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

Permittee NC Department of Transportation

Permit No. 200220745

Issuing Office USAED, Wilmington

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

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

Project Description:

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).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

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

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

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

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

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

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

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

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

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

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

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

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

Phillip E. Harris II — 3/31/05

(PERMITTEE) *(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)*

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

264 COPY

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

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,

John E. Hennessy

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 activites.

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

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 _____

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

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

John E. Hennessy

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.

* 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 (*Alasmidonta heterodon*) and Tar spinymussel (*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

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 *(circle one)*
Monitoring Level 3 requires completion of *Section 1*
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
(1*) 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.
(2*) 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.
(3*) 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.
(4*) 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.

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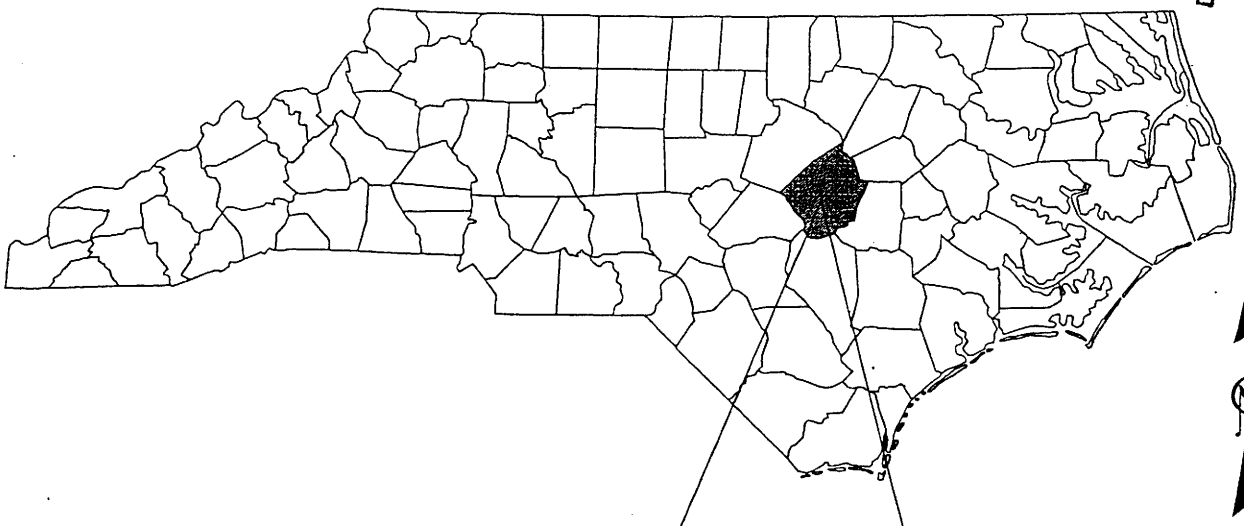
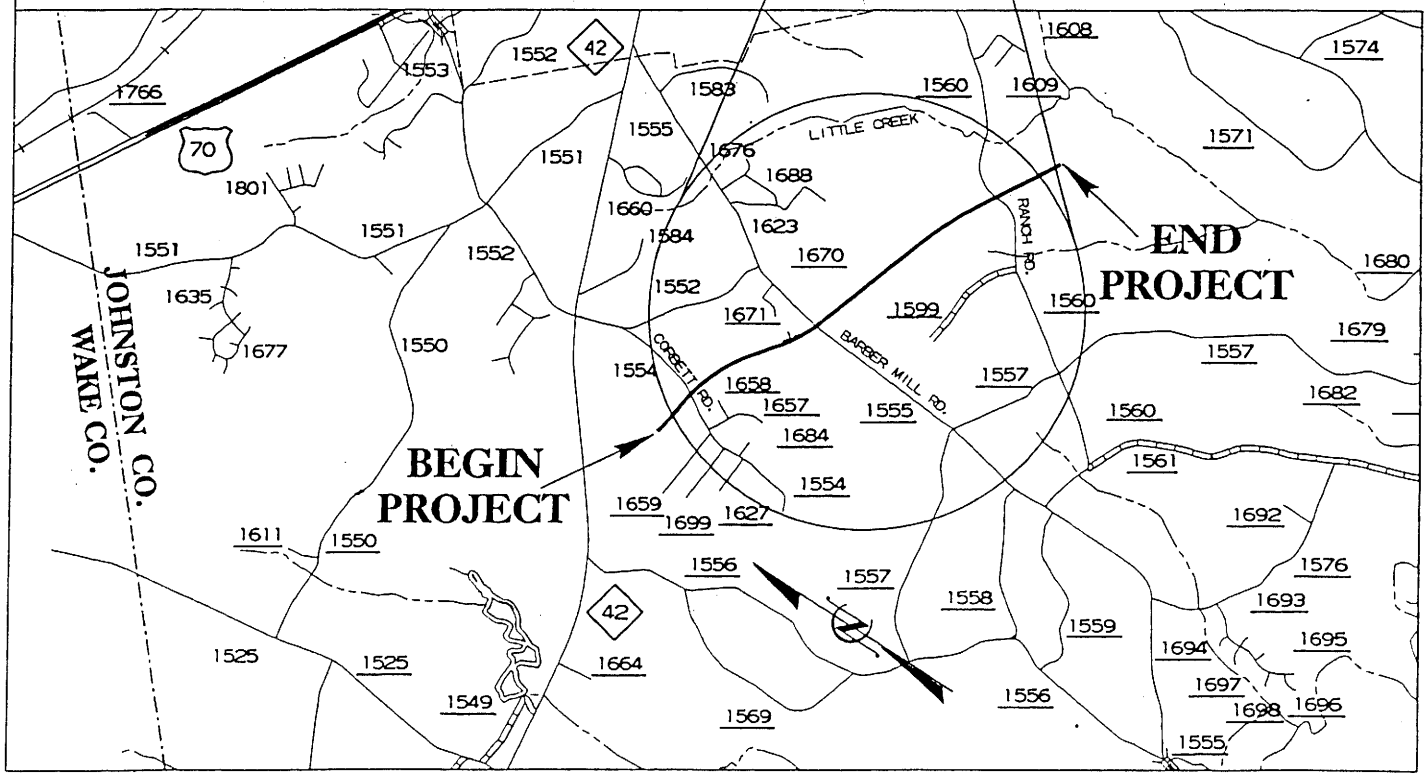
Read 11/1/01 SH

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*

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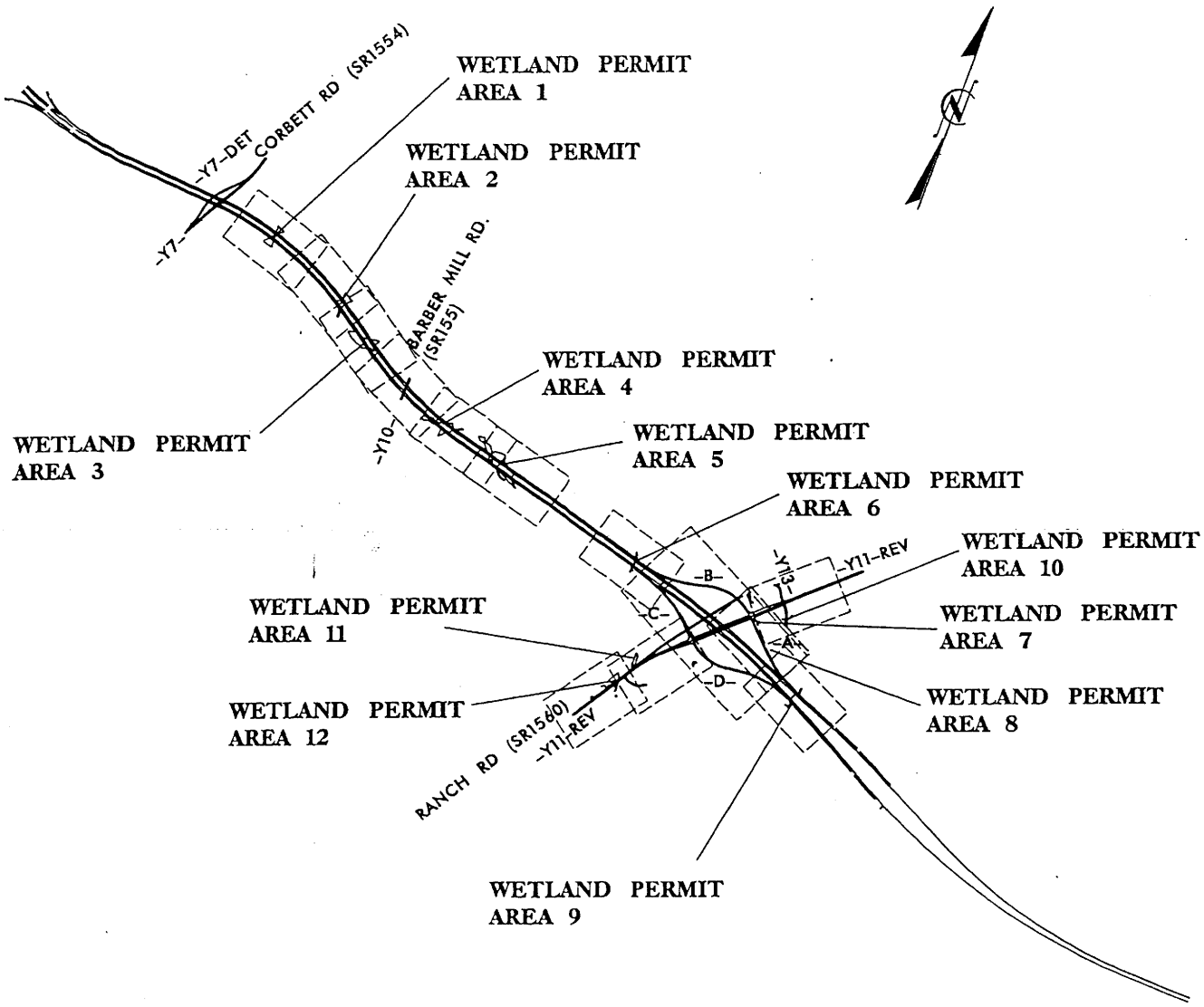
SITE MAP



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*

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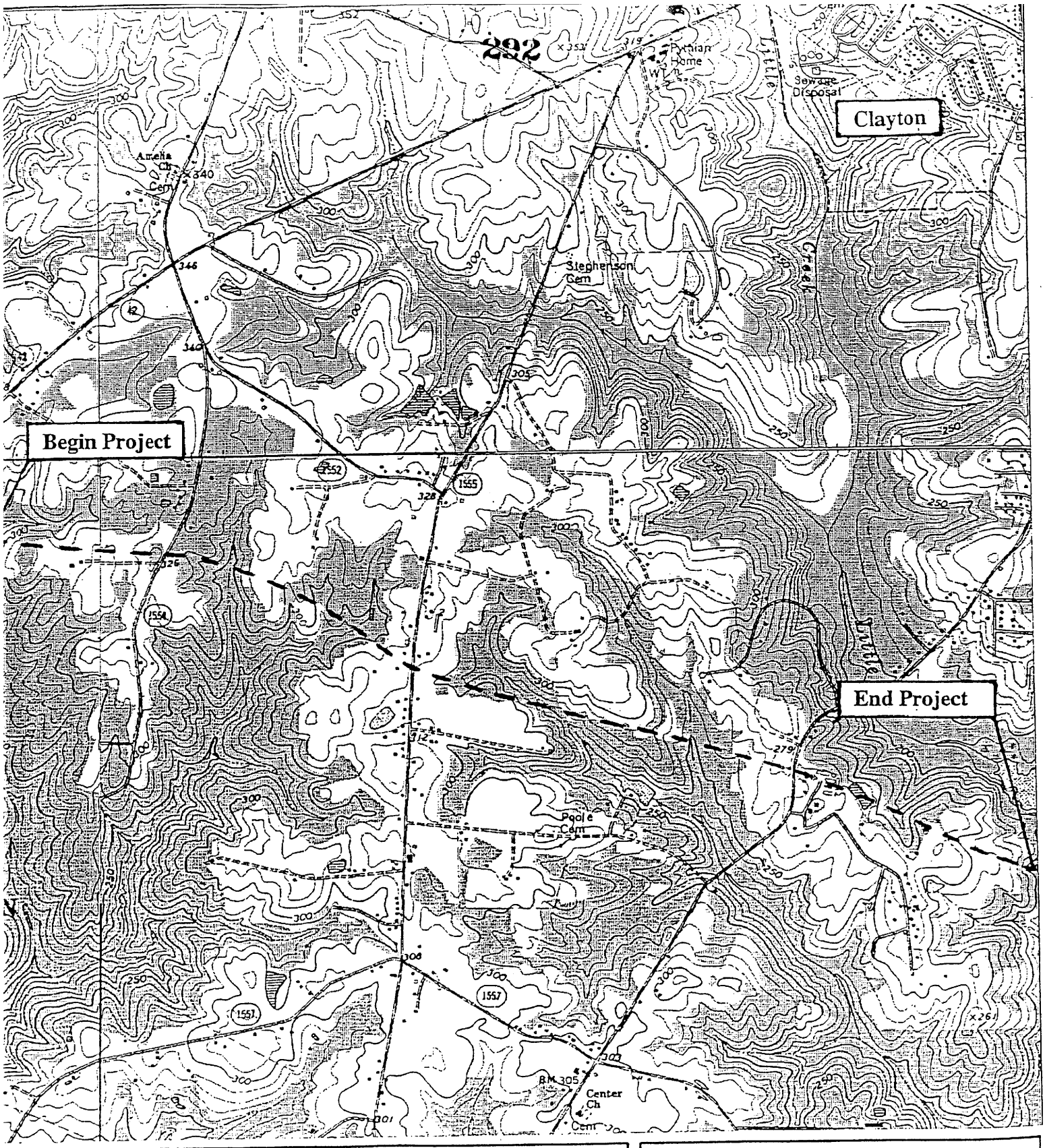
9/23/2004



WETLAND PERMIT DRAWING LOCATION R-2552B

SCALE: 1" = 2000'

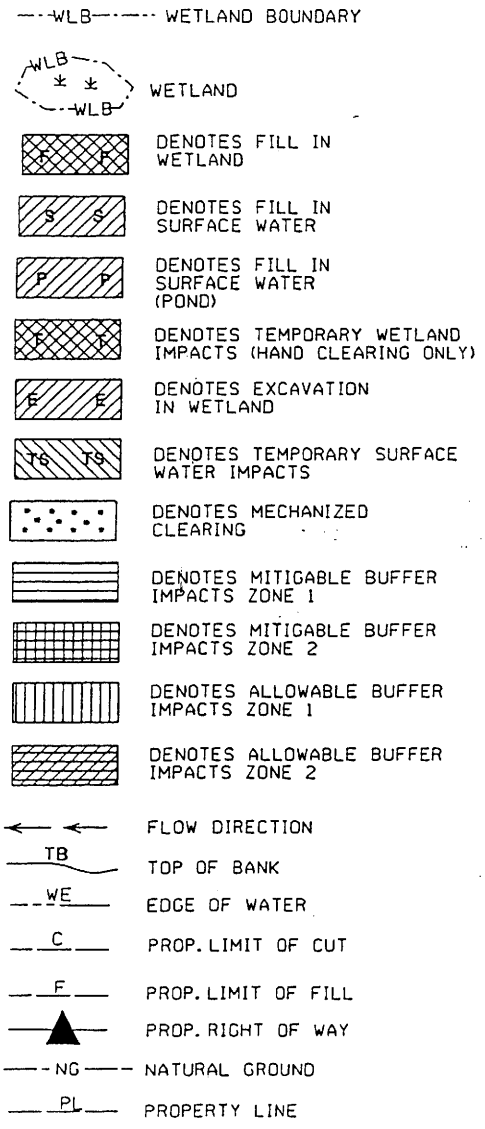
NCDOT

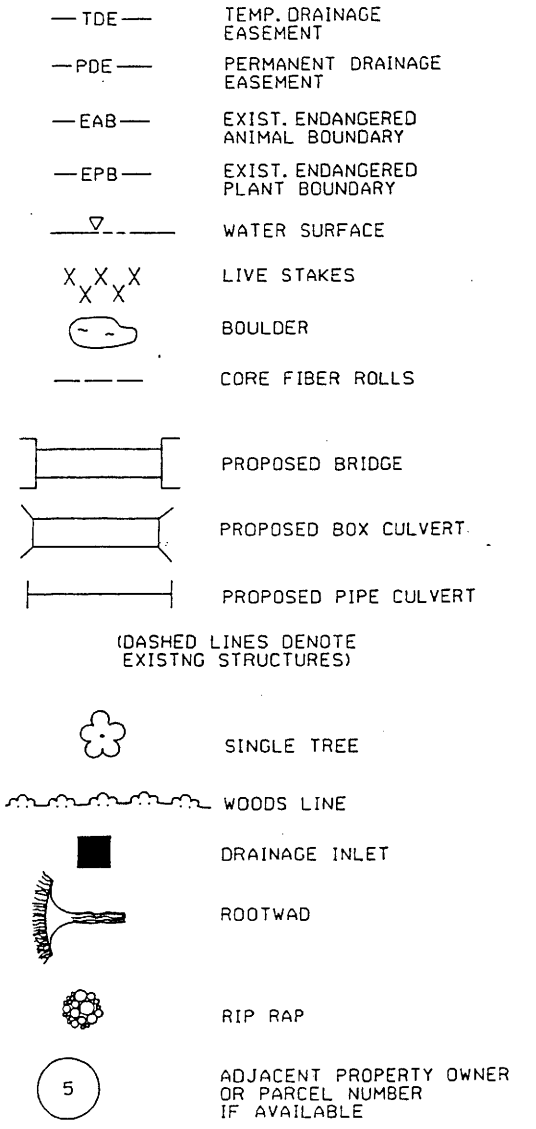
DIVISION OF HIGHWAYS
JOHNSTON COUNTY

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

SHEET 3 OF 23 8/404

LEGEND





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*

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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	60 in RCP	1.203	0.000		0.081	0.071		0.009	474.8	62.3	
	Sta 76+00											
4	-L- Sta 79+80 TO	42 in RCP	1.217	0.000		0.028	0.103		0.010	672.6	70.5	
	Sta 81+80											
5	-L- Sta 82+60 TO	10' x 7' RCBC	1.899	0.000	0.175	0.117	0.245		0.024	721.5	73.2	410.1
	Sta 85+50											
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	10' x 9' RCBC &	0.117	0.000		0.000	0.065		0.031	388.1	166.0	
	Sta 25+20	8' x 8' RCBC										
TOTALS:			5.025	0.000	0.175	0.318	0.822	0.274	0.165	3818.1	814.0	410.1

Form Revised 3/22/01

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

Rec'd 1/10/05 EA

	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 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 6 OF 23 9/17/2004

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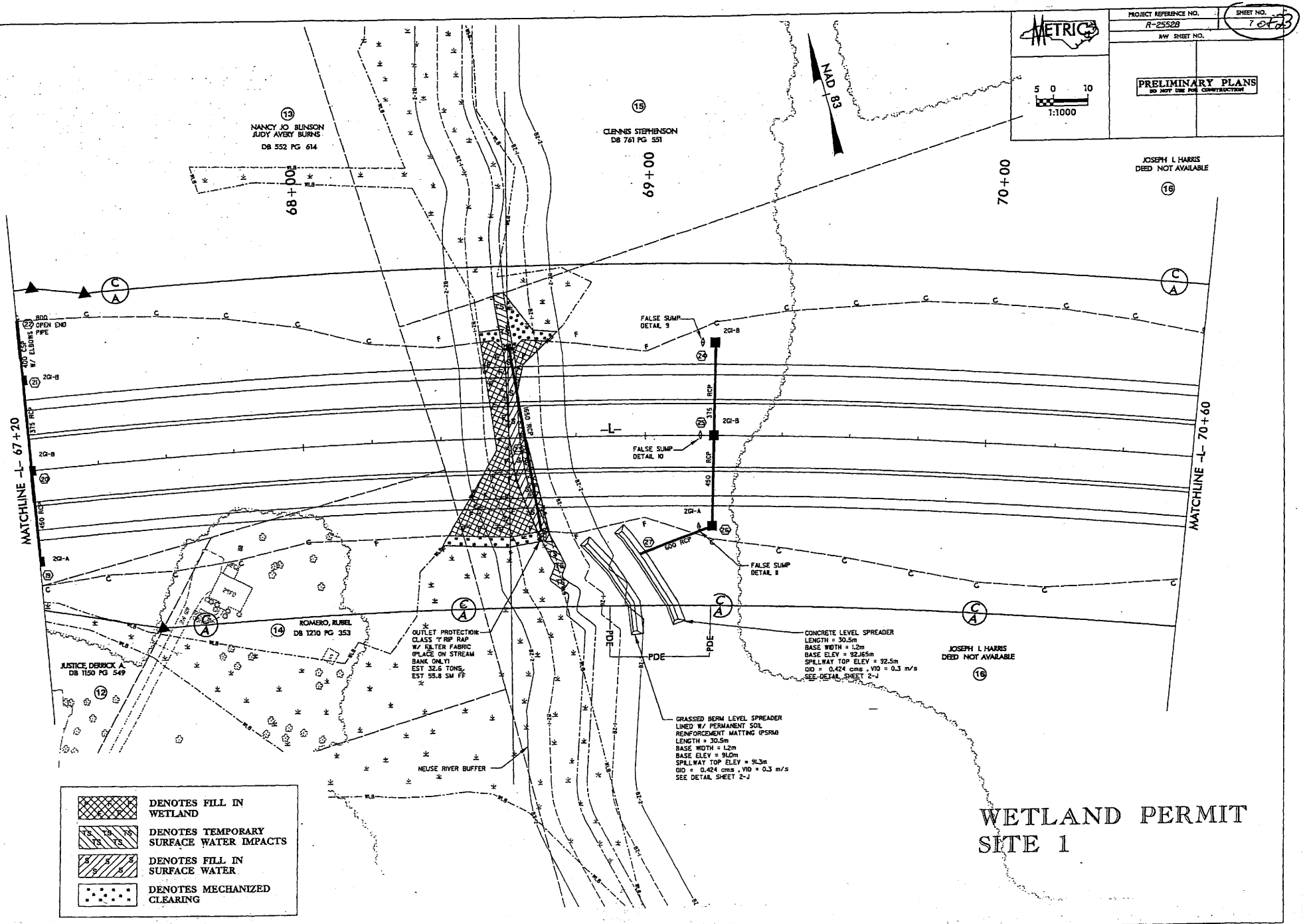
9/17/2004



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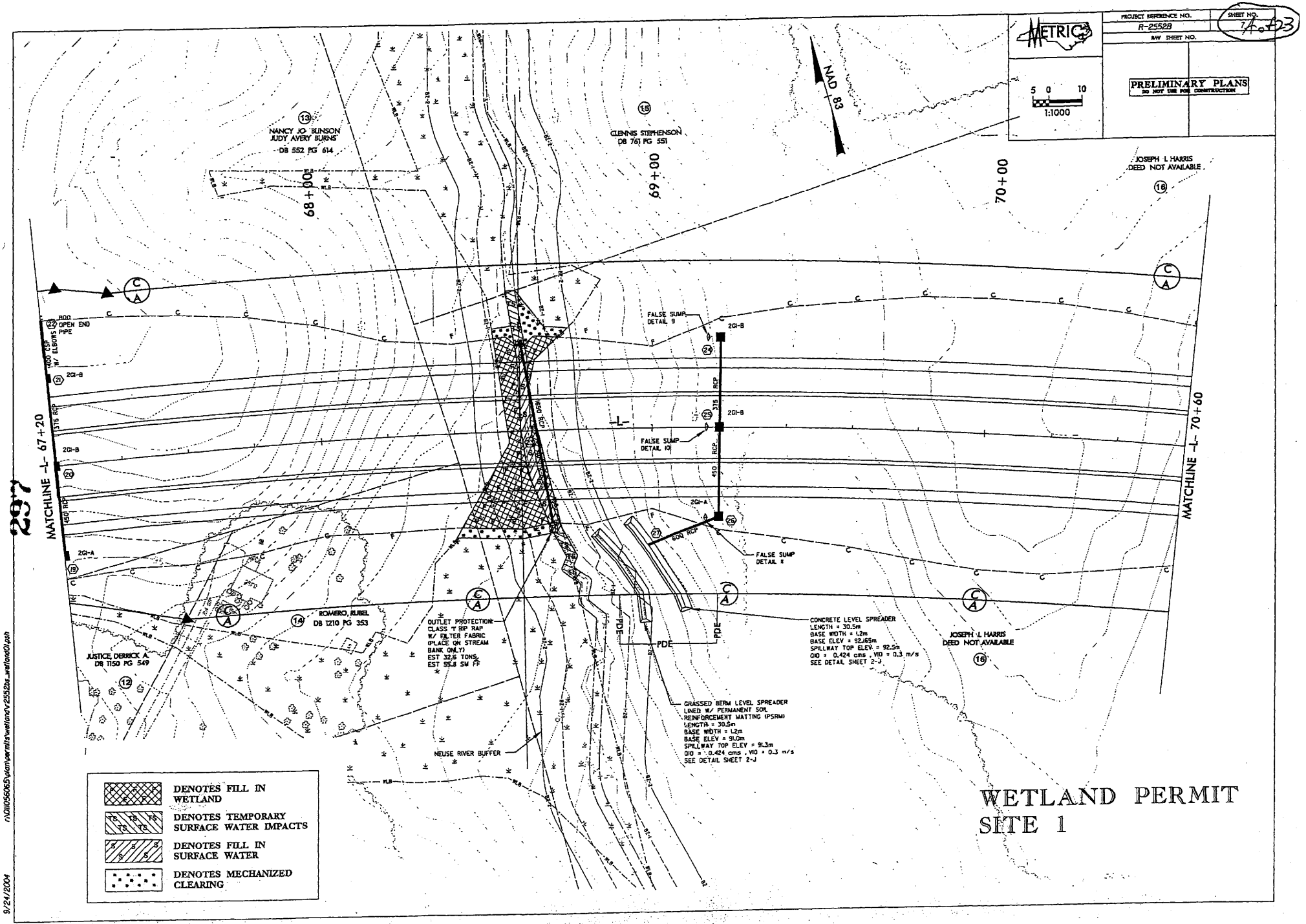
9/23/2004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PROJECT REFERENCE NO.
R-2552B
SHEET NO.
74-23
RW SHEET NO.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
5 0 10
1:1000
NAD 83
NANCY JO BUNSON
JUDY AVERY BURNS
DB 552 PG 614
CLENNIS STEPHENSON
DB 761 PG 551
JOSEPH L HARRIS
DEED NOT AVAILABLE
68+00
69+00
70+00
MATCHLINE -L- 67+20
MATCHLINE -L- 70+60
FALSE SUMP DETAIL 9
FALSE SUMP DETAIL 10
FALSE SUMP DETAIL 11
800 OPEN END PIPE
400 CSP W/ ELBOWS
376 RCP
450 RCP
600 RCP
315 RCP
2GI-A
2GI-B
ROMERO, RUBEL
DB 1210 PG 353
JUSTICE, DERRICK A
DB 1150 PG 549
OUTLET PROTECTION CLASS 'I' RIP RAP W/ FILTER FABRIC (PLACE ON STREAM BANK ONLY) EST 32.6 TONS EST 55.8 SM FF
NEUSE RIVER BUFFER
PDE
CONCRETE LEVEL SPREADER
LENGTH = 30.5m
BASE WIDTH = 1.2m
BASE ELEV = 92.65m
SPILLWAY TOP ELEV. = 92.5m
Q10 = 0.424 cms , V10 = 0.3 m/s
SEE DETAIL SHEET 2-J
GRASSED BERM LEVEL SPREADER LINED W/ PERMANENT SOIL REINFORCEMENT MATTING (PSRM)
LENGTH = 30.5m
BASE WIDTH = 1.2m
BASE ELEV = 91.0m
SPILLWAY TOP ELEV = 91.3m
Q10 = 0.424 cms , V10 = 0.3 m/s
SEE DETAIL SHEET 2-J
DENOTES FILL IN WETLAND
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
WETLAND PERMIT
SITE 1
9/24/2004
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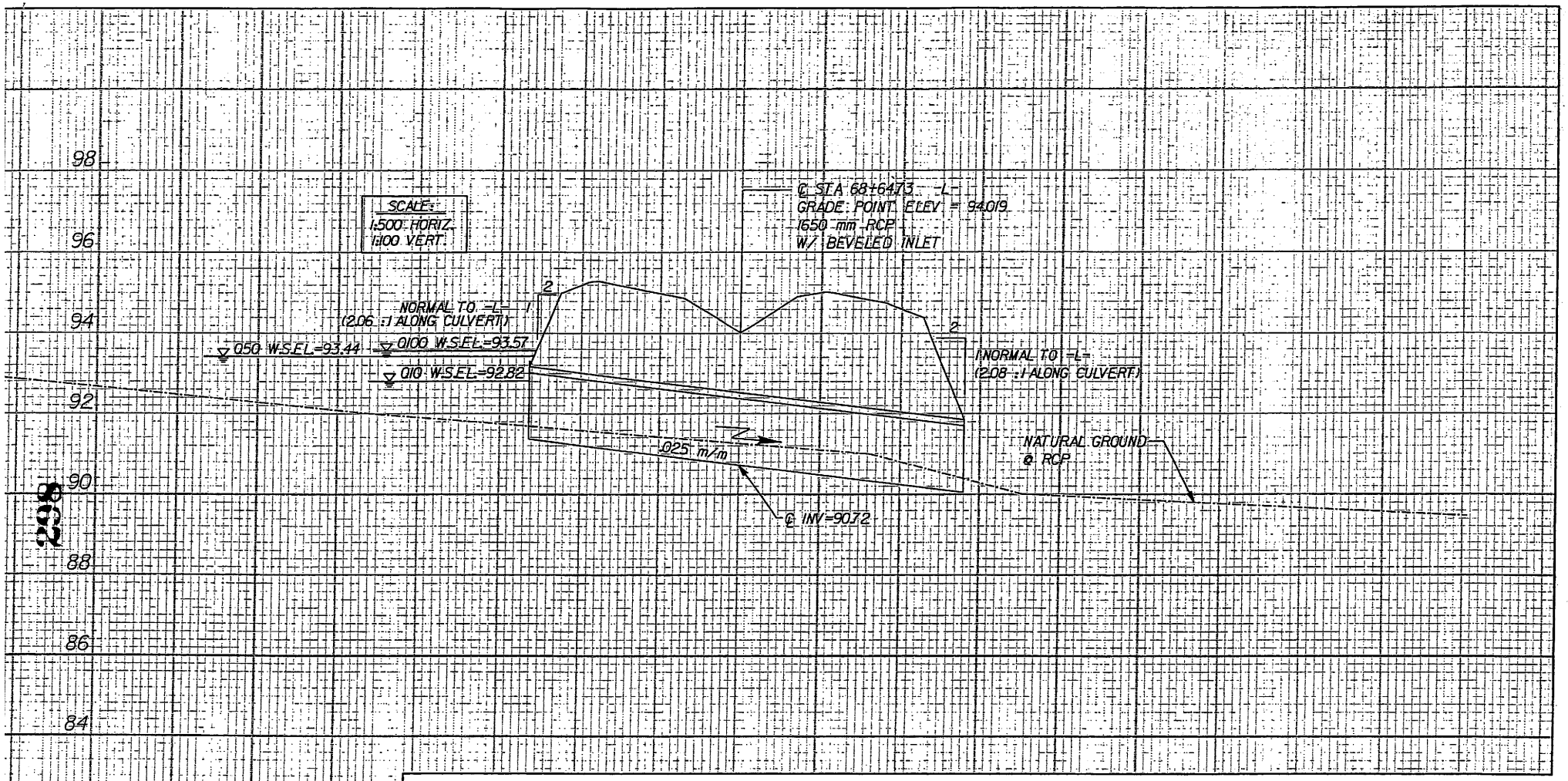


298

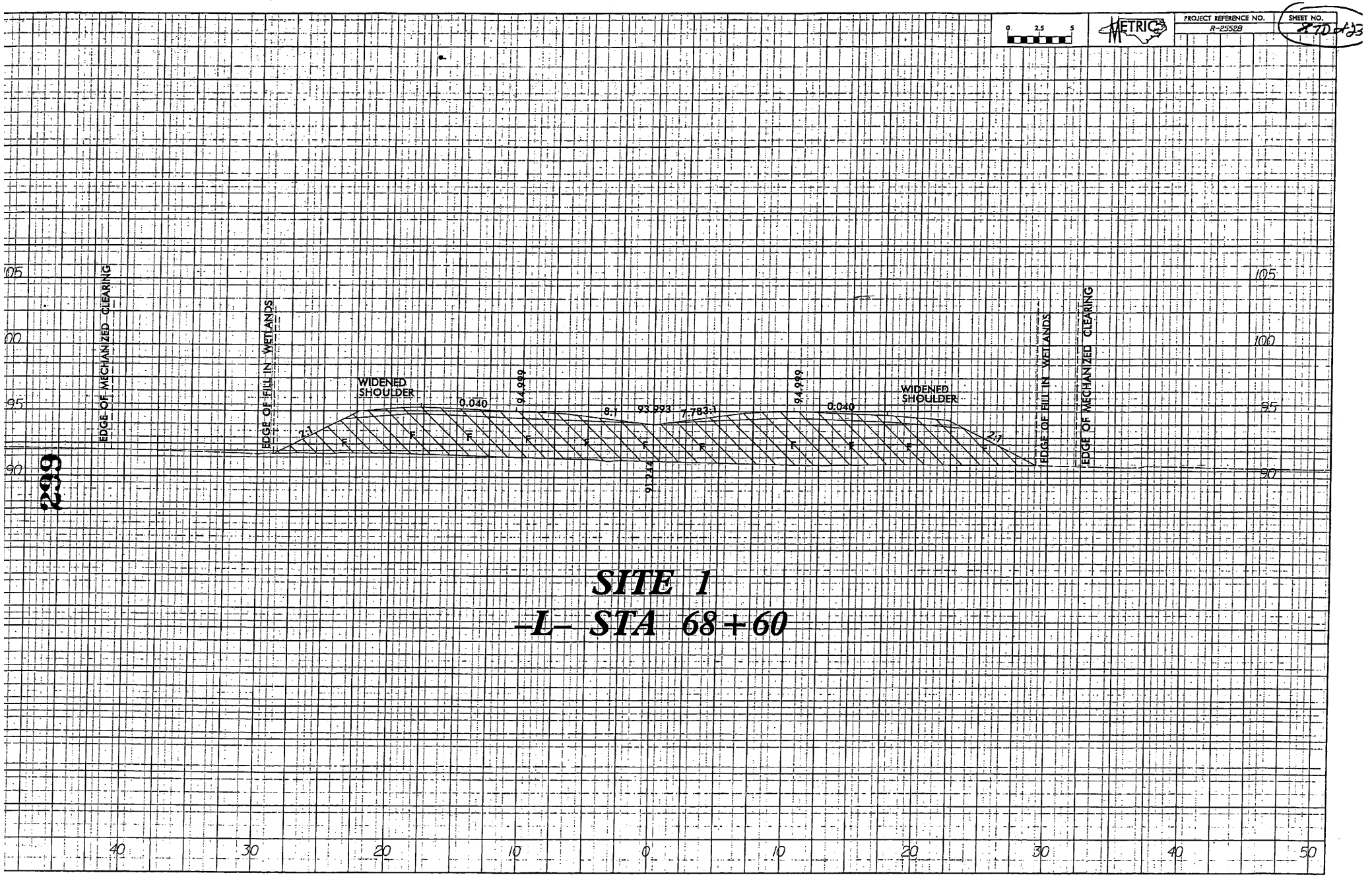
WETLAND PERMIT DRAWING
PROFILE of 1650mm RCP at 68+65 -L-
R-2552B

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 7 OF 23 *9/16/2004*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METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
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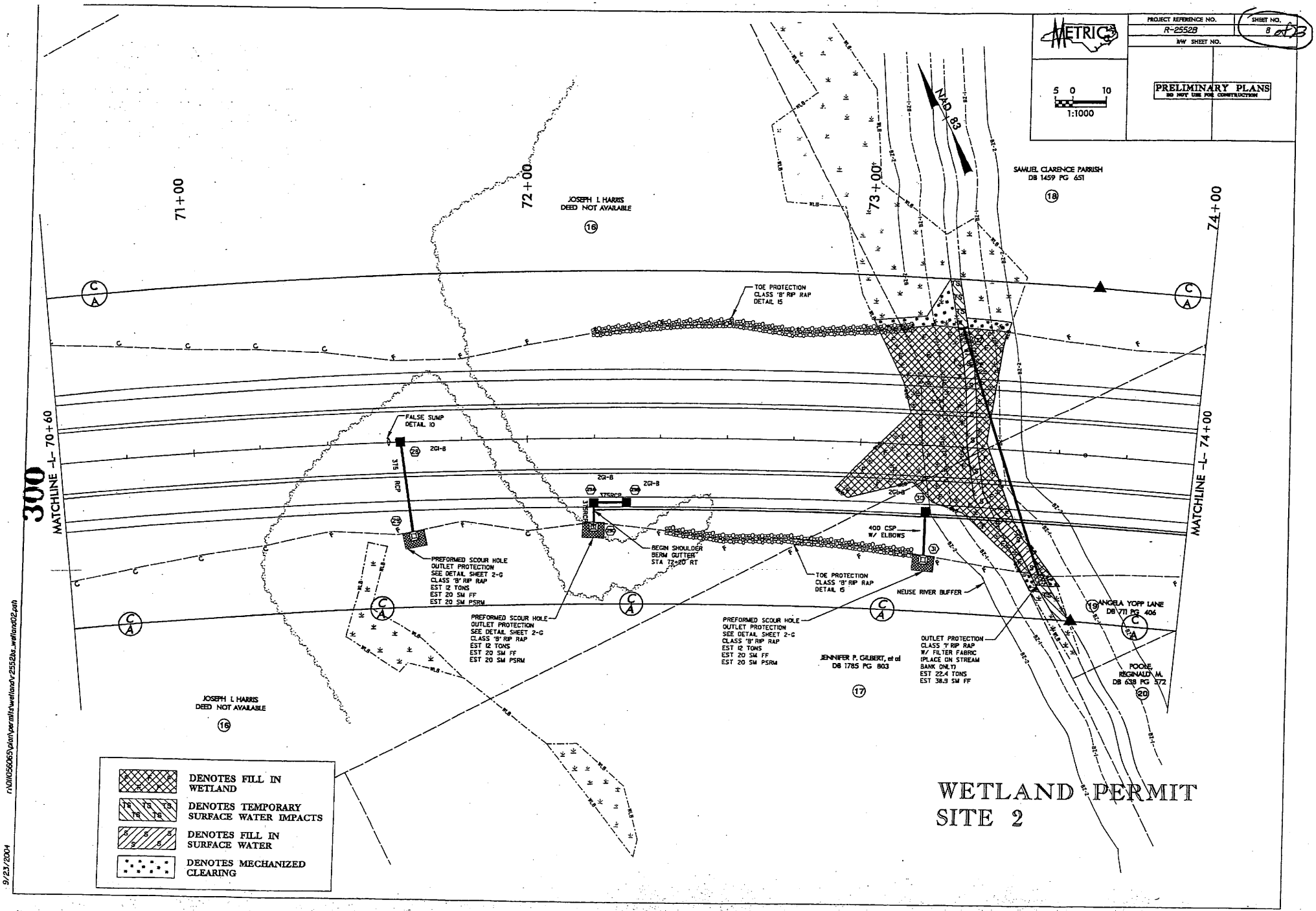
EDGE OF MECHANIZED CLEARING
EDGE OF FILL IN WETLANDS
WIDENED SHOULDER
0.040
94.999
8:1
93.993
7.783:1
97.244
94.999
0.040
WIDENED SHOULDER
EDGE OF FILL IN WETLANDS
EDGE OF MECHANIZED CLEARING
105
100
95
90
40
30
20
10
0
10
20
30
40
50
SITE 1
-L- STA 68+60


METRIC
5 0 10
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PROJECT REFERENCE NO.
R-2552B
SHEET NO.
8 of 23
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
NAD 83
71+00
72+00
73+00
74+00
300
MATCHLINE -L- 70+60
MATCHLINE -L- 74+00
JOSEPH L HARRIS
DEED NOT AVAILABLE
16
SAMUEL CLARENCE PARRISH
DB 1459 PG 651
18
TOE PROTECTION
CLASS 'B' RIP RAP
DETAIL 15
FALSE SUMP
DETAIL 10
29
2GI-8
375 RCP
30
2GI-8
2GI-8
375RCP
31
2GI-8
400 CSP
W/ ELBOWS
PREFORMED SCOUR HOLE
OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS 'B' RIP RAP
EST 12 TONS
EST 20 SM FF
EST 20 SM PSRM
BEGIN SHOULDER
BERM GUTTER
STA 72+20 RT
TOE PROTECTION
CLASS 'B' RIP RAP
DETAIL 15
NEUSE RIVER BUFFER
ANGELA YOPP LANE
DB 711 PG 406
19
POOLE,
REGINALD M.
DB 638 PG 572
20
JENNIFER P. GILBERT, et al
DB 1785 PG 803
17
OUTLET PROTECTION
CLASS 'I' RIP RAP
W/ FILTER FABRIC
(PLACE ON STREAM
BANK ON 17)
EST 22.4 TONS
EST 38.9 SM FF
DENOTES FILL IN
WETLAND
DENOTES TEMPORARY
SURFACE WATER IMPACTS
DENOTES FILL IN
SURFACE WATER
DENOTES MECHANIZED
CLEARING
WETLAND PERMIT
SITE 2
9/23/2004
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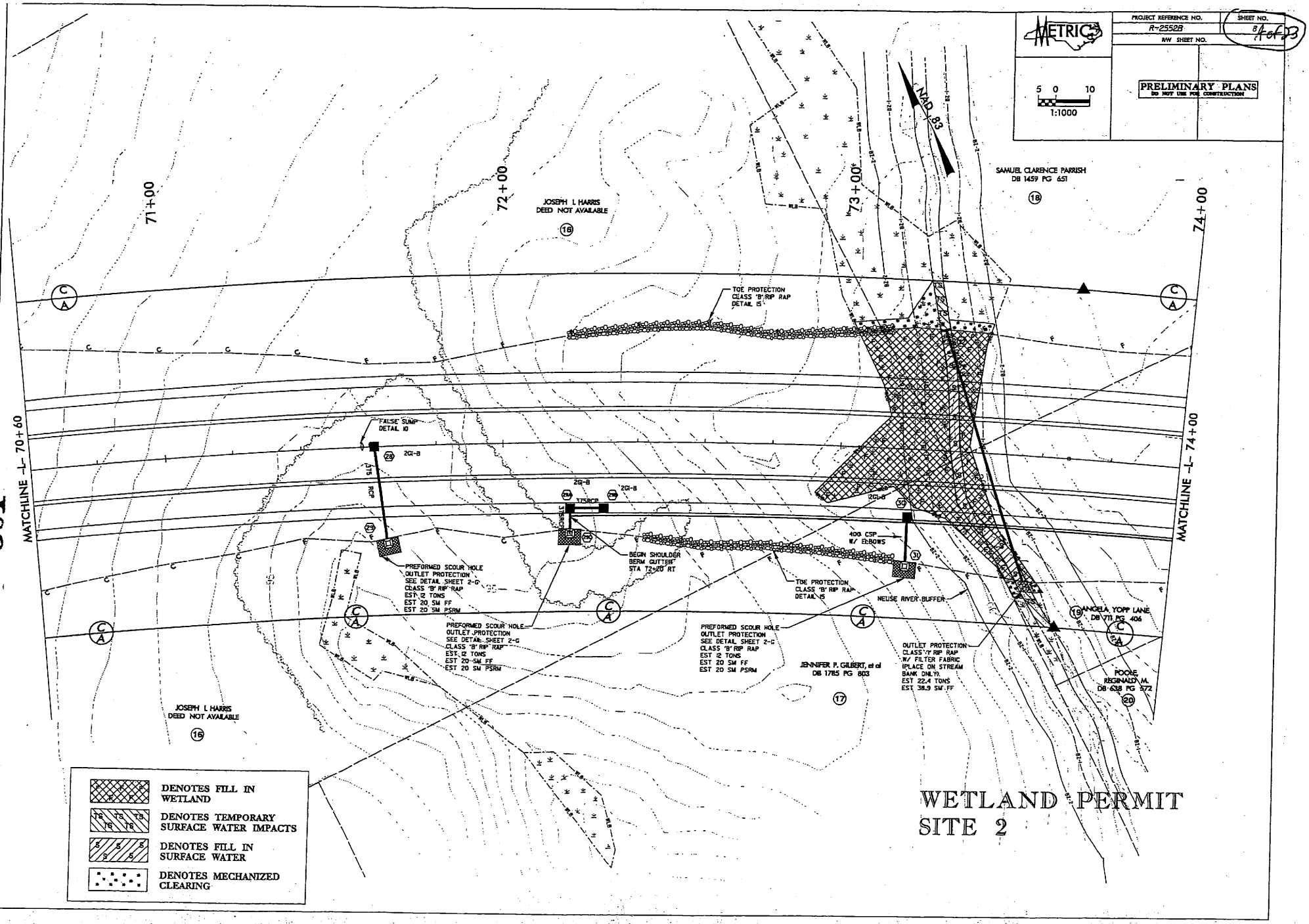

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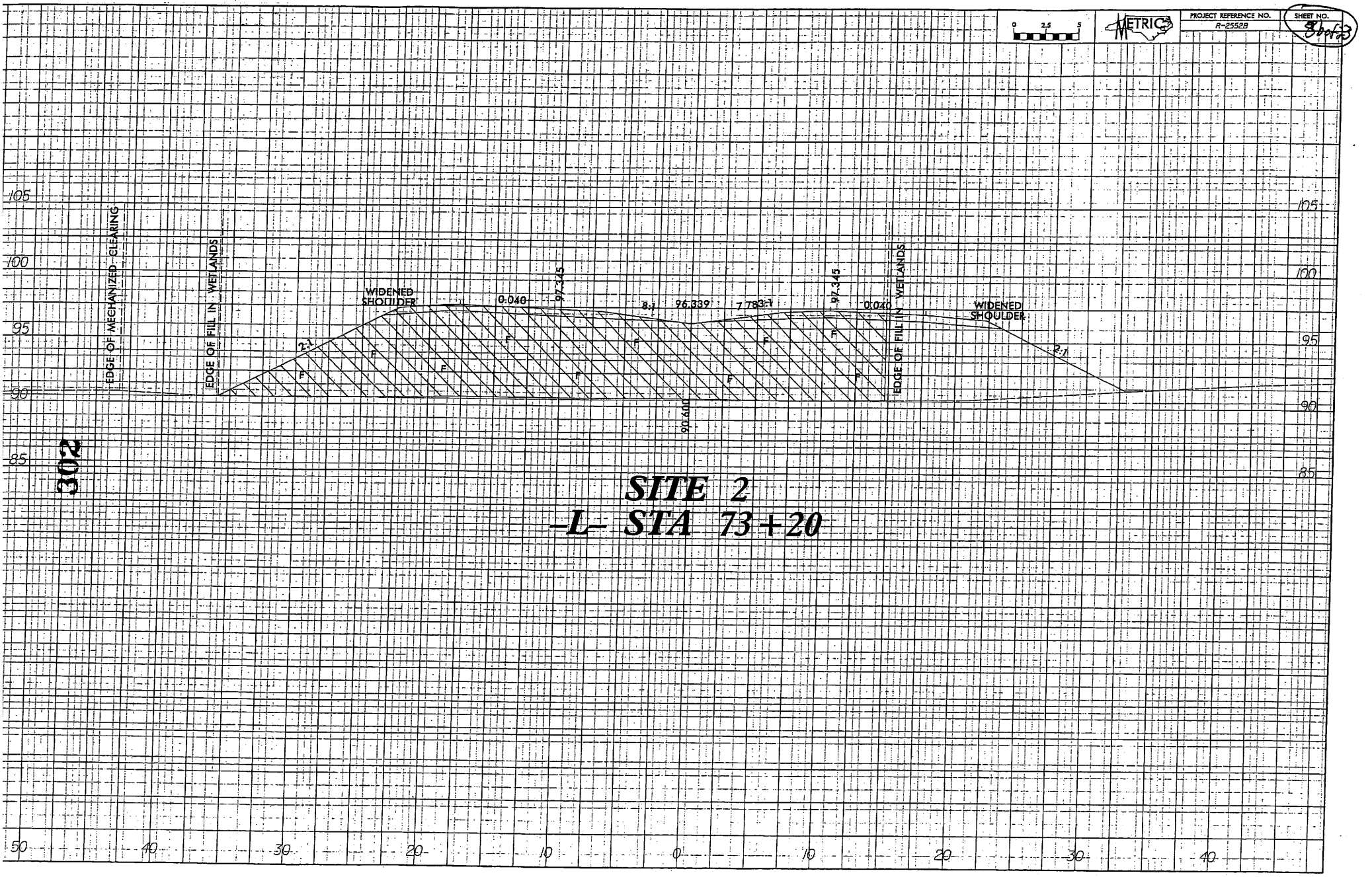
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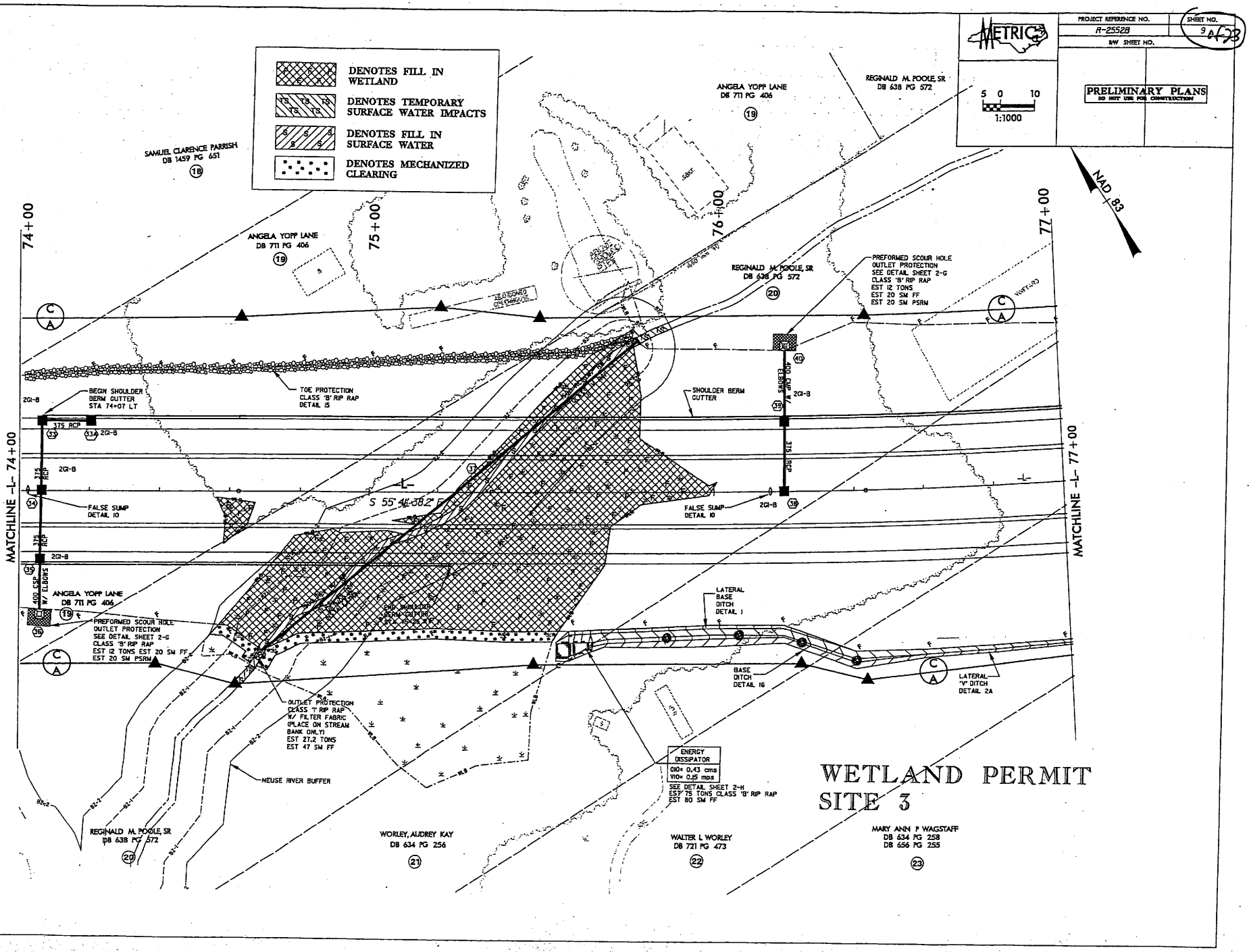
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
3 of 3
105
100
95
90
85
EDGE OF MECHANIZED CLEARING
EDGE OF FILL IN WETLANDS
WIDENED SHOULDER
0.040
97.345
8.1
96.339
7.783
97.345
0.040
WIDENED SHOULDER
EDGE OF FILL IN WETLANDS
2:1
2:1
90.600
50
40
30
20
10
0
10
20
30
40
SITE 2
-L- STA 73+20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R-2552B
SHEET NO.
9
RW SHEET NO.
5 0 10
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DENOTES FILL IN WETLAND
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
NAD 83
303
MATCHLINE -L- 74+00
MATCHLINE -L- 77+00
74+00
75+00
76+00
77+00
SAMUEL CLARENCE PARRISH
DB 1459 PG 651
ANGELA YOPP LANE
DB 711 PG 406
REGINALD M. POOLE, SR
DB 638 PG 572
TOE PROTECTION CLASS 'B' RIP RAP DETAIL 15
BEGIN SHOULDER BERM GUTTER STA 74+07 LT
SHOULDER BERM GUTTER
PREFORMED SCOUR HOLE OUTLET PROTECTION SEE DETAIL SHEET 2-G CLASS 'B' RIP RAP EST 12 TONS EST 20 SM FF EST 20 SM PSRM
400 CMP W/ ELBOWS
375 RCP
2GI-B
FALSE SUMP DETAIL 10
S 55°41'38.2" E
LATERAL BASE DITCH DETAIL 1
BASE DITCH DETAIL 16
LATERAL 'V' DITCH DETAIL 2A
OUTLET PROTECTION CLASS 'I' RIP RAP W/ FILTER FABRIC (PLACE ON STREAM BANK ONLY) EST 27.2 TONS EST 47 SM FF
NEUSE RIVER BUFFER
ENERGY DISSIPATOR
Q10= 0.43 cms
V10= 0.15 mps
SEE DETAIL SHEET 2-H
EST 75 TONS CLASS 'B' RIP RAP
EST 80 SM FF
WETLAND PERMIT SITE 3
WORLEY, AUDREY KAY
DB 634 PG 256
WALTER L WORLEY
DB 721 PG 473
MARY ANN P WAGSTAFF
DB 634 PG 258
DB 656 PG 255
09/27/2004
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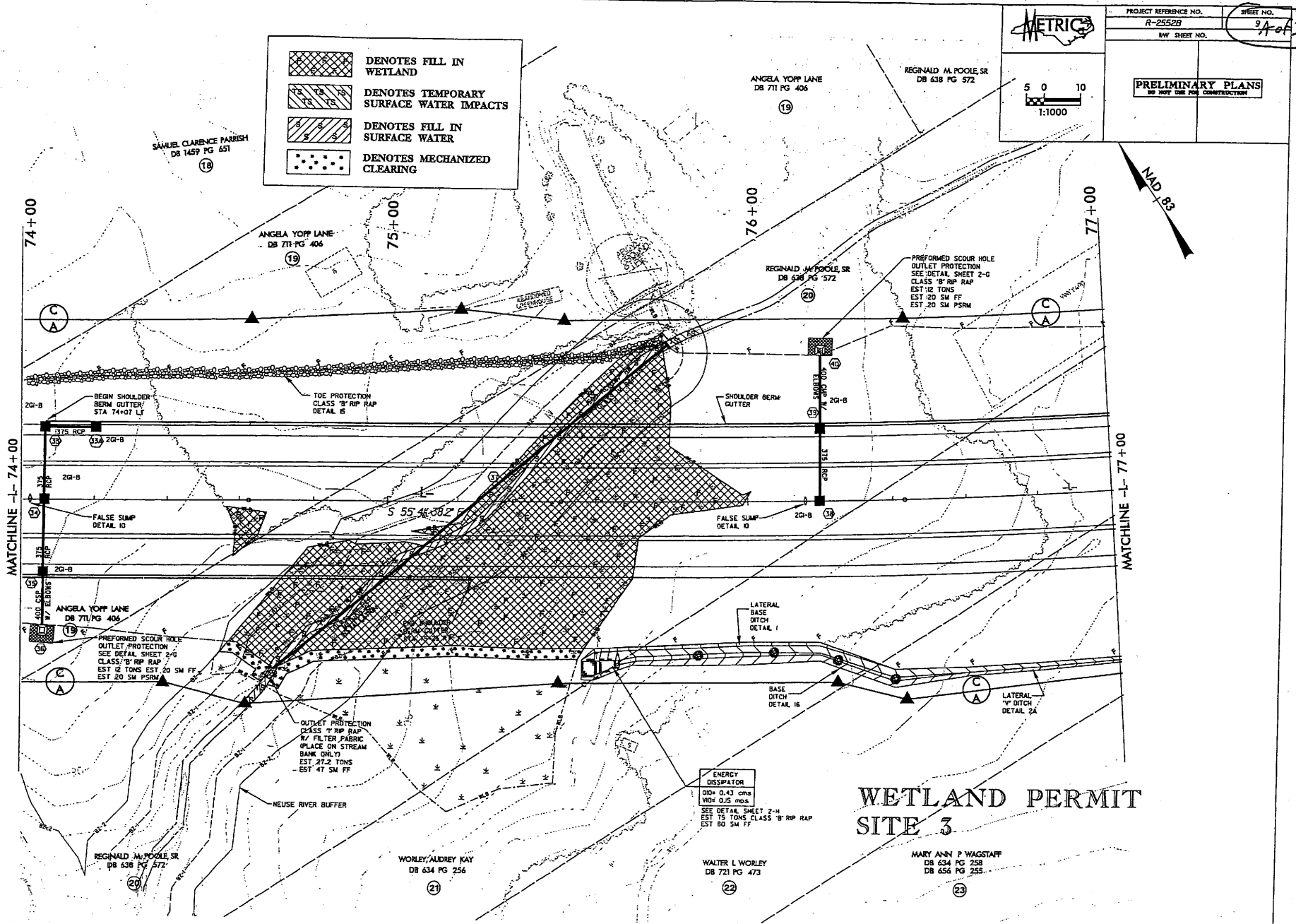

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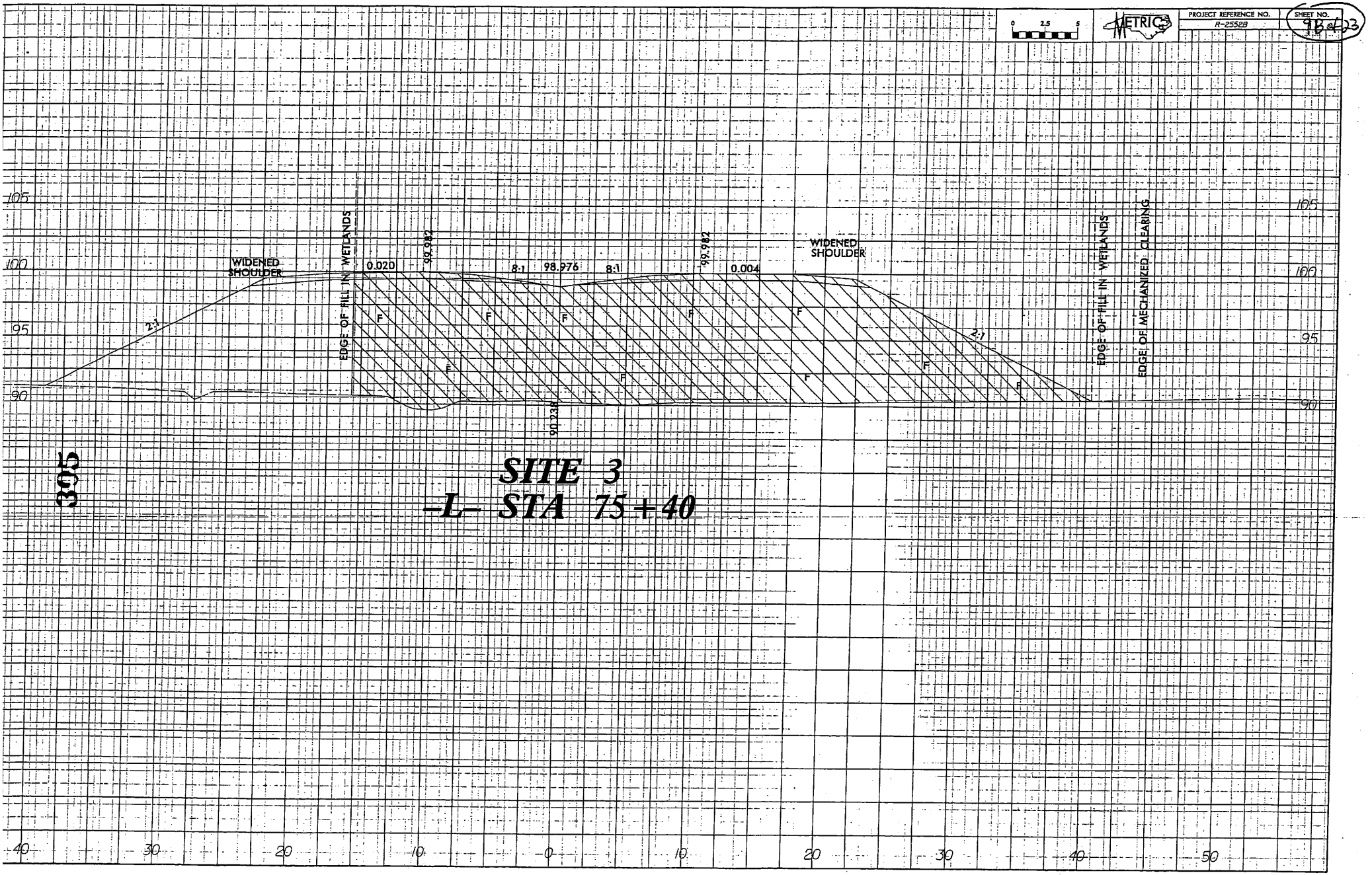
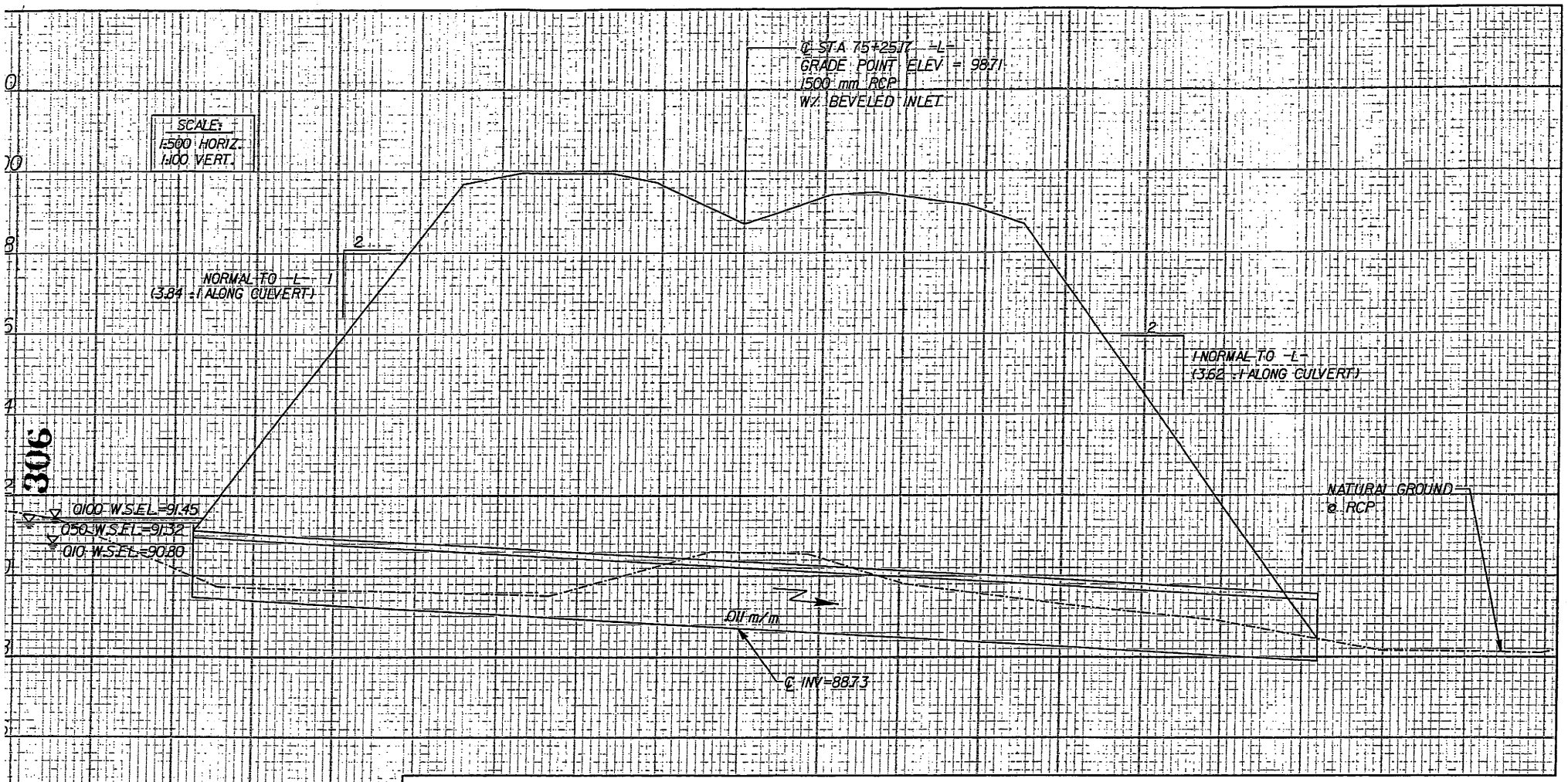


365

SITE 3

-L- STA 75+40



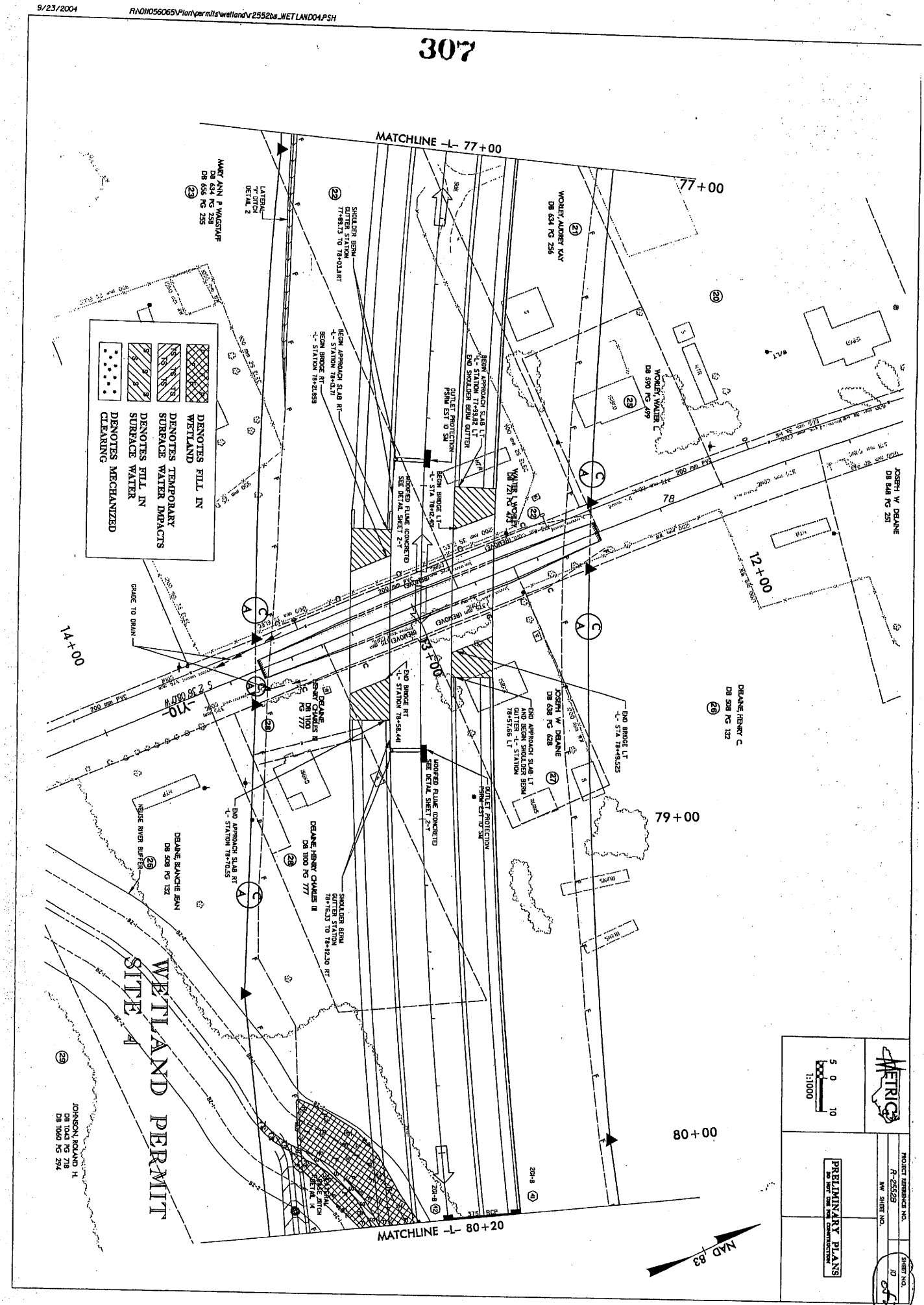
WETLAND PERMIT DRAWING
PROFILE of 1500mm RCP at 75+25 -L-
R-2552B

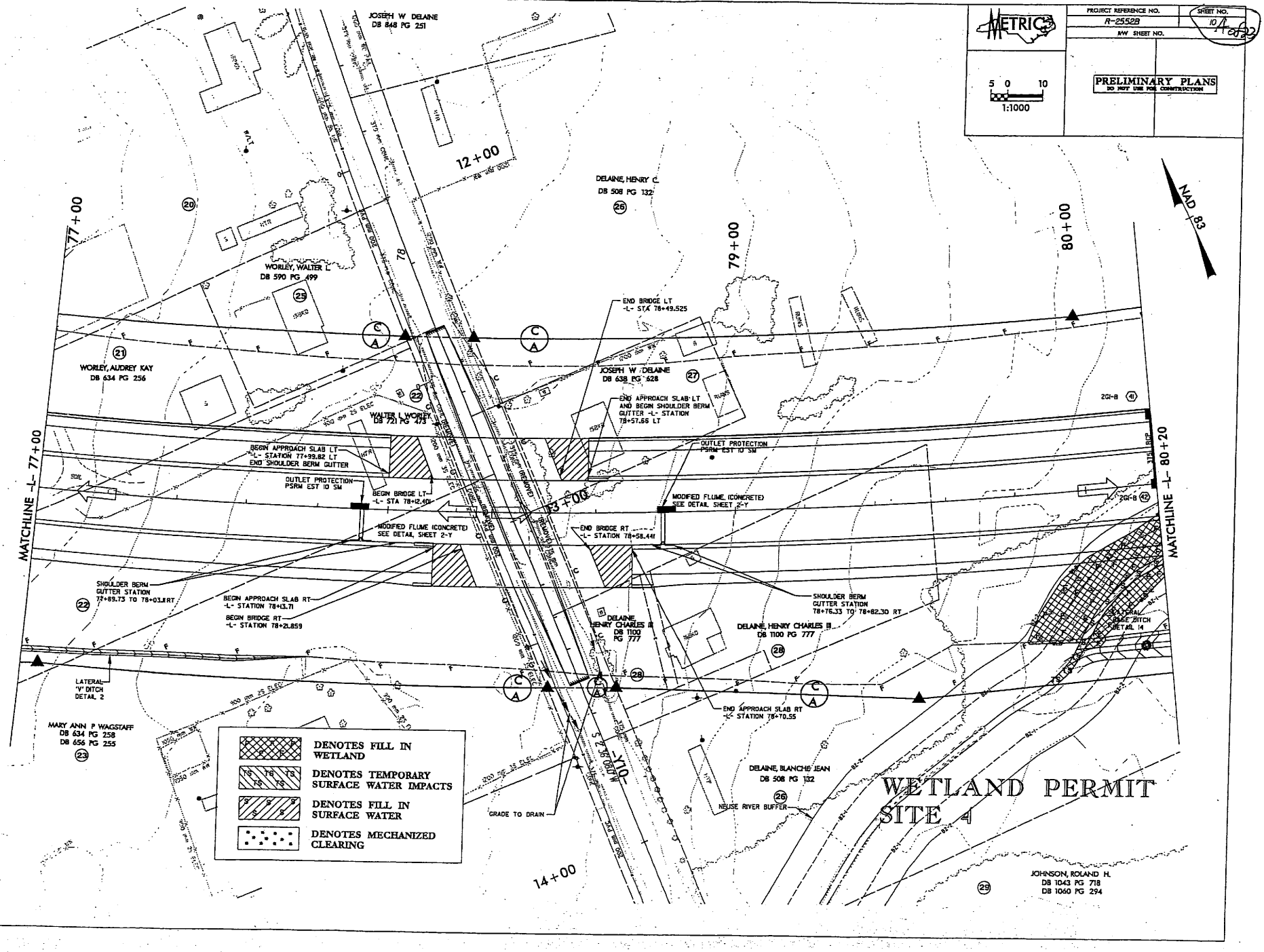
NCDOT

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 9C OF 23 9/16/2004


MATCHLINE -L- 77+00
MATCHLINE -L- 80+20
77+00
78+00
79+00
80+00
12+00
13+00
14+00
DENOTES FILL IN WETLAND
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
WETLAND PERMIT SITE 4
NAD 83
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PROJECT REFERENCE NO. R-2552B
SHEET NO. 10
1:1000



308

9/21/2004

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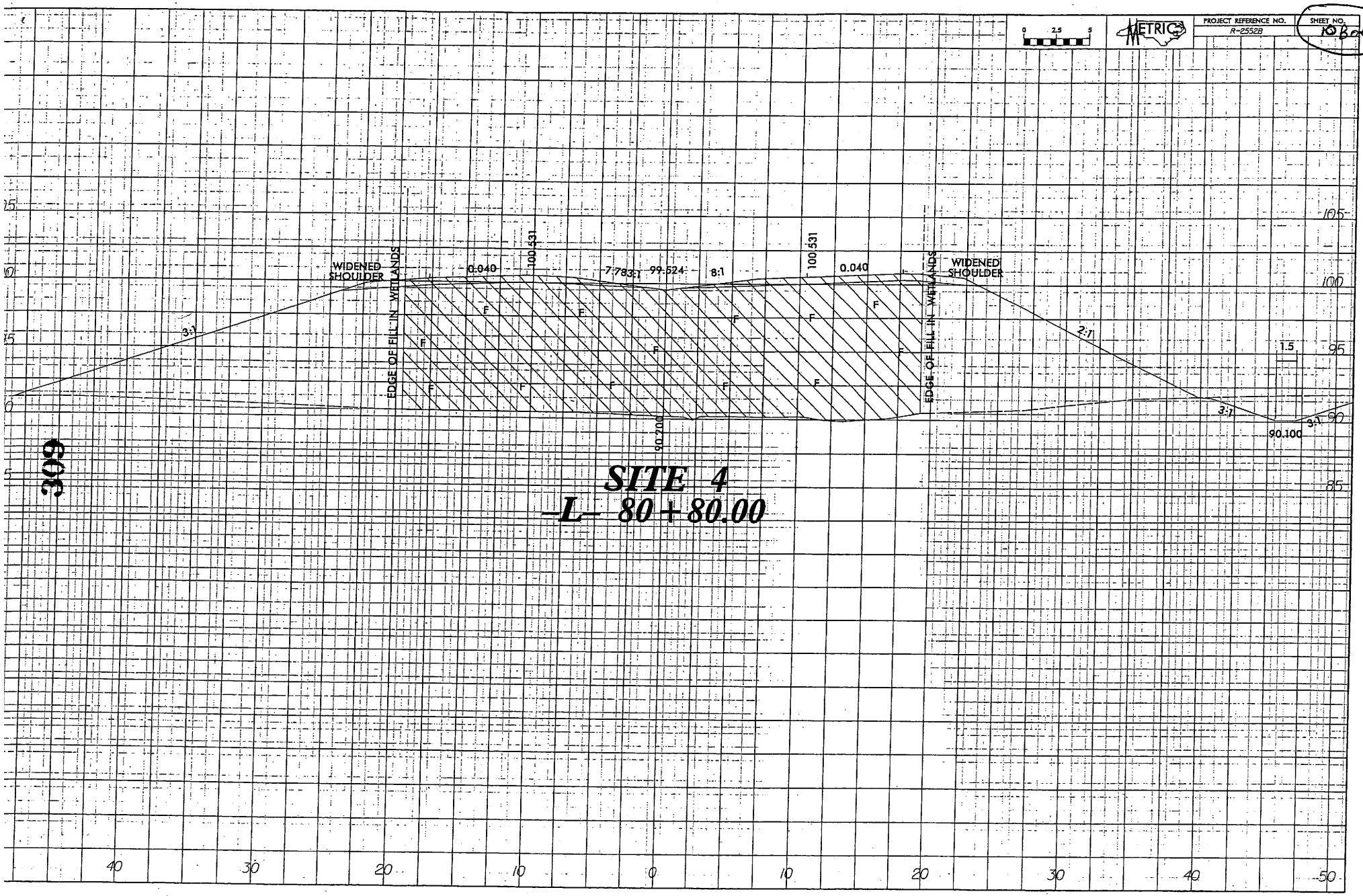
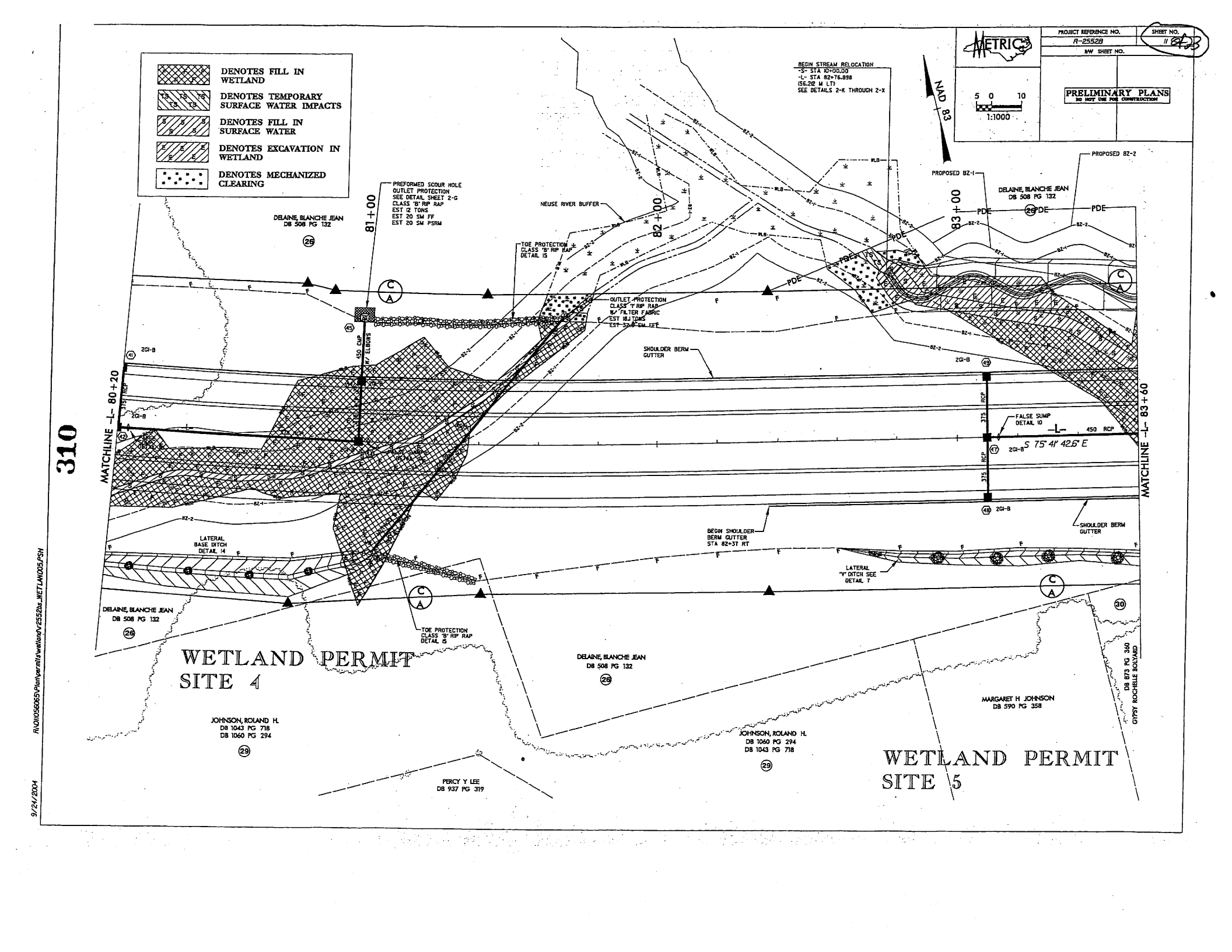


309

SITE 4

-L- 80+80.00



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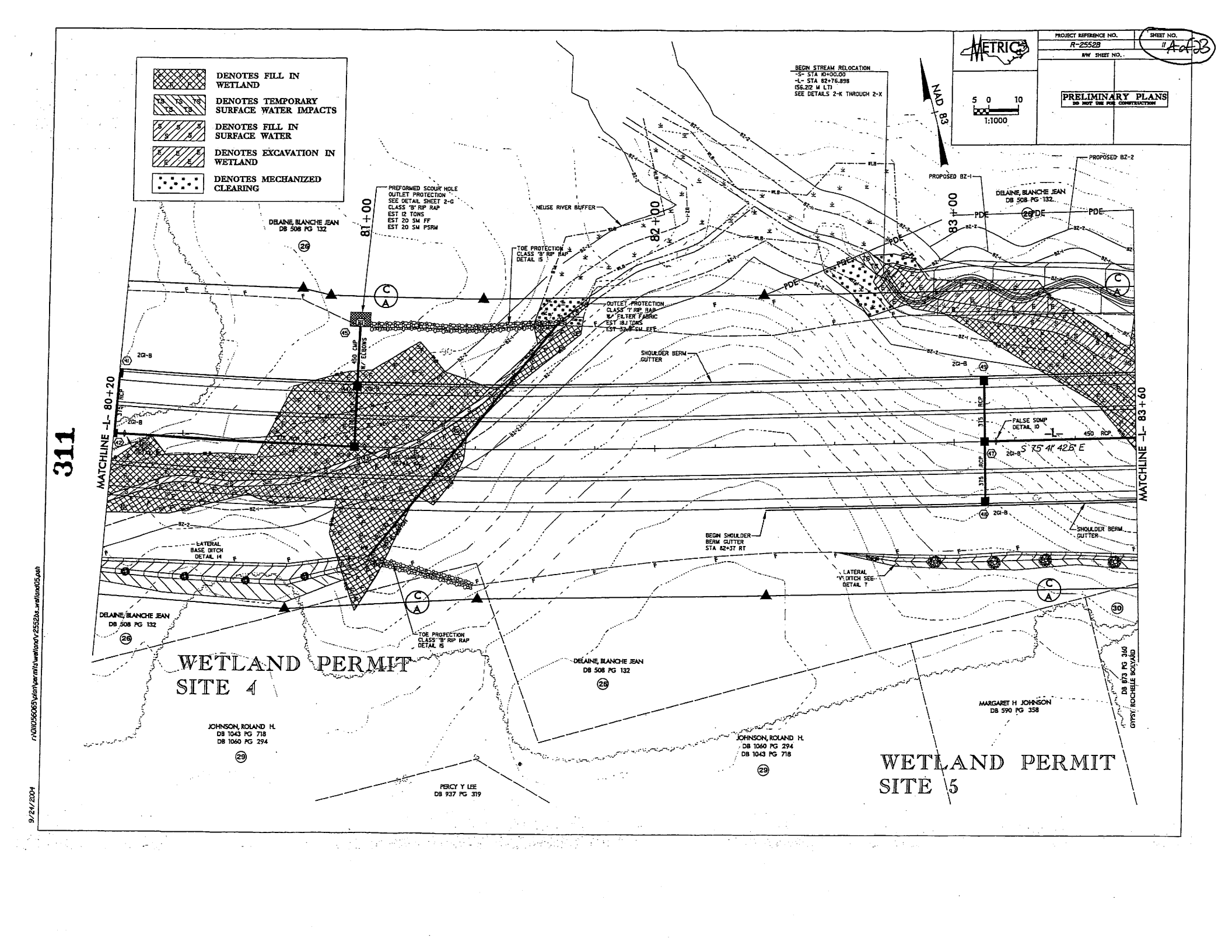

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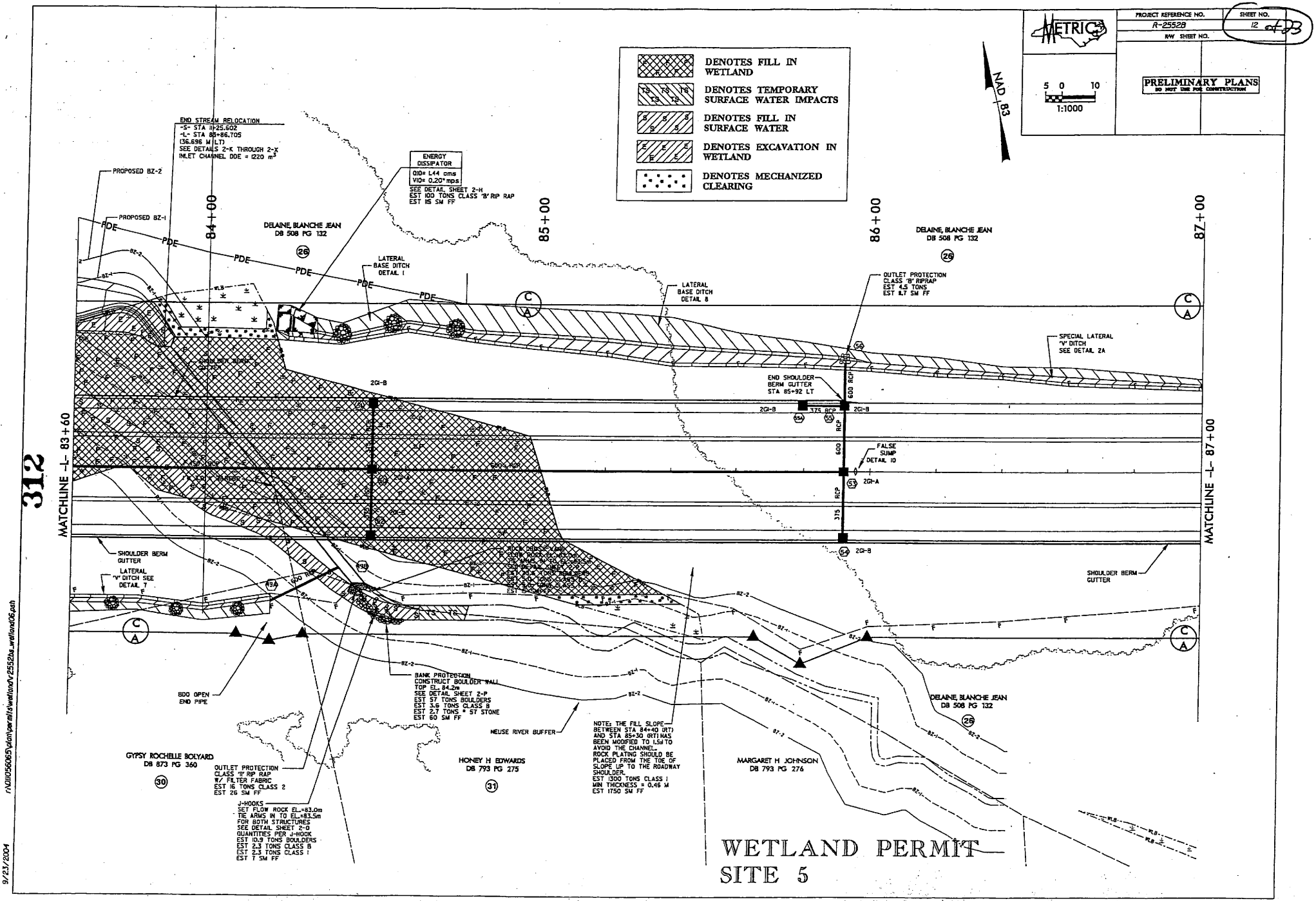
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
12 of 23
R/W SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
DENOTES FILL IN WETLAND
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
312
MATCHLINE -L- 83+60
MATCHLINE -L- 87+00
84+00
85+00
86+00
87+00
END STREAM RELOCATION
-S- STA 11+25.602
-L- STA 85+86.705
(36.696 M LT)
SEE DETAILS 2-K THROUGH 2-X
INLET CHANNEL DDE = 1220 m³
ENERGY DISSIPATOR
Q10= 1.44 cms
V10= 0.20 mps
SEE DETAIL SHEET 2-H
EST 100 TONS CLASS 'B' RIP RAP
EST 115 SM FF
PROPOSED BZ-2
PROPOSED BZ-1
PDE
DELAINE, BLANCHE JEAN
DB 508 PG 132
26
LATERAL BASE DITCH DETAIL 1
LATERAL BASE DITCH DETAIL 8
OUTLET PROTECTION CLASS 'B' RIPRAP
EST 4.5 TONS
EST 8.7 SM FF
SPECIAL LATERAL "V" DITCH SEE DETAIL 2A
END SHOULDER BERM GUTTER STA 85+92 LT
600 RCP
375 RCP
2GI-B
2GI-A
FALSE SUMP DETAIL 10
SHOULDER BERM GUTTER
LATERAL "V" DITCH SEE DETAIL 7
BDO OPEN END PIPE
BANK PROTECTION
CONSTRUCT BOULDER WALL
TOP EL. 84.2m
SEE DETAIL SHEET 2-P
EST 57 TONS BOULDERS
EST 3.6 TONS CLASS B
EST 2.7 TONS * 57 STONE
EST 60 SM FF
NEUSE RIVER BUFFER
NOTE: THE FILL SLOPE BETWEEN STA 84+40 (RT) AND STA 85+30 (RT) HAS BEEN MODIFIED TO 1.5:1 TO AVOID THE CHANNEL. ROCK PLATING SHOULD BE PLACED FROM THE TOE OF SLOPE UP TO THE ROADWAY SHOULDER.
EST 1300 TONS CLASS I
MIN THICKNESS = 0.46 M
EST 1750 SM FF
GYPSY ROCHELLE BOLYARD
DB 873 PG 360
30
OUTLET PROTECTION CLASS 'I' RIP RAP W/ FILTER FABRIC
EST 16 TONS CLASS 2
EST 26 SM FF
J-HOOKS
SET FLOW ROCK EL.=83.0m
TIE ARMS IN TO EL.=83.5m
FOR BOTH STRUCTURES
SEE DETAIL SHEET 2-O
QUANTITIES PER J-HOOK
EST 10.9 TONS BOULDERS
EST 2.3 TONS CLASS B
EST 2.3 TONS CLASS I
EST 7 SM FF
HONEY H EDWARDS
DB 793 PG 275
31
MARGARET H JOHNSON
DB 793 PG 276
WETLAND PERMIT
SITE 5
9/23/2004
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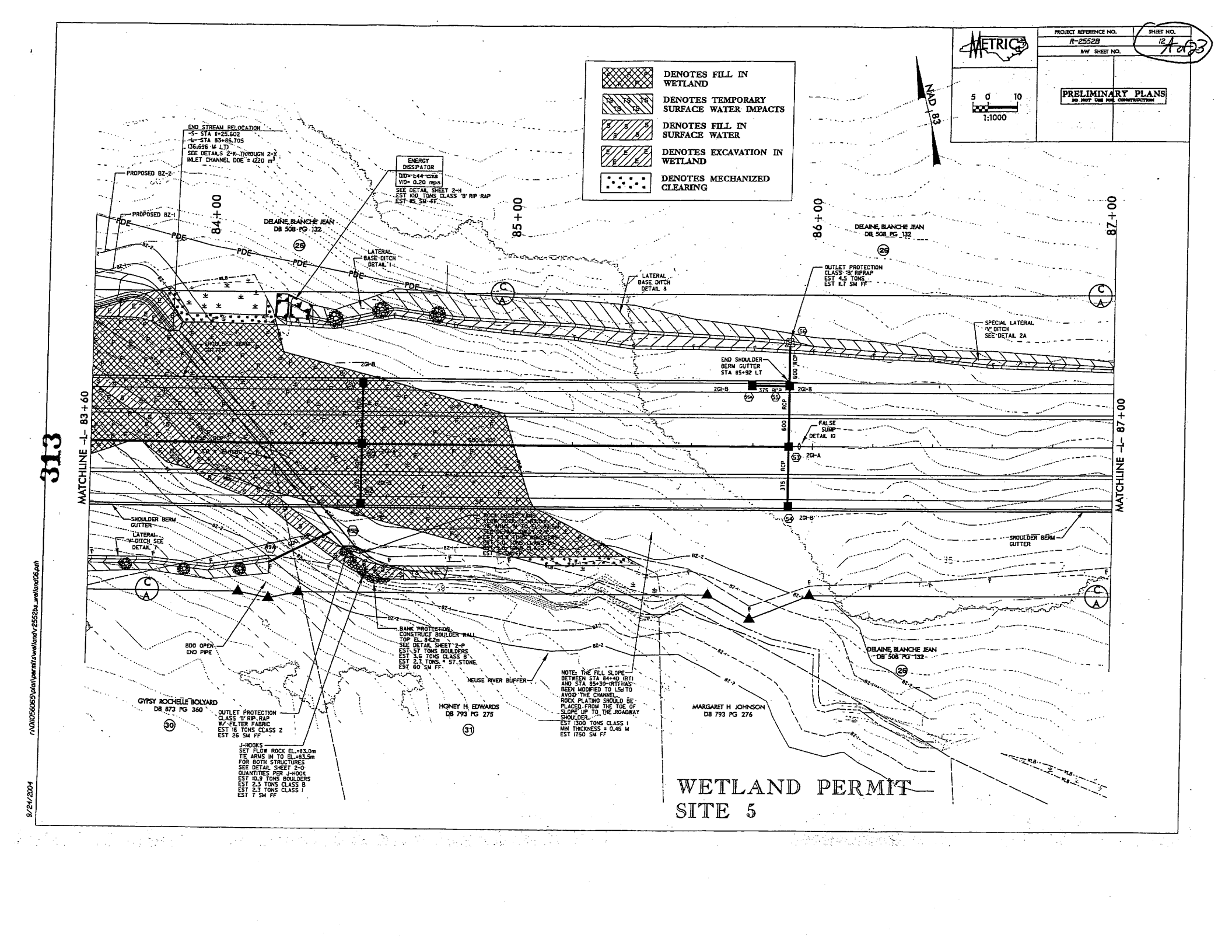
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
12
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DENOTES FILL IN WETLAND
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
NAD 83
313
MATCHLINE -L- 83+60
MATCHLINE -L- 87+00
84+00
85+00
86+00
87+00
END STREAM RELOCATION
-S- STA 11+25.502
-L- STA 83+86.705
(36.696 M LT)
SEE DETAILS Z-K THROUGH Z-X
INLET CHANNEL DDE = 220 m³
PROPOSED BZ-2
PROPOSED BZ-1
PDE
ENERGY DISSIPATOR
DID= 1.44 cms
VID= 0.20 mps
SEE DETAIL SHEET 2-H
EST 100 TONS CLASS 'B' RIP RAP
EST 45 SM FF
DELAINE, BLANCHE JEAN
DB 508 PG 132
26
LATERAL BASE DITCH DETAIL 1
LATERAL BASE DITCH DETAIL 8
OUTLET PROTECTION CLASS 'B' RIPRAP
EST 4.5 TONS
EST 6.7 SM FF
SPECIAL LATERAL 'V' DITCH SEE DETAIL 2A
END SHOULDER BERM GUTTER STA 85+92 LT
2GI-B
2GI-A
375 RCP
600 RCP
FALSE SUMP DETAIL 10
SHOULDER BERM GUTTER
LATERAL 'V' DITCH SEE DETAIL
ROCK CHUTE SEE DETAIL SHEET 2-P
TIE ARMS IN TO EL=83.5m
EST 24.4 TONS BOULDERS
EST 6.1 TONS CLASS B
EST 9.1 TONS CLASS A
EST 0.4 SM FF
BANK PROTECTION
CONSTRUCT BOULDER WALL
TOP EL. 84.2m
SEE DETAIL SHEET 2-P
EST 57 TONS BOULDERS
EST 14.6 TONS CLASS B
EST 21 TONS * 57 STONES
EST 60 SM FF
800 OPEN END PIPE
NEUSE RIVER BUFFER
NOTE: THE FILL SLOPE BETWEEN STA 84+40 (RT) AND STA 85+30 (RT) HAS BEEN MODIFIED TO L5H TO AVOID THE CHANNEL. ROCK PLATING SHOULD BE PLACED FROM THE TOE OF SLOPE UP TO THE ROADWAY SHOULDER.
EST 1300 TONS CLASS I
MIN THICKNESS = 0.45 M
EST 1750 SM FF
GYPSY ROCHELLE BOLYARD
DB 873 PG 360
30
OUTLET PROTECTION CLASS 'I' RIP RAP W/ FILTER FABRIC
EST 16 TONS CLASS 2
EST 26 SM FF
J-HOOKS
SET FLOW ROCK EL.=83.0m
TIE ARMS IN TO EL.=83.5m
FOR BOTH STRUCTURES
SEE DETAIL SHEET 2-O
QUANTITIES PER J-HOOK
EST 10.9 TONS BOULDERS
EST 2.3 TONS CLASS B
EST 2.3 TONS CLASS I
EST 7 SM FF
HONEY H. EDWARDS
DB 793 PG 275
31
MARGARET H JOHNSON
DB 793 PG 276
DELAINE, BLANCHE JEAN
DB 508 PG 132
26
SHOULDER BERM GUTTER
WETLAND PERMIT
SITE 5
9/24/2004
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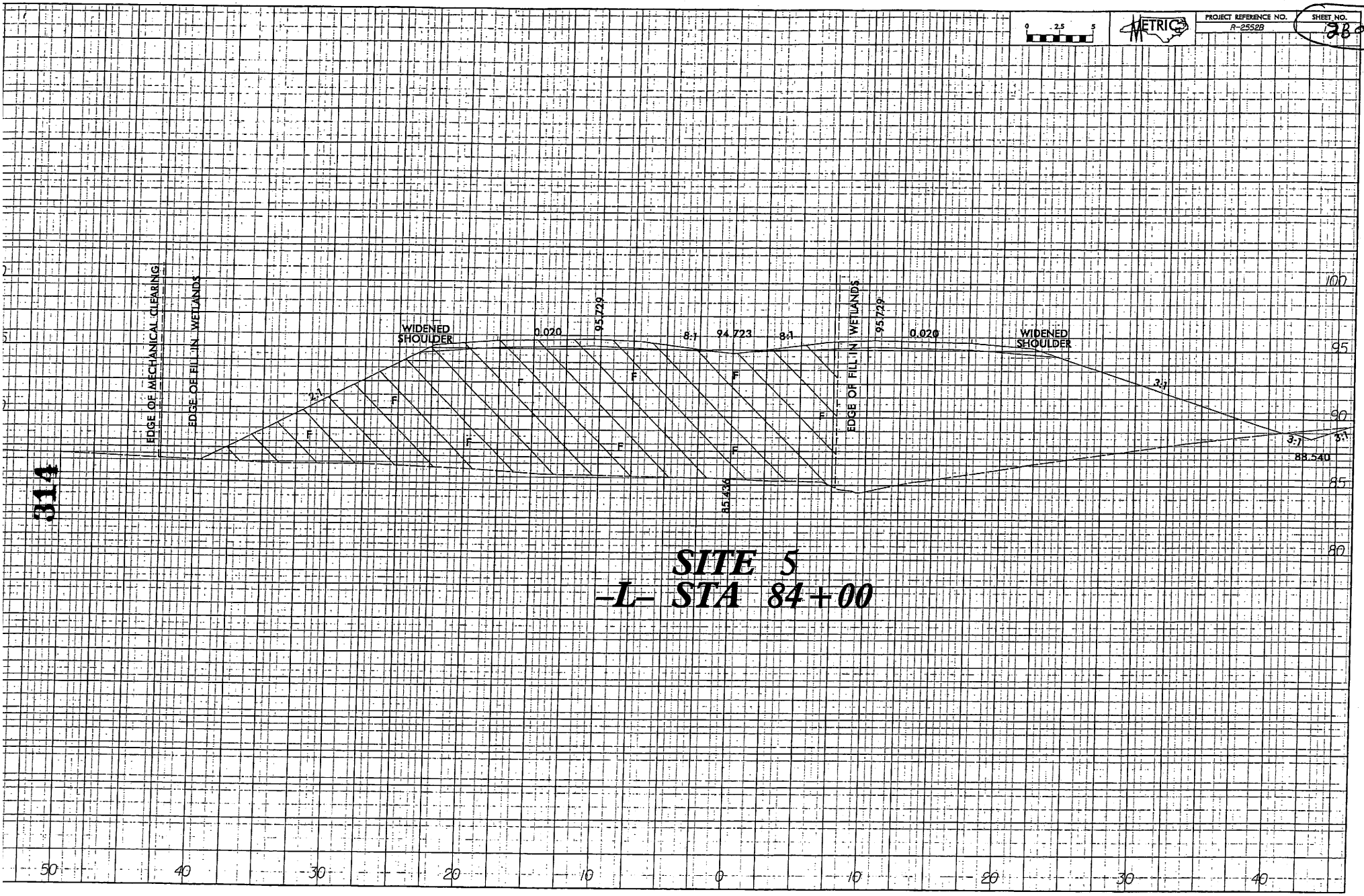
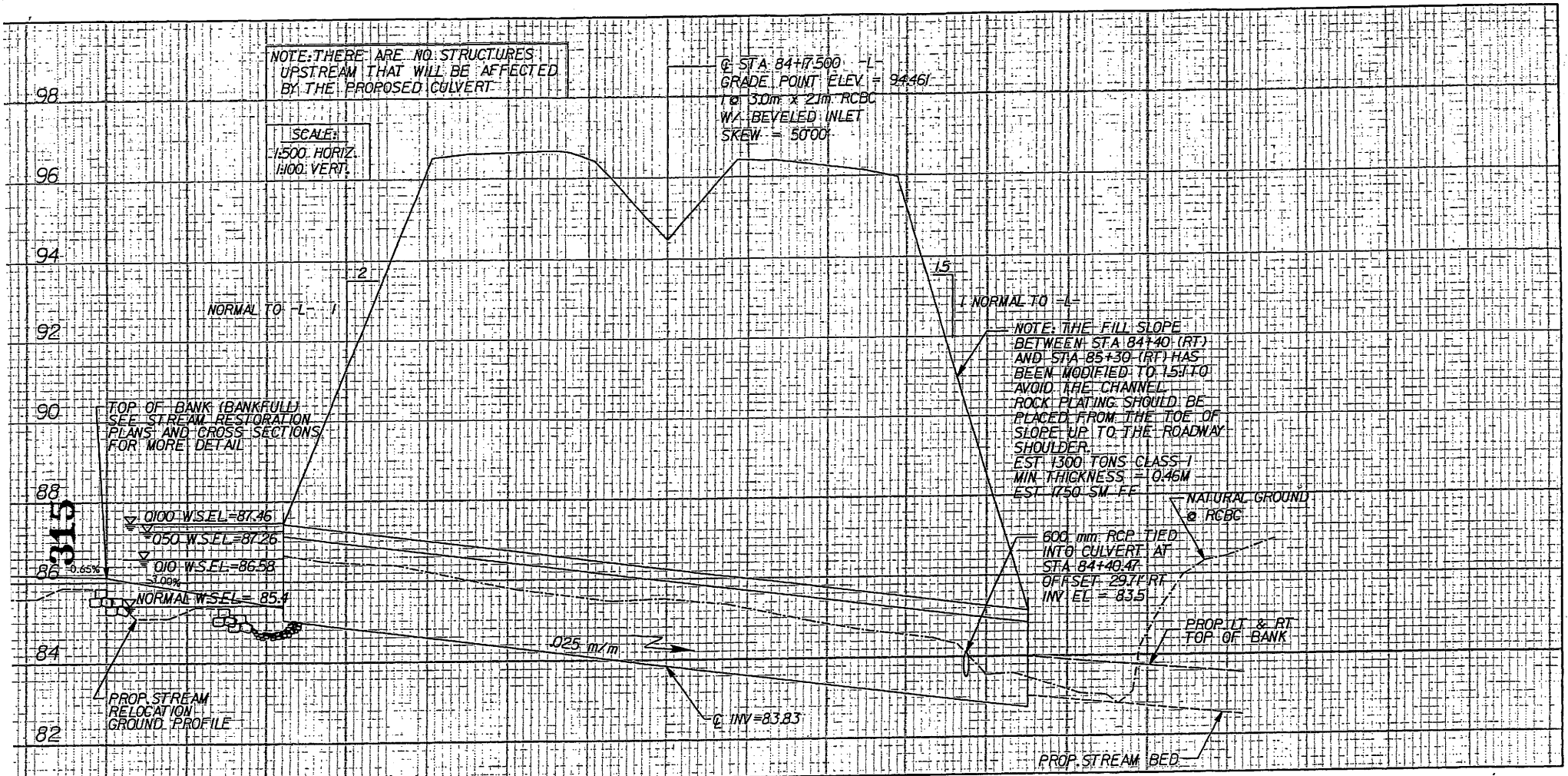

0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
38 of 42
EDGE OF MECHANICAL CLEARING
EDGE OF FILL IN WETLANDS
WIDENED SHOULDER
0.020
95.729
8:1
94.723
8:1
95.729
EDGE OF FILL IN WETLANDS
0.020
WIDENED SHOULDER
2:1
3:1
3:1
3:1
F
85.436
88.540
100
95
90
85
80
50
40
30
20
10
0
10
20
30
40
SITE 5
-L- STA 84+00



315

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

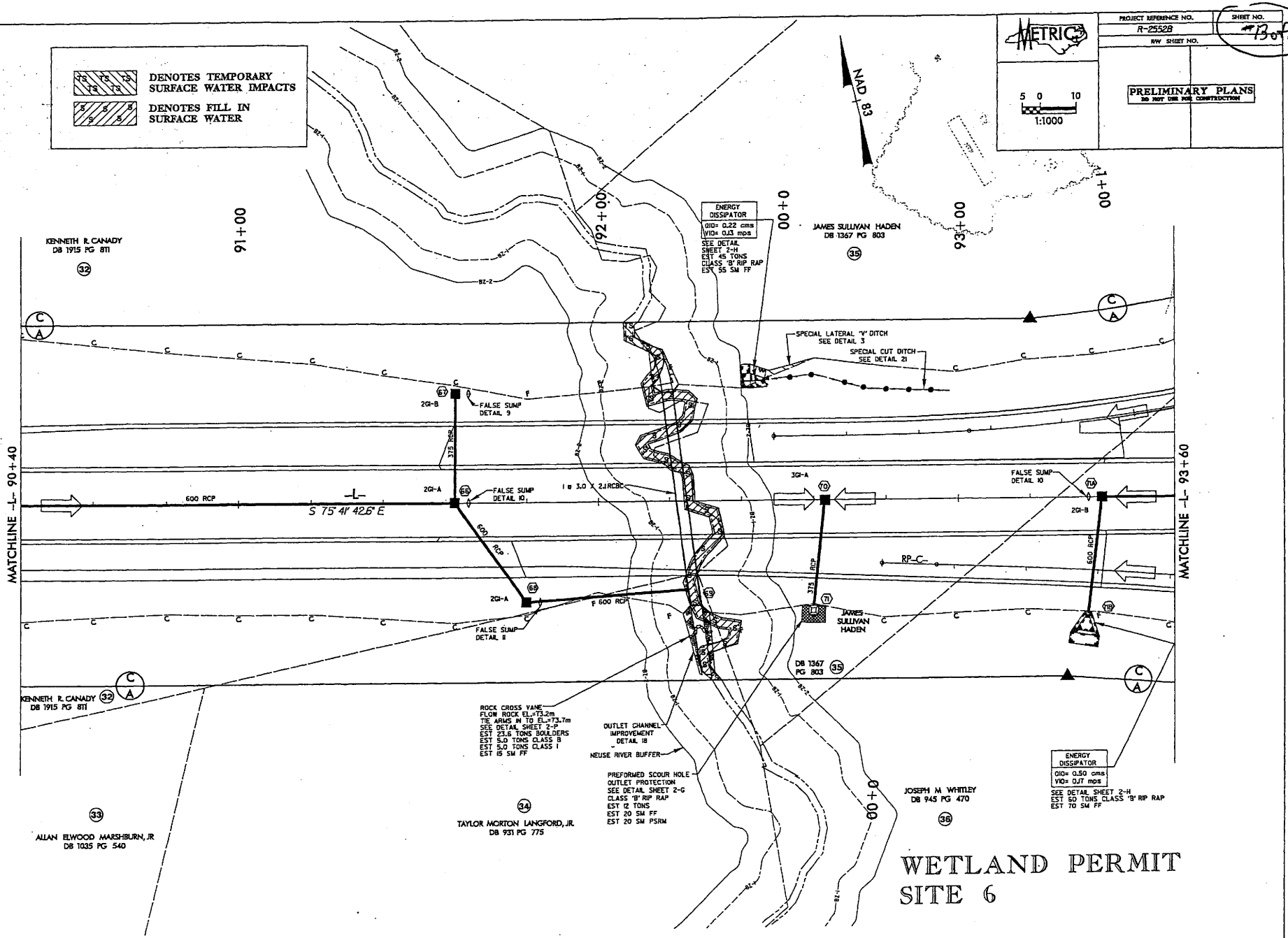
NCDOT

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 12C OF 23

9/16/2004



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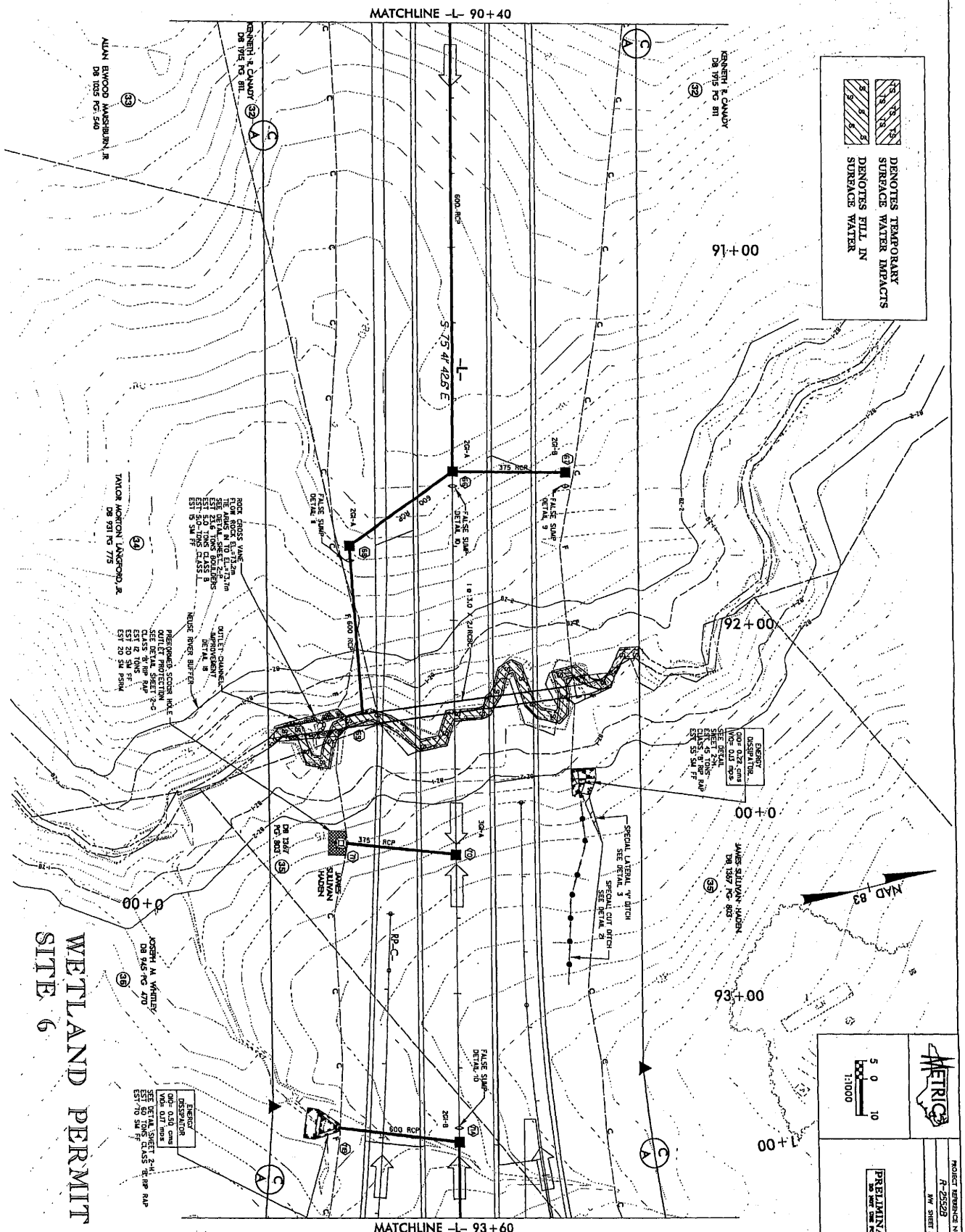
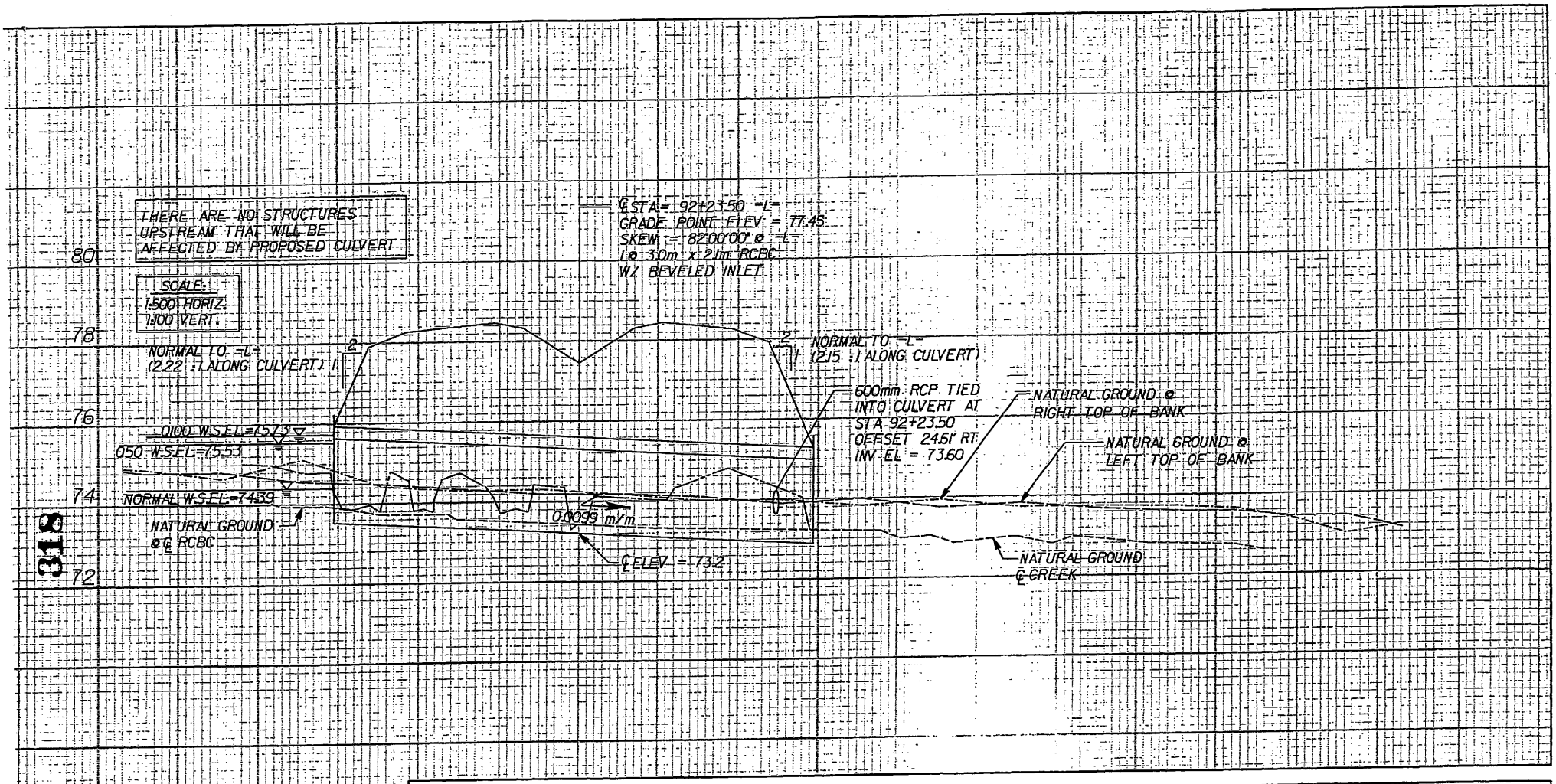


WETLAND PERMIT
SITE 6



318

WETLAND PERMIT DRAWING
CSR 2 of 4 PROFILE
R-2552B

Site 6

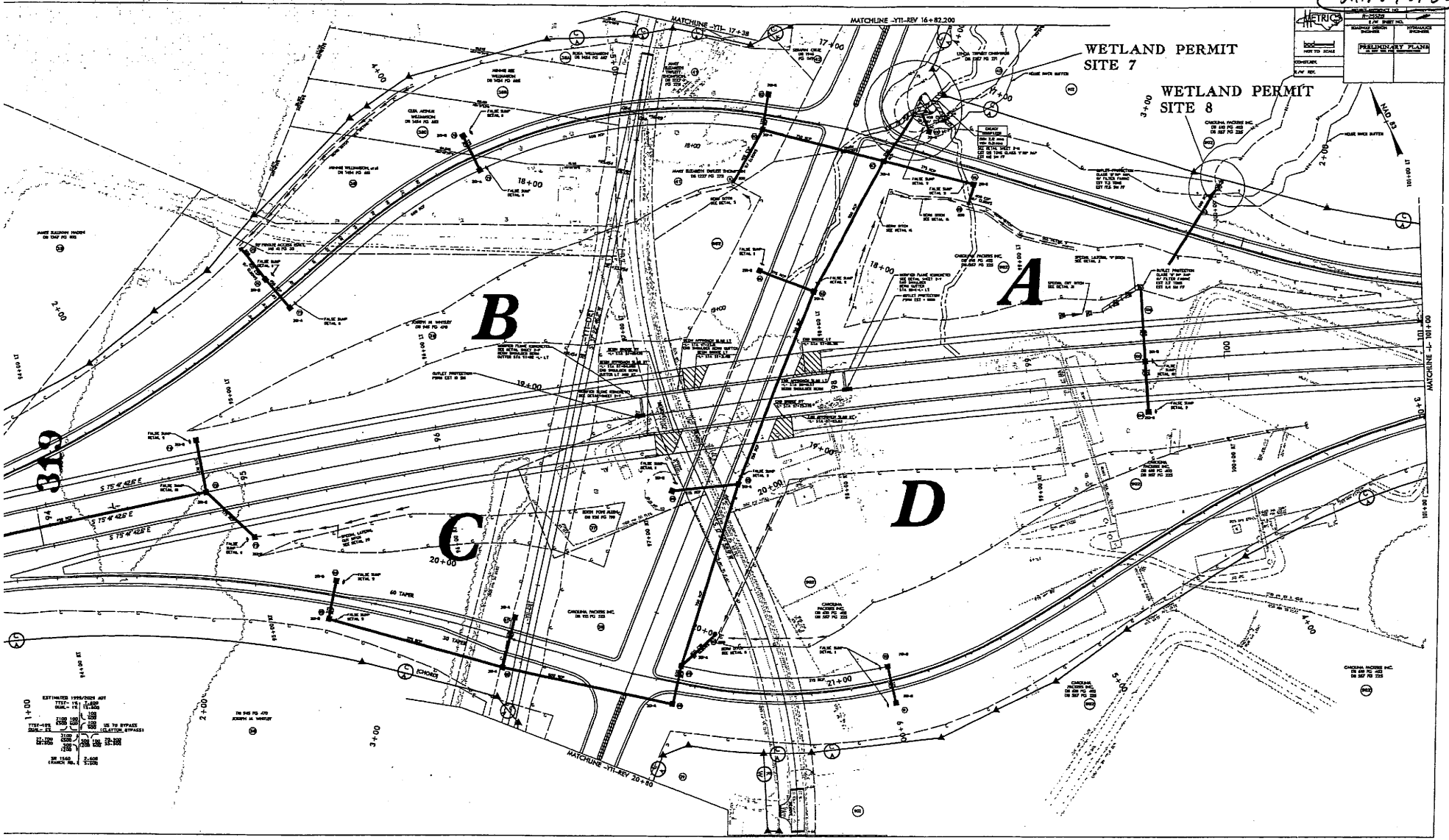
NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY

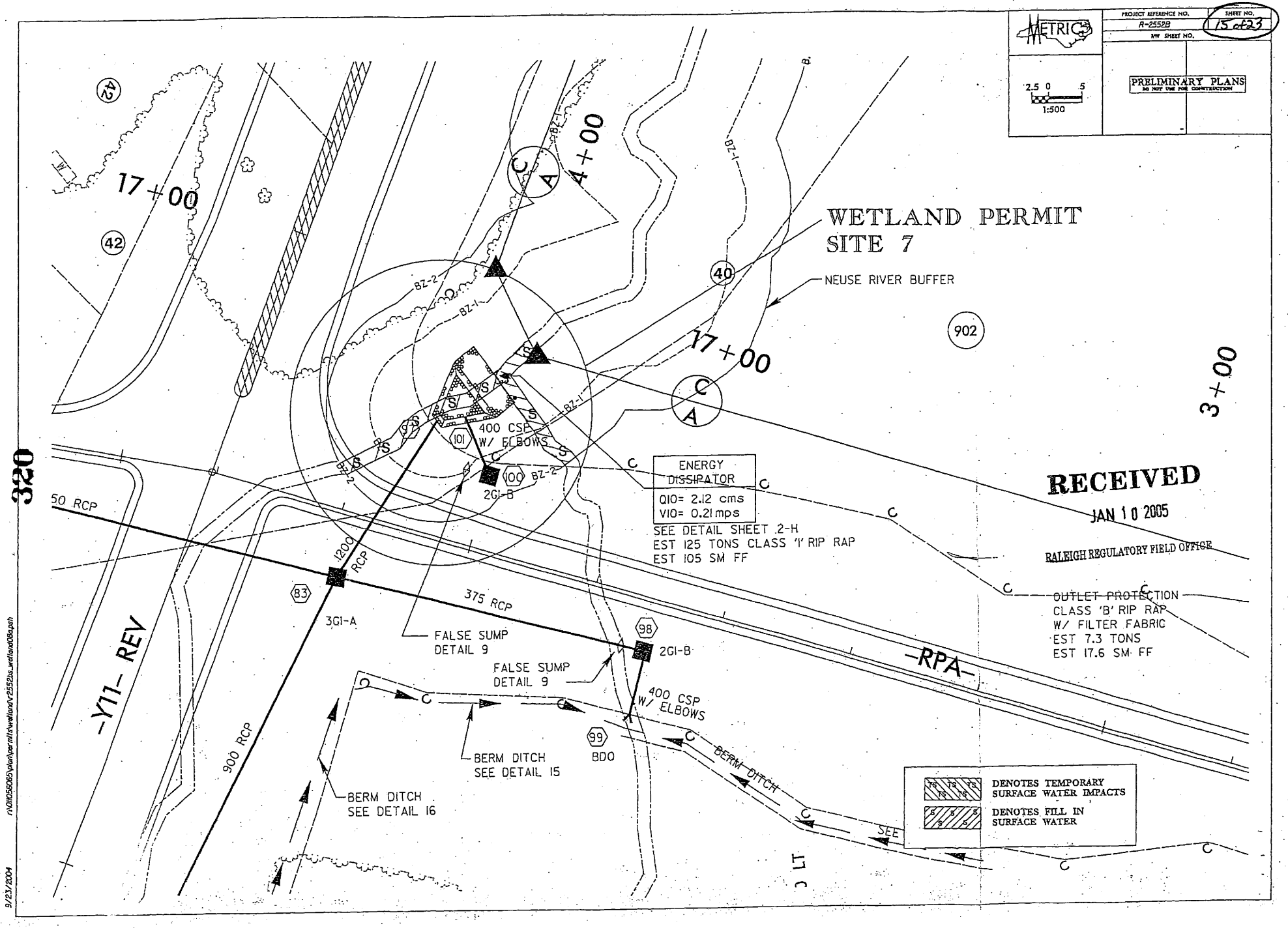
PROJECT: 8.T311002 (R-2552B)
US 70 CLAYTON BYPASS FROM EAST OF NC 42 TO EAST OF SR 1560 (RANCH ROAD)

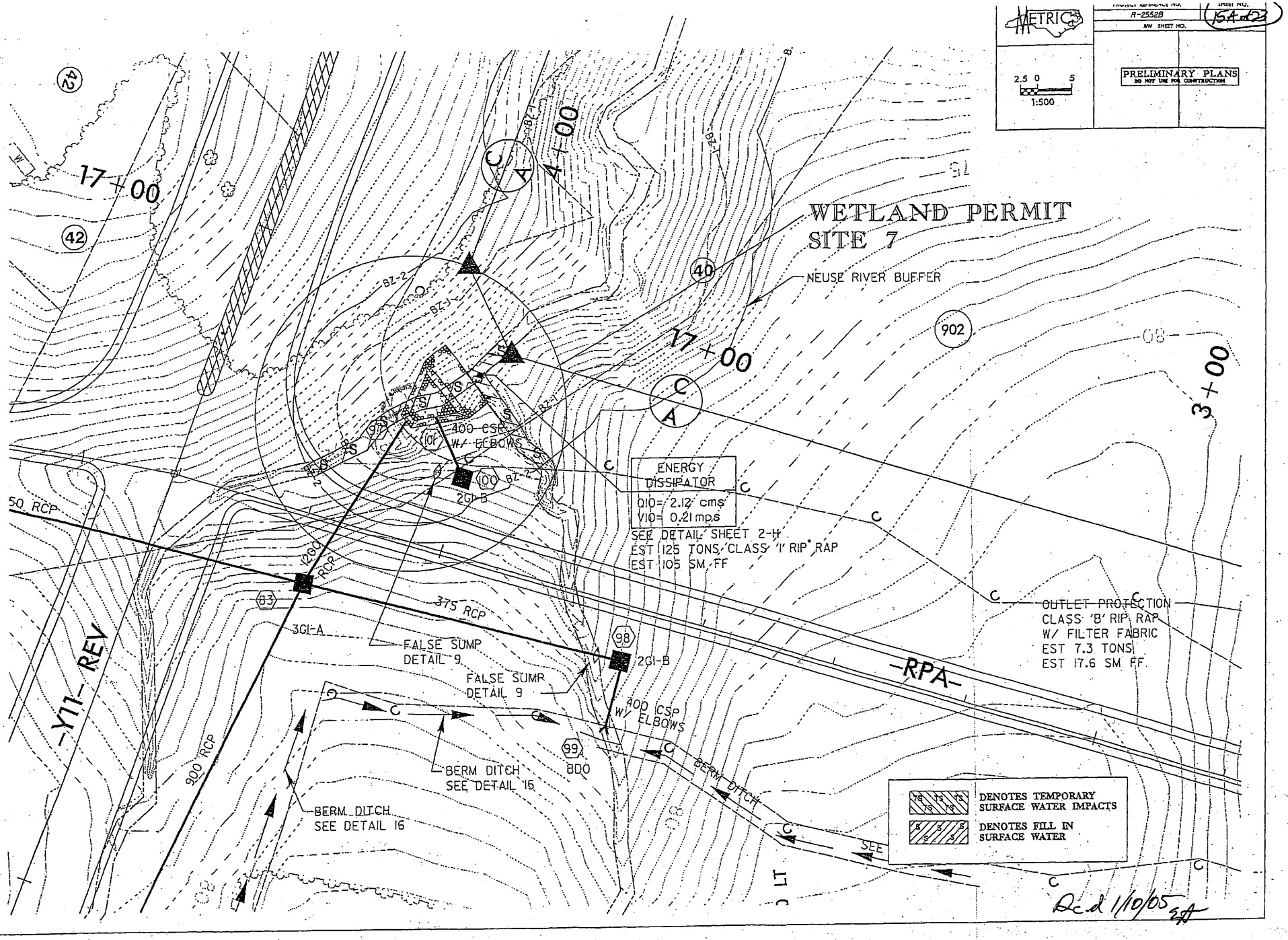
SHEET 13B OF 23

9/16/2004



SEE NEXT 2 SHEETS FOR WETLAND PERMIT SITES 7 AND 8


METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
15 of 23
NW SHEET NO.
2.5 0 5
1:500
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
WETLAND PERMIT
SITE 7
NEUSE RIVER BUFFER
17+00
4+00
3+00
320
42
40
902
83
98
99
101
100
BZ-1
BZ-2
400 CSP
W/ ELBOWS
2GI-B
ENERGY
DISSIPATOR
Q10= 2.12 cms
V10= 0.21 mps
SEE DETAIL SHEET 2-H
EST 125 TONS CLASS 'I' RIP RAP
EST 105 SM FF
50 RCP
1200 RCP
375 RCP
900 RCP
3GI-A
FALSE SUMP
DETAIL 9
FALSE SUMP
DETAIL 9
2GI-B
400 CSP
W/ ELBOWS
BERM DITCH
SEE DETAIL 15
BERM DITCH
SEE DETAIL 16
BDO
BERM DITCH
-Y11- REV
-RPA-
OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 7.3 TONS
EST 17.6 SM FF
RECEIVED
JAN 10 2005
RALEIGH REGULATORY FIELD OFFICE
DENOTES TEMPORARY
SURFACE WATER IMPACTS
DENOTES FILL IN
SURFACE WATER
SEE
LT
r\01\056065\plan\permit\wetland\r2552bs_wetland08.psh
9/23/2004



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9/24/2004

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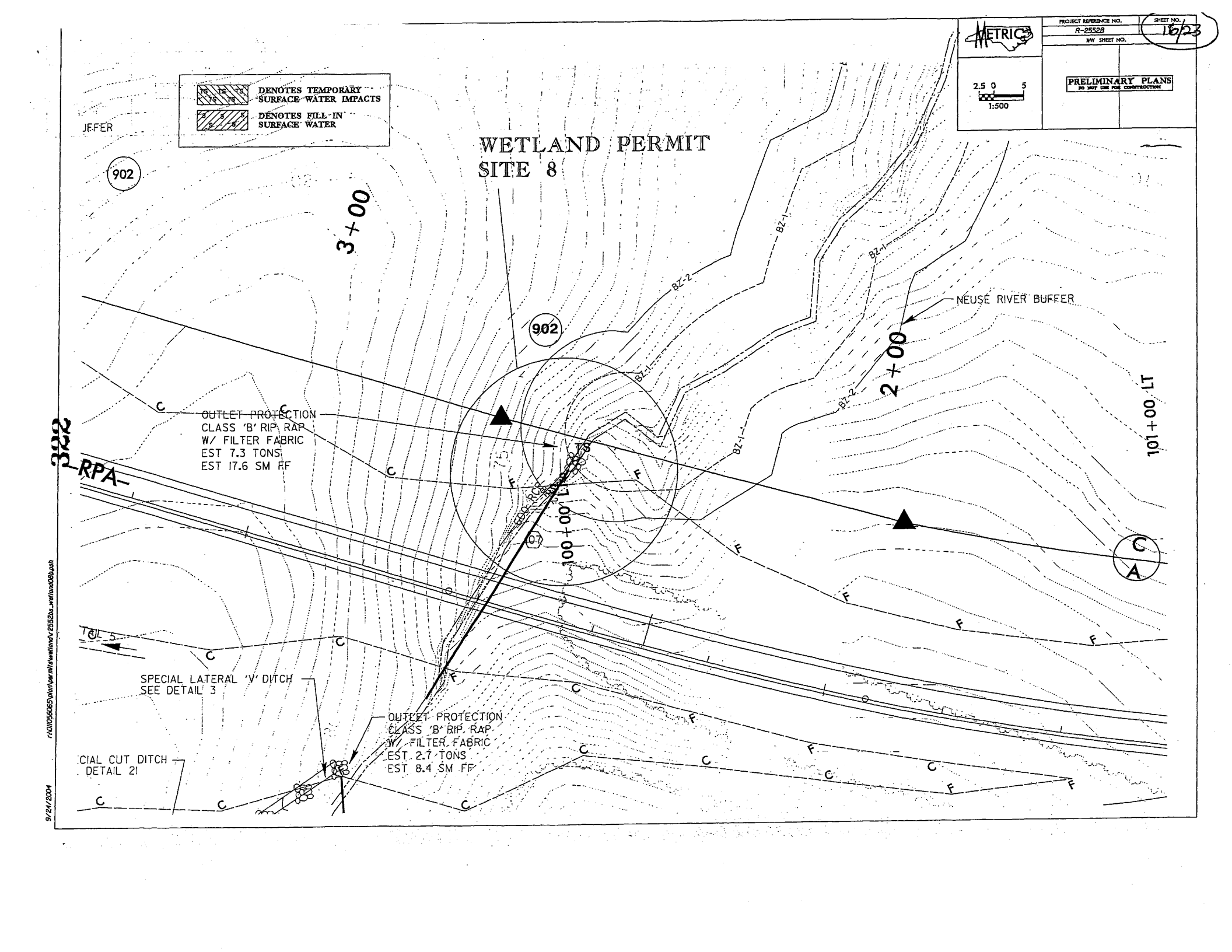
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
16/23
R/W SHEET NO.
2.5 0 5
1:500
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
WETLAND PERMIT
SITE 8
JEFER
902
3+00
2+00
1+00
101+00 LT
NEUSE RIVER BUFFER
BZ-1
BZ-2
OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 7.3 TONS
EST 17.6 SM FF
RPA
322
TOE
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
CIAL CUT DITCH
DETAIL 2!
C
F
A
9/21/2004
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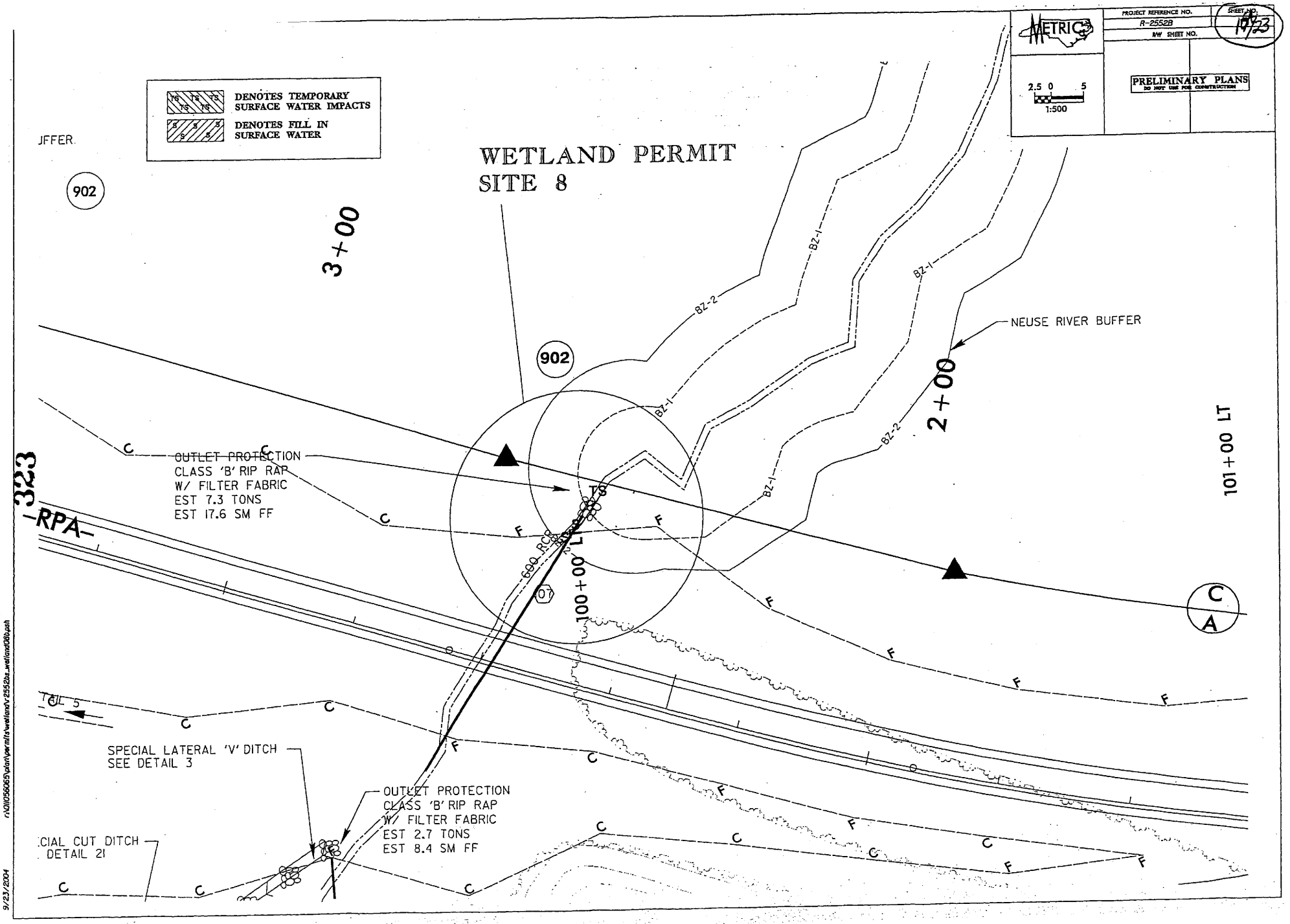
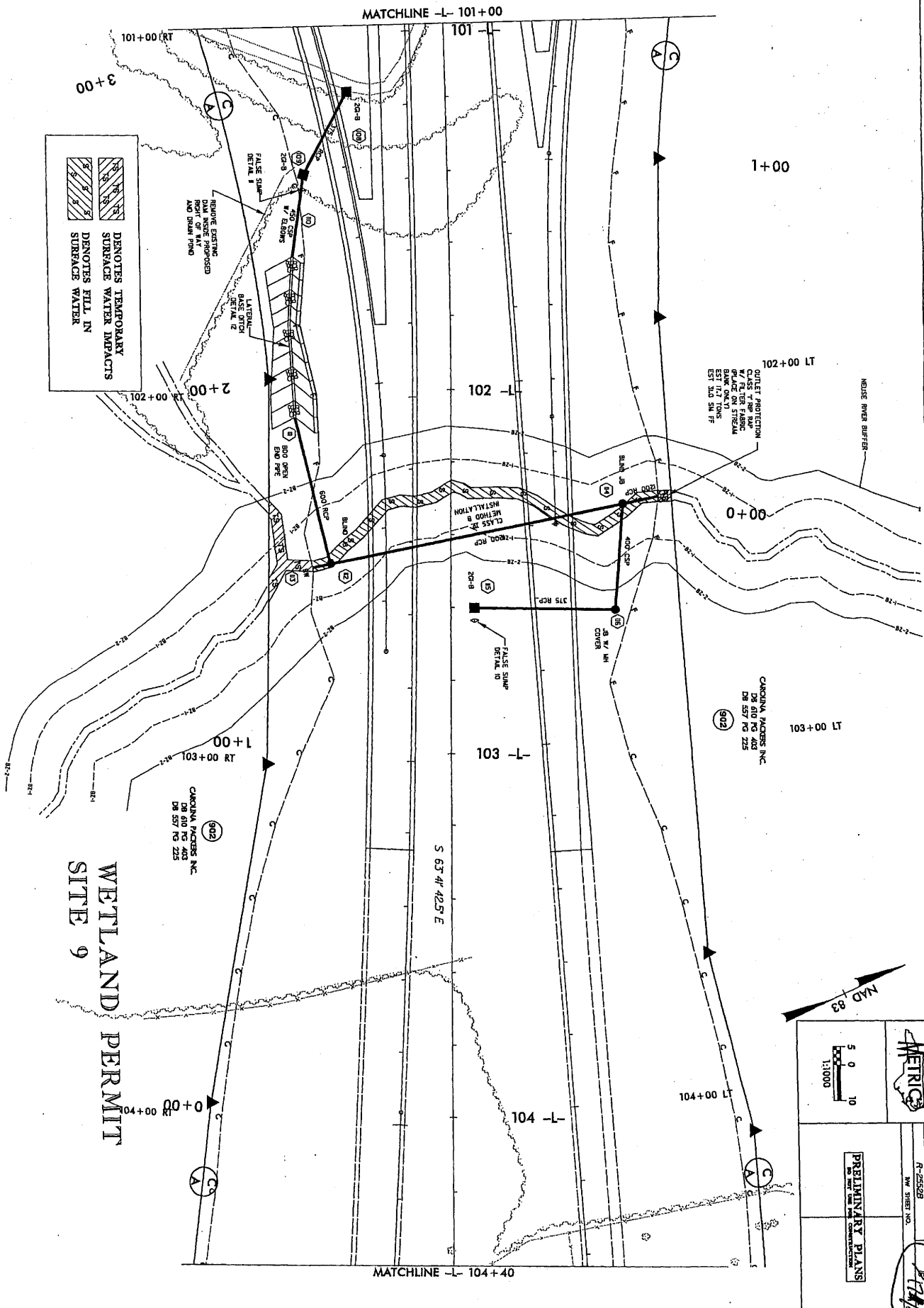
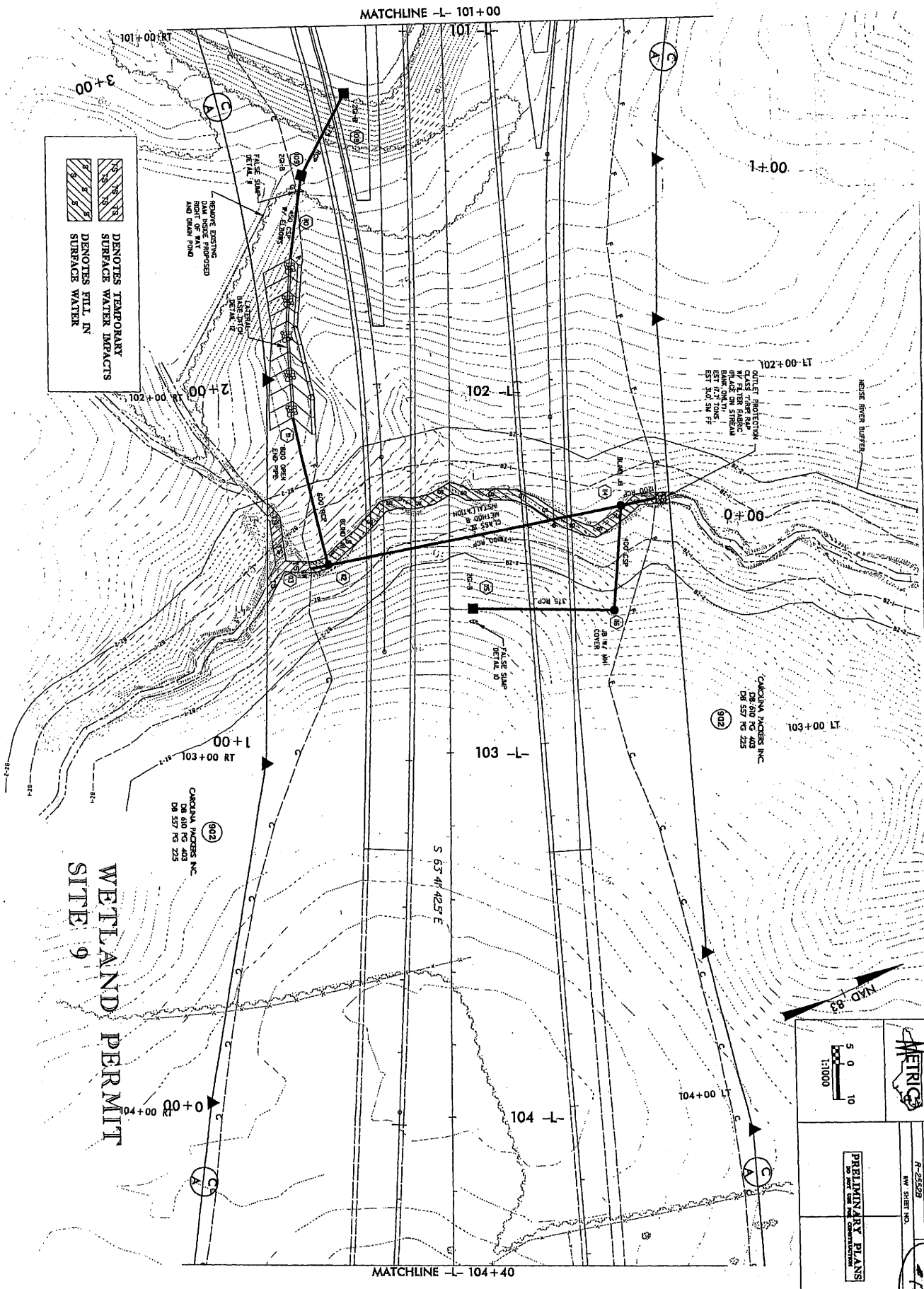
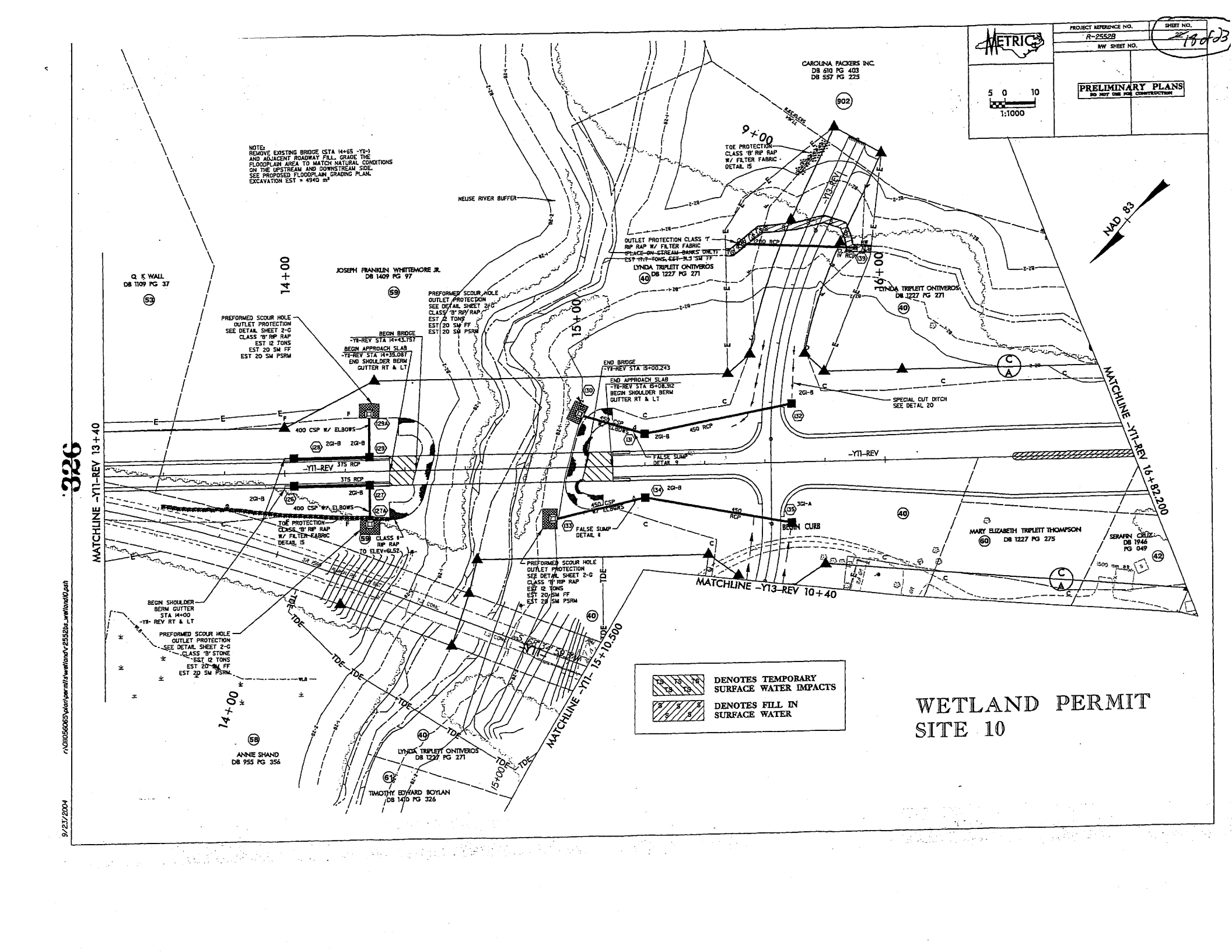

METRIC
PROJECT REFERENCE NO.
R-2552B
NW SHEET NO.
SHEET NO.
14/23
2.5 0 5
1:500
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
WETLAND PERMIT SITE 8
902
3+00
2+00
100+00 LT
101+00 LT
NEUSE RIVER BUFFER
BZ-1
BZ-2
OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 7.3 TONS
EST 17.6 SM FF
600 RCP
TS
323
-RPA-
C
A
TOL 5
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
DETAIL 21
9/23/2004


MATCHLINE -L- 101+00
MATCHLINE -L- 104+40
101 -L-
102 -L-
103 -L-
104 -L-
101+00 RT
102+00 RT
103+00 RT
104+00 RT
102+00 LT
103+00 LT
104+00 LT
3+00
2+00
1+00
0+00
S 63° 41' 42.5" E
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
FALSE SUMP DETAIL 9
FALSE SUMP DETAIL 10
REMOVE EXISTING DAM AND PROPOSED RIGHT OF WAY AND DRAIN POND
LATERAL BASE DITCH DETAIL 12
450 CSP W/ 4 ELBOWS
600 OPEN END PIPE
600 RCP
400 CSP
375 RCP
2@-8
CLASS 3R RIPRAP (PLACE ON STREAM BANK ONLY) EST 17.7 TONS EST 3.43 SN FF
OUTLET PROTECTION
NEUSE RIVER BUFFER
JB W/ MH COVER
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225
WETLAND PERMIT SITE 9
NAD 83
METRIC
1:1000
PRELIMINARY PLANS
NOT TO BE USED FOR CONSTRUCTION
PROJECT REFERENCE NO. R-2552B
SHEET NO.


MATCHLINE -L- 101+00
MATCHLINE -L- 104+40
101 -L-
102 -L-
103 -L-
104 -L-
101+00 RT
102+00 RT
103+00 RT
104+00 RT
102+00 LT
103+00 LT
104+00 LT
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
REMOVE EXISTING DRAINAGE FEATURE AND PROPOSED RIGHT OF WAY AND DRAIN POND
FALSE SUMP DETAIL 9
FALSE SUMP DETAIL 10
LATERAL BASE DITCH DETAIL 12
OUTLET PROTECTION CLASS I RIP RAP
NEUSE RIVER BUFFER
CAROLINA PACKERS INC DB 610 PG 403 DB 557 PG 225
S 63° 41' 42.5" E
WETLAND PERMIT SITE 9
NAD 83
METRIC
PRELIMINARY PLANS
PROJECT REFERENCE NO. R-2552B
SHEET NO.



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9/23/2004

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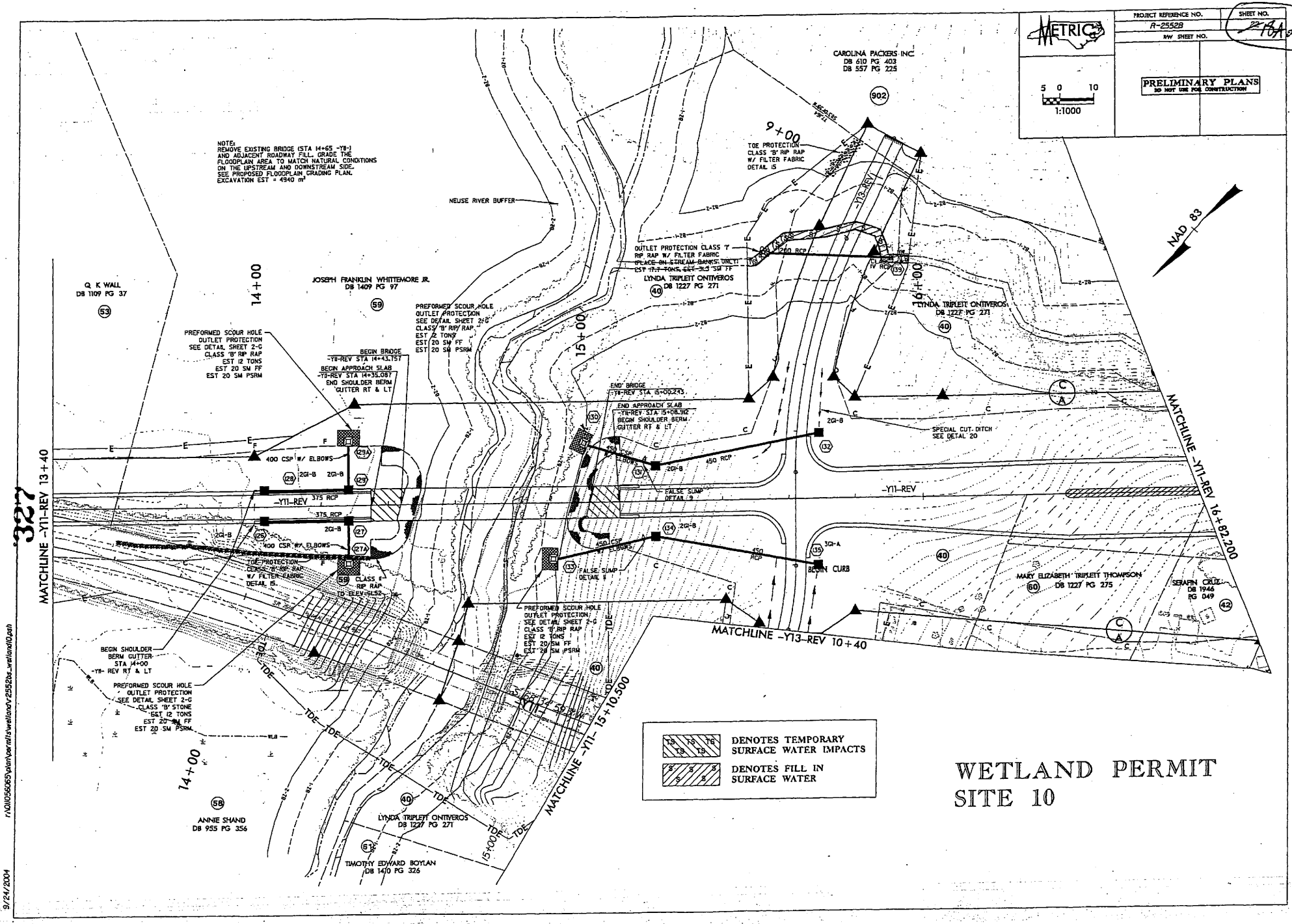
METRIC
5 0 10
1:1000
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
22-10A of 27
RW SHEET NO.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
CAROLINA PACKERS INC
DB 610 PG 403
DB 557 PG 225
902
9+00
TOE PROTECTION CLASS "B" RIP RAP W/ FILTER FABRIC DETAIL 15
NOTE:
REMOVE EXISTING BRIDGE (STA 14+65 -Y11-) AND ADJACENT ROADWAY FILL. GRADE THE FLOODPLAIN AREA TO MATCH NATURAL CONDITIONS ON THE UPSTREAM AND DOWNSTREAM SIDE. SEE PROPOSED FLOODPLAIN GRADING PLAN. EXCAVATION EST = 4940 m³
NEUSE RIVER BUFFER
-Y13-REV
OUTLET PROTECTION CLASS 'I' RIP RAP W/ FILTER FABRIC PLACE ON STREAM BANKS, DRCT. EST 17.7 TONS, EST 313 SM FF
LYNDA TRIPLETT ONTIVEROS
DB 1227 PG 271
40
Q K WALL
DB 1109 PG 37
53
14+00
JOSEPH FRANKLIN WHITTEMORE JR.
DB 1409 PG 97
59
PREFORMED SCOUR HOLE OUTLET PROTECTION SEE DETAIL SHEET 2-G CLASS 'B' RIP RAP EST 12 TONS EST 20 SM FF EST 20 SM PSRM
BEGIN BRIDGE -Y11-REV STA 14+43.757
BEGIN APPROACH SLAB -Y11-REV STA 14+35.087
END SHOULDER BERM GUTTER RT & LT
15+00
PREFORMED SCOUR HOLE OUTLET PROTECTION SEE DETAIL SHEET 2-G CLASS 'B' RIP RAP EST 12 TONS EST 20 SM FF EST 20 SM PSRM
END BRIDGE -Y11-REV STA 15+00.245
END APPROACH SLAB -Y11-REV STA 15+08.912
BEGIN SHOULDER BERM GUTTER RT & LT
16+00
LYNDA TRIPLETT ONTIVEROS
DB 1227 PG 271
40
MATCHLINE -Y11-REV 13+40
MATCHLINE -Y11-REV 16+82.200
400 CSP W/ ELBOWS
375 RCP
2GI-B
450 RCP
FALSE SUMP DETAIL 9
SPECIAL CUT DITCH SEE DETAL 20
3GI-A
BEGIN CURB
TOE PROTECTION CLASS 'B' RIP RAP W/ FILTER FABRIC DETAIL 15
CLASS 'I' RIP RAP TO ELEV=61.52
BEGIN SHOULDER BERM GUTTER STA 14+00 -Y11- REV RT & LT
PREFORMED SCOUR HOLE OUTLET PROTECTION SEE DETAIL SHEET 2-G CLASS 'B' STONE EST 12 TONS EST 20 SM FF EST 20 SM PSRM
TOE
MATCHLINE -Y11- 15+10.500
MATCHLINE -Y13-REV 10+40
MARY ELIZABETH TRIPLETT THOMPSON
DB 1227 PG 275
60
SERAFIN CRUZ
DB 1946 PG 049
42
ANNIE SHAND
DB 955 PG 356
58
LYNDA TRIPLETT ONTIVEROS
DB 1227 PG 271
40
TIMOTHY EDWARD BOYLAN
DB 1410 PG 326
61
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
WETLAND PERMIT
SITE 10
327
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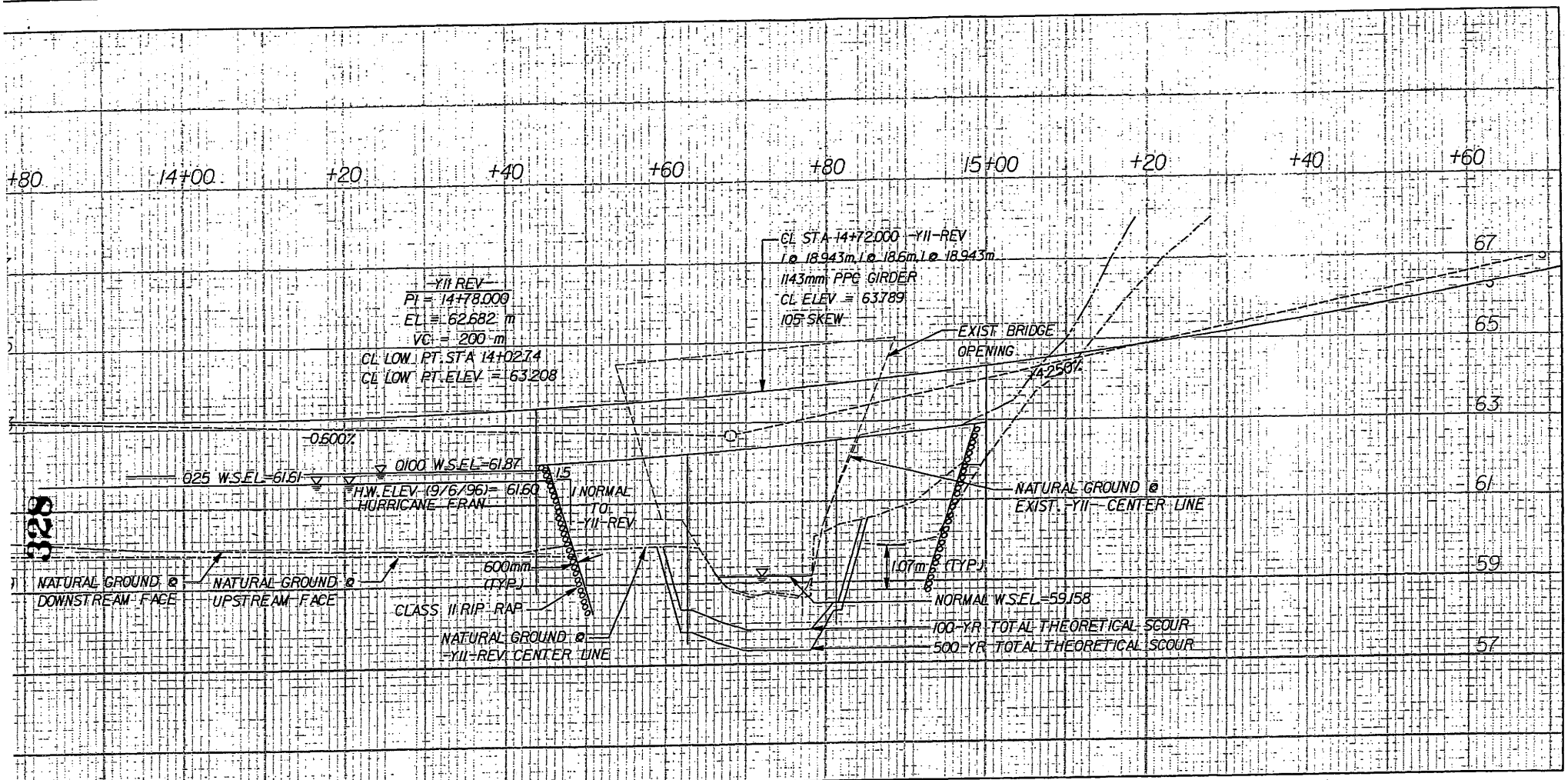
9/24/2004



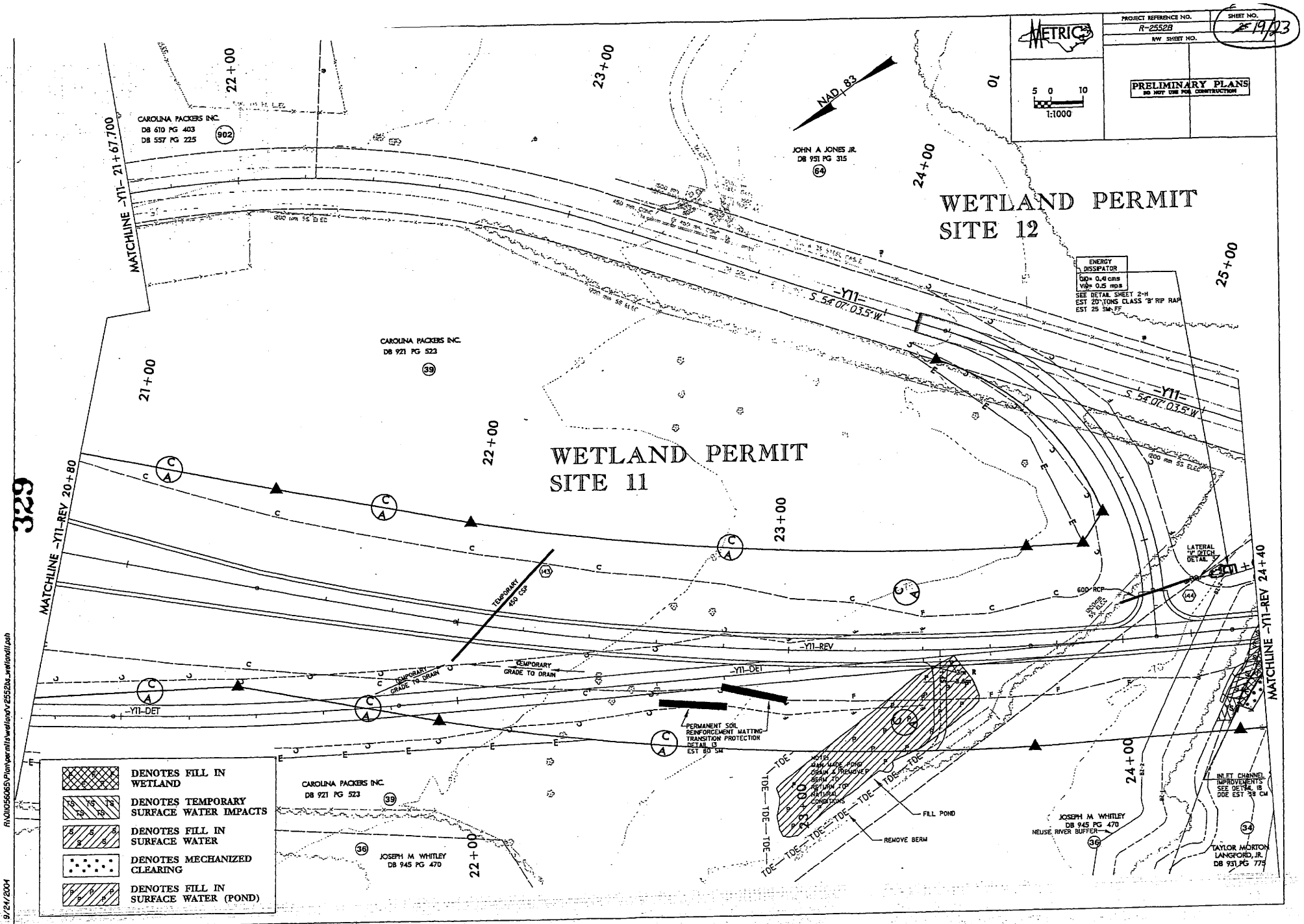
325

WETLAND PERMIT DRAWING
BSR PROFILE
R-2552B Site 10 EA

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 18R OF 23 9/16/2004



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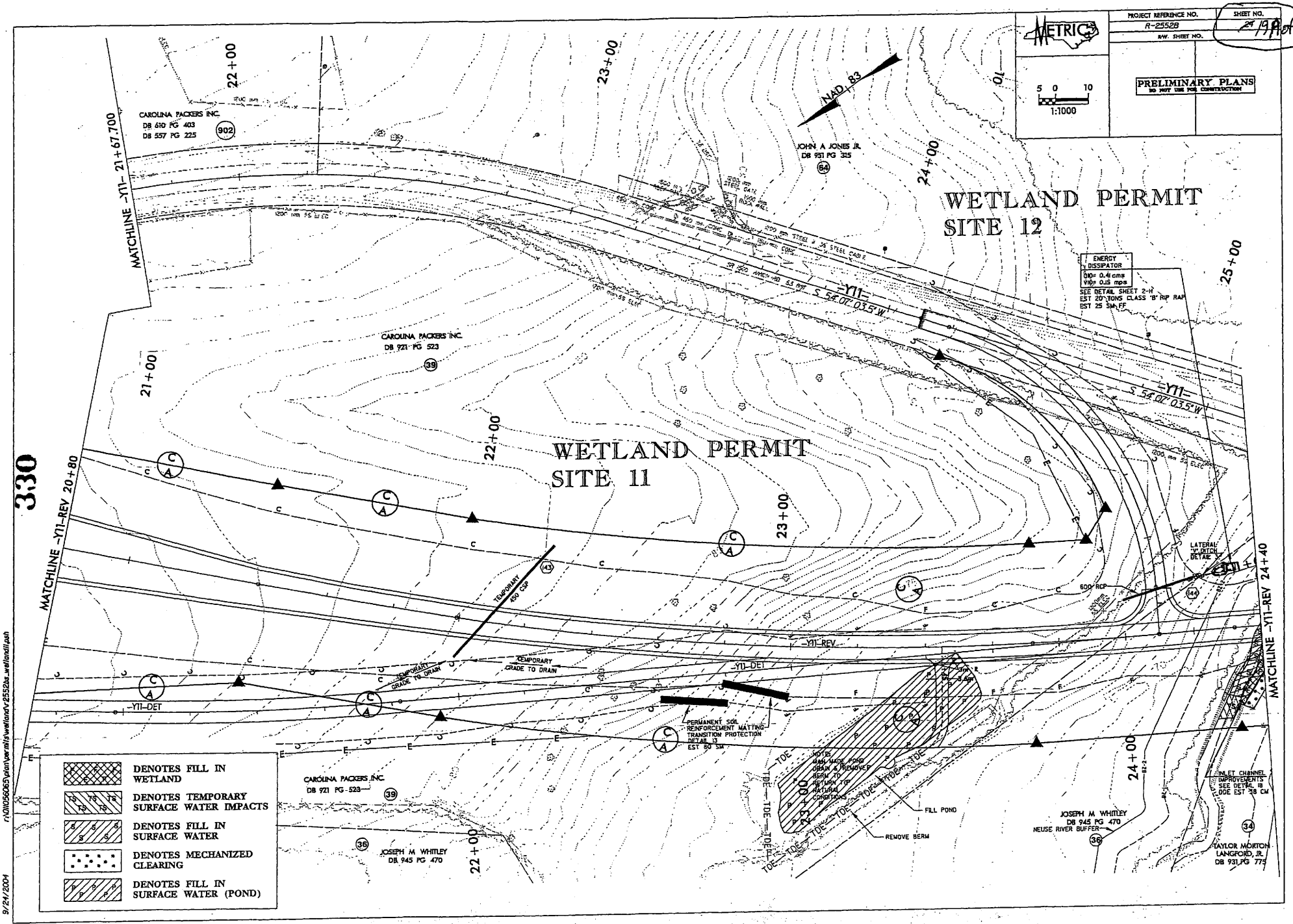
9/21/2004



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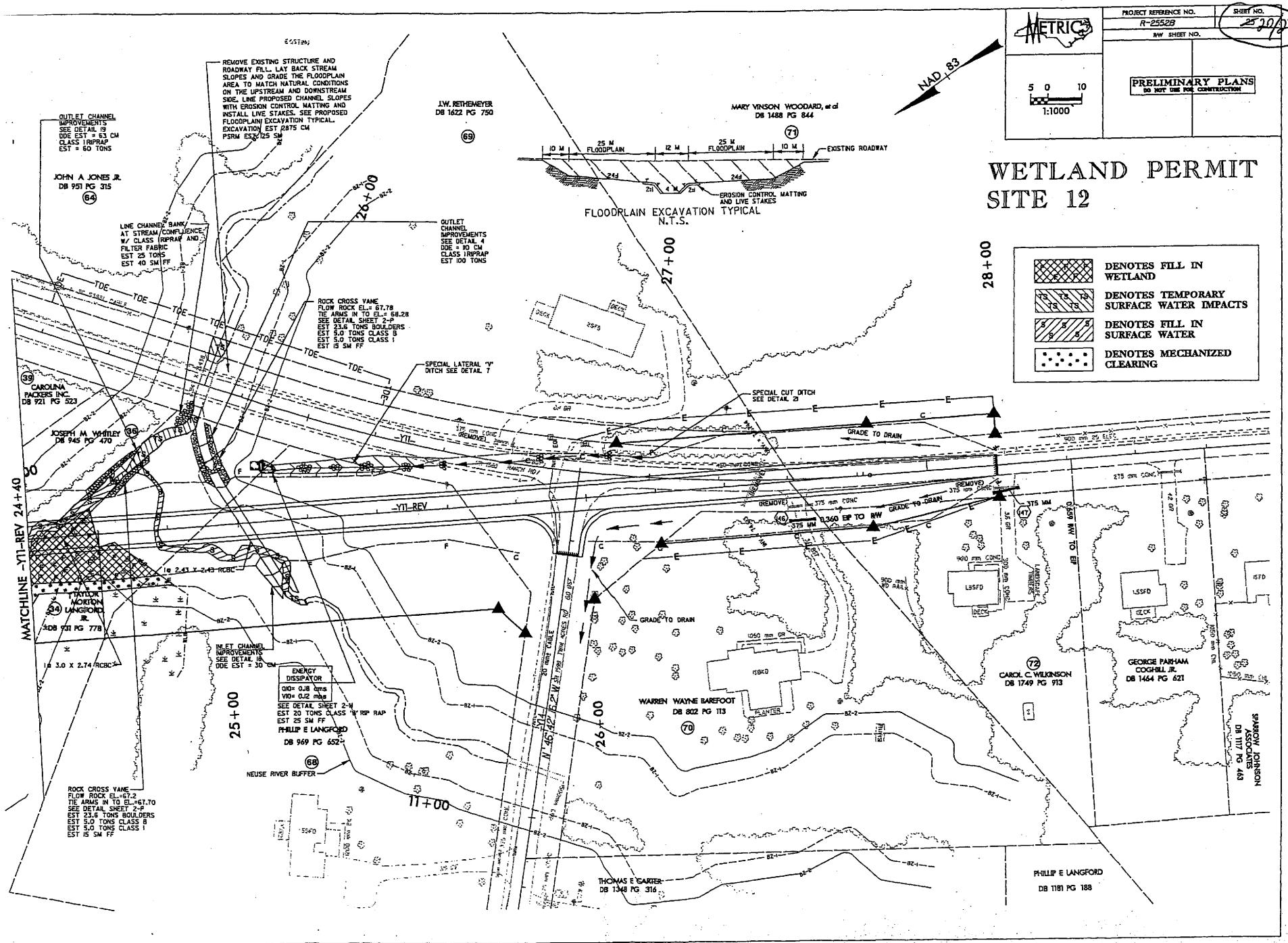
9/24/2004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PROJECT REFERENCE NO.
R-25528
RW SHEET NO.
SHEET NO.
25 OF 23
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
WETLAND PERMIT
SITE 12
331
DENOTES FILL IN WETLAND
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
FLOODPLAIN EXCAVATION TYPICAL
N.T.S.
EXISTING ROADWAY
EROSION CONTROL MATTING AND LIVE STAKES
MATCHLINE -Y11-REV 24+40
25+00
26+00
27+00
28+00
11+00
REMOVE EXISTING STRUCTURE AND ROADWAY FILL. LAY BACK STREAM SLOPES AND GRADE THE FLOODPLAIN AREA TO MATCH NATURAL CONDITIONS ON THE UPSTREAM AND DOWNSTREAM SIDE. LINE PROPOSED CHANNEL SLOPES WITH EROSION CONTROL MATTING AND INSTALL LIVE STAKES. SEE PROPOSED FLOODPLAIN EXCAVATION TYPICAL.
EXCAVATION EST 2875 CM
PSRM ES 125 SM
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 19 DDE EST = 63 CM CLASS I RIPRAP EST = 60 TONS
LINE CHANNEL BANK AT STREAM CONFLUENCE W/ CLASS I RIPRAP AND FILTER FABRIC EST 25 TONS EST 40 SM FF
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 4 DDE = 80 CM CLASS I RIPRAP EST 100 TONS
ROCK CROSS VANE FLOW ROCK EL.= 67.78 TIE ARMS IN TO EL.= 68.28 SEE DETAIL SHEET 2-P EST 23.6 TONS BOULDERS EST 5.0 TONS CLASS B EST 5.0 TONS CLASS I EST 15 SM FF
SPECIAL LATERAL "Y" DITCH SEE DETAIL 7
SPECIAL CUT DITCH SEE DETAIL 21
GRADE TO DRAIN
0.360 EIP TO RW
0.659 RW TO EIP
INLET CHANNEL IMPROVEMENTS SEE DETAIL 18 DDE EST = 30 CM
ENERGY DISSIPATOR
Q10= 0.18 cms
V10= 0.12 mps
SEE DETAIL SHEET 2-N
EST 20 TONS CLASS B RIP RAP
EST 25 SM FF
NEUSE RIVER BUFFER
ROCK CROSS VANE FLOW ROCK EL.=67.2 TIE ARMS IN TO EL.=67.70 SEE DETAIL SHEET 2-P EST 23.6 TONS BOULDERS EST 5.0 TONS CLASS B EST 5.0 TONS CLASS I EST 15 SM FF
JOHN A JONES JR. DB 951 PG 315 (64)
J.W. RETHEMEYER DB 1622 PG 750 (69)
MARY VINSON WOODARD, et al DB 1488 PG 844 (71)
CAROLINA PACKERS INC. DB 921 PG 523 (39)
JOSEPH M WHITLEY DB 945 PG 470 (36)
TAYLOR MORTON LANGFORD JR. DB 931 PG 778 (34)
PHILLIP E LANGFORD DB 969 PG 652 (68)
WARREN WAYNE BAREFOOT DB 802 PG 113 (70)
CAROL C WILKINSON DB 1749 PG 913 (72)
GEORGE PARHAM COGHILL JR. DB 1464 PG 621
SPARROW JOHNSON ASSOCIATES DB 1117 PG 463
THOMAS E CARTER DB 1348 PG 316
PHILLIP E LANGFORD DB 1181 PG 188
Ig 2.43 X 2.43 RCBC
Ig 3.0 X 2.74 RCBC
N 46°42'E 2" W 31.98' TRM ACRES 60' DST
20 mm CABLE
-Y11-REV
-Y11-
-301-
-BZ-1-
-BZ-2-
-BZ-3-
-BZ-4-
375 mm CONC (REMOVE)
375 mm CONC
900 mm CONC
1050 mm CONC
675 mm CONC
600 mm CONC
450 mm CONC
525 mm CONC
LSSFD
ISFD
DECK
PLANTER
PATIO
WALK
9/23/2004
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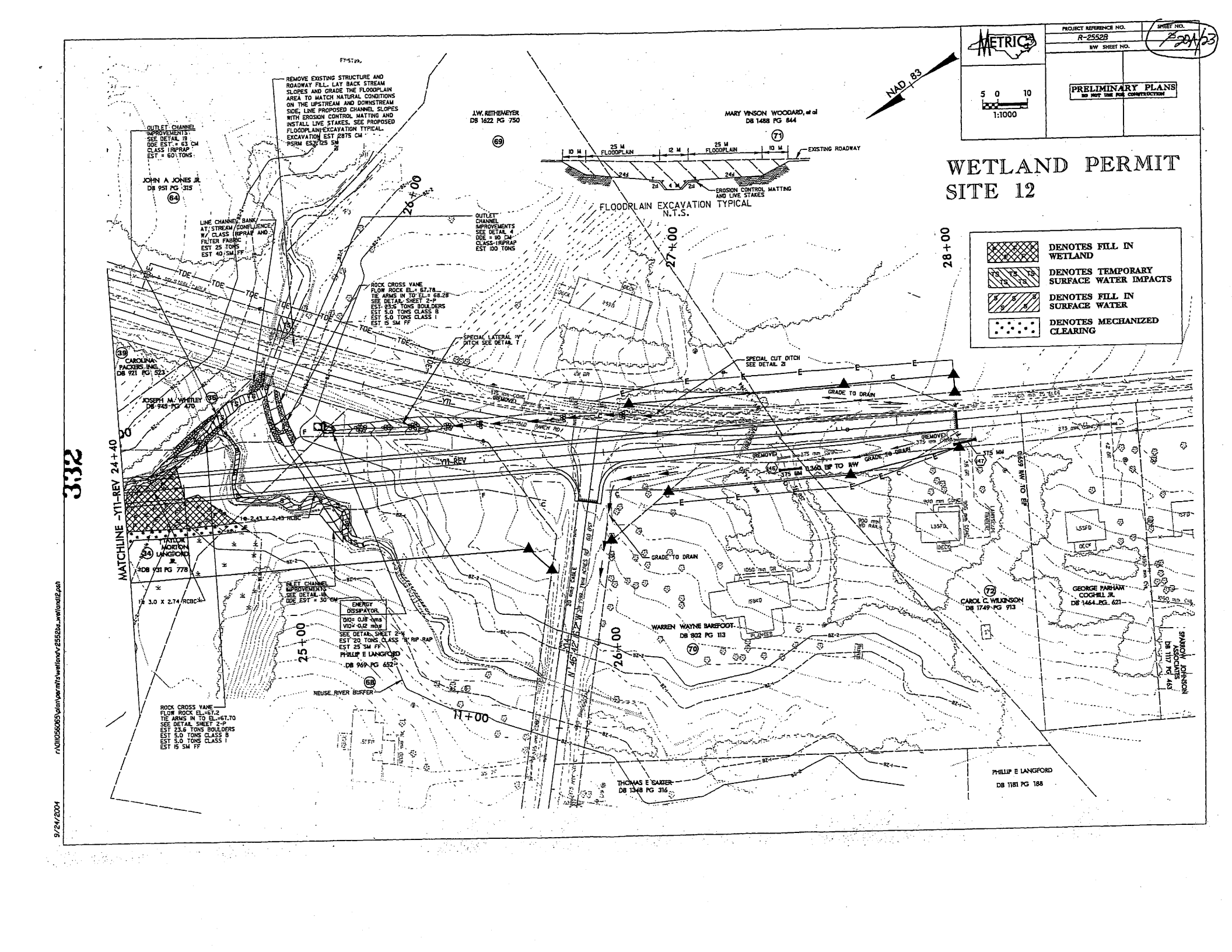
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
25 of 63
R/W SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
NAD 83
WETLAND PERMIT
SITE 12
DENOTES FILL IN WETLAND
DENOTES TEMPORARY SURFACE WATER IMPACTS
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
FLOODPLAIN EXCAVATION TYPICAL
N.T.S.
10 M
25 M FLOODPLAIN
12 M
25 M FLOODPLAIN
10 M
EXISTING ROADWAY
24H
2H
1V
2H
24H
EROSION CONTROL MATTING AND LIVE STAKES
REMOVE EXISTING STRUCTURE AND ROADWAY FILL. LAY BACK STREAM SLOPES AND GRADE THE FLOODPLAIN AREA TO MATCH NATURAL CONDITIONS ON THE UPSTREAM AND DOWNSTREAM SIDE. LINE PROPOSED CHANNEL SLOPES WITH EROSION CONTROL MATTING AND INSTALL LIVE STAKES. SEE PROPOSED FLOODPLAIN/EXCAVATION TYPICAL.
EXCAVATION EST 2875 CM
RSRM EST 125 SM
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 19 DDE EST. = 63 CM CLASS I RIPRAP EST = 60 TONS
JOHN A JONES JR. DB 951 PG 315 (64)
J.W. REITHMEYER DB 1622 PG 750 (69)
MARY VINSON WOODARD, et al DB 1488 PG 844 (71)
LINE CHANNEL BANK AT STREAM CONFLUENCE W/ CLASS I RIPRAP AND FILTER FABRIC EST 25 TONS EST 40 SM FF
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 4 DDE = 90 CM CLASS I RIPRAP EST 100 TONS
ROCK CROSS VANE FLOW ROCK EL.= 67.78 TIE ARMS IN TO EL.= 68.28 SEE DETAIL SHEET 2-P EST 23.6 TONS BOULDERS EST 5.0 TONS CLASS B EST 5.0 TONS CLASS I EST 15 SM FF
SPECIAL LATERAL DITCH SEE DETAIL 7
SPECIAL CUT DITCH SEE DETAIL 21
GRADE TO DRAIN
CAROLINA PACKERS INC. DB 921 PG 523 (39)
JOSEPH M. WHITLEY DB 945 PG 470 (38)
MATCHLINE -Y11-REV 24+40
Y11-REV
(REMOVE) 375 mm CSP
(REMOVE) 375 mm CSP
375 MM
0.360 EP TO RW
GRADE TO DRAIN
0.659 NW TO EP
900 mm RCP
900 mm RCP
L55FD
L55FD
DECK
TAYLOR MORTON LANGFORD JR. DB 931 PG 778 (34)
1@ 2.43 X 2.43 RCBC
1@ 3.0 X 2.74 RCBC
INLET CHANNEL IMPROVEMENTS SEE DETAIL 16 DDE EST = 30 CM
ENERGY DISSIPATOR
DIG= 0.18 cms
V10= 0.12 m/s
SEE DETAIL SHEET 2-N
EST 20 TONS CLASS B RIP RAP
EST 25 SM FF
PHILLIP E LANGFORD DB 969 PG 652 (68)
NEUSE RIVER BUFFER
ROCK CROSS VANE FLOW ROCK EL.=67.2 TIE ARMS IN TO EL.=67.70 SEE DETAIL SHEET 2-P EST 23.6 TONS BOULDERS EST 5.0 TONS CLASS B EST 5.0 TONS CLASS I EST 15 SM FF
WARREN WAYNE BAREFOOT DB 802 PG 113 (70)
CAROL C. WILKINSON DB 1749 PG 913 (72)
GEORGE PARHAM COGHILL JR. DB 1464 PG 621
SHARON JOHNSON ASSOCIATES DB 1157 PG 463
PHILLIP E LANGFORD DB 1181 PG 188
THOMAS E SARTER DB 1348 PG 316
25+00
26+00
27+00
28+00
11+00
N 46°42'42"W 1194.42' (MEASURED)
332
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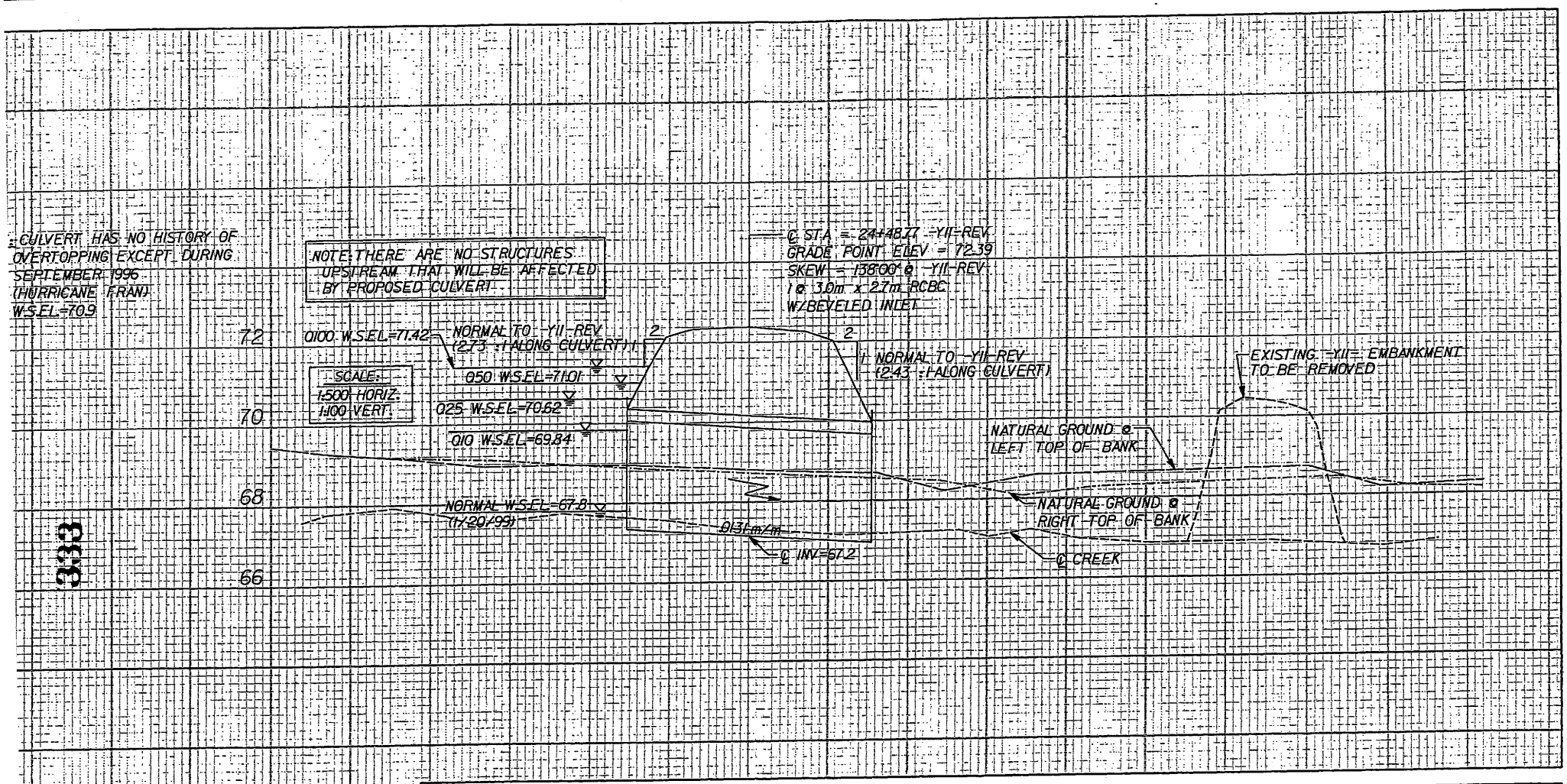
9/21/2004



333

WETLAND PERMIT DRAWING
CSR 3 of 4 PROFILE
R-2552B

Site 12

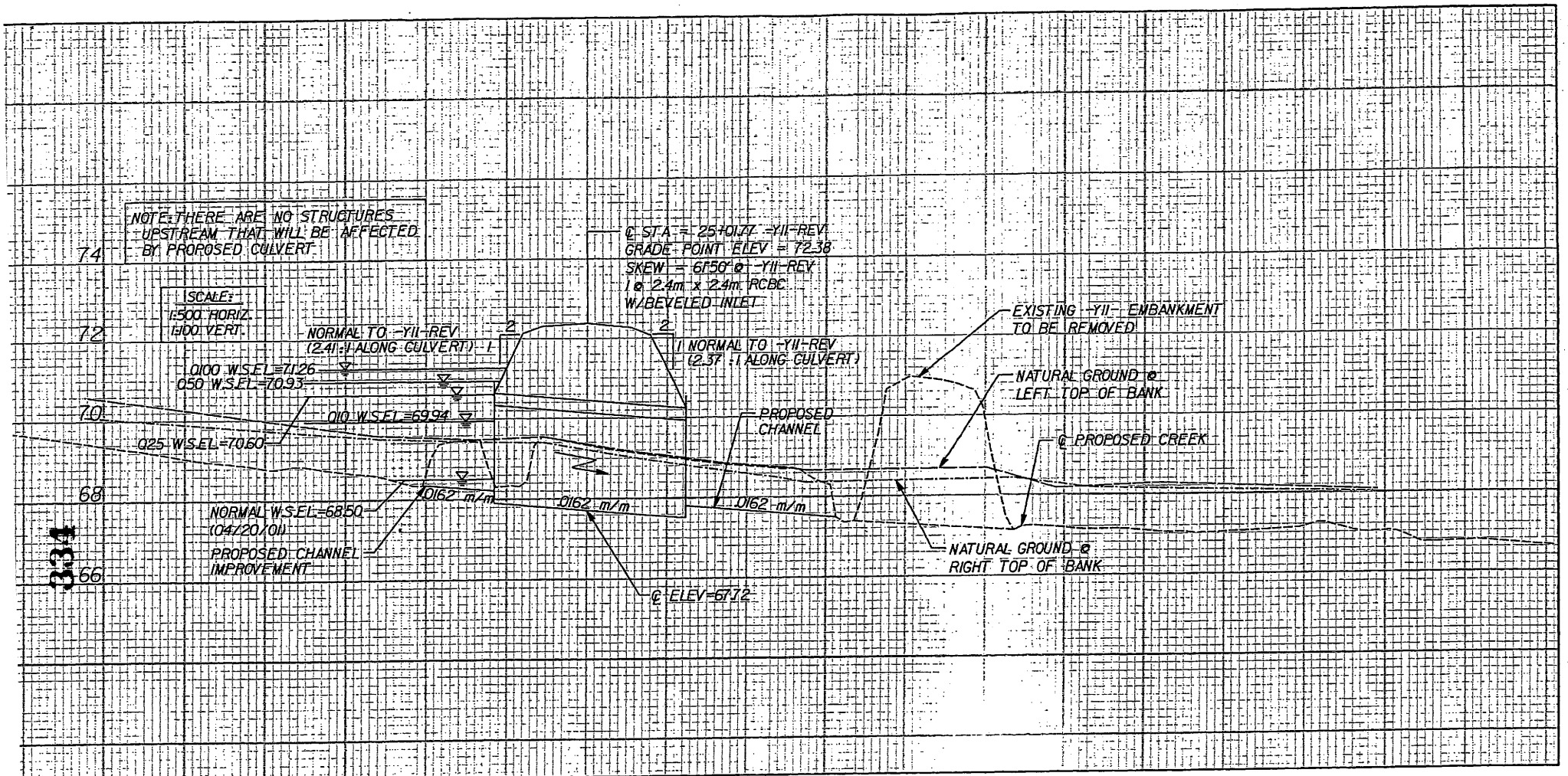
NCDOT

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 20 OF 23 9/16/2004

Sht. 21 of 23



331

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

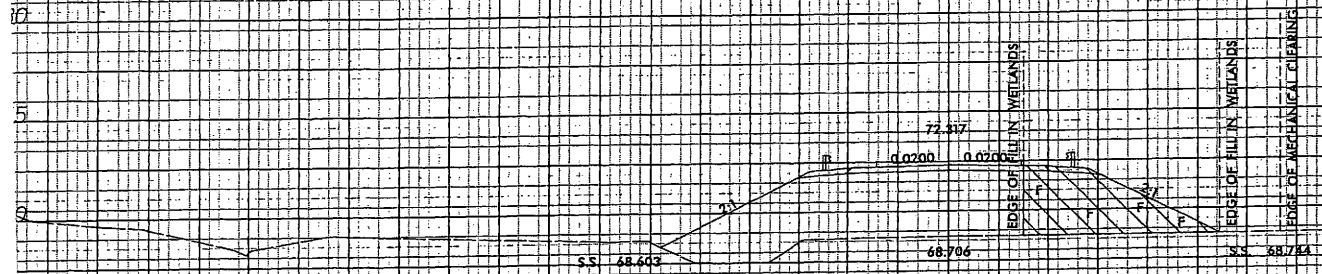
Site 12

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 22 OF 23 9/16/2004



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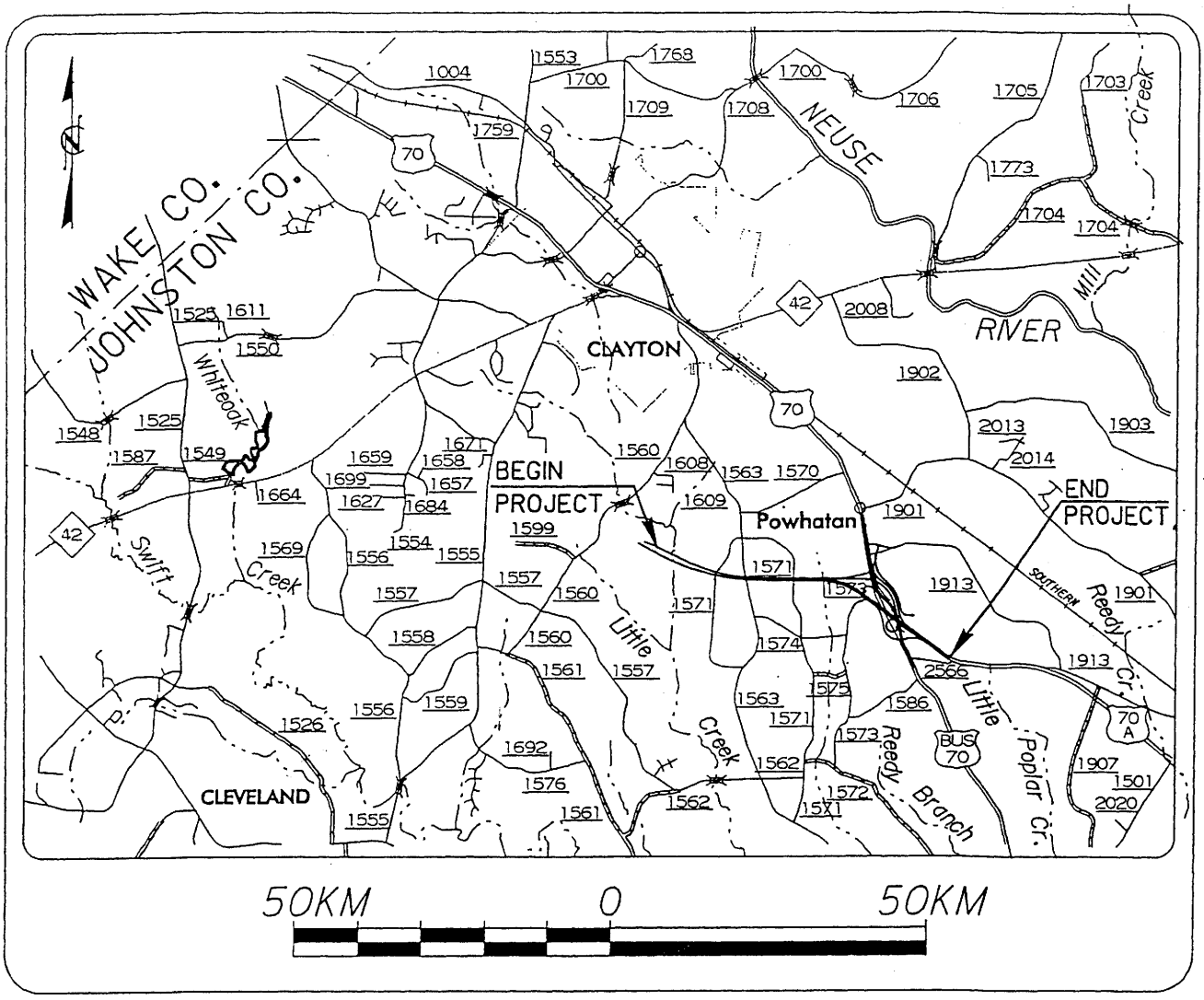
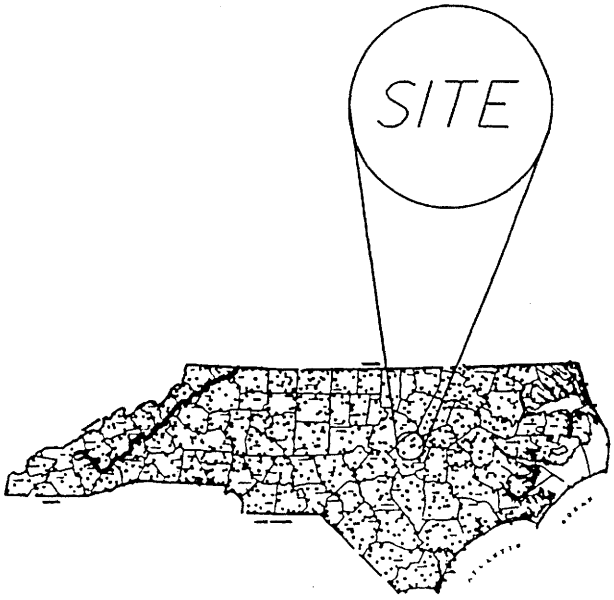
SITE 12
-Y11-REV 24+60.00

COPY

Rcvd 11/1/01



VICINITY MAP



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

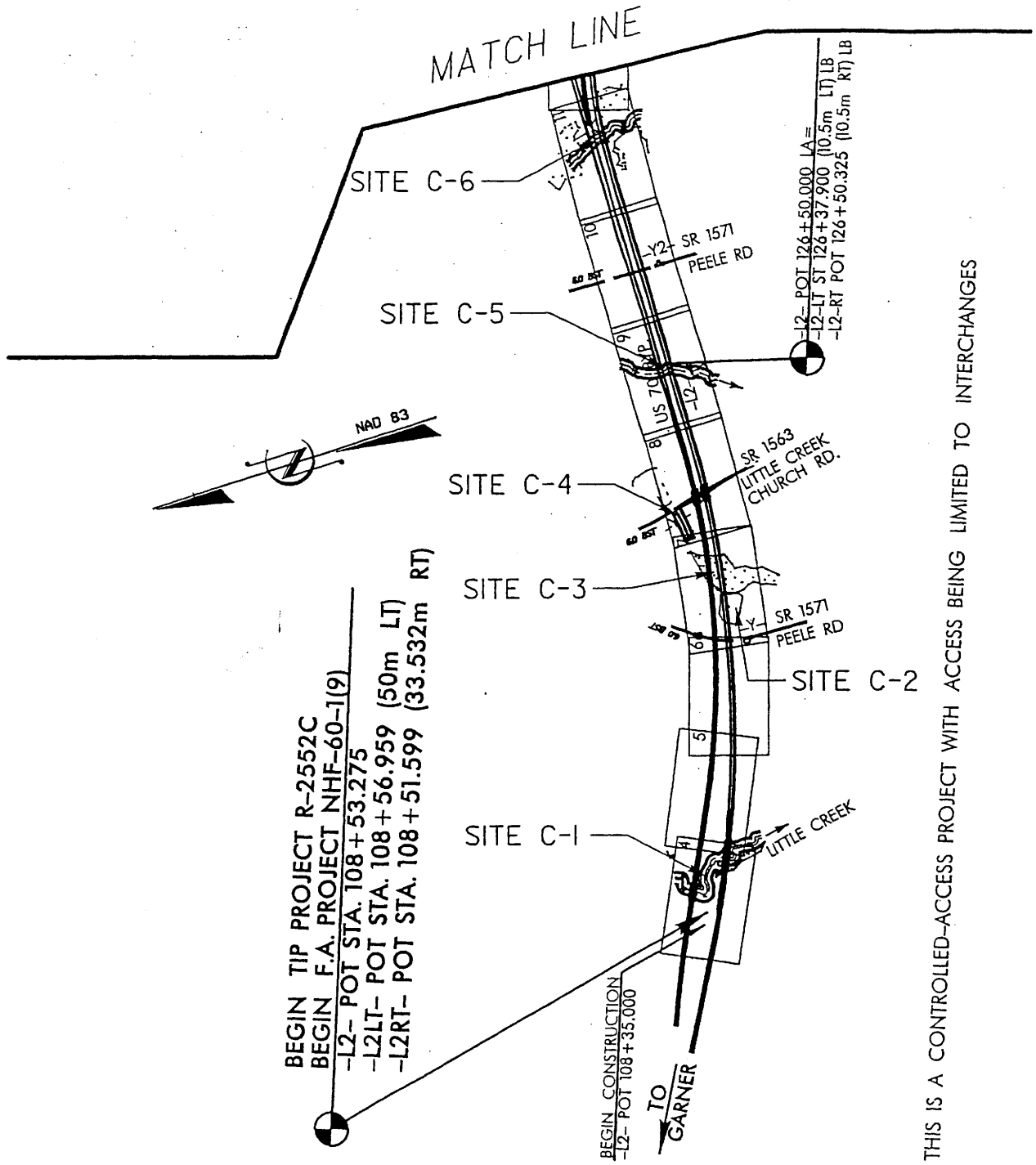
JOHNSTON COUNTY

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

0 500M 1000M

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

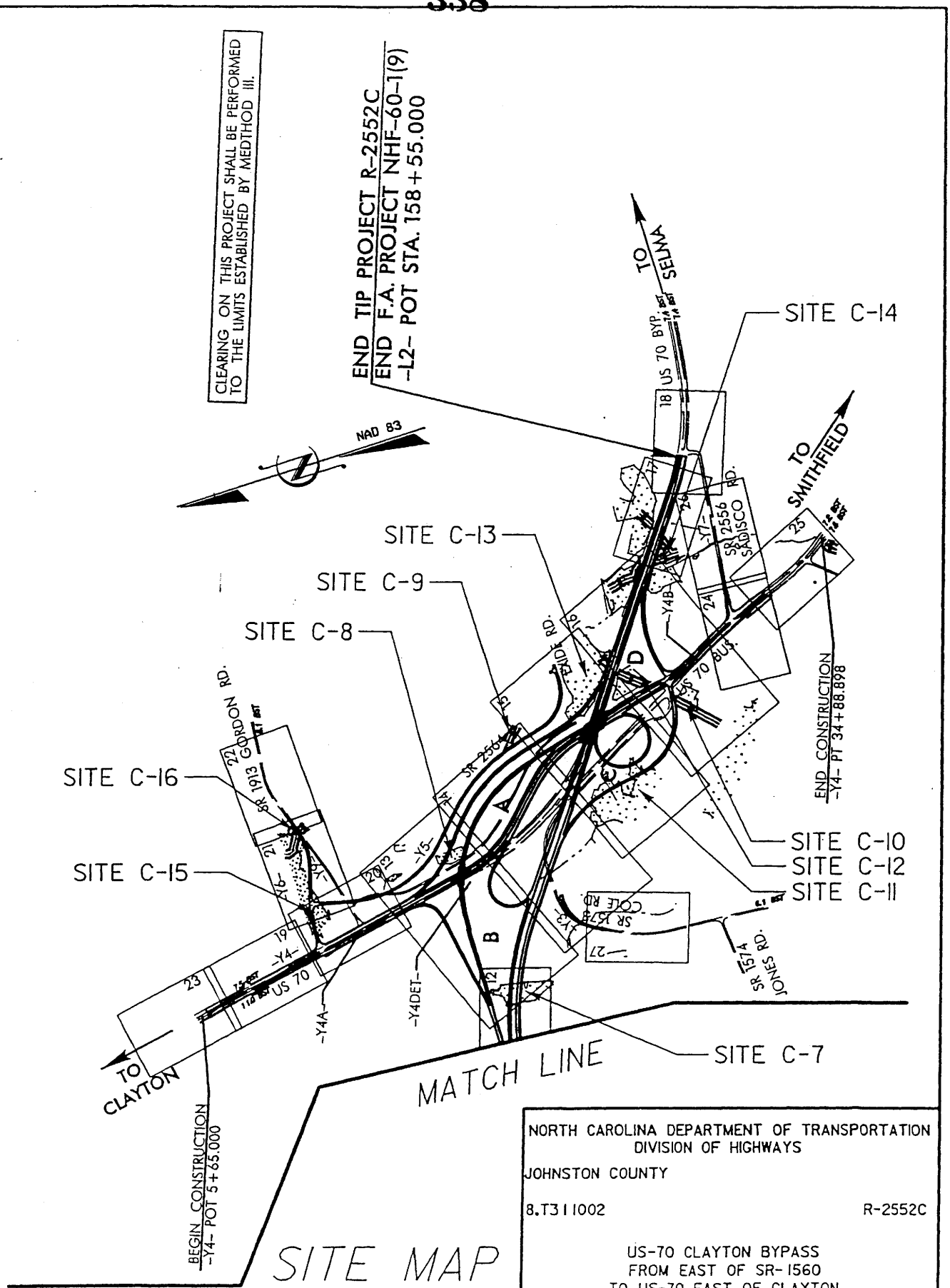
JOHNSTON COUNTY

8.T31 1002 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



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 3 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 Litle 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 Litle 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

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

WETLAND PERMIT IMPACT SUMMARY (English)

			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	L2 108+50/	DUAL BRIDGES	0.04	0.03		0.04			0.28	115	
	111+00										
2	L2 117+92/	900 RCP				0.06		1.54			
	118+80										
3	L2 118+87/	1050 RCP	2.26			0.11					
	120+07										
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/	DBL. 2.7 x 1.8 RCBC &	1.77		0.01	0.40	0.06		0.02	272	
	134+59	1200 RCP &									
		3.7 x 2.4 RCBC									
7	L2 137+41/	1200 RCP	1.18		0.36	0.13		0.06			
	138+19										
8	Rp. A 9+59/	750 RCP	1.06								
	10+09										

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 ~~16~~ 6 OF 23 November 15, 2004

WETLAND PERMIT IMPACT SUMMARY (English)

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	SURFACE WATER IMPACTS: Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
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	
PROJECT TOTALS:			9.49	0.03	0.76	1.88	0.13	1.60	0.34	879	0

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

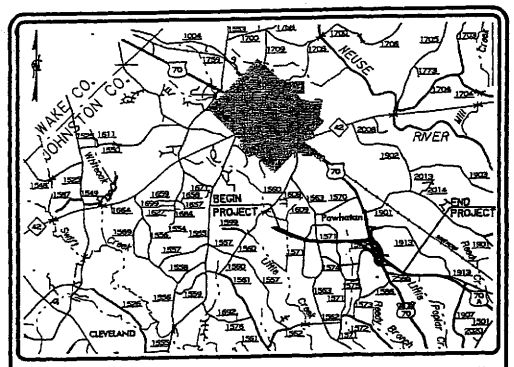
SHEET 7 OF 23 November 15, 2004

CONTRACT: TIP PROJECT: R-2552C 343

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

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



VICINITY MAP

METRIC

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

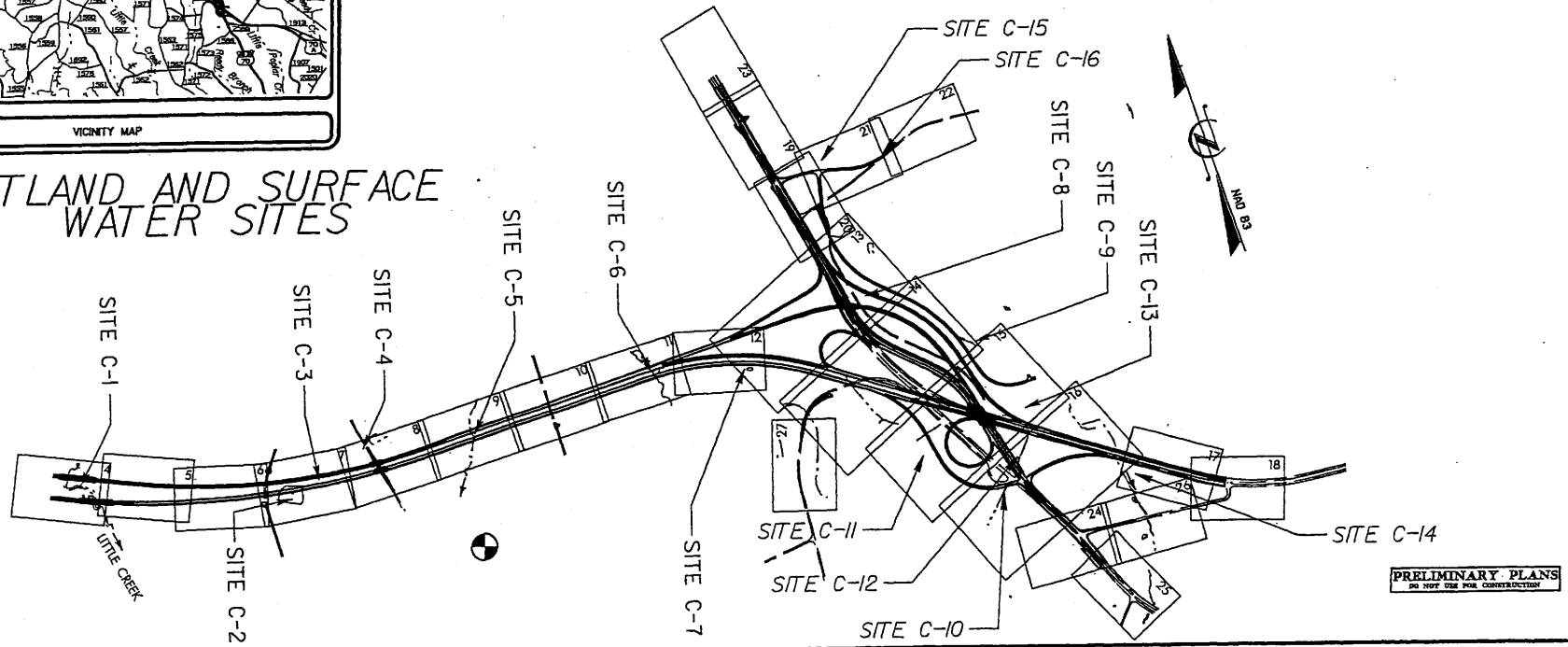
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2552C	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34459.1.6	NHF-60-1(9)	P.E.	
34459.2.7		R.W. & UTIL.	

Sht. 8/23

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*

WETLAND AND SURFACE WATER SITES



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALE

PLANS 5 m 0 10 m

PROFILE (HORIZONTAL) 5 m 0 10 m

PROFILE (VERTICAL) 1 m 0 2 m

DESIGN DATA

ADT 2005 = 29,500
ADT 2025 = 55,800
DHV = 10 %
D = 65 %
T = 16 % *
V = 110 km/h

* TTST 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:
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: May 16, 2003

LETTING DATE: May 17, 2005

Stephen C. Browde, P.E.
PROJECT ENGINEER

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

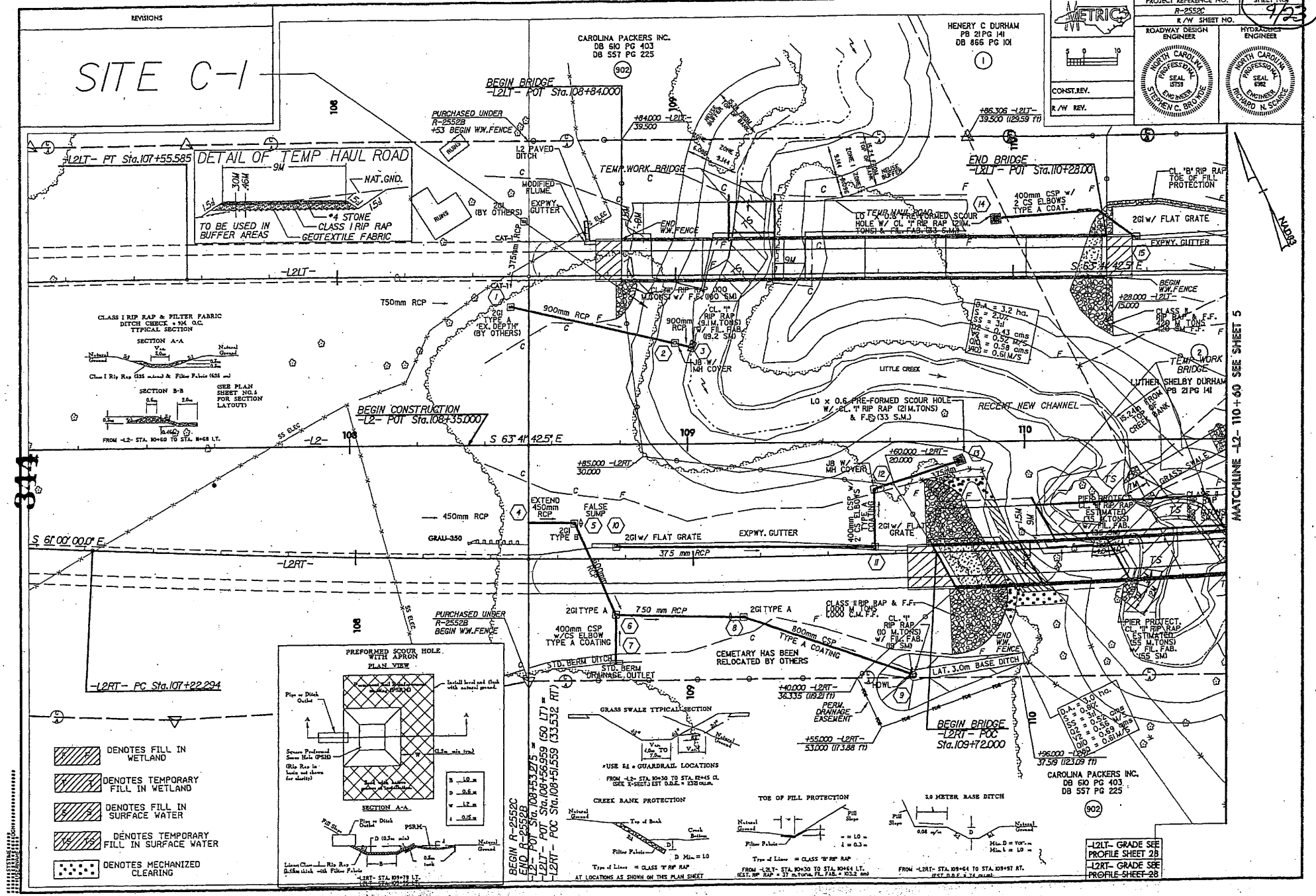
N.C.D.O.T. CONTACT:
Teresa Bruton, P.E.
PROJECT ENGINEER - DESIGN SERVICES

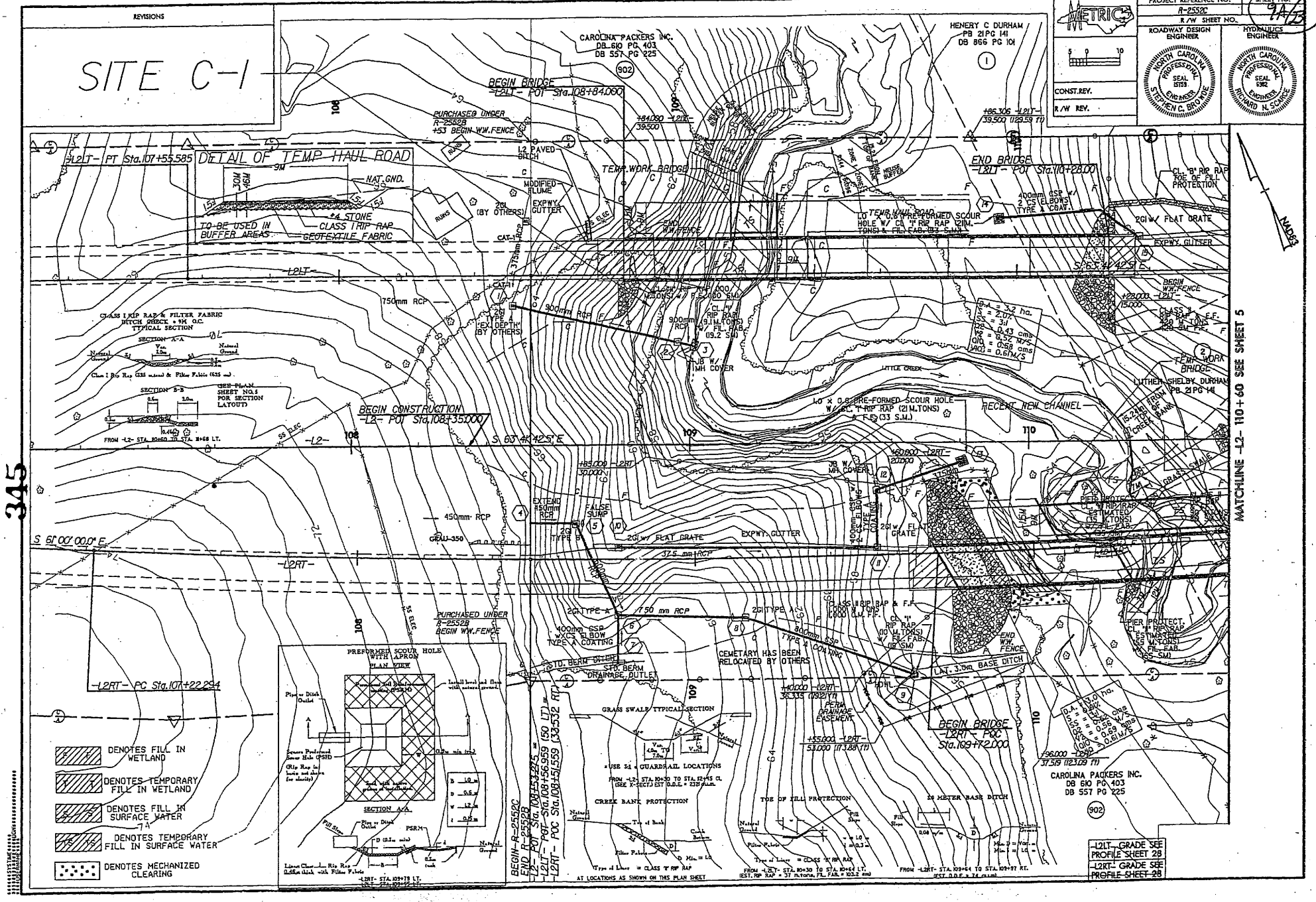
HYDRAULICS ENGINEER
SIGNATURE: P.E.

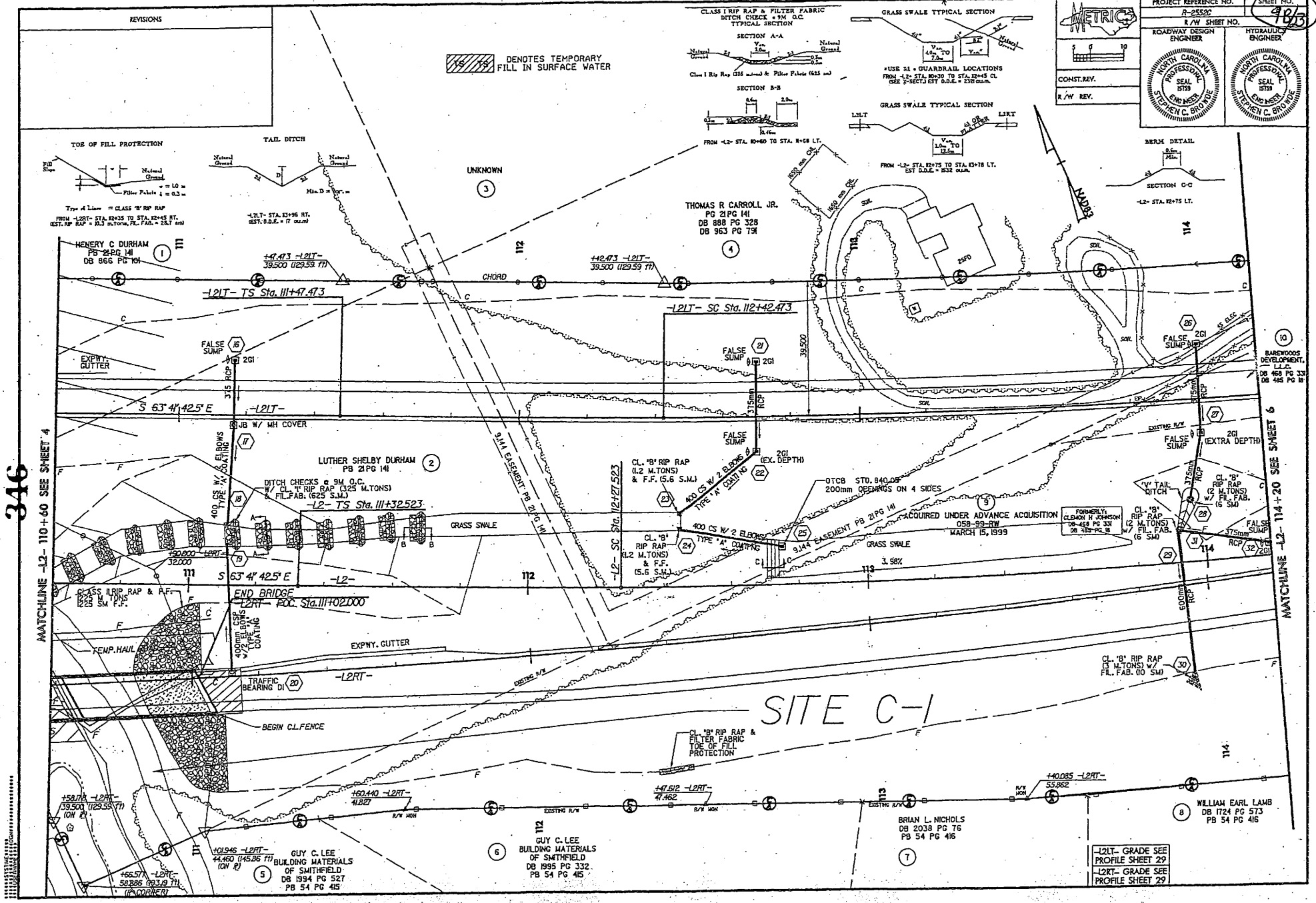
ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

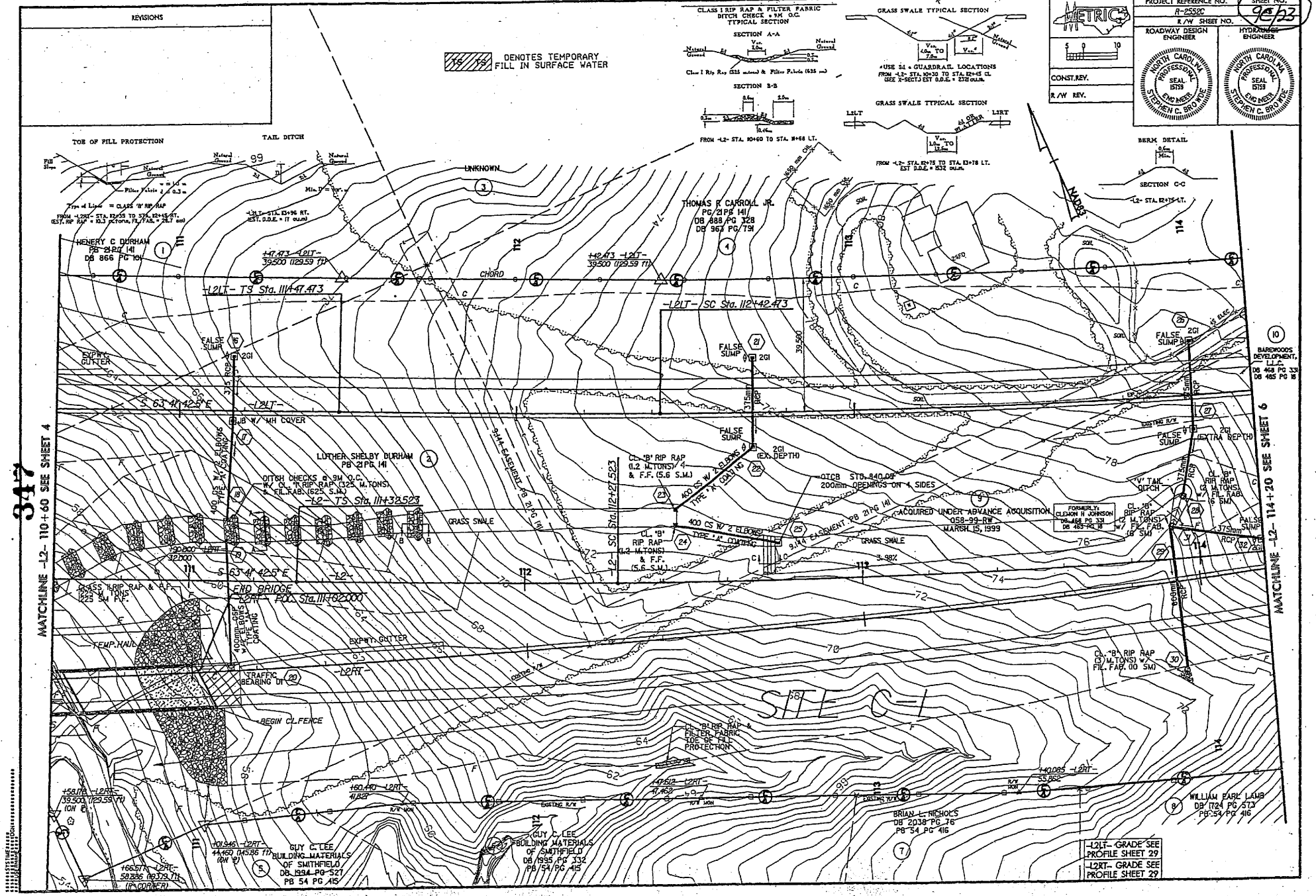
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE DESIGN ENGINEER P.E.

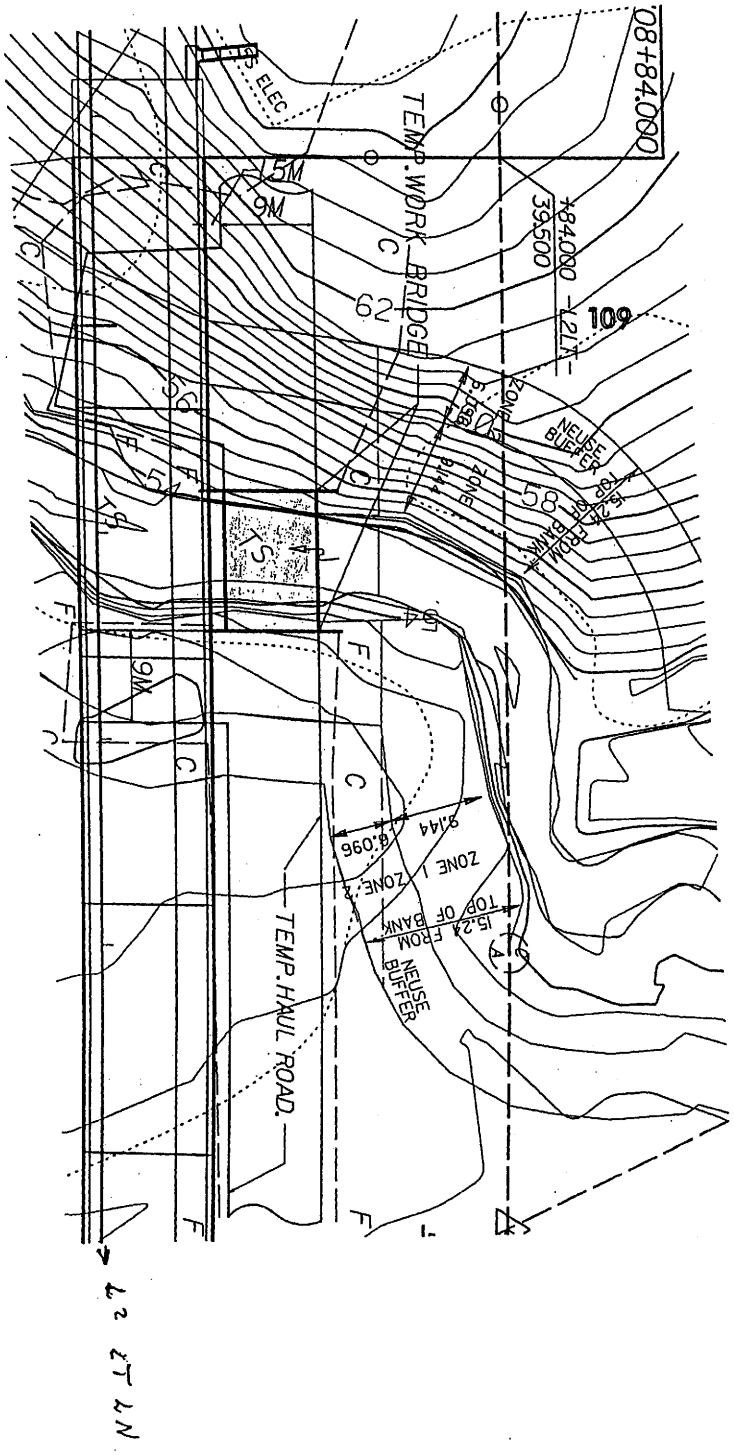
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ADMINISTRATOR DATE


SITE C-1
REVISIONS
PROJECT REFERENCE NO. R-2552C
R/W SHEET NO.
SHEET NO. 9B
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST.REV.
R/W REV.
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225
HENERY C DURHAM PB 21 PG 141 DB 865 PG 101
BEGIN BRIDGE -L2LT- POT Sta.108+84.000
PURCHASED UNDER R-2552B +53 BEGIN WW.FENCE
DETAIL OF TEMP HAUL ROAD
TO BE USED IN BUFFER AREAS
#4 STONE
CLASS I RIP RAP
GEOTEXTILE FABRIC
NAT.GND.
-L2LT- PT Sta.107+55.585
TEMP.WORK BRIDGE
END BRIDGE -L2LT- POT Sta.110+28.00
BEGIN CONSTRUCTION -L2- POT Sta.108+35.000
-L2RT- PC Sta.107+22.294
BEGIN BRIDGE -L2RT- POC Sta.109+72.000
END BRIDGE -L2- POT Sta.108+53.275 = -L2LT- POT Sta.108+56.959 (50 LT) = -L2RT- POC Sta.108+51.559 (33.532 RT)
MATCHLINE -L2- 110+60 SEE SHEET 5
NAD83
LITTLE CREEK
RECENT NEW CHANNEL
LUTHER SHELBY DURHAM PB 21 PG 141
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225
CEMETARY HAS BEEN RELOCATED BY OTHERS
PERM. DRAINAGE EASEMENT
STD. BERM DRAINAGE OUTLET
LAT. 3.0m BASE DITCH
GRASS SWALE TYPICAL SECTION
CREEK BANK PROTECTION
TOE OF FILL PROTECTION
3.0 METER BASE DITCH
PREFORMED SCOUR HOLE WITH APRON
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK @ 9M O.C. TYPICAL SECTION
DENOTES FILL IN WETLAND
DENOTES TEMPORARY FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
-L2LT- GRADE SEE PROFILE SHEET 2B
-L2RT- GRADE SEE PROFILE SHEET 2B
314


REVISIONS
SITE C-1
PROJECT REFERENCE NO.
A-2552C
R/W SHEET NO.
SHEET NO.
9A
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST.REV.
R/W REV.
DETAIL OF TEMP. HAUL ROAD
TEMP. WORK BRIDGE
BEGIN BRIDGE -L2LT- POT Sta.108+84.060
END BRIDGE -L2LT- POT Sta.110+28.00
BEGIN CONSTRUCTION -L2- POT Sta.108+35.000
BEGIN BRIDGE -L2RT- POC Sta.109+12.000
-L2LT- PT Sta.107+55.585
-L2RT- PC Sta.107+22.294
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225
HENERY C DURHAM PB 21PG 141 DB 866 PG 101
LUTHER SHELBY DURHAM PB. 21PG 141
LITTLE CREEK
RECENT NEW CHANNEL
CEMETARY HAS BEEN RELOCATED BY OTHERS
PURCHASED UNDER R-2552B BEGIN WW.FENCE
END WW.FENCE
TEMP. WORK BRIDGE
PERA DRAINAGE EASEMENT
STD. BERM DITCH
STD. BERM DRAINAGE OUTLET
GRASS SWALE TYPICAL SECTION
CREEK BANK PROTECTION
TOE OF FILL PROTECTION
12 METER BASE DITCH
PREFORMED SCOUR HOLE WITH APRON PLAN VIEW
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK
DENOTES FILL IN WETLAND
DENOTES TEMPORARY FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
-L2LT- GRADE SEE PROFILE SHEET 28
-L2RT- GRADE SEE PROFILE SHEET 28
MATCHLINE -L2- 110+60 SEE SHEET 5
NAD83
345


REVISIONS
DENOTES TEMPORARY FILL IN SURFACE WATER
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK @ 9M O.C. TYPICAL SECTION
SECTION A-A
SECTION B-B
GRASS SWALE TYPICAL SECTION
*USE 24 @ GUARDRAIL LOCATIONS
GRASS SWALE TYPICAL SECTION
TOE OF FILL PROTECTION
TAIL DITCH
BERM DETAIL
SECTION C-C
UNKNOWN
THOMAS R CARROLL JR.
PG 21 PG 141
DB 888 PG 328
DB 963 PG 791
HENERY C DURHAM
PB 21 PG 141
DB 866 PG 161
LUTHER SHELBY DURHAM
PB 21 PG 141
GUY C. LEE BUILDING MATERIALS OF SMITHFIELD DB 1994 PG 527 PB 54 PG 415
GUY C. LEE BUILDING MATERIALS OF SMITHFIELD DB 1995 PG 332 PB 54 PG 415
BRIAN L. NICHOLS DB 2038 PG 76 PB 54 PG 416
WILLIAM EARL LAMB DB 1724 PG 573 PB 54 PG 416
BAREWOODS DEVELOPMENT, L.L.C. DB 468 PG 331 DB 485 PG 18
FORMERLY CLEMON H JOHNSON DB 468 PG 331 DB 485 PG 18
ACQUIRED UNDER ADVANCE ACQUISITION 058-99-RW MARCH 15, 1999
-L2LT- TS Sta. 111+47.473
-L2LT- SC Sta. 112+42.473
-L2- TS Sta. 111+32.523
-L2- SC Sta. 112+27.523
-L2RT- POC Sta. 111+02.000
END BRIDGE
BEGIN C.L. FENCE
SITE C-1
MATCHLINE -L2- 110+60 SEE SHEET 4
MATCHLINE -L2- 114+20 SEE SHEET 6
-L2LT- GRADE SEE PROFILE SHEET 29
-L2RT- GRADE SEE PROFILE SHEET 29
PROJECT REFERENCE NO. R-2552C
R/W SHEET NO.
SHEET NO. 4B
ROADWAY DESIGN ENGINEER
HYDRAULIC ENGINEER
CONST. REV.
R/W REV.
346

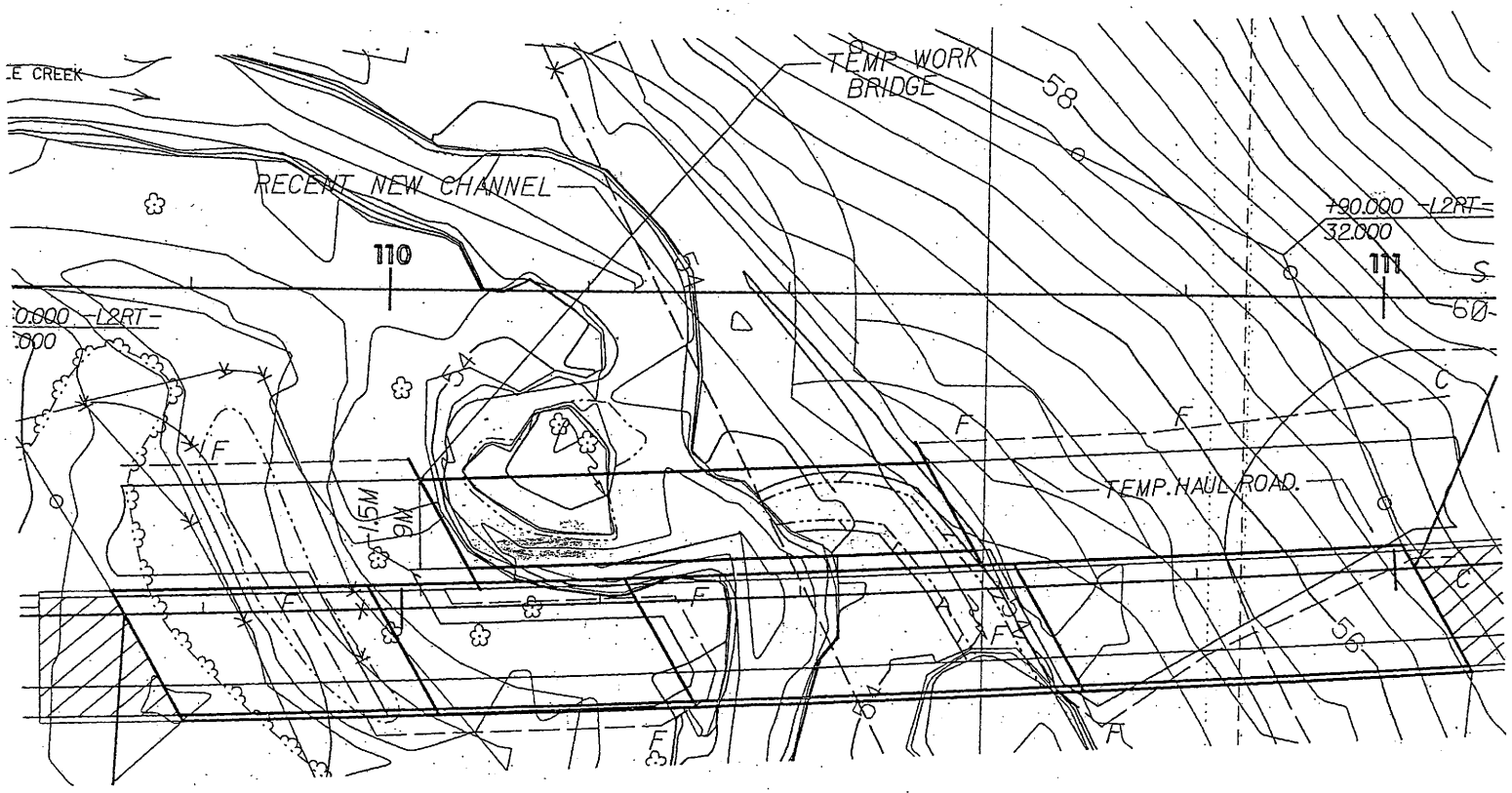

REVISIONS
DENOTES TEMPORARY FILL IN SURFACE WATER
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK @ 9M O.C. TYPICAL SECTION
SECTION A-A
SECTION B-B
GRASS SWALE TYPICAL SECTION
GRASS SWALE TTYPICAL SECTION
METRIC
CONST.REV.
R/W REV.
PROJECT REFERENCE NO. R-2552C
SHEET NO. 9 OF 23
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULIC ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15759 ENGINEER STEPHEN C. BROOKS
TOE OF FILL PROTECTION
TAIL DITCH
BERM DETAIL
SECTION C-C
MATCHLINE -L2- 110+60 SEE SHEET 4
MATCHLINE -L2- 114+20 SEE SHEET 6
HENERY C DURHAM PB 21 PG 141 DB 866 PG 101
LUTHER SHELBY DURHAM PB 21 PG 141
UNKNOWN
THOMAS R CARROLL JR. PG/21 PG 141 DB 888 PG 328 DB 963 PG 791
BAREWOODS DEVELOPMENT, LLC DB 468 PG 339 DB 485 PG 15
WILLIAM EARL LAMB DB 1724 PG 573 PB 54 PG 416
BRIAN L. NICHOLS DB 2038 PG 76 PB 54 PG 416
GUY C. LEE BUILDING MATERIALS OF SMITHFIELD DB 1994 PG 527 PB 54 PG 415
GUY C. LEE BUILDING MATERIALS OF SMITHFIELD DB 1995 PG 332 PB 54 PG 415
-L2LT- TS Sta. 111+47.473
-L2LT- SC Sta. 112+42.473
-L2- TS Sta. 111+32.523
-L2- SC Sta. 112+27.523
-L2- END BRIDGE -L2RT- POC Sta. 111+82.000
S 63°41'42.5" E
CHORD
EXPWY. GUTTER
FALSE SUMP
2GI
JB W/ MH COVER
CL. "B" RIP RAP (1.2 M.TONS) & F.F. (5.6 S.M.)
400 CS W/ 2 ELBOWS TYPE "A" COATING
OTCB STD. 840.05 200mm OPENINGS ON 4 SIDES
9.14 EASEMENT PB 21 PG 141
GRASS SWALE
ACQUIRED UNDER ADVANCE ACQUISITION 058-99-RW MARCH 15, 1999
FORMERLY: CLEMON H JOHNSON DB 468 PG 339 DB 485 PG 15
CL. "B" RIP RAP (2 M.TONS) W/ FIL. FAB. (6 SM)
CL. "B" RIP RAP (3 M.TONS) W/ FIL. FAB. (10 SM)
"V" TAIL DITCH
CL. "B" RIP RAP & FILTER FABRIC TOE OF FILL PROTECTION
GRASS RIP RAP & R.P. (225 SM TONS) 225 SM FT.
TEMP. HAUL
TRAFFIC BEARING DI
BEGIN CL FENCE
STE C-1
-L2LT- GRADE SEE PROFILE SHEET 29
-L2RT- GRADE SEE PROFILE SHEET 29
347

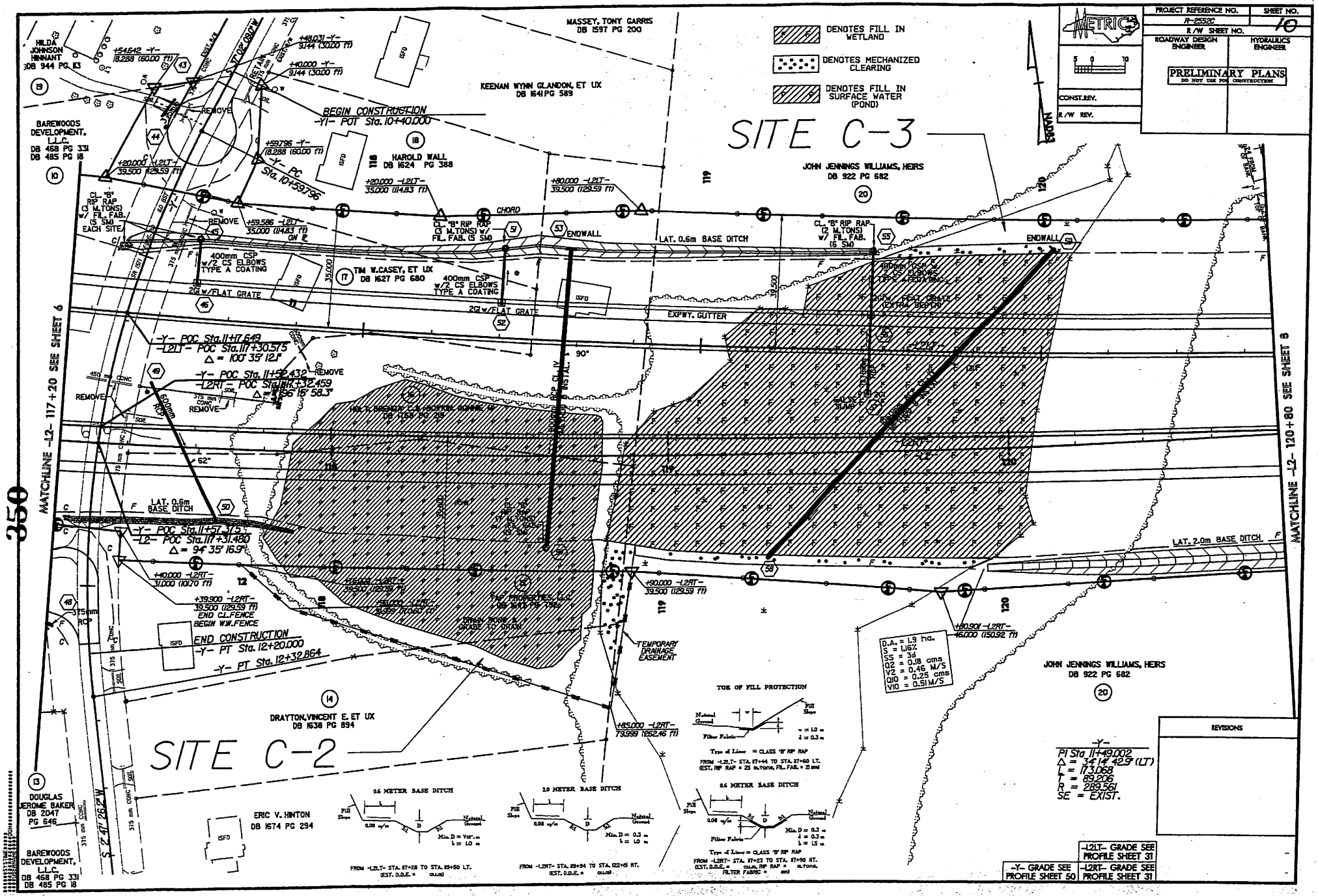

08+84.000
+84.000
39.500
-L2LT-
109
TEMP. WORK BRIDGE
ELEC
15M
9M
62
60
58
ZONE 3
NEUSE BUFFER
TOP OF BANK
ZONE 1
ZONE 2
8.096
9.144
15.24
TEMP. HAUL ROAD.
NEUSE BUFFER
TOP OF BANK
42 LT LN

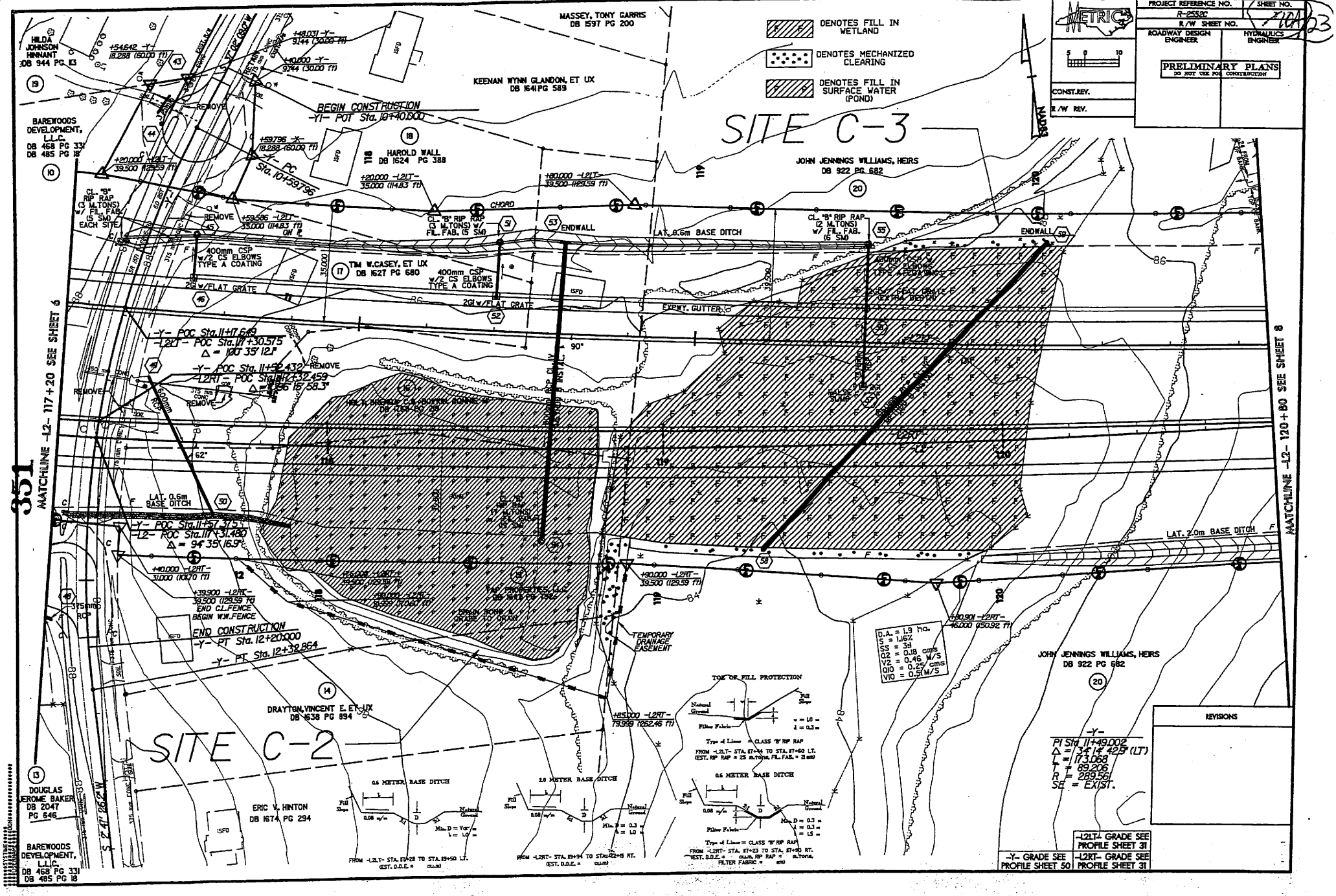
Sht. 9D of 23

SKF 10825

349




SITE C-3
SITE C-2
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES FILL IN SURFACE WATER (POND)
PROJECT REFERENCE NO. R-2552C
SHEET NO. 10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
BEGIN CONSTRUCTION -Y1- POT Sta. 10+40.000
-Y- PC Sta. 10+59.796
END CONSTRUCTION -Y- PT Sta. 12+20.000
-Y- PT Sta. 12+32.864
MATCHLINE -L2- 117+20 SEE SHEET 6
MATCHLINE -L2- 120+80 SEE SHEET 8
HILDA JOHNSON HINNANT DB 944 PG 153
BAREWOODS DEVELOPMENT, L.L.C. DB 468 PG 331 DB 485 PG 18
MASSEY, TONY GARRIS DB 1597 PG 200
KEENAN WYNN GLANDON, ET UX DB 1641 PG 589
HAROLD WALL DB 1624 PG 388
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
TIM W. CASEY, ET UX DB 1627 PG 680
DRAYTON, VINCENT E. ET UX DB 1638 PG 894
ERIC V. HINTON DB 1674 PG 294
DOUGLAS JEROME BAKER DB 2047 PG 646
CL. "B" RIP RAP (3 M.TONS) w/ FIL. FAB. (5 SM) EACH SITE
CL. "B" RIP RAP (3 M.TONS) w/ FIL. FAB. (5 SM)
CL. "B" RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
400mm CSP w/2 CS ELBOWS TYPE A COATING
2GI w/FLAT GRATE
ENDWALL
LAT. 0.6m BASE DITCH
LAT. 2.0m BASE DITCH
EXPWY. GUTTER
-Y- POC Sta. 11+47.649
-L2LT- POC Sta. 111+30.575
Δ = 100° 35' 12"
-Y- POC Sta. 11+52.432
-L2RT- POC Sta. 117+32.459
Δ = 96° 16' 58.3"
-Y- POC Sta. 11+57.375
-L2- POC Sta. 111+31.480
Δ = 94° 35' 16.9"
REMOVE
END W.W. FENCE
BEGIN W.W. FENCE
END C.L. FENCE
BEGIN C.L. FENCE
TEMPORARY DRAINAGE EASEMENT
TOE OF FILL PROTECTION
0.6 METER BASE DITCH
2.0 METER BASE DITCH
D.A. = 1.9 ha.
S = 1.16%
QS = 0.18 cms
VS = 0.46 M/S
Q10 = 0.25 cms
V10 = 0.51 M/S
-Y- PI Sta. 11+49.002
Δ = 34° 14' 42.5" (LT)
L = 173.069
T = 89.206
R = 289.561
SE = EXIST.
REVISIONS
-L2LT- GRADE SEE PROFILE SHEET 31
-Y- GRADE SEE PROFILE SHEET 50
-L2RT- GRADE SEE PROFILE SHEET 31
350


SITE C-3
SITE C-2
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES FILL IN SURFACE WATER (POND)
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PROJECT REFERENCE NO. R-2552C
SHEET NO. 7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST.REV.
R/W REV.
NAD83
BEGIN CONSTRUCTION -Y- POT Sta. 10+40.000
-Y- PC Sta. 10+59.96
END CONSTRUCTION -Y- PT Sta. 12+20.000
-Y- PT Sta. 12+32.864
-Y- POC Sta. 11+17.649
-L2LT- POC Sta. 17+30.575
Δ = 100° 35' 12"
-Y- POC Sta. 11+32.432
-L2RT- POC Sta. 17+32.459
Δ = 96° 16' 58.3"
-Y- POC Sta. 11+57.375
-L2- POC Sta. 17+31.430
Δ = 94° 35' 16.9"
-Y- PI Sta. 11+49.002
Δ = 34° 14' 42.5" (LT)
L = 173.068
T = 89.206
R = 289.56
SE = EXIST.
MATCHLINE -L2- 117+20 SEE SHEET 6
MATCHLINE -L2- 120+80 SEE SHEET 8
HILDA JOHNSON HINNANT DB 944 PG 13
BAREWOODS DEVELOPMENT, L.L.C. DB 468 PG 331 DB 485 PG 18
KEENAN WYNN GLANDON, ET UX DB 1641 PG 589
MASSEY, TONY GARRIS DB 1597 PG 200
HAROLD WALL DB 1624 PG 388
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
TIM W. CASEY, ET UX DB 1627 PG 680
DRAYTON, VINCENT E. ET UX DB 1638 PG 894
ERIC V. HINTON DB 1674 PG 294
DOUGLAS JEROME BAKER DB 2047 PG 646
TOE OF FILL PROTECTION
TEMPORARY DRAINAGE EASEMENT
D.A. = 1.9 ha.
Ss = 1.16%
SSS = 34
Q2 = 0.18 cms
V2 = 0.46 M/S
Q10 = 0.25 cms
V10 = 0.51 M/S
REVISIONS
-L2LT- GRADE SEE PROFILE SHEET 31
-Y- GRADE SEE PROFILE SHEET 50
-L2RT- GRADE SEE PROFILE SHEET 31

SITE C-4

REVISIONS

PROJECT REFERENCE NO. R-2552C | SHEET NO. 7 | R/W SHEET NO. | ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

METRIC 5 0 10

CONST.REV. | R/W REV.

PRELIMINARY PLANS NOT FOR CONSTRUCTION

JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682 (20)

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

DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER

MATCHLINE -L2- 120+80 SEE SHEET 7

MATCHLINE -L2- 124+40 SEE SHEET 9

BEGIN CONSTRUCTION -Y1- PT Sta. 10+84.283

-L2- ST Sta. 122+82.616

-L2LT- CS Sta. 123+41.047

-Y1- POT Sta. 11+96.591

-L2LT- POC Sta. 121+97.157

Δ = 72° 25' 37.9"

-Y1- POT Sta. 12+14.221

-L2- POS Sta. 122+13.539

Δ = 73° 51' 59.8"

-L2- S 88° 53' 01.1" E

S 88° 53' 01.1" E

-L2RT-

-L2LT-

-L2- CS Sta. 121+87.616

-L2RT- POC Sta. 121+94.763

-L2RT- POC Sta. 122+24.672

-Y1- POT Sta. 12+18.883

-L2RT- POC Sta. 122+14.832

Δ = 73° 03' 02.5"

-Y1- PC Sta. 12+34.512

-L2RT- PT Sta. 124+23.175

-Y1- PI Sta. 12+87.560

Δ = 2° 32' 36.0" (RT)

L = 106.079

T = 53.048

R = 2,389.728

SE = 0.03 (AS SHOWN)

Runoff = 60.000

DS = 100 km/h

BEGIN CONSTRUCTION -Y1- POC Sta. 13+25.000

-Y1- PT Sta. 13+40.591

JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682 (20)

JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682 (20)

JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682 (20)

BEGIN BRIDGE -L2LT- POC Sta. 121+76.848

END BRIDGE -L2LT- POC Sta. 122+17.286

BEGIN BRIDGE -L2RT- POC Sta. 121+94.763

END BRIDGE -L2RT- POC Sta. 122+24.672

TEMPORARY CONSTRUCTION EASEMENT

SPECIAL DITCH

REMOVE

EXPWY. GUTTER

LAT. 0.6m BASE DITCH

LAT. 2.0m BASE DITCH

LAT. 'Y' DITCH

MODIFIED FLUME

FLATTEN MEDIAN SLOPES TO DRAIN AHEAD (MIN. -0.3%)

+40 BEGIN CABLE GUIDERAIL

END W.W.FENCE

BEGIN W.W.FENCE

CL. 'B' RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)

CL. 'A1' RIP RAP (3 M.TONS) w/ FIL. FAB. (9 SM)

400mm CSP w/ 2 CS ELBOWS TYPE A COATING

2GI w/ FLAT GRATE

1.5 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.

450mm RCP

750mm RCP

PREFORMED SCOUR HOLE WITH APRON

PLAN VIEW

SECTION A-A

2.0 METER BASE DITCH

0.6 METER BASE DITCH

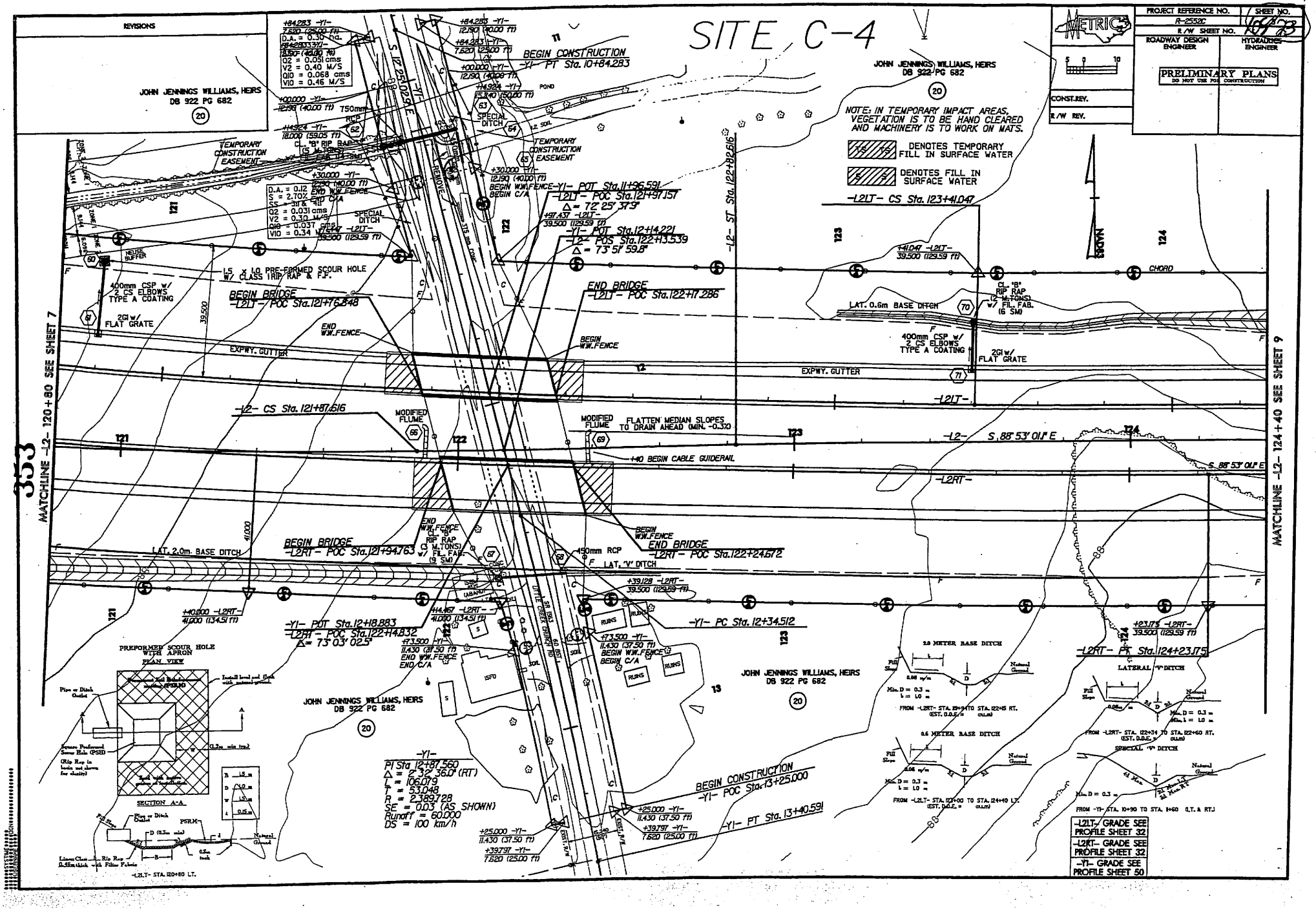
LATERAL 'Y' DITCH

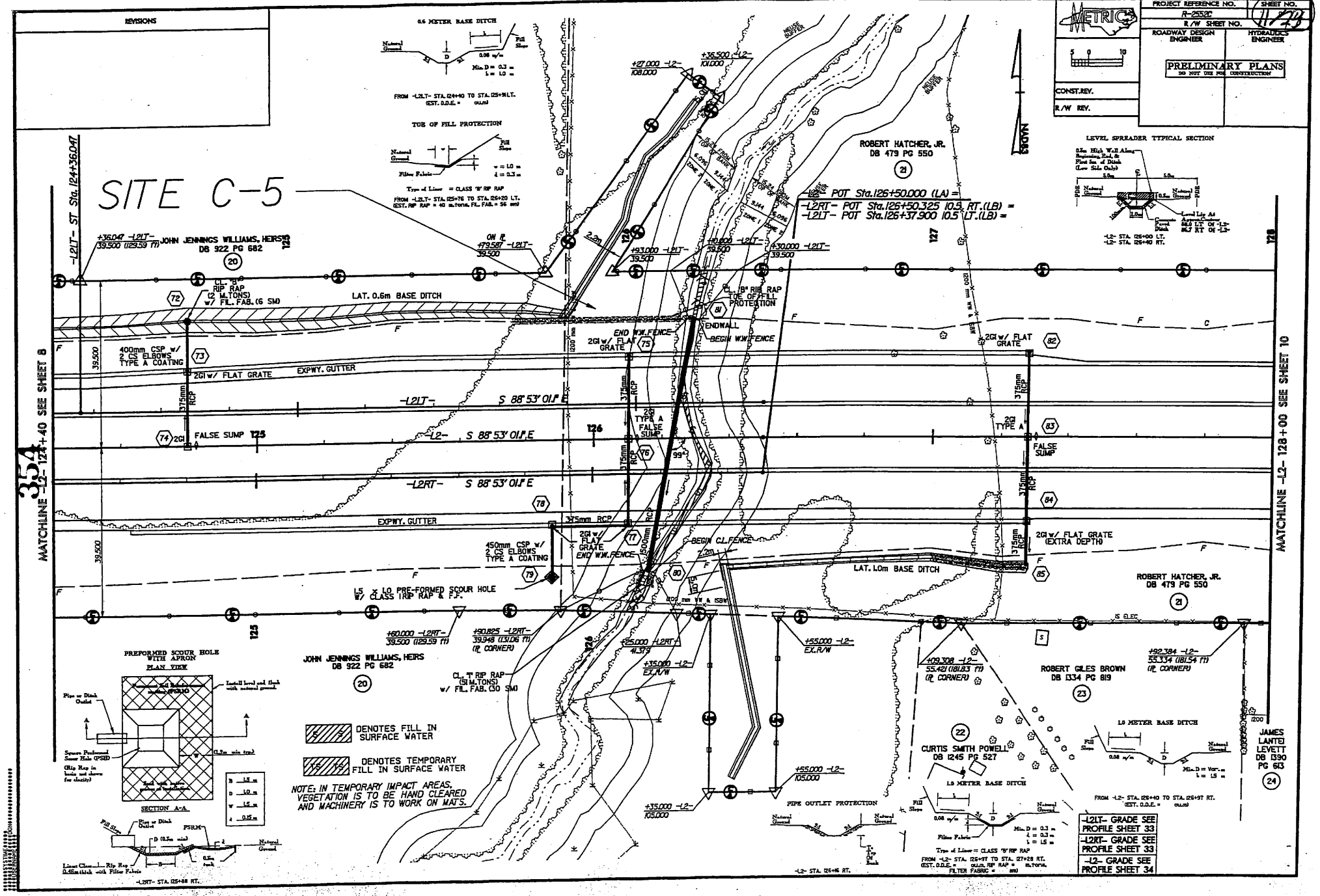
SPECIAL 'Y' DITCH

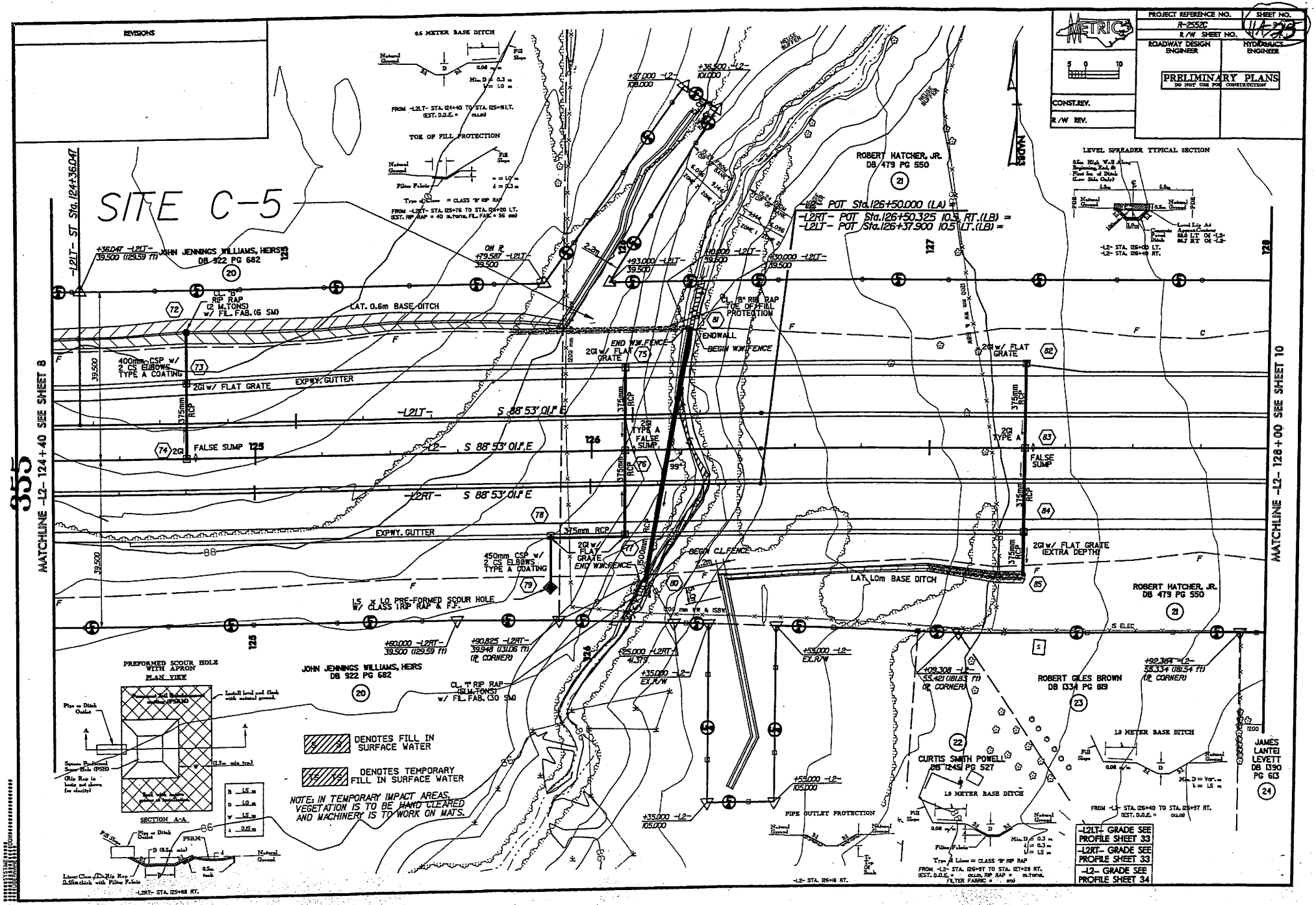
-L2LT- GRADE SEE PROFILE SHEET 32

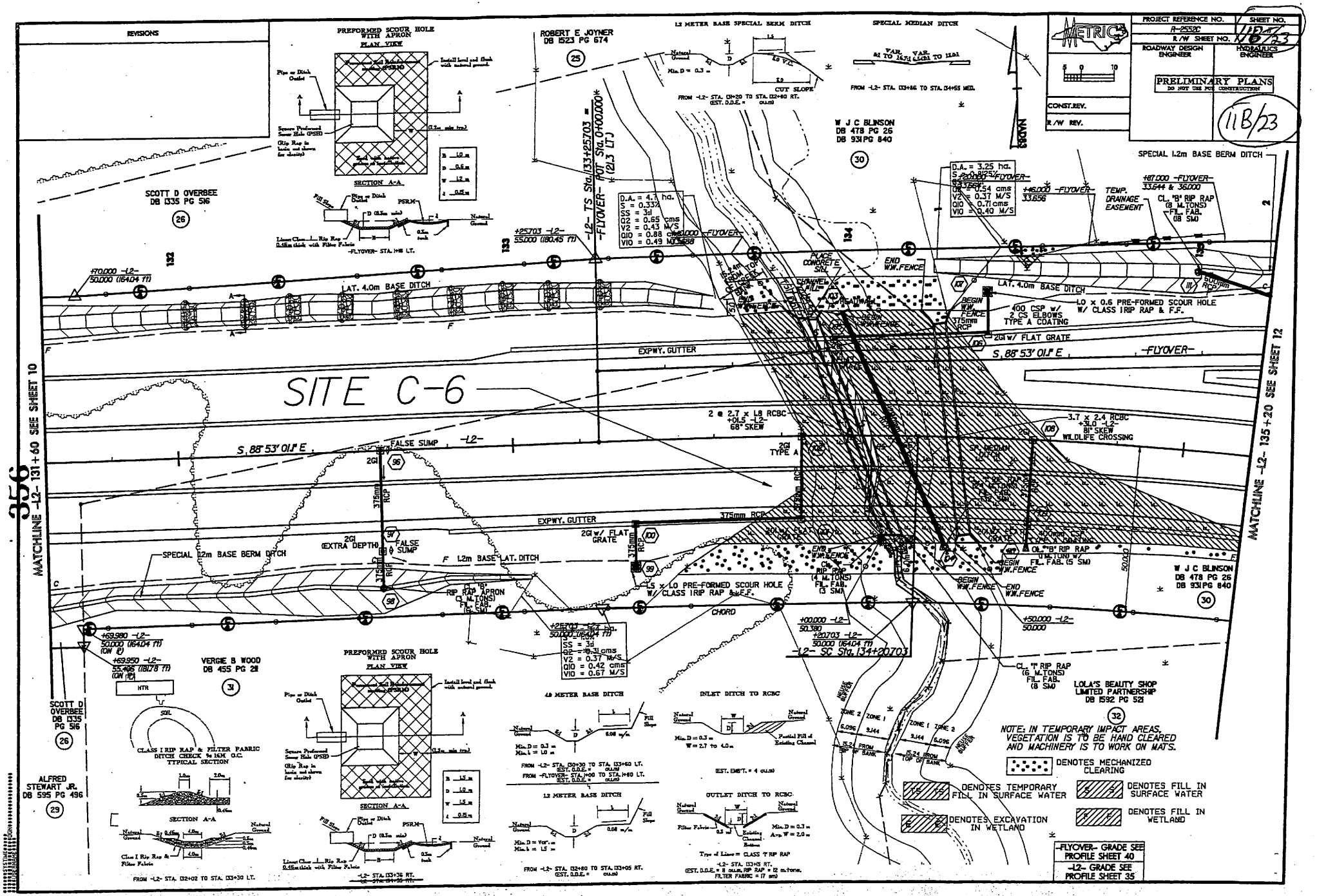
-L2RT- GRADE SEE PROFILE SHEET 32

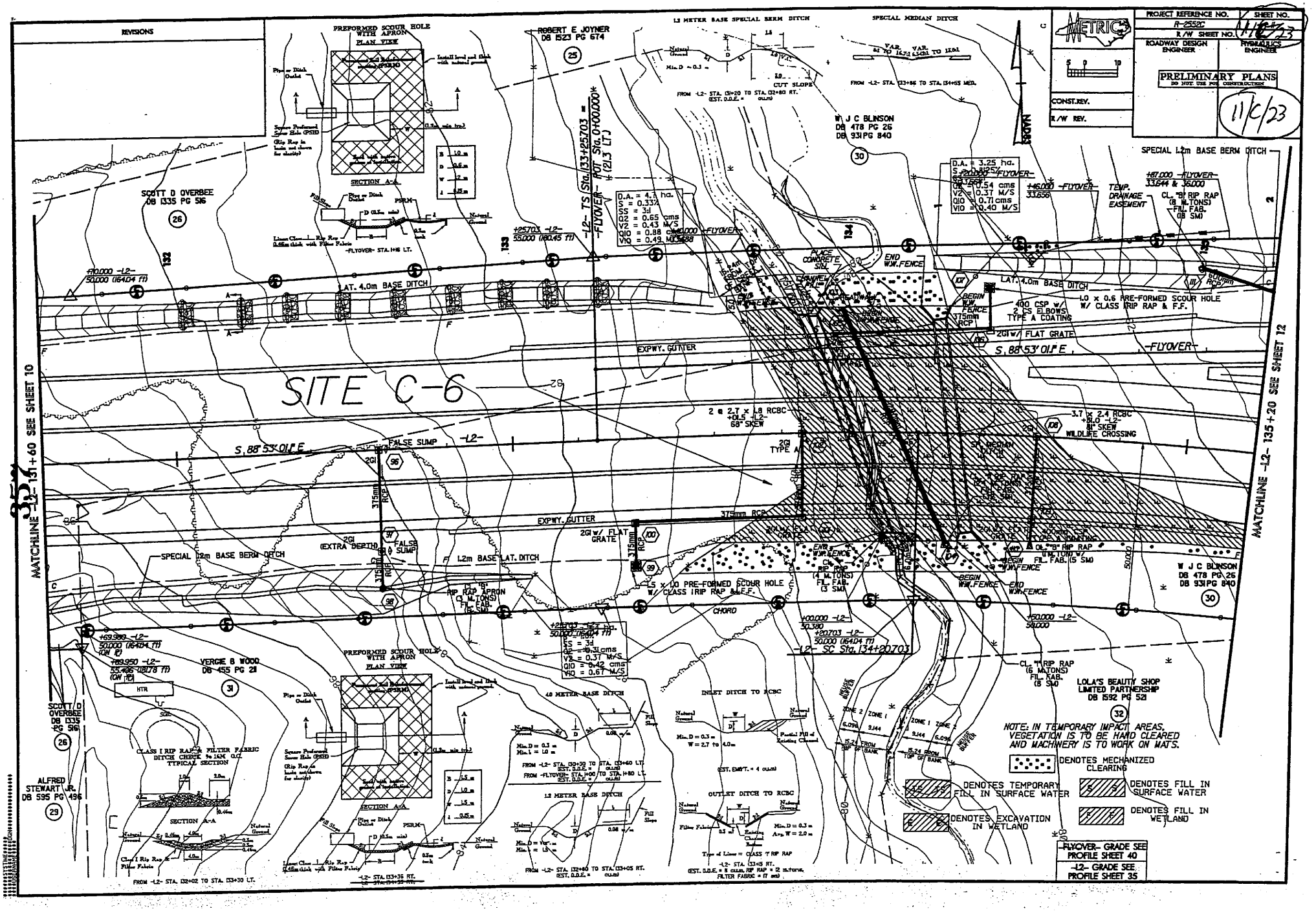
-Y1- GRADE SEE PROFILE SHEET 50

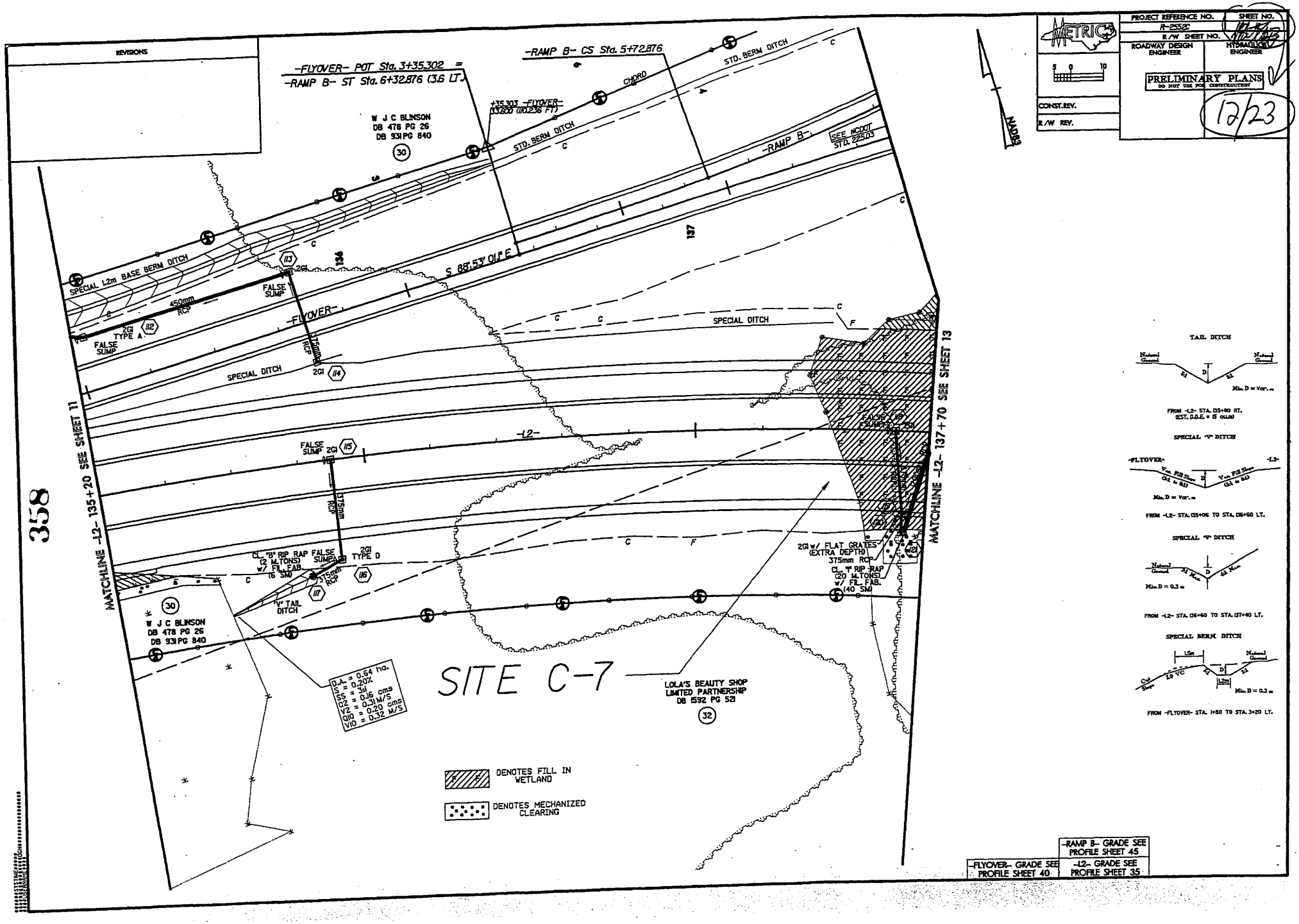

SITE C-4
REVISIONS
PROJECT REFERENCE NO. R-2552C
SHEET NO. 10 OF 73
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
METRIC
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
BEGIN CONSTRUCTION -Y1- PT Sta. 10+84.283
-Y1- PC Sta. 11+96.591
-L2LT- POC Sta.12+97.157
-Y1- POT Sta.12+14.221
-L2- POS Sta.122+13.539
-L2- ST Sta.122+82.616
-L2LT- CS Sta. 123+41.047
END BRIDGE -L2LT- POC Sta.122+17.286
BEGIN BRIDGE -L2LT- POC Sta.121+76.848
-L2- CS Sta.121+87.616
BEGIN BRIDGE -L2RT- POC Sta.121+94.763
END BRIDGE -L2RT- POC Sta.122+24.672
-L2- S.88°53'01.1"E
-L2RT- PT Sta.124+23.175
-Y1- POT Sta.12+18.883
-L2RT- POC Sta.122+14.832
Δ= 73°03'02.5"
-Y1- PC Sta.12+34.512
-Y1- PI Sta.12+87.560
Δ = 2°32'36.0" (RT)
L = 106.079
T = 53.048
R = 2389.728
SE = 0.03 (AS SHOWN)
Runoff = 60.000
DS = 100 km/h
BEGIN CONSTRUCTION -Y1- POC Sta.13+25.000
-Y1- PT Sta.13+40.591
NOTE: IN TEMPORARY IMPACT AREAS, VEGETATION IS TO BE HAND CLEARED AND MACHINERY IS TO WORK ON MATS.
DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER
TEMPORARY CONSTRUCTION EASEMENT
SPECIAL DITCH
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
2GI w/ FLAT GRATE
LS x LO PRE-FORMED SCOUR HOLE W/ CLASS 1 RIP RAP & F.F.
NOISE BUFFER
EXPWY. GUTTER
LAT. 2.0m. BASE DITCH
LAT. 0.6m BASE DITCH
LAT. 'V' DITCH
MODIFIED FLUME
FLATTEN MEDIAN SLOPES TO DRAIN AHEAD (MIN. -0.3%)
+40 BEGIN CABLE GUIDERAIL
450mm RCP
CL. 'B' RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
CL. 'A' RIP RAP (1 M.TONS) w/ FIL. FAB. (5 SM)
PREFORMED SCOUR HOLE WITH APRON PLAN VIEW
SECTION A-A
2.0 METER BASE DITCH
0.6 METER BASE DITCH
LATERAL 'V' DITCH
SPECIAL 'V' DITCH
-L2LT- GRADE SEE PROFILE SHEET 32
-L2RT- GRADE SEE PROFILE SHEET 32
-Y1- GRADE SEE PROFILE SHEET 50
MATCHLINE -L2- 120+80 SEE SHEET 7
MATCHLINE -L2- 124+40 SEE SHEET 9
353

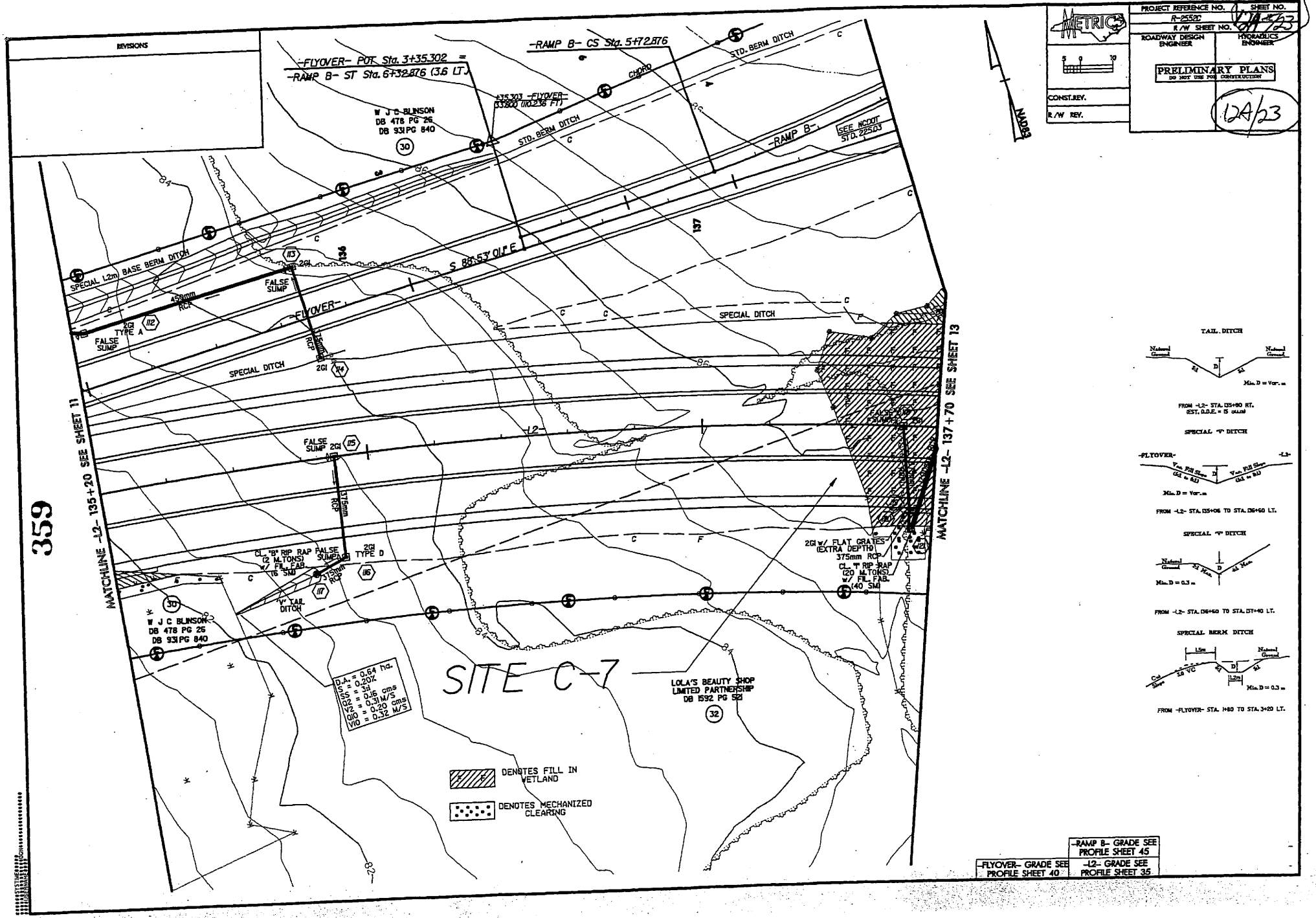

REVISIONS
METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
SITE C-5
MATCHLINE -L2- 124+40 SEE SHEET 8
MATCHLINE -L2- 128+00 SEE SHEET 10
-L2LT- ST Sta.124+36.047
+36.047 -L2LT- 39.500 (129.59 ft)
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
ROBERT HATCHER, JR. DB 479 PG 550
ROBERT GILES BROWN DB 1334 PG 819
CURTIS SMITH POWELL DB 1245 PG 527
JAMES LANTEI LEVETT DB 1390 PG 613
0.6 METER BASE DITCH
TOE OF FILL PROTECTION
LEVEL SPREADER TYPICAL SECTION
CL. "B" RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
LAT. 0.6m BASE DITCH
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
2GI w/ FLAT GRATE
EXPWY. GUTTER
FALSE SUMP
375mm RCP
-L2LT- S 88°53'01.F E
-L2- S 88°53'01.F E
-L2RT- S 88°53'01.F E
END WW.FENCE
BEGIN WW.FENCE
ENDWALL
2GI TYPE A FALSE SUMP
2GI TYPE A
2GI w/ FLAT GRATE (EXTRA DEPTH)
450mm CSP w/ 2 CS ELBOWS TYPE A COATING
BEGIN CL.FENCE
1.5 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
CL. "I" RIP RAP (SI M.TONS) w/ FIL. FAB. (30 SM)
LAT. 1.0m BASE DITCH
1.5 METER BASE DITCH
PIPE OUTLET PROTECTION
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
NOTE: IN TEMPORARY IMPACT AREAS, VEGETATION IS TO BE HAND CLEARED AND MACHINERY IS TO WORK ON MATS.
-L2LT- GRADE SEE PROFILE SHEET 33
-L2RT- GRADE SEE PROFILE SHEET 33
-L2- GRADE SEE PROFILE SHEET 34
354

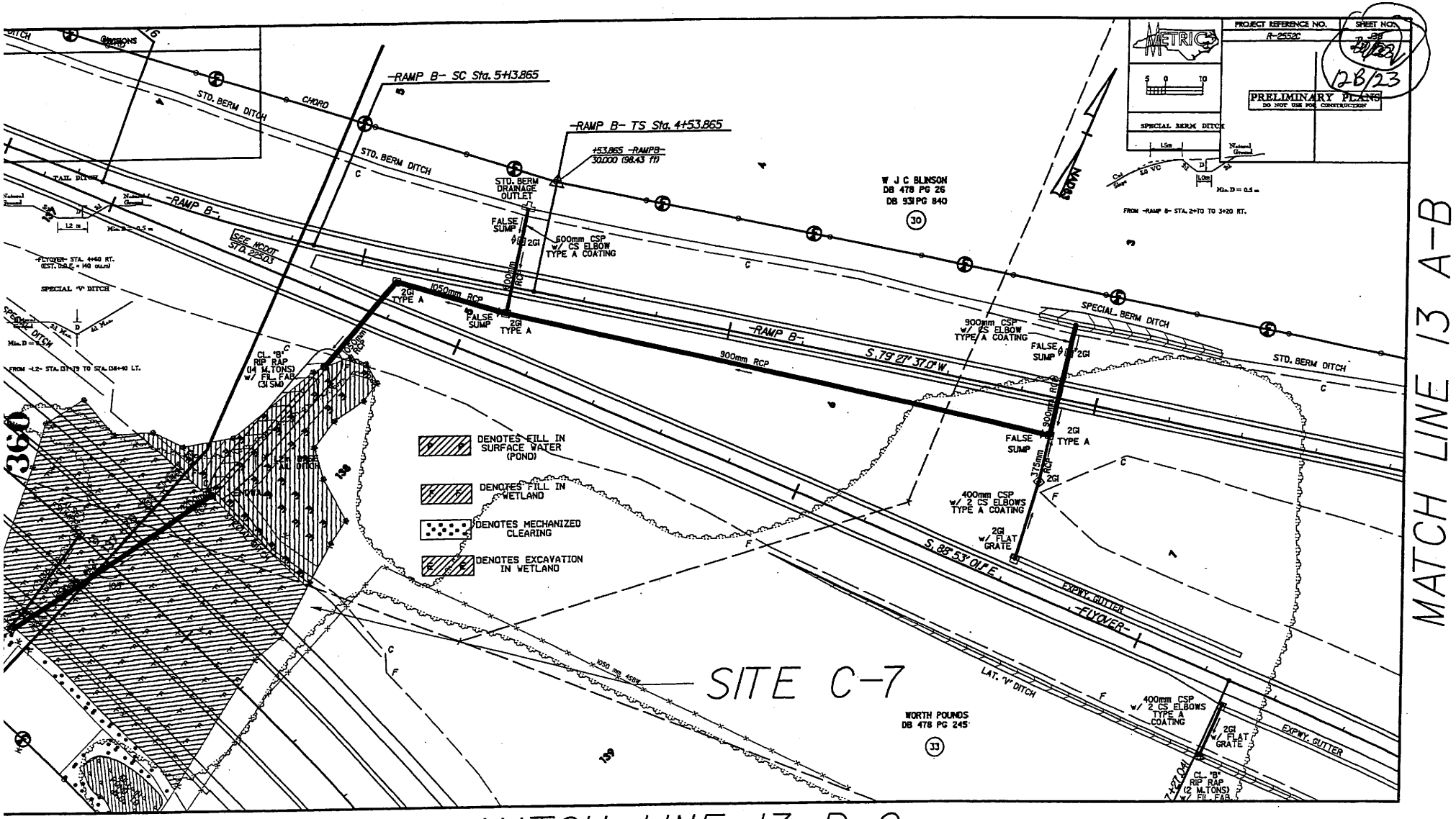

REVISIONS
PROJECT REFERENCE NO.
R-2520
SHEET NO.
11-B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
SITE C-5
MATCHLINE -L2- 124+40 SEE SHEET 8
MATCHLINE -L2- 128+00 SEE SHEET 10
-L2LT- ST Sta.124+36.047
+36.047 -L2LT- 39.500 (129.59 FT)
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
0.6 METER BASE DITCH
TOE OF FILL PROTECTION
LEVEL SPREADER TYPICAL SECTION
ROBERT HATCHER, JR. DB 479 PG 550
POT Sta.126+50.000 (LA)
-L2RT- POT Sta.126+50.325 10.5 RT.(LB) =
-L2LT- POT Sta.126+37.900 10.5 LT.(LB) =
CL. "B" RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
LAT. 0.6m BASE DITCH
CL. "B" RIP RAP TOE OF FILL PROTECTION
ENDWALL
BEGIN W.W.FENCE
END W.W.FENCE
2GI w/ FLAT GRATE
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
EXPWY. GUTTER
375mm RCP
2GI TYPE A FALSE SUMP
-L2LT- S 88°53'01.1" E
-L2- S 88°53'01.1" E
-L2RT- S 88°53'01.1" E
450mm CSP w/ 2 CS ELBOWS TYPE A COATING
1.5 X 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
BEGIN CL.FENCE
LAT. 1.0m BASE DITCH
+60.000 -L2RT- 39.500 (129.59 FT)
+90.825 -L2RT- 39.948 (131.06 FT) (R. CORNER)
+25.000 -L2RT- 41.379
+35.000 -L2- EX.R/W
+55.000 -L2- EX.R/W
+109.308 -L2- 55.421 (181.83 FT) (R. CORNER)
+92.369 -L2- 58.334 (181.54 FT) (R. CORNER)
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
CL. "T" RIP RAP (SLM.TONS) w/ FIL. FAB. (30 SM)
ROBERT HATCHER, JR. DB 479 PG 550
ROBERT GILES BROWN DB 1334 PG 819
CURTIS SMITH POWELL DB 1245 PG 527
JAMES LANTEI LEVETT DB 1390 PG 613
1.0 METER BASE DITCH
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
NOTE: IN TEMPORARY IMPACT AREAS, VEGETATION IS TO BE HAND CLEARED AND MACHINERY IS TO WORK ON MATS.
PIPE OUTLET PROTECTION
-L2LT- GRADE SEE PROFILE SHEET 33
-L2RT- GRADE SEE PROFILE SHEET 33
-L2- GRADE SEE PROFILE SHEET 34
355

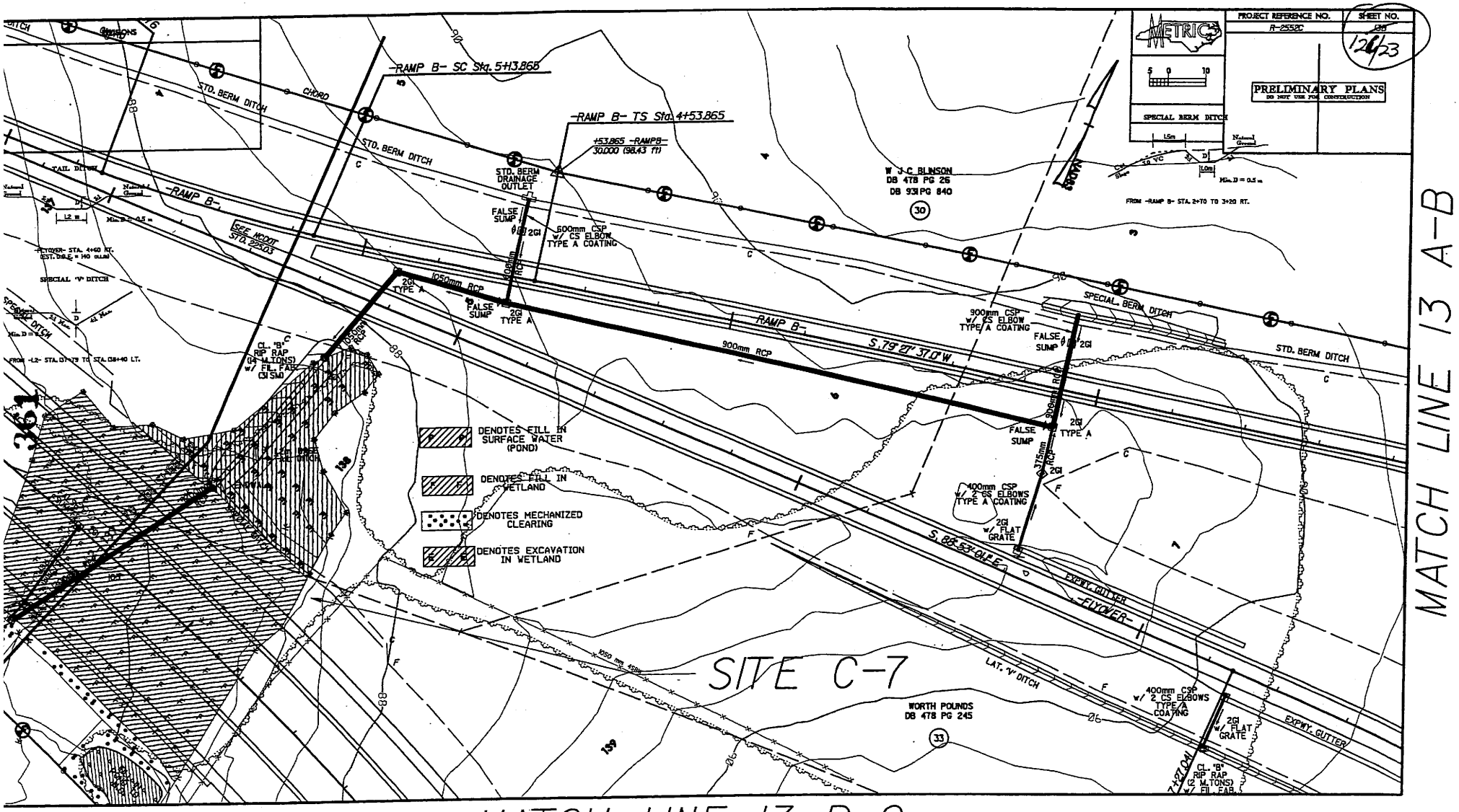

REVISIONS
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
SITE C-6
MATCHLINE -L2- 131+60 SEE SHEET 10
MATCHLINE -L2- 135+20 SEE SHEET 12
SCOTT D OVERBEE DB 1335 PG 516
ROBERT E JOYNER DB 1523 PG 674
W J C BLINSON DB 478 PG 26 DB 931PG 840
VERGIE B WOOD DB 455 PG 28
ALFRED STEWART JR. DB 595 PG 496
LOLA'S BEAUTY SHOP LIMITED PARTNERSHIP DB 1592 PG 521
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
-FLYOVER- STA. 1+16 LT.
-L2- TS Sta.133+25703 = -FLYOVER- POT Sta.0+00.000* (21.3 LT.)
+70.000 -L2- 50.000 (164.04 FT)
+25703 -L2- 55.000 (180.45 FT)
+69.980 -L2- 50.000 (164.04 FT) (ON ℄)
+69.950 -L2- 55.405 (181.78 FT) (ON ℄)
+25703 -L2- PC 50.000 (164.04 FT)
+00.000 -L2- 50.380
+20.703 -L2- 50.000 (164.04 FT)
+50.000 -L2- 50.000
-L2- SC Sta.134+20.703
+87.000 -FLYOVER- 33.644 & 36.000
+46.000 -FLYOVER- 33.656
LAT. 4.0m BASE DITCH
SPECIAL 1.2m BASE BERM DITCH
SPECIAL MEDIAN DITCH
L2 METER BASE SPECIAL BERM DITCH
CUT SLOPE
TEMP. DRAINAGE EASEMENT
CL. "B" RIP RAP (8 M.TONS) FIL. FAB. (8 SM)
CL. "I" RIP RAP (6 M.TONS) FIL. FAB. (8 SM)
CL. "B" RIP RAP (4 M.TONS) FIL. FAB. (5 SM)
CL. "B" RIP RAP (3 M.TONS) FIL. FAB. (3 SM)
LO x 0.6 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
LS x LO PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
400 CSP w/ 2 CS ELBOWS TYPE A COATING
2GI w/ FLAT GRATE
2GI TYPE A
2GI (EXTRA DEPTH)
FALSE SUMP
EXPWY. GUTTER
-FLYOVER-
S 88° 53' 01" E
2 @ 2.7 x 1.8 RCBC +0.5 -L2- 68° SKEW
3.7 x 2.4 RCBC +3.0 -L2- 81° SKEW WILDLIFE CROSSING
375mm RCP
500mm RCP
END W.W. FENCE
BEGIN W.W. FENCE
PLACE CONCRETE SILL
CHANNEL FILL
4M FROM TOP OF BANK
F 1.2m BASE LAT. DITCH
CHORD
4.0 BASE
NOTE: IN TEMPORARY IMPACT AREAS, VEGETATION IS TO BE HAND CLEARED AND MACHINERY IS TO WORK ON MAT'S.
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
-FLYOVER- GRADE SEE PROFILE SHEET 40
-L2- GRADE SEE PROFILE SHEET 35
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK @ 16M O.C. TYPICAL SECTION
SOIL
NTR
4.0 BASE DITCH
48 METER BASE DITCH
INLET DITCH TO RCBC
L2 METER BASE DITCH
OUTLET DITCH TO RCBC
Type of Liner = CLASS 'I' RIP RAP
FROM -L2- STA. 132+02 TO STA. 133+30 LT.
FROM -L2- STA. 132+80 TO STA. 133+05 RT.
FROM -L2- STA. 133+03 RT.
ZONE 1
ZONE 2
ZONE 3
15.24 FROM TOP OF BANK
ANGLE POINT
SHEET 356

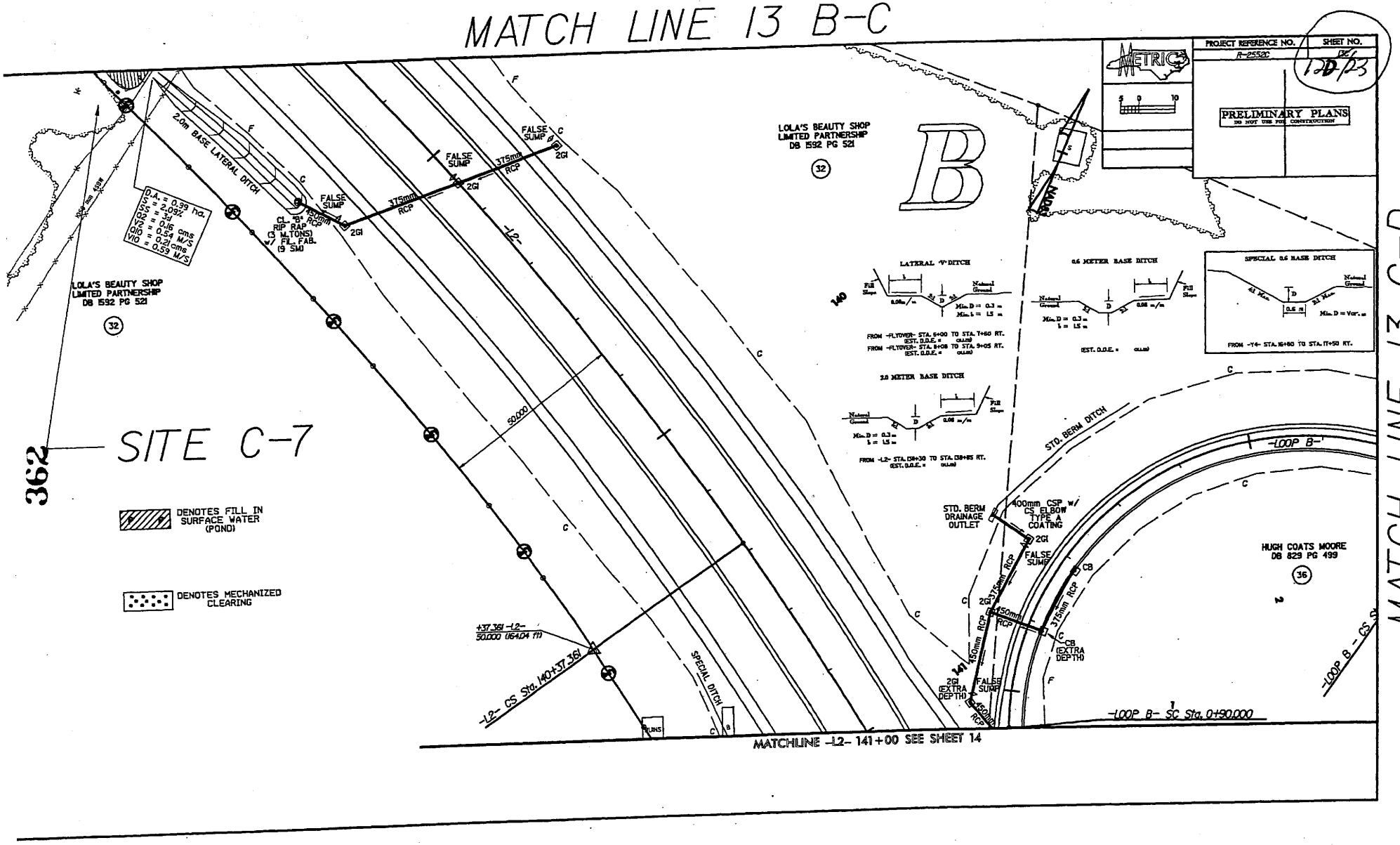

REVISIONS
PROJECT REFERENCE NO. R-2552C
SHEET NO. 1
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
11/6/23
CONST.REV.
R/W REV.
METRIC
SITE C-6
MATCHLINE -L2- 131+60 SEE SHEET 10
MATCHLINE -L2- 135+20 SEE SHEET 12
-FLYOVER- STA. 1+18 LT.
-L2- TS Sta. 133+25.703 = -FLYOVER- POT Sta. 0+00.000 = (21.3 LT.)
-L2- SC Sta. 134+20.703
SCOTT D OVERBEE DB 1335 PG 516
ROBERT E JOYNER DB 1523 PG 674
W J C BLINSON DB 478 PG 26 DB 931PG 840
VERGE B WOOD DB 455 PG 21
ALFRED STEWART JR. DB 595 PG 496
LOLA'S BEAUTY SHOP LIMITED PARTNERSHIP DB 1592 PG 521
PREFORMED SCOUR HOLE WITH APRON PLAN VIEW
SECTION A-A
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK 9x16M O.C. TYPICAL SECTION
L2 METER BASE SPECIAL BERM DITCH
SPECIAL MEDIAN DITCH
SPECIAL L2m BASE BERM DITCH
L.AT. 4.0m BASE DITCH
L2m BASE LAT. DITCH
4.0 METER BASE DITCH
1.2 METER BASE DITCH
INLET DITCH TO RCBC
OUTLET DITCH TO RCBC
D.A. = 4.1 ha. S = 0.33% SS = 3% V/2 = 0.65 cms V/2 = 0.43 M/S Q10 = 0.88 cms V10 = 0.49 M/S
D.A. = 3.25 ha. S = 2.00% SS = 3% Q/2 = 0.54 cms V/2 = 0.37 M/S Q10 = 0.71 cms V10 = 0.40 M/S
2 @ 2.7 x 1.8 RCBC +01.5 -L2- 68° SKEW
3.7 x 2.4 RCBC +51.0 -L2- 90° SKEW WILDLIFE CROSSING
2GI TYPE A
2GI (EXTRA DEPTH)
2GI w/ FLAT GRATE
FALSE SUMP
EXPWY. GUTTER
S 88°53'01" E
-FLYOVER-
1.0 x 0.6 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
400 CSP w/ 2 CS ELBOWS TYPE A COATING
375mm RCP
600mm RCP
CL. "B" RIP RAP (8 M.TONS) FIL. FAB. (8 SM)
CL. "I" RIP RAP (6 M.TONS) FIL. FAB. (8 SM)
RIP RAP APRON (3 M.TONS) FIL. FAB. (5 SM)
CHORD
TEMP. DRAINAGE EASEMENT
PLACE CONCRETE SILL
END W.W. FENCE
BEGIN W.W. FENCE
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 EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
-FLYOVER- GRADE SEE PROFILE SHEET 40
-L2- GRADE SEE PROFILE SHEET 35

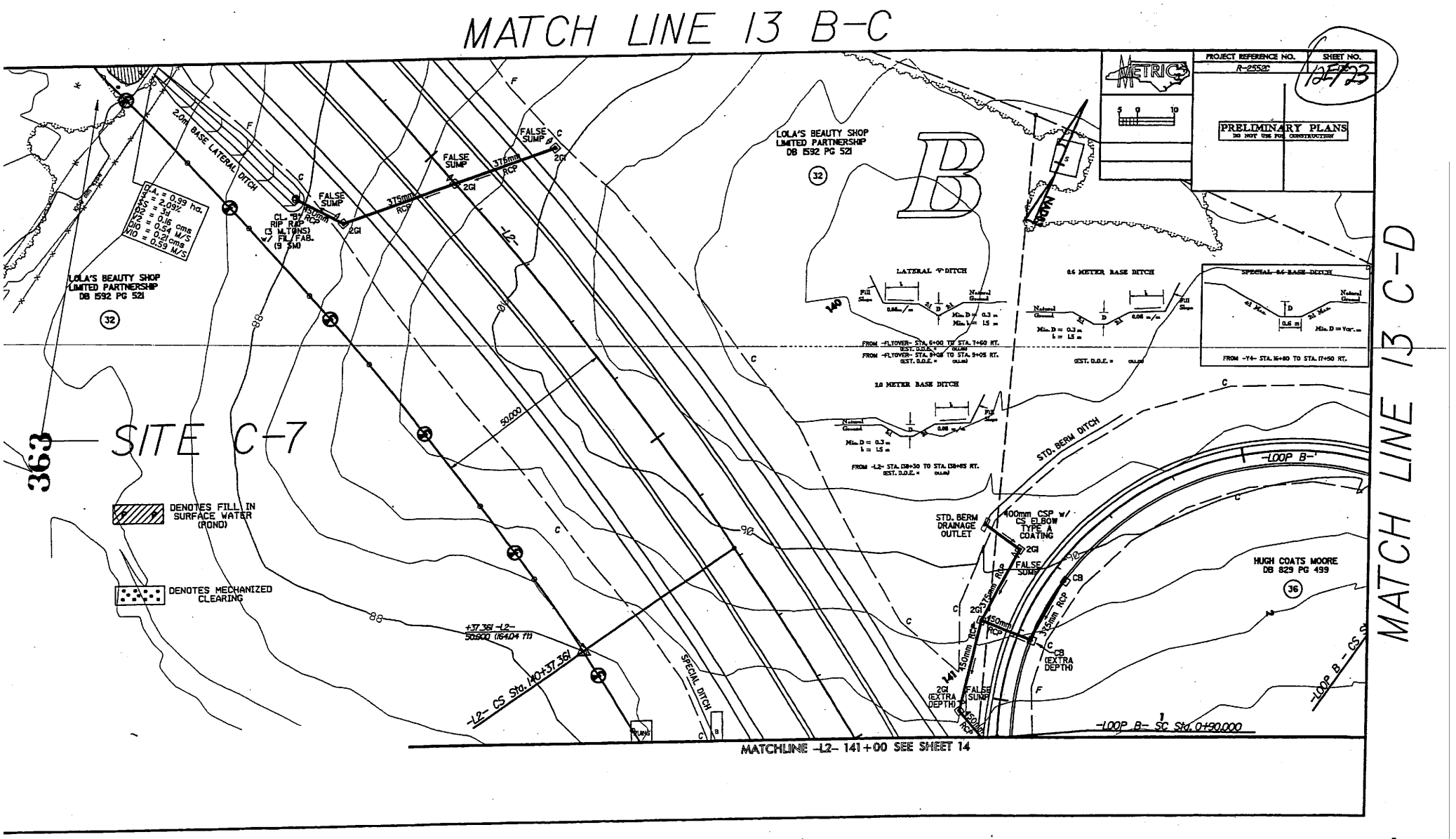

REVISIONS
METRIC
PROJECT REFERENCE NO.
R-2520
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
SHEET NO.
12/23
NADB3
-FLYOVER- POT Sta. 3+35.302 =
-RAMP B- ST Sta. 6+32.876 (3.6 LT.)
-RAMP B- CS Sta. 5+72.876
+35.303 -FLYOVER-
(3.600 (110.236 FT)
CHORD
STD. BERM DITCH
STD. BERM DITCH
-RAMP B-
SEE NCDOT STD. 225.03
W J C BLINSON
DB 478 PG 26
DB 931 PG 840
30
SPECIAL 1.2m BASE BERM DITCH
S 88°53'01" E
137
136
113
2GI
450mm RCP
FALSE SUMP
-FLYOVER-
112
2GI TYPE A
FALSE SUMP
SPECIAL DITCH
375mm RCP
114
2GI
SPECIAL DITCH
-L2-
FALSE SUMP
115
2GI
375mm RCP
CL "B" RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
FALSE SUMP
2GI TYPE D
116
375mm RCP
117
"V" TAIL DITCH
MATCHLINE -L2- 135+20 SEE SHEET 11
MATCHLINE -L2- 137+70 SEE SHEET 13
358
2GI w/ FLAT GRATES (EXTRA DEPTH)
375mm RCP
CL "I" RIP-RAP (20 M.TONS) w/ FIL. FAB. (40 SM)
SITE C-7
LOLA'S BEAUTY SHOP LIMITED PARTNERSHIP
DB 1592 PG 521
32
D.A. = 0.64 ha.
Q5 = 0.20 cms
V5 = 1.31 m/s
Q25 = 0.36 cms
V25 = 0.31 m/s
Q10 = 0.29 cms
V10 = 0.32 m/s
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
TAIL DITCH
Natural Ground
Z1
D
Z1
Min. D = Var. m
FROM -L2- STA. 135+80 RT. (EST. D.D.E. = 15 cubic)
SPECIAL "V" DITCH
-FLYOVER-
-L2-
Var. Fill Slope (Z1 = 8:1)
Var. Fill Slope (Z1 = 8:1)
Min. D = Var. m
FROM -L2- STA. 135+06 TO STA. 136+60 LT.
SPECIAL "V" DITCH
Natural Ground
Z1 Min.
D
Z1 Min.
Min. D = 0.3 m
FROM -L2- STA. 136+60 TO STA. 137+40 LT.
SPECIAL BERM DITCH
1.5m
Natural Ground
Cut Slope
2.0 Vert.
Z1
D
Z1
1.2m
Min. D = 0.3 m
FROM -FLYOVER- STA. 1+80 TO STA. 3+20 LT.
-FLYOVER- GRADE SEE PROFILE SHEET 40
-RAMP B- GRADE SEE PROFILE SHEET 45
-L2- GRADE SEE PROFILE SHEET 35


REVISIONS
-FLYOVER- POT Sta. 3+35.302 =
-RAMP B- ST Sta. 6+32.876 (3.6 LT.)
-RAMP B- CS Sta. 5+72.876
STD. BERM DITCH
CHORD
+35.303 -FLYOVER-
33.900 (10.236 FT)
W J C BLINSON
DB 478 PG 26
DB 931 PG 840
30
SEE NCDOT STD. 225.03
-RAMP B-
SPECIAL L2m BASE BERM DITCH
FALSE SUMP
450mm RCP
2GI TYPE A
112
113
-FLYOVER-
S 85°53'01" E
SPECIAL DITCH
375mm RCP
2GI
114
-L2-
115
116
117
CL "B" RIP RAP (2 M.TONS) W/ FIL. FAB. (16 SM)
2GI TYPE D
"V" TAIL DITCH
MATCHLINE -L2- 135+20 SEE SHEET 11
MATCHLINE -L2- 137+70 SEE SHEET 13
359
SITE C-7
D.A. = 0.64 ha.
Q5 = 0.20%
Q10 = 0.31 cms
V5 = 0.16 M/S
V10 = 0.21 M/S
LOLA'S BEAUTY SHOP
LIMITED PARTNERSHIP
DB 1592 PG 521
32
2GI W/ FLAT GRATES (EXTRA DEPTH)
375mm RCP
CL "B" RIP RAP (20 M.TONS) W/ FIL. FAB. (40 SM)
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
NAD83
METRIC
5 0 10
CONST.REV.
R/W REV.
PROJECT REFERENCE NO.
R-2552C
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
12/4/23
TAIL DITCH
Min. D = Var. m
FROM -L2- STA. 135+80 RT. (EST. D.O.E. = 15 cms)
SPECIAL "V" DITCH
-FLYOVER-
-L2-
Min. D = Var. m
FROM -L2- STA. 135+06 TO STA. 136+60 LT.
SPECIAL "V" DITCH
Min. D = 0.3 m
FROM -L2- STA. 136+60 TO STA. 137+40 LT.
SPECIAL BERM DITCH
1.5m
1.2m
Min. D = 0.3 m
FROM -FLYOVER- STA. 1+80 TO STA. 3+20 LT.
-RAMP B- GRADE SEE PROFILE SHEET 45
-FLYOVER- GRADE SEE PROFILE SHEET 40
-L2- GRADE SEE PROFILE SHEET 35

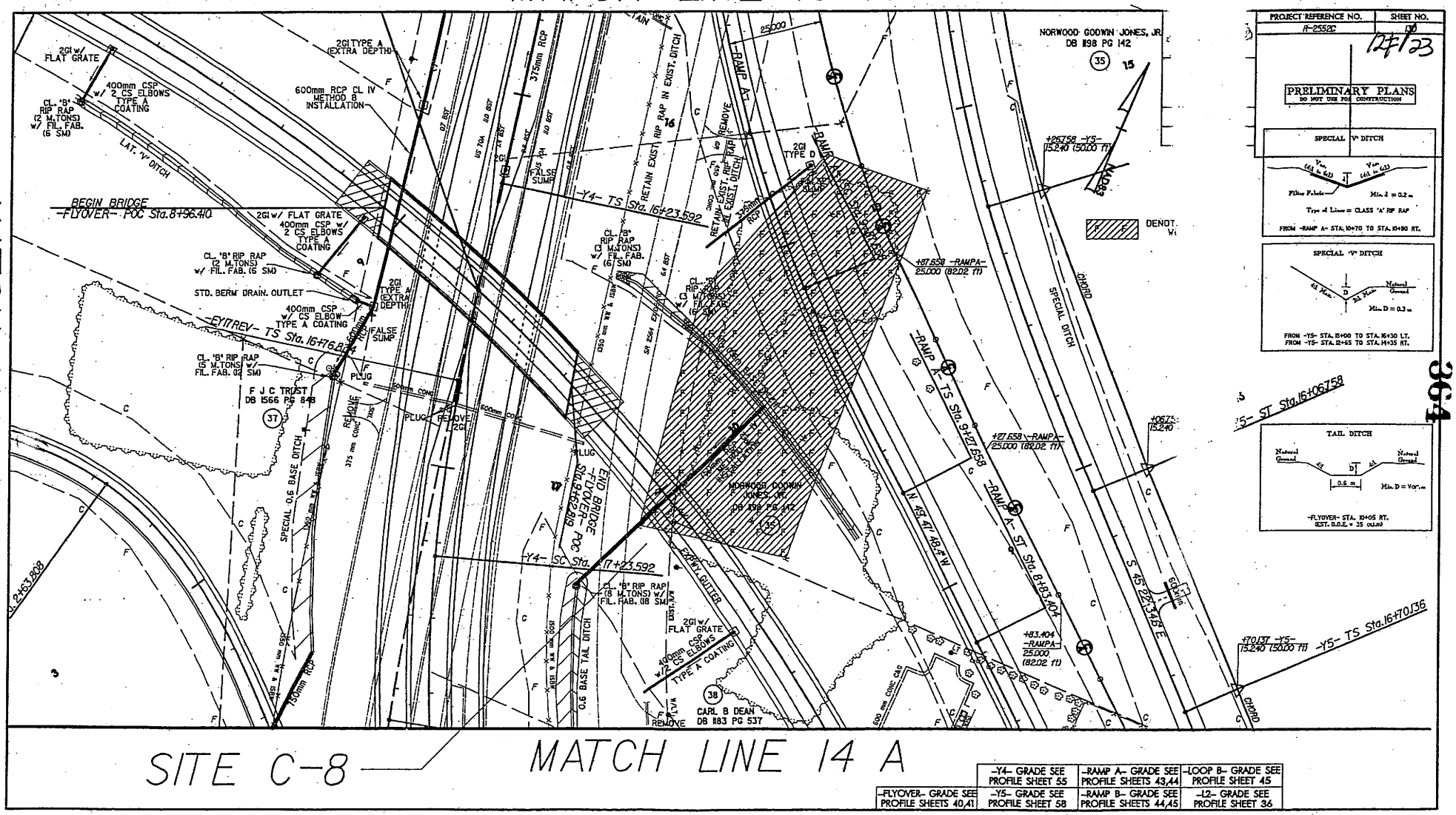

PROJECT REFERENCE NO.
R-2552C
SHEET NO.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SPECIAL BERM DITCH
FROM -RAMP B- STA. 2+70 TO 3+20 RT.
-RAMP B- SC Sta. 5+13.865
-RAMP B- TS Sta. 4+53.865
+53.865 -RAMP B-
30.000 (98.43 ft)
STD. BERM DITCH
CHORD
STD. BERM DRAINAGE OUTLET
FALSE SUMP
2GI
600mm CSP
w/ CS ELBOW
TYPE A COATING
W J C BLINSON
DB 478 PG 26
DB 931 PG 840
30
-RAMP B-
S.79°27'31.0"W
1050mm RCP
900mm RCP
2GI TYPE A
SEE MODIF. STD. 225.03
FLYOVER- STA. 4+60 RT.
(EST. DRN. E. = 140 cu.m)
SPECIAL "V" DITCH
FROM -L2- STA. 13+78 TO STA. 15+40 LT.
CL. "B" RIP RAP (14 M.TONS) w/ FIL. FAB. (31 SM)
900mm CSP
w/ FS ELBOW
TYPE A COATING
300mm RCP
375mm RCP
400mm CSP
w/ 2 CS ELBOWS
TYPE A COATING
2GI
w/ FLAT GRATE
S.85°53'01.0"E
EXPWY. GUTTER
-FLYOVER-
LAT. "V" DITCH
1050 mm RCP
SITE C-7
WORTH POUNDS
DB 478 PG 245
33
CL. "B" RIP RAP (2 M.TONS) w/ FIL. FAB.
DENOTES FILL IN SURFACE WATER (POND)
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES EXCAVATION IN WETLAND
MATCH LINE 13 A-B
MATCH LINE 13 B-C


PROJECT REFERENCE NO.
R-2552C
SHEET NO.
126
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
-RAMP B- SC Sta. 5+13.865
-RAMP B- TS Sta. 4+53.865
+53.865 -RAMP B-
30.000 (98.43 ft)
STD. BERM DITCH
CHORD
STD. BERM DRAINAGE OUTLET
FALSE SUMP
2GI
600mm CSP W/ CS ELBOW TYPE A COATING
1050mm RCP
900mm RCP
-RAMP B-
S 79° 27' 31.0" W
W J.C. BLINSON
DB 478 PG 26
DB 931 PG 840
30
SPECIAL BERM DITCH
FROM -RAMP B- STA. 2+70 TO 3+20 RT.
900mm CSP W/ CS ELBOW TYPE A COATING
FALSE SUMP
2GI TYPE A
STD. BERM DITCH
S 88° 57' 01" E
EXPWY. GUTTER
-FLYOVER-
375mm RCP
400mm CSP W/ 2 CS ELBOWS TYPE A COATING
2GI W/ FLAT GRATE
CL. "B" RIP RAP (2 M. TONS) W/ FIL. FAB.
DENOTES FILL IN SURFACE WATER (POND)
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES EXCAVATION IN WETLAND
SITE C-7
LAT. "A" DITCH
WORTH POUNDS
DB 478 PG 245
33
MATCH LINE 13 A-B
MATCH LINE 13 B-C

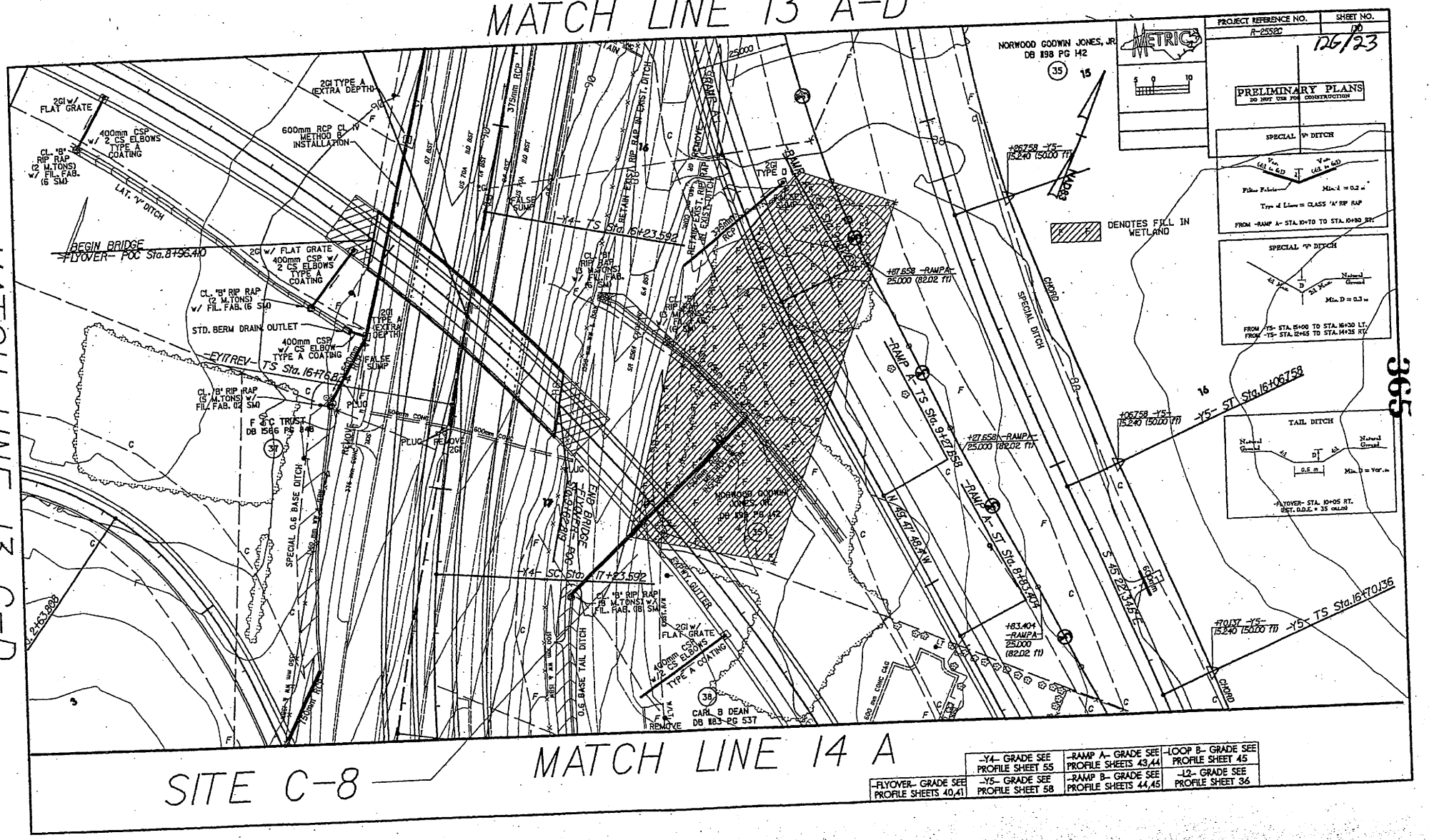

MATCH LINE 13 B-C
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
13C
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
B
LOLA'S BEAUTY SHOP
LIMITED PARTNERSHIP
DB 1592 PG 521
32
SITE C-7
362
2.0m BASE LATERAL DITCH
FALSE SUMP
2GI
375mm RCP
450mm RCP
CL. "B" RIP RAP (3 M.TONS) FIL. FAB. (9 SM)
D.A. = 0.99 ha.
V2 = 2.09%
V10 = 3.37%
Q2 = 0.16 cms
V2 = 0.54 M/s
Q10 = 0.21 cms
V10 = 0.59 M/s
-L2-
50.000
+37.361 -L2- 50.000 (164.04 ft)
-L2- CS Sta. 140+37.361
SPECIAL DITCH
PLANS
DENOTES FILL IN SURFACE WATER (POND)
DENOTES MECHANIZED CLEARING
LATERAL 'V' DITCH
0.6 METER BASE DITCH
SPECIAL 0.6 BASE DITCH
2.0 METER BASE DITCH
FROM -FLYOVER- STA. 5+00 TO STA. 7+60 RT.
FROM -FLYOVER- STA. 8+08 TO STA. 9+05 RT.
FROM -L2- STA. 138+30 TO STA. 138+85 RT.
FROM -Y4- STA. 16+80 TO STA. 17+50 RT.
STD. BERM DITCH
STD. BERM DRAINAGE OUTLET
400mm CSP w/ CS ELBOW TYPE A COATING
CB
CB (EXTRA DEPTH)
2GI (EXTRA DEPTH)
HUGH COATS MOORE
DB 829 PG 499
36
-LOOP B-
-LOOP B- SC Sta. 0+90.000
-LOOP B- CS
MATCHLINE -L2- 141+00 SEE SHEET 14
MATCH LINE 13 C-D

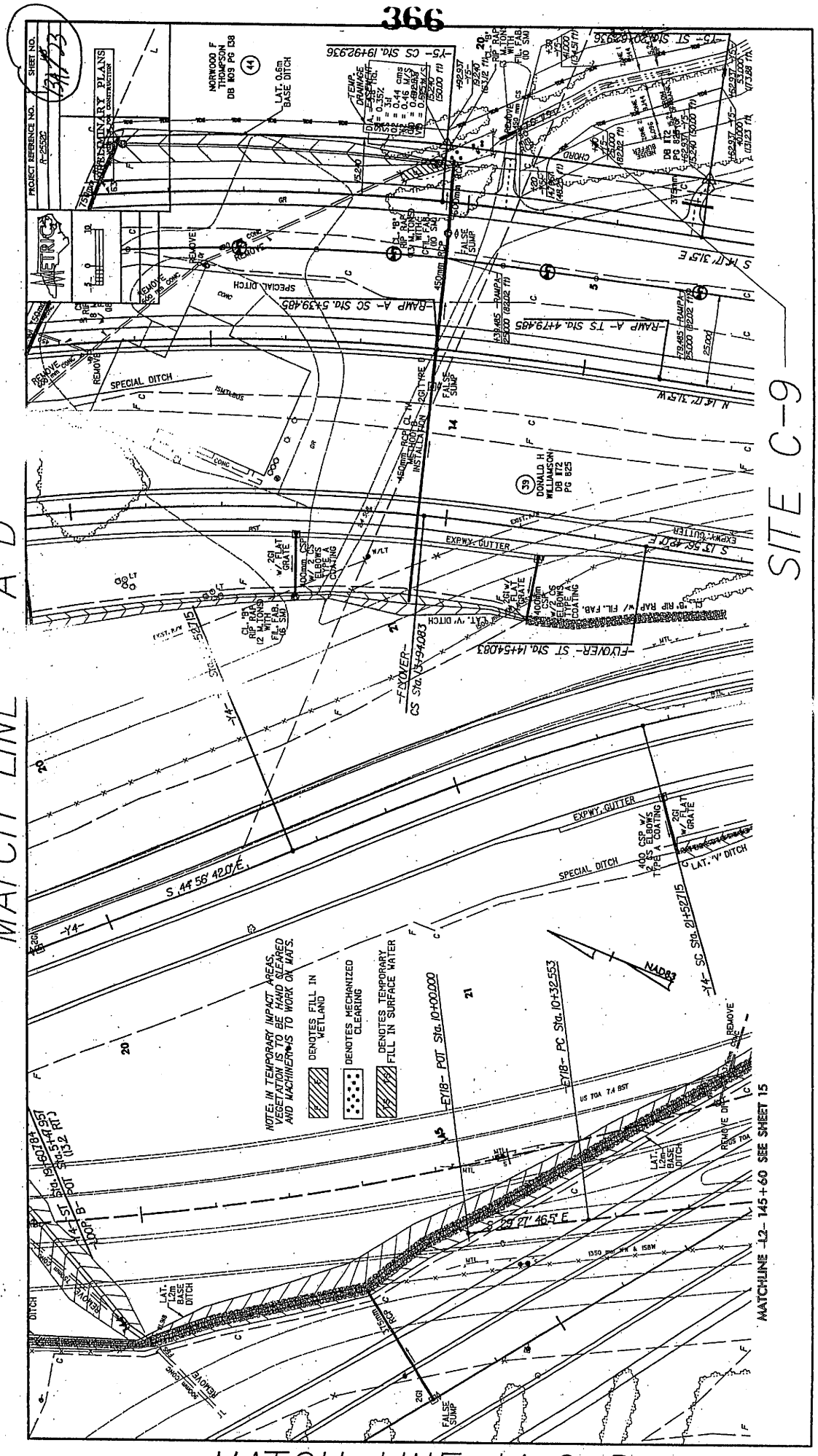

MATCH LINE 13 B-C
PROJECT REFERENCE NO. R-2552C
SHEET NO. 12 of 23
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
B
LOLA'S BEAUTY SHOP LIMITED PARTNERSHIP DB 1592 PG 521
32
LOLA'S BEAUTY SHOP LIMITED PARTNERSHIP DB 1592 PG 521
32
2.0m BASE LATERAL DITCH
FALSE SUMP
2GI
375mm RCP
450mm RCP
CL RIP RAP (3 MTNS) FIL FAB. (9 SM)
-L2-
LATERAL DITCH
1.6 METER BASE DITCH
SPECIAL 1.6 BASE DITCH
2.0 METER BASE DITCH
FROM -FLTOVER- STA. 6+00 TO STA. 7+60 RT.
FROM -FLTOVER- STA. 8+05 TO STA. 9+05 RT.
FROM -Y4- STA. 16+80 TO STA. 17+50 RT.
STD. BERM DITCH
-LOOP B-
STD. BERM DRAINAGE OUTLET
400mm CSP w/ CS ELBOW TYPE A COATING
HUGH COATS MOORE DB 829 PG 499
36
CB
CB (EXTRA DEPTH)
2GI (EXTRA DEPTH)
SPECIAL DITCH
-LOOP B- SC Sta. 0+50.000
363
SITE C-7
DENOTES FILL IN SURFACE WATER (POND)
DENOTES MECHANIZED CLEARING
+37.36 -L2- 50.000 (164.04 ft)
-L2- CS Sta. 140+37.36
MATCHLINE -L2- 141+00 SEE SHEET 14
MATCH LINE 13 C-D

MATCH LINE 13 A-D



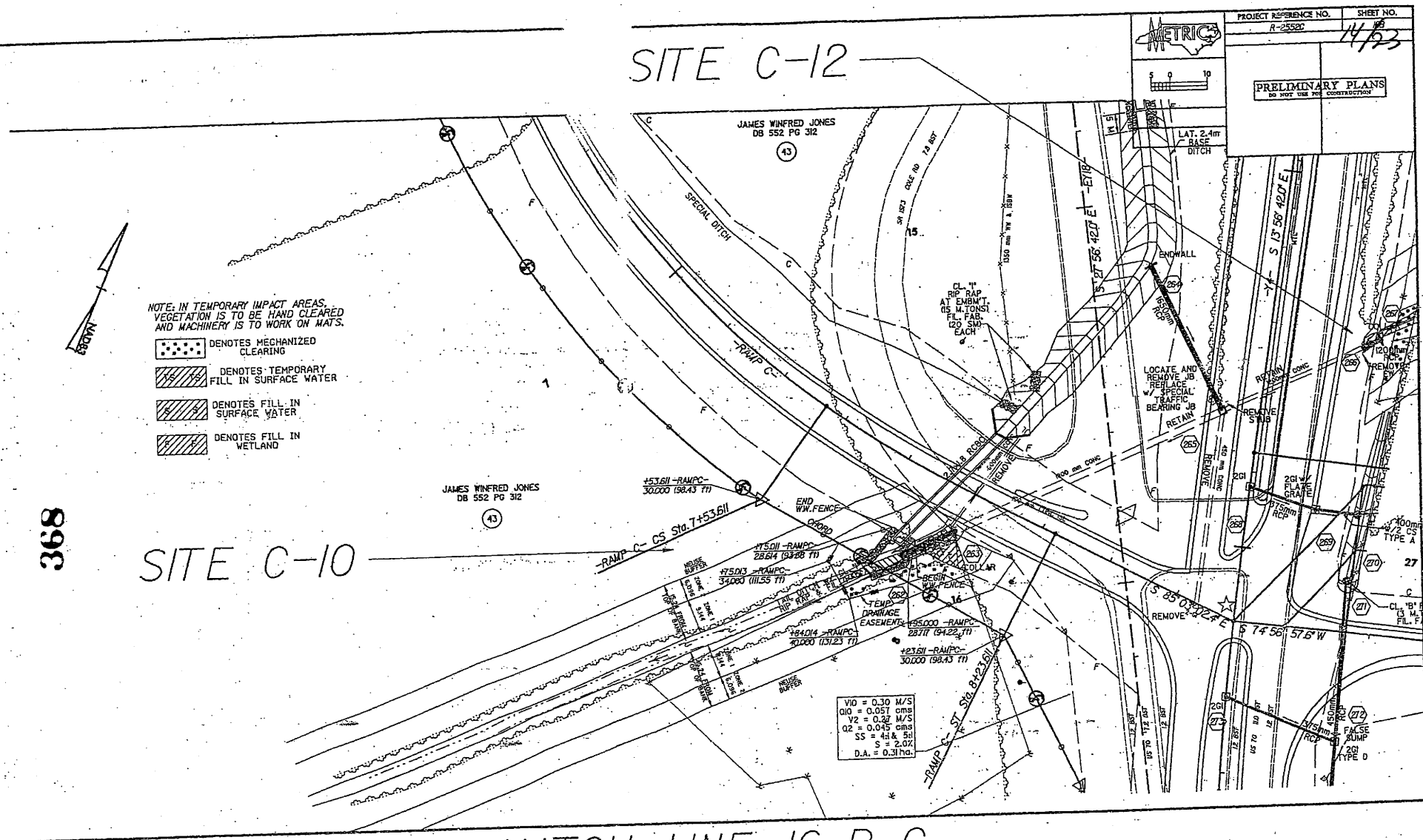
	-Y4- GRADE SEE PROFILE SHEET 55	-RAMP A- GRADE SEE PROFILE SHEETS 43,44	-LOOP B- GRADE SEE PROFILE SHEET 45
-FLYOVER- GRADE SEE PROFILE SHEETS 40,41	-Y5- GRADE SEE PROFILE SHEET 58	-RAMP B- GRADE SEE PROFILE SHEETS 44,45	-L2- GRADE SEE PROFILE SHEET 36

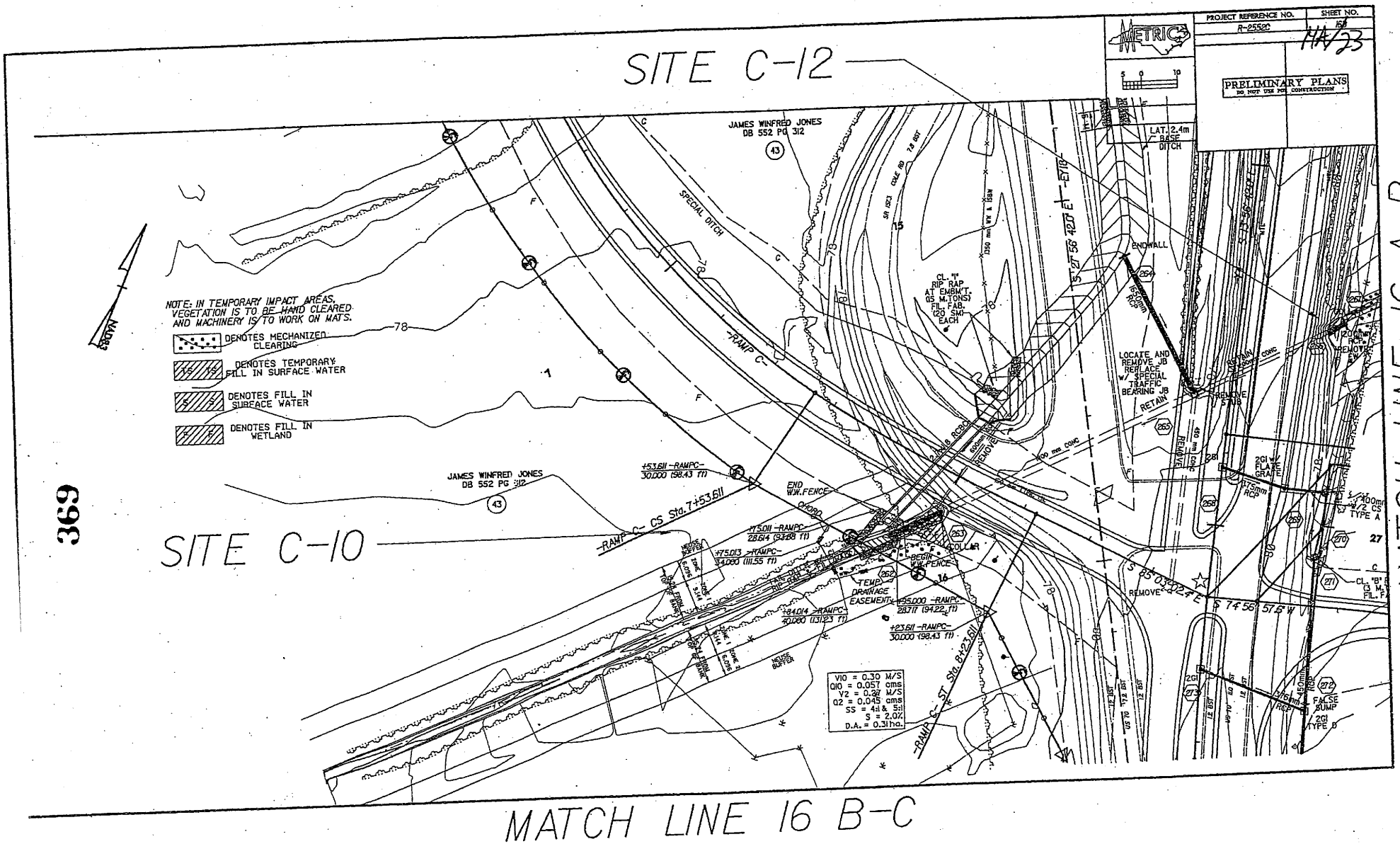

MATCH LINE 13 A-D
MATCH LINE 13 C-D
MATCH LINE 14 A
SITE C-8
PROJECT REFERENCE NO. R-2552C
SHEET NO. DD
12/6/23
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SPECIAL "V" DITCH
DENOTES FILL IN WETLAND
TAIL DITCH
NORWOOD GODWIN JONES, JR. DB 198 PG 142
CARL B DEAN DB 183-PG 537
F & C TRUST DB 1586 PG 848
-Y4- TS Sta. 16+23.592
-Y5- ST Sta.16+06.758
-Y5- TS Sta.16+70.136
-RAMP A- TS Sta. 9+27.658
-RAMP A- ST Sta. 8+83.404
-FLYOVER- POC Sta. 8+96.410
-FLYOVER- EOT REV- TS Sta. 16+76.822
BEGIN BRIDGE
END BRIDGE
-FLYOVER- GRADE SEE PROFILE SHEETS 40,41
-Y4- GRADE SEE PROFILE SHEET 55
-Y5- GRADE SEE PROFILE SHEET 58
-RAMP A- GRADE SEE PROFILE SHEETS 43,44
-RAMP B- GRADE SEE PROFILE SHEETS 44,45
-LOOP B- GRADE SEE PROFILE SHEET 45
-L2- GRADE SEE PROFILE SHEET 36

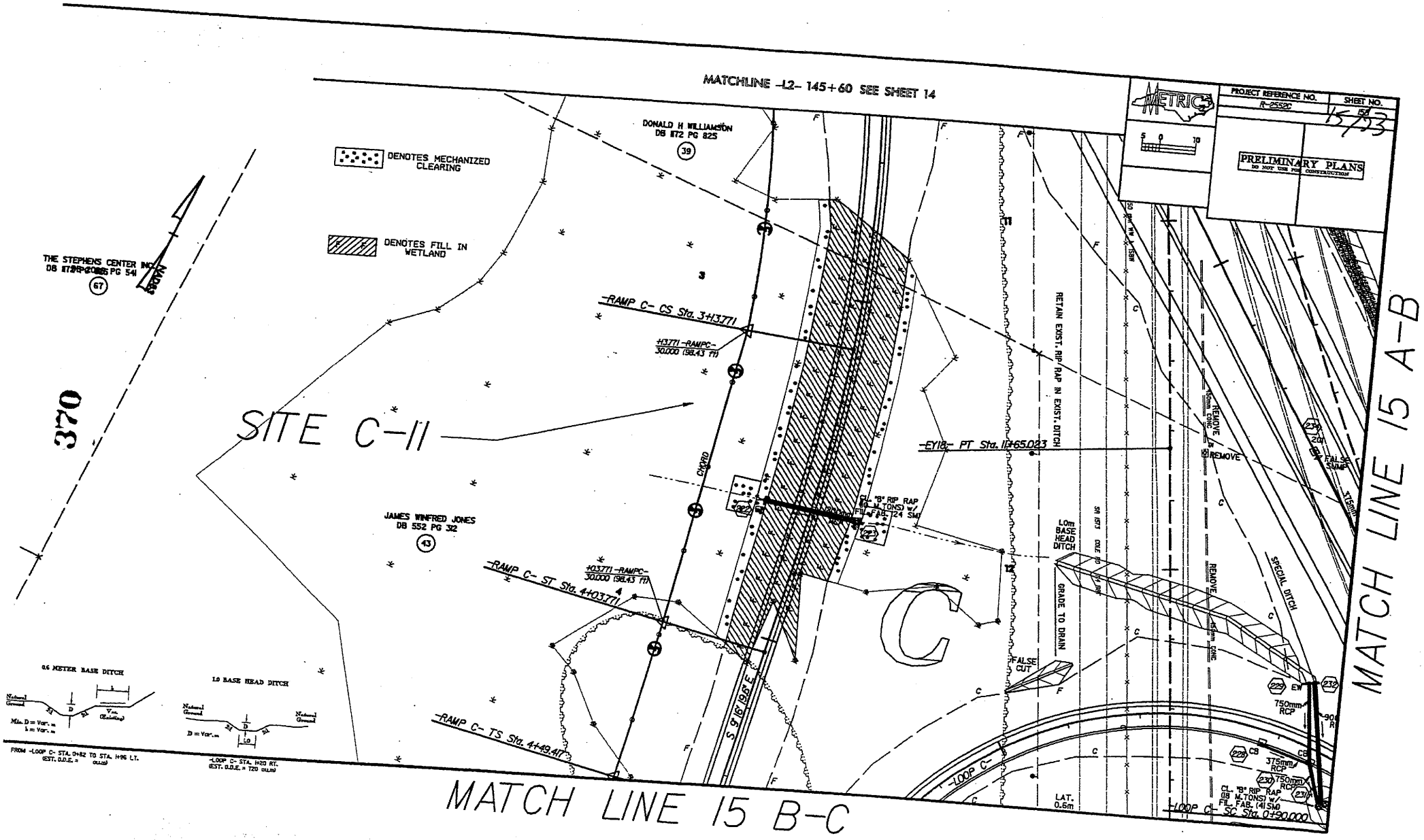

MATCH LINE A-D
SITE C-9
MATCH LINE 14.C-D
PRELIMINARY PLANS
PROJECT REFERENCE NO. R-2552C
SHEET NO. 13
METRIC
NOTE: IN TEMPORARY IMPACT AREAS, VEGETATION IS TO BE HAND CLEARED AND MACHINE MATS TO WORK ON MATS.
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY FILL IN SURFACE WATER
NAD83
MATCHLINE -L2- 145+60 SEE SHEET 15
-FLYOVER- ST Sta. 14+54.083
-FLYOVER- CS Sta. 13+94.083
-RAMP A- TS Sta. 4+79.485
-RAMP A- SC Sta. 5+39.485
-Y4- SC Sta. 21+52.715
-EY18- POT Sta. 10+00.000
-EY18- PC Sta. 10+32.553
-Y4- ST Sta. 19+60.784
-75- CS Sta. 19+92.936
-75- ST Sta. 20+52.936
S 44°56'42.0"E
S 29°21'46.5"E
N 14°17'31.5"W
S 14°17'31.5"E
S 14°56'42.0"E
NORWOOD F THOMPSON DB 1103 PG 138
DONALD H WILLIAMSON DB 1772 PG 825
TEMP. DRAINAGE EASEMENT
SPECIAL DITCH
EXPWY. GUTTER
LAT. 0.6m BASE DITCH
LAT. 1.2m BASE DITCH
LAT. 'V' DITCH
FALSE SUMP
REMOVE
CHORD
TOOLBOX
DITCH

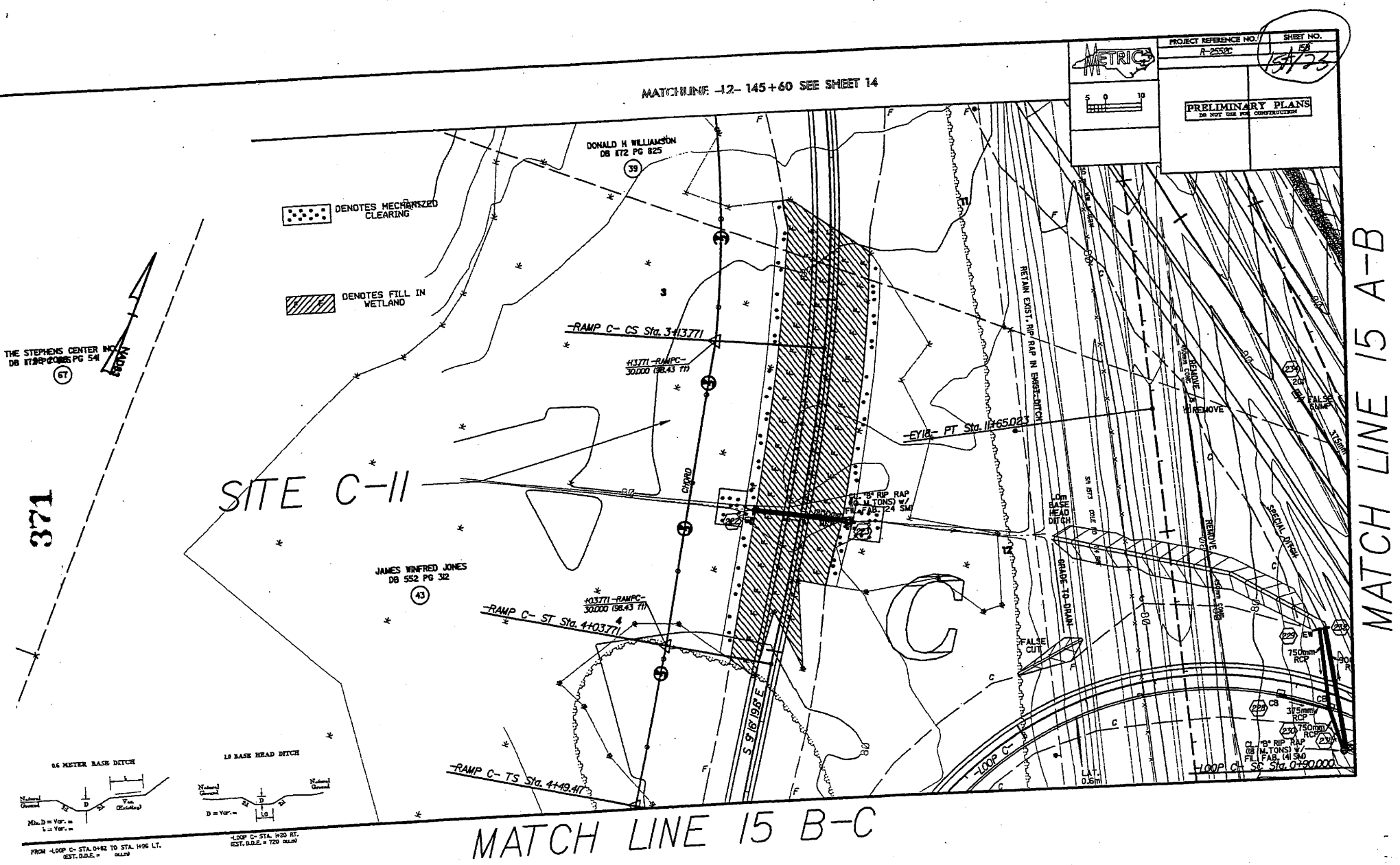
MATCH LINE 14 A-D

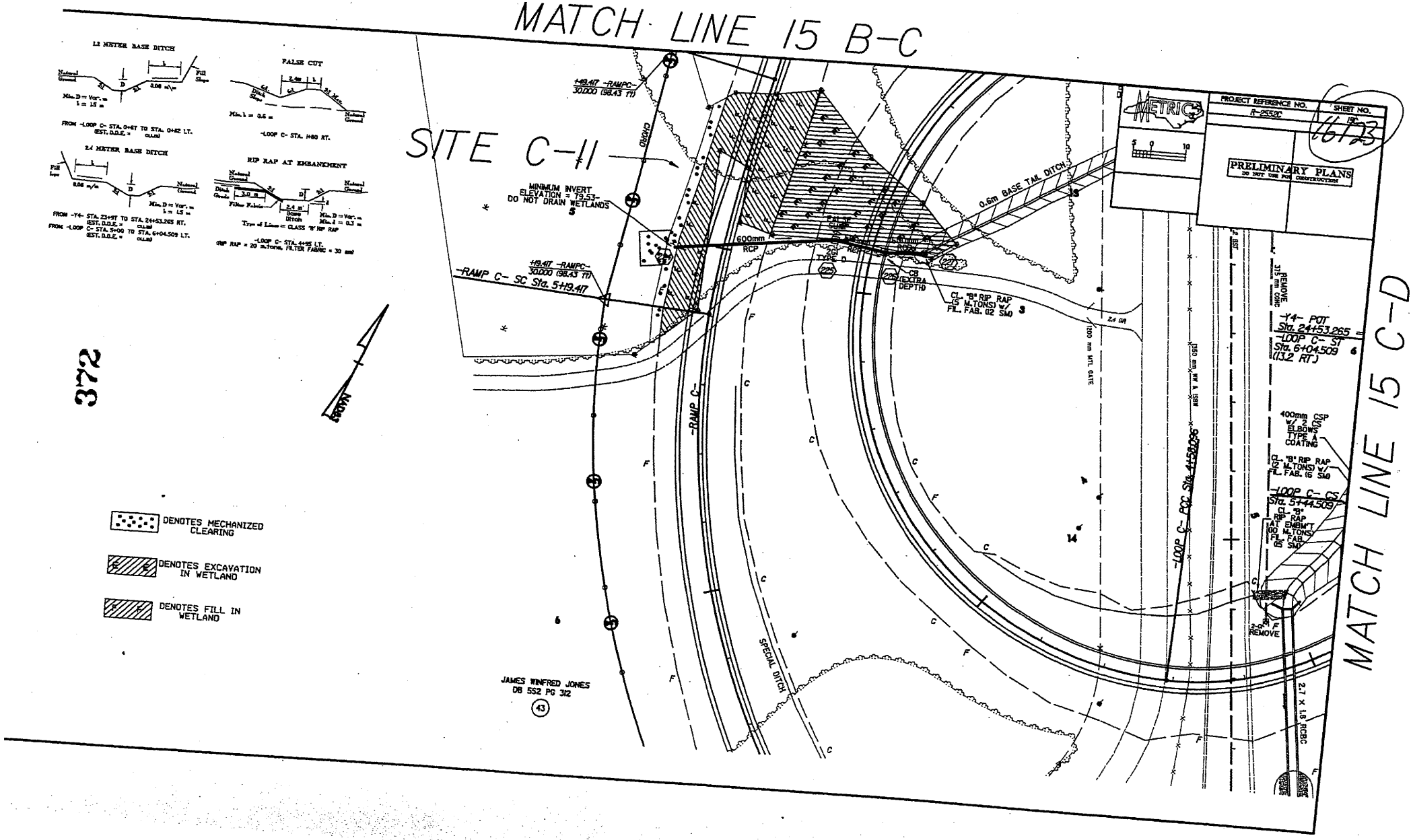
MATCH LINE 14 C-D

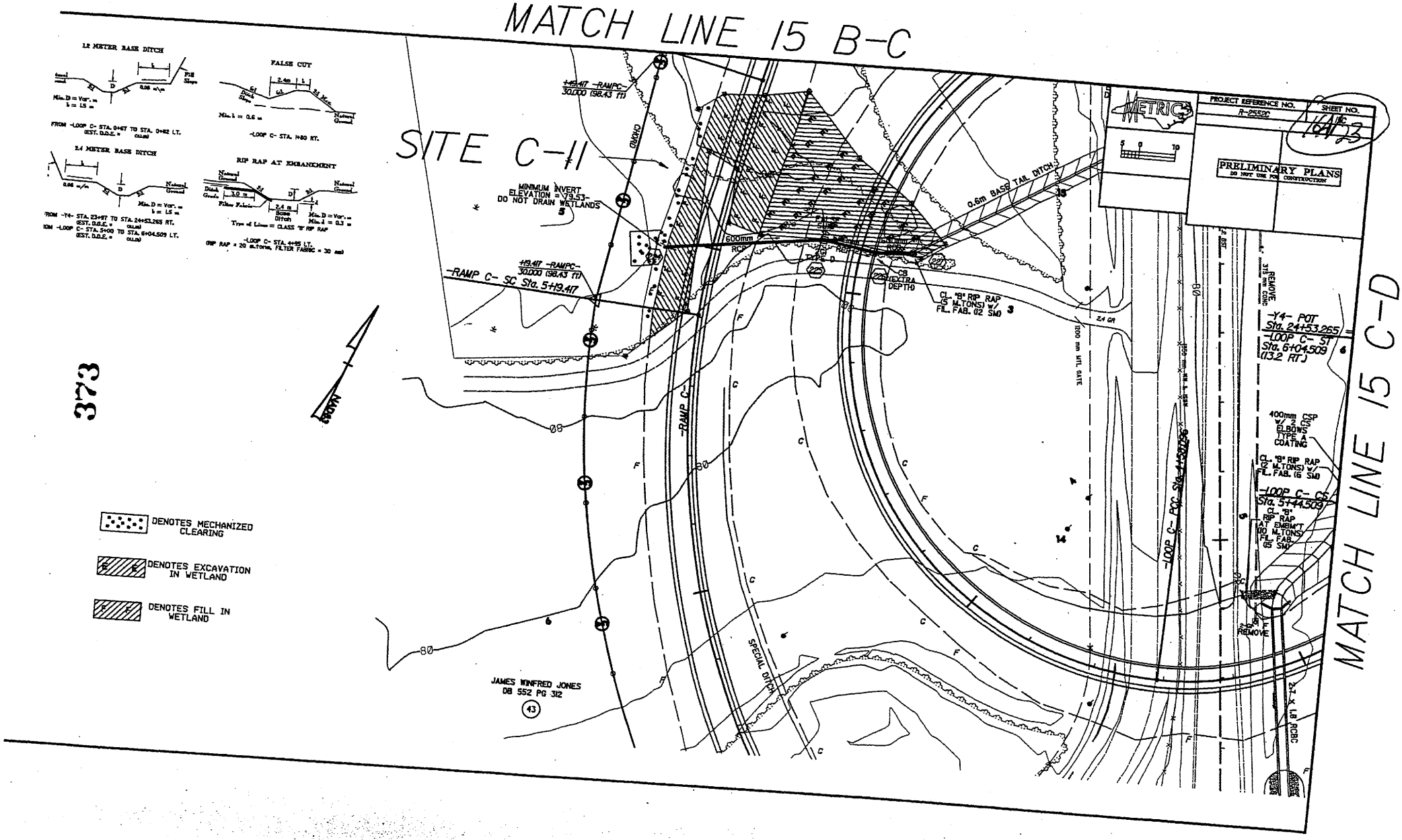

SITE C-12
SITE C-10
MATCH LINE 16 A-B
MATCH LINE 16 B-C
METRIC
PROJECT REFERENCE NO. R-2552D
SHEET NO. 14/53
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
LAT. 2.4m BASE DITCH
JAMES WINFRED JONES DB 552 PG 312
(43)
SPECIAL DITCH
RAMP C
NOTE: IN TEMPORARY IMPACT AREAS, VEGETATION IS TO BE HAND CLEARED 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
+53.611 -RAMP C- 30.000 (98.43 ft)
END WW. FENCE
-RAMP C- CS Sta. 7+53.611
+75.011 -RAMP C- 28.814 (93.88 ft)
+75.013 -RAMP C- 34.060 (111.55 ft)
BEGIN WW. FENCE
TEMP. DRAINAGE EASEMENT
+84.014 -RAMP C- 40.000 (131.23 ft)
+95.000 -RAMP C- 28.711 (94.22 ft)
+23.611 -RAMP C- 30.000 (98.43 ft)
-RAMP C- ST Sta. 8+23.611
V10 = 0.30 M/S
Q10 = 0.057 cms
V2 = 0.32 M/S
Q2 = 0.045 cms
SS = 4:1 & 5:1
S = 2.0%
D.A. = 0.31ha.
CL "1" RIP RAP AT EMB'MT. (15 M. TONS) FIL. FAB. (20 SMY. EACH
ENDWALL
LOCATE AND REMOVE JB REPLACE W/ "SPECIAL" TRAFFIC BEARING JB
REMOVE STUB
RETAIN
REMOVE
2GI FLARE GRATE
S 85° 02' 42" E
S 74° 56' 57.6" W
S 13° 56' 42.0" E
-L- S 13° 56' 42.0" E
-L- 57.6" W
CL "B" (3 M. FIL. F
FM SE SUMP 2GI TYPE D
100mm Ø 1/2 CS TYPE A
REMOVE
RETAIN
REMOVE
368

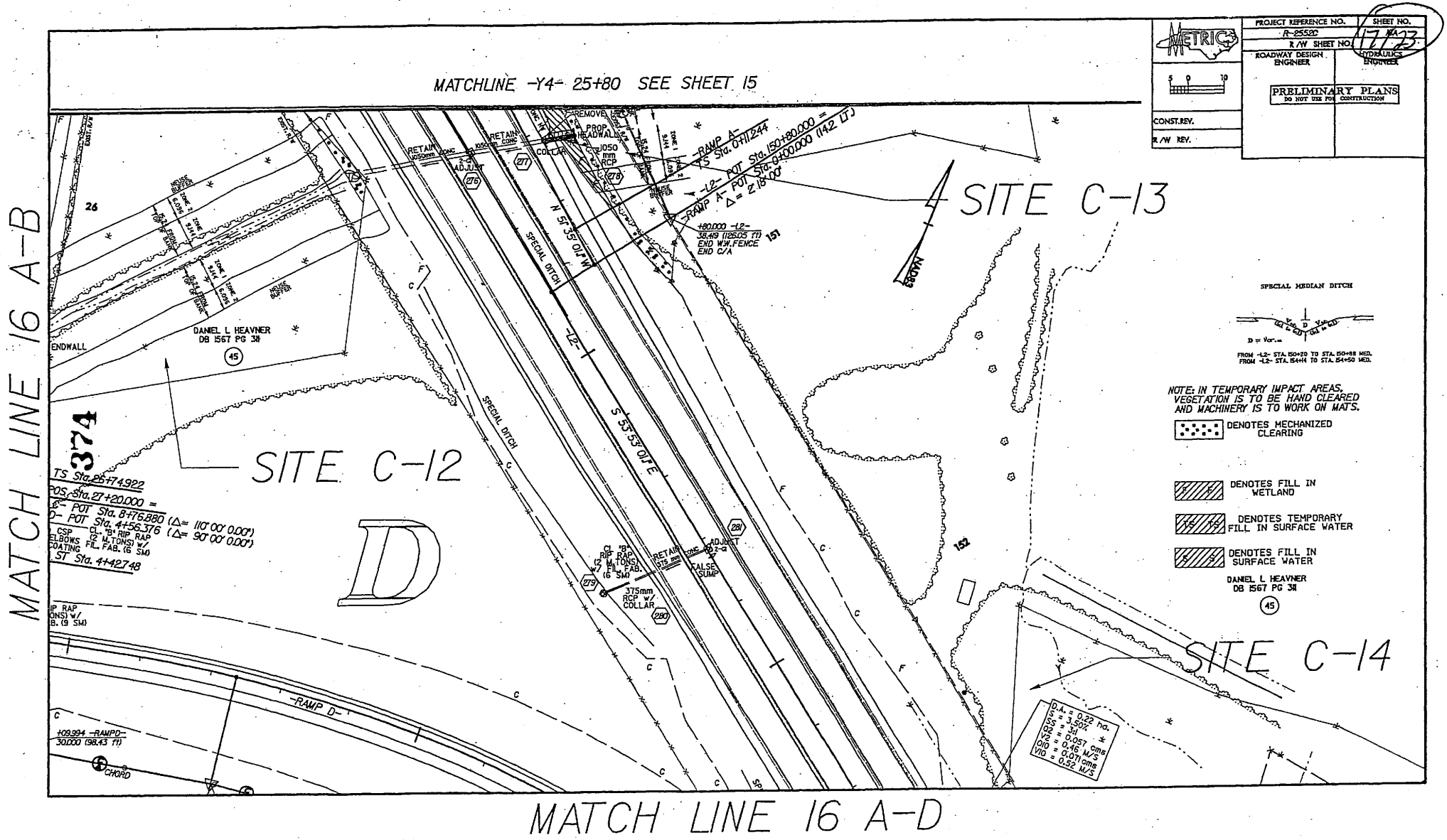

SITE C-12
SITE C-10
MATCH LINE 16 A-B
MATCH LINE 16 B-C
369
METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
16
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
JAMES WINFRED JONES
DB 552 PG 312
SPECIAL DITCH
-RAMP C-
-RAMP C- CS Sta. 7+53.611
-RAMP C- ST Sta. 8+23.611
+53.611 -RAMPC- 30.000 (98.43 ft)
+75.011 -RAMPC- 28.614 (93.88 ft)
+75.013 -RAMPC- 34.000 (111.55 ft)
+94.014 -RAMPC- 40.000 (131.23 ft)
+95.000 -RAMPC- 28.711 (94.22 ft)
+23.611 -RAMPC- 30.000 (98.43 ft)
END WW. FENCE
BEGIN WW. FENCE
TEMP. DRAINAGE EASEMENT
LAT. 2.4m BASE DITCH
ENDWALL
CL. "1" RIP RAP AT EMBM'T. (25 M. TONS) FIL. FAB. (20 SM) EACH
LOCATE AND REMOVE JB REPLACE W/ SPECIAL TRAFFIC BEARING JB
RETAIN
REMOVE
2CI W/ FLAT GRATE
CL. "B" (G.M. FIL. F
FALSE SUMP
2CI TYPE D
V10 = 0.30 M/S
Q10 = 0.057 cms
V2 = 0.287 M/S
Q2 = 0.045 cms
SS = 4:1 & 5:1
S = 2.0%
D.A. = 0.31ha.
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

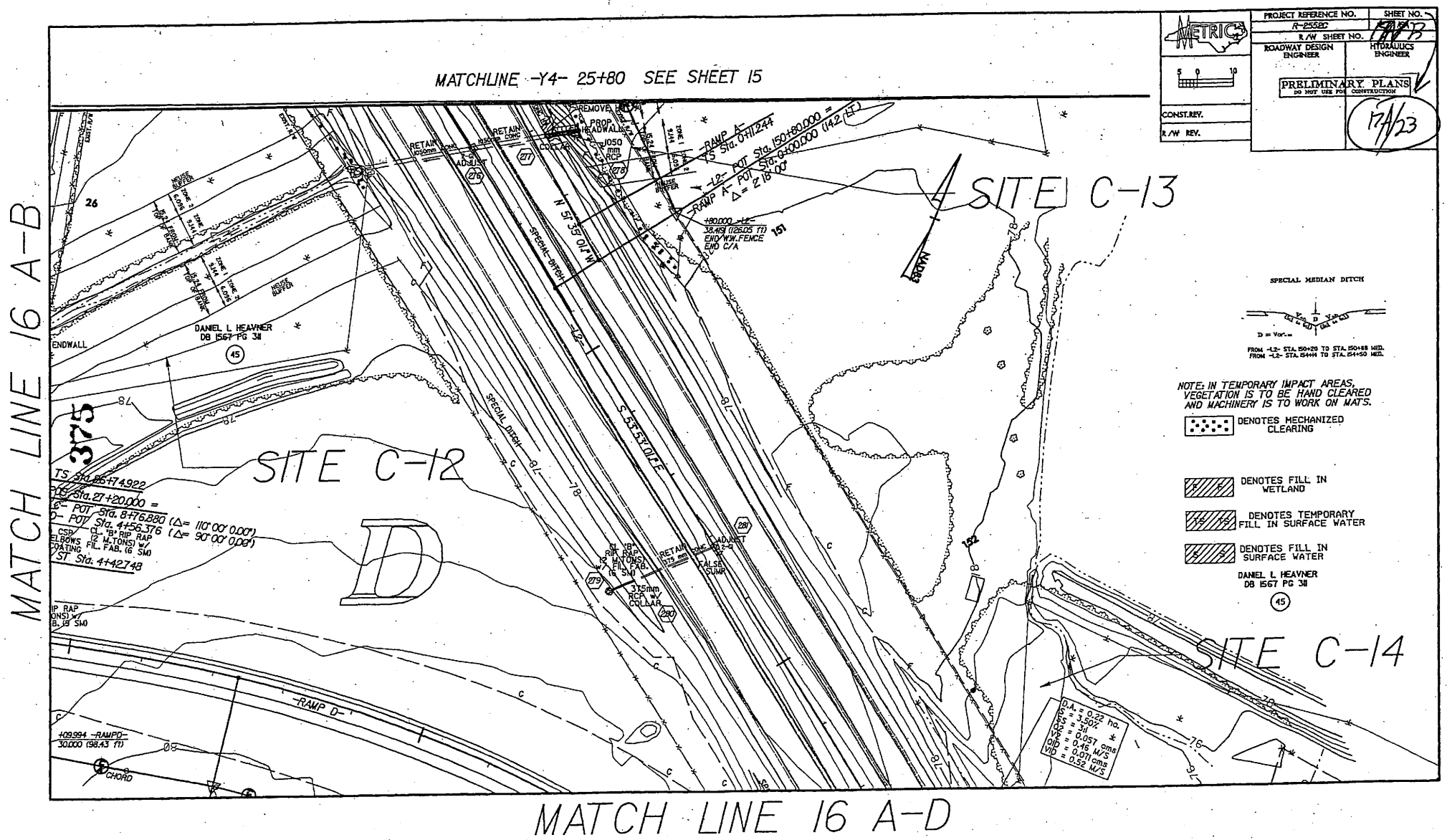

MATCHLINE -L2- 145+60 SEE SHEET 14
PROJECT REFERENCE NO. R-2520
SHEET NO. 15
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DONALD H WILLIAMSON DB 872 PG 825
THE STEPHENS CENTER INC DB 872 PG 541
JAMES WINFRED JONES DB 552 PG 32
SITE C-11
-RAMP C- CS Sta. 3+13.771
-RAMP C- ST Sta. 4+03.771
-RAMP C- TS Sta. 4+49.417
+13.771 -RAMPC- 30.000 (98.43 FT)
+03.771 -RAMPC- 30.000 (98.43 FT)
-EY18- PT Sta. 11+65.023
-LOOP C-
-LOOP C- SC Sta. 0+90.000
RETAIN EXIST. RIP RAP IN EXIST. DITCH
REMOVE
CL "B" RIP RAP (40 M.TONS) w/ FIL. FAB. 24 SM
CL "B" RIP RAP (18 M.TONS) w/ FIL. FAB. 141 SM
GRADE TO DRAIN
FALSE CUT
SPECIAL DITCH
LO BASE HEAD DITCH
0.6 METER BASE DITCH
LO BASE HEAD DITCH
S 91°16'19" E
750mm RCP
375mm RCP
LAT. 0.6m
MATCH LINE 15 A-B
MATCH LINE 15 B-C

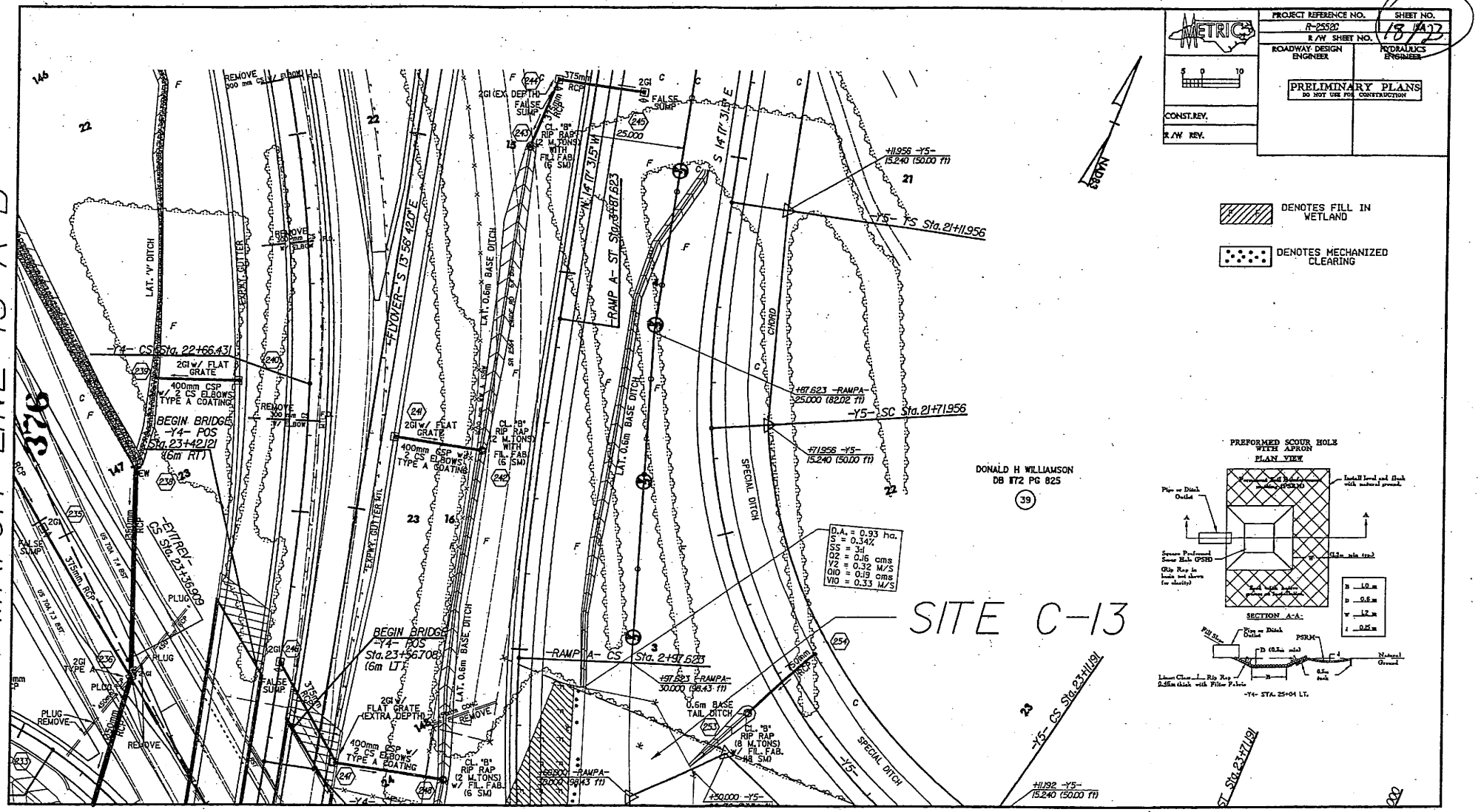

MATCHLINE -L2- 145+60 SEE SHEET 14
METRIC
5 0 10
PROJECT REFERENCE NO.
A-2552C
SHEET NO.
15
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DONALD H WILLIAMSON
DB 872 PG 825
39
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
THE STEPHENS CENTER INC
DB 1129 PG 541
67
-RAMP C- CS Sta. 3+13.771
+13.771 -RAMPC-
30.000 (98.43 FT)
-EY18- PT Sta. 11+65.083
SITE C-11
371
JAMES WINFRED JONES
DB 552 PG 312
43
+03.771 -RAMPC-
30.000 (98.43 FT)
-RAMP C- ST Sta. 4+03.771
-RAMP C- TS Sta. 4+49.41
S 9°16'19.6"E
CHORD
RETAIN EXIST. RIP/RAP IN EXIST. DITCH
REMOVE
REMOVE 450mm CONC
SPECIAL DITCH
GRADE TO DRAIN
FALSE CUT
1.0m BASE HEAD DITCH
SR 1573 COLE RD
750mm RCP
375mm RCP
CB
-L00P C-
-L00P C- SC Sta. 0+90.000
L.T. 0.5m
0.6 METER BASE DITCH
1.0 BASE HEAD DITCH
FROM -L00P C- STA. 0+82 TO STA. H96 LT.
(EST. D.D.E. = cu.m)
-L00P C- STA. H20 RT.
(EST. D.D.E. = 720 cu.m)
MATCH LINE 15 A-B
MATCH LINE 15 B-C

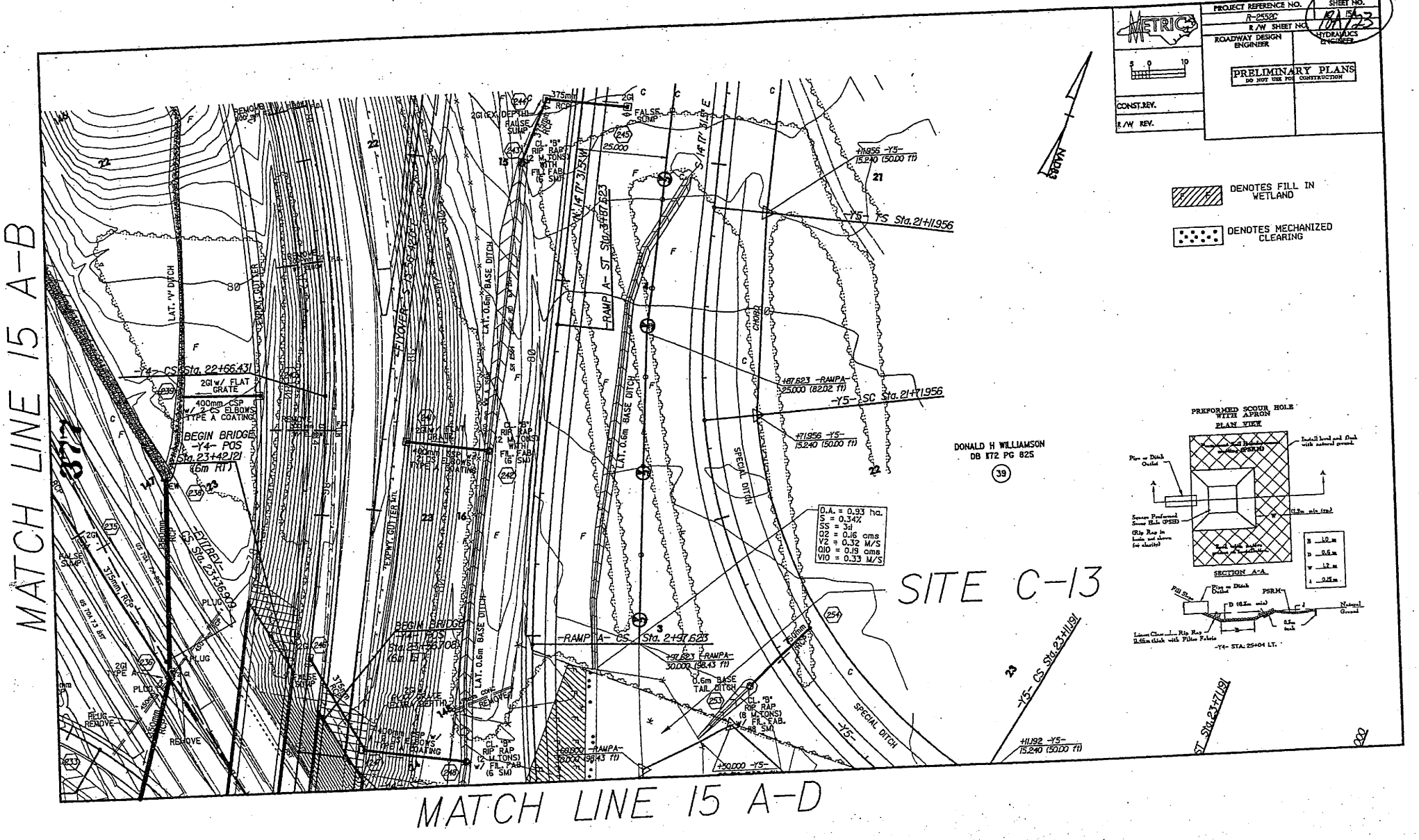

MATCH LINE 15 B-C
SITE C-II
12 METER BASE DITCH
FALSE CUT
2.4 METER BASE DITCH
RIP RAP AT EMBANKMENT
FROM -L00P C- STA. 0+67 TO STA. 0+42 LT.
-L00P C- STA. 1+80 RT.
FROM -Y4- STA. 23+97 TO STA. 24+53.265 RT.
FROM -L00P C- STA. 5+00 TO STA. 6+04.509 LT.
-L00P C- STA. 4+95 LT.
DENOTES MECHANIZED CLEARING
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
372
N 60°W
MINIMUM INVERT ELEVATION = 79.57 DO NOT DRAIN WETLANDS
+19.417 -RAMP C- 30.000 (98.43 FT)
-RAMP C- SC Sta. 5+19.417
600mm RCP
0.6m BASE TAIL DITCH
CB (EXTRA DEPTH)
CL. "B" RIP RAP (5 M.TONS) W/ FIL. FAB. 02 SM)
-RAMP C-
-L00P C- POC Sta. 4+58.095
SPECIAL DITCH
JAMES WINFRED JONES DB 552 PG 312
43
METRIC
PROJECT REFERENCE NO. R-2552A
SHEET NO. 15
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
REMOVE 375 mm CONC
-Y4- POT Sta. 24+53.265 = -L00P C- ST Sta. 6+04.509 (13.2 RT.)
400mm CSP W/ 2 CSP ELBOWS TYPE A COATING
CL. "B" RIP RAP (5 M.TONS) W/ FIL. FAB. (6 SM)
-L00P C- Sta. 5+44.509
CL. "B" RIP RAP AT EMBMT (5 M.TONS) W/ FIL. FAB. (5 SM)
REMOVE
2.7 x 1.8 RCBC
MATCH LINE 15 C-D


MATCH LINE 15 B-C
SITE C-11
12 METER BASE DITCH
FALSE CUT
2.4 METER BASE DITCH
RIP RAP AT EMBANKMENT
FROM -LOOP C- STA. 0+67 TO STA. 0+82 LT.
-LOOP C- STA. 1+80 RT.
FROM -Y4- STA. 23+97 TO STA. 24+53.265 RT.
-LOOP C- STA. 5+00 TO STA. 6+04.509 LT.
-LOOP C- STA. 4+95 LT.
MINIMUM INVERT ELEVATION = 79.53- DO NOT DRAIN WETLANDS
+19.417 -RAMP C- 30.000 (98.43 FT)
-RAMP C- SC Sta. 5+19.417
-RAMP C-
-LOOP C- EOC Sta. 4+55.026
-LOOP C- SC Sta. 5+44.509
-Y4- POT Sta. 24+53.265
-LOOP C- ST Sta. 6+04.509 (13.2 RT.)
0.6m BASE TAIL DITCH
600mm RCP
1200 mm MTL GATE
1550 mm MTL GATE
315 mm CONC
REMOVE
400mm CSP W/ 2 BENDS ELBOWS TYPE A COATING
C1 "B" RIP RAP (6 M.TONS) W/ FIL. FAB. (6 SM)
C2 "B" RIP RAP AT EMBM'T (80 M.TONS) FIL. FAB. (15 SM)
C3 "B" RIP RAP (12 M.TONS) W/ FIL. FAB. (12 SM)
C8 (EXTRA DEPTH)
2.7 X 1.8 RCBC
JAMES WINFRED JONES DB 552 PG 312
SPECIAL DITCH
DENOTES MECHANIZED CLEARING
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
METRIC
PROJECT REFERENCE NO. R-2552C
SHEET NO. 11C
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
373
MATCH LINE 15 C-D

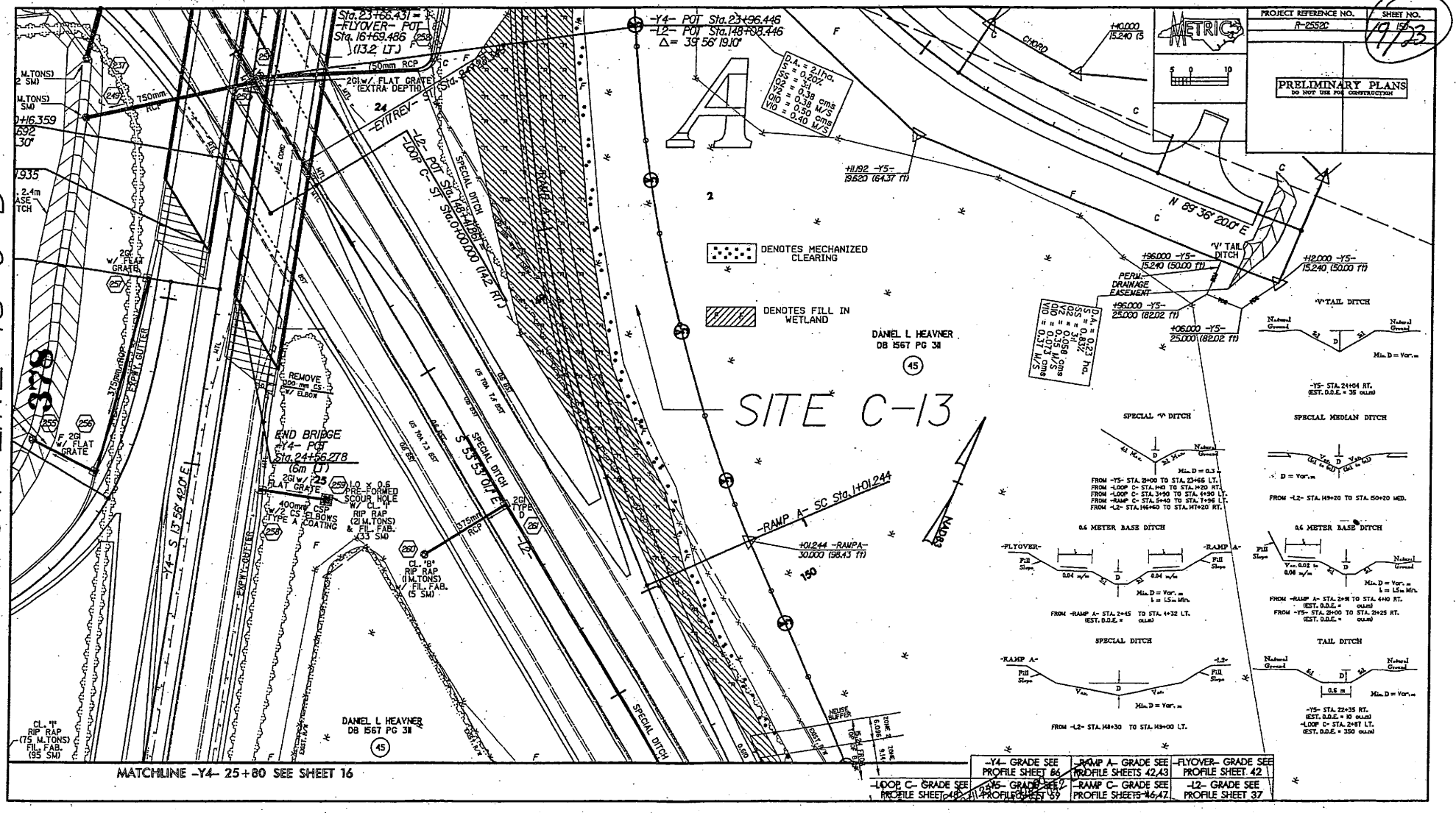

MATCHLINE -Y4- 25+80 SEE SHEET 15
MATCH LINE 16 A-B
MATCH LINE 16 A-D
SITE C-12
SITE C-13
SITE C-14
D
METRIC
5 0 10
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
17 OF 23
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
-RAMP A-
-L2- POT Sta. 150+80.000 =
-RAMP A- POT Sta. 0+00.000 (142 LF)
Δ = 2°15'00"
+80.000 -L2-
38.419 (126.05 FT)
END W.W. FENCE
END C/A
N 57°35'01"W
S 55°53'01"E
-L2-
SPECIAL DITCH
REMOVE
PROP HEADWALL
1050 mm RCP
COLLAR
RETAIN
ADJUST
FALSE SUMP
375mm RCP w/ COLLAR
CL "B" RIP RAP
(2 M.TONS) W/ FIL. FAB. (6 SM)
DANIEL L HEAVNER
DB 1567 PG 311
ENDWALL
HOUSE BUFFER
TOP OF BANK
TS Sta. 25+74.922
POS Sta. 27+20.000 =
-L2- POT Sta. 8+76.880 (Δ= 110°00'0.00")
-D- POT Sta. 4+56.376 (Δ= 90°00'0.00")
ST Sta. 4+42.748
-RAMP D-
+09.994 -RAMPD-
30.000 (98.43 ft)
CHORD
SPECIAL MEDIAN DITCH
FROM -L2- STA. 150+20 TO STA. 150+88 MED.
FROM -L2- STA. 154+14 TO STA. 154+50 MED.
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
D.A. = 0.22 ha.
Vis = 3.50%
Vid = 0.057 cms
Vio = 0.46 M/S
Qio = 0.071 cms
Vio = 0.52 M/S


MATCHLINE -Y4- 25+80 SEE SHEET 15
MATCH LINE 16 A-B
MATCH LINE 16 A-D
SITE C-12
SITE C-13
SITE C-14
METRIC
PROJECT REFERENCE NO.
R-2558C
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
17/1/23
CONST.REV.
R/W REV.
SPECIAL MEDIAN DITCH
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 1567 PG 311
DANIEL L HEAVNER DB 1567 PG 311
-RAMP A-
-RAMP D-
-L2-
-L3-
SPECIAL DITCH
N 51°35'01"W
S 53°53'01"E
RETAIN 1050mm RCP
ADJUST
PROP HEADWALL
1050 mm RCP
315mm RCP W/ COLLAR
FALSE SUMP
ENDWALL
CHORD
D.A. = 0.22 ha.
Qss = 0.057 cms
Vss = 0.46 M/S
Qss = 0.071 cms
Vss = 0.92 M/S

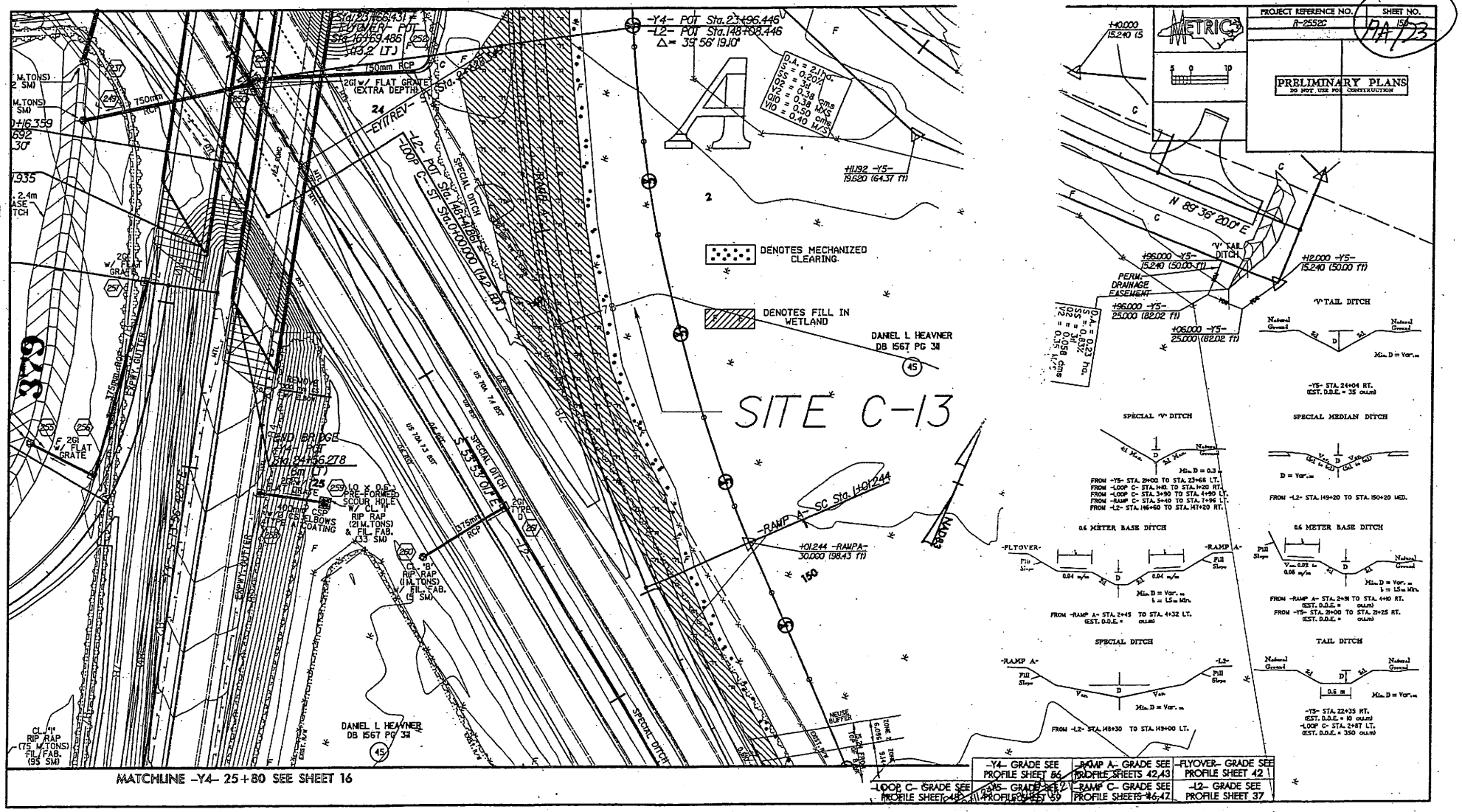

MATCH LINE 15 A-B
MATCH LINE 15 A-D
SITE C-13
METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
18 OF 22
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DONALD H WILLIAMSON
DB 872 PG 825
39
-Y4- CS Sta. 22+66.431
BEGIN BRIDGE -Y4- POS Sta. 23+42.121 (6m RT)
-Y4REV- CS Sta. 23+36.908
BEGIN BRIDGE -Y4- POS Sta. 23+56.708 (6m LT)
-FLYOVER- S 15°56'42.0"E
N 14°17'31.5" W
RAMP A- ST Sta. 9+87.623
RAMP A- CS Sta. 2+97.623
-Y5- CS Sta. 23+11.91
-Y5- SC Sta. 21+71.956
-Y5- YS Sta. 21+11.956
S 14°17'31.5" E
+11.956 -Y5- 15.240 (50.00 ft)
+71.956 -Y5- 15.240 (50.00 ft)
+87.623 -RAMPA- 25.000 (82.02 ft)
+97.623 -RAMPA- 30.000 (98.43 ft)
+11.192 -Y5- 15.240 (50.00 ft)
+50.000 -Y5-
+68.800 -RAMPA- 30.000 (98.43 ft)
D.A. = 0.93 ha.
S = 0.34%
SS = 3d
Q2 = 0.16 cms
V2 = 0.32 M/S
Q10 = 0.19 cms
V10 = 0.33 M/S
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
-Y4- STA. 25+01 LT.
LAT. 'V' DITCH
LAT. 0.6m BASE DITCH
SPECIAL DITCH
CHORD
REMOVE 900 mm CS W/ ELBOW
REMOVE 375mm RCP
REMOVE 600mm RCP
REMOVE 300mm RCP W/ ELBOW
2GI w/ FLAT GRATE
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
2GI (EX. DEPTH) FALSE SUMP
2GI FALSE SUMP
2GI TYPE A
2GI w/ FLAT GRATE (EXTRA DEPTH)
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
CL. "B" RIP RAP (2 M.TONS) WITH FIL. FAB. (6 SM)
CL. "B" RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
CL. "B" RIP RAP (8 M.TONS) w/ FIL. FAB. (48 SM)
PLUG
PLUG REMOVE
375mm RCP
600mm RCP
PSRM
Rip Rap
Natural Ground
Filter Cloth
Layer Class I Rip Rap 0.45m thick with Filter Fabric

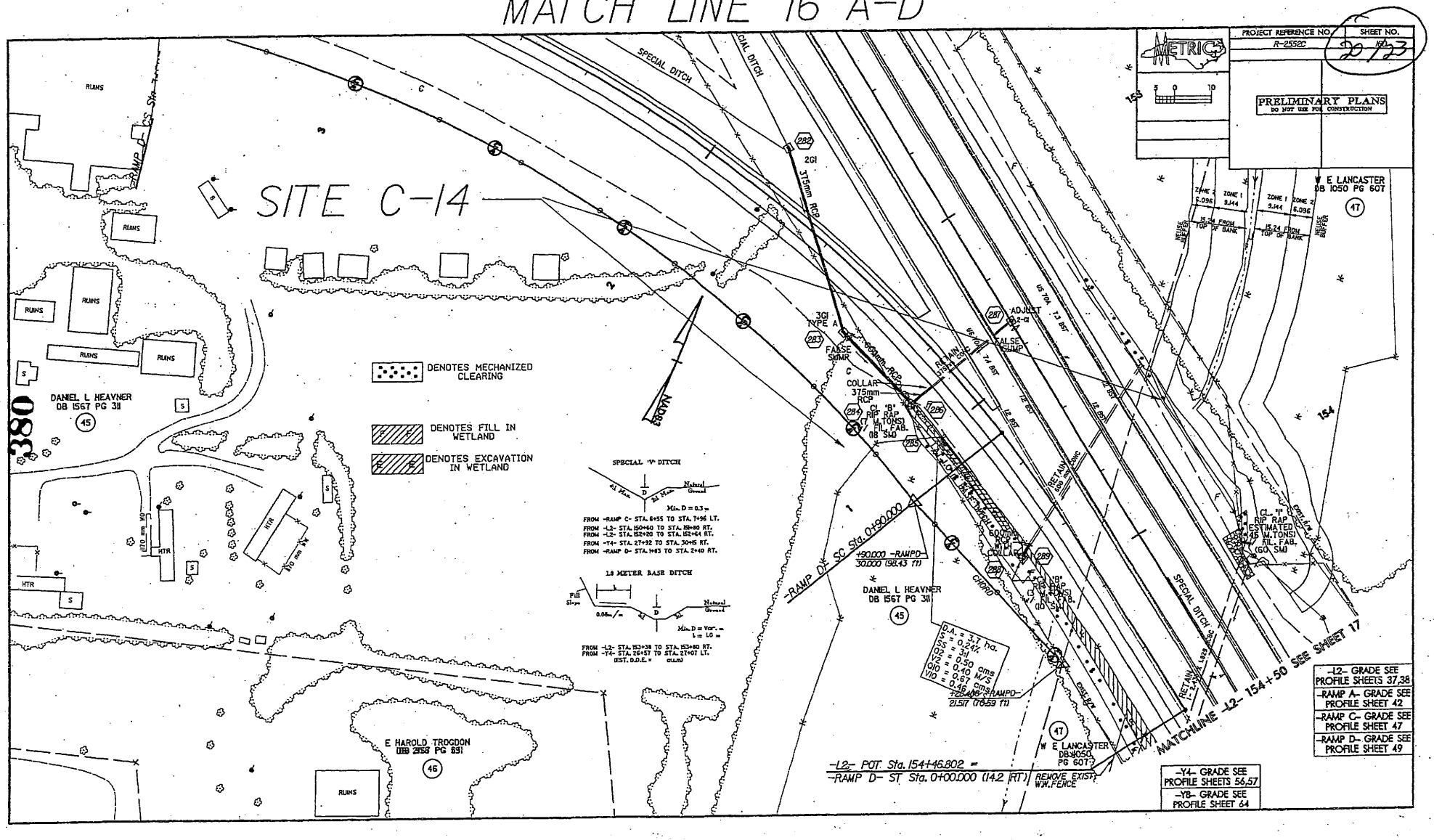

MATCH LINE 15 A-B
MATCH LINE 15 A-D
SITE C-13
METRIC
PROJECT REFERENCE NO.
R-2552C
R/W SHEET NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DONALD H WILLIAMSON
DB 1172 PG 825
-Y4- CS Sta. 22+66.431
BEGIN BRIDGE -Y4- POS Sta. 23+42.121 (6m RT)
-EOVREV- CS Sta. 23+36.909
-RAMP A- CS Sta. 21+87.623
-RAMP A- SC Sta. 21+11.956
-RAMP A- ST Sta. 21+11.956
-Y5- CS Sta. 23+11.91
-Y5- ST Sta. 23+11.91
-Y5- SC Sta. 21+11.956
-Y5- TS Sta. 21+11.956
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
-Y4- STA. 25+04 LT.

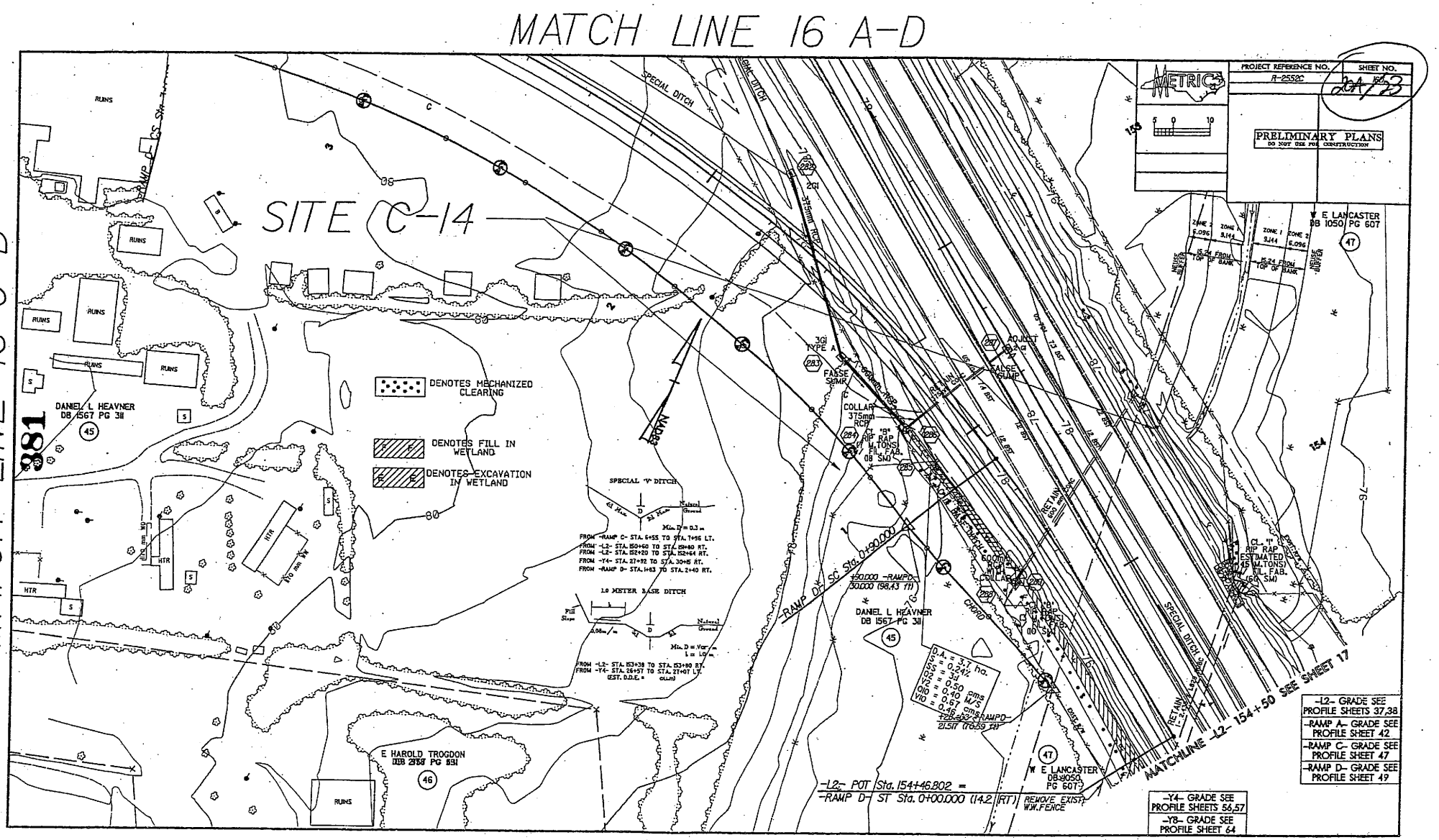
MATCH LINE 15 A-D



MATCH LINE 15 A-D

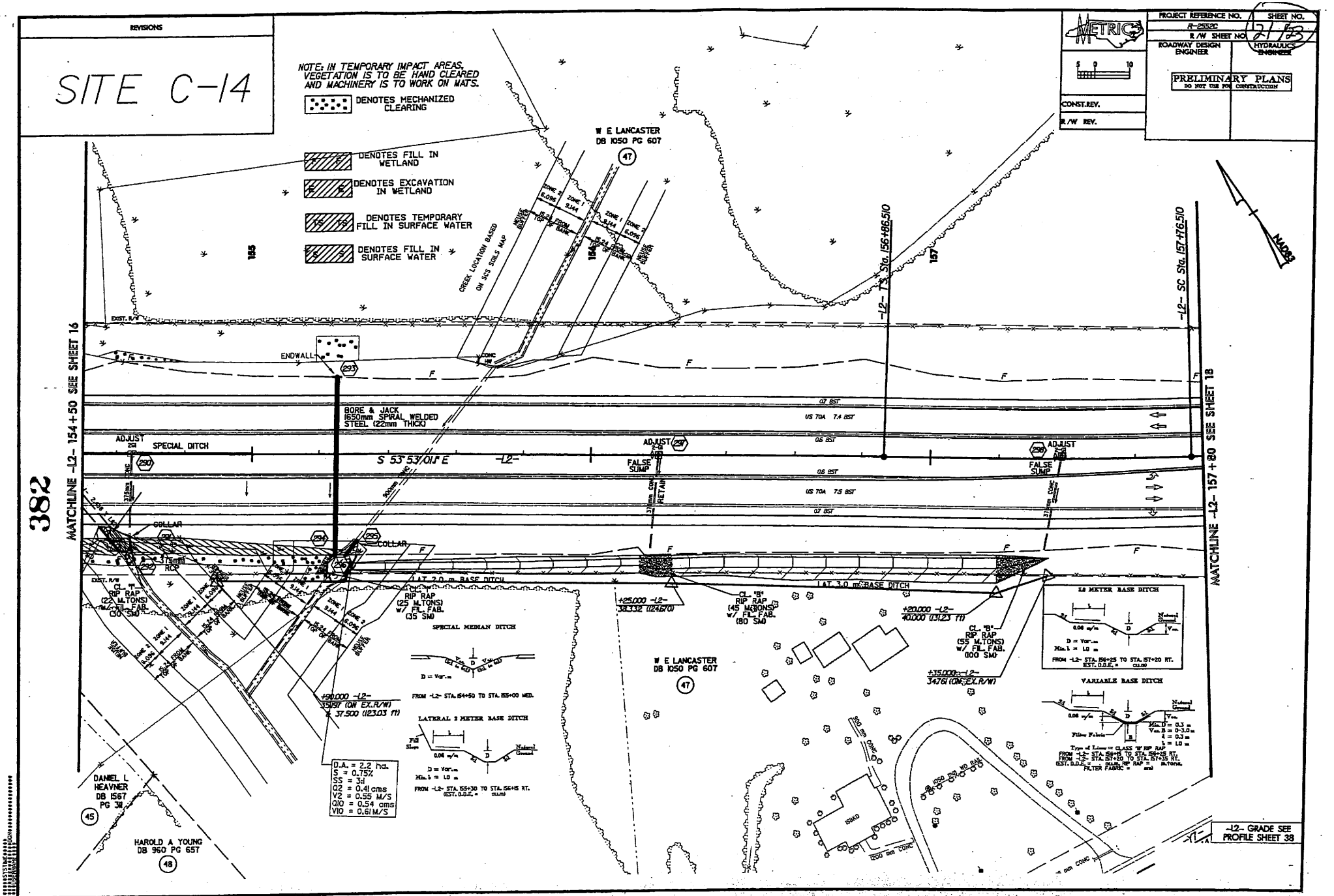



MATCH LINE 16 A-D
MATCH LINE 16 C-D
SITE C-14
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PROJECT REFERENCE NO. R-2552C
SHEET NO. 20
TOTAL SHEETS 123
METRIC
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
SPECIAL 'V' DITCH
1.0 METER BASE DITCH
DANIEL L HEAVNER DB 1567 PG 311
E HAROLD TROGDON DB 2958 PG 891
E LANCASTER DB 1050 PG 607
W E LANCASTER DB 1050 PG 607
RAMP C- STA 6+55
RAMP D- STA 0+00.000
+90.000 -RAMP D-
30.000 (98.43 ft)
+26.408 -RAMP D-
21.517 (70.59 ft)
-L2- POT. Sta. 154+46.802 = -RAMP D- ST. Sta. 0+00.000 (14.2 RT)
REMOVE EXIST. W.W. FENCE
MATCHLINE -L2- 154+50 SEE SHEET 17
-L2- GRADE SEE PROFILE SHEETS 37,38
-RAMP A- GRADE SEE PROFILE SHEET 42
-RAMP C- GRADE SEE PROFILE SHEET 47
-RAMP D- GRADE SEE PROFILE SHEET 49
-Y4- GRADE SEE PROFILE SHEETS 56,57
-Y8- GRADE SEE PROFILE SHEET 64
RUINS
SPECIAL DITCH
MAINT. ACCESS
FALSE SUMP
COLLAR 375mm RCP
RIP RAP (ESTIMATED 45 M.TONS) FIL. FAB. (60 SM)
ADJUST TO 2-CI
2CI
3CI TYPE A
HTR
380


MATCH LINE 16 A-D
MATCH LINE 16 C-D
SITE C-14
PROJECT REFERENCE NO. A-2552C
SHEET NO. 24 OF 33
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
DANIEL L HEAVNER DB 1567 PG 311
E HAROLD TROGDON DB 2158 PG 591
W E LANCASTER DB 1050 PG 607
SPECIAL DITCH
SPECIAL "V" DITCH
10 METER BASE DITCH
-RAMP D- STA. 0+90.000
-RAMP D- ST Sta. 0+00.000 (14.2 RT)
MATCHLINE -L2- 154+50 SEE SHEET 17
-L2- GRADE SEE PROFILE SHEETS 37,38
-RAMP A- GRADE SEE PROFILE SHEET 42
-RAMP C- GRADE SEE PROFILE SHEET 47
-RAMP D- GRADE SEE PROFILE SHEET 49
-Y4- GRADE SEE PROFILE SHEETS 56,57
-Y8- GRADE SEE PROFILE SHEET 64

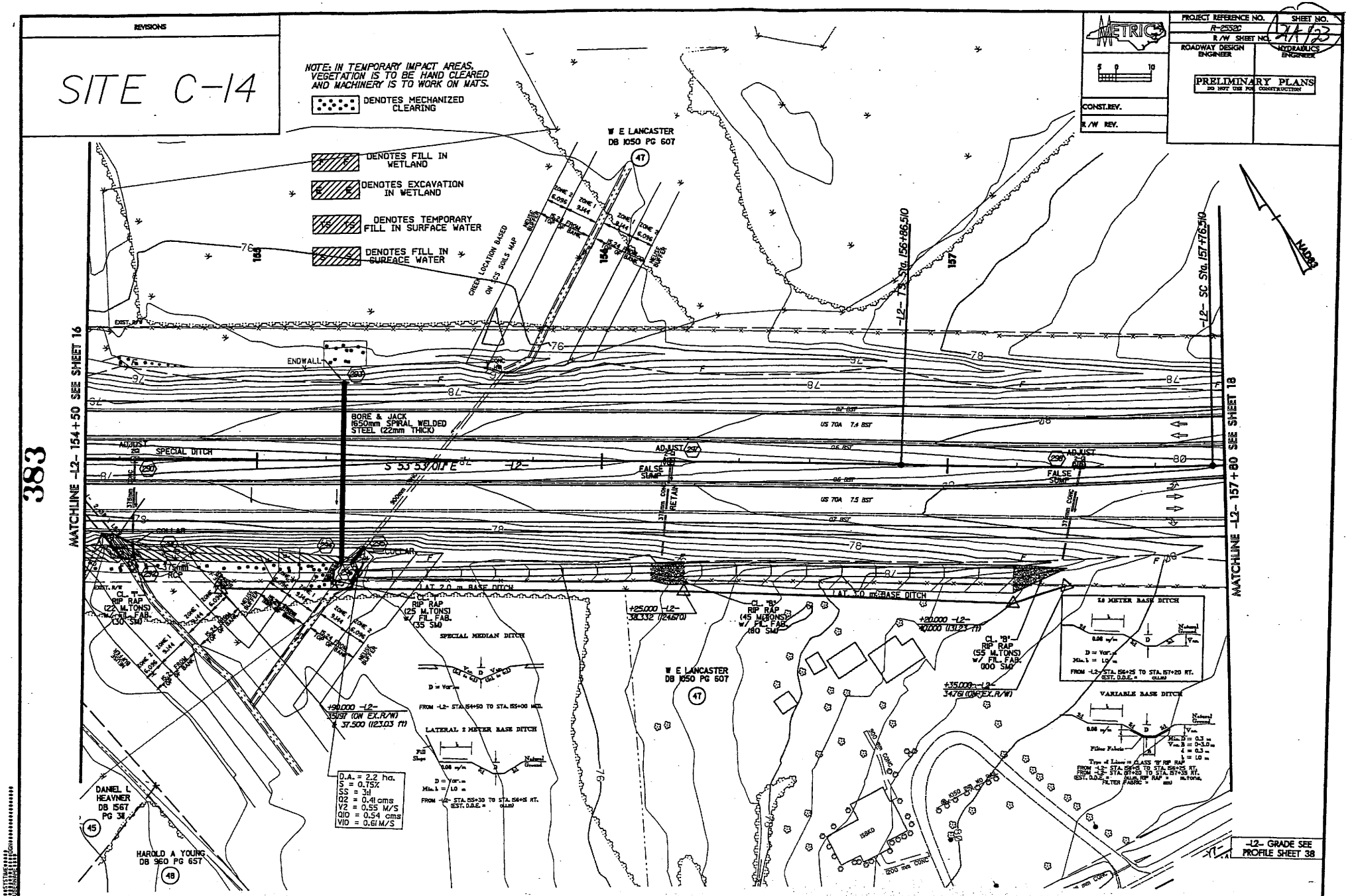
REVISIONS

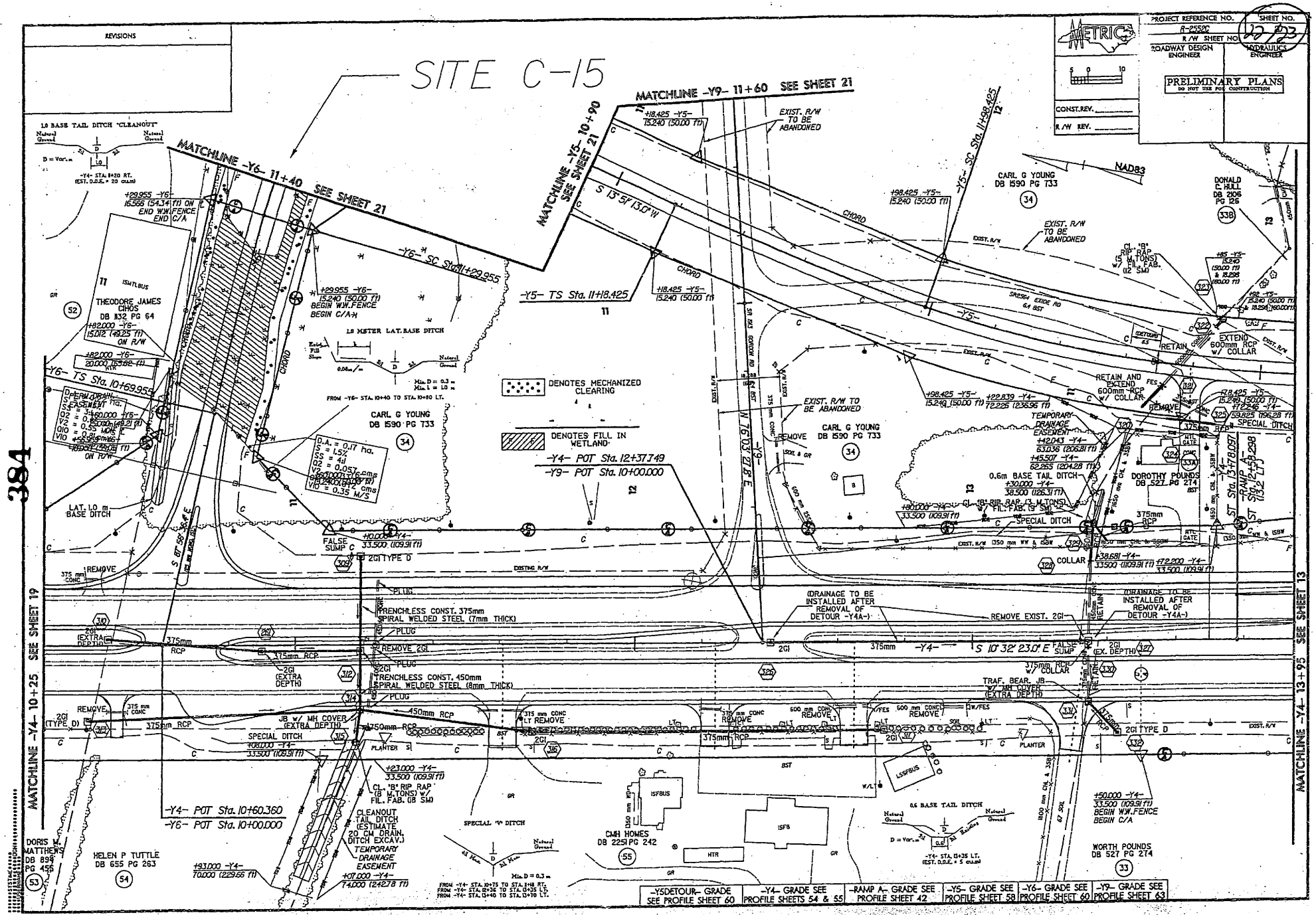
SITE C-14

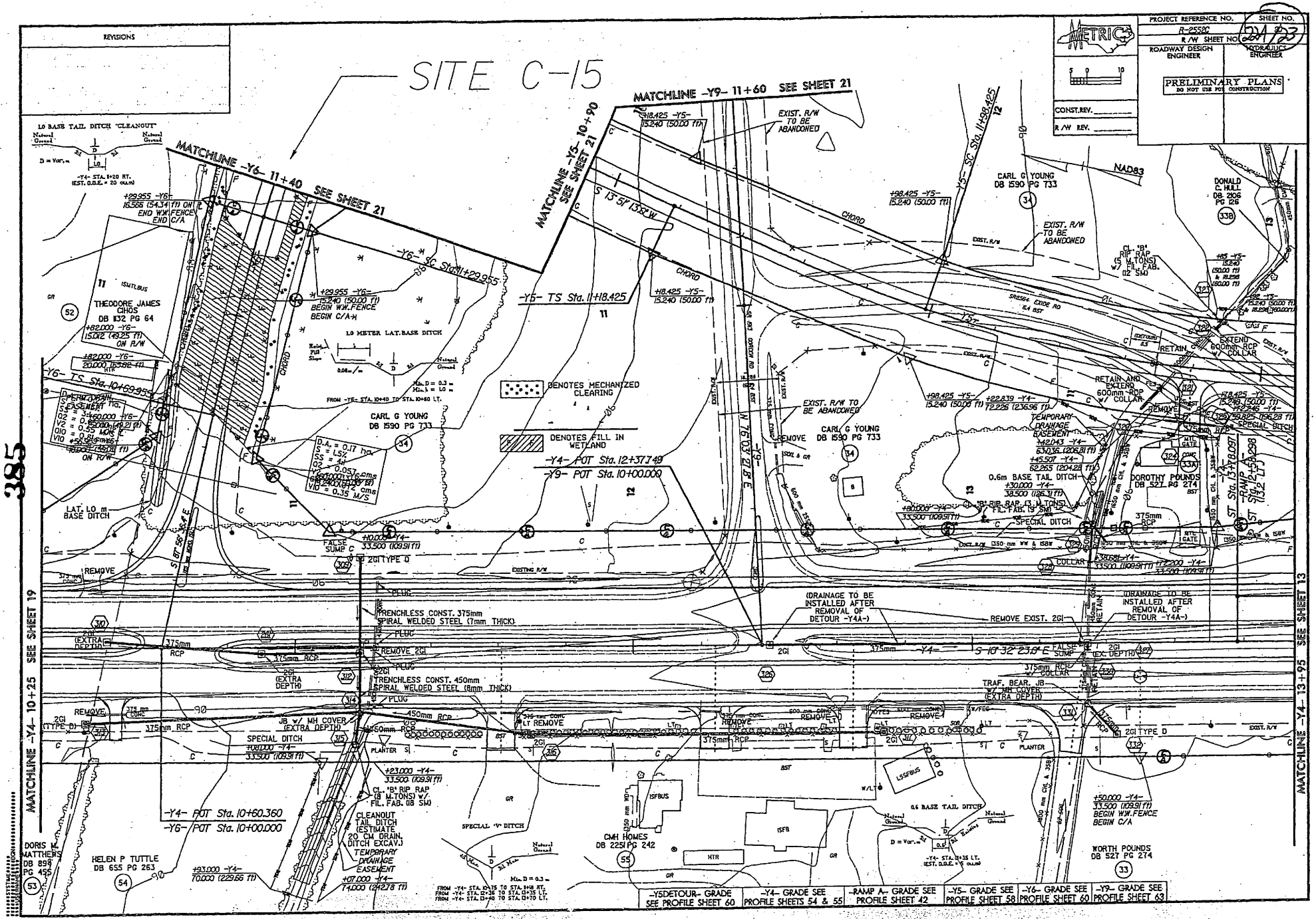


REVISIONS

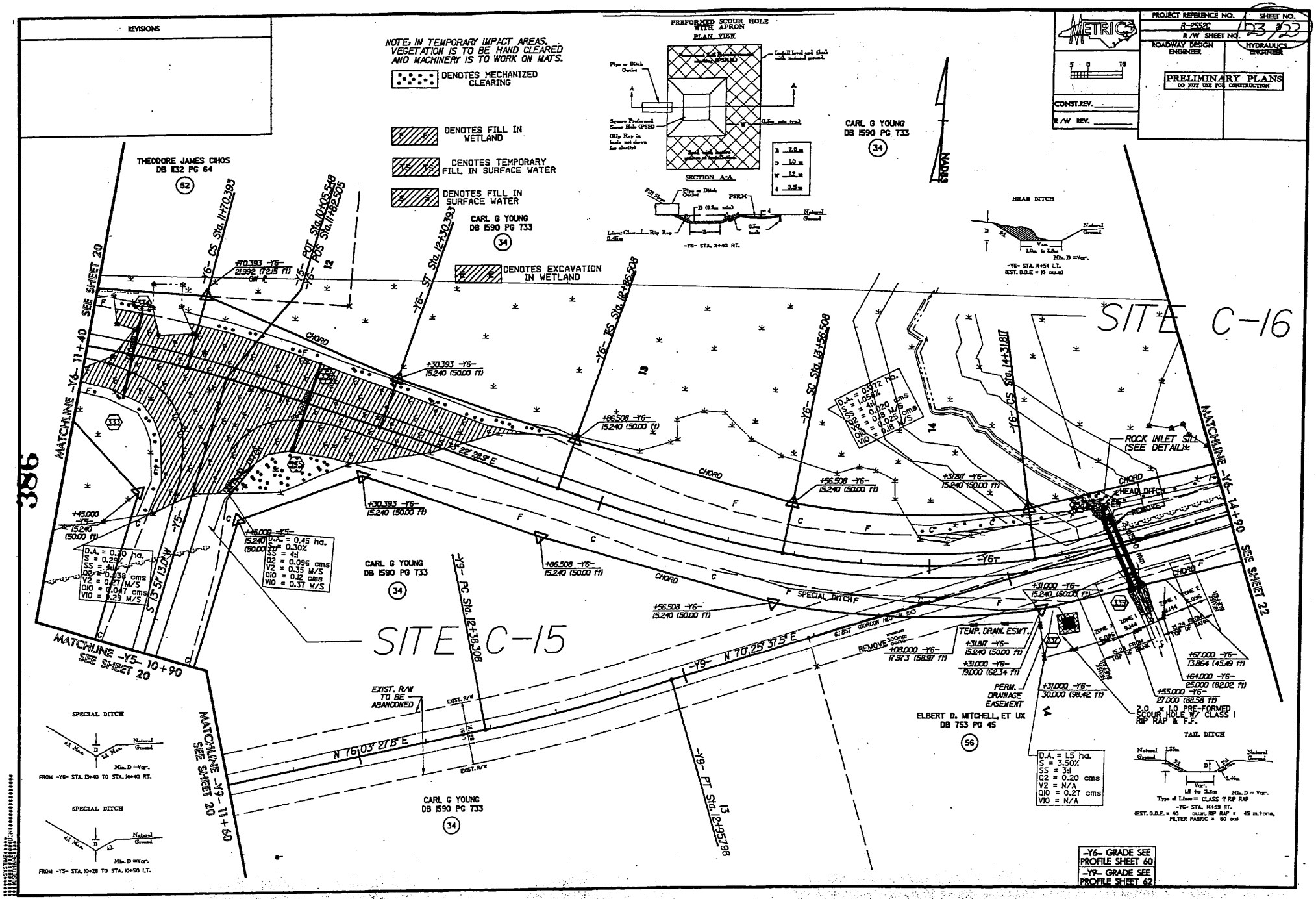
SITE C-14

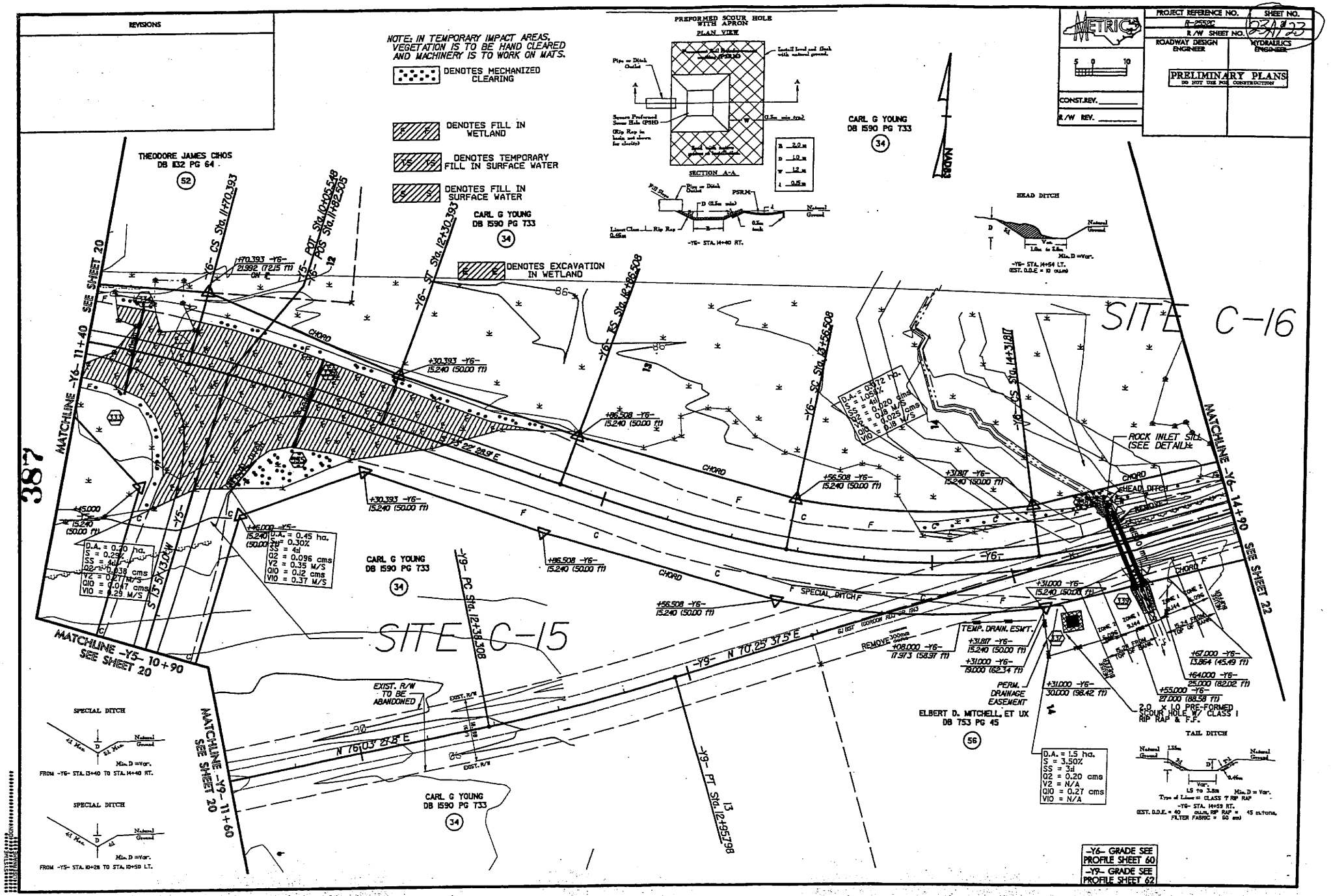



SITE C-15
REVISIONS
METRIC
PROJECT REFERENCE NO. R-2520C
SHEET NO. 10/23
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
MATCHLINE -Y6- 11+40 SEE SHEET 21
MATCHLINE -Y5- 10+90 SEE SHEET 21
MATCHLINE -Y9- 11+60 SEE SHEET 21
-Y6- SC Sta. 11+29.955
-Y5- TS Sta. 11+18.425
-Y5- SC Sta. 11+98.425
-Y6- TS Sta. 10+69.954
-Y4- POT Sta. 12+37.749
-Y9- POT Sta. 10+00.000
-Y4- POT Sta. 10+60.360
-Y6- POT Sta. 10+00.000
L9 BASE TAIL DITCH "CLEANOUT"
L9 METER LAT. BASE DITCH
LAT. L0 m BASE DITCH
0.6m BASE TAIL DITCH
SPECIAL 'V' DITCH
SPECIAL DITCH
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
EXIST. R/W TO BE ABANDONED
TEMPORARY DRAINAGE EASEMENT
CLEANOUT TAIL DITCH (ESTIMATE 20 CM DRAIN. DITCH EXCAV.) TEMPORARY DRAINAGE EASEMENT
FALSE SUMP C
FALSE SUMP
THEODORE JAMES CIHOS DB 832 PG 64
CARL G YOUNG DB 1590 PG 733
DONALD C HULL DB 206 PG 126
DOROTHY POUNDS DB 527 PG 274
WORTH POUNDS DB 527 PG 274
HELEN P TUTTLE DB 655 PG 263
DORIS M MATTHEWS DB 895 PG 455
CMH HOMES DB 2251 PG 242
EXTEND 600mm RCP W/ COLLAR
RETAIN AND EXTEND 600mm RCP W/ COLLAR
REMOVE EXIST. 2GI
TRENCHLESS CONST. 375mm SPIRAL WELDED STEEL (7mm THICK)
TRENCHLESS CONST. 450mm SPIRAL WELDED STEEL (8mm THICK)
JB W/ MH COVER (EXTRA DEPTH)
TRAF. BEAR. JB W/ MH COVER (EXTRA DEPTH)
CL 'B' RIP RAP (5 M TONS) W/ FIL. FAB. (12 SM)
CL 'B' RIP RAP (3 M TONS) W/ FIL. FAB. (6 SM)
DRAINAGE TO BE INSTALLED AFTER REMOVAL OF DETOUR -Y4A-
-Y5DETOUR- GRADE SEE PROFILE SHEET 60
-Y4- GRADE SEE PROFILE SHEETS 54 & 55
-RAMP A- GRADE SEE PROFILE SHEET 42
-Y5- GRADE SEE PROFILE SHEET 58
-Y6- GRADE SEE PROFILE SHEET 60
-Y9- GRADE SEE PROFILE SHEET 63
MATCHLINE -Y4- 10+25 SEE SHEET 19
MATCHLINE -Y4- 13+95 SEE SHEET 13
384


SITE C-15
REVISIONS
PROJECT REFERENCE NO. R-2558C
SHEET NO. 22 OF 23
R/W SHEET NO. 6
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
NAD83
MATCHLINE -Y6- 11+40 SEE SHEET 21
MATCHLINE -Y9- 11+60 SEE SHEET 21
MATCHLINE -Y5- 10+90 SEE SHEET 21
MATCHLINE -Y4- 10+25 SEE SHEET 19
MATCHLINE -Y4- 13+95 SEE SHEET 13
-Y6- TS Sta. 10+69.955
-Y6- SC Sta. 11+29.955
-Y5- TS Sta. 11+18.425
-Y5- SC Sta. 11+98.425
-Y4- POT Sta. 10+60.360
-Y6-/POT Sta. 10+00.000
-Y4- POT Sta. 12+37.749
-Y9- POT Sta. 10+00.000
-Y4- TS Sta. 13+78.097
-RAMP A- Sta. 12+59.298
ST Sta. 13+32.179
S 13°51'13"E
S 87°58'54"E
S 76°03'21"E
S 10°32'23"E
CHORD
EXIST. R/W TO BE ABANDONED
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
LO BASE TAIL DITCH "CLEANOUT"
LO METER LAT. BASE DITCH
0.6 BASE TAIL DITCH
SPECIAL DITCH
SPECIAL "V" DITCH
LAT. LO m BASE DITCH
0.6m BASE TAIL DITCH
TEMPORARY DRAINAGE EASEMENT
CLEANOUT TAIL DITCH (ESTIMATE 20 CM DRAIN. DITCH EXCAV.) TEMPORARY DRAINAGE EASEMENT
CL. "B" RIP RAP (18 M. TONS) W/ FIL. FAB. (18 SM)
CL. "B" RIP RAP (15 M. TONS) W/ FIL. FAB. (12 SM)
RETAIN AND EXTEND 600mm RCP W/ COLLAR
EXTEND 600mm RCP W/ COLLAR
REMOVE
REMOVE EXIST. 2GI
TRENCHLESS CONST. 375mm SPIRAL WELDED STEEL (7mm THICK)
TRENCHLESS CONST. 450mm SPIRAL WELDED STEEL (8mm THICK)
(DRAINAGE TO BE INSTALLED AFTER REMOVAL OF DETOUR -Y4A-)
FALSE SUMP
JB W/ MH COVER (EXTRA DEPTH)
TRAF. BEAR. JB W/ MH COVER (EXTRA DEPTH)
CARL G YOUNG DB 1590 PG 733
THEODORE JAMES CHOS DB 832 PG 64
DORIS M. MATTHEWS DB 895 PG 456
HELEN P TUTTLE DB 655 PG 263
CMH HOMES DB 2251 PG 242
DONALD C. HILL DB 206 PG 226
DOROTHY POUNDS DB 527 PG 274
WORTH POUNDS DB 527 PG 274
-Y5DETOUR- GRADE SEE PROFILE SHEET 60
-Y4- GRADE SEE PROFILE SHEETS 54 & 55
-RAMP A- GRADE SEE PROFILE SHEET 42
-Y5- GRADE SEE PROFILE SHEET 58
-Y6- GRADE SEE PROFILE SHEET 60
-Y9- GRADE SEE PROFILE SHEET 63

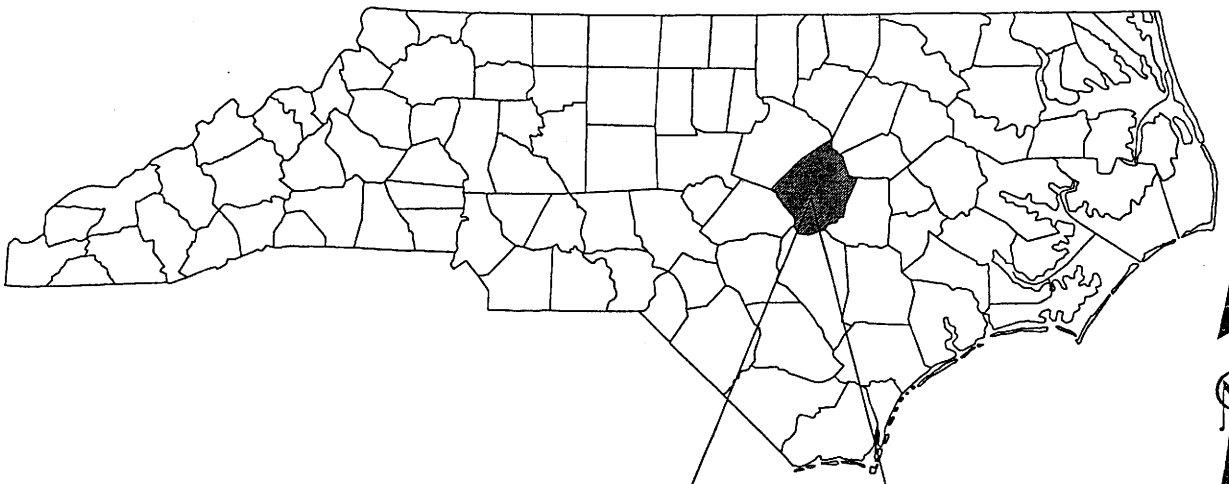
385

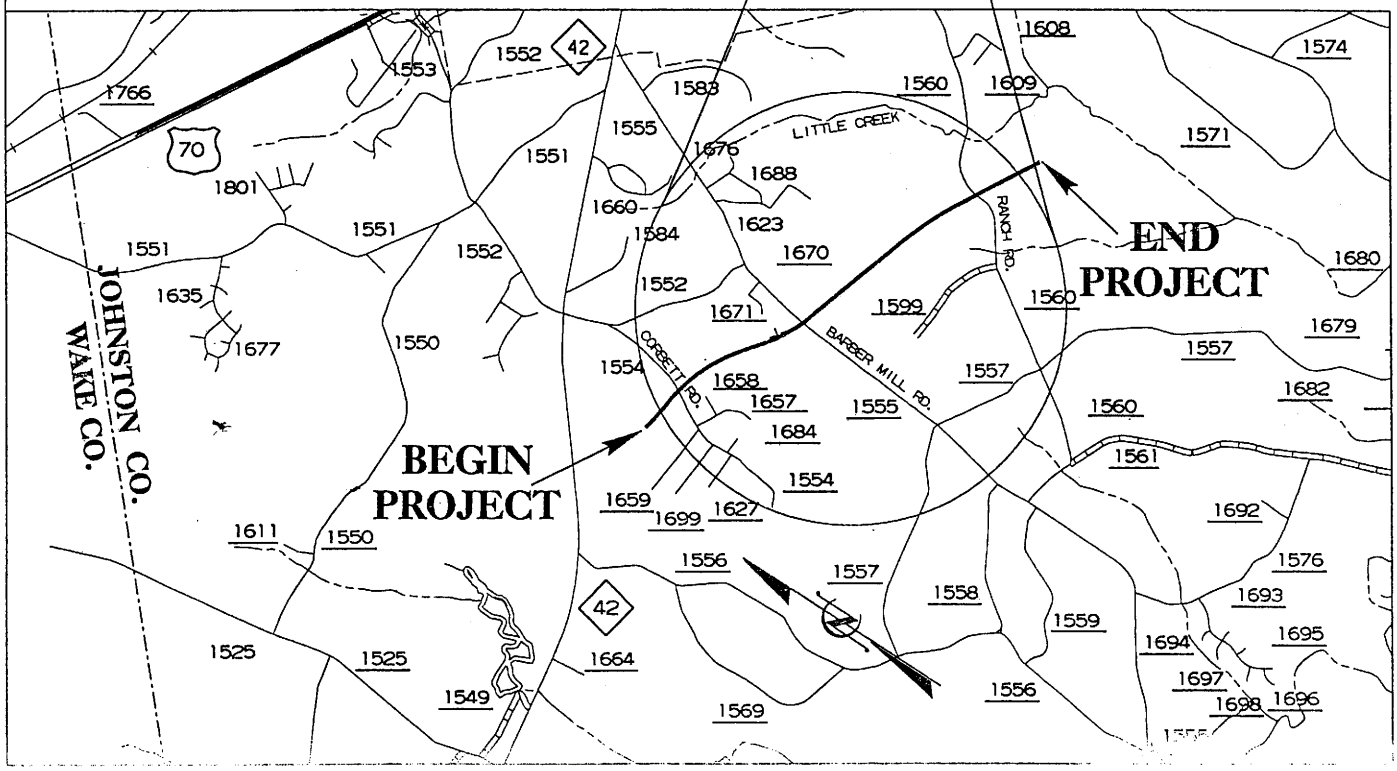

REVISIONS
NOTE: IN TEMPORARY IMPACT AREAS, VEGETATION IS TO BE HAND CLEARED AND MACHINERY IS TO WORK ON MATS.
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
HEAD DITCH
METRIC
PROJECT REFERENCE NO. C-2532C
SHEET NO. D3 22
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
THEODORE JAMES CHOS DB 1132 PG 64
CARL G YOUNG DB 1590 PG 733
ELBERT D. MITCHELL ET UX DB 753 PG 45
-Y6- CS Sta. 11+70.393
-Y6- POT Sta. 10+05.548
-Y6- POS Sta. 11+82.505
-Y6- ST Sta. 12+30.393
-Y6- ES Sta. 12+86.508
-Y6- SC Sta. 13+56.508
-Y6- CS Sta. 14+31.817
-Y9- PC Sta. 12+38.308
-Y9- PT Sta. 12+95.798
MATCHLINE -Y6- 11+40 SEE SHEET 20
MATCHLINE -Y5- 10+90 SEE SHEET 20
MATCHLINE -Y9- 11+60 SEE SHEET 20
MATCHLINE -Y6- 14+90 SEE SHEET 22
SITE C-15
SITE C-16
ROCK INLET SIL (SEE DETAIL)
TEMP. DRAIN. ESMT.
PERM. DRAINAGE EASEMENT
EXIST. R/W TO BE ABANDONED
SPECIAL DITCH
TAIL DITCH
2.0 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
-Y6- GRADE SEE PROFILE SHEET 60
-Y9- GRADE SEE PROFILE SHEET 62
386


REVISIONS
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
DENOTES EXCAVATION IN WETLAND
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
HEAD DITCH
METRIC
PROJECT REFERENCE NO. R-2552C
R /W SHEET NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
THEODORE JAMES CHOS DB 1132 PG 64
CARL G YOUNG DB 1590 PG 733
ELBERT D. MITCHELL, ET UX DB 753 PG 45
-Y6- CS Sta. 11+70.393
-Y6- PCT Sta. 12+05.548
-Y6- PCS Sta. 11+82.505
-Y6- ST Sta. 12+30.393
-Y6- RS Sta. 12+86.508
-Y6- SC Sta. 13+56.508
-Y6- ET Sta. 14+19.35
-Y9- PC Sta. 12+38.308
-Y9- PT Sta. 12+95.798
MATCHLINE -Y6- 11+40 SEE SHEET 20
MATCHLINE -Y5- 10+90 SEE SHEET 20
MATCHLINE -Y9- 11+60 SEE SHEET 20
MATCHLINE -Y6- 14+90 SEE SHEET 22
SITE C-15
SITE C-16
ROCK INLET SILL (SEE DETAIL)
TEMP. DRAIN. ESMT.
PERM. DRAINAGE EASEMENT
EXIST. R/W TO BE ABANDONED
REMOVE 300mm CMP
2.0 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
TAIL DITCH
SPECIAL DITCH
-Y6- GRADE SEE PROFILE SHEET 60
-Y9- GRADE SEE PROFILE SHEET 62
387

388

NORTH CAROLINA





BUFFER PERMIT DRAWING
VICINITY MAP
R-2552B

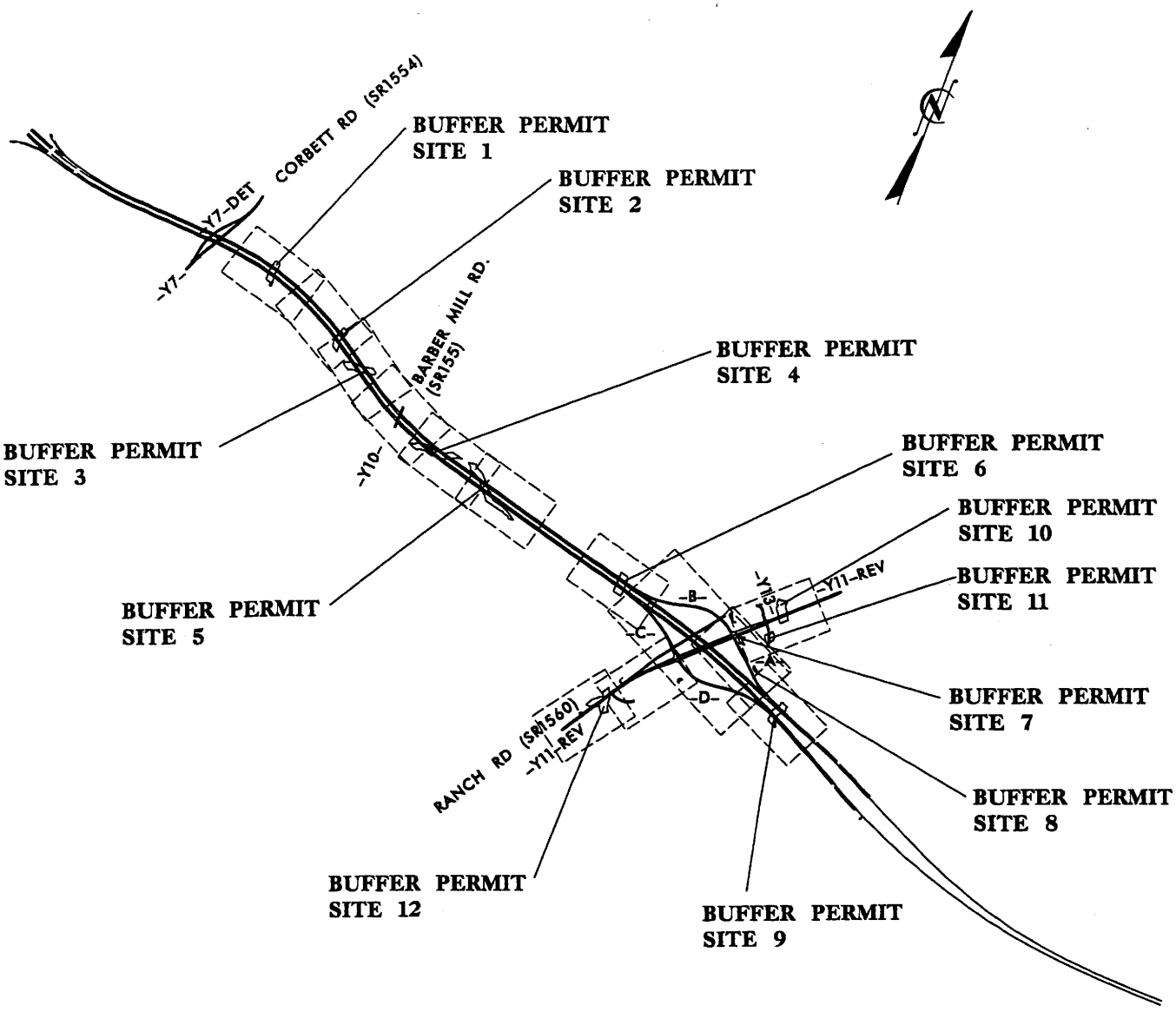
NCDOT
DIVISION OF HIGHWAYS
JOHNSTON COUNTY

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

9/23/2004 R:\01\056065\Plan\...\ltsbuffer\BUFFvicinitymap.dgn

SITE MAP



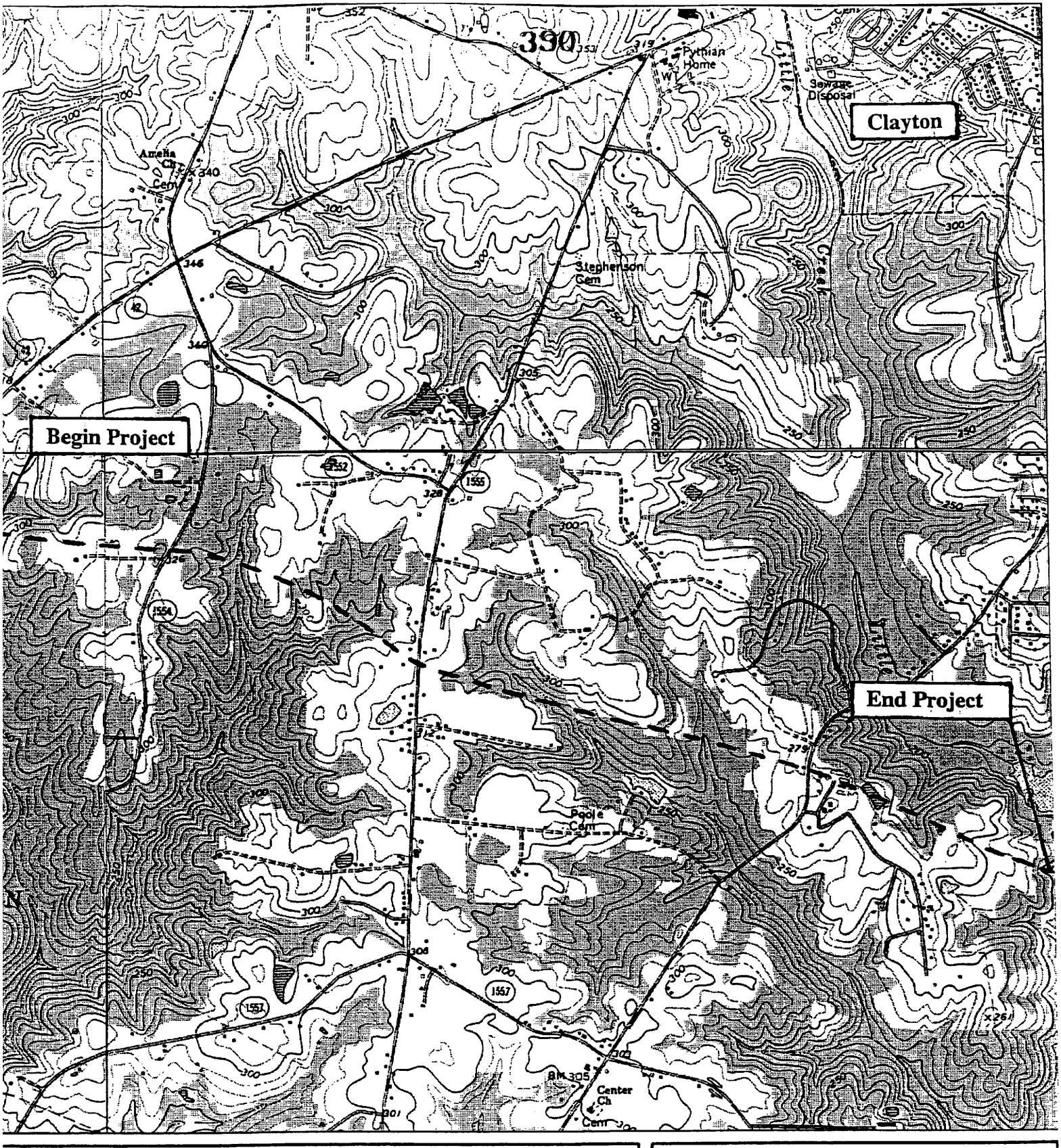
BUFFER PERMIT DRAWING
VICINITY MAP

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*

9/23/2004 R:\01056065\Plan\permits\buffer\buff\SITEMAP.dgn



BUFFER PERMIT DRAWING LOCATION R–2552B

SCALE: 1" = 2000'

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 3 OF 11 *8/4/04*

391

LEGEND

—WLB— WETLAND BOUNDARY

WETLAND

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

DENOTES TEMPORARY WETLAND IMPACTS (HAND CLEARING ONLY)

DENOTES EXCAVATION IN WETLAND

DENOTES TEMPORARY SURFACE WATER IMPACTS

DENOTES MECHANIZED CLEARING

DENOTES MITIGABLE BUFFER IMPACTS ZONE 1

DENOTES MITIGABLE BUFFER IMPACTS ZONE 2

DENOTES ALLOWABLE BUFFER IMPACTS ZONE 1

DENOTES ALLOWABLE BUFFER IMPACTS ZONE 2

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

—NG— NATURAL GROUND

PL PROPERTY LINE

—TDE— TEMP. DRAINAGE EASEMENT

—PDE— PERMANENT DRAINAGE EASEMENT

—EAB— EXIST. ENDANGERED ANIMAL BOUNDARY

—EPB— EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

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***

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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. 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 7 OF 11 **9/17/2004**

9/17/2004 R:\01\056065\Plan\permits\buffer\r2552_prop.dgn

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	66 in RCP	-L- Sta 68+60+/-	X					11249.7	12195.9	23445.6		
2	54 in RCP	-L- Sta 73+30+/-	X					14866.2	11954.1	26820.3		
3	60 in RCP	-L- Sta 74+50-75+80	X					24801.0	19088.2	43889.2		
4	42 in RCP	-L- Sta 79+60-82+00	X					36510.9	30222.6	66733.5		
5	10' x 7' RCBC	-L- Sta 82+30-86+00	X					37785.0	37688.1	75473.1	9671.3	7493.9
6	10' x 7' RCBC	-L- Sta 92+20+/-	X					25888.5	12147.8	38036.3		
7	48 in RCP	-RPA- Sta 4+00	X		4845.3	5625.8	10471.1					
8	24 in RCP	-RPA- Sta 2+40	X		1146.5	2137.9	3284.4					
9	48 in RCP	-L- Sta 102+30+/-	X					20306.2	18380.4	38686.6		
10	Bridge	-Y11- REV Sta 14+80	X					14885.8	11322.6	26208.4	5565.5	4911.0
11	48 in RCP	-Y13- REV Sta 9+20	X					11070.7	5718.3	16789.0		
12	10' x 7' RCBC &	-Y11- REV	X					36490.6	12864.5	49355.1	5770.0	3111.1
	8' x 8' RCBC	Sta 24+10 - 25+60	X									
TOTAL:					5991.8	7763.7	13755.5	233854.6	171582.5	405437.1	21006.8	15516.0

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

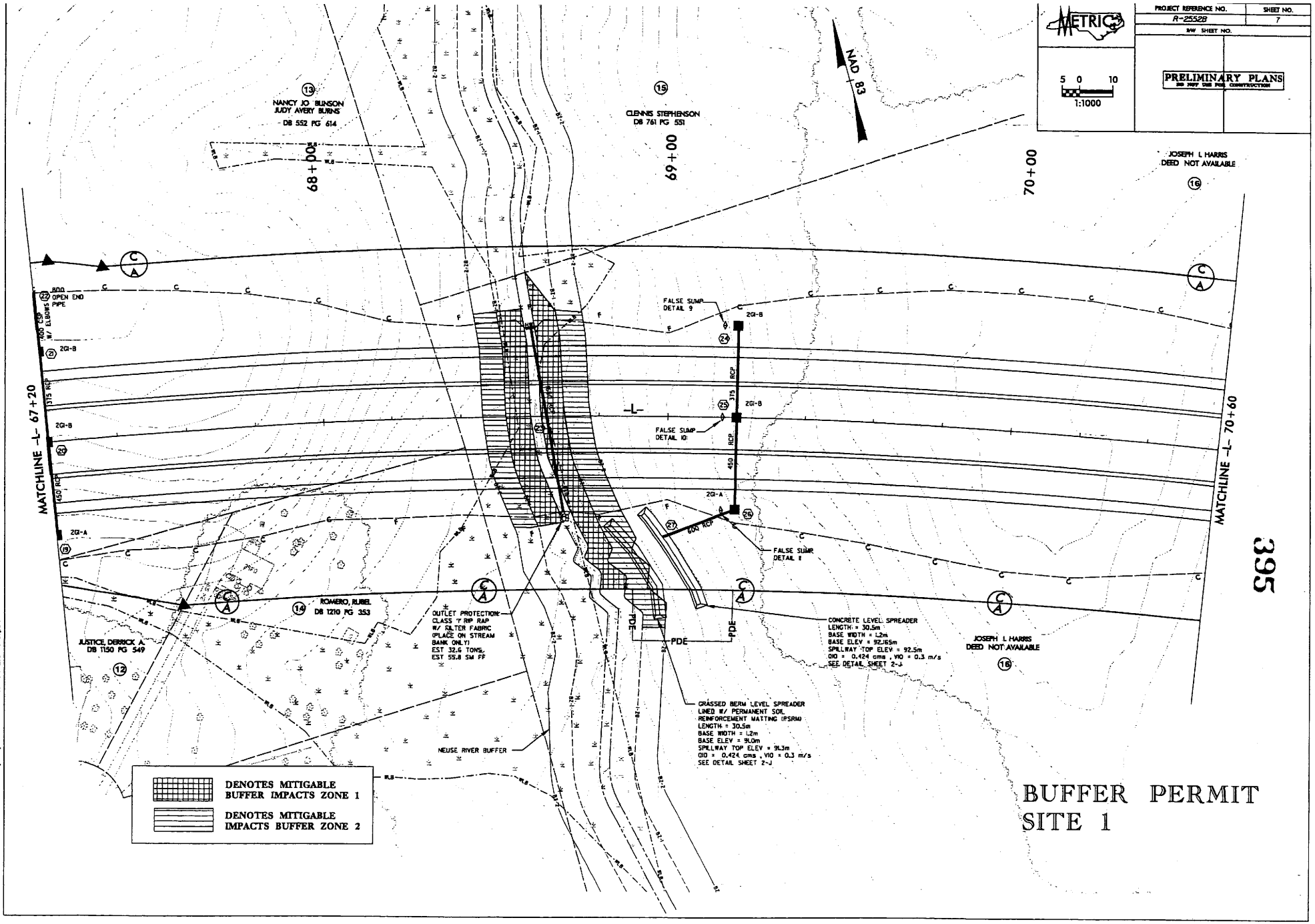
JOHNSTON COUNTY
PROJECT: 8.T311002 (R-2552B)
US-70 CLAYTON BYPASS
EAST OF NC 42 TO EAST OF SR 1560
10/14/04
SHEET 5 OF 11

BUFFER IMPACTS SUMMARY (within wetlands)

		WETLANDS IN BUFFER	
Site	Station	ZONE 1 (ft^2)	ZONE 2 (ft^2)
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

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
9/23/2004
SHEET OF


METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
7
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
NAD 83
NANCY JO BUNSON
JUDY AVERY BURNS
DB 552 PG 614
CLENNIS STEPHENSON
DB 761 PG 551
JOSEPH L HARRIS
DEED NOT AVAILABLE
68+00
69+00
70+00
MATCHLINE -L- 67+20
MATCHLINE -L- 70+60
-L-
800 OPEN END PIPE
100 RCSP W/ ELBOWS
375 RCP
450 RCP
600 RCP
2GI-A
2GI-B
FALSE SUMP DETAIL 9
FALSE SUMP DETAIL 10
FALSE SUMP DETAIL 11
ROMERO, RUBEL
DB 1210 PG 353
JUSTICE, DERRICK A.
DB 1150 PG 549
OUTLET PROTECTION CLASS 'I' RIP RAP W/ FILTER FABRIC (PLACE ON STREAM BANK ONLY)
EST 32.6 TONS,
EST 55.8 SM FF
NEUSE RIVER BUFFER
PDE
CONCRETE LEVEL SPREADER
LENGTH = 30.5m
BASE WIDTH = 1.2m
BASE ELEV = 92.165m
SPILLWAY TOP ELEV = 92.5m
QIO = 0.424 cms , VIO = 0.3 m/s
SEE DETAIL SHEET 2-J
GRASSED BERM LEVEL SPREADER LINED W/ PERMANENT SOIL REINFORCEMENT MATTING (PSRM)
LENGTH = 30.5m
BASE WIDTH = 1.2m
BASE ELEV = 91.0m
SPILLWAY TOP ELEV = 91.3m
QIO = 0.424 cms , VIO = 0.3 m/s
SEE DETAIL SHEET 2-J
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
BUFFER PERMIT
SITE 1
395
9/23/2004
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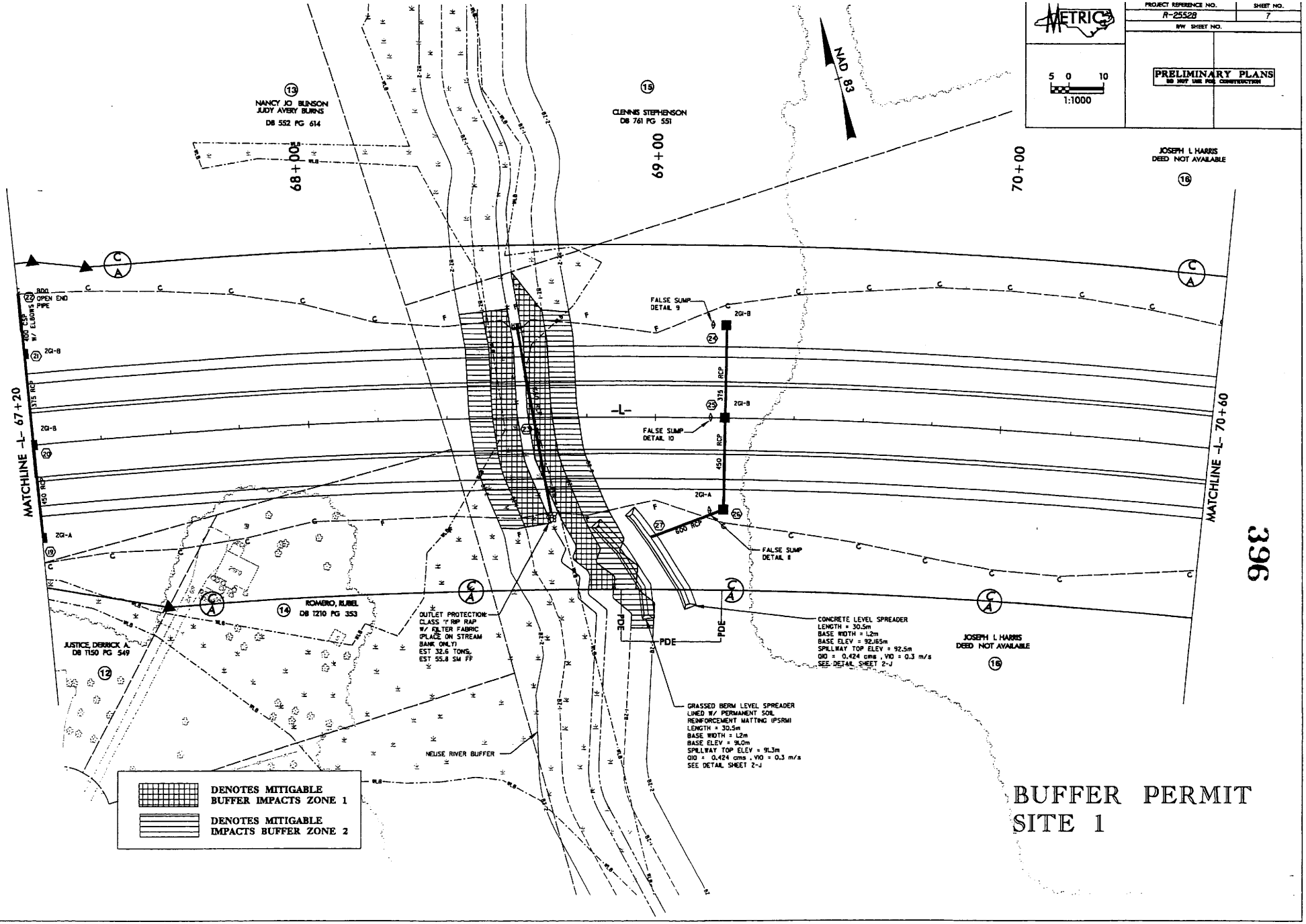

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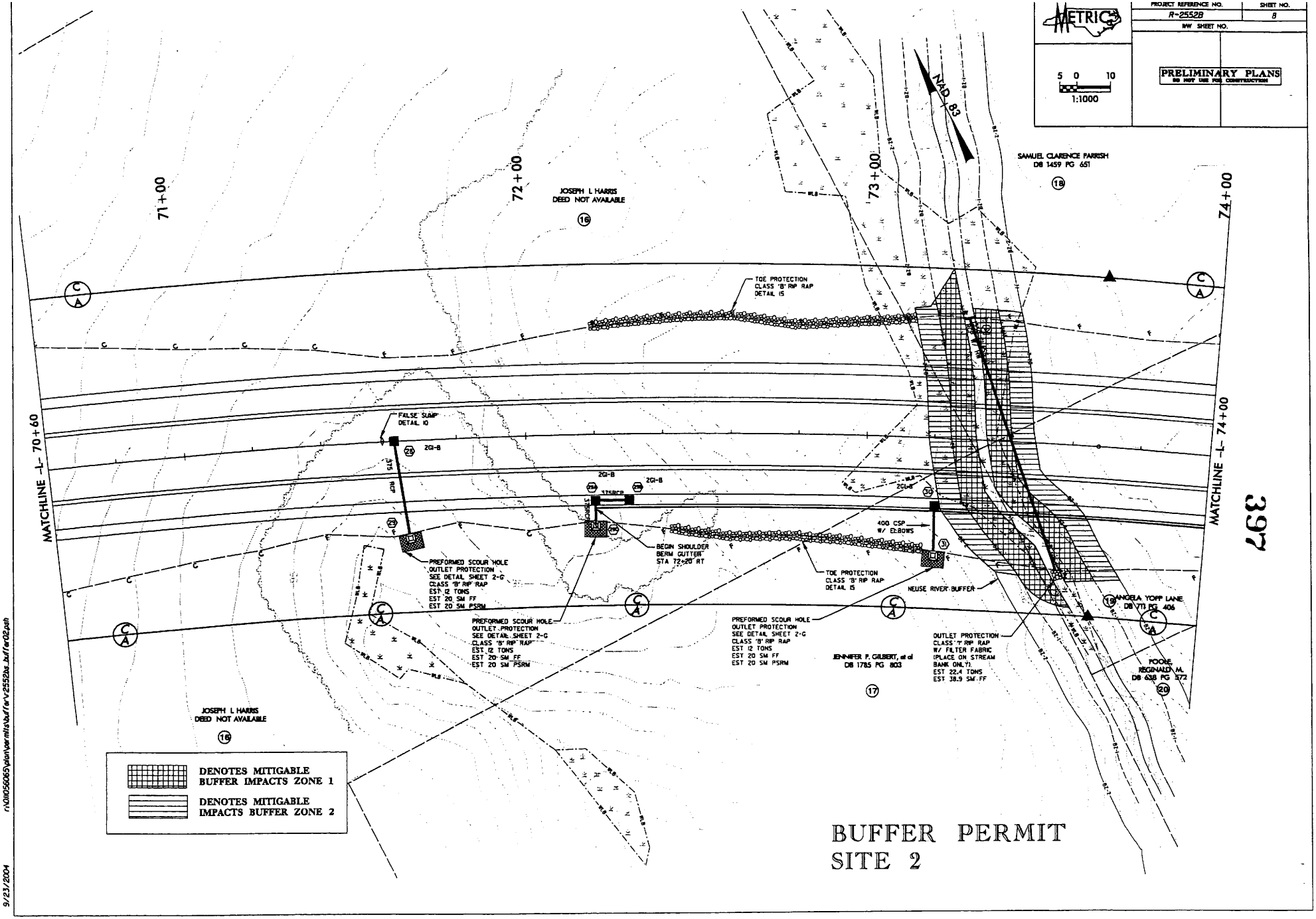
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
8
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
NAD 83
71+00
72+00
73+00
74+00
MATCHLINE -L- 70+60
MATCHLINE -L- 74+00
JOSEPH L HARRIS
DEED NOT AVAILABLE
SAMUEL CLARENCE FARRISH
DB 1459 PG 651
TOE PROTECTION
CLASS 'B' RIP RAP
DETAIL 15
FALSE SUMP
DETAIL 10
2GI-B
375RCP
400 CSP
W/ ELBOWS
BEGIN SHOULDER
BERM GUTTER
STA 72+20 RT
PREFORMED SCOUR HOLE
OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS 'B' RIP RAP
EST 12 TONS
EST 20 SM FF
EST 20 SM PSRM
NEUSE RIVER BUFFER
JENNIFER P. GILBERT, et al
DB 1785 PG 803
OUTLET PROTECTION
CLASS 'I' RIP RAP
W/ FILTER FABRIC
(PLACE ON STREAM
BANK ONLY)
EST 22.4 TONS
EST 38.9 SM FF
ANGELA YOPP LANE
DB V11 PG 406
POOLE,
REGINALD M.
DB 638 PG 572
DENOTES MITIGABLE
BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE
IMPACTS BUFFER ZONE 2
BUFFER PERMIT
SITE 2
397
9/23/2004
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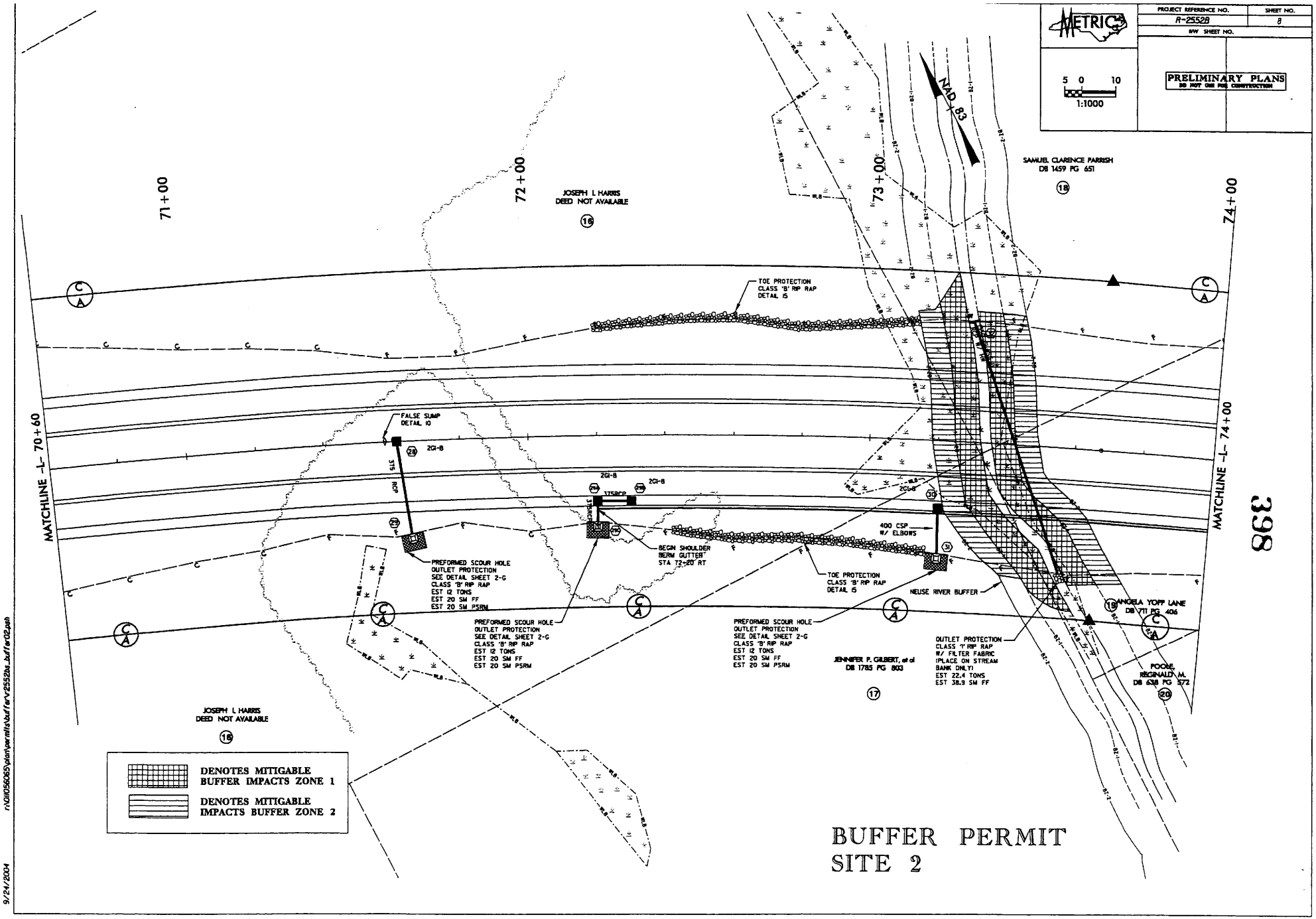
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PROJECT REFERENCE NO.
R-2552B
SHEET NO.
8
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
71+00
72+00
73+00
74+00
MATCHLINE -L- 70+60
MATCHLINE -L- 74+00
JOSEPH L HARRIS
DEED NOT AVAILABLE
16
SAMUEL CLARENCE PARRISH
DB 1459 PG 651
18
TOE PROTECTION
CLASS 'B' RIP RAP
DETAIL 15
FALSE SUMP
DETAIL 10
2GI-B
29
30
31
STRUCT
375RCP
400 CSP
W/ ELBOWS
PREFORMED SCOUR HOLE
OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS 'B' RIP RAP
EST 12 TONS
EST 20 SM FF
EST 20 SM PSRM
BEGIN SHOULDER
BERM GUTTER
STA 72+20 RT
NEUSE RIVER BUFFER
JENNIFER P. GILBERT, et al
DB 1785 PG 803
17
OUTLET PROTECTION
CLASS 'I' RIP RAP
W/ FILTER FABRIC
(PLACE ON STREAM
BANK ONLY)
EST 22.4 TONS
EST 38.9 SM FF
ANGELA YOPP LANE
DB 771 PG 406
19
POOLE,
REGINALD M.
DB 638 PG 572
20
DENOTES MITIGABLE
BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE
IMPACTS BUFFER ZONE 2
BUFFER PERMIT
SITE 2
398
9/24/2004
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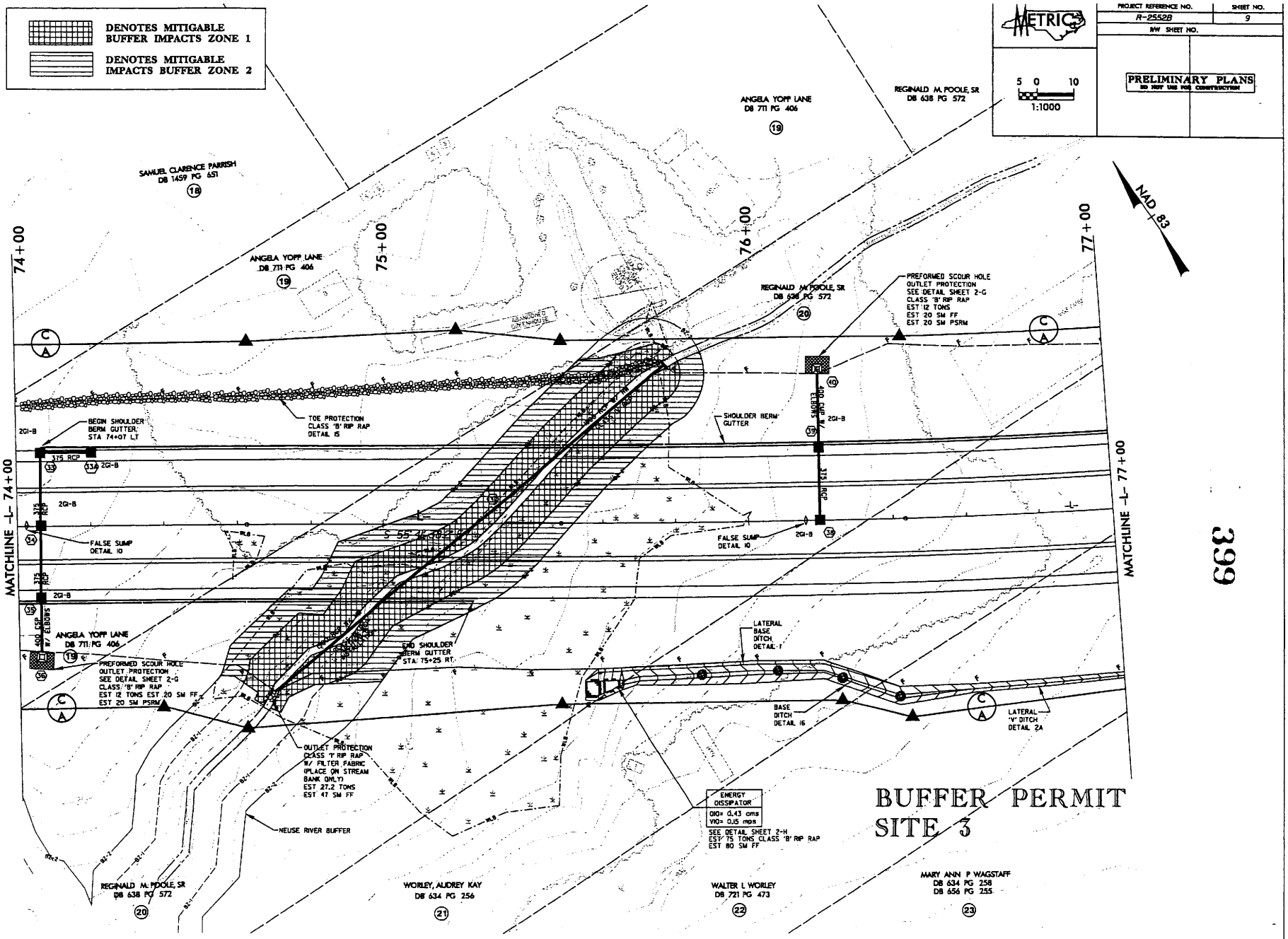

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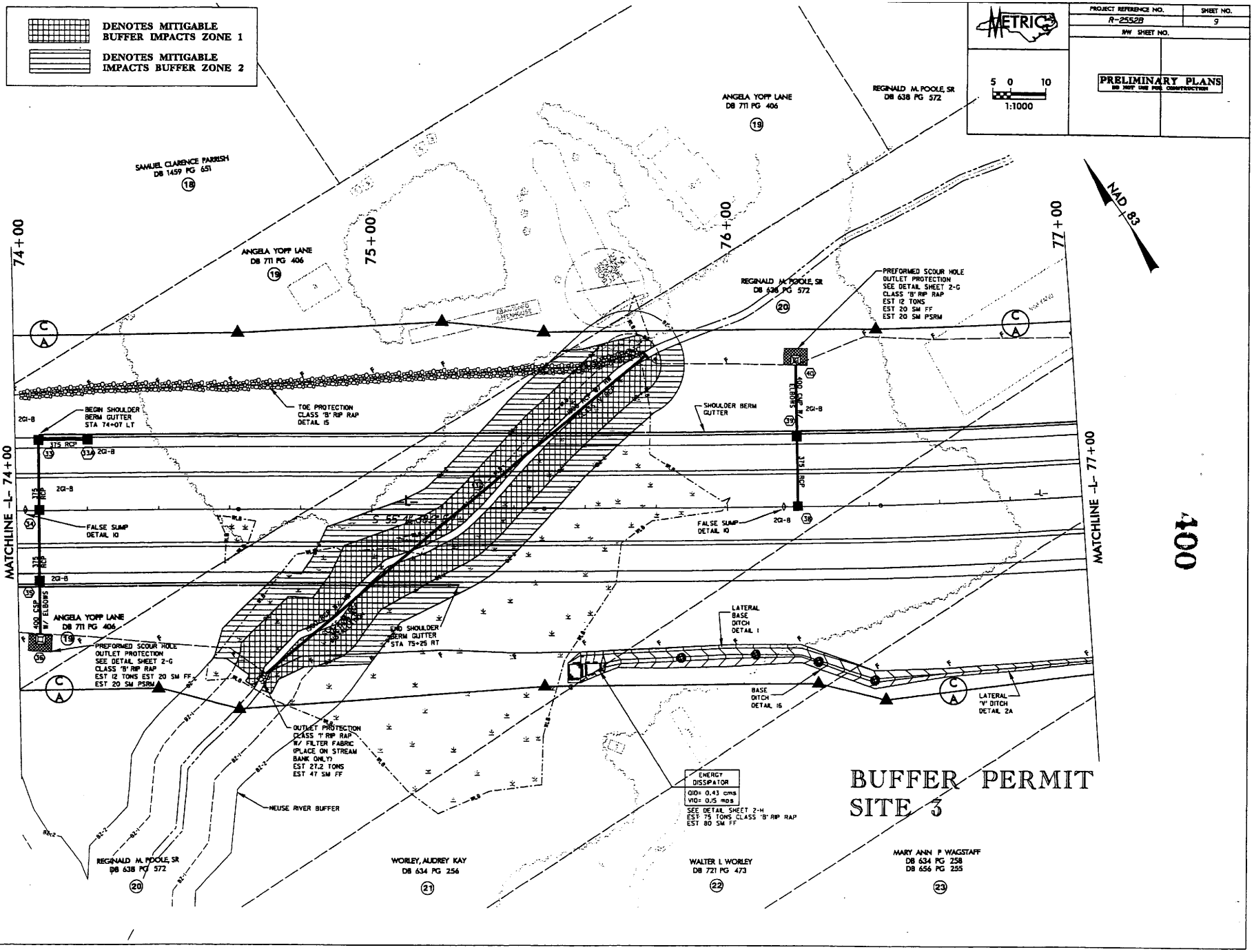

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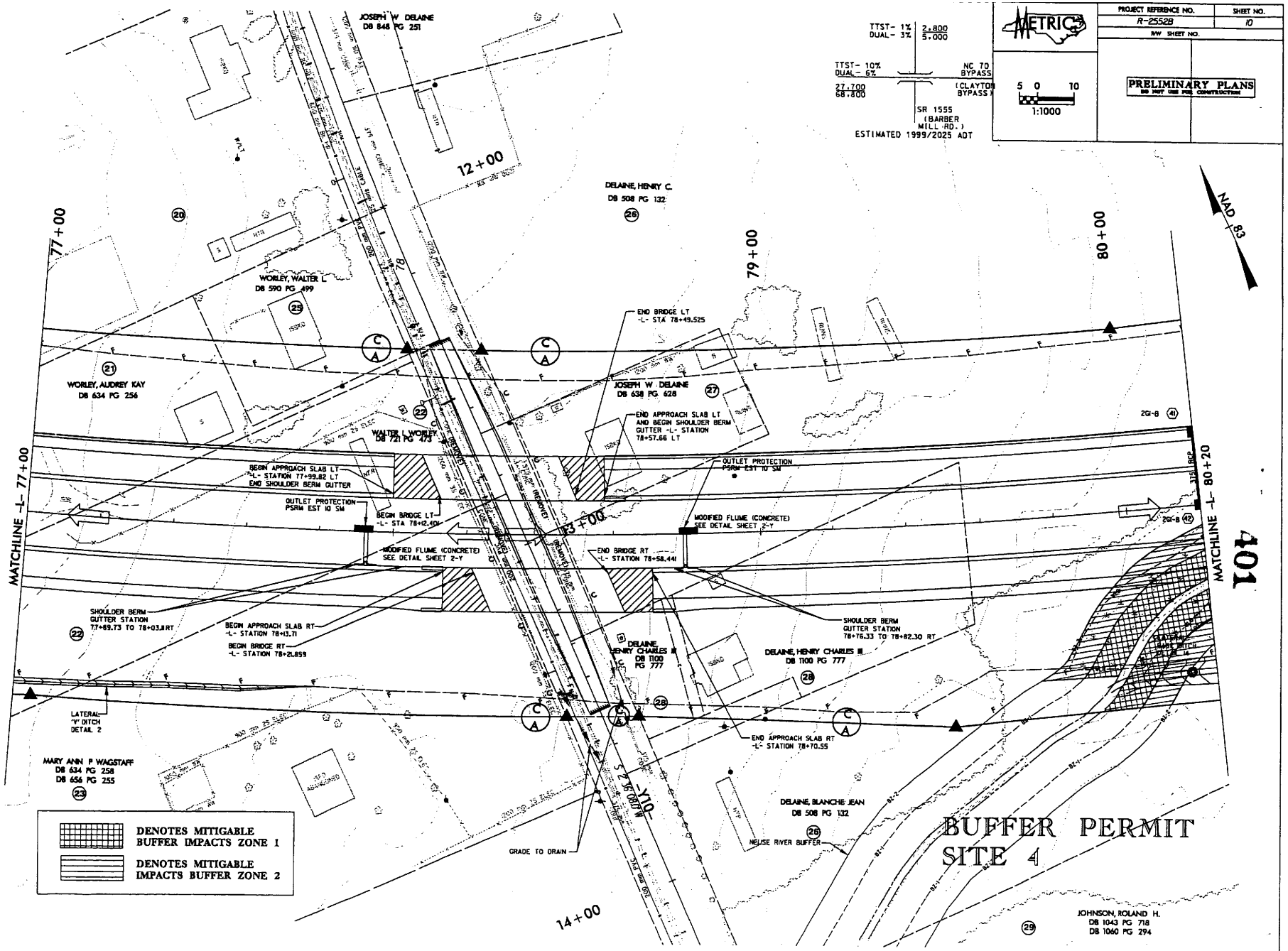

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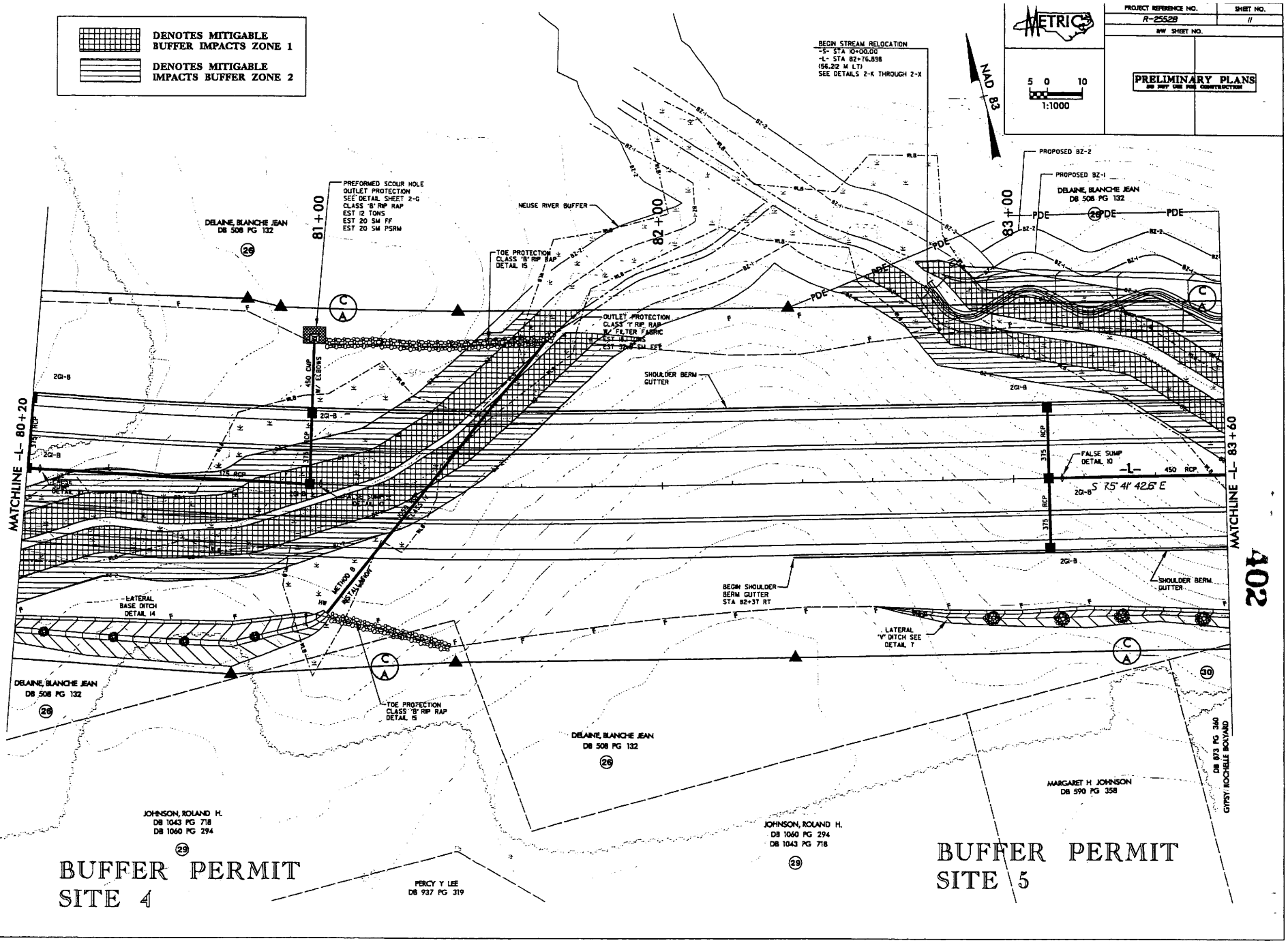
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
11
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
NAD 83
BEGIN STREAM RELOCATION
-S- STA 10+00.00
-L- STA 82+76.898
(56.212 M LT)
SEE DETAILS 2-K THROUGH 2-X
PROPOSED BZ-2
PROPOSED BZ-1
DELAINE, BLANCHE JEAN
DB 508 PG 132
PREFORMED SCOUR HOLE
OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS "B" RIP RAP
EST 12 TONS
EST 20 SM FF
EST 20 SM PSRM
NEUSE RIVER BUFFER
TOE PROTECTION
CLASS "B" RIP RAP
DETAIL 15
OUTLET PROTECTION
CLASS "I" RIP RAP
W/ FILTER FABRIC
EST 181 TONS
EST 370 SM FF
SHOULDER BERM
GUTTER
81+00
82+00
83+00
MATCHLINE -L- 80+20
MATCHLINE -L- 83+60
450 CMP
W/ 4 ELBOWS
375 RCP
175 RCP
450 RCP
FALSE SUMP
DETAIL 10
S 75° 41' 42.6" E
METHOD B
INSTALLATION
LATERAL
BASE DITCH
DETAIL 14
BEGIN SHOULDER
BERM GUTTER
STA 82+37 RT
LATERAL
"V" DITCH SEE
DETAIL 7
SHOULDER BERM
GUTTER
JOHNSON, ROLAND H.
DB 1043 PG 718
DB 1060 PG 294
PERCY Y LEE
DB 937 PG 319
MARGARET H JOHNSON
DB 590 PG 358
GYPSY ROCHELLE BOYLARD
DB 873 PG 360
BUFFER PERMIT
SITE 4
BUFFER PERMIT
SITE 5
9/23/2004
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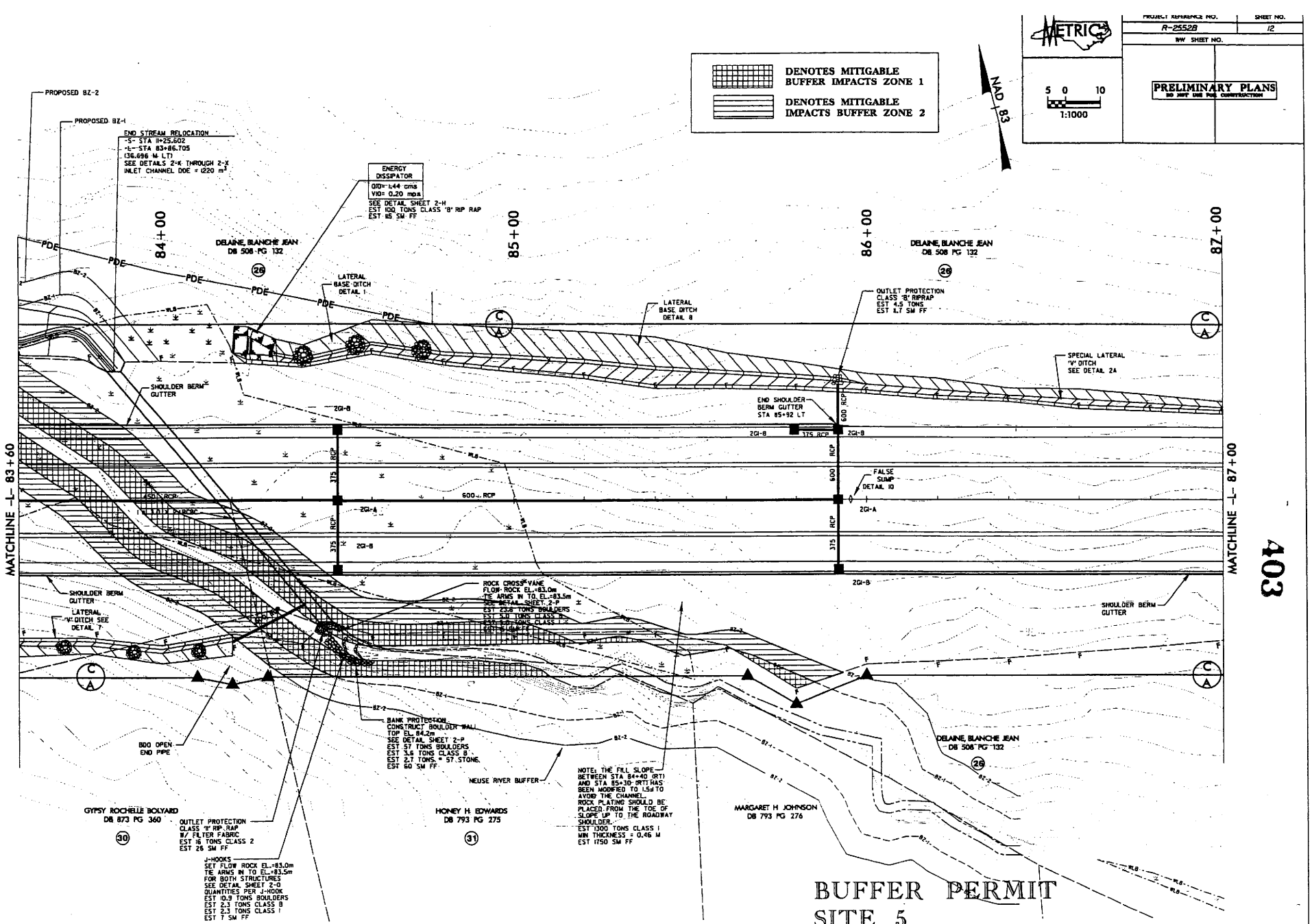
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
12
NW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
NAD 83
PROPOSED BZ-2
PROPOSED BZ-1
END STREAM RELOCATION
-S- STA 11+25.602
-L- STA 83+86.705
(36.696 M LT)
SEE DETAILS Z-K THROUGH Z-X
INLET CHANNEL DOE = 1220 m³
ENERGY DISSIPATOR
QIO= 1.44 cms
VIO= 0.20 mps
SEE DETAIL SHEET Z-H
EST 100 TONS CLASS 'B' RIP RAP
EST 85 SM FF
84+00
85+00
86+00
87+00
DELAINE, BLANCHE JEAN
DB 508 PG 132
26
LATERAL BASE DITCH DETAIL I
LATERAL BASE DITCH DETAIL B
OUTLET PROTECTION CLASS 'B' RIPRAP
EST 4.5 TONS
EST 8.7 SM FF
SPECIAL LATERAL 'V' DITCH SEE DETAIL 2A
SHOULDER BERM GUTTER
END SHOULDER BERM GUTTER STA 85+92 LT
FALSE SUMP DETAIL 10
MATCHLINE -L- 83+60
MATCHLINE -L- 87+00
ROCK CROSS VANE
FLOW ROCK EL.=83.0m
TIE ARMS IN TO EL.=83.5m
SEE DETAIL SHEET Z-P
EST 23.8 TONS BOULDERS
EST 5.0 TONS CLASS B
EST 5.7 TONS CLASS I
EST 61 SM FF
LATERAL 'V' DITCH SEE DETAIL 7
BDO OPEN END PIPE
BANK PROTECTION CONSTRUCT BOULDER WALL TOP EL. 84.2m
SEE DETAIL SHEET Z-P
EST 57 TONS BOULDERS
EST 3.6 TONS CLASS B
EST 2.7 TONS. = 57 STONE
EST 60 SM FF
NEUSE RIVER BUFFER
NOTE: THE FILL SLOPE BETWEEN STA 84+40 (RT) AND STA 85+30 (RT) HAS BEEN MODIFIED TO 1.5:1 TO AVOID THE CHANNEL. ROCK PLATING SHOULD BE PLACED FROM THE TOE OF SLOPE UP TO THE ROADWAY SHOULDER.
EST 1300 TONS CLASS I
MIN THICKNESS = 0.46 M
EST 1750 SM FF
GYPSY ROCHELLE BOLYARD
DB 873 PG 360
30
OUTLET PROTECTION CLASS 'B' RIP RAP W/ FILTER FABRIC
EST 16 TONS CLASS 2
EST 26 SM FF
J-HOOKS
SET FLOW ROCK EL.=83.0m
TIE ARMS IN TO EL.=83.5m
FOR BOTH STRUCTURES
SEE DETAIL SHEET Z-Q
QUANTITIES PER J-HOOK
EST 10.9 TONS BOULDERS
EST 2.3 TONS CLASS B
EST 2.3 TONS CLASS I
EST 7 SM FF
HONEY H. EDWARDS
DB 793 PG 275
31
MARGARET H JOHNSON
DB 793 PG 276
DELAINE, BLANCHE JEAN
DB 508 PG 132
26
BUFFER PERMIT
SITE 5
403
9/23/2004
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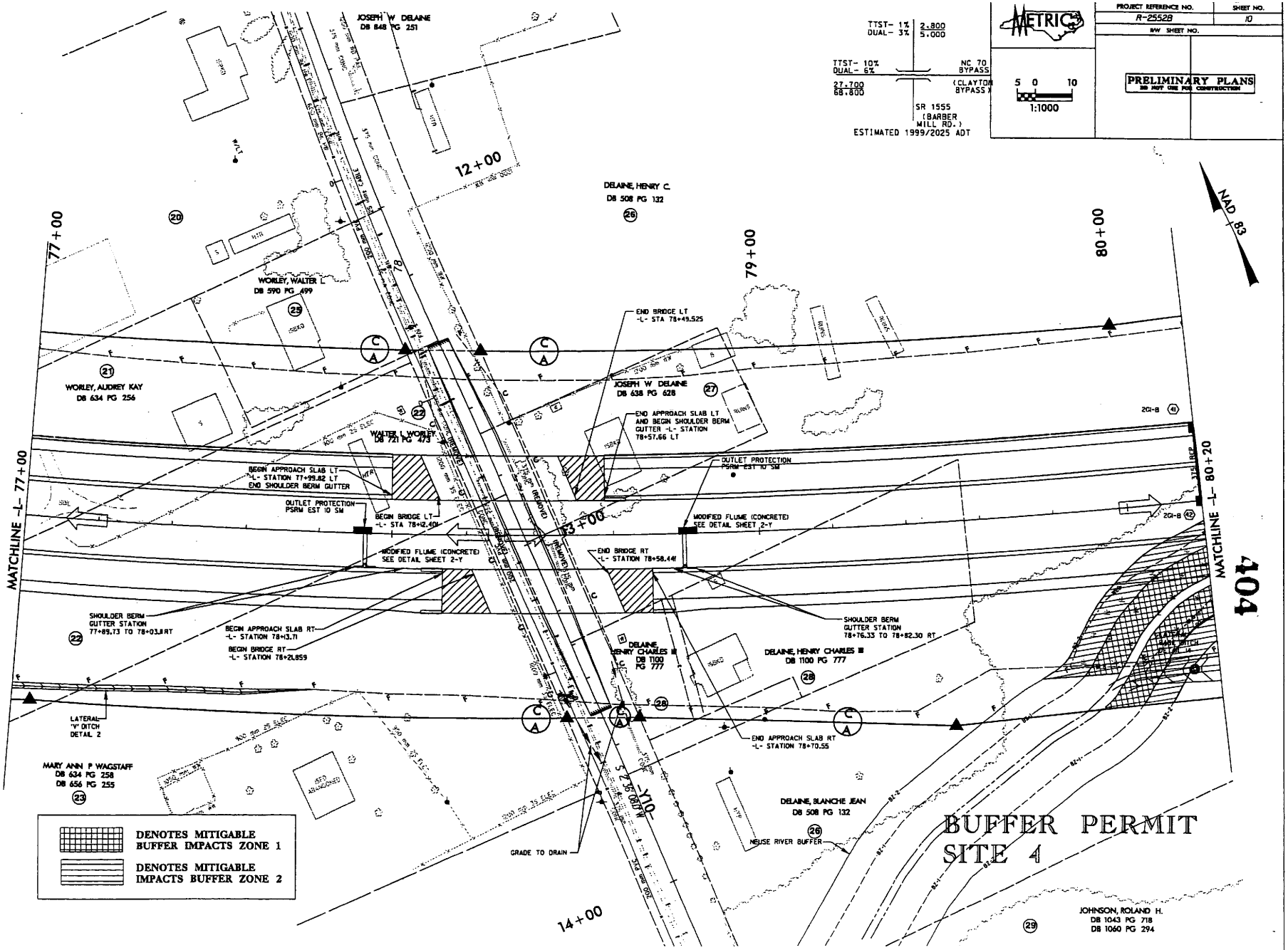

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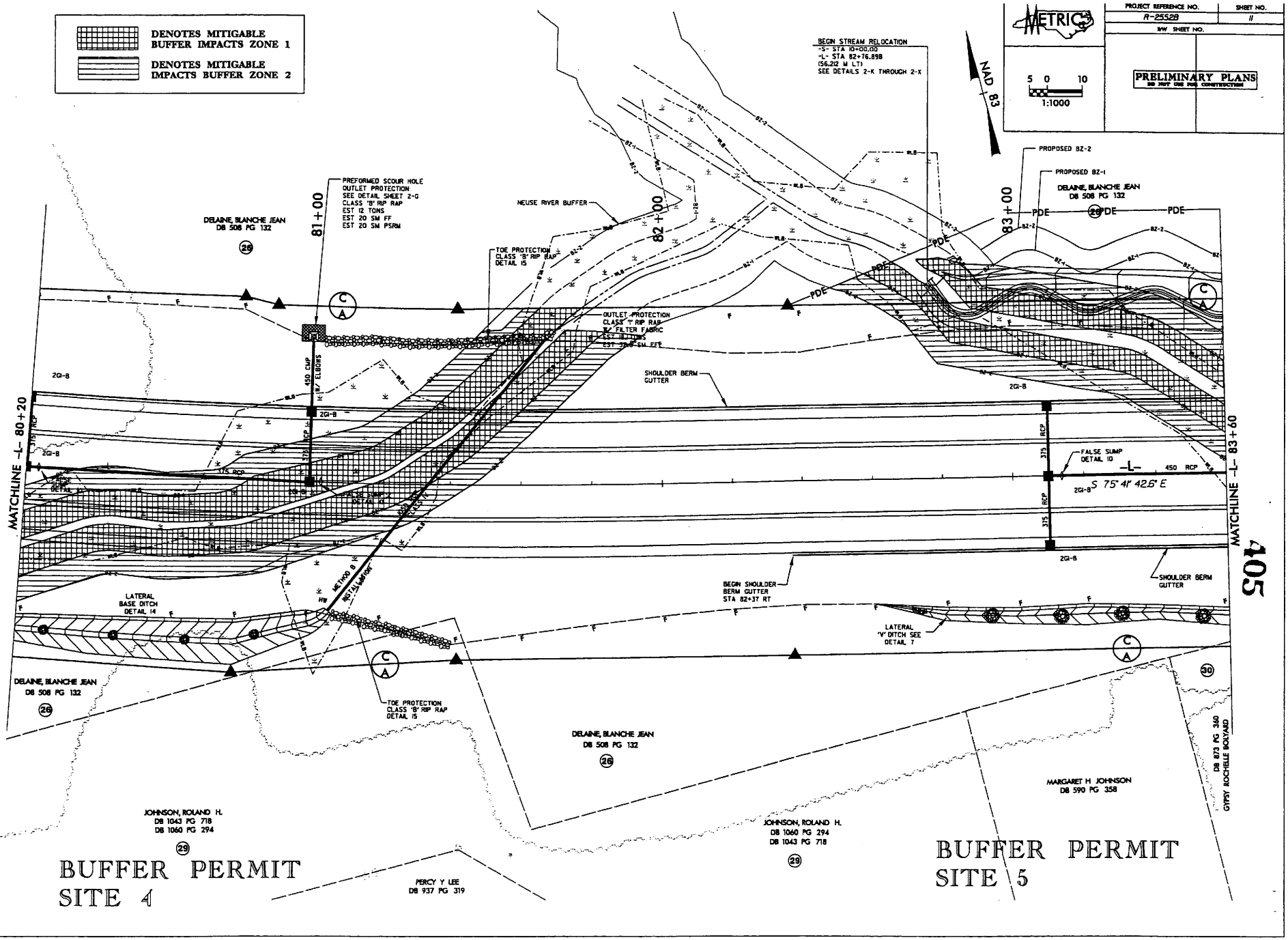

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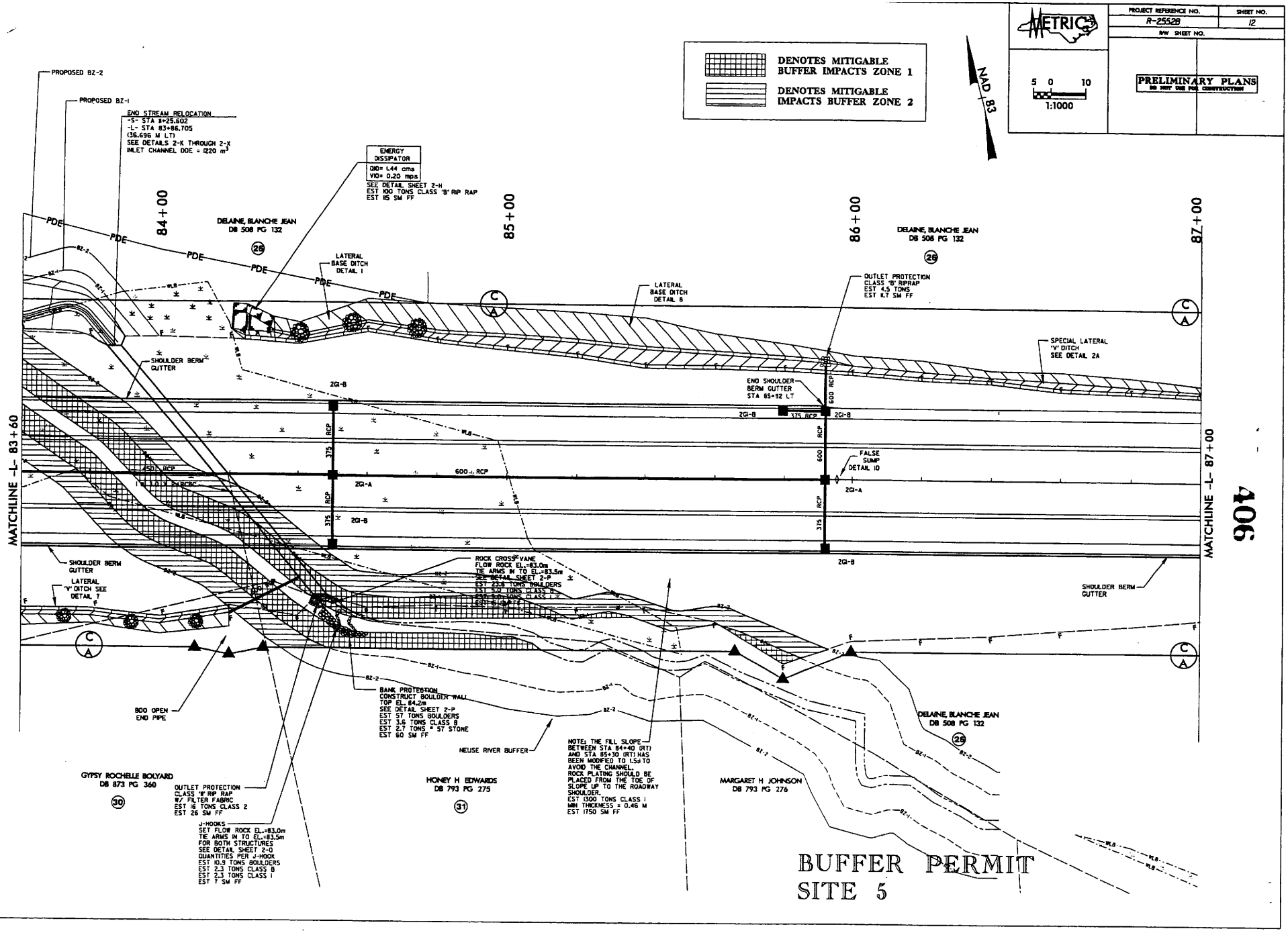
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
12
R/W SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
NAD 83
PROPOSED BZ-2
PROPOSED BZ-1
END STREAM RELOCATION
-S- STA 8+25.602
-L- STA 83+86.705
(36.696 M LT)
SEE DETAILS 2-K THROUGH 2-X
INLET CHANNEL DDE = 1220 m³
ENERGY DISSIPATOR
Q10= 1.44 cms
V10= 0.20 mps
SEE DETAIL SHEET 2-N
EST 100 TONS CLASS 'B' RIP RAP
EST 115 SM FF
84+00
85+00
86+00
87+00
DELAINE, BLANCHE JEAN
DB 508 PG 132
26
LATERAL BASE DITCH DETAIL 1
LATERAL BASE DITCH DETAIL 8
OUTLET PROTECTION CLASS 'B' RIPRAP
EST 4.5 TONS
EST 4.7 SM FF
SPECIAL LATERAL 'V' DITCH SEE DETAIL 2A
SHOULDER BERM GUTTER
END SHOULDER BERM GUTTER STA 85+92 LT
2GI-B
2GI-A
375 RCP
600 RCP
FALSE SUMP DETAIL 10
MATCHLINE -L- 83+60
MATCHLINE -L- 87+00
LATERAL 'V' DITCH SEE DETAIL 7
ROCK CROSS VANE
FLOW ROCK EL.=83.0m
TIE ARMS IN TO EL.=83.5m
SEE DETAIL SHEET 2-P
EST 25.8 TONS BOULDERS
EST 5.0 TONS CLASS B
EST 5.7 TONS CLASS 1-2
EST 6.4 SM FF
BANK PROTECTION
CONSTRUCT BOULDER WALL
TOP EL. 84.2m
SEE DETAIL SHEET 2-P
EST 57 TONS BOULDERS
EST 3.6 TONS CLASS B
EST 2.7 TONS * 57 STONE
EST 60 SM FF
800 OPEN END PIPE
NEUSE RIVER BUFFER
NOTE: THE FILL SLOPE BETWEEN STA 84+40 (RT) AND STA 85+30 (RT) HAS BEEN MODIFIED TO 1.5:1 TO AVOID THE CHANNEL. ROCK PLATING SHOULD BE PLACED FROM THE TOE OF SLOPE UP TO THE ROADWAY SHOULDER. EST 1300 TONS CLASS 1 MIN THICKNESS = 0.46 M EST 1750 SM FF
GYPSY ROCHELLE BOLYARD
DB 873 PG 360
30
OUTLET PROTECTION CLASS 'B' RIP RAP W/ FILTER FABRIC
EST 16 TONS CLASS 2
EST 26 SM FF
J-HOOKS
SET FLOW ROCK EL.=83.0m
TIE ARMS IN TO EL.=83.5m
FOR BOTH STRUCTURES
SEE DETAIL SHEET 2-O
QUANTITIES PER J-HOOK
EST 10.9 TONS BOULDERS
EST 2.3 TONS CLASS B
EST 2.3 TONS CLASS 1
EST 7 SM FF
HONEY H EDWARDS
DB 793 PG 275
31
MARGARET H JOHNSON
DB 793 PG 276
BUFFER PERMIT
SITE 5
9/24/2004
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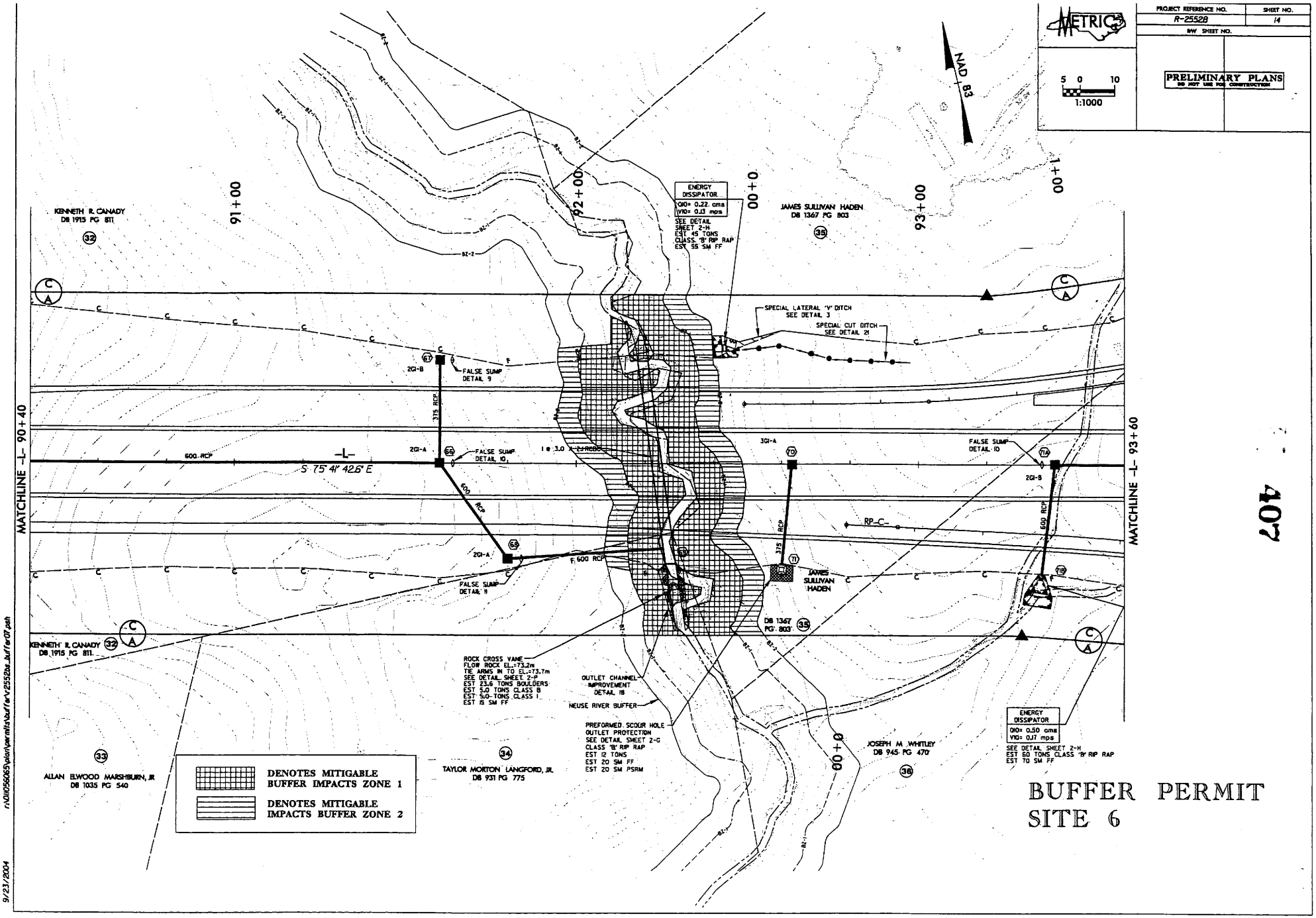
906


METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
14
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
91+00
92+00
00+00
93+00
1+00
MATCHLINE -L- 90+40
MATCHLINE -L- 93+60
KENNETH R. CANADY
DB 1915 PG 811
32
JAMES SULLIVAN HADEN
DB 1367 PG 803
35
ENERGY DISSIPATOR
Q10= 0.22 cms
V10= 0.13 mps
SEE DETAIL SHEET 2-H
EST 45 TONS CLASS 'B' RIP RAP
EST 55 SM FF
SPECIAL LATERAL 'V' DITCH
SEE DETAIL 3
SPECIAL CUT DITCH
SEE DETAIL 2I
2GI-B
FALSE SUMP DETAIL 9
375 RCP
600 RCP
2GI-A
FALSE SUMP DETAIL 10
S 75°41'42.6"E
1 @ 3.0
2-RCBC
3GI-A
FALSE SUMP DETAIL 10
2GI-B
600 RCP
RP-C
375 RCP
600 RCP
FALSE SUMP DETAIL 11
JAMES SULLIVAN HADEN
DB 1367 PG 803
35
KENNETH R. CANADY
DB 1915 PG 811
32
ROCK CROSS VANE
FLOW ROCK EL.=73.2m
TIE ARMS IN TO EL.=73.7m
SEE DETAIL SHEET 2-F
EST 23.6 TONS BOULDERS
EST 5.0 TONS CLASS B
EST 5.0 TONS CLASS I
EST 15 SM FF
OUTLET CHANNEL IMPROVEMENT DETAIL 18
NEUSE RIVER BUFFER
PREFORMED SCOUR HOLE OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS 'B' RIP RAP
EST 12 TONS
EST 20 SM FF
EST 20 SM PSRM
ENERGY DISSIPATOR
Q10= 0.50 cms
V10= 0.17 mps
SEE DETAIL SHEET 2-H
EST 60 TONS CLASS 'B' RIP RAP
EST 70 SM FF
JOSEPH M. WHITLEY
DB 945 PG 470
36
ALLAN ELWOOD MARSHBURN, JR
DB 1035 PG 540
33
TAYLOR MORTON LANGFORD, JR.
DB 931 PG 775
34
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
BUFFER PERMIT
SITE 6
407
9/23/2004
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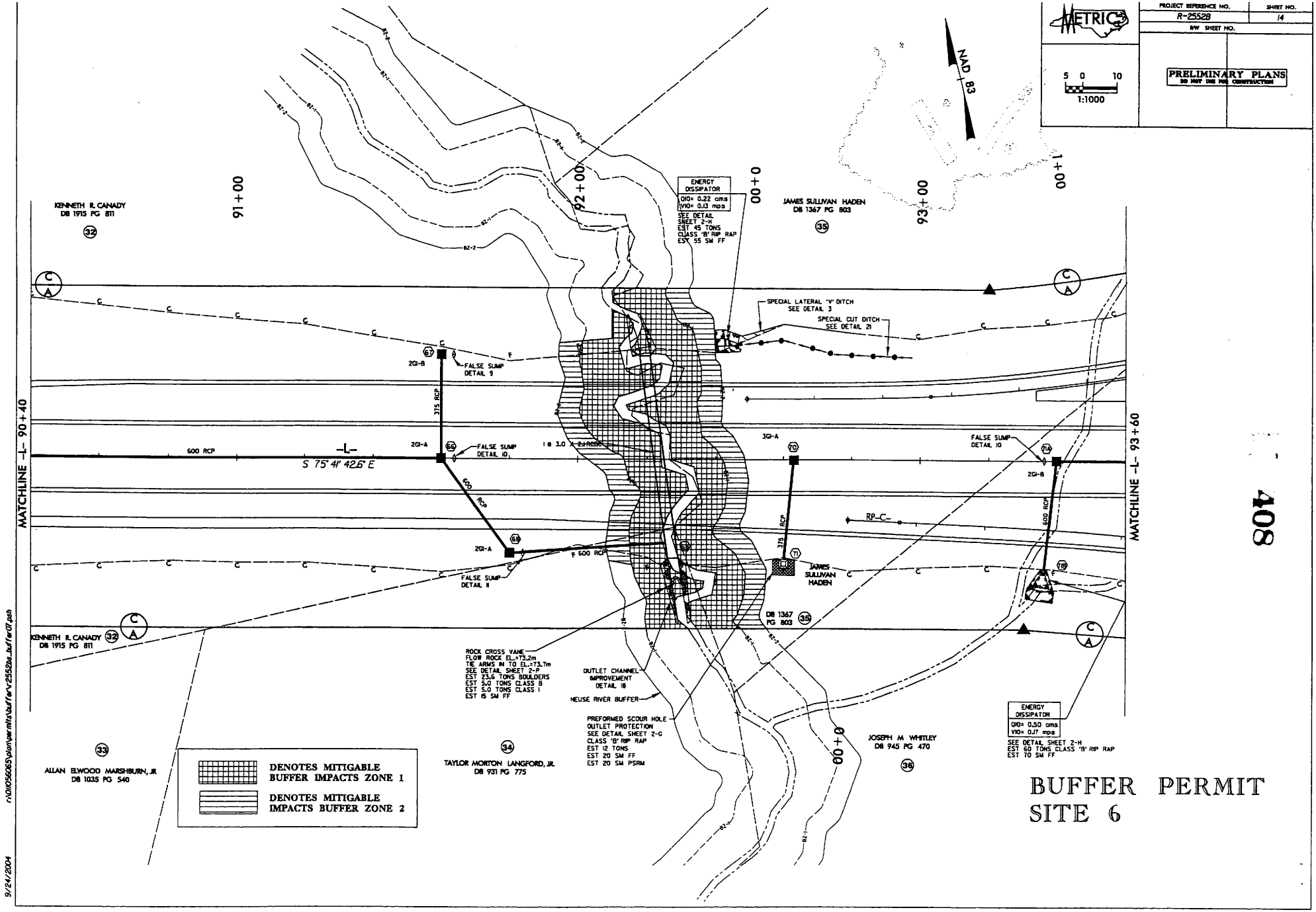
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
14
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
91+00
92+00
00+0
93+00
1+00
KENNETH R. CANADY
DB 1915 PG 811
32
JAMES SULLIVAN HADEN
DB 1367 PG 803
35
ENERGY DISSIPATOR
Q10= 0.22 cms
V10= 0.13 mps
SEE DETAIL SHEET 2-H
EST 45 TONS CLASS 'B' RIP RAP
EST 55 SM FF
SPECIAL LATERAL 'V' DITCH SEE DETAIL 3
SPECIAL CUT DITCH SEE DETAIL 21
MATCHLINE -L- 90+40
MATCHLINE -L- 93+60
-L-
S 75° 41' 42.6" E
600 RCP
375 RCP
2GI-B
2GI-A
3GI-A
FALSE SUMP DETAIL 9
FALSE SUMP DETAIL 10
FALSE SUMP DETAIL 11
1 @ 3.0 x 2.4 RCBC
F 600 RCP
RP-C
JAMES SULLIVAN HADEN
DB 1367 PG 803
35
ROCK CROSS VANE
FLOW ROCK EL.=73.2m
TIE ARMS IN TO EL.=73.7m
SEE DETAIL SHEET 2-P
EST 23.6 TONS BOULDERS
EST 5.0 TONS CLASS B
EST 5.0 TONS CLASS I
EST 15 SM FF
OUTLET CHANNEL IMPROVEMENT DETAIL 18
NEUSE RIVER BUFFER
PREFORMED SCOUR HOLE OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS 'B' RIP RAP
EST 12 TONS
EST 20 SM FF
EST 20 SM PSRM
ENERGY DISSIPATOR
Q10= 0.50 cms
V10= 0.17 mps
SEE DETAIL SHEET 2-H
EST 60 TONS CLASS 'B' RIP RAP
EST 70 SM FF
KENNETH R. CANADY
DB 1915 PG 811
32
ALLAN ELWOOD MARSHBURN, JR
DB 1035 PG 540
33
TAYLOR MORTON LANGFORD, JR.
DB 931 PG 775
34
JOSEPH M. WHITLEY
DB 945 PG 470
36
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
BUFFER PERMIT
SITE 6
408
9/24/2004
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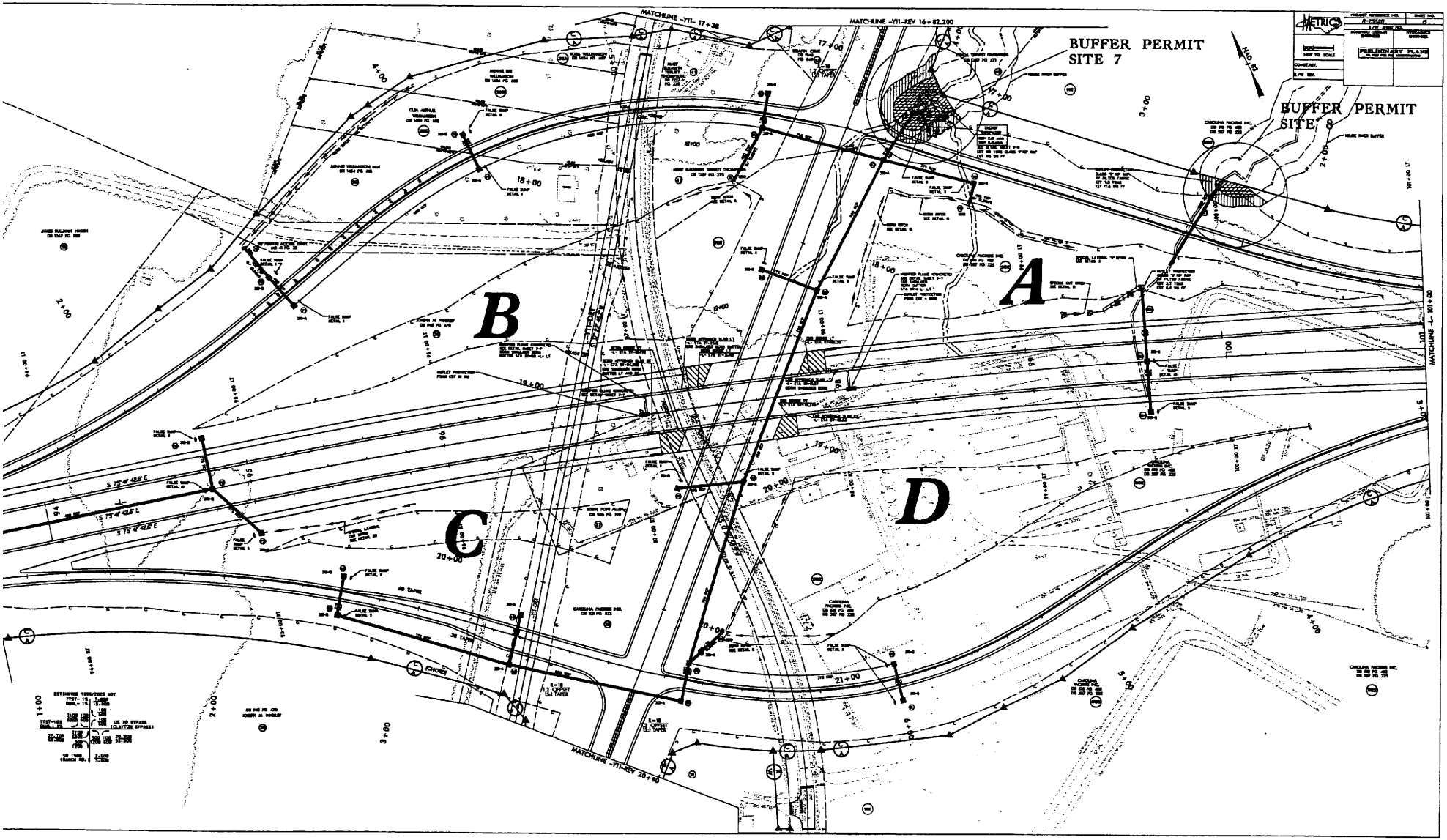
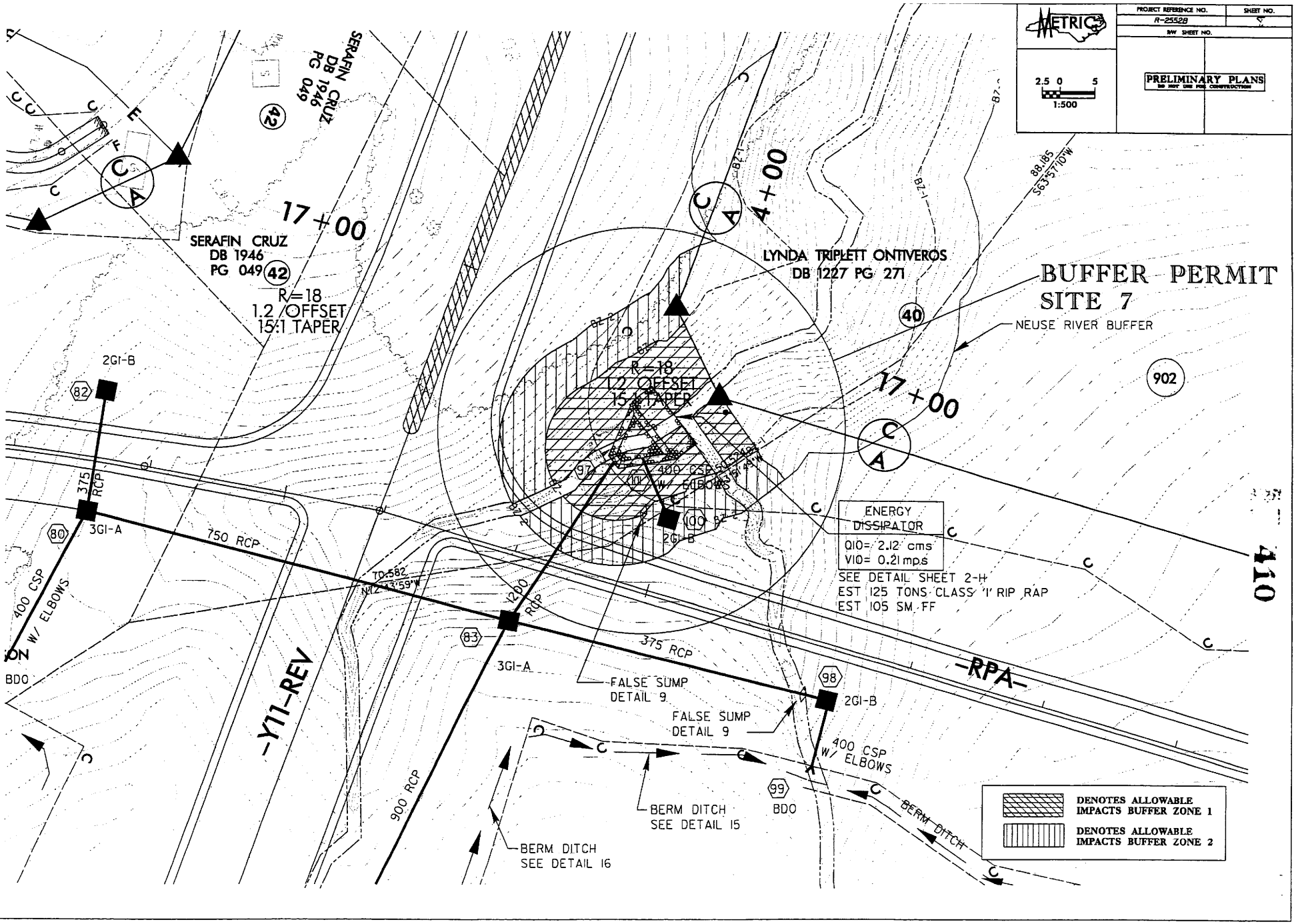


SEE NEXT 2 SHEETS FOR BUFFER PERMIT SITES 7 AND 8


METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
RW SHEET NO.
2.5 0 5
1:500
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
BUFFER PERMIT
SITE 7
NEUSE RIVER BUFFER
SERAFIN CRUZ
DB 1946
PG 049
42
R=18
1.2 /OFFSET
15:1 TAPER
17+00
4+00
LYNDA TRIPLETT ONTIVEROS
DB 1227 PG 271
40
902
410
2GI-B
3GI-A
375 RCP
750 RCP
400 CSP
W/ ELBOWS
BDO
1200 RCP
900 RCP
375 RCP
ENERGY
DISSIPATOR
Q10= 2.12 cms
V10= 0.21 mps
SEE DETAIL SHEET 2-H
EST 125 TONS CLASS 'I' RIP RAP
EST 105 SM FF
FALSE SUMP
DETAIL 9
BERM DITCH
SEE DETAIL 15
BERM DITCH
SEE DETAIL 16
-Y11-REV
-RPA-
DENOTES ALLOWABLE
IMPACTS BUFFER ZONE 1
DENOTES ALLOWABLE
IMPACTS BUFFER ZONE 2
9/24/2004
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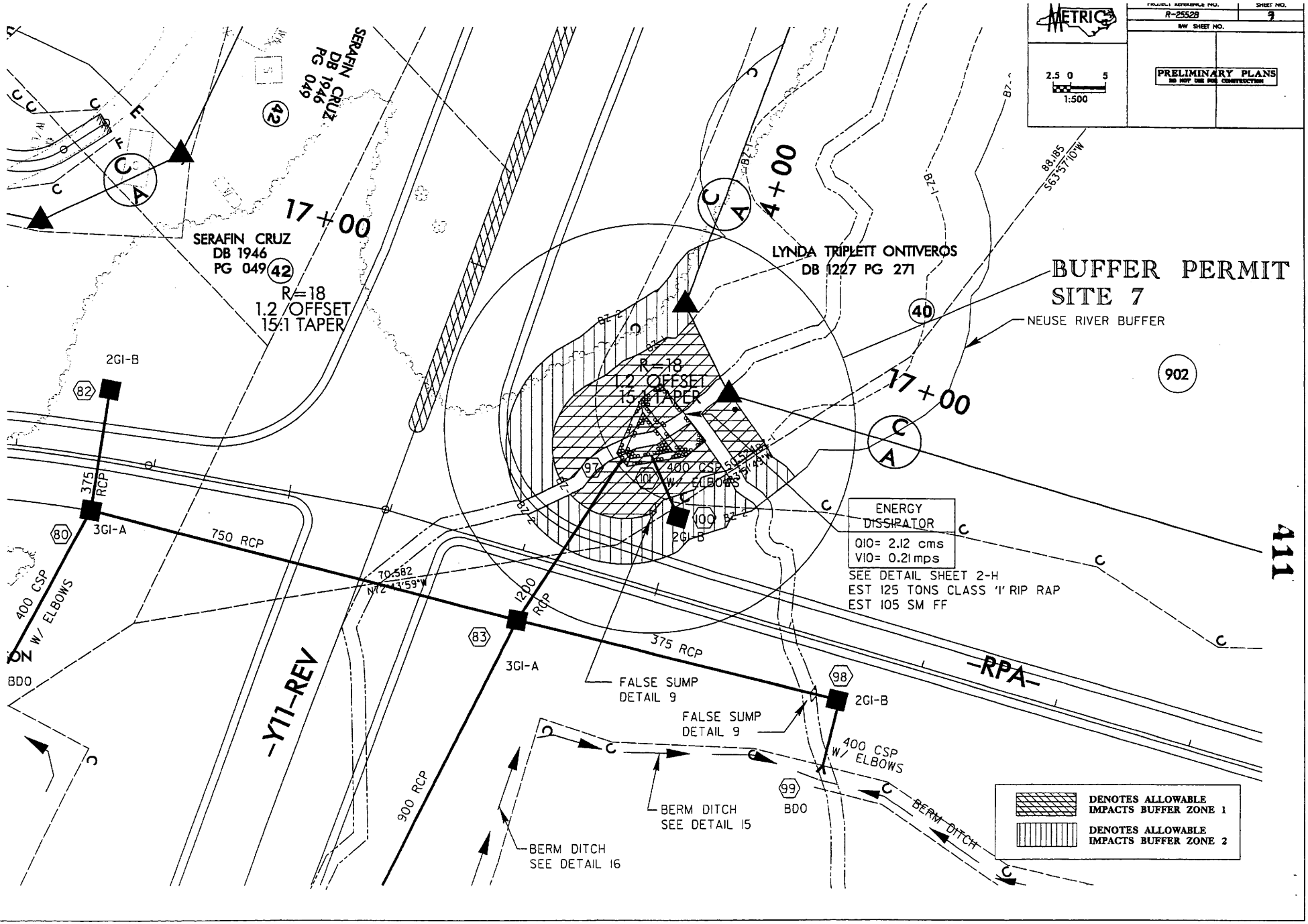

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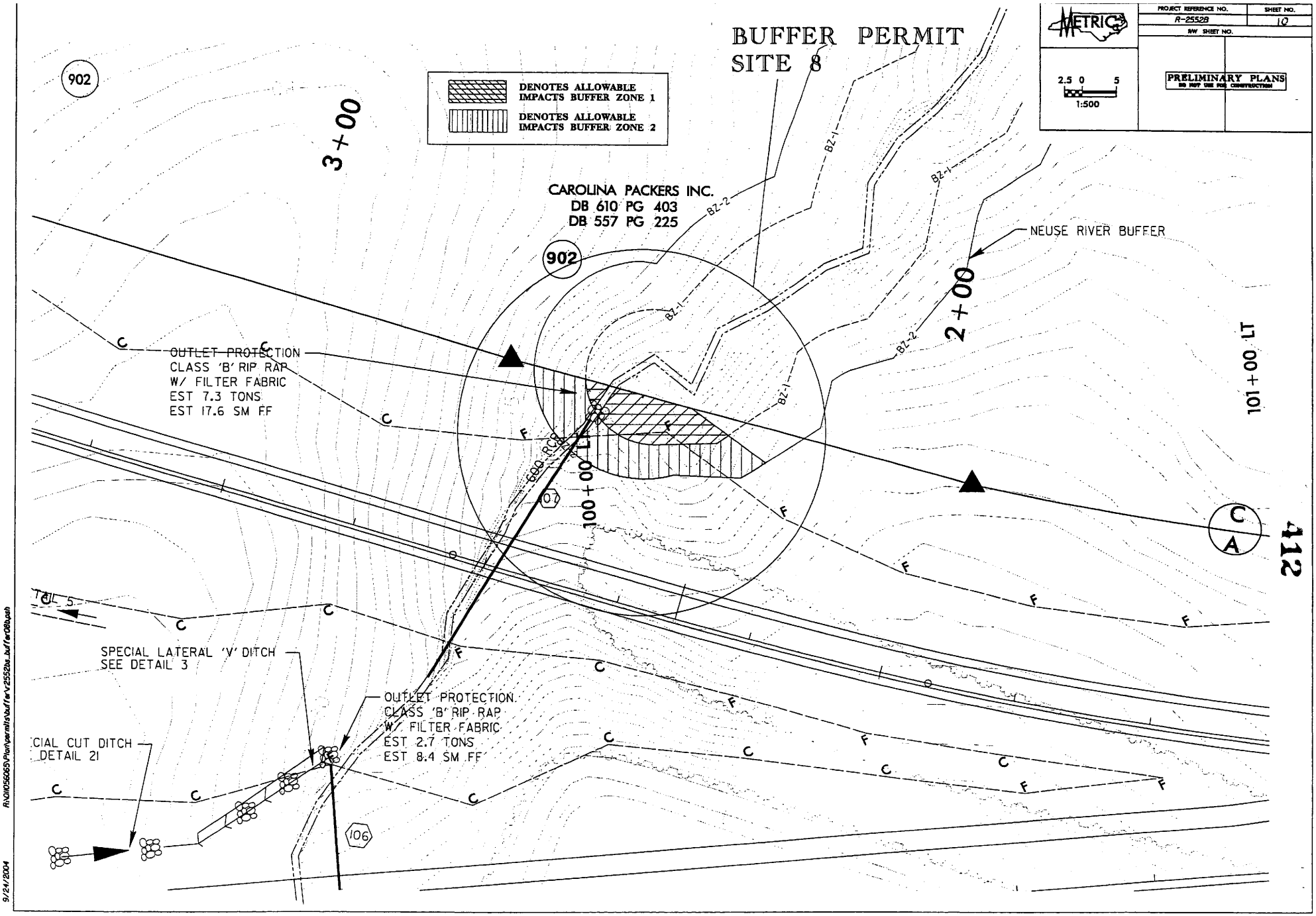

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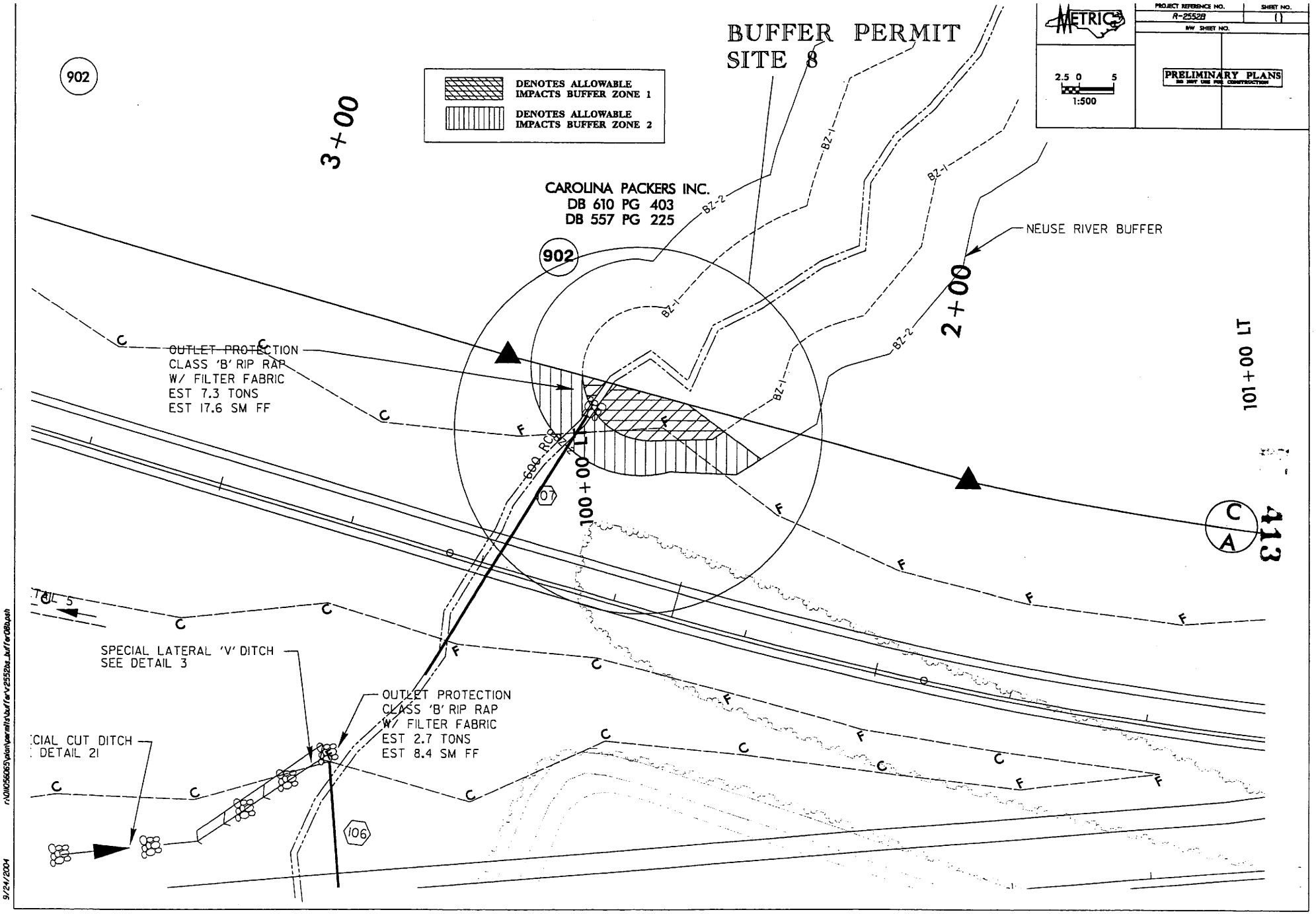
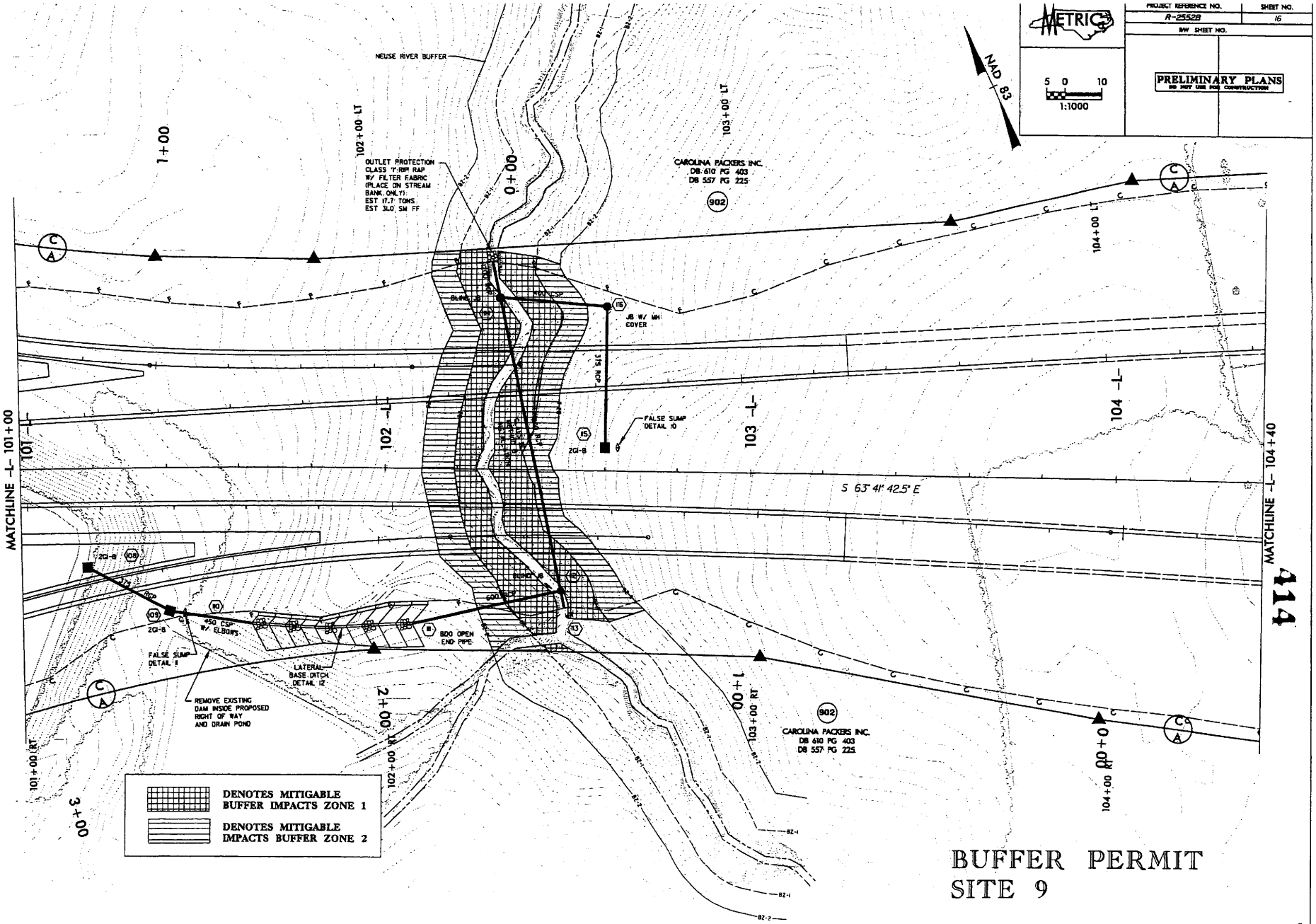

BUFFER PERMIT
SITE 8
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
1
RW SHEET NO.
2.5 0 5
1:500
PRELIMINARY PLANS
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 1
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 2
902
3+00
CAROLINA PACKERS INC.
DB 610 PG 403
DB 557 PG 225
902
BZ-1
BZ-2
NEUSE RIVER BUFFER
2+00
101+00 LT
OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 7.3 TONS
EST 17.6 SM FF
600 RCP
100+00 LT
107
C
A
413
TAIL 5
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
CIAL CUT DITCH
DETAIL 21
106
n:\DIII\05065\plan\permits\buffer\r2552bs_buffer08b.dgn
9/24/2004


METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
16
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
NO RIGHT OF WAY OR CONSTRUCTION
NAD 83
NEUSE RIVER BUFFER
OUTLET PROTECTION CLASS 'I' RIP RAP W/ FILTER FABRIC (PLACE ON STREAM BANK ONLY): EST 17.7 TONS EST 310 SM FF
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225
902
JB W/ MH COVER
FALSE SUMP DETAIL 10
FALSE SUMP DETAIL 11
LATERAL BASE DITCH DETAIL 12
REMOVE EXISTING DAM INSIDE PROPOSED RIGHT OF WAY AND DRAIN POND
450 CSP W/ ELBOWS
BDO OPEN END PIPE
S 63° 41' 42.5" E
MATCHLINE -L- 101+00
MATCHLINE -L- 104+40
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
BUFFER PERMIT
SITE 9
414
9/23/2004
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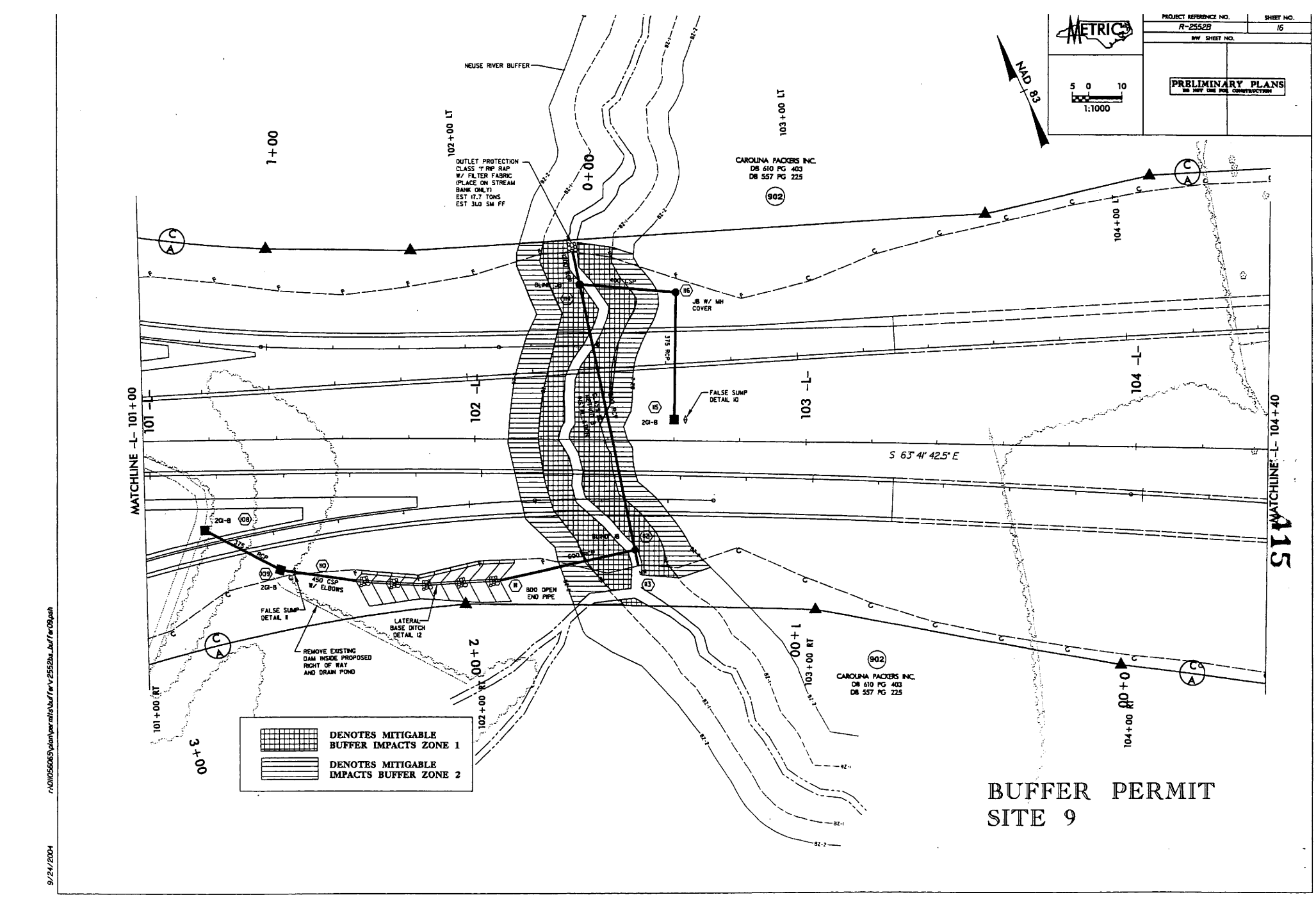

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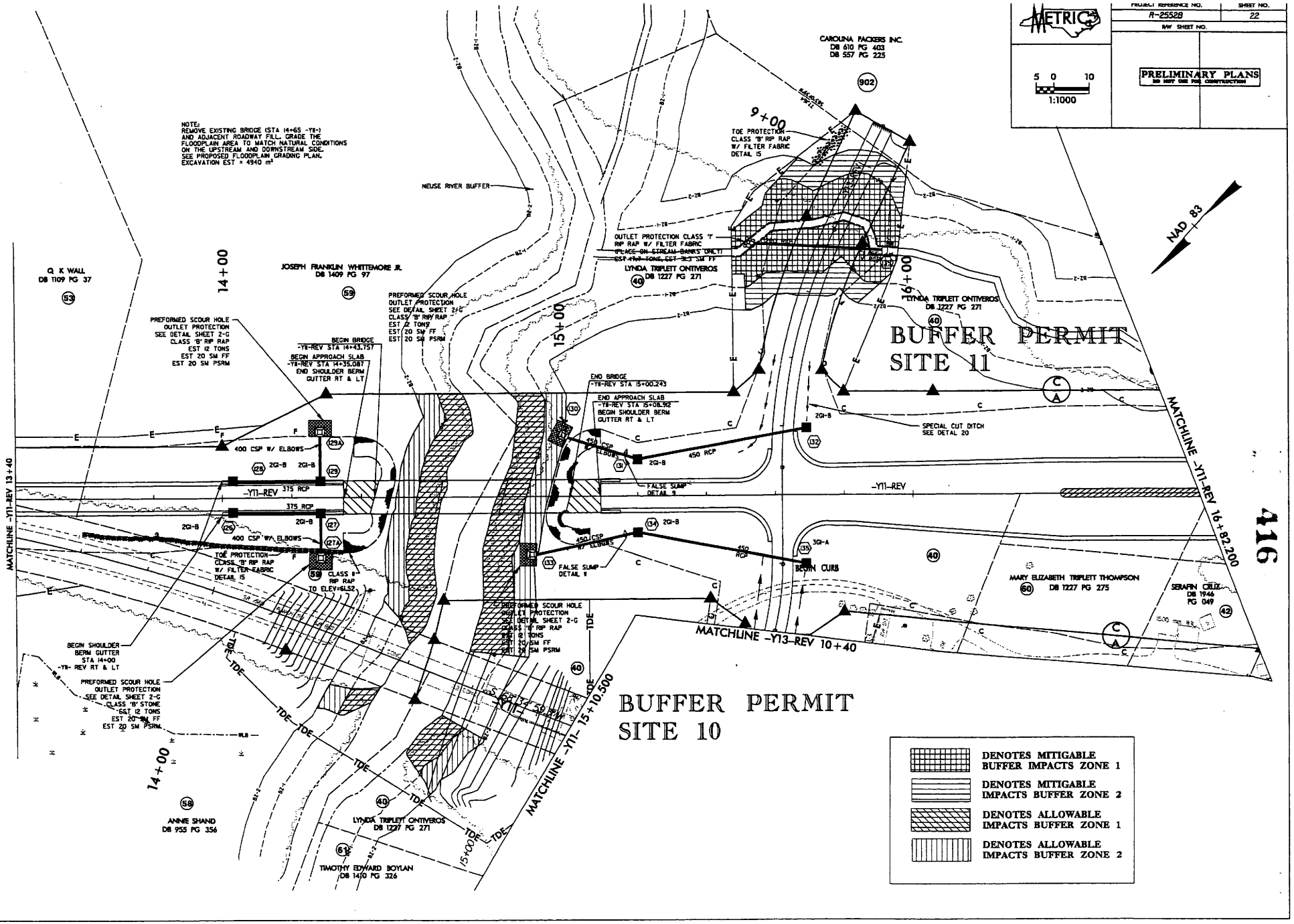
9/24/2004


METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
22
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
NOTE:
REMOVE EXISTING BRIDGE (STA 14+65 -Y11-)
AND ADJACENT ROADWAY FILL. GRADE THE
FLOODPLAIN AREA TO MATCH NATURAL CONDITIONS
ON THE UPSTREAM AND DOWNSTREAM SIDE.
SEE PROPOSED FLOODPLAIN GRADING PLAN.
EXCAVATION EST = 4940 m³
CAROLINA PACKERS INC.
DB 610 PG 403
DB 557 PG 225
902
9+00
TOE PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
DETAIL 15
NEUSE RIVER BUFFER
NAD 83
Q. K WALL
DB 1109 PG 37
53
14+00
JOSEPH FRANKLIN WHITTEMORE JR.
DB 1409 PG 97
59
PREFORMED SCOUR HOLE
OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS 'B' RIP RAP
EST 12 TONS
EST 20 SM FF
EST 20 SM PSRM
BEGIN BRIDGE
-Y8-REV STA 14+43.757
BEGIN APPROACH SLAB
-Y8-REV STA 14+35.087
END SHOULDER BERM
GUTTER RT & LT
15+00
OUTLET PROTECTION CLASS 'I'
RIP RAP W/ FILTER FABRIC
PLACE ON STREAM BANKS ONLY
EST 4+3.5 TONS EST 363 SM FF
LYNDA TRIPLETT ONTIVEROS
DB 1227 PG 271
40
16+00
LYNDA TRIPLETT ONTIVEROS
DB 1227 PG 271
40
BUFFER PERMIT
SITE 11
END BRIDGE
-Y8-REV STA 15+00.243
END APPROACH SLAB
-Y8-REV STA 15+08.92
BEGIN SHOULDER BERM
GUTTER RT & LT
30
2GI-B
SPECIAL CUT DITCH
SEE DETAL 20
32
MATCHLINE -Y11-REV 16+82.200
MATCHLINE -Y11-REV 13+40
400 CSP W/ ELBOWS
29A
28
2GI-B
2GI-B
29
-Y11-REV
375 RCP
375 RCP
2GI-B
26
27
400 CSP W/ ELBOWS
27A
TOE PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
DETAIL 15
59
CLASS 'B'
RIP RAP
TO ELEV=615.2
45A CSP W/ ELBOWS
31
2GI-B
450 RCP
FALSE SUMP
DETAIL 9
-Y11-REV
34
2GI-B
450 CSP W/ ELBOWS
33A
FALSE SUMP
DETAIL 9
35
3GI-A
450 RCP
BEGIN CURB
40
MARY ELIZABETH TRIPLETT THOMPSON
DB 1227 PG 275
60
SERAFIN CRUZ
DB 1946
PG 049
42
MATCHLINE -Y13-REV 10+40
BEGIN SHOULDER
BERM GUTTER
STA 14+00
-Y8- REV RT & LT
PREFORMED SCOUR HOLE
OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS 'B' STONE
EST 12 TONS
EST 20 SM FF
EST 20 SM PSRM
14+00
58
ANNIE SHAND
DB 955 PG 356
40
LYNDA TRIPLETT ONTIVEROS
DB 1227 PG 271
61
TIMOTHY EDWARD BOYLAN
DB 1410 PG 326
15+00
MATCHLINE -Y11- 15+10.500
TDE
BUFFER PERMIT
SITE 10
DENOTES MITIGABLE
BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE
IMPACTS BUFFER ZONE 2
DENOTES ALLOWABLE
IMPACTS BUFFER ZONE 1
DENOTES ALLOWABLE
IMPACTS BUFFER ZONE 2
416
9/30/2004
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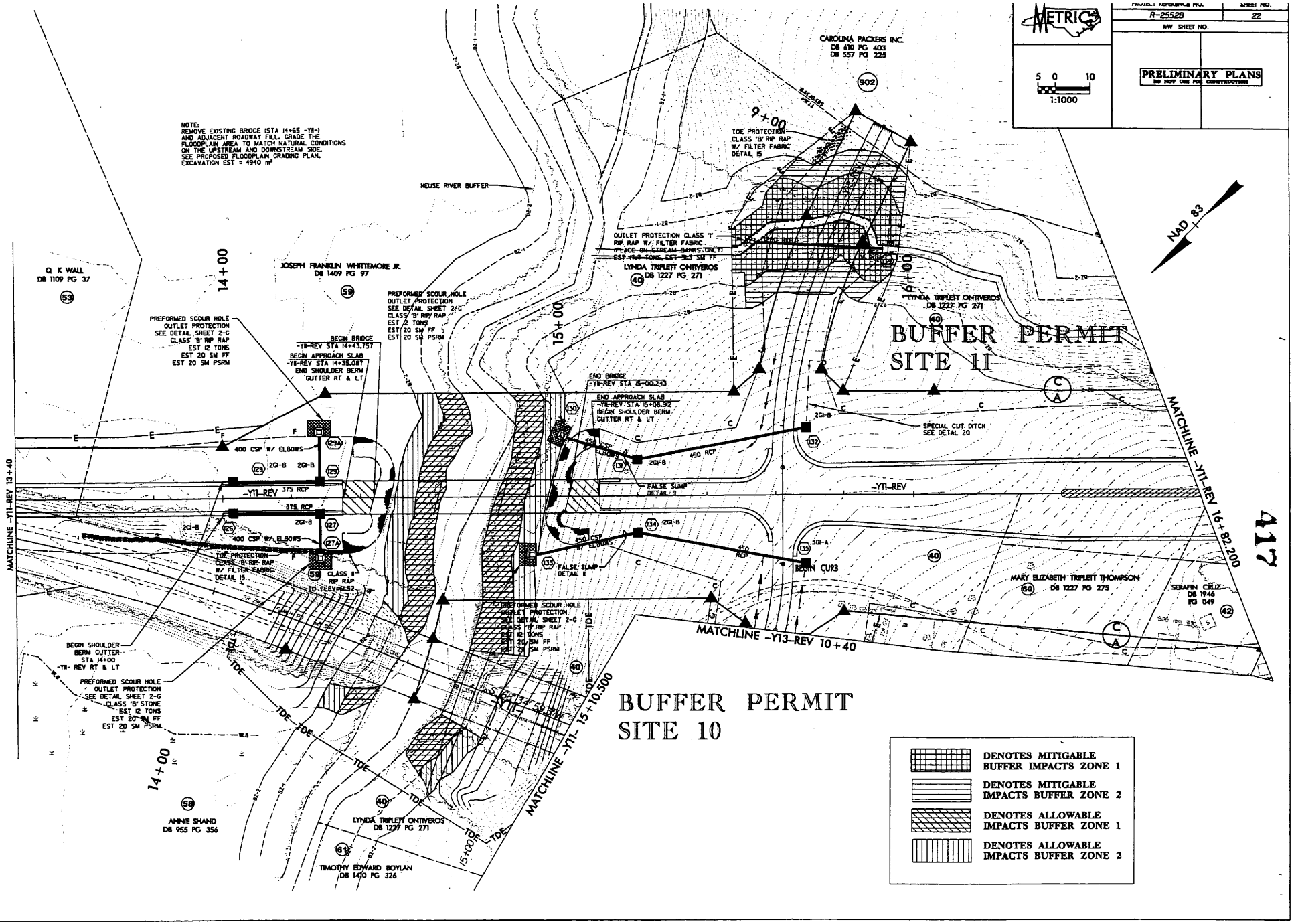

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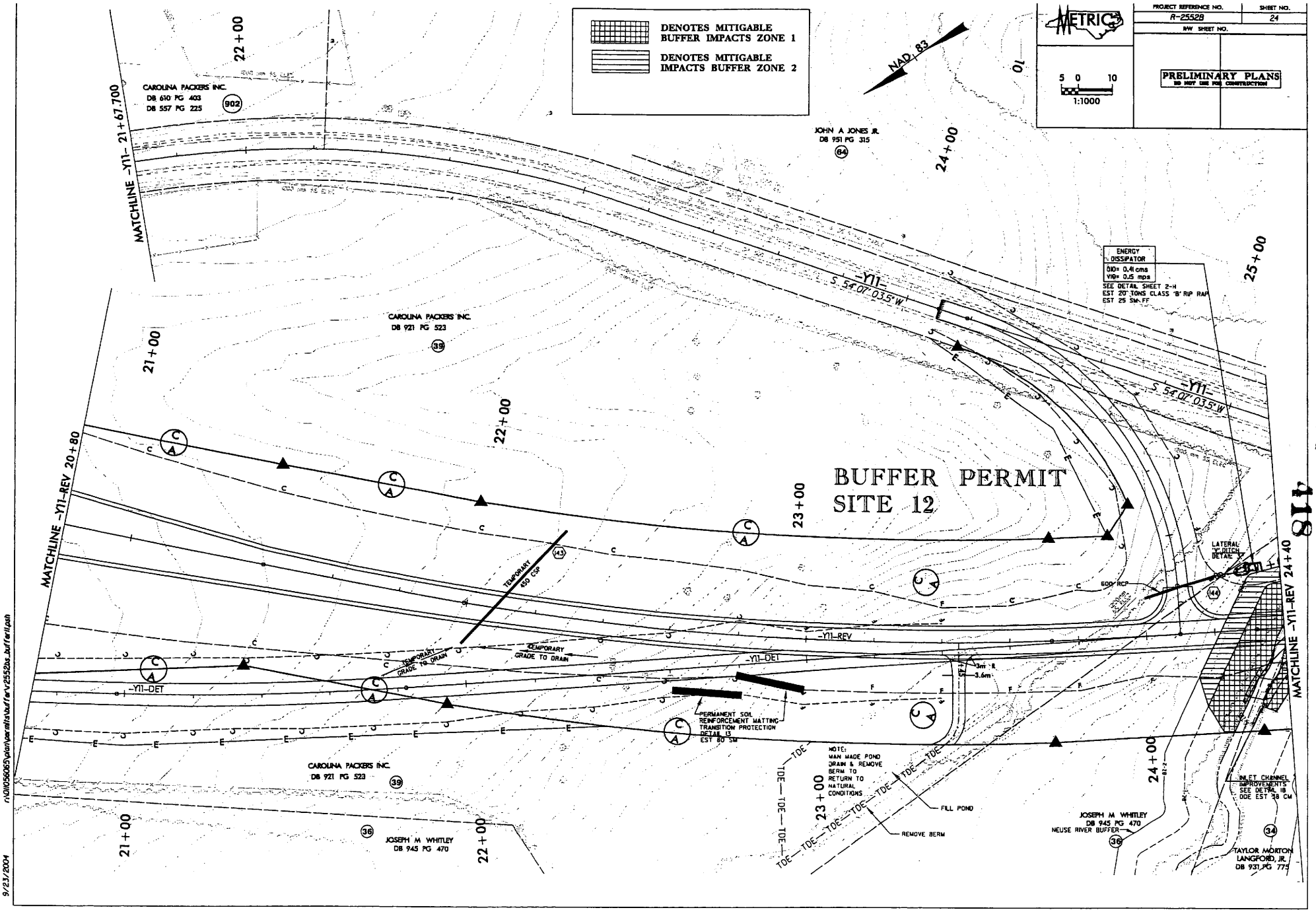

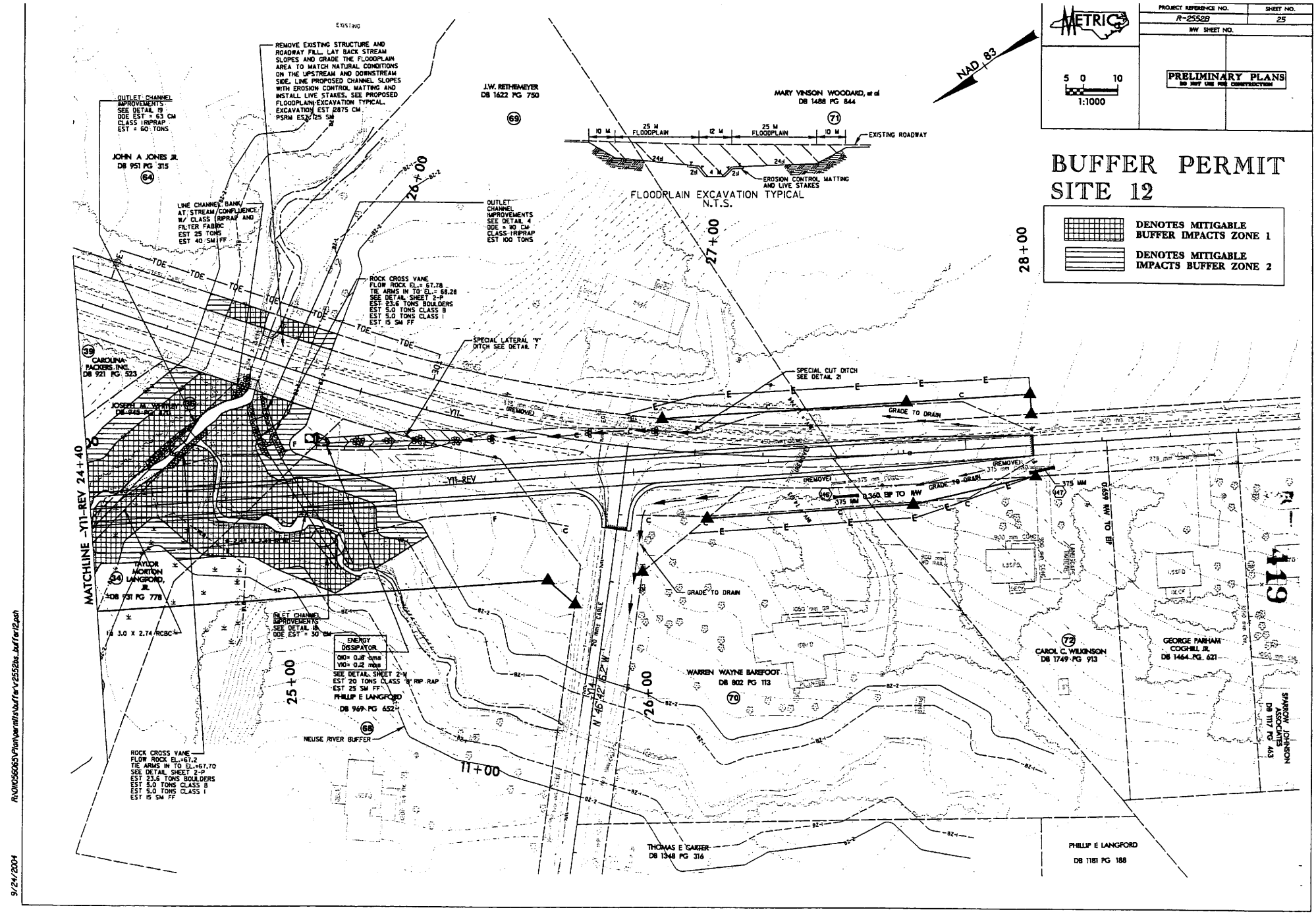
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
25
RW SHEET NO.
METRIC
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
BUFFER PERMIT
SITE 12
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
FLOODPLAIN EXCAVATION TYPICAL
N.T.S.
25 M FLOODPLAIN
12 M
10 M
EXISTING ROADWAY
EROSION CONTROL MATTING AND LIVE STAKES
REMOVE EXISTING STRUCTURE AND ROADWAY FILL. LAY BACK STREAM SLOPES AND GRADE THE FLOODPLAIN AREA TO MATCH NATURAL CONDITIONS ON THE UPSTREAM AND DOWNSTREAM SIDE. LINE PROPOSED CHANNEL SLOPES WITH EROSION CONTROL MATTING AND INSTALL LIVE STAKES. SEE PROPOSED FLOODPLAIN EXCAVATION TYPICAL.
EXCAVATION EST 2875 CM
PSRM EST 125 SM
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 19 DDE EST = 63 CM CLASS I RIPRAP EST = 60 TONS
LINE CHANNEL BANK AT STREAM CONFLUENCE W/ CLASS I RIPRAP AND FILTER FABRIC EST 25 TONS EST 40 SM FF
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 4 DDE = 90 CM CLASS I RIPRAP EST 100 TONS
ROCK CROSS VANE FLOW ROCK EL.= 67.78 TIE ARMS IN TO EL.= 68.28 SEE DETAIL SHEET 2-P EST 23.6 TONS BOULDERS EST 5.0 TONS CLASS B EST 5.0 TONS CLASS I EST 15 SM FF
SPECIAL LATERAL 'Y' DITCH SEE DETAIL 7
SPECIAL CUT DITCH SEE DETAIL 21
GRADE TO DRAIN
(REMOVE)
375 MM
0.360 EP TO RW
0.459 MM TO EP
MATCHLINE -Y11-REV 24+40
-Y11-REV
-Y11-
TOE
BZ-1
BZ-2
ENERGY DISSIPATOR
Q10= 0.08 cms
V10= 0.12 m/s
SEE DETAIL SHEET 2-M
EST 20 TONS CLASS 'B' RIP RAP
EST 25 SM FF
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 18 DDE EST = 30 CM
ROCK CROSS VANE FLOW ROCK EL.=67.2 TIE ARMS IN TO EL.=67.70 SEE DETAIL SHEET 2-P EST 23.6 TONS BOULDERS EST 5.0 TONS CLASS B EST 5.0 TONS CLASS I EST 15 SM FF
N 46°42'52" W
25+00
26+00
27+00
28+00
11+00
NEUSE RIVER BUFFER
WARREN WAYNE BAREFOOT DB 802 PG 113
PHILLIP E LANGFORD DB 969 PG 652
THOMAS E CARTER DB 1348 PG 316
PHILLIP E LANGFORD DB 1181 PG 188
CAROL C. WILKINSON DB 1749 PG 913
GEORGE PARHAM COGHILL JR. DB 1464 PG. 621
SPARROW JOHNSON ASSOCIATES DB 1117 PG 443
J.W. REITHMEYER DB 1622 PG 750
MARY VINSON WOODARD, et al DB 1488 PG 844
JOHN A JONES JR. DB 951 PG 315
CAROLINA PACKERS, INC DB 921 PG. 323
JOSEPH M. WARNER DB 945 PG 811
TAYLOR MORTON LANGFORD, JR. DB 931 PG 778
F.E. 3.0 X 2.74 RCBC
64
69
71
39
68
34
70
72
147
146
9/24/2004
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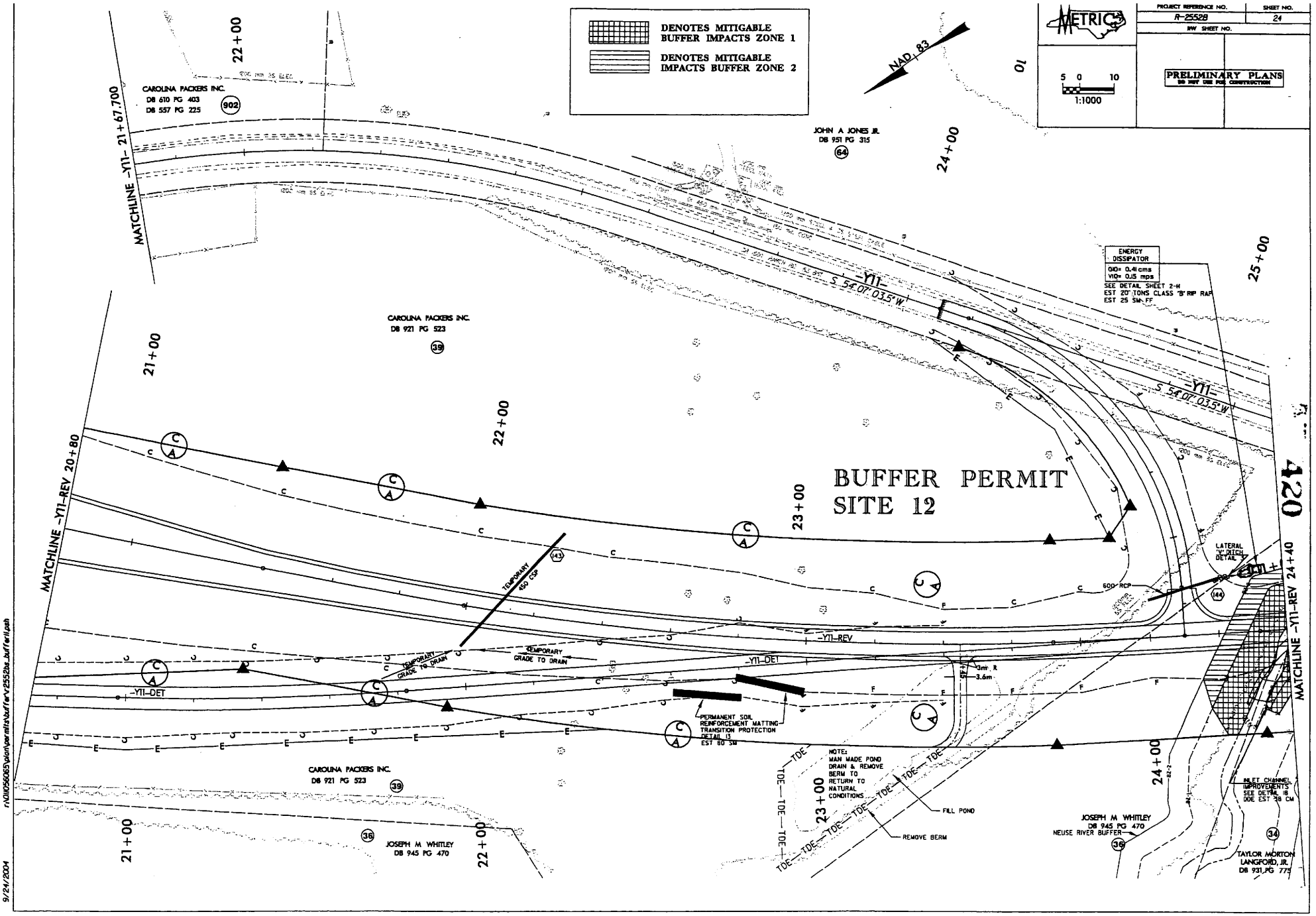
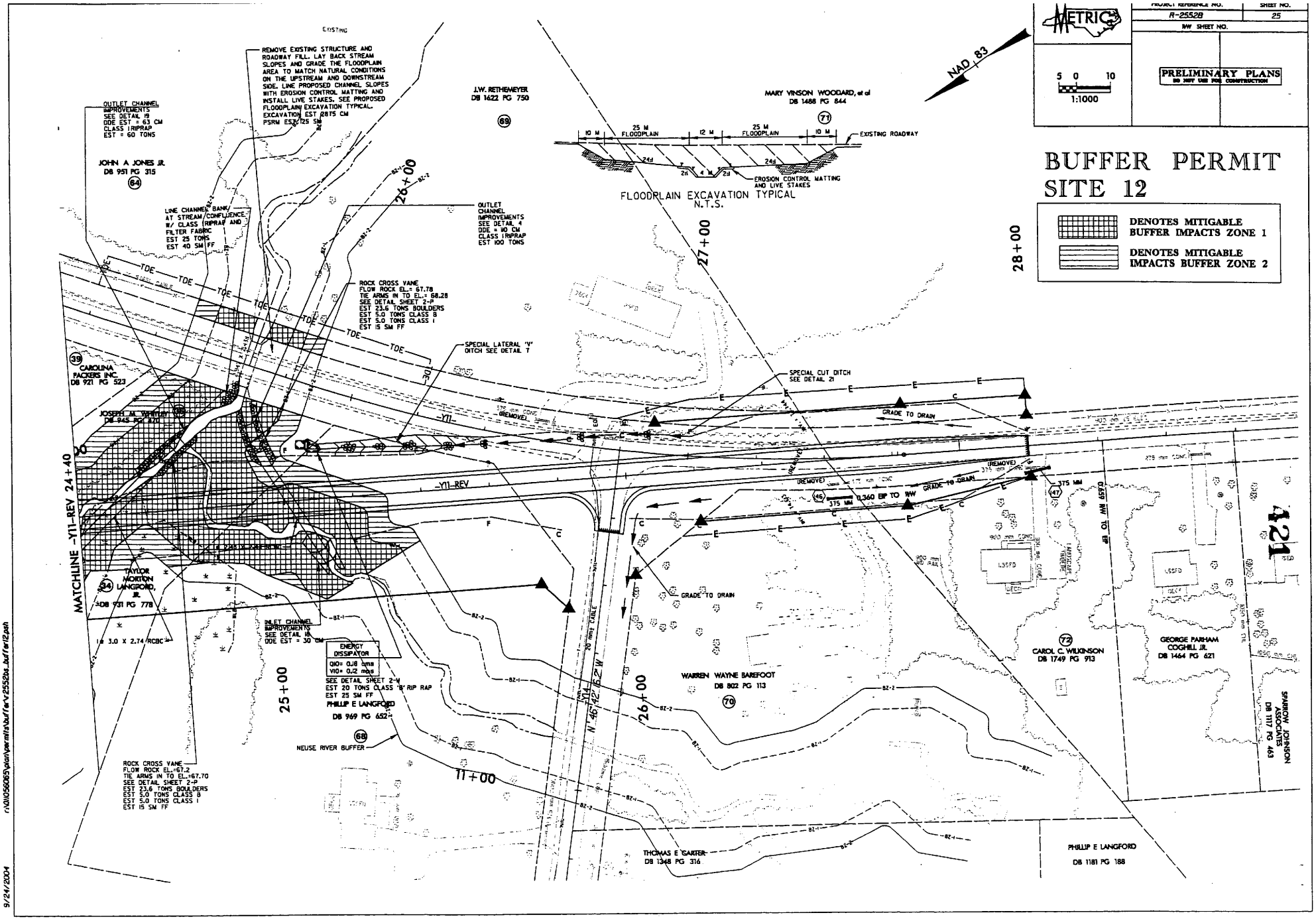

DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
NAD 83
METRIC
PROJECT REFERENCE NO. R-2552B
SHEET NO. 24
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
BUFFER PERMIT SITE 12
MATCHLINE -Y11- 21+67.700
MATCHLINE -Y11-REV 20+80
MATCHLINE -Y11-REV 24+40
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225 902
CAROLINA PACKERS INC. DB 921 PG 523 39
JOHN A JONES JR. DB 951 PG 315 64
JOSEPH M WHITLEY DB 945 PG 470 36
TAYLOR MORTON LANGFORD, JR. DB 931, PG 775 34
-Y11- S 54°07'03.5"W
ENERGY DISSIPATOR
QI0= 0.41 cms
VI0= 0.15 mps
SEE DETAIL SHEET 2-H
EST 20' TONS CLASS 'B' RIP RAP
EST 25 SM FF
TEMPORARY 450 CSP
TEMPORARY GRADE TO DRAIN
-Y11-DET
-Y11-REV
600 RCP
LATERAL 'Y' DITCH DETAIL
PERMANENT SOIL REINFORCEMENT MATTING TRANSITION PROTECTION DETAIL 13 EST 80 SM
NOTE: MAN MADE POND DRAIN & REMOVE BERM TO RETURN TO NATURAL CONDITIONS.
FILL POND
REMOVE BERM
INLET CHANNEL IMPROVEMENTS SEE DETAIL 18 DOE EST 38 CM
NEUSE RIVER BUFFER
21+00
22+00
23+00
24+00
25+00
420

9/24/2004


METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
25
NW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
NAD 83
BUFFER PERMIT
SITE 12
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
FLOODPLAIN EXCAVATION TYPICAL
N.T.S.
10 M FLOODPLAIN
12 M
25 M FLOODPLAIN
10 M
EXISTING ROADWAY
EROSION CONTROL MATTING AND LIVE STAKES
MATCHLINE -Y11-REV 24+40
25+00
26+00
27+00
28+00
11+00
-Y11-REV
-Y11-
-Y14-
N 46°42'52" W
REMOVE EXISTING STRUCTURE AND ROADWAY FILL. LAY BACK STREAM SLOPES AND GRADE THE FLOODPLAIN AREA TO MATCH NATURAL CONDITIONS ON THE UPSTREAM AND DOWNSTREAM SIDE. LINE PROPOSED CHANNEL SLOPES WITH EROSION CONTROL MATTING AND INSTALL LIVE STAKES. SEE PROPOSED FLOODPLAIN EXCAVATION TYPICAL.
EXCAVATION EST 2875 CM
PSRM EST 125 SM
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 19
ODE EST = 63 CM
CLASS I RIPRAP
EST = 60 TONS
LINE CHANNEL BANK AT STREAM CONFLUENCE W/ CLASS I RIPRAP AND FILTER FABRIC
EST 25 TONS
EST 40 SM FF
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 4
ODE = 140 CM
CLASS I RIPRAP
EST 100 TONS
ROCK CROSS VANE
FLOW ROCK EL.= 67.78
TIE ARMS IN TO EL.= 68.28
SEE DETAIL SHEET 2-P
EST 23.6 TONS BOULDERS
EST 5.0 TONS CLASS B
EST 5.0 TONS CLASS I
EST 15 SM FF
SPECIAL LATERAL 'Y' DITCH SEE DETAIL 7
SPECIAL CUT DITCH SEE DETAIL 21
GRADE TO DRAIN
(REMOVE)
1,360 EP TO WW
375 MM
INLET CHANNEL IMPROVEMENTS SEE DETAIL 18
ODE EST = 30 CM
ENERGY DISSIPATOR
Q10= 0.18 cms
V10= 0.12 mps
SEE DETAIL SHEET 2-M
EST 20 TONS CLASS 'B' RIP RAP
EST 25 SM FF
NEUSE RIVER BUFFER
ROCK CROSS VANE
FLOW ROCK EL.=67.2
TIE ARMS IN TO EL.=67.70
SEE DETAIL SHEET 2-P
EST 23.6 TONS BOULDERS
EST 5.0 TONS CLASS B
EST 5.0 TONS CLASS I
EST 15 SM FF
1@ 3.0 X 2.74 RCBC
J.W. RETHEMEYER
DB 1622 PG 750
MARY VINSON WOODARD, et al
DB 1488 PG 844
JOHN A JONES JR.
DB 951 PG 315
CAROLINA PACKERS INC.
DB 921 PG 523
JOSEPH M. WHITLEY
DB 945 PG 810
TAYLOR MORTON LANGFORD, JR.
DB 931 PG 778
PHILLIP E LANGFORD
DB 969 PG 652
WARREN WAYNE BAREFOOT
DB 802 PG 113
CAROL C. WILKINSON
DB 1749 PG 913
GEORGE PARHAM COGHILL JR.
DB 1464 PG 621
SPARROW JOHNSON ASSOCIATES
DB 1117 PG 463
THOMAS E CARTER
DB 1348 PG 316
PHILLIP E LANGFORD
DB 1181 PG 188
421
USED
0.459 MW TO EP
TDE
BZ-1
BZ-2
9/24/2004
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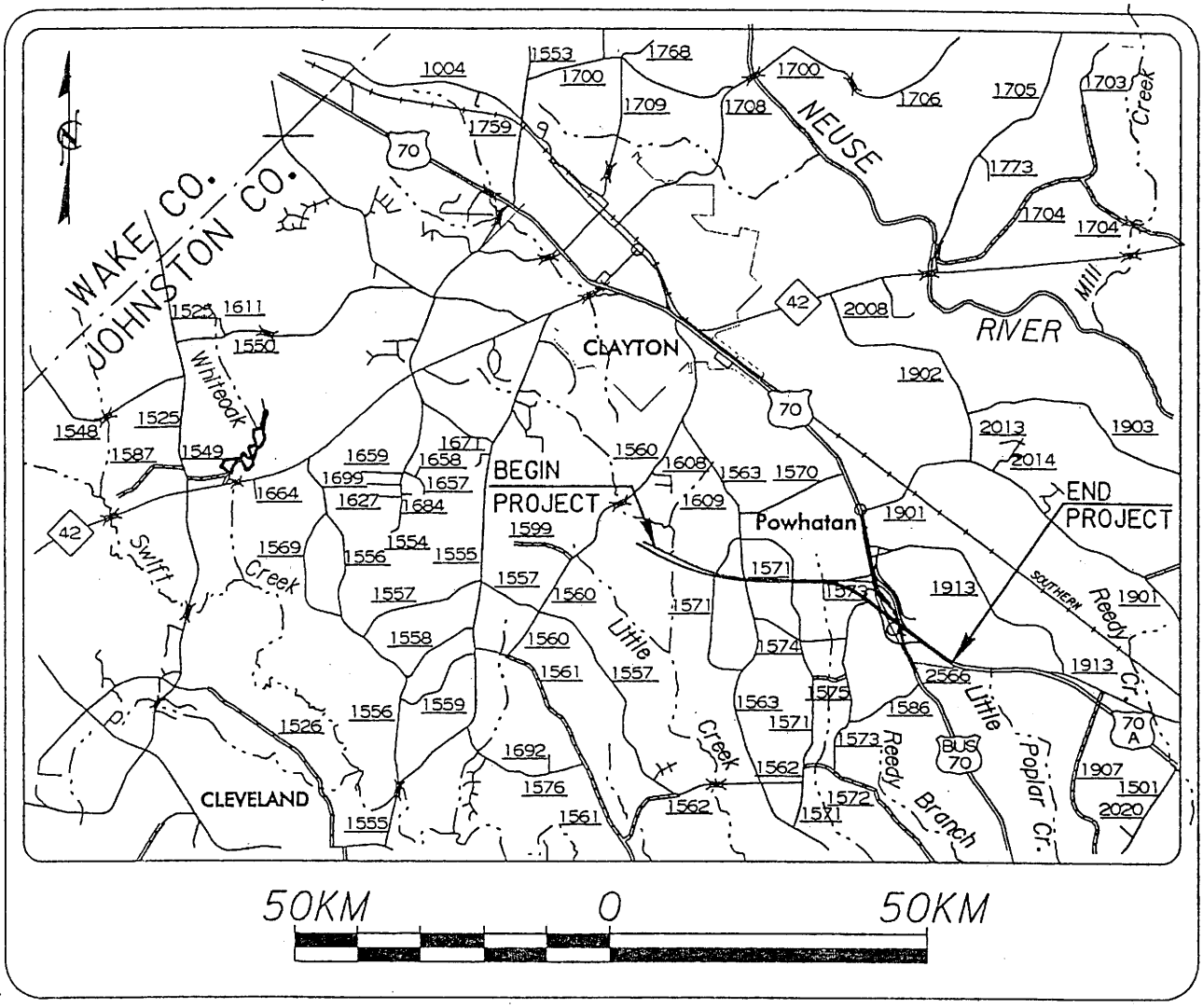
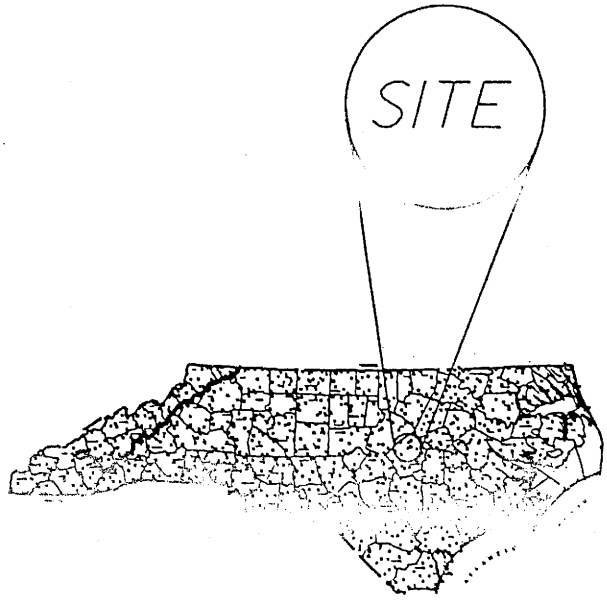


VICINITY MAP



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

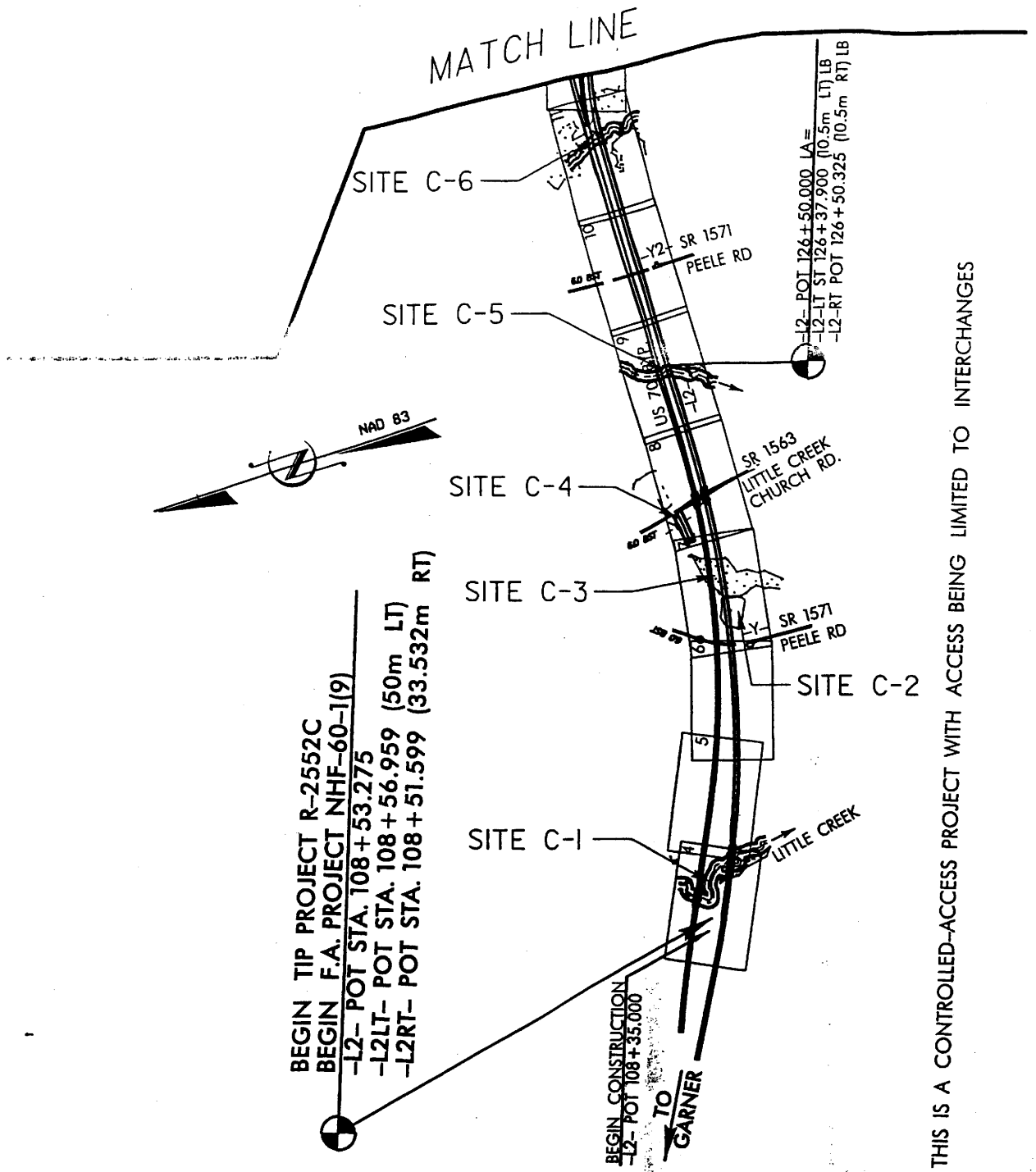
JOHNSTON COUNTY

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

0 500M 1000M

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

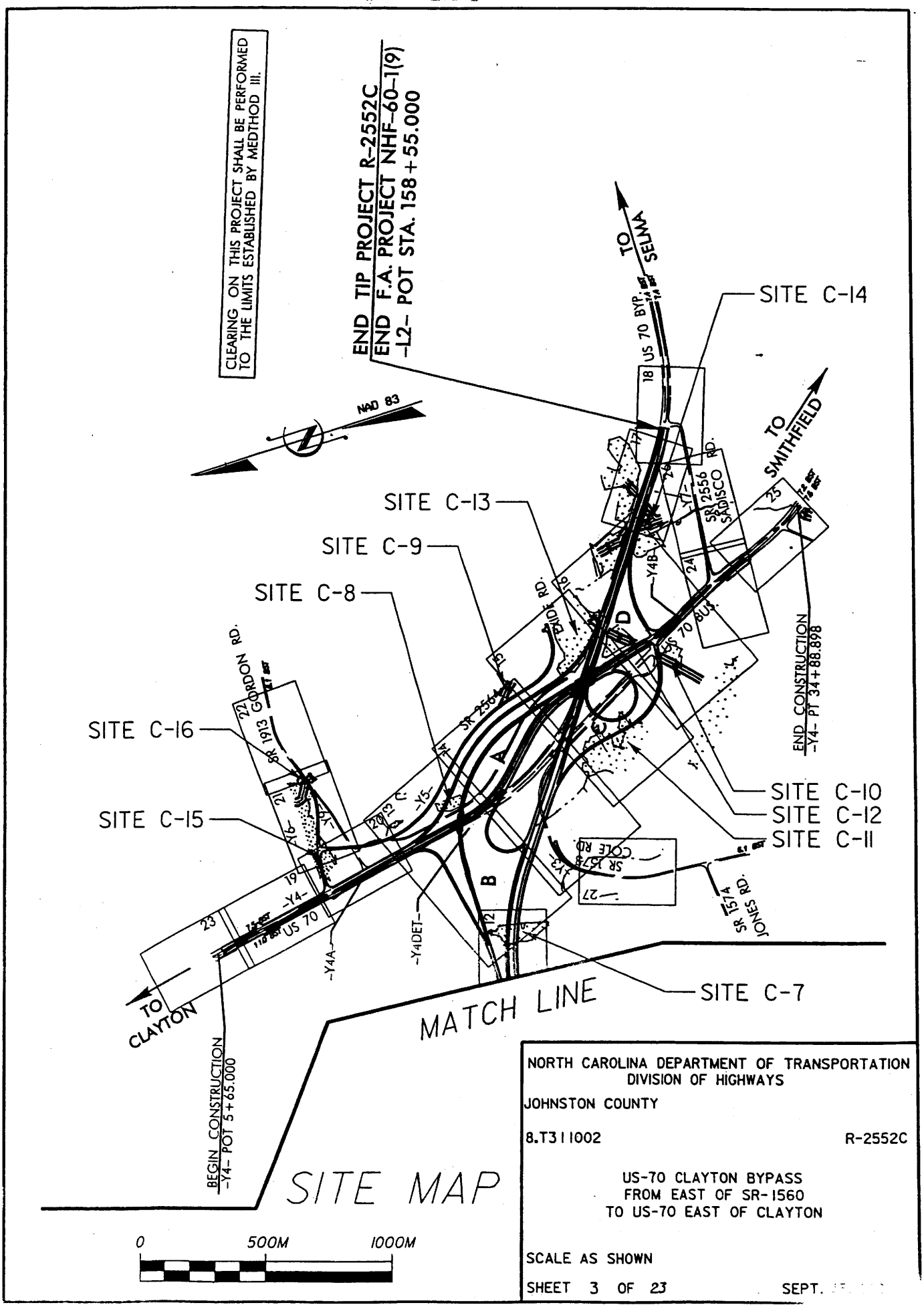
JOHNSTON COUNTY

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



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 3 OF 23 SEPT.

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 Litle 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 Litle 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	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

R-2552C Johnston Co. Affected Buffer Areas **Site #1**

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

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

Date: September 15, 2004
Dsn. By: RNS

SHT.	Structure	Line	Station	STR.	Total D.A.		Required length for treatment		PROVIDED	Channel	BASE WID	SIDE SLOPES *		Treated	Q2	V 2	Q10	V 10	Treatment	Remarks
No.	No.			Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (%)	(m)	Z1	Z2	Discharge?	cfs	fps	cfs	fps	Provided	
	115	L2 RT	104+80 RT	2-GI	0.84	2.1	207.6	63	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	1.2	118.6	36	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	1.7	165.6	50	199	2.34	0.0	6	6	YES	5.3	1.6	6.6	1.7	G.S.	
	112	L2 LT	104+85 LT	2-GI	0.75	1.9	185.3	56	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	2.0	200.2	61	199	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	1.9	185.3	56	199	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	1.2	123.6	38	99	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	1.2	116.1	35	99	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	1.4	143.3	44	92	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	2.1	207.6	63	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	16.5	1653.1	504	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	2.2	222.4	68	198	2.34	0.0	6	6	YES	6.6	1.7	8.2	2.0	G.S.	
4	118	L2 RT	106+78 LT	2-GI	0.62	1.5	153.2	47	200	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	1.6	160.6	49	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	1.5	145.8	44	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	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	7.4	741.3	226	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	0.3	29.7	9	0	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	0.1	10.4	3	0	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	0.4	40.0	12	0	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	0.3	29.7	9	0	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	0.3	29.7	9	0	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	0.3	27.2	8	0	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	1.2	116.1	35	102	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	1.3	131.0	40	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	0.8	76.6	23	129	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	1.2	116.1	35	153	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	7.9	790.7	241	644	2.00	6.0	3	3	YES	15.2	1.7	20.4	2.0	G.S.	1, 2

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 RT STA. 111+71 TO STA. 112+45 LT

NOTE 3: TREATMENT IS PROVIDED DOWNSTREAM

R-2552C Johnston Co. Affected Buffer Areas **Site # 4**

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. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
8		L2 LT	120+80 LT	2-GI	0.14	0.3	34.6	11	0	N/A	N/A	N/A	N/A	NO	2.0	N/A	2.5	N/A	PSH	1
8		Y1	11+16 RT	DITCH	0.30	0.7	74.1	23	26	3.33	0.00	4.00	3.00	YES	1.8	1.3	2.4	1.5	G.S.	1
8		Y1	11+17 RT	DITCH	0.12	0.3	29.7	9	43	2.70	0.00	4.00	3.00	YES	1.1	1.0	1.3	1.1	G.S.	1

1

4.26

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

R-2552C Johnston Co. Affected Buffer Areas **Site # 5**

Date: September 15, 2004
Dsn. By: RNS

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%

SHT.	Structure	Line	Station	STR.	Total D.A.		Required length for treatment		PROVIDED	Channel	BASE WID	SIDE SLOPES *		Treated	Q2	V 2	Q10	V 10	Treatment	Remarks
No.	No.			Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (%)	(m)	Z1	Z2	Discharge?	cfs	fps	cfs	fps	Provided	
9		L2	126+10 LT	2-GI	0.18	0.4	44.5	14	0	1.50	N/A	N/A	N/A	NO	2.5	N/A	3.2	N/A	N/A	
9		L2	126+10 M	2-GI	0.27	0.7	66.7	20	129	1.50	0.0	8	8	YES	1.8	0.8	2.2	0.8	G.S.	
9		L2	126+10 RT	2-GI	0.04	0.1	9.9	3	0	1.50	N/A	N/A	N/A	NO	0.6	N/A	0.7	N/A	N/A	
9		L2	125+88 RT	2-GI	0.20	0.5	49.4	15	0	1.50	N/A	N/A	N/A	NO	2.8	N/A	3.5	N/A	N/A	
9		L2	125+88 RT	OPEN	0.69	1.7	170.5	52	129		N/A	N/A	N/A	NO	6.2	N/A	8.0	N/A	PSH	1
9		L2	126+00 LT	DITCH	3.30	8.2	815.4	249	N/A	N/A	N/A	N/A	N/A	NO	12.1	N/A	16.5	N/A	L.S.	1
9		L2	126+40 RT	DITCH	3.10	7.7	766.0	233	N/A	N/A	N/A	N/A	N/A	NO	10.6	N/A	14.6	N/A	L.S.	1

2GI = 2 GRATED INLET
SBG = SHOULDER BERM GUTTER
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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

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. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * 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	0.9	93.9	29	239	0.77	0.0	6	6	YES	3.7	0.8	4.6	0.9	G.S.	
10		L2	129+68 M	2-GI	0.50	1.2	123.6	38	239	0.77	0.0	8	8	YES	2.9	0.7	3.6	0.7	G.S.	
10		L2	129+68 LT	2-GI	0.54	1.3	133.4	41	239	0.85	0.0	6	6	YES	4.8	1.0	6.1	1.1	G.S.	
10		L2	130+20 LT	2-GI	0.15	0.4	37.1	11	51	0.85	0.0	6	6	YES	1.5	0.6	1.9	0.7	G.S.	
10		L2	131+49 RT	2-GI	0.47	1.2	116.1	35	179	1.34	0.0	6	6	YES	4.5	1.1	5.7	1.3	G.S.	
10		L2	131+49 M	2-GI	0.38	0.9	93.9	29	179	1.34	0.0	8	8	YES	2.4	0.8	3.0	0.8	G.S.	
10		L2	131+47 LT	DITCH	3.17	7.8	783.3	239	881	1.34	4.0	3	3	YES	17.6	1.9	23.3	2.3	G.S.	
11		L2	133+60 LT	DITCH	4.70	11.6	1161.4	354	1218	0.33	4.0	3	3	YES	23.0	1.4	31.2	1.6	G.S.	1, 2
11		L2	132+60 M	2-GI	0.23	0.6	56.8	17	110	1.34	0.0	8	8	YES	1.6	0.7	2.0	0.7	G.S.	
11		L2	132+60 RT	2-GI	0.60	1.5	148.3	45	110	1.34	0.0	6	6	YES	3.2	0.9	8.1	1.6	G.S.	
11		L2	133+05 RT	DITCH	3.40	8.4	840.1	256	245	1.00	1.2	3	3	NO	10.8	1.2	14.8	2.2	G.S.	1
11		L2	133+86 M	2-GI	0.43	1.1	106.3	32	169	SAG	0.0	8	8	YES	3.6	0.4	4.6	0.5	G.S.	
11		L2	133+86 RT	2-GI	0.07	0.2	17.3	5	0	N/A	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	0.2	22.2	7	0	N/A	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	1.5	145.8	44	N/A	N/A	N/A	N/A	N/A	NO	5.6	N/A	7.1	N/A	PSH	1
11		L2	134+55 M	2-GI	0.45	1.1	111.2	34	157	SAG	0.0	6	6	YES	3.8	0.5	4.8	0.5	G.S.	
11		L2	134+55 RT	2-GI	0.20	0.5	49.4	15	0	N/A	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	1.6	160.6	49	N/A	N/A	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	2.0	197.7	60	425	SAG	0.0	6	6	YES	3.9	0.5	5.0	0.5	G.S.	
12		FLYOVER	2+68 LT	2-GI	0.75	1.9	185.3	56	239	0.69	0.0	6	6	YES	6.2	0.8	7.9	0.9	G.S.	
12		FLYOVER	2+06 LT	2-GI	0.15	0.4	37.1	11	61	0.69	0.0	6	6	YES	1.6	0.6	2.0	0.6	G.S.	
11		FLYOVER	1+00 LT	DITCH	3.25	8.0	803.1	245	802	0.81	4.0	3	3	YES	18.9	1.2	25.0	1.3	G.S.	1
11		FLYOVER	0+70 LT	2-GI	0.13	0.3	32.1	10	N/A	0.22	N/A	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	0.3	34.6	11	N/A	SAG	N/A	N/A	N/A	NO	2.0	N/A	2.5	N/A	G.S.	
11		FLYOVER	1+16.4 LT	OPEN	0.27	0.7	66.7	20	N/A	0.90	N/A	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 from -l2- Sta. 132+00 to Sta. 133+30 LT.
NOTE 3: OUTLETS INTO WETLAND

R-2552C Johnston Co. Affected Buffer Areas **Site # 9**

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

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

Date: September 15, 2004
Dsn. By: RNS

SHT. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
14		FLYOVER	12+46 RT	2-GI	0.12	0.3	29.7	9	N/A	N/A	N/A	N/A	N/A	N/A	1.7	N/A	2.1	N/A	N/A	3
14		FLYOVER	13+60 RT	2-GI	0.13	0.3	32.1	10	N/A	N/A	N/A	N/A	N/A	N/A	1.8	N/A	2.3	N/A	N/A	3
14		FLYOVER	12+86 RT	DITCH	1.10	2.7	271.8	83	118	0.83	0.0	3	3	YES	5.0	1.3	6.7	1.5	G.S.	
14		RAMP A	6+55.5 LT	DITCH	0.25	0.6	61.8	19	55	0.88	0.0	6	3	YES	2.0	0.7	2.6	0.8	G.S.	
14		RAMP A	6+56.5 LT	DITCH	0.75	1.9	185.3	56	148	2.40	0.0	6	3	YES	5.4	1.9	6.8	2.1	G.S.	
14		RAMP A	6+37.5 RT	DITCH	0.20	0.5	49.4	15	72	0.75	0.0	5	4	YES	0.9	0.6	1.1	0.6	G.S.	
14		RAMP A	6+38.5 RT	DITCH	0.70	1.7	173.0	53	131	2.00	0.0	6	4	YES	4.5	1.5	5.6	1.6	G.S.	
14		Y-5-	18+80 LT	DITCH	0.55	1.4	135.9	41	165	2.90	0.0	4	4	YES	4.3	1.9	5.4	2.1	G.S.	
14		Y-5-	19+93 LT	DITCH	3.80	9.4	939.0	286	777	0.35	0.6	3	3	YES	15.6	1.5	21.5	1.7	G.S.	1
14		FLYOVER	14+26 RT	2-GI	0.08	0.2	19.8	6	N/A	N/A	N/A	N/A	N/A	N/A	1.1	N/A	1.4	N/A	N/A	3
14		FLYOVER	13+92 RT	DITCH	0.66	1.6	163.1	50	55	0.91	0.0	3	3	YES	4.8	1.3	6.1	1.5	G.S.	
14		RAMP A	5+40 LT	2-GI	0.28	0.7	69.2	21	59	1.01	0.0	6	6	YES	2.3	0.7	2.9	0.8	G.S.	
14		Y-5-	19+95 RT	DITCH	0.26	0.6	64.2	20	85	1.60	0.0	4	4	YES	2.0	0.9	2.4	1.1	G.S.	
14		Y-5-	19+96 LT	OPEN	1.20	3.0	296.5	90	199	N/A	N/A	N/A	N/A	NO	8.1	N/A	10.3	N/A	N/A	1

431

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 3: TREATMENT IS PROVIDED DOWNSTREAM

R-2552C Johnston Co. Affected Buffer Areas **Site # 10**

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

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

Date: September 15, 2004
Dsn. By: RNS

SHT. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
16		Y-4	27+40 RT	DITCH	0.31	0.8	76.6	23	150	2.00	0.0	5	4	YES	1.6	0.9	2.0	1.0	G.S.	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

R-2552C Johnston Co. Affected Buffer Areas **Site # 12**

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

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

Date: September 15, 2004
Dsn. By: RNS

SHT.	Structure	Line	Station	STR.	Total D.A.		Required length for treatment		PROVIDED	Channel	BASE WID	SIDE SLOPES *		Treated	Q2	V 2	Q10	V 10	Treatment	Remarks
No.	No.			Type	ha	(ac)	(ft.)	(m.)	Length (m)	Slope (%)	(m)	Z1	Z2	Discharge?	cfs	fps	cfs	fps	Provided	
16		Y-4	26+88 M	2-GI	0.32	0.8	79.1	24	240	0.74	0.0	6	6	YES	2.3	0.7	2.9	0.7	G.S.	
16		Y-4	26+88 LT	2-GI	0.26	0.6	64.2	20	0	0.74	N/A	N/A	N/A	N/A	3.7	N/A	4.6	N/A	G.S.	3
16		Y-4	28+86 LT	2-GI	0.04	0.1	9.9	3	4	SAG	0.0	6	6	YES	0.4	0.3	0.5	0.3	G.S.	
16		Y-4	28+72 LT	2-GI	0.05	0.1	12.4	4	6	SAG	0.0	6	6	YES	0.5	0.3	0.7	0.3	G.S.	
16		Y-4	27+50 LT	2-GI	0.52	1.3	128.5	39	105	0.55	0.0	6	6	YES	5.5	0.8	6.8	0.9	G.S.	
16		Y-4	27+40 M	2-GI	0.36	0.9	89.0	27	170	0.34	0.0	6	4	YES	3.2	0.6	4.0	0.6	G.S.	
16		Y-4	26+59 LT	DITCH	1.76	4.3	434.9	133	571	0.70	1.0	3	3	YES	14.1	1.9	18.1	2.1	G.S.	1
15		Y-4	25+04 LT	2-GI	0.20	0.5	49.4	15	0	N/A	N/A	N/A	N/A	N/A	2.8	N/A	3.5	N/A	PSH	
15		L2-	149+41 M	2-GI	0.23	0.6	56.8	17	150	SAG	0.0	5	5	YES	1.8	0.4	2.3	0.4	G.S.	
16		L2-	150+19 RT	DITCH	1.15	2.8	284.2	87	269	1.00	0.00	4.00	4.00	YES	5.8	1.3	7.5	1.5	G.S.	1, 4
																		0.0		
16		L2-	151+63 RT	2-GI	0.11	0.3	27.2	8	74	0.40	0.0	6	6	YES	0.8	0.4	1.0	0.4	G.S.	
16		L2-	150+25 RT	DITCH	1.31	3.2	323.7	99	225	1.30	0.0	6	4	YES	3.3	1.0	4.5	1.2	G.S.	

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 3: TREATMENT IS PROVIDED DOWNSTREAM

NOTE 4: EXISTING DITCH

R-2552C Johnston Co. Affected Buffer Areas **Site # 13**

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

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

Date: September 15, 2004
Dsn. By: RNS

SHT. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
16		L2	150+55 LT	THERE ARE NO ROADWAY DITCHES ENTERING THE BUFFERED AREA IN THIS VICINITY - SHEET FLOW ONLY																

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

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
Dsn. By: RNS

SHT. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
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

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

R-2552C Johnston Co. Affected Buffer Areas **Site # 16**

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. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
21		Y-6	14+30 LT	DITCH	0.07	0.2	17.8	5	30	1.06	0.0	6	4	YES	0.7	0.6	0.9	0.6	G.S.	1
																0.0		0.0		
21		Y-6	14+40 RT	DITCH	1.50	3.7	370.7	113	140	3.50	0.0	4	3	N/A	7.2	2.8	9.7	3.1	PSH	1, 5
																0.0		0.0		
22		Y-6	14+90 LT	DITCH	0.19	0.5	46.9	14	59	0.33	0.0	3	4	YES	1.7	0.5	2.1	0.5	G.S.	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 5: NO HIGHWAY PAVEMENT DRAINS TO THIS SITE

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BUFFER IMPACTS SUMMARY (English)

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
			ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	DUAL BRIDGES	L2 LT LN 108+84 / 110+28	X		25272	13712	38985					
		L2 RT LN 109+72 / 111+02										
4	750 RCP	Y1 11+06 / 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	L2 133+87 / 134+23	X					19472	13196	32668		
	1200 RCP											
	3.7x2.4 RCBC											
9	750 RCP	Y5 20+10 / 20+30		X				549	958	1507		
10	2.7x1.8 RCBC	Rp C 7+68 / 8+16	X		5479	2099	7578					
	1800 RCP											
12	1200 RCP	L2 150+05 / 150+42 RT	X		2712	1087	3800					
13	1050 RCP	L2 150+27 / 150+68 LT	X		1937	850	2788					
14	2.44x1.83 RCBC	L2 153+64 LT / 155+54 RT	X		4801	2390	7190					
	1500 STEEL PIPE											
	900 RCP & 600 RCP											
16	DBL 1500 RCP	Y6 14+24 / 14+76	X		4176	2153	6329					
TOTAL:					**46475**	**23152**	**69628**	**39910**	**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

BUFFER IMPACTS SUMMARY (Metric)

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
			ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (m^2)	ZONE 2 (m^2)	TOTAL (m^2)	ZONE 1 (m^2)	ZONE 2 (m^2)	TOTAL (m^2)	ZONE 1 (m^2)	ZONE 2 (m^2)
1	DUAL BRIDGES	L2 LT LN 108+84 / 110+28	X		2348	1274	3622					
		L2 RT LN 109+72 / 111+02										
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	L2 133+87 / 134+23	X					1809	1226	3035		
	1200 RCP											
	3.7x2.4 RCBC											
9	750 RCP	Y5 20+10 / 20+30		X				51	89	140		
10	2.7x1.8 RCBC	Rp C 7+68 / 8+16	X		509	195	704					
	1800 RCP											
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	L2 153+64 LT / 155+54 RT	X		446	222	668					
	1500 STEEL PIPE											
	900 RCP & 600 RCP											
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)

		WETLANDS IN BUFFER		MECH. CLEARING IN BUFFER		TOTAL	
Site	Station (FROM/TO)	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	0	0	0	8	0	8
	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	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)

		WETLANDS IN BUFFER		MECH. CLEARING IN BUFFER		TOTAL	
Site	Station (FROM/TO)	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 OK	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

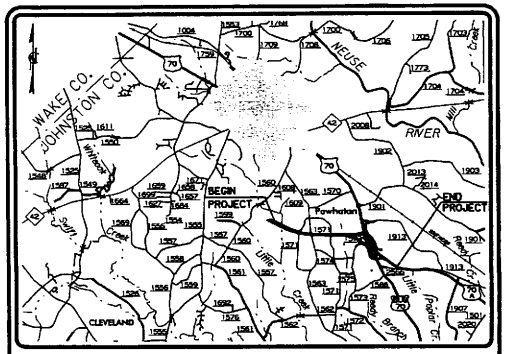
SHEET 23 OF 23 SEPT. 15, 2004

TIP PROJECT: R-2552C

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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



VICINITY MAP

METRIC

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

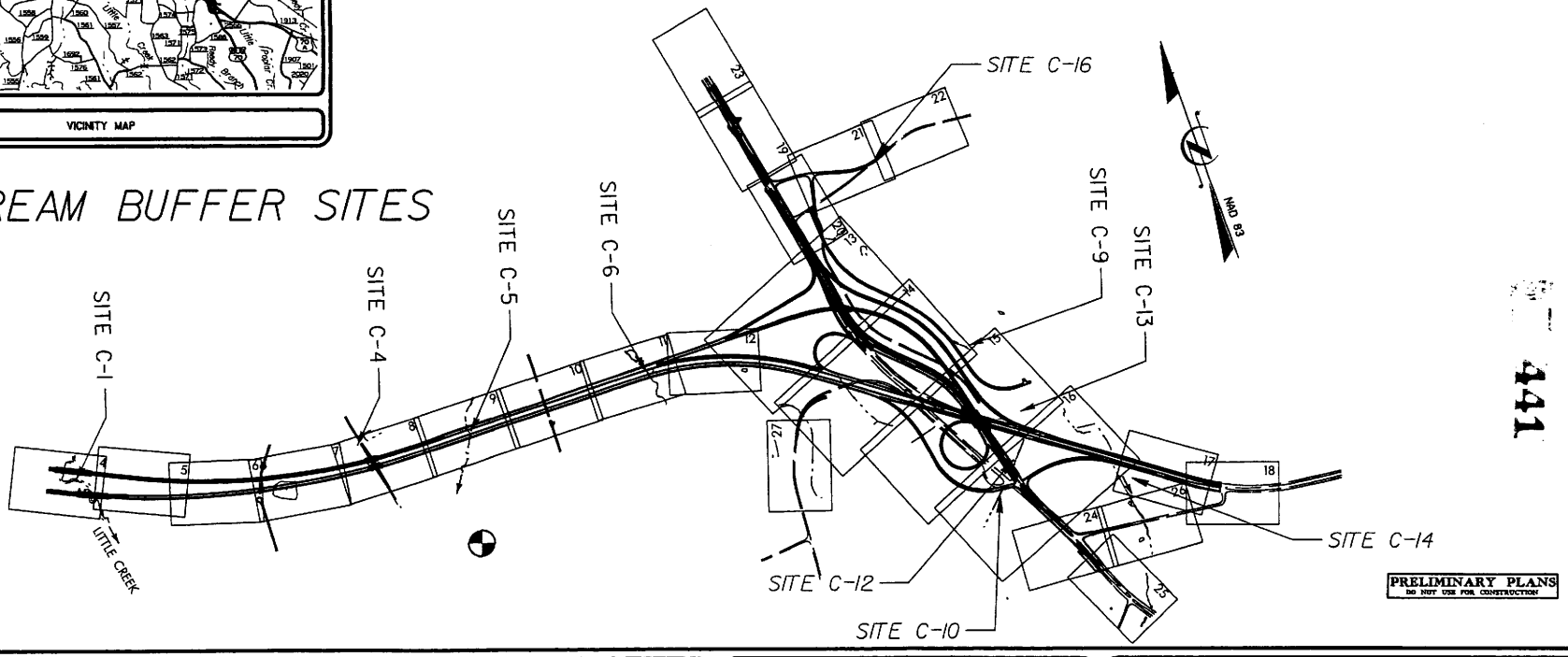
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2552C	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34459.1.6	NHF-60-1(9)	P.E.	
34459.2.7		R.W. & UTIL.	

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

STREAM BUFFER SITES



441

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALE

PLANS 5 m 0 10 m

PROFILE (HORIZONTAL) 5 m 0 10 m

PROFILE (VERTICAL) 1 m 0 2 m

DESIGN DATA

ADT 2005 = 29,500
ADT 2025 = 55,800
DHV = 10 %
D = 65 %
T = 16 % *
V = 110 km/h

* TTST 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:
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: May 16, 2003

LETTING DATE: May 17, 2005

Stephen C. Browde, P.E.
PROJECT ENGINEER

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

N.C.D.O.T. CONTACT:
Teresa Bruton, P.E.
PROJECT ENGINEER - DESIGN SERVICES

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

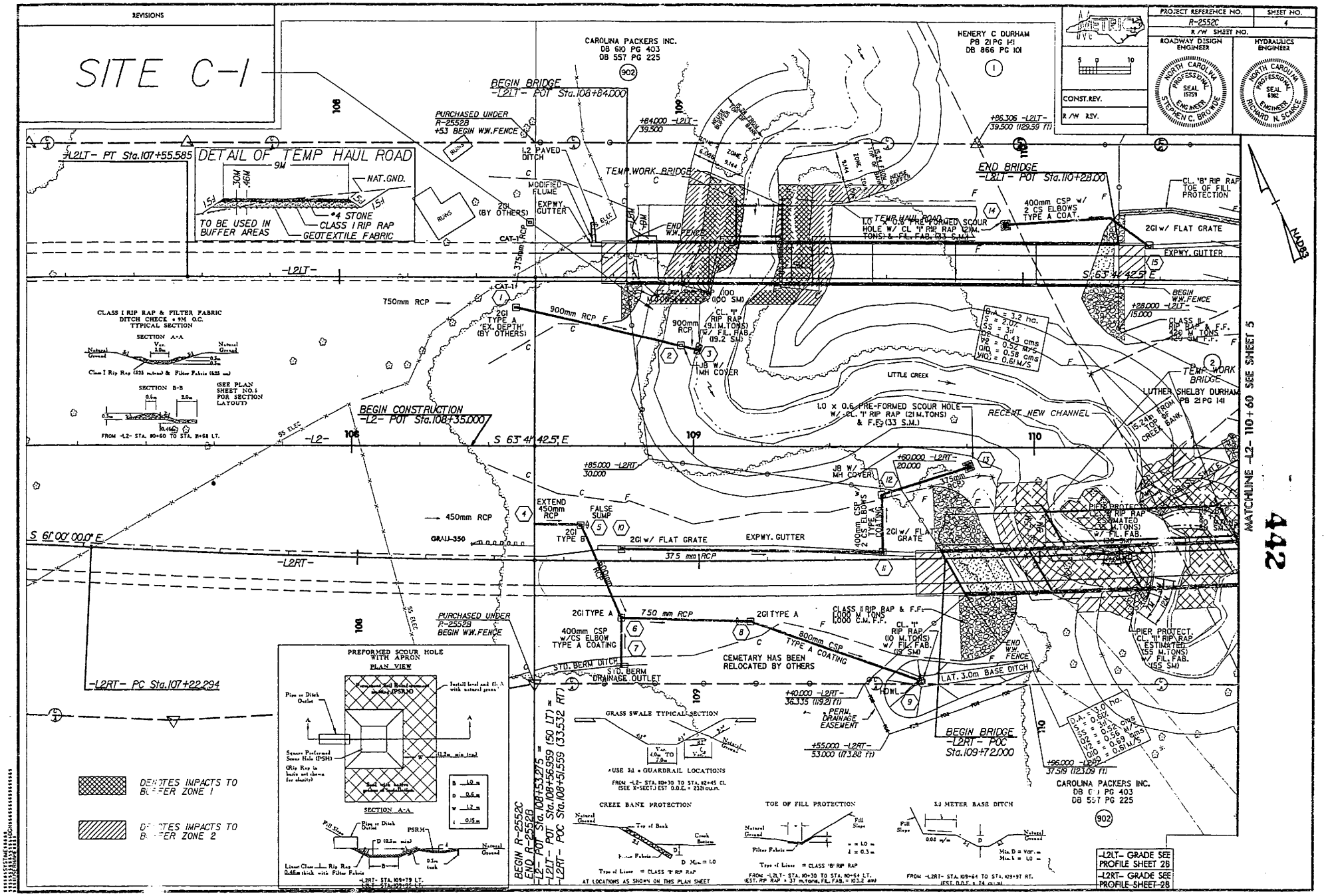
SIGNATURE: P.E.

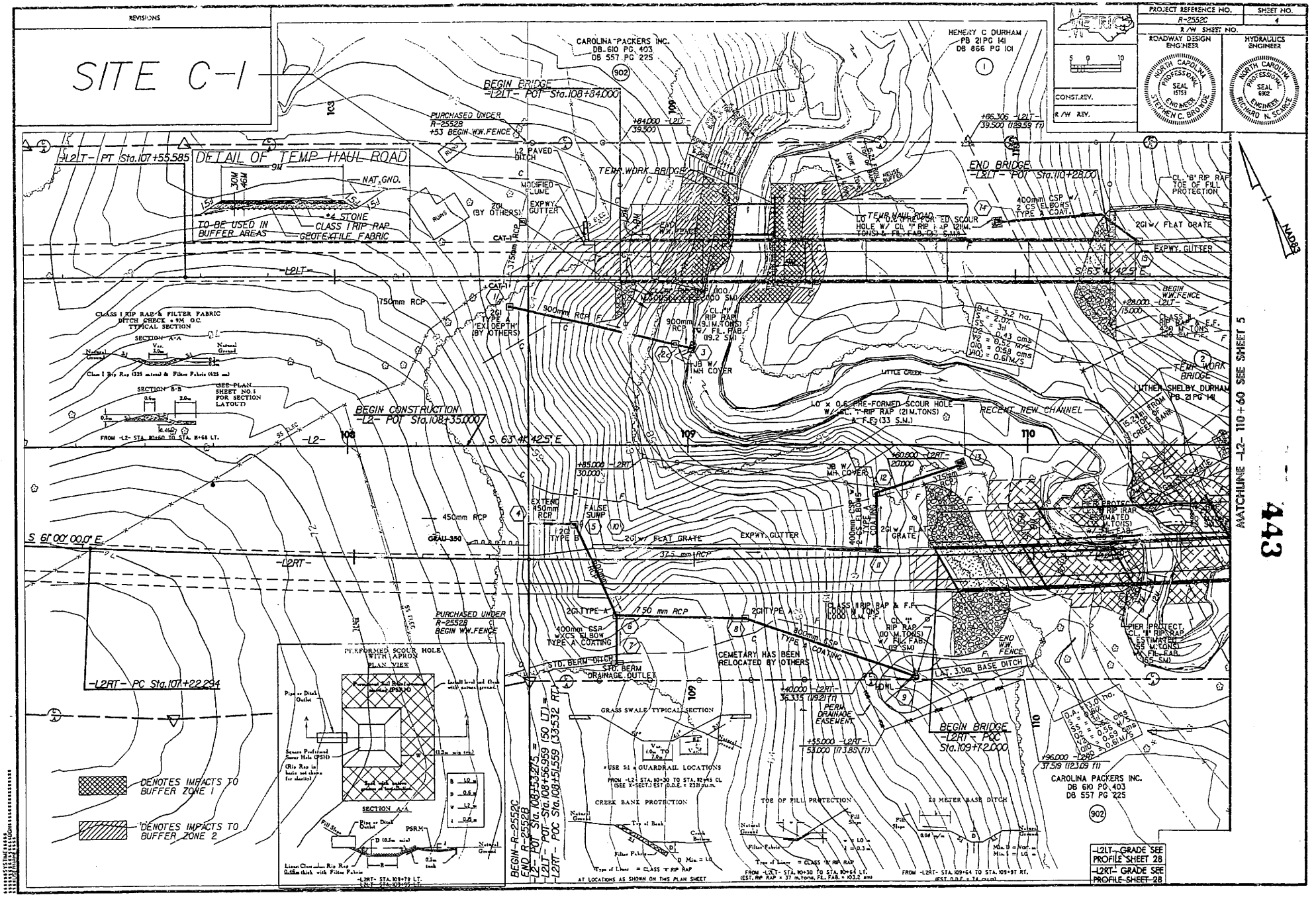
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

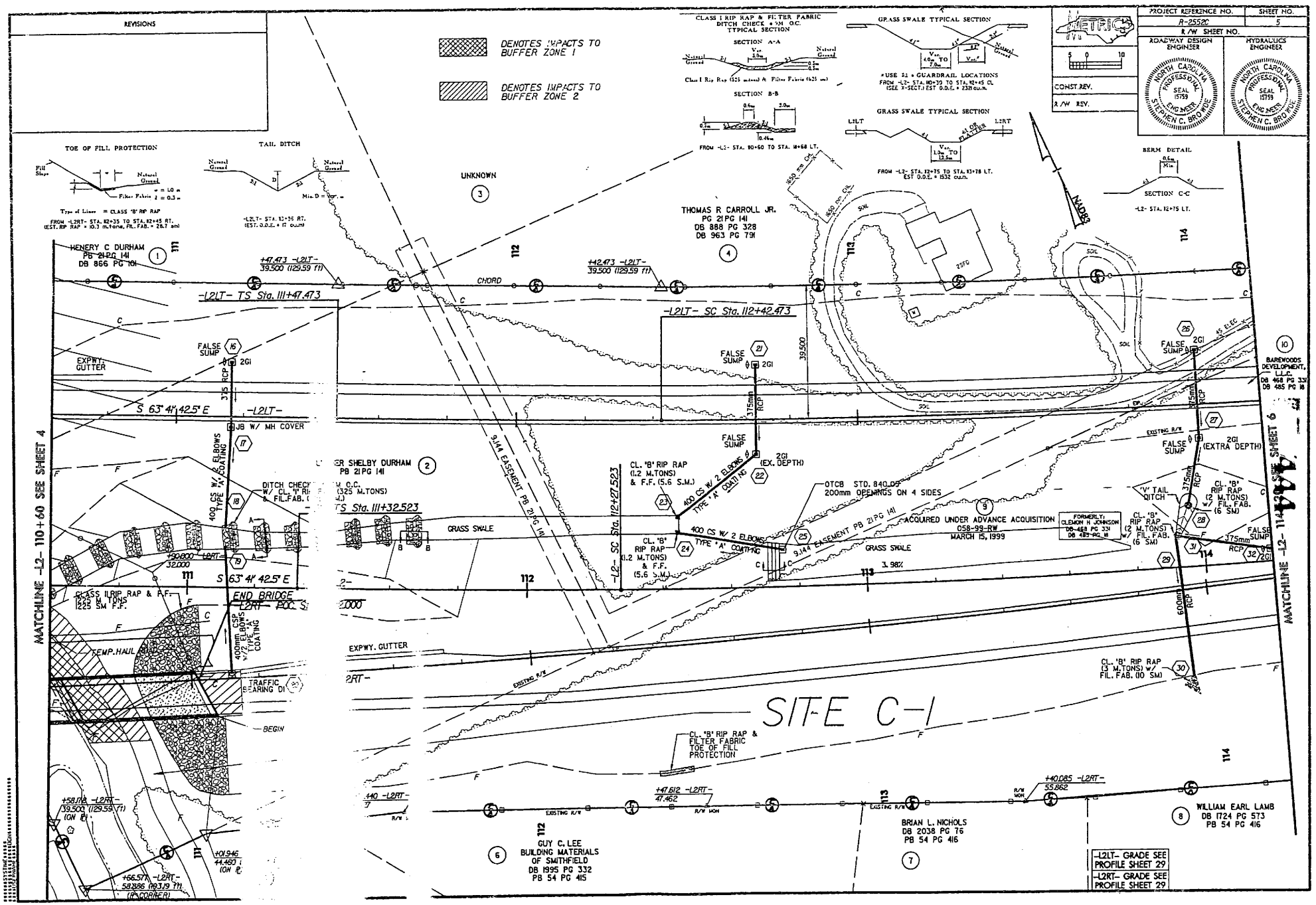
P.E.
STATE DESIGN ENGINEER

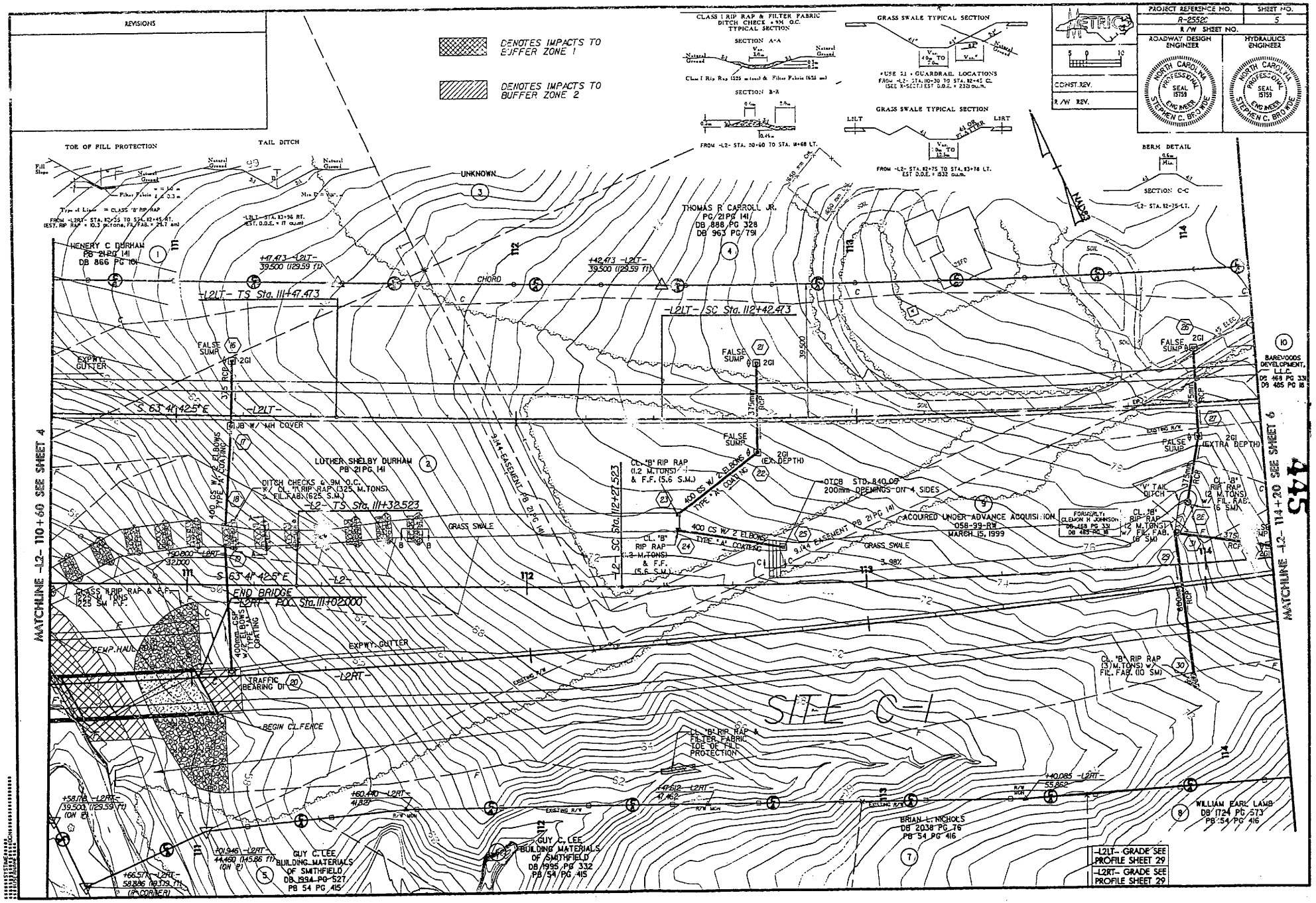
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

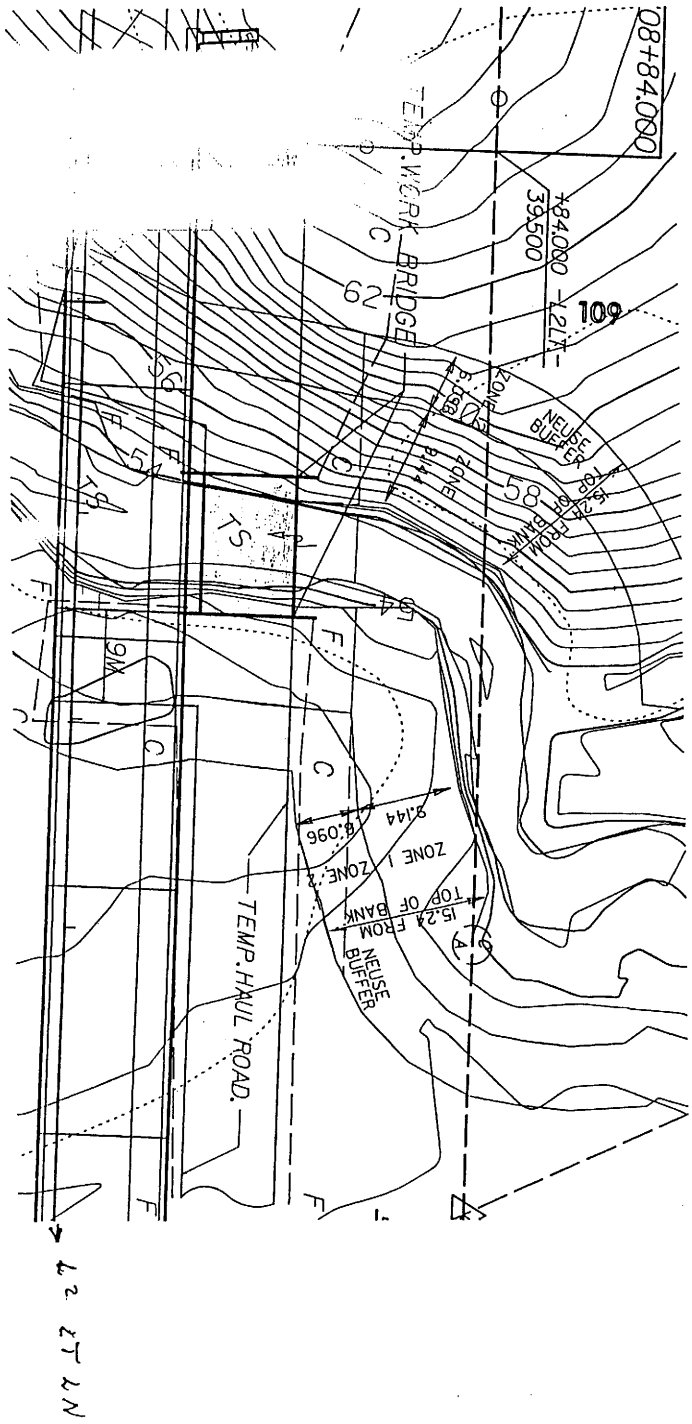
APPROVED
DIVISION ADMINISTRATOR DATE

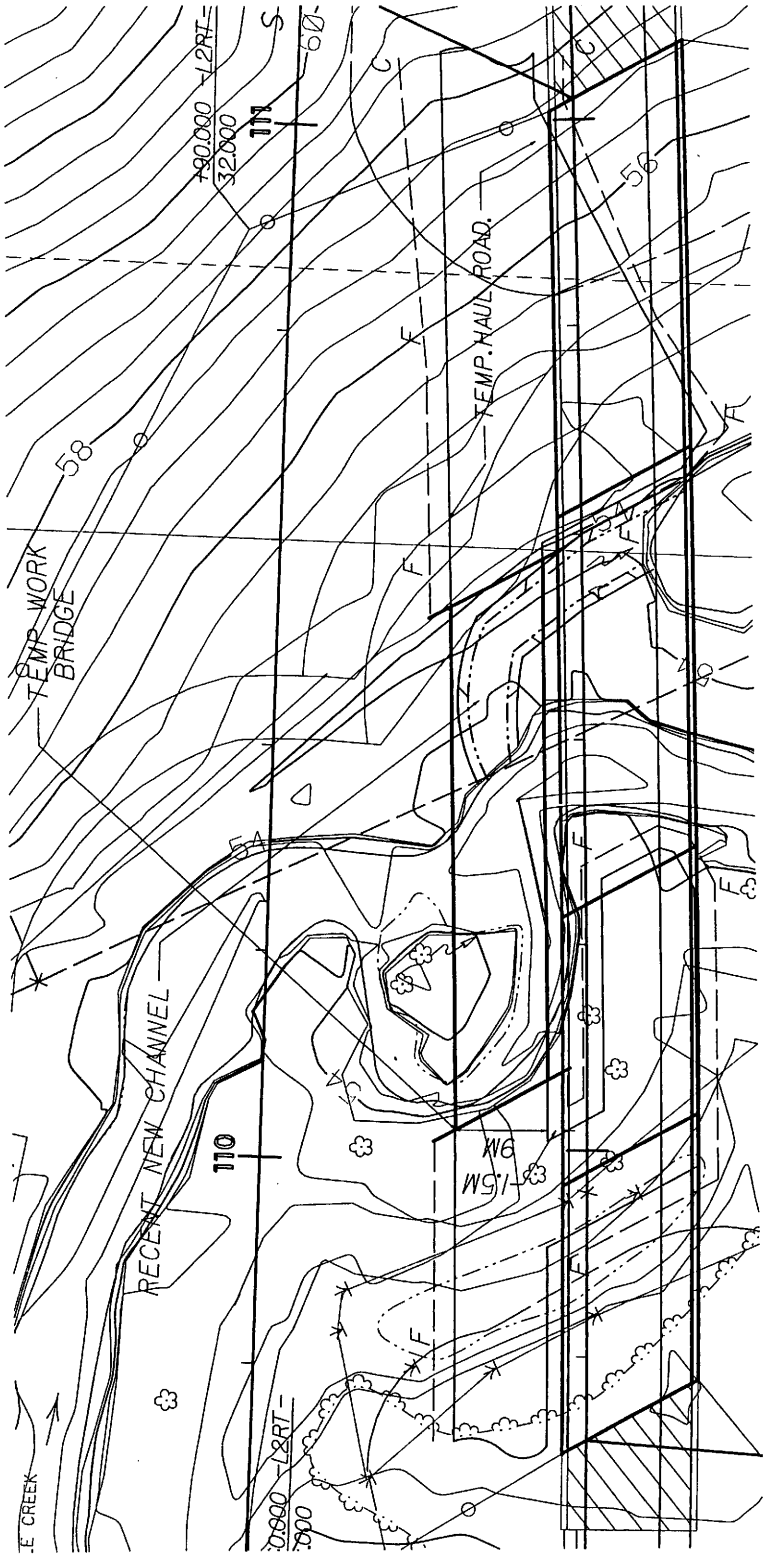

REVISIONS
SITE C-1
CAROLINA PACKERS INC.
DB 610 PG 403
DB 557 PG 225
HENERY C DURHAM
PB 21 PG 141
DB 866 PG 101
BEGIN BRIDGE
-L2LT- POT Sta.108+84.000
PURCHASED UNDER
R-2552B
+53 BEGIN WW.FENCE
+84.000 -L2LT-
39.500
+86.306 -L2LT-
39.500 (129.59 ft)
-L2LT- PT Sta.107+55.585
DETAIL OF TEMP HAUL ROAD
9M
30M
46M
NAT.GND.
1.5:1
*4 STONE
CLASS I RIP RAP
GEOTEXTILE FABRIC
TO BE USED IN
BUFFER AREAS
RUINS
2GI (BY OTHERS)
MODIFIED FLUME
EXPWY. GUTTER
L2 PAVED DITCH
TEMP. WORK BRIDGE
END WW.FENCE
END BRIDGE
-L2LT- POT Sta.110+28.00
1.0 TEMP HAUL ROAD
1.0 x 0.6 PRE-FORMED SCOUR HOLE W/ CL. "I" RIP RAP (21 M. TONS) & F.F. (33 S.M.)
400mm CSP w/ 2 CS ELBOWS TYPE A COAT.
CL. "B" RIP RAP TOE OF FILL PROTECTION
2GI w/ FLAT GRATE
EXPWY. GUTTER
S 63° 41' 42.5" E
BEGIN WW.FENCE
+28.000 -L2LT-
15.000
CLASS II RIP RAP & F.F.
750 M. TONS
(625 SM)
CLASS I RIP RAP & FILTER FABRIC
DITCH CHECK @ 9M O.C.
TYPICAL SECTION
SECTION A-A
SECTION B-B
SEE PLAN SHEET NO.1 FOR SECTION LAYOUT)
FROM -L2- STA. 80+60 TO STA. 84+68 LT.
750mm RCP
900mm RCP
2GI TYPE A 'EX. DEPTH' (BY OTHERS)
CAT-1
CL. "I" RIP RAP (49 M.TONS) W/ FIL. FAB. (19.2 SM)
JB W/ MH COVER
LITTLE CREEK
RECENT NEW CHANNEL
LUTHER SHELBY DURHAM
PB 21 PG 141
TEMP. WORK BRIDGE
15.24m FROM TOP OF CREEK BANK
BEGIN CONSTRUCTION
-L2- POT Sta.108+35.000
-L2-
S 63° 41' 42.5" E
+85.000 -L2RT-
30.000
+60.000 -L2RT-
20.000
EXTEND 450mm RCP
FALSE SUMP
2GI TYPE B
2GI w/ FLAT GRATE
EXPWY. GUTTER
375mm RCP
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
450mm RCP
GRAU-350
S 61° 00' 00.0" E
-L2RT-
375 mm RCP
800mm RCP
PIER PROTECT. CL. "I" RIP RAP ESTIMATED (30 M.TONS) W/ FIL. FAB. (30 SM)
PIER PROTECT. CL. "I" RIP RAP ESTIMATED (55 M.TONS) W/ FIL. FAB. (55 SM)
PURCHASED UNDER
R-2552B
BEGIN WW.FENCE
2GI TYPE A
400mm CSP w/CS ELBOW TYPE A COATING
750 mm RCP
2GI TYPE A
800mm CSP TYPE A COATING
CLASS II RIP RAP & F.F.
1,000 M. TONS
1,000 C.M. F.F.
CL. "I" RIP RAP (10 M.TONS) W/ FIL. FAB. (15 SM)
END WW. FENCE
CEMETARY HAS BEEN RELOCATED BY OTHERS
STD. BERM DITCH
STD. BERM DRAINAGE OUTLET
-L2RT- PC Sta.107+22.294
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
Pipe or Ditch Outlet
Square Prefromed Scour Hole (PSH)
Rip Rap in basin not shown for clarity)
Install level and fit with natural grass
PSRM
Fill Slope
Natural Ground
Limit Class I Rip Rap 0.45m thick with Filter Fabric
B 1.0 m
D 0.6 m
W 1.2 m
t 0.15 m
-L2RT- STA. 109+79 LT.
-L2RT- STA. 109+95 LT.
GRASS SWALE TYPICAL SECTION
*USE 3:1 = GUARDRAIL LOCATIONS
FROM -L2- STA. 80+30 TO STA. 82+45 CL (SEE X-SECT.) EST. D.O.E. = 230 cu.m.
+40.000 -L2RT-
36.335 (119.21 ft)
PERM. DRAINAGE EASEMENT
+55.000 -L2RT-
53.000 (173.88 ft)
BEGIN BRIDGE
-L2RT- POC
Sta.109+72.000
+96.000 -L2RT-
37.519 (123.09 ft)
1.0 TOE OF FILL PROTECTION
1.0 x 0.6 PRE-FORMED SCOUR HOLE W/ CL. "I" RIP RAP (10 M. TONS) & F.F. (15 S.M.)
Q100 = 3.2 m³/s
V100 = 2.0 m/s
Q10 = 0.43 cms
V10 = 0.52 m/s
Q100 = 0.58 cms
V100 = 0.61 M/S
CREEK BANK PROTECTION
Top of Bank
Creek Bottom
Filter Fabric
Type of Liner = CLASS 'I' RIP RAP
AT LOCATIONS AS SHOWN ON THIS PLAN SHEET
TOE OF FILL PROTECTION
Fill Slope
Natural Ground
Type of Liner = CLASS 'B' RIP RAP
FROM -L2LT- STA. 80+30 TO STA. 80+64 LT. (EST. RIP RAP = 37 M.TONS, FIL. FAB. = 103.2 sm)
3.0 METER BASE DITCH
FROM -L2RT- STA. 109+64 TO STA. 109+97 RT. (EST. D.O.E. = 74 cu.m.)
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
BEGIN R-2552C
END R-2552B
-L2LT- POT Sta.108+53.275
-L2- POT Sta.108+56.959 (50 LT)
-L2LT- POC Sta.108+51.559 (33.532 RT)
CAROLINA PACKERS INC.
DB 610 PG 403
DB 557 PG 225
-L2LT- GRADE SEE PROFILE SHEET 26
-L2RT- GRADE SEE PROFILE SHEET 28
CONST.REV.
R/W REV.
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
STEPHEN C. BROWNE
SEAL 15759
HYDRAULICS ENGINEER
RICHARD N. SCARCE
SEAL 9382
NORTH CAROLINA PROFESSIONAL ENGINEER
NAD83
MATCHLINE -L2- 110+60 SEE SHEET 5
442

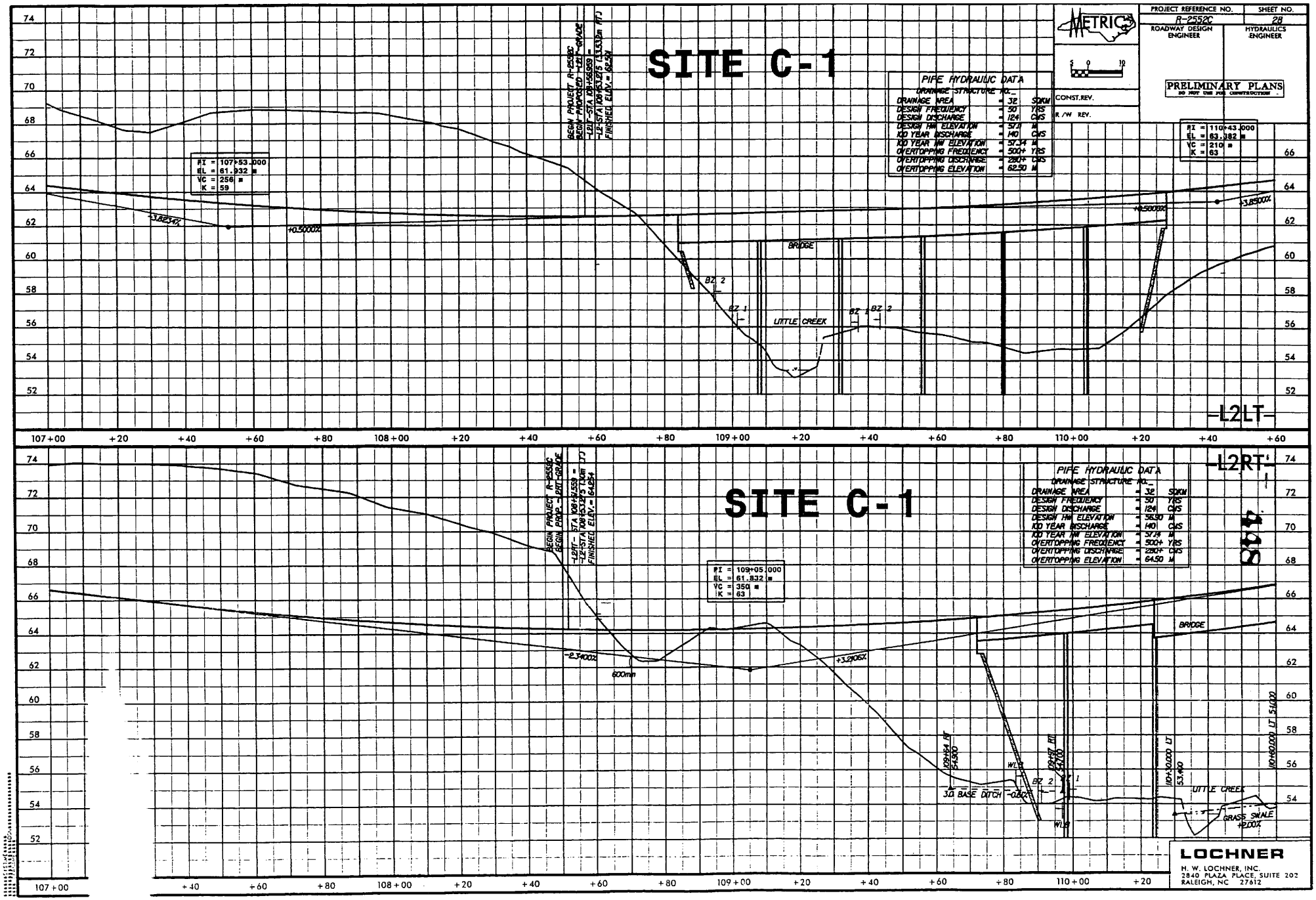

SITE C-1
REVISIONS
PROJECT REFERENCE NO. R-2552C
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.
CAROLINA PACKERS INC. DB 510 PG 403 DB 557 PG 225
HENERY C DURHAM PB 21 PG 141 DB 866 PG 101
BEGIN BRIDGE -L2LT- POT Sta.108+34.000
PURCHASED UNDER R-2552B +53 BEGIN WW FENCE
-L2LT- PT Sta.107+55.585
DETAIL OF TEMP HAUL ROAD
TO BE USED IN BUFFER AREAS
#4 STONE
CLASS I RIP RAP
GEOTEXTILE FABRIC
TEMP. WORK BRIDGE
END BRIDGE -L2LT- POT Sta.110+28.000
CL. "B" RIP RAP TOE OF FILL PROTECTION
400mm CSP W/ 2 CS ELBOWS TYPE A COAT
2GI W/ FLAT GRATE
EXPWY. GUTTER
S 63° 42' 25" E
BEGIN CONSTRUCTION -L2- POT Sta.108+35.000
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK @ 9M O.C. TYPICAL SECTION
SECTION A-A
SECTION B-B
SEE PLAN SHEET NO. 1 FOR SECTION LAYOUT
FROM -L2- STA. 80+60 TO STA. 84+68 LT.
-L2-
-L2RT- PC Sta.107+22.294
S 61° 00' 00.0" E
-L2RT-
PURCHASED UNDER R-2552B BEGIN WW FENCE
PERFORMED SCOUR HOLE WITH APRON PLAN VIEW
SECTION A-A
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
BEGIN R-2552C END R-2552B
-L2LT- POT Sta.108+53.275 (150 LT)
-L2RT- POC Sta.108+56.959 (33.532 RT)
GRASS SWALE TYPICAL SECTION
USE 31.4 GUARDRAIL LOCATIONS
CREEK BANK PROTECTION
TOE OF FILL PROTECTION
AT LOCATIONS AS SHOWN ON THIS PLAN SHEET
CEMETERY HAS BEEN RELOCATED BY OTHERS
PERM. DRAINAGE EASEMENT
10 METER BASE DITCH
BEGIN BRIDGE -L2RT- POC Sta.109+72.000
CAROLINA PACKERS INC. DB 510 PG 403 DB 557 PG 225
-L2LT- GRADE SEE PROFILE SHEET 28
-L2RT- GRADE SEE PROFILE SHEET 28
MATCHLINE -L2- 110+60 SEE SHEET 5
NAD83
443

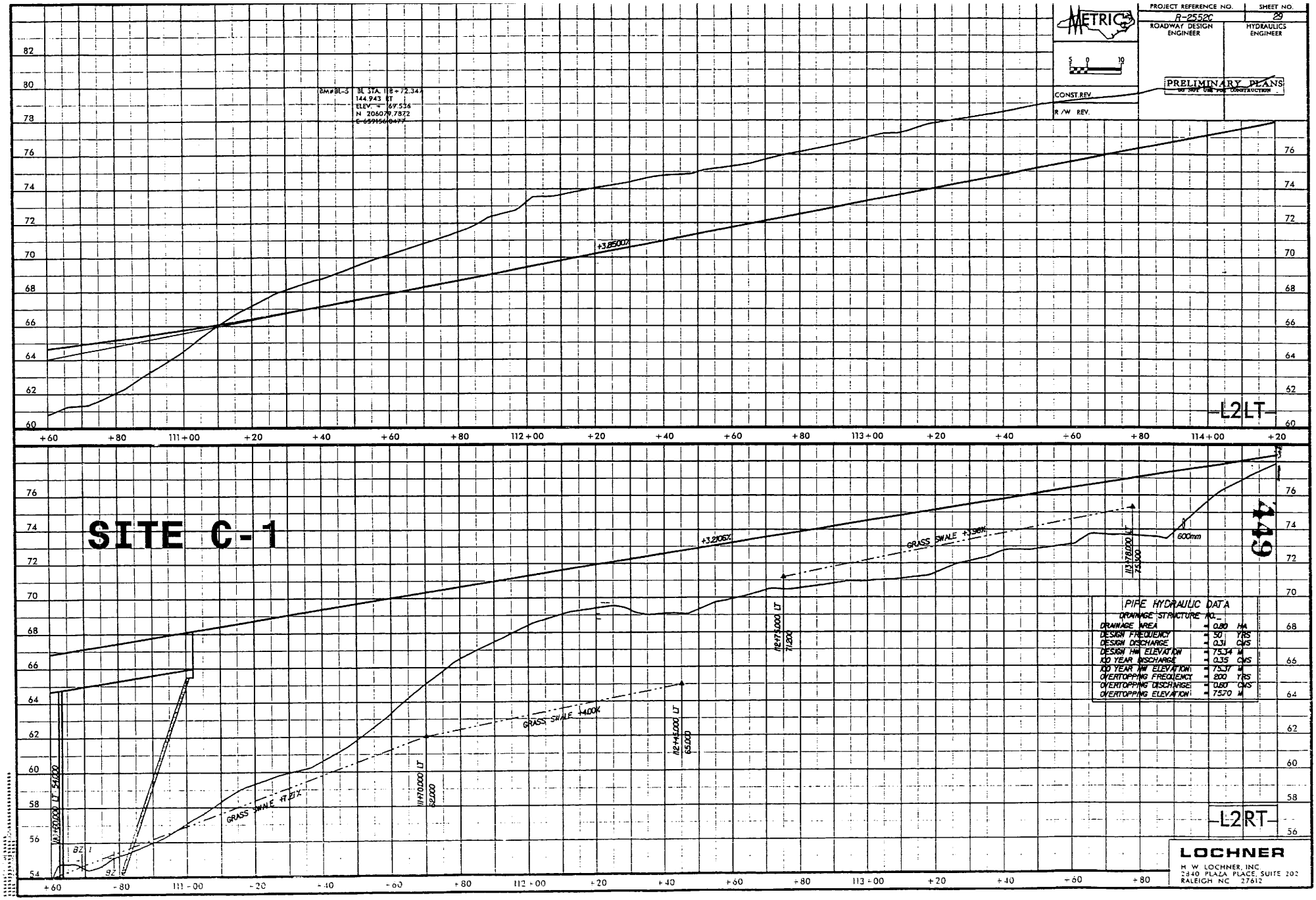

REVISIONS
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK @ 3M O.C. TYPICAL SECTION
SECTION A-A
SECTION B-B
GRASS SWALE TYPICAL SECTION
*USE 32 x GUARDRAIL LOCATIONS
FROM -L2- STA. 110+39 TO STA. 112+45 CL (SEE X-SECT.) EST. O.D.E. = 2328 cu.m.
GRASS SWALE TYPICAL SECTION
FROM -L2- STA. 110+60 TO STA. 111+68 LT.
FROM -L2- STA. 112+75 TO STA. 113+78 LT. EST O.D.E. = 1532 cu.m.
METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15759 ENG NEER STEPHEN C. BROOKS
CONST. REV.
R/W REV.
TOE OF FILL PROTECTION
TAIL DITCH
Type of Liner = CLASS 'B' RIP RAP
FROM -L2RT- STA. 112+35 TO STA. 112+45 RT. (EST. RIP RAP = 10.3 m.tons, FIL. FAB. = 26.7 sm)
-L2LT- STA. 112+95 RT. (EST. O.D.E. = 17 cu.m)
BERM DETAIL
SECTION C-C
-L2- STA. 112+75 LT.
UNKNOWN
3
THOMAS R CARROLL JR.
PG 21 PG 141
DB 888 PG 328
DB 963 PG 791
4
HENERY C DURHAM
PB 21 PG 141
DB 866 PG 101
1
+47.473 -L2LT-
39.500 (129.59 ft)
+42.473 -L2LT-
39.500 (129.59 ft)
CHORD
-L2LT- TS Sta. 111+47.473
-L2LT- SC Sta. 112+42.473
1650 mm CPC
SOIL
NAD83
EXPWY. GUTTER
FALSE SUMP
16
2GI
375 RCP
S 63° 41' 42.5" E
-L2LT-
JB W/ MH COVER
17
400 CS W/ 2 ELBOWS TYPE 'A' COATING
18
DITCH CHECK W/ CL. 'I' RIP & FIL. FAB.
19
+50.600 -L2RT-
32.000
S 63° 41' 42.5" E
CLASS II RIP RAP & F.F.
225 M. TONS
225 SM F.F.
END BRIDGE
-L2RT- POC Sta.
400mm CSP W/ 2 ELBOWS W/ TYPE 'A' COATING
TEMP. HAUL ROAD
TRAFFIC BEARING DI
BEGIN
+58.118 -L2RT-
39.500 (129.59 ft)
(ON ℄)
+101.946
44.160
(ON ℄)
+66.571 -L2RT-
58.386 (193.19 ft)
(℄ CORNER)
SHELBY DURHAM
PB 21 PG 141
(325 M. TONS)
Sta. 111+32.523
GRASS SWALE
9.144 EASEMENT PB 21 PG 141
CL. 'B' RIP RAP (1.2 M. TONS) & F.F. (5.6 S.M.)
22
400 CS W/ 2 ELBOWS TYPE 'A' COATING
23
OTCB STD. 840.09 200mm OPENINGS ON 4 SIDES
9
ACQUIRED UNDER ADVANCE ACQUISITION 058-99-RW MARCH 15, 1999
FORMERLY: CLEMON H JOHNSON DB 468 PG 331 DB 485 PG 18
CL. 'B' RIP RAP (1.2 M. TONS) & F.F. (5.6 S.M.)
24
400 CS W/ 2 ELBOWS TYPE 'A' COATING
25
9.144 EASEMENT PB 21 PG 141
-L2- SC Sta. 112+27.523
3.98%
FALSE SUMP
21
2GI
(EX. DEPTH)
375mm RCP
39.500
SOIL
EXP.
FALSE SUMP
26
2GI
45 ELEC
BAREWOODS DEVELOPMENT, L.L.C.
DB 468 PG 331
DB 485 PG 18
10
375mm RCP
EXISTING R/W
FALSE SUMP
27
2GI
(EXTRA DEPTH)
'V' TAIL DITCH
CL. 'B' RIP RAP (2 M. TONS) w/ FIL. FAB. (6 SM)
28
CL. 'B' RIP RAP (2 M. TONS) w/ FIL. FAB. (6 SM)
29
FALSE SUMP
31
375mm RCP
32
2GI
600mm RCP
CL. 'B' RIP RAP (3 M. TONS) w/ FIL. FAB. (10 SM)
30
SITE C-1
CL. 'B' RIP RAP & FILTER FABRIC TOE OF FILL PROTECTION
+47.612 -L2RT-
47.462
+40.085 -L2RT-
55.862
R/W MON.
EXISTING R/W
GUY C. LEE BUILDING MATERIALS OF SMITHFIELD
DB 1995 PG 332
PB 54 PG 415
6
BRIAN L. NICHOLS
DB 2038 PG 76
PB 54 PG 416
7
WILLIAM EARL LAMB
DB 1724 PG 573
PB 54 PG 416
8
-L2LT- GRADE SEE PROFILE SHEET 29
-L2RT- GRADE SEE PROFILE SHEET 29
MATCHLINE -L2- 110+60 SEE SHEET 4
MATCHLINE -L2- 114+20 SEE SHEET 6
111
112
113
114


REVISIONS
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK @ 9M O.C. TYPICAL SECTION
SECTION A-A
SECTION B-B
GRASS SWALE TYPICAL SECTION
GRASS SWALE TYPICAL SECTION
FROM -L2- STA. 82+75 TO STA. 83+76 LT. EST. D.O.E. = 1532 cu.m.
BERM DETAIL
SECTION C-C
PROJECT REFERENCE NO. R-2552C
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15759 ENGINEER STEPHEN C. BROOKE
CONST. REV.
R/W REV.
TOE OF FILL PROTECTION
TAIL DITCH
UNKNOWN
THOMAS R CARROLL JR. PG/21 PG 141 DB 888, PG 328 DB 963 PG 791
HENERY C DURHAM PB 21 PG 141 DB 866 PG 101
LUTHER SHELBY DURHAM PB 21 PG 141
BAREWOODS DEVELOPMENT, LLC DB 468 PG 33 DB 485 PG 18
FORMERLY: CLEMON H JOHNSON DB 468 PG 33 DB 485 PG 18
ACQUIRED UNDER ADVANCE ACQUISITION 058-99-RW MARCH 15, 1999
GUY C. LEE BUILDING MATERIALS OF SMITHFIELD DB 1994 PG 527 PB 54 PG 415
GUY C. LEE BUILDING MATERIALS OF SMITHFIELD DB 1995 PG 332 PB 54 PG 415
BRIAN L. NICHOLS DB 2038 PG 76 PB 54 PG 416
WILLIAM EARL LAMB DB 1724 PG 573 PB 54 PG 416
-L2LT- TS Sta. 111+47.473
-L2LT- SC Sta. 112+42.473
-L2- TS Sta. 111+32.523
-L2- SC Sta. 112+27.523
-L2RT- POC Sta. 111+02.000
-L2RT- POT Sta. 111+58.178
S 63° 41' 42.5" E
+47.473 -L2LT- 39.500 (129.59 ft)
+42.473 -L2LT- 39.500 (129.59 ft)
CHORD
9.14 EASEMENT PB 21 PG 141
400 CS W/ 2 ELBOWS TYPE 'A' COATING
OTCB STD. 840.05 200mm OPENINGS ON 4 SIDES
CL. 'B' RIP RAP (1.2 M.TONS) & F.F. (5.6 S.M.)
CL. 'B' RIP RAP (1.3 M.TONS) & F.F. (5.5 S.M.)
CL. 'B' RIP RAP (2 M.TONS) W/ FIL. FAB. (6 SM)
CL. 'B' RIP RAP (3 M.TONS) W/ FIL. FAB. (10 SM)
CL. 'B' RIP RAP & FILTER FABRIC TOE OF FILL PROTECTION
GRASS SWALE
DITCH CHECKS @ 9M O.C. W/ CL. 'B' RIP RAP (325 M.TONS) & FIL. FAB. (625 S.M.)
'V' TAN DITCH
EXPWY. GUTTER
TRAFFIC BEARING DI
TEMP. HAUL ROAD
BEGIN C.L. FENCE
EXISTING R/W
FALSE SUMP
JB W/ MH COVER
SITE C-1
-L2LT- GRADE SEE PROFILE SHEET 29
-L2RT- GRADE SEE PROFILE SHEET 29
MATCHLINE -L2- 110+60 SEE SHEET 4
MATCHLINE -L2- 114+20 SEE SHEET 6
445

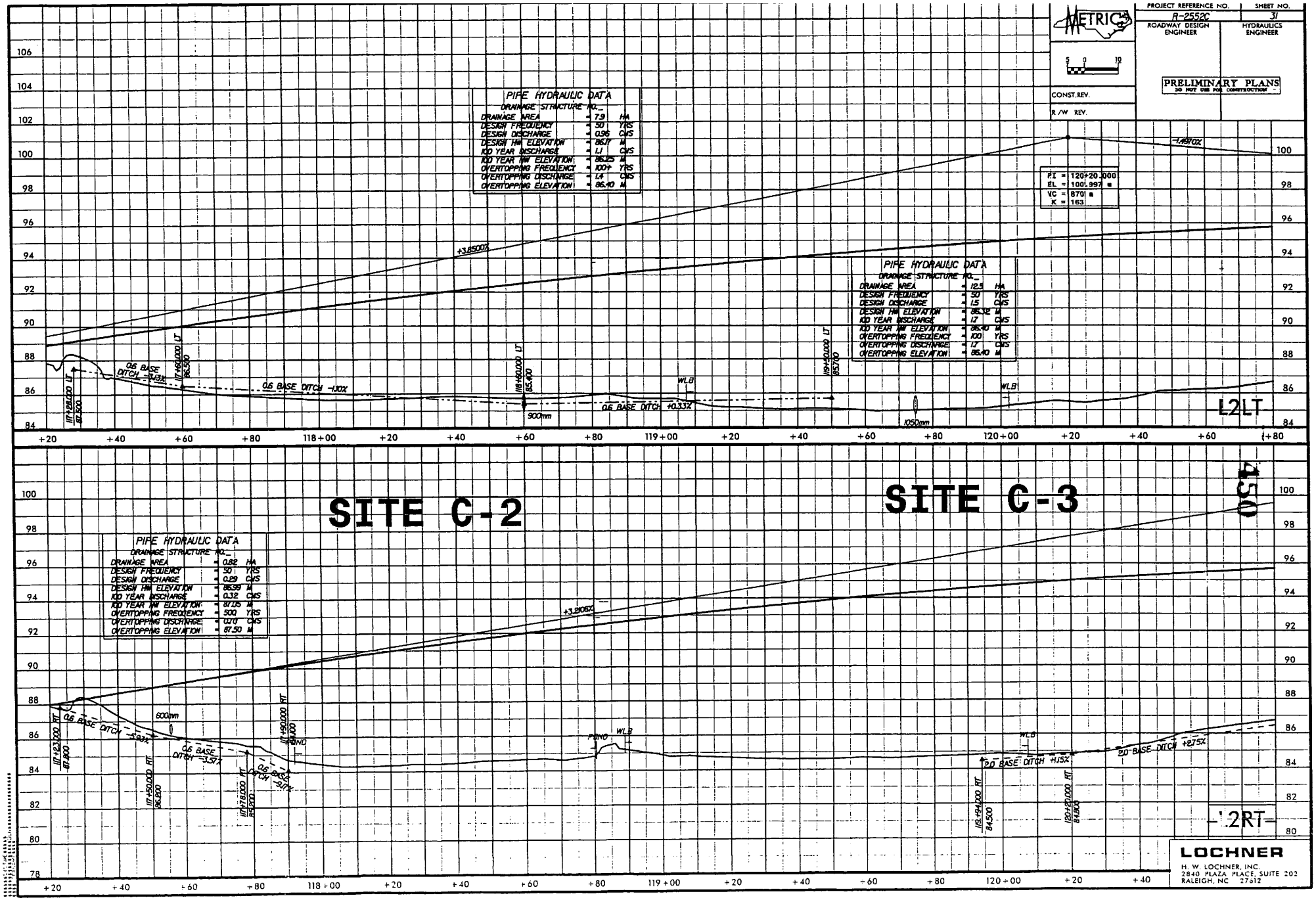

08+84.000
+84.000
39.500
TEMP. WORK BRIDGE
62
109
ZONE 3
15.24 FROM TOP OF BANK
NEUSE BUFFER
58
54
56
91
ZONE 1
ZONE 2
9.144
8.096
TEMP. HAUL ROAD.
42 27 22 N

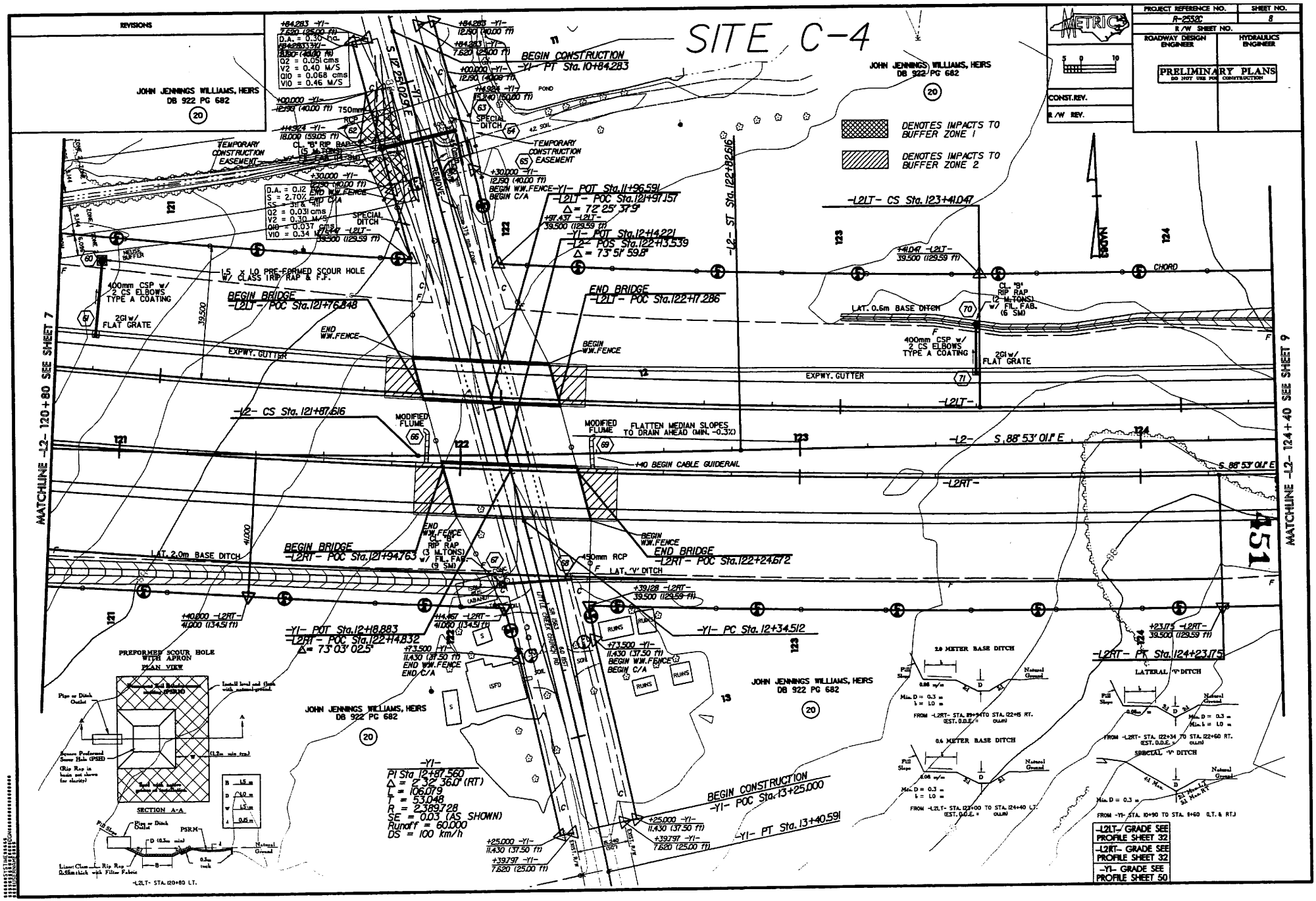

TEMP. WORK BRIDGE
TEMP. HAUL ROAD
RECENT NEW CHANNEL
+90.000 L2RT=
32.600
111
110
58
56
54
52
50
48
60
C
F
S
E CREEK

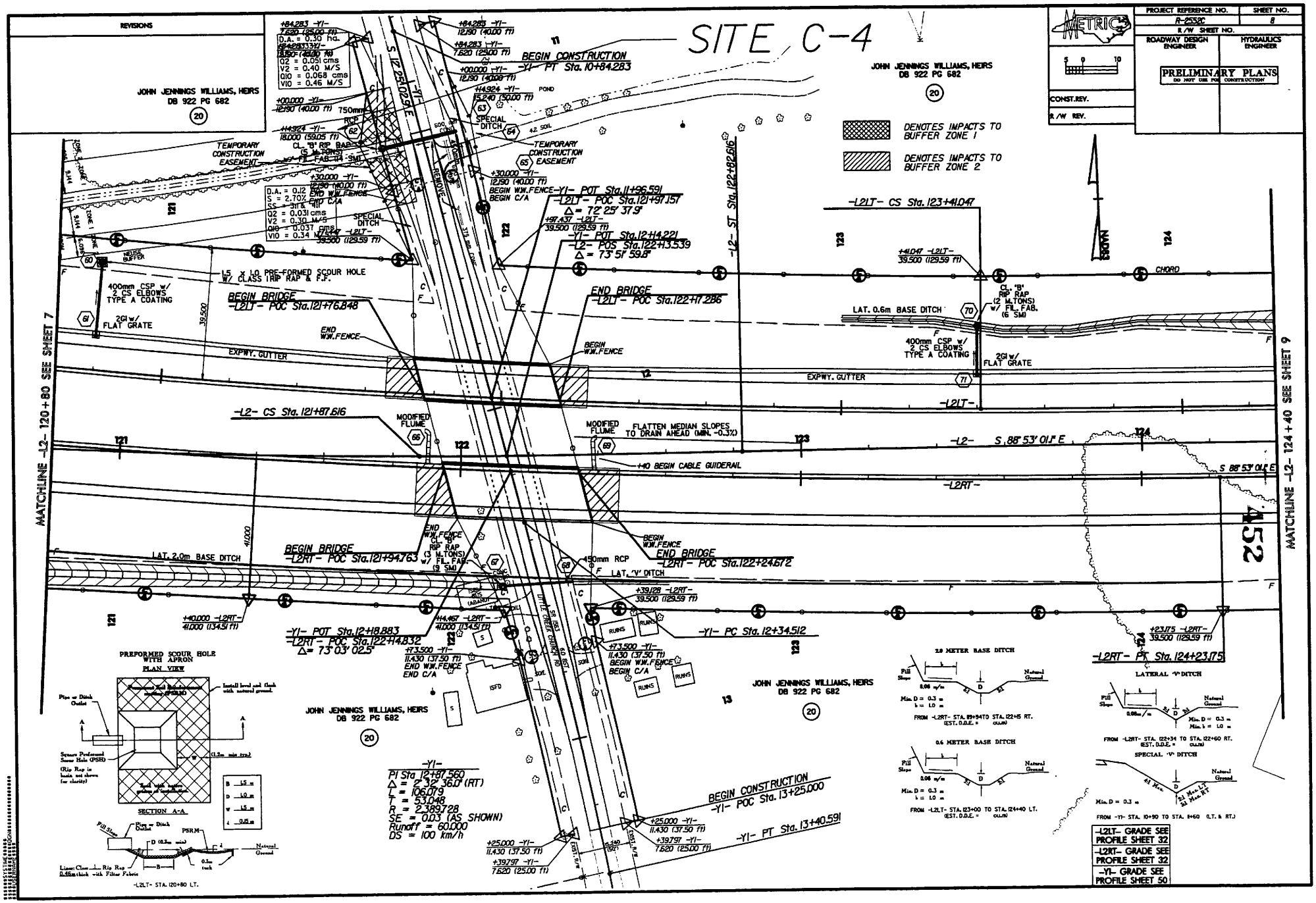

SITE C-1
METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
28
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 32 SQKM
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 124 CMS
DESIGN HW ELEVATION = 57.0 M
100 YEAR DISCHARGE = 140 CMS
100 YEAR HW ELEVATION = 57.34 M
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING DISCHARGE = 280+ CMS
OVERTOPPING ELEVATION = 62.50 M
PI = 107+53.000
EL = 61.932 m
VC = 256 m
K = 59
PI = 110+43.000
EL = 63.382 m
VC = 210 m
K = 63
-3.82534%
+0.50000%
+0.50000%
-3.85000%
BEGIN PROJECT R-2552C
BEGIN PROPOSED -L2LT- GRADE
-L2LT- STA 109+56.939 =
-L2-STA 109+53.275 (33.33m RT)
FINISHED ELEV. = 62.50
BRIDGE
BZ 2
BZ 1
LITTLE CREEK
-L2LT-
-L2RT-
SITE C-1
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 32 SQKM
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 124 CMS
DESIGN HW ELEVATION = 56.90 M
100 YEAR DISCHARGE = 140 CMS
100 YEAR HW ELEVATION = 57.19 M
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING DISCHARGE = 280+ CMS
OVERTOPPING ELEVATION = 64.50 M
PI = 109+05.000
EL = 61.832 m
VC = 350 m
K = 63
BEGIN PROJECT R-2552C
BEGIN PROP. -DITCH GRADE
-L2RT- STA 109+49.559 =
-L2-STA 109+53.275 (3.72m LT)
FINISHED ELEV. = 64.64
-2.34002
+3.21062
600mm
BRIDGE
30 BASE DITCH -0.62%
WL 2
WL 1
109+64 RT 54.00
109+37 RT 54.00
109+10.000 LT 53.400
110+60.000 LT 54.000
LITTLE CREEK
GRASS SWALE +2.00%
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612


METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
29
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
BM#BL-5 BL STA. 118+72.347 144.943 RT ELEV. = 69.526 N 206079.7872 E 659156.6477
+3.850%
-L2LT-
SITE C-1
+3.210%
GRASS SWALE +3.98%
GRASS SWALE +4.00%
GRASS SWALE +1.21%
600mm
111+78.000 LT 25.000
112+15.000 LT 11.200
112+15.000 LT 65.000
111+60.000 LT 54.000
111+60.000 LT 64.000
BZ 1
BZ 2
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.
DRAINAGE AREA = 0.80 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 0.31 CMS
DESIGN HW ELEVATION = 75.34 M
100 YEAR DISCHARGE = 0.35 CMS
100 YEAR HW ELEVATION = 75.37 M
OVERTOPPING FREQUENCY = 200 YRS
OVERTOPPING DISCHARGE = 0.60 CMS
OVERTOPPING ELEVATION = 75.70 M
-L2RT-
LOCHNER
H W LOCHNER, INC
2840 PLAZA PLACE, SUITE 202
RALEIGH NC 27612

479


PROJECT REFERENCE NO.
R-2552C
SHEET NO.
31
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
5 0 10
CONST.REV.
R/W REV.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 7.9 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 0.96 CMS
DESIGN HW ELEVATION = 86.17 M
100 YEAR DISCHARGE = 1.1 CMS
100 YEAR HW ELEVATION = 86.25 M
OVERTOPPING FREQUENCY = 100+ YRS
OVERTOPPING DISCHARGE = 1.4 CMS
OVERTOPPING ELEVATION = 86.40 M
P.I. = 120+20.000
EL = 100.997 m
VC = 870 m
K = 163
-1.497%
+3.850%
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 12.5 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 1.5 CMS
DESIGN HW ELEVATION = 86.32 M
100 YEAR DISCHARGE = 1.7 CMS
100 YEAR HW ELEVATION = 86.40 M
OVERTOPPING FREQUENCY = 100 YRS
OVERTOPPING DISCHARGE = 1.7 CMS
OVERTOPPING ELEVATION = 86.40 M
L1 PI 118+40.000 LT 85.700
L1 118+40.000 LT 85.400
L1 PI 117+60.000 LT 86.500
L1 PI 116+00.000 LT 87.500
0.6 BASE DITCH -0.93%
0.6 BASE DITCH -1.10%
0.6 BASE DITCH +0.33%
900mm
1050mm
WLB
WLB
L2LT
+20 +40 +60 +80 118+00 +20 +40 +60 +80 119+00 +20 +40 +60 +80 120+00 +20 +40 +60 +80
SITE C-2
SITE C-3
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 0.82 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 0.29 CMS
DESIGN HW ELEVATION = 86.39 M
100 YEAR DISCHARGE = 0.32 CMS
100 YEAR HW ELEVATION = 87.05 M
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING DISCHARGE = 0.70 CMS
OVERTOPPING ELEVATION = 87.50 M
+3.806%
L1 PI 117+30.000 RT 87.800
0.6 BASE DITCH -0.93%
800mm
L1 PI 117+50.000 RT 86.800
0.6 BASE DITCH -1.57%
L1 PI 117+75.000 RT 85.900
0.6 BASE DITCH -0.57%
L1 PI 118+00.000 RT
POND
POND
WLB
WLB
2.0 BASE DITCH +1.15%
2.0 BASE DITCH +2.75%
L1 PI 119+40.000 RT 84.500
L1 PI 120+20.000 RT 84.800
L2RT
+20 +40 +60 +80 118+00 +20 +40 +60 +80 119+00 +20 +40 +60 +80 120+00 +20 +40
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612


SITE C-4
REVISIONS
PROJECT REFERENCE NO. R-2536
SHEET NO. 8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
BEGIN CONSTRUCTION -Y1- PT Sta. 10+84.283
-L2- ST Sta. 122+82.616
-L2LT- CS Sta. 123+41.047
-L2- CS Sta. 121+87.616
-L2- S 88° 53' 01.1" E
-L2RT-
MATCHLINE -L2- 120+80 SEE SHEET 7
MATCHLINE -L2- 124+40 SEE SHEET 9
BEGIN BRIDGE -L2LT- POC Sta. 121+76.848
END BRIDGE -L2LT- POC Sta. 122+17.286
BEGIN BRIDGE -L2RT- POC Sta. 121+94.763
END BRIDGE -L2RT- POC Sta. 122+24.672
-Y1- POT Sta. 12+18.883
-L2RT- POC Sta. 122+14.832
Δ = 73° 03' 02.5"
-Y1- PC Sta. 12+34.512
-L2RT- PT Sta. 124+23.175
-Y1- PI Sta 12+87.560
Δ = 2° 32' 36.0" (RT)
L = 106.079
T = 53.048
R = 2389.728
SE = 0.03 (AS SHOWN)
Runoff = 60.000
DS = 100 km/h
BEGIN CONSTRUCTION -Y1- POC Sta. 13+25.000
-Y1- PT Sta. 13+40.591
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
2GI w/ FLAT GRATE
1.5 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
CL "B" RIP RAP (3 M. TONS) w/ FIL. FAB. (9 SM)
CL "B" RIP RAP (2 M. TONS) w/ FIL. FAB. (6 SM)
LAT. 2.0m BASE DITCH
LAT. 0.6m BASE DITCH
LAT. 'V' DITCH
EXPWY. GUTTER
MODIFIED FLUME
FLATTEN MEDIAN SLOPES TO DRAIN AHEAD (MIN. -0.3%)
+40 BEGIN CABLE GUIDERAIL
450mm RCP
750mm RCP
SPECIAL DITCH
TEMPORARY CONSTRUCTION EASEMENT
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
2.0 METER BASE DITCH
0.6 METER BASE DITCH
SPECIAL 'V' DITCH
LATERAL 'V' DITCH
-L2LT- GRADE SEE PROFILE SHEET 32
-L2RT- GRADE SEE PROFILE SHEET 32
-Y1- GRADE SEE PROFILE SHEET 50
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682


SITE C-4
REVISIONS
PROJECT REFERENCE NO. R-2552C
SHEET NO. 8
R /W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R /W REV.
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
MATCHLINE -L2- 120+80 SEE SHEET 7
MATCHLINE -L2- 124+40 SEE SHEET 9
BEGIN CONSTRUCTION -Y1- PT Sta. 10+84.283
-L2LT- CS Sta. 123+41.047
-L2- CS Sta. 121+87.616
-L2- ST Sta. 122+82.616
-L2- S 88° 53' 01.1" E
-L2RT-
-L2LT-
BEGIN BRIDGE -L2LT- POC Sta.121+76.848
END BRIDGE -L2LT- POC Sta.122+17.286
BEGIN BRIDGE -L2RT- POC Sta.121+94.763
END BRIDGE -L2RT- POC Sta.122+24.672
-Y1- POT Sta.11+96.591
-L2LT- POC Sta.121+91.157
Δ = 72° 25' 37.9"
-Y1- POT Sta.12+14.221
-L2- POS Sta.122+13.539
Δ = 73° 51' 59.8"
-Y1- POT Sta.12+18.883
-L2RT- POC Sta.122+14.832
Δ= 73° 03' 02.5"
-Y1- PC Sta.12+34.512
-L2RT- PT Sta.124+23.175
-Y1-
PI Sta 12+87.560
Δ = 2° 32' 36.0" (RT)
L = 106.079
T = 53.048
R = 2,389.728
SE = 0.03 (AS SHOWN)
Runoff = 60.000
DS = 100 km/h
BEGIN CONSTRUCTION -Y1- POC Sta. 13+25.000
-Y1- PT Sta. 13+40.591
-L2LT- GRADE SEE PROFILE SHEET 32
-L2RT- GRADE SEE PROFILE SHEET 32
-Y1- GRADE SEE PROFILE SHEET 50
TEMPORARY CONSTRUCTION EASEMENT
SPECIAL DITCH
POND
750mm RCP
600 RCP
450mm RCP
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
2GI w/ FLAT GRATE
L5 x L0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
CL. "B" RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
CL. "B" RIP RAP (3 M.TONS) w/ FIL. FAB. (9 SM)
EXPWY. GUTTER
LAT. 0.6m BASE DITCH
LAT. 2.0m BASE DITCH
LAT. 'V' DITCH
MODIFIED FLUME
FLATTEN MEDIAN SLOPES TO DRAIN AHEAD (MIN. -0.3%)
+10 BEGIN CABLE GUIDERAIL
END WW.FENCE
BEGIN WW.FENCE
END C/A
BEGIN C/A
NOISE BUFFER
ISFD
RUINS
SR 1453 LITTLE CREEK CHURCH RD
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
-L2LT- STA. 120+80 LT.
2.0 METER BASE DITCH
0.6 METER BASE DITCH
SPECIAL 'V' DITCH
LATERAL 'V' DITCH
FROM -L2RT- STA. 121+94.763 TO STA. 122+15 RT.
FROM -L2RT- STA. 122+34 TO STA. 122+60 RT.
FROM -L2LT- STA. 123+00 TO STA. 124+40 LT.
FROM -Y1- STA. 10+90 TO STA. 11+60 (LT. & RT.)

PROJECT REFERENCE NO.	SHEET NO.
R-2552C	50

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

METRIC

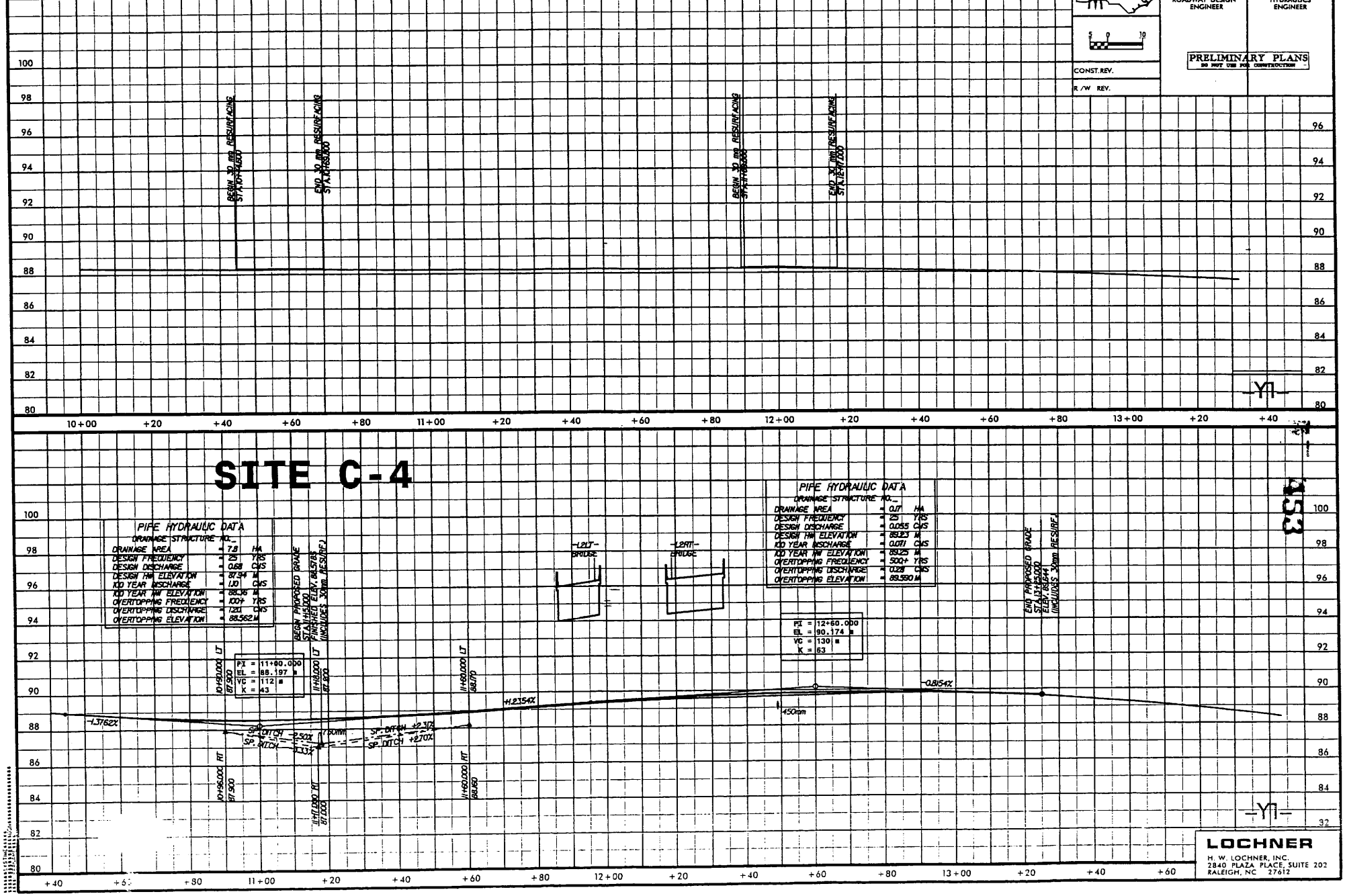
5 0 10

CONST. REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE C-4



-Y1-

153

-Y1-

LOCHNER

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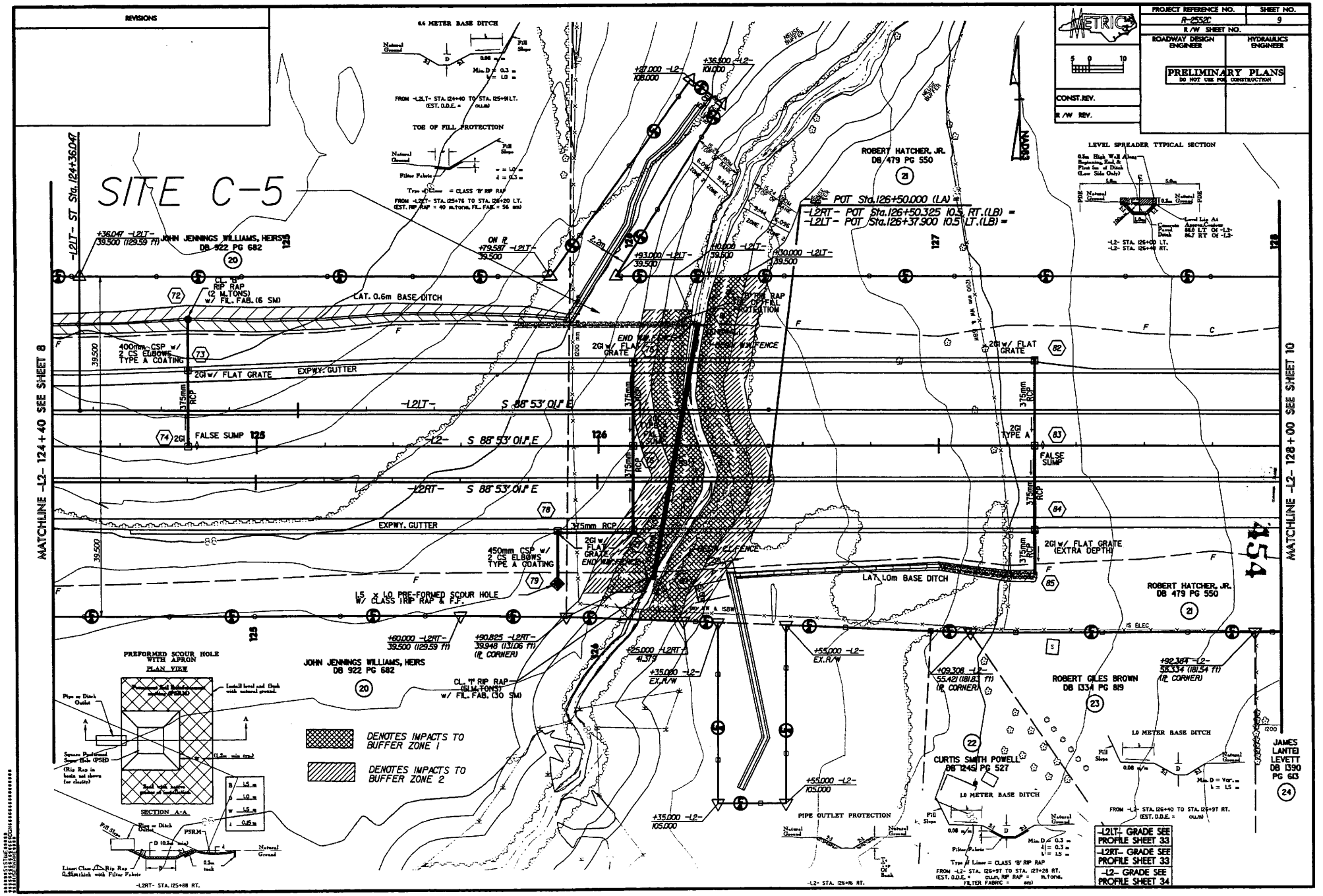
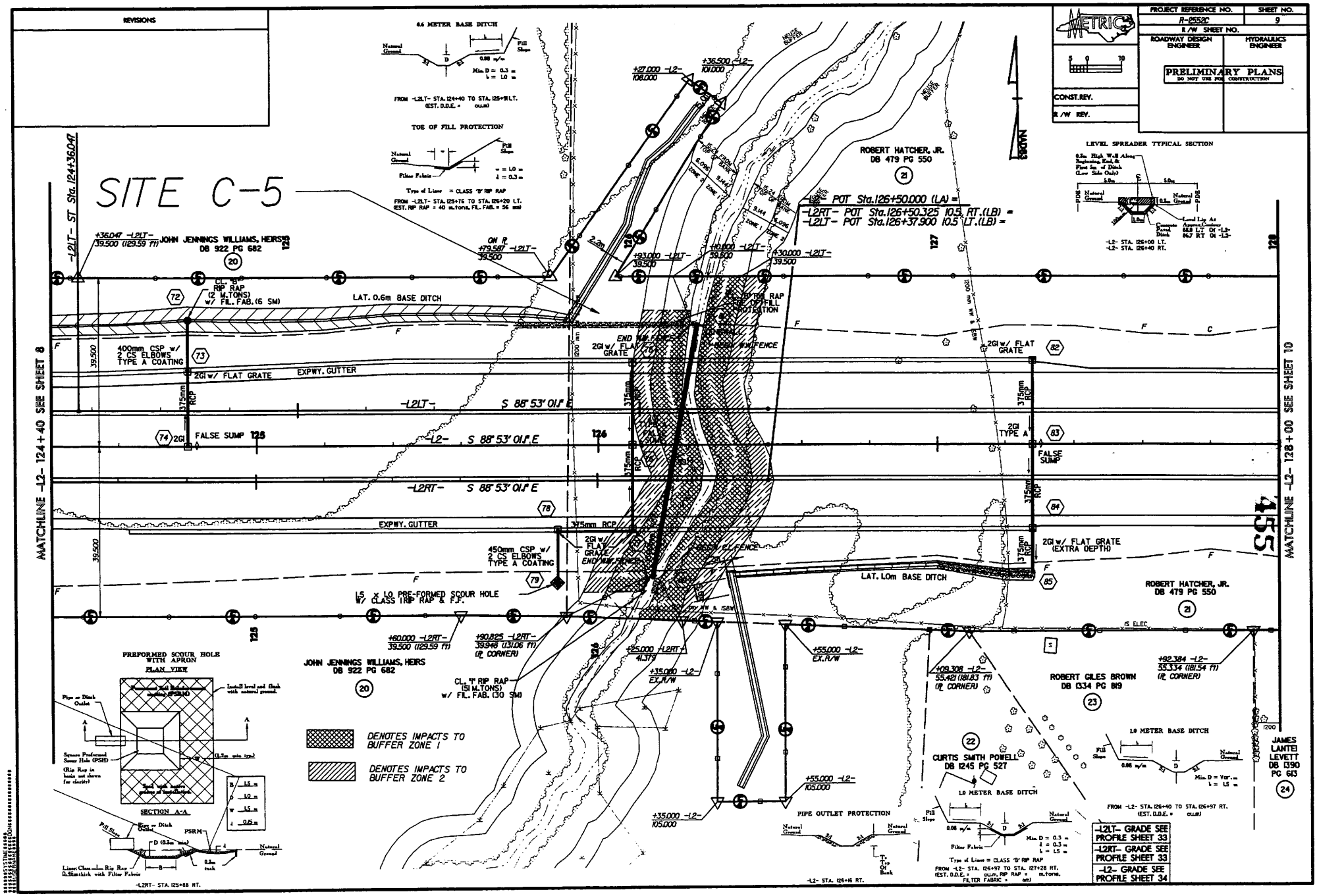
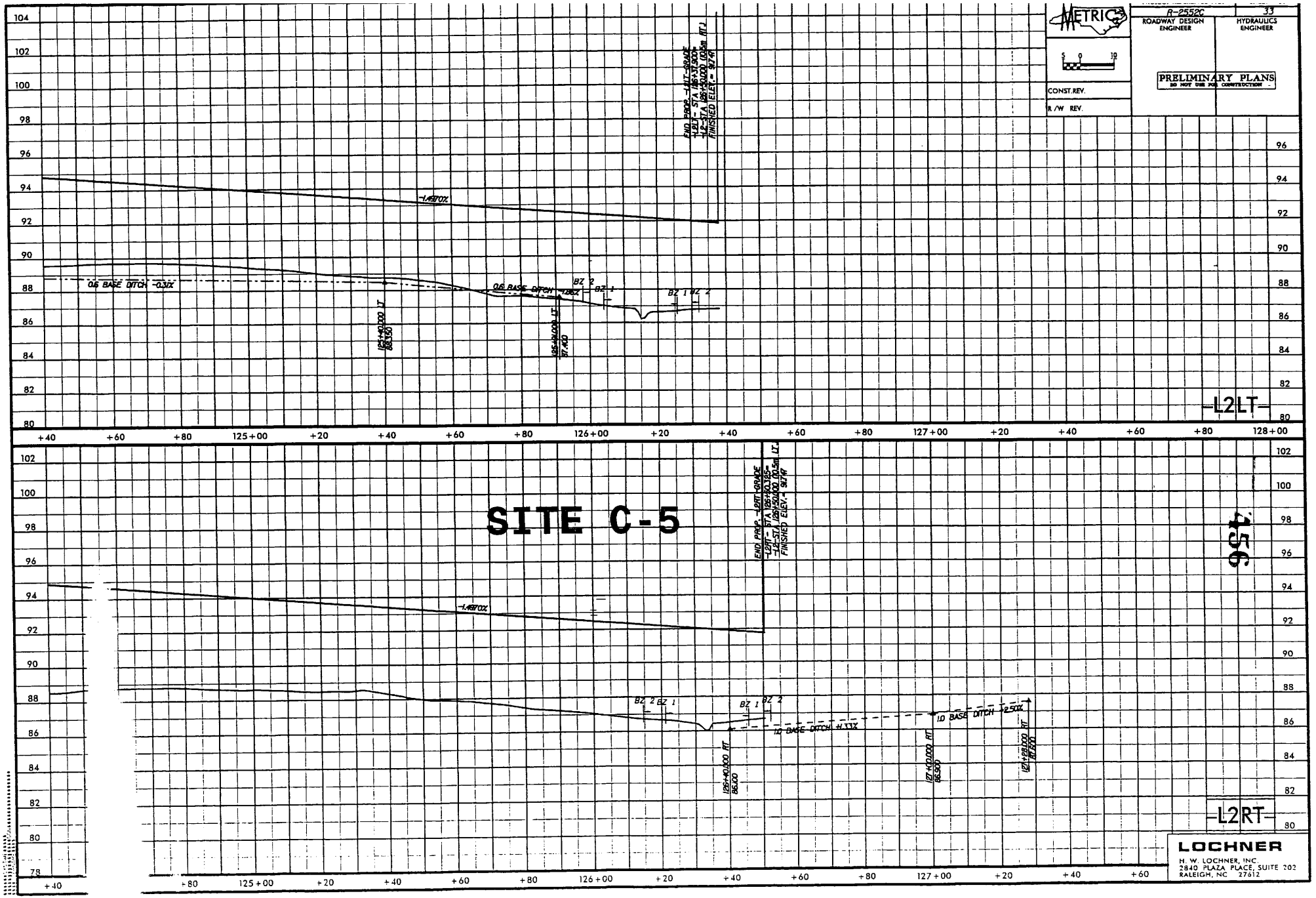
RALEIGH, NC 27612


REVISIONS
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
SITE C-5
MATCHLINE -L2- 124+40 SEE SHEET 8
MATCHLINE -L2- 128+00 SEE SHEET 10
-L2LT- ST Sta. 124+36.047
+36.047 -L2LT- 39.500 (129.59 Ft)
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
ROBERT HATCHER, JR. DB 479 PG 550
CL "B" RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
LAT. 0.6m BASE DITCH
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
2GI w/ FLAT GRATE
EXPWY. GUTTER
375mm RCP
FALSE SUMP
-L2LT- S 88° 53' 01.1" E
-L2- S 88° 53' 01.1" E
-L2RT- S 88° 53' 01.1" E
450mm CSP w/ 2 CS ELBOWS TYPE A COATING
L5 x L0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
+60.000 -L2RT- 39.500 (129.59 Ft)
+90.825 -L2RT- 39.948 (131.06 Ft) (Rt. CORNER)
CL "I" RIP RAP (5 M.TONS) w/ FIL. FAB. (30 SM)
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
6.6 METER BASE DITCH
TOE OF FILL PROTECTION
+27.000 -L2- 108.000
+36.800 -L2- 101.000
POT Sta.126+50.000 (LA) =
-L2RT- POT Sta.126+50.325 10.5 Rt.(LB) =
-L2LT- POT Sta.126+37.900 10.5 Lt.(LB) =
+93.000 -L2LT- 39.500
+100.000 -L2LT- 39.500
+130.000 -L2LT- 39.500
END WING FENCE
2GI w/ FLAT GRATE
EXTRA RIP RAP OUTFALL PROTECTION
2GI TYPE A
FALSE SUMP
2GI w/ FLAT GRATE (EXTRA DEPTH)
LAT. L0m BASE DITCH
+25.000 -L2RT- 41.379
+35.000 -L2- EX.R/W
+55.000 -L2- EX.R/W
+55.000 -L2- 105.000
+35.000 -L2- 105.000
PIPE OUTLET PROTECTION
+109.308 -L2- 55.421 (181.83 Ft) (Rt. CORNER)
+92.384 -L2- 58.334 (181.54 Ft) (Rt. CORNER)
ROBERT GILES BROWN DB 1334 PG 819
CURTIS SMITH POWELL DB 1245 PG 527
L0 METER BASE DITCH
JAMES LANTEI LEVETT DB 1390 PG 613
LEVEL SPREADER TYPICAL SECTION
-L2LT- GRADE SEE PROFILE SHEET 33
-L2RT- GRADE SEE PROFILE SHEET 33
-L2- GRADE SEE PROFILE SHEET 34
454


REVISIONS
PROJECT REFERENCE NO. R-2552C
SHEET NO. 9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
METRIC
SITE C-5
MATCHLINE -L2- 124+40 SEE SHEET 8
MATCHLINE -L2- 128+00 SEE SHEET 10
-L2LT- ST Sta.124+36.047
+36.047 -L2LT- 39.500 (129.59 ft)
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
ROBERT HATCHER, JR. DB 479 PG 550
ROBERT GILES BROWN DB 1334 PG 819
CURTIS SMITH POWELL DB 1245 PG 527
JAMES LANTEI LEVETT DB 1390 PG 613
POT Sta.126+50.000 (LA) =
-L2RT- POT Sta.126+50.325 10.5 RT.(LB) =
-L2LT- POT Sta.126+37.900 10.5 LT.(LB) =
LAT. 0.6m BASE DITCH
LAT. L0m BASE DITCH
L0 METER BASE DITCH
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
450mm CSP w/ 2 CS ELBOWS TYPE A COATING
2GI w/ FLAT GRATE
2GI TYPE A
FALSE SUMP
EXPWY. GUTTER
375mm RCP
END WALL FENCE
CL. "I" RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
CL. "I" RIP RAP (5 M.TONS) w/ FIL. FAB. (10 SM)
"I" RIP RAP AT PIPE OUTFALL PROTECTION
L5 x L0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
-L2LT- S 88°53'01.1"E
-L2- S 88°53'01.1"E
-L2RT- S 88°53'01.1"E
+27.000 -L2- 108.000
+36.500 -L2- 101.000
+79.587 -L2LT- 39.500
+93.000 -L2LT- 39.500
+101.000 -L2- 39.500
+30.000 -L2LT- 39.500
+60.000 -L2RT- 39.500 (129.59 ft)
+90.825 -L2RT- 39.948 (131.06 ft) (ℓ CORNER)
+25.000 -L2RT- 41.379
+35.000 -L2- EX.R/W
+55.000 -L2- EX.R/W
+55.000 -L2- 105.000
+35.000 -L2- 105.000
+28.308 -L2- 55.421 (181.83 ft) (ℓ CORNER)
+92.384 -L2- 55.334 (181.54 ft) (ℓ CORNER)
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
PIPE OUTLET PROTECTION
LEVEL SPREADER TYPICAL SECTION
-L2LT- GRADE SEE PROFILE SHEET 33
-L2RT- GRADE SEE PROFILE SHEET 33
-L2- GRADE SEE PROFILE SHEET 34
455


METRIC
R-2552C
33
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
5 0 10
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R /W REV.
END PROF. -L2LT- STA 126+40.000 -L2- STA 126+40.000 10.5m RT.
FINISHED ELEV.= 94.74
-1.49%
0.6 BASE DITCH -0.5%
BZ 2
BZ 1
126+40.000 LT
88.50
126+40.000 LT
87.40
-L2LT-
SITE C-5
END PROF. -L2RT- STA 126+40.385 -L2- STA 126+40.000 10.5m LT.
FINISHED ELEV.= 94.74
-1.49%
BZ 2 BZ 1
BZ 1 BZ 2
1.0 BASE DITCH 12.50%
1.2 BASE DITCH 4.33%
126+40.000 RT
86.00
127+40.000 RT
86.90
127+80.000 RT
88.00
-L2RT-
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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
456
104
102
100
98
96
94
92
90
88
86
84
82
80
78
+40
+60
+80
125+00
+20
+40
+60
+80
126+00
+20
+40
+60
+80
127+00
+20
+40
+60
+80
128+00

SITE C-5

PROJECT REFERENCE NO. R-2552C | SHEET NO. 34

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

PRELIMINARY PLANS
NOT TO BE USED FOR CONSTRUCTION

BEGIN PROP. 12' GRADE
-LT- STA 126+50.000 (10.5m LT)
-RT- STA 126+73.300 (10.5m RT)
-LPIT- STA 126+50.325 (10.5m RT)
FINISHED ELEV.= 90.49

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. -

DRAINAGE AREA	= 31	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 31	CMS
DESIGN HW ELEVATION	= 87.58	M
100 YEAR DISCHARGE	= 36	CMS
100 YEAR HW ELEVATION	= 87.59	M
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 60	CMS
OVERTOPPING ELEVATION	= 89.00	M

PI = 127+14.997
EL = 90.774 M
VC = 90 M
K = 124

-1.497%

-.077352

BZ 2 BZ 1

1500mm

BZ 1 BZ 2

10 BASE DITCH -1.332

10 BASE DITCH -.250%

126+90.000 RT
65.600

127+40.000 RT
65.600

127+90.000 RT
65.600

L2

126+00 +20 +40 +60 +80 127+00 +20 +40 +60 +80 128+00

BM#BL-1 RR SPIKE DRIVEN VERICALLY IN BASE OF 10" HOLLY TREE
BL STA. 135 + 85.528
120.089' RT
ELEV. = 85.921
N 205682.4659
E 860824.7846

PI = 130+40.000
EL = 88.260 M
VC = 100 M
K = 176

-.077352

-1.346%

12 BASE DITCH -1.34%

40 BASE DITCH -1.34%

40 BASE DITCH -0.98%

130+20.000 RT
65.600

130+70.000 LT
65.600

131+20.000 LT
65.600

L2

128+00 +20 +40 +60 +80 130+00 +20 +40 +60 +80 131+00 +20

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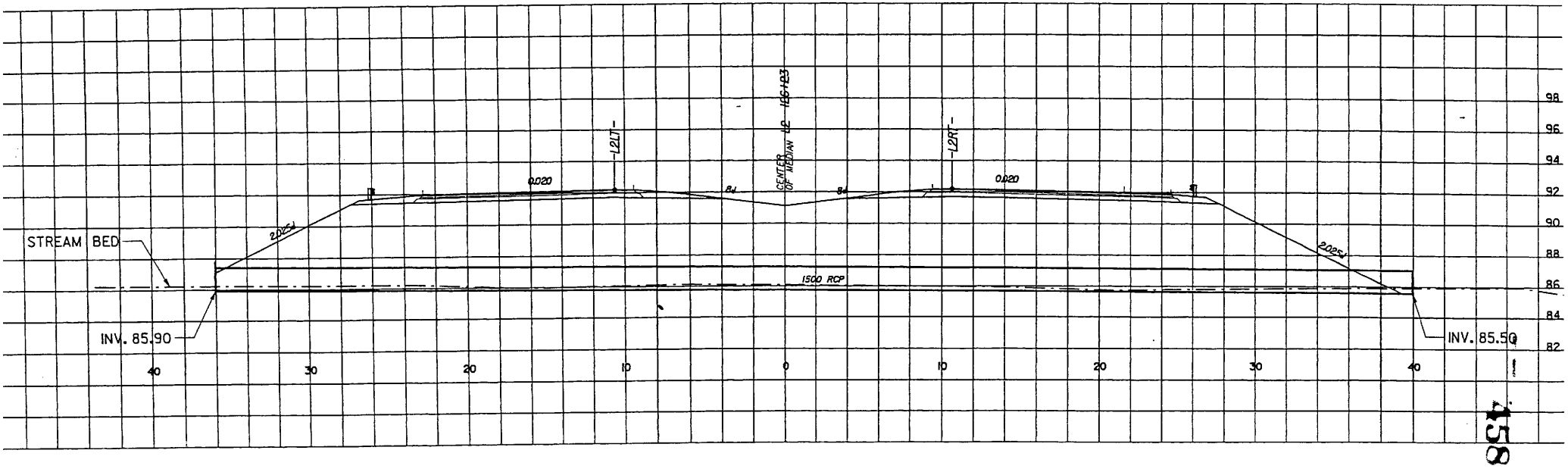
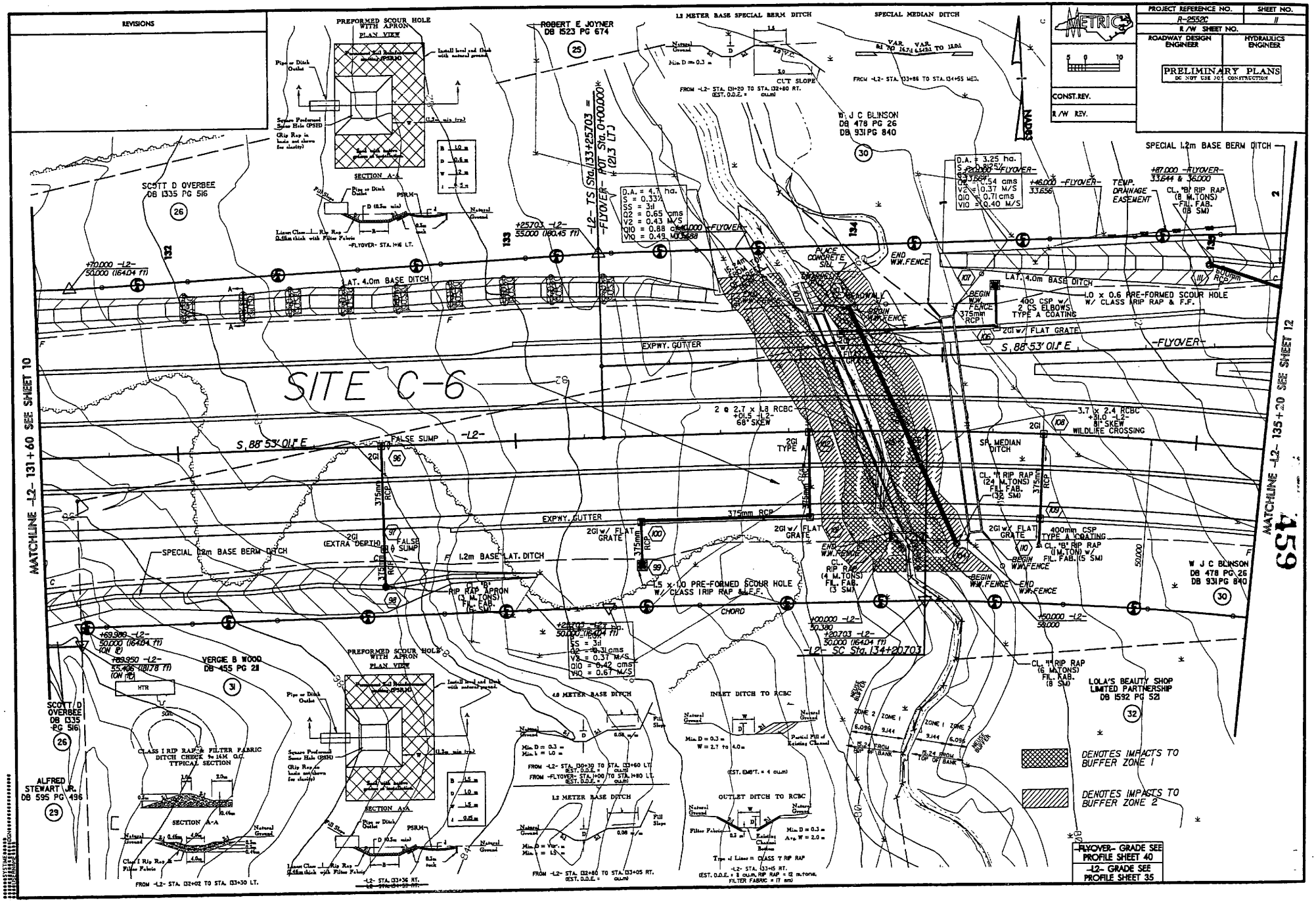
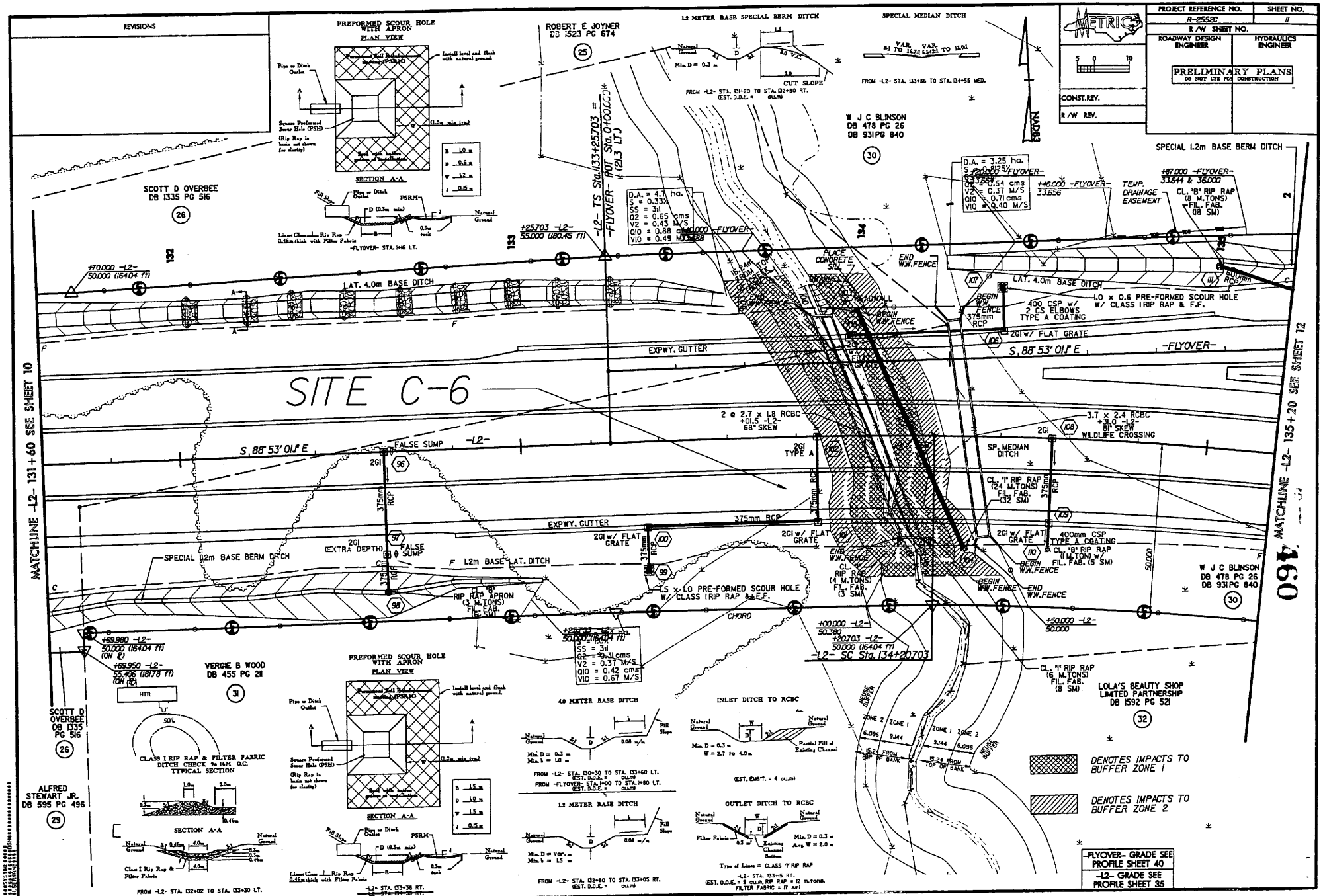
SITE C-5

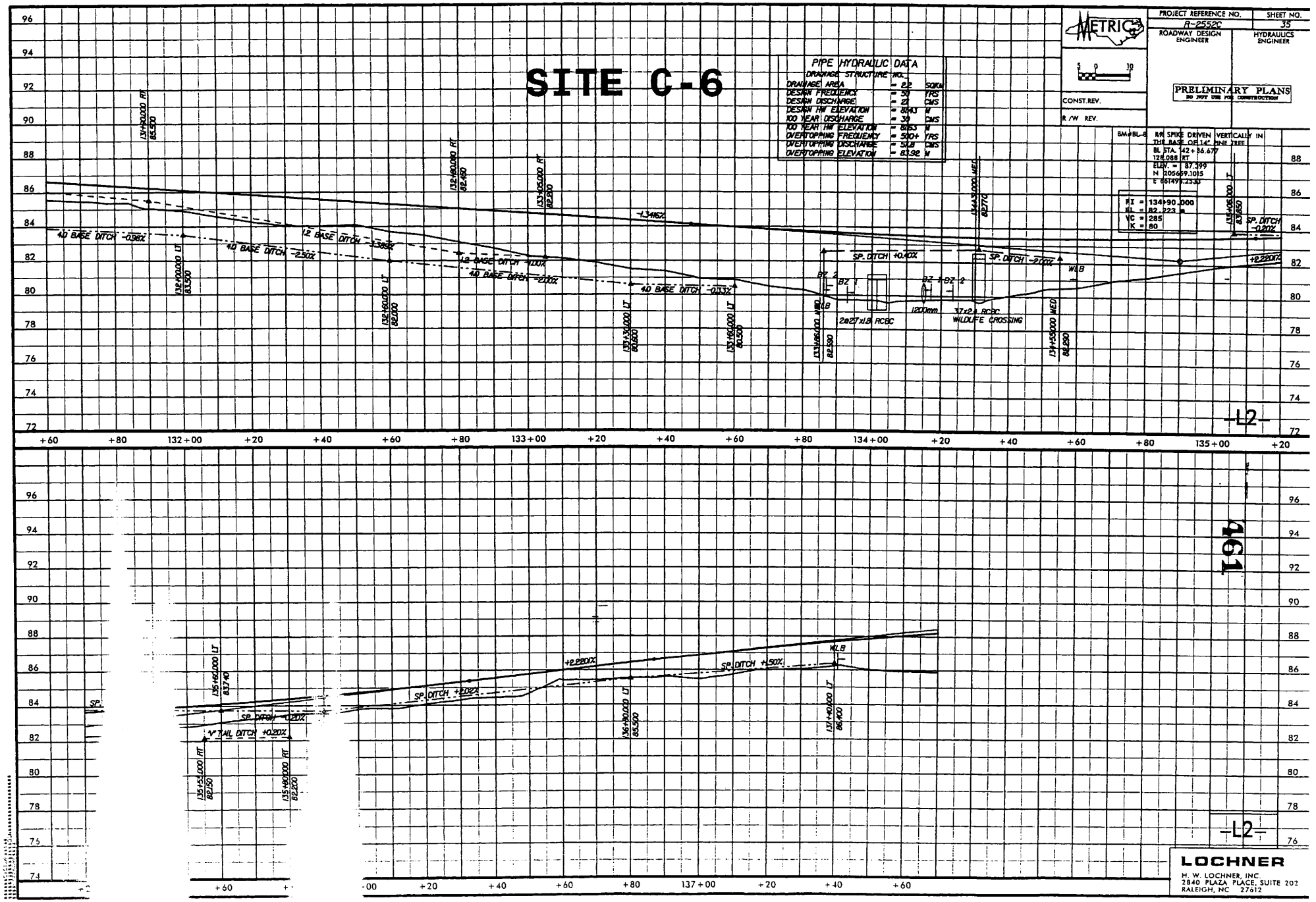


PROFILE OF 1500 RCP
-L2- STA. 126+23
PLAN SHEET 9


REVISIONS
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST. REV.
R/W REV.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SITE C-6
MATCHLINE -L2- 131+60 SEE SHEET 10
MATCHLINE -L2- 135+20 SEE SHEET 12
-L2- TS Sta. 133+25.703 = -FLYOVER- POT Sta. 0+00.000 (213 LT)
-L2- SC Sta. 134+20.703
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
ROBERT E JOYNER DB 1523 PG 674
W J C BLINSON DB 478 PG 26 DB 931 PG 840
SCOTT D OVERBEE DB 1335 PG 516
VERGIE B WOOD DB 455 PG 21
ALFRED STEWART JR. DB 595 PG 496
LOLA'S BEAUTY SHOP LIMITED PARTNERSHIP DB 1592 PG 52
L3 METER BASE SPECIAL BERM DITCH
SPECIAL MEDIAN DITCH
SPECIAL 1.2m BASE BERM DITCH
LAT. 4.0m BASE DITCH
EXPWY. GUTTER
FALSE SUMP
2GI (EXTRA DEPTH)
2GI w/ FLAT GRATE
2GI TYPE A
SR MEDIAN DITCH
CL. "B" RIP RAP (4 M. TONS) FIL. FAB. (3 SM)
CL. "B" RIP RAP (6 M. TONS) FIL. FAB. (5 SM)
CL. "I" RIP RAP (24 M. TONS) FIL. FAB. (32 SM)
CL. "I" RIP RAP (6 M. TONS) FIL. FAB. (8 SM)
CL. "B" RIP RAP (8 M. TONS) FIL. FAB. (10 SM)
1.5 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
1.0 x 0.6 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
400 CSP w/ 2 CS ELBOWS TYPE A COATING
400mm CSP TYPE A COATING
375mm RCP
2 @ 2.7 x 1.8 RCBC +0.5 -L2- 68° SKEW
3.7 x 2.4 RCBC +5.0 -L2- 81° SKEW WILDLIFE CROSSING
FLARE CONCRETE SIDEWALL
END WW. FENCE
BEGIN WW. FENCE
CHORD
4.0 METER BASE DITCH
L2 METER BASE DITCH
INLET DITCH TO RCBC
OUTLET DITCH TO RCBC
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK 9@ 14M O.C. TYPICAL SECTION
TEMP. DRAINAGE EASEMENT
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
-FLYOVER- GRADE SEE PROFILE SHEET 40
-L2- GRADE SEE PROFILE SHEET 35
459


REVISIONS
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
METRIC
SITE C-6
MATCHLINE -L- 131+60 SEE SHEET 10
MATCHLINE -L- 135+20 SEE SHEET 12
SCOTT D OVERBEE DB 1335 PG 516
ROBERT E JOYNER DB 1523 PG 674
W J C BLINSON DB 478 PG 26 DB 931PG 840
VERGIE B WOOD DB 455 PG 21
ALFRED STEWART JR. DB 595 PG 496
LOLA'S BEAUTY SHOP LIMITED PARTNERSHIP DB 1592 PG 521
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
L2 METER BASE SPECIAL BERM DITCH
SPECIAL MEDIAN DITCH
SPECIAL 1.2m BASE BERM DITCH
LAT. 4.0m BASE DITCH
EXPWY. GUTTER
FALSE SUMP
SP. MEDIAN DITCH
WILDLIFE CROSSING
1.0 x 0.6 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
1.5 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
400 CSP w/ 2 CS ELBOWS TYPE A COATING
400mm CSP TYPE A COATING
TEMP. DRAINAGE EASEMENT
4.0 METER BASE DITCH
L2 METER BASE DITCH
INLET DITCH TO RCBC
OUTLET DITCH TO RCBC
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK 9@ 16M O.C. TYPICAL SECTION
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
-FLYOVER- GRADE SEE PROFILE SHEET 40
-L2- GRADE SEE PROFILE SHEET 35
-L2- TS Sta.133+25.703 = -FLYOVER- POT Sta.0+00.000 = (21.3 LT)
-L2- SC Sta.134+20.703
-L2- STA. 133+36 RT.
FROM -L2- STA. 132+02 TO STA. 133+30 LT.
FROM -L2- STA. 132+80 TO STA. 133+05 RT.
FROM -L2- STA. 130+30 TO STA. 133+60 LT.
FROM -FLYOVER- STA. 1+00 TO STA. 1+80 LT.
-L2- STA. 133+15 RT.
TYPE OF LINER = CLASS 'I' RIP RAP
FILTER FABRIC = (7 sm)
2GI w/ FLAT GRATE
2 @ 2.7 x 1.8 RCBC
3.7 x 2.4 RCBC
375mm RCP
CHORD

SITE C-6



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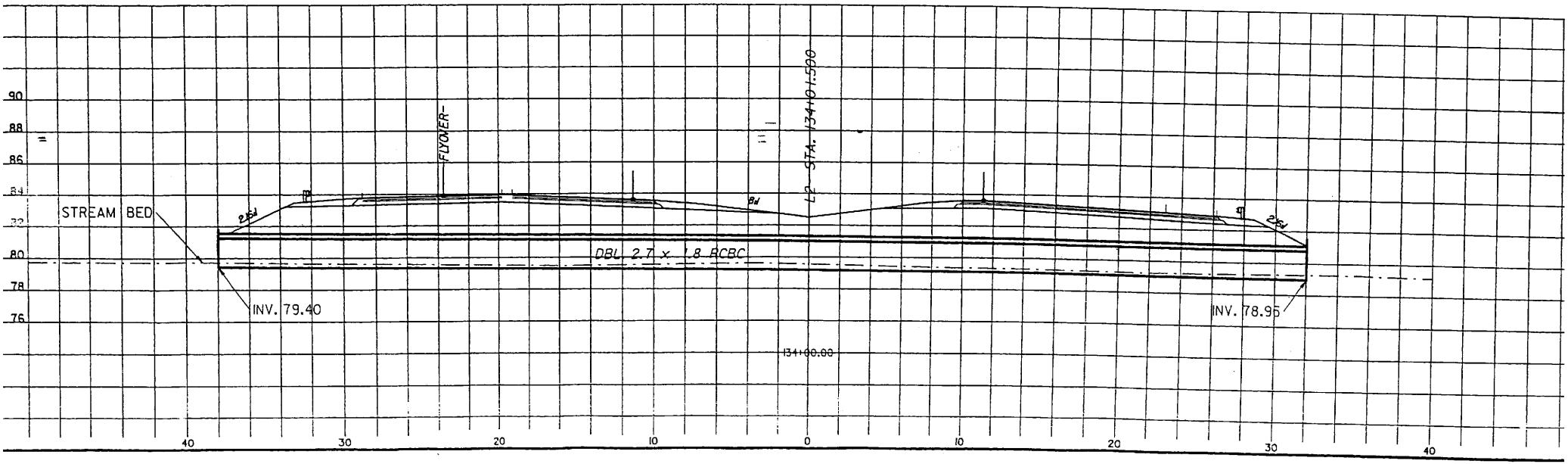
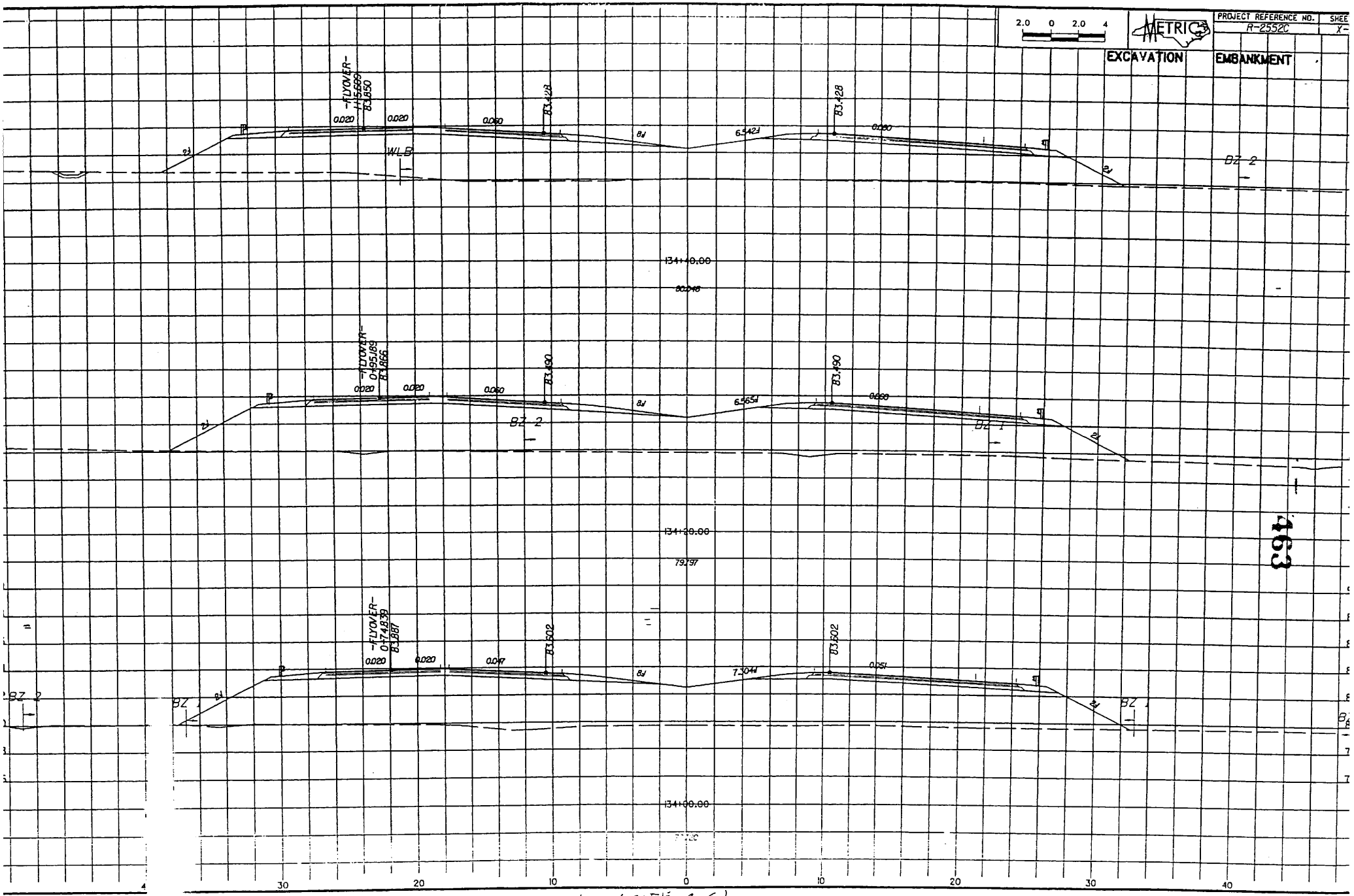
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

SITE C-6

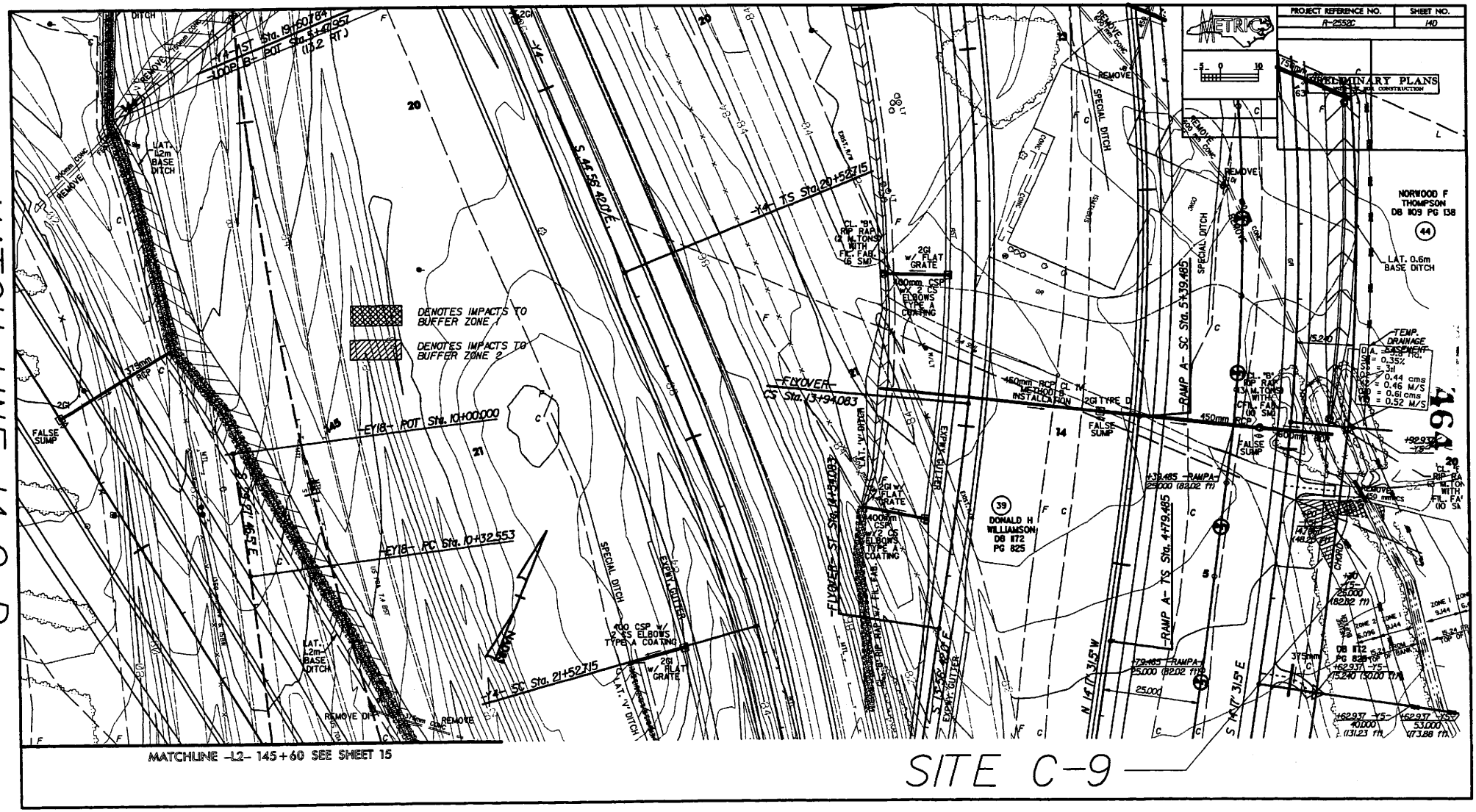
PROFILE ALONG DBL 2.4 x 1.8 RCBC -L2- STA. 134+01.500 PLAN SHEET 11





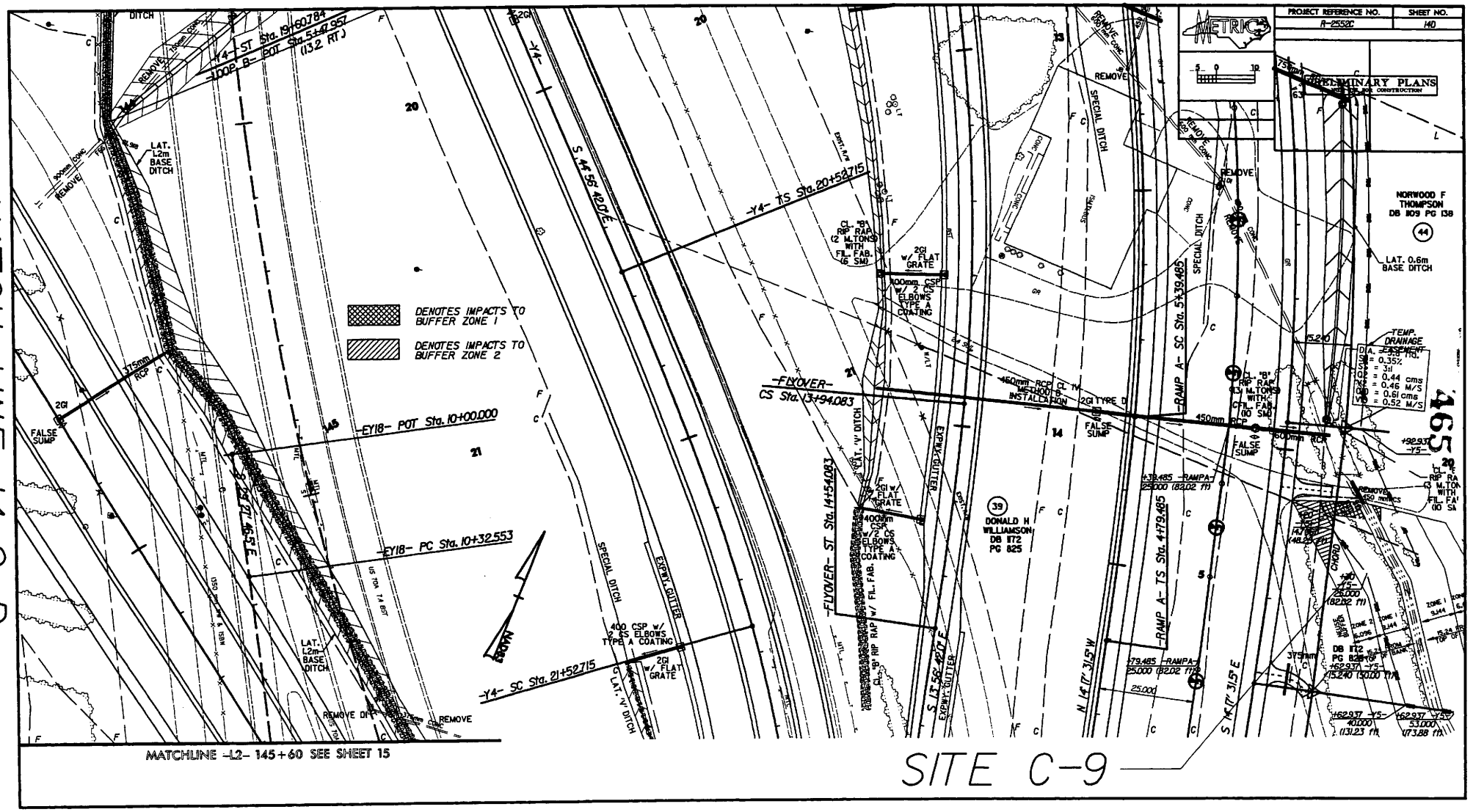
TYPICAL CROSS SECTION (SITE C-6)

MATCH LINE 14 A-D



MATCH LINE 14 C-D

MATCH LINE 14 A-D



MATCH LINE 14 C-D

SITE C-9

SITE C-9

PROJECT REFERENCE NO.	SHEET NO.
R-2552C	59
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.

R/W REV.

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.—

DRAINAGE AREA	3.0	HA
DESIGN FREQUENCY	25	YRS
DESIGN DISCHARGE	0.65	CMS
DESIGN HW ELEVATION	82.52	M
100 YEAR DISCHARGE	0.88	CMS
100 YEAR HW ELEVATION	82.71	M
OVERTOPPING FREQUENCY	100	YRS
OVERTOPPING DISCHARGE	1.04	CMS
OVERTOPPING ELEVATION	82.70	M

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.—

DRAINAGE AREA	1.2	HA
DESIGN FREQUENCY	25	YRS
DESIGN DISCHARGE	0.36	CMS
DESIGN HW ELEVATION	81.77	M
100 YEAR DISCHARGE	0.48	CMS
100 YEAR HW ELEVATION	81.91	M
OVERTOPPING FREQUENCY	100	YRS
OVERTOPPING DISCHARGE	0.64	CMS
OVERTOPPING ELEVATION	81.90	M

PI = 20+70.000
EL = 81.364 M
VC = 70 M
K = 54

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.—

DRAINAGE AREA	21	HA
DESIGN FREQUENCY	25	YRS
DESIGN DISCHARGE	0.65	CMS
DESIGN HW ELEVATION	79.68	M
100 YEAR DISCHARGE	0.83	CMS
100 YEAR HW ELEVATION	79.83	M
OVERTOPPING FREQUENCY	100+	YRS
OVERTOPPING DISCHARGE	1.00	CMS
OVERTOPPING ELEVATION	80.15	M

Y5

Y5

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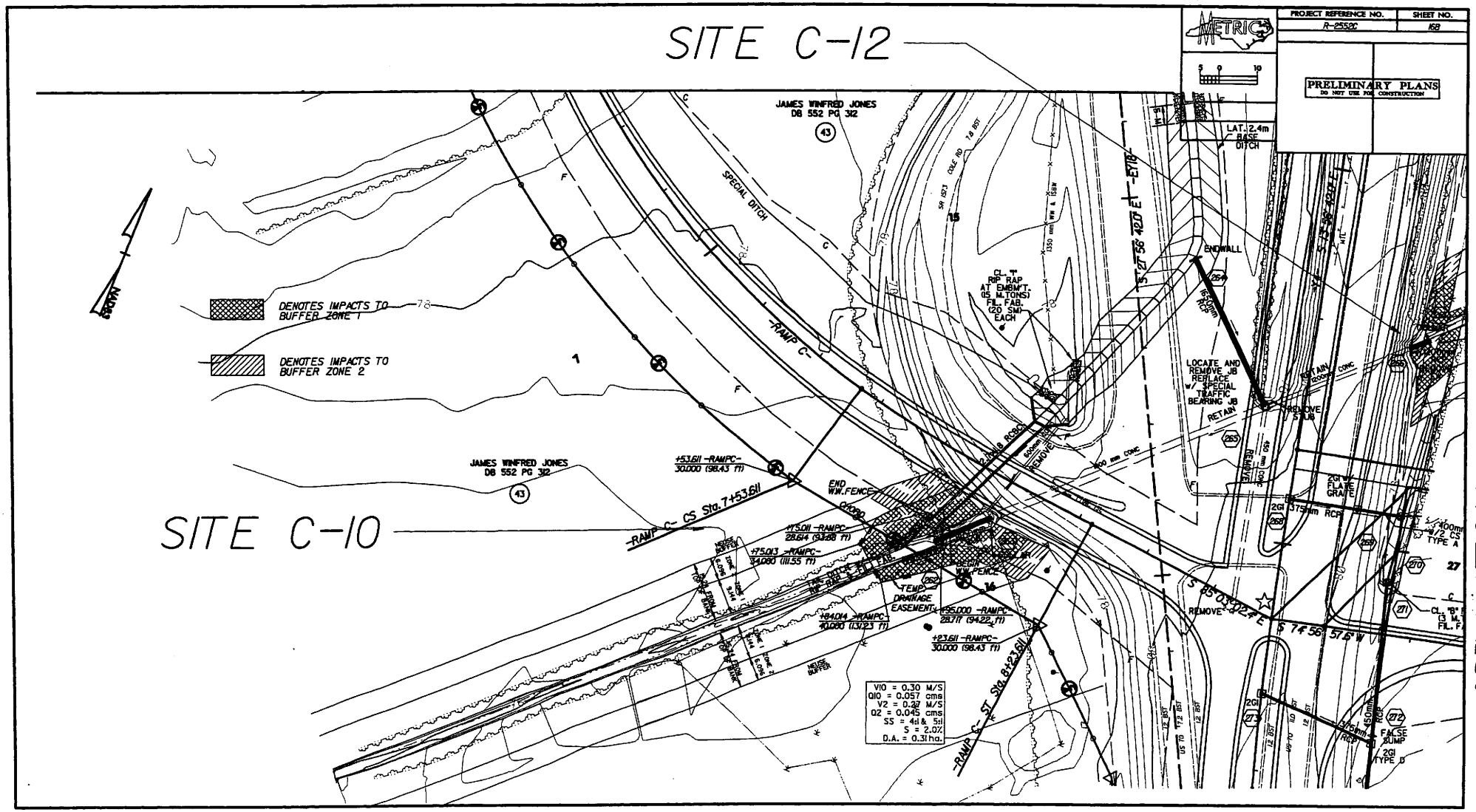
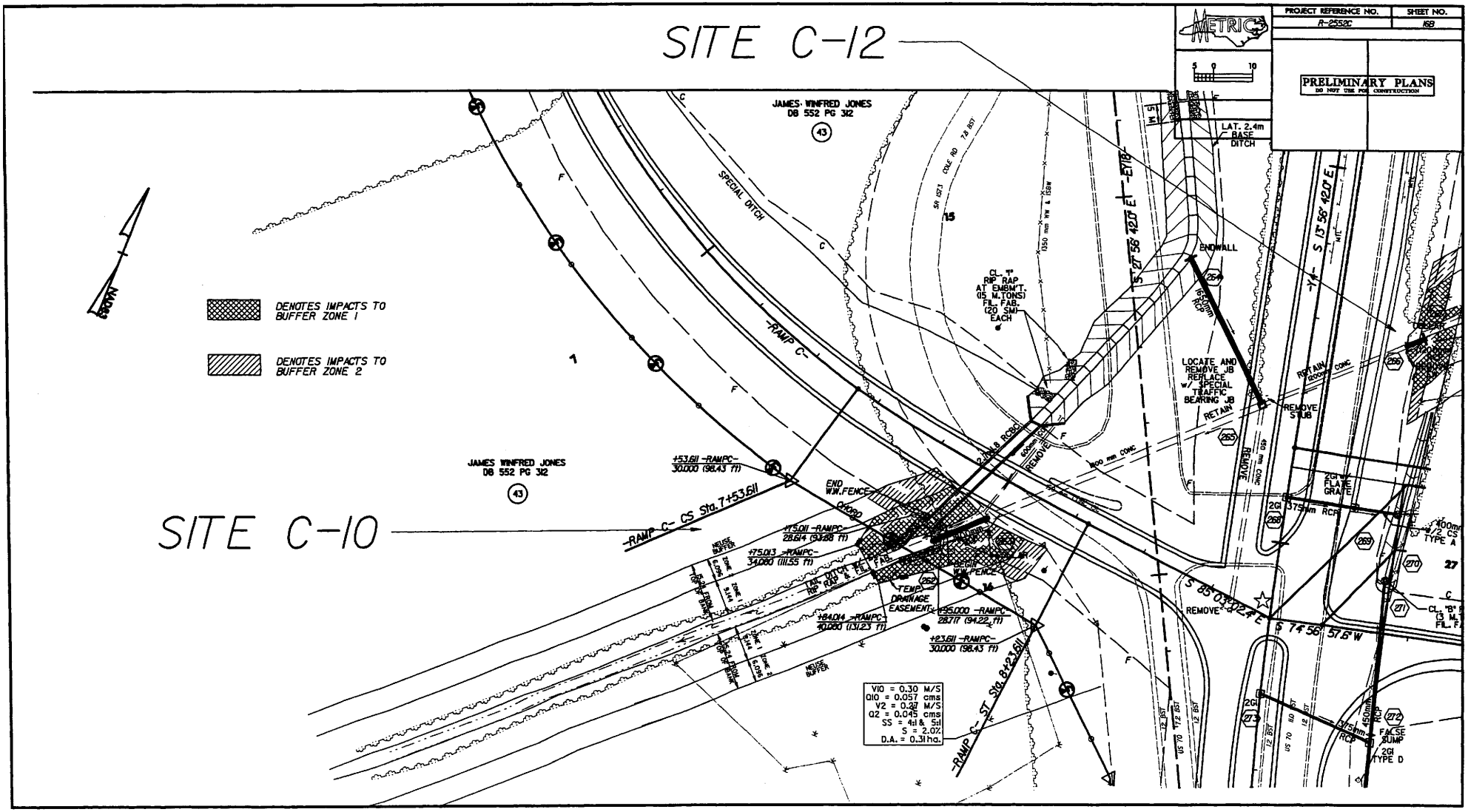
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612


SITE C-12
SITE C-10
MATCH LINE 16 B-C
MATCH LINE 16 A-B
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
16B
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
JAMES WINFRED JONES
DB 552 PG 312
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
SPECIAL DITCH
-RAMP C-
-RAMP C- CS Sta. 7+53.611
+53.611 -RAMPC-
30.000 (98.43 ft)
+75.011 -RAMPC-
28.614 (93.88 ft)
+75.013 -RAMPC-
34.080 (111.55 ft)
+84.014 -RAMPC-
40.080 (131.23 ft)
+95.000 -RAMPC-
28.711 (94.22 ft)
+23.611 -RAMPC-
30.000 (98.43 ft)
-RAMP C- ST Sta. 8+23.611
END WW FENCE
NEW WW FENCE
TEMP. DRAINAGE EASEMENT
ENDWALL
CL "I" RIP RAP AT EMBM'T. (15 M.TONS) FIL. FAB. (20 SMI EACH
LOCATE AND REMOVE JB REPLACE w/ SPECIAL TRAFFIC BEARING JB
RETAIN
REMOVE
2GI W.C. FLATE GRATE
2GI 375mm RCP
400mm Ø CS TYPE A
LAT. 2.4m BASE DITCH
V10 = 0.30 M/S
Q10 = 0.057 cms
V2 = 0.27 M/S
Q2 = 0.045 cms
SS = 4:1 & 5:1
S = 2.0%
D.A. = 0.31 ha.
S 27°56'40.0"E -ETM-
S 85°03'02.2"E
S 14°56'57.6"W
FALSE SUMP
2GI TYPE D

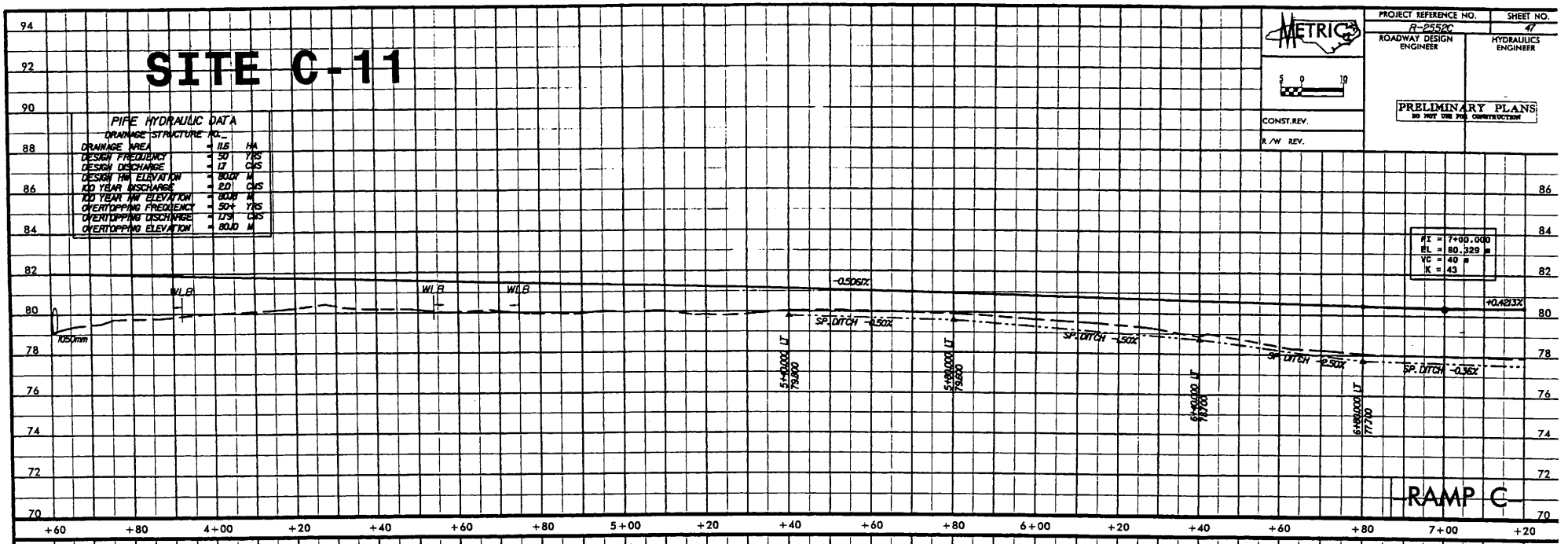
PROJECT REFERENCE NO.	SHEET NO.
R-2552C	16B

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SITE C-11

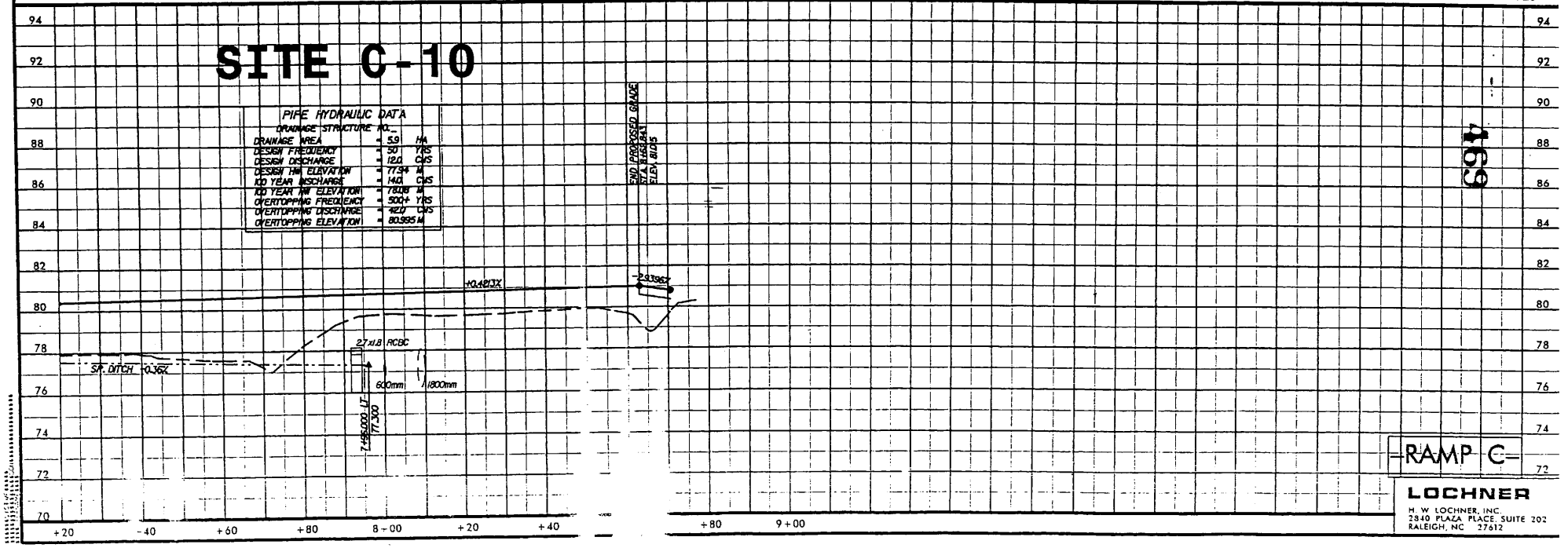
PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO._		
DRAINAGE AREA	= 11.8	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 17	CMS
DESIGN HW ELEVATION	= 80.01	M
100 YEAR DISCHARGE	= 20	CMS
100 YEAR HW ELEVATION	= 80.18	M
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING DISCHARGE	= 17.9	CMS
OVERTOPPING ELEVATION	= 80.10	M



RAMP C

SITE C-10

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO._		
DRAINAGE AREA	= 5.9	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 12.0	CMS
DESIGN HW ELEVATION	= 77.94	M
100 YEAR DISCHARGE	= 14.0	CMS
100 YEAR HW ELEVATION	= 78.08	M
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 42.0	CMS
OVERTOPPING ELEVATION	= 80.595	M



RAMP C

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

METRIC

5 0 10

CONST. REV.

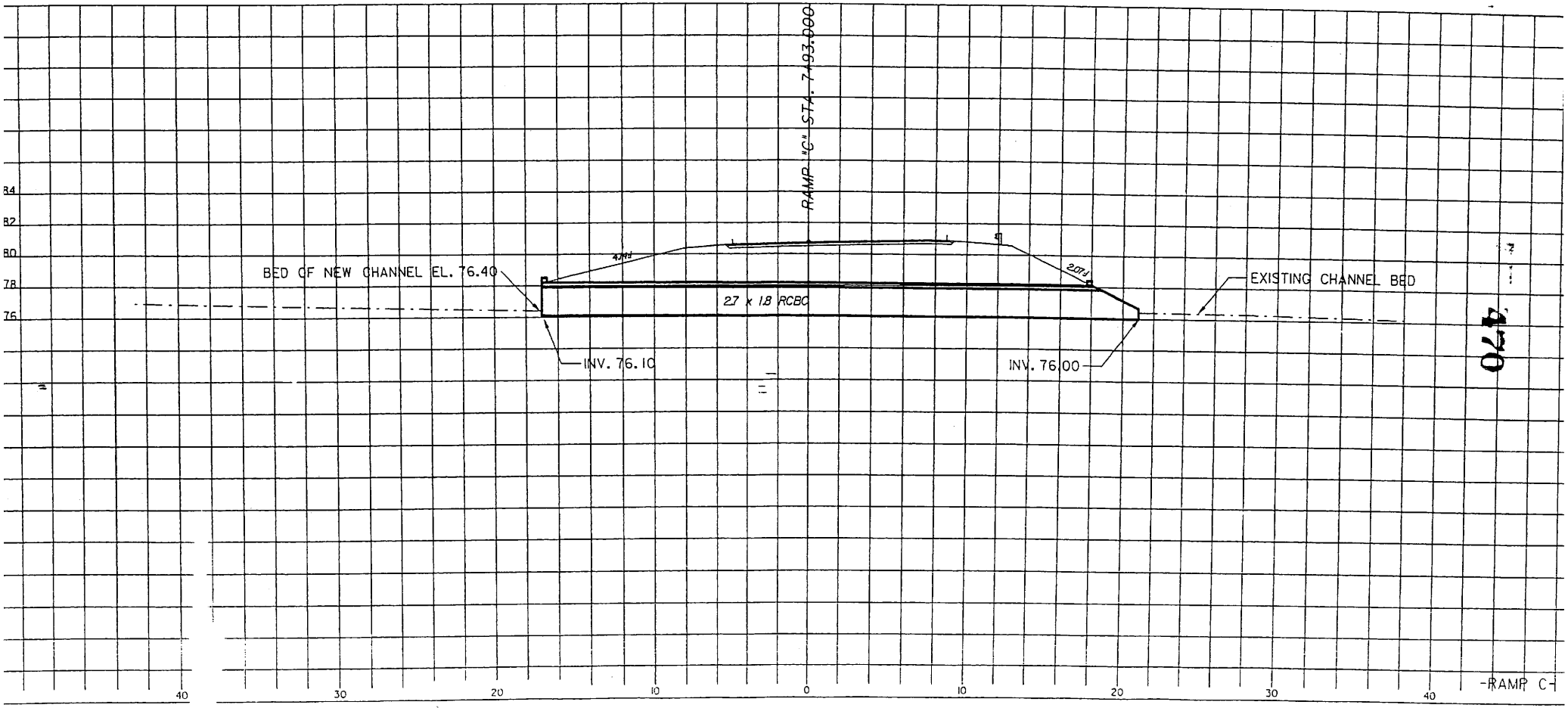
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2552C	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

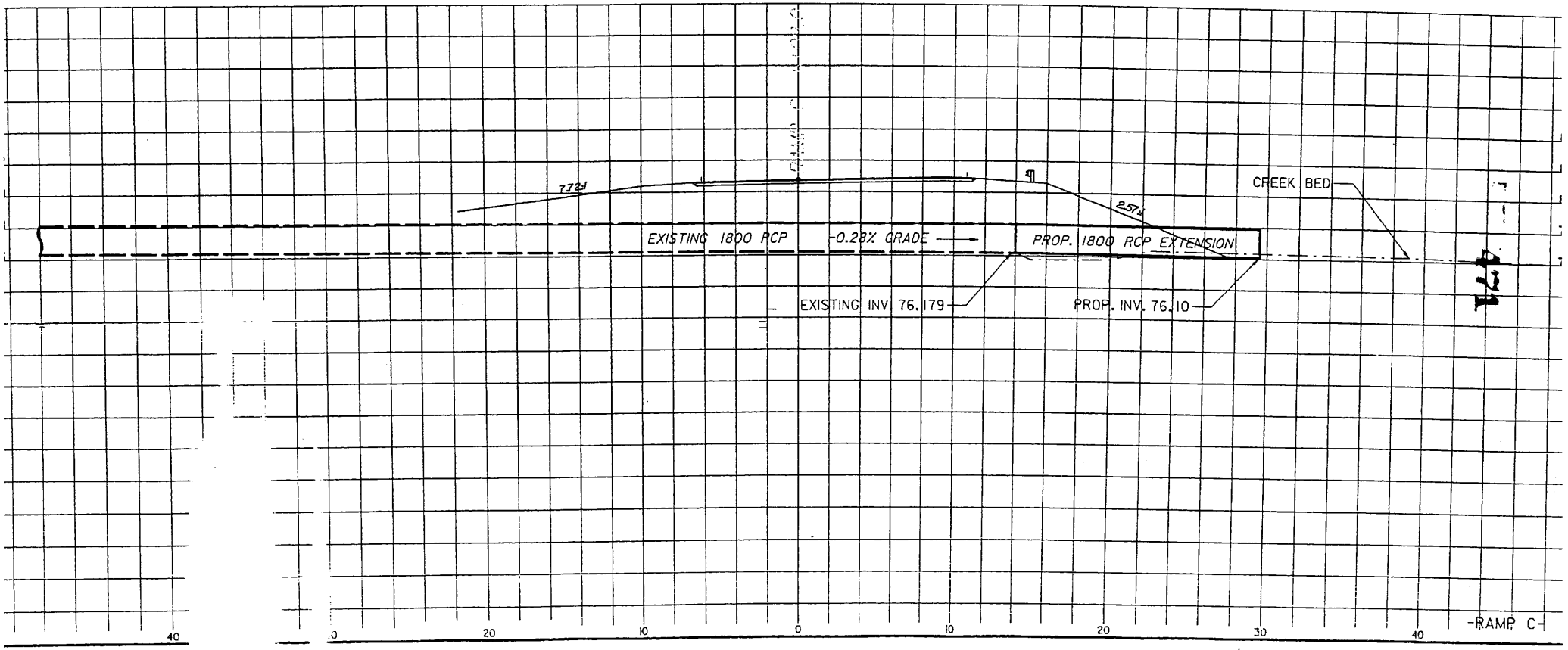
SITE C-10

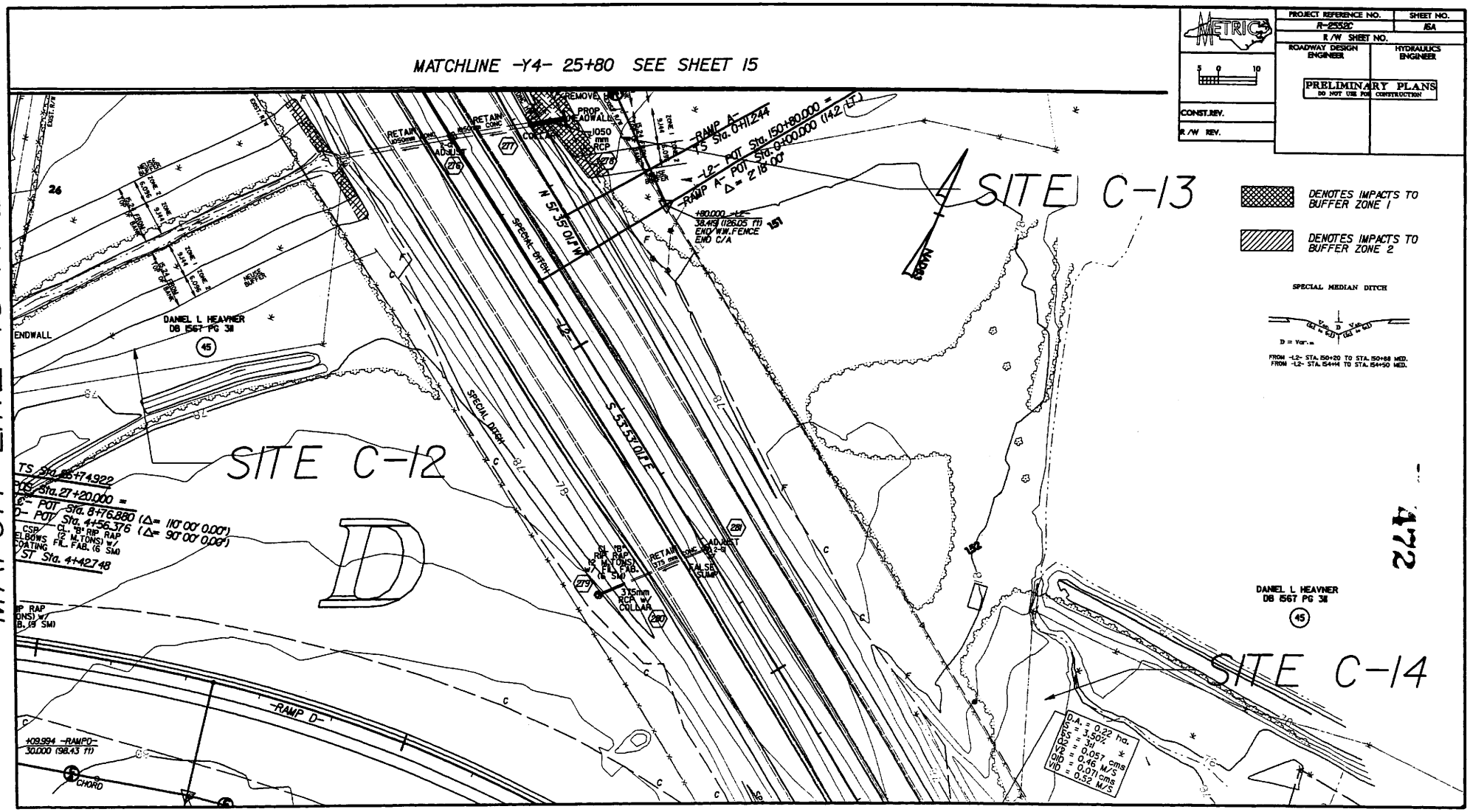
PROFILE OF 2.7 x 1.8 RCBC
RAMP C - STA. 7+93.000
PLAN SHEET 16

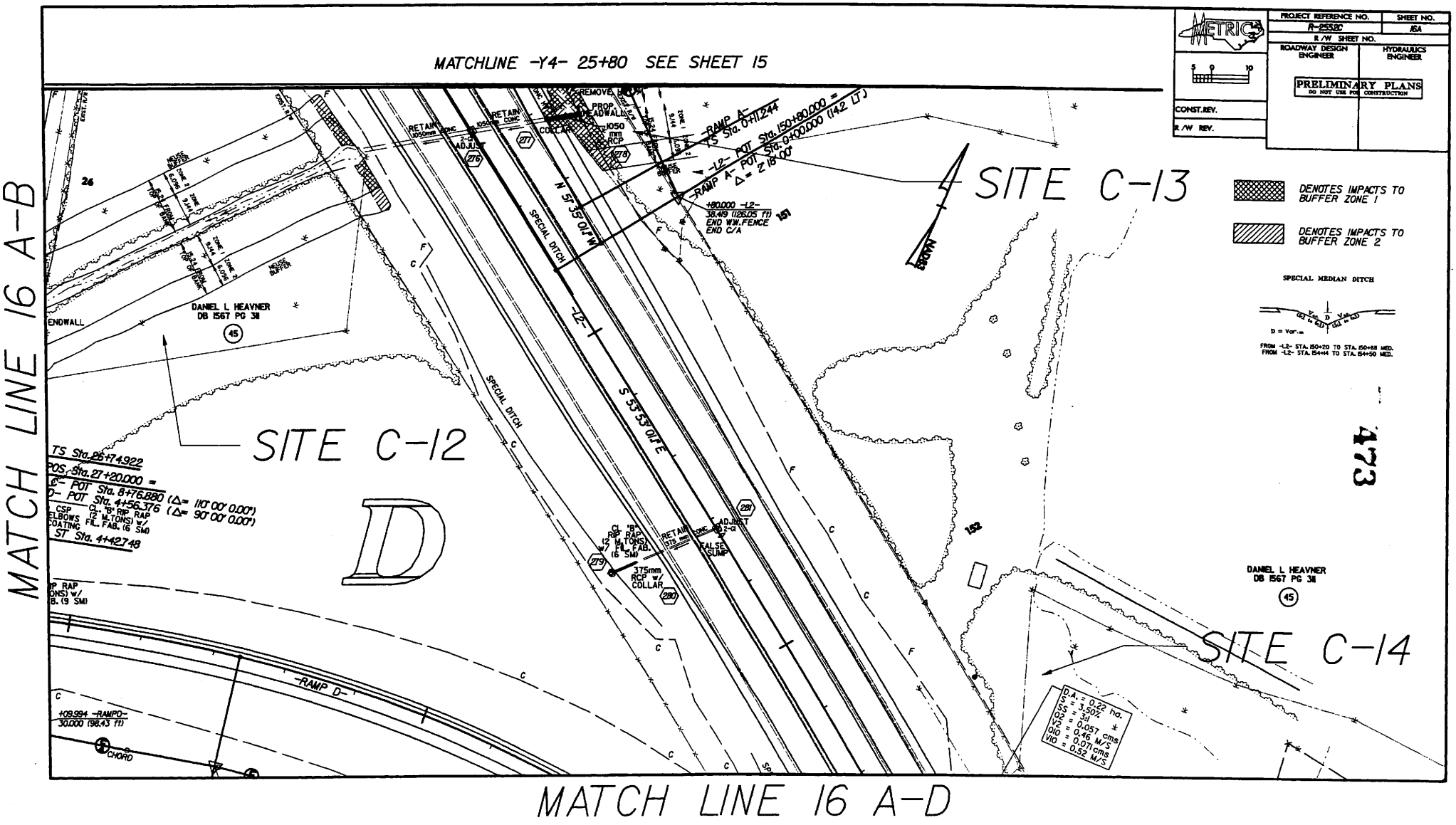


SITE C-10

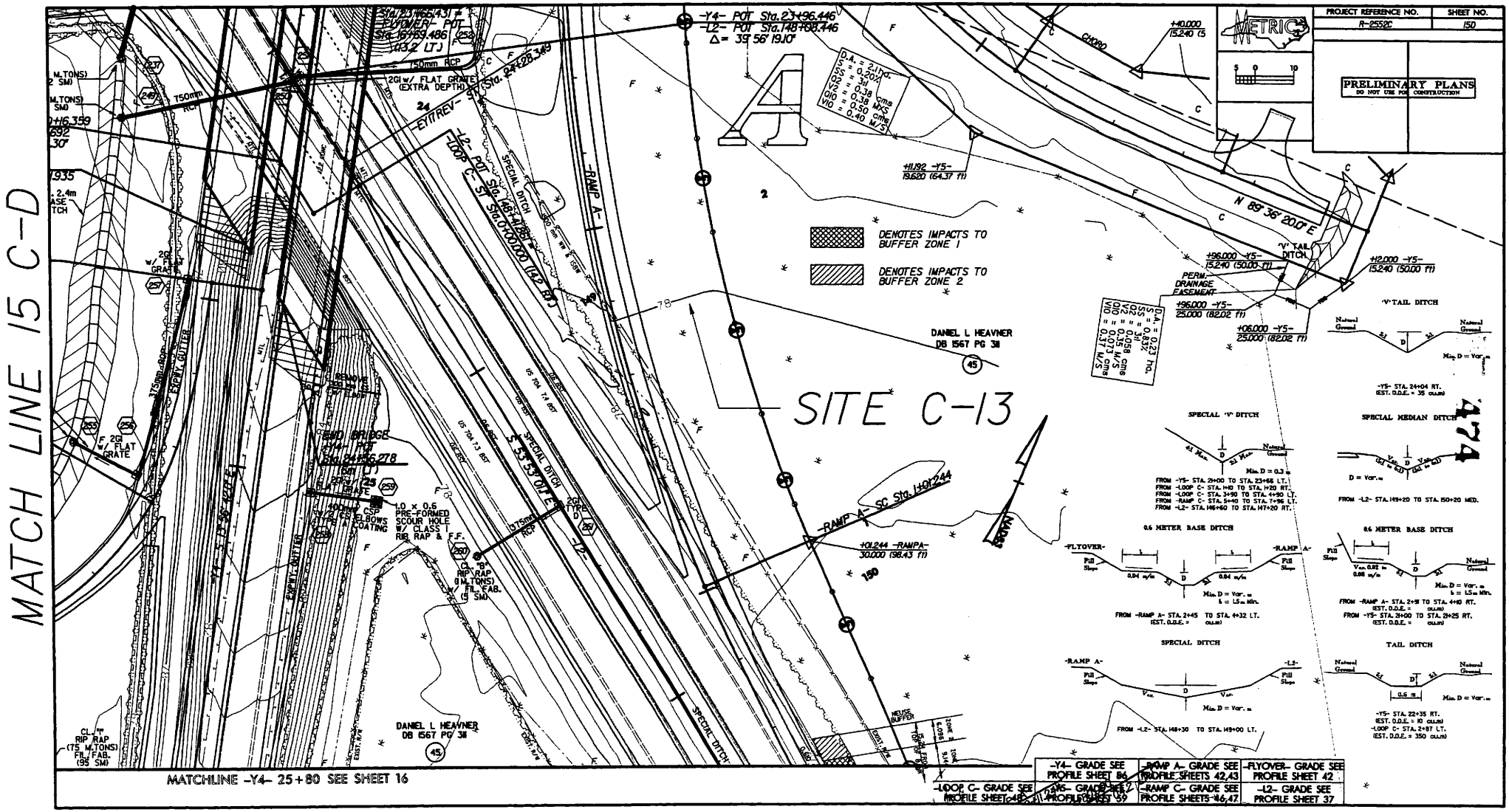
PIPE PROFILE OF 1800 RCP
RAMP C STA. 8+09.0



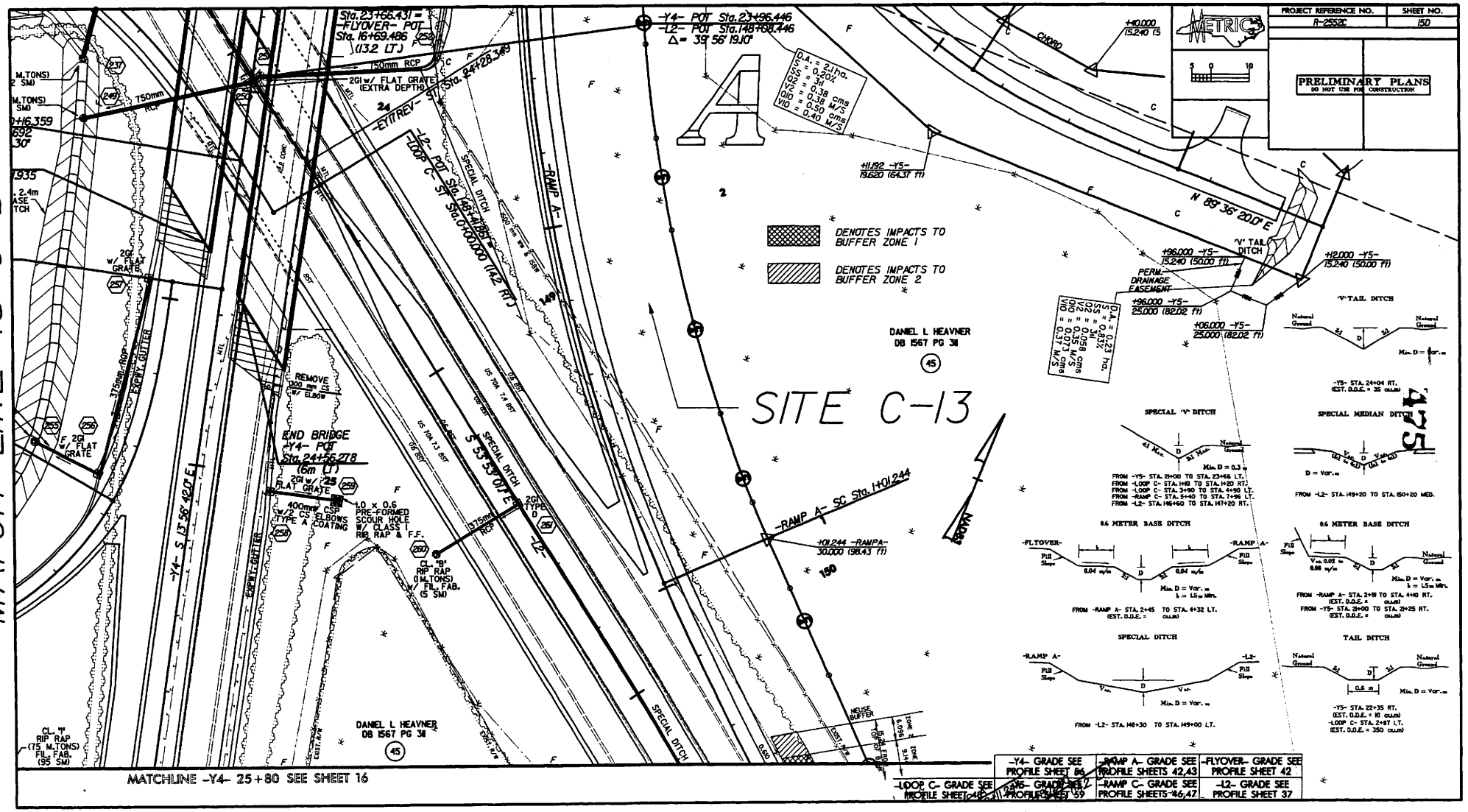

MATCHLINE -Y4- 25+80 SEE SHEET 15
MATCH LINE 16 A-B
MATCH LINE 16 A-D
SITE C-12
SITE C-13
SITE C-14
METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
15A
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
SPECIAL MEDIAN DITCH
FROM -L2- STA. 150+20 TO STA. 150+88 MED.
FROM -L2- STA. 154+14 TO STA. 154+50 MED.
DANIEL L HEAVNER
DB 1567 PG 311
ENDWALL
RETAIN
ADJUST
REMOVE END
PROP HEADWALL
1050 mm RCP
COLLAR
-RAMP A-
-L2- POT Sta. 0+00.000 (14.2 (LT.)
-RAMP A- POT Sta. 150+80.000 =
Δ = 2°18'00"
+80.000 -L2-
38.419 (126.05 FT)
END WW. FENCE
END C/A
N 57°35'01"W
SPECIAL DITCH
-L2-
S 57°53'01"E
TS Sta. 25+74.922
-RAMP C- POT Sta. 27+20.000 =
-L2- POT Sta. 8+76.880 (Δ= 110°00'0.00")
-RAMP D- POT Sta. 4+56.376 (Δ= 90°00'0.00")
ST Sta. 4+42.748
CSP
ELBOWS (2 M.ITONS) w/
COATING FIL. FAB. (6 SM)
RIP RAP
ONS) w/
B. (9 SM)
-RAMP D-
+09.994 -RAMPD-
30.000 (98.43 FT)
CHORD
#1 "B" RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
375mm RCP w/ COLLAR
RETAIN
ADJUST
TAN SB (SLOPE)
D.A. = 0.22 ha.
= 1.50%
= 0.057 cms
= 0.46 M/S
= 0.07 cms
= 0.52 M/S
472

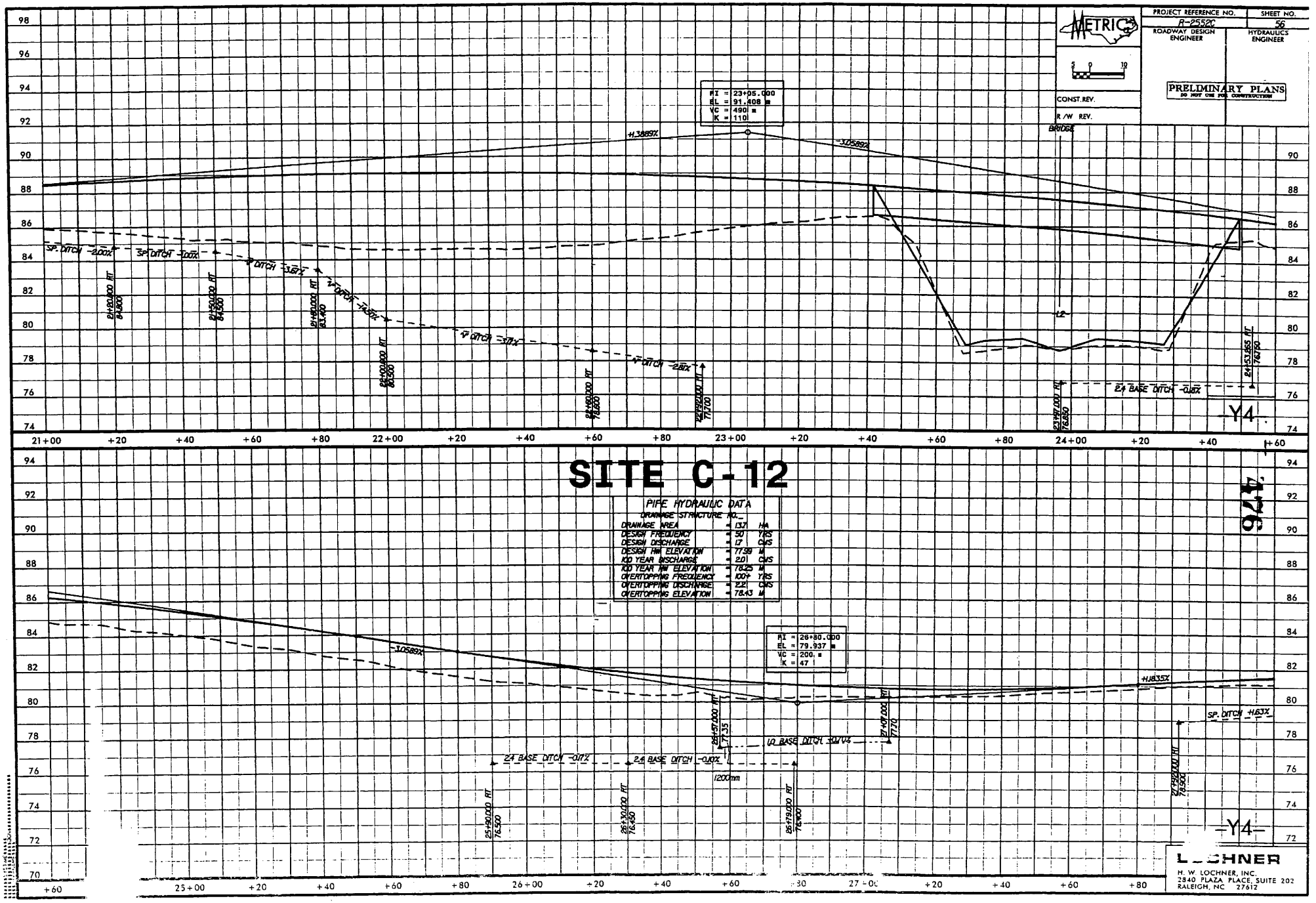

MATCHLINE -Y4- 25+80 SEE SHEET 15
MATCH LINE 16 A-B
MATCH LINE 16 A-D
METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
15A
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
SITE C-13
SITE C-12
SITE C-14
D
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
SPECIAL MEDIAN DITCH
FROM -L2- STA. 150+20 TO STA. 150+88 MED.
FROM -L2- STA. 154+14 TO STA. 154+50 MED.
DANIEL L HEAVNER
DB 1567 PG 311
45
RETAIN 1050mm CONC
ADJUST
PROP HEADWALL
1050 mm RCP
COLLAR
-RAMP A-
TS Sta. 0+11.244
-L2- POT Sta. 150+80.000 = -RAMP A- POT Sta. 0+00.000 (142 LT)
Δ= 2°18'00"
+80.000 -L2-
38.419 (126.05 ft)
END WW. FENCE
END C/A
N 57°39'01"W
SPECIAL DITCH
S 53°53'01"E
-L2-
RETAIN 375 mm CONC
FALSE SUMP
375mm RCP w/ COLLAR
CL "B" RIP RAP (2 M. TONS) FL. FAB. (6 SM)
-RAMP D-
+08.994 -RAMPD-
30.000 (98.43 ft)
CHORD
TS Sta. 26+74.922
POS. Sta. 27+20.000 =
-L2- POT Sta. 8+76.880 (Δ= 110°00'0.00")
D- POT Sta. 4+56.376 (Δ= 90°00'0.00")
CSP
ELBOWS
COATING
ST Sta. 4+42.748
D.A. = 0.22 ha.
V10 = 3.50 cms
V50 = 0.57 cms
V100 = 0.96 M/S
V10 = 0.071 cms
V50 = 0.52 M/S
423

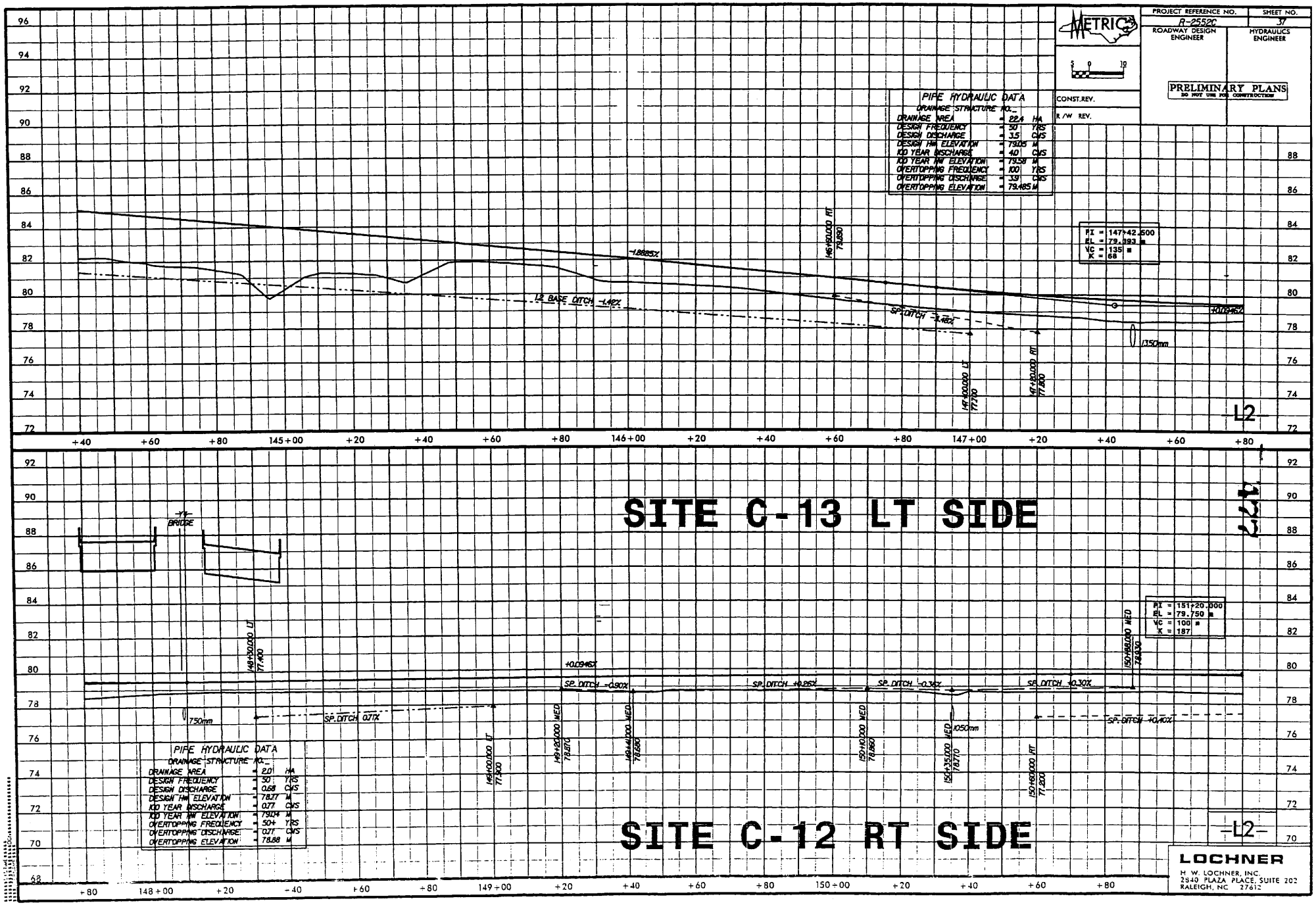
MATCH LINE 15 A-D

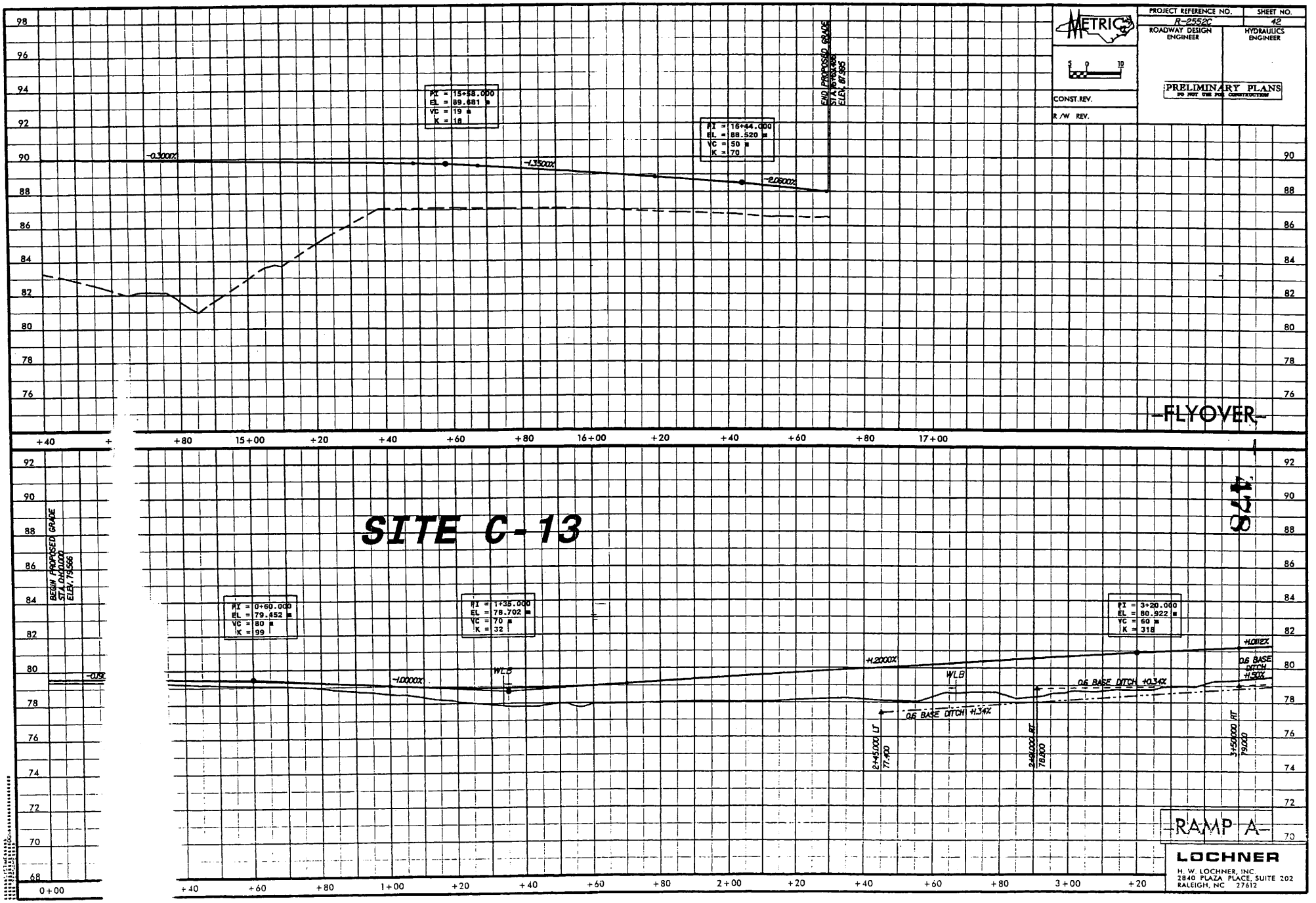


MATCH LINE 15 A-D

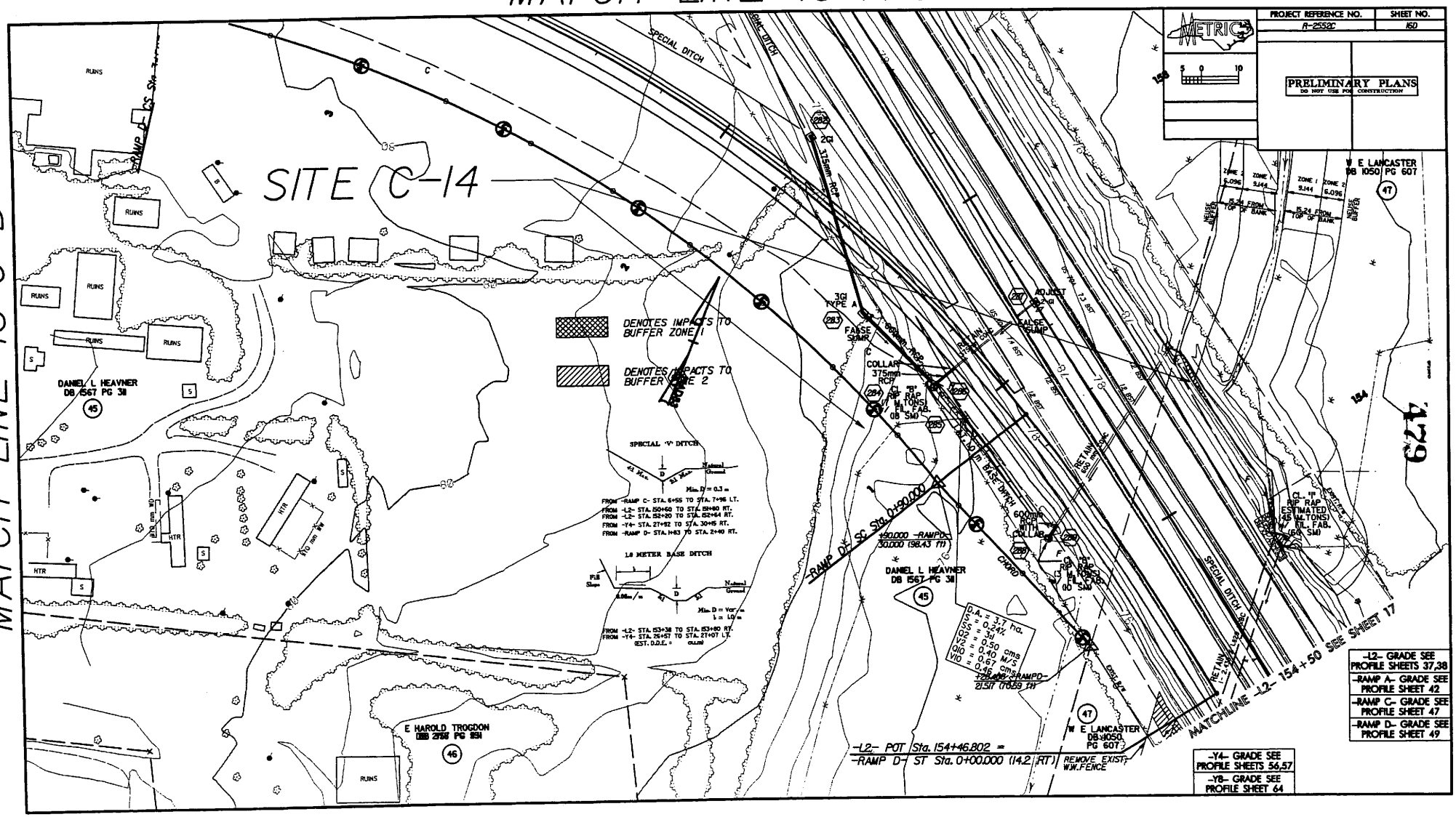



METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
56
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
BRIDGE
PI = 23+05.000
EL = 91.408 m
VC = 490 m
K = 110
+1.388%
-3.058%
SP. DITCH -2.00%
SP. DITCH -1.00%
V DITCH -3.67%
V DITCH -1.40%
V DITCH -3.71%
V DITCH -2.81%
L2
2.4 BASE DITCH -0.87%
Y4
SITE C-12
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 137 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 17 CMS
DESIGN HW ELEVATION = 77.59 M
100 YEAR DISCHARGE = 201 CMS
100 YEAR HW ELEVATION = 78.25 M
OVERTOPPING FREQUENCY = 100+ YRS
OVERTOPPING DISCHARGE = 221 CMS
OVERTOPPING ELEVATION = 78.43 M
PI = 26+80.000
EL = 79.937 m
VC = 200. m
K = 47
-3.058%
+1.835%
SP. DITCH +1.63%
10 BASE DITCH -3.01%
2.4 BASE DITCH -0.17%
2.4 BASE DITCH -0.10%
1200mm
Y4
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612


METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
37
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.-
DRAINAGE AREA = 22.4 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 3.5 CMS
DESIGN HW ELEVATION = 79.05 M
100 YEAR DISCHARGE = 4.0 CMS
100 YEAR HW ELEVATION = 79.58 M
OVERTOPPING FREQUENCY = 100 YRS
OVERTOPPING DISCHARGE = 3.9 CMS
OVERTOPPING ELEVATION = 79.485 M
PI = 147+42.500
EL = 79.393 M
VC = 135 M
K = 68
-1.8885%
1.2 BASE DITCH -1.42%
SP. DITCH -1.46%
+0.0946%
1350mm
146+90.000 RT
79.090
147+00.000 LT
77.700
147+90.000 RT
77.880
L2
SITE C-13 LT SIDE
-Y1-
BRIDGE
PI = 151+20.000
EL = 79.750 M
VC = 100 M
K = 187
148+90.000 LT
177.400
SP. DITCH -0.90%
SP. DITCH +0.25%
SP. DITCH -0.34%
SP. DITCH -0.30%
150+80.000 MED
78.630
750mm
SP. DITCH 0.71%
SP. DITCH +0.10%
149+00.000 LT
77.300
149+80.000 MED
78.870
149+40.000 MED
78.580
150+10.000 MED
78.860
150+35.000 MED
78.770
1050mm
150+60.000 RT
77.200
L2
SITE C-12 RT SIDE
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.-
DRAINAGE AREA = 2.01 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 0.68 CMS
DESIGN HW ELEVATION = 78.77 M
100 YEAR DISCHARGE = 0.77 CMS
100 YEAR HW ELEVATION = 79.04 M
OVERTOPPING FREQUENCY = 50+ YRS
OVERTOPPING DISCHARGE = 0.77 CMS
OVERTOPPING ELEVATION = 78.88 M
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

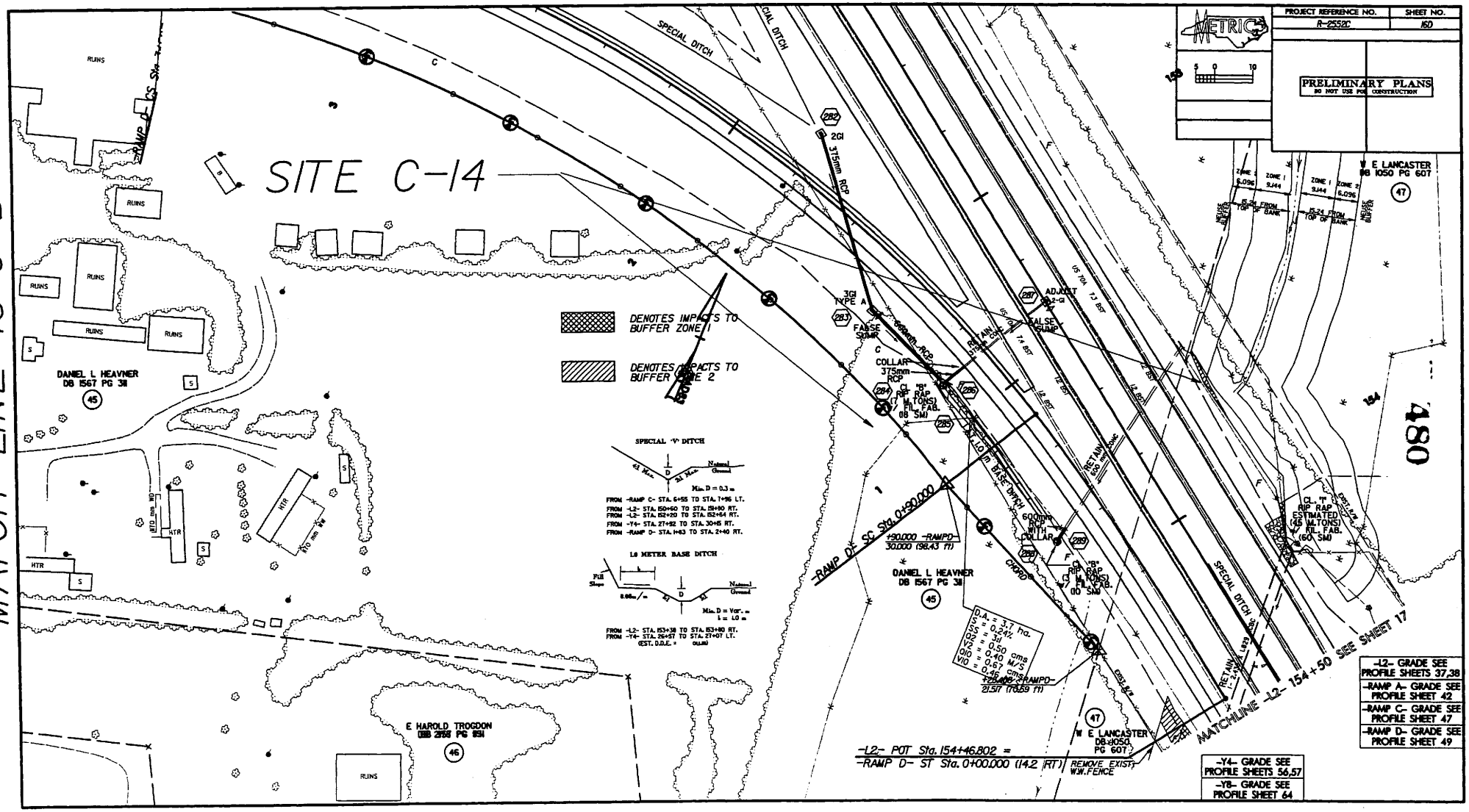

METRIC
5 0 10
CONST. REV.
R/W REV.
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
42
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PI = 15+58.000
EL = 89.681 m
VC = 19 m
K = 18
PI = 16+44.000
EL = 88.520 m
VC = 50 m
K = 70
END PROPOSED GRADE
STA. 17+03.000
ELEV. 87.395
-0.3000%
-1.3500%
-2.0600%
-FLYOVER-
SITE C-13
BEGIN PROPOSED GRADE
STA. 0+10.000
ELEV. 79.566
PI = 0+60.000
EL = 79.452 m
VC = 80 m
K = 99
PI = 1+35.000
EL = 78.702 m
VC = 70 m
K = 32
PI = 3+20.000
EL = 80.922 m
VC = 60 m
K = 318
-1.0000%
+1.2000%
+1.0116%
WLB
0.6 BASE DITCH +0.34%
0.6 BASE DITCH +1.50%
2+45.000 LT
77.400
2+60.000 RT
78.800
3+50.000 RT
79.000
-RAMP A-
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

MATCH LINE 16 A-D



MATCH LINE 16 A-D

MATCH LINE 16 C-D



REVISIONS

SITE C-14

DENOTES IMPACTS TO BUFFER ZONE 1

DENOTES IMPACTS TO BUFFER ZONE 2

METRIC

5 0 10

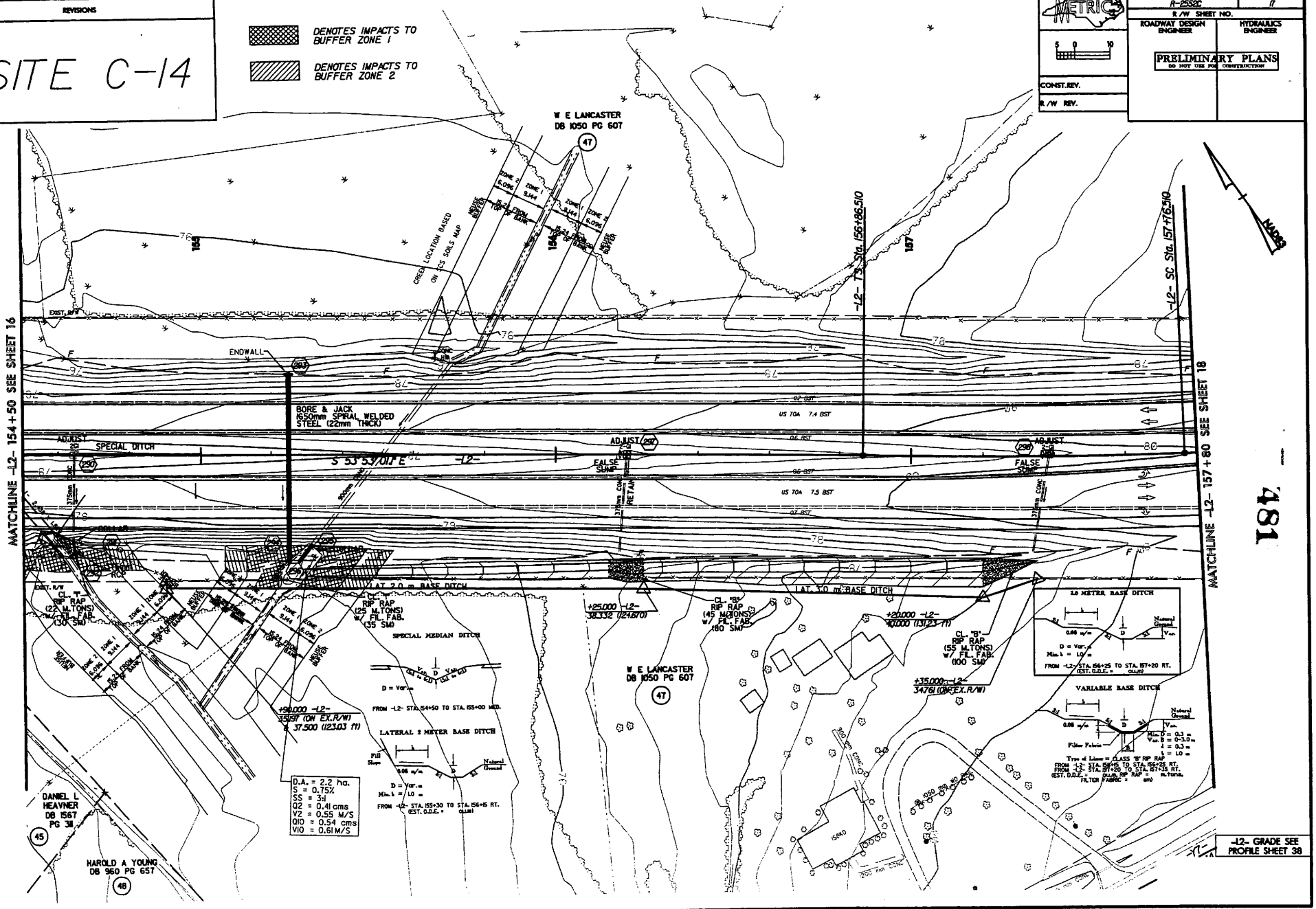
PROJECT REFERENCE NO.	SHEET NO.
R-2552C	17
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R /W REV.



REVISIONS

SITE C-14

DENOTES IMPACTS TO BUFFER ZONE 1

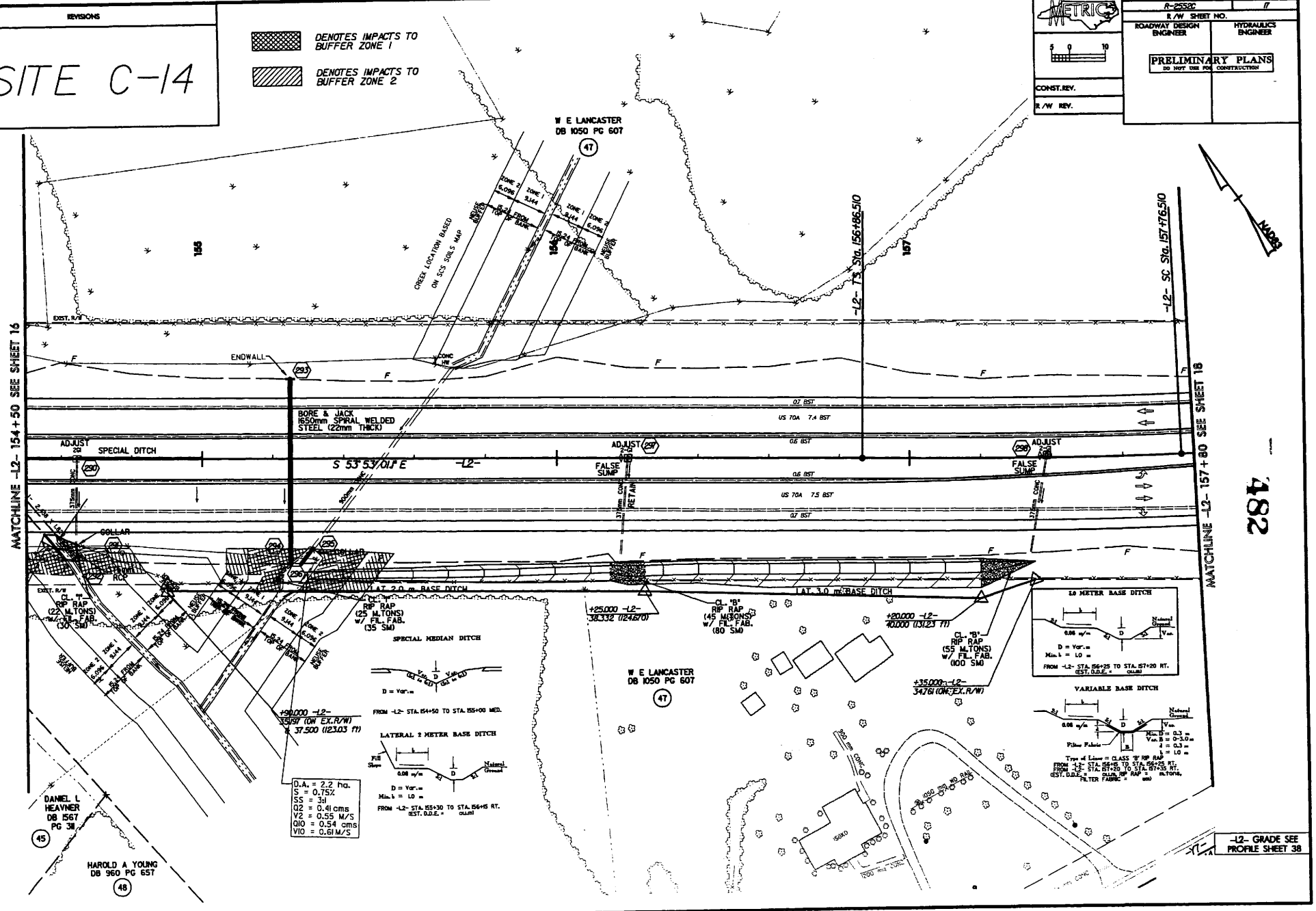
DENOTES IMPACTS TO BUFFER ZONE 2

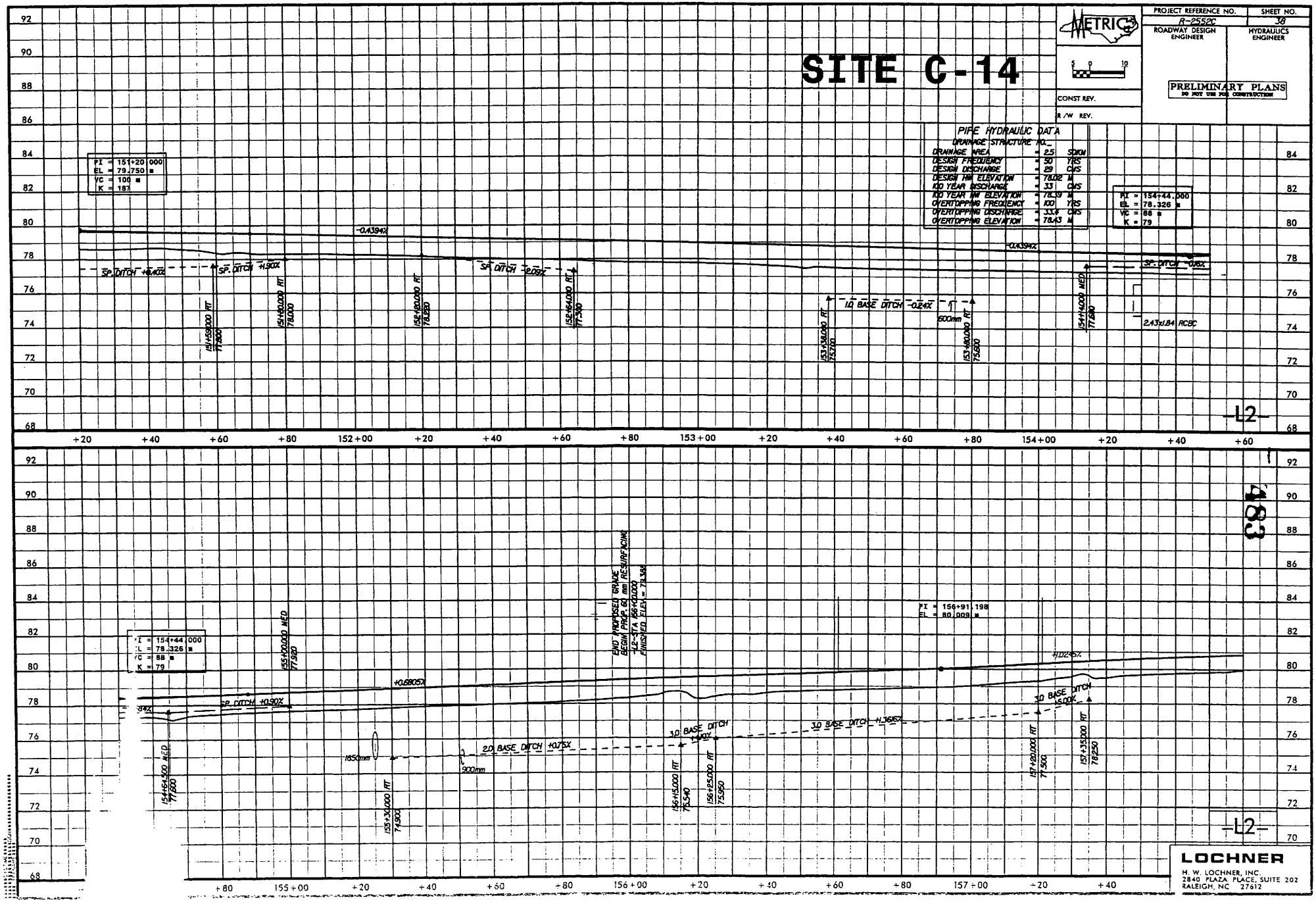
PROJECT REFERENCE NO.	SHEET NO.
R-2552C	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.




SITE C-14
METRIC
PROJECT REFERENCE NO. R-2552C
SHEET NO. 38
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST REV.
R/W REV.
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 2.5 SQKM
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 29 CMS
DESIGN HW ELEVATION = 78.02 M
100 YEAR DISCHARGE = 33 CMS
100 YEAR HW ELEVATION = 78.19 M
OVERTOPPING FREQUENCY = 100 YRS
OVERTOPPING DISCHARGE = 33.6 CMS
OVERTOPPING ELEVATION = 78.43 M
PI = 154+44.000
EL = 78.326 M
VC = 88 M
K = 79
PI = 154+20.000
EL = 79.750 M
VC = 100 M
K = 187
-0.43942
SP. DITCH +0.400%
SP. DITCH +1.900%
SP. DITCH -2.09%
-0.43942
SP. DITCH -0.86%
10 BASE DITCH -0.24%
600mm
2.43x1.84 RCBC
151+59.000 RT
77.200
151+80.000 RT
78.000
152+80.000 RT
78.280
152+94.000 RT
77.340
153+38.000 RT
75.700
153+60.000 RT
75.600
154+14.000 MED
77.880
-L2-
+0.6805%
SP. DITCH +0.90%
10 BASE DITCH +1.365%
10 BASE DITCH +1.40%
10 BASE DITCH +5.00%
2.0 BASE DITCH +0.75%
1850mm
900mm
END PROPOSED GRADE
BEGIN PROP. 60 mm RESURFACING
-L2- STA 156+40.000
FINISHED ELEV = 79.368
PI = 154+44.000
EL = 78.326 M
VC = 88 M
K = 79
PI = 156+91.198
EL = 80.009 M
+1.0245%
154+64.300 MED
77.800
155+30.000 RT
74.900
156+15.000 RT
75.540
156+25.000 RT
75.960
157+20.000 RT
77.500
157+35.000 RT
78.250
-L2-
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RALEIGH, NC 27612

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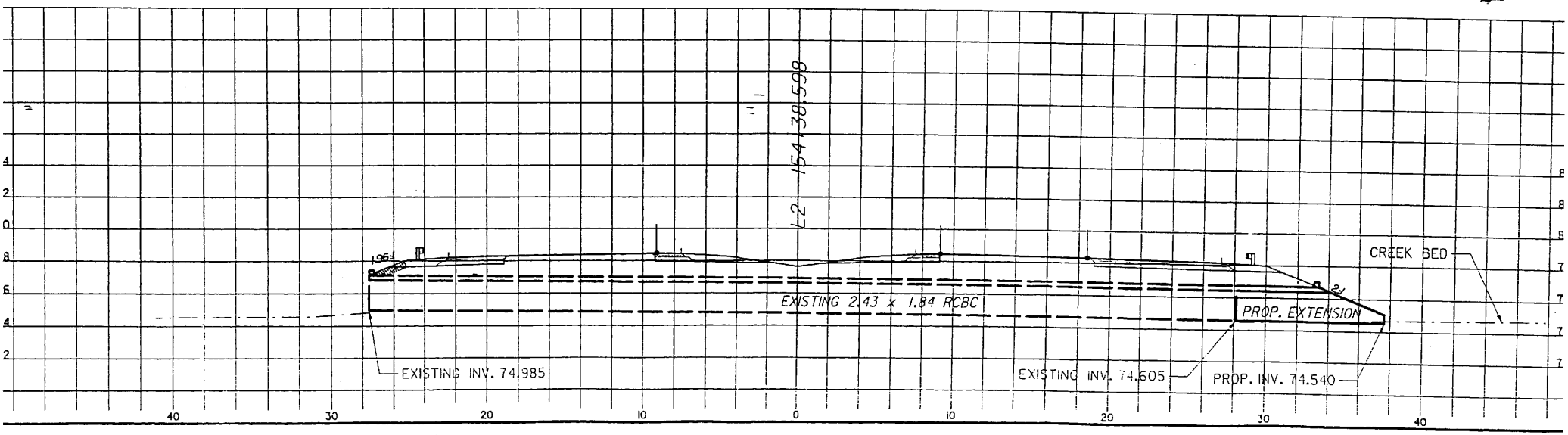
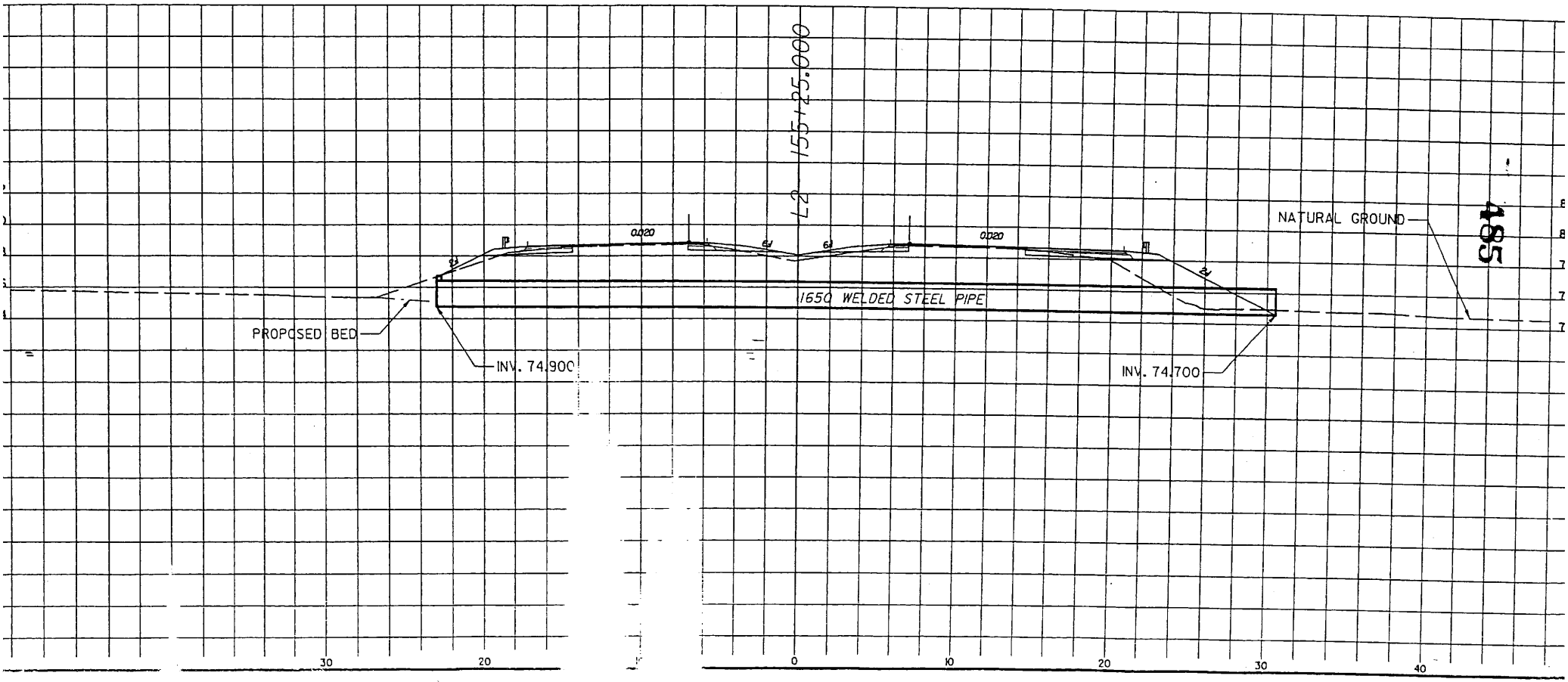
SITE C-14

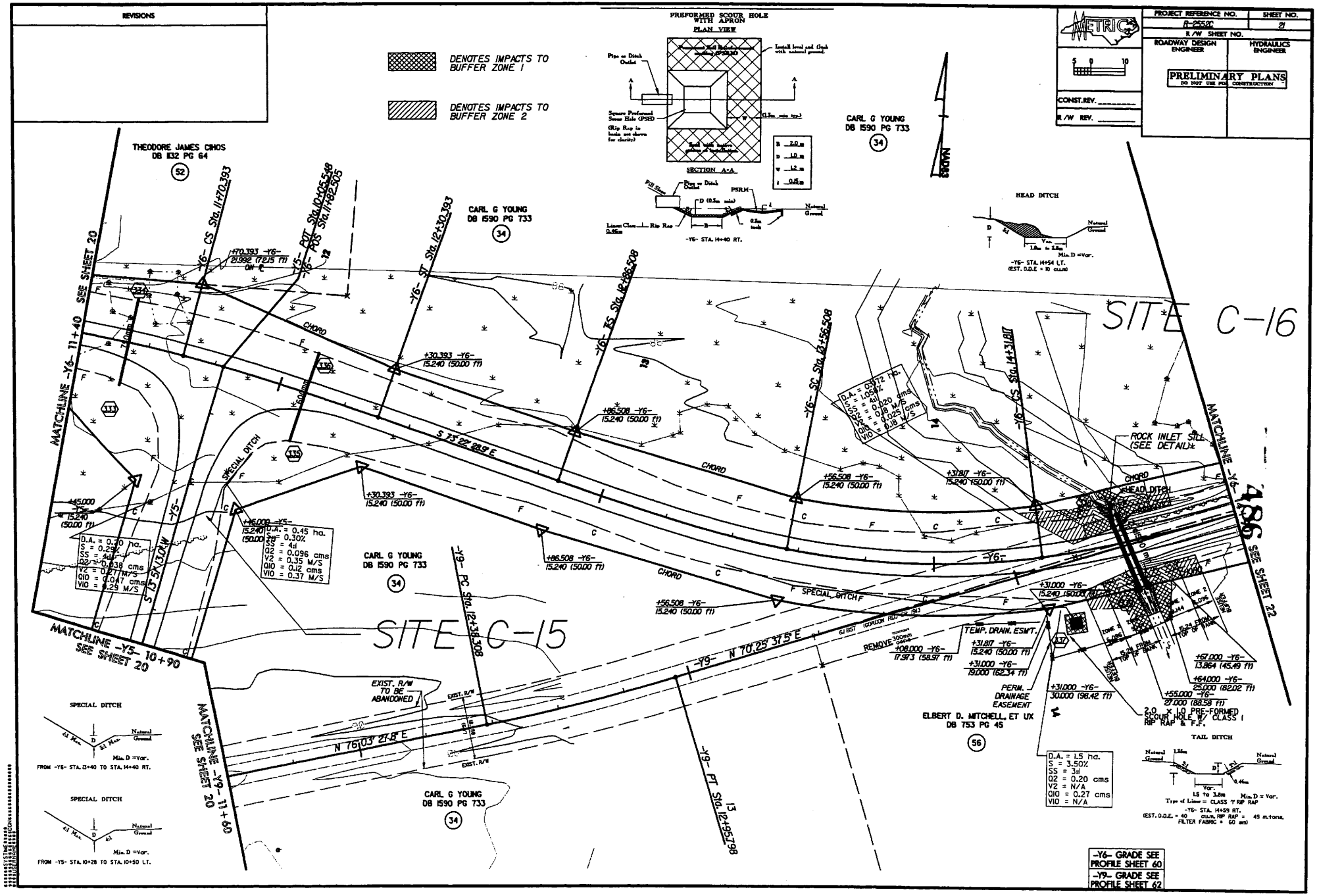
PROFILE OF 2.43 x 1.84 RCBC
-L2- STA. 154+38.598
PLAN SHEETS 16 & 17

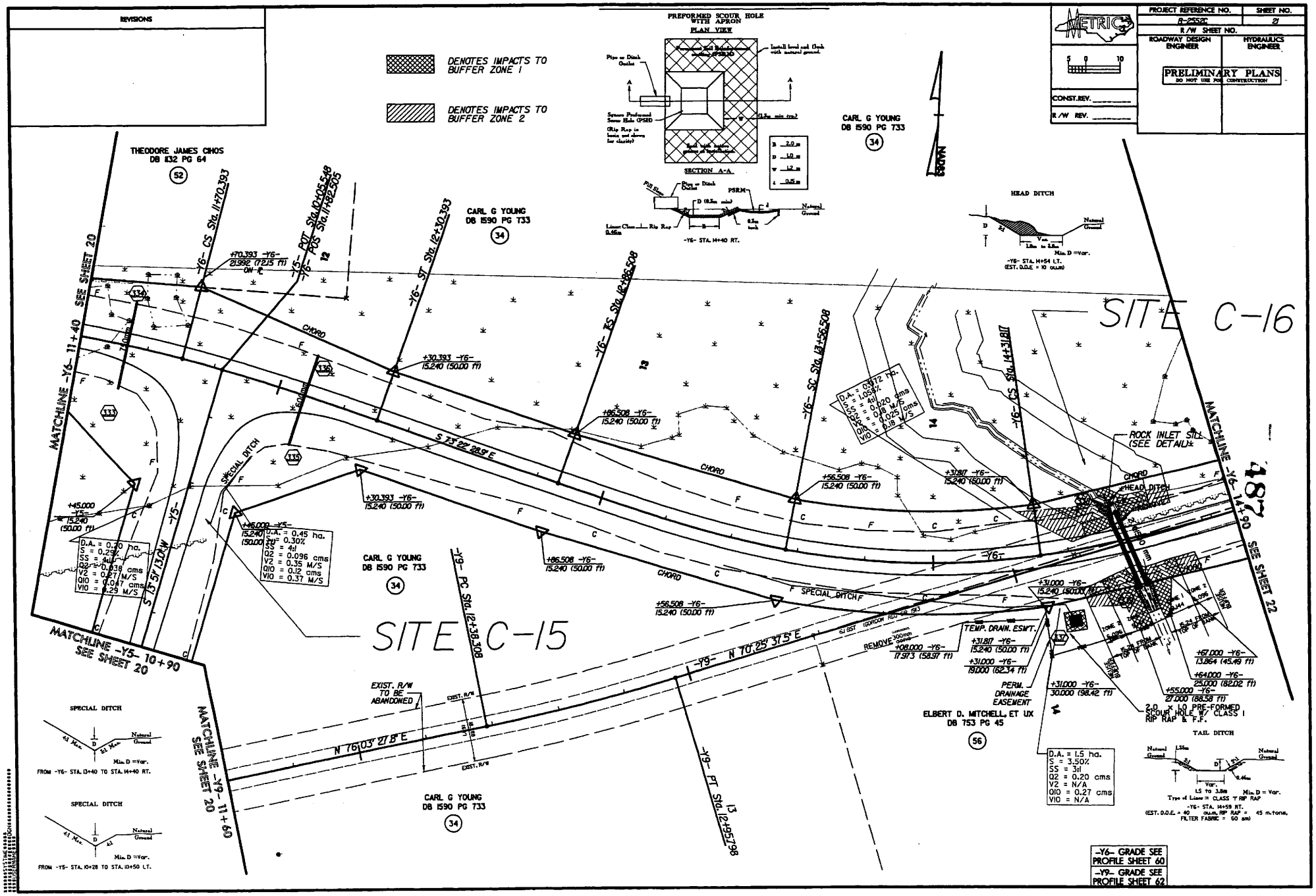


SITE C-14

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




REVISIONS
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
21
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
THEODORE JAMES CIHOS
DB 1032 PG 64
CARL G YOUNG
DB 1590 PG 733
ELBERT D. MITCHELL, ET UX
DB 753 PG 45
HEAD DITCH
SPECIAL DITCH
TAIL DITCH
ROCK INLET SIL (SEE DETAIL)
TEMP. DRAIN. ESMT.
PERM. DRAINAGE EASEMENT
EXIST. R/W TO BE ABANDONED
REMOVE
SITE C-15
SITE C-16
MATCHLINE -Y6- 11+40 SEE SHEET 20
MATCHLINE -Y5- 10+90 SEE SHEET 20
MATCHLINE -Y9- 11+60 SEE SHEET 20
MATCHLINE -Y6- 14+86 SEE SHEET 22
-Y6- GRADE SEE PROFILE SHEET 60
-Y9- GRADE SEE PROFILE SHEET 62


REVISIONS
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
-Y6- STA. 14+40 RT.
METRIC
PROJECT REFERENCE NO. R-2552C
SHEET NO. 21
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
THEODORE JAMES CIMOS DB 1132 PG 64
CARL G YOUNG DB 1590 PG 733
ELBERT D. MITCHELL, ET UX DB 753 PG 45
-Y6- CS Sta. 11+70.393
-Y6- POT Sta. 12+05.548
-Y6- POS Sta. 11+82.505
-Y6- ST Sta. 12+30.393
-Y6- PS Sta. 12+86.508
-Y6- SC Sta. 13+56.508
-Y6- CS Sta. 14+31.807
-Y9- PC Sta. 12+38.308
-Y9- PT Sta. 12+95.798
MATCHLINE -Y6- 11+40 SEE SHEET 20
MATCHLINE -Y5- 10+90 SEE SHEET 20
MATCHLINE -Y9- 11+60 SEE SHEET 20
MATCHLINE -Y6- 14+90 SEE SHEET 22
SITE C-15
SITE C-16
HEAD DITCH
SPECIAL DITCH
ROCK INLET SIL (SEE DETAIL)
TEMP. DRAIN. ESMT.
PERM. DRAINAGE EASEMENT
EXIST. R/W TO BE ABANDONED
REMOVE 300mm CMP
TAIL DITCH
2.0 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
-Y6- GRADE SEE PROFILE SHEET 60
-Y9- GRADE SEE PROFILE SHEET 62
FROM -Y6- STA. 10+40 TO STA. 14+40 RT.
FROM -Y5- STA. 10+28 TO STA. 10+50 LT.
Min. D =Var.
Type of Liner = CLASS 'I' RIP RAP
FILTER FABRIC = 60 sm
N 76°03' 27.8" E
S 73° 22' 28.9" E
S 13° 51' 13.0" W
N 70° 25' 37.5" E
CHORD
D.A. = 0.20 ha.
S = 0.29%
SS = 4H
Q2 = 0.038 cms
V2 = 0.27 M/S
Q10 = 0.047 cms
V10 = 0.29 M/S
D.A. = 0.45 ha.
S = 0.30%
SS = 4H
Q2 = 0.096 cms
V2 = 0.35 M/S
Q10 = 0.12 cms
V10 = 0.37 M/S
D.A. = 0.72 ha.
S = 1.05%
SS = 4H
Q2 = 0.20 cms
V2 = 0.48 M/S
Q10 = 0.25 cms
V10 = 0.78 M/S
D.A. = 1.5 ha.
S = 3.50%
SS = 3H
Q2 = 0.20 cms
V2 = N/A
Q10 = 0.27 cms
V10 = N/A
487

PROJECT REFERENCE NO.	SHEET NO.
R-2552C	60
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

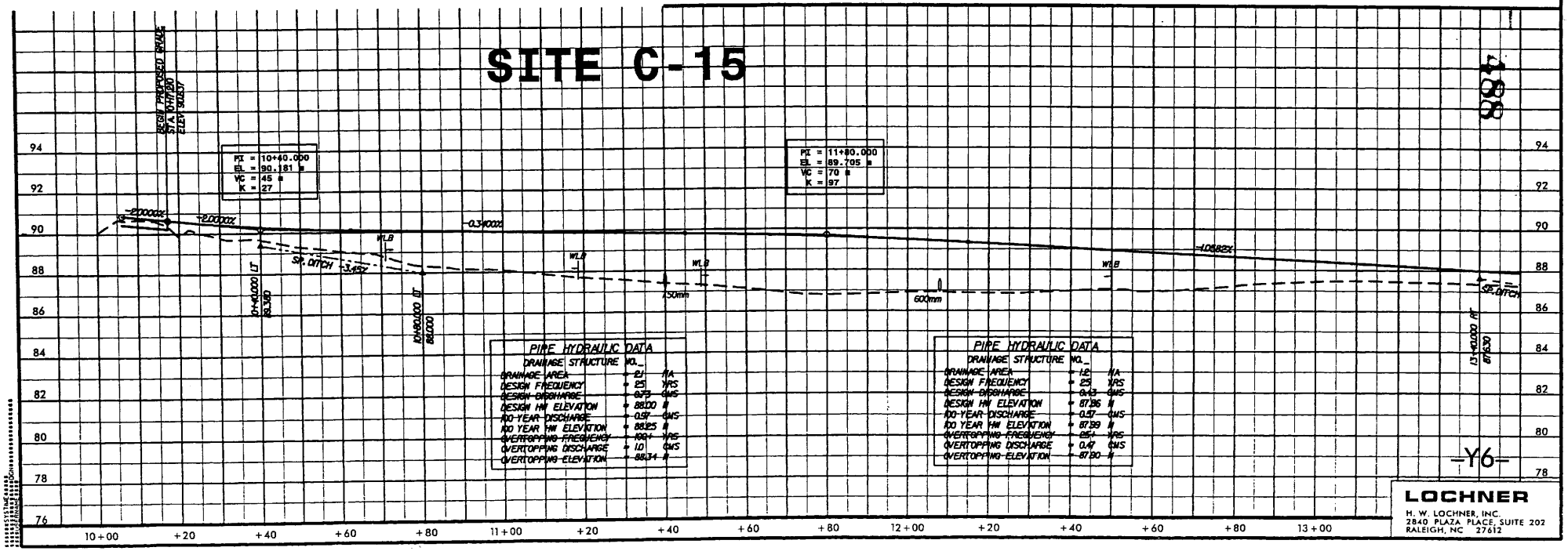
METRIC

CONST.REV.

R /W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE C-15



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 21	HA
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.73	CMS
DESIGN HW ELEVATION	= 88.00	M
100 YEAR DISCHARGE	= 0.97	CMS
100 YEAR HW ELEVATION	= 88.25	M
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 1.0	CMS
OVERTOPPING ELEVATION	= 88.34	M

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 1.2	HA
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.43	CMS
DESIGN HW ELEVATION	= 87.86	M
100-YEAR DISCHARGE	= 0.57	CMS
100 YEAR HW ELEVATION	= 87.99	M
OVERTOPPING FREQUENCY	= 65+	YRS
OVERTOPPING DISCHARGE	= 0.47	CMS
OVERTOPPING ELEVATION	= 87.90	M

-Y6-

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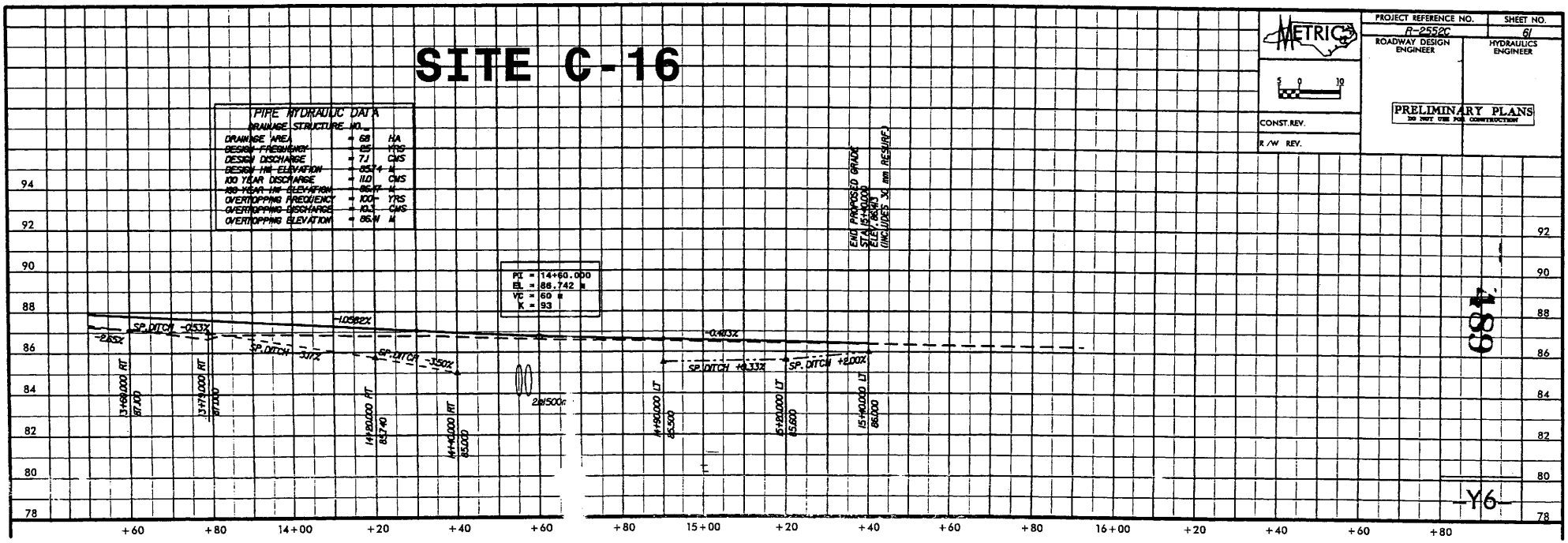
SITE C-16



METRIC

5 0 10

CONST. REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2552C	61
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
NOT FOR USE FOR CONSTRUCTION

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-Y6-

2.0 0 2.0 4	METRIC	PROJECT REFERENCE NO. R-2552C	SHEET NO PP-7

SITE C-16

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