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.

Phyllis Harris — 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

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 _____

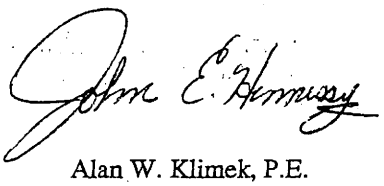
Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands

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



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 <u>not</u> 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.

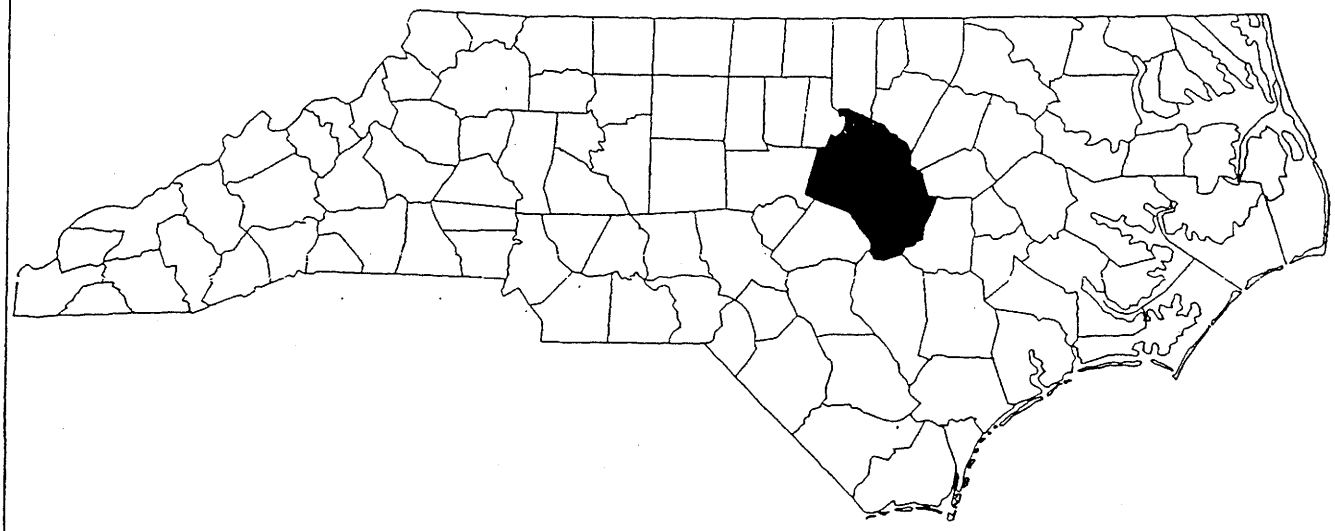
Monitoring Level 3 will include only item 1.

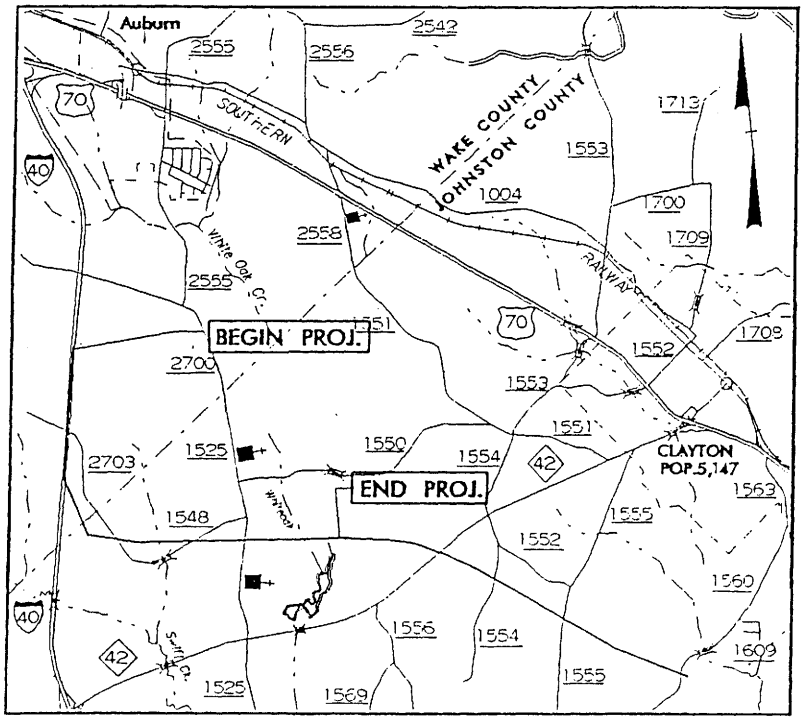
Read 11/1/01 SA

COPY

I 312

NORTH CAROLINA





VICINITY MAP

NCDOT

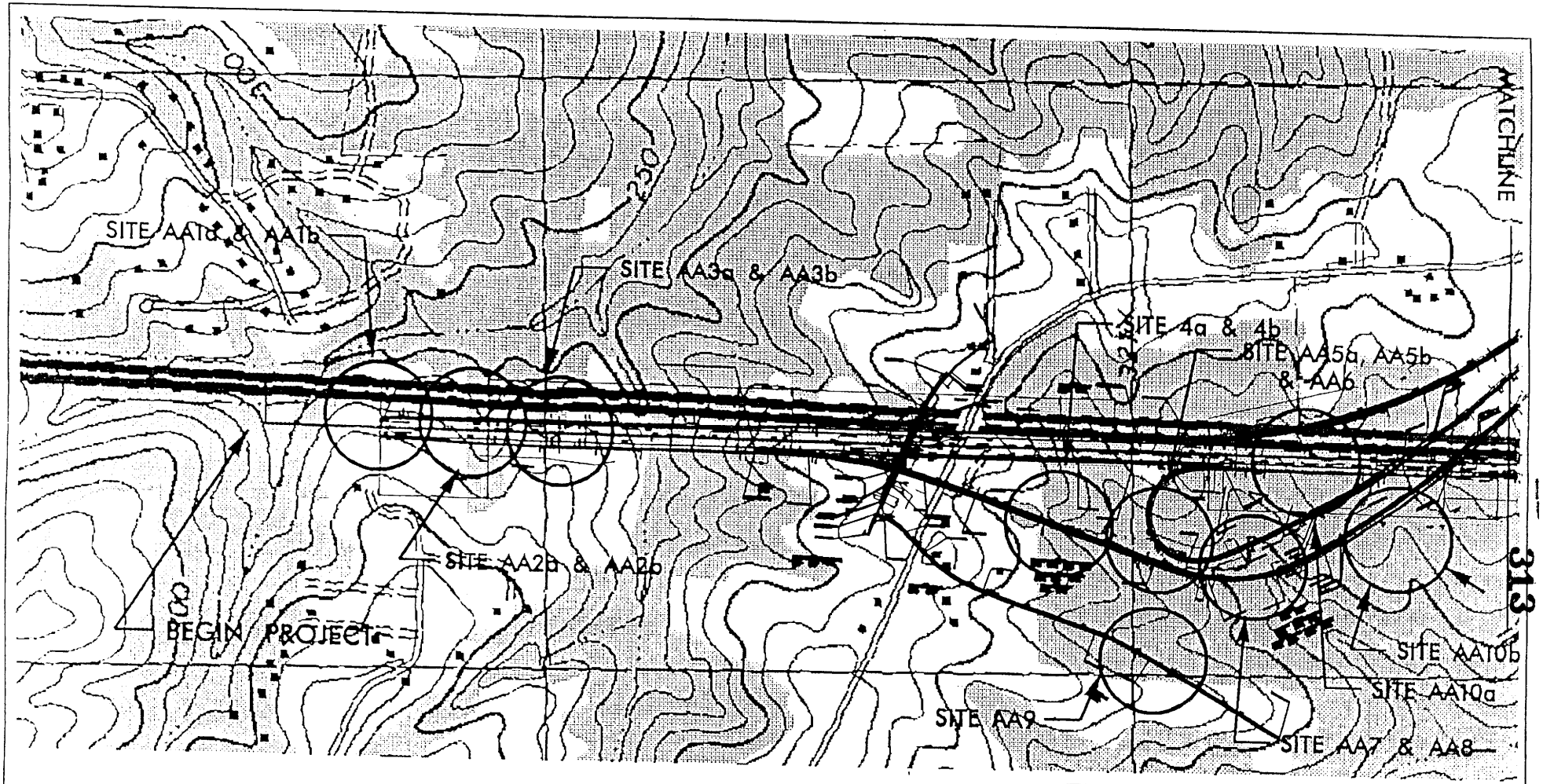
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

SHEET 1 OF 50 10/01/04



SITE MAP

NCDOT

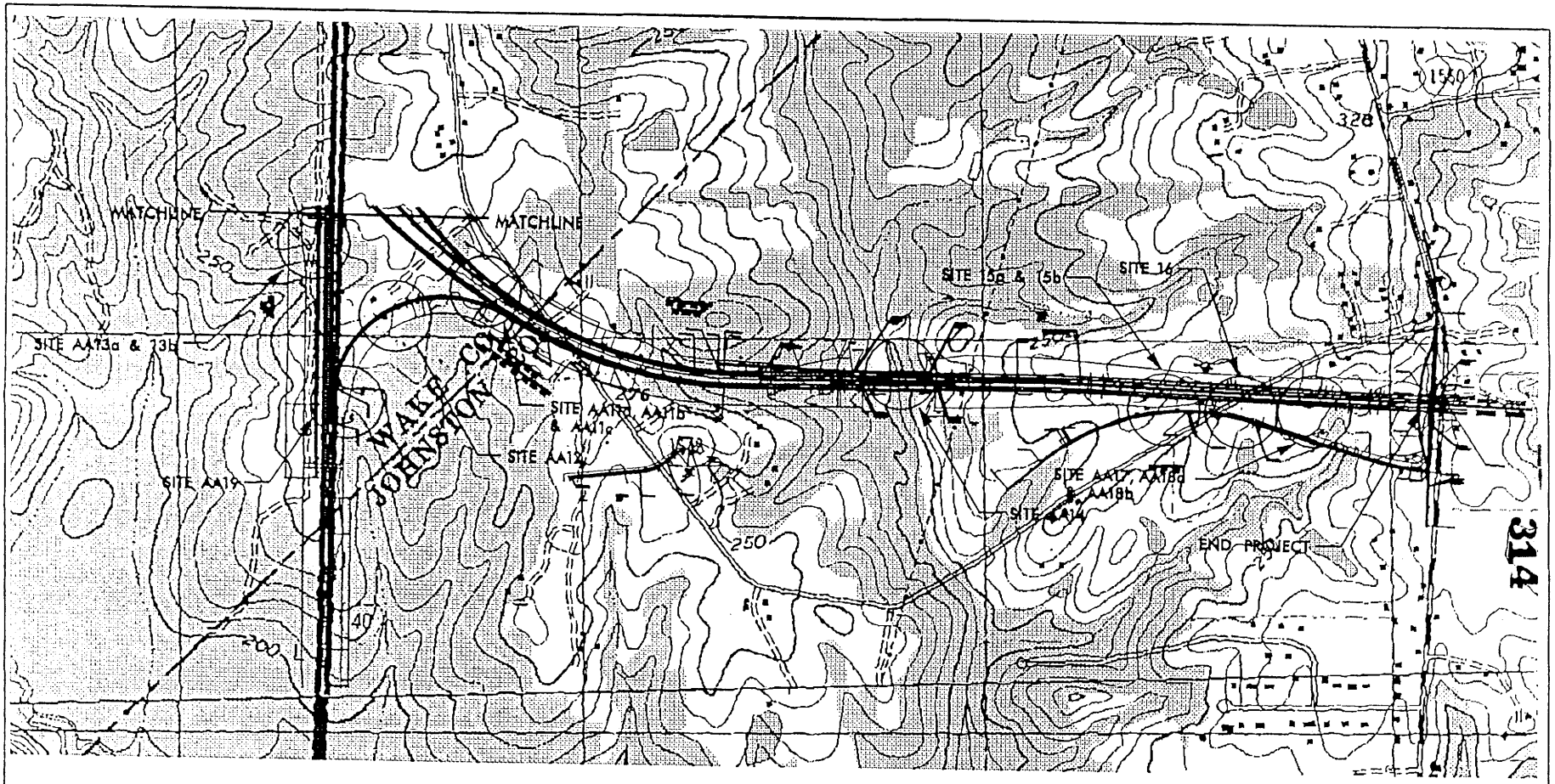
DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

PROJECT: 34459.1.1 (R-252AA)

US 70 CLAYTON BYPASS

SHEET 2 OF 50 10/01/04



SITE MAP

NCDOT

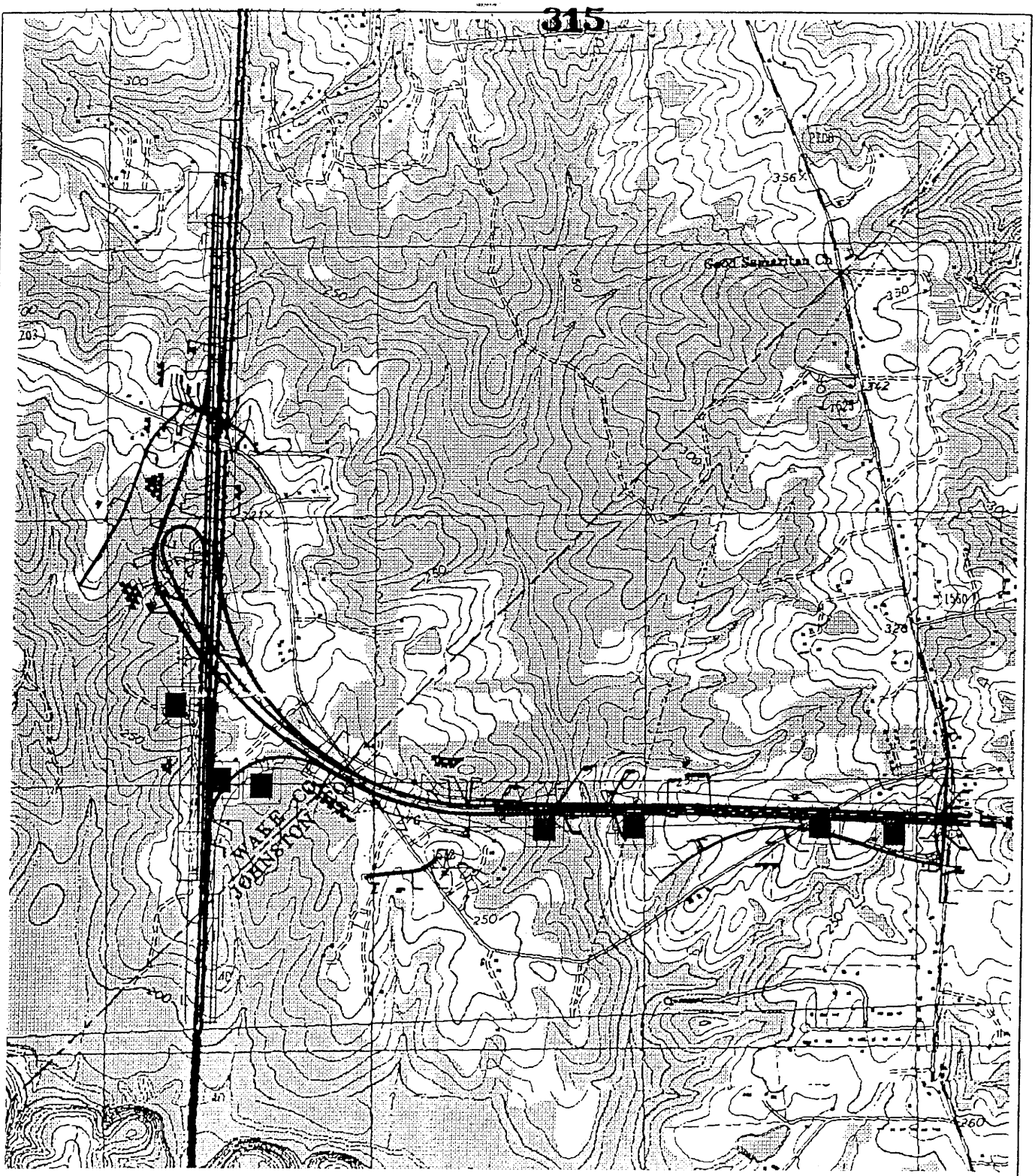
DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

PROJECT: 34459.1.1 (R-252AA)

US 70 CLAYTON BYPASS

SHEET 5 OF 50 10 / 01 / 04



HAZARDOUS SPILL BASIN

HAZARDOUS SPILL BASIN
LOCATION SITE MAP

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

SHEET 1 OF 50 10/01/04

WETLAND PERMIT IMPACT SUMMARY

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

~~X~~NOTE: SURFACE WATER (POND) SITE AA10a = 0.06 ac

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

SHEET 5 OF 50 01/06/05

WETLAND PERMIT IMPACT SUMMARY

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

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

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

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

SHEET 6 OF 50 01/06/05

PROPERTY OWNERS

NAMES AND ADDRESSES

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

NCDOT

DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552 AA)

US 70 CLAYTON BYPASS

PROPERTY OWNERS

NAMES AND ADDRESSES

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

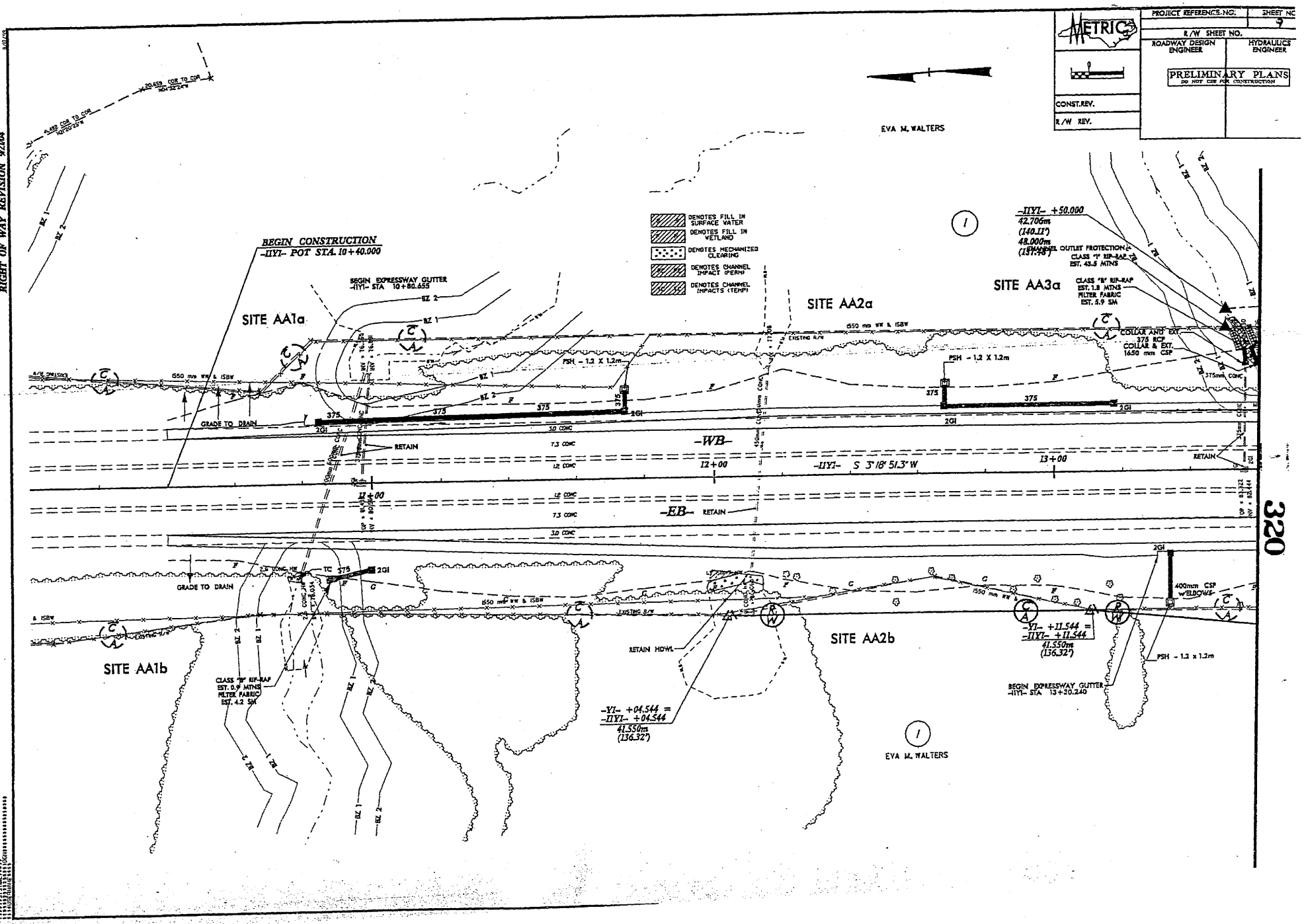
NCDOT

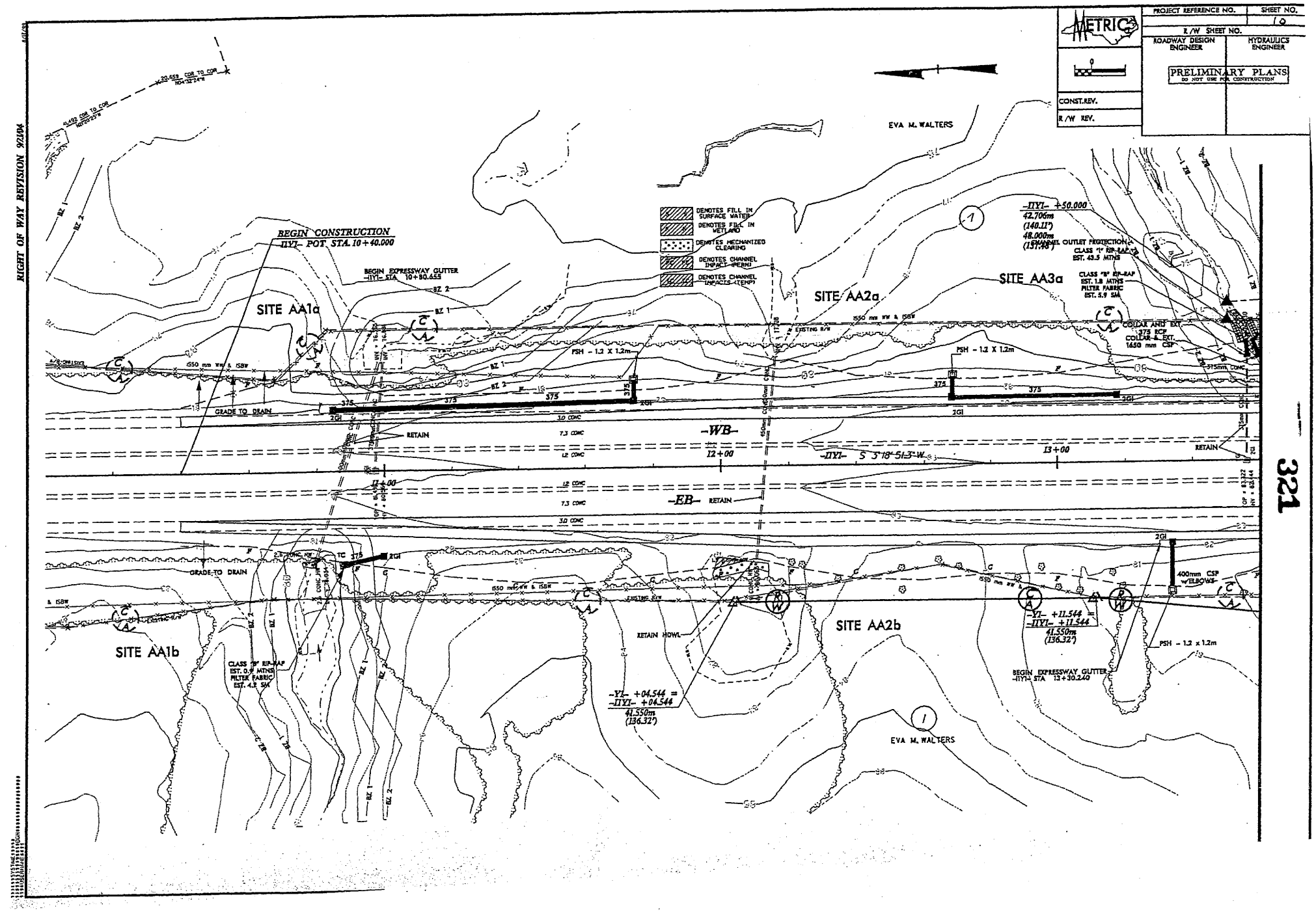
DIVISION OF HIGHWAYS

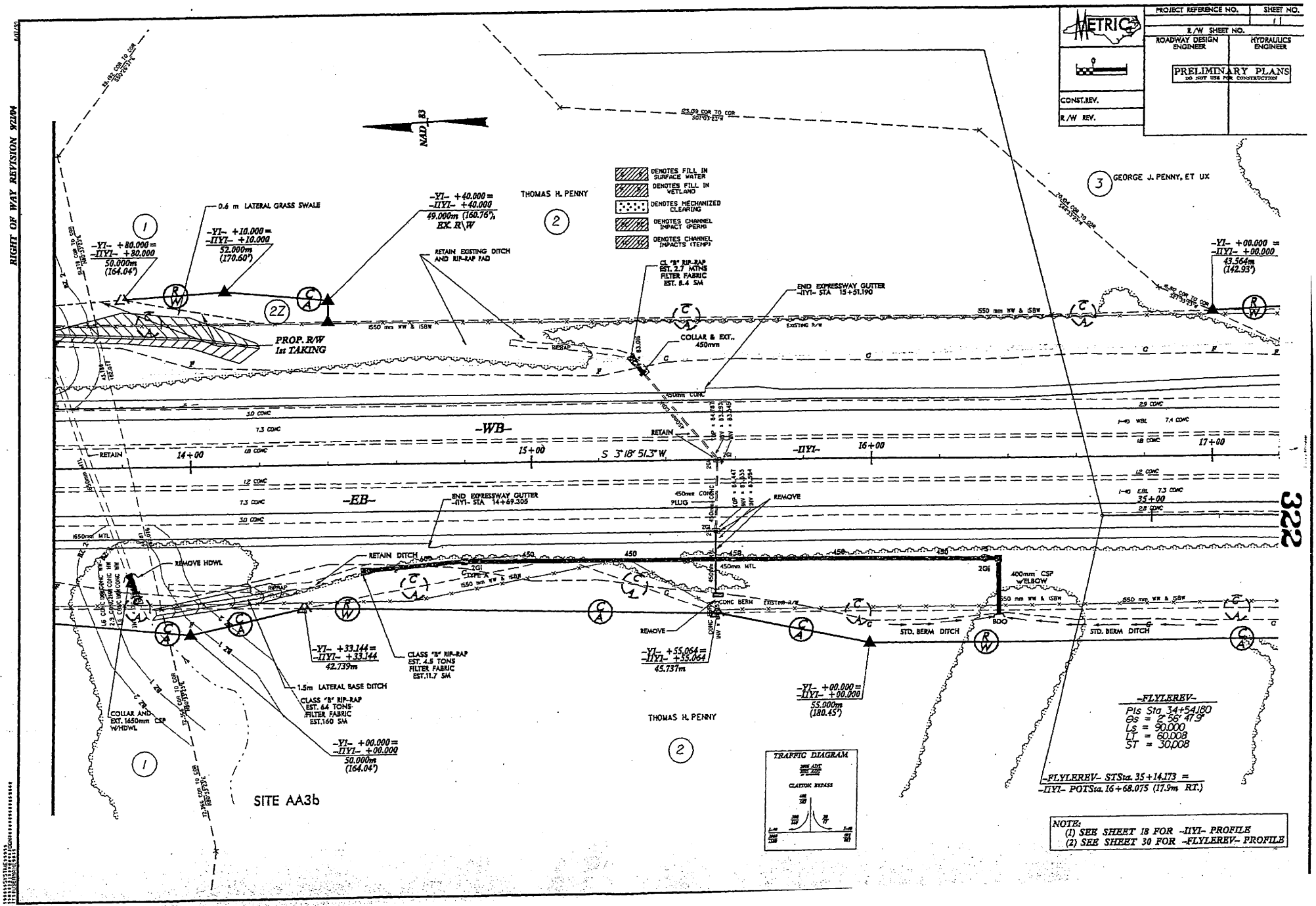
WAKE / JOHNSTON COUNTY

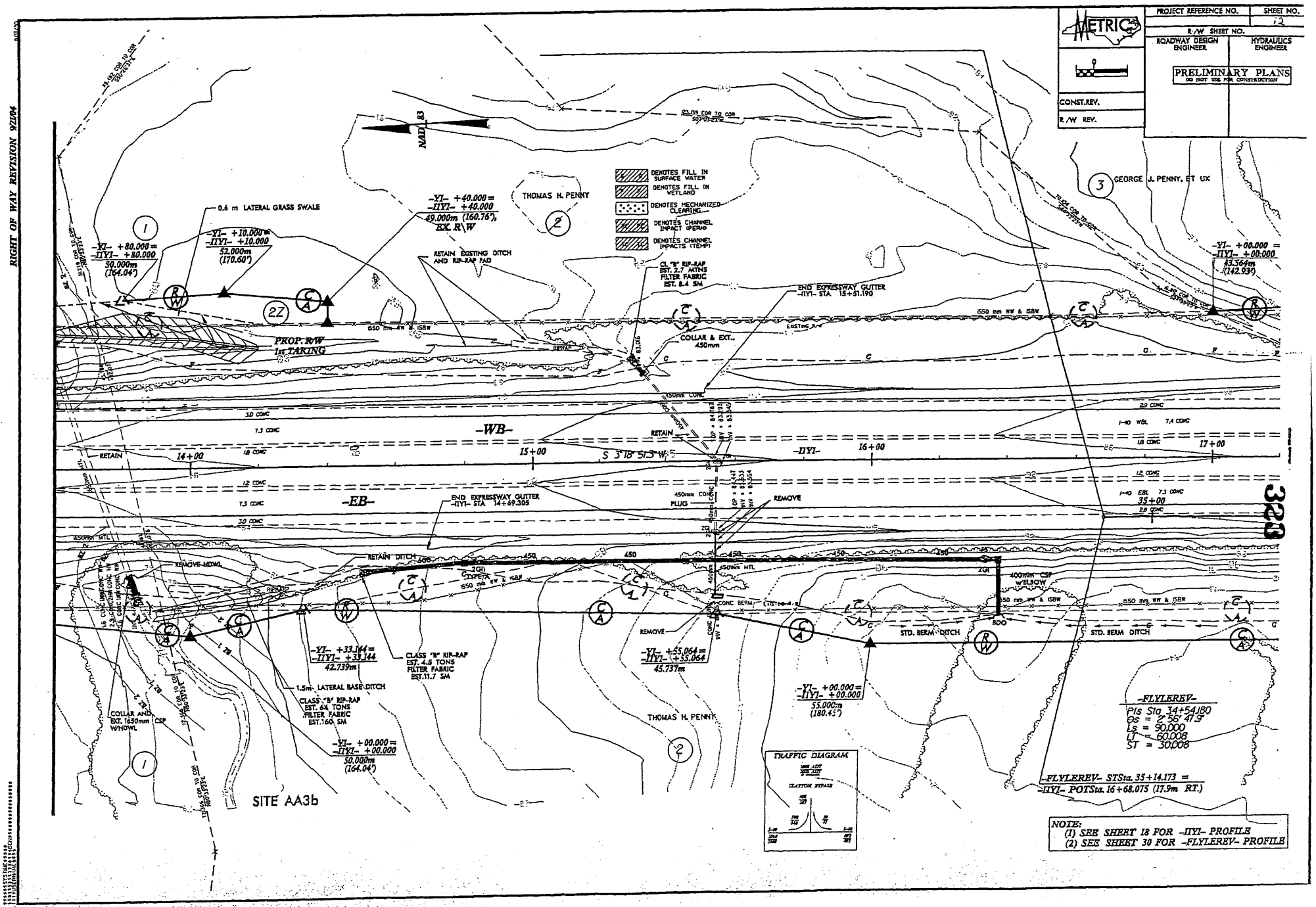
PROJECT: WBS 34459.1.1 (R-2552 AA)

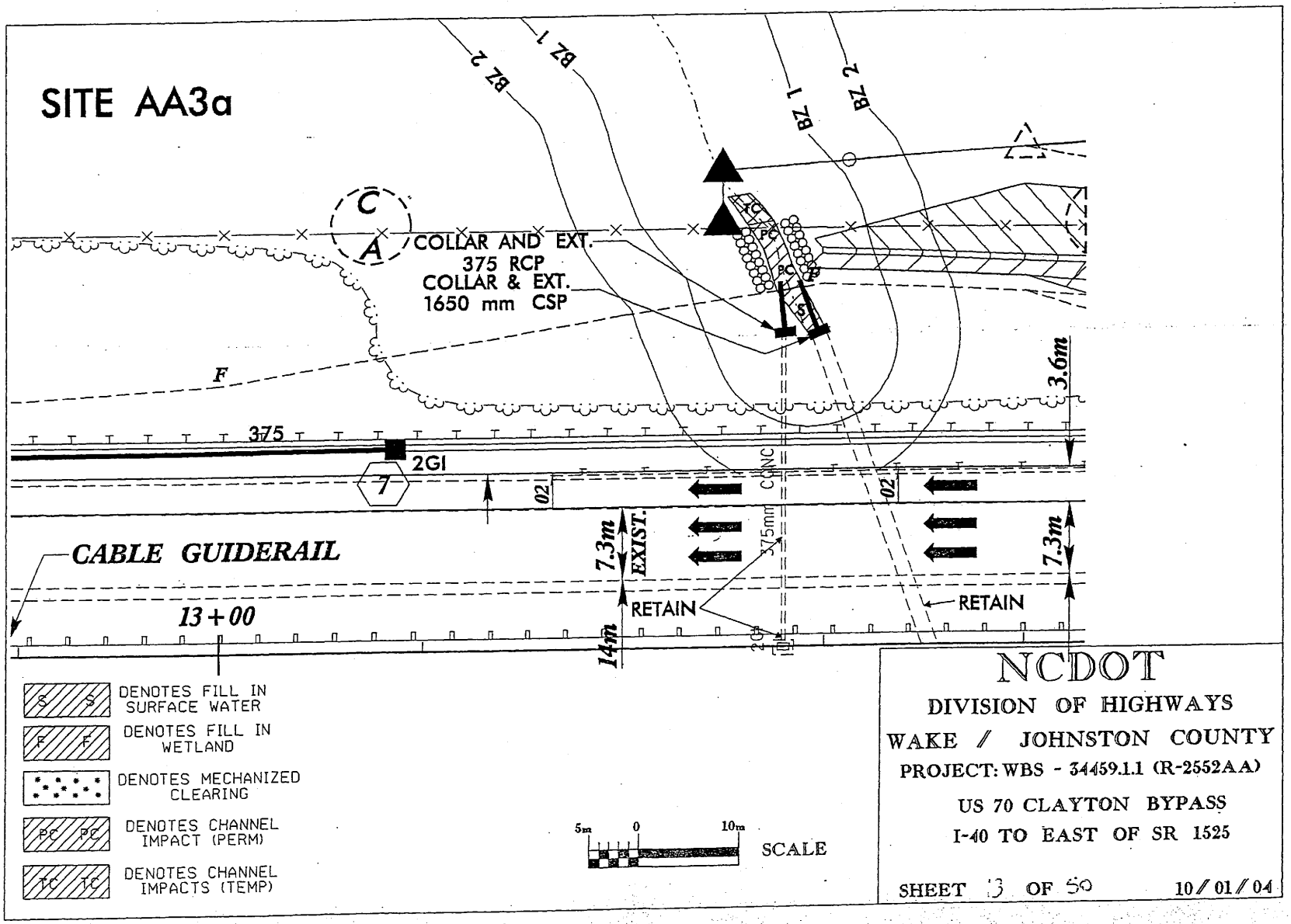
US 70 CLAYTON BYPASS


METRIC
CONST.REV.
R/W REV.
PROJECT REFERENCE NO.
SHEET NO
9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
RIGHT OF WAY REVISION 92/04
EVA M. WALTERS
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES CHANNEL IMPACT (PERM)
DENOTES CHANNEL IMPACTS (TEMP)
BEGIN CONSTRUCTION
-11Y1- POT STA. 10+40.000
BEGIN EXPRESSWAY GUTTER
-11Y1- STA 10+80.655
SITE AA1a
SITE AA1b
SITE AA2a
SITE AA2b
SITE AA3a
-11Y1- +50.000
42.706m
(140.11')
48.000m
(157.48')
CHANNEL OUTLET PROTECTION
CLASS "I" RIP-RAP
EST. 43.5 MTNS
CLASS "B" RIP-RAP
EST. 1.8 MTNS
FILTER FABRIC
EST. 5.9 SM
COLLAR AND EXT.
375 RCP
COLLAR & EXT.
1650 mm CSP
375mm CONC
650 mm WW & ISBW
1550 mm WW & ISBW
EXISTING R/W
PSH - 1.2 X 1.2m
GRADE TO DRAIN
RETAIN
-WB-
-EB-
12+00
13+00
-11Y1- S 3°18' 51.3" W
RETAIN HDWL
-VI- +04.544 =
-11Y1- +04.544
41.550m
(136.32')
-VI- +11.544 =
-11Y1- +11.544
41.550m
(136.32')
400mm CSP
W/ELBOWS
BEGIN EXPRESSWAY GUTTER
-11Y1- STA 13+30.240
CLASS "B" RIP-RAP
EST. 4.2 SM
320


METRIC
PROJECT REFERENCE NO.
SHEET NO.
10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
RIGHT OF WAY REVISION 92/04
321
EVA M. WALTERS
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES CHANNEL IMPACT (PERM)
DENOTES CHANNEL IMPACTS (TEMP)
BEGIN CONSTRUCTION
-IIYI- POT STA. 10+40.000
BEGIN EXPRESSWAY GUTTER
-IIYI- STA 10+80.655
SITE AA1a
SITE AA1b
SITE AA2a
SITE AA2b
SITE AA3a
-IIYI- +50.000
42.706m
(140.11')
48.000m
(157.48')
CHANNEL OUTLET PROTECTION
CLASS "I" RIP-RAP
EST. 43.5 MTNS
CLASS "B" RIP-RAP
EST. 1.8 MTNS
FILTER FABRIC
EST. 5.9 SM
COLLAR AND EXT.
375 RCP
COLLAR & EXT.
1650 mm CSP
PSH - 1.2 X 1.2m
1550 mm WM & ISBW
GRADE TO DRAIN
RETAIN
-WB-
-EB-
12+00
13+00
-IIYI- S 3°18'51.3"W
-YL- +11.544 =
-IIYI- +11.544
41.550m
(136.32')
-YL- +04.544 =
-IIYI- +04.544
41.550m
(136.32')
400mm CSP
w/ELBOWS
RETAIN HDWL
CLASS "B" RIP-RAP
EST. 0.9 MTNS
FILTER FABRIC
EST. 4.2 SM
BEGIN EXPRESSWAY GUTTER
-IIYI- STA 13+30.240


RIGHT OF WAY REVISION 9/2/04
METRIC
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
NAD 83
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES CHANNEL IMPACT (PERM)
DENOTES CHANNEL IMPACTS (TEMP)
THOMAS H. PENNY
GEORGE J. PENNY, ET UX
0.6 m LATERAL GRASS SWALE
-Y1- +80.000 = -I1Y1- +80.000
50.000m (164.04')
-Y1- +10.000 = -I1Y1- +10.000
52.000m (170.60')
-Y1- +40.000 = -I1Y1- +40.000
49.000m (160.76'), EX R\W
RETAIN EXISTING DITCH AND RIP-RAP PAD
CL "B" RIP-RAP EST. 2.7 MTNS FILTER FABRIC EST. 8.4 SM
END EXPRESSWAY GUTTER -I1Y1- STA 15+51.190
-Y1- +00.000 = -I1Y1- +00.000
43.564m (142.93')
PROP. R/W 1st TAKING
COLLAR & EXT., 450mm
-WB-
-EB-
-I1Y1-
RETAIN
REMOVE HDWL
RETAIN DITCH
END EXPRESSWAY GUTTER -I1Y1- STA 14+69.305
PLUG
REMOVE
450mm CONC
450mm MTL
400mm CSP w/ELBOW
CONC BERM
STD. BERM DITCH
-Y1- +33.144 = -I1Y1- +33.144
42.739m
CLASS "B" RIP-RAP EST. 4.5 TONS FILTER FABRIC EST.11.7 SM
1.5m LATERAL BASE DITCH
CLASS "B" RIP-RAP EST. 64 TONS FILTER FABRIC EST.160 SM
COLLAR AND EXT. 1650mm CSP w/HDWL
-Y1- +00.000 = -I1Y1- +00.000
50.000m (164.04')
-Y1- +55.064 = -I1Y1- +55.064
45.737m
-Y1- +00.000 = -I1Y1- +00.000
55.000m (180.45')
SITE AA3b
TRAFFIC DIAGRAM
CLAYTON BYPASS
-FLYLEREV-
PIs Sta 34+54.180
Θs = 2°56'47.9"
Ls = 90.000
LT = 60.008
ST = 30.008
-FLYLEREV- STSta. 35+14.173 =
-I1Y1- POTSta. 16+68.075 (17.9m RT.)
NOTE:
(1) SEE SHEET 18 FOR -I1Y1- PROFILE
(2) SEE SHEET 30 FOR -FLYLEREV- PROFILE
322


METRIC
PROJECT REFERENCE NO.
SHEET NO.
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
RIGHT OF WAY REVISION 9/2/04
NAD 83
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES CHANNEL IMPACT (PERM)
DENOTES CHANNEL IMPACTS (TEMP)
THOMAS H. PENNY
GEORGE J. PENNY, ET UX
0.6 m LATERAL GRASS SWALE
-YI- +10.000
-IIYI- +10.000
52.000m
(170.60')
-YI- +40.000 =
-IIYI- +40.000
49.000m (160.76')
EX. R\W
RETAIN EXISTING DITCH AND RIP-RAP PAD
CL "B" RIP-RAP EST. 2.7 MTNS FILTER FABRIC EST. 8.4 SM
END EXPRESSWAY GUTTER -IIYI- STA 15+51.190
-YI- +00.000 =
-IIYI- +00.000
43.564m
(142.93')
PROP. R/W 1st TAKING
COLLAR & EXT., 450mm
-WB-
-EB-
-IIYI-
14+00
15+00
16+00
17+00
35+00
S 3°18' 51.5" W
END EXPRESSWAY GUTTER -IIYI- STA 14+69.305
450mm CONC PLUG
REMOVE
RETAIN DITCH
REMOVE-HDWL
-YI- +33.144 =
-IIYI- +33.144
42.739m
CLASS "B" RIP-RAP EST. 4.5 TONS FILTER FABRIC EST.11.7 SM
1.5m- LATERAL BASE DITCH
CLASS "B" RIP-RAP EST. 6.4 TONS FILTER FABRIC EST.16.0 SM
COLLAR AND EXT. 1650mm CSP W/HDWL
-YI- +00.000 =
-IIYI- +00.000
50.000m
(164.04')
-YI- +55.064 =
-IIYI- +55.064
45.737m
-YI- +00.000 =
-IIYI- +00.000
55.000m
(180.45')
400mm CSP W/ELBOW
STD. BERM DITCH
CONC BERM
TRAFFIC DIAGRAM
-FLYLEREV-
PIs Sta 34+54.180
Δs = 2°56'47.9"
Ls = 90.000
LT = 60.008
ST = 30.008
-FLYLEREV- STSta. 35+14.173 =
-IIYI- POTSta. 16+68.075 (17.9m RT.)
SITE AA3b
NOTE:
(1) SEE SHEET 18 FOR -IIYI- PROFILE
(2) SEE SHEET 30 FOR -FLYLEREV- PROFILE
323



NCDOT

DIVISION OF HIGHWAYS

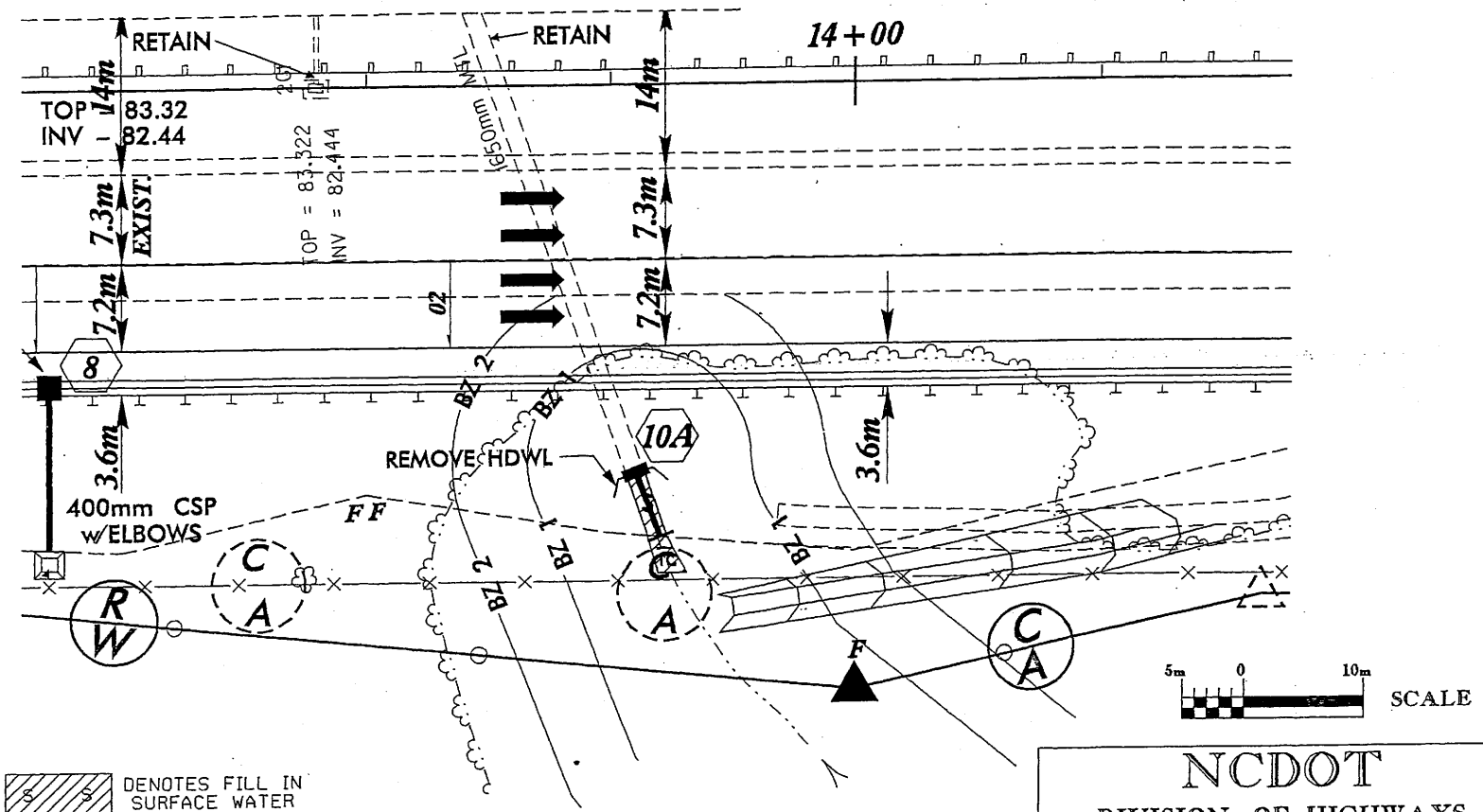
WAKE / JOHNSTON COUNTY

PROJECT: WBS - 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

I-40 TO EAST OF SR 1525

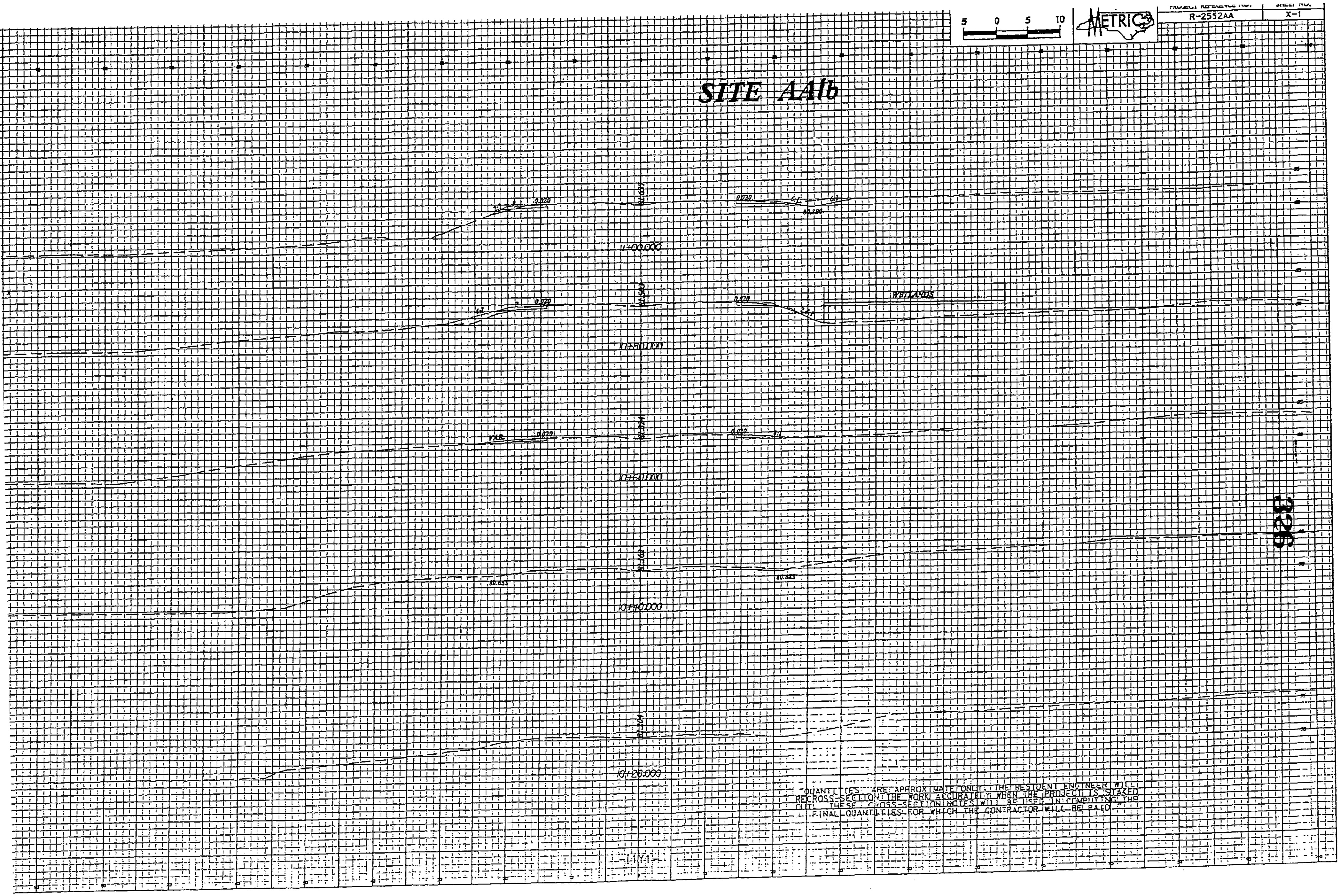
SHEET 13 OF 50 10/01/04

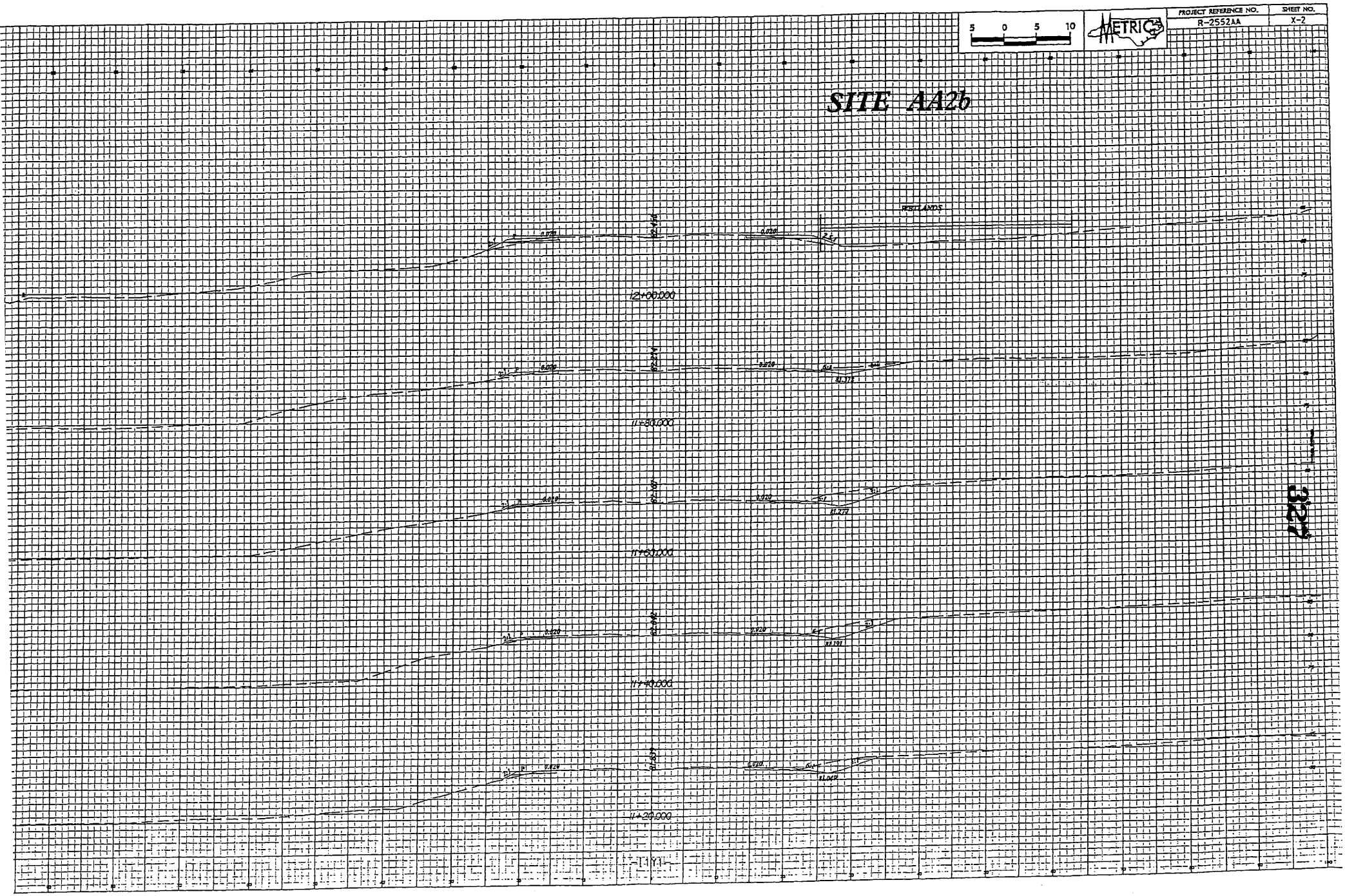


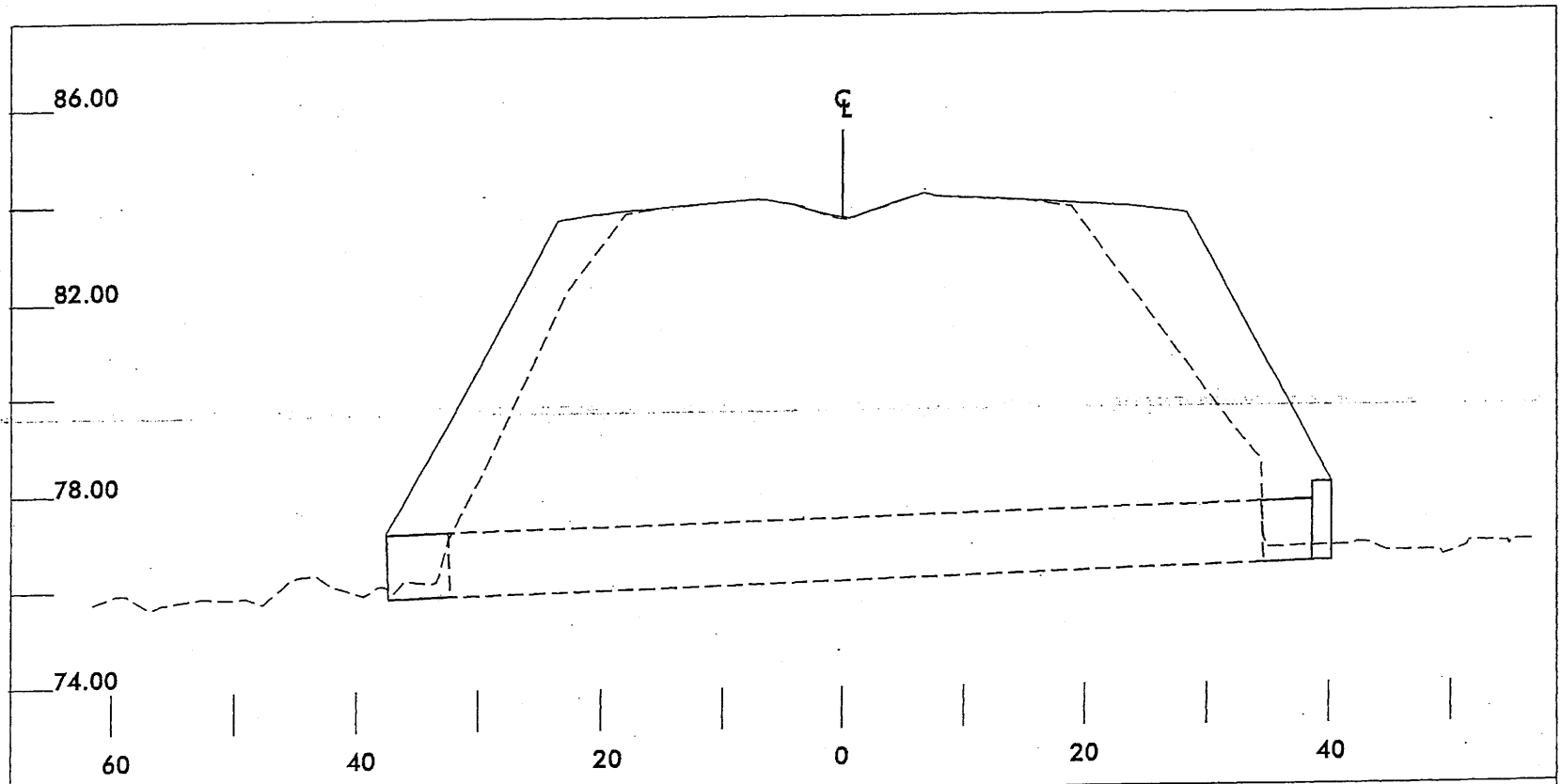
SITE AA3b

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

SHEET 14 OF 50 10/01/04


PROJECT REFERENCE NO.
R-2552AA
SHEET NO.
X-1
METRIC
5 0 5 10
SITE AAIb
11+00.000
10+80.000
10+60.000
10+40.000
10+20.000
WETLANDS
0.020
-L1Y1-
"QUANTITIES ARE APPROXIMATE ONLY. THE RESIDENT ENGINEER WILL RECROSS-SECTION THE WORK ACCURATELY WHEN THE PROJECT IS STAKED OUT. THESE CROSS-SECTION NOTES WILL BE USED IN COMPUTING THE FINAL QUANTITIES FOR WHICH THE CONTRACTOR WILL BE PAID."

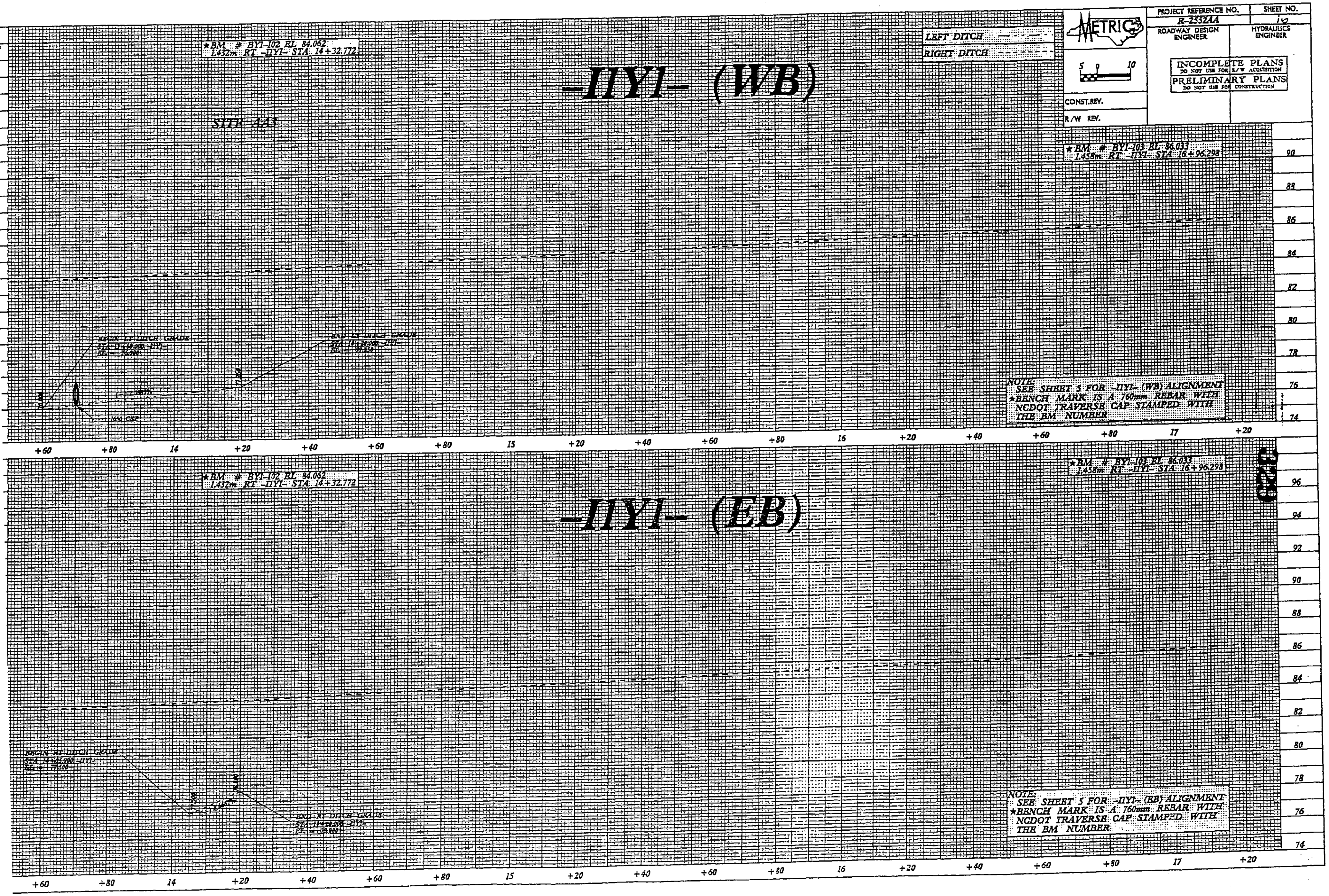

5 0 5 10
METRIC
PROJECT REFERENCE NO.
R-2552AA
SHEET NO.
X-2
SITE AA2b
WETLANDS
12+00.000
11+80.000
11+60.000
11+40.000
11+20.000
X-2

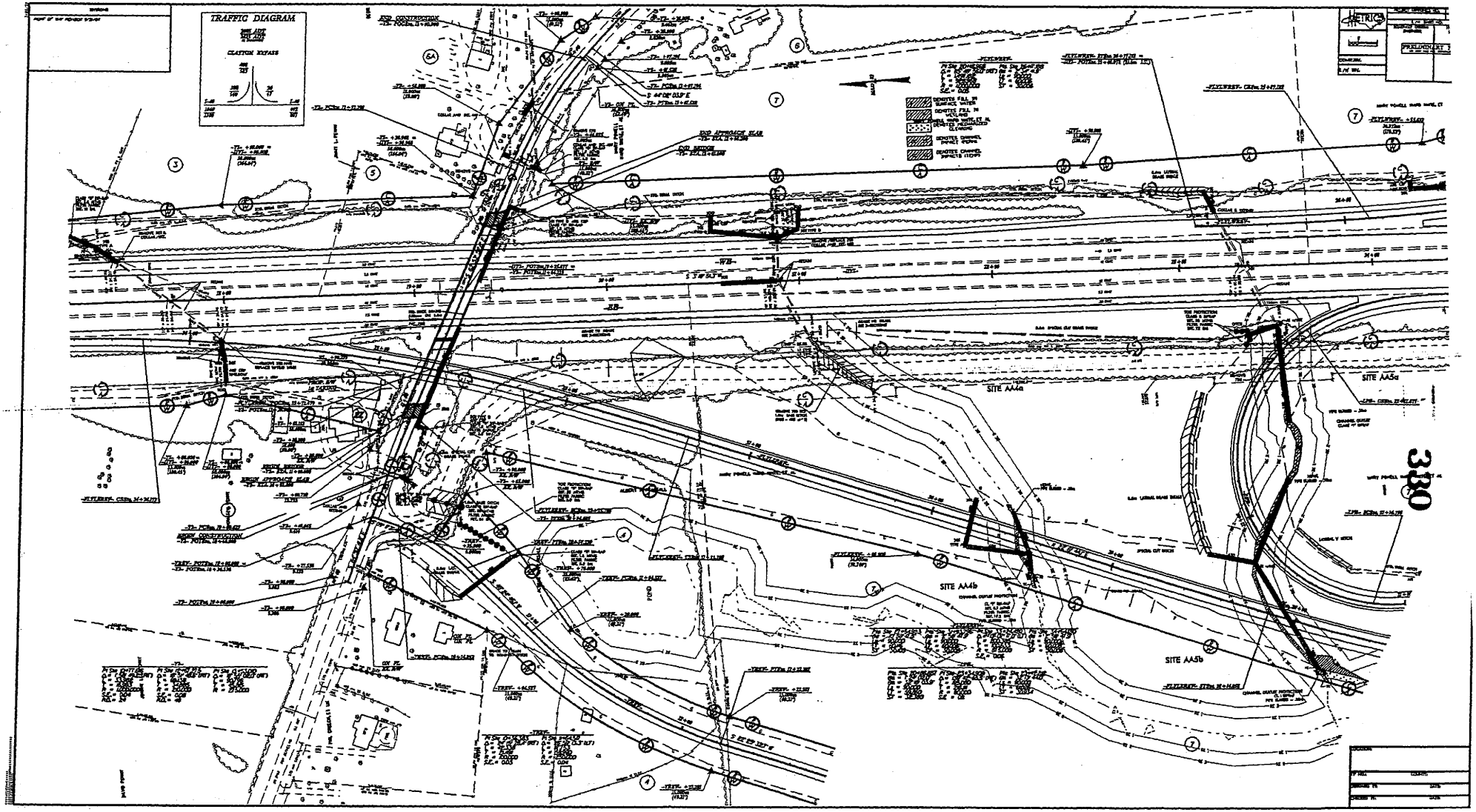


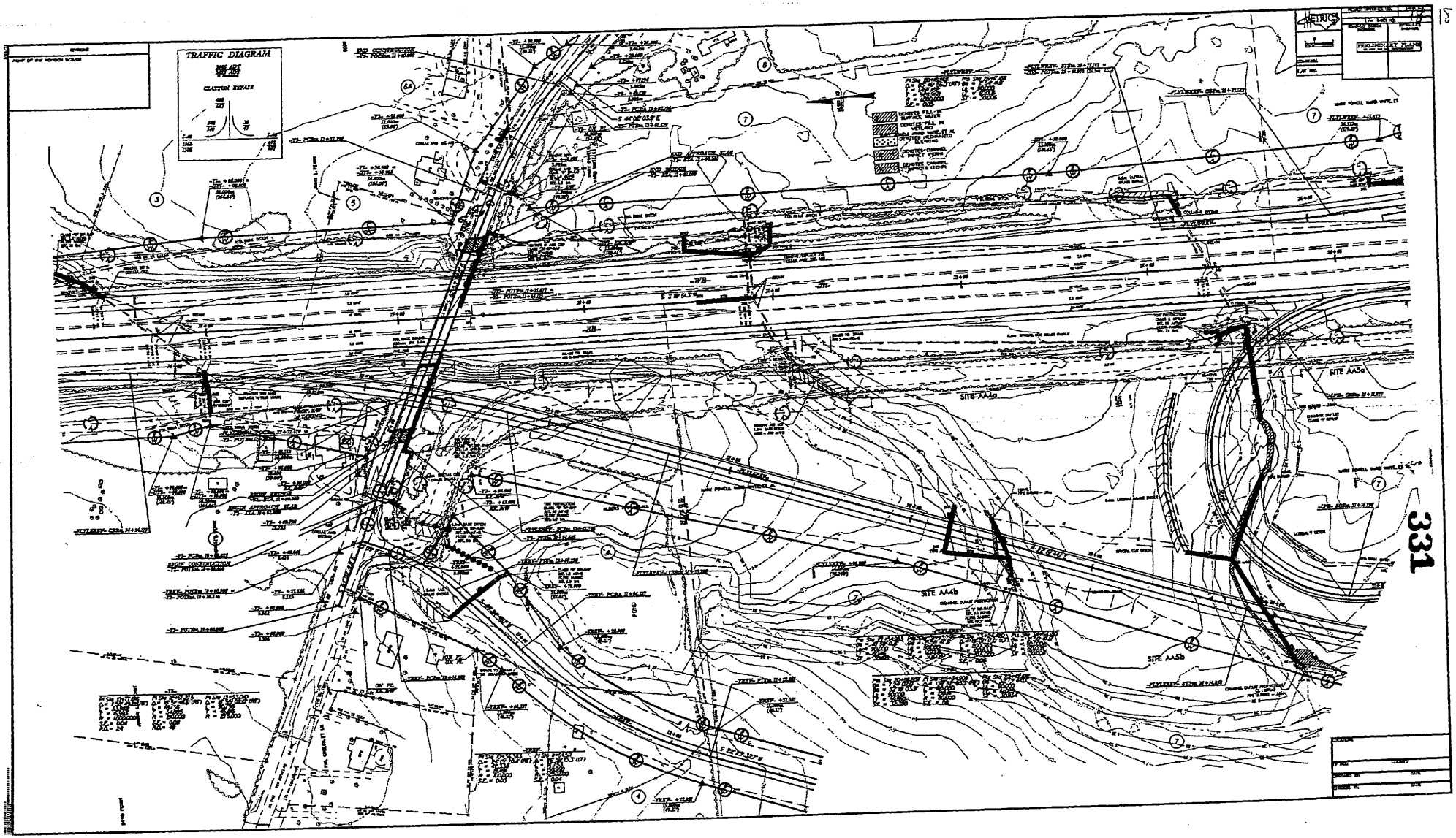
CROSS SECTION - Y1 STA 13+70
1650mm CSP

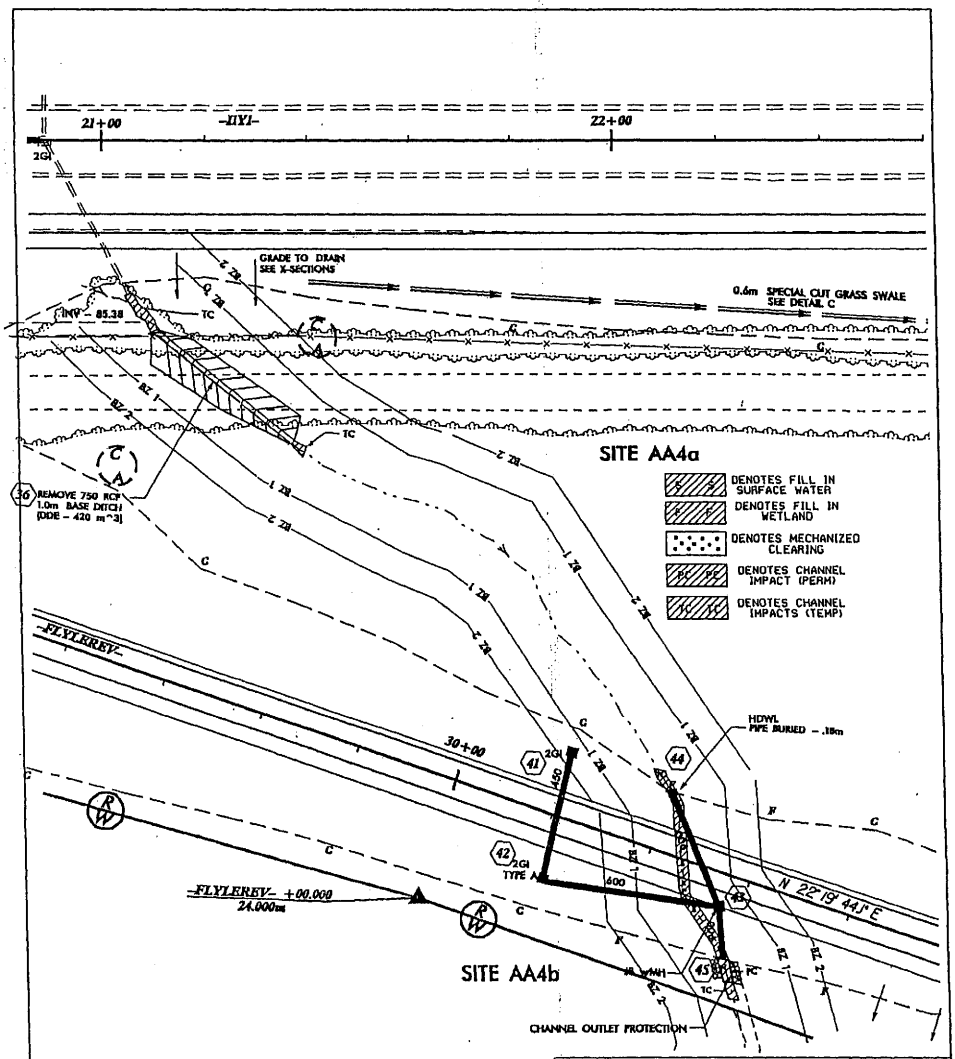
NCDOT
DIVISION OF HIGHWAYS
WAKE / JOHNSTON COUNTY
PROJECT: WBS - 34459.1.1 (R-2552AA)
US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525

SHEET 15 OF 50 10/01/04

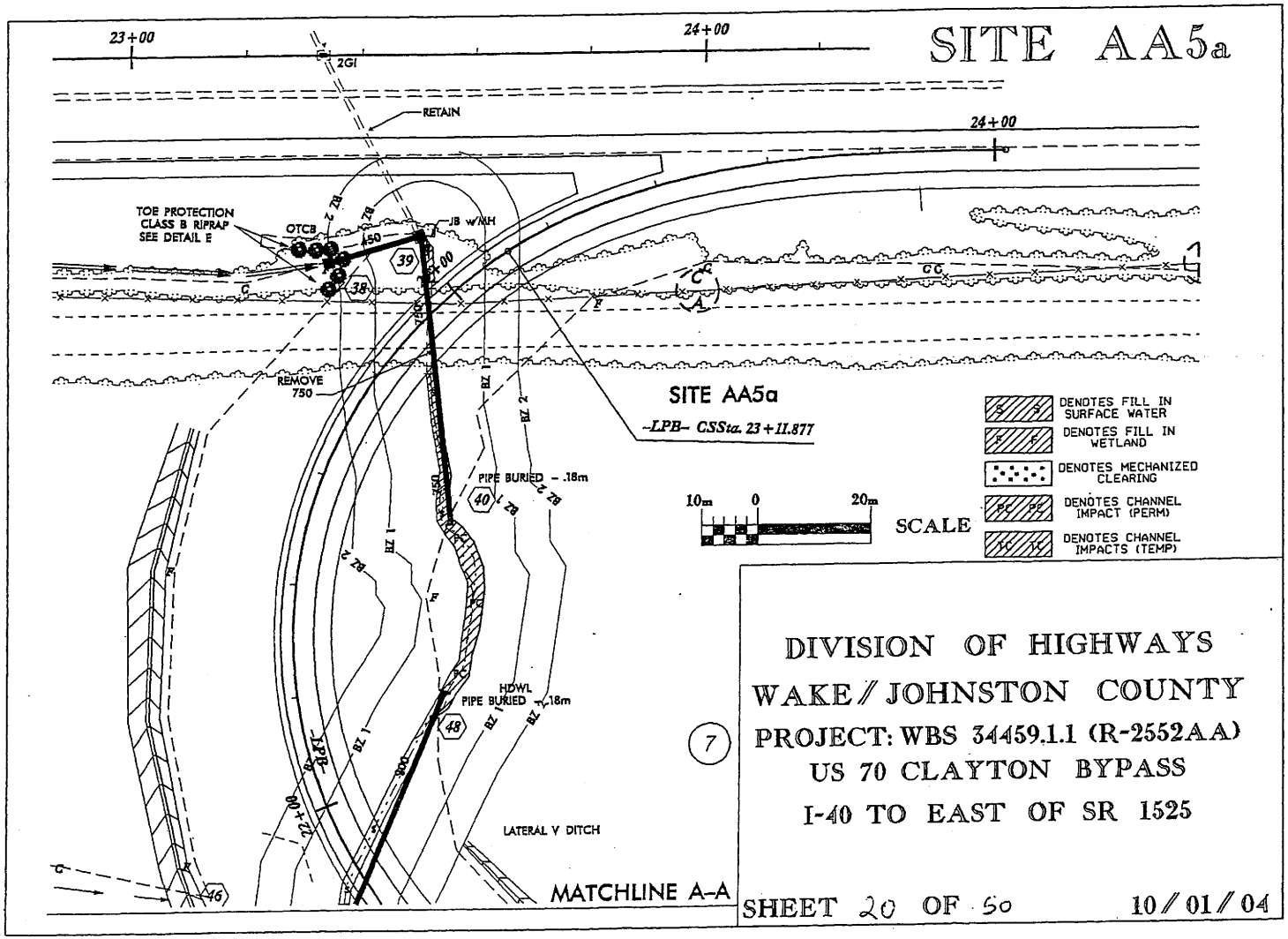

PROJECT REFERENCE NO.
R-2552AA
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
LEFT DITCH
RIGHT DITCH
-IIY1- (WB)
SITE AA3
*BM # BY1-102 EL 84.062
1.432m RT -IIY1- STA 14+32.772
*BM # BY1-103 EL 86.033
1.458m RT -IIY1- STA 16+96.298
NOTE:
SEE SHEET 5 FOR -IIY1- (WB) ALIGNMENT
*BENCH MARK IS A 760mm REBAR WITH
NCDOT TRAVERSE CAP STAMPED WITH
THE BM NUMBER
-IIY1- (EB)
*BM # BY1-102 EL 84.062
1.432m RT -IIY1- STA 14+32.772
*BM # BY1-103 EL 86.033
1.458m RT -IIY1- STA 16+96.298
NOTE:
SEE SHEET 5 FOR -IIY1- (EB) ALIGNMENT
*BENCH MARK IS A 760mm REBAR WITH
NCDOT TRAVERSE CAP STAMPED WITH
THE BM NUMBER
329
+60 +80 14 +20 +40 +60 +80 15 +20 +40 +60 +80 16 +20 +40 +60 +80 17 +20
90 88 86 84 82 80 78 76 74
96 94 92 90 88 86 84 82 80 78 76 74


TRAFFIC DIAGRAM
CLAYTON BYPASS
SITE AA4a
SITE AA4b
SITE AA5a
SITE AA5b
330


TRAFFIC DIAGRAM
METRIC
PRELIMINARY PLANS
SITE AA5c
SITE AA5b
SITE AA4b
331


21+00
22+00
GRADE TO DRAIN
SEE X-SECTIONS
0.6m SPECIAL CUT GRASS SWALE
SEE DETAIL C
INV = 85.38
TC
SITE AA4a
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES CHANNEL IMPACT (PERM)
DENOTES CHANNEL IMPACTS (TEMP)
REMOVE 750 RCP
1.0m BASE DITCH
(DDE = 420 m^3)
-FLYLEREV-
30+00
HDWL
PIPE BURIED = .15m
TYPE A
-FLYLEREV- +00.000
24.000m
N 22°19'44"E
SITE AA4b
CHANNEL OUTLET PROTECTION
SITES AA4a & AA4b
10m 0 20m
SCALE
NCDOT
DIVISION OF HIGHWAYS
WAKE / JOHNSTON COUNTY
PROJECT: WBS 34459.1.1 (R-2552AA)
US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525
SHEET 19 OF 50
10/01/04

SITE AA5a



DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

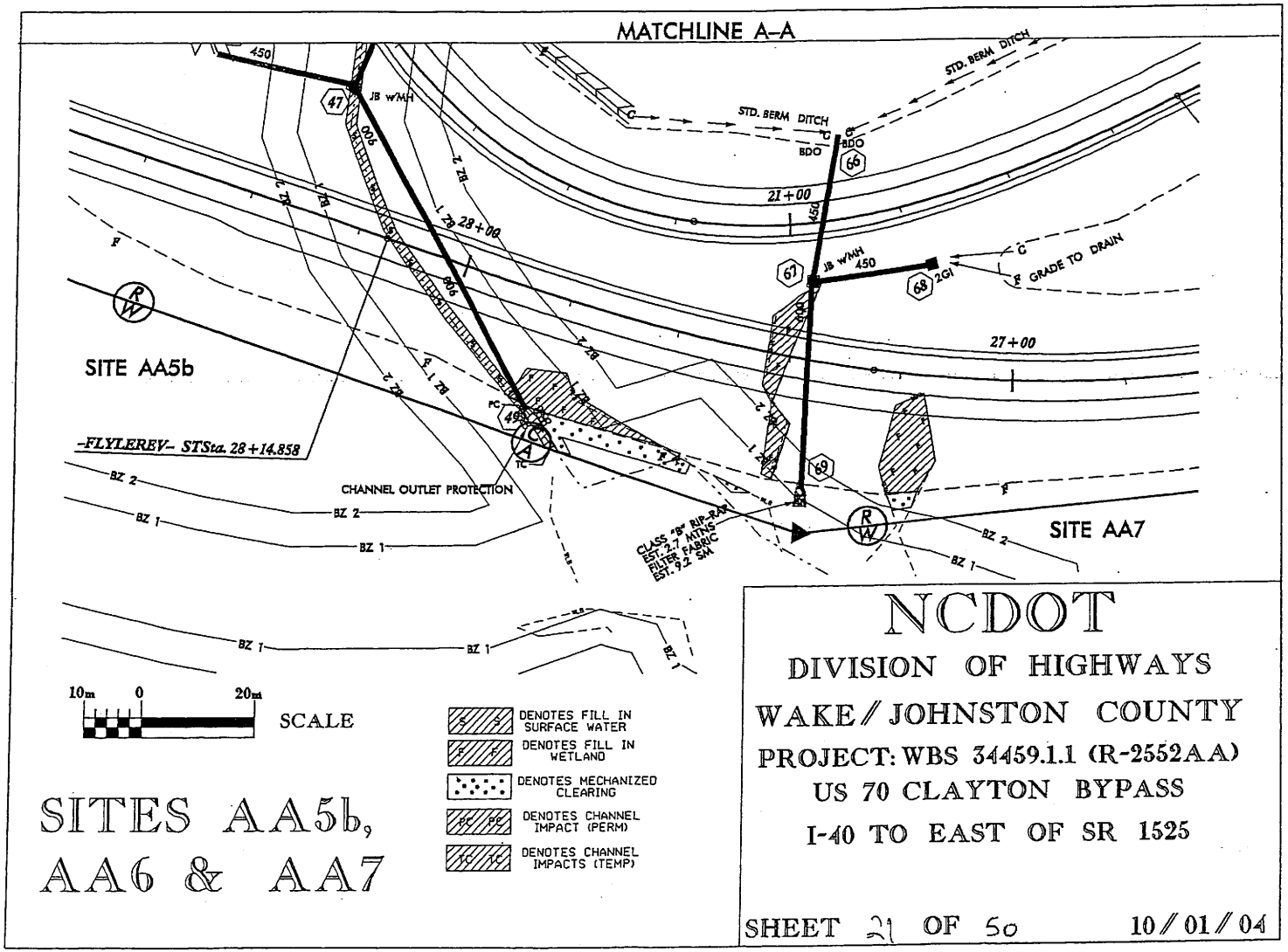
PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

I-40 TO EAST OF SR 1525

(7)

SHEET 20 OF 50 10/01/04



SITES AA5b, AA6 & AA7

NCDOT

DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

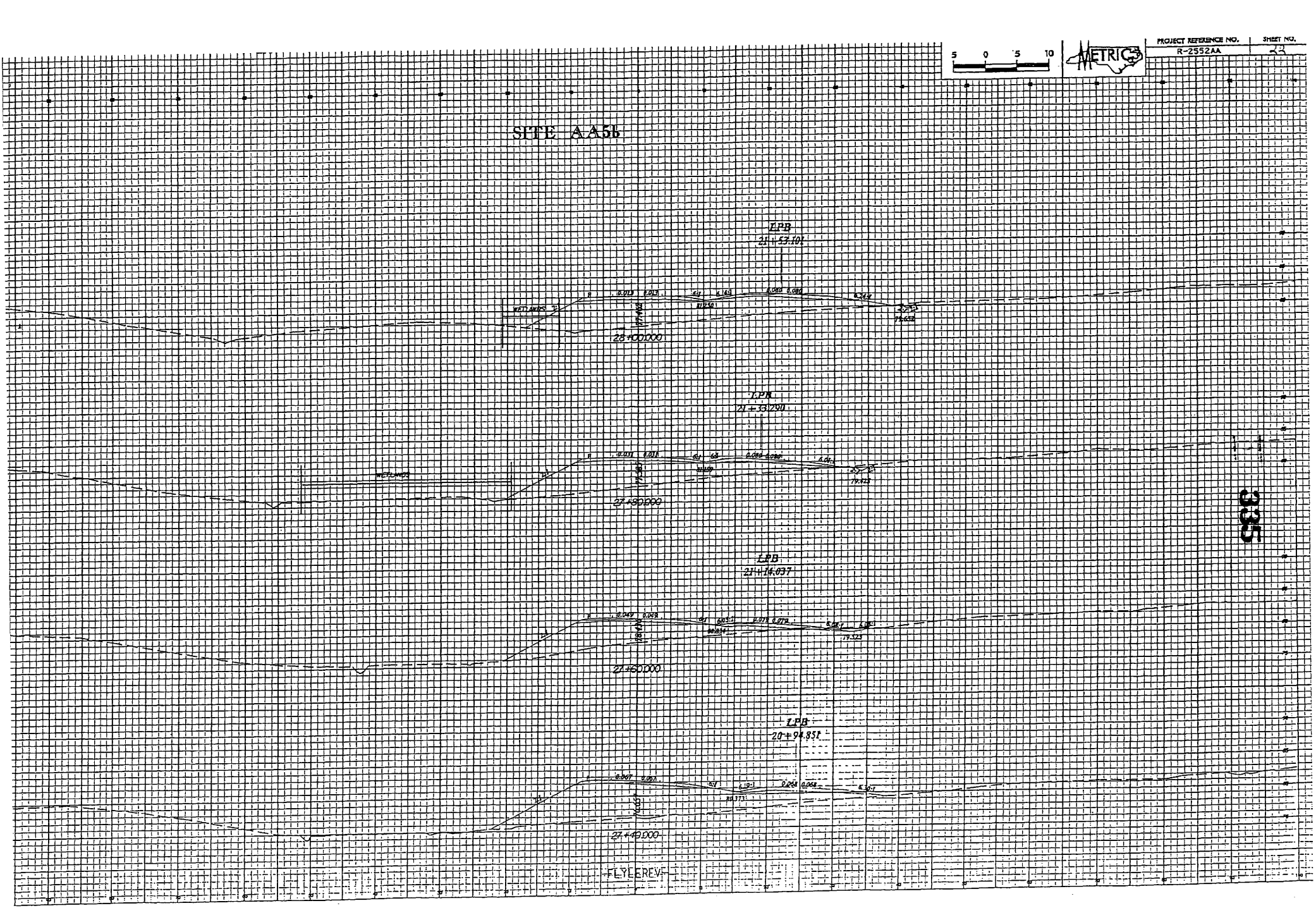
I-40 TO EAST OF SR 1525

SHEET 21 OF 50 10/01/04

5 0 5 10

METRIC

SITE AA5b



RIGHT OF WAY REVISION 9/2/04

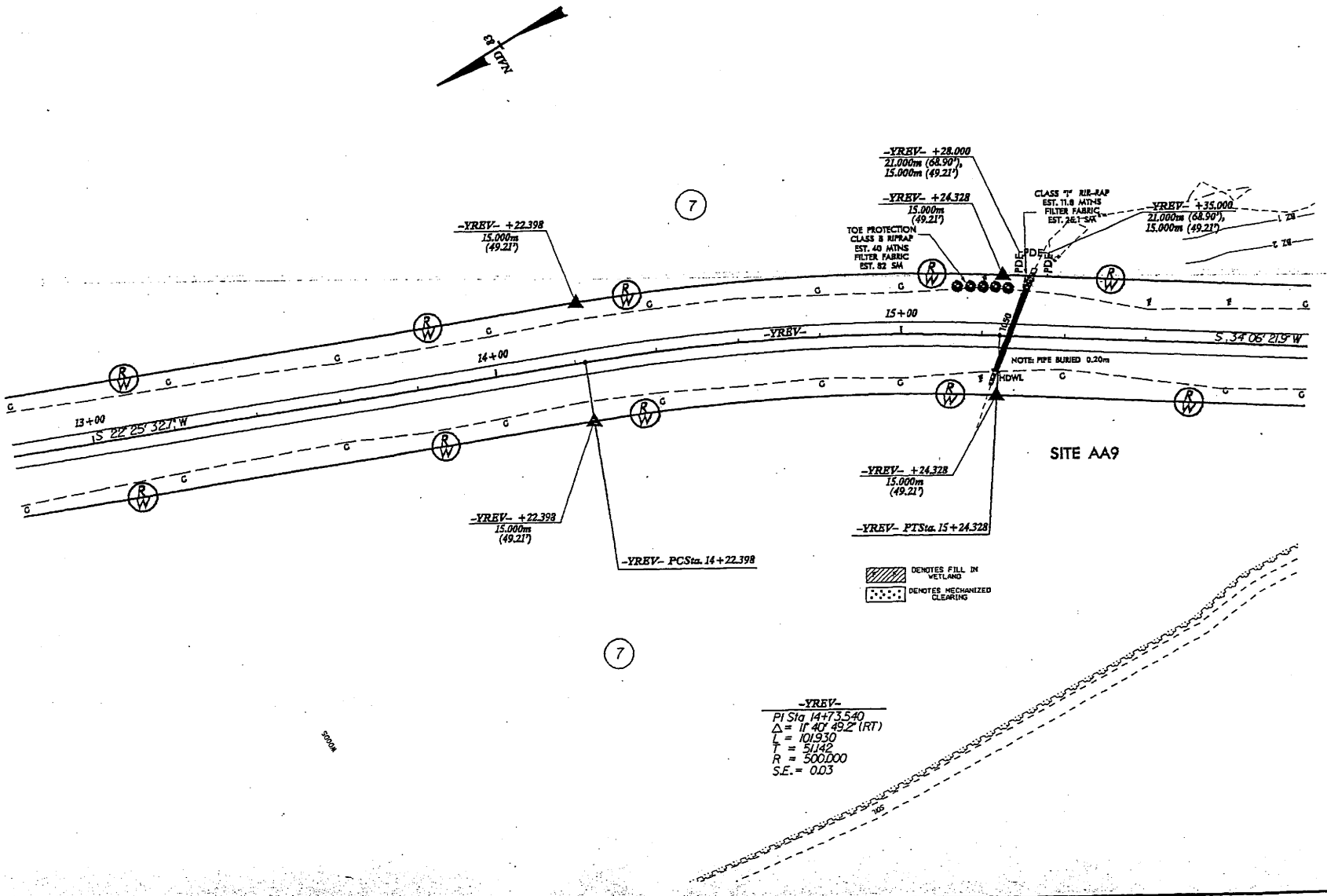
METRIC

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

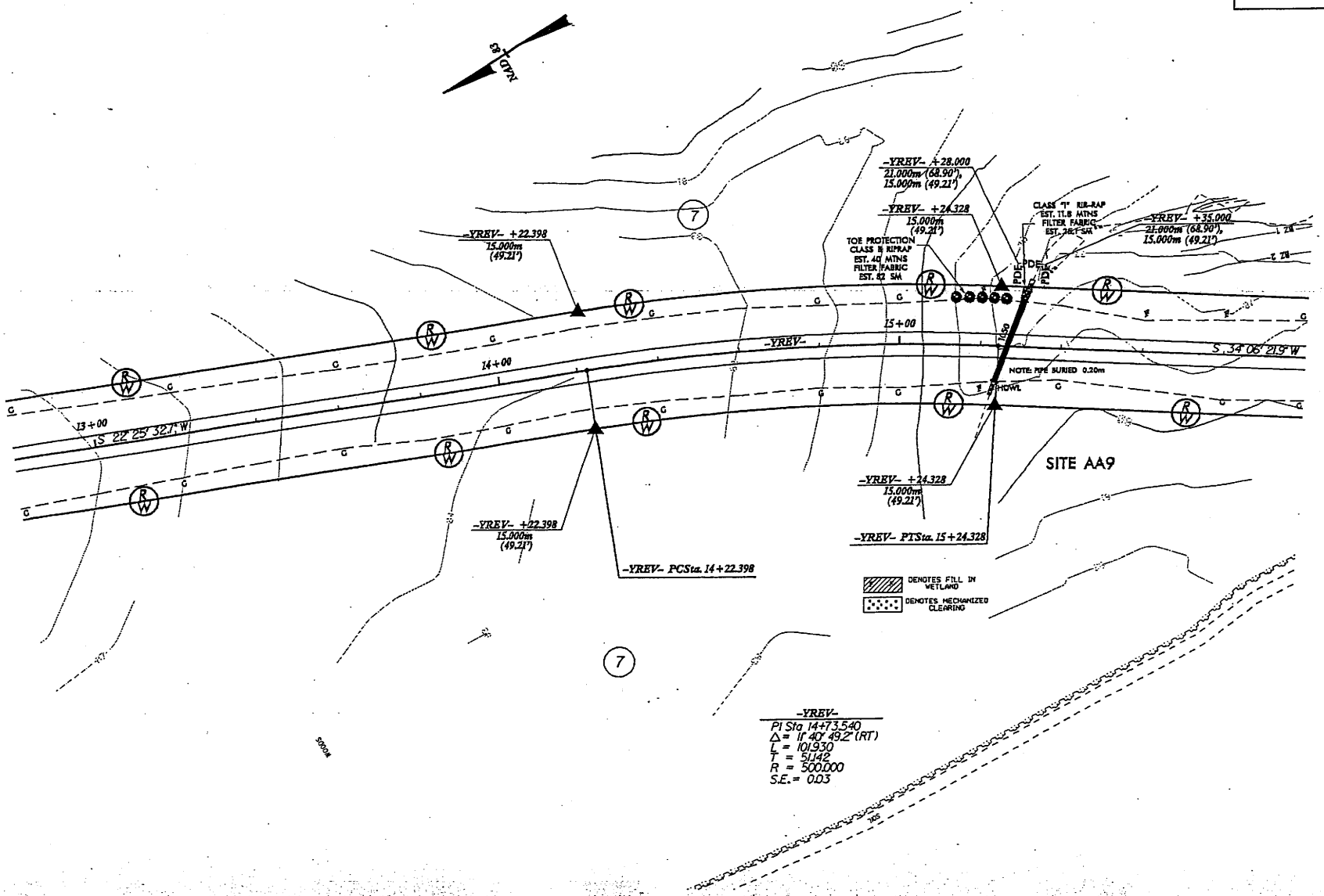
R /W REV.



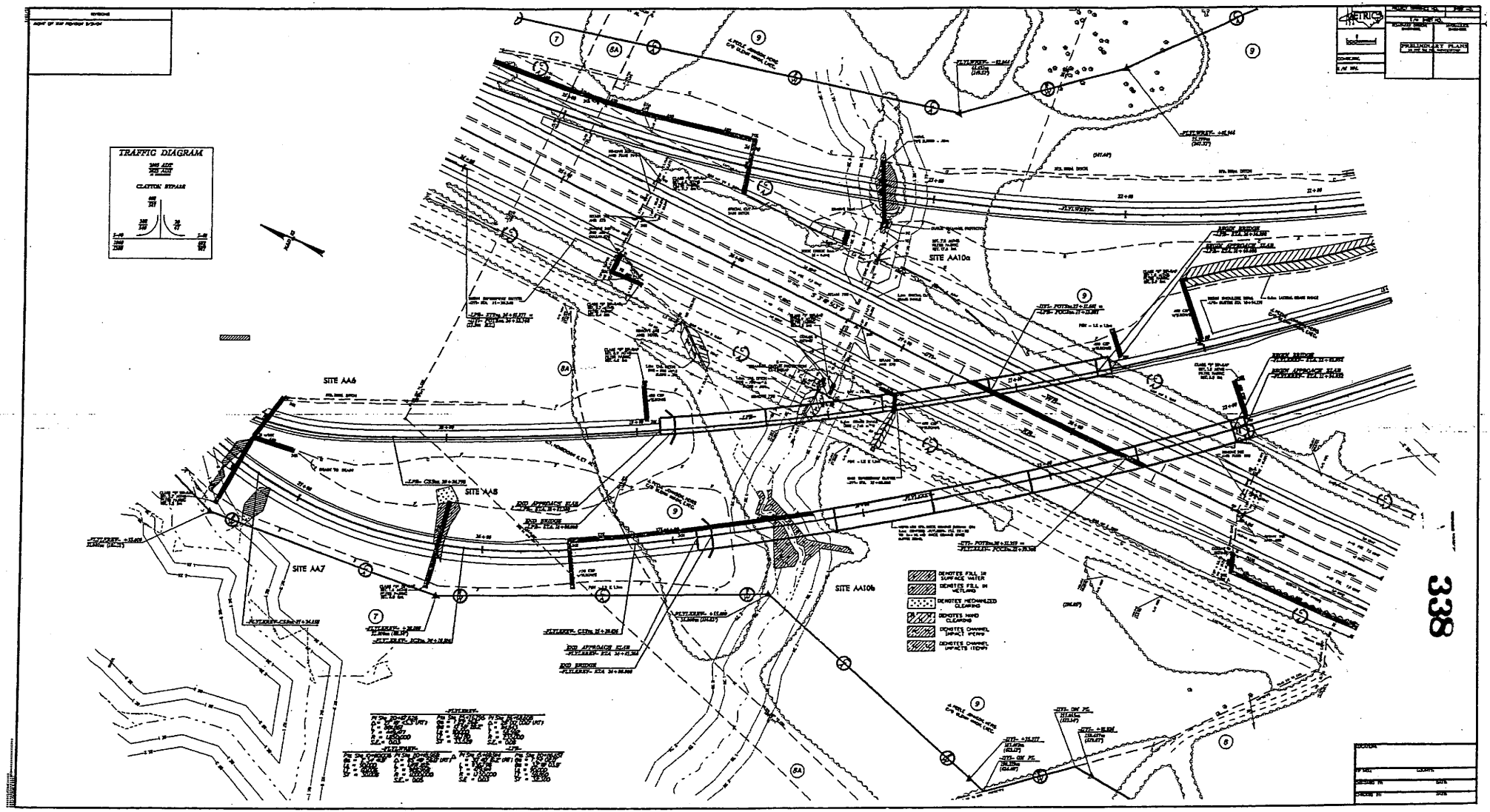
336

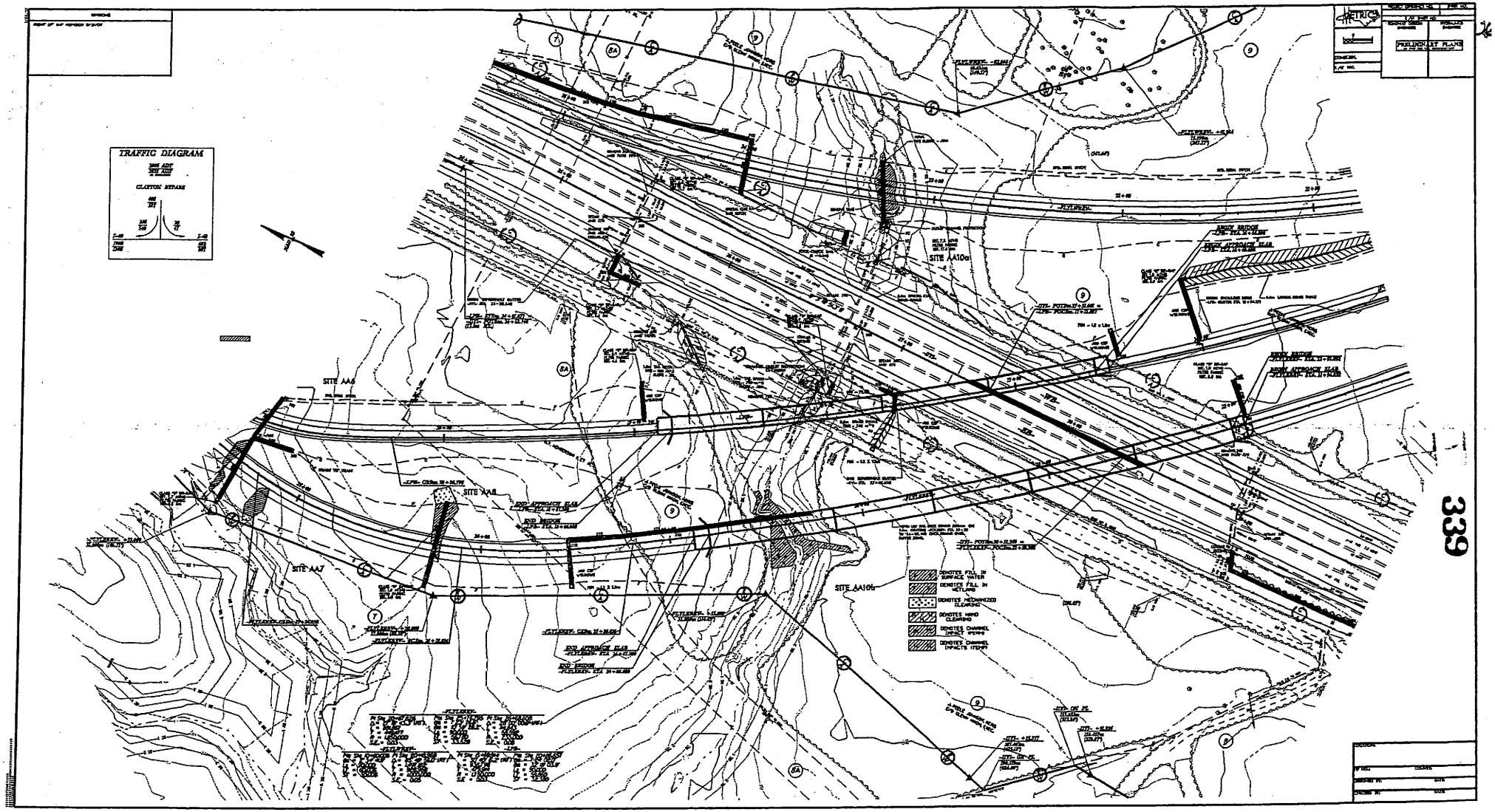
RIGHT OF WAY REVISION 9/2/04

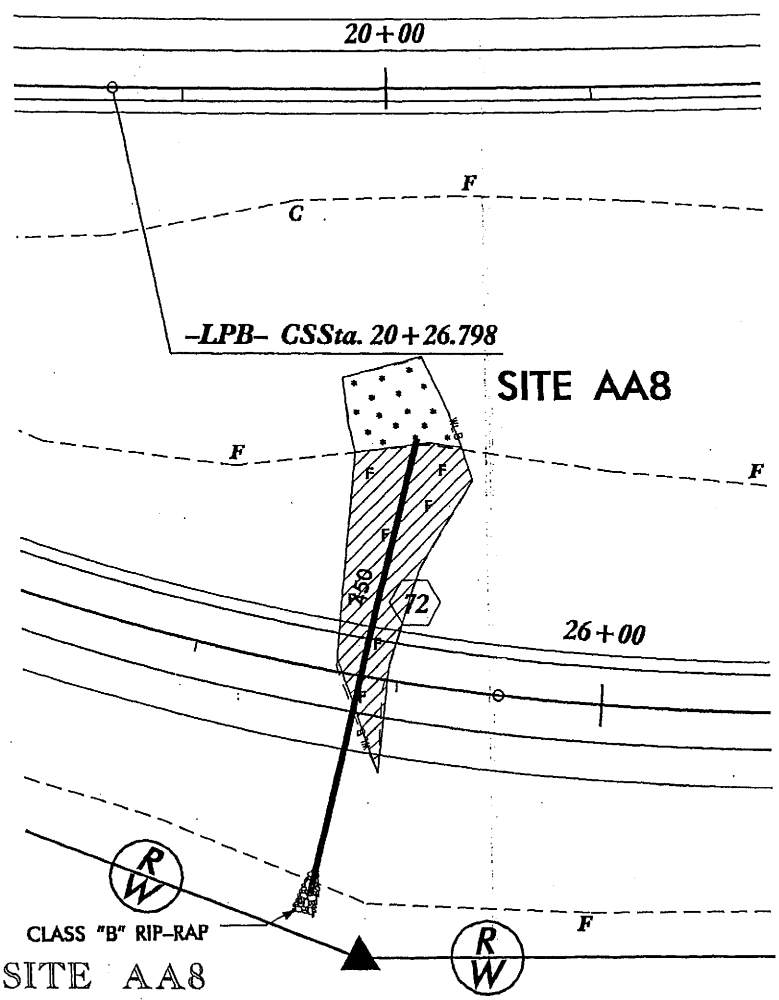
METRIC	PROJECT REFERENCE NO.	SHEET NO.
		24
	R/W SHEET NO.	
CONST.REV.	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R/W REV.	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



337


TRAFFIC DIAGRAM
SITE AA6
SITE AA5
SITE AA7
SITE AA10a
SITE AA10b
338


TRAFFIC DIAGRAM
SITE AA10a
SITE AA8
SITE AA9
SITE AA7
SITE AA10b
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES RECHARGED CLEARING
DENOTES MINE CLEARING
DENOTES CHANNEL IMPACTS (PERM)
DENOTES CHANNEL IMPACTS (TEMP)

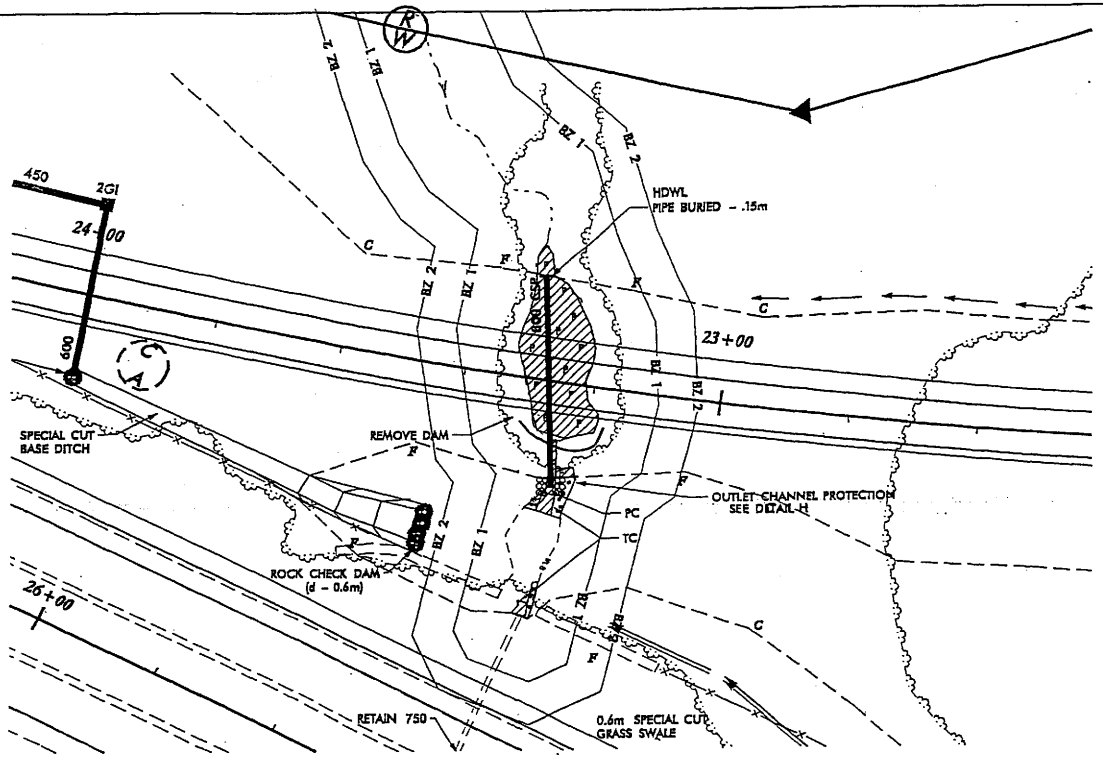


DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES HAND CLEARING
DENOTES CHANNEL IMPACT (PERM)
DENOTES CHANNEL IMPACTS (TEMP)

5m 0 10m SCALE

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

SHEET 27 OF 50 10/01/04



SITE AA10a

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

10m 0 20m SCALE

NCDOT

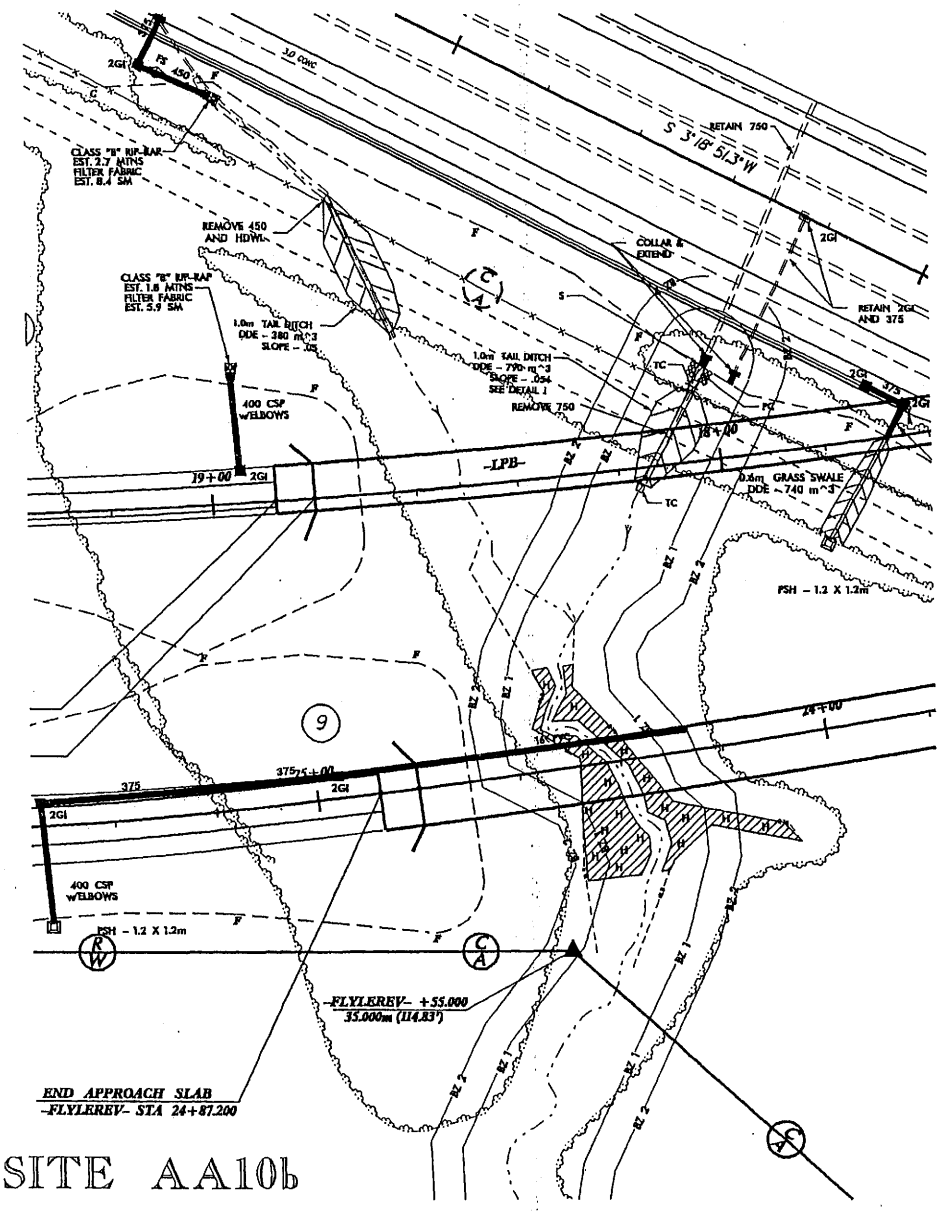
DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

SHEET 28 OF 50 10 / 01 / 04



DENOTES FILL IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES HAND CLEARING

DENOTES CHANNEL IMPACT (PERM)

DENOTES CHANNEL IMPACTS (TEMP)

10m 0 20m SCALE

NCDOT

DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

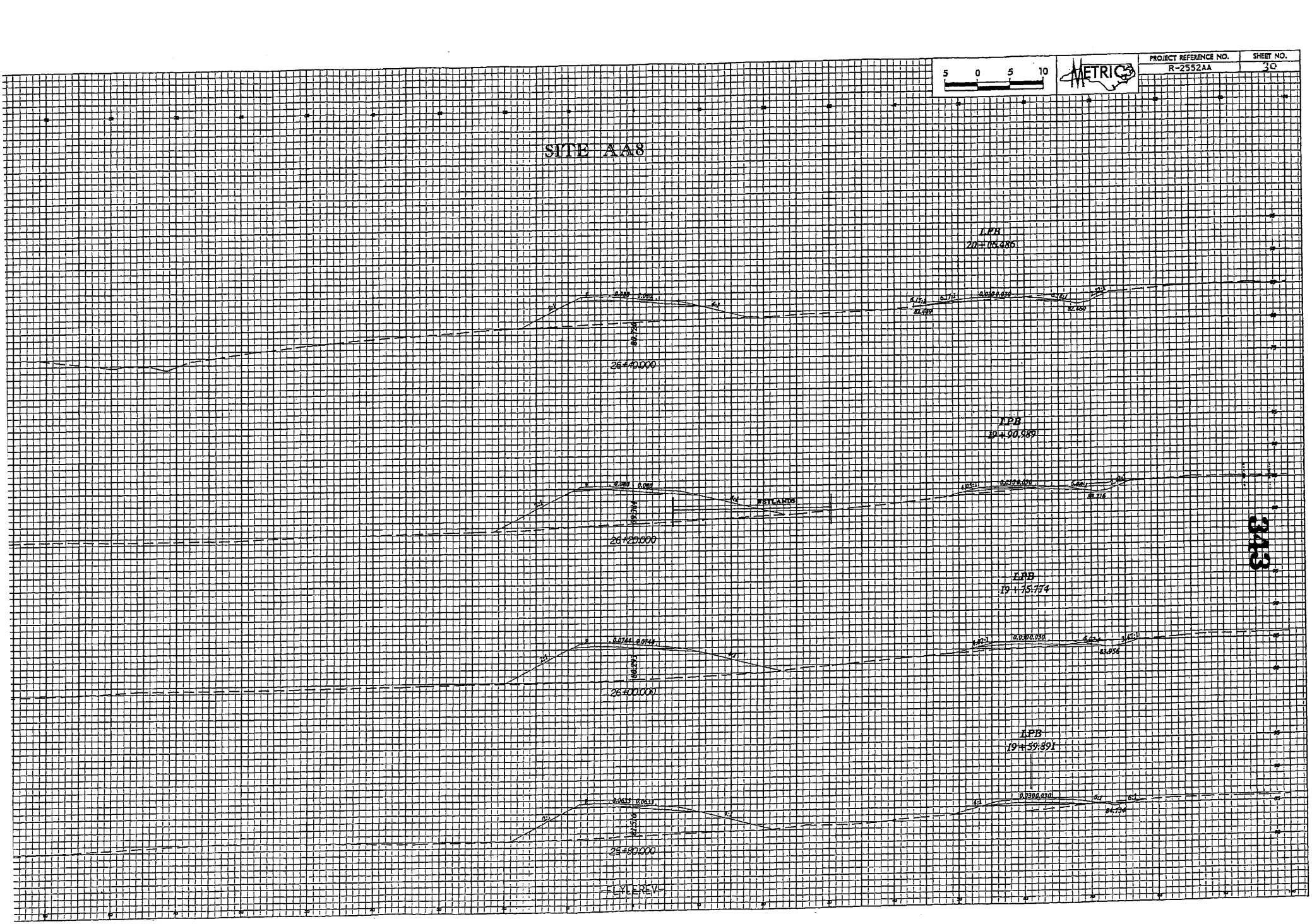
US 70 CLAYTON BYPASS

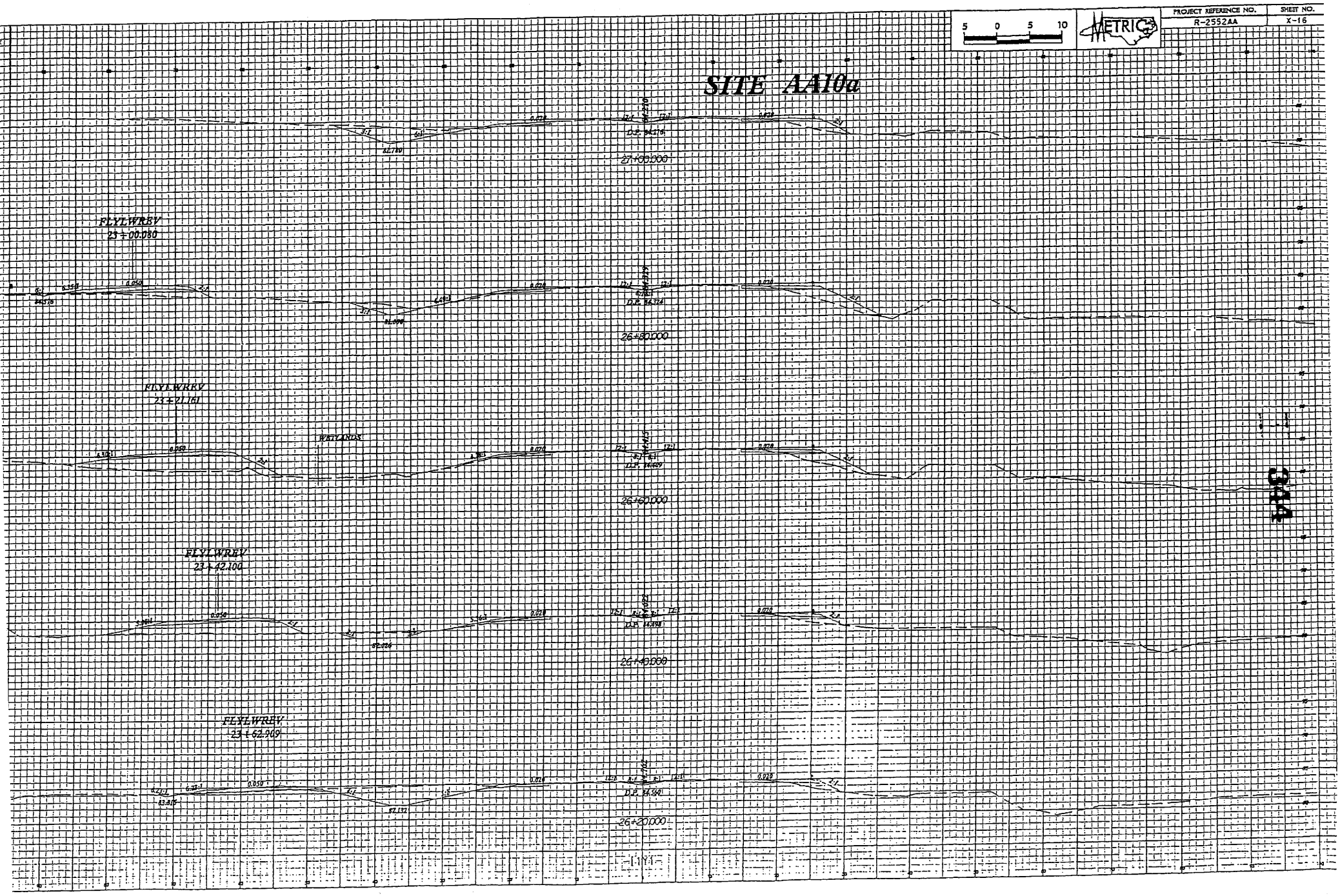
SHEET 29 OF 50 10/01/04

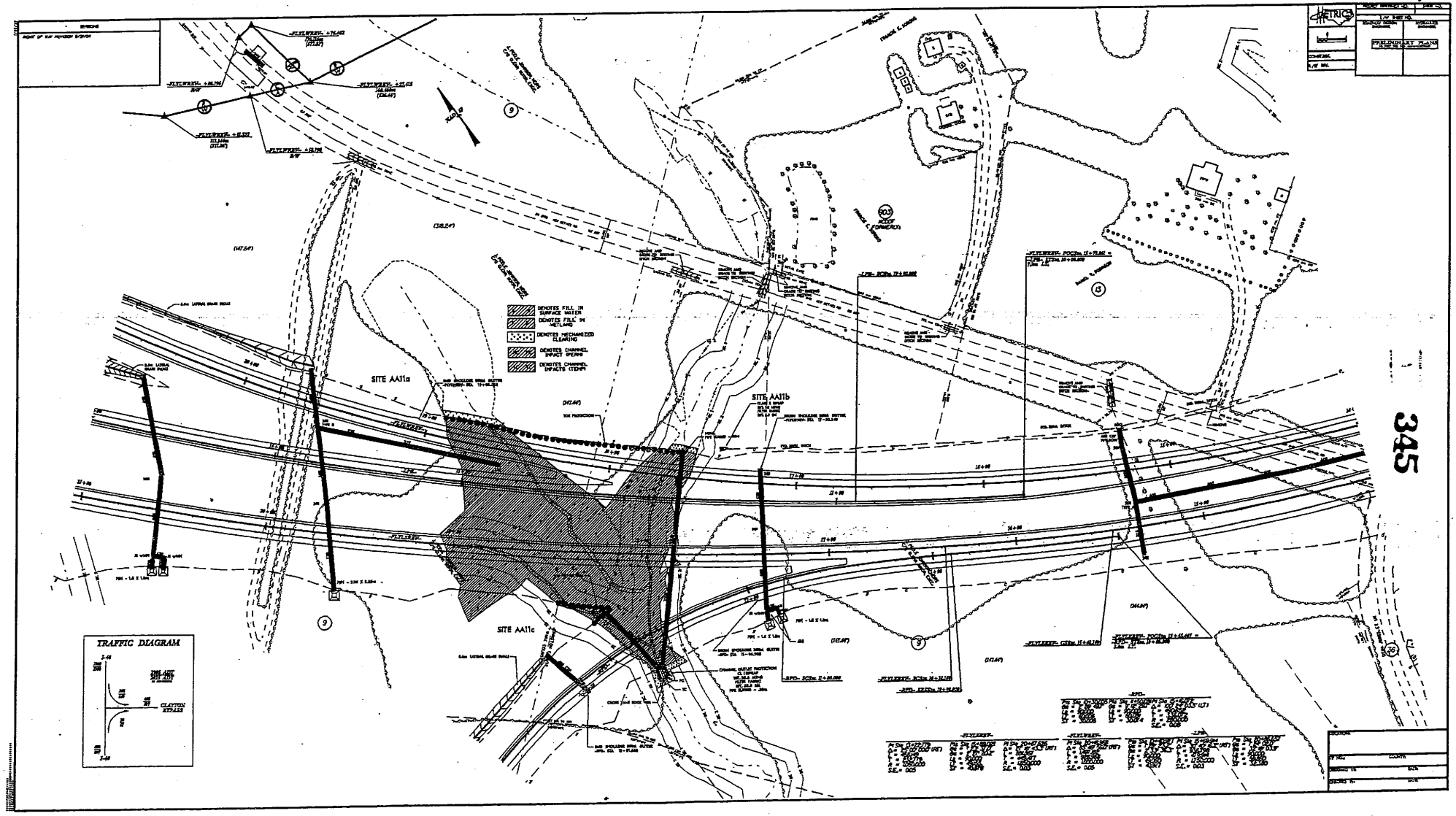
5 0 5 10

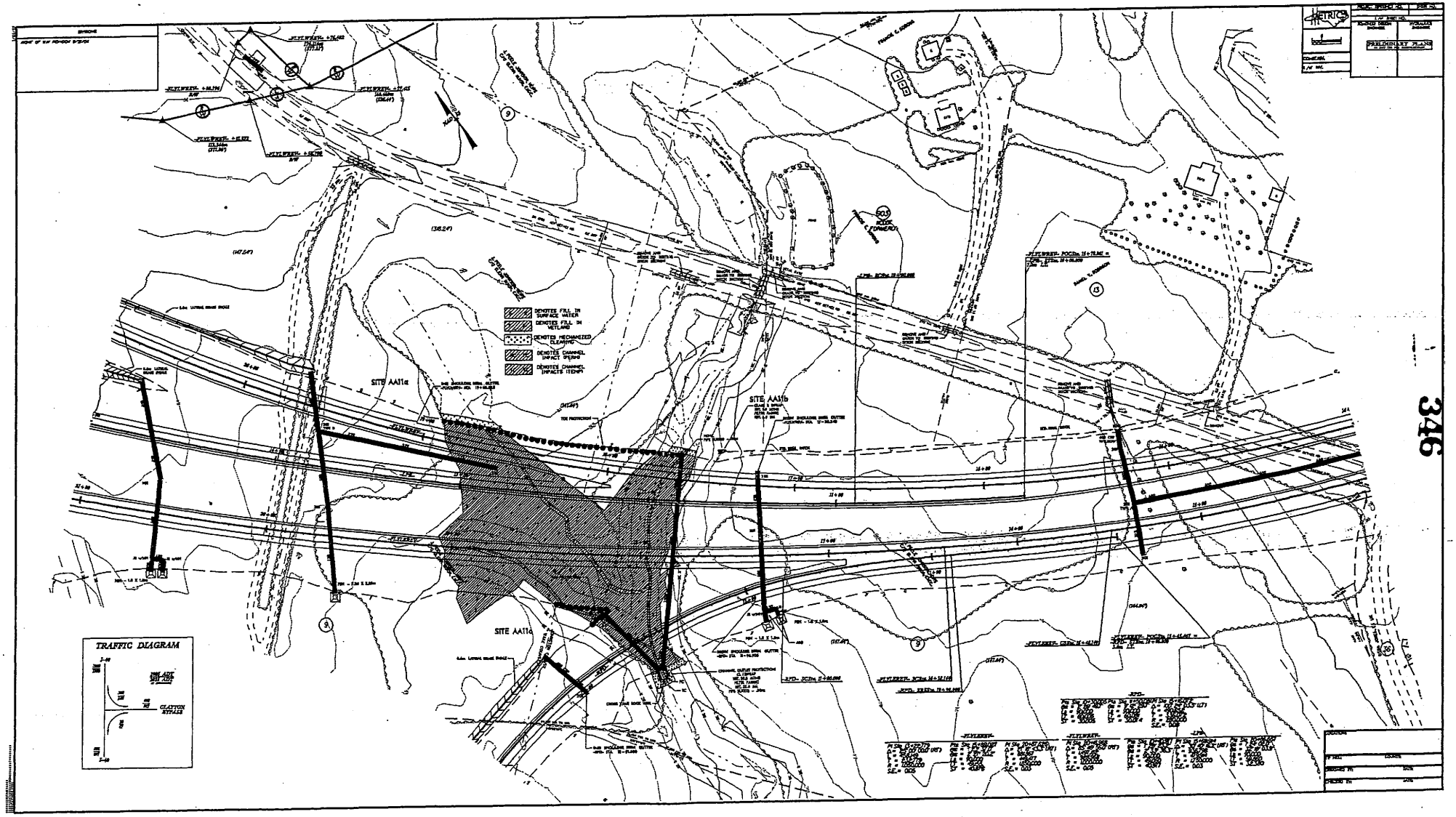
METRIC

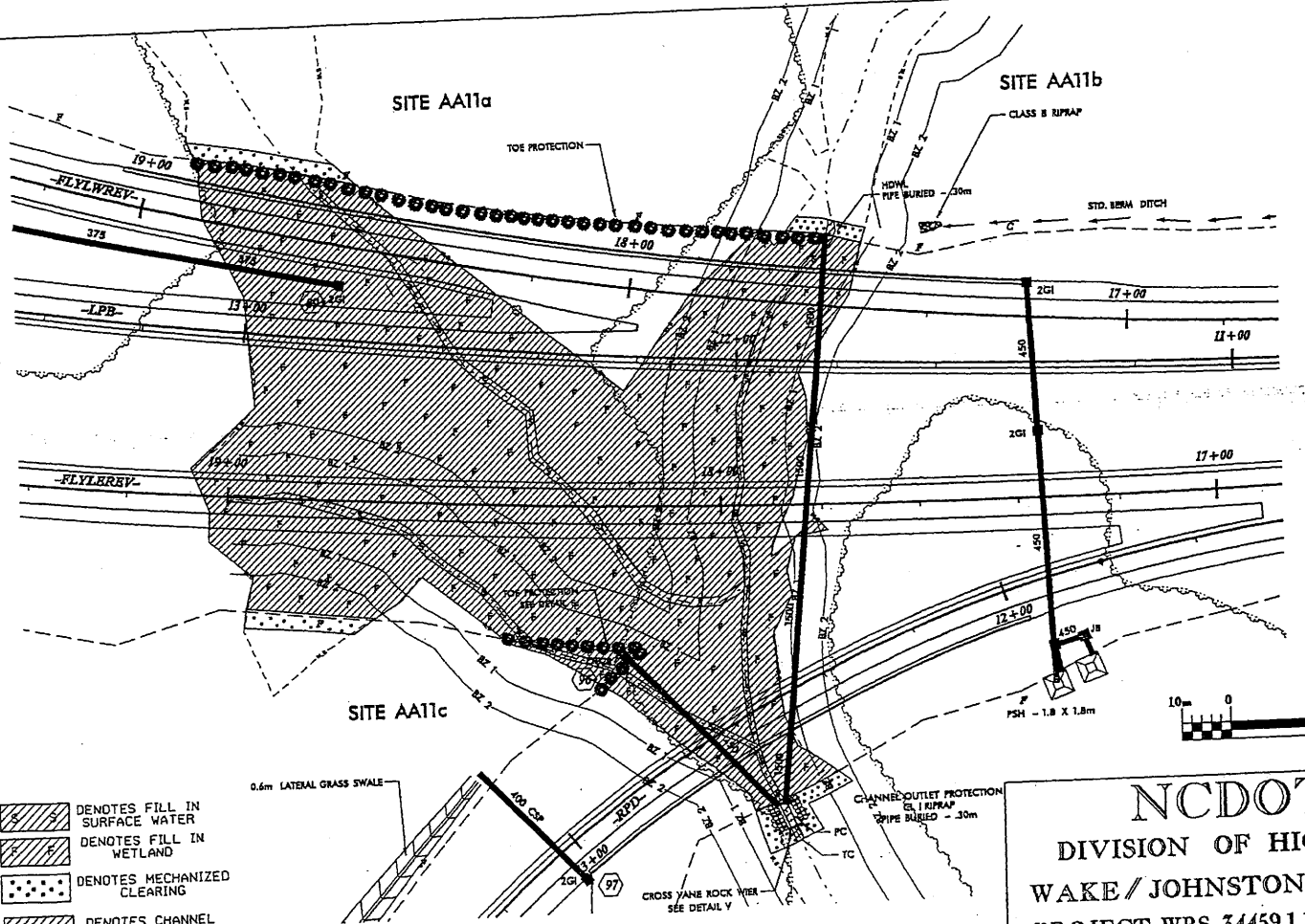
SITE AA8




5 0 5 10
METRIC
PROJECT REFERENCE NO.
R-2552AA
SHEET NO.
X-16
SITE AA10a
FLYLWRBV
23+00.080
FLYLWRRV
23+21.161
WETLANDS
FLYLWRRV
23+42.100
FLYLWRRV
23+62.909
27+00.000
26+80.000
26+60.000
26+40.000
26+20.000


SITE AA11a
SITE AA11b
SITE AA11c
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES CHANNEL IMPACT SPENS
DENOTES CHANNEL IMPACTS (TEMP)
TRAFFIC DIAGRAM
CLAYTON
PRELIMINARY PLANS


SITE AA11a
SITE AA11b
SITE AA11c
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES RECHANNELIZED CLEARING
DENOTES CHANNEL IMPACTS PERM
DENOTES CHANNEL IMPACTS TEMP
TRAFFIC DIAGRAM
PRELIMINARY PLANS



SITE AA11a , AA11b & AA11c

NCDOT

DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

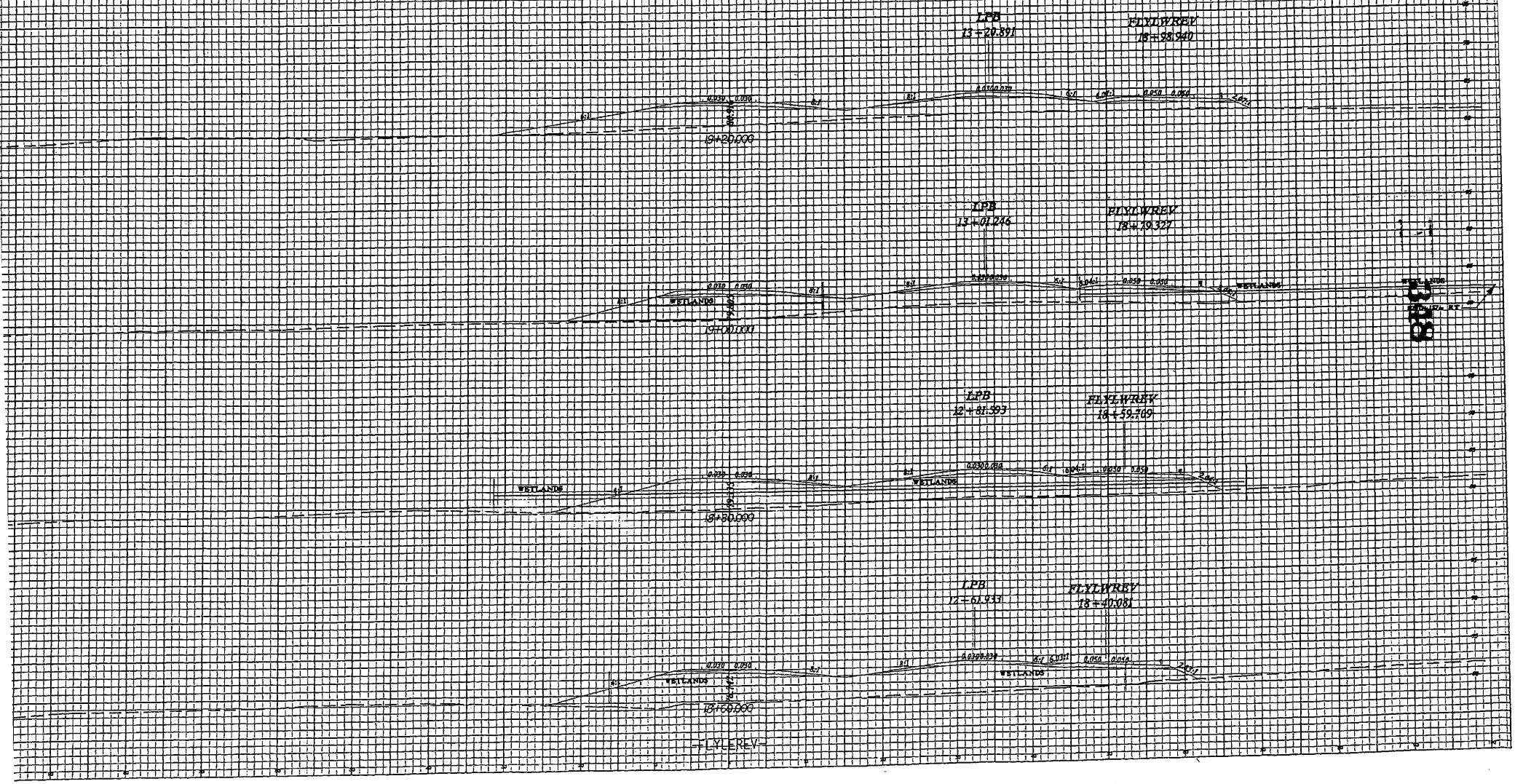
I-40 TO EAST OF SR 1525

SHEET 33 OF 50 10 / 01 / 04

5 0 5 10

METRIC

SITE AA11 (a & b)

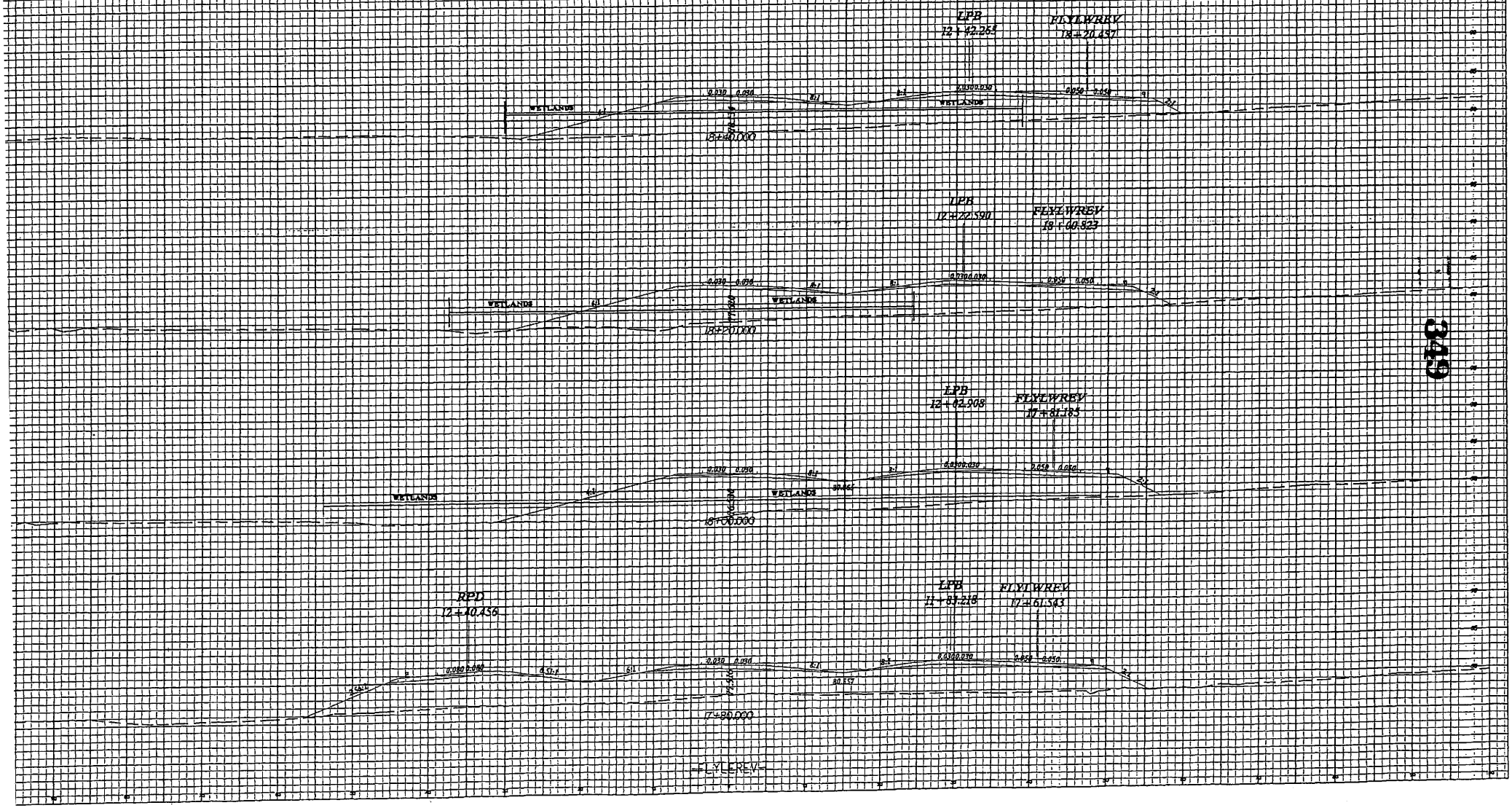


PROJECT REFERENCE NO.	SHEET NO.
R-2552AA	35

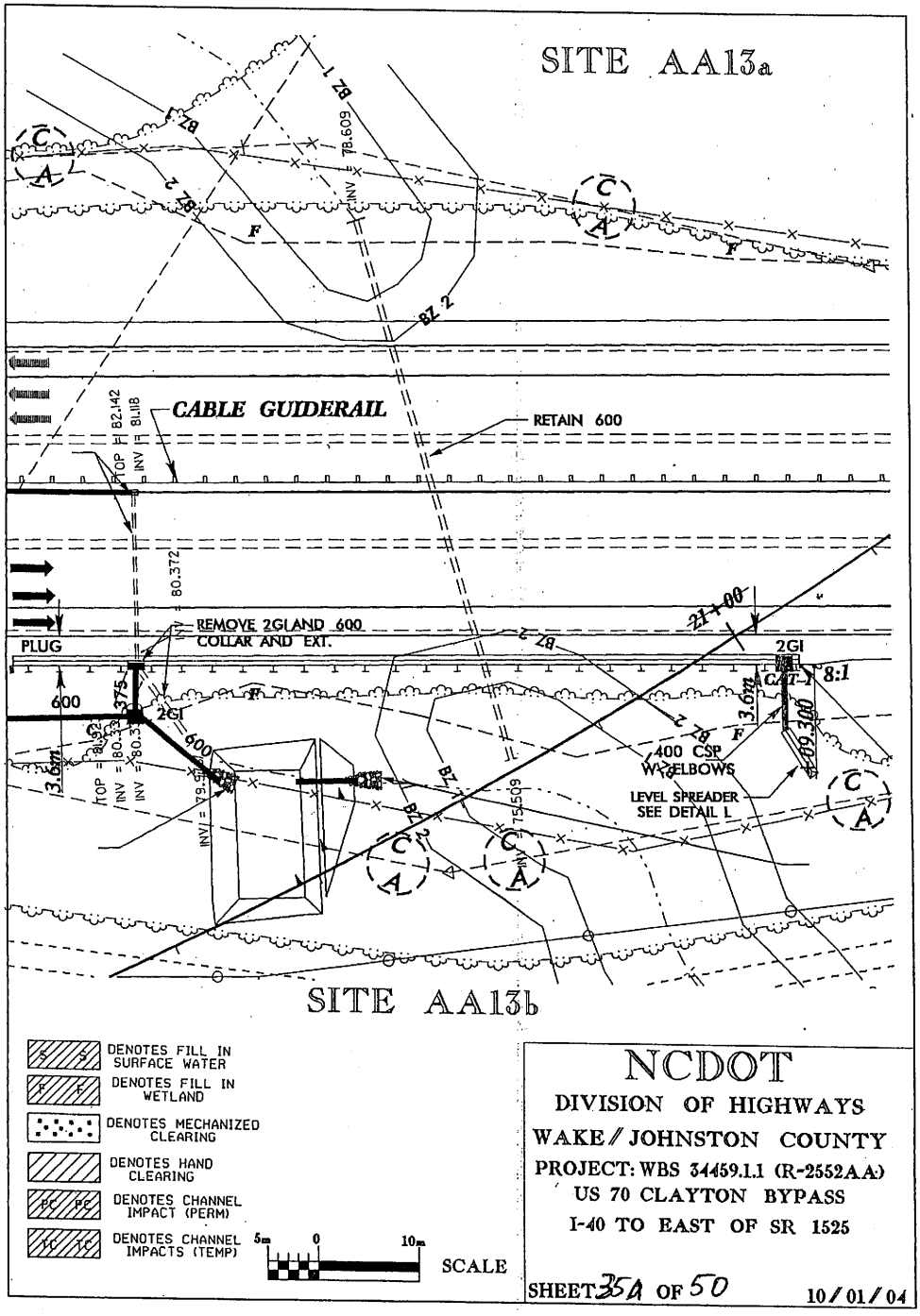
5 0 5 10

METRIC

SITE AA11 (a & b)



35



NCDOT

DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

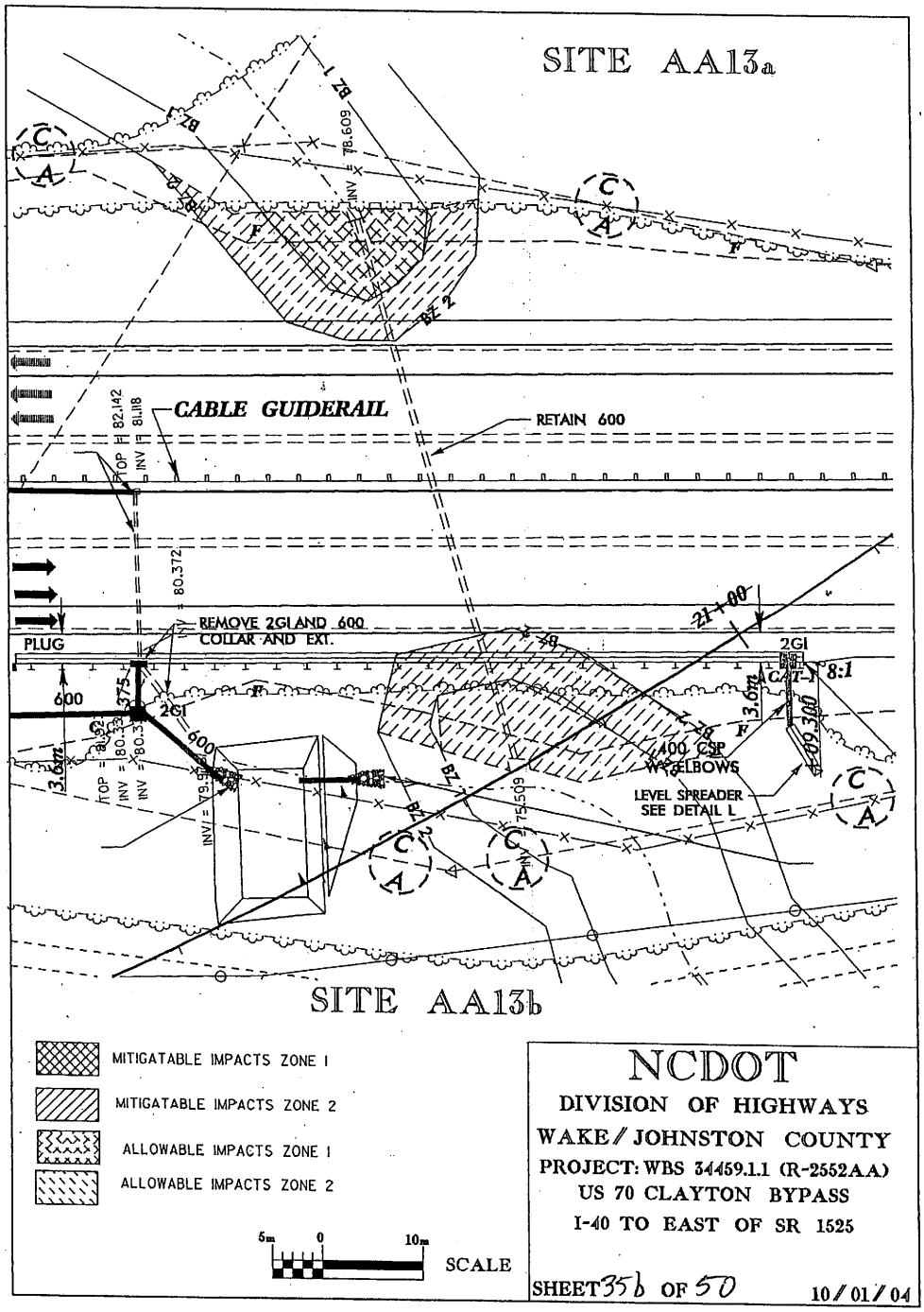
PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

I-40 TO EAST OF SR 1525

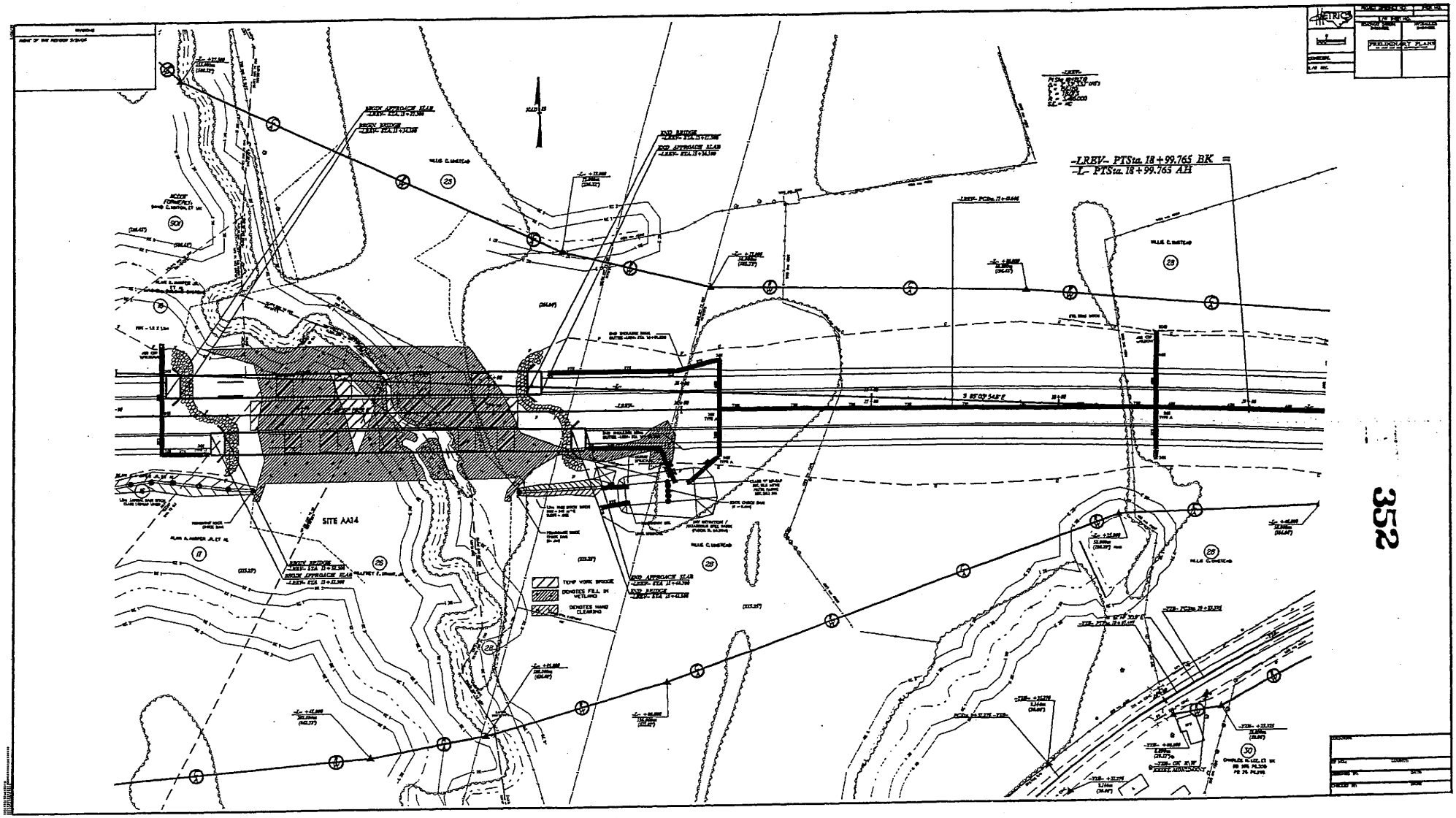
SHEET 35A OF 50

10/01/04

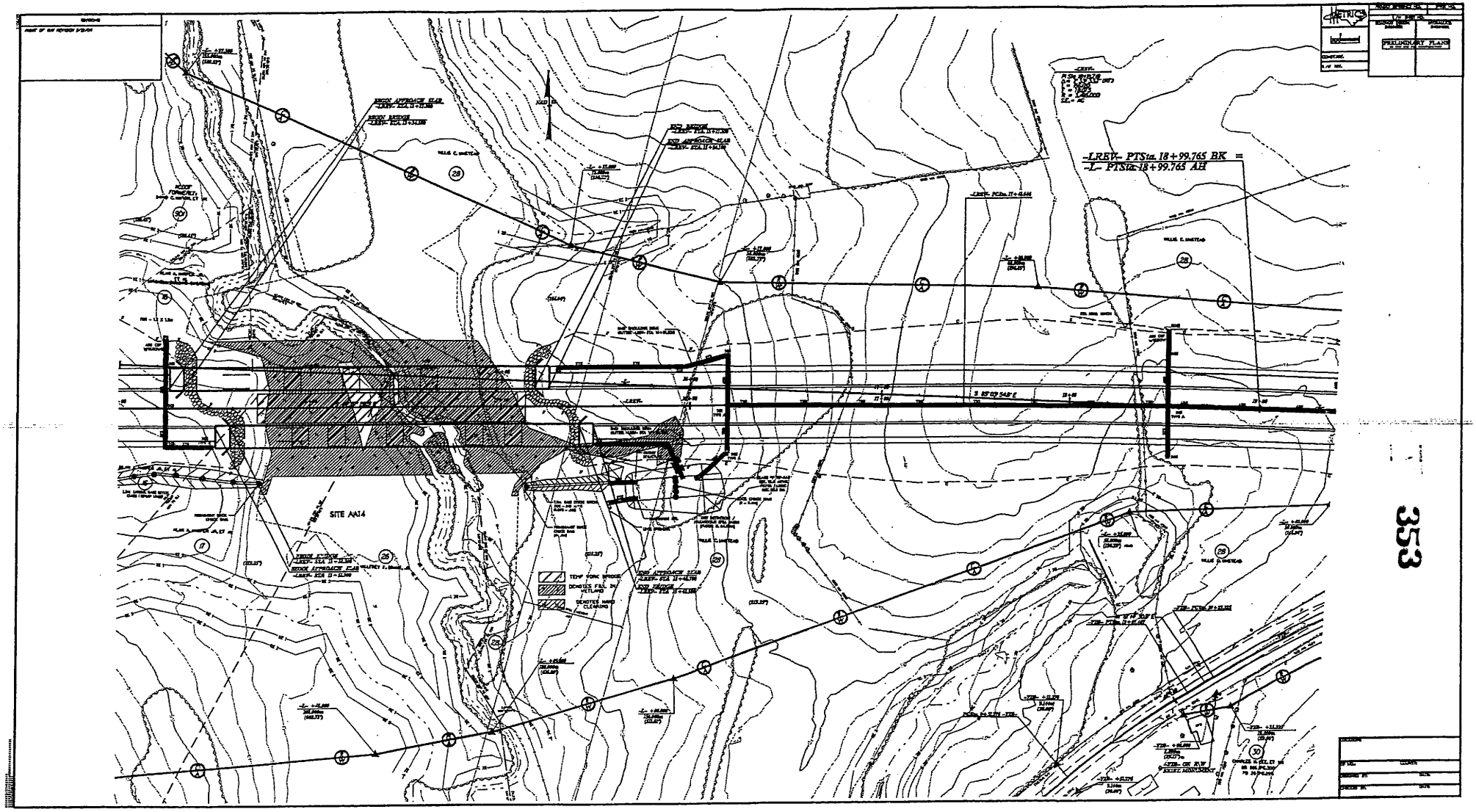


NCDOT
DIVISION OF HIGHWAYS
WAKE / JOHNSTON COUNTY
PROJECT: WBS 34459.1.1 (R-2552AA)
US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525

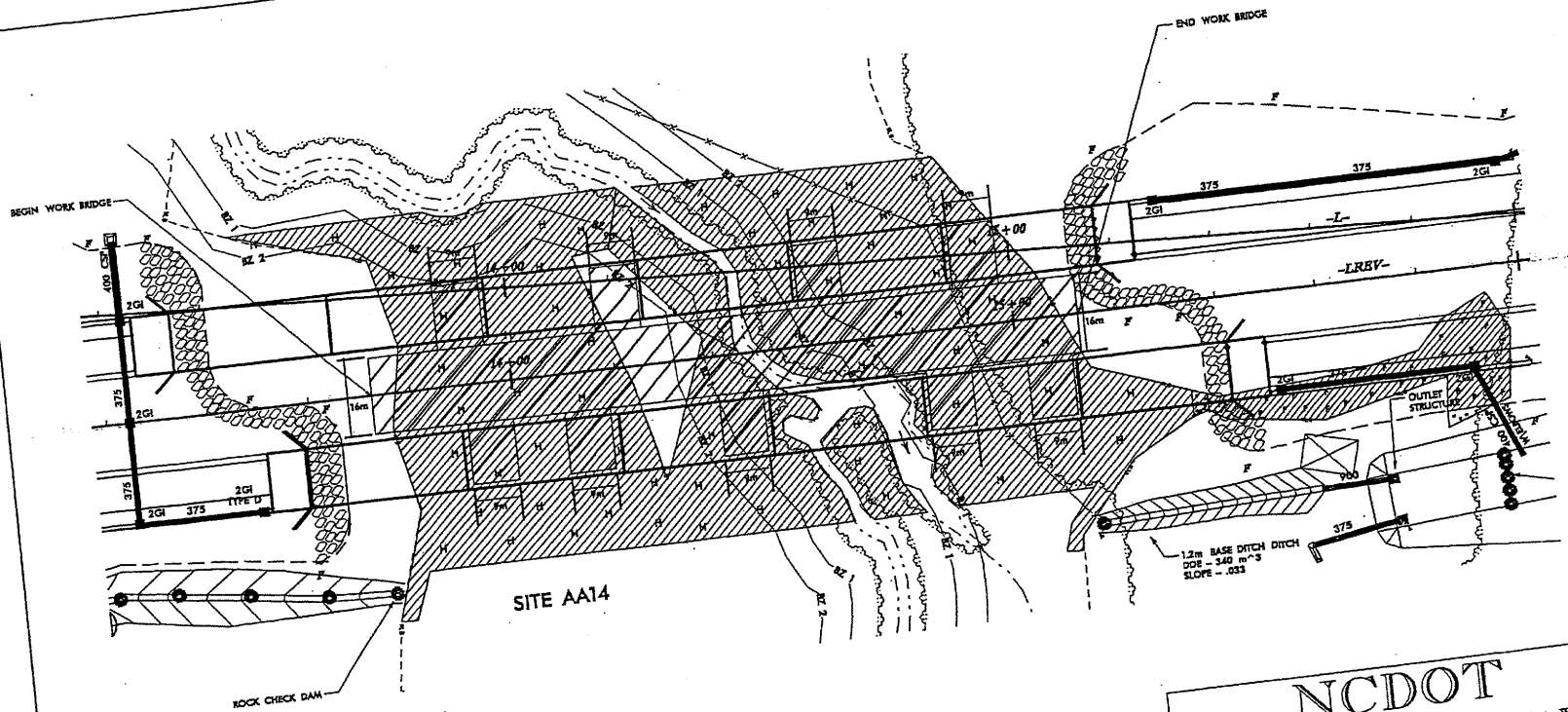
SHEET 35b OF 50 10/01/04


-LREV- PTSta. 18+99.765 BK =
-L- PTSta. 18+99.765 AH
SITE AA14
TEMP WORK BRIDGE
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
PRELIMINARY PLANS

352


-LREV- PTSta. 18+99.765 BK =
-L- PTSta. 18+99.765 AH
SITE AA14
TEW FORK BRIDGE
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
PRELIMINARY PLANS

353



SITE AA14

TEMP WORK BRIDGE

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES HAND CLEARING IN WETLANDS

DENOTES MECHANIZED CLEARING IN WETLANDS

DENOTES CHANNEL IMPACT (PERM)

DENOTES CHANNEL IMPACTS (TEMP)

10m 0 20m SCALE

NCDOT

DIVISION OF HIGHWAYS

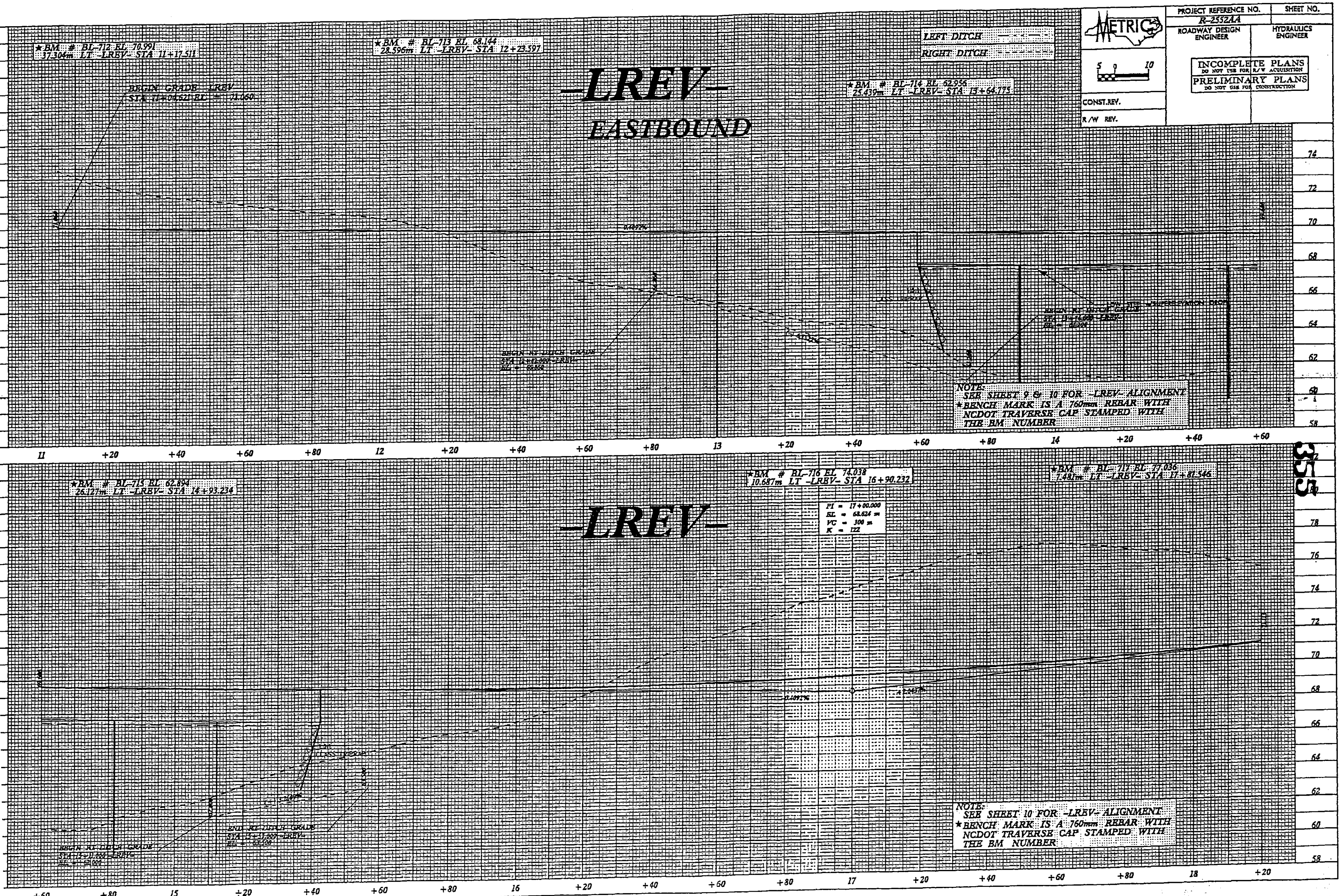
WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2551AA)

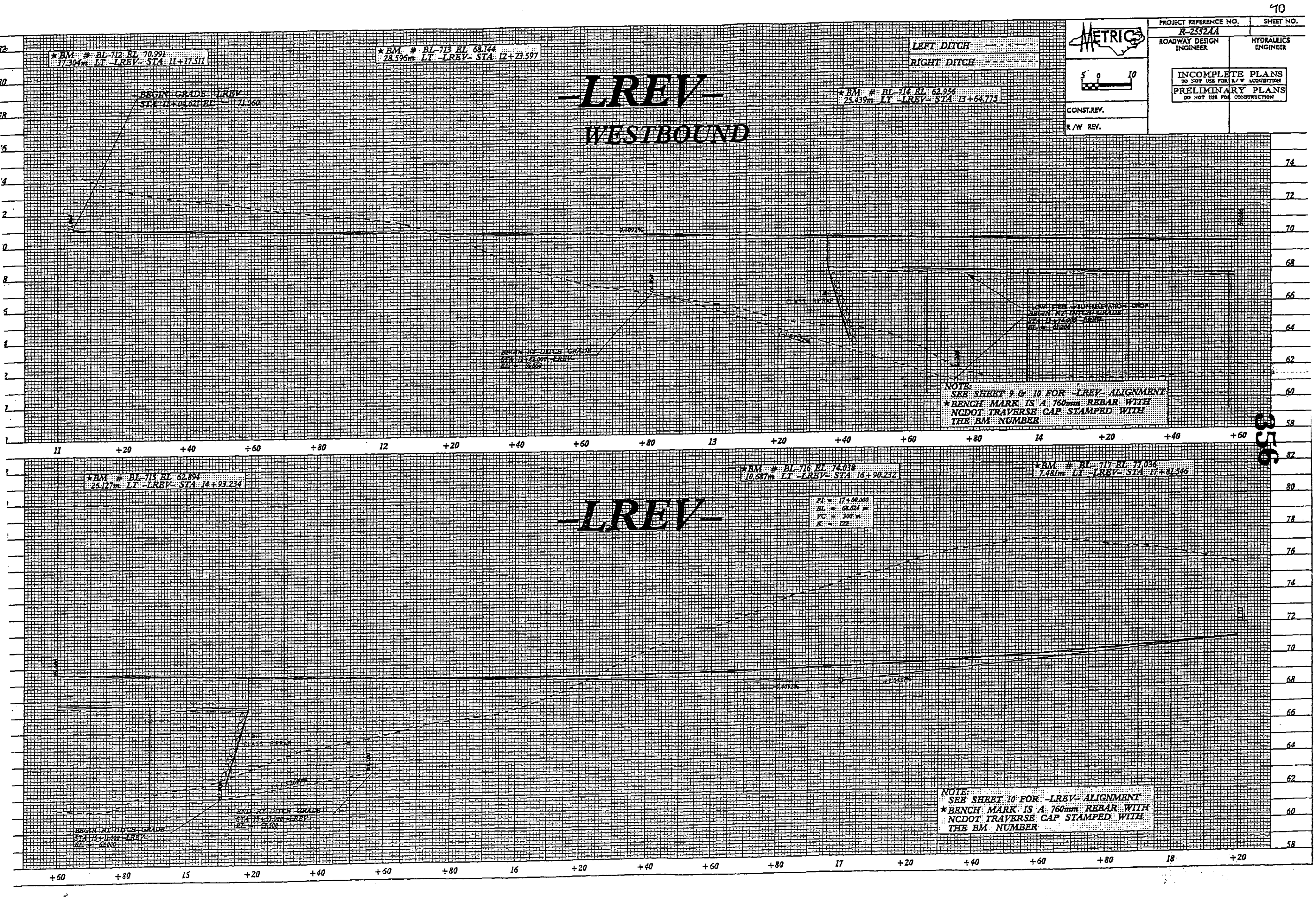
US 70 CLAYTON BYPASS

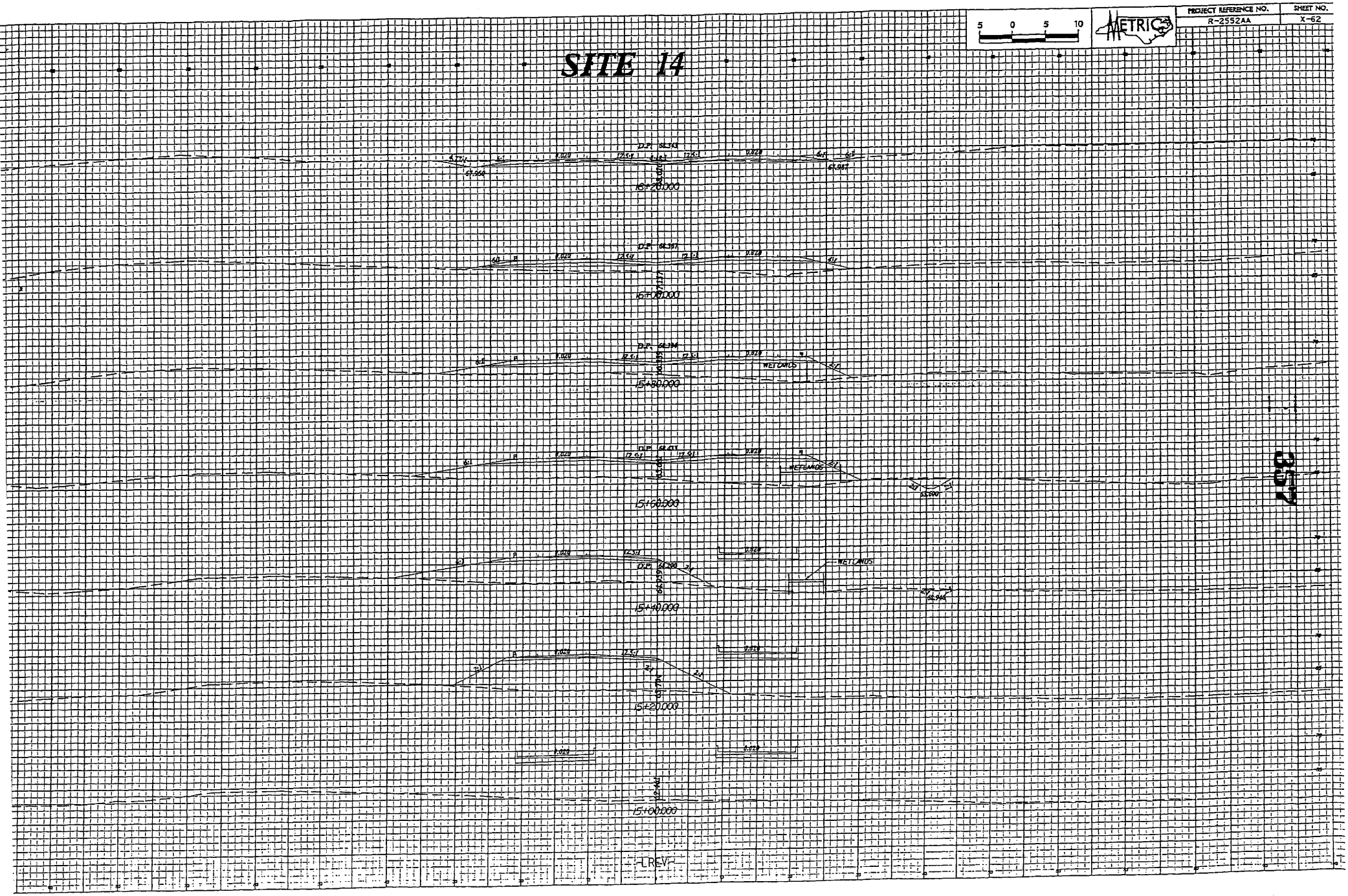
I-40 TO EAST OF SR 1525

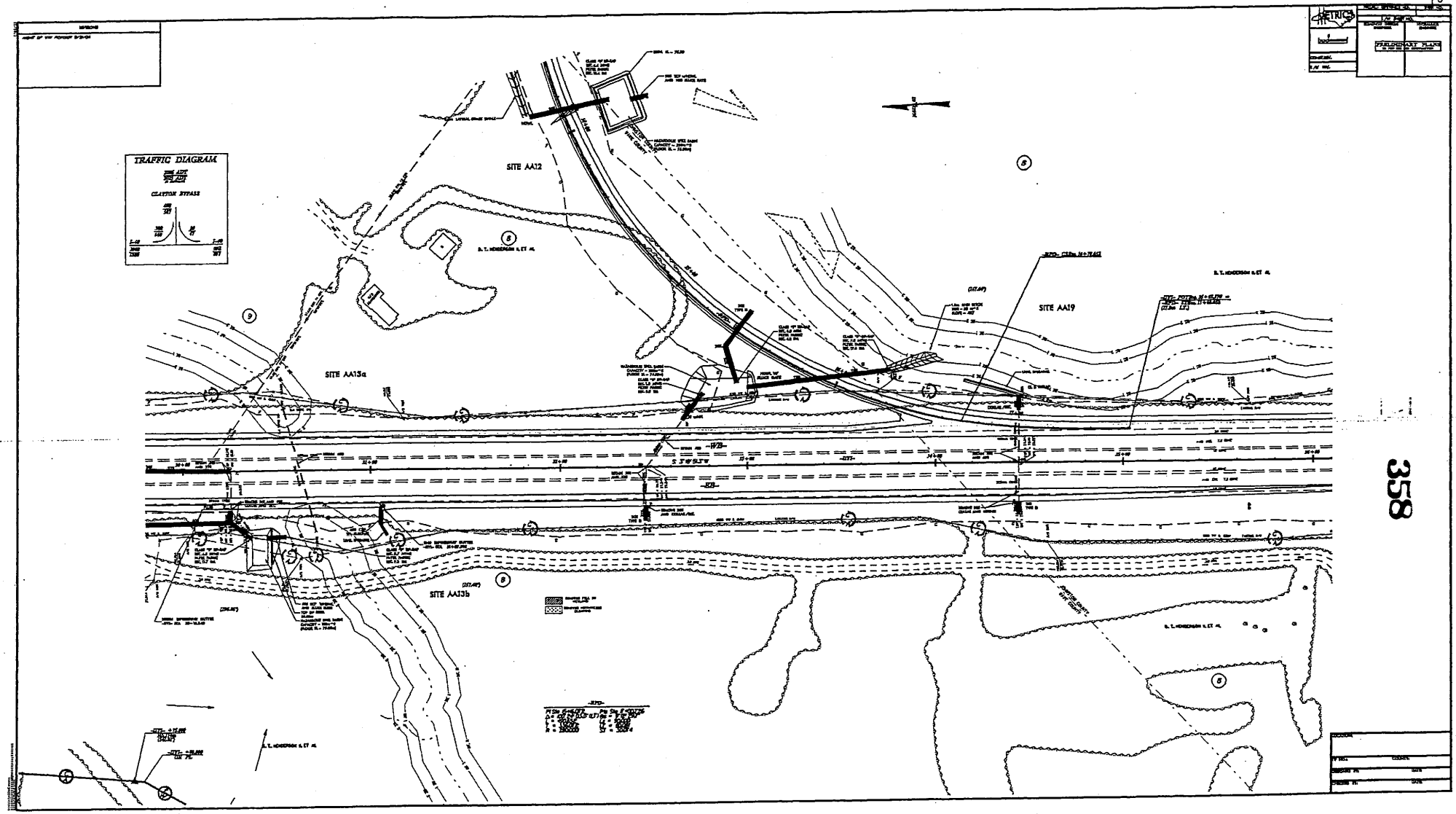
SHEET 37 OF 50 10 / 01 / 04



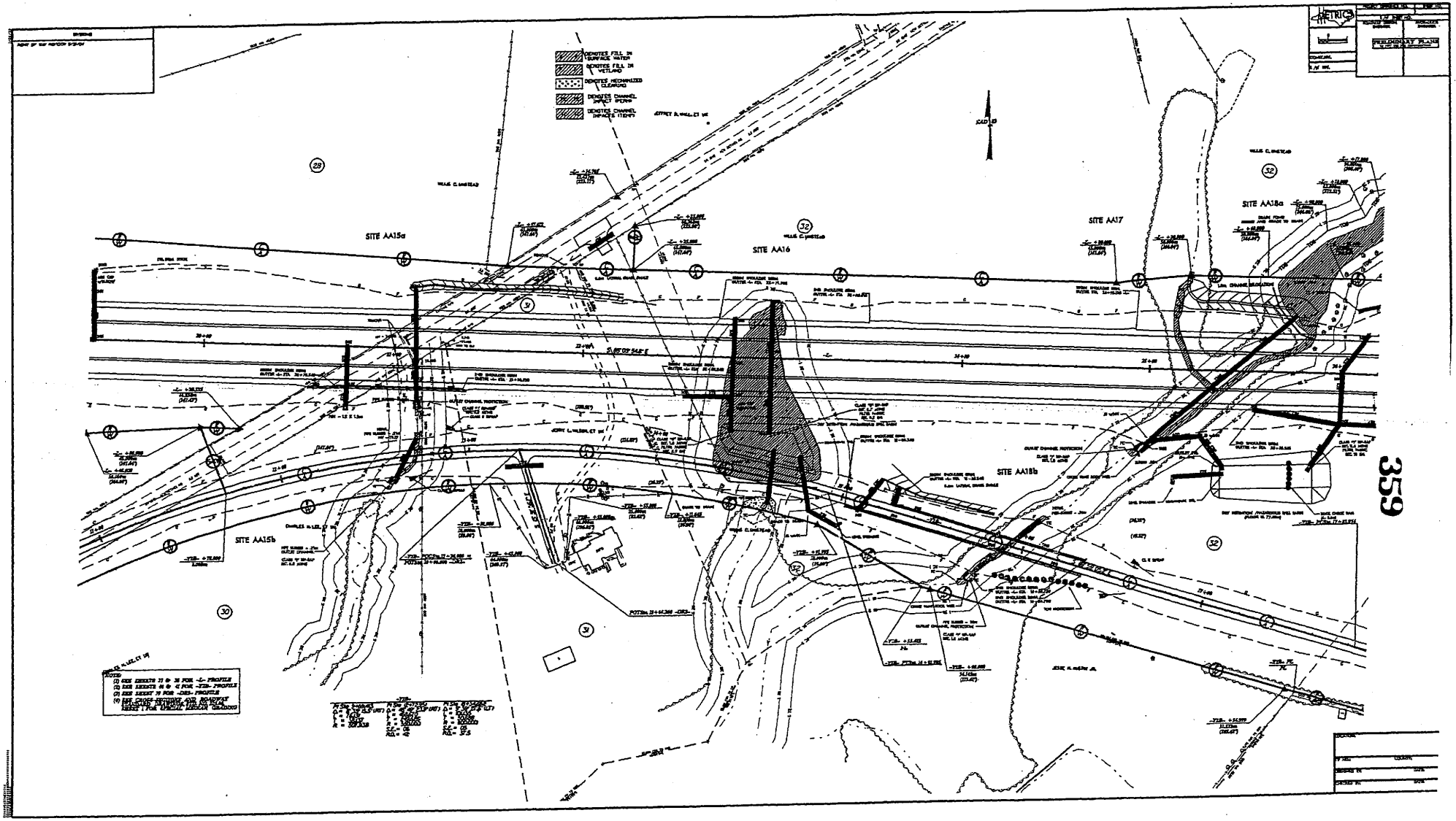
-LREV-
EASTBOUND
-LREV-
PROJECT REFERENCE NO. R-2552AA
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
LEFT DITCH
RIGHT DITCH
★BM # BL-712 EL 70.991 37.304m LT -LREV- STA 11+17.511
★BM # BL-713 EL 68.144 28.596m LT -LREV- STA 12+23.597
★BM # BL-714 EL 62.956 25.439m LT -LREV- STA 13+64.775
BEGIN GRADE -LREV- STA 11+04.621 EL = 71.060
★BM # BL-715 EL 62.894 26.127m LT -LREV- STA 14+93.234
★BM # BL-716 EL 74.038 10.687m LT -LREV- STA 16+90.232
★BM # BL-717 EL 77.036 7.481m LT -LREV- STA 17+81.546
PI = 17+00.000
EL = 68.624 m
VC = 300 m
K = 122
NOTE:
SEE SHEET 9 & 10 FOR -LREV- ALIGNMENT
★BENCH MARK IS A 760mm REBAR WITH NCDOT TRAVERSE CAP STAMPED WITH THE BM NUMBER
NOTE:
SEE SHEET 10 FOR -LREV- ALIGNMENT
★BENCH MARK IS A 760mm REBAR WITH NCDOT TRAVERSE CAP STAMPED WITH THE BM NUMBER

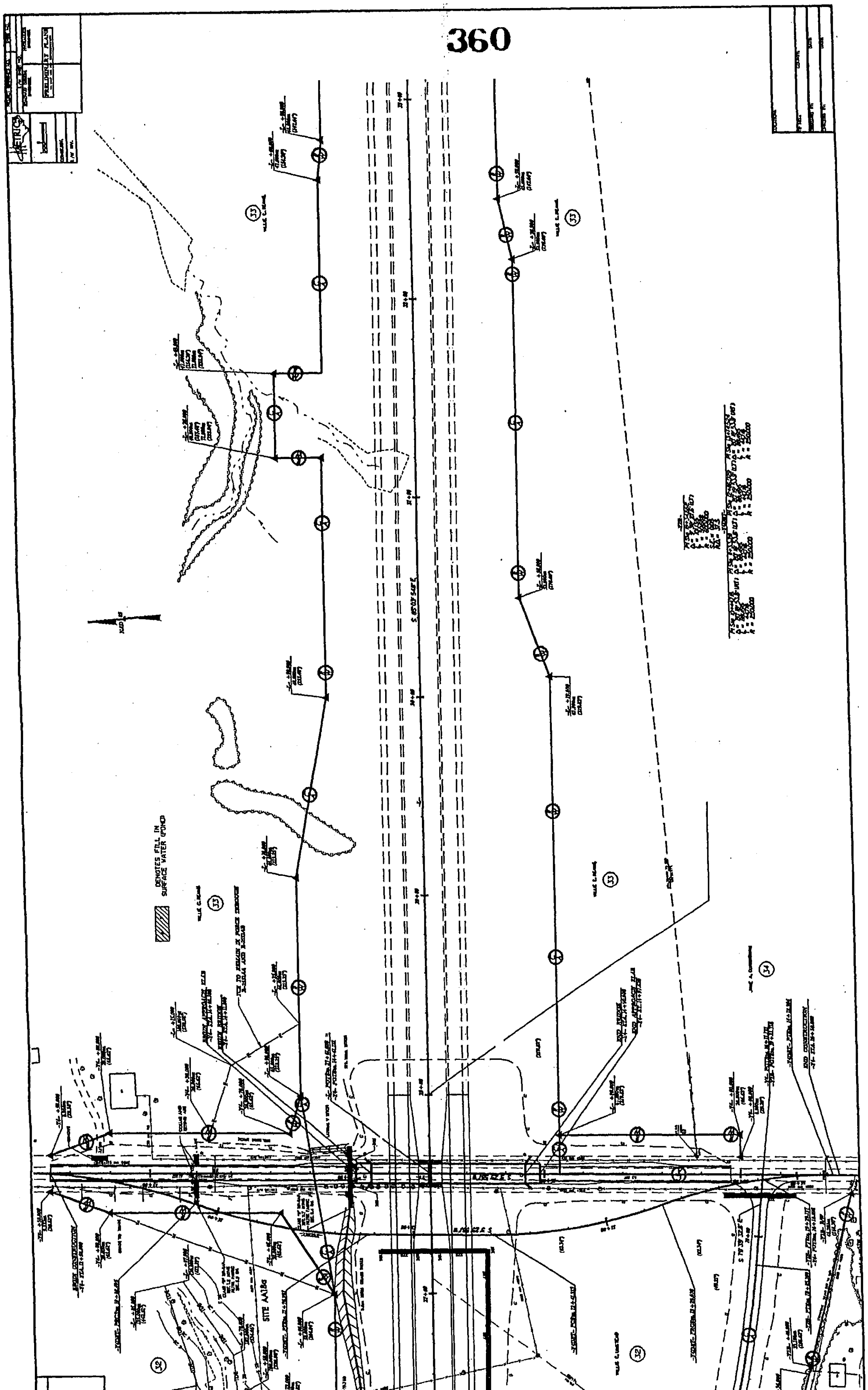

PROJECT REFERENCE NO.
SHEET NO.
R-2552AA
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
CONST.REV.
R/W REV.
LEFT DITCH
RIGHT DITCH
-LREV-
WESTBOUND
★BM # BL-712 EL 70.991 17.304m LT -LREV- STA 11+17.511
★BM # BL-713 EL 68.144 28.596m LT -LREV- STA 12+23.597
★BM # BL-714 EL 62.956 25.439m LT -LREV- STA 13+64.775
BEGIN GRADE -LREV- STA 11+04.621 EL = 71.060
BEGIN RT DITCH GRADE
CLASS RIPRAP
NOTE:
SEE SHEET 9 & 10 FOR -LREV- ALIGNMENT
★BENCH MARK IS A 760mm REBAR WITH NCDOT TRAVERSE CAP STAMPED WITH THE BM NUMBER
-LREV-
★BM # BL-715 EL 62.894 26.127m LT -LREV- STA 14+93.234
★BM # BL-716 EL 74.038 10.687m LT -LREV- STA 16+90.232
★BM # BL-717 EL 77.036 7.481m LT -LREV- STA 17+81.546
BEGIN RT DITCH GRADE
END RT DITCH GRADE
CLASS RIPRAP
NOTE:
SEE SHEET 10 FOR -LREV- ALIGNMENT
★BENCH MARK IS A 760mm REBAR WITH NCDOT TRAVERSE CAP STAMPED WITH THE BM NUMBER
356

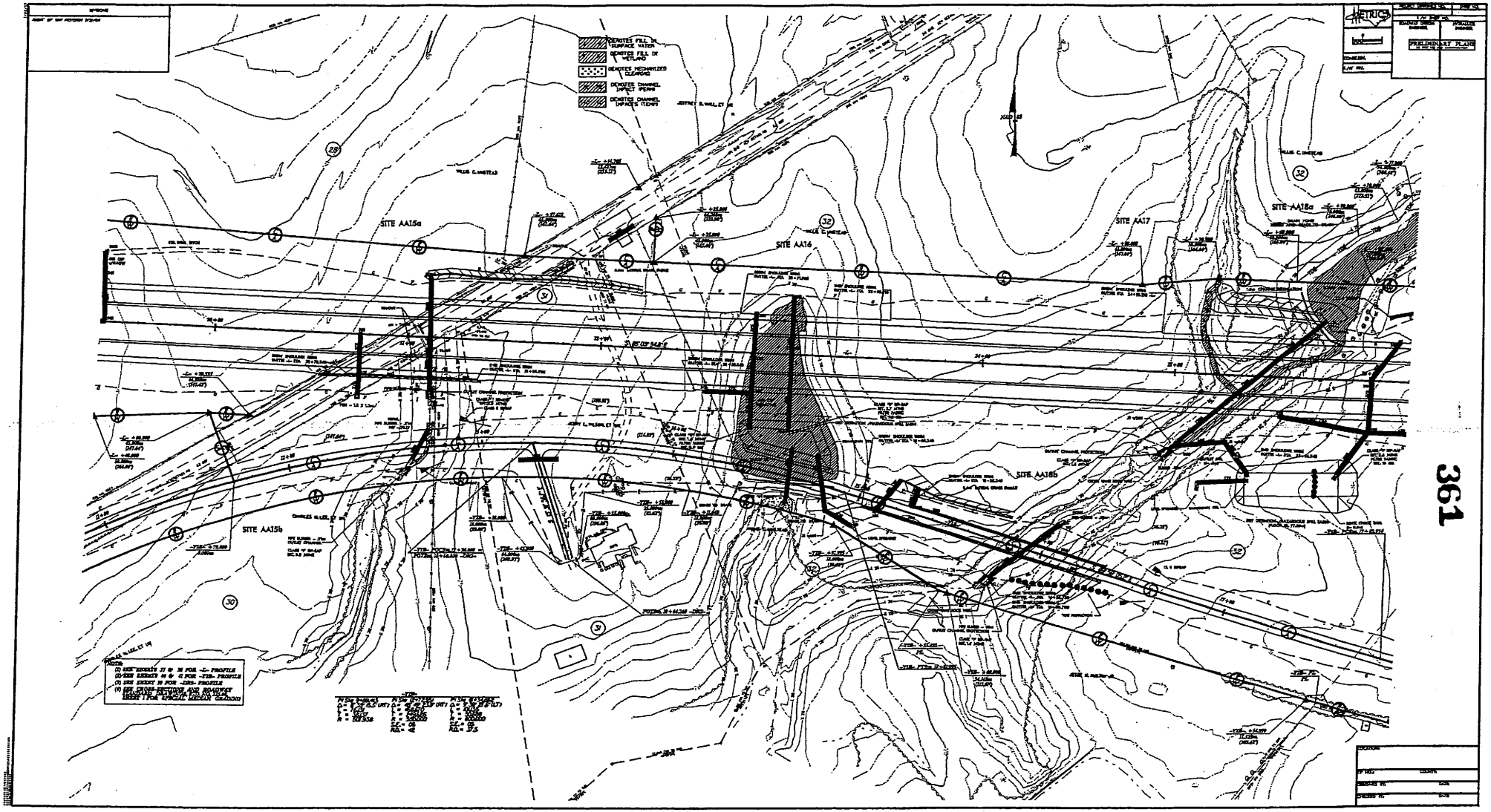

SITE 14
5 0 5 10
METRIC
PROJECT REFERENCE NO.
R-2552AA
SHEET NO.
X-62
16+20.000
16+00.000
15+80.000
15+60.000
15+40.000
15+20.000
15+00.000
WETLANDS
WETLANDS
-L REV-

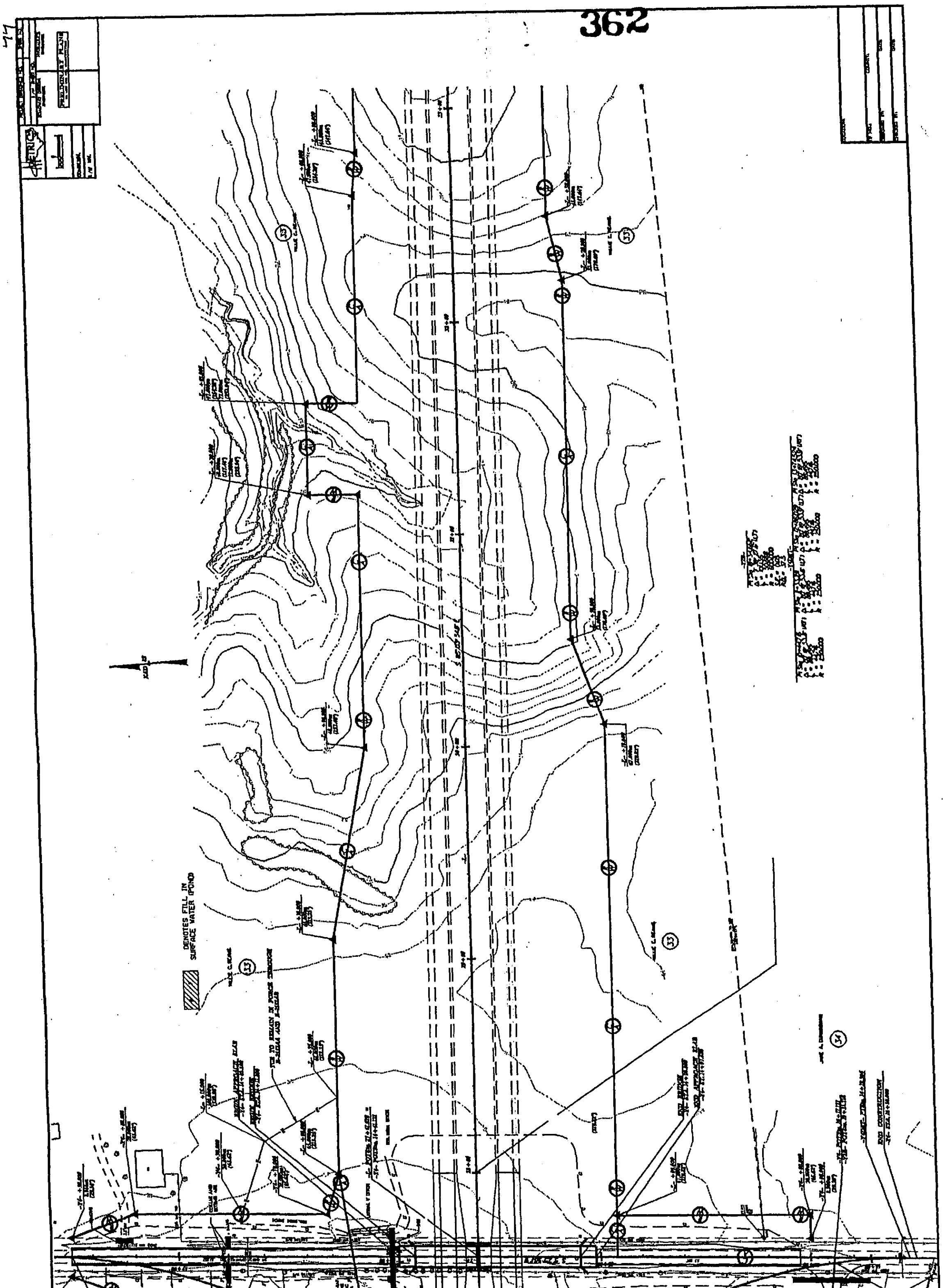

TRAFFIC DIAGRAM
CLAYTON BYPASS
SITE AA12
SITE AA13a
SITE AA13b
SITE AA19
PRELIMINARY PLANS

358

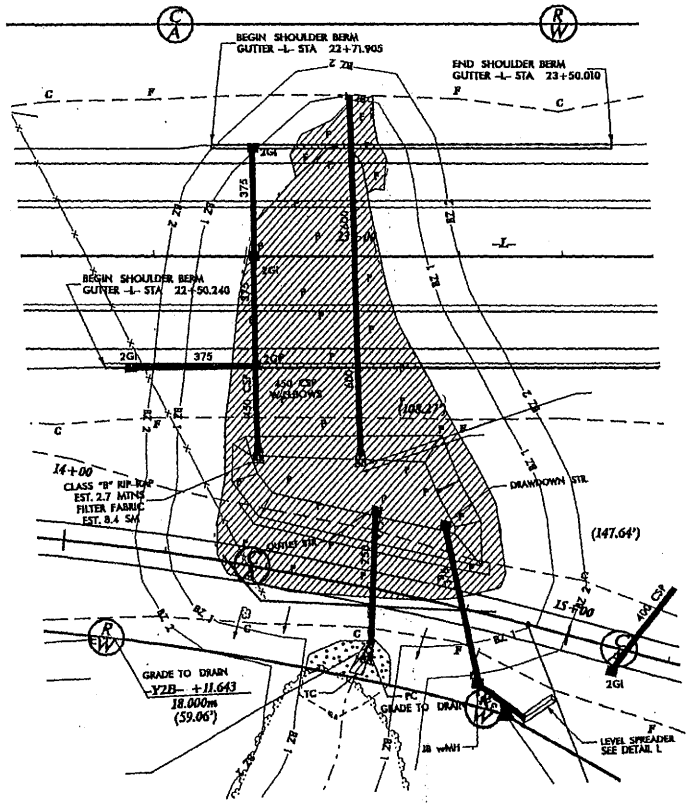

SITE AA15a
SITE AA15b
SITE AA16
SITE AA17
SITE AA18a
SITE AA18b
PRELIMINARY PLANS


DENOTES FILL IN SURFACE WATER (POND)


SITE AA15a
SITE AA15b
SITE AA16
SITE AA17
SITE AA18a
SITE AA18b
PRELIMINARY PLANS


DENOTES FILL IN SURFACE WATER (POND)

SITE AA16



SITE AA16

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER (POND)

DENOTES MECHANIZED CLEARING IN WETLANDS

DENOTES CHANNEL IMPACT (PERM)

DENOTES CHANNEL IMPACTS (TEMP)

10m 0 20m SCALE

NCDOT

DIVISION OF HIGHWAYS

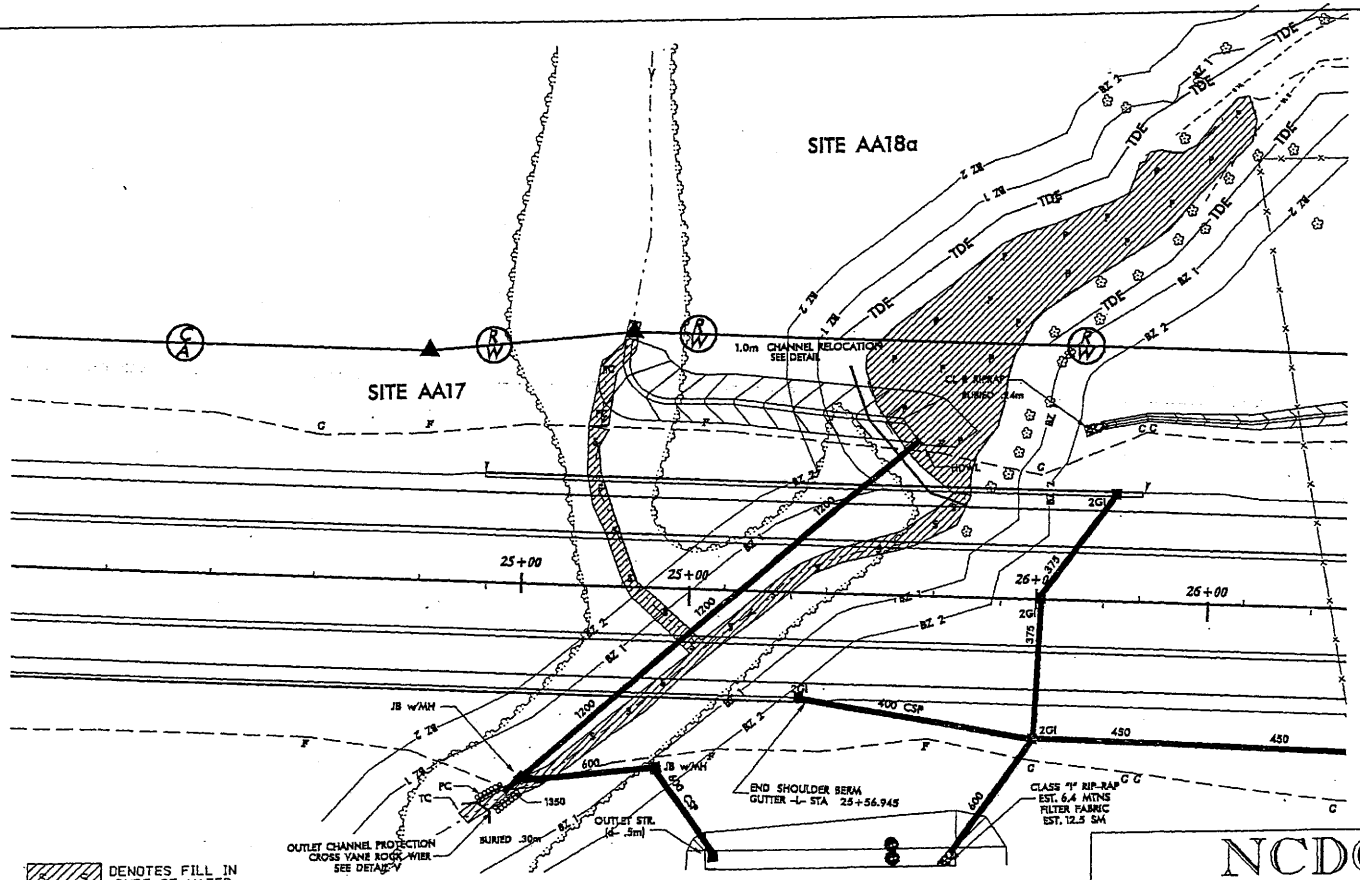
WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

I-40 TO EAST OF SR 1525

SHEET 75 OF 80 10/01/04



DENOTES FILL IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER (POND)

DENOTES MECHANIZED CLEARING IN WETLANDS

DENOTES CHANNEL IMPACT (PERM)

DENOTES CHANNEL IMPACTS (TEMP)

10m 0 20m SCALE

SITE AA17 & AA18a

NCDOT

DIVISION OF HIGHWAYS

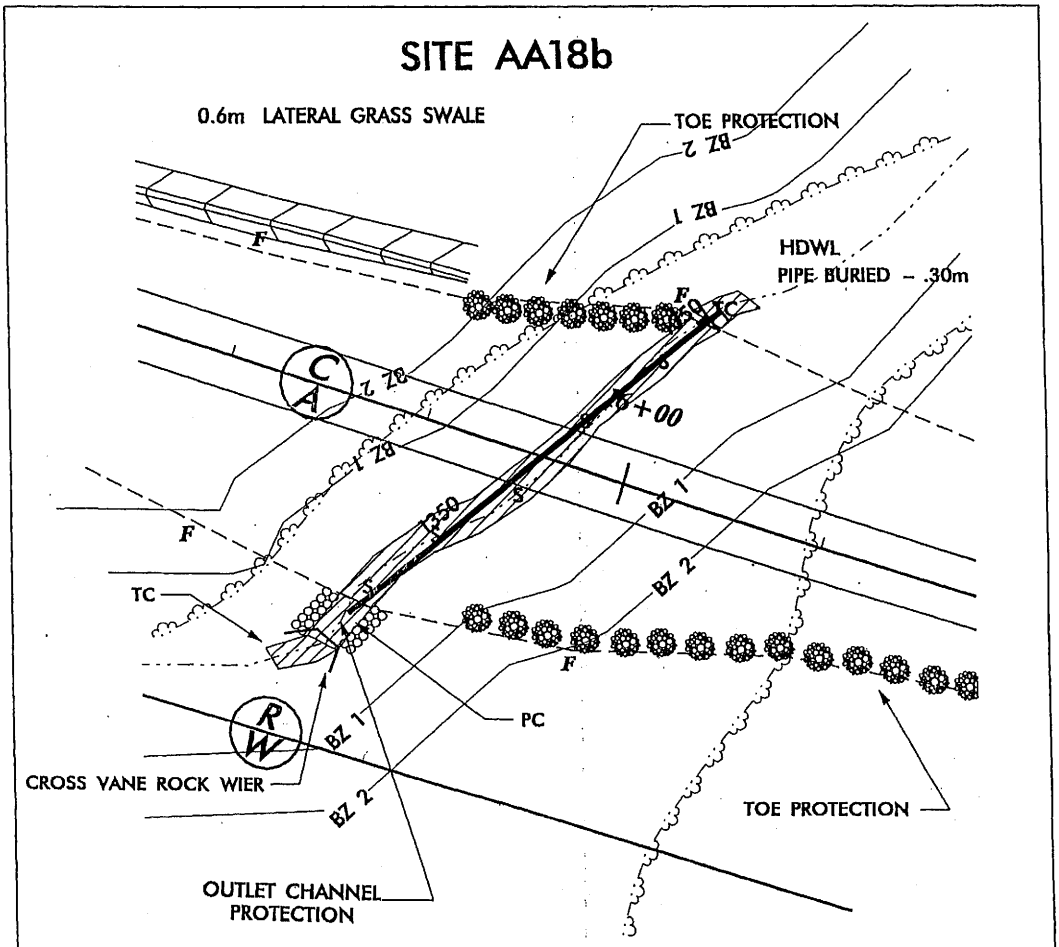
WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

I-40 TO EAST OF SR 1525

SHEET 46 OF 50 10 / 01 / 04



SITE AA18b

S S DENOTES FILL IN SURFACE WATER

F F DENOTES FILL IN WETLAND

H H DENOTES HAND CLEARING IN WETLANDS

DENOTES MECHANIZED CLEARING IN WETLANDS

PC PC DENOTES CHANNEL IMPACT (PERM)

TC TC DENOTES CHANNEL IMPACTS (TEMP)

10m 0 20m SCALE

NCDOT

DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

PROJECT: 8.2661601 (R-~~2246C~~ 2552AA)

US 70 CLAYTON BYPASS

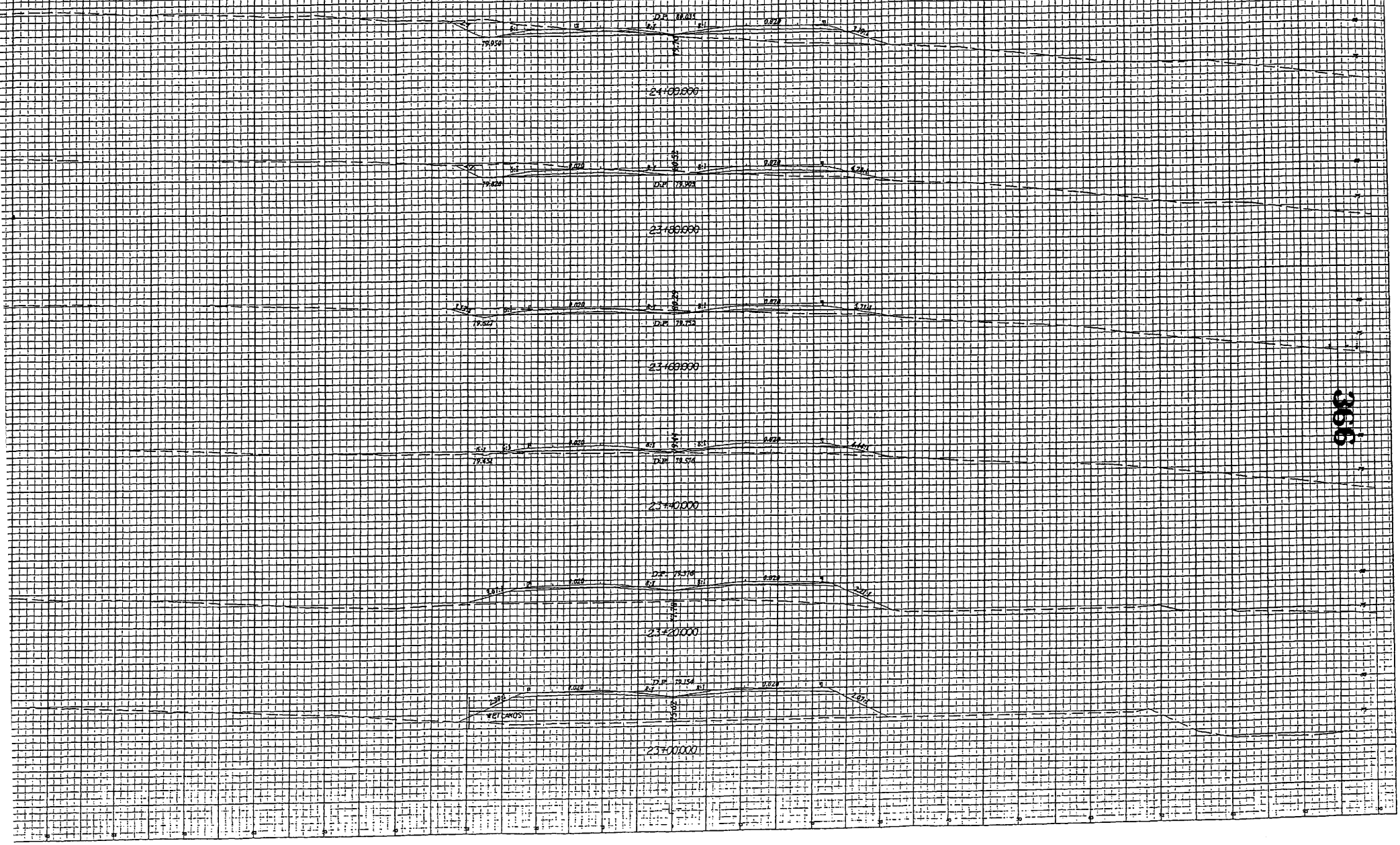
I-40 TO EAST OF SR 1525

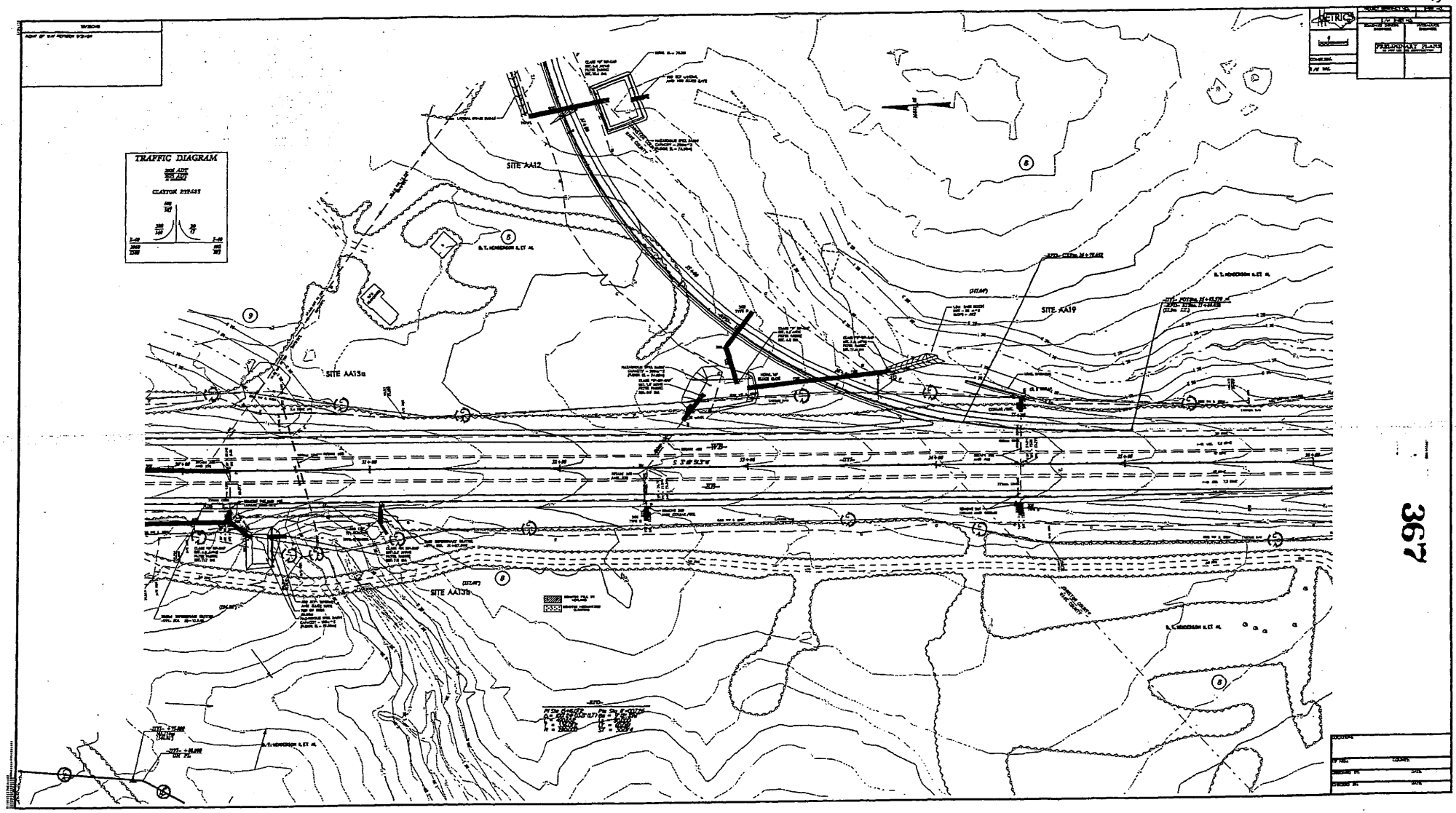
SHEET 47 OF 50 **10/01/04**

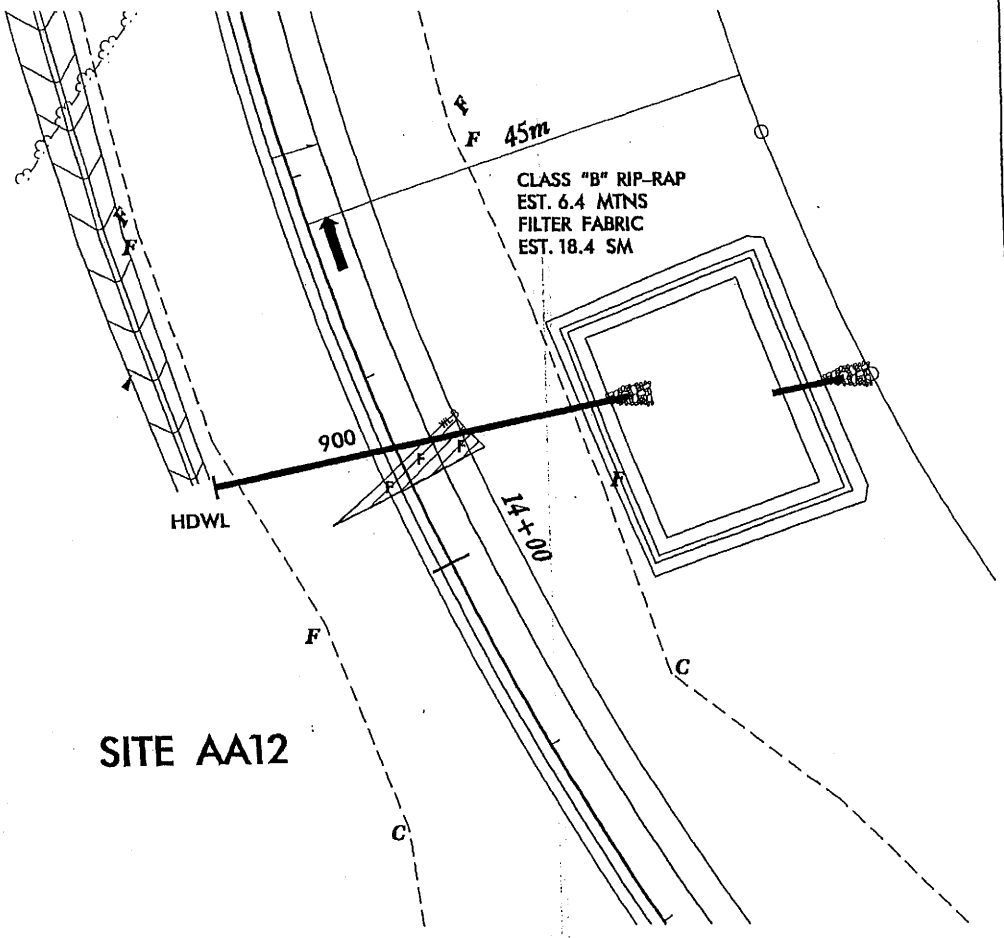
5 0 5 10

METRIC

SITE 16




TRAFFIC DIAGRAM
SITE AA12
SITE AA13a
SITE AA13b
SITE AA19
METRIC
PRELIMINARY PLANS



10m 0 20m SCALE

F F DENOTES FILL IN WETLAND

NCDOT
DIVISION OF HIGHWAYS
WAKE / JOHNSTON COUNTY
PROJECT: 8.2661601 (R-~~2248C~~ 2553AA)
US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525

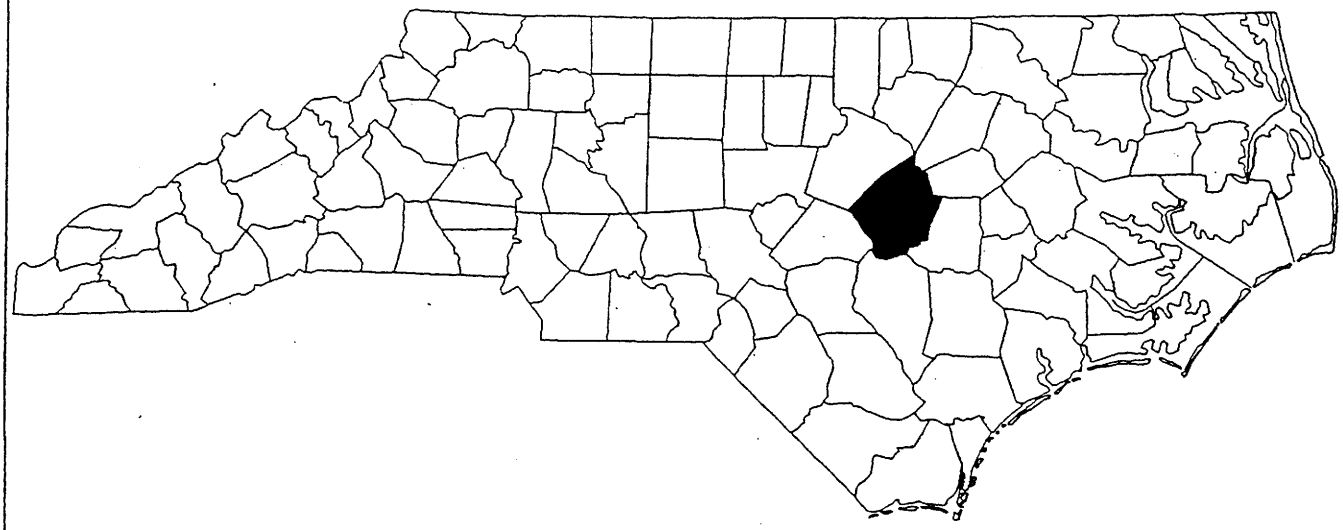
SHEET 50 OF 50 10/01/04

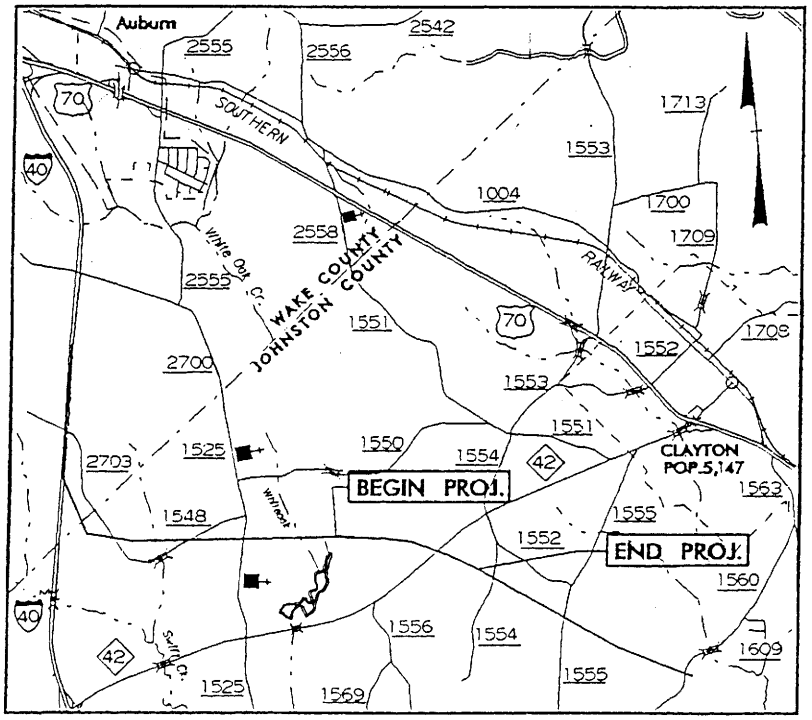
KCW 11/1/01

COPY

I 369

NORTH CAROLINA





VICINITY MAP

NCDOT

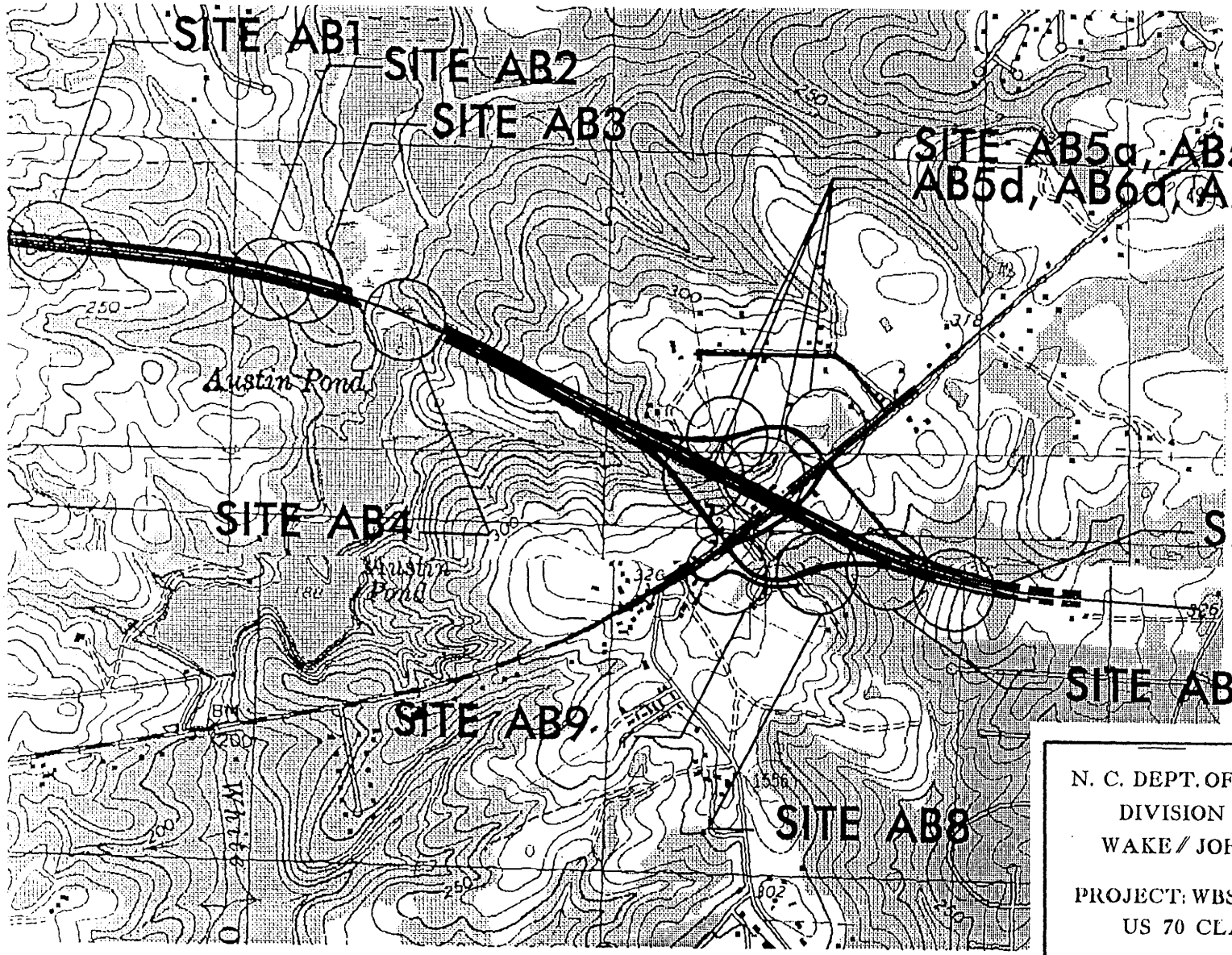
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AB)

US 70 CLAYTON BYPASS

SHEET 1 OF 23 10/01/04



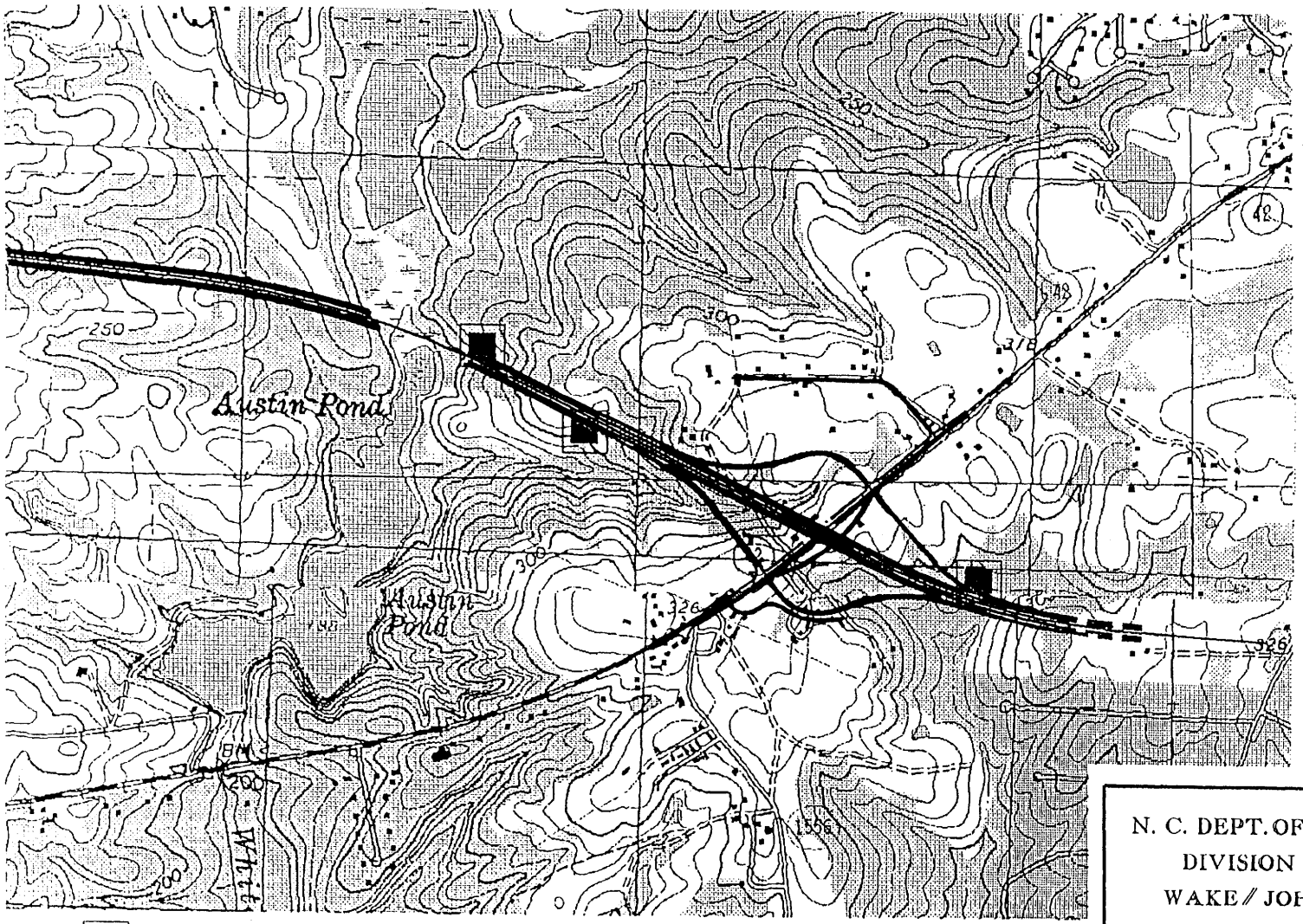
SITE MAP

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

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

SHEET 2 OF 23 10/01/04

320



HAZARDOUS SPILL BASIN

HAZARDOUS SPILL BASINS SITE MAP

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

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

SHEET 3 OF 23 10/01/04

371

WETLAND PERMIT IMPACT SUMMARY

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

NOTE :

HAND-CLEARING IN WETLAND	SITE AB4	=	0.08 ac
PERM FILL IN SURFACE WATER (PERM BRIDGE PIER)	SITE AB4	=	0.01 ac
TEMP FILL IN SURFACE WATER (TEMP BRIDGE PIER)	SITE AB4	=	0.02 ac
PERM FILL IN WETLAND (PERM BRIDGE PIER)	SITE AB4	=	0.01 ac
TEMP FILL IN WETLAND (TEMP BRIDGE PIER)	SITE AB4	=	0.01 ac
SURFACE WATER FILL (POND)	SITE AB7	=	0.13 ac

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

372

373

PROPERTY OWNERS

NAMES AND ADDRESSES

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

NCDOT

DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552 AB)

US 70 CLAYTON BYPASS

FROM EAST OF SR 1525

TO EAST OF NC 42

SHEET 5 OF 23 10/01/04

PROPERTY OWNERS

NAMES AND ADDRESSES

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

NCDOT

DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552 AB)

US 70 CLAYTON BYPASS

FROM EAST OF SR 1525

TO EAST OF NC 42

375

PROPERTY OWNERS

NAMES AND ADDRESSES

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

NCDOT

DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552 AB)

US 70 CLAYTON BYPASS

FROM EAST OF SR 1525

TO EAST OF NC 42

7a of 23

376

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

LOCATION: *US 70 CLAYTON BYPASS FROM EAST OF SR 1525 (CORNWALLIS RD.) TO EAST OF NC 42*

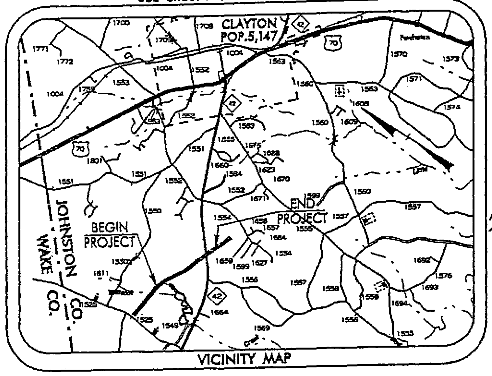
TYPE OF WORK: *GRADING, DRAINAGE, GUARDRAIL, CABLE GUIDERAIL, STRUCTURES, CULVERTS, PAVING, AND SIGNALS*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2552AB	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34459.1.4	NHF-60-1 (9)	PE	
34459.2.4	N/A	R/W & UTL	
34459.3.8	N/A	CONST.	

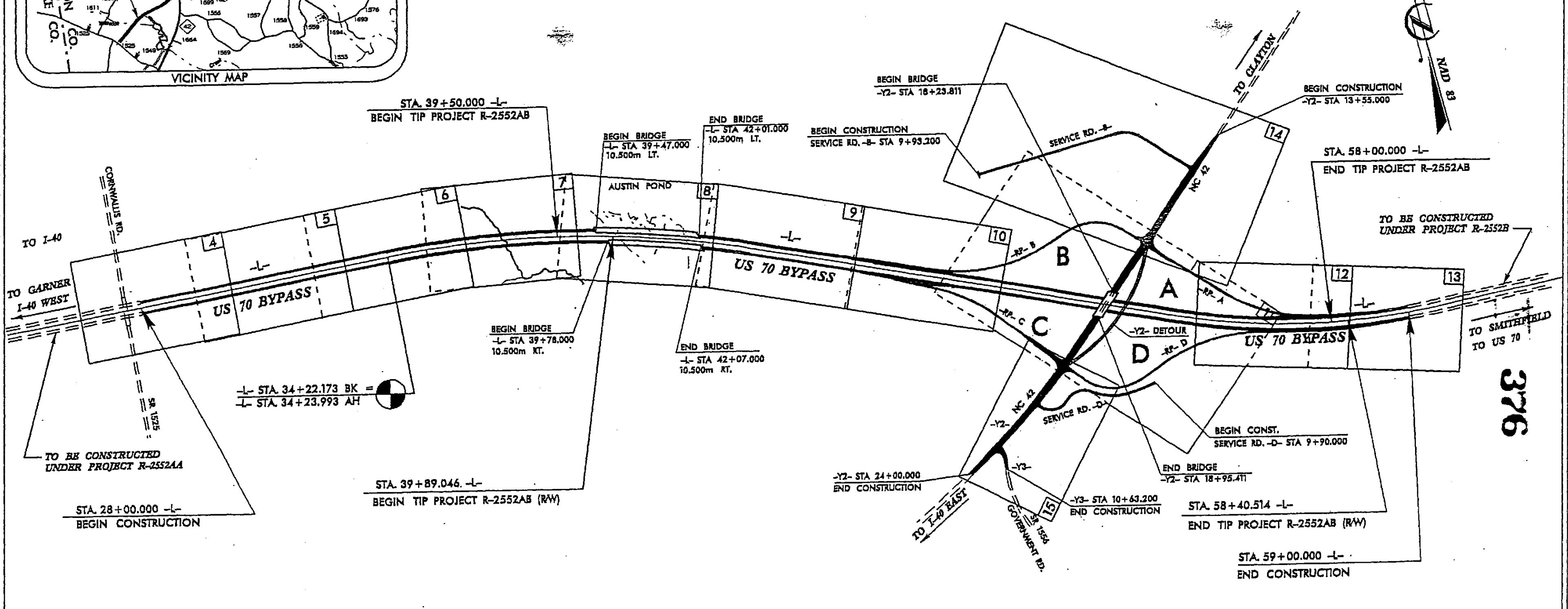
METRIC

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

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



VICINITY MAP



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

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

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

GRAPHIC SCALES

PLANS (0 – 10)

PROFILE (HORIZONTAL) (0 – 10)

PROFILE (VERTICAL) (0 – 2)

DESIGN DATA

ADT 2005 = 35,400 TO 40,800
ADT 2025 = 68,800 TO 85,000
DHV = 10 %
D = 65 %
T = 16 % *
V = 110 km/h

* (TTST 10% & DUAL 6%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2552AB	=	1.600 km
LENGTH STRUCTURES TIP PROJECT R-2552AB	=	0.250 km
TOTAL LENGTH OF TIP PROJECT R-2552AB	=	1.850 km

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 31, 2002

LETTING DATE: MAY 17, 2005

JASON MOORE, PE — PROJECT ENGINEER

KEVIN E. MOORE, PE — PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

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

CONTRACT: C201227

R-2552AB

09/09/99

07-JAN-2005 10:02

METRIC | PROJ. REFERENCE NO. R-2552AB | SHEET NO. 1-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

- Edge of Pavement
- Curb
- Prop. Slope Stakes Cut
- Prop. Slope Stakes Fill
- Prop. Woven Wire Fence
- Prop. Chain Link Fence
- Prop. Barbed Wire Fence
- Prop. Wheelchair Ramp
- Curb Cut For Future Wheelchair Ramp
- Exist. Guardrail
- Prop. Guardrail
- Exist. Cable Guiderail
- Prop. Cable Guiderail
- Equality Symbol
- Pavement Removal

RIGHT OF WAY

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

HYDROLOGY

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

STRUCTURES

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

MINOR
- Head & End Wall
- Pipe Culvert
- Footbridge
- Drainage Boxes
- Paved Ditch Gutter

UTILITIES

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

- Recorded Water Line
- Designated Water Line (S.U.E.*)
- Sanitary Sewer
- Recorded Sanitary Sewer Force Main
- Designated Sanitary Sewer Force Main(S.U.E.*)
- Recorded Gas Line
- Designated Gas Line (S.U.E.*)
- Storm Sewer
- Recorded Power Line
- Designated Power Line (S.U.E.*)
- Recorded Telephone Cable
- Designated Telephone Cable (S.U.E.*)
- Recorded U/G Telephone Conduit
- Designated U/G Telephone Conduit (S.U.E.*)
- Unknown Utility (S.U.E.*)
- Recorded Television Cable
- Designated Television Cable (S.U.E.*)
- Recorded Fiber Optics Cable
- Designated Fiber Optics Cable (S.U.E.*)
- Exist. Water Meter
- U/G Test Hole (S.U.E.*)
- Abandoned According to U/G Record
- End of Information

BOUNDARIES & PROPERTIES

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

BUILDINGS & OTHER CULTURE

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

TOPOGRAPHY

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

VEGETATION

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard

RAILROADS

- Standard Gauge
- RR Signal Milepost
- Switch

METRIC

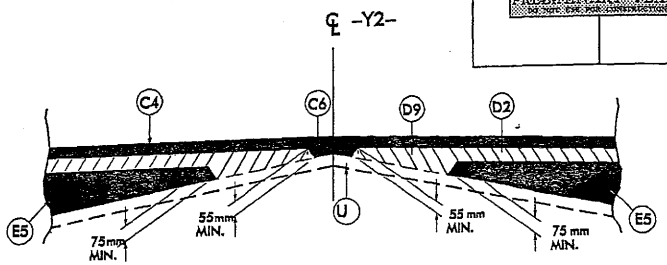
PROJECT REFERENCE NO.	SHEET NO.
R-2552AB	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

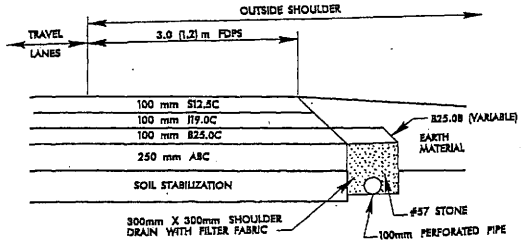
PAVEMENT SCHEDULE

C1	PROP. APPROX. 70 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 64 kg PER SQ. METER IN EACH OF TWO LAYERS.	E4	PROP. VAR. DEPTH ASPHALT CONC.BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 mm IN DEPTH.
C2	PROP. APPROX. 80 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 86 kg PER SQ. METER IN EACH OF TWO LAYERS.	J1	PROP. 200 mm AGGREGATE BASE COURSE.
C3	PROP. APPROX. 100 mm ASPHALT CONC. SURFACE COURSE, TYPE S12.5C, AT AN AVERAGE RATE OF 120 kg PER SQ. METER IN EACH OF TWO LAYERS.	J2	PROP. 250 mm AGGREGATE BASE COURSE.
C4	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 2.4 kg PER SQ. METER PER 1 mm DEPTH,TO BE PLACED IN LAYERS NOT LESS THAN 30 mm IN DEPTH OR GREATER THAN 40 mm IN DEPTH.	J3	PROP. VAR. DEPTH AGGREGATE BASE COURSE.
D1	PROP. APPROX. 65 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 159.25 kg PER SQ. METER.	L	SUBBASE TO BE TREATED WITH LIME TO A DEPTH OF 200mm, AT A RATE OF 11 KG. PER SQ.METER, AS DIRECTED BY THE ENGINEER OR SUBBASE TO BE TREATED WITH CEMENT TO A DEPTH OF 180mm, AT A RATE OF 30 KG. PER SQ.METER, AS DIRECTED BY THE ENGINEER. OR SUBBASE TO BE TREATED WITH AGGREGATE AT A RATE OF 135 KG. PER SQ. METER AND CEMENT AT A RATE OF 30 KG. PER SQ.METER TO A DEPTH OF 180mm, AS DIRECTED BY THE ENGINEER.
D2	PROP. APPROX. 65 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 159.25 kg PER SQ. METER.		
D3	PROP. APPROX. 80 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 196.00 kg PER SQ. METER.		
D4	PROP. APPROX. 100 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 245.00 kg PER SQ. METER.	P	PRIME COAT AT THE RATE OF 1.8 L PER SQ. METER.
D5	PROP. VAR. DEPTH ASPHALT CONC.INTERMEDIATE COURSE,TYPE I19.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 55 mm OR GREATER THAN 110 mm IN DEPTH.	R	125 mm MONOLITHIC CONCRETE ISLAND.
E1	PROP. APPROX. 80 mm ASPHALT CONC.BASE COURSE,TYPE B25.0C, AT AN AVERAGE RATE OF 220.50 kg PER SQ. METER.	T	EARTH MATERIAL.
E2	PROP. APPROX. 100 mm ASPHALT CONC.BASE COURSE,TYPE B25.0C,AT AN AVERAGE RATE OF 245.00 kg PER SQ. METER.	U	EXISTING PAVEMENT.
E3	PROP. APPROX. 160 mm ASPHALT CONC.BASE COURSE,TYPE B25.0C, AT AN AVERAGE RATE OF 220.50 kg PER SQ. METER, IN EACH OF TWO LAYERS	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL)

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



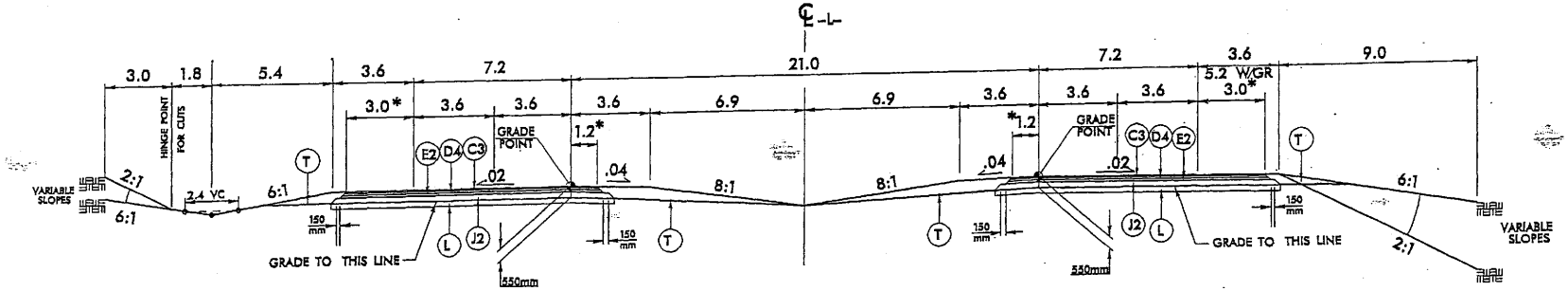
DETAIL OF WEDGING



SHOULDER DRAIN DETAIL

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

378



TYPICAL SECTION NO. 1

*FULL DEPTH PAVED SHOULDER

USE TYPICAL SECTION NO.1 AS FOLLOWS:
-L- 28+00.000 TO (BEGIN BRIDGE)
-L- (END BRIDGE) TO 58+00.000

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

7D of 23

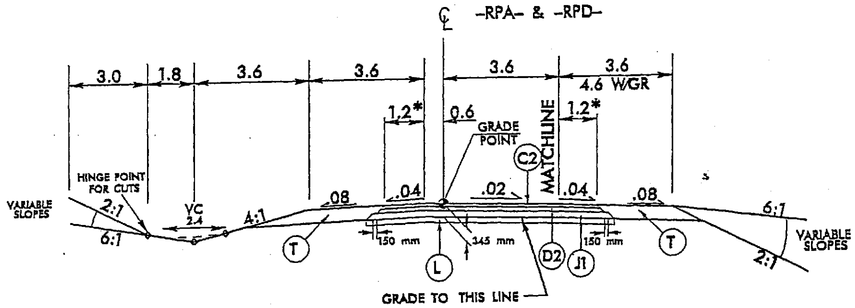
PROJECT REFERENCE NO.	SHEET NO.
R-2552AB	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS

PAVEMENT SCHEDULE	
C1	70 mm S9.5B
C2	80 mm S9.5C
C3	100 mm S12.5C
C4	VAR. DEPTH S9.5B
D1	65 mm I19.0B
D2	65 mm I19.0C
D3	80 mm I19.0C
D4	VAR. DEPTH I19.0C
E1	90 mm B25.0C
E2	100 mm B25.0C
E3	180 mm B25.0C
E4	VAR. DEPTH B25.0C
J1	200 mm AGGREGATE BASE COURSE.
J2	250 mm AGGREGATE BASE COURSE.
J3	VAR. DEPTH AGGREGATE BASE CORSE
L	SUBGRADE STABILIZATION
P	PRIME COAT
R	125 mm MONO. CONC ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT

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

379



TYPICAL SECTION NO. 2

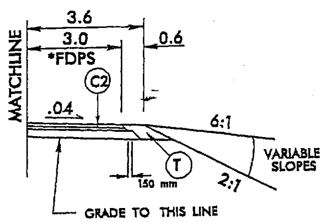
*FULL DEPTH PAVED SHOULDER

NOTE: USE DITCH DETAIL U IN CONJUNCTION WITH TS NO 2
-RPD- 13+70 TO 14+20

USE TYPICAL SECTION NO. 2 AS FOLLOWS:

-RPA- 10+000 TO 14+91.683
-RPD- 10+000 TO 16+21.407 (REVERSE TYPICAL)

NOTE : SEE PARTIAL TYPICAL SECTION NO. 3A FOR
-RPD- 10+000 TO 16+21.407

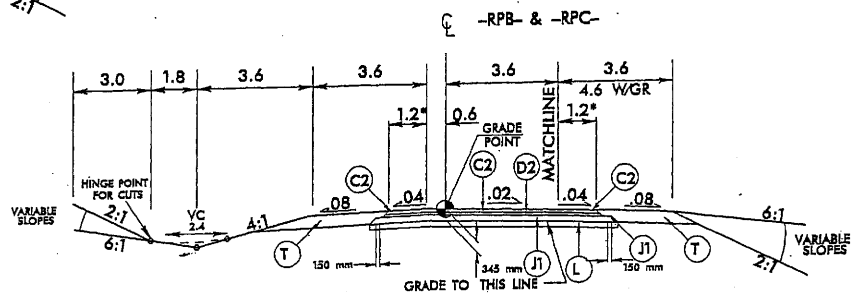


TYPICAL SECTION NO. 2A

*FULL DEPTH PAVED SHOULDER

T.S. 2A TO BE USED IN CONJUNCTION WITH
T.S. NO. 2 & 3 IN THE FOLLOWING LOCATIONS:

-RPB- 10+000 TO 15+94.234 (NOTE: USE T.S. NO. 4 PAVEMENT DESIGN)
-RPD- 10+000 TO 16+21.407 (REVERSE TYPICAL) (NOTE: USE T.S. NO. 3 PAVEMENT DESIGN)



TYPICAL SECTION NO. 3

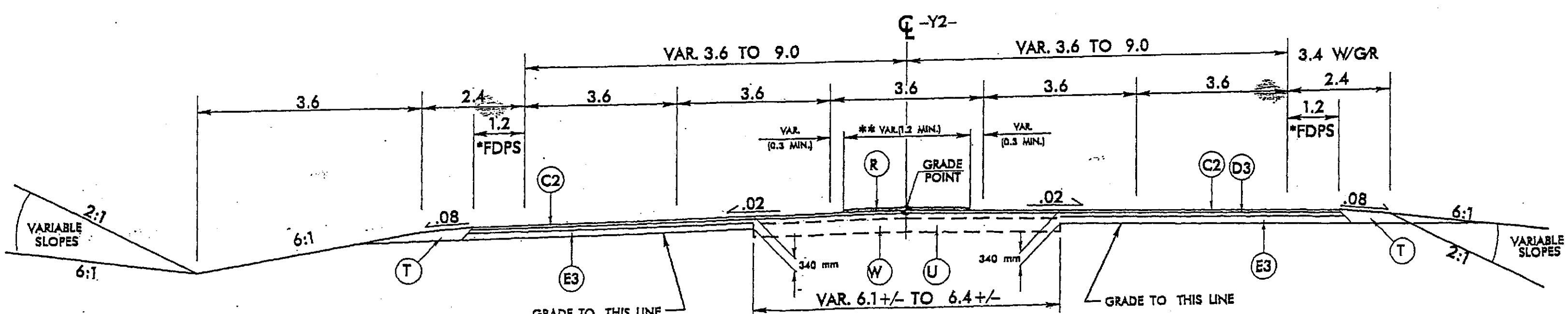
*FULL DEPTH PAVED SHOULDER

USE TYPICAL SECTION NO. 3 AS FOLLOWS:

-RPB- 10+000 TO 15+94.234 (REVERSE TYPICAL)
-RPC- 10+000 TO 14+80.943

NOTE : SEE PARTIAL TYPICAL SECTION NO. 2A FOR
-RPB- 10+000 TO 15+94.234

NOTE: USE DITCH DETAIL U IN CONJUNCTION WITH TS NO 3
-RPC- 13+00 TO 14+60



** 125 mm MONOLITHIC CONC. ISLAND
SEE PLANS FOR LOCATIONS

TYPICAL SECTION NO. 4

*FULL DEPTH PAVED SHOULDER

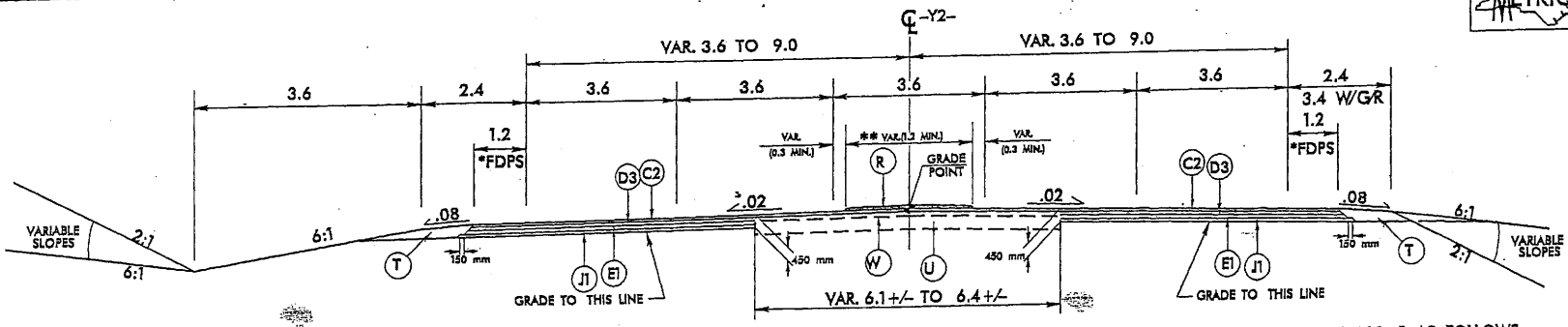
USE TYPICAL SECTION NO. 4 AS FOLLOWS:

-Y2- 13+55.000 TO 15+05 +/-
-Y2- 21+75 +/- TO 24+00.000
**

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2552AB	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION



TYPICAL SECTION NO. 5

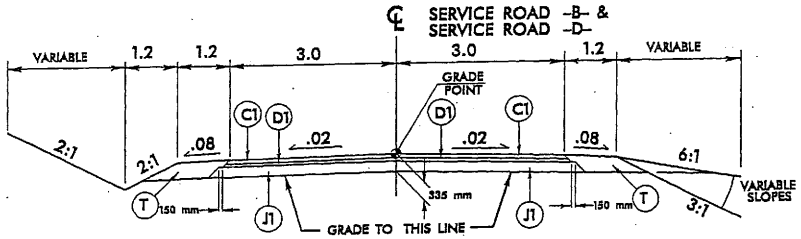
*FULL DEPTH PAVED SHOULDER

USE TYPICAL SECTION NO. 5 AS FOLLOWS:

-Y2- 15+05 +/- TO (BEGIN BRIDGE)
-Y2- (END BRIDGE) TO 21+75 +/-

PAVEMENT SCHEDULE	
C1	70 mm S9.5B
C2	80 mm S9.5C
C3	100 mm S12.5C
C4	VAR. DEPTH S9.5B
D1	85 mm I19.0B
D2	85 mm I19.0C
D3	80 mm I19.0C
D4	VAR. DEPTH I19.0C
E1	90 mm B25.0C
E2	100 mm B25.0C
E3	180 mm B25.0C
E4	VAR. DEPTH B25.0C
J1	200 mm AGGREGATE BASE COURSE.
J2	250 mm AGGREGATE BASE COURSE.
J3	VAR. DEPTH AGGREGATE BASE COURSE.
L	SUBGRADE STABILIZATION
P	PRIME COAT
R	125 mm MONO. CONC ISLAND
T	EARTH MATERIAL .
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT

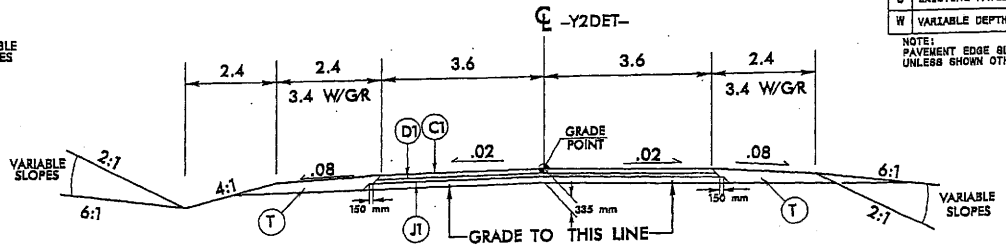
NOTE:
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS:

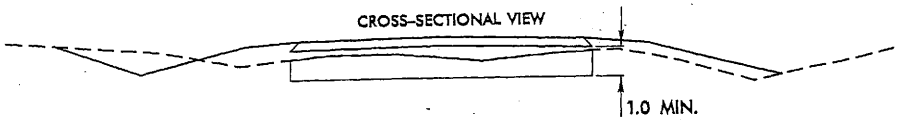
SERVICE ROAD -B- 9+93.200 TO 15+67.450
SERVICE ROAD -D- 9+90.000 TO 13+00.920



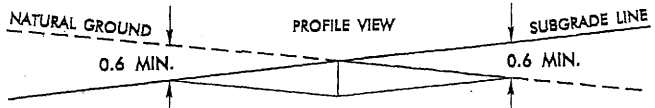
TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 AS FOLLOWS:

-Y2DET- 16+58.778 TO 20+78.437



DETAIL OF UNDERCUT LIMITS



DETAIL OF UNDERCUT AT GRADE POINT

380

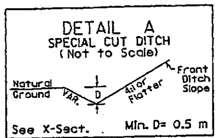
7 of 23

PROJECT REFERENCE NO.	SHEET NO.
R-2552AB	2-C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

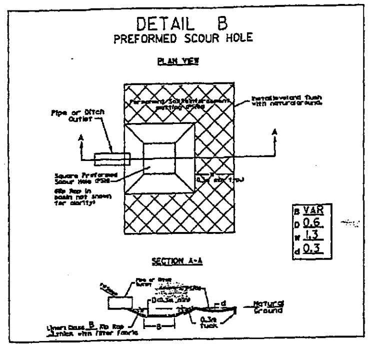
METRIC

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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

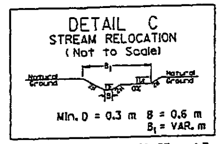


STA 39+00 TO 39+20 -L- RT
STA 52+60 TO 53+80 -L- RT
STA 15+40 TO 15+80 -Y2- RT
STA 11+85 TO 12+25 -RPA- RT



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

STA 56+20 -L- RT
STA 56+80 -L- RT
STA 12+50 -RPD- LT
STA 13+82 -RPD- RT
STA 18+80 -Y2 DET- LT
STA 19+34 -Y2 DET- LT



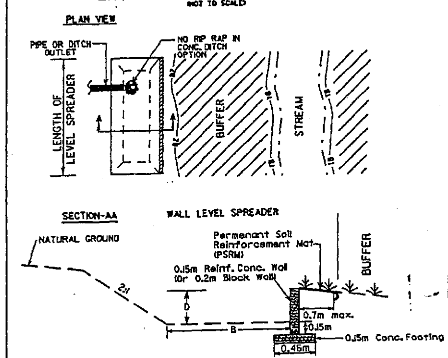
STA 50+20 -L- 30 TO 85 m LT

DETAIL D
PERM ROCK SILT CHECK DAM

SEE METRIC STD 1633.02

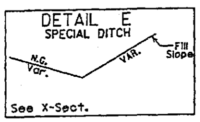
STA 13+00 TO 13+60 -RPB- LT
STA 12+80 TO 13+60 -RPB- RT
STA 13+00 TO 14+60 -RPC- RT

DETAIL O
LEVEL SPREADER DETAIL
NOT TO SCALE

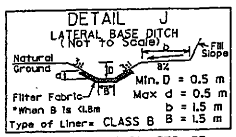


STATION	LENGTH	D	B	TOP ELEV.
STA 41+40 -L- LT	3.0	.45	1.2	60.75
STA 45+85 -L- RT	3.0	.45	1.2	73.95
STA 54+10 -L- RT	23.8	.45	1.2	89.85
STA 56+88 -L- LT	3.0	.45	1.2	86.41

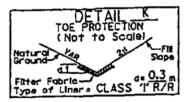
381



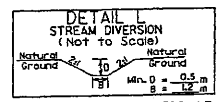
STA 48+80 TO 49+80 -L- LT
STA 17+00 TO 17+60 -Y2- LT
STA 17+20 TO 18+20 -Y2- RT



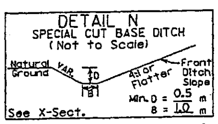
STA 12+20 TO 12+80 -RPC- RT



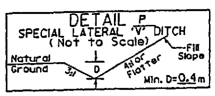
STA 11+80 TO 12+20 -RPC- RT
STA 15+05 TO 15+50 -RPD- LT
STA 35+20 TO 36+00 -L- RT
STA 50+50 TO 50+80 -L- RT



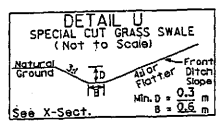
STA 13+00 TO 13+04 -RPC- LT



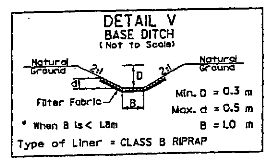
STA 13+00 TO 13+60 -RPB- LT
STA 12+80 TO 13+60 -RPB- RT



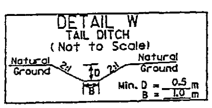
STA 33+00 TO 33+60 -L- LT



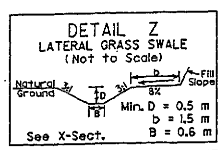
STA 46+00 TO 47+00 -L- RT
STA 13+00 TO 14+60 -RPC- RT
STA 13+80 TO 14+20 -RPD- RT



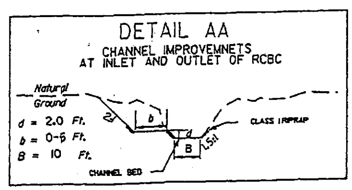
STA 42+20 TO 42+60 -L- LT



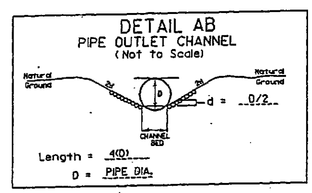
STA 53+95 -L- RT
STA 11+98 -SERVRD B- RT



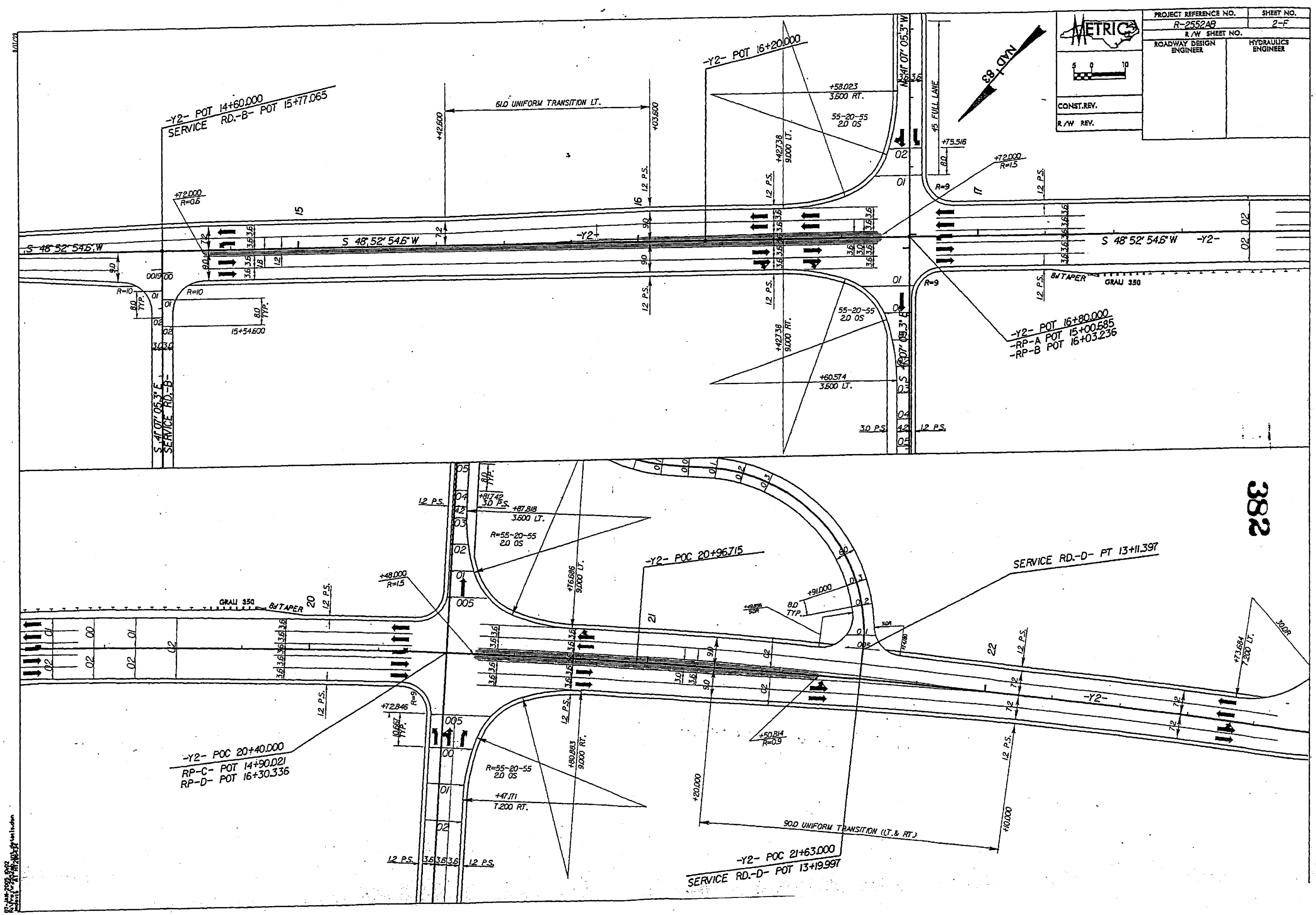
STA 11+75 TO 12+80 -SERVRD D- RT



STA 37+11 -L- LT/RT



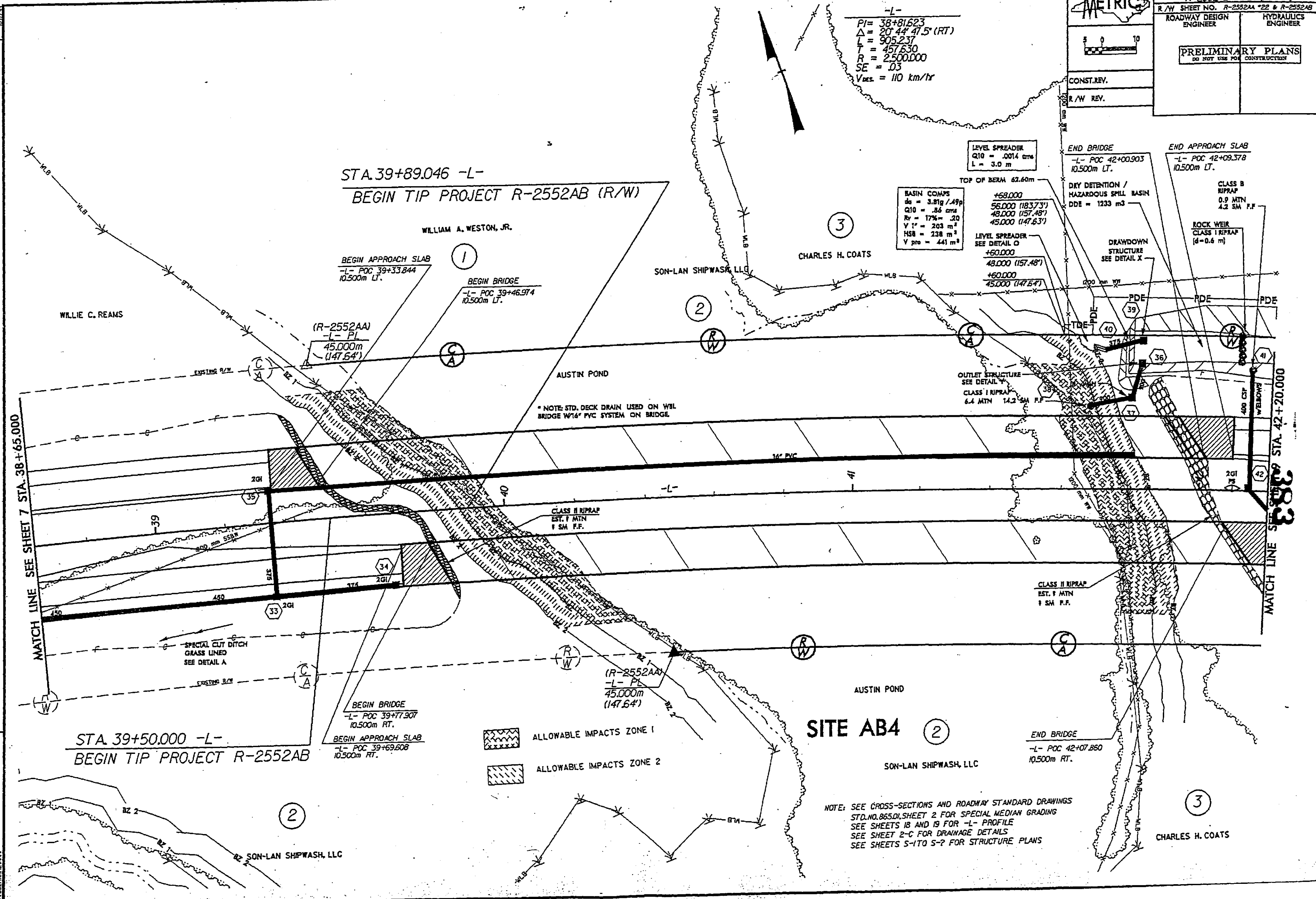
STA 50+20 -L- RT
STA 50+35 -L- RT
STA 11+65 -RPC- RT
STA 13+00 -RPD- LT


PROJECT REFERENCE NO.
R-2552AB
SHEET NO.
2-F
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST.REV.
R/W REV.
NAD 83
382
-Y2- POT 14+60.000
SERVICE RD.-B- POT 15+77.065
-Y2- POT 16+20.000
-Y2- POT 16+80.000
-RP-A POT 15+00.685
-RP-B POT 16+03.236
61.0 UNIFORM TRANSITION LT.
S 48°52' 54.6" W
-Y2-
45 FULL LANE
8:1 TAPER
GRAU 350
SERVICE RD.-B-
-Y2- POC 20+96.715
SERVICE RD.-D- PT 13+11.397
-Y2- POC 20+40.000
RP-C- POT 14+90.021
RP-D- POT 16+30.336
-Y2- POC 21+63.000
SERVICE RD.-D- POT 13+19.997
90.0 UNIFORM TRANSITION (LT. & RT.)

7H of 23

PROJECT REFERENCE NO.	SHEET NO.
R-2552AB	8
R/W SHEET NO. R-2552AA *22 & R-2552AB *8	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



METRIC
CONST.REV.
R/W REV.
-L-
PI= 38+81.623
Δ= 20°44'47.5" (RT)
L = 905.237
T = 457.630
R = 2,500.000
SE = .03
Vdes. = 110 km/hr
STA. 39+89.046 -L-
BEGIN TIP PROJECT R-2552AB (R/W)
WILLIAM A. WESTON, JR.
WILLIE C. REAMS
BEGIN APPROACH SLAB
-L- POC 39+33.844
10.500m LT.
BEGIN BRIDGE
-L- POC 39+46.974
10.500m LT.
(R-2552AA)
-L- PL
45.000m
(147.64')
SON-LAN SHIPWASH, LLC
CHARLES H. COATS
AUSTIN POND
* NOTE: STD. DECK DRAIN USED ON WBL BRIDGE W/16" PVC SYSTEM ON BRIDGE
16" PVC
CLASS II RIPRAP
EST. 9 MTN
9 SM F.F.
SPECIAL CUT DITCH
GRASS LINED
SEE DETAIL A
MATCH LINE SEE SHEET 7 STA. 38+65.000
MATCH LINE SEE SHEET 9 STA. 42+20.000
383
BEGIN BRIDGE
-L- POC 39+77.907
10.500m RT.
BEGIN APPROACH SLAB
-L- POC 39+69.608
10.500m RT.
STA. 39+50.000 -L-
BEGIN TIP PROJECT R-2552AB
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
(R-2552AA)
-L- PL
45.000m
(147.64')
SITE AB4
LEVEL SPREADER
Q10 = .0014 cms
L = 3.0 m
TOP OF BERM 62.60m
BASIN COMPS
da = 3.81g / .49p
Q10 = .86 cms
Rv = 17%= .20
V 1" = 203 m³
HSB = 238 m³
V pro = 441 m³
+68.000
56.000 (183.73')
48.000 (157.48')
45.000 (147.63')
LEVEL SPREADER
SEE DETAIL O
+60.000
48.000 (157.48')
+60.000
45.000 (147.64')
END BRIDGE
-L- POC 42+00.903
10.500m LT.
DRY DETENTION / HAZARDOUS SPILL BASIN
DDE = 1233 m3
DRAWDOWN STRUCTURE
SEE DETAIL X
END APPROACH SLAB
-L- POC 42+09.378
10.500m LT.
CLASS B RIPRAP
0.9 MTN
4.2 SM F.F.
ROCK WEIR
CLASS I RIPRAP
(d=0.6 m)
OUTLET STRUCTURE
SEE DETAIL Y
CLASS I RIPRAP
6.4 MTN 14.2 SM F.F.
CLASS II RIPRAP
EST. 9 MTN
9 SM F.F.
END BRIDGE
-L- POC 42+07.860
10.500m RT.

NOTE: SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS STD.NO.865.01,SHEET 2 FOR SPECIAL MEDIAN GRADING
SEE SHEETS 18 AND 19 FOR -L- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SEE SHEETS S-1 TO S-? FOR STRUCTURE PLANS

REVISIONS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2552AB	5
R/W SHEET NO. R-2552AA *19 & *20	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

5 0 10

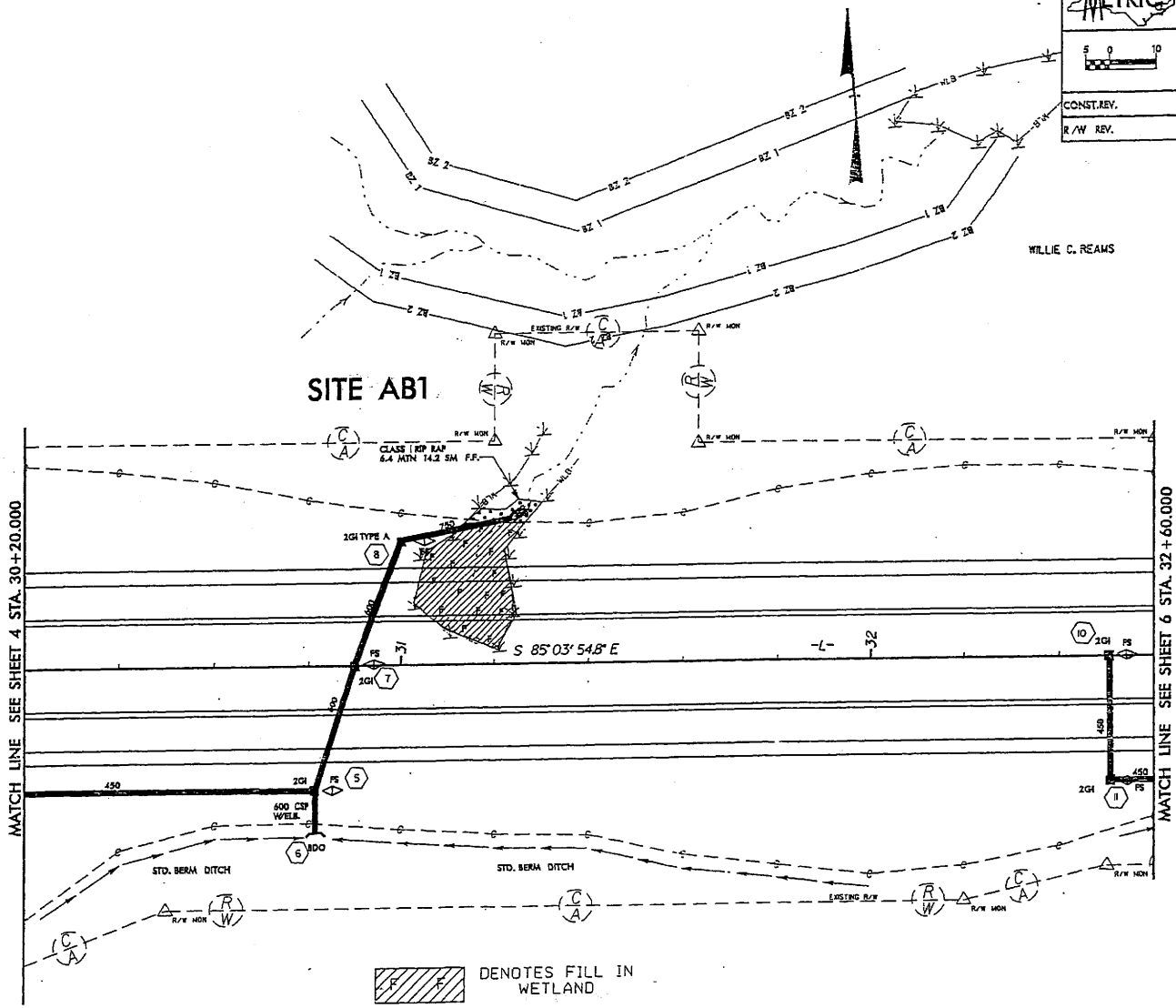
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

SITE AB1



F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEET 16 FOR -L- PROFILE

SEE SHEET 2-C FOR DRAINAGE DETAILS

384

PROJECT REFERENCE NO.	SHEET NO.
R-2552AB	5
R/W SHEET NO.	R-2552AA *19 & *20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

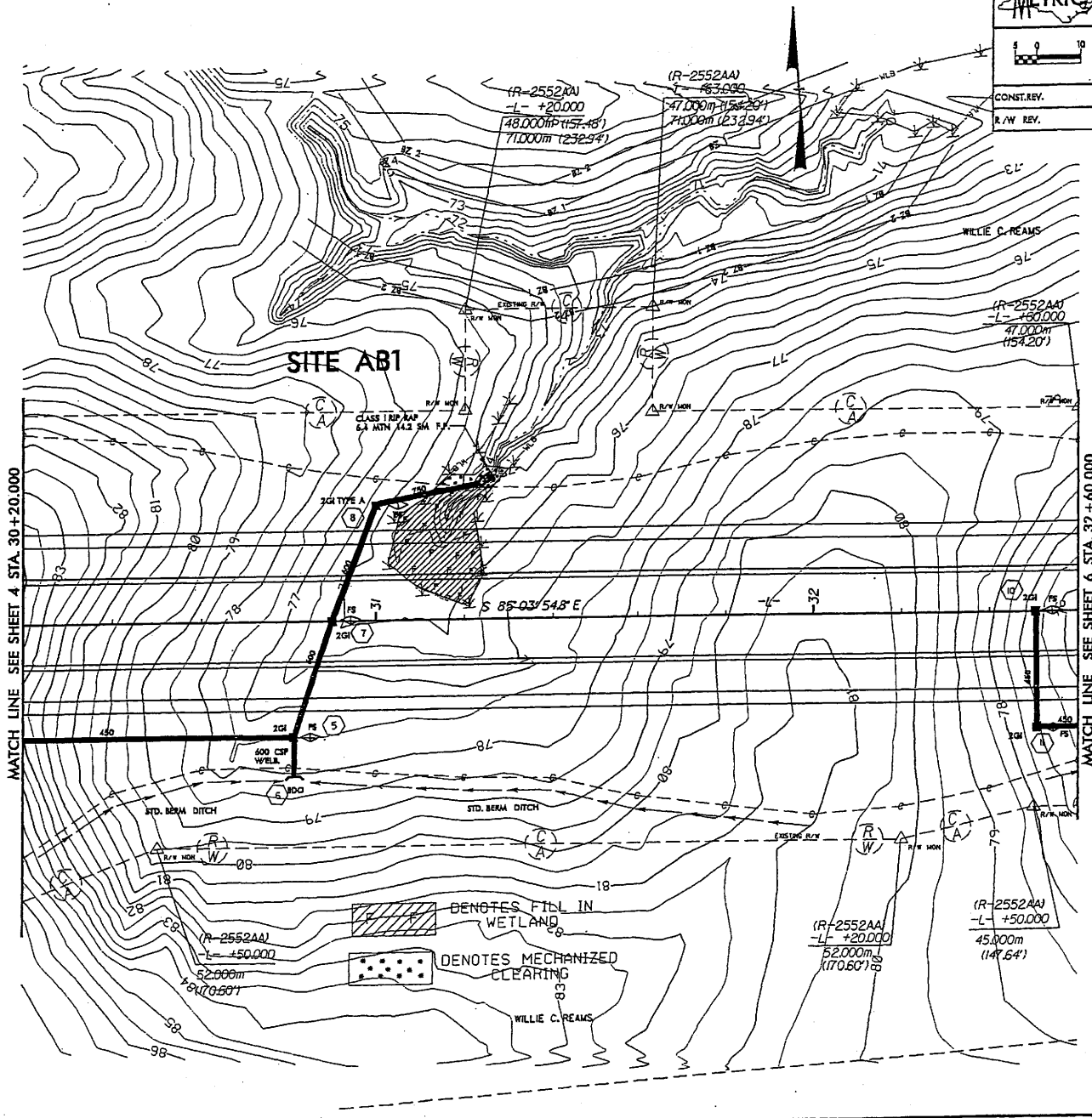
METRIC

5 0 10

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SEE SHEET 16 FOR -L- PROFILE

SEE SHEET 2-C FOR DRAINAGE DETAILS

385

PROJECT REFERENCE NO.	SHEET NO.
R-2552AB	7
R/W SHEET NO.	A-2552AA "2" & "22"
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST. REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES EXISTING CHANNEL IMPACTS (TEMP)

DENOTES EXISTING CHANNEL IMPACTS (PERM)

-L-
PI= 38+81.623
Δ = 20° 44' 47.5" (RT)
L = 905.237
T = 457.630
R = 2,500.000
SE = .03
$V_{des.}$ = 110 km/hr

DETAIL AA
CHANNEL IMPROVEMENTS AT INLET AND OUTLET OF RCBC

Natural Ground
d = 2.0 Ft.
b = 0-6 Ft.
B = 10 Ft.
CLASS I RIPRAP
CHANNEL BED

STA 37+81-L- LT/RT

BEGIN CULVERT
-L- POC 37+06.250

END CULVERT
-L- POC 37+12.233

WILLIE C. REAMS

SITE AB2

SITE AB3

PROPOSED STREAM IMPROVEMENTS SEE DETAIL AA

TOE PROTECTION CLASS 'I' RIP RAP SEE DETAIL K

2 - 2.7 X 2.1m RCBC W/ BAFFLES

TOE PROTECTION CLASS 'I' RIP RAP 45.30T MTN 128.690 SM F.F. SEE DETAIL K

PROPOSED STREAM IMPROVEMENTS SEE DETAIL AA

PSH 1.5 x 1.5m SEE DETAIL B

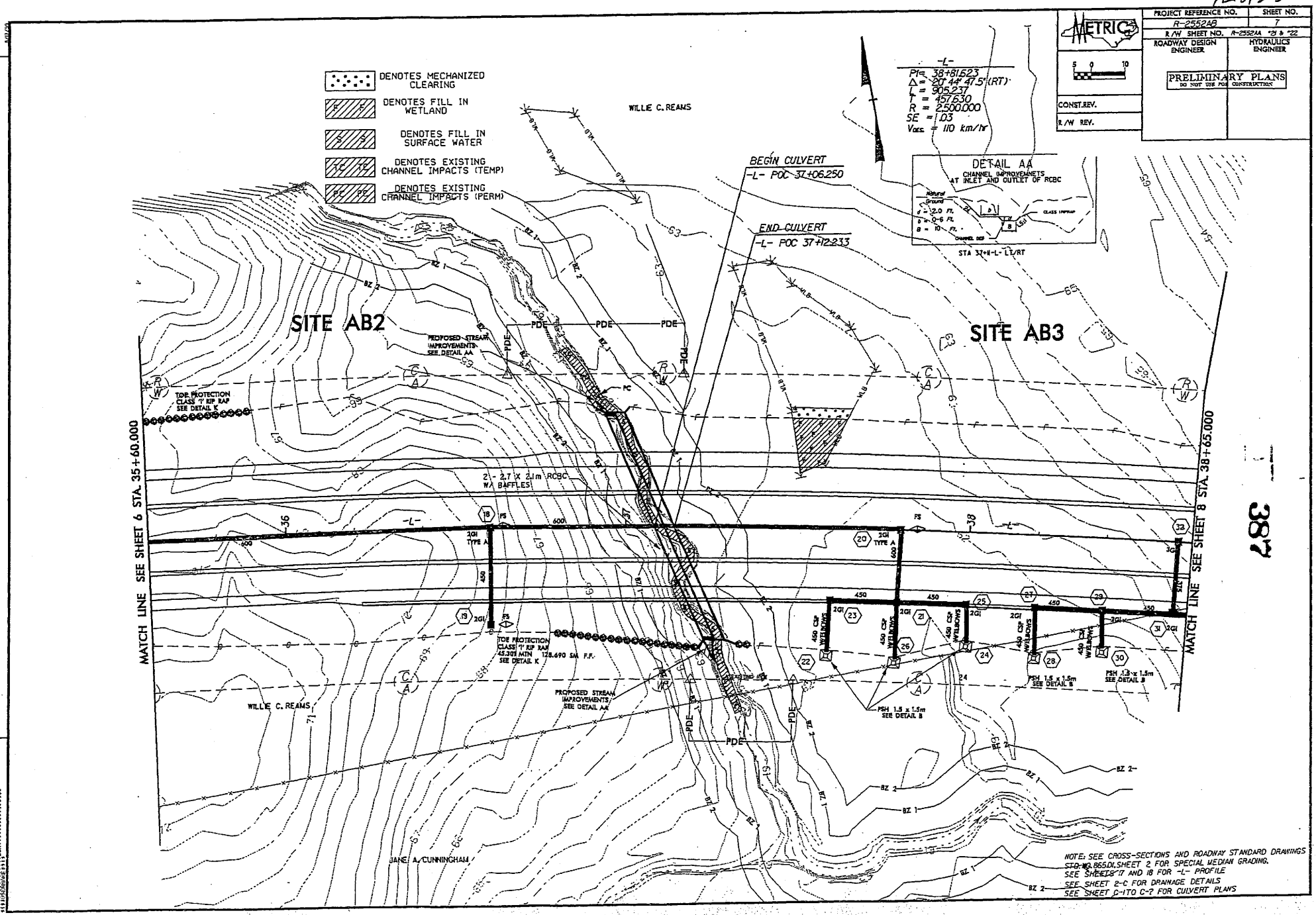
JANE A. CUNNINGHAM

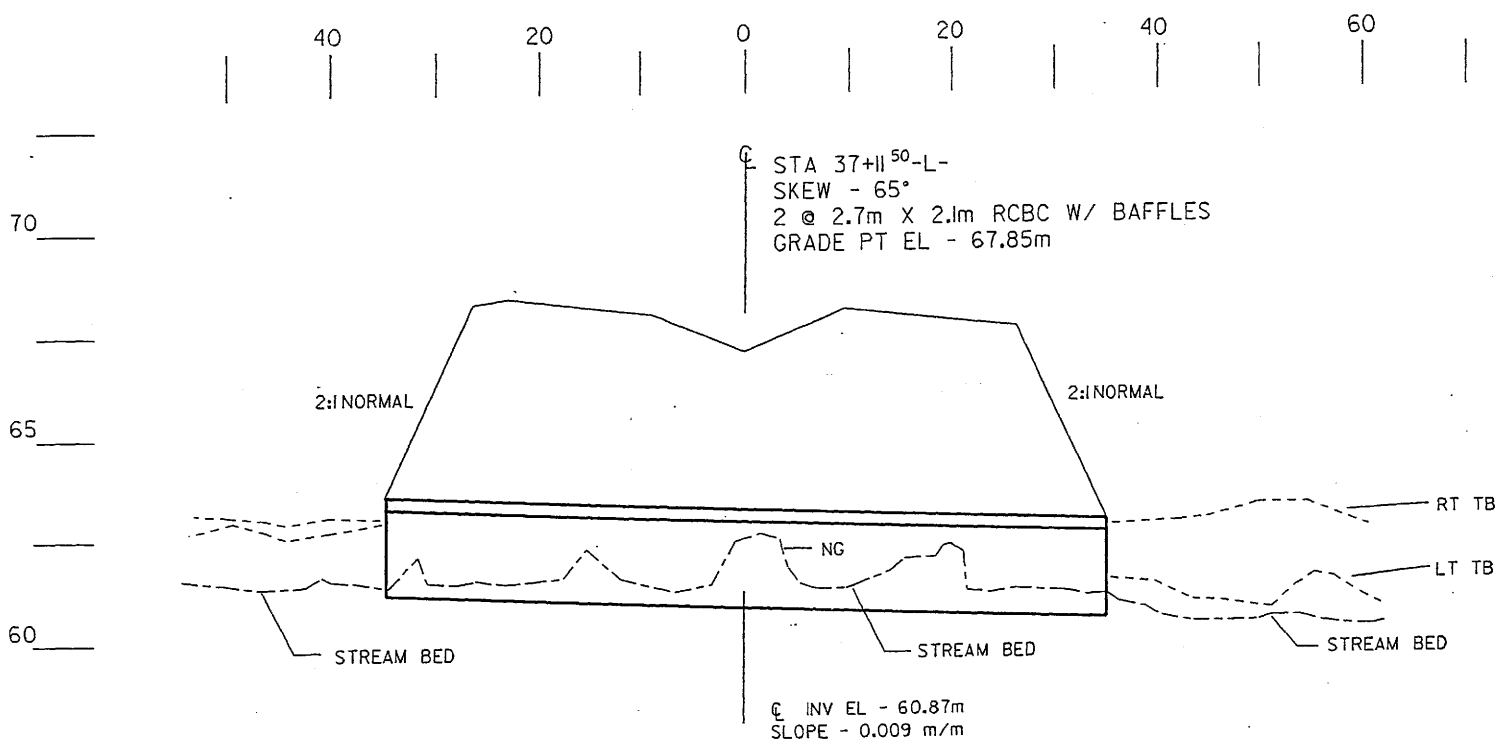
MATCH LINE SEE SHEET 6 STA. 35+60.000

MATCH LINE SEE SHEET 8 STA. 38+65.000

NOTE: SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS STD. #2.865.01, SHEET 2 FOR SPECIAL MEDIAN GRADING.
SEE SHEETS 17 AND 18 FOR -L- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SEE SHEET C-1 TO C-2 FOR CULVERT PLANS

386


METRIC
PROJECT REFERENCE NO. R-2552AB
SHEET NO. 7
R/W SHEET NO. R-2552AA "21 & "22
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES EXISTING CHANNEL IMPACTS (TEMP)
DENOTES EXISTING CHANNEL IMPACTS (PERM)
-L-
PI= 38+81.623
Δ= 20° 44' 41.5" (RT)
L = 905.237
T = 457.630
R = 2500.000
SE = .03
Vdes. = 110 km/hr
BEGIN CULVERT
-L- POC 37+06.250
END CULVERT
-L- POC 37+12.233
DETAIL AA
CHANNEL IMPROVEMENTS AT INLET AND OUTLET OF RCBC
STA 37+11-L- LT/RT
SITE AB2
SITE AB3
WILLIE C. REAMS
JANE A. CUNNINGHAM
PROPOSED STREAM IMPROVEMENTS SEE DETAIL AA
TOE PROTECTION CLASS 'I' RIP RAP SEE DETAIL K
2 - 2.7 'X 2.1m RCBC W/ BAFFLES
PDE
MATCH LINE SEE SHEET 6 STA. 35+60.000
MATCH LINE SEE SHEET 8 STA. 38+65.000
PSH 1.5 x 1.5m SEE DETAIL B
NOTE: SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS STD. NO. 865.01, SHEET 2 FOR SPECIAL MEDIAN GRADING.
SEE SHEETS 17 AND 18 FOR -L- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SEE SHEET C-1 TO C-7 FOR CULVERT PLANS



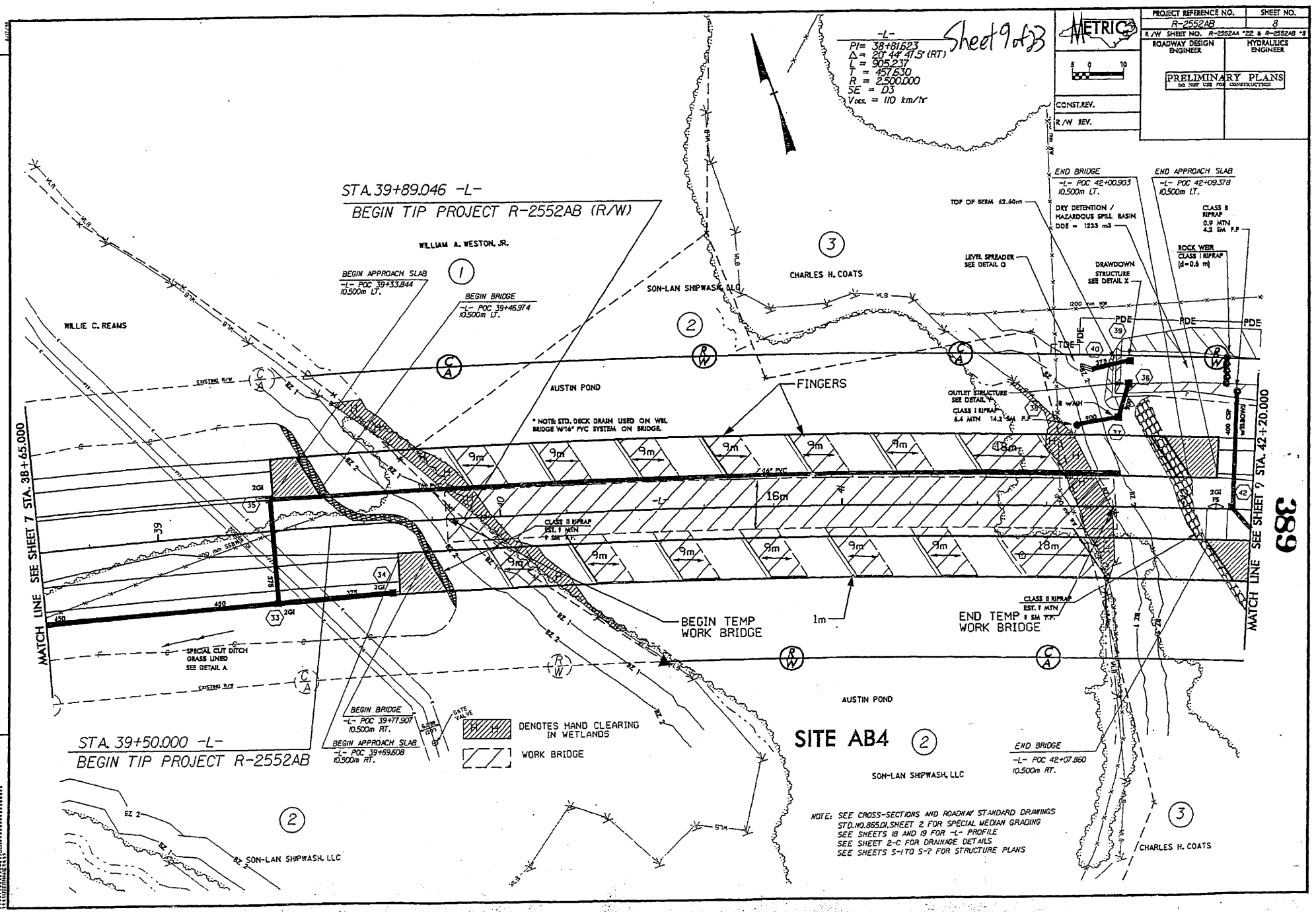
SITE AB2
CROSS SECTION

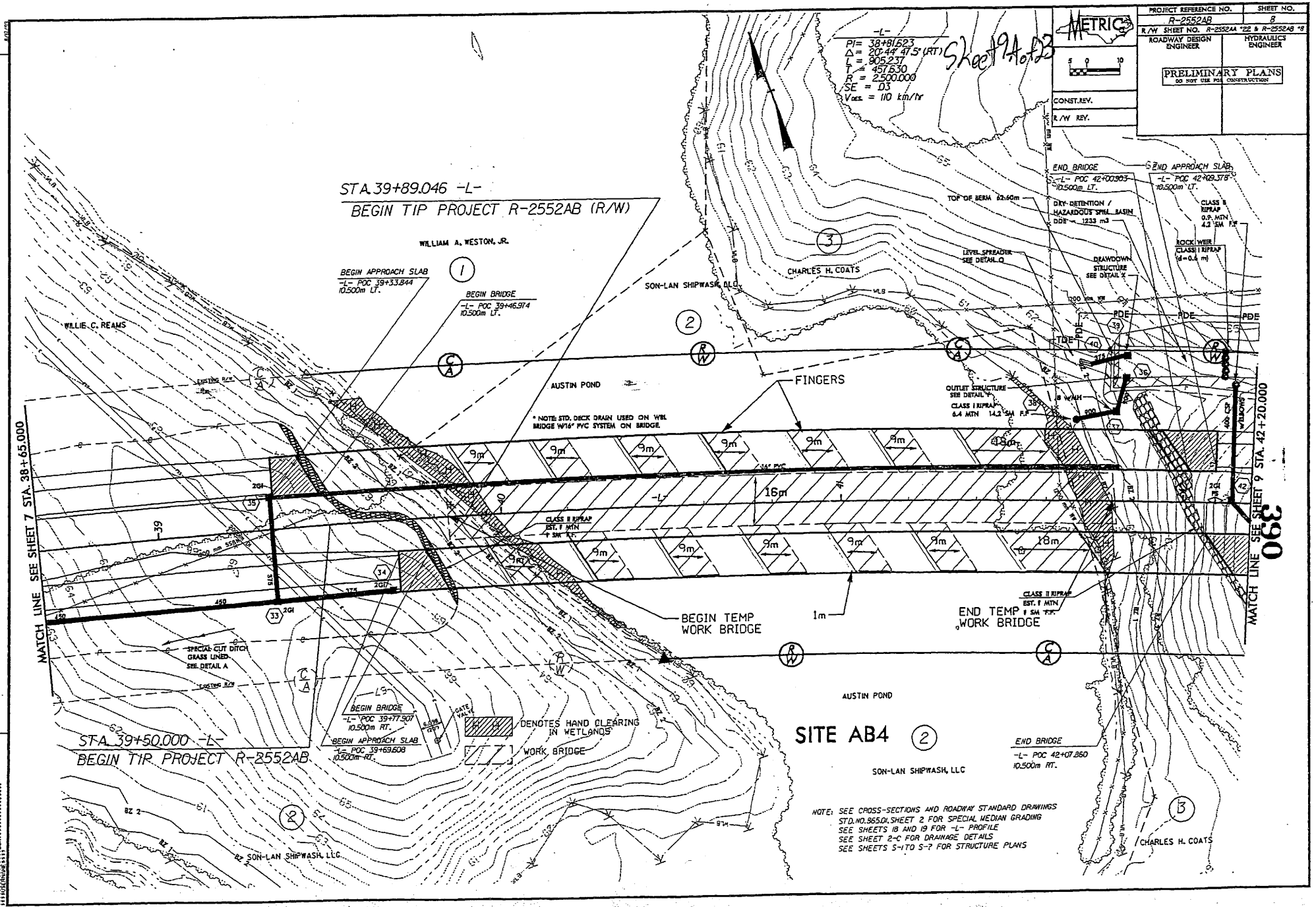
NCDOT
DIVISION OF HIGHWAYS
JOHNSTON COUNTY

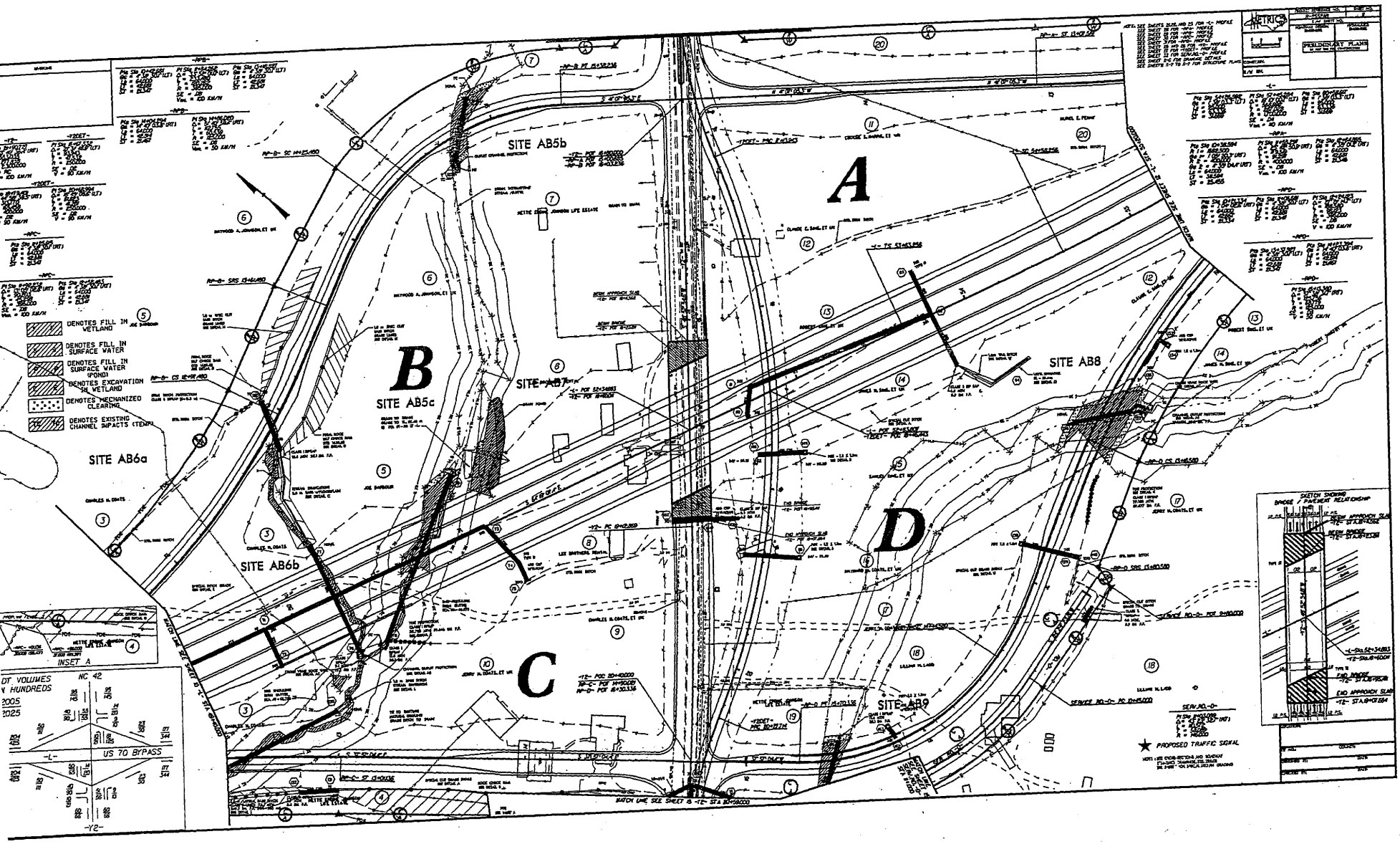
PROJECT: WBS 34459.1.1 (R-2552 AB)

US 70 CLAYTON BYPASS

SHEET 8 OF 23 10/01/04

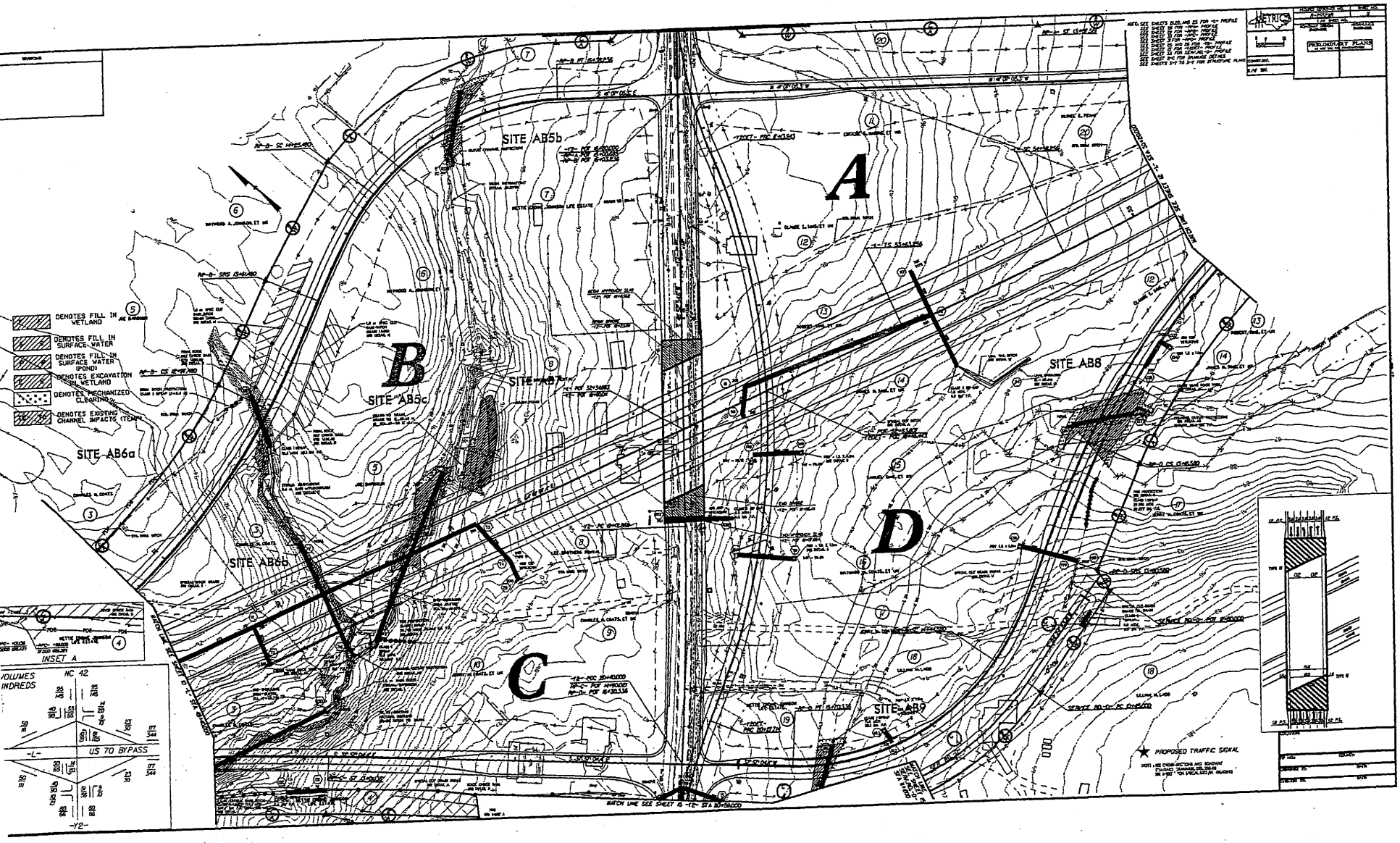

Sheet 9 of 33
-L-
PI= 38+81.623
Δ= 20° 44' 41.5" (RT)
L = 905.237
T = 457.630
R = 2,500.000
SE = .03
Vdes. = 110 km/hr
METRIC
PROJECT REFERENCE NO.
R-2552AB
SHEET NO.
8
R/W SHEET NO. R-2552AA *22 & R-2552AB *8
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
REVISIONS
STA. 39+89.046 -L-
BEGIN TIP PROJECT R-2552AB (R/W)
WILLIAM A. WESTON, JR.
WILLIE C. REAMS
CHARLES H. COATS
SON-LAN SHIPWASH, LLC
BEGIN APPROACH SLAB
-L- POC 39+33.844
10.500m LT.
BEGIN BRIDGE
-L- POC 39+46.974
10.500m LT.
END BRIDGE
-L- POC 42+00.903
10.500m LT.
END APPROACH SLAB
-L- POC 42+09.378
10.500m LT.
TOP OF BERM 62.60m
DRY DETENTION / HAZARDOUS SPILL BASIN
DDE = 1233 m3
CLASS B RIPRAP
0.9 MTN
4.2 SM F.F
ROCK WEIR
CLASS I RIPRAP
(d=0.6 m)
LEVEL SPREADER
SEE DETAIL O
DRAWDOWN STRUCTURE
SEE DETAIL X
PDE
TDE
FINGERS
AUSTIN POND
* NOTE: STD. DECK DRAIN USED ON WBL BRIDGE W/14" PVC SYSTEM ON BRIDGE.
OUTLET STRUCTURE
SEE DETAIL Y
CLASS I RIPRAP
6.4 MTN 14.2 SM F.F
8 WMH
14" PVC
CLASS II RIPRAP
EST. 9 MTN
9 SM F.F.
BEGIN TEMP WORK BRIDGE
END TEMP WORK BRIDGE
SPECIAL CUT DITCH
GRASS LINED
SEE DETAIL A
BEGIN BRIDGE
-L- POC 39+77.907
10.500m RT.
BEGIN APPROACH SLAB
-L- POC 39+69.608
10.500m RT.
GATE VALVE
DENOTES HAND CLEARING IN WETLANDS
WORK BRIDGE
STA. 39+50.000 -L-
BEGIN TIP PROJECT R-2552AB
SITE AB4
END BRIDGE
-L- POC 42+07.860
10.500m RT.
SON-LAN SHIPWASH, LLC
CHARLES H. COATS
NOTE: SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS STD.NO.865.01,SHEET 2 FOR SPECIAL MEDIAN GRADING
SEE SHEETS 18 AND 19 FOR -L- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SEE SHEETS S-1 TO S-7 FOR STRUCTURE PLANS
MATCH LINE SEE SHEET 7 STA. 38+65.000
MATCH LINE SEE SHEET 9 STA. 42+20.000
389


PROJECT REFERENCE NO. R-2552AB
SHEET NO. 8
R/W SHEET NO. R-2552AA *22 & R-2552AB *19
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
Skeet 19 of 23
-L-
PI= 38+81.623
Δ= 20°44' 47.5" (RT)
L= 905.237
T= 457.630
R= 2,500.000
SE= .03
Vdes. = 110 km/hr
STA. 39+89.046 -L-
BEGIN TIP PROJECT R-2552AB (R/W)
WILLIAM A. WESTON, JR.
BEGIN APPROACH SLAB
-L- POC 39+33.844
10.500m LT.
BEGIN BRIDGE
-L- POC 39+46.974
10.500m LT.
WILLIE C. REAMS
SON-LAN SHIPWASH, LLC
CHARLES H. COATS
AUSTIN POND
FINGERS
* NOTE: STD. DECK DRAIN USED ON WBI BRIDGE W/16" PVC SYSTEM ON BRIDGE.
END BRIDGE
-L- POC 42+00.903
10.500m LT.
END APPROACH SLAB
-L- POC 42+09.378
10.500m LT.
TOP OF BERM 62.60m
DRY DETENTION / HAZARDOUS SPILL BASIN
DDE = 1233 m3
CLASS B RIPRAP
0.9 MTN
4.2 SM F.F.
ROCK WEIR
CLASS I RIPRAP
(d=0.6 m)
LEVEL SPREADER
SEE DETAIL Q
DRAWDOWN STRUCTURE
SEE DETAIL X
OUTLET STRUCTURE
SEE DETAIL Y
CLASS I RIPRAP
6.4 MTN 14.2 SM F.F.
MATCH LINE SEE SHEET 7 STA. 38+65.000
MATCH LINE SEE SHEET 9 STA. 42+20.000
CLASS II RIPRAP
EST. 9 MTN
+ SM F.F.
BEGIN TEMP WORK BRIDGE
END TEMP WORK BRIDGE
SPECIAL CUT DITCH
GRASS LINED
SEE DETAIL A
STA. 39+50.000 -L-
BEGIN TIP PROJECT R-2552AB
BEGIN BRIDGE
-L- POC 39+77.907
10.500m RT.
BEGIN APPROACH SLAB
-L- POC 39+69.608
10.500m RT.
GATE VALVE
DENOTES HAND CLEARING IN WETLANDS
WORK BRIDGE
SITE AB4 (2)
SON-LAN SHIPWASH, LLC
END BRIDGE
-L- POC 42+07.860
10.500m RT.
CHARLES H. COATS
NOTE: SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS STD.NO.865.01, SHEET 2 FOR SPECIAL MEDIAN GRADING
SEE SHEETS 18 AND 19 FOR -L- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SEE SHEETS S-1 TO S-7 FOR STRUCTURE PLANS
390


A
B
C
D
SITE AB5b
SITE AB5c
SITE AB6a
SITE AB6b
SITE AB7
SITE AB8
SITE AB9
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER (POND)
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES EXISTING CHANNEL IMPACTS (TEMP.)
INSET A
US 70 BYPASS
NC 42
PROPOSED TRAFFIC SIGNAL
SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP
END APPROACH SLAB
PRELIMINARY PLANS

391

Sht 10A of 23



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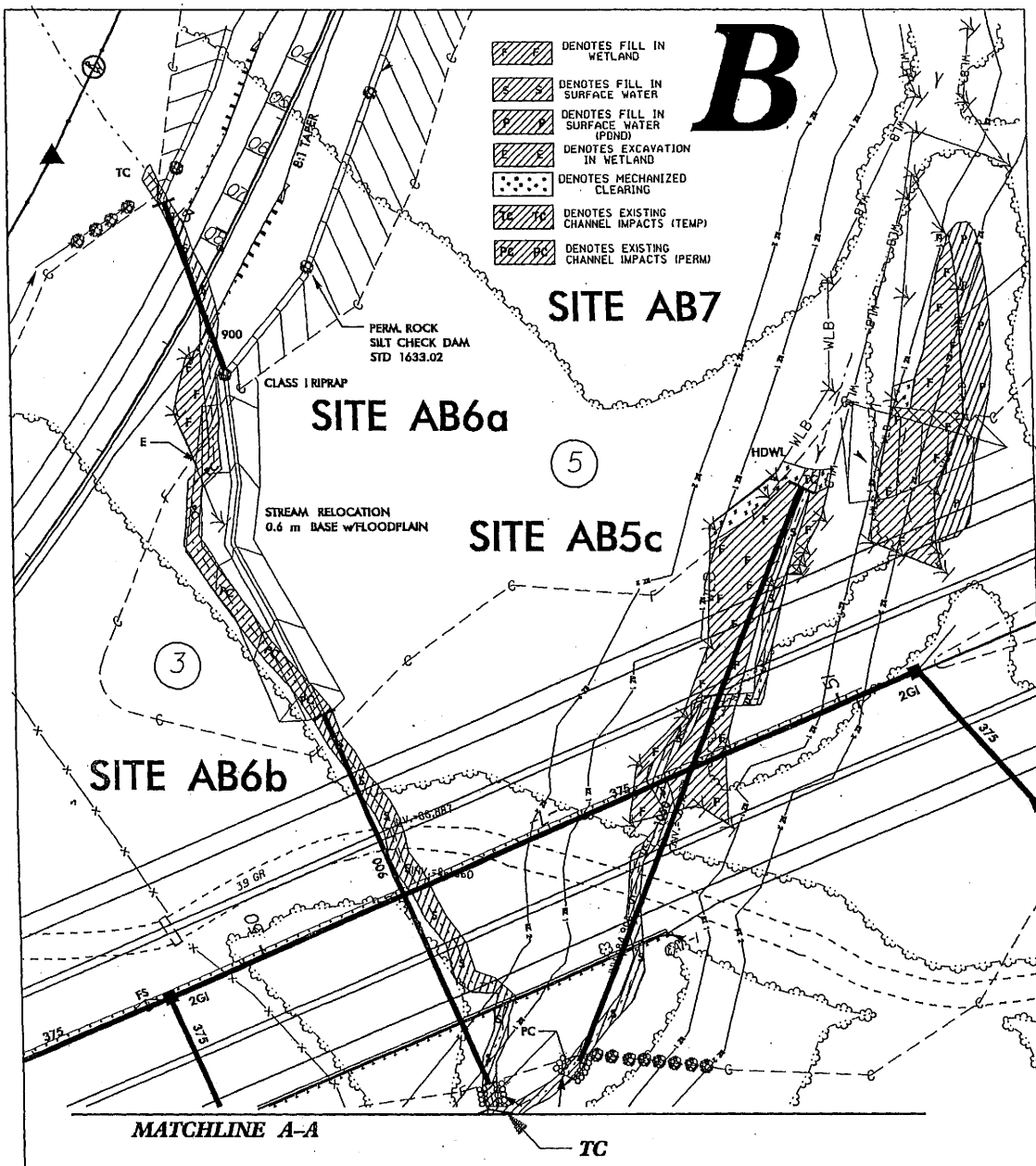


SITES AB5c, AB6a AB6b & AB7

10m 0 20m SCALE

NCDOT

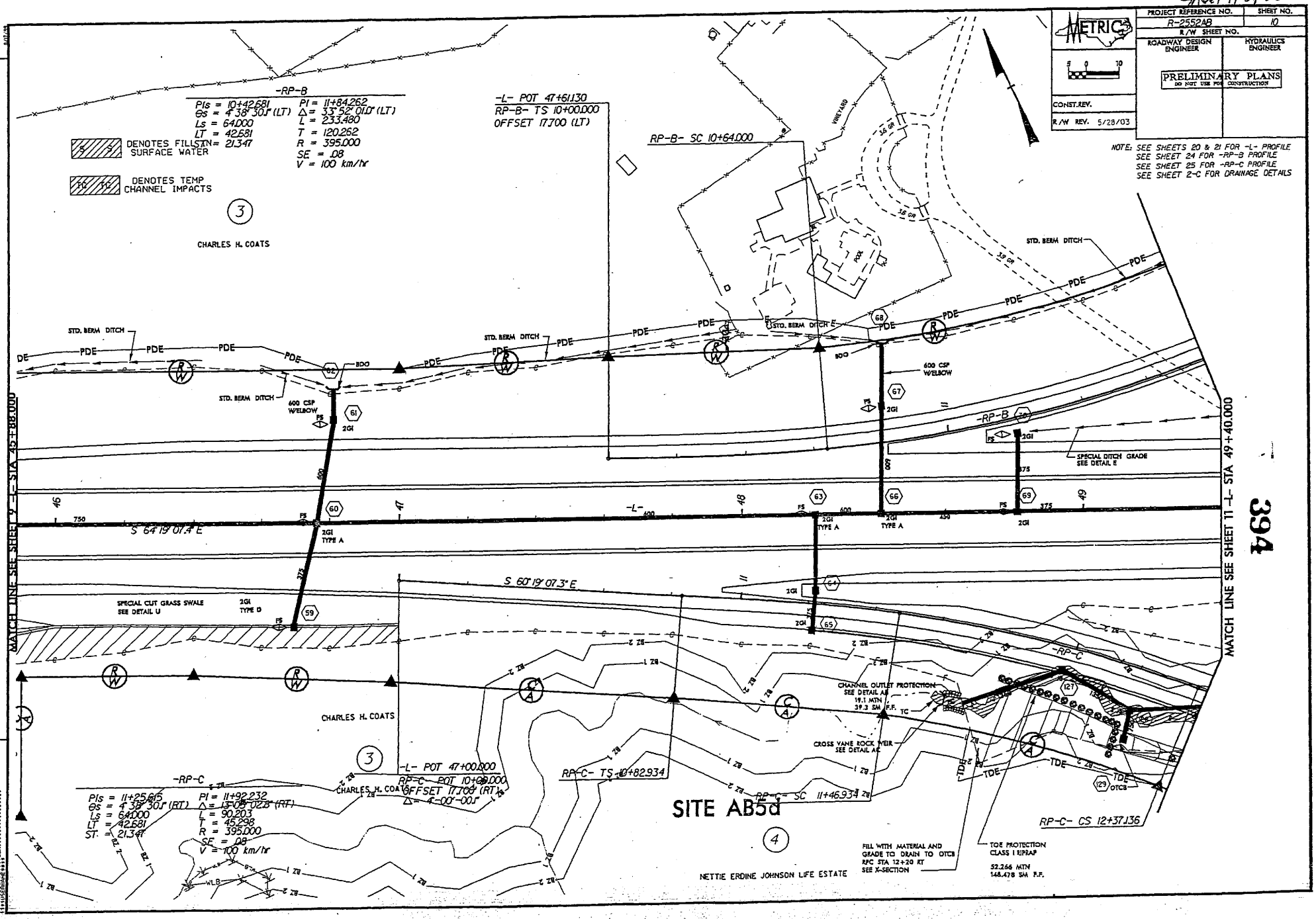
DIVISION OF HIGHWAYS

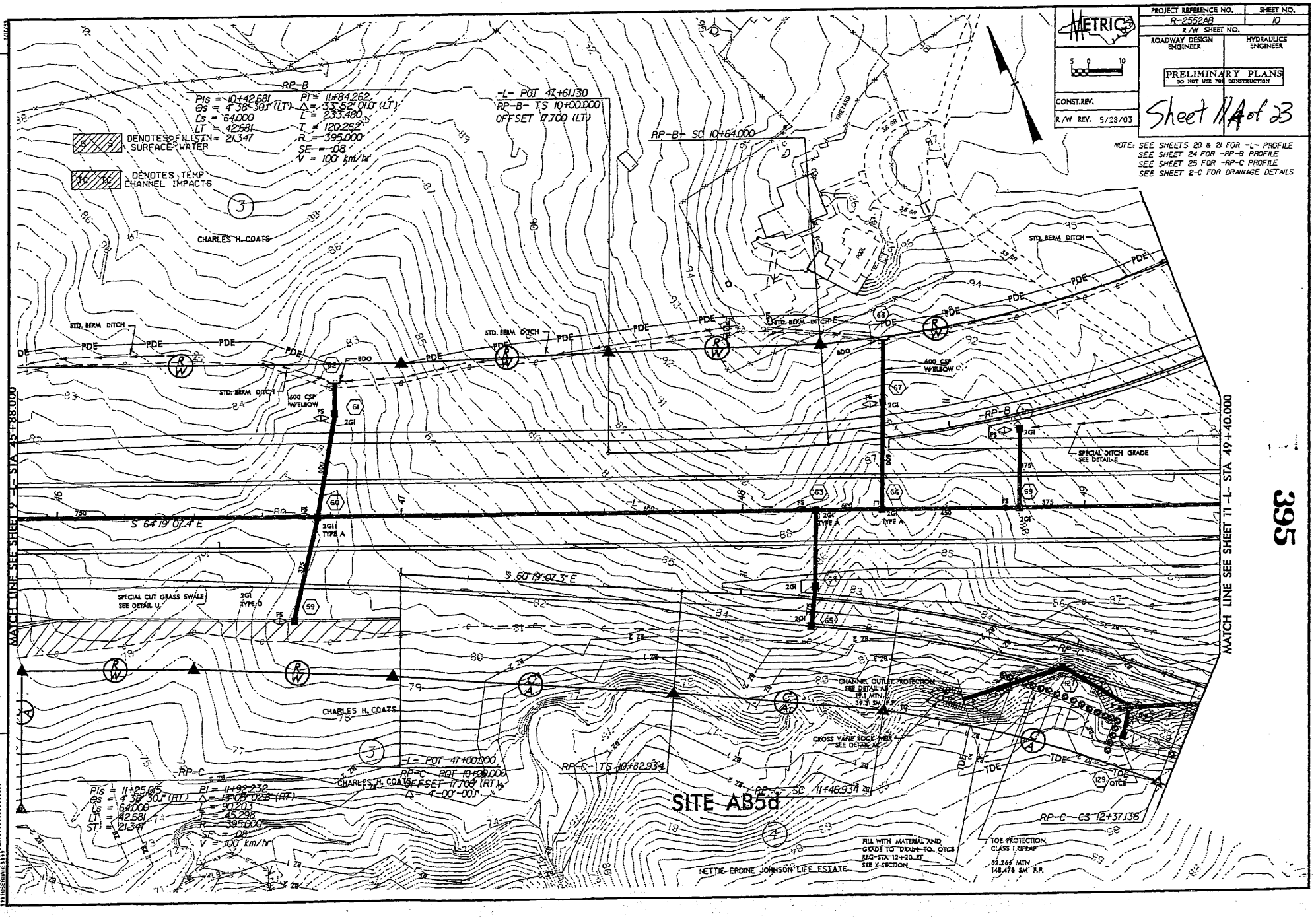
JOHNSTON COUNTY

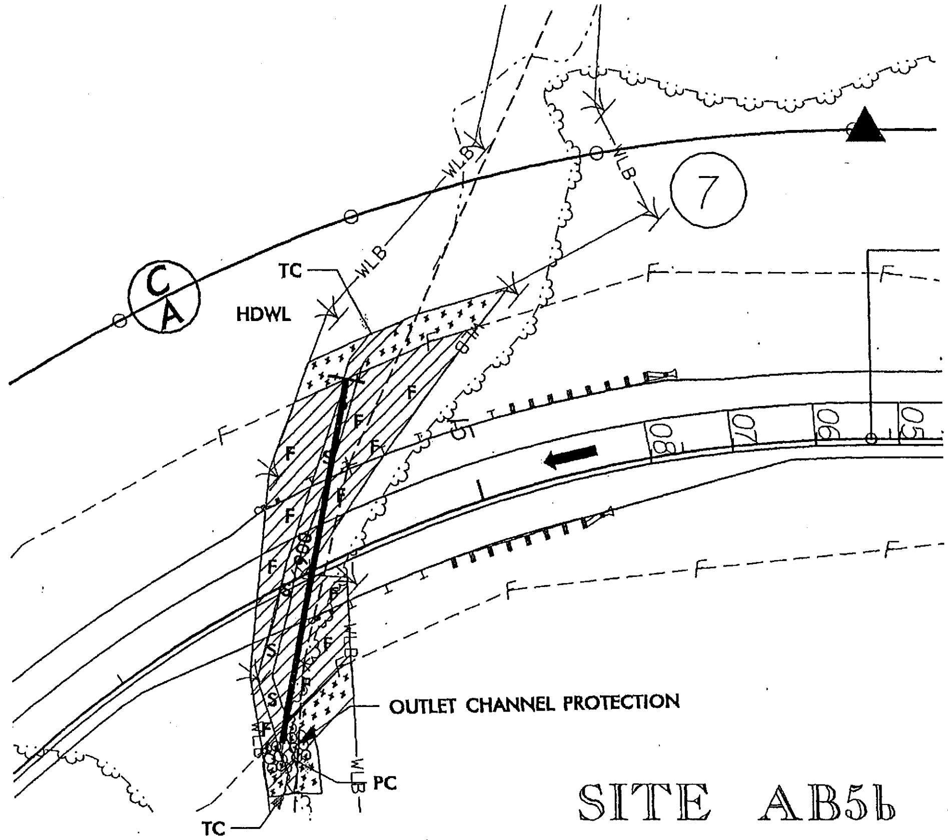
PROJECT: WBS 34459.1.1 (R-2552AB)

US 70 CLAYTON BYPASS

SHEET 10B OF 23 10/01/04


METRIC
PROJECT REFERENCE NO. R-2552AB
SHEET NO. 10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV. 5/28/03
NOTE: SEE SHEETS 20 & 21 FOR -L- PROFILE
SEE SHEET 24 FOR -RP-B PROFILE
SEE SHEET 25 FOR -RP-C PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
-RP-B
Pls = 10+42.681
θs = 4°38'30.0" (LT)
Ls = 64.000
LT = 42.681
ST = 21.347
PI = 11+84.262
Δ = 33°52'01.0" (LT)
L = 233.480
T = 120.262
R = 395.000
SE = .08
V = 100 km/hr
-L- POT 47+61.130
RP-B- TS 10+00.000
OFFSET 17.700 (LT)
RP-B- SC 10+64.000
DENOTES FILL SLOPE IN SURFACE WATER
DENOTES TEMP CHANNEL IMPACTS
CHARLES H. COATS
STD. BERM DITCH
PDE
600 CSP W/ELBOW
2GI
2GI TYPE A
SPECIAL DITCH GRADE SEE DETAIL E
SPECIAL CUT GRASS SWALE SEE DETAIL U
2GI TYPE D
S 64°19'07.4" E
S 60°19'07.3" E
-L-
-RP-B
-RP-C
CHANNEL OUTLET PROTECTION SEE DETAIL AB
19.1 MTN
39.3 SM F.F.
CROSS VANE ROCK WEIR SEE DETAIL AC
RP-C- TS 10+82.934
RP-C- SC 11+46.934
RP-C- CS 12+37.136
-RP-C
Pls = 11+25.615
θs = 4°38'30.0" (RT)
Ls = 64.000
LT = 42.681
ST = 21.347
PI = 11+92.232
Δ = 13°09'02.8" (RT)
L = 90.203
T = 45.298
R = 395.000
SE = .08
V = 100 km/hr
-L- POT 47+00.000
RP-C- POT 10+00.000
OFFSET 17.700 (RT)
Δ = 4°00'00.0"
SITE AB5d
NETTIE ERDINE JOHNSON LIFE ESTATE
FILL WITH MATERIAL AND GRADE TO DRAIN TO DITCH RPC STA 12+20 RT SEE X-SECTION
TOE PROTECTION CLASS I RIPRAP
52.266 MTN
148.478 SM F.F.
MATCH LINE SEE SHEET 11 -L- STA 46+88.000
MATCH LINE SEE SHEET 11 -L- STA 49+40.000
REVISIONS
394


METRIC
PROJECT REFERENCE NO.
R-2552AB
SHEET NO.
10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV. 5/28/03
Sheet 11A of 23
NOTE: SEE SHEETS 20 & 21 FOR -L- PROFILE
SEE SHEET 24 FOR -RP-B PROFILE
SEE SHEET 25 FOR -RP-C PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
DENOTES FILL IN SURFACE WATER
DENOTES TEMP CHANNEL IMPACTS
RP-B
Pls = 10+42.681
es = 4°38'30" (LT)
Ls = 64.000
LT = 42.681
ST = 21.347
PI = 11+84.262
Δ = 33°52'01.0" (LT)
L = 233.480
T = 120.262
R = 395.000
SE = .08
V = 100 km/hr
-L- POT 47+61.130
RP-B- TS 10+00.000
OFFSET 17.700 (LT)
RP-B- SC 10+64.000
CHARLES H. COATS
STD. BERM DITCH
PDE
DE
600 CSP W/ELBOW
2GI
2GI TYPE A
SPECIAL CUT GRASS SWALE SEE DETAIL U
SPECIAL DITCH GRADE SEE DETAIL E
S 64°19'07.4" E
S 60°19'07.3" E
CHANNEL OUTLET PROTECTION SEE DETAIL AS
19.1 MTN
39.3 SM R.P.
CROSS VANE ROCK WEIR SEE DETAIL AC
RP-C
Pls = 11+25.615
es = 4°38'30" (RT)
Ls = 64.000
LT = 42.581
ST = 21.347
PI = 11+92.232
Δ = 13°09'02.8" (RT)
L = 90.203
T = 45.298
R = 395.000
SE = .08
V = 100 km/hr
-L- POT 47+00.000
RP-C- POT 10+98.006
OFFSET 17.700 (RT)
Δ = 4°-00'-00.1"
RP-C- TS 10+82.934
RP-C- SC 11+46.934
RP-C- CS 12+37.136
SITE AB5d
NETTIE ERDINE JOHNSON LIFE ESTATE
FILL WITH MATERIAL AND GRADE TO DRAIN TO DTCB
SAC-STA 12+20 RT
SEE X-SECTION
TOE PROTECTION CLASS I RIPRAP
62.265 MTN
148.478 SM R.P.
MATCH LINE SEE SHEET 9 -L- STA 45+88.000
MATCH LINE SEE SHEET 11 -L- STA 49+40.000
395



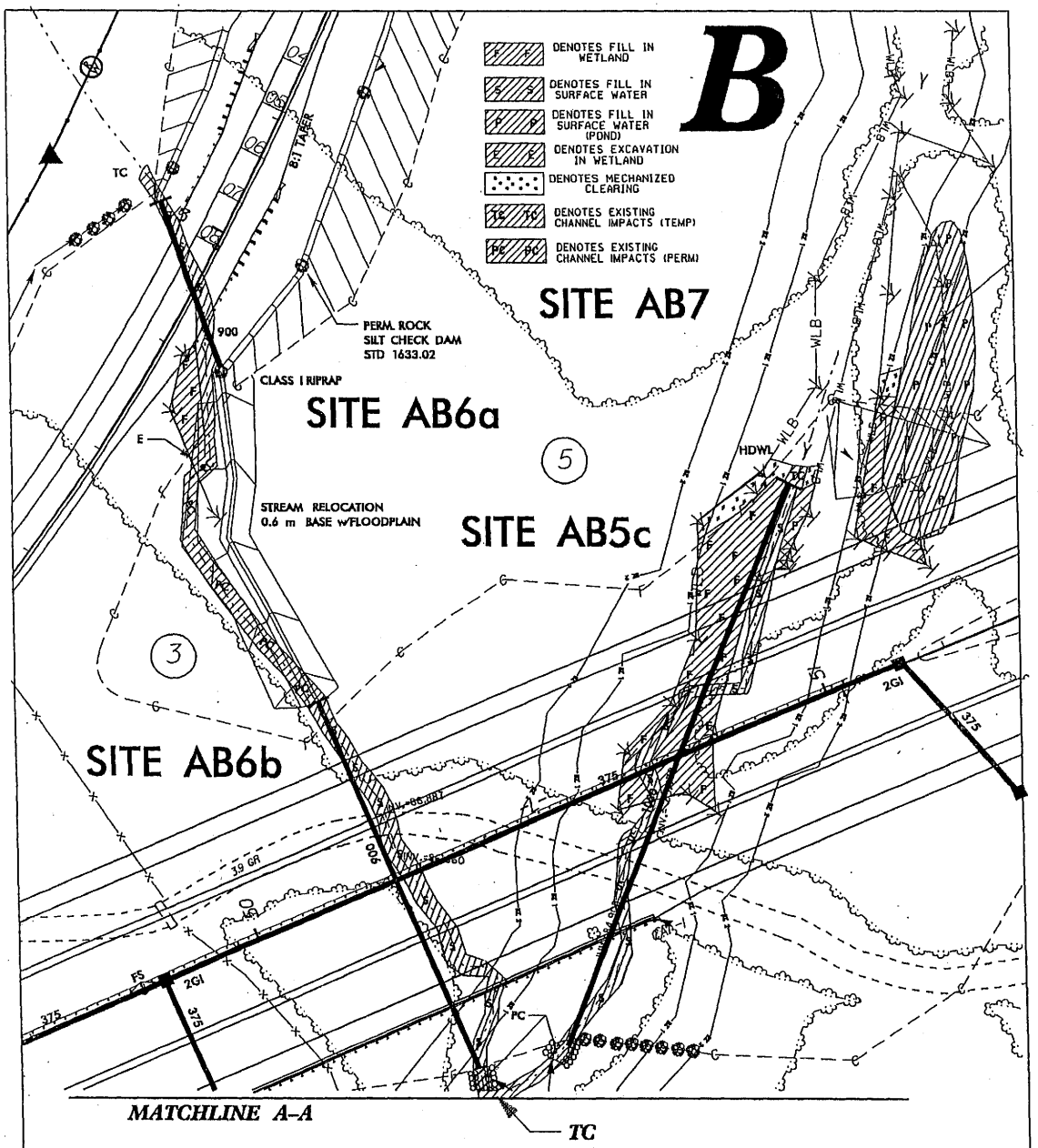
SITE AB5b

- F / F — DENOTES FILL IN WETLAND
- S / S — DENOTES FILL IN SURFACE WATER
- DENOTES MECHANIZED CLEARING
- TC / TC — DENOTES EXISTING CHANNEL IMPACTS (TEMP)
- PC / PC — DENOTES EXISTING CHANNEL IMPACTS (PERM)

5m 0 10m SCALE

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

SHEET 12 OF 23 10/01/04



SITES AB5c, AB6a AB6b & AB7

10m 0 20m SCALE

NCDOT

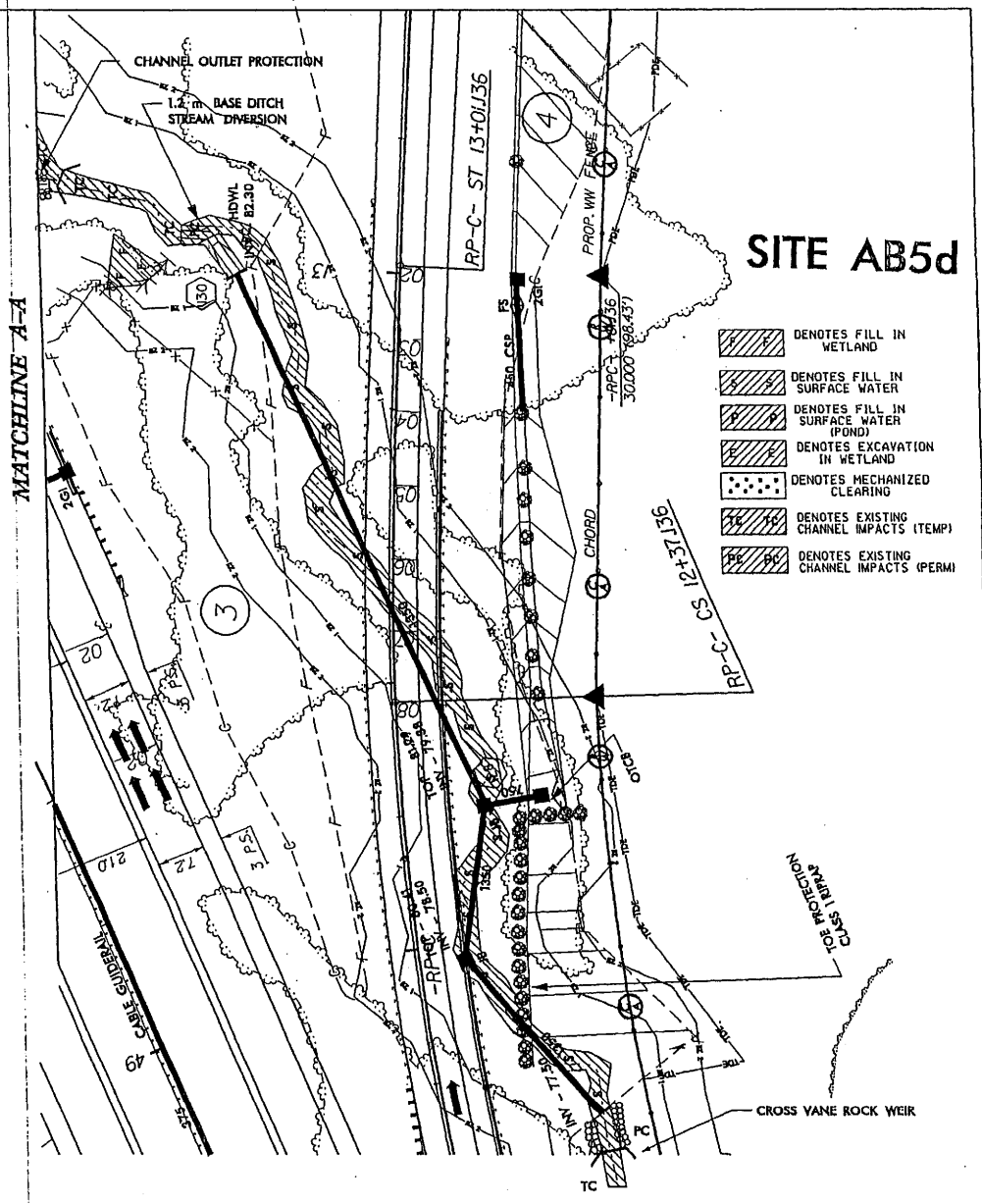
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AB)

US 70 CLAYTON BYPASS

SHEET 13 OF 23 10/01/04



SITES AB5d

10 0 20m

SCALE

NCDOT

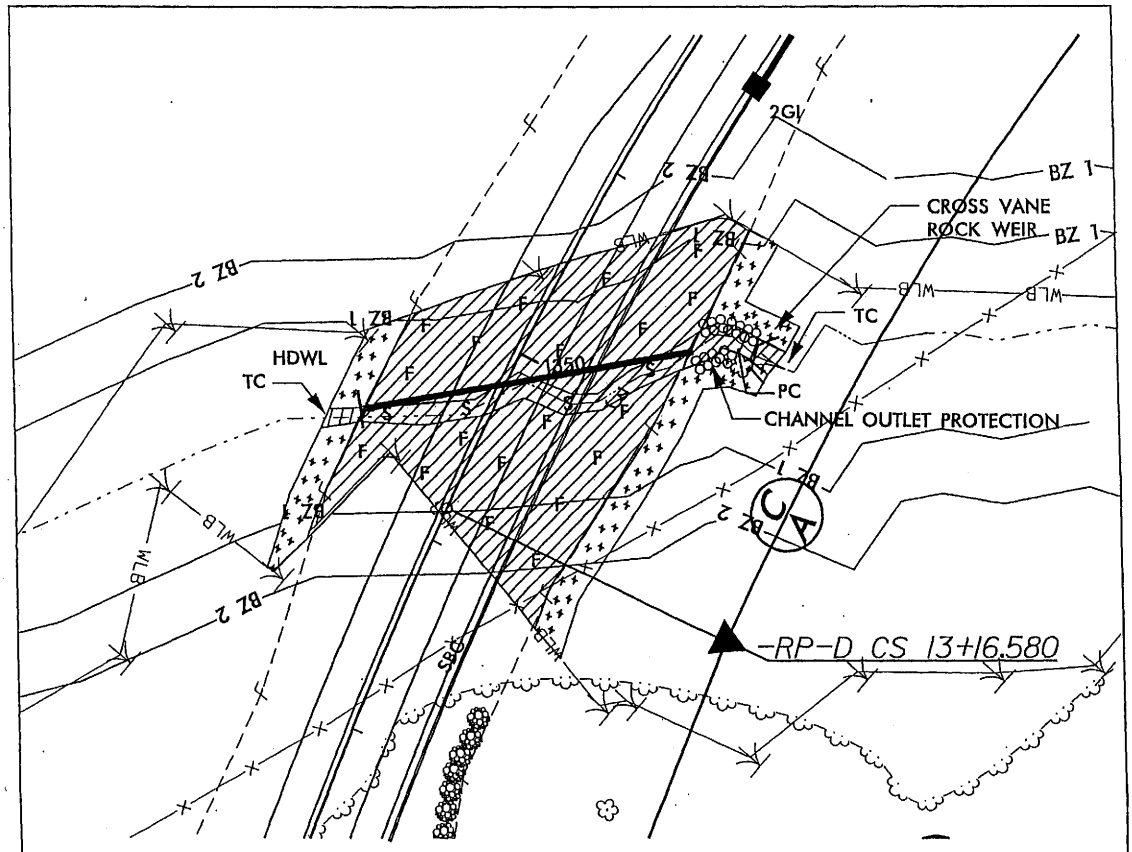
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AB)

US 70 CLAYTON BYPASS

SHEET 14 OF 23 10/01/04



F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TC TC DENOTES EXISTING CHANNEL IMPACTS (TEMP)

PC PC DENOTES EXISTING CHANNEL IMPACTS (PERM)

SITE AB8

5m 0 10m SCALE

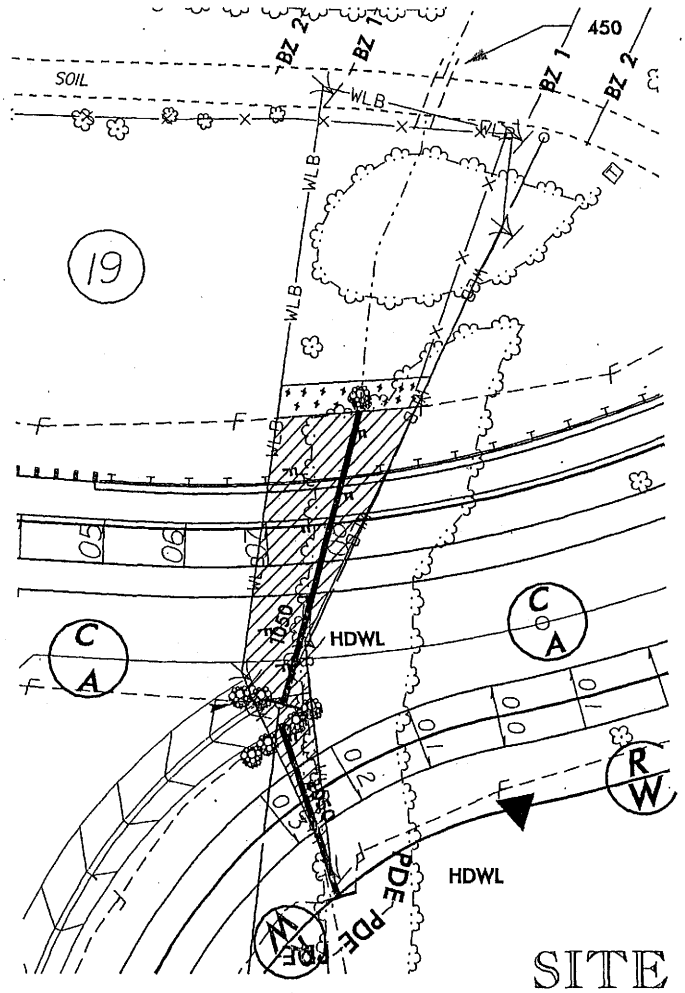
NCDOT

DIVISION OF HIGHWAYS

JOHNSTON COUNTY

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

SHEET 15 OF 23 10/01/04



F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TC TC DENOTES EXISTING CHANNEL IMPACTS (TEMP)

PC PC DENOTES EXISTING CHANNEL IMPACTS (PERM)

5m 0 10m SCALE

NCDOT

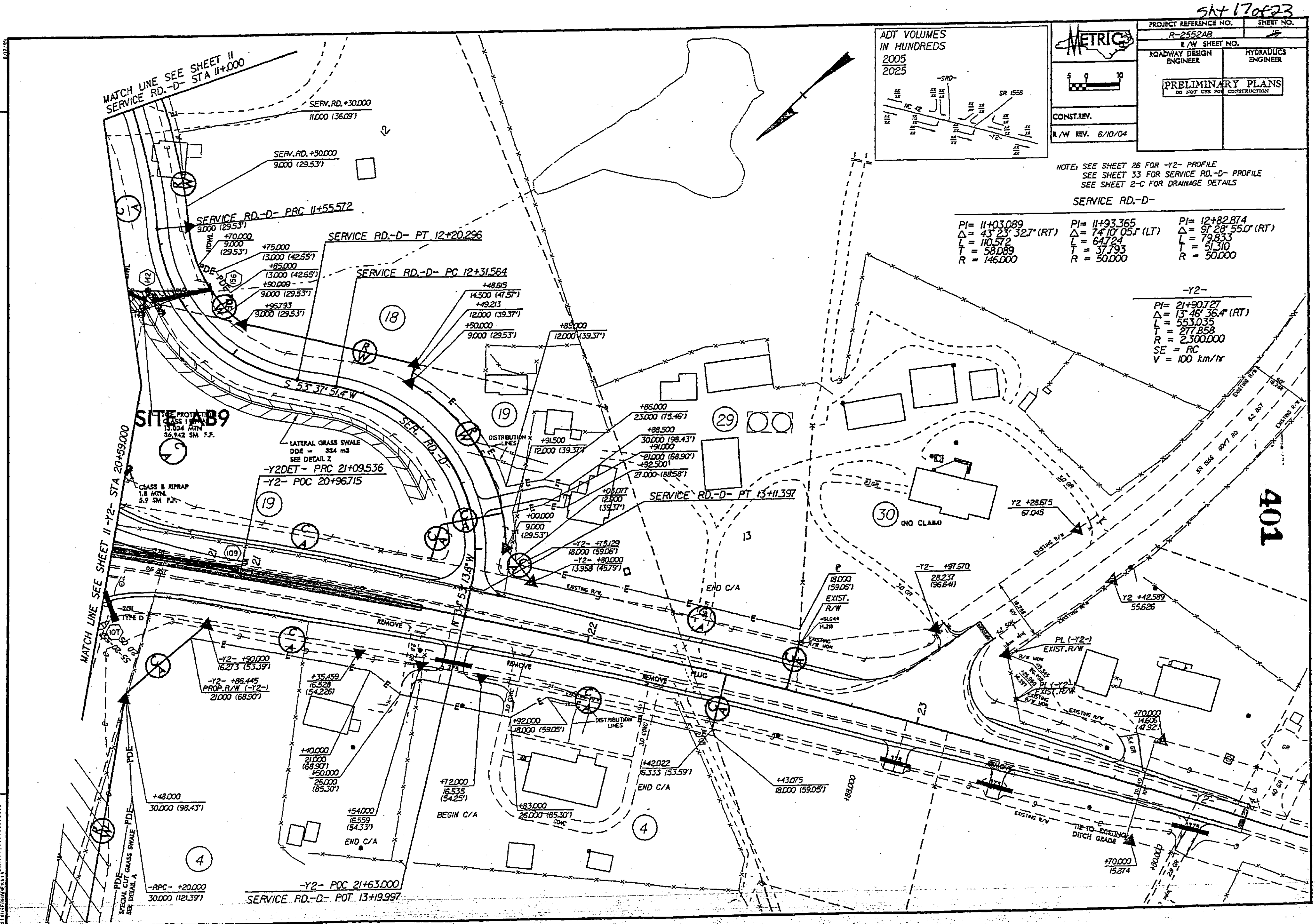
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

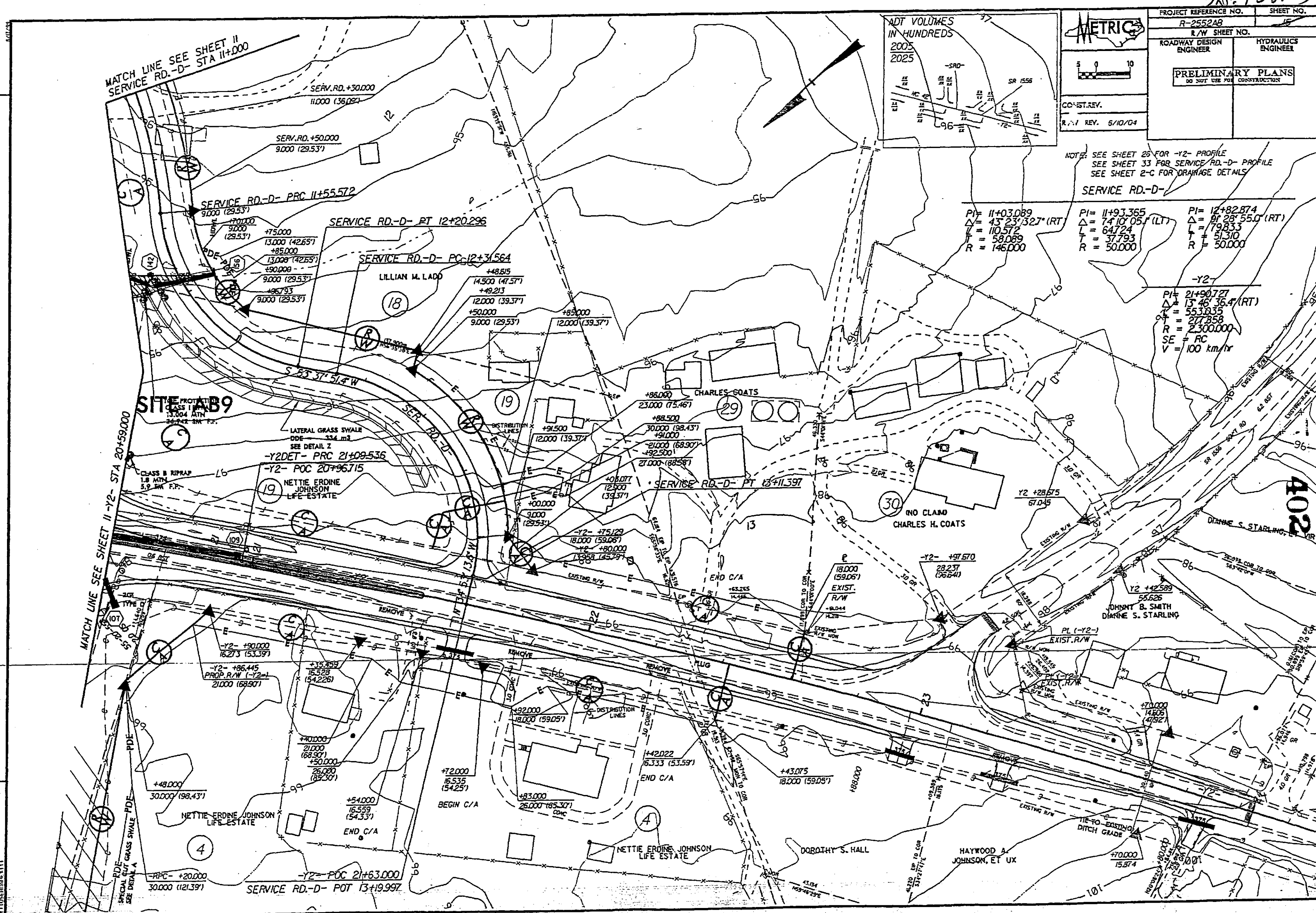
PROJECT: WBS 34459.1.1 (R-2552AB)

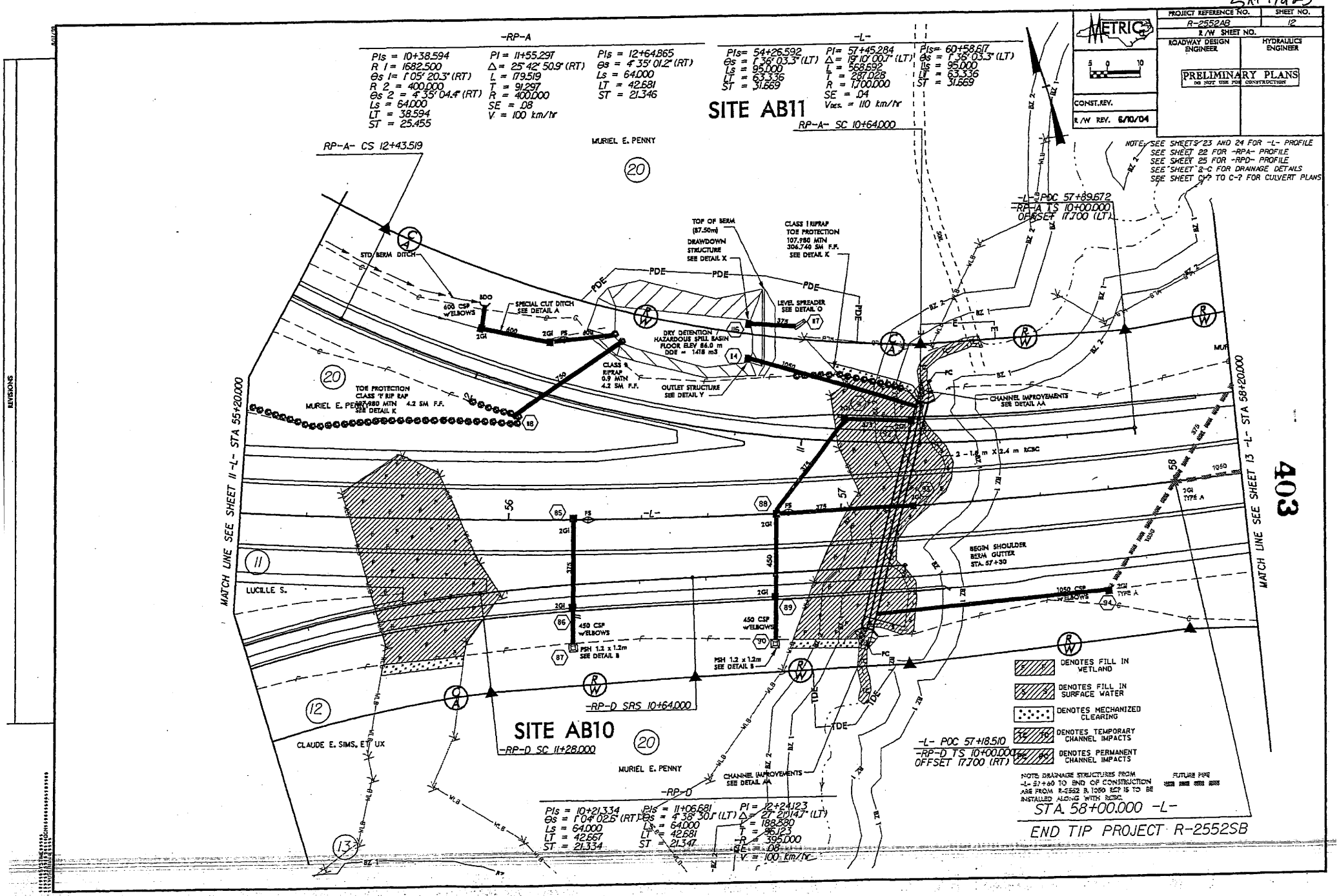
US 70 CLAYTON BYPASS

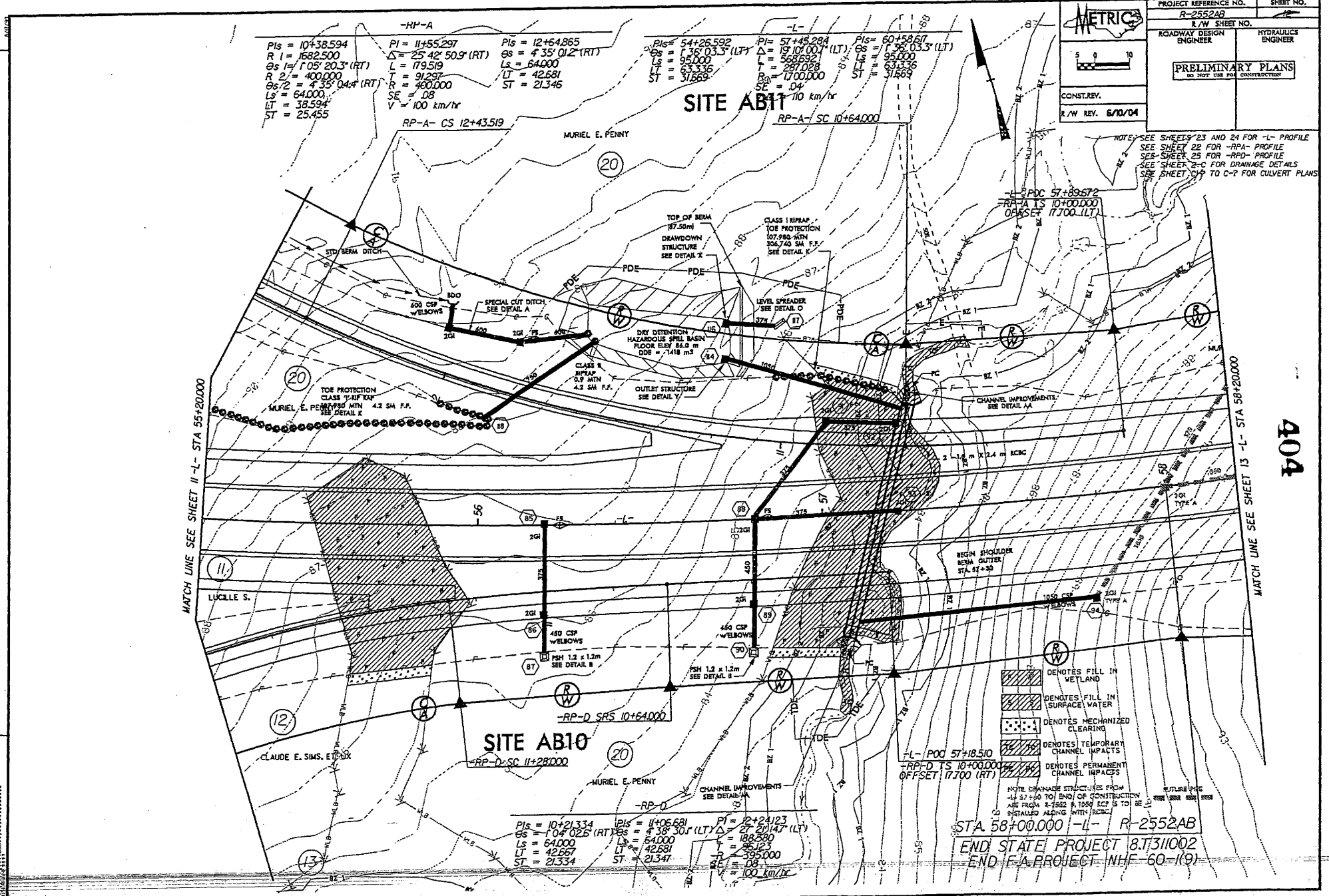
SHEET 16 OF 23 10/01/04


Sht 17 of 23
401
PROJECT REFERENCE NO. R-2552AB
SHEET NO. 15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
CONST. REV.
R/W REV. 6/10/04
ADT VOLUMES
IN HUNDREDS
2005
2025
NOTE: SEE SHEET 26 FOR -Y2- PROFILE
SEE SHEET 33 FOR SERVICE RD.-D- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SERVICE RD.-D-
PI = 11+03.089
Δ = 43° 23' 32.7" (RT)
L = 110.572
T = 58.089
R = 146.000
PI = 11+93.365
Δ = 74° 10' 05.1" (LT)
L = 64.724
T = 37.793
R = 50.000
PI = 12+82.874
Δ = 91° 28' 55.0" (RT)
L = 79.833
T = 51.310
R = 50.000
-Y2-
PI = 21+90.727
Δ = 13° 46' 36.4" (RT)
L = 553.035
T = 277.858
R = 2,300.000
SE = RC
V = 100 km/hr
SERVICE RD.-D- PRC 11+55.572
SERVICE RD.-D- PT 12+20.296
SERVICE RD.-D- PC 12+31.564
SERVICE RD.-D- PT 13+11.397
-Y2DET- PRC 21+09.536
-Y2- POC 20+96.715
-Y2- POC 21+63.000
SERVICE RD.-D- POT 13+19.997
S 53° 37' 51.4" W
SER. RD.-D-
SITE AB9
LATERAL GRASS SWALE
DDE = 334 m3
SEE DETAIL Z
MATCH LINE SEE SHEET 11 -Y2- STA 20+59.000
MATCH LINE SEE SHEET 11 SERVICE RD.-D- STA 11+000
SPECIAL CUT GRASS SWALE SEE DETAIL A
BEGIN C/A
END C/A
TIE-TO-EXISTING DITCH GRADE
(NO CLAIM)
REVISIONS

Sht. 18 of 23

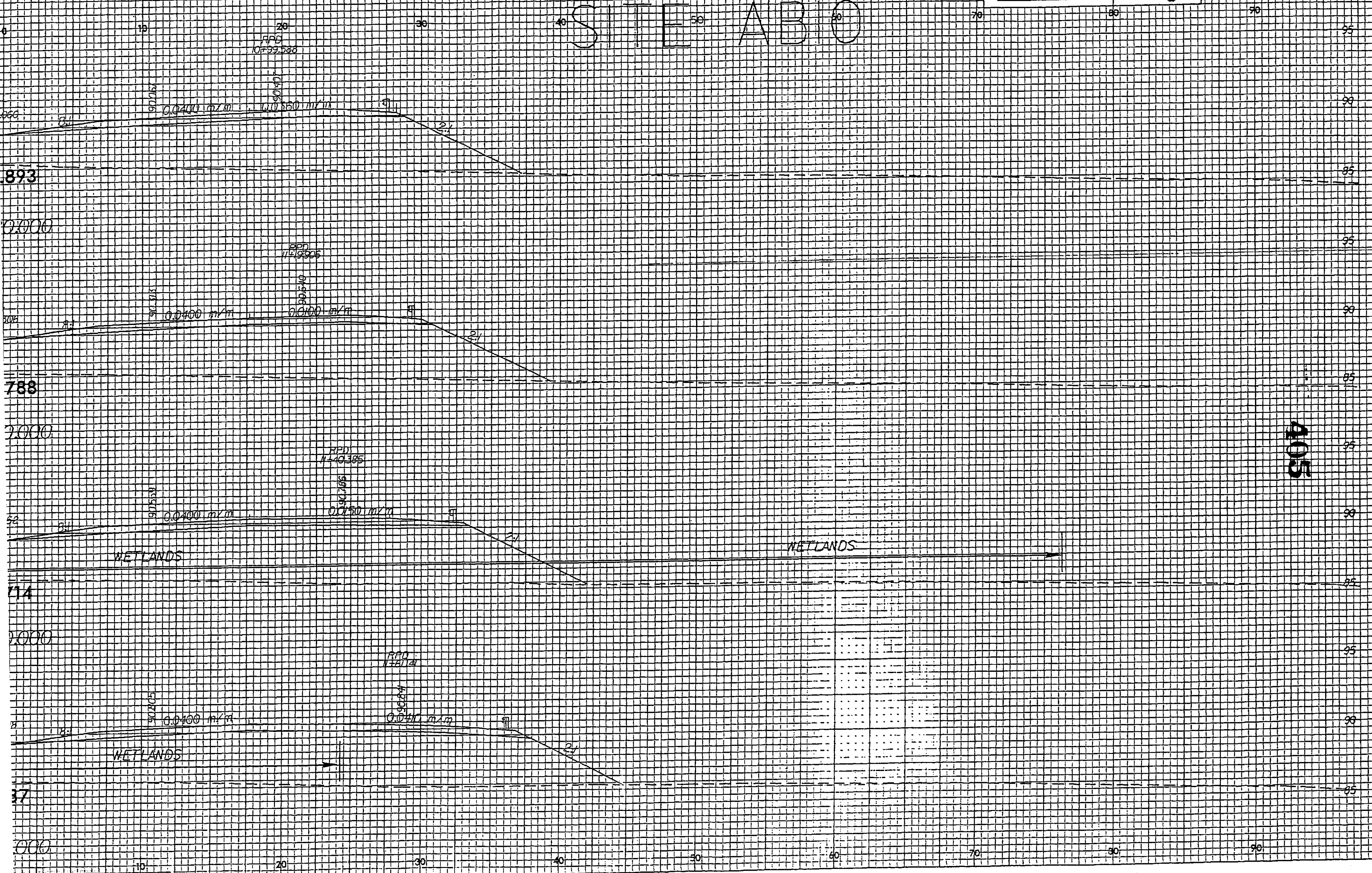

PROJECT REFERENCE NO. R-2552AB
SHEET NO. 15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
CONST.REV.
R/W REV. 5/10/04
ADT VOLUMES IN HUNDREDS
2005
2025
SR 1556
NOTE: SEE SHEET 25 FOR -Y2- PROFILE
SEE SHEET 33 FOR SERVICE RD.-D- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SERVICE RD.-D-
PI= 11+03.089
Δ= 43° 23' 32.7" (RT)
L = 110.572
T = 58.089
R = 146.000
PI= 11+93.365
Δ= 74° 10' 05.1" (LT)
L = 64.724
T = 37.793
R = 50.000
PI= 12+82.874
Δ= 91° 28' 55.0" (RT)
L = 79.833
T = 51.310
R = 50.000
-Y2-
PI= 21+90.727
Δ= 13° 46' 36.4" (RT)
L = 553.035
T = 277.858
R = 2,300.000
SE = RC
V = 100 km/hr
MATCH LINE SEE SHEET 11
SERVICE RD.-D- STA 11+000
MATCH LINE SEE SHEET 11 -Y2- STA 20+59.000
SERVICE RD.-D- PRC 11+55.572
SERVICE RD.-D- PT 12+20.296
SERVICE RD.-D- PC 12+31.564
SERVICE RD.-D- PT 13+11.397
SERVICE RD.-D- POT 13+19.997
-Y2- POC 21+63.000
-Y2DET- PRC 21+09.536
-Y2- POC 20+96.715
SITE AB9
LATERAL GRASS SWALE
SEE DETAIL Z
CLASS B RIPRAP
LILLIAN M. LADD
CHARLES COATS
(NO CLAIM)
CHARLES H. COATS
NETTIE ERDINE JOHNSON LIFE ESTATE
DOROTHY S. HALL
HAYWOOD A. JOHNSON, ET UX
JOHNNY B. SMITH
DIANNE S. STARLING
S 53° 37' 51.4" W
SER. RD.-D-
DISTRIBUTION LINES
EXISTING R/W
REMOVE
PLUG
BEGIN C/A
END C/A
TIE TO EXISTING DITCH GRADE
SPECIAL CUT GRASS SWALE SEE DETAIL A
402

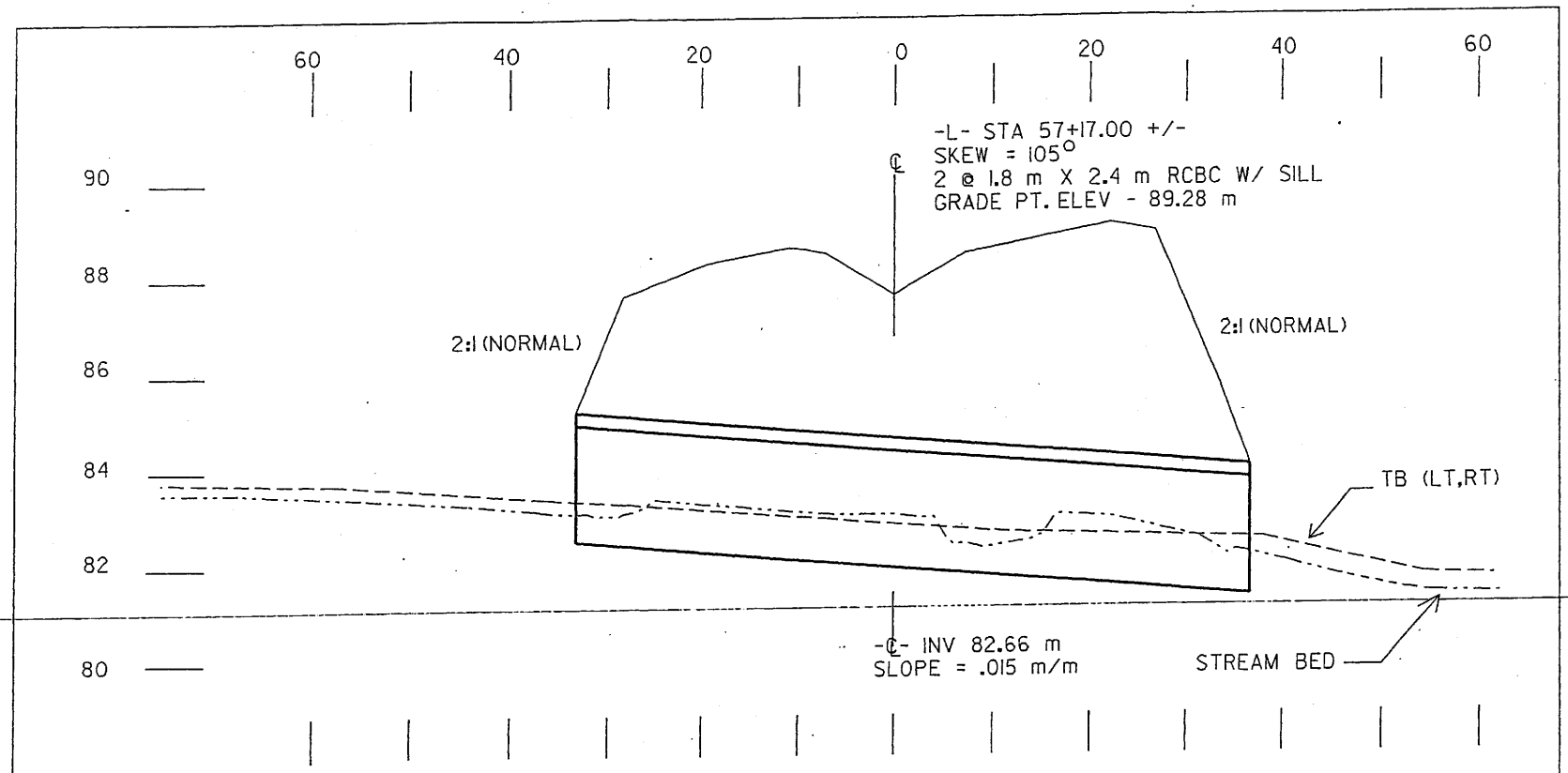

-RP-A
PIs = 10+38.594
R 1 = 1682.500
θs 1 = 1° 05' 20.3" (RT)
R 2 = 400.000
θs 2 = 4° 35' 04.4" (RT)
Ls = 64.000
LT = 38.594
ST = 25.455
PI = 11+55.291
Δ = 25° 42' 50.9" (RT)
L = 179.519
T = 91.297
R = 400.000
SE = .08
V = 100 km/hr
PIs = 12+64.865
θs = 4° 35' 01.2" (RT)
Ls = 64.000
LT = 42.681
ST = 21.346
-L-
PIs = 54+26.592
θs = 1° 36' 03.3" (LT)
Ls = 95.000
LT = 63.336
ST = 31.669
PI = 57+45.284
Δ = 19° 10' 00.7" (LT)
L = 568.692
T = 287.028
R = 1,700.000
SE = .04
Vdes. = 110 km/hr
PIs = 60+58.617
θs = 1° 36' 03.3" (LT)
Ls = 95.000
LT = 63.336
ST = 31.669
SITE AB11
RP-A- SC 10+64.000
RP-A- CS 12+43.519
MURIEL E. PENNY
20
-L- POC 57+89.672
-RP-A TS 10+00.000
OFFSET 17.700 (LT)
NOTE: SEE SHEETS 23 AND 24 FOR -L- PROFILE
SEE SHEET 22 FOR -RP-A- PROFILE
SEE SHEET 25 FOR -RP-D- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SEE SHEET C-? TO C-? FOR CULVERT PLANS
METRIC
PROJECT REFERENCE NO.
R-2552AB
SHEET NO.
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV. 6/10/04
TOP OF BERM (87.50m)
DRAWDOWN STRUCTURE SEE DETAIL X
CLASS I RIPRAP TOE PROTECTION 107.980 MTN 306.740 SM F.F. SEE DETAIL K
STD BERM DITCH
SPECIAL CUT DITCH SEE DETAIL A
400 CSP w/ELBOWS
LEVEL SPREADER SEE DETAIL O
DRY DETENTION / HAZARDOUS SPILL BASIN FLOOR ELEV 86.0 m DDE = 1418 m3
CLASS B RIPRAP 0.9 MTN 4.2 SM F.F.
OUTLET STRUCTURE SEE DETAIL Y
TOE PROTECTION CLASS 'I' RIP RAP 107.980 MTN 4.2 SM F.F. SEE DETAIL K
MURIEL E. PENNY
CHANNEL IMPROVEMENTS SEE DETAIL AA
2 - 1.8 m X 2.4 m RCBC
BEGIN SHOULDER BERM GUTTER STA. 57+30
1050 CSP w/ELBOWS
450 CSP w/ELBOWS
PSH 1.2 x 1.2m SEE DETAIL B
-RP-D SRS 10+64.000
SITE AB10
-RP-D SC 11+28.000
CLAUDE E. SIMS, ET UX
LUCILLE S.
MATCH LINE SEE SHEET 11 -L- STA 55+20.000
MATCH LINE SEE SHEET 13 -L- STA 58+20.000
-RP-D
PIs = 10+21.334
θs = 1° 04' 02.6" (RT)
Ls = 64.000
LT = 42.667
ST = 21.334
PIs = 11+06.681
θs = 4° 38' 30.5" (LT)
Ls = 64.000
LT = 42.681
ST = 21.347
PI = 12+24.123
Δ = 27° 21' 14.7" (LT)
L = 188.880
T = 96.123
R = 395.000
SE = .08
V = 100 Km/hr
-L- POC 57+18.510
-RP-D TS 10+00.000
OFFSET 17.700 (RT)
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY CHANNEL IMPACTS
DENOTES PERMANENT CHANNEL IMPACTS
FUTURE PIPE
NOTE: DRAINAGE STRUCTURES FROM -L- 57+60 TO END OF CONSTRUCTION ARE FROM R-2552 B. 1050 RCP IS TO BE INSTALLED ALONG WITH RCBC.
STA. 58+00.000 -L-
END TIP PROJECT R-2552SB
REVISIONS
403


-RP-A
Pis = 10+38.594
R 1 = 1682.500
Θs 1 = 1 05' 20.3" (RT)
R 2 = 400.000
Θs/2 = 4 35' 04.4" (RT)
Ls = 64.000
LT = 38.594
ST = 25.455
PI = 11+55.297
Δ = 25 42' 50.9" (RT)
L = 179.519
T = 91.297
R = 400.000
SE = .08
V = 100 km/hr
Pis = 12+64.865
Θs = 4 35' 01.2" (RT)
Ls = 64.000
LT = 42.681
ST = 21.346
-L-
Pis = 54+26.592
Θs = 1 36' 03.3" (LT)
Ls = 95.000
LT = 63.336
ST = 31.669
PI = 57+45.284
Δ = 19 10' 00.1" (LT)
L = 568.692
R = 287.028
Rad = 1700.000
SE = .04
V = 110 km/hr
Pis = 60+58.617
Θs = 1 36' 03.3" (LT)
Ls = 95.000
LT = 63.336
ST = 31.669
SITE AB11
RP-A- CS 12+43.519
RP-A- SC 10+64.000
MURIEL E. PENNY
-L- POC 57+89.672
-RP-A TS 10+00.000
OFFSET 17.700 (LT)
NOTE: SEE SHEETS 23 AND 24 FOR -L- PROFILE
SEE SHEET 22 FOR -RPA- PROFILE
SEE SHEET 25 FOR -RPD- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SEE SHEET C-1 TO C-7 FOR CULVERT PLANS
METRIC
PROJECT REFERENCE NO.
R-2552AB
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV. 6/10/04
STD. BERM DITCH
TOP OF BERM
DRAWDOWN STRUCTURE
SEE DETAIL X
CLASS I RIPRAP
TOE PROTECTION
SEE DETAIL K
SPECIAL CUT DITCH
SEE DETAIL A
LEVEL SPREADER
SEE DETAIL O
DRY DETENTION
HAZARDOUS SPILL BASIN
FLOOR ELEV 86.0 m
DDE = 1418 m3
CLASS B RIPRAP
OUTLET STRUCTURE
SEE DETAIL V
CHANNEL IMPROVEMENTS
SEE DETAIL AA
MURIEL E. PENNY
LUCILLE S.
CLAUDE E. SIMS, ET UX
SITE AB10
-RP-D SRS 10+64.000
-RP-D SC 11+28.000
-RP-D
-L- POC 57+18.510
-RP-D TS 10+00.000
OFFSET 17.700 (RT)
BEGIN SHOULDER BERM GUTTER STA. 57+30
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY CHANNEL IMPACTS
DENOTES PERMANENT CHANNEL IMPACTS
NOTE: DRAINAGE STRUCTURES FROM -L- 57+50 TO END OF CONSTRUCTION ARE FROM R-2552 & 1250 ECP IS TO BE INSTALLED ALONG WITH RCBC
FUTURE PAVING
STA. 58+00.000 -L- R-2552AB
END STATE PROJECT 8.T311002
END F.A. PROJECT NHF-60-1(9)
MATCH LINE SEE SHEET 11 -L- STA 55+20.000
MATCH LINE SEE SHEET 13 -L- STA 58+20.000
Pis = 10+21.334
Θs = 1 04' 02.6" (RT)
Ls = 64.000
LT = 42.667
ST = 21.334
Pis = 11+06.681
Θs = 4 38' 30.1" (LT)
Ls = 64.000
LT = 42.681
ST = 21.347
PI = 12+24.123
Δ = 27 21' 47" (LT)
L = 188.380
T = 96.123
R = 395.000
SE = .08
V = 100 km/hr
404

PROJECT REFERENCE NO.	SHEET NO.
R-2552AB	31

SITE ABIO





SITE AB11
CROSS SECTION

NCDOT
DIVISION OF HIGHWAYS
JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552 AB)

US 70 CLAYTON BYPASS

SHEET 22 OF 23 10/01/04

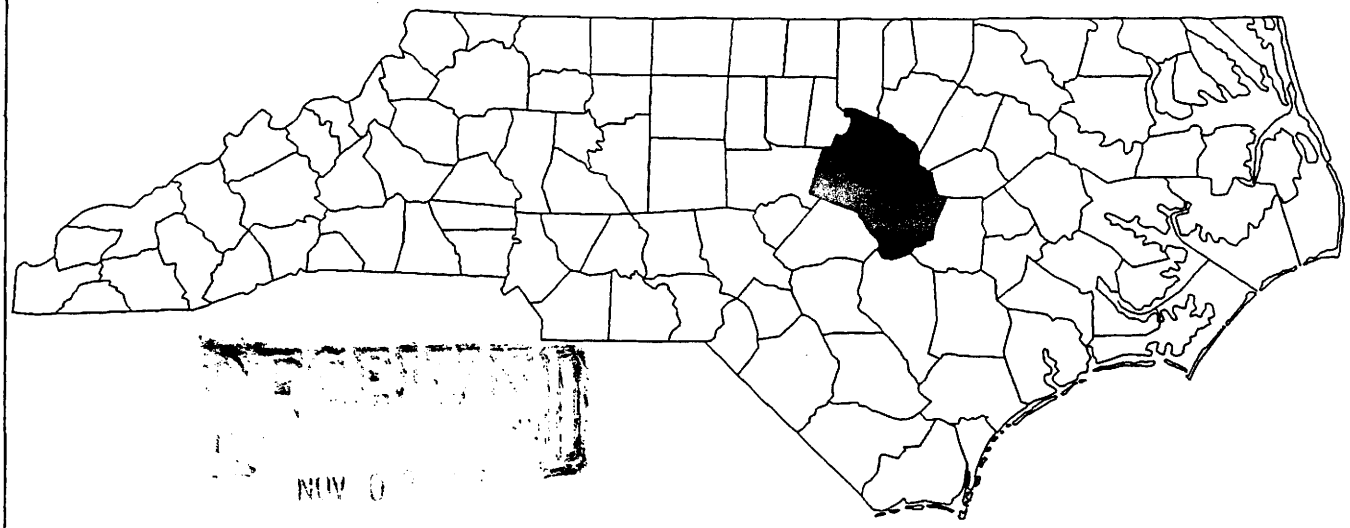
407

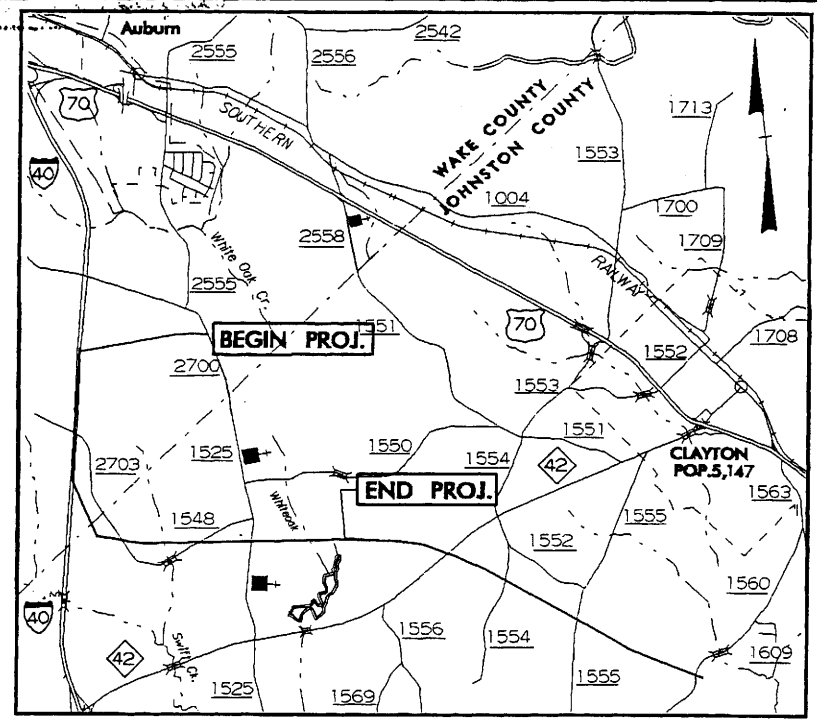
SITE AB


2.5 0 2.5 5
METRIC
0.0400 m/m
8:1
2:1
3:1
89.385
89.305
89.262
89.122
89.626
895
597
545
53
RFD
10+487.03
WETLANDS

408

NORTH CAROLINA





NEUSE RIVER BUFFER

VICINITY MAP

NCDOT

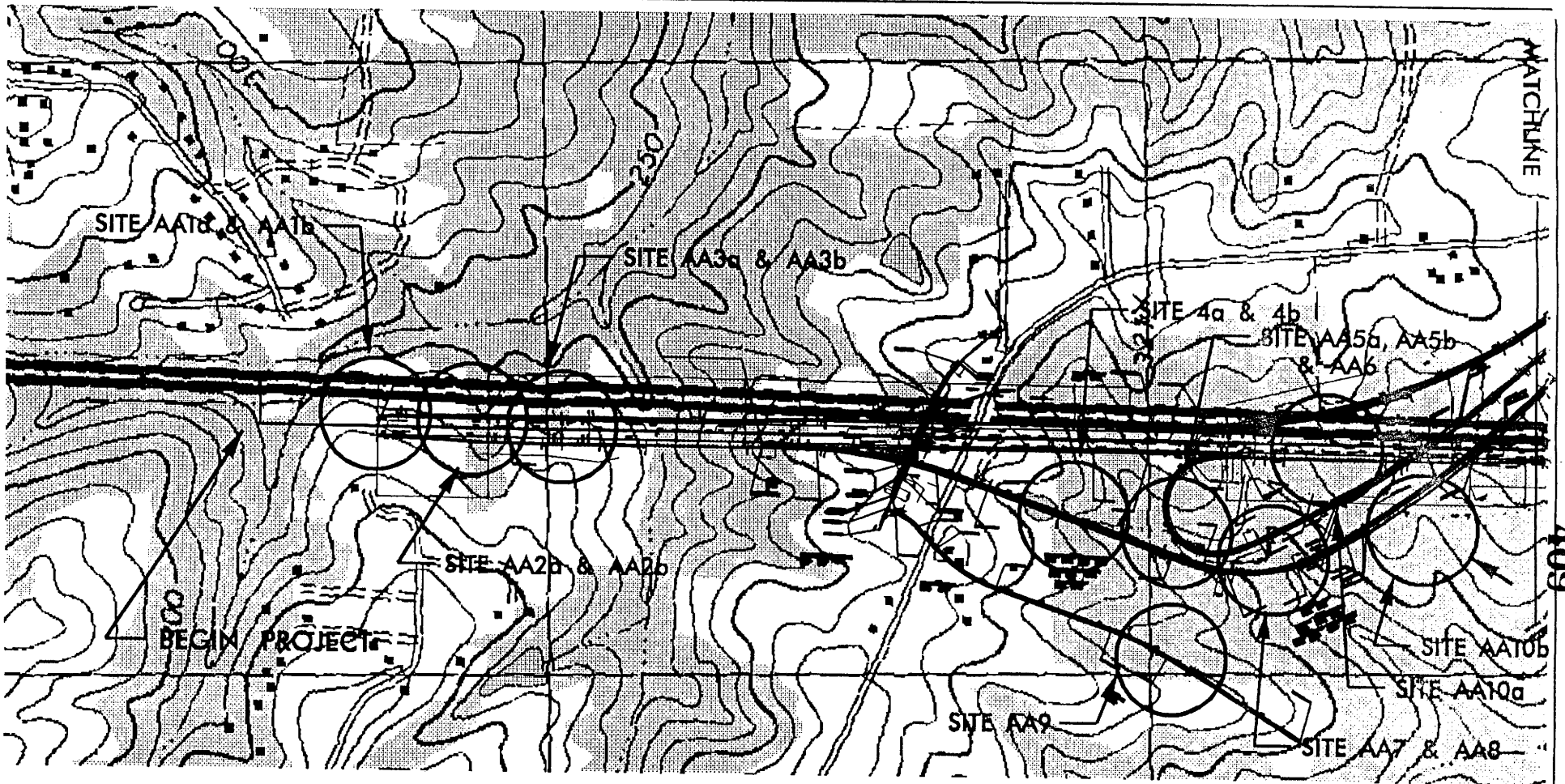
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

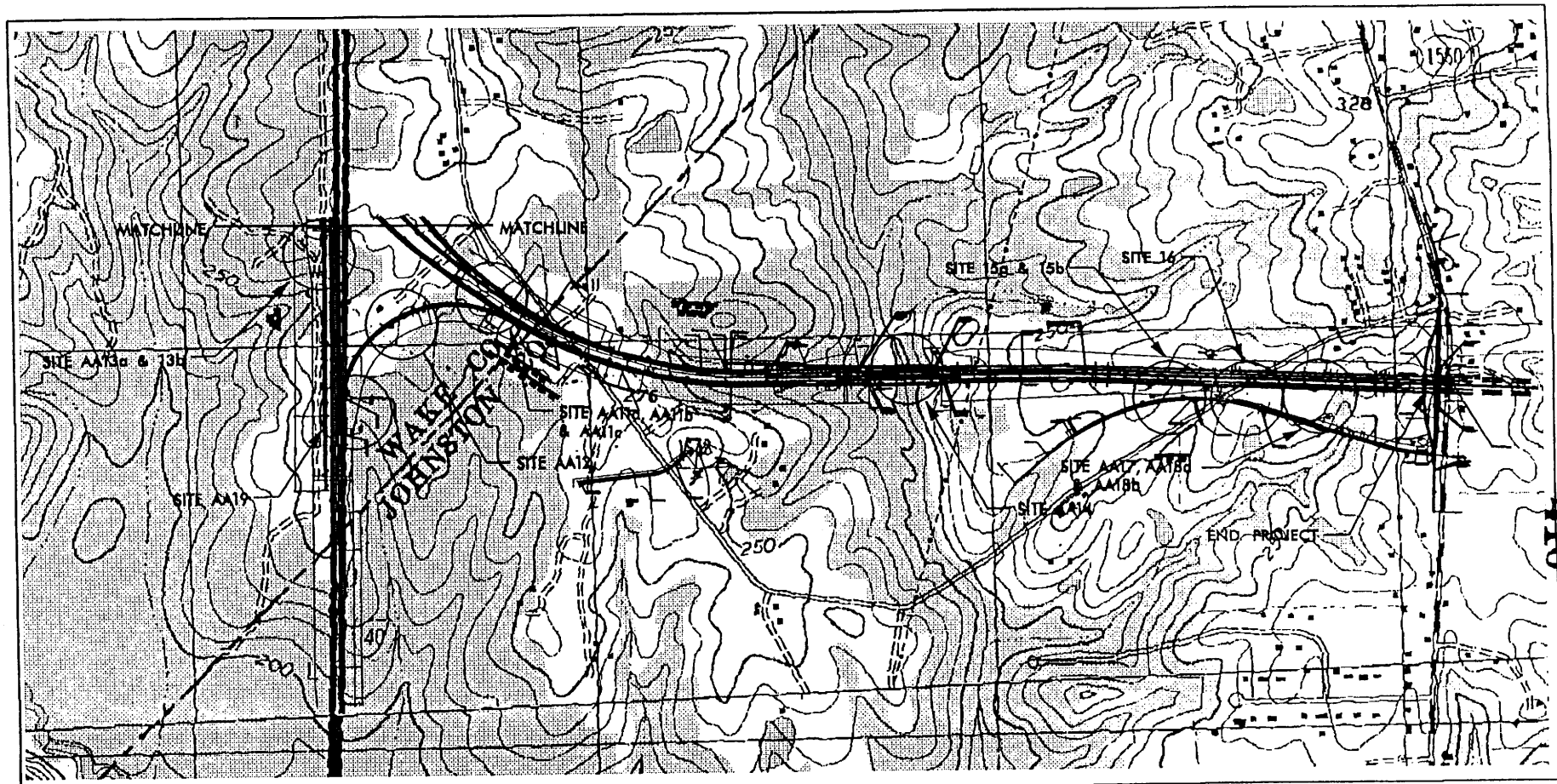
SHEET 1 OF 15 **10/01/04**



SITE MAP

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

SHEET ~ OF 18 10/01/04



SITE MAP

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

SHEET 3 OF 18 **10 / 01 / 04**

BUFFER IMPACTS SUMMARY

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)
AA1a	600 RCP	I1Y1 10+90	X		430.56	2611.00	3041.56					
AA1b	600 RCP	I1Y1 10+90	X		2124.80	1765.28	3890.08					
AA3a	1350 CSP	I1Y1 13+70	X		3717.85	4049.38	7767.23					
AA3b	1350 CSP	I1Y1 13+70	X		4111.81	4391.68	8503.49					
AA4a	750 RCP	I1Y1 20+90	X					11348.39	8144.73	19493.12		
AA4b	900 RCP	FLYLEREV 29+50	X					8830.17	6469.65	15299.82		
AA5a	750 RCP	LPB 21+90	X					41580.88	32338.05	73918.93		
AA5b	900 RCP	FLYLEREV 28+20	X					0.00	10.76	10.76		
AA10a	800 CSP	FLYLWREV 23+20	X					11797.25	9601.41	21398.66		
AA10b	BRIDGE	FLYLEREV 24+45	X				—	18155.59	14593.60	32749.19		
TOTAL:					10385.02	12817.34	23202.36	91712.28	71158.20	162870.48		

NOTE : WETLAND IMPACT IN BUFFER ZONES

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

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

38278
SHEET 4 OF 18

411

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT TYPE: ROAD CROSSING	IMPACT TYPE: PARALLEL IMPACT	ALLOWABLE: ZONE 1 (ft^2)	ALLOWABLE: ZONE 2 (ft^2)	ALLOWABLE: TOTAL (ft^2)	MITIGABLE: ZONE 1 (ft^2)	MITIGABLE: ZONE 2 (ft^2)	MITIGABLE: TOTAL (ft^2)	BUFFER REPLACEMENT: ZONE 1 (ft^2)	BUFFER REPLACEMENT: ZONE 2 (ft^2)
AA11b	1500 RCP	FLYLEREV 18+00	X					46633.03	32446.41	79079.44		
AA11c	450 RCP	FLYLEREV 18+40 LT	X					SEE AA11b FOR SITE TOTAL				
AA13	600 RCP	I1Y1 30+80	X		3719.82	5908.53	9628.35					
AA14	BRIDGE	LREV 14+50	X					18513.82	15333.94	33847.76		
AA15a	1050 RCP\	L 21+10	X		5571.94	4047.45	9619.39					
AA15b	1050 RCP	Y2B 12+70	X					6284.08	8147.74	14431.82		
AA16	750 RCP	L 23+00	X					27648.93	19748.98	47397.91		
AA18a	1200 RCP	L 25+80	X					28645.56	18336.32	46981.88		
AA18b	1350 RCP	Y2B 16+00	X					8818.38	6898.70	15717.08		
AA19	750 RCP	I1Y1 33+90 LT	X		2164.73	1921.68	4086.41					
TOTAL:					11456.49	11877.66	23334.15	136543.80	100912.09	237455.89		
PROJECT TOTALS					**21841.51**	**24695.00**	**46536.51**	**228256.08**	**172070.29**	**400326.37**		

NOTE : WETLAND IMPACT IN BUFFER ZONES

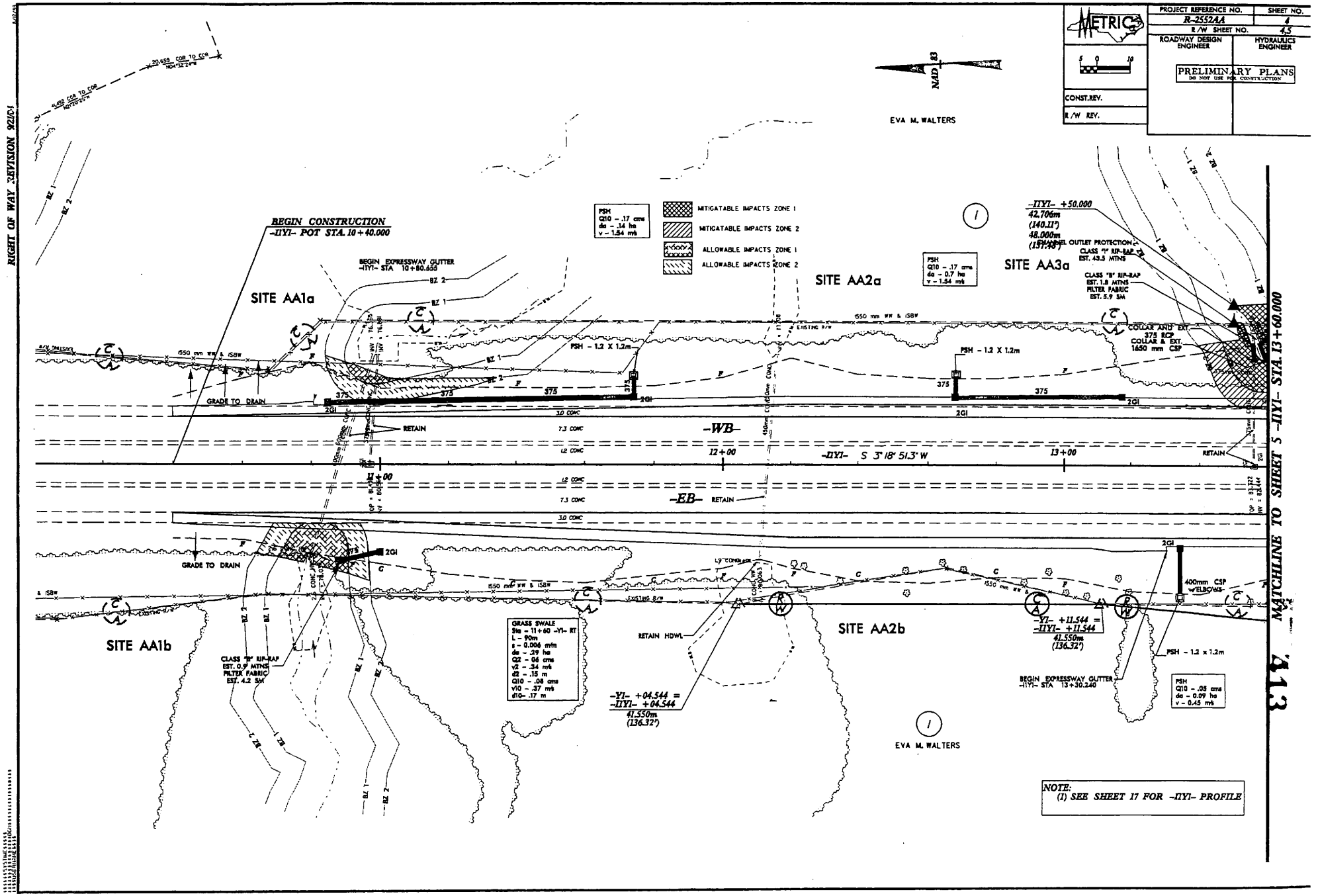
SITE	1	2
11	39338.56	15193.12
14	17775.52	11975.88
16	2690.00	0.00

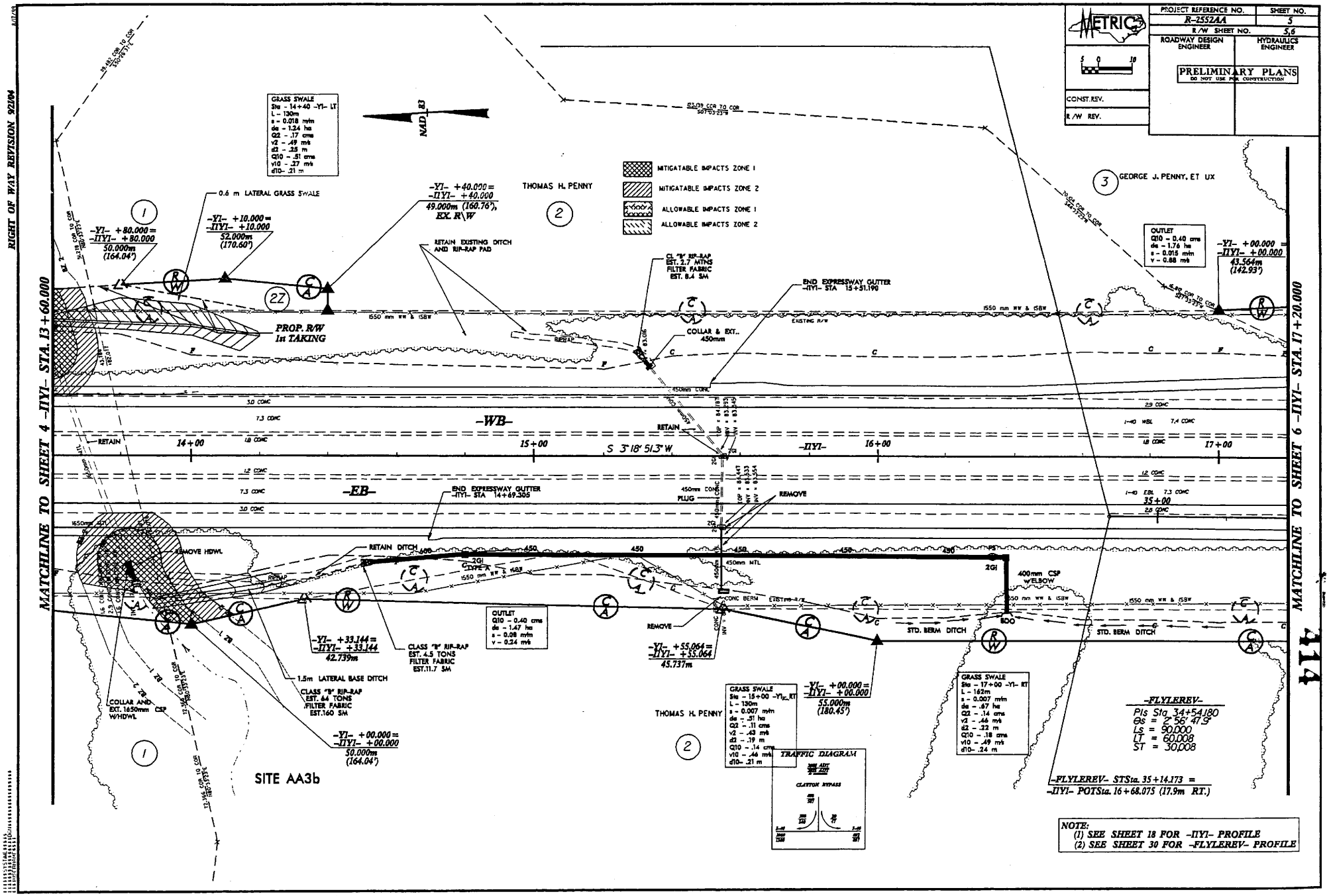
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

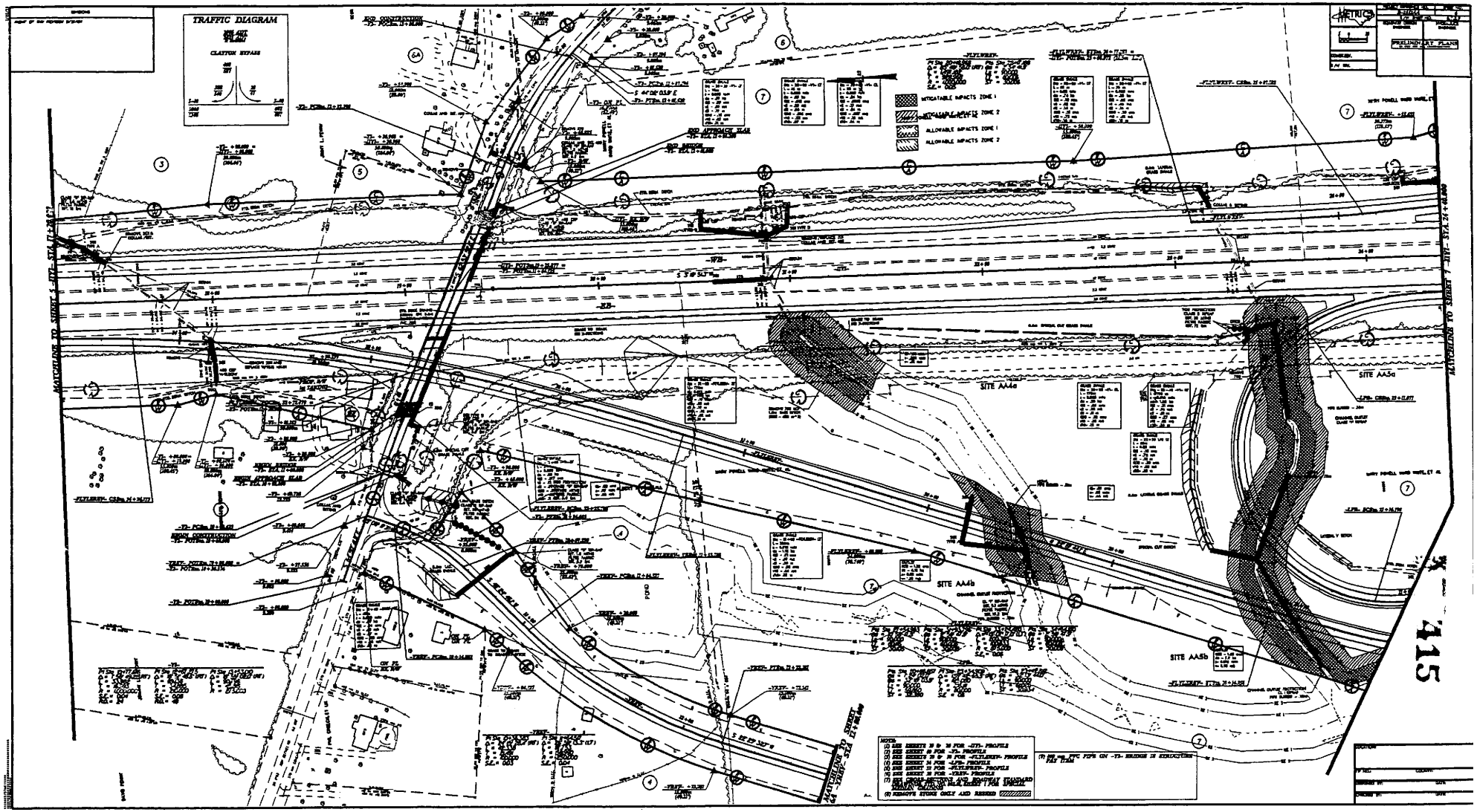
WAKE / JOHNSTON COUNTY
PROJECT # - WBS 34459.1.1 (R2552AA)
US 70 - CLAYTON BYPASS

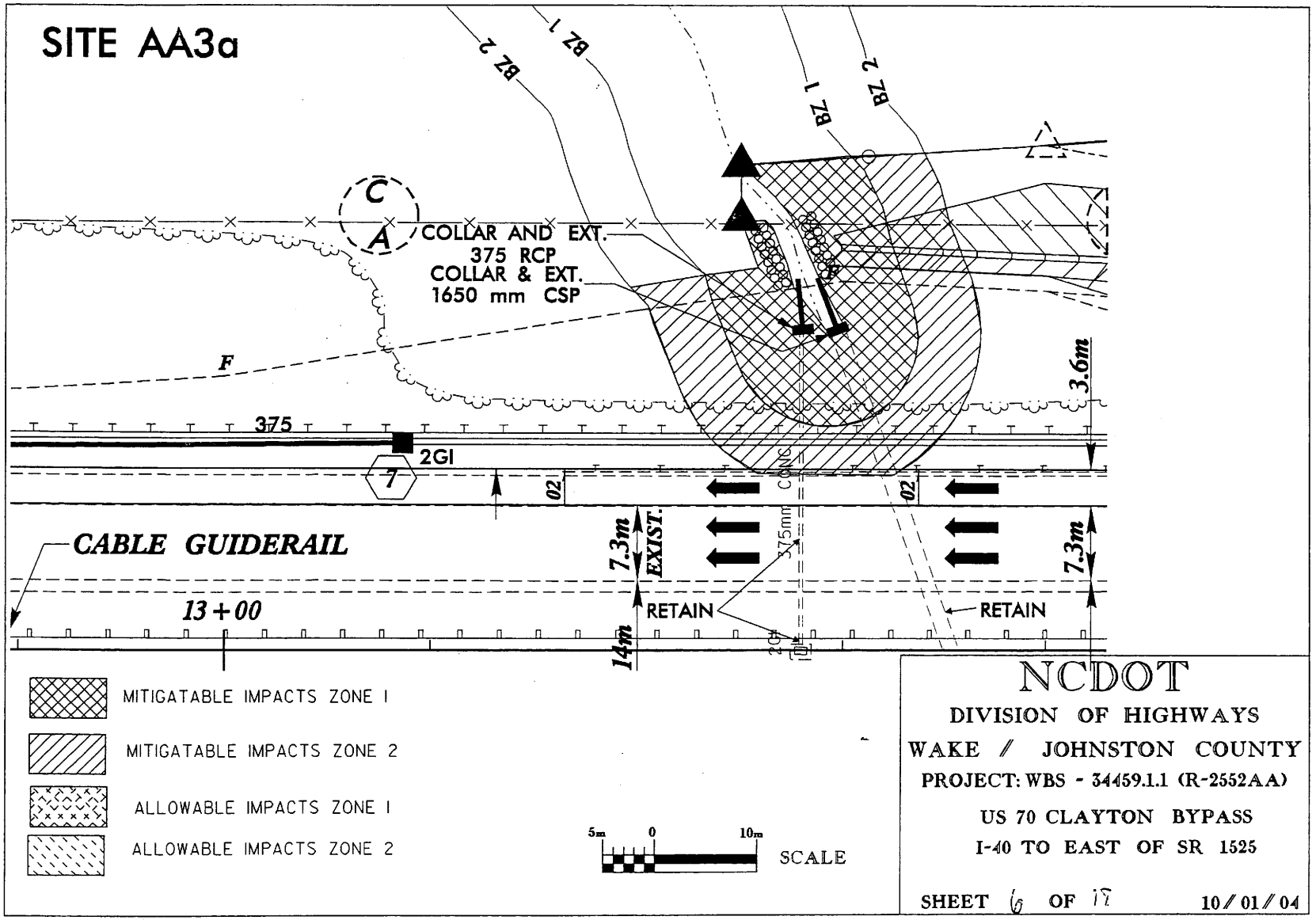
10/18/04
SHEET 5 OF 18

412


METRIC
PROJECT REFERENCE NO.
R-2552AA
SHEET NO.
4
R/W SHEET NO.
4.5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
NAD 83
EVA M. WALTERS
RIGHT OF WAY REVISION 9/2/03
BEGIN CONSTRUCTION
-IIYI- POT STA. 10+40.000
BEGIN EXPRESSWAY GUTTER
-IIYI- STA 10+80.655
SITE AA1a
SITE AA1b
SITE AA2a
SITE AA2b
SITE AA3a
PSH
Q10 - .17 cms
da - .14 ha
v - 1.54 m/s
MITIGATABLE IMPACTS ZONE 1
MITIGATABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
PSH
Q10 - .17 cms
da - 0.7 ha
v - 1.54 m/s
-IIYI- +50.000
42.706m
(140.11')
48.000m
(157.48')
CHANNEL OUTLET PROTECTION
CLASS "I" RIP-RAP
EST. 43.5 MTNS
CLASS "B" RIP-RAP
EST. 1.8 MTNS
FILTER FABRIC
EST. 5.9 SM
COLLAR AND EXT.
375 RCP
COLLAR & EXT.
1650 mm CSP
1550 mm WW & ISBW
EXISTING R/W
PSH - 1.2 X 1.2m
375
2GI
GRADE TO DRAIN
RETAIN
-WB-
-EB-
-IIYI- S 3° 18' 51.3" W
11+00
12+00
13+00
7.3 CONC
12 CONC
3.0 CONC
GRASS SWALE
Sta - 11+60 -YI- RT
L - 90m
s - 0.006 m/m
da - .29 ha
Q2 - .06 cms
v2 - .34 m/s
d2 - .15 m
Q10 - .08 cms
v10 - .37 m/s
d10- .17 m
RETAIN HDWL
-YI- +04.544 =
-IIYI- +04.544
41.550m
(136.32')
-YI- +11.544 =
-IIYI- +11.544
41.550m
(136.32')
400mm CSP
w/ELBOWS
BEGIN EXPRESSWAY GUTTER
-IIYI- STA 13+30.240
PSH - 1.2 x 1.2m
PSH
Q10 - .05 cms
da - 0.09 ha
v - 0.45 m/s
CLASS "B" RIP-RAP
EST. 0.9 MTNS
FILTER FABRIC
EST. 4.2 SM
BZ 1
BZ 2
NOTE:
(1) SEE SHEET 17 FOR -IIYI- PROFILE
MATCHLINE TO SHEET 5 -IIYI- STA. 13+60.000
413


METRIC
PROJECT REFERENCE NO.
R-2552AA
SHEET NO.
5
R/W SHEET NO.
5,6
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
RIGHT OF WAY REVISION 9/2/04
MATCHLINE TO SHEET 4 -IIY1- STA. 13+60.000
MATCHLINE TO SHEET 6 -IIY1- STA. 17+20.000
GRASS SWALE
Sta - 14+40 -Y1- LT
L - 130m
s - 0.018 m/m
da - 1.24 ha
Q2 - .17 cms
v2 - .49 m/s
d2 - .25 m
Q10 - .51 cms
v10 - .27 m/s
d10- .21 m
NAD 83
MITIGATABLE IMPACTS ZONE 1
MITIGATABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
THOMAS H. PENNY
GEORGE J. PENNY, ET UX
0.6 m LATERAL GRASS SWALE
-Y1- +80.000 = -IIY1- +80.000
50.000m (164.04')
-Y1- +10.000 = -IIY1- +10.000
52.000m (170.60')
-Y1- +40.000 = -IIY1- +40.000
49.000m (160.76'), EX. R\W
RETAIN EXISTING DITCH AND RIP-RAP PAD
CL "B" RIP-RAP EST. 2.7 MTNS FILTER FABRIC EST. 8.4 SM
END EXPRESSWAY GUTTER -IIY1- STA 13+51.190
PROP. R/W 1st TAKING
COLLAR & EXT.. 450mm
OUTLET Q10 - 0.40 cms da - 1.76 ha s - 0.015 m/m v - 0.88 m/s
-Y1- +00.000 = -IIY1- +00.000
63.564m (142.93')
1550 mm WW & ISBW
EXISTING R/W
-WB-
-EB-
-IIY1-
RETAIN
14+00
15+00
16+00
17+00
S 3°18'51.3"W
END EXPRESSWAY GUTTER -IIY1- STA 14+69.305
450mm CONC
PLUG
REMOVE
35+00
REMOVE HDWL
RETAIN DITCH
2GI
CURVE
450mm MTL
400mm CSP W/ELBOW
CONC BERM
EXISTING R/W
STD. BERM DITCH
BDO
OUTLET Q10 - 0.40 cms da - 1.47 ha s - 0.08 m/m v - 0.24 m/s
-Y1- +33.144 = -IIY1- +33.144
42.739m
CLASS "B" RIP-RAP EST. 4.5 TONS FILTER FABRIC EST.11.7 SM
1.5m LATERAL BASE DITCH
CLASS "B" RIP-RAP EST. .64 TONS FILTER FABRIC EST.160 SM
COLLAR AND EXT. 1650mm CSP W/HDWL
-Y1- +00.000 = -IIY1- +00.000
50.000m (164.04')
-Y1- +55.064 = -IIY1- +55.064
45.737m
-Y1- +00.000 = -IIY1- +00.000
55.000m (180.45')
GRASS SWALE
Sta - 15+00 -Y1- RT
L - 130m
s - 0.007 m/m
da - .51 ha
Q2 - .11 cms
v2 - .43 m/s
d2 - .19 m
Q10 - .14 cms
v10 - .46 m/s
d10- .21 m
GRASS SWALE
Sta - 17+00 -Y1- RT
L - 162m
s - 0.007 m/m
da - .67 ha
Q2 - .14 cms
v2 - .46 m/s
d2 - .22 m
Q10 - .18 cms
v10 - .49 m/s
d10- .24 m
TRAFFIC DIAGRAM
CLAYTON BYPASS
-FLYLEREV-
Pis Sta 34+54.180
θs = 2°56'47.9"
Ls = 90.000
LT = 60.008
ST = 30.008
-FLYLEREV- STSta. 35+14.173 = -IIY1- POTSta. 16+68.075 (17.9m RT.)
NOTE:
(1) SEE SHEET 18 FOR -IIY1- PROFILE
(2) SEE SHEET 30 FOR -FLYLEREV- PROFILE
SITE AA3b
414


TRAFFIC DIAGRAM
MATCHLINE TO SHEET 6
MATCHLINE TO SHEET 7
SITE AA4a
SITE AA4b
SITE AA5a
SITE AA5b
PRELIMINARY PLANS
METRIC
MITIGATABLE IMPACTS ZONE 1
MITIGATABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
415



NCDOT

DIVISION OF HIGHWAYS

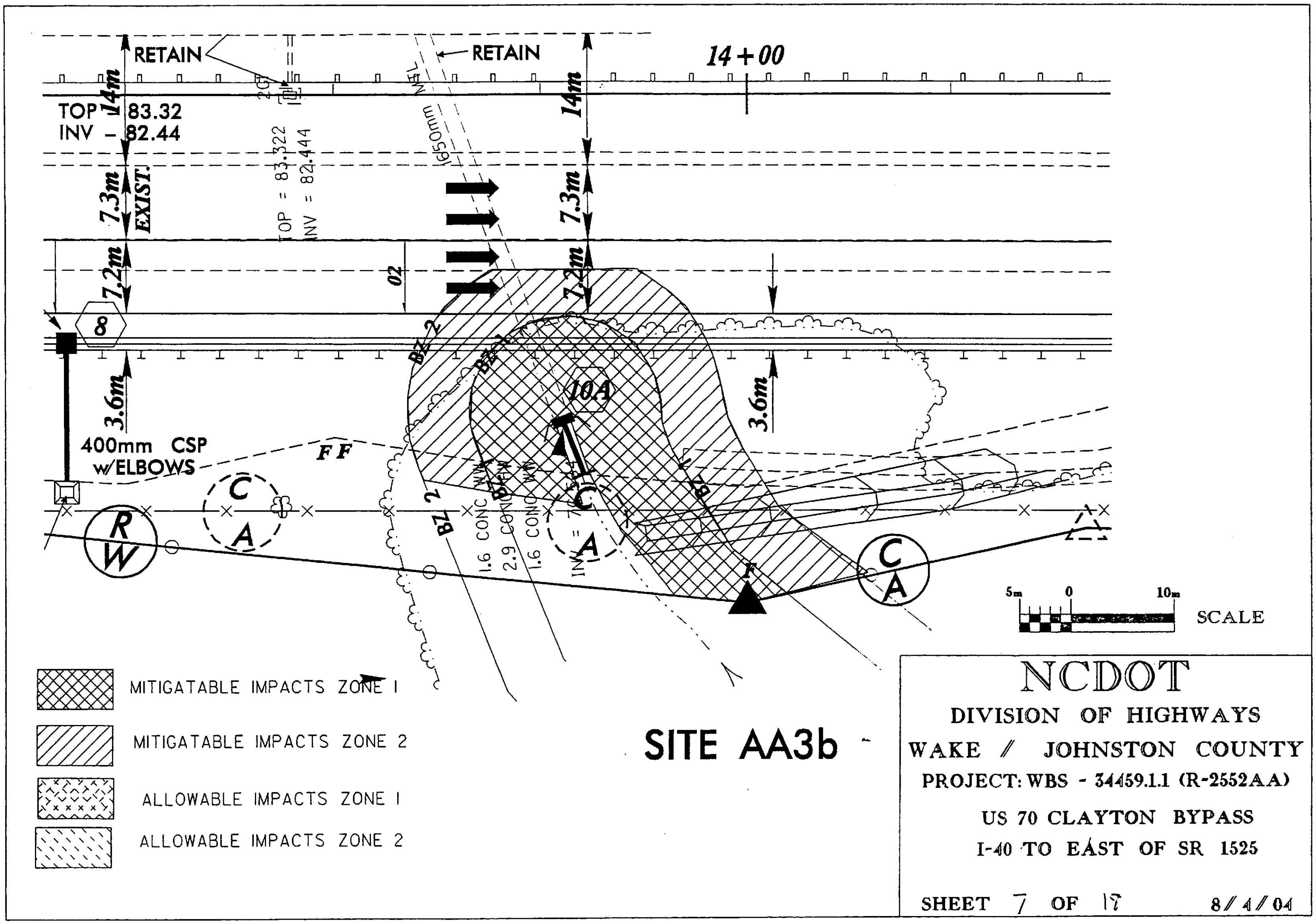
WAKE / JOHNSTON COUNTY

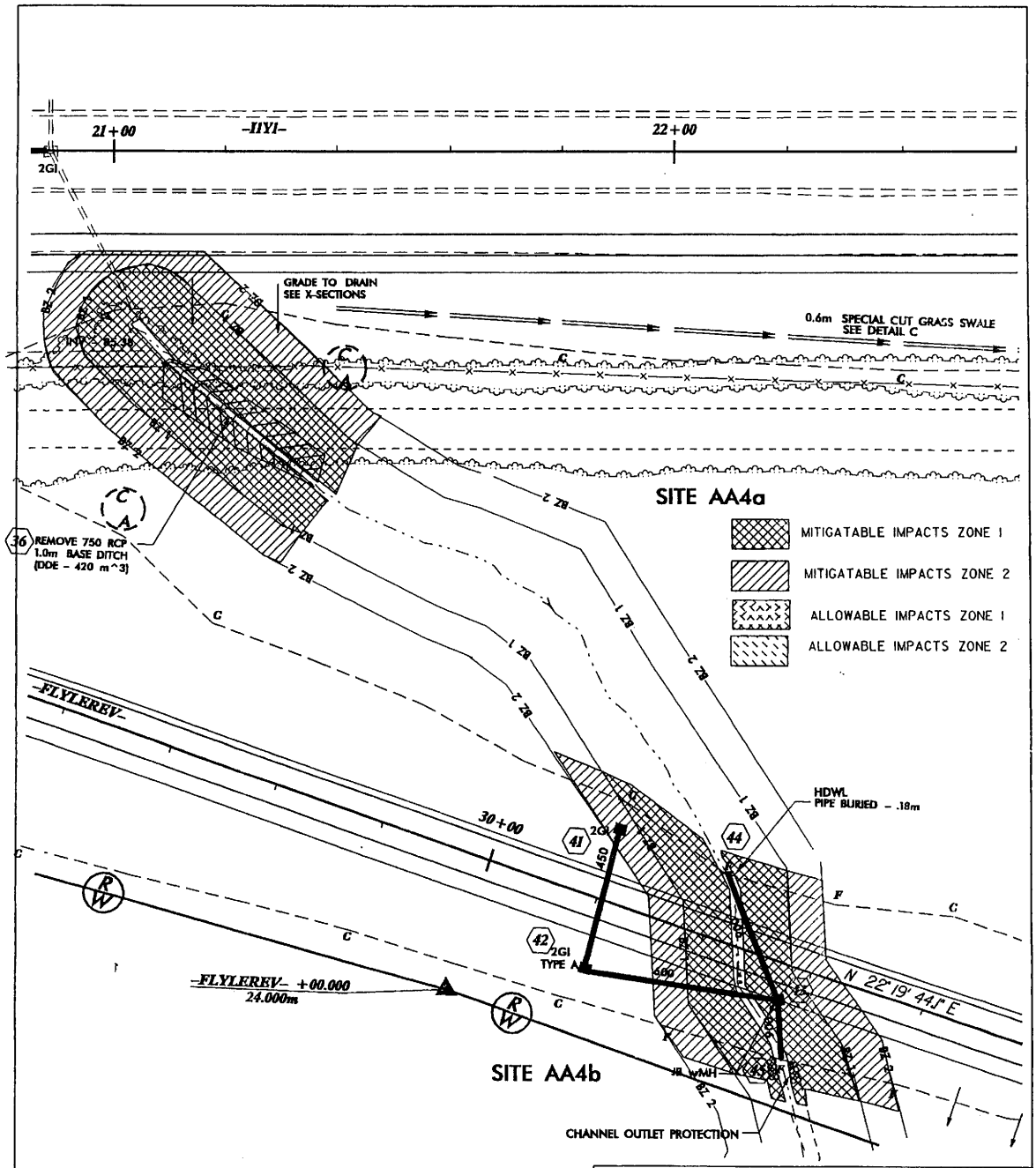
PROJECT: WBS - 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

I-40 TO EAST OF SR 1525

SHEET 6 OF 17 10/01/04


RETAIN
RETAIN
14+00
TOP - 83.32
INV - 82.44
14m
7.3m
EXIST.
7.2m
3.6m
TOP = 83.322
INV = 82.444
1650mm WL
02
8
10A
400mm CSP
w/ELBOWS
FF
BZ 2
BZ 1
1.6 CONC WW
2.9 CONC HW
1.6 CONC WW
SCALE
5m
0
10m
MITIGATABLE IMPACTS ZONE 1
MITIGATABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
SITE AA3b
NCDOT
DIVISION OF HIGHWAYS
WAKE / JOHNSTON COUNTY
PROJECT: WBS - 34459.1.1 (R-2552AA)
US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525
SHEET 7 OF 17
8/4/04



SITES AA4a & AA4b

NCDOT

DIVISION OF HIGHWAYS

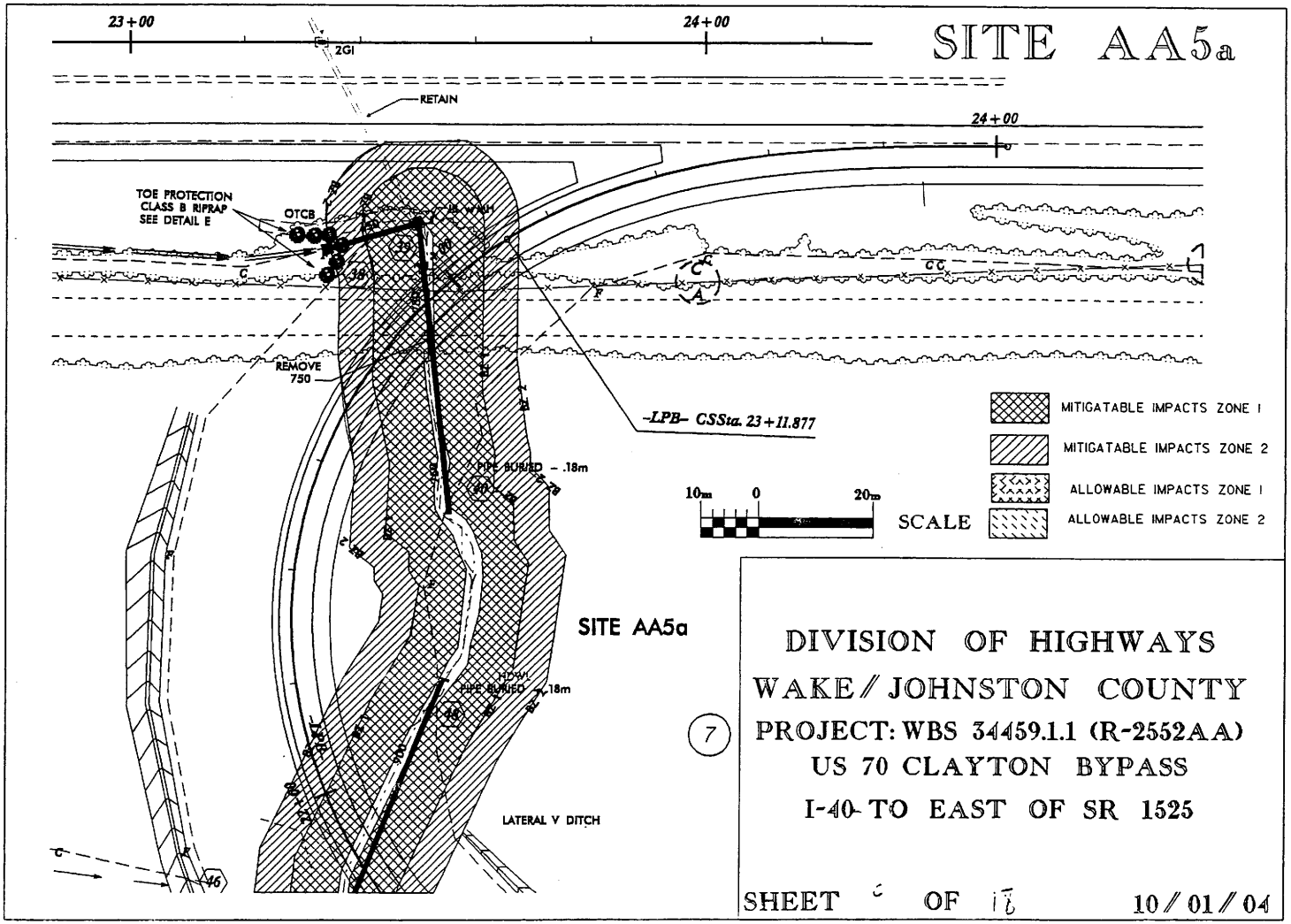
WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

I-40 TO EAST OF SR 1525

SHEET 8 OF 12 10 / 01 / 04



DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

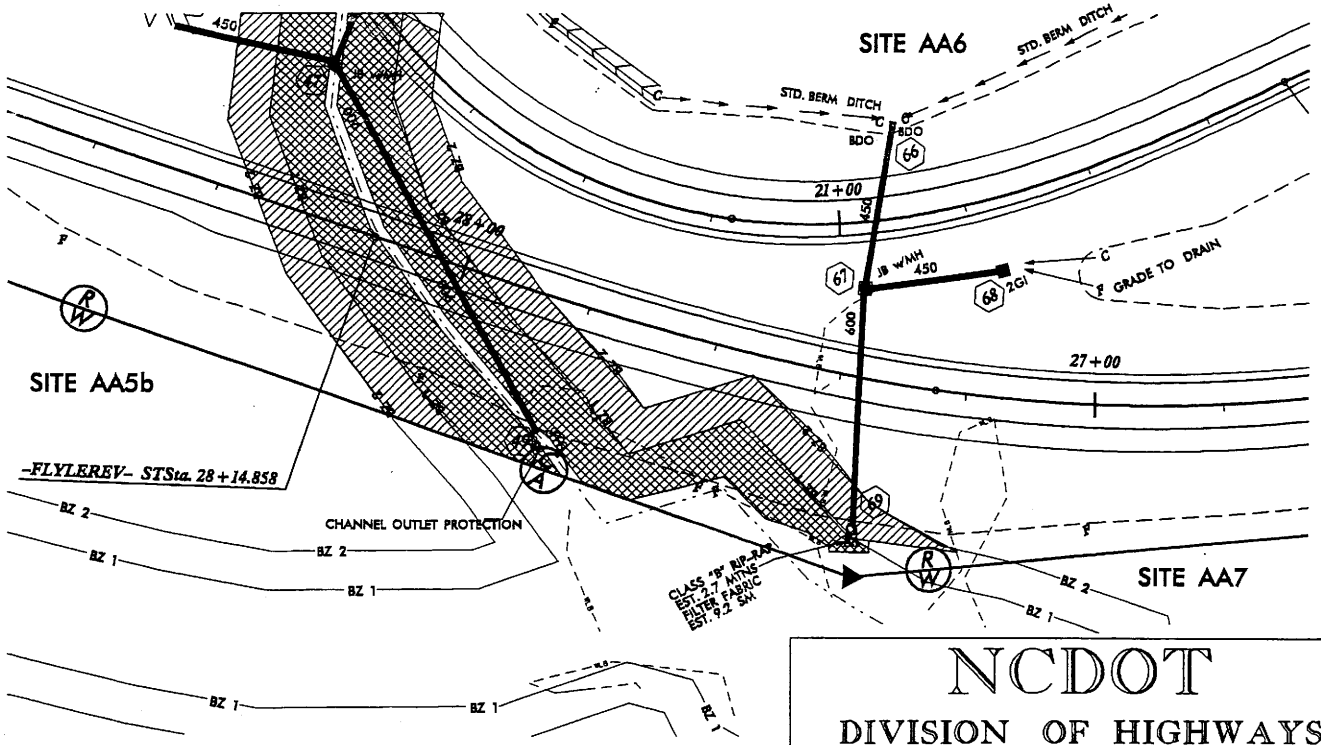
PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

I-40 TO EAST OF SR 1525

(7)

SHEET 5 OF 11 10 / 01 / 04



SITES AA5b, AA6 & AA7

NCDOT

DIVISION OF HIGHWAYS

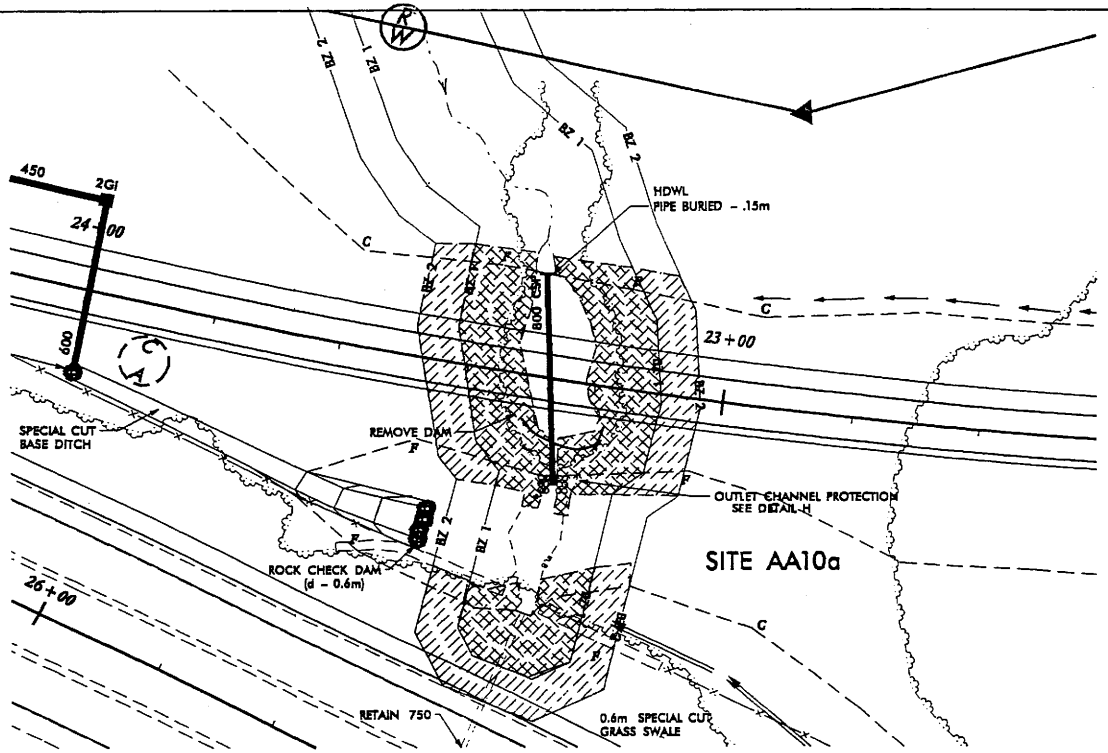
WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

I-40 TO EAST OF SR 1525

SHEET 10 OF 17 10/01/04



SITE AA10a

MITIGATABLE IMPACTS ZONE 1

MITIGATABLE IMPACTS ZONE 2

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

10m 0 20m SCALE

NCDOT

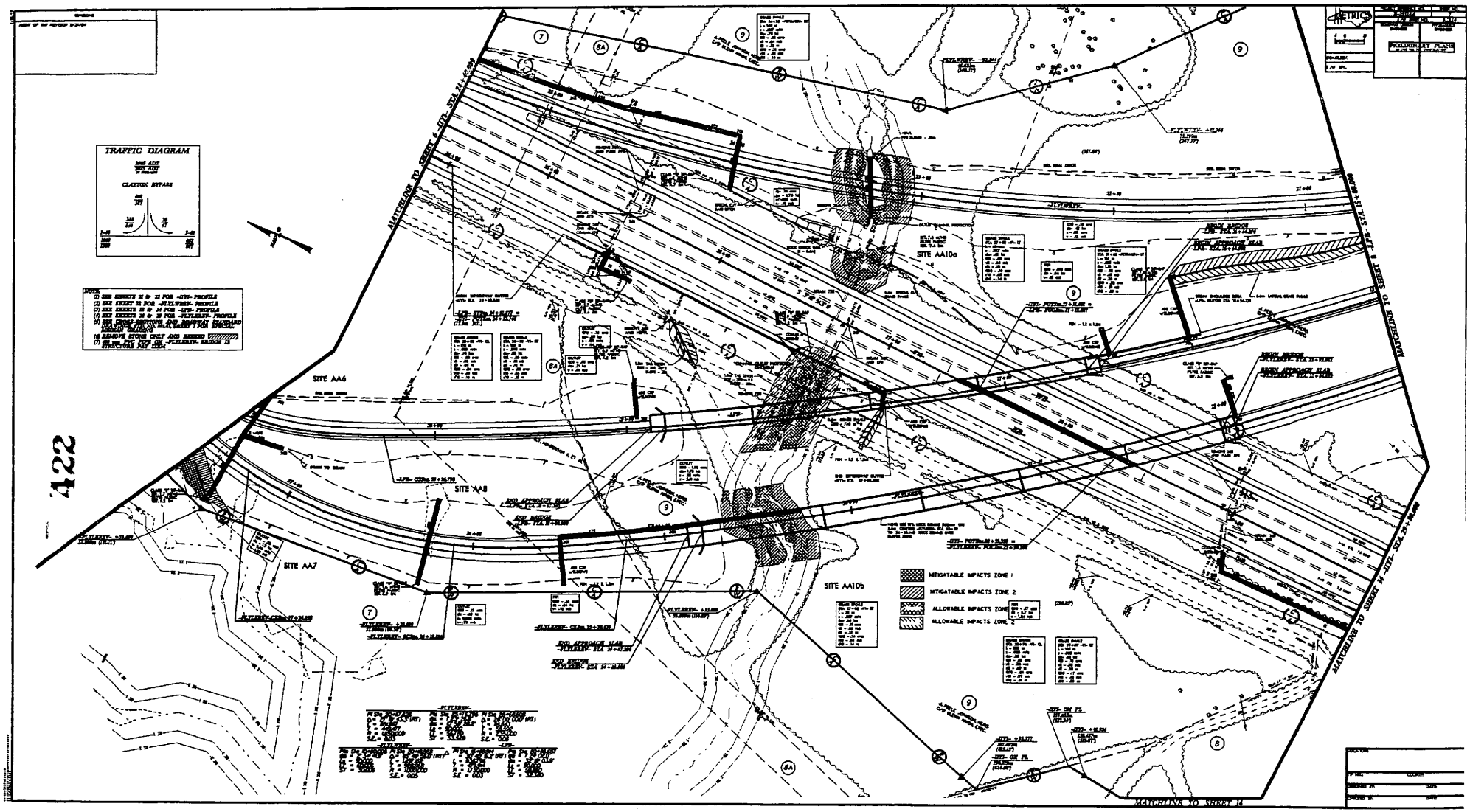
DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

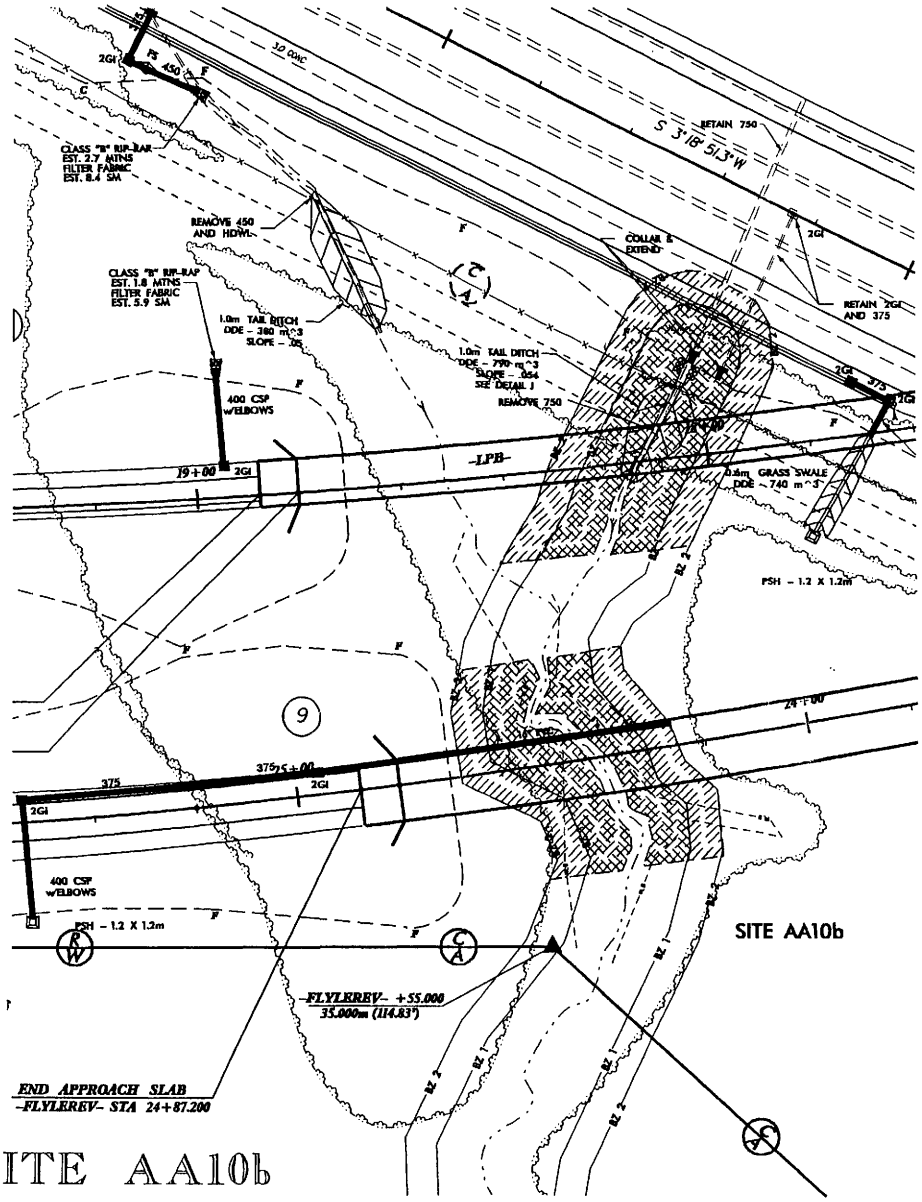
PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

SHEET 11 OF 19 10 / 01 / 04


TRAFFIC DIAGRAM
CLAYTON BYPASS
SITE AA6
SITE AA8
SITE AA7
SITE AA10a
SITE AA10b
MITIGATABLE IMPACTS ZONE 1
MITIGATABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
MATCHLINE TO SHEET 6
MATCHLINE TO SHEET 8
MATCHLINE TO SHEET 14
PRELIMINARY PLANS

422



SITE AA10b

MITIGATABLE IMPACTS ZONE 1

MITIGATABLE IMPACTS ZONE 2

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

10m 0 20m SCALE

NCDOT

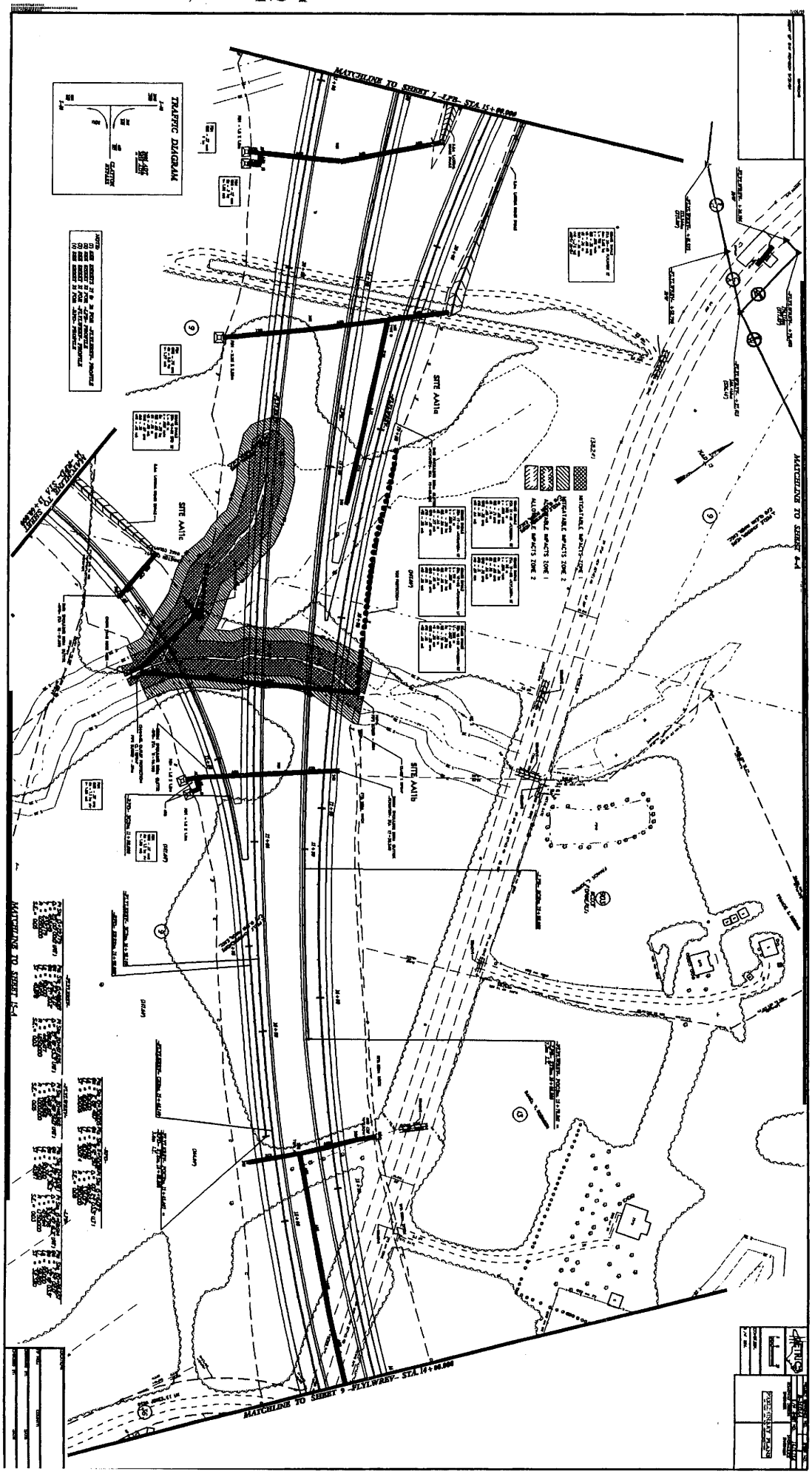
DIVISION OF HIGHWAYS

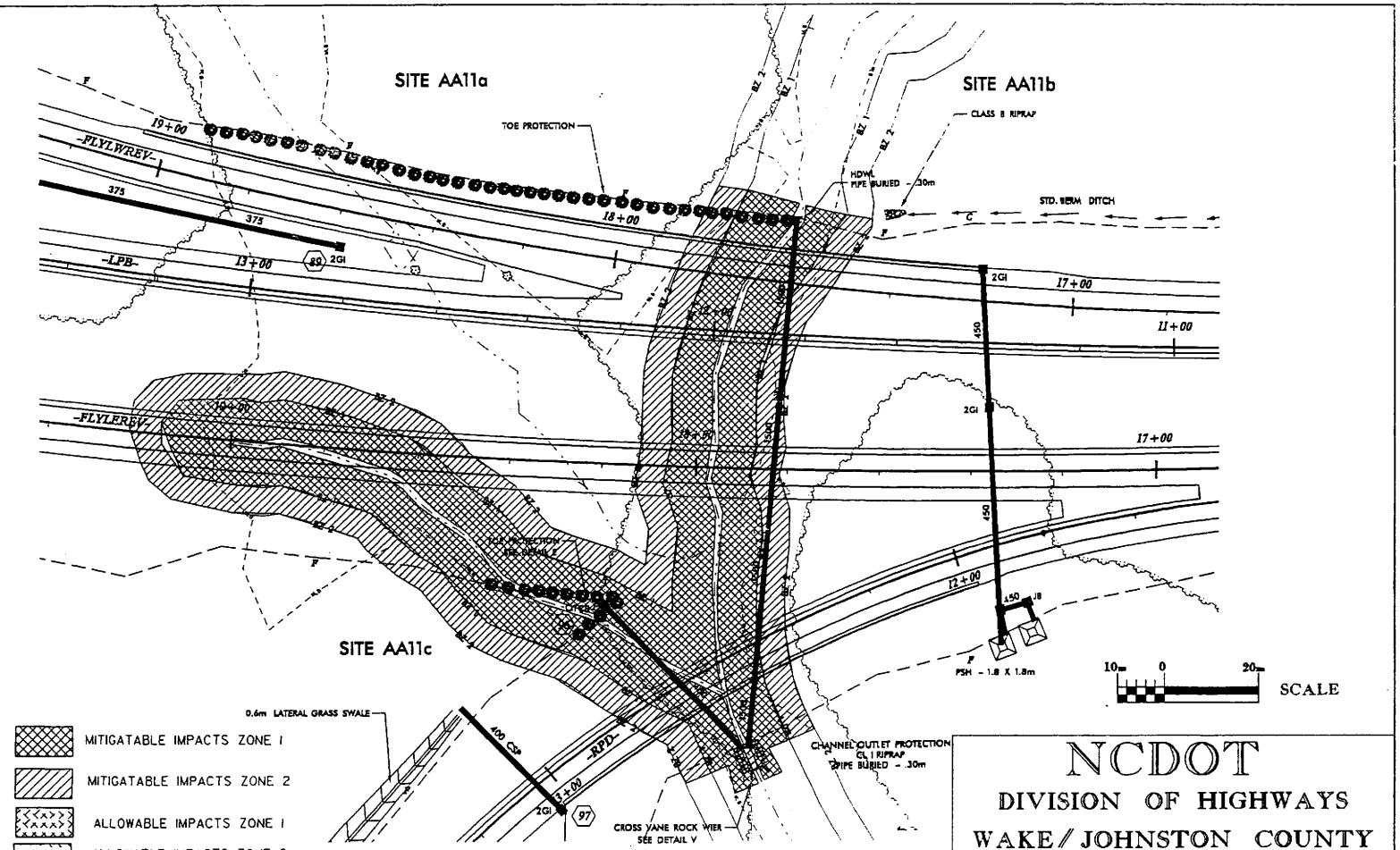
WAKE / JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AA)

US 70 CLAYTON BYPASS

SHEET 12 OF 18 10/01/04


MATCHLINE TO SHEET 7 -ETR- STA. 15+00.000
TRAFFIC DIAGRAM
SITE AA11a
SITE AA11b
MATCHLINE TO SHEET 4-4
MATCHLINE TO SHEET 9 -SLYLWREY- STA. 14+00.000

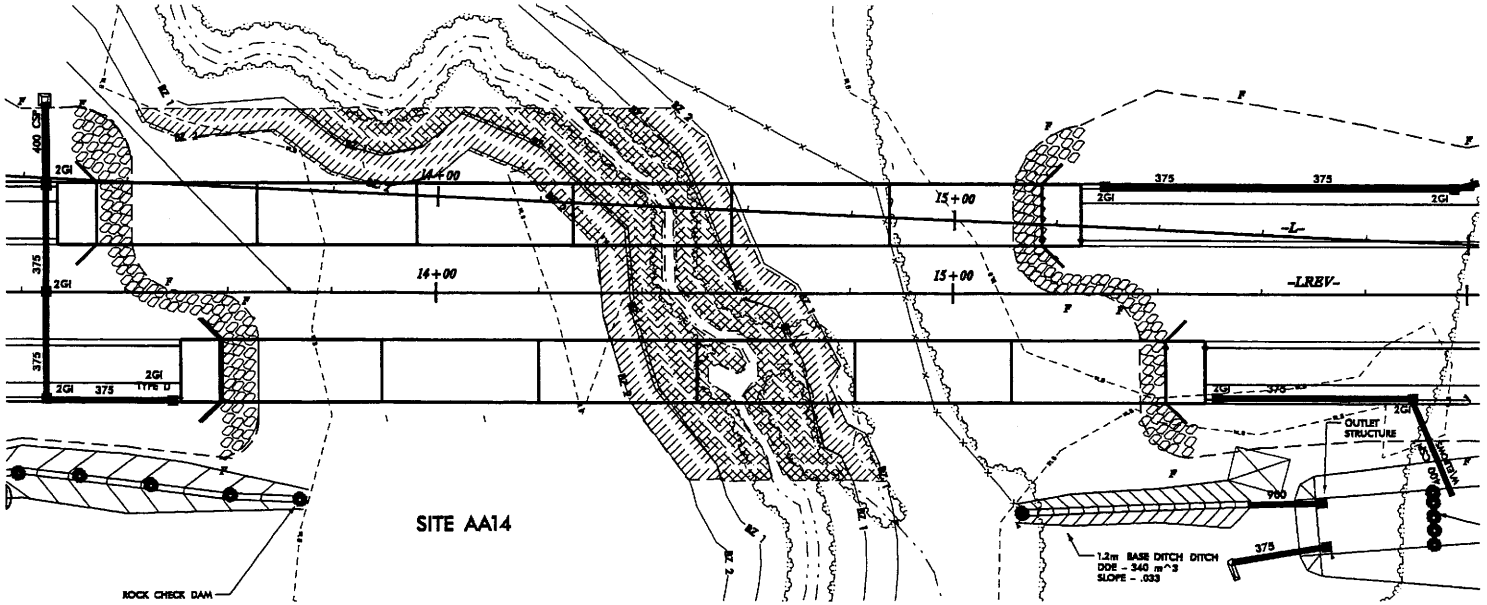


SITE AA11a , AA11b & AA11c

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

SHEET 15 OF 15 10 / 01 / 04

MATCHLINE TO SHEET 9 -LREV- STA. 13+00.000
MATCHLINE TO SHEET 11 -L- STA. 19+40.000
-LREV- PTS\a 18+99.765 BK =
-L- PTS\a 18+99.765 AH



SITE AA14

MITIGATABLE IMPACTS ZONE 1

MITIGATABLE IMPACTS ZONE 2

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

10m 0 20m SCALE

NCDOT

DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

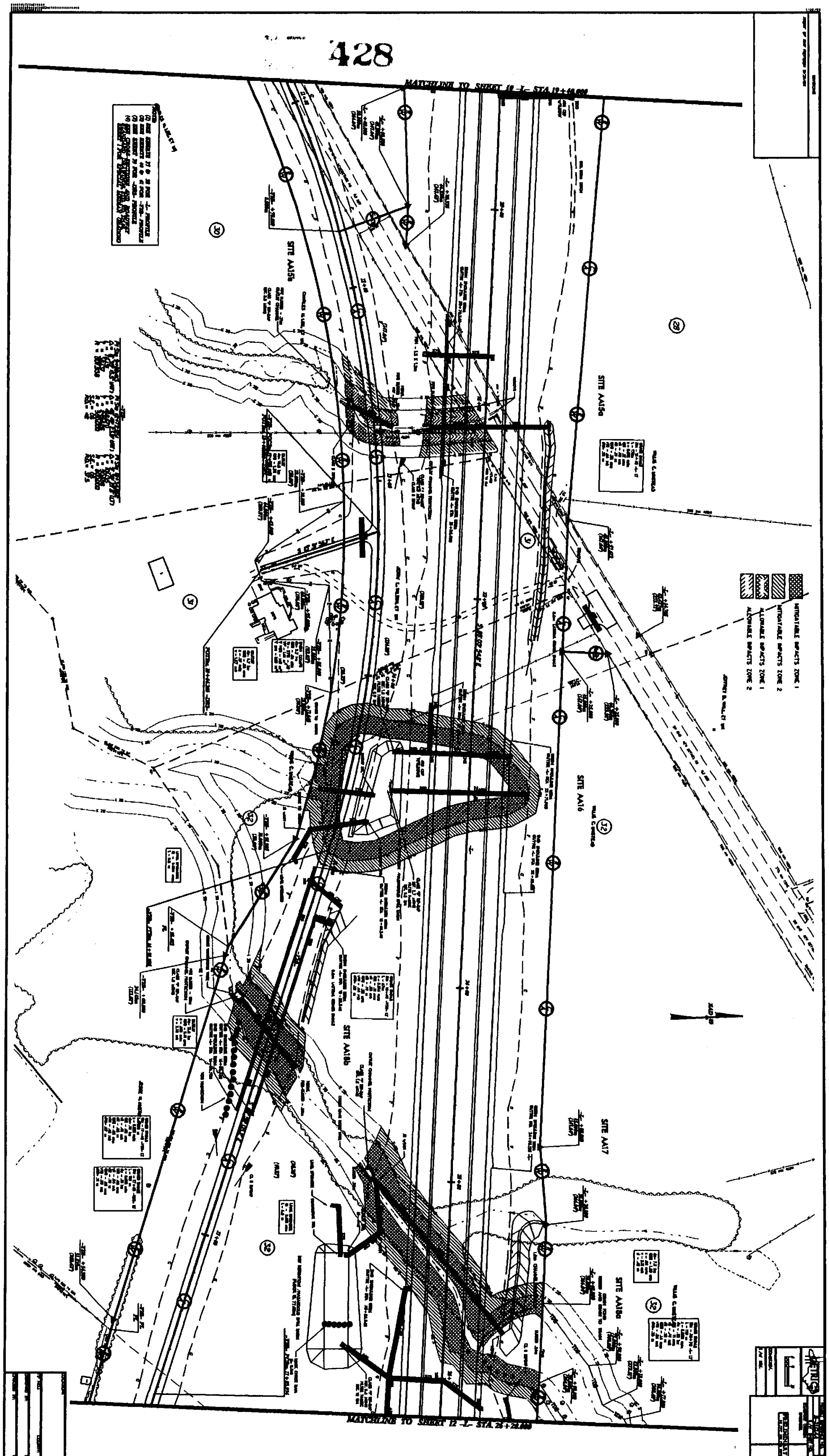
PROJECT: WBS 34459.1.1 (R-2551AA)

US 70 CLAYTON BYPASS

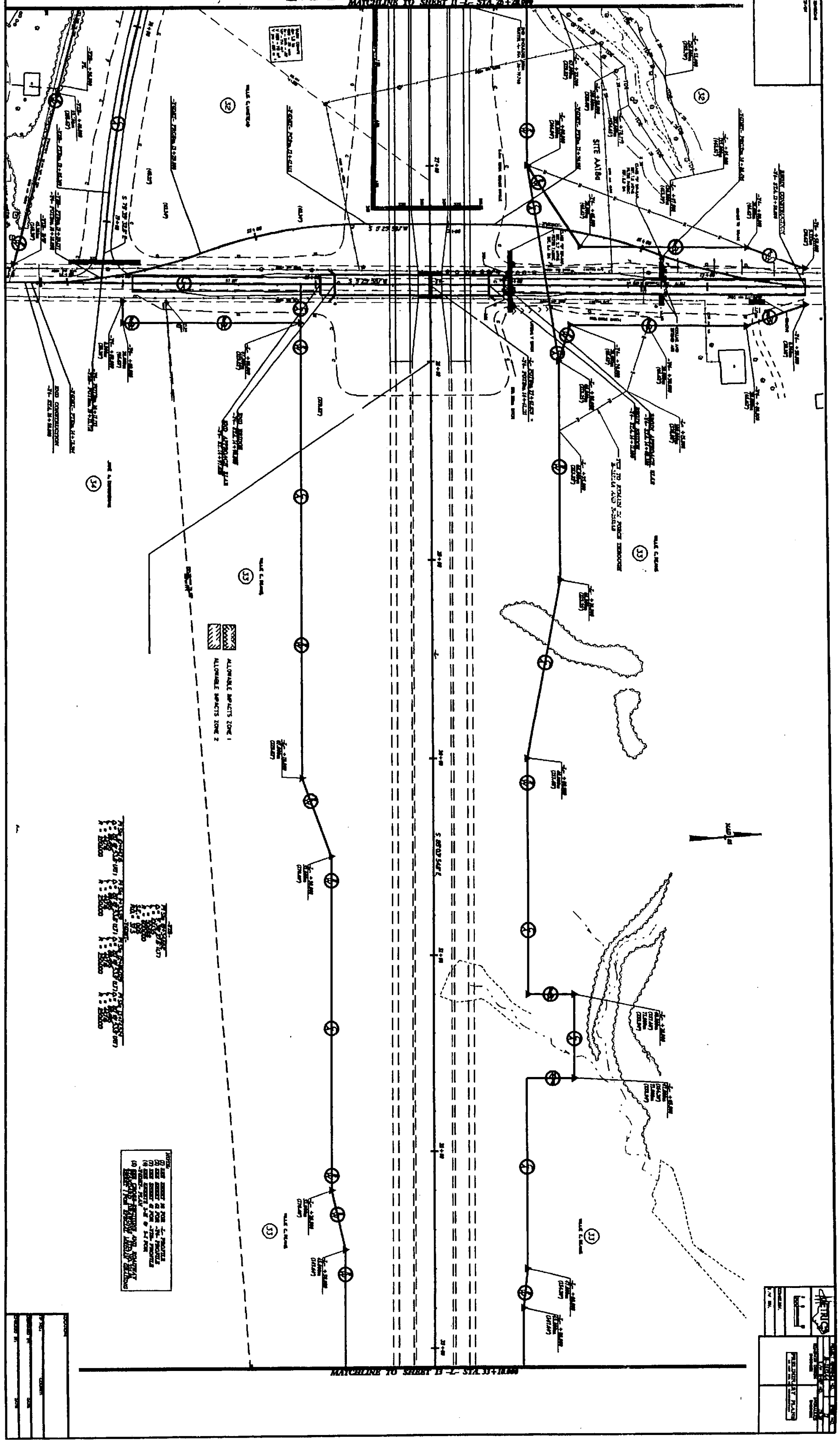
I-40 TO EAST OF SR 1525

SHEET 14 OF 18 10/01/04

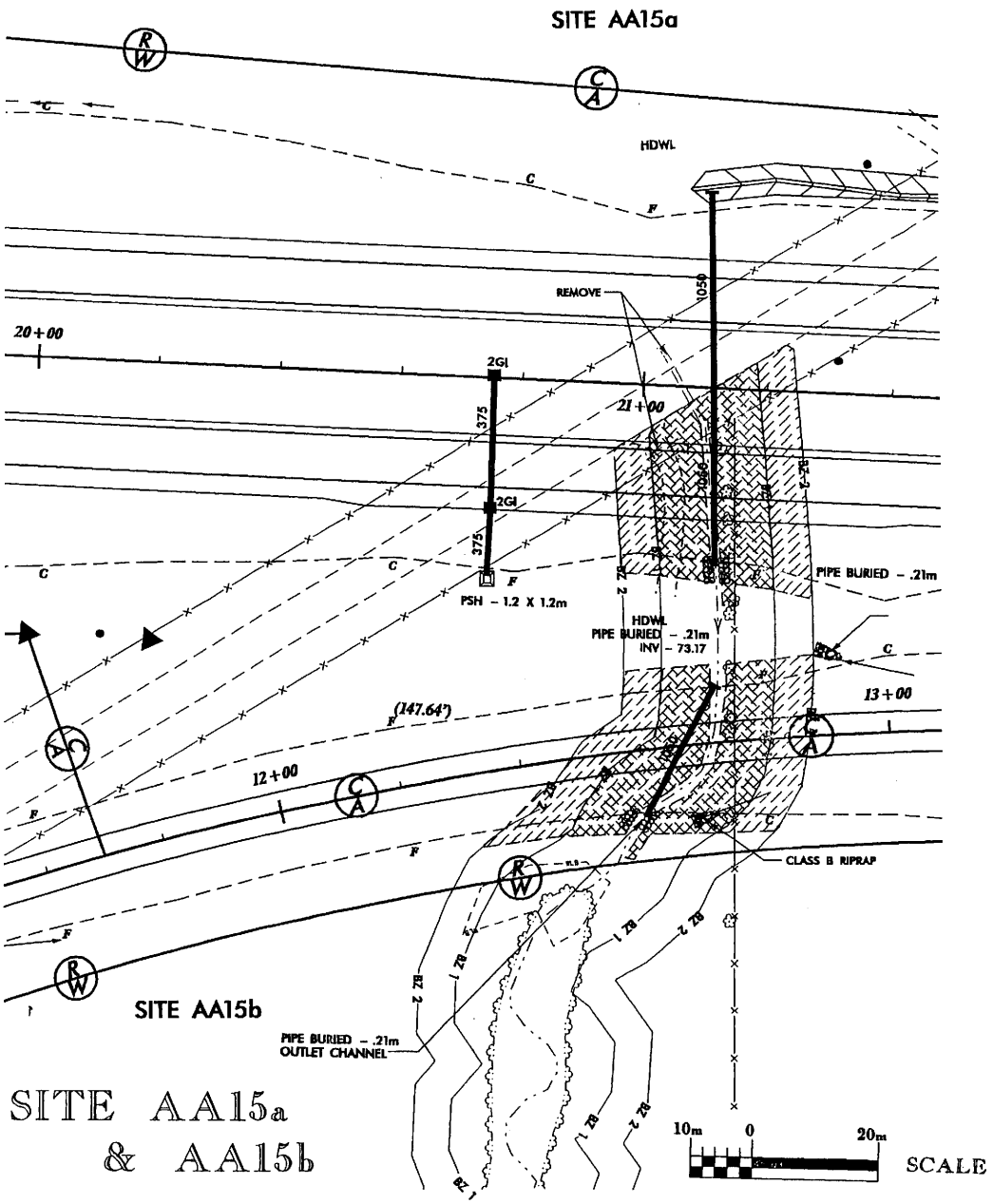
428


MATCHLINE TO SHEET 10 -L- STA 19+40.000
SITE AA15b
SITE AA15a
SITE AA16
SITE AA16b
SITE AA17
SITE AA18a
MITIGATABLE IMPACTS ZONE 1
MITIGATABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
MATCHLINE TO SHEET 12 -L- STA 25+20.000

429



MATCHLINE TO SHEET 11 -L- STA 26+28.000
MATCHLINE TO SHEET 13 -L- STA 33+18.000



SITE AA15a
& AA15b

MITIGATABLE IMPACTS ZONE 1

MITIGATABLE IMPACTS ZONE 2

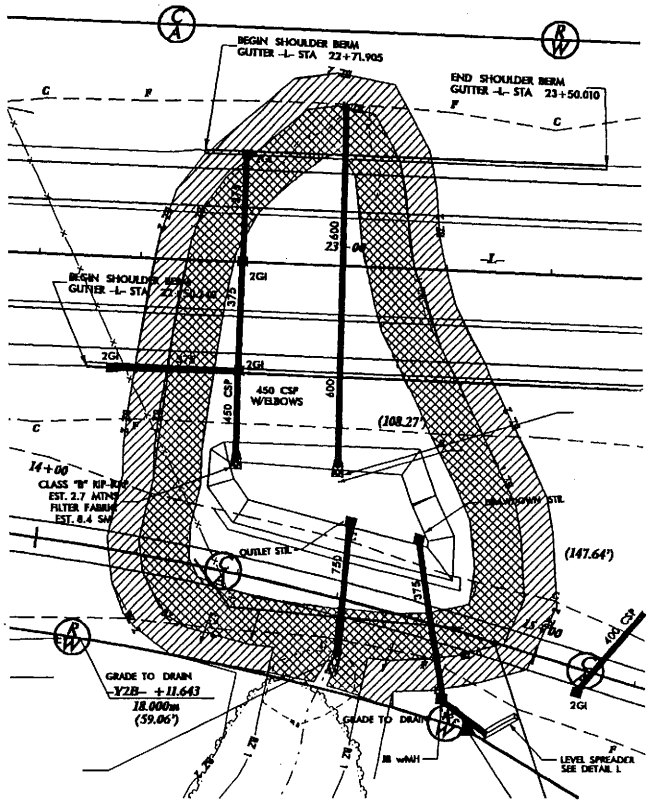
ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

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

SHEET 15 OF 18 10/01/04

SITE AA16



SITE AA16

MITIGATABLE IMPACTS ZONE 1

MITIGATABLE IMPACTS ZONE 2

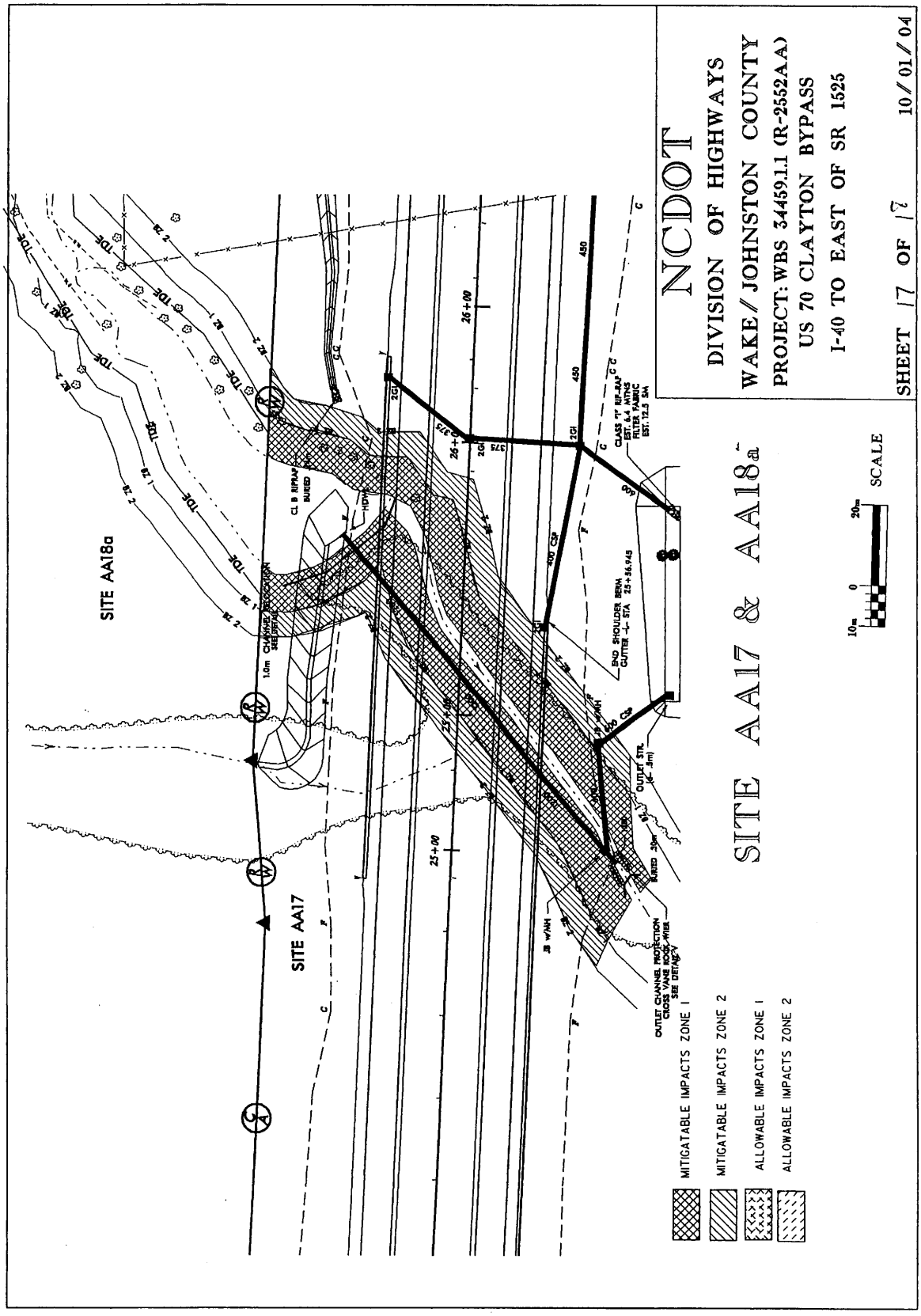
ALLOWABLE IMPACTS ZONE 1

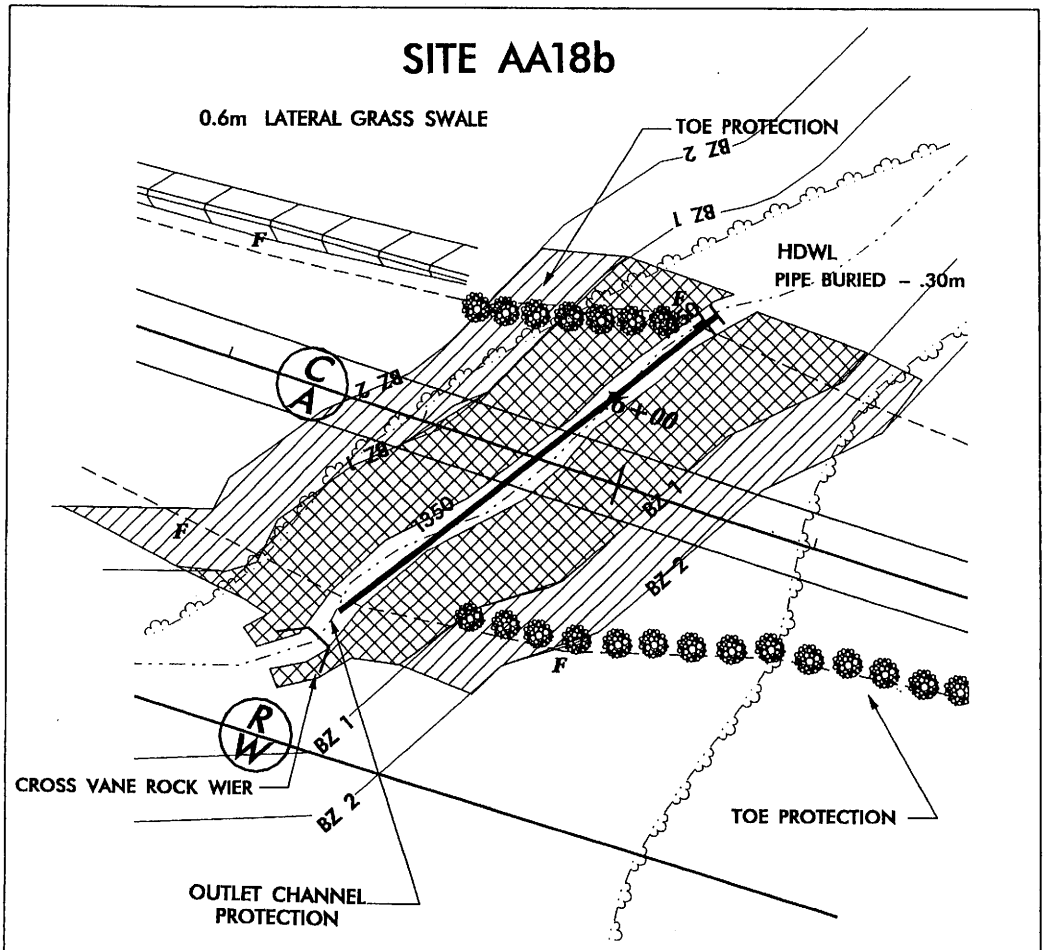
ALLOWABLE IMPACTS ZONE 2

10m 0 20m SCALE

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

SHEET 16 OF 18 10/01/04


NCDOT
DIVISION OF HIGHWAYS
WAKE / JOHNSTON COUNTY
PROJECT: WBS 34459.1.1 (R-2552AA)
US 70 CLAYTON BYPASS
I-40 TO EAST OF SR 1525
SHEET 17 OF 17
10/01/04
SITE AA17 & AA18a
SITE AA18a
SITE AA17
SCALE
MITIGATABLE IMPACTS ZONE 1
MITIGATABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2



SITE AA18b

MITIGATABLE IMPACTS ZONE 1

MITIGATABLE IMPACTS ZONE 2

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

10m 0 20m

SCALE

NCDOT

DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY

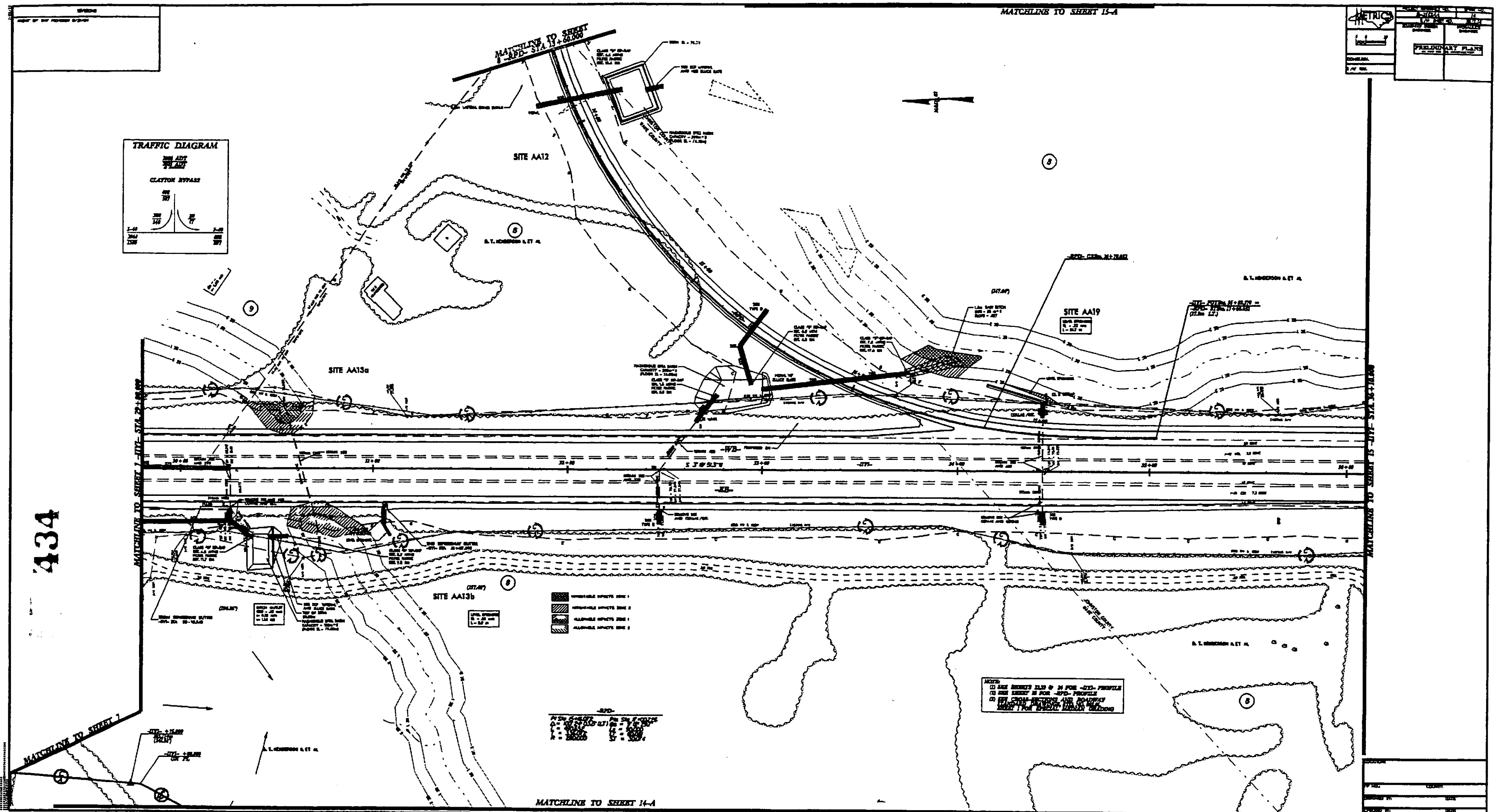
PROJECT: 8.2661601 (R-2246C)

US 70 CLAYTON BYPASS

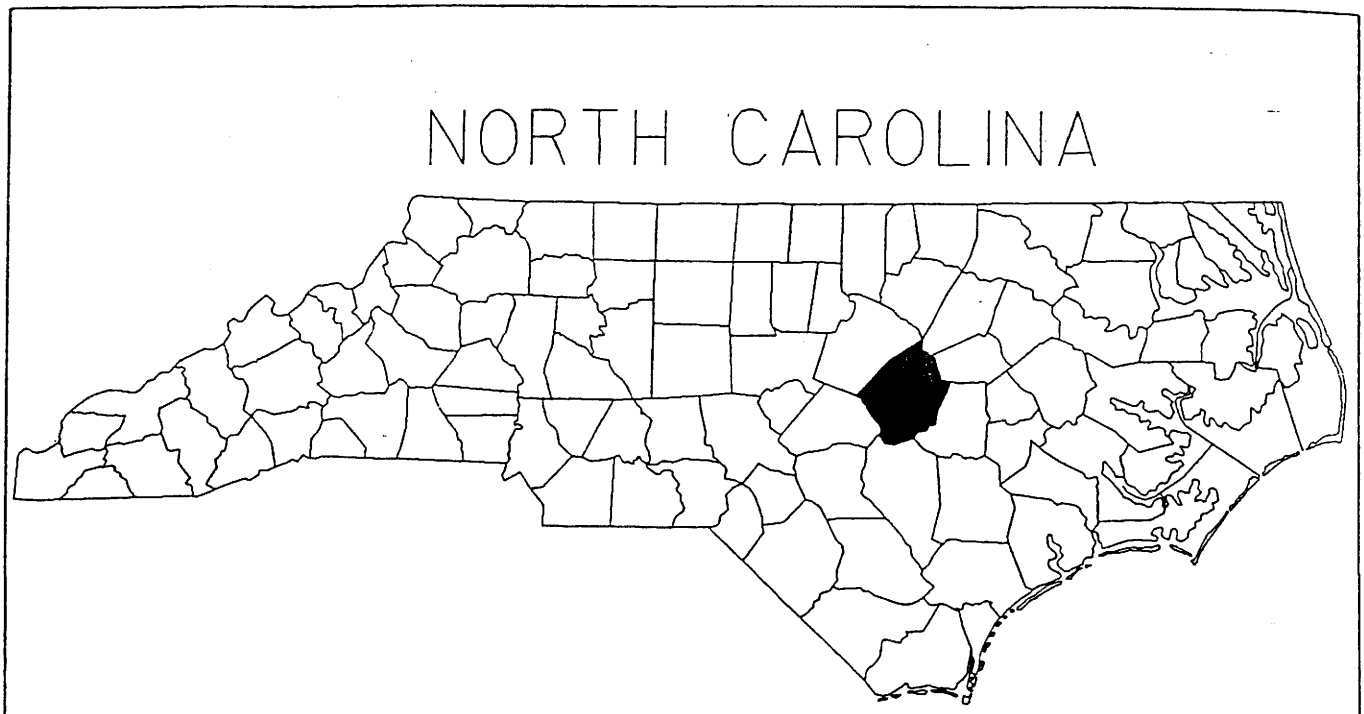
I-40 TO EAST OF SR 1525

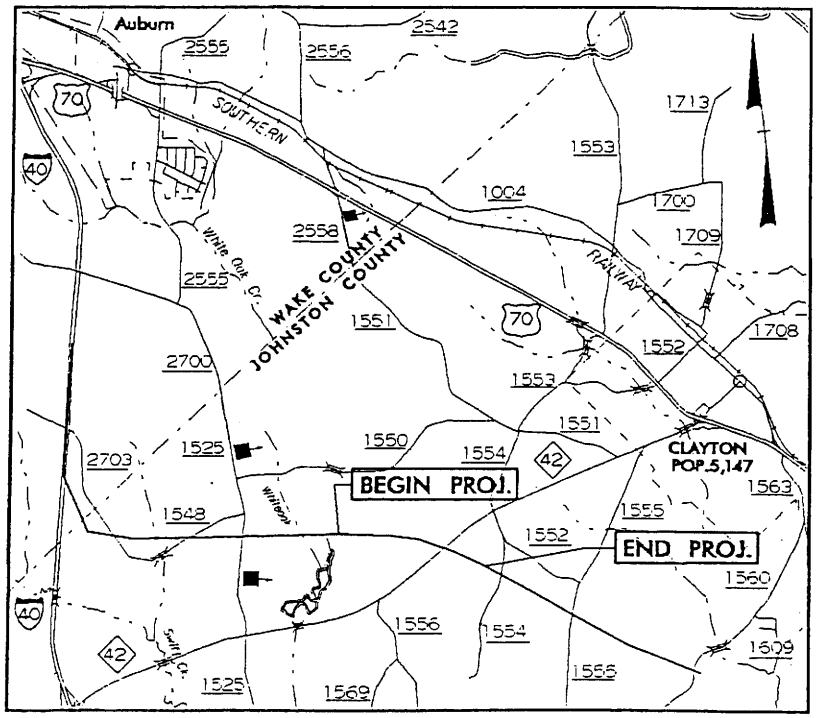
SHEET 19 OF 18 10/01/04

434



MATCHLINE TO SHEET 15-A
MATCHLINE TO SHEET 14-A
MATCHLINE TO SHEET 7
TRAFFIC DIAGRAM
CLAYTON BYPASS
SITE AA12
SITE AA13a
SITE AA13b
SITE AA19
PRELIMINARY PLANS





NEUSE RIVER BUFFER

VICINITY MAP

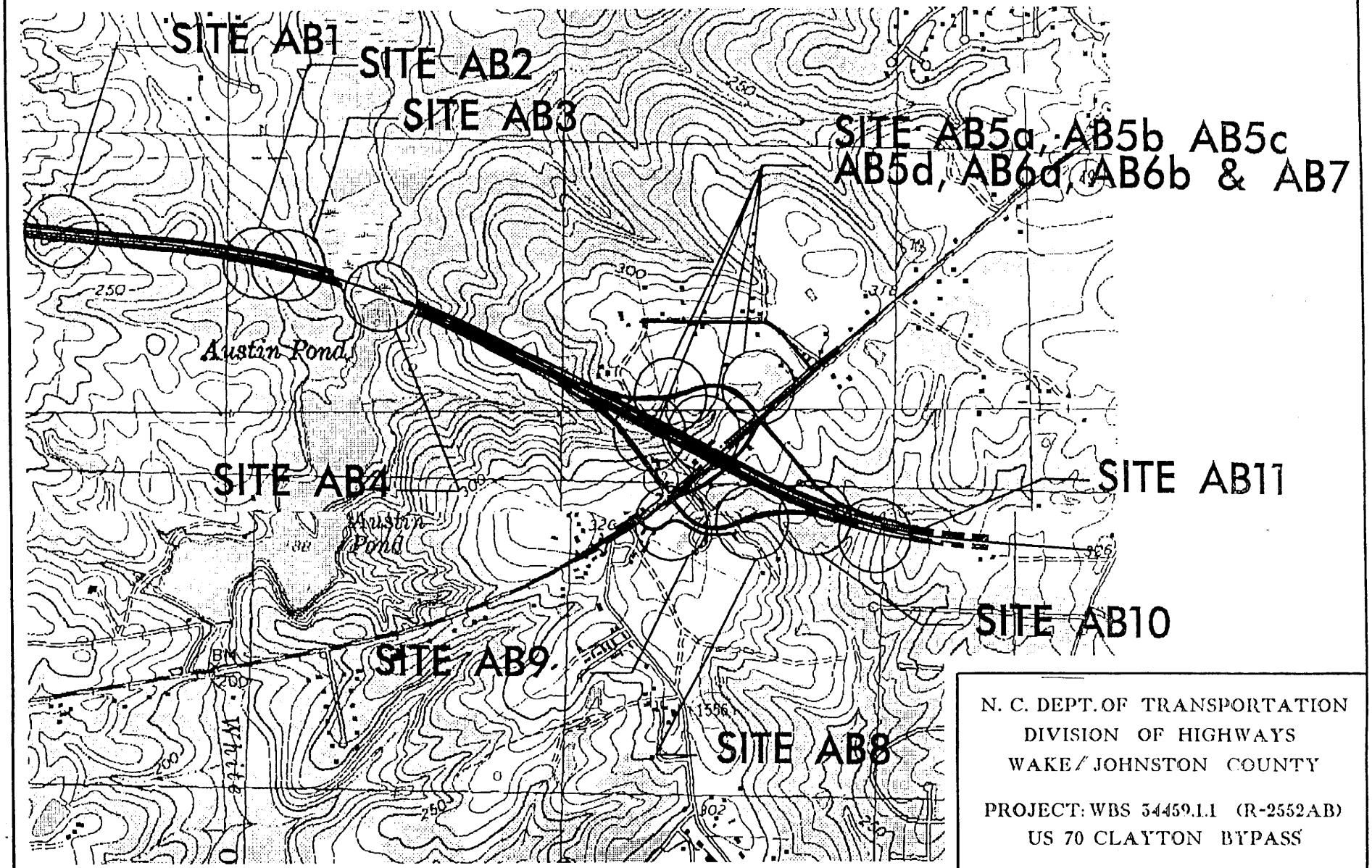
NCDOT
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AB)

US 70 CLAYTON BYPASS

SHEET 1 OF 6 10/01/04



SITE MAP

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

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

SHEET 2 OF 6 10/01/04

436

BUFFER IMPACTS SUMMARY

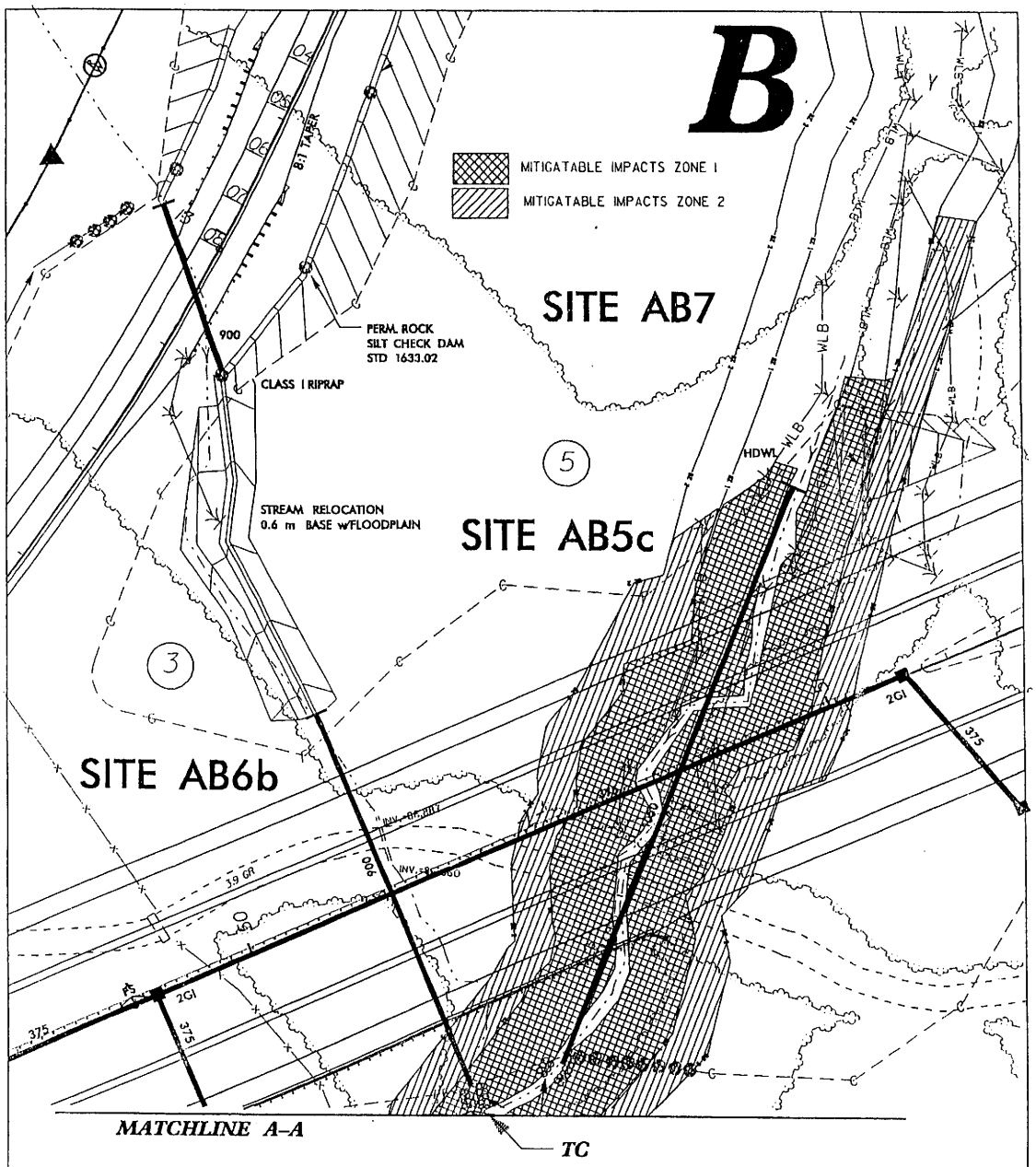
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT TYPE: ROAD CROSSING	IMPACT TYPE: PARALLEL IMPACT	ALLOWABLE: ZONE 1 (ft^2)	ALLOWABLE: ZONE 2 (ft^2)	ALLOWABLE: TOTAL (ft^2)	MITIGABLE: ZONE 1 (ft^2)	MITIGABLE: ZONE 2 (ft^2)	MITIGABLE: TOTAL (ft^2)	BUFFER REPLACEMENT: ZONE 1 (ft^2)	BUFFER REPLACEMENT: ZONE 2 (ft^2)
AB2	RCBC	L 37+10	X					24211.05	15173.35	39384.40		
AB4	BRIDGE	L	X					18477.87	13015.94	31493.81		
AB5c	1050 RCP	I1Y1 13+70	X					58508.96	44229.66	102738.62		
AB5d	1350 CSP	I1Y1 13+70	X					SEE AB5c FOR SITE TOTAL				
AB8	1350 RCP	I1Y1 20+90	X		7294.38	4831.17	12125.55					
AB11	RCBC	FLYLEREV 29+50	X					20325.60	13774.79	34100.39		
PROJECT TOTAL:					7294.38	4831.17	12125.55	121523.48	86193.74	207717.22		

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

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE / JOHNSTON COUNTY
PROJECT # - WBS 34459.1.1 (R2552AB)
US 70 - CLAYTON BYPASS

38278
SHEET 3 OF 6



SITES AB5c, AB6a, AB6b & AB7

10m 0 20m SCALE

NCDOT

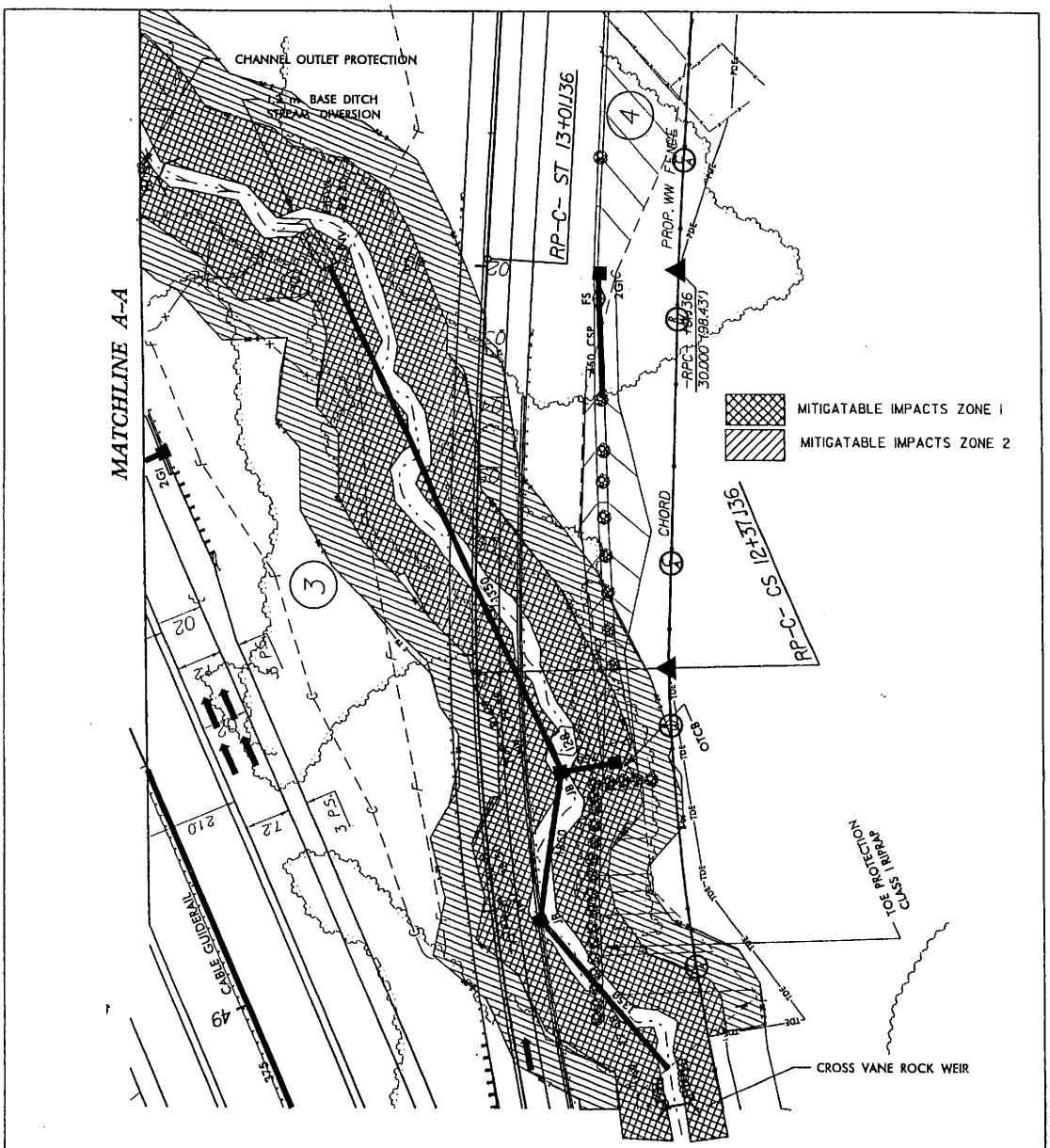
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AB)

US 70 CLAYTON BYPASS

SHEET 4 OF 6 10/01/04



NCDOT

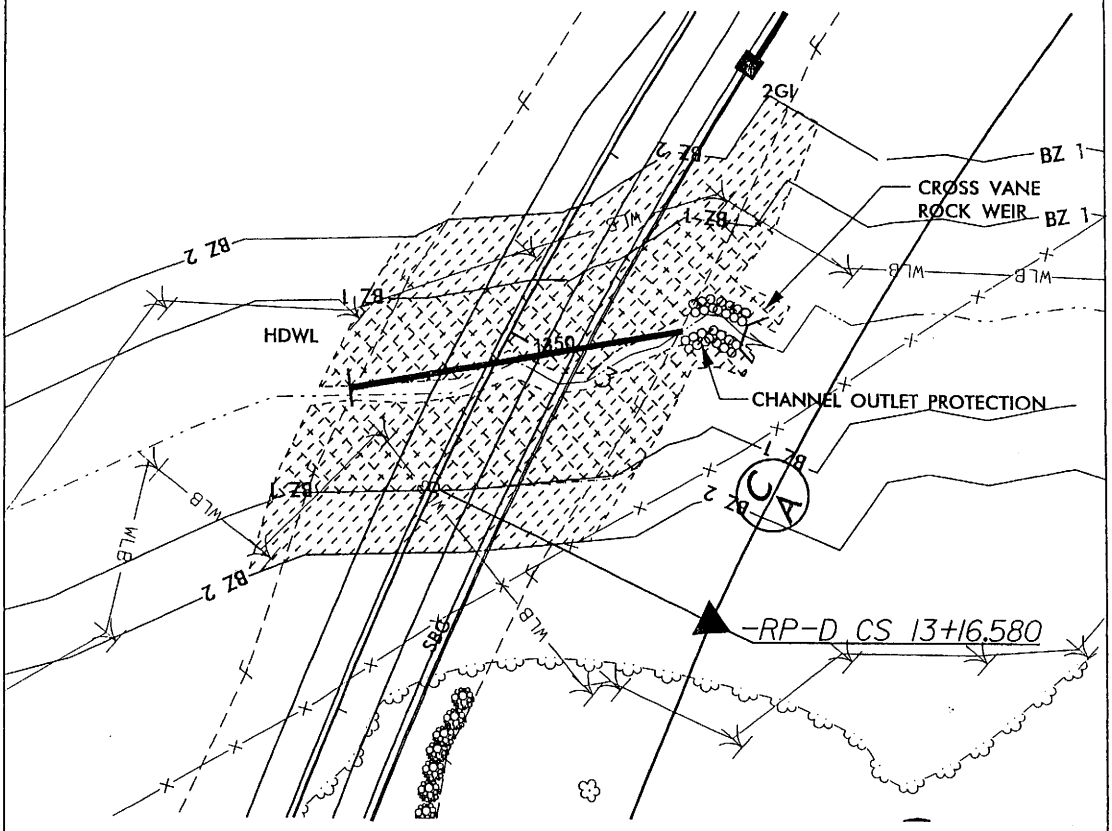
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AB)

US 70 CLAYTON BYPASS

SHEET 5 OF 6 10/01/04



SITE AB8

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

5m 0 10m SCALE

NCDOT

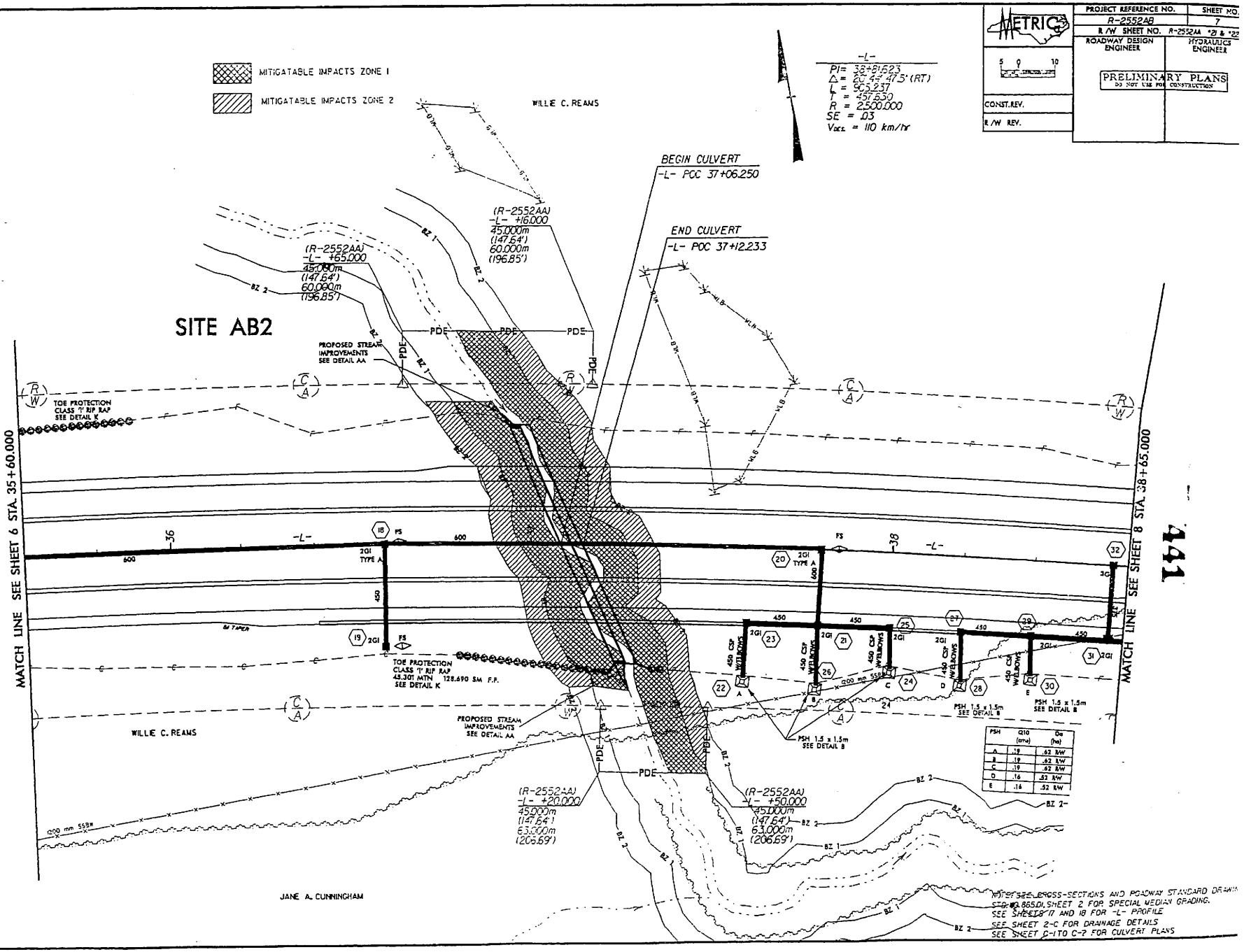
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: WBS 34459.1.1 (R-2552AB)

US 70 CLAYTON BYPASS

SHEET 6 OF 6 **10/01/04**



PSH	Q10 (cms)	Qa (hp)
A	.18	.62 kW
B	.19	.62 kW
C	.19	.62 kW
D	.16	.52 kW
E	.16	.52 kW

METRIC

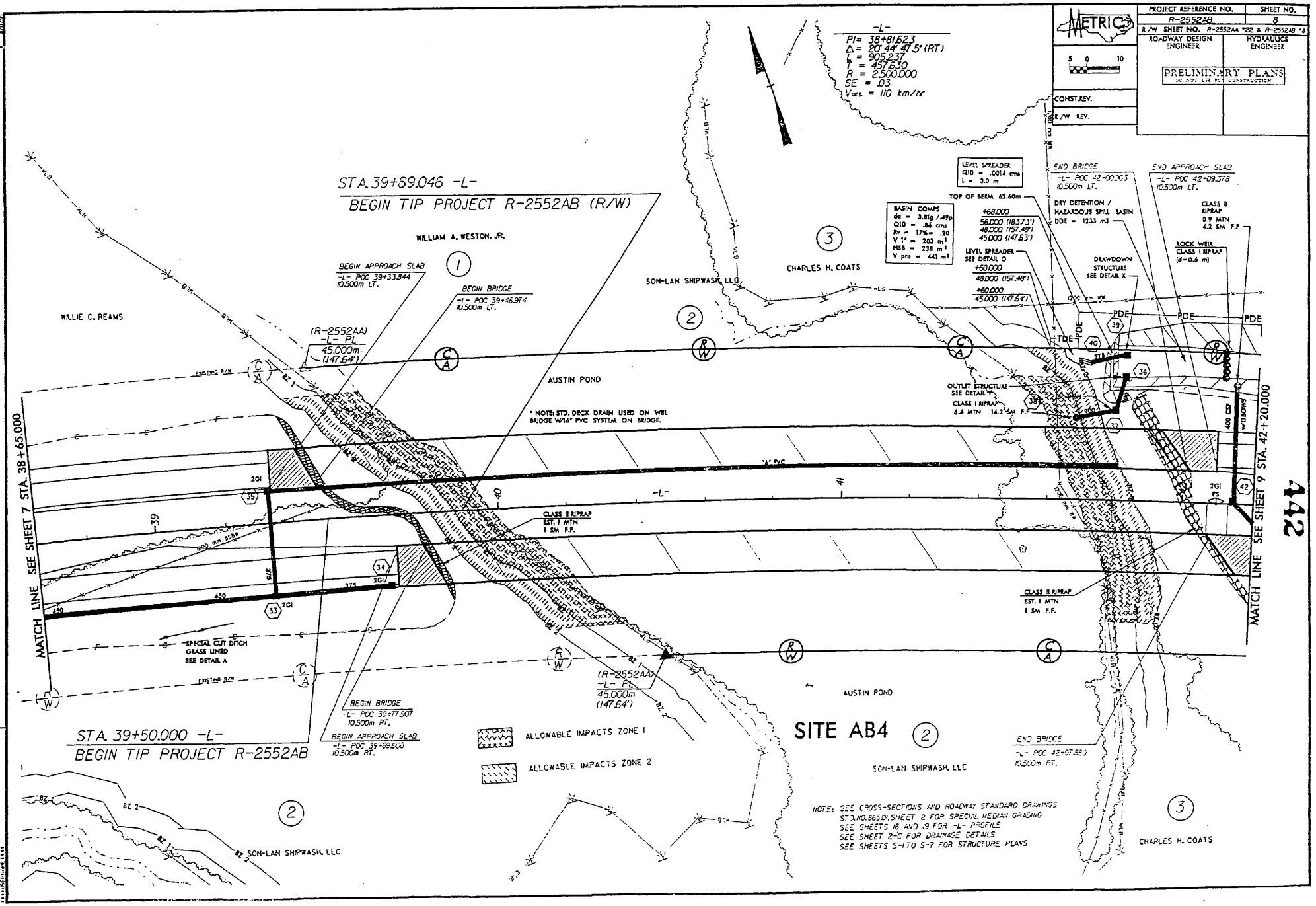
PROJECT REFERENCE NO.	SHEET NO.
R-2552AB	7
R/W SHEET NO.	R-2552AA *21 & *22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

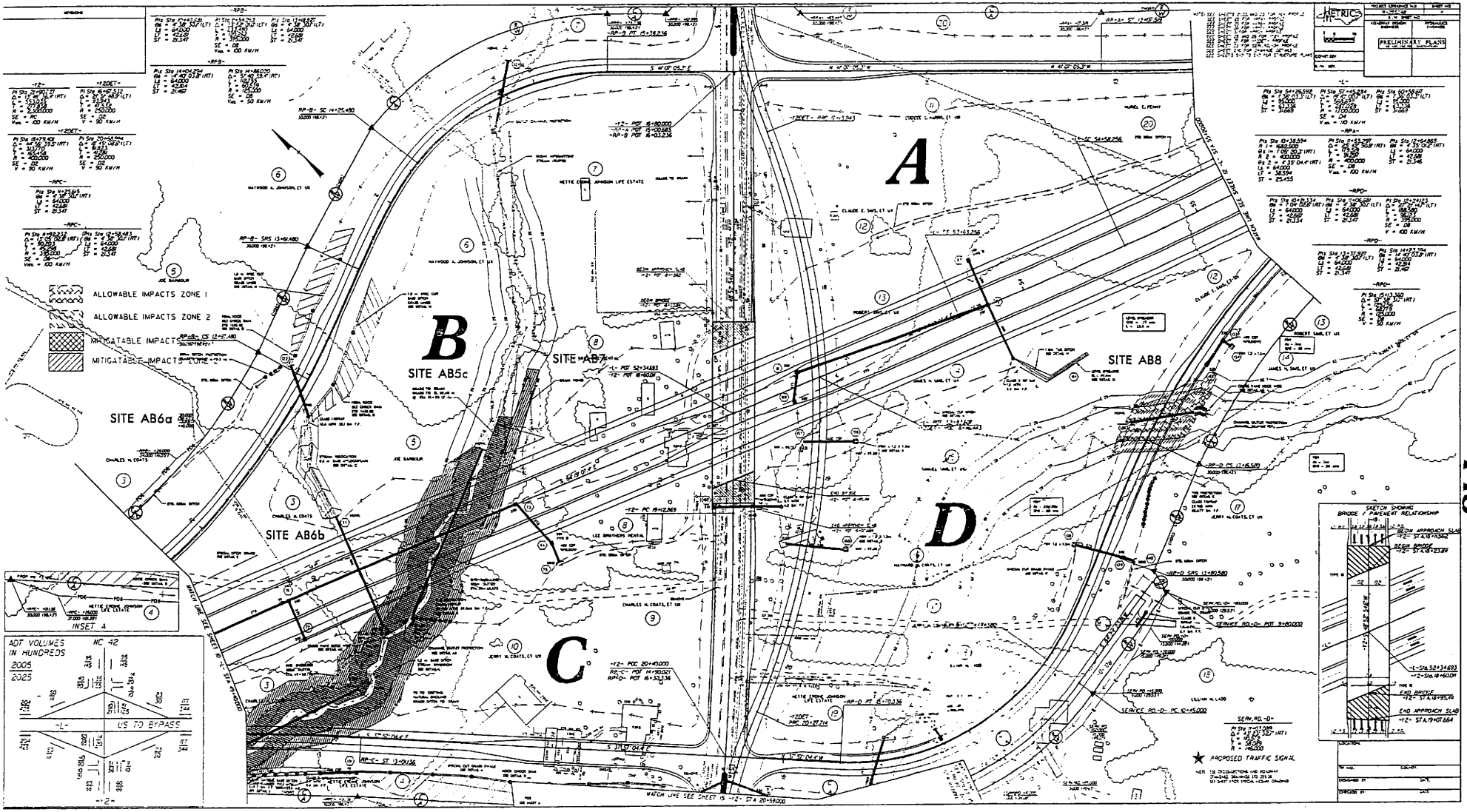
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.
R/W REV.

REVISIONS

441


METRIC
PROJECT REFERENCE NO. R-2552AB
SHEET NO. 8
R/W SHEET NO. R-2552AA *22 & R-2552AB *8
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
-L-
PI= 38+81.623
Δ = 20° 44' 47.5" (RT)
L = 905.237
T = 457.630
R = 2,500.000
SE = .03
Vdes. = 110 km/hr
STA. 39+89.046 -L-
BEGIN TIP PROJECT R-2552AB (R/W)
WILLIAM A. WESTON, JR.
WILLIE C. REAMS
CHARLES H. COATS
SON-LAN SHIPWASH, LLC
BEGIN APPROACH SLAB
-L- POC 39+33.844
10.500m LT.
BEGIN BRIDGE
-L- POC 39+46.974
10.500m LT.
(R-2552AA)
-L- PI
45.000m
(147.64')
AUSTIN POND
* NOTE: STD. DECK DRAIN USED ON WBL
BRIDGE W/16" PVC SYSTEM ON BRIDGE.
LEVEL SPREADER
Q10 = .0014 cms
L = 3.0 m
TOP OF BERM 62.60m
BASIN COMPS
da = 3.81g /.49p
Q10 = .86 cms
Rv = 17%= .20
V 1" = 203 m³
HSB = 238 m³
V pro = 441 m³
+68.000
56.000 (183.73')
48.000 (157.48')
45.000 (147.63')
+60.000
48.000 (157.48')
+60.000
45.000 (147.64')
END BRIDGE
-L- POC 42+00.363
10.500m LT.
END APPROACH SLAB
-L- POC 42+09.378
10.500m LT.
DRY DETENTION / HAZARDOUS SPILL BASIN
DDE = 1233 m3
CLASS B RIPRAP
0.9 MTN
4.2 SM F.F
ROCK WEIR
CLASS I RIPRAP
(d=0.6 m)
LEVEL SPREADER
SEE DETAIL O
DRAWDOWN STRUCTURE
SEE DETAIL X
PDE
TDE
OUTLET STRUCTURE
SEE DETAIL Y
CLASS I RIPRAP
6.4 MTN 14.2 SM F.F
CLASS II RIPRAP
EST. 7 MTN
8 SM F.F.
MATCH LINE SEE SHEET 7 STA. 38+65.000
MATCH LINE SEE SHEET 9 STA. 42+20.000
SPECIAL CUT DITCH
GRASS LINED
SEE DETAIL A
STA. 39+50.000 -L-
BEGIN TIP PROJECT R-2552AB
BEGIN BRIDGE
-L- POC 39+77.907
10.500m RT.
BEGIN APPROACH SLAB
-L- POC 39+69.603
10.500m RT.
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
SITE AB4
END BRIDGE
-L- POC 42+07.560
10.500m RT.
NOTE: SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS
STD.NO.865.01, SHEET 2 FOR SPECIAL MEDIAN GRADING
SEE SHEETS 18 AND 19 FOR -L- PROFILE
SEE SHEET 2-C FOR DRAINAGE DETAILS
SEE SHEETS S-1 TO S-7 FOR STRUCTURE PLANS
442


A
B
C
D
SITE AB5c
SITE AB6a
SITE AB6b
SITE AB7
SITE AB8
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
MITIGATABLE IMPACTS ZONE 1
MITIGATABLE IMPACTS ZONE 2
INSET A
ADT VOLUMES IN HUNDREDS
2005
2025
NC 42
US 70 BYPASS
PROPOSED TRAFFIC SIGNAL
SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP
PRELIMINARY PLANS