STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 10, 2005

Addendum No. 1

RE: Contract ID: C201209
WBS# 34459.3.5
Proposal No. 2
Johnston County (R-2552C, R-2552B)
US-70 Bypass (Clayton Bypass) From
East of NC-42 to US-70.

May 17, 2005 Letting

To Whom It May Concern:

Please note that the permit drawings for the Clayton Bypass have been posted on the Department's Website under "Doing Business With NCDOT" (see the "Project Letting" link). These drawings have been posted in an 11" X 17" format for easier viewing.

Reference is made to the plans and proposal form recently furnished to you on the above-mentioned project.

The following revisions have been made to the Roadway plans:

Sheet No. 3 (R-2552B/R-2552C) was inadvertently blank. Please void Sheet No. 3 in your plans and staple the revised Sheet No. 3 (2 Sheets) thereto.

On Sheet No. TCP-2 the notes concerning hauling restrictions were revised. Please void Sheet No. TCP-2 in your plans and staple the revised Sheet No. TCP-2 thereto.

Sheet No. SIGN-2 has been revised to correct the "Signs-Summary of Quantities." Please void Sheet No. SIGN-2 in your plans and staple the revised Sheet No. SIGN-2 thereto.

The following revision has been made to the Roadway Sub-Surface plans:

Sheet No. 3E has been revised to add inventory information for four box culverts. Please void Sheet No. 3E in your plans and staple the revised Sheet No. 3E thereto.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
CONTRACTS & PROPOSALS
1591 MAIL SERVICE CENTER
RALEIGH NC 27699-1595

TELEPHONE: 919-250-4124
FAX: 919-250-4127

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER COMPLEX
BUILDING B - ENTRANCE B15
1020 BIRCH RIDGE DRIVE
RALEIGH NC

The following revisions have been made to the Structure plans:

On Sheet No. S-187, a pay item and note for "Construction Maintenance and Removal of Temporary Access" was added and several foundation notes were revised. Please void Sheet No. S-187 in your plans and staple the revised Sheet No. S-187 thereto.

On Sheet No. S-230, a note concerning temporary work bridge was added and several foundation notes were revised. Please void Sheet No. S-230 in your plans and staple the revised Sheet No. S-230 thereto.

The following revisions have been made to the proposal form:

On Page No. 5 a revision has been made to the second paragraph of "Intermediate Contract Time Number 5." Please void Page No. 5 in your proposal and staple the revised Page No. 5 thereto.

On Page No. 28, notes #3 and #4 were added to the "Notes to Contractor." Please void Page No. 28 in your proposal and staple the revised Page No. 28 thereto.

On Page Nos. 146 and 147, the project special provision "Luminaire Retrieval System (LRS) Lighting for Overhead Sign Assembly" has been revised. Please void Page Nos. 146 and 147 in your proposal and staple the revised Page Nos. 146 and 147 thereto.

On Page No. 183, a revision was made in the first paragraph of "Subsection 8.3 Construction Methods" of the project special provision "Temporary Signal for Haul Road." Please void Page No. 183 in your proposal and staple the revised Page No. 183 thereto.

On Page No. 184, the Structures Table of Contents has been revised. Please void Page No. 184 in your proposal and staple the revised Page No. 184 thereto.

New Page Nos. 259-A and 259-B are being added to include the project special provision "Construction, Maintenance and Removal of Temporary Access at Station 109 + 56.000-L2LT-." Please staple New Page Nos. 259-A and 259-B after Page No. 259 in your proposal.

New Page Nos. 388 thru 490 have been added to include the "Buffer Permit Drawings." Please staple New Page Nos. 388 thru 490 after Page No. 387 in your proposal.

On Page No. 2 of the item sheets two pay items are being deleted. By copy of this addendum the following two pay items are hereby deleted: "17-0029000000-N-SP Reinforced Bridge Approach Fill, Station 97 + 46.928-L-LT" and "18-0029000000-N-SP Reinforced Bridge Approach Fill, Station 97 + 46.928-L-RT.". The Contractor's bid price should not include these two pay items. The Contract will be prepared accordingly.

On Page No. 13 of the original item sheets, by copy of this addendum, the following item description and quantity is hereby revised: Old Item-"193-4127500000-N-SP LRS Lighting System for Overhead Sign Assembly at Station (Assy "D" @ Sta.150 + 80) (Quantity = Lump Sum)." New Item-"193-4360000000-N-SP Install LRS Lighting System for Overhead Sign Assembly at Station (Assy "D" @ Sta.150 + 80) (Quantity = 1 EA)." The contractor's bid price must be based on this revised pay item description and quantity. The Contract will be prepared accordingly.

On Page No. 27 of the original item sheets a new pay item has been added. By copy of this addendum the following pay item is hereby added: "408-8017000000-N-SP Construction, Maintenance and Removal of Temporary Access at Station 109 + 56.000-L2LT- (Quantity = Lump Sum)." The Contractor's bid price must include this new pay item. The Contract will be prepared accordingly.

The Table of contents has been revised to reflect the above mentioned changes. Please void the Table of Contents in your proposal and staple the revised Table of Contents thereto.

The Expedite file has been updated to reflect these revisions. Please download the Expedite addendum file and follow the instructions for applying the addendum. Bid Express will not accept your bid unless the addendum has been applied.

Sincerely,

R. A. Garris, PE.
Contract Officer

RAG/jag/pa
Attachments

cc:
Mr. W. S. Varnedoe, PE
Mr. S. D. DeWitt, PE
Mr. E. C. Powell, PE
Mr. J. H. Trogdon, PE
Ms. D. M. Barbour, PE
Mr. Art McMillan, PE
Mr. J. V. Barbour, PE
Mr. G. R. Perfetti, PE
Mr. Paul Garrett, PE
Mr. Ron King, PE
Mr. Mark Staley (2)
Mr. Aydren Flowers
Mr. R. E. Davenport, Jr., PE
Ms. Marsha Byrd
Ms. Taylor Mishoe
Project File (2)

Revised 5-10-05

STANDARD SPECIAL PROVISIONS (YELLOW SHEETS)

PROPOSAL FORM ITEM SHEETS, ETC.

INTERMEDIATE CONTRACT TIME NUMBER 4 AND LIQUIDATED DAMAGES:

The Contractor shall complete the work required of **Area IV Phase I Step 3A** as shown on Sheets **TCP-15, TCP-16 & TCP-19** and shall place and maintain traffic on same.

The time of availability for this intermediate contract time will be the **Friday at 6:00 p.m.** that the Contractor elects to begin the work.

The completion time for this intermediate contract time will be the following **Monday at 6:00 a.m.** after the **Friday** the Contractor begins work.

The liquidated damages for this intermediate contract time are **Five Hundred Dollars ($500.00)** per hour.

INTERMEDIATE CONTRACT TIME NUMBER 5 AND LIQUIDATED DAMAGES:

The Contractor shall complete the work required of **Area IV Phase III Step 2 and Step 3** as shown on Sheets **TCP-35 to TCP-40** and shall place and maintain traffic on same.

The date of availability for this intermediate contract time will be the date the Contractor elects to begin the work, excluding the period of time between Memorial Day and Labor Day. .

The completion time for this intermediate contract time will be the date which is **Ninety (90)** consecutive calendar days after and including the date the Contractor begins this work.

The completion date for this intermediate contract time shall be before Memorial Day and/or after Labor Day.

The liquidated damages for this intermediate contract time are **Ten Thousand Dollars ($10,000.00)** per calendar day.

SAFETY INDEX RATING: **6-18-02**

Revise the 2002 Standard Specifications as follows:

Page 1-10, Article 102-2

Before the last paragraph on this page, add the following paragraph:

"All subcontractors performing work for the Department shall have received a passing grade on the Safety Index Rating form, in accordance with Article 102-2, prior to beginning work. Subcontractors can request the Safety Index Rating form from the State Contractual Services Engineer." SP1G14

NOTES TO THE CONTRACTOR:

1. "Borrow material consisting of A-2-5 and A-5 soils with a plasticity index less than 8 shall not be used in the top 0.3 meters of embankments nor as backfill in undercut areas unless waived in writing by the Engineer".

2. As an exception to the requirements of Article 1018-2. II(a), Coastal Plain borrow criteria shall be used for this project, unless the material is obtained from within the limits of Project R-2552AA & AB.

3. The Contractor shall submit temporary drainage plans for the excavation required for the structure at Station 14+25 -Y7- to the Engineer for approval.

   The Contractor shall install any needed temporary drainage under the proposed detour, and shall perform the Line –L- grading to either a temporary grade or to the final grade in order to drain the proposed bridge construction site. Other than the permanent excavation needed, no direct payment will be made for furnishing temporary drainage plans, or for furnishing and installing temporary drainage pipe, or other dewatering methods, as the cost of same shall be included in the unit price bid per cubic meter "Unclassified Excavation".

4. The Contractor's attention is directed to the fact that there are tires stockpiled on Parcel #38 (Carl Dean) on R-2552C . The tires are being removed by the Department. Tire removal is expected to be completed by July 15, 2005.

Luminaire Retrieval System (LRS) Lighting
For
Overhead Sign Assembly

General:

Performance of this work shall comply with the requirements of sections 905, 1097, and other applicable sections of the North Carolina Department of Transportation's Standard Specifications for Roads and Structures.

Luminaire Retrieval System(LRS) Lighting Design and/or installation:

The lighting design shall be engineered to meet the requirements of section 905 and 1097 of the 2002 NC *Standard Specifications for Roads and Structures* in an energy efficient and cost effective manner.

LRS manufacturer shall design the lighting for all structures requiring LRS. The following provisions shall be provided to the LRS manufacturer:

a) section 905 and 1097 of the 2002 NC *Standard Specifications for Roads and Structures*
b) structure line drawings for all structures requiring LRS
c) The Contractor shall ensure that coordination is established between the OHS assembly and Luminaire Retrieval System Fabricators so that a fully functional sign and lighting system is installed. The Contractor shall be fully responsible for any OHS assembly and Luminaire Retrieval System incompatibilities, or installation of a lighting system not functioning to its intended purpose.

A point-by-point lighting analysis of each overhead assembly lighting system shall be submitted for approval.

Catalog Cut Submittals:

Catalog cut transmittals shall be generated using the NCDOT Signing Section's online qualified products list (SQPL). The online SQPL is located at:

http://www.doh.dot.state.nc.us/preconstruct/traffic/congestion/SIGN/qpl/qpl.html

If a product complies with the requirements of the NCDOT Standard Specifications for Roads and Structures and isn't contained in the online SQPL, the submittal process guidelines are online at:

http://www.doh.dot.state.nc.us/preconstruct/traffic/congestion/SIGN/qpl/equipment_submittal.html

Luminaire retrieval system shop drawings shall be submitted directly to the NCDOT signing section for review and approval.

Luminaire Retrieval System:

Overhead sign structure luminaires are to be installed on a luminaire retrieval system with supports and electrical system designed for track mounted luminaires. The retrieval system must be capable of securely holding all sign luminaires at their designed positions and to allow all luminaires and electrical connections to be maintained from the roadway shoulder without lane closures. Electrical connections for the luminaires are to be arranged to allow each luminaire to

be energized while over the shoulder for testing purposes. The system shall be capable of utilizing more than one circuit if required by the plans. A service pole for mounting electric meter, Walkways, handrails and associated equipment will not be required with the luminaire retrieval system.

A possible source of this product is:

Lumi Trak Inc.
P.O. Box 158
Shrewsbury, PA 17361
(717) 235-2863

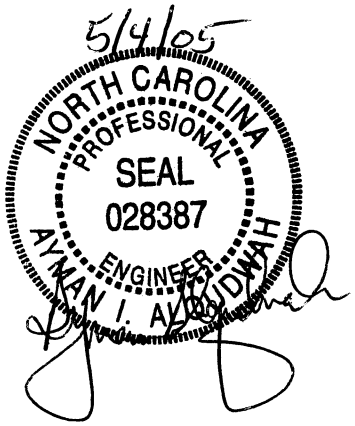
Compensation for Lighting on Assembly "D":

Luminaire Retrieval System (LRS) for overhead Assembly "D" shall be furnished by NCDOT and installed by the contractor. The Contractor shall notify the Resident Engineer in writing of the date he requires any Departmental furnished Luminaire Retrieval System (LRS) to be made available. This notification should be made in writing a minimum of 30 days prior to the date the Contractor desires the Department furnished LRS. The Resident Engineer shall notify the Traffic Engineering Signing Unit as soon as the Contractor has given this notification. The preceding LRS's are stocked at LumiTrak (at the above address) and the Contractor is responsible for delivery.

After notification that the requested Luminaire Retrieval System is available , the Contractor shall have a maximum of 90 calendar days to pick up the Department furnished Luminaire Retrieval System.

Payment will be made under:

INSTALL LRS ON OVERHEAD SIGN ASSEMBLY "D" ..... Each



Revised 5-10-05

All traffic signal equipment must be in compliance with the plans provided by NCDOT (plans will be provided upon request from the contractor), the project special provisions, and the 2002 Standard Specifications for Roads and Structures.

Assume ownership of all signal equipment upon removal of temporary haul road traffic signal.

8.3. CONSTRUCTION METHODS

NCDOT will provide required temporary traffic signal plans 30 days after written request is submitted to the Engineer. Plan request shall consist of the following: map showing exact location of the haul road intersection on SR 1560 (Ranch Road), speed limit to be posted during operation, grade of each approach, times haul road will be in operation and estimated duration of hauling activities.

Ensure that the signal meets the physical display and operational requirements of conventional traffic signals as specified in PART IV of the *Manual on Uniform Traffic Control Devices (MUTCD)* and the *North Carolina Supplement to the MUTCD* in effect on the date of advertisement.

Allow only trained operators to install and operate the signal. Provide for an experienced operator at all times during periods of manual operation. Do not violate yellow change and red clearance intervals during periods of manual operation. During manual operation, ensure the operator has an unobstructed view of the motorists and all signal head units. Locate the operator as close to the center of the operation as possible.

Perform all maintenance operations required by the manufacturer. Have properly skilled and trained maintenance personnel available to maintain the system in good working order and to perform all emergency and preventive maintenance as recommended by the equipment manufacturer.

Furnish the Engineer with the name, office telephone number, cellular (mobile) telephone number, and pager number of the supervisory employee who will be responsible for maintenance and repair of equipment during all hours.

In the event that the signal becomes inoperative be prepared at all times to revert to a flagging operation or suspend all construction activities requiring the use of the temporary traffic signal until the signal is restored to proper operation.

Place signal in flash mode when haul road is not in operation. All inappropriate signs shall also be removed, covered, folded or turned so that they are not readable by oncoming traffic.

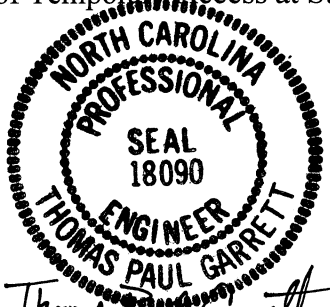
Remove signal within two weeks of completion of work requiring haul road crossing.

8.4. BASIS OF PAYMENT

There will be no direct payment for the work covered in this section. Payment at the contract unit prices for various items in the contract will be full compensation for all work covered by this section.

Project Special Provisions
Structures & Culverts

Table of Contents



Thomas Paul Garrett
May 1, 2005

CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 109+56.000 -L2LT- (2-14-04)

1.0 GENERAL

Construct, maintain, and remove the temporary access required to provide the working area necessary to construct the bridge and, if applicable, remove an existing bridge. Temporary access may include other methods than those outlined in this Special Provision; however, all types of temporary access are required to meet the requirements of all permits, the Standard Specifications, and this Special Provision.

2.0 TEMPORARY ROCK CAUSEWAY [WORKPAD]

If detailed on the plans, construction of a temporary rock causeway [workpad] within the limits shown on the plans is permitted. Build the causeway [workpad] with Class II riprap topped by a layer of Class A riprap or as otherwise designated on the plans or approved by the Engineer. If desired, recycle the Class II riprap used in the causeway [workpad] for placement in the final riprap slope protection as directed by the Engineer. No payment will be made for recycled riprap as this material is considered incidental to the causeway [workpad] placement and removal. If this option is exercised, no adjustment in contract bid price will be allowed due to an underrun in the quantity of "Plain Rip Rap Class II (2'-0" (600 mm) Thick)".

Completely remove all causeway [workpad] material including pipes and return the entire causeway [workpad] footprint to the original contours and elevations within 90 days of the completion of the deck slab or as otherwise required by permits.

For sites affected by moratoriums of restrictions on in-stream work: Do not construct or remove causeway [workpad] during the moratorium period shown on the permit. If the completion of the deck slab falls within the prohibitive dates for causeway [workpad] construction or removal, begin causeway [workpad] removal immediately following the prohibitive dates.

3.0 TEMPORARY WORK BRIDGE

If noted on the plans, the construction of a temporary work bridge is permitted. Submit details of the temporary work bridge to the Engineer prior to constructing the work bridge to ensure conformance with the plans and all permits. Make certain that the temporary work bridge satisfies all permits. Completely remove the temporary bridge prior to final acceptance or as otherwise required by the permits.

If a causeway [workpad] is detailed on the plans, the construction of a temporary work bridge in lieu of the causeway [workpad] is permitted. If this option is exercised, prepare all necessary documents required for permit modifications, if any.

Revised 5-10-05

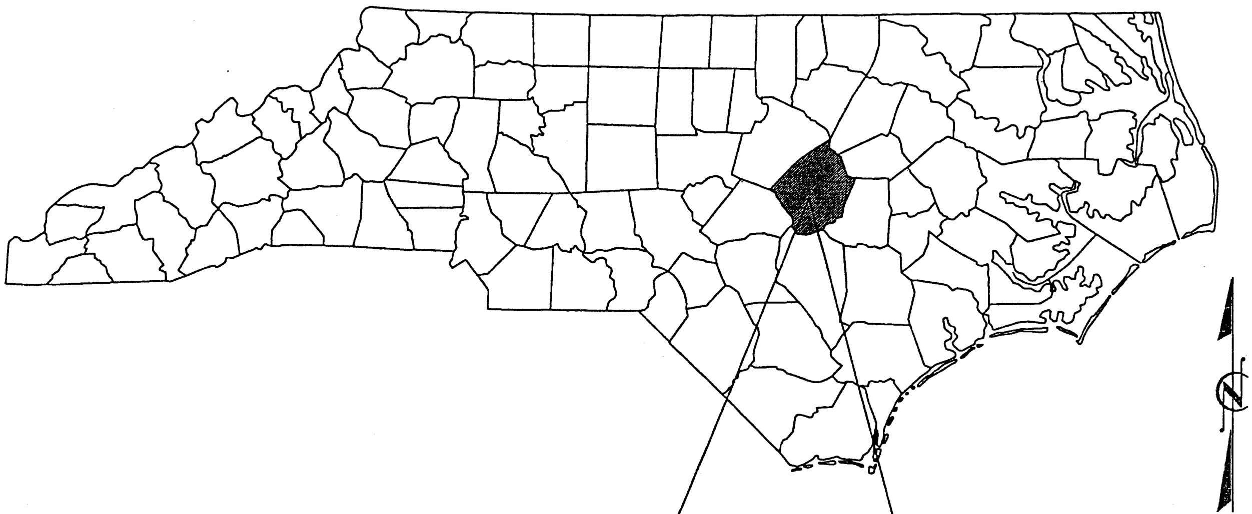
259-B

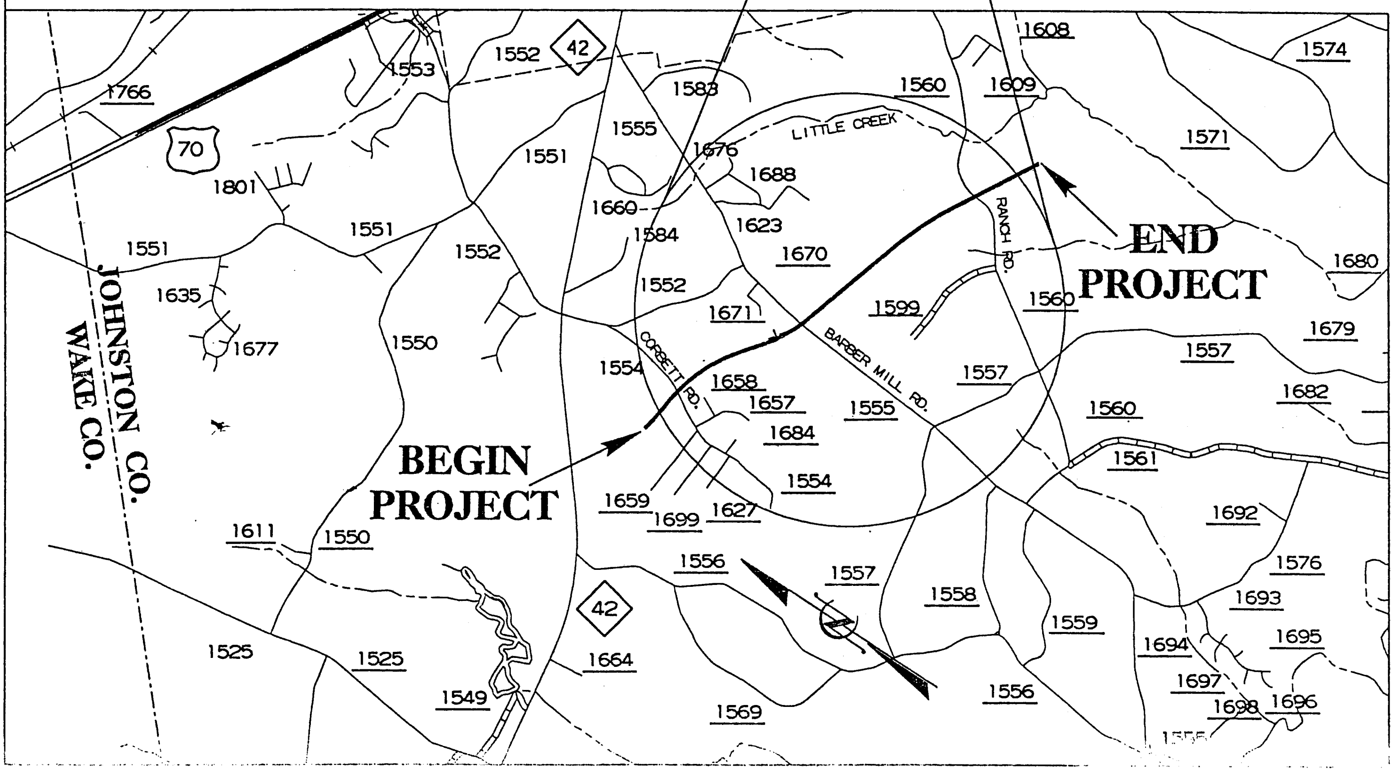
4.0 BASIS OF PAYMENT

Payment for the temporary work bridge and haul road of the right lane bridge at Station 110+37.000 –L2RT- shall be included in the Lump Price For Construction Maintenance and Removal of Temporary Access at Station 109+56.000 –L2LT-.

The lump sum price bid for "Construction, Maintenance and Removal of Temporary Access at Station _____" will be full compensation for the above work, or other methods of access, including all material, pipes, work bridge components, equipment, tools, labor, disposal, and incidentals necessary to complete the work.

NORTH CAROLINA





BUFFER PERMIT DRAWING
VICINITY MAP
R-2552B

NCDOT
DIVISION OF HIGHWAYS
JOHNSTON COUNTY

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

SHEET OF 9/23/2004

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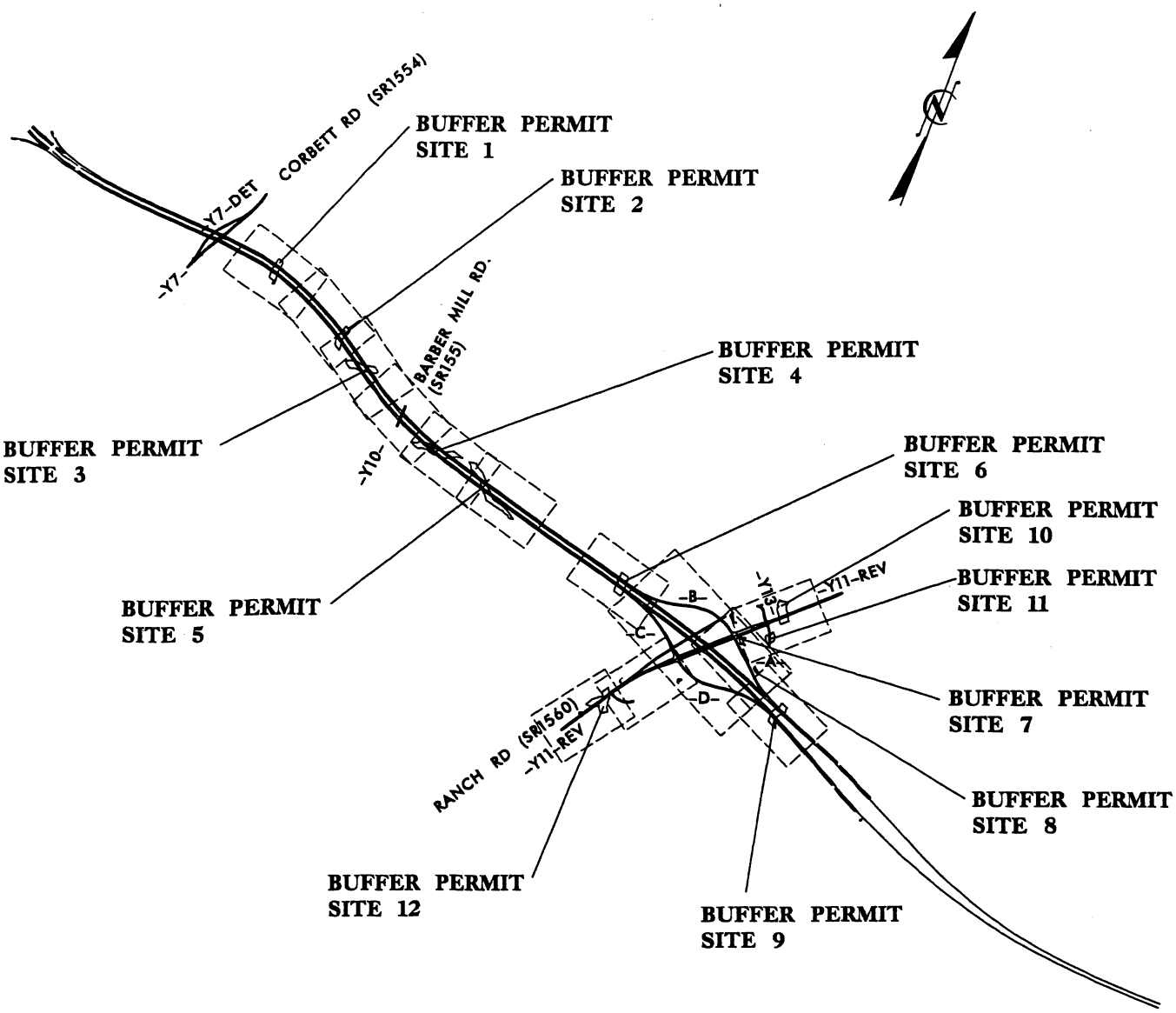
9/23/2004

SITE MAP



BUFFER PERMIT DRAWING
VICINITY MAP

DIVISION OF HIGHWAYS
JOHNSTON COUNTY

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

SHEET 1 OF 11 *9/23/2004*

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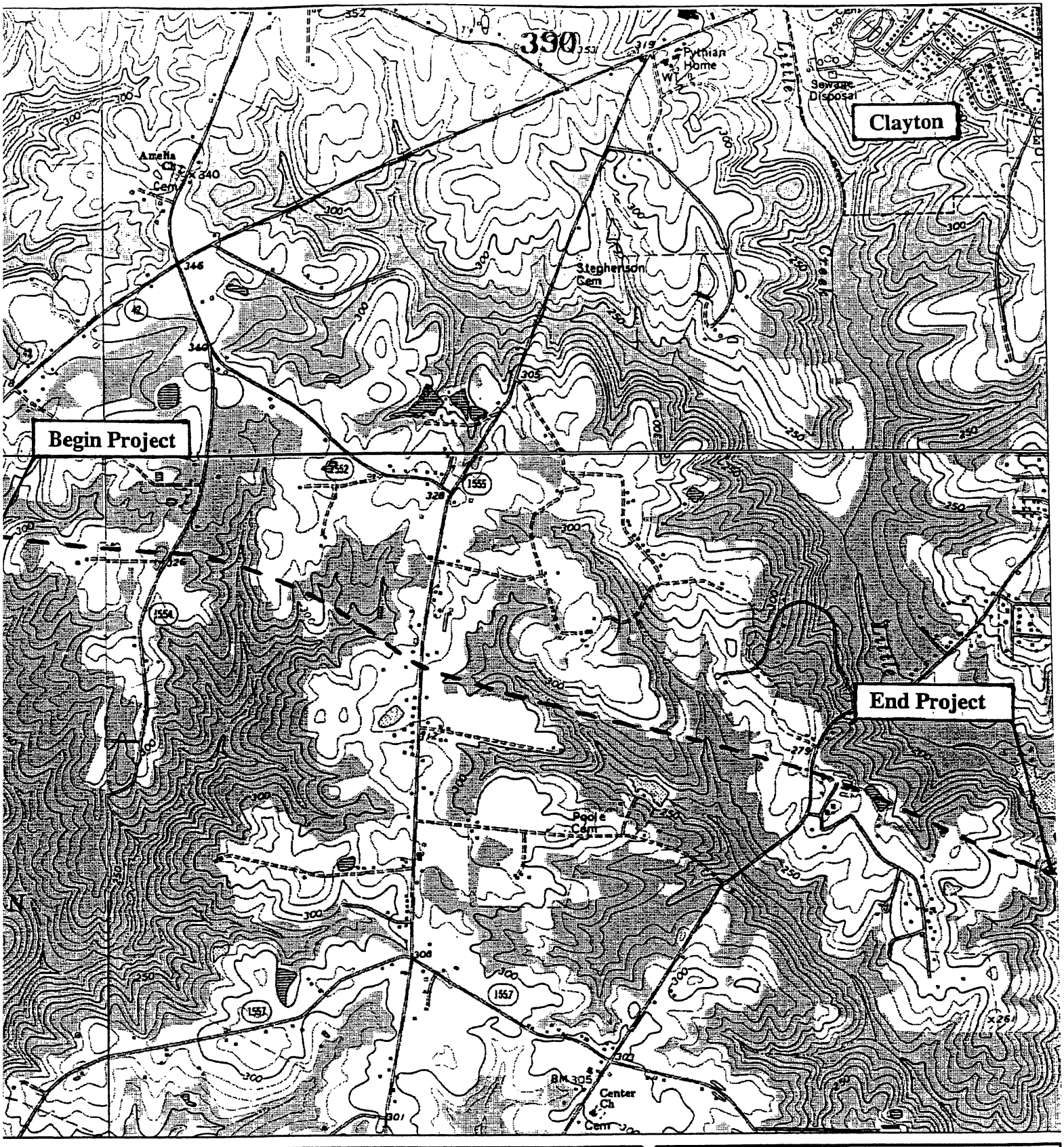

BUFFER PERMIT DRAWING LOCATION R–2552B

SCALE: 1" = 2000'

NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY

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

SHEET 3 OF 11 *8/4/04*

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LEGEND

WLB WETLAND BOUNDARY

WETLAND

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

DENOTES TEMPORARY WETLAND IMPACTS (HAND CLEARING ONLY)

DENOTES EXCAVATION IN WETLAND

TS DENOTES TEMPORARY SURFACE WATER IMPACTS

DENOTES MECHANIZED CLEARING

DENOTES MITIGABLE BUFFER IMPACTS ZONE 1

DENOTES MITIGABLE BUFFER IMPACTS ZONE 2

DENOTES ALLOWABLE BUFFER IMPACTS ZONE 1

DENOTES ALLOWABLE BUFFER IMPACTS ZONE 2

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG NATURAL GROUND

PL PROPERTY LINE

TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

BUFFER PERMIT DRAWING
VICINITY MAP

DIVISION OF HIGHWAYS
JOHNSTON COUNTY

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

SHEET 1 OF 11 ***9/16/2004***

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9/16/2004

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

PROPERTY OWNER NAME AND ADDRESS

DIVISION OF HIGHWAYS
JOHNSTON COUNTY

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

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

9/17/2004 R:\01056065\Plan\permits\buffer\r-2552_prop.dgn

BUFFER IMPACTS SUMMARY

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

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

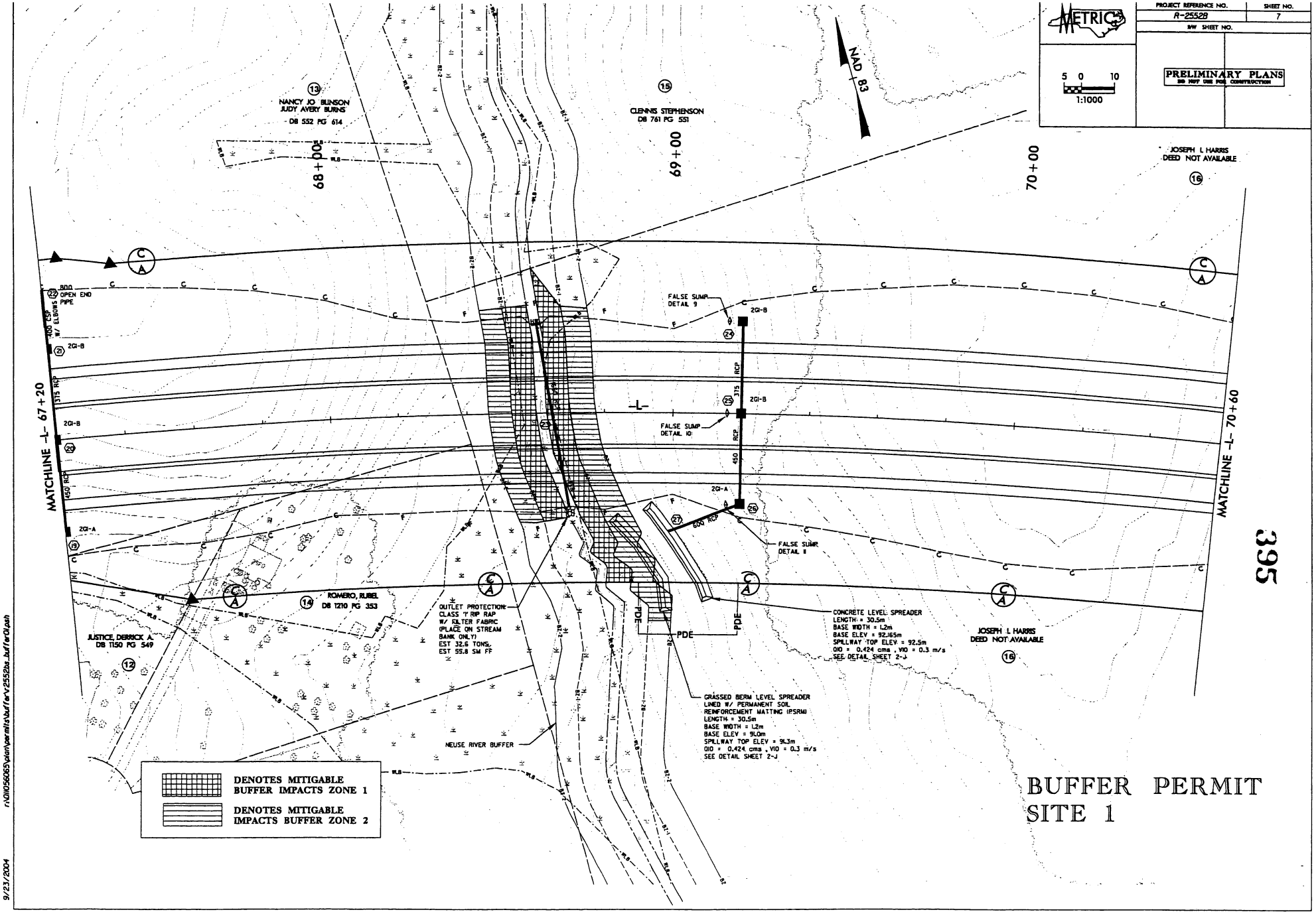
JOHNSTON COUNTY
PROJECT: 8.T311002 (R-2552B)
US-70 CLAYTON BYPASS
EAST OF NC 42 TO EAST OF SR 1560
10/14/04
SHEET 5 OF 11

BUFFER IMPACTS SUMMARY (within wetlands)

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

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

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


METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
7
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
NANCY JO BUNSON
JUDY AVERY BURNS
DB 552 PG 614
CLENNIS STEPHENSON
DB 761 PG 551
JOSEPH L HARRIS
DEED NOT AVAILABLE
68+00
69+00
70+00
MATCHLINE -L- 67+20
MATCHLINE -L- 70+60
-L-
800 OPEN END PIPE
400 RCP W/ ELBOWS PIPE
1350 RCP
1650 RCP
315 RCP
450 RCP
600 RCP
2GI-A
2GI-B
FALSE SUMP DETAIL 9
FALSE SUMP DETAIL 10
FALSE SUMP DETAIL 11
ROMERO, RUBEL
DB 1210 PG 353
JUSTICE, DERRICK A.
DB 1150 PG 549
OUTLET PROTECTION: CLASS 'I' RIP RAP W/ FILTER FABRIC (PLACE ON STREAM BANK ONLY) EST 32.6 TONS, EST 55.8 SM FF
PDE
CONCRETE LEVEL SPREADER
LENGTH = 30.5m
BASE WIDTH = 1.2m
BASE ELEV = 92.165m
SPILLWAY TOP ELEV = 92.5m
QIO = 0.424 cms , VIO = 0.3 m/s
SEE DETAIL SHEET 2-J
GRASSED BERM LEVEL SPREADER LINED W/ PERMANENT SOIL REINFORCEMENT MATTING (PSRM)
LENGTH = 30.5m
BASE WIDTH = 1.2m
BASE ELEV = 91.0m
SPILLWAY TOP ELEV = 91.3m
QIO = 0.424 cms , VIO = 0.3 m/s
SEE DETAIL SHEET 2-J
NEUSE RIVER BUFFER
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
BUFFER PERMIT
SITE 1
395
9/23/2004
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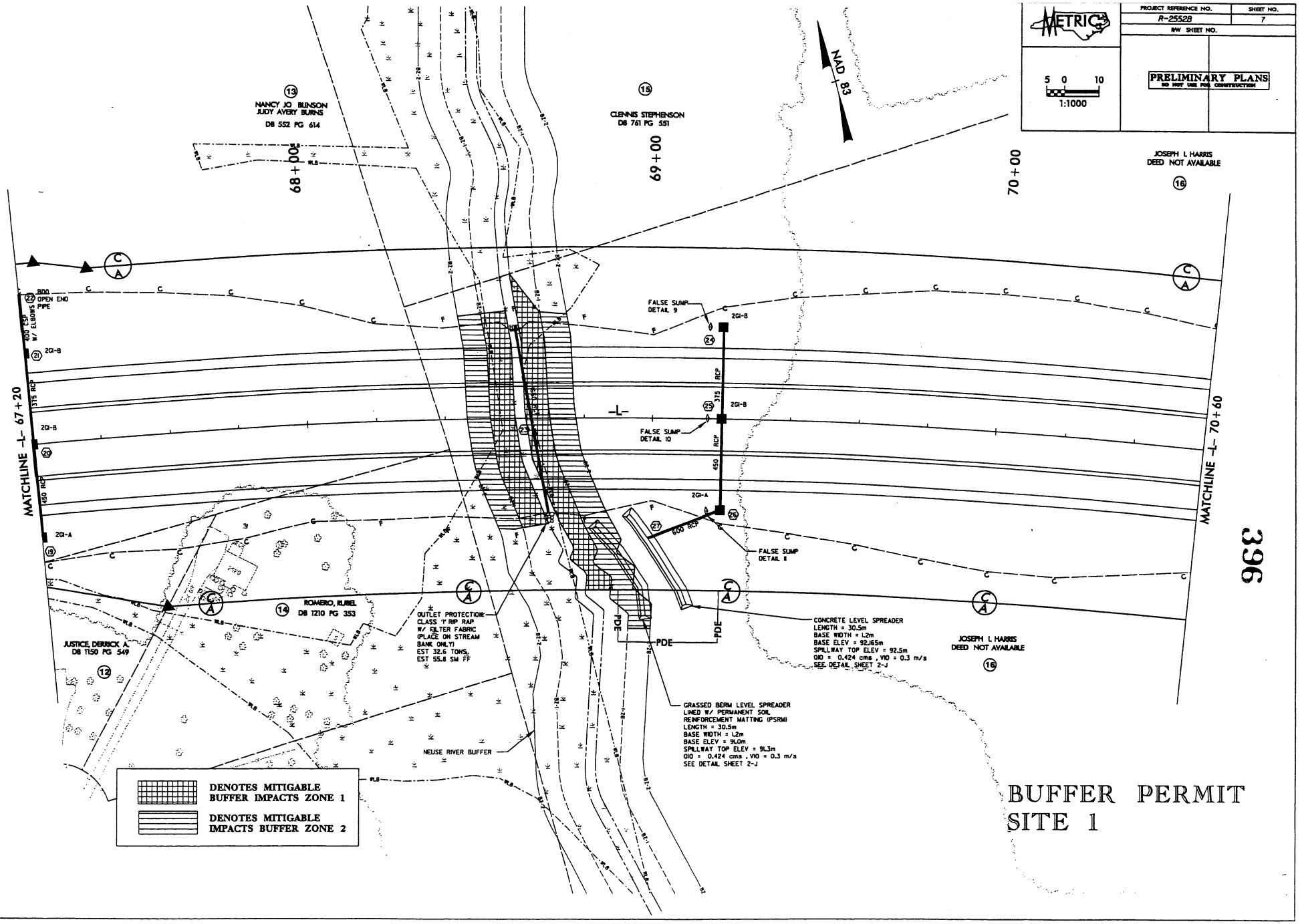
METRIC
PROJECT REFERENCE NO.
R-25528
SHEET NO.
7
RW SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
68+00
69+00
70+00
MATCHLINE -L- 67+20
MATCHLINE -L- 70+60
NANCY JO BUNSON
JUDY AVERY BURNS
DB 552 PG 614
CLENNIS STEPHENSON
DB 761 PG 551
JOSEPH L HARRIS
DEED NOT AVAILABLE
ROMERO, RUBEL
DB 1210 PG 353
JUSTICE, DERRICK A.
DB 1150 PG 549
800 OPEN END PIPE
600 RCP W/ ELBOWS
375 RCP
450 RCP
600 RCP
2GI-A
2GI-B
FALSE SUMP DETAIL 9
FALSE SUMP DETAIL 10
FALSE SUMP DETAIL 11
OUTLET PROTECTION: CLASS 'I' RIP RAP W/ FILTER FABRIC (PLACE ON STREAM BANK ONLY) EST 32.6 TONS, EST 55.8 SM FF
CONCRETE LEVEL SPREADER
LENGTH = 30.5m
BASE WIDTH = 1.2m
BASE ELEV = 92.165m
SPILLWAY TOP ELEV = 92.5m
QI0 = 0.424 cms , VI0 = 0.3 m/s
SEE DETAIL SHEET 2-J
GRASSED BERM LEVEL SPREADER
LINED W/ PERMANENT SOIL REINFORCEMENT MATTING (PSRM)
LENGTH = 30.5m
BASE WIDTH = 1.2m
BASE ELEV = 91.0m
SPILLWAY TOP ELEV = 91.3m
QI0 = 0.424 cms , VI0 = 0.3 m/s
SEE DETAIL SHEET 2-J
PDE
NEUSE RIVER BUFFER
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
BUFFER PERMIT
SITE 1
396
9/24/2004
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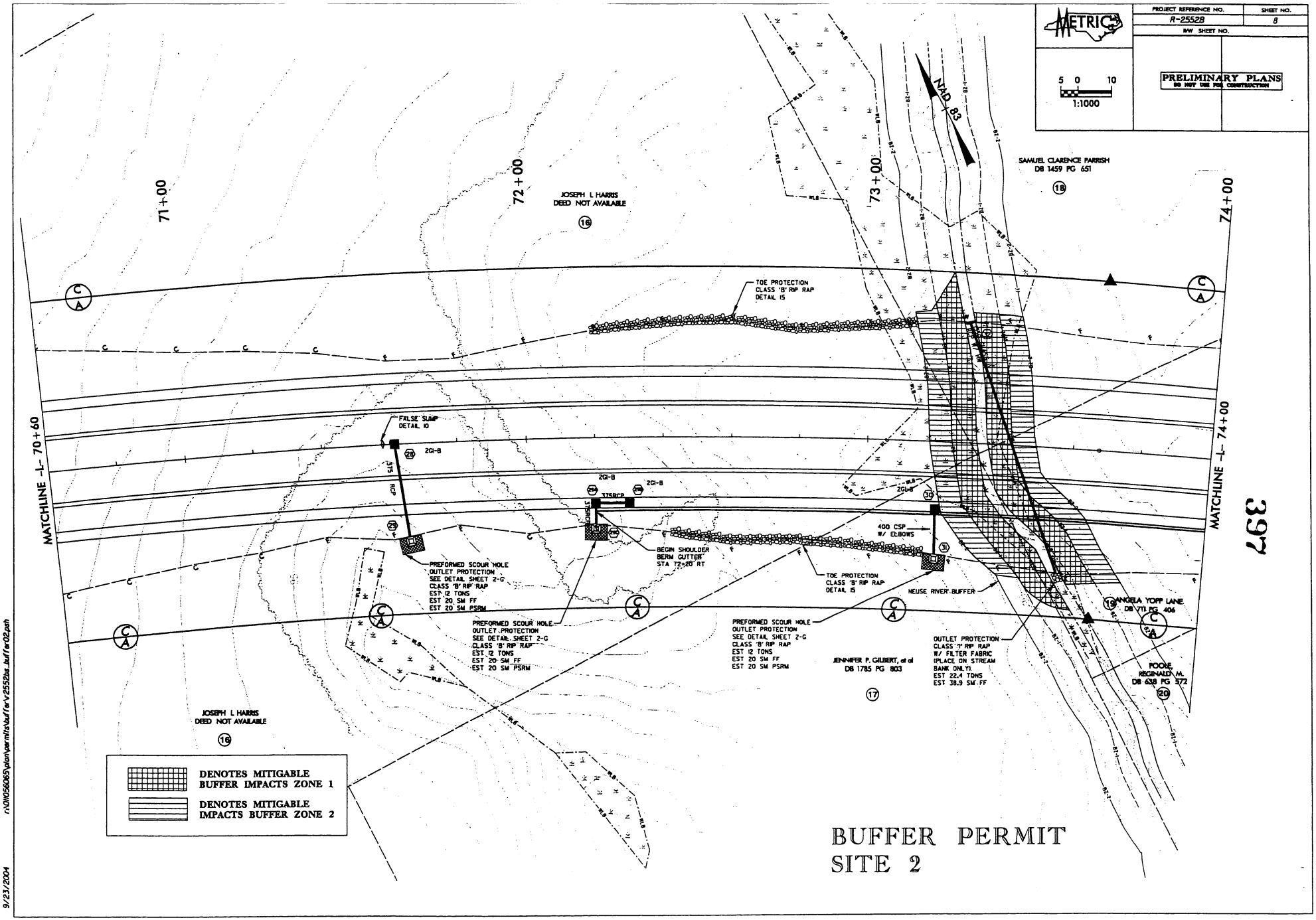
METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
8
R/W SHEET NO.
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
71+00
72+00
73+00
74+00
MATCHLINE -L- 70+60
MATCHLINE -L- 74+00
JOSEPH L HARRIS
DEED NOT AVAILABLE
SAMUEL CLARENCE PARRISH
DB 1459 PG 651
TOE PROTECTION
CLASS 'B' RIP RAP
DETAIL 15
FALSE SUMP
DETAIL 10
2GI-B
375RCP
400 CSP
W/ ELBOWS
BEGIN SHOULDER
BERM GUTTER
STA 72+20 RT
PREFORMED SCOUR HOLE
OUTLET PROTECTION
SEE DETAIL SHEET 2-G
CLASS 'B' RIP RAP
EST 12 TONS
EST 20 SM FF
EST 20 SM PSRM
NEUSE RIVER BUFFER
ANGELA YOPP LANE
DB 711 PG 406
JENNIFER P. GILBERT, et al
DB 1785 PG 803
OUTLET PROTECTION
CLASS 'I' RIP RAP
W/ FILTER FABRIC
(PLACE ON STREAM
BANK ONLY)
EST 22.4 TONS
EST 38.9 SM FF
POOLE
REGINALD M.
DB 4318 PG 572
DENOTES MITIGABLE
BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE
IMPACTS BUFFER ZONE 2
BUFFER PERMIT
SITE 2
397
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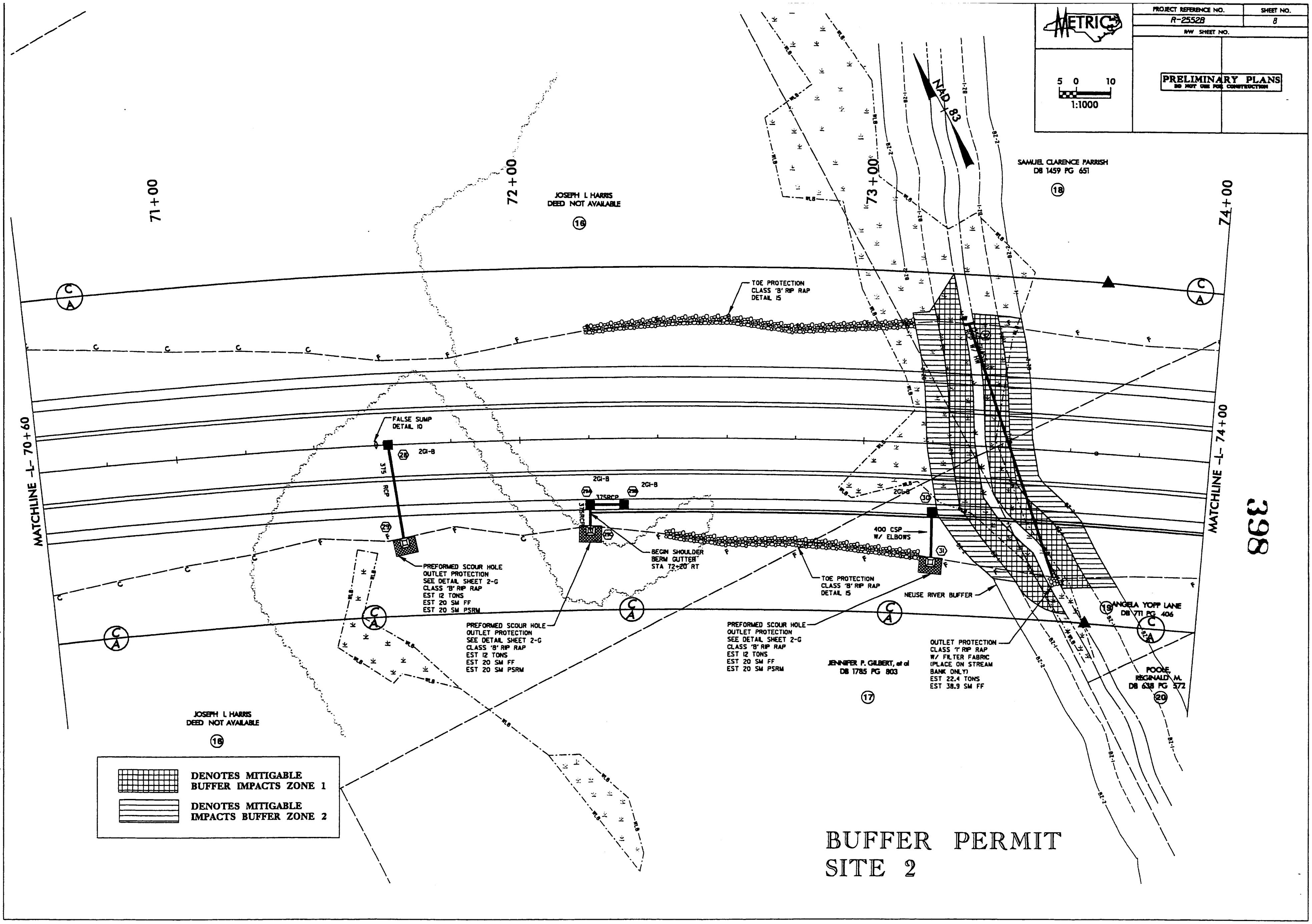
9/23/2004



BUFFER PERMIT SITE 2

398

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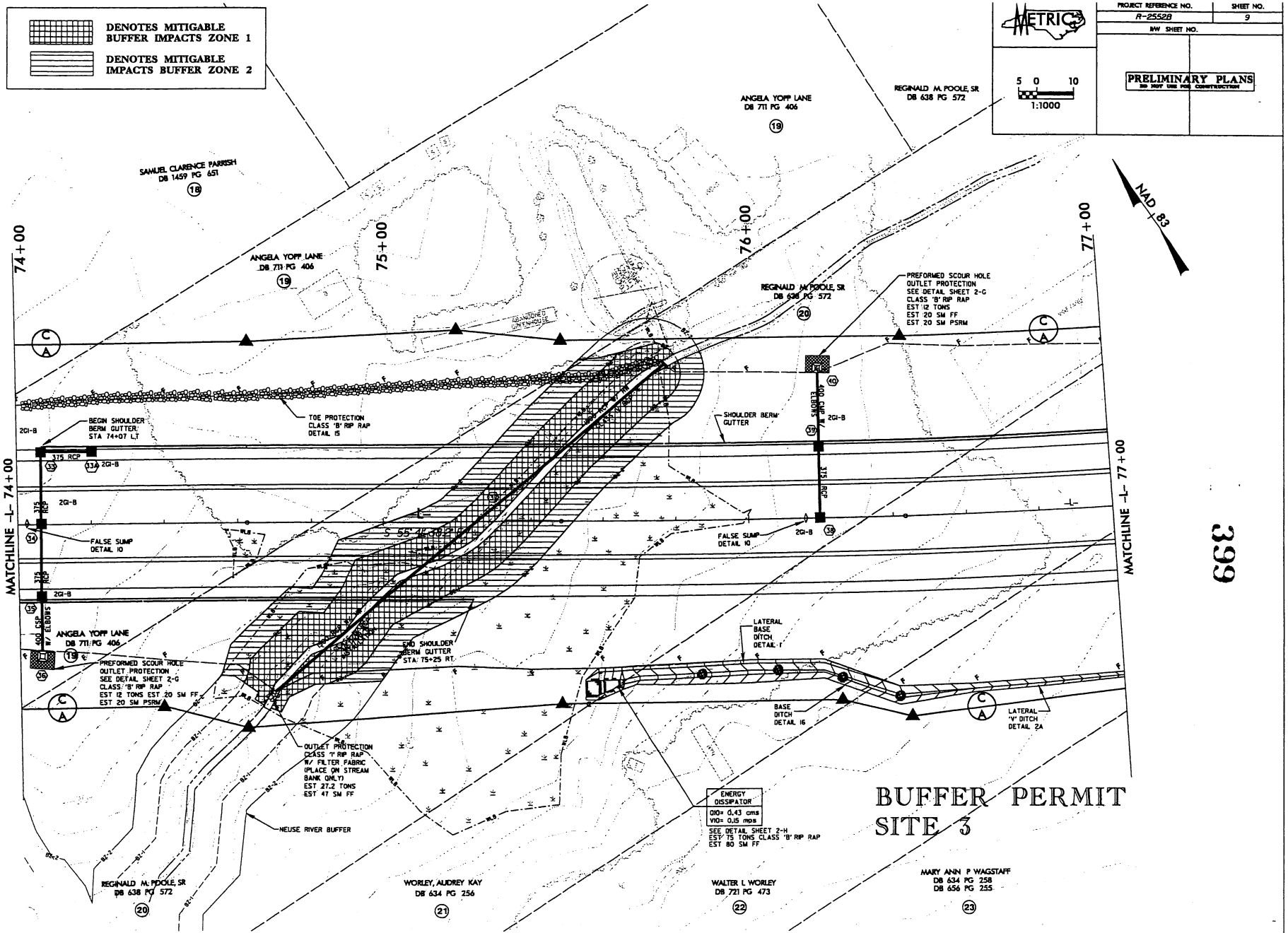
9/24/2004



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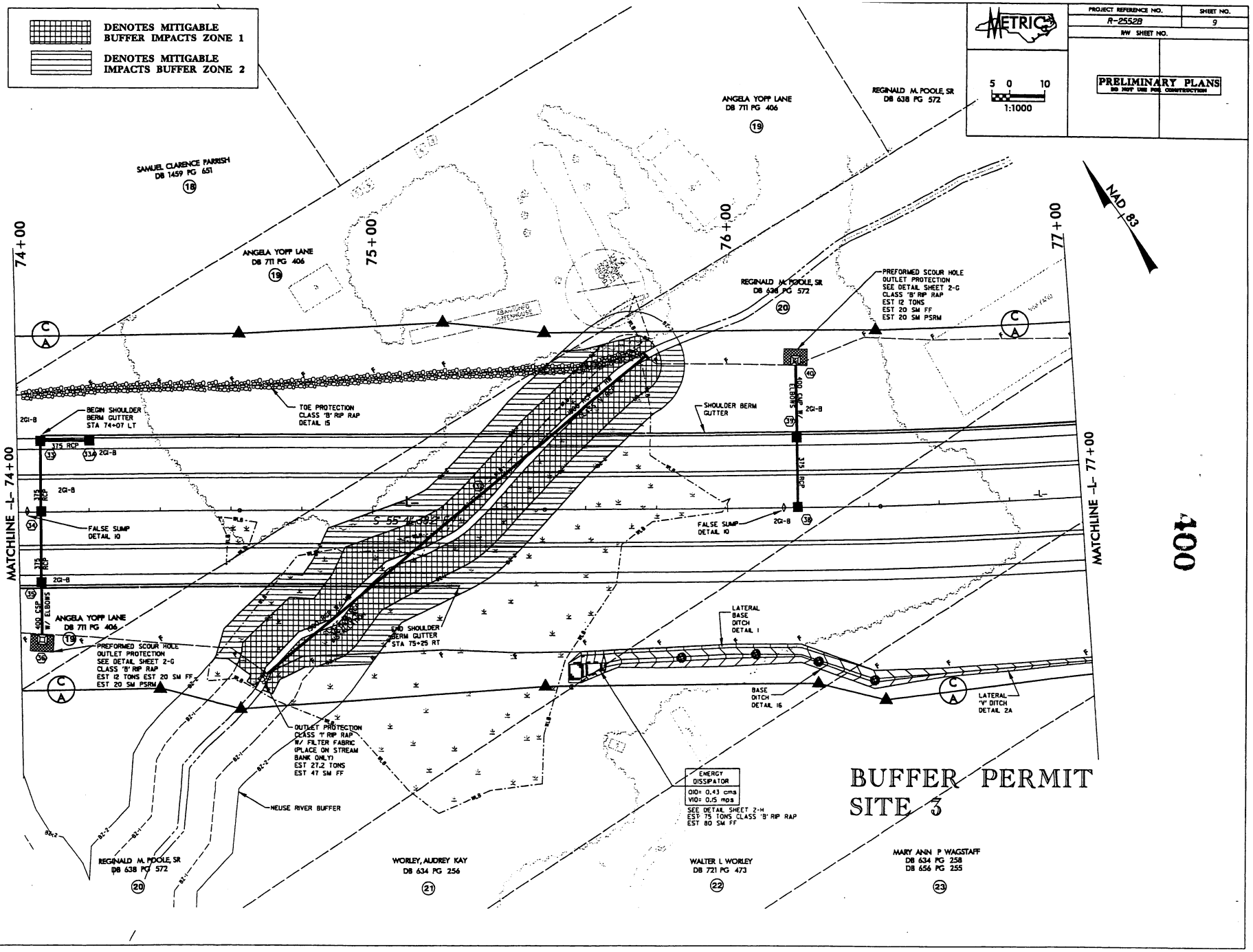

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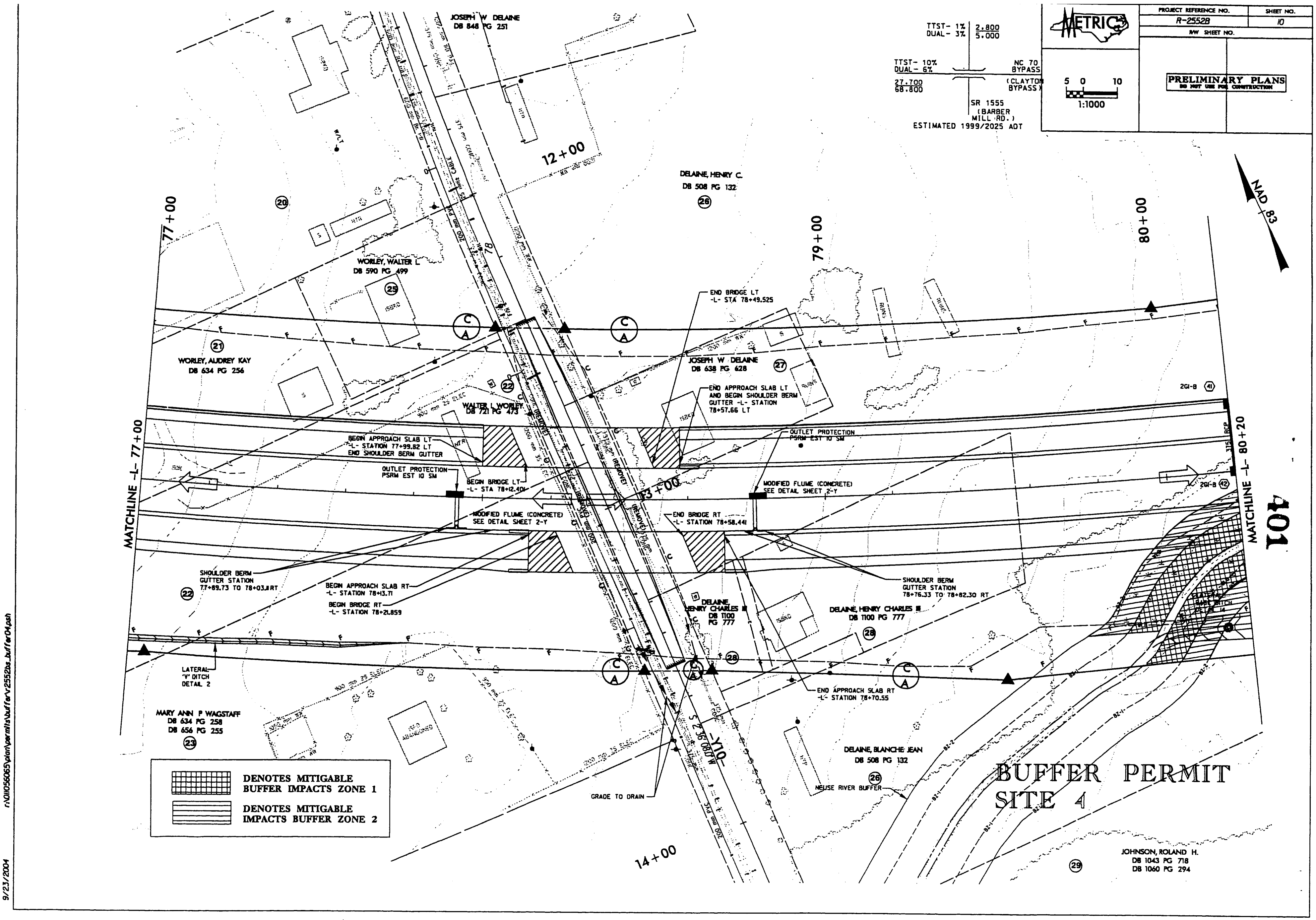

PROJECT REFERENCE NO.
R-2552B
SHEET NO.
10
R/W SHEET NO.
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
5 0 10
1:1000
TTST- 1% DUAL- 3%
2.800
5.000
TTST- 10% DUAL- 6%
27.700
68.800
NC 70 BYPASS (CLAYTON BYPASS)
SR 1555 (BARBER MILL RD.)
ESTIMATED 1999/2025 ADT
NAD 83
401
BUFFER PERMIT SITE 4
MATCHLINE -L- 77+00
MATCHLINE -L- 80+20
77+00
79+00
80+00
12+00
14+00
JOSEPH W DELAINE DB 848 PG 251
DELAINE, HENRY C. DB 508 PG 132
WORLEY, WALTER L DB 590 PG 499
WORLEY, AUDREY KAY DB 634 PG 256
JOSEPH W DELAINE DB 638 PG 628
WALTER L WORLEY DB 721 PG 473
DELAINE, HENRY CHARLES III DB 1100 PG 777
DELAINE, BLANCHE JEAN DB 508 PG 132
MARY ANN P WAGSTAFF DB 634 PG 258 DB 656 PG 255
JOHNSON, ROLAND H. DB 1043 PG 718 DB 1060 PG 294
END BRIDGE LT -L- STA 78+49.525
END APPROACH SLAB LT AND BEGIN SHOULDER BERM GUTTER -L- STATION 78+57.66 LT
OUTLET PROTECTION PSRM EST 10 SM
MODIFIED FLUME (CONCRETE) SEE DETAIL SHEET 2-Y
BEGIN APPROACH SLAB LT -L- STATION 77+99.82 LT END SHOULDER BERM GUTTER
BEGIN BRIDGE LT -L- STA 78+12.401
END BRIDGE RT -L- STATION 78+58.441
SHOULDER BERM GUTTER STATION 77+89.73 TO 78+03.11RT
BEGIN APPROACH SLAB RT -L- STATION 78+13.71
BEGIN BRIDGE RT -L- STATION 78+21.859
SHOULDER BERM GUTTER STATION 78+76.33 TO 78+82.30 RT
END APPROACH SLAB RT -L- STATION 78+70.55
LATERAL 'V' DITCH DETAIL 2
GRADE TO DRAIN
NEUSE RIVER BUFFER
-Y10-
S 2°36'08.0"W
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
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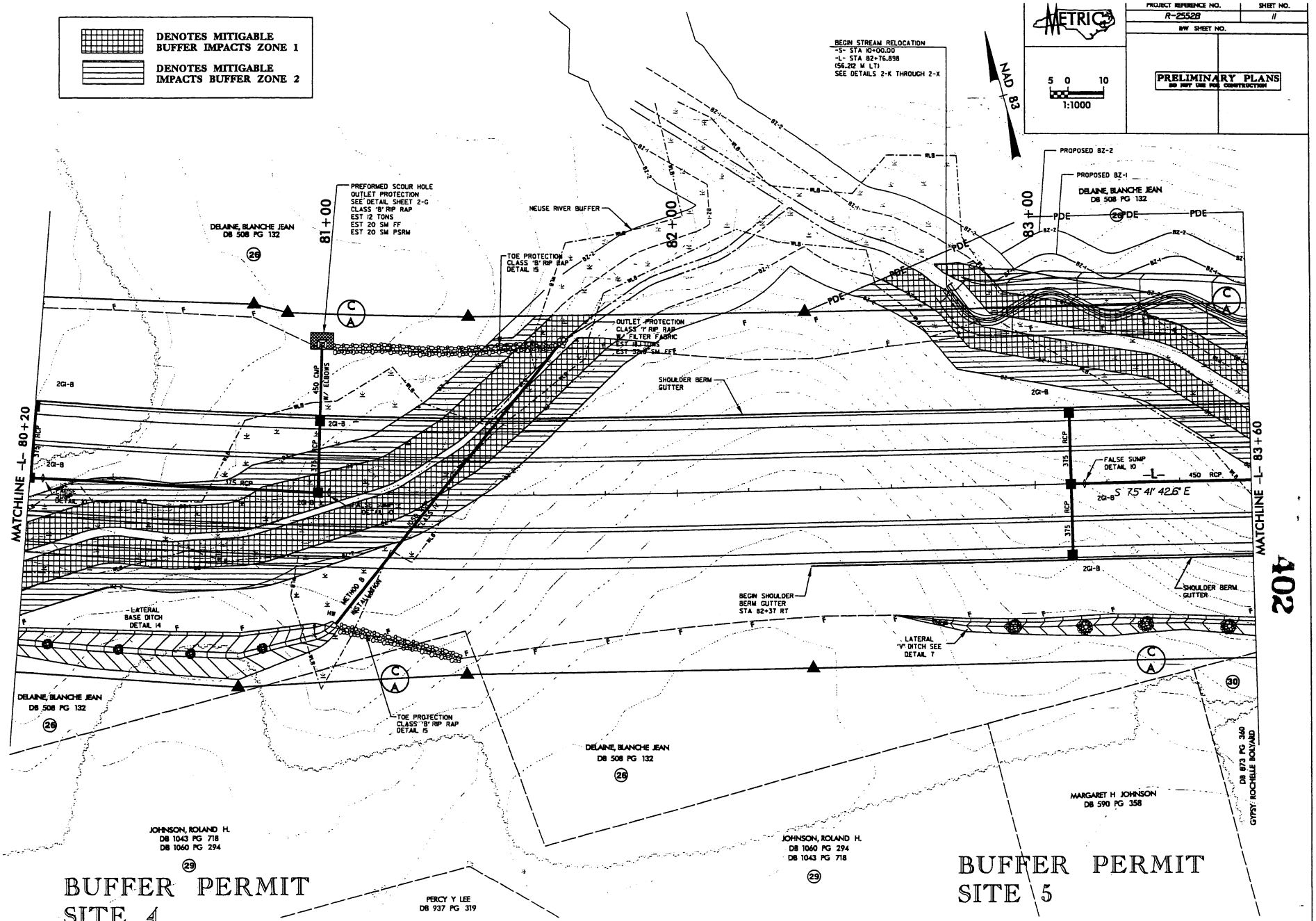
9/23/2004



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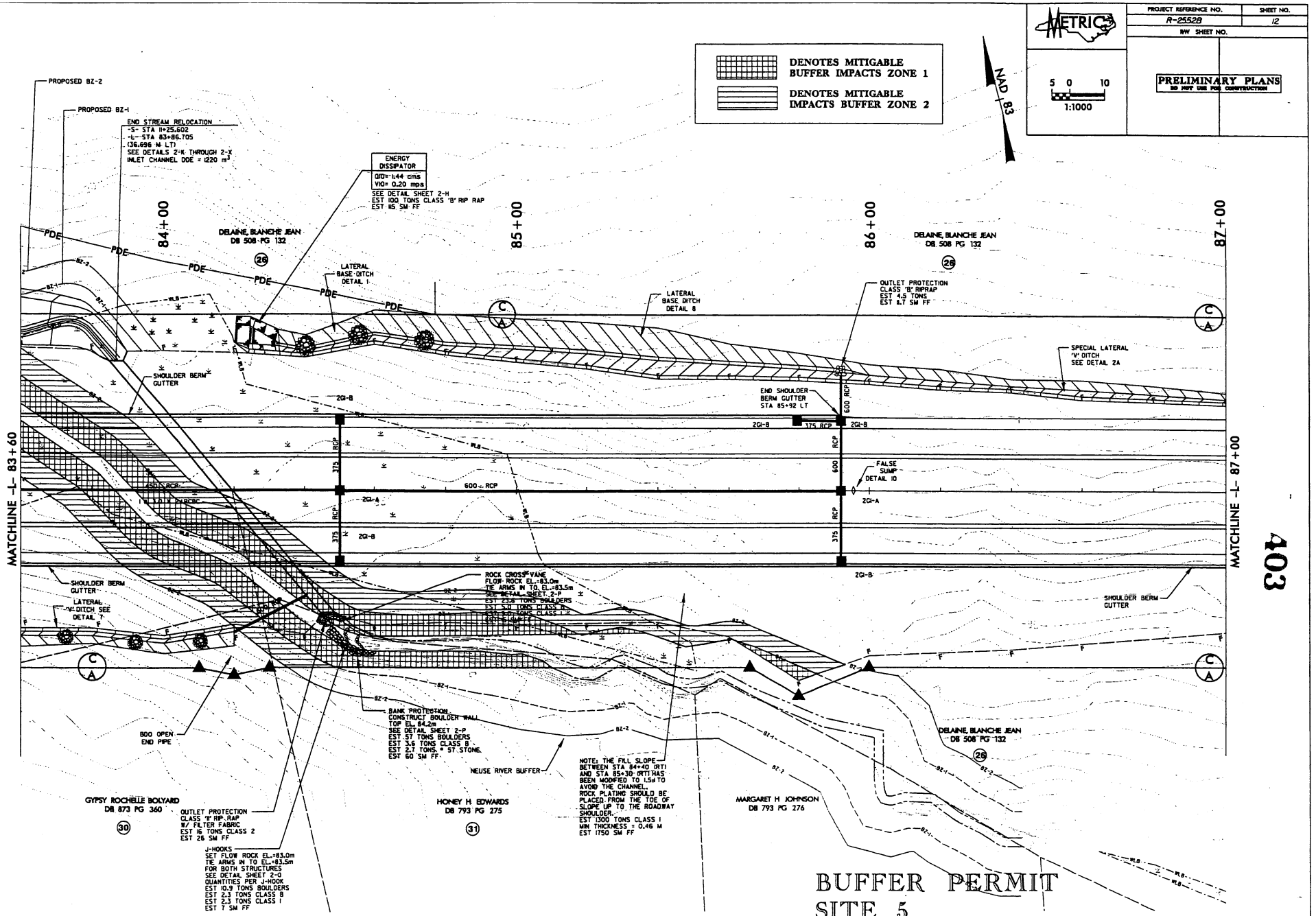
9/23/2004


DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
NAD 83
METRIC
5 0 10
1:1000
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
12
RW SHEET NO.
PRELIMINARY PLANS
NO RIGHT OF WAY OR CONSTRUCTION
MATCHLINE -L- 83+60
MATCHLINE -L- 87+00
84+00
85+00
86+00
87+00
PROPOSED BZ-2
PROPOSED BZ-1
END STREAM RELOCATION
-S- STA 11+25.602
-L- STA 83+86.705
(36.696 M LT)
SEE DETAILS 2-K THROUGH 2-X
INLET CHANNEL DOE = 1220 m³
ENERGY DISSIPATOR
QID= 1.44 cms
VID= 0.20 mps
SEE DETAIL SHEET 2-H
EST 100 TONS CLASS 'B' RIP RAP
EST 45 SM FF
PDE
DELAINE, BLANCHE JEAN
DB 508 PG 132
26
LATERAL BASE DITCH DETAIL 1
LATERAL BASE DITCH DETAIL 8
OUTLET PROTECTION CLASS 'B' RIPRAP
EST 4.5 TONS
EST 8.7 SM FF
SPECIAL LATERAL 'V' DITCH SEE DETAIL 2A
SHOULDER BERM GUTTER
END SHOULDER BERM GUTTER STA 85+92 LT
2GI-8
2GI-A
375 RCP
600 RCP
FALSE SUMP DETAIL 10
ROCK CROSS VANE
FLOW ROCK EL.=83.0m
TIE ARMS IN TO EL.=83.5m
SEE DETAIL SHEET 2-P
EST 23.8 TONS BOULDERS
EST 5.0 TONS CLASS A
EST 3.0 TONS CLASS 1
LATERAL 'V' DITCH SEE DETAIL 7
BANK PROTECTION CONSTRUCT BOULDER WALL
TOP EL. 84.2m
SEE DETAIL SHEET 2-P
EST 57 TONS BOULDERS
EST 3.6 TONS CLASS B
EST 2.7 TONS, * 57 STONE
EST 60 SM FF
NEUSE RIVER BUFFER
NOTE: THE FILL SLOPE BETWEEN STA 84+40 (RT) AND STA 85+30 (RT) HAS BEEN MODIFIED TO 1.5H:1V TO AVOID THE CHANNEL. ROCK PLATING SHOULD BE PLACED FROM THE TOE OF SLOPE UP TO THE ROADWAY SHOULDER.
EST 1300 TONS CLASS 1
MIN THICKNESS = 0.46 M
EST 1750 SM FF
800 OPEN END PIPE
GYPSY ROCHELLE BOLYARD
DB 873 PG 360
30
OUTLET PROTECTION CLASS 'A' RIP RAP W/ FILTER FABRIC
EST 16 TONS CLASS 2
EST 26 SM FF
J-HOOKS
SET FLOW ROCK EL.=83.0m
TIE ARMS IN TO EL.=83.5m
FOR BOTH STRUCTURES
SEE DETAIL SHEET 2-Q
QUANTITIES PER J-HOOK
EST 10.9 TONS BOULDERS
EST 2.3 TONS CLASS B
EST 2.3 TONS CLASS 1
EST 7 SM FF
HONEY H. EDWARDS
DB 793 PG 275
31
MARGARET H. JOHNSON
DB 793 PG 276
SHOULDER BERM GUTTER
403
BUFFER PERMIT
SITE 5
9/23/2004
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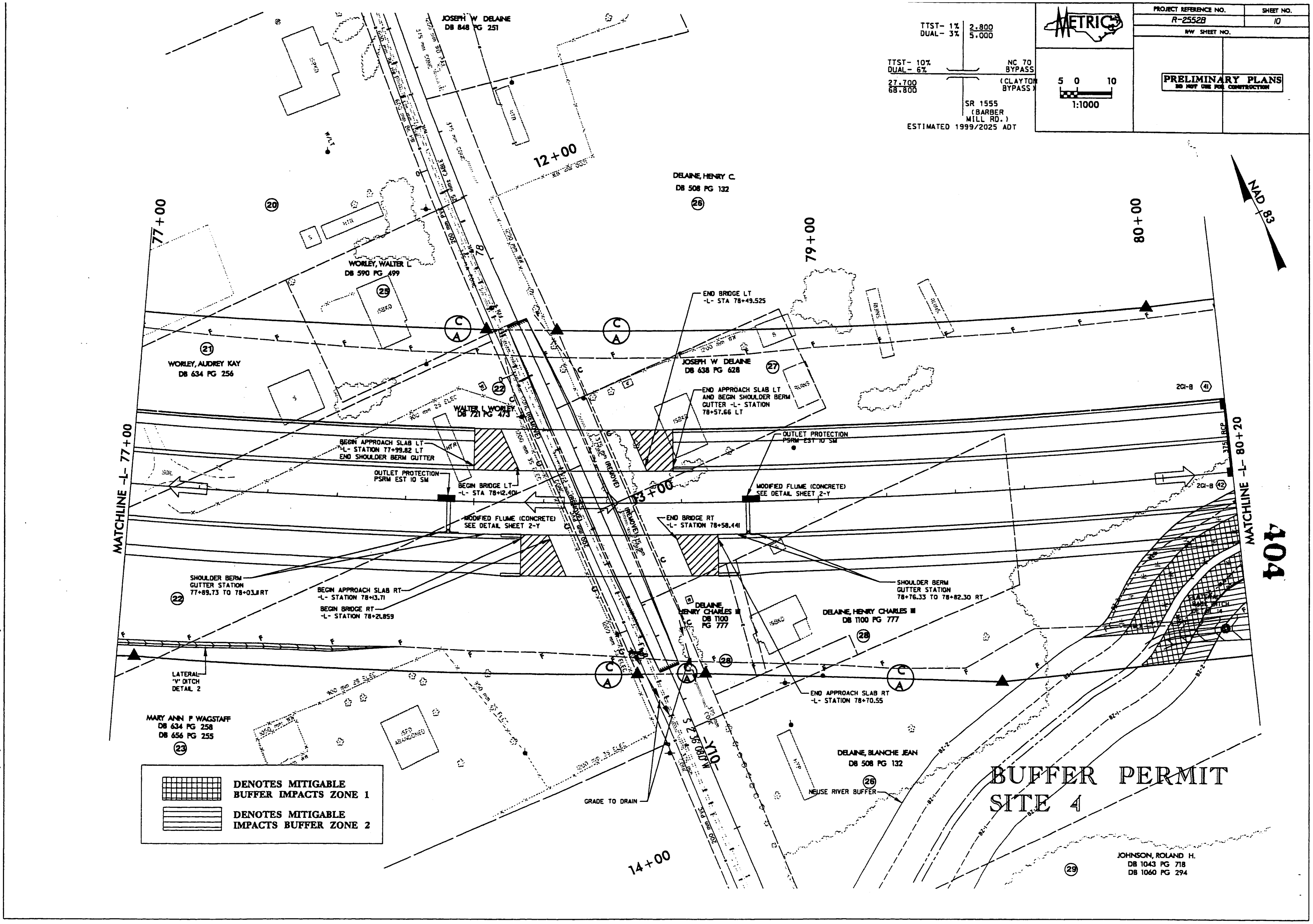
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
10
R/W SHEET NO.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
1:1000
TTST- 1% DUAL- 3% 2.800 5.000
TTST- 10% DUAL- 6% 27.700 68.800
NC 70 BYPASS (CLAYTON BYPASS)
SR 1555 (BARBER MILL RD.)
ESTIMATED 1999/2025 ADT
NAD 83
404
MATCHLINE -L- 77+00
MATCHLINE -L- 80+20
77+00
79+00
80+00
12+00
14+00
JOSEPH W DELAINE DB 848 PG 251
DELAINE, HENRY C. DB 508 PG 132
WORLEY, WALTER L DB 590 PG 499
WORLEY, AUDREY KAY DB 634 PG 256
JOSEPH W DELAINE DB 638 PG 628
WALTER L WORLEY DB 721 PG 473
END BRIDGE LT -L- STA 78+49.525
END APPROACH SLAB LT AND BEGIN SHOULDER BERM GUTTER -L- STATION 78+57.66 LT
OUTLET PROTECTION PSRM EST 10 SM
BEGIN APPROACH SLAB LT -L- STATION 77+99.82 LT END SHOULDER BERM GUTTER
BEGIN BRIDGE LT -L- STA 78+12.401
MODIFIED FLUME (CONCRETE) SEE DETAIL SHEET 2-Y
END BRIDGE RT -L- STATION 78+58.441
SHOULDER BERM GUTTER STATION 77+89.73 TO 78+03.11 RT
BEGIN APPROACH SLAB RT -L- STATION 78+13.71
BEGIN BRIDGE RT -L- STATION 78+21.859
SHOULDER BERM GUTTER STATION 78+76.33 TO 78+82.30 RT
DELAINE, HENRY CHARLES III DB 1100 PG 777
END APPROACH SLAB RT -L- STATION 78+70.55
LATERAL 'V' DITCH DETAIL 2
MARY ANN P WAGSTAFF DB 634 PG 258 DB 656 PG 255
GRADE TO DRAIN
S 2°36'08.0" W
-Y10-
DELAINE, BLANCHE JEAN DB 508 PG 132
NEUSE RIVER BUFFER
BUFFER PERMIT SITE 4
JOHNSON, ROLAND H. DB 1043 PG 718 DB 1060 PG 294
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
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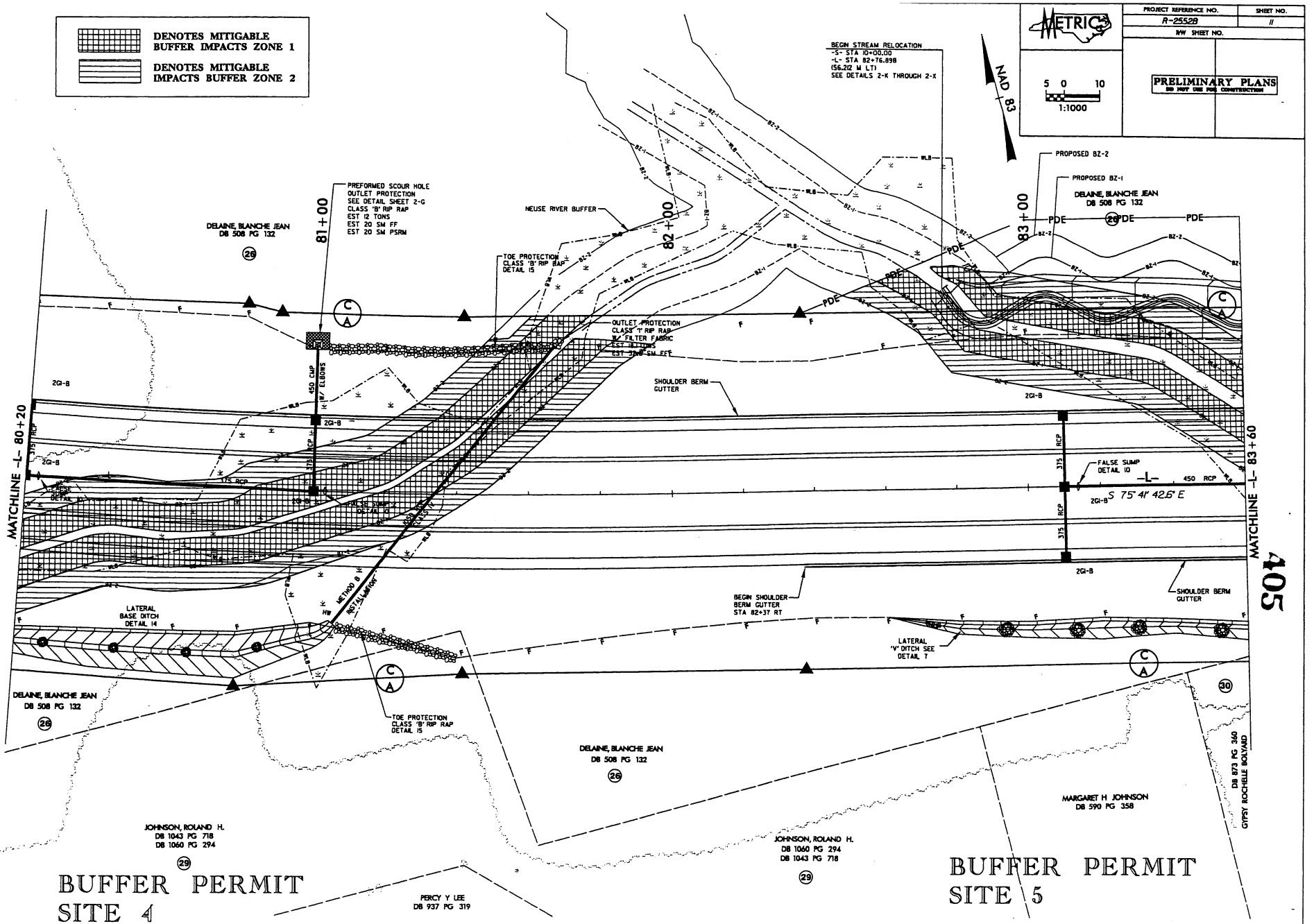
9/24/2004



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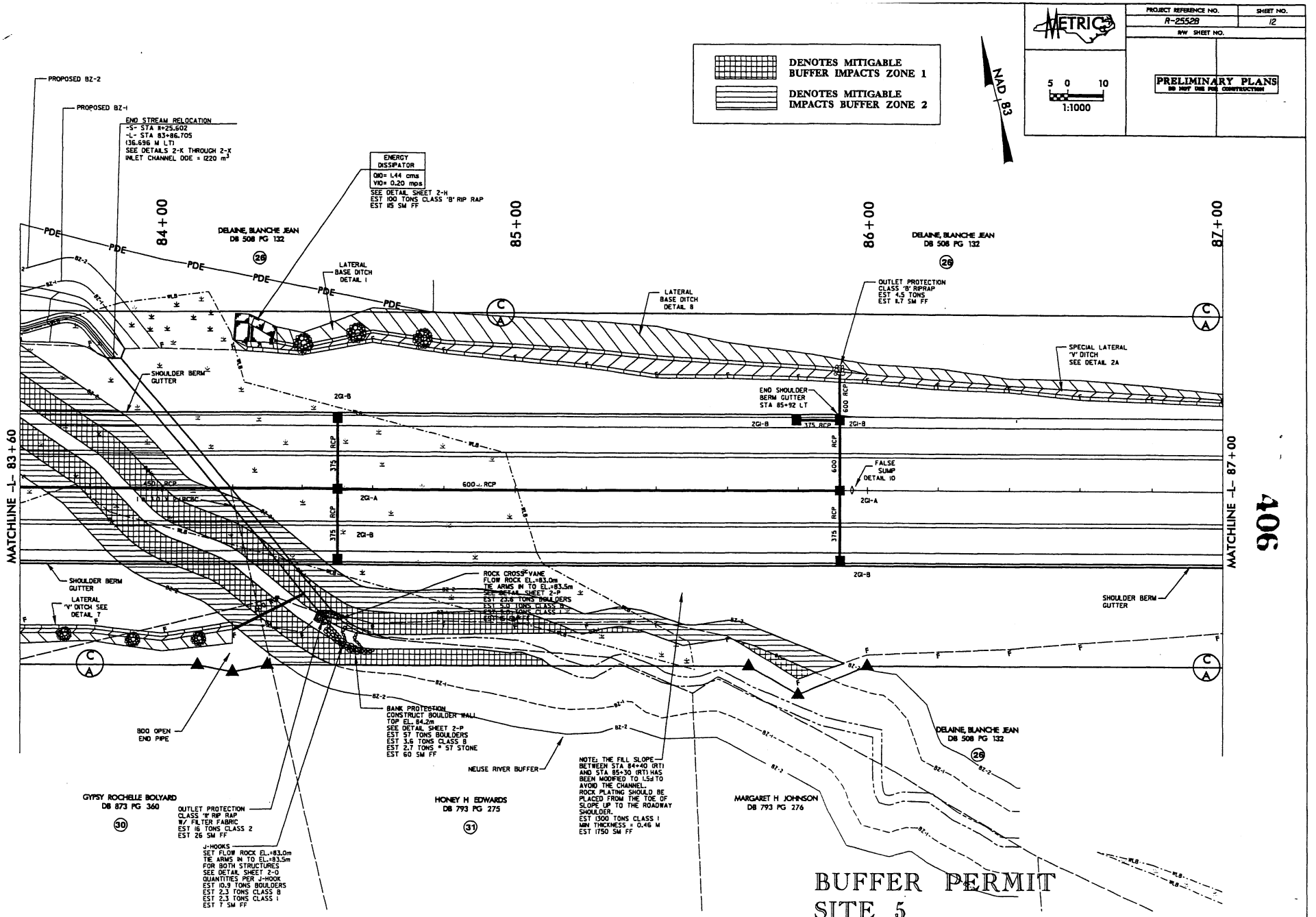

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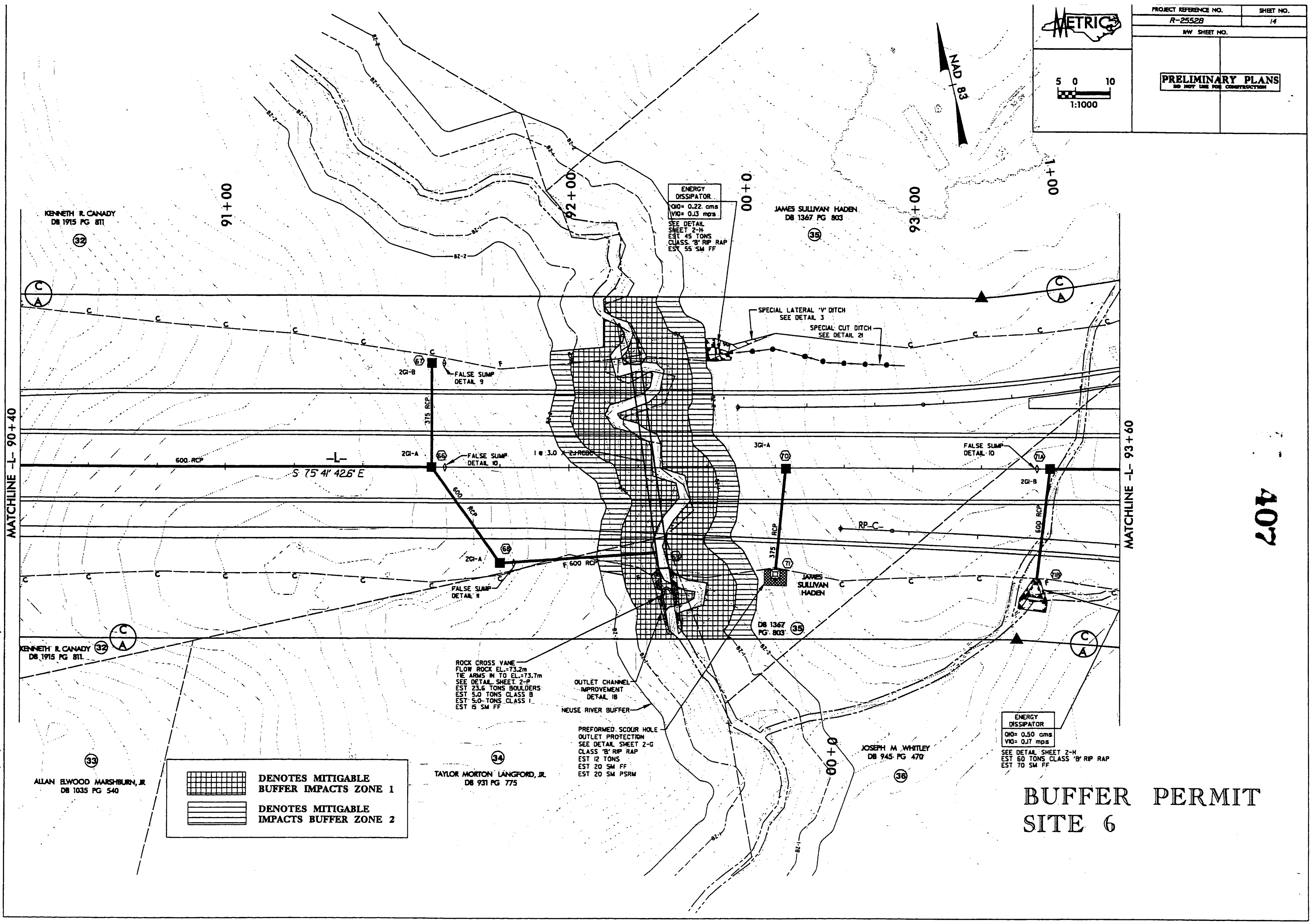
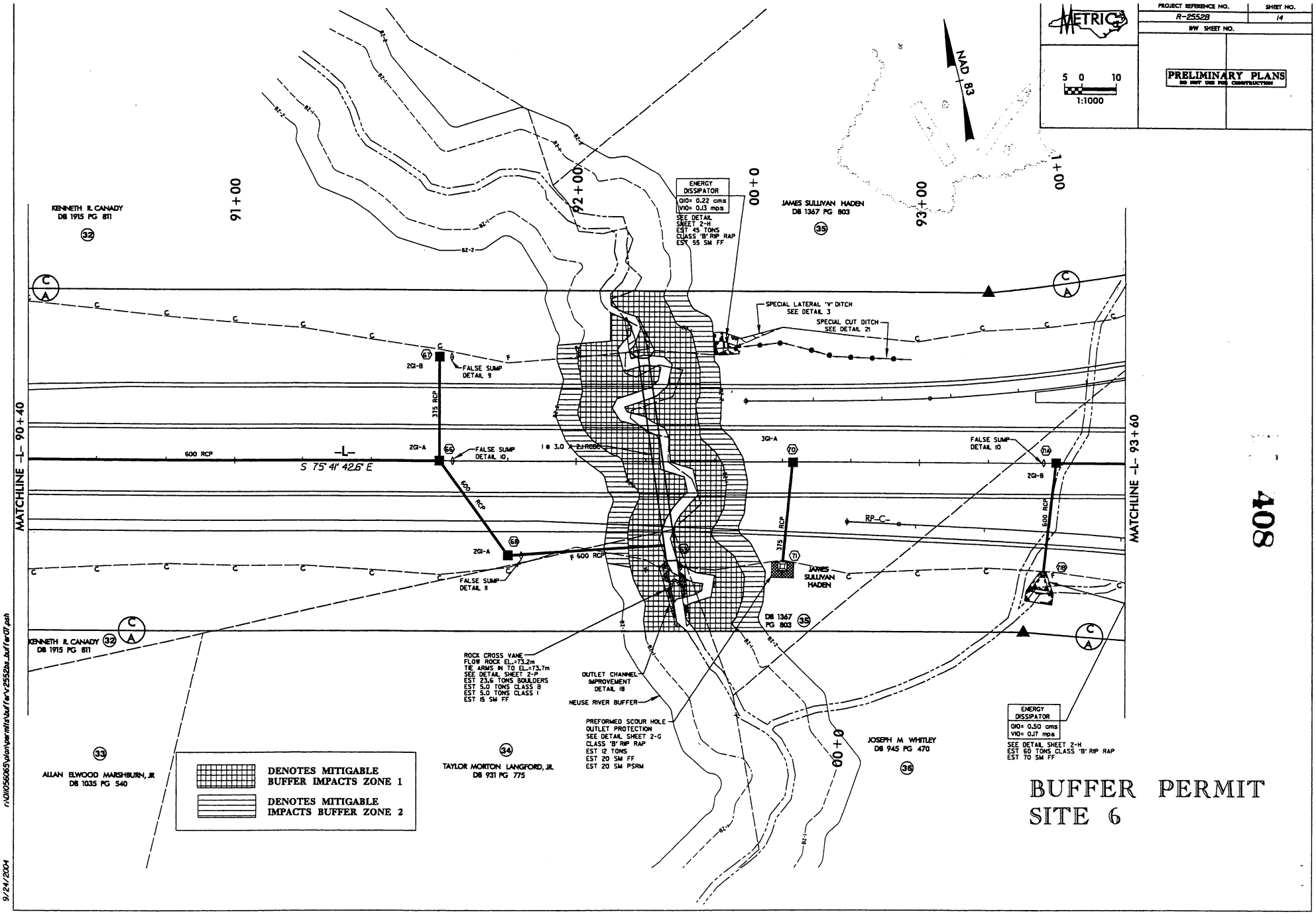

PROJECT REFERENCE NO. R-2552B
SHEET NO. 14
R/W SHEET NO.
METRIC
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
MATCHLINE -L- 90+40
MATCHLINE -L- 93+60
91+00
92+00
93+00
1+00
0+00
KENNETH R. CANADY DB 1915 PG 811
JAMES SULLIVAN HADEN DB 1367 PG 803
ENERGY DISSIPATOR Q10= 0.22 cms V10=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



BUFFER PERMIT
SITE 6

408

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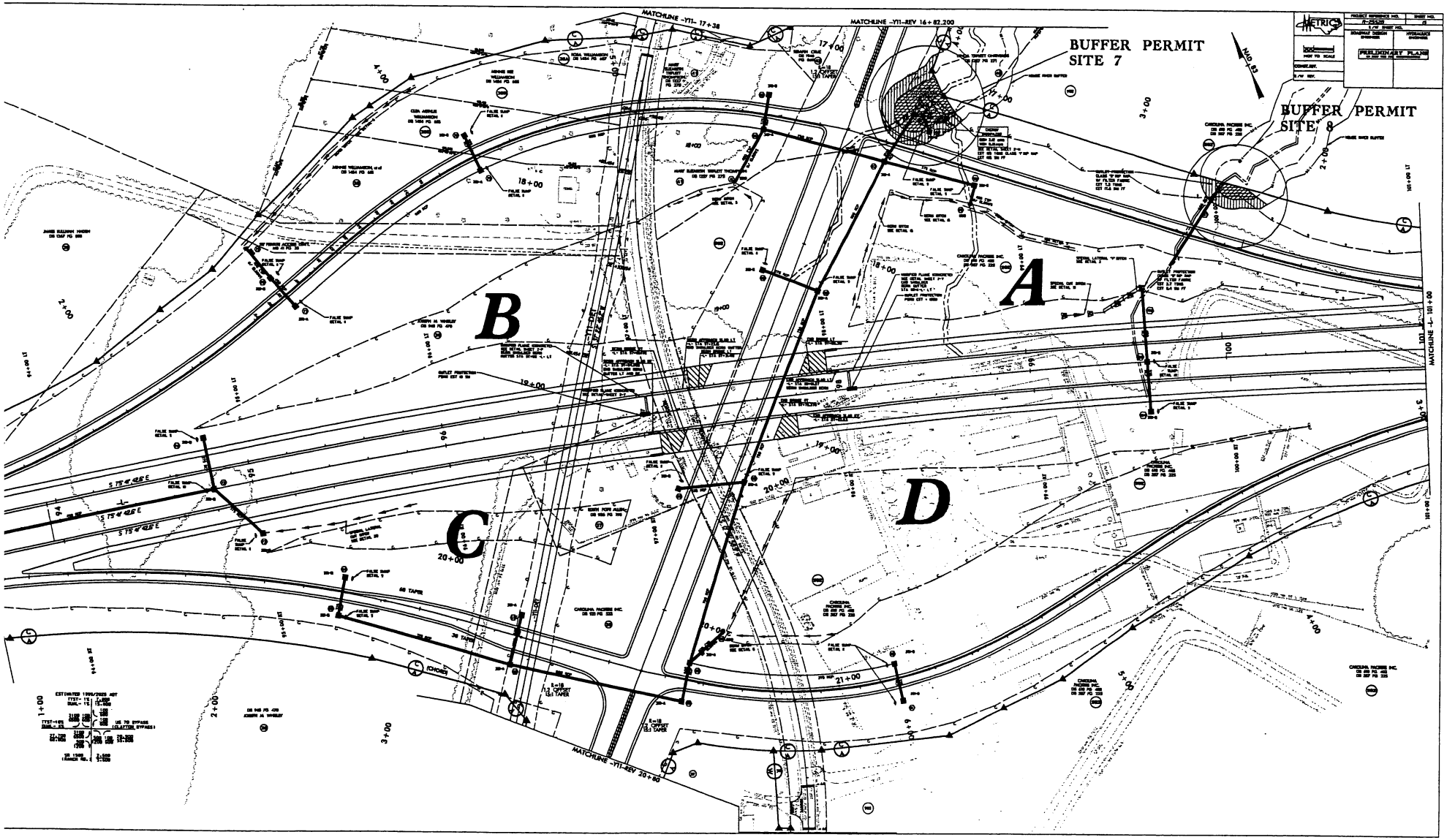
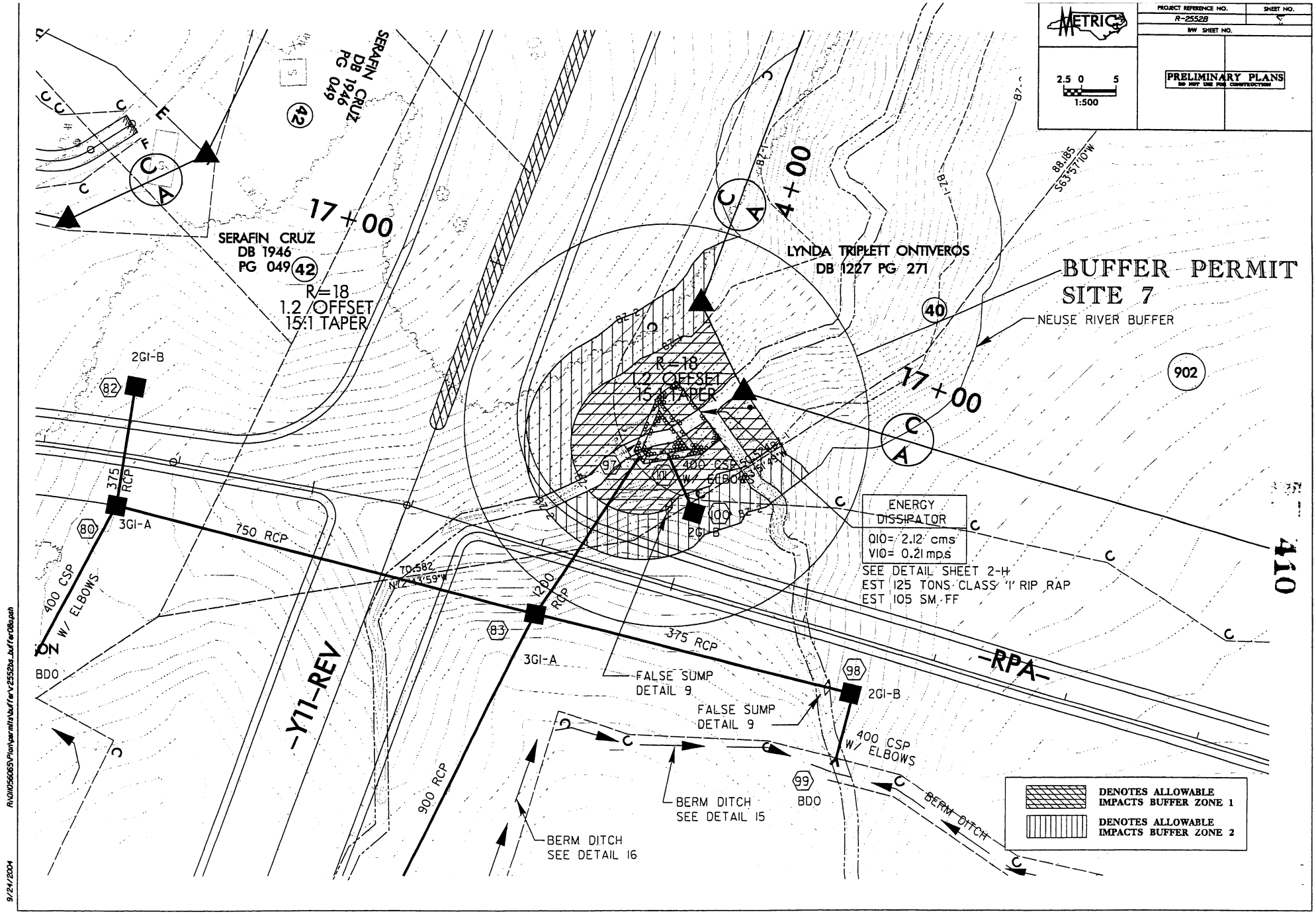
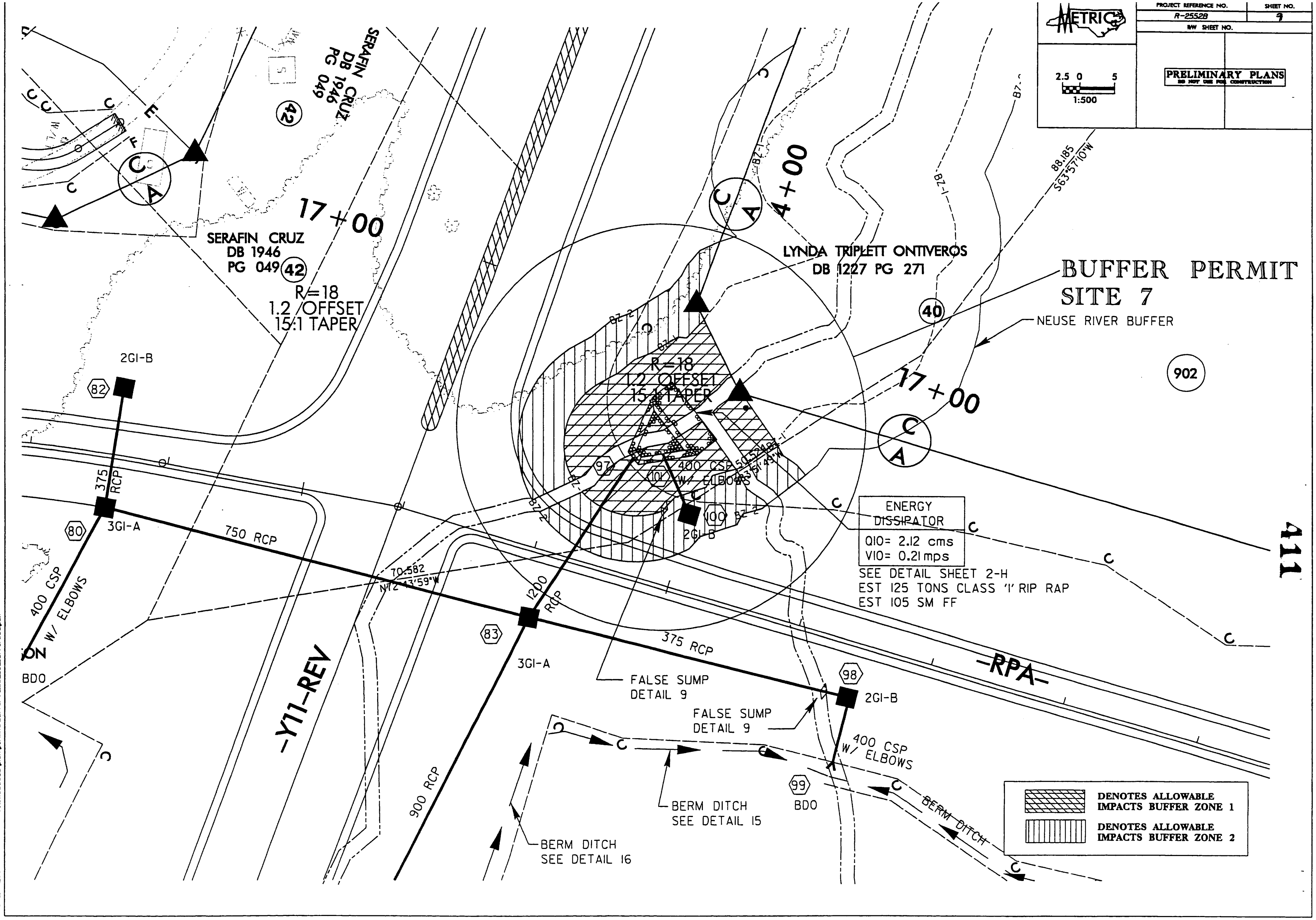
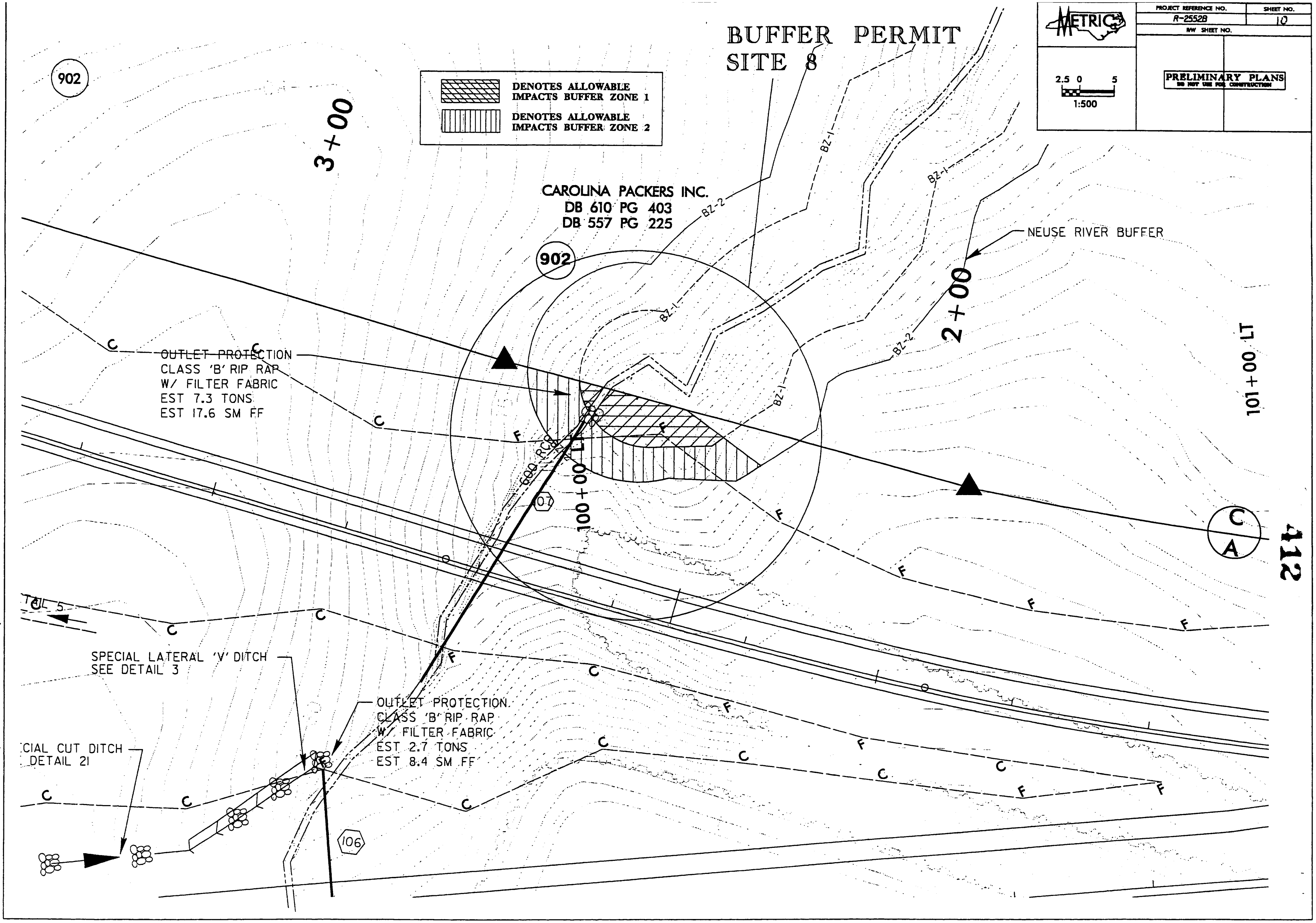


SEE NEXT 2 SHEETS FOR BUFFER PERMIT SITES 7 AND 8

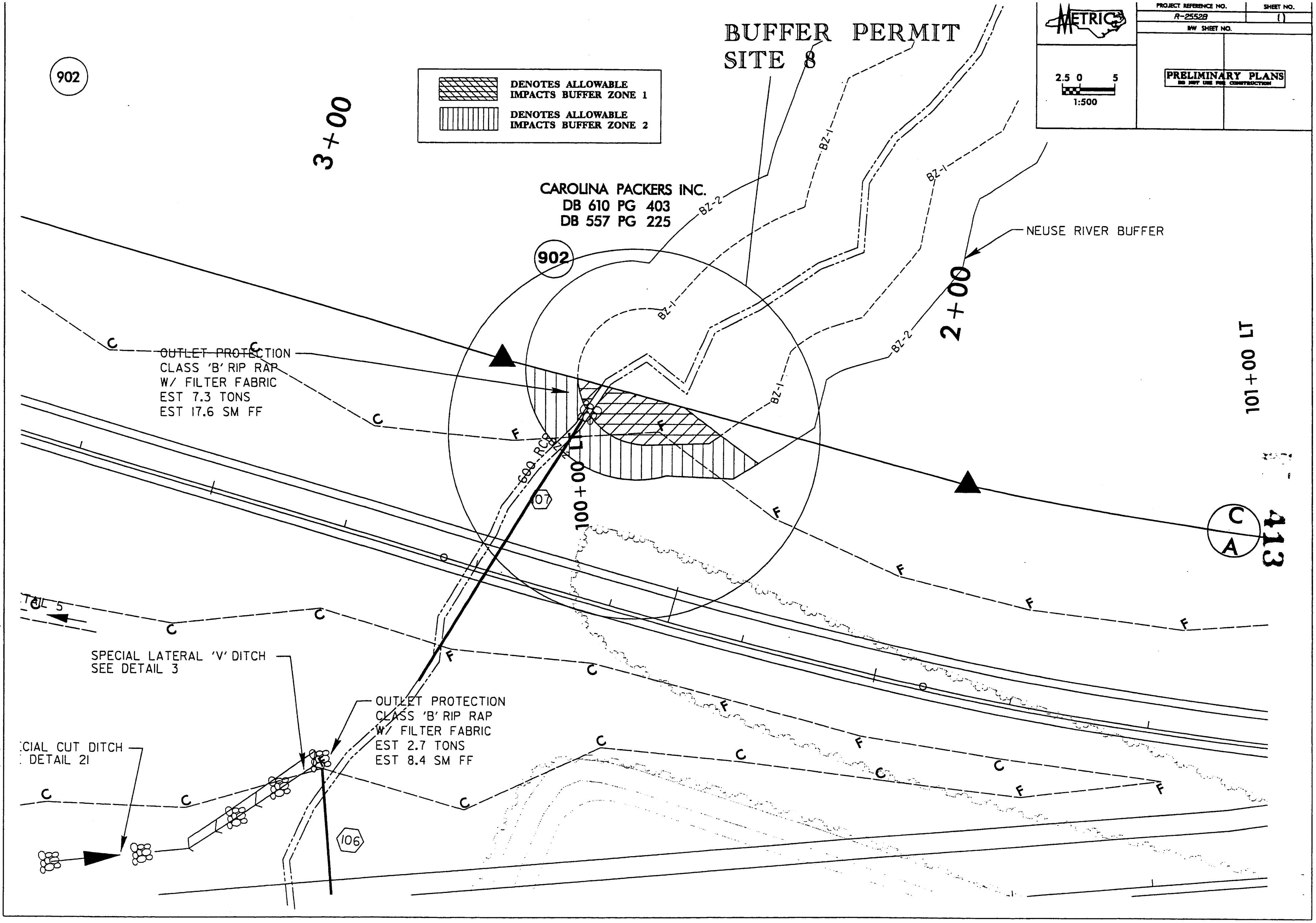

METRIC
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
2
RW SHEET NO.
2.5 0 5
1:500
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
BUFFER PERMIT
SITE 7
NEUSE RIVER BUFFER
SERAFIN CRUZ
DB 1946
PG 049
42
R=18
1.2 OFFSET
15:1 TAPER
17+00
4+00
LYNDA TRIPLETT ONTIVEROS
DB 1227 PG 271
40
902
410
2GI-B
82
375 RCP
3GI-A
80
750 RCP
400 CSP
W/ ELBOWS
BDO
ENERGY
DISSIPATOR
QI0= 2.12 cms
VI0= 0.21 mps
SEE DETAIL SHEET 2-H
EST 125 TONS CLASS 'I' RIP RAP
EST 105 SM FF
88.185
S63°57'10"W
70.582
N22°43'59"W
83
12 BDO
RCP
375 RCP
3GI-A
FALSE SUMP
DETAIL 9
98
2GI-B
FALSE SUMP
DETAIL 9
400 CSP
W/ ELBOWS
99
BDO
BERM DITCH
SEE DETAIL 15
BERM DITCH
BERM DITCH
SEE DETAIL 16
900 RCP
-Y11-REV
-RPA-
DENOTES ALLOWABLE
IMPACTS BUFFER ZONE 1
DENOTES ALLOWABLE
IMPACTS BUFFER ZONE 2
9/24/2004
R:\0105605\Plan\permits\buffer\r-2552bs_buffer08.psh



PROJECT REFERENCE NO.
R-2552B
SHEET NO.
9
RW SHEET NO.
METRIC
2.5 0 5
1:500
PRELIMINARY PLANS
BUFFER PERMIT
SITE 7
NEUSE RIVER BUFFER
902
40
LYNDA TRIPLETT ONTIVEROS
DB 1227 PG 271
SERAFIN CRUZ
DB 1946
PG 049
42
17+00
4+00
R=18
1.2 OFFSET
15:1 TAPER
ENERGY
DISSIPATOR
Q10= 2.12 cms
V10= 0.21mps
SEE DETAIL SHEET 2-H
EST 125 TONS CLASS 'I' RIP RAP
EST 105 SM FF
88.185
S63°57'10"W
70.582
N72°43'59"W
2GI-B
3GI-A
375 RCP
750 RCP
1200 RCP
900 RCP
400 CSP W/ ELBOWS
400 CSP
W/ ELBOWS
82
80
83
97
98
99
100
101
BDO
FALSE SUMP
DETAIL 9
BERM DITCH
SEE DETAIL 15
BERM DITCH
SEE DETAIL 16
BERM DITCH
-Y11-REV
-RPA-
DENOTES ALLOWABLE
IMPACTS BUFFER ZONE 1
DENOTES ALLOWABLE
IMPACTS BUFFER ZONE 2


PROJECT REFERENCE NO. R-2552B
SHEET NO. 10
R/W SHEET NO.
METRIC
2.5 0 5
1:500
PRELIMINARY PLANS
BUFFER PERMIT
SITE 8
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 1
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 2
902
3+00
CAROLINA PACKERS INC.
DB 610 PG 403
DB 557 PG 225
902
NEUSE RIVER BUFFER
2+00
101+00 LT
BZ-1
BZ-2
OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 7.3 TONS
EST 17.6 SM FF
600 RCP
100+00 LT
107
C
A
412
SPECIAL LATERAL 'V' DITCH
SEE DETAIL 3
OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 2.7 TONS
EST 8.4 SM FF
CIAL CUT DITCH
DETAIL 21
106

9/24/2004


BUFFER PERMIT
SITE 8
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 1
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 2
PROJECT REFERENCE NO.
R-2552B
SHEET NO.
RW SHEET NO.
METRIC
2.5 0 5
1:500
PRELIMINARY PLANS
902
3+00
2+00
101+00 LT
100+00 LT
413
CAROLINA PACKERS INC.
DB 610 PG 403
DB 557 PG 225
NEUSE RIVER BUFFER
BZ-1
BZ-2
OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 7.3 TONS
EST 17.6 SM FF
OUTLET PROTECTION
CLASS 'B' RIP RAP
W/ FILTER FABRIC
EST 2.7 TONS
EST 8.4 SM FF
SPECIAL LATERAL 'V' DITCH
SEE DETAIL 3
CIAL CUT DITCH
DETAIL 21
600 RCP
107
106
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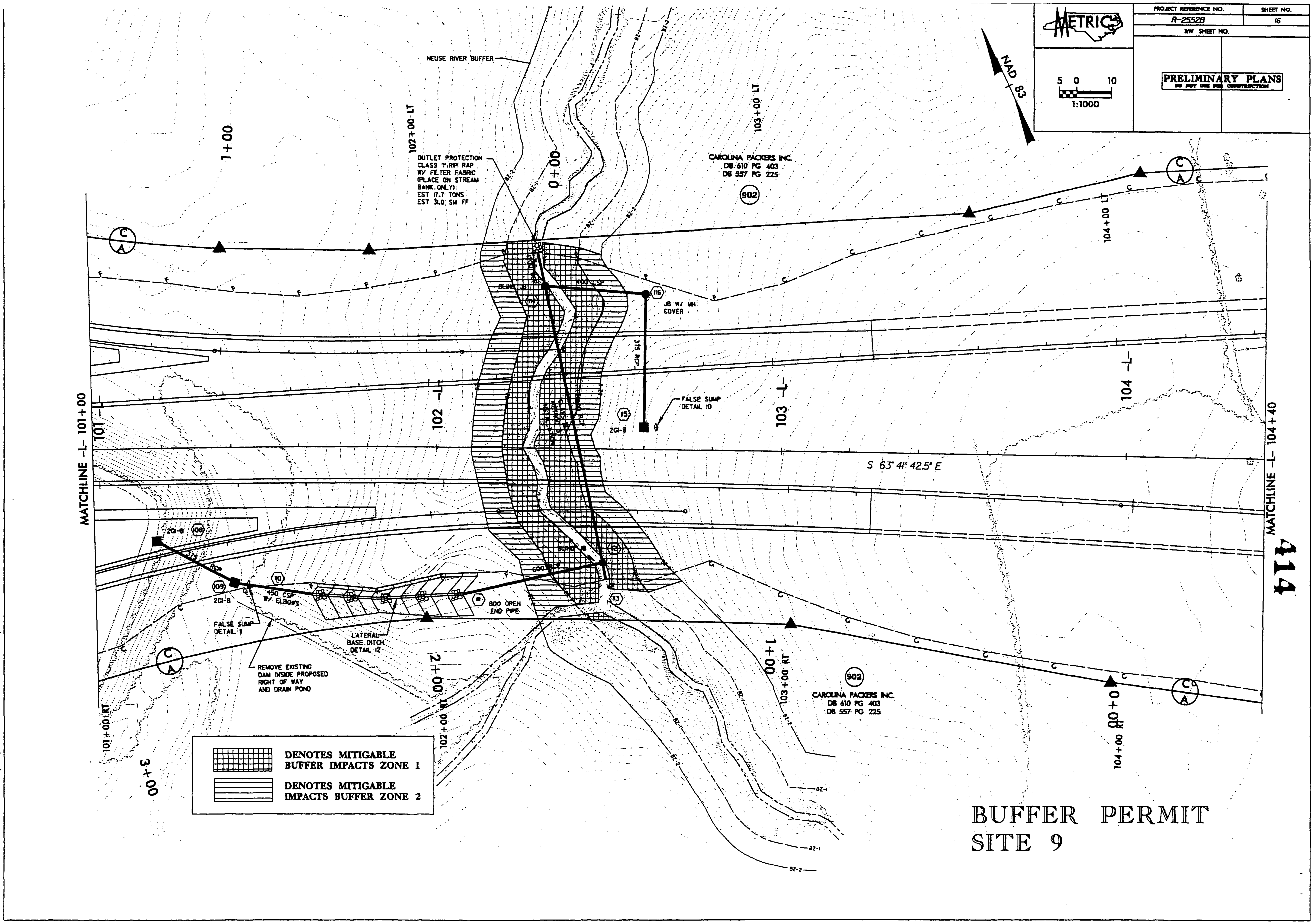
9/24/2004



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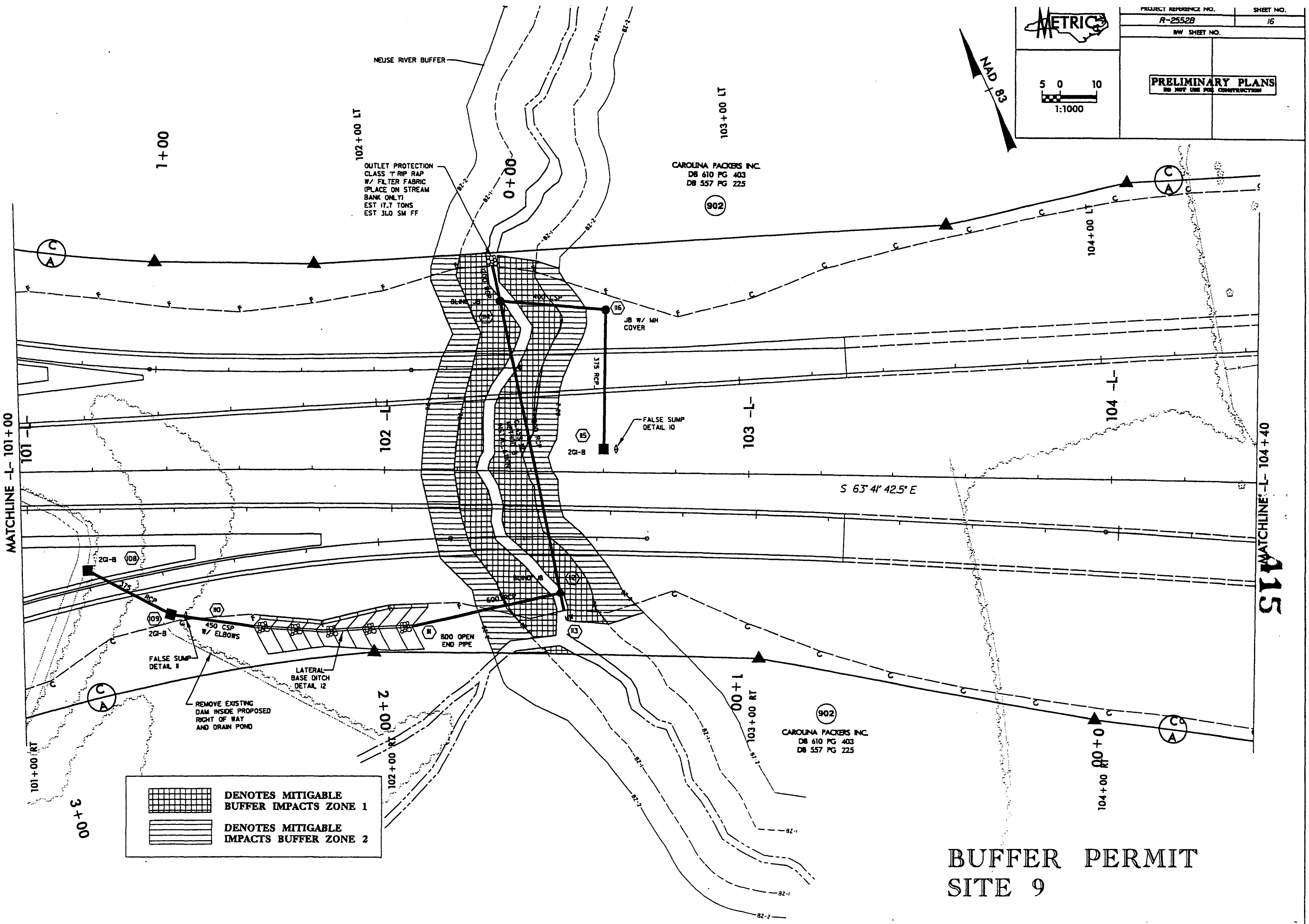
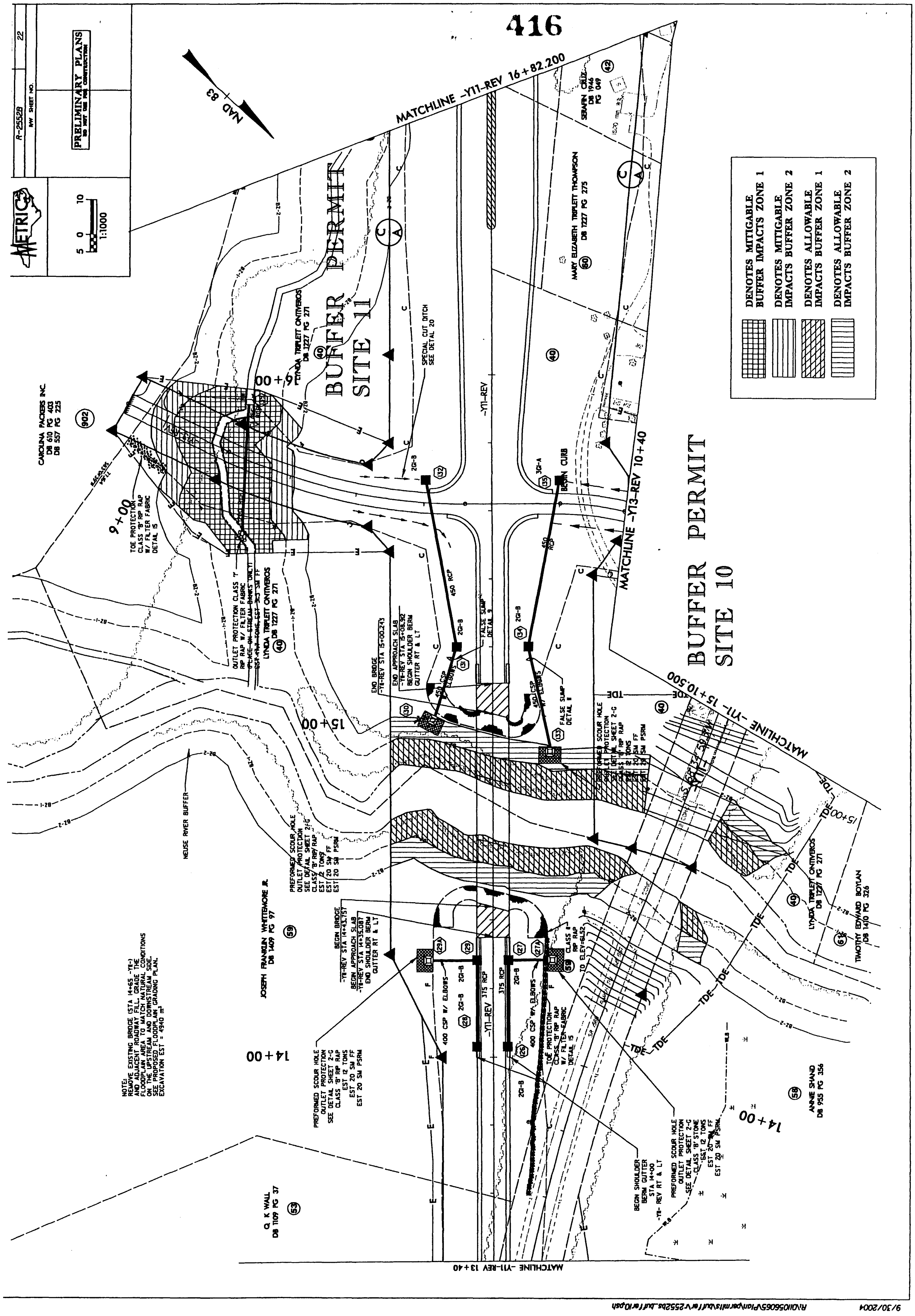
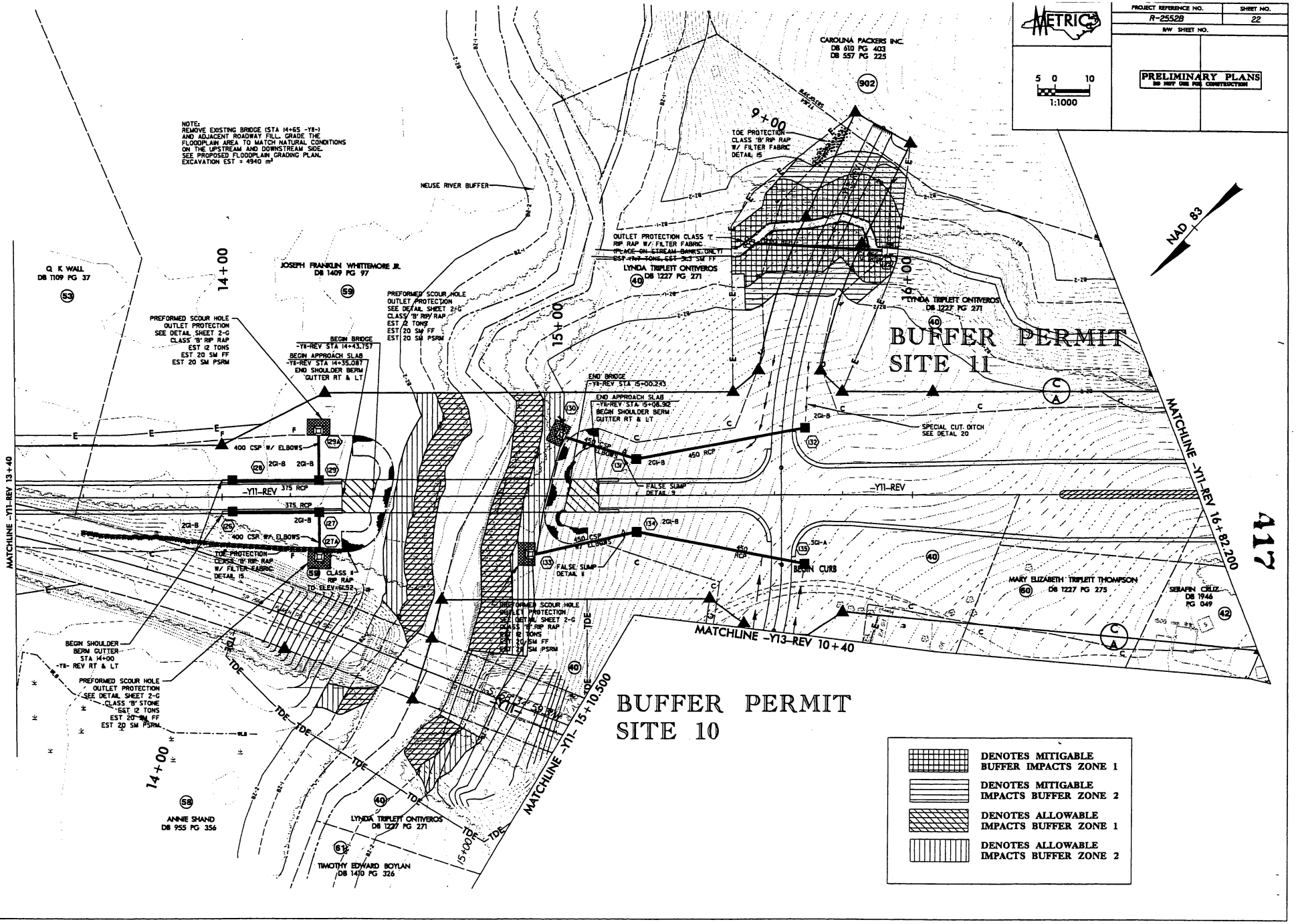

PROJECT REFERENCE NO. R-2552B
SHEET NO. 16
RW SHEET NO.
METRIC
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
NEUSE RIVER BUFFER
OUTLET PROTECTION
CLASS 'I' RIP RAP
W/ FILTER FABRIC
(PLACE ON STREAM
BANK ONLY)
EST 17.7 TONS
EST 31.0 SM FF
CAROLINA PACKERS INC.
DB 610 PG 403
DB 557 PG 225
902
JB W/ MH
COVER
375 RCP
FALSE SUMP
DETAIL 10
2GI-B
S 63° 41' 42.5" E
MATCHLINE -L- 101+00
MATCHLINE -L- 104+40
101 -L-
102 -L-
103 -L-
104 -L-
1+00
0+00
2+00
3+00
101+00 RT
102+00 LT
102+00 RT
103+00 LT
103+00 RT
104+00 LT
104+00 RT
450 CSP
W/ ELBOWS
800 OPEN
END PIPE
FALSE SUMP
DETAIL 11
LATERAL
BASE DITCH
DETAIL 12
REMOVE EXISTING
DAM INSIDE PROPOSED
RIGHT OF WAY
AND DRAIN POND
DENOTES MITIGABLE
BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE
IMPACTS BUFFER ZONE 2
BUFFER PERMIT
SITE 9


R-2552B
22
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
1:1000
NAD 83
MATCHLINE -Y11-REV 16+82.200
BUFFER PERMIT
SITE 11
BUFFER PERMIT
SITE 10
MATCHLINE -Y13-REV 10+40
MATCHLINE -Y11- 15+10.500
MATCHLINE -Y11-REV 13+40
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 1
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 2
CAROLINA PACKERS INC.
DB 610 PG 403
DB 557 PG 225
LYNDA TRIPLETT ONTIVEROS
DB 1227 PG 271
MARY ELIZABETH TRIPLETT THOMPSON
DB 1227 PG 275
SERAFIN CRUZ
DB 1946 PG 049
JOSEPH FRANKLIN WHITTEMORE JR.
DB 1409 PG 97
TIMOTHY EDWARD BOYLAN
DB 1410 PG 326
ANNIE SHAND
DB 955 PG 356
Q. K. WALL
DB 1109 PG 37
NEUSE RIVER BUFFER
SPECIAL CUT DITCH
SEE DETAIL 20
END BRIDGE
END APPROACH SLAB
BEGIN SHOULDER BERM
GUTTER RT & LT
BEGIN BRIDGE
BEGIN APPROACH SLAB
END SHOULDER BERM
GUTTER RT & LT
FALSE SUMP
DETAIL 9
FALSE SUMP
DETAIL 11
BEGIN CURB
PREFORMED SCOUR HOLE
OUTLET PROTECTION
SEE DETAIL SHEET 2-G
TOE PROTECTION
CLASS "B" RIP RAP
W/ FILTER FABRIC
DETAIL 15
OUTLET PROTECTION CLASS "I"
RIP RAP W/ FILTER FABRIC
BEGIN SHOULDER
BERM GUTTER
STA 14+00
-Y11- REV RT & LT
450 RCP
375 RCP
400 CSP W/ ELBOWS
450 CSP W/ ELBOWS
2GI-B
-Y11-REV
9+00
15+00
14+00
NOTE:
REMOVE EXISTING BRIDGE (STA 14+65 -Y11-)
AND ADJACENT ROADWAY FILL. GRADE THE
FLOODPLAIN AREA TO MATCH NATURAL CONDITIONS
ON THE UPSTREAM AND DOWNSTREAM SIDE.
SEE PROPOSED FLOODPLAIN GRADING PLAN.
9/30/2004


METRIC
5 0 10
1:1000
PROJECT REFERENCE NO. R-2552B
SHEET NO. 22
RW SHEET NO.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
BUFFER PERMIT SITE 11
BUFFER PERMIT SITE 10
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225
902
9+00
TOE PROTECTION CLASS 'B' RIP RAP W/ FILTER FABRIC DETAIL 15
NEUSE RIVER BUFFER
NOTE: REMOVE EXISTING BRIDGE (STA 14+65 -Y11-) AND ADJACENT ROADWAY FILL. GRADE THE FLOODPLAIN AREA TO MATCH NATURAL CONDITIONS ON THE UPSTREAM AND DOWNSTREAM SIDE. SEE PROPOSED FLOODPLAIN GRADING PLAN. EXCAVATION EST = 4940 m³
OUTLET PROTECTION CLASS 'I' RIP RAP W/ FILTER FABRIC PLACE ON STREAM BANKS ONLY EST -YW- TONS EST 3 SM FF
LYNDA TRIPLETT ONTIVEROS DB 1227 PG 271
40
14+00
15+00
16+00
Q. K WALL DB 1109 PG 37
93
JOSEPH FRANKLIN WHITTEMORE JR. DB 1409 PG 97
59
PREFORMED SCOUR HOLE OUTLET PROTECTION SEE DETAIL SHEET 2-G CLASS 'B' RIP RAP EST 12 TONS EST 20 SM FF EST 20 SM PSRM
BEGIN BRIDGE -Y11-REV STA 14+43.757
BEGIN APPROACH SLAB -Y11-REV STA 14+35.087
END SHOULDER BERM GUTTER RT & LT
END BRIDGE -Y11-REV STA 15+00.243
END APPROACH SLAB -Y11-REV STA 15+08.92
BEGIN SHOULDER BERM GUTTER RT & LT
400 CSP W/ ELBOWS
450 CSP ELBOWS
450 RCP
375 RCP
2GI-B
2GI-A
-Y11-REV
FALSE SUMP DETAIL 9
FALSE SUMP DETAIL 8
SPECIAL CUT DITCH SEE DETAIL 20
BEGIN CURB
MATCHLINE -Y11-REV 13+40
MATCHLINE -Y11-REV 16+82.200
MATCHLINE -Y13-REV 10+40
MATCHLINE -Y11- 15+10.500
TOE PROTECTION CLASS 'B' RIP RAP W/ FILTER FABRIC DETAIL 15
CLASS B RIP RAP TO ELEV 65.52
TDE
BEGIN SHOULDER BERM GUTTER STA 14+00 -Y8- REV RT & LT
PREFORMED SCOUR HOLE OUTLET PROTECTION SEE DETAIL SHEET 2-G CLASS 'B' STONE EST 12 TONS EST 20 SM FF EST 20 SM PSRM
ANNIE SHAND DB 955 PG 356
58
LYNDA TRIPLETT ONTIVEROS DB 1227 PG 271
61
TIMOTHY EDWARD BOYLAN DB 1410 PG 326
MARY ELIZABETH TRIPLETT THOMPSON DB 1227 PG 275
60
SEBASTIN CRUZ DB 1946 PG 049
42
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 1
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 2
417
9/30/2004
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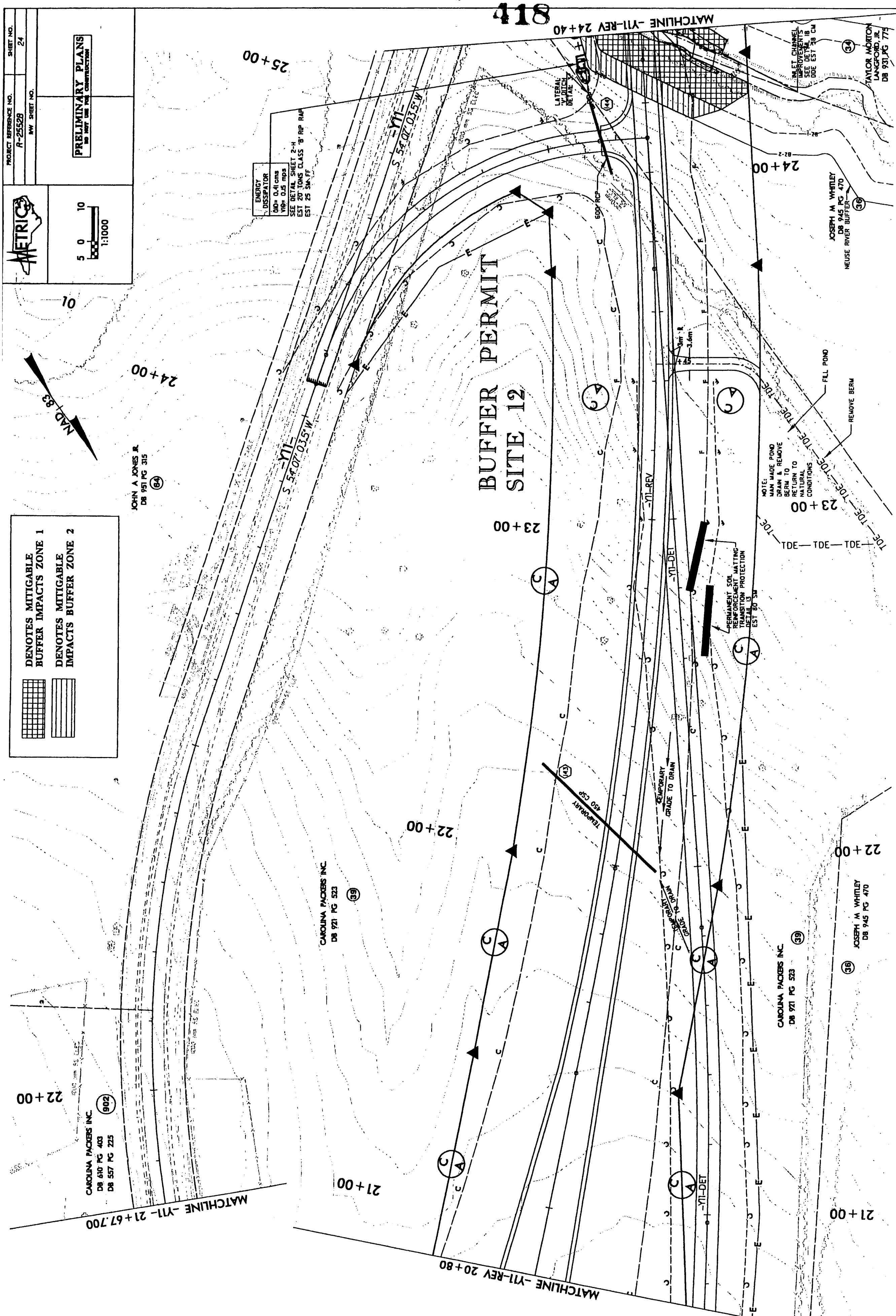
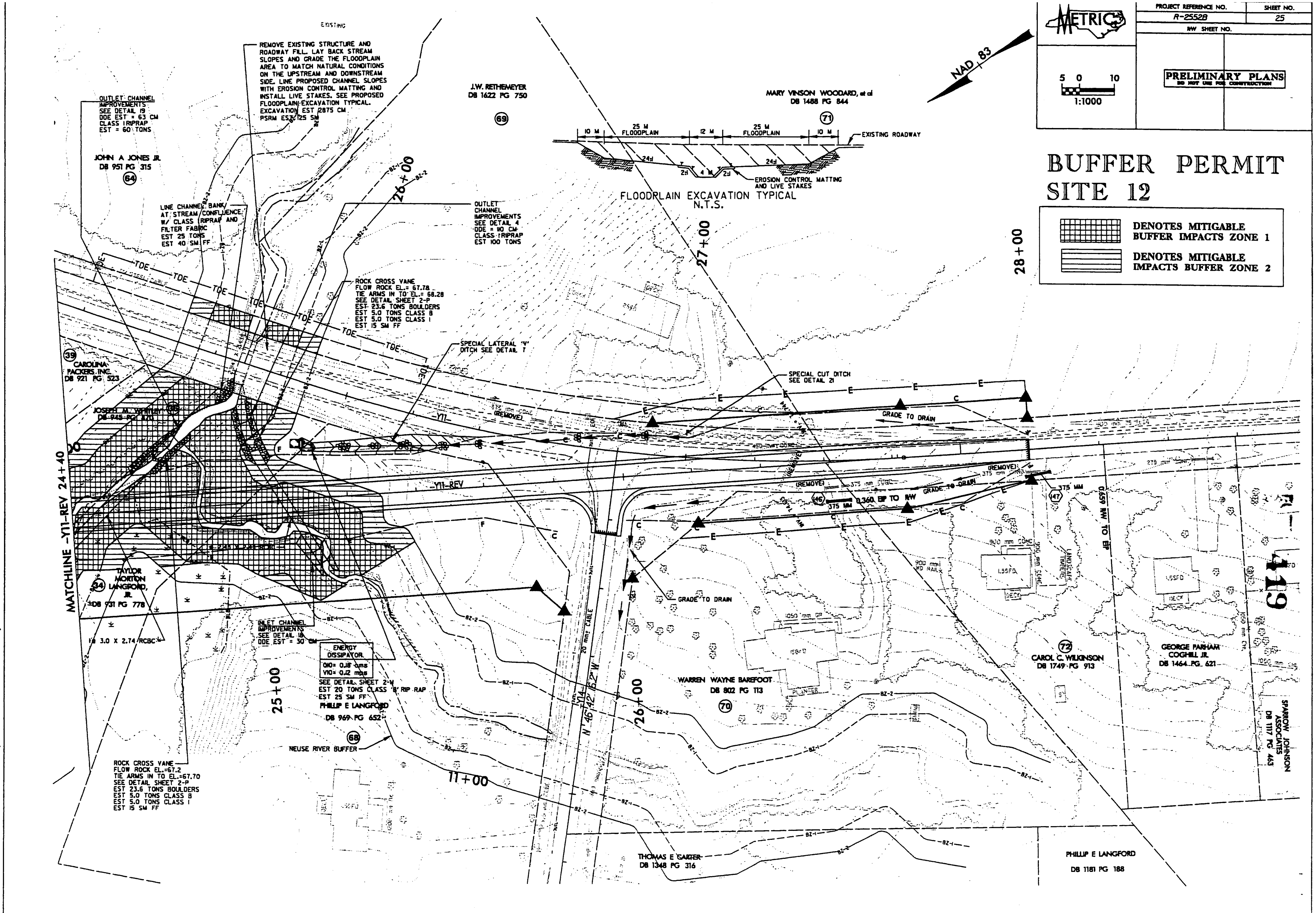
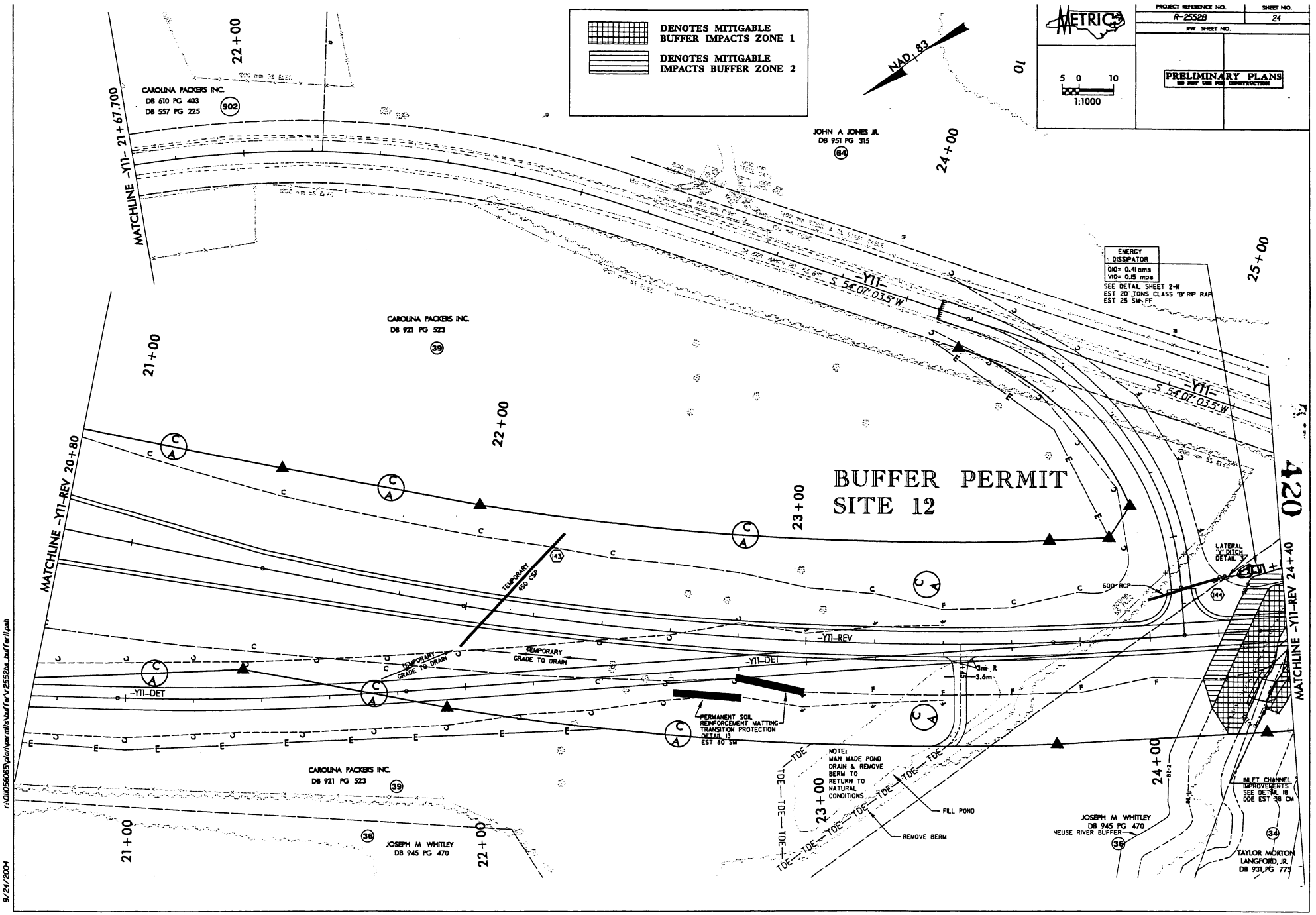
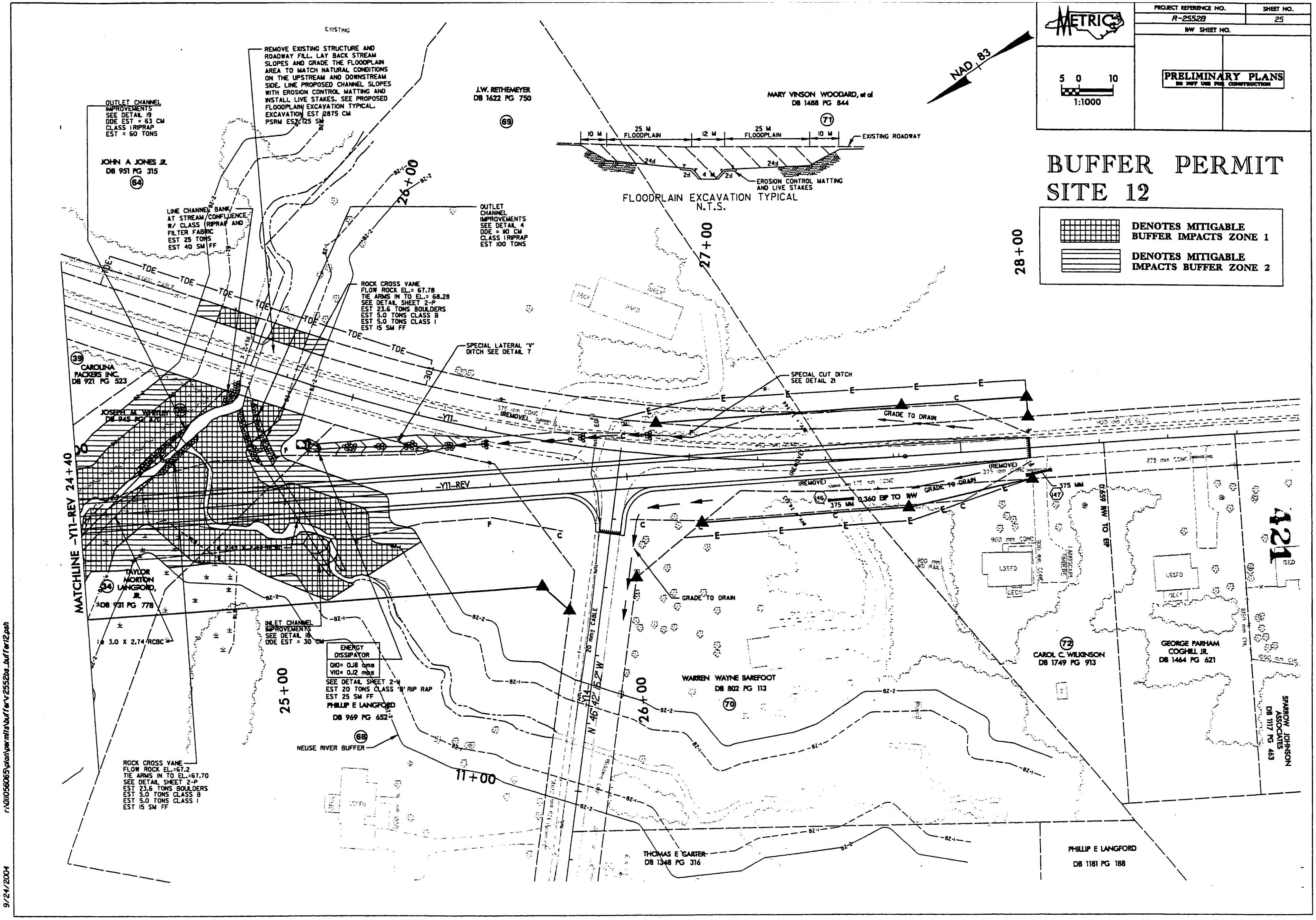

PROJECT REFERENCE NO. R-2552B
SHEET NO. 24
RW SHEET NO.
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
METRIC
1:1000
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
BUFFER PERMIT SITE 12
NAD 83
ENERGY DISSIPATOR
Q10= 0.41 cms
V10= 0.15 mps
SEE DETAIL SHEET 2-H
EST 20 TONS CLASS 'B' RIP RAP
EST 25 Sm FF
-Y11- S 54°07'03.5"W
-Y11-REV
-Y11-DET
600 RCP
TEMPORARY 450 CSP
TEMPORARY GRADE TO DRAIN
PERMANENT SOIL REINFORCEMENT MATTING TRANSITION PROTECTION DETAIL 13 EST 80 Sm
NOTE: MAN MADE POND DRAIN & REMOVE BERM TO RETURN TO NATURAL CONDITIONS
FILL POND
REMOVE BERM
INLET CHANNEL IMPROVEMENTS SEE DETAIL 18 DDE EST 38 CM
LATERAL V DITCH DETAIL
NEUSE RIVER BUFFER
JOHN A JONES JR. DB 951 PG 315
CAROLINA PACKERS INC. DB 921 PG 523
JOSEPH M WHITLEY DB 945 PG 470
TAYLOR MORTON LANGFORD, JR. DB 931 PG 775
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225
MATCHLINE -Y11-REV 24+40
MATCHLINE -Y11- 21+67.700
MATCHLINE -Y11-REV 20+80
25+00
24+00
23+00
22+00
21+00


PROJECT REFERENCE NO.
R-2552B
SHEET NO.
25
RW SHEET NO.
METRIC
5 0 10
1:1000
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
BUFFER PERMIT
SITE 12
DENOTES MITIGABLE BUFFER IMPACTS ZONE 1
DENOTES MITIGABLE IMPACTS BUFFER ZONE 2
EXISTING
REMOVE EXISTING STRUCTURE AND ROADWAY FILL. LAY BACK STREAM SLOPES AND GRADE THE FLOODPLAIN AREA TO MATCH NATURAL CONDITIONS ON THE UPSTREAM AND DOWNSTREAM SIDE. LINE PROPOSED CHANNEL SLOPES WITH EROSION CONTROL MATTING AND INSTALL LIVE STAKES. SEE PROPOSED FLOODPLAIN EXCAVATION TYPICAL. EXCAVATION EST 2875 CM PSRM EST 125 SM
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 19 DDE EST = 63 CM CLASS I RIPRAP EST = 60 TONS
J.W. RETHEMEYER
DB 1622 PG 750
69
MARY VINSON WOODARD, et al
DB 1488 PG 844
71
10 M
25 M FLOODPLAIN
12 M
25 M FLOODPLAIN
10 M
EXISTING ROADWAY
EROSION CONTROL MATTING AND LIVE STAKES
FLOODPLAIN EXCAVATION TYPICAL
N.T.S.
JOHN A JONES JR.
DB 951 PG 315
64
LINE CHANNEL BANK AT STREAM CONFLUENCE W/ CLASS I RIPRAP AND FILTER FABRIC EST 25 TONS EST 40 SM FF
OUTLET CHANNEL IMPROVEMENTS SEE DETAIL 4 DDE = 110 CM CLASS I RIPRAP EST 100 TONS
26+00
27+00
28+00
ROCK CROSS VANE FLOW ROCK EL.= 67.78 TIE ARMS IN TO EL.= 68.28 SEE DETAIL SHEET 2-P EST 23.6 TONS BOULDERS EST 5.0 TONS CLASS B EST 5.0 TONS CLASS I EST 15 SM FF
SPECIAL LATERAL "V" DITCH SEE DETAIL 7
SPECIAL CUT DITCH SEE DETAIL 21
39
CAROLINA PACKERS, INC.
DB 921 PG 523
JOSEPH M. WHITLEY
DB 945 PG 470
-Y11-
-Y11-REV
GRADE TO DRAIN
(REMOVE)
375 MM
0.360 EIP TO RW
0.659 RW TO EIP
MATCHLINE -Y11-REV 24+40
TAYLOR MORTON LANGFORD, JR.
34
DB 931 PG 778
3.0 X 2.74 RCBC
INLET CHANNEL IMPROVEMENTS SEE DETAIL 18 DDE EST = 30 CM
ENERGY DISSIPATOR
Q10= 0.18 cms
V10= 0.12 mps
SEE DETAIL SHEET 2-M EST 20 TONS CLASS 'B' RIP RAP EST 25 SM FF
PHILLIP E LANGFORD
DB 969 PG 652
68
NEUSE RIVER BUFFER
25+00
26+00
11+00
N 46° 42' 52" W
20 mm CABLE
ROCK CROSS VANE FLOW ROCK EL.=67.2 TIE ARMS IN TO EL.=67.70 SEE DETAIL SHEET 2-P EST 23.6 TONS BOULDERS EST 5.0 TONS CLASS B EST 5.0 TONS CLASS I EST 15 SM FF
WARREN WAYNE BAREFOOT
DB 802 PG 113
70
CAROL C. WILKINSON
DB 1749 PG 913
72
GEORGE PARHAM COGHILL JR.
DB 1464 PG 621
SPARROW JOHNSON ASSOCIATES
DB 1117 PG 463
THOMAS E CARTER
DB 1348 PG 316
PHILLIP E LANGFORD
DB 1181 PG 188
419





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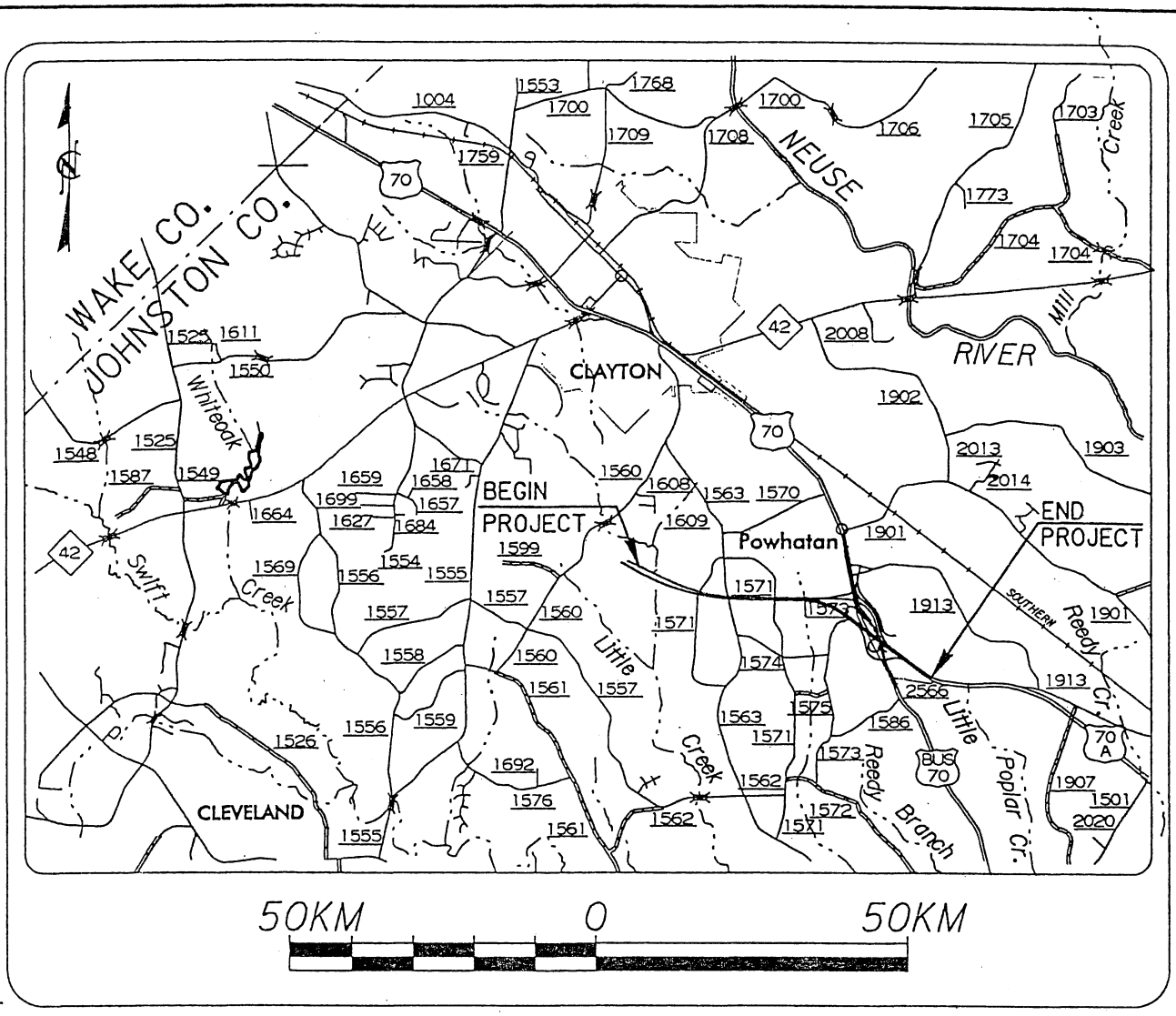
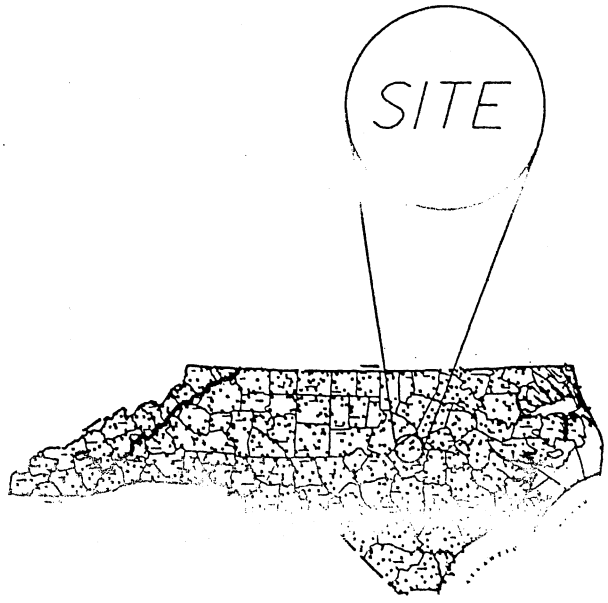
9/24/2004



VICINITY MAP



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

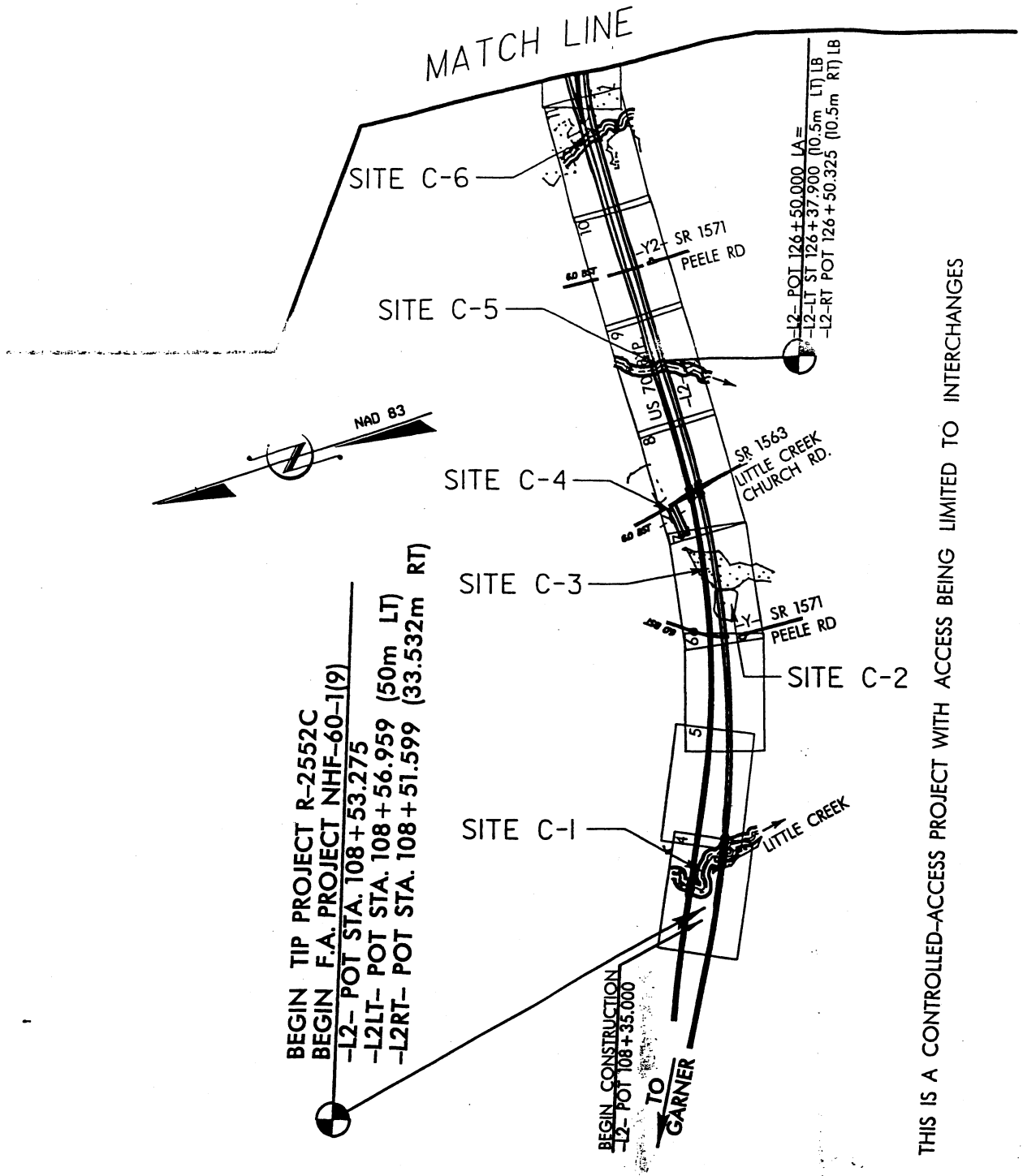
JOHNSTON COUNTY

8.T311002 R-2552C

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

SCALE AS SHOWN

SHEET 1 OF 23 SEPT. 15, 2004



SITE MAP

0 500M 1000M

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

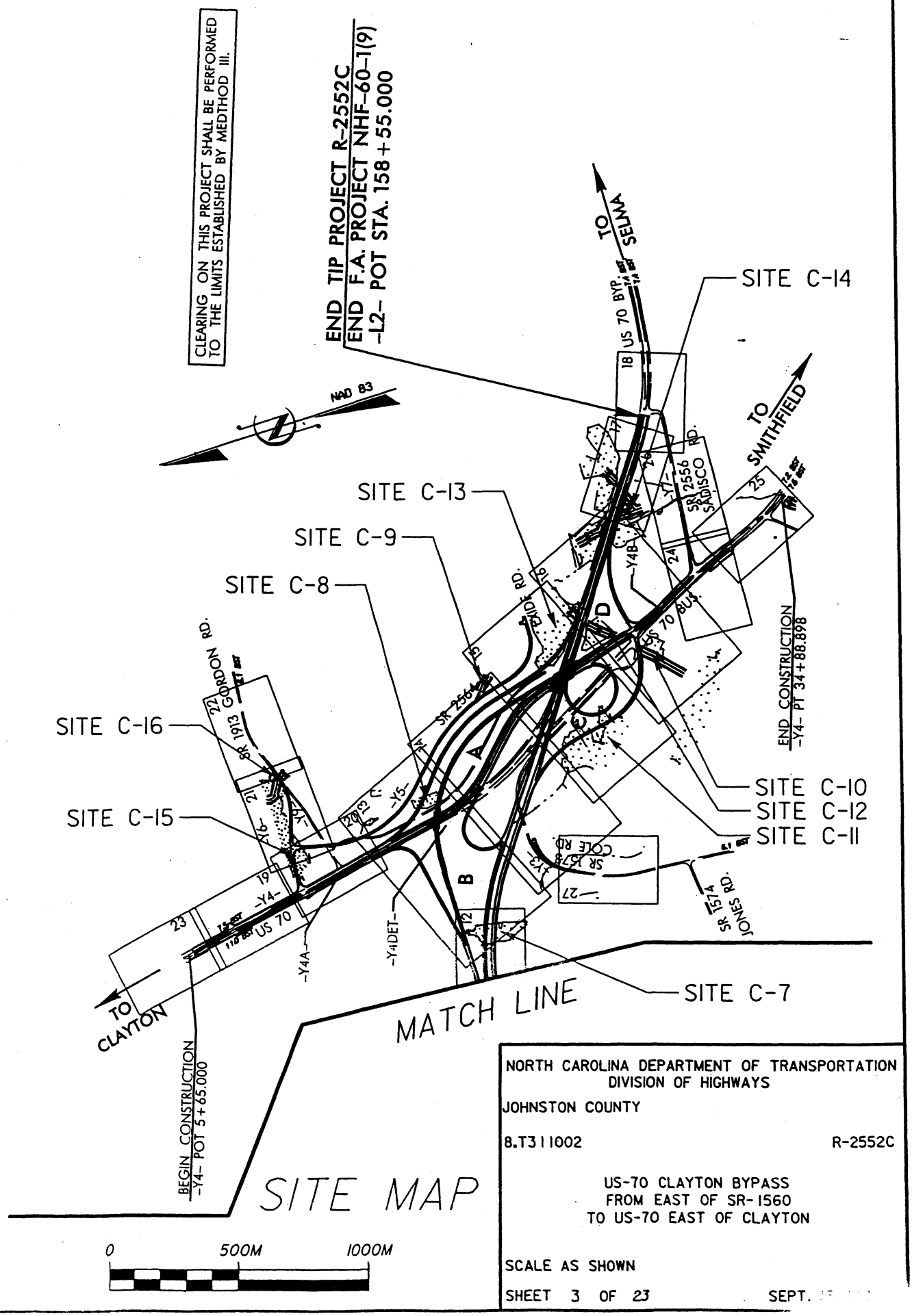
JOHNSTON COUNTY

8.T31 1002 R-2552C

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

SCALE AS SHOWN

SHEET 2 OF 23 SEPT. 15, 2004



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

8.T31 1002 R-2552C

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

SCALE AS SHOWN

SHEET 3 OF 23 SEPT.

PROPERTY OWNERS

NAME AND ADDRESS

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

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

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

PROPERTY OWNERS

NAME AND ADDRESS

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

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

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

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

Date: September 15, 2004

Dsn. By: RNS

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

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

SHT. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
	115	L2 RT	104+80 RT	2-GI	0.84	2.1	207.6	63	199	2.34	0.0	6	6	YES	6.9	1.8	8.6	2.0	G.S.	
	114	L2 RT	104+77 LT	2-GI	0.48	1.2	118.6	36	199	2.34	0.0	6	6	YES	3.1	1.2	3.8	1.3	G.S.	
	113	L2 LT	104+83 RT	2-GI	0.67	1.7	165.6	50	199	2.34	0.0	6	6	YES	5.3	1.6	6.6	1.7	G.S.	
	112	L2 LT	104+85 LT	2-GI	0.75	1.9	185.3	56	179	2.34	0.0	6	6	YES	4.6	1.5	5.7	1.6	G.S.	
	116	L2 LT	106+84 LT	2-GI	0.81	2.0	200.2	61	199	3.82	0.0	6	6	YES	4.7	1.8	5.9	2.1	G.S.	
	117	L2 LT	106+84 RT	2-GI	0.75	1.9	185.3	56	199	3.82	0.0	6	6	YES	5.8	2.0	7.3	2.3	G.S.	
	120	L2 LT	107+81 LT	2-GI	0.50	1.2	123.6	38	99	1.10	0.0	6	6	YES	2.8	0.8	3.5	0.9	G.S.	
	121	L2 LT	107+81 RT	2-GI	0.47	1.2	116.1	35	99	1.10	0.0	6	6	YES	3.4	0.9	4.3	1.0	G.S.	
4		L2 LT	108+56 LT	2-GI	0.58	1.4	143.3	44	92	SAG	0.0	6	6	YES	6.0	0.5	7.5	0.6	G.S.	
4		L2 LT	108+51 RT	2-GI	0.84	2.1	207.6	63	85	SAG	0.0	6	6	YES	5.1	0.5	6.5	0.6	G.S.	
4		L2 LT	109+06 RT	OPEN	6.69	16.5	1653.1	504	1549	N/A	N/A	N/A	N/A	N/A	38.7	N/A	49.7	N/A	N/A	1
4	119	L2 RT	106+79 RT	2-GI	0.90	2.2	222.4	68	198	2.34	0.0	6	6	YES	6.6	1.7	8.2	2.0	G.S.	
4	118	L2 RT	106+78 LT	2-GI	0.62	1.5	153.2	47	200	2.34	0.0	6	6	YES	4.3	1.4	5.4	1.6	G.S.	
4		L2 RT	108+65 LT	2-GI	0.65	1.6	160.6	49	186	0.20	0.0	6	6	YES	5.9	0.5	7.4	0.6	G.S.	
4		L2 RT	108+77.5 RT	2-GI	0.59	1.5	145.8	44	234	SAG	0.0	6	6	YES	4.8	0.5	6.1	0.5	G.S.	
4		L2 RT	109+15 RT	2-GI	0.00	0.0	0.0	0	0	0.58	0.0	6	6	N/A	N/A	N/A	N/A	N/A	N/A	
4		L2 RT	109+97 RT	DITCH	3.00	7.4	741.3	226	848	0.61	3.0	3	3	YES	19.0	1.7	24.2	2.0	G.S.	1
4		L2 RT	108+77.5 LT	2-GI	0.12	0.3	29.7	9	0	N/A	N/A	N/A	N/A	NO	1.7	N/A	2.1	N/A	N/A	
4		L2 RT	109+54 LT	2-GI	0.04	0.1	10.4	3	0	N/A	N/A	N/A	N/A	NO	0.6	N/A	0.7	N/A	N/A	
4		L2 RT	109+79 LT	OPEN	0.16	0.4	40.0	12	0	N/A	N/A	N/A	N/A	NO	2.3	N/A	2.9	N/A	PSH	1
4		L2 LT	110+37 LT	2-GI	0.12	0.3	29.7	9	0	N/A	N/A	N/A	N/A	NO	1.6	N/A	1.9	N/A	N/A	
4		L2 LT	109+95 LT	OPEN	0.12	0.3	29.7	9	0	N/A	N/A	N/A	N/A	NO	1.6	N/A	1.9	N/A	PSH	1
5		L2 RT	111+12 LT	2-GI	0.11	0.3	27.2	8	0	N/A	N/A	N/A	N/A	N/A	1.6	N/A	1.9	N/A	N/A	3
5		L2 RT	112+77 LT	OTCB	0.47	1.2	116.1	35	102	3.98	9.0	4	4	YES	3.4	0.8	4.2	0.9	G.S.	
5		L2 LT	112+70 LT	2-GI	0.53	1.3	131.0	40	129	3.85	0.0	6	6	YES	4.1	1.8	5.1	1.9	G.S.	
5		L2 LT	112+70 RT	2-GI	0.31	0.8	76.6	23	129	3.85	0.0	6	6	YES	2.0	1.2	2.5	1.3	G.S.	
5		L2 LT	111+16 LT	2-GI	0.47	1.2	116.1	35	153	3.34	0.0	6	6	YES	4.5	1.7	5.6	1.9	G.S.	
4		L2 RT	110+30 LT	DITCH	3.20	7.9	790.7	241	644	2.00	6.0	3	3	YES	15.2	1.7	20.4	2.0	G.S.	1, 2

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

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

NOTE 1: TOTAL FOR THIS SYSTEM

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

NOTE 3: TREATMENT IS PROVIDED DOWNSTREAM

A-27

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

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

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

Date: September 15, 2004
Dsn. By: RNS

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

1
4.28

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

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

NOTE 1: TOTAL FOR THIS SYSTEM

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

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

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

Date: September 15, 2004
Dsn. By: RNS

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

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PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
* SIDE SLOPES TAKEN FROM CROSS SECTIONS

NOTE 1: TOTAL FOR THIS SYSTEM

R-2552C Johnston Co. Affected Buffer Areas **Site # 6**

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

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

Date: September 15, 2004
Dsn. By: RNS

SHT. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
10		L2	129+68 RT	2-GI	0.38	0.9	93.9	29	239	0.77	0.0	6	6	YES	3.7	0.8	4.6	0.9	G.S.	
10		L2	129+68 M	2-GI	0.50	1.2	123.6	38	239	0.77	0.0	8	8	YES	2.9	0.7	3.6	0.7	G.S.	
10		L2	129+68 LT	2-GI	0.54	1.3	133.4	41	239	0.85	0.0	6	6	YES	4.8	1.0	6.1	1.1	G.S.	
10		L2	130+20 LT	2-GI	0.15	0.4	37.1	11	51	0.85	0.0	6	6	YES	1.5	0.6	1.9	0.7	G.S.	
10		L2	131+49 RT	2-GI	0.47	1.2	116.1	35	179	1.34	0.0	6	6	YES	4.5	1.1	5.7	1.3	G.S.	
10		L2	131+49 M	2-GI	0.38	0.9	93.9	29	179	1.34	0.0	8	8	YES	2.4	0.8	3.0	0.8	G.S.	
10		L2	131+47 LT	DITCH	3.17	7.8	783.3	239	881	1.34	4.0	3	3	YES	17.6	1.9	23.3	2.3	G.S.	
11		L2	133+60 LT	DITCH	4.70	11.6	1161.4	354	1218	0.33	4.0	3	3	YES	23.0	1.4	31.2	1.6	G.S.	1, 2
11		L2	132+60 M	2-GI	0.23	0.6	56.8	17	110	1.34	0.0	8	8	YES	1.6	0.7	2.0	0.7	G.S.	
11		L2	132+60 RT	2-GI	0.60	1.5	148.3	45	110	1.34	0.0	6	6	YES	3.2	0.9	8.1	1.6	G.S.	
11		L2	133+05 RT	DITCH	3.40	8.4	840.1	256	245	1.00	1.2	3	3	NO	10.8	1.2	14.8	2.2	G.S.	1
11		L2	133+86 M	2-GI	0.43	1.1	106.3	32	169	SAG	0.0	8	8	YES	3.6	0.4	4.6	0.5	G.S.	
11		L2	133+86 RT	2-GI	0.07	0.2	17.3	5	0	N/A	N/A	N/A	N/A	NO	1.0	N/A	1.2	N/A	N/A	
11		L2	133+36 RT	2-GI	0.09	0.2	22.2	7	0	N/A	N/A	N/A	N/A	NO	1.3	N/A	1.6	N/A	N/A	
11		L2	133+36 RT	OPEN	0.59	1.5	145.8	44	N/A	N/A	N/A	N/A	N/A	NO	5.6	N/A	7.1	N/A	PSH	1
11		L2	134+55 M	2-GI	0.45	1.1	111.2	34	157	SAG	0.0	6	6	YES	3.8	0.5	4.8	0.5	G.S.	
11		L2	134+55 RT	2-GI	0.20	0.5	49.4	15	0	N/A	N/A	N/A	N/A	NO	2.8	N/A	3.5	N/A	N/A	
11		L2	134+55 RT	OPEN	0.65	1.6	160.6	49	N/A	N/A	N/A	N/A	N/A	NO	6.4	N/A	8.0	N/A	RIP RAP PAD	1, 3
12		FLYOVER	2+68 RT	2-GI	0.80	2.0	197.7	60	425	SAG	0.0	6	6	YES	3.9	0.5	5.0	0.5	G.S.	
12		FLYOVER	2+68 LT	2-GI	0.75	1.9	185.3	56	239	0.69	0.0	6	6	YES	6.2	0.8	7.9	0.9	G.S.	
12		FLYOVER	2+06 LT	2-GI	0.15	0.4	37.1	11	61	0.69	0.0	6	6	YES	1.6	0.6	2.0	0.6	G.S.	
11		FLYOVER	1+00 LT	DITCH	3.25	8.0	803.1	245	802	0.81	4.0	3	3	YES	18.9	1.2	25.0	1.3	G.S.	1
11		FLYOVER	0+70 LT	2-GI	0.13	0.3	32.1	10	N/A	0.22	N/A	N/A	N/A	NO	1.8	N/A	2.3	N/A	G.S.	
11		FLYOVER	1+16.4 LT	2-GI	0.14	0.3	34.6	11	N/A	SAG	N/A	N/A	N/A	NO	2.0	N/A	2.5	N/A	G.S.	
11		FLYOVER	1+16.4 LT	OPEN	0.27	0.7	66.7	20	N/A	0.90	N/A	N/A	N/A	NO	3.8	N/A	4.8	N/A	PSH	1

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OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
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LS = LEVEL SPREADER
* SIDE SLOPES TAKEN FROM CROSS SECTIONS

NOTE 1: TOTAL FOR THIS SYSTEM
NOTE 2: No credit is claimed for 4M Base Ditch from -l2- Sta. 132+00 to Sta. 133+30 LT.
NOTE 3: OUTLETS INTO WETLAND

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

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

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

Date: September 15, 2004
Dsn. By: RNS

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

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2GI = 2 GRATED INLET
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OTCB = OPEN THROAT CATCH BASIN
OPEN = OPEN END PIPE
PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
* SIDE SLOPES TAKEN FROM CROSS SECTIONS

NOTE 1: TOTAL FOR THIS SYSTEM

NOTE 3: TREATMENT IS PROVIDED DOWNSTREAM

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

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

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

Date: September 15, 2004
Dsn. By: RNS

SHT. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
16		Y-4	27+40 RT	DITCH	0.31	0.8	76.6	23	150	2.00	0.0	5	4	YES	1.6	0.9	2.0	1.0	G.S.	1

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PSH = PRE FORMED SCOUR HOLE
LS = LEVEL SPREADER
* SIDE SLOPES TAKEN FROM CROSS SECTIONS

NOTE 1: TOTAL FOR THIS SYSTEM

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

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

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

Date: September 15, 2004
Dsn. By: RNS

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

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LS = LEVEL SPREADER
* SIDE SLOPES TAKEN FROM CROSS SECTIONS

NOTE 1: TOTAL FOR THIS SYSTEM

NOTE 3: TREATMENT IS PROVIDED DOWNSTREAM

NOTE 4: EXISTING DITCH

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

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

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

Date: September 15, 2004
Dsn. By: RNS

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

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

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

NOTE 1: TOTAL FOR THIS SYSTEM

R-2552C Johnston Co. Affected Buffer Areas **Site # 14**

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

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

Date: September 15, 2004
Dsn. By: RNS

SHT. No.	Structure No.	Line	Station	STR. Type	Total D.A. ha	Total D.A. (ac)	Required length for treatment (ft.)	Required length for treatment (m.)	PROVIDED Length (m)	Channel Slope (%)	BASE WID (m)	SIDE SLOPES * Z1	SIDE SLOPES * Z2	Treated Discharge?	Q2 cfs	V 2 fps	Q10 cfs	V 10 fps	Treatment Provided	Remarks
16		L2	152+62 LT	DITCH	0.22	0.5	54.4	17	92	3.50	0.0	4	3	YES	2.0	1.5	2.5	1.7	G.S.	1, 4
16		L2	152+64 RT	2-GI	0.59	1.5	145.8	44	307	2.09	0.0	6	6	YES	3.7	1.3	4.7	1.4	G.S.	
16		RAMP D	2+40 LT	2-GI	2.20	5.4	543.6	166	284	0.32	0.0	6	6	YES	12.2	1.0	16.4	1.1	G.S.	
16		L2	153+33 M	2-GI	0.24	0.6	59.3	18	165	0.44	0.0	6	6	YES	1.6	0.5	2.0	0.5	G.S.	
16		L2	153+80 RT	DITCH	3.70	9.1	914.3	279	796	0.24	1.0	3	3	YES	17.5	1.3	23.7	1.5	G.S.	1
17		L2	154+64.5	2-GI	0.40	1.0	98.8	30	283	SAG	0.0	5	5	YES	2.8	0.4	3.5	0.5	G.S.	1
17		L2	156+20 M	2-GI	0.22	0.5	54.4	17	117	0.90	0.0	6	6	YES	2.0	0.7	2.5	0.7	G.S.	
17		L2	157+38.5	2-GI	0.32	0.8	79.1	24	101	0.80	0.0	6	4	YES	3.8	0.9	4.7	1.0	G.S.	
17		L2	156+25 RT	DITCH	1.70	4.2	420.1	128	207	1.63	3.0	3	3	YES	12.0	1.9	15.5	2.2	G.S.	2
17		L2	155+30 RT	DITCH	2.20	5.4	543.6	166	409	0.75	2.0	3	3	YES	14.4	1.8	19.0	2.0	G.S.	1

435

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

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

NOTE 1: TOTAL FOR THIS SYSTEM

NOTE 2: NO CREDIT IS CLAIMED FOR THE DITCH FROM L2 STA. 156+15 TO STA. 156+25 RT AND FROM STA. 157+20 RT AHEAD

NOTE 4: EXISTING DITCH

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

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

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

Date: September 15, 2004
Dsn. By: RNS

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

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

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

NOTE 1: TOTAL FOR THIS SYSTEM

NOTE 5: NO HIGHWAY PAVEMENT DRAINS TO THIS SITE

436

BUFFER IMPACTS SUMMARY (English)

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
			ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	DUAL BRIDGES	L2 LT LN 108+84 / 110+28	X		25272	13712	38985					
		L2 RT LN 109+72 / 111+02										
4	750 RCP	Y1 11+06 / 11+35 RT	X		2097	861	2958					
5	1500 RCP	L2 126+12 / 126+49	X					19889	13157	33046		
6	DBL 2.7x1.8 RCBC	L2 133+87 / 134+23	X					19472	13196	32668		
	1200 RCP											
	3.7x2.4 RCBC											
9	750 RCP	Y5 20+10 / 20+30		X				549	958	1507		
10	2.7x1.8 RCBC	Rp C 7+68 / 8+16	X		5479	2099	7578					
	1800 RCP											
12	1200 RCP	L2 150+05 / 150+42 RT	X		2712	1087	3800					
13	1050 RCP	L2 150+27 / 150+68 LT	X		1937	850	2788					
14	2.44x1.83 RCBC	L2 153+64 LT / 155+54 RT	X		4801	2390	7190					
	1500 STEEL PIPE											
	900 RCP & 600 RCP											
16	DBL 1500 RCP	Y6 14+24 / 14+76	X		4176	2153	6329					
TOTAL:					**46475**	**23152**	**69628**	**39910**	**27311**	**67221**		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

SHEET 21 OF 23 January 7, 2005

BUFFER IMPACTS SUMMARY (Metric)

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
			ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (m^2)	ZONE 2 (m^2)	TOTAL (m^2)	ZONE 1 (m^2)	ZONE 2 (m^2)	TOTAL (m^2)	ZONE 1 (m^2)	ZONE 2 (m^2)
1	DUAL BRIDGES	L2 LT LN 108+84 / 110+28	X		2348	1274	3622					
		L2 RT LN 109+72 / 111+02										
4	750 RCP	Y1 11+06 / 11+35 RT	X		195	80	275					
5	1500 RCP	L2 126+12 / 126+49	X					1848	1222	3070		
6	DBL 2.7x1.8 RCBC	L2 133+87 / 134+23	X					1809	1226	3035		
	1200 RCP											
	3.7x2.4 RCBC											
9	750 RCP	Y5 20+10 / 20+30		X				51	89	140		
10	2.7x1.8 RCBC	Rp C 7+68 / 8+16	X		509	195	704					
	1800 RCP											
12	1200 RCP	L2 150+05 / 150+42 RT	X		252	101	353					
13	1050 RCP	L2 150+27 / 150+68 LT	X		180	79	259					
14	2.44x1.83 RCBC	L2 153+64 LT / 155+54 RT	X		446	222	668					
	1500 STEEL PIPE											
	900 RCP & 600 RCP											
16	DBL 1500 RCP	Y6 14+24 / 14+76	X		388	200	588					
TOTAL:					**4318**	**2151**	**6469**	**3708**	**2537**	**6245**		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

SHEET 20 OF 23 January 7, 2005

BUFFER IMPACTS SUMMARY (METRIC)

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

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

SHEET 22 OF 23 SEPT. 15, 2004

BUFFER IMPACTS SUMMARY (ENGLISH)

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

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

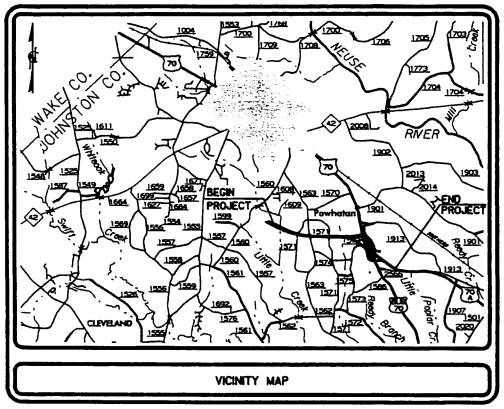
SHEET 23 OF 23 SEPT. 15, 2004

TIP PROJECT: R-2552C

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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



VICINITY MAP

JOHNSTON COUNTY

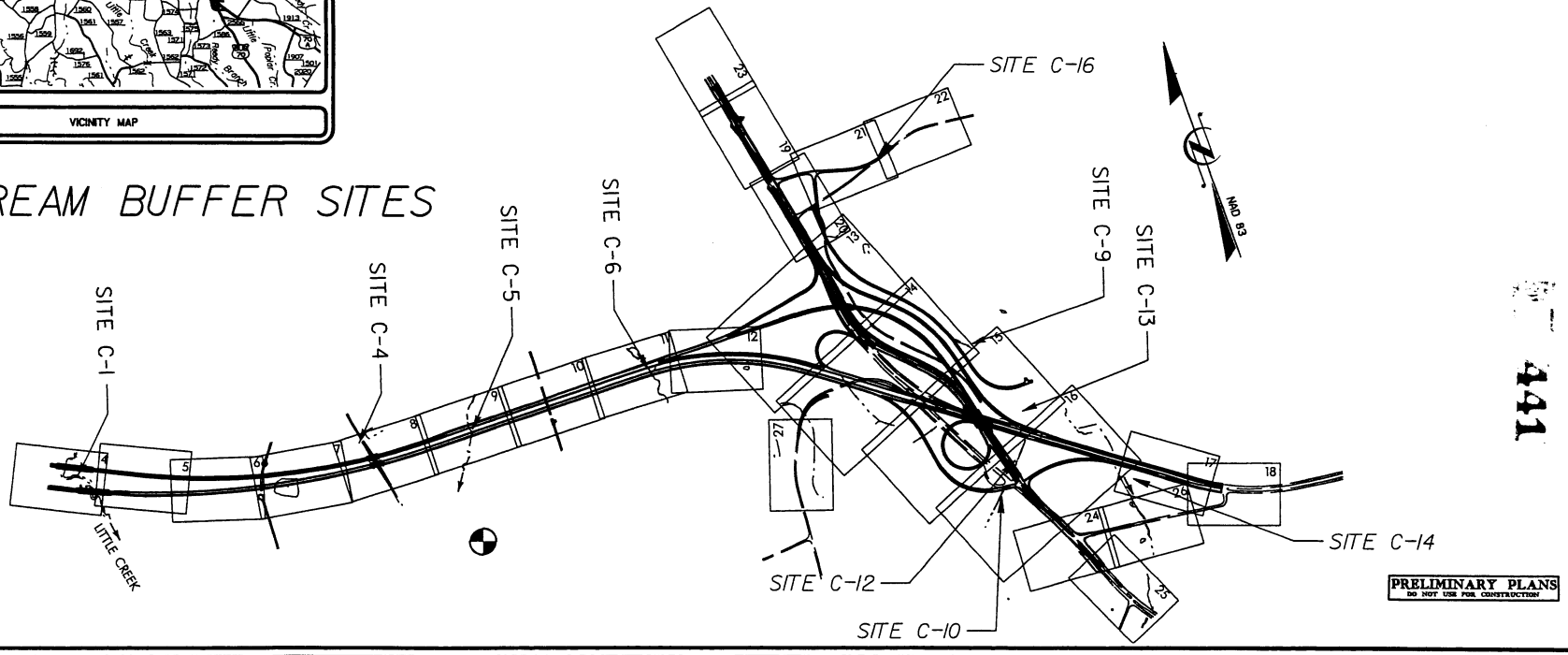
METRIC

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

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

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

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



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

441

GRAPHIC SCALE

PLANS (5 m 0 10 m)

PROFILE (HORIZONTAL) (5 m 0 10 m)

PROFILE (VERTICAL) (1 m 0 2 m)

DESIGN DATA

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

* TTST 10% + DUAL 6%

PROJECT LENGTH

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

-L2-RT WAS USED TO DETERMINE STRUCTURE LENGTH

Prepared in the Office of:
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: May 16, 2003

LETTING DATE: May 17, 2005

Stephen C. Browde, P.E.
PROJECT ENGINEER

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

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

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

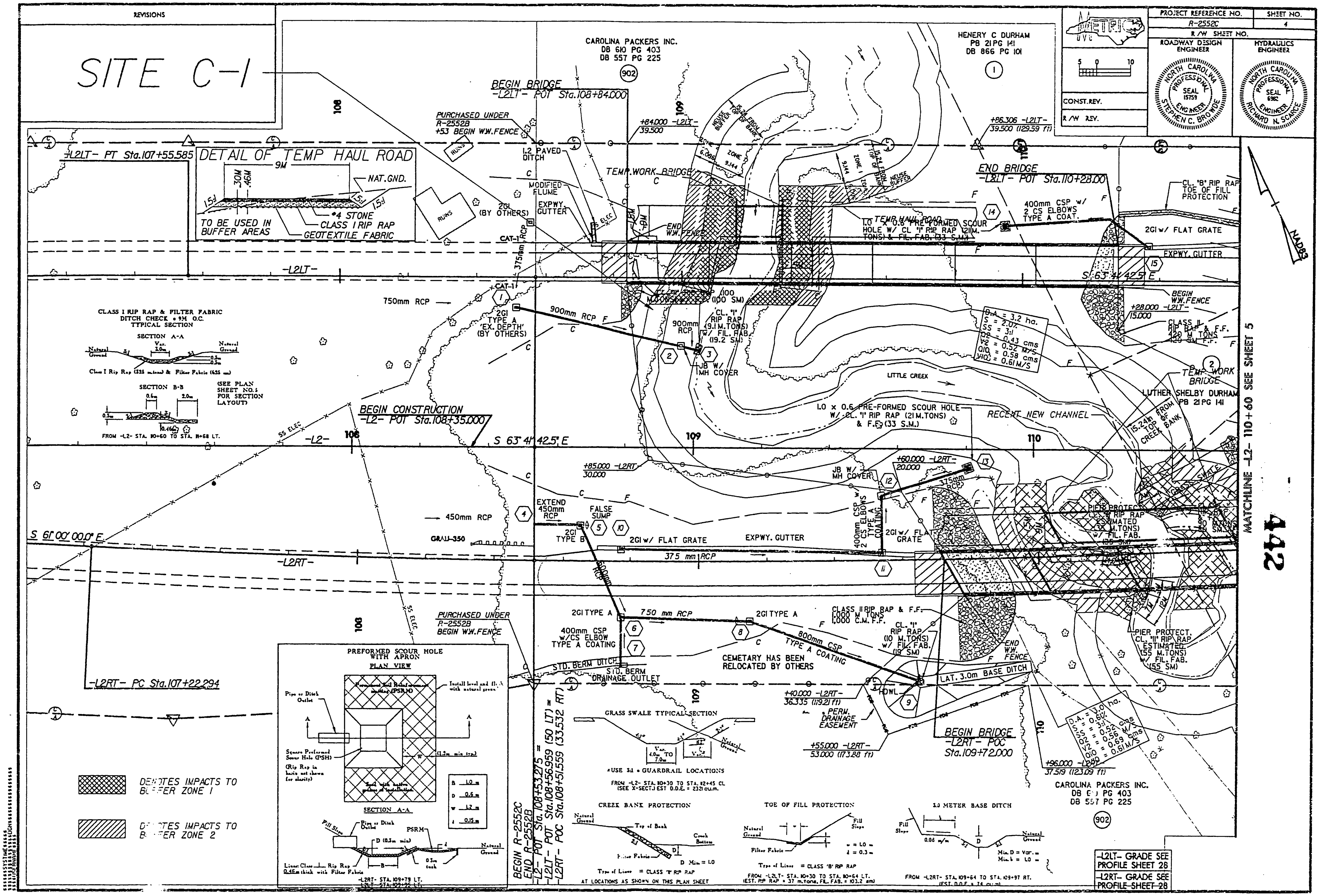
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

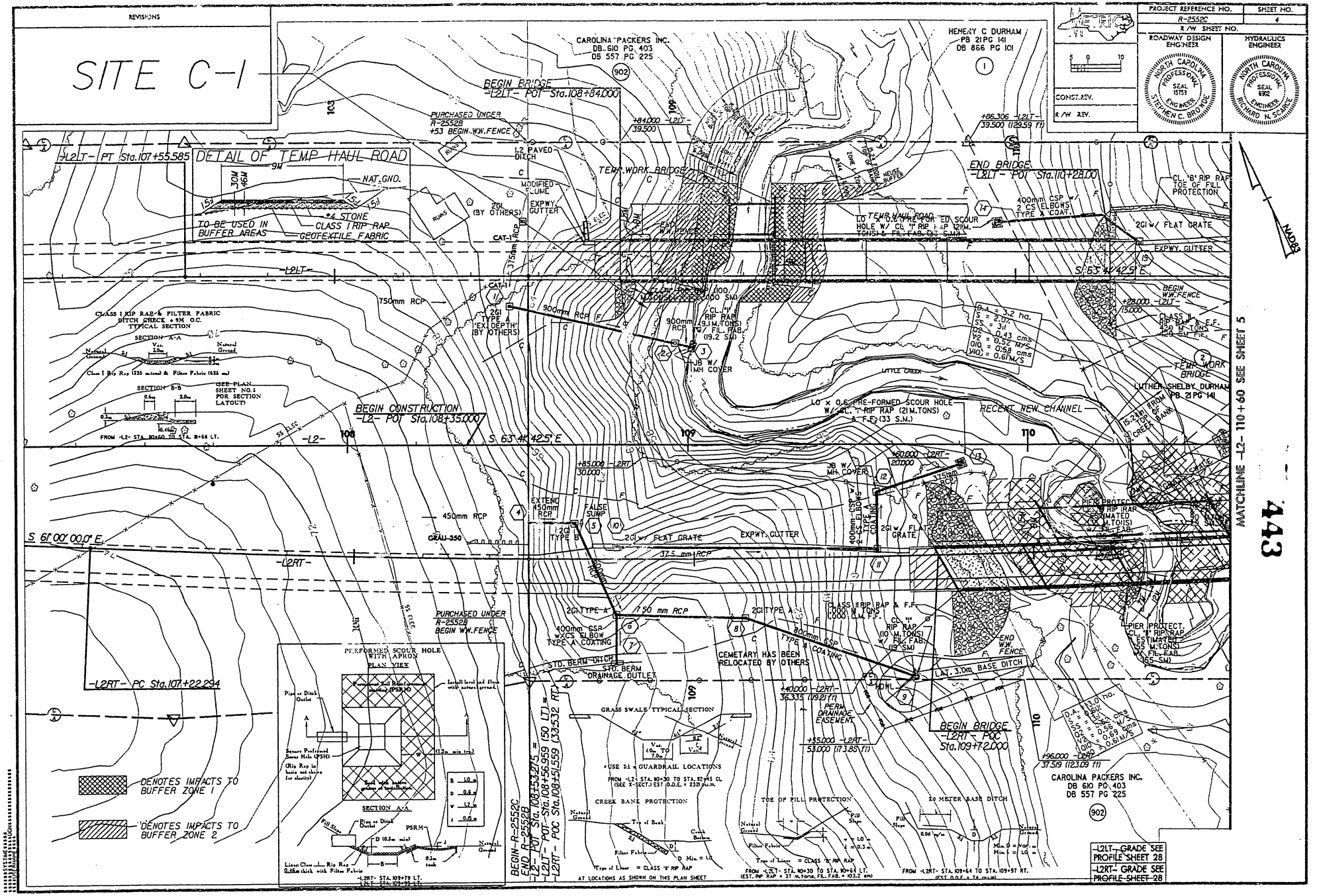
P.E.
STATE DESIGN ENGINEER

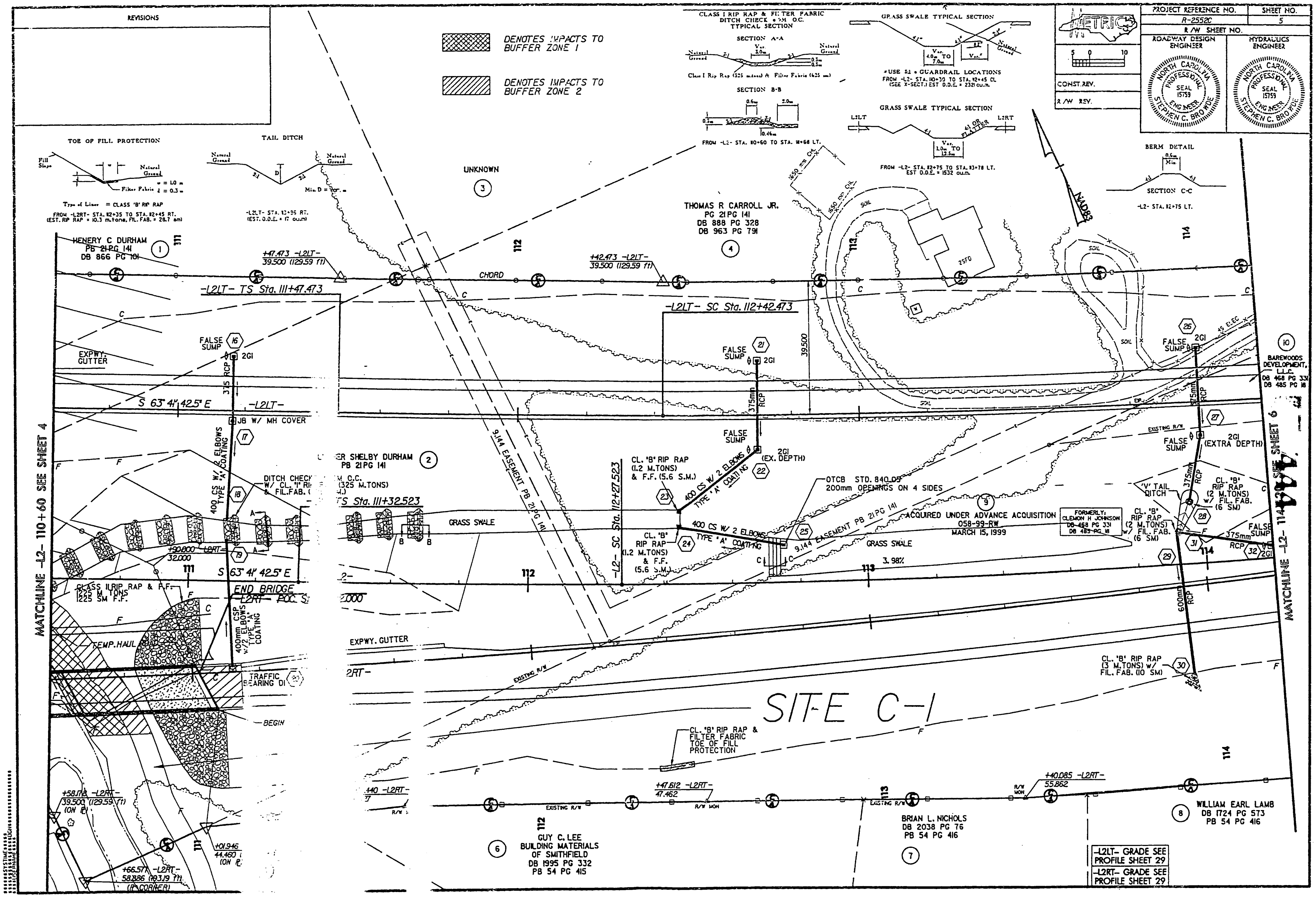
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

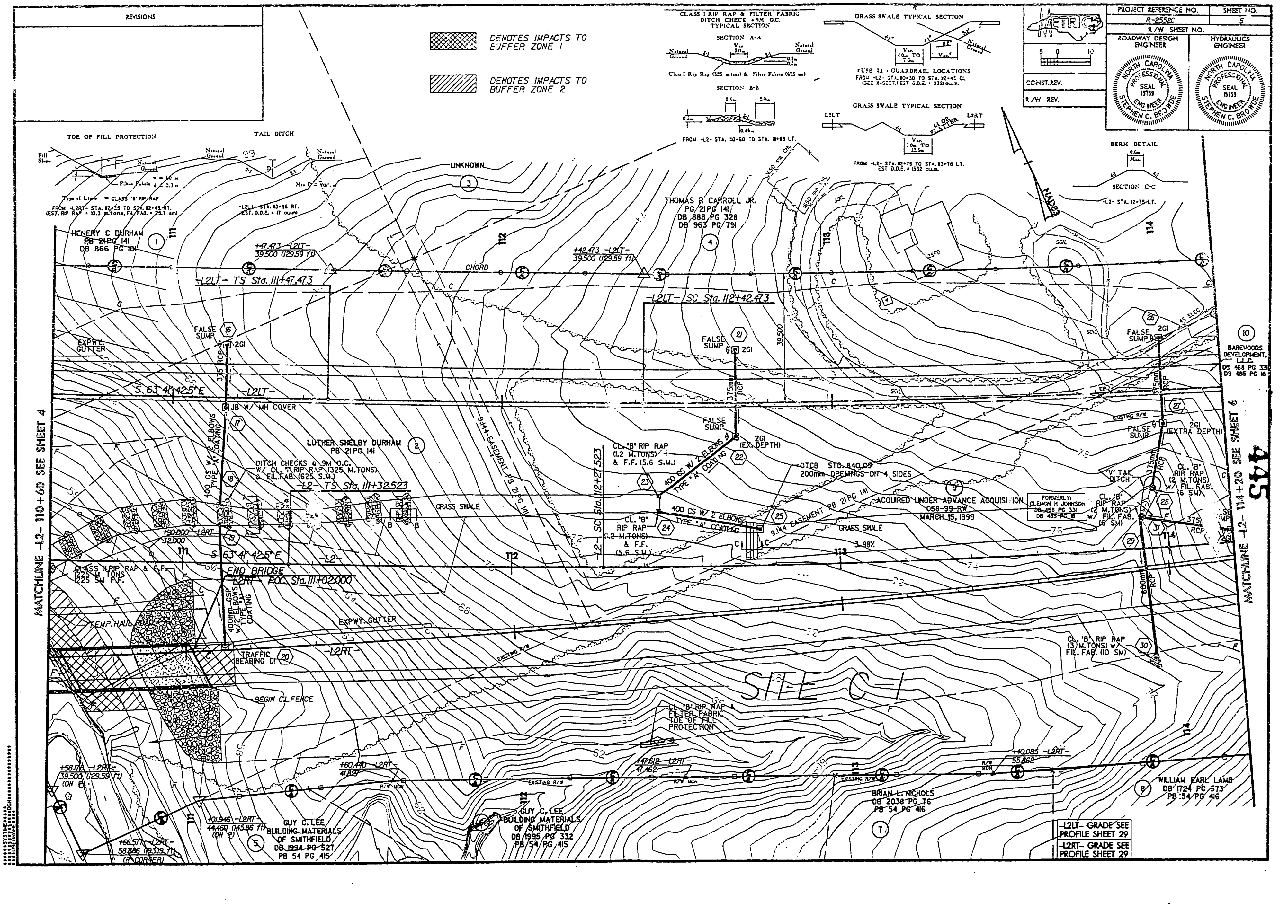
APPROVED
DIVISION ADMINISTRATOR DATE

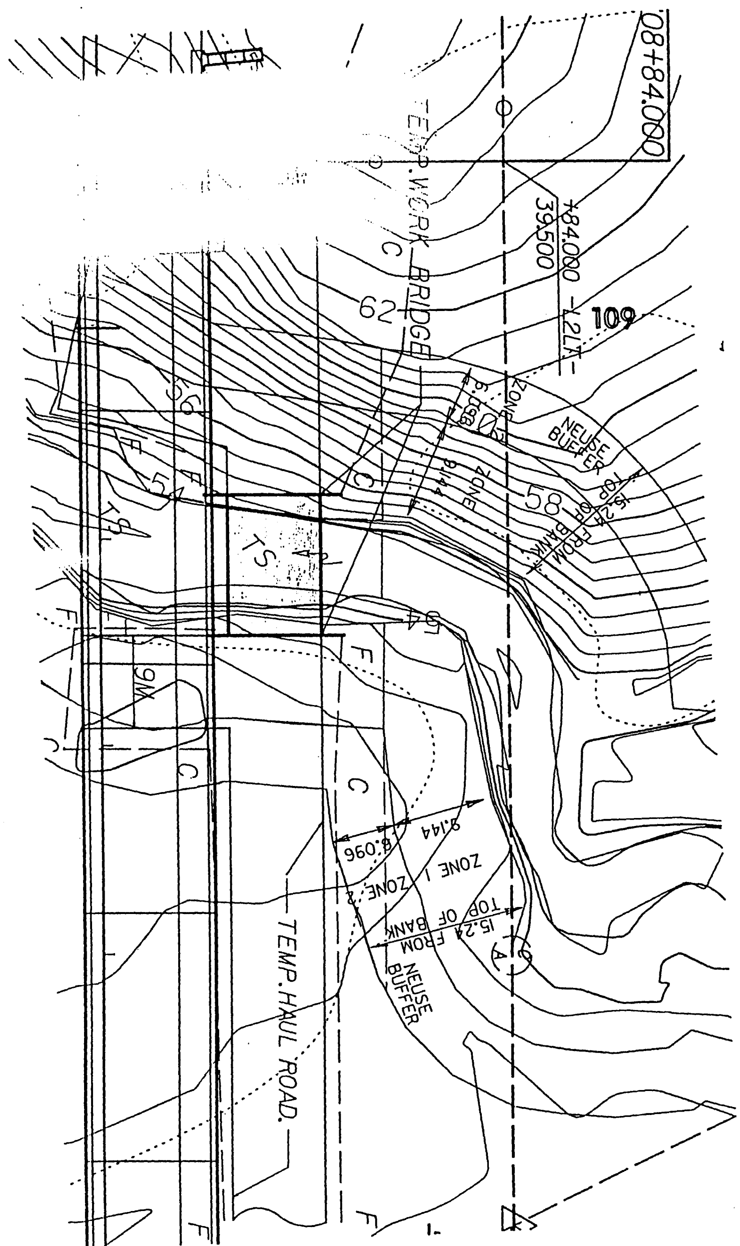


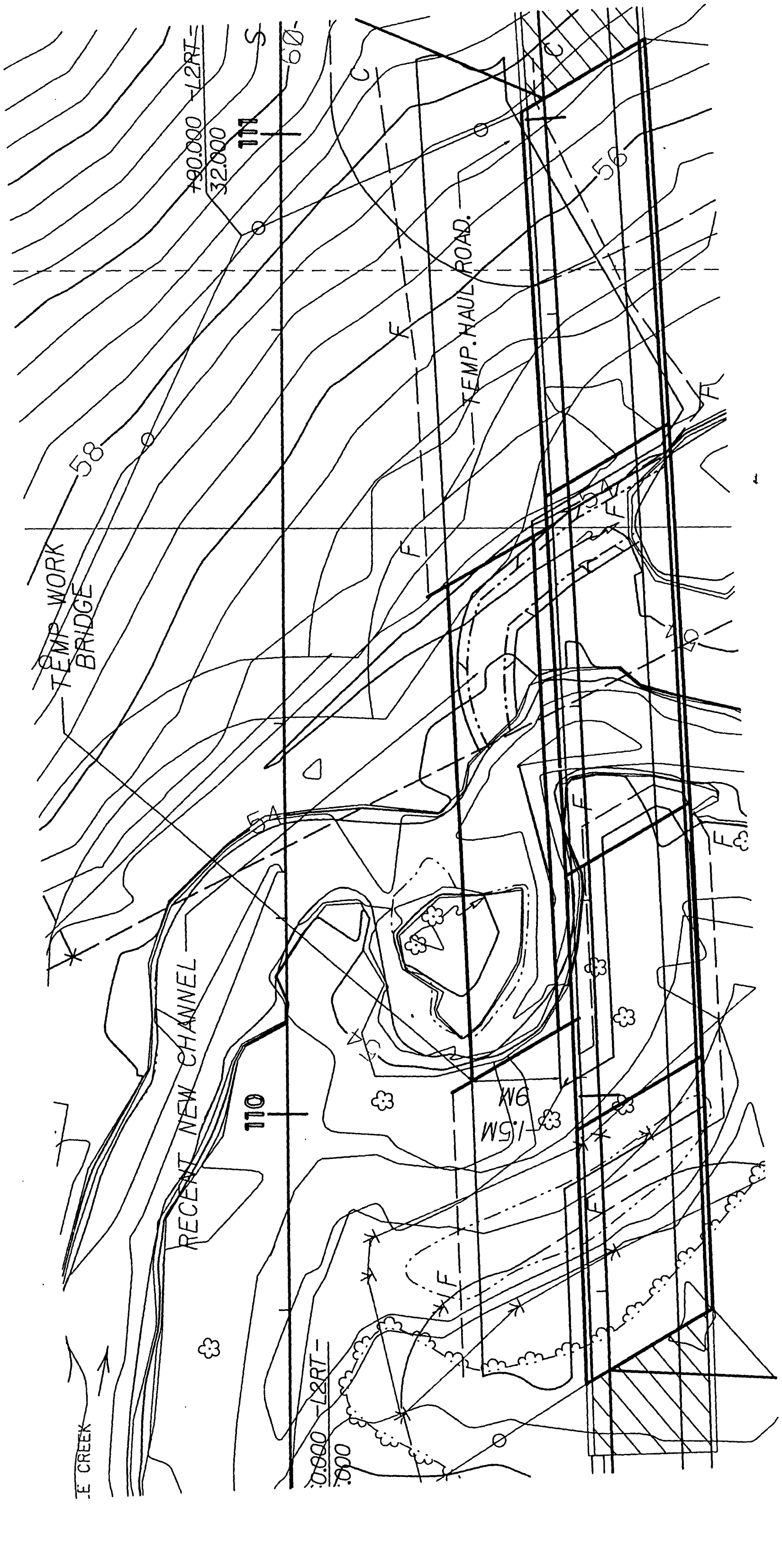
SITE C-1
DETAIL OF TEMP HAUL ROAD
TO BE USED IN BUFFER AREAS
CLASS I RIP RAP
GEOTEXTILE FABRIC
#4 STONE
NAT. GND.
BEGIN BRIDGE -L2LT- POT Sta.108+84.000
END BRIDGE -L2LT- POT Sta.110+28.000
BEGIN CONSTRUCTION -L2- POT Sta.108+35.000
BEGIN BRIDGE -L2RT- POC Sta.109+72.000
-L2LT- PT Sta.107+55.585
-L2RT- PC Sta.107+22.294
S 63° 41' 42.5" E
S 61° 00' 00.0" E
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225
HENRY C DURHAM PB 21 PG 141 DB 866 PG 101
LUTHER SHELBY DURHAM PB 21 PG 141
LITTLE CREEK
RECENT NEW CHANNEL
TEMP. WORK BRIDGE
TEMP HAUL ROAD
CEMETARY HAS BEEN RELOCATED BY OTHERS
PURCHASED UNDER R-2552B +53 BEGIN W.W. FENCE
PURCHASED UNDER R-2552B BEGIN W.W. FENCE
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
GRASS SWALE TYPICAL SECTION
CREEK BANK PROTECTION
TOE OF FILL PROTECTION
3.0 METER BASE DITCH
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK @ 9M O.C. TYPICAL SECTION
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
BEGIN R-2552C
END R-2552B
-L2- POT Sta.108+53.275 =
-L2LT- POT Sta.108+56.959 (50 LT) =
-L2RT- POC Sta.108+51.559 (33.532 RT)
MATCHLINE -L2- 110+60 SEE SHEET 5
-L2LT- GRADE SEE PROFILE SHEET 26
-L2RT- GRADE SEE PROFILE SHEET 28
PROJECT REFERENCE NO. R-2552C
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
CONST. REV.
R/W REV.
REVISIONS
NAD83

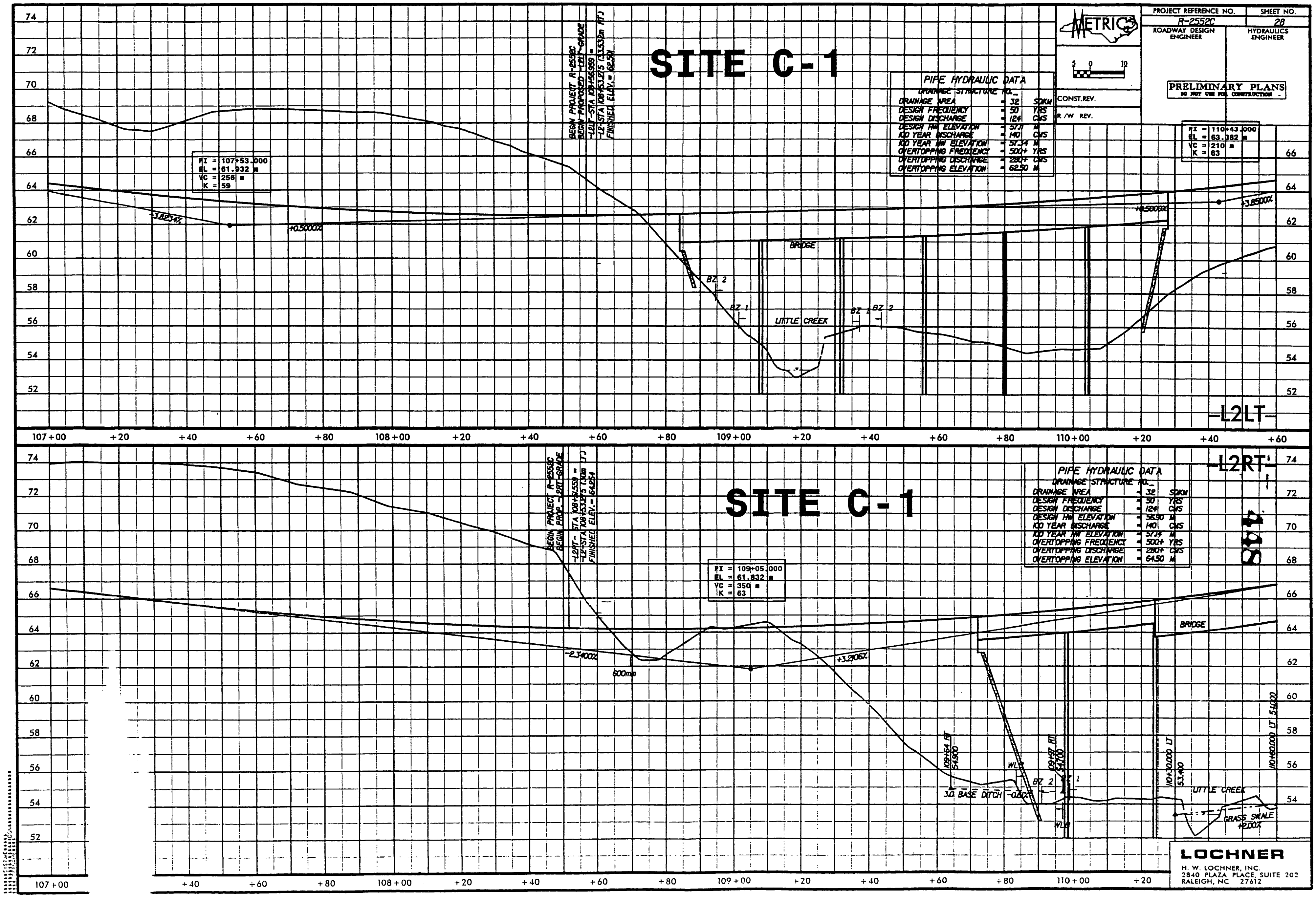

SITE C-1
REVISIONS
PROJECT REFERENCE NO. R-2552C
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225
HENERY C DURHAM PB 21 PG 141 DB 866 PG 101
BEGIN BRIDGE -L2LT- POT Sta.108+84.000
PURCHASED UNDER R-2552B +53 BEGIN WW. FENCE
-L2LT- PT Sta.107+55.585 DETAIL OF TEMP HAUL ROAD
TEMP. WORK BRIDGE
END BRIDGE -L2LT- POT Sta.110+28.00
CL 'B' RIP RAP TOE OF FILL PROTECTION
TO BE USED IN BUFFER AREAS
#4 STONE
CLASS I RIP RAP
GEOFEXTILE FABRIC
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK @ 9M O.C. TYPICAL SECTION
SECTION A-A
SECTION B-B
SEE PLAN SHEET NO. 4 FOR SECTION LAYOUT
BEGIN CONSTRUCTION -L2- POT Sta.108+35.000
S 63° 42' 25" E
LITTLE CREEK
RECENT NEW CHANNEL
LUTHER SHELBY DURHAM PB 21 PG 141
15.24m TOP OF CREEK BANK
S 61° 00' 00.0" E
-L2RT- PC Sta.107+22.294
PURCHASED UNDER R-2552B BEGIN WW. FENCE
PERFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
BEGIN-R-2552C END R-2552B -L2- POT-Sta.108+53.275 (50 LT) -L2LT- POT-Sta.108+56.959 (33.532 RT) -L2RT- POC Sta.108+51.559
GRASS SWALE TYPICAL SECTION
CREEK BANK PROTECTION
TOE OF FILL PROTECTION
10 METER BASE DITCH
CEMETERY HAS BEEN RELOCATED BY OTHERS
PERM. DRAINAGE EASEMENT
BEGIN BRIDGE -L2RT- POC Sta.109+72.000
CAROLINA PACKERS INC. DB 610 PG 403 DB 557 PG 225
-L2LT- GRADE SEE PROFILE SHEET 28
-L2RT- GRADE SEE PROFILE SHEET 28
MATCHLINE -L2- 110+60 SEE SHEET 5
NAD83

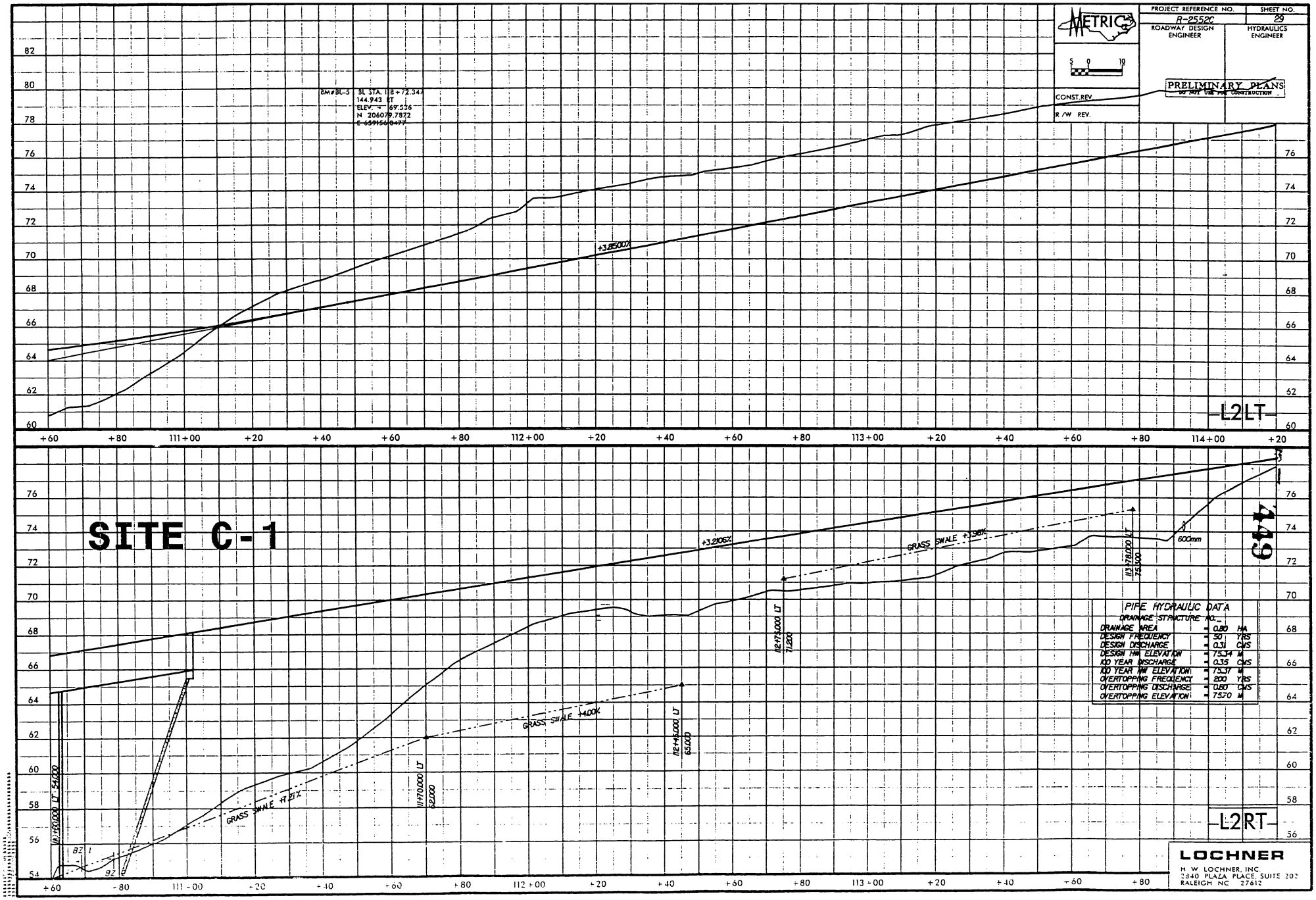

REVISIONS
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
PROJECT REFERENCE NO. R-2552C
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.
TOE OF FILL PROTECTION
TAIL DITCH
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK
TYPICAL SECTION
SECTION A-A
SECTION B-B
GRASS SWALE TYPICAL SECTION
BERM DETAIL
SECTION C-C
UNKNOWN
THOMAS R CARROLL JR.
PG 21 PG 141
DB 888 PG 328
DB 963 PG 791
HENERY C DURHAM
DB 866 PG 101
CHORD
-L2LT- TS Sta. 111+47.473
-L2LT- SC Sta. 112+42.473
S 63° 4' 42.5" E
9.144 EASEMENT PB 21 PG 141
GRASS SWALE
EXPWY. GUTTER
TEMP. HAUL ROAD
END BRIDGE
SITE C-1
ACQUIRED UNDER ADVANCE ACQUISITION
058-99-RW
MARCH 15, 1999
GUY C. LEE
BUILDING MATERIALS
OF SMITHFIELD
DB 1995 PG 332
PB 54 PG 415
BRIAN L. NICHOLS
DB 2038 PG 76
PB 54 PG 416
WILLIAM EARL LAMB
DB 1724 PG 573
PB 54 PG 416
BAREWOODS DEVELOPMENT, L.L.C.
DB 468 PG 331
DB 485 PG 18
MATCHLINE -L2- 110+60 SEE SHEET 4
-L2LT- GRADE SEE PROFILE SHEET 29
-L2RT- GRADE SEE PROFILE SHEET 29
444

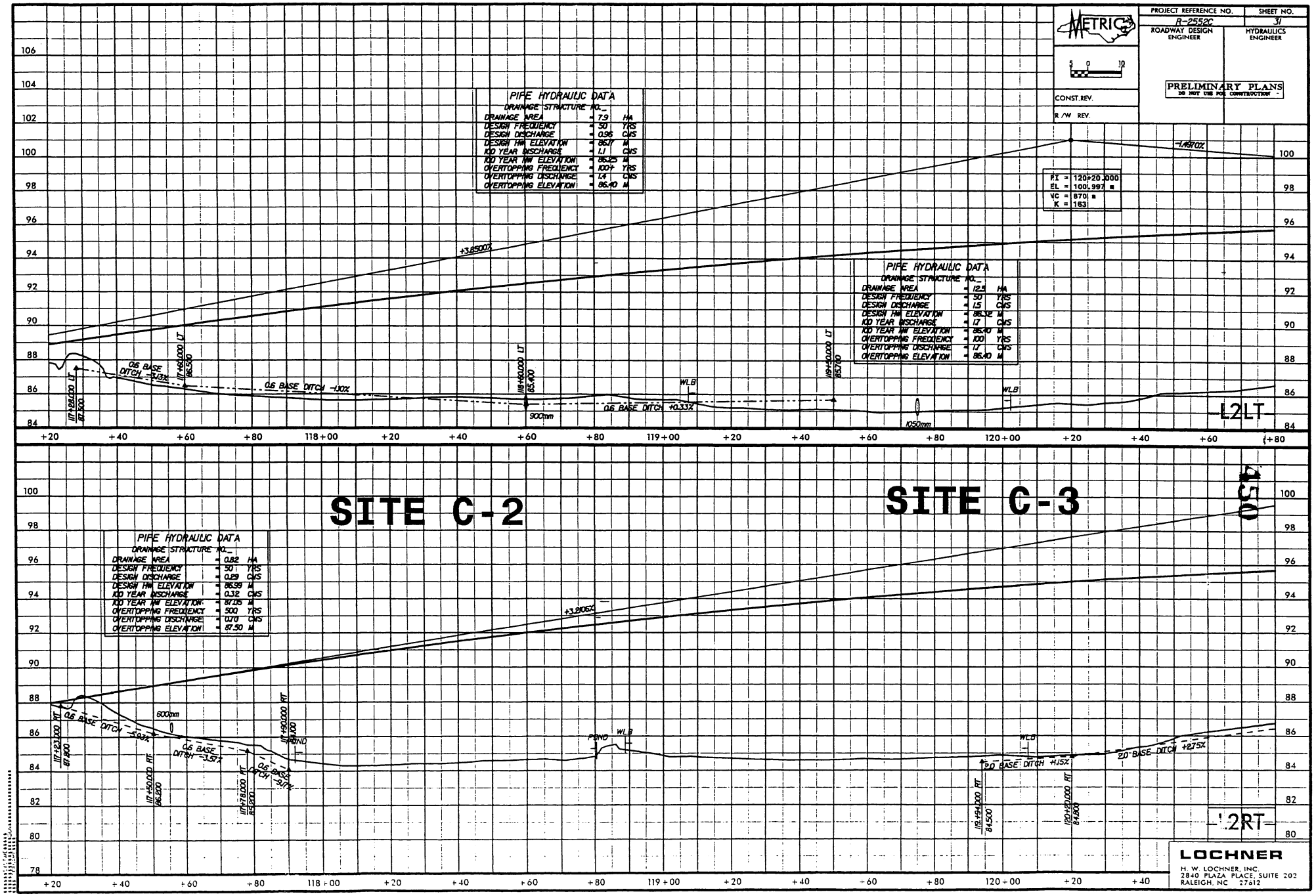

445
PROJECT REFERENCE NO. R-2552C
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15759 ENGINEER STEPHEN C. BROWDE
CONST. REV.
R/W REV.
REVISIONS
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK @ 9M O.C. TYPICAL SECTION
SECTION A-A
SECTION B-B
FROM -L2- STA. 110+60 TO STA. 111+68 LT.
GRASS SWALE TYPICAL SECTION
*USE 3:1 @ GUARDRAIL LOCATIONS
FROM -L2- STA. 112+75 TO STA. 113+78 LT. EST O.D.E. = 1532 cu.m.
BERM DETAIL
SECTION C-C
TOE OF FILL PROTECTION
TAIL DITCH
MATCHLINE -L2- 110+60 SEE SHEET 4
MATCHLINE -L2- 114+20 SEE SHEET 6
HENERY C DURHAM PB 21 PG 141 DB 866 PG 101
THOMAS R CARROLL JR. PG/21 PG 141 DB 888 PG 328 DB 963 PG 791
LUTHER SHELBY DURHAM PB 21 PG 141
BAREWOODS DEVELOPMENT, L.L.C. DB 468 PG 331 DB 485 PG 18
GUY C. LEE BUILDING MATERIALS OF SMITHFIELD DB 1994 PG 527 PB 54 PG 415
GUY C. LEE BUILDING MATERIALS OF SMITHFIELD DB 1995 PG 332 PB 54 PG 415
BRIAN L. NICHOLS DB 2038 PG 76 PB 54 PG 416
WILLIAM EARL LAMB DB 1724 PG 573 PB 54 PG 416
-L2LT- TS Sta. 111+47.473
-L2LT- SC Sta. 112+42.473
-L2- TS Sta. 111+32.523
-L2- SC Sta. 112+27.523
-L2RT- POC Sta. 111+02.000
END BRIDGE
S 63° 41' 42.5" E
9.144 EASEMENT PB 21 PG 141
ACQUIRED UNDER ADVANCE ACQUISITION 058-99-RW MARCH 15, 1999
OTCB STD. 840.05 200mm OPENINGS ON 4 SIDES
GRASS SWALE
SITE C-1
BEGIN C.L. FENCE
TRAFFIC BEARING DI
EXPWY. GUTTER
FALSE SUMP
JB W/ MH COVER
DITCH CHECKS @ 9M O.C. W/ CL. "I" RIP RAP (325 M.TONS) & FIL. FAB. (625 S.M.)
CL. "B" RIP RAP (1.2 M.TONS) & F.F. (5.6 S.M.)
400 CS W/ 2 ELBOWS TYPE "A" COATING
CL. "B" RIP RAP & FILTER FABRIC TOE OF FILL PROTECTION
CL. "B" RIP RAP (3 M.TONS) W/ FIL. FAB. (10 SM)
-L2LT- GRADE SEE PROFILE SHEET 29
-L2RT- GRADE SEE PROFILE SHEET 29

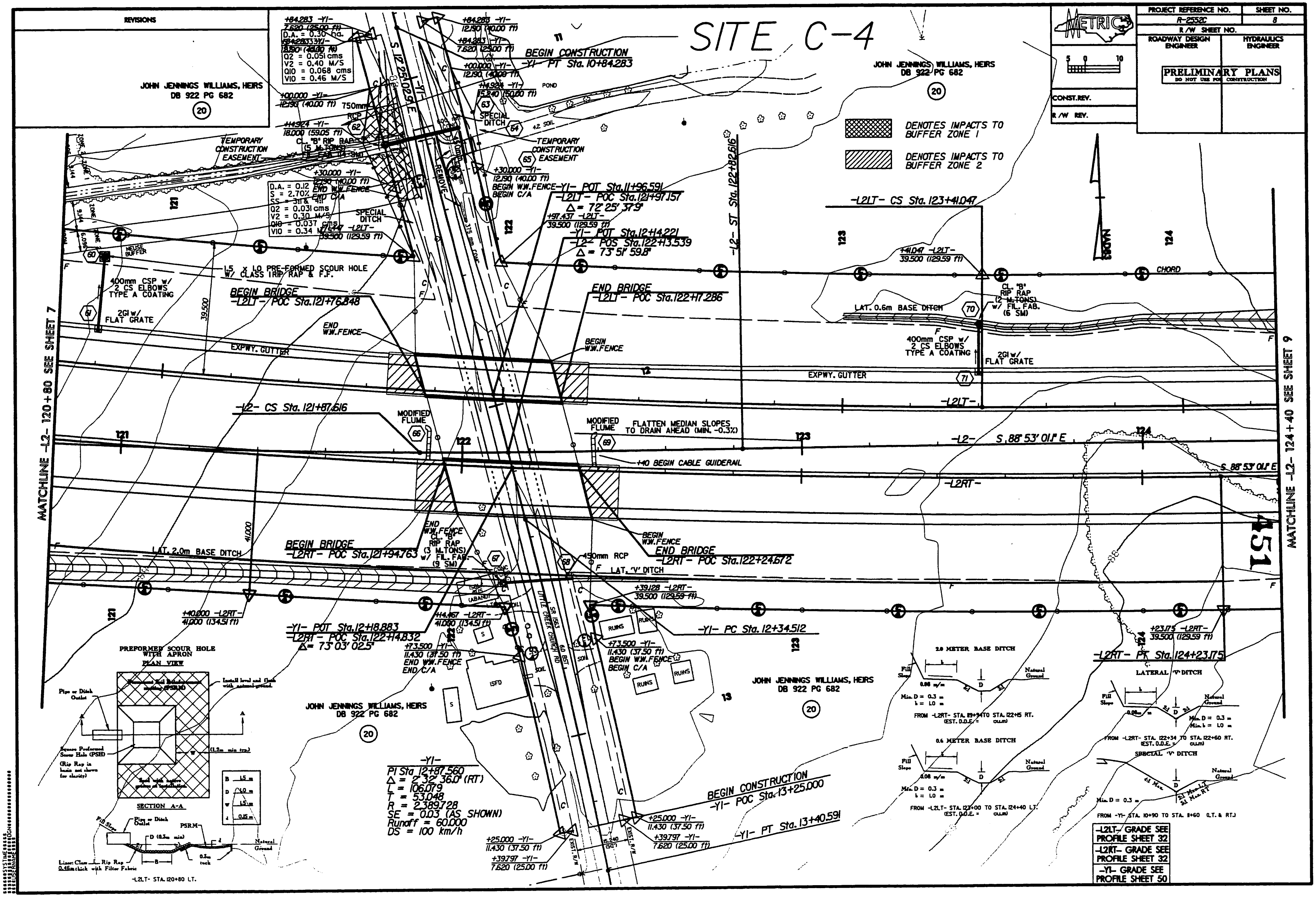

08+84.000
+84.000 -L2LT-
39.500
109
TEMP. WORK BRIDGE
62
56
58
NEUSE BUFFER
15.24 FROM TOP OF BANK
ZONE 1
ZONE 2
9.144
6.096
TS
TEMP. HAUL ROAD
C
F

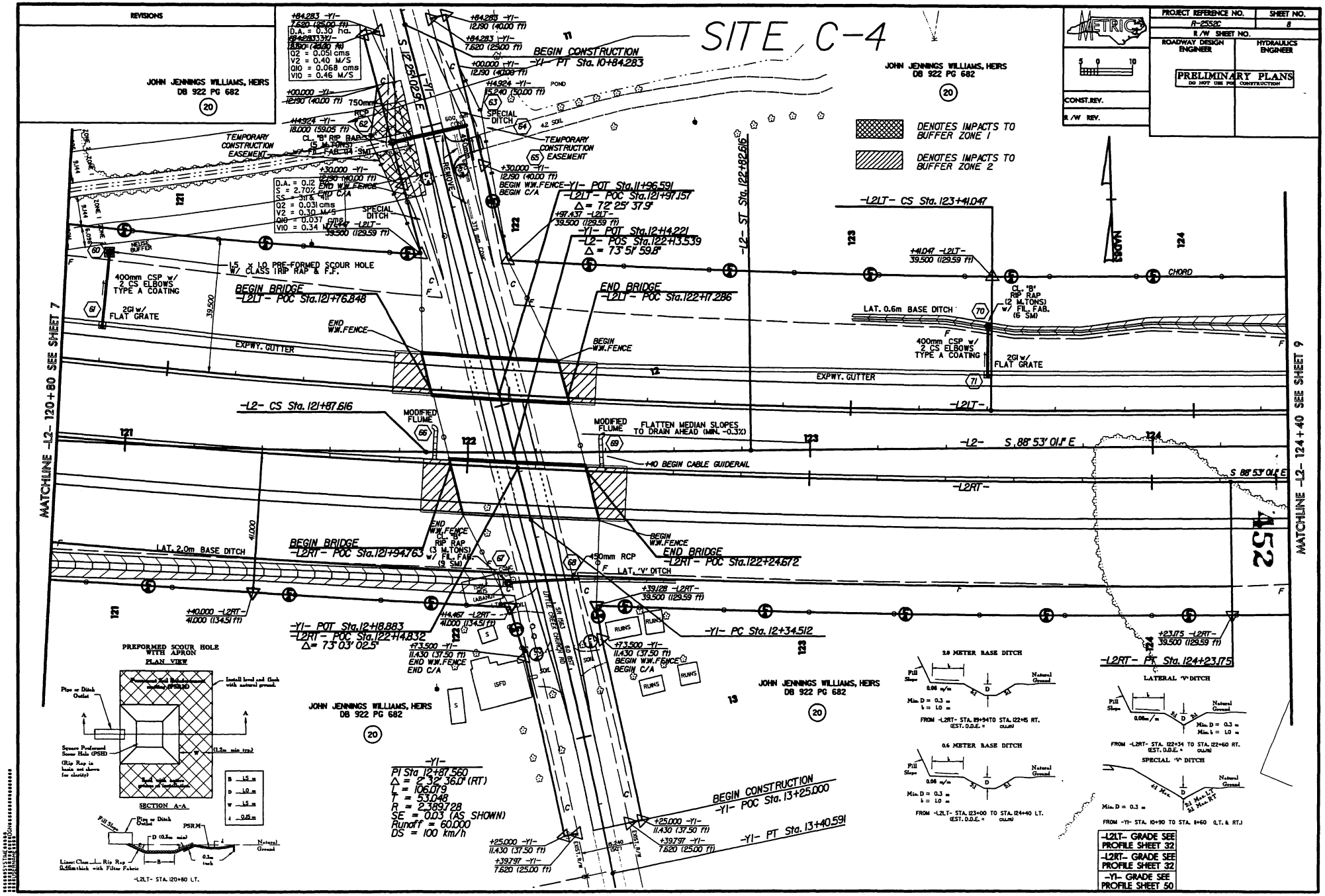

TEMP WORK BRIDGE
TEMP. HAUL ROAD
RECENT NEW CHANNEL
+90.000 -L2RT-
32.000
111
110
58
60
56
9M
1.5M
-L2RT-
E CREEK

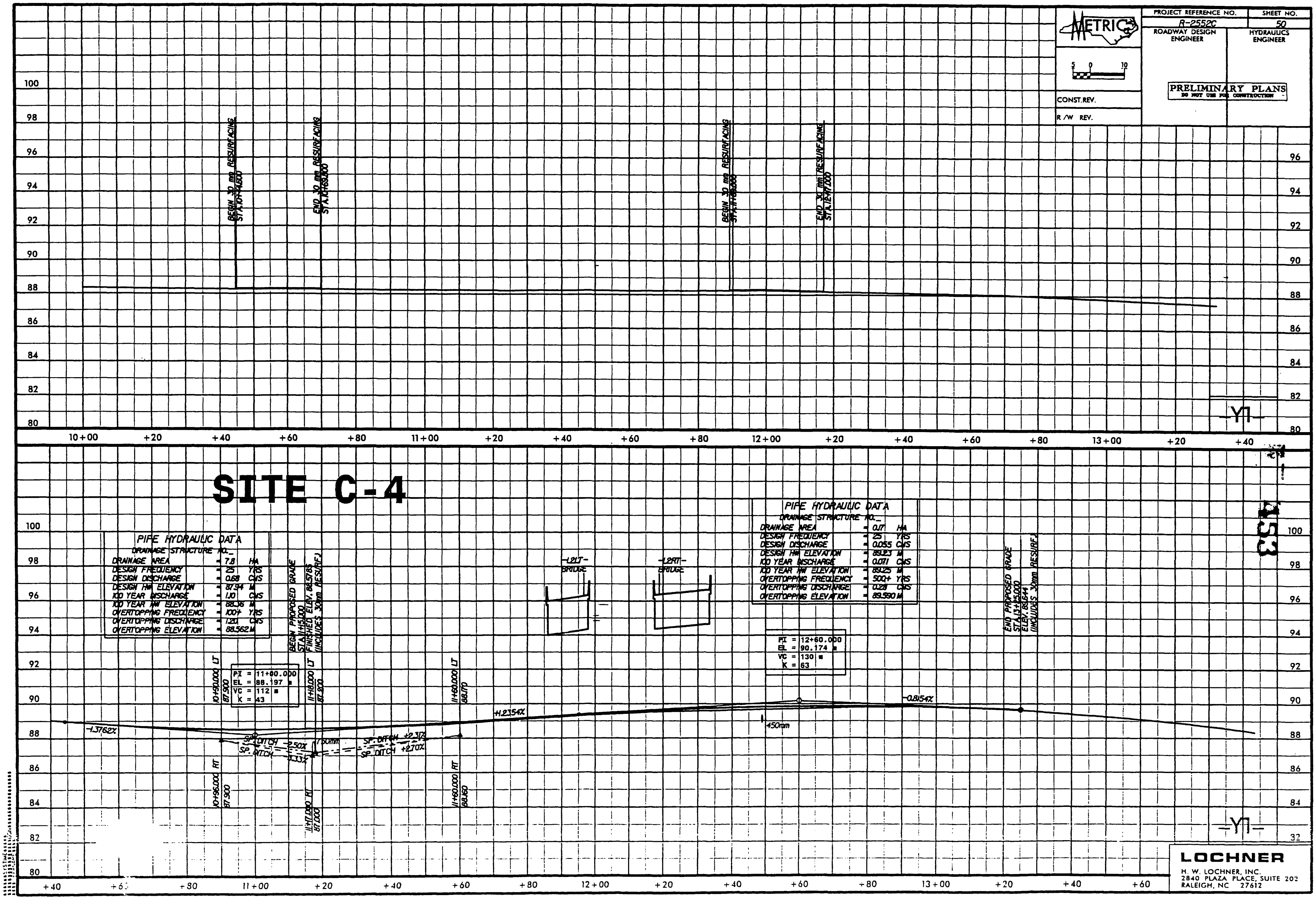

PROJECT REFERENCE NO. R-2552C
SHEET NO. 28
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
SITE C-1
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 32 SQKM
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 124 CMS
DESIGN HW ELEVATION = 57.1 M
100 YEAR DISCHARGE = 140 CMS
100 YEAR HW ELEVATION = 57.34 M
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING DISCHARGE = 280+ CMS
OVERTOPPING ELEVATION = 62.50 M
BEGIN PROJECT R-2552C
BEGIN PROPOSED -L2LT- GRADE
-L2LT- STA 108+56.959 =
-L2- STA 108+53.275 (13.533m RT.)
FINISHED ELEV. = 62.50
PI = 107+53.000
EL = 61.932 m
VC = 256 m
K = 59
-3.8234%
+0.5000%
PI = 110+43.000
EL = 63.382 m
VC = 210 m
K = 63
+3.8500%
BRIDGE
BZ 2
BZ 1
LITTLE CREEK
-L2LT-
SITE C-1
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 32 SQKM
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 124 CMS
DESIGN HW ELEVATION = 56.90 M
100 YEAR DISCHARGE = 140 CMS
100 YEAR HW ELEVATION = 57.14 M
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING DISCHARGE = 280+ CMS
OVERTOPPING ELEVATION = 64.50 M
BEGIN PROJECT R-2552C
BEGIN PROP. -L2RT- GRADE
-L2RT- STA 108+51.559 =
-L2- STA 108+53.275 (13.0m LT.)
FINISHED ELEV. = 64.254
PI = 109+05.000
EL = 61.832 m
VC = 350 m
K = 63
-2.3400%
+3.2106%
600mm
-L2RT-
BRIDGE
109+64 RT 54.900
3:1 BASE DITCH -0.8%
WL
BZ 2
BZ 1
109+97 RT 54.700
110+30.000 LT 53.400
110+60.000 LT 54.000
LITTLE CREEK
GRASS SWALE +2.00%
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612


METRIC
5 0 10
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
29
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
BM#BL-3
BL STA. 118+72.347
144.943 RT
ELEV. = 69.536
N 206079.7872
E 659156.0477
+3.85000%
-L2LT-
+60
+80
111+00
+20
+40
+60
+80
112+00
+20
+40
+60
+80
113+00
+20
+40
+60
+80
114+00
+20
SITE C-1
+3.21065%
GRASS SWALE +3.98%
GRASS SWALE +4.00%
GRASS SWALE +4.21%
600mm
113+78.000 LT
75.000
112+73.000 LT
71.200
112+43.000 LT
65.000
111+70.000 LT
62.000
111+40.000 LT 54.000
BZ 1
BZ
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.
DRAINAGE AREA = 0.80 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 0.31 CMS
DESIGN HW ELEVATION = 75.34 M
100 YEAR DISCHARGE = 0.35 CMS
100 YEAR HW ELEVATION = 75.37 M
OVERTOPPING FREQUENCY = 200 YRS
OVERTOPPING DISCHARGE = 0.60 CMS
OVERTOPPING ELEVATION = 75.70 M
-L2RT-
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH NC 27612

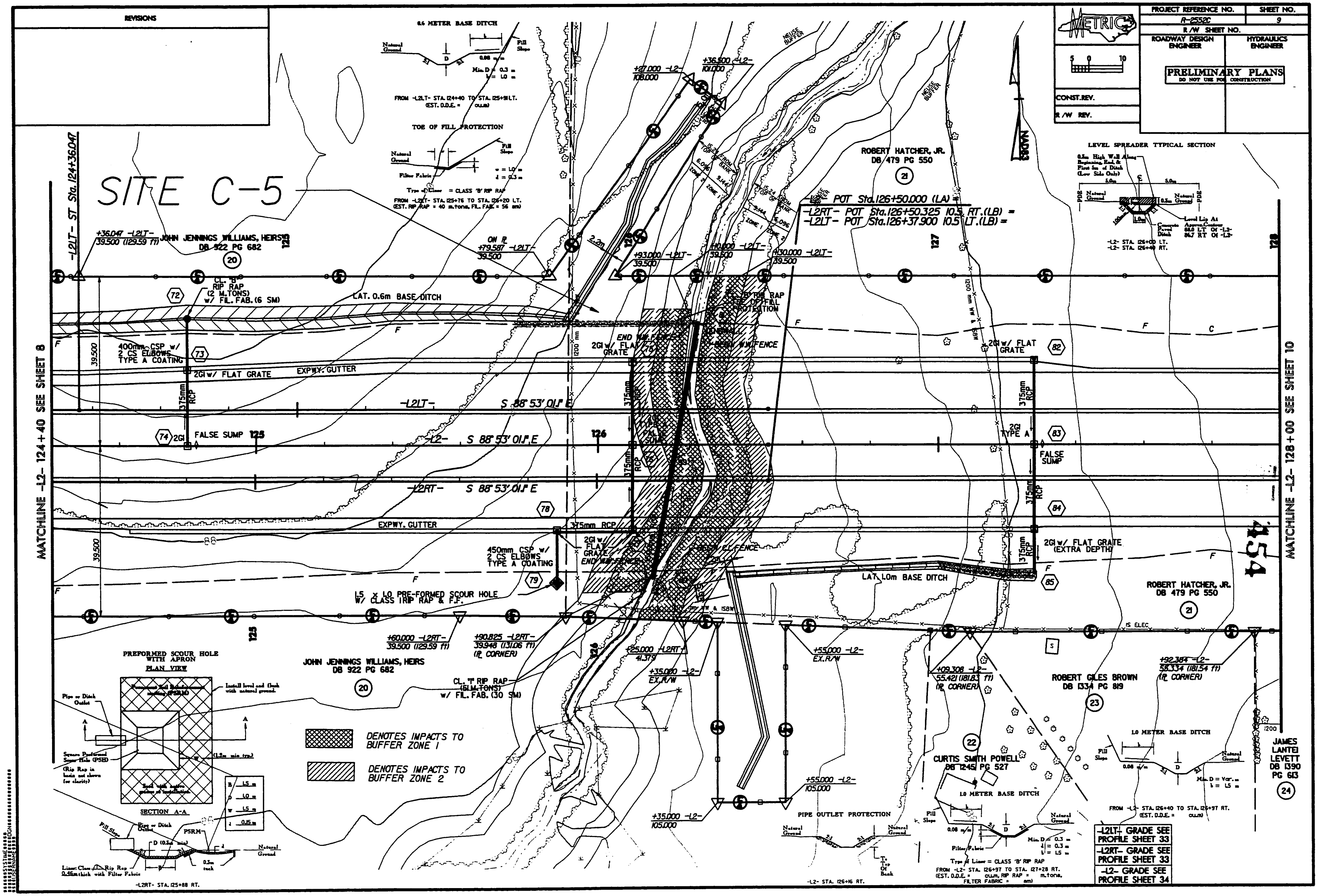

PROJECT REFERENCE NO.
R-2552C
SHEET NO.
31
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
5 0 10
CONST.REV.
R/W REV.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 7.9 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 0.96 CMS
DESIGN HW ELEVATION = 86.17 M
100 YEAR DISCHARGE = 1.1 CMS
100 YEAR HW ELEVATION = 86.25 M
OVERTOPPING FREQUENCY = 100+ YRS
OVERTOPPING DISCHARGE = 1.4 CMS
OVERTOPPING ELEVATION = 86.40 M
PI = 120+20.000
EL = 100.997 M
VC = 870 M
K = 163
-1.480%
+3.850%
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 12.5 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 1.5 CMS
DESIGN HW ELEVATION = 86.32 M
100 YEAR DISCHARGE = 1.7 CMS
100 YEAR HW ELEVATION = 86.40 M
OVERTOPPING FREQUENCY = 100 YRS
OVERTOPPING DISCHARGE = 1.7 CMS
OVERTOPPING ELEVATION = 86.40 M
117+128.000 LT
87.500
117+160.000 LT
86.300
0.6 BASE DITCH -0.93%
0.6 BASE DITCH -1.10%
118+160.000 LT
85.400
900mm
WLB
0.6 BASE DITCH +0.33%
119+120.000 LT
85.700
1050mm
WLB
L2LT
+20 +40 +60 +80 118+00 +20 +40 +60 +80 119+00 +20 +40 +60 +80 120+00 +20 +40 +60 +80
SITE C-2
SITE C-3
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 0.82 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 0.29 CMS
DESIGN HW ELEVATION = 86.39 M
100 YEAR DISCHARGE = 0.32 CMS
100 YEAR HW ELEVATION = 87.05 M
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING DISCHARGE = 0.70 CMS
OVERTOPPING ELEVATION = 87.50 M
+3.206%
117+123.000 RT
87.800
0.6 BASE DITCH -5.93%
600mm
117+150.000 RT
86.950
0.6 BASE DITCH -3.57%
117+170.000 RT
85.970
0.6 BASE DITCH -9.15%
117+190.000 RT
84.000
POND
WLB
WLB
2.0 BASE DITCH +1.15%
2.0 BASE DITCH +2.75%
119+194.000 RT
84.500
120+120.000 RT
84.800
L2RT
+20 +40 +60 +80 118+00 +20 +40 +60 +80 119+00 +20 +40 +60 +80 120+00 +20 +40
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612


SITE C-4
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
REVISIONS
METRIC
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
NAD83
JOHN JENNINGS WILLIAMS, HEIRS
DB 922 PG 682
20
BEGIN CONSTRUCTION
-Y1- PT Sta. 10+84.283
-Y1- POT Sta. 11+96.591
-L2LT- POC Sta. 121+97.157
Δ = 72° 25' 37.9"
-Y1- POT Sta. 12+14.221
-L2- POS Sta. 122+13.539
Δ = 73° 51' 59.8"
-L2- ST Sta. 122+82.616
-L2LT- CS Sta. 123+41.047
BEGIN BRIDGE
-L2LT- POC Sta. 121+76.848
END BRIDGE
-L2LT- POC Sta. 122+17.286
-L2- CS Sta. 121+87.616
BEGIN BRIDGE
-L2RT- POC Sta. 121+94.763
END BRIDGE
-L2RT- POC Sta. 122+24.672
-Y1- POT Sta. 12+18.883
-L2RT- POC Sta. 122+14.832
Δ = 73° 03' 02.5"
-Y1- PC Sta. 12+34.512
-L2RT- PT Sta. 124+23.175
BEGIN CONSTRUCTION
-Y1- POC Sta. 13+25.000
-Y1- PT Sta. 13+40.591
-L2- S 88° 53' 01.1" E
S 12° 25' 02.9" E
-Y1-
PI Sta 12+87.560
Δ = 2° 32' 36.0" (RT)
L = 106.079
T = 53.048
R = 2,389.728
SE = 0.03 (AS SHOWN)
Runoff = 60.000
DS = 100 km/h
D.A. = 0.30 ha.
Q2 = 0.051 cms
V2 = 0.40 M/S
Q10 = 0.068 cms
V10 = 0.46 M/S
D.A. = 0.12
S = 2.70%
Q2 = 0.031 cms
V2 = 0.30 M/S
Q10 = 0.037 cms
V10 = 0.34 M/S
TEMPORARY CONSTRUCTION EASEMENT
SPECIAL DITCH
CL. "B" RIP RAP
L5 x L0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
2GI w/ FLAT GRATE
EXPWY. GUTTER
MODIFIED FLUME
FLATTEN MEDIAN SLOPES TO DRAIN AHEAD (MIN. -0.3%)
+40 BEGIN CABLE GUIDERAIL
LAT. 0.6m BASE DITCH
LAT. 2.0m BASE DITCH
LAT. 'V' DITCH
450mm RCP
SR 1563 LITTLE CREEK CHURCH RD
BEGIN W.W.FENCE
END W.W.FENCE
RUINS
ISFD
MATCHLINE -L2- 120+80 SEE SHEET 7
MATCHLINE -L2- 124+40 SEE SHEET 9
451
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
2.0 METER BASE DITCH
0.6 METER BASE DITCH
LATERAL 'V' DITCH
SPECIAL 'V' DITCH
-L2LT- GRADE SEE PROFILE SHEET 32
-L2RT- GRADE SEE PROFILE SHEET 32
-Y1- GRADE SEE PROFILE SHEET 50

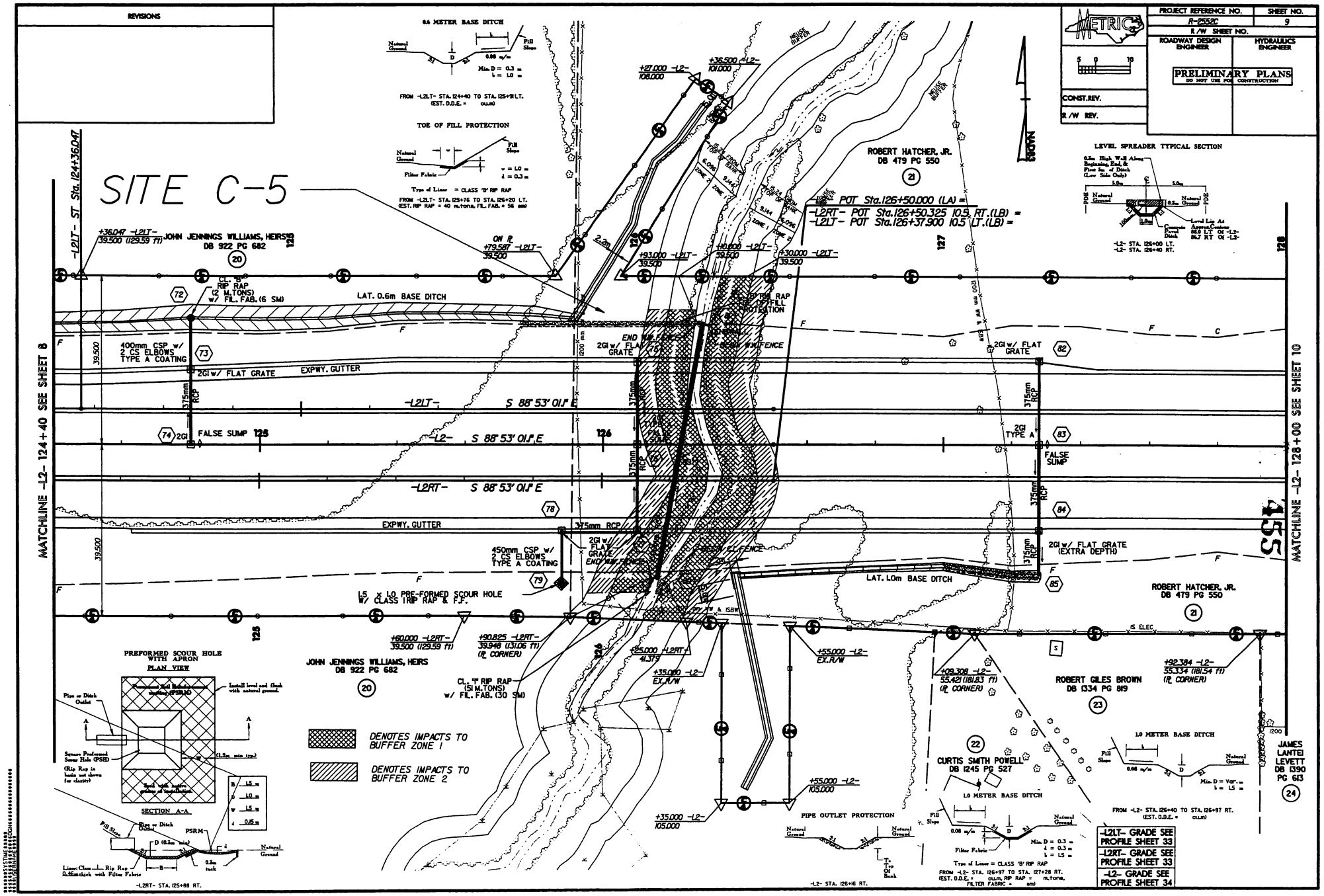

SITE C-4
REVISIONS
PROJECT REFERENCE NO. R-2552C
SHEET NO. 8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
METRIC
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
MATCHLINE -L2- 120+80 SEE SHEET 7
MATCHLINE -L2- 124+40 SEE SHEET 9
BEGIN CONSTRUCTION -Y1- PT Sta. 10+84.283
-L2LT- POC Sta.121+97.157
Δ = 72° 25' 37.9"
-Y1- POT Sta.12+14.221
-L2- POS Sta.122+13.539
Δ = 73° 51' 59.8"
-L2LT- CS Sta. 123+41.047
-L2- ST Sta. 122+82.616
BEGIN BRIDGE -L2LT- POC Sta.121+76.848
END BRIDGE -L2LT- POC Sta.122+11.286
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
2GI w/ FLAT GRATE
L5 x L0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
EXPWY. GUTTER
LAT. 0.6m BASE DITCH
CL. 'B' RIP RAP (12 M.TONS) w/ FIL. FAB. (6 SM)
CHORD
-L2- CS Sta.121+87.616
-L2- S 88° 53' 01.1" E
+40 BEGIN CABLE GUIDERAIL
MODIFIED FLUME
FLATTEN MEDIAN SLOPES TO DRAIN AHEAD (MIN. -0.3%)
BEGIN BRIDGE -L2RT- POC Sta.121+94.763
END BRIDGE -L2RT- POC Sta.122+24.672
LAT. 2.0m BASE DITCH
LAT. 'V' DITCH
450mm RCP
-Y1- POT Sta.12+18.883
-L2RT- POC Sta.122+14.832
Δ = 73° 03' 02.5"
-Y1- PC Sta. 12+34.512
-L2RT- PT Sta. 124+23.175
-Y1- PI Sta 12+87.560
Δ = 2° 32' 36.0" (RT)
L = 106.079
T = 53.048
R = 2,389.728
SE = 0.03 (AS SHOWN)
Runoff = 60.000
DS = 100 km/h
BEGIN CONSTRUCTION -Y1- POC Sta. 13+25.000
-Y1- PT Sta. 13+40.591
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
2.0 METER BASE DITCH
0.6 METER BASE DITCH
LATERAL 'V' DITCH
SPECIAL 'V' DITCH
-L2LT- GRADE SEE PROFILE SHEET 32
-L2RT- GRADE SEE PROFILE SHEET 32
-Y1- GRADE SEE PROFILE SHEET 50

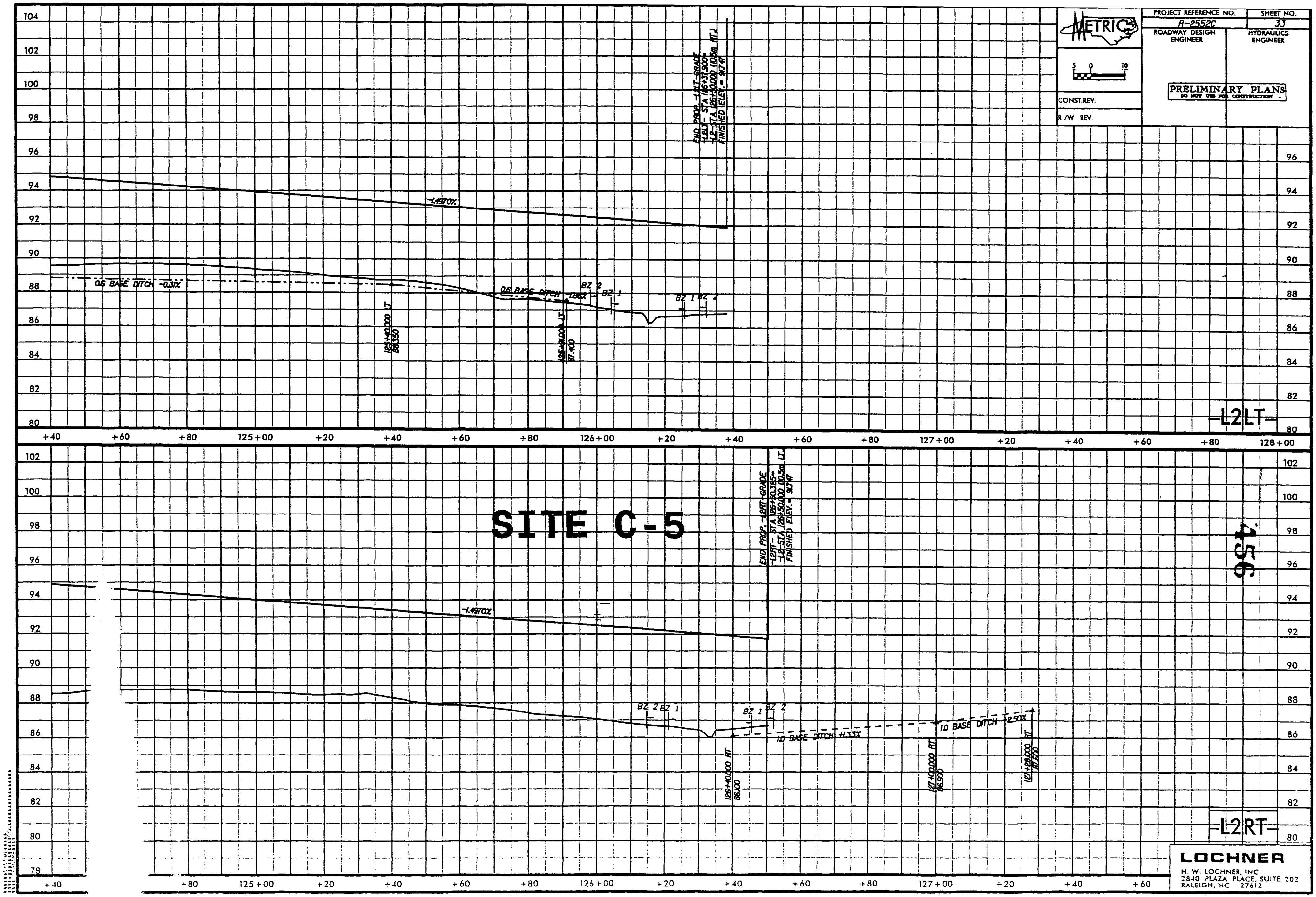

PROJECT REFERENCE NO. R-2552C
SHEET NO. 50
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
BEGIN 30 mm RESURFACING STA.10+74.600
END 30 mm RESURFACING STA.10+63.000
BEGIN 30 mm RESURFACING STA.11+89.000
END 30 mm RESURFACING STA.12+17.000
-Y1-
SITE C-4
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 7.8 HA
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 0.68 CMS
DESIGN HW ELEVATION = 87.94 M
100 YEAR DISCHARGE = 1.10 CMS
100 YEAR HW ELEVATION = 88.36 M
OVERTOPPING FREQUENCY = 100+ YRS
OVERTOPPING DISCHARGE = 1.20 CMS
OVERTOPPING ELEVATION = 88.562 M
BEGIN PROPOSED GRADE STA.11+15.000 FINISHED ELEV. 88.578 (INCLUDES 30mm RESURF.)
PI = 11+80.000
EL = 88.197 m
VC = 112 m
K = 43
10+90.000 LT 87.900
10+96.000 RT 87.900
11+18.000 LT 87.800
11+17.000 RT 87.000
11+60.000 LT 88.170
11+60.000 RT 88.160
-1.3762%
+1.2354%
-0.8154%
SP. DITCH -2.50%
SP. DITCH -3.13%
SP. DITCH +2.31%
SP. DITCH +2.70%
750mm
450mm
-L2LT- BRIDGE
-L2RT- BRIDGE
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._
DRAINAGE AREA = 0.17 HA
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 0.055 CMS
DESIGN HW ELEVATION = 89.23 M
100 YEAR DISCHARGE = 0.071 CMS
100 YEAR HW ELEVATION = 89.25 M
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING DISCHARGE = 0.28 CMS
OVERTOPPING ELEVATION = 89.590 M
PI = 12+60.000
EL = 90.174 m
VC = 130 m
K = 63
END PROPOSED GRADE STA.13+25.000 ELEV. 88.644 (INCLUDES 30mm RESURF.)
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

453



REVISIONS
METRIC
PROJECT REFERENCE NO. R-2552C
SHEET NO. 9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
NAD83
SITE C-5
454
MATCHLINE -L2- 124+40 SEE SHEET 8
MATCHLINE -L2- 128+00 SEE SHEET 10
-L2LT- ST Sta. 124+36.047
0.6 METER BASE DITCH
TOE OF FILL PROTECTION
LEVEL SPREADER TYPICAL SECTION
ROBERT HATCHER, JR. DB 479 PG 550
JOHN JENNINGS WILLIAMS, HEIRS DB 922 PG 682
ROBERT GILES BROWN DB 1334 PG 819
CURTIS SMITH POWELL DB 1245 PG 527
JAMES LANTEI LEVETT DB 1390 PG 613
-L2- POT Sta.126+50.000 (LA) =
-L2RT- POT Sta.126+50.325 10.5 RT.(LB) =
-L2LT- POT Sta.126+37.900 10.5 LT.(LB) =
-L2LT- S 88° 53' 01.1" E
-L2- S 88° 53' 01.1" E
-L2RT- S 88° 53' 01.1" E
LAT. 0.6m BASE DITCH
LAT. 1.0m BASE DITCH
EXPWY. GUTTER
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
450mm CSP w/ 2 CS ELBOWS TYPE A COATING
2GI w/ FLAT GRATE
2GI w/ FLAT GRATE (EXTRA DEPTH)
FALSE SUMP
375mm RCP
L5 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS 1 RIP RAP & F.F.
CL. "B" RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
CL. "I" RIP RAP (5 M.TONS) w/ FIL. FAB. (30 SM)
PREFORMED SCOUR HOLE WITH APRON PLAN VIEW
SECTION A-A
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
PIPE OUTLET PROTECTION
1.0 METER BASE DITCH
-L2LT- GRADE SEE PROFILE SHEET 33
-L2RT- GRADE SEE PROFILE SHEET 33
-L2- GRADE SEE PROFILE SHEET 34


REVISIONS
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
9
R /W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R /W REV.
METRIC
SITE C-5
MATCHLINE -L2- 124+40 SEE SHEET 8
MATCHLINE -L2- 128+00 SEE SHEET 10
-L2LT- ST Sta. 124+36.047
+36.047 -L2LT- 39.500 (129.59 ft)
JOHN JENNINGS WILLIAMS, HEIRS
DB 922 PG 682
20
ON R +79.587 -L2LT- 39.500
+93.000 -L2LT- 39.500
+10.000 -L2LT- 39.500
+30.000 -L2LT- 39.500
CL. B RIP RAP (2 M.TONS) w/ FIL. FAB. (6 SM)
72
LAT. 0.6m BASE DITCH
400mm CSP w/ 2 CS ELBOWS TYPE A COATING
73
2GI w/ FLAT GRATE
EXPWY. GUTTER
375mm RCP
-L2LT- S 88°53'01.1" E
74 2GI FALSE SUMP
-L2- S 88°53'01.1" E
-L2RT- S 88°53'01.1" E
78
EXPWY. GUTTER
450mm CSP w/ 2 CS ELBOWS TYPE A COATING
79
2GI w/ FLAT GRATE
END W/ FENCE
L5 x L0 PRE-FORMED SCOUR HOLE W/ CLASS TRIP RAP & F.F.
+60.000 -L2RT- 39.500 (129.59 ft)
+90.825 -L2RT- 39.948 (131.06 ft) (R CORNER)
JOHN JENNINGS WILLIAMS, HEIRS
DB 922 PG 682
20
CL. "I" RIP RAP (51 M.TONS) w/ FIL. FAB. (30 SM)
+25.000 -L2RT- 41.379
+35.000 -L2- EX.R/W
+55.000 -L2- EX.R/W
+55.000 -L2- 105.000
+35.000 -L2- 105.000
PIPE OUTLET PROTECTION
-L2- STA. 126+16 RT.
ROBERT HATCHER, JR.
DB 479 PG 550
21
+27.000 -L2- 108.000
+36.500 -L2- 101.000
NADB
POT Sta.126+50.000 (LA) =
-L2RT- POT Sta.126+50.325 10.5 RT.(LB) =
-L2LT- POT Sta.126+37.900 10.5 LT.(LB) =
LEVEL SPREADER TYPICAL SECTION
-L2- STA. 126+00 LT.
-L2- STA. 126+40 RT.
END W/ FENCE
2GI w/ FLAT GRATE
82
2GI TYPE A
83
FALSE SUMP
84
2GI w/ FLAT GRATE (EXTRA DEPTH)
85
LAT. L0m BASE DITCH
ROBERT HATCHER, JR.
DB 479 PG 550
21
+92.384 -L2- 55.334 (181.54 ft) (R CORNER)
+08.308 -L2- 55.421 (181.83 ft) (R CORNER)
ROBERT GILES BROWN
DB 1334 PG 819
23
22
CURTIS SMITH POWELL
DB 1245 PG 527
L0 METER BASE DITCH
JAMES LANTEI LEVETT
DB 1390 PG 613
24
FROM -L2- STA. 126+40 TO STA. 126+97 RT. (EST. D.D.E. = cu.m)
FROM -L2- STA. 126+97 TO STA. 127+28 RT. (EST. D.D.E. = cu.m, RIP RAP = m.tons, FILTER FABRIC = sm)
-L2LT- GRADE SEE PROFILE SHEET 33
-L2RT- GRADE SEE PROFILE SHEET 33
-L2- GRADE SEE PROFILE SHEET 34
6.6 METER BASE DITCH
FROM -L2LT- STA. 124+40 TO STA. 125+91 LT. (EST. D.D.E. = cu.m)
TOE OF FILL PROTECTION
Type of Liner = CLASS 'B' RIP RAP
FROM -L2LT- STA. 125+76 TO STA. 126+20 LT. (EST. RIP RAP = 40 m.tons, FIL. FAB. = 56 sm)
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
-L2RT- STA. 125+88 RT.
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
455


METRIC
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
33
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
-L2LT-
END PROP. -L2LT- GRADE
-L2LT- STA 126+37.900=
-L2- STA 126+50.000 (10.5m RT.)
FINISHED ELEV. = 91.741
-1.4970%
0.6 BASE DITCH -0.31%
0.6 BASE DITCH -1.26%
BZ 2
BZ 1
125+40.000 LT
88.350
125+91.000 LT
87.400
SITE C-5
END PROP. -L2RT- GRADE
-L2RT- STA 126+50.385=
-L2- STA 126+50.000 (10.5m LT.)
FINISHED ELEV. = 91.741
-1.4970%
1.0 BASE DITCH +1.33%
1.0 BASE DITCH +2.50%
126+40.000 RT
86.100
127+00.000 RT
86.900
127+28.000 RT
87.600
-L2RT-
456
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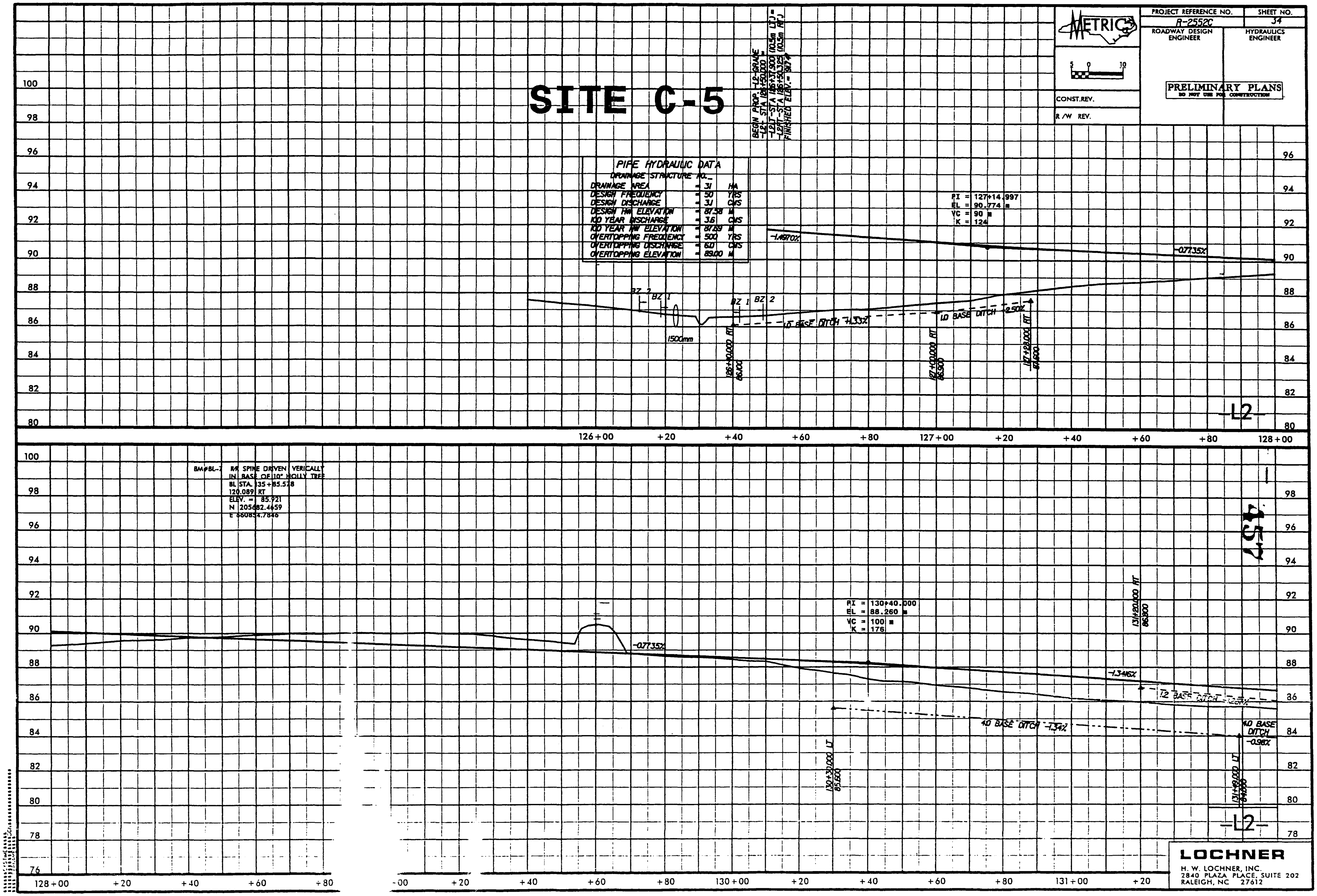
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612



SITE C-5
BEGIN PROP. -L2- GRADE
-L2- STA 126+50.000 =
-L2LT- STA 186+37.900 (10.5m LT.) =
-L2RT- STA 186+50.325 (10.5m RT.)
FINISHED ELEV. = 90.74
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. _
DRAINAGE AREA = 31 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 3.1 CMS
DESIGN HW ELEVATION = 87.58 M
100 YEAR DISCHARGE = 3.6 CMS
100 YEAR HW ELEVATION = 87.69 M
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING DISCHARGE = 6.0 CMS
OVERTOPPING ELEVATION = 89.00 M
PI = 127+14.997
EL = 90.774 m
VC = 90 m
K = 124
-1.4970%
-0.7735%
BZ 2
BZ 1
BZ 1
BZ 2
1500mm
1.0 BASE DITCH -1.33%
1.0 BASE DITCH -2.50%
126+40.000 RT
86.100
127+00.000 RT
86.900
127+28.000 RT
87.600
-L2-
126+00
+20
+40
+60
+80
127+00
+20
+40
+60
+80
128+00
BM#BL-7 RR SPIKE DRIVEN VERICALLY IN BASE OF 10" HOLLY TREE
BL STA. 135+85.578
120.089 RT
ELEV. = 85.921
N 205682.4659
E 660854.7846
PI = 130+40.000
EL = 88.260 m
VC = 100 m
K = 176
-0.7735%
-1.3416%
1.2 BASE DITCH -1.25%
4.0 BASE DITCH -1.34%
4.0 BASE DITCH -0.96%
131+20.000 RT
86.800
130+32.000 LT
85.600
131+49.000 LT
84.000
457
-L2-
128+00
+20
+40
+60
+80
-00
+20
+40
+60
+80
130+00
+20
+40
+60
+80
131+00
+20
100
98
96
94
92
90
88
86
84
82
80
78
76
METRIC
5 0 10
CONST. REV.
R/W REV.
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
34
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
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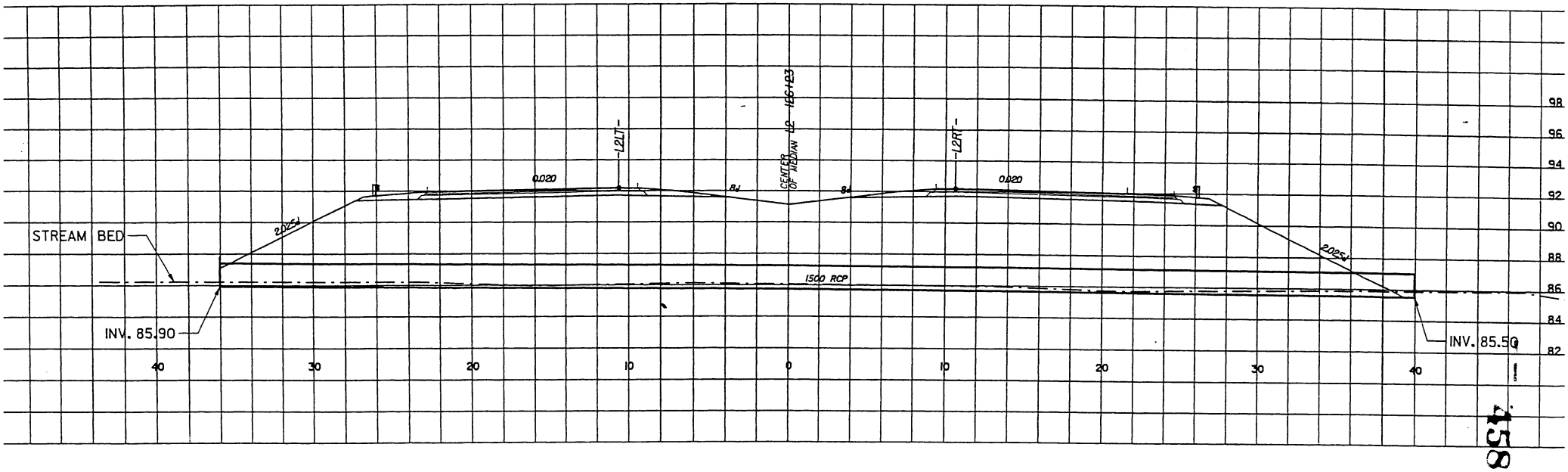
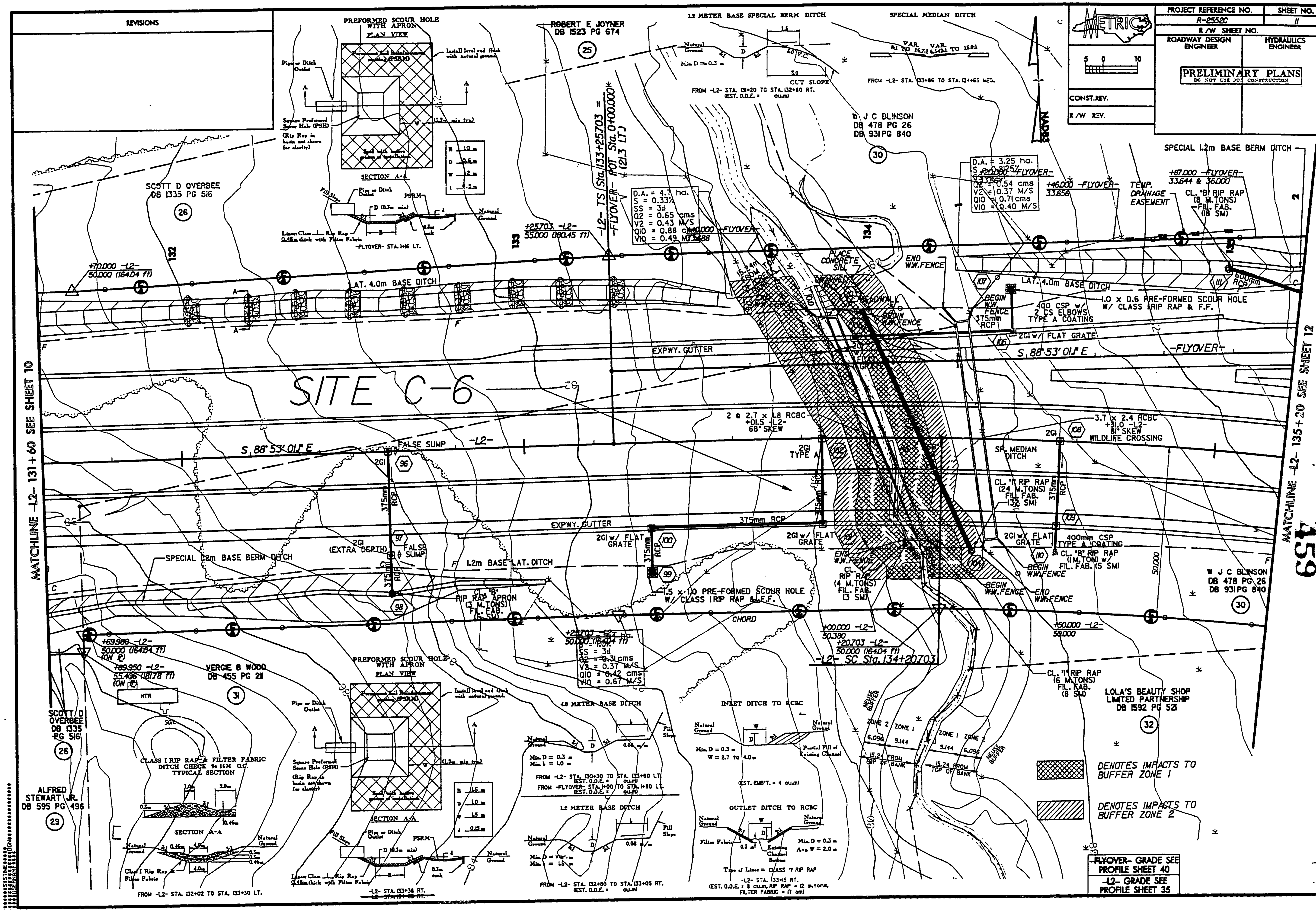
RALEIGH, NC 27612

2.0 0 2.0 4	METRIC	PROJECT REFERENCE NO.	SHEET NO.
		R-2552C	PP 1

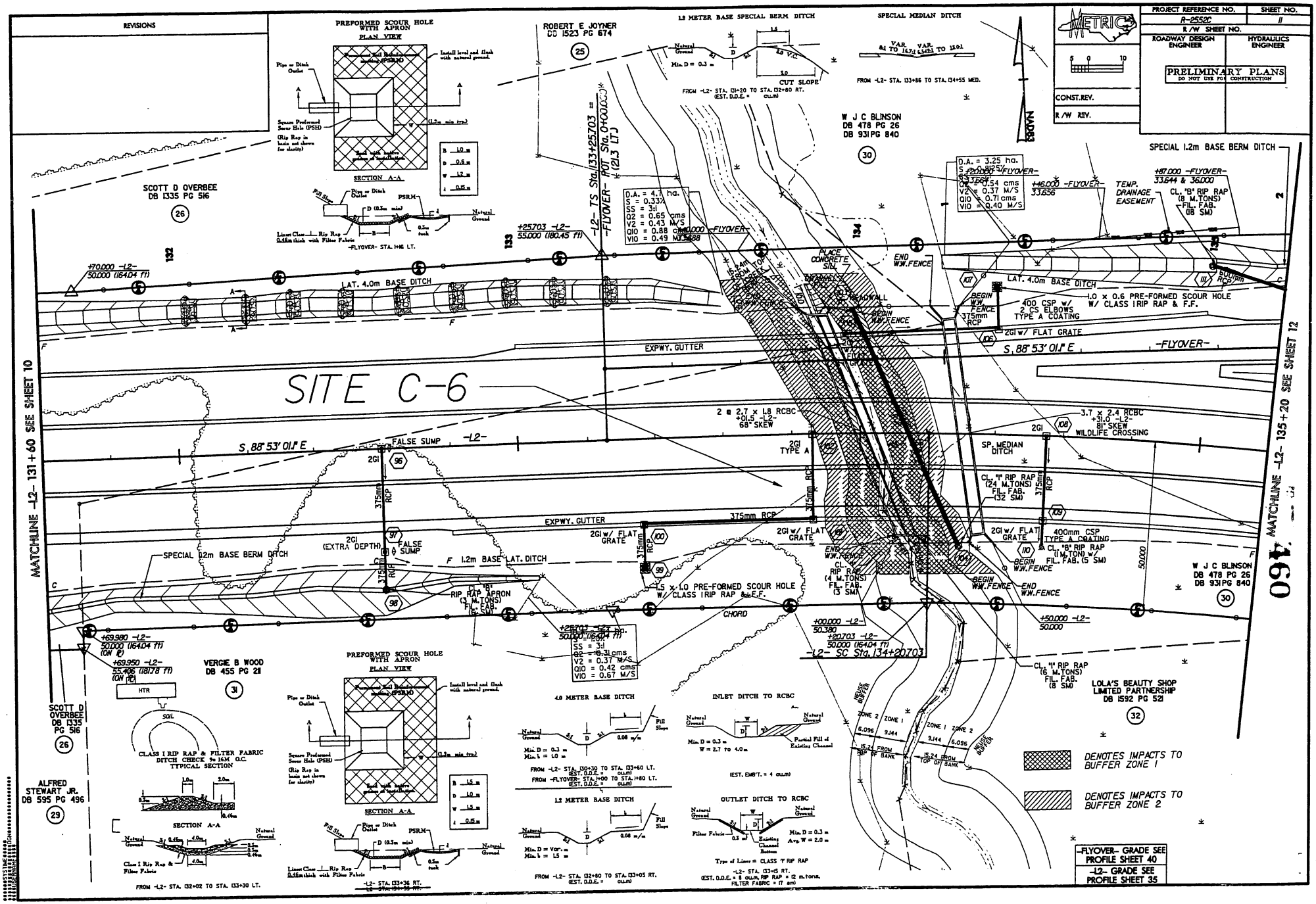
SITE C-5



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



REVISIONS
PROJECT REFERENCE NO. R-2552C
SHEET NO. 11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
METRIC
NAD83
459
MATCHLINE -L2- 131+60 SEE SHEET 10
MATCHLINE -L2- 135+20 SEE SHEET 12
SITE C-6
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
1.2 METER BASE SPECIAL BERM DITCH
SPECIAL MEDIAN DITCH
4.0 METER BASE DITCH
1.2 METER BASE DITCH
INLET DITCH TO RCBC
OUTLET DITCH TO RCBC
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK
TYPICAL SECTION
ROBERT E JOYNER
DB 1523 PG 674
SCOTT D OVERBEE
DB 1335 PG 516
W J C BLINSON
DB 478 PG 26
DB 931 PG 840
VERGIE B WOOD
DB 455 PG 21
ALFRED STEWART JR.
DB 595 PG 496
LOLA'S BEAUTY SHOP
LIMITED PARTNERSHIP
DB 1592 PG 521
-L2- TS Sta. 133+25703 = -FLYOVER- POT Sta. 0+00.000 (21.3 LT)
-L2- SC Sta. 134+20.703
S 88°53'01.1" E
LAT. 4.0m BASE DITCH
EXPWY. GUTTER
FALSE SUMP
2 @ 2.7 x 1.8 RCBC +01.5 -L2- 68° SKEW
3.7 x 2.4 RCBC +31.0 -L2- 81° SKEW WILDLIFE CROSSING
1.0 x 0.6 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
1.5 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
SPECIAL 1.2m BASE BERM DITCH
1.2m BASE LAT. DITCH
SP. MEDIAN DITCH
TEMP. DRAINAGE EASEMENT
PLACE CONCRETE SILL
BEGIN W.W. FENCE
END W.W. FENCE
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
-FLYOVER- GRADE SEE PROFILE SHEET 40
-L2- GRADE SEE PROFILE SHEET 35


REVISIONS
PROJECT REFERENCE NO. A-2552C
SHEET NO. 11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
METRIC
SITE C-6
MATCHLINE -L2- 131+60 SEE SHEET 10
MATCHLINE -L2- 135+20 SEE SHEET 12
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
ROBERT E JOYNER DB 1523 PG 674
SCOTT D OVERBEE DB 1335 PG 516
W J C BLINSON DB 478 PG 26 DB 931PG 840
VERGIE B WOOD DB 455 PG 21
ALFRED STEWART JR. DB 595 PG 496
LOLA'S BEAUTY SHOP LIMITED PARTNERSHIP DB 1592 PG 521
-L2- TS Sta.133+25.703 = -FLYOVER- POT Sta.0+00.000 (21.3 LT.)
12 METER BASE SPECIAL BERM DITCH
SPECIAL MEDIAN DITCH
SPECIAL 1.2m BASE BERM DITCH
LAT. 4.0m BASE DITCH
1.2m BASE LAT. DITCH
EXPWY. GUTTER
FALSE SUMP
2 @ 2.7 x 1.8 RCBC +01.5 -L2- 68° SKEW
3.7 x 2.4 RCBC +31.0 -L2- 81° SKEW WILDLIFE CROSSING
1.0 x 0.6 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
1.5 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
400 CSP w/ 2 CS ELBOWS TYPE A COATING
400mm CSP TYPE A COATING
SP. MEDIAN DITCH
TEMP. DRAINAGE EASEMENT
PLACE CONCRETE SILL
END W.W. FENCE
BEGIN W.W. FENCE
2GI w/ FLAT GRATE
2GI TYPE A
2GI (EXTRA DEPTH)
CL. "B" RIP RAP APRON (3 M. TONS) FIL. FAB. (3 SM)
CL. "I" RIP RAP (24 M. TONS) FIL. FAB. (32 SM)
CL. "I" RIP RAP (4 M. TONS) FIL. FAB. (3 SM)
CL. "B" RIP RAP (1 M. TON) w/ FIL. FAB. (5 SM)
CL. "I" RIP RAP (6 M. TONS) FIL. FAB. (8 SM)
CL. "B" RIP RAP (8 M. TONS) FIL. FAB. (18 SM)
CLASS I RIP RAP & FILTER FABRIC DITCH CHECK 9o 16M O.C. TYPICAL SECTION
4.0 METER BASE DITCH
INLET DITCH TO RCBC
OUTLET DITCH TO RCBC
1.2 METER BASE DITCH
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
-FLYOVER- GRADE SEE PROFILE SHEET 40
-L2- GRADE SEE PROFILE SHEET 35
460

SITE C-6

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 2.2	SQKM
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 23	CMS
DESIGN HW ELEVATION	= 86.43	M
100 YEAR DISCHARGE	= 34	CMS
100 YEAR HW ELEVATION	= 86.63	M
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 51.8	CMS
OVERTOPPING ELEVATION	= 87.92	M

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2552C	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM#BL-8 RR SPIKE DRIVEN VERTICALLY IN THE BASE OF 14" PINE TREE
BL STA. 42+36.677
121.088 RT
ELEV. = 87.399
N 205659.1015
E 661499.2533

PI = 134+90.000
PI = 82.223 m
VC = 285
K = 80

-L2-

-L1-

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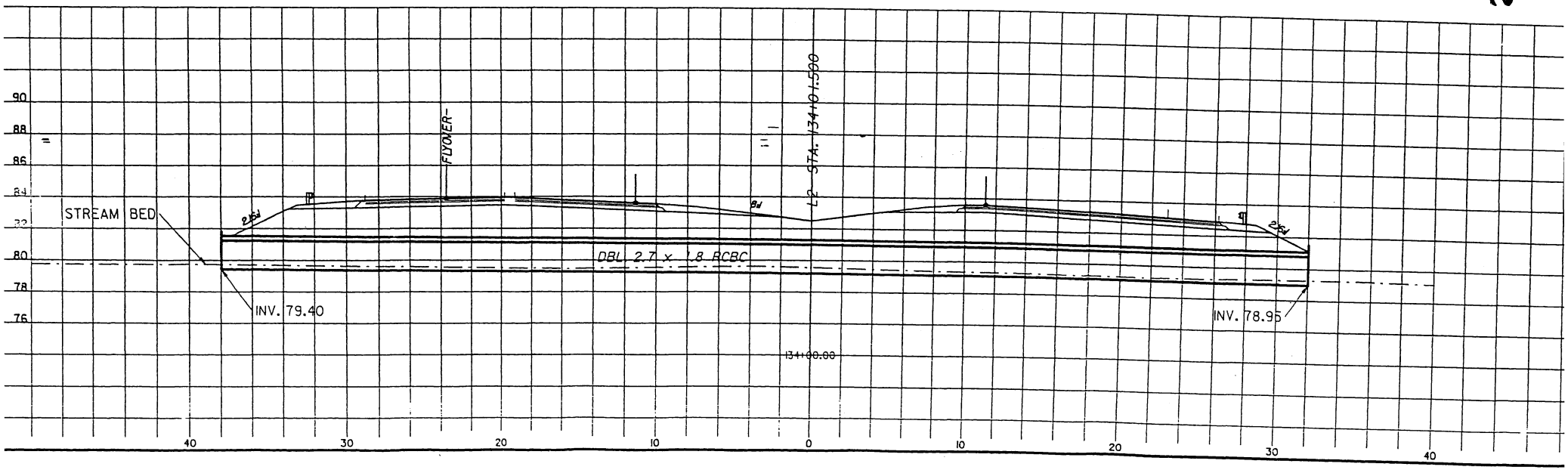
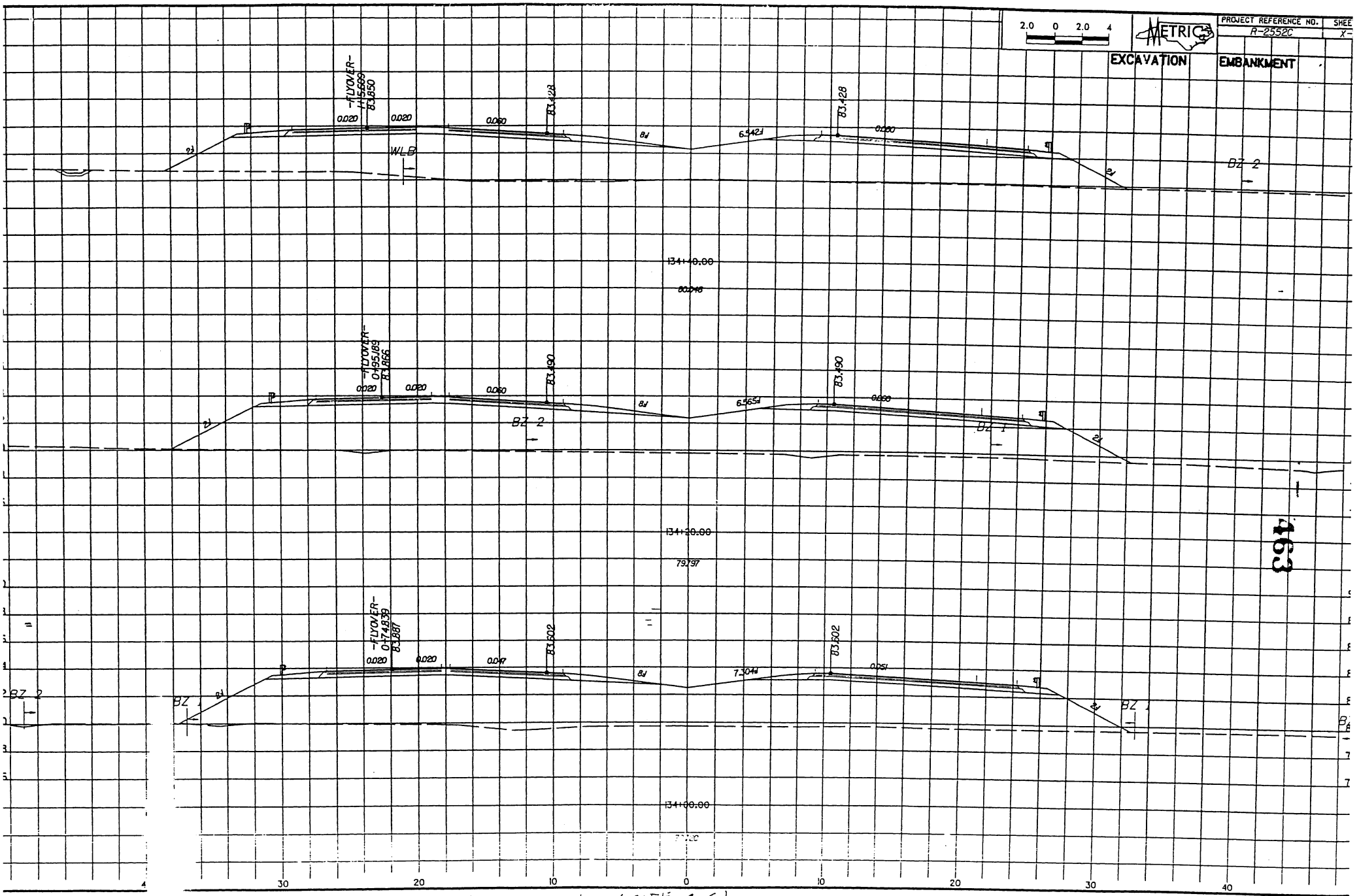
SITE C-6

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

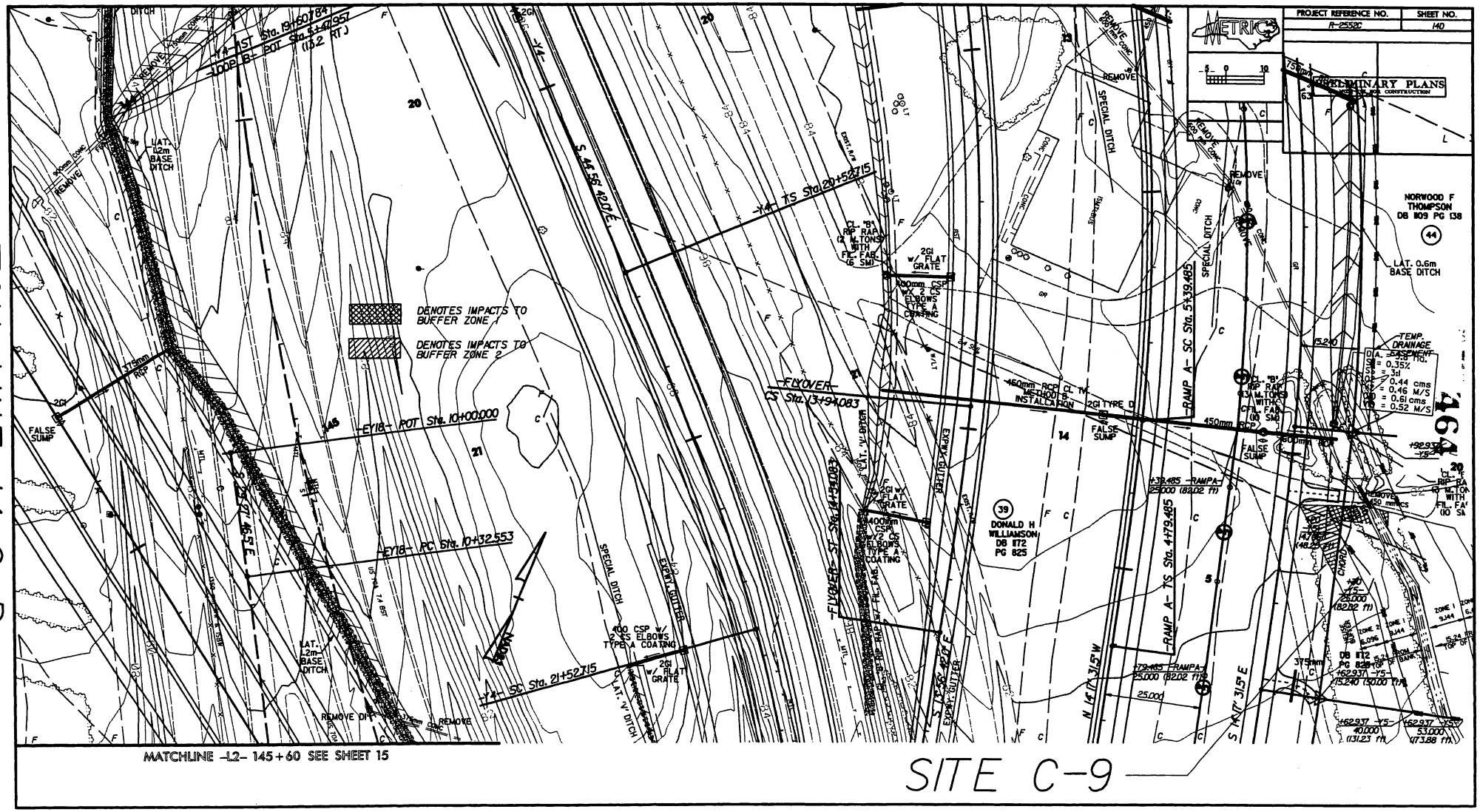




463

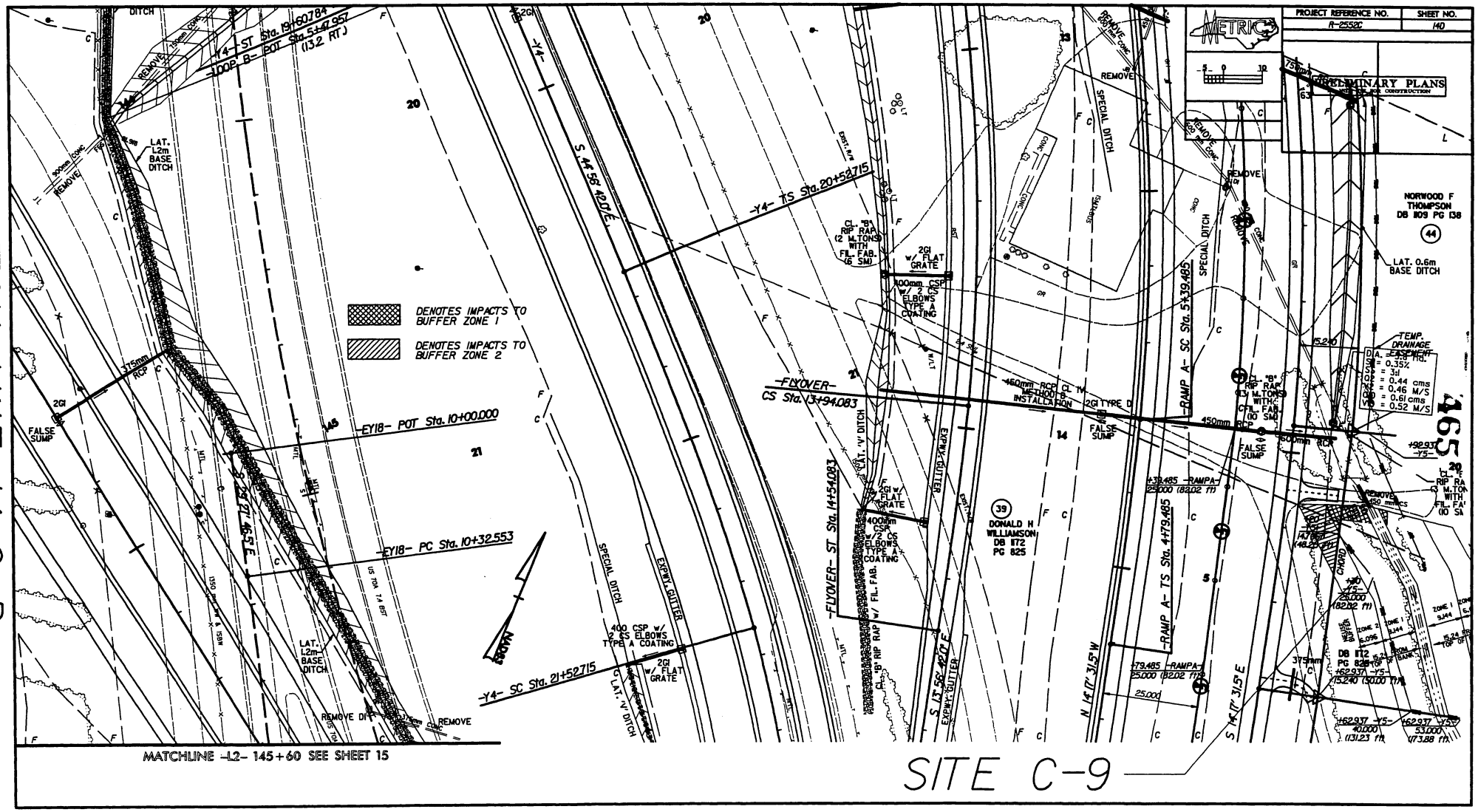
TYPICAL CROSS SECTION (SITE C-6)

MATCH LINE 14 A-D



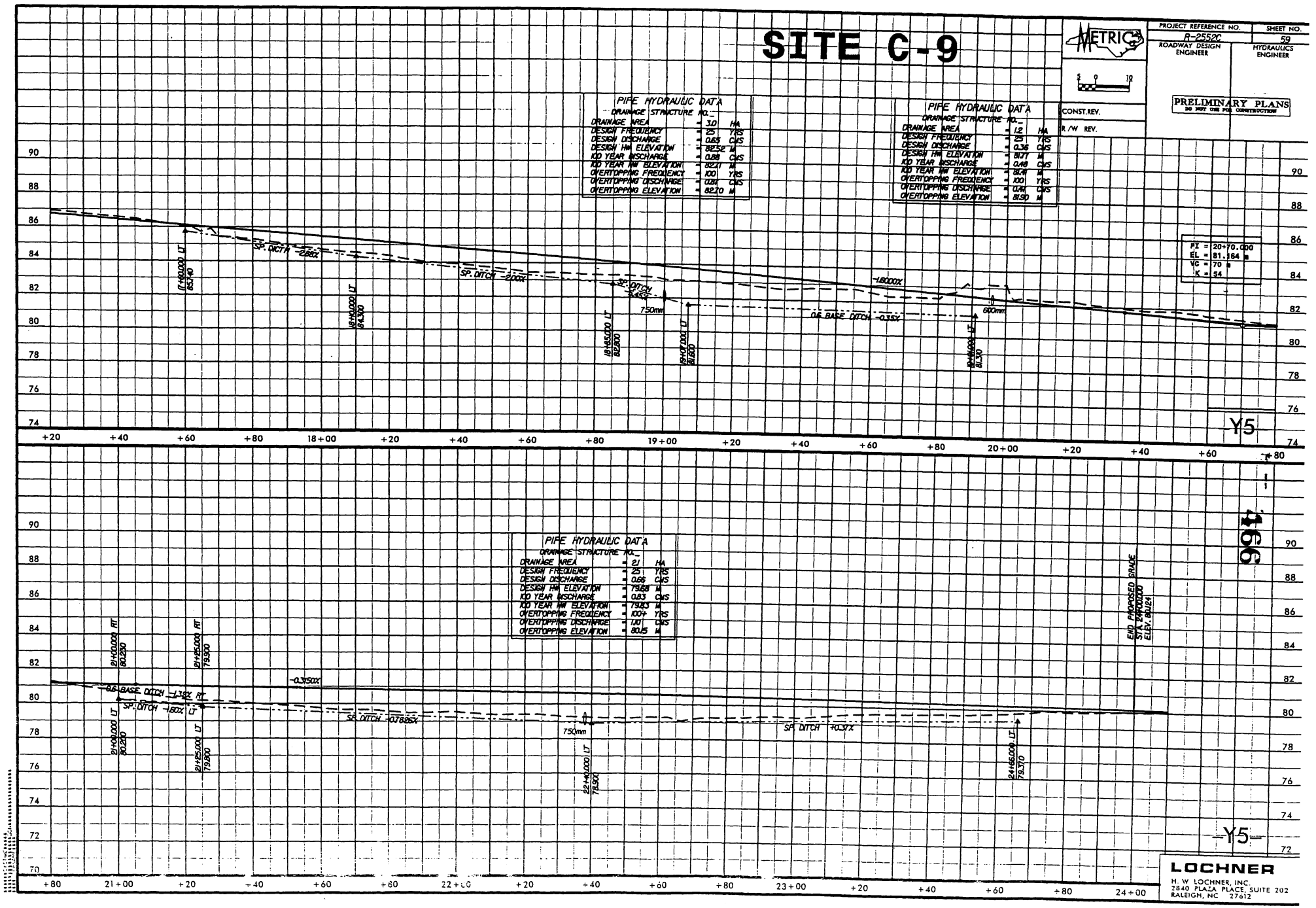
MATCH LINE 14 C-D

MATCH LINE 14 A-D



MATCH LINE 14 C-D

SITE C-9



METRIC

$ 0 10

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.

R/W REV.

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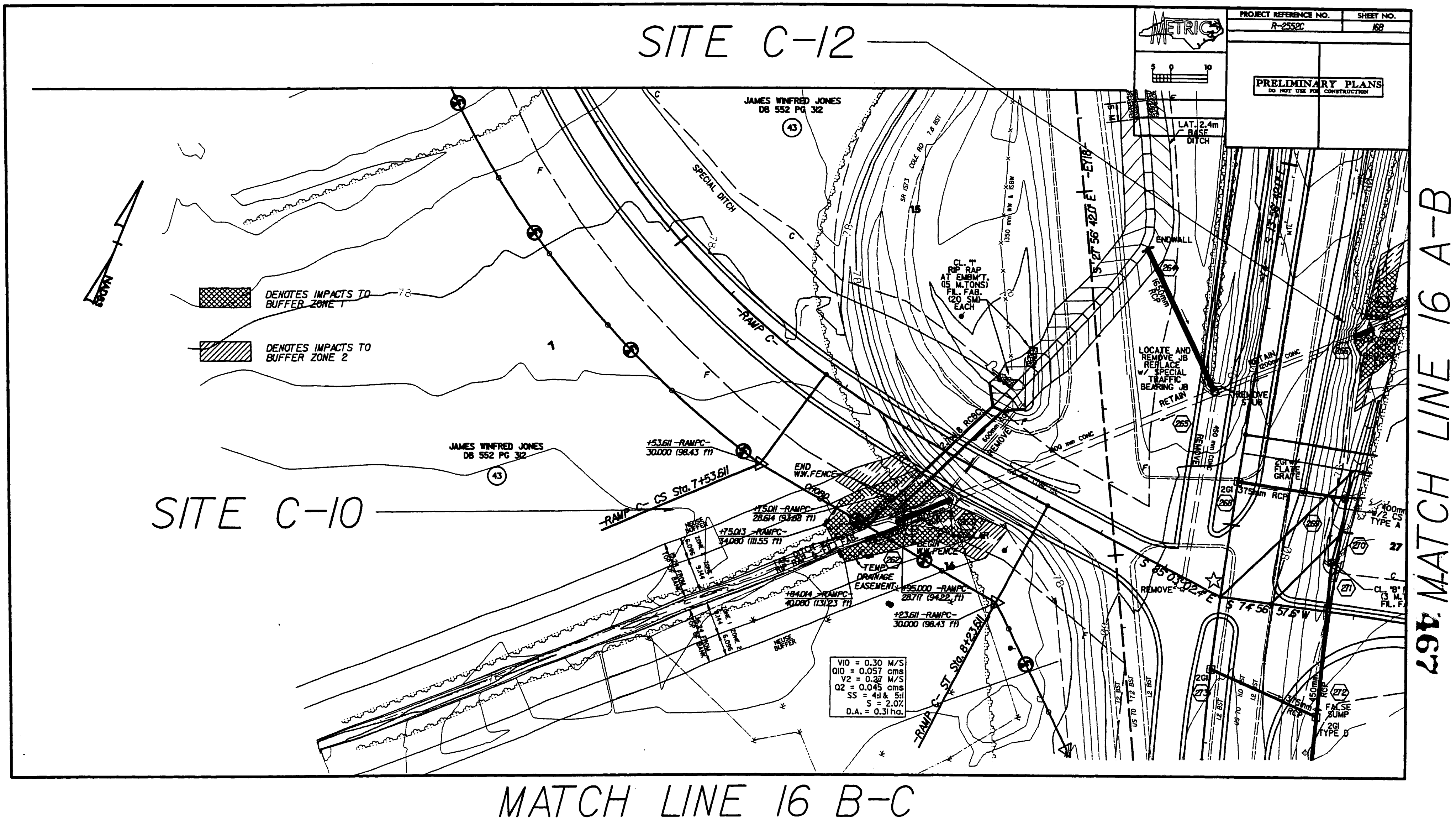
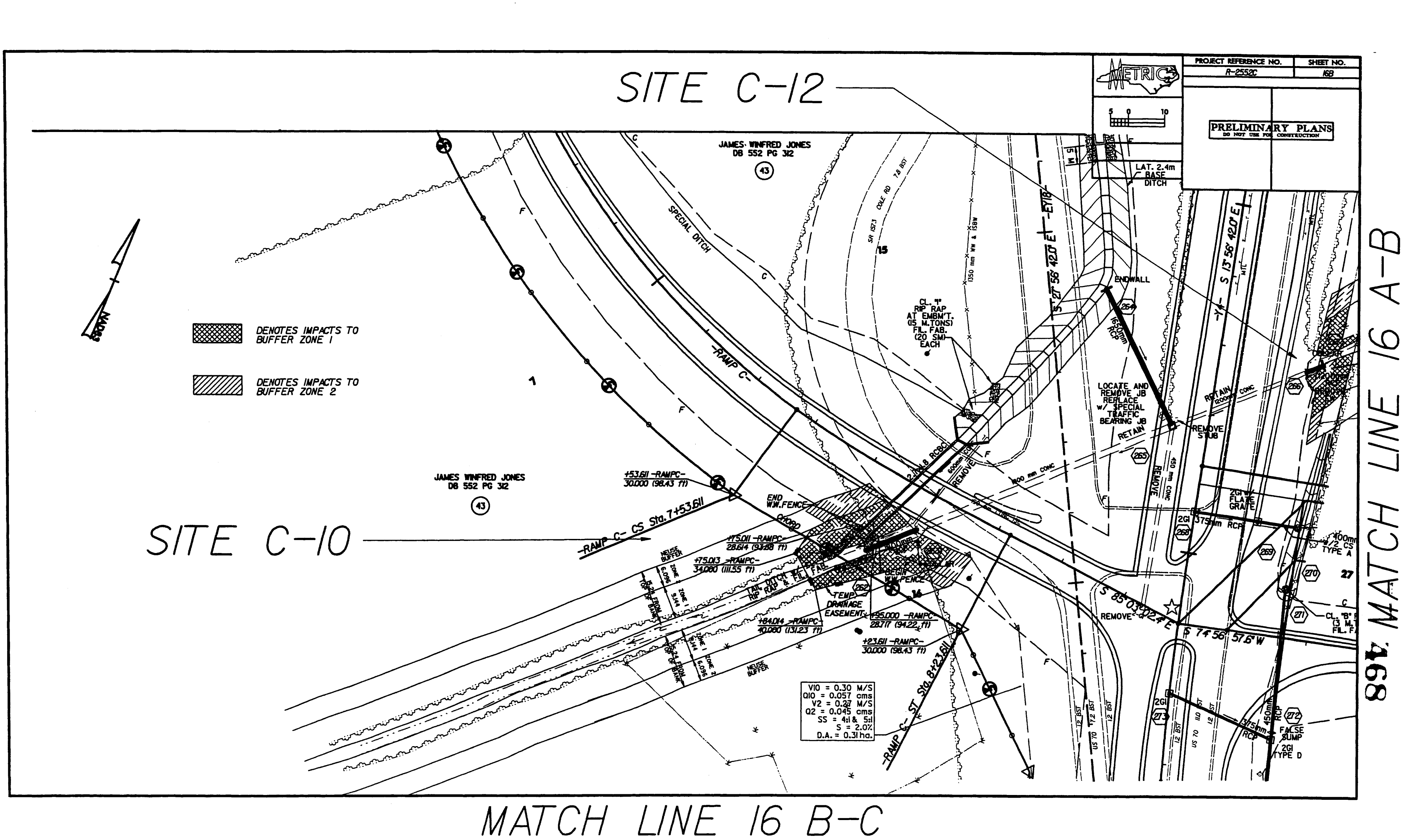
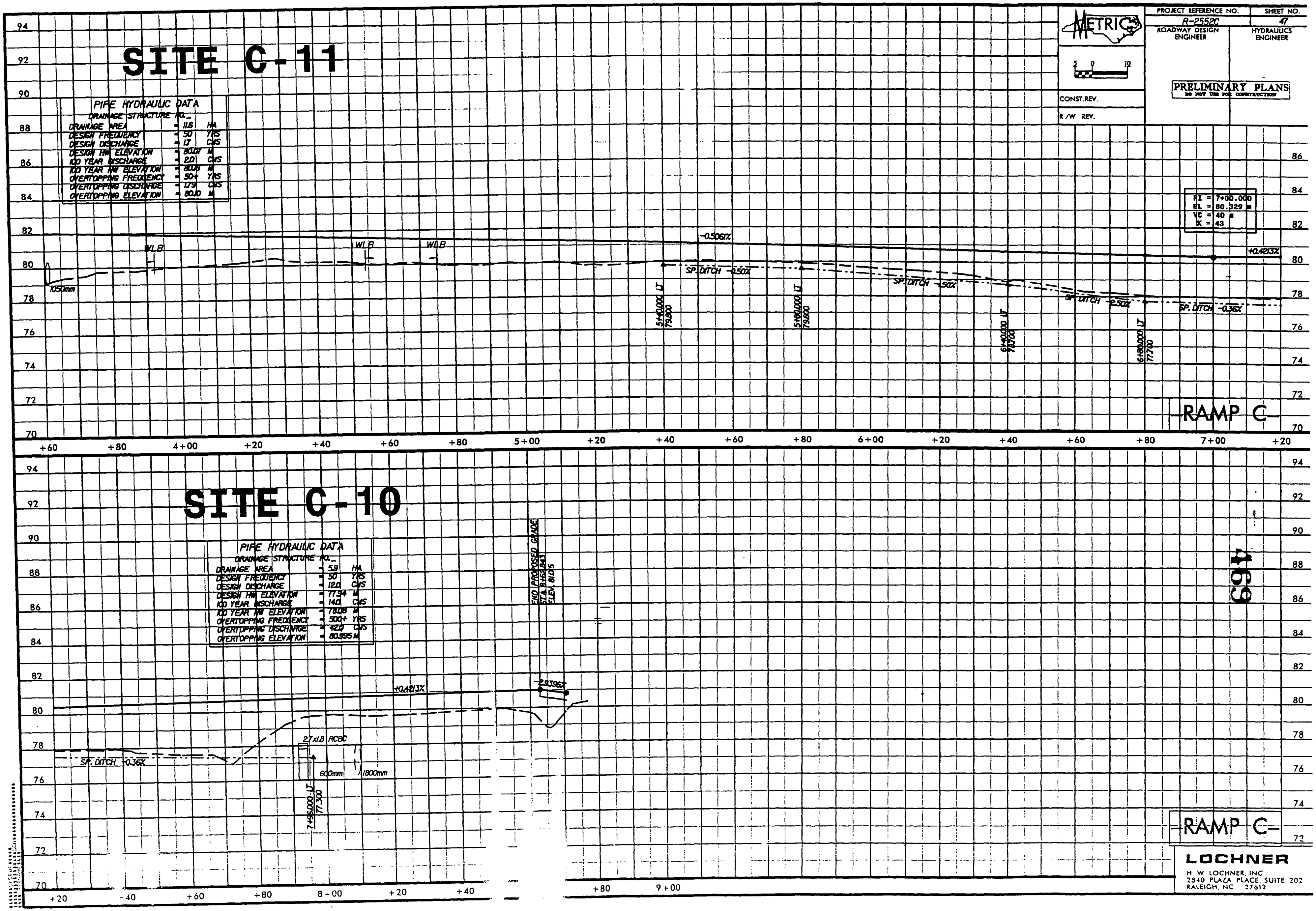
RALEIGH, NC 27612



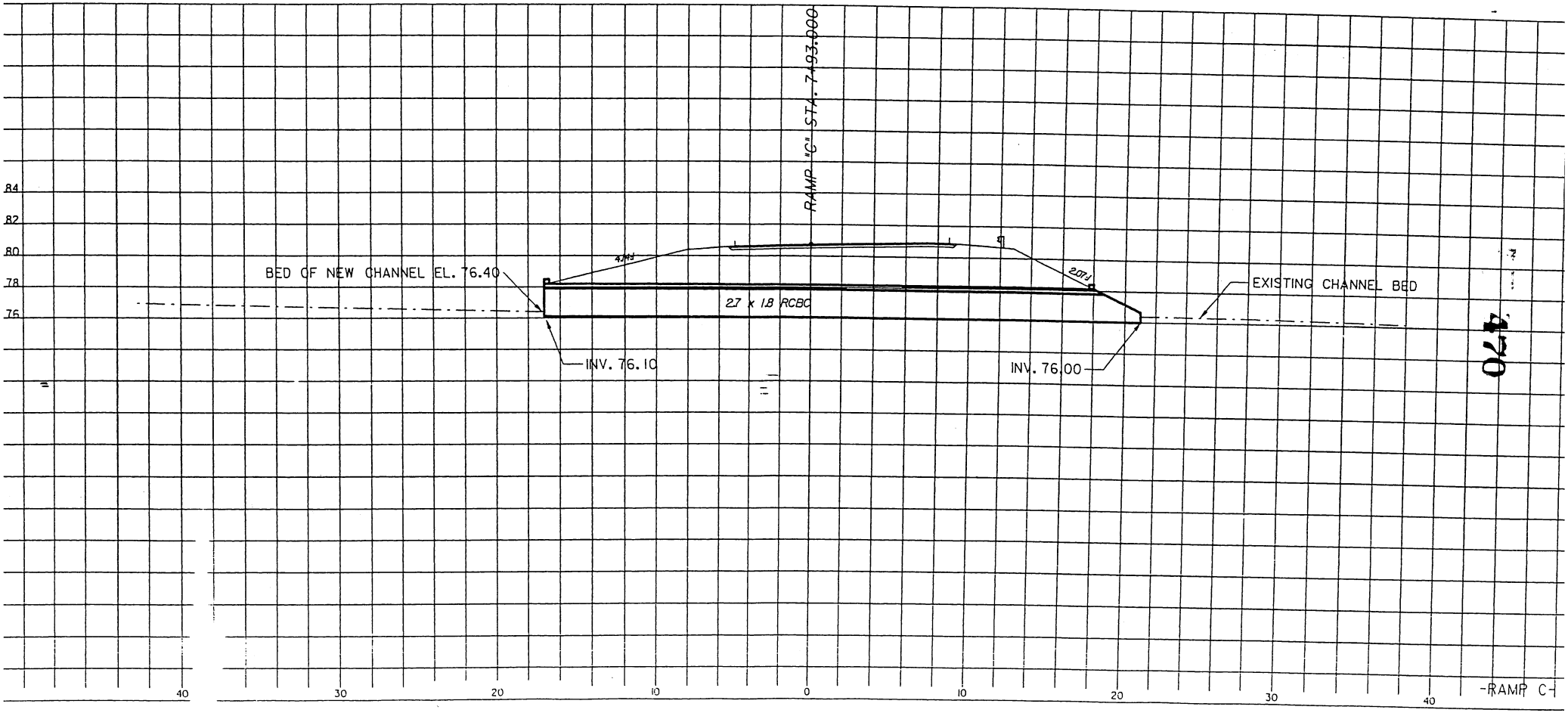
SITE C-12
SITE C-10
MATCH LINE 16 A-B
MATCH LINE 16 B-C
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
16B
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
LAT. 2.4m BASE DITCH
JAMES WINFRED JONES
DB 552 PG 312
SPECIAL DITCH
-RAMP C-
CL. "I" RIP RAP AT EMBM'T. (15 M.TONS) FIL. FAB. (20 SM) EACH
ENDWALL
LOCATE AND REMOVE JB REPLACE w/ SPECIAL TRAFFIC BEARING JB
RETAIN
REMOVE
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
NAD83
END WW.FENCE
TEMP. DRAINAGE EASEMENT
BEGIN WW.FENCE
+53.611 -RAMPC-
30.000 (98.43 ft)
-RAMP C- CS Sta. 7+53.611
+75.011 -RAMPC-
28.614 (93.88 ft)
+75.013 -RAMPC-
34.080 (111.55 ft)
+84.014 -RAMPC-
40.080 (131.23 ft)
+95.000 -RAMPC-
28.717 (94.22 ft)
+23.611 -RAMPC-
30.000 (98.43 ft)
-RAMP C- ST Sta. 8+23.611
NEUSE BUFFER
V10 = 0.30 M/S
Q10 = 0.057 cms
V2 = 0.27 M/S
Q2 = 0.045 cms
SS = 4:1 & 5:1
S = 2.0%
D.A. = 0.31 ha.
S 74°56' 57.6" W
REMOVE
2GI FLAT GRATE
375mm RCP
450mm RCP
FALSE SUMP
2GI TYPE D
TYPE A
27


SITE C-12
SITE C-10
MATCH LINE 16 A-B
MATCH LINE 16 B-C
468
PROJECT REFERENCE NO. R-2552C
SHEET NO. 16B
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
JAMES WINFRED JONES
DB 552 PG 312
43
SPECIAL DITCH
-RAMP C-
-RAMP C- CS Sta. 7+53.611
+53.611 -RAMPC-
30.000 (98.43 ft)
+75.011 -RAMPC-
28.614 (93.88 ft)
+75.013 -RAMPC-
34.000 (111.55 ft)
+84.014 -RAMPC-
40.000 (131.23 ft)
+95.000 -RAMPC-
28.717 (94.22 ft)
+23.611 -RAMPC-
30.000 (98.43 ft)
-RAMP C- ST Sta. 8+23.611
END W.W. FENCE
BEGIN W.W. FENCE
TEMP. DRAINAGE EASEMENT
NEUSE BUFFER
ZONE 1
ZONE 2
9.144
6.096
15.24 FROM TOP OF BANK
V10 = 0.30 M/S
Q10 = 0.057 cms
V2 = 0.27 M/S
Q2 = 0.045 cms
SS = 4:1 & 5:1
S = 2.0%
D.A. = 0.31 ha.
CL. "I" RIP RAP AT EMBM'T. (15 M.TONS) FIL. FAB. (20 SM) EACH
ENDWALL
1650mm RCP
LOCATE AND REMOVE JB REPLACE w/ SPECIAL TRAFFIC BEARING JB
RETAIN
REMOVE STUB
REMOVE
450 mm CONC
2GI w/ FLATE GRATE
2GI 375mm RCP
400mm 1/2 CS TYPE A
CL. "B" R (3 M.T) FIL. F
FALSE SUMP
2GI TYPE D
450mm RCP
375mm RCP
S 27°56'42.0" E
S 13°56'42.0" E
S 85°03'02.4" E
S 74°56'57.6" W
LAT. 2.4m BASE DITCH
SR 1573 COLE RD 7.8 BST
1350 mm WW & ISBW
US 70
12 BST
NAD83
-EY1B-
-Y-
264
265
266
268
269
270
271
272
273
262
15
14
27


SITE C-11
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. _
DRAINAGE AREA = 11.6 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 17 CMS
DESIGN HW ELEVATION = 80.07 M
100 YEAR DISCHARGE = 20 CMS
100 YEAR HW ELEVATION = 80.08 M
OVERTOPPING FREQUENCY = 50+ YRS
OVERTOPPING DISCHARGE = 17.9 CMS
OVERTOPPING ELEVATION = 80.10 M
W.L.B
1050mm
-0.5061%
SP. DITCH -0.50%
SP. DITCH -1.50%
SP. DITCH -2.50%
SP. DITCH -0.36%
+0.4813%
5+40.000 LT 79.800
5+80.000 LT 79.600
6+40.000 LT 78.700
6+80.000 LT 77.700
PI = 7+00.000
EL = 80.329 m
VC = 40 m
K = 43
RAMP C
SITE C-10
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. _
DRAINAGE AREA = 5.9 HA
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 12.0 CMS
DESIGN HW ELEVATION = 77.94 M
100 YEAR DISCHARGE = 14.0 CMS
100 YEAR HW ELEVATION = 78.08 M
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING DISCHARGE = 42.0 CMS
OVERTOPPING ELEVATION = 80.995 M
END PROPOSED GRADE
STA. 8+60.843
ELEV. 81.05
-2.9395%
+0.4813%
SP. DITCH -0.36%
2.7x1.8 RCBC
600mm
1800mm
7+95.000 LT 77.300
RAMP C
469
METRIC
PROJECT REFERENCE NO. R-2552C
SHEET NO. 47
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

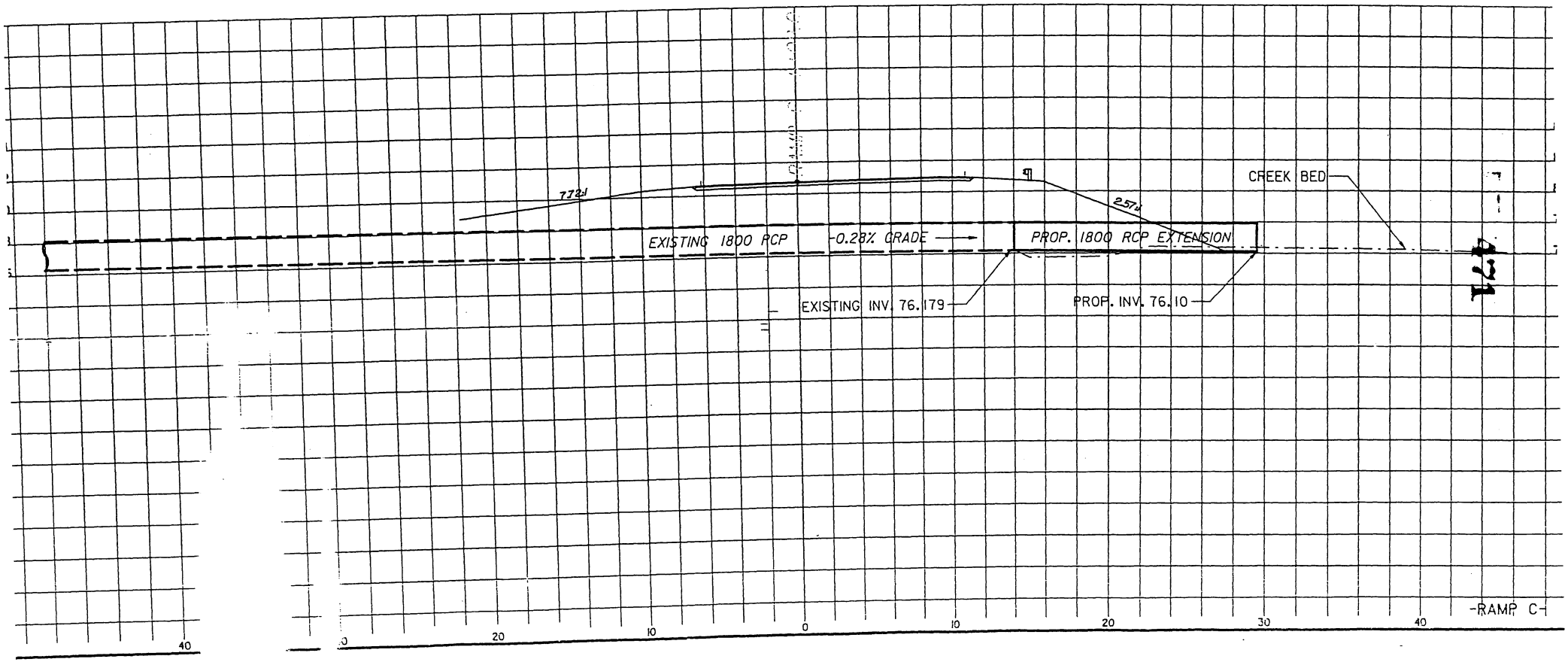
SITE C-10

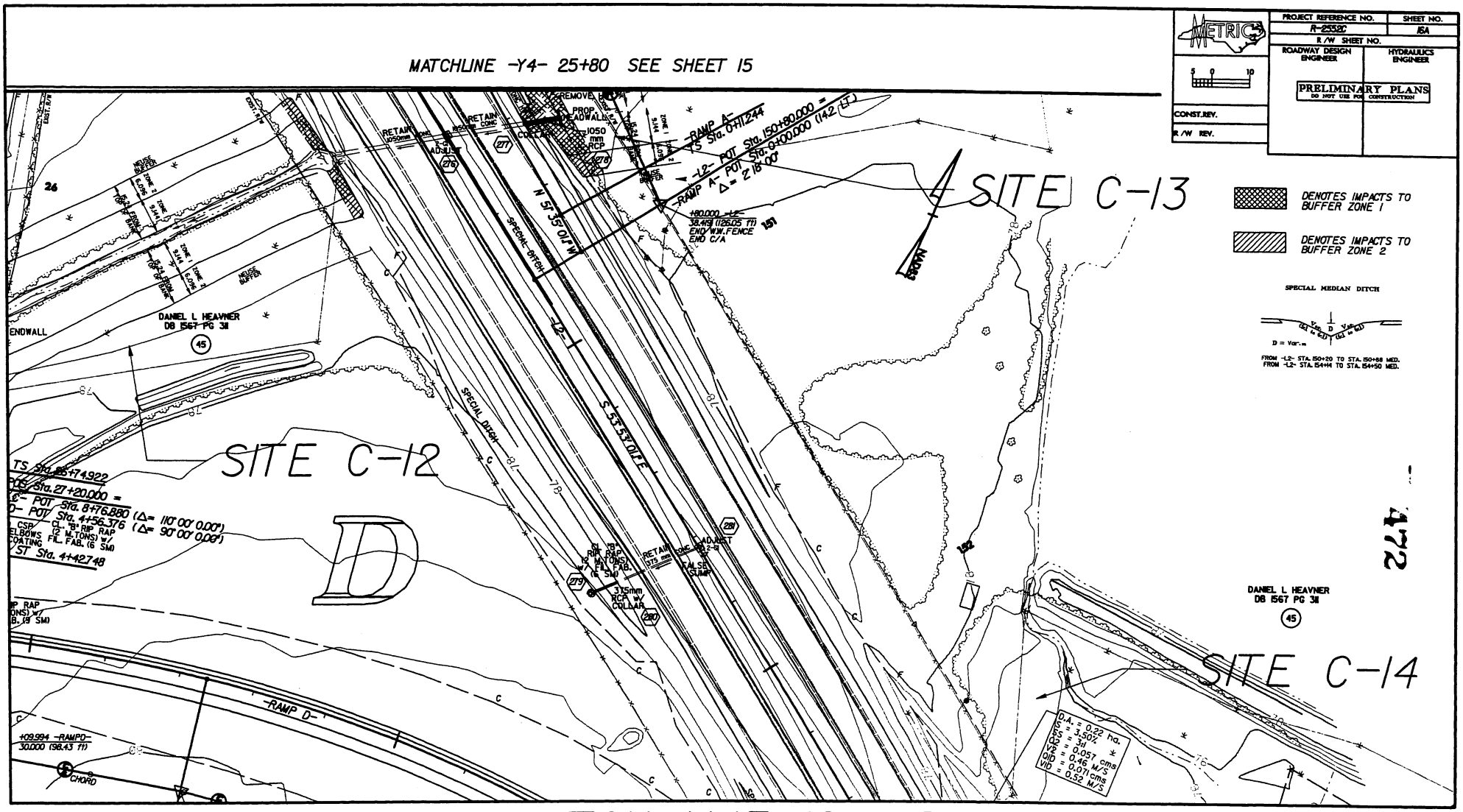
PROFILE OF 2.7 x 1.8 RCBC
RAMP C - STA. 7+93.000
PLAN SHEET 16

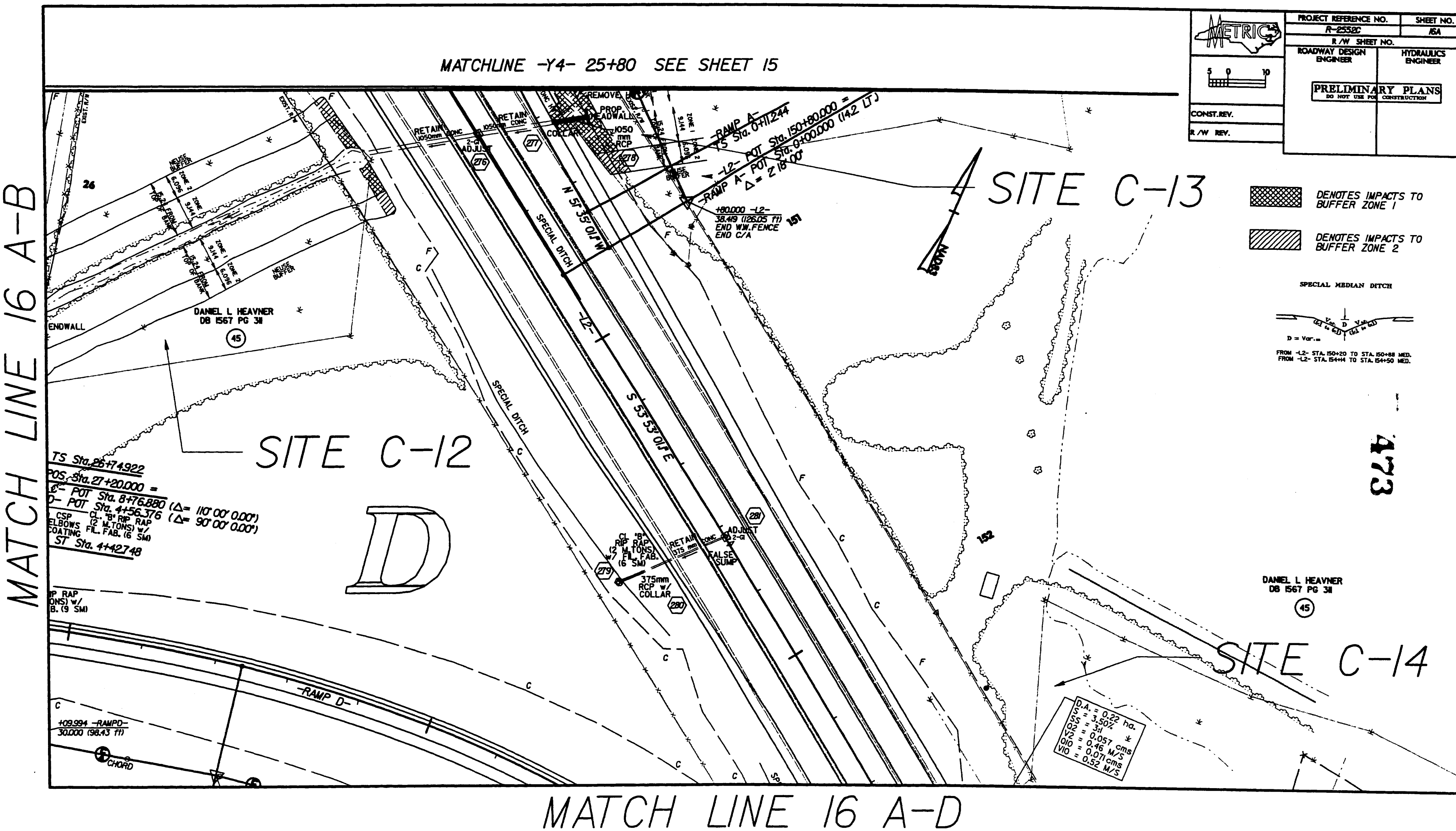


SITE C-10

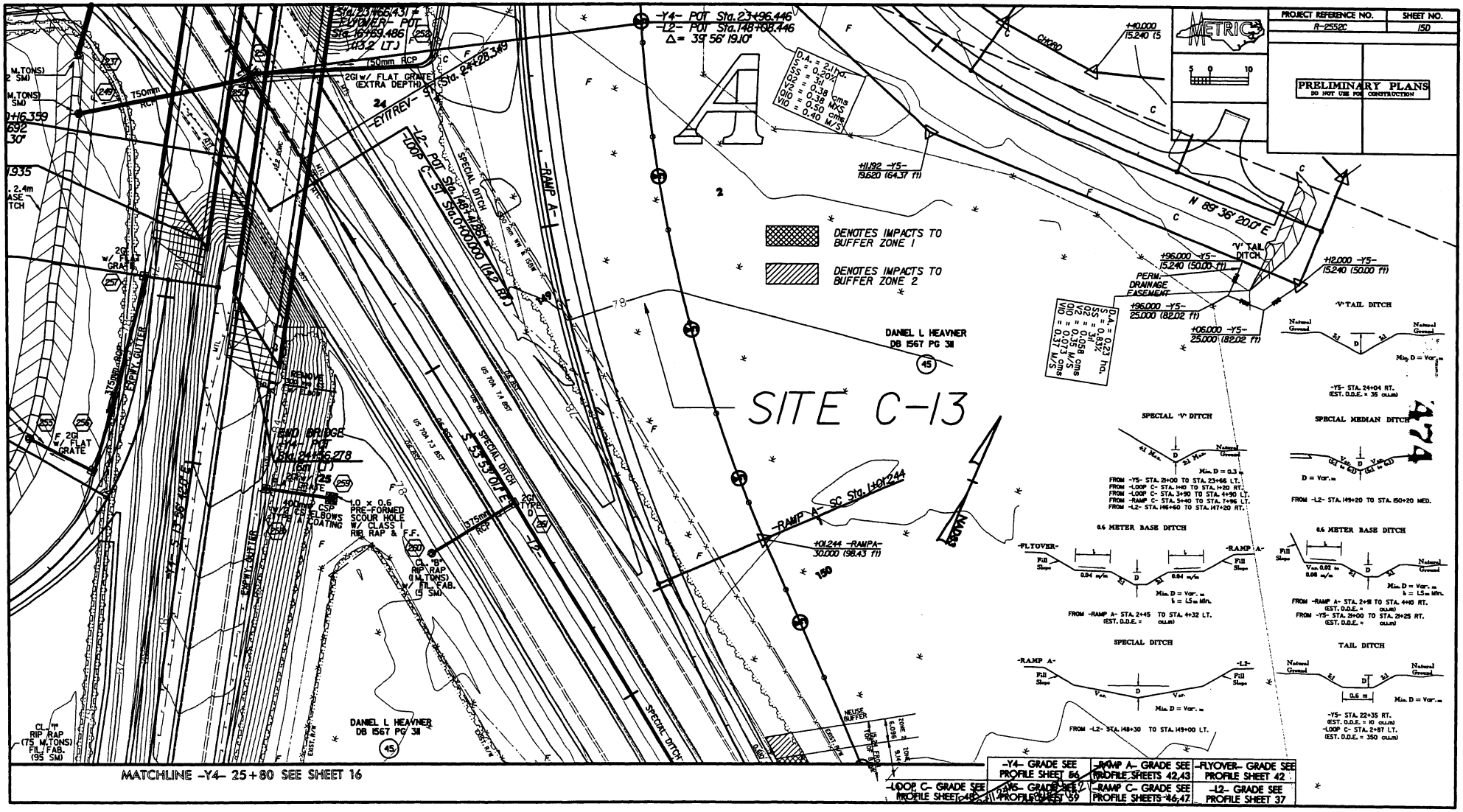
PIPE PROFILE OF 1800 RCP
RAMP C STA. 8+09.0

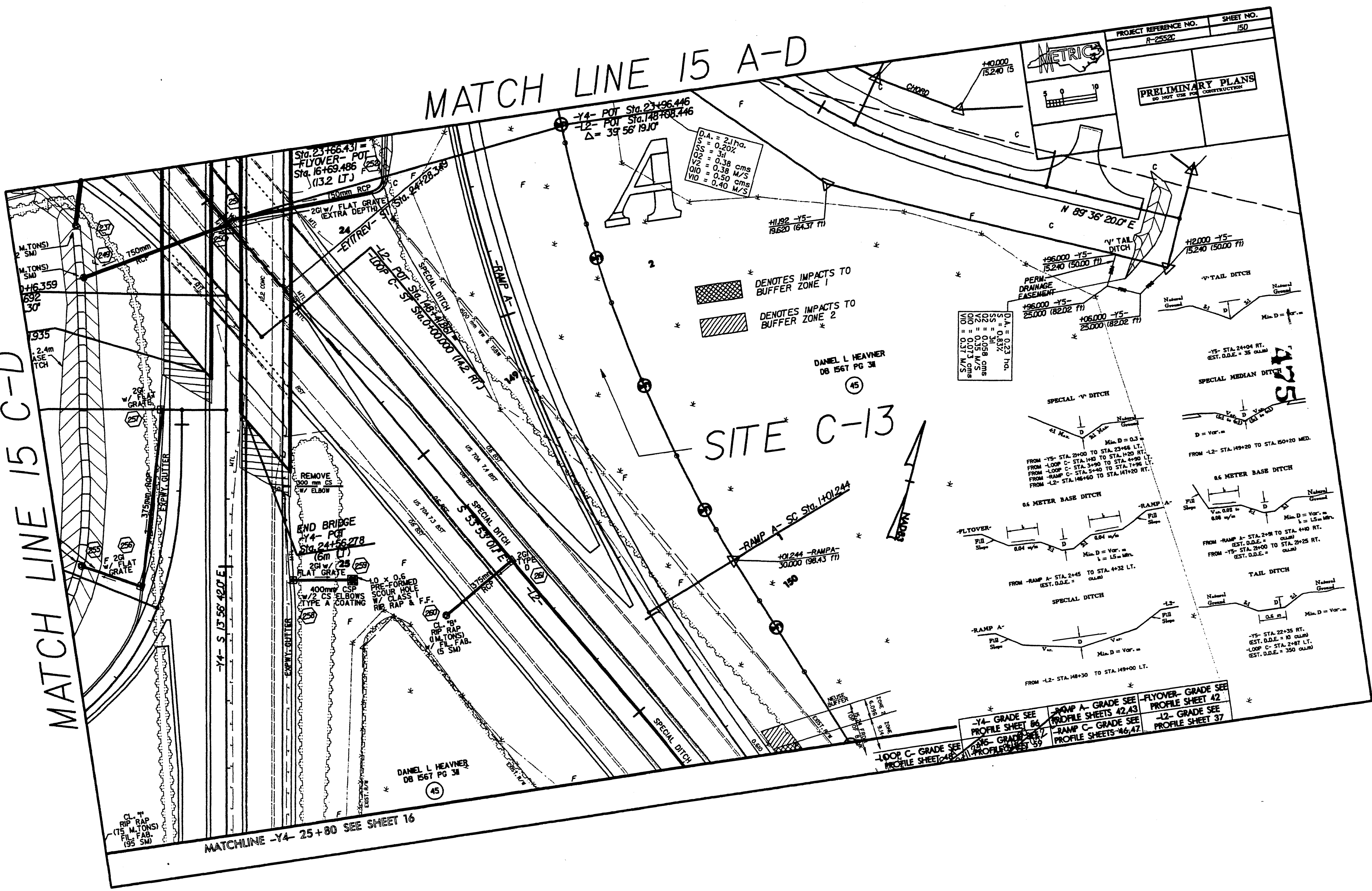


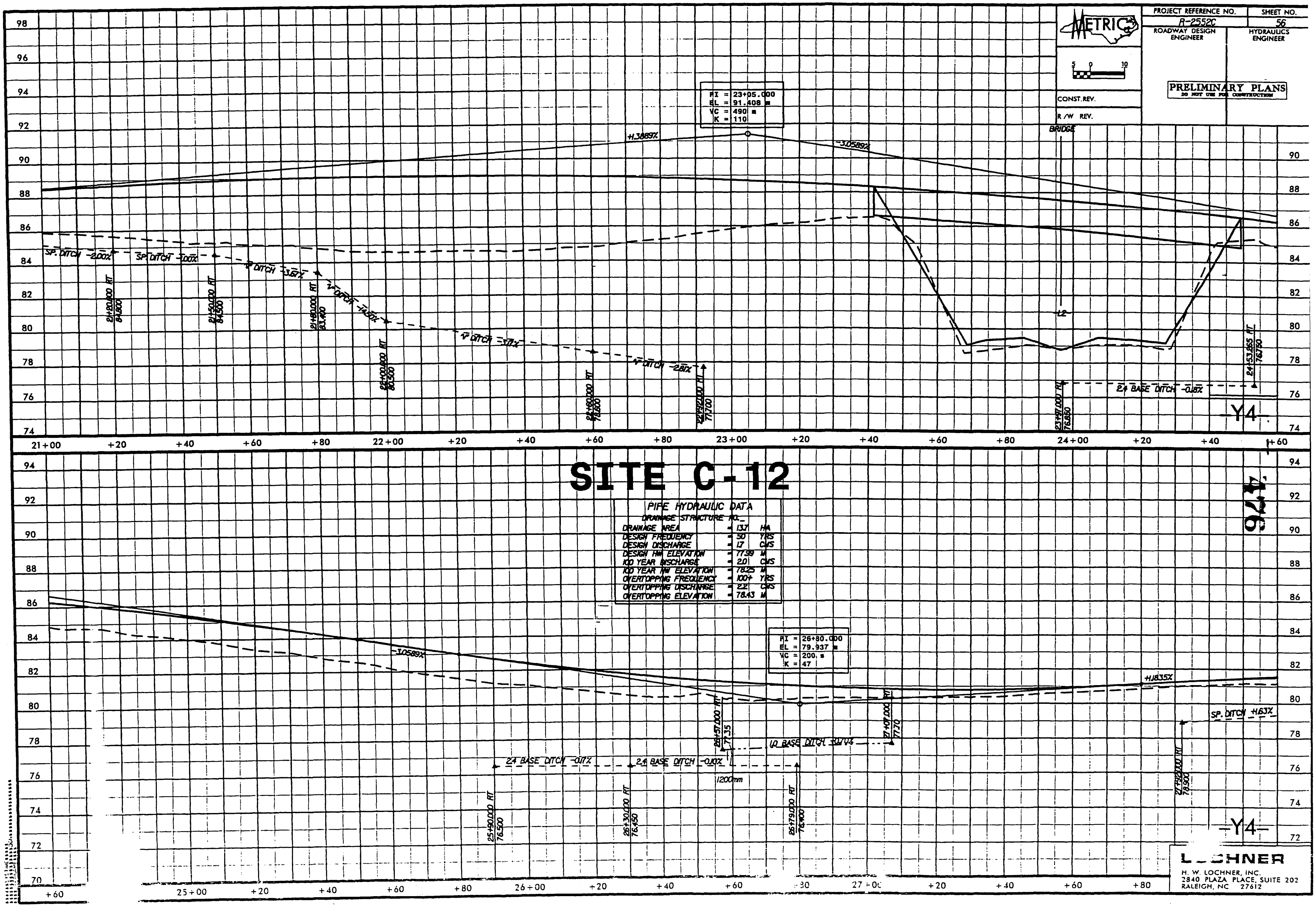

MATCHLINE -Y4- 25+80 SEE SHEET 15
MATCH LINE 16 A-B
MATCH LINE 16 A-D
SITE C-12
SITE C-13
SITE C-14
METRIC
5 0 10
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
15A
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
SPECIAL MEDIAN DITCH
FROM -L2- STA. 150+20 TO STA. 150+88 MED.
FROM -L2- STA. 154+14 TO STA. 154+50 MED.
DANIEL L HEAVNER
DB 1567 PG 311
45
-RAMP A-
-L2- POT Sta. 150+80.000 =
TS Sta. 0+11.244
-RAMP A- POT Sta. 0+00.000 (142 LF)
Δ = 2°15'00"
+80.000 -L2-
38.48 (126.05 FT)
END W.W. FENCE
END C/A
N 57°35'01" W
S 57°35'01" E
SPECIAL DITCH
-L2-
-RAMP D-
TS Sta. 25+74.922
-L2- POT Sta. 27+20.000 =
-D- POT Sta. 8+76.880 (Δ= 110°00'0.00")
POT Sta. 4+56.376 (Δ= 90°00'0.00")
ST Sta. 4+42.748
CSP ELBOWS
CL "B" RIP RAP (2 M.TONS) W/ COATING FIL. FAB. (6 SM)
RIP RAP (2 M.TONS) W/ FIL. FAB. (6 SM)
(8.19 SM)
+109.994 -RAMP D-
30.000 (98.43 FT)
CHORD
RETAIN 1050mm CONC
ADJUST
1050 mm RCP
REMOVE
PROP HEADWALL
RETAIN CONC COLLAR
RETAIN 375 mm CONC
ADJUST
FIL. FAB. SLOPE
315mm RCP W/ COLLAR
ENDWALL
D
D.A. = 0.22 ha.
= 3.50Z
= 3H
= 0.057 cms
= 0.46 M/s
= 0.071 cms
= 0.52 M/s
472


PROJECT REFERENCE NO.
R-2552C
SHEET NO.
16A
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
CONST. REV.
R/W REV.
MATCHLINE -Y4- 25+80 SEE SHEET 15
SITE C-13
SITE C-12
SITE C-14
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
SPECIAL MEDIAN DITCH
D = Var.
FROM -L2- STA. 150+20 TO STA. 150+88 MED.
FROM -L2- STA. 154+44 TO STA. 154+50 MED.
473
DANIEL L HEAVNER
DB 1567 PG 311
45
RAMP A-
TS Sta. 0+11.244
-L2- POT Sta. 150+80.000 =
RAMP A- POT Sta. 0+00.000 (14.2 LT)
Δ = 2°18'00"
+80.000 -L2-
38.419 (126.05 ft)
END W.W.FENCE
END C/A
N 51°35'01.1" W
S 53°53'01.1" E
-L2-
SPECIAL DITCH
SPECIAL DITCH
NEUSE BUFFER
ZONE 1
ZONE 2
9.144
6.096
15.24 FROM TOP OF BANK
ENDWALL
REMOVE
PROP. HEADWALL
1050 mm RCP
COLLAR
RETAIN 1050mm CONC
ADJUST
RETAIN 375 mm CONC
FALSE SUMP
CL "B" RIP RAP (2 M.TONS) W/ FIL. FAB. (6 SM)
375mm RCP W/ COLLAR
TS Sta. 26+74.922
POS. Sta. 27+20.000 =
POT Sta. 8+76.880 (Δ= 110°00'0.00")
POT Sta. 4+56.376 (Δ= 90°00'0.00")
CL. "B" RIP RAP (2 M.TONS) W/ FIL. FAB. (6 SM)
ST Sta. 4+42.748
-RAMP D-
+09.994 -RAMPD-
30.000 (98.43 ft)
CHORD
D.A. = 0.22 ha.
SS = 3.50%
SS2 = 3:1
Q2 = 0.057 cms
V2 = 0.46 M/S
Q10 = 0.071 cms
V10 = 0.52 M/S
MATCH LINE 16 A-B
MATCH LINE 16 A-D

MATCH LINE 15 A-D




MATCH LINE 15 A-D
MATCH LINE 15 C-D
PROJECT REFERENCE NO. R-2552C
SHEET NO. 150
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
475
SITE C-13
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
DANIEL L HEAVNER
DB 1567 PG 311
-Y4- POT Sta. 23+96.446
-L2- POT Sta. 148+08.446
Δ = 39° 56' 19.10"
D.A. = 2.1 ha.
S = 0.20%
SS = 3:1
Q2 = 0.38 cms
V2 = 0.38 M/S
Q10 = 0.50 cms
V10 = 0.40 M/S
D.A. = 0.23 ha.
S = 0.83%
SS = 3:1
Q2 = 0.058 cms
V2 = 0.35 M/S
Q10 = 0.073 cms
V10 = 0.37 M/S
N 89° 36' 20.0" E
'V' TAIL DITCH
PERM. DRAINAGE EASEMENT
SPECIAL 'V' DITCH
SPECIAL MEDIAN DITCH
0.6 METER BASE DITCH
SPECIAL DITCH
TAIL DITCH
-RAMP A- SC Sta. 1+01.244
END BRIDGE
-Y4- POT Sta. 24+56.278
-Y4- S 13° 56' 42.0" E
S 53° 53' 01.0" E
MATCHLINE -Y4- 25+80 SEE SHEET 16
-Y4- GRADE SEE PROFILE SHEET 56
-RAMP A- GRADE SEE PROFILE SHEETS 42,43
-RAMP C- GRADE SEE PROFILE SHEETS 46,47
-FLYOVER- GRADE SEE PROFILE SHEET 42
-L2- GRADE SEE PROFILE SHEET 37
-LOOP C- GRADE SEE PROFILE SHEET 48
NAD83



PROJECT REFERENCE NO. R-2552C
SHEET NO. 56
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
BRIDGE
PI = 23+05.000
EL = 91.408 m
VC = 490 m
K = 110
+1.3889%
-3.0589%
SP. DITCH -2.00%
SP. DITCH -1.00%
V DITCH -3.67%
V DITCH -14.50%
V DITCH -3.17%
V DITCH -2.81%
2.4 BASE DITCH -0.18%
21+20.800 RT 84.800
21+50.000 RT 84.500
21+80.000 RT 83.400
22+00.800 RT 80.500
22+60.000 RT 78.600
22+92.000 RT 77.700
23+97.000 RT 76.850
24+53.865 RT 76.750
Y4
SITE C-12
PI = 26+80.000
EL = 79.937 m
VC = 200. m
K = 47
-3.0589%
+1.1835%
SP. DITCH +1.63%
2.4 BASE DITCH -0.17%
2.4 BASE DITCH -0.10%
1.0 BASE DITCH
1200mm
25+90.000 RT 76.500
26+30.000 RT 76.450
26+57.000 RT 77.35
26+79.000 RT 76.400
27+07.000 RT 77.70
27+92.000 RT 78.900
476
LOCHNER
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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

SITE C-12

PIPE HYDRAULIC DATA

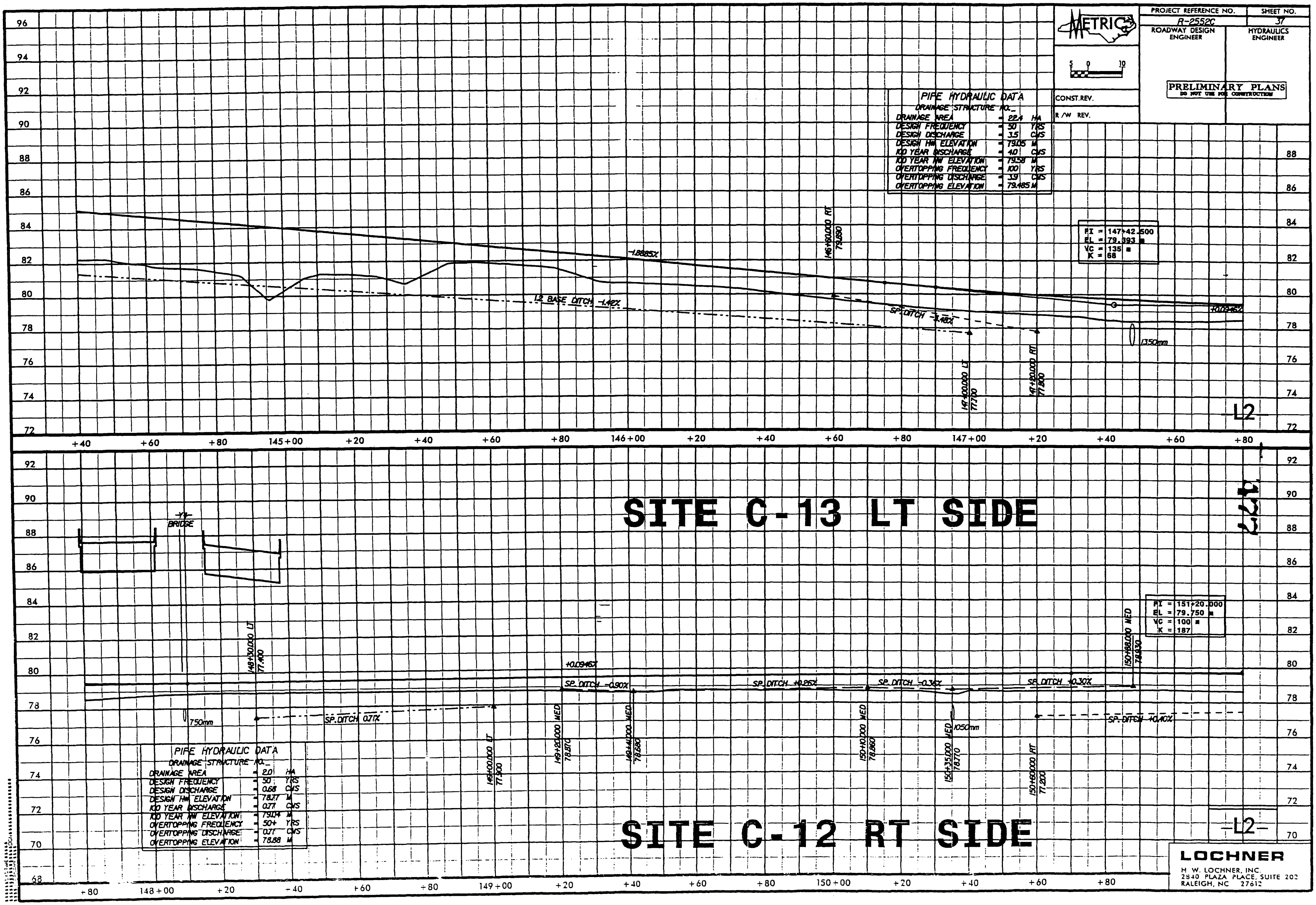
DRAINAGE STRUCTURE NO._

DRAINAGE AREA	= 1.37	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 1.7	CMS
DESIGN HW ELEVATION	= 77.99	M
100 YEAR DISCHARGE	= 2.0	CMS
100 YEAR HW ELEVATION	= 78.25	M
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 2.2	CMS
OVERTOPPING ELEVATION	= 78.43	M

PROJECT REFERENCE NO.	SHEET NO.
R-2552C	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.
R/W REV.



PIPE HYDRAULIC DATA (Site C-13)

DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 22.4	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 3.5	CMS
DESIGN HW ELEVATION	= 79.05	M
100 YEAR DISCHARGE	= 4.0	CMS
100 YEAR HW ELEVATION	= 79.58	M
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 3.9	CMS
OVERTOPPING ELEVATION	= 79.485	M

PIPE HYDRAULIC DATA (Site C-12)

DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 2.0	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 0.68	CMS
DESIGN HW ELEVATION	= 78.77	M
100 YEAR DISCHARGE	= 0.77	CMS
100 YEAR HW ELEVATION	= 79.04	M
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING DISCHARGE	= 0.77	CMS
OVERTOPPING ELEVATION	= 78.88	M

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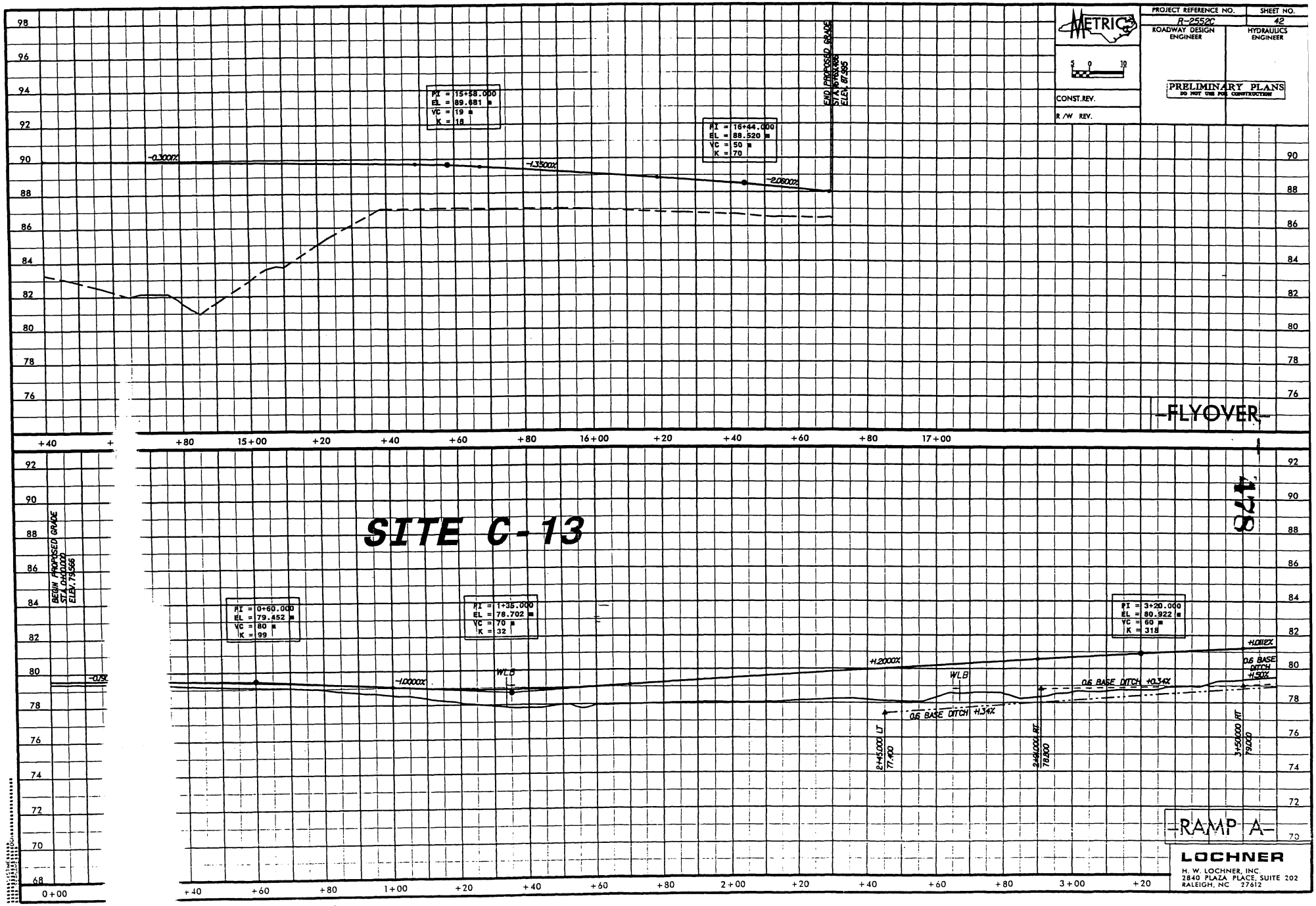
RALEIGH, NC 27612

477


METRIC
5 0 10
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
42
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R /W REV.
PI = 15+58.000
EL = 89.681 m
VC = 19 m
K = 18
PI = 16+44.000
EL = 88.520 m
VC = 50 m
K = 70
END PROPOSED GRADE
STA. 16+90.965
ELEV. 87.395
-0.300%
-1.350%
-2.060%
-FLYOVER-
SITE C-13
PI = 0+60.000
EL = 79.452 m
VC = 80 m
K = 99
PI = 1+35.000
EL = 78.702 m
VC = 70 m
K = 32
PI = 3+20.000
EL = 80.922 m
VC = 60 m
K = 318
BEGIN PROPOSED GRADE
STA. 0+10.000
ELEV. 79.566
-0.5%
-1.0000%
+1.2000%
+1.011%
WLB
0.6 BASE DITCH +1.34%
0.6 BASE DITCH +1.50%
2+45.000 LT
77.400
2+60.000 RT
78.800
3+50.000 RT
79.000
-RAMP A-
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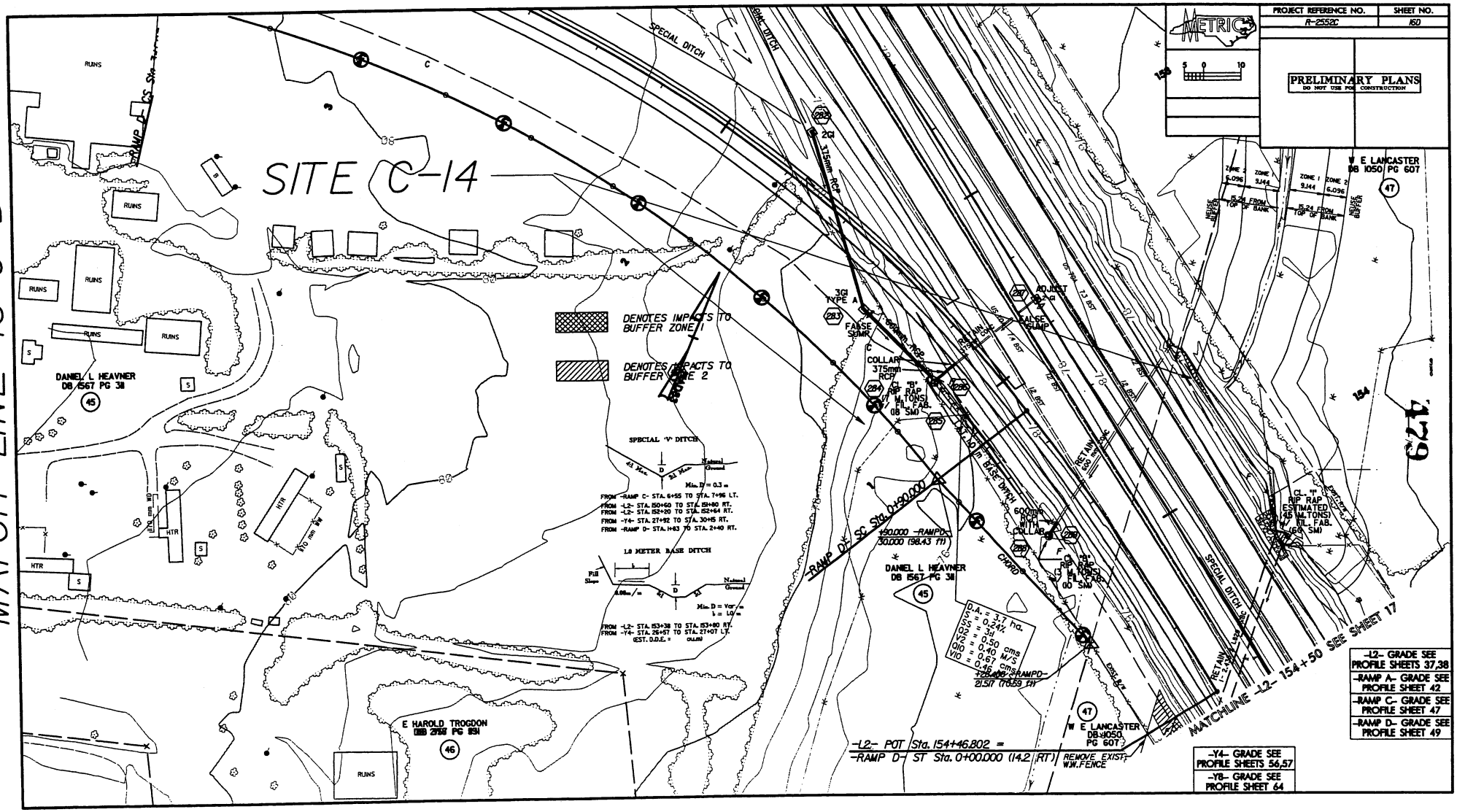
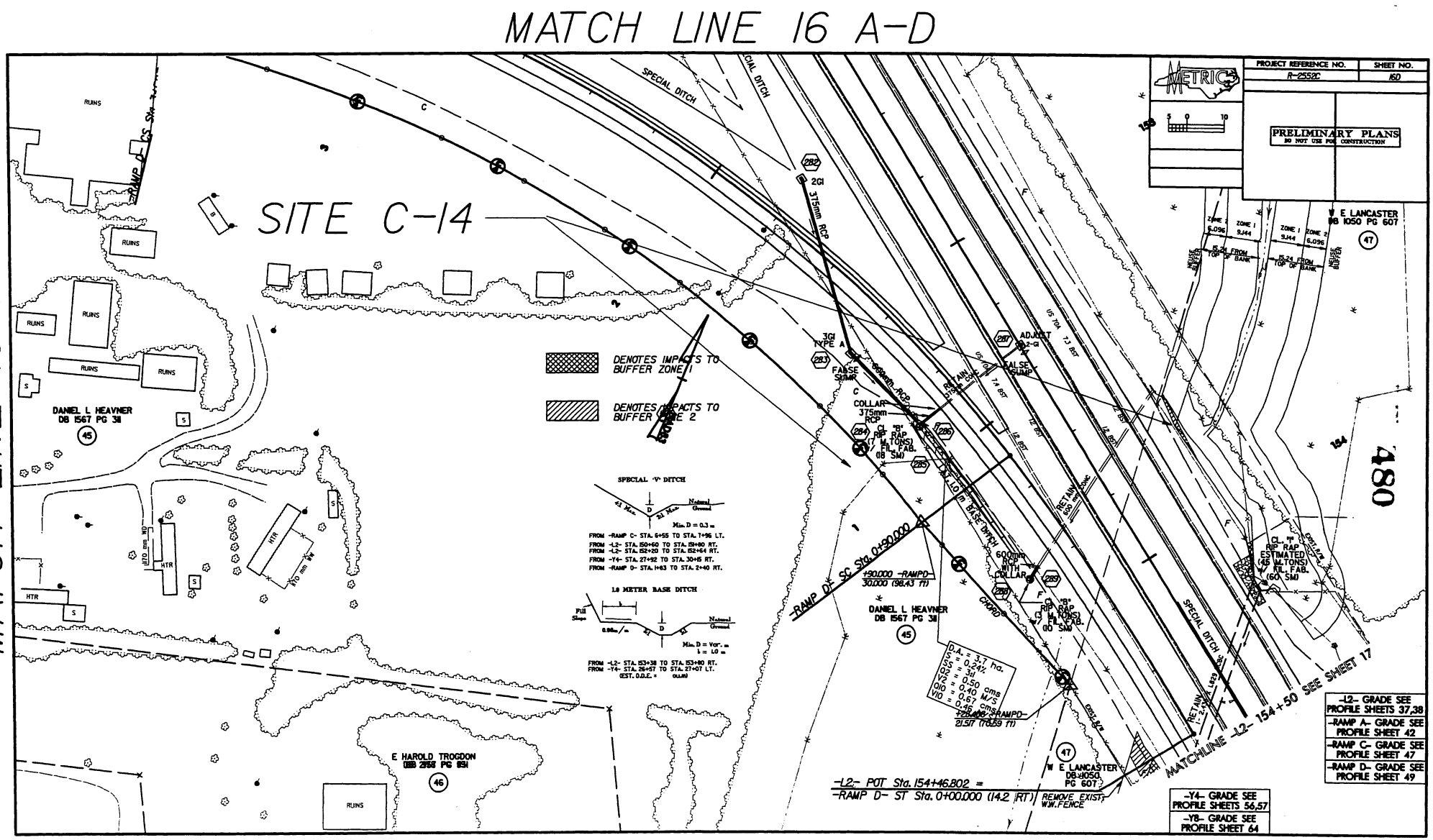
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

MATCH LINE 16 A-D



MATCH LINE 16 C-D


MATCH LINE 16 A-D
MATCH LINE 16 C-D
SITE C-14
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PROJECT REFERENCE NO. R-2552C
SHEET NO. 160
METRIC
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
SPECIAL 'V' DITCH
1.0 METER BASE DITCH
-RAMP D- SC Sta. 0+90.000
+90.000 -RAMP D- 30.000 (98.43 FT)
-L2- POT Sta. 154+46.802 = -RAMP D- ST Sta. 0+00.000 (14.2 RT)
REMOVE EXIST. W.W. FENCE
MATCHLINE -L2- 154+50 SEE SHEET 17
DANIEL L HEAVNER DB 1567 PG 311
E HAROLD TROGDON DB 2958 PG 859
W E LANCASTER DB 1050 PG 607
-L2- GRADE SEE PROFILE SHEETS 37,38
-RAMP A- GRADE SEE PROFILE SHEET 42
-RAMP C- GRADE SEE PROFILE SHEET 47
-RAMP D- GRADE SEE PROFILE SHEET 49
-Y4- GRADE SEE PROFILE SHEETS 56,57
-Y8- GRADE SEE PROFILE SHEET 64
480

REVISIONS

SITE C-14

DENOTES IMPACTS TO BUFFER ZONE 1

DENOTES IMPACTS TO BUFFER ZONE 2

METRIC

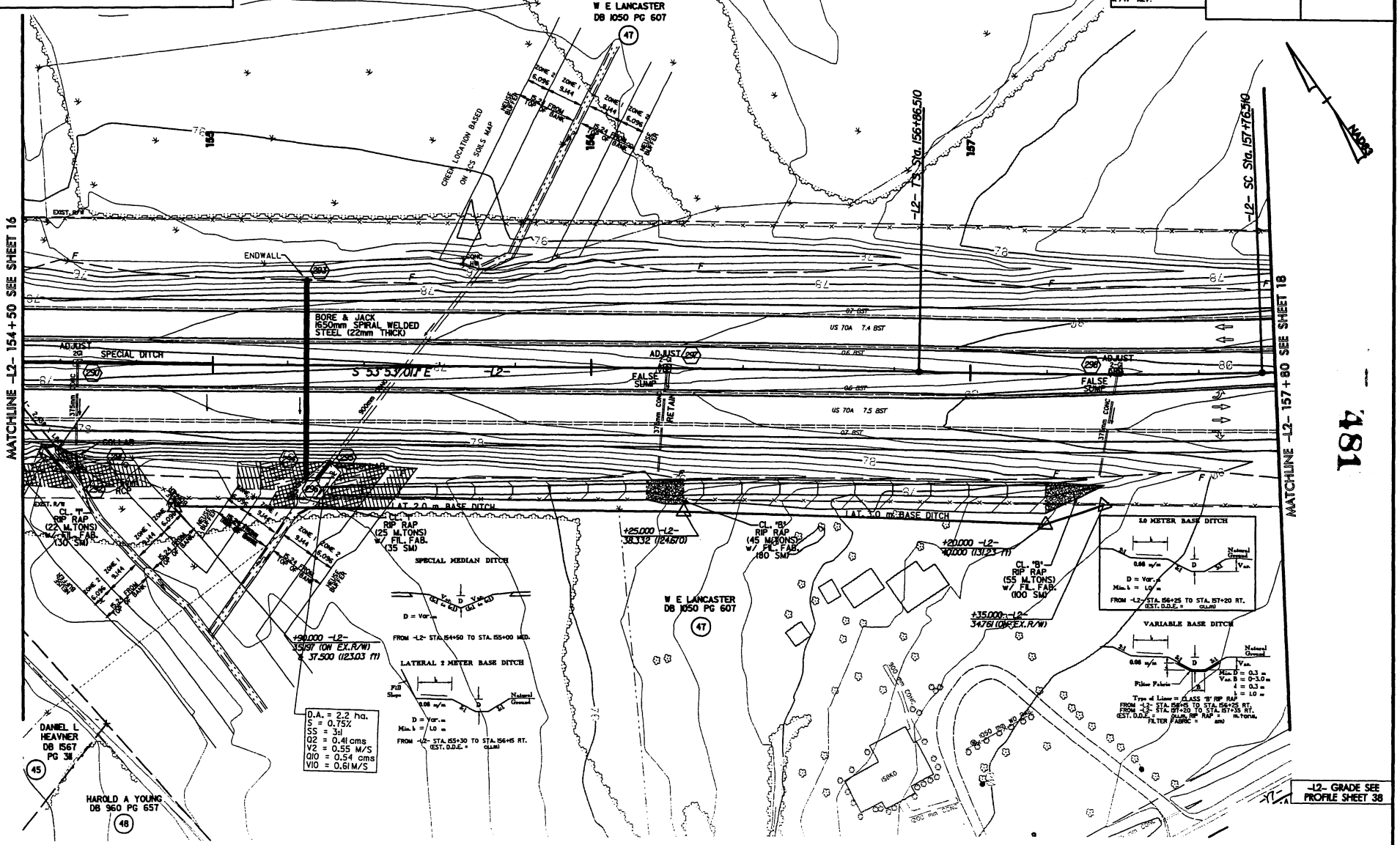
5 0 10

CONST.REV.

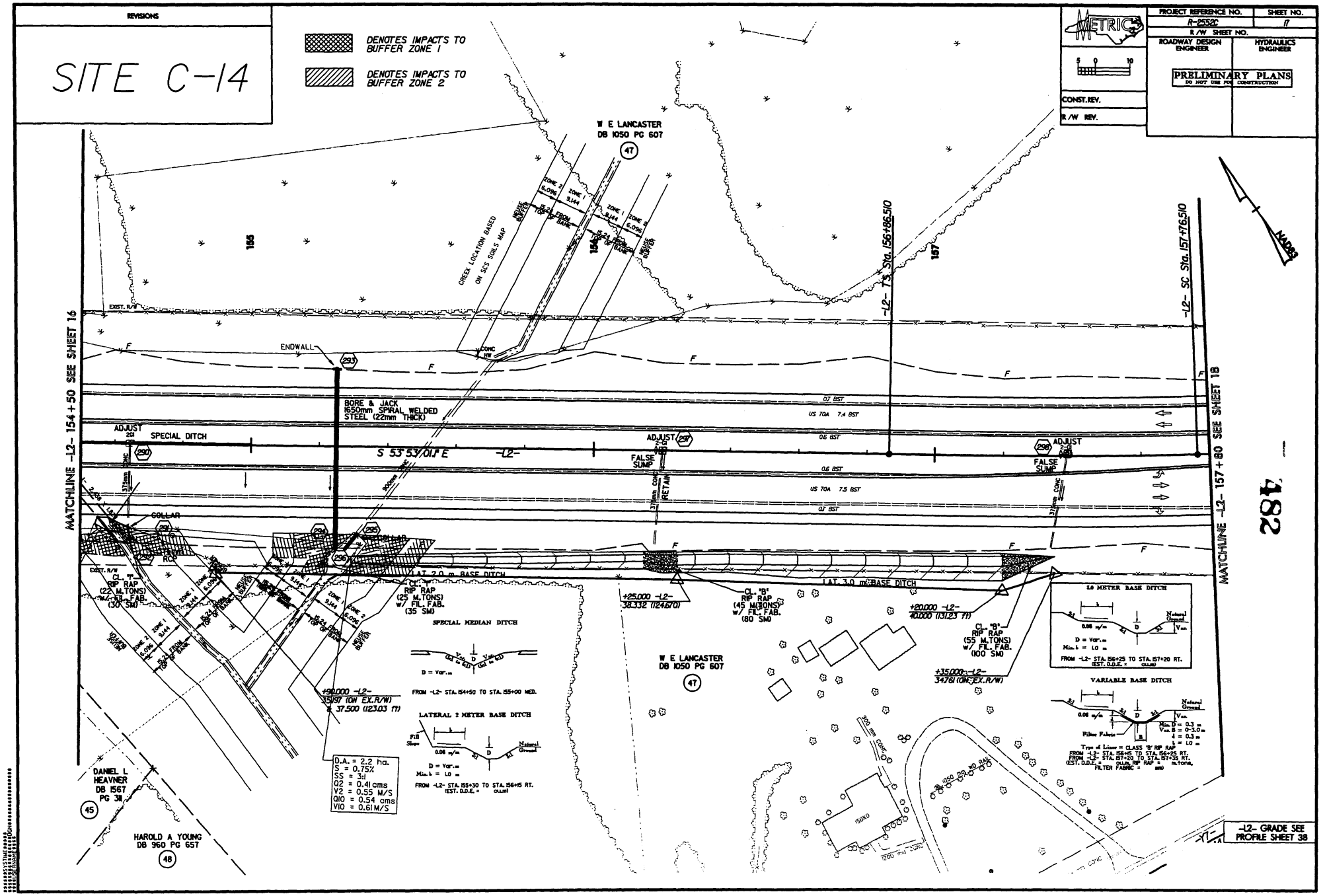
R/W REV.

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



481


REVISIONS
SITE C-14
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
METRIC
5 0 10
CONST.REV.
R/W REV.
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
W E LANCASTER DB 1050 PG 607
47
-L- PT Sta. 156+86.510
-L- SC Sta. 157+76.510
MATCHLINE -L- 154+50 SEE SHEET 16
MATCHLINE -L- 157+80 SEE SHEET 18
NAD83
ENDWALL
BORE & JACK 1650mm SPIRAL WELDED STEEL (22mm THICK)
S 53°53'01"E -L-
ADJUST SPECIAL DITCH
FALSE SUMP
COLLAR
RIP RAP (22 M.TONS) w/ FIL. FAB. (30 SM)
RIP RAP (25 M.TONS) w/ FIL. FAB. (35 SM)
RIP RAP (45 M.TONS) w/ FIL. FAB. (80 SM)
RIP RAP (55 M.TONS) w/ FIL. FAB. (100 SM)
LAT. 2.0 m BASE DITCH
LAT. 3.0 m BASE DITCH
SPECIAL MEDIAN DITCH
LATERAL 2 METER BASE DITCH
2.0 METER BASE DITCH
VARIABLE BASE DITCH
+90.000 -L- 35.197 (ON EX.R/W) Rt 37.500 (123.03 ft)
+25.000 -L- 38.332 (124.670)
+20.000 -L- 40.000 (131.23 ft)
+35.000 -L- 34.761 (ON EX.R/W)
D.A. = 2.2 ha.
S = 0.75%
SS = 3:1
Q2 = 0.41 cms
V2 = 0.55 M/S
Q10 = 0.54 cms
V10 = 0.61 M/S
DANIEL L HEAVNER DB 1567 PG 38
45
HAROLD A YOUNG DB 960 PG 657
48
-L- GRADE SEE PROFILE SHEET 38
482

SITE C-14

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2552C	38

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.

R /W REV.

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._

DRAINAGE AREA	= 2.5	SQKM
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 29	CMS
DESIGN HW ELEVATION	= 78.02	M
100 YEAR DISCHARGE	= 33	CMS
100 YEAR HW ELEVATION	= 78.39	M
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 33.4	CMS
OVERTOPPING ELEVATION	= 78.43	M

PI = 151+20.000
EL = 79.750 m
VC = 100 m
K = 187

PI = 154+44.000
EL = 78.326 m
VC = 88 m
K = 79

-0.439%
SP. DITCH +0.40%
SP. DITCH +1.90%
SP. DITCH -2.05%
+0.439%
SP. DITCH -0.82%
10 BASE DITCH -0.24%
600mm
2.43x1.84 RCBC
151+50.000 RT 77.300
151+60.000 RT 78.000
152+00.000 RT 78.250
152+60.000 RT 77.300
153+30.000 RT 75.700
153+60.000 RT 75.600
154+14.000 MED 77.600

-L2-

+20 +40 +60 +80 152+00 +20 +40 +60 +80 153+00 +20 +40 +60 +80 154+00 +20 +40 +60

92 90 88 86 84 82 80 78 76 74 72 70 68

PI = 154+44.000
EL = 78.326 m
VC = 88 m
K = 79

PI = 156+91.198
EL = 80.009 m

+0.680%
SP. DITCH +0.90%
+1.024%
END PROPOSED GRADE
BEGIN PROP. 61 mm RESURFACING
-L2- STA 155+00.000
FINISHED ELEV = 79.388
155+00.000 MED 77.920
154+64.500 MED 77.600
1650mm
900mm
2.0 BASE DITCH +0.75%
3.0 BASE DITCH +1.00%
3.0 BASE DITCH +1.368%
3.0 BASE DITCH +5.00%
155+30.000 RT 74.900
156+15.000 RT 75.540
156+25.000 RT 75.950
157+20.000 RT 77.500
157+35.000 RT 78.250

-L2-

+80 155+00 +20 +40 +60 +80 156+00 +20 +40 +60 +80 157+00 +20 +40

92 90 88 86 84 82 80 78 76 74 72 70 68

483

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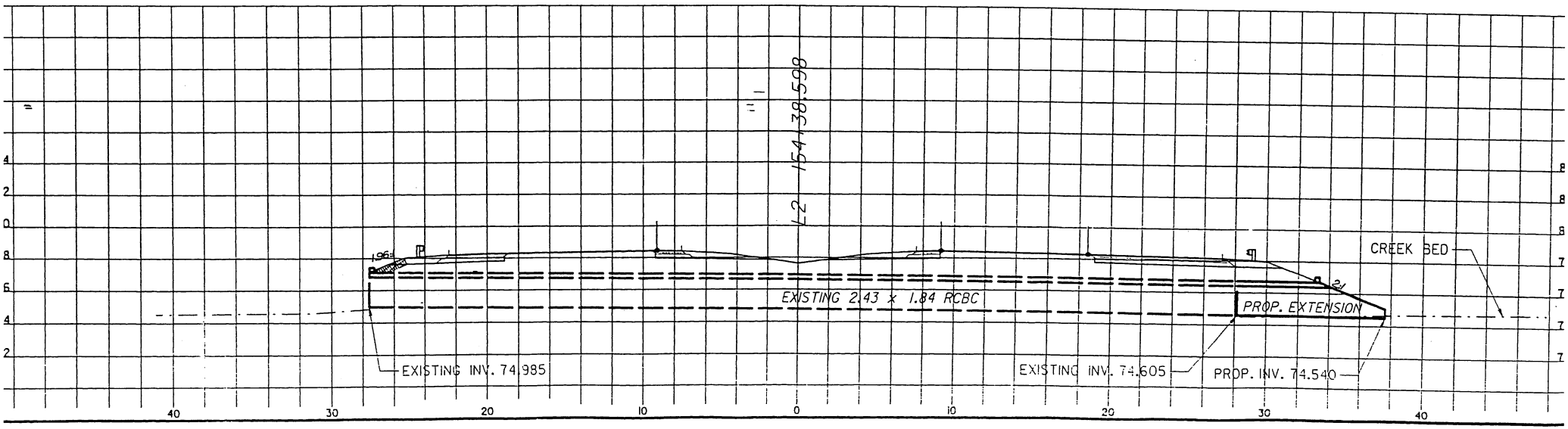
SITE C-14

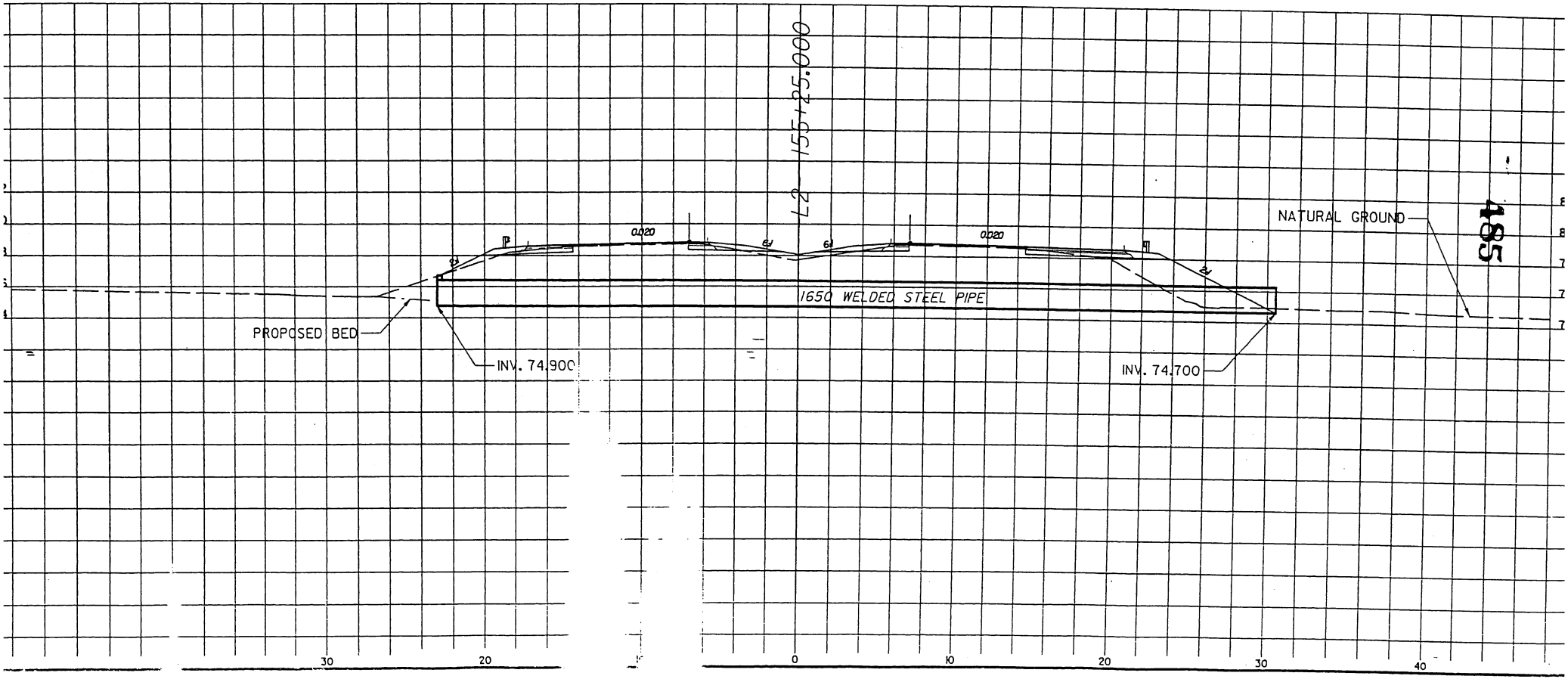
PROFILE OF 2.43 x 1.84 RCBC
-L2- STA. 154+38.598
PLAN SHEETS 16 & 17

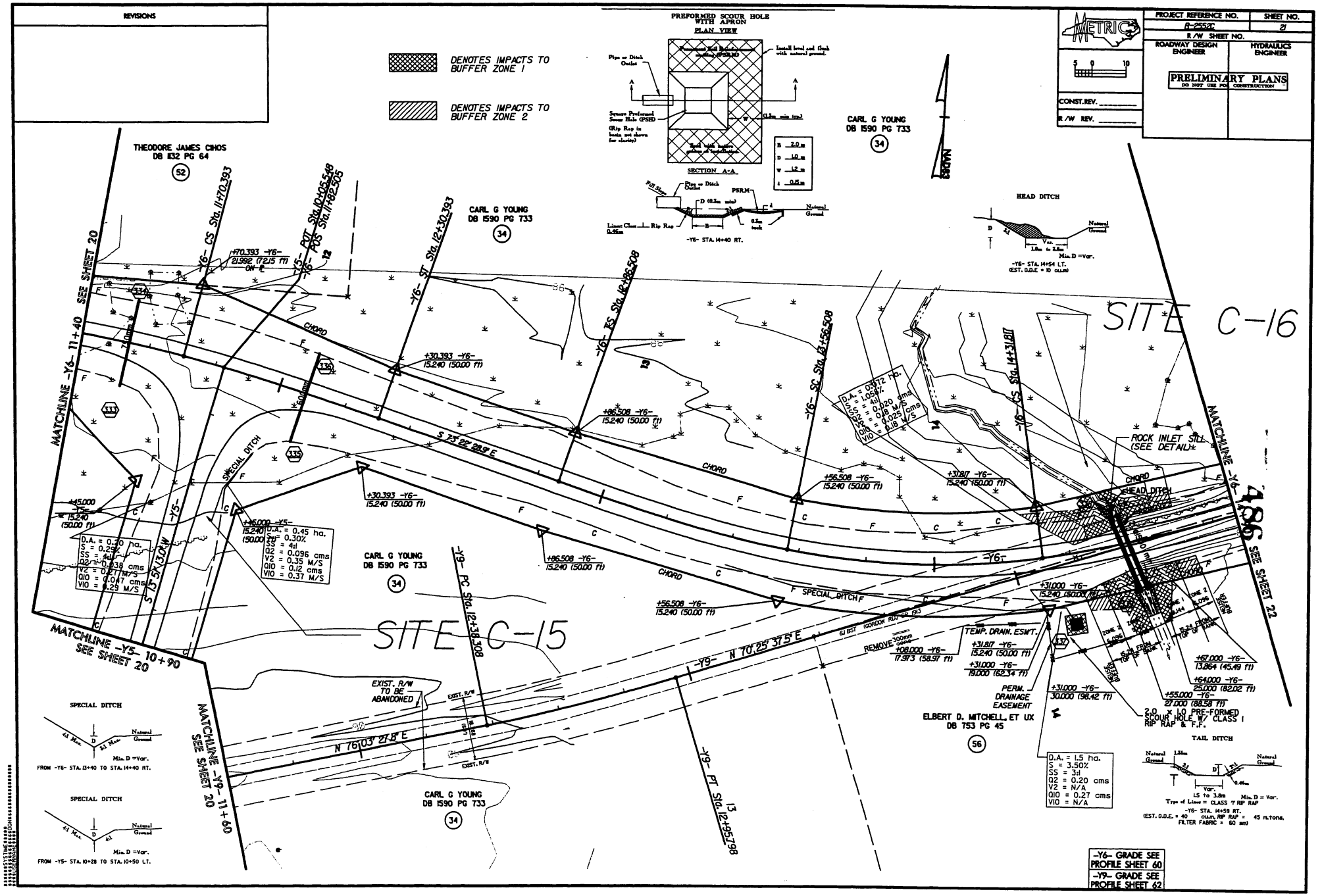


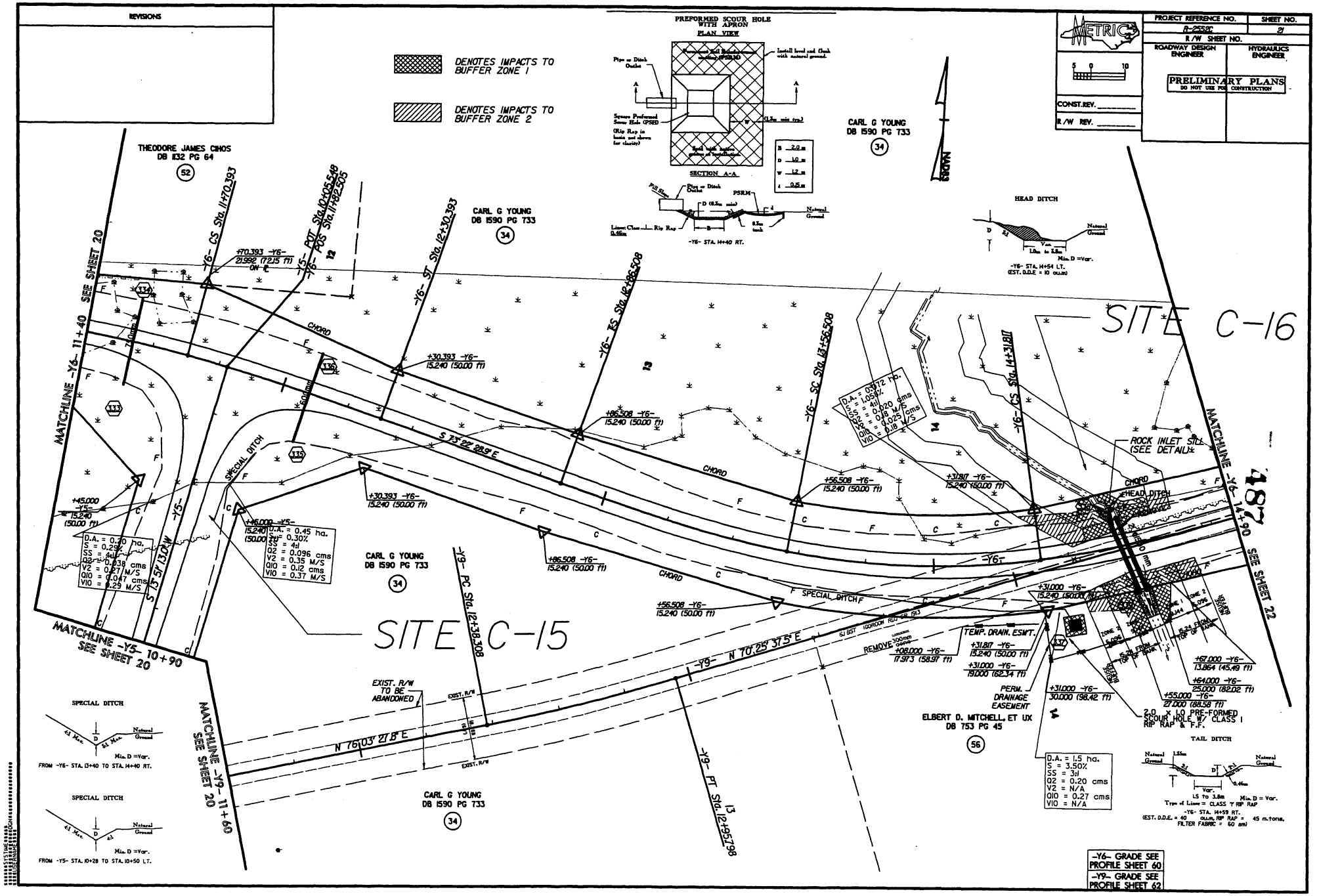
2.0 0 2.0 4	METRIC	PROJECT REFERENCE NO.	SHEET
		R-2552C	PP-

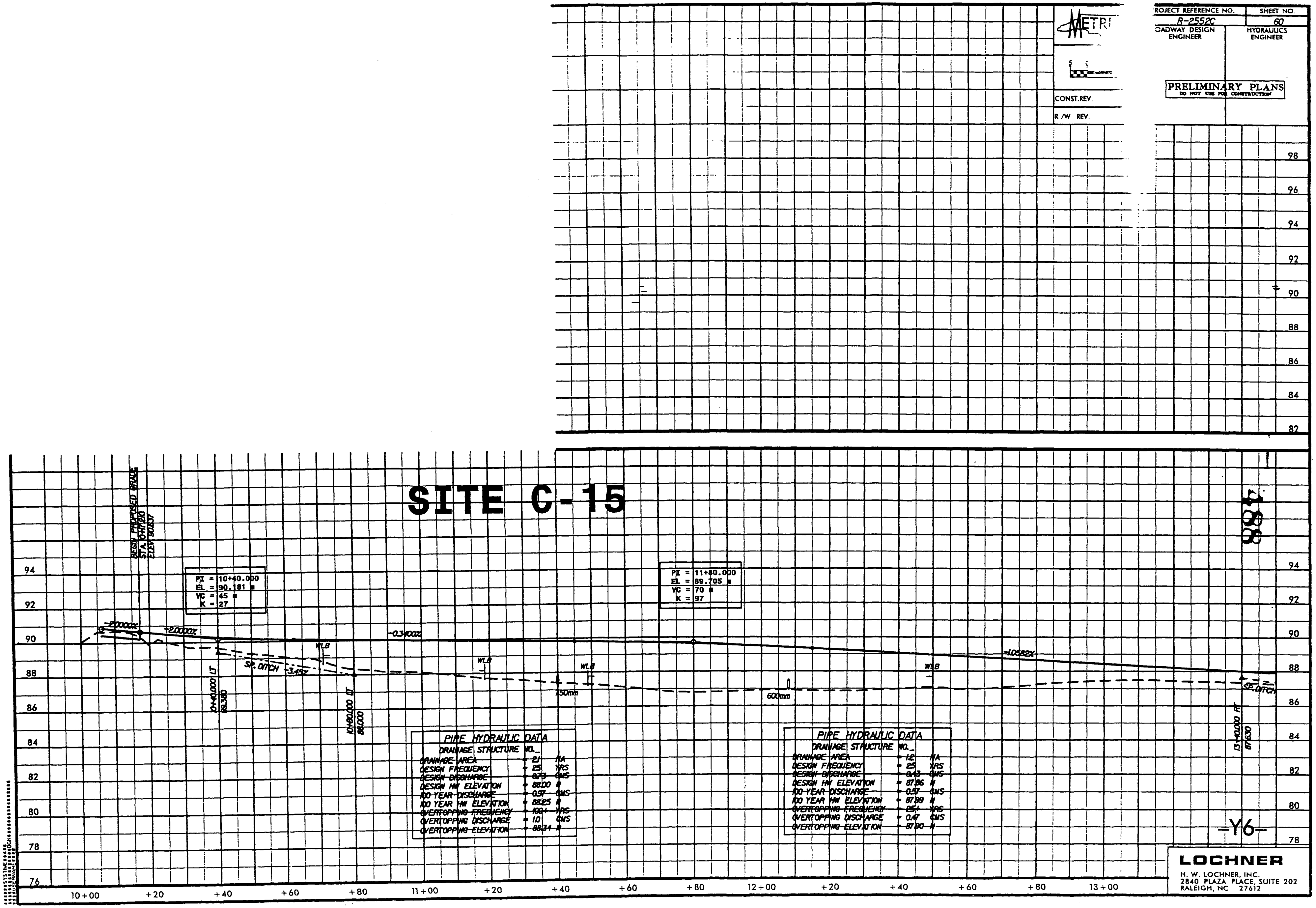
SITE C-14

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




REVISIONS
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
21
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
THEODORE JAMES CHOS
DB 1132 PG 64
CARL G YOUNG
DB 1590 PG 733
ELBERT D. MITCHELL, ET UX
DB 753 PG 45
MATCHLINE -Y6- 11+40 SEE SHEET 20
MATCHLINE -Y5- 10+90 SEE SHEET 20
MATCHLINE -Y9- 11+60 SEE SHEET 20
MATCHLINE -Y6- 14+86 SEE SHEET 22
-Y6- CS Sta. 11+70.393
-Y5- POT Sta. 10+105.548
-Y5- POS Sta. 11+82.805
-Y6- ST Sta. 12+30.393
-Y6- TS Sta. 12+86.508
-Y6- SC Sta. 13+56.508
-Y6- CT Sta. 14+31.817
-Y9- PC Sta. 12+34.308
-Y9- PT Sta. 12+95.798
S 23° 22' 28.9" E
N 70° 25' 37.5" E
N 76° 03' 27.8" E
SPECIAL DITCH
CHORD
HEAD DITCH
TAIL DITCH
ROCK INLET SILL (SEE DETAIL)
TEMP. DRAIN. ESMT.
PERM. DRAINAGE EASEMENT
EXIST. R/W TO BE ABANDONED
REMOVE 300mm CMP
2.0 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
D.A. = 0.20 ha.
S = 0.25%
SS = 4:1
Q2 = 0.038 cms
V2 = 0.27 M/S
Q10 = 0.047 cms
V10 = 0.29 M/S
D.A. = 0.45 ha.
S = 0.30%
SS = 4:1
Q2 = 0.096 cms
V2 = 0.35 M/S
Q10 = 0.12 cms
V10 = 0.37 M/S
D.A. = 1.5 ha.
S = 3.50%
SS = 3:1
Q2 = 0.20 cms
V2 = N/A
Q10 = 0.27 cms
V10 = N/A
D.A. = 0.3672 ha.
S = 1.05%
SS = 4:1
Q2 = 0.020 cms
V2 = 0.08 M/S
Q10 = 0.025 cms
V10 = 0.18 M/S
SITE C-15
SITE C-16
-Y6- GRADE SEE PROFILE SHEET 60
-Y9- GRADE SEE PROFILE SHEET 62


REVISIONS
DENOTES IMPACTS TO BUFFER ZONE 1
DENOTES IMPACTS TO BUFFER ZONE 2
PREFORMED SCOUR HOLE WITH APRON
PLAN VIEW
SECTION A-A
METRIC
PROJECT REFERENCE NO.
B-2552C
SHEET NO.
21
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
THEODORE JAMES CIHOS
DB 1132 PG 64
CARL G YOUNG
DB 1590 PG 733
ELBERT D. MITCHELL, ET UX
DB 753 PG 45
MATCHLINE -Y6- 11+40 SEE SHEET 20
MATCHLINE -Y5- 10+90 SEE SHEET 20
MATCHLINE -Y9- 11+60 SEE SHEET 20
MATCHLINE -Y6- 14+90 SEE SHEET 22
-Y6- CS Sta. 11+70.393
-Y5- PCT Sta. 10+05.548
-Y5- POS Sta. 11+82.505
-Y6- ST Sta. 12+30.393
-Y6- FS Sta. 12+86.508
-Y6- SC Sta. 13+56.508
-Y6- CS Sta. 14+31.817
-Y9- PC Sta. 12+38.308
-Y9- PT Sta. 12+95.798
SITE C-15
SITE C-16
SPECIAL DITCH
HEAD DITCH
TAIL DITCH
ROCK INLET SIT1 (SEE DETAIL)
TEMP. DRAIN. ESMT.
PERM. DRAINAGE EASEMENT
REMOVE
EXIST. R/W TO BE ABANDONED
2.0 x 1.0 PRE-FORMED SCOUR HOLE W/ CLASS I RIP RAP & F.F.
-Y6- GRADE SEE PROFILE SHEET 60
-Y9- GRADE SEE PROFILE SHEET 62



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.	_	
DRAINAGE AREA	2.1	HA
DESIGN FREQUENCY	25	YRS
DESIGN DISCHARGE	0.73	CMS
DESIGN HW ELEVATION	88.00	m
100-YEAR DISCHARGE	0.97	CMS
100 YEAR HW ELEVATION	88.25	m
OVERTOPPING FREQUENCY	100+	YRS
OVERTOPPING DISCHARGE	1.0	CMS
OVERTOPPING ELEVATION	88.34	m

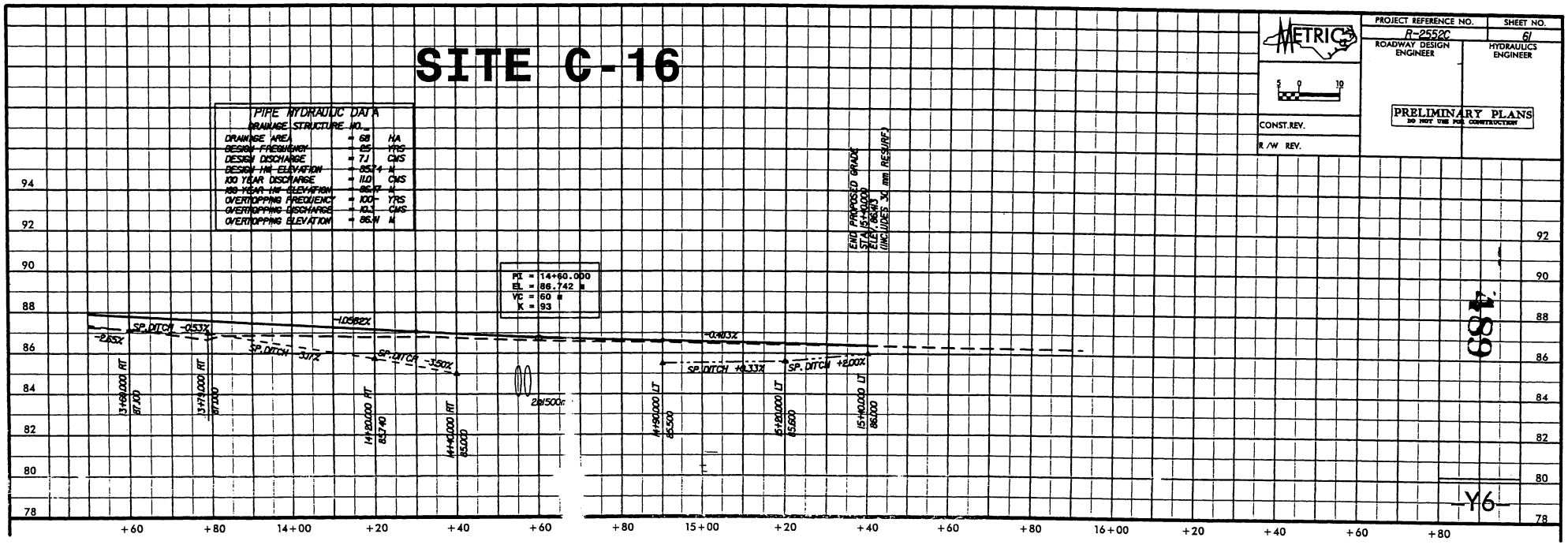
PIPE HYDRAULIC DATA

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

PROJECT REFERENCE NO. R-2552C
SHEET NO. 60
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.

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

SITE C-16


PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.
DRAINAGE AREA = 68 HA
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 73 CMS
DESIGN HW ELEVATION = 85.74 M
100 YEAR DISCHARGE = 110 CMS
100-YEAR HW ELEVATION = 86.17 M
OVERTOPPING FREQUENCY = 100+ YRS
OVERTOPPING DISCHARGE = 10.1 CMS
OVERTOPPING ELEVATION = 86.14 M
PI = 14+60.000
EL = 86.742 M
VS = 60 M
K = 93
END PROPOSED GRADE
STA. 15+40.000
ELEV. 86.45
(INCLUDES 30 mm RESURF.)
-2.65%
SP. DITCH -0.53%
-1.058%
SP. DITCH -3.17%
SP. DITCH -1.50%
-0.40%
SP. DITCH +0.33%
SP. DITCH +2.00%
13+60.000 RT
87.00
13+79.000 RT
87.00
14+20.000 RT
85.740
14+40.000 RT
85.000
14+90.000 LT
85.500
15+20.000 LT
85.600
15+40.000 LT
86.000
2@1500
94
92
90
88
86
84
82
80
78
+60
+80
14+00
+20
+40
+60
+80
15+00
+20
+40
+60
+80
16+00
+20
+40
+60
+80
METRIC
5 0 10
CONST. REV.
R/W REV.
PROJECT REFERENCE NO.
R-2552C
SHEET NO.
61
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
69
-Y6-

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

SITE C-16

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