STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

September 14, 2012

MEMORANDUM TO: Mr. Wally Bowman, PE
Division 5 Engineer

FROM: Philip S. Harris, III, P.E., Section Head
Natural Environment Section
Project Development and Environmental Analysis Unit

E. L. Fuske

SUBJECT: Person County, US 501 from NC 49 in Roxboro to SR 1521; Federal Aid Project No. MASTP-501(1); WBS Element 34406.2.3; **T.I.P. Project No. R-2241A**

Please find attached the USACE Section 404 Individual Permit, USACE Section 404 Individual Permit Modification, NCDWQ Water Quality Certification Letter of Correction (correcting and replacing the original Water Quality Certification), and NCDWQ Water Quality Certification Modification for the above referenced project. All environmental permits have been received for the construction of this project.

A copy of this permit package will be posted on the NCDOT website at: http://www.ncdot.gov/doh/preconstruct/pe/neu/permit.html

Cc: w/o attachment (see website for attachments):

Mr. Randy Garris, P.E. State Contract Officer
Mr. Chris Murray, Division Environmental Officer
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Jay Bennett, P.E., Roadway Design Unit
Mr. Dewayne Sykes, P.E. Utilities Unit
Mr. Art McMillan, P.E., Hydraulics Unit
Mr. Tom Koch, P.E., Structure Design Unit
Mr. Mark Staley, Roadside Environmental Unit
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Mr. Mike Robinson, P.E., State Bridge Construction Engineer
Mr. Eric Midkiff, P.E., PDEA Central Section Head
Ms. Beth Harmon, EEP
Mr. Phillip Ayscue, NCDOT External Audit Branch

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-707-6100
FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

LOCATION:
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610-4328

PROJECT COMMITMENTS

T.I.P Project No. R-2241A
US 501 from NC 49 in Roxboro to SR 1521 (Mountain Street)
Person County
Federal Aid Project No. MASTP-501(1)
WBS Element 34406.2.3

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Project Development and Environmental Analysis

Approximately 0.7 hectares (1.75 acres) of wetlands will be impacted by the proposed project. Compensatory mitigation for the wetland impacts will be coordinated with the COE, who has discretionary authority over this issue

For Section A, 1.22 acres of wetlands will be impacted. Compensatory mitigation for wetland impacts will be coordinated with COE as needed

It is anticipated that 22 streams and one pond will be crossed by the project as proposed. Upon final determination of the quantity of impacts, the final decision concerning compensatory mitigation for the stream impacts will be made by the DWQ

For Section A, 2965 feet of stream impacts are anticipated. NCDOT will coordinate with DWQ concerning the compensatory mitigation requirements.

Hydraulics Unit and Project Development and Environmental Analysis Branch

No channel modifications are anticipated. However, if stream channel relocation is required for any of the impacted stream crossings, consultation with the US Fish and Wildlife Service (FWS) and the NC Wildlife Resources Commission (WRC) will be required. Relocated streams will be designed to have similar characteristics (depth, width, and substrate) as the original stream. This also includes re-establishment of streamside vegetation.

Location and Surveys Unit

Currently, it is anticipated that 20 geodetic survey markers will be impacted by this project. The N.C. Geodetic Survey will be contacted prior to construction regarding the relocation of these markers.

COMMITMENTS FROM PERMITTING

Natural Environment Section

In order to compensate for permanent losses of 3,184 linear feet of stream with more than minimal function/, and 2.38 acres of wetlands, the permittee shall make payment to the North Carolina Ecosystem Enhancement Program (NCEEP) in the amount determined by the NCEEP, sufficient to perform the restoration of 6,364 linear feet of warm water stream and 5.76 acres of riparian non-riverine wetlands in the Lower Dan River Basin, Cataloging Unit 03010104. Construction within jurisdictional areas on the property shall begin only after the permittee has made full payment to the NCEEP and provided a copy of the payment documentation to the Corps, and the NCEEP has provided written confirmation to the Corps that is agrees to accept responsibility for the mitigation work required, in compliance with the NCEEP In- Lieu Fee Instrument, approved by the United States Corps of Engineers, Wilmington District on July 28, 2010.

Payment has been made and documentation forwarded to the Corps of Engineers.

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

REPLY TO
ATTENTION OF

RECEIVED
AUG 31 2012
PDEA-OFFICE OF NATURAL ENVIRONMENT

August 27, 2012

Regulatory Division/1145b

SUBJECT: Action ID 2009-00439; TIP No. R-2241A

Mr. Gregory J. Thorpe, Ph.D
North Carolina Department of Transportation
Division of Highways
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Dr. Thorpe:

Reference the Department of the Army permit issued to the North Carolina Department of Transportation (NCDOT) on June 6, 2012, to authorize the discharge of fill material into waters of the United States, for construction of Section A of the US 501 improvements (TIP No. R-2241A), from NC 49 in Roxboro to SR 1602 (Jesse Banks Road), in Person County, North Carolina. Also, please reference your July 30, 2012, letter requesting modification of the permit for a net decrease of permanent loss impacts to streams with more than minimal function, an increase of streambank stabilization impacts, and a net decrease of temporary impacts to streams. These changes in impacts result from design modifications to provide additional necessary stream bank protection, re-calculation of impacts, and necessary relocation of a natural gas pipeline main. Additional mitigation is not proposed because the revisions result in a net decrease of permanent loss impacts to streams with more than minimal function.

We have reviewed the requested modification, and determined that it is appropriate and reasonable, and that no public notice is required for this modification. Therefore, the permit is hereby modified to include the changes listed and shown in the modified drawings in the July 30, 2012, modification request, for a net decrease of permanent loss impacts to streams with more than minimal function of 12 linear feet, an increase of stream bank stabilization impacts of 86 linear feet, and a net decrease of temporary impacts to streams of 86 linear feet, and to include the revised mitigation requirement below. This section of the project will now permanently impact 3,381 linear feet of streams (including 3,184 linear feet of stream with more than minimal function) and 2.38 acre of wetlands, impact 525 linear feet of streams for stream bank stabilization, and temporarily impact 772 linear feet of streams.

k) In order to compensate for permanent losses of 3,184 linear feet of stream with more than minimal function, and 2.38 acres of wetlands, the permittee shall make payment to the North Carolina Ecosystem Enhancement Program (NCEEP) in the amount determined by the NCEEP, sufficient to perform the restoration of 6,364 linear feet of warm water stream

and 5.76 acres of riparian non-riverine wetlands in the Lower Dan River Basin, Cataloging Unit 03010104. Construction within jurisdictional areas on the property shall begin only after the permittee has made full payment to the NCEEP and provided a copy of the payment documentation to the Corps, and the NCEEP has provided written confirmation to the Corps that it agrees to accept responsibility for the mitigation work required, in compliance with the NCEEP In-Lieu Fee Instrument, approved by the United States Army Corps of Engineers, Wilmington District on July, 28, 2010.

All other conditions of the previously modified permit, including the permit expiration date of December 31, 2017, remain applicable.

Should you have any questions, please call Mr. Eric Alsmeyer at (919) 554-4884, extension 23.

Sincerely,

Andrew Williams for Steven A. Baker

Steven A. Baker
Colonel, U.S. Army
District Commander

Copies Furnished:

Ms. Amy Chapman
Division of Water Quality
North Carolina Department of
Environment and Natural Resources
1650 Mail Service Center
Raleigh, NC 27699-1650

Mr. Clarence Coleman
Federal Highway Administration
310 New Bern Ave., Room 410
Raleigh, North Carolina 27601-1442

Mr. J.W. Bowman, PE, Division Engineer
North Carolina Department of Transportation
Division of Highways
2612 North Duke Street
Durham, North Carolina 27704

Ms. Beth Harmon
North Carolina Ecosystem Enhancement Program
(by e-mail)

RECEIVED
JUN 05 2012
REG. WILM. FLD. OFC.

DEPARTMENT OF THE ARMY PERMIT

Permittee: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ATTN: DR. GREGORY J. THORPE, PH.D.

Permit No: SAW- 2009-00439

Issuing Office: USAED, WILMINGTON

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

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

Project Description: The proposed project includes 4.5 mile of improvements to existing US 501 and NC 49, to make a multilane roadway facility from NC 49 in Roxboro to SR 1602 (Jesse Banks Road) (TIP No. R-2241A). Impacts to waters of the United States (streams and wetlands) will be from roadway fills and mechanized clearing, new and replacement pipe and box culverts, riprap bank protection, and a utility line crossing (water and sewer). The project will permanently impact 3,832 linear feet of streams at fifteen sites, and 2.38 acre of wetlands at eleven sites. Additional temporary impacts are also proposed to 858 linear feet of stream at fourteen sites.

Project Location: US 501 (TIP No. R-2241A), from NC 49 in Roxboro to SR 1602 (Jesse Banks Road), in Person County, North Carolina. The project starts at approximately Latitude 36.4098 N, Longitude 78.9724 W, and ends at Latitude 36.4535 N, Longitude 78.9247 W.

Permit Conditions:

General Conditions:

1. The time Limit for completing the work authorized ends on December 31, 2017. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Conditions 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site eligible for listing in the National Register of Historic Places.

4. If you sell the property associate with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

*SEE ATTACHED SPECIAL CONDITIONS

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. C. 403).

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

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

2. Limits of this authorization.

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

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

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

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

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

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

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

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

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

*U.S. GOVERNMENT PRINTING OFFICE: 1986 – 717-425

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

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

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

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

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

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

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

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

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

06/04/2012

(PERMITTEE) NORTH CAROLINA DEPARTMENT OF TRANSPORTATION *(DATE)*
ATTN: DR. GREGORY J. THORPE, PH.D.

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

6 June 2012

(DISTRICT ENGINEER) STEVEN A. BAKER, COLONEL *(DATE)*

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(Transferee) *(DATE)*

*U.S. GOVERNMENT PRINTING OFFICE: 1986 – 717-425

SPECIAL CONDITIONS
ACTION ID SAW-2009-00439
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION - TIP R-2241A

Work Limits

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

b) Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

c) Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

Related Laws

d) All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the permittee shall immediately report it to the N.C. Division of Water Quality at (919) 807-6308 or (800) 858-0368 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.

Project Maintenance

e) The permittee shall advise the Corps in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.

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

g) The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or

maintenance of this project with a copy of this permit. A copy of this permit, including all conditions, shall be available at the project site during construction and maintenance of this project.

h) The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).

i) The permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.

Enforcement

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

modified, see attached Aug 27, 2012

Mitigation

k) In order to compensate for permanent losses of 3,196 linear feet of stream with more than minimal function/, and 2.38 acres of wetlands, the permittee shall make payment to the North Carolina Ecosystem Enhancement Program (NCEEP) in the amount determined by the NCEEP, sufficient to perform the restoration of 6,392 linear feet of warm water stream and 5.76 acres of riparian non-riverine wetlands in the Lower Dan River Basin, Cataloging Unit 03010104. Construction within jurisdictional areas on the property shall begin only after the permittee has made full payment to the NCEEP and provided a copy of the payment documentation to the Corps, and the NCEEP has provided written confirmation to the Corps that it agrees to accept responsibility for the mitigation work required, in compliance with the NCEEP In-Lieu Fee Instrument, approved by the United States Army Corps of Engineers, Wilmington District on July, 28, 2010.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: **North Carolina Department of Transportation**	File Number: **SAW-2009-00439**	Date: **May 23, 2012**

Attached is:	See Section below
☒ INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
☐ PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐ PERMIT DENIAL	C
☐ APPROVED JURISDICTIONAL DETERMINATION	D
☐ PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT	
REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)	
ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.	
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:	
If you have questions regarding this decision and/or the appeal process you may contact: **District Engineer, Wilmington Regulatory Div.** **Attn: Mr. Eric Alsmeyer** **3331 Heritage Trade Drive** **Raleigh, North Carolina 27587** **Phone: (919) 554-4884, extension 23**	If you only have questions regarding the appeal process you may also contact: **Mr. Jason Steele, Administrative Appeal Review Officer** **CESAD-PDO** **U.S. Army Corps of Engineers, South Atlantic Division** **60 Forsyth Street, Room 10M15** **Atlanta, Georgia 30303-8801** **Phone: (404) 562-5137**
RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.	

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

For appeals on Initial Proffered Permits send this form to:

District Engineer, Wilmington Regulatory Division, Attn: Eric Alsmeyer, 69 Darlington Avenue, Wilmington, North Carolina 28403

For Permit denials, Proffered Permits and approved Jurisdictional Determinations send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Jason Steele, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801
Phone: (404) 562-5137

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality
Charles Wakild, P.E
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

RECEIVED
AUG 16 2012
DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT

August 13, 2012

Dr. Greg Thorpe, PhD., Manager
Project Development and Environmental Analysis
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548

Subject: MODIFICATION to 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for Proposed improvements to US 501 North in Person County, Federal Aid Project No. STP-501(1), State Project No. 34406.2.3, TIP No. R-2241A. NCDWQ Project No. 20120073 version 2.

Dear Dr. Thorpe:

Attached hereto is a modification of Certification No. 3910 issued to The North Carolina Department of Transportation (NCDOT) dated March 23, 2012.

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

Sincerely,

for Charles Wakild
Director

Attachments

cc: Eric Alsmeyer, US Army Corps of Engineers, Raleigh Field Office
Chris Murray, Division 5 Environmental Officer
Beth Harmon, Ecosystem Enhancement Program
Rachelle Beauregard, NCDOT Natural Environment Unit
File Copy

Transportation and Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492
Internet: www.ncwaterquality.org

An Equal Opportunity \ Affirmative Action Employer

One NorthCarolina Naturally

MODIFICATION to 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations. This certification authorizes the NCDOT to impact 2.39 acres of jurisdictional wetlands and 4,310 linear feet of jurisdictional streams in Person County. The project shall be constructed pursuant to the application dated received January 26, 2012. The authorized impacts are as described below:

Additional (or Decrease) to Stream Impacts in the Roanoke River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Impacts to Intermittent Stream (linear ft)	Riprap Stabilization to Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Impacts to Perennial Stream (linear ft)	Riprap Stabilization to Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	0	0	0	0	+ 2	0	+ 2	0
6	0	- 10	+ 7	0	0	0	- 3	0
11	0	0	0	0	- 17	+16	-1	+16
17	0	0	0	- 2	- 39	+31	- 10	+ 29
18	0	0	0	- 10	- 22	+ 32	0	+ 22
Total	**0**	**- 10**	**+ 7**	**- 12**	**- 76**	**+ 79**	**- 14**	**+ 67**

Total Additional Stream Impact for Project: -14 linear feet

The application provides adequate assurance that the discharge of fill material into the waters of the Roanoke River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application dated received January 26, 2012 and modification request received August 2, 2012. Should your project change, you are required to notify the NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Conditions of Certification:

1. Compensatory mitigation for 3,626 linear feet of impact to streams in the Roanoke River Basin is now required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated January 17, 2012 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the EEP Mitigation Banking Instrument signed July 28, 2010.

2. All other conditions in the first version of this Certification dated April 5, 2012 for this project still apply.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission.
The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-733-2698, Facsimile: (919)-733-3478

A copy of the petition must also be served on DENR as follows:

Ms. Mary Penny Thompson, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center
Raleigh, NC 27699-1601

This the 13th day of August 2012

DIVISION OF WATER QUALITY

for Charles Wakild
Director

WQC No. 3910

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality
Charles Wakild, P.E
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

April 5, 2012

RECEIVED
Division of Highways
APR 12 2012
Preconstruction
Project Development and
Environmental Analysis Branch

Dr. Greg Thorpe, PhD., Manager
Project Development and Environmental Analysis
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina, 27699-1548

Subject: CORRECTION to 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for Proposed improvements to US 501 North in Person County, Federal Aid Project No. STP-501(1), State Project No. 34406.2.3, TIP No. R-2241A. NCDWQ Project No. 20120073

Dear Dr. Thorpe:

Attached hereto is a corrected copy of Certification No. 3910 issued to The North Carolina Department of Transportation (NCDOT) dated March 23, 2012.

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

Sincerely,

Robert Robinson

for Charles Wakild
Director

Attachments

cc: Eric Alsmeyer, US Army Corps of Engineers, Raleigh Field Office
Chris Murray, Division 5 Environmental Officer
Beth Harmon, Ecosystem Enhancement Program
Rachelle Beauregard, NCDOT Natural Environment Unit
File Copy

Transportation and Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6492
Internet: www.ncwaterquality.org

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One NorthCarolina Naturally

401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations. This certification authorizes the NCDOT to impact 2.39 acres of jurisdictional wetlands and 4,310 linear feet of jurisdictional streams in Person County. The project shall be constructed pursuant to the application dated received January 26, 2012. The authorized impacts are as described below:

Stream Impacts in the Roanoke River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Impacts to Intermittent Stream (linear ft)	Riprap Stabilization to Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Impacts to Perennial Stream (linear ft)	Riprap Stabilization to Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	0	0	0	138	32	125	289	263
3	23	0	0	0	0	0	23	0
4	0	0	0	112	39	59	210	171
6	23	30	16	0	0	0	69	0
7A	0	0	0	518	108	82	708	600
7B	59	0	0	0	0	0	59	0
8	0	0	0	194	36	13	243	207
9	0	0	0	279	33	16	328	295
10	92	43	20	0	0	0	155	0
11	0	0	0	282	102	36	420	318
13	0	0	0	246	72	0	318	246
14	0	0	0	262	23	13	298	275
15	0	0	0	653	75	13	741	666
17	0	0	0	148	62	36	246	184
18	0	0	0	364	203	10	203	374
Total	**197**	**73**	**36**	**3196**	**785**	**403**	**4310**	**3559**

Total Stream Impact for Project: 4,310 linear feet

Wetland Impacts in the Roanoke River Basin

Site	Permanent Fill (ac)	Excavation (ac)	Mechanized Clearing (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
2	0.11	0.01	0.06	0.18	0.18
5	0.22	0	0.06	0.28	0.28
7A	0.13	0	< 0.01	0.13	0.13
8	0.02	< 0.01	0.03	0.05	0.05
11	< 0.01	0	0	< 0.01	0
12	0.12	0	0	0.12	0.12
13	0.17	< 0.01	0.07	0.24	0.24
14	0.09	< 0.01	0	0.09	0.09
15	0.36	0	0.03	0.39	0.39
17	0.47	0.15	0.18	0.80	0.80
19	0.01	0	0.10	0.11	0.11
Total	**1.70**	**0.16**	**0.53**	**2.39**	**2.39**

Total Wetland Impact for Project: 2.39 acres

Open Water (Pond) Impacts in the Roanoke River Basin

Site	Pond Removal (ac)	Total Impacts to Open Waters (ac)
16	0.041	0.041
Total	**0.041**	**0.041**

Total Open Water Impact for Project: 0.041 acres.

The application provides adequate assurance that the discharge of fill material into the waters of the Roanoke River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application dated received January 26, 2012. Should your project change, you are required to notify the NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit. **This approval replaces the one issued March 23, 2012.**

Aug 13, 2012 modified

Conditions of Certification:

1. Compensatory mitigation for 3,559 linear feet of impact to streams in the Roanoke River Basin is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated January 17, 2012 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the EEP Mitigation Banking Instrument signed July 28, 2010.

2. Compensatory mitigation for impacts to 2.39 acres of wetlands in the Roanoke River Basin is required. We understand that you have chosen to perform compensatory mitigation for impacts to wetlands through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated January 17, 2012 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004

3. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams, shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.

4. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

5. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.

6. For all streams being impacted due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species. The channel shall be stable prior to diverting water back into it. The banks should also be revegetated with native riparian species to the greatest extend possible.

7. At locations where ponds will be drained, proper measures will be taken to drain the pond with limited impact to upstream and downstream channel stability as well as to native aquatic species. Proper measures will be taken to avoid sediment release and/or sediment accumulation downstream as a result of pond draining.

8. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species

9. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.

10. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.

11. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions.

12. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.

13. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.

14. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.

15. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream.

16. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.

17. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.

18. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.

19. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If NCDWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, NCDWQ may reevaluate and modify this certification.

20. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification..

21. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.

22. The outside wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.

23. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.

24. The Permittee shall report any violations of this certification to the Division of Water Quality within 24 hours of discovery.

25. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify NCDWQ when all work included in the 401 Certification has been completed.

26. Native riparian vegetation (i.e., trees and shrubs native to your geographic region) must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction.

27. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.

28. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:

a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual.*
b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual.* The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual.*
d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

29. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification.

30. Pipes and culverts used exclusively to maintain equilibrium in wetlands, where aquatic life passage is not a concern, shall not be buried. These pipes shall be installed at natural ground elevation.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

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Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-733-2698, Facsimile: (919)-733-3478

A copy of the petition must also be served on DENR as follows:

Ms. Mary Penny Thompson, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center
Raleigh, NC 27699-1601

This the 5th day of April 2012

DIVISION OF WATER QUALITY

Robert Ridings

for Charles Wakild
Director

WQC No. 3910

NCDWQ Project No.: _____ **County:** _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Transportation Permitting Unit, North Carolina Division of Water Quality, 1650 Mail Service Center, Raleigh, NC, 27699-1650. This form may be returned to NCDWQ by the applicant, the applicant's authorized agent, **or** the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

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

Signature: _____ Date: _____

Agent's Certification

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

Signature: _____ Date:_____

Engineer's Certification

_____ Partial _____ Final

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

Signature _____ Registration No. _____

Date _____

NCDWQ Project No.: _____ **County:** _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Transportation Permitting Unit, North Carolina Division of Water Quality, 1650 Mail Service Center, Raleigh, NC, 27699-1650. This form may be returned to NCDWQ by the applicant, the applicant's authorized agent, **or** the project engineer. It is not necessary to send certificates from all of these.

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Signature: _____ Date: _____

Agent's Certification

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

Signature: _____ Date:_____

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Signature _____ Registration No. _____

Date _____

PROJECT: 34406.1.1 TIP PROJECT: R-2241A

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PERSON COUNTY

LOCATION: US 501 FROM NC 49 IN ROXBORO TO SOUTH OF SR 1602

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

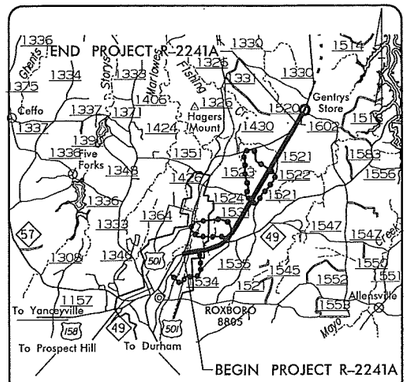
METRIC

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-2241A	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34406.1.1	MA-STP-501	PE

Permit Drawing Sheet 1 of 48



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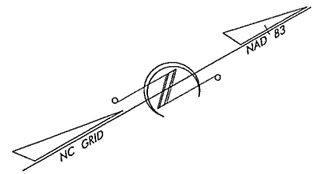
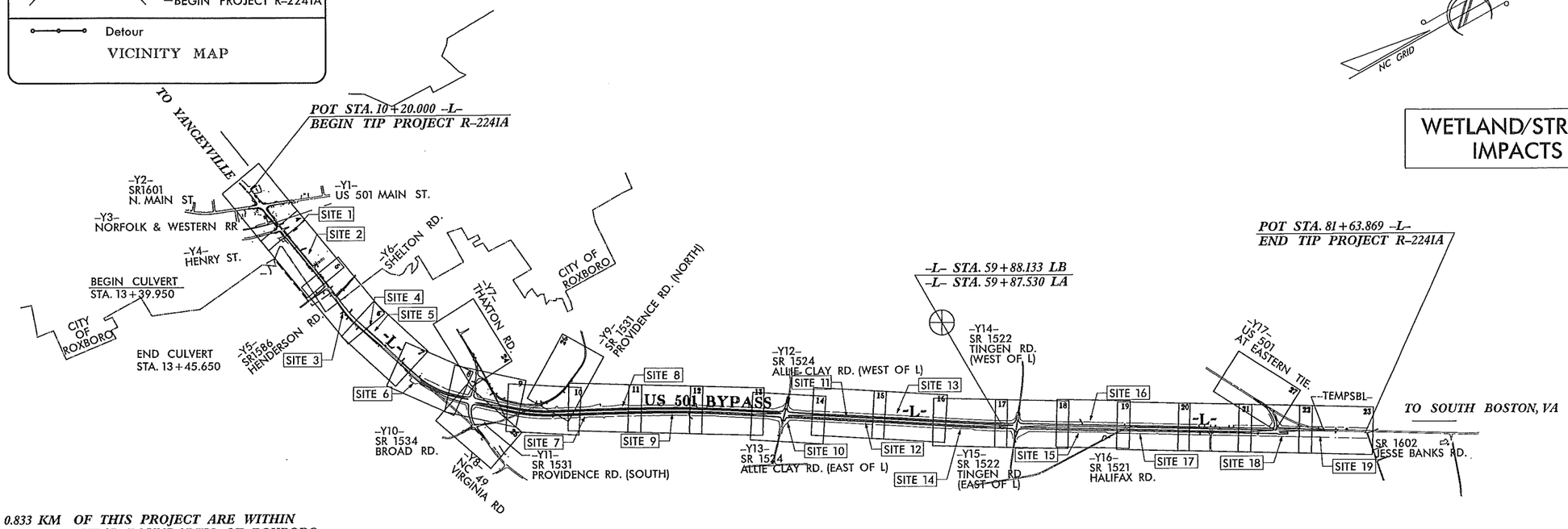
VICINITY MAP



WETLAND/STREAM IMPACTS



0.833 KM OF THIS PROJECT ARE WITHIN THE MUNICIPAL BOUNDARIES OF ROXBORO

NCDOT CONTACT: MALCOLM WATSON, P.E.
PROJECT ENGINEER (NCDOT)

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

THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALE

5 0 10
PLANS
5 0 10
PROFILE (HORIZONTAL)
1 0 2
PROFILE (VERTICAL)

DESIGN DATA

	5 LANE C&G	4 LANE DIVIDED
ADT 2007 =	21,725	10,500
ADT 2027 =	34,142	17,500
DHV =	10%	10 %
D =	60%	60 %
T =	11%*	6%**
V =	65 km/h	100 km/h

* TTST 3% + DUAL 8%
** TTST 2% + DUAL 4%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-2241A = 7.138 km

LENGTH OF STRUCTURES TIP PROJECT R-2241A = 0.006 km

TOTAL LENGTH OF TIP PROJECT R-2241A = 7.144 km

Prepared In the Office of:
RALPH WHITEHEAD ASSOCIATES, INC.
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCT. 20, 2006

LETTING DATE: OCT. 18, 2011

JOSEPH A. FREEMAN, P.E.
PROJECT ENGINEER

RICHARD A. ODYNSKI, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

APPROVED P.E.
STATE HIGHWAY DESIGN ENGINEER

$$$$$$SYSTIME$$$$$
$$$$$$

PROJECT: 34406.1.1 TIP PROJECT: R-2241A

See Sheet 1-A For Index of Sheets
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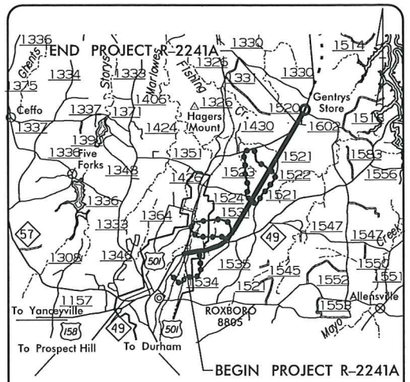

Detour

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DIVISION OF HIGHWAYS

PERSON COUNTY

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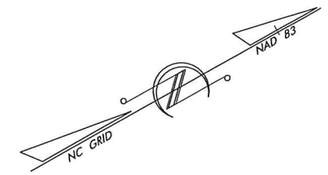
34406.1.1	MA-STP-501	PE

Permit Drawing
Sheet 2 of 48



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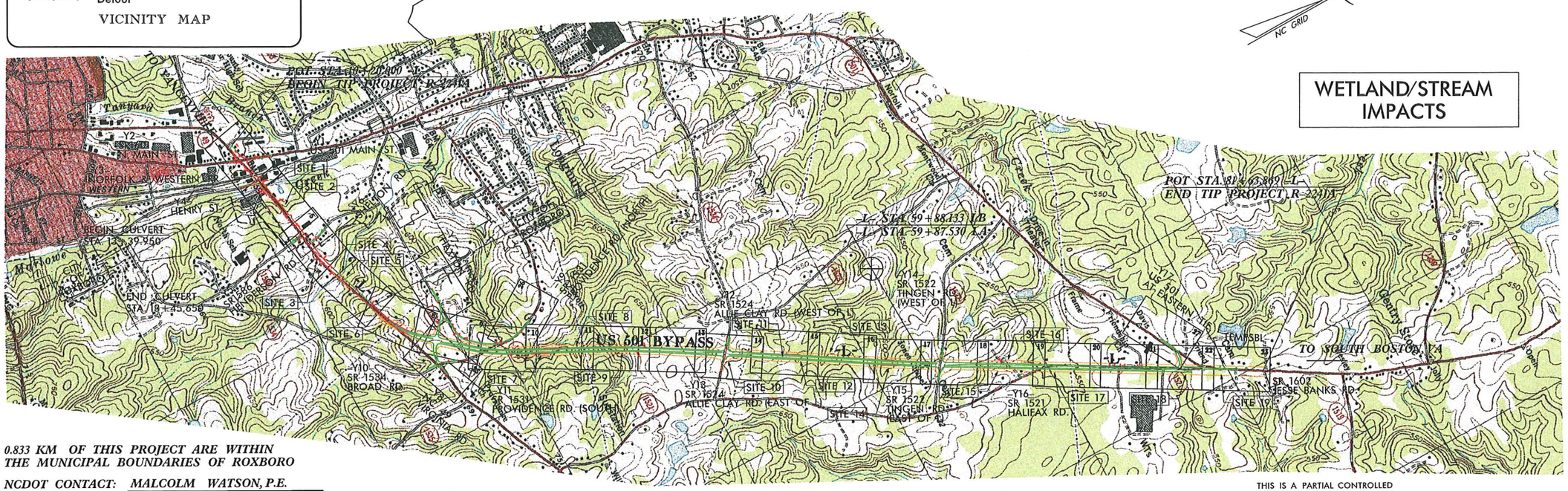

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HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

APPROVED P.E.
STATE HIGHWAY DESIGN ENGINEER

RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 35434
CHARLOTTE, NORTH CAROLINA 28235

REVISIONS

METRIC

NOT TO SCALE

CONST.REV.

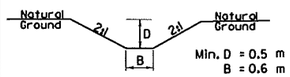
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	2H
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

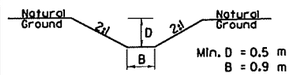
Revised 7/5/12
Permit Drawing
Sheet 3 of 48

DETAIL 1
STANDARD BASE DITCH
(Not to Scale)



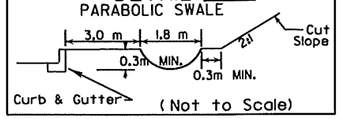
Min. D = 0.5 m
B = 0.6 m

DETAIL 2
STANDARD BASE DITCH
(Not to Scale)



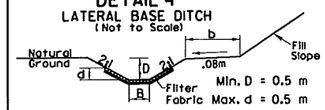
Min. D = 0.5 m
B = 0.9 m

DETAIL 3
PARABOLIC SWALE



(Not to Scale)

DETAIL 4
LATERAL BASE DITCH
(Not to Scale)

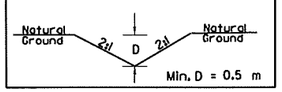


Min. D = 0.5 m
Max. d = 0.5 m
B = 0.9 m
b = 1.5 m

* When B is < 1.8m

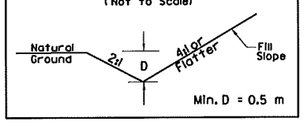
Type of Liner = CLASS 'B' RIP RAP

DETAIL 5
STANDARD 'V' DITCH
(Not to Scale)



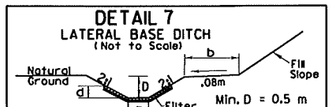
Min. D = 0.5 m

DETAIL 6
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 0.5 m

DETAIL 7
LATERAL BASE DITCH
(Not to Scale)

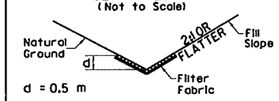


Min. D = 0.5 m
Max. d = 0.5 m
B = 0.6 m
b = 1.5 m

* When B is < 1.8m

Type of Liner = CLASS 'B' RIP RAP

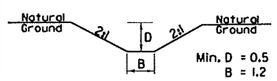
DETAIL 8
TOE PROTECTION
(Not to Scale)



d = 0.5 m

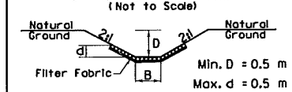
Type of Liner = CLASS 'B' RIP RAP

DETAIL 9
STANDARD BASE DITCH
(Not to Scale)



Min. D = 0.5 m
B = 1.2 m

DETAIL 10
STANDARD BASE DITCH
(Not to Scale)

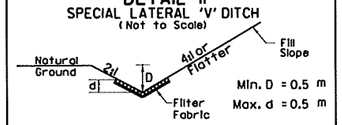


Min. D = 0.5 m
Max. d = 0.5 m
B = 0.9 m

* When B is < 1.8m

Type of Liner = CLASS 'B' RIP RAP

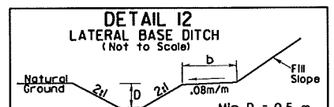
DETAIL 11
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 0.5 m
Max. d = 0.5 m

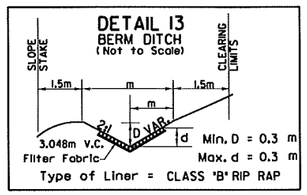
Type of Liner = CLASS 'B' RIP RAP

DETAIL 12
LATERAL BASE DITCH
(Not to Scale)



Min. D = 0.5 m
B = 1.5 m
b = 1.2 m

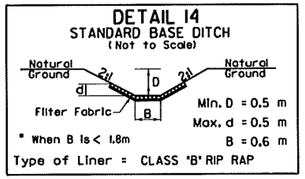
DETAIL 13
BERM DITCH
(Not to Scale)



Min. D = 0.3 m
Max. d = 0.3 m

Type of Liner = CLASS 'B' RIP RAP

DETAIL 14
STANDARD BASE DITCH
(Not to Scale)

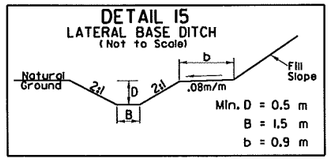


Min. D = 0.5 m
Max. d = 0.5 m
B = 0.6 m

* When B is < 1.8m

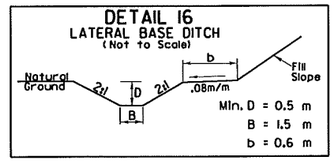
Type of Liner = CLASS 'B' RIP RAP

DETAIL 15
LATERAL BASE DITCH
(Not to Scale)



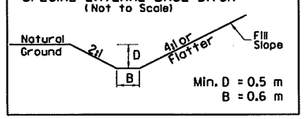
Min. D = 0.5 m
B = 1.5 m
b = 0.9 m

DETAIL 16
LATERAL BASE DITCH
(Not to Scale)



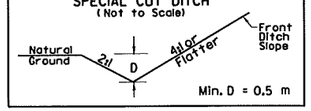
Min. D = 0.5 m
B = 1.5 m
b = 0.6 m

DETAIL 17
SPECIAL LATERAL BASE DITCH
(Not to Scale)



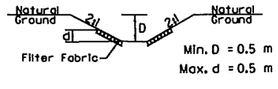
Min. D = 0.5 m
B = 0.6 m

DETAIL 18
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 0.5 m

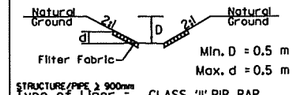
DETAIL 19
OUTLET PROTECTION
(Not to Scale)



Min. D = 0.5 m
Max. d = 0.5 m

Type of Liner = CLASS 'B' RIP RAP

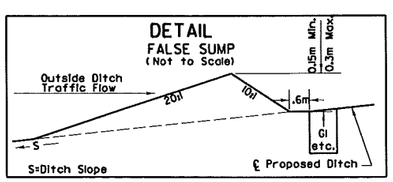
DETAIL 20
OUTLET PROTECTION
(Not to Scale)



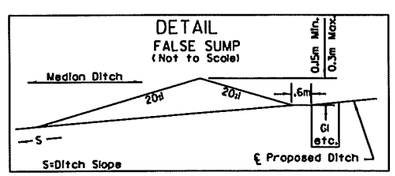
Min. D = 0.5 m
Max. d = 0.5 m

STRUCTURE/PIPE ≥ 900mm
Type of Liner = CLASS 'II' RIP RAP
STRUCTURE/PIPE < 900mm
Type of Liner = CLASS 'I' RIP RAP

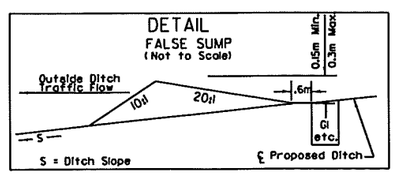
DETAIL
FALSE SUMP
(Not to Scale)



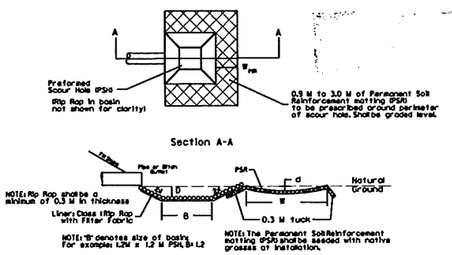
DETAIL
FALSE SUMP
(Not to Scale)



DETAIL
FALSE SUMP
(Not to Scale)

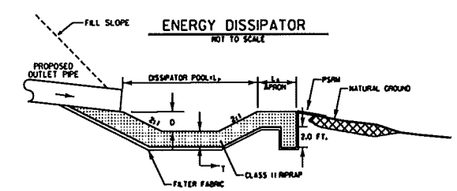


PREFORMED SCOUR HOLE
(Not to scale)

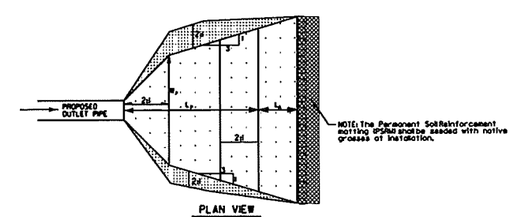


STATION	B M	D M	W_{PSR} M	d M	CLASS I RIP RAP MTONS	DDE (CU M)	FILTER FABRIC (SQ M)
13+80-L-	1.4	.5	1.5	0.15	8.2	11.5	1.2
33+60 -L-	1.4	.5	1.5	0.15	8.2	11.5	1.2
36+60 -L-	1.4	.5	1.5	0.15	8.2	11.5	1.2
48+30 -L-	1.8	.5	1.5	0.15	11.5	15	1.7
50+26 -L-	1.4	.5	1.5	0.15	8.2	11.5	1.2
52+00 -L-	1.2	.5	1.5	0.15	6.5	10.0	1.0
66+60 -L-	1.2	.5	1.5	0.15	6.5	10.0	1.0

ENERGY DISSIPATOR
NOT TO SCALE



PROFILE
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

STATION	L_P M	W_P M	L_A M	T M	D M	CLASS I RIP RAP MTONS	DDE (CU M)	FILTER FABRIC (SQ M)
20+70 -L-	8.0	5.0	1.8	.6	1.0	110	86	75
39+80 -L-	7.0	4.3	2.0	.6	1.0	120	95	85

RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 35624
CHARLOTTE, NORTH CAROLINA 28235

REVISIONS

METRIC

NOT TO SCALE

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	2H-2
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL
(NOT TO SCALE)

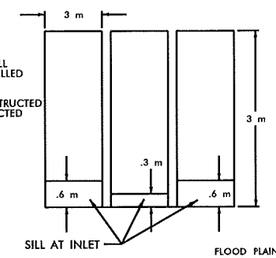
MULTI-BARREL – FOR 2 OR 3 BARRELS
GENERAL DETAIL
LOW FLOW CHANNEL
AND FLOOD PLAIN SILLS

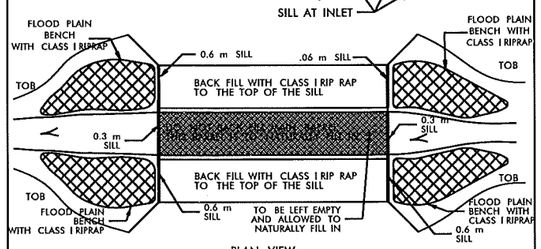
*NOTES:

1) SILLS ARE TO BE 0.3 m. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

2) CLASS 'I' RIPRAP TO BE USED AS BACK FILL IN HIGHFLOW BARRELS AND BE BACK FILLED TO TOP OF THE SILL.

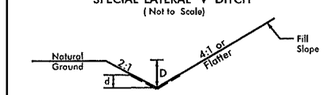
3) FLOOD PLAIN BENCH SHOULD BE CONSTRUCTED WITH CLASS 'I' RIPRAP AND BE CONSTRUCTED TO THE TOP OF THE SILL.





PLAN VIEW

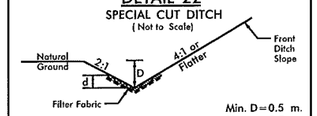
DETAIL 21
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=0.5 m.
Max. d=0.5 m.

Type of Liner= PSRM

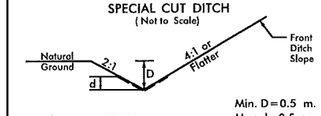
DETAIL 22
SPECIAL CUT DITCH
(Not to Scale)



Min. D=0.5 m.
Max. d=0.5 m.

Type of Liner= Class 'II' Rip-Rap

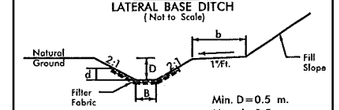
DETAIL 23
SPECIAL CUT DITCH
(Not to Scale)



Min. D=0.5 m.
Max d=0.5 m.

Type of Liner= PSRM

DETAIL 24
LATERAL BASE DITCH
(Not to Scale)

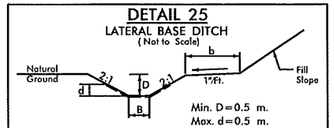


Min. D=0.5 m.
Max. d=0.5 m.
B=1.5 m.
b=1.2 m.

*When B is < 1.8 m

Type of Liner= Class 'II' Rip-Rap

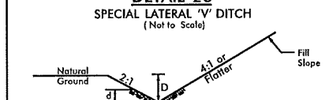
DETAIL 25
LATERAL BASE DITCH
(Not to Scale)



Min. D=0.5 m.
Max. d=0.5 m.
B=1.5 m.
b=0.9 m.

Type of Liner= PSRM

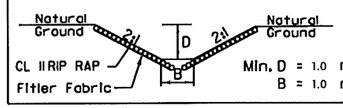
DETAIL 26
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=0.5 m.
Max. d=0.5 m.

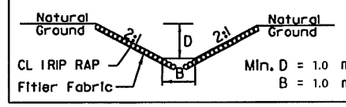
Type of Liner= Class 'II' Rip-Rap

INLET CHANNEL DETAIL
STRUCTURES/PIPES ≥ 900mm



Min. D = 1.0 m
B = 1.0 m

INLET CHANNEL DETAIL
STRUCTURES/PIPES < 900mm



Min. D = 1.0 m
B = 1.0 m

Revised 7/5/12
Permit Drawing
Sheet 39 of 48

STV / Ralph Whitehead Associates, Inc.
1000 Westgate Drive, Suite 200
Charlotte, NC 28205
NC License Number F-0991

REVISIONS

08-02-11-	PARCEL 16; PROPERTY LINE MODIFIED & REMOVED SHED. ADDED UNDERGROUND DRAIN LINE & MANHOLES PARCEL 16A; ADDED NEW PARCEL BETWEEN 16 & 17 REVISED OWNER NAME ON PARCELS 4,9,11,16 PARCEL 10; REVISED DRIVEWAY CONNECTION & MODIFIED PROPOSED CHAIN LINK FENCE
08-16-11-	PARCEL 12; 10.8M DRIVEWAY SHIFTED TO WEST SIDE OF PROPERTY
09-09-11-	PARCELS 8 & 8A COMBINED. REVISED OWNER NAME
10-07-11-	REVISED PARCEL BOUNDRIES FOR PARCEL 16 AND 16A
10-07-11-	ADDED SUBSURFACE DRAINAGE FOR PARCEL 16 AND 16A
10-27-11-	PARCEL 11; ADDED PDE FOR DRAINAGE STRUCTURE
10-31-11-	PARCEL 7; ADDED R/W AND MODIFIED TEMPORARY EASEMENTS
06-20-10 -	PARCEL 1; NO CLAIM. REMOVED PARCEL NUMBER PARCELS 4,5; REVISED PARCEL NUMBERS PARCELS 8,8A; REVISED R/W OF ROAD BY SURVEY PARCELS 10,12; LOCATED SIGN
03-25-10 -	MODIFIED RIGHT TURN LANE STORAGE LENGTH AND RAILROAD SKETCH PARCEL 9; REVISED CURB AND GUTTER, ADJUSTED RW AND EASEMENT TIES-NS PARCEL 10; ADDED A CHAIN LINK FENCE AND GATE. REDUCED GUARDRAIL LIMITS, UPDATED NOTES. UPDATED RW AND EASEMENT TIE-NS PARCEL 12; REVISED CURB AND GUTTER PARCEL 13A; UPDATED NOTES PARCEL 16; CHANGED TWO GM DRIVEWAYS INTO TURN OUT DRIVEWAYS, UPDATED RW AND EASEMENT TIE-NS
06-20-10 -	PARCEL 4; REVISED PARCEL INFORMATION PARCEL 6; UPDATED EASEMENT LINES
03-25-10 -	MODIFIED RIGHT TURN LANE STORAGE LENGTH AND RAILROAD SKETCH PARCEL 9; REVISED CURB AND GUTTER, ADJUSTED RW AND EASEMENT TIES-NS PARCEL 10; ADDED A CHAIN LINK FENCE AND GATE. REDUCED GUARDRAIL LIMITS, UPDATED NOTES. UPDATED RW AND EASEMENT TIE-NS PARCEL 12; REVISED CURB AND GUTTER PARCEL 13A; UPDATED NOTES PARCEL 16; CHANGED TWO GM DRIVEWAYS INTO TURN OUT DRIVEWAYS, UPDATED RW AND EASEMENT TIE-NS
06-25-09 -	PULLED SLOPE STAKES IN, REVISED EASEMENT.
06-04-09 -	MOVED DRIVEWAY ON PARCEL 10, STEEPENED FILL ON PARCEL 14, DRIVEWAY RECONNECTION ON PARCEL 16. REMOVED EASEMENT FROM PARCEL 1,8, REDUCED ROW AND TCE ON PARCEL 4, RELOCATED TCE ON PARCEL 6, REDUCED TCE ON PARCEL 9, ADDED TCE ON PARCEL 11, NAME CHANGE ON PARCEL 2,3,9,9S. PLACED GUARDRAIL TO PROTECT TANKS ON PARCEL 10, AND CREATED NEW PARCEL 13A
06-24-09 -	MOVED REAR MONUMENTS ON PARCEL 10. TOTALLY REMOVED SIDE STAKES, ADDED BOLLARDS.
02-18-09 -	REMOVED PIPE EMPTYING INTO RAILROAD DITCH, ADDED 2 PIPES AND 1 CB TO CONNECT TO PIPE ON PARCEL 13
01-07-09 -	ELIMINATED EASEMENT FROM WITHIN BOLLARDS AT PROPANE TANK ON PARCEL 10
03-28-10 -	PARCEL 6; REVISED PARCEL INFORMATION PARCEL 6; UPDATED EASEMENT LINES

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR "JKA PANEL 13"
WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 300205.115(m) EASTING: 616308.868(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000077057
THE N.C. LAWBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "JKA PANEL 13" TO -L- POT STATION 10+20.000 IS
S 40° 03' 09.53" W 6729.835 (m)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NAD 83 NC GRID

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	4
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

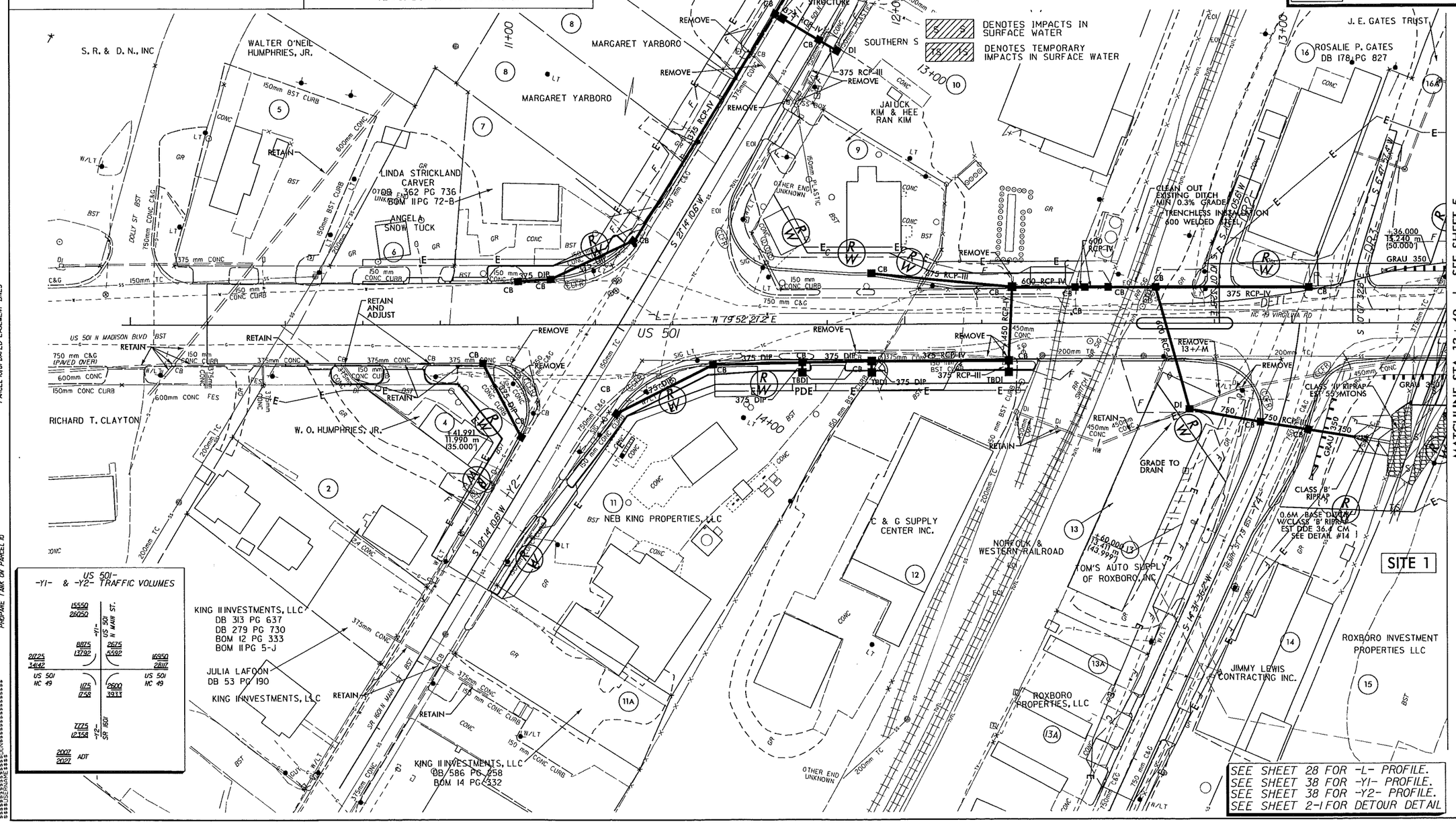
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Revised 6/15/12
Permit Drawing
Sheet 4 of 48

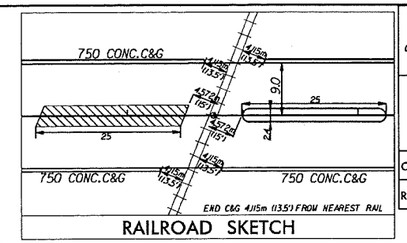
METRIC
5 0 10

CONST.REV.
R /W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER





RAILROAD SKETCH

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

08-02-11-	PARCEL 16: PROPERTY LINE MODIFIED & REMOVED SHED. ADDED UNDERGROUND DRAIN LINE & MANHOLES PARCEL 16A: ADDED NEW PARCEL BETWEEN 16 & 17 REVISED OWNER NAME ON PARCELS 4,9,11,16 PARCEL 10: REVISED DRIVEWAY CONNECTION & MODIFIED PROPOSED CHAIN LINK FENCE
08-16-11-	PARCEL 12: 10.8M DRIVEWAY SHIFTED TO WEST SIDE OF PROPERTY
09-09-11-	PARCELS 8 & 8A COMBINED, REVISED OWNER NAME
10-07-11-	REVISED PARCEL BOUNDRIES FOR PARCEL 16 AND 16A
10-07-11-	ADDED SUBSURFACE DRAINAGE FOR PARCEL 16 AND 16A
10-27-11-	PARCEL 11: ADDED PDE FOR DRAINAGE STRUCTURE
10-31-11-	PARCEL 7: ADDED R/W AND MODIFIED TEMPORARY EASEMENTS
06-21-10 -	PARCEL 1: NO CLAIM. REMOVED PARCEL NUMBER PARCEL 4: REVISED PARCEL NAME & REMOVED PARCEL 5 PARCELS 8,9: LOCATED R/W OF ROAD BY SURVEY PARCELS 10,12: LOCATED SIGN
09-20-10 -	MODIFIED RIGHT TURN LANE STORAGE LENGTH AND RAILROAD SKETCH PARCEL 1: ADDED CURB AND GUTTER. ADJUSTED RW AND EASEMENT TIE-INS PARCEL 10: ADDED A CHAIN LINK FENCE AND GATE. REDUCED GUARDRAIL LIMITS. UPDATED NOTES. UPDATED RW AND EASEMENT TIE-INS PARCEL 11: ADDED CURB AND GUTTER. PARCEL 13A: UPDATED NOTES PARCEL 16: CHANGED TWO GW DRIVEWAYS INTO TURN OUT DRIVEWAYS. UPDATED RW AND EASEMENT TIE-INS
06-21-10 -	PARCEL 6: REVISED PARCEL INFORMATION PARCEL 6A: UPDATED EASEMENT LINES
06-25-10 -	PULLED SLOPE STAKES IN. REVISED EASEMENT. ADDED PARCEL 4A ON PARCEL 4
06-04-09 -	MOVED DRIVEWAY ON PARCEL 10. STEEPENED FILL ON PARCEL 14. DRIVEWAY RECONNECTION ON PARCEL 16. REMOVED EASEMENT FROM PARCEL 1,8. REDUCED ROW AND EASEMENT ON PARCEL 4. RELOCATED TCE ON PARCEL 6. REDUCED CURVE ON PARCEL 9. ADDED TCE ON PARCEL 11. NAME CHANGE ON PARCEL 2,3,9,10. PLACED GUARDRAIL TO PROTECT TANKS ON PARCEL 10. AND CREATED NEW PARCEL 13A
06-24-09 -	MOVED RED MONUMENT ON PARCEL 1. ADDED BALLAROS. TO PROTECT SIGN. ADJUSTED TCE LINE TO ADD BALLAROS.
02-18-09 -	REMOVED PIPE EMPTYING INTO RAILROAD DITCH. ADDED 2 PIPES AND 1 CB TO CONNECT TO PIPE ON PARCEL 13
01-07-09 -	ELIMINATED EASEMENT FROM WITHIN BOLLARDS AT PROPANE TANK ON PARCEL 10
09-29-10 -	PARCEL 1: ADDED EASEMENT FROM WITHIN BOLLARDS AT PROPANE TANK ON PARCEL 10

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR "JKA PANEL 13"
WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 300205.115(m) EASTING: 616308.868(m).
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000077057
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "JKA PANEL 13" TO -L- POT STATION 10+20.000 IS
S 40° 03' 09.53" W 6729.835 (m)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

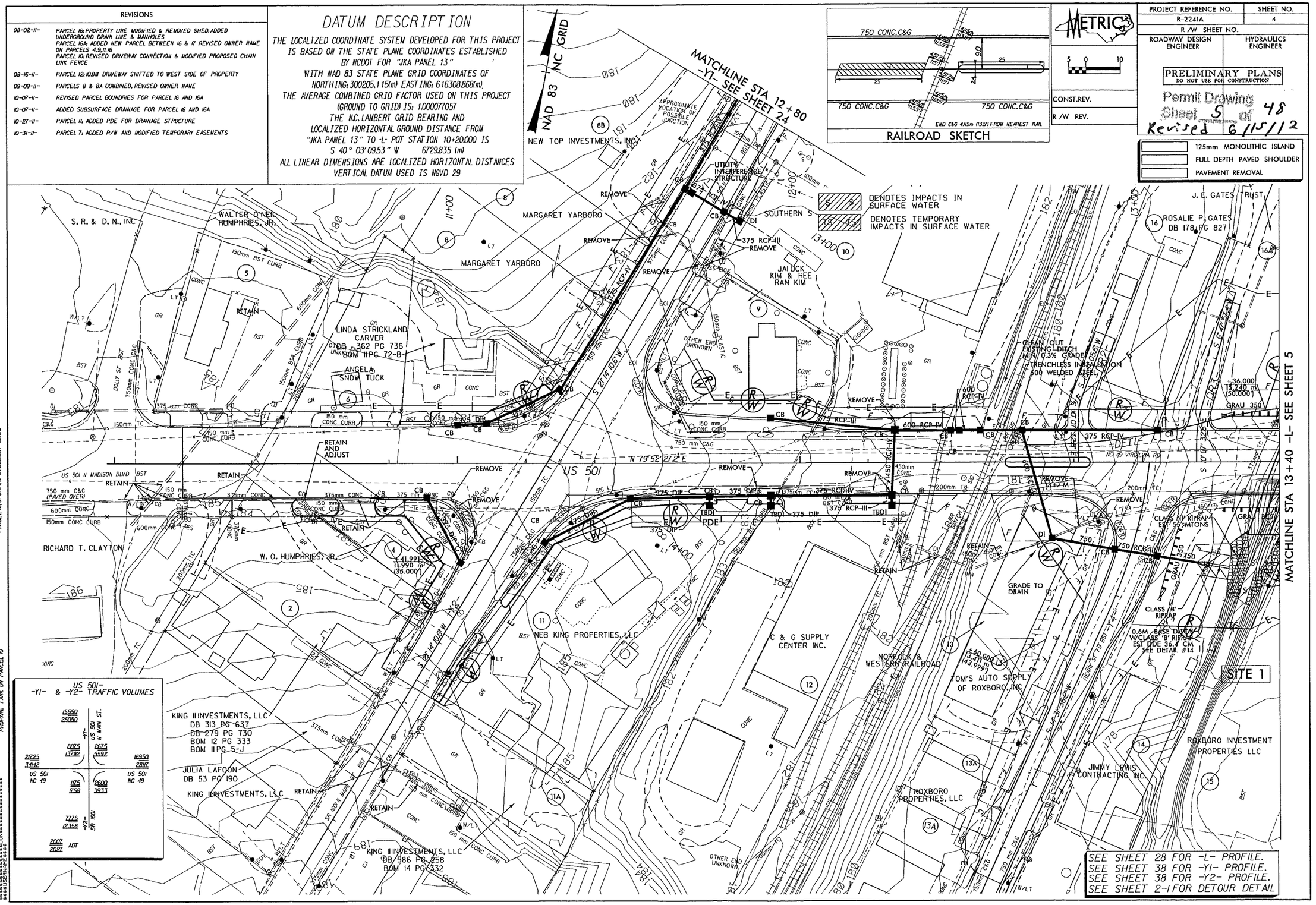
PROJECT REFERENCE NO.	SHEET NO.
R-2241A	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 5 of 48
Revised 6/15/12

CONST. REV.
R/W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER



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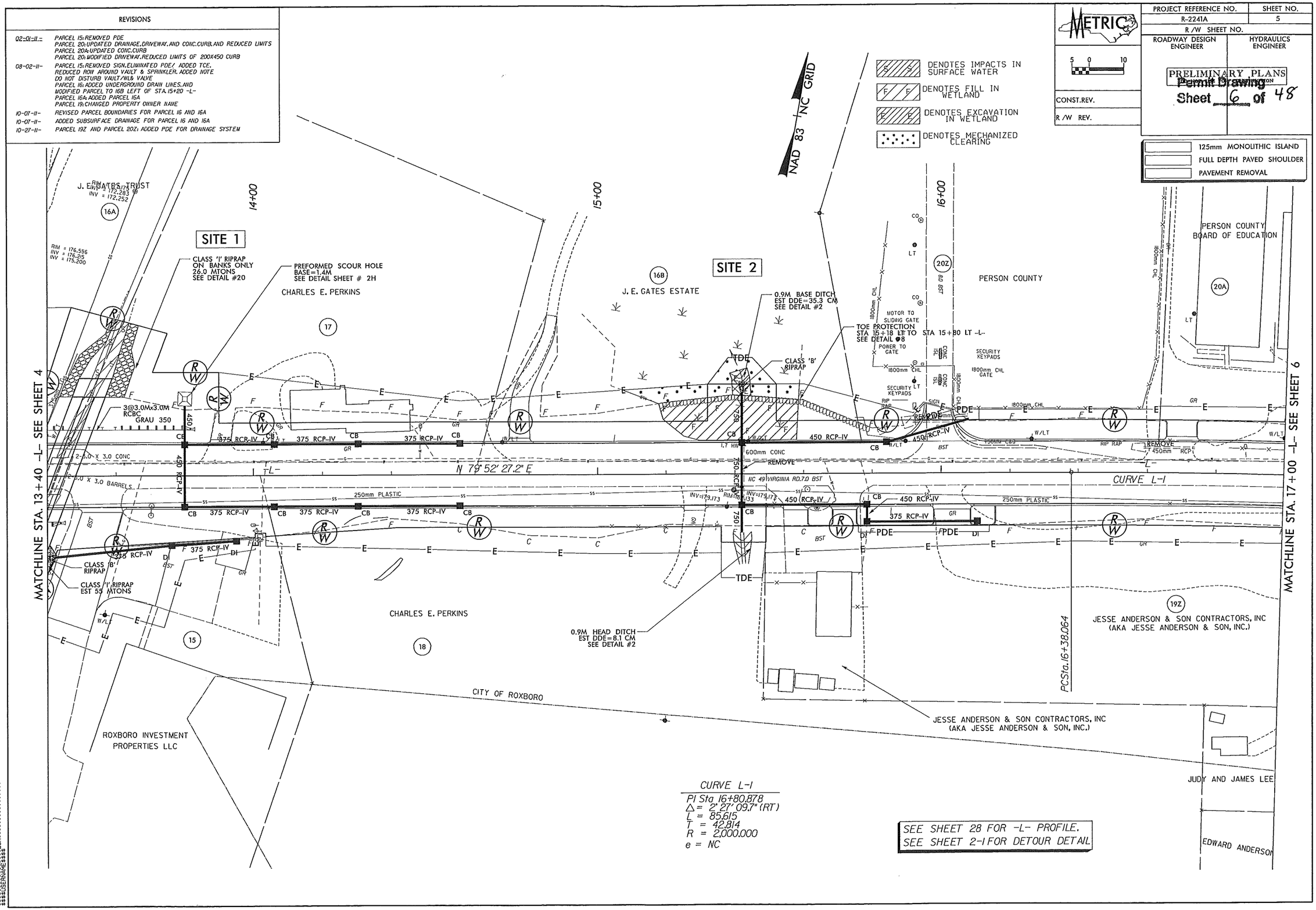
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS	
02-01-11	PARCEL 15: REMOVED PDE PARCEL 20: UPDATED DRAINAGE, DRIVEWAY, AND CONC. CURB, AND REDUCED LIMITS PARCEL 20A: UPDATED CONC. CURB PARCEL 20: MODIFIED DRIVEWAY, REDUCED LIMITS OF 200X450 CURB
08-02-11	PARCEL 15: REMOVED SIGN, ELIMINATED PDE/ ADDED TCE. REDUCED ROW AROUND VAULT & SPRINKLER. ADDED NOTE DO NOT DISTURB VAULT/WL& VALVE PARCEL 16: ADDED UNDERGROUND DRAIN LINES, AND MODIFIED PARCEL TO 16B LEFT OF STA. 15+20 -L- PARCEL 16A: ADDED PARCEL 16A PARCEL 19: CHANGED PROPERTY OWNER NAME
10-07-11	REVISED PARCEL BOUNDARIES FOR PARCEL 16 AND 16A
10-07-11	ADDED SUBSURFACE DRAINAGE FOR PARCEL 16 AND 16A
10-27-11	PARCEL 19Z AND PARCEL 20Z: ADDED PDE FOR DRAINAGE SYSTEM

06-04-08	ADDED A ROW MONUMENT & REMOVED 2 MONUMENTS, NAME CHANGE PARCELS 15,17,19, CHANGE ROW NEAR SE DRIVEWAY ON PARCEL 15, AND ESTABLISHED NEW PARCEL 20A
06-23-08	MOVED ROW MONUMENTS ON PARCEL 15.
06-21-10	PARCELS 15,20,20A: REVISED PARCEL NAME PARCEL 20: LOCATED SECURITY PADS, SECURITY GATE ENTRANCE, SIGN, FENCE, REMOVED OLD PROPERTY LINE AND FENCE PARCELS 20,20A: LOCATED CORRECT PROPERTY LINE
09-20-10	PARCEL 15: ADJUSTED RW AND EASEMENT TIE-INS, UPDATED NOTES, MODIFIED CURB AND GUTTER, MODIFIED DRIVEWAY TIE-IN LOCATION
09-28-10	PARCEL 20: RELOCATED DRIVEWAY ENTRANCE



PROJECT REFERENCE NO.	SHEET NO.
R-2241A	5
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R /W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 7 of 48

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

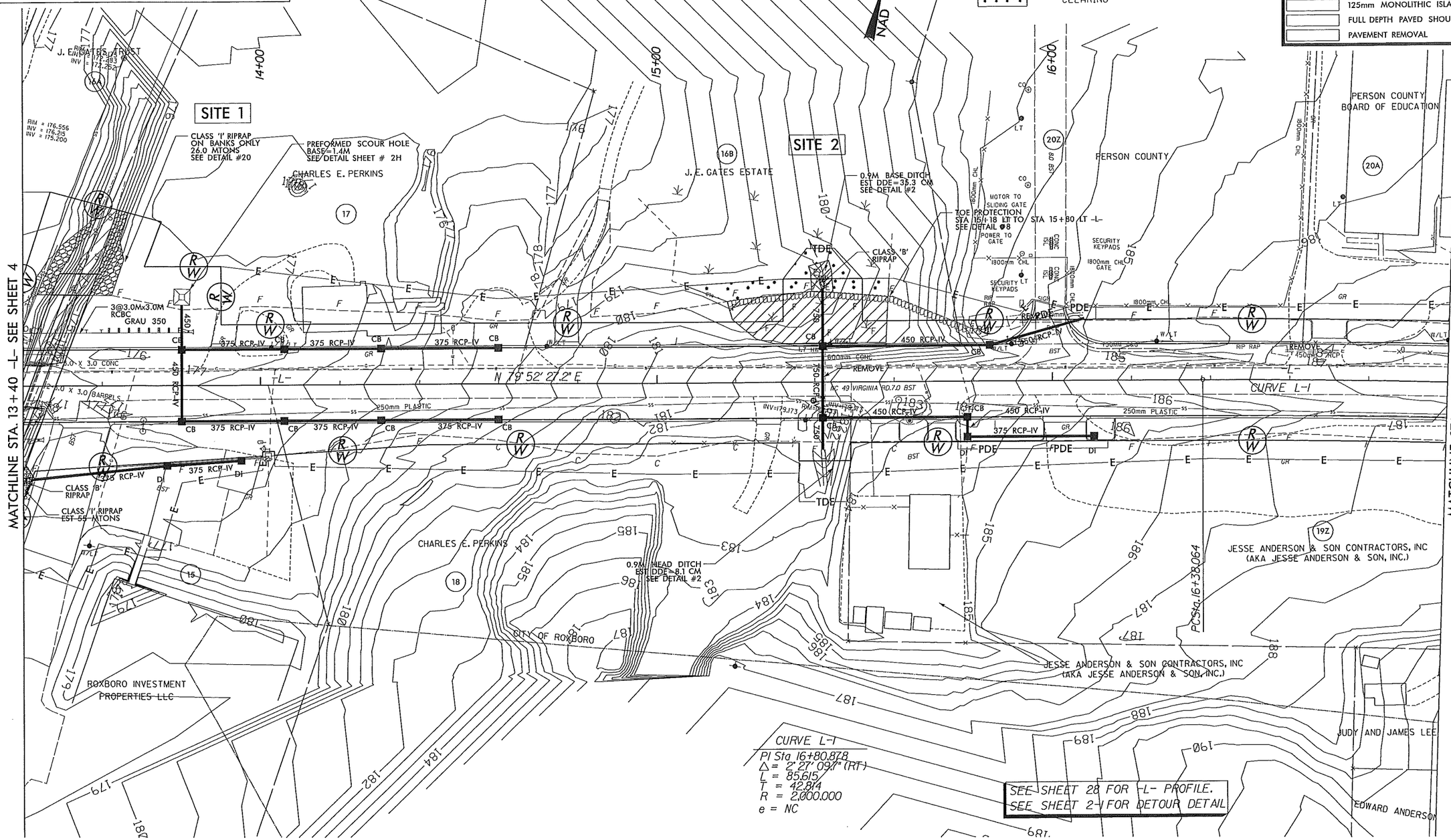
REVISIONS

02-01-11-	PARCEL 15: REMOVED PDE PARCEL 20: UPDATED DRAINAGE, DRIVEWAY, AND CONC.CURB, AND REDUCED LIMITS PARCEL 20A: UPDATED CONC.CURB PARCEL 20: MODIFIED DRIVEWAY, REDUCED LIMITS OF 200X450 CURB
08-02-11-	PARCEL 15: REMOVED SIGN, ELIMINATED PDE/ ADDED TCE. REDUCED ROW AROUND VAULT & SPRINKLER. ADDED NOTE DO NOT DISTURB VAULT/WL& VALVE PARCEL 16: ADDED UNDERGROUND DRAIN LINES, AND MODIFIED PARCEL TO 16B LEFT OF STA.15+20 -L- PARCEL 16A: ADDED PARCEL 16A PARCEL 19: CHANGED PROPERTY OWNER NAME
10-07-11-	REVISED PARCEL BOUNDARIES FOR PARCEL 16 AND 16A
10-07-11-	ADDED SUBSURFACE DRAINAGE FOR PARCEL 16 AND 16A
10-27-11-	PARCEL 19Z AND PARCEL 20Z: ADDED PDE FOR DRAINAGE SYSTEM

06-04-08-	ADDED A ROW MONUMENT & REMOVED 2 MONUMENTS, NAME CHANGE, PARCELS 15,17-19, CHANGE TRUSTEE NAME, DRIVEWAY ON PARCEL 15, ADDED NEW PARCEL 20A
06-23-08-	MOVED ROW MONUMENTS ON PARCEL 15.
06-24-08-	PARCELS 15,20,20A: REVISED PARCEL NAME
02-20-10-	PARCEL 20: LOCATED SECURITY PADS, SECURITY GATE ENTRANCE, SIGN, FENCE; REMOVED OLD PROPERTY LINE AND FENCE PARCELS 20,20A: LOCATED CORRECT PROPERTY LINE PARCEL 15: ADJUSTED WALL, ADDED SECURITY-HIS, REMOVED ROW MONUMENTS, ADDED CURB AND GUTTER, MODIFIED DRIVEWAY TIE-IN LOCATION
02-26-10-	PARCEL 20: RELOCATED DRIVEWAY ENTRANCE

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

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



$$$$$$SYSTIME$$$$$$
$$$$$$DGNFILE$$$$$$
$$$$$$USERNAME$$$$$$

RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 35624
CHARLOTTE, NORTH CAROLINA 28235

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

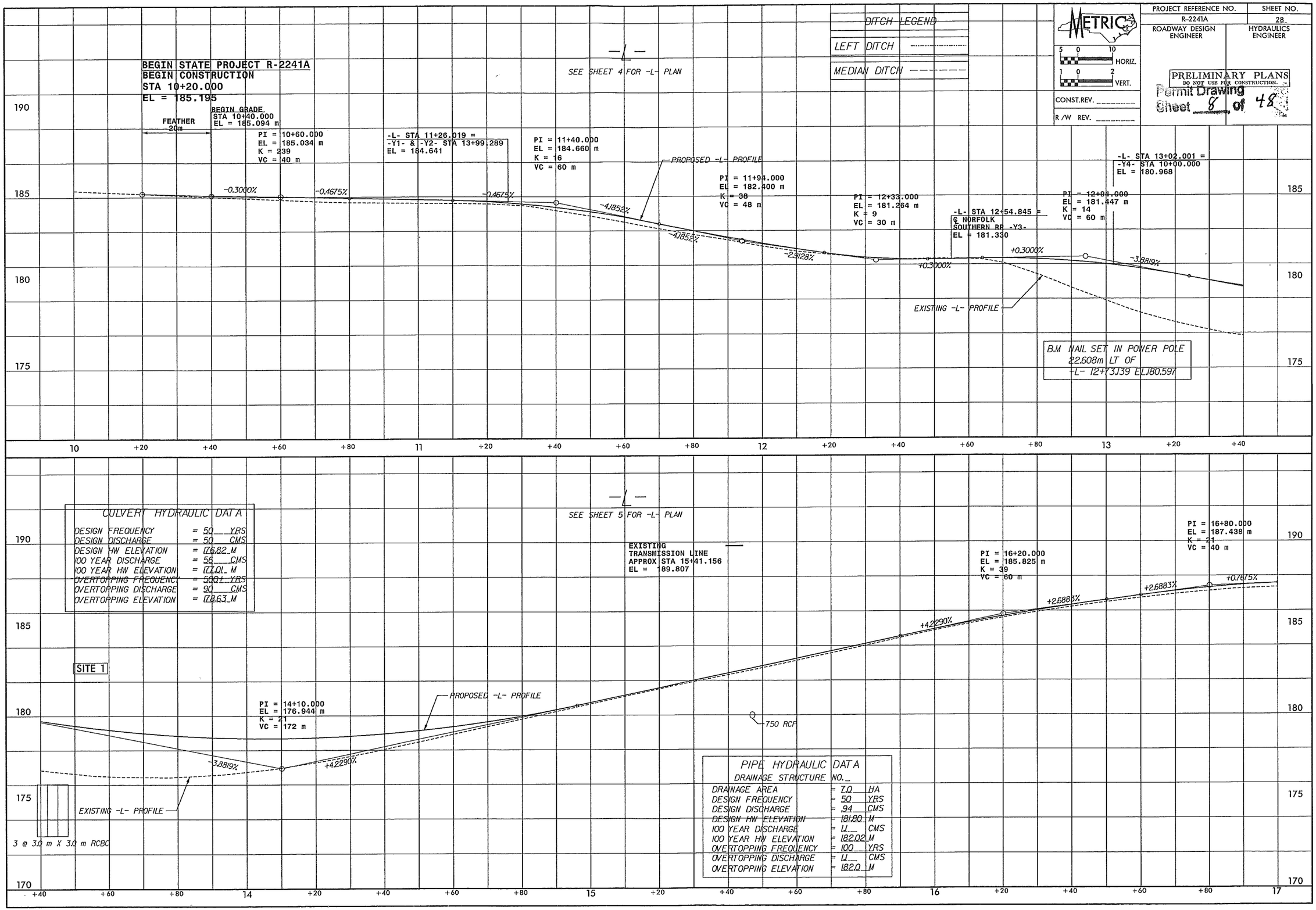
5 0 10 HORIZ.
1 0 2 VERT.

CONST.REV. _____
R/W REV. _____

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION.

Permit Drawing
Sheet 8 of 48

DITCH LEGEND
LEFT DITCH
MEDIAN DITCH



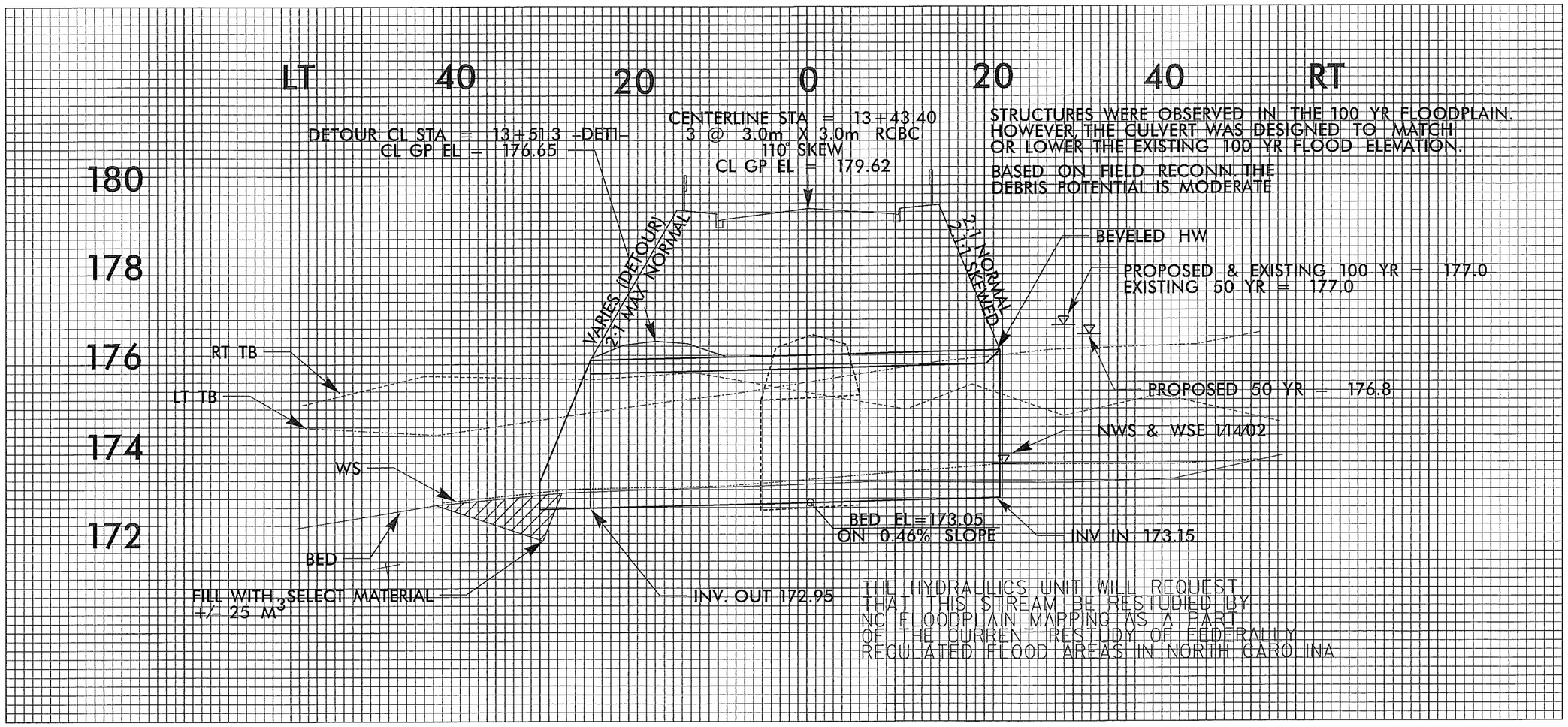
CULVERT HYDRAULIC DATA

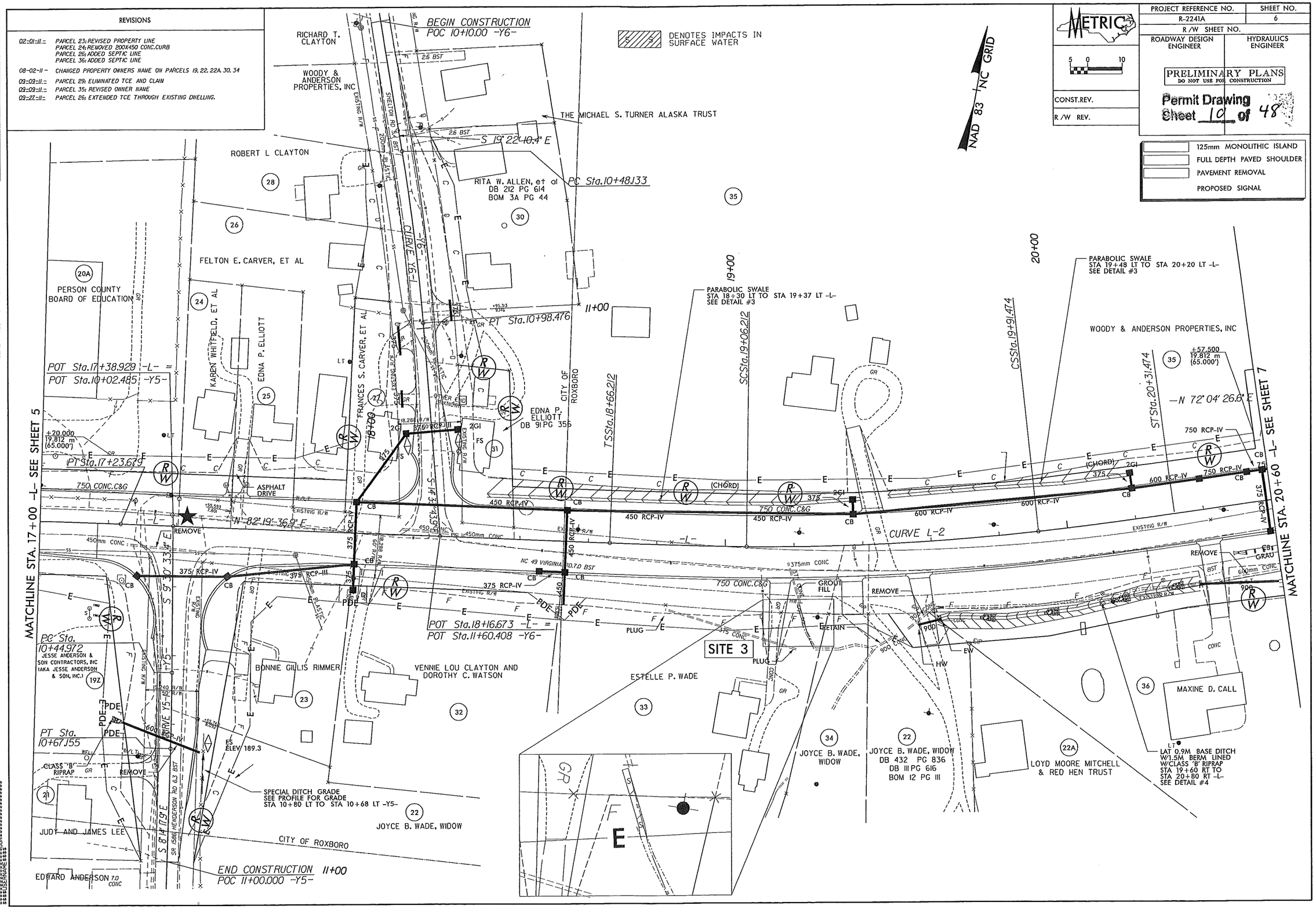
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 50	CMS
DESIGN HW ELEVATION	= 176.82	M
100 YEAR DISCHARGE	= 56	CMS
100 YEAR HW ELEVATION	= 177.01	M
OVERTOPPING FREQUENCY	= 500±	YRS
OVERTOPPING DISCHARGE	= 90	CMS
OVERTOPPING ELEVATION	= 178.63	M

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO._

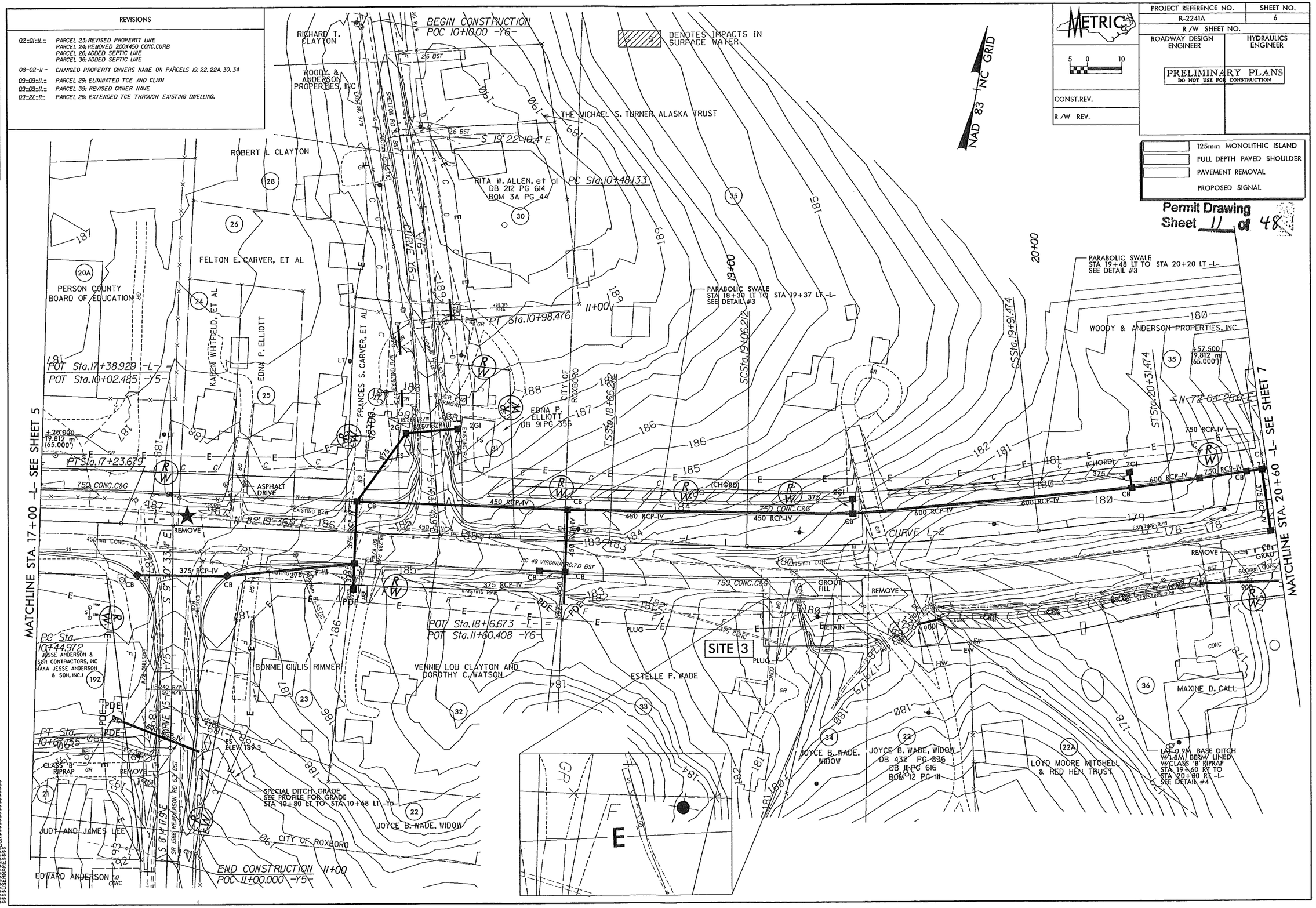
DRAINAGE AREA	= 7.0	HA
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= .94	CMS
DESIGN HW ELEVATION	= 181.80	M
100 YEAR DISCHARGE	= 1.1	CMS
100 YEAR HW ELEVATION	= 182.02	M
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 1.1	CMS
OVERTOPPING ELEVATION	= 182.0	M

$$$$SYSTIME$$$$
$$$$USERNAME$$$$


LT
40
20
0
20
40
RT
180
178
176
174
172
DETOUR CL STA = 13+51.3 -DET1-
CL GP EL = 176.65
CENTERLINE STA = 13+43.40
3 @ 3.0m X 3.0m RCBC
110° SKEW
CL GP EL = 179.62
STRUCTURES WERE OBSERVED IN THE 100 YR FLOODPLAIN. HOWEVER, THE CULVERT WAS DESIGNED TO MATCH OR LOWER THE EXISTING 100 YR FLOOD ELEVATION.
BASED ON FIELD RECONN. THE DEBRIS POTENTIAL IS MODERATE
VARIES (DETOUR) 2:1 MAX. NORMAL
2:1 NORMAL 2:1:1 SKEWED
BEVELED HW
PROPOSED & EXISTING 100 YR = 177.0
EXISTING 50 YR = 177.0
RT TB
LT TB
PROPOSED 50 YR = 176.8
NWS & WSE 1/14/02
WS
BED EL=173.05
ON 0.46% SLOPE
INV IN 173.15
BED
FILL WITH SELECT MATERIAL
+/- 25 M3
INV. OUT 172.95
THE HYDRAULICS UNIT WILL REQUEST THAT THIS STREAM BE RESTUDIED BY NC FLOODPLAIN MAPPING AS A PART OF THE CURRENT RESTUDY OF FEDERALLY REGULATED FLOOD AREAS IN NORTH CAROLINA



REVISIONS
02-01-11 - PARCEL 23; REVISED PROPERTY LINE
PARCEL 24; REMOVED 200X450 CONC.CURB
PARCEL 26; ADDED SEPTIC LINE
PARCEL 36; ADDED SEPTIC LINE
08-02-11 - CHANGED PROPERTY OWNERS NAME ON PARCELS 19, 22, 22A, 30, 34
09-09-11 - PARCEL 29; ELIMINATED TCE AND CLAIM
09-09-11 - PARCEL 35; REVISED OWNER NAME
09-27-11 - PARCEL 26; EXTENDED TCE THROUGH EXISTING DWELLING.
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991
METRIC
PROJECT REFERENCE NO. R-2241A
SHEET NO. 6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 10 of 48
CONST.REV.
R/W REV.
125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL
PROPOSED SIGNAL
DENOTES IMPACTS IN SURFACE WATER
NAD 83 NC GRID
BEGIN CONSTRUCTION
POC 10+10.00 -Y6-
RICHARD T. CLAYTON
WOODY & ANDERSON PROPERTIES, INC
THE MICHAEL S. TURNER ALASKA TRUST
S 19° 22' 10.4" E
ROBERT L CLAYTON
RITA W. ALLEN, et al
DB 212 PG 614
BOM 3A PG 44
PC Sta.10+48.133
FELTON E. CARVER, ET AL
PERSON COUNTY BOARD OF EDUCATION
KAREN WHITFIELD, ET AL
EDNA P. ELLIOTT
FRANCES S. CARVER, ET AL
CURVE Y6-1
PT Sta.10+98.476
11+00
19+00
20+00
PARABOLIC SWALE
STA 18+30 LT TO STA 19+37 LT -L-
SEE DETAIL #3
PARABOLIC SWALE
STA 19+48 LT TO STA 20+20 LT -L-
SEE DETAIL #3
WOODY & ANDERSON PROPERTIES, INC
POT Sta.17+38.929 -L- =
POT Sta.10+02.485 -Y5-
EDNA P. ELLIOTT
DB 91 PG 356
CITY OF ROXBORO
TSSta.18+66.212
SCSta.19+06.212
CSSta.19+91.474
STSta.20+31.474
N 72° 04' 26.6" E
MATCHLINE STA. 17+00 -L- SEE SHEET 5
MATCHLINE STA. 20+60 -L- SEE SHEET 7
PT Sta.17+23.679
ASPHALT DRIVE
N 82° 19' 36.9" E
REMOVE
CURVE L-2
POT Sta.18+16.673 -L- =
POT Sta.11+60.408 -Y6-
SITE 3
PC Sta. 10+44.972
JESSE ANDERSON & SON CONTRACTORS, INC (AKA JESSE ANDERSON & SON, INC.)
BONNIE GILLIS RIMMER
VENNIE LOU CLAYTON AND DOROTHY C. WATSON
ESTELLE P. WADE
PT Sta. 10+67.155
CLASS 'B' RIPRAP
SPECIAL DITCH GRADE
SEE PROFILE FOR GRADE
STA 10+80 LT TO STA 10+68 LT -Y5-
JOYCE B. WADE, WIDOW
JOYCE B. WADE, WIDOW
DB 432 PG 836
DB III PG 616
BOM 12 PG III
LOYD MOORE MITCHELL & RED HEN TRUST
MAXINE D. CALL
LAT 0.9M BASE DITCH W/1.5M BERM LINED W/CLASS 'B' RIPRAP STA 19+60 RT TO STA 20+80 RT -L- SEE DETAIL #4
JUDY AND JAMES LEE
EDWARD ANDERSON
CITY OF ROXBORO
END CONSTRUCTION 11+00
POC 11+00.000 -Y5-



REVISIONS	
02-01-11	PARCEL 23: REVISED PROPERTY LINE PARCEL 24: REMOVED 200X450 CONC.CURB PARCEL 26: ADDED SEPTIC LINE PARCEL 36: ADDED SEPTIC LINE
08-02-11	CHANGED PROPERTY OWNERS NAME ON PARCELS 19, 22, 22A, 30, 34
09-09-11	PARCEL 29: ELIMINATED TCE AND CLAIM
09-09-11	PARCEL 35: REVISED OWNER NAME
09-27-11	PARCEL 26: EXTENDED TCE THROUGH EXISTING DWELLING.

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NC License Number F-0991

06-04-08 SHOWED WELL, DRIVEWAY RECONNECTION ON PARCEL 21. PROVIDED DRIVEWAY ACCESS ON PARCEL 22A AND 34. RELABELED FILL AS CUT ON PARCEL 20A. NAME CORRECTION ON PARCELS 24, 26. NAME CHANGE 21, 22A AND 25. SPELLING CORRECTION FOR NAME ON PARCEL 27. PROPERTY LINE CHANGE ON PARCELS 21, 22, 22A AND 36

06-21-10 PARCEL 20A: REVISED PARCEL NAME. LOCATED CORRECT PROPERTY LINE. PARCEL 36: REVISED PARCEL NAME. VERIFIED FIRE HYDRANT, SEWER HOLE AND WATER METER LOCATIONS.

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NC License Number F-0891

REVISIONS

06-04-08 -	SHIFTED ROW MONUMENT OFF OF PROPERTY LINE, AND PROPERTY LINE CHANGE PARCELS 35,36
06-21-10 -	PARCEL 35; REMOVED PARCEL AND OWNERSHIP OF PARCEL 36
02-01-11 -	PARCEL 38; UPDATED PARCEL INFORMATION
08-02-11 -	PARCEL 37; ADDED NOTE NOT TO DISTURB SEPTIC LINES PARCEL 39; REDUCED TCE 3 METERS SOUTHWARD OFF SEPTIC LINES. ADDED NOTE TO NOT DISTURB
09-09-11 -	PARCEL 35; REVISED OWNER NAME

METRIC 5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

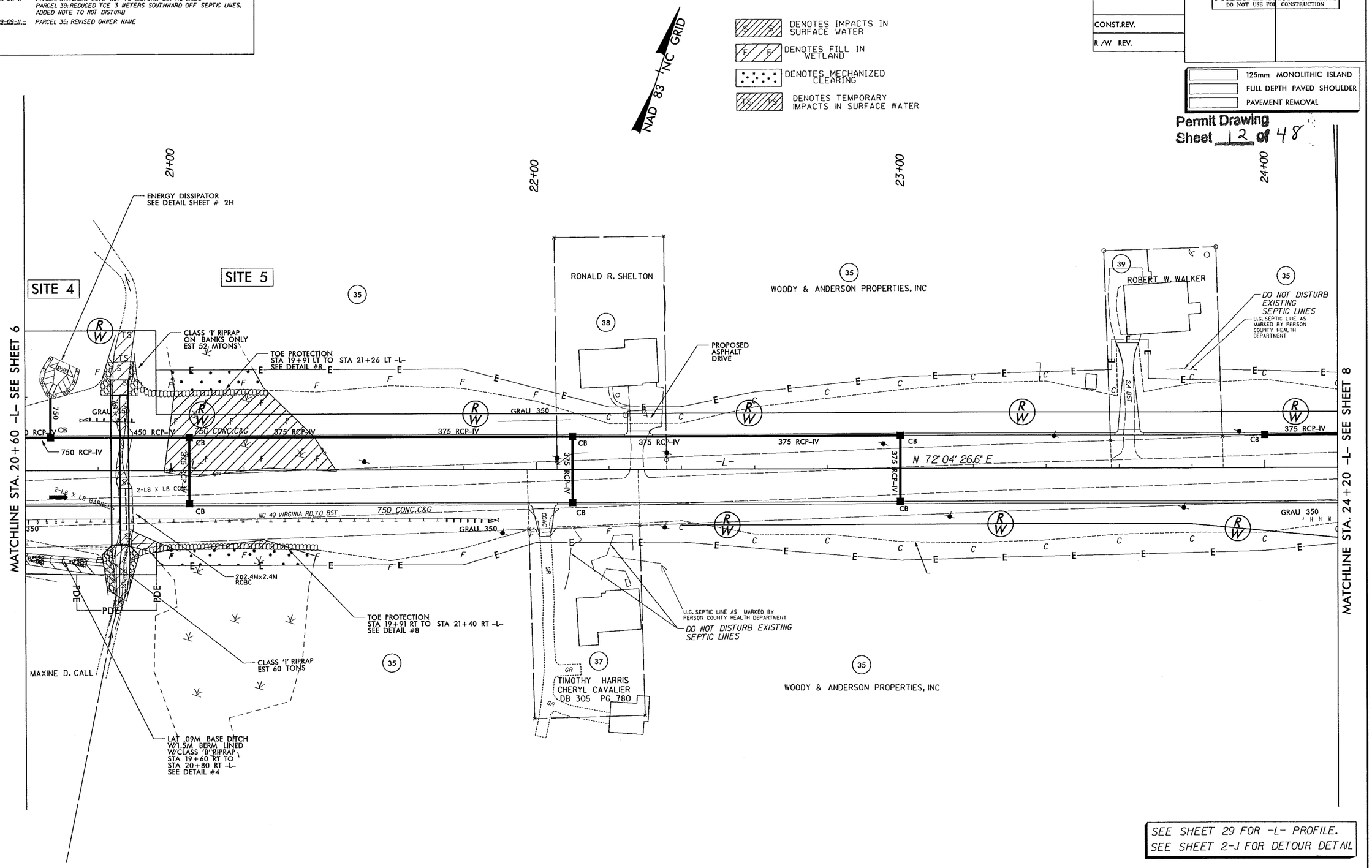
CONST. REV.

R/W REV.

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

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Permit Drawing
Sheet 12 of 48



SEE SHEET 29 FOR -L- PROFILE.
SEE SHEET 2-J FOR DETOUR DETAIL

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 -	SHIFTED ROW MONUMENT OFF OF PROPERTY LINE, AND PROPERTY LINE CHANGE PARCELS 35,36
06-21-10 -	PARCEL 35; REMOVED PARCEL AND OWNERSHIP OF PARCEL 36
02-01-11 -	PARCEL 38; UPDATED PARCEL INFORMATION
08-02-11 -	PARCEL 37; ADDED NOTE NOT TO DISTURB SEPTIC LINES PARCEL 39; REDUCED TCE 3 METERS SOUTHWARD OFF SEPTIC LINES. ADDED NOTE TO NOT DISTURB
09-09-11 -	PARCEL 35; REVISED OWNER NAME

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	7
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

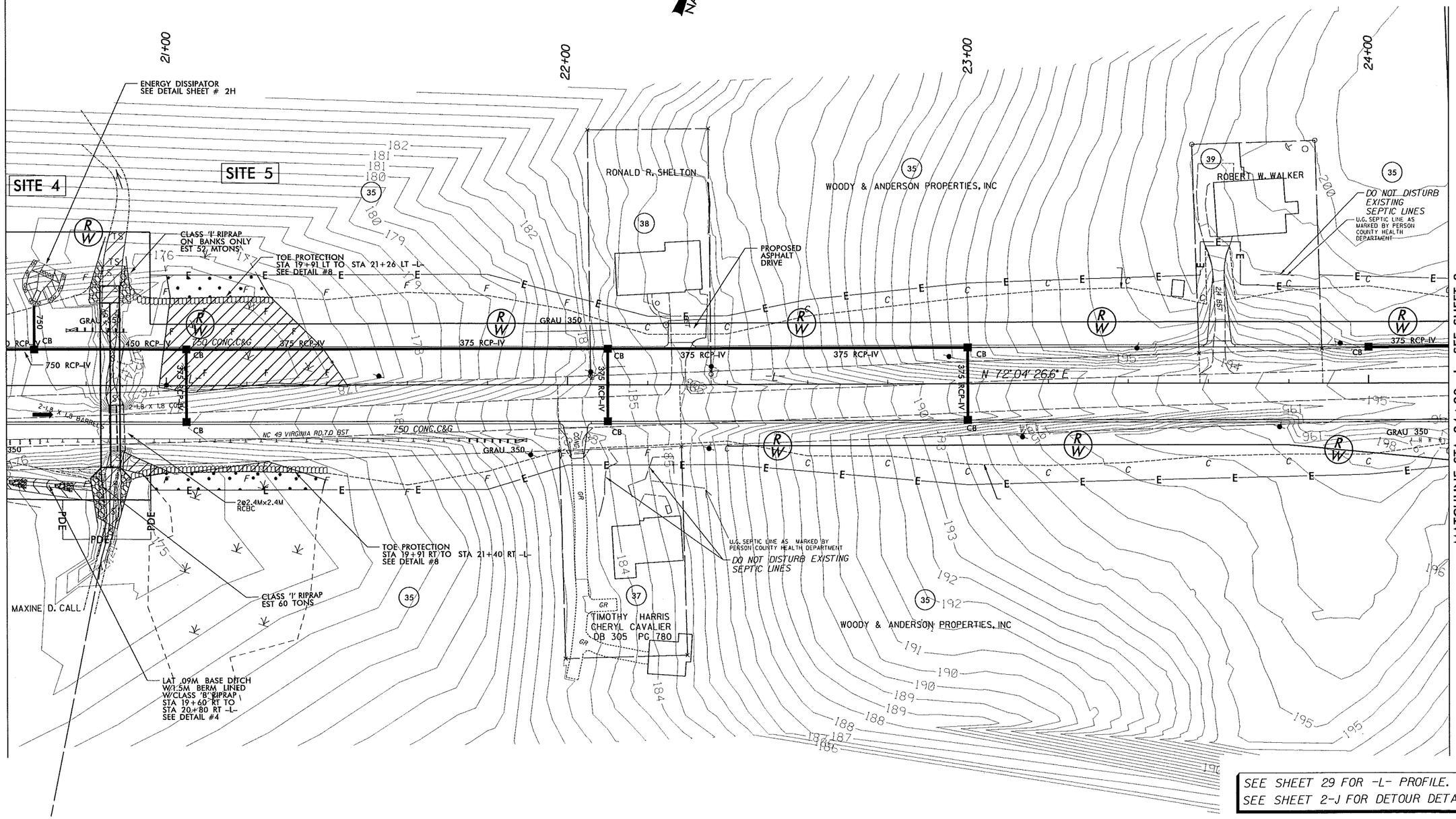
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 13 of 48

- 125mm MONOLITHIC ISLAND
- FULL DEPTH PAVED SHOULDER
- PAVEMENT REMOVAL

NAD 83 NC GRID

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



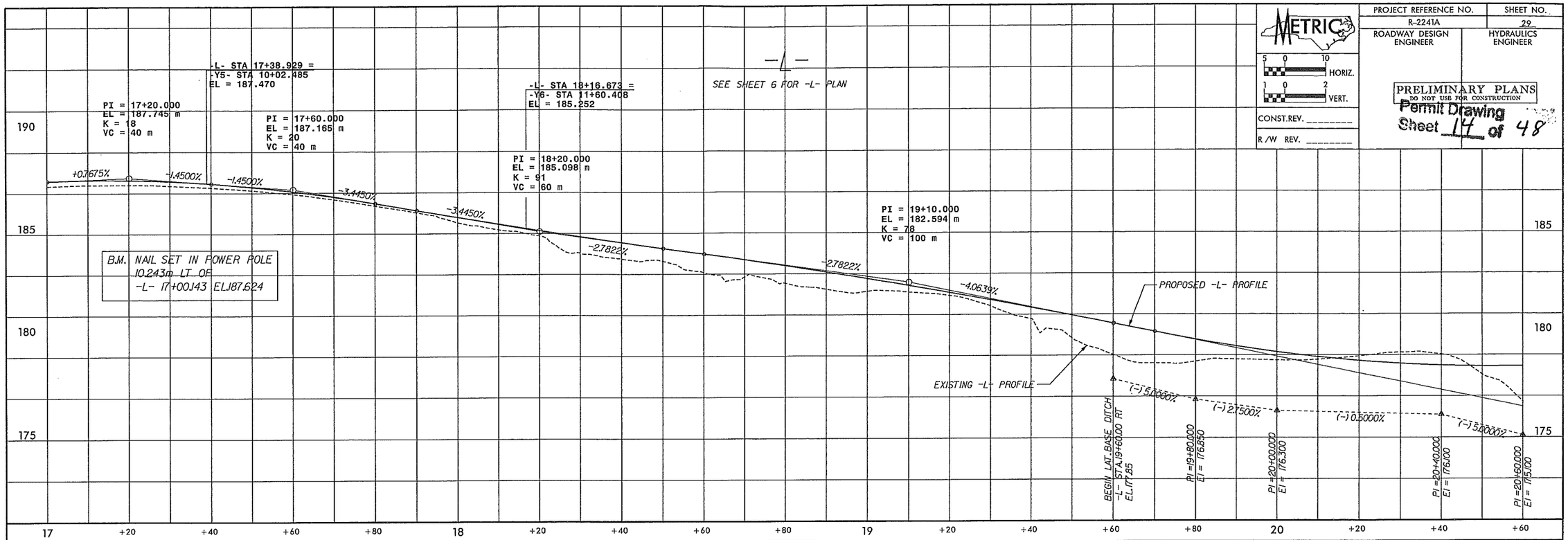
SEE SHEET 29 FOR -L- PROFILE.
SEE SHEET 2-J FOR DETOUR DETAIL

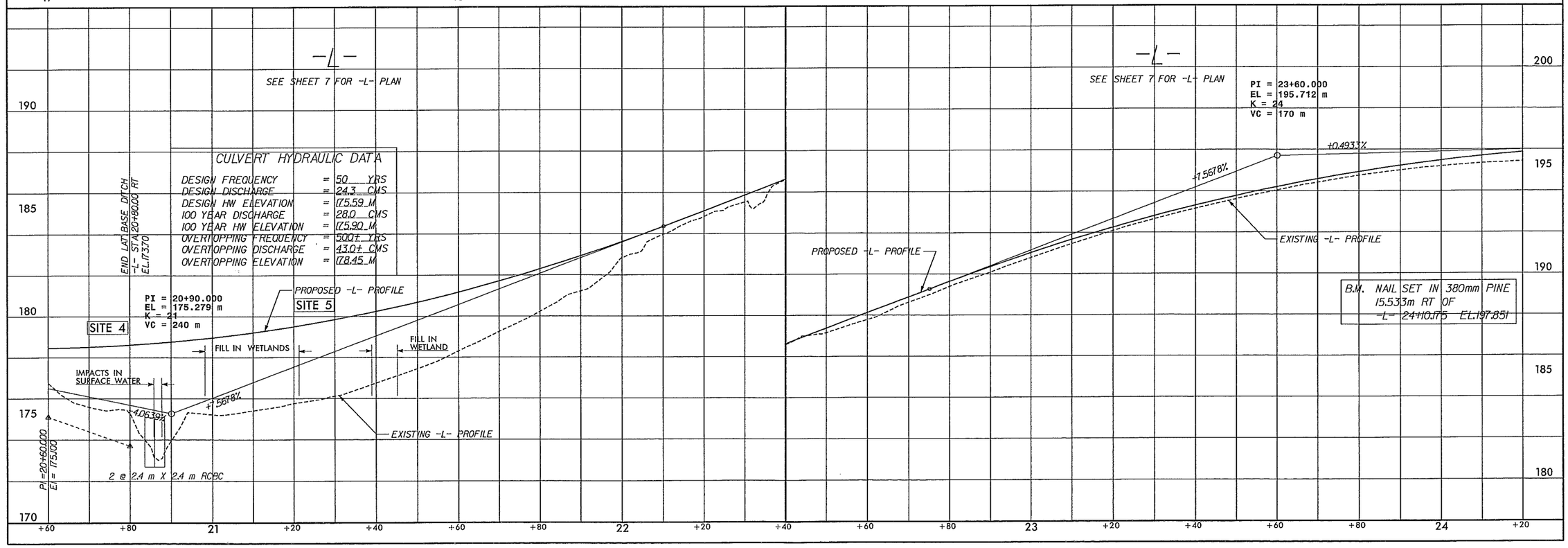
RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 35624
CHARLOTTE, NORTH CAROLINA 28235

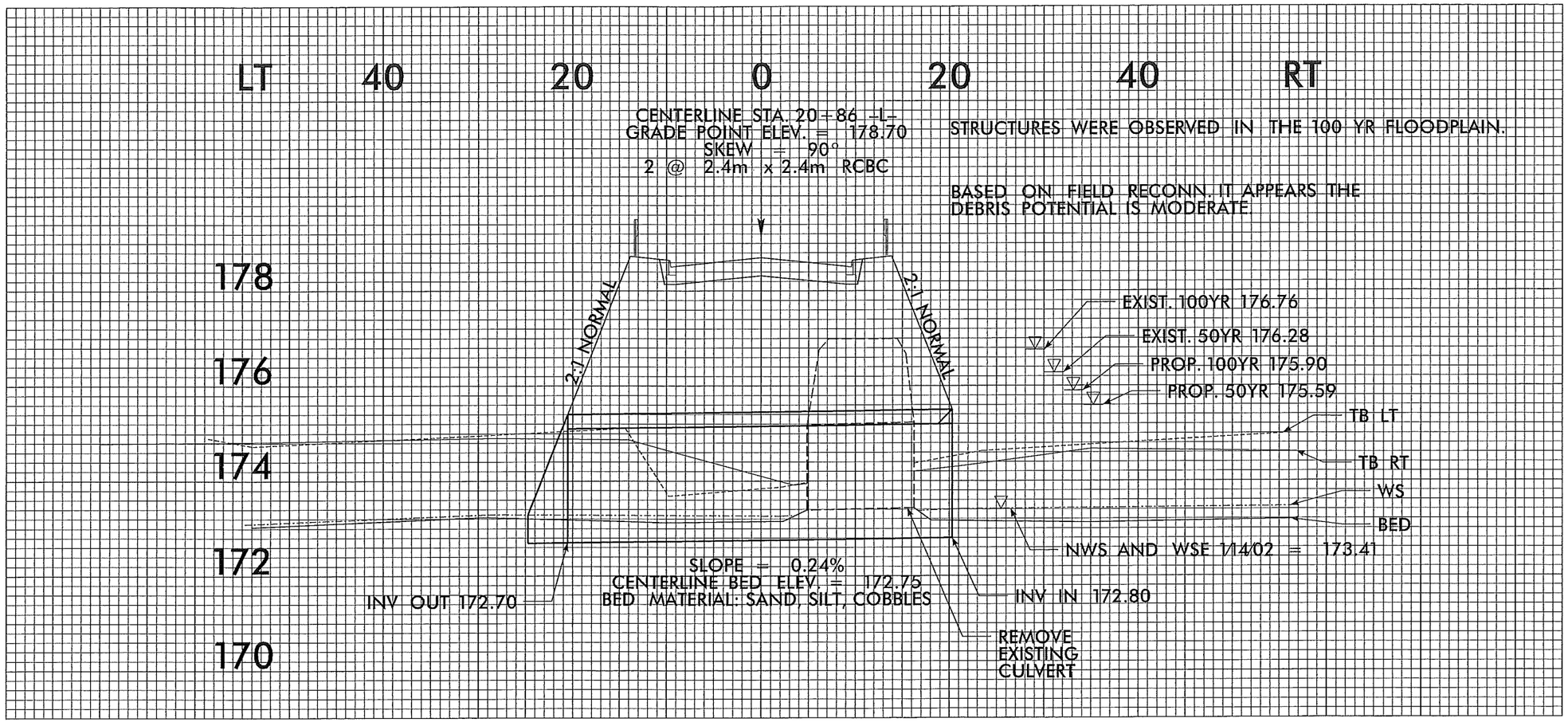
METRIC
5 0 10 HORIZ.
1 0 2 VERT.
CONST.REV. _____
R/W REV. _____

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 14 of 48






LT
40
20
0
20
40
RT
CENTERLINE STA. 20+86 -L-
GRADE POINT ELEV. = 178.70
SKEW = 90°
2 @ 2.4m x 2.4m RCBC
STRUCTURES WERE OBSERVED IN THE 100 YR FLOODPLAIN.
BASED ON FIELD RECONN. IT APPEARS THE DEBRIS POTENTIAL IS MODERATE.
178
176
174
172
170
2:1 NORMAL
2:1 NORMAL
EXIST. 100YR 176.76
EXIST. 50YR 176.28
PROP. 100YR 175.90
PROP. 50YR 175.59
TB LT
TB RT
WS
BED
NWS AND WSE 1/14/02 = 173.41
SLOPE = 0.24%
CENTERLINE BED ELEV. = 172.75
BED MATERIAL: SAND, SILT, COBBLES
INV OUT 172.70
INV IN 172.80
REMOVE
EXISTING
CULVERT

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 :-	ESTABLISHED ACCESS POINT ON PARCEL 41, AND CHANGED NAME ON PARCEL 40
06-21-10 :-	PARCEL 41; REVISED PARCEL NAME
09-28-10 :-	PARCEL 41; REVISED PARCEL INFORMATION
02-01-11 :-	PARCEL 37; ADDED SEPTIC LINE PARCEL 38; ADDED WELL PARCEL 39; ADDED SEPTIC LINE
08-02-11 :-	COMBINED PARCELS 43A-43G INTO TRACTS (A-I), DENOTING EACH ACCORDINGLY
09-09-11 :-	PARCEL 35; REVISED OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	8
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R /W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

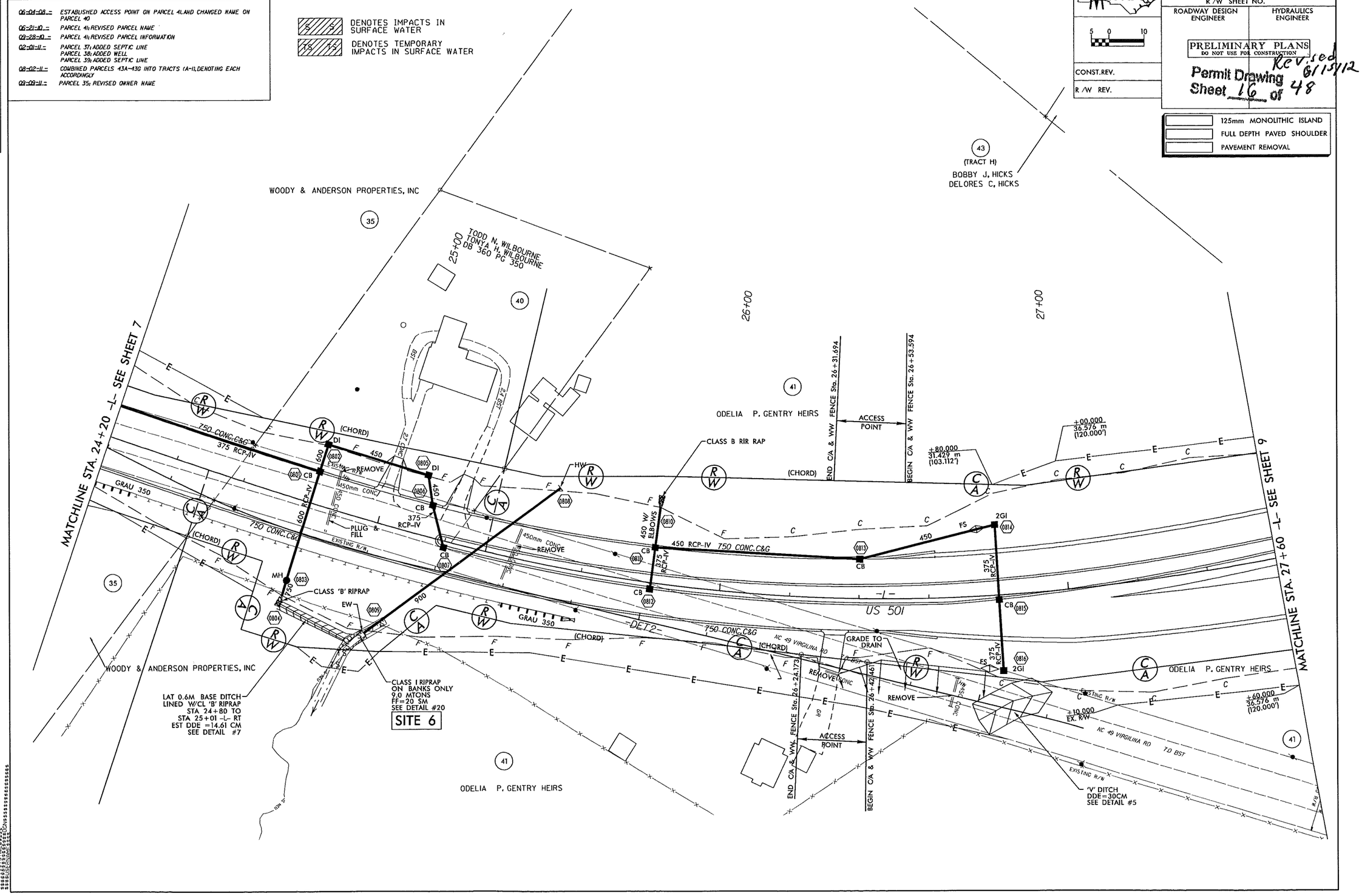
Revised 8/15/12

Permit Drawing
Sheet 16 of 48

- 125mm MONOLITHIC ISLAND
- FULL DEPTH PAVED SHOULDER
- PAVEMENT REMOVAL

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER



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1000 West Morehead St. Ste 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08.-	ESTABLISHED ACCESS POINT ON PARCEL 41, AND CHANGED NAME ON PARCEL 40
06-21-10.-	PARCEL 41; REVISED PARCEL NAME
09-28-10.-	PARCEL 41; REVISED PARCEL INFORMATION
02-01-11.-	PARCEL 37; ADDED SEPTIC LINE PARCEL 38; ADDED WELL PARCEL 39; ADDED SEPTIC LINE
08-02-11.-	COMBINED PARCELS 43A-43G INTO TRACTS 1A-1I, DENOTING EACH ACCORDINGLY
09-09-11.-	PARCEL 35; REVISED OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

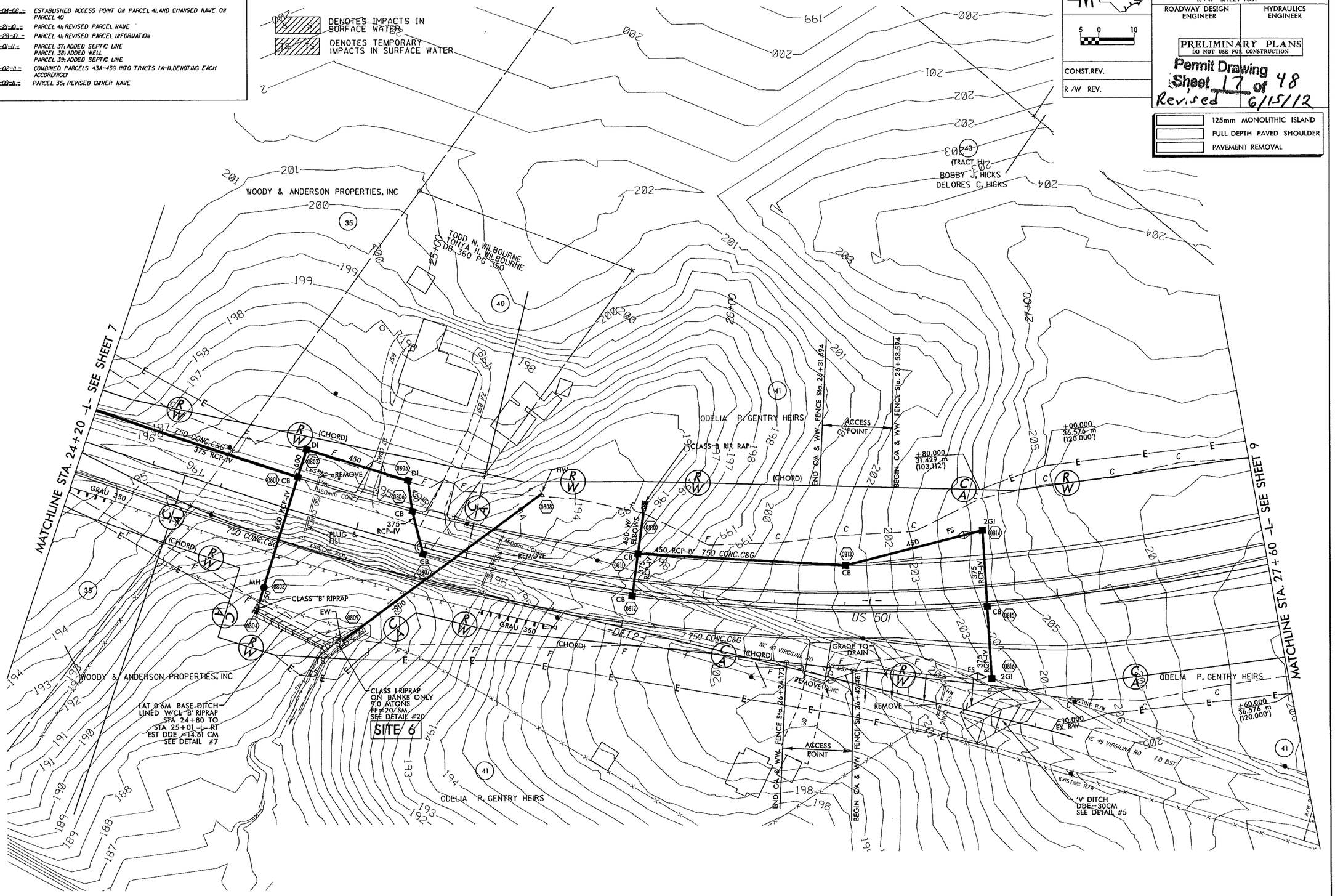
METRIC
5 0 10

CONST. REV.
R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 17 of 48
Revised 6/15/12

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



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1000 West Morehead St. Ste 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 -	MOVED ROW LINE ON PARCEL 63A AND ESTABLISHED ACCESS POINT ON PARCEL 62.
06-23-08 -	REMOVED ROW MONUMENTS, STRAIGHTENED CA AND WW FENCE ON PARCEL 62.
02-09-09 -	REMOVED PARCEL 63A, UPDATED DEED AND PLAT REFERENCES FOR PARCEL 63. UPDATED BEGIN C/A & WW FENCE STATION LABEL ON PARCEL 62.
08-02-11 -	CHANGED PROPERTY OWNER NAMES ON PARCELS 62 & 69.

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	11
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

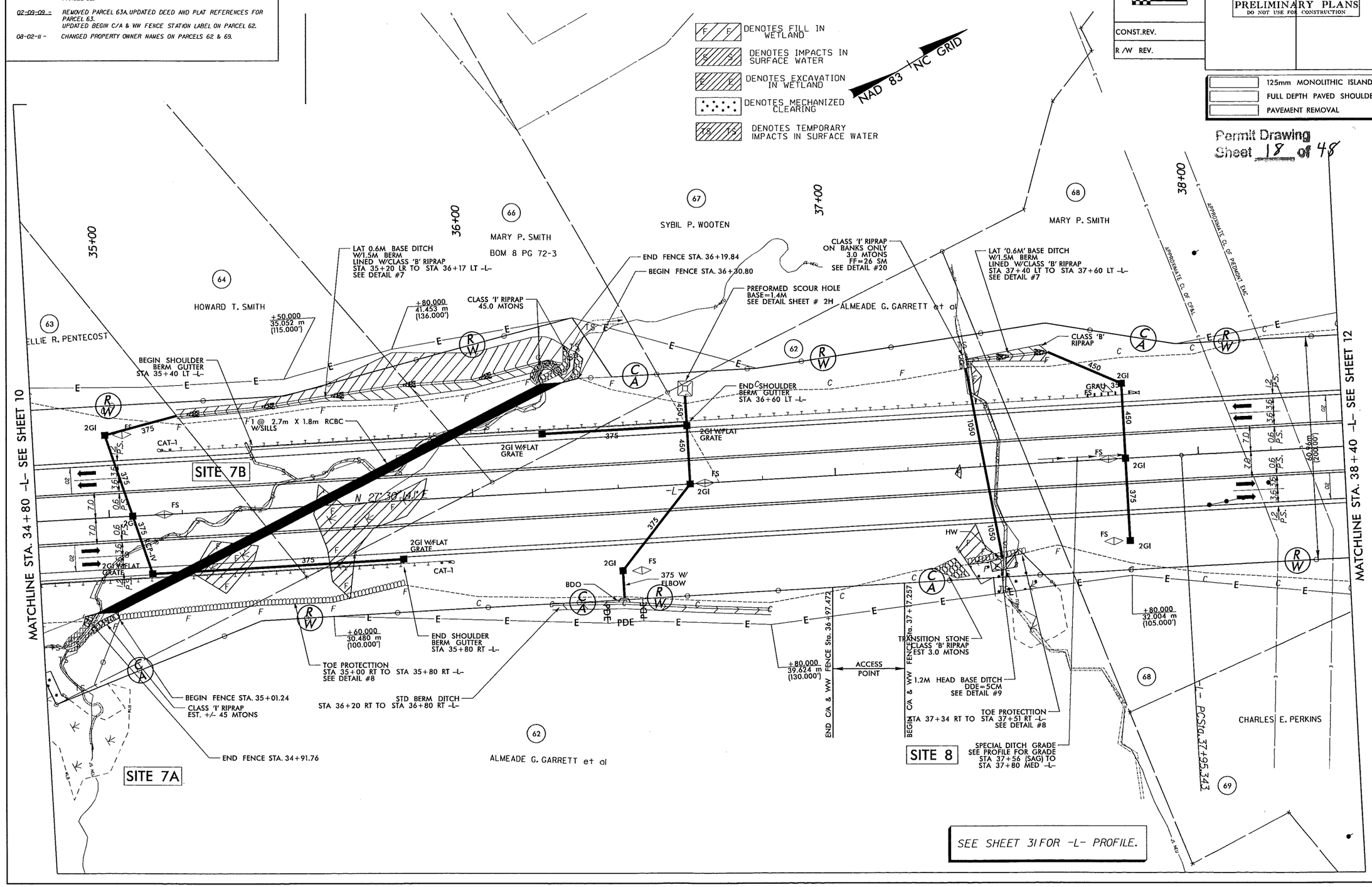
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Permit Drawing
Sheet 18 of 48

F F DENOTES FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
E E DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83 NC GRID



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1000 West Morehead St. Ste 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 -	MOVED ROW LINE ON PARCEL 63A, AND ESTABLISHED ACCESS POINT ON PARCEL 62.
06-23-08 -	REMOVED ROW MONUMENTS, STRAIGHTENED CA AND WW FENCE ON PARCEL 62.
02-09-09 -	REMOVED PARCEL 63A, UPDATED DEED AND PLAT REFERENCES FOR PARCEL 63. UPDATED BEGIN C/A & WW FENCE STATION LABEL ON PARCEL 62.
08-02-11 -	CHANGED PROPERTY OWNER NAMES ON PARCELS 62 & 69.

METRIC

5 0 10

CONST.REV.

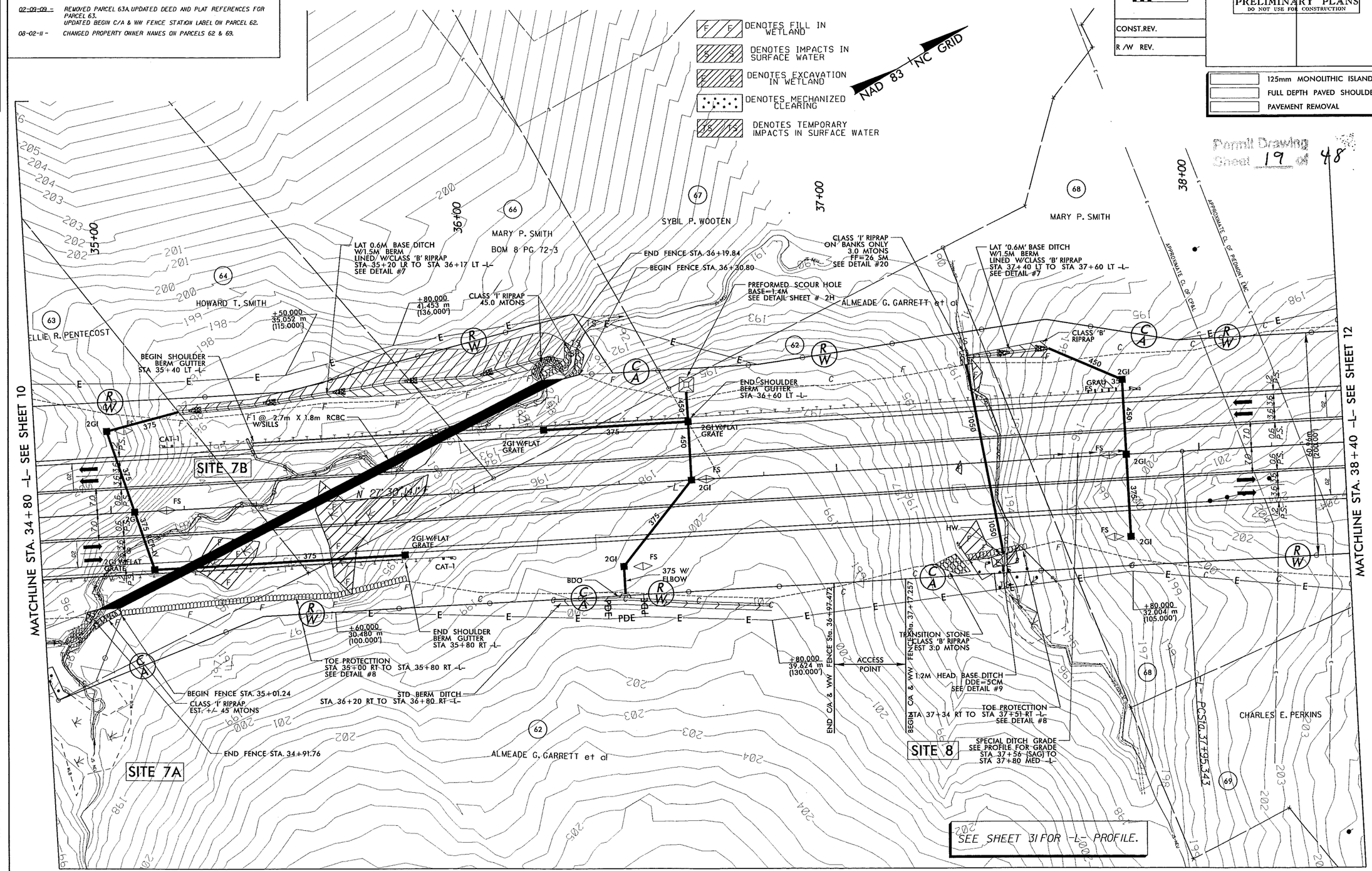
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	11
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Permit Drawing
Sheet 19 of 48

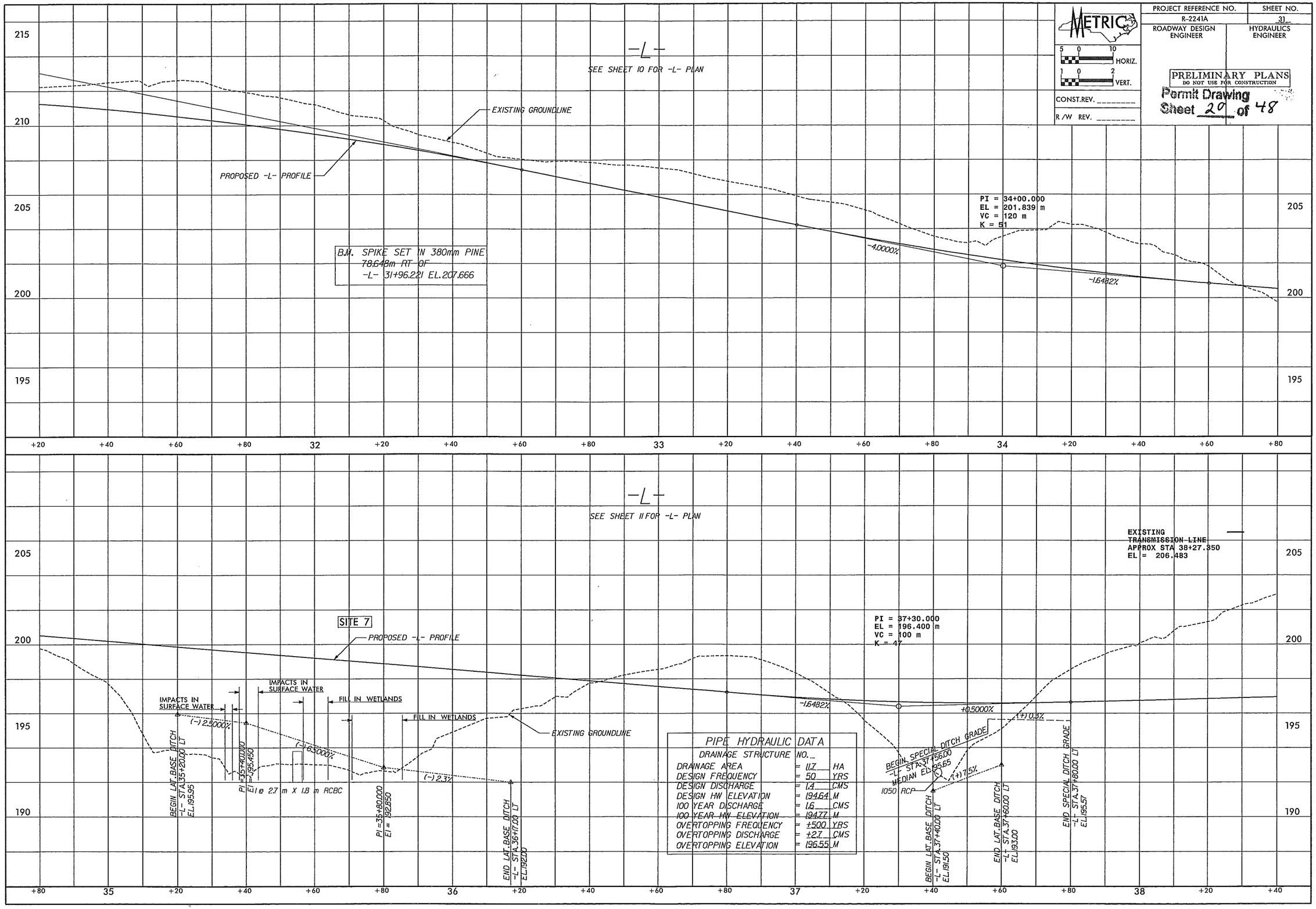


RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 33624
CHARLOTTE, NORTH CAROLINA 28235

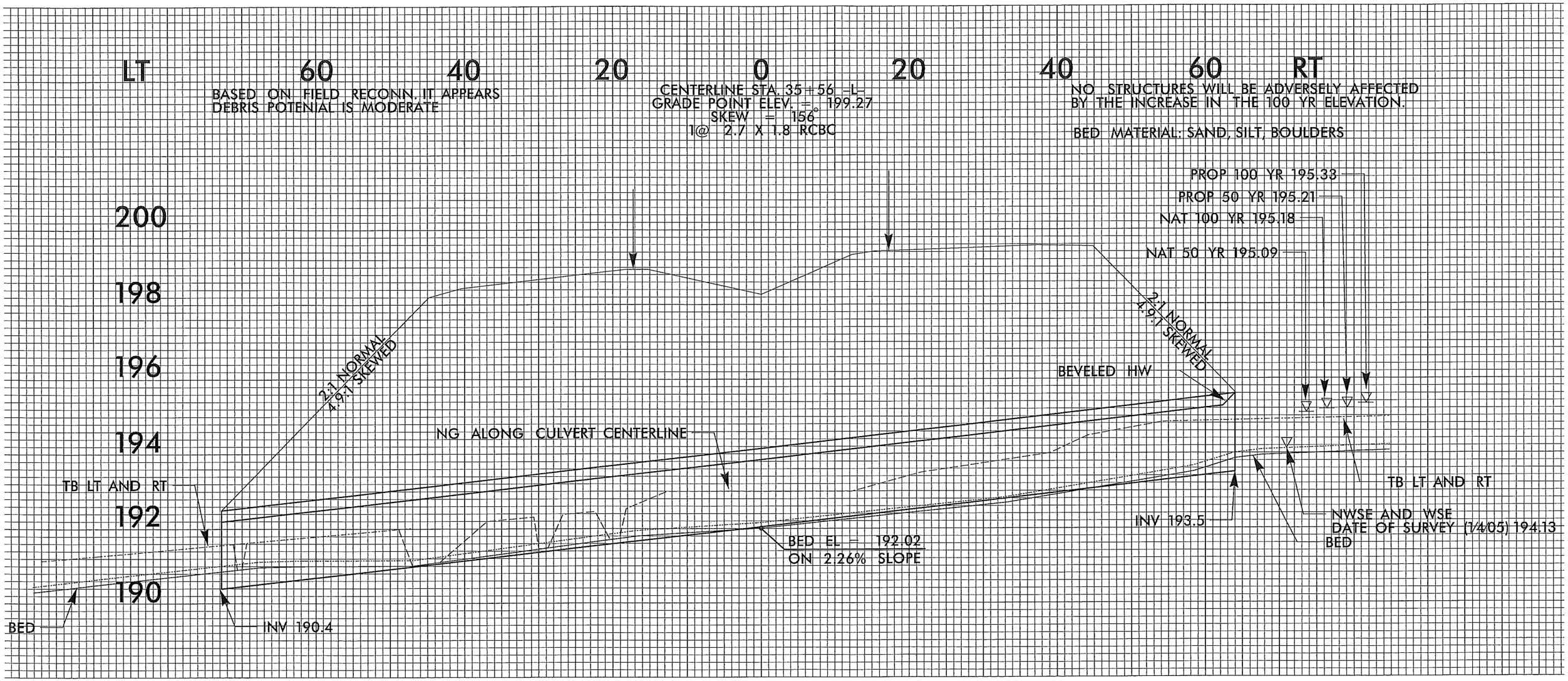
PROJECT REFERENCE NO.	SHEET NO.
R-2241A	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC
5 0 10 HORIZ.
1 0 2 VERT.
CONST.REV. _____
R/W REV. _____

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 20 of 48



Permit Drawing
Sheet 21 of 48



STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS	
06-04-08 -	ESTABLISHED ACCESS POINT PARCEL 69.ELIMINATED TCE.AND WELL SHOWN ON PARCEL 71
06-24-08 -	TIED TCE TO ROW ON PARCEL 71
06-21-10 -	PARCEL 71:REVISED PARCEL NAME
08-02-11 -	CHANGED PROPERTY OWNER INFORMATION ON PARCEL 69
10-27-11 -	PARCEL 70Z: CHANGED TCE TO PDE

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	12
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

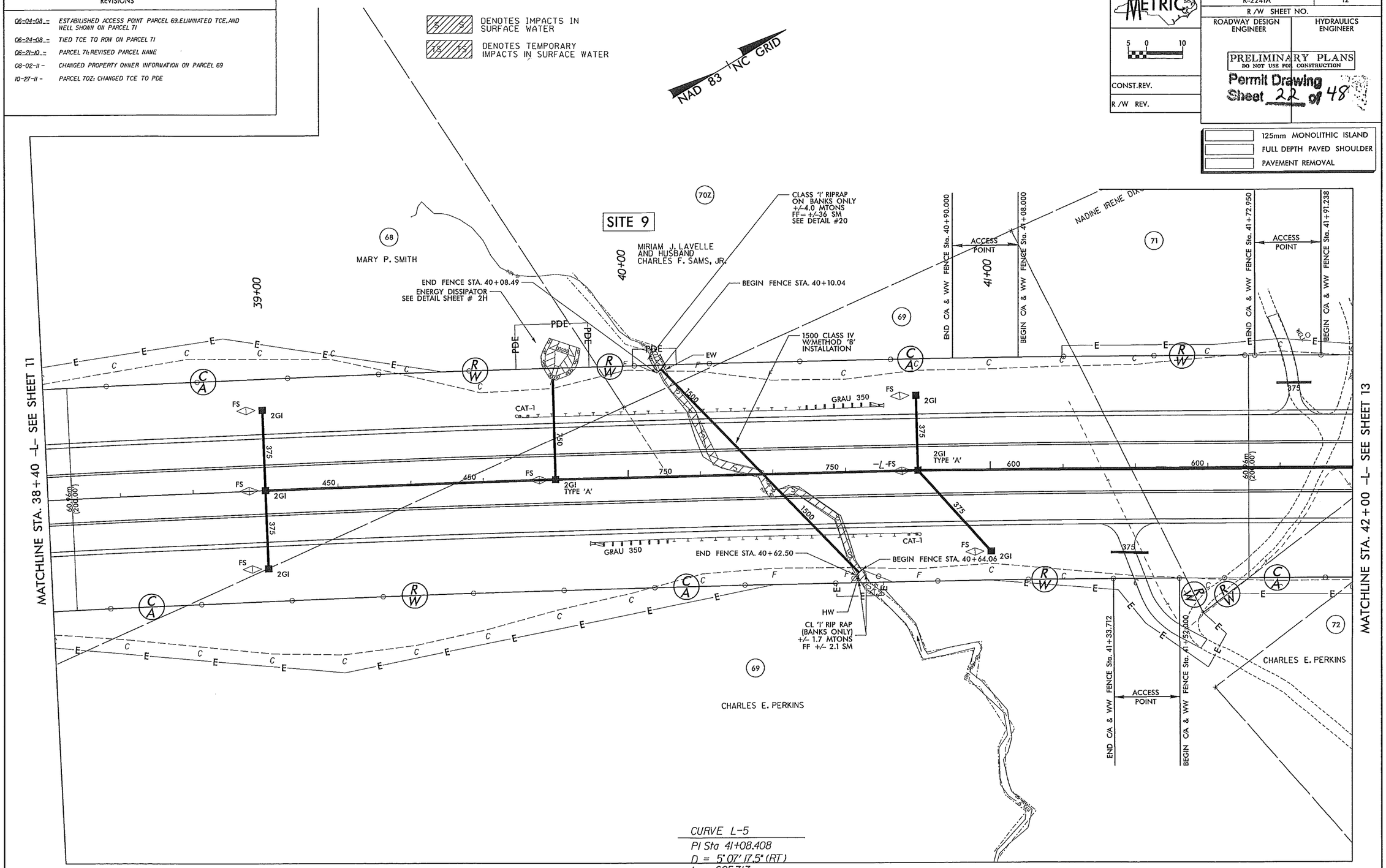
CONST.REV.

R /W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 22 of 48

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



CURVE L-5
PI Sta 41+08.408
D = 5°07' 17.5" (RT)
L = 625.713
T = 313.065
R = 7,000.000
e = N.C.

SEE SHEET 32 FOR -L- PROFILE.

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, North Carolina 28208
NC License Number F-0991

REVISIONS	
06-04-08 -	ESTABLISHED ACCESS POINT PARCEL 69. ELIMINATED TCE. AND WELL SHOWN ON PARCEL 71
06-24-08 -	TIED TCE TO ROW ON PARCEL 71
06-21-10 -	PARCEL 71: REVISED PARCEL NAME
08-02-11 -	CHANGED PROPERTY OWNER INFORMATION ON PARCEL 69
10-27-11 -	PARCEL 70Z: CHANGED TCE TO PDE

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.

R/W REV.

Permit Drawing
Sheet 23 of 48

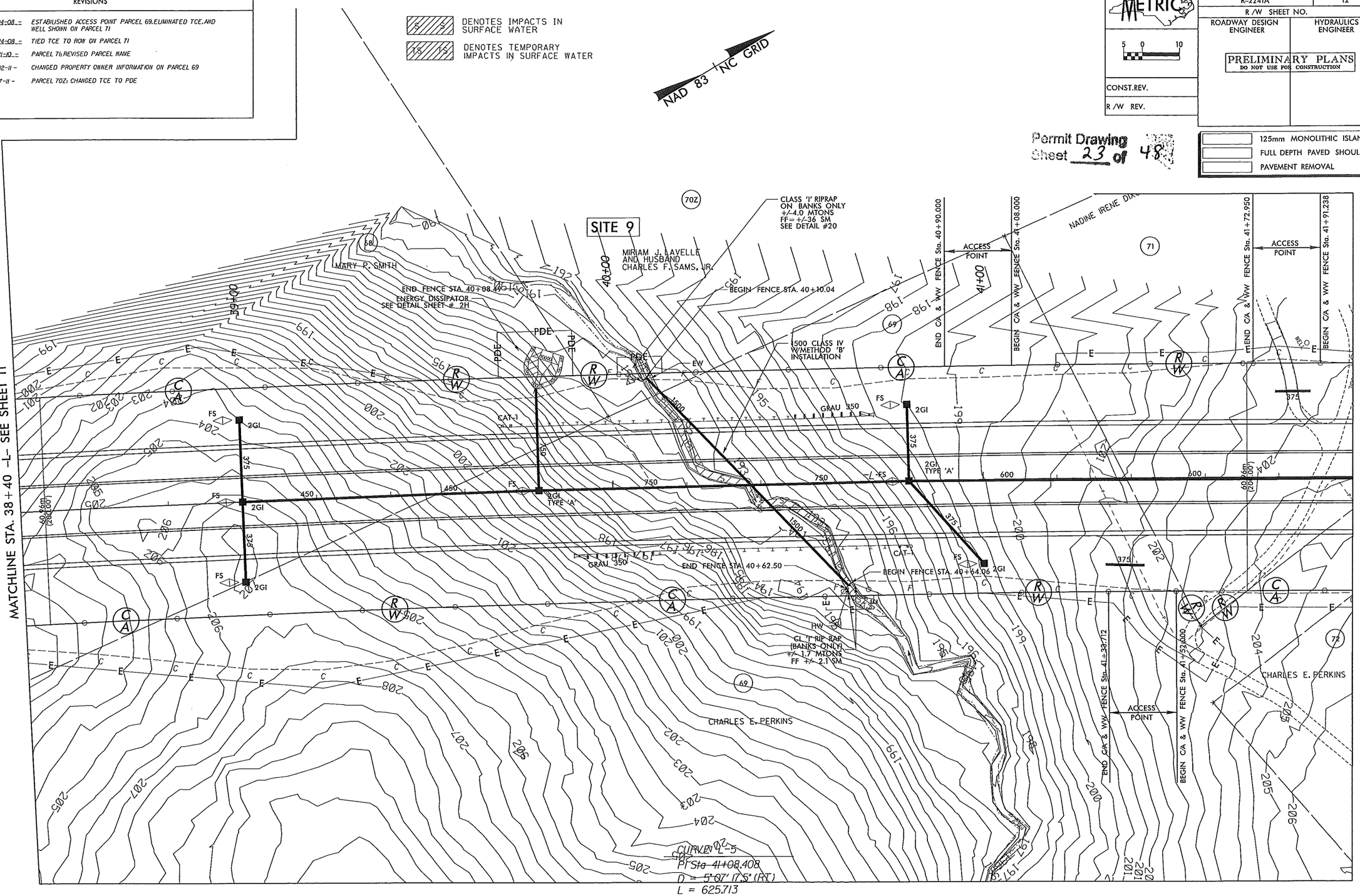
DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

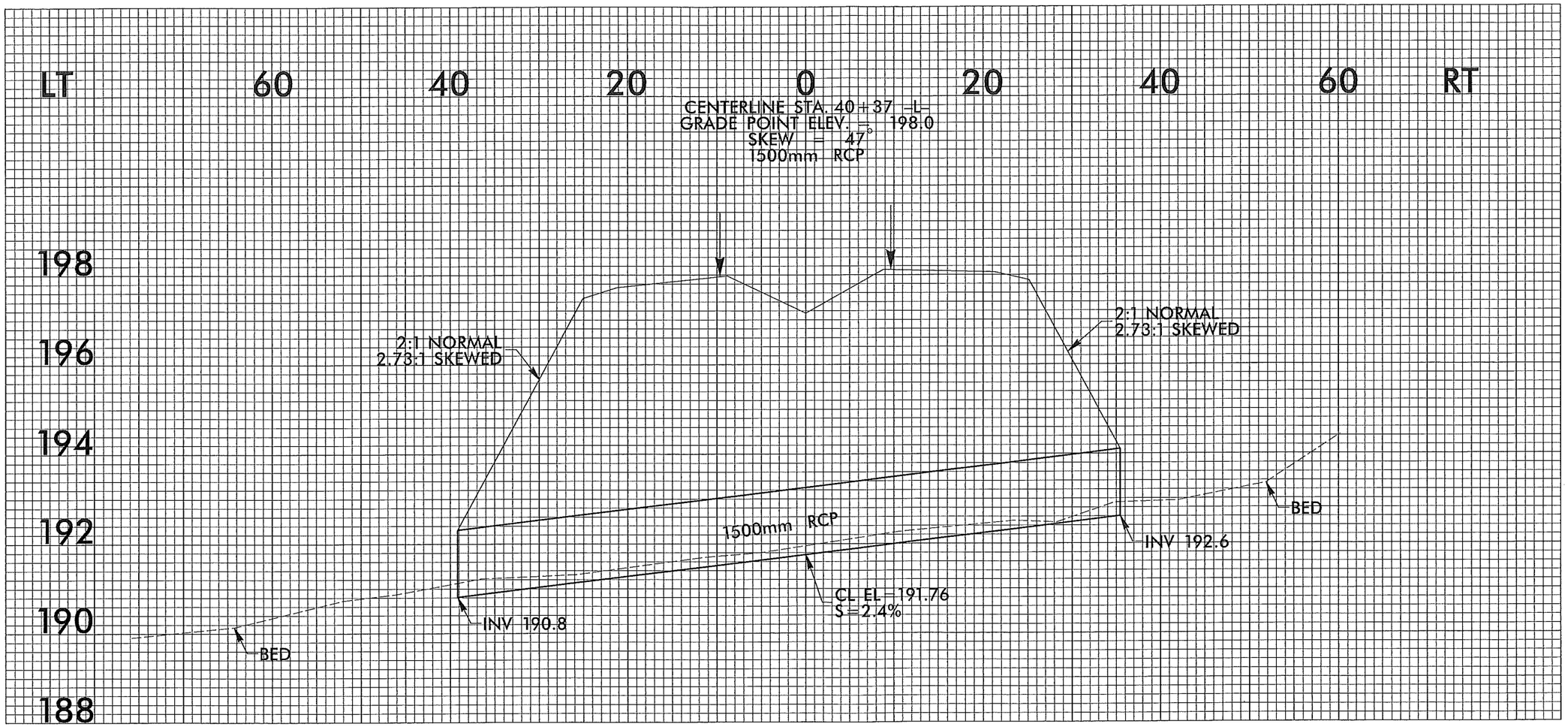
125mm MONOLITHIC ISLAND

FULL DEPTH PAVED SHOULDER

PAVEMENT REMOVAL



SEE SHEET 32 FOR -L- PROFILE.


LT
60
40
20
0
20
40
60
RT
CENTERLINE STA. 40+37 -L-
GRADE POINT ELEV. = 198.0
SKEW = 47°
1500mm RCP
198
196
194
192
190
188
2:1 NORMAL
2.73:1 SKEWED
2:1 NORMAL
2.73:1 SKEWED
1500mm RCP
INV 190.8
CL EL = 191.76
S = 2.4%
INV 192.6
BED
BED

RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 35654
CHARLOTTE, NORTH CAROLINA 28235

REVISIONS
06-04-08 -: ESTABLISHED ACCESS POINT ON PARCEL 76A. PROPERTY LINE CHANGE 76,76A, AND NEW PARCEL 76A
06-21-10 -: PARCEL 77; REVISED PARCEL NAME

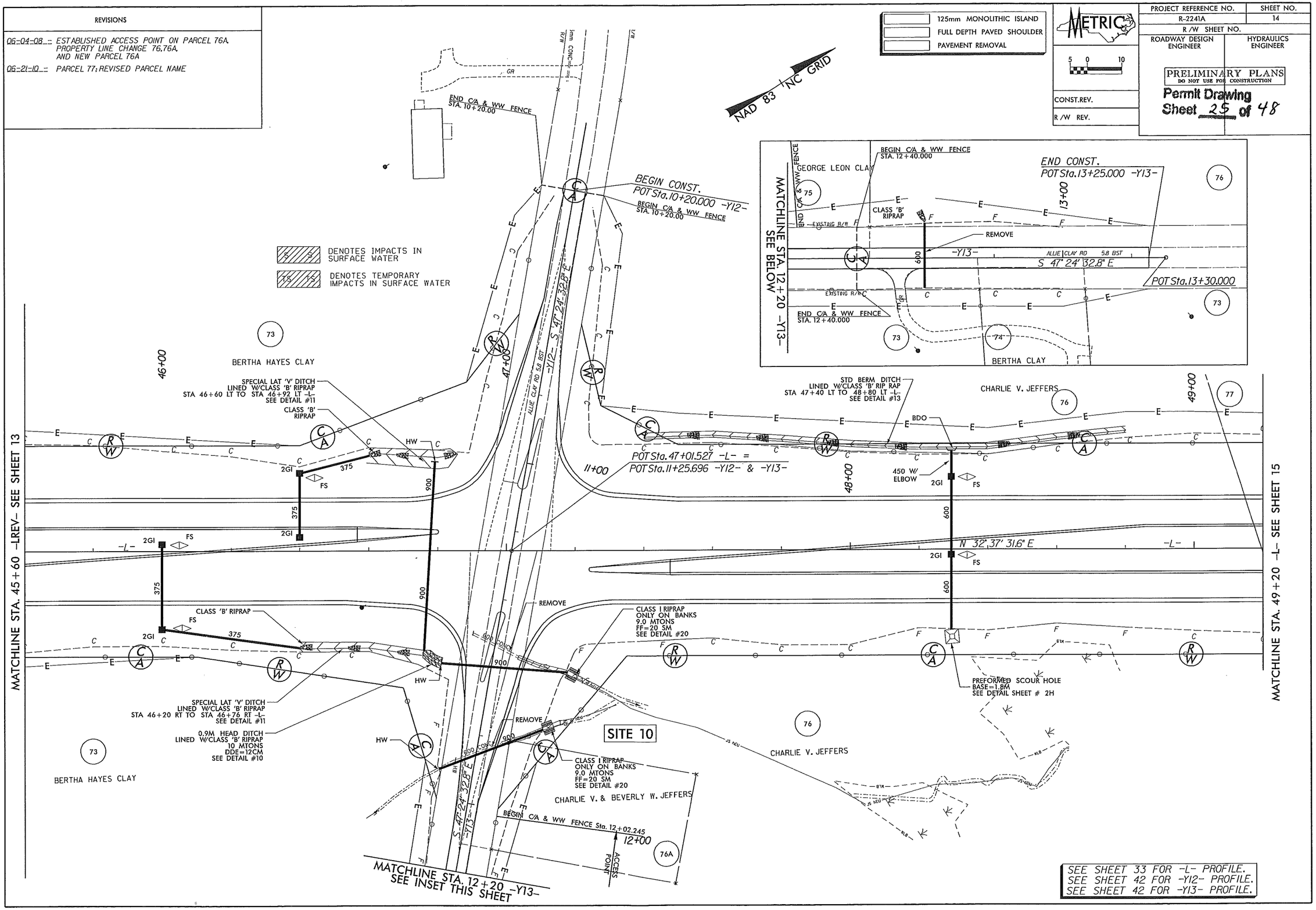
125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

METRIC
5 0 10

CONST.REV.
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	14
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 25 of 48



RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 15654
CHARLOTTE, NORTH CAROLINA 28215

REVISIONS
06-04-08 -- ESTABLISHED ACCESS POINT ON PARCEL 76A, PROPERTY LINE CHANGE 76,76A, AND NEW PARCEL 76A
06-21-10 -- PARCEL 77; REVISED PARCEL NAME

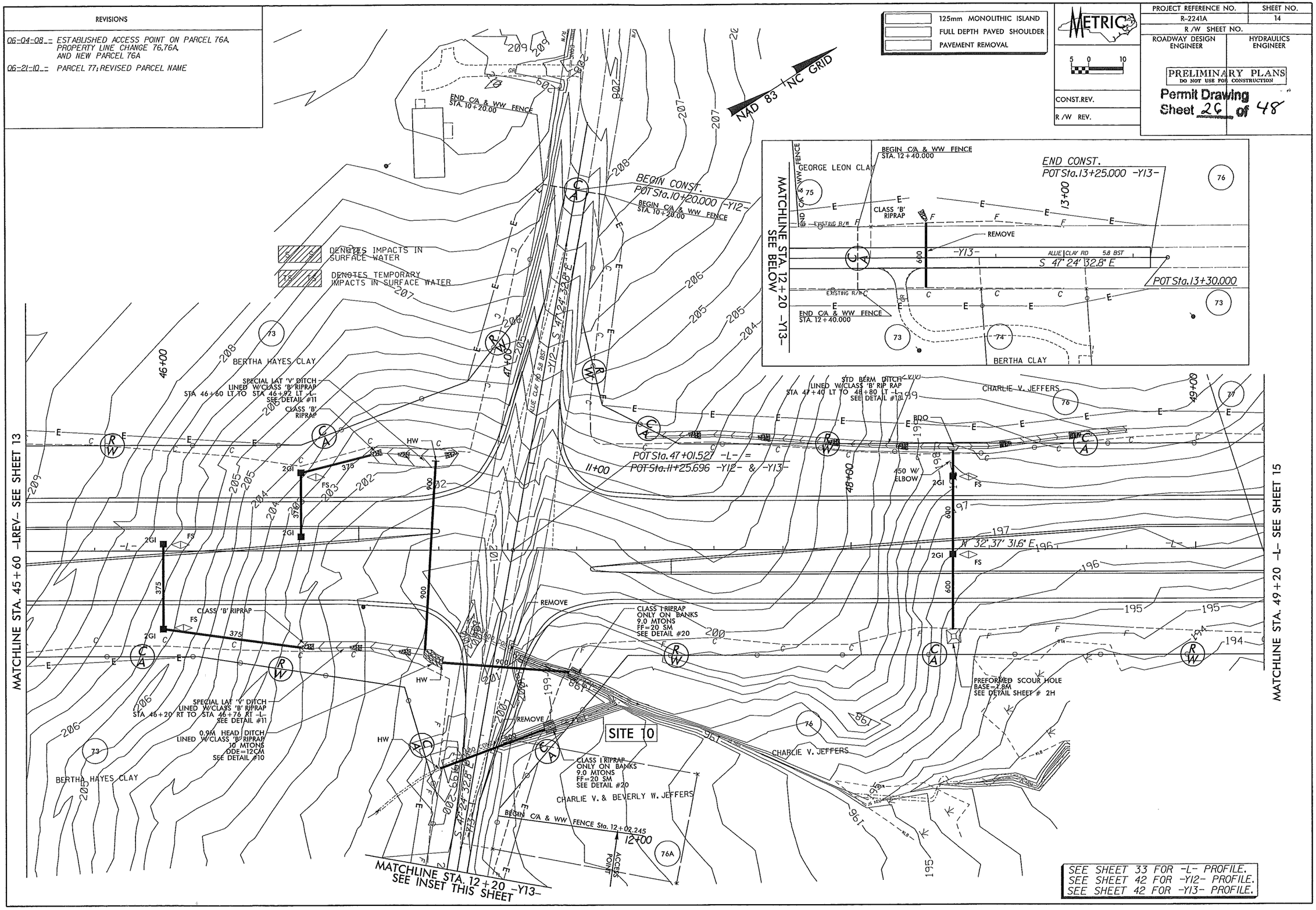
125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

METRIC
5 0 10

CONST.REV.
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	14
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 26 of 48



STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 - NAME CHANGE ON PARCEL 79, AND ESTABLISHED ACCESS POINT ON PARCEL 77,78
06-21-10 - PARCELS 77,78; REVISED PARCEL NAME
09-28-10 - PARCEL 78; REVISED PARCEL INFORMATION
08-02-11 - CHANGED PROPERTY OWNER INFORMATION ON PARCEL 79
09-09-11 - PARCEL 76 & 78; REVISED OWNER NAME/ PARCEL INFORMATION

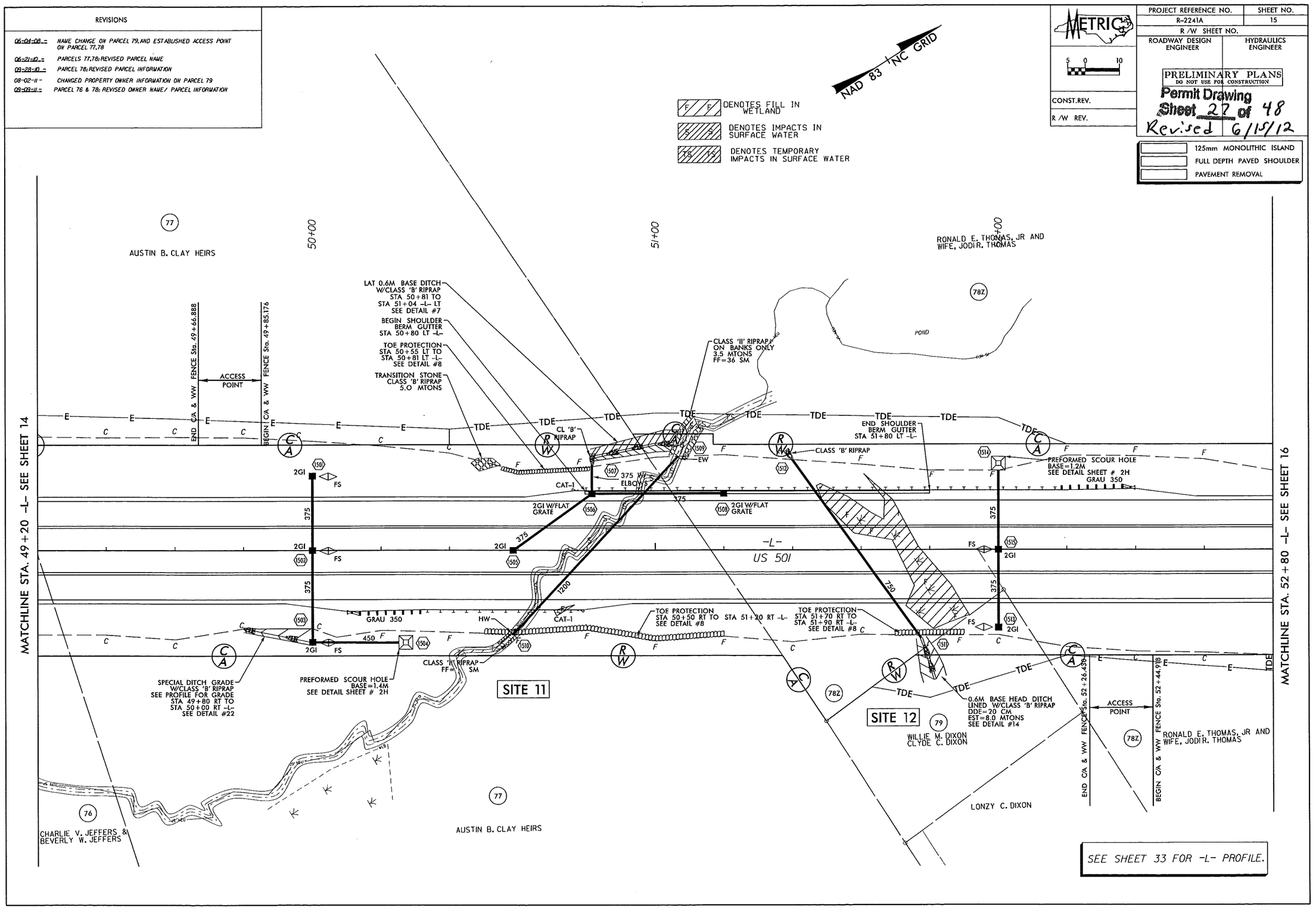
PROJECT REFERENCE NO.	SHEET NO.
R-2241A	15
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 27 of 48
Revised 6/15/12

CONST.REV.
R /W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



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Charlotte, NC 28208
NC License Number F-0991

REVISIONS	
06-04-08 -	NAME CHANGE ON PARCEL 79, AND ESTABLISHED ACCESS POINT ON PARCEL 77,78
06-21-10 -	PARCELS 77,78; REVISED PARCEL NAME
09-28-10 -	PARCEL 78; REVISED PARCEL INFORMATION
08-02-11 -	CHANGED PROPERTY OWNER INFORMATION ON PARCEL 79
09-09-11 -	PARCEL 76 & 78; REVISED OWNER NAME/ PARCEL INFORMATION

METRIC
5 0 10

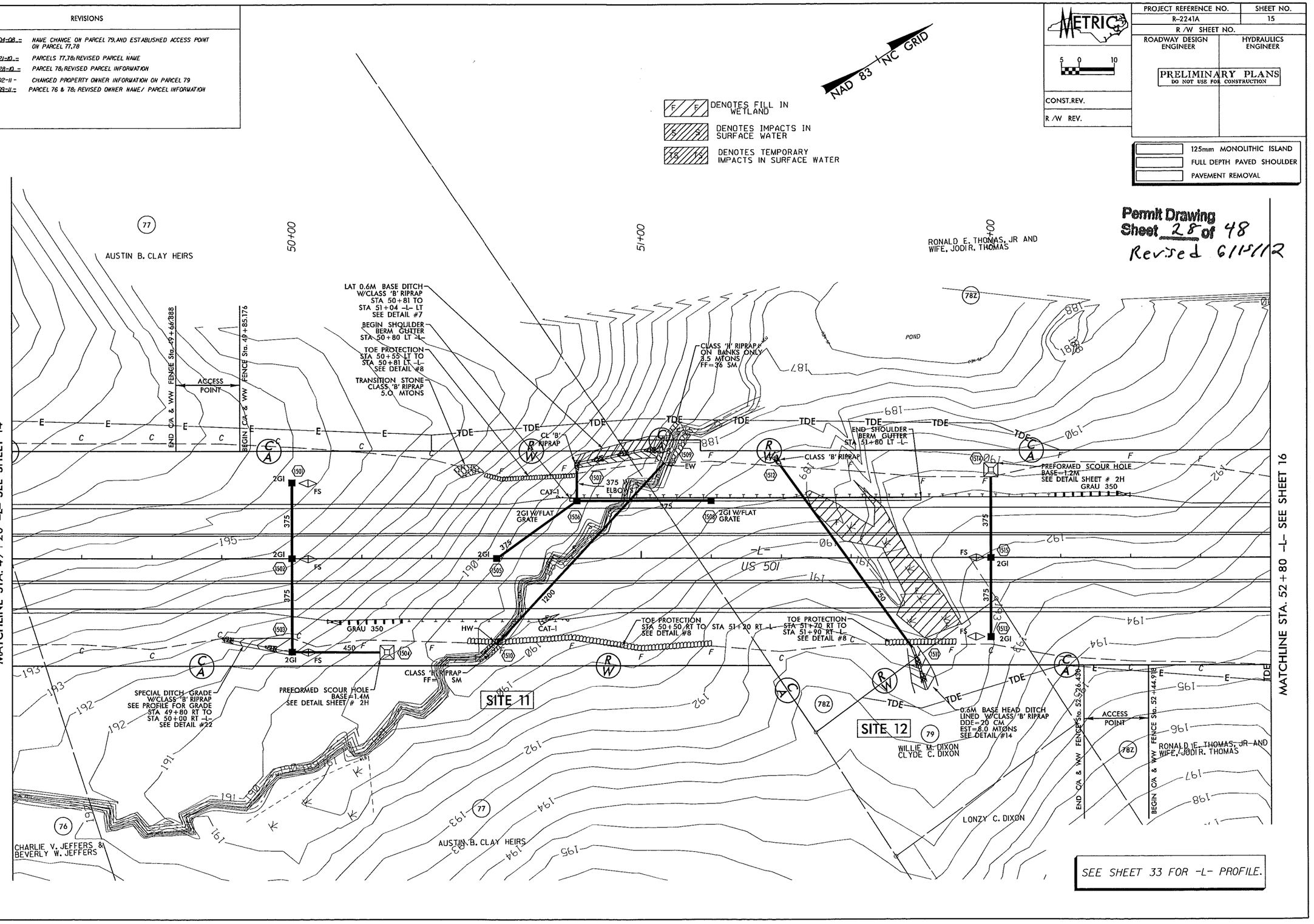
PROJECT REFERENCE NO.	SHEET NO.
R-2241A	15
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R /W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Permit Drawing
Sheet 28 of 48
Revised 6/15/12



RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 16024
CHARLOTTE, NORTH CAROLINA 28211

REVISIONS

06-04-08 -: ESTABLISHED ACCESS POINT ON PARCEL 80
06-21-10 -: PARCEL 78; REVISED PARCEL NAME
09-28-10 -: PARCEL 78; REVISED PARCEL INFORMATION

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	16
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

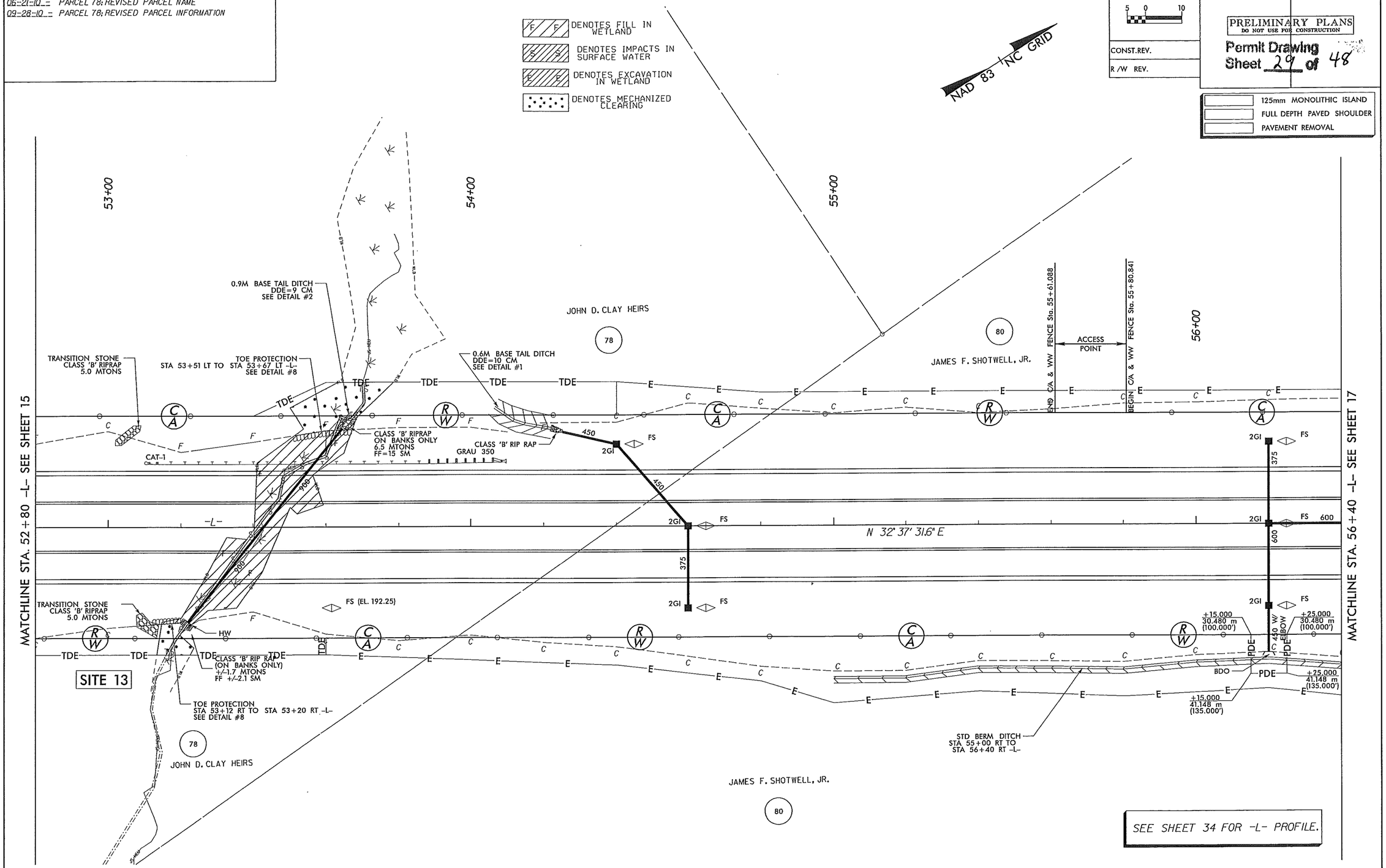
CONST.REV.

R /W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 29 of 48

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



RALPH WHITEHEAD ASSOCIATES
CONSULTING ENGINEERS
P.O. BOX 5404
CHARLOTTE, NORTH CAROLINA 28225

REVISIONS

06-04-08 -- ESTABLISHED ACCESS POINT ON PARCEL 80
06-21-10 -- PARCEL 78; REVISED PARCEL NAME
09-28-10 -- PARCEL 78; REVISED PARCEL INFORMATION

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

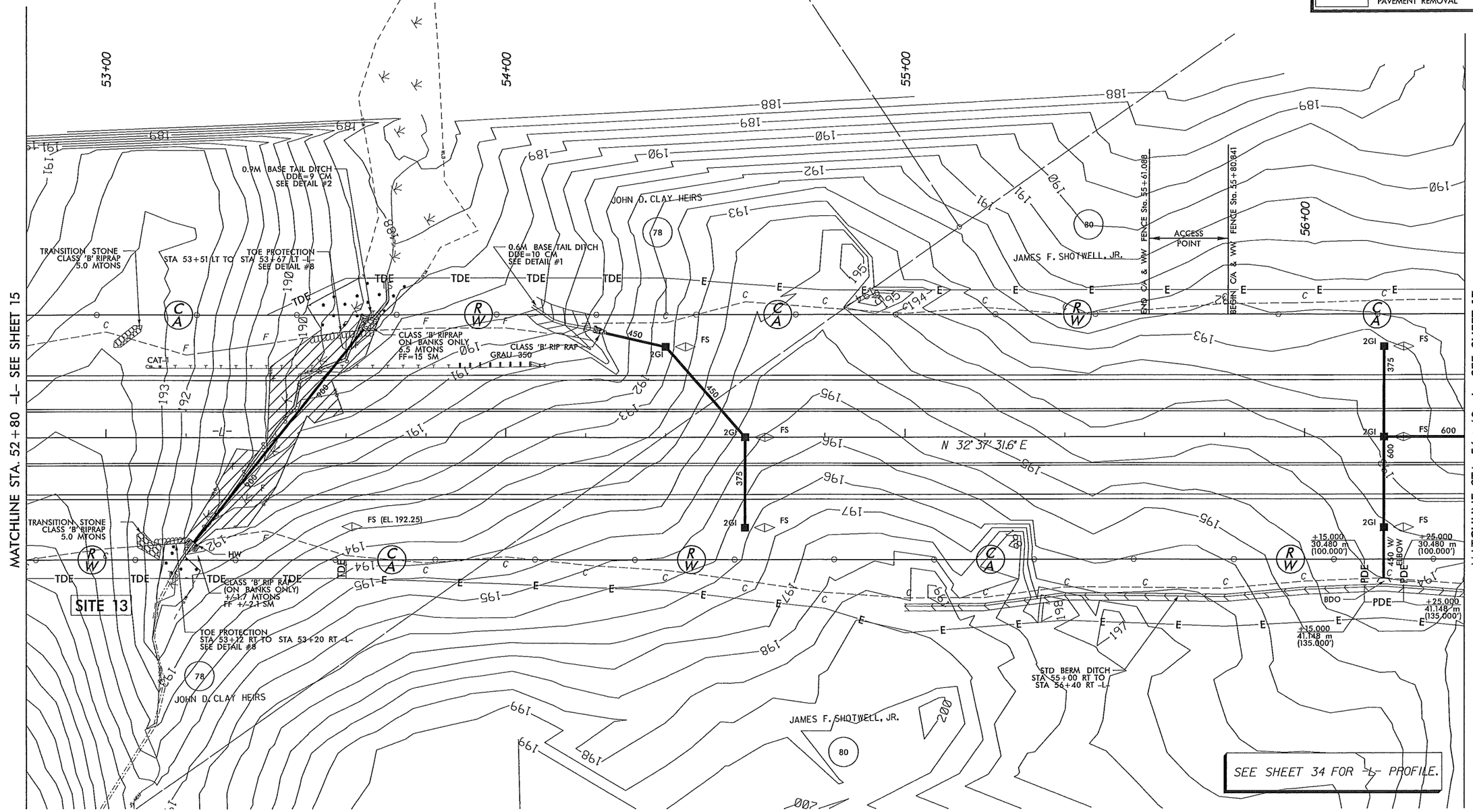
R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 30 of 48

F F DENOTES FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
E E DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



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1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 -:-	ESTABLISHED ACCESS POINT ON PARCEL 80
06-21-10 -:-	PARCEL 81: REVISED PARCEL NAME. LOCATED WIRE FENCING. PARCEL 82: LOCATED ELECTRIC FENCE
10-31-11 -:-	PARCEL 80: ADDED PDE AND MODIFIED C/A FENCE. AND TEMPORARY EASEMENTS

METRIC 5 0 10

CONST. REV.

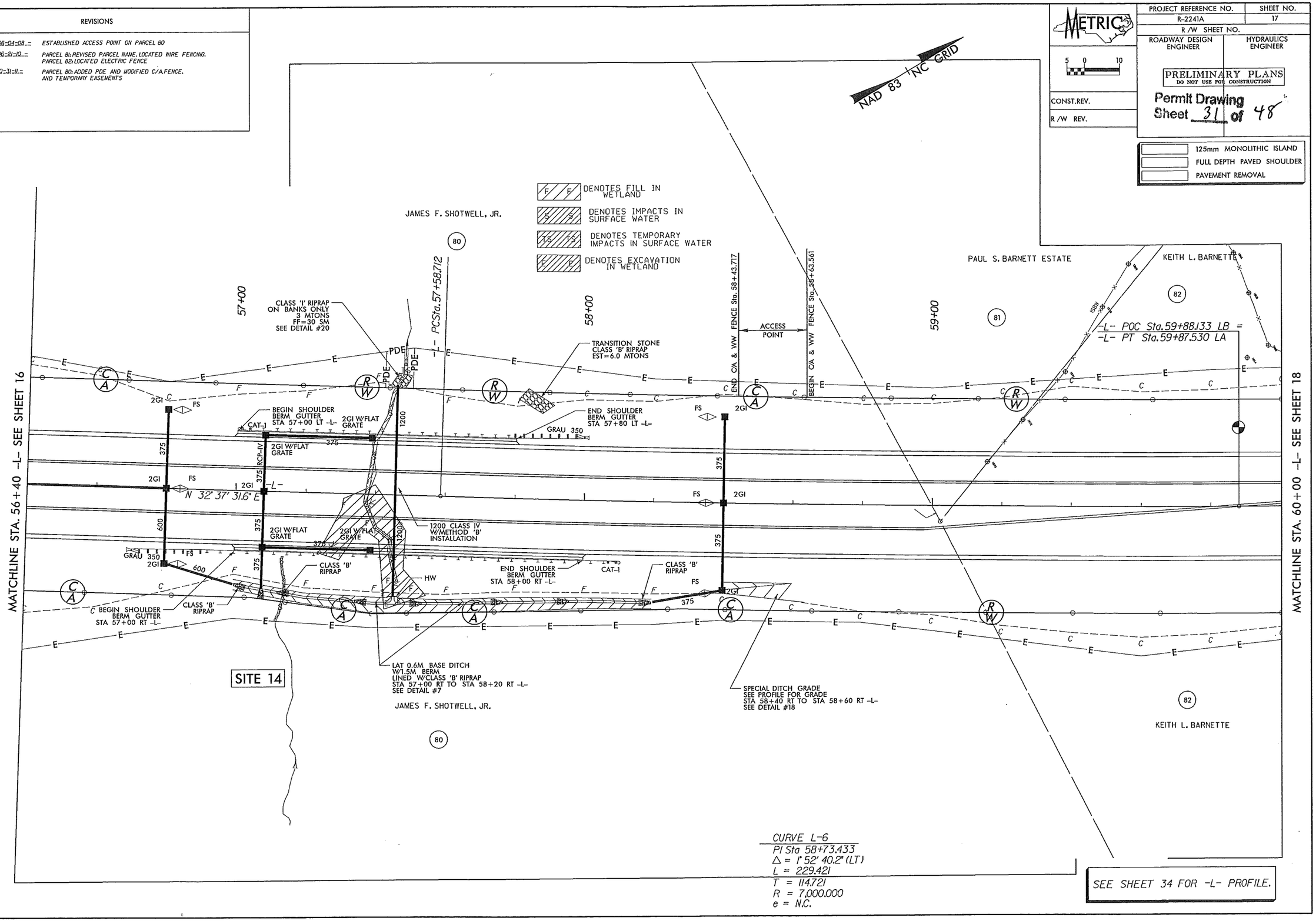
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 31 of 48

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Suite 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 -:-	ESTABLISHED ACCESS POINT ON PARCEL 80
06-21-10 -:-	PARCEL 81: REVISED PARCEL NAME. LOCATED WIRE FENCING. PARCEL 82: LOCATED ELECTRIC FENCE
10-31-11 -:-	PARCEL 80: ADDED PDE AND MODIFIED C/A FENCE. AND TEMPORARY EASEMENTS

METRIC 5 0 10

CONST.REV.

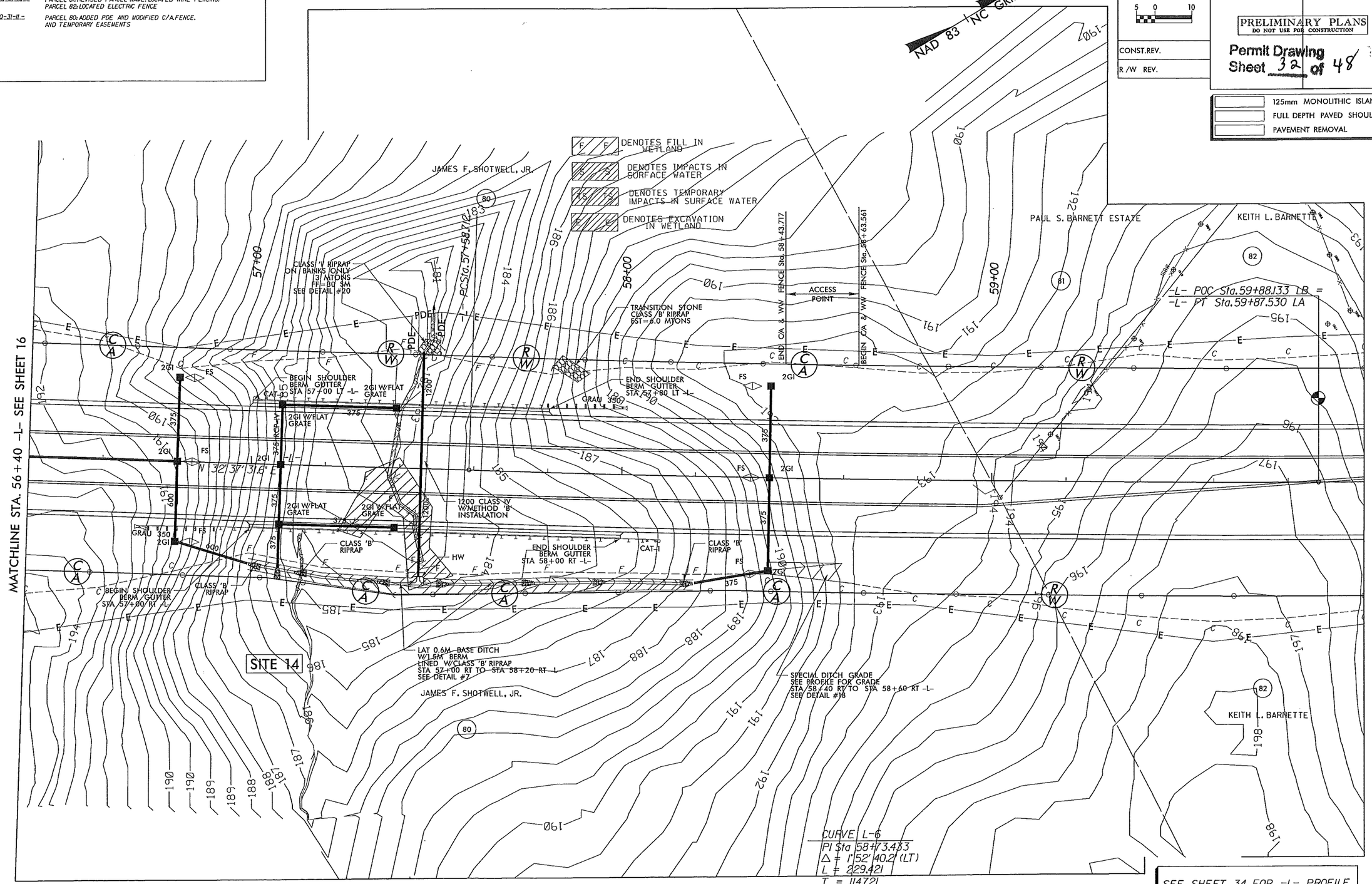
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	17
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 32 of 48

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS	
06-04-08	ESTABLISHED ACCESS POINT ON PARCEL 83. DRIVEWAY RECONNECTION ON PARCEL 84A. ESTABLISHED ACCESS POINT ON PARCEL 82. WELL SHOWN ON PARCEL 84A. NEW PARCEL 84A
06-21-10	PARCEL 82: LOCATED ELECTRIC FENCE. BARN. EXISTING DRIVEWAYS PARCEL 84A, 84: LOCATED FENCE
09-20-10	PARCEL 84A: MOVED RW MONUMENT AND LINE 2 FEET FROM WELL
09-28-10	PARCEL 82: REMOVED C/A SYMBOL. ELIMINATED R/W CALL-OUT. RELOCATED FENCE ALONG C/A
10-27-11	PARCEL 82: ADDED PDE

METRIC 5 0 10

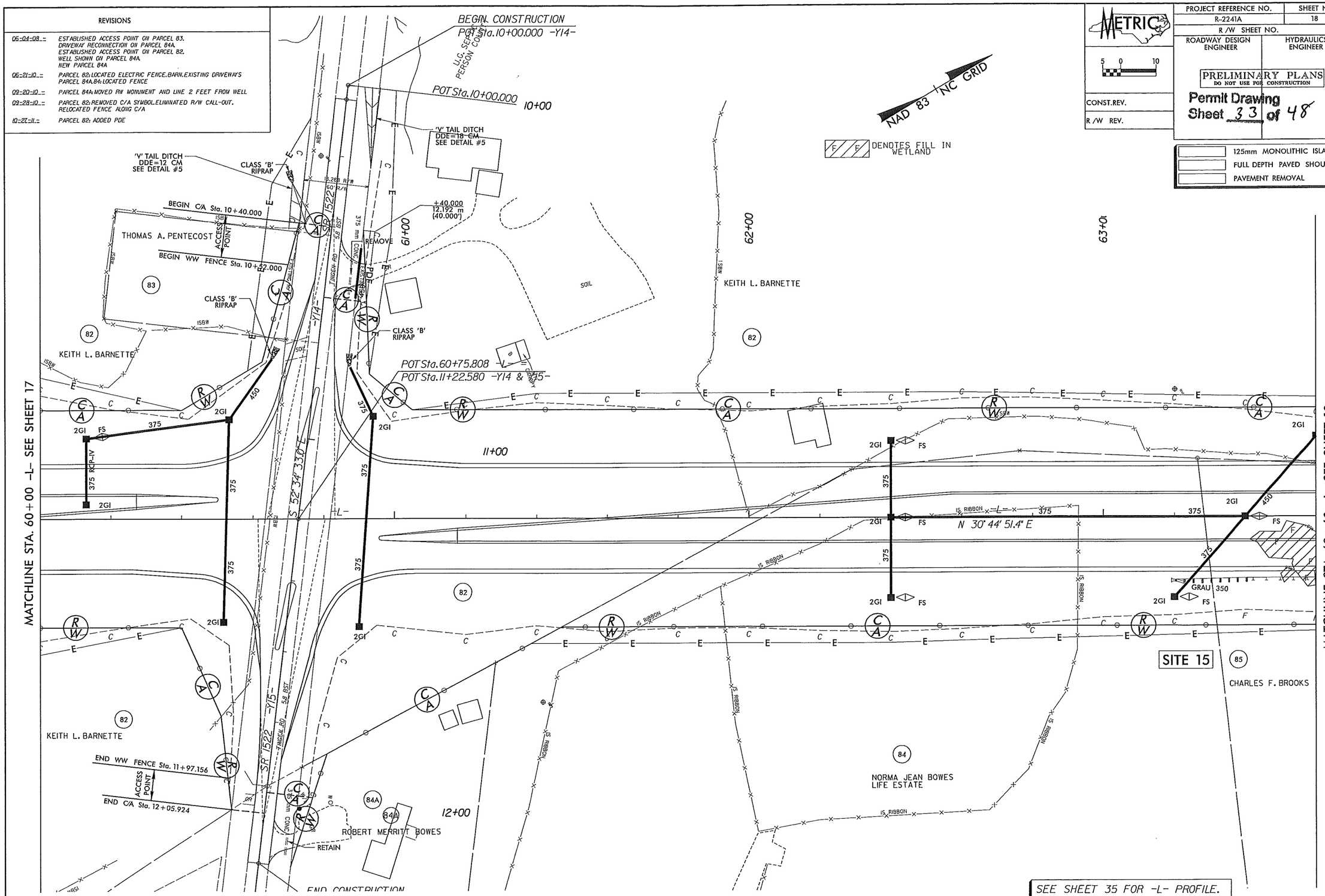
PROJECT REFERENCE NO.	SHEET NO.
R-2241A	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 33 of 48

CONST. REV.
R/W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



SEE SHEET 35 FOR -L- PROFILE.
SEE SHEET 42 FOR -Y14- PROFILE.
SEE SHEET 42 FOR -Y15- PROFILE.

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, North Carolina
NC License Number F-0991

REVISIONS

06-04-09 -:-	ESTABLISHED ACCESS POINT ON PARCEL 83. DRIVEWAY RECONNECTION ON PARCEL 84A. ESTABLISHED ACCESS POINT ON PARCEL 82. WELL SHOWN ON PARCEL 84A. NEW PARCEL 84A
06-21-10 -:-	PARCEL 82: LOCATED ELECTRIC FENCE, BARN, EXISTING DRIVEWAYS PARCEL 84A, 84: LOCATED FENCE
09-20-10 -:-	PARCEL 84A: MOVED RW MONUMENT AND LINE 2 FEET FROM WELL
09-28-10 -:-	PARCEL 82: REMOVED C/A SYMBOL. ELIMINATED R/W CALL-OUT. RELOCATED FENCE ALONG C/A
10-27-11 -:-	PARCEL 82: ADDED PDE

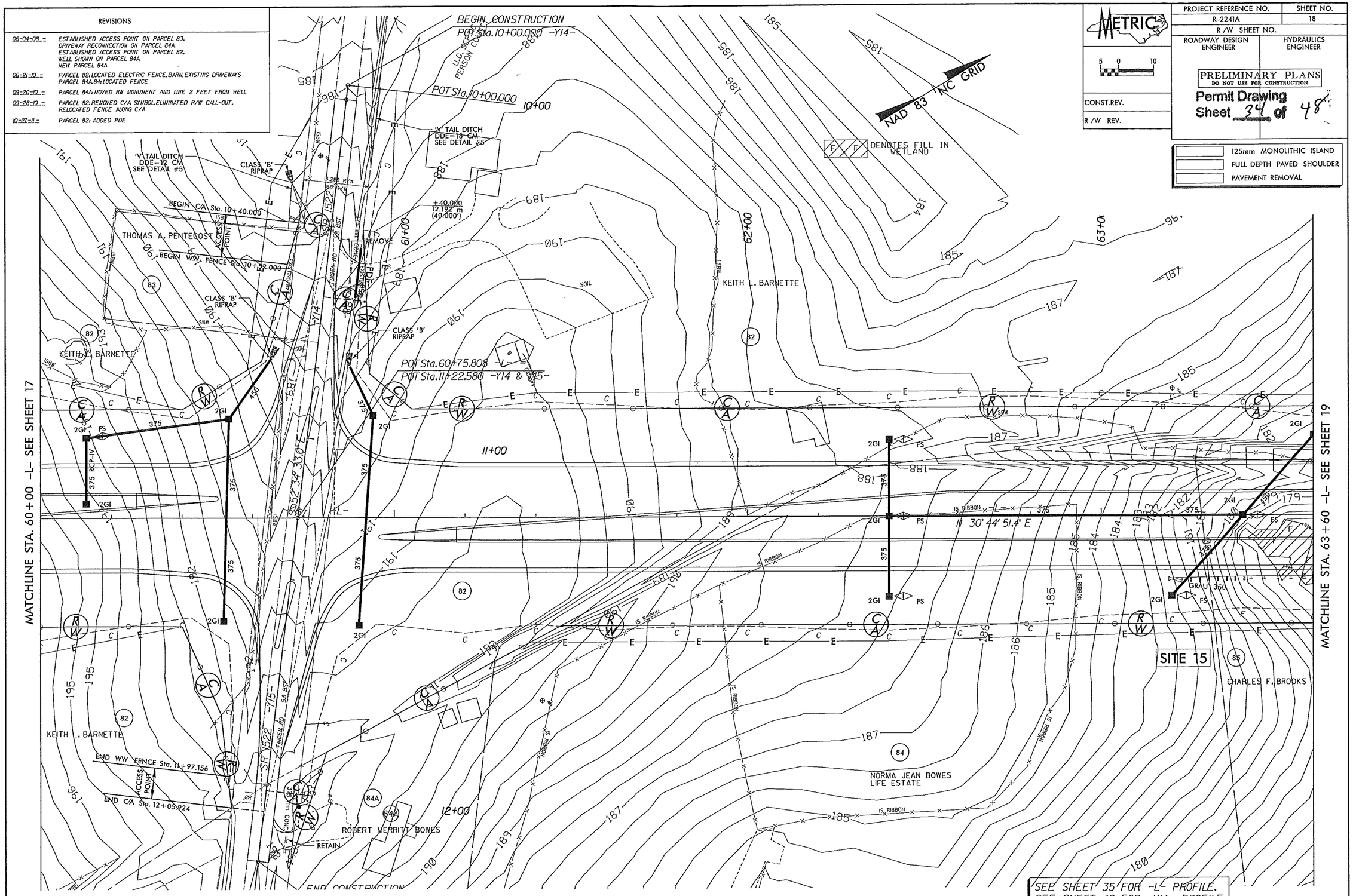
METRIC
5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 34 of 48

CONST. REV.
R/W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



SEE SHEET 35 FOR -L- PROFILE.
SEE SHEET 42 FOR -Y14- PROFILE.
SEE SHEET 42 FOR -Y15- PROFILE.

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St. Suite 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS	
06-04-08 -	NEW PARCEL 87A, AND PROPERTY LINE CHANGE ON PARCEL 87
06-21-10 -	PARCEL 82: LOCATED FENCE PARCEL 87A: LOCATED SHED, GARAGE, MOBILE HOME, REVISED PARCEL NAME PARCEL 90: REVISED PARCEL NAME
08-02-11 -	COMBINED PARCEL 87A WITH PARCEL 87 CHANGED PROPERTY INFORMATION ON PARCEL 89
09-09-11 -	PARCEL 87: REVISED OWNER NAME
10-27-11 -	PARCEL 85, 86, 87Z AND 89Z: MODIFIED C/A, FENCE, AND TEMPORARY EASEMENTS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

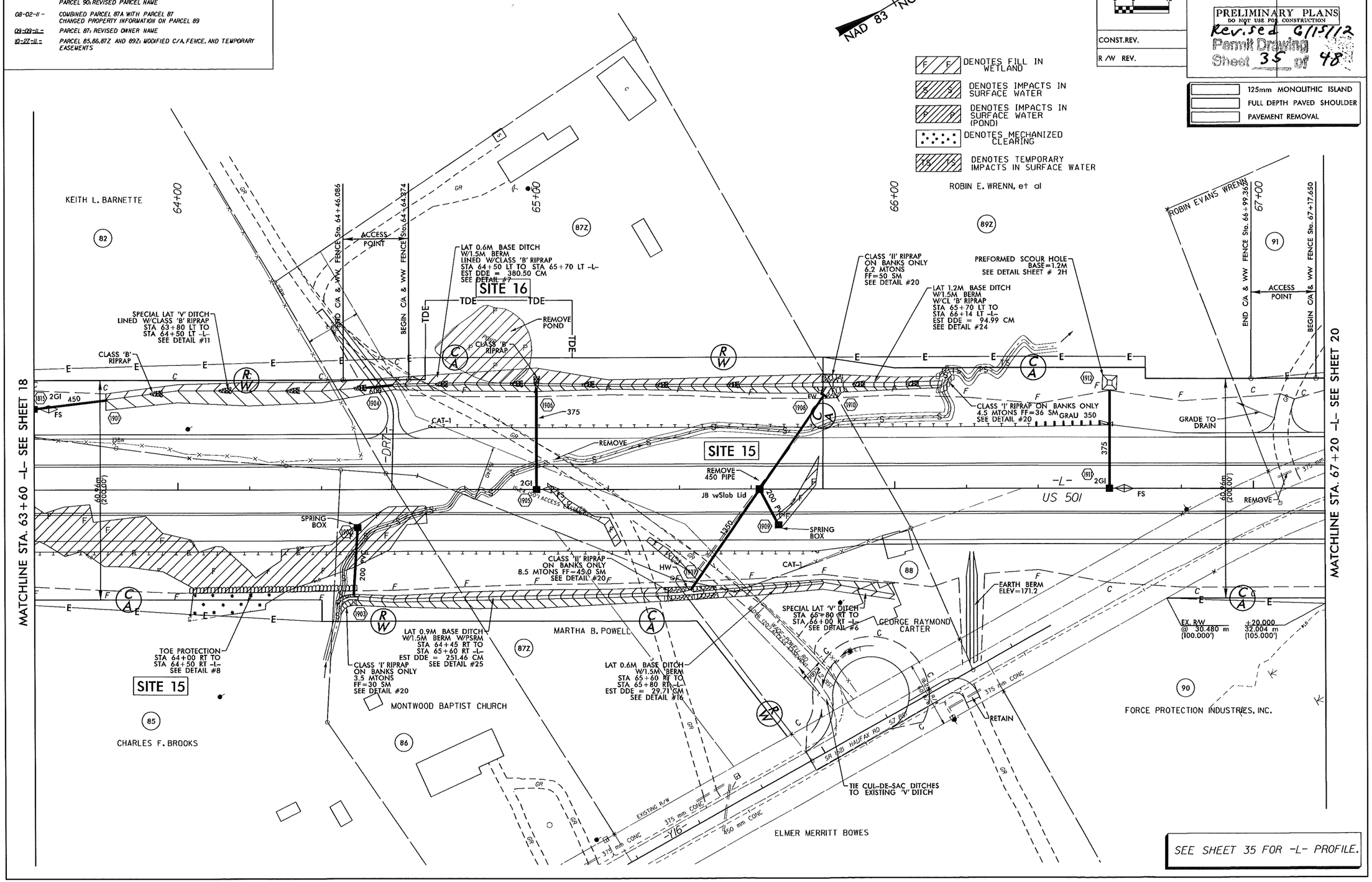
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Revised 6/15/12
Permit Drawing
Sheet 35 of 48

CONST. REV.
R/W REV.

NAD 83 NC GRID

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

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



SEE SHEET 35 FOR -L- PROFILE.

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1000 West Morehead St., Ste 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 -	NEW PARCEL 87A AND PROPERTY LINE CHANGE ON PARCEL 87
06-21-10 -	PARCEL 82; LOCATED FENCE PARCEL 87A; LOCATED SHED, GARAGE, MOBILE HOME, REVISED PARCEL NAME PARCEL 90; REVISED PARCEL NAME
08-02-11 -	COMBINED PARCEL 87A WITH PARCEL 87 CHANGED PROPERTY INFORMATION ON PARCEL 89
09-09-11 -	PARCEL 87; REVISED OWNER NAME
10-27-11 -	PARCEL 85, 86, 87Z AND 89Z; MODIFIED C/A, FENCE, AND TEMPORARY EASEMENTS

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	19
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

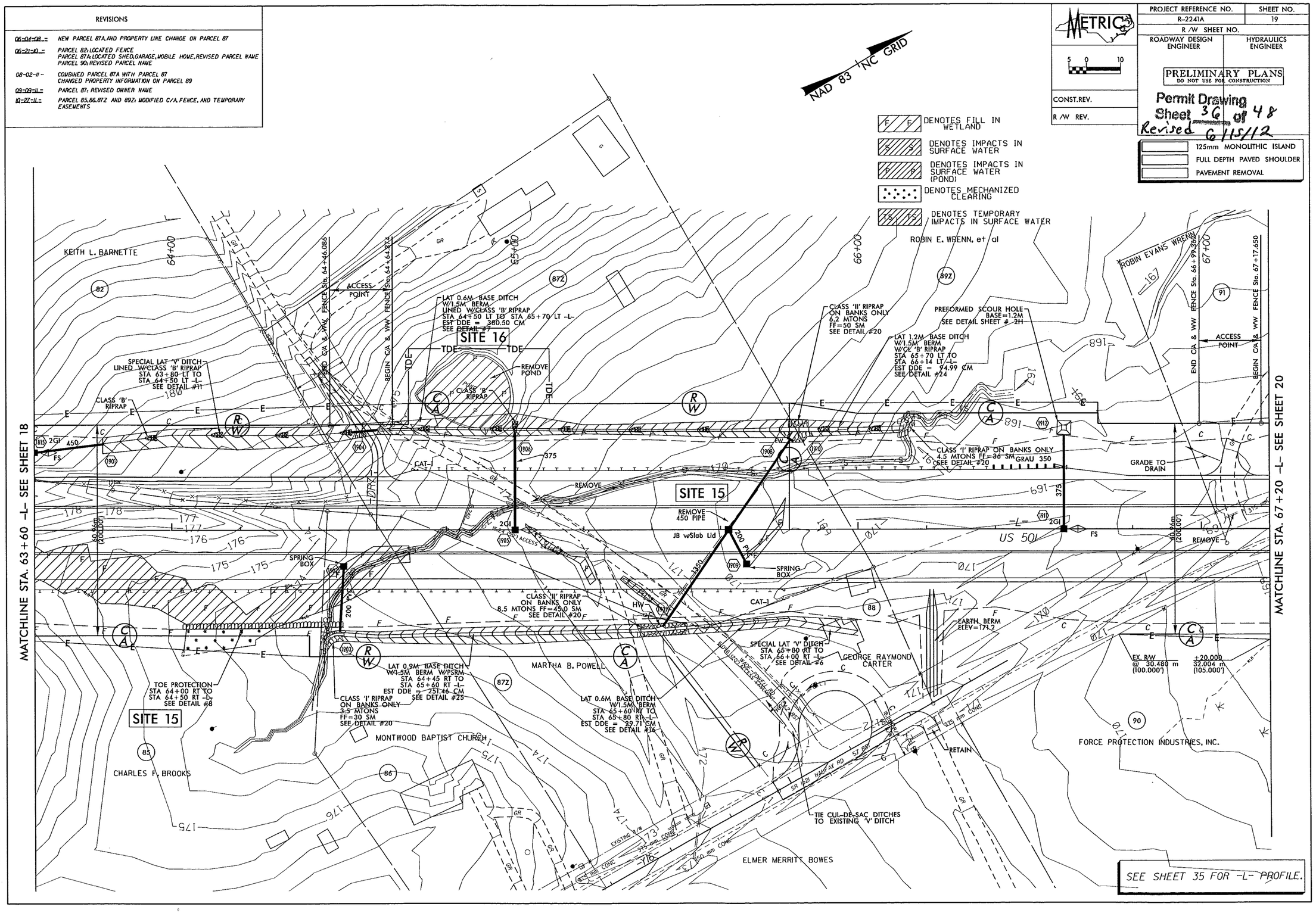
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 36 of 48
Revised 6/15/12

CONST.REV.

R /W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



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Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	20
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

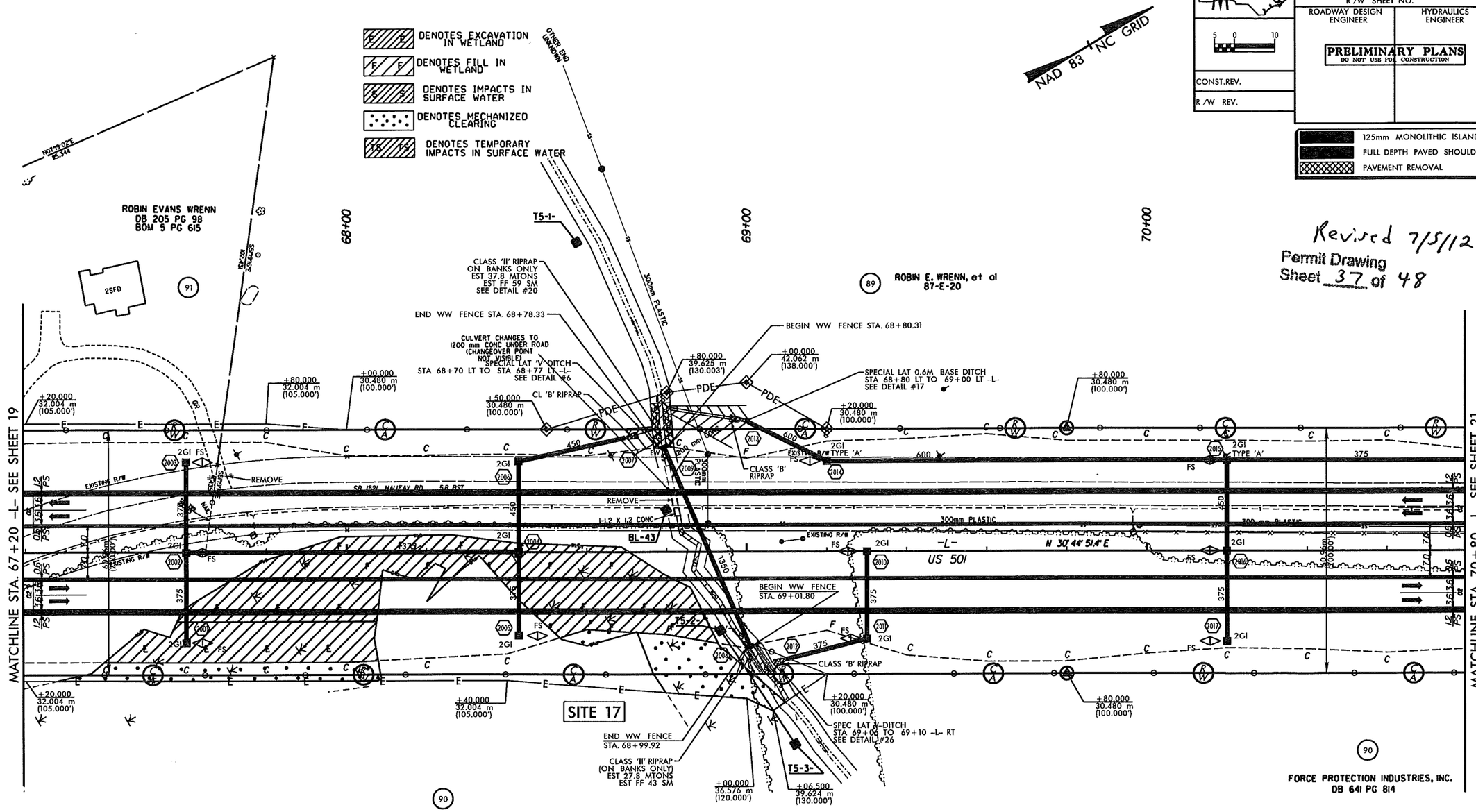
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R /W REV.

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/5/12
Permit Drawing
Sheet 37 of 48



SEE SHEET 36 FOR -L- PROFILE

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1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

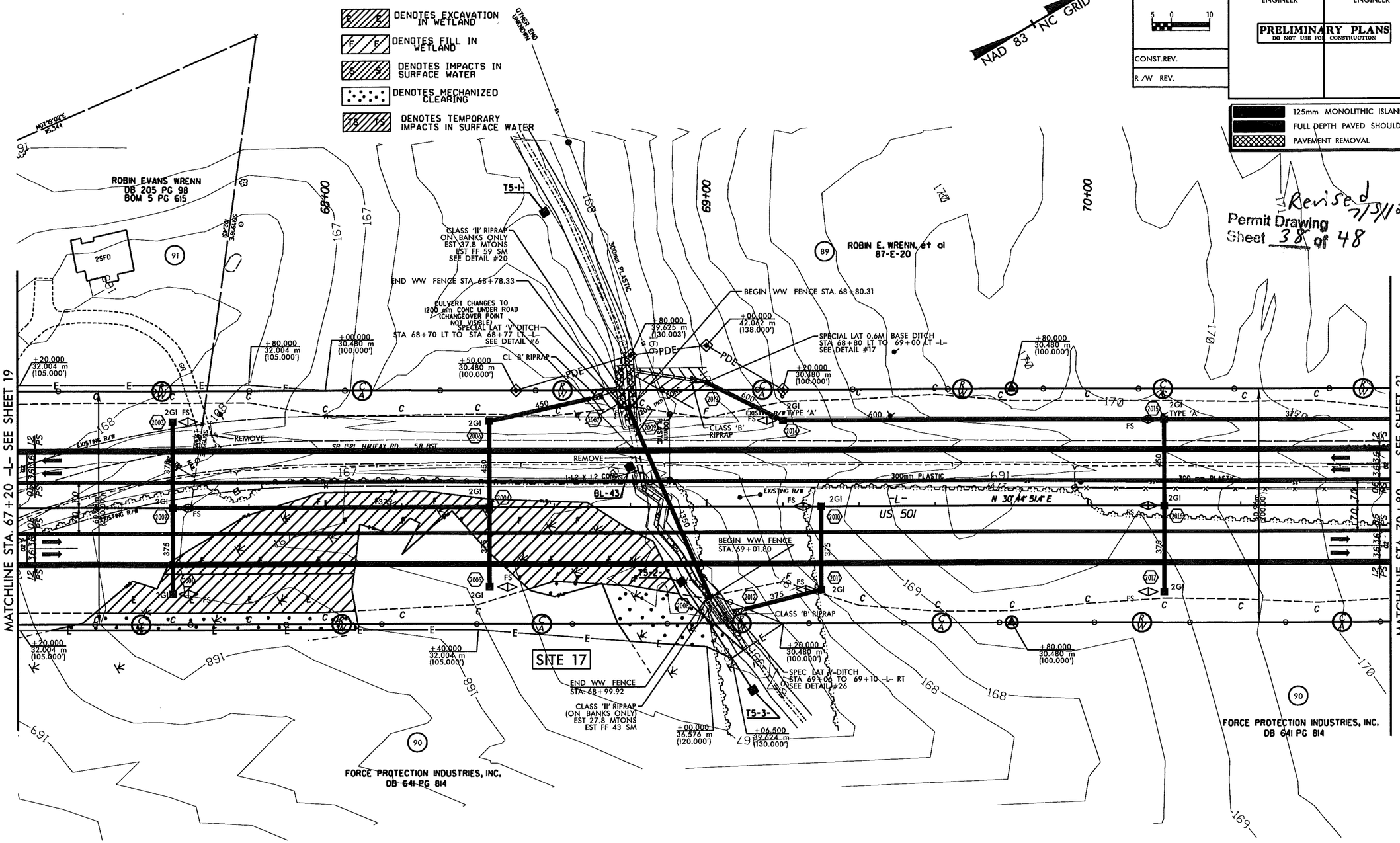
CONST. REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/25/12
Permit Drawing
Sheet 38 of 48



SEE SHEET 36 FOR -L- PROFILE

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Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

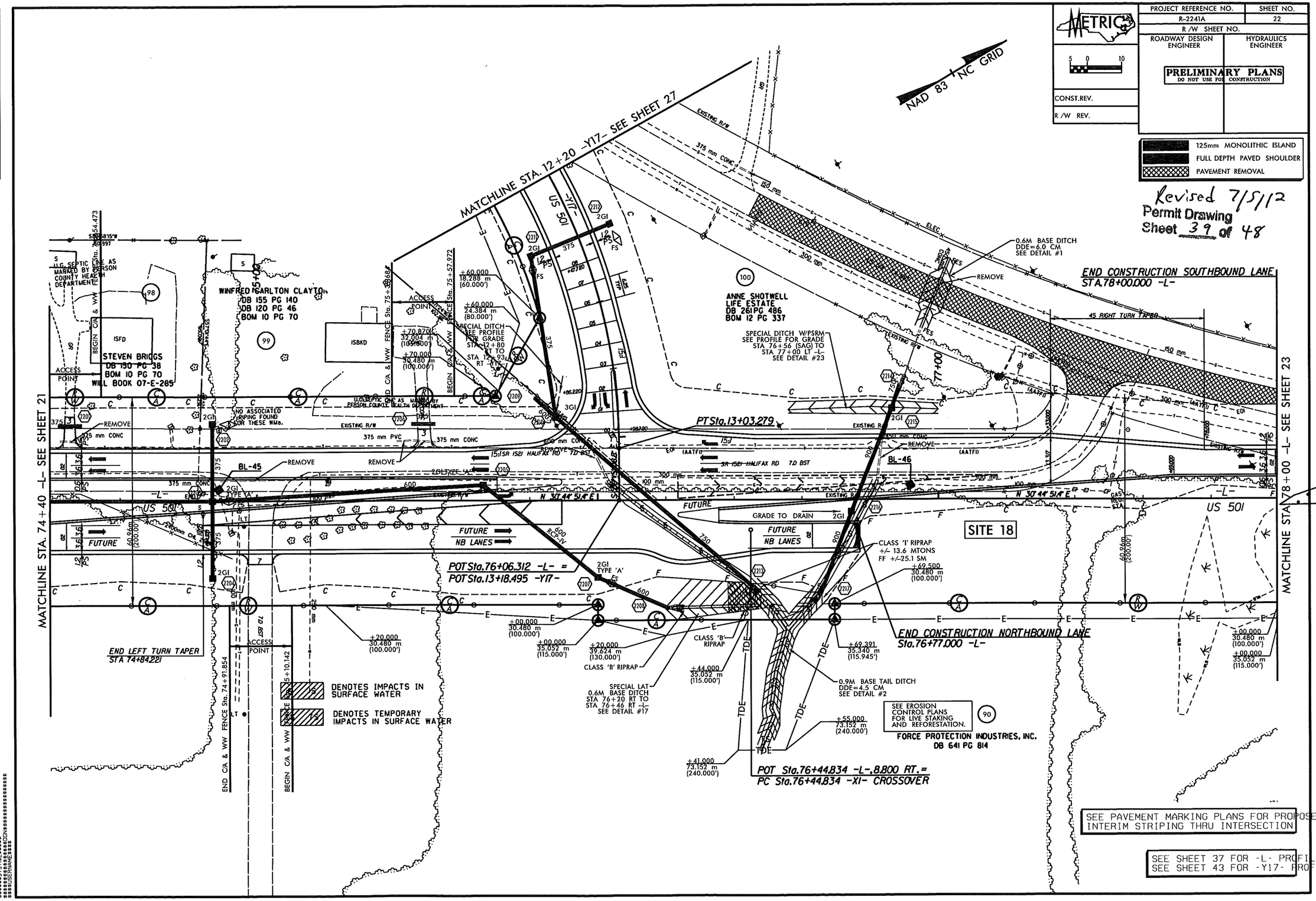
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/5/12
Permit Drawing
Sheet 39 of 48



STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0891

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

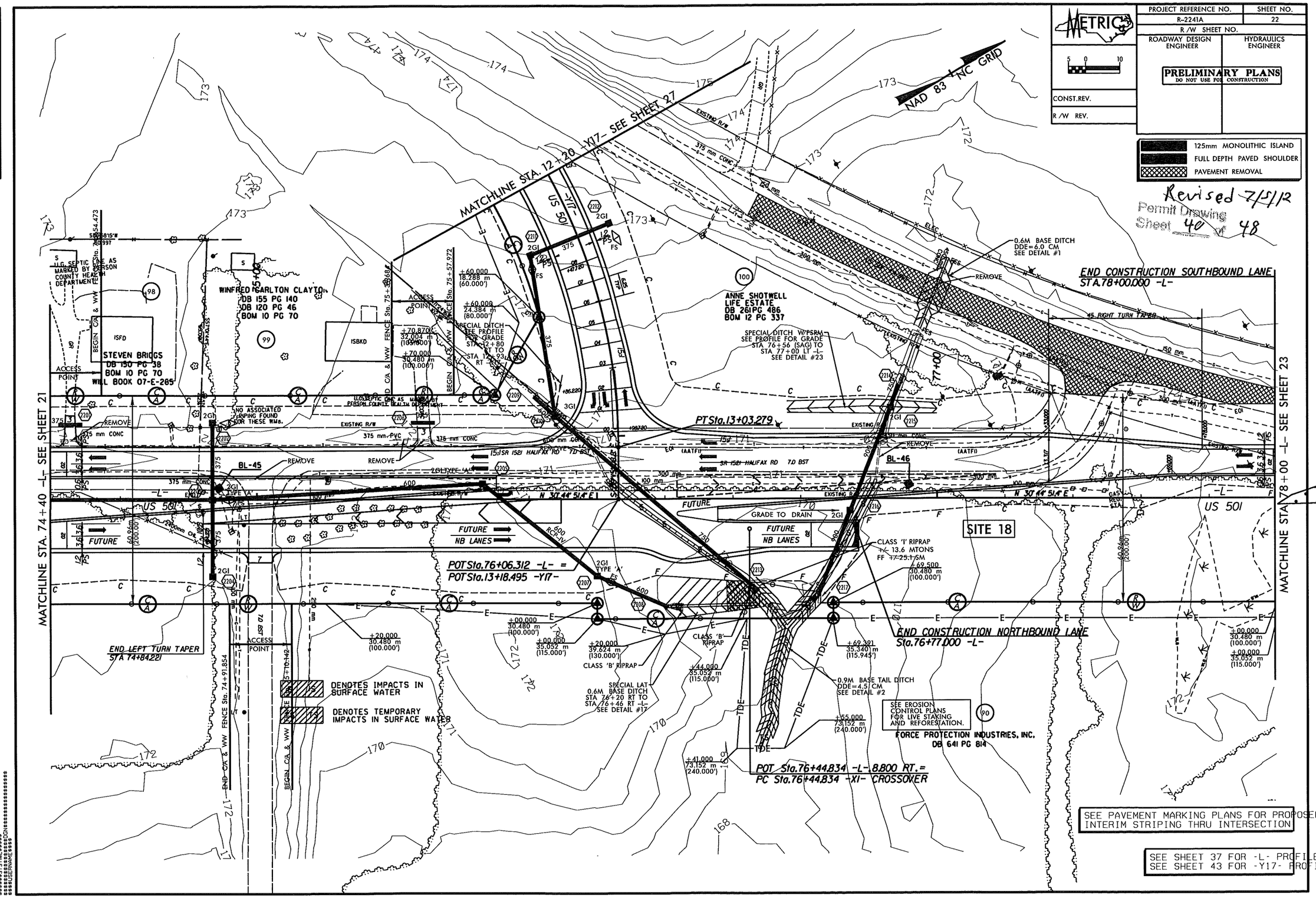
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/5/12
Permit Drawing
Sheet 40 of 48



\$\$\$\$SYSTIME\$\$\$\$
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STV / Ralph Whitehead Associates, Inc.
1000 Westgate Mall, Suite 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 -	DRIVEWAY RECONNECTION ON PARCELS 100,101,103,105,106,107,108 SHIFTED ACCESS POINT ON PARCEL 107. PROPERTY LINE CHANGES ON PARCELS 101,102,103,104,108 AND NAME CHANGE ON PARCELS 101,103,108
06-24-08 -	PROVIDED ACCESS ON PARCEL 102.
06-21-10 -	PARCEL 90; LOCATED BARBWIRE FENCE. REVISED PARCEL NAME PARCEL 108; REVISED PARCEL NAME
08-02-11 -	CHANGED PROPERTY OWNER INFORMATION ON PARCELS 101,106,108
09-09-11 -	PARCEL 102 & 107; REVISED OWNER NAMES

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 41 of 48

CONST.REV.

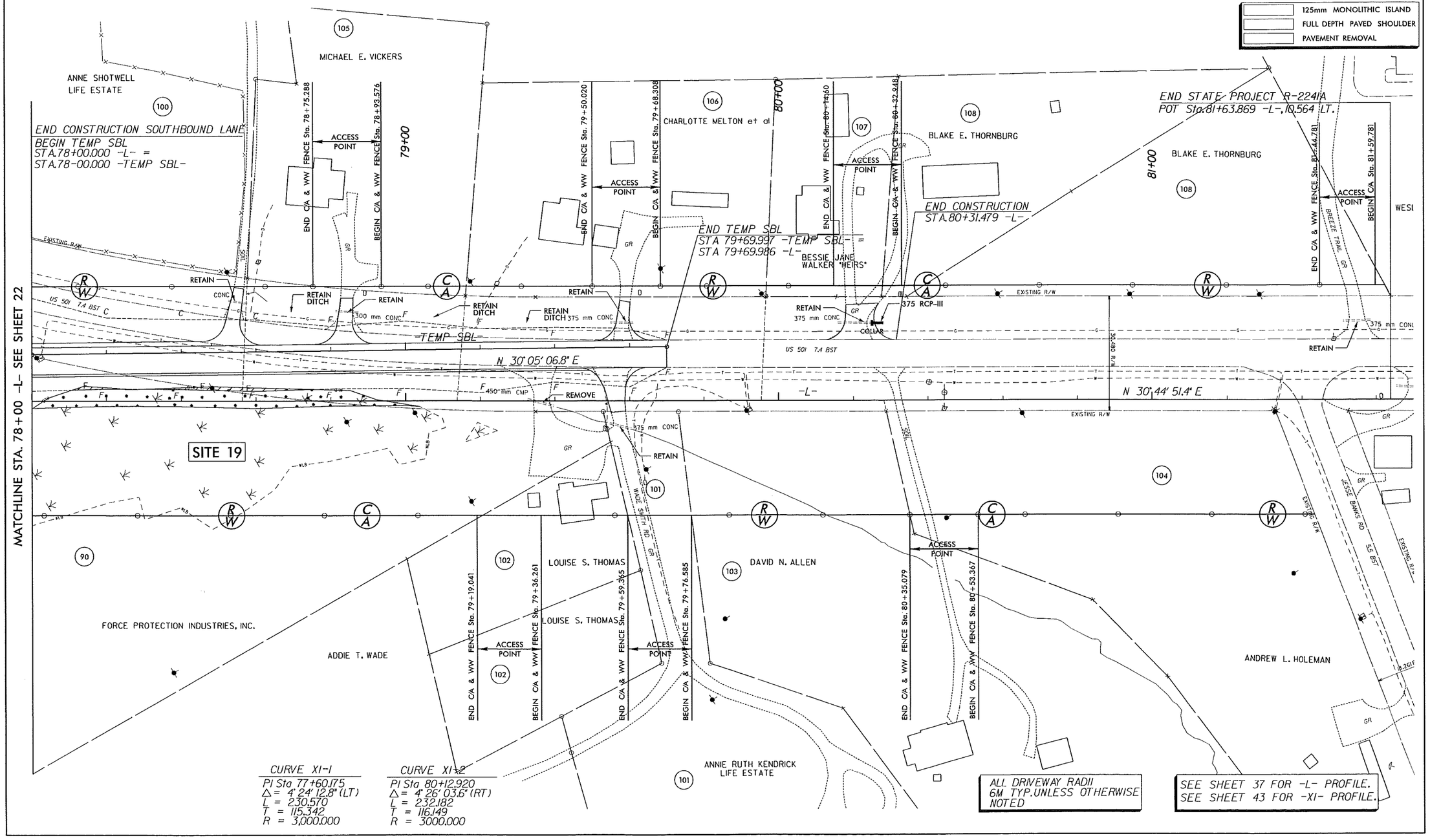
R/W REV.

NAD 83 / NC GRID

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

REVISIONS

06-04-08 -	DRIVEWAY RECONNECTION ON PARCELS 100,101,103,105,106,107,108 SHIFTED ACCESS POINT ON PARCEL 107, PROPERTY LINE CHANGES ON PARCELS 101,102,103,104,108 AND NAME CHANGE ON PARCELS 101,103,108
06-24-08 -	PROVIDED ACCESS ON PARCEL 102.
06-21-10 -	PARCEL 90; LOCATED BARBWIRE FENCE. REVISED PARCEL NAME PARCEL 108; REVISED PARCEL NAME
08-02-11 -	CHANGED PROPERTY OWNER INFORMATION ON PARCELS 101,106,108
09-09-11 -	PARCEL 102 & 107; REVISED OWNER NAMES

METRIC
5 0 10

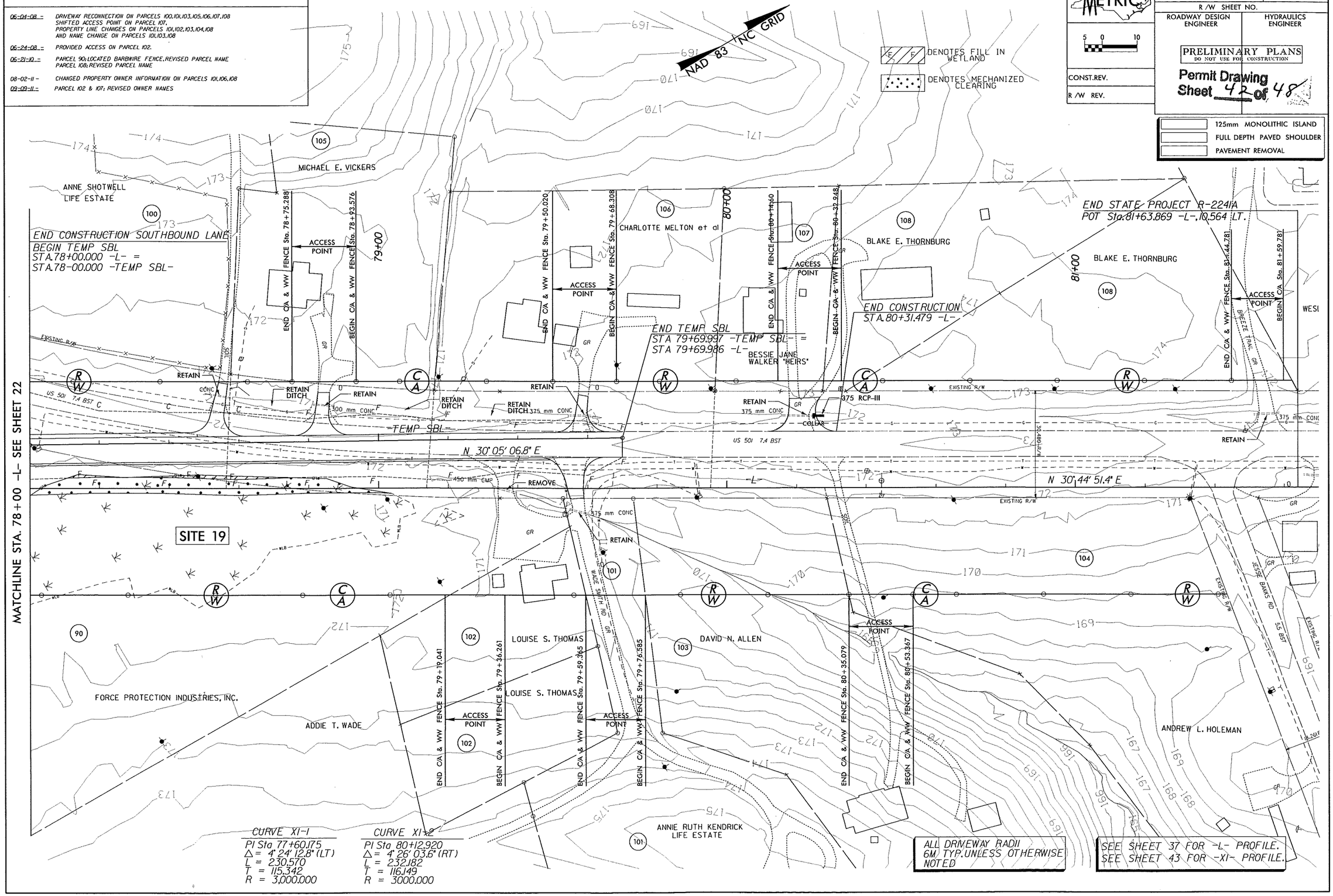
CONST. REV.
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	23
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 42 of 48

DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL



PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES		
14	Jimmy Lewis Contracting, Inc.	3068 Chub Lake Rd.		
		Roxboro	NC	27574
15	Roxboro Properties LLC	PO Box 190138		
		Dallas	TX	75219
16	Gates, J.E.	Drawer 720		
	Rosalie Gate	Roxboro	NC	27573
16A	J. E. Gates Trust	PO Box 720		
		Roxboro	NC	27573
16B	J. E. Gates Estate	PO Box 720		
		Roxboro	NC	27573
17	Perkins, Charles E.	PO Box F		
		Roxboro	NC	27573
33	Wade, Estelle P.	490 Virgilina Rd		
		Roxboro	NC	27573
35	Woody & Anderson Properties Inc.	112 S. Main St.		
		Roxboro	NC	27573
36	Call, Nathaniel	570 Virgilina Rd.		
		Roxboro	NC	27573
41	Gentry, Odelia P.	285 Adcock Rd.		
	Heirs	Lillington	NC	27546
63	Pentecost, Nellie R.	1065 Providence Rd.		
		Roxboro	NC	27573
64	Smith, Howard	1031 Providence Rd.		
		Roxboro	NC	27573
66	Smith, Mary P.	1031 Providence Rd.		
		Roxboro	NC	27573
62	Garrett, Almeade G.	1899 Virgilina Rd.		
		Roxboro	NC	27573
69	Perkins, Charles	P.O. Box F		
	Wanda H. Perkins	Roxboro	NC	27573
70Z	Miriam J. Lavelle	525 Mill Hill Rd.		
	Charles F. Sams, Jr.	Roxboro	NC	27574
76	Jeffers, Charlie V.	1108 Semora Rd.		
		Roxboro	NC	27573
76A	Jeffers, Charlie V.	1108 Semora Rd.		
	Beverly W. Jeffers	Roxboro	NC	27573

NCDOT

DIVISION OF HIGHWAYS

PERSON COUNTY

PROJECT: 34069.1.1 (R-2241A)

US 501 FROM NC 49

IN ROXBORO TO

SOUTH OF SR 1602

11/02/11

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES		ADDRESSES		
77	Clay,	Austin B.	204 Hill St.		
	Heirs		Roxboro	NC	27573
78	Clay,	John D.	701 Patterson Dr.		
	Heirs		Roxboro	NC	27573
78Z	Ronald E. Thomas, Jr.		948 Semora Rd.		
	Jodi R. Thomas		Roxboro	NC	27574
80	Shotwell, Jr.	James	509 Meherrin Lane		
			Murfreesboro	NC	27855
85	Brooks,	Charles F.	3875 Halifax Rd		
	Wilma Brooks		Roxboro	NC	27574
86	Montwood Baptist Church		4416 Boston Rd.		
			Roxboro	NC	27573
87	Powell,	Roy R.	4431 Halifax Rd		
			Roxboro	NC	27573
87A	Wade,	Racheal D.	124 Wade Powell Rd		
			Roxboro	NC	27574
87Z	Martha B. Powell		150 Wade Powell Rd.		
			Roxboro	NC	27574
89Z	Robin E. Wrenn		8101 Slatesville Rd.		
			Keeling	VA	24566
90	Force Protection Industries, Inc.		9801 Highway 78		
			Ladson	SC	29456
103	Allen,	David N.	33 Kendrick Dr.		
	Elizabeth Allen		Roxboro	NC	27574

NCDOT

DIVISION OF HIGHWAYS

PERSON COUNTY

PROJECT: 34A069.1.1 (R-2241A)

US 501 FROM NC 49

IN ROXBORO TO

SOUTH OF SR 1602

SHEET 44 OF 48 11/02/11

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation in Wetlands (ha)	Mechanized Clearing in Wetlands (ha)	Hand Clearing in Wetlands (ha)	Permanent SW impacts (ha)	Temp. SW impacts (ha)	Existing Channel Impacts Permanent (m)	Existing Channel Impacts Temp. (m)	Natural Stream Design (m)
1	13+28/13+62 -L-	3@3mx3m RCBC						0.012	0.002	42	8	
	Stream Bank Stabilization							0.013		38		
2	15+12/15+59 -L- LT	750mm CSP	0.045		0.004	0.025						
3 *	19+21/19+23 -L- RT	Fill						<0.001		7		
4	20+84/20+89 -L-	2@2.4mx2.4m RCBC						0.010	0.005	34	12	
	Stream Bank Stabilization							0.010		18		
5	20+89/21+45 -L-	Fill	0.089			0.023						
6 *	24+98/25+10 -L- RT	900mm RCP						0.001	0.001	7	6	
	Stream Bank Stabilization							0.002		7		
7A	34+93/36+38 -L-	2.7mx1.8m RCBC	0.051			0.002		0.012	0.003	158	33	
	Stream Bank Stabilization							0.007		25		
7B *	35+38/35+51 -L- LT	Fill						0.001		18		
8	37+33/37+55 -L-	1050mm RCP	0.008		0.002	0.012		0.004	0.001	59	11	
	Stream Bank Stabilization							0.001		4		
9	40+05/40+70 -L-	1500mm RCP						0.017	0.002	85	10	
	Stream Bank Stabilization							0.002		5		
10 *	11+55/11+82 -Y13- LT	900mm CSP						0.003	0.002	28	13	
	Stream Bank Stabilization							0.001		6		
11	50+41/51+25 -L-	1200mm RCP	0.001					0.008	0.004	86	26	
	Stream Bank Stabilization							0.003		16		
12	51+47/51+91 -L-	750mm RCP	0.047									
13	53+13/53+79 -L-	900mm RCP	0.070		0.001	0.027		0.005	0.001	75	22	
TOTALS:			0.311		0.007	0.089		0.112	0.021	718	141	

* Note: Stream Impacts are Non-Mitigatable.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

SHEET 45 of 48 Rev. 7/16/2012

WHE Revised 5/21/2008

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation in Wetlands (ha)	Mechanized Clearing in Wetlands (ha)	Hand Clearing in Wetlands (ha)	Permanent SW impacts (ha)	Temp. SW impacts (ha)	Existing Channel Impacts Permanent (m)	Existing Channel Impacts Temp. (m)	Natural Stream Design (m)
14	57+12/57+55 -L-	1200mm RCP	0.036		0.002			0.007	0.001	80	7	
	Stream Bank Stabilization							0.002		4		
15	63+41/66+32 -L-	1350mm RCP	0.144			0.013		0.012	0.001	199	23	
	Stream Bank Stabilization							0.002		4		
16	64+72/64+99 -L- LT	Pond Removal						0.041				
17	67+35/69+11 -L-	1350 RCP	0.191		0.061	0.074		0.005	0.002	45	7	
	Stream Bank Stabilization							0.006		20		
18 *	76+03/76+90 -L-	750mm/900mm RCP						0.009	0.005	108	55	
	Stream Bank Stabilization							<0.001		13		
19	77+72/79+54 -L-	Fill	0.003			0.039						
TOTALS:			0.374		0.063	0.126		0.084	0.009	473	92	
TOTALS:			0.685		0.070	0.215		0.196	0.030	1191	233	

* Note: Stream Impacts are Non-Mitigatable.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

SHEET 46 of 48 Rev. 7/16/2012

WHE Revised 5/21/2008

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	13+28/13+62 -L-	3@3mx3m RCBC						0.03	<0.01	138	26	
	Stream Bank Stabilization							0.03		125		
2	15+12/15+59 -L- LT	750mm CSP	0.11		0.01	0.06						
3 *	19+21/19+23 -L- RT	Fill						<0.01		23		
4	20+84/20+89 -L-	2@2.4mx2.4m RCBC						0.02	0.01	112	39	
	Stream Bank Stabilization							0.02		59		
5	20+89/21+45 -L-	Fill	0.22			0.06						
6 *	24+98/25+10 -L- RT	900mm RCP						<0.01	<0.01	23	20	
	Stream Bank Stabilization							<0.01		23		
7A	34+93/36+38 -L-	2.7mx1.8m RCBC	0.13			<0.01		0.03	0.01	518	108	
	Stream Bank Stabilization							0.02		82		
7B *	35+38/35+51 -L- LT	Fill						<0.01		59		
8	37+33/37+55 -L-	1050mm RCP	0.02		<0.01	0.03		0.01	<0.01	194	36	
	Stream Bank Stabilization							<0.01		13		
9	40+05/40+70 -L-	1500mm RCP						0.04	<0.01	279	33	
	Stream Bank Stabilization							<0.01		16		
10 *	11+55/11+82 -Y13- LT	900mm CSP						0.01	<0.01	92	43	
	Stream Bank Stabilization							<0.01		20		
11	50+41/51+25 -L-	1200mm RCP	<0.01					0.02	0.01	282	85	
	Stream Bank Stabilization							0.01		52		
12	51+47/51+91 -L-	750mm RCP	0.12									
13	53+13/53+79 -L-	900mm RCP	0.17		<0.01	0.07		0.01	<0.01	246	72	
SUB TOTALS:			0.77		0.01	0.21		0.26	0.03	2356	463	

* Note: Stream Impacts are Non-Mitigatable.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

SHEET 47 of 48 Rev. 7/16/2012

ATN Revised 3/31/05

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
14	57+12/57+55 -L-	1200mm RCP	0.09		<0.01			0.02	<0.01	262	23	
	Stream Bank Stabilization							<0.01		13		
15	63+41/66+32 -L-	1350mm RCP	0.36			0.03		0.03	<0.01	653	75	
	Stream Bank Stabilization							<0.01		13		
16	64+72/64+99 -L- LT	Pond Removal						0.10				
17	67+35/69+11 -L-	1350 RCP	0.47		0.15	0.18		0.01	<0.01	146	23	
	Stream Bank Stabilization							0.01		67		
18 *	76+03/76+90 -L-	750mm/900mm RCP						0.02	0.01	354	181	
	Stream Bank Stabilization							<0.01		42		
19	77+72/79+54 -L-	Fill	0.01			0.10						
SUB TOTALS:			0.92		0.15	0.31		0.20	0.01	1551	303	
TOTALS:			1.69		0.16	0.53		0.45	0.04	3906	765	

* Note: Stream Impacts are Non-Mitigatable.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

SHEET 48 of 48 Rev. 7/16/2012

ATN Revised 3/31/05

UTILITY IMPACTS PERMIT IMPACT SUMMARY Revised 7/6/2012

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	13+50/13+67	10" SEWER									3.000	
1	13+50/13+67	8" WATER									3.000	
1	13+50/13+67	4" GAS MAIN									2.000	
TOTALS:			0.00		0.00	0.00					8	

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PERSON COUNTY
WBS - 34406.1.1 (R-2241A)

SHEET 1 of 2 Rev. 7/6/2012

ATN Revised 3/31/05

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
R-2241A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

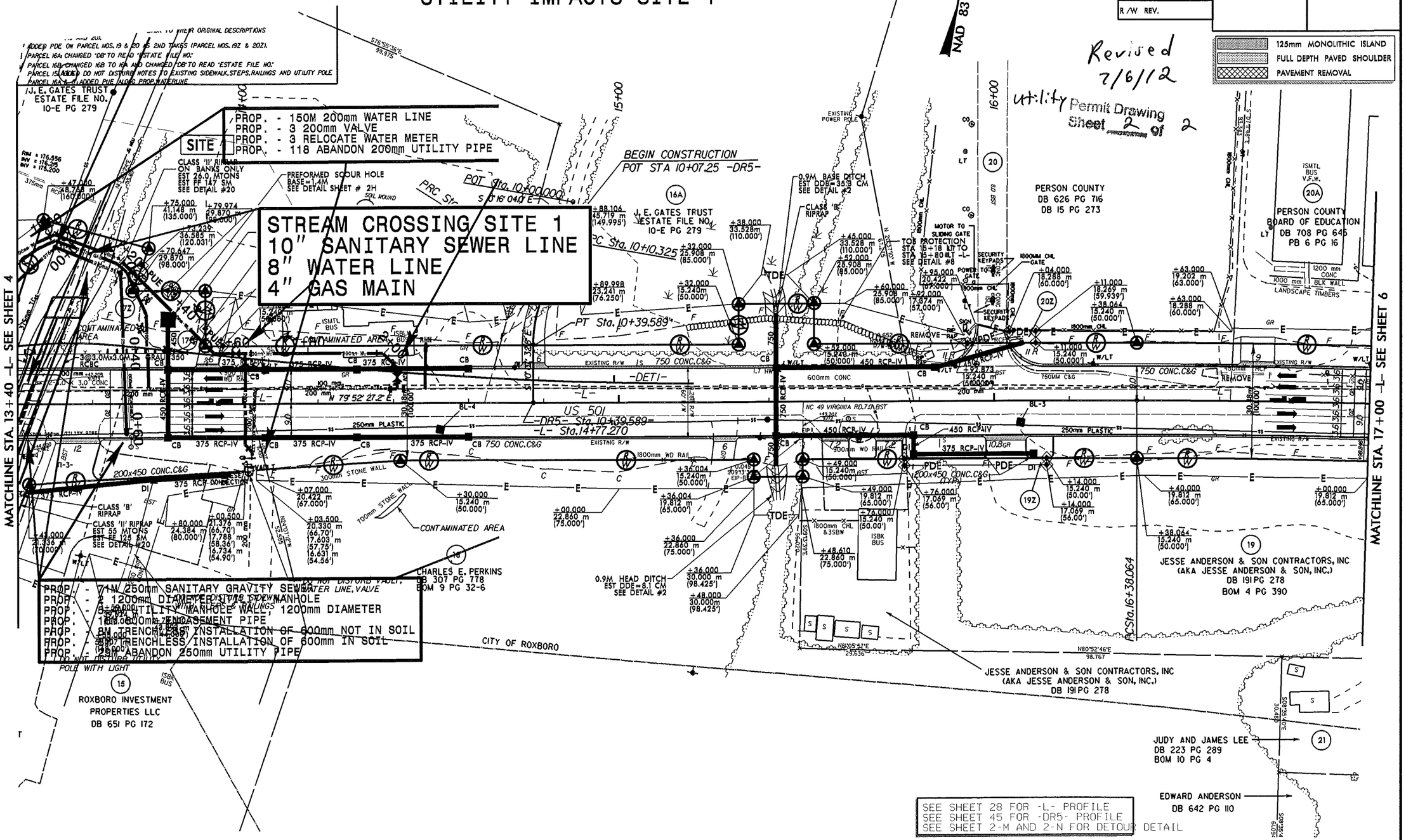
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

125mm MONOLITHIC ISLAND
FULL DEPTH PAVED SHOULDER
PAVEMENT REMOVAL

Revised 7/6/12

Utility Permit Drawing Sheet 2 of 2

UTILITY IMPACTS SITE 1



REVISED 7/6/2012 ADD GAS MAIN

06-JUL-2012 13:28
R:\Hydraulics\Projects\R2241A_UTL_SITE1_PERMIT.dgn