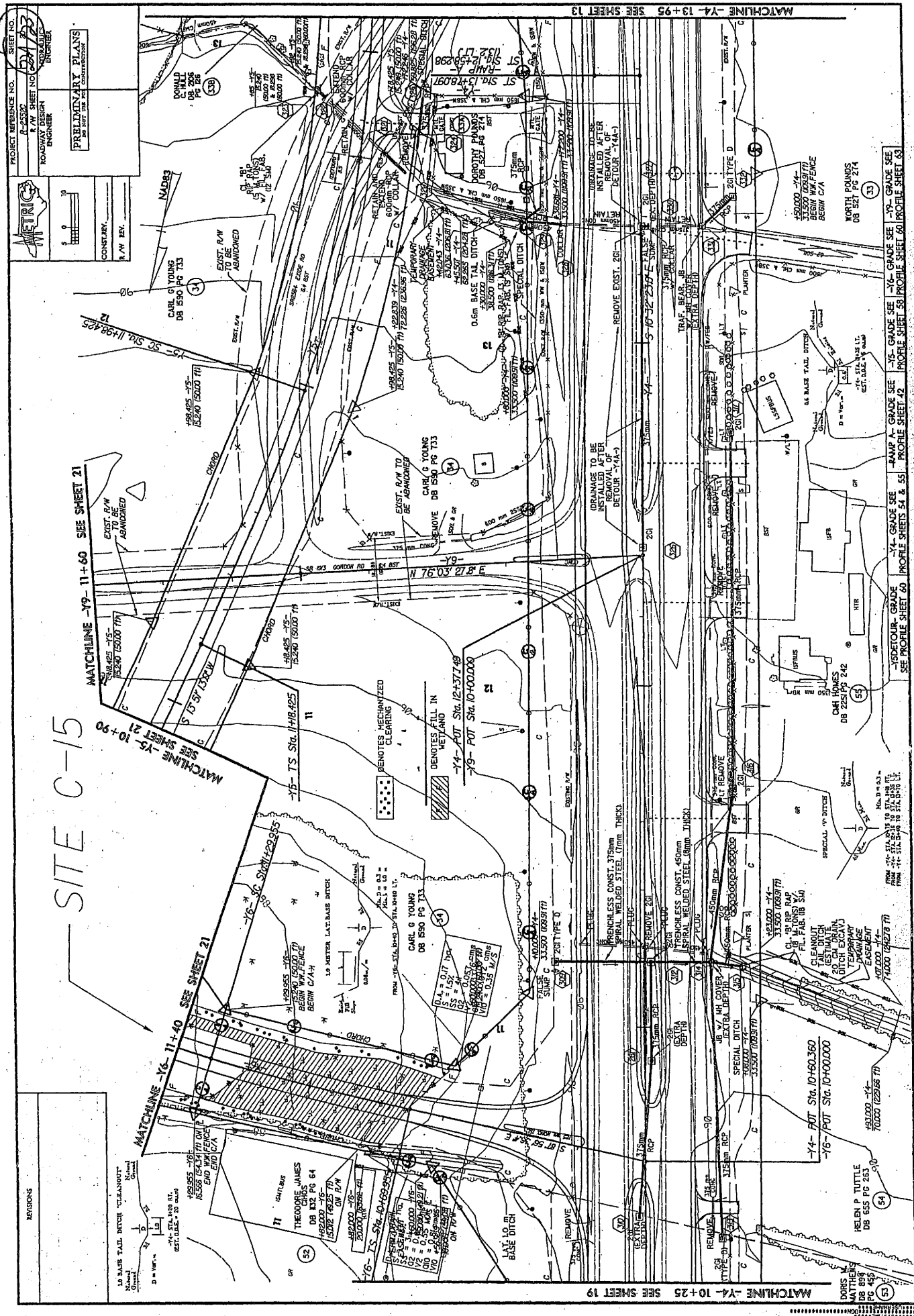
D.A. = 2.2 ha.
S = 0.75%
SS = 3h
Q2 = 0.4l cms
V2 = 0.55 M/S
Q10 = 0.54 cms
V10 = 0.61 M/S

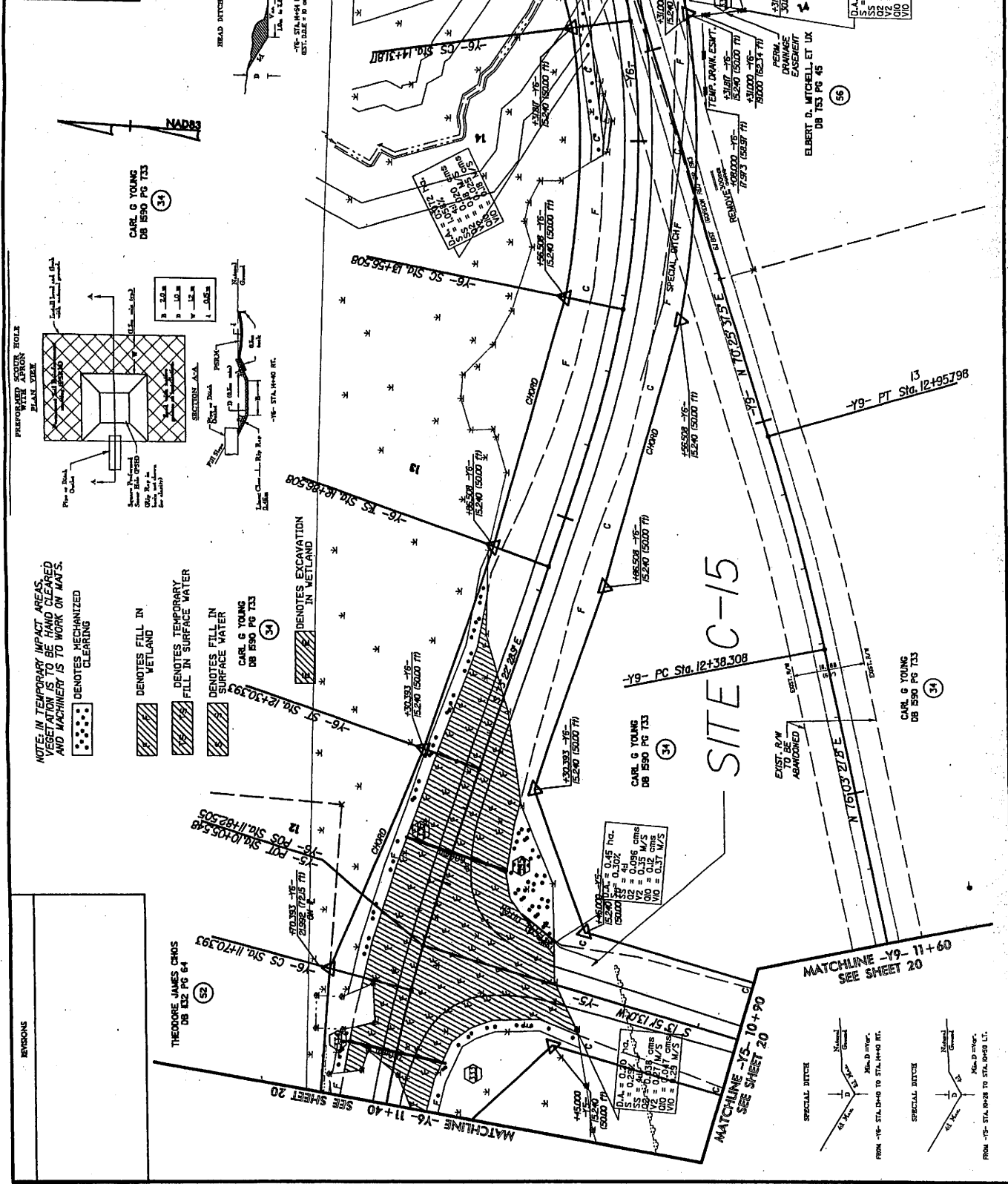
HAROLD A YOUNG
DB 960 PG 657

DANIEL L
HEAVNER
DB 1567
PC TH

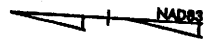
WATCHLINE -12-157+80 SEE SHEET 18





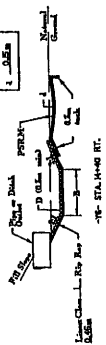
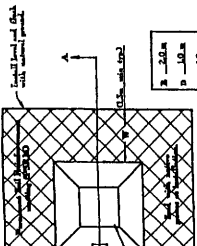


PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN	10
ENGINEER	PRELIMINARY PLANS
CONST. REV.	
A/W REV.	



CARL G YOUNG
DB 550 PG 733

PREPARED FOUR HOLES
PLATE VIEW



NOTE: IN TEMPORARY IMPACT AREAS,
DEMOLITION IS TO BE HAND CLEARED
AND MACHINERY IS TO WORK ON MATS.
DEMOTES MECHANIZED
CLEARING

DEMOTES FILL IN
WETLAND

DEMOTES TEMPORARY
FILL IN SURFACE WATER

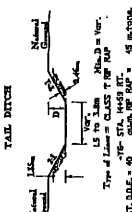
DEMOTES FILL IN
SURFACE WATER

CARL G YOUNG
DB 550 PG 733

DEMOTES EXCAVATION
IN WETLAND

SITE C-16

MATCHLINE -Y6- 14+90 SEE SHEET 22



D.A. = 1.5 No.
S.S. = 3.00
G.S. = 0.20 cms
V.S. = N/A
V.D. = N/A

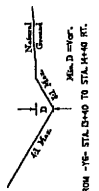
-Y6- GRADE SEE
PROFILE SHEET 60
-Y9- GRADE SEE
PROFILE SHEET 62

SITE C-15

CARL G YOUNG
DB 550 PG 733

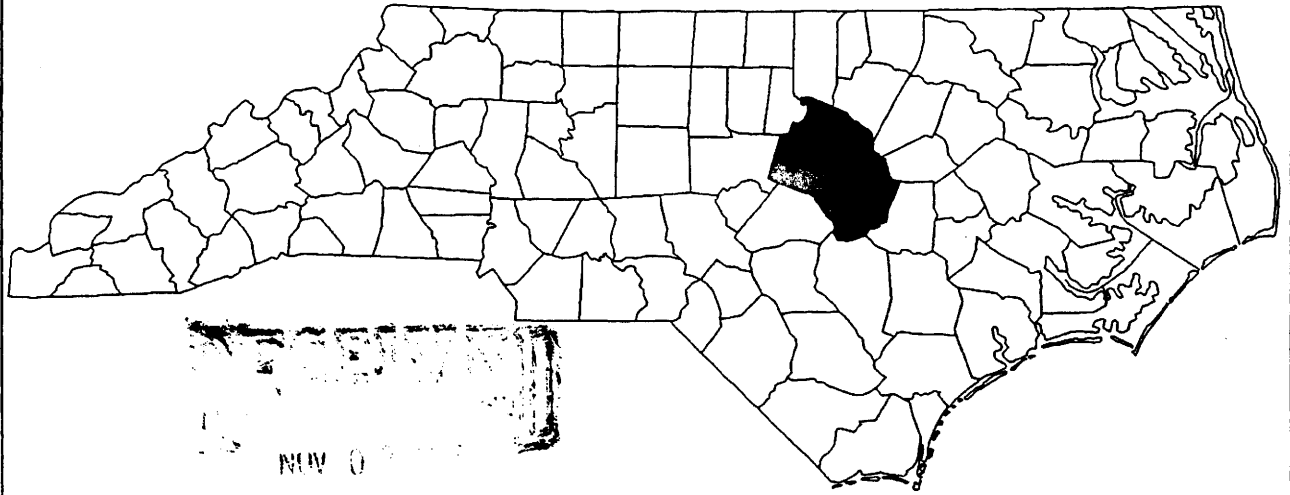
MATCHLINE -Y9- 11+60
SEE SHEET 20

MATCHLINE -Y5- 10+90
SEE SHEET 20

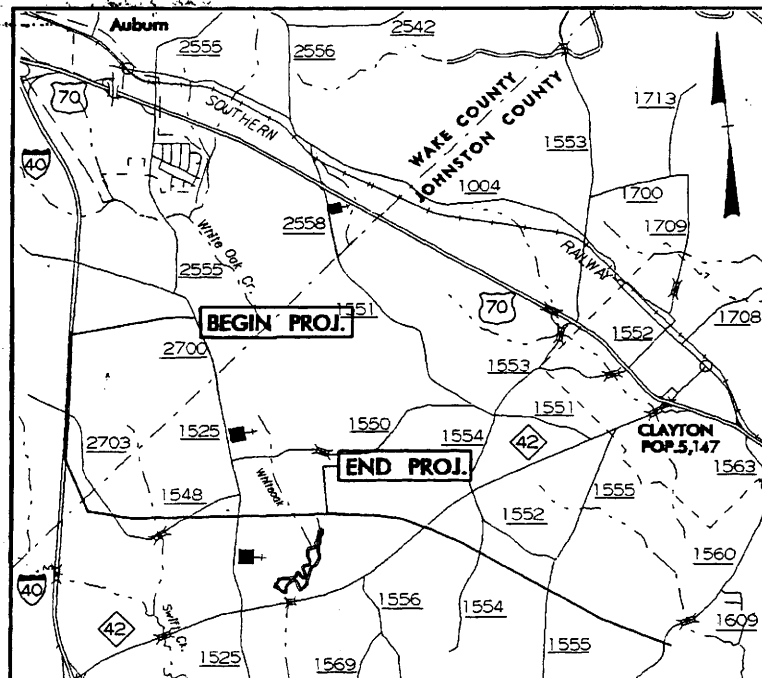


FROM -Y5- STA. 8+40 TO STA. 10+90 L.I.

NORTH CAROLINA



NOV 0



NEUSE RIVER BUFFER

VICINITY
MAP

NCDOT

DIVISION OF HIGHWAYS

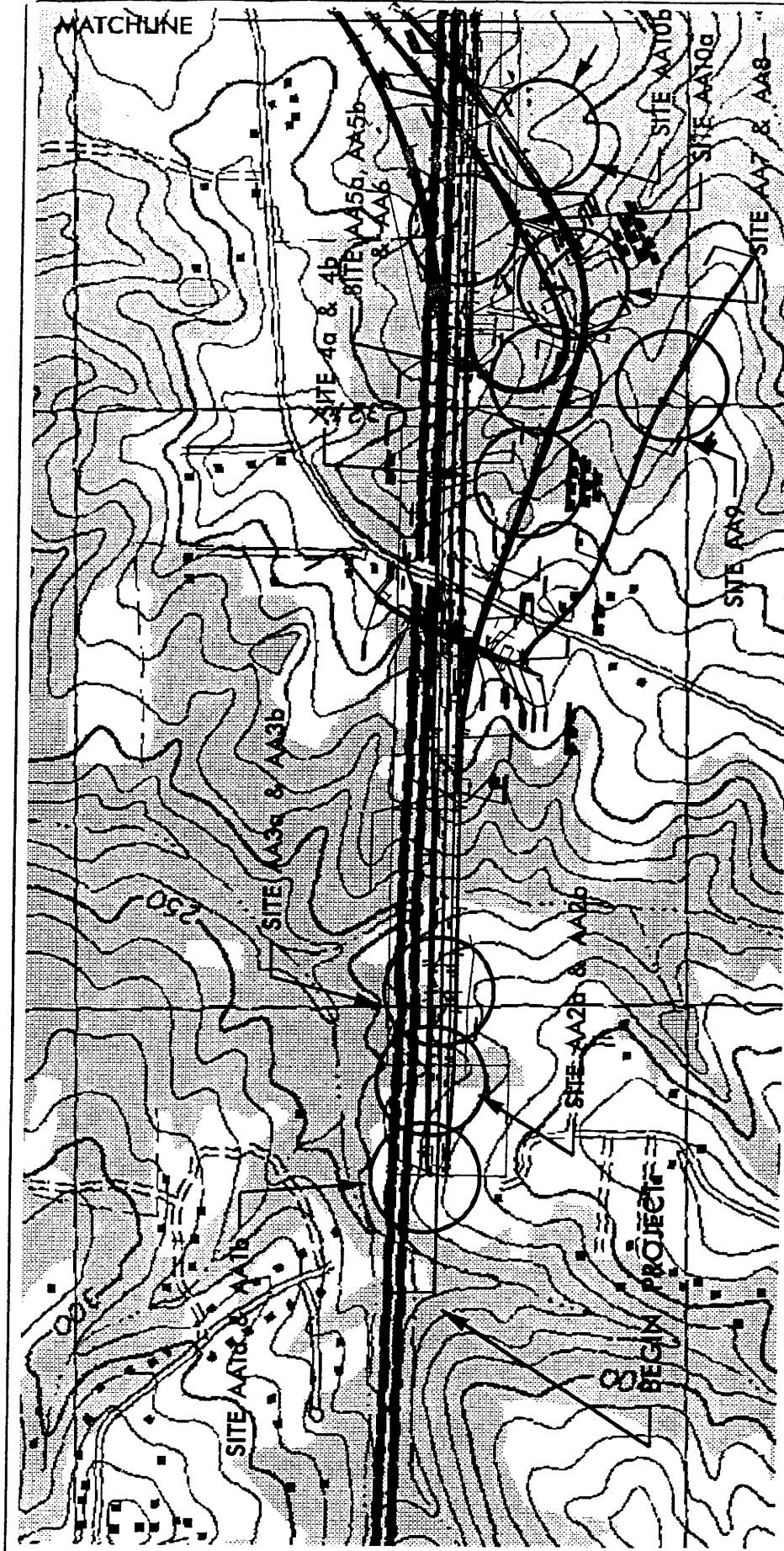
JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

SHEET 1 OF 15

10/01/04



NCDOT

DIVISION OF HIGHWAYS

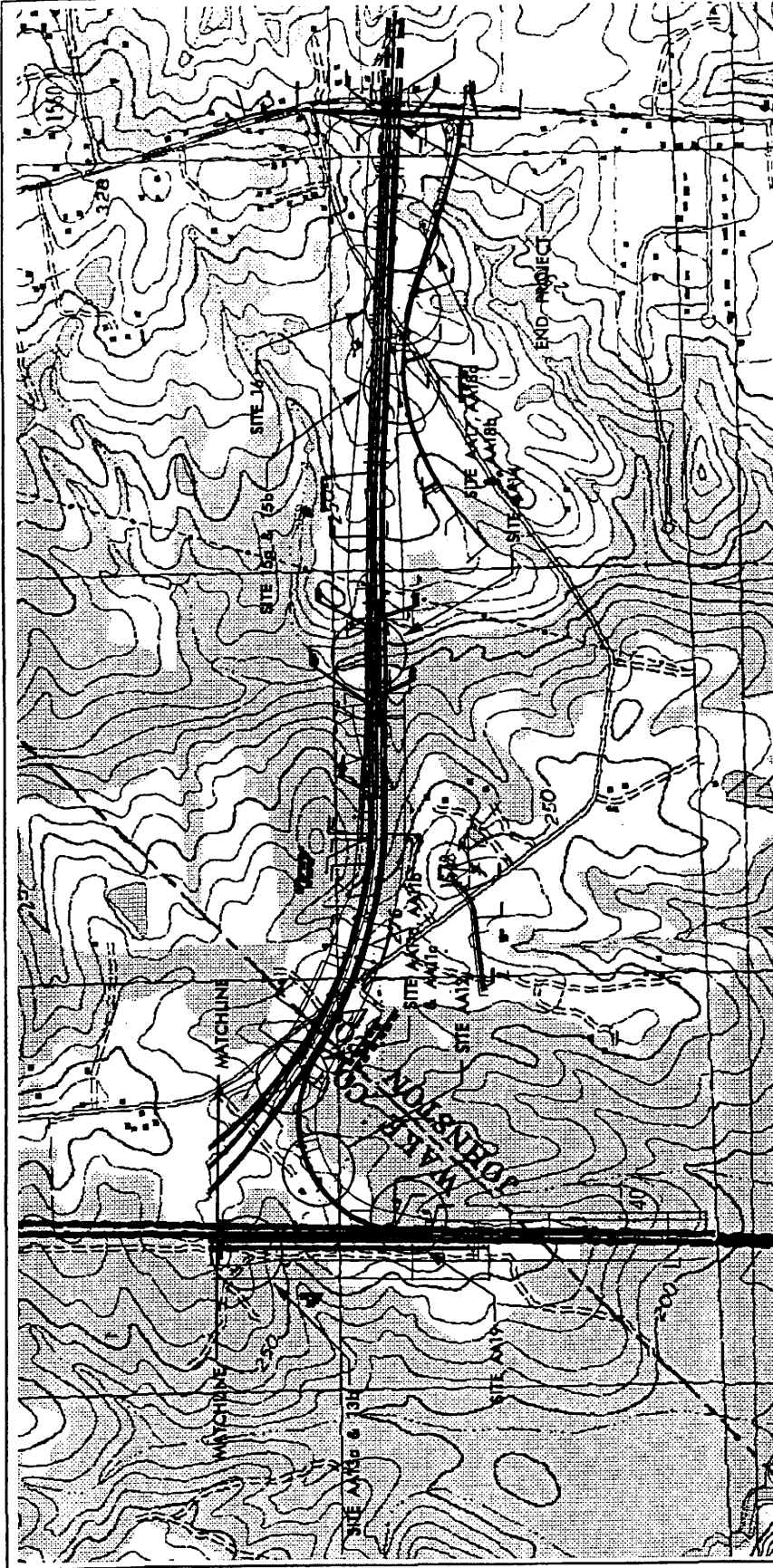
WAKE/JOHNSTON COUNTY

PROJECT: 34459.1.1 (R-252AA)

US 70 CLAYTON BYPASS

SITE MAP

SHEET 18 OF 18 10/01/04



NCDOT

DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

PROJECT: 34459.1.1 (R-252AA)

US 70 CLAYTON BYPASS

SHEET 3 OF 18 10/01/04

SITE MAP

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT				MITIGABLE				BUFFER REPLACEMENT	
			TYPE		ALLOWABLE		ZONE 1		ZONE 2		TOTAL (ft ²)	TOTAL (ft ²)
			ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft ²)	ZONE 2 (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)		
AA1a	600 RCP	I1Y1 10+90	X		430.56	2611.00						
AA1b	600 RCP	I1Y1 10+90	X		2124.80	1765.28						
AA3a	1350 CSP	I1Y1 13+70	X		3717.85	4049.38						
AA3b	1350 CSP	I1Y1 13+70	X		4111.81	4391.68						
AA4a	750 RCP	I1Y1 20+90	X				11348.39	8144.73			19493.12	
AA4b	900 RCP	FLYLEREV 29+50	X				8830.17	6469.65			15299.82	
AA5a	750 RCP	LPB 21+90	X				41580.88	32338.05			73918.93	
AA5b	900 RCP	FLYLEREV 28+20	X				0.00	10.76			10.76	
AA10a	800 CSP	FLYLWREV 23+20	X				11797.25	9601.41			21398.66	
AA10b	BRIDGE	FLYLEREV 24+45	X				18155.59	14593.60			32749.19	
TOTAL:					10385.02	12817.34	91712.28	71158.20			162870.48	

NOTE : WETLAND IMPACT IN BUFFER ZONES

SITE	1	2
1b	107.60	0.00
4b	107.60	0.00
5b	193.68	107.60
6	107.60	322.80
10a	215.20	0.00
10b	538.00	107.60

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY
PROJECT # - WBS 34459.1.1 (R2552AA)
US 70 - CLAYTON BYPASS

38278
SHEET 4 OF 18

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM TO)	IMPACT				MITIGABLE				BUFFER REPLACEMENT	
			TYPE		ALLOWABLE		TOTAL		ZONE 1		TOTAL	
			ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft ²)	ZONE 2 (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)
AA11b	1500 RCP	FLYLEREV 18+00	X				46633.03	32446.41			79079.44	
AA11c	450 RCP	FLYLEREV 18+40 LT	X				SEE AA11b FOR SITE TOTAL					
AA13	600 RCP	I1Y1 30+80	X		3719.82	5908.53						
AA14	BRIDGE	LREV 14+50	X				18513.82	15333.94			33847.76	
AA15a	1050 RCP	L 21+10	X		5571.94	4047.45						
AA15b	1050 RCP	Y2B 12+70	X				6284.08	8147.74			14431.82	
AA16	750 RCP	L 23+00	X				27648.93	19748.98			47397.91	
AA18a	1200 RCP	L 25+80	X				28645.56	18336.32			46981.88	
AA18b	1350 RCP	Y2B 18+00	X				8818.38	6898.70			15717.08	
AA19	750 RCP	I1Y1 33+90 LT	X		2164.73	1921.68						
TOTAL:					21841.51	24695.00	11456.49	11877.66	23334.15	100912.09	237455.89	
PROJECT TOTALS					21841.51	24695.00	228256.08	172070.29	46536.51	400326.37		

NOTE : WETLAND IMPACT IN BUFFER ZONES

SITE	1	2
11	39338.56	15193.12
14	17775.52	11975.88
16	2690.00	0.00

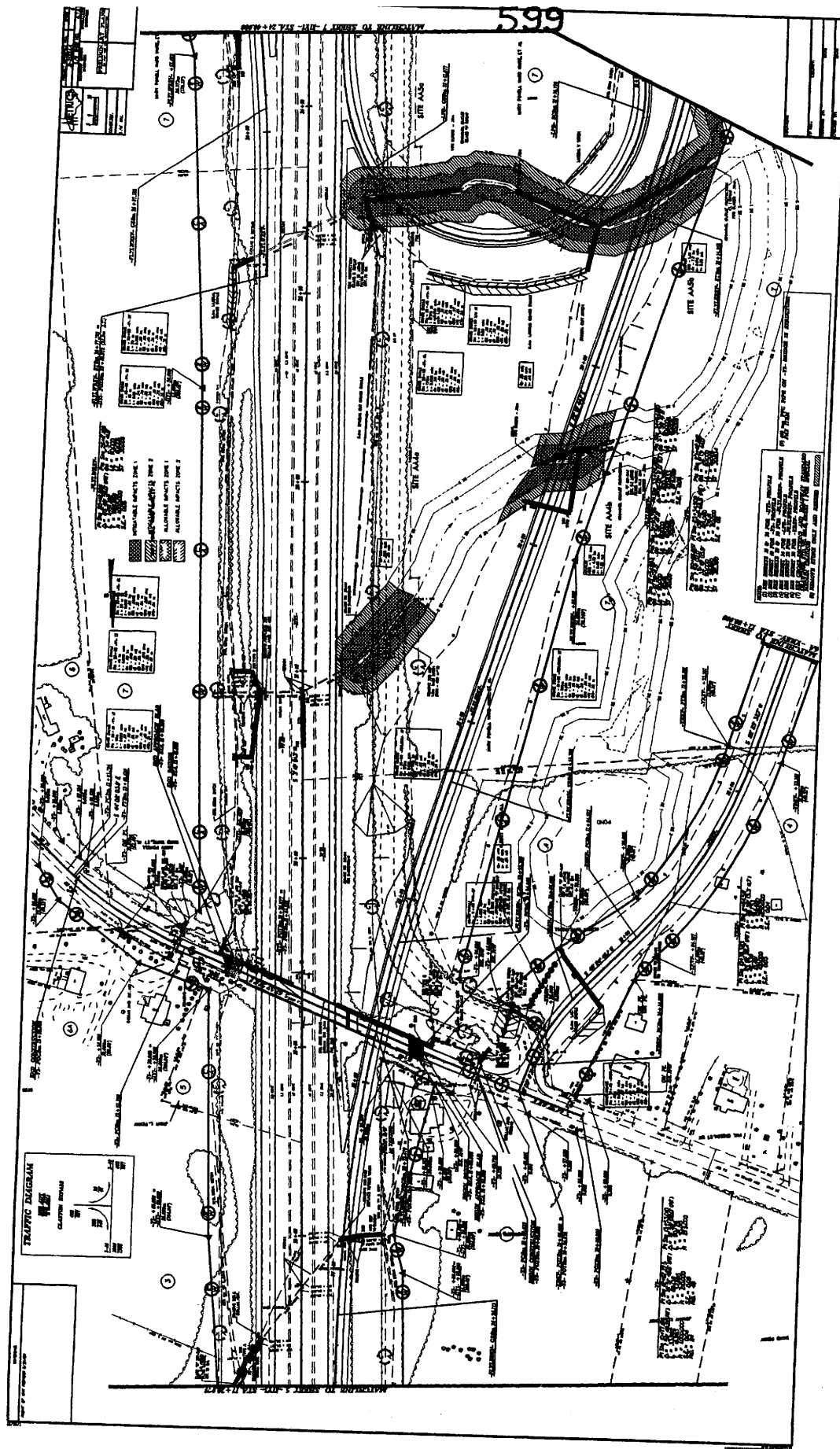
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

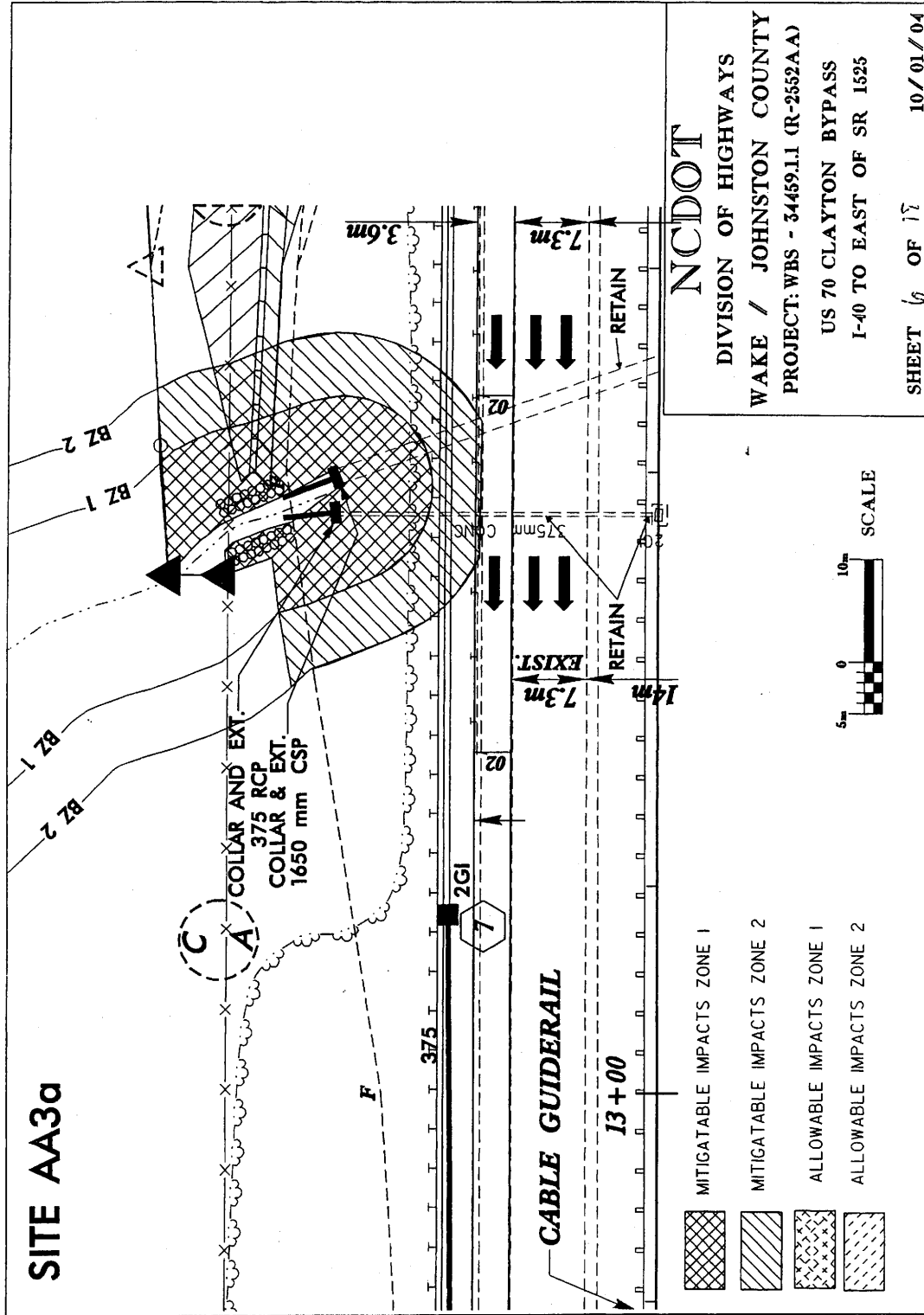
WAKE / JOHNSTON COUNTY
PROJECT # - WBS 34459.1.1 (R2552AA)
US 70 - CLAYTON BYPASS

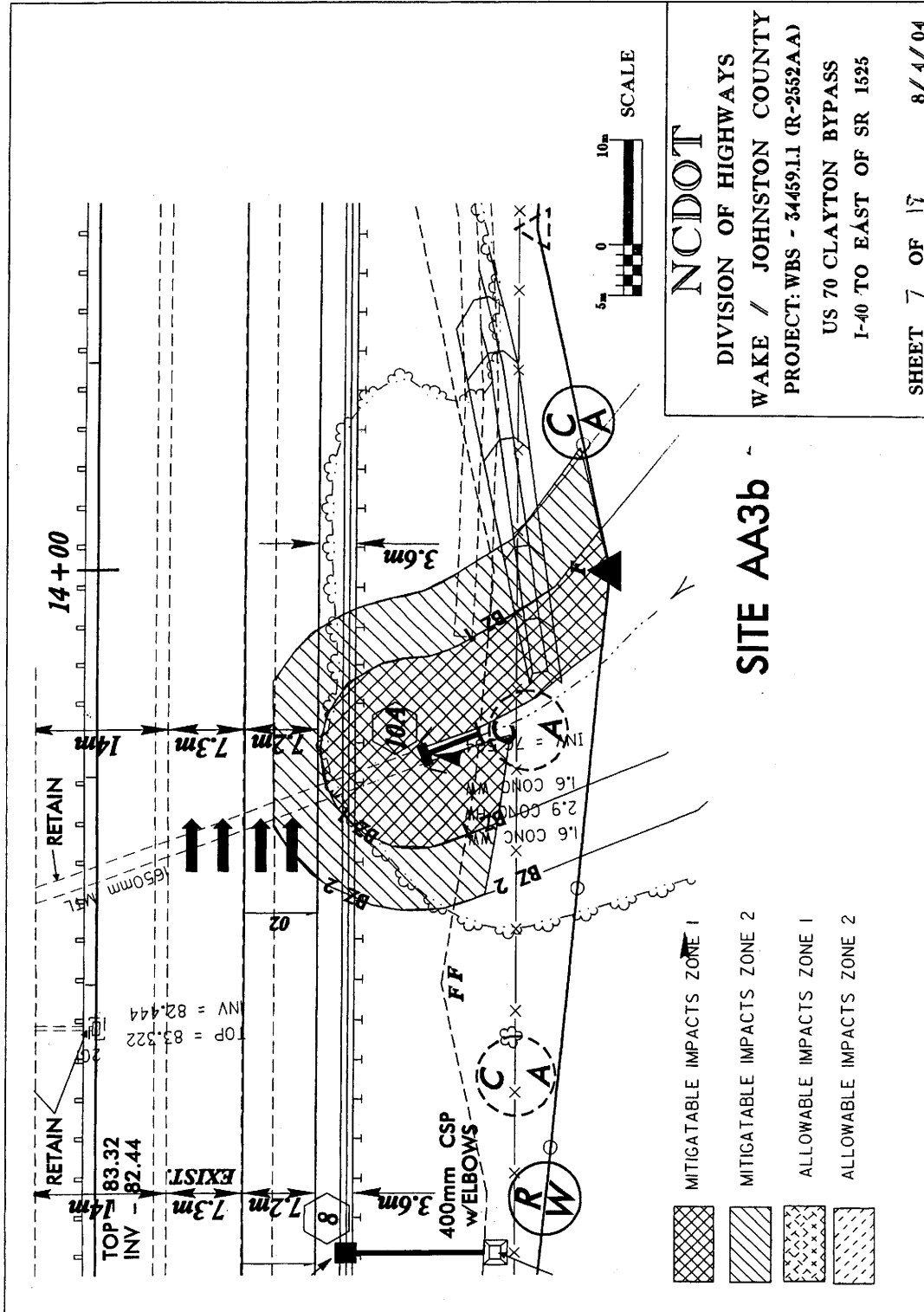
10/18/04
SHEET 5 OF 18



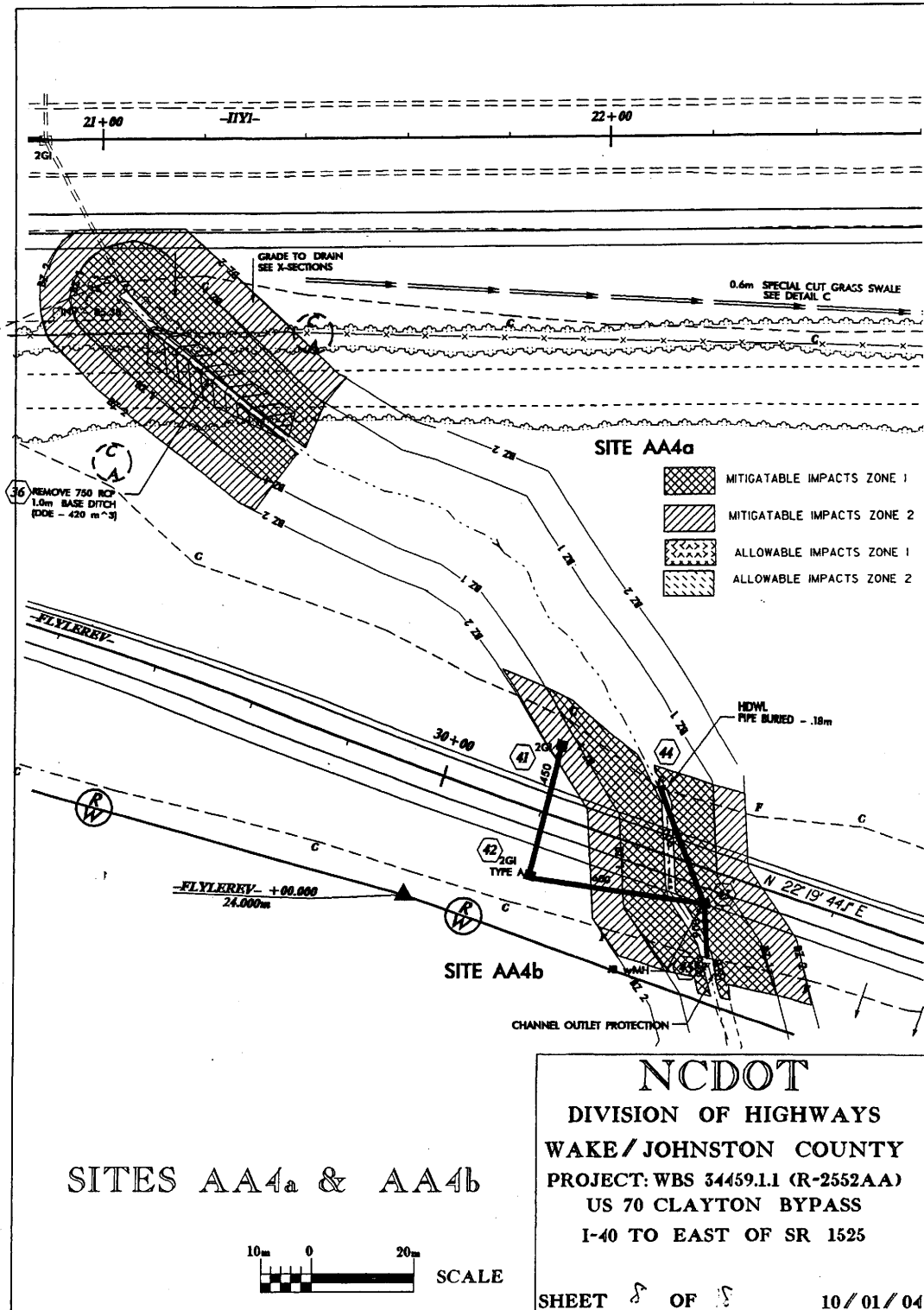
NOTE:
(1) SEE SHEET 18 FOR -IYI- PROFILE
(2) SEE SHEET 30 FOR -FLYLEREV- PROFILE



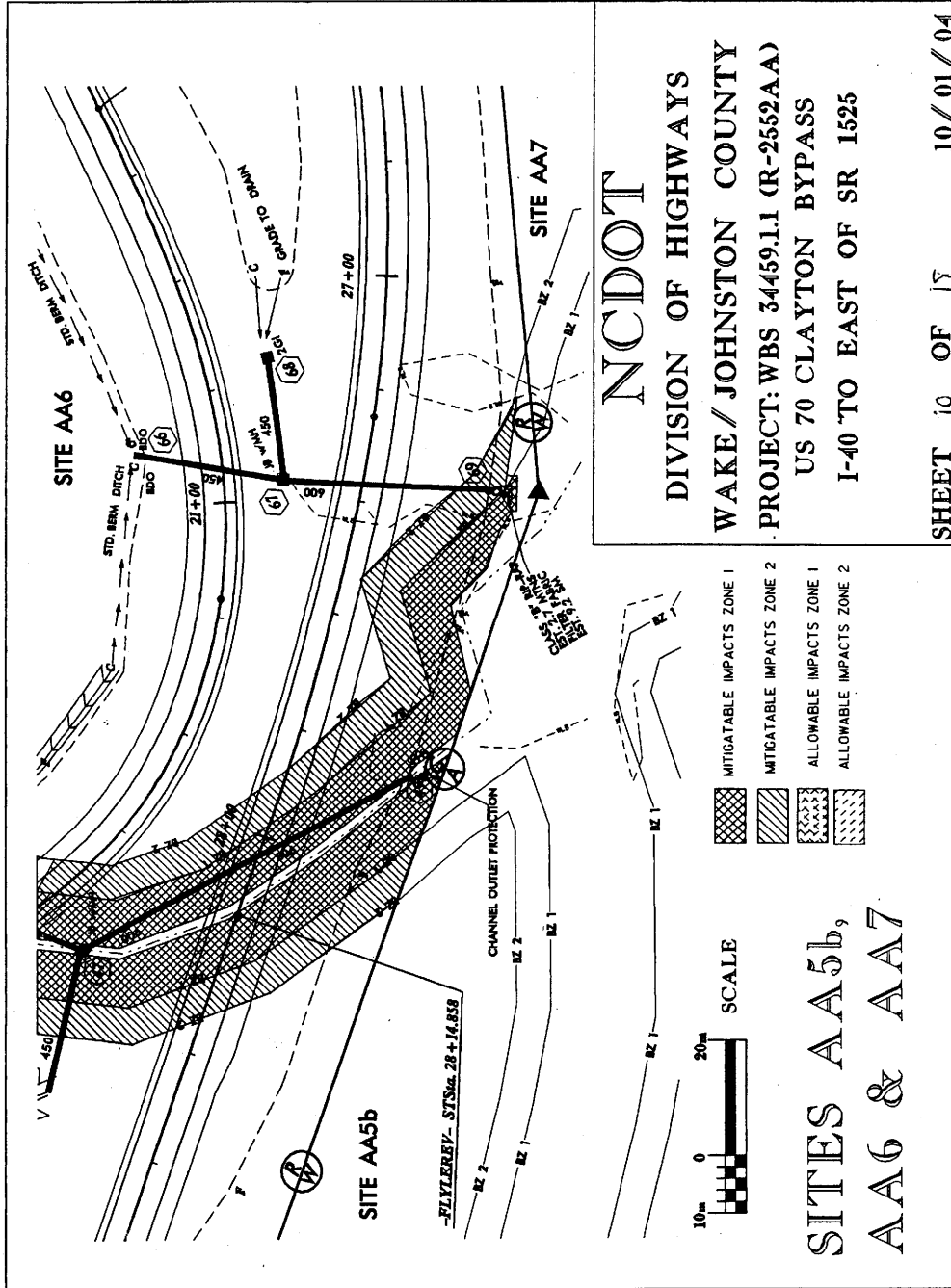


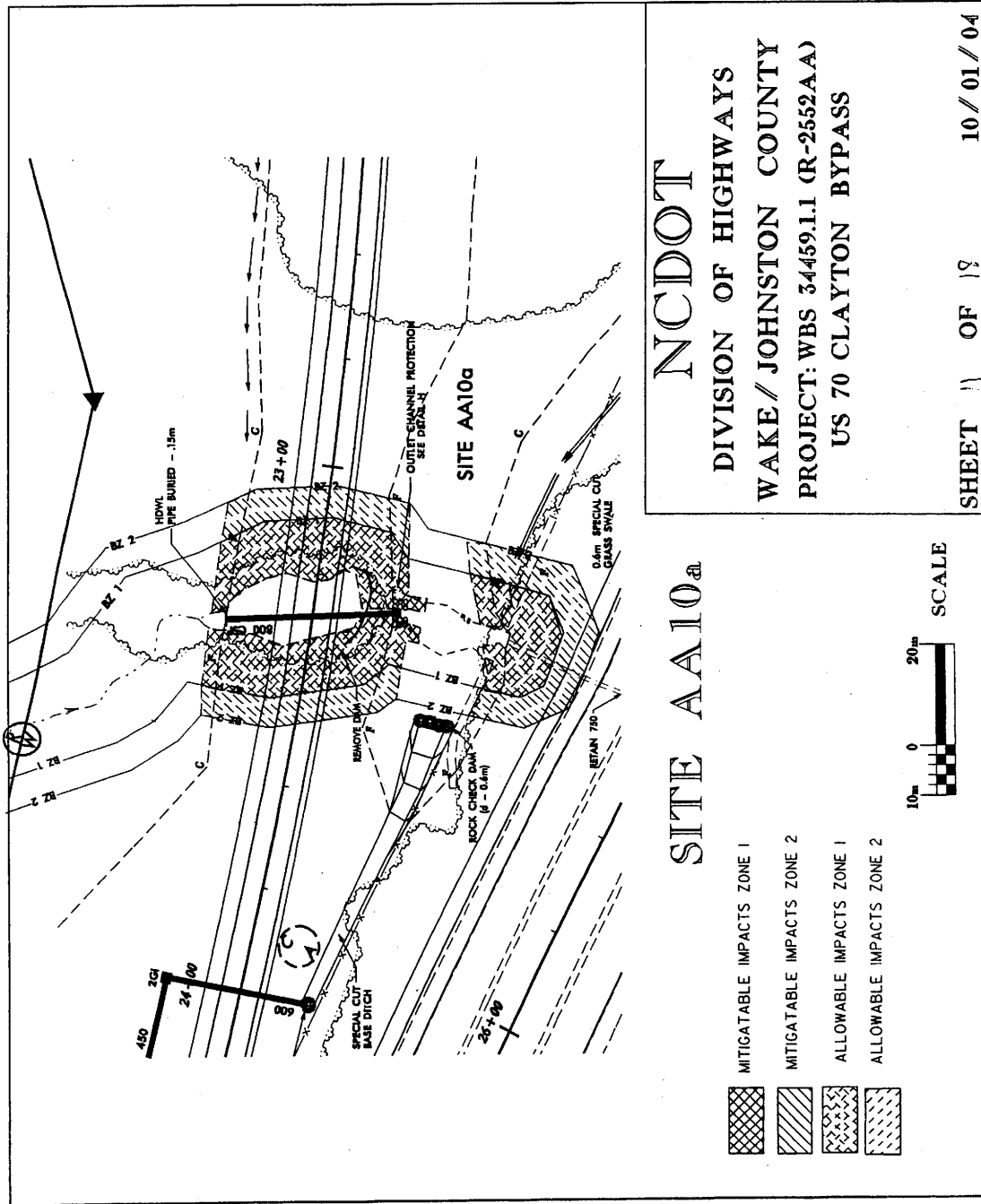


NCDOT
DIVISION OF HIGHWAYS
WAKE / JOHNSTON COUNTY
PROJECT: WBS - 34459.1.1 (R-2552AA)
US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525
SHEET 7 OF 17 8/4/04





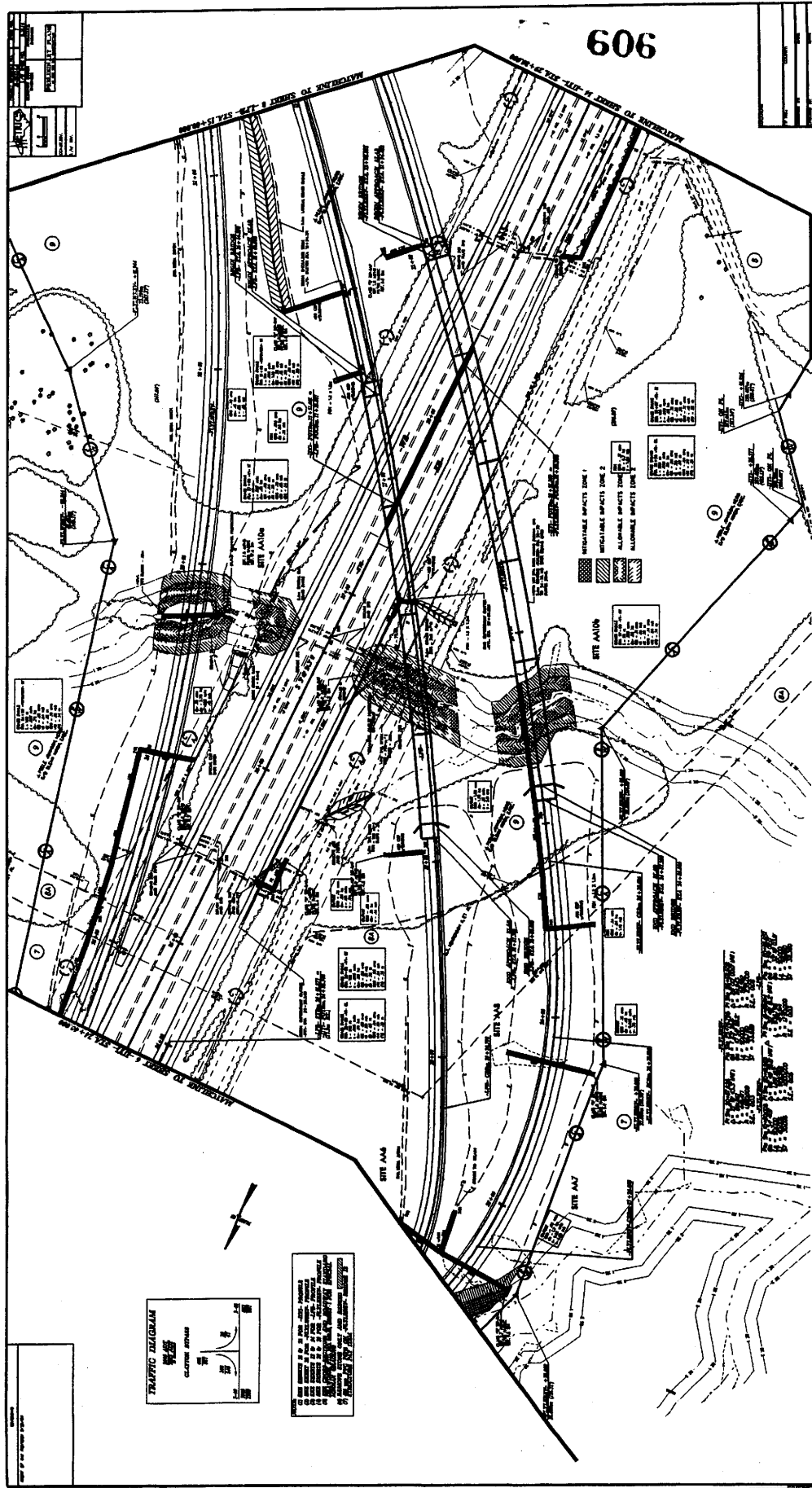




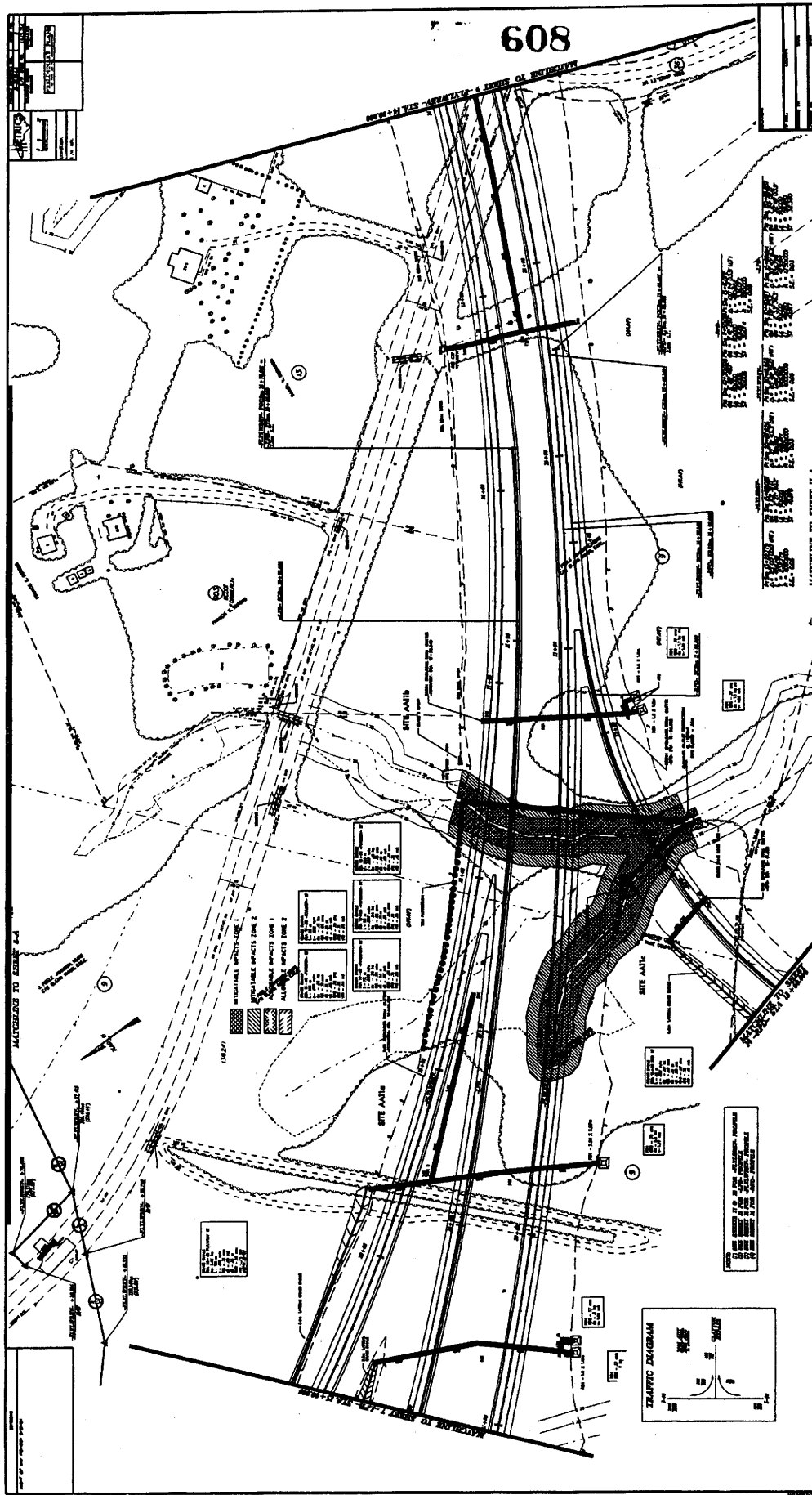
NCDOT
 DIVISION OF HIGHWAYS
 WAKE / JOHNSTON COUNTY
 PROJECT: WBS 34459.1.1 (R-2552AA)
 US 70 CLAYTON BYPASS

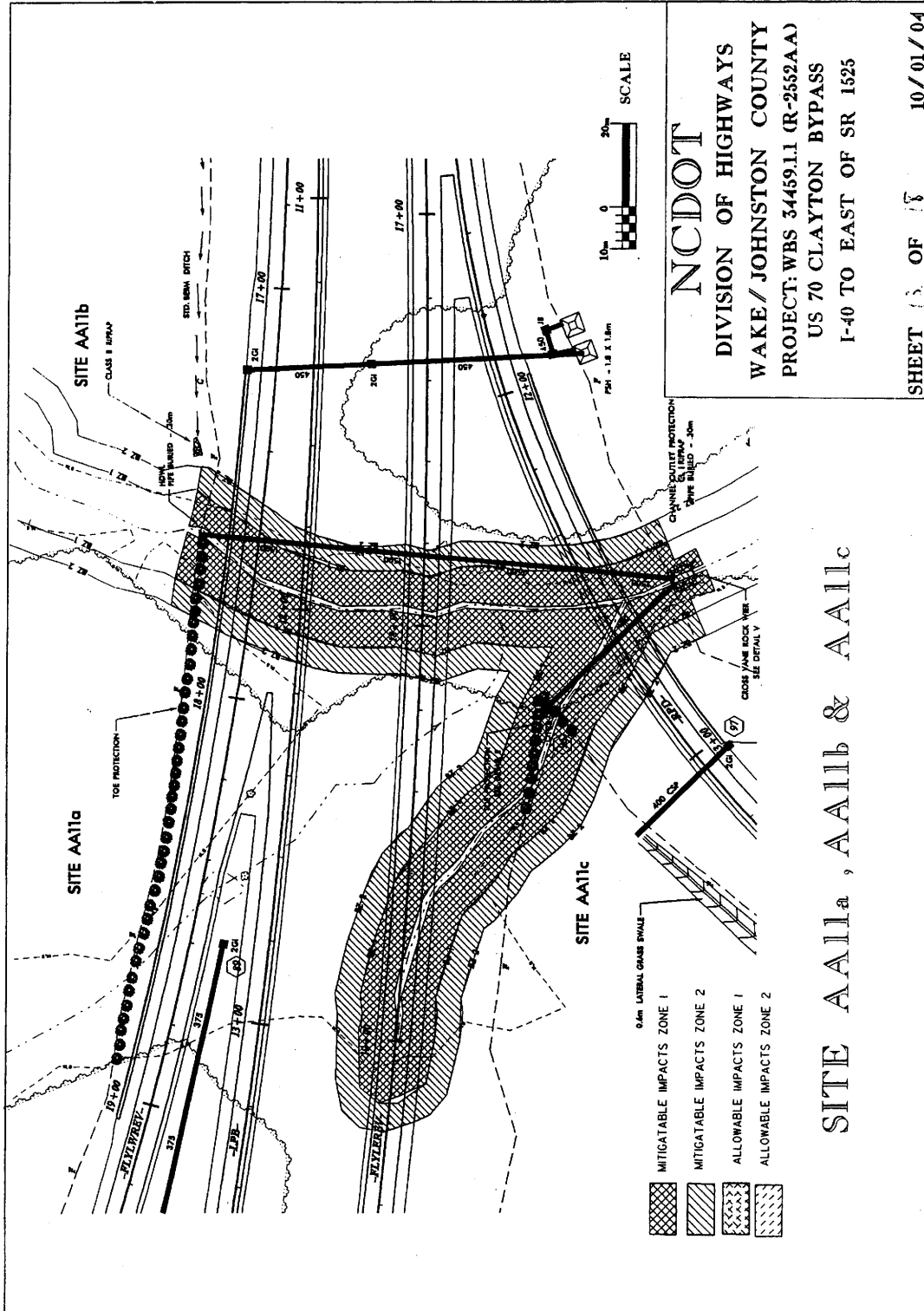
SHEET 11 OF 18 10 / 01 / 04

SITE AA10a





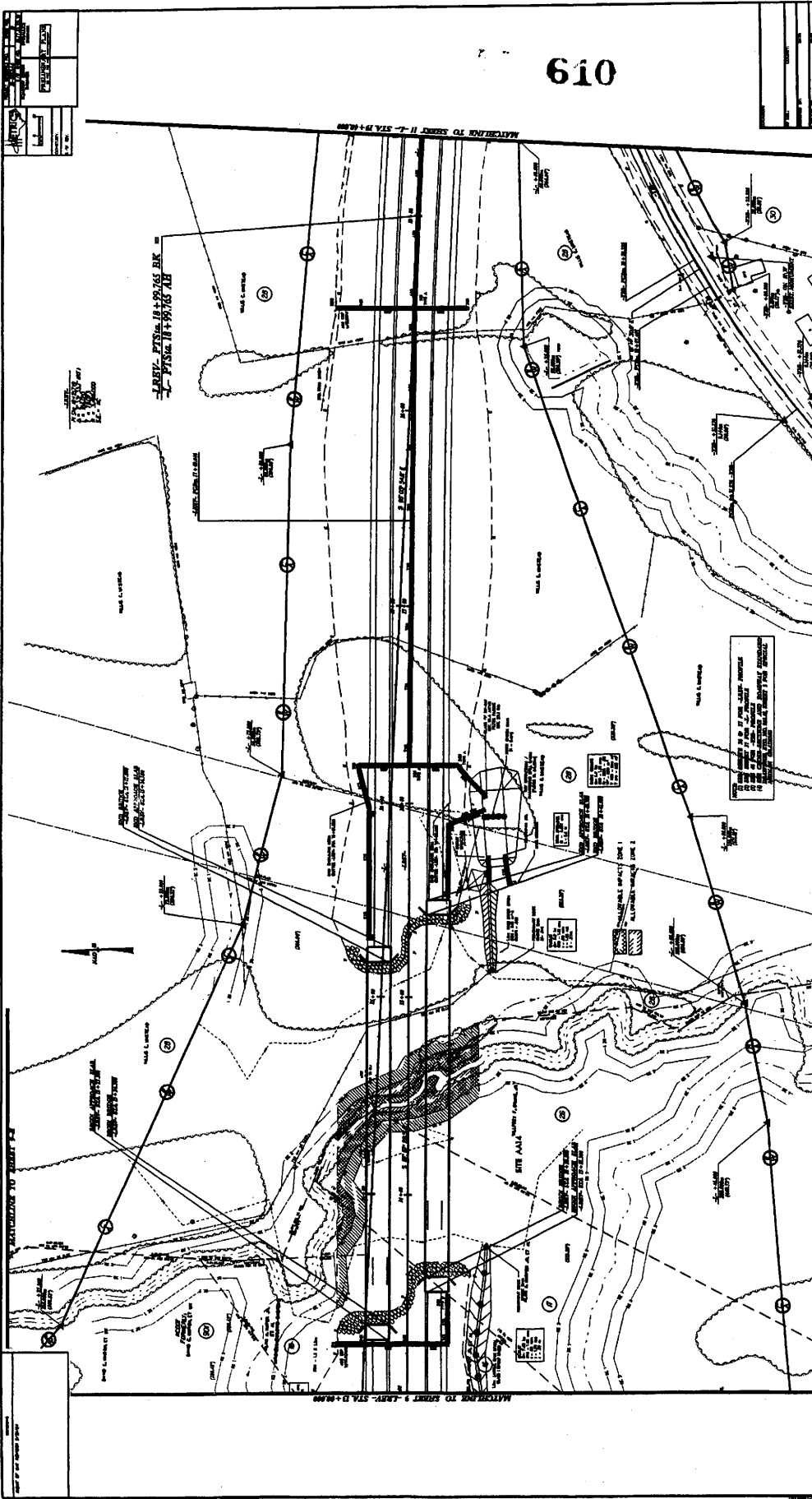


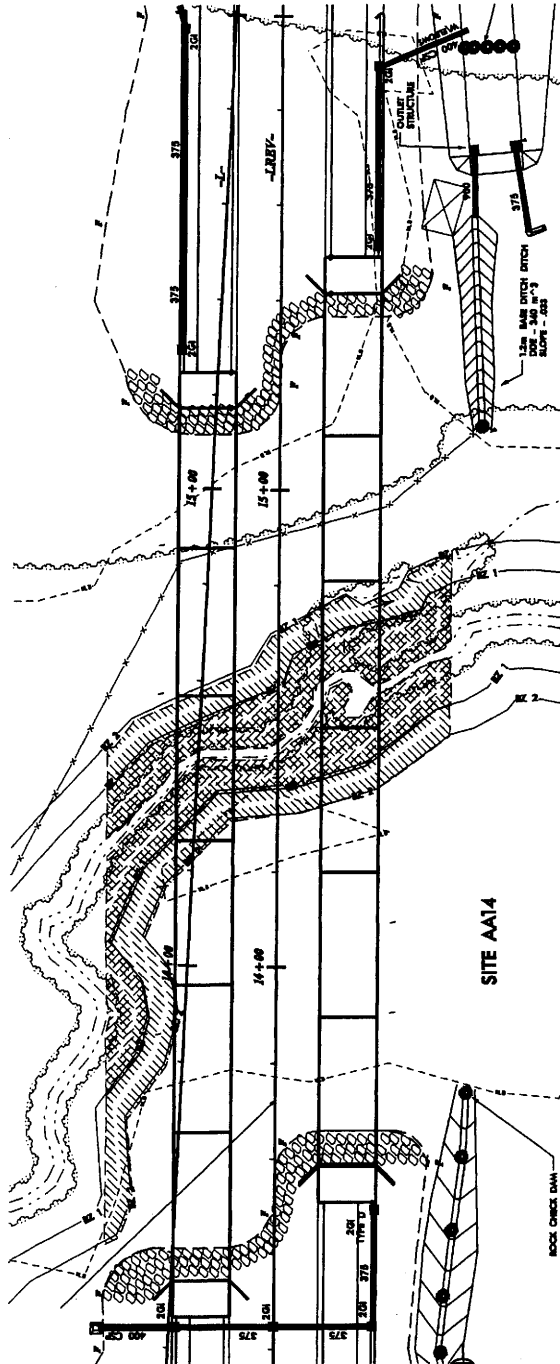


NCDOT
 DIVISION OF HIGHWAYS
 WAKE/JOHNSTON COUNTY
 PROJECT: WBS 34459.1.1 (R-2552AA)
 US 70 CLAYTON BYPASS
 I-40 TO EAST OF SR 1525

SITE AA11a, AA11b & AA11c

SHEET 13 OF 18 10/01/04





SITE AA14

SITE AA14

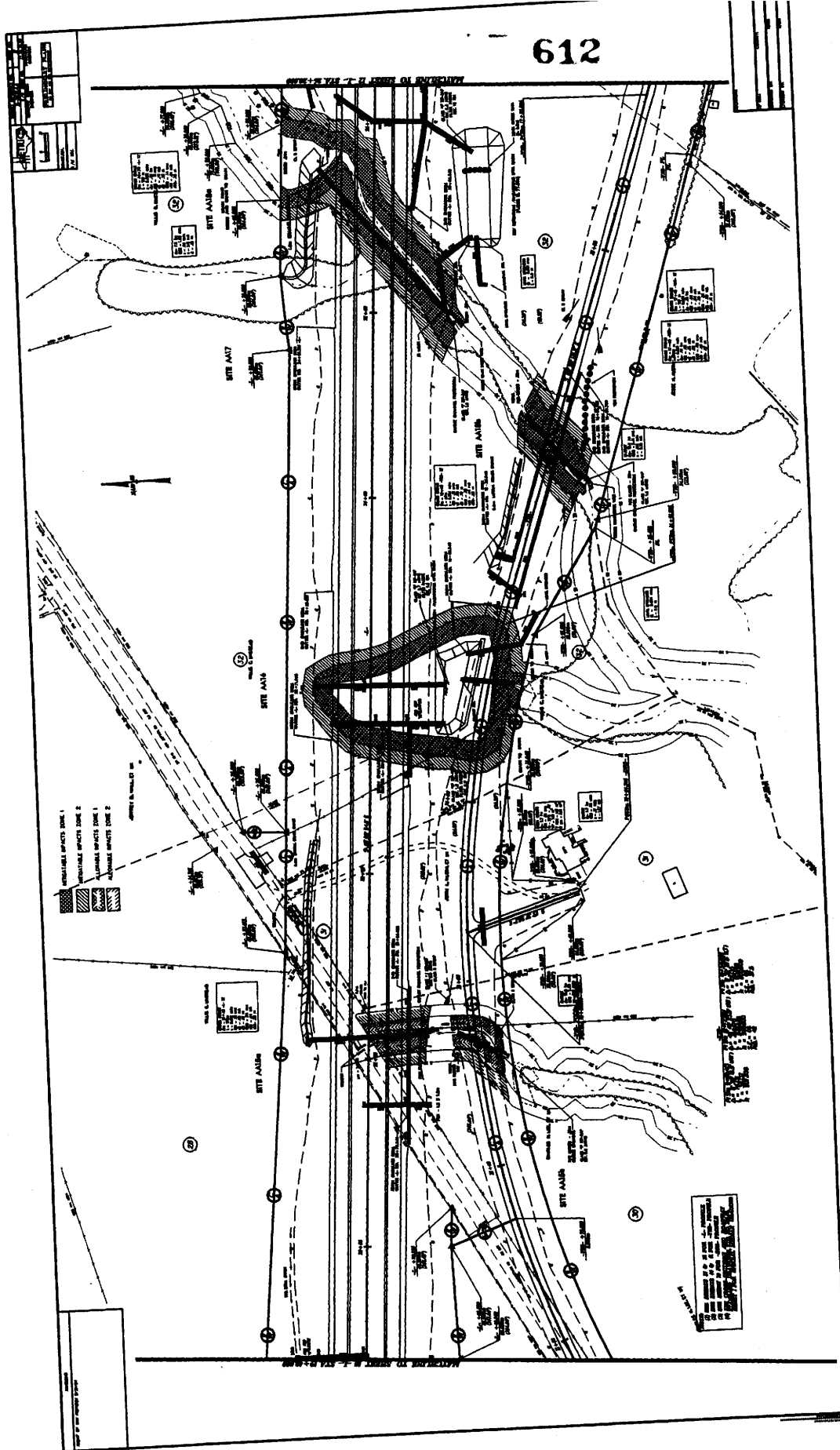
NCDOT

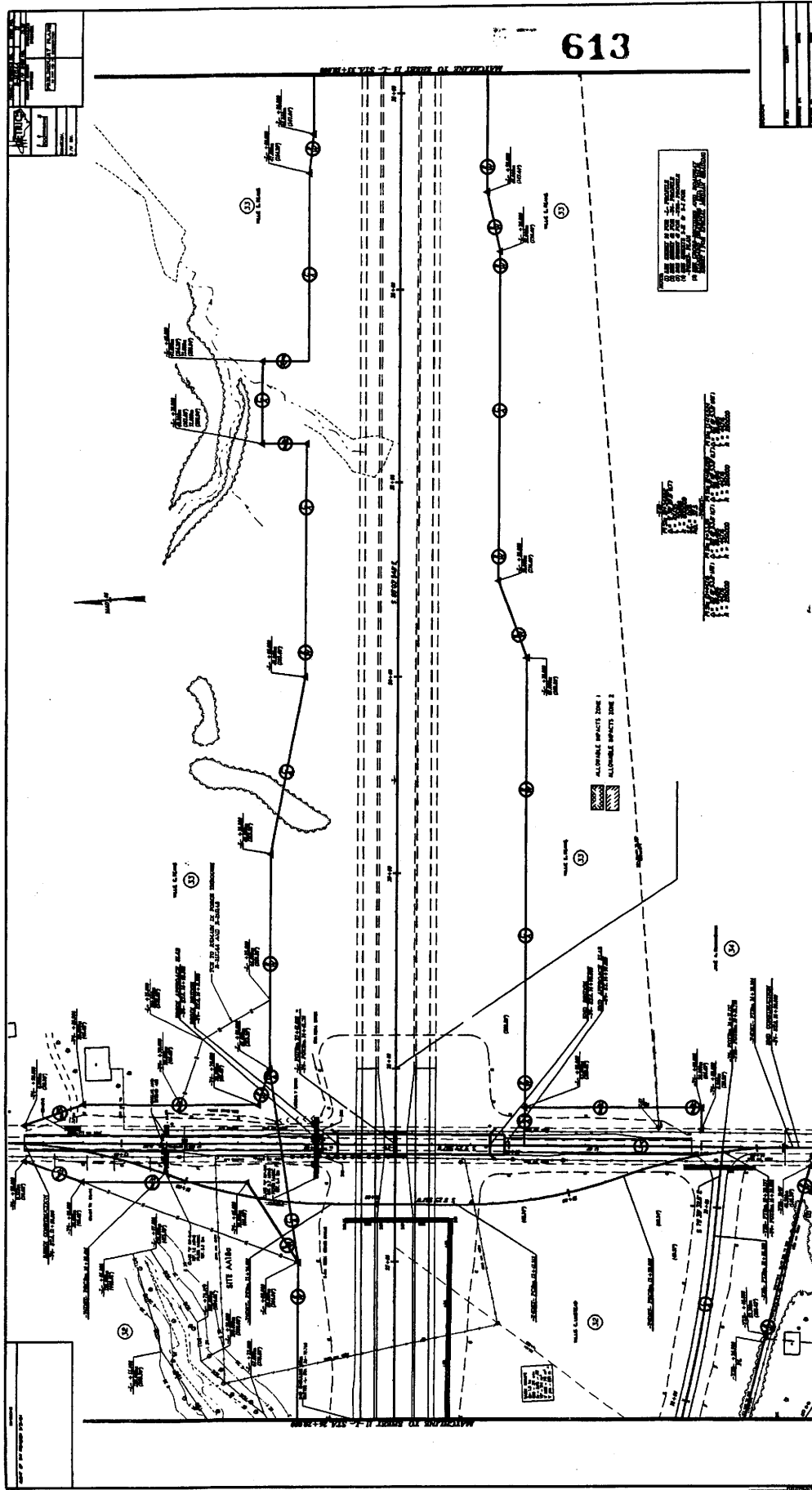
DIVISION OF HIGHWAYS
WAKE/JOHNSTON COUNTY
PROJECT: WBS 34459.11 (R-2551AA)
US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525

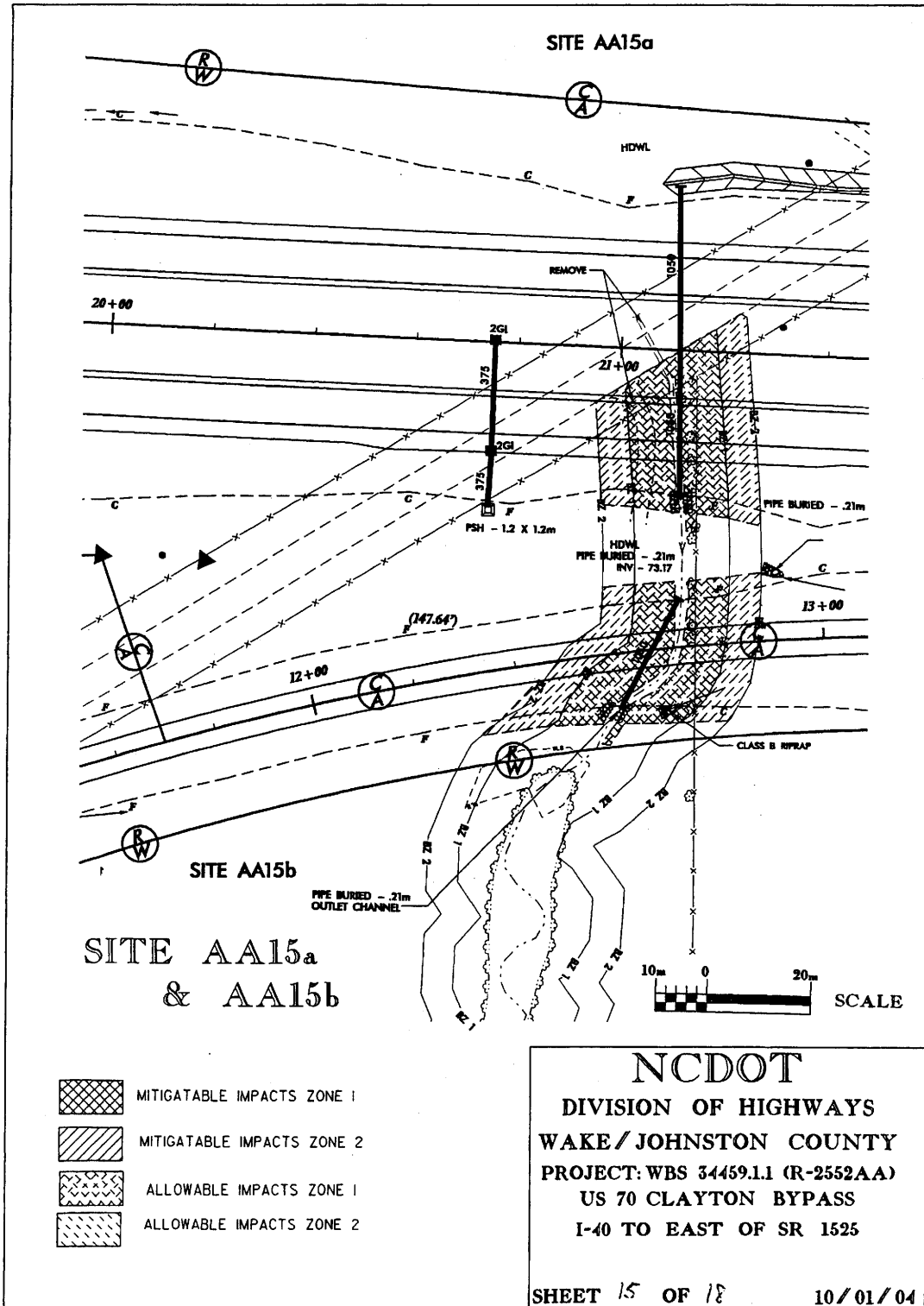
SHEET 14 OF 18 10/01/04

- MITIGATABLE IMPACTS ZONE 1
- MITIGATABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

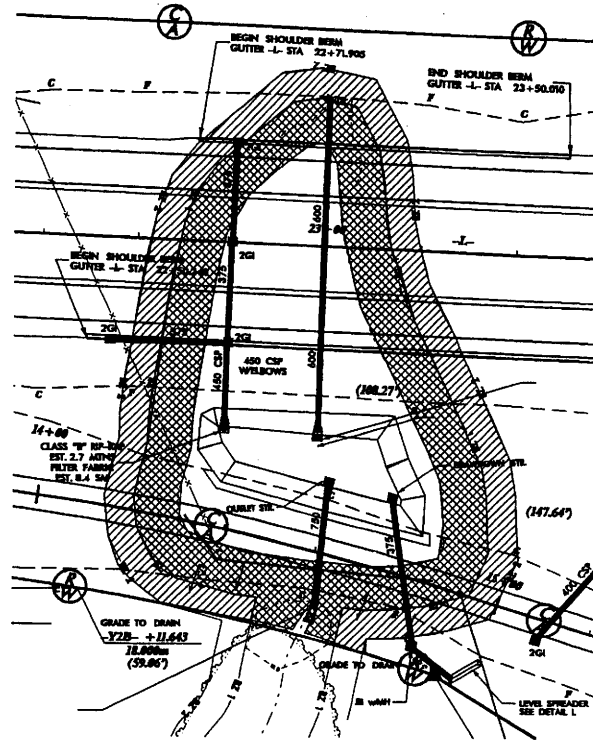






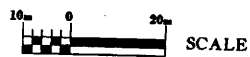


SITE AA16



SITE AA16

- | | |
|---|----------------------------|
|  | MITIGATABLE IMPACTS ZONE 1 |
|  | MITIGATABLE IMPACTS ZONE 2 |
|  | ALLOWABLE IMPACTS ZONE 1 |
|  | ALLOWABLE IMPACTS ZONE 2 |



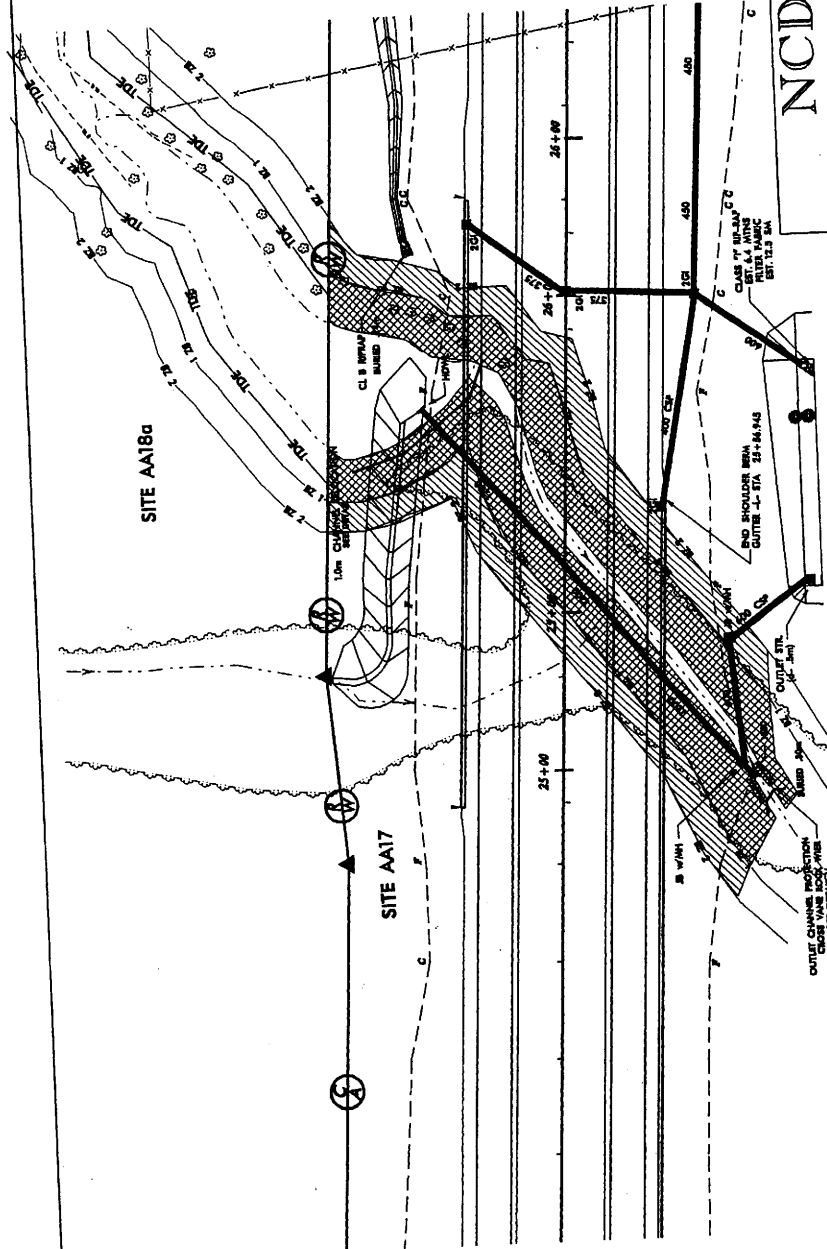
NCDOT
 DIVISION OF HIGHWAYS
 WAKE/JOHNSTON COUNTY
 PROJECT: WBS 34459.1.1 (R-2552AA)
 US 70 CLAYTON BYPASS
 I-40 TO EAST OF SR 1525

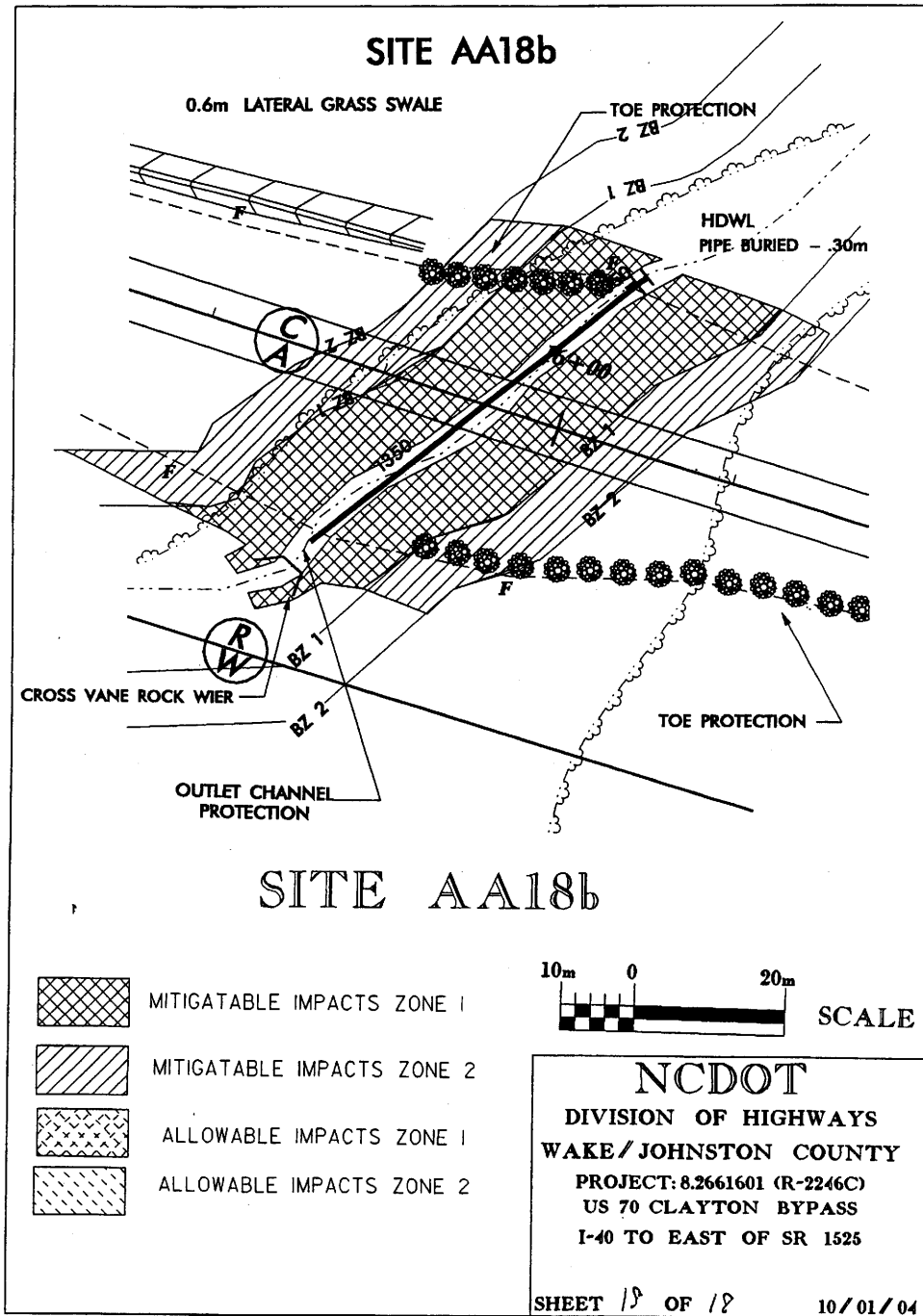
SHEET 16 OF 18

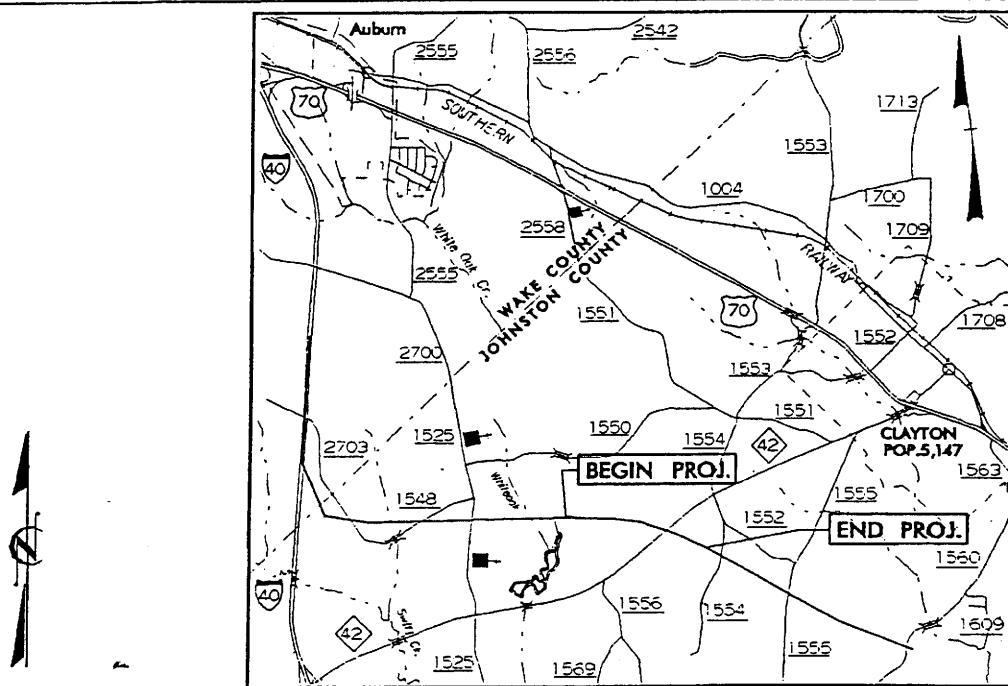
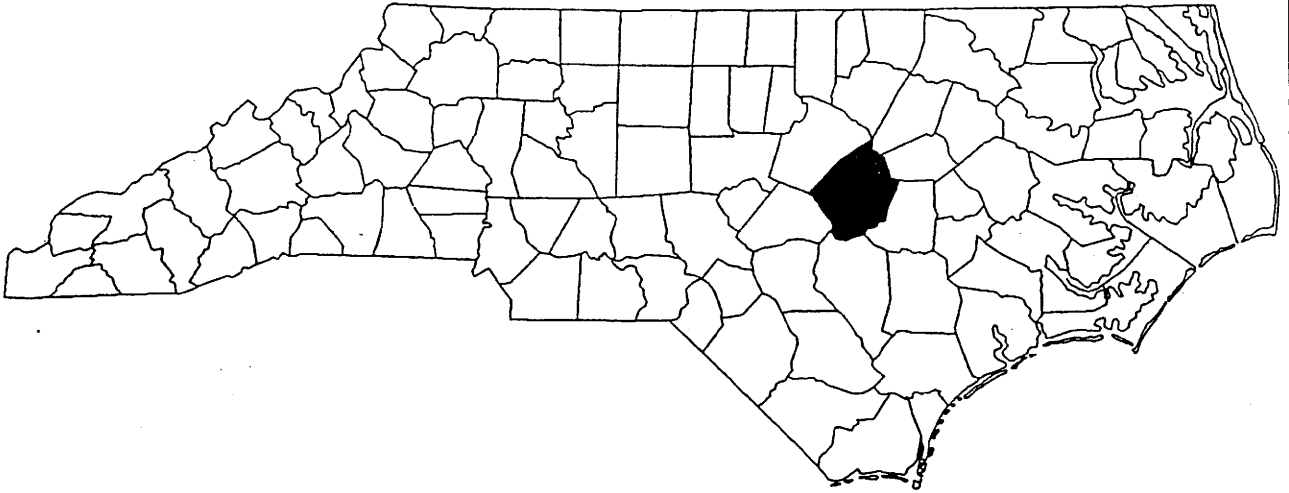
10/01/04

SHEET 17 OF 17 10/01/04

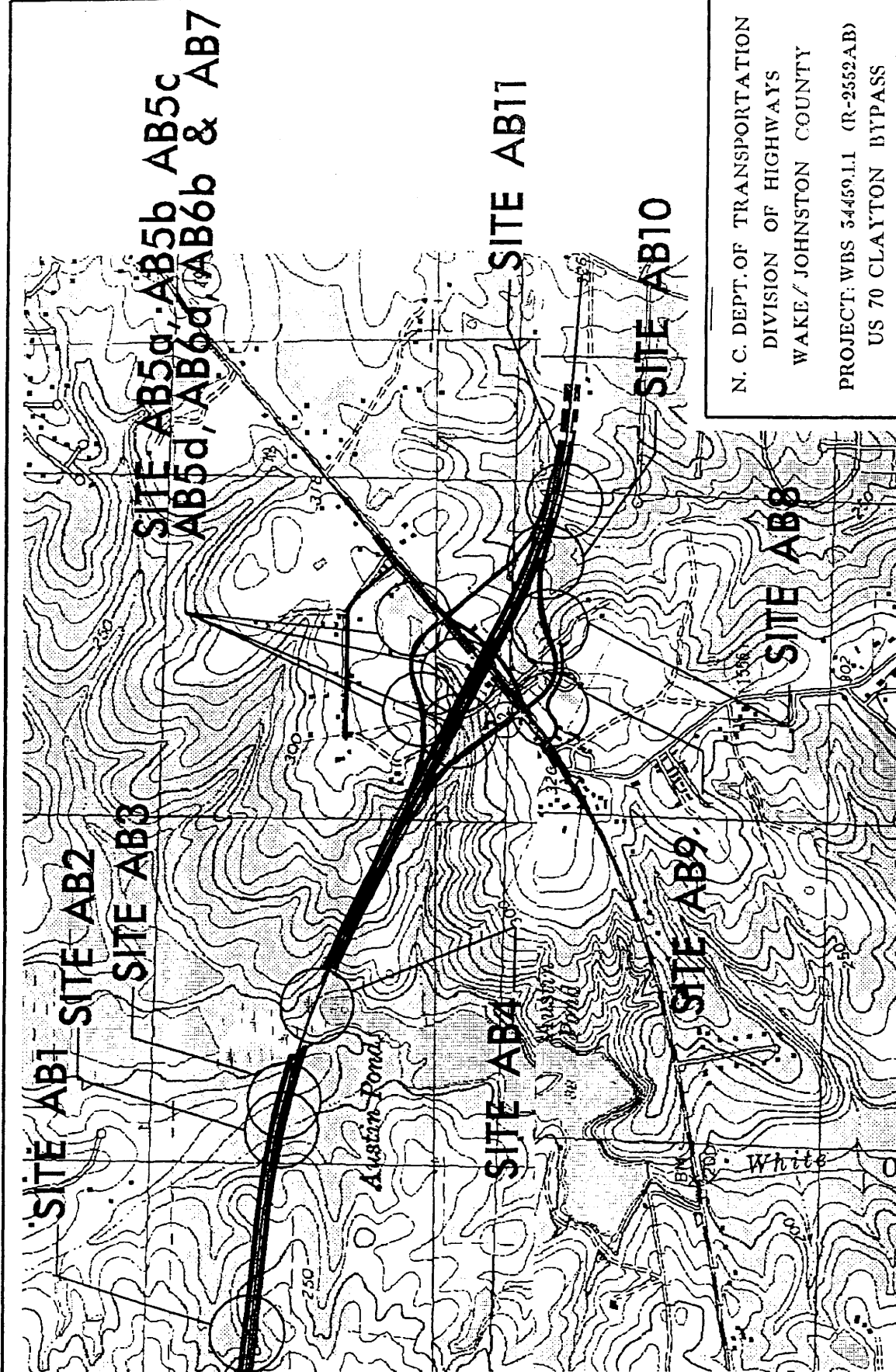
SITE AA17 & AA18a





VICINITY
MAP

US 70 CLAYTON BYPASS



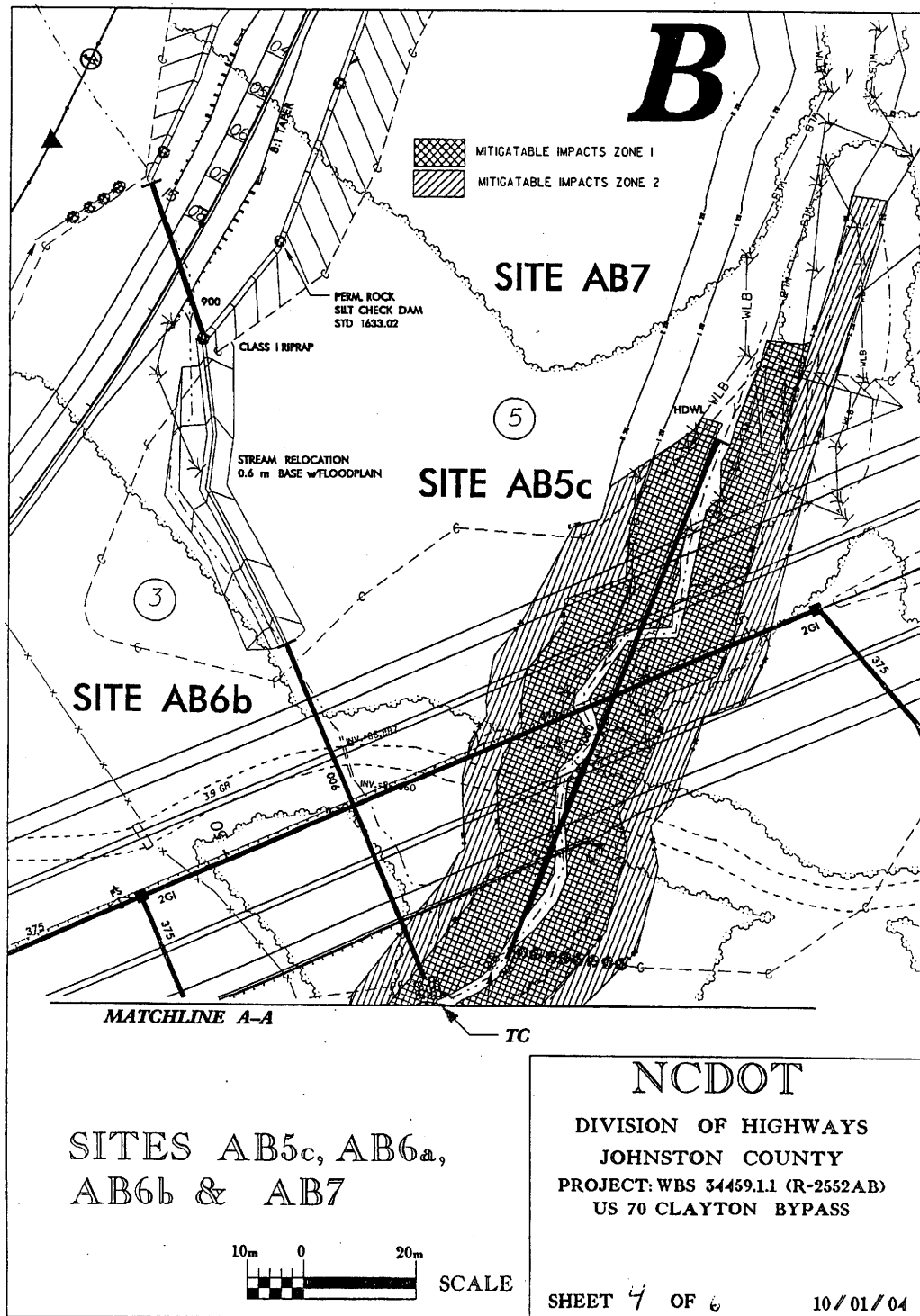
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 WAKE/JOHNSTON COUNTY
 PROJECT: WBS 54459.1.1 (R-2552AB)
 US 70 CLAYTON BYPASS

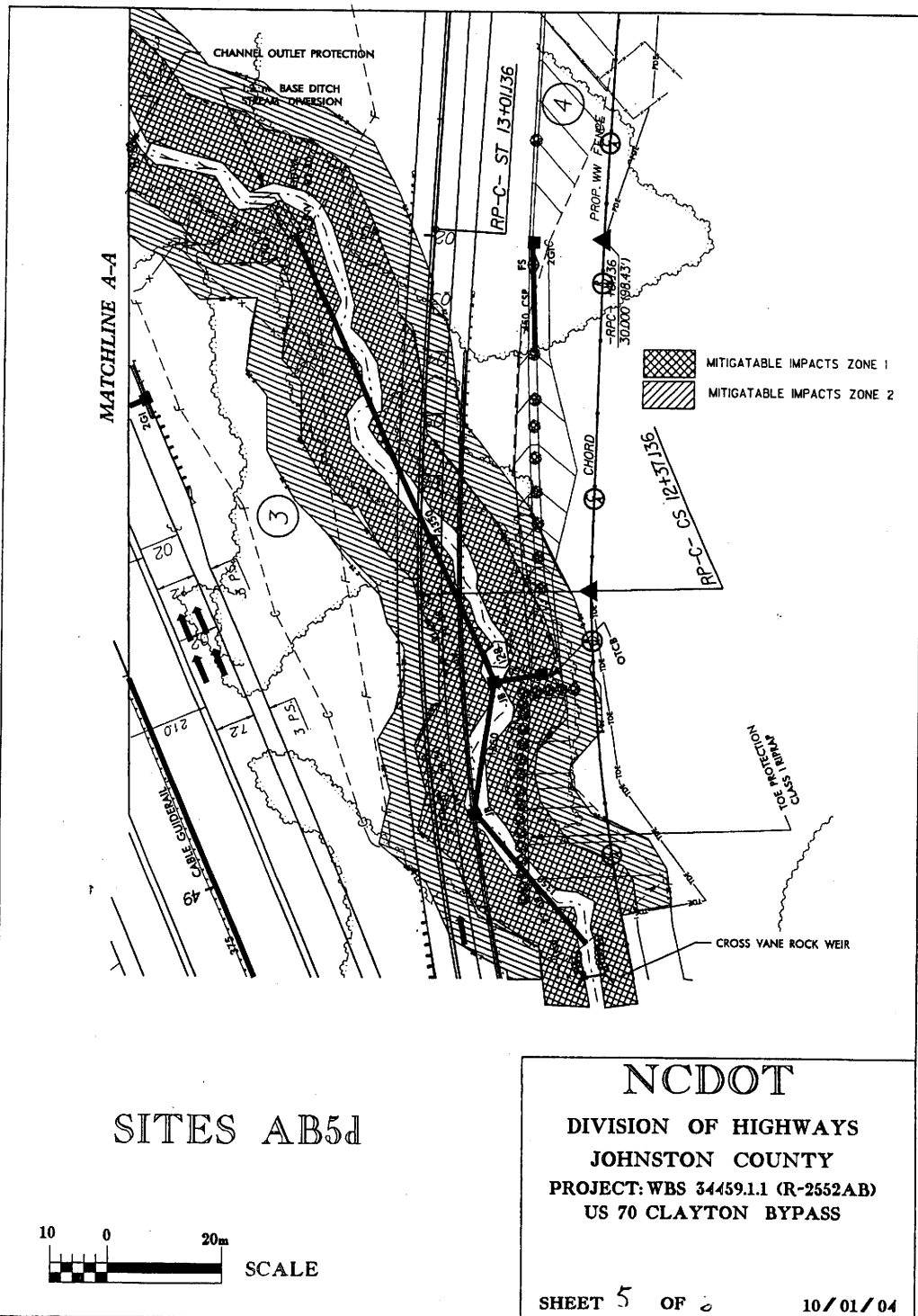
SITE MAP

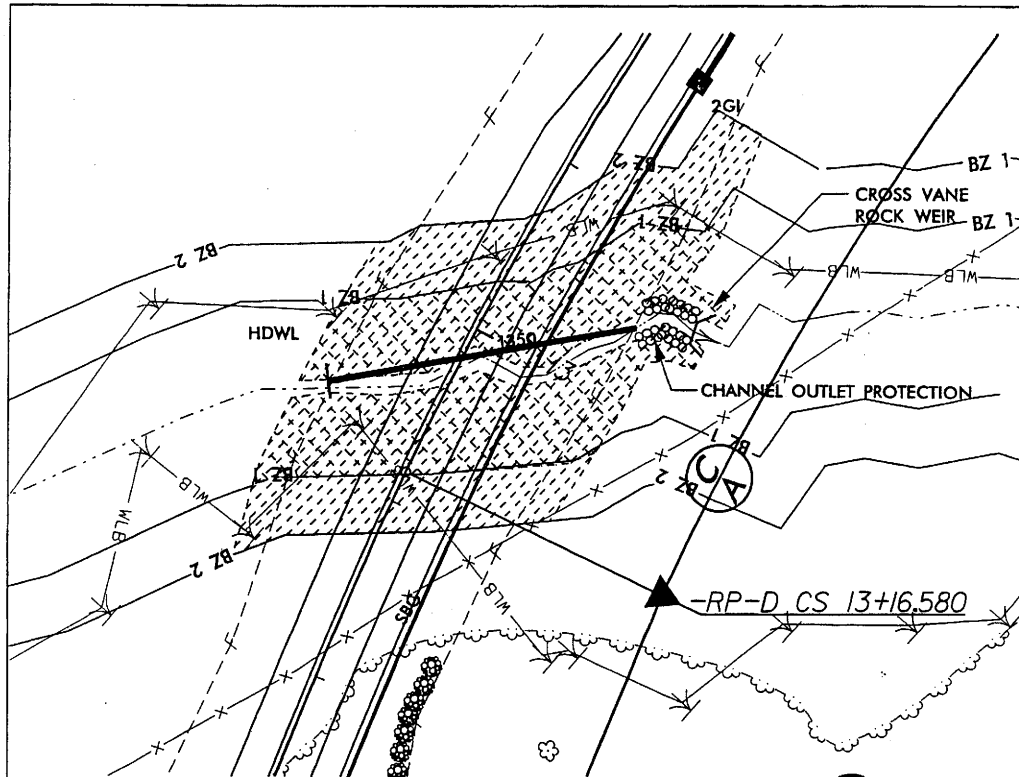
SHEET 6 OF 6 10/01/04

NOTE : WETLAND IMPACT IN BUFFER ZONES	1	2
- SITE AB4	8179.27	0.00
SITE AB7	9272.26	0.00
- SITE AB11	14760.87	0.00

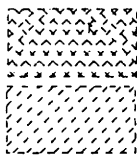
38278
SHEET 3 OF 6







SITE AB8



ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2



NCDOT

DIVISION OF HIGHWAYS

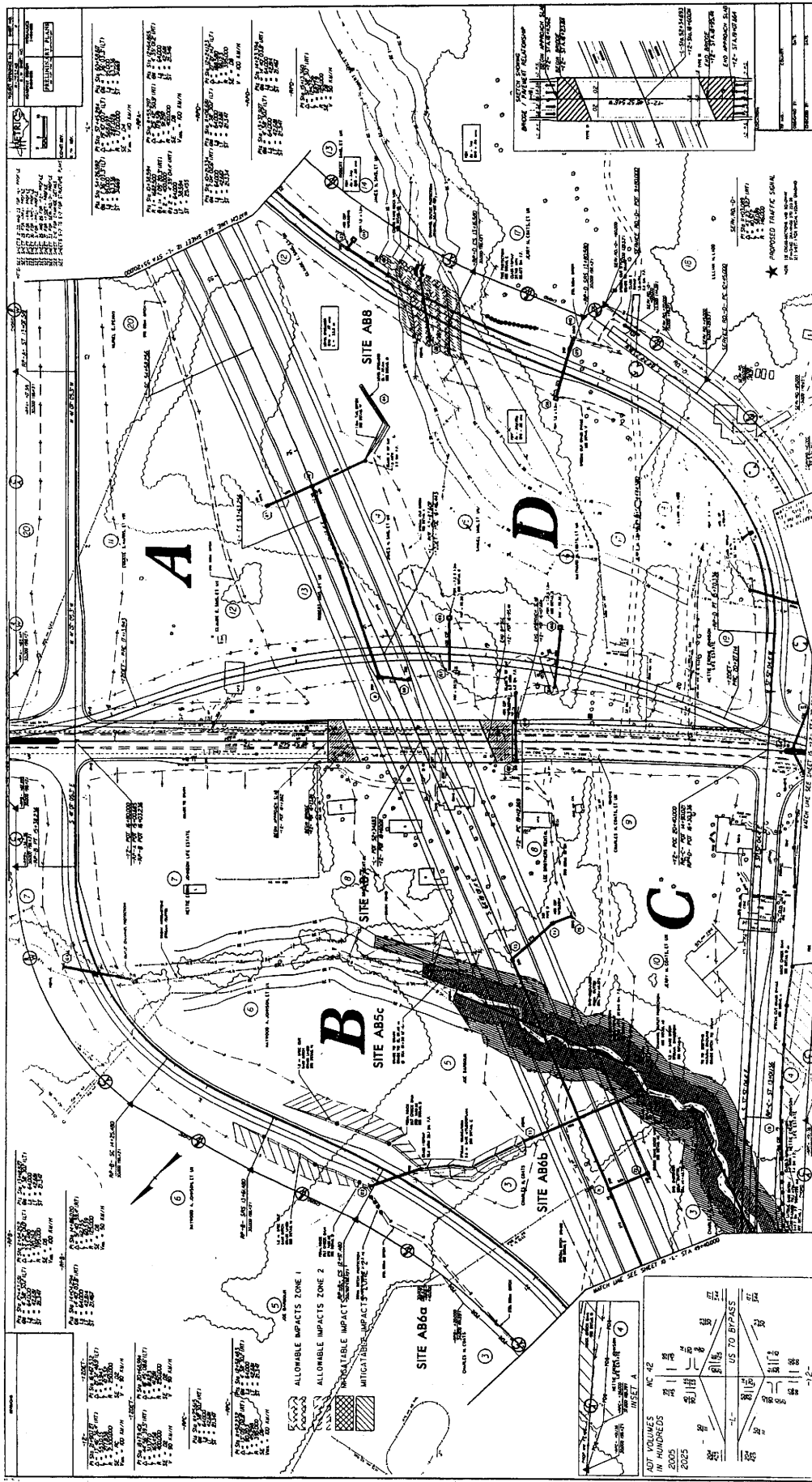
JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AB)

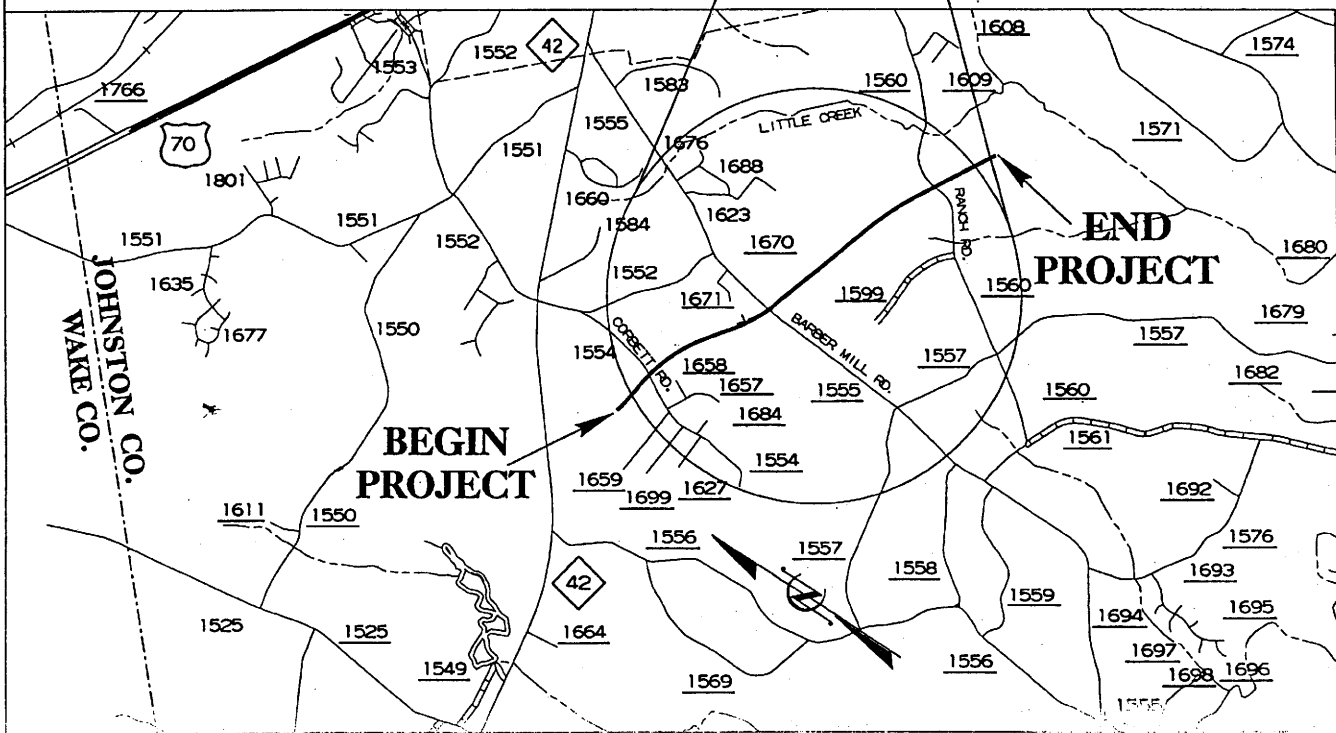
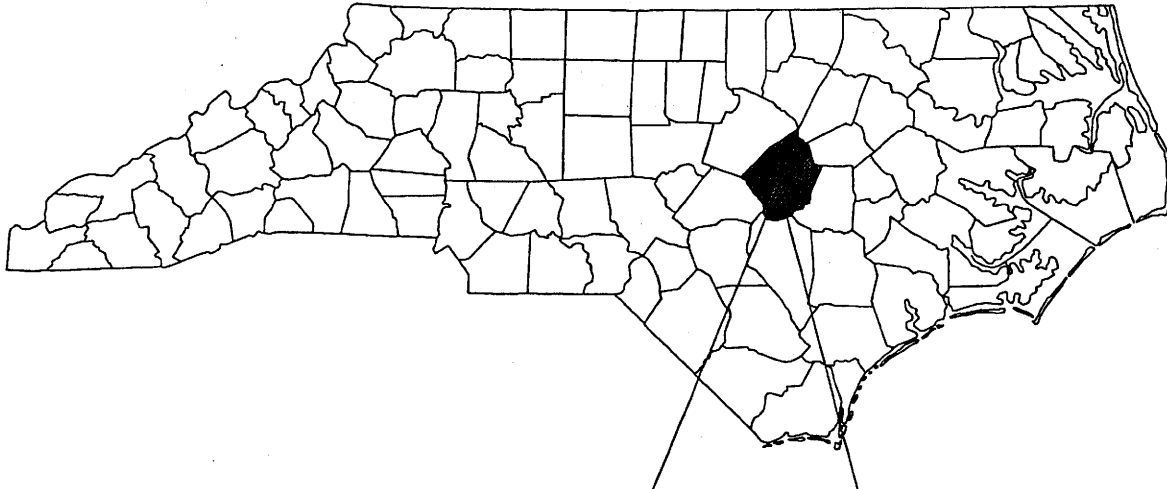
US 70 CLAYTON BYPASS

SHEET 6 OF 6

10/01/04



NORTH CAROLINA



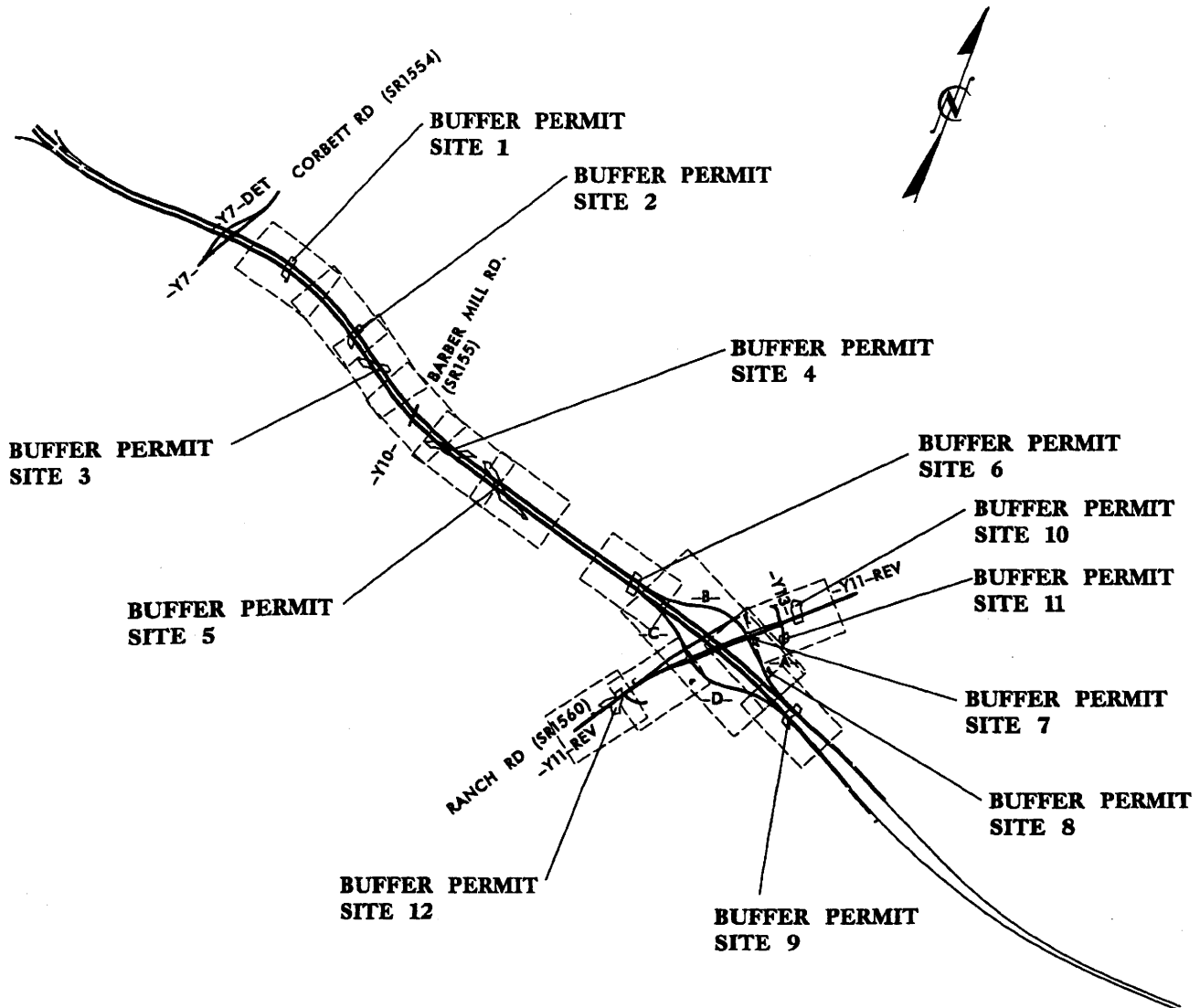
BUFFER PERMIT DRAWING VICINITY MAP R-2552B

**NCDOT
DIVISION OF HIGHWAYS
JOHNSTON COUNTY**

**PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)**

SHEET OF 9/23/2004

SITE MAP



BUFFER PERMIT DRAWING VICINITY MAP

**DIVISION OF HIGHWAYS
JOHNSTON COUNTY**

**PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)**

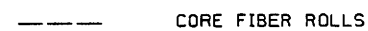
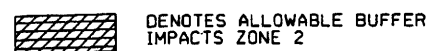
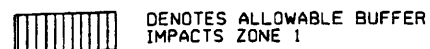
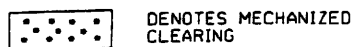
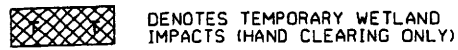
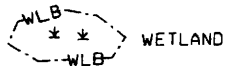
SHEET 2 OF 11

9/23/2004

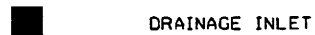
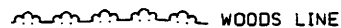
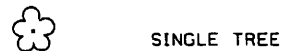


LEGEND

---WLB--- WETLAND BOUNDARY



(DASHED LINES DENOTE EXISTING STRUCTURES)



BUFFER PERMIT DRAWING VICINITY MAP

**DIVISION OF HIGHWAYS
JOHNSTON COUNTY**

**PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)**

SHEET 4 OF 11 9/16/2004

OWNER'S NAME	ADDRESS
(14) Romero, Rubel	2012 Scott Court Clayton, NC 27520
(15) Stephenson, Clennis	5524 Rolling Field Dr. Garner, NC 27529
(16) Harris, Joseph L.	514 N. East St. Raleigh, NC 27604
(17) Gilbert, Jennifer P.	273-C Blue Pond Rd. Clayton, NC 27520
(18) Parrish, Samuel Clarence	377 Short Johnson Rd. Clayton, NC 27520
(19) Lane, Angela Yopp	606 S. 5th St. Mebana, NC 27302
(20) Poole, Reginald M., Sr.	3907 Barber Mill Rd. Clayton, NC 27520
(26) Delaine, Blanche Jean	3960 Barber Mill Rd. Clayton, NC 27520
(29) Johnson, Roland H.	2433 Tweedmore Ct. High Point, NC 27625
(30) Bolyard, Gypsy Rochelle	3047 Jack Rd. Clayton, NC 27520
(31) Edwards, Honey H.	216 E. Horne St. Clayton, NC 27520
(32) Canady, Kenneth R.	203 Blanche St. Clayton, NC 27520
(34) Langford, Taylor Morton, Jr.	2100 Twin Acres Rd. Clayton, NC 27520
(35) Haden, James Sullivan	1120 Ranch Rd. Clayton, NC 27520
(36) Whitley, Joseph M.	740 Ranch Rd. Clayton, NC 27520
(39) Carolina Packers, Inc.	P.O. Drawer 1109 Smithfield, N.C. 27577
(40) Ontiveros, Lynda Triplett	411 Pleasant Hill Ave. North Sebastopol, CA 95472
(58) Shand, Annie	PO Box 32 Clayton, NC 27520
(59) Whittemore, Joseph Franklin, Jr.	140 Canyon Rd. Clayton, NC 27520
(64) Jones, John A., Jr.	1357 Ranch Rd. Clayton, NC 27520
(68) Langford, Phillip E.	2130 Twin Acres Rd. Clayton, NC 27520
(69) Rethemeyer, J.W.	1521 Ranch Rd. Clayton, NC 27520
(902) Carolina Packers, Inc.	P.O. Drawer 1109 Smithfield, N.C. 27577

**PROPERTY OWNER
NAME AND ADDRESS**

**DIVISION OF HIGHWAYS
JOHNSTON COUNTY**

**PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM
EAST OF NC 42 TO EAST OF
SR 1560 (RANCH ROAD)**

SHEET 7 OF 11 9/17/2004

BUFFER IMPACTS SUMMARY

[illegible]

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

JOHNSTON COUNTY
PROJECT: 8.T311002 (R-2552B)
US-70 CLAYTON BYPASS
EAST OF NC 42 TO EAST OF SR 1560
10/14/04

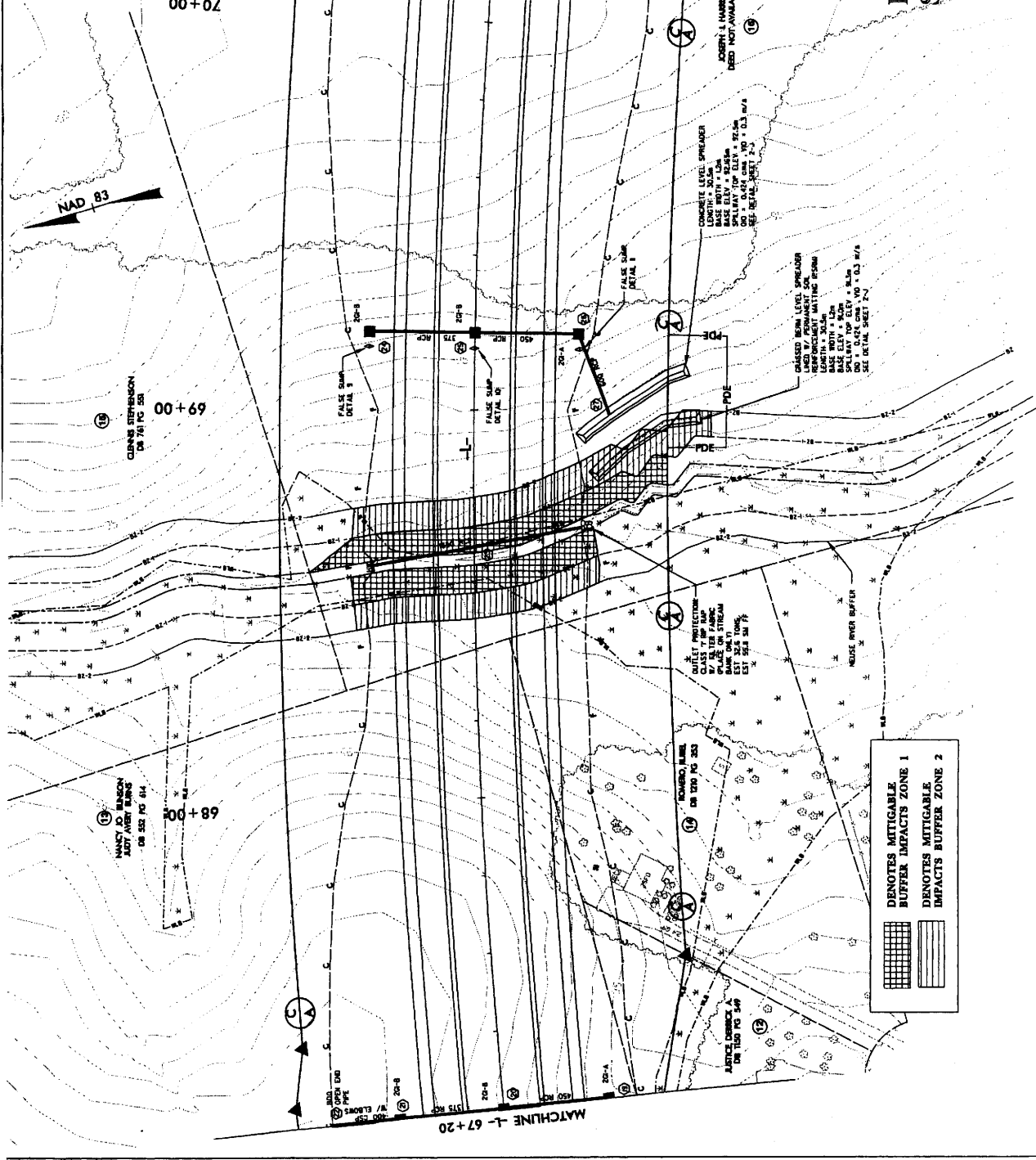
10/14/04
SHEET 5 OF 11

			WETLANDS IN BUFFER	
Site	Station		ZONE 1 (ft²)	ZONE 2 (ft²)
1	-L- Sta 68+60+/-		5984.7	1715.1
2	-L- Sta 73+30+/-		10382.3	4527.1
3	-L- Sta 74+50-75+80		19247.0	10620.0
4	-L- Sta 79+60-82+00		27400.0	11569.0
5	-L- Sta 82+30-86+00		21033.7	17608.7
12	-Y11- REV		3497.8	1787.0
	Sta 24+10 - 25+60			
			87545.7	47826.9

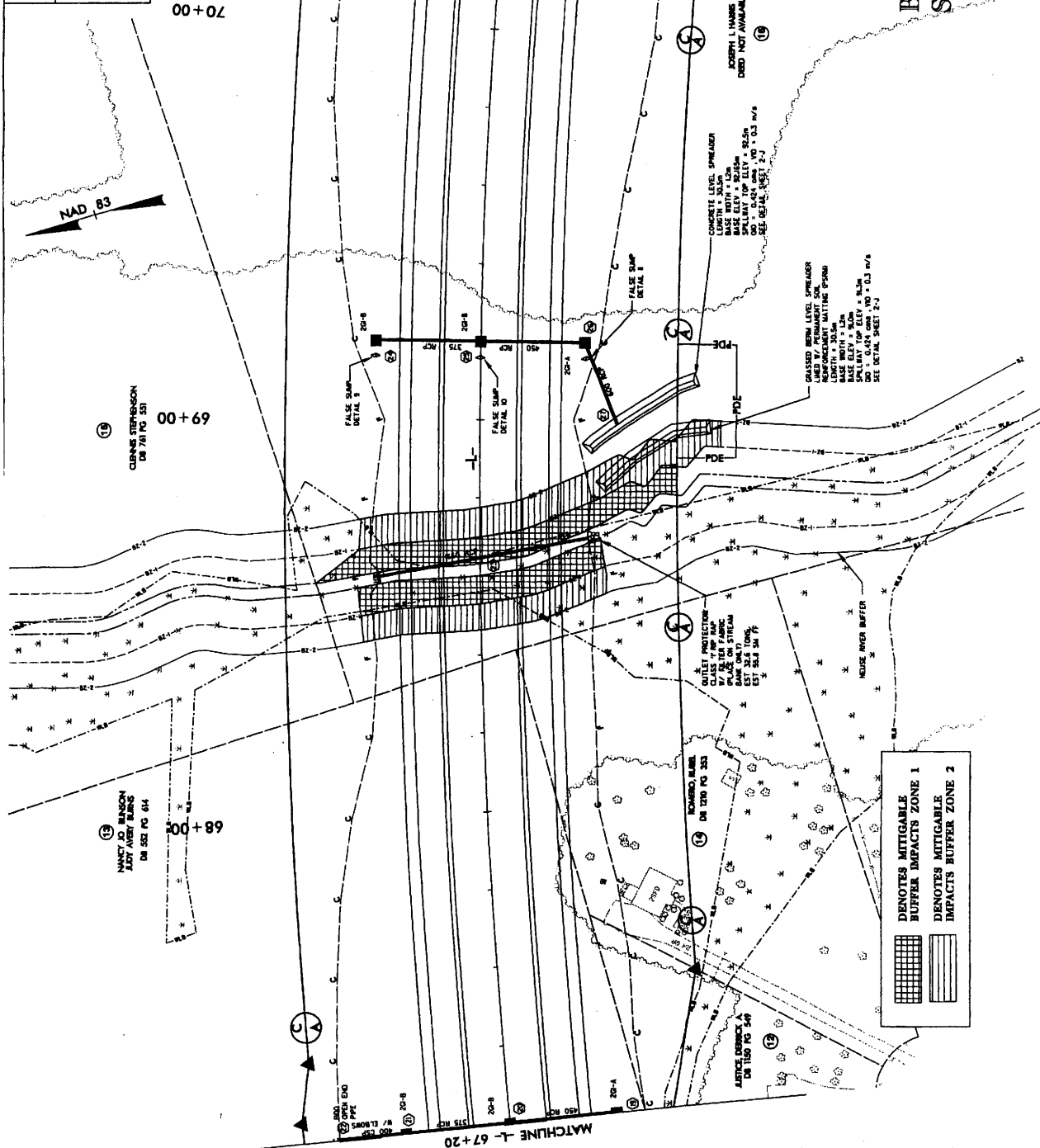
JOHNSTON COUNTY
PROJECT: 8.T311002 (F-2552B)
US-70 CLAYTON BYPASS
EAST OF NC 42 TO EAST OF SR 1560
9/23/2004
SHEET OF

BUFFER PERMIT
SITE 1

PROJECT REFERENCE NO. R-25525	SHEET NO. 7
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	BY SHEET NO.

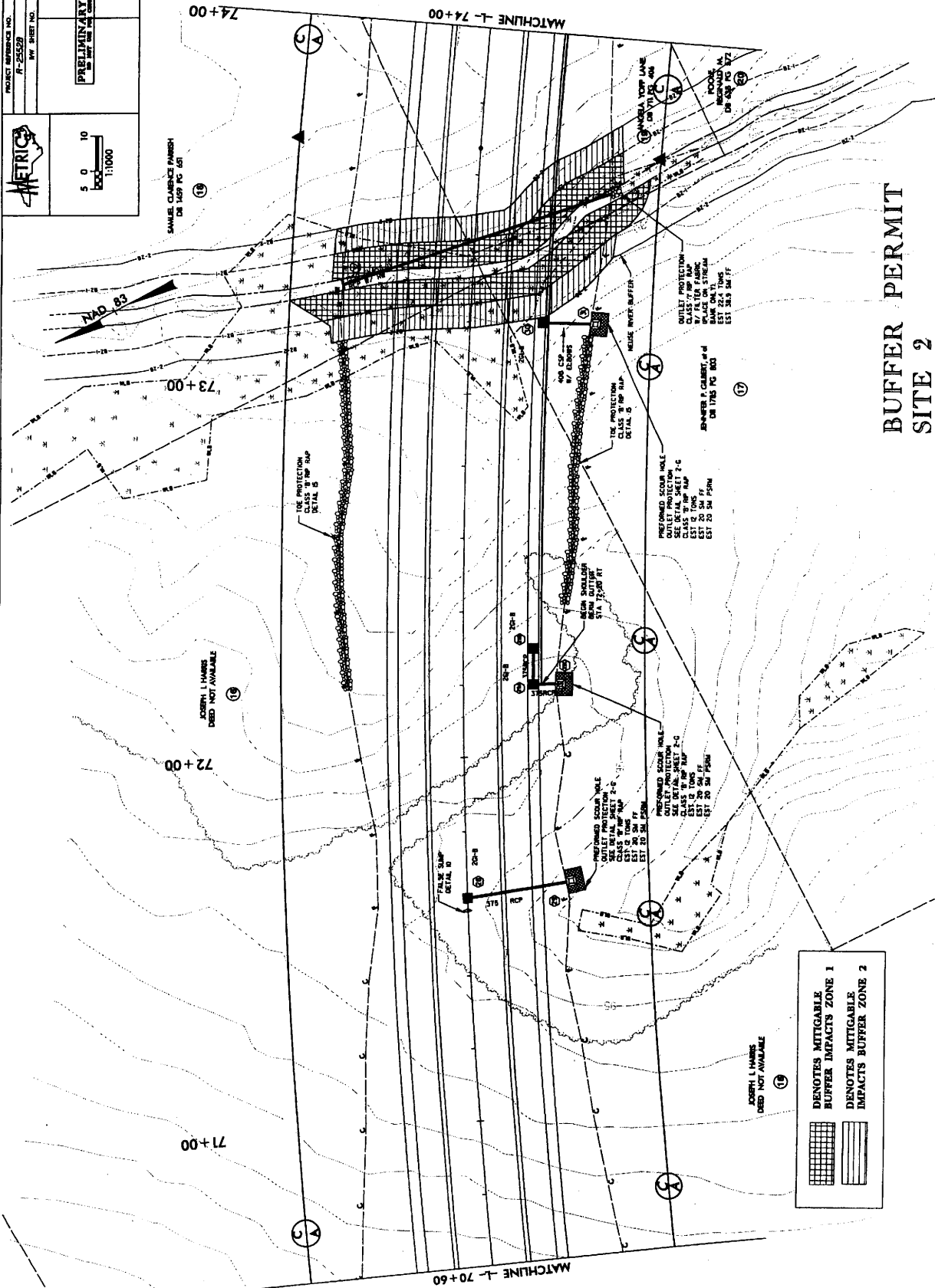


BUFFER PERMIT SITE 1




 DENOTES MITIGABLE
 BUFFER IMPACTS ZONE 1

 DENOTES MITIGABLE
 IMPACTS BUFFER ZONE 2



BUFFER PERMIT SITE 2

 DENOTES MITTIGABLE
 BUFFER IMPACTS ZONE 1
 DENOTES MITTIGABLE
 IMPACTS BUFFER ZONE 2

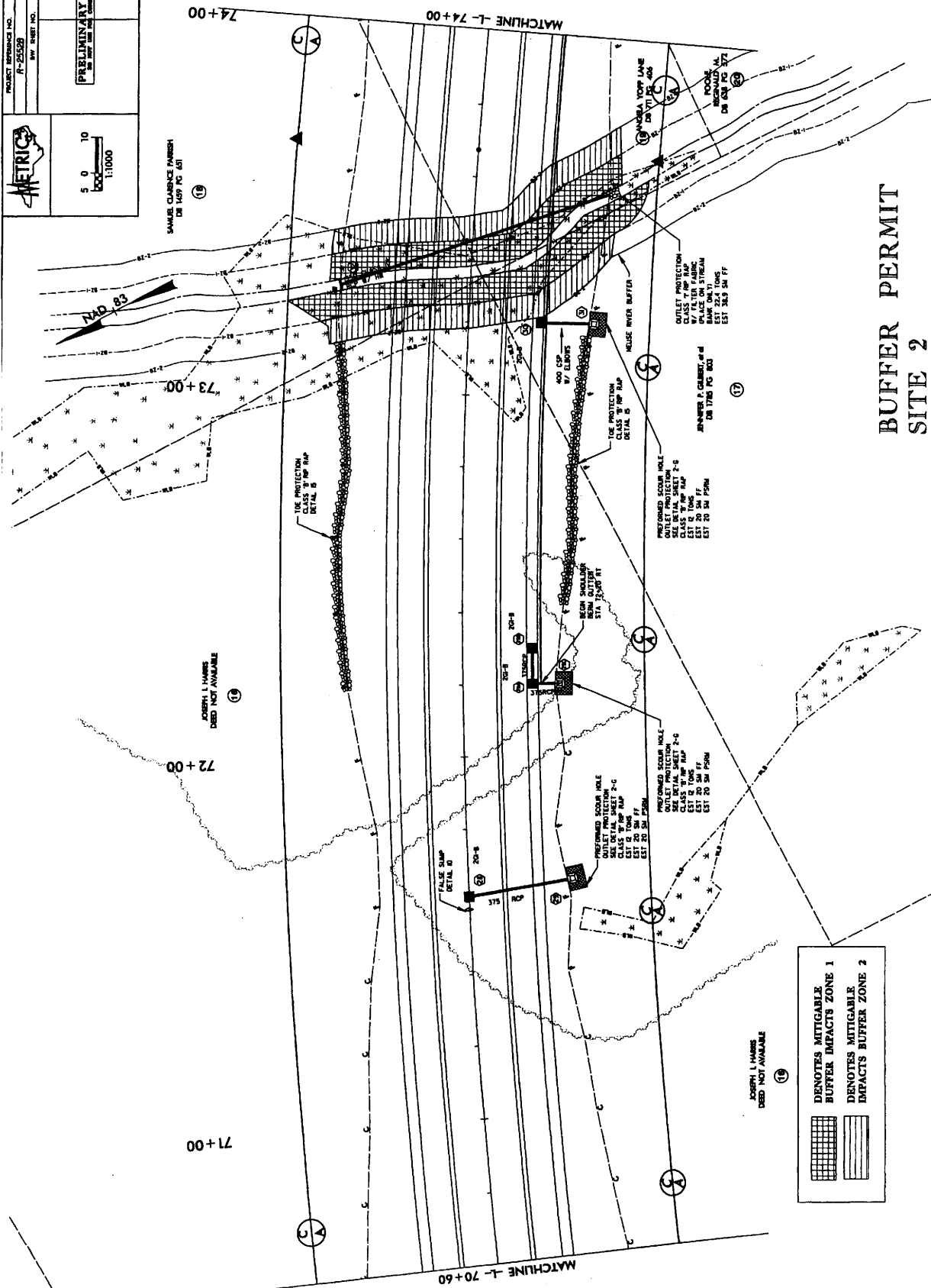
JOSEPH L. HARRIS
DEED NOT AVAILABLE

1-101056065 yonparmlsdl/rv2552bs buf/r02.pdf

9/23/2004

BUFFER PERMIT SITE 2

PROJECT REFERENCE NO. R-25528	SHEET NO. 8
PRELIMINARY PLANS FOR THE CONSTRUCTION	
	
SCALE 5 0 10 1:1000	



	PROJECT NUMBER	7-25522
	SHEET NO.	3
PRELIMINARY PLANS NOT FOR CONSTRUCTION		

REGINALD J. POOLE SR.
DN 434 PG 272

ANGELA TOP LANE
DN 771 PG 406

SAMUEL CLARKE PARKER
DN 1469 PG 451

ANGELA TOP LANE
DN 771 PG 406

REGINALD J. POOLE SR.
DN 434 PG 272

MARY ANN P. WAGSTAFF
DN 434 PG 258
DN 435 PG 255

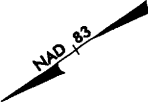
WALTER L. WOLFEY
DN 771 PG 473

WOLFEY, ALBERT MAY
DN 434 PG 256

REGINALD J. POOLE SR.
DN 434 PG 272

BUFFER PERMIT SITE 3

- DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
- DENOTES MITIGABLE IMPACTS BUFFER ZONE 2



5 0 10
1:1000

77+00

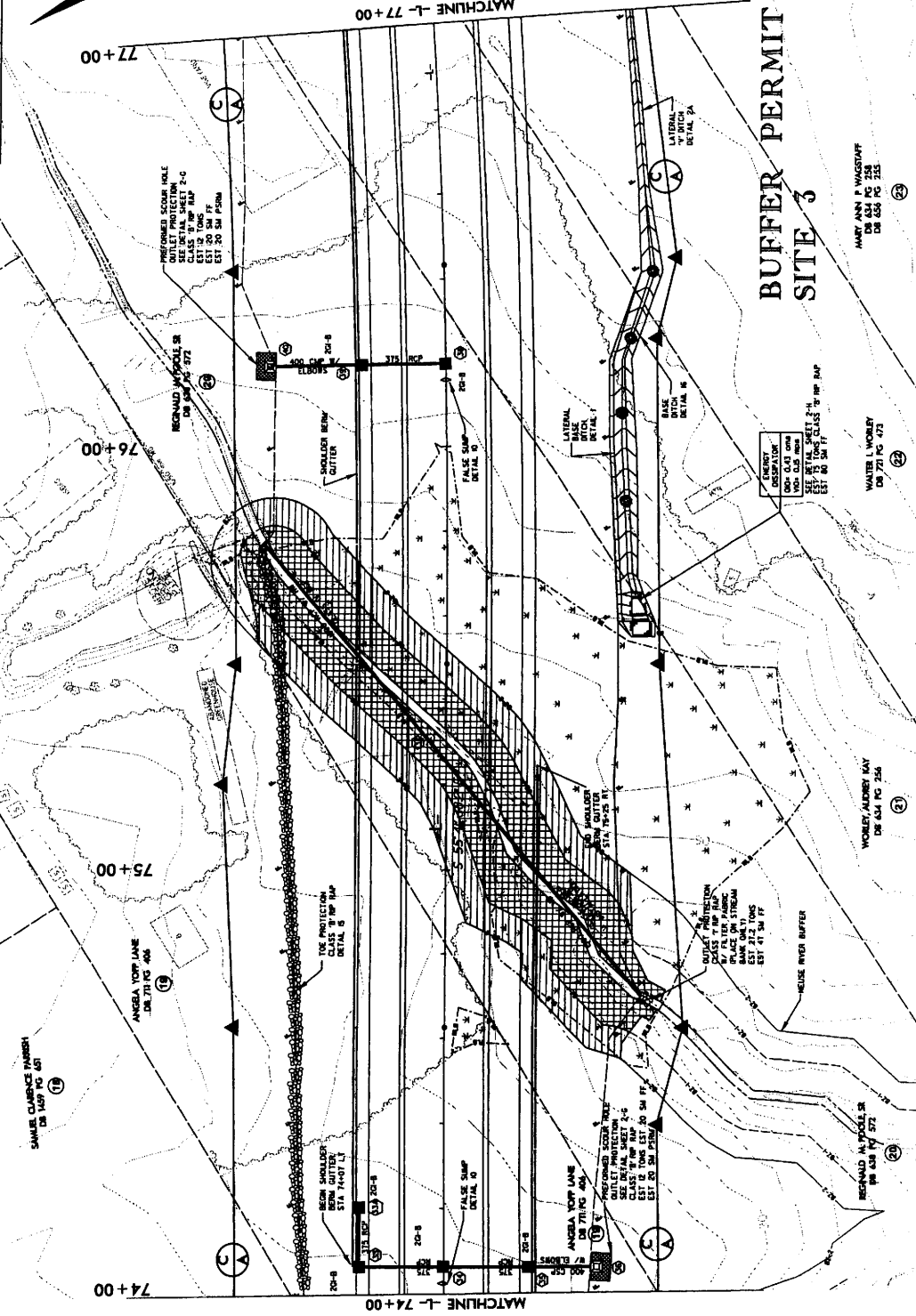
76+00

75+00

74+00

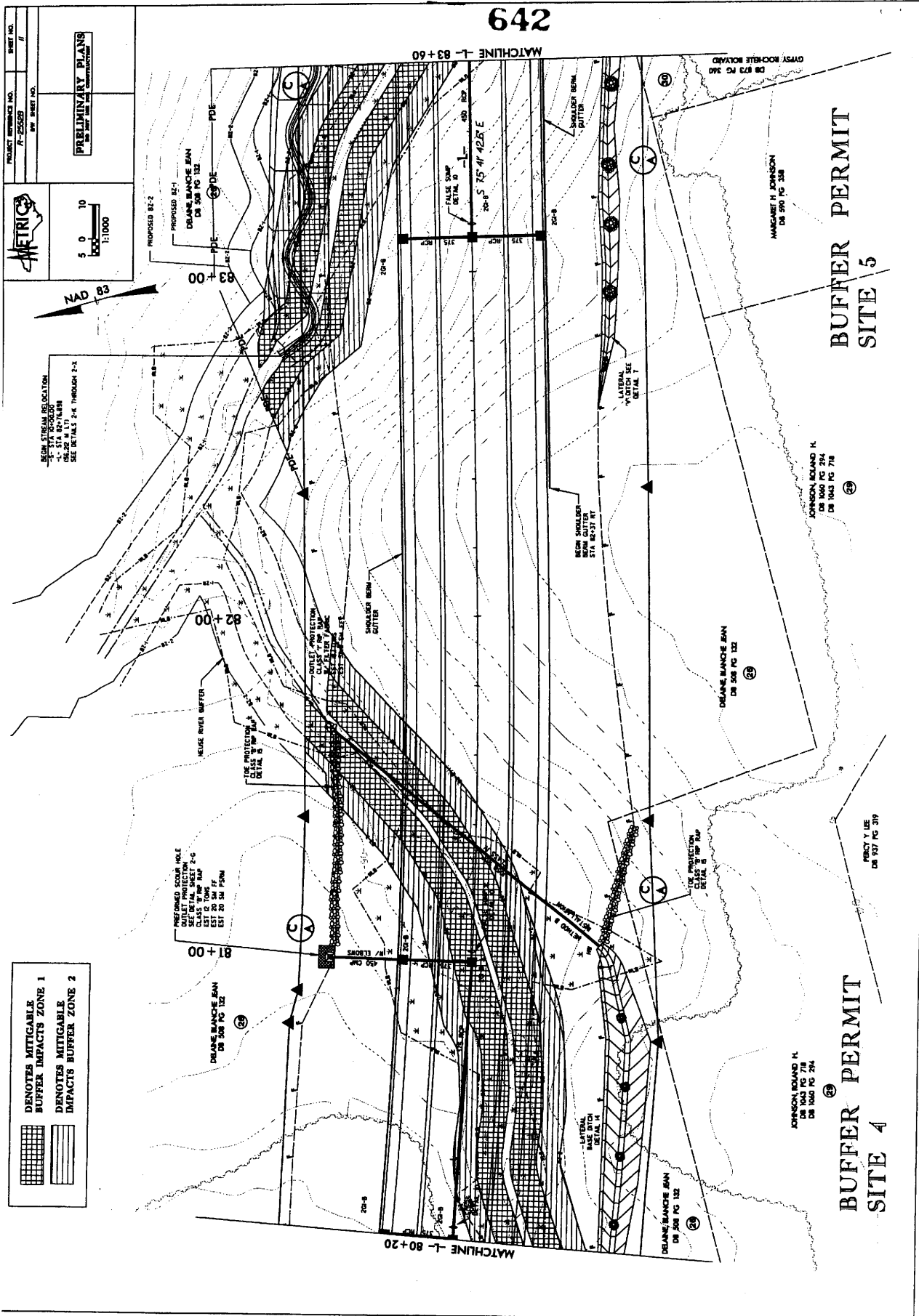
MATCHLINE -L- 77+00

MATCHLINE -L- 74+00



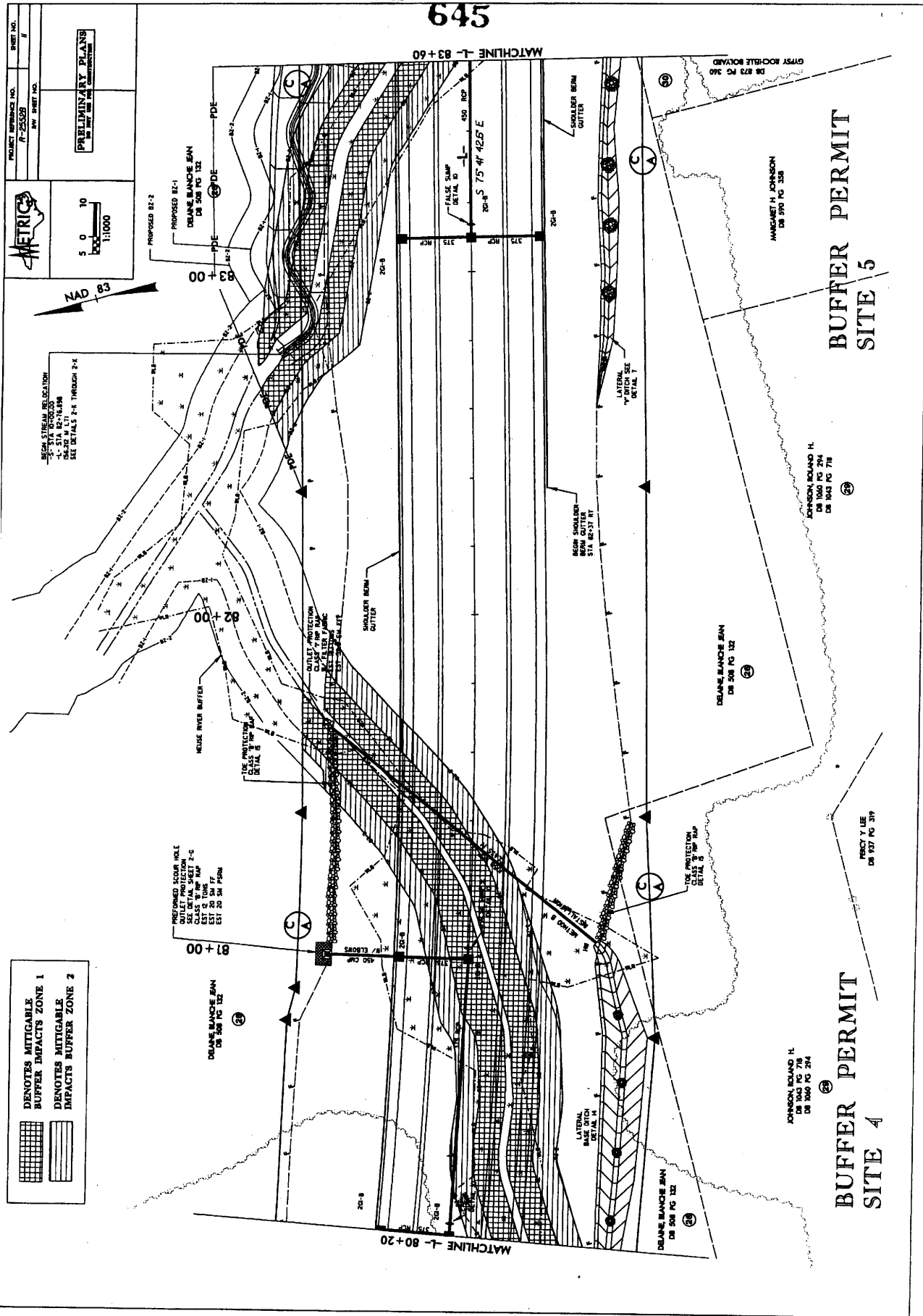












DENOTES MITIGABLE
 BUFFER IMPACTS ZONE 1
 DENOTES MITIGABLE
 IMPACTS BUFFER ZONE 2

PROJECT REFERENCE NO.
 R-25508

SHEET NO.
 11

PRELIMINARY PLANS
 NOT FOR CONSTRUCTION

5 0 10
 1:1000

NAD 83

BEGIN STREAM RELOCATION
 STA 82+00 TO 82+100
 SEE DETAILS 2-4 THROUGH 2-6

BUFFER PERMIT
 SITE 5

BUFFER PERMIT
 SITE 4

645

MATCHLINE - 80+20

MATCHLINE - 83+60

	PROJECT REFERENCE NO. R-55528		SHEET NO. 14
	NEW SHEET NO.		

PRELIMINARY PLANS

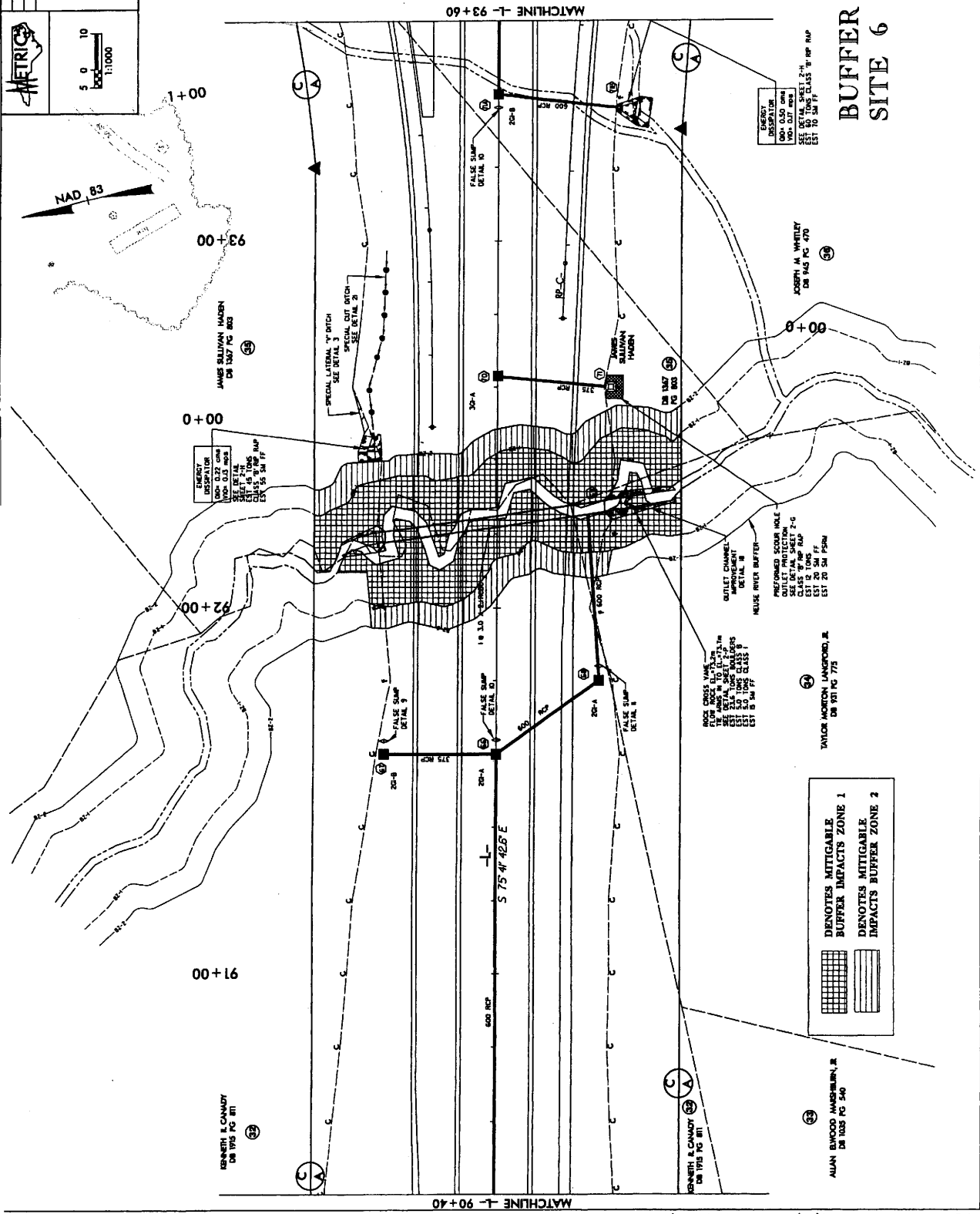
NO PART OF THIS DOCUMENT TO BE REPRODUCED

5 0 10



1:1000

BUFFER PERMIT SITE 6



 DENOTES MITTIGABLE
BUFFER IMPACTS ZONE 1

 DENOTES MITTIGABLE
IMPACTS BUFFER ZONE 2

ALLAN ELWOOD MARSH-BURN, JR
DB 1035 PG 540

TAYLOR 'MORTON LANGFORD, JR.
DB 021 800 717

36

EST 10 31 11

2

36

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fin

✓

15
22
33

ANGELINO, J.

TAYLOR H.

BLE

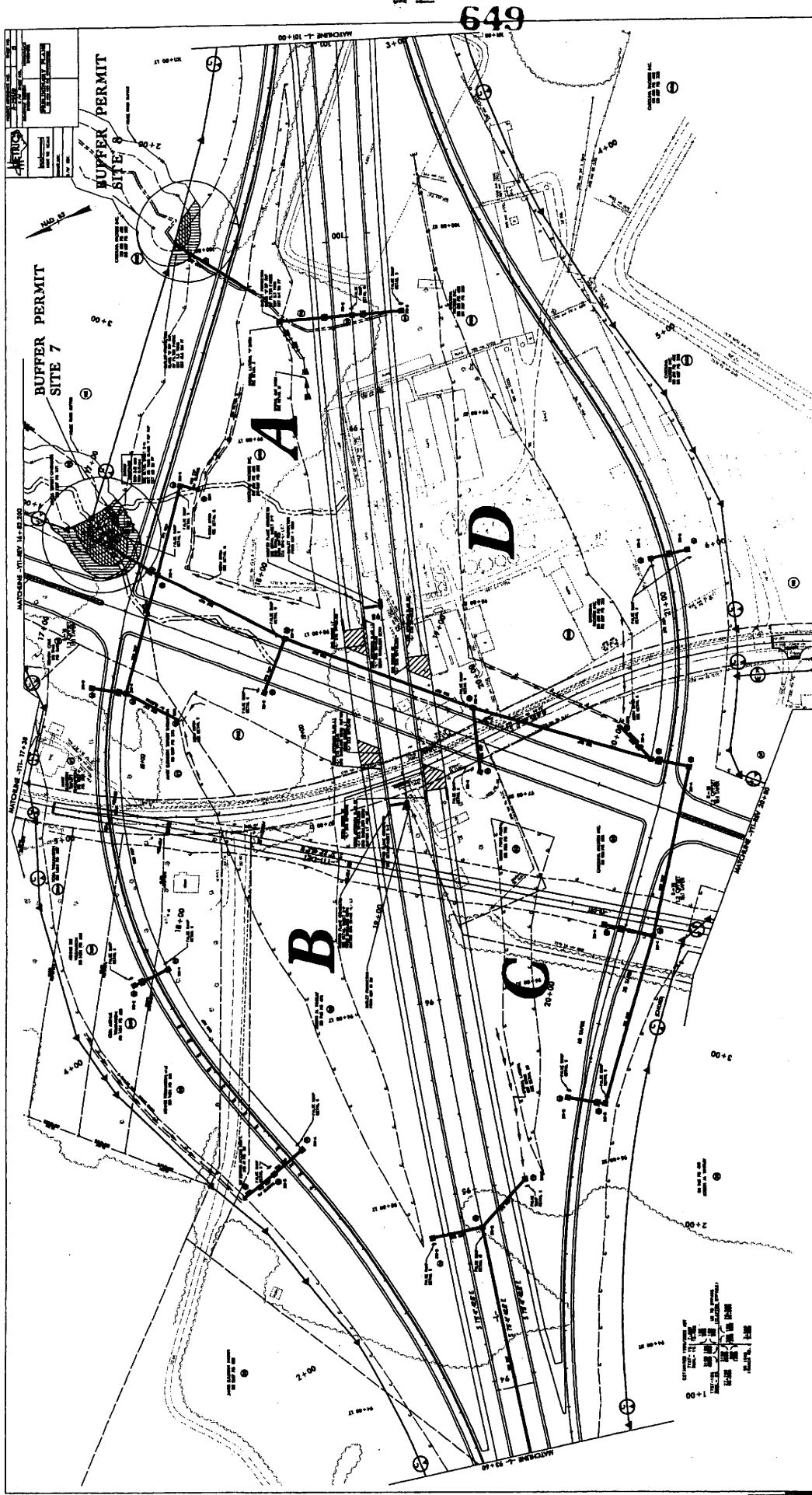
NOTES

Figure 1

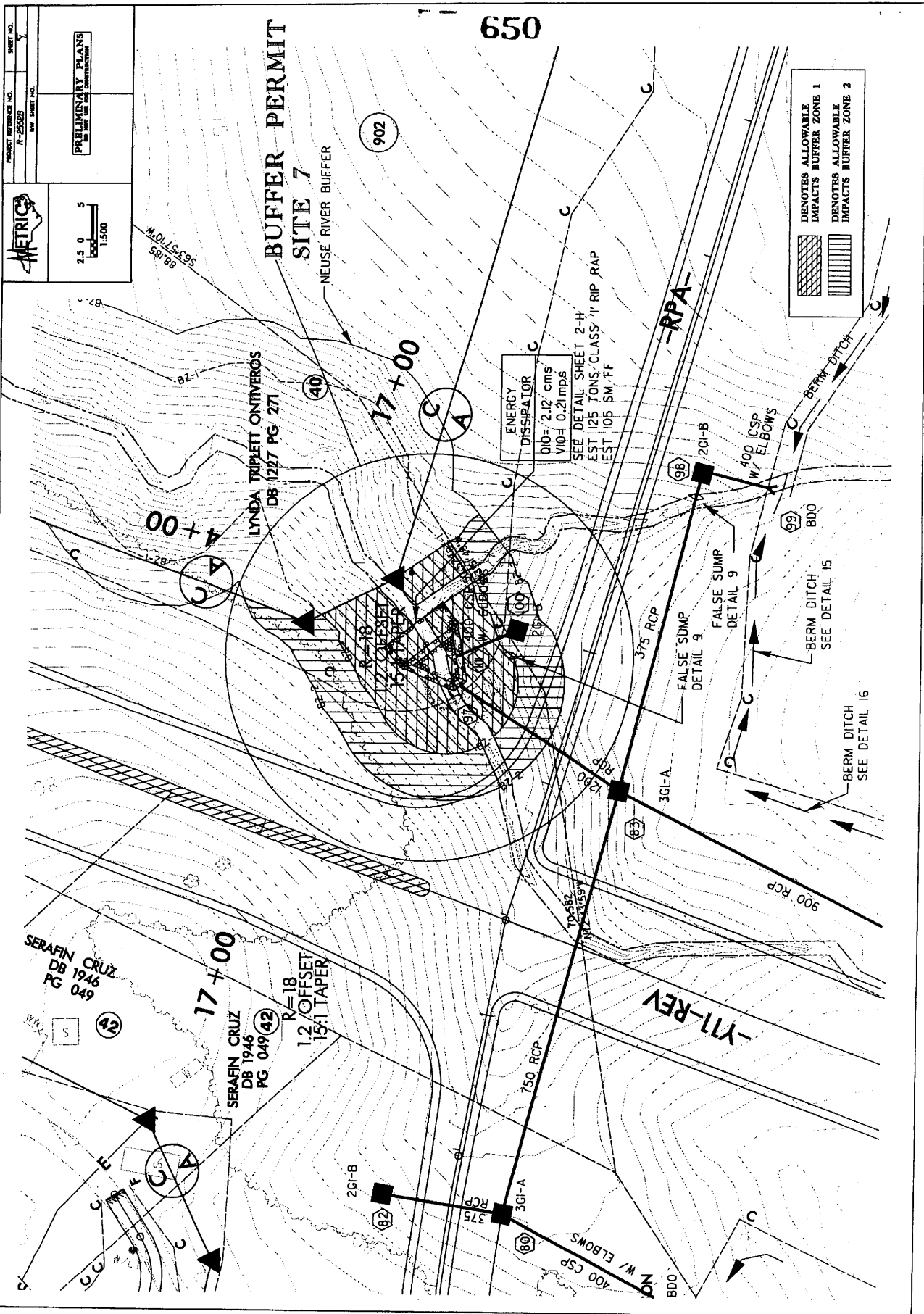
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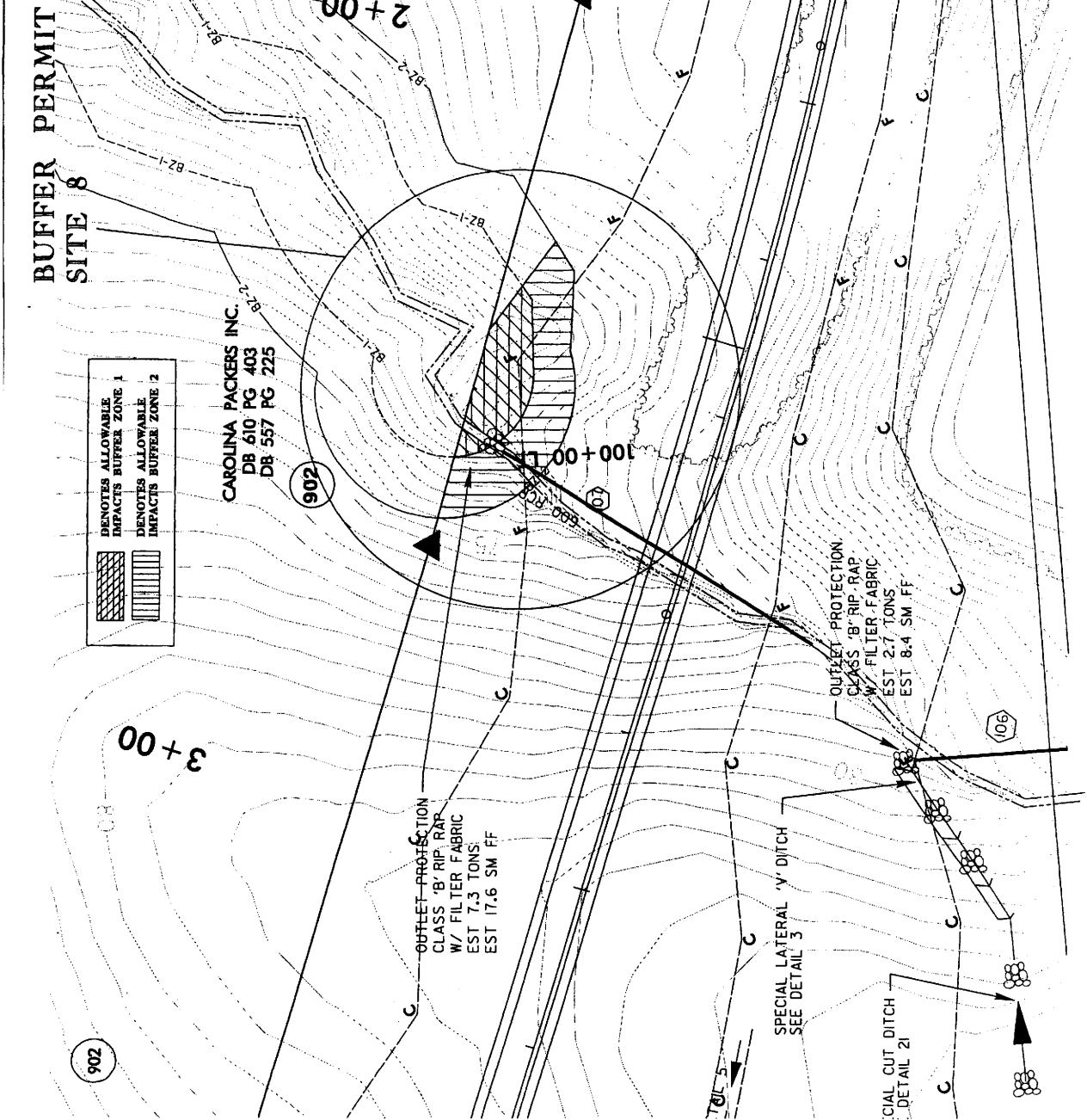
PROFESSOR N. B. BROWN

A590



SEE NEXT 2 SHEETS FOR BUFFER PERMIT SITES 7 AND 8





**BUFFER PERMIT
SITE 8**

DENOTES ALLOWABLE
IMPACTS BUFFER ZONE 1

CAROLINA PACKERS INC.
DB 610 PG 403
DB 557 PG 225

OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 7.3 TONS
EST 17.6 SM FF

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 3

OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 2.7 TONS
EST 8.4 SM FF

ICIAL CUT DITCH -

902

 $\varepsilon + 00$ ~~2 + 00~~

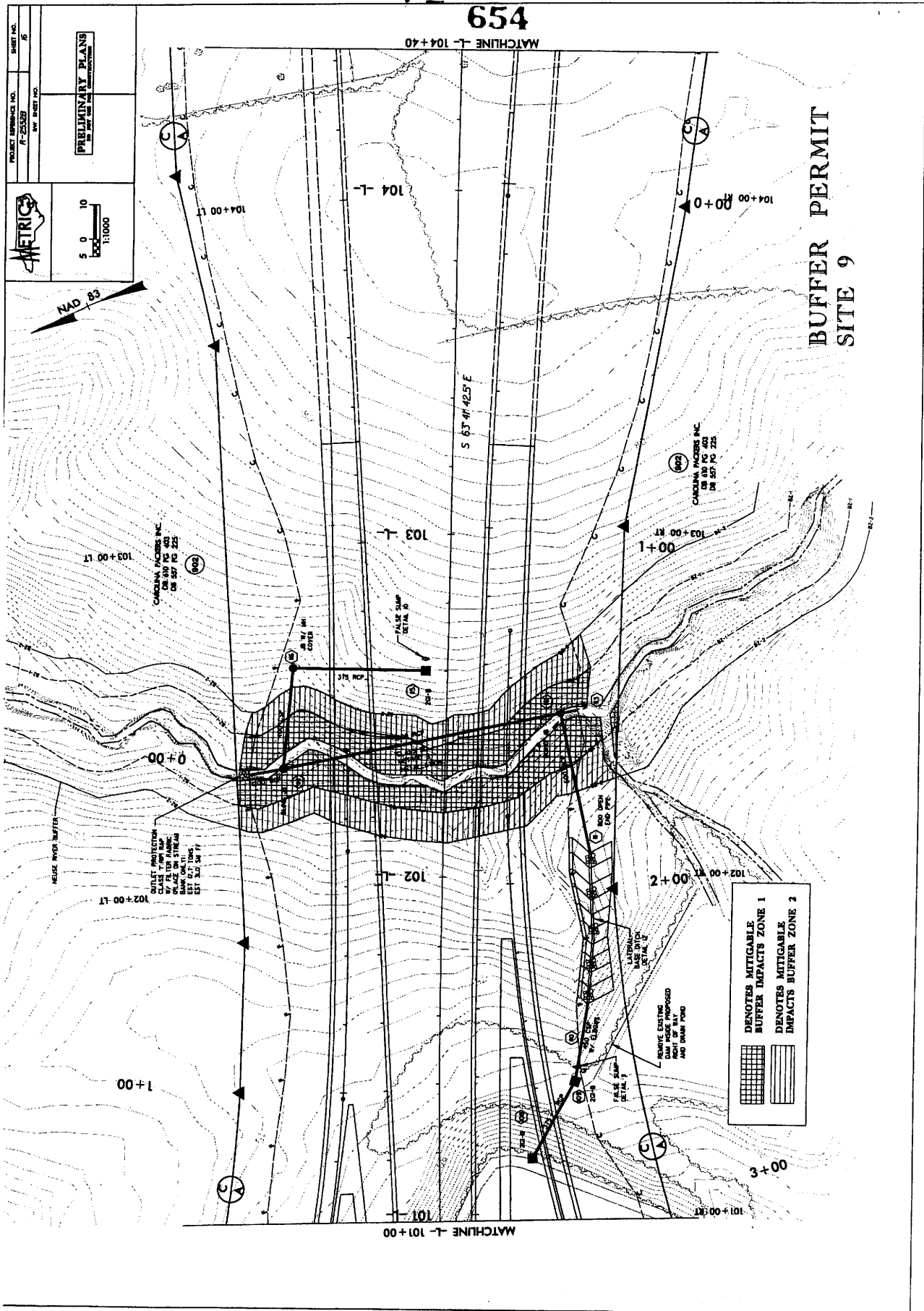
17 00 + 101

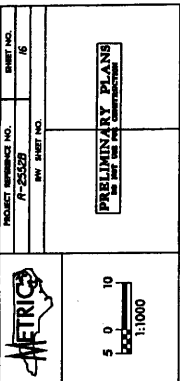
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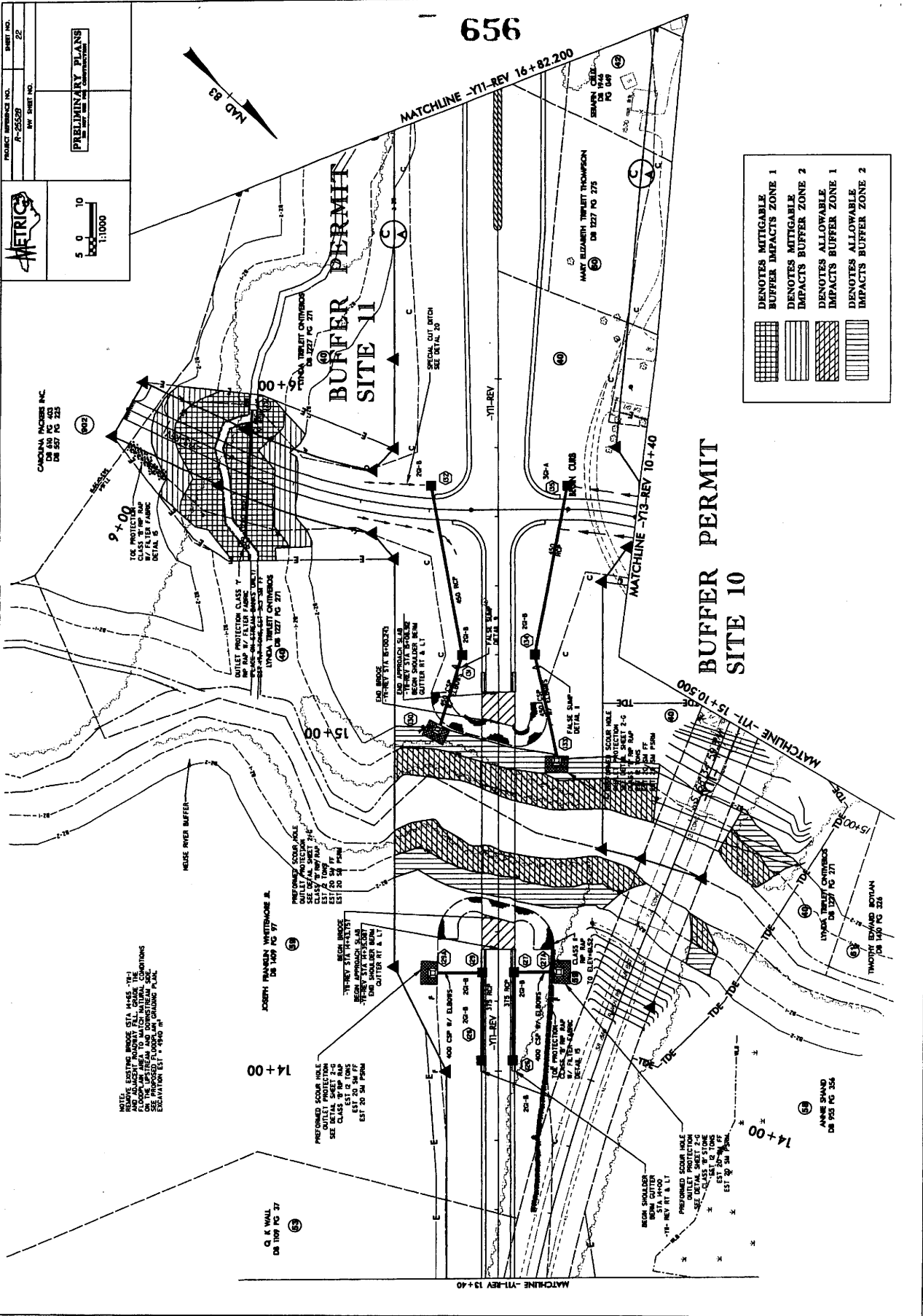
27/12

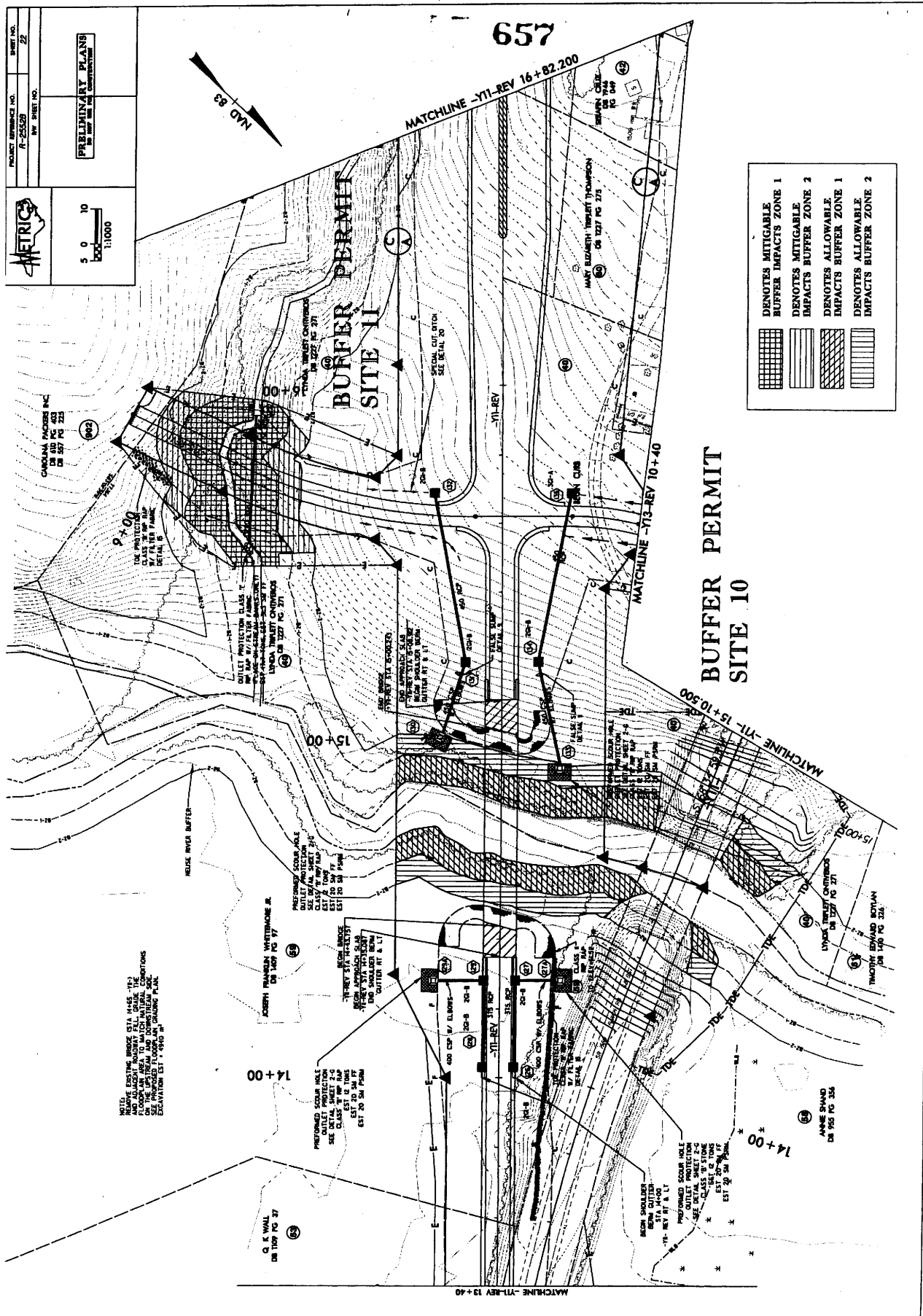
1/24/2004

1010556065 pkn/pmr m/s/bu f/w-2552ba bu f/w 0806pm

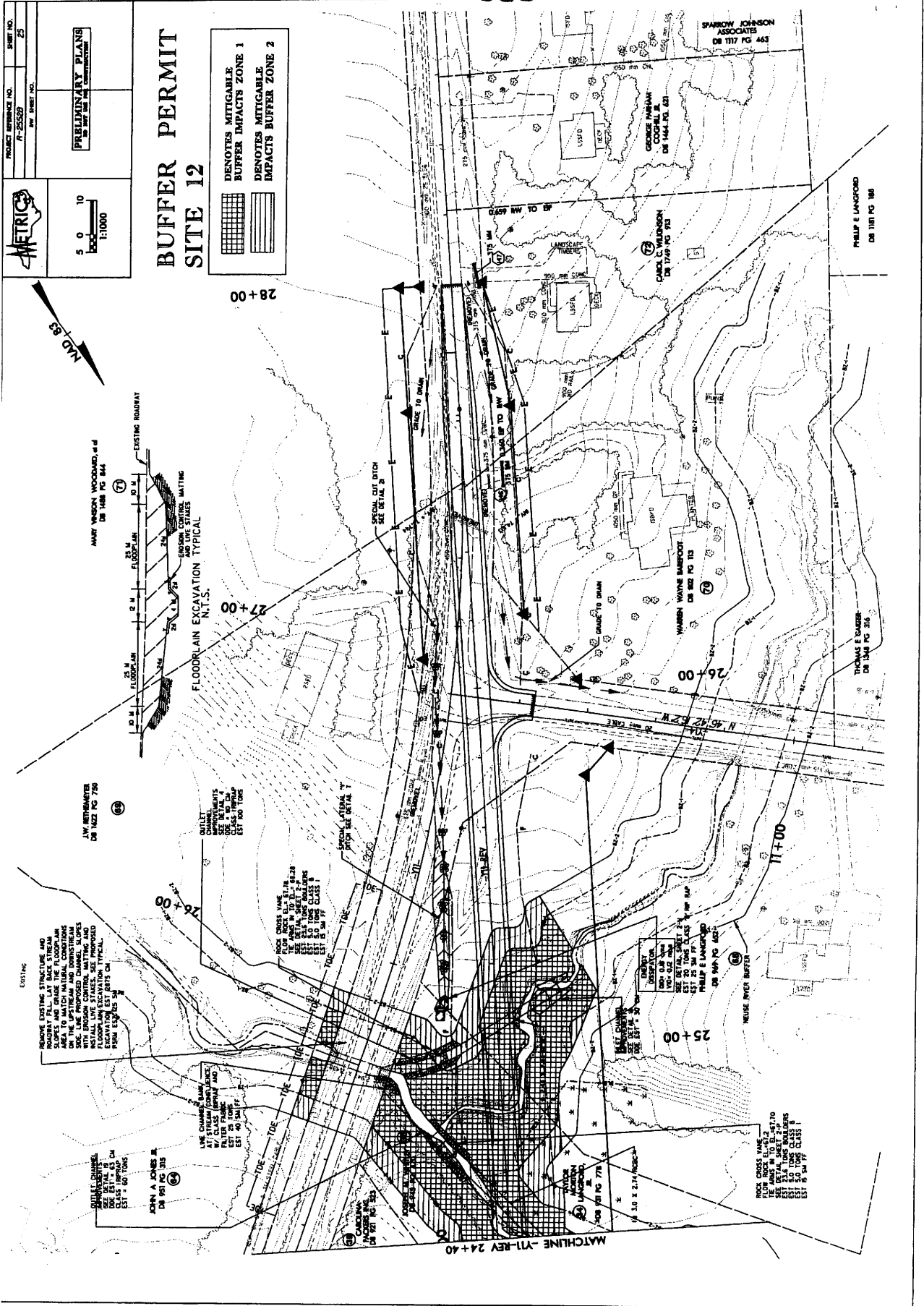


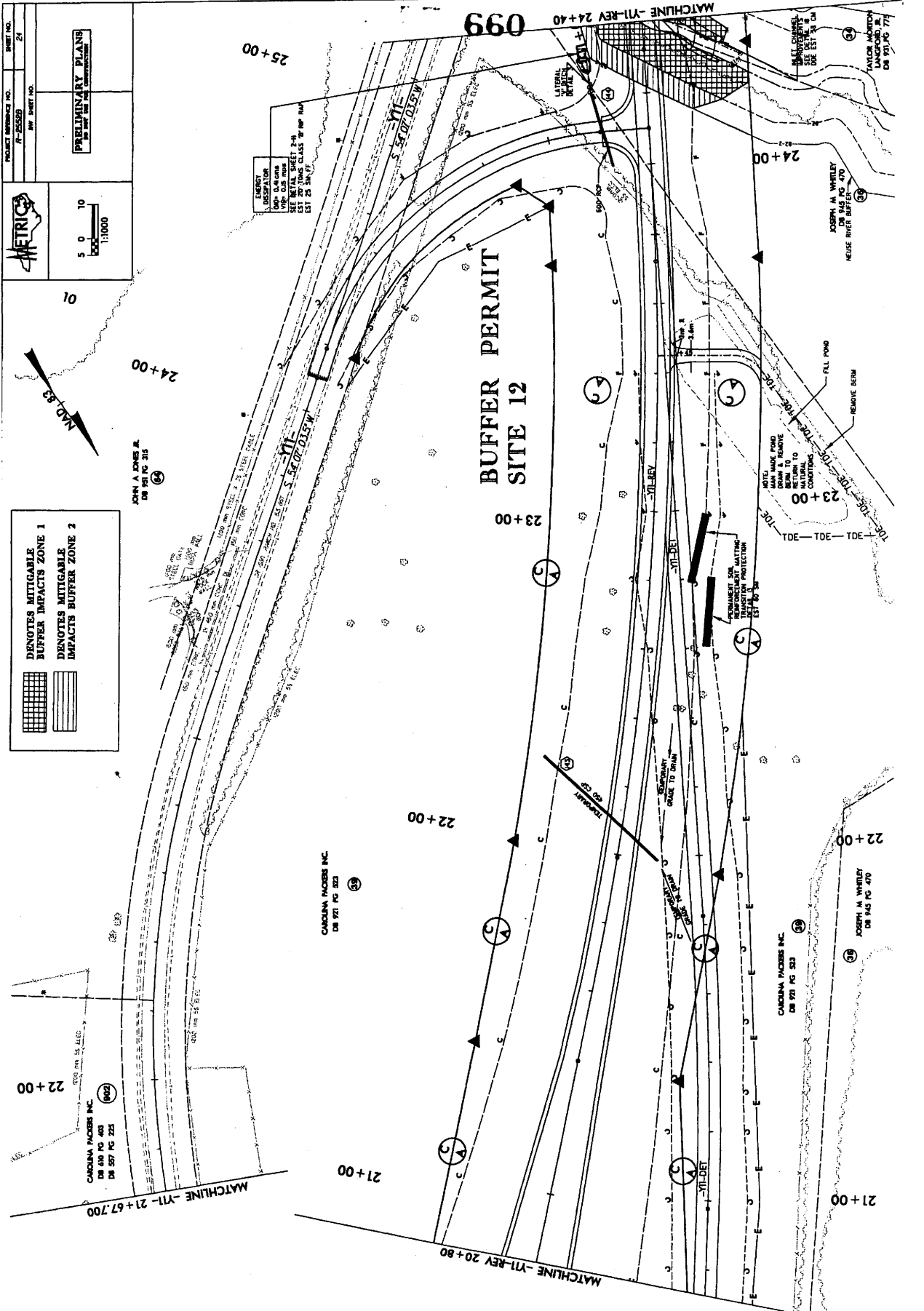


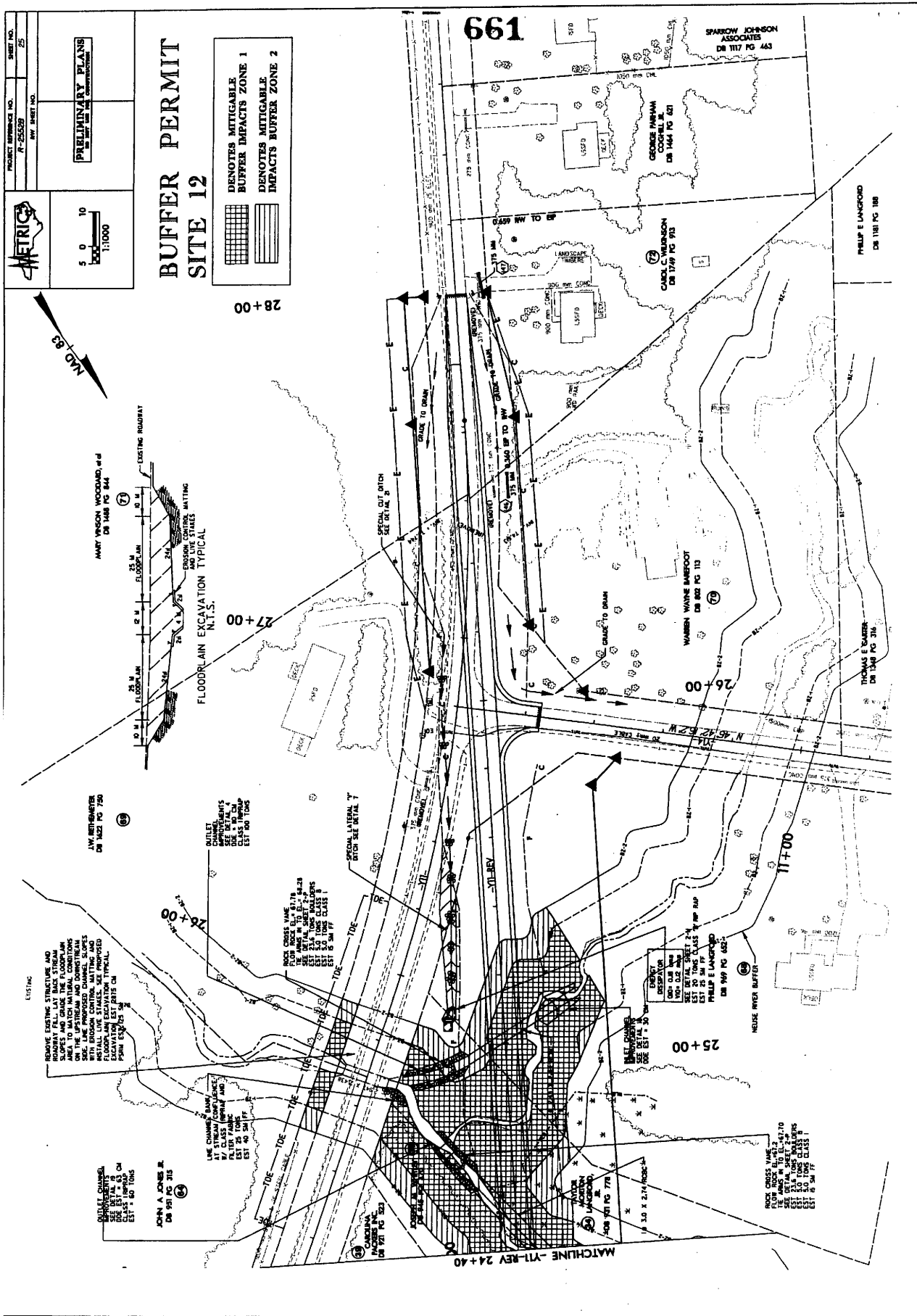




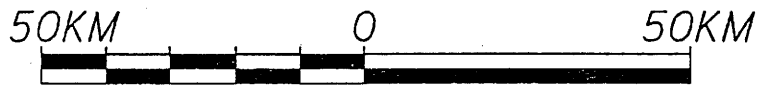
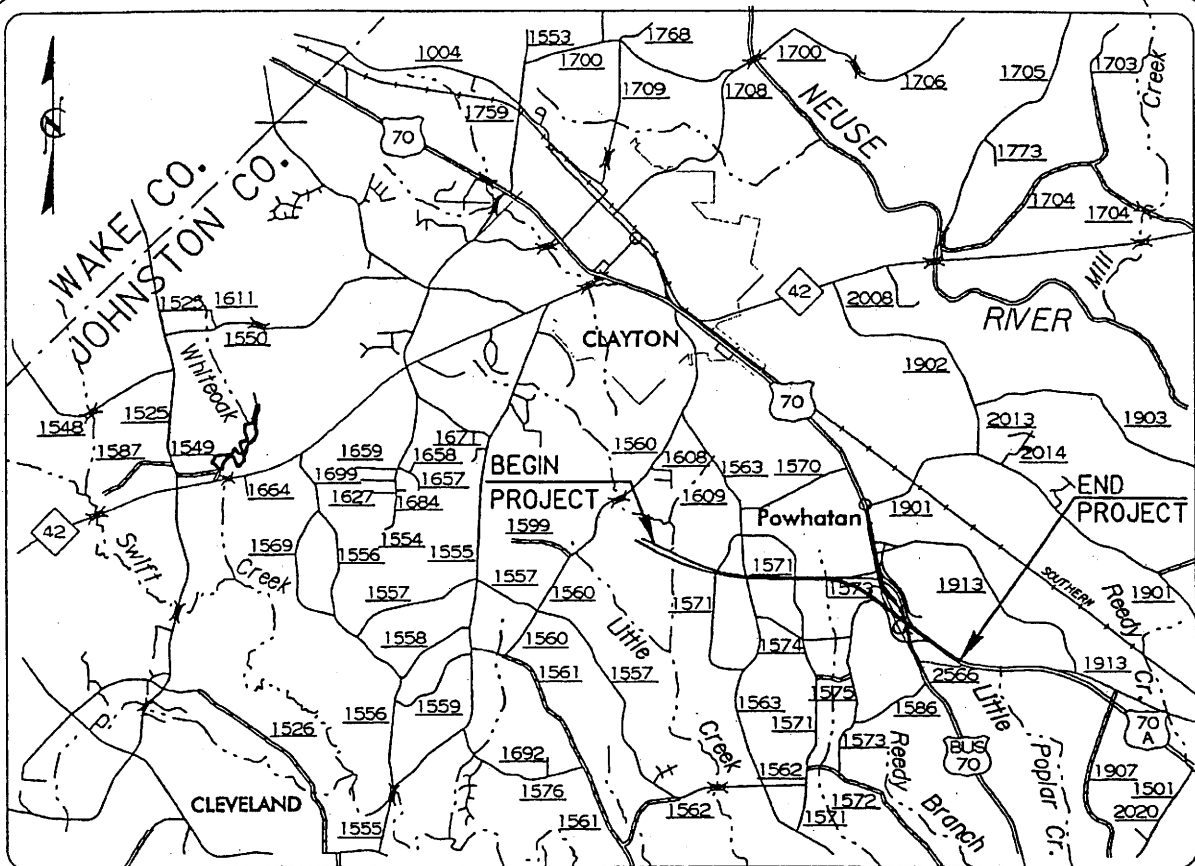




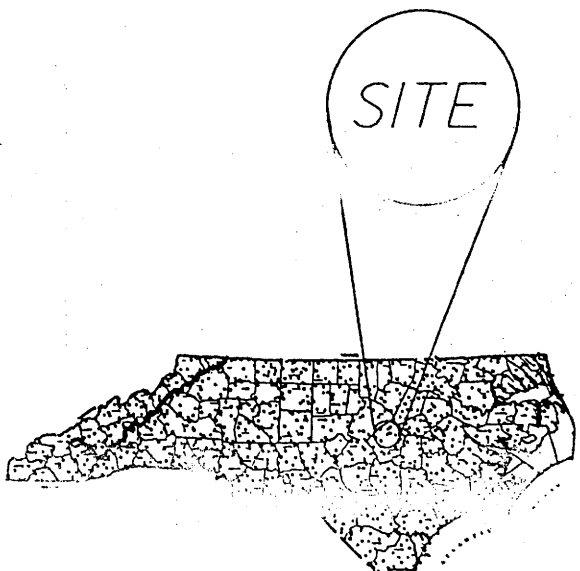




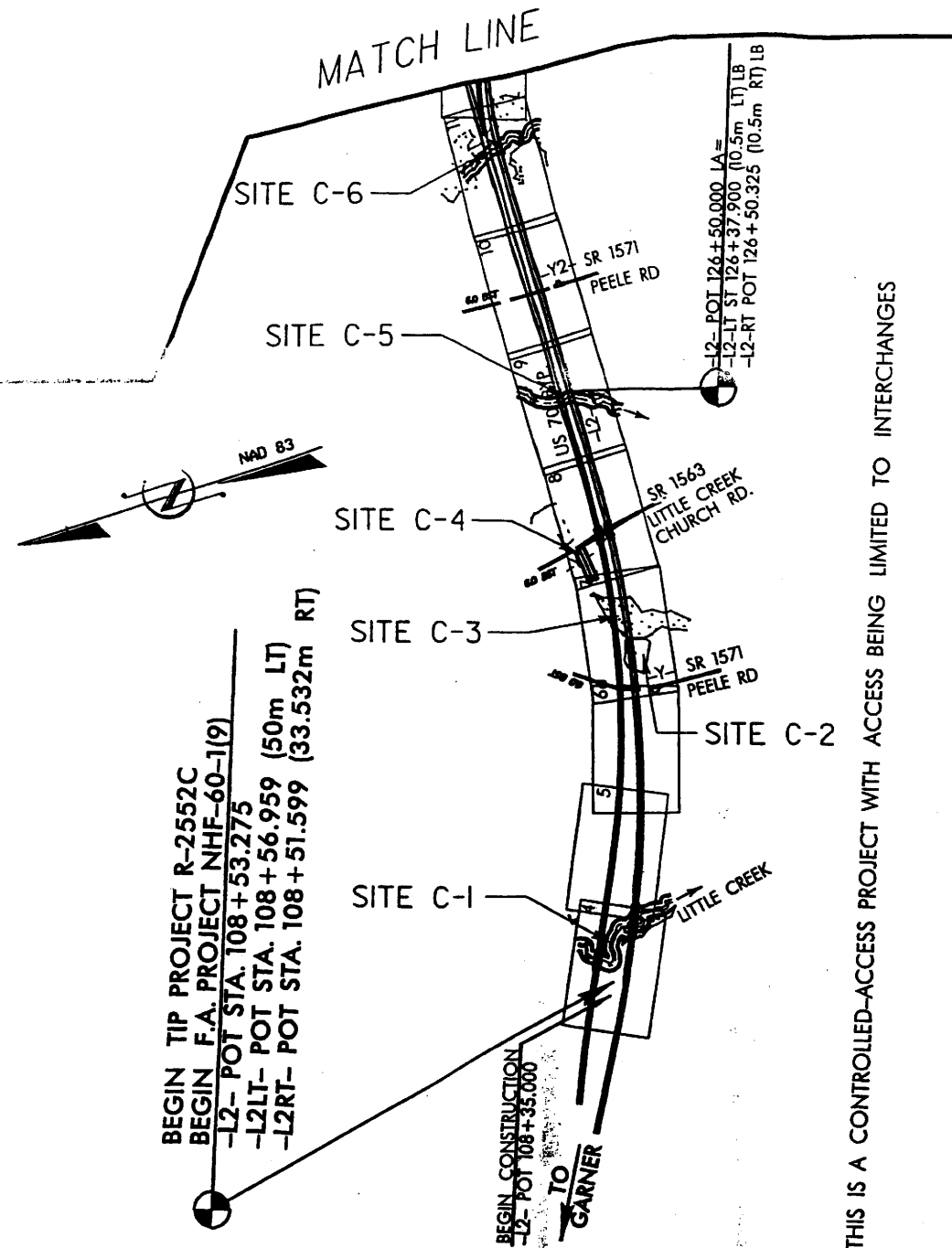
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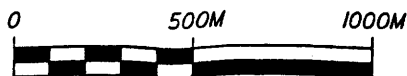
VICINITY MAP



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
JOHNSTON COUNTY
8.T311002 R-2552C
US-70 CLAYTON BYPASS
FROM EAST OF SR-1560
TO US-70 EAST OF CLAYTON
SCALE AS SHOWN
SHEET 1 OF 23
SEPT. 15, 2004



SITE MAP



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

8.T311002

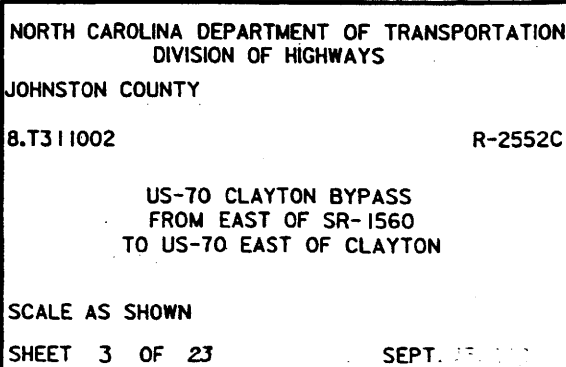
R-2552C

US-70 CLAYTON BYPASS
FROM EAST OF SR-1560
TO US-70 EAST OF CLAYTON

SCALE AS SHOWN

SHEET 2 OF 23

SEPT. 15, 2004



**PROPERTY OWNERS
NAME AND ADDRESS**

PARCEL No.	OWNER'S NAME	ADRESS
902	Carolina Packers, Inc.	P. O. Drawer 1109 Smithfield, NC 27577
2	Luther Shelby Durham	4483 Little Creek Church Road Clayton, NC 27520
14	Teresa Montgomery	3731 Peele Road Clayton, NC 27520
15	TAP Properties, LLC	273-D Blue Pond Road Clayton, NC 27520
16	Brenda C. Holt & Connie M. Boykin	3687 Peele Road Clayton, NC 27520
20	John Jennings Williams, Heirs	4335 Little Creek Church Road Clayton, NC 27520
21	Robert Hatcher, Jr.	2498 Peele Road Clayton, NC 27520
26	Scott D. Overbee	P. O. Box 1051 Clayton, NCD LK27520
30	W. J. C. Blinson	7595F US 70W Clayton, NC 27520
31	Vergie B. Wood	616 Barbour St. Clayton, NC 27520
32	Lola's Beauty Shop Limited Partnership	3307 Little Creek Church Road Clayton, NC 27520
35	Norwood Godwin Jones, Jr., et. al.	804 Chestnut Drive Smithfield, NC 27577
38	Carl B. Dean	2000 Neuse Colony Drive Clayton, NC 27520
39	Donald H. Williamson	P. O. Box 605 1546 Piney Grove Church Road Kenly, NC 27542
N.C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS JOHNSTON COUNTY PROJECT: 8.T311002 R-2552C US-70 CLAYTON BYPASS FROM EAST OF SR-1560 TO US-70 EAST OF CLAYTON SHEET 4 OF 23 September 15, 2004		

**PROPERTY OWNERS
NAME AND ADDRESS**

PARCEL No.	OWNER'S NAME	ADRESS
43	William R. Jones	P. O. Box 393 Pine Level, NC 27568
45	Daniel L. Heavner	P. O. Box 2346 Smithfield, NC 27577
47	W. E. Lancaster	31 Sadisco Road Clayton, NC 27520
34	Worth Gurley	318 S. McDowell St. Raleigh, NC 27601
52	Theodore James Cihos	7744 U.S. Hwy. 70 West Clayton, NC 27520
56	Elbert D. Mitchell	2367 Gordon Road Clayton, NC 27520

**N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 8.T311002 R-2552C**

**US-70 CLAYTON BYPASS
FROM EAST OF SR-1560 TO US-70 EAST OF CLAYTON**

Date: September 15, 2004
 Dan. By: RNS

ASSUMPTIONS FOR ROADWAY CUT DITCHES:
 "V" BOTTOM DITCH
 MINIMUM GRADE AT SAGS = 0.2%

Site #1

R-2552C Johnston Co. Affected Buffer Areas

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

SHT. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Required length for treatment (ft.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	Z2	Treated Discharge?	Q2 cfs	V2 fps	Q10 cfs	V10 fps	Treatment Provided	Remarks
115		L2 RT	104+80 RT	2-GI	0.84	207.6	199	2.34	0.0	6	6	YES	6.9	1.8	8.6	2.0	G.S.	
114		L2 RT	104+77 LT	2-GI	0.48	118.6	199	2.34	0.0	6	6	YES	3.1	1.2	3.8	1.3	G.S.	
113		L2 LT	104+83 RT	2-GI	0.67	165.6	199	2.34	0.0	6	6	YES	5.3	1.6	6.6	1.7	G.S.	
112		L2 LT	104+83 LT	2-GI	0.75	185.3	179	2.34	0.0	6	6	YES	4.6	1.5	5.7	1.6	G.S.	
116		L2 LT	106+84 LT	2-GI	0.81	200.2	61	3.82	0.0	6	6	YES	4.7	1.8	5.9	2.1	G.S.	
117		L2 LT	106+84 RT	2-GI	0.75	185.3	56	3.82	0.0	6	6	YES	5.8	2.0	7.3	2.3	G.S.	
120		L2 LT	107+81 LT	2-GI	0.50	123.6	38	1.10	0.0	6	6	YES	2.8	0.8	3.5	0.9	G.S.	
121		L2 LT	107+81 RT	2-GI	0.47	116.1	35	1.10	0.0	6	6	YES	3.4	0.9	4.3	1.0	G.S.	
4		L2 LT	108+56 LT	2-GI	0.58	143.3	44	SAG	0.0	6	6	YES	6.0	0.5	7.5	0.6	G.S.	
4		L2 LT	108+51 RT	2-GI	0.84	207.6	85	SAG	0.0	6	6	YES	5.1	0.5	6.5	0.6	G.S.	
4		L2 LT	109+06 RT	OPEN	6.69	1653.1	1549	N/A	N/A	N/A	N/A	N/A	38.7	N/A	49.7	N/A	N/A	1
4	119	L2 RT	106+79 RT	2-GI	0.90	222.4	198	2.34	0.0	6	6	YES	6.6	1.7	8.2	2.0	G.S.	
4	118	L2 RT	106+79 LT	2-GI	0.62	153.2	47	2.34	0.0	6	6	YES	4.3	1.4	5.4	1.6	G.S.	
4		L2 RT	108+65 LT	2-GI	0.65	160.6	186	0.20	0.0	6	6	YES	5.9	0.5	7.4	0.6	G.S.	
4		L2 RT	108+77.5 RT	2-GI	0.59	145.8	234	SAG	0.0	6	6	YES	4.8	0.5	6.1	0.5	G.S.	
4		L2 RT	109+15 RT	2-GI	0.00	0.0	0	0.58	0.0	6	6	N/A	N/A	N/A	N/A	N/A	N/A	
4		L2 RT	109+97 RT	DITCH	3.00	741.3	848	0.61	3.0	3	3	YES	19.0	1.7	24.2	2.0	G.S.	1
4		L2 RT	108+77.5 LT	2-GI	0.12	29.7	9	N/A	N/A	N/A	N/A	NO	1.7	N/A	2.1	N/A	N/A	
4		L2 RT	109+54 LT	2-GI	0.04	10.4	3	N/A	N/A	N/A	N/A	NO	0.6	N/A	0.7	N/A	N/A	
4		L2 RT	109+79 LT	OPEN	0.16	40.0	12	N/A	N/A	N/A	N/A	NO	2.3	N/A	2.9	N/A	PSH	1
4		L2 LT	110+37 LT	2-GI	0.12	29.7	9	N/A	N/A	N/A	N/A	NO	1.6	N/A	1.9	N/A	N/A	
4		L2 LT	109+95 LT	OPEN	0.12	29.7	9	N/A	N/A	N/A	N/A	NO	1.6	N/A	1.9	N/A	PSH	1
5		L2 RT	111+12 LT	2-GI	0.11	27.2	8	N/A	N/A	N/A	N/A	N/A	1.6	N/A	1.9	N/A	N/A	3
5		L2 RT	112+77 LT	OTCB	0.47	116.1	35	3.98	9.0	4	4	YES	3.4	0.8	4.2	0.9	G.S.	
5		L2 LT	112+70 LT	2-GI	0.53	131.0	129	3.85	0.0	6	6	YES	4.1	1.8	5.1	1.9	G.S.	
5		L2 LT	112+70 RT	2-GI	0.31	76.6	23	3.85	0.0	6	6	YES	2.0	1.2	2.5	1.3	G.S.	
5		L2 LT	111+16 LT	2-GI	0.47	116.1	35	3.34	0.0	6	6	YES	4.5	1.7	5.6	1.9	G.S.	
4		L2 RT	110+30 LT	DITCH	3.20	790.7	644	2.00	6.0	3	3	YES	15.2	1.7	20.4	2.0	G.S.	1, 2

NOTE 1: TOTAL FOR THIS SYSTEM

NOTE 2: NO CREDIT IS CLAIMED FOR THE DITCH FROM L2 RT STA. 111+71 TO STA. 112+45 LT

NOTE 3: TREATMENT IS PROVIDED DOWNSTREAM

BDOS = BERM DRAINAGE OUTLET STRUCTURE
 OTCB = OPEN THROAT CATCH BASIN
 OPEN = OPEN END PIPE
 PSH = PRE FORMED SCOUR HOLE
 LS = LEVEL SPREADER
 * SIDE SLOPES TAKEN FROM CROSS SECTIONS

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

R-2552C Johnston Co. Affected Buffer Areas

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

ASSUMPTIONS FOR ROADWAY CUT DITCHES:
"V" BOTTOM DITCH
MINIMUM GRADE AT SAGS = 0.2%

[illegible]

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

BIDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PPSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
*** SIDE SLOPES TAKEN FROM CROSS SECTIONS**

NOTE 1: TOTAL FOR THIS SYSTEM

R-2552C Johnston Co. Affected Buffer Areas

Site # 6

Discharge is considered to be treated if it meets the following criteria:

100 ft. of grass swale for every 1 acre of drainage area. AND

2 yr. velocity is less than or equal to 2 ft./sec.

ASSUMPTIONS FOR ROADWAY CUT DITCHES:

"V" BOTTOM DITCH

MINIMUM GRADE AT SAGS = 0.2%

Date: September 15, 2004

Dsn. By: RNS

SHT.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Required length for treatment (ft.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1 Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
10		L2	129+68 RT	2-GI	0.38	93.9	239	0.77	0.0	6	YES	3.7	0.8	4.6	0.9	G.S.	
10		L2	129+68 M	2-GI	0.50	123.6	38	0.77	0.0	8	YES	2.9	0.7	3.6	0.7	G.S.	
10		L2	129+68 LT	2-GI	0.54	133.4	41	0.85	0.0	6	YES	4.8	1.0	6.1	1.1	G.S.	
10		L2	130+20 LT	2-GI	0.15	37.1	11	0.85	0.0	6	YES	1.5	0.6	1.9	0.7	G.S.	
10		L2	131+49 RT	2-GI	0.47	116.1	35	1.34	0.0	6	YES	4.5	1.1	5.7	1.3	G.S.	
10		L2	131+49 M	2-GI	0.38	93.9	29	1.34	0.0	8	YES	2.4	0.8	3.0	0.8	G.S.	
10		L2	131+47 LT	DITCH	3.17	783.3	239	1.34	4.0	3	YES	17.6	1.9	23.3	2.3	G.S.	
11		L2	133+60 LT	DITCH	4.70	1161.4	354	0.33	4.0	3	YES	23.0	1.4	31.2	1.6	G.S.	1, 2
11		L2	132+60 M	2-GI	0.23	56.8	17	1.34	0.0	8	YES	1.6	0.7	2.0	0.7	G.S.	
11		L2	132+60 RT	2-GI	0.60	148.3	45	1.34	0.0	6	YES	3.2	0.9	8.1	1.6	G.S.	
11		L2	133+05 RT	DITCH	3.40	840.1	256	1.00	1.2	3	NO	10.8	1.2	14.8	2.2	G.S.	1
11		L2	133+86 M	2-GI	0.43	106.3	32	SAG	0.0	8	YES	3.6	0.4	4.6	0.5	G.S.	
11		L2	133+86 RT	2-GI	0.07	17.3	5	N/A	N/A	N/A	NO	1.0	N/A	1.2	N/A	N/A	
11		L2	133+36 RT	2-GI	0.09	22.2	7	N/A	N/A	N/A	NO	1.3	N/A	1.6	N/A	N/A	
11		L2	133+36 RT	OPEN	0.59	145.8	44	N/A	N/A	N/A	NO	5.6	N/A	7.1	N/A	PSH	
11		L2	134+55 M	2-GI	0.45	111.2	34	SAG	0.0	6	YES	3.8	0.5	4.8	0.5	G.S.	
11		L2	134+55 RT	2-GI	0.20	49.4	15	N/A	N/A	N/A	NO	2.8	N/A	3.5	N/A	N/A	
11		L2	134+55 RT	OPEN	0.65	160.6	49	N/A	N/A	N/A	NO	6.4	N/A	8.0	N/A	RIP RAP PAD	1, 3
12		FLYOVER	2+68 RT	2-GI	0.80	197.7	60	SAG	0.0	6	YES	3.9	0.5	5.0	0.5	G.S.	
12		FLYOVER	2+68 LT	2-GI	0.75	185.3	56	0.69	0.0	6	YES	6.2	0.8	7.9	0.9	G.S.	
12		FLYOVER	2+06 LT	2-GI	0.15	37.1	11	0.69	0.0	6	YES	1.6	0.6	2.0	0.6	G.S.	
11		FLYOVER	1+00 LT	DITCH	3.25	803.1	245	0.81	4.0	3	YES	18.9	1.2	25.0	1.3	G.S.	1
11		FLYOVER	0+70 LT	2-GI	0.13	32.1	10	0.22	N/A	N/A	NO	1.8	N/A	2.3	N/A	G.S.	
11		FLYOVER	1+16.4 LT	2-GI	0.14	34.6	11	SAG	N/A	N/A	NO	2.0	N/A	2.5	N/A	G.S.	
11		FLYOVER	1+16.4 LT	OPEN	0.27	66.7	20	0.90	N/A	N/A	NO	3.8	N/A	4.8	N/A	PSH	1

2GI = 2 GRATED INLET

SBG = SHOULDER BERM GUTTER

CB = CATCH BASIN

DDB = DRY DETENTION BASIN

B = BASIN

GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE

OTCB = OPEN THROAT CATCH BASIN

OPEN = OPEN END PIPE

PSH = PRE FORMED SCOUR HOLE

LS = LEVEL SPREADER

* SIDE SLOPES TAKEN FROM CROSS SECTIONS

NOTE 1: TOTAL FOR THIS SYSTEM

NOTE 2: No credit is claimed for 4M Base Ditch

NOTE 3: Sta. 132+00 to Sta. 133+30 LT.

NOTE 4: OUTLETS INTO WETLAND

from 12-

Site # 9

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

ASSUMPTIONS FOR ROADWAY CUT DITCHES:

"V" BOTTOM DITCH

MINIMUM GRADE AT SAGS = 0.2%

Date: September 15, 2004
Dsn. By: RNS

[illegible]

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

BBDS = BERM DRAINAGE OUTLET STRUCTURE
 OTCB = OPEN THROAT CATCH BASIN
 OPEN = OPEN END PIPE
 PSH = PRE FORMED SCOUR HOLE
 L.S. = LEVEL SPREADER
 * SIDE SLOPES TAKEN FROM CROSS SECTIONS

NOTE 1: TOTAL FOR THIS SYSTEM

NOTE 3:
TREATMENT IS PROVIDED DOWNSTREAM

Date: September 15, 2004
Dsn. By: RNS

Site # 10

R-2552C Johnston Co. Affected Buffer Areas

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

ASSUMPTIONS FOR ROADWAY CUT DITCHES:

"V" BOTTOM DITCH

MINIMUM GRADE AT SAGS = 0.2%

[illegible]

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

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
* SIDE SLOPES TAKEN FROM CROSS SECTIONS

NOTE 1: TOTAL FOR THIS SYSTEM

SHEET 12 OF 23

R-2552C Johnston Co. Affected Buffer Areas

Site # 14

Discharge is considered to be treated if it meets the following criteria:

- 100 ft. of grass swale for every 1 acre of drainage area. AND
- 2 yr. velocity is less than or equal to 2 ft./sec.

ASSUMPTIONS FOR ROADWAY CUT DITCHES:

"V" BOTTOM DITCH

MINIMUM GRADE AT SAGS = 0.2%

Date: September 15, 2004

Des. By: RNS

SHT. No.	Structure No.	Line	Station	STR. Type	Total D.A.		Required length for treatment		PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES *		Treated Discharge?	Q2 cfs	V2 fps	Q10 cfs	V10 fps	Treatment Provided	Remarks
					ha	ac	(ft.)	(m.)				Z1	Z2							
16		L2	152+62 LT	DITCH	0.22	0.5	54.4	17	92	3.50	0.0	4	3	YES	2.0	1.5	2.5	1.7	G.S.	1, 4
16		L2	152+64 RT	2-GI	0.59	1.5	145.8	44	307	2.09	0.0	6	6	YES	3.7	1.3	4.7	1.4	G.S.	
16		RAMP D	2+40 LT	2-GI	2.20	5.4	543.6	166	284	0.32	0.0	6	6	YES	12.2	1.0	16.4	1.1	G.S.	
16		L2	153+33 M	2-GI	0.24	0.6	59.3	18	165	0.44	0.0	6	6	YES	1.6	0.5	2.0	0.5	G.S.	
16		L2	153+80 RT	DITCH	3.70	9.1	914.3	279	796	0.24	1.0	3	3	YES	17.5	1.3	23.7	1.5	G.S.	1
17		L2	154+64.5	2-GI	0.40	1.0	98.8	30	283	SAG	0.0	5	5	YES	2.8	0.4	3.5	0.5	G.S.	1
17		L2	156+20 M	2-GI	0.22	0.5	54.4	17	117	0.90	0.0	6	6	YES	2.0	0.7	2.5	0.7	G.S.	
17		L2	157+38.5	2-GI	0.32	0.8	79.1	24	101	0.80	0.0	6	4	YES	3.8	0.9	4.7	1.0	G.S.	
17		L2	156+25 RT	DITCH	1.70	4.2	420.1	128	207	1.63	3.0	3	3	YES	12.0	1.9	15.5	2.2	G.S.	2
17		L2	155+30 RT	DITCH	2.20	5.4	543.6	166	409	0.75	2.0	3	3	YES	14.4	1.8	19.0	2.0	G.S.	1
																				675

2GI = 2 GRATED INLET

SBG = SHOULDER BERM GUTTER

CB = CATCH BASIN

DDB = DRY DETENTION BASIN

B = BASIN

GS = GRASS SWALE

BDOS = BERM DRAINAGE OUTLET STRUCTURE

OTCB = OPEN THROAT CATCH BASIN

OPEN = OPEN END PIPE

PSH = PRE FORMED SCOUR HOLE

LS = LEVEL SPREADER

* SIDE SLOPES TAKEN FROM CROSS SECTIONS

NOTE 1: TOTAL FOR THIS SYSTEM

NOTE 2: NO CREDIT IS CLAIMED FOR THE DITCH FROM L2 STA.

156+15 TO STA. 156+25 RT AND FROM STA. 157+20 RT

AHEAD

NOTE 4: EXISTING DITCH

Date: September 15, 2004
Dsn. By: RNS

Site # 16

R-2552C Johnston Co. Affected Buffer Areas

Discharge is considered to be treated if it meets the following criteria:

100 ft. of grass swale for every 1 acre of drainage area. AND

2 yr. velocity is less than or equal to 2 ft./sec.

ASSUMPTIONS FOR ROADWAY CUT DITCHES:

"V" BOTTOM DITCH

MINIMUM GRADE AT SAGS = 0.2%

[illegible]

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

BDOS = BERM DRAINAGE OUTLET STRUCTURE
OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
* SIDE SLOPES TAKEN FROM CROSS SECTIONS

NOTE 1: TOTAL FOR THIS SYSTEM

NOTE 5: NO HIGHWAY PAVEMENT DRAINS TO THIS SITE

BUFFER IMPACTS SUMMARY (English)															
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT								BUFFER REPLACEMENT				
			TYPE		ALLOWABLE		MITIGABLE		TOTAL (ft²)	ZONE 1 (ft²)	TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)		
			ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft²)	ZONE 2 (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)							
1	DUAL BRIDGES	L2 LT LN 108+84 / 110+28 L2 RT LN 109+72 / 111+02	X		25272	13712	38985								
4	750 RCP	Y1 11+08 / 11+35 RT	X		2097	861	2958								
5	1500 RCP	L2 126+12 / 126+49	X							19889	13157	33046			
6	DBL 2.7x1.8 RCBC 1200 RCP 3.7x2.4 RCBC	L2 133+87 / 134+23	X							19472	13196	32668			
9	750 RCP	Y5 20+10 / 20+30		X						549	958	1507			
10	2.7x1.8 RCBC 1800 RCP	Rp C 7+68 / 8+16	X		5479	2099	7578								
12	1200 RCP	L2 150+05 / 150+42 RT	X		2712	1087	3800								
13	1050 RCP	L2 150+27 / 150+88 LT	X		1837	850	2788								
14	2.44x1.83 RCBC 1500 STEEL PIPE 900 RCP & 600 RCP	L2 153+64 LT / 155+54 RT	X		4801	2390	7190								
16	DBL 1500 RCP	Y6 14+24 / 14+76	X		4176	2153	6329								
TOTAL:					46475	23152	69628			39810	27311	67221			
													N.C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS JOHNSTON COUNTY PROJECT: 8.T311002 (R-2552C) US-70 CLAYTON BYPASS FROM EAST OF SR-1560 TO US-70 EAST OF CLAYTON		
													SHEET 21 OF 23 January 7, 2005		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 8.T311002 (R-2552C)
US-70 CLAYTON BYPASS
FROM EAST OF SR-1560
TO US-70 EAST OF CLAYTON

SHEET 21 OF 23 January 7, 2005

BUFFER IMPACTS SUMMARY (Metric)												
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT							BUFFER REPLACEMENT		
			TYPE		ALLOWABLE		MITIGABLE			REPLACEMENT		
			ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (m²)	ZONE 2 (m²)	TOTAL (m²)	ZONE 1 (m²)	ZONE 2 (m²)	TOTAL (m²)	ZONE 1 (m²)	ZONE 2 (m²)
1	DUAL BRIDGES	L2 LT LN 108+84 / 110+28 L2 RT LN 109+72 / 111+02	X		2348	1274		3622				
4	750 RCP	Y1 11+06 / 11+35 RT	X		195	80		275				
5	1500 RCP	L2 126+12 / 126+49	X						1848	1222		3070
6	DBL 2.7x1.8 RCBC 1200 RCP 3.7x2.4 RCBC	L2 133+87 / 134+23	X						1809	1226		3035
9	750 RCP	Y6 20+10 / 20+30		X					51	89		140
10	2.7x1.8 RCBC 1800 RCP	Rp C 7+68 / 8+16	X		509	195		704				
12	1200 RCP	L2 150+05 / 150+42 RT	X		252	101		353				
13	1050 RCP	L2 150+27 / 150+68 LT	X		180	79		259				
14	2.44x1.83 RCBC 1500 STEEL PIPE 900 RCP & 600 RCP	L2 153+64 LT / 155+54 RT	X		446	222		668				
16	DBL 1500 RCP	Y6 14+24 / 14+76	X		388	200		588				
TOTAL:					4318	2151		6469	3708	2537		6245
N.C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS JOHNSTON COUNTY PROJECT: 8.T311002 (R-2552C) US-70 CLAYTON BYPASS FROM EAST OF SR-1560 TO US-70 EAST OF CLAYTON SHEET 20 OF 23 January 7, 2005												

BUFFER IMPACTS SUMMARY (METRIC)

Site	Station (FROM/TO)	WETLANDS IN BUFFER		MECH. CLEARING IN BUFFER		TOTAL	
		ZONE 1 (M^2)	ZONE 2 (M^2)	ZONE 1 (M^2)	ZONE 2 (M^2)	ZONE 1 (M^2)	ZONE 2 (M^2)
C-1	L2 LT LN 108+84 / 110+28 L2 RT LN 109+72 / 111+02	0	0	0	8	0	8
							0
C-4	Y1 11+06 / 11+35 RT	0	0	0	0	0	0
C-5	L2 126+12 / 126+49	0	0	0	0	0	0
C-6	L2 133+87 / 134+23	1407	910	402	247	1809	1157
C-9	Y5 20+10 / 20+30	0	0	0	0	0	0
C-10	Rp C 7+68 / 8+16	51	0	128	7	179	7
C-12	L2 150+05 / 150+42 RT	0	0	104	7	104	7
C-13	L2 150+27 / 150+68 LT	94	39	62	38	156	77
C-14	L2 153+64 LT / 155+54 RT	131	61	135	74	266	135
C-16	Y6 14+24 / 14+76	1	0	54	30	55	30
TOTAL:		1684	1010	885	411	2569	1421

**N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**JOHNSTON COUNTY
PROJECT 8.T311002 (R-2552C)**

**US-70 CLAYTON BYPASS
FROM EAST OF SR-1560
TO US-70 EAST OF CLAYTON**

SHEET 22 OF 23 SEPT. 15, 2004

BUFFER IMPACTS SUMMARY (ENGLISH)

Site	Station (FROM/TO)	WETLANDS IN BUFFER		MECH. CLEARING IN BUFFER		TOTAL	
		ZONE 1 (FT^2)	ZONE 2 (FT^2)	ZONE 1 (FT^2)	ZONE 2 (FT^2)	ZONE 1 (FT^2)	ZONE 2 (FT^2)
C-1	L2 LT LN 108+84 / 110+28	0	0	0	86	0	86
	L2 RT LN 109+72 / 111+02						0
C-4	Y1 11+06 / 11+35 RT	0	0	0	0	0	0
C-5	L2 126+12 / 126+49	0	0	0	0	0	0
C-6	L2 133+87 / 134+23	15145	9795	4327	2659	19472	12454
C-9	Y5 20+10 / 20+30	0	0	0	0	0	0
C-10	Rp C 7+68 / 8+16	550	0	1379	75	1929	75
C-12	L2 150+05 / 150+42 RT	0	0	1119	75	1119	75
C-13	L2 150+27 / 150+68 LT	1014	419	662	410	1676	829
C-14	L2 153+64 LT / 155+54 RT	1410	657	1453	797	2863	1453
C-16	Y6 14+24 / 14+76	12	0	581	321	593	321
TOTAL:		18131	10870	9522	4423	27652	15293

**N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS**

JOHNSTON COUNTY

PROJECT 8.T311002 (R-2552C)

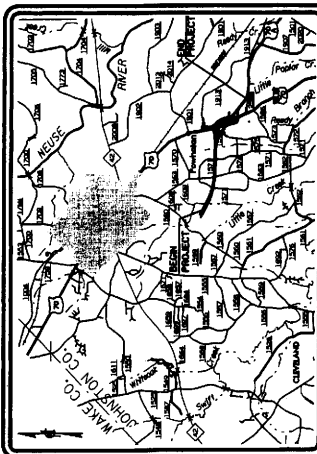
**US-70 CLAYTON BYPASS
FROM EAST OF SR-1560
TO US-70 EAST OF CLAYTON**

SHEET 23 OF 23 SEPT. 15, 2004

JOHNSTON COUNTY

**LOCATION: US 70 (CLAYTON BYPASS) FROM EAST
OF SR 1560 TO US 70 EAST OF CLAYTON**

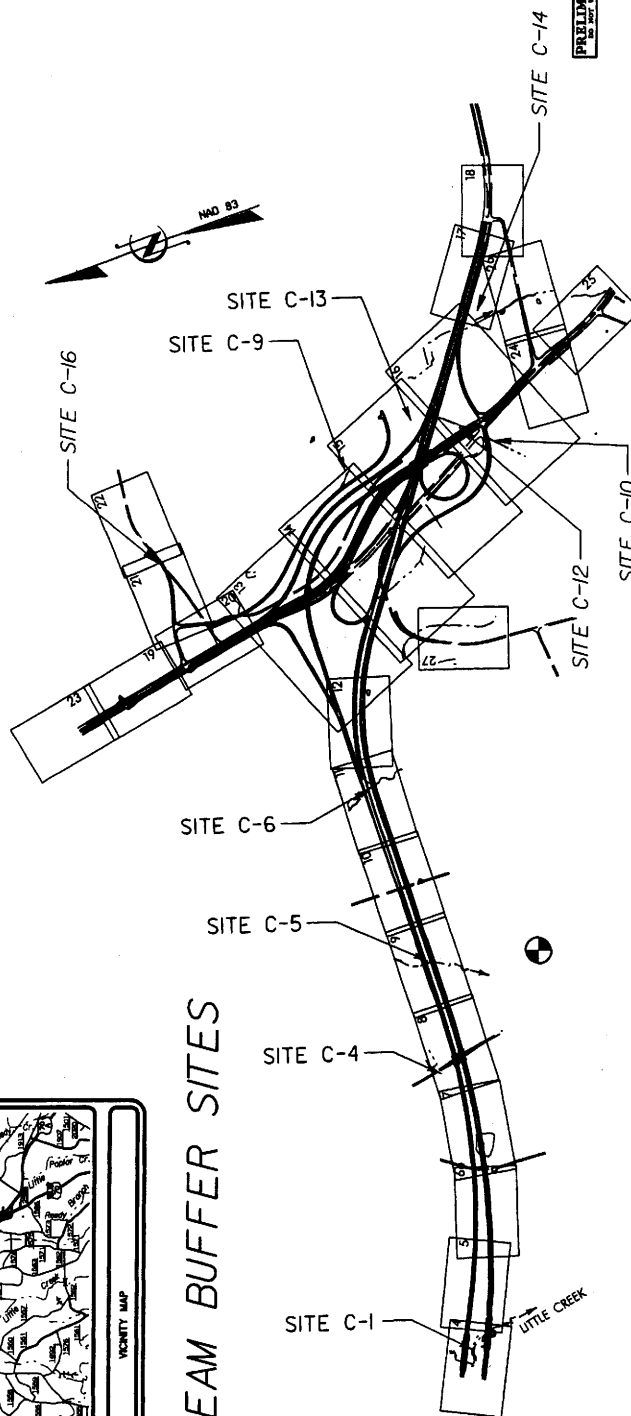
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL,
SIGNALS, STRUCTURES AND CULVERTS**



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

VICINITY MAP

STREAM BUFFER SITES



681

PRELIMINARY PLANS

[illegible]

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

CONTACT:

GRAPHIC SCALE

PLANS
 0 5 m

PROFILE (HORIZONTAL)
 0 5 m

PROFILE (VERTICAL)
 0 2 m

DESIGN DATA

ADT 2005 = 29,500
 ADT 2025 = 55,800
 DHW = 10 %
 D = 65 %
 T = 16 %
 V = 110 km/h
 * TST 10% + DUAL 6%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2552C = 4.842 km
LENGTH STRUCTURE TIP PROJECT R-2552C = 0.160 km
TOTAL LENGTH TIP PROJECT R-2552C = 5.002 km

—L2-RT WAS USED TO DETERMINE STRUCTURE LENGTH

Prepared in the Office of:
LOCKNER

H. W. LOGINNER, INC.
 10000 W. 10TH AVE. SUITE 202
 BALSHEM, MN 55425
 AND THE NEW CONCRETE BUSINESS OF MINNAPAC

Stephen C. Bowdye, P.E.
 PROJECT MANAGER

Thomas A. McCloskey, P.E.
 PROJECT DESIGN MANAGER

Richard Conway
 PROJECT ENGINEER

Teresa Bruken, P.E.
 PROJECT ENGINEER DESIGN SERVICES

RIGHT OF WAY DATE: May 16, 2003

LETTING DATE: May 17, 2005

HYDRAULICS ENGINEER

SIGNATURE: _____ **PR** _____

PE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

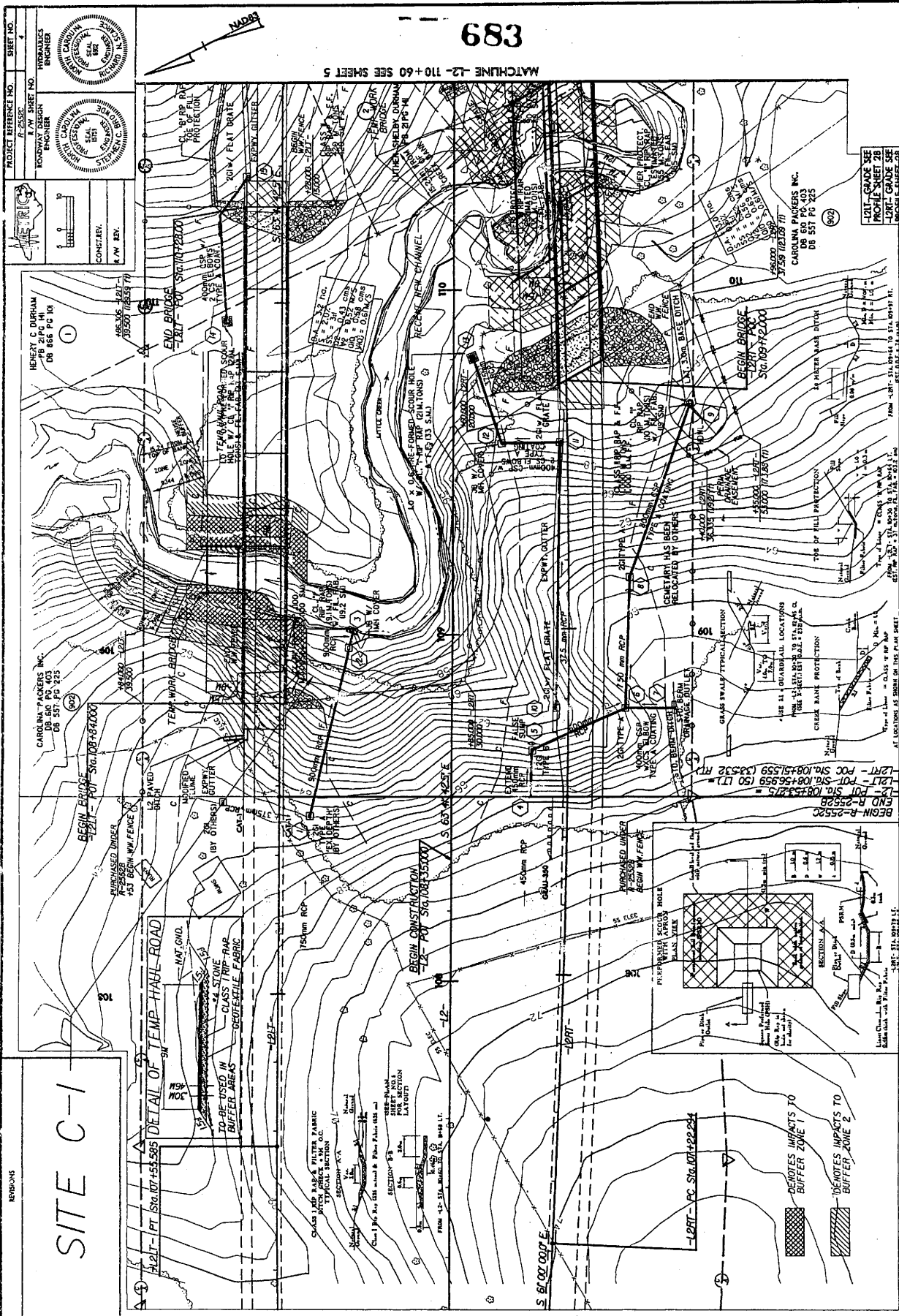
APPROVED
DIVISION ADMINISTRATOR

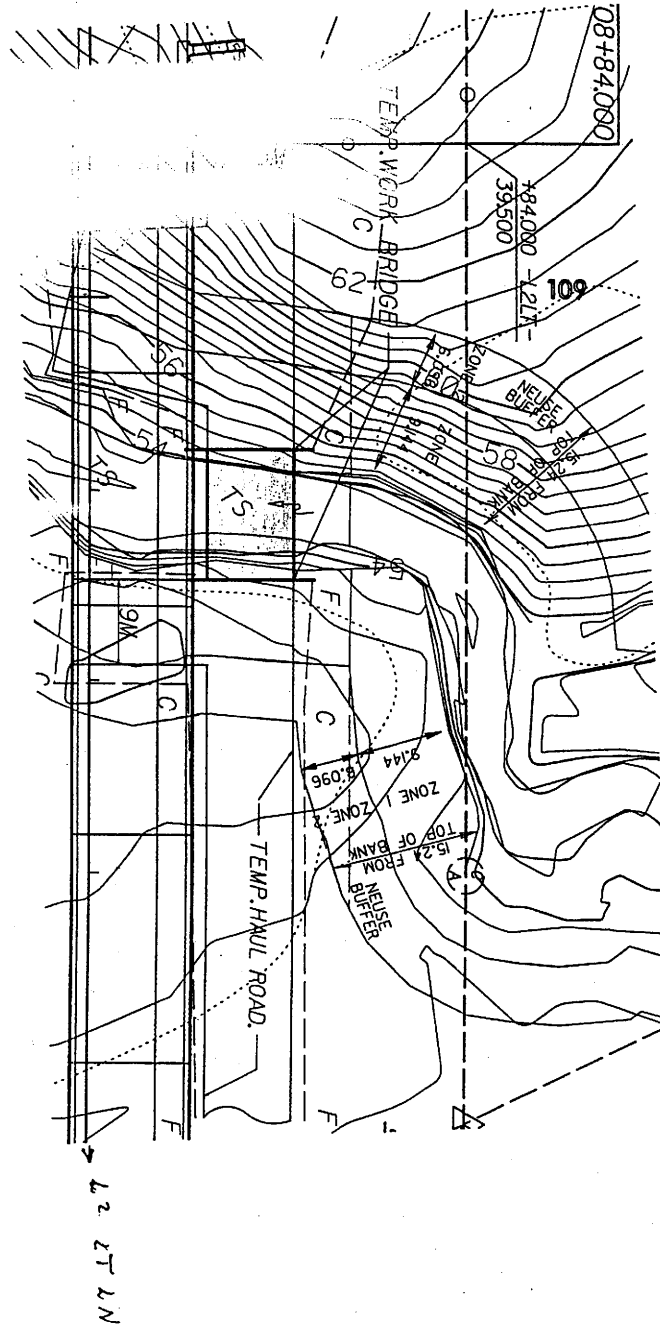
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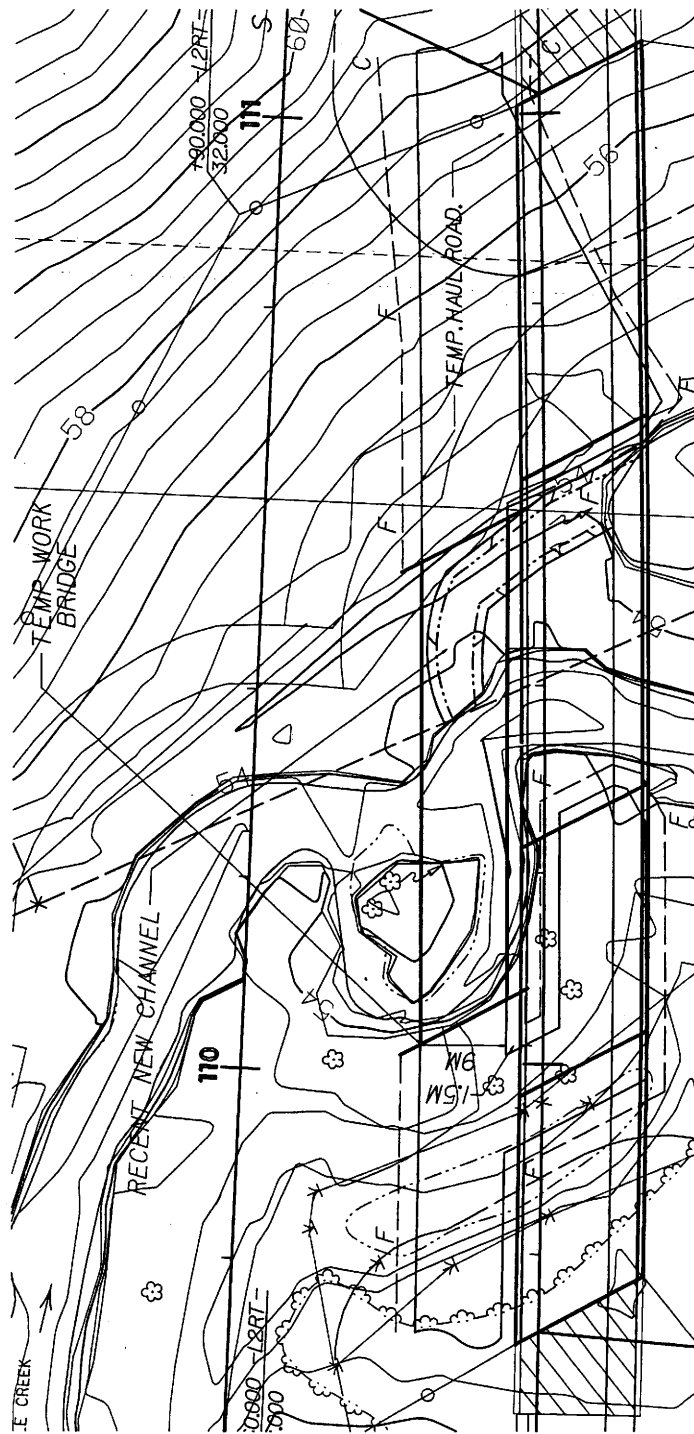
SITE C-1

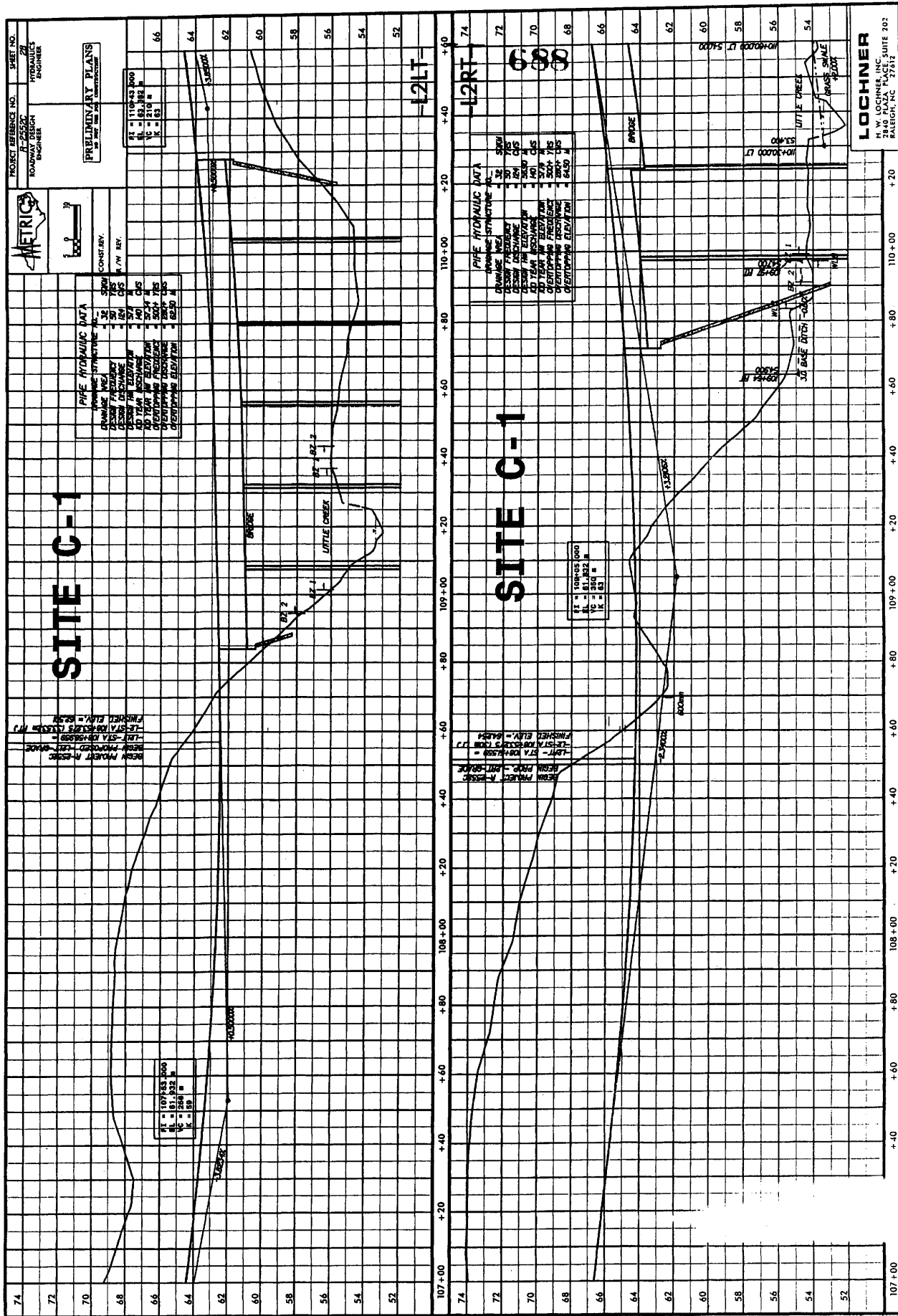
683

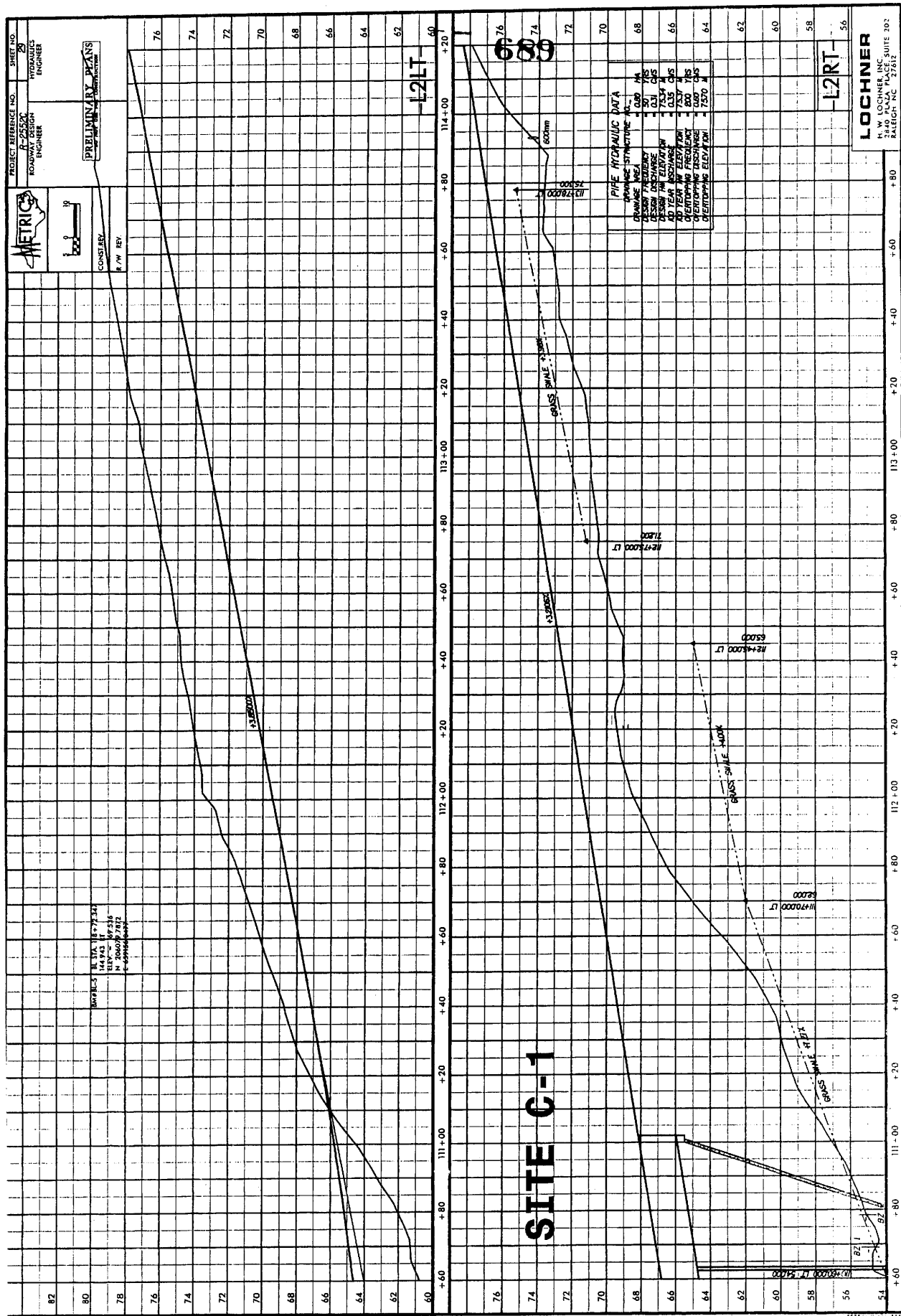
MATCHLINE -12- 110+60 SEE SHEET 5











PROJECT REFERENCE NO. **R-2550C**
 ROADWAY DESIGN
 ENGINEER



CONST. REV.
 1/24/97

PRELIMINARY PLANS
 NOT FOR CONSTRUCTION

SHEET NO.
 3

HYDRAULICS
 ENGINEER

PIPE HYDRAULIC DATA	
ORANGE STRUCTURE NO.	173
DESIGN FREQUENCY	1.00
DESIGN DISCHARGE	0.08 CFS
DESIGN FLOW ELEVATION	86.7
10 YEAR FREQUENCY	1.00
10 YEAR DISCHARGE	0.08 CFS
10 YEAR FLOW ELEVATION	86.7
OVERTOPPING FREQUENCY	1.00
OVERTOPPING DISCHARGE	0.08 CFS
OVERTOPPING ELEVATION	86.7

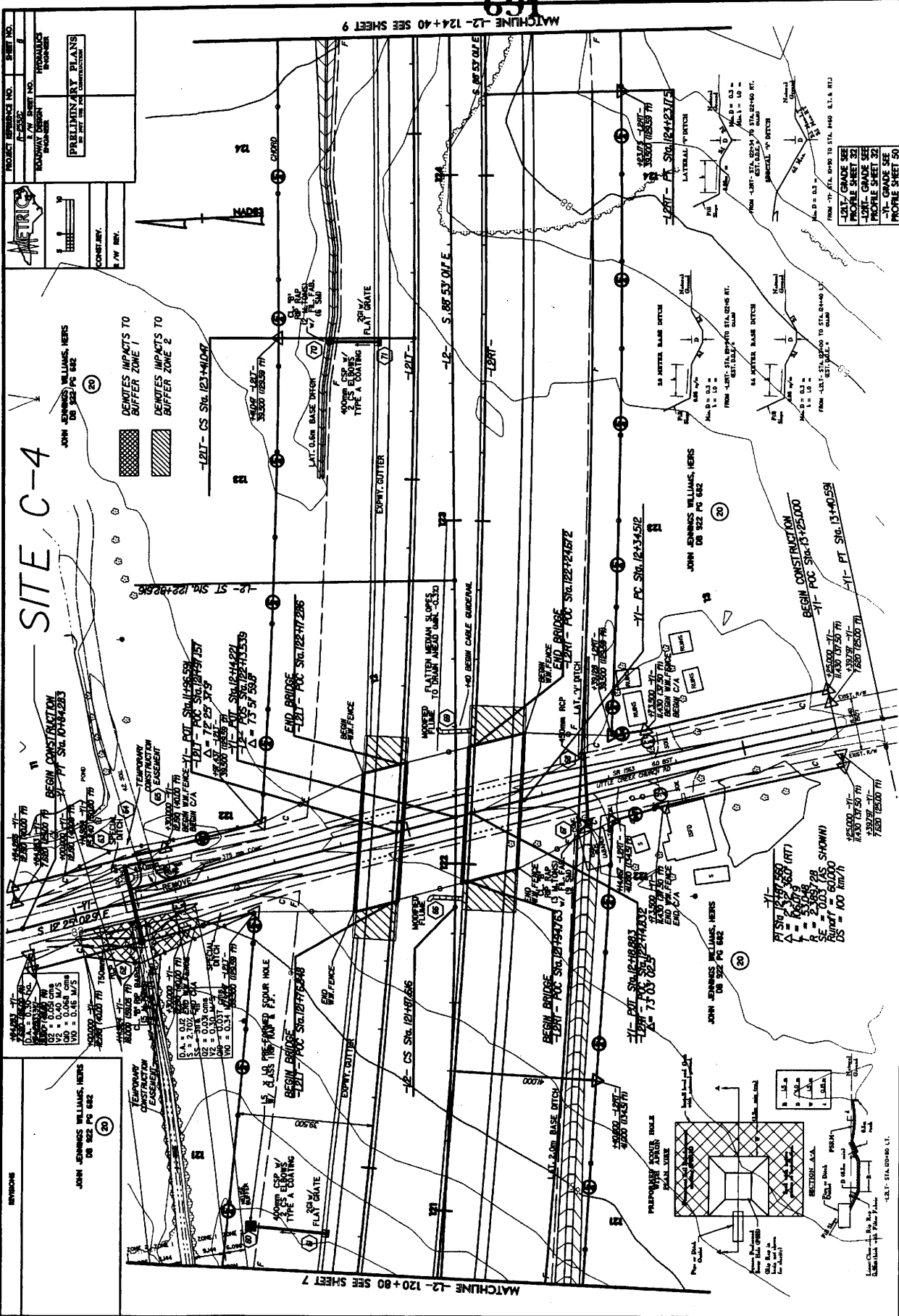
PIPE HYDRAULIC DATA	
ORANGE STRUCTURE NO.	172
DESIGN FREQUENCY	1.00
DESIGN DISCHARGE	0.08 CFS
DESIGN FLOW ELEVATION	86.7
10 YEAR FREQUENCY	1.00
10 YEAR DISCHARGE	0.08 CFS
10 YEAR FLOW ELEVATION	86.7
OVERTOPPING FREQUENCY	1.00
OVERTOPPING DISCHARGE	0.08 CFS
OVERTOPPING ELEVATION	86.7

PIPE HYDRAULIC DATA	
ORANGE STRUCTURE NO.	174
DESIGN FREQUENCY	1.00
DESIGN DISCHARGE	0.08 CFS
DESIGN FLOW ELEVATION	86.7
10 YEAR FREQUENCY	1.00
10 YEAR DISCHARGE	0.08 CFS
10 YEAR FLOW ELEVATION	86.7
OVERTOPPING FREQUENCY	1.00
OVERTOPPING DISCHARGE	0.08 CFS
OVERTOPPING ELEVATION	86.7

SITE C-2

SITE C-3

LOCHNER
 H. W. LOCHNER, INC.
 1701 S. W. 10TH AVE.
 FORT LAUDERDALE, FL 33304



PROJECT NUMBER NO. 1
SHEET NO. 1
ROADWAY DESIGN ENGINEER
PRELIMINARY PLANS
BY THE STATE OF CALIFORNIA
CONTRACTOR

DEMOLITION IMPACTS TO
BUFFER ZONE 1
DEMOLITION IMPACTS TO
BUFFER ZONE 2

JOHN JENNINGS WILLIAMS, HERS
DB 522 PG 682

12+00
12+40
12+80

12+12
12+16
12+20

12+24
12+28
12+32

12+36
12+40
12+44

12+48
12+52
12+56

12+60
12+64
12+68

12+72
12+76
12+80

12+84
12+88
12+92

12+96
13+00
13+04

13+08
13+12
13+16

13+20
13+24
13+28

13+32
13+36
13+40

13+44
13+48
13+52

13+56
13+60
13+64

13+68
13+72
13+76

13+80
13+84
13+88

13+92
13+96
14+00

14+04
14+08
14+12

14+16
14+20
14+24

14+28
14+32
14+36

14+40
14+44
14+48

14+52
14+56
14+60

14+64
14+68
14+72

14+76
14+80
14+84

14+88
14+92
14+96

15+00
15+04
15+08

15+12
15+16
15+20

15+24
15+28
15+32

15+36
15+40
15+44

15+48
15+52
15+56

15+60
15+64
15+68

15+72
15+76
15+80

15+84
15+88
15+92

15+96
16+00
16+04

16+08
16+12
16+16

16+20
16+24
16+28

16+32
16+36
16+40

16+44
16+48
16+52

16+56
16+60
16+64

16+68
16+72
16+76

16+80
16+84
16+88

16+92
16+96
17+00

17+04
17+08
17+12

17+16
17+20
17+24

17+28
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25+44
25+48
25+52

25+56
25+60
25+64

25+68
25+72
25+76

25+80
25+84
25+88

25+92
25+96
26+00

SITE, C-4

JOHN JENNINGS WILLIAMS, HEIRS
DB 922 BC 682

 DENOTES IMPACTS TO BUFFER ZONE 1

 DENOTES IMPACTS TO BUFFER ZONE 2

JOHN JENNINGS WILLIAMS, HERS
DB 922 PG 642

SYSTEMS

MATCHLINE -12-120+80 SEE SHEET 7

WATCHLINE -12-124+40 SEE SHEET 9

692

[illegible]

-1-

PI Sta 12+87.560
 $\Delta = 232.360$ (RT)
 $L = 106.079$
 $E = 53.048$
 $R = 2389.728$
SE = 0.03 (AS SHOWN)

JOHN JENNINGS WILLIAMS, HERS
DB 922 PG 682

1650472

FROM -1.2LT- STA. 123+00 TO STA. 124+40 L.T.
(EST. O.D.E. = 6.00m)

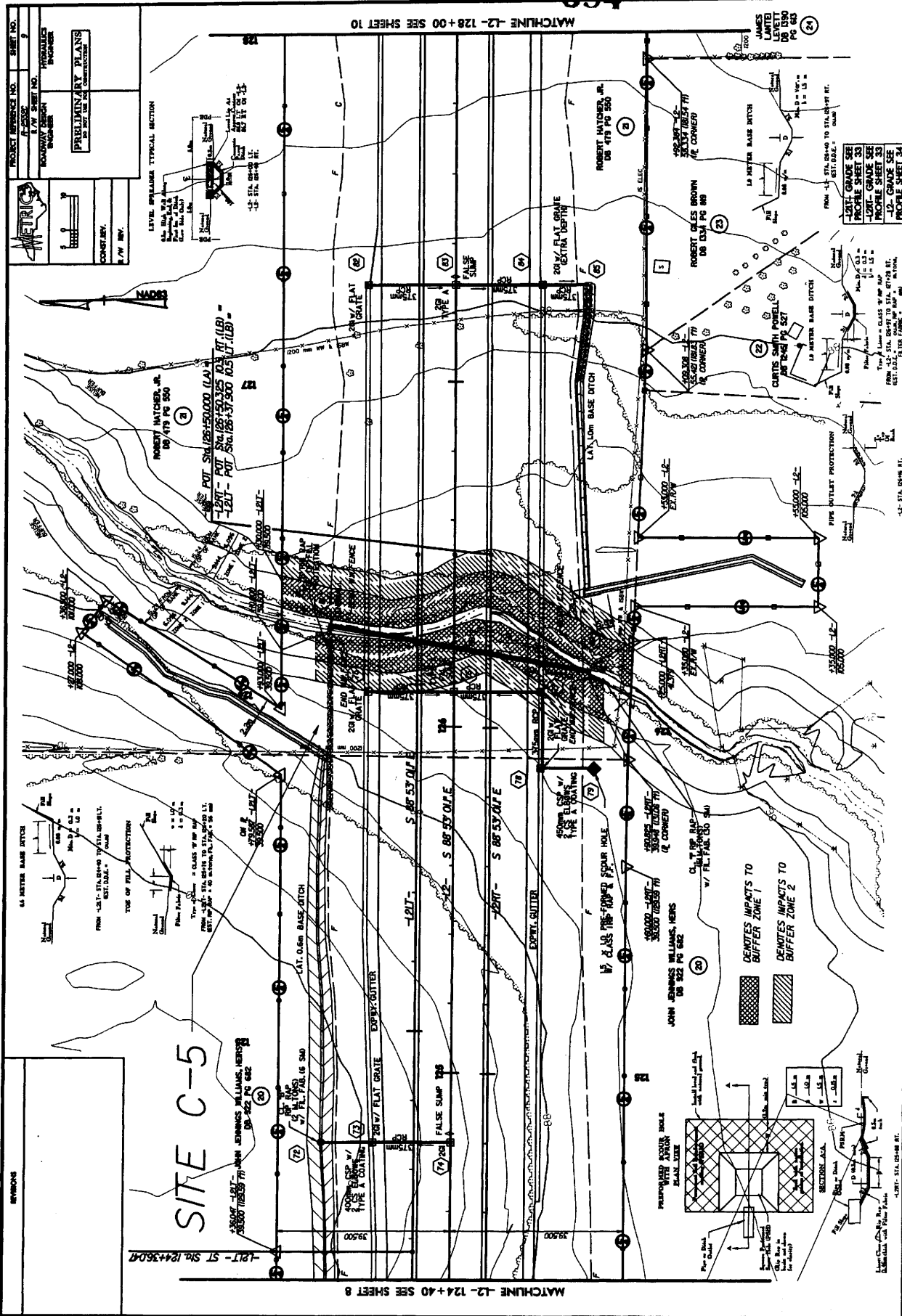
FROM -YI- STA. 10+90 TO STA. 11+60 G.T. & RT. J

-L2LT- GRADE SEE
PROFILE SHEET 32

-L2RT- GRADE SEE
PROFILE SHEET 32

-YI- GRADE SEE
PROFILE SHEET 50

-121Y- STA. 120+40 L.T.



SITE C-5

MATCHLINE -L2- 128+00 SEE SHEET 10

MATCHLINE -L2- 124+40 SEE SHEET 8

PROJECT REFERENCE NO. 8
SHEET NO. 9
DESIGNER: ROBERT WATKINS, JR.
CHECKED BY: JAMES LIMITED
DATE: 12/15/2000
PRELIMINARY PLANS
CONST. BY: [blank]
DATE: [blank]

15 METER BASE DITCH
TOE OF FILL PROTECTION
FROM -L2- 124+40 TO -L2- 128+00
EST. DATE: 12/15/2000
Scale: 1" = 100'

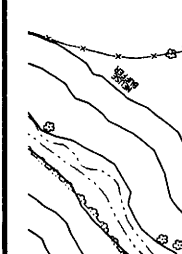
DEMOTES IMPACTS TO
BUFFER ZONE 1
DEMOTES IMPACTS TO
BUFFER ZONE 2

PREPARED ADJUST HOLE
PLAN VIEW
SECTIONAL VIEW
Scale: 1" = 100'

PROJECT REFERENCE NO.	12-124+40 SEE SHEET 8
	12-128+00 SEE SHEET 10
DATE	12/1/83
DESIGNER	HYDRAULICS ENGINEER
CHECKED BY	12-124+40 SEE SHEET 8
CONTRACT NO.	12-124+40 SEE SHEET 8
PRELIMINARY PLANS	NO POST FOR CONSTRUCTION



LEVEL SPREADER TYPICAL SECTION



6.6 METER BASE DITCH
Max. D = 0.3
L = 0.3

TYPE OF FILL PROTECTION
FROM -12T- STA. 0+00 TO STA. 0+100
EST. DATE: 12/1/83

FROM -12T- STA. 0+100 TO STA. 0+200
EST. DATE: 12/1/83

FROM -12T- STA. 0+200 TO STA. 0+300
EST. DATE: 12/1/83

FROM -12T- STA. 0+300 TO STA. 0+400
EST. DATE: 12/1/83

FROM -12T- STA. 0+400 TO STA. 0+500
EST. DATE: 12/1/83

FROM -12T- STA. 0+500 TO STA. 0+600
EST. DATE: 12/1/83

FROM -12T- STA. 0+600 TO STA. 0+700
EST. DATE: 12/1/83

FROM -12T- STA. 0+700 TO STA. 0+800
EST. DATE: 12/1/83

FROM -12T- STA. 0+800 TO STA. 0+900
EST. DATE: 12/1/83

FROM -12T- STA. 0+900 TO STA. 0+1000
EST. DATE: 12/1/83

FROM -12T- STA. 0+1000 TO STA. 0+1100
EST. DATE: 12/1/83

FROM -12T- STA. 0+1100 TO STA. 0+1200
EST. DATE: 12/1/83

FROM -12T- STA. 0+1200 TO STA. 0+1300
EST. DATE: 12/1/83

FROM -12T- STA. 0+1300 TO STA. 0+1400
EST. DATE: 12/1/83

FROM -12T- STA. 0+1400 TO STA. 0+1500
EST. DATE: 12/1/83

FROM -12T- STA. 0+1500 TO STA. 0+1600
EST. DATE: 12/1/83

FROM -12T- STA. 0+1600 TO STA. 0+1700
EST. DATE: 12/1/83

FROM -12T- STA. 0+1700 TO STA. 0+1800
EST. DATE: 12/1/83

FROM -12T- STA. 0+1800 TO STA. 0+1900
EST. DATE: 12/1/83

FROM -12T- STA. 0+1900 TO STA. 0+2000
EST. DATE: 12/1/83

SITE C-5

12-124+40 SEE SHEET 8

12-128+00 SEE SHEET 10

12-132+00 SEE SHEET 11

12-136+00 SEE SHEET 12

12-140+00 SEE SHEET 13

12-144+00 SEE SHEET 14

12-148+00 SEE SHEET 15

12-152+00 SEE SHEET 16

12-156+00 SEE SHEET 17

12-160+00 SEE SHEET 18

12-164+00 SEE SHEET 19

12-168+00 SEE SHEET 20

12-172+00 SEE SHEET 21

12-176+00 SEE SHEET 22

12-180+00 SEE SHEET 23

12-184+00 SEE SHEET 24

12-188+00 SEE SHEET 25

12-192+00 SEE SHEET 26

12-196+00 SEE SHEET 27

12-200+00 SEE SHEET 28

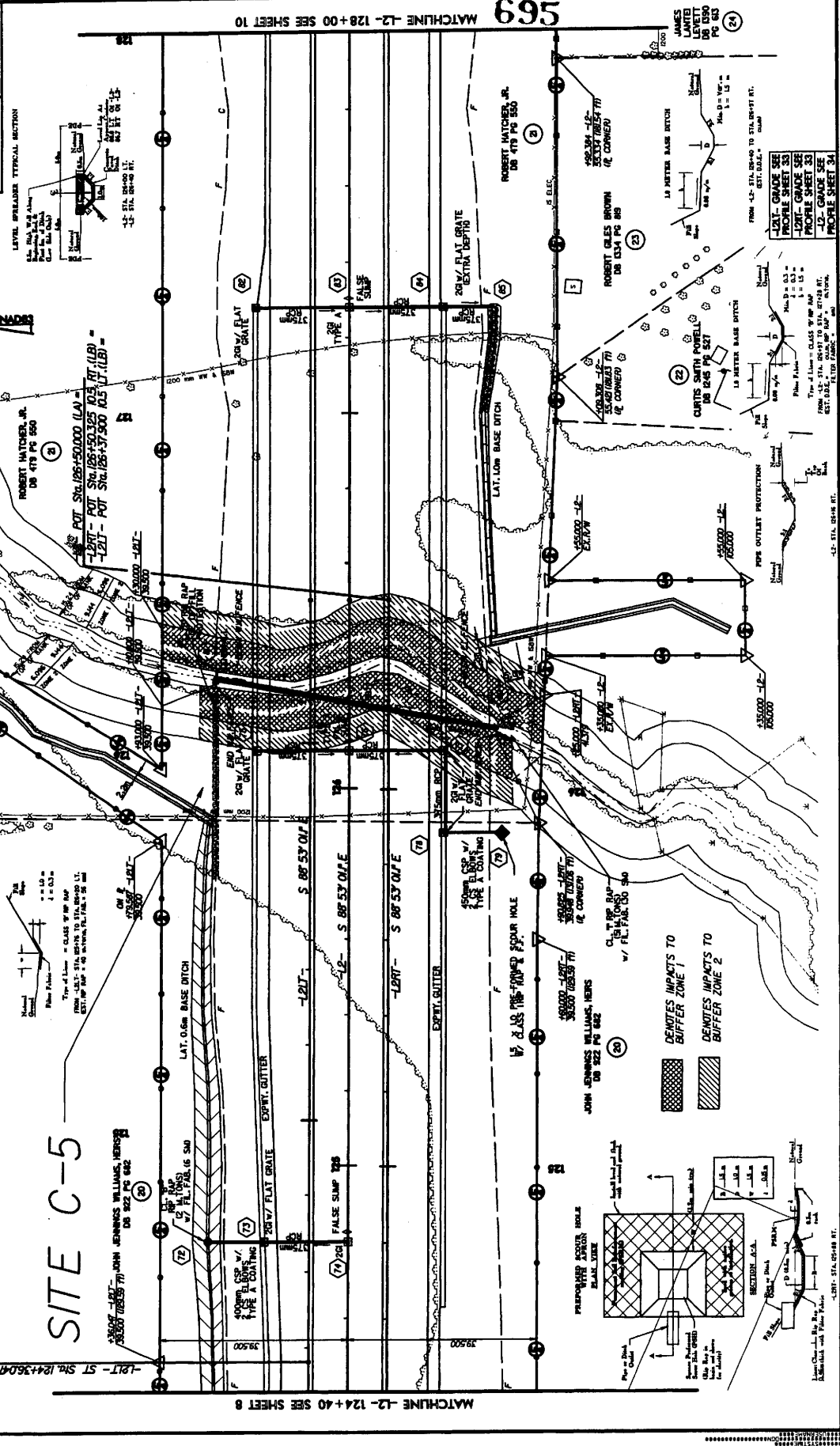
12-204+00 SEE SHEET 29

12-208+00 SEE SHEET 30

12-212+00 SEE SHEET 31

12-216+00 SEE SHEET 32

12-220+00 SEE SHEET 33



12-124+40 SEE SHEET 8

12-128+00 SEE SHEET 10

12-132+00 SEE SHEET 11

12-136+00 SEE SHEET 12

12-140+00 SEE SHEET 13

12-144+00 SEE SHEET 14

12-148+00 SEE SHEET 15

12-152+00 SEE SHEET 16

12-156+00 SEE SHEET 17

12-160+00 SEE SHEET 18

12-164+00 SEE SHEET 19

12-168+00 SEE SHEET 20

12-172+00 SEE SHEET 21

12-176+00 SEE SHEET 22

12-180+00 SEE SHEET 23

12-184+00 SEE SHEET 24

12-188+00 SEE SHEET 25

12-192+00 SEE SHEET 26

12-196+00 SEE SHEET 27

12-200+00 SEE SHEET 28

12-204+00 SEE SHEET 29

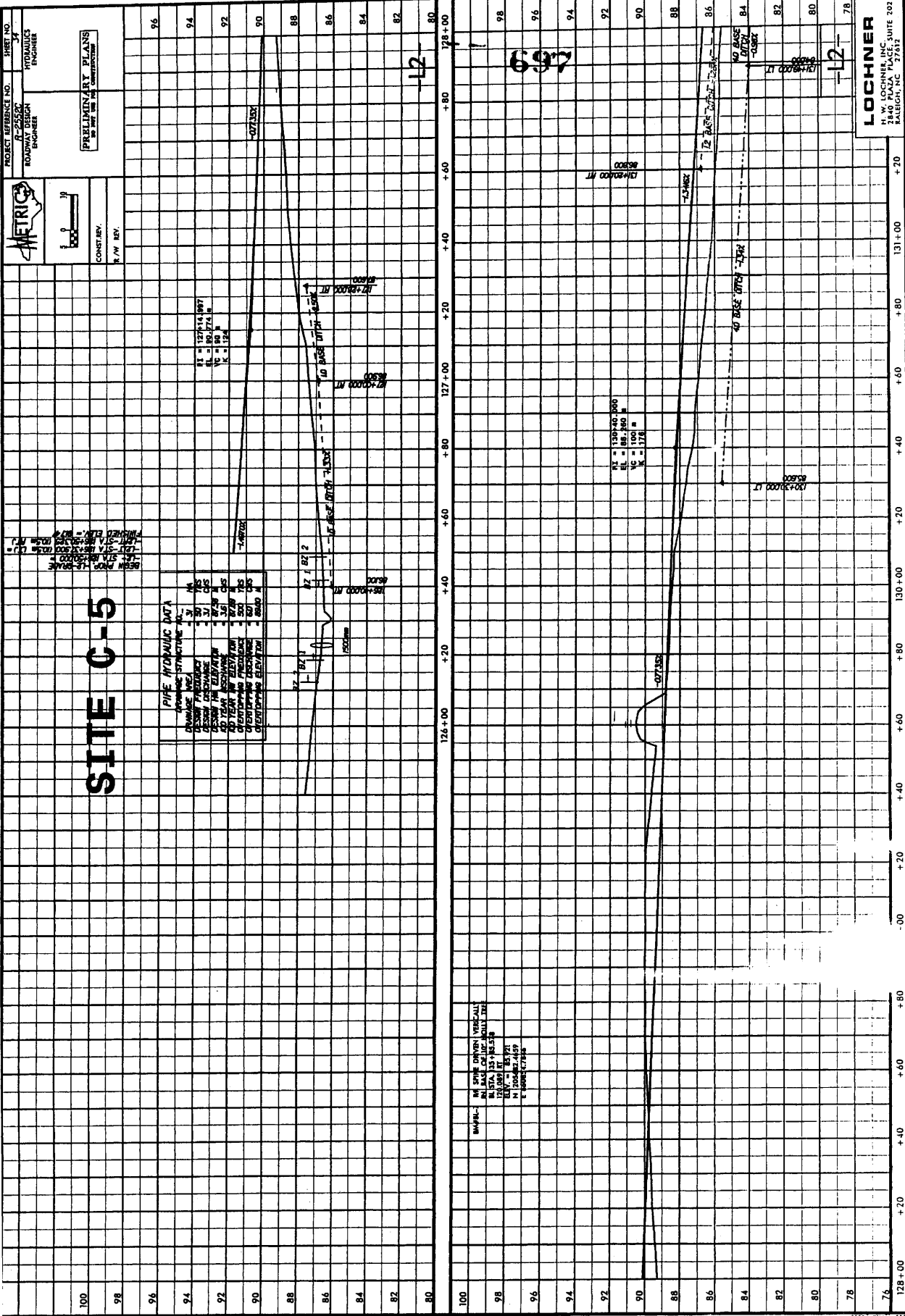
12-208+00 SEE SHEET 30

12-212+00 SEE SHEET 31

12-216+00 SEE SHEET 32

12-220+00 SEE SHEET 33





SITE C-5

PROJECT REFERENCE NO. 8-2552C
ROADWAY DESIGN
ENGINEER

SHEET NO. 34

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
NO FIELD USE IN CONSTRUCTION

CONST. REV. 10

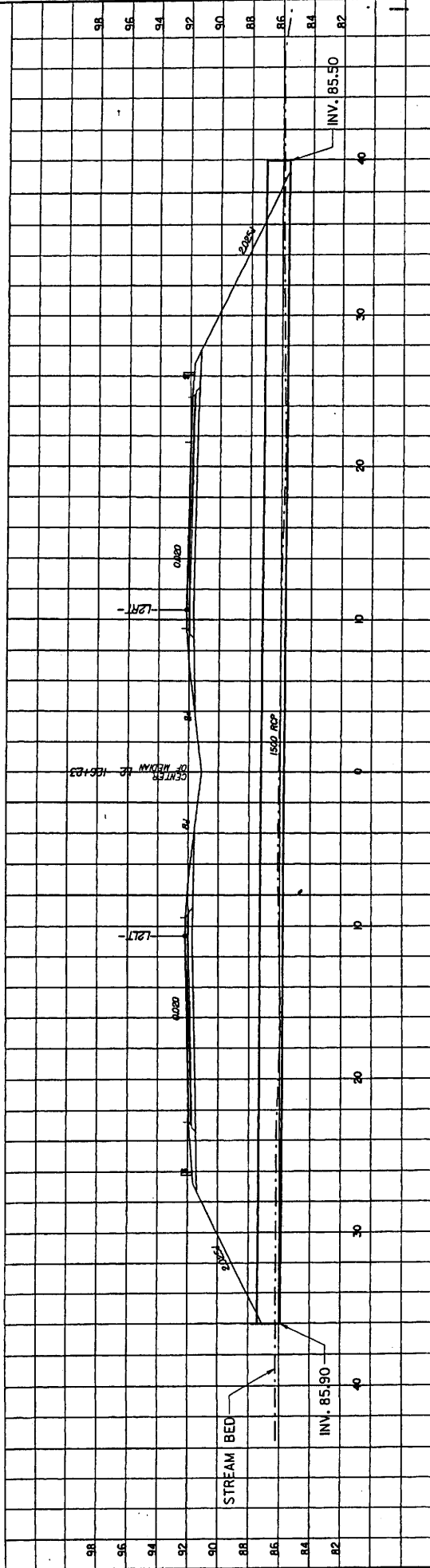
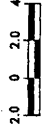
DATE REV. 10

LOCHNER

H.W. LOCHNER, INC. SUITE 202
RALEIGH, NC 27612

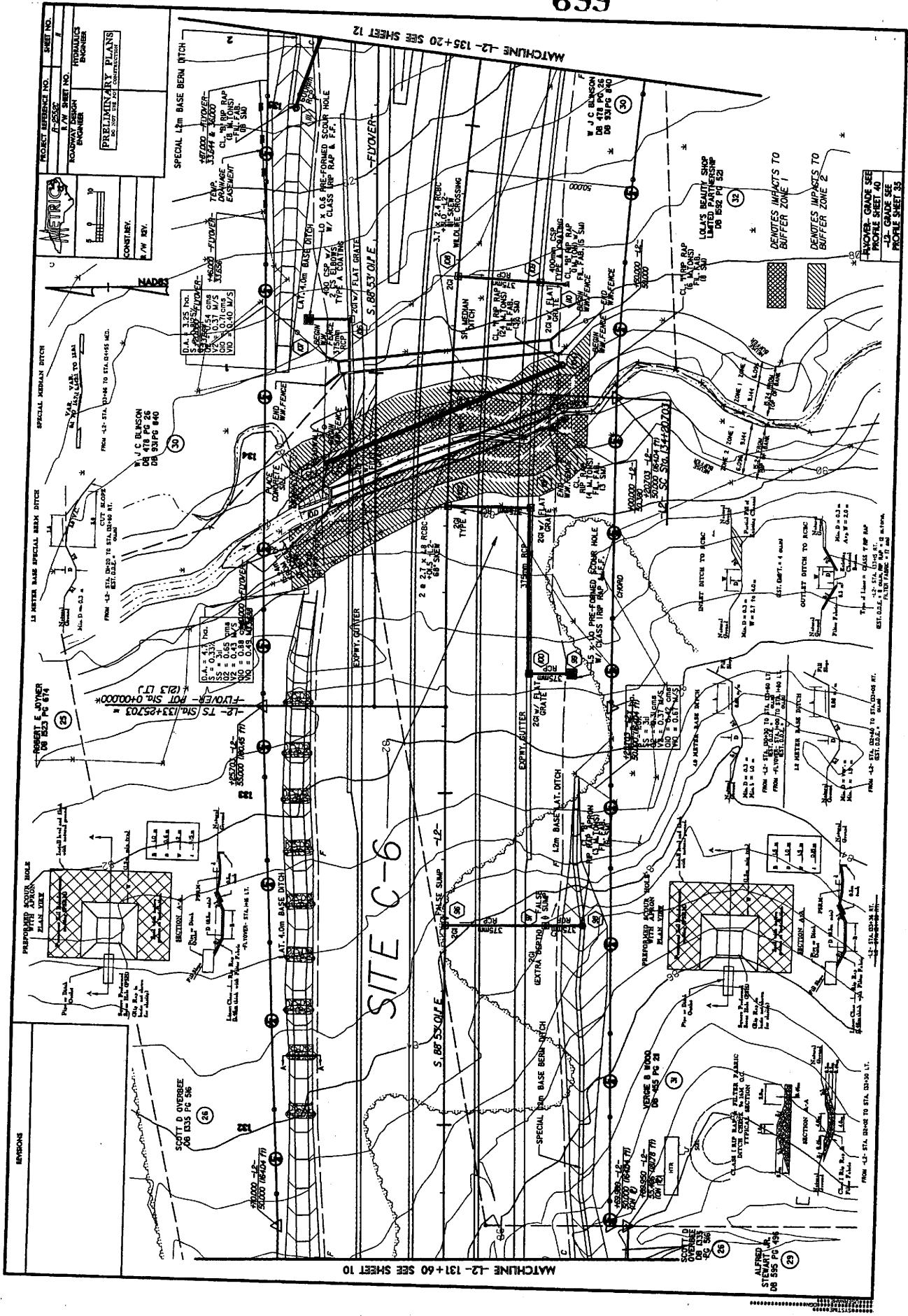
SITE C-5

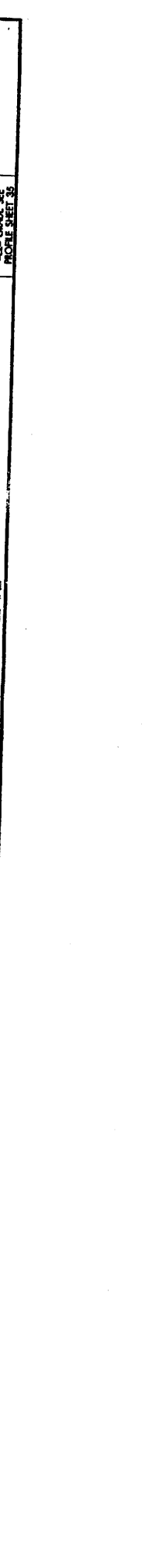
PROJECT REFERENCE NO.	SHEET NO.
H-25520	PP. 1

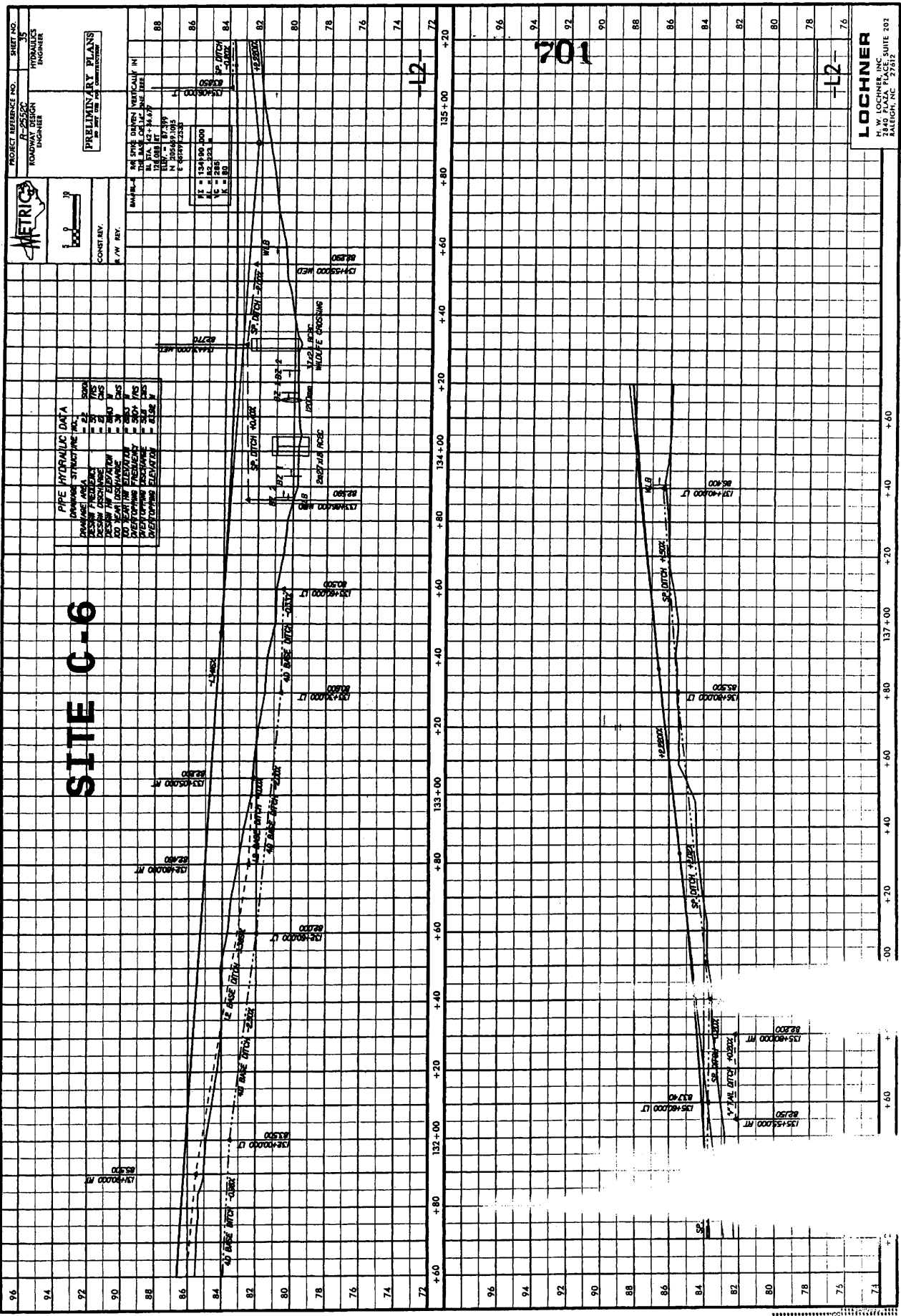


698

PROFILE OF F500 RCP
-L2- STA. 126+23
PLAN SHEET 9







PROJECT REFERENCE NO. 35
A. J. JONES
ENGINEER

PRELIMINARY PLANS
NO. 1000
DATE 10/1/77

PIPE HYDRAULIC DATA

PIPE SIZE	30"
DESIGN FLOW	1.50 CFS
DESIGN VELOCITY	2.00 FPS
DESIGN HEAD LOSS	0.50 FT
DESIGN FRICTION LOSS	0.30 FT
DESIGN MIN. COVER	2.00 FT
DESIGN MIN. ELEVATION	72.00 FT
DESIGN MAX. ELEVATION	82.00 FT
DESIGN MIN. SLOPE	0.01
DESIGN MAX. SLOPE	0.02
DESIGN MIN. RADIUS	100 FT
DESIGN MAX. RADIUS	200 FT
DESIGN MIN. CLEARANCE	5.00 FT
DESIGN MAX. CLEARANCE	10.00 FT
DESIGN MIN. ELEVATION	72.00 FT
DESIGN MAX. ELEVATION	82.00 FT

SITE C-6

VERTICAL CURVE DATA

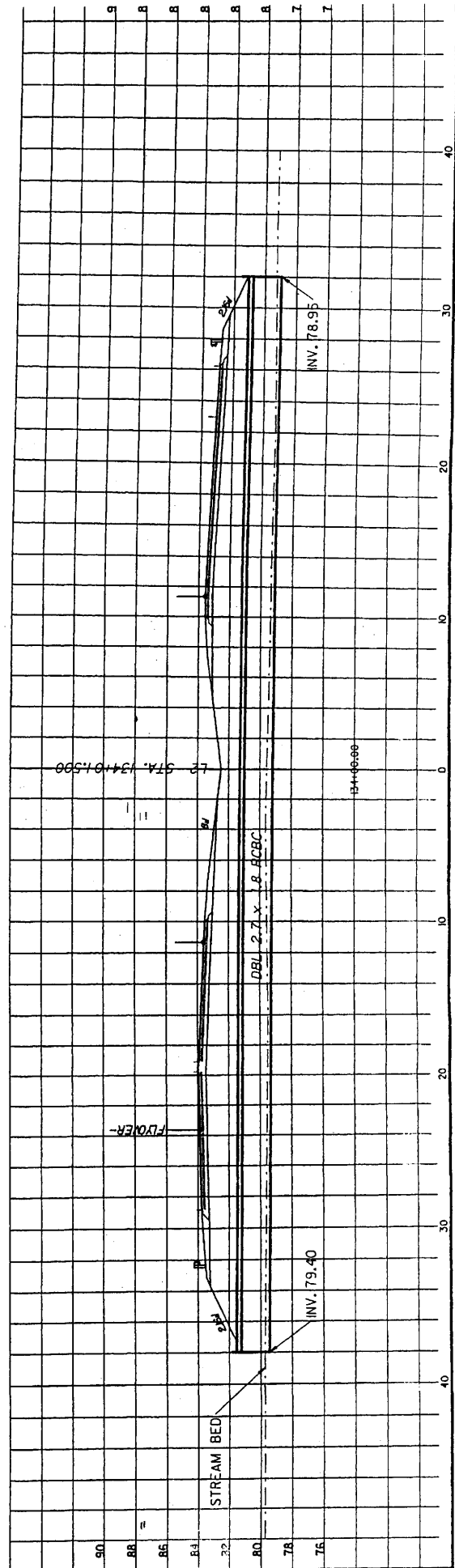
STATION	132+00
PC	131+00
PVI	132+00
PT	133+00
LC	132+00
STATION	137+00
PC	136+00
PVI	137+00
PT	138+00
LC	137+00

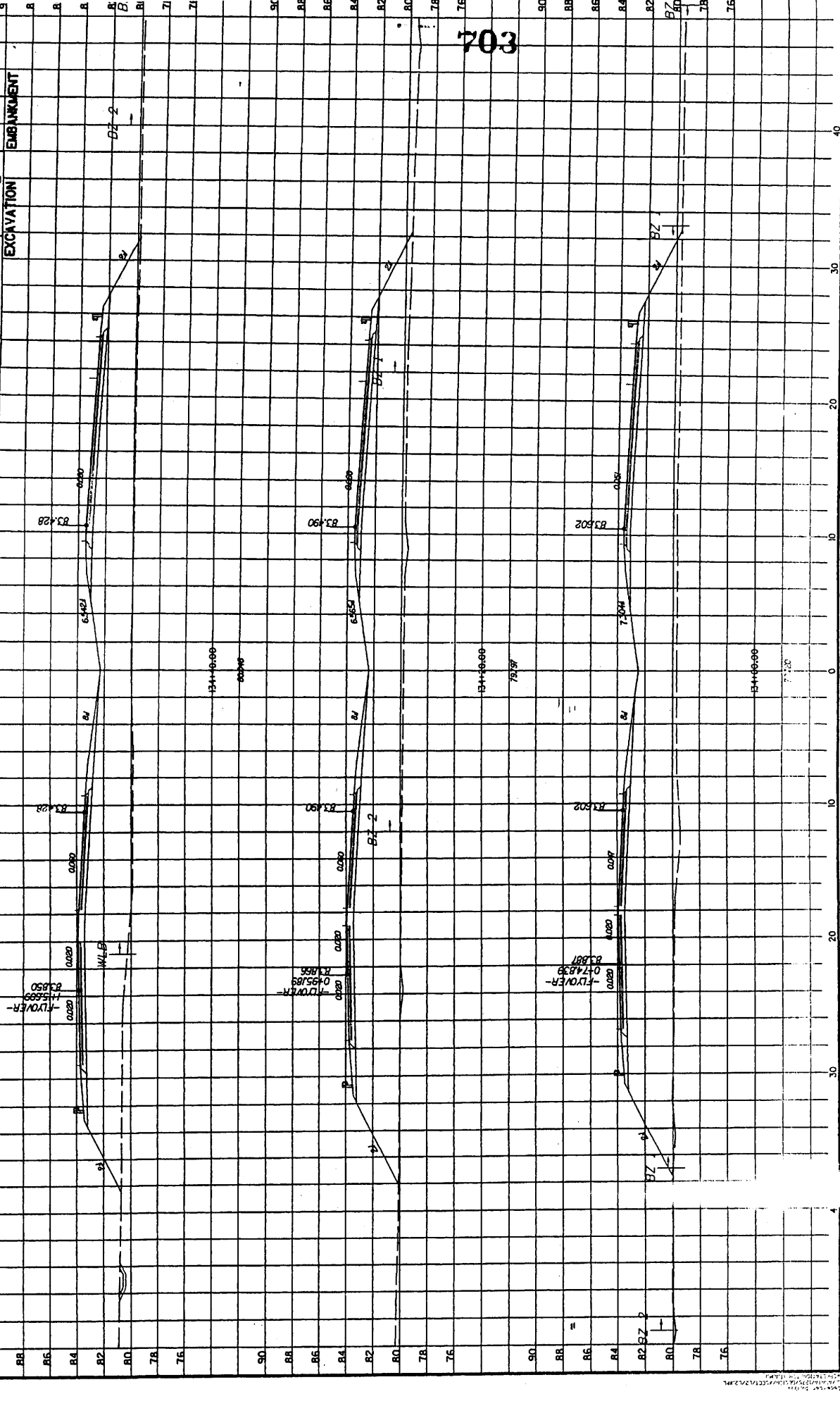
LOCHNER
H.W. LOCHNER, INC.
2840 PATA PLACE, SUITE 101
ALEXANDRIA, VA 22304

SITE C-6

PROFILE ALONG DBL 2.4 X 1.8 RCBC
 -L2- STA. 134+0 1.500
 PLAN SHEET 11

702





TYPICAL CROSS SECTION (SITE C-C)

MATCHLINE -12- 145+60 SEE SHEET 15

MATCH LINE 14 C-D

MATCHLINE - 12- 145 + 60 SEE SHEET 15

MATCH LINE 14 C-D

[illegible]

SITE C-10

MATCH LINE 16 B-C

SITE C-10

MATCH LINE 16 B-C

[illegible]

PIPE HYDRAULIC DATA	
ORANGE STRUCTURE NO.	16
ORANGE MEA	14
DESIGN FREQUENCY	30 YRS
DESIGN DESIGN	17 CFS
DESIGN MEAN ELEVATION	802.7
DESIGN MEAN ELEVATION	802.7
AD YEAR ASSURANCE	2.0 CFS
AD YEAR ELEVATION	802.7
OPERATING FREQUENCY	30 YRS
OPERATING DESIGN	274 CFS
OPERATING ELEVATION	800.0

PIPE HYDRAULIC DATA	
DRAINAGE AREA	= 5.9 HA
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 12.0 CUS
DESIGN FLOW	= 71.94 M
DESIGN PIPE ELEVATION	= 14.0 CUS
10 YEAR INCHARGE	= 76.03 M
10 YEAR 100 YEAR	= 500+ YRS
OPENING FREQUENCY	= 802 CUS
OPENING DISCHARGE	= 80.98 M
OPENING ELEVATION	
OPENING AREA	
10 YEAR INCHARGE	
10 YEAR 100 YEAR	
OPENING FREQUENCY	
OPENING DISCHARGE	
OPENING ELEVATION	
OPENING AREA	

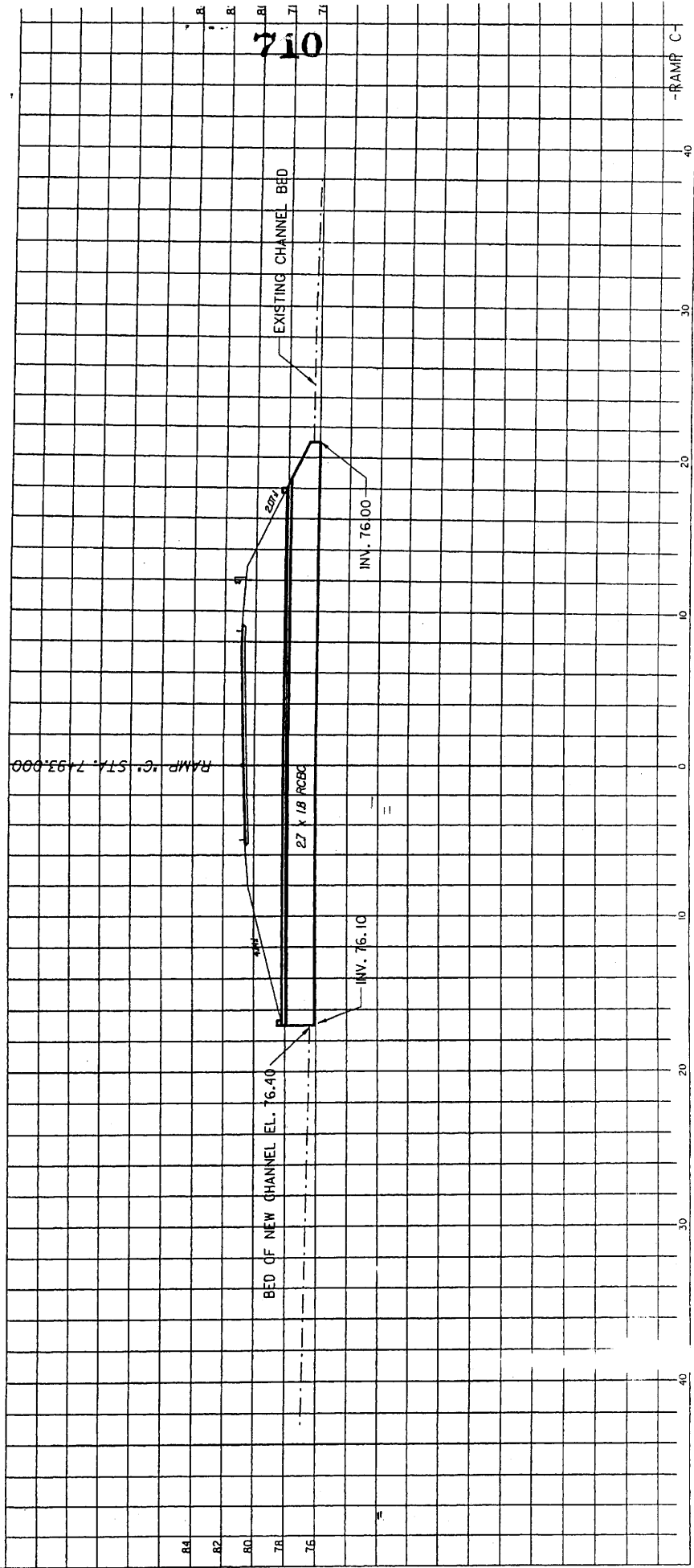
SITE C-10

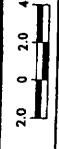
RAMP C

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 300
RALEIGH, NC 27612

SITE C-10

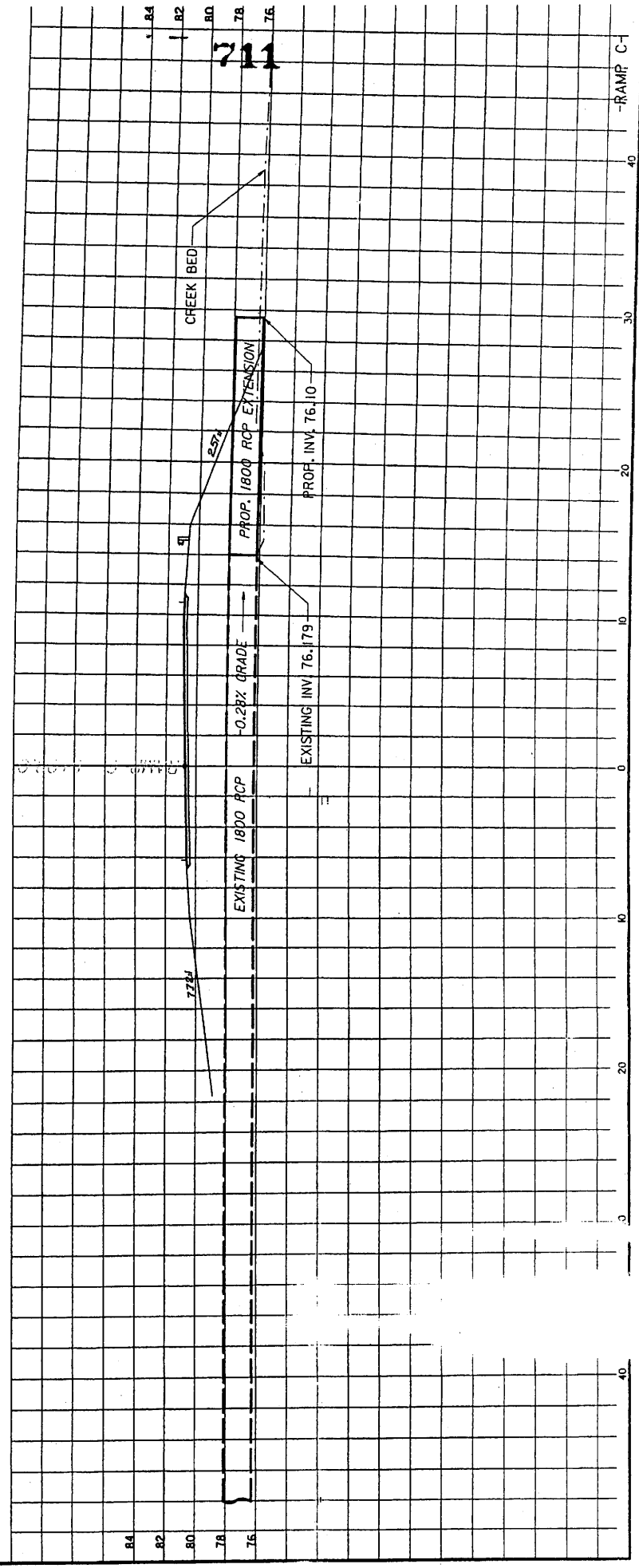
PROFILE OF 2.7 x 1.8 RCBC
 RAMP C - STA. 7+93.000
 PLAN SHEET 16

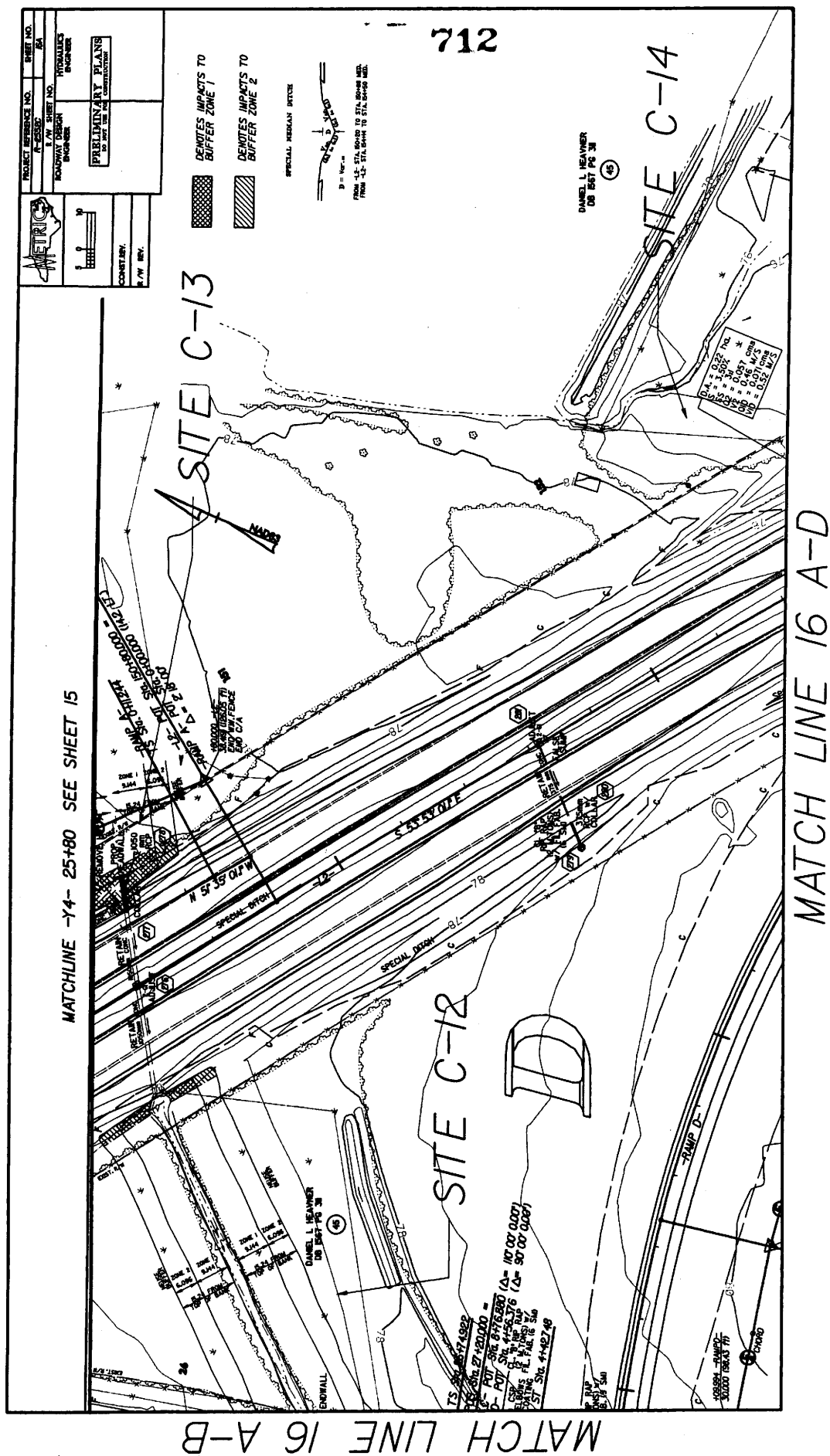


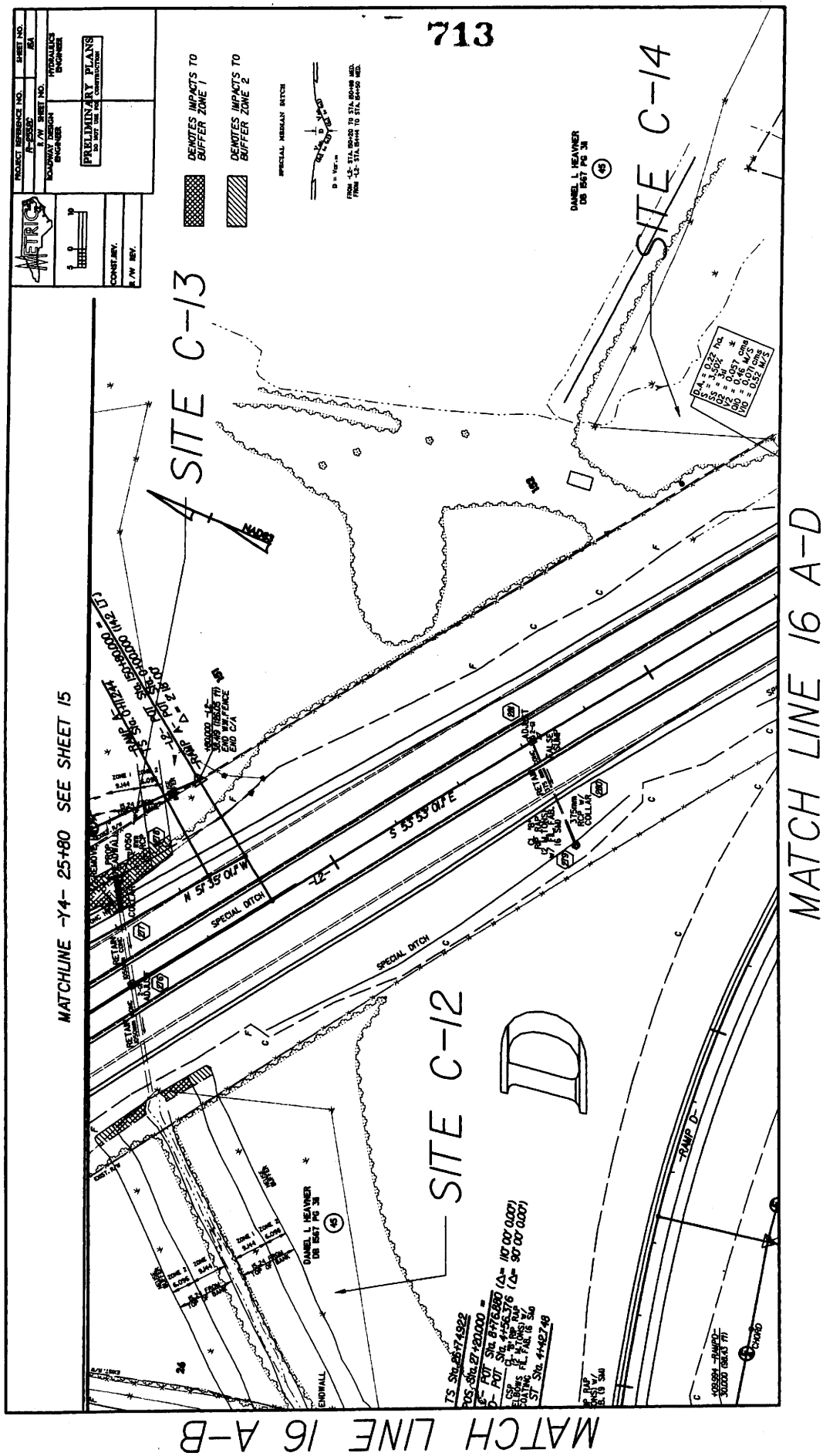


SITE C-10

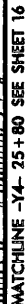
PIPE PROFILE OF 1800 RCP
RAMP C STA. 8+09.0



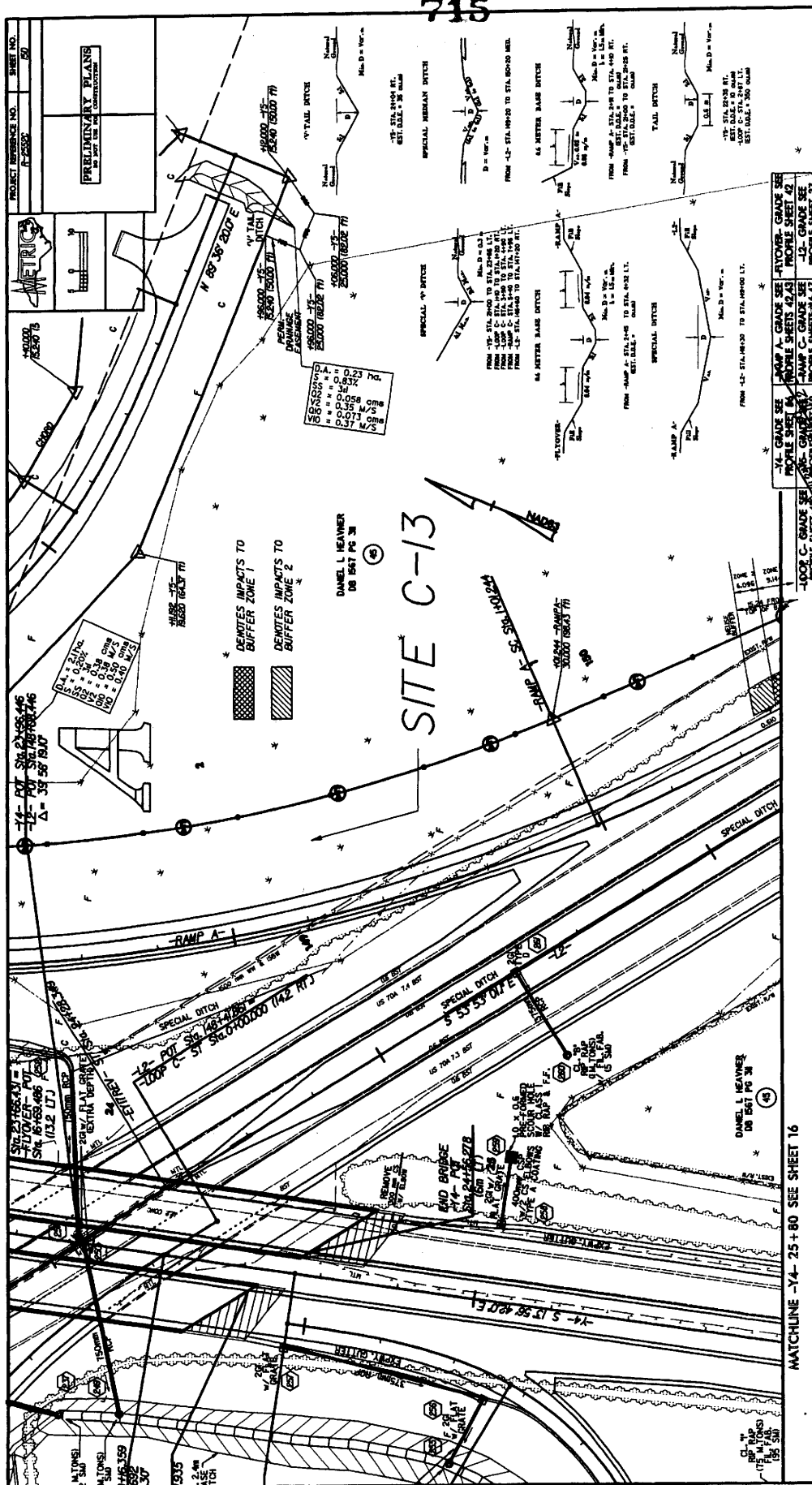




MATCH LINE 15 C-D

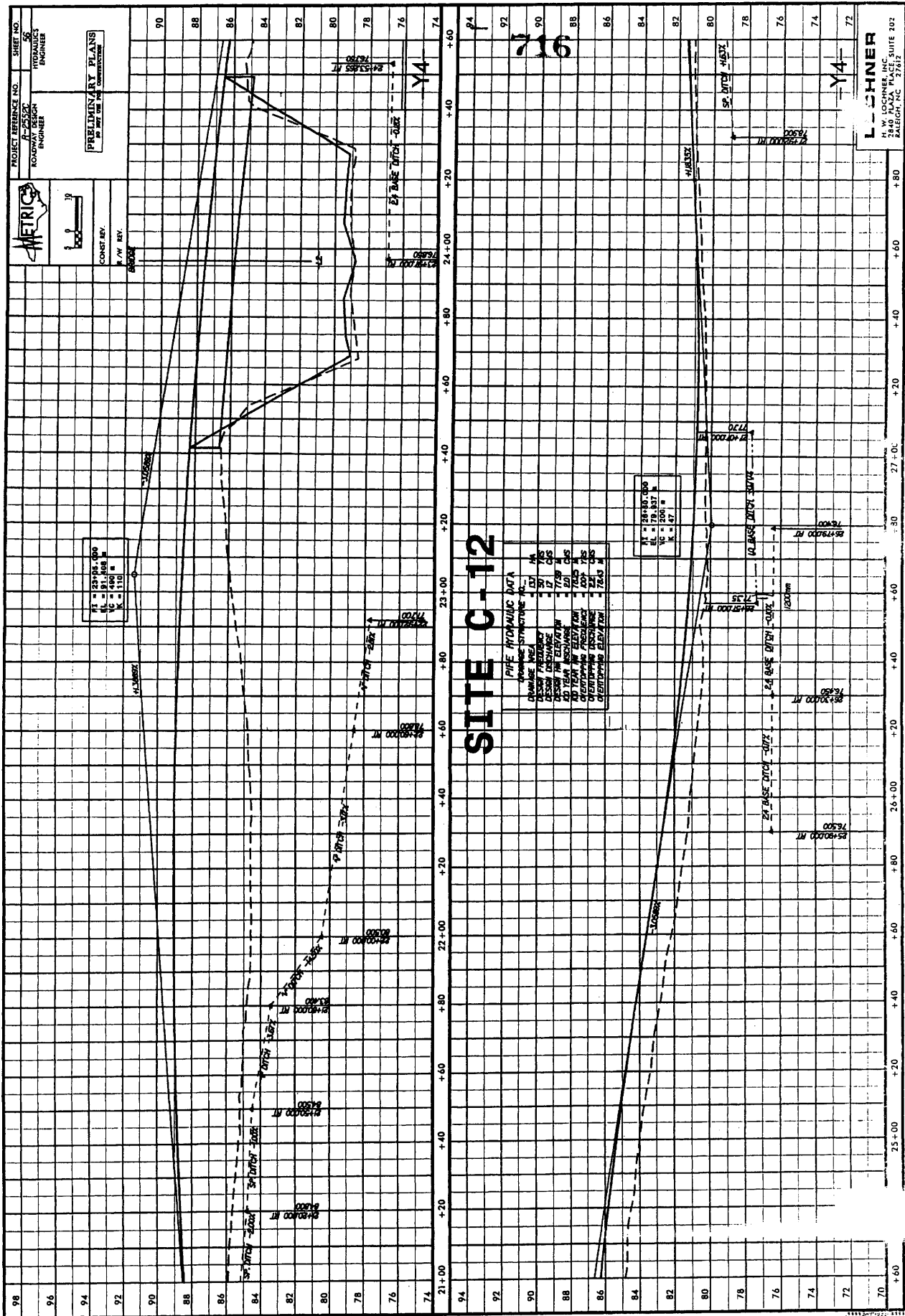


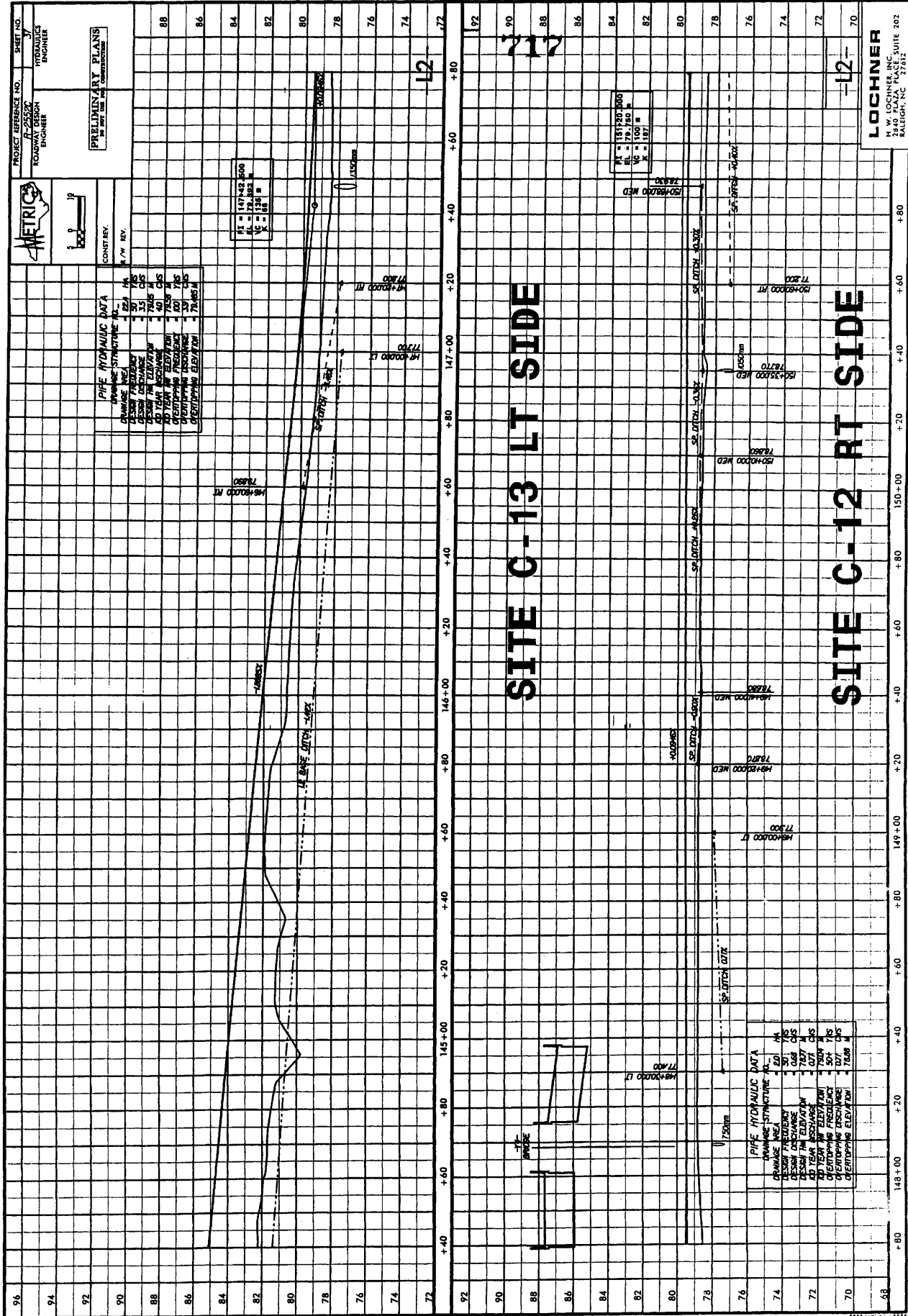
MATCH LINE 15 C-D

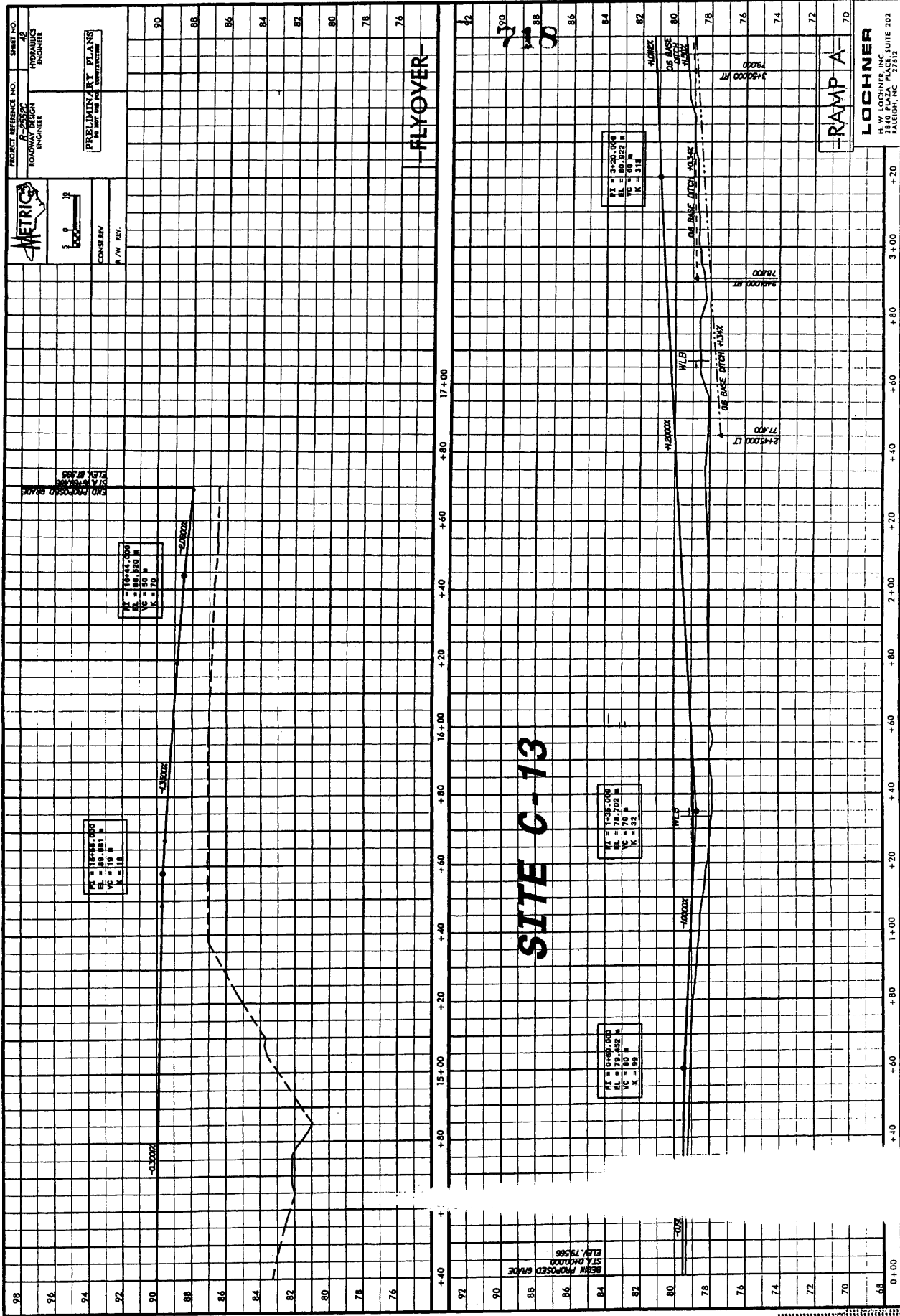


WATCHLINE -Y4- 25 + 80 SEE SHEET 16

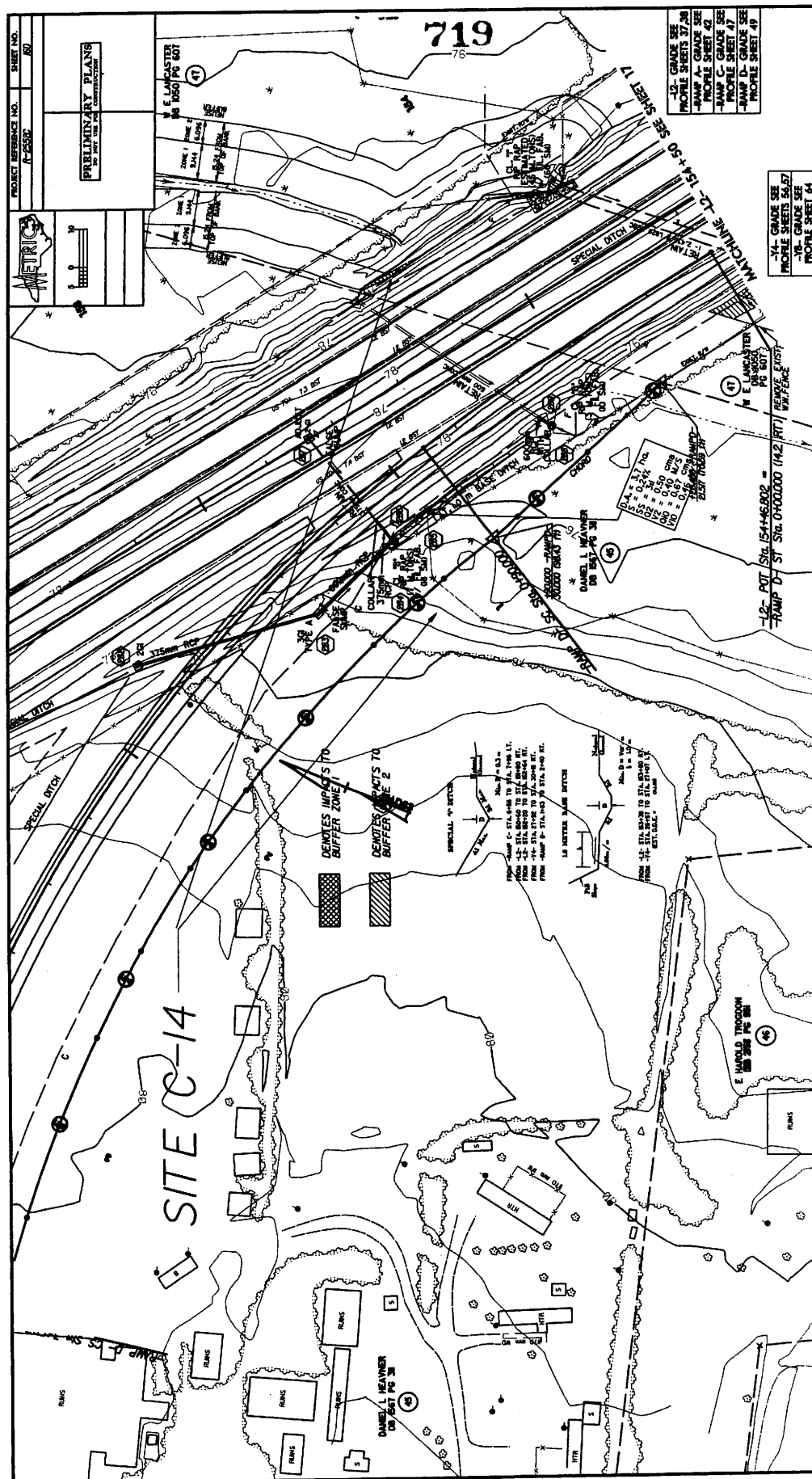
-1/4" GRADE SEE PEOPLE SHEET 84	-1/4" A- GRADE SEE PEOPLE SHEETS 42/43	-1/2" OVER- GRADE SEE PEOPLE SHEET 42
-1/2" GRADE SEE PEOPLE SHEET 84	-1/2" A- GRADE SEE PEOPLE SHEETS 42/43	-1/2" GRADE SEE PEOPLE SHEETS 42/43
-1/2" C- GRADE SEE PEOPLE SHEET 84	-1/2" B- GRADE SEE PEOPLE SHEETS 42/43	-1/2" GRADE SEE PEOPLE SHEETS 42/43



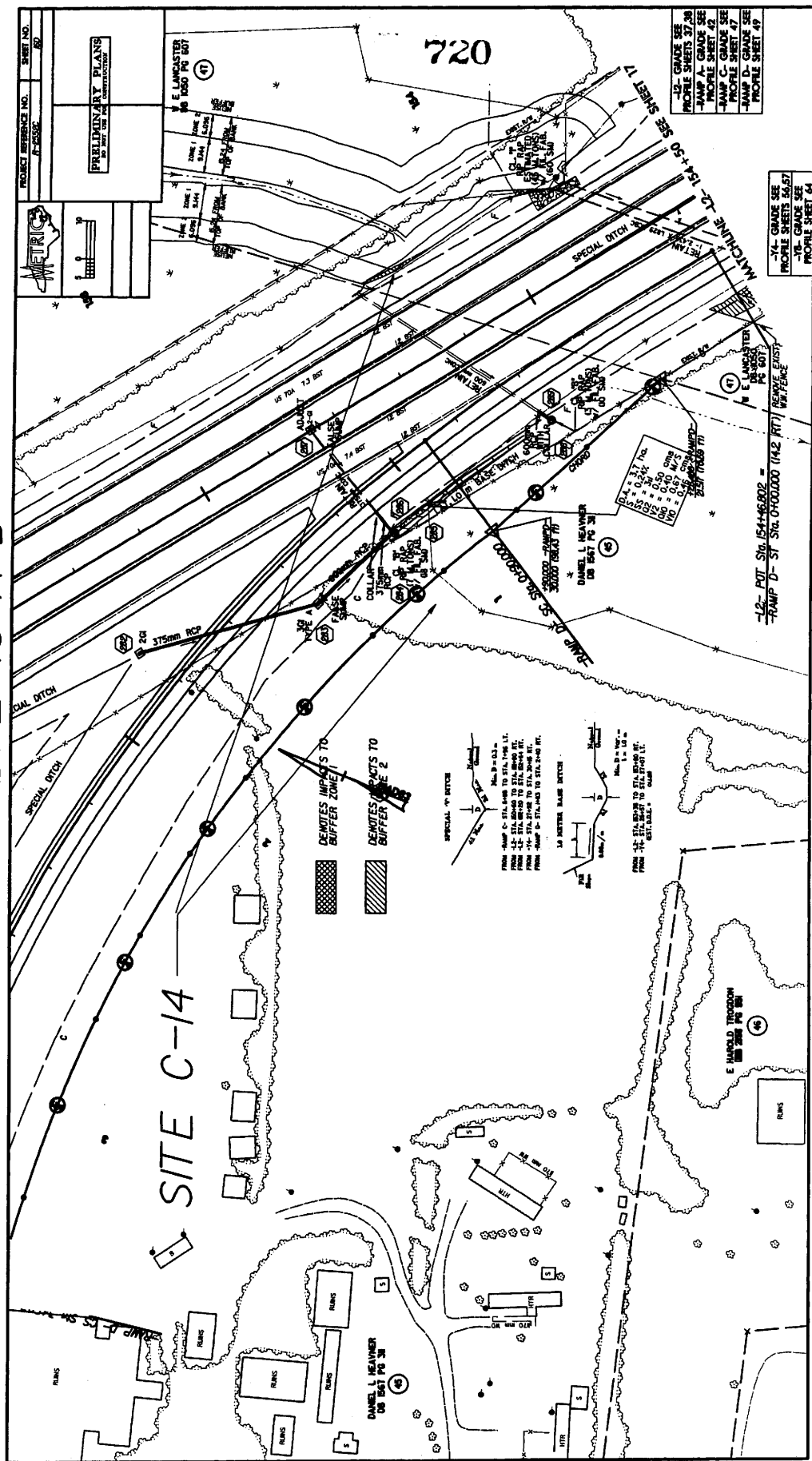


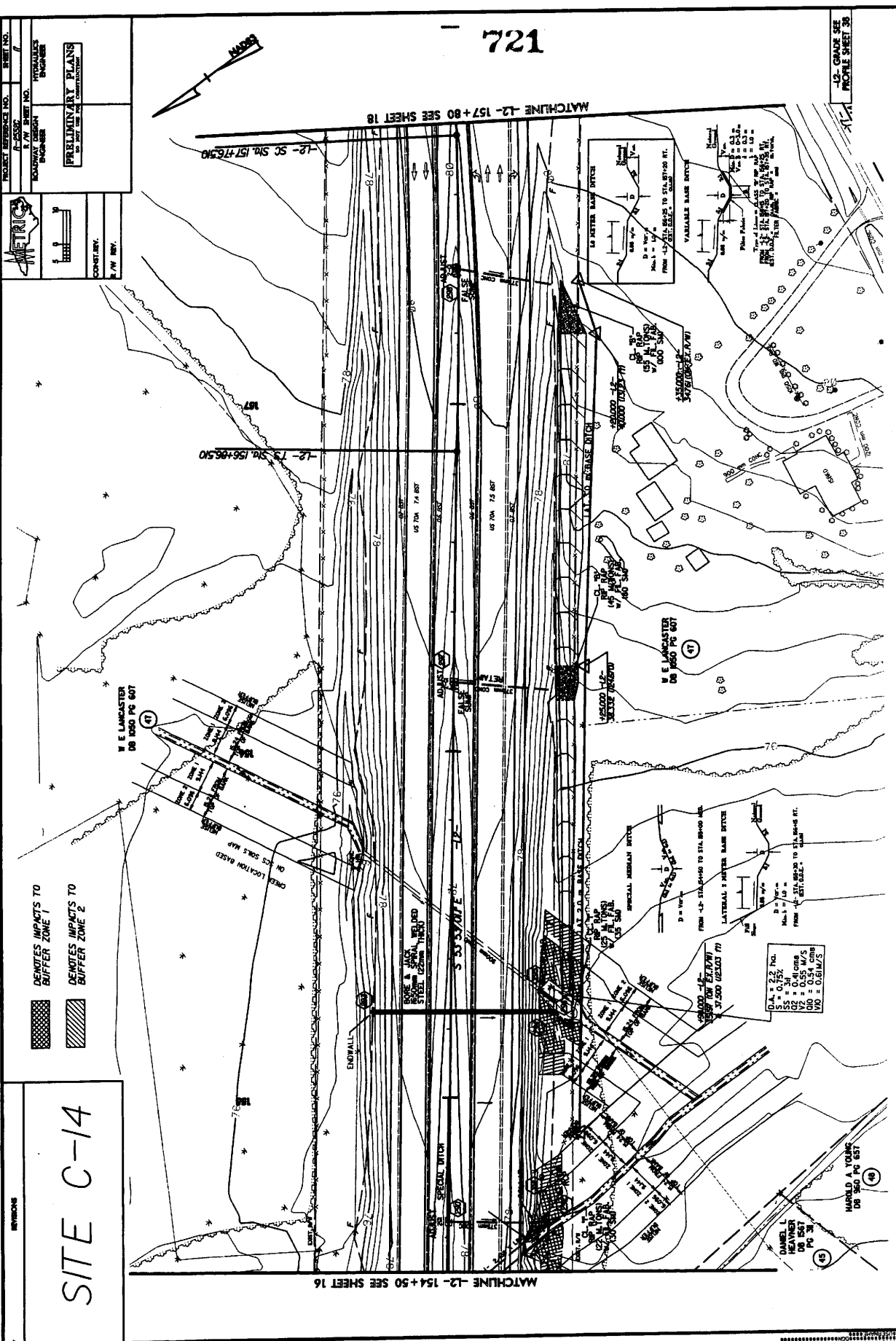


MATCH LINE 16 C-D



MATCH LINE 16 C-D





PROJECT NUMBER NO. 1

SHEET NO. 1

DESIGNER

HYDRAULICS ENGINEER

DATE

1/1/00

BY

1/1/00

FOR

1/1/00

PROJECT NAME

1/1/00

PROJECT LOCATION

1/1/00

PROJECT DESCRIPTION

1/1/00

PROJECT STATUS

1/1/00

PROJECT OWNER

1/1/00

PROJECT CONTACT

1/1/00

PROJECT PHONE

1/1/00

PROJECT FAX

1/1/00

PROJECT E-MAIL

1/1/00

PROJECT WEBSITE

1/1/00

PROJECT ADDRESS

1/1/00

PROJECT CITY

1/1/00

PROJECT STATE

1/1/00

PROJECT ZIP

1/1/00

PROJECT COUNTY

1/1/00

PROJECT TOWNSHIP

1/1/00

PROJECT RANGE

1/1/00

PROJECT SECTION

1/1/00

PROJECT QUARTER

1/1/00

PROJECT MERIDIAN

1/1/00

PROJECT ZONE

1/1/00

PROJECT DATUM

1/1/00

PROJECT SCALE

1/1/00

PROJECT UNITS

1/1/00

PROJECT CURRENCY

1/1/00

PROJECT TAXES

1/1/00

PROJECT FEES

1/1/00

PROJECT COSTS

1/1/00

PROJECT REVENUE

1/1/00

PROJECT PROFIT

1/1/00

PROJECT LOSS

1/1/00

PROJECT BREAK-EVEN

1/1/00

PROJECT RISK

1/1/00

PROJECT SENSITIVITY

1/1/00

PROJECT SCENARIO

1/1/00

PROJECT ASSUMPTIONS

1/1/00

PROJECT LIMITATIONS

1/1/00

PROJECT NOTES

1/1/00

PROJECT REFERENCES

1/1/00

PROJECT SOURCES

1/1/00

PROJECT DATA

1/1/00

PROJECT RESULTS

1/1/00

PROJECT CONCLUSIONS

1/1/00

PROJECT RECOMMENDATIONS

1/1/00

PROJECT ACTION PLAN

1/1/00

PROJECT MONITORING

1/1/00

PROJECT EVALUATION

1/1/00

PROJECT IMPROVEMENTS

1/1/00

PROJECT MAINTENANCE

1/1/00

PROJECT OPERATIONS

1/1/00

PROJECT SAFETY

1/1/00

PROJECT SECURITY

1/1/00

PROJECT COMPLIANCE

1/1/00

PROJECT LEGAL

1/1/00

PROJECT ETHICS

1/1/00

PROJECT PROFESSIONAL

1/1/00

PROJECT SOCIETY

1/1/00

PROJECT ENVIRONMENT

1/1/00

PROJECT CULTURE

1/1/00

PROJECT HISTORY

1/1/00

PROJECT FUTURE

1/1/00

PROJECT TRENDS

1/1/00

PROJECT PREDICTIONS

1/1/00

PROJECT PROJECTIONS

1/1/00

PROJECT FORECASTS

1/1/00

PROJECT TRENDS

1/1/00

PROJECT PREDICTIONS

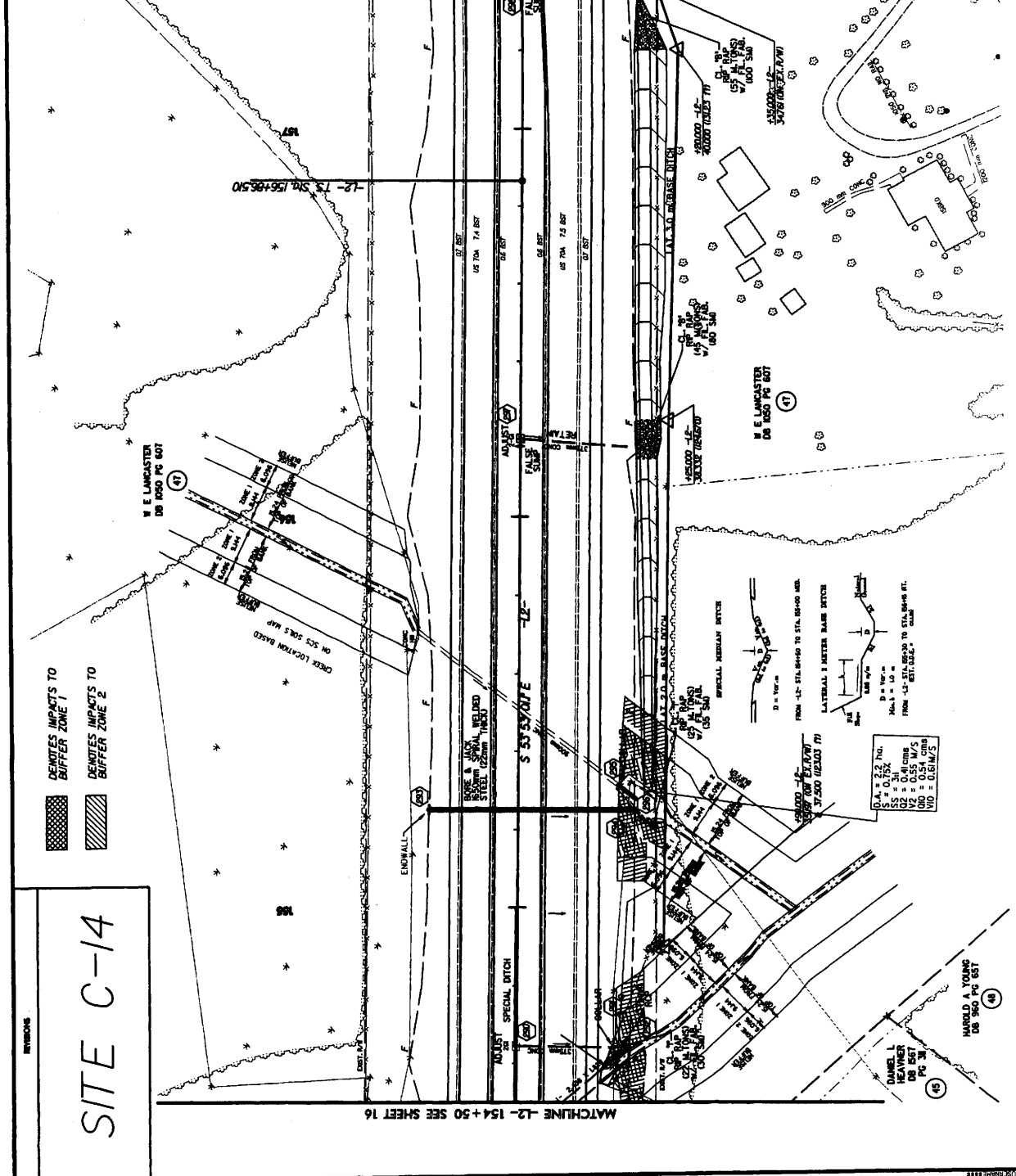
1/1/00

PROJECT PROJECTIONS

1/1/00

PROJECT FORECASTS

1/1/00



PROJECT NUMBER NO. 1

SHEET NO. 1

DESIGNER

HYDRAULICS ENGINEER

DATE

1/1/00

BY

1/1/00

FOR

1/1/00

PROJECT NAME

1/1/00

PROJECT LOCATION

1/1/00

PROJECT DESCRIPTION

1/1/00

PROJECT STATUS

1/1/00

PROJECT OWNER

1/1/00

PROJECT CONTACT

1/1/00

PROJECT PHONE

1/1/00

PROJECT FAX

1/1/00

PROJECT E-MAIL

1/1/00

PROJECT WEBSITE

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PROJECT ADDRESS

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PROJECT CITY

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PROJECT STATE

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PROJECT ZIP

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PROJECT COUNTY

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PROJECT TOWNSHIP

1/1/00

PROJECT RANGE

1/1/00

PROJECT SECTION

1/1/00

PROJECT QUARTER

1/1/00

PROJECT MERIDIAN

1/1/00

PROJECT ZONE

1/1/00

PROJECT DATUM

1/1/00

PROJECT SCALE

1/1/00

PROJECT UNITS

1/1/00

PROJECT CURRENCY

1/1/00

PROJECT TAXES

1/1/00

PROJECT FEES

1/1/00

PROJECT COSTS

1/1/00

PROJECT REVENUE

1/1/00

PROJECT PROFIT

1/1/00

PROJECT LOSS

1/1/00

PROJECT BREAK-EVEN

1/1/00

PROJECT RISK

1/1/00

PROJECT SENSITIVITY

1/1/00

PROJECT SCENARIO

1/1/00

PROJECT ASSUMPTIONS

1/1/00

PROJECT LIMITATIONS

1/1/00

PROJECT NOTES

1/1/00

PROJECT REFERENCES

1/1/00

PROJECT SOURCES

1/1/00

PROJECT DATA

1/1/00

PROJECT RESULTS

1/1/00

PROJECT CONCLUSIONS

1/1/00

PROJECT RECOMMENDATIONS

1/1/00

PROJECT ACTION PLAN

1/1/00

PROJECT MONITORING

1/1/00

PROJECT EVALUATION

1/1/00

PROJECT IMPROVEMENTS

1/1/00

PROJECT MAINTENANCE

1/1/00

PROJECT OPERATIONS

1/1/00

PROJECT SAFETY

1/1/00

PROJECT SECURITY

1/1/00

PROJECT COMPLIANCE

1/1/00

PROJECT LEGAL

1/1/00

PROJECT ETHICS

1/1/00

PROJECT PROFESSIONAL

1/1/00

PROJECT SOCIETY

1/1/00

PROJECT ENVIRONMENT

1/1/00

PROJECT CULTURE

1/1/00

PROJECT HISTORY

1/1/00

PROJECT FUTURE

1/1/00

PROJECT TRENDS

1/1/00

PROJECT PREDICTIONS

1/1/00

PROJECT PROJECTIONS

1/1/00

PROJECT FORECASTS

1/1/00

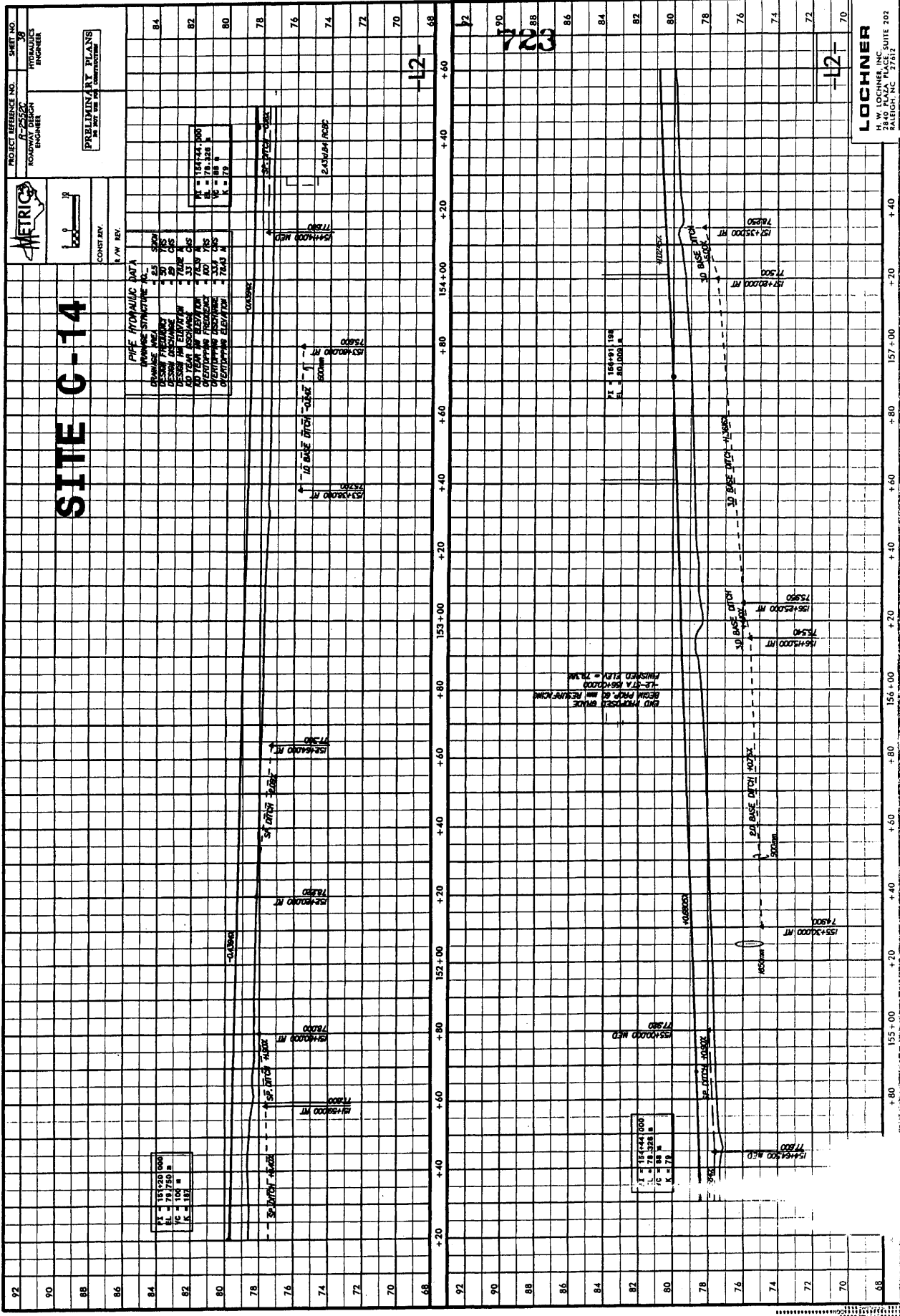
722

12- GRADE SEE
PROFILE SHEET 38

SITE C-14

MATCHLINE -12- 154+50 SEE SHEET 16

MATCHLINE -12- 157+80 SEE SHEET 18



PROJECT REFERENCE NO. 10
SHEET NO. 10
H.W. LOCKNER, INC.
ROADWAY DESIGN
ENGINEER



SITE C-14

PRELIMINARY PLANS
IN ACCORDANCE WITH
THE STANDARD SPECIFICATIONS
FOR CONSTRUCTION

CONTRACT NO. 10
SHEET NO. 10

PIPE HYDRAULIC DATA

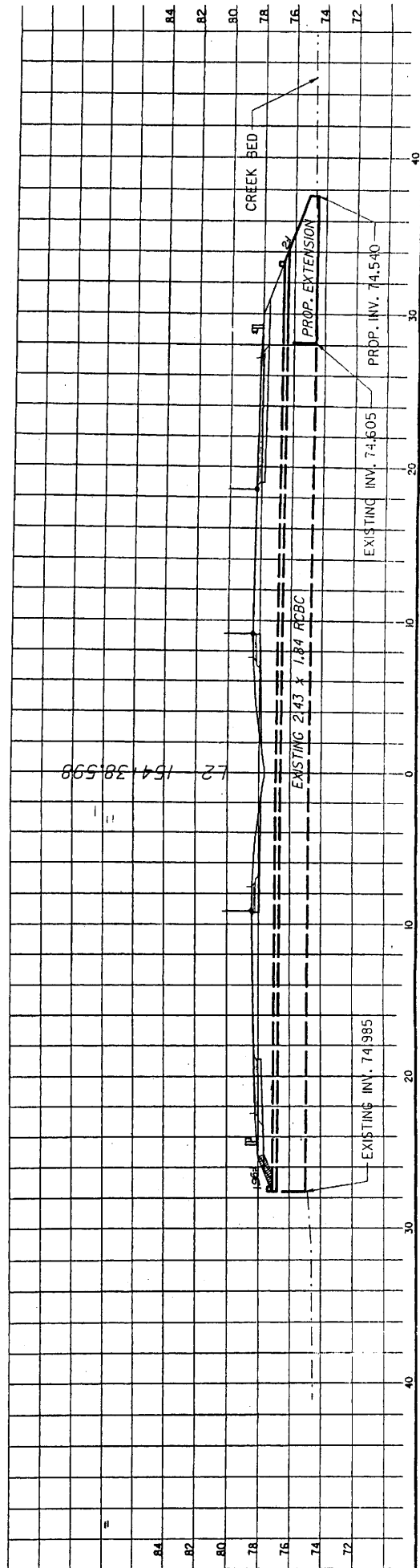
PIPE SIZE	15"
PIPE MATERIAL	CONCRETE
PIPE SLOPE	0.01
PIPE LENGTH	100'
PIPE ELEVATION	78.00
PIPE INVERT ELEVATION	77.99
PIPE OUTLET ELEVATION	78.01
PIPE FLOW RATE	1.00 CFS
PIPE VELOCITY	1.00 FPS
PIPE HEAD LOSS	0.01'
PIPE HEAD LOSS PER FOOT	0.0001'
PIPE HEAD LOSS PER 100 FEET	0.01'
PIPE HEAD LOSS PER 1000 FEET	0.10'
PIPE HEAD LOSS PER MILE	1.74'
PIPE HEAD LOSS PER KILOMETER	1.09'
PIPE HEAD LOSS PER HECTARE	0.04'
PIPE HEAD LOSS PER ACRE	0.01'
PIPE HEAD LOSS PER SQUARE FOOT	0.0001'
PIPE HEAD LOSS PER SQUARE METER	0.0001'
PIPE HEAD LOSS PER SQUARE KILOMETER	0.04'
PIPE HEAD LOSS PER SQUARE MILE	1.74'

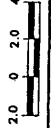
LOCKNER
H.W. LOCKNER, INC.
2840 PLAZA PLACE, SUITE 202
ALEXANDRIA, VA 22304

SITE C-14

PROFILE OF 2.43 X 1.84 RCBC
 -L2- STA. 154+38.598
 PLAN SHEETS 16 & 17

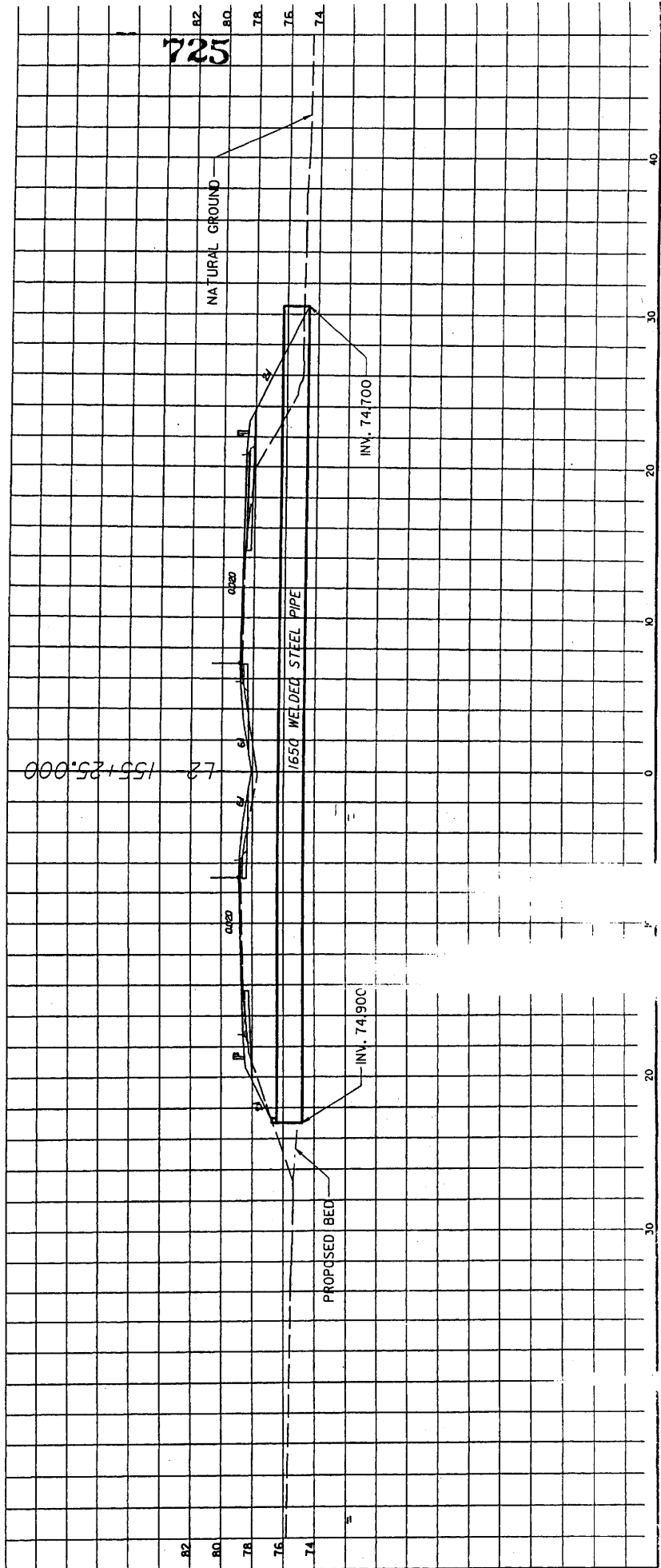
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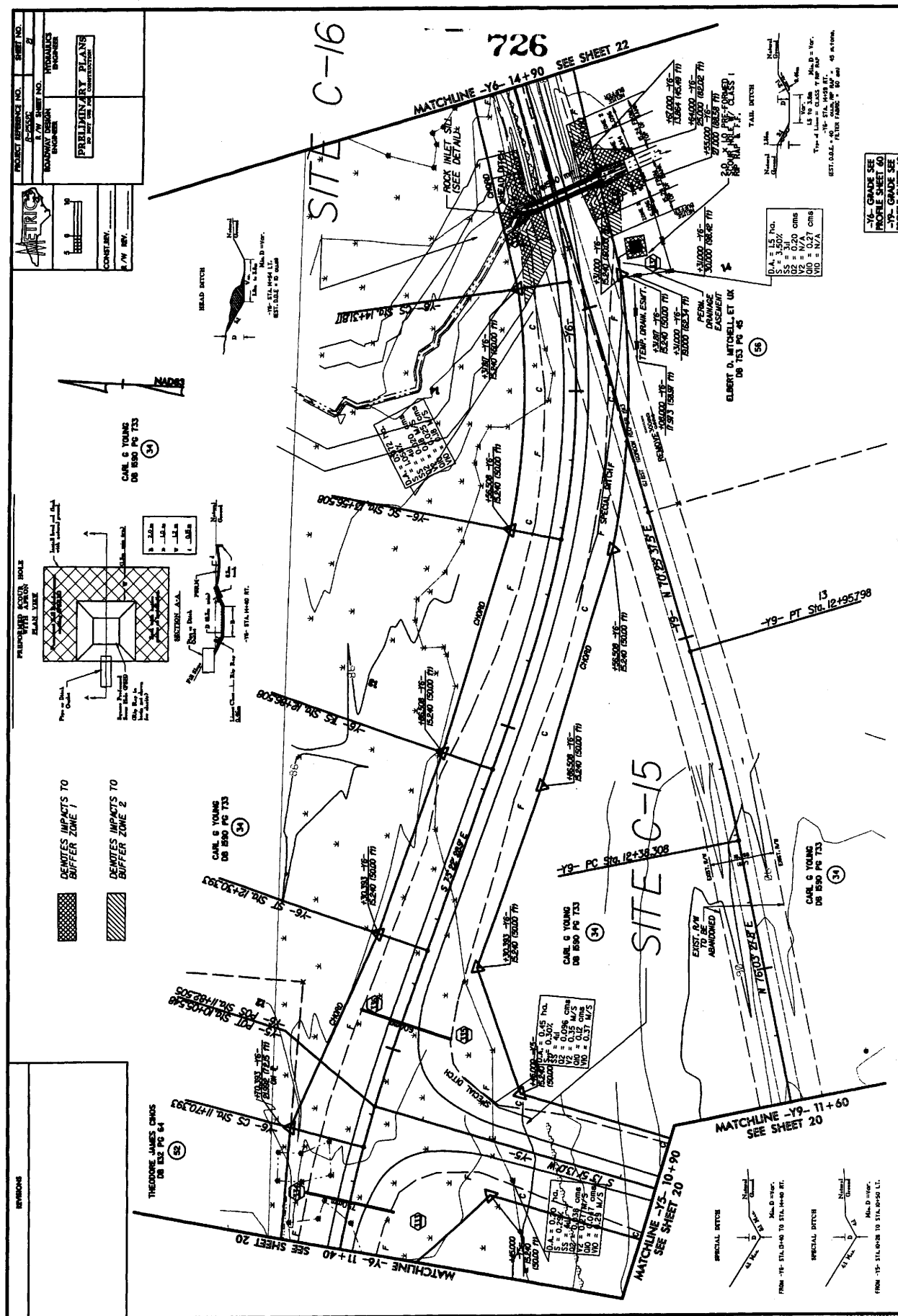


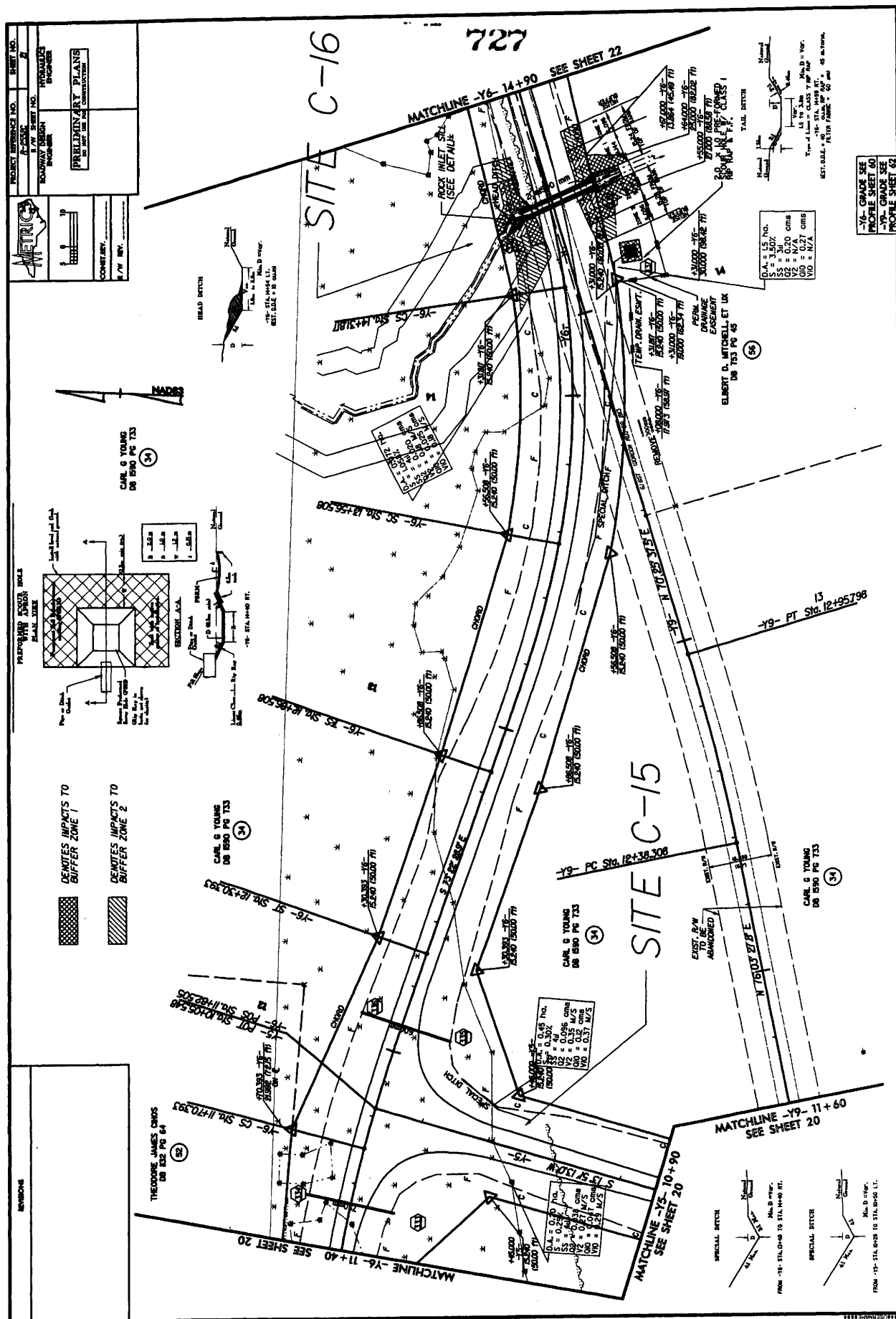


SITE C-14

PROFILE OF 1650 WELDED STEEL PIPE
 -L2- STA. 155+25.000
 PLAN SHEET 17







[illegible]

SITE C-16

PROFILE OF DOUBLE 1500 RCP
 -Y6- STA. 14+56.200
 PLAN SHEET 21

STA. 14+50.200

