

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.

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

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

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

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

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

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



REPLY TO
ATTENTION OF:

450

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

November 22, 2011

Regulatory Division

Action ID: SAW-2002-20447

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

Dear Mr. Thorpe:

In accordance with the written request of April 19, 2011, including the revisions submitted on May 20, 2011 (purpose and need statement), June 30, 2011, July 27, 2011, and the ensuing administrative record, enclosed are two copies of a permit to authorize the following:

1) proposed permanent placement of fill material into 3,943 linear feet of jurisdictional stream channel, 2.41 acre of adjacent riparian wetlands and 1.78 acre of Lake Brandt and Lake Higgins open water areas and, 2) proposed temporary placement of fill material into 809 linear feet of jurisdictional stream channel and 0.42 acre of Lake Brandt and Lake Higgins open water areas. These impacts are associated with the widening and improvement project identified as R-2309AB/R-2413C. The project site is located along US 220, in and near Greensboro and Summerfield, in Guilford and Rockingham Counties, North Carolina, and extends from the existing SR 2182 (Horsepen Creek Road) and ends at the intersection of US 220 and existing NC 68.

You should acknowledge that you accept the terms and conditions of the enclosed permit by signing and dating each copy in the spaces provided ("Permittee" on page 3). Your signature, as permittee, indicates that, as consideration for the issuance of this permit, you voluntarily accept and agree to comply with all of the terms and conditions of this permit. All pages of both copies of the signed permit with drawings and exhibits should then be returned to this office for final authorization. A self-addressed envelope is enclosed for your convenience.

This correspondence contains a proffered permit for the above described project. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the District Commander, Wilmington District at the following address:

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Col. Steven A. Baker, District Commander
U.S. Army Corps of Engineers, Wilmington District
69 Darlington Avenue
Wilmington, North Carolina 28403

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the District Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by January 20, 2012.

****It is not necessary to submit an RFA form to the District Office if you do not object to the decision in contained in this correspondence.****

After the permit is authorized in this office, the original copy will be returned to you and the duplicate copy will be permanently retained in this office. Should you have questions, please contact Mr. Andrew Williams, Raleigh Regulatory Field Office, at telephone (919) 554-4884, extension 26.

Sincerely,



 Jean B. Gibby
Chief, Raleigh Regulatory Field Office

Enclosures

Copy Furnished (with Special Conditions):

CESAW-R

DEPARTMENT OF THE ARMY PERMIT

Permittee: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION—ATTN: Mr. Gregory Thorpe

Permit No: SAW-2002-20447

Issuing Office: USAED, WILMINGTON

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

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

Project Description: The project, identified as R-2309AB/R-2413C, consists of widening and improving a section of US220 from a two-lane facility to a four-lane facility. R-2309AB begins at SR 2182 (Horsepen Creek Road) and terminates at 0.2 miles north of SR 2313 (Winfree Road) in Greensboro and R-2413C begins south of the Haw River and ends at the intersection of US 220 and existing NC 68. Total permanent impacts for the construction of this project are 3,943 linear feet of stream channel, 2.41 acre of adjacent riparian wetlands, and 1.78 acre of open water within Lake Brandt and Lake Higgins. Total temporary impacts for construction of this project are 809 linear feet of stream channel, and 0.42 acre of open water within Lake Brandt and Lake Higgins. The applicant will mitigate for unavoidable impacts to streams by payment into the North Carolina Ecosystem Enhancement Program (NCEEP) in the amount necessary to perform the restoration of 5,388 linear feet of warm water streams and 4.56- acres of riparian wetland within the in the Cape Fear River Basin (HUC 03030002) and by payment to the NCEEP in the amount necessary to perform the restoration of 1,060 linear feet of warm water streams and 0.04-acre of riparian wetland within the Roanoke River Basin (03010103).

Project Location: The project, identified as R-2309AB/R-2413C is located along US 220, in and near Greensboro and Summerfield, in Guilford and Rockingham Counties, North Carolina. The project extends from the existing SR 2182 (Horsepen Creek Road) and ends at the intersection of US 220 and existing NC 68. Coordinates (in decimal degrees) for the site are 36.2285° N, -79.9139° W (NAD83/WGS84). The site contains a portion of the Haw River, six (6) unnamed tributaries to the Haw River, a portion of Troublesome Creek, two (2) unnamed tributaries to Troublesome Creek, four (4) unnamed tributaries to Mears Creek, two (2) unnamed tributaries to Lake Brandt and twenty-one (21) adjacent wetland areas, and two (2) open water areas in the Cape Fear River Basin (8-Digit Cataloging Unit 03030002). Additionally, the site contains three (3) unnamed tributaries to Jacobs Creek, and one (1) adjacent wetland in the Roanoke River Basin (8-Digit Cataloging Unit 03010103). Troublesome Creek and Mears Creek are tributaries to the Haw River which flows to Cape Fear River, a navigable water of the United States. Jacobs Creek is a tributary to the Dan River, which flows to the Roanoke River, a navigable water of the United States.

Permit Conditions:**General Conditions:**

1. The time Limit for completing the work authorized ends on December 31, 2016. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Conditions 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site eligible for listing in the National Register of Historic Places.
4. If you sell the property 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:

- () Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. C. 403).
- (X) Section 404 of the clean Water Act (33 U.S.C. 1344).
- () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

- a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
- b. This permit does not grant any property rights or exclusive privileges.
- c. This permit does not authorize any injury to the property or rights of others.
- d. This permit does not authorize interference with any existing or proposed Federal project.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

E. L. Fulk for November 29, 2011
(PERMITTEE) ~~Dr.~~ Gregory Thorpe - NCDOT (DATE)

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

(DISTRICT Engineer) STEVEN A. BAKER, COLONEL (DATE)

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

(Transferee) (Date)

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: NCDOT- Mr. Gregory Thorpe **File Number:** SAW 2002-20447 **Date:** November 22, 2011

Attached is: See Section below

<input checked="" type="checkbox"/>	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
<input type="checkbox"/>	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
<input type="checkbox"/>	PERMIT DENIAL	C
<input type="checkbox"/>	APPROVED JURISDICTIONAL DETERMINATION	D
<input type="checkbox"/>	PRELIMINARY JURISDICTIONAL DETERMINATION	E

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

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

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

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

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

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

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

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

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

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Andrew Williams, Regulatory Project Manager Raleigh Regulatory Field Office U.S. Army Corps of Engineers 3331 Heritage Trade Drive, Suite 105 Wake Forest, North Carolina 27587	If you only have questions regarding the appeal process you may also contact: Mr. Mike Bell, Administrative Appeal Review Officer CESAD-ET-CO-R U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 9M15 Atlanta, Georgia 30303-8801
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RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:
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For appeals on Initial Proffered Permits and approved Jurisdictional Determinations send this form to:

District Engineer, Wilmington Regulatory Division, Attn: Andrew Williams, Project Manager, Raleigh Regulatory Field Office, 3331 Heritage Trade Drive, Suite 105, Wake Forest, North Carolina 27587

For Permit denials and Proffered Permits send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Mike Bell, Administrative Appeal Officer, CESAD-ET-CO-R, 60 Forsyth Street, Room 9M15, Atlanta, Georgia 30303-8801

SPECIAL CONDITIONS

Failure to institute and carry out the details of the following special conditions below (listed as a-w) will result in a directive to cease all ongoing and permitted work within waters of the United States, including wetlands, associated with the permitted project, or such other remedies and/or fines as the U.S. Army Corps of Engineers District Commander or his authorized representatives may seek.

a) The North Carolina Division of Water Quality (DWQ) permit/certification number 3864 was issued for this project on November 19, 2011. Special conditions were issued associated with this water quality permit/certification and a copy of these conditions is attached as Exhibit B. These referenced conditions are hereby incorporated as special conditions of this permit.

b) All work authorized by this permit must be performed in strict compliance with the attached plans which were received on April 19, 2011, including supplemental permit application information provided by letter dated July 27, 2011. These plans are a part of this permit and identified as Exhibit A. Any modification to these plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.

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

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

e) 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

SPECIAL CONDITIONS (Action ID. SAW-2002-20447; NC Department of Transportation/TIP R-2309AB/R-2413C)

maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

- * f) Compensatory mitigation for the unavoidable impacts to 3,943 linear feet of stream and 2.41 acres of riparian wetland impact associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP), as outlined in the letters dated March 21 and November 17, 2011, from William D. Gilmore, EEP Director. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010, between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 5,388 linear feet of restoration equivalent warm water stream channel in the Cape Fear River Basin (Cataloging Unit 03030002) and 1,060 linear feet of restoration equivalent warm water stream channel within the Roanoke River Basin (Cataloging Unit 03010103) in accordance with Section F of the Instrument. Pursuant to the In-Lieu-Fee Instrument signed July 28, 2010, between the State of North Carolina, Ecosystem Enhancement Program and the US Army Corps of Engineers the EEP will provide 4.56-acres of riparian wetland restoration equivalent in the Cape Fear River Basin (03030002) and 0.04-acre of riparian wetland restoration equivalent in the Roanoke River Basin (03010103) in accordance with Section F of the instrument. For wetlands, a minimum of 1:1 (impact to mitigation) must be in the form of wetland restoration.

- g) All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the permittee shall immediately report it to the N.C. Division of Water Quality at 1 (800) 858-0368 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.

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

- i) 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.

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

SPECIAL CONDITIONS (Action ID. SAW-2002-20447; NC Department of Transportation/TIP R-2309AB/R-2413C)

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

l) 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.

m) During the clearing phase of the project, heavy equipment must not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of non-erodible materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.

n) 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.

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

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

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

SPECIAL CONDITIONS (Action ID. SAW-2002-20447; NC Department of Transportation/TIP R-2309AB/R-2413C)

- r) Prior to commencing construction within jurisdictional waters of the United States for any portion of the proposed project, the permittee shall forward the latest version of project construction drawings to the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings will be acceptable.
- s) The permittee shall take measures to prevent live or fresh concrete from coming into contact with any surface waters until the concrete has hardened.
- t) Measures will be included in the construction/installation that will promote the safe passage of fish and other aquatic organisms. The dimension, pattern, and profile of the stream above and below a pipe or culvert should not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed opening should be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gauge data, if available. In the absence of such data, bankfull flow can be used as a comparable level.
- u) Culverts greater than 48 inches in diameter will be buried at least one foot below the bed of the stream. Culverts 48 inches in diameter or less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, and every effort shall be made to maintain the existing channel slope. The bottom of the culvert must be placed at a depth below the natural stream bottom to provide for passage during drought or low flow conditions. Destabilizing the channel and head cutting upstream should be considered in the placement of the culvert. A waiver from the depth specifications in this condition may be requested in writing. The waiver will be issued if it can be demonstrated that the proposal would result in the least impacts to the aquatic environment.
- v) To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall provide the USACE with appropriate maps indicating the locations of proposed borrow or waste sites as soon as the permittee has that information. The permittee will coordinate with the USACE before approving any borrow or waste sites that are within 400 feet of any streams or wetlands.
- w) If the permittee discovers any previously unknown historic or archaeological sites while accomplishing the authorized work, he shall immediately stop work and notify the Corps of Engineers, Raleigh Regulatory Field Office NCDOT Regulatory Project Manager who will initiate the required State/Federal coordination.



Exhibit B

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

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

November 19, 2011

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


Proposed improvements to US 220 from SR 2182 (Horsepen Creek Rd) to 0.2 miles north of SR 2313 (Winfree Rd) in Guilford County, Federal Aid Project No. STP-220(5), State Project No. 8.1491504, WBS Element No. 34418.1.4, R-2309AB, and proposed improvements to US 220 from south of the Haw River to the Intersection of US 220 and existing NC 68 in Guilford and Rockingham Counties, State Project No. 6499008T. WBS Element No. 34429.1.1, TIP No. R2413C. NCDWQ Project No. 20110392

Dear Dr. Thorpe:

Attached hereto is a copy of the reissued Certification No. 3864 issued to The North Carolina Department of Transportation (NCDOT) dated November 19, 2011. This replaces the Certification No. 3684 issued August 5, 2011 and correction letters issued August 15, 2011, August 29, 2011, and November 14, 2011.

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

Sincerely,


for Coleen H. Sullins
Director

Attachments

cc: Andy Williams, US Army Corps of Engineers, Raleigh Field Office
Mike Mills, PE, Division 7 Engineer
Jerry Parker, Division 7 Environmental Officer
Chris Militscher, Environmental Protection Agency (electronic copy only)
Travis Wilson, NC Wildlife Resources Commission (electronic copy only)
Beth Harmon, Ecosystem Enhancement Program
Wetlands/ 401 Transportation Permitting Unit
File Copy

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

An Equal Opportunity \ Affirmative Action Employer

One
North Carolina
Naturally

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

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to impact 2.41 acres of jurisdictional wetlands, 4751 linear feet of jurisdictional streams, and 2.2 acres of open water in Guilford and Rockingham Counties. The project shall be constructed pursuant to the application dated received April 28, 2011 with additional information dated received May 26, 2011 and August 3, 2011. The authorized impacts are as described below:

Stream Impacts in the Cape Fear River Basin for R2309AB

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			280	162	280	280
6	3	0			0	0
7			172	18	190	172
8			40	34	74	0
9			240	122	362	240
10			412	16	428	412
11	85	20			105	0
12			200	22	222	200
Total	88	20	1344	374	1826	1304

Total Stream Impact for R2309 AB Project: 1826 linear feet

Stream Impacts in the Cape Fear River Basin for R2413C

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	42				42	0
4			40	141	181	0
5			894		894	894
6			36	16	52	0
7			220	19	239	220
8			142	48	190	0
9			348		348	348
10			182	33	215	0
Total	42	0	1862	257	2161	1462

Total Stream Impact for R2413C Project in Cape Fear River Basin: 2161 linear feet

Stream Impacts in the Roanoke River Basin for R2413C

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)
11			229	33	262	229
12			154	35	189	154
13			82	63	145	
14			142	26	168	142
Total			607	157	764	525

Total Stream Impact for R2413C Project in Roanoke River Basin: 764 linear feet

Open Water (Lakes) Impacts in the Cape Fear River Basin for R2309AB

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
3	0.36		0.36
4	1.42	0.42	1.84
Total	1.78	0.42	2.2

Total Open Water Impact for R-2309AB Project in Cape Fear River Basin: 2.2 acres.

Wetland Impacts in the Cape Fear River Basin for R-2309AB

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
1	0.07		0.06				0.13
2				0.04			0.04
3	0.31			0.04			0.35
4	0.21			0.02			0.23
5			0.01	0.01			0.02
10	0.02						0.02
Total	0.61		0.07	0.11			0.79

Total Wetland Impact for R-2309AB Project in Cape Fear River Basin: 0.79 acres.

Wetland Impacts in the Cape Fear River Basin For R-2413C

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
2	0.46		0.09				0.55
3	0.24			0.03			0.27
Utility 1					0.01		0.01
5	0.65			0.06			0.71
10	0.02		0.04				0.06
Total	1.37		0.13	0.09	0.01		1.6

Total Wetland Impact for R2413C Project in Cape Fear River Basin: 1.6 acres.

Wetland Impacts in the Roanoke River Basin for R-2413C

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
11	0.02						0.02
Total	0.02						0.02

Total Wetland Impact for R2413C Project in Roanoke River Basin: 0.02 acres.

The application provides adequate assurance that the discharge of fill material into the waters of the Cape Fear and Roanoke River Basins 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 April 28, 2011 with additional information dated received May 26, 2011 and August 3, 2011. Should your project change, you are required to notify the NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the

conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Condition(s) of Certification:

Project Specific Conditions

- * 1. The NCDOT Division Environmental Officer or Environmental Assistant will conduct a pre-construction meeting with all appropriate staff to ensure that the project supervisor and essential staff understand the potential issues with stream and pipe alignment at the permitted site. NCDWQ staff shall be invited to the pre-construction meeting.
- 2. Turbidity curtains shall be used to isolate all work areas from Lake Brandt, including pile or casement installation, placement of riprap, excavation or filling. Strict adherence to the Construction and Maintenance Best Management Practices will be required.
- 3. NCDOT shall design, construct, and operate and maintain hazardous spill catch basins (HSCBs) at lake crossings within the WS CA watershed. The HSCBs shall be located at Station numbers -L- 57+13 LT, -L- 118+50 LT, -L-142+25 LT, -L-112+60 RT, and -L- 121+70 LT.
- * 4. Compensatory mitigation for 1304 linear feet of impact to streams in the Cape Fear River Basin for R2309AB is required. Also, compensatory mitigation for 1462 linear feet of impact to streams in the Cape Fear River Basin and 525 linear feet in the Roanoke River Basin for R2413C is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in letters dated March 21, 2011 for the impacts associated with R-2309AB and November 17, 2011 for the impacts associated with R-2413C that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the North Carolina Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument signed July 28, 2010.
- * 5. Compensatory mitigation for 0.79 acres of wetland in the Cape Fear River Basin for R2309AB is required. Also, compensatory mitigation for 1.59 acres of wetland in the Cape Fear River Basin and 0.02 acres of wetland in the Roanoke River Basin for R2413C is required. We understand that you have chosen to perform compensatory mitigation for impacts to the 0.79 acres of wetland in the Cape Fear Basin for R-2309AB, 1.59 acres of wetland impacts in the Cape Fear Basin for R-2413C, and 0.02 acres of wetland impacts in the Roanoke River Basin for R-2413C through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in letters dated March 21, 2011 the impacts associated with R-2309AB and November 17, 2011 for the impacts associated with R-2413C that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the North Carolina Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument signed July 28, 2010.
- 6. Any modifications to this 401 Water Quality Certification that propose additional stream impacts or increased impervious surface requiring additional stormwater management may be subject the Jordan Water Supply Nutrient Strategy [15A NCAC02B .0267]. NCDOT shall coordinate with NCDWQ prior to submitting a modification request to determine the applicability of the Jordan Water Supply Nutrient Strategy. This condition does not apply to major modifications for additional sections of the project that were covered under the Finding of No Significant Impact or approved in the Avoidance and Minimization stage of the project.
- * 7. Two copies 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 April 28, 2011 with additional information May 26, 2011 and August 3, 2011. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Quality.
- 8. 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.
- 9. 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.

10. The permittee shall use /Design Standards in Sensitive Watersheds/[15A NCAC 4B.0124(a)-(e)] in areas draining to WSIV CA waters. However, due to the size of the project, NC DOT shall not be required to meet 15A NCAC 4B .0124(a) regarding the maximum amount of uncovered acres. Temporary cover (wheat, millet, or similar annual grain) or permanent herbaceous cover shall be planted on all bare soil within 15 business days of ground disturbing activities to provide erosion control.
11. 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.
12. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Rather it shall be keyed into the stream bed in such a manner that low flow conditions allows water to pass over the rip rap. Bioengineering boulders or structures should be properly designed, sized and installed.
13. All temporary impacts to jurisdictional streams due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species.

General Conditions

14. 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.
15. 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.
16. 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.
17. 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.
- * 18. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.
19. 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.
20. 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.
21. 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.
22. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.
23. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.
24. 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.
25. 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.
26. 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.
27. The Permittee shall report any violations of this certification to the Division of Water Quality within 24 hours of discovery.
 - * 28. 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.
 29. Native riparian vegetation 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.
 30. 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.
 31. 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.
 32. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification.
 33. In accordance with commitments made in your application, all clearing of vegetation for purpose of relocating overhead power lines within jurisdictional wetlands shall be performed without the use of mechanized equipment.
 34. 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.
 35. Strict adherence to the most recent version of NCDOT's Best Management Practices For Bridge Demolition and Removal approved by the US Army Corps of Engineers is a condition of the 401 Water Quality Certification.
 36. 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*.
 37. Bridge piles and bents shall be constructed using driven piles (hammer or vibratory) or drilled shaft construction methods. More specifically, jetting or other methods of pile driving are prohibited without prior written approval from NCDWQ first.
 38. No drill slurry or water that has been in contact with uncured concrete shall be allowed to enter surface waters. This water shall be captured, treated, and disposed of properly.
 39. All pile driving or drilling activities shall be enclosed in turbidity curtains unless otherwise approved by NCDWQ in this certification.
 40. All bridge construction shall be performed from the existing bridge, temporary work bridges, temporary causeways, or floating or sunken barges. If work conditions require barges, they shall be floated into position and then sunk. The barges shall not be sunk and then dragged into position. Under no circumstances should barges be dragged along the bottom of the surface water.
 41. All streams being impacted due to site dewatering activities shall be graded to its preconstruction contours and revegetated with appropriate native species.
 42. 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.

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 November 2011

DIVISION OF WATER QUALITY

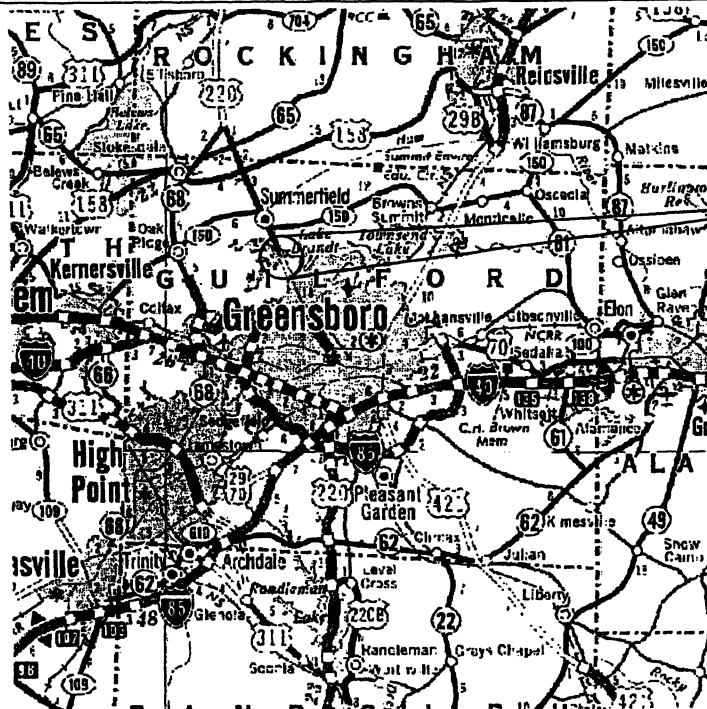
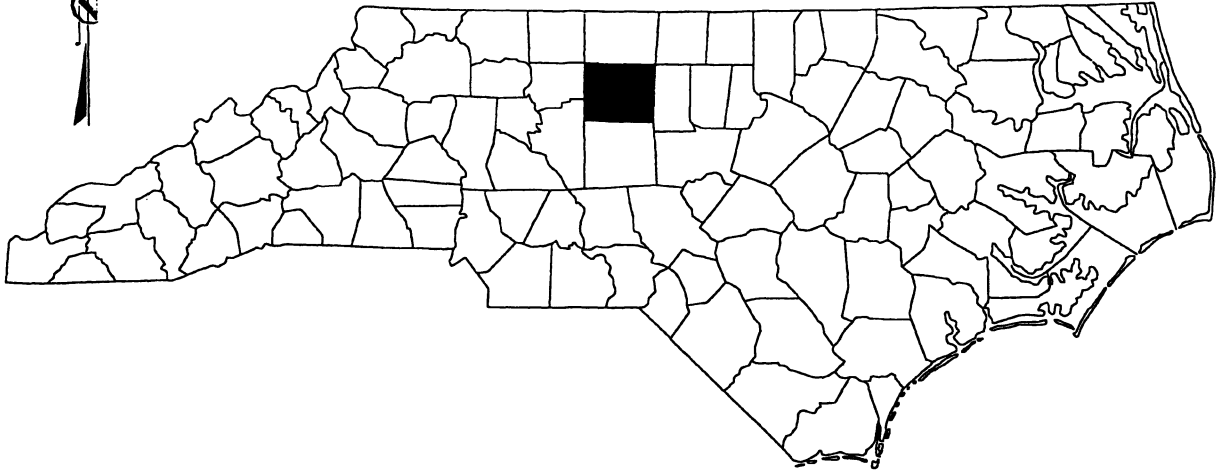


For Coleen H. Sullins
Director

APR 28 2011

Regulatory Branch

NORTH CAROLINA



SITE

VICINITY MAP

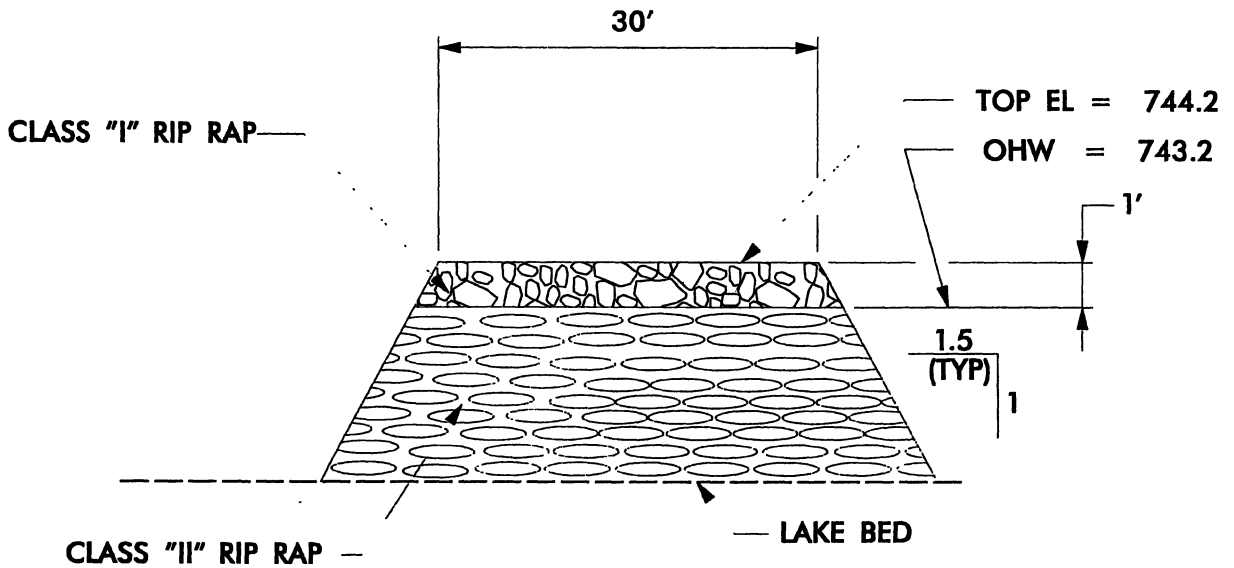
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY

PROJECT: 34418.1.4 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN
 CREEK RD.) TO 0.2 MILES
 NORTH OF SR 2313 (WINFREE RD.)

SHEET 1 OF 45

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470
DETAIL OF CAUSEWAY
FOR PROPOSED BRIDGE
-L- 154 + 00 TO 155 + 70



**VOLUME OF CLASS "II" RIP RAP
 BELOW OHW:**

LEFT LANE = 2105 CY
 RIGHT LANE = 2145 CY



N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY

PROJECT: 34418.14 (R-2309AB)
 US 220 FROM SR 2182 (HORSEPEN
 CREEK RD.) TO 0.2 MILES
 NORTH OF SR 2313 (WINFREE RD.)

SHEET 2 OF 45

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
(23)	ROGER HERMAN & JOYCE GIOLA	4057 MAYNARD RD GREENSBORO NC, 27410	1
(17)	GRANITE/ HORSE PEN CREEK, LLC	P.O. BOX 1928 MT. AIRY NC, 27030	2
(48)	CITY OF GREENSBORO	P.O. BOX 3136 GREENSBORO NC, 27402	3,4
(49)	CITY OF GREENSBORO	P.O. BOX 3136 GREENSBORO NC, 27402	3
(51)	GUILFORD COUNTY AND CITY OF GREENSBORO	P.O. BOX 3427 GREENSBORO NC, 27402	5
(75)	KOTIS PROPERTIES, INC	P.O. BOX 9296 GREENSBORO NC, 27429	6
(96)	DONNIE M. MABE	471 US 220 NORTH SUMMERFIELD NC, 27358	7
(101)	NCDOT	P.O. BOX 14996 GREENSBORO NC, 27415	7
(103)	DONALD M. & BARBARA L. REID	7499 WEITZEL DRIVE SUMMERFIELD NC, 27358	7
(105)	LENA H. FLINCHUM	8520 STREAMVIEW DR APT L HUNTERSVILLE NC, 28078	8
(111)	CHUL H. & WHA JIN PARK	7507 WEITZEL DRIVE SUMMERFIELD NC, 27358	9
(112)	JERRY W. & WANDA C.	5002 MYERS FORK ROAD SUMMERFIELD NC, 27358	9
(115)	CHARLES R. & MARIA BETH SMITH	7704 TANNERY RD SUMMERFIELD NC, 27358	9

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N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY

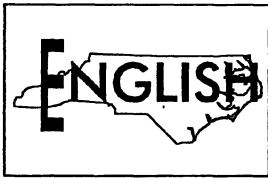
PROJECT: 34418.1.4 (R-2309AB)
US 220 FROM SR 2182 (HORSEPEN
CREEK RD.) TO 0.2 MILES
NORTH OF SR 2313 (WINFREE RD.)

SHEET 3 OF 45

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
(116)	PEGGY P. MOORE (WOODWARD)	7708 TANNERY RD SUMMERFIELD NC, 27358	9
(122)	SESSOMS DEVELOPMENT INC.	P.O. BOX 711 SUMMERFIELD NC, 27358	10
(127)	COMMUNITY LUTHERAN CHURCH	7708 TANNERY RD SUMMERFIELD NC, 27358	11
(128)	CYNTHIA G. WELCH & JAMES E. GAMBLE	113 MARYWOOD DR HIGH POINT NC, 27265	11
(141)	ROSE FULTZ COOK	PO BOX 14462 GREENSBORO NC, 27415	12
(142)	WILLIAM C. & NORMA JEAN MABERSON	7904 SUMMERFIELD RD SUMMERFIELD NC, 27358	12
(144)	JOHN C. JR. & MARGARET E. CHANDLER	5108 US 220 N SUMMERFIELD NC, 27358	12

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N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY

PROJECT: 34418.14 (R-2309AB)
US 220 FROM SR 2182 (HORSEPEN CREEK RD.) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.)

SHEET 4 OF 45

WETLAND PERMIT IMPACT SUMMARY														
Site No	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER 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)	Permanent SW Impacts (ac)	Temp SW Impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp (ft)	Natural Stream Design (ft)		
1	-L- 56+36	10x11' RCBC	0.07		0.06					0.03	0.02	244	162	
1	-L- 56+36	Bank Stabilization								<0.01		36		
2	-L- 57+02 to 58+44 RT	Temporary Stilling Basin & Diversion Channel				0.04								
3	-L- 116+00 to 125+00	72" CAP / Roadway Fill	0.31			0.04				0.36				
4	-L- 126+50 to 141+00	Dual Bridges*	0.21			0.02				1.42				
4	-L- 134+00 to 135+70 RT	Temporary Causeway (RT)									0.20			
4	-L- 134+00 to 135+70 LT	Temporary Causeway (LT)									0.18			
4	-L- 134+00 to 134+60 LT	Temporary cofferdams (LT)									0.04			
5	-Y6- 14+14 to 14+52 LT	Roadway Cut			0.01	0.01								
6	-L- 201+22	Extend 38" RCP								<0.01		3		
7	-L- 233+72	54" WSP & Extend 54" RCP								0.01	<0.01	98	18	
7	-L- 233+72	Bank Stabilization								0.01	<0.01	74		
8	-L- 240+00 RT	36" WSP										40		
8	-L- 240+00 RT	Bank Stabilization								<0.01		171	122	
9	-L- 247+02	8'x8' RCBC								0.02	0.01	69		
9	-L- 247+02	Bank Stabilization								0.01				
10	-L- 266+05 LT - 270+05 RT	Roadway Fill / 54" & 48" RCP	0.02							0.02	<0.01	354	16	
10	-L- 266+05 LT / 270+00 RT	Bank Stabilization								<0.01		58		
11	-L- 277+16	42" WSP								<0.01	<0.01	73	20	
11	-L- 277+16	Bank Stabilization								<0.01		12		
12	-L- 295+36	36" WSP & Extend 36" RCP								0.01	<0.01	157	22	
12	-L- 295+36	Bank Stabilization								<0.01		43		
TOTALS:			0.81		0.07	0.11				1.89	0.45	1432	394	

* Permanent SW impacts for proposed berms = 450 sq ft

NO. PROJECT	NO. SHEET	NO. SHEETS
1	1	1
N.C. PROJECT NO. R-2309AB		
DATE	BY	SCALE
3/4/18, 1/4	STP-220(S)	P.E.
3/4/18, 2, 3	STPHS-0220(S)	RAW & UTIL.
Permit Drawing of 45		
Sheet 1 of 45		

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APR 2 2018
Regulatory Branch

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

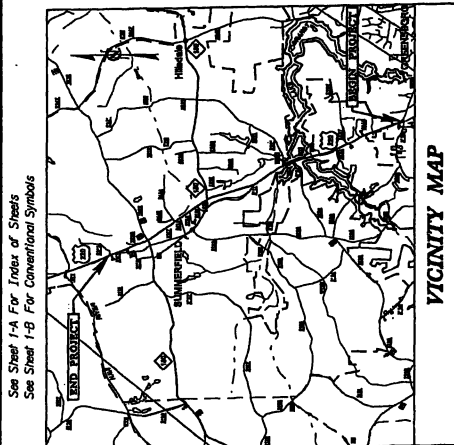
GUILFORD COUNTY

LOCATION: US 220 FROM SR 2182 (HORSEPEN CREEK RD.)
TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.) IN GREENSBORO

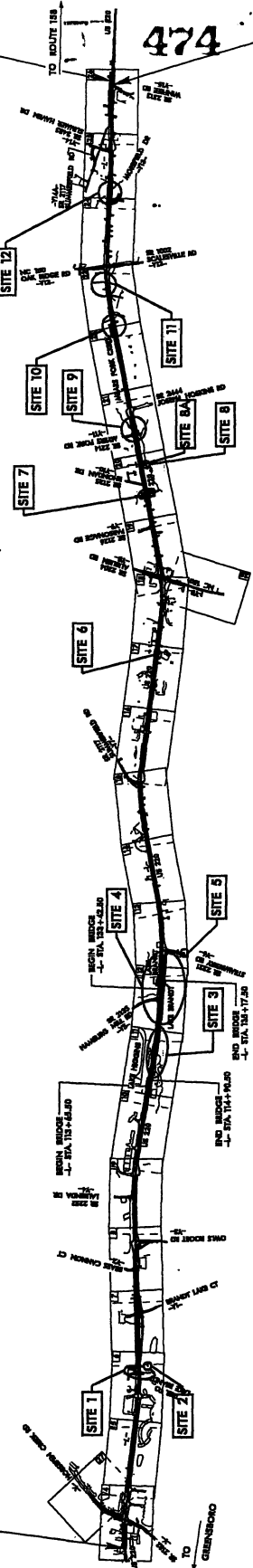
TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, AND STRUCTURES

WETLAND AND STREAM IMPACTS PLAN

END CONSTRUCTION
-L- FT. STA. 317 + 51.85
(TIE TO TIP PROJECT R-2413C)



BEGIN TIP PROJECT R-2309AB
-L- STA. 21 + 50.00



END TIP PROJECT R-2309AB
-L- STA. 316 + 76.67 =
R-2413C -LREV1- STA. 13 + 50.00

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

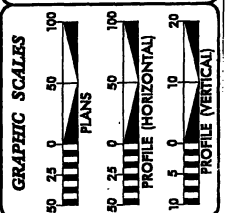
Prepared in the Office of
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 148614 G-2014D
US 220 FROM SR 2182 HORSEPEN
CREEK RD TO 0.2 MILES
NORTH OF SR 2313 WINFREE RD.
SHEET NO. 1 OF 1

Project in the Office of
KO & ASSOCIATES, P.C.
5111 KENDRICK WAY,
SUITE 100
MAXWELL, NC 27027
(919) 411-8868
A Professional Engineering Firm
For the
DIVISION OF HIGHWAYS
NORTH CAROLINA
PROJECT NO. 148614
PROJECT ENGINEER
BRIAN A. WILES, P.E.
OCTOBER 17, 2008
LETTING DATE
JANUARY 1, 2012
PROJECT DESIGN ENGINEER

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF SUMMERFIELD AND THE CITY OF GREENSBORO.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS LIMITED TO POINTS AS SHOWN ON THE PLANS.
NCDOT CONTACT: B. DOUG TAYLOR, P.E., PROJECT ENGINEER - ROADWAY DESIGN

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT R-2309AB	= 5.535 MI.
LENGTH STRUCTURES TIP PROJECT R-2309AB	= 0.057 MI.
TOTAL LENGTH OF TIP PROJECT R-2309AB	= 5.592 MI.

DESIGN DATA	
ADT 2012	= 28,882
ADT 2032	= 42,810
DHV	= 11 %
D	= 65 %
T	= 7 %
V	= 60 MPH (SHLDR.)
	= 50 MPH (C&G)
FUNC. CLASS	= ARTERIAL
	* TST 4% + DUAL 3%



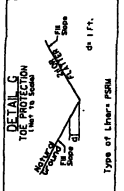
TIP PROJECT: R-2309AB

CONTRACT:

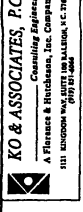
PROJECT REFERENCE NO. R-230949
 SHEET NO. 2-11
 ROADWAY DESIGN ENGINEER
 PROJECTS ENGINEER

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Fitzmaurice & Hutchison, Inc. Company
 1111 MIDCOURT WAY, SUITE 100, WILSONVILLE, NC 27158
 (704) 399-0888

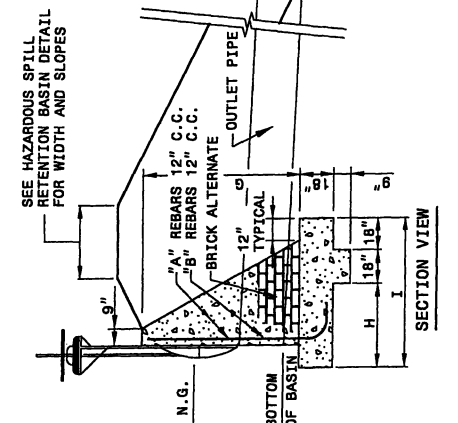
PRELIMINARY PLANS
 Permit Drawing
 Sheet 8 of 45



SHEET	RDWY STATION	STATION	SIZE
1	4+00	7+40	12" x 12"
2	7+40	24+40	12" x 12"
3	24+40	31+40	12" x 12"
4	31+40	44+40	12" x 12"
5	44+40	51+40	12" x 12"
6	51+40	64+40	12" x 12"
7	64+40	71+40	12" x 12"
8	71+40	84+40	12" x 12"
9	84+40	91+40	12" x 12"
10	91+40	104+40	12" x 12"
11	104+40	111+40	12" x 12"
12	111+40	124+40	12" x 12"
13	124+40	131+40	12" x 12"
14	131+40	144+40	12" x 12"
15	144+40	151+40	12" x 12"
16	151+40	164+40	12" x 12"
17	164+40	171+40	12" x 12"
18	171+40	184+40	12" x 12"
19	184+40	191+40	12" x 12"
20	191+40	204+40	12" x 12"
21	204+40	211+40	12" x 12"
22	211+40	224+40	12" x 12"
23	224+40	231+40	12" x 12"
24	231+40	244+40	12" x 12"
25	244+40	251+40	12" x 12"
26	251+40	264+40	12" x 12"
27	264+40	271+40	12" x 12"



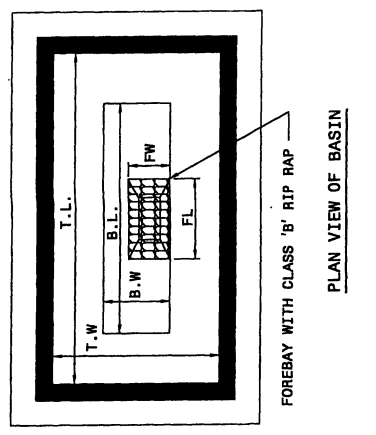
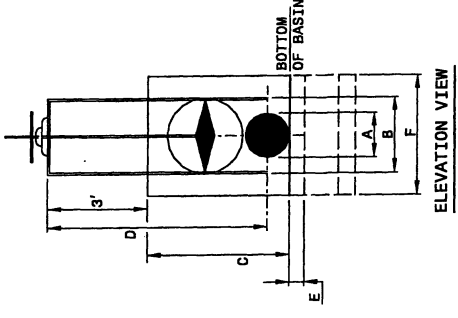
SHEET	RDWY STATION	STATION	SIZE
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3	16+15	17+15	12" x 12"
4	17+15	18+15	12" x 12"
5	18+15	19+15	12" x 12"
6	19+15	20+15	12" x 12"
7	20+15	21+15	12" x 12"
8	21+15	22+15	12" x 12"
9	22+15	23+15	12" x 12"
10	23+15	24+15	12" x 12"
11	24+15	25+15	12" x 12"
12	25+15	26+15	12" x 12"
13	26+15	27+15	12" x 12"
14	27+15	28+15	12" x 12"
15	28+15	29+15	12" x 12"
16	29+15	30+15	12" x 12"
17	30+15	31+15	12" x 12"
18	31+15	32+15	12" x 12"
19	32+15	33+15	12" x 12"
20	33+15	34+15	12" x 12"
21	34+15	35+15	12" x 12"
22	35+15	36+15	12" x 12"
23	36+15	37+15	12" x 12"
24	37+15	38+15	12" x 12"
25	38+15	39+15	12" x 12"
26	39+15	40+15	12" x 12"
27	40+15	41+15	12" x 12"
28	41+15	42+15	12" x 12"
29	42+15	43+15	12" x 12"
30	43+15	44+15	12" x 12"
31	44+15	45+15	12" x 12"
32	45+15	46+15	12" x 12"
33	46+15	47+15	12" x 12"
34	47+15	48+15	12" x 12"
35	48+15	49+15	12" x 12"
36	49+15	50+15	12" x 12"
37	50+15	51+15	12" x 12"
38	51+15	52+15	12" x 12"
39	52+15	53+15	12" x 12"
40	53+15	54+15	12" x 12"
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42	55+15	56+15	12" x 12"
43	56+15	57+15	12" x 12"
44	57+15	58+15	12" x 12"
45	58+15	59+15	12" x 12"
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47	60+15	61+15	12" x 12"
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49	62+15	63+15	12" x 12"
50	63+15	64+15	12" x 12"
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55	68+15	69+15	12" x 12"
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57	70+15	71+15	12" x 12"
58	71+15	72+15	12" x 12"
59	72+15	73+15	12" x 12"
60	73+15	74+15	12" x 12"
61	74+15	75+15	12" x 12"
62	75+15	76+15	12" x 12"
63	76+15	77+15	12" x 12"
64	77+15	78+15	12" x 12"
65	78+15	79+15	12" x 12"
66	79+15	80+15	12" x 12"
67	80+15	81+15	12" x 12"
68	81+15	82+15	12" x 12"
69	82+15	83+15	12" x 12"
70	83+15	84+15	12" x 12"
71	84+15	85+15	12" x 12"
72	85+15	86+15	12" x 12"
73	86+15	87+15	12" x 12"
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75	88+15	89+15	12" x 12"
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77	90+15	91+15	12" x 12"
78	91+15	92+15	12" x 12"
79	92+15	93+15	12" x 12"
80	93+15	94+15	12" x 12"
81	94+15	95+15	12" x 12"
82	95+15	96+15	12" x 12"
83	96+15	97+15	12" x 12"
84	97+15	98+15	12" x 12"
85	98+15	99+15	12" x 12"
86	99+15	100+15	12" x 12"
87	100+15	101+15	12" x 12"
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91	104+15	105+15	12" x 12"
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93	106+15	107+15	12" x 12"
94	107+15	108+15	12" x 12"
95	108+15	109+15	12" x 12"
96	109+15	110+15	12" x 12"
97	110+15	111+15	12" x 12"
98	111+15	112+15	12" x 12"
99	112+15	113+15	12" x 12"
100	113+15	114+15	12" x 12"
101	114+15	115+15	12" x 12"
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111	124+15	125+15	12" x 12"
112	125+15	126+15	12" x 12"
113	126+15	127+15	12" x 12"
114	127+15	128+15	12" x 12"
115	128+15	129+15	12" x 12"
116	129+15	130+15	12" x 12"
117	130+15	131+15	12" x 12"
118	131+15	132+15	12" x 12"
119	132+15	133+15	12" x 12"
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121	134+15	135+15	12" x 12"
122	135+15	136+15	12" x 12"
123	136+15	137+15	12" x 12"
124	137+15	138+15	12" x 12"
125	138+15	139+15	12" x 12"
126	139+15	140+15	12" x 12"
127	140+15	141+15	12" x 12"
128	141+15	142+15	12" x 12"
129	142+15	143+15	12" x 12"
130	143+15	144+15	12" x 12"
131	144+15	145+15	12" x 12"
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136	149+15	150+15	12" x 12"
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139	152+15	153+15	12" x 12"
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141	154+15	155+15	12" x 12"
142	155+15	156+15	12" x 12"
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145	158+15	159+15	12" x 12"
146	159+15	160+15	12" x 12"
147	160+15	161+15	12" x 12"
148	161+15	162+15	12" x 12"
149	162+15	163+15	12" x 12"
150	163+15	164+15	12" x 12"
151	164+15	165+15	12" x 12"
152	165+15	166+15	12" x 12"
153	166+15	167+15	12" x 12"
154	167+15	168+15	12" x 12"
155	168+15	169+15	12" x 12"
156	169+15	170+15	12" x 12"
157	170+15	171+15	12" x 12"
158	171+15	172+15	12" x 12"
159	172+15	173+15	12" x 12"
160	173+15	174+15	12" x 12"
161	174+15	175+15	12" x 12"
162	175+15	176+15	12" x 12"
163	176+15	177+15	12" x 12"
164	177+15	178+15	12" x 12"
165	178+15	179+15	12" x 12"
166	179+15	180+15	12" x 12"
167	180+15	181+15	12" x 12"
168	181+15	182+15	12" x 12"
169	182+15	183+15	12" x 12"
170	183+15	184+15	12" x 12"
171	184+15	185+15	12" x 12"
172	185+15	186+15	12" x 12"
173	186+15	187+15	12" x 12"
174	187+15	188+15	12" x 12"
175	188+15	189+15	12" x 12"
176	189+15	190+15	12" x 12"
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178	191+15	192+15	12" x 12"
179	192+15	193+15	12" x 12"
180	193+15	194+15	12" x 12"
181	194+15	195+15	12" x 12"
182	195+15	196+15	12" x 12"
183	196+15	197+15	12" x 12"
184	197+15	198+15	12" x 12"
185	198+15	199+15	12" x 12"
186	199+15	200+15	12" x 12"
187	200+15	201+15	12" x 12"
188	201+15	202+15	12" x 12"
189	202+15	203+15	12" x 12"
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217	230+15	231+15	12" x 12"
218	231+15	232+15	12" x 12"
219	232+15	233+15	12" x 12"
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221	234+15	235+15	12" x 12"
222	235+15	236+15	12" x 12"
223	236+15	237+15	12" x 12"
224	237+15	238+15	12" x 12"
225	238+15	239+15	12" x 12"
226	239+15	240+15	12" x 12"
227	240+15	241+15	12" x 12"
228	241+15	242+15	12" x 12"
229	242+15	243+15	12" x 12"
230	243+15	244+15	12" x 12"
23			



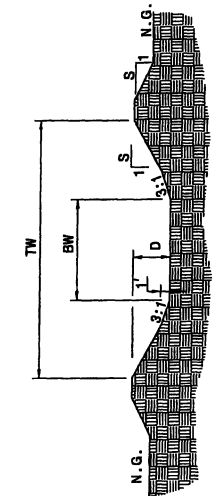
BASIN #	1	2	3	4	5
SLUICE GATE DIMENSIONS					
PIPE DIAMETER	A 30"	30"	18"	30"	18"
GATE DIAMETER	B 36 3/4"	36 3/4"	25"	36 3/4"	25"
HEADWALL HT.	C 6'3"	6'3"	3'9"	6'3"	3'9"
FRAME HEIGHT	D 60"	60"	36"	60"	36"
INVERT HEIGHT	E 10"	10"	10"	10"	10"
HEADWALL WIDTH	F 9'2"	9'2"	6'4"	9'2"	6'4"
HEADWALL DIMENSIONS					
RYE DIAMETER	A 30"	30"	18"	30"	18"
HEADWALL HT.	G 7'1"	7'1"	4'7"	7'1"	4'7"
FOOTING DEPTH	H 2'6"	2'6"	18"	2'6"	18"
HEADWALL DEP.	I 5'6"	5'6"	4'6"	5'6"	4'6"

- GENERAL NOTES:
- 1- REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO THE HEADWALL AND SHALL BE PAID FOR ON YD'S BASIS.
 - 2- CONCRETE SHALL BE CLASS "B" THROUGHOUT STRUCTURE.
 - 3- DELETE REINFORCING STEEL WHEN BRICK ALTERNATE IS USED.

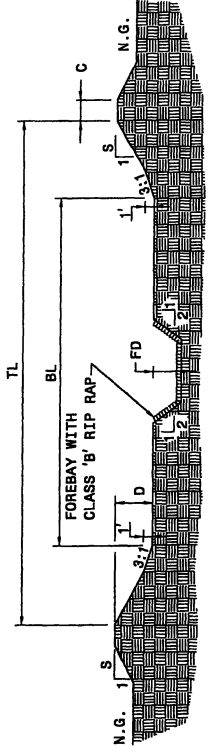
SEE HAZARDOUS SPILL RETENTION BASIN DETAIL FOR WIDTH AND SLOPES



PLAN VIEW OF BASIN



CROSS SECTION VIEW OF BASIN



CROSS SECTION VIEW OF BASIN

HAZARDOUS SPILL RETENTION BASIN																
BASIN #	PIPE SIZE	TOP ELEV.	BOTTOM ELEV.	T.W.	B.W.	D	T.L.	B.L.	S	C	*G	CAPACITY	STATION	FL	PW	FD
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(CY)		(cu. ft.)		(ft)	(ft)	(ft)
1	30"	779	774	97	75	5	72-97	50-75	2	2	100	30900	-L- 57+13 LT.	40	20	3
2	30"	760	753.5	58	30	6.5	78	50	2	5	110	17600	-L- 112+80 RT.	30	15	3
3	18"	746.5	N/A	N/A	N/A	N/A	N/A	N/A	2	2	0	6500	-L- 118+50 LT.	N/A	N/A	N/A
4	30"	748	744	33	15	4	58	48	2	2	180	16000	-L- 121+70 LT.	N/A	N/A	N/A
5	18"	750.8	745.8	42	20	5	62	40	2	2	180	7500	-L- 142+25 LT.	20	12	3

*G DENOTES EXCAVATION AMOUNT.

NOTE: SEE PLAN SHEET FOR LOCATION OF OUTLET PIPE WITH SLUICE GATE.

** Provided at new and/or improved roadway sections to aid in containment and clean up of accidental spills by truck traffic. Basins are provided in particular locations including areas in proximity to sensitive waters and water supplies.

DESIGN SERVICES UNIT
 STANLEY A. SPENCER, INC.
 OFFICE 919-250-4128 FAX 919-250-4119

HAZARDOUS SPILL
 RETENTION BASIN

ORIGINAL BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____
 FILE #250-4119

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT#4414 / R-2309AB
 US 401 FROM SR 216 GORSPEN
 CHECK RD TO SR 208 WYNFARIE RD.
 NORTH OF SR 208 WYNFARIE RD.
 SHEET OF

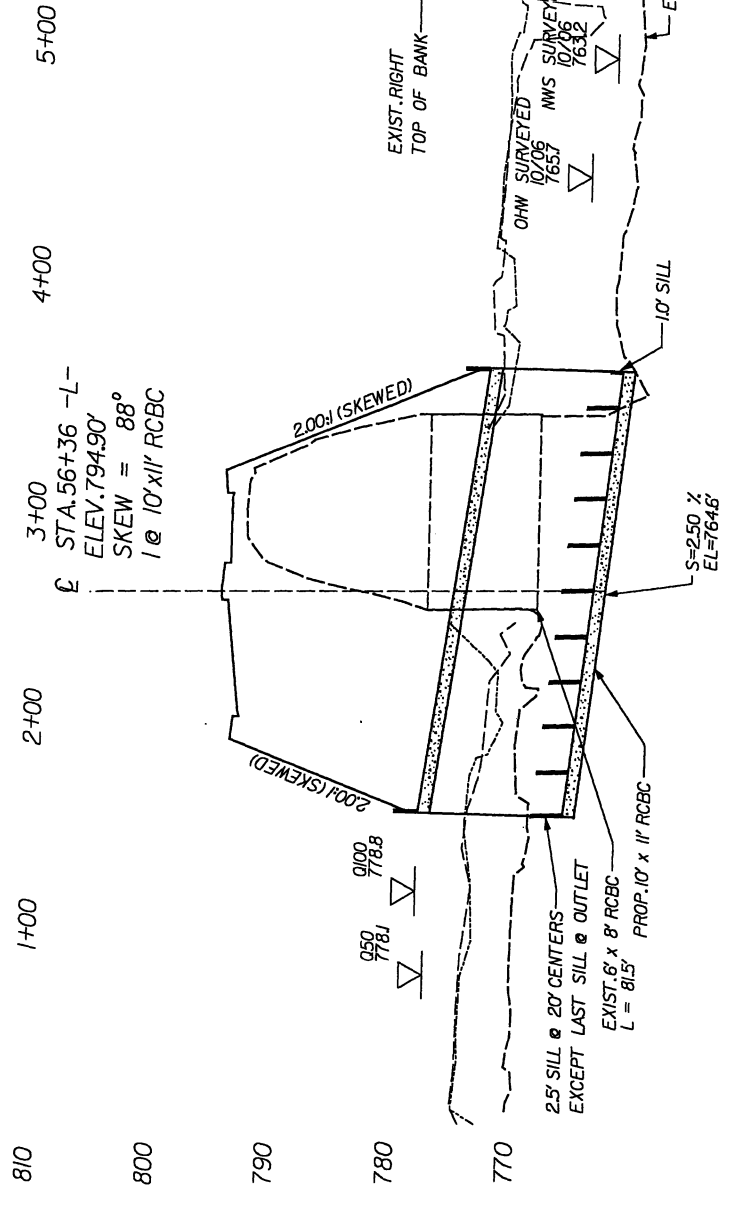
477

KO & ASSOCIATES, P.C.
 Consulting Engineers
 1000 W. 10th Street, Suite 100
 Oklahoma City, Oklahoma 73106

PROJECT NUMBER: **P-27016**
 DRAWN BY: **PJS-SJ**
 CHECKED BY: **HYDRAULIC ENGINEER**

PRELIMINARY PLANS
 AS NOTED AND OTHERWISE

Permit Drawing
 Sheet 12 of 45



SCALE:
 1" = 50' HORIZONTAL
 1" = 10' VERTICAL

SITE 1
PROFILE ALONG STRUCTURE
STA. 56 + 36 -L-



N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 141814 (R-2609AB)
 US 29 FROM SR 2182 HORSEFEN
 CHECK RD TO 0.2 MILES
 NORTH OF SR 2182 HORSEFEN RD

PROJECT REFERENCE NO. **R-2309AB**
 SHEET NO. **30**
 HYDRAULICS ENGINEER

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A. F. Frazier & Associates, Inc. Highway
 1011 E. 10th Street, Raleigh, N.C. 27601
 (919) 781-3300

PRELIMINARY PLANS
 WE NOT BE FOR CONSTRUCTION

Permit Drawing
 Street of **ENGLISH**

FOR PLANS SEE SHEET NO. 29

FOR PLANS SEE SHEET NO. 27

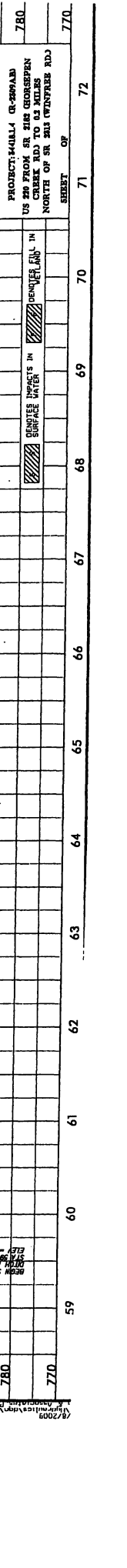
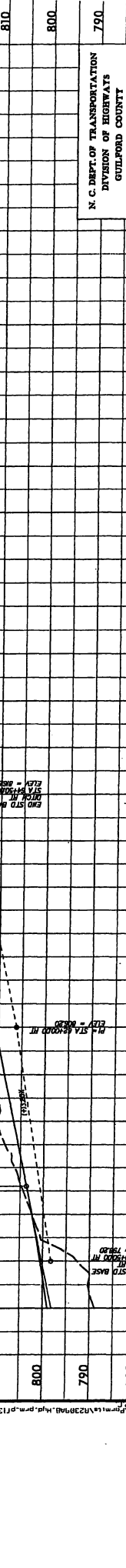
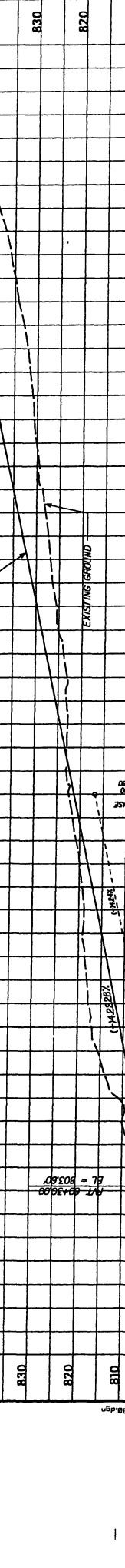
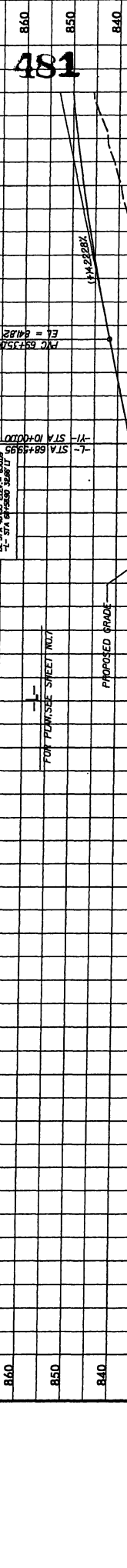
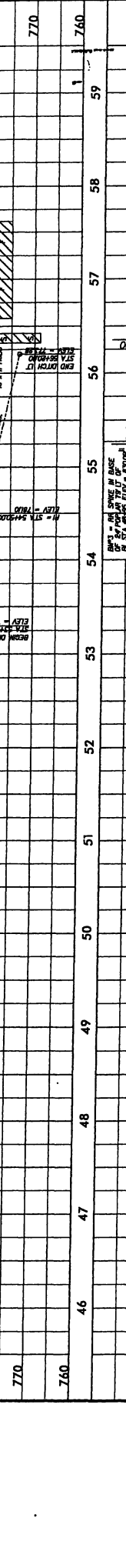
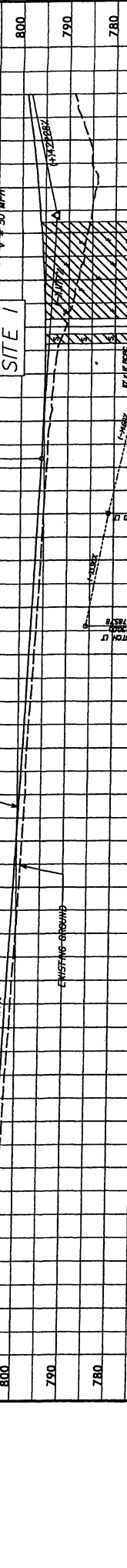
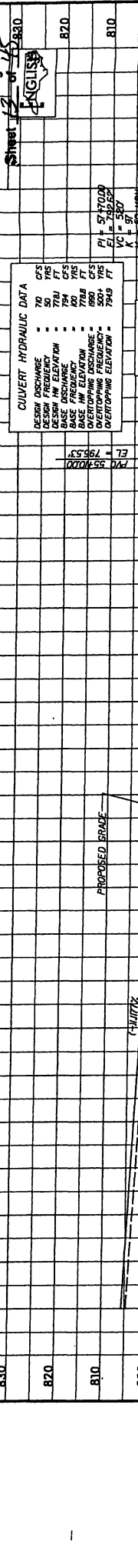
FOR PLANS SEE SHEET NO. 26

FOR PLANS SEE SHEET NO. 25

FOR PLANS SEE SHEET NO. 24

FOR PLANS SEE SHEET NO. 23

DESIGN DISCHARGE	DESIGN FREQ	DESIGN HW ELEVATION	BASE FREQ	BASE HW ELEVATION	OVERTOPPING DISCHARGE	OVERTOPPING ELEVATION
70 CFS	70	765 FT	778 FT	784 FT	690 CFS	794 FT
50 CFS	50	765 FT	778 FT	784 FT	690 CFS	794 FT
30 CFS	30	765 FT	778 FT	784 FT	690 CFS	794 FT
15 CFS	15	765 FT	778 FT	784 FT	690 CFS	794 FT
7.5 CFS	7.5	765 FT	778 FT	784 FT	690 CFS	794 FT
3.75 CFS	3.75	765 FT	778 FT	784 FT	690 CFS	794 FT



N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 44114 (R-2309AB)
 US 29 FROM SR 218 CROSSPEN
 NORTH OF SR 243 (WENTFORS RD.)
 SHEET OF 72

PROJ. REFERENCE NO. R-2302AB
 ROADWAY DESIGN ENGINEER
 SHEET NO. 45 OF 45
 PRELIMINARY PLANS
 PERMIT DRAWING

0 5 10

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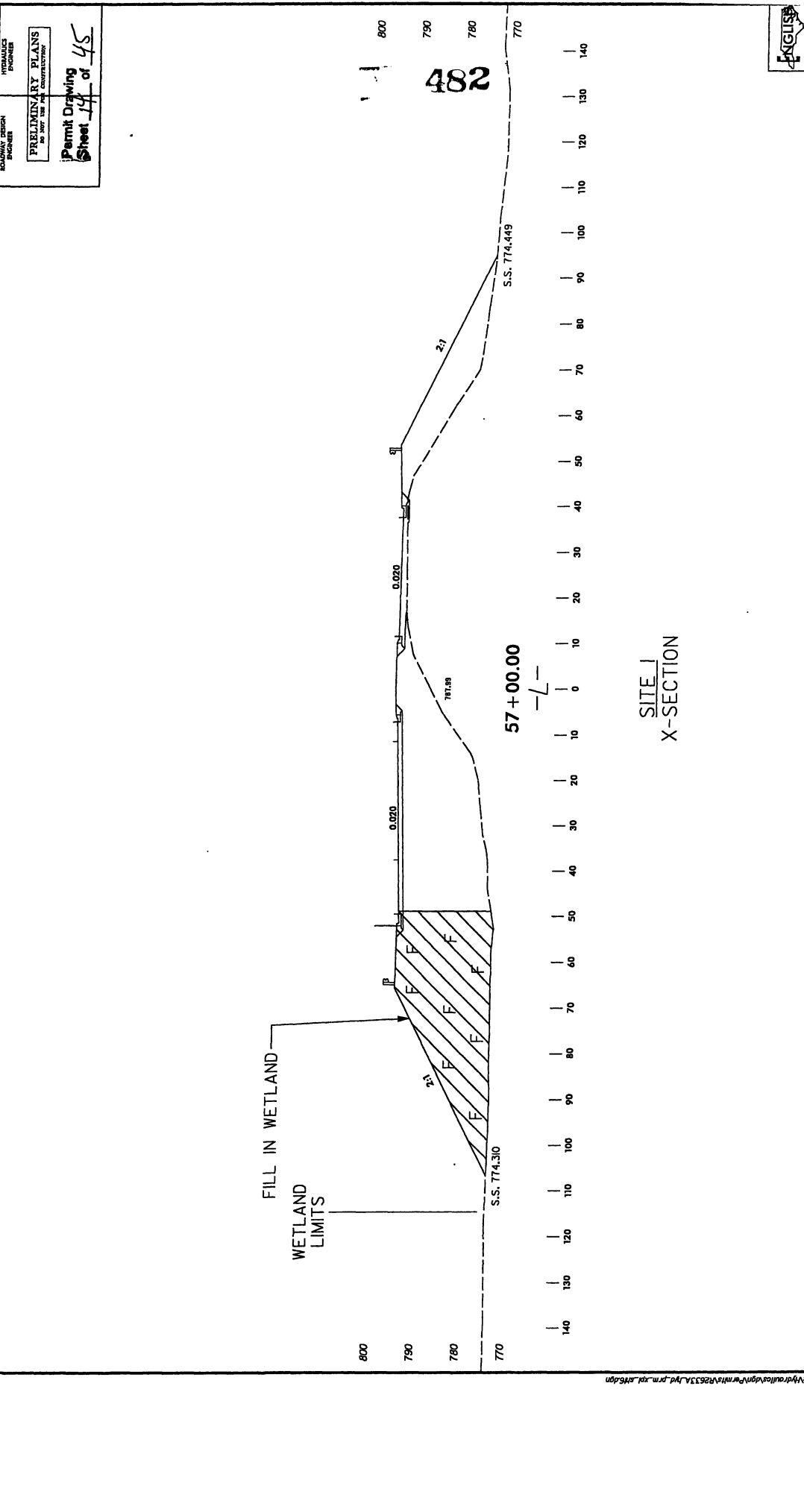
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SITE I
X-SECTION

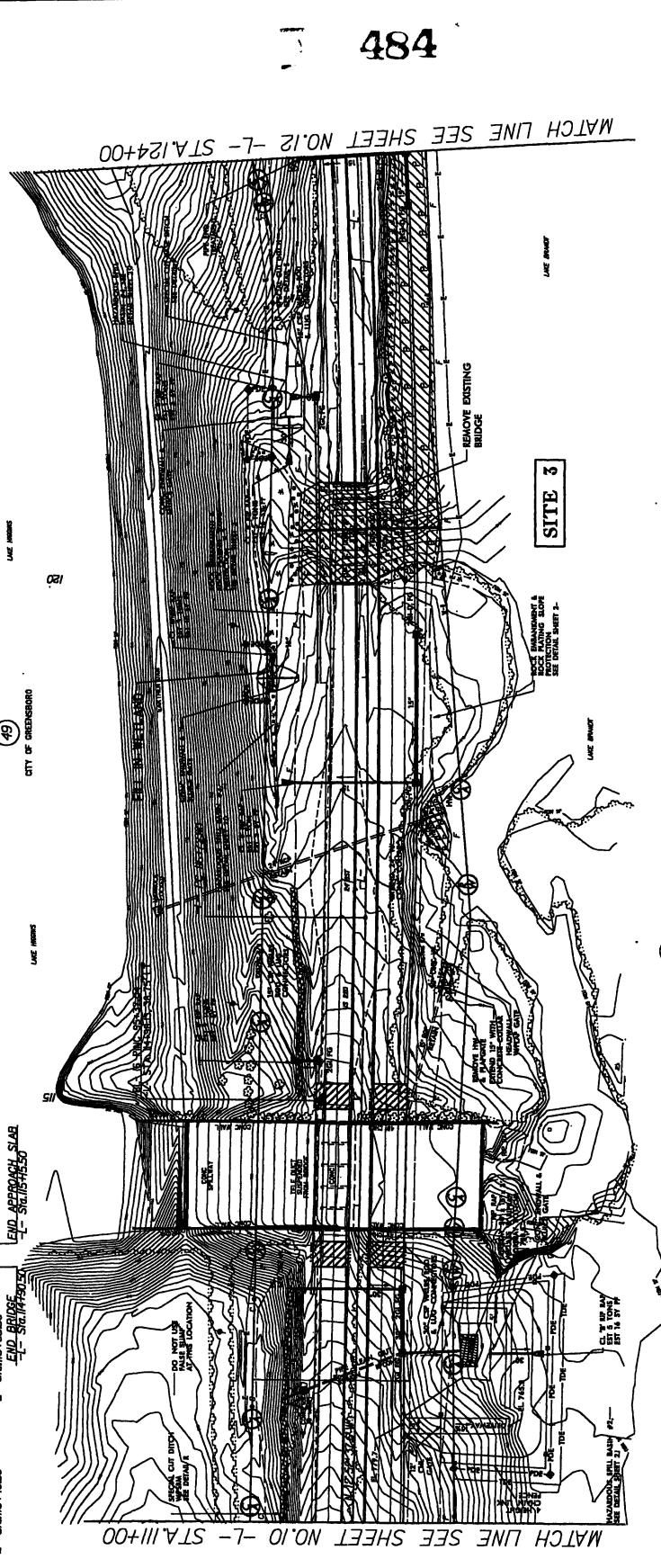
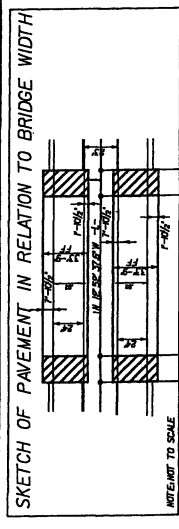
LEGEND
 [Hatched Box] DENOTES FILL IN WETLAND

KO & ASSOCIATES, P.C.
 Civil Engineers
 A Pittman & Hitchcock, Inc. Company
 311 KNOXWOOD WAY, SUITE 100 WILMINGTON, N.C. 28401
 (910) 343-5666

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GULLFORD COUNTY
 PROJECT M40LL4 G-289AB
 US 28 FROM SR 218A GROSSCOPEN
 CULVERT ROAD TO US 28
 NORTH OF SR 218A WINFREES RD
 SHEET 45 OF 45

PROJECT REFERENCE NO. R-2309AB
 SHEET NO. 11
 CONTRACTOR: KO & ASSOCIATES, P.C.
 ENGINEER: PRELIMINARY PLANS
 PERMIT DRAWING
 SHEET 16 OF 15

KO & ASSOCIATES, P.C.
 CONSULTING ENGINEERS
 A FORTRESS & HATHASSEN, INC. COMPANY
 3111 LINDSEY WAY, SUITE 100, RALEIGH, N.C. 27607
 (919) 879-8888



LEGEND
 --- W.L.B. --- WETLAND BOUNDARY
 DENOTES IMPACTS IN SURFACE WATER (POND)
 DENOTES FILL IN WETLAND
 DENOTES MECHANIZED CLEARING

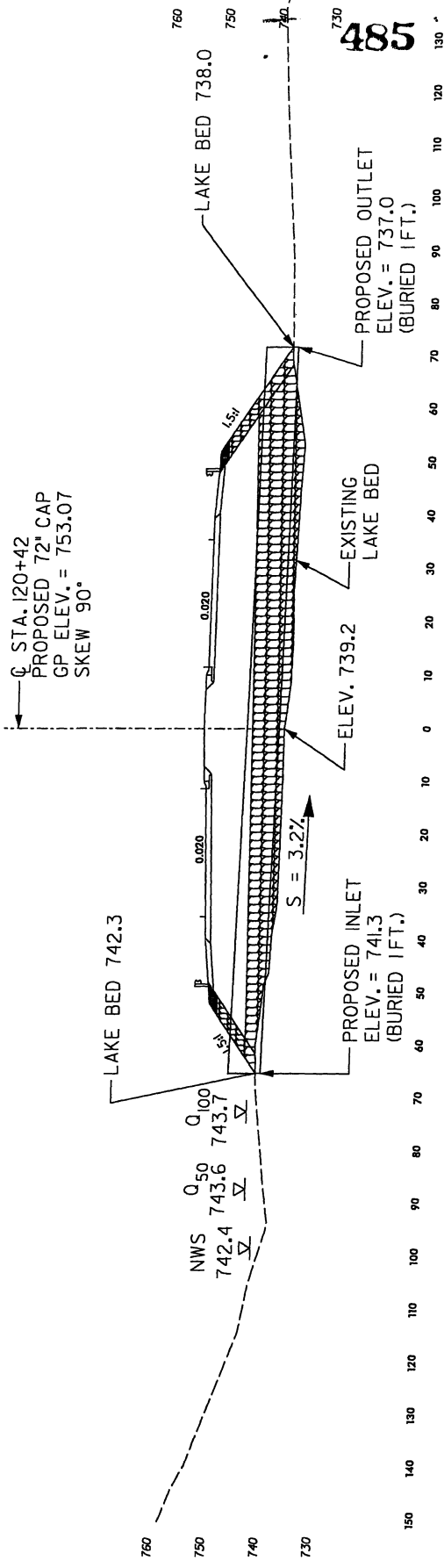
SCALE: 1" = 100' HORIZ.
 0 50 100

PROJECT: HALLAM ROAD
 COUNTY: GUILFORD COUNTY
 N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 SHEET NO. 16 OF 15

484

8/17/2009
 R:\Projects\2309AB\Drawings\2309AB.dwg
 11/17/2009 10:00 AM

PROJ. REFERENCE NO. R-2009AB
 SHEET NO. FAS-53
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT 14464 G-209AB
 US 20 FROM SR 212 HORSEPEN
 CREEK RD TO 0.3 MILES
 NORTH OF SR 213
 PRELIMINARY PLANS
 NO. 307 USE FOR CONSTRUCTION
 Permit Drawing
 Sheet 17 of 45



SITE 3
PROFILE ALONG STRUCTURE
STA. 120 + 42 -L-

SCALE:
 1" = 20' HORIZONTAL
 1" = 20' VERTICAL

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A. Pittman & B. ...
 211 ...
 01/11/2009

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT 14464 G-209AB
 US 20 FROM SR 212 HORSEPEN
 CREEK RD TO 0.3 MILES
 NORTH OF SR 213
 SHEET 17 OF 45

PROJECT REFERENCE NO. R-2009AB
 HYDRAULICS
 ROADWAY DESIGN
 PROPOSED

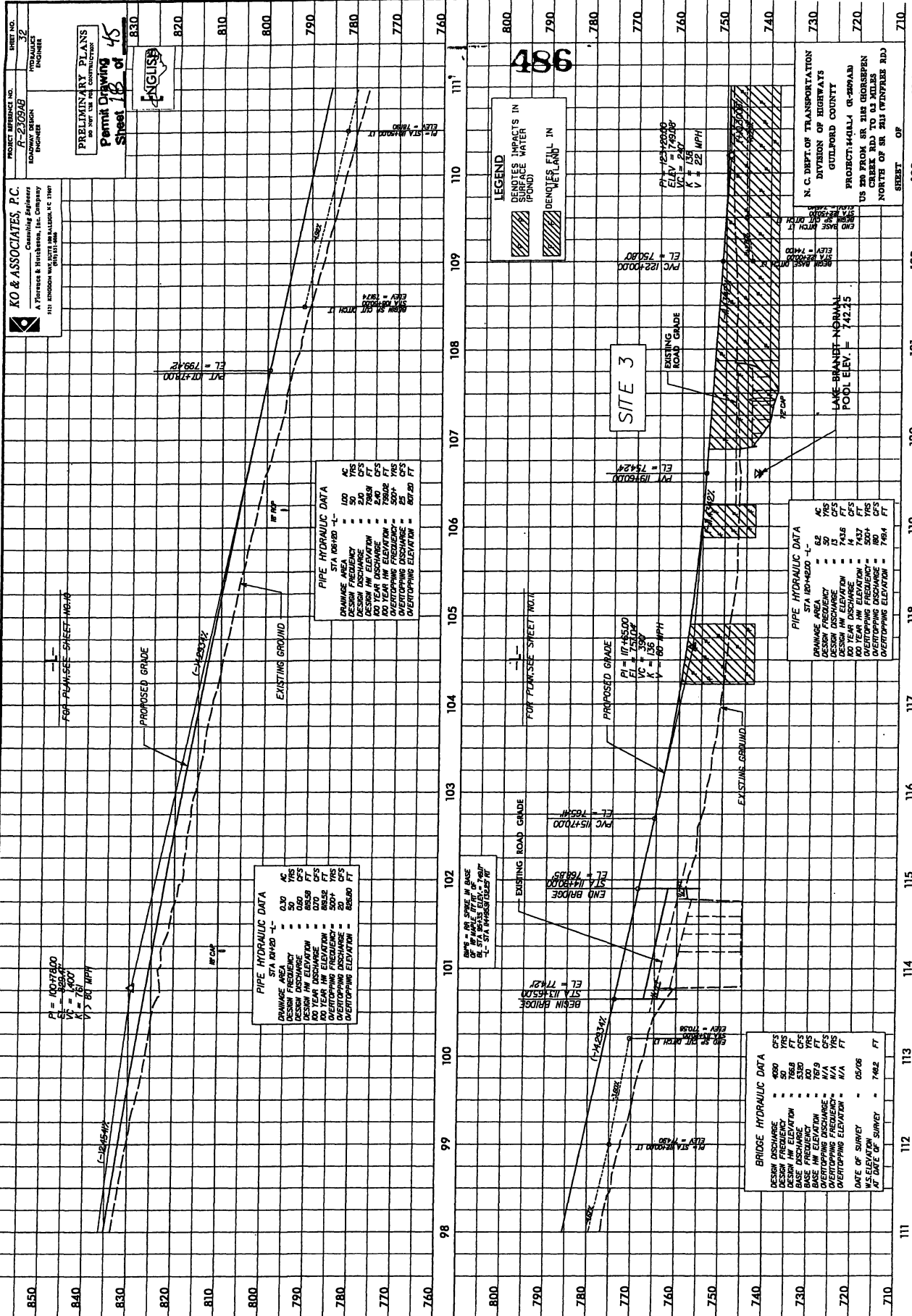
PROJECT REFERENCE NO. R-2009AB
 HYDRAULICS
 ROADWAY DESIGN
 PROPOSED

PRELIMINARY PLANS
 FOR THE
 Permit Drawing
 Sheet 1B of 45



ENGLISH

KO & ASSOCIATES, P.C.
 Consulting Engineers & Surveyors
 A Florence & Rivers Company
 1111 WOODROW WILSON BLVD., SUITE 1100
 RICHMOND, VA 23220



PIPE HYDRAULIC DATA

STATION	850	840	830	820	810	800	790	780	770	760
DRAINAGE AREA	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
DESIGN FREQ	50	50	50	50	50	50	50	50	50	50
DESIGN DISCH	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DESIGN HW ELEV	805	805	805	805	805	805	805	805	805	805
100 YEAR HW ELEV	805	805	805	805	805	805	805	805	805	805
100 YEAR DISCH	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
OVERTOPPING FREQ	500+	500+	500+	500+	500+	500+	500+	500+	500+	500+
OVERTOPPING DISCH	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
OVERTOPPING ELEV	805.00	805.00	805.00	805.00	805.00	805.00	805.00	805.00	805.00	805.00

PIPE HYDRAULIC DATA

STATION	107	106	105	104	103	102	101	100	99
DRAINAGE AREA	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
DESIGN FREQ	50	50	50	50	50	50	50	50	50
DESIGN DISCH	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
DESIGN HW ELEV	795	795	795	795	795	795	795	795	795
100 YEAR HW ELEV	795	795	795	795	795	795	795	795	795
100 YEAR DISCH	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
OVERTOPPING FREQ	500+	500+	500+	500+	500+	500+	500+	500+	500+
OVERTOPPING DISCH	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
OVERTOPPING ELEV	805.00	805.00	805.00	805.00	805.00	805.00	805.00	805.00	805.00

BRIDGE HYDRAULIC DATA

DESIGN DISCH	4000	CFS
DESIGN HW ELEV	762.8	FT
BASE DISCH	5300	CFS
BASE FREQ	100	YRS
DESIGN DISCH	N/A	CFS
OVERTOPPING DISCH	N/A	CFS
OVERTOPPING FREQ	N/A	YRS
OVERTOPPING ELEV	N/A	FT
DATE OF SURVEY	05/06	
W.S. ELEVATION AT DATE OF SURVEY	746.2	FT

PIPE HYDRAULIC DATA

STATION	118	117	116	115	114	113	112	111
DRAINAGE AREA	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
DESIGN FREQ	50	50	50	50	50	50	50	50
DESIGN DISCH	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
DESIGN HW ELEV	743.6	743.6	743.6	743.6	743.6	743.6	743.6	743.6
100 YEAR HW ELEV	743.7	743.7	743.7	743.7	743.7	743.7	743.7	743.7
100 YEAR DISCH	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
OVERTOPPING FREQ	500+	500+	500+	500+	500+	500+	500+	500+
OVERTOPPING DISCH	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
OVERTOPPING ELEV	744.4	744.4	744.4	744.4	744.4	744.4	744.4	744.4

SITE 3

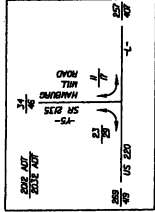
LEGEND
 DEWETTED SURFACE WATER (POND)
 DEWETTED LAND IN

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: HALLA G-2009AB
 US 501 WORK ST. 215 WILKINSON
 CREEK RD. TO 215 WILKINSON
 NORTH OF SR 201 (WINFREY RD)

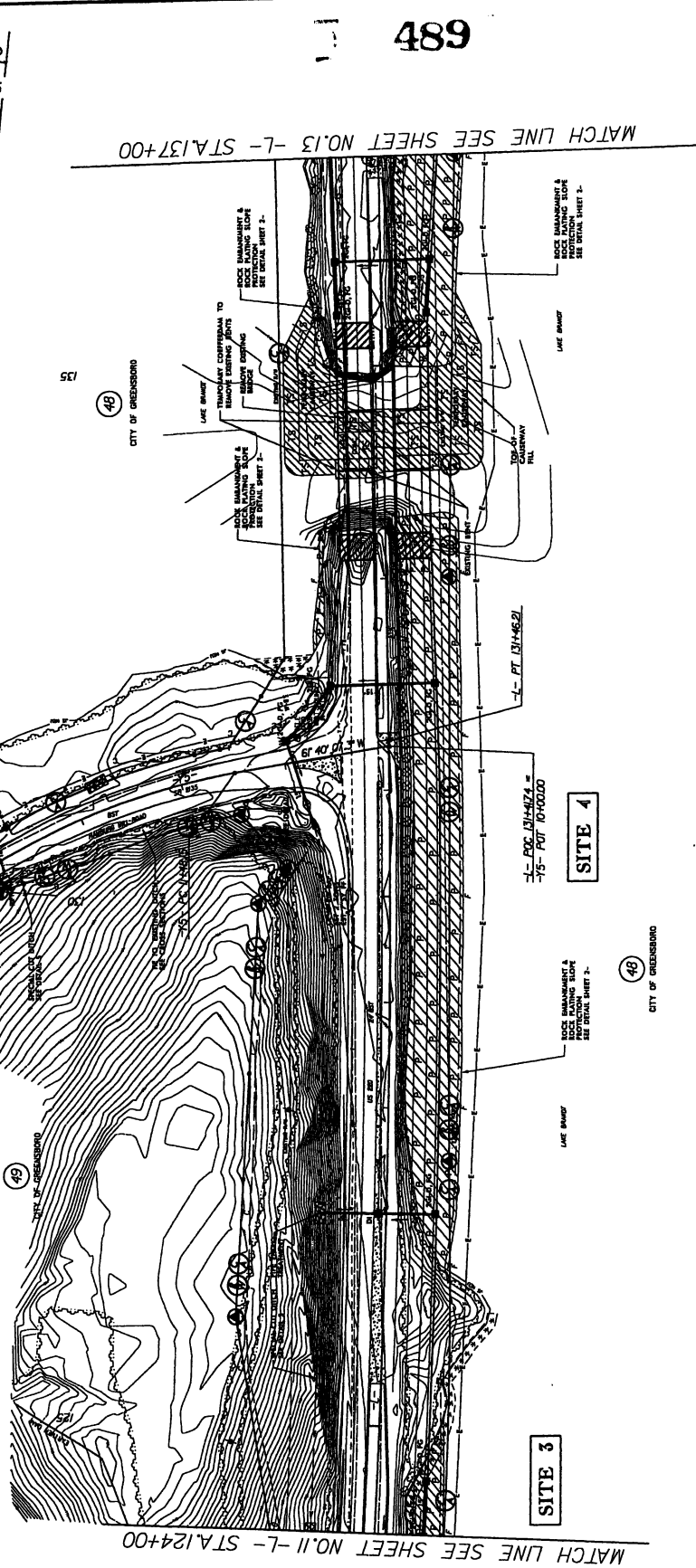
SHEET OF 124

PROJECT REFERENCE NO. R-230849
 SHEET NO. 12
 ROADWAY DESIGN ENGINEER
 PRELIMINARY PLANS
 SHEET 21 of 45
 Permit Drawing

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Florence & Hitchcock, Inc. Company
 1111 ANDERSON AVENUE, SUITE 100, BALTIMORE, M.D. 21201

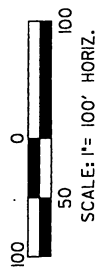


END CONSTRUCTION
 -75- POC 140000
 SEE EXISTING LOCUS WORK SHEET
 FOR EXISTING CHANNEL AND
 BRIDGE STRUCTURE
 SEE EXISTING CHANNEL AND
 BRIDGE STRUCTURE
 SHEET 20 OF 45



LEGEND

- NLB - WETLAND BOUNDARY
- ▨ DENOTES FILL IN WETLAND
- ▨ DENOTES IMPACTS IN SURFACE WATER POND
- ▨ DENOTES TEMPORARY IMPACTS IN SURFACE WATER



**SITE 3 AND 4
 PLAN VIEW**

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 44111 G-209410
 US 240 FROM SR 218 GREENSPEN
 CREEK RD. TO 0.3 MILES
 NORTH OF SR 218 (WYFFREE RD.)
 SHEET OF

489

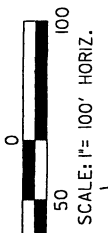
MATCH LINE SEE SHEET NO.13 -L- STA.137+00

MATCH LINE SEE SHEET NO.11 -L- STA.124+00

PROJECT REFERENCE NO. **F-2009AB**
 SHEET NO. **13**
 DRAWN BY: **W. J. HARRIS**
 CHECKED BY: **W. J. HARRIS**
 DATE: **08/11/09**
 PROJECT: **WETLANDS RESTORATION**

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Finreco & Brackman, Inc. Company
 1111 KENNEDY WAY, SUITE 100, WILSON, N.C. 27157
 P: 919.286.1111

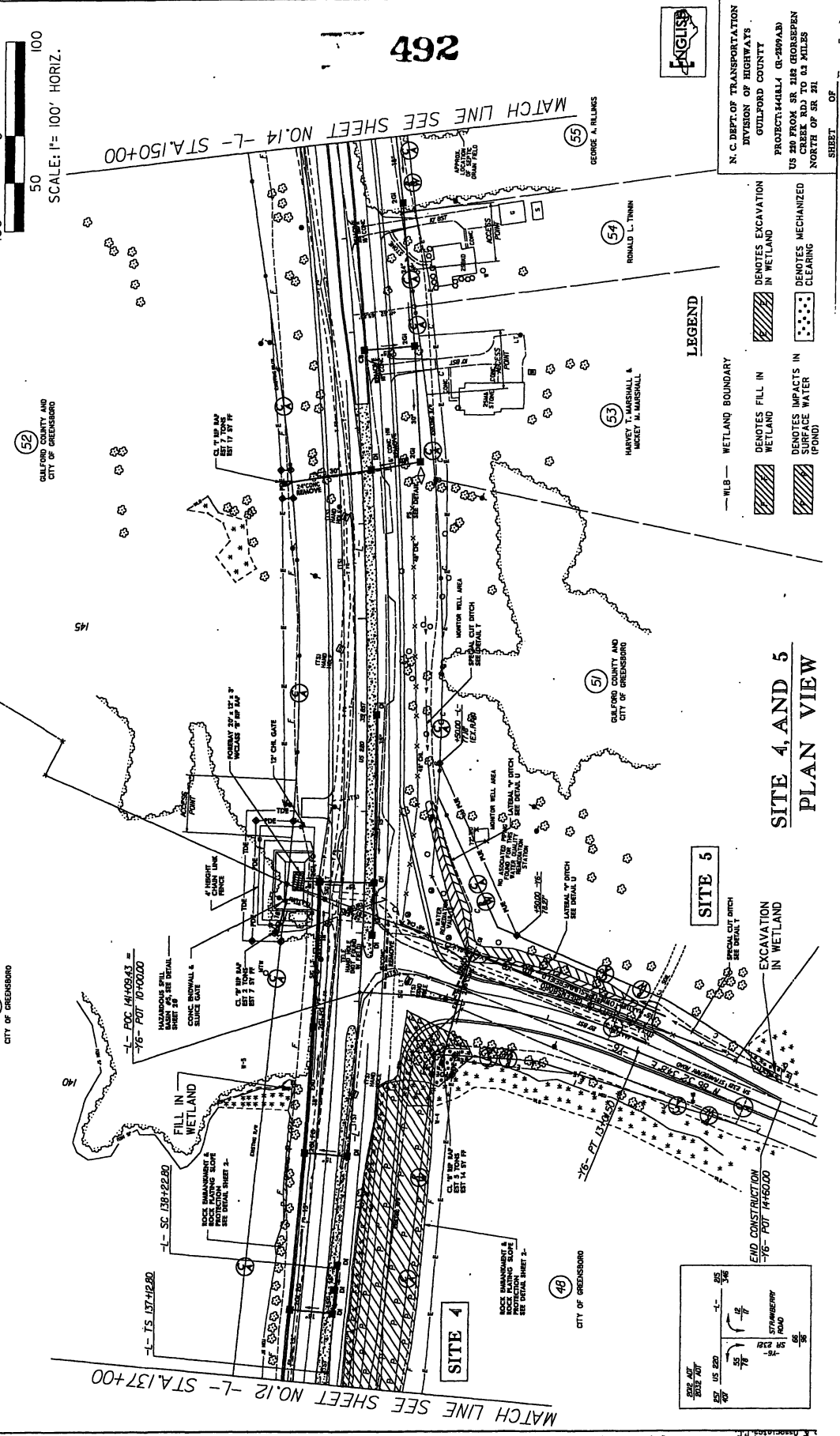
PRELIMINARY PLANS
 do not constitute a contract
Permit Drawing
 Sheet **24** of **45**



492

ENGIS
 N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: **840414 (R-289AB)**
 US 240 FROM SR 2182 GORSEPEN
 CREEK RD TO 0.3 MILES
 NORTH OF SR 21

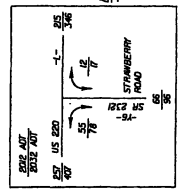
CITY OF GREENSBORO
 TOWN OF SUMMERFIELD



LEGEND

- WLB --- WETLAND BOUNDARY
- [Hatched Box] DENOTES FILL IN WETLAND
- [Dotted Box] DENOTES IMPACTS IN SURFACE WATER (POND)
- [Hatched Box] DENOTES EXCAVATION IN WETLAND
- [Dotted Box] DENOTES MECHANIZED CLEARING

**SITE 4, AND 5
 PLAN VIEW**



PROJECT REFERENCE NO. R-2009AB
 SHEET NO. 42
 HYDRAULICS
 ROUTINE

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Planners & Architects
 111 WILSON MILITARY BLVD. SUITE 100
 WYOMING, WY 82001

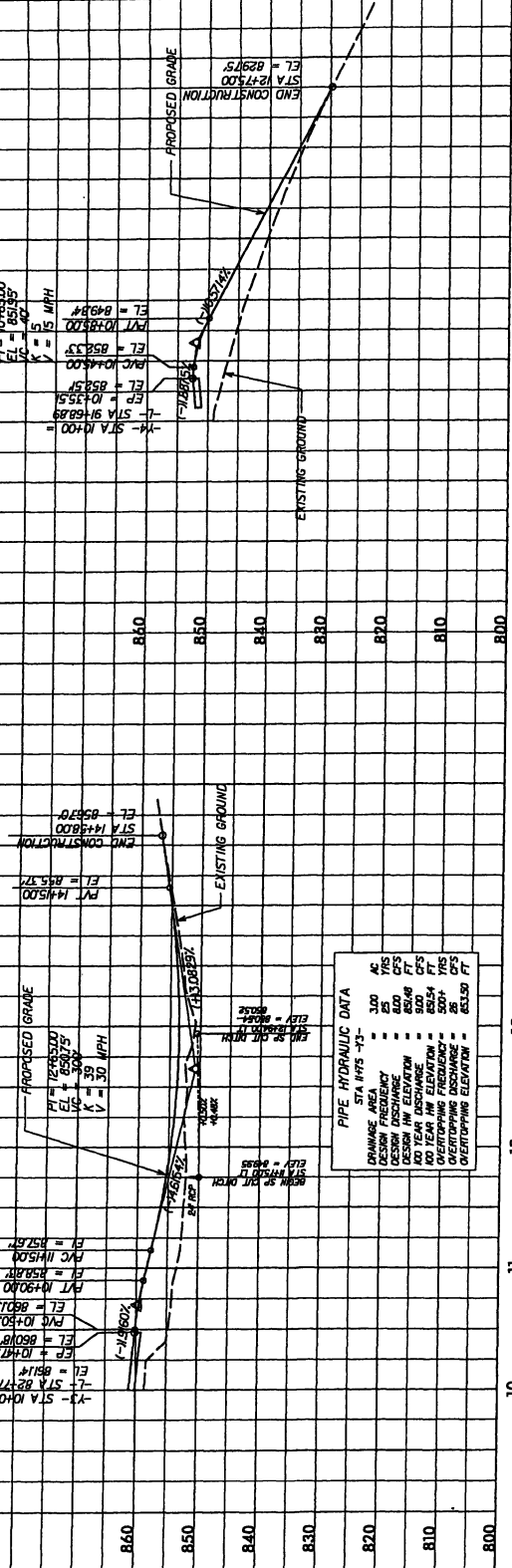
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
 Permit Drawing
 Sheet 24 of 45
 ENGLISH

-Y4-
 FOR PLAN/SHEET NO. 9

-Y3-
 FOR PLAN/SHEET NO. 8

-Y5-
 FOR PLAN/SHEET NO. 12

-Y6-
 FOR PLAN/SHEET NO. 13



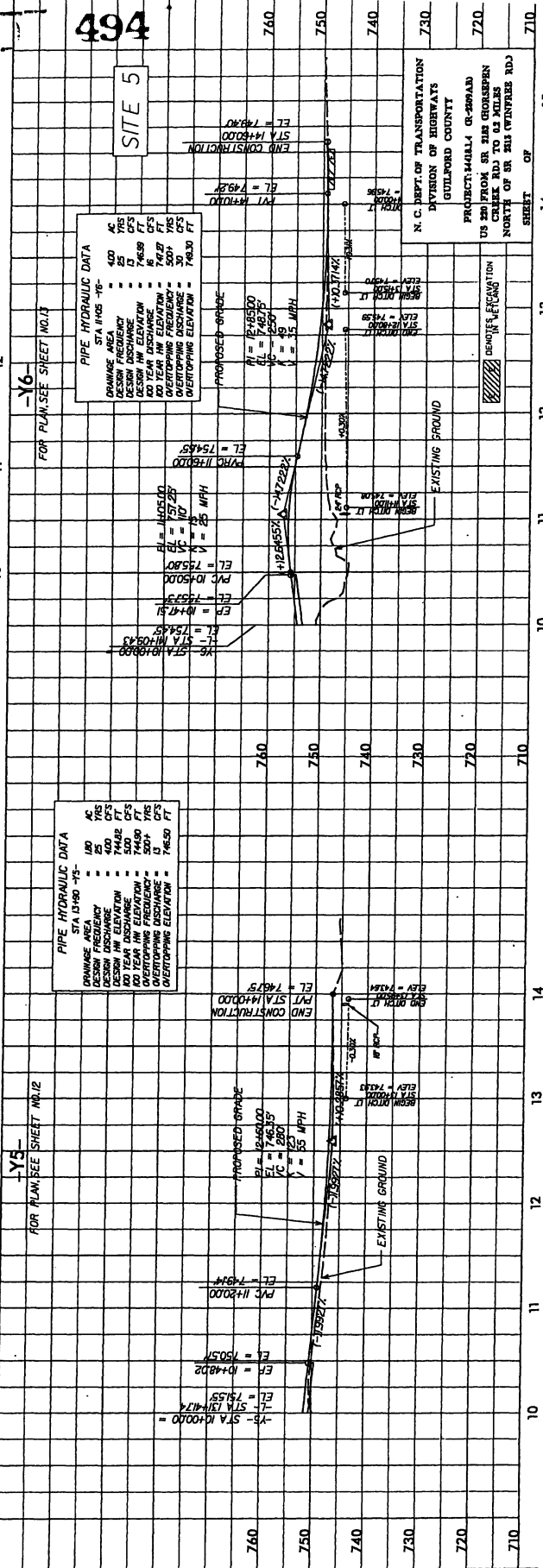
PIPE HYDRAULIC DATA
 STA 10+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 820 FT
 100 YEAR INVERSION = 820 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 820 FT

PIPE HYDRAULIC DATA
 STA 11+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 825 FT
 100 YEAR INVERSION = 825 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 825 FT

PIPE HYDRAULIC DATA
 STA 12+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 830 FT
 100 YEAR INVERSION = 830 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 830 FT

PIPE HYDRAULIC DATA
 STA 13+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 835 FT
 100 YEAR INVERSION = 835 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 835 FT

PIPE HYDRAULIC DATA
 STA 14+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 840 FT
 100 YEAR INVERSION = 840 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 840 FT



PIPE HYDRAULIC DATA
 STA 10+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 720 FT
 100 YEAR INVERSION = 720 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 720 FT

PIPE HYDRAULIC DATA
 STA 11+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 725 FT
 100 YEAR INVERSION = 725 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 725 FT

PIPE HYDRAULIC DATA
 STA 12+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 730 FT
 100 YEAR INVERSION = 730 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 730 FT

PIPE HYDRAULIC DATA
 STA 13+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 735 FT
 100 YEAR INVERSION = 735 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 735 FT

PIPE HYDRAULIC DATA
 STA 14+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 740 FT
 100 YEAR INVERSION = 740 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 740 FT

PIPE HYDRAULIC DATA
 STA 15+00
 DRAINAGE AREA = 100 AC
 DESIGN FREQ. = 100 YRS
 DESIGN DISCHARGE = 100 CFS
 DESIGN HW ELEVATION = 745 FT
 100 YEAR INVERSION = 745 FT
 100 YEAR FREQ. = 100 YRS
 OVERTOPPING DISCHARGE = 0 CFS
 OVERTOPPING ELEVATION = 745 FT

494
 SITE 5

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: MARILLA 00-2004B
 US 401 FROM SR 215 GOURNEN
 CREEK RD TO SR 215 (WYNFEE RD)
 NORTH OF SR 215 (WYNFEE RD)

DEVELOPER INFORMATION
 (Hatched area)

EXISTING GROUND

PROPOSED GRADE

PROPOSED GRADE

PROPOSED GRADE

PROPOSED GRADE

PROPOSED GRADE

PROPOSED GRADE

PROPOSED GRADE

SHEET OF 15

SHEET OF 14

SHEET OF 13

SHEET OF 12

SHEET OF 11

SHEET OF 10

SHEET OF 9

SHEET OF 8

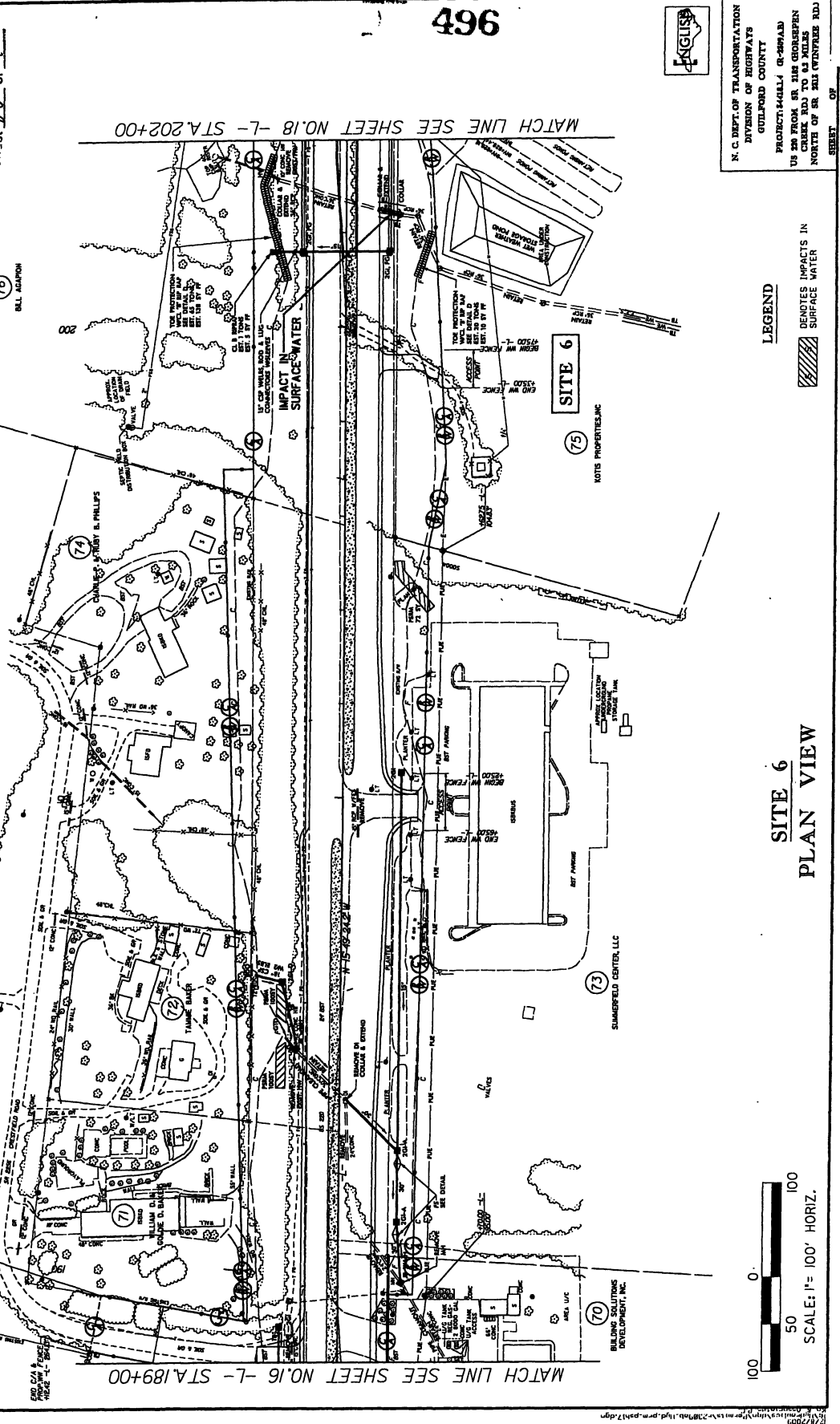
SHEET OF 7

SHEET OF 6

PROJECT REFERENCE NO. R-2004B
 SHEET NO. 17
 HYDRAULICS ENGINEER

PRELIMINARY PLANS
 NO. 2004B OF 45
 Permit Drawing

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Fluorine & Frickman, Inc. Company
 1115 S. BROADWAY, SUITE 1000, WASHINGTON, D.C. 20004



496

AGLUS

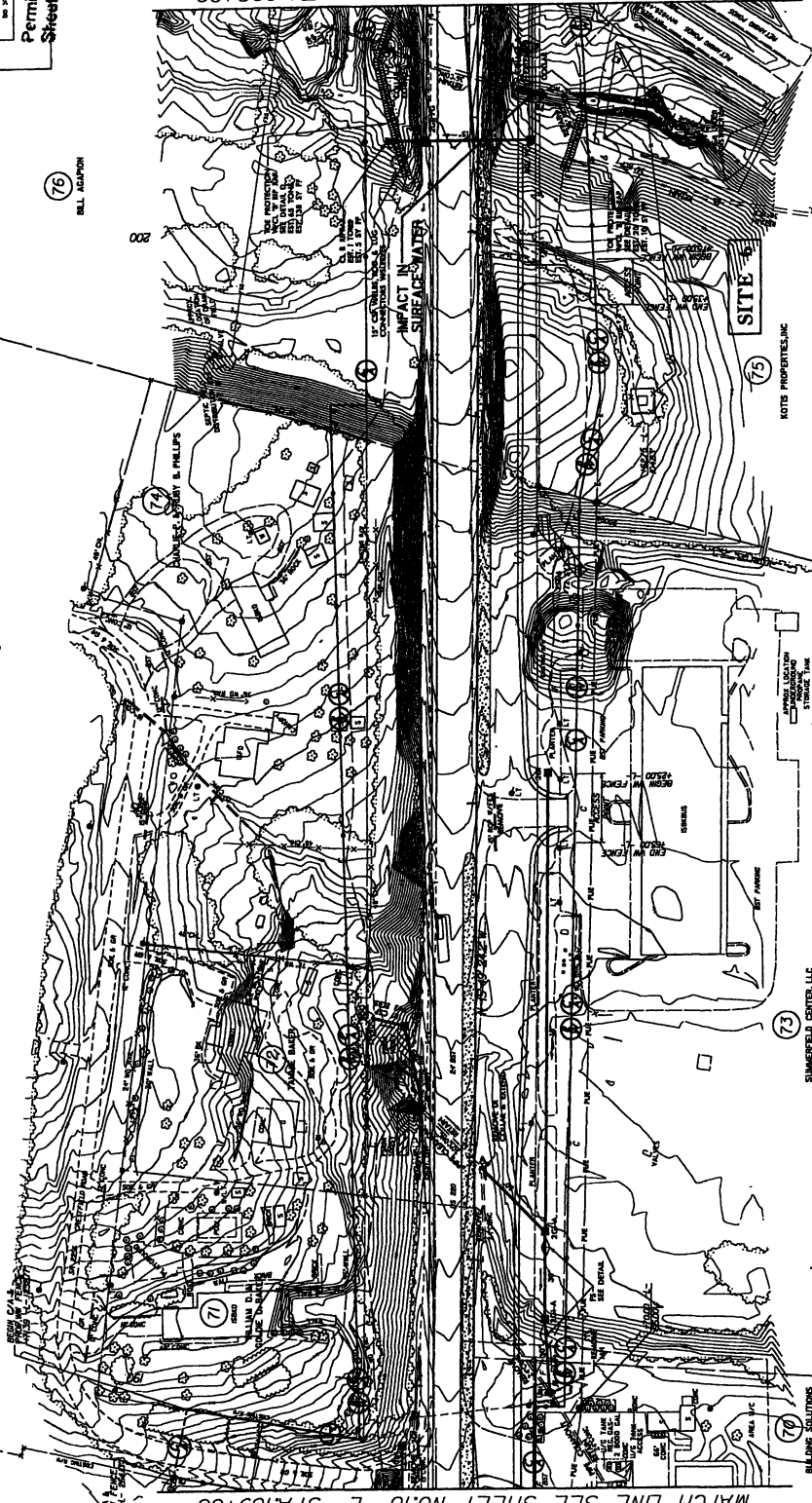
N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY

PROJECT: 44444 (4-2004B)
 US 201 FROM SR 2146 CROSSPEN
 CREEK RD TO 43 MILLS
 NORTH OF SR 2146 (WINFREY RD)

SHEET OF

PROJECT REFERENCE NO. R-2309AB
 SHEET NO. 17
 PRELIMINARY PLANS
 Permit Drawing
 Sheet 17 of 46

KO & ASSOCIATES, P.C.
 Consulting Engineers
 & Architects
 101 KENNEDY WAY, SUITE 200, RALEIGH, N.C. 27601
 (919) 871-1000



MATCH LINE SEE SHEET NO. 18 - L - STA. 202+00

MATCH LINE SEE SHEET NO. 16 - L - STA. 189+00

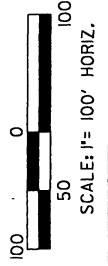
497



N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 141414 G-099A10
 US 29 FROM SR 2182 GORSEPEN
 CENTER POINT TO RAILROAD
 NORTH OF SR 292 (CENTRE RD)

LEGEND
 Hatched area: DENOTES IMPACTS IN SURFACE WATER

SITE 6
 PLAN VIEW



PROJECT REFERENCE NO. R-2109AB
 SHEET NO. 35
 HYDRAULICS
 SURVEY DESIGN
 ENGINEER

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Florence & Hargett Company
 1111 WOODROW WILSON BLVD., SUITE 1100
 RALEIGH, N.C. 27601
 (919) 731-1100

PRELIMINARY PLANS
 NOT FOR CONSTRUCTION

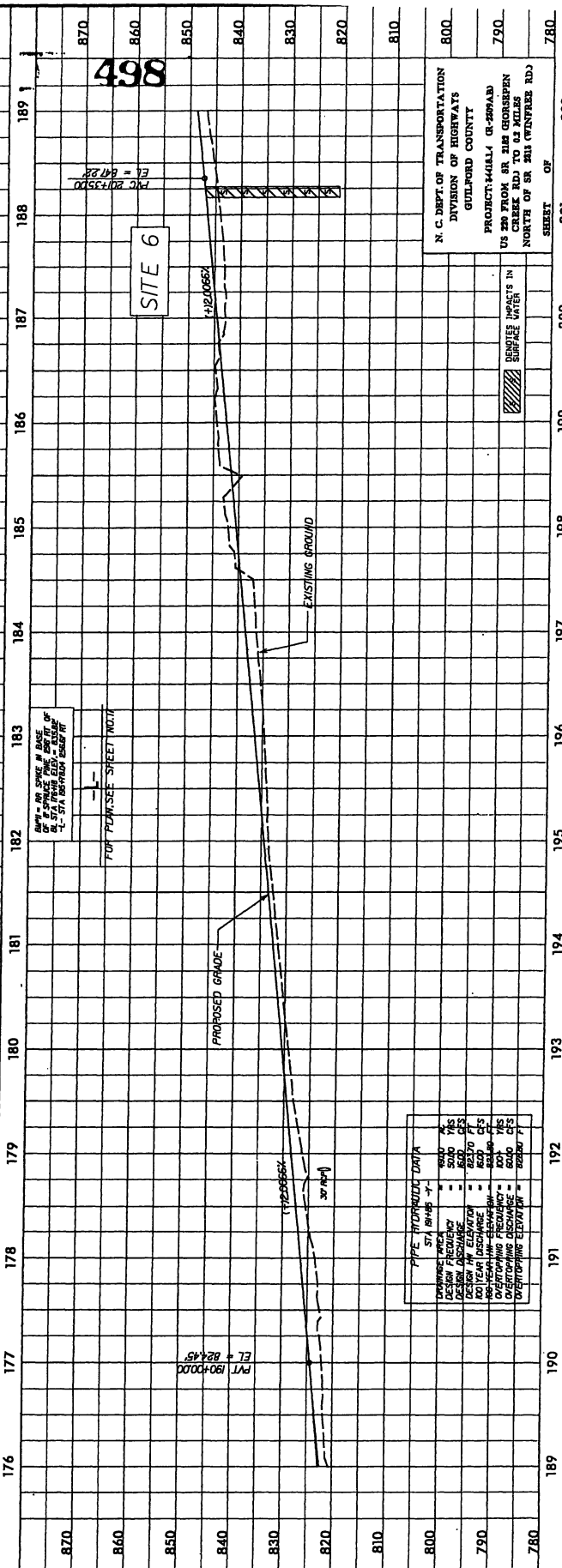
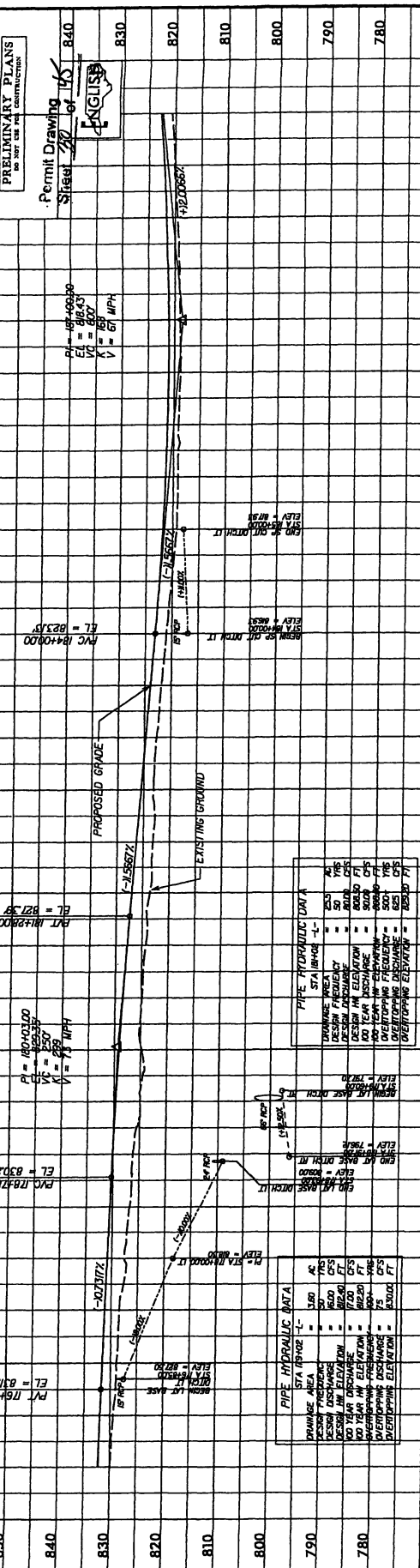
Permit Drawing
 Sheet 20 of 45
 45

BEAD - 8" SPIKE IN BASE
 BY STA 182+00.00 ELEV. = 818.00'
 LC - STA 182+00.00 TO 182+00.00

FOR PLAN/SSEE - SHEET NO. 16
 P = 1600.00
 CL = 200.00
 VC = 250.00
 K = 200
 V = 75 MPH

BEAD - 8" SPIKE IN BASE
 BY STA 187+00.00 ELEV. = 828.00'
 LC - STA 187+00.00 TO 187+00.00

FOR PLAN/SSEE - SHEET NO. 17
 P = 1600.00
 CL = 200.00
 VC = 250.00
 K = 200
 V = 75 MPH



N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT #4411.4 (R-209AB)
 US 421 FROM SR 2114 CROSSROADS
 NORTH OF SR 2111 (WAYNE RD.)

DESIGN IMPACTS IN
 SURFACE WATER

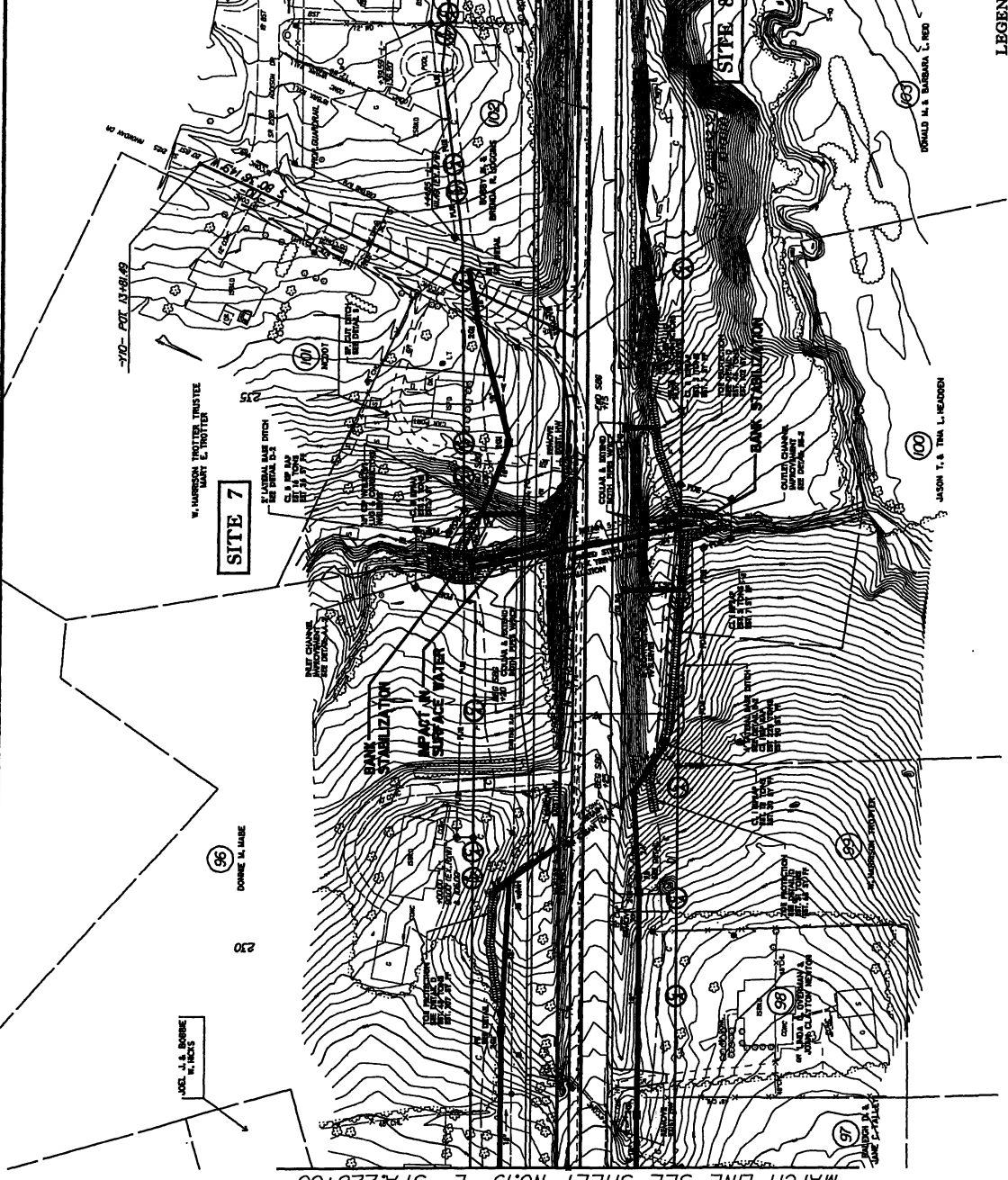
860 850 840 830 820 810 800 790 780
 189 188 187 186 185 184 183 182 181 180 179 178 177 176
 870 860 850 840 830 820 810 800 790 780
 201 200 199 198 197 196 195 194 193 192 191 190 189

4/28/99

4/28/99

PROJECT REFERENCE NO. R-2309AB
 SHEET NO. 20
 HYDRAULIC ENGINEER
 PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
 Permit Drawing
 Sheet 20 of 25

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Florida & California State Licensed Engineering Firm
 411 S. UNIVERSITY AVENUE, SUITE 1000
 GAITHERSBURG, MARYLAND 20878



500

MATCH LINE SEE SHEET NO. 21-L-ST.A.241+00

LEWIS N. FURCHMAN

ROBERT M. S. JENSEN, L.P.E.

JASON T. & TINA L. HEDGECOCK

LEGEND

- RLB — WETLAND BOUNDARY
- ▨ DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- ▨ DENOTES IMPACTS IN SURFACE WATER

MATCH LINE SEE SHEET NO. 19-L-ST.A.228+00

500

56 DONNE M. LAURE

57 JAMES E. PALMER

58 JENNIFER M. WOOD

59 JENNIFER M. WOOD

60 JASON T. & TINA L. HEDGECOCK

61 JASON T. & TINA L. HEDGECOCK

62 JASON T. & TINA L. HEDGECOCK

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96 JASON T. & TINA L. HEDGECOCK

97 JASON T. & TINA L. HEDGECOCK

98 JASON T. & TINA L. HEDGECOCK

99 JASON T. & TINA L. HEDGECOCK

100 JASON T. & TINA L. HEDGECOCK

SCALE: 1" = 100' HORIZ.

0 50 100

SITE 7, AND 8
 PLAN VIEW

ENGINEER

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY

PROJECT: SHELLEY CR-099AB
 US 501 BRIDGE, SR 315 (CROSSCREEK)
 CREEK ROAD TO THE BRIDGE
 NORTH OF SR 301 (WINDFIRE RD)

SHEET OF

B/17/99

2-FE-2009

2009-09-15 10:00:00

2009-09-15 10:00:00

2009-09-15 10:00:00

2009-09-15 10:00:00

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2009-09-15 10:00:00

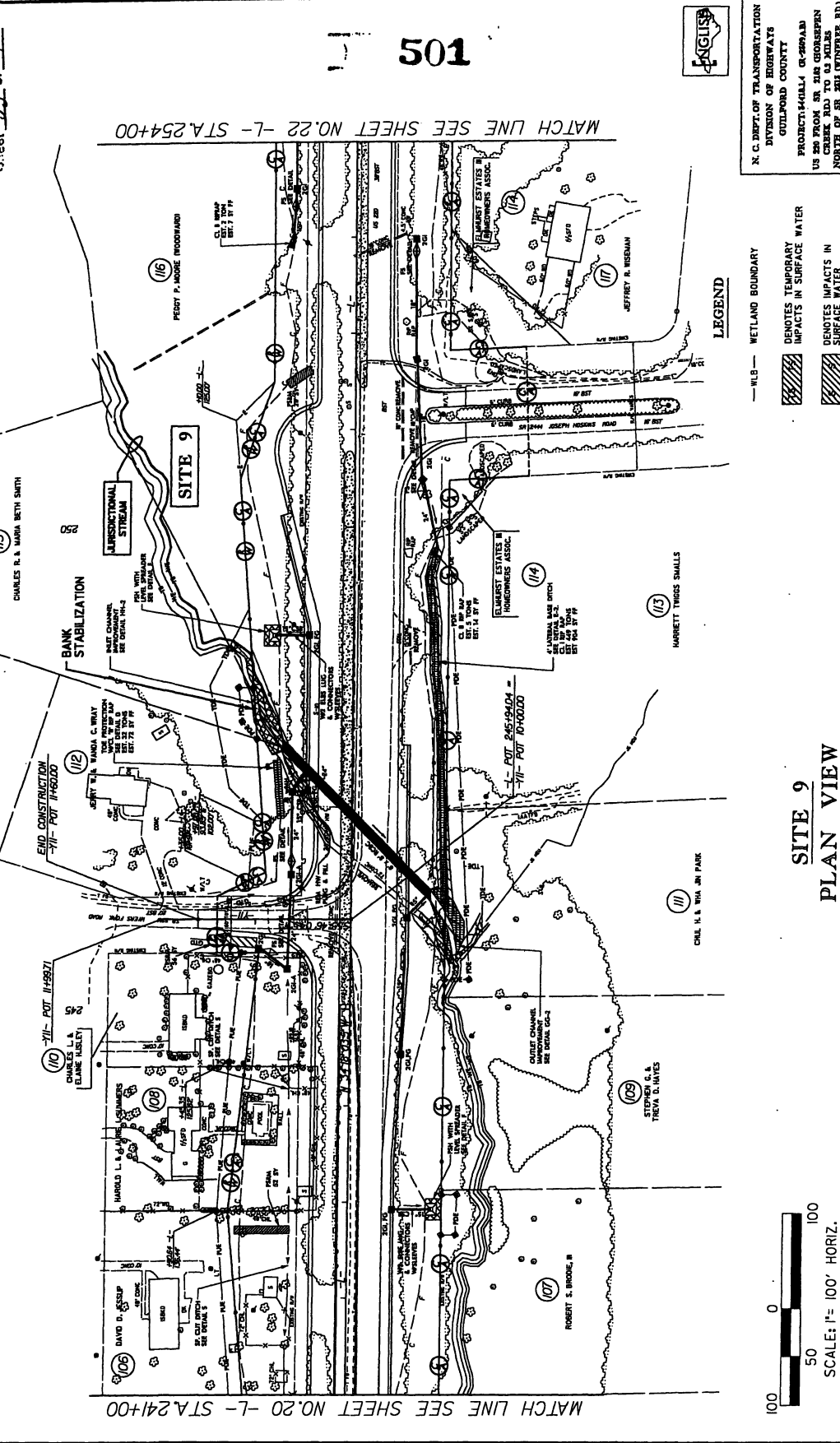
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2009-09-15 10:00:00

PROJECT REFERENCE NO. R-209248
 SHEET NO. 2
 PRELIMINARY PLANS
 Permit Drawing 45
 SHEET 22 of 45

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A. Flanagan & Associates
 1001 WASHINGTON BLVD. SUITE 100 BALTIMORE, MD 21201
 (410) 528-1000

SITE 9
 BANK STABILIZATION
 LATERAL CHANNEL
 END CONSTRUCTION
 MATCH LINE SEE SHEET NO. 20 - L - STA. 24+00
 MATCH LINE SEE SHEET NO. 22 - L - STA. 25+00



LEGEND

- WLB - WETLAND BOUNDARY
- Denotes TEMPORARY IMPACTS IN SURFACE WATER
- Denotes IMPACTS IN SURFACE WATER

**SITE 9
 PLAN VIEW**

100 0 100
 SCALE: 1" = 100' HORIZ.

501

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 OUTLORD COUNTY
 PROJECT: 14-0111, 01-2009, 14-0
 US 50 FROM SR 210 GORSEFEN
 CREEK RD TO 13 MILLS
 NORTH OF SR 280 (WANTWIRE RD)

Page 11 of 37

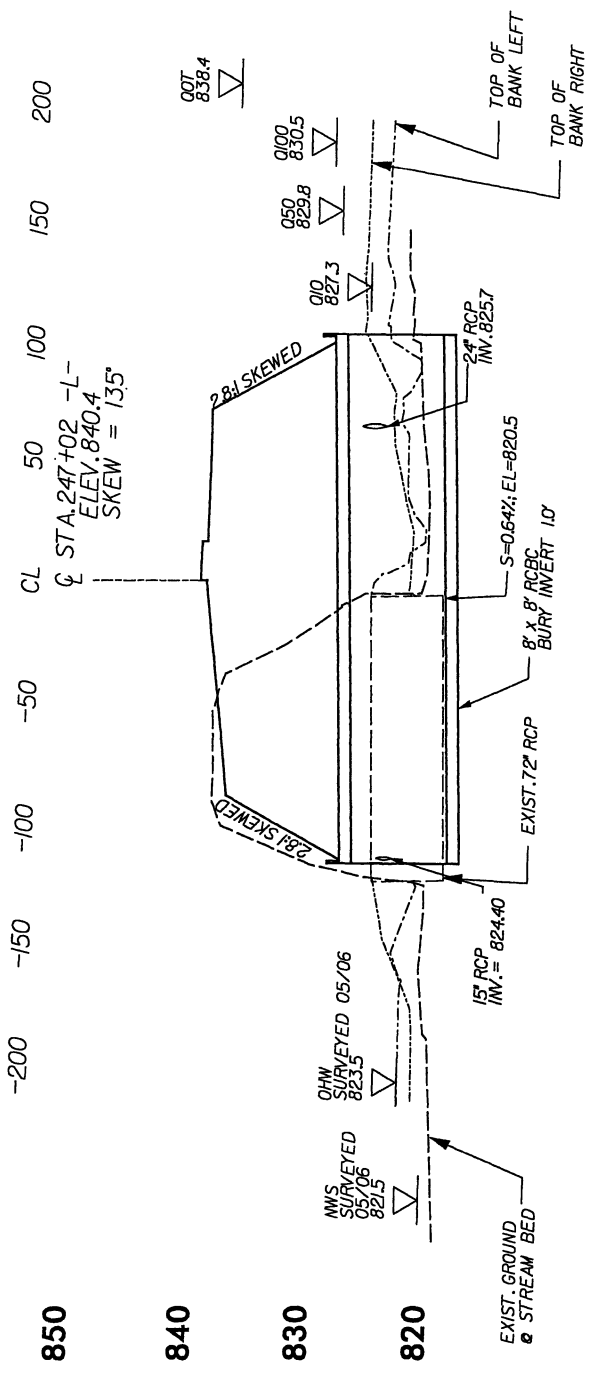
KO & ASSOCIATES, P.C.
 Consulting Engineers
 1000 W. HARRIS ST. SUITE 100
 RALEIGH, N.C. 27607

PROJECT REFERENCE NO.
F-2309AB

SHEET NO.
PAS-S9

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

Permit Drawing
 Sheet **25** of **45**



503

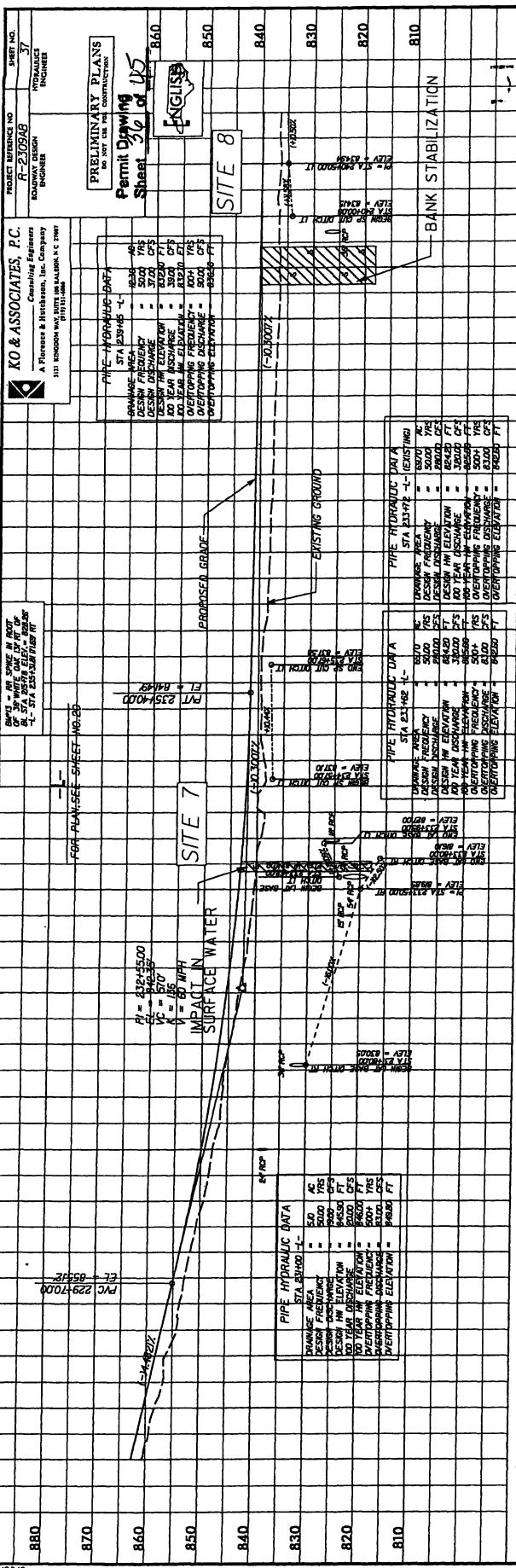
SCALE:
 1" = 50' HORIZONTAL
 1" = 10' VERTICAL

SITE 9
PROFILE ALONG STRUCTURE
STA. 247 + 02

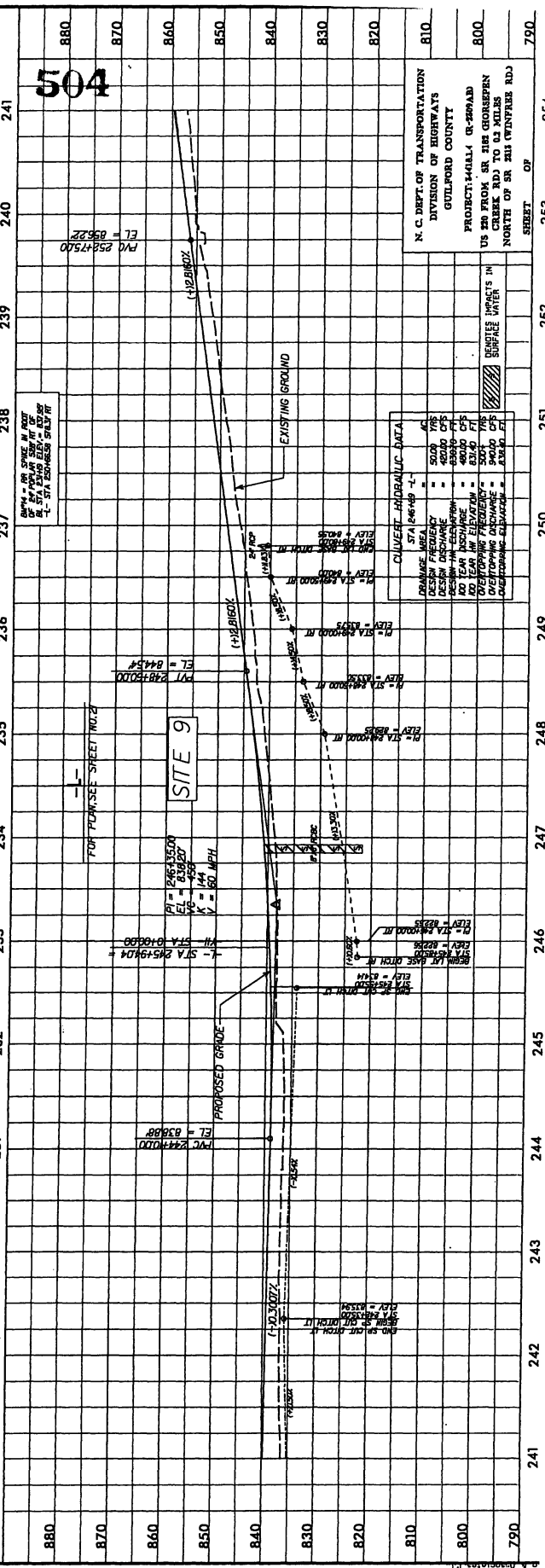


N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 1441L1 GR-209AB
 US 240 FROM SR 2182 GORSEFEN
 CREEK RD. TO 0.2 MILES
 NORTH OF SR 2113 (WINFREE RD.)

SHEET OF



PROJECT REFERENCE NO. R-230948
 SHEET NO. 37
 PRELIMINARY PLANS
 PERMIT DRAWING
 SHEET 36 of 125
 KO & ASSOCIATES, P.C.
 CONSULTING ENGINEERS
 A PRINCE & HUTCHINSON, INC. COMPANY
 3111 KENNEDY HWY., SUITE 100, BALTIMORE, MD 21220
 (410) 321-1000



PROJECT REFERENCE NO. R-230948
 SHEET NO. 37
 PRELIMINARY PLANS
 PERMIT DRAWING
 SHEET 36 of 125
 KO & ASSOCIATES, P.C.
 CONSULTING ENGINEERS
 A PRINCE & HUTCHINSON, INC. COMPANY
 3111 KENNEDY HWY., SUITE 100, BALTIMORE, MD 21220
 (410) 321-1000

504

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: HALL'S CREEK ROAD
 US 250 FROM SR 1188 (GOSPEREN
 CREEK RD) TO 0.3 MILES
 NORTH OF SR 2113 (WINFREY RD.)

SECTION OF 253

5/8/2009
 1:47:20PM
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 5/20/09

PROJECT REFERENCE NO. R-2309AB
 SHEET NO. 22
 HYDRAULICS ENGINEER

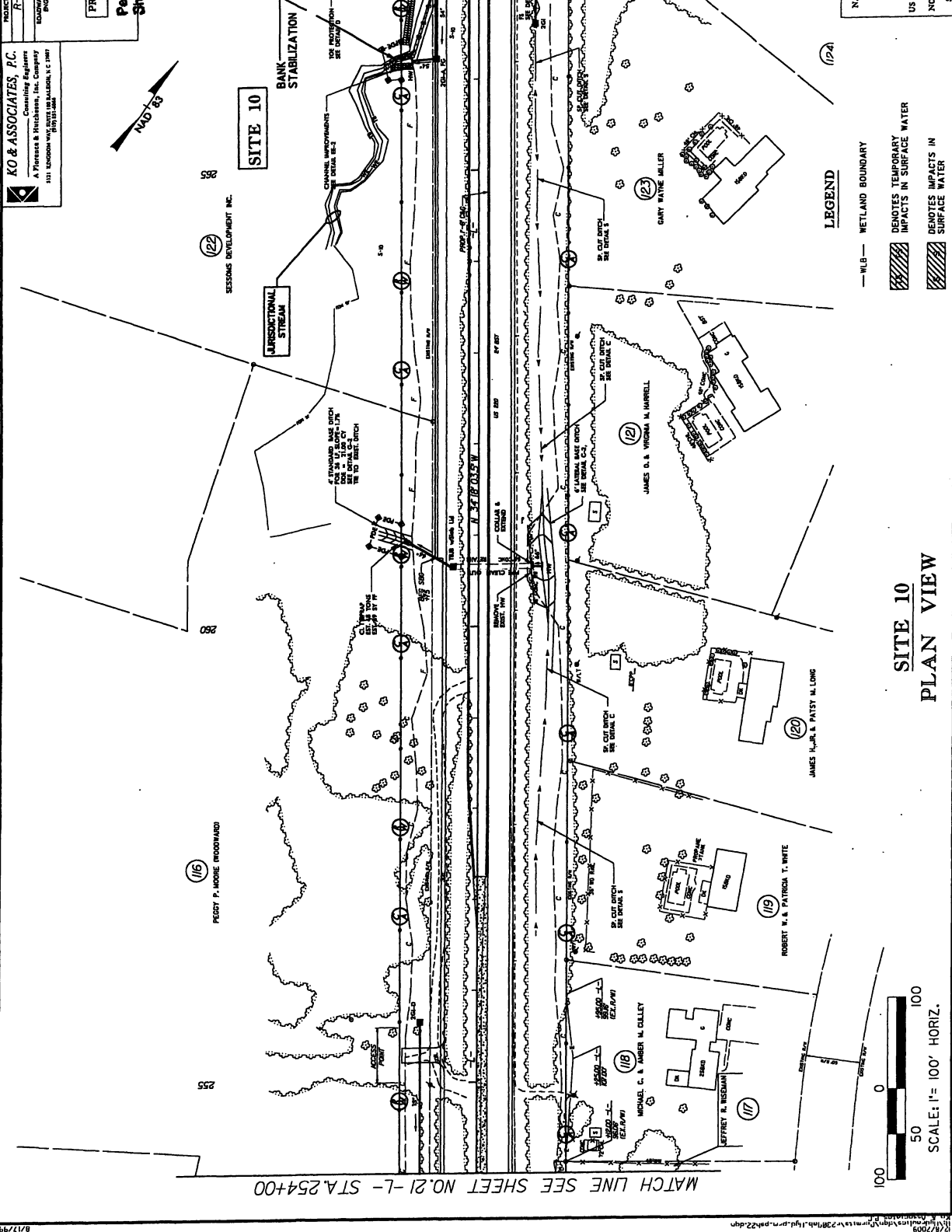
PRELIMINARY PLANS
 Permit Drawing
 Sheet 22 of 45

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Flannery & Fitzhugh, Inc. Company
 111 LEXINGTON AVENUE, SUITE 1000, NEW YORK, N.Y. 10017
 PH: 212-691-1000



505

MATCH LINE SEE SHEET NO. 23 - L - STA. 267+00

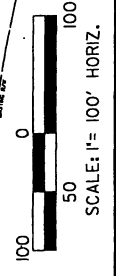


MATCH LINE SEE SHEET NO. 21 - L - STA. 254+00

LEGEND

- WLB - WETLAND BOUNDARY
- IMPACTS IN SURFACE WATER
- IMPACTS IN SURFACE WATER

**SITE 10
 PLAN VIEW**

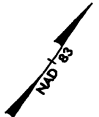


N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: HALL'S (R-2309AB)
 US 52/10000 ST. 10000 HOUSE
 CREEK RD. TO HOUSE OPEN
 NORTH OF SR 2013 (WINFREY RD)
 SHEET OF

PROJECT REFERENCE NO. R-210348
 SHEET NO. 22
 ROADWAY DESIGN
 ENGINEER

PRELIMINARY PLANS
 FOR THE
 CONSTRUCTION
 Permit Drawing
 Sheet 22 of 45

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Florence & Hitchcock, Inc. Company
 1711 SANDHURST ROAD, WASHINGTON, N.C. 27687
 (704) 271-1000



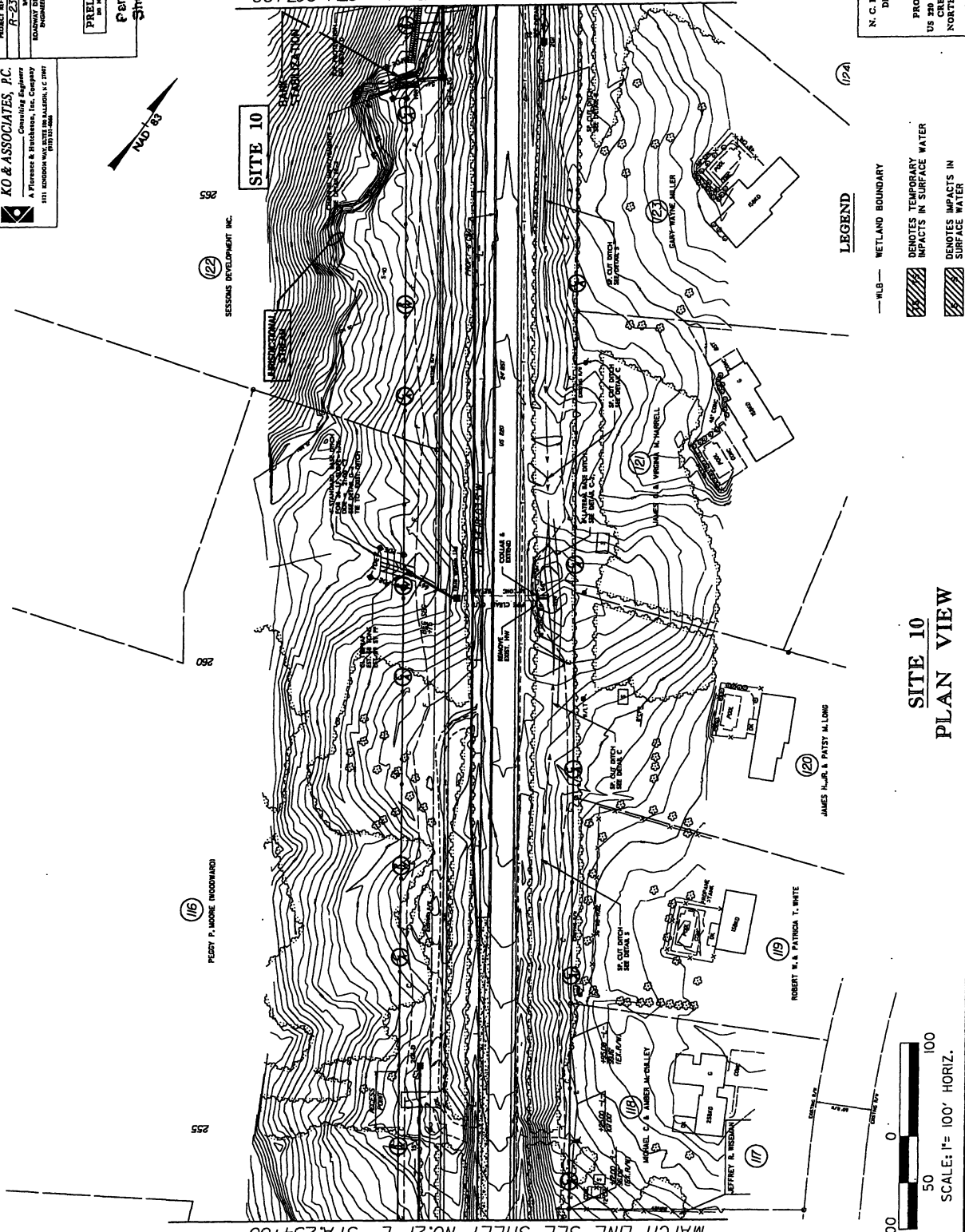
58
 (12) SESSONS DEVELOPMENT INC.

(16) PERRY P. MOORE (WOODBRAND)

SITE 10

MATCH LINE SEE SHEET NO. 21-L-STA.254+00

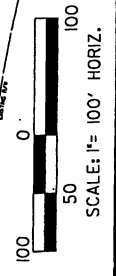
MATCH LINE SEE SHEET NO. 23-L-STA.267+00



LEGEND

- WLB — WETLAND BOUNDARY
- [Hatched Box] DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- [Hatched Box] DENOTES IMPACTS IN SURFACE WATER

**SITE 10
 PLAN VIEW**



N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT: 44614 (R-20948)
 US 240 FROM SR 2142 HOARSEPEN
 CREEK RD TO 0.3 MILES
 NORTH OF SR 333 (WINFREE RD)

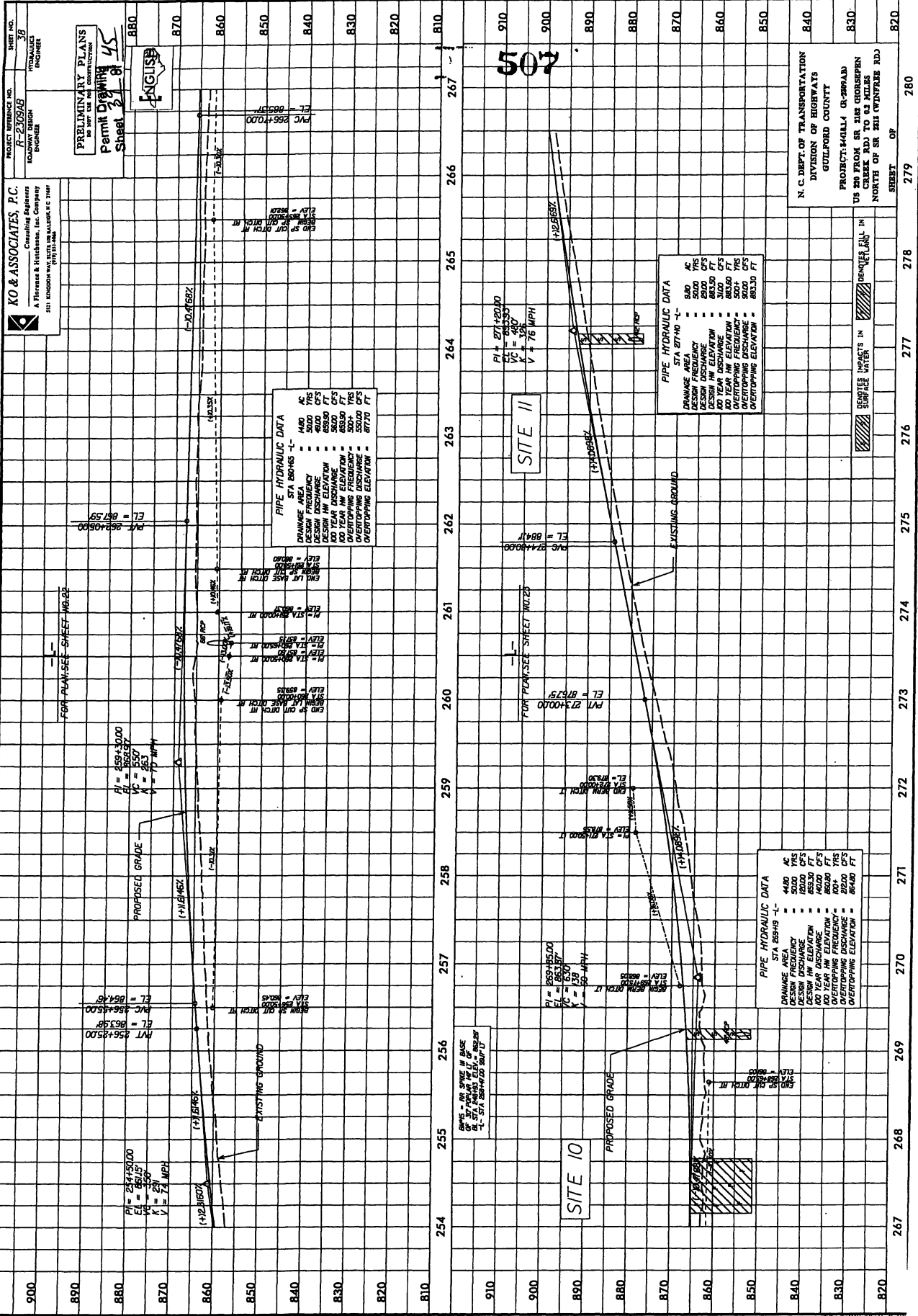


506

PROJECT REFERENCE NO. **F-2309AB**
 PRELIMINARY DESIGN
 SHEET NO. **38**
 PROJECT: **ROADWAY**

KO & ASSOCIATES, P.C.
 A Florida & International, Inc. Company
 3511 S.W. 11th Street, Suite 100, Ft. Lauderdale, FL 33309
 (954) 521-1400

PRELIMINARY PLANS
 FOR THE USE OF CONSTRUCTION
Permit Drawing
 Sheet **38** of **45**
ENGLISH



N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILDFORD COUNTY
 PROJECT: HALLA (R-2004RD)
 US 284 FROM SR 814 (CORSEPTEN
 CREEK RD) TO 0.3 MILES
 NORTH OF SR 214 (WINFREED RD)

REVISIONS IN
 SQUARE WORKS IN
 REMOVED IN

PROJECT REFERENCE NO. R-23094B
 SHEET NO. 25
 HYDRAULICS ENGINEER

PRELIMINARY PLANS
 Permit Drawing
 Sheet 43 of 45

END CONSTRUCTION
 LEE N. SPRECHER, INC. 1987 PM

END CONSTRUCTION
 PERRY LEE GILMER

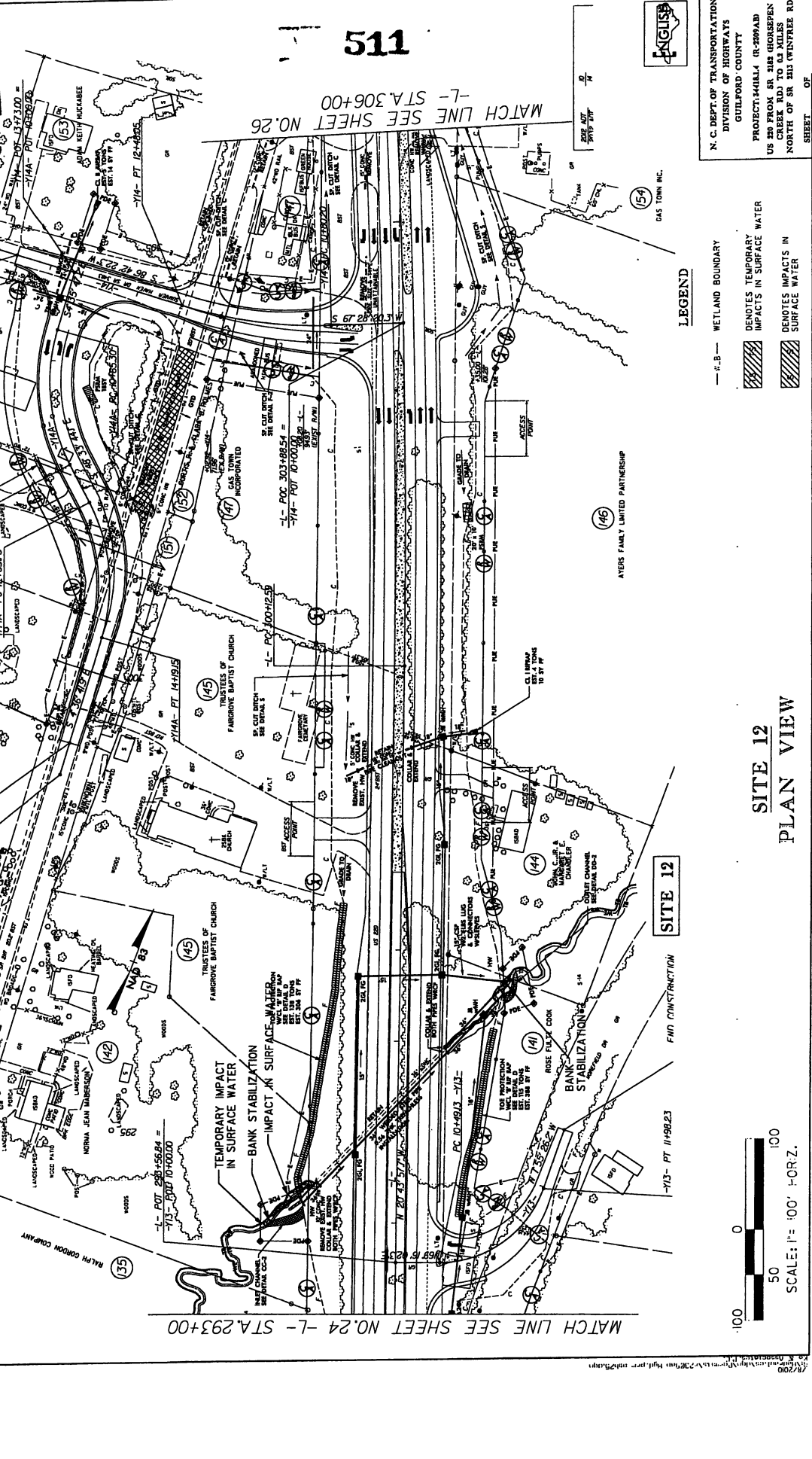
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 BOARD OF EDUCATION
 SOUTHERN ELEMENTARY SCHOOL

END CONSTRUCTION
 NORTON SEAN INSURANCE

END CONSTRUCTION
 TRUSTEES OF FARMBOY BAPTIST CHURCH

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 TRUSTEES OF FARMBOY BAPTIST CHURCH

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 TRUSTEES OF FARMBOY BAPTIST CHURCH



PROJECT REFERENCE NO. R-23094B
 SHEET NO. 25
 HYDRAULICS ENGINEER

PRELIMINARY PLANS
 Permit Drawing
 Sheet 43 of 45

END CONSTRUCTION
 LEE N. SPRECHER, INC. 1987 PM

END CONSTRUCTION
 PERRY LEE GILMER

END CONSTRUCTION
 BOARD OF EDUCATION
 SOUTHERN ELEMENTARY SCHOOL

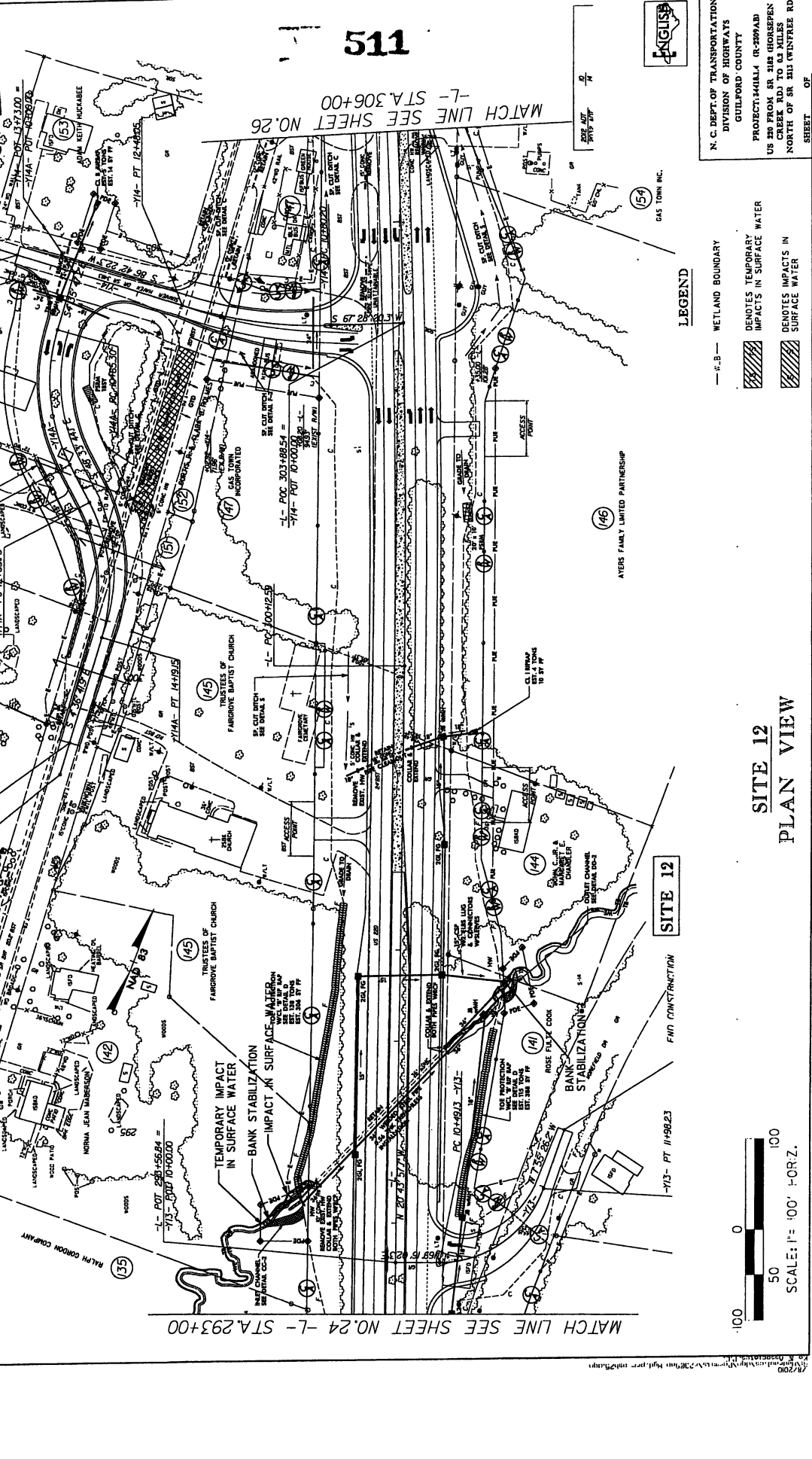
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 TRUSTEES OF FARMBOY BAPTIST CHURCH



PROJECT REFERENCE NO. R-23094B
 SHEET NO. 25
 HYDRAULICS ENGINEER

PRELIMINARY PLANS
 Permit Drawing
 Sheet 43 of 45

END CONSTRUCTION
 LEE N. SPRECHER, INC. 1987 PM

END CONSTRUCTION
 PERRY LEE GILMER

END CONSTRUCTION
 BOARD OF EDUCATION
 SOUTHERN ELEMENTARY SCHOOL

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PROJECT REFERENCE NO. R-23094B
 SHEET NO. 25
 HYDRAULICS ENGINEER

PRELIMINARY PLANS
 Permit Drawing
 Sheet 43 of 45

END CONSTRUCTION
 LEE N. SPRECHER, INC. 1987 PM

END CONSTRUCTION
 PERRY LEE GILMER

END CONSTRUCTION
 BOARD OF EDUCATION
 SOUTHERN ELEMENTARY SCHOOL

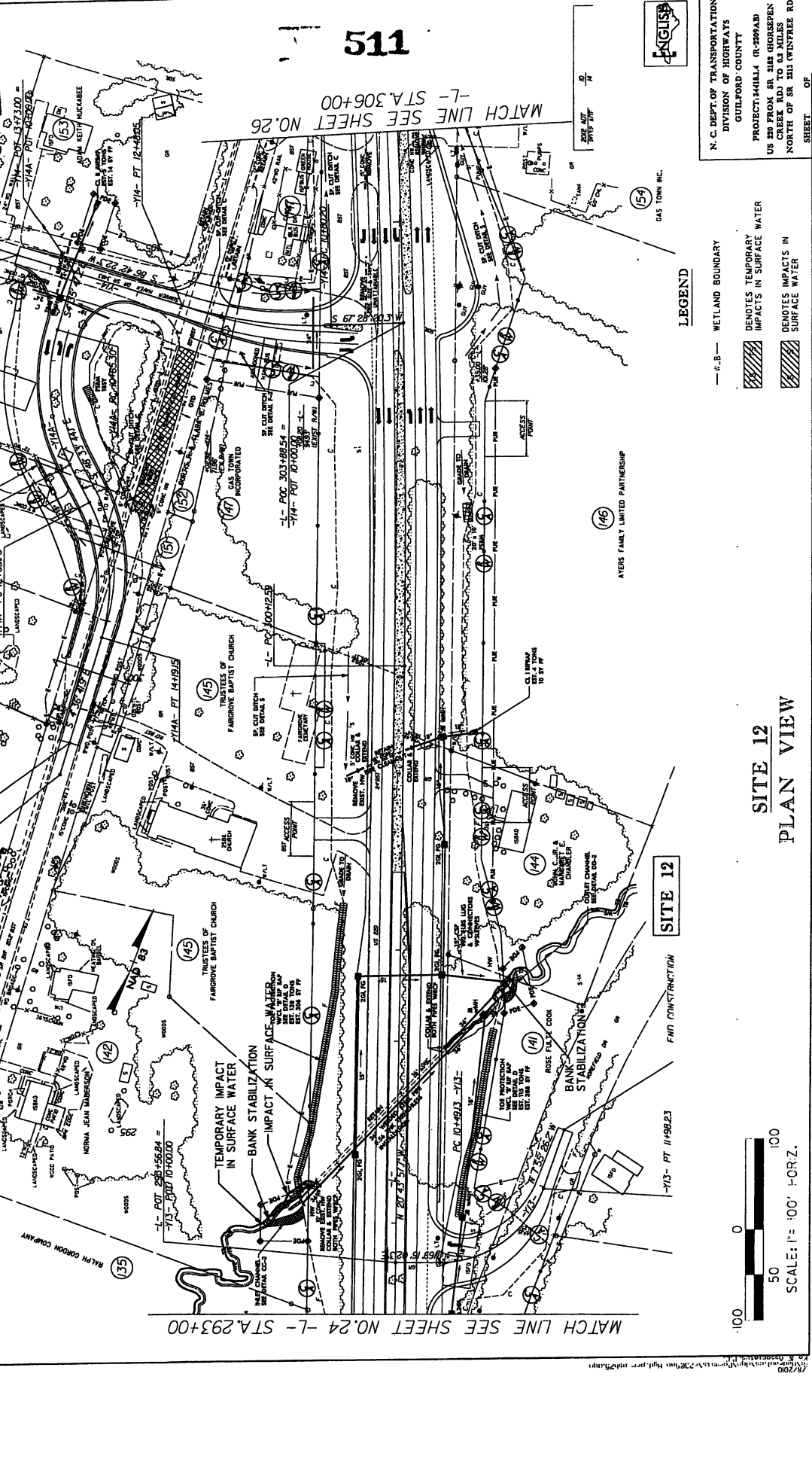
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 TRUSTEES OF FARMBOY BAPTIST CHURCH



PROJECT REFERENCE NO. R-23094B
 SHEET NO. 25
 HYDRAULICS ENGINEER

PRELIMINARY PLANS
 Permit Drawing
 Sheet 43 of 45

END CONSTRUCTION
 LEE N. SPRECHER, INC. 1987 PM

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 PERRY LEE GILMER

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 SOUTHERN ELEMENTARY SCHOOL

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 TRUSTEES OF FARMBOY BAPTIST CHURCH

PROJECT REFERENCE NO. R-23094B
 SHEET NO. 25
 HYDRAULICS ENGINEER

PRELIMINARY PLANS
 Permit Drawing
 Sheet 43 of 45

END CONSTRUCTION
 LEE N. SPRECHER, INC. 1987 PM

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 PERRY LEE GILMER

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 BOARD OF EDUCATION
 SOUTHERN ELEMENTARY SCHOOL

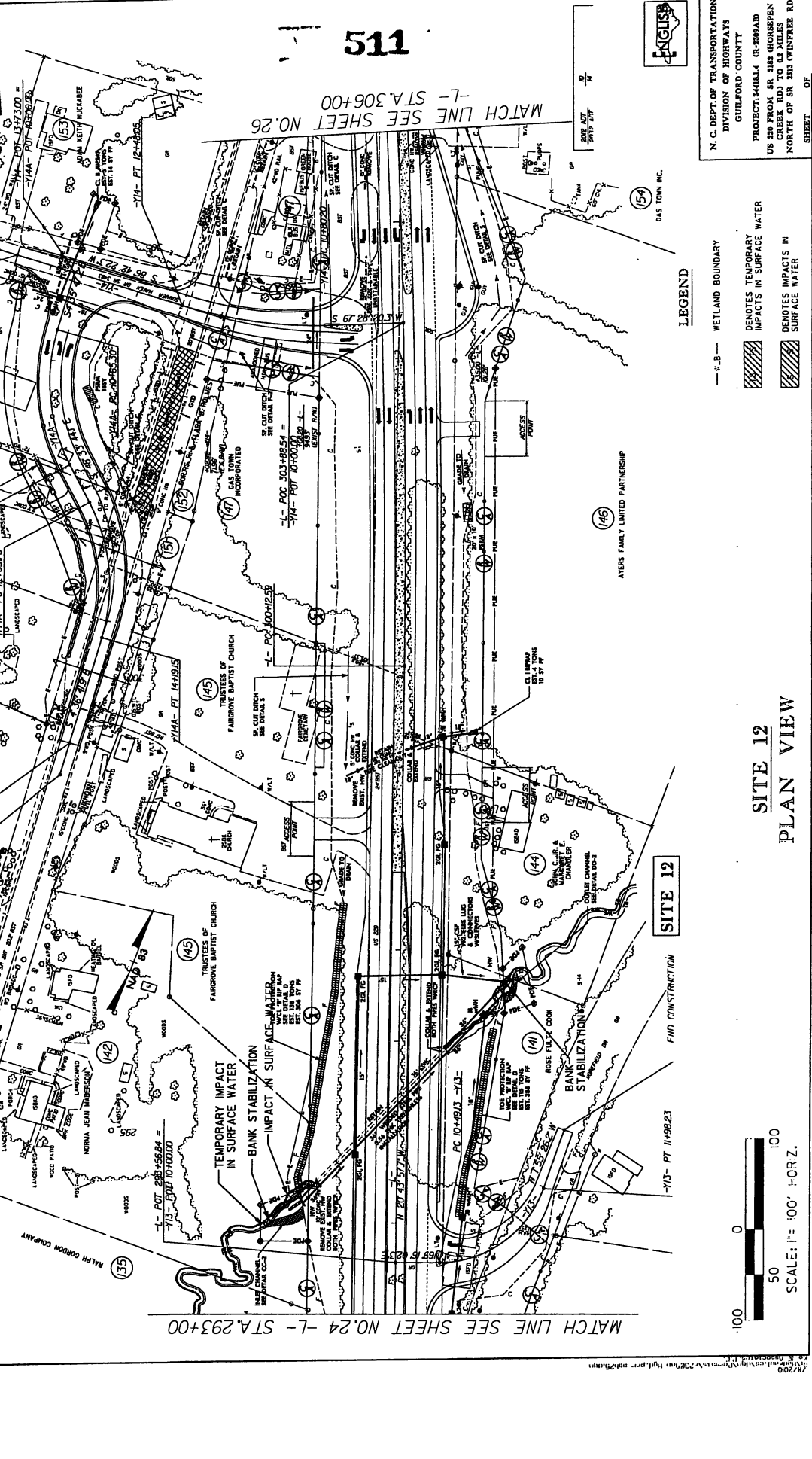
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 TRUSTEES OF FARMBOY BAPTIST CHURCH



PROJECT REFERENCE NO. R-23094B
 SHEET NO. 25
 HYDRAULICS ENGINEER

PRELIMINARY PLANS
 Permit Drawing
 Sheet 43 of 45

END CONSTRUCTION
 LEE N. SPRECHER, INC. 1987 PM

END CONSTRUCTION
 PERRY LEE GILMER

END CONSTRUCTION
 BOARD OF EDUCATION
 SOUTHERN ELEMENTARY SCHOOL

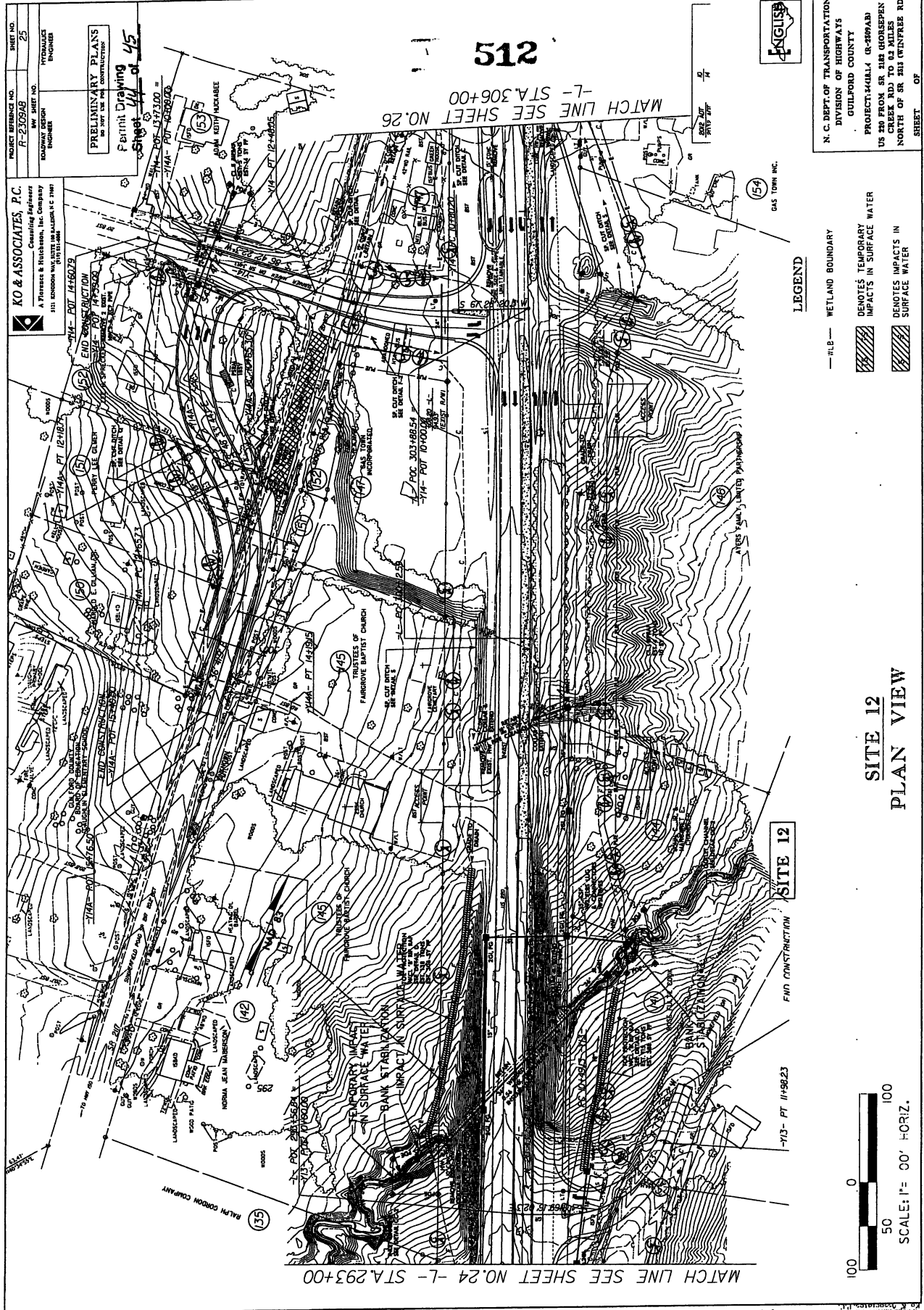
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 TRUSTEES OF FARMBOY BAPTIST CHURCH

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 TRUSTEES OF FARMBOY BAPTIST CHURCH

END CONSTRUCTION
 TRUSTEES OF FARMBOY BAPTIST CHURCH



PROJECT REFERENCE NO. SHEET NO.
 R-230946 25
 ROADWAY DESIGN ENGINEER
 HYDRAULIC ENGINEER

KO & ASSOCIATES, P.C.
 Consulting Engineers
 A Fitzmaurice & Hutchinson, Inc. Company
 3111 LONDON WAY, SUITE 300 BALTIMORE, M.D. 21286
 410.526.1100

PRELIMINARY PLANS
 FOR THE
 CONSTRUCTION OF
 Permit Drawing
 Sheet 14 of 45

MATCH LINE SEE SHEET NO. 26
 -L- STA. 306+00
 512
 MATCH LINE SEE SHEET NO. 24 -L- STA. 293+00

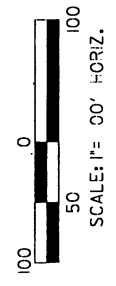


N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GUILFORD COUNTY
 PROJECT #4414 (R-8894B)
 US FROM STATE ROUTE 100
 NORTH OF SR 283 WINFREY RD.
 SHEET OF

LEGEND

- WLB- WETLAND BOUNDARY
- [Hatched Box] DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- [Hatched Box] DENOTES IMPACTS IN SURFACE WATER

**SITE 12
 PLAN VIEW**



PROJECT REFERENCE NO. R-2301B
 ROADWAY DESIGN ENGINEER

PROJECT REFERENCE NO. R-2301B
 ROADWAY DESIGN ENGINEER

PROJECT REFERENCE NO. R-2301B
 ROADWAY DESIGN ENGINEER

PROJECT REFERENCE NO. R-2301B
 ROADWAY DESIGN ENGINEER

PROJECT REFERENCE NO. R-2301B
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PROJECT REFERENCE NO. R-2301B
 ROADWAY DESIGN ENGINEER

PROJECT REFERENCE NO. R-2301B
 ROADWAY DESIGN ENGINEER

PROJECT REFERENCE NO. R-2301B
 ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
 IN PART FOR THE
 CONSTRUCTION
 Permit Drawing
 Sheet 12 of 15
 ENGLISH

PRELIMINARY PLANS
 IN PART FOR THE
 CONSTRUCTION
 Permit Drawing
 Sheet 12 of 15
 ENGLISH

PRELIMINARY PLANS
 IN PART FOR THE
 CONSTRUCTION
 Permit Drawing
 Sheet 12 of 15
 ENGLISH

PRELIMINARY PLANS
 IN PART FOR THE
 CONSTRUCTION
 Permit Drawing
 Sheet 12 of 15
 ENGLISH

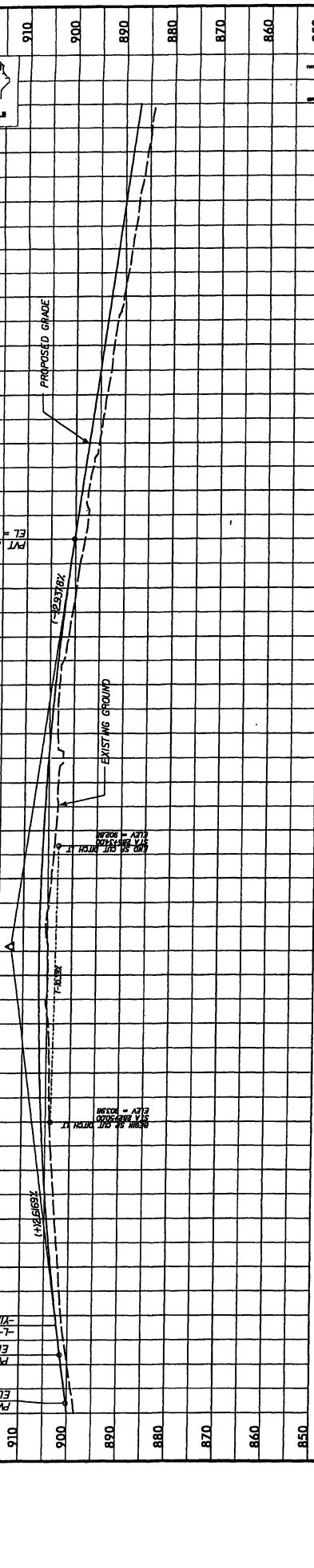
PRELIMINARY PLANS
 IN PART FOR THE
 CONSTRUCTION
 Permit Drawing
 Sheet 12 of 15
 ENGLISH

PRELIMINARY PLANS
 IN PART FOR THE
 CONSTRUCTION
 Permit Drawing
 Sheet 12 of 15
 ENGLISH

PRELIMINARY PLANS
 IN PART FOR THE
 CONSTRUCTION
 Permit Drawing
 Sheet 12 of 15
 ENGLISH

PRELIMINARY PLANS
 IN PART FOR THE
 CONSTRUCTION
 Permit Drawing
 Sheet 12 of 15
 ENGLISH

PRELIMINARY PLANS
 IN PART FOR THE
 CONSTRUCTION
 Permit Drawing
 Sheet 12 of 15
 ENGLISH



930 920 910 900 890 880 870 860 850 293 292 291 290 289 288 287 286 285 284 283 282 281 280 279 278 277 276 275 274 273 272 271 270 269 268 267 266 265 264 263 262 261 260 259 258 257 256 255 254 253 252 251 250 249 248 247 246 245 244 243 242 241 240 239 238 237 236 235 234 233 232 231 230 229 228 227 226 225 224 223 222 221 220 219 218 217 216 215 214 213 212 211 210 209 208 207 206 205 204 203 202 201 200 199 198 197 196 195 194 193 192 191 190 189 188 187 186 185 184 183 182 181 180 179 178 177 176 175 174 173 172 171 170 169 168 167 166 165 164 163 162 161 160 159 158 157 156 155 154 153 152 151 150 149 148 147 146 145 144 143 142 141 140 139 138 137 136 135 134 133 132 131 130 129 128 127 126 125 124 123 122 121 120 119 118 117 116 115 114 113 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

PIPE HYDRAULIC DATA

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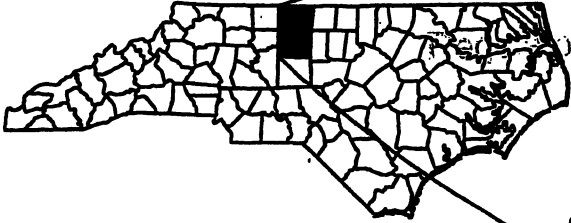
5/28/2019

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EXHIBIT A

APR 28 2011

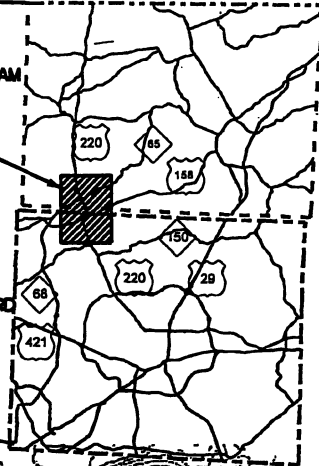
514



SEE INSET BELOW

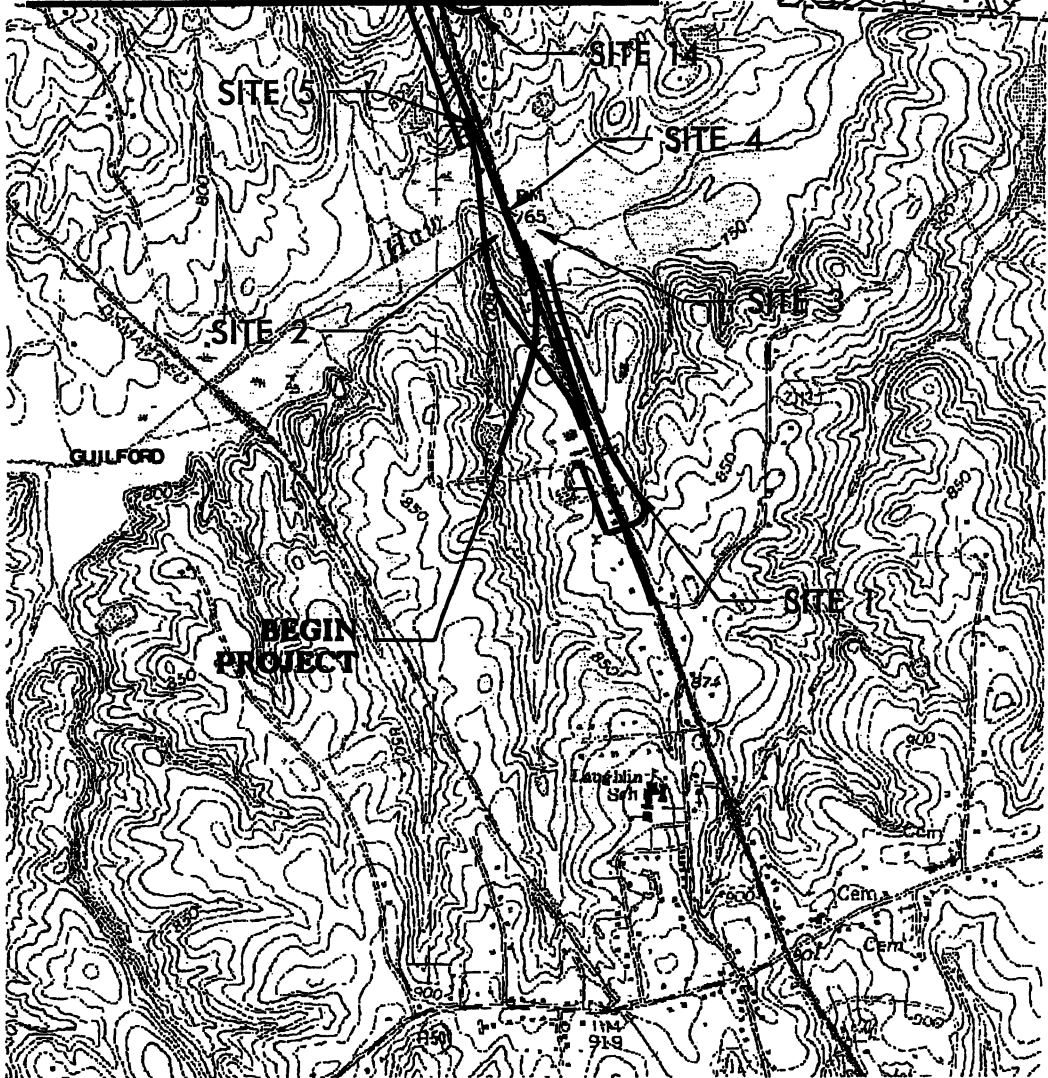
ROCKINGHAM

GUILFORD



SEE SHEET 2 OF 3

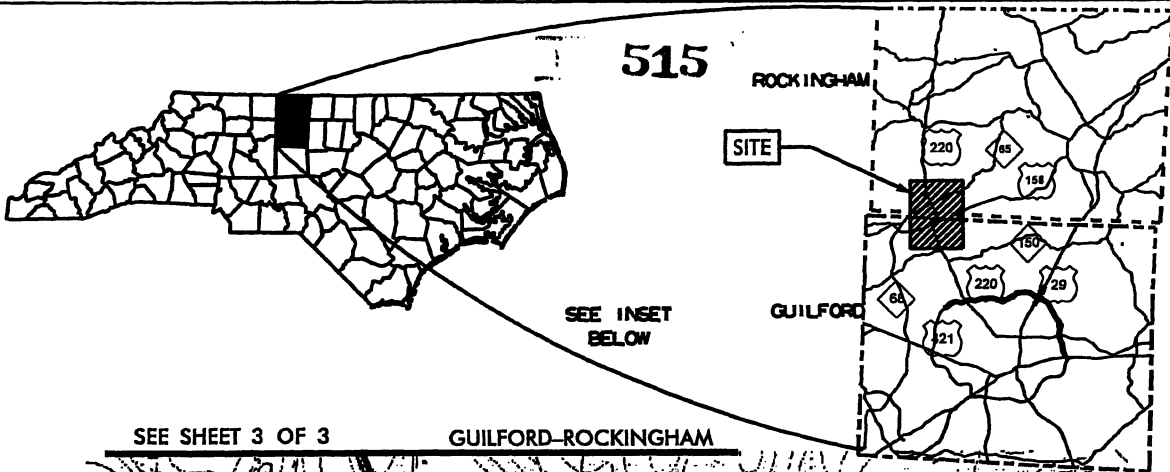
GUILFORD-ROCKINGHAM



WETLAND/STREAM
IMPACTS
(1 OF 3)

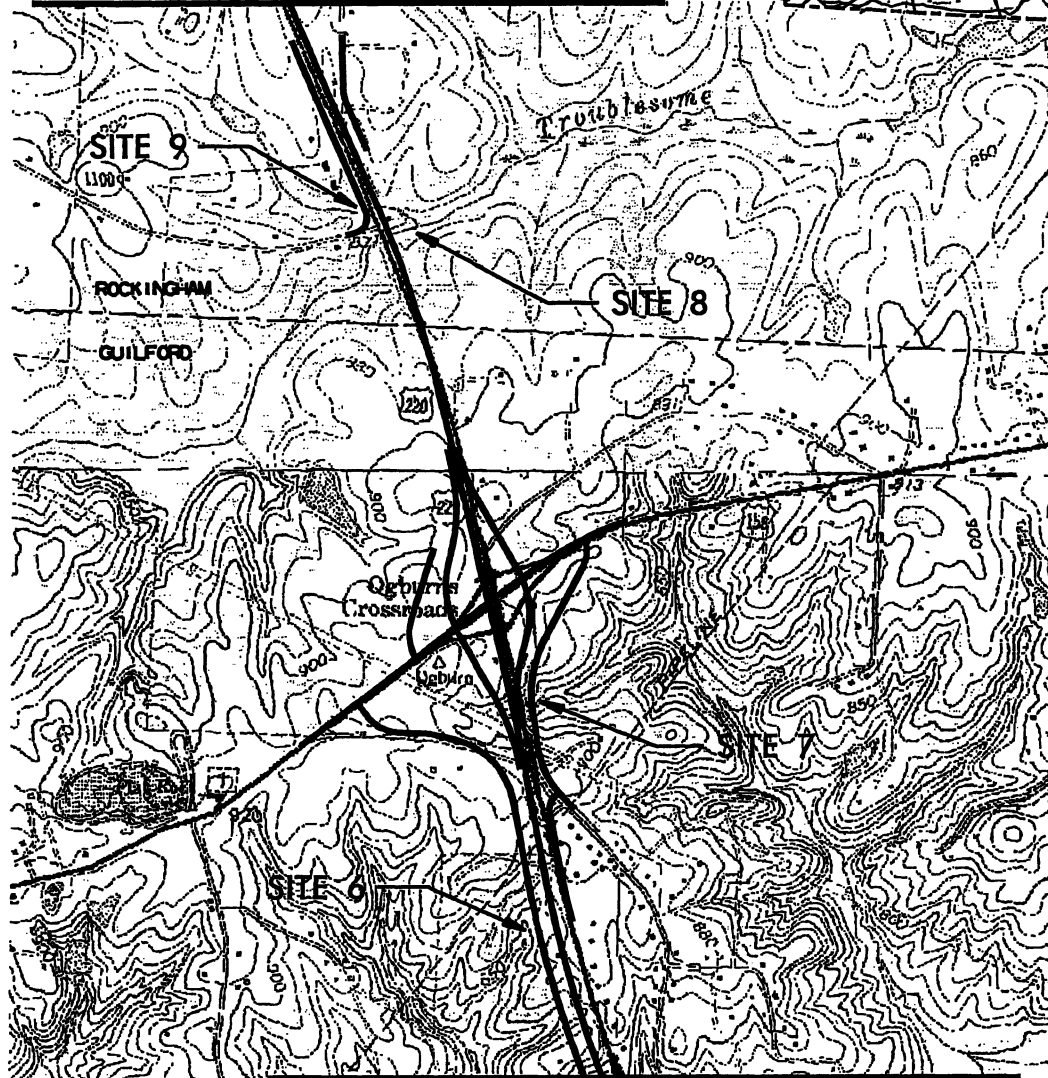
**N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD-ROCKINGHAM COUNTY**

PROJECT: 6.499002T (R-2413C)
US 220 SOUTH OF HAW RIVER
TO THE INTERSECTION OF US 220
AND EXISTING NC 68
SHEET 1 OF 40 8-14-09



SEE SHEET 3 OF 3

GUILFORD-ROCKINGHAM



SEE SHEET 1 OF 3

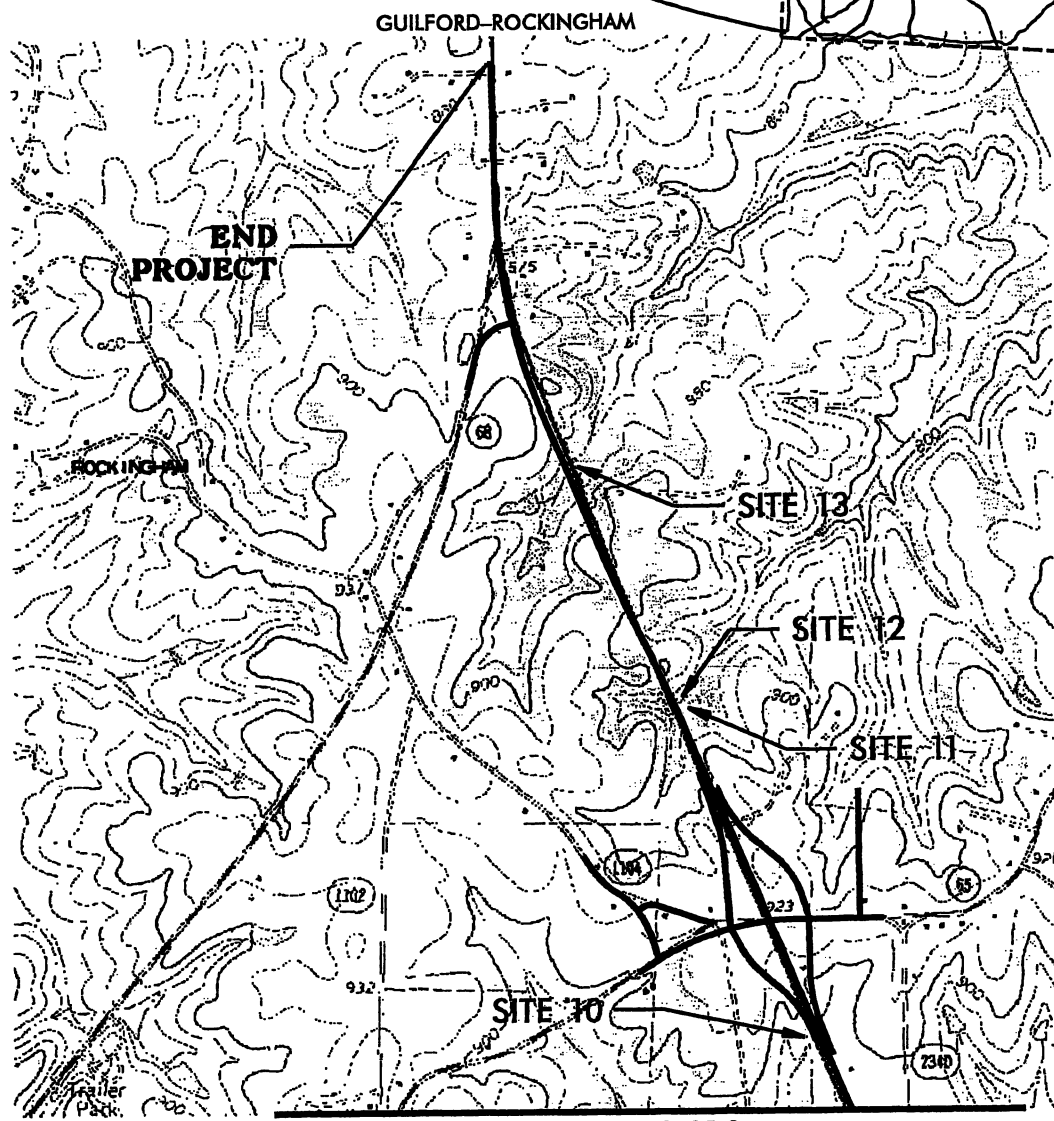
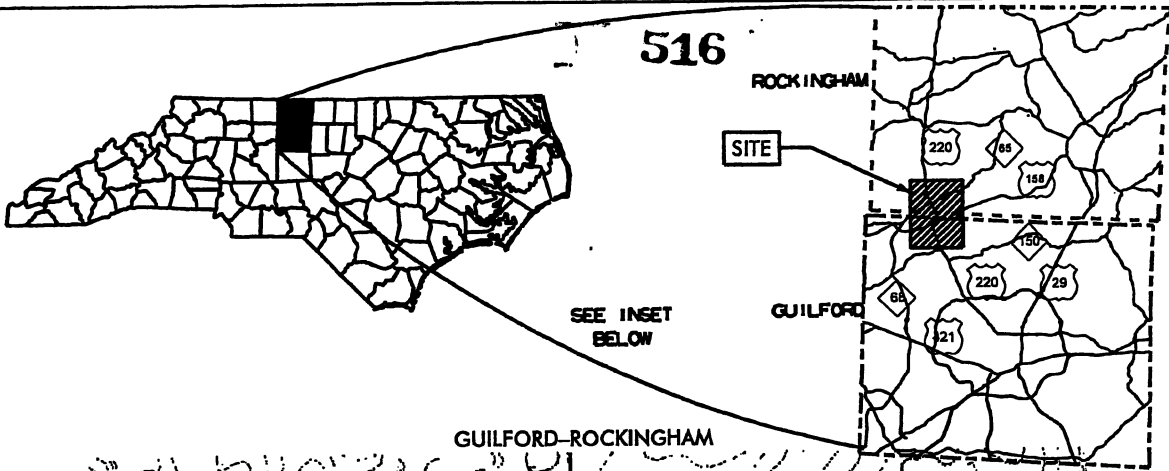
WETLAND/STREAM
IMPACTS
(2 OF 3)

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD-ROCKINGHAM COUNTY

PROJECT: 6.499002T (R-2413C)
US 220 SOUTH OF HAW RIVER
TO THE INTERSECTION OF US 220
AND EXISTING NC 68

SHEET 2 OF 40

8-14-09



SEE SHEET 2 OF 3

WETLAND/STREAM
IMPACTS
(3 OF 3)

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD-ROCKINGHAM COUNTY
PROJECT: 6.499002T (R-2413C)
US 220 SOUTH OF HAW RIVER
TO THE INTERSECTION OF US 220
AND EXISTING NC 68
SHEET 3 OF 40

PROPERTY OWNERS
NAMES AND ADDRESSES

PARCEL NO. NAMES ADDRESSES

**ALL AFFECTED AREAS ARE PROPERTY OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION, WHICH MAY NOT BE
REFLECTED ON PLANS**

WETLAND/STREAM IMPACTS

NCDOT

**DIVISION OF HIGHWAYS
GUILFORD-ROCKINGHAM COUNTY
PROJECT: 6.499002T (R-2413C)**

**US 220 SOUTH OF HAW RIVER
TO THE INTERSECTION OF US 220
AND EXISTING NC 68**

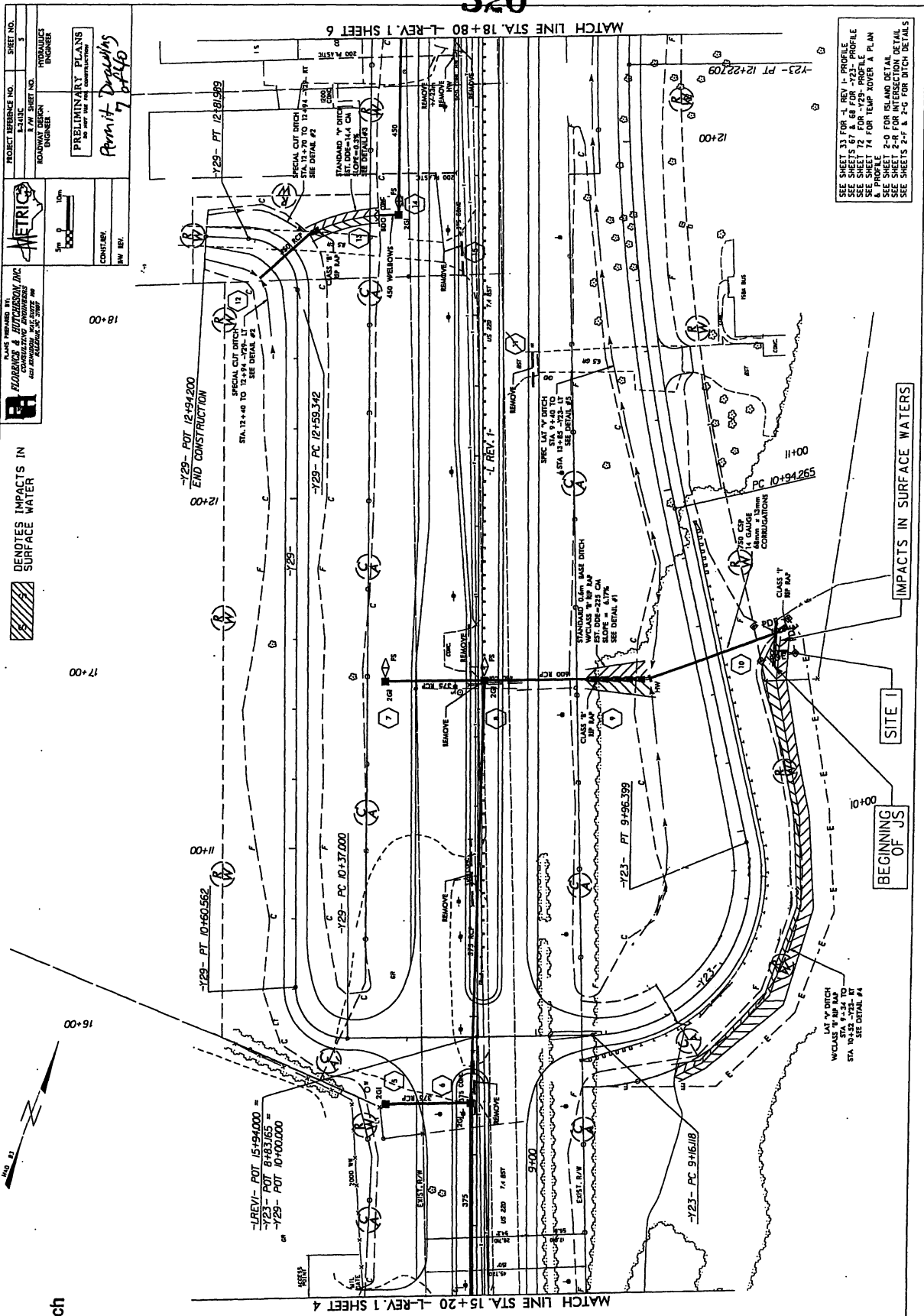
SHEET 4 OF 40

10/16/09

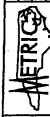
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JUN 30 2011

Regulatory Branch



IMPACTS IN SURFACE WATERS



FORWARD BY: FLORENCE ROY, INC. CONSULTING ENGINEERS 400 UNIVERSITY AVENUE, SUITE 200 WILMINGTON, DE 19801

PROJECT REFERENCE NO.	SHEET NO.
3-21-11C	5
DATE	PROJECT ENGINEER
11/11/10	PROJ. MGR.
11/11/10	ENGINEER
11/11/10	PRELIMINARY PLANS
11/11/10	Permit Drawings
11/11/10	7/11/10

101609 - PARCELS 2 & 4 ADDED PARTIAL CONTROL OF ACCESS

090209 - PARCEL 3 REVISED DRIVEWAY ACCESS

090809 - ADDED PARCEL 22

101609 - PARCEL 6 ADDED DRIVEWAY -Y23- 11+40 RT

16+00

17+00

18+00

MATCH LINE STA 15+20 -L-REV. 1 SHEET 4

MATCH LINE STA 18+80 -L-REV. 1 SHEET 6

11+00

12+00

13+00

-Y29- PT 10+50.562

-Y29- PC 10+37.000

-Y29- PT 12+19.989

-Y29- PC 12+59.342

-Y23- PT 9+96.399

-Y23- PC 9+16.018

-Y23- PT 12+22.709

-Y23- PC 10+94.265

END CONSTRUCTION

IMPACTS IN SURFACE WATERS

SITE 1

BEGINNING OF JS

REMOVE

REMOVE

REMOVE

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PROJECT REFERENCE NO. SHEET NO. 9
 E. JAY SHEET NO. 9
 HYDRAULIC NUMBER
 ROADWAY DESIGN NUMBER

METRICS

SCALE: 1" = 40'

CONTRACT: RY 151

PRELIMINARY PLANS
 FOR THE USE OF THE CONTRACTOR

Permit Drawing
 Sheet 8 of 40

DESIGNED BY: **FLORIAN**
 CONSULTING ENGINEERS, INC.
 1000 W. 10TH AVENUE, SUITE 200
 DENVER, COLORADO 80202

BENOTES IMPACTS IN SURFACE WATER

17+00

18+00



16+00

17+00

18+00

MATCH LINE STA. 15+20 - REV. 1 SHEET 4

MATCH LINE STA. 18+80 - REV. 1 SHEET 6

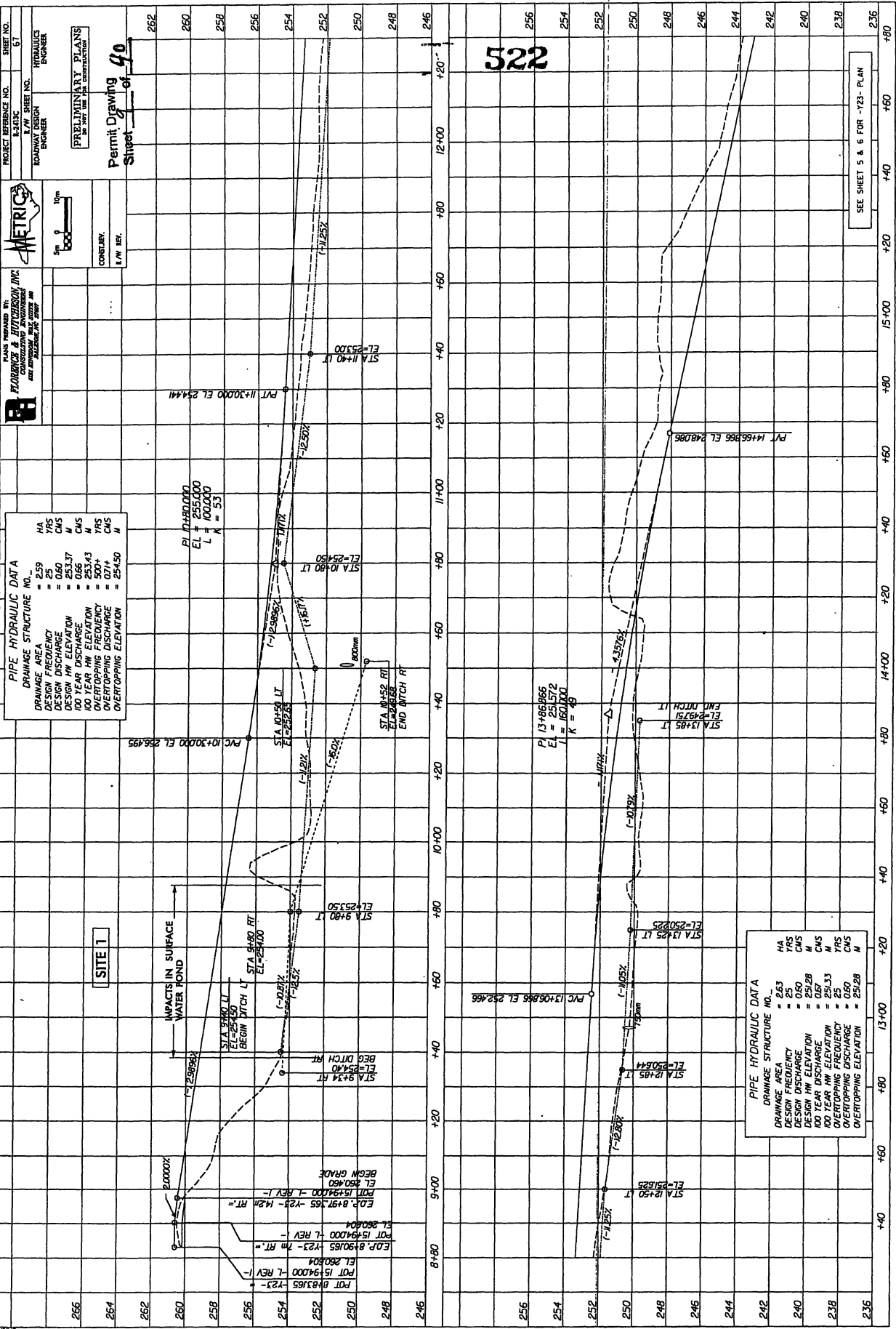
104609 - PARCEL 6 ADDED DRIVEWAY -125- 11+40 RT
 090609 - ADDED PARCEL 22
 090709 - PARCEL 2 REVISED DRIVEWAY ACCESS
 080609 - PARCELS 2 & 4 ADDED PARTIAL CONTROL OF ACCESS
 124609 - PARCELS 4 & 6 REVISED CONTROL OF ACCESS & FENCE

SEE SHEET 33 FOR -1 REV. I- PROFILE
 SEE SHEETS 67 & 68 FOR -123- PROFILE
 SEE SHEET 69 FOR -123- PROFILE
 SEE SHEET 74 FOR TEMP. COVER A PLAN
 & PROFILE
 SEE SHEET 2-0 FOR ISLAND DETAIL
 SEE SHEET 2-1 FOR ISLAND DETAIL
 SEE SHEETS 2-2 & 2-3 FOR DITCH DETAILS

104609 - PARCEL 6 ADDED DRIVEWAY -125- 11+40 RT
 090609 - ADDED PARCEL 22
 090709 - PARCEL 2 REVISED DRIVEWAY ACCESS
 080609 - PARCELS 2 & 4 ADDED PARTIAL CONTROL OF ACCESS
 124609 - PARCELS 4 & 6 REVISED CONTROL OF ACCESS & FENCE

104609 - PARCEL 6 ADDED DRIVEWAY -125- 11+40 RT
 090609 - ADDED PARCEL 22
 090709 - PARCEL 2 REVISED DRIVEWAY ACCESS
 080609 - PARCELS 2 & 4 ADDED PARTIAL CONTROL OF ACCESS
 124609 - PARCELS 4 & 6 REVISED CONTROL OF ACCESS & FENCE

104609 - PARCEL 6 ADDED DRIVEWAY -125- 11+40 RT
 090609 - ADDED PARCEL 22
 090709 - PARCEL 2 REVISED DRIVEWAY ACCESS
 080609 - PARCELS 2 & 4 ADDED PARTIAL CONTROL OF ACCESS
 124609 - PARCELS 4 & 6 REVISED CONTROL OF ACCESS & FENCE



PROJECT REFERENCE NO. 51
 E. J. JONES
 ROADWAY DESIGN
 ENGINEER



SCALE: 1" = 40'
 10m
 5m

PRELIMINARY PLANS
 IN PART FOR THE CONSTRUCTION
 Permit Drawing of 40
 Street of

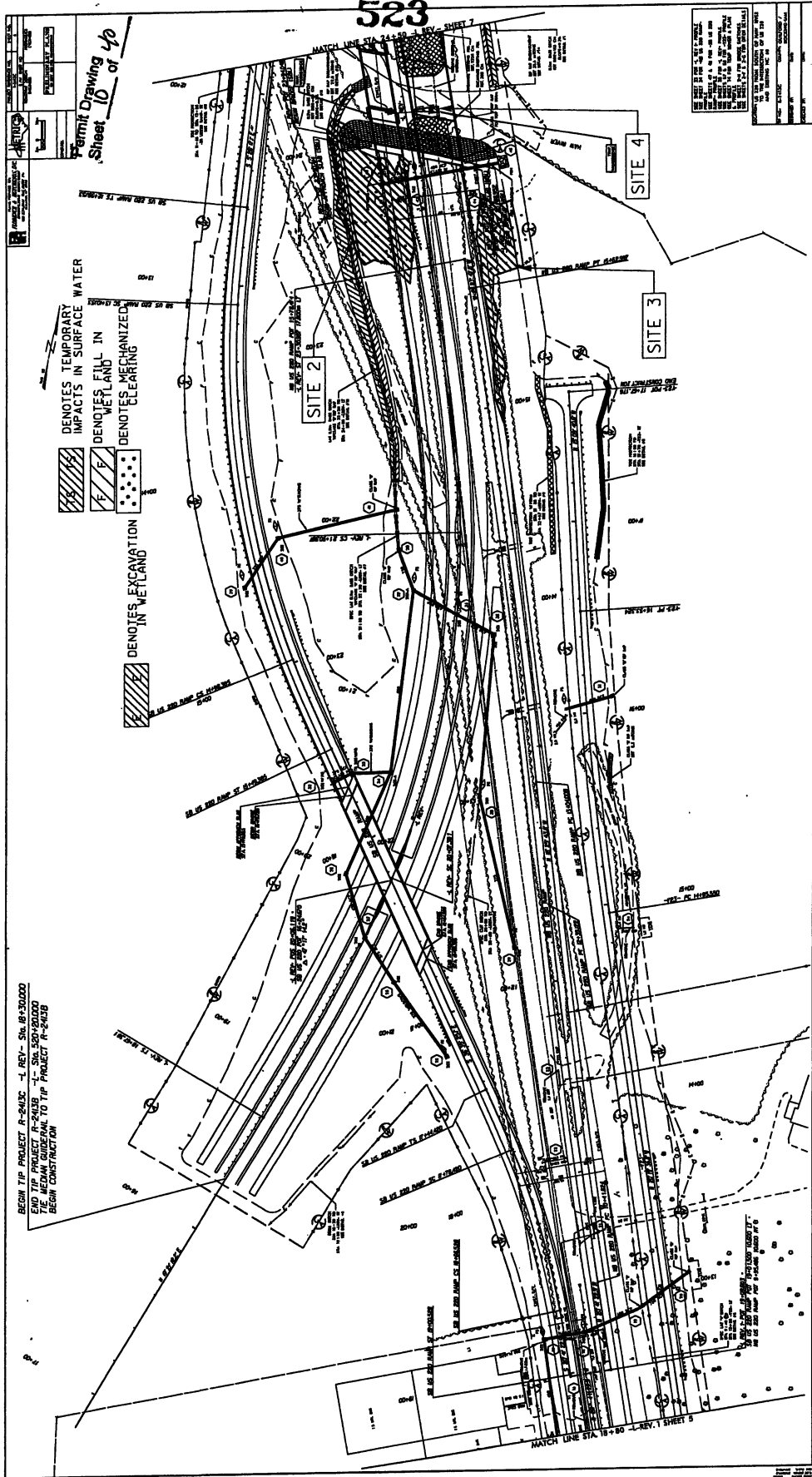
CONST. 1/4" = 10'

PIPE HYDRAULIC DATA	
DRAINAGE STRUCTURE NO.	HA
DESIGN FREQUENCY	YRS
DESIGN DISCHARGE	CMS
DESIGN HW ELEVATION	FT
100 YEAR DISCHARGE	CMS
100 YEAR HW ELEVATION	FT
OVERTOPPING FREQUENCY	YRS
OVERTOPPING DISCHARGE	CMS
OVERTOPPING ELEVATION	FT

SITE 1

PIPE HYDRAULIC DATA	
DRAINAGE AREA	HA
DESIGN FREQUENCY	YRS
DESIGN DISCHARGE	CMS
DESIGN HW ELEVATION	FT
100 YEAR DISCHARGE	CMS
100 YEAR HW ELEVATION	FT
OVERTOPPING FREQUENCY	YRS
OVERTOPPING DISCHARGE	CMS
OVERTOPPING ELEVATION	FT

SEE SHEET 5 & 6 FOR -Y23- PLAN



BEGIN TIP PROJECT R-2413C -L REV- Sls 18*30000
 END TIP PROJECT R-2413B -L- Sls 300*0000
 BEGIN TIP PROJECT R-2413A -L- Sls 300*0000
 BEGIN CONSTRUCTION

101609 - PACEL 6 PROPERTY NAME UPDATED
 101609 - PACEL 10 ADDED TEMPORARY CONSTRUCTION EASEMENT

PROJECT REFERENCE NO. 8-213C
 SHEET NO. 7
 HYDRAULICS ENGINEER
 ROADWAY DESIGN ENGINEER
 PRELIMINARY PLANS
 Permit Drawing
 Sheet 15 of 40

SCALE: 1" = 100'
 METRIC
 COUNTY: NY BR.

DESIGNED BY: FLORENCE & HUTCHINSON INC.
 CONSULTING ENGINEERS AND ARCHITECTS
 100 WEST 175TH STREET
 BRONX, NY 10461

DEMOLITION AND RECONSTRUCTION OF
 DENOTES IMPACTS IN
 SURFACE WATER

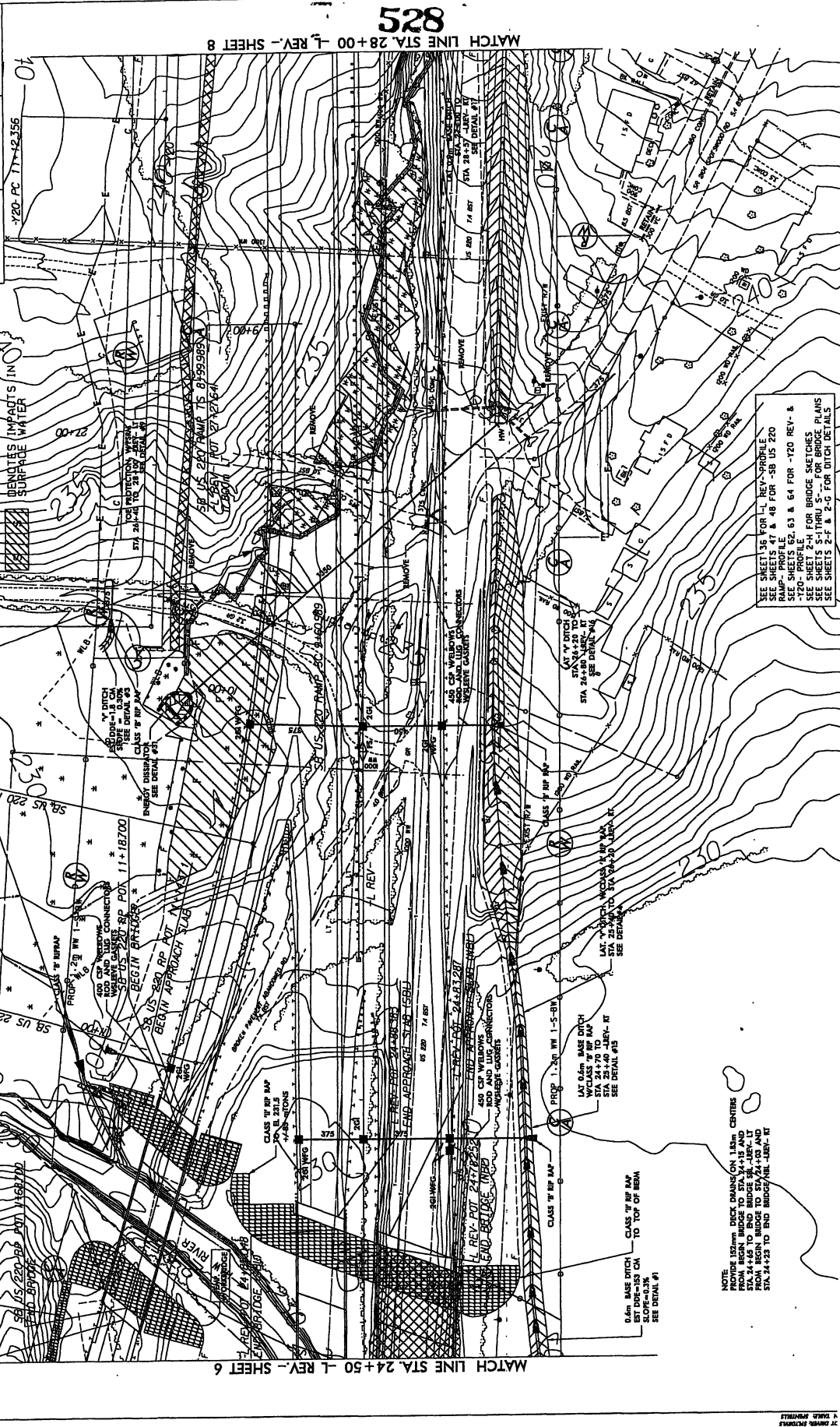
DEVELOPER'S PLAN
 DEMOLITION AND RECONSTRUCTION

NOTE: PROVIDE 152mm DECK DRAINS ON
 FROM BEGIN BRIDGE TO STA 24+15 AND
 FROM END BRIDGE TO STA 24+103 AND
 STA 24+23 TO END BRIDGE/ABL-LRB-RT
 SEE DETAIL #1

NOTE: PROVIDE 152mm DECK DRAINS ON
 FROM BEGIN BRIDGE TO STA 24+15 AND
 FROM END BRIDGE TO STA 24+103 AND
 STA 24+23 TO END BRIDGE/ABL-LRB-RT
 SEE DETAIL #1

NOTE: PROVIDE 152mm DECK DRAINS ON
 FROM BEGIN BRIDGE TO STA 24+15 AND
 FROM END BRIDGE TO STA 24+103 AND
 STA 24+23 TO END BRIDGE/ABL-LRB-RT
 SEE DETAIL #1

NOTE: PROVIDE 152mm DECK DRAINS ON
 FROM BEGIN BRIDGE TO STA 24+15 AND
 FROM END BRIDGE TO STA 24+103 AND
 STA 24+23 TO END BRIDGE/ABL-LRB-RT
 SEE DETAIL #1



NOTE: PROVIDE 152mm DECK DRAINS ON
 FROM BEGIN BRIDGE TO STA 24+15 AND
 FROM END BRIDGE TO STA 24+103 AND
 STA 24+23 TO END BRIDGE/ABL-LRB-RT
 SEE DETAIL #1

NOTE: PROVIDE 152mm DECK DRAINS ON
 FROM BEGIN BRIDGE TO STA 24+15 AND
 FROM END BRIDGE TO STA 24+103 AND
 STA 24+23 TO END BRIDGE/ABL-LRB-RT
 SEE DETAIL #1

MATCH LINE STA. 24+50 L-REV-SHEET 6

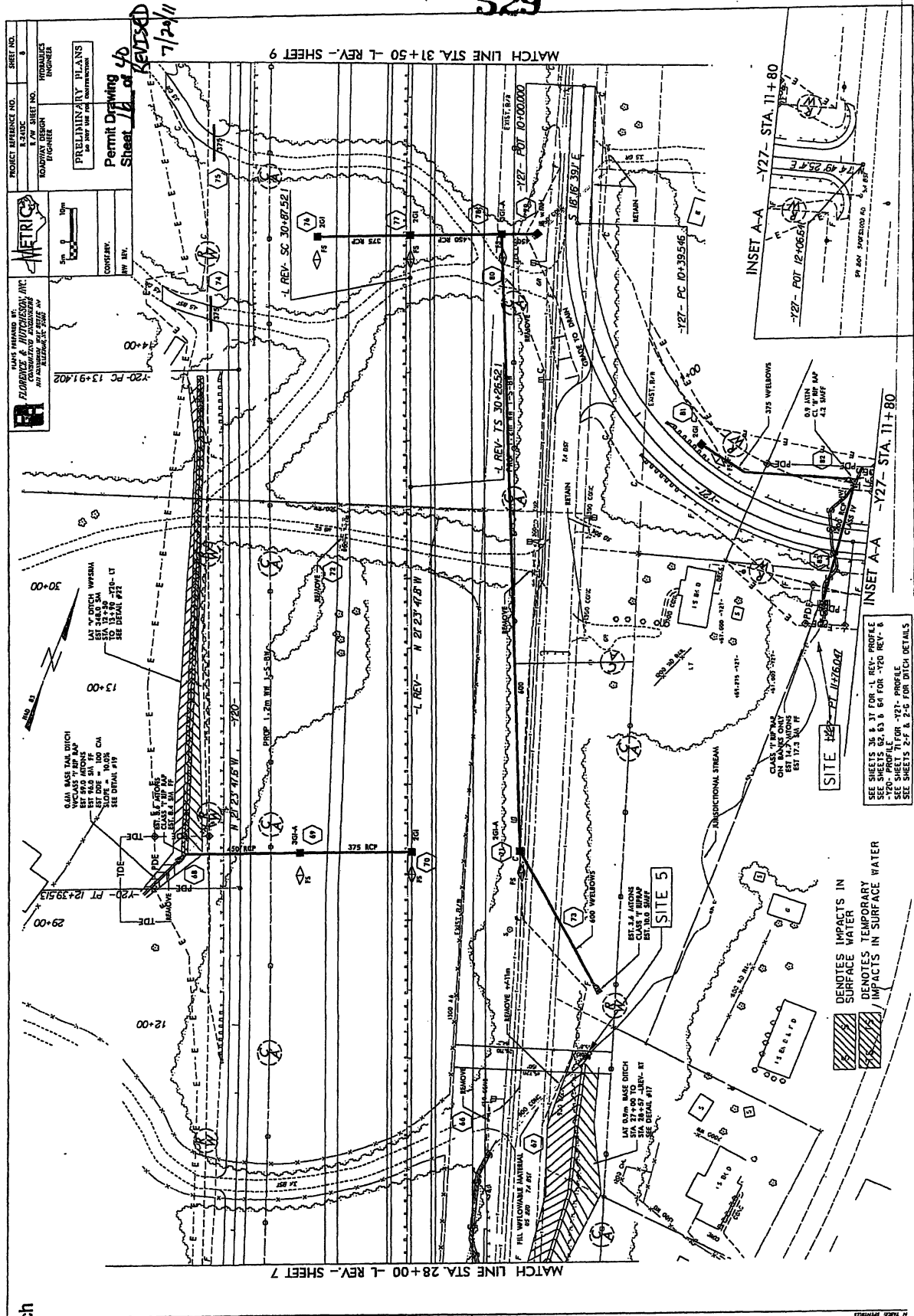
MATCH LINE STA. 28+00 L-REV-SHEET 8

528

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Regulatory Branch



2/15/10 - PARCEL 182 ADDED TEMPORARY DRAINAGE EASEMENT
 2/15/10 - PARCEL 192 ADDED PERMANENT DRAINAGE EASEMENT
 2/15/10 - PARCEL 202 REVISED PERMANENT DRAINAGE EASEMENT

5. SHEETS
 10. SOARES
 11. DAVIS
 12. THOMAS
 13. HARRIS
 14. BROWN
 15. GIBSON

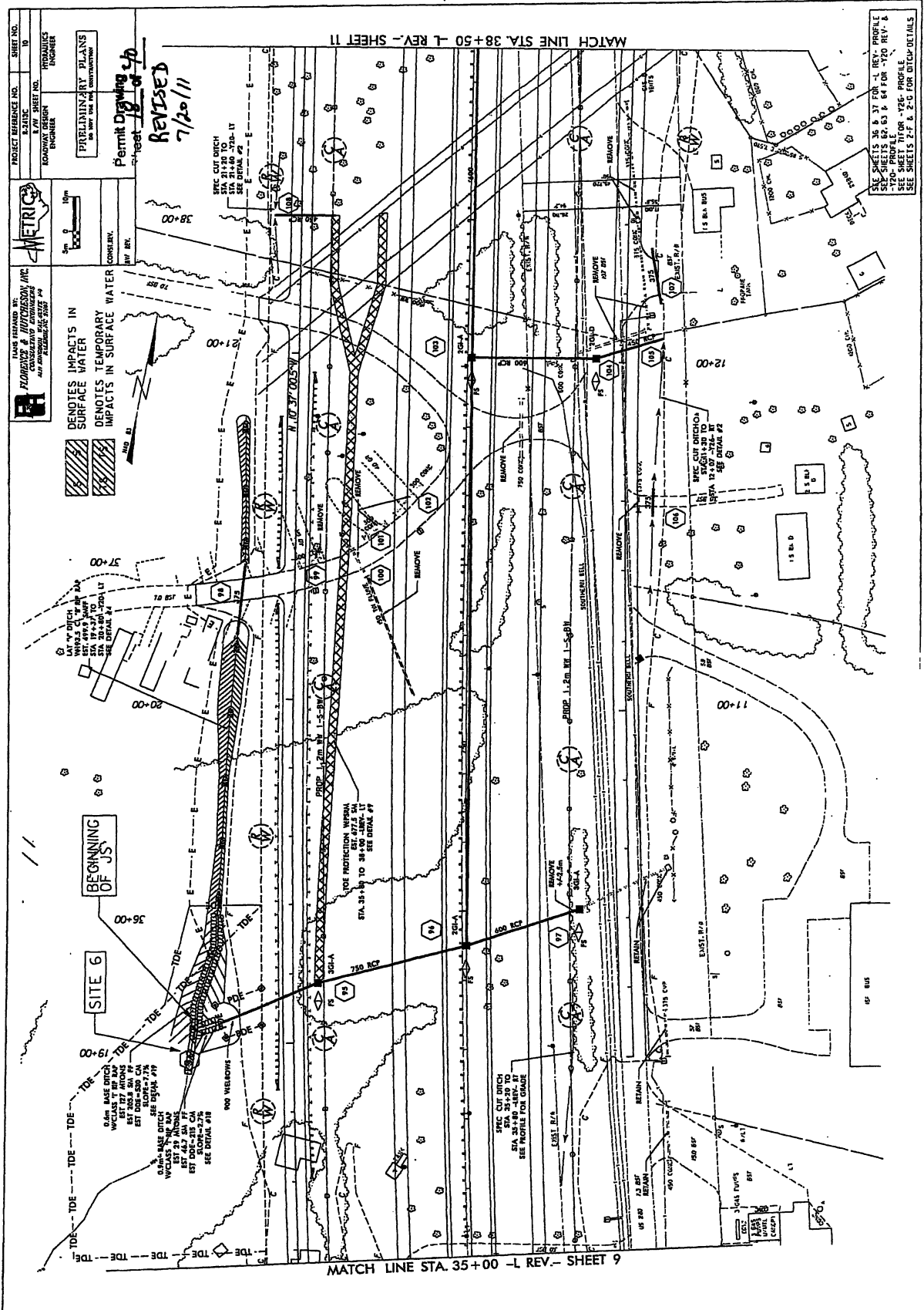
529

RECEIVED

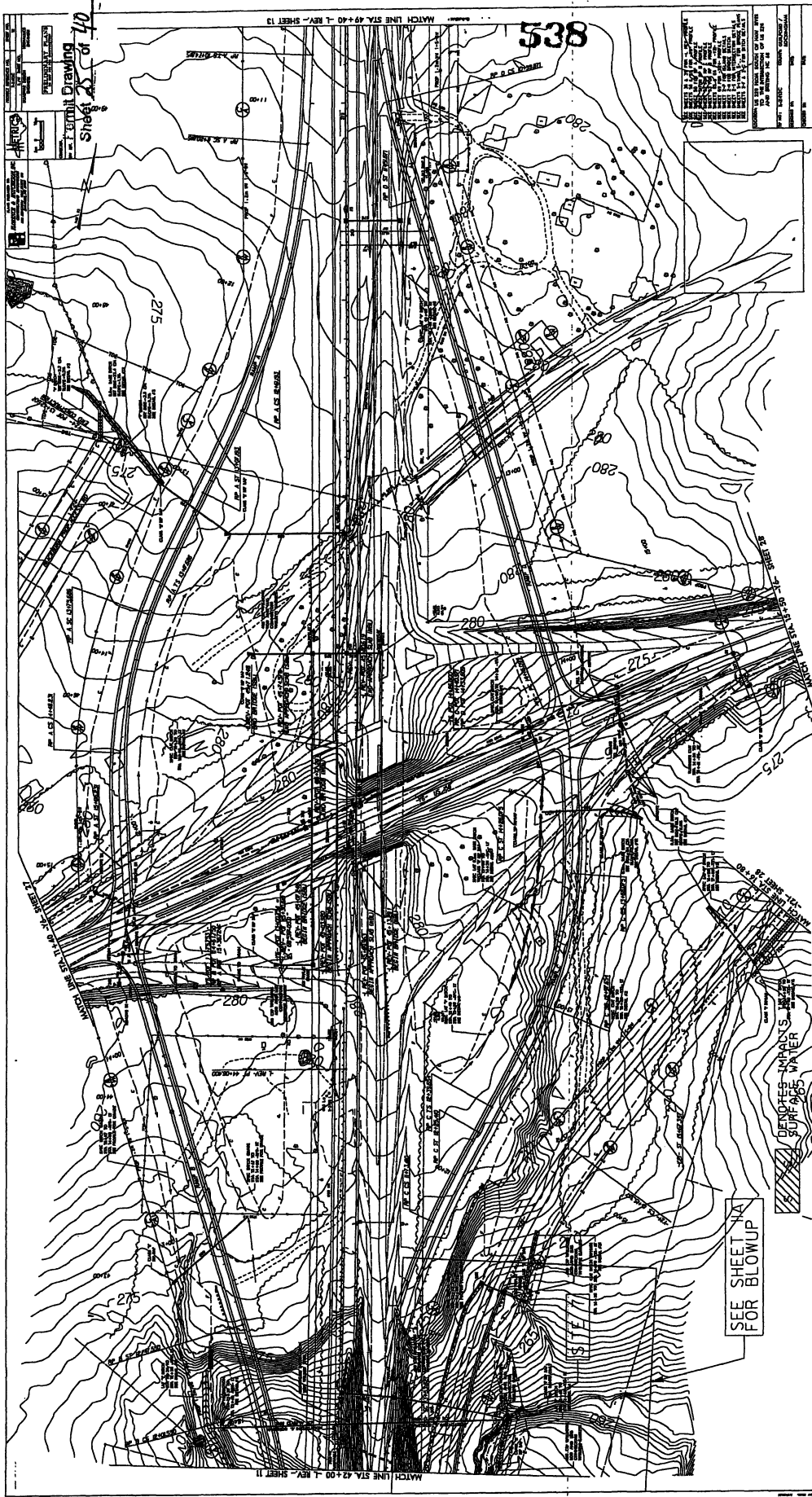
JUL 28 2011

Regulatory Branch

100309 - PARCEL 26 REVISED TEMPORARY DRAINAGE EASEMENT



092309 - ADDED PARCEL NO. 352 DESIGNATION TO PUE
110309 - PARCEL NO. 35 REVISION DRAINAGE EASEMENT
REVISED TEMPORARY CONVEYANCE EASEMENT
REVISED TEMPORARY DRAINAGE EASEMENT



SEE SHEET #141
FOR BLOWUP

DENOTES IMPROVEMENTS TO
SURFACE WATER

538

07 to 08
Drawing
Sheets
2 - 7

110309 - PARCEL NO. 35 REVISION DRAINAGE EASEMENT
REVISED TEMPORARY CONVEYANCE EASEMENT
REVISED TEMPORARY DRAINAGE EASEMENT

092309 - ADDED PARCEL NO. 352 DESIGNATION TO PUE

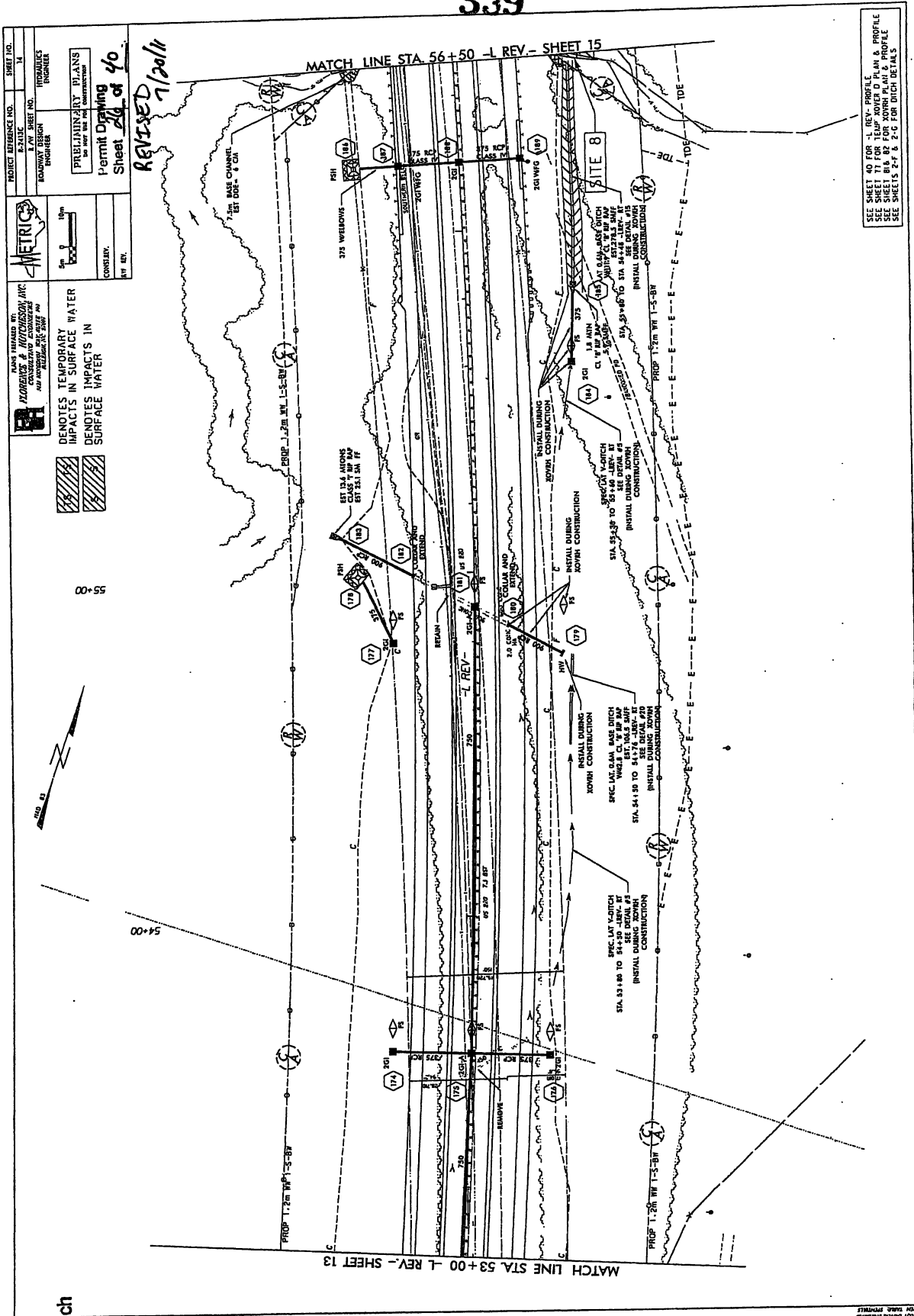
MATCH LINE STA. 42+00 L. REV. SHEET 11

MATCH LINE STA. 49+40 L. REV. SHEET 13

RECEIVED

JUL 28 2011

Regulatory Branch



539

SEE SHEET 40 FOR -L REV- PROFILE
 SEE SHEET 71 FOR TEMP ADJUSTED PLAN & PROFILE
 SEE SHEET 72 FOR TEMP ADJUSTED PROFILE
 SEE SHEETS 2-7 & 2-8 FOR DITCH DETAILS

RECEIVED

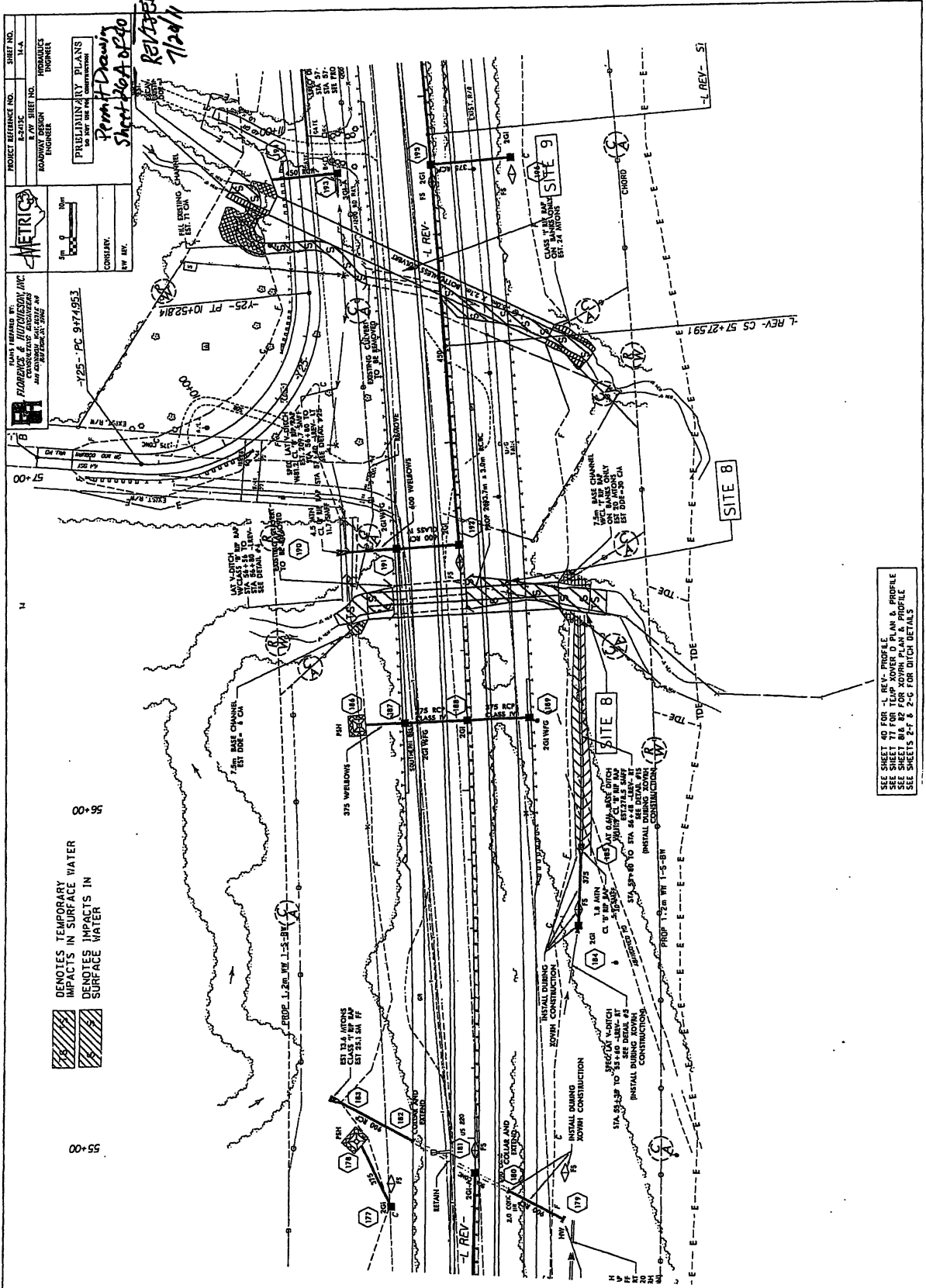
11 09 09 AM

Branch

RECEIVED

JUL 28 2011

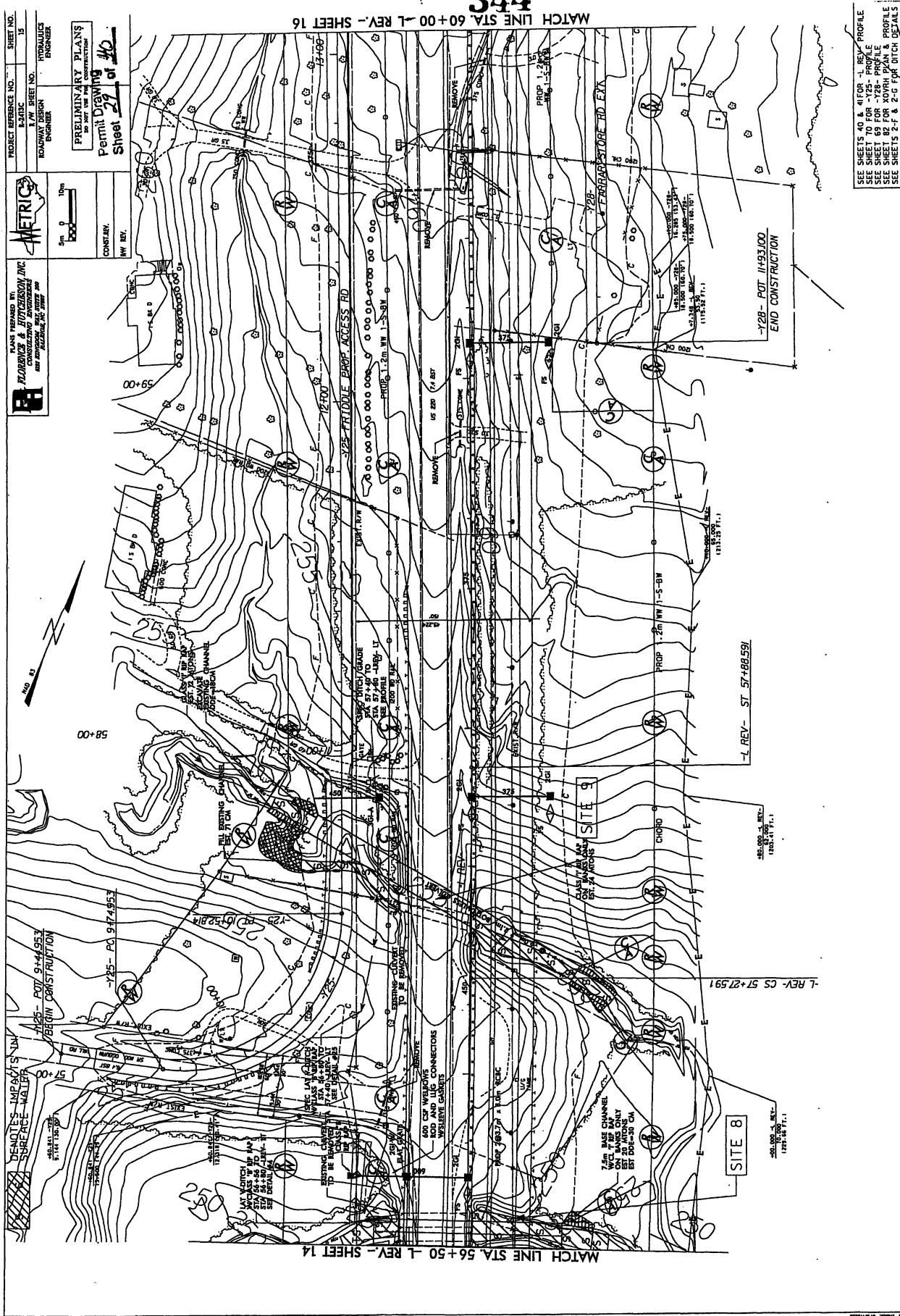
Regulatory Branch



SEE SHEET 40 FOR "L" REV. PROFILE
 SEE SHEET 77 FOR T&P XOVER D PLAN & PROFILE
 SEE SHEET 80, 82 FOR XOVER PLAN & PROFILE
 SEE SHEETS E-F-B, E-F-C FOR DITCH DETAILS

STANDARD 4700 11
 STANDARD 4700 11
 STANDARD 4700 11

3. PRINTS
 2. DRAWING
 1. TITLE SHEET



SEE SHEETS 40 & 41 FOR -L REV- PROFILE
 SEE SHEETS 42 & 43 FOR -L REV- PROFILE
 SEE SHEET 44 FOR -L REV- PROFILE
 SEE SHEET 45 FOR -L REV- PROFILE
 SEE SHEET 46 FOR -L REV- PROFILE
 SEE SHEET 47 FOR -L REV- PROFILE
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 SEE SHEET 99 FOR -L REV- PROFILE
 SEE SHEET 100 FOR -L REV- PROFILE

PROJECT REFERENCE NO. SHEET NO. 15
 1-11-11
 ROADWAY DESIGN ENGINEER
 HYDRAULICS ENGINEER
 PRELIMINARY PLANS
 Permit Drawing
 Sheet 29 of 40

CONTRACTOR
 NW BEY.

5m 0
 10m 0
 20m 0
 30m 0
 40m 0
 50m 0
 60m 0
 70m 0
 80m 0
 90m 0
 100m 0

58+00
 57+00
 56+00
 55+00
 54+00
 53+00
 52+00
 51+00
 50+00
 49+00
 48+00
 47+00
 46+00
 45+00
 44+00
 43+00
 42+00
 41+00
 40+00
 39+00
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 36+00
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 19+00
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 13+00
 12+00
 11+00
 10+00
 9+00
 8+00
 7+00
 6+00
 5+00
 4+00
 3+00
 2+00
 1+00
 0+00

110309 - PARCEL 35 ADDED TEMPORARY CONSTRUCTION EASEMENT
 110309 - PARCEL 42 ADDED TEMPORARY CONSTRUCTION EASEMENT

110309 - PARCEL 35 ADDED TEMPORARY CONSTRUCTION EASEMENT
 110309 - PARCEL 42 ADDED TEMPORARY CONSTRUCTION EASEMENT

110309 - PARCEL 35 ADDED TEMPORARY CONSTRUCTION EASEMENT
 110309 - PARCEL 42 ADDED TEMPORARY CONSTRUCTION EASEMENT

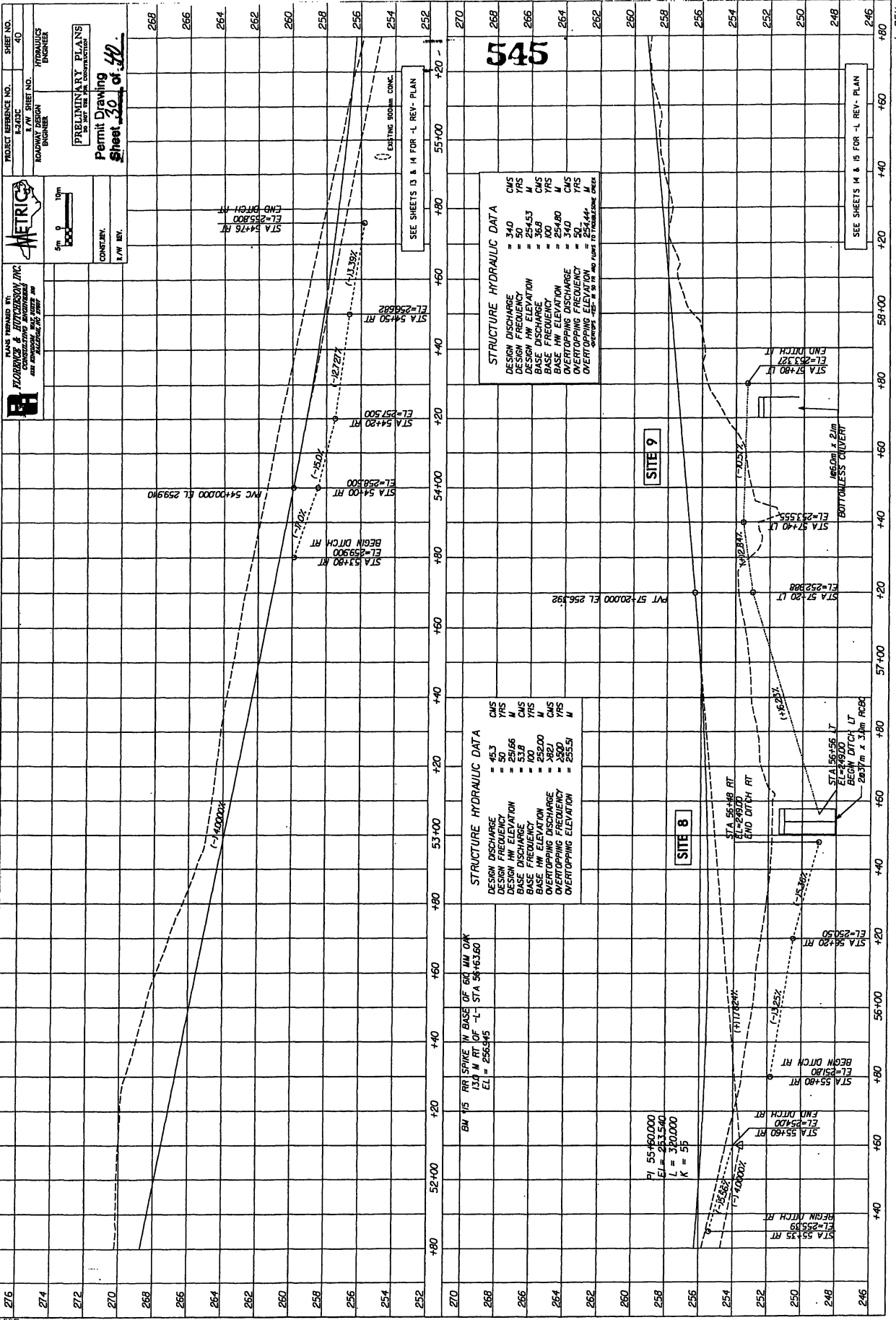
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 110309 - PARCEL 42 ADDED TEMPORARY CONSTRUCTION EASEMENT

110309 - PARCEL 35 ADDED TEMPORARY CONSTRUCTION EASEMENT
 110309 - PARCEL 42 ADDED TEMPORARY CONSTRUCTION EASEMENT

110309 - PARCEL 35 ADDED TEMPORARY CONSTRUCTION EASEMENT
 110309 - PARCEL 42 ADDED TEMPORARY CONSTRUCTION EASEMENT

MATCH LINE STA. 60+00 -L REV- SHEET 16

MATCH LINE STA. 56+50 -L REV- SHEET 14



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 340	CMS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 254.53	M
BASE DISCHARGE	= 36.8	CMS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 241.80	M
OVERTOPPING DISCHARGE	= 340	CMS
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING ELEVATION	= 254.44	M

EXAMPLES: 1.0 = 10% AND 1.0 = 10% PROBABILITY OF EXCEEDANCE

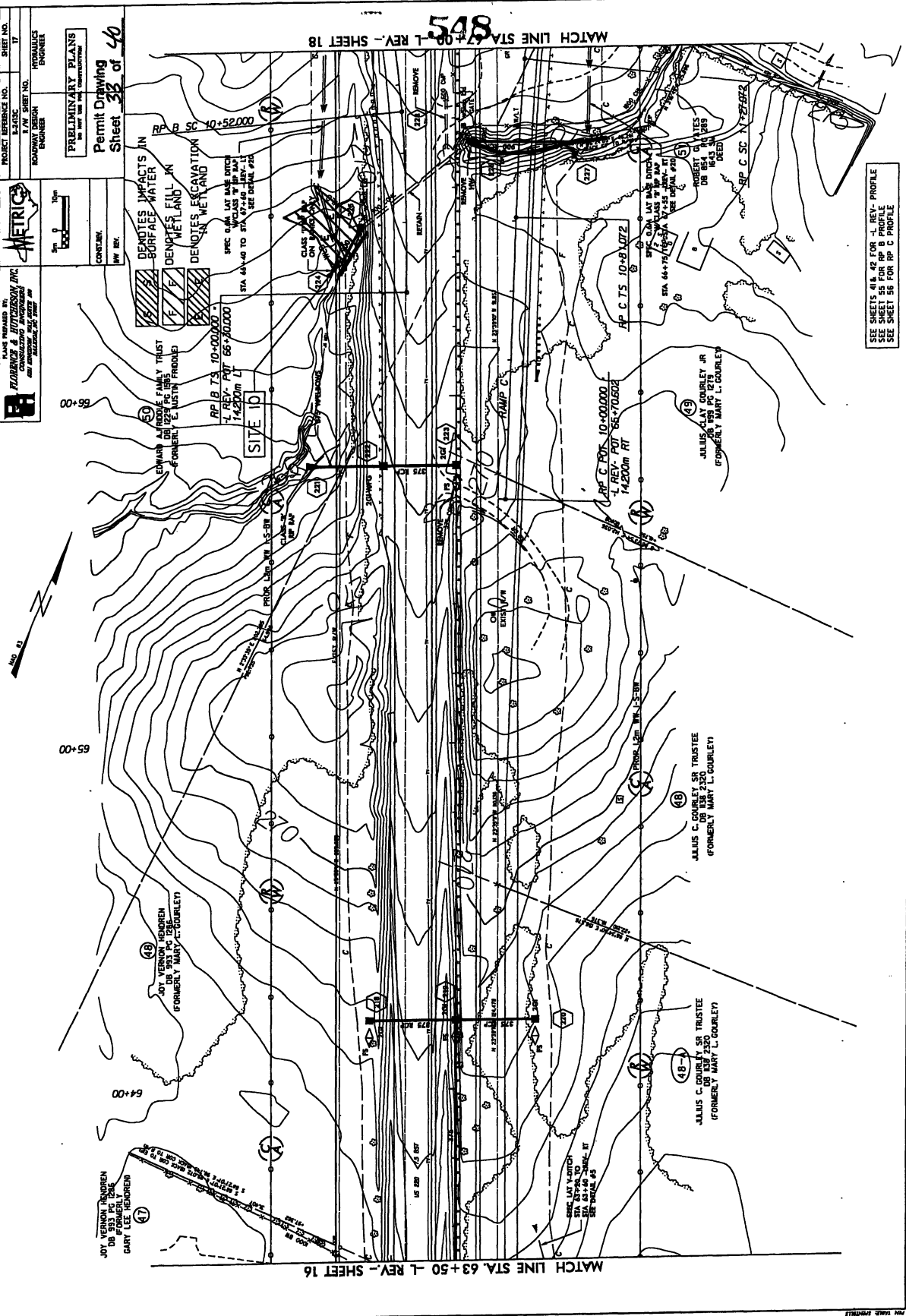
STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 48.3	CMS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 253.66	M
BASE DISCHARGE	= 53.8	CMS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 252.00	M
OVERTOPPING DISCHARGE	= 382.1	CMS
OVERTOPPING FREQUENCY	= 300	YRS
OVERTOPPING ELEVATION	= 255.51	M

PROJECT REFERENCE NO. E-2000
SHEET NO. 40
METRICS
PRELIMINARY PLANS
Permit Drawing
Sheet 30 of 40

PLANS PREPARED BY:
TALORANCE & ASSOCIATES INC.
1000 W. 10th St. Suite 200
Wichita, KS 67202
CONTRACT:
1.111.111

5m 0 10m
CONST. 1:111.111



PROJECT REFERENCE NO. _____ SHEET NO. 33
 ROADWAY DESIGN ENGINEER
 HYDRAULICS ENGINEER

METRIC
 ENGINEERING

PRELIMINARY PLANS
 Permit Drawing
 Sheet 33 of 40

CONTRACT: _____
 IMP. REV.: _____

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

EDWARD A. MOORE FAMILY TRUST
 DB 0224 PC 085
 FORMERLY E. JUSTIN PRODD

JULIUS C. COURLEY SR TRUSTEE
 DB 0338 2320
 FORMERLY MARY L. COURLEY

JULIUS C. COURLEY JR
 DB 0413 0103
 FORMERLY MARY L. COURLEY

JULIUS C. COURLEY SR TRUSTEE
 DB 0338 2320
 FORMERLY MARY L. COURLEY

JULIUS C. COURLEY JR
 DB 0413 0103
 FORMERLY MARY L. COURLEY

SPEC. 0.01% LAT. SLOPE DITCH
 STA. 64+40 TO STA. 67+60 REV. 1
 SEE DETAIL #2

SPEC. 0.01% LAT. SLOPE DITCH
 STA. 67+60 TO STA. 69+00 REV. 1
 SEE DETAIL #2

CLASS. 10% ON 10% SLOPE

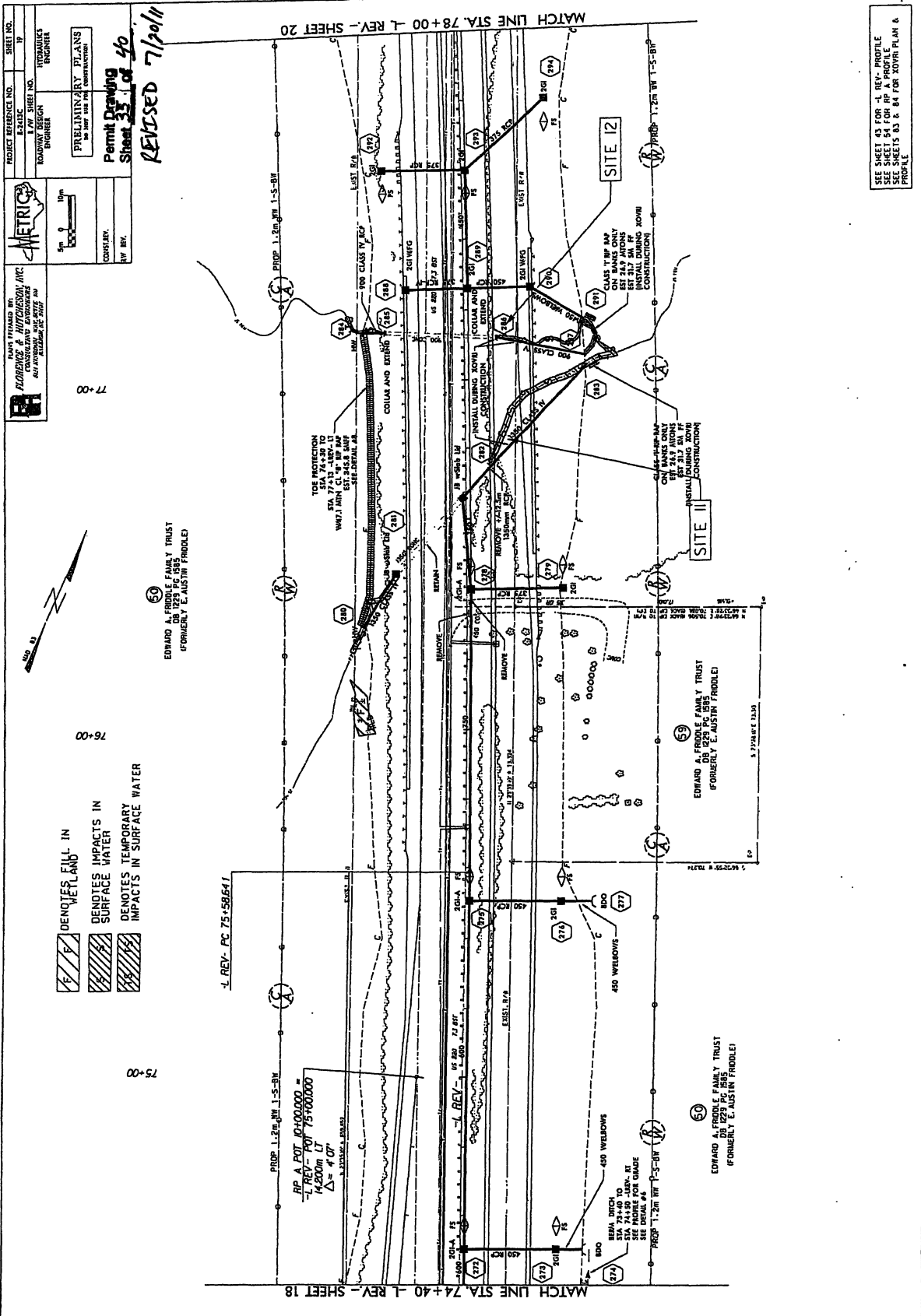
PROJ. LANE 10'-5'-8"

MATCH LINE STA. 63+50 -1 REV.- SHEET 16

MATCH LINE STA. 74+00 -1 REV.- SHEET 18

SEE SHEETS 41 & 42 FOR -1 REV.- PROFILE
 SEE SHEET 55 FOR RP B PROFILE
 SEE SHEET 58 FOR RP C PROFILE

548



PROJECT REFERENCE NO. 2-212C SHEET NO. 19

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
Permit Drawing
Sheet 33 of 40
REVISED 7/10/11

CONVEY BY

FORWARD BY: **EDWARD A. FRODLE & ASSOCIATES, INC.**
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS, LICENSE NO. 24075

- DENOTES FILL IN WATER AND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

EDWARD A. FRODLE & ASSOCIATES, INC.
FORMERLY E. AUSTIN FRODLE

EDWARD A. FRODLE & ASSOCIATES, INC.
FORMERLY E. AUSTIN FRODLE

SEE SHEET 43 FOR REVISION PROFILE
SEE SHEET 44 FOR REVISION PROFILE
SEE SHEETS 83 & 84 FOR XOVER PLAN & PROFILE

RECORDED

JUL 28 2011

Regulatory Branch

RECEIVED

JUL 28 2011

Regulatory Branch

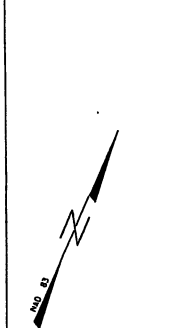
NO. 5505
DATE: 07/28/11
BY: [Signature]

PROJECT REFERENCE NO. 8-243C
 ROADWAY DESIGN ENGINEER
 PRELIMINARY PLANS
 NOT FOR USE FOR CONSTRUCTION
 PERMIT DRAWING
 SHEET 36 of 40
 HW REV.

PLANS PREPARED BY:
FRANCOIS & HUTCHINSON, INC.
 CONSULTING ENGINEERS
 1000 WEST 10TH STREET, SUITE 200
 DENVER, COLORADO 80202

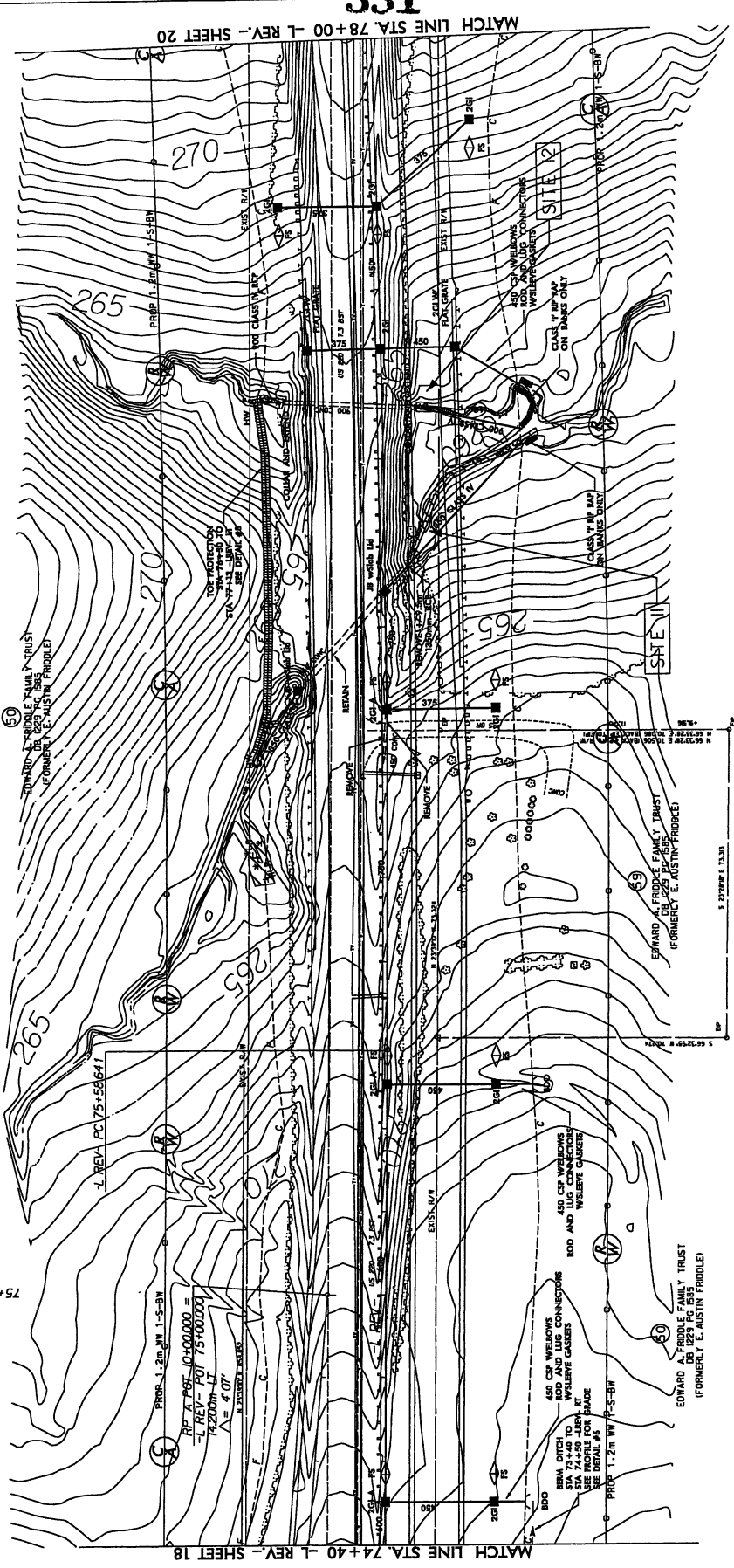
SCALE: 1" = 100'

CONSTR. BY: _____
 HW REV. _____

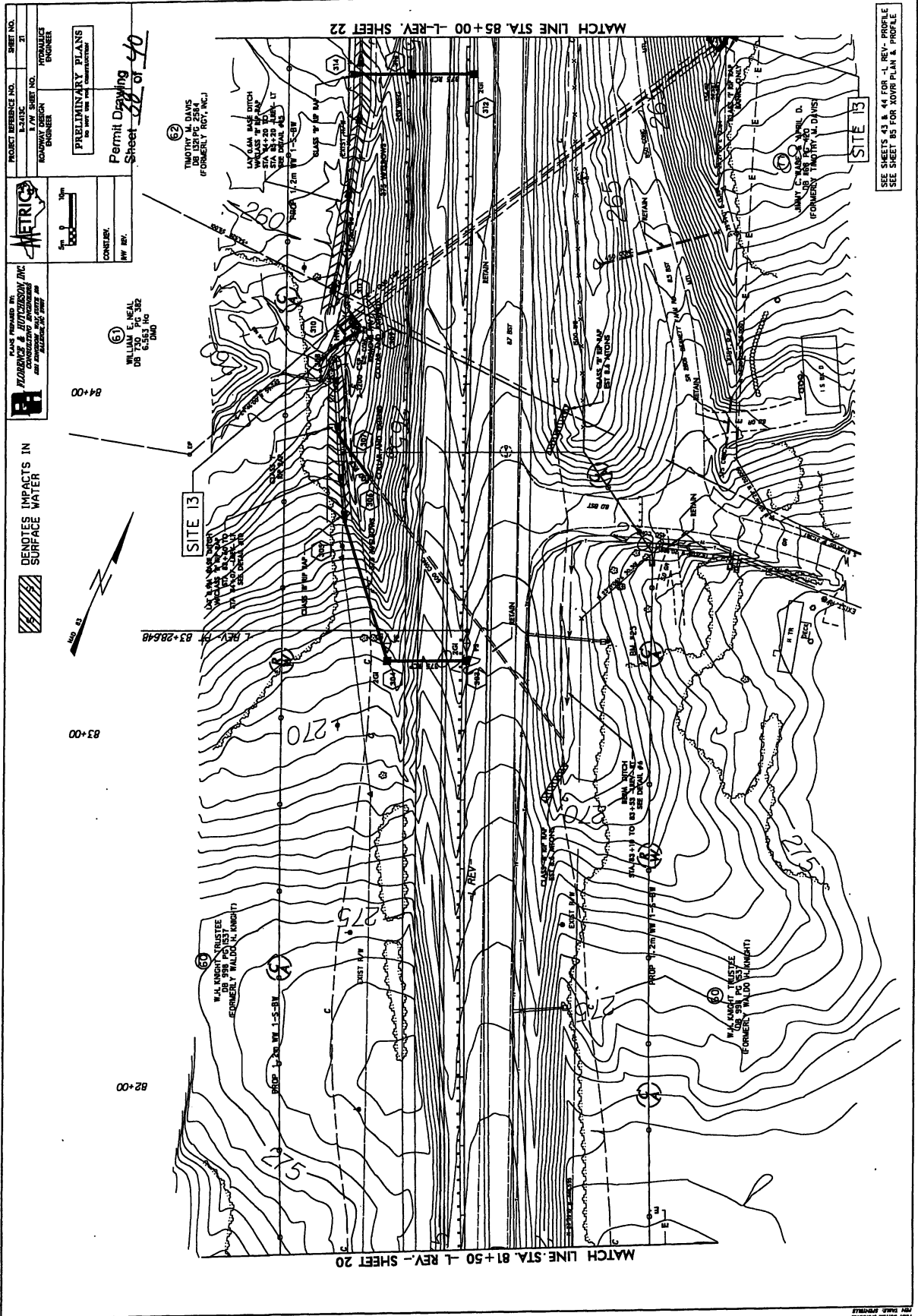


75+00 76+00 77+00

DENOTES FILL IN WETLAND
 DENOTES IMPACTS IN SURFACE WATER



SEE SHEET 43 FOR L-REV-PROFILE
 SEE SHEET 54 FOR M-REV-PROFILE
 SEE SHEETS 63 & 64 FOR MOUNTAIN PLAN & PROFILE



PROJECT REFERENCE NO. 17
 SHEET NO. 21
 ROADWAY DESIGN ENGINEER
 HYDRAULIC ENGINEER
 PRELIMINARY PLANS
 PERMIT DRAWING
 SHEET 21 OF 40

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA
 COUNTY: [blank]
 HWY. NO.: [blank]

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

FORWARDED BY:
 WILLIAM F. NEAL
 DB 130, PC 362
 LISA

SEE SHEETS 13 & 14 FOR A REV. PROFILE
 SEE SHEET 85 FOR XOVER PLAN & PROFILE

SEE SHEETS 13 & 14 FOR A REV. PROFILE
 SEE SHEET 85 FOR XOVER PLAN & PROFILE

SEE SHEETS 13 & 14 FOR A REV. PROFILE
 SEE SHEET 85 FOR XOVER PLAN & PROFILE

SEE SHEETS 13 & 14 FOR A REV. PROFILE
 SEE SHEET 85 FOR XOVER PLAN & PROFILE

SEE SHEETS 13 & 14 FOR A REV. PROFILE
 SEE SHEET 85 FOR XOVER PLAN & PROFILE

SEE SHEETS 13 & 14 FOR A REV. PROFILE
 SEE SHEET 85 FOR XOVER PLAN & PROFILE

SEE SHEETS 13 & 14 FOR A REV. PROFILE
 SEE SHEET 85 FOR XOVER PLAN & PROFILE

PROJECT REFERENCE NO.	SHEET NO.
1-2131C	23
ROADWAY DESIGNER	PROFESSIONAL ENGINEER
PRELIMINARY PLANS	
NO PART SHALL BE CONSIDERED	

METRIC

SCALE: 1" = 100'

CONSENT: _____

BY: _____

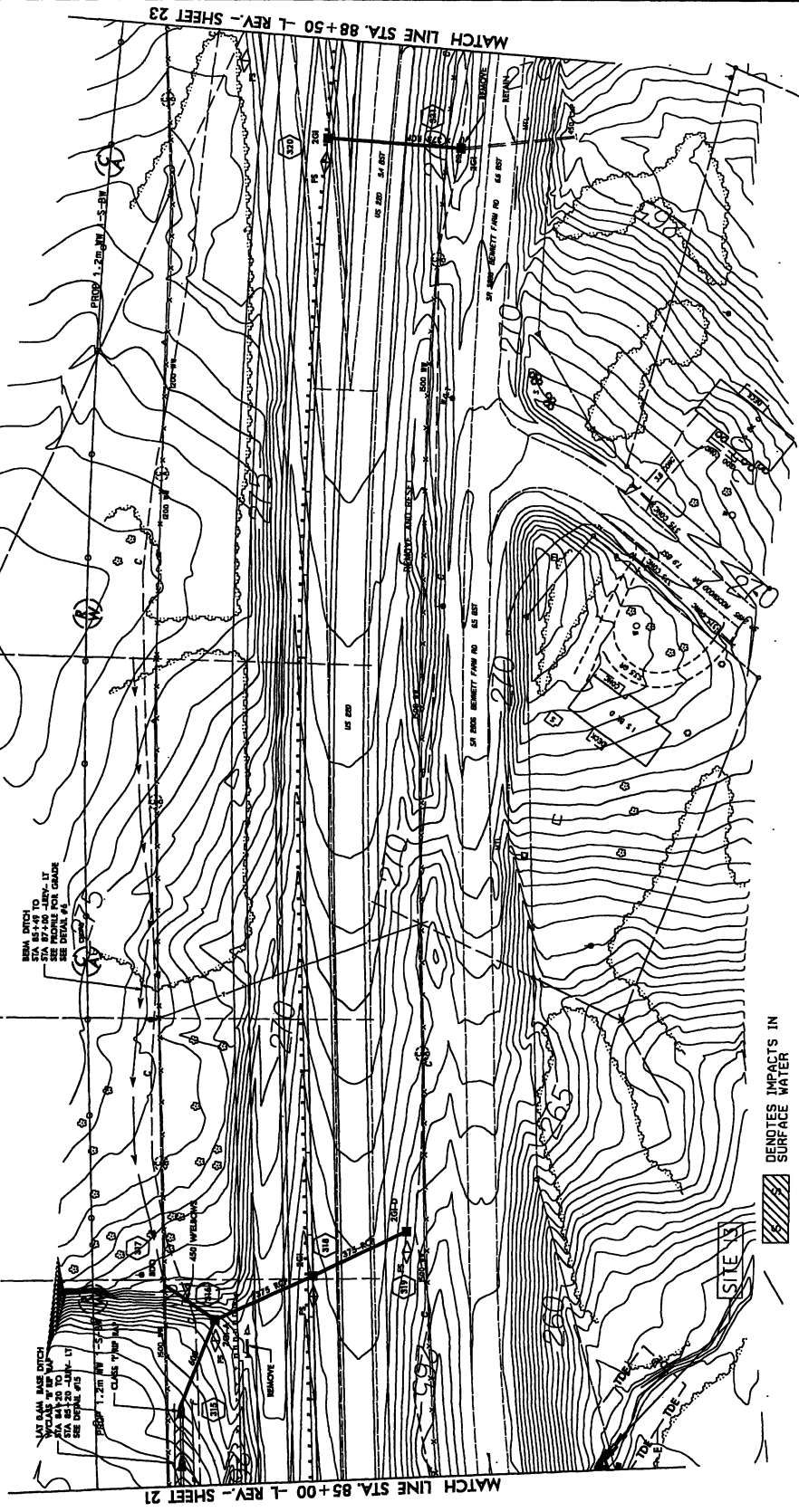
FOR THE RECORD BY: **FLORIANEK, INC.**
 CONSULTING ENGINEERS
 1000 W. 10TH ST., SUITE 100
 MILWAUKEE, WI 53233

Permit Drawing
 Sheet 20 of 40



00+78

00+98



DENOTES IMPACTS IN SURFACE WATER



SEE SHEETS 44 & 45 FOR -1 REV- PROFILE

DATE PLOTTED: 08/11/2011 10:00 AM
 PLOTTER: HPGLA2000
 FILE: 1-2131C.dwg

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PERMIT DRAWINGS
GUILFORD-ROCKINGHAM
COUNTIES

LOCATION: US 220 FROM SOUTH FO HAW RIVER TO
THE INTERSECTION OF US 220 AND EXISTING NC 68
TYPE OF WORK: PDEA PERMIT

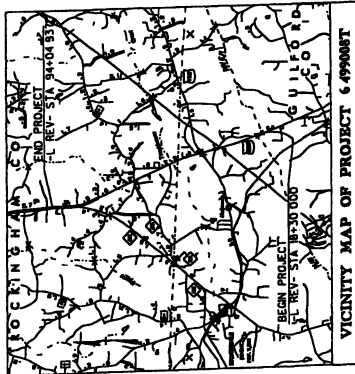
TIP NO
R-2413C
SHEET NO
PO-1

Utility Permit Drawings

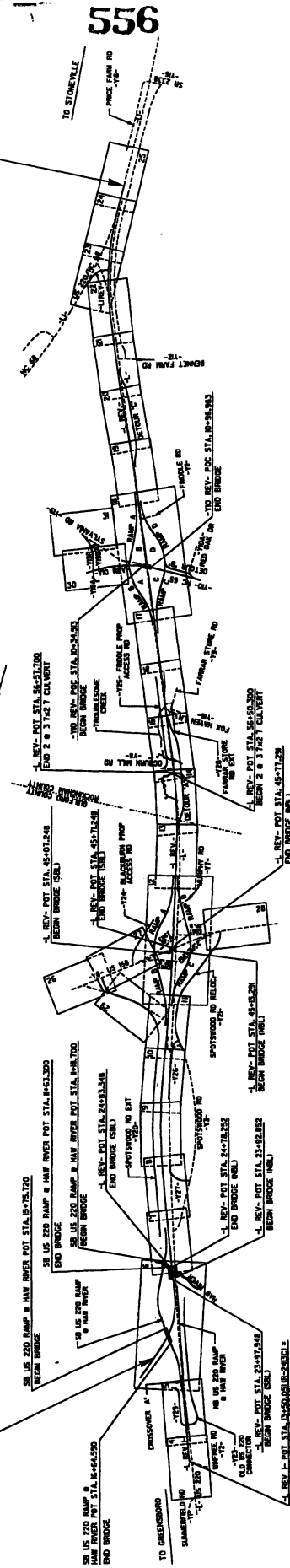
Permit Drawing
Sheet 1 of 3



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



POT 18+30.000 -1. REV.-
BEGIN STATE PROJECT R-2413C



POT 94+04.937 -1. REV. -
ST 23+08.747 -1.1-
END STATE PROJECT R-2413C

NCDOT CONTACT: B. DOUG TAYLOR, P.E., PROJECT ENGINEER
MALCOLM WATSON, P.E., PROJECT DESIGN ENGINEER

NOTE: THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES

GRAPHIC SCALES

PLANS	1" = 100'
PROFILE (HORIZONTAL)	1" = 100'
PROFILE (VERTICAL)	1" = 10'

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
PO-1	TITLE SHEET
PO-2	PERMIT DRAWING

WATER AND SEWER OWNERS ON PROJECT

(1) DUKE ENERGY
(2) AITCO
(3) BELLSOUTH
(4) CATV

PREPARED IN THE OFFICE OF
DIVISION OF HIGHWAYS
UTILITIES ENGINEERING
SECTION
100 EAST WATSON STREET
RALEIGH, NORTH CAROLINA
27601-1000
TEL: (919) 733-2400

FOR: UTILITIES SECTION ENGINEER
FOR: UTILITIES SQUAD LEADER PROJECT ENGINEER
FOR: UTILITIES PROJECT DESIGNER

Barry Washington, P.E. UTILITIES SECTION ENGINEER
Steve McKee, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Johnathan Johnson UTILITIES PROJECT DESIGNER

TIP PROJECT: R-2413C

