PROJECT SPECIAL PROVISION

(10-18-95) Z-1

PERMITS

The Contractor's attention is directed to the following permits, which have been issued to the Department of Transportation by the authority granting the permit.

PERMIT	AUTHORITY GRANTING THE PERMIT
Dredge and Fill and/or Work in Navigable Waters (404)	U. S. Army Corps of Engineers
Water Quality (401)	Division of Environmental Management, DENR State of North Carolina
Buffer Certification	Division of Environmental Management, DENR State of North Carolina
CCPCUA	Division of Water Resources, DENR State of North Carolina

The Contractor shall comply with all applicable permit conditions during construction of this project. Those conditions marked by * are the responsibility of the department and the Contractor has no responsibility in accomplishing those conditions.

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Contractor's attention is also directed to Articles 107-10 and 107-14 of the *Standard Specifications* and the following:

Should the Contractor propose to utilize construction methods (such as temporary structures or fill in waters and/or wetlands for haul roads, work platforms, cofferdams, etc.) not specifically identified in the permit (individual, general, or nationwide) authorizing the project it shall be the Contractor's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Contractor shall also be responsible for initiating the request for the authorization of such construction method by the permitting agency. The request shall be submitted through the Engineer. The Contractor shall not utilize the construction method until it is approved by the permitting agency. The request normally takes approximately 60 days to process; however, no extensions of time or additional compensation will be granted for delays resulting from the Contractor's request for approval of construction methods not specifically identified in the permit.

Where construction moratoriums are contained in a permit condition which restricts the Contractor's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the waters or wetlands provided that activities outside those areas is done in such a manner as to not affect the waters or wetlands.

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
Washington Regulatory Field Office
Post Office Box 1000
Washington, North Carolina 27889-1000

IN REPLY REFER TO

21 July 2008

Regulatory Division

Subject: Action ID: SAW 2008-00252

Gregory J. Thorpe, Ph. D.
Environmental Manager Director
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Dr. Thorpe:

Enclosed is a Department of the Army permit to relocate and widen approximately 20 miles of US Highway 70 Goldsboro Bypass (TIP R-2554), starting from Aulander Road (NCSR 1381) west of Goldsboro, in Wayne County and ending east of Promise Land Road (NCSR 1323) southwest of LaGrange, in Lenoir County, North Carolina.

Any deviation in the authorized work will likely require modification of this permit. If a change in the authorized work is necessary, you should promptly submit revised plans to the Corps showing the proposed changes. You may not undertake the proposed changes until the Corps notifies you that your permit has been modified.

Carefully read your permit. The general and special conditions are important. Your failure to comply with these conditions could result in a violation of Federal law. Certain significant conditions require that:

a. You must complete construction before December 31, 2013.

b. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.

You must notify this office in advance as to when you intend to commence and complete work.

You should address all questions regarding this authorization to Mr. William Wescott, Regulatory Division , Washington Regulatory Field Office, telephone (252) 975-1616, extension 31.

Sincerely,

for John E. Pulliam, Jr.
Colonel, U.S. Army
District Commander

Enclosures

Copy furnished (with enclosures):

Chief, Source Data Unit
NOAA/National Ocean Service
ATTN: Sharon Tear N/CS261
1315 East-West Hwy., Rm 7316
Silver Spring, MD 20910-3282

Copies furnished (with special conditions and plans):

Mr. Ronald J. Mikulak, Chief
Wetlands Regulatory Section
61 Forsyth Street
Atlanta, Georgia 30303

Mr. Pete Benjamin
U.S. Fish and Wildlife Service
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. Ron Sechler
National Marine Fisheries Service
101 Pivers Island Road
Beaufort, North Carolina 28516

Mr. Doug Huggett
Division of Coastal Management
North Carolina Department of
Environment and Natural Resources
400 Commerce Avenue
Morehead City, North Carolina 28557

Mr. David Rackley
National Marine Fisheries Service
219 Fort Johnson Road
Charleston, South Carolina 29412-9110

DEPARTMENT OF THE ARMY PERMIT

Permittee **North Carolina Department of Transportation, Gregory J. Thorpe, Ph.D.**

Permit No. **SAW 2008-00252**

Issuing Office **CESAW-RG-W**

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

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

Project Description: **The proposed T.I.P. project R-2554 involves constructing a divided multi-lane, full control of access freeway, interchanges at locations with major traffic movements, and grade separations at minor crossroads and railroads. The project is approximately 20 miles long and proposes to construct on new location US Highway 70 north of Goldsboro. The T.I.P. R-2554 project would permanently impact 27.62 acres of jurisdictional wetlands and 13,153 linear feet of stream. The project would temporarily impact 0.24 acres of jurisdictional wetlands and 488 linear feet of stream.**

Project Location: **This project involves the construction of a new US Highway 70 Goldsboro Bypass starting from Aulander Road (NCSR 1381) west of Goldsboro, in Wayne County and ending east of Promise Land Road (NCSR 1323) southwest of LaGrange, in Lenoir County, North Carolina .**

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2013** If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

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

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

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

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

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

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

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

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

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

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

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

E. L. Pleak for Gregory Thorpe, PhD — July 14, 2008

(PERMITTEE) **North Carolina Department of Transportation** *(DATE)*

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

David N. Pulliam — 7/21/08

(DISTRICT ENGINEER) **JOHN E. PULLIAM, JR., 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

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

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

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

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

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

(X) 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.

SPECIAL CONDITIONS (Action ID. SAW 2008-00252; NCDOT/TIP R-2554)

COMPLIANCE WITH PLANS

a) This authorization is only for R-2554 section BA. Construction on R-2554 sections A, BB and C shall not commence until final designs have been completed and plans have been approved by the District Engineer.

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

ACTIVITIES NOT AUTHORIZED

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

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

CONSTRUCTION PLANS

* d) The Permittee will ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Written verification shall be provided that the final construction drawings comply with the attached permit drawings prior to any active construction in waters of the United States, including wetlands. Any deviation in the construction design plans will be brought to the attention of the Corps of Engineers, Washington Regulatory Field Office prior to any active construction in waters or wetlands.

* e) Prior to commencing construction within jurisdictional waters of the United States for any portion of the proposed project, the Permittee shall forward the latest version of project construction drawings to the Corps of Engineers, Washington Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings will be acceptable.

POLLUTION SPILLS

f) All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. No equipment staging or storage of construction material will occur in wetlands. Hydro-seeding equipment will not be discharged or washed out into any surface waters or wetlands. In the event of a spill of petroleum products or any other hazardous waste, the Permittee shall immediately report it to the N.C. Division of Water Quality at (919) 733-5083 or (800) 662-7956 and provisions of the North Carolina Oil ~~Pollution and Hazardous Substances Control Act will be followed.~~

NOTIFICATION

* g) The Permittee shall advise the Corps in writing at least two weeks prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.

CLEAN FILL MATERIAL

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

CONTRACTOR COMPLIANCE

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

SEDIMENTATION AND EROSION CONTROL MEASURES

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

Adequate sedimentation and erosion control measures must be implemented prior to any ground disturbing activities to minimize impacts to aquatic resources. These measures must be inspected and maintained regularly, especially following rainfall events. All fill material must be adequately stabilized at the earliest practicable date to prevent sediment from entering into adjacent waters or wetlands.

The Permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.

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

REPORTING OF VIOLATIONS

k) The Permittee will report any violation of these conditions or violations of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act in writing to the Corps of Engineers, Washington Regulatory Field Office NCDOT Regulatory Project Manager, within 24 hours of the Permittee's discovery of the violation.

COMPLIANCE WITH SPECIAL CONDITIONS

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

PRECONSTRUCTION MEETING

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

BORROW AND WASTE

n) To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent wetlands and streams, except as authorized by this permit, the Permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The Permittee shall provide the Corps of Engineers with appropriate maps indicating the locations of proposed borrow or waste sites as soon as the Permittee has that information. The Permittee will coordinate with the Corps of Engineers before approving any borrow or waste sites that are within 400 feet of any streams or wetlands. All jurisdictional wetland boundaries on borrow and waste sites shall be verified by the Corps of Engineers and shown on the approved reclamation plans. The Permittee shall ensure that all such areas comply with Special Condition b) of this permit, and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This information will include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with the Special Condition b). All information will be available to the Corps of Engineers upon request. NCDOT shall require its contractors to complete and execute reclamation plans for each waste and borrow site and provide written documentation that the reclamation plans have been implemented and all work is completed. This documentation will be provided to the Corps of Engineers within 30 days of the completion of the reclamation work.

MITIGATION

* o) Compensatory mitigation for the unavoidable impacts to 27.62 acres of wetlands and 13,153 linear feet of streams associated with the proposed project shall be provided as outlined in the permit application and drawings with the following modifications.

- R-2554 C directly impacts Bear Creek-Mill Branch Mitigation Bank (Bank). The mitigation banking instrument, conservation easement and available credits for the Bank shall be modified to reflect the impacts resulting from R-2554 C prior to the authorization of Sections A, BB or C.
- Stream mitigation sites and wetland mitigation sites shall be monitored annually for five years or until success criteria are satisfied, whichever is longer.
- Vegetation success shall be achieved by documenting the survival of 320, 3-year old planted stems/acre at year three (3) and 260, 5-year old planted stems/acre at year five (5).
- For wetland mitigation Site 8, hydrologic success shall be achieved by documenting the inundation or saturation of the soils within 12 inches of the ground surface for at least 12.5 percent of the growing season.

North Carolina Department of Environment and Natural Resources
Coleen Sullins, Director
Division of Water Quality

May 16, 2008

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

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and NEUSE BUFFER RULES, with ADDITIONAL CONDITIONS for Proposed construction of US 70 Goldsboro Bypass in Wayne and Lenoir Counties, Federal Aid Project No. F-56-2(28), State Project No. 8.T330801, TIP No. R-2554, DWQ Project No. 20080570.

Dear Dr. Thorpe:

Attached hereto is a copy of Certification No. 3740 issued to The North Carolina Department of Transportation dated May 16, 2008.

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

Sincerely,

Coleen Sullins,
Director

Attachments

cc: William Wescott, US Army Corps of Engineers, Washington Field Office
Chris Manley, NCDOT NEU
Chad Coggins, Division 4 Environmental Officer
Jay Johnson, Division 2 Environmental Officer
Kathy Matthews, Environmental Protection Agency
Travis Wilson, NC Wildlife Resources Commission
Beth Harmon, Ecosystem Enhancement Program
DWQ Washington Regional Office
File Copy

Coleen Sullins, Director
Division of Water Quality

401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and NEUSE BUFFER RULES, 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 (DWQ) Regulations in 15 NCAC 2H .0500 and 15A NCAC 2B.0233. This certification authorizes the NCDOT to impact 31.42 acres of jurisdictional wetlands, 13,640 linear feet of jurisdictional streams and 1,622,079 square feet of protected riparian buffers in Wayne and Lenoir Counties. The project shall be constructed pursuant to the application dated received March 28, 2008. The authorized impacts are as described below:

Section BA Stream Impacts in the Neuse River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	0	0	142	22	164	142
2	0	0	24	22	46	24
3	0	0	1048	31	1079	1048
4	115	0	1058	84	1257	1058
5	0	0	541	34	575	541
8	0	0	0	30	30	0
11	0	0	831	20	851	831
14	0	0	128	11	139	128
Total	**115**	**0**	**3772**	**254**	**4141**	**3772**

Total Stream Impact for Section BA: 4,141 linear feet

Preliminary Section A Stream Impacts in the Neuse River Basin*

Site	Permanent Fill in (Perennial)* Stream (linear ft)	Temporary Fill in (Perennial)* Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation* (linear ft)
1	246	0	246	246
3	276	0	276	276
4	204	0	204	204
5	223	0	223	223
Total	**949**	**0**	**949**	**949**

Total Preliminary Stream Impact for Section A: 949 linear feet

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts and mitigation adjustments) in future certifications prior to construction of this section. For purposes of these preliminary impact calculations, all stream impacts will be assumed to be Perennial and cumulative, and thus require mitigation by DWQ, until applicant specifies otherwise in the final calculations for the modification.*

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

Coleen Sullins, Director
Division of Water Quality

Preliminary Section BB Stream Impacts in the Neuse River Basin*

Site	Permanent Fill in (Perennial)* Stream (linear ft)	Temporary Fill in (Perennial)* Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation* (linear ft)
3	1149	55	1204	1149
4	952	48	1000	952
9	1556	90	1646	1556
10	19	10	29	19
12	133	20	153	133
13	92	10	102	92
Total	**3901**	**233**	**4134**	**3901**

Total Preliminary Stream Impact for Section BB: 4,134 linear feet

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts and mitigation adjustments) in future certifications prior to construction of this section. For purposes of these preliminary impact calculations, all stream impacts will be assumed to be Perennial and cumulative, and thus require mitigation by DWQ, until applicant specifies otherwise in the final calculations for the modification.*

Preliminary Section C Stream Impacts in the Neuse River Basin*

Site	Permanent Fill in (Perennial)* Stream (linear ft)	Temporary Fill in (Perennial)* Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation* (linear ft)
1	1395	0	1395	1395
3	660	0	660	660
4	378	0	378	378
5	328	0	328	328
10	338	0	338	338
11	427	0	427	427
12	483	0	483	483
14	407	0	407	407
Total	**4416**	**0**	**4416**	**4416**

Total Preliminary Stream Impact for Section C: 4,416 linear feet

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts and mitigation adjustments) in future certifications prior to construction of this section. For purposes of these preliminary impact calculations, all stream impacts will be assumed to be Perennial and cumulative, and thus require mitigation by DWQ, until applicant specifies otherwise in the final calculations for the modification.*

Section BA Wetland Impacts in the Neuse River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
3	1.57	0	0.07	0	1.64	1.64
5	0.06	0	0.01	0	0.07	0.07
6	0	0	0.03	0	0.03	0.03
7	0	0	0.01	0.72	0.73	0.01
8	0	0	0	0.04	0.04	0
9	0.12	0	0.03	1.42	1.57	0.15
10	2.65	0	0.31	0	2.96	2.96
11	0.10	0	0.03	0	0.13	0.13
12	0.75	0	0.04	0	0.79	0.79
Total	**5.25**	**0**	**0.53**	**2.18**	**7.96**	**5.78**

Total Wetland Impact for Section BA: 7.96 acres.

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

Coleen Sullins, Director
Division of Water Quality

Preliminary Section A Wetland Impacts in the Neuse River Basin *

Site	Fill (ac)	Fill (temporary) (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
1	0.85	0	0.10	0	0.95	0.95
2	0.14	0	0.04	0	0.18	0.18
3	0.10	0	0.02	0	0.12	0.12
4	0.62	0	0.04	0	0.66	0.66
5	0.18	0	0.02	0	0.20	0.20
6	0	0	0	0.95	0.95	0
7	0.04	0	0.04	0	0.08	0.08
8	0	0.24	0.06	0	0.30	0.06
Total	**1.93**	**0.24**	**0.32**	**0.95**	**3.44**	**2.25**

Total Preliminary Wetland Impact for Section A: 3.44 acres.

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts and mitigation adjustments) in future certifications prior to construction of this section.*

Preliminary Section BB Wetland Impacts in the Neuse River Basin *

Site	Fill (ac)	Fill (temporary) (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
1	0	0	0	0.44	0.44	0
6	0.16	0	0	0	0.16	0.16
7	0.20	0	0.06	0	0.26	0.26
10	0	0	0.02	0	0.02	0.02
Total	**0.36**	**0**	**0.08**	**0.44**	**0.88**	**0.44**

Total Preliminary Wetland Impact for Section BB: 0.88 acres.

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts and mitigation adjustments) in future certifications prior to construction of this section.*

Preliminary Section C Wetland Impacts in the Neuse River Basin *

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
4	0.30	0	0	0	0.30	0.30
6	1.71	0	0	0.10	1.81	1.81
7	3.09	0	0	0.25	3.34	3.34
8	0.22	0	0.01	0.06	0.29	0.29
9	1.97	0	0	0.13	2.10	2.10
10	1.09	0	0	0.14	1.23	1.23
11	1.66	0	0	0.18	1.84	1.84
12	4.65	0	0	0.55	5.20	5.20
13	0.62	0	0	0.22	0.84	0.84
14	2.03	0	0	0.16	2.19	2.19
Total	**17.34**	**0**	**0.01**	**1.79**	**19.14**	**19.14**

Total Preliminary Wetland Impact for Section C: 19.14 acres.

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts and mitigation adjustments) in future certifications prior to construction of this section.*

Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
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Coleen Sullins, Director
Division of Water Quality

Section BA Neuse Riparian Buffer Impacts

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Impacts Requiring Mitigation (sq ft)	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Impacts Requiring Mitigation (sq ft)
1	9909	0	9909	9909	5820	0	5820	5820
2	2671	0	2671	0	1639	0	1639	0
3	60642	37903	22739	22739	37274	15780	21494	21494
4	68271	0	68271	68271	42177	0	42177	42177
5	131027	2569	128458	128458	89077	539	88538	88538
7	9396	6745	2651	0	7149	1392	5757	0
8	1929	706	1223	0	555	250	305	0
9	8763	5785	2978	0	5887	2796	3091	0
11	51025	2398	48627	48627	32871	1224	31647	31647
13	5490	0	5490	5490	4512	0	4512	4512
14	7383	0	7383	0	4875	0	4875	0
Totals	**356506**	**56106**	**300400**	**283494**	**231836**	**21981**	**209855**	**194188**

Total Buffer Impact for Section BA: 588,342 square feet.

Section BA Neuse Buffer Onsite Restoration

Site	Zone 1 Restoration (sq ft)	Zone 2 Restoration (sq ft)	Total Buffer Restoration (sq ft)
4	59609	35530	95139
5	34199	21760	55959
8	4459	3333	7792
Totals	**98267**	**60623**	**158890**

Section BA Remaining Buffer Mitigation Requirements

Zone	Buffer Impacts Requiring Mitigation (sq ft)	*Minus* Onsite Buffer Restoration (sq ft)	= Buffer Impacts Using Offsite Mitigation (sq ft)	*Times* Multiplier	= Offsite Buffer Mitigation Requirements (sq ft)
1	283494	98267	185227	3	555681
2	194188	60623	133565	1.5	200348
Total	**477682**	**158890**	**318792**		**756029**

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Preliminary Section A Neuse Riparian Buffer Impacts*

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Impacts Requiring Mitigation (sq ft)	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Impacts Requiring Mitigation (sq ft)
1	15048	9690	5358	5358	9871	4973	4898	4898
2	9160	5468	3692	3692	6146	1281	4865	4865
3	12335	7987	4348	4348	7955	4036	3919	3919
4	10054	0	10054	0	6631	0	6631	0
5	10613	0	10613	0	3746	0	3746	0
Totals	**57210**	**23145**	**34065**	**13398**	**34349**	**10290**	**24059**	**13682**

Total Preliminary Buffer Impact for Section A: 91,559 square feet.

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts and mitigation adjustments) in future certifications prior to construction of this section.*

Preliminary Section A Buffer Mitigation Requirements*

Zone	Buffer Impacts Requiring Mitigation (sq ft)	*Minus* Onsite Buffer Restoration (sq ft)	= Buffer Impacts Using Offsite Mitigation (sq ft)	*Times* Multiplier	= Offsite Buffer Mitigation Requirements (sq ft)
1	13398	0	13398	3	40194
2	13682	0	13682	1.5	20523
Total	**27080**	**0**	**27080**		**60714**

Preliminary Section BB Neuse Riparian Buffer Impacts*

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Impacts Requiring Mitigation (sq ft)	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Impacts Requiring Mitigation (sq ft)
1	10728	0	10728	0	7354	0	7354	0
2	16252	0	16252	16252	10102	0	10102	10102
3	70928	0	70928	70928	48382	0	48382	48382
4	53102	0	53102	53102	30716	0	30716	30716
5	7000	0	7000	0	4409	0	4409	0
8	29446	0	29446	29446	20993	0	20993	20993
9	74010	0	74010	74010	50947	0	50947	50947
10	18562	805	17757	17757	13332	0	13332	13332
11	1381	0	1381	0	901	0	901	0
12	8966	0	8966	8966	5054	0	5054	5054
13	5892	0	5892	0	3597	0	3597	0
Totals	**296267**	**805**	**295462**	**270461**	**195787**	**0**	**195787**	**179526**

Total Preliminary Buffer Impact for Section BB: 492,054 square feet.

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts and mitigation adjustments) in future certifications prior to construction of this section.*

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Division of Water Quality

Section BB Neuse Buffer Onsite Restoration*

Site	Zone 1 Restoration (sq ft)	Zone 2 Restoration (sq ft)	Total Buffer Restoration (sq ft)
9	74108	46713	120821
Totals	**74108**	**46713**	**120821**

Preliminary Section BB Remaining Buffer Mitigation Requirements*

Zone	Buffer Impacts Requiring Mitigation (sq ft)	*Minus* Onsite Buffer Restoration (sq ft)	= Buffer Impacts Using Offsite Mitigation (sq ft)	*Times* Multiplier	= Offsite Buffer Mitigation Requirements (sq ft)
1	270461	74108	196353	3	589059
2	179526	46713	132813	1.5	199220
Total	**449987**	**120821**	**329166**		**788279**

Preliminary Section C Neuse Riparian Buffer Impacts*

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Impacts Requiring Mitigation (sq ft)	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Impacts Requiring Mitigation (sq ft)
1	85786	0	85786	85786	34248	0	34248	34248
2	40922	0	40922	40922	26910	0	26910	26910
3	37580	6129	31451	14635	26288	0	26288	13770
4	21036	0	21036	21036	12116	0	12116	12116
5	20328	20328	0	0	12951	12360	591	591
6	25438	12401	13037	13037	17377	8424	8953	8953
7	29006	7158	21848	21848	18411	4429	13982	13982
8	27808	23507	4301	4301	13919	11729	2190	2190
Totals	**287904**	**69523**	**218381**	**201565**	**162220**	**36942**	**125278**	**112760**

Total Preliminary Buffer Impact for Section C: 450,124 square feet.

**Phased Project: impacts for this section are preliminary and will be modified (including possible temporary impacts and mitigation adjustments) in future certifications prior to construction of this section.*

Section C Neuse Buffer Onsite Restoration

Site	Zone 1 Restoration (sq ft)	Zone 2 Restoration (sq ft)	Total Buffer Restoration (sq ft)
3	73181	48787	121968
Totals	**73181**	**48787**	**121968**

Preliminary Section C Remaining Buffer Mitigation Requirements*

Zone	Buffer Impacts Requiring Mitigation (sq ft)	*Minus* Onsite Buffer Restoration (sq ft)	= Buffer Impacts Using Offsite Mitigation (sq ft)	*Times* Multiplier	= Offsite Buffer Mitigation Requirements (sq ft)
1	201565	73181	128384	3	385152
2	112760	48787	63973	1.5	95960
Total	**314325**	**121968**	**192357**		**481112**

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

This approval is only valid for the purpose and design that you submitted in your application dated received March 28, 2008. Should your project change, you are required to notify the DWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project ~~(now or in the future) exceed one acre or 150 linear feet~~, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Conditions of Certification:

* 1. When final design plans are completed for R-2554 Sections A, BB, and C, a modification to the 401 Water Quality Certification and the Neuse River Riparian Buffer Authorization shall be submitted with applicable fees to the NC Division of Water Quality. Final designs shall reflect all appropriate avoidance, minimization, and mitigation for impacts to wetlands, streams, surface waters, and buffers. No construction activities that impact any wetlands, streams, surface waters, or buffers located in R-2554 Sections A, BB, and C shall begin until after the permittee applies for, and receives a written modification of the 401 Water Quality Certification and the Neuse River Riparian Buffer Authorization from the NC Division of Water Quality.

* 2. Compensatory mitigation for impacts to 13,038 linear feet of streams is required. As stated in your application, compensatory mitigation for impacts to jurisdictional streams shall be provided by 12,900 linear feet of onsite stream restorations plus 691 feet of onsite stream preservation. The stream mitigations will occur as follows:

Section	Site	Restoration (linear feet)	Preservation (linear feet)
A	Claridge Nursery	8716	0
BA	4	1083	0
BA	5	561	0
BA	8	61	691
BB	9	1236	0
C	UT West Bear Creek	1243	0
Totals	-	**12,900**	**691**

The onsite stream relocations shall be constructed in accordance with the design submitted in your March 28, 2008 application. Please be reminded that as-builts for the completed streams shall be submitted to the North Carolina Division of Water Quality 401 Wetlands Unit with the as-builts for the rest of the project. If the parameters of this condition are not met, then the permittee shall supply additional stream mitigation for these impacts. All channel relocations will be constructed in a dry work area, will be completed and stabilized, and must be approved on site by DWQ staff, prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. All stream relocations and restorations shall have a 50-foot wide native wooded buffer planted on both sides of the stream unless otherwise authorized by this Certification. A transitional phase incorporating rolled erosion control product (RECP) and appropriate temporary ground cover is allowable.

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3. The stream mitigation site shall be monitored annually for five years or until success criteria are satisfied. Monitoring protocols shall follow the Monitoring Level I outlined in the Stream Mitigation Guidelines, April 2003.

4. Compensatory mitigation for impacts to 27.61 acres of wetands is required. As stated in your application, compensatory mitigation for these wetlands shall be provided by 27.17 acres of onsite wetland restoration plus 2.37 acres of onsite wetland preservation. The wetland mitigations will occur as follows:
a.) Section BA: 0.37 acres of wetland restoration at Site 8; and 2.37 acres of wetland preservation at Site 8.
b.) Section C: 26.84 acres of wetland restoration at Site 12.
The permittee shall comply with the on-site wetland mitigation plan submitted with the application on March 28, 2008 .

5. For the onsite wetland mitigation sites, the permittee shall plant 680 stems/acre. Vegetation success shall be measured by survivability over a 5-year monitoring period. Survivability will be based on 320 stems/acre after three (3) years and 260 stems after five (5) years. A survey of vegetation during the growing season shall be conducted annually over the five-year monitoring period and submitted to the NC Division of Water Quality. If the surviving vegetation densities are below the required thresholds after the five-year monitoring period, the site may still be declared successful at the discretion of and with written approval from the NC Division of Water Quality.

6. For the onsite wetland mitigation sites, hydrologic success of the sites will be attained by restoration of a hydrologic regime that results in inundation or saturation of the soils within 12 inches of the ground surface for at least 12.5 percent of the growing season. The hydrologic monitoring shall persist for a total of five (5) years. After the five-year monitoring period, if the monitoring requirements are not met, the site may still be declared successful at the discretion of and with written approval from the NC Division of Water Quality.

7. Compensatory mitigation for impacts to 768,918 square feet of protected riparian buffers in Zone 1 and 500,156 square feet of protected riparian buffers in Zone 2 shall be required. As stated in your applications compensatory mitigation for these riparian buffers shall be provided partially by onsite buffer restorations listed in the impact tables above. These onsite restorations will mitigate for 245,556 square feet of Zone 1 and 156,123 square feet of Zone 2 impacts. In accordance with 15A NCAC 02B.0242(9) riparian vegetation reestablishment shall include a minimum of at least 2 native hardwood tree species planted at a density sufficient to provide 320 trees per acre at maturity. The mitigation area shall be placed under a perpetual conservation easement that will provide for protection of the property's nutrient removal efficiencies.

8. Using a 3:1 ratio for Zone 1 Buffer impacts and a 1.5:1 ration for Zone 2 Buffer impacts, the remaining mitigation requirements for this project is 2,086,134 square feet of Neuse Riparian Buffer. As stated in your application, 1,393,920 square feet of buffer restoration will be used from the Claridge Nursery Stream Mitigation Site.

* 9. For the remaining 692,214 square feet of Neuse Buffer Mitigation required, we understand that you have chosen use of the North Carolina Ecosystem Enhancement Program (EEP). Mitigation for unavoidable impacts to Neuse Riparian Buffers shall be provided in the Neuse River Basin and done in accordance with 15A NCAC 2B.0233. EEP has indicated in a letter dated April 9, 2008 that they will assume responsibility for satisfying the 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.

* 10. For the onsite buffer mitigation sites, the permittee shall monitor the sites. An annual report shall be submitted to the DWQ for a period of 5 years showing monitoring results, survival rate/ success of tree and vegetation establishment, and that diffuse flow through the riparian buffer has been maintained. The first annual report shall be submitted within one year of final planting. Failure to achieve a buffer density of 320 trees per acre after 5 years will require the annual report to provide appropriate remedial actions to be implemented and a schedule for implementation. Approval of the final annual report, and a formal "close out" of the mitigation site by the DWQ is required.

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* 11. A copy of the final construction drawings shall be furnished to NCDWQ Central Office prior to the pre-construction meeting. The permittee shall provide written verification that the final construction drawings comply with the permit drawings contained in the application dated March 28, 2008. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Quality.

12. The post-construction removal of any temporary bridge structures must return the project site to its preconstruction contours and elevations. The impacted areas shall be revegetated with appropriate native species.

13. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of *Stormwater Best Management Practices*.

14. Placement of culverts and other structures in waters, streams, and wetlands 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 down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by DWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact the NC DWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.

15. 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.

16. 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.

17. For all streams being impacted due to site dewatering activties, the site shall be graded to its preconstruction contours and revegetated with appropriate native species.

18. All stormwater runoff shall be directed as sheetflow through stream buffers at nonerosive velocities, unless otherwise approved by this certification.

19. All riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated. Maintained buffers shall be permanently revegetated with non-woody species by the end of the growing season following completion of construction. For the purpose of this condition, maintained buffer areas are defined as areas within the transportation corridor that will be subject to regular DOT maintenance activities including mowing. The area with non-maintained buffers shall be permanently revegetated, with native woody species before the next growing season following completion of construction.

20. Pursuant to NCAC15A 2B.0233(6), sediment and erosion control devices shall not be placed in Zone 1 of any Neuse Buffer without prior approval by the NCDWQ. At this time, the NCDWQ has approved no sediment and erosion control devices in Zone 1, outside of the approved project impacts, anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.

21. 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.

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22. 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.

23. 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.

24. 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.

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

26. 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.

27. 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.

28. 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.

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

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

31. 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 DWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, DWQ may reevaluate and modify this certification.

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

33. A copy of this Water Quality Certification shall be maintained on site at 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.

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

35. 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.

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

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

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

39. 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.

40. 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.

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

42. The onsite project manager shall schedule regular review meetings, at least once per two months, once construction on impact areas begins. These meetings will be scheduled with DWQ and other interested resource agencies (USCOE, WRC, USFWS, NCDOT, etc). At the agencies' discretion, these meetings may be more or less frequent as needed based on impact activities and/or project progression.

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.

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North Carolina Department of Environment and Natural Resources

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Division of Water Quality

If this Certification is unacceptable to you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 16th day of May 2008

DIVISION OF WATER QUALITY

Coleen Sullins
Director

WQC No. 3740

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DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
Washington Regulatory Field Office
2407 W 5th Street
Washington, North Carolina 27889

IN REPLY REFER TO

March 13, 2012

Regulatory Division

Action ID No. 2008-00252

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Reference the Department of the Army individual permit (IP) issued to you on July 21, 2008, for the U.S. Highway 70 Goldsboro Bypass project (R-2554), from Aulander Road (SR 1381) west of Goldsboro, in Wayne County and ending east of Promise Land Road (SR 1323) southwest of LaGrange, in Lenoir County. This office received a permit modification request dated January 10, 2012, addressing the proposed construction of Section A, from west of NC581 to NCSR 1300 (Salem Church Rd.) in Wayne County.

An unintentional omission in the original 2008 IP application revealed the section break between the A Section and the BA Section being moved to the east. Due to changes in the contour and elevation file since 2008, there have been increases in impacts to some of the sites. Permit Site VII (on the wetland/stream drawings) has been updated (now in the A Section), as well as some of the other sites.

The proposed modification will result in 3.99 acres of permanent wetland impacts (3.59 acres riparian & 0.40 non-riparian). These impacts represent an increase in jurisdictional impacts presented in the original IP by the following amounts: 1.7 acres of riparian wetland impacts and 0.02 acre of non-riparian impacts. The project will temporarily impact 0.31 acre of wetlands. There will also be 0.31 acre of hand clearing in wetlands and 165 linear feet of temporary stream impacts. The proposed modification will also result in 2,202 linear feet of permanent stream impacts, an increase of 1253 linear feet from the original permit.

There will be no jurisdictional impacts due to utility relocations on this project. The power lines, telephone lines and cable TV will be relocated jointly to the left side of US 70 on proposed poles and existing poles in wetlands. Most of the existing water lines will be relocated along the length of the project with installation in wetland areas being performed by trenchless methods.

This modification request was discussed and coordinated with the appropriate State and Federal

agencies at previous Merger 01 concurrence meetings and the coordination revealed no objections to this modification request. Therefore, the permit is hereby modified in accordance with the specific work activities described above and in the enclosed plans.

It is understood that all conditions of the original permit and applicable modifications remain valid. In addition, the permittee will comply with the additional special permit conditions as follows:

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

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

c.) Under the previous permit, compensatory mitigation was provided for the following impacts on the entire R-2554 project: 16.32 acres of riparian wetlands, 11.3 acres of non-riparian wetlands, and 13,153 feet of stream. Increased stream and wetland impacts will be mitigated through the use of assets in the NCDOT Debit Ledger, and onsite mitigation via natural stream design (NSD). The permittee shall comply with the on-site wetland and stream mitigation plans submitted with the original application dated march 28, 2008 and this modification request on January 10, 2012. The following tables represent the mitigation proposed by NCDOT:

Table 1. Wetland Mitigation (ac.)

Section	Restoration	Preservation (5:1)	Total Credits Proposed
R-2554BA Tommy's Rd. (site 8)	0.11	2.37	0.58
R-2554C Bear Creek (site 12)*	26.84		26.84
Jeffrey's Warehouse	0.21	8.61	1.9
Totals	27.16	10.98	29.36

*Bear Creek is the Mill Branch Mitigation Bank

Table 2. Stream Mitigation (l.ft.)

Section	Restoration	Preservation (5:1)	Total Credits Proposed
R-2554A Claridge Nursery	10,397		10,397
R-2554A NSD Site VII	544		544
R-2554BA NSD Site 4	1,083		1,083
R-2554BA NSD Site 5	561		561

R-2554BA Tommys Rd. (site 8)	61	691	199.2
R-2554BB NSD Site 9	1,236		1,236
R-2554C UT West Bear Creek	1,243		1,243
Totals	15,125	691	15,263.2

* d.) Prior to commencing construction within jurisdictional waters of the United States for any portion of the proposed project, the permittee shall forward the latest version of project construction drawings to the Corps of Engineers, Washington Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings will be acceptable.

e.) Compliance with Condition O of the original 404 Individual Permit for R-2554, Goldsboro Bypass (AID: SAW-2008-00252) specified that NCDOT provide the Corps with the following information prior to applying for permit modification to any section of the R-2554 project:

- Project Correspondence from 2006 with associated figures discussing the unavoidable impacts to 5.88 acres of the Bear Creek Mitigation Bank (Bank).
- A change order for the Mitigation Agreement between NCDOT and Restoration Systems removing 5.88 acres and associated credits of available mitigation provided by the Bank.
- Condemnation proceeding records detailing NCDOT right of way acquisition.

The Corps is in receipt of the requested documentation and NCDOT is currently in compliance with permit Special Condition "O" of the original 404 Individual Permit.

Questions regarding this correspondence may be directed to Tom Steffens, NCDOT Coordinator/Regulatory Project Manager at the Washington Regulatory Field Office, telephone (910) 251-4615.

Sincerely,

Tom Steffens
Project Manager
Washington Regulatory Field Office

Copies furnished w/o attachments:

Mr. Travis Wilson
Eastern Region Highway Project Coordinator
Habitat Conservation Program
1142 I-85 Service Road
Creedmoor, North Carolina 27522

Mr. Gary Jordan
U.S. Fish and Wildlife Service
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. Chris Militscher
C/O FHWA
U.S. Environmental Protection Agency
Raleigh Office
310 New Bern Avenue, Room 206
Raleigh, North Carolina 27601

P-29

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

March 19, 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: CORRECTION to Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and NEUSE BUFFER RULES with ADDITIONAL CONDITIONS for Construction of US 70 Goldsboro Bypass in Wayne County, Federal Aid Project No. F-56-2(28), State Project No. 8.T330801,
TIP No. R-2554A, DWQ Project No. 20080570 ver. 3.

Dear Dr. Thorpe:

Attached hereto is a modification of Certification No. 3740 issued to The North Carolina Department of Transportation (NCDOT) dated May 16, 2008.

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

Sincerely,

for Charles Wakild
Director

Attachments

cc: Tom Steffens, US Army Corps of Engineers, Washington Field Office
Chris Manley, NCDOT NEU
Chad Coggins, Division 4 Environmental Officer
Travis Wilson, NC Wildlife Resources Commission
Beth Harmon, Ecosystem Enhancement Program
Jason Elliott, NCDOT, Roadside Environmental 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

Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and NEUSE BUFFER RULES, with ADDITIONAL CONDITIONS

THIS CERTIFICATION MODIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15 NCAC 2H .0500 and 15A NCAC 2B.0233. This certification modification for R-2554 Section A authorizes the NCDOT to impact acres of jurisdictional wetlands, linear feet of jurisdictional streams and square feet of protected riparian buffers in Wayne County. The project shall be constructed pursuant to the application dated received January 10, 2012 and additional information received February 13, 2012. **This correction replaces the modification issued March 8, 2012.** The modified authorized impacts are as described below, and **replace** the Section A approved impacts in the original authorization:

Revised Section A Stream Impacts in the Neuse River Basin

Site	Permanent Fill in Perennial Stream (linear ft)	Bank Stabilization to Intermittent Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
I	255	24	59	338	279
III	157	0	0	157	157
IV	210	28	20	258	238
WB 1	0	0	33	33	0
VII	1414	16	33	1463	1430
VIII	114	0	20	134	0
Total	**2150**	**68**	**165**	**2383**	**2104**

Total Revised Stream Impact for R-2554 Section A: 2,383 linear feet

Revised Section A Wetland Impacts in the Neuse River Basin

Site	Permanent Fill (ac)	Temporary Fill (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
I	0.92	0	0.03	0.15	0	1.10	1.10
II	0.14	0	0	0.04	0	0.18	0.18
III	0.14	0	0	0.02	0	0.16	0.16
IV	0.65	0	0	0.03	0	0.68	0.68
V	0.19	0	0	0.03	0	0.22	0.22
VI	0	0.08	0	0	0.31	0.39	0
VII	1.34	0	0.14	0.07	0	1.55	1.55
VIII	0.04	0.23	0	0.06	0	0.33	0.10
Total	**3.42**	**0.31**	**0.17**	**0.40**	**0.31**	**4.61**	**3.99**

Total Revised Wetland Impact for R-2554 Section A: 4.61 acres.

Revised Section A Neuse Riparian Buffer Impacts

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Impacts Requiring Mitigation (sq ft)	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Impacts Requiring Mitgation (sq ft)
I	18805	11733	7072	7072	12443	6200	6243	6243
II	10839	5608	5231	5231	8794	1302	7492	7492
III	13455	6824	6631	6631	8859	4456	4403	4403
IV	9246	0	9246	0	6297	0	6297	0
V	8202	0	8202	0	3154	0	3154	0
VI	75089	28524	46565	46565	48868	6017	42851	42851
VII	6006	3660	2346	0	3057	2013	1044	0
Totals	**141642**	**56349**	**85293**	**65499**	**91472**	**19988**	**71484**	**60989**

Total Revised R-2554 Section A Buffer Impacts: 233,114 square feet.

Note: Wetland, Stream and Riparian Buffer Impacts for R-2554 Sections BA, BB, and C are unchanged from the previous versions of this application. This modification addresses impact changes for Section A only.

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

This approval is only valid for the purpose and design that you submitted in your modified application dated received January 10, 2012 and addition information received Feburary 13, 2012. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated May 16, 2008 and modification dated August 24, 2009 still apply except where superceded by this certification. **This correction replaces the modification issued March 8, 2012.** Should your project change, you are required to notify 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). Additional buffer impacts may require compensatory mitigation as described in 15A NCAC 2B.0242(9). 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. When final design plans are completed for R-2554 Sections BB and C, a modification to the 401 Water Quality Certification and the Neuse River Riparian Buffer Authorization shall be submitted with applicable fees to the NC Division of Water Quality. Final designs shall reflect all appropriate avoidance, minimization, and mitigation for impacts to wetlands, streams, surface waters, and buffers. No construction activities that impact any wetlands, streams, surface waters, or buffers located in R-2554 Sections BB and C shall begin until after the permittee applies for, and receives a written modification of the 401 Water Quality Certification and the Neuse River Riparian Buffer Authorization from the NC Division of Water Quality.

2. Compensatory mitigation for impacts to 14,193 linear feet of streams is required for R-2554. As stated in your application, compensatory mitigation for impacts to jurisdictional streams shall be provided by linear feet of onsite stream restorations plus feet of onsite stream preservation. The stream mitigations will occur as follows:

Section	Site	Restoration (1:1) (linear feet)	Preservation (5:1) (linear feet)	Total Credits Proposed (linear ft)
A	Claridge Nursery	10397	0	10397
A	NSD Site VII	544	0	544
BA	NSD Site 4	1083	0	1083
BA	NSD Site 5	561	0	561
BA	Tommy's Road Site 8	61	691	199.2
BB	NSD Site 9	1236	0	1236
C	UT West Bear Creek	1243	0	1243
Totals	-	**15,125**	**691**	**15263.2**

The onsite stream relocations shall be constructed in accordance with the design submitted in your March 28, 2008 application and January 10, 2012 modification application. Please be reminded that as-builts for the completed streams shall be submitted to the North Carolina Division of Water Quality 401 Wetlands Unit with the as-builts for the rest of the project. If the parameters of this condition are not met, then the permittee shall supply additional stream mitigation for these impacts. All channel relocations will be constructed in a dry work area, will be completed and stabilized, and must be approved on site by DWQ staff, prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. All stream relocations and restorations shall have a 50-foot wide native wooded buffer planted on both sides of the stream unless otherwise authorized by this Certification. A transitional phase incorporating rolled erosion control product (RECP) and appropriate temporary ground cover is allowable.

authorized by this Certification. A transitional phase incorporating rolled erosion control product (RECP) and appropriate temporary ground cover is allowable.

* 3. The stream mitigation sites shall be monitored annually for five years or until success criteria are satisfied. Monitoring protocols shall follow the Monitoring Level I outlined in the Stream Mitigation Guidelines, April 2003. Success of the mitigation site shall be determined by NCDWQ during an on-site visit at or near the end of the monitoring period.

4. Compensatory mitigation for impacts to 29.35 acres of wetlands for R-2554 is required. As stated in your application, compensatory mitigation for these wetlands shall occur as follows:

Section	Site	Restoration (1:1) (acres)	Preservation (5:1) (acres)	Total Credits Proposed (acres)
BA	Tommy's Road Site 8	0.11	2.37	0.584
C	Bear Creek (Site 12)	26.84	0	26.840
Jeffrey's Warehouse	Jeffrey's Warehouse Mitigation Bank	0.21	8.61	1.932
Totals	-	**27.16**	**10.98**	**29.356**

The permittee shall comply with the on-site wetland mitigation plan submitted with the application on March 28, 2008 and modification application on January 10, 2012.

5. For the onsite wetland mitigation sites, the permittee shall plant 680 stems/acre. Vegetation success shall be measured by survivability over a 5-year monitoring period. Survivability will be based on 320 stems/acre after three (3) years and 260 stems after five (5) years. A survey of vegetation during the growing season shall be conducted annually over the five-year monitoring period and submitted to the NC Division of Water Quality. If the surviving vegetation densities are below the required thresholds after the five-year monitoring period, the site may still be declared successful at the discretion of and with written approval from the NC Division of Water Quality.

6. For the onsite wetland mitigation sites, hydrologic success of the sites will be attained by restoration of a hydrologic regime that results in inundation or saturation of the soils within 12 inches of the ground surface for at least 12.5 percent of the growing season. The hydrologic monitoring shall persist for a total of five (5) years. After the five-year monitoring period, if the monitoring requirements are not met, the site may still be declared successful at the discretion of and with written approval from the NC Division of Water Quality.

7. Compensatory mitigation for impacts to 821,019 square feet of protected riparian buffers in Zone 1 and 547,463 square feet of protected riparian buffers in Zone 2 shall be required for R-2554. As stated in your applications compensatory mitigation for these riparian buffers shall be provided partially by onsite buffer restorations as follows:

Section	Site	Zone 1 Restoration (sq ft)	Zone 2 Restoration (sq ft)	Total (sq ft)
A	NSD Site VI	34380	22733	57113
A	Claridge Nursery	617605	377052	994657
BA	NSD Site 4	59609	35530	95169
BA	NSD Site 5	34199	21760	55959
BA	Tommy's Road Site 8	4459	3333	7792
BB	NSD Site 9	74108	46713	120821
C	UT West Bear Creek	73181	48787	121968
Totals	-	**897541**	**555908**	**1453479**

8. In accordance with 15A NCAC 02B.0242(9) riparian vegetation reestablishment for buffer mitigation sites shall include a minimum of at least 2 native hardwood tree species planted at a density sufficient to provide 320 trees per acre at maturity. The mitigation area shall be placed under a perpetual conservation easement that will provide for protection of the property's nutrient removal efficiencies.

* 9. For the buffer mitigation sites, the permittee shall monitor the sites. An annual report shall be submitted to the DWQ for a period of 5 years showing monitoring results, survival rate/ success of tree and vegetation establishment, and that diffuse flow through the riparian buffer has been maintained. The first annual report shall be submitted within one year of final planting. Failure to achieve a buffer density of 320 trees per acre after 5 years will require the annual

10. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase.

* 11. A copy of the final construction drawings shall be furnished to NCDWQ Central Office prior to the pre-construction meeting. The permittee shall provide written verification that the final construction drawings comply with the permit drawings contained in the application dated received January 10, 2012 and additional information received February 13, 2012. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Quality.

12. The post-construction removal of any temporary bridge structures must return the project site to its preconstruction contours and elevations. The impacted areas shall be revegetated with appropriate native species.

13. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of *Stormwater Best Management Practices.*

14. 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 down stream 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.

15. 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.

16. 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.

17. 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.

18. 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.

19. All riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated. Maintained buffers shall be permanently revegetated with non-woody species by the end of the growing season following completion of construction. For the purpose of this condition, maintained buffer areas are defined as areas within the transportation corridor that will be subject to regular NCDOT maintenance activities including mowing. The area with non-maintained buffers shall be permanently revegetated with native woody species before the next growing season following completion of construction.

20. All stormwater runoff shall be directed as sheetflow through stream buffers at nonerosive velocities, unless otherwise approved by this certification.

21. Pursuant to NCAC15A 2B.0233(6), sediment and erosion control devices shall not be placed in Zone 1 of any Neuse Buffer without prior approval by the NCDWQ. At this time, the NCDWQ has approved no sediment and erosion control devices in Zone 1, outside of the approved project impacts, anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.

22. 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.

23. 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.

24. 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.

25. 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.

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

27. 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.

28. 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.

29. 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.

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

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

32. 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.

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

34. 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.

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

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

37. 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.

* 38. 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.

39. 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.

40. 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.

41. 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.

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

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:

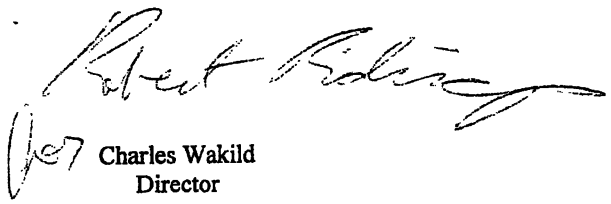
Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-733-2698, Facsimile: (919)-733-3478

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 19th day of March 2012

DIVISION OF WATER QUALITY



Charles Wakild
Director

WQC No. 3740

North Carolina
Environmental Management Commission
Department of Environment and Natural Resources

Permit For The Withdrawal And Use Of Water In The Central Coastal Plain Capacity Use Area

In accordance with the provisions of Part 2, Article 21 of Chapter 143, General Statutes of North Carolina as amended, and any other applicable Laws, Rules and Regulations,

Permission Is Hereby Granted To

NC Department of Transportation

Project No. R-2554A
US 70 (Goldsboro Byp) US 70 West of NC 581 to SR 1300 (Salem Church Rd)

FOR THE

Withdrawal and Use of Water in Wayne County, North Carolina in accordance with the grantee's application dated January 10, 2012, and any supporting data submitted with the application, all of which are filed with the Department of Environment and Natural Resources and are considered part of this Permit.

This Permit shall be effective from the date of its issuance until January 31, 2017, and shall be subject to the specified conditions and/or limitations contained in Sections I - X of this Permit.

Permit issued this the 21 day of MARCH, 2012.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

BY _____

Thomas A. Reeder
Director, Division of Water Resources

By Authority of the Secretary of the Department of Environment and Natural Resources

PERMIT #CU4028

I. WITHDRAWALS

A. USE

This Permit allows the withdrawal of water for the purpose of dewatering borrow pits to extract material for road construction.

B. RATES OF WITHDRAWALS

The maximum quantity of water that may be withdrawn shall not exceed what is established in the Reclamation Plan as specified in NCDOT's CCPCUA Special Provisions document.

C. SOURCE(s) OF WITHDRAWALS

Ground Water Source(s): Withdrawals shall be made from sumps in borrow pits in the surficial aquifer.

D. MONITORING OF WITHDRAWALS

Withdrawals from each source, whether well or sump, shall be measured by an approved metering device equipped with a totalizing indicator, and having an accuracy within plus or minus five percent.

II. WATER LEVELS

A. MAXIMUM DRAWDOWN LEVELS

1. Pump intakes for the well(s) shall not be set below the depth specified in the permit application or associated documentation without prior approval of the Division of Water Resources.

2. In the event that data from the permitted wells or other wells within the zone influenced by pumping of the permitted wells indicates a deterioration of quality or quantity in surrounding aquifers or the source aquifer, an alternate maximum pumping level may be established by the Division of Water Resources.

B. MONITORING OF WATER LEVELS

1. The pumping water level in each supply well shall be measured once a month:
   a. by a steel or electric tape from a fixed reference point, or by using the air-line method
   b. within accuracy limits of plus or minus one percent,
   c. just prior to shutting off the pump, or after sufficient time of pumping, so that a maximum drawdown may be obtained, and
   d. during the last planned pumping day of the month, or within the last five days of the month.

2. The static water level in each supply well shall be measured once a month:
   a. by a steel or electric tape from a fixed reference point, or by using the air-line method
   b. within accuracy limits of plus or minus one percent,
   c. after the pump is shut off for approximately 12 hours, and
   d. within the last five days of the month.

3. Unused supply wells or other suitable wells that may be available shall be monitored when such monitoring is specified by the Division of Water Resources and when pertinent to observation or evaluation of the effects of withdrawals made under this permit.

III. OTHER PROVISIONS

A. WELL CONSTRUCTION APPROVAL

A Well Construction Permit shall be required prior to the construction of any well that will be used to withdraw any portion of the water regulated under this Permit. Application for these permits must be submitted to the Washington Regional Office, Division of Water Quality, P.O. Box 2188, Washington, NC 27889.

B. ACCESS TO FACILITIES

The Environmental Management Commission and employees of the Department of Environment and Natural Resources shall have reasonable access to areas owned and under control of the permittee for observation and inspection of water use and related facilities pertinent to the provisions of this permit and other regulations.

IV. REPORTS REQUIRED

A. WITHDRAWALS

Monthly reports of daily withdrawal totals from each well or sump shall be furnished to the Division on a quarterly basis, within 30 days after the end of March, June, September and December.

B. WATER LEVELS

Water level measurements for each supply well shall be measured in accordance with Condition II. B. 1. of this permit and submitted to the Division not later than 30 days after the end of the calendar month in which the measurement was taken.

V. MODIFICATION OR REVOCATION

A. MODIFICATION

1. The Permittee must notify the Director of any proposed major changes in usage and apply for a modification of the permit for such changes or for any revisions of the terms of this permit.

2. The Director may modify the terms of the permit, after 60 days written notice to the permittee, if he finds that the terms of the permit and/or the resulting water use are found to be contrary to the purposes of the Water Use Act of 1967 or contrary to public interest or having an unreasonably adverse effect upon other water uses in the capacity use area. Modifications may include, but are not limited to, requirements for alternate pumping levels or the collection, analysis, and reporting of ground or surface water quality samples.

B. REVOCATION

The Director may revoke the permit if he finds that:

1. the Permittee has violated the terms of the permit; or

2. the terms of the Permit and/or the resulting water use are contrary to the purpose of the Water Use Act of 1967 or contrary to the public interest or having an unreasonably adverse effect upon other water uses in the capacity use area and cannot be cured by modification; or

3. the Permittee made false or fraudulent statements in the application for the water use permit; or

4. water withdrawn under the terms of the permit is used for purposes other than those set forth in the permit.

VI. CONSTRUCTION OF PERMIT

A. The terms and conditions shall not be construed to relieve the Permittee of any legal obligation or liability, which it owes or may incur to third parties as the result of the conduct of its operations in conformity with this Permit.

B. When under the terms hereof, any provision of this Permit requires approval of the Department or becomes effective at the discretion of the Department, the notice of approval or the exercise of such discretion shall be evidenced by written instrument issued by the Department.

C. The terms and conditions of this Permit shall not be construed as a limitation of the powers, duties, and authority vested in the Environmental Management Commission or any other State, Federal, or local agency, or any applicable laws hereafter enacted.

VII. ADDITIONAL CONDITIONS

A. This Permit shall be subject to any limitations or conditions in other State permits, including but not limited to permits required pursuant to North Carolina General Statutes §143-215.1.

B. Issuance of this Permit shall have no bearing on subsequent State decision(s) regarding any other water use or other permit application(s) submitted or which may be submitted by the Permittee, its successors or assigns.

C. Compliance with the terms and conditions in this permit does not relieve the permittee of compliance with any provision, now in force or hereafter enacted or promulgated, of the Water Use Act of 1967, the regulations promulgated thereunder, or any other provision of State law.

VIII. PENALTIES

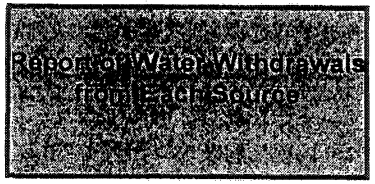
Violations of the terms and conditions of this Permit are subject to penalties as set forth in North Carolina General Statutes §143-215.17.

IX. PERMIT NONTRANSFERABLE

Water Use Permits shall not be transferred except with approval of the Environmental Management Commission.

X. RENEWAL OF PERMIT

The Permittee, at least three (3) months prior to the expiration of this permit, shall request its extension. Upon receipt of the request, the Commission will review the adequacy of the facilities described therein, and if warranted, will extend the permit for such period of time and under such conditions and limitations as it may deem appropriate.



North Carolina Department of Environment and Natural Resources

Mail To: Division of Water Resources - NC DENR
1611 Mail Service Center
Raleigh, North Carolina 27699-1611
Attention : Capacity Use Administration

Check Box If No Use This Month ☐

For month of: _____ Year: _____ Facility: **NCDOT (R-2554A)** Permit #: **CU4028** Sheet ___of___

Well/Sump ID →							
	meter readings ↓	gallons per day	meter readings ↓	gallons per day	meter readings ↓	gallons per day	Total Withdrawn
Beginning reading →							
Day 1							
Day 2							
Day 3							
Day 4							
Day 5							
Day 6							
Day 7							
Day 8							
Day 9							
Day 10							
Day 11							
Day 12							
Day 13							
Day 14							
Day 15							
Day 16							
Day 17							
Day 18							
Day 19							
Day 20							
Day 21							
Day 22							
Day 23							
Day 24							
Day 25							
Day 26							
Day 27							
Day 28							
Day 29							
Day 30							
Day 31							

DWR CCPCUA-4 **Name:** _____ **Signature:** _____ **Date:** _____

Report of Weekly or Monthly Water Levels Pumping (P) and (S)

North Carolina Department Of Environmental and Natural Resources

Mail to: Division of Water Resources- NC DENR
1611 Mail Service Center
Raleigh, NC 27699-1611
Attention: Capacity Use Administration

Name: ____________
Signature: ____________
Date: ____________

Month ______ Year ________ Facility Name: NCDOT (R-2554A) Permit #: CU4028 Sheet # ____ of ____

Well ID______	Land Surface Elev. (ft) ______			Well ID______	Land Surface Elev. (ft) ______			Well ID______	Land Surface Elev. (ft) ______		
Date	Time	Feet Below Land Surface	P or S	Date	Time	Feet Below Land Surface	P or S	Date	Time	Feet Below Land Surface	P or S

Well ID______	Land Surface Elev. (ft) ______			Well ID______	Land Surface Elev. (ft) ______			Well ID______	Land Surface Elev. (ft) ______		
Date	Time	Feet Below Land Surface	P or S	Date	Time	Feet Below Land Surface	P or S	Date	Time	Feet Below Land Surface	P or S

Well ID______	Land Surface Elev. (ft) ______			Well ID______	Land Surface Elev. (ft) ______			Well ID______	Land Surface Elev. (ft) ______		
Date	Time	Feet Below Land Surface	P or S	Date	Time	Feet Below Land Surface	P or S	Date	Time	Feet Below Land Surface	P or S

DWR CCPCUA-6

State land surface elevations and depths below land surface to the nearest 0.1 feet.

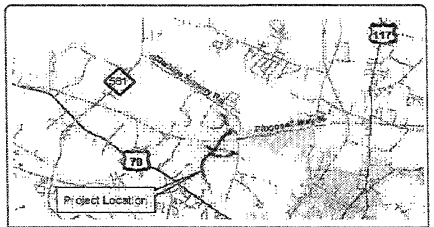
TIP PROJECT: R-2554A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAYNE COUNTY

METRIC	STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
	N.C.	R-2554A	OSM-1	16

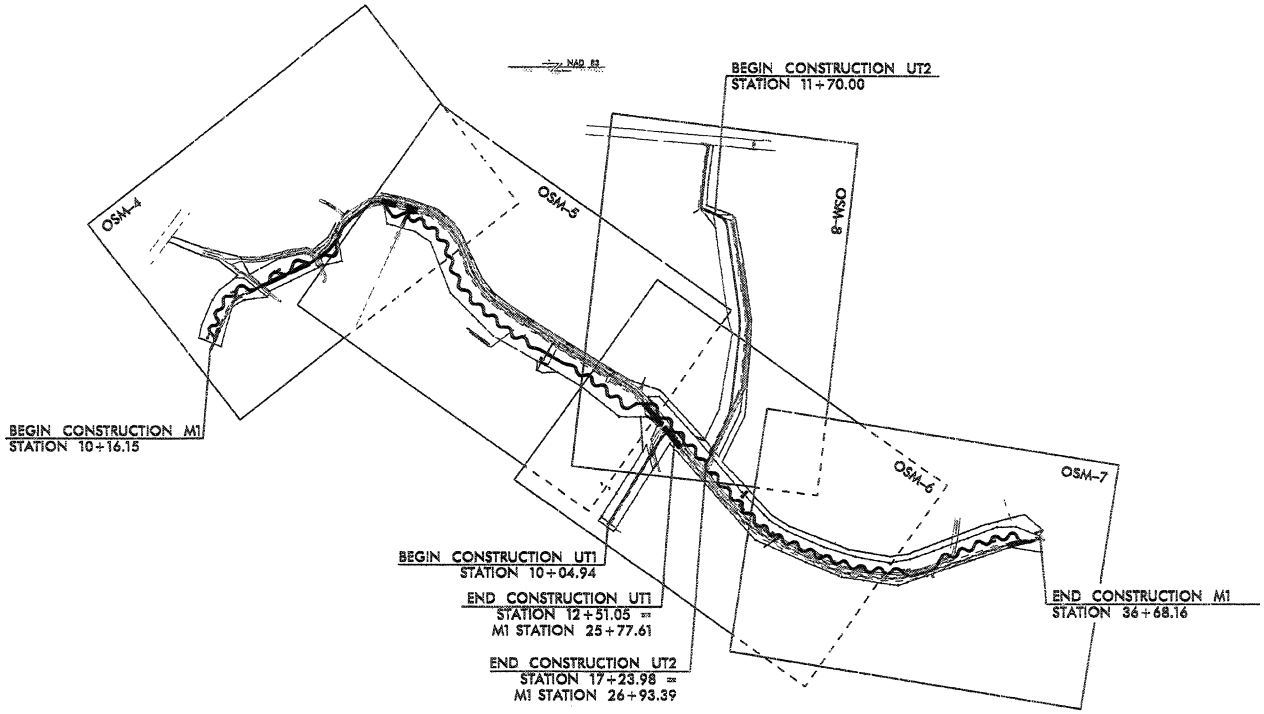
	STATE FUNDING	F.A. FUNDING	DESCRIPTION
	34461.1.3	NHF-70(30)	P.E.
	34461.2.4		R/W, UTIL
CONST.REV.	34461.3.4		CONST.
R/W REV.			



VICINITY MAP

LOCATION: *2 MILES SOUTHEAST OF NC HWY 581 OFF OF CLARIDGE NURSERY ROAD (SR 1326)*

TYPE OF WORK: ON-SITE MITIGATION



PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS 10 0 25

PROFILE (HORIZONTAL) 2.5 0 5

PROFILE (VERTICAL) 0.5 0 1

PROJECT LENGTH

REACH:	M1	UT1	UT2
EXISTING STREAM LENGTH	= 2206m	236m	763m
PROPOSED DESIGN STREAM LENGTH (EXCLUDES CROSSINGS)	= 2399m	230m	540m

Prepared in the Office of:

Baker

Michael Baker Engineering Inc.
8000 Regency Parkway
Suite 200
Cary, NORTH CAROLINA 27518
Phone: 919.463.5488
Fax: 919.463.5490

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

GENERAL NOTES

1 THE CONTRACTOR IS RESPONSIBLE FOR JOB SITE SAFETY.
2 SUBSURFACE PLANS ARE NOT AVAILABLE; THEREFORE, THE CONTRACTOR WILL BE REQUIRED TO LOCATE UTILITIES, INCLUDING EXISTING IRRIGATION LINES AND PROTECT FROM DAMAGE.
3. GRADING SHOULD INCLUDE SMOOTH TRANSITIONS.
4 CONTRACTOR WILL BE REQUIRED TO PUMP BASE STREAM FLOW AROUND AREA WHERE CONSTRUCTION WILL OCCUR IN THE ACTIVE STREAM CHANNEL

MORPHOLOGICAL MEASUREMENTS TABLE

		M1	UT1 **	UT2 **
1.	reach name			
2.	stream type	E/C5	DA5	DA5
3.	drainage area (sq. mi)	1.80	0.13	0.25
4.	bankfull width (ft)	mean: 13.4 range: — - —	mean: NA range: — - —	mean: NA range: — - —
5.	bankfull mean depth (ft)	mean: 1.1 range: — - —	mean: NA range: — - —	mean: NA range: — - —
6.	width/depth ratio	mean: 12 range: — - —	mean: NA range: — - —	mean: NA range: — - —
7.	bankfull cross-sectional area (sq. ft)	mean: 15 range: — - —	mean: NA range: — - —	mean: NA range: — - —
8	bankfull mean velocity (ft/sec)	mean: 0.9 range: — - —	mean: 1.9 range: — - —	mean: 0.4 range: — - —
9.	bankfull discharge (cfs)	mean: 11.1 range: — - —	mean: 8.1 range: — - —	mean: 2.4 range: — - —
10.	bankfull max depth (ft)	mean: 1.6 range: — - —	mean: NA range: — - —	mean: NA range: — - —
11.	width of floodprone area (ft)	mean: 62 range: — - —	mean: NA range: — - —	mean: NA range: — - —
12.	entrenchment ratio	mean: 4.6 range: -	mean: NA range: -	mean: NA range: — - —
13.	meander length (ft)	mean: 134 range: 107 - 161	mean: NA range: — - —	mean: NA range: — - —
14.	ratio of meander length to bankfull width	mean: 10 range: 8 - 12	mean: NA range: — - —	mean: NA range: — - —
15.	radius of curvature (ft)	mean: 38 range: 27 - 38	mean: NA range: — - —	mean: NA range: — - —
16.	radius of curvature to bankfull width *	mean: 2.8 range: 2.5 - 4.3	mean: NA range: — - —	mean: NA range: — - —
17.	belt width (ft)	mean: 54 range: 40 - 67	mean: NA range: — - —	mean: NA range: — - —
18.	meander width ratio	mean: 4 range: 3 - 5	mean: NA range: — - —	mean: NA range: — - —
19.	sinuosity (stream length/valley length)	mean: 1.25 range: — - —	mean: NA range: — - —	mean: NA range: — - —
20.	valley slope (ft/ft)	mean: 0.0008 range: — - —	mean: 0.003 range: — - —	mean: 0.003 range: — - —
21.	average slope (ft/ft)	mean: 0.0006 range: — - —	mean: 0.003 range: — - —	mean: 0.003 range: — - —
22.	Pool slope (ft/ft)	mean: 0 range: — - —	mean: NA range: — - —	mean: NA range: — - —
23.	Ratio of pool slope to average slope	mean: 0 range: — - —	mean: NA range: — - —	mean: NA range: — - —
24.	maximum pool depth (ft)	mean: 2.5 range: — - —	mean: NA range: — - —	mean: NA range: — - —
25.	ratio of pool depth to average bankfull depth	mean: 2.2 range: -	mean: NA range: — - —	mean: NA range: — - —
26.	pool width (ft)	mean: 17.4 range: — - —	mean: NA range: — - —	mean: NA range: — - —
27.	ratio of pool width to bankfull width	mean: 1.3 range: -	mean: NA range: — - —	mean: NA range: — - —
28.	pool to pool spacing (ft)	mean: 67 range: 54 - 80	mean: NA range: — - —	mean: NA range: — - —
29.	ratio of pool to pool spacing to bankfull width	mean: 5 range: 4 - 6	mean: NA range: — - —	mean: NA range: — - —
30.	ratio of lowest bank height to bankfull height (or max bankfull depth)	mean: 1.00 range: 1.00 - 1.20	mean: NA range: — - —	mean: NA range: — - —

NA = not applicable

* RADIUS OF CURVATURE RATIO BASED ON OUTSIDE RADIUS OF MEANDER BENDS

** DESIGNS FOR UT1 AND UT2 WILL USE THE 2007 USACE AND NCDWQ GUIDANCE FOR COASTAL PLAIN HEADWATER STREAMS

REVISIONS

INDEX OF SHEETS

METRIC

CONST REV

R /W REV

PROJECT REFERENCE NO.	SHEET NO.
R-2554A	0SM-1A

PROJECT ENGINEER

PROJECT ENGINEER

Baker

Michael Baker Engineering Inc
8000 Regency Parkway
Suite 200
Cary, NORTH CAROLINA 27518
Phone: 919 463 5488
Fax: 919 463 5490

PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION

STREAM CONVENTIONAL SYMBOLS

SUPERCEDES SHEET 1B

- LOG VANE
- LOG WEIR
- ROOT WAD
- LOG CROSS VANE
- J-HOOK
- ROCK VANE
- TEMPORARY SILT CHECK
- FOOT BRIDGE
- TEMPORARY STREAM CROSSING
- PERMANENT STREAM CROSSING
- ROCK CROSS VANE
- BOULDER CLUSTER
- SILT FENCE
- SAFETY FENCE
- TRANSPLANTED VEGETATION
- ROCK STEP POOL
- SINGLE WING DEFLECTOR
- DOUBLE WING DEFLECTOR
- SMB — STREAM MITIGATION BUFFER
- FLOODPLAIN INTERCEPTOR

NOTE: ALL ITEMS ABOVE MAY NOT BE USED ON THIS PROJECT

PROJECT REFERENCE NO.	SHEET NO.
R-2554A	OSM-1B

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin
- Property Corner
- Property Monument
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing High Quality Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream
- River Basin Buffer
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch
- False Sump

RAILROADS:

- Standard Guage — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — TCE
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Curb Cut for Future Wheel Chair Ramp — CFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole
- Telephone Booth
- Telephone Pedestal
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — FO

WATER:

- Water Manhole
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal
- TV Tower
- U/G TV Cable Hand Hole
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

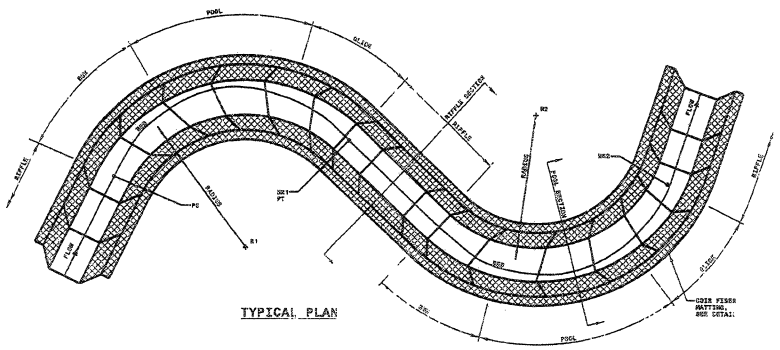
SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

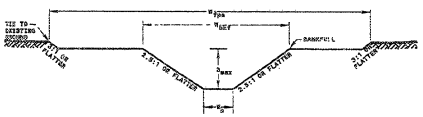
MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line — DUL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of information — E.O.I

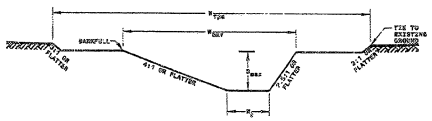
CHANNEL TYPICAL DETAIL



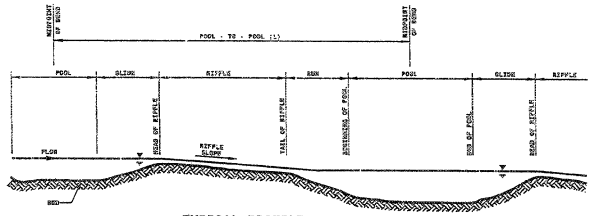
TYPICAL PLAN



TYPICAL RIFFLE WITH BANKFULL BENCH
(REACH M1)



TYPICAL POOL WITH BANKFULL BENCH



TYPICAL PROFILE

W_{bkf} = BANKFULL WIDTH
D_{max} = MAXIMUM DEPTH
W_b = BOTTOM WIDTH
W_{fpa} = FLOOD PRONE AREA WIDTH

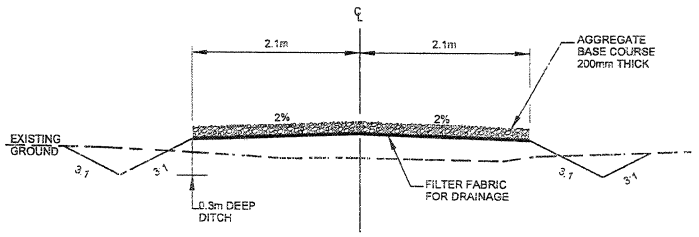
NOTES:
1. THE COORDINATES FOR EACH CENTER OF RADIUS (EX. "R1","R2") ARE INDICATED ON THE PLAN SHEETS

CROSS-SECTION DIMENSIONS (m)

REACH	RIFFLE				POOL				Width/Depth Ratio
	W_{bkf}	D_{max}	W_b	W_{fpa}	W_{bkf}	D_{max}	W_b	W_{fpa}	
M1, Sta. 10+16-36+85.93	4.08	0.49	1.68	18.90	5.30	0.76	0.73	18.90	12
UT1, Sta. 10+00-12+47.19	*								
UT2, Sta. 10+00-17+42.64	*								

* DESIGNS FOR UT1 AND UT2 DO NOT FOLLOW A TYPICAL TRAPEZOIDAL CHANNEL DESIGN. SEE DETAIL FOR BRAIDED CHANNEL.

RELOCATED FARM PATH



TYPICAL SECTION

PROJECT REFERENCE NO	SHEET NO
R-2554A	OSM-2

PROJECT ENGINEER

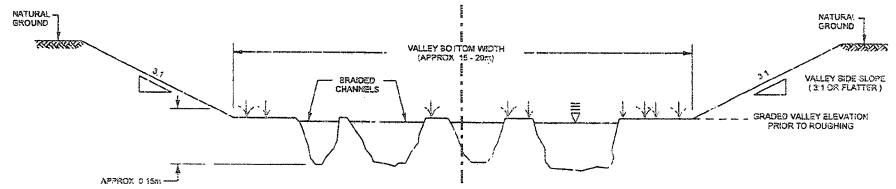
PROJECT ENGINEER

Baker

Michael Baker Engineering Inc.
8000 Regency Parkway
Suite 600
Cary, NORTH CAROLINA 27518
Phone: 919.463.5488
Fax: 919.463.5490

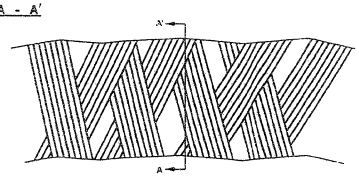
PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION

BRAIDED CHANNEL DETAIL
(APPLIES TO UT1 & UT2)

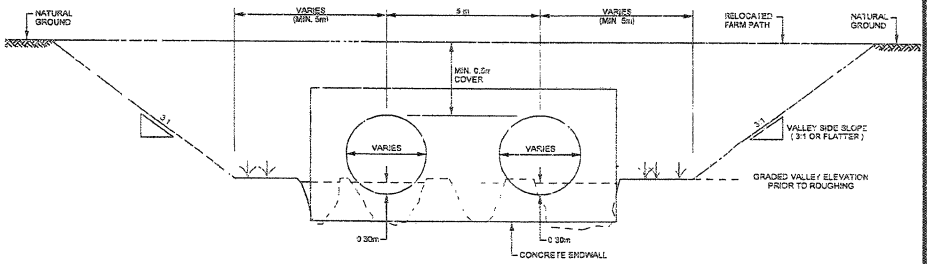


SECTION A - A'

NOTES:
1. REACHES UT1 AND UT2 WILL BE CONSTRUCTED BY FIRST RESTORING VALLEY TOPOGRAPHY AS SHOWN ON THE TYPICAL DIMENSIONS
2. THE RESTORED VALLEY BOTTOM WILL THEN BE ROUGHENED
3. BRAIDED CHANNELS WILL BE SHAPED TO FORM SMOOTH TRANSITIONS INTO THE SINGLE THREAD CHANNEL AT THE TIE IN OF M1
4. UPON COMPLETION OF BRAIDED CHANNEL FEATURES, APPLY MULCH TEMPORARY SEED, AND PERMANENT SEED TO THE CONSTRUCTED VALLEY ACCORDING TO SEDIMENT AND EROSION CONTROL SPECIFICATIONS



PLAN VIEW OF MICROTOPOGRAPHIC PATTERN

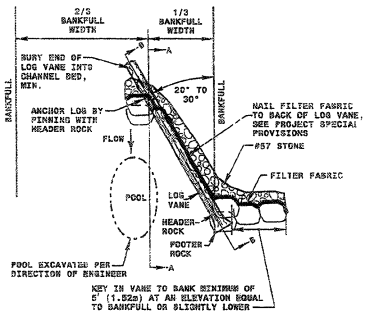


NOTES:
1. TYPICAL SECTION APPLIES TO UT1 AND UT2
2. CULVERTS ARE TO BE EVENLY SPACED AND PLACED 0.30 METERS BELOW THE BED ELEVATION
3. MINIMUM OF 0.8 METERS COVER FOR ALL PIPES

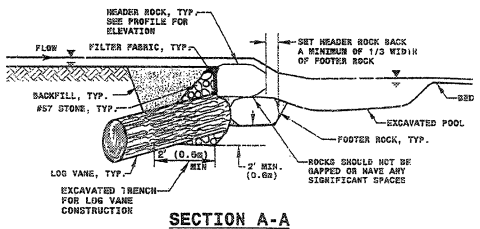
REVISIONS

LOG VANE DETAIL

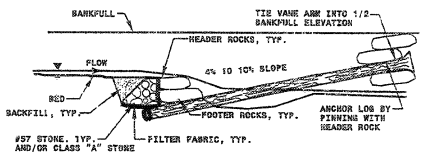
NOT TO SCALE



PLAN VIEW



SECTION A-A



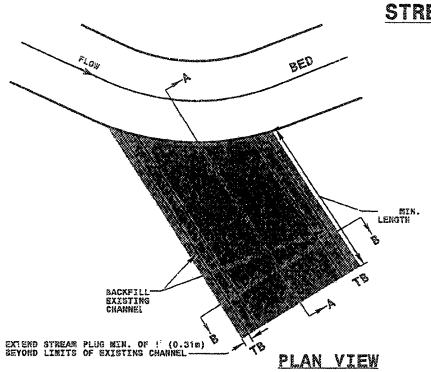
SECTION B-B

BOULDER DIMENSIONS (FT)(M)		
HEIGHT	LENGTH	WIDTH
2' (0.6m)	2' (0.6m)	2' (0.6m)

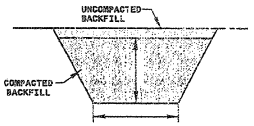
NOTES:
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4. COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

STREAM PLUG

NOT TO SCALE

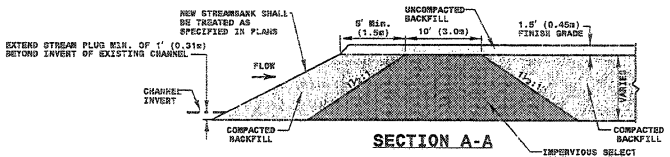


PLAN VIEW

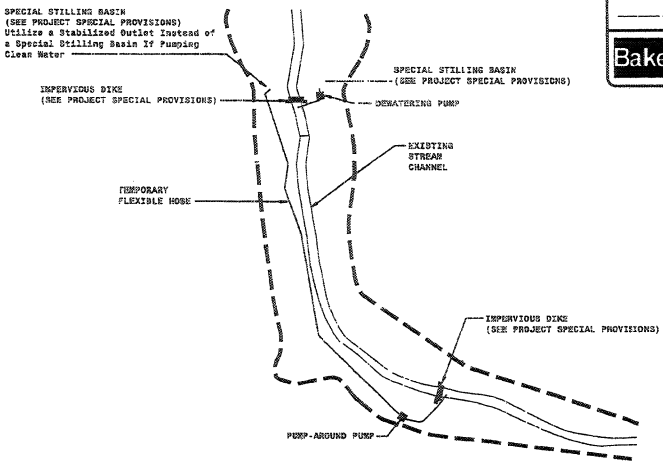


SECTION B-B

NOTES:
1. STREAM PLUG SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. PLUG SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
3. BOTTOM OF PLUG SHOULD BE A MINIMUM OF 1' (0.31m) BELOW THE INVERT OF THE EXISTING CHANNEL.
4. PLUG SHOULD EXTEND A MINIMUM OF 1' (0.31m) BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
5. INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
6. COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.



SECTION A-A



NOTES:
1) All excavation shall be performed in only dry or isolated sections of channel
2) Impervious dikes are to be used to isolate work from stream flow when necessary.
3) All graded areas shall be stabilized within 24 hours
4) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses
5) Pumps and hoses shall be of sufficient size to dewater the work area.

SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA

1 INSTALL SPECIAL STILLING BASIN(S)

2 INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE

3 PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION

4 PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS DEWATER ENTRAPPED AREA AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK

5 PERFORM STREAM RESTORATION WORK IN ACCORDANCE WITH THE PLANS

6 EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE (DOWNSTREAM IMPERVIOUS DIKES FIRST)

7 ALL GRADING AND STABILIZATION MUST BE COMPLETED IN ONE DAY WITHIN THE PUMP AROUND AREAS BETWEEN THE IMPERVIOUS DIKES THE IMPERVIOUS DIKE LOCATIONS AS SHOWN ON THIS SHEET ONLY SHOW THE UPPER AND LOWER EXTENT OF WORK FOR EACH STREAM SEGMENT THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF THE IMPERVIOUS DIKE(S) FOR EACH DAY'S WORK

8 REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.

PROJECT REFERENCE NO.	SHEET NO.
R-2554A	OSM-2A

PROJECT ENGINEER

PROJECT ENGINEER

Baker

Michael Baker Engineering, Inc.
8000 Regency Parkway
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Cary, NORTH CAROLINA 27518
Phone: 919.463.5488
Fax: 919.463.5490

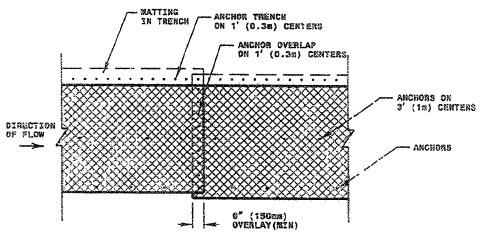
PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION

REVISIONS

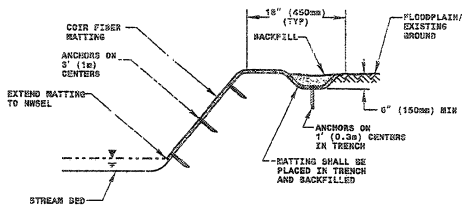
10/6/2011 M:\TIP\R-2554\Design\Plans\R2554_dtl_psh_OSM2.dgn

COIR FIBER MATTING DETAIL

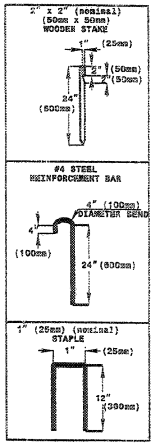
NOT TO SCALE



PLAN VIEW



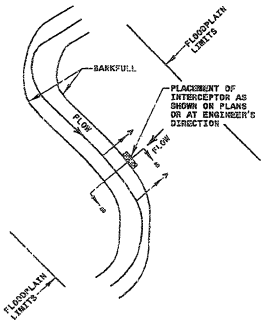
TYPICAL CROSS SECTION



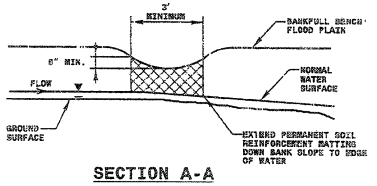
ANCHOR OPTIONS

FLOODPLAIN INTERCEPTOR DETAIL

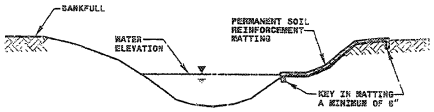
NOT TO SCALE



PLAN VIEW



SECTION A-A



SECTION B-B

PERMANENT ROAD CULVERT CROSSING

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2554A	OSM-2B

PROJECT ENGINEER

PROJECT ENGINEER

Baker

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Phone: 919.463.5488
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PROGRESS DRAWING
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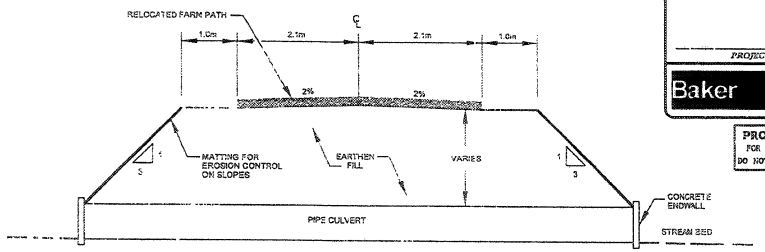
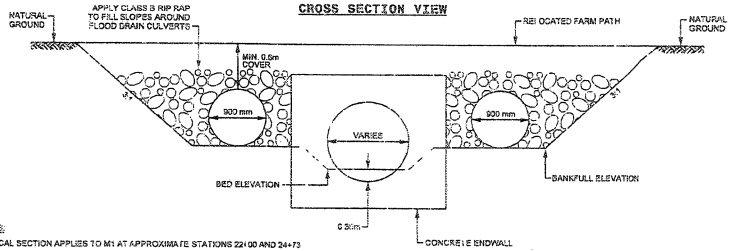


NOTES:
1. INSTALL PIPE CULVERT IN ACCORDANCE WITH SECTIONS 300 AND 1032
2. INSTALL MATTING FOR EROSION CONTROL ALONG FILL SLOPES
3. INSTALL CONCRETE ENDWALLS IN ACCORDANCE WITH SECTION 838

CROSS SECTION VIEW



NOTES:
1. TYPICAL SECTION APPLIES TO M1 AT APPROXIMATE STATIONS 22+00 AND 24+73
2. CULVERTS ARE TO BE EVENLY SPACED AND PLACED 0.30 METERS BELOW THE BED ELEVATION
3. MINIMUM OF 0.6 METERS COVER FOR ALL PIPES

REVISIONS

REACH M1 CURVE DATA

M1-1
PI STA = 10+25.77 N = 165,961.9581 E = 690,291.9377
DELTA = 67° 12' 22" (LT)
DEGREE = 486° 13' 27"
TANGENT = 7.36
LENGTH = 13.09
RADIUS = 11.50
PC STA = 10+18.41 N = 165,955.2470 E = 690,285.4185
PT STA = 10+31.50 N = 165,955.5516 E = 690,297.7424

M1-2
PI STA = 10+90.89 N = 165,864.7836 E = 690,320.5442
DELTA = 129° 20' 24" (RT)
DEGREE = 398° 43' 44"
TANGENT = 17.32
LENGTH = 18.61
RADIUS = 8.20
PC STA = 10+40.37 N = 165,873.9549 E = 690,307.0140
PT STA = 10+91.35 N = 165,897.4911 E = 690,320.3343

M1-3
PI STA = 10+80.69 N = 165,848.6809 E = 690,320.1083
DELTA = 123° 27' 17" (LT)
DEGREE = 698° 43' 44"
TANGENT = 15.25
LENGTH = 17.67
RADIUS = 8.20
PC STA = 10+65.44 N = 165,853.9053 E = 690,320.2911
PT STA = 10+83.10 N = 165,859.9112 E = 690,332.9276

M1-4
PI STA = 11+01.79 N = 165,897.0204 E = 690,348.6363
DELTA = 130° 15' 24" (RT)
DEGREE = 698° 43' 44"
TANGENT = 9.82
LENGTH = 14.35
RADIUS = 8.20
PC STA = 10+91.97 N = 165,951.7055 E = 690,340.3828
PT STA = 11+06.32 N = 165,957.9310 E = 690,352.3965

M1-5
PI STA = 11+21.47 N = 166,643.9438 E = 690,358.1981
DELTA = 74° 35' 12" (LT)
DEGREE = 698° 43' 44"
TANGENT = 6.25
LENGTH = 10.67
RADIUS = 8.20
PC STA = 11+15.23 N = 166,949.7135 E = 690,359.8056
PT STA = 11+25.90 N = 166,944.7207 E = 690,364.5936

M1-6
PI STA = 11+44.35 N = 166,946.9972 E = 690,382.6062
DELTA = 99° 03' 29" (RT)
DEGREE = 698° 43' 44"
TANGENT = 9.61
LENGTH = 14.18
RADIUS = 8.20
PC STA = 11+34.73 N = 166,945.3109 E = 690,373.1590
PT STA = 11+48.91 N = 166,937.3921 E = 690,382.3982

M1-7
PI STA = 11+53.45 N = 166,619.8948 E = 690,381.7841
DELTA = 79° 59' 12" (LT)
DEGREE = 573° 57' 28"
TANGENT = 7.86
LENGTH = 13.44
RADIUS = 10.00
PC STA = 11+45.59 N = 166,927.8122 E = 690,382.0371
PT STA = 11+71.93 N = 166,911.8087 E = 690,399.4482
CC N = 166,927.4889 E = 690,392.0312

M1-8
PI STA = 11+96.62 N = 166,611.3934 E = 690,412.7102
DELTA = 131° 09' 50" (RT)
DEGREE = 520° 52' 18"
TANGENT = 16.57
LENGTH = 21.73
RADIUS = 11.00
PC STA = 11+79.35 N = 166,615.9269 E = 690,396.6999
PT STA = 12+01.07 N = 166,599.4725 E = 690,402.4133

M1-9
PI STA = 12+16.74 N = 166,588.1535 E = 690,392.7353
DELTA = 64° 04' 21" (LT)
DEGREE = 572° 57' 28"
TANGENT = 6.26
LENGTH = 11.19
RADIUS = 10.00
PC STA = 12+10.48 N = 166,591.0763 E = 690,386.5033
PT STA = 12+21.68 N = 166,590.5258 E = 690,395.4743

M1-10
PI STA = 12+60.84 N = 166,545.4693 E = 690,412.5177
DELTA = 97° 19' 21" (LT)
DEGREE = 719° 11' 50"
TANGENT = 4.37
LENGTH = 5.60
RADIUS = 8.00
PC STA = 12+56.27 N = 166,549.4029 E = 690,410.6057
PT STA = 12+54.27 N = 166,544.5655 E = 690,419.9662

M1-11
PI STA = 12+83.45 N = 166,542.7099 E = 690,436.9076
DELTA = 96° 40' 35" (RT)
DEGREE = 477° 27' 53"
TANGENT = 13.49
LENGTH = 20.26
RADIUS = 12.00
PC STA = 12+69.97 N = 166,544.2991 E = 690,422.5144
PT STA = 12+90.21 N = 166,529.5529 E = 690,432.7760

M1-12
PI STA = 13+17.06 N = 165,903.4504 E = 690,425.9377
DELTA = 94° 31' 14" (LT)
DEGREE = 477° 27' 53"
TANGENT = 10.90
LENGTH = 17.70
RADIUS = 12.00
PC STA = 13+06.16 N = 165,914.0654 E = 690,429.0695
PT STA = 13+23.86 N = 165,499.9174 E = 690,433.8534

M1-13
PI STA = 13+50.24 N = 165,491.3757 E = 690,461.7936
DELTA = 67° 47' 35" (RT)
DEGREE = 477° 27' 53"
TANGENT = 11.85
LENGTH = 16.39
RADIUS = 12.00
PC STA = 13+38.39 N = 165,495.1163 E = 690,450.6703
PT STA = 13+57.08 N = 165,480.3184 E = 690,459.4782
CC N = 165,483.7641 E = 690,448.9821

M1-14
PI STA = 13+79.16 N = 165,459.1861 E = 690,482.1319
DELTA = 50° 09' 46" (LT)
DEGREE = 716° 11' 50"
TANGENT = 3.74
LENGTH = 6.99
RADIUS = 8.00
PC STA = 13+75.43 N = 165,462.7444 E = 690,483.2053
PT STA = 13+82.42 N = 165,456.0481 E = 690,484.1269

M1-15
PI STA = 14+14.43 N = 165,429.2857 E = 690,471.9965
DELTA = 49° 09' 54" (RT)
DEGREE = 716° 11' 50"
TANGENT = 3.57
LENGTH = 6.72
RADIUS = 8.00
PC STA = 14+10.59 N = 165,432.2838 E = 690,469.8443
PT STA = 14+17.32 N = 165,425.8310 E = 690,470.3392

M1-16
PI STA = 14+44.70 N = 165,399.6255 E = 690,463.9999
DELTA = 111° 03' 29" (LT)
DEGREE = 520° 52' 15"
TANGENT = 15.02
LENGTH = 21.32
RADIUS = 11.00
PC STA = 14+29.68 N = 165,412.1201 E = 690,458.0791
PT STA = 14+50.00 N = 165,401.3851 E = 690,479.9253

M1-17
PI STA = 14+62.96 N = 165,403.4876 E = 690,496.7524
DELTA = 21° 42' 57" (RT)
DEGREE = 2811° 56' 19"
TANGENT = 4.26
LENGTH = 8.30
RADIUS = 8.10
PC STA = 14+54.68 N = 165,402.8993 E = 690,494.5172
PT STA = 14+72.98 N = 165,401.6398 E = 690,502.6612

M1-18
PI STA = 15+03.01 N = 165,386.6147 E = 690,534.2526
DELTA = 27° 02' 43" (RT)
DEGREE = 520° 52' 15"
TANGENT = 2.65
LENGTH = 5.19
RADIUS = 11.00
PC STA = 15+00.36 N = 165,387.7493 E = 690,531.8429
PT STA = 15+10.55 N = 165,384.6171 E = 690,535.8445

M1-19
PI STA = 15+02.55 N = 165,311.5722 E = 690,591.9101
DELTA = 92° 46' 30" (RT)
DEGREE = 2291° 28' 44"
TANGENT = 20.99
LENGTH = 32.39
RADIUS = 20.00
PC STA = 15+31.53 N = 165,326.2174 E = 690,578.1171
PT STA = 16+13.96 N = 165,299.9307 E = 690,574.6668

M1-20
PI STA = 15+47.69 N = 165,280.4121 E = 690,547.0273
DELTA = 94° 52' 47" (LT)
DEGREE = 698° 43' 44"
TANGENT = 7.50
LENGTH = 12.16
RADIUS = 8.20
PC STA = 15+40.19 N = 165,284.6963 E = 690,553.1535
PT STA = 15+52.34 N = 165,273.3956 E = 690,550.7367

M1-21
PI STA = 15+73.17 N = 165,256.7102 E = 690,561.0890
DELTA = 93° 29' 57" (RT)
DEGREE = 698° 43' 44"
TANGENT = 8.55
LENGTH = 13.24
RADIUS = 8.20
PC STA = 15+64.62 N = 165,263.1521 E = 690,556.5527
PT STA = 16+77.34 N = 165,251.8902 E = 690,563.4706

M1-22
PI STA = 15+96.84 N = 165,245.5820 E = 690,587.4581
DELTA = 96° 15' 19" (LT)
DEGREE = 698° 43' 44"
TANGENT = 9.15
LENGTH = 13.78
RADIUS = 8.20
PC STA = 15+88.69 N = 165,247.7659 E = 690,545.6662
PT STA = 17+02.46 N = 165,235.9432 E = 690,542.5118

M1-23
PI STA = 17+16.11 N = 165,221.2293 E = 690,552.2478
DELTA = 112° 39' 12" (RT)
DEGREE = 698° 43' 44"
TANGENT = 12.30
LENGTH = 16.12
RADIUS = 8.20
PC STA = 17+05.81 N = 165,231.4841 E = 690,546.4526
PT STA = 17+21.93 N = 165,218.9096 E = 690,540.1727

M1-24
PI STA = 17+35.49 N = 165,216.7344 E = 690,523.0378
DELTA = 93° 32' 50" (LT)
DEGREE = 698° 31' 11"
TANGENT = 9.68
LENGTH = 14.71
RADIUS = 9.00
PC STA = 17+28.87 N = 165,217.9966 E = 690,533.3597
PT STA = 17+43.58 N = 165,205.4974 E = 690,529.3482

M1-25
PI STA = 17+61.74 N = 165,188.9175 E = 690,530.9113
DELTA = 140° 26' 35" (RT)
DEGREE = 707° 21' 19"
TANGENT = 11.66
LENGTH = 15.61
RADIUS = 8.10
PC STA = 17+50.08 N = 165,200.2035 E = 690,527.9819
PT STA = 17+65.69 N = 166,190.1110 E = 690,512.3126

M1-26
PI STA = 17+81.93 N = 165,191.7816 E = 690,503.2721
DELTA = 87° 07' 47" (LT)
DEGREE = 707° 21' 19"
TANGENT = 7.59
LENGTH = 12.32
RADIUS = 8.10
PC STA = 17+74.13 N = 165,190.9745 E = 690,510.9201
PT STA = 17+86.45 N = 165,184.1660 E = 690,502.0877

M1-27
PI STA = 18+00.21 N = 165,164.9249 E = 690,492.0411
DELTA = 109° 00' 05" (RT)
DEGREE = 707° 21' 19"
TANGENT = 10.78
LENGTH = 14.09
RADIUS = 8.10
PC STA = 17+95.46 N = 165,176.2459 E = 690,520.5271
PT STA = 18+10.44 N = 165,165.1445 E = 690,485.2881

M1-28
PI STA = 18+27.92 N = 165,178.4491 E = 690,473.9262
DELTA = 83° 13' 47" (LT)
DEGREE = 707° 21' 19"
TANGENT = 7.35
LENGTH = 12.47
RADIUS = 8.10
PC STA = 18+19.98 N = 165,173.1470 E = 690,480.6603
PT STA = 18+32.44 N = 165,169.4280 E = 690,470.0046

M1-29
PI STA = 18+49.11 N = 165,154.5196 E = 690,462.9276
DELTA = 87° 41' 01" (RT)
DEGREE = 698° 43' 44"
TANGENT = 7.73
LENGTH = 12.40
RADIUS = 8.20
PC STA = 18+41.38 N = 165,161.4739 E = 690,465.0160
PT STA = 18+53.73 N = 165,157.7232 E = 690,455.4390

M1-30
PI STA = 19+73.28 N = 165,165.7647 E = 690,437.5429
DELTA = 88° 32' 18" (LT)
DEGREE = 698° 43' 44"
TANGENT = 7.72
LENGTH = 12.39
RADIUS = 8.20
PC STA = 19+65.54 N = 165,162.5931 E = 690,444.9771
PT STA = 19+77.93 N = 165,155.9353 E = 690,434.0484

M1-31
PI STA = 19+26.82 N = 165,142.2108 E = 690,425.2387
DELTA = 75° 39' 29" (RT)
DEGREE = 698° 43' 44"
TANGENT = 6.37
LENGTH = 10.83
RADIUS = 8.20
PC STA = 19+20.45 N = 165,147.9605 E = 690,429.2054
PT STA = 19+31.29 N = 165,143.8957 E = 690,419.0455

M1-32
PI STA = 19+22.06 N = 165,145.5224 E = 690,398.5911
DELTA = 93° 09' 13" (LT)
DEGREE = 698° 43' 44"
TANGENT = 8.65
LENGTH = 13.32
RADIUS = 8.20
PC STA = 19+13.39 N = 165,149.5133 E = 690,401.2933
PT STA = 19+26.71 N = 165,140.0092 E = 690,397.2969

M1-33
PI STA = 19+49.40 N = 165,120.8438 E = 690,390.7592
DELTA = 63° 01' 20" (RT)
DEGREE = 698° 31' 11"
TANGENT = 7.97
LENGTH = 13.04
RADIUS = 9.00
PC STA = 19+38.43 N = 165,126.4780 E = 690,396.1995
PT STA = 19+51.46 N = 165,121.1119 E = 690,386.8054

M1-34
PI STA = 19+71.03 N = 165,122.2630 E = 690,366.2345
DELTA = 97° 01' 45" (LT)
DEGREE = 698° 31' 11"
TANGENT = 10.18
LENGTH = 15.24
RADIUS = 9.00
PC STA = 19+60.85 N = 165,121.6840 E = 690,376.4446
PT STA = 19+76.10 N = 165,112.1060 E = 690,368.9331

M1-35
PI STA = 19+93.76 N = 165,094.4580 E = 690,368.6662
DELTA = 90° 25' 45" (RT)
DEGREE = 698° 31' 11"
TANGENT = 9.07
LENGTH = 14.20
RADIUS = 9.00
PC STA = 19+84.71 N = 165,103.8071 E = 690,367.4923
PT STA = 19+98.92 N = 165,093.9473 E = 690,359.0070

M1-36
PI STA = 20+16.84 N = 165,092.9393 E = 690,341.1119
DELTA = 94° 16' 16" (LT)
DEGREE = 698° 31' 11"
TANGENT = 9.70
LENGTH = 14.81
RADIUS = 9.00
PC STA = 20+07.14 N = 165,093.4849 E = 690,350.7936
PT STA = 20+21.95 N = 165,083.3240 E = 690,342.3772

M1-37
PI STA = 20+38.93 N = 165,066.4331 E = 690,344.5521
DELTA = 91° 12' 57" (RT)
DEGREE = 698° 31' 11"
TANGENT = 9.19
LENGTH = 14.33
RADIUS = 9.00
PC STA = 20+29.73 N = 165,075.6016 E = 690,348.2527
PT STA = 20+44.06 N = 165,068.4374 E = 690,336.4543

M1-38
PI STA = 20+52.29 N = 165,053.4926 E = 690,317.3313
DELTA = 97° 19' 26" (LT)
DEGREE = 698° 31' 11"
TANGENT = 9.59
LENGTH = 15.72
RADIUS = 9.00
PC STA = 20+53.71 N = 165,064.4223 E = 690,326.8939
PT STA = 20+67.42 N = 165,054.9294 E = 690,317.9712

M1-39
PI STA = 20+84.85 N = 165,030.5192 E = 690,316.9317
DELTA = 94° 02' 19" (RT)
DEGREE = 638° 37' 11"
TANGENT = 9.10
LENGTH = 13.20
RADIUS = 9.00
PC STA = 20+75.75 N = 165,040.6031 E = 690,318.4531
PT STA = 20+88.96 N = 165,035.1652 E = 690,310.9765

M1-40
PI STA = 21+09.23 N = 165,032.9449 E = 690,291.9196
DELTA = 95° 19' 11" (LT)
DEGREE = 638° 37' 11"
TANGENT = 9.57
LENGTH = 14.98
RADIUS = 9.00
PC STA = 20+99.66 N = 165,034.5901 E = 690,301.8467
PT STA = 21+14.37 N = 165,023.4091 E = 690,294.4494

M1-41
PI STA = 21+32.93 N = 165,005.8687 E = 690,299.1797
DELTA = 69° 36' 32" (RT)
DEGREE = 636° 37' 11"
TANGENT = 6.76
LENGTH = 13.90
RADIUS = 9.00
PC STA = 21+24.07 N = 165,014.0347 E = 690,296.9345
PT STA = 21+37.96 N = 165,009.5942 E = 690,290.7779

M1-42
PI STA = 21+53.76 N = 165,000.6489 E = 690,275.6944
DELTA = 98° 14' 41" (LT)
DEGREE = 638° 37' 11"
TANGENT = 9.87
LENGTH = 10.41
RADIUS = 9.00
PC STA = 21+43.89 N = 165,000.3079 E = 690,281.3172
PT STA = 21+53.23 N = 165,002.8281 E = 690,274.9337

M1-43
PI STA = 21+72.19 N = 164,979.0977 E = 690,275.1905
DELTA = 22° 57' 57" (RT)
DEGREE = 190° 59' 09"
TANGENT = 9.09
LENGTH = 12.02
RADIUS = 30.00
PC STA = 21+63.01 N = 165,995.1120 E = 690,275.9396
PT STA = 21+78.03 N = 165,973.5035 E = 690,270.0845

M1-44
PI STA = 22+35.09 N = 165,924.5548 E = 690,241.2922
DELTA = 20° 08' 06" (LT)
DEGREE = 143° 14' 22"
TANGENT = 7.03
LENGTH = 14.02
RADIUS = 40.00
PC STA = 22+28.00 N = 165,930.3702 E = 690,244.3672
PT STA = 22+42.02 N = 165,917.5837 E = 690,240.0348

M1-45
PI STA = 22+56.03 N = 165,901.7757 E = 690,237.1935
DELTA = 61° 51' 46" (RT)
DEGREE = 638° 37' 11"
TANGENT = 5.99
LENGTH = 9.72
RADIUS = 9.00
PC STA = 22+50.03 N = 165,907.3861 E = 690,238.1402
PT STA = 22+59.41 N = 165,900.1290 E = 690,232.0915

M1-46
PI STA = 22+80.90 N = 165,894.5280 E = 690,214.7410
DELTA = 85° 29' 46" (LT)
DEGREE = 638° 37' 11"
TANGENT = 8.46
LENGTH = 13.58
RADIUS = 9.00
PC STA = 22+72.14 N = 165,897.1283 E = 690,222.7594
PT STA = 22+85.72 N = 165,895.3308 E = 690,216.8384

M1-47
PI STA = 23+02.91 N = 165,882.8832 E = 690,221.0989
DELTA = 92° 53' 00" (RT)
DEGREE = 638° 37' 11"
TANGENT = 9.45
LENGTH = 14.62
RADIUS = 9.00
PC STA = 22+93.44 N = 165,978.8513 E = 690,218.7525
PT STA = 23+08.03 N = 165,867.7994 E = 690,211.8243

M1-48
PI STA = 23+27.40 N = 165,853.9474 E = 690,192.8472
DELTA = 92° 19' 42" (LT)
DEGREE = 638° 37' 11"
TANGENT = 8.37
LENGTH = 14.50
RADIUS = 9.00
PC STA = 23+19.03 N = 165,866.9116 E = 690,200.0302
PT STA = 23+33.53 N = 165,864.8483 E = 690,195.0601

M1-49
PI STA = 23+51.39 N = 165,836.5290 E = 690,199.8745
DELTA = 101° 21' 56" (RT)
DEGREE = 638° 37' 11"
TANGENT = 10.99
LENGTH = 15.92
RADIUS = 9.00
PC STA = 23+40.40 N = 165,847.2018 E = 690,198.9552
PT STA = 23+56.32 N = 165,835.0690 E = 690,188.9282

M1-50
PI STA = 23+74.84 N = 165,835.2830 E = 690,170.0928
DELTA = 97° 17' 33" (LT)
DEGREE = 638° 37' 11"
TANGENT = 10.21
LENGTH = 15.27
RADIUS = 9.00
PC STA = 23+64.63 N = 165,835.7140 E = 690,180.2900
PT STA = 23+79.90 N = 165,825.2190 E = 690,171.7073

M1-51
PI STA = 23+97.67 N = 165,807.6997 E = 690,174.7940
DELTA = 93° 26' 00" (RT)
DEGREE = 638° 37' 11"
TANGENT = 9.58
LENGTH = 14.70
RADIUS = 9.00
PC STA = 23+88.08 N = 165,817.1491 E = 690,175.1642
PT STA = 24+02.79 N = 165,808.6955 E = 690,186.2336

M1-52
PI STA = 24+29.66 N = 165,803.8016 E = 690,136.5224
DELTA = 118° 41' 47" (LT)
DEGREE = 477° 27' 53"
TANGENT = 19.47
LENGTH = 24.44
RADIUS = 12.00
PC STA = 24+10.19 N = 165,803.9210 E = 690,157.8316
PT STA = 24+34.62 N = 165,787.9024 E = 690,149.9419

M1-53
PI STA = 24+52.89 N = 165,772.1354 E = 690,159.9105
DELTA = 37° 06' 12" (RT)
DEGREE = 477° 27' 53"
TANGENT = 4.03
LENGTH = 7.77
RADIUS = 12.00
PC STA = 24+48.85 N = 165,775.5249 E = 690,156.7344
PT STA = 24+56.63 N = 165,769.1210 E = 690,159.9022

M1-54
PI STA = 24+28.44 N = 165,729.4254 E = 690,155.6205
DELTA = 85° 39' 28" (RT)
DEGREE = 672° 57' 28"
TANGENT = 9.26
LENGTH = 14.94
RADIUS = 10.00
PC STA = 24+28.17 N = 165,739.4595 E = 690,155.3399
PT STA = 24+01.12 N = 165,729.4254 E = 690,149.3383

M1-55
PI STA = 25+20.96 N = 165,729.4254 E = 690,128.9261
DELTA = 87° 17' 33" (LT)
DEGREE = 638° 37' 11"
TANGENT = 8.56
LENGTH = 13.71
RADIUS = 9.00
PC STA = 25+11.97 N = 165,729.4254 E = 690,135.5096
PT STA = 25+25.69 N = 165,720.6803 E = 690,125.5196

PROJECT REFERENCE NO. R-2554A | SHEET NO. OSM-2C
PROJECT ENGINEER
PROJECT ENGINEER
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PROGRESS DRAWING
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REVISIONS

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REACH M1 CURVE DATA

M1-66
PI STA = 25+47.26 N = 185,098.2167 E = 696,125.4681
DELTA = 93° 02' 15" (RT)
DEGREE = 636° 37' 11"
TANGENT = 9.49
LENGTH = 14.61
RADIUS = 9.00
PC STA = 25+55.45 N = 185,096.0965 E = 696,129.0164
PT STA = 25+53.97 N = 185,089.5576 E = 696,118.0283

M1-67
PI STA = 23+36.81 N = 185,578.3108 E = 697,260.2539
DELTA = 99° 20' 47" (LT)
DEGREE = 636° 37' 11"
TANGENT = 10.60
LENGTH = 15.61
RADIUS = 9.00
PC STA = 27+96.01 N = 185,577.2224 E = 697,250.6051
PT STA = 28+11.61 N = 186,557.7265 E = 697,260.8525

M1-78
PI STA = 30+57.03 N = 185,402.1391 E = 697,660.9270
DELTA = 97° 24' 24" (RT)
DEGREE = 636° 37' 11"
TANGENT = 10.26
LENGTH = 15.30
RADIUS = 9.00
PC STA = 30+47.63 N = 185,411.9057 E = 697,646.6906
PT STA = 30+62.93 N = 185,399.2428 E = 697,840.9983

M1-89
PI STA = 33+22.38 N = 185,196.8878 E = 697,799.3852
DELTA = 82° 09' 18" (LT)
DEGREE = 381° 58' 19"
TANGENT = 7.32
LENGTH = 13.63
RADIUS = 15.00
PC STA = 33+15.06 N = 185,202.9057 E = 697,793.5328
PT STA = 33+28.69 N = 185,189.6845 E = 697,791.5979

M1-100
PI STA = 26+26.71 N = 184,983.3575 E = 697,861.9831
DELTA = 77° 02' 00" (LT)
DEGREE = 381° 58' 19"
TANGENT = 11.96
LENGTH = 20.20
RADIUS = 15.00
PC STA = 26+14.74 N = 184,988.6924 E = 697,872.3734
PT STA = 26+35.94 N = 184,981.7332 E = 697,894.4890

M1-67
PI STA = 25+72.43 N = 185,701.5056 E = 696,096.7102
DELTA = 93° 07' 29" (LT)
DEGREE = 636° 37' 11"
TANGENT = 9.50
LENGTH = 14.63
RADIUS = 9.00
PC STA = 25+62.93 N = 185,700.5578 E = 696,106.1672
PT STA = 25+77.61 N = 185,692.0145 E = 696,093.2756

M1-68
PI STA = 29+56.47 N = 185,673.1737 E = 695,035.4123
DELTA = 92° 30' 28" (RT)
DEGREE = 636° 37' 11"
TANGENT = 9.42
LENGTH = 14.53
RADIUS = 9.00
PC STA = 29+37.04 N = 185,682.5338 E = 695,035.3429
PT STA = 29+51.59 N = 185,674.0382 E = 695,056.0278

M1-69
PI STA = 28+52.03 N = 185,550.1721 E = 697,928.5082
DELTA = 99° 29' 00" (LT)
DEGREE = 636° 37' 11"
TANGENT = 10.05
LENGTH = 15.16
RADIUS = 9.00
PC STA = 28+41.94 N = 185,562.1720 E = 697,933.8419
PT STA = 28+57.10 N = 185,543.0920 E = 697,923.8483

M1-70
PI STA = 28+74.53 N = 185,528.8325 E = 697,923.8350
DELTA = 92° 39' 12" (RT)
DEGREE = 636° 37' 11"
TANGENT = 9.42
LENGTH = 14.55
RADIUS = 9.00
PC STA = 28+65.14 N = 185,535.0661 E = 697,923.7336
PT STA = 28+79.69 N = 185,525.9332 E = 697,914.4758

M1-71
PI STA = 29+29.22 N = 185,509.5582 E = 697,894.9569
DELTA = 100° 28' 27" (LT)
DEGREE = 636° 37' 11"
TANGENT = 10.64
LENGTH = 15.80
RADIUS = 9.00
PC STA = 29+18.57 N = 185,526.2116 E = 697,905.7933
PT STA = 29+04.18 N = 185,515.8431 E = 697,895.6109

M1-72
PI STA = 29+20.77 N = 185,499.4452 E = 697,893.1423
DELTA = 89° 34' 26" (RT)
DEGREE = 636° 37' 11"
TANGENT = 8.75
LENGTH = 13.91
RADIUS = 9.00
PC STA = 29+11.93 N = 185,505.1212 E = 697,887.3029
PT STA = 29+25.90 N = 185,497.8904 E = 697,890.5023

M1-73
PI STA = 29+43.20 N = 185,484.5287 E = 697,873.4776
DELTA = 85° 35' 42" (LT)
DEGREE = 636° 37' 11"
TANGENT = 9.04
LENGTH = 16.03
RADIUS = 9.00
PC STA = 29+32.27 N = 185,495.5896 E = 697,863.2529
PT STA = 29+48.29 N = 185,485.2698 E = 697,876.1936

M1-74
PI STA = 29+55.20 N = 185,469.0068 E = 697,890.8147
DELTA = 90° 54' 05" (RT)
DEGREE = 636° 37' 11"
TANGENT = 9.14
LENGTH = 14.28
RADIUS = 9.00
PC STA = 29+46.06 N = 185,477.8015 E = 697,879.3155
PT STA = 29+70.33 N = 185,466.8453 E = 697,871.9617

M1-75
PI STA = 29+30.69 N = 185,461.5473 E = 697,852.8594
DELTA = 104° 04' 29" (LT)
DEGREE = 636° 37' 11"
TANGENT = 11.53
LENGTH = 16.36
RADIUS = 9.00
PC STA = 29+19.16 N = 185,484.5291 E = 697,864.0434
PT STA = 29+34.90 N = 185,451.4020 E = 697,852.4979

M1-76
PI STA = 30+12.58 N = 185,435.3053 E = 697,867.0782
DELTA = 102° 29' 23" (RT)
DEGREE = 636° 37' 11"
TANGENT = 11.21
LENGTH = 16.10
RADIUS = 9.00
PC STA = 30+01.37 N = 185,445.9062 E = 697,861.9385
PT STA = 30+17.48 N = 185,430.8128 E = 697,855.9304

M1-77
PI STA = 30+35.03 N = 185,427.8127 E = 697,839.4268
DELTA = 97° 16' 00" (LT)
DEGREE = 636° 37' 11"
TANGENT = 10.22
LENGTH = 15.25
RADIUS = 9.00
PC STA = 30+24.81 N = 185,430.7225 E = 697,849.2941
PT STA = 30+40.06 N = 185,416.4617 E = 697,843.8229

M1-79
PI STA = 30+81.79 N = 185,393.9305 E = 697,622.9531
DELTA = 104° 41' 16" (LT)
DEGREE = 636° 37' 11"
TANGENT = 11.92
LENGTH = 16.44
RADIUS = 9.00
PC STA = 30+70.13 N = 185,397.2242 E = 697,634.1420
PT STA = 30+86.57 N = 185,383.9429 E = 697,628.0768

M1-80
PI STA = 31+04.61 N = 185,366.4942 E = 697,638.2527
DELTA = 99° 41' 45" (RT)
DEGREE = 636° 37' 11"
TANGENT = 10.12
LENGTH = 15.19
RADIUS = 9.00
PC STA = 30+94.50 N = 185,377.1520 E = 697,633.0575
PT STA = 31+09.69 N = 185,364.3142 E = 697,625.0778

M1-81
PI STA = 31+27.77 N = 185,365.8472 E = 697,612.6121
DELTA = 89° 14' 07" (LT)
DEGREE = 636° 37' 11"
TANGENT = 10.04
LENGTH = 15.12
RADIUS = 9.00
PC STA = 31+17.73 N = 185,365.9828 E = 697,621.7528
PT STA = 31+32.85 N = 185,348.2108 E = 697,617.7280

M1-82
PI STA = 31+49.92 N = 185,333.6087 E = 697,628.3723
DELTA = 92° 29' 46" (RT)
DEGREE = 636° 37' 11"
TANGENT = 9.39
LENGTH = 14.52
RADIUS = 9.00
PC STA = 31+40.43 N = 185,341.9984 E = 697,621.5891
PT STA = 31+54.94 N = 185,329.1712 E = 697,610.0972

M1-83
PI STA = 31+74.54 N = 185,310.9124 E = 697,600.9310
DELTA = 98° 54' 16" (LT)
DEGREE = 636° 37' 11"
TANGENT = 10.62
LENGTH = 15.54
RADIUS = 9.00
PC STA = 31+64.02 N = 185,324.3939 E = 697,610.1021
PT STA = 31+79.55 N = 185,311.5229 E = 697,597.1776

M1-84
PI STA = 31+97.89 N = 185,297.1331 E = 697,616.0514
DELTA = 100° 14' 10" (RT)
DEGREE = 636° 37' 11"
TANGENT = 10.77
LENGTH = 15.75
RADIUS = 9.00
PC STA = 31+86.82 N = 185,305.7250 E = 697,611.5634
PT STA = 32+02.57 N = 185,292.2570 E = 697,609.4535

M1-85
PI STA = 32+21.83 N = 185,283.5594 E = 697,791.2676
DELTA = 102° 14' 17" (LT)
DEGREE = 636° 37' 11"
TANGENT = 12.07
LENGTH = 17.16
RADIUS = 9.00
PC STA = 32+09.76 N = 185,289.2373 E = 697,802.8725
PT STA = 32+26.92 N = 185,274.7731 E = 697,800.4006

M1-86
PI STA = 32+46.17 N = 185,261.7011 E = 697,813.9833
DELTA = 103° 31' 41" (RT)
DEGREE = 636° 37' 11"
TANGENT = 11.42
LENGTH = 16.25
RADIUS = 9.00
PC STA = 32+33.75 N = 185,269.5201 E = 697,805.7569
PT STA = 32+50.01 N = 185,256.5565 E = 697,804.3635

M1-87
PI STA = 32+67.72 N = 185,249.0150 E = 697,789.4435
DELTA = 104° 34' 20" (LT)
DEGREE = 636° 37' 11"
TANGENT = 11.84
LENGTH = 16.46
RADIUS = 9.00
PC STA = 32+55.88 N = 185,252.2532 E = 697,799.2508
PT STA = 32+72.01 N = 185,236.1010 E = 697,797.9787

M1-88
PI STA = 32+88.94 N = 185,226.9233 E = 697,810.0270
DELTA = 91° 37' 54" (RT)
DEGREE = 572° 57' 29"
TANGENT = 9.84
LENGTH = 14.26
RADIUS = 10.00
PC STA = 32+80.31 N = 185,232.7971 E = 697,803.9349
PT STA = 32+94.56 N = 185,219.8244 E = 697,805.1377

M1-90
PI STA = 33+78.55 N = 185,144.2722 E = 697,805.0457
DELTA = 42° 56' 03" (LT)
DEGREE = 358° 09' 55"
TANGENT = 6.50
LENGTH = 12.00
RADIUS = 16.00
PC STA = 33+70.23 N = 185,150.2785 E = 697,804.1442
PT STA = 33+82.23 N = 185,141.1764 E = 697,811.5290

M1-91
PI STA = 34+17.14 N = 185,124.0069 E = 697,841.0243
DELTA = 90° 36' 12" (RT)
DEGREE = 572° 57' 29"
TANGENT = 10.11
LENGTH = 15.82
RADIUS = 10.00
PC STA = 34+07.03 N = 185,123.9815 E = 697,833.1197
PT STA = 34+22.84 N = 185,115.2801 E = 697,836.8642

M1-92
PI STA = 34+40.94 N = 185,099.9305 E = 697,827.7791
DELTA = 100° 57' 58" (LT)
DEGREE = 636° 37' 11"
TANGENT = 10.91
LENGTH = 15.82
RADIUS = 9.00
PC STA = 34+30.03 N = 185,109.0410 E = 697,833.2501
PT STA = 34+45.85 N = 185,096.0252 E = 697,836.0375

M1-93
PI STA = 34+62.43 N = 185,080.8045 E = 697,853.7173
DELTA = 98° 10' 21" (RT)
DEGREE = 636° 37' 11"
TANGENT = 10.03
LENGTH = 15.11
RADIUS = 9.00
PC STA = 34+52.41 N = 185,093.8697 E = 697,844.2490
PT STA = 34+67.52 N = 185,081.8404 E = 697,849.4327

M1-94
PI STA = 34+84.83 N = 185,069.3656 E = 697,842.0236
DELTA = 94° 57' 48" (LT)
DEGREE = 636° 37' 11"
TANGENT = 9.82
LENGTH = 14.92
RADIUS = 9.00
PC STA = 34+75.04 N = 185,074.7405 E = 697,845.2183
PT STA = 34+89.95 N = 185,062.4553 E = 697,851.2271

M1-95
PI STA = 35+09.95 N = 185,055.5056 E = 697,859.9737
DELTA = 90° 53' 59" (RT)
DEGREE = 636° 37' 11"
TANGENT = 10.71
LENGTH = 15.62
RADIUS = 9.00
PC STA = 34+99.24 N = 185,059.2277 E = 697,859.9345
PT STA = 35+14.93 N = 185,048.2568 E = 697,864.8932

M1-96
PI STA = 35+32.93 N = 185,030.7077 E = 697,855.5192
DELTA = 95° 52' 40" (LT)
DEGREE = 636° 37' 11"
TANGENT = 9.97
LENGTH = 15.05
RADIUS = 9.00
PC STA = 35+22.96 N = 185,039.3248 E = 697,860.5418
PT STA = 35+38.02 N = 185,026.9938 E = 697,864.8054

M1-97
PI STA = 35+55.64 N = 185,018.8117 E = 697,831.3731
DELTA = 105° 10' 31" (RT)
DEGREE = 636° 37' 11"
TANGENT = 11.35
LENGTH = 16.21
RADIUS = 9.00
PC STA = 35+46.29 N = 185,023.5230 E = 697,871.2334
PT STA = 35+61.50 N = 185,009.9111 E = 697,874.6583

M1-98
PI STA = 35+73.20 N = 184,999.6664 E = 697,864.4626
DELTA = 96° 31' 12" (LT)
DEGREE = 636° 37' 11"
TANGENT = 9.91
LENGTH = 15.00
RADIUS = 9.00
PC STA = 35+63.29 N = 185,004.6283 E = 697,870.5208
PT STA = 35+63.29 N = 184,991.4109 E = 697,872.9983

M1-99
PI STA = 35+93.50 N = 184,973.2984 E = 697,892.9036
DELTA = 121° 33' 25" (RT)
DEGREE = 636° 37' 11"
TANGENT = 18.09
LENGTH = 19.09
RADIUS = 9.00
PC STA = 35+85.81 N = 184,987.4258 E = 697,879.2604
PT STA = 35+03.91 N = 184,971.7351 E = 697,876.4951

REACH UT1 CURVE DATA

UT1-1
PI STA = 12+32.24 N = 185,713.0530 E = 696,097.2368
DELTA = 60° 51' 35" (RT)
DEGREE = 286° 28' 44"
TANGENT = 11.76
LENGTH = 21.24
RADIUS = 20.00
PC STA = 12+20.49 N = 185,719.2370 E = 696,097.2502
PT STA = 12+41.73 N = 185,701.3173 E = 696,096.7014

REACH UT2 CURVE DATA

UT2-1
PI STA = 11+94.80 N = 185,532.0972 E = 696,548.4482
DELTA = 58° 05' 53" (RT)
DEGREE = 190° 59' 09"
TANGENT = 10.65
LENGTH = 20.40
RADIUS = 30.00
PC STA = 11+77.05 N = 185,537.2745 E = 696,553.2951
PT STA = 12+09.35 N = 185,579.9523 E = 696,529.9427

UT2-2
PI STA = 14+12.23 N = 185,552.7517 E = 696,327.8718
DELTA = 14° 40' 21" (RT)
DEGREE = 38° 11' 50"
TANGENT = 19.31
LENGTH = 38.41
RADIUS = 150.00
PC STA = 13+92.92 N = 185,556.3326 E = 696,347.0120
PT STA = 14+31.33 N = 185,555.1247 E = 696,308.7051

UT2-3
PI STA = 16+03.14 N = 185,578.1464 E = 696,136.1922
DELTA = 17° 11' 40" (RT)
DEGREE = 57° 17' 45"
TANGENT = 16.12
LENGTH = 30.01
RADIUS = 100.00
PC STA = 15+86.02 N = 185,574.2264 E = 696,153.1996
PT STA = 16+16.03 N = 185,582.3503 E = 696,124.4637

UT2-4
PI STA = 16+05.61 N = 185,595.5781 E = 696,155.0135
DELTA = 19° 11' 19" (RT)
DEGREE = 57° 17' 45"
TANGENT = 13.90
LENGTH = 33.49
RADIUS = 100.00
PC STA = 15+91.71 N = 185,587.0942 E = 696,171.8511
PT STA = 16+25.20 N = 185,575.5135 E = 696,139.5990

REVISIONS

K:\Civil\R-2554A\Design\Plans\R2554_Rdy_dtl_Lgnh_05Mar20.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2554A	OSW-20

PROJECT ENGINEER

PROJECT ENGINEER

Baker — Michael Baker Engineering Inc
8000 Regency Parkway, Suite 225, Cary, NORTH CAROLINA 27518
Phone: 919.463.5488 Fax: 919.463.5490

PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION

CONSTRUCTION SEQUENCE

The Contractor is responsible for following the sequence of construction in accordance with the plans and provisions, as directed by the Engineer. Construction shall proceed in the following manner unless otherwise directed by the Engineer.

The length of stream that is isolated as a daily work area is left to Contractor's discretion in accordance with the following provisions:

1. All project operations will comply with the provided Sediment and Erosion Control Plan.
2 The project consists of three stream reaches (Reaches M1, UT1, and UT2) Once work begins on a stream reach, the Contractor must complete that site before moving work crews and equipment to a different stream reach.
3 Before water is turned into the new channel, each reach of stream must be a completed work product, i.e. all bank and channel modifications, including excavation, grading, fill, seeding and mulching and matting, as directed by the engineer.

The following general provisions will apply to each stream reach:

1. Layout location of the new stream channel, construction easement limits, and set grade stakes. The Engineer must inspect and approve all layout work before construction may begin.
2. Mobilize equipment and materials to the site.
3 Set up staging areas, construction entrances, and safety fences.
4. Open construction area shall be minimized - the Contractor shall not begin more work than can be completed in a day.
5. The Contractor shall work in the dry. Pump-around operations will be required.
6. Apply mulch, temporary, and permanent seeding as work areas are completed and approved by the Engineer.
7. Repair construction entrances and demobilize equipment from the site.

The following provisions are provided for each stream site:

Reach M1

1. Contractor shall begin by excavating bench limits as indicated on the plans.
2 Install pump-around operations as required to construct new channel and in-stream structures in the dry.
3. Beginning at the upstream end of the reach, begin installing structures and stabilizing banks as indicated on the plans.
4 Contractor shall install the culvert crossings as specified on the plans at approximate stations 22+00 and 24+73
5 Remove pump-around operations and ensure compliance with the sediment and erosion control plan prior to leaving the site.

Reach UT1

1 Contractor shall begin by excavating grading limits as indicated on the plans.
2 Reconstruct valley topography as indicated on the plans.
3. Contractor shall install the culvert crossing as specified on the plans at approximate station 11+76
4 Remove equipment and ensure compliance with the sediment and erosion control plan prior to leaving the site.

Reach UT2

1. Contractor shall begin by excavating grading limits as indicated on the plans
2. Reconstruct valley topography as indicated on the plans.
3. Contractor shall install the culvert crossings as specified on the plans at approximate station 16+95.
4 Remove equipment and ensure compliance with the sediment and erosion control plan prior to leaving the site

REVISIONS

PROJECT REFERENCE NO. R-2554 | SHEET NO. 0SM-3

PROJECT ENGINEER

PROJECT ENGINEER

Baker

Michael Baker Engineering Inc
8000 Regency Parkway
Suite 220
Cary, NORTH CAROLINA 27518
Phone: 919 463 5488
Fax: 919 463 5490

PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION

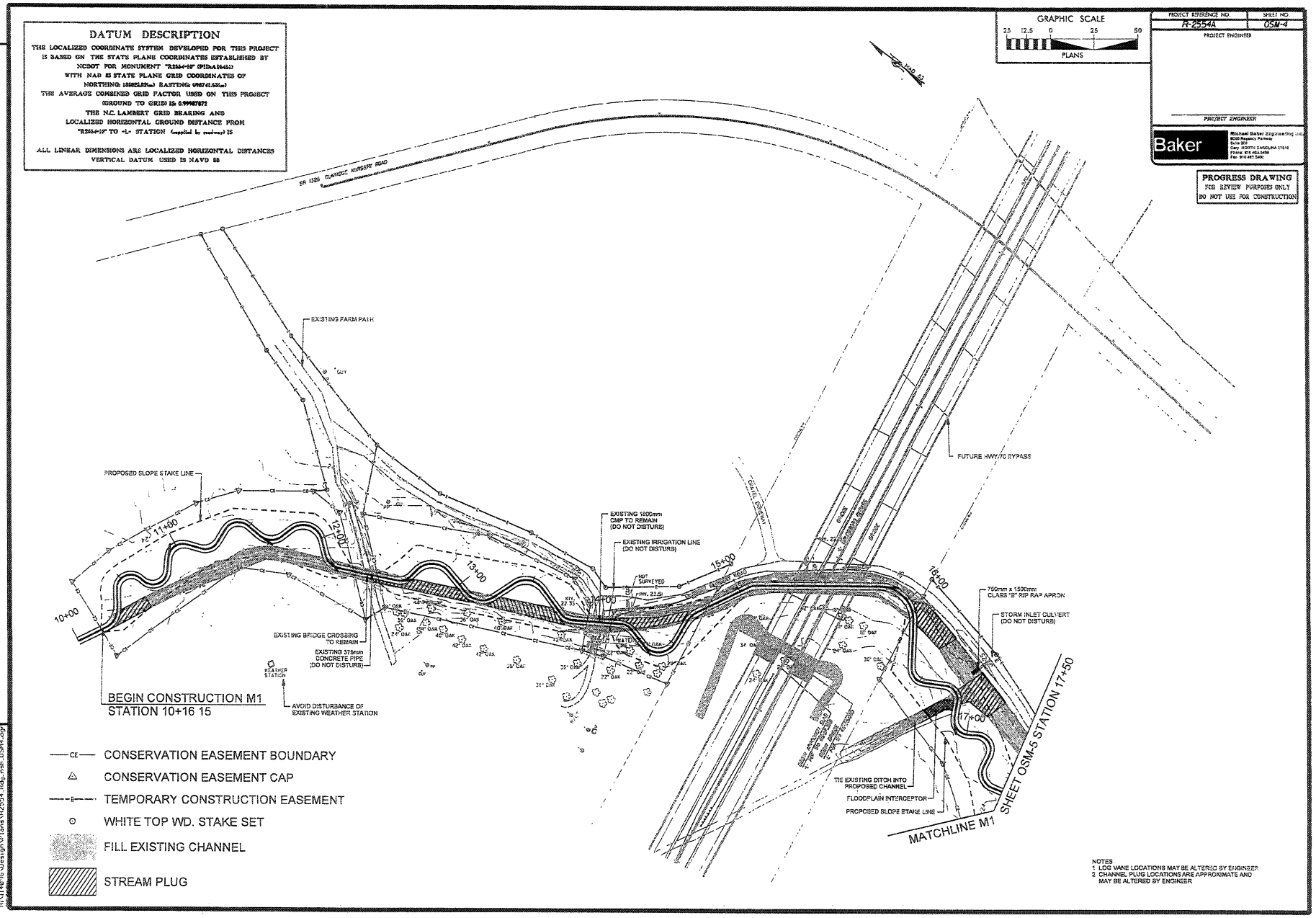
SUMMARY OF QUANTITIES

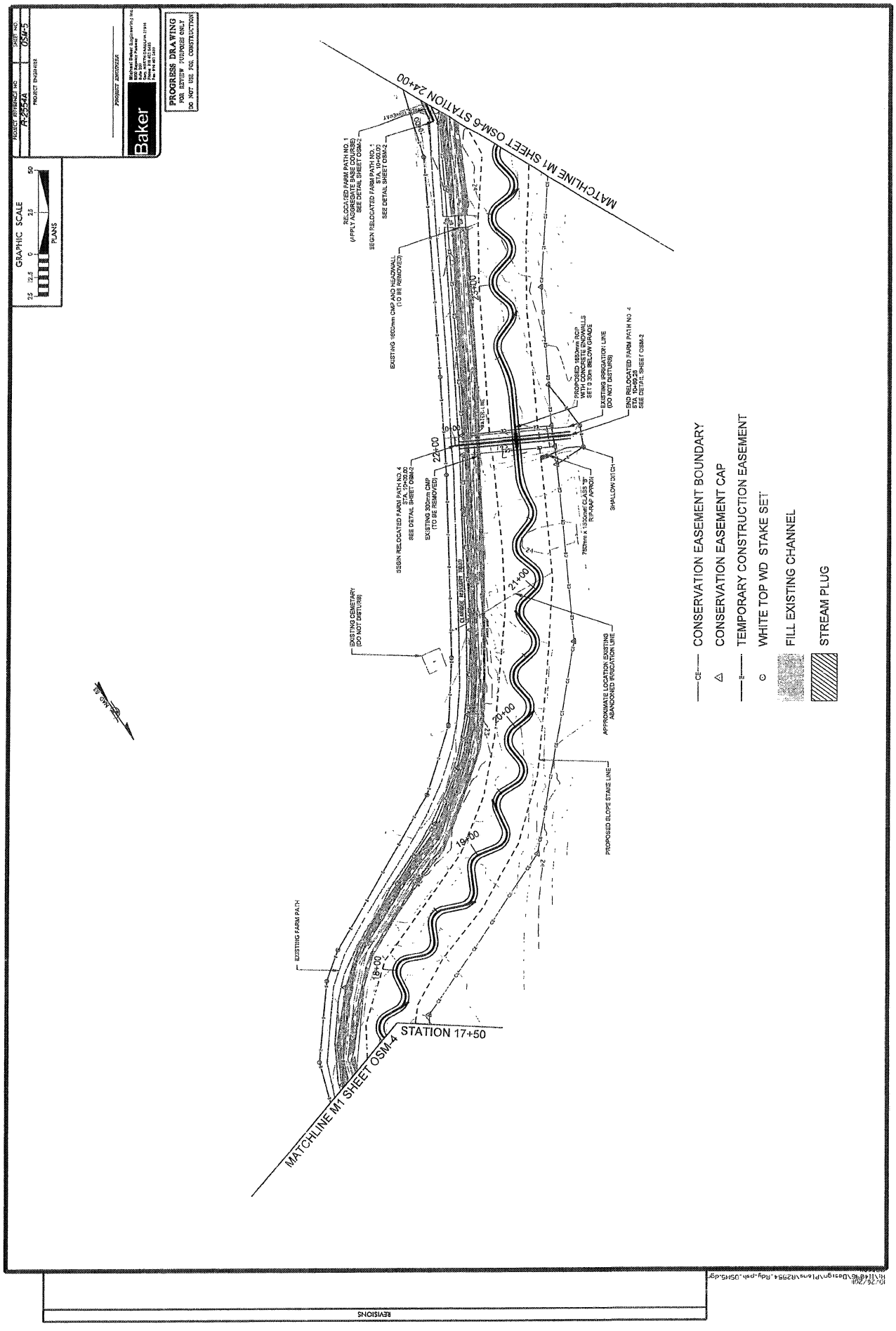
DESC	SECT	QUANTITY	UNIT	ITEM DESCRIPTION
0420000000-M	310	20	M	1650 mm RC Pipe Culvert - Class III
0396000000-M	310	30	M	1050 mm RC Pipe Culvert - Class III
0390000000-M	310	100	M	900 mm RC Pipe Culvert - Class III
1121000000-M	520	1550	MTON	Aggregate Base Course
0000100000-N	800	1	LS	Mobillization/Demobilization
2209000000-M	838	13	M3	Endwalls -1650mm Single RCP
2209000000-M	838	5.0	M3	Endwalls - 1050mm Double RCP
2209000000-M	838	3.5	M3	Endwalls - 900mm Double RCP
3656000000-M	876	6000	M2	Filter Fabric for Drainage
3642000000-M	876	10	MTON	Plain Rip Rap, Class A
3649000000-M	876	20	MTON	Plain Rip Rap, Class B
6133000000-N	SP	1	LS	Construction Surveying for Mitigation
6133000000-N	SP	1	LS	Grading for Mitigation
1077000000-M	SP	14	MTON	No. 57 Stone
6133000000-N	SP	1	LS	Diversion Pumping for Mitigation
3651000000-M	SP	90	MTON	Boulders
6133000000-N	SP	29	EACH	Log Vane
6133000000-N	SP	11500	M2	Coir Fiber Matting
0995000000-M	340	80	M	Pipe Removal
6036000000-M	1631		M2	Matting for Erosioin Control
6038000000-M	SP		M2	Permanent Soil Reinforcement Matting
0314000000-M	SP		MTON	Impervious Select Material

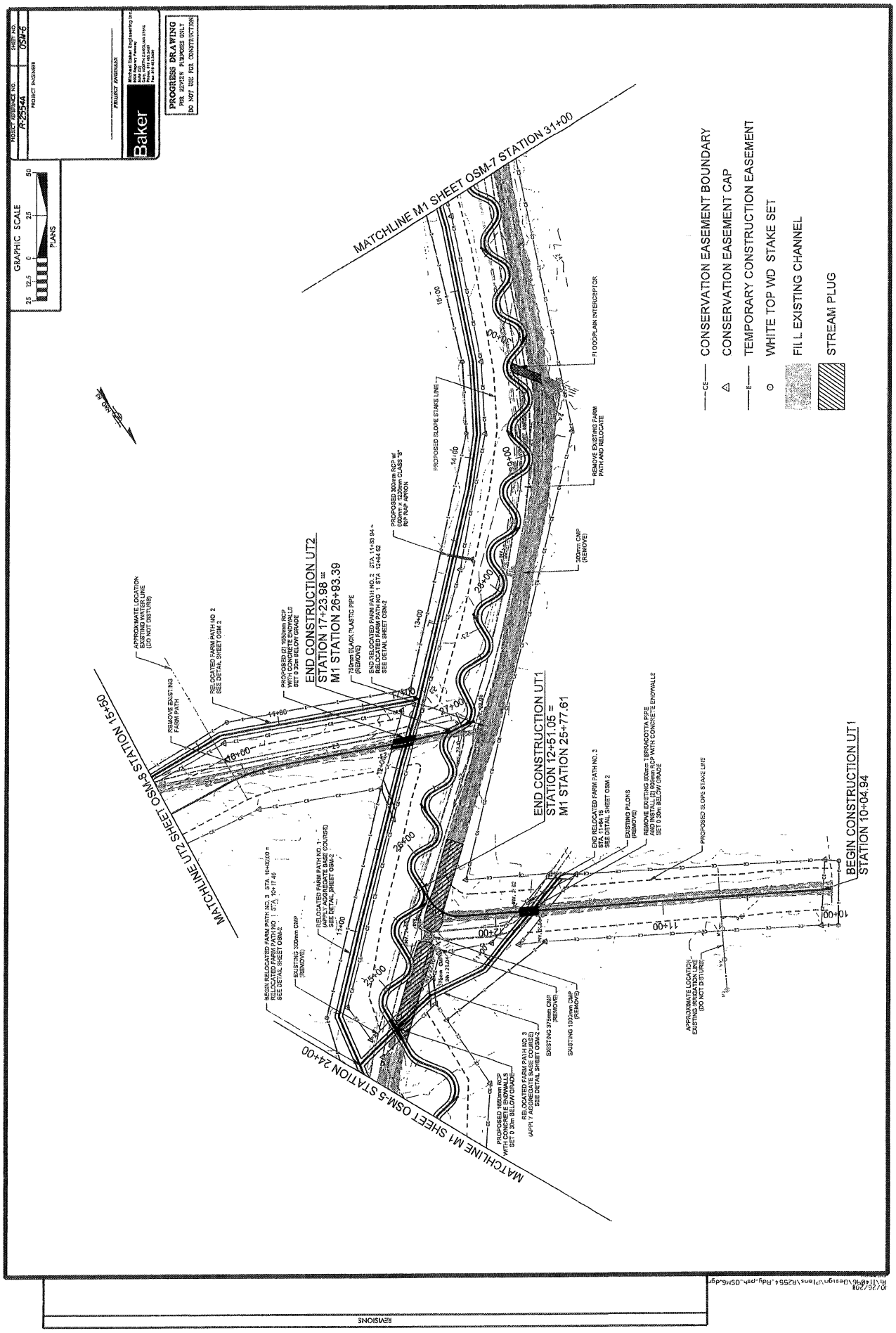
EARTHWORK SUMMARY FOR MITIGATION

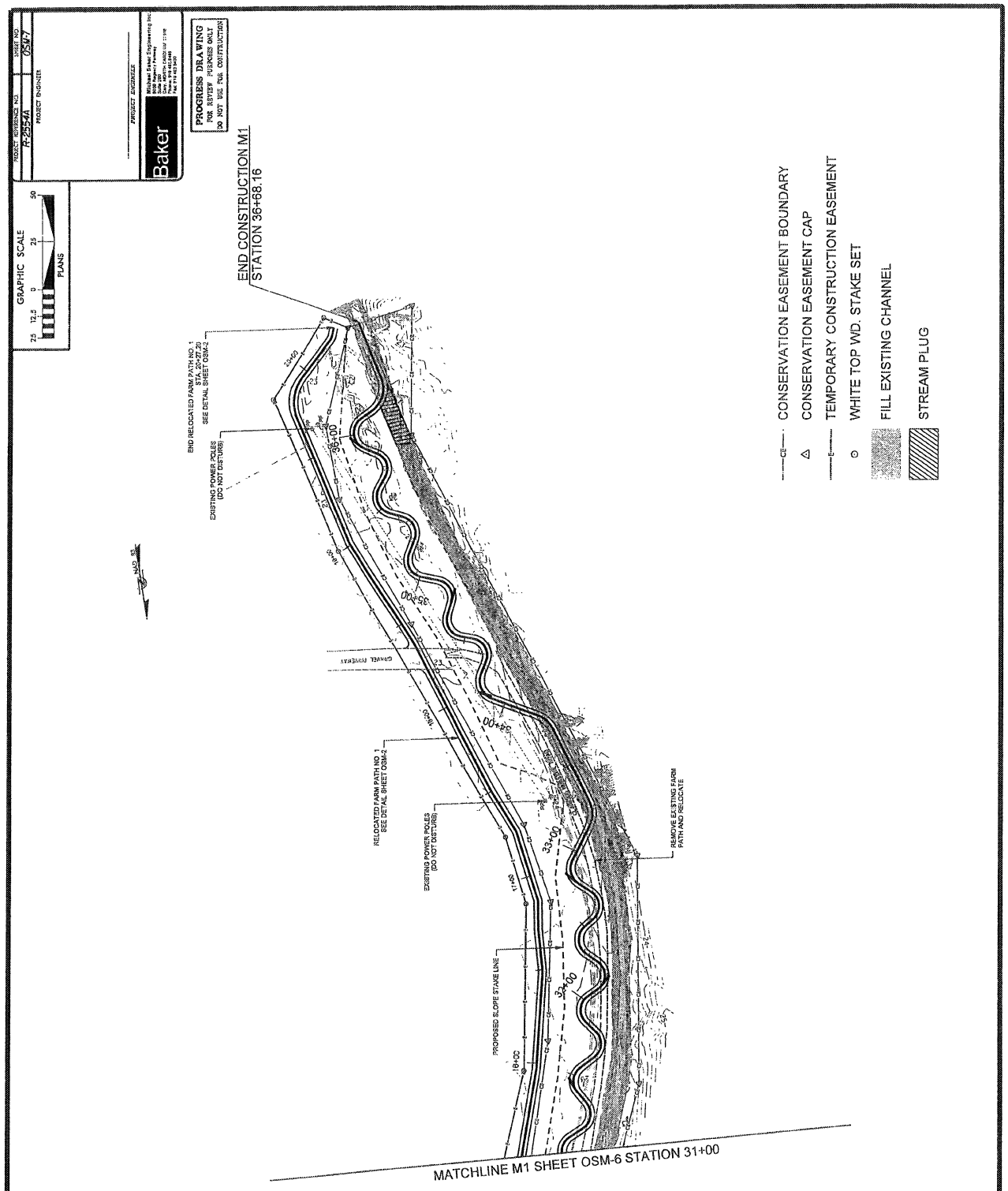
IN CUBIC METERS

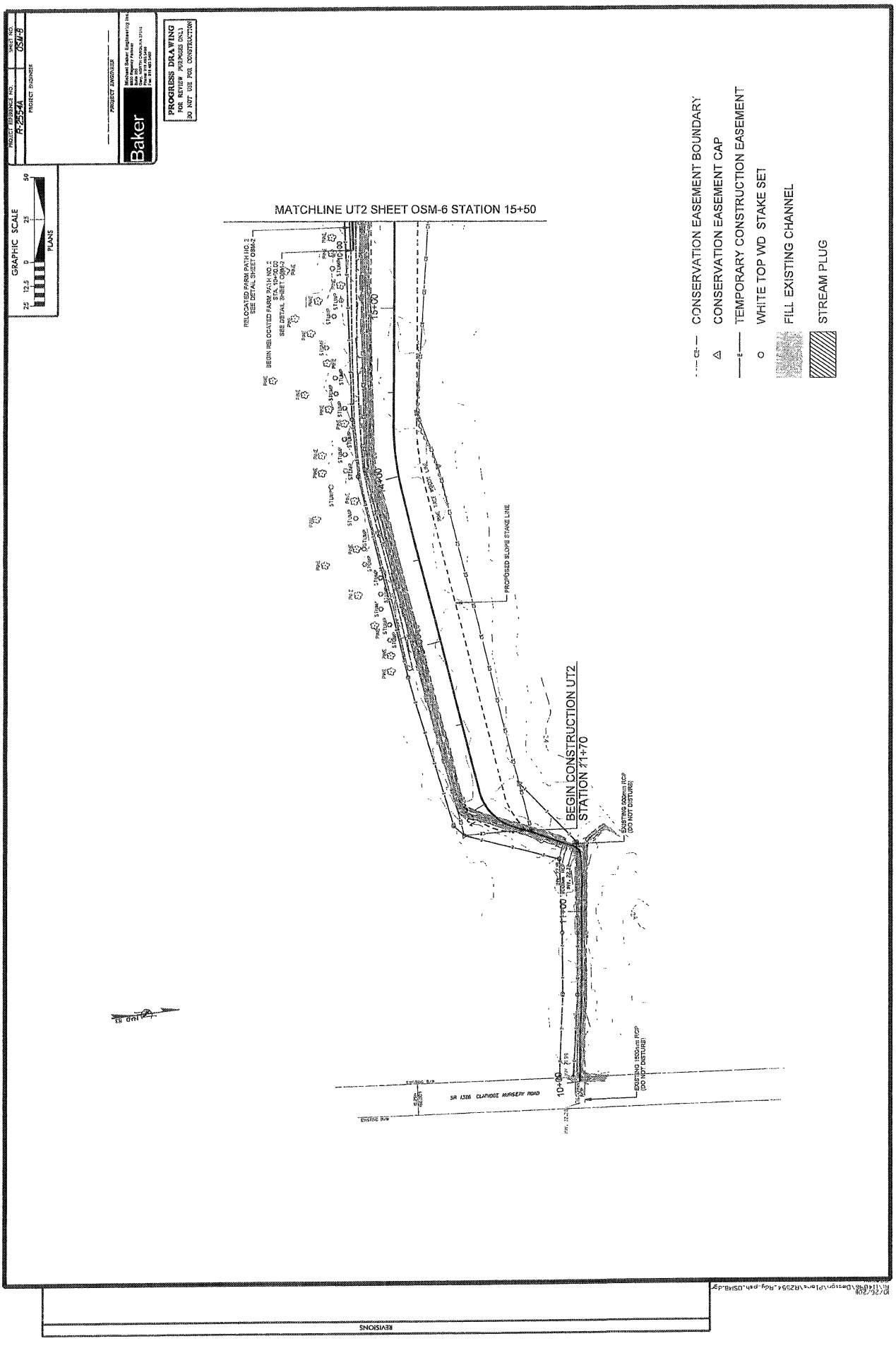
LINE	STATION TO STATION		MITIGATION EXCAVATION TOTAL UNCLASS.	MITIGATION EXCAVATION UNDERCUT	MITIGATION EMBANK + %	MITIGATION BORROW	MITIGATION TOTAL WASTE
REACH M1	10+16.15	36+68.16	117,229		93,731	0	23,498
REACH UT1	10+04.94	12+51.05	4,156		10	0	4,146
REACH UT2	11+70.00	17+23.98	10,502		1,704	0	8,798
TOTAL			131,887		95,445	0	36,442
Waste in lieu of borrow							
GRAND TOTAL			131,887		95,445	0	36,442
SAY			132,000		95,450	0	36,450

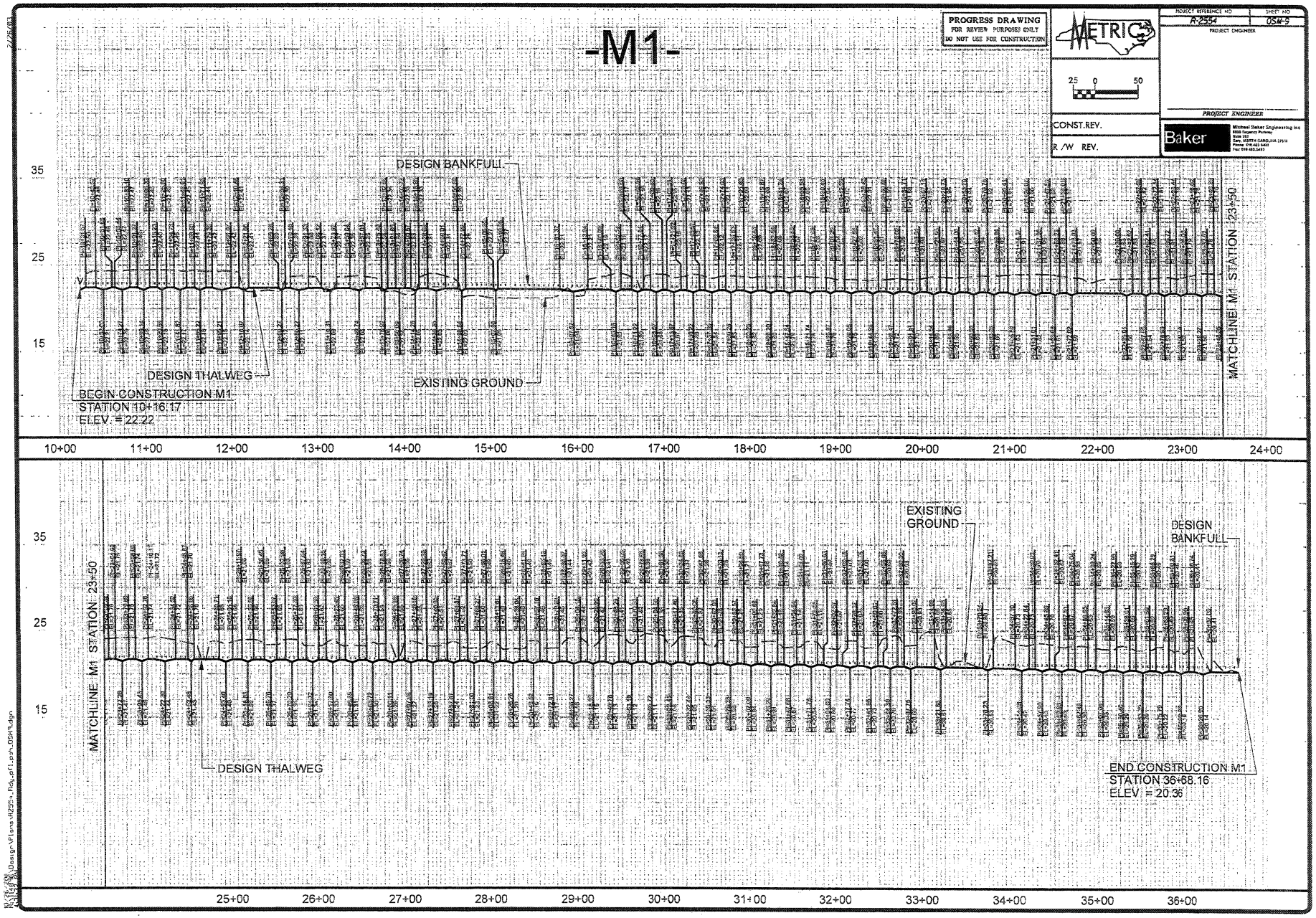

DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2554-16" (PIDA16451)
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 1898282.82m) EASTING: 676741.63(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS 0.99987827
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2554-16" TO "L" STATION (supplied by roadway) IS
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88
GRAPHIC SCALE
25 12.5 0 25 50
PLANS
PROJECT REFERENCE NO. R-2554A
SHEET NO. OSM-4
PROJECT ENGINEER
PROJECT ENGINEER
Baker
PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION
REVISIONS
SR 1326 CLARIDGE NURSERY ROAD
EXISTING FARM PATH
PROPOSED SLOPE STAKE LINE
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
EXISTING 1200mm CMP TO REMAIN (DO NOT DISTURB)
EXISTING IRRIGATION LINE (DO NOT DISTURB)
NOT SURVEYED
EXISTING BRIDGE CROSSING TO REMAIN
EXISTING 375mm CONCRETE PIPE (DO NOT DISTURB)
WEATHER STATION
AVOID DISTURBANCE OF EXISTING WEATHER STATION
BEGIN CONSTRUCTION M1
STATION 10+16 15
FUTURE HWY 70 BYPASS
750mm x 1500mm CLASS "B" RIP RAP APRON
STORM INLET CULVERT (DO NOT DISTURB)
TIE EXISTING DITCH INTO PROPOSED CHANNEL
FLOODPLAIN INTERCEPTOR
PROPOSED SLOPE STAKE LINE
MATCHLINE M1
SHEET OSM-5 STATION 17+50
CE CONSERVATION EASEMENT BOUNDARY
CONSERVATION EASEMENT CAP
TEMPORARY CONSTRUCTION EASEMENT
WHITE TOP WD. STAKE SET
FILL EXISTING CHANNEL
STREAM PLUG
NOTES
1 LOG VANE LOCATIONS MAY BE ALTERED BY ENGINEER
2 CHANNEL PLUG LOCATIONS ARE APPROXIMATE AND MAY BE ALTERED BY ENGINEER

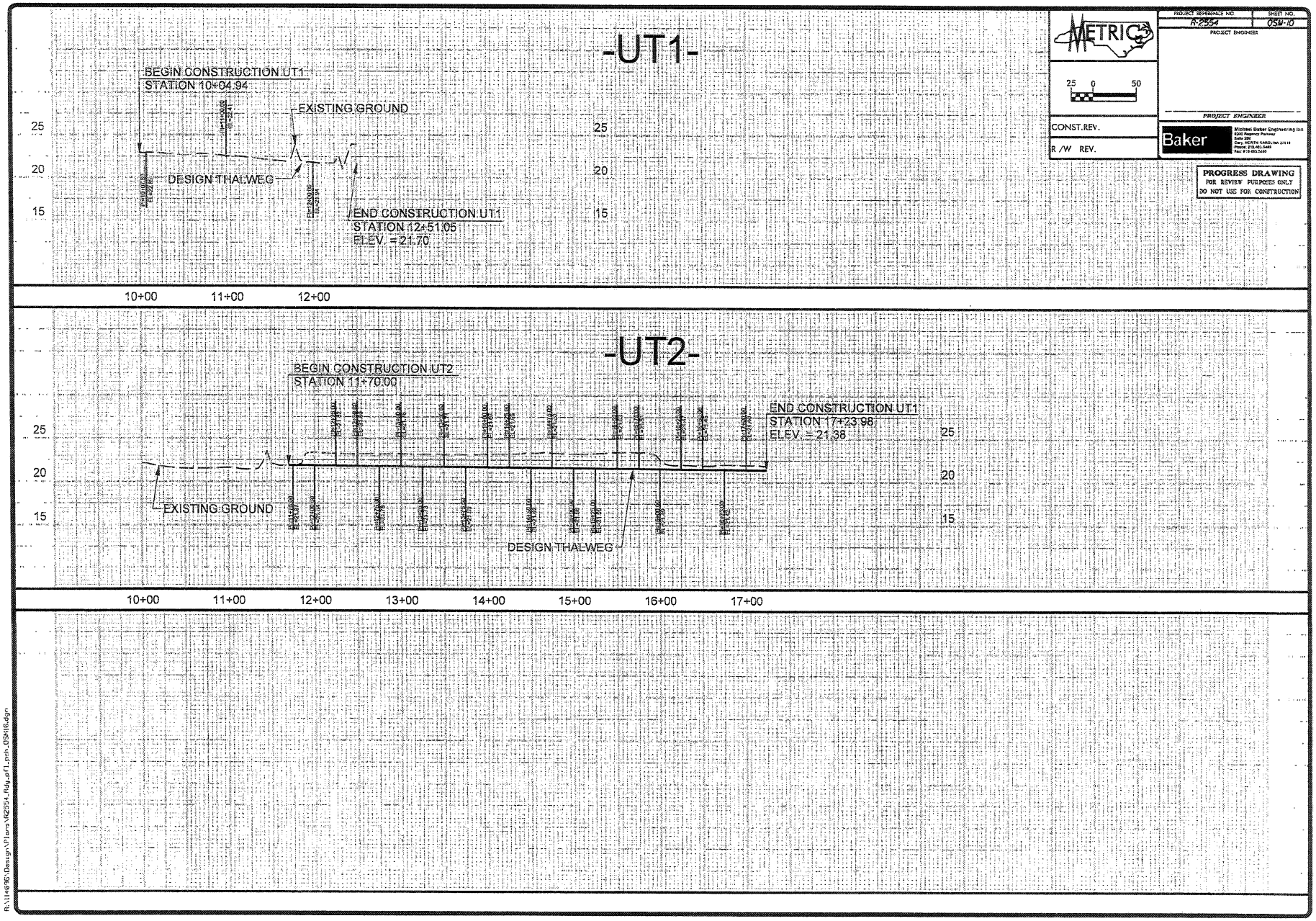

PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION
Baker
GRAPHIC SCALE
PLANS
PROJECT REFERENCE NO.
A-2554A
SHEET NO.
OSM-5
PROJECT ENGINEER
PROJECT MANAGER
MATCHLINE M1 SHEET OSM-6 STATION 24+00
MATCHLINE M1 SHEET OSM-4 STATION 17+50
RELOCATED FARM PATH NO.1
(APPLY ADDITIONAL RESTRICTIONS)
SEE DETAIL SHEET OSM-2
SEGN RELOCATED FARM PATH NO. 1
STA. 10+00.00
SEE DETAIL SHEET OSM-2
EXISTING 1600mm CMP AND HEADWALL
(TO BE REMOVED)
PROPOSED 1829mm RCP
WITH CONCRETE ENDWALLS
SET 0.30m BELOW GRADE
EXISTING IRRIGATION LINE
(DO NOT DISTURB)
END RELOCATED FARM PATH NO. 4
STA. 10+99.29
SEE DETAIL SHEET OSM-2
SEGN RELOCATED FARM PATH NO. 4
STA. 10+00.00
SEE DETAIL SHEET OSM-2
EXISTING 900mm CMP
(TO BE REMOVED)
SHALLOW DITCH
750mm X 1350mm CLASS "B"
RIP-RAP APRON
EXISTING CEMETARY
(DO NOT DISTURB)
APPROXIMATE LOCATION EXISTING
ABANDONED IRRIGATION LINE
PROPOSED SLOPE STAKE LINE
EXISTING FARM PATH
CONSERVATION EASEMENT BOUNDARY
CONSERVATION EASEMENT CAP
TEMPORARY CONSTRUCTION EASEMENT
WHITE TOP WD STAKE SET
FILL EXISTING CHANNEL
STREAM PLUG
REVISIONS


PROJECT REFERENCE NO.
R-2554A
SHEET NO.
OSM-6
PROJECT ENGINEER
PROJECT MANAGER
Baker
PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION
GRAPHIC SCALE
25 12.5 0 25 50
PLANS
REVISIONS
MATCHLINE M1 SHEET OSM-7 STATION 31+00
MATCHLINE M1 SHEET OSM-5 STATION 15+50
MATCHLINE M1 SHEET OSM-5 STATION 24+00
END CONSTRUCTION UT2
STATION 17+23.98 =
M1 STATION 26+93.39
END CONSTRUCTION UT1
STATION 12+51.05 =
M1 STATION 25+77.61
BEGIN CONSTRUCTION UT1
STATION 10+04.94
CONSERVATION EASEMENT BOUNDARY
CONSERVATION EASEMENT CAP
TEMPORARY CONSTRUCTION EASEMENT
WHITE TOP WD STAKE SET
FILL EXISTING CHANNEL
STREAM PLUG
FLOODPLAIN INTERCEPTOR
REMOVE EXISTING FARM PATH AND RELOCATE
PROPOSED SLOPE STAKE LINE
EXISTING POND
EXISTING PILONS
APPROXIMATE LOCATION EXISTING POTABLE WATER LINE (DO NOT DISTURB)
REMOVE EXISTING FARM PATH
RELOCATED FARM PATH HD. 2 SEE DETAIL SHEET OSM-2
PROPOSED (2) 18Dmm RCP WITH CONCRETE HEADWALLS SET 0.30m BELOW GRADE
75mm BLACK PLASTIC PIPE (REMOVE)
END RELOCATED FARM PATH NO. 2 STA. 14+93.84 = EXISTING FARM PATH NO. 1 STA. 15+04.62 SEE DETAIL SHEET OSM-2
PROPOSED 300mm RCP w/ CONCRETE CLASS "B" RIP RAP APPRON
PROPOSED SLOPE STAKE LINE
375mm CMP (REMOVE)
END RELOCATED FARM PATH NO. 3 STA. 11+64.19 SEE DETAIL SHEET OSM-2
REMOVE EXISTING 600mm TERRAFOTH PIPE AND INSTALL (2) 750mm RCP WITH CONCRETE ENDWALLS SET 0.30m BELOW GRADE
BEGIN RELOCATED FARM PATH NO. 3 STA. 10+60.00 = RELOCATED FARM PATH NO. 1 STA. 10+17.46 SEE DETAIL SHEET OSM-2
RELOCATED FARM PATH NO. 1 (APPLY AGGREGATE BASE COURSE) SEE DETAIL SHEET OSM-2
EXISTING 300mm CMP (REMOVE)
RELOCATED FARM PATH NO. 3 (APPLY AGGREGATE BASE COURSE) SEE DETAIL SHEET OSM-2
EXISTING 375mm CMP (REMOVE)
EXISTING 150mm CMP (REMOVE)
PROPOSED (1) 600mm RCP WITH CONCRETE HEADWALLS SET 0.30m BELOW GRADE
APPROXIMATE LOCATION EXISTING POTABLE WATER LINE (DO NOT DISTURB)


PROJECT REFERENCE NO.
R-2554A
SHEET NO.
OSM-7
PROJECT ENGINEER
PROJECT ENGINEER
Baker
PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION
GRAPHIC SCALE
2.5 12.5 0 25 50
PLANS
END CONSTRUCTION M1
STATION 36+68.16
END RELOCATED FARM PATH NO. 1
STA. 35+70
SEE DETAIL SHEET OSM-2
EXISTING POWER POLES
(DO NOT DISTURB)
CHANNEL RIPRAP
RELOCATED FARM PATH NO. 1
SEE DETAIL SHEET OSM-2
EXISTING POWER POLES
(DO NOT DISTURB)
REMOVE EXISTING FARM
PATH AND RELOCATE
PROPOSED SLOPE STAKE LINE
MATCHLINE M1 SHEET OSM-6 STATION 31+00
CONSERVATION EASEMENT BOUNDARY
CONSERVATION EASEMENT CAP
TEMPORARY CONSTRUCTION EASEMENT
WHITE TOP WD. STAKE SET
FILL EXISTING CHANNEL
STREAM PLUG
REVISIONS


PROJECT ENGINEER'S NO.
A-2554
SHEET NO.
OSM-6
PROJECT ENGINEER
PROJECT ENGINEER
Baker
PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION
GRAPHIC SCALE
25 12.5 0 25 50
PLANS
MATCHLINE UT2 SHEET OSM-6 STATION 15+50
RELOCATED FARM PATH NO. 2
SEE DETAIL SHEET OSM-2
BEGIN RELOCATED FARM PATH NO. 1
SEE DETAIL SHEET OSM-2
15+00
14+00
PROPOSED SLOPE STAKE LINE
BEGIN CONSTRUCTION UT2
STATION 11+70
11+00
10+00
EXISTING 600mm RCP
(DO NOT DISTURB)
EXISTING 1500mm RCP
(DO NOT DISTURB)
SR 1336 CLAYHOOS NURSERY ROAD
EXISTING R/W
CONSERVATION EASEMENT BOUNDARY
CONSERVATION EASEMENT CAP
TEMPORARY CONSTRUCTION EASEMENT
WHITE TOP WD STAKE SET
FILL EXISTING CHANNEL
STREAM PLUG
REVISIONS


-M1-
PROGRESS DRAWING
FOR REVIEW PURPOSES ONLY
DO NOT USE FOR CONSTRUCTION
METRIC
25 0 50
PROJECT REFERENCE NO
R-2554
SHEET NO
DSM-5
PROJECT ENGINEER
CONST.REV.
R /W REV.
Baker
DESIGN BANKFULL
DESIGN THALWEG
EXISTING GROUND
BEGIN CONSTRUCTION M1
STATION 10+16.17
ELEV. = 22.22
MATCHLINE M1 STATION 23+50
35
25
15
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
MATCHLINE M1 STATION 23+50
EXISTING GROUND
DESIGN BANKFULL
DESIGN THALWEG
END CONSTRUCTION M1
STATION 36+68.16
ELEV. = 20.36
25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00
35+00
36+00



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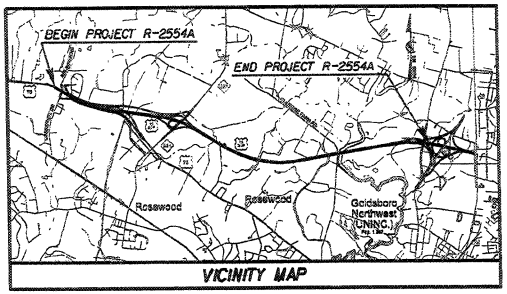
TIP PROJECT: R-2554A

CONTRACT No.:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAYNE COUNTY

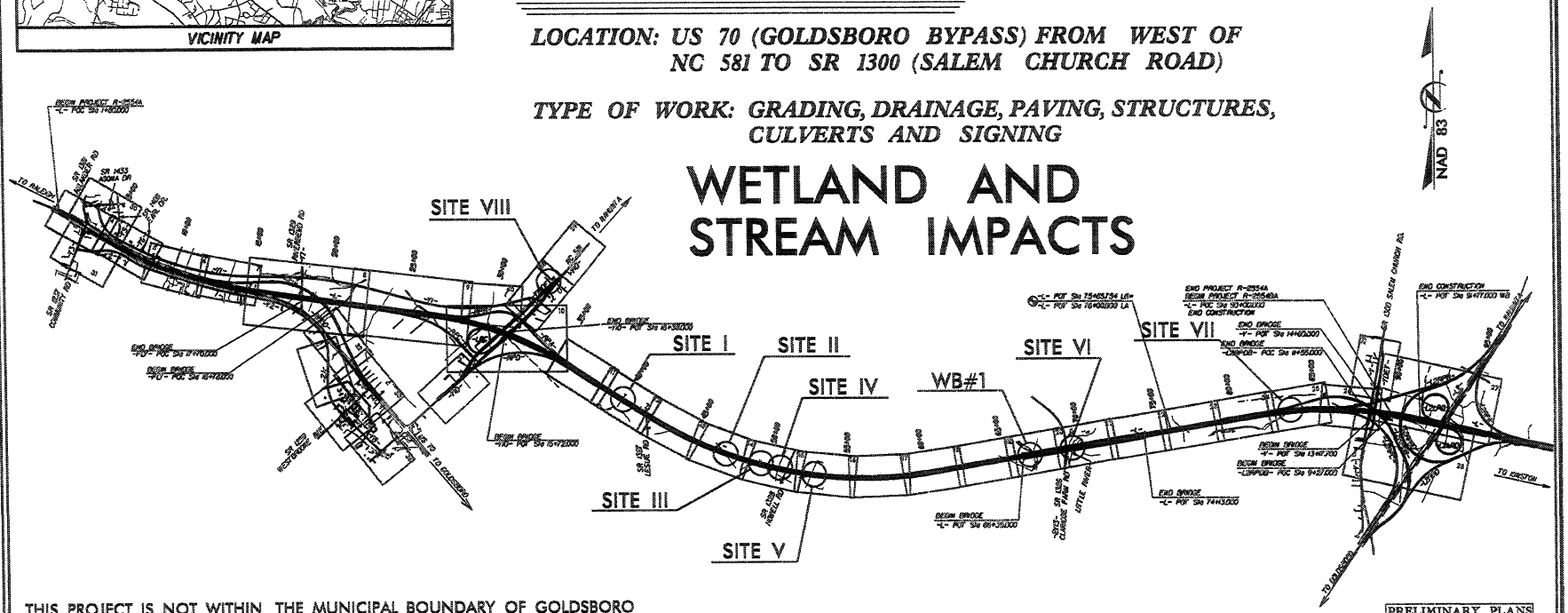
METRIC	STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN	N.C.	R-2554A	1	
	STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
	34461.1.3	NHF-70(30)	P.E.	
	34461.2.4		R/W, UTIL	

Permit Drawing
Sheet 1 of 45

LOCATION: US 70 (GOLDSBORO BYPASS) FROM WEST OF NC 581 TO SR 1300 (SALEM CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERTS AND SIGNING

WETLAND AND STREAM IMPACTS



THIS PROJECT IS NOT WITHIN THE MUNICIPAL BOUNDARY OF GOLDSBORO
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III EXCEPT BY PERMIT
THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS 5 0 10

PROFILE (HORIZONTAL) 5 0 10

PROFILE (VERTICAL) 1 0 2

DESIGN DATA

ADT 2010 = 19,800
ADT 2030 = 36,400
DHV = 11 %
D = 60 %
T = 26 % *
V = 110 km/h

* TTST 16 % + DUAL 10 %
FUNC. CLASS.: FREEWAY

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT R-2554A 8.028 KM.
LENGTH STRUCTURES T.I.P. PROJECT R-2554A 0.778 KM.
TOTAL LENGTH OF STATE T.I.P. PROJECT R-2554A 8.806 KM.

NOTE: EB LANE USED TO DETERMINE PROJECT LENGTH

PLANS PREPARED BY:
Florence & Hutcheson
CONSULTING ENGINEERS
5121 KINGDOM WAY, SUITE 100
RALEIGH, N.C. 27607
License No: P-0256

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 20, 2006

LETTING DATE: SEPTEMBER 18 2012

NCDOT CONTACT: CATHY S. HOUSER, PE
ROADWAY DESIGN - PROJECT ENGINEER

DENNIS J. MORY, PE
PROJECT ENGINEER

HENRY BARE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

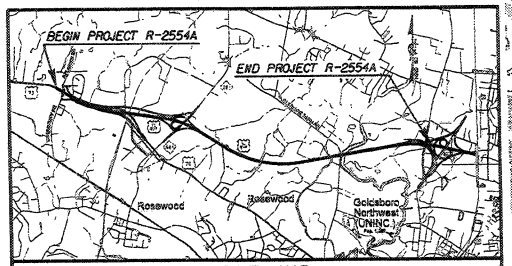
STATE HIGHWAY DESIGN ENGINEER P.E.

FILE: R:\Projects\Wetland permit\Drawings\R2554A\R2554A_Mod_permit_revised_sheetsheet_NCDA.dgn
USER NAME: SPEARMAN
PLOT SCALE: 100.0000 '/ Inch
PLOT DATE: 9/11/2012

CONTRACT No.:

TIP PROJECT: R-2554A

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



VICINITY MAP

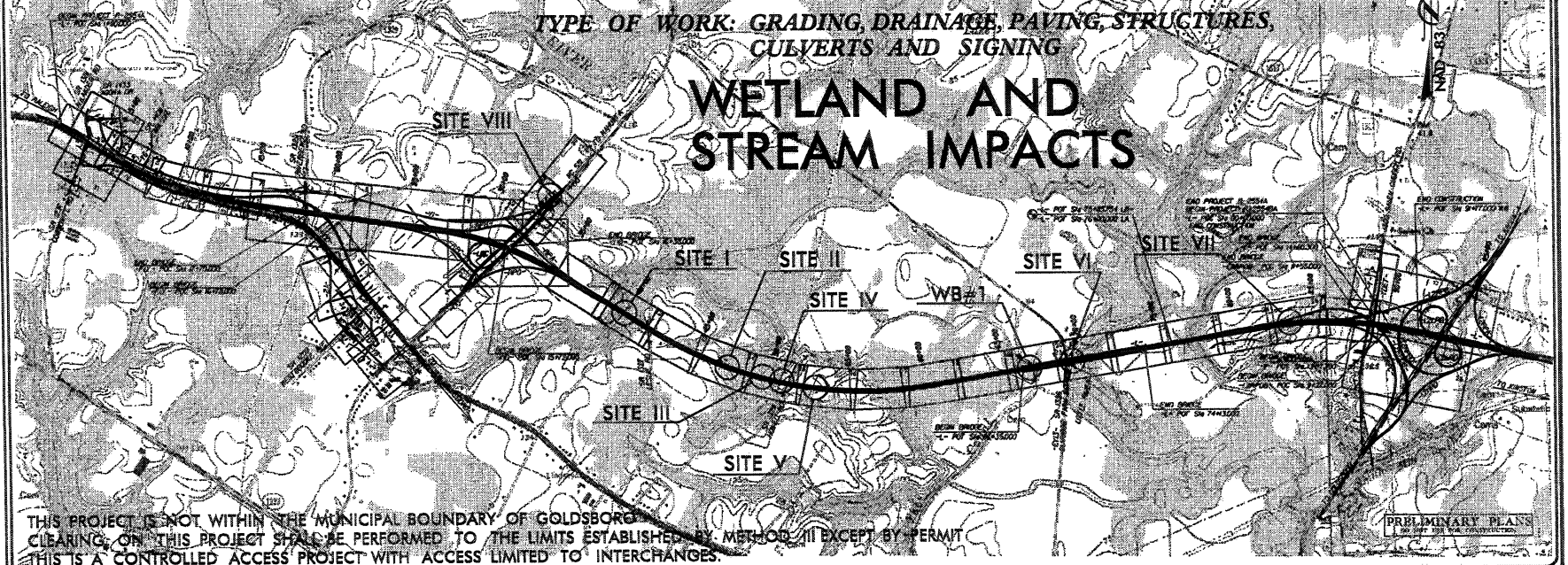
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAYNE COUNTY

LOCATION: US 70 (GOLDSBORO BYPASS) FROM WEST OF NC 581 TO SR 1300 (SALEM CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERTS AND SIGNING

WETLAND AND STREAM IMPACTS



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-2554A	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34461.1.3	NHF-70(30)	P.E.
34461.2.4		R/W, UTIL

Permit Drawing
Sheet 2 of 45

THIS PROJECT IS NOT WITHIN THE MUNICIPAL BOUNDARY OF GOLDSBORO.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III EXCEPT BY PERMIT.
THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES.

PRELIMINARY PLANS

GRAPHIC SCALES

PLANS (5 0 10)

PROFILE (HORIZONTAL) (5 0 10)

PROFILE (VERTICAL) (1 0 2)

DESIGN DATA

ADT 2010 = 19,800
ADT 2030 = 36,400
DHV = 11 %
D = 60 %
T = 26 % *
V = 110 km/h

* TTST 16 % + DUAL 10 %
FUNC. CLASS.: FREEWAY

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT R-2554A 8.028 KM.
LENGTH STRUCTURES T.I.P. PROJECT R-2554A 0.778 KM.
TOTAL LENGTH OF STATE T.I.P. PROJECT R-2554A 8.806 KM.

NOTE: EB LANE USED TO DETERMINE PROJECT LENGTH

PLANS PREPARED BY:
Florence & Hutcheson
CONSULTING ENGINEERS
5121 KINGDOM WAY, SUITE 100
RALEIGH, N.C. 27607
License No: P-0253

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 20, 2006

LETTING DATE: SEPTEMBER 18, 2012

DENNIS J. MORY, PE
PROJECT ENGINEER

HENRY BARE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: CATHY S. HOUSER, PE
ROADWAY DESIGN - PROJECT ENGINEER

HYDRAULICS ENGINEER

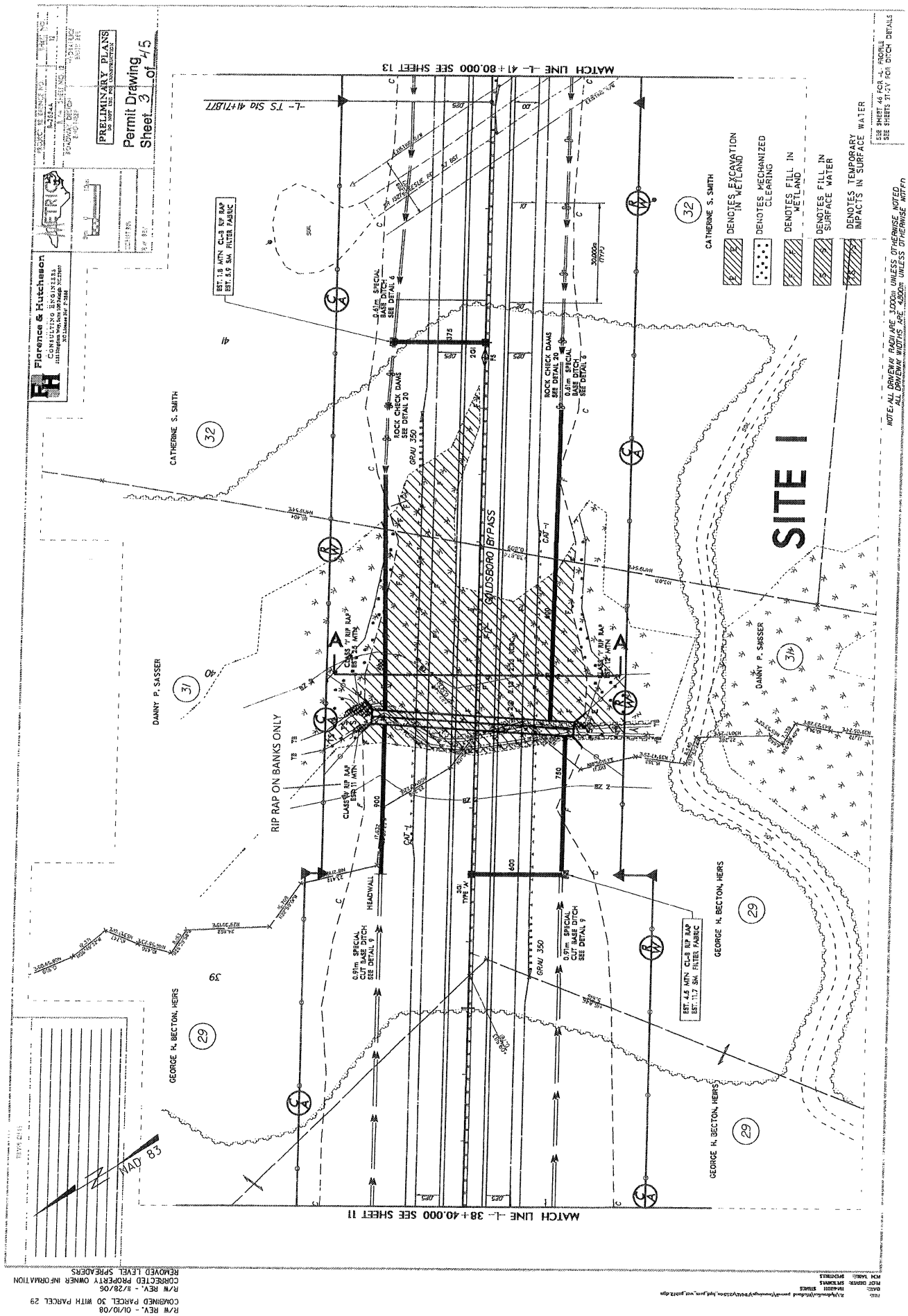
P.E.
SIGNATURE

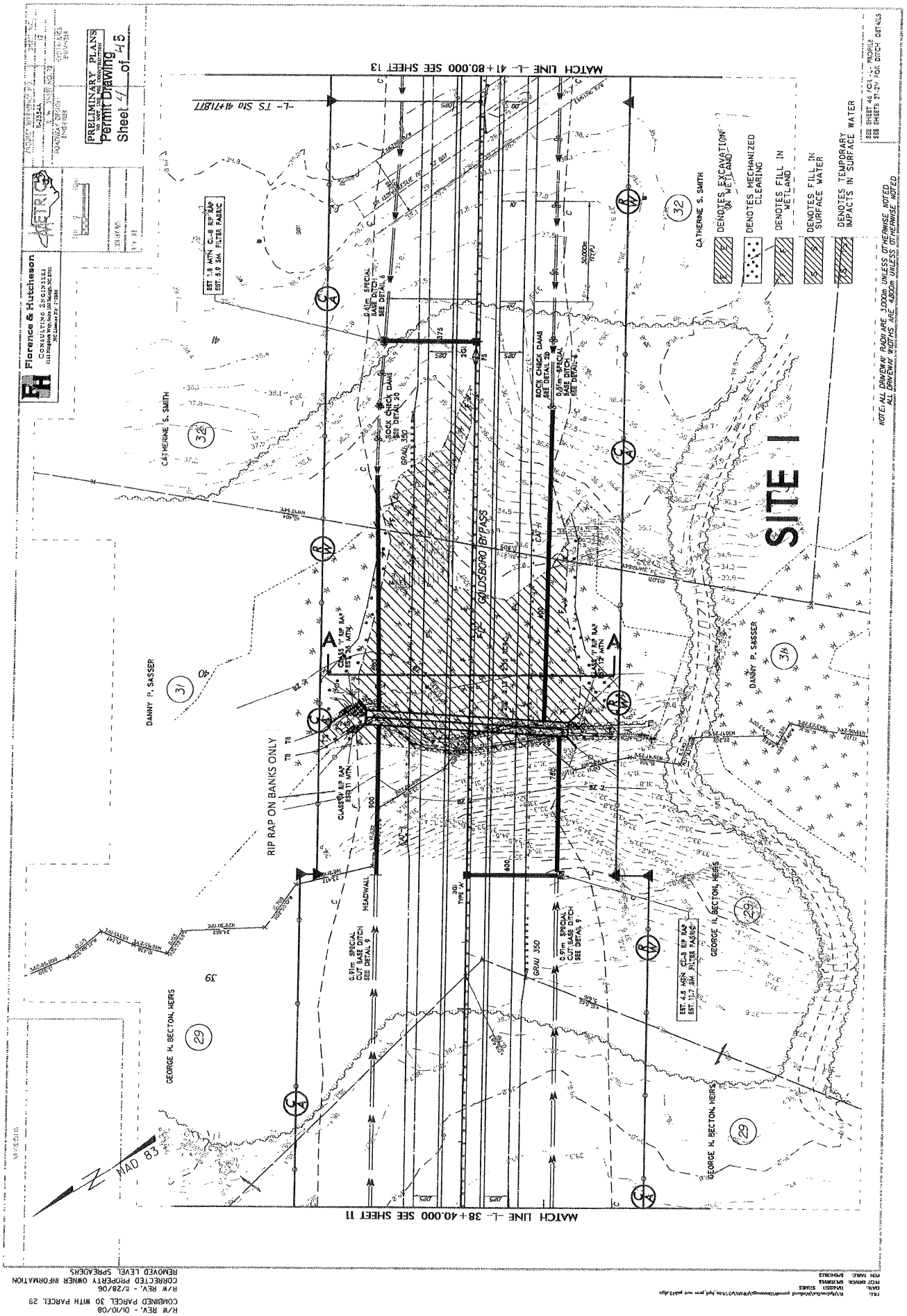
ROADWAY DESIGN ENGINEER

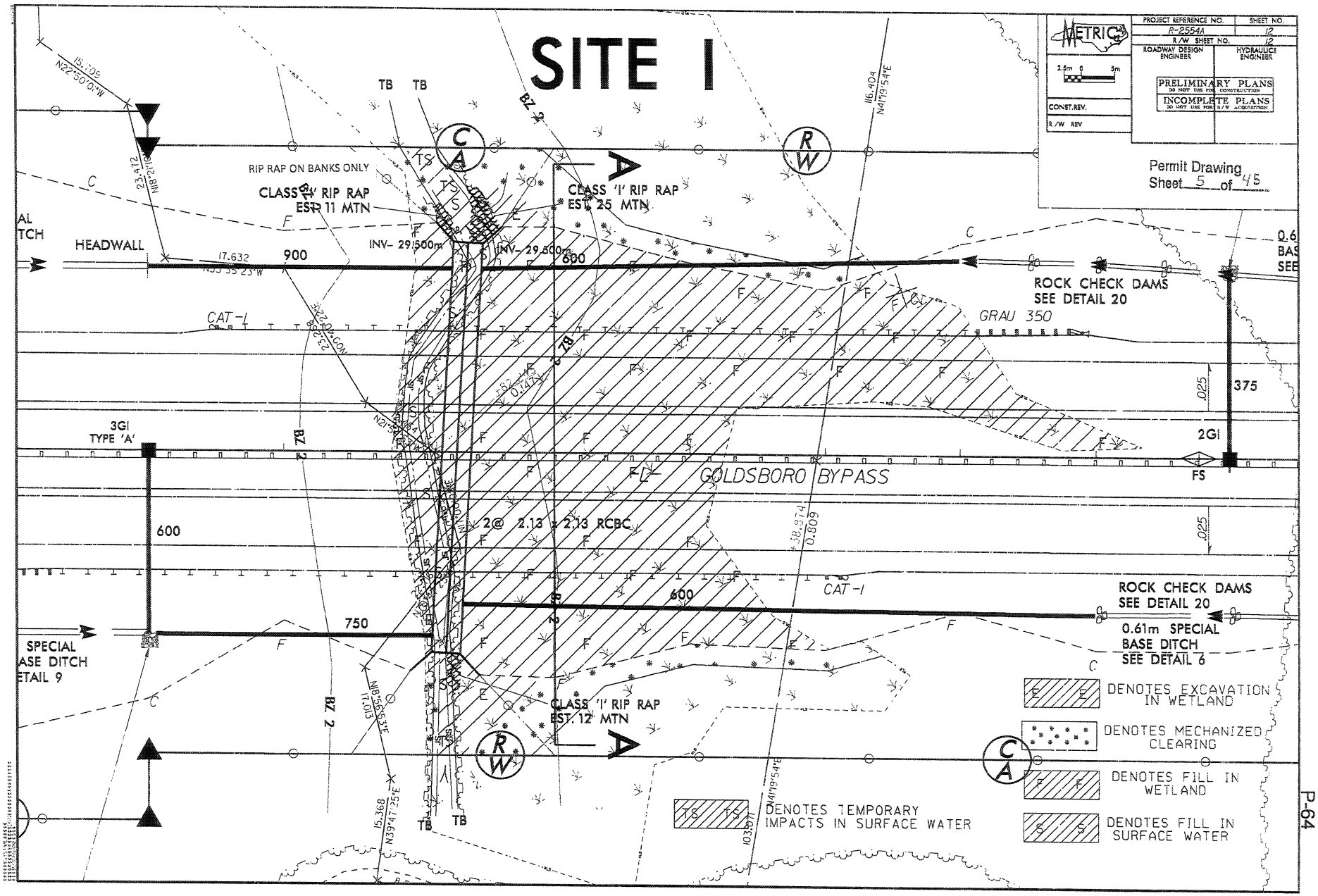
P.E.
SIGNATURE

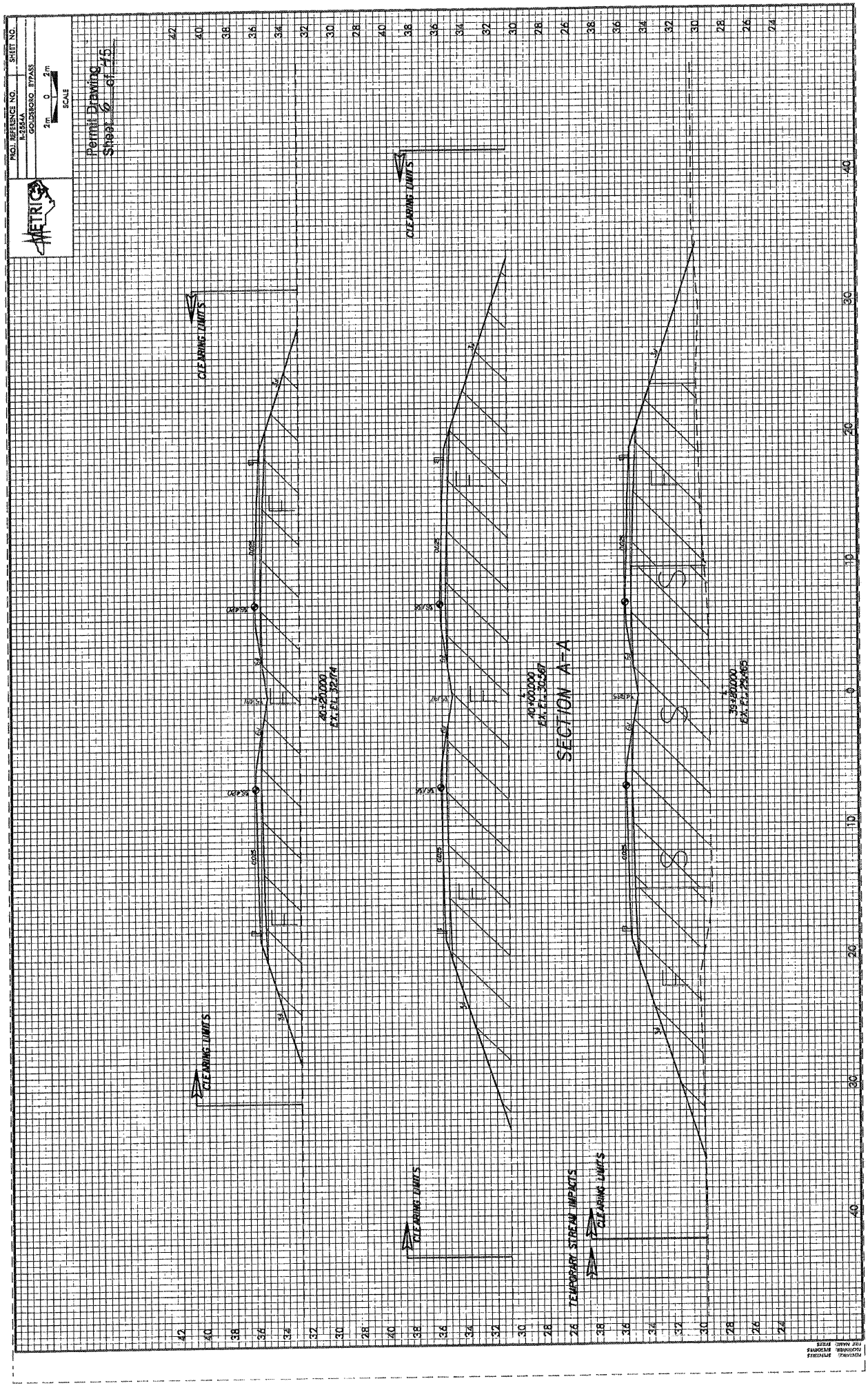
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

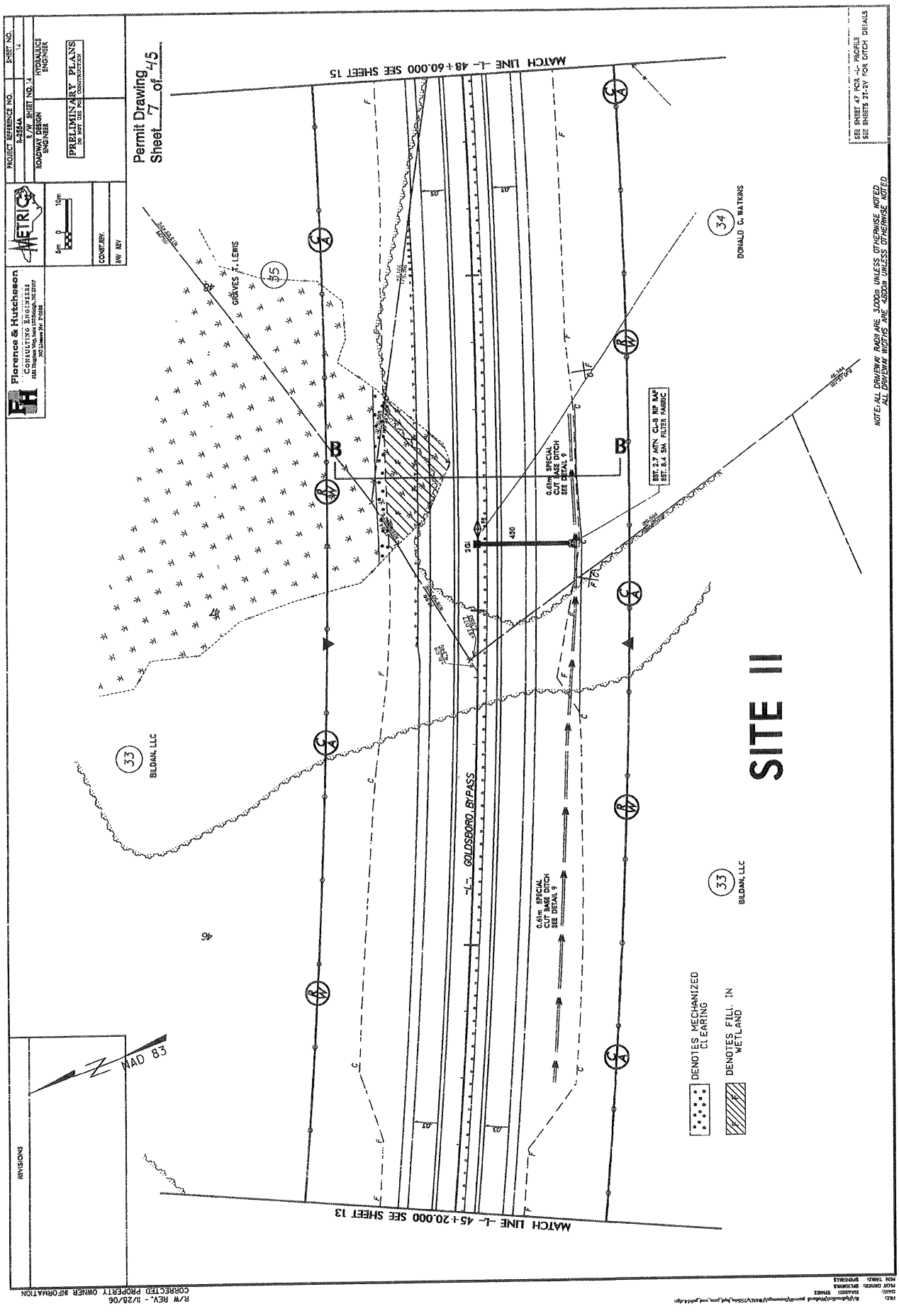
P.E.
STATE HIGHWAY DESIGN ENGINEER

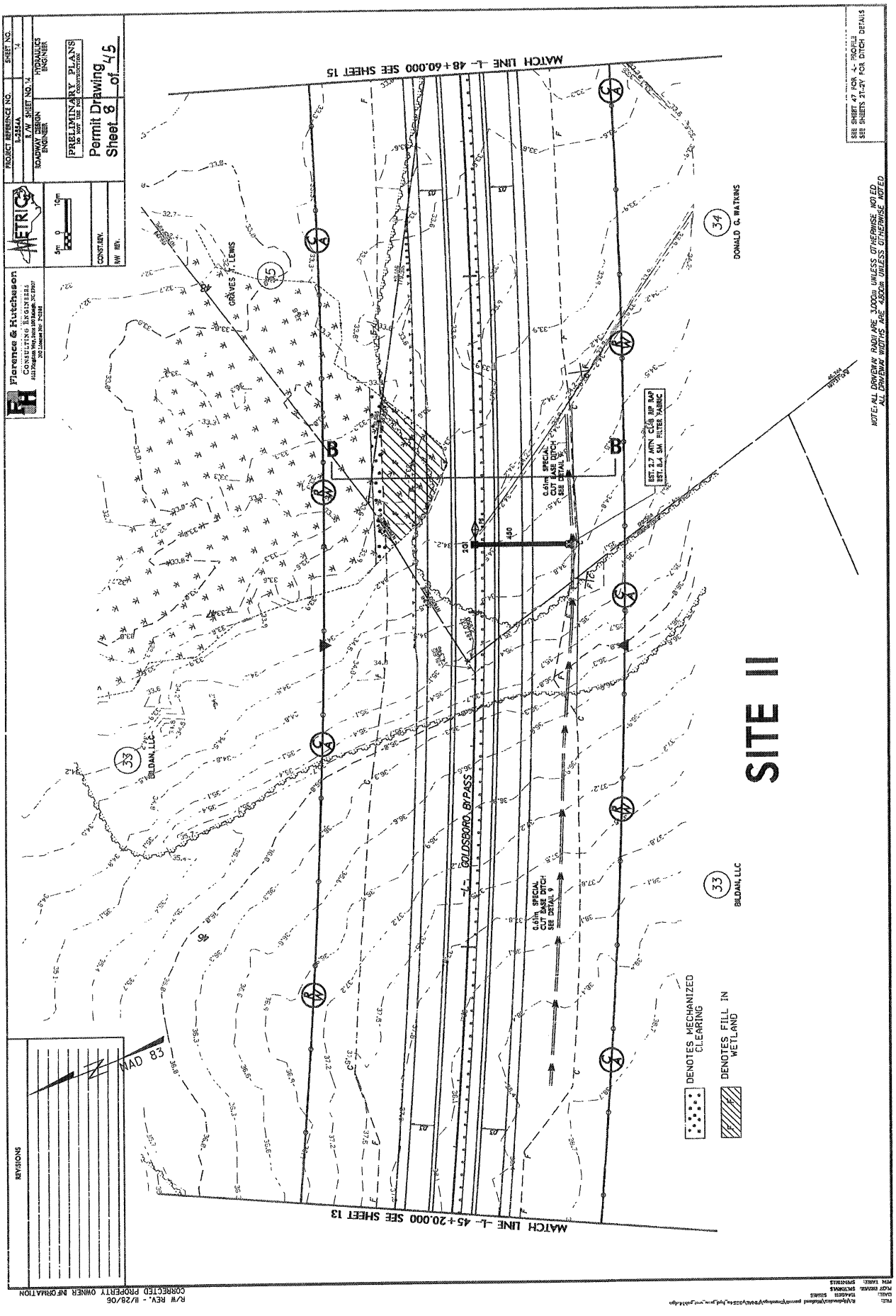

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 3 of 45
Florence & Hutcheson
CONSULTING ENGINEERS
MATCH LINE -L- 41+80.000 SEE SHEET 13
MATCH LINE -L- 38+40.000 SEE SHEET 11
-L- STA 41+71.877
SITE 1
GOLDSBORO BYPASS
CATHERINE S. SMITH
DANNY P. SASSER
GEORGE H. BECTON, HEIRS
RIP RAP ON BANKS ONLY
ROCK CHECK DAMS SEE DETAIL 20
0.61m SPECIAL BASE DITCH SEE DETAIL 6
0.91m SPECIAL CUT BASE DITCH SEE DETAIL 9
HEADWALL
GRAU 350
CAT-1
CLASS II RIP RAP EST. 11 MTN
EST. 1.8 MTN CL-B RIP RAP EST. 8.9 SM FILTER FABRIC
EST. 4.6 MTN CL-B RIP RAP EST. 11.7 SM FILTER FABRIC
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
SEE SHEET 46 FOR -L- PROFILE
SEE SHEETS 37-39 FOR DITCH DETAILS
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED
MAD 83
R/W REV. - 01/10/08
COMBINED PARCEL 30 WITH PARCEL 29
R/W REV. - 11/28/06
CORRECTED PROPERTY OWNER INFORMATION
REMOVED LEVEL SPREADERS

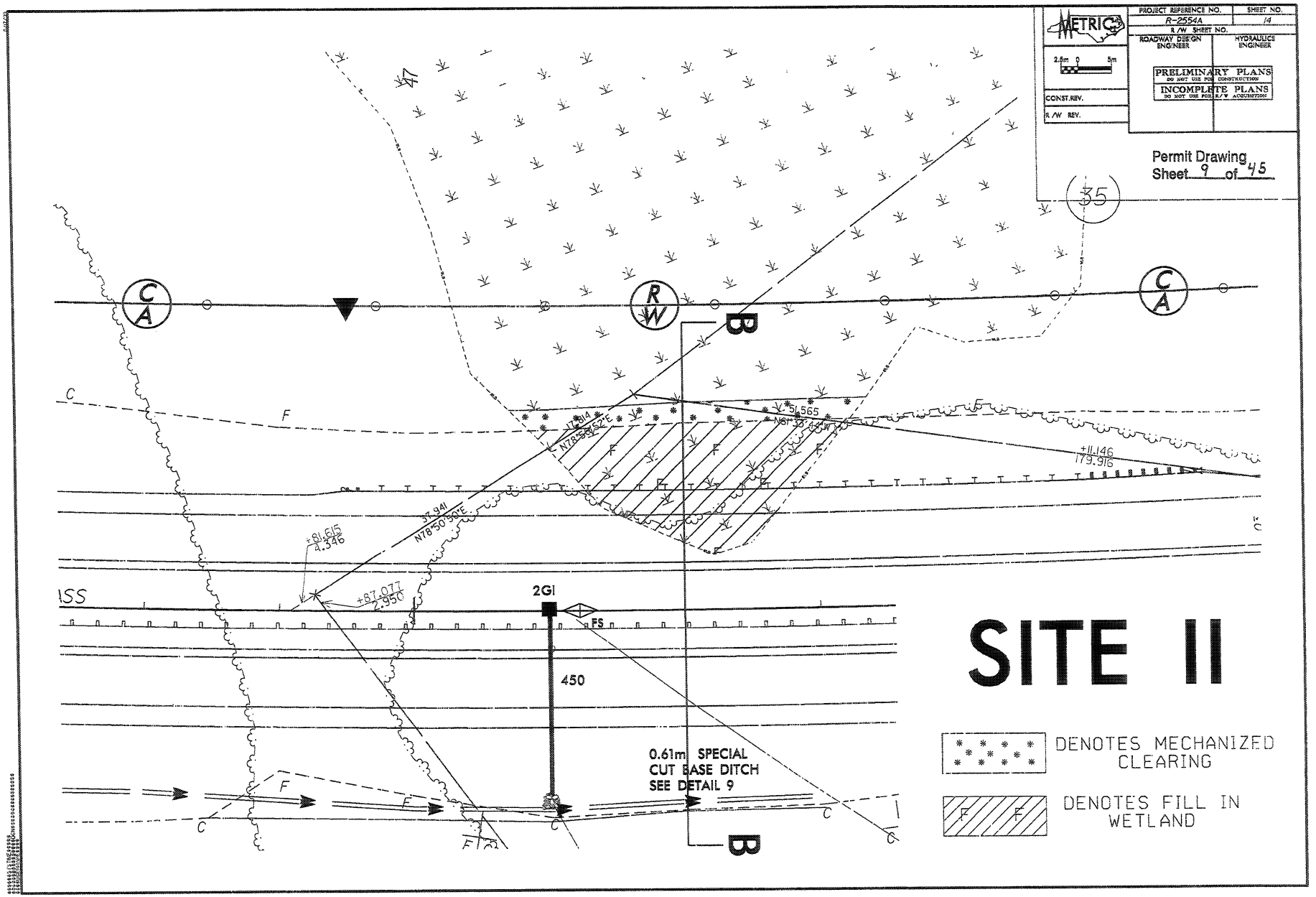

PRELIMINARY PLANS
NOT FOR CONSTRUCTION
Permit Drawing
Sheet 4 of 45
Florence & Hutcheson
CONSULTING ENGINEERS
SITE I
GOLDSBORO BYPASS
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NOTE: ALL DRIVEWAY RADII ARE 3.00m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.80m UNLESS OTHERWISE NOTED
MATCH LINE -L- 41+80.000 SEE SHEET 13
MATCH LINE -L- 38+40.000 SEE SHEET 11
CATHERINE S. SMITH
DANNY P. SASSER
GEORGE H. BECTON, HEIRS
RIP RAP ON BANKS ONLY
NAD 83
R/W REV. - 01/10/08
COMBINED PARCEL 30 WITH PARCEL 29
R/W REV. - 12/28/06
CORRECTED PROPERTY OWNER INFORMATION
REMOVED LEVEL SPREADERS

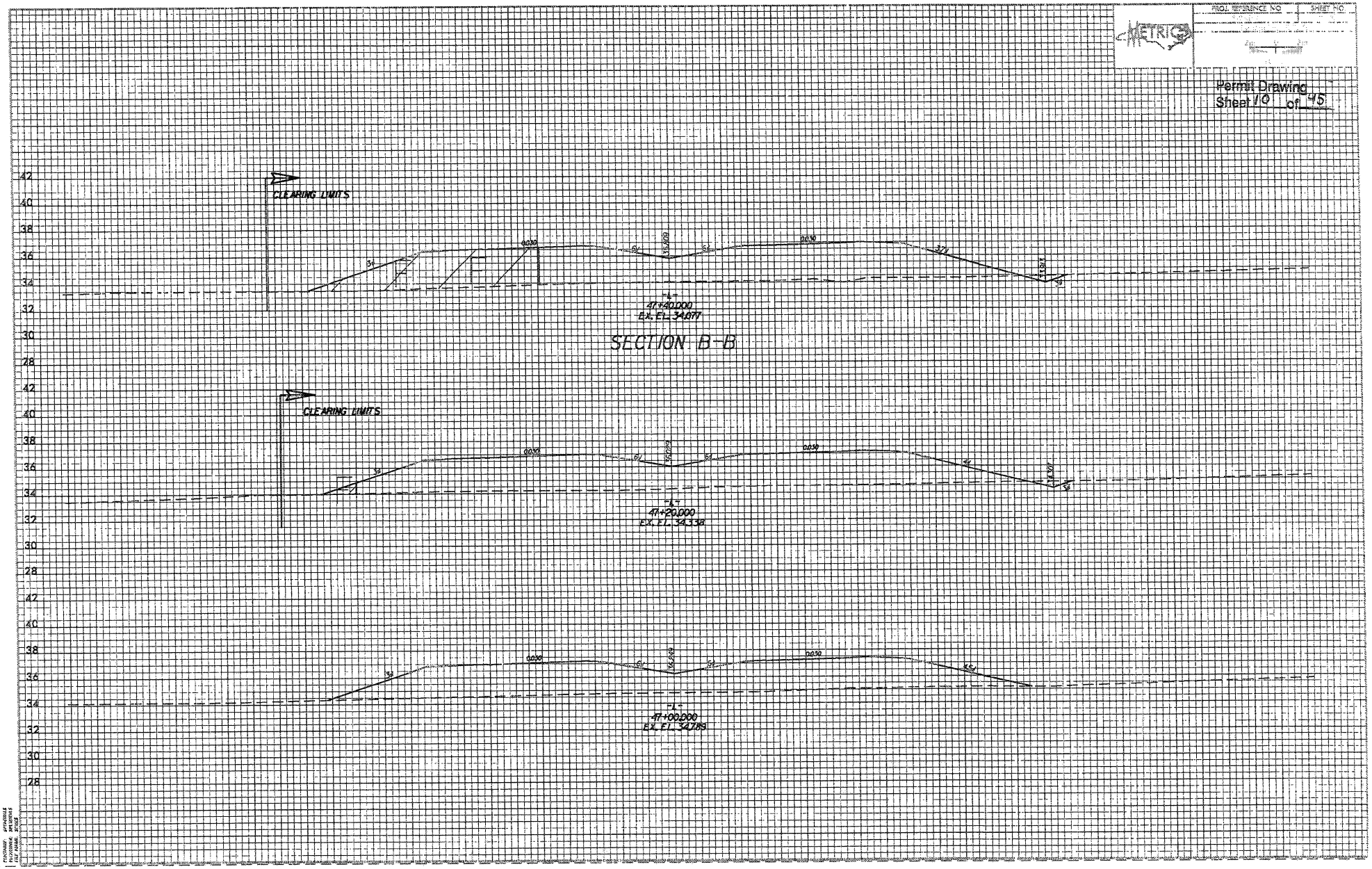

SITE I
PROJECT REFERENCE NO. R-2554A
SHEET NO. 12
R/W SHEET NO. 12
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
METRIC
2.5m 0 5m
CONST. REV.
R/W REV
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
Permit Drawing Sheet 5 of 45
RIP RAP ON BANKS ONLY
CLASS 'I' RIP RAP EST. 11 MTN
CLASS 'I' RIP RAP EST. 25 MTN
CLASS 'I' RIP RAP EST. 12 MTN
HEADWALL
INV- 29.500m
INV- 29.500m
900
600
750
600
600
ROCK CHECK DAMS SEE DETAIL 20
ROCK CHECK DAMS SEE DETAIL 20
0.61m SPECIAL BASE DITCH SEE DETAIL 6
SPECIAL BASE DITCH DETAIL 9
3GI TYPE 'A'
2GI
FS
CAT-1
CAT-1
GRAU 350
GOLDSBORO BYPASS
2@ 2.13 x 2.13 RCBC
BZ 2
BZ 2
BZ 2
BZ 2
TB TB
TB TB
TS TS
TS TS
S S
F F
C
A
RW
RW
CA
.025
.025
375
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

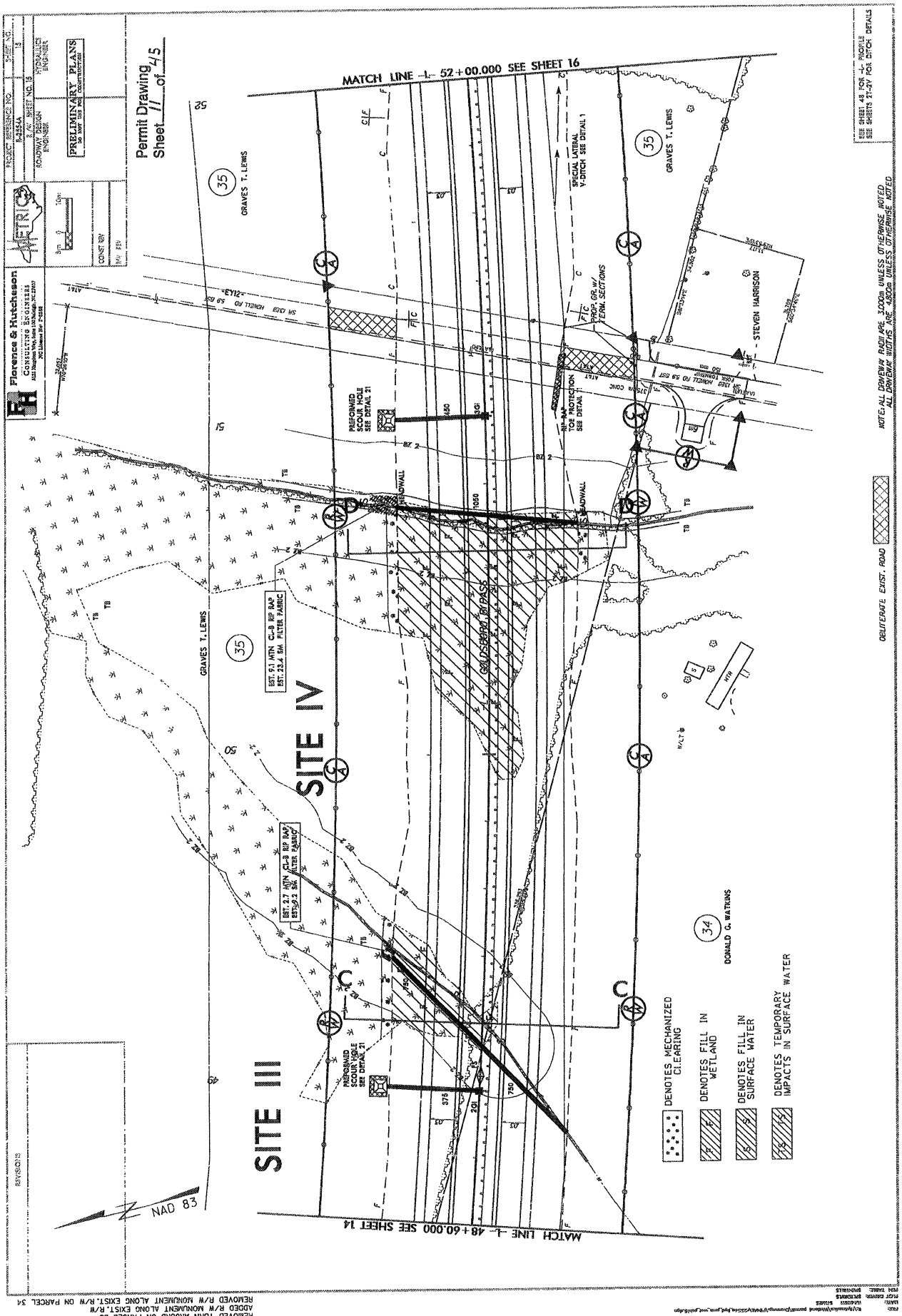

PROJ. REFERENCE NO.
M-2554A
GOLDSBORO BYPASS
SHEET NO.
SCALE
2m 0 2m
METRIC
Permit Drawing
Sheet 6 of 15
SECTION A-A
CLEARING LIMITS
CLEARING LIMITS
CLEARING LIMITS
CLEARING LIMITS
TEMPORARY STREAM IMPACTS
40+21.000
EX. EL. 32.74
40+400.000
EX. EL. 30.567
39+800.000
EX. EL. 29.495

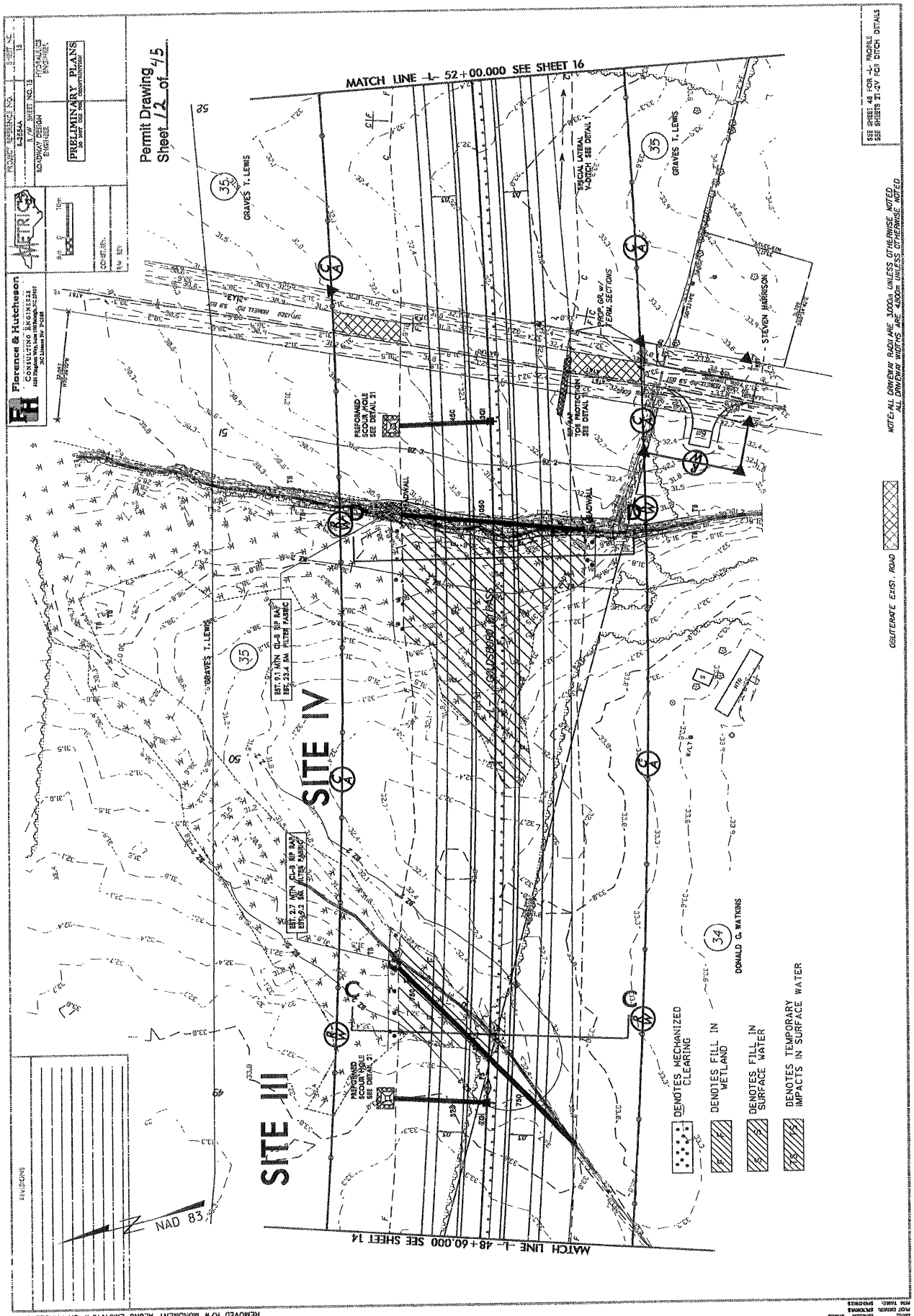

Permit Drawing
Sheet 7 of 45
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PROJECT REFERENCE NO. B-2594A
R/W SHEET NO. 14
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Florence & Hutcheson CONSULTING ENGINEERS
METRIC
CONST.REV.
R/W REV
REVISIONS
MATCH LINE -L- 48+60.000 SEE SHEET 15
MATCH LINE -L- 45+20.000 SEE SHEET 13
-L- GOLDSBORO BYPASS
GRAVES T. LEWIS
BILDAN, LLC
DONALD G. WATKINS
SITE II
0.61m SPECIAL CUT BASE DITCH SEE DETAIL 9
EST. 2.7 MTN CL-B RIP RAP
EST. 8.4 SM FILTER FABRIC
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
NAD 83
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED
SEE SHEET 47 FOR -L- PROFILE
SEE SHEETS 21-2V FOR DITCH DETAILS
R/W REV. - 11/28/06
CORRECTED PROPERTY OWNER INFORMATION

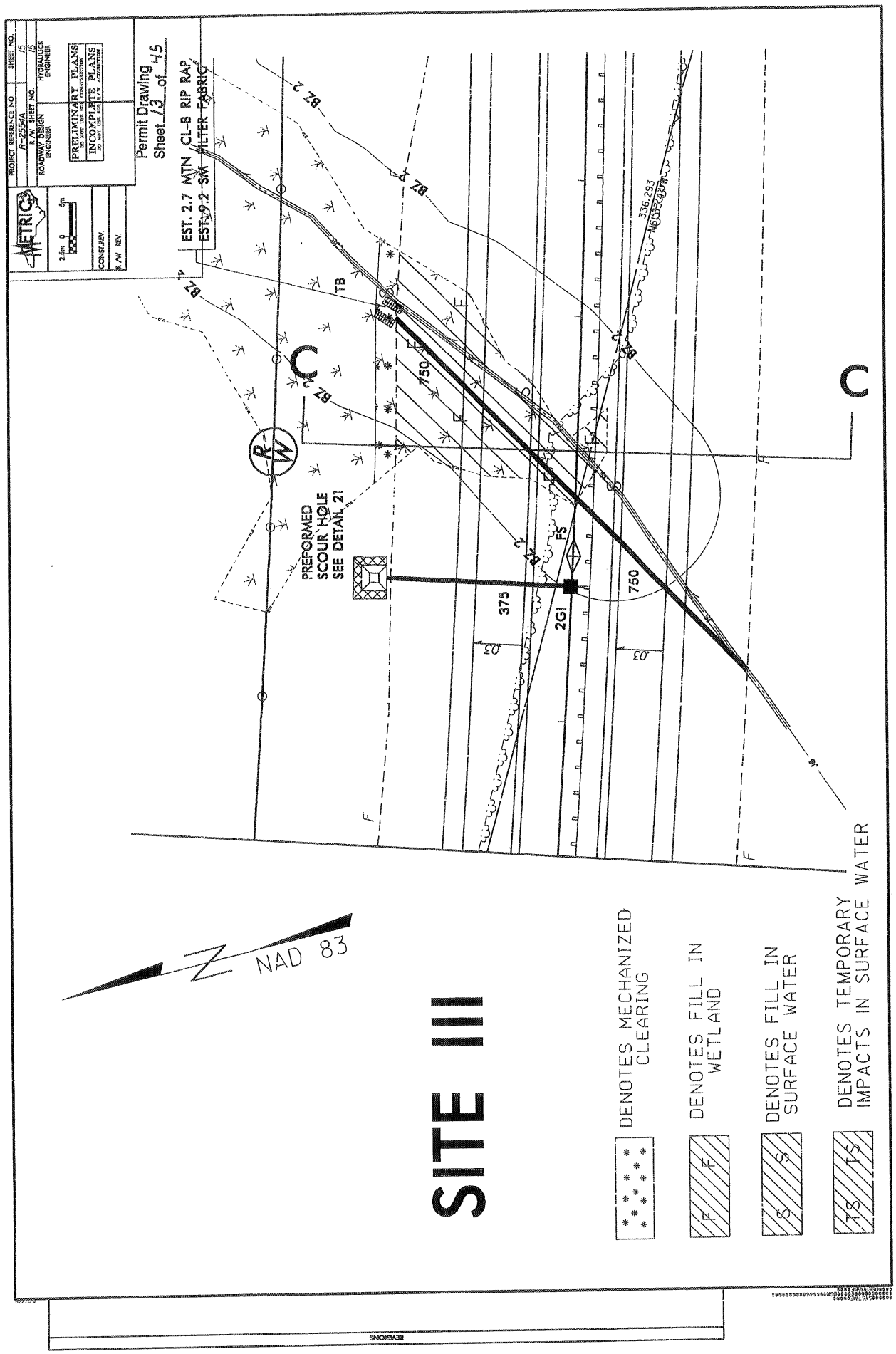

PROJECT REFERENCE NO. B-2554A
R/W SHEET NO. 14
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
NOT TO BE USED FOR CONSTRUCTION
Permit Drawing
Sheet 8 of 45
Florence & Hutcheson
CONSULTING ENGINEERS
CONSTR.
R/W
REVISIONS
MATCH LINE -L- 48+60.000 SEE SHEET 15
MATCH LINE -L- 45+20.000 SEE SHEET 13
GOLDSBORO BYPASS -L-
GRAVES F. LEWIS
DONALD G. WATKINS
BILOAN, LLC
SITE II
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
NAD 83
0.61m SPECIAL CUT BASE DITCH SEE DETAIL 9
EST. 2.7 MTN CLASS RIP RAP
EST. 8.4 SM FILTER FABRIC
SEE SHEET 47 FOR -L- PROFILE
SEE SHEETS 21-24 FOR DITCH DETAILS
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.500m UNLESS OTHERWISE NOTED
R/W REV. - 11/28/06
CORRECTED PROPERTY OWNER INFORMATION

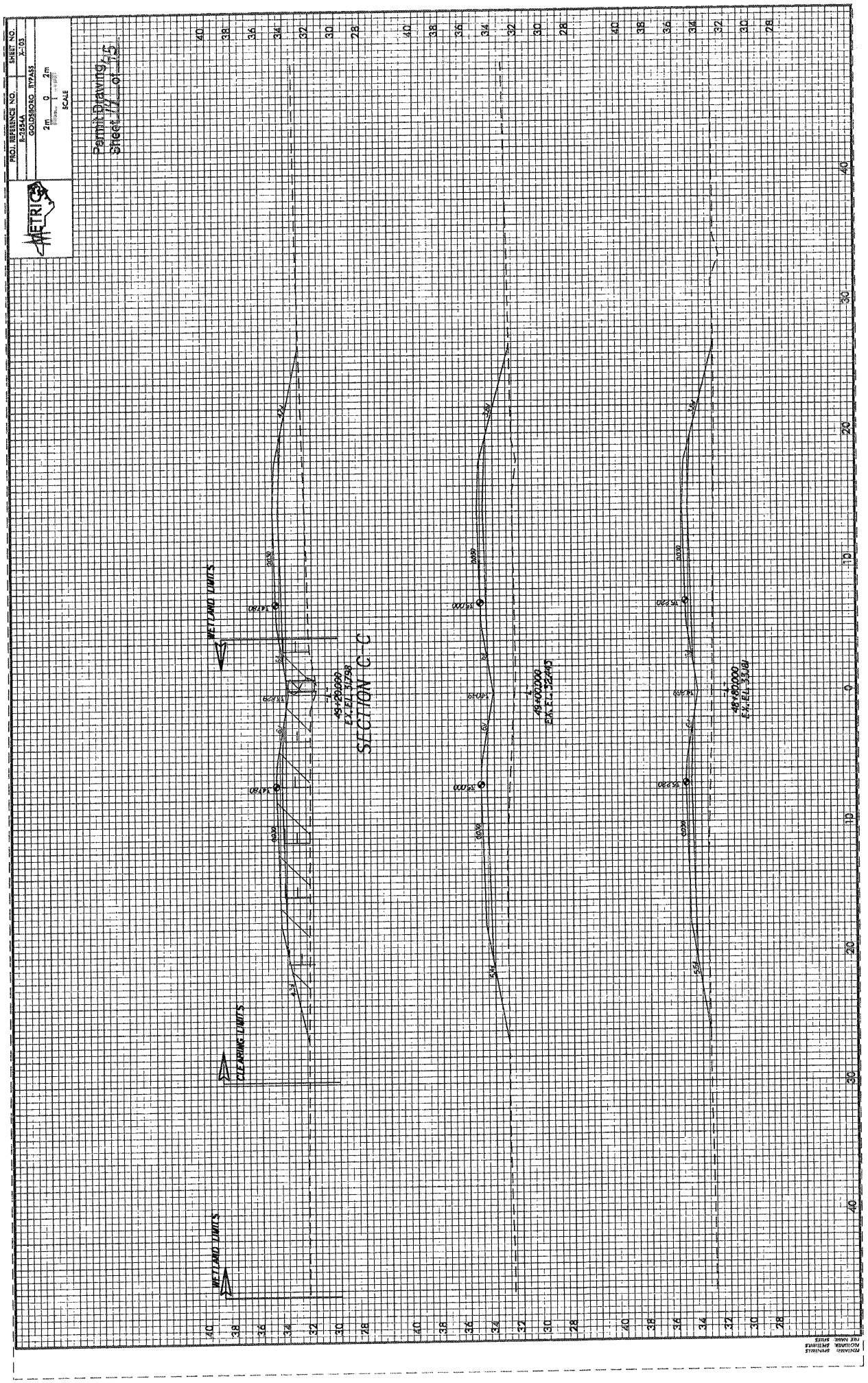

METRIC
PROJECT REFERENCE NO.
R-2554A
SHEET NO.
14
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
2.5m 0 5m
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
Permit Drawing
Sheet 9 of 45
35
C A
R W
C A
B
B
C
F
N78°50'58"E
37.941
+81.615
4.346
+87.077
2.950
2GI
FS
450
0.61m SPECIAL
CUT BASE DITCH
SEE DETAIL 9
+111.146
179.916
N51°28'45"W
51.565
SITE II
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND

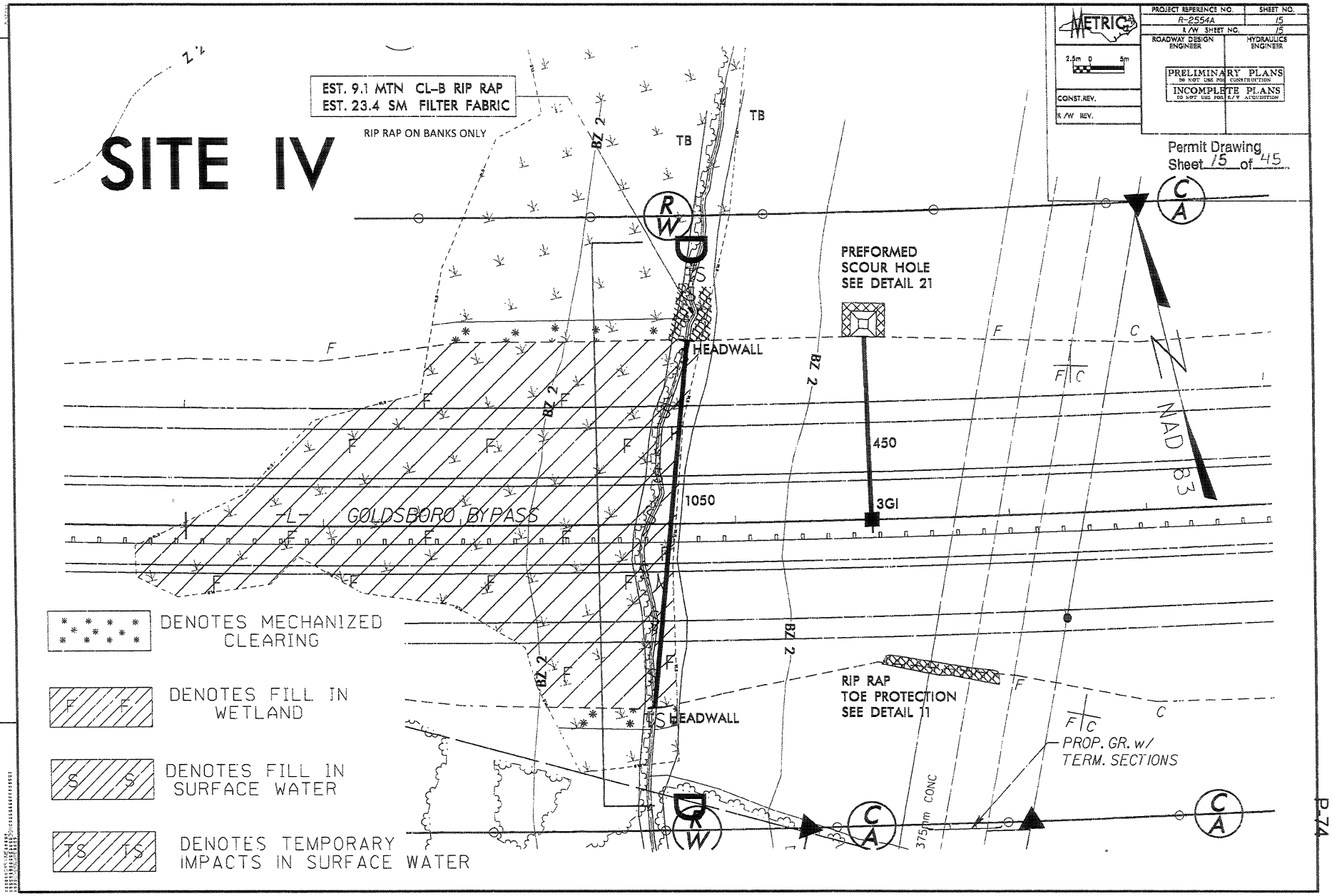

PROJ. REFERENCE NO.
SHEET NO.
METRIC
Permit Drawing
Sheet 10 of 45
CLEARING LIMITS
42
40
38
36
34
32
30
28
3H
0.03
6V
15.429
3H
0.03
4H
11.613
4H
"L"
47+40.000
EX. EL. 34.677
SECTION B-B
CLEARING LIMITS
42
40
38
36
34
32
30
28
3H
0.03
6V
15.429
3H
0.03
4H
11.307
4H
"L"
47+20.000
EX. EL. 34.338
42
40
38
36
34
32
30
28
3H
0.03
6V
15.429
3H
0.03
4H
"L"
47+00.000
EX. EL. 34.719

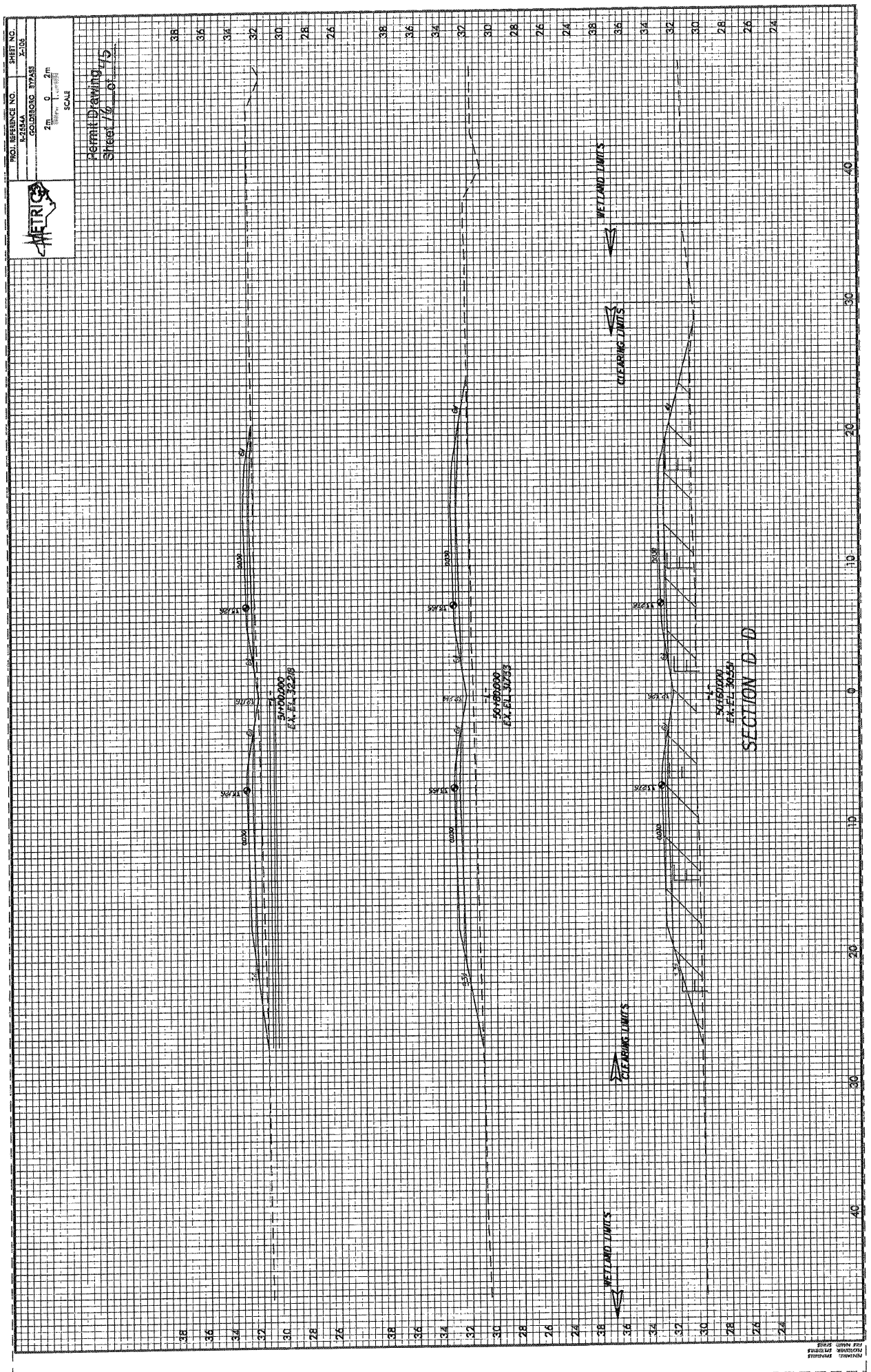

MATCH LINE -L- 52+00.000 SEE SHEET 16
MATCH LINE -L- 48+60.000 SEE SHEET 14
SITE IV
SITE III
GOLDSBORO BYPASS
GRAVES T. LEWIS
DONALD G. WATKINS
STEVEN HARRISON
PRELIMINARY PLANS
Permit Drawing
Sheet 11 of 45
Florence & Hutcheson
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NAD 83
DELUTERATE EXIST. ROAD

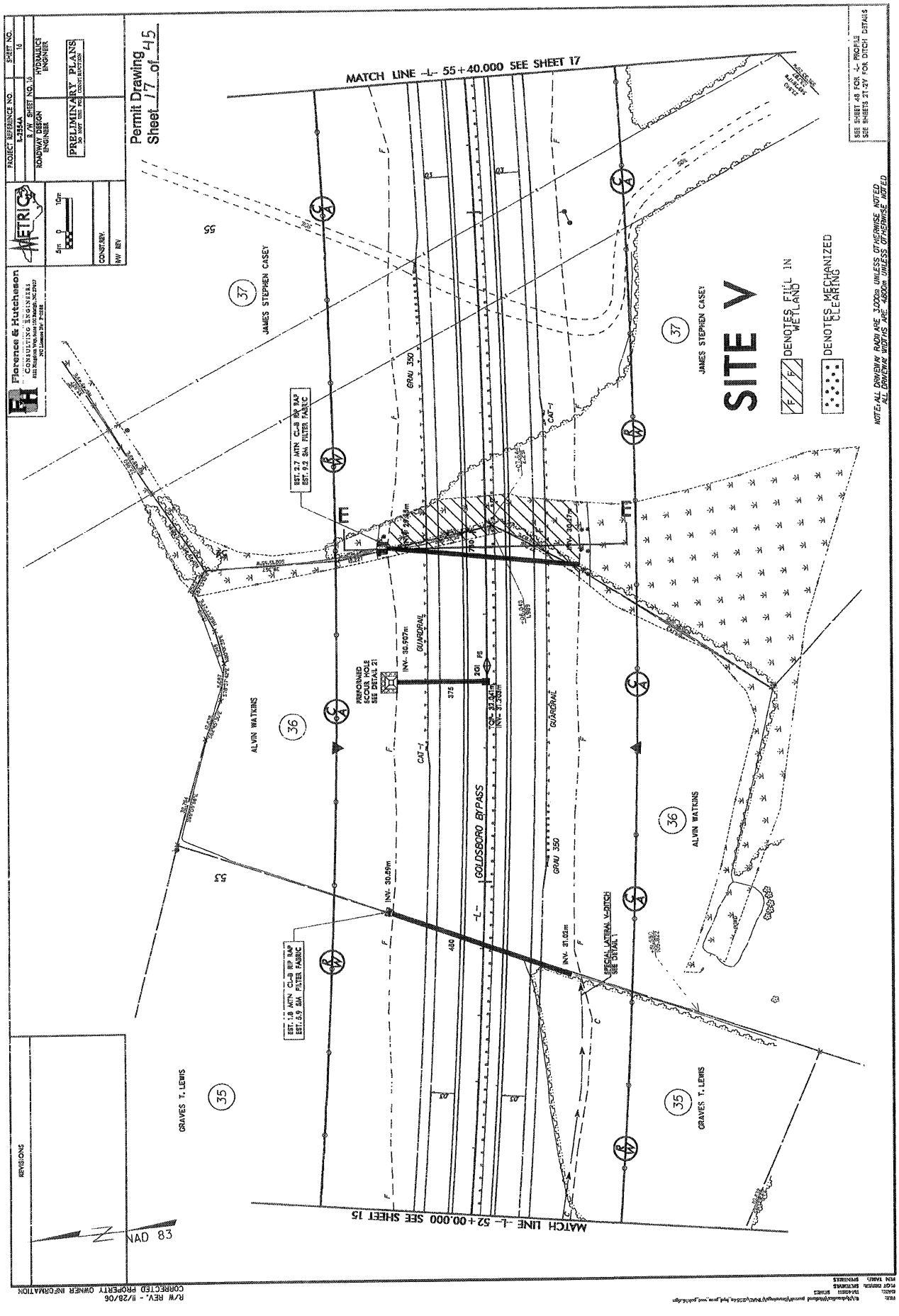

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 12 of 15
MATCH LINE -L- 52+00.000 SEE SHEET 16
MATCH LINE -L- 48+60.000 SEE SHEET 14
SITE IV
SITE III
GRAVES T. LEWIS
DONALD G. WATKINS
STEVEN HARRISON
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NAD 83
R/W REV. - 8/30/10
PARCEL 35 ADDED PROPOSED 3.6 DRIVE, SHIFTED
GUARDRAIL TO 0.6 OFF ROW TO ACCOUNT FOR
POST & OFFSET BLOCKS
R/W REV. - 8/28/06
CORRECTED PROPERTY OWNER INFORMATION
REMOVED TURN AROUND ON PARCEL 35
ADDED R/W MONUMENT ALONG EXIST. R/W
REMOVED R/W MONUMENT ALONG EXIST. R/W ON PARCEL 34

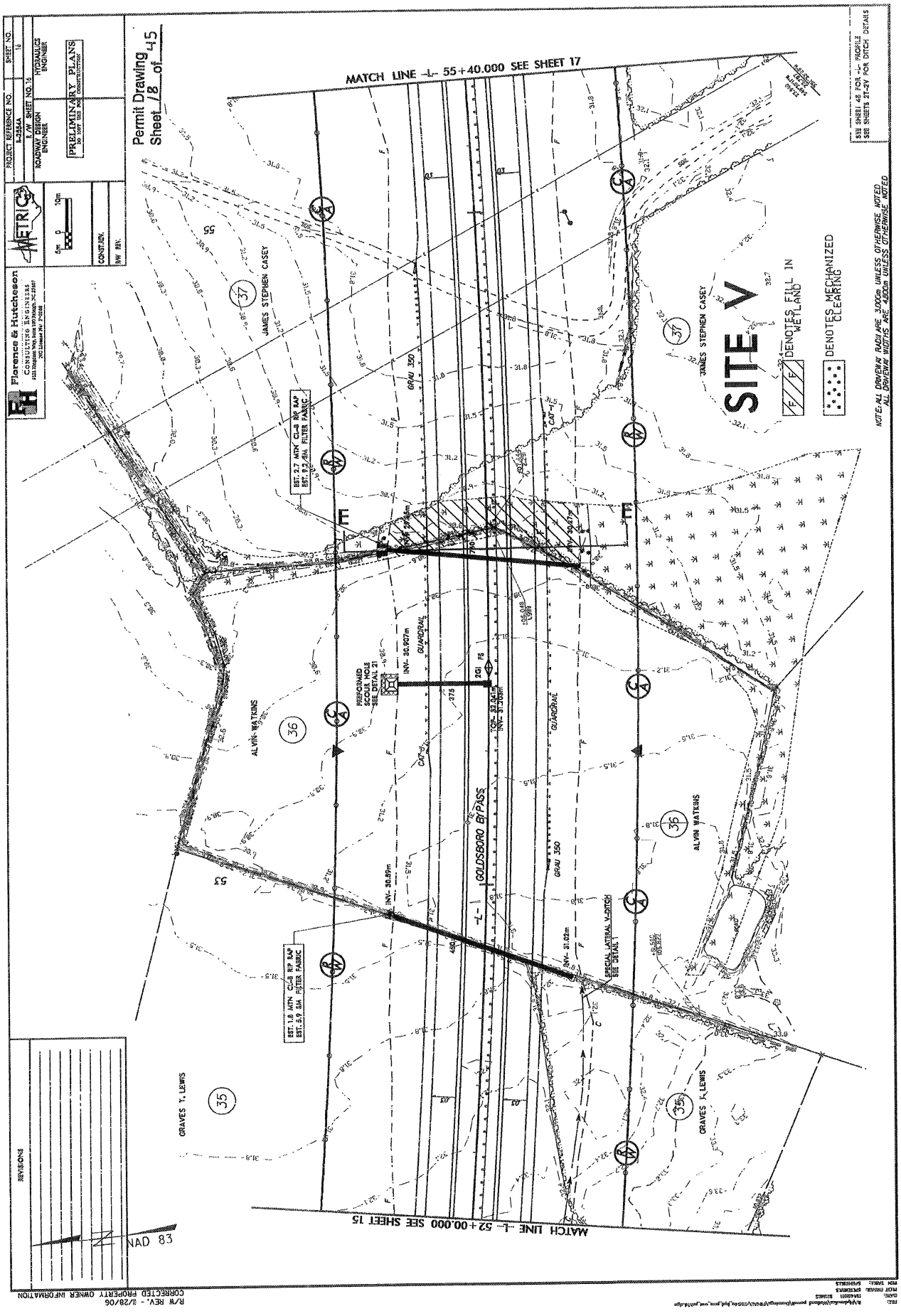

PROJECT REFERENCE NO. R-2554A
R/W SHEET NO. 15
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SHEET NO. 15
PRELIMINARY PLANS NOT TO BE USED FOR CONSTRUCTION
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
METRIC
CONST. REV.
R/W REV.
Permit Drawing Sheet 13 of 45
EST. 2.7 MTN CL-B RIP RAP
EST. 0.2 SW FILTER FABRIC
PREFORMED SCOUR HOLE SEE DETAIL 21
R/W
TB
F
E
C
D
750
375
2GI
FS
336.293
NCDOT 2007
SITE III
NAD 83
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
REVISIONS

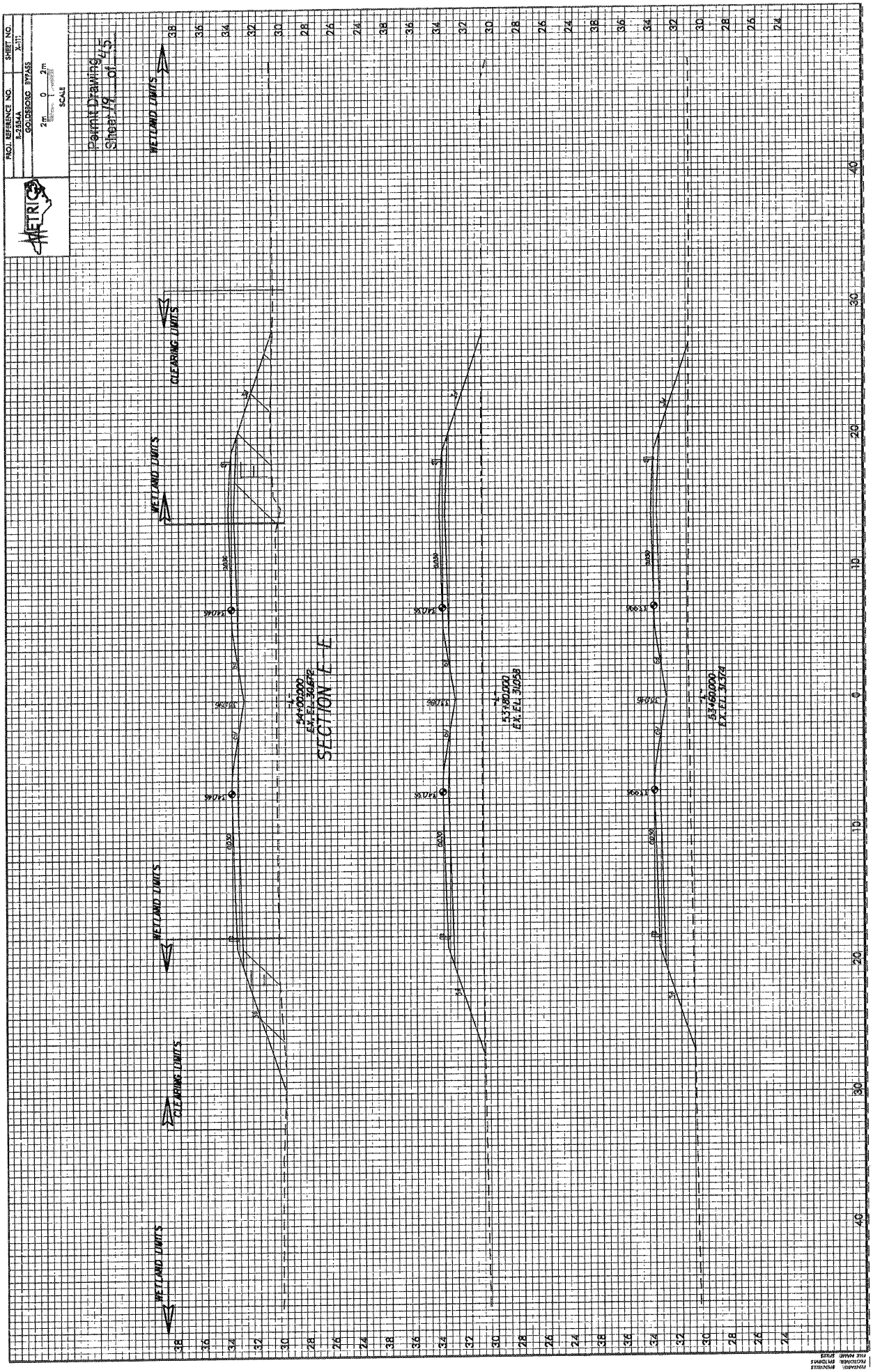

METRO
PROJ. REFERENCE NO.
R-2554A
GOLDSBORO BYPASS
SHEET NO.
X-03
SCALE
2m 0 2m
Permit Drawing 9 of 15
Sheet XX of XX
SECTION C-C
WETLAND LIMITS
CLEARING LIMITS
WETLAND LIMITS
-L- 45+20.000
EX. EL. 31.79
-L- 46+00.000
EX. EL. 32.45
-L- 46+80.000
EX. EL. 33.61

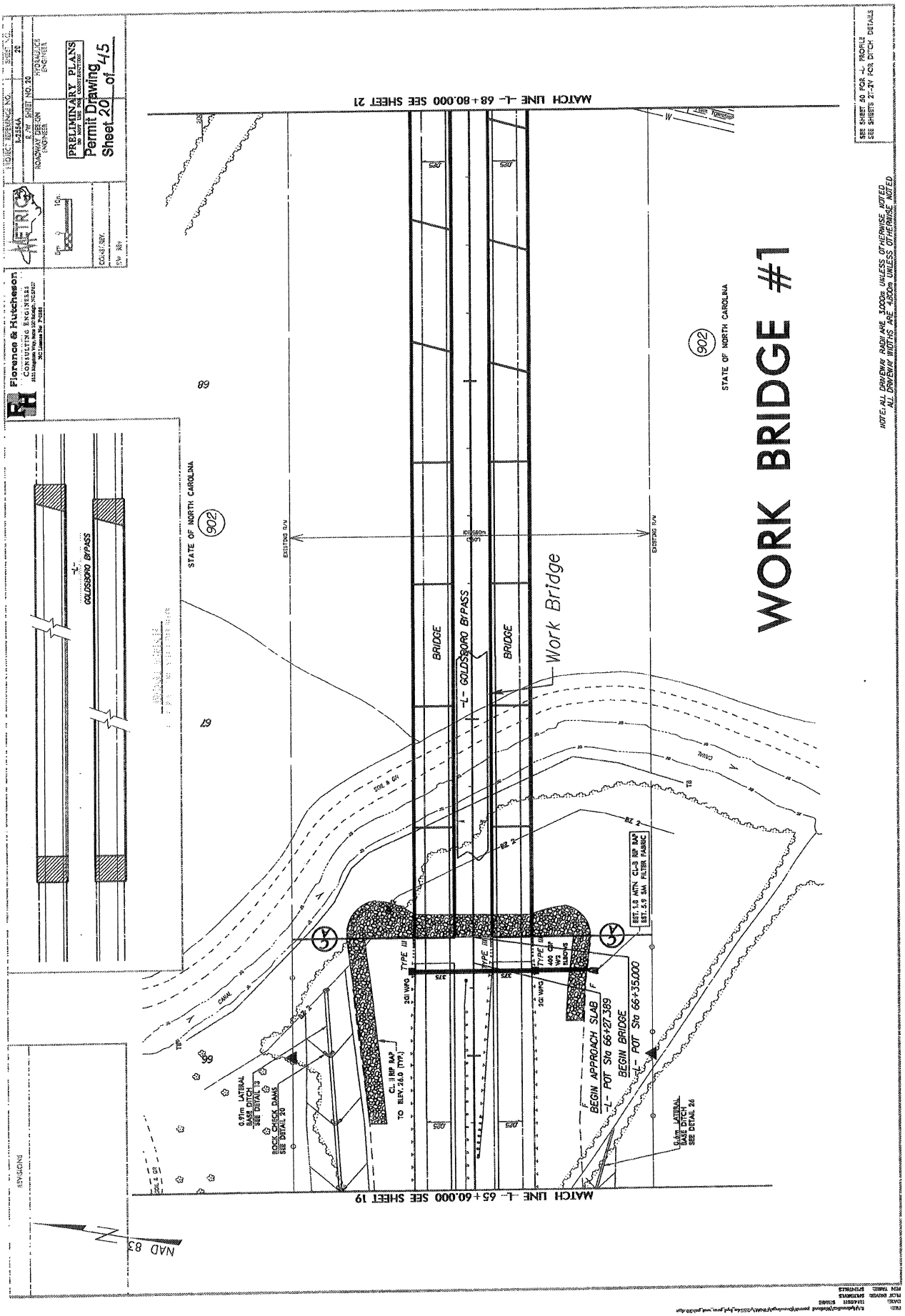

SITE IV
EST. 9.1 MTN CL-B RIP RAP
EST. 23.4 SM FILTER FABRIC
RIP RAP ON BANKS ONLY
METRIC
PROJECT REFERENCE NO.
R-2554A
SHEET NO.
15
R/W SHEET NO.
15
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
2.5m 0 5m
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST. REV.
R/W REV.
Permit Drawing
Sheet 15 of 45
REVISIONS
TB
TB
BZ 2
BZ 2
BZ 2
BZ 2
RW
PREFORMED
SCOUR HOLE
SEE DETAIL 21
HEADWALL
HEADWALL
450
1050
3GI
-L- GOLDSBORO BYPASS
RIP RAP
TOE PROTECTION
SEE DETAIL 11
PROP. GR. w/
TERM. SECTIONS
375mm CONC
NAD 83
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

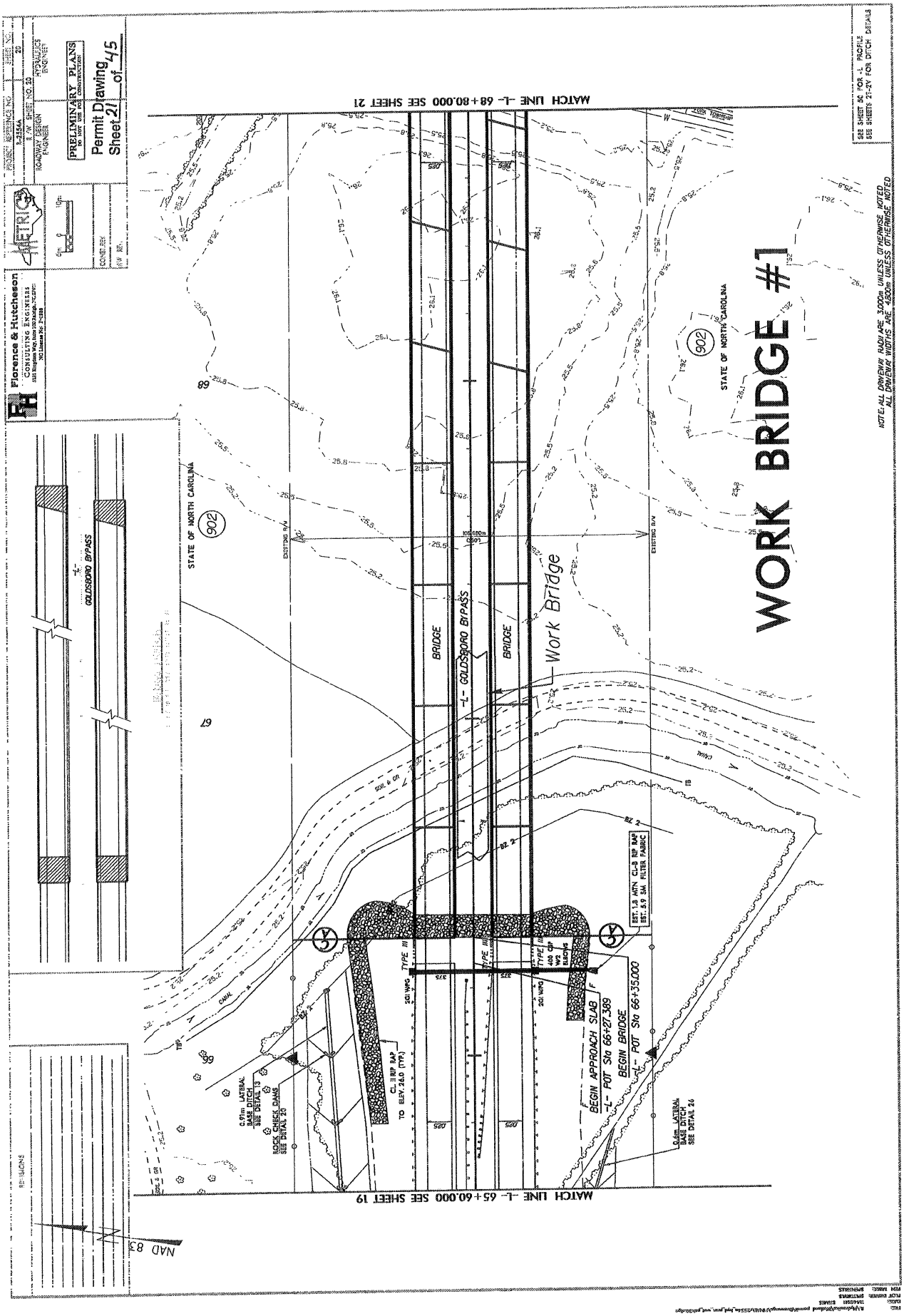

PROJ. REFERENCE NO.
R-2554A
GOLDSBORO BYPASS
SHEET NO.
X-106
METRIC
2m 0 2m
SCALE
Permit Drawing #5
Sheet 76 of 75
SECTION D-D
WETLAND LIMITS
CLEARING LIMITS
CLEARING LIMITS
WETLAND LIMITS
-L-
50+00.000
EX. EL. 32.33
-L-
51+00.000
EX. EL. 32.28
-L-
50+50.000
EX. EL. 36.54

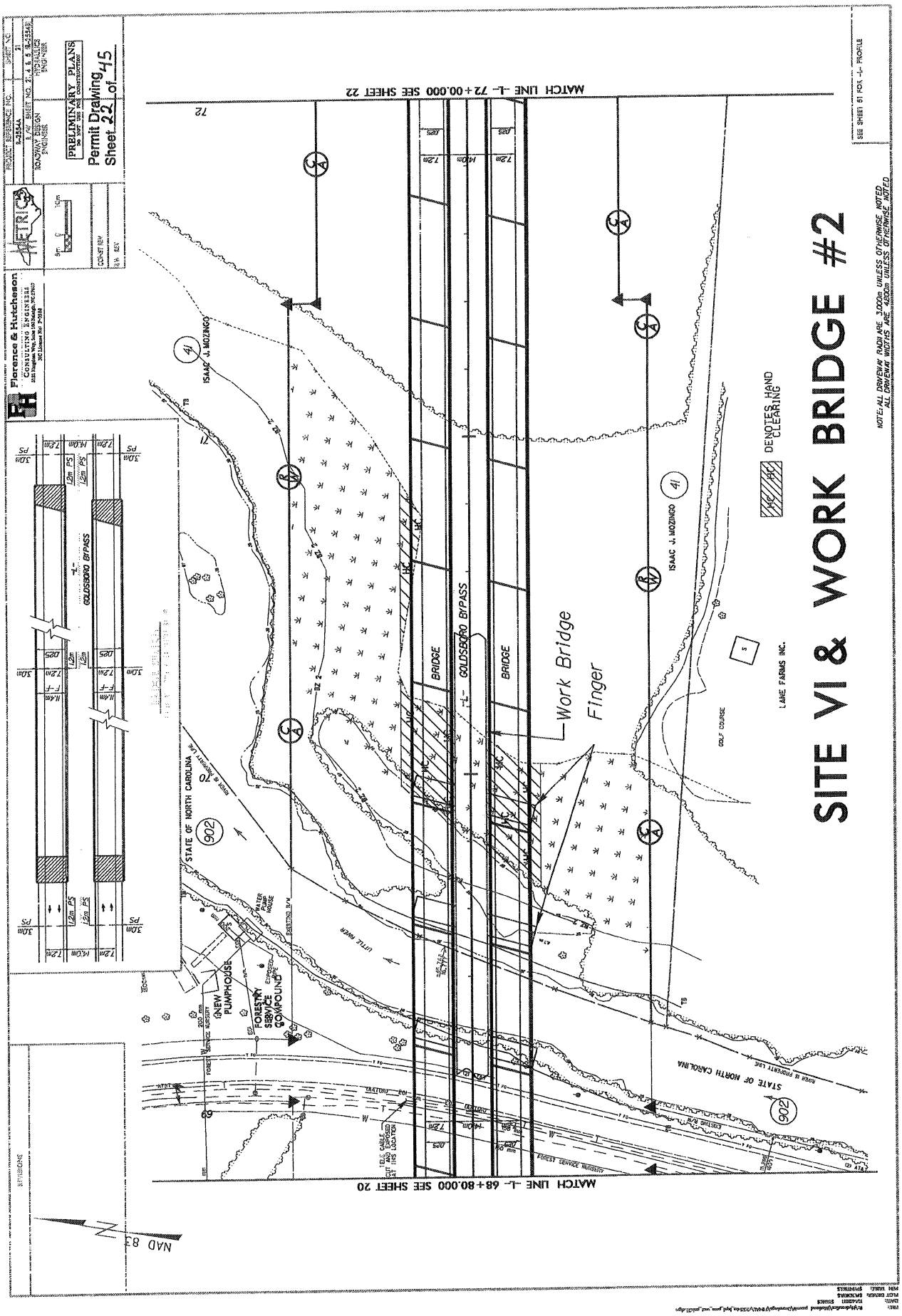

Permit Drawing
Sheet 17 of 45
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PROJECT REFERENCE NO. R-2554A
R/W SHEET NO. 16
SHEET NO. 16
Florence & Hutcheson
CONSULTING ENGINEERS
CONSTR'RV.
R/W REV.
REVISIONS
MATCH LINE -L- 55+40.000 SEE SHEET 17
MATCH LINE -L- 52+00.000 SEE SHEET 15
SITE V
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED
SEE SHEET 48 FOR -L- PROFILE
SEE SHEETS 21-24 FOR DITCH DETAILS
GOLDSBORO BYPASS
-L-
GRAU 350
GUARDRAIL
CAT-I
JAMES STEPHEN CASEY
ALVIN WATKINS
GRAVES T. LEWIS
EST. 2.7 MTN CL-B RIP RAP
EST. 9.2 SM. FILTER FABRIC
EST. 1.8 MTN CL-B RIP RAP
EST. 5.9 SM. FILTER FABRIC
PERFORMED SCOUR HOLE SEE DETAIL 21
SPECIAL LATERAL V-DITCH SEE DETAIL 1
INV= 35.597m
INV= 30.89m
INV= 31.03m
NAD 83
R/W REV. - 11/28/06
CORRECTED PROPERTY OWNER INFORMATION

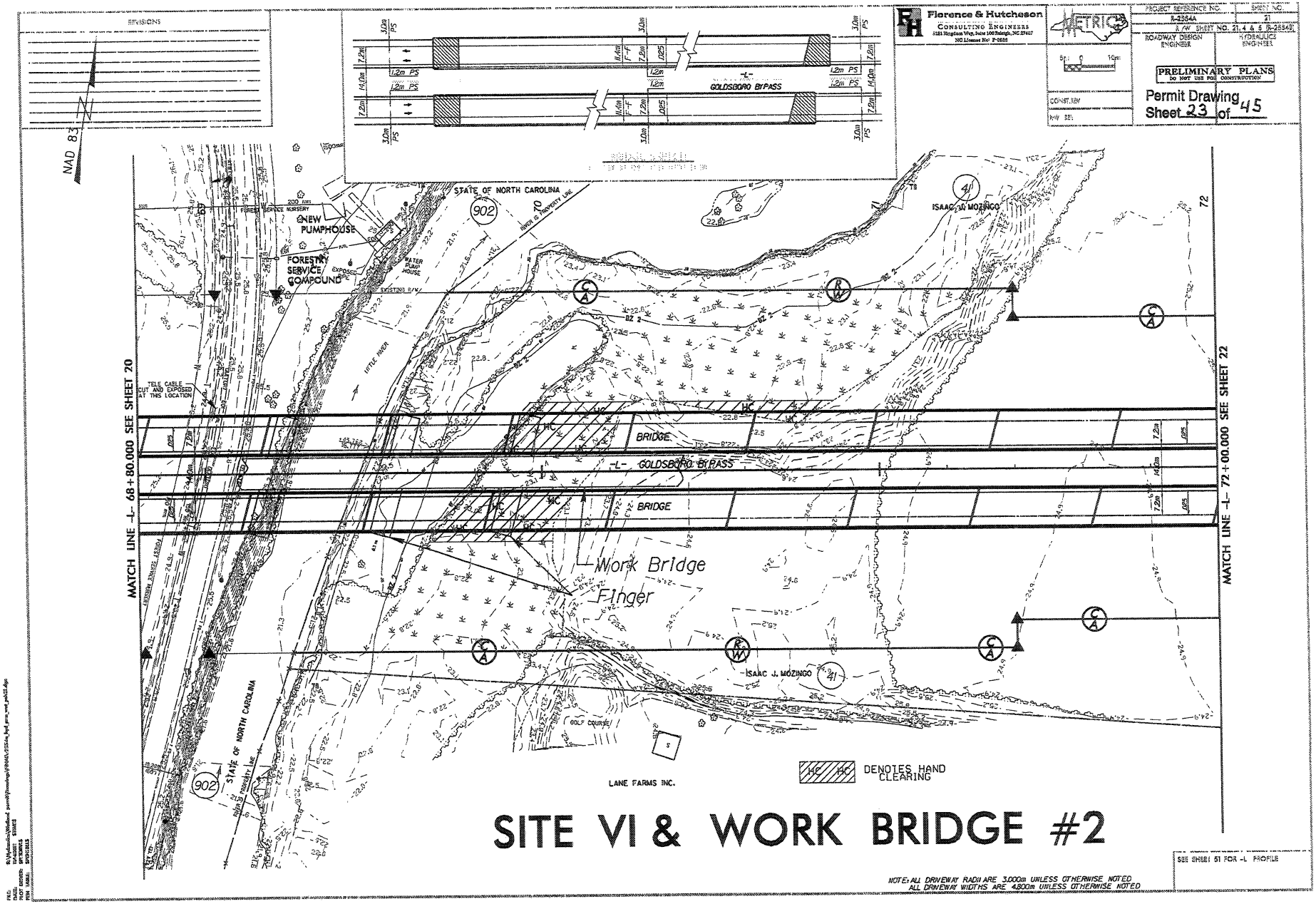

MATCH LINE -L- 55+40.000 SEE SHEET 17
MATCH LINE -L- 52+00.000 SEE SHEET 15
-L- GOLDSBORO BYPASS
SITE V
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
JAMES STEPHEN CASEY
ALVIN WATKINS
GRAVES T. LEWIS
GRAVES K. LEWIS
GUARDRAIL
GRAU 350
CAT-1
EST. 2.7 M/M CL-B RIP RAP
EST. 0.9 M/M FILTER FABRIC
EST. 1.8 M/M CL-B RIP RAP
EST. 0.9 M/M FILTER FABRIC
REINFORCED SCOUR HOLE SEE DETAIL 21
SPECIAL LATERAL V-DITCH SEE DETAIL 1
INV= 30.90m
INV= 30.97m
INV= 31.02m
INV= 31.04m
INV= 31.06m
NAD 83
Permit Drawing Sheet 18 of 45
PRELIMINARY PLANS
Florence & Hutcheson
CONSULTING ENGINEERS
METRIC
PROJECT REFERENCE NO. R-2554A
R/W SHEET NO. 15
SHEET NO. 18
ROADWAY DESIGN ENGINEER
HYDRAULIC ENGINEER
CONSTR. R/W REV.
REVISIONS
R/W REV. - 3/28/06
CORRECTED PROPERTY OWNER INFORMATION
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED
SEE SHEET 45 FOR -L- PROFILE
SEE SHEETS 21-2V FOR DITCH DETAILS

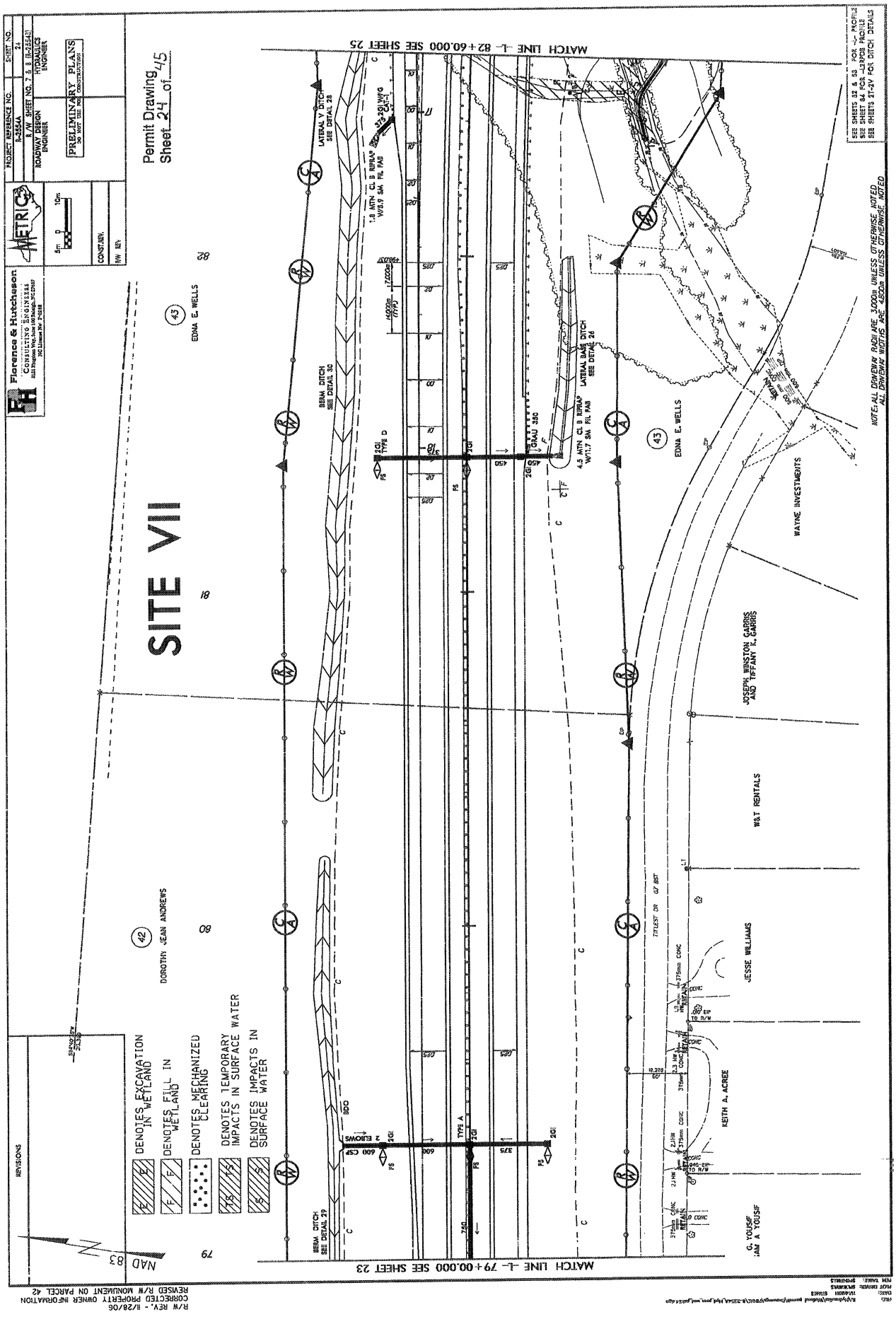

PROJ. REFERENCE NO.
R-2554A
GOLDSBORO BYPASS
SHEET NO.
X-111
SCALE
2m 0 2m
METRIC
Permit Drawing
Sheet 19 of 45
WETLAND LIMITS
CLEARING LIMITS
SECTION E-E'
E'
14+00.000
EX. EL. 34.478
E
13+80.000
EX. EL. 31.058
13+60.000
EX. EL. 31.378

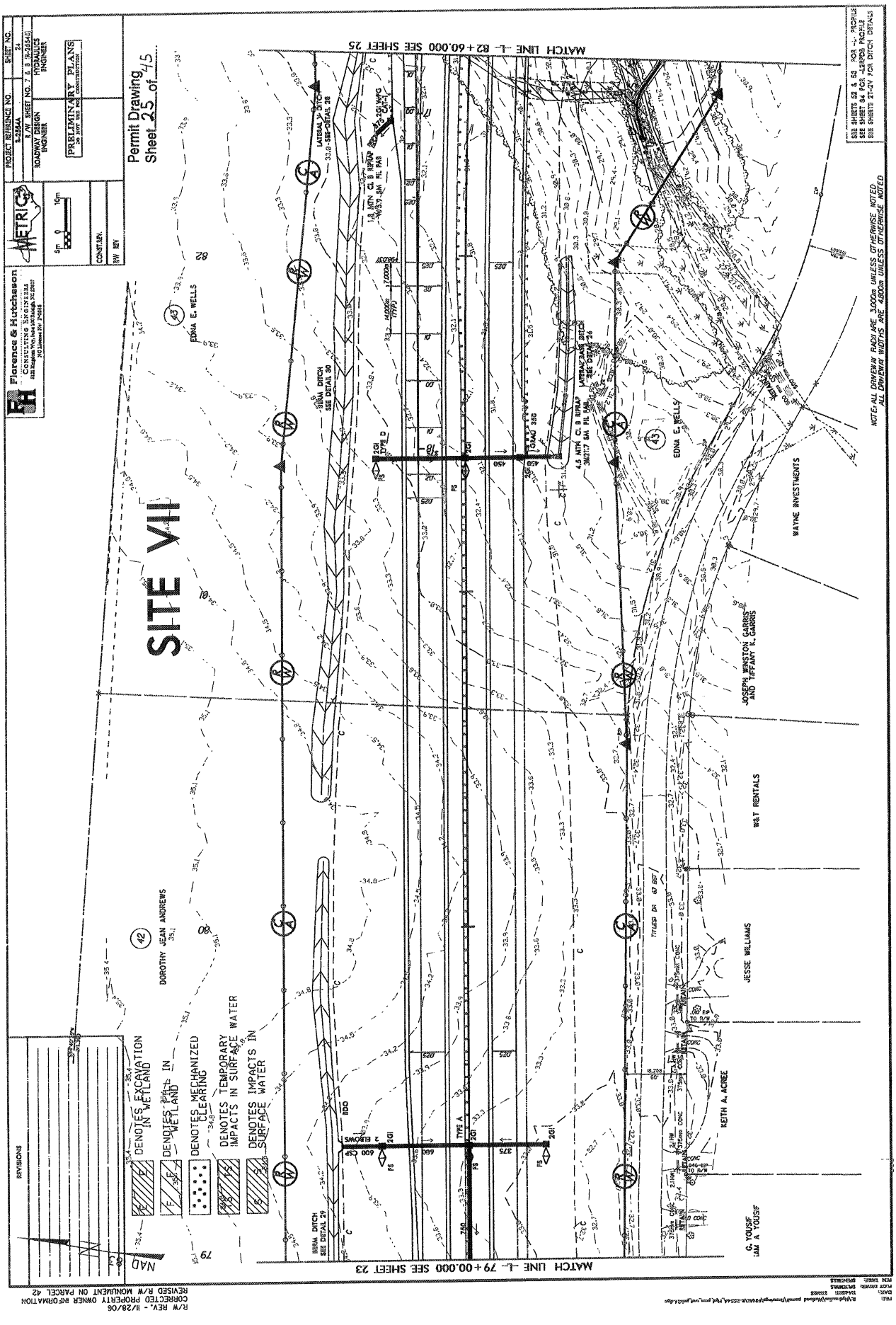

WORK BRIDGE #1
Work Bridge
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 20 of 45
Florence & Hutcheson
CONSULTING ENGINEERS
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PROJECT REFERENCE NO.
R-2554A
R/W SHEET NO. 20
SHEET NO. 20
MATCH LINE -L- 68+80.000 SEE SHEET 21
MATCH LINE -L- 63+60.000 SEE SHEET 19
STATE OF NORTH CAROLINA
902
-L- GOLDSBORO BYPASS
BRIDGE
BRIDGE
EXISTING R/W
BEGIN APPROACH SLAB -L- POT Sta 66+27.389
BEGIN BRIDGE -L- POT Sta 66+35.000
TYPE III RIP RAP
CL. II RIP RAP TO ELEV. 26.0 (TYP.)
EST. 1.0 MTN CL-3 RIP RAP
EST. 2.5 SM. FILTER FABRIC
0.91m LATERAL BASE DITCH SEE DETAIL 7B
ROCK CHECK DAMS SEE DETAIL 20
LEFT LATERAL BASE DITCH SEE DETAIL 26
SEE SHEET 50 FOR -L- PROFILE
SEE SHEETS 27-27 FOR DITCH DETAILS
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED
NAD 83
REVISIONS

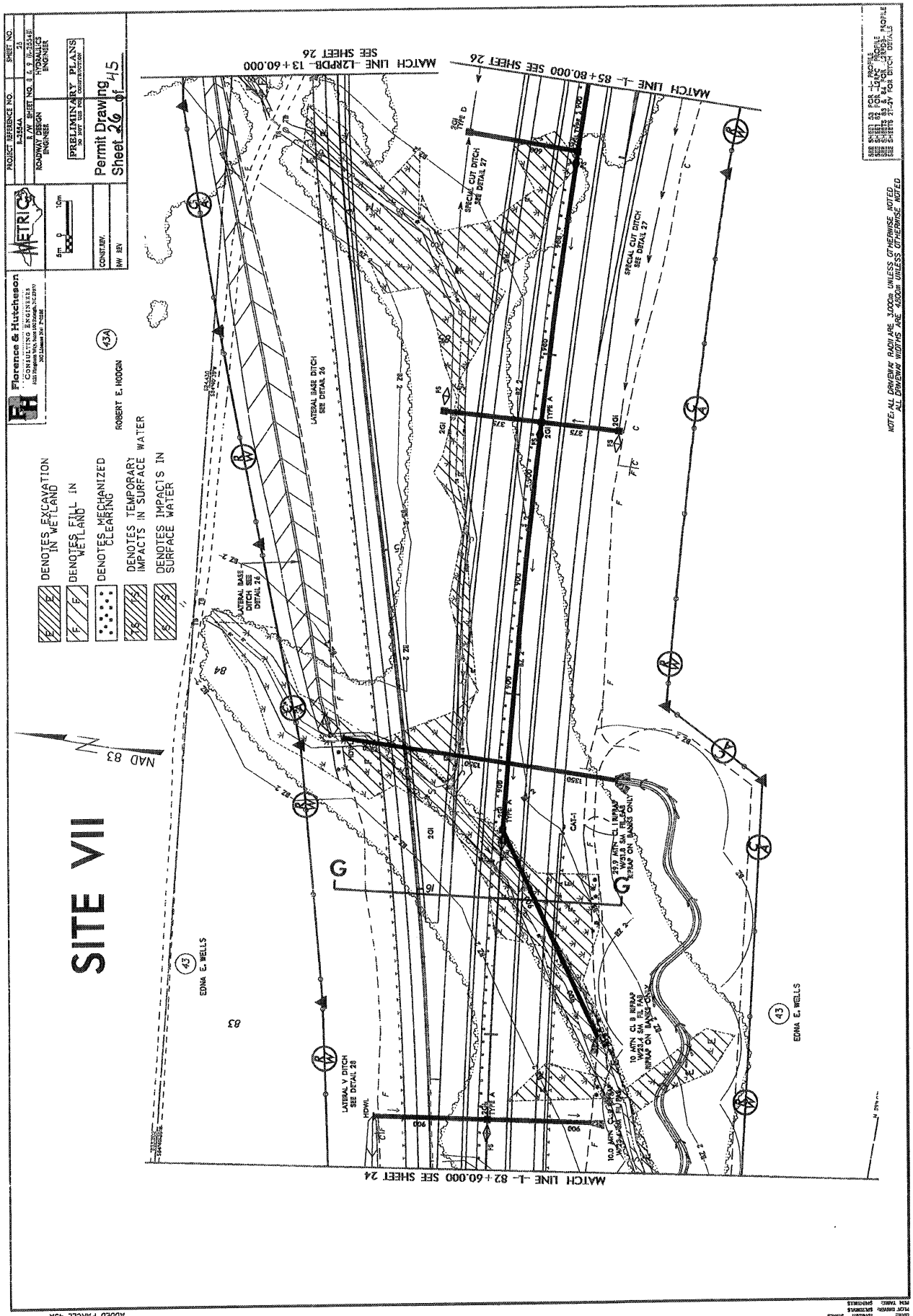

PRELIMINARY PLANS
NO RIGHT OF WAY OR CONSTRUCTION
Permit Drawing Sheet 21 of 45
Florence & Hutcheson
CONSULTING ENGINEERS
WORK BRIDGE #1
MATCH LINE -L- 68+80.000 SEE SHEET 21
MATCH LINE -L- 65+60.000 SEE SHEET 19
STATE OF NORTH CAROLINA
902
GOLDSBORO BYPASS
-L- GOLDSBORO BYPASS
BRIDGE
BRIDGE
Work Bridge
BEGIN APPROACH SLAB
-L- POT Sta 66+27.389
BEGIN BRIDGE
-L- POT Sta 66+35.000
TYPE III
TYPE III
CL. II RIP RAP TO ELEV. 24.0 (TYP.)
0.91m LATERAL BASE DITCH SEE DETAIL 18
ROCK CHECK DAMS SEE DETAIL 25
0.6m LATERAL BASE DITCH SEE DETAIL 24
EXISTING R/W
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED.
ALL DRIVEWAY WIDTHS ARE 4.500m UNLESS OTHERWISE NOTED

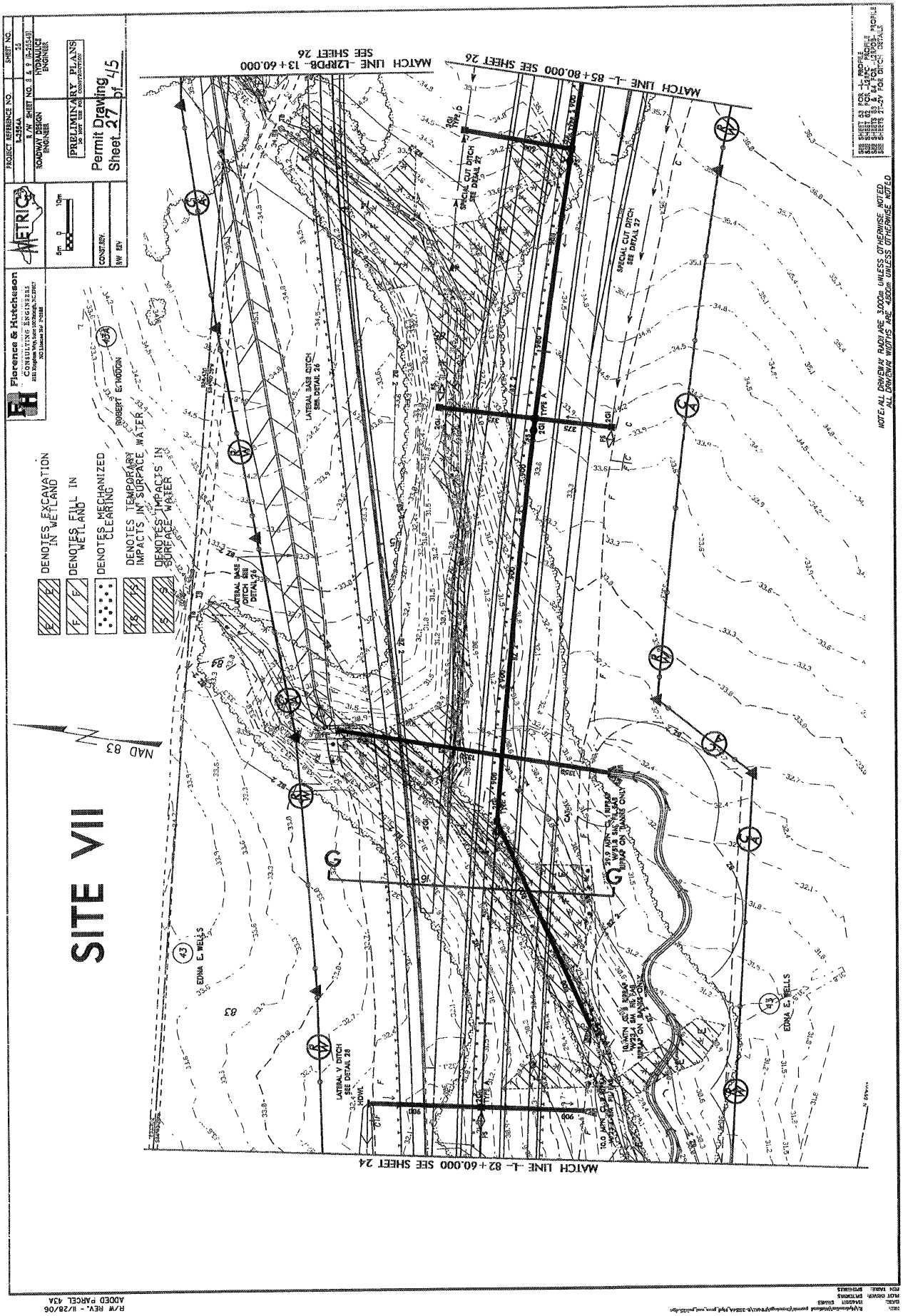

SITE VI & WORK BRIDGE #2
PRELIMINARY PLANS
Permit Drawing
Sheet 22 of 45
Florence & Hutcheson
CONSULTING ENGINEERS
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.200m UNLESS OTHERWISE NOTED
SEE SHEET 61 FOR -L- PROFILE
MATCH LINE -L- 72+00.000 SEE SHEET 22
MATCH LINE -L- 68+80.000 SEE SHEET 20
GOLDSBORO BYPASS
BRIDGE
Work Bridge
Finger
ISAAC J. MOZINGO
LANE FARMS INC.
GOLF COURSE
DENOTES HAND CLEARING
STATE OF NORTH CAROLINA
NEW PUMPHOUSE
FORESTRY SERVICE COMPOUND
FOREST SERVICE NURSERY
NAD 83


Florence & Hutcheson
CONSULTING ENGINEERS
METRIC
PROJECT REFERENCE NO. R-2564A
SHEET NO. 21
R/W SHEET NO. 21, 4 & 5 R-2554D
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing Sheet 23 of 45
REVISIONS
NAD 83
GOLDSBORO BYPASS
STATE OF NORTH CAROLINA
FORESTRY SERVICE NURSERY
NEW PUMPHOUSE
FORESTRY SERVICE COMPOUND
WATER PUMP HOUSE
EXPOSED
EXISTING R/W
TELE CABLE CUT AND EXPOSED AT THIS LOCATION
LITTLE RIVER
BRIDGE
-L- GOLDSBORO BYPASS
BRIDGE
Work Bridge Finger
ISAAC J. MOZINGO
ISAAC J. MOZINGO
GOLF COURSE
LANE FARMS INC.
STATE OF NORTH CAROLINA
902
MATCH LINE -L- 68+80.000 SEE SHEET 20
MATCH LINE -L- 72+00.000 SEE SHEET 22
HC DENOTES HAND CLEARING
SITE VI & WORK BRIDGE #2
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED
SEE SHEET 51 FOR -L- PROFILE


SITE VII
Permit Drawing
Sheet 24 of 45
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
Florence & Hutcheson
CONSULTING ENGINEERS
METRIC
PROJECT REFERENCE NO. R-2554A
R/W SHEET NO. 7 & 8
SHEET NO. 24
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.
REVISIONS
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
NAD 83
MATCH LINE -L- 79+00.000 SEE SHEET 23
MATCH LINE -L- 82+60.000 SEE SHEET 25
NOTE: ALL DRIVEWAY RADII ARE 3000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.60m UNLESS OTHERWISE NOTED
SEE SHEETS 22 & 23 FOR -Y1- PROFILE
SEE SHEET 24 FOR -L3PDB PROFILE
SEE SHEETS 21-2V FOR DITCH DETAILS
(42) DOROTHY JEAN ANDREWS
(43) EDNA E. WELLS
WAYNE INVESTMENTS
JOSEPH WINSTON GARRIS AND TIFFANY K. GARRIS
W&T RENTALS
JESSE WILLIAMS
KEITH A. ACREE
G. YOUSUF JAM A YOUSUF
LATERAL DITCH SEE DETAIL 28
BERM DITCH SEE DETAIL 30
LATERAL BASE DITCH SEE DETAIL 26
BERM DITCH SEE DETAIL 29
TYPE A
TYPE D
4.5 MTH CL B RIPRAP W=11.7 SAN FIL FAB
1.8 MTH CL B RIPRAP W=9.9 SAN FIL FAB
771.61ST DR @7 BRF
R/W REV. - 8/28/06
CORRECTED PROPERTY OWNER INFORMATION
REVISED R/W MONUMENT ON PARCEL 42

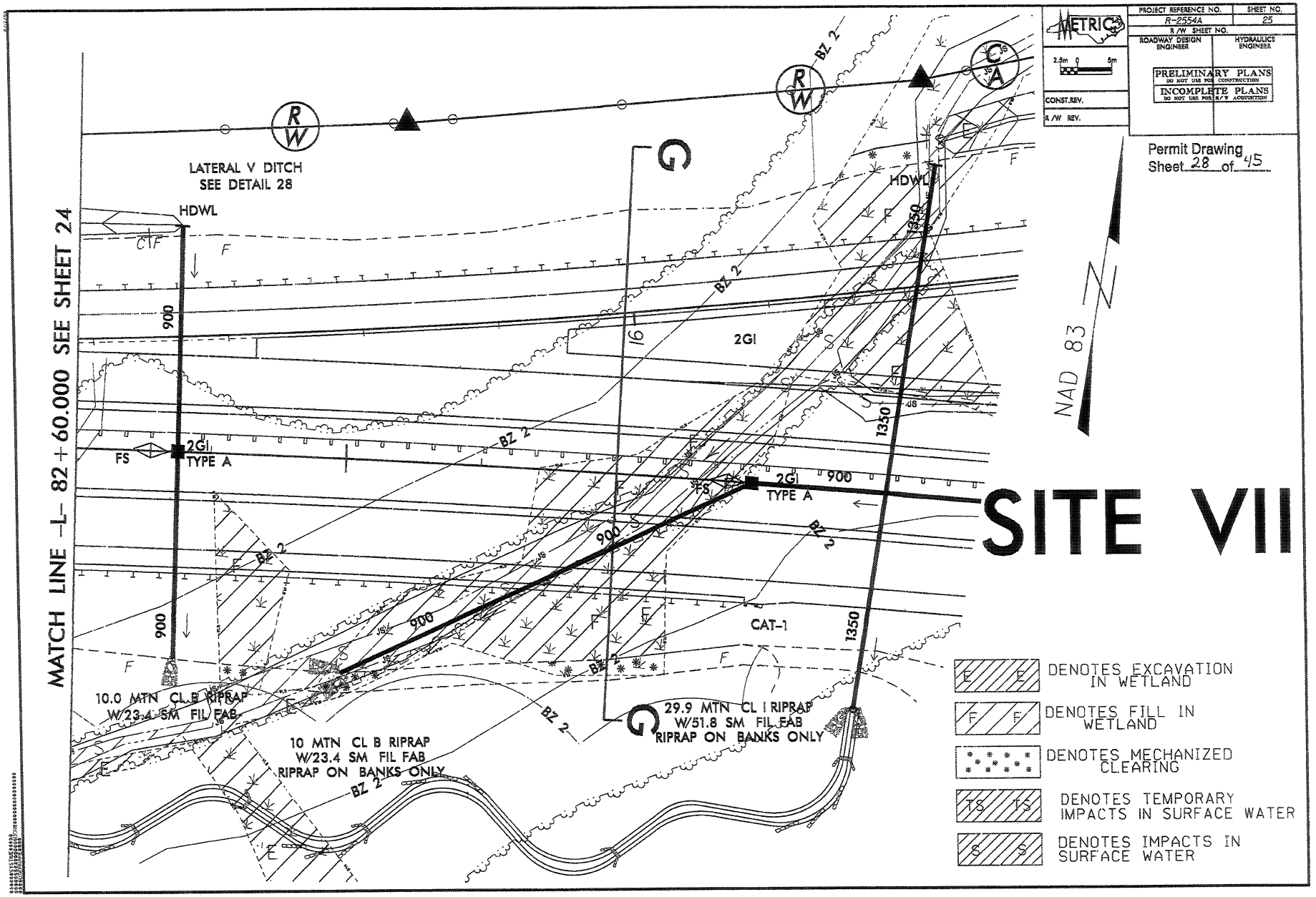

SITE VII
Permit Drawing
Sheet 25 of 45
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
PROJECT REFERENCE NO. R-2554A
SHEET NO. 24
R/W SHEET NO. 7 & 8
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Florence & Hutcheson
CONSULTING ENGINEERS
METRIC
CONST. ENG.
R/W ENG
REVISIONS
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
MATCH LINE -L- 79+00.000 SEE SHEET 23
MATCH LINE -L- 82+60.000 SEE SHEET 25
DOROTHY JEAN ANDREWS
EDNA E. WELLS
JOSEPH WINSTON GARRIS AND TIFFANY N. GARRIS
WAYNE INVESTMENTS
W&T RENTALS
JESSE WILLIAMS
KEITH A. ACREE
G. YOUSIF
SAM A YOUSIF
NOTE: ALL DRIVEWAY RADIAPE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED
R/W REV. - 11/28/06
CORRECTED PROPERTY OWNER INFORMATION
REVISED R/W MONUMENT ON PARCEL 42


SITE VII
NAD 83
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
ROBERT E. HOOGAN
EDNA E. WELLS
MATCH LINE -L- 82+60.000 SEE SHEET 24
MATCH LINE -L- 85+80.000 SEE SHEET 26
MATCH LINE -L12RPDB- 13+60.000 SEE SHEET 26
LATERAL BASE DITCH SEE DETAIL 26
LATERAL V DITCH SEE DETAIL 26
SPECIAL CUT DITCH SEE DETAIL 27
TYPE A
TYPE D
CAT-1
HDWL
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.600m UNLESS OTHERWISE NOTED
Florence & Hutcheson
CONSULTING ENGINEERS
METRIC
PROJECT REFERENCE NO. R-2554A
R/W SHEET NO. 3 & 9
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing
Sheet 26 of 45
CONST.REV.
R/W REV.
SHEET NO. 25
R/W REV. - 07/23/10
PARCEL 43A NAME REVISION
R/W REV. - 11/28/06
ADDED PARCEL 43A



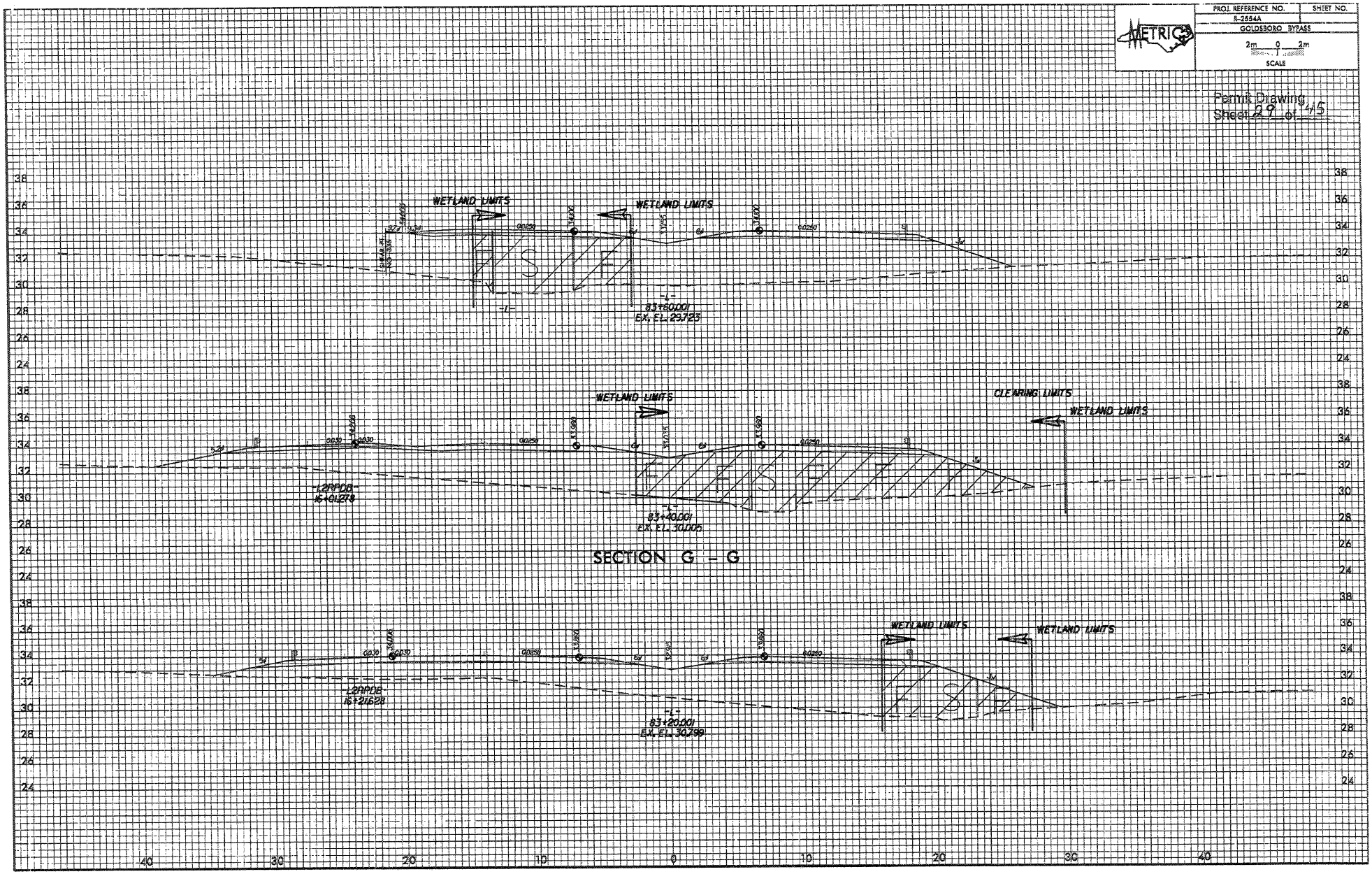
R/W REV. - 07/23/10
PARCEL 43A NAME REVISION

R/W REV. - 11/28/06
ADDED PARCEL 43A

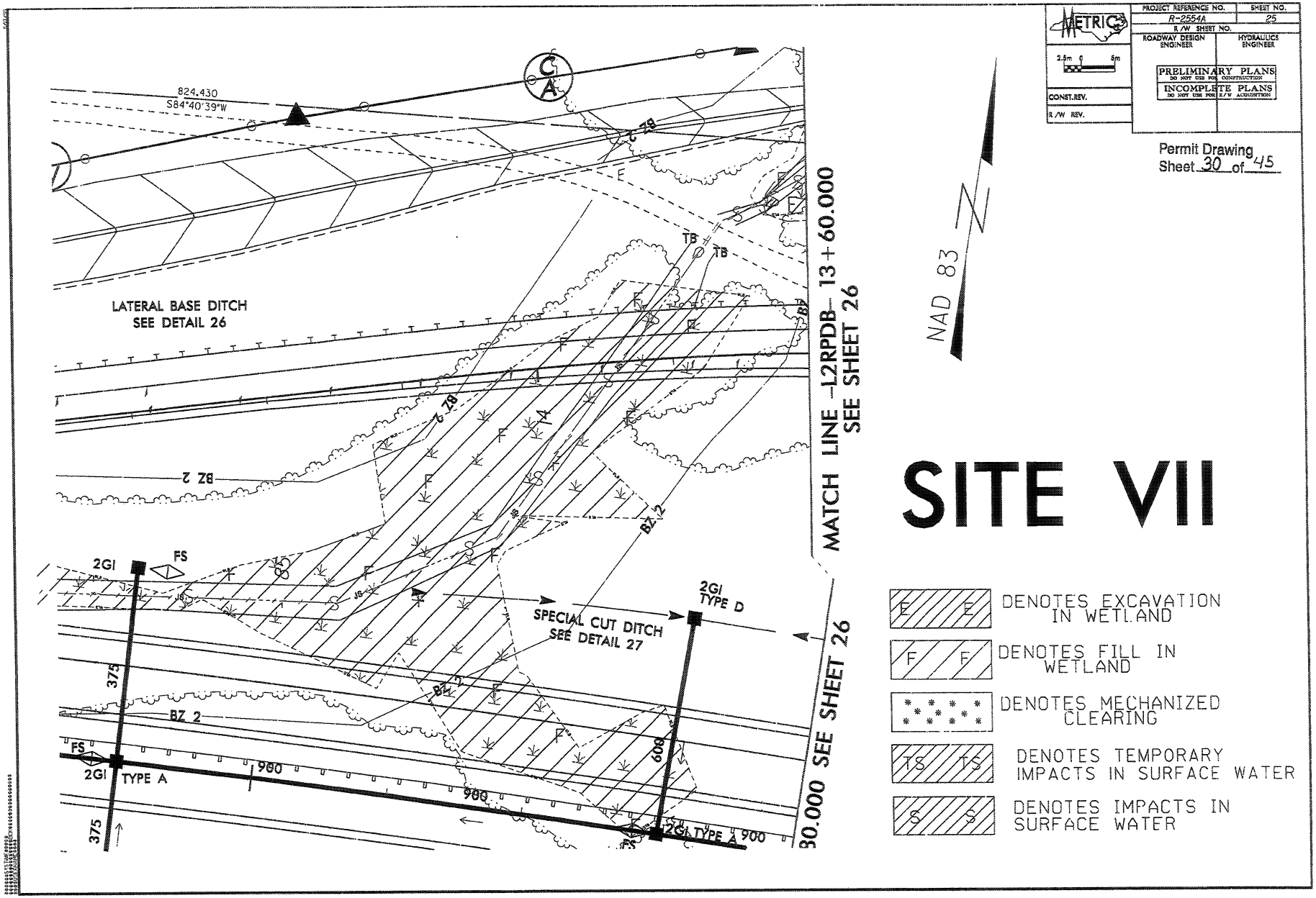

METRIC
2.5m 0 5m
CONST.REV.
R/W REV.
PROJECT REFERENCE NO.
R-2554A
SHEET NO.
25
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Permit Drawing
Sheet 28 of 45
NAD 83
SITE VII
MATCH LINE -L- 82+60.000 SEE SHEET 24
LATERAL V DITCH
SEE DETAIL 28
HDWL
CTF
F
900
2GI
TYPE A
FS
BZ 2
16
1350
CAT-1
10.0 MTN CL B RIPRAP
W/23.4 SM FIL FAB
10 MTN CL B RIPRAP
W/23.4 SM FIL FAB
RIPRAP ON BANKS ONLY
29.9 MTN CL I RIPRAP
W/51.8 SM FIL FAB
RIPRAP ON BANKS ONLY
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER

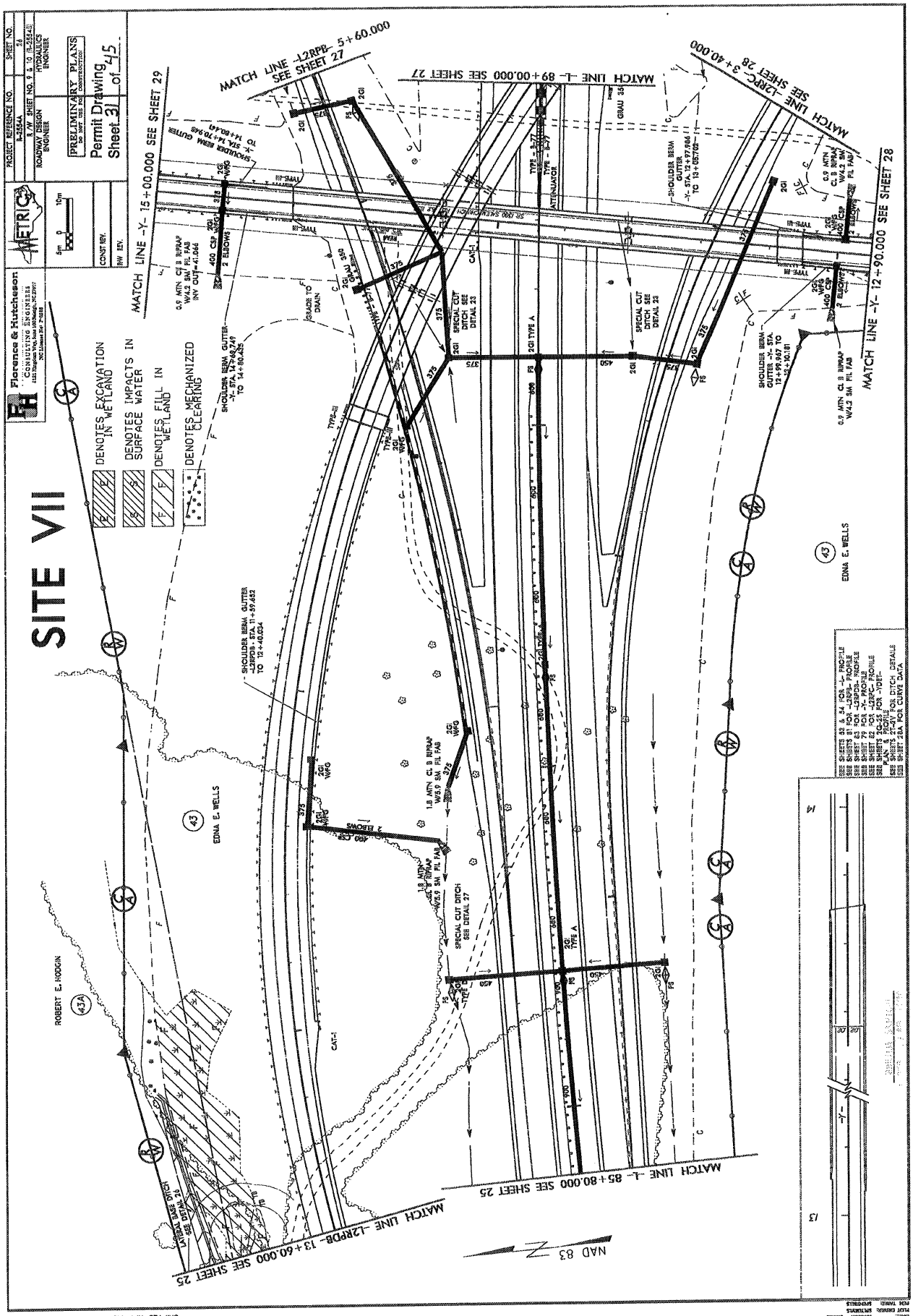
PROJ. REFERENCE NO.	SHEET NO.
R-2554A	
GOLDSBORO BYPASS	
2m 0 2m	
SCALE	

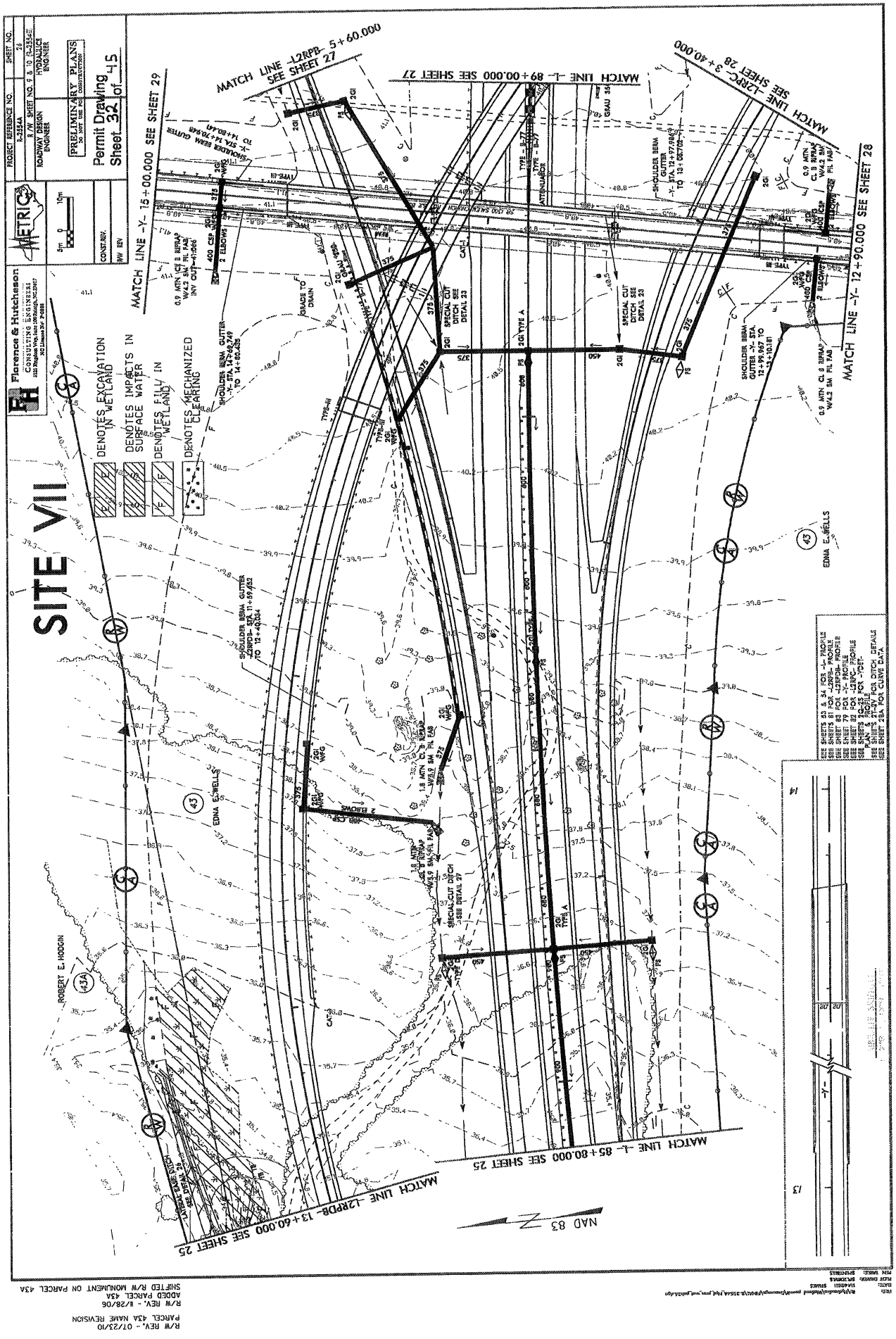
Permit Drawing
Sheet 29 of 45

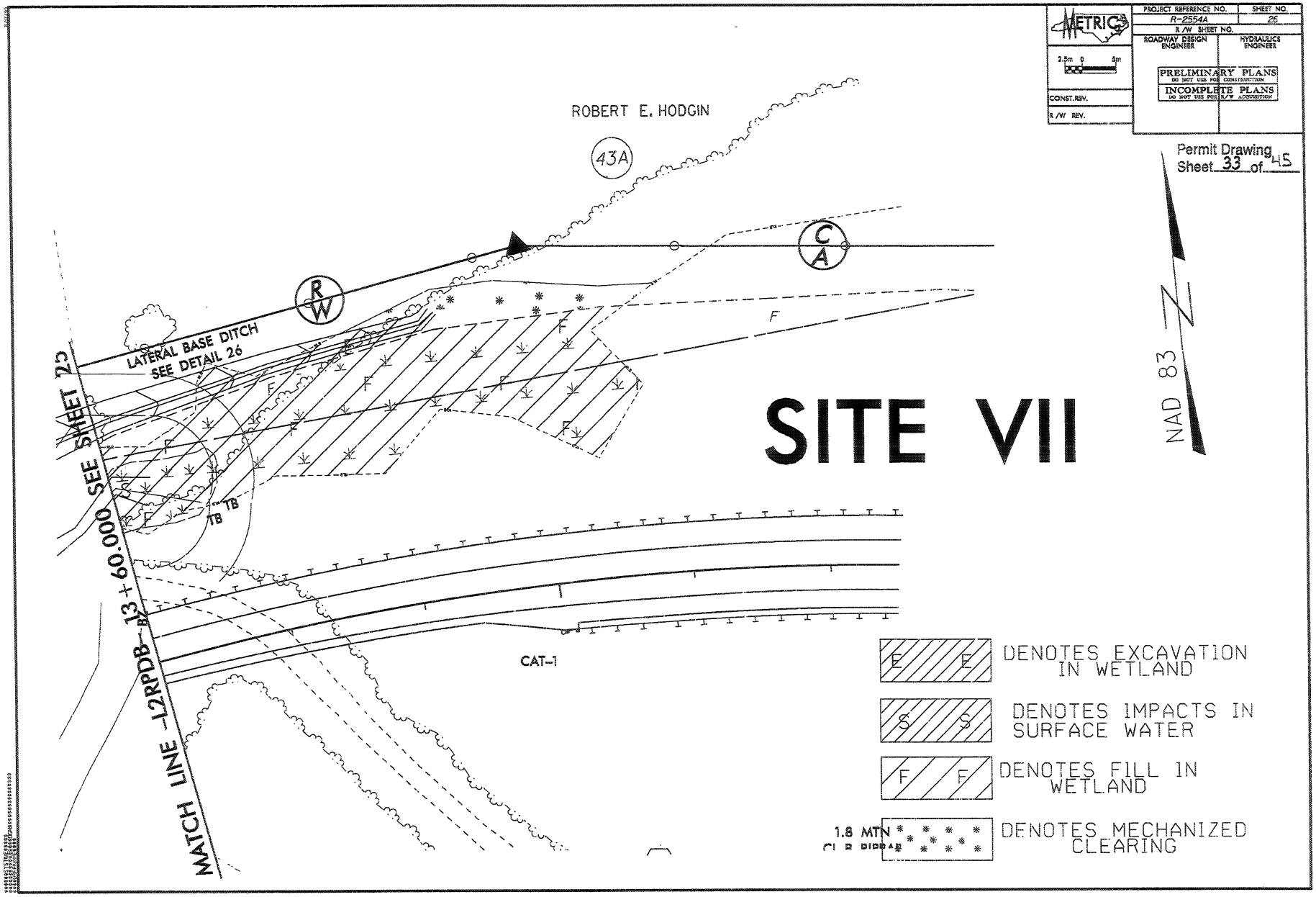


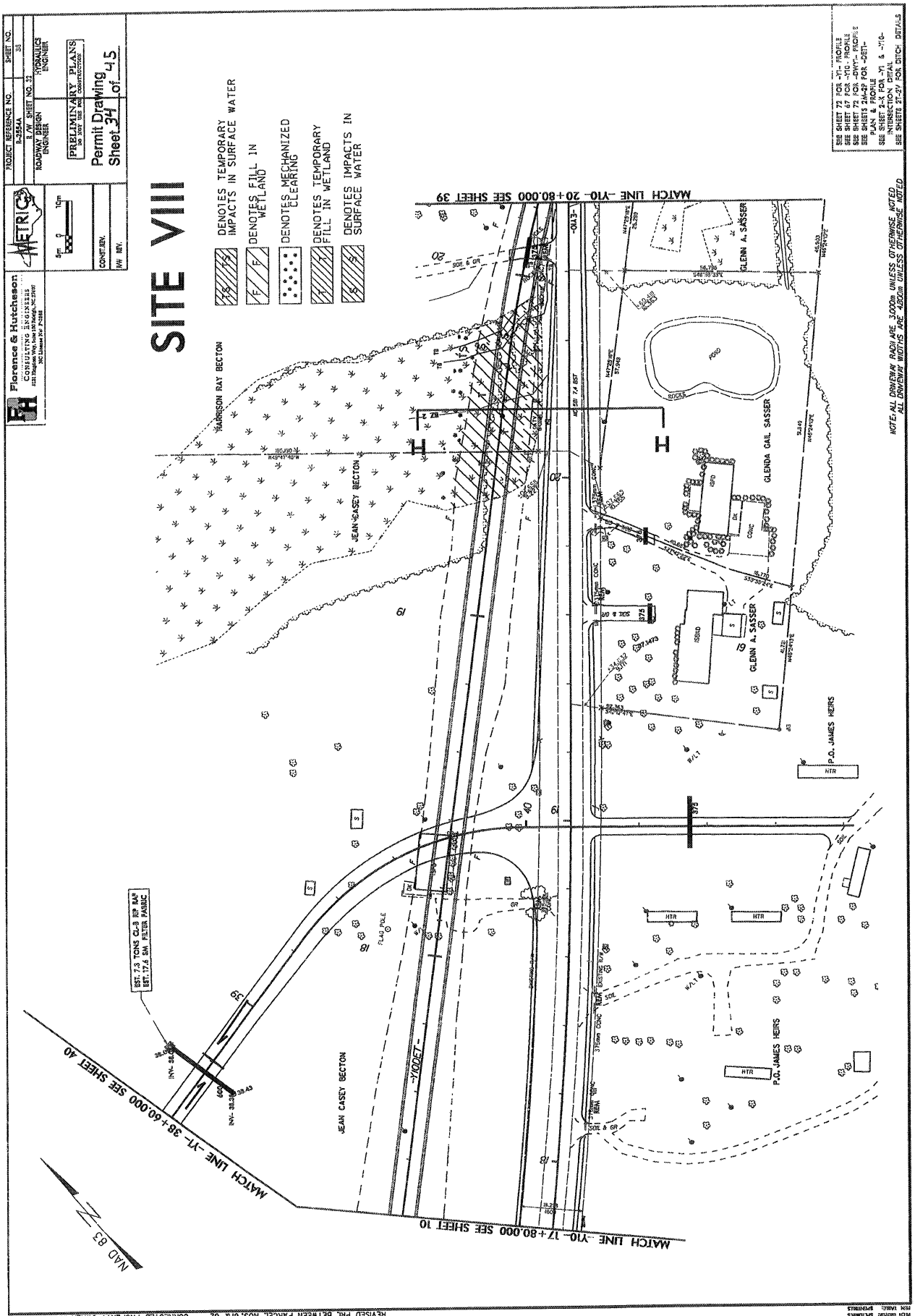
SECTION G - G


824.430
S84°40'39"W
LATERAL BASE DITCH
SEE DETAIL 26
MATCH LINE -L2RPDB- 13+60.000
SEE SHEET 26
30.000 SEE SHEET 26
SPECIAL CUT DITCH
SEE DETAIL 27
2GI TYPE D
2GI TYPE A
2GI TYPE A
FS
FS
375
375
900
900
600
NAD 83
SITE VII
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
METRIC
PROJECT REFERENCE NO.
R-2554A
SHEET NO.
25
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
Permit Drawing
Sheet 30 of 45


SITE VII
DENOTES EXCAVATION IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
MATCH LINE -Y- 15+00.000 SEE SHEET 29
MATCH LINE -L- 89+00.000 SEE SHEET 27
MATCH LINE -12RPC- 3+40.000 SEE SHEET 28
MATCH LINE -Y- 12+90.000 SEE SHEET 28
MATCH LINE -12RPB- 5+60.000 SEE SHEET 27
MATCH LINE -12RPDB- 13+60.000 SEE SHEET 25
MATCH LINE -L- 85+80.000 SEE SHEET 25
EDNA E. WELLS
ROBERT E. HODGIN
NAD 83
PRELIMINARY PLANS
Permit Drawing
Sheet 31 of 45
Florence & Hutcheson
METRO


SITE VII
DENOTES EXCAVATION IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES F/L/V IN WETLAND
DENOTES MECHANIZED CLEARING
MATCH LINE -L2RPB- 5+60.000 SEE SHEET 27
MATCH LINE -L- 89+00.000 SEE SHEET 27
MATCH LINE -L2RPC- 3+40.000 SEE SHEET 28
MATCH LINE -Y- 15+00.000 SEE SHEET 29
MATCH LINE -Y- 12+90.000 SEE SHEET 28
MATCH LINE -L- 85+80.000 SEE SHEET 25
MATCH LINE -L2RPB- 13+60.000 SEE SHEET 25
EDNA E. WELLS
ROBERT E. HODGIN
NAD 83
PRELIMINARY PLANS
Permit Drawing
Sheet 32 of 45


METRIC
2.5m 0 5m
CONST.REV.
R/W REV.
PROJECT REFERENCE NO.
R-2554A
SHEET NO.
26
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
Permit Drawing
Sheet 33 of 45
ROBERT E. HODGIN
43A
CA
RW
LATERAL BASE DITCH
SEE DETAIL 26
SEE SHEET 25
13+60.000 -L2RPDB-
MATCH LINE -L2RPDB-
TB
CAT-1
NAD 83
SITE VII
E E DENOTES EXCAVATION IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
F F DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING

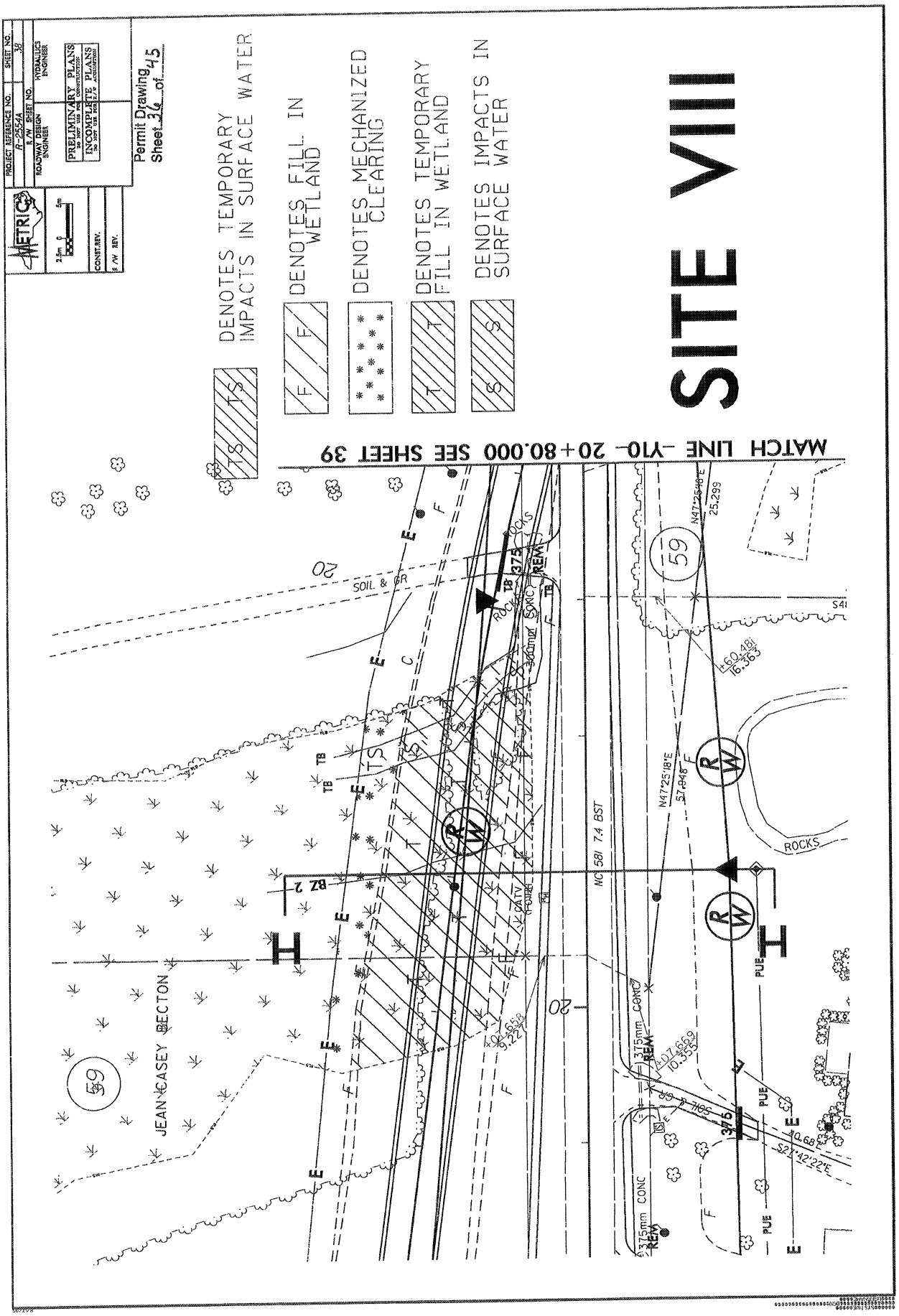


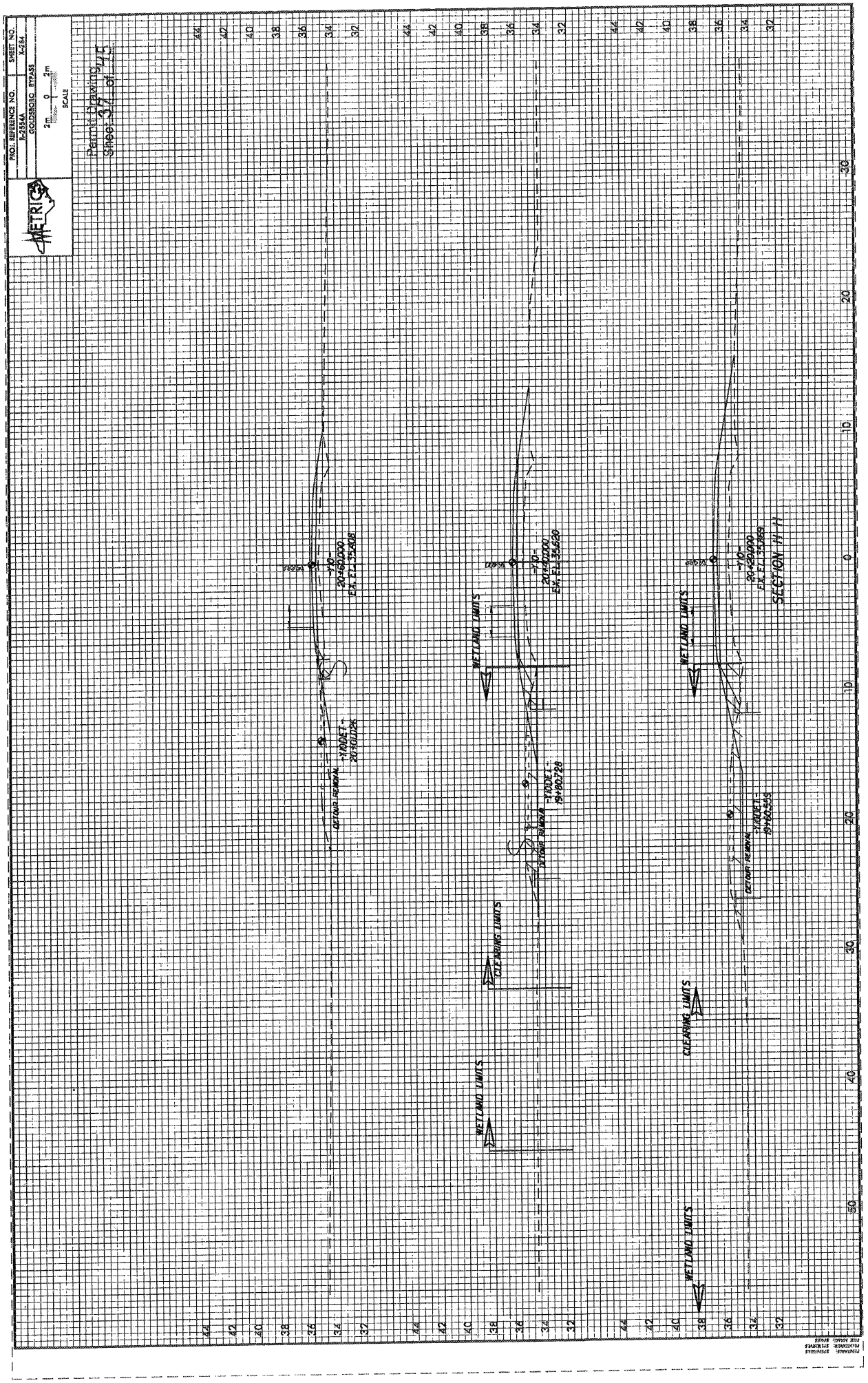
R/W REV. - 7/08/09
REVISED PLE ON PARCEL NO. 60
R/W REV. - 6/8/09
REDUCED PAINTED ISLAND TO 19+60 -Y10-
R/W REV. - 4/15/09
ADDED PLE TO PARCEL NOS. 60, 61A 62
R/W REV. - 8/28/08
CORRECTED PROPERTY OWNER INFORMATION

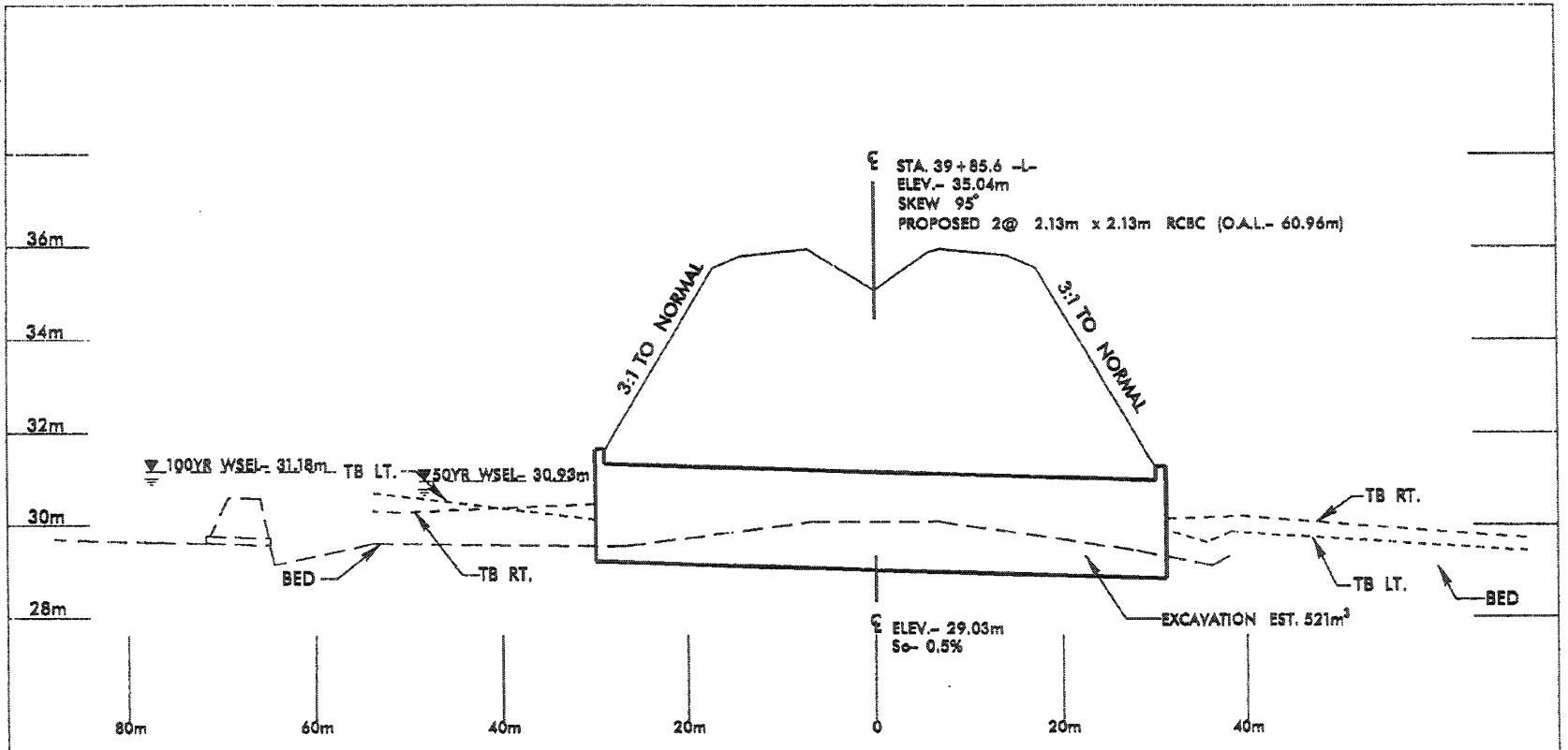
R/W REV. - 9/30/09
REVISED PRL BETWEEN PARCEL NOS. 61A 62

R/W REV. - 7/08/09
REVISED PUE ON PARCEL NO. 60
R/W REV. - 6/11/09
REDUCED PAINTED ISLAND TO 19+80 -Y1G-
R/W REV. - 4/15/09
ADDED PUE TO PARCEL NOS. 60, 61& 62
R/W REV. - 11/28/08
CORRECTED PROPERTY OWNER INFORMATION

R/W REV. - 9/30/09
REVISED PRL BETWEEN PARCEL NOS. 61& 62


SITE VIII
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCH LINE -Y10- 20+80.000 SEE SHEET 39
PROJECT REFERENCE NO. R-2554A
SHEET NO. 38
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
INCOMPLETE PLANS
METRIC
CONST./REV.
R/W REV.
Permit Drawing Sheet 36 of 45
JEAN CASEY BECTON
59
20
SOIL & GR
ROCKS
375mm CONC
REM
TB
TS
F
E
C
T
S
R/W
PUE
NC 581 7.4 BST
N47°25'18"E 57.948
N47°25'48"E 25.299
S41°42'22"E 40.68
ADT 6669
10.35%
+60.48
16.363
-60.48
16.363
-20.16
6.228
DATA POINT
BZ 2


PROJ. REFERENCE NO.
R-2544A
GOLDSBORO BYPASS
SHEET NO.
K-2B4
SCALE
2m 0 2m
Permit Drawing
Sheet 37 of 44
SECTION H-H'
-Y10-
20+400.000
EX. EL. 35.620
-Y10-
20+430.000
EX. EL. 35.369
-Y10-
20+460.000
EX. EL. 35.408
-Y10DET-
19+801.728
-Y10DET-
19+863.556
-Y10DET-
20+301.058
DETOUR REMOVAL
WETLAND LIMITS
CLEARING LIMITS



10m 0m 10m
VERT.

5m 0m 20m
HOR.

PROFILE

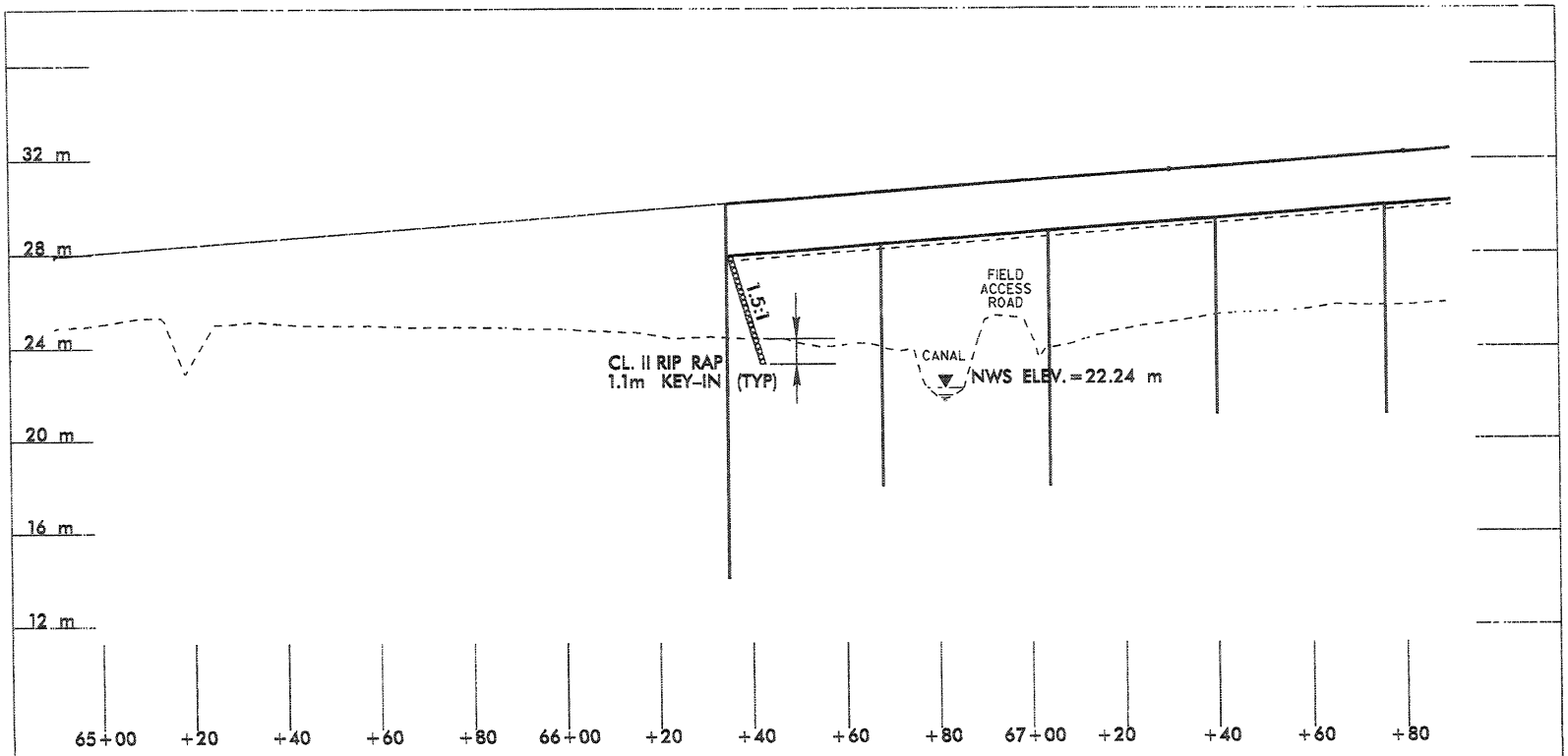
SITE 1

NCDOT
DIVISION OF HIGHWAYS
WAYNE COUNTY
PROJECT: 34461.1.3 (R-2554A)

GOLDSBORO BYPASS FROM US 70 WEST OF NC 581 TO SR 1300

SHEET OF **11/15/11**

Permit Drawing
Sheet 38 of 45



PROFILE

SITE VI

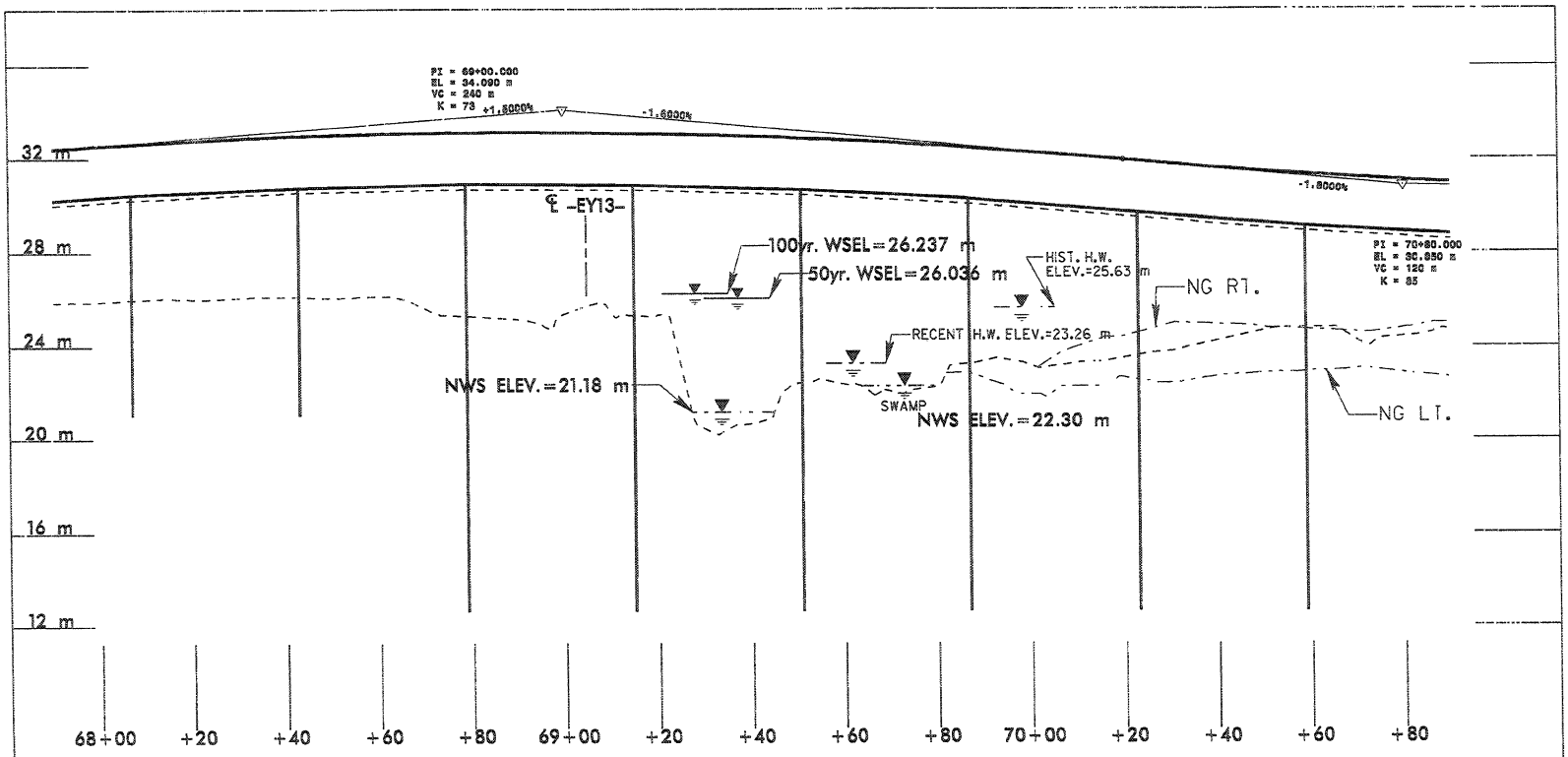
4m 0m 4m
VERT.

10m 0m 40m
HOR.

NCDOT
DIVISION OF HIGHWAYS
WAYNE COUNTY
PROJECT: 34461.1.3 (R-2554A)

GOLDSBORO BYPASS FROM US 70
WEST OF NC 581 TO SR 1300

SHEET 1 OF 4 8/22/11



4m 0m 4m
VERT.

10m 0m 40m
HOR.

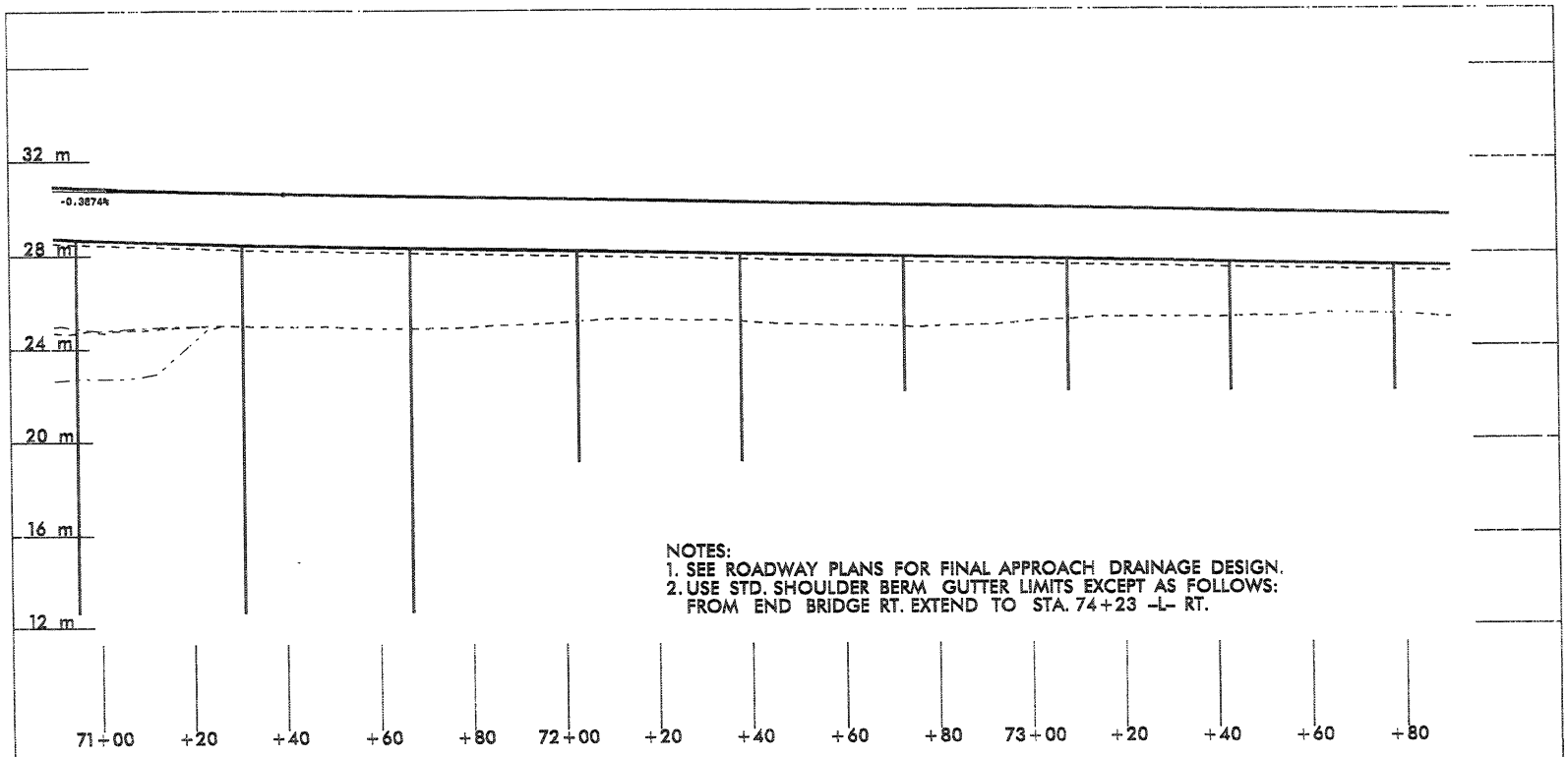
PROFILE

SITE VI

NCDOT
DIVISION OF HIGHWAYS
WAYNE COUNTY
PROJECT: 34461.1.3 (R-2554A)

GOLDSBORO BYPASS FROM US 70
WEST OF NC 581 TO SR 1300

SHEET 2 OF 4 8/22/11



NOTES:
1. SEE ROADWAY PLANS FOR FINAL APPROACH DRAINAGE DESIGN.
2. USE STD. SHOULDER BERM GUTTER LIMITS EXCEPT AS FOLLOWS:
   FROM END BRIDGE RT. EXTEND TO STA. 74+23 -L- RT.

PROFILE

SITE VI

4m 0m 4m
VERT.

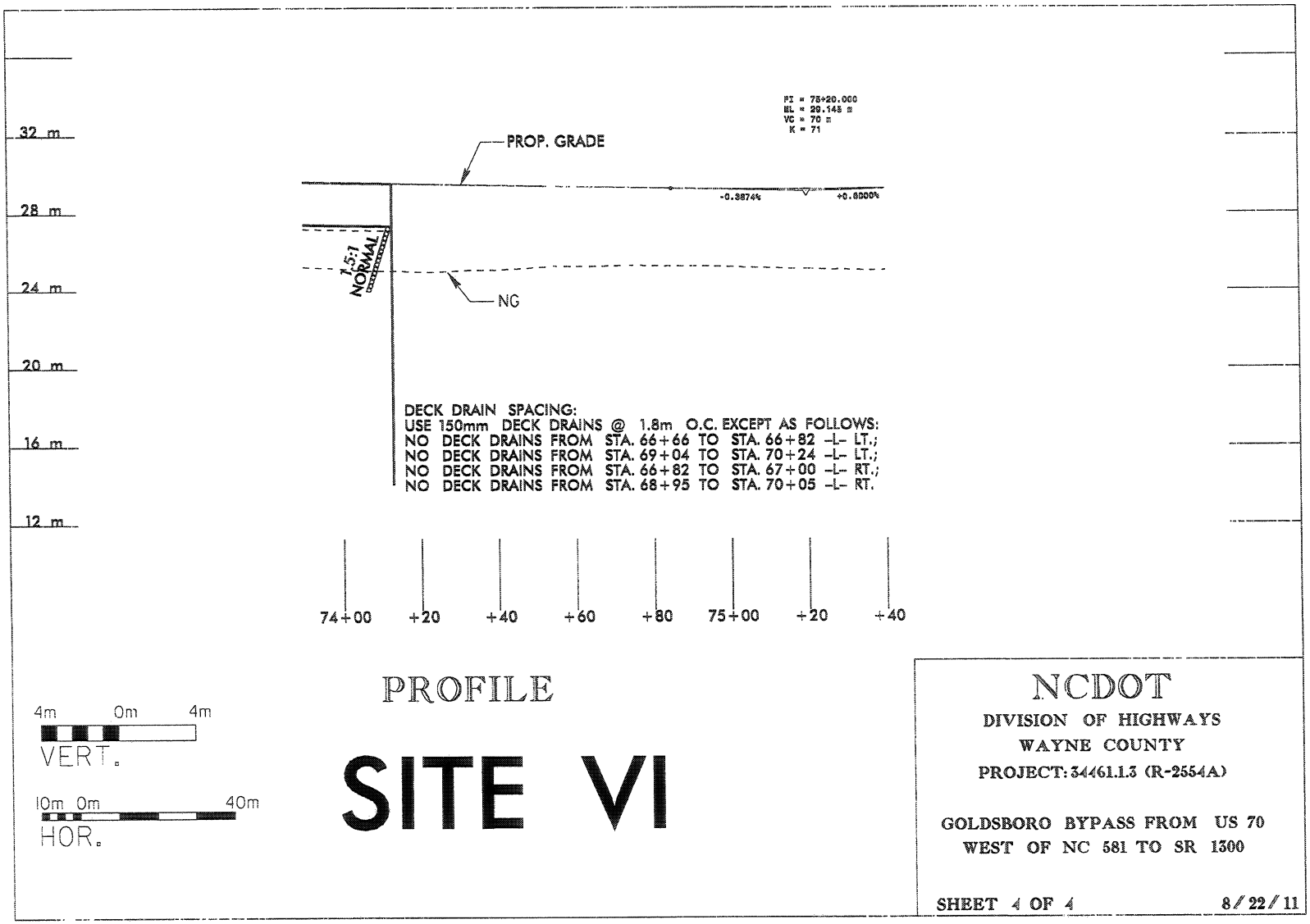
10m 0m 40m
HOR.

NCDOT
DIVISION OF HIGHWAYS
WAYNE COUNTY
PROJECT: 34461.1.3 (R-2554A)

GOLDSBORO BYPASS FROM US 70
WEST OF NC 581 TO SR 1300

SHEET 3 OF 4 8/22/11

P-100



DECK DRAIN SPACING:
USE 150mm DECK DRAINS @ 1.8m O.C. EXCEPT AS FOLLOWS:
NO DECK DRAINS FROM STA. 66+66 TO STA. 66+82 -L- LT.;
NO DECK DRAINS FROM STA. 69+04 TO STA. 70+24 -L- LT.;
NO DECK DRAINS FROM STA. 66+82 TO STA. 67+00 -L- RT.;
NO DECK DRAINS FROM STA. 68+95 TO STA. 70+05 -L- RT.

4m 0m 4m
VERT.

10m 0m 40m
HOR.

PROFILE

SITE VI

NCDOT
DIVISION OF HIGHWAYS
WAYNE COUNTY
PROJECT: 34461.1.3 (R-2554A)

GOLDSBORO BYPASS FROM US 70
WEST OF NC 581 TO SR 1300

SHEET 4 OF 4 8/22/11

P-101

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
29	GEORGE H. BECTON, HEIRS	N NC 581 HWY GOLDSBORO, N.C. 27530
31	DANNY P. SASSER	203 SADDLEWOOD DR. GOLDSBORO, N.C. 27534
32	CATHERINE S. SMITH	405 PARK AVE. GOLDSBORO, N.C. 27530
33	BILDAN, LLC	P.O. BOX 867 NEW BERN, N.C. 28562
34	DONALD G. WATKINS	644 NOBLES MILL RD. DEEP RUN, N.C. 28525
35	GRAVES T. LEWIS	P.O. BOX 429 LAKE WACCAMAW, N.C. 28450
36	ALVIN WATKINS	2199 US 70 WEST GOLDSBORO, N.C. 27530
37	JAMES S. CASEY	156 BLUEBERRY RD. GOLDSBORO, N.C. 27530
41	ISAAC J. MOZINGO	2716 SALEM CHURCH ROAD GOLDSBORO, N.C. 27530
43	EDNA E. WELLS	673 WELLS TOWN ROAD TEACHEY, N.C. 28464
43A	ROBERT E. HODGIN	
59	JEAN C. BECTON	343 NC HWY 581 N. GOLDSBORO, N.C. 27530
64	HARRISON R. BECTON	385 NC HWY 581 N. GOLDSBORO, N.C. 27530
902	N.C. DEPARTMENT OF TRANSPORTATION	P.O. BOX 3165 WILSON, N.C. 27895

NCDOT

DIVISION OF HIGHWAYS

WAYNE COUNTY

PROJECT: 34461.1.3 (R-2554A)

GOLDSBORO BYPASS FROM US 70 WEST OF NC 581 TO SR 1300

Permit Drawing

SHEET OF Sheet 43 of 45

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
I	40+00 -L-	2@2.13m X 2.13m RCBC	0.92		0.03	0.15		0.04	0.01	255	59	
		Bank Stabilization								24		
II	47+40 -L-		0.14			0.04						
III	49+20 -L-	750mm RCP	0.14			0.02		0.01		157		
IV	50+60 -L-	1050mm RCP	0.65			0.03		0.01	<.01	210	20	
		Bank Stabilization								28		
V	54+00 -L-	750mm RCP	0.19			0.03						
WB#1	66+80 -L-								0.02		33	
VI & WB#2	70+00 -L-			0.08			0.31					
VII	84+00 -L-	900mm &1350mm RCP	1.34		0.14	0.07		0.19	0.01	1414	33	544
		Bank Stabilization								16		
VIII	20+20 -Y10DET-		0.04	0.23		0.06		0.01	<.01	114	20	
TOTALS:			3.42	0.31	0.17	0.40	0.31	0.26	0.04	2202	165	544

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAYNE COUNTY
WBS - 34461.1.3 (R-2554A)

SHEET ##########

ATN Revised 3/31/05

Permit Drawing
Sheet 44 of 45

P-103

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation in Wetlands (ha)	Mechanized Clearing in Wetlands (ha)	Hand Clearing in Wetlands (ha)	SURFACE WATER IMPACTS: Permanent SW impacts (ha)	Temp. SW Impacts (ha)	Existing Channel Impacts Permanent (m)	Existing Channel Impacts Temp. (m)	Natural Stream Design (m)
I	40+00 -L-	2@2.13m X 2.13m RCBC	0.371		0.012	0.061		0.016	0.004	78	18	
		Bank Stabilization								7		
II	47+40 -L-		0.055			0.015						
III	49+20 -L-	750mm RCP	0.057			0.010		0.003		48		
IV	50+60 -L-	1050mm RCP	0.264			0.012		0.004	<.001	64	6	
		Bank Stabilization								8		
V	54+00 -L-	750mm RCP	0.079			0.011						
WB#1	66+80 -L-								0.007		10	
VI & WB#2	70+00 -L-			0.032			0.124					
VII	84+00 -L-	900mm &1350mm RCP	0.541		0.058	0.030		0.079	0.002	431	10	166
		Bank Stabilization								5		
VIII	20+20 -Y10DET-		0.017	0.095		0.024		0.004	0.001	35	6	
TOTALS:			1.385	0.127	0.071	0.163	0.124	0.106	0.014	671	50	166

NOTE: THE WETLAND SOUTH OF THE FILL SLOPE ON SITE IV IS ACCOUNTED FOR ON THE WETLAND IMPACT SUMMARY AS A TOTAL TAKE.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAYNE COUNTY
WBS - 34461.1.3 (R-2554A)

SHEET #########

WHE Revised 5/21/2008

Permit Drawing Sheet 45 of 45

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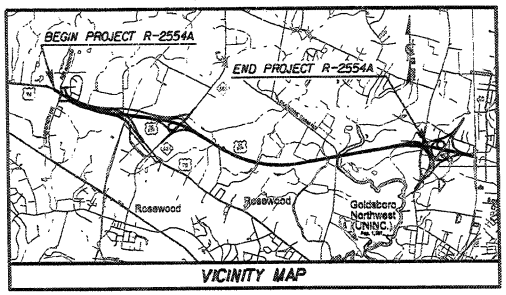
TIP PROJECT: R-2554A

CONTRACT No.:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

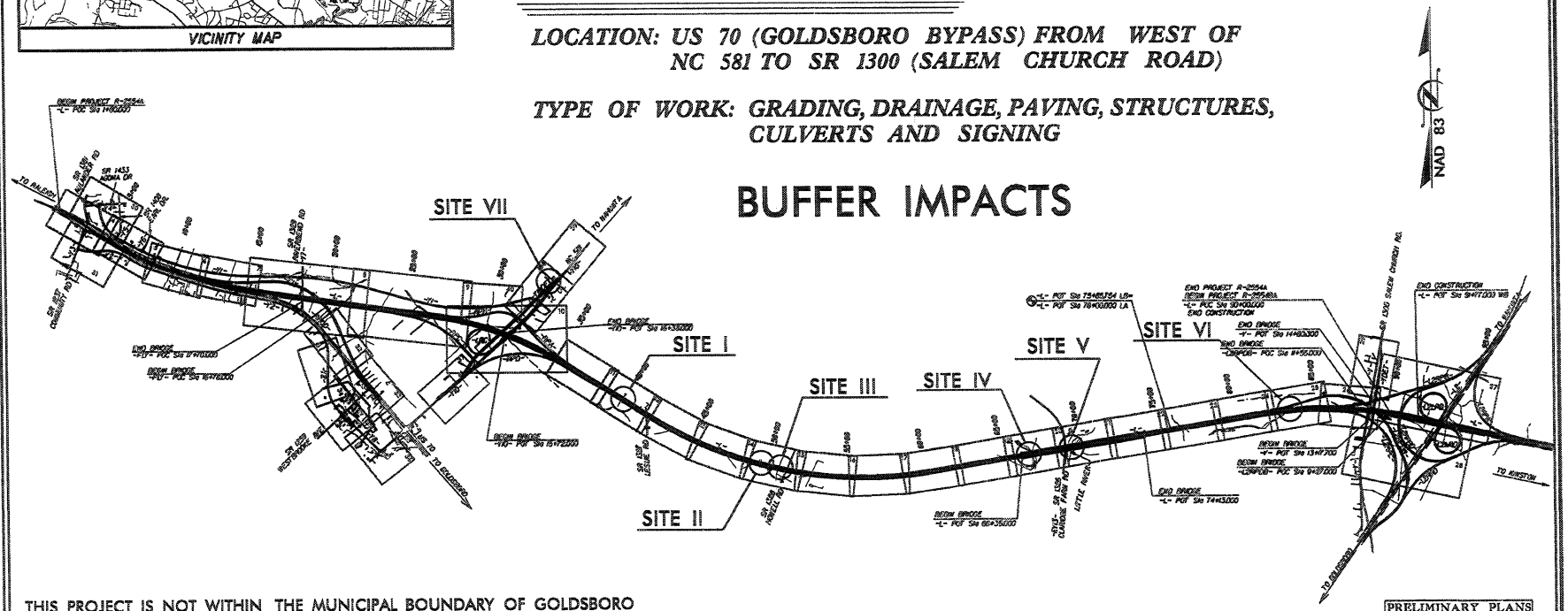
WAYNE COUNTY

LOCATION: US 70 (GOLDSBORO BYPASS) FROM WEST OF NC 581 TO SR 1300 (SALEM CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERTS AND SIGNING

METRIC	STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN	N.C.	R-2554A	1	
	STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
	34461.1.3	NHF-70(30)	P.E.	
	34461.2.4		R/W, UTIL	

Buffer Drawing
Sheet 1 of 22



BUFFER IMPACTS

THIS PROJECT IS NOT WITHIN THE MUNICIPAL BOUNDARY OF GOLDSBORO
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III EXCEPT BY PERMIT
THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES
PLANS 5 0 10
PROFILE (HORIZONTAL) 5 0 10
PROFILE (VERTICAL) 0 2

DESIGN DATA
ADT 2010 = 19,800
ADT 2030 = 36,400
DHV = 11 %
D = 60 %
T = 26 % *
V = 110 km/h
* TTST 16 % + DUAL 10 %
FUNC. CLASS.: FREEWAY

PROJECT LENGTH
LENGTH ROADWAY T.I.P. PROJECT R-2554A 8.028 KM.
LENGTH STRUCTURES T.I.P. PROJECT R-2554A 0.778 KM.
TOTAL LENGTH OF STATE T.I.P. PROJECT R-2554A 8.806 KM.
NOTE: EB LANE USED TO DETERMINE PROJECT LENGTH

PLANS PREPARED BY:
Florence & Hutcheson
CONSULTING ENGINEERS
5121 KINGDOM WAY, SUITE 100
RALEIGH, N.C. 27607
License No: P-0238

2002 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE: JANUARY 20, 2006
LETTING DATE: SEPTEMBER 18, 2012
NCDOT CONTACT: CATHY S. HOUSER, PE, ROADWAY DESIGN - PROJECT ENGINEER

DENNIS J. MORY, PE, PROJECT ENGINEER
HENRY BARE, PROJECT DESIGN ENGINEER

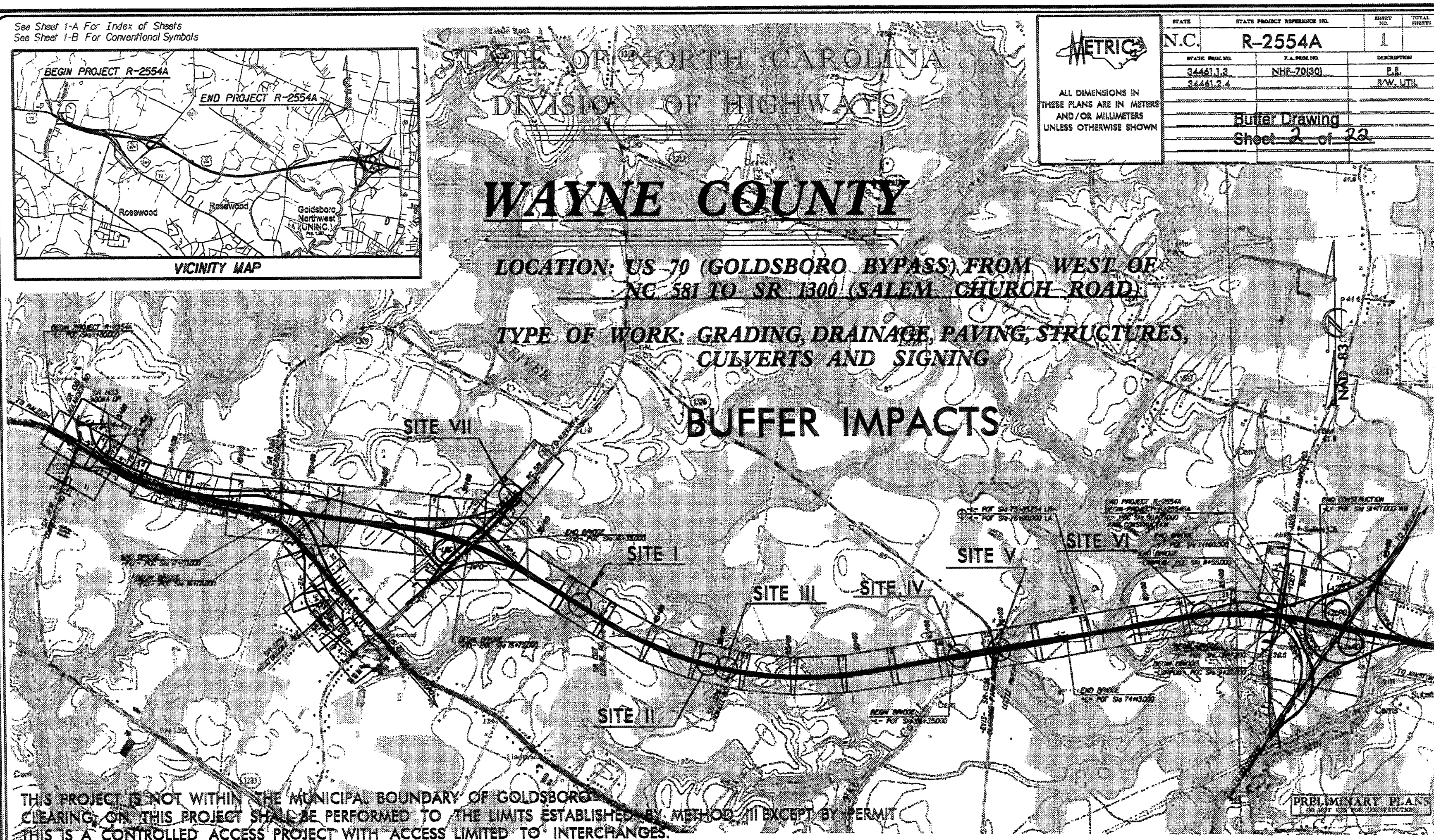
HYDRAULICS ENGINEER
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
P.E.
SIGNATURE:

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

P-105

TIP PROJECT: R-2554A



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-2554A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34461.1.2	NHF-70(30)	P.E.	
34461.2.4		R/W, UTIL.	

Buffer Drawing
Sheet 2 of 22

GRAPHIC SCALES

PLANS

PROFILE (HORIZONTAL)

PROFILE (VERTICAL)

DESIGN DATA

ADT 2010 = 19,800
ADT 2030 = 36,400
DHV = 11 %
D = 60 %
T = 26 % *
V = 110 km/h
* TTST 16 % + DUAL 10 %
FUNC. CLASS.: FREEWAY

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT R-2554A	8.028 KM.
LENGTH STRUCTURES T.I.P. PROJECT R-2554A	0.778 KM.
TOTAL LENGTH OF STATE T.I.P. PROJECT R-2554A	8.806 KM.

NOTE: EB LANE USED TO DETERMINE PROJECT LENGTH

PLANS PREPARED BY:
Florence & Hutcheson
CONSULTING ENGINEERS
5121 KINGDOM WAY, SUITE 100
RALEIGH, N.C. 27607
License No: F-0258

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 20, 2006 — DENNIS J. MORY, PE, PROJECT ENGINEER

LETTING DATE: SEPTEMBER 18 2012 — HENRY BARE, PROJECT DESIGN ENGINEER

NCDOT CONTACT: CATHY S. HOUSER, PE, ROADWAY DESIGN - PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

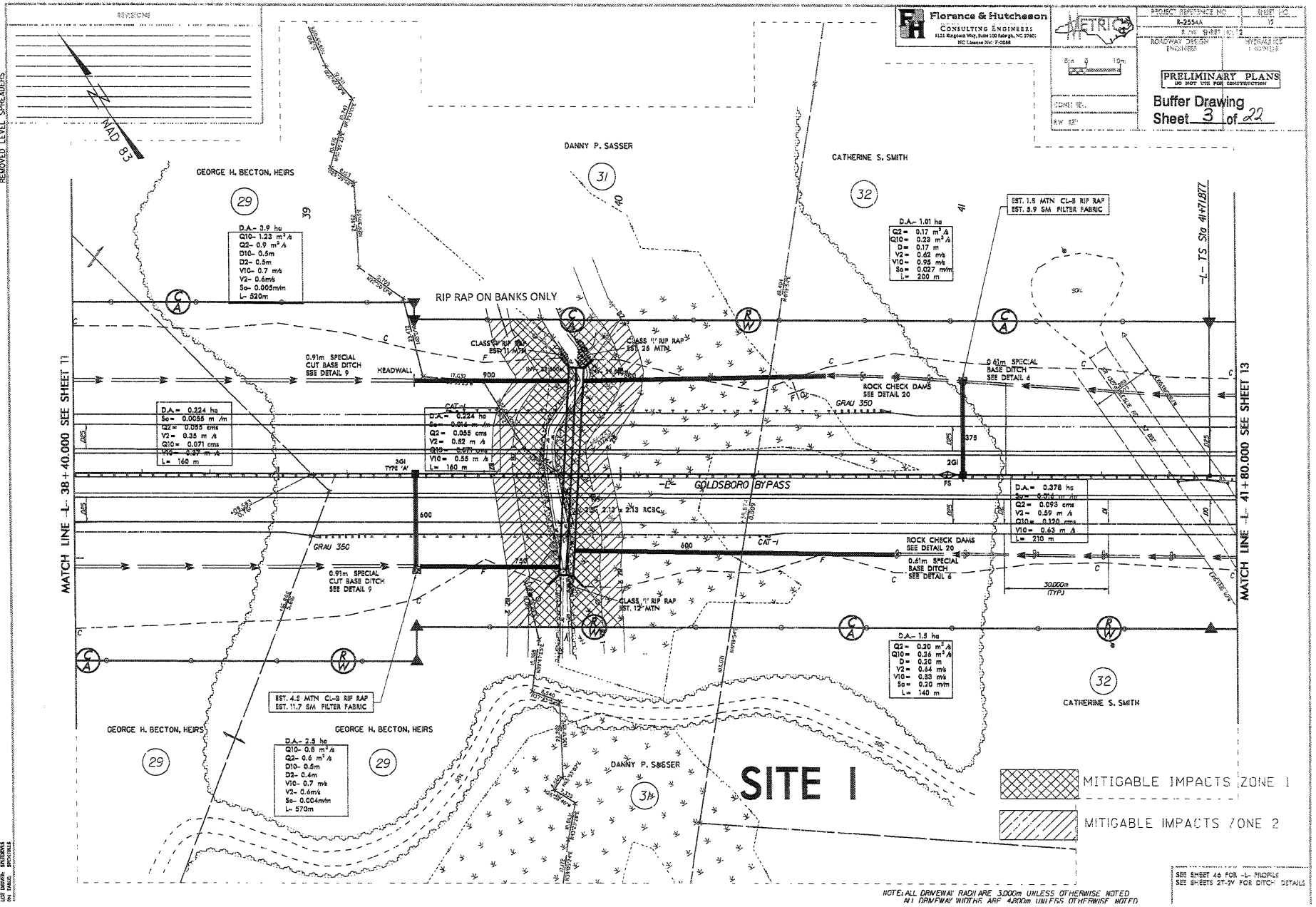
ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

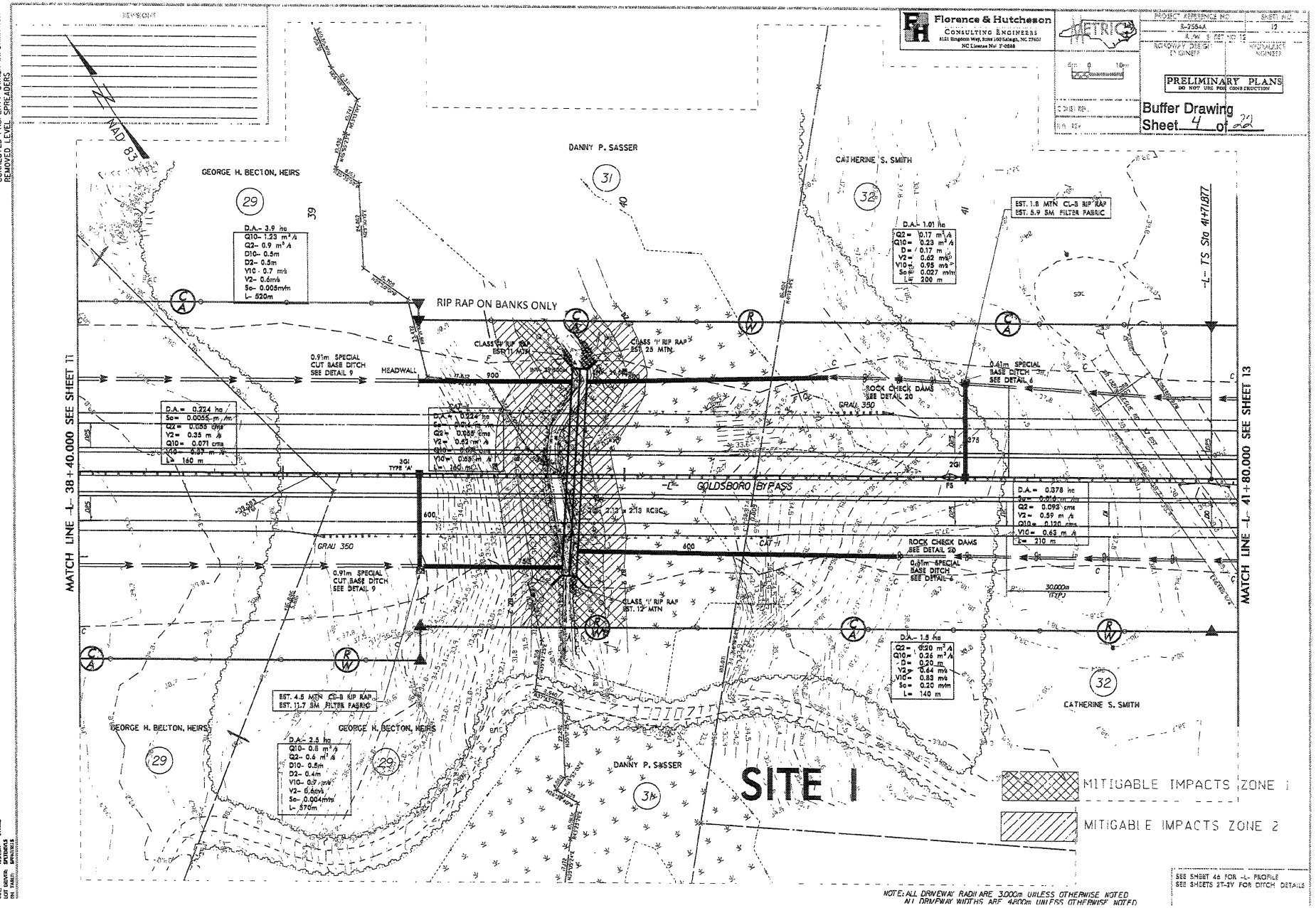
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

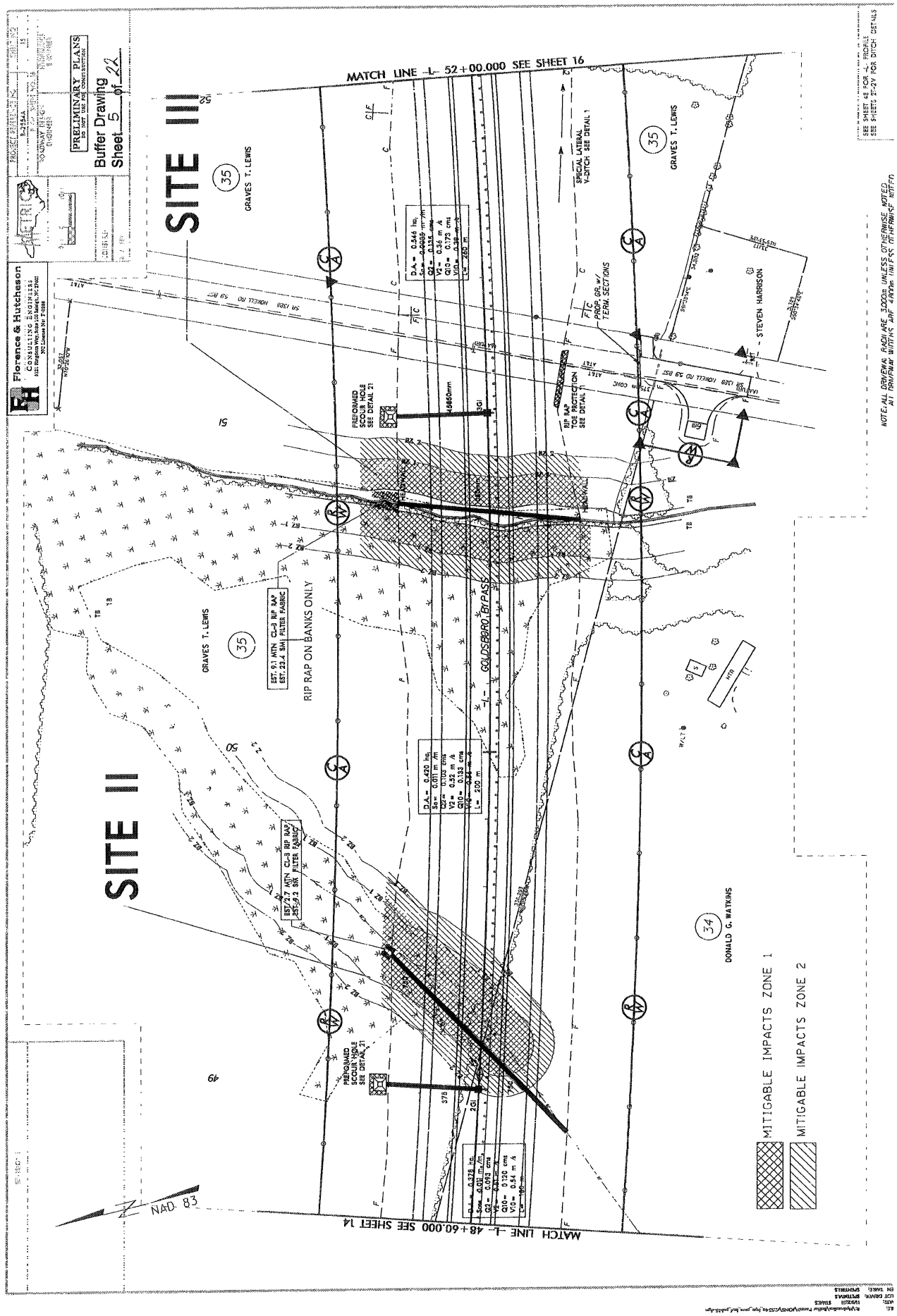
STATE HIGHWAY DESIGN ENGINEER P.E.

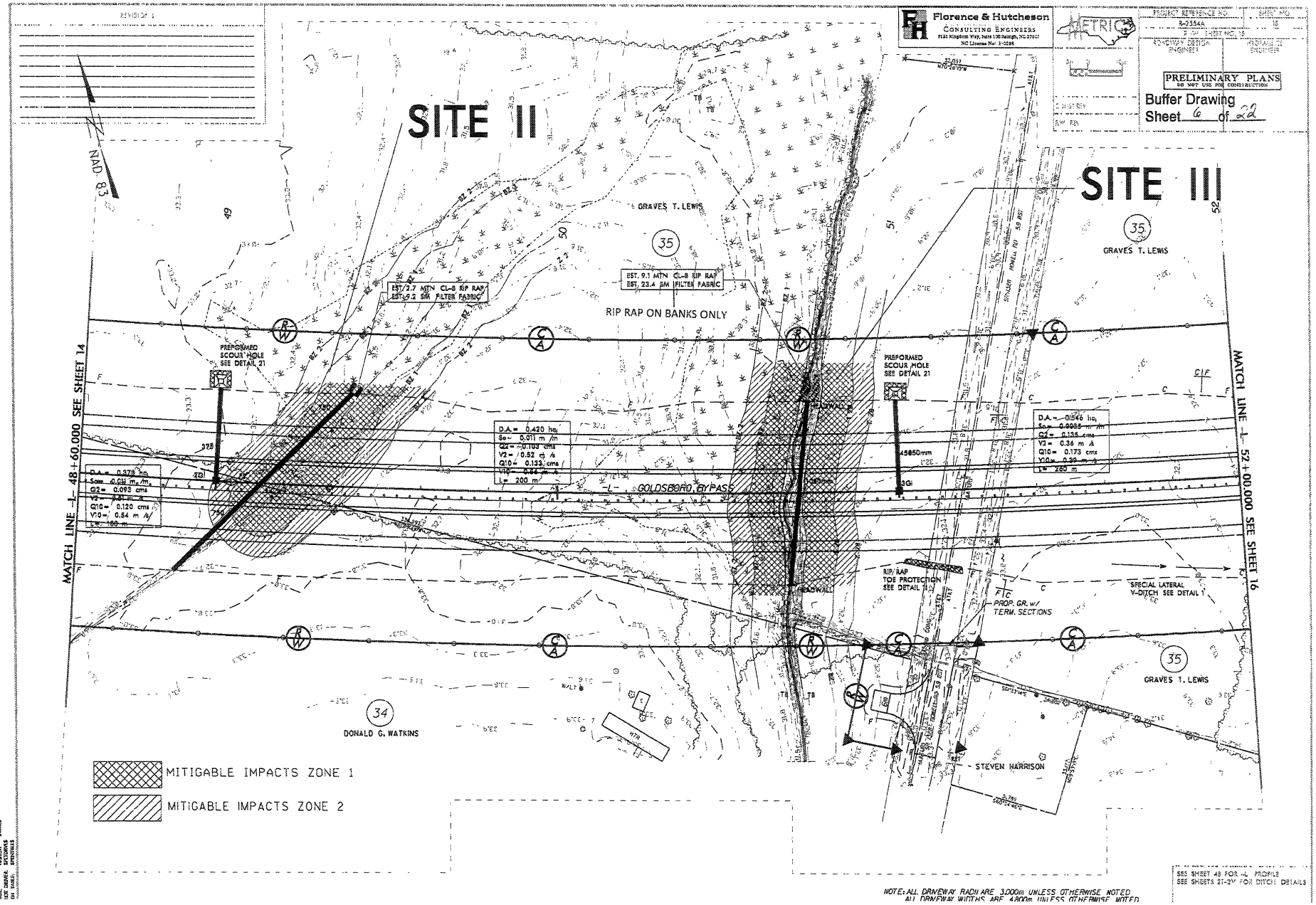
CONTRACT No.:


Florence & Hutcheson
CONSULTING ENGINEERS
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Buffer Drawing
Sheet 3 of 22
R-2554A
REVISIONS
R/W REV. - 01/10/06
COMBINED PARCEL 30 WITH PARCEL 29
R/W REV. - 8/28/06
CORRECTED PROPERTY OWNER INFORMATION
REMOVED LEVEL SPREADERS
NAD 83
GEORGE H. BECTON, HEIRS
DANNY P. SASSER
CATHERINE S. SMITH
RIP RAP ON BANKS ONLY
-L- GOLDSBORO BYPASS
-L- TS Sta 41+71.877
MATCH LINE -L- 38+40.000 SEE SHEET 11
MATCH LINE -L- 41+80.000 SEE SHEET 13
0.91m SPECIAL CUT BASE DITCH SEE DETAIL 9
0.61m SPECIAL BASE DITCH SEE DETAIL 6
ROCK CHECK DAMS SEE DETAIL 20
HEADWALL
GRAU 350
CAT-I
CLASS II RIP RAP EST. 25 MTN
CLASS II RIP RAP EST. 12" MTN
EST. 1.5 MTN CL-B RIP RAP
EST. 5.9 SM FILTER FABRIC
EST. 4.5 MTN CL-B RIP RAP
EST. 11.7 SM FILTER FABRIC
D.A.= 3.9 ha
Q10= 1.23 m³/s
Q2= 0.9 m³/s
D10= 0.5m
D2= 0.5m
V10= 0.7 m/s
V2= 0.6m/s
So= 0.005m/m
L= 520m
D.A.= 1.01 ha
Q2= 0.17 m³/s
Q10= 0.23 m³/s
D= 0.17 m
V2= 0.62 m/s
V10= 0.95 m/s
So= 0.027 m/m
L= 200 m
D.A.= 0.224 ha
So= 0.0055 m /m
Q2= 0.055 cms
V2= 0.35 m /s
Q10= 0.071 cms
V10= 0.37 m /s
L= 160 m
D.A.= 0.224 ha
So= 0.016 m /m
Q2= 0.055 cms
V2= 0.82 m /s
Q10= 0.071 cms
V10= 0.55 m /s
L= 160 m
D.A.= 0.378 ha
So= 0.016 m /m
Q2= 0.093 cms
V2= 0.59 m /s
Q10= 0.120 cms
V10= 0.63 m /s
L= 210 m
D.A.= 1.8 ha
Q2= 0.30 m³/s
Q10= 0.36 m³/s
D= 0.30 m
V2= 0.64 m/s
V10= 0.83 m/s
So= 0.20 m/m
L= 140 m
D.A.= 2.5 ha
Q10= 0.8 m³/s
Q2= 0.6 m³/s
D10= 0.5m
D2= 0.4m
V10= 0.7 m/s
V2= 0.6m/s
So= 0.004m/m
L= 570m
SITE 1
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED
SEE SHEET 46 FOR -L- PROFILE
SEE SHEETS 27-7V FOR DITCH DETAILS

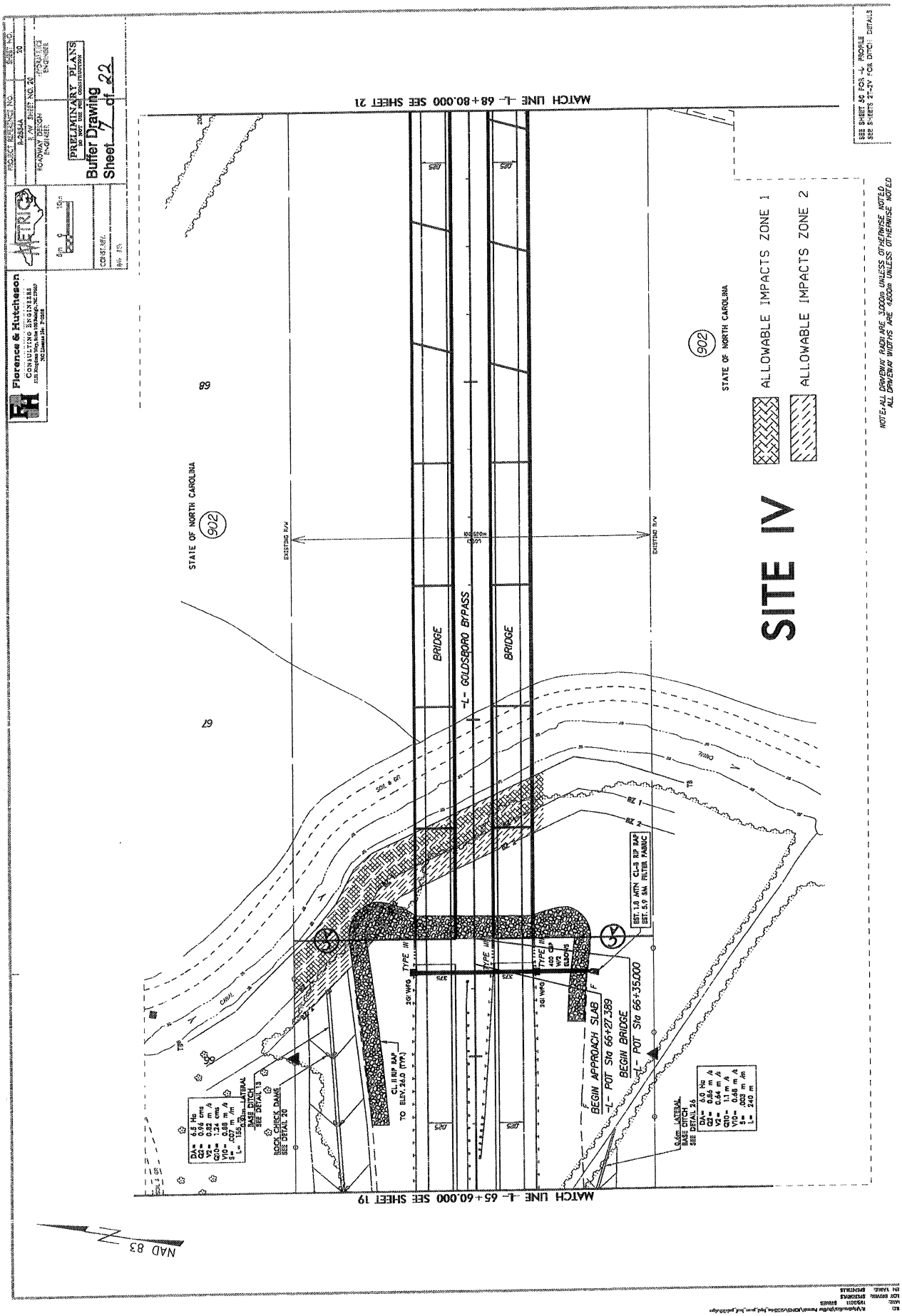
P-107

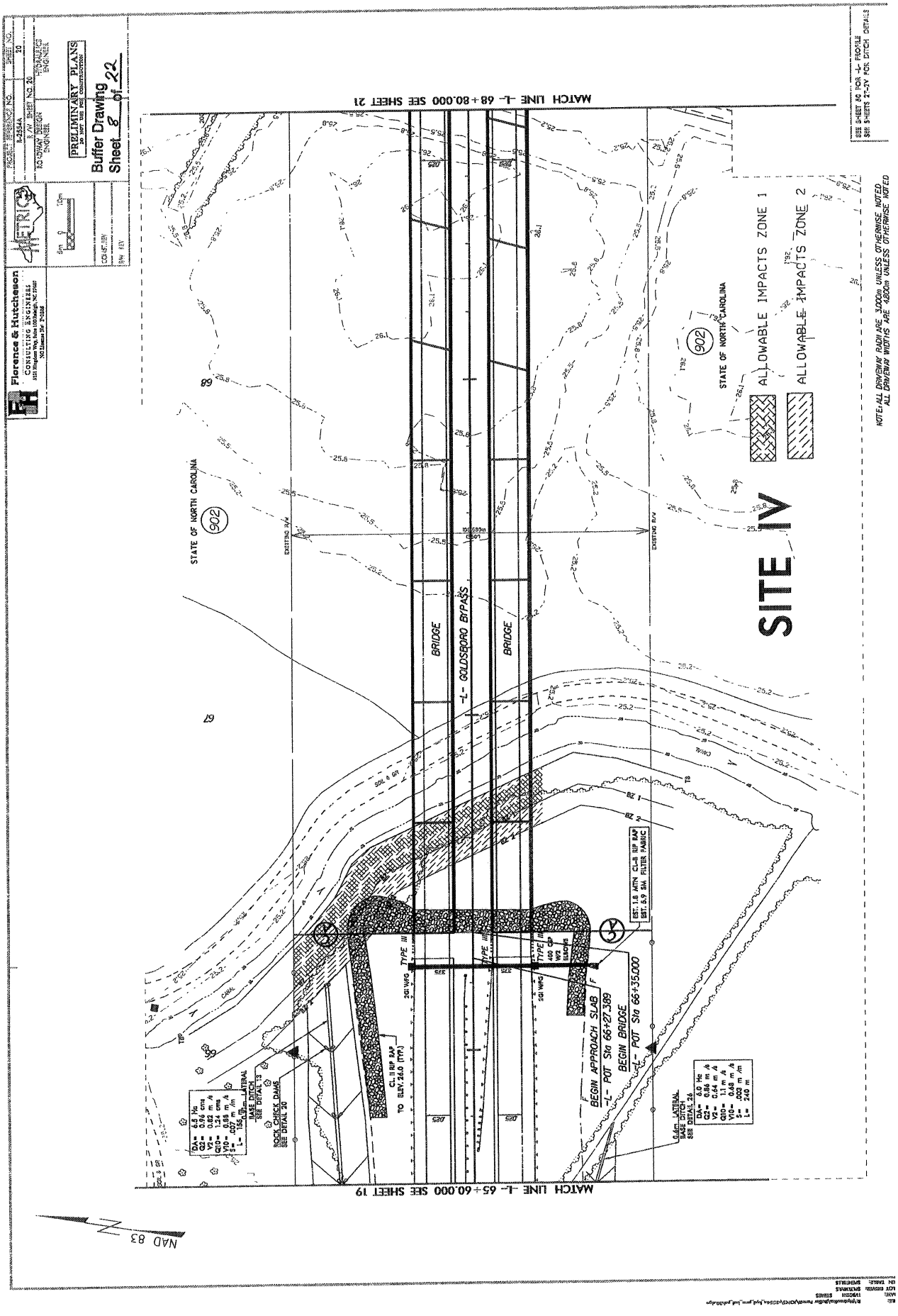

R/W REV. - 01/10/06
COMBINED PARCEL 30 WITH PARCEL 29
R/W REV. - 11/28/06
CORRECTED PROPERTY OWNER INFORMATION
REMOVED LEVEL SPREADERS
REVISION
NAD 83
Florence & Hutcheson
CONSULTING ENGINEERS
PROJECT REFERENCE NO.
R-2554A
SHEET NO.
12
R/W & EST NO 12
METRIC
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Buffer Drawing
Sheet 4 of 22
GEORGE H. BECTON, HEIRS
DANNY P. SASSER
CATHERINE S. SMITH
MATCH LINE -L- 38+40.000 SEE SHEET 11
MATCH LINE -L- 41+80.000 SEE SHEET 13
-L- TS Sta 41+71.877
RIP RAP ON BANKS ONLY
GOLDSBORO BYPASS
HEADWALL
0.91m SPECIAL CUT BASE DITCH SEE DETAIL 9
0.61m SPECIAL BASE DITCH SEE DETAIL 6
ROCK CHECK DAMS SEE DETAIL 20
CLASS "I" RIP RAP EST. 11 MTN
CLASS "I" RIP RAP EST. 25 MTN
CLASS "I" RIP RAP EST. 12 MTN
EST. 1.8 MTN CL-B RIP RAP
EST. 5.9 SM FILTER FABRIC
EST. 4.8 MTN CL-B RIP RAP
EST. 11.7 SM FILTER FABRIC
GRAU 350
CAT H
CAT I
2GI TYPE 'A'
2GI
FS
213 = 2.13 RCBC
D.A.= 3.9 ha
Q10= 1.23 m³/s
Q2= 0.9 m³/s
D10= 0.5m
D2= 0.5m
V10= 0.7 m/s
V2= 0.6m/s
So= 0.005m/m
L= 520m
D.A.= 1.01 ha
Q2= 0.17 m³/s
Q10= 0.23 m³/s
D= 0.17 m
V2= 0.62 m/s
V10= 0.95 m/s
So= 0.027 m/m
L= 200 m
D.A.= 0.224 ha
So= 0.005 m/m
Q2= 0.055 cms
V2= 0.35 m/s
Q10= 0.071 cms
V10= 0.37 m/s
L= 160 m
D.A.= 0.378 ha
So= 0.015 m/m
Q2= 0.093 cms
V2= 0.59 m/s
Q10= 0.120 cms
V10= 0.63 m/s
L= 210 m
D.A.= 1.5 ha
Q2= 0.20 m³/s
Q10= 0.26 m³/s
D= 0.20 m
V2= 0.64 m/s
V10= 0.83 m/s
So= 0.20 m/m
L= 140 m
D.A.= 2.5 ha
Q10= 0.6 m³/s
Q2= 0.4 m³/s
D10= 0.5m
D2= 0.4m
V10= 0.7 m/s
V2= 0.6m/s
So= 0.004m/m
L= 570m
30.000m (TYP.)
SITE 1
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.200m UNLESS OTHERWISE NOTED
SEE SHEET 4A FOR -L- PROFILE
SEE SHEETS 27-29 FOR DITCH DETAILS

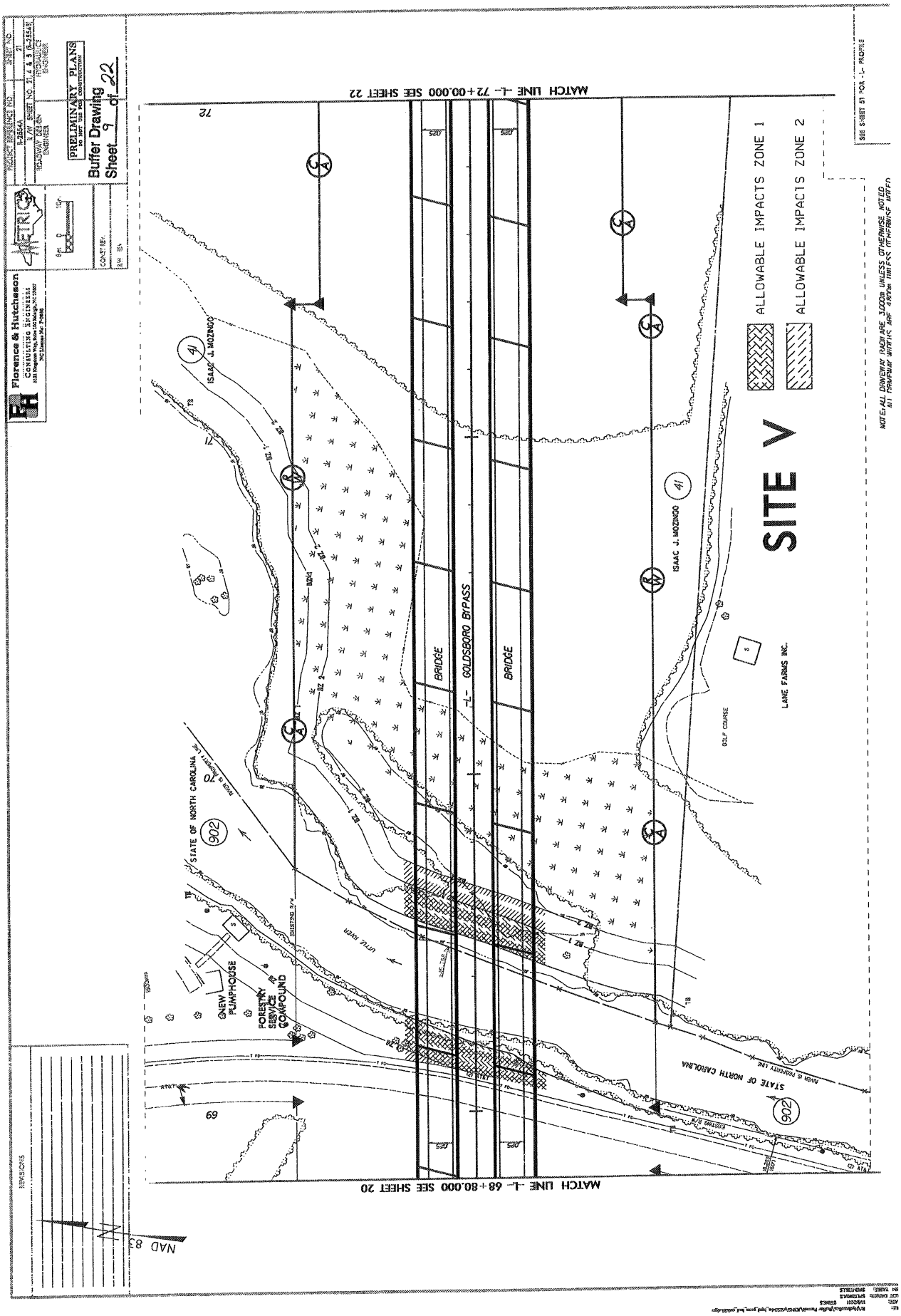

PRELIMINARY PLANS
Buffer Drawing
Sheet 5 of 22
SITE III
SITE II
MATCH LINE -L- 52+00.000 SEE SHEET 16
MATCH LINE -L- 48+60.000 SEE SHEET 14
GRAVES T. LEWIS
STEVEN HARRISON
DONALD G. WATKINS
GOLDSBORO BYPASS
RIP RAP ON BANKS ONLY
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
NAD 83
NOTE: ALL DRIVEWAY RADII ARE 3000m UNLESS OTHERWISE NOTED.
ALL DRIVEWAY WIDTHS ARE 4.80m UNLESS OTHERWISE NOTED.

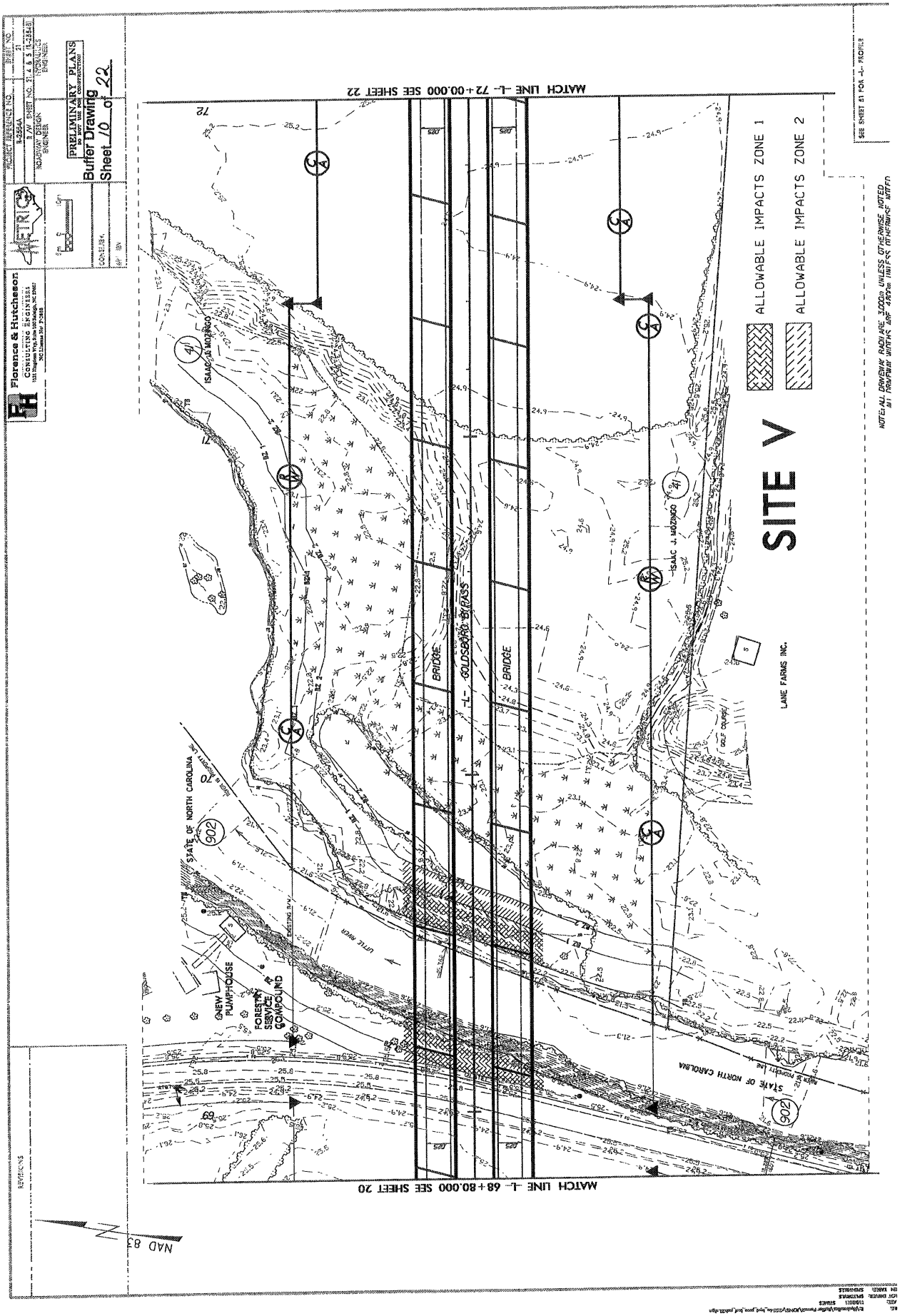

SITE II
SITE III
NAD 83
GRAVES T. LEWIS
35
RIP RAP ON BANKS ONLY
EST. 2.7 MTN CL-B RIP RAP
EST. 2.2 SM FILTER FABRIC
EST. 9.1 MTN CL-B RIP RAP
EST. 23.4 SM FILTER FABRIC
PREFORMED SCOUR HOLE SEE DETAIL 21
MATCH LINE -L- 48+60.000 SEE SHEET 14
MATCH LINE -L- 52+00.000 SEE SHEET 16
-L- GOLDSBORO BYPASS
RIP RAP TOE PROTECTION SEE DETAIL 12
PROP. GR. w/ TERM. SECTIONS
SPECIAL LATERAL V-DITCH SEE DETAIL 1
34
DONALD G. WATKINS
STEVEN HARRISON
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
Florence & Hutcheson
CONSULTING ENGINEERS
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Buffer Drawing
Sheet 6 of 22
R-2554A
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED
SEE SHEET 48 FOR -L- PROFILE
SEE SHEETS 27-29 FOR DITCH DETAILS

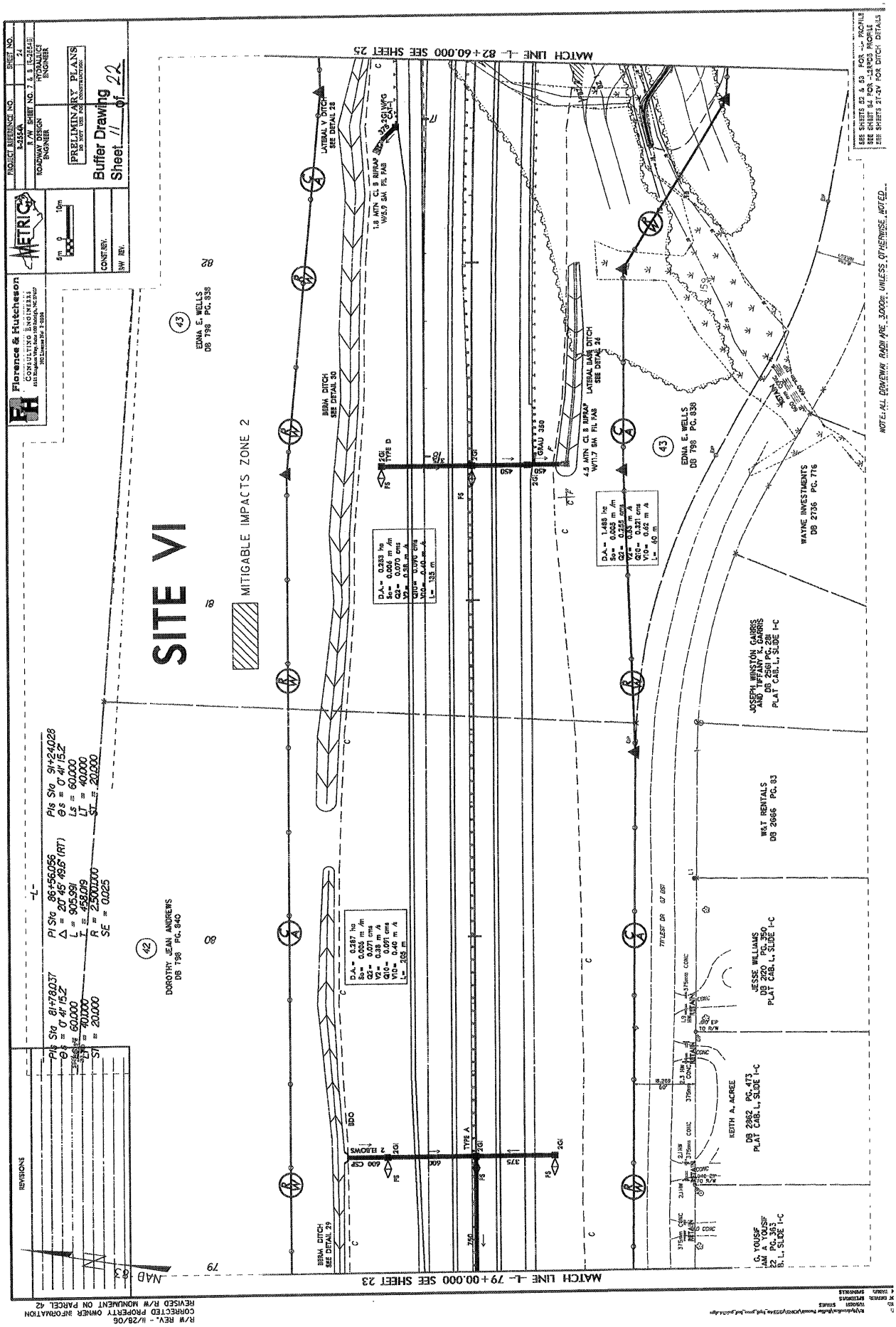
P-110

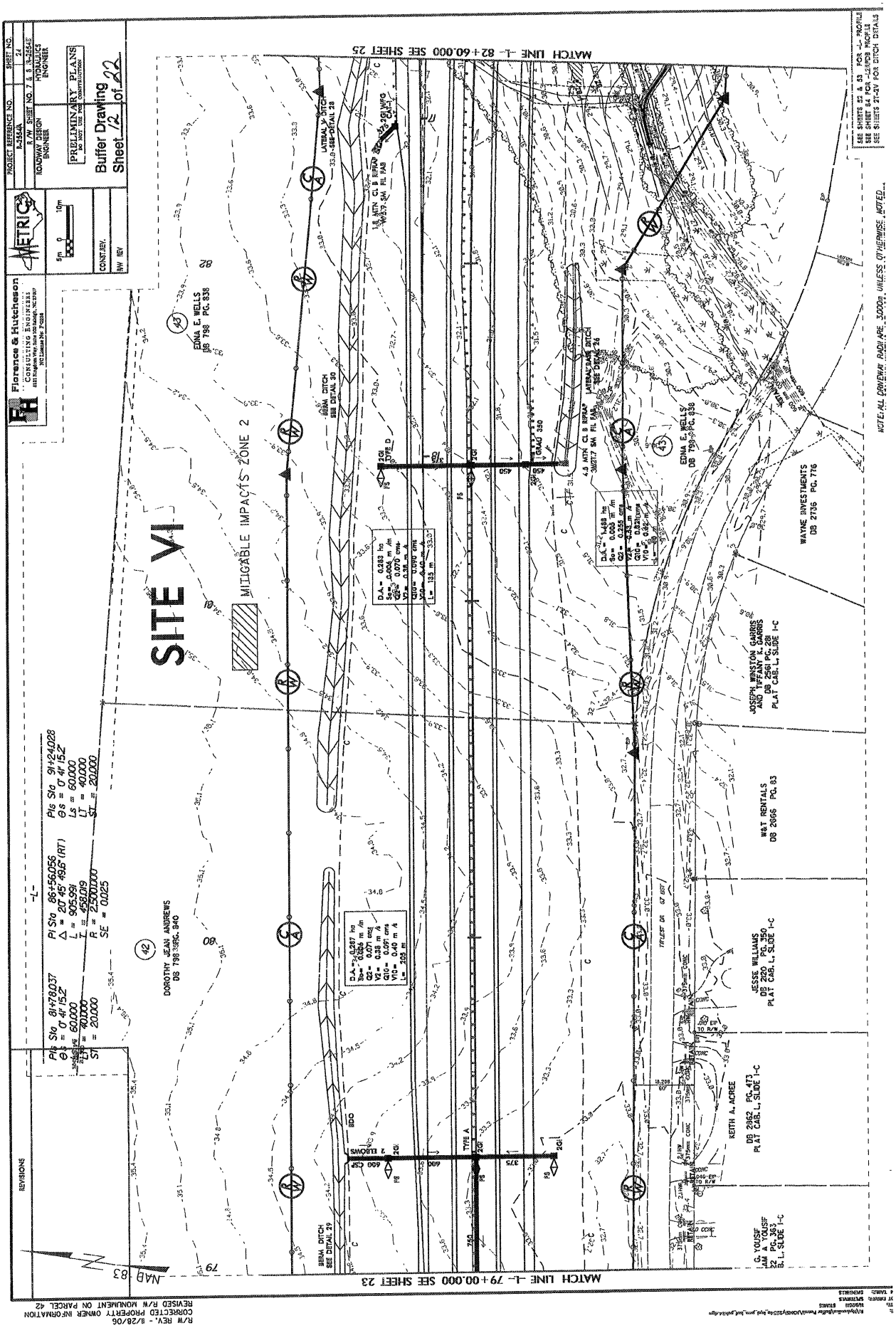

PRELIMINARY PLANS
Buffer Drawing
Sheet 7 of 22
Florence & Hutcheson
CONSULTING ENGINEERS
ROADWAY DESIGN
ENGINEER
PROJECT NO. 20
R-2633A
SEQUENCE NO.
20
MATCH LINE -L- 68+80.000 SEE SHEET 21
MATCH LINE -L- 65+60.000 SEE SHEET 19
STATE OF NORTH CAROLINA
902
SITE IV
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
BRIDGE
-L- GOLDSBORO BYPASS
BRIDGE
EXISTING R/W
BEGIN APPROACH SLAB
-L- POT Sta 66+27.389
BEGIN BRIDGE
-L- POT Sta 66+35.000
CL. II RIP RAP
TO ELEV. 26.0 (TYP.)
ROCK CHECK DAMS
SEE DETAIL 20
0.6m LATERAL
BASE DITCH
SEE DETAIL 26
EST. 1.0 MTN CL=3 RIP RAP
EST. 5.9 SM. FILTER FABRIC
NAD 83
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED.
ALL DRIVEWAY WIDTHS ARE 4.500m UNLESS OTHERWISE NOTED

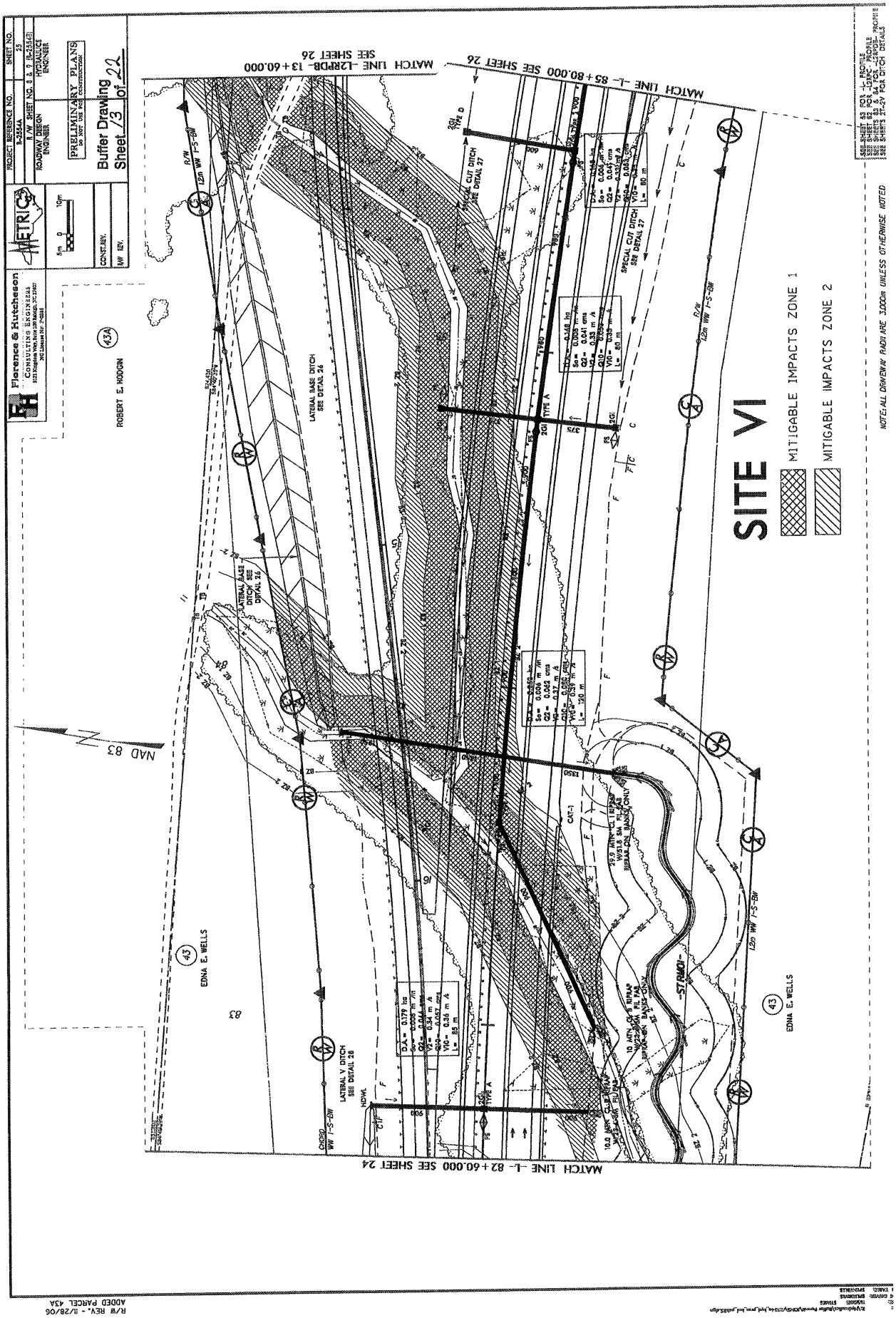

PRELIMINARY PLANS
Buffer Drawing
Sheet 8 of 22
Florence & Hutcheson
CONSULTING ENGINEERS
MATCH LINE -L- 68+80.000 SEE SHEET 21
MATCH LINE -L- 65+60.000 SEE SHEET 19
STATE OF NORTH CAROLINA
902
BRIDGE
-L- GOLDSBORO BYPASS
SITE IV
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
BEGIN APPROACH SLAB
-L- POT Sta 66+27.389
BEGIN BRIDGE
-L- POT Sta 66+35.000
TYPE III
CL. II RIP RAP
TO ELEV. 26.0 (TYP.)
ROCK CHECK DAMS
SEE DETAIL 20
0.6m LATERAL
BASE DITCH
SEE DETAIL 26
EST. 1.8 MTN CLAS RIP RAP
EST. 5.9 SM FILTER FABRIC
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED
NAD 83

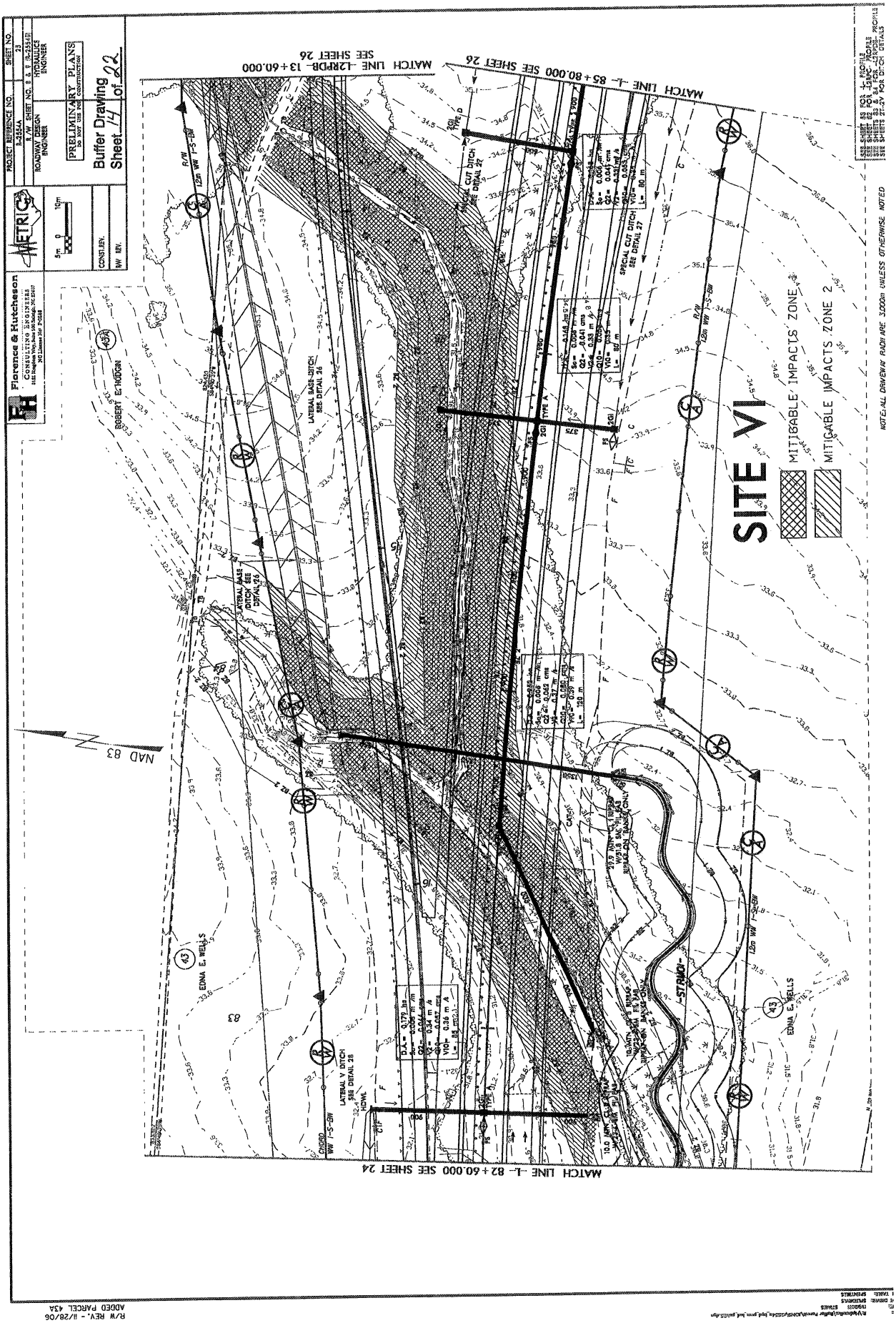

PRELIMINARY PLANS
Buffer Drawing
Sheet 9 of 22
Florence & Hutcheson
CONSULTING ENGINEERS
MATCH LINE -L- 72+00.000 SEE SHEET 22
MATCH LINE -L- 68+80.000 SEE SHEET 20
-L- GOLDSBORO BYPASS
BRIDGE
BRIDGE
ISAAC J. MOZINGO
ISAAC J. MOZINGO
LANE FARMS INC.
STATE OF NORTH CAROLINA
STATE OF NORTH CAROLINA
NEW PUMPHOUSE
FORESTRY SERVICE COMPOUND
GOLF COURSE
LITTLE RIVER
SITE V
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
NAD 83

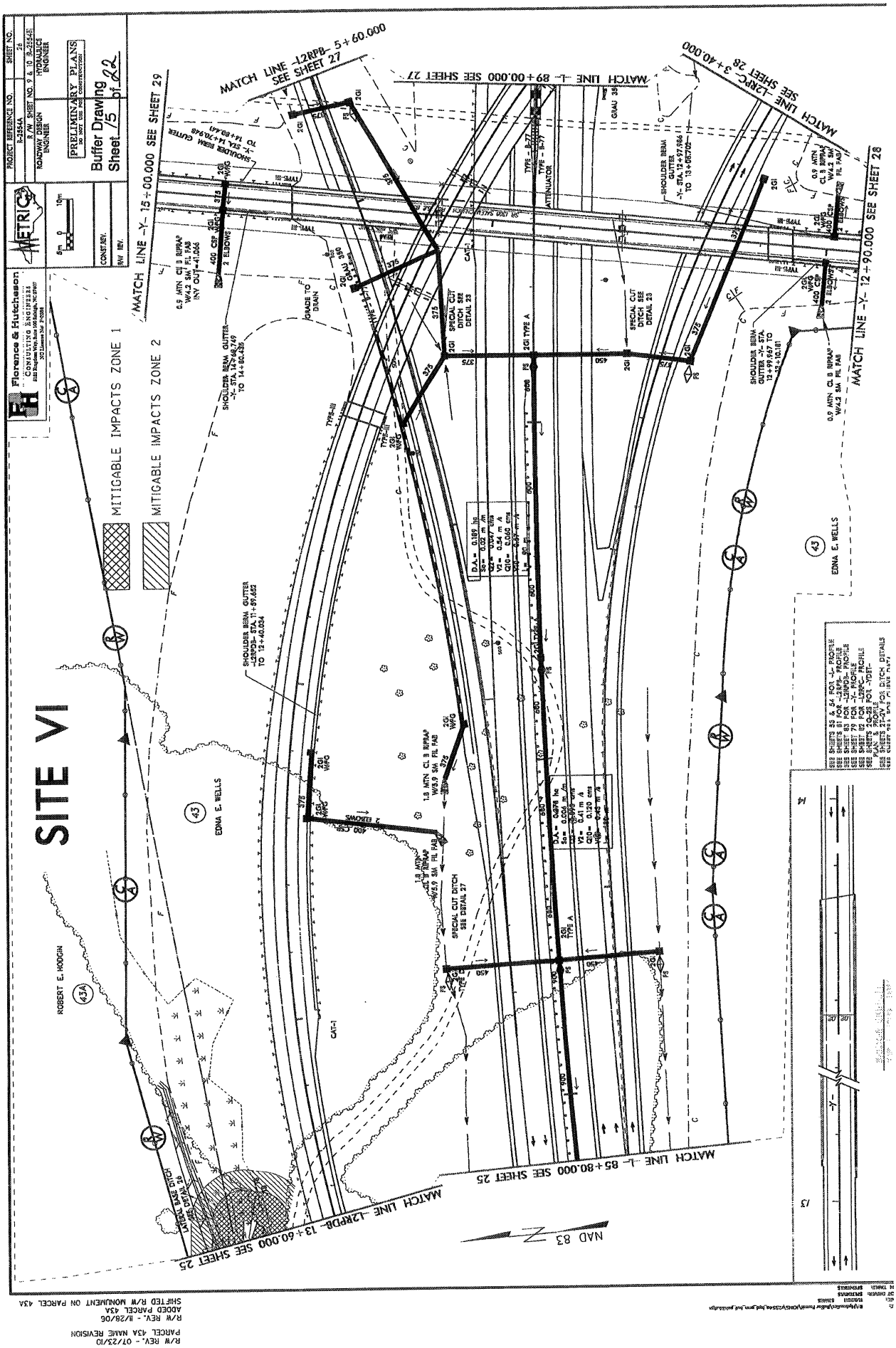

PRELIMINARY PLANS
Buffer Drawing
Sheet 10 of 22
Florence & Hutcheson
CONSULTING ENGINEERS
SITE V
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
MATCH LINE -L- 72+00.000 SEE SHEET 22
MATCH LINE -L- 68+80.000 SEE SHEET 20
-L- GOLDSBORO BYPASS
BRIDGE
BRIDGE
STATE OF NORTH CAROLINA
NEW PUMPHOUSE
FOREST SERVICE COMPOUND
LANE FARMS INC.
ISAAC J. MOZINGO
ISAAC M. MOZINGO
GOLF COURSE
NAD 83

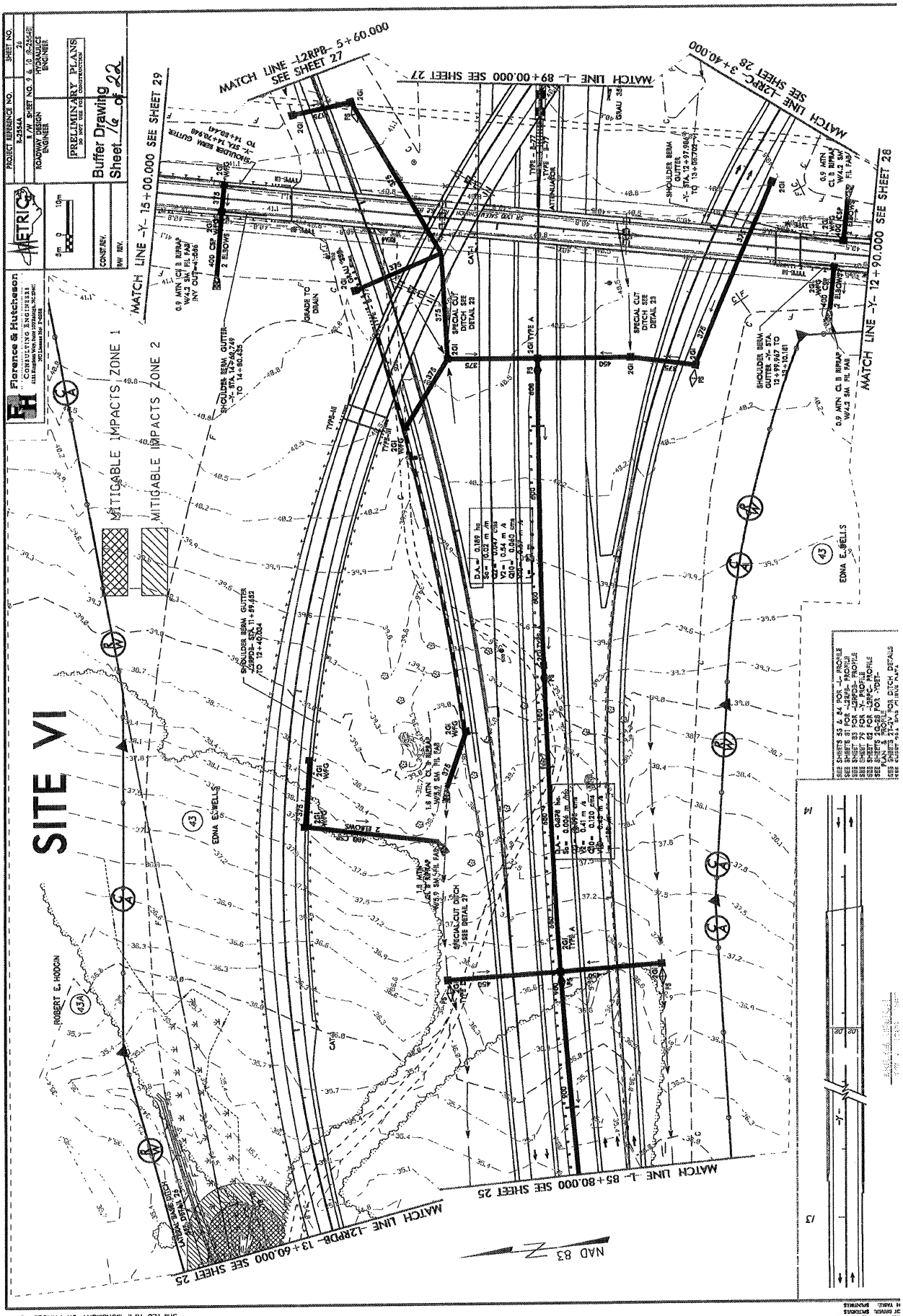

SITE VI
MITIGABLE IMPACTS ZONE 2
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Buffer Drawing
Sheet 11 of 22
PROJECT REFERENCE NO. R-2554A
SHEET NO. 24
R/W SHEET NO. 7 & 8
STATE PROJECT ENGINEER
ROADWAY DESIGN ENGINEER
Florence & Hutcheson
CONSULTING ENGINEERS
METRIC
CONST. REV.
R/W REV.
REVISIONS
MATCH LINE -L- 82+60.000 SEE SHEET 25
MATCH LINE -L- 79+00.000 SEE SHEET 23
NOTE: ALL CURVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED.
SEE SHEETS 52 & 53 FOR -L&RPDS PROFILE
SEE SHEET 54 FOR -L&RPDS PROFILE
SEE SHEETS 27-29 FOR DITCH DETAILS
EDNA E. WELLS DB 798 PG. 838
DOROTHY JEAN ANDREWS DB 798 PG. 840
WAYNE INVESTMENTS DB 2736 PG. 776
JOSEPH WINSTON GARRIS AND TIFFANY K. GARRIS DB 2961 PG. 281 PLAT CAB. L, SLIDE 1-C
W&T RENTALS DB 2666 PG. 83
JESSE WILLIAMS DB 2220 PG. 350 PLAT CAB. L, SLIDE 1-C
KEITH A. ACREE DB 2862 PG. 473 PLAT CAB. L, SLIDE 1-C
LG YOUSEF AND YOUSSEF DB 2433 PG. 353 BL. L, SLIDE 1-C
TITLEST DR
GT DIST
LATERAL V DITCH SEE DETAIL 28
BERM DITCH SEE DETAIL 30
BERM DITCH SEE DETAIL 29
LATERAL BERM DITCH SEE DETAIL 26
1.8 MTR CL B RIPRAP W/15.9 SAH FIL FAB
4.8 MTR CL B RIPRAP W/17.7 SAH FIL FAB
TYPE A
TYPE D
2 ELBOWS
D.A.= 0.287 ha
Sa= 0.006 m /m
Q2= 0.071 cms
V2= 0.38 m /s
Q10= 0.097 cms
V10= 0.47 m /s
L= 205 m
D.A.= 0.283 ha
Sa= 0.006 m /m
Q2= 0.070 cms
V2= 0.38 m /s
Q10= 0.096 cms
V10= 0.46 m /s
L= 135 m
D.A.= 1.468 ha
Sa= 0.003 m /m
Q2= 0.255 cms
V2= 0.33 m /s
Q10= 0.321 cms
V10= 0.42 m /s
L= 60 m
-L-
Pls Sta 81+78.037
Δ = 0° 41' 15.2"
Ls = 60.000
LT = 40.000
ST = 20.000
Pi Sta 86+56.056
Δ = 20° 45' 49.6" (RT)
L = 905.991
T = 458.019
R = 2,500.000
SE = 0.025
Pls Sta 91+24.028
θs = 0° 41' 15.2"
Ls = 60.000
LT = 40.000
ST = 20.000
NAD 83

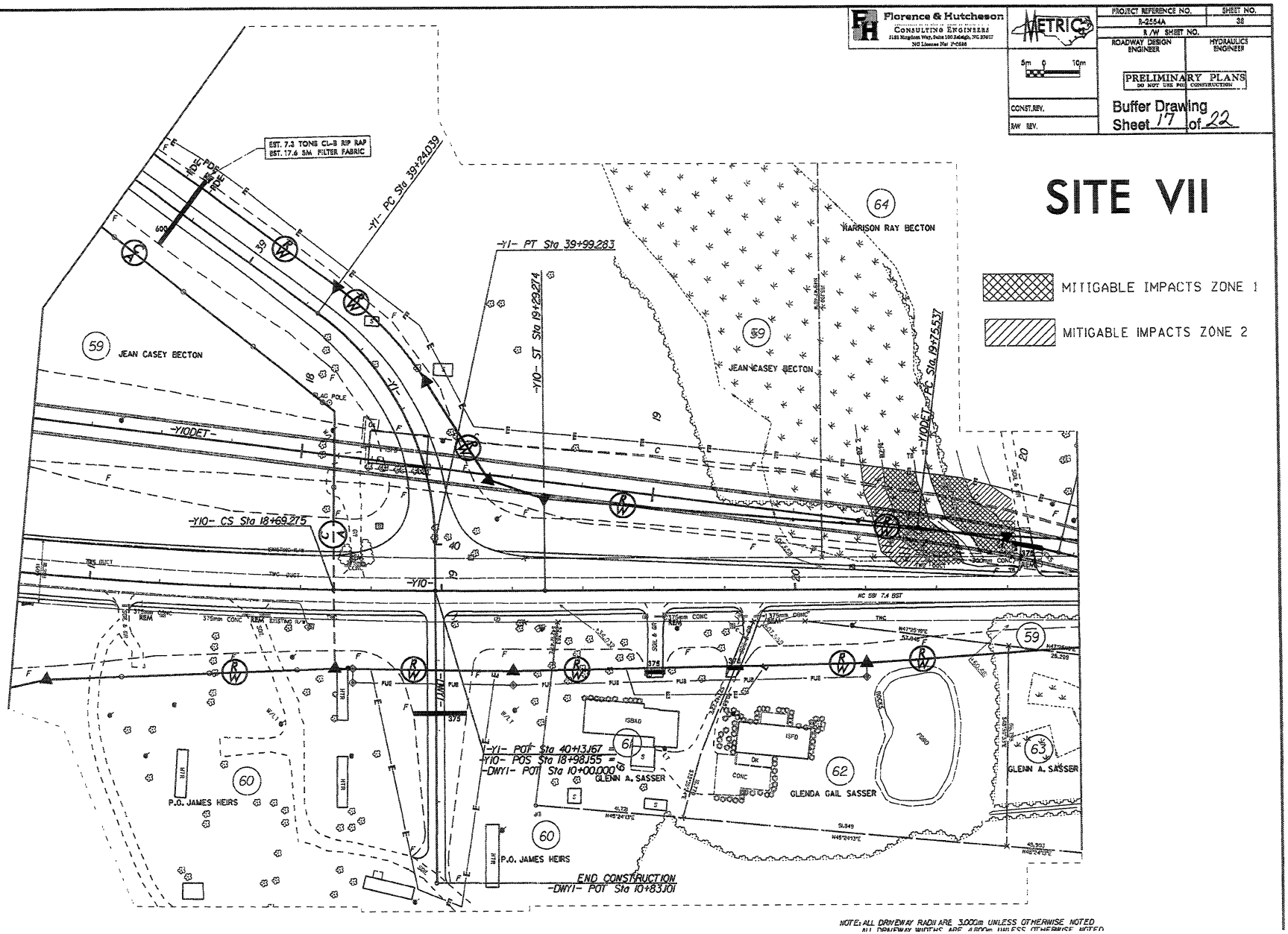

SITE VI
MITIGABLE IMPACTS ZONE 2
-L-
Pi Sta 81+78.037
Θs = 0° 4' 15.2"
Ls = 60.000
LT = 40.000
ST = 20.000
Pi Sta 86+56.056
Δ = 20° 45' 49.6" (RT)
L = 905.991
T = 458.09
R = 2500.000
SE = 0.025
Pis Sta 91+24.028
Θs = 0° 4' 15.2"
Ls = 60.000
LT = 40.000
ST = 20.000
MATCH LINE -L- 82+60.000 SEE SHEET 25
MATCH LINE -L- 79+00.000 SEE SHEET 23
NAD 83
DOROTHY JEAN ANDREWS DB 798 PG. 840
EDNA E. WELLS DB 798 PG. 838
EDNA E. WELLS DB 799 PG. 838
WAYNE INVESTMENTS DB 2736 PG. 776
JOSEPH WINSTON GARRIS AND TIFFANY L. GARRIS DB 2961 PG. 228 PLAT CAB. L, SLIDE 1-C
W&T RENTALS DB 2866 PG. 83
JESSE WILLIAMS DB 220 PG. 350 PLAT CAB. L, SLIDE 1-C
KEITH A. ACREE DB 2862 PG. 473 PLAT CAB. L, SLIDE 1-C
G. YOUSIF AND A. COULISF 12 PG. 363 B. L. SLIDE 1-C
LATERAL 'A' DITCH
LATERAL 'B' DITCH
LATERAL 'C' DITCH
LATERAL 'D' DITCH
BERM DITCH SEE DETAIL 29
TAYLEST DR
TYPE A
TYPE D
PROJECT REFERENCE NO. R-2548A
SHEET NO. 24
SHEET NO. 7 & 8 R-2548AB
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS NOT TO BE USED FOR CONSTRUCTION
Buffer Drawing Sheet 12 of 22
Florence & Hutcheson CONSULTING ENGINEERS
METRIC
CONST.REV.
R/W REV
REVISIONS
R/W REV. - 8/28/06
CORRECTED PROPERTY OWNER INFORMATION
REVISED R/W MONUMENT ON PARCEL 42
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED.
SEE SHEETS 22 & 23 FOR -L- PROFILE
SEE SHEET 24 FOR -L2PCR PROFILE
SEE SHEETS 21-24 FOR DITCH DETAILS

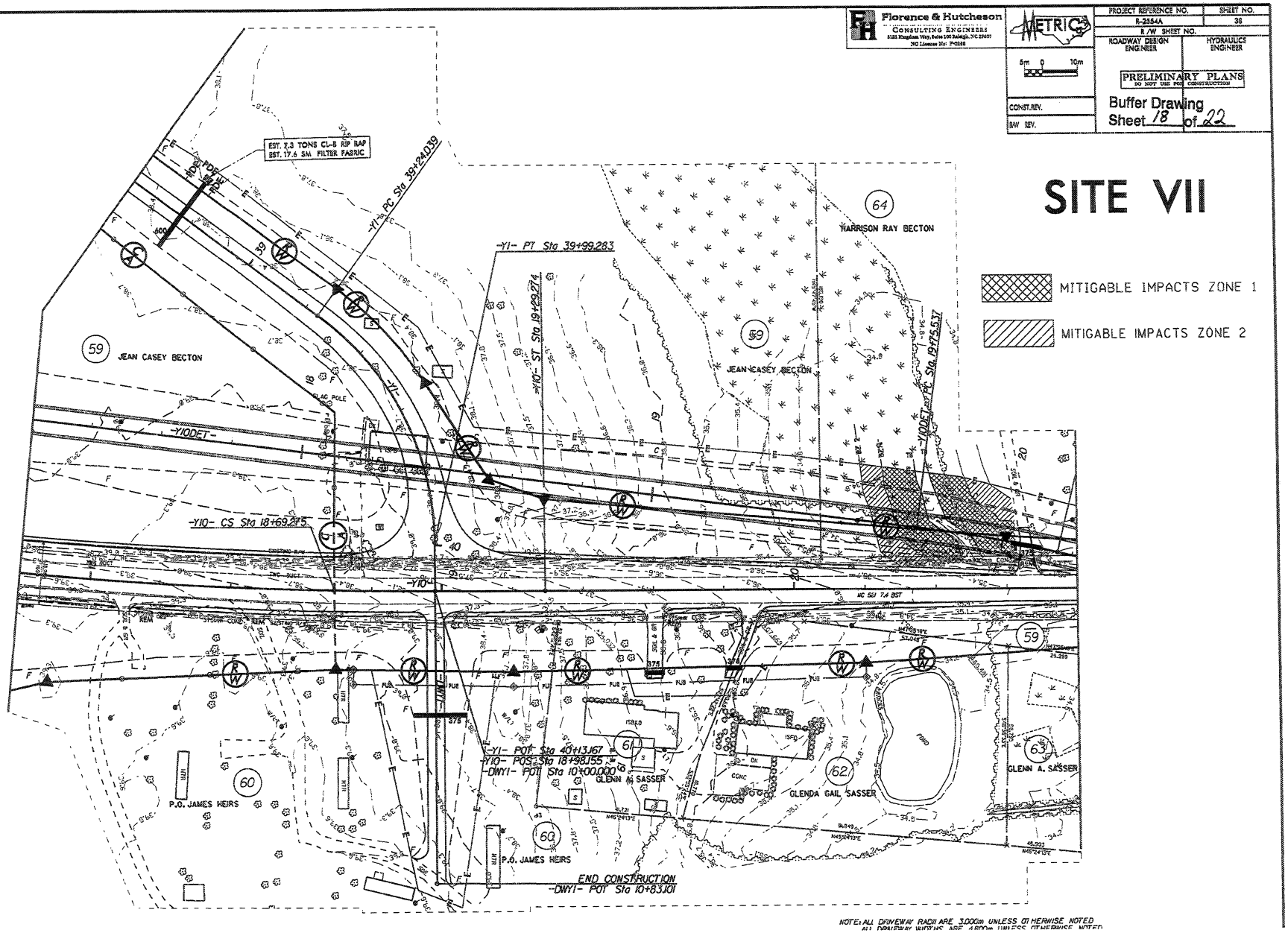

SITE VI
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
NOTE: ALL DRAWN AT RADIUS 300m UNLESS OTHERWISE NOTED
MATCH LINE -L- 82+60.000 SEE SHEET 24
MATCH LINE -L- 85+80.000 SEE SHEET 26
MATCH LINE -L2RPDB- 13+60.000 SEE SHEET 26
PROJECT REFERENCE NO. R-2854A
R/W SHEET NO. 1 & 2 R-2854B
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
Buffer Drawing Sheet 13 of 22
CONST. REV.
R/W REV.
Florence & Hutcheson CONSULTING ENGINEERS
METRIC
SHEET NO. 25
ROBERT E. HODGIN
EDNA E. WELLS
LATERAL BASE DITCH SEE DETAIL 26
LATERAL V DITCH SEE DETAIL 28
SPECIAL CUT DITCH SEE DETAIL 27
TYPE A
TYPE D
12m WW I-S-SW
R/W REV. - 07/25/10
PARCEL 43A NAME REVISION
R/W REV. - 11/28/06
ADDED PARCEL 43A


SITE VI
MITIGABLE IMPACTS ZONE 2
UNMITIGABLE IMPACTS ZONE 1
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
MATCH LINE -L- 85+80.000 SEE SHEET 26
MATCH LINE -L12RPDB- 13+60.000 SEE SHEET 26
MATCH LINE -L- 82+60.000 SEE SHEET 24
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Buffer Drawing
Sheet 14 of 22
Florence & Hutcheson
METRIC
PROJECT REFERENCE NO. R-2554A
SHEET NO. 25
R/W SHEET NO. 8 & 9
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONSTR.ENV.
R/W ENV.
ROBERT E. HOGAN
EDNA E. WELLS
LATERAL BASE DITCH SEE DETAIL 26
LATERAL V DITCH SEE DETAIL 28
SPECIAL CUT DITCH SEE DETAIL 27
ANGLE CUT DITCH SEE DETAIL 27
NAD 83
R/W REV. - 07/23/10
PARCEL 43A NAME REVISION
R/W REV. - 8/28/06
ADDED PARCEL 43A


SITE VI
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
MATCH LINE -L2RPB- 5+60.000 SEE SHEET 27
MATCH LINE -Y- 15+00.000 SEE SHEET 29
MATCH LINE -Y- 89+00.000 SEE SHEET 27
MATCH LINE -L2RPC- 3+40.000 SEE SHEET 28
MATCH LINE -Y- 12+90.000 SEE SHEET 28
MATCH LINE -L2RPDB- 13+60.000 SEE SHEET 25
MATCH LINE -Y- 85+80.000 SEE SHEET 25
EDNA E. WELLS
ROBERT E. HODGIN
NAD 83
PRELIMINARY PLANS
Buffer Drawing
Sheet 15 of 22


SITE VI
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
MATCH LINE -L2RPB- 5+60.000 SEE SHEET 27
MATCH LINE -L- 89+00.000 SEE SHEET 27
MATCH LINE -L2RPC- 3+40.000 SEE SHEET 28
MATCH LINE -Y- 15+00.000 SEE SHEET 29
MATCH LINE -Y- 12+90.000 SEE SHEET 28
MATCH LINE -L- 85+80.000 SEE SHEET 25
MATCH LINE -L2RPB- 13+60.000 SEE SHEET 25
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
Buffer Drawing
Sheet 16 of 22
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Florence & Hutcheson
CONSULTING ENGINEERS
ROBERT E. HOGGIN
EDNA E. WELLS
NAD 83


Florence & Hutcheson
CONSULTING ENGINEERS
METRIC
PROJECT REFERENCE NO.
R-2554A
SHEET NO.
38
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
Buffer Drawing
Sheet 17 of 22
SITE VII
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
EST. 7.3 TONS CL-B RIP RAP
EST. 17.6 SM FILTER FABRIC
-Y1- PC Sta 39+24.039
-Y1- PT Sta 39+99.283
-Y10- ST Sta 19+29.274
-Y10ET- PC Sta 19+75.537
-Y10- CS Sta 18+69.275
-Y1- POT Sta 40+13.167 =
-Y10- POS Sta 18+98.155 =
-DWY1- POT Sta 10+00.000
END CONSTRUCTION
-DWY1- POT Sta 10+83.101
59 JEAN CASEY BECTON
64 HARRISON RAY BECTON
60 P.O. JAMES HEIRS
61 GLENN A. SASSER
62 GLENDA GAIL SASSER
63 GLENN A. SASSER
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED
ALL DRIVEWAY WIDTHS ARE 4.800m UNLESS OTHERWISE NOTED


Florence & Kutcheson
CONSULTING ENGINEERS
METRIC
PROJECT REFERENCE NO.
R-2554A
SHEET NO.
38
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
Buffer Drawing
Sheet 18 of 22
SITE VII
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
-Y1- PC Sta 39+24.039
-Y1- PT Sta 39+99.283
-Y1OET- PC Sta 19+75.537
-Y1OET-
-Y1- CS Sta 18+69.275
-Y1OST- ST Sta 19+29.274
-Y1-
-Y1O-
-DWY1- POT Sta 10+00.000
-Y1- POT Sta 40+13.167
-Y1O- POS Sta 18+98.155
-DWY1- POT Sta 10+83.101
END CONSTRUCTION
EST. X.3 TONS CL-B RIP RAP
EST. 17.6 SM FILTER FABRIC
64 HARRISON RAY BECTON
59 JEAN CASEY BECTON
60 P.O. JAMES HEIRS
61 GLENN A. SASSER
62 GLENDA GAIL SASSER
63 GLENN A. SASSER
FLAG POLE
POND
NOTE: ALL DRIVEWAY RADII ARE 3.000m UNLESS OTHERWISE NOTED

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
I	2 @ 2.13 m x 2.13 m RCBC	39+60 to 40+00 -L-	X						18805	12443	31248		
II	750 mm RCP	49+00 to 49+60 -L-	X						10839	8794	19633		
III	1050 mm RCP	50+50 to 50+90 -L-	X						13455	8859	22324		
IV	BRIDGE	66+10 to 66+80 -L-				9246	6297	15532					
V	BRIDGE	69+10 to 70+70 -L-				8202	3154	11356					
VI	900 mm RCP & 1350 mm RCP	82+50 to 86+00 -L-	X						75089	48868	123968	34380	22733
VII		19+60 to 20+05 -Y10DET-	X						6008	3057	9063		
TOTAL:						17448	9451	26888	124194	82021	206236	34380	22733

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAYNE COUNTY
PROJECT: 34461.1.3 (R-2554A)

11/9/2011

Buffer Drawing
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WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
I	39+75 to 40+10 -L-		11733	6200
II	49+15 to 49+50 -L-		5608	1302
III	50+50 to 50+65 -L-		6824	4456
VI	82+50 to 85+40 -L-		28524	6017
	13+40 to 14+00 -L2RPD8-			
VII	19+60 to 19+90 -Y10DET-		3660	2013
TOTAL:			56349	19988

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAYNE
PROJECT: 34461.1.3 (R-2554A)

11/9/2011

Rev. Jan 2009

Buffer Drawing
Sheet 20 of 22

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (m^2)	ZONE 2 (m^2)	TOTAL (m^2)	ZONE 1 (m^2)	ZONE 2 (m^2)	TOTAL (m^2)	ZONE 1 (m^2)	ZONE 2 (m^2)
I	2 @ 2.13 m x 2.13 m RCB	39+60 to 40+00 -L-	X						1747	1156	2903		
II	750 mm RCP	49+00 to 49+60 -L-	X						1007	817	1824		
III	1050 mm RCP	50+50 to 50+90 -L-	X						1250	823	2074		
IV	BRIDGE	66+10 to 66+80 -L-		X		859	585	1443					
V	BRIDGE	69+10 to 70+70 -L-		X		762	293	1055					
VI	900 mm RCP & 1350 mm RCP	82+50 to 86+00 -L-	X						6976	4540	11517	3194	2112
VII		19+60 to 20+05 -Y10DET-	X						558	284	842		
TOTAL:						1621	878	2498	11538	7620	19160	3194	2112

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAYNE COUNTY
PROJECT: 34461.1.3 (R-2554A)

11/9/2011

Buffer Drawing
Sheet 21 of 22

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (m^2)	WETLANDS IN BUFFERS ZONE 2 (m^2)
I	39+75 to 40+10 -L-		1090	576
II	49+15 to 49+50 -L-		521	121
III	50+50 to 50+65 -L-		634	414
VI	82+50 to 85+40 -L-		2650	559
	13+40 to 14+00 -L2RPDB-			
VII	19+60 to 19+90 -Y10DET-		340	187
TOTAL:			5235	1857

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAYNE
PROJECT: 34461.1.3 (R-2554A)

11/9/2011

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Buffer Drawing
Sheet 22 of 22