PROJECT SPECIAL PROVISION

(10-18-95) Z-1

PERMITS

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

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

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.

Feulner

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

REPLY TO
ATTENTION OF:

February 12, 2010

Regulatory Division

Action ID: SAW-2008-02242; NCDOT TIP No. R-2233A

Dr. Gregory J. Thorpe, PhD, Manager
Project Development and Environmental Analysis Branch
N.C. Department of Transportation
Division of Highways
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Dr. Thorpe:

Enclosed is a Department of the Army permit to discharge fill material into 3,342 linear feet of stream channel in Floyds Creek, the Broad River and unnamed tributaries and 0.14 acre of adjacent wetland, within the Broad River drainage, associated with the widening of US Highway 221 in Rutherfordton, Rutherford County, North Carolina (TIP No. R-2233A).

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

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

a. You must complete construction before December 31, 2015.

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

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

You should address all questions regarding this authorization to Mr. David Baker, Regulatory Division, Asheville Regulatory Field Office, telephone (828) 271-7980, extension 225.

Sincerely,

FOR: Jefferson M. Ryscavage
Colonel, U.S. Army
District Commander

Enclosures

Copy furnished (with enclosures):

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

Copies furnished (with special conditions and plans):

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

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

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

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

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

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: NC Department of Transportation	File Number: SAW-2008-2242	Date: January 28, 2010
Attached is:		See Section below
XX	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://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 division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

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DEPARTMENT OF THE ARMY PERMIT

Permittee **North Carolina Department of Transportation**

Permit No. **SAW 2008-2242**

Issuing Office **CESAW-RG-A**

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

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

Project Description: **to discharge fill material into 0.14 acres of wetland, and 3,342 linear feet of stream channel in Floyds Creek, the Broad River, and unnamed tributaries in conjunction with the widening of US Highway 221 (TIP No. R-2233A)**

Project Location: **in Rutherfordton, Rutherford County, North Carolina.**

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **January 28, 2015**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

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

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

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

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

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

Special Conditions:

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

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

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

E. L. Lupe for Gregory J. Thorpe, PhD 2-2-10

(PERMITTEE) **NC Dept of Transportation** *(DATE)*

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

2/12/10

(DISTRICT COMMANDER) **JEFFERSON M. RYSCAVAGE** *(DATE)*
COLONEL

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

(TRANSFEREE) *(DATE)*

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

SPECIAL CONDITIONS
AID #: SAW 2008-2242

1. All work must be performed in strict compliance with the attached plans, which are a part of this permit. Any modifications to the permit plans must be approved by the Corps of Engineers prior to implementation.

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

* 3. 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, Asheville Regulatory Field Office prior to any active construction in waters and wetlands.

* 4. The permittee shall schedule a pre-construction meeting between their representatives, the contractor and the Corps of Engineers, Asheville Regulatory Field Office, NCDOT Regulatory Project Manager prior to any work in jurisdictional waters and wetlands to ensure that there is a mutual understanding of all terms and conditions contained in this DA permit. The permittee shall provide the NCDOT Regulatory Project Manager with a copy of the final plans at least two weeks prior to the pre-construction 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 pre-construction meeting for a time when the Corps of Engineers and North Carolina Division of Water Quality (NCDWQ) Project Managers can attend. The permittee shall notify the Corps of Engineers and NCDWQ Project Managers a minimum of thirty (30) days in advance of the meeting.

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

6. Except as authorized by this permit or any Corps of Engineers approved modification to this permit, no excavation, fill or mechanized land clearing activities shall take place at any time in the construction or maintenance of this project within waters or wetlands nor shall any activities take place that cause the degradation of waters or wetlands. In addition, except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project in such a manner as to

impair normal flows and circulation patterns within, into or out of waters and wetlands or to reduce the reach of waters and wetlands.

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

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

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

10. The permittee shall take measures to prevent live or fresh concrete from coming into contact with any surface waters until the concrete has hardened and cured.

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

SPECIAL CONDITIONS
AID #: SAW 2008-2242

12. All authorized culverts will be installed to allow the passage of low stream flows and the continued movement of fish and other aquatic life as well as to prevent head-cutting of the streambed. For all box culverts and for pipes greater than 48 inches in diameter, the bottom of the culvert will be buried one foot below the bed of the stream unless such burial would be impractical and the Corps of Engineers has waived this requirement. For culverts 48 inches in diameter or smaller, the bottom of the pipe will be buried below the bed of the stream to a depth equal to or greater than 20 percent of the diameter of the culvert. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in the disequilibrium of wetlands, streambeds or stream banks adjacent to, upstream of or downstream of the structures. In order to allow for the continued movement of bed load and aquatic organisms, existing channel widths and depths will be maintained at the inlet and outlet ends of culverts. Riprap armoring of streams at culvert inlets and outlets shall be minimized above ordinary high water elevation in favor of bioengineering techniques such as bank sloping, erosion control matting and revegetation with deep-rooted native woody plants.

13. Unless 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.

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

* 15. Compensatory mitigation for unavoidable impacts to 2,870 linear feet of cool-water stream channel (HUC 03050105) associated with the proposed project shall be provided by the Ecosystem Enhancement Program (EEP) as outlined in the October 22, 2007 letter from William D. Gilmore, P.E., EEP Director. Pursuant to Section X of the EEP Memorandum of Agreement (MOA) and as revised on March 8, 2007, between the State of North Carolina and the US Army Corps of Engineers, Wilmington District, signed on July 22, 2003, the EEP will provide 5,740 linear feet of cool water stream restoration in the Upper Broad River Basin, Hydrologic Cataloging Units 03050105.

SPECIAL CONDITIONS
AID #: SAW 2008-2242

16. The permittee will report any violation of the above conditions and any violations of Section 404 of the Clean Water Act from unauthorized work in writing to the Wilmington District, US Army Corps of Engineers within 24 hours of the permittee's discovery of the violation.

17. The USFWS Biological Opinion, dated May 12, 2009, contains Conservation Measures which have been developed to further avoid and minimize impacts to the federally threatened dwarf-flowered heartleaf (Hexastylis naniflora). NCDOT has committed to implementation of these design and construction measures. Your authorization under this Corps permit is conditional upon your compliance with all the conservation measures outlined on Page 2 of the Biological Opinion. Failure to comply with the conservation measures would constitute non-compliance with your Corps permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its BO, and the ESA.

18. All conditions of the North Carolina Division of Water Quality's Section 401 Water Quality Certification No. 3784, original dated March 5, 2009 are hereby incorporated as special conditions of this permit.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

May 12, 2009

MAY 14 2009

Mr. David Baker
Asheville Regulatory Field Office
U.S. Army Corps of Engineers
151 Patton Avenue, Room 208
Asheville, North Carolina 28801 5006

Dear Mr. Baker:

Subject: Proposed Widening of US 221 in Rutherford County North Carolina, and Its Effects on the Federally Threatened Dwarf-flowered Heartleaf

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (Opinion) based on our review of the North Carolina Department of Transportation's (NCDOT) Biological Assessment (BA) on the effects of the subject highway widening on the federally threatened dwarf-flowered heartleaf (*Hexastylis naniflora*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act). Your January 8, 2009 request for formal consultation was received on January 13, 2009

This Opinion is based on information provided in the BA, telephone conversations, e-mail, office files, published literature, field investigations, and other available literature and sources of information. A complete administrative record of this consultation is on file at this office.

The BA concludes that the rock gnome lichen (*Gymnoderma lineare*) and white irisette (*Sisyrinchium dichotomum*) would not be affected by the proposed project. In addition, the BA states that the project is "not likely to adversely affect" the Indiana bat (*Myotis sodalis*) or small whorled pogonia (*Isotria medeoloides*). We concur with these determinations. Therefore, we believe the requirements under section 7 of the Act are fulfilled for these species. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

BIOLOGICAL OPINION

CONSULTATION HISTORY

A consultation history of this project is provided in Appendix A.

DESCRIPTION OF THE PROPOSED ACTION

The NCDOT proposes to widen US 221 in Rutherford County from the South Carolina state line northward (R-2233A) to Rutherfordton, North Carolina. The current two-lane road will be widened to a four-lane divided highway for about 10 miles. TIP No. R-2233B will provide a bypass of the city of Rutherfordton and continue northward; this portion of the project is about 9 miles long. The dwarf-flowered heartleaf occurs in several locations along R 2233A and in the proposed interchange area at US 221 and US 74. The interchange area is considered part of the R-2233B project. No dwarf-flowered heartleaf plants have been located on the remainder of R-2233B to the north. (See map on the following page of this Opinion.)

Surveys conducted along the project corridor resulted in the discovery of seven occurrences of the dwarf-flowered heartleaf along the corridor of R-2233A and one population in the interchange area of R-2233A and B.. These eight occurrences are estimated to contain 4, 478 plants. About 330 plants will be directly affected by project construction, and another 740 plants will be indirectly affected by corridor construction and maintenance.

Conservation Measures

In addition to asymmetrical widening along the corridor to avoid the dwarf-flowered heartleaf, the NCDOT has committed to several design and construction practices to further avoid and minimize impacts to the species. These measures include the following:

Use 1.5.1 or 2:1 slopes to minimize the construction footprint at dwarf-flowered heartleaf Sites 1, 2, 3, 5, 6, and 7 (EO #s 106, 174, 114, 113 and 175, 76, and 172).

Use wing walls on the culverts to minimize impacts at dwarf-flowered heartleaf Sites 5, 6, and 7 (EO #s 113 and 175, 76, and 172).

Reduce the mechanical clearing limits to less than the standard 10 feet at dwarf-flowered heartleaf Sites 2 and 6 (EO #s 174 and 76).

Use the NCDOT's native seed mix throughout the corridor, where possible.

Resurvey the corridor for dwarf-flowered heartleaf prior to project let for R-2233B. If plants are found, reinitiate consultation.

Obtain a conservation easement on the Tate property (Site 1 and EO # 106), about 8 acres and 2,350 plants.

Transplant the estimated 330 dwarf-flowered heartleaf plants that will be directly impacted to the conservation area.

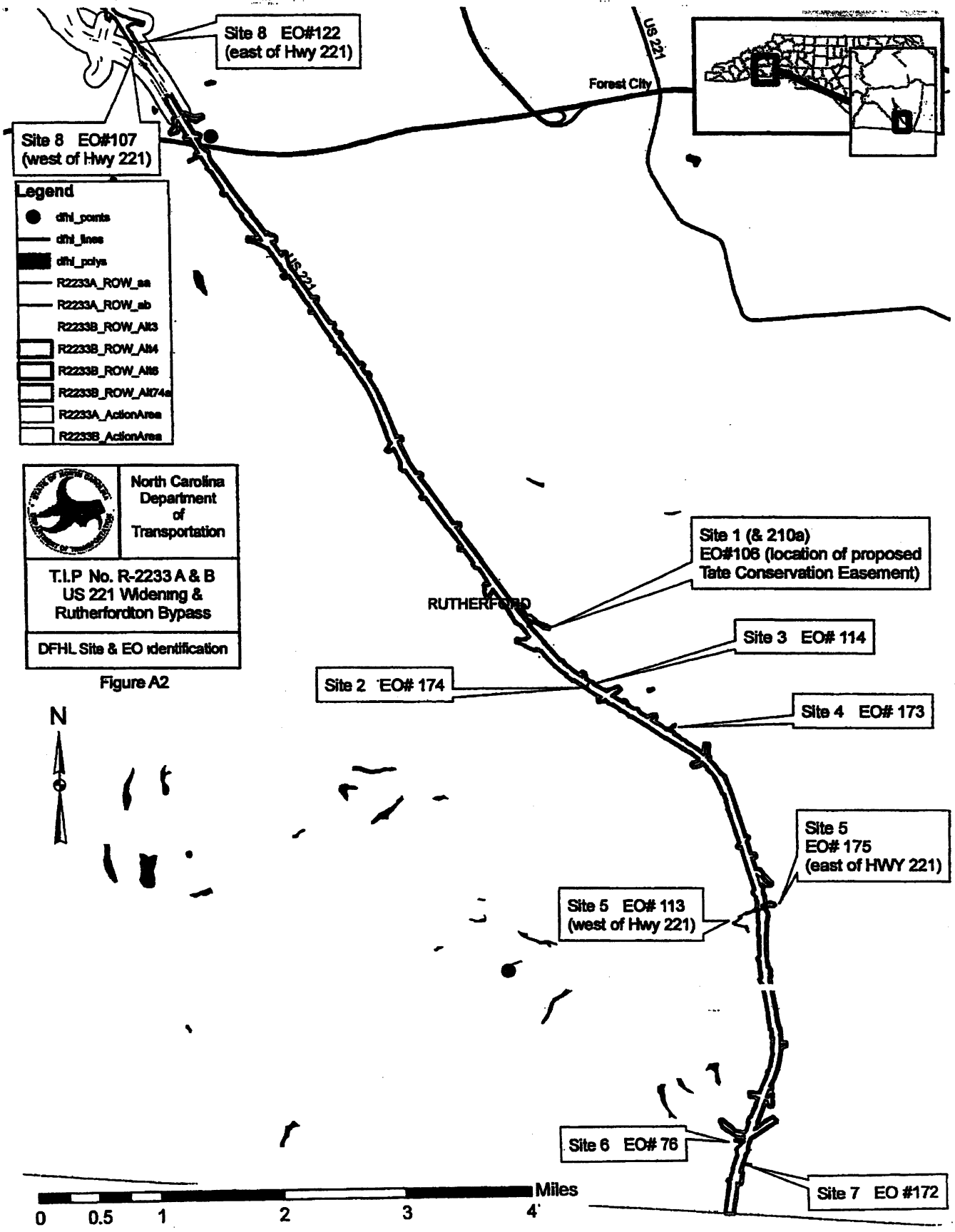

Site 8 EO#122
(east of Hwy 221)
Site 8 EO#107
(west of Hwy 221)
US 221
Forest City
Legend
dfhl_points
dfhl_lines
dfhl_polys
R2233A_ROW_ab
R2233A_ROW_ab
R2233B_ROW_Alt3
R2233B_ROW_Alt4
R2233B_ROW_Alt5
R2233B_ROW_Alt74e
R2233A_ActionArea
R2233B_ActionArea
North Carolina
Department
of
Transportation
T.I.P No. R-2233 A & B
US 221 Widening &
Rutherfordton Bypass
DFHL Site & EO identification
Site 1 (& 210a)
EO#106 (location of proposed
Tate Conservation Easement)
RUTHERFORD
Site 3 EO# 114
Site 2 EO# 174
Site 4 EO# 173
Site 5
EO# 175
(east of HWY 221)
Site 5 EO# 113
(west of Hwy 221)
Site 6 EO# 76
Site 7 EO #172
N
0 0.5 1 2 3 4
Miles

Figure A2

Action Area

The action area should be determined based on consideration of all direct and indirect effects of the proposed action (50 CFR 402.2 and 402.14(h)(2)). The direct and indirect effects of the actions and activities must be considered in conjunction with the effects of other past and present federal, state, or private activities, as well as the cumulative effects of reasonably certain future state or private activities within the action area.

The action area for R-2233A and B is a linear corridor beginning at the North Carolina/South Carolina state line and continuing for about 19 miles, terminating north of the city of Rutherfordton. The width of the corridor is the existing roadway including the current right-of-way (ROW) and 100 feet beyond the ROW limits. In the interchange area of US 221 and US 74, the action area was extended to 400 feet beyond the ROW to accommodate the entire interchange area.

STATUS OF THE SPECIES AND ITS CRITICAL HABITAT

Species Description and Life History

The dwarf-flowered heartleaf is a low-growing herbaceous plant in the birthwort family (Aristolochiaceae). Blomquist (1957) described the species in his revision of the genus *Hexastylis*. The plant's heart-shaped dark green leaves are evergreen and leathery and are supported by long thin petioles from a subsurface rhizome. Maximum height rarely exceeds 15 centimeters (6 inches). The jug-shaped flowers are usually beige to dark brown in color and appear from mid-March to early June. The flowers are small and inconspicuous and are found near the base of the petioles. The fruit matures from mid-May to early July (Blomquist 1957· Gaddy 1980, 1981). The plant grows in acidic soils, usually along north-facing bluffs and adjacent slopes and in floodplains next to streams and creek heads in the upper Piedmont Region of North Carolina and South Carolina. It is most often found on Madison and Pacolet soils. Its small flower distinguishes this species from other members of the genus *Hexastylis*.

Thrips (sucking insects) and flies are the major pollinators of most plant species in the genus *Hexastylis*. As yet, the pollination method for the dwarf-flowered heartleaf is unproven, but biologists speculate that it may be pollinated by snails and/or slugs. With most *Hexastylis* species, the vectors--flies and thrips--spend most of their lives in the plant's flower tissues and feed on pollen grains or on portions of the plant's outer skin. Once the flowers have been fertilized, ants distribute the seeds. These ants eat the coating of the seeds and leave the seeds near the plant site or by the ant nest. Seed germination takes place in the spring, after the seeds have been exposed to cool temperatures.

Status and Distribution

The dwarf-flowered heartleaf was listed as a threatened species on April 14, 1989 (54 FR 14964). No critical habitat has been designated. At the time of listing, threats to the species included residential and industrial development, conversion of its habitat to pasture or small ponds, timber-harvesting, and cattle-grazing. As of 2006, the combined databases of the North Carolina Natural Heritage Program (NCNHP) and the South Carolina Department of Natural Resources' Heritage Trust Program contain records of about 103 locations that are sufficiently geographically distinct as to be regarded as proxies for populations of the species (Draft Five Year Review for *Hexastylis naniflora*, Asheville Field Office, September 2006). This is roughly four times the

number of populations known when the species was federally listed as threatened in 1989 Of these populations, 76 occur in North Carolina, and 29 occur in South Carolina. The species' known range has since expanded to include Alexander, Caldwell, Iredell, and Polk Counties, North Carolina. Despite the relatively large number of known sites and many that have been located since its designation as threatened, threats identified at listing continue to affect the species; at least nine sites have been destroyed, including five that have been discovered since listing. Many more sites have been partially impacted or destroyed because of development, and fewer than ten sites have permanent legal protection from habitat loss or alteration. Further, fewer than 15 percent of all known populations have been reported to contain more than 1,000 rosettes (Service, Draft Five-Year Review for *Hexastylis naniflora*, September 2006).

Analysis of the Species Likely to be Affected

At a minimum, the action area contains about 4,500 dwarf-flowered heartleaf plants. Of the total, about 330 plants will be directly impacted by project construction, and another 740 could be indirectly affected by the effects of clearing and other alterations of the microclimate at the project edges and by the invasion of nonnative plants.

ENVIRONMENTAL BASELINE

Under section 7(a)(2) of the Act, when considering the effects of an action on federally listed species, we are required to take into consideration the environmental baseline. The environmental baseline includes past and ongoing natural factors and past and present impacts from all federal, state, or private actions and other activities in the action area (50 CFR 402.02), including federal actions in the area that have already undergone section 7 consultation and the impacts from state or private actions that are contemporaneous with the consultation in progress. The discussion that follows is our evaluation of the factors and impacts from the activities within the action area that make up the environmental baseline.

Status of the Species within the Action Area

The action area contains about 4,500 dwarf-flowered heartleaf plants. About 330 plants will be directly affected by construction. These plants will be relocated to a protected area. Based on the survival of previously relocated dwarf-flowered heartleaf plants, mortality is not expected to exceed 50 percent. In addition to the direct impacts of the project, about 740 plants may be impacted indirectly.

The subject project may result in the loss of less than one-half of 1 percent of all known individual dwarf-flowered heartleaf plants and about 25 percent of the plants within the action area.

Factors Affecting the Species' Environment within the Action Area

Surveys for the dwarf-flowered heartleaf have been conducted across the entire action area. No other impacts are planned or expected beyond those described in this Opinion.

EFFECTS OF THE ACTION

Under section 7(a)(2) of the Act, "effects of the action" refers to the direct and indirect effects of an action on the species or its critical habitat, together with the effects of other activities that are

interrelated or interdependent with that action. Under section 7 of the Act, the federal agency is responsible for analyzing these effects. The effects of the proposed action are added to the environmental baseline to determine the future baseline, which serves as the basis for the determination in this Opinion. Should the effects of the federal action result in a situation that would jeopardize the continued existence of the species, we may propose reasonable and prudent alternatives that the federal agency can take to avoid violation of section 7(a)(2) of the Act. The discussion that follows is our evaluation of the expected direct and indirect effects of the construction of the subject switching station and transmission line. Indirect effects are those caused by the proposed action that will occur later but that are still reasonably certain to occur (50 CFR 402.02). We have determined that there are no interrelated or interdependent actions apart from the action under consideration.

Factors to be Considered

As previously stated, 330 of the estimated 4,500 dwarf-flowered heartleaf plants within the action area will be directly affected by the proposed highway widening. An estimated 740 additional plants are expected to be impacted indirectly because of habitat changes at the edges of the construction corridor. These areas may provide suitable habitat for the species in the future as the canopy closes in the unmaintained portions of the ROW

The NCDOT has purchased a conservation easement to permanently protect about 2,350 plants on the Tate property (Site 1), including about 4 acres of habitat and an additional 4 acres that will buffer the existing plants and provide suitable habitat for expansion of the "population."

The total number of dwarf-flowered heartleaf plants throughout its known range (estimated to be in excess of 100 populations) is not considered a limiting factor toward recovery of the species; rather, it is the protection of populations from continued developmental threats (such as the activities associated with this project) that is limiting the species' recovery

Analyses of the Effects of the Action

Direct effects. In the action area, 330 dwarf-flowered heartleaf plants and about 1 acre of habitat will be directly affected by the proposed project. These plants will be relocated to the conservation area.

Indirect effects. Indirect effects to the dwarf-flowered heartleaf are anticipated to occur to about 740 plants and about 1.9 acres of habitat. Impacts may result from the edge of the pavement out to the cleared ROW by allowing increased sunlight to plants that occur adjacent to areas that are cleared. After the removal of trees, the additional sunlight would alter habitat conditions at the immediate edge of the tree line, making the area less hospitable to the dwarf-flowered heartleaf and potentially causing additional losses of individual plants. Although increased sunlight could result in increased flowering of the dwarf-flowered heartleaf rosettes just inside the new tree line, it is not known whether this increased flowering would result in increased seedling recruitment or long-term changes in the number of established plants in these locations.

The removal of trees could also result in an influx of native and nonnative invasive species, and dense understories could form from the resultant increase in sunlight. It is likely that the area cleared for the transmission line ROW will result in an increase in the number of invasive species into the action area. If allowed to establish and spread into areas currently occupied by the dwarf-flowered

heartleaf, these invasive species would ultimately result in the loss of additional dwarf-flowered heartleaf plants.

Species' Response to the Proposed Action

The proposed construction activities will result in the removal of all vegetation within the impact area and permanent conversion of suitable habitat to the roadway and maintained shoulders. The proposed project will result in direct impacts to about 330 dwarf-flowered heartleaf plants out of the estimated 4,500 plants in the action area. The predicted impacts will not have negative effects on the recovery of the species.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require a separate consultation pursuant to section 7 of the Act (Service and National Marine Fisheries Service 1998). There are no other state, tribal, local, or private actions reasonably certain to occur in the action area that would affect the dwarf-flowered heartleaf.

CONCLUSION

After reviewing the current status of the dwarf-flowered heartleaf, the environmental baseline for the action area, the effects of the proposed project, the cumulative effects, and the proposed conservation measures, it is our biological opinion that the project as proposed is not likely to jeopardize the continued existence of the dwarf-flowered heartleaf. No critical habitat has been designated for this species; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulations pursuant to section 4(d) of the Act prohibit the taking of endangered and threatened species without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, such as breeding, feeding, or sheltering. Harass is defined as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not for the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the Act, provided that such taking is in compliance with the terms and conditions of this incidental take statement.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, section 9(a)(2)(B) provides limited protection to listed plants from take to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage to such plants on areas under federal jurisdiction or the destruction of endangered plants on nonfederal areas in violation of state law or regulation or in the course of any violation of a

state criminal trespass law Therefore, for this Opinion, incidental take does not apply, and an incidental take statement is not necessary

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to further minimize or avoid the adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We request that the NCDOT implement the following conservation recommendations:

1. Develop a management plan for the dwarf-flowered heartleaf on the conservation easement area (Tate property). This plan, which would require our approval, should address the long-term conservation of all occurrences of the dwarf-flowered heartleaf on this property and is to be in place before any construction begins. A draft plan is to be submitted to the Service's Asheville Field Office by December 31, 2009

2. Provide general location, population, and condition information on the subject eight dwarf-flowered heartleaf "sub-populations" located within this project's footprint to the NCNHP within 1 year of the date of this Opinion. Notify the Service's Asheville Field Office when the information has been provided to the NCNHP

3. Notify the Service's Asheville Field Office when the dwarf-flowered heartleaf plants have been transplanted. This notification should occur no later than 2 weeks after transplanting.

4. Monitor (using a qualified botanist/biologist) the relocated dwarf-flowered heartleaf plants 1 year after they are relocated to determine survival.

5. Provide a written report summarizing the survival of the relocated dwarf-flowered heartleaf plants, as well as any seemingly significant threats or management issues; within 13 months of the completion of transplanting. This report should be submitted to the NCNHP and the Service's Asheville Field Office. This report should include maps and photographs sufficient to clearly convey the general vicinity and specific location of the conservation (transplant) area, the specific locations within the project area in which the dwarf-flowered heartleaf occurs and is monitored, and a condition assessment of the species and its habitat.

In order for us to be kept informed about actions that minimize or avoid adverse effects or that benefit listed species or their habitats, we request notification of the implementation of any conservation recommendations. This notification can be sent via e-mail to Ms. Marella Buncick (marella_buncick @fws.gov), the lead biologist for this consultation, and Dr. Carolyn Wells (carolyn_wells@fws.gov), species recovery coordinator for the dwarf-flowered heartleaf.

REINITIATION/CLOSING STATEMENT

This concludes formal consultation on the action outlined in your January 8, 2009 request for formal consultation. As provided in 50 CFR 402.16, the reinitiation of formal consultation is required where

discretionary federal agency involvement or control over an action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion, (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion, or (4) a new species is listed or critical habitat is designated that may be affected by the action.

If you have any questions or concerns about this consultation or the consultation process in general, please feel free to contact Ms. Buncick at 828/258-3939 Ext. 237 or me, Ext. 223. In any future correspondence concerning this project, please reference our Log Number 4-2-09-100.

Sincerely,

Brian P Cole
Field Supervisor

cc:
Regional Director, FWS, Atlanta, GA (ES, Attention: Mr. Ken Graham)

References:

Blomquist, H.L. 1957 A revision of the *Hexastylis* of North America. Brittonia 8.255-281.

Gaddy, L.L. 1980. Status report on *Hexastylis naniflora.* Prepared for the U.S. Fish and Wildlife Service. Unpublished report. 25 pp.

------ 1981. The status of *Hexastylis naniflora* Blomquist in North Carolina. Unpublished report. 58 pp.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook – Procedures for Conducting Consultation and Conference Activities under Section 7 of the Endangered Species Act. Washington, D.C.

Appendix A. Consultation History

Early consultation for segments of this project began as long ago as 1999. Initially, R-2233 was a single project. In 2000, it was separated into R-2233A and B.

09/1999 Initial Scoping letter from NCDOT
09/1999 Service sends comments to NCDOT

R-2233B

06/2000 Service attends an interagency meeting to review Purpose and Need
02/2001 Service attends an interagency meeting to discuss Alternatives
10/2001 Service attends an interagency meeting to discuss Alternatives
03/2002 Service attends an interagency meeting to further discuss Alternatives
11/2003 Service is notified that dwarf-flowered heartleaf has been found in the interchange area between R-2233A and B.
10/2007 Service attends an interagency meeting to discuss bridge and culvert locations
04/2009 Service attends an interagency meeting to discuss choosing a LEDPA.

R-2233A

08/2002 Service attends first Merger meeting
09/2003 Service receives natural resources report with locations of dwarf-flowered heartleaf locations along the proposed widening.
12/2003 Service attends interagency meeting to discuss bridging and culvert decisions
05/2004 Service receives more detailed information regarding plant locations along proposed route
02/2006 Service attends an interagency meeting to discuss Alternatives
03/2006 Service provides comments on the State Environmental Assessment
05/2006 Service attends interagency meeting to discuss avoidance and minimization measures, including those to avoid impacts to dwarf-flowered heartleaf

The service provided comments regarding avoidance and minimization measures for dwarf-flowered heartleaf during the Merger meetings for the individual projects. Informal consultation continued with:

08/08 a review and comments on the draft BA
09/08 further comments on the draft BA
10/08 comments on the proposed conservation area for the project
01/09 Formal consultation began

287 Please RET to,

Baker David K SAW

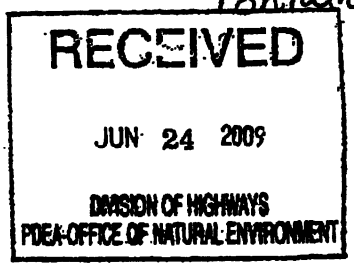
From: Fontaine, Lance P Ph.D. [lpfontaine@ncdot.gov]
Sent: Monday, June 22, 2009 9:16 AM
To: Baker, David K SAW
Cc: Williams, Logan; Feulner Brett M
Subject: Biological Assessment/Biological Opinion for R-2233

David-
I received word from our USFWS rep (Marella Buncick) that she sent to you a Biological Opinion in response to the Biological Assessment that NCDOT prepared and submitted in Dec 2008 for R-2233 (US 221 widening in Rutherford Co) I'm not sure when she sent it or if you have had sufficient time to review the document

Please confirm your receipt of the BA/BO and forward the document to our office at your earliest convenience With the project approaching Let in less than 1 year our office needs all relevant documentation in order for permitting issues to be resolved.

Please don t hesistate to contact me if you have any questions

Fontaine



Lance

Lance P Fontaine, Ph.D
Environmental Biologist

Natural Environment Unit
NC Department of Transportation

lpfontaine@ncdot gov

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1598 Mail Service Center
Raleigh, NC 27699

Physical Address
PDEA Environmental Resource Center
4701 Atlantic Ave, Ste 116
Raleigh, NC 27604

NCDENR

North Carolina Department of Environment and Natural Resources

Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

March 5, 2009

Fewlner

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

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for Proposed improvements to US 221 from the South Carolina line to US 74 Bypass in Rutherford County TIP R 2233A, Division 13.
DWQ Project No. 20081809

Dear Dr. Thorpe:

Attached hereto is a copy of Certification No. 3784 issued to The North Carolina Department of Transportation dated March 5, 2009

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

Sincerely

Coleen H. Sullins
Director

Attachments

cc: David Baker, US Army Corps of Engineers, Asheville Field Office
Roger Bryan, Division 13 Environmental Officer
Kathy Matthews, Environmental Protection Agency
Marla Chambers, NC Wildlife Resources Commission
Mike Parker, DWQ Asheville Regional Office
File Copy

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Dee Freeman
Secretary

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 (DWQ) Regulations in 15 NCAC 2H .0500 This certification authorizes the NCDOT to impact 0.02 acres of jurisdictional wetlands and 3,580 linear feet of jurisdictional streams in Rutherford County The project shall be constructed pursuant to the application dated received December 10, 2008. The authorized impacts are as described below:

R-2233AA Stream Impacts in the Broad River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	90				90	
2			205		205	205
3			109		109	
4			188		188	188
5			36	127	163	
6	156				156	
7			615		615	615
8			832		832	832
9			210		210	210
10			408		408	408
Total	**246**		**2,603**	**127**	**2,976**	**2,458**

Total Stream Impact for Project: 2,976 linear feet

R-2233AB Stream Impacts in the Broad River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1			60	20	80	
2	226				226	
3			228	45	273	228
4			15	10	25	
Total	**226**		**303**	**75**	**604**	**228**

Total Stream Impact for Project: 604 linear feet

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R-2233AA Wetland Impacts in the Broad River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)
3	0.01			0.01		0.02
Total	**0.01**			**0.01**		**0.02**

Total Wetland Impact for Project: 0.02 acres.

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

This approval is only valid for the purpose and design that you submitted in your application dated received December 10, 2008. Should your project change, you are required to notify the DWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Condition(s) of Certification:

1. During construction of the bridge over the Broad River at Site 5, no more than half of the channel shall be blocked by causeways at any time.

2. The dwarf flowered heartleaf population located at station Y2 12+50 shall be protected in perpetuity by a conservation easement or through NCDOT's fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase.

3. At Station No. –L-534+17 a 2-foot sill shall be installed in the overflow pipe and four baffles shall be installed in both pipes to mimic the natural stream flow

* 4. Compensatory mitigation for 2,686 linear feet of impact to streams is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Ecosystem Enhancement Program (EEP), and that the EEP has agreed to implement the mitigation for the project. EEP has indicated in a letter dated September 29 2008 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the Tri-Party MOA signed on July 22, 2003 and the Dual-Party MOA signed on April 12, 2004.

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* 5 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 December 10, 2008 (dated received December 10, 2008). Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Quality

6. All channel relocations will be constructed in a dry work area and stabilized before stream flows are diverted. Channel relocations will be completed and stabilized, and must be approved on site by DWQ staff, prior to diverting water into the new channel. Whenever possible, channel relocations shall be allowed to stabilize for an entire growing season. Vegetation used for bank stabilization shall be limited to native woody species, and should include establishment of a 30 foot wide wooded and an adjacent 20 foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical. A transitional phase incorporating coir fiber and seedling establishment is allowable. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested.

7 At locations where ponds will be drained, proper measures will be taken to drain the pond with limited impact to upstream and downstream channel stability as well as to native aquatic species. Proper measures will be taken to avoid sediment release and/or sediment accumulation downstream as a result of pond draining. If typical pond draining techniques will create significant disturbance to native aquatic species, additional measures such as collection and relocation may be necessary to prevent a significant fish kill. NCDOT shall consult with NC Wildlife Resources Commission staff to determine if there are any sensitive species, and the most appropriate measures to limit impacts to these species. NCDOT shall observe any natural channel re-establishment, or utilize natural channel construction techniques, to ensure that the jurisdictional stream channel above and below the drained pond remain stable, and that no additional impacts occur within the natural stream channel as a result of draining the pond.

8. Bridge deck drains should 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.*

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

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10. 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.

11 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.

12. 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.

13 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.

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

15 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.

16. 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.

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

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

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

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

21. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3.1, unless otherwise authorized by this certification.

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

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23 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.

24. 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.

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

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

27 Native riparian vegetation (ex. river birch, shagbark hickory green ash, black gum, sycamore, black willow, tag alder, red chokeberry ironwood, silky dogwood, spicebush, swamp milkwood, hop sedge, lurid sedge, bottlebrush grass, joe-pye-weed, boneset) must be reestablished within the construction limits of the project by the end of the growing season following completion of construction.

28. 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.

29 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.

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/

North Carolina Department of Environment and Natural Resources
Division of Water Quality
Beverly Eaves Perdue, Governor
Coleen H. Sullins, Director
Dee Freeman, Secretary

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

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

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

This the 5th day of March 2009

DIVISION OF WATER QUALITY

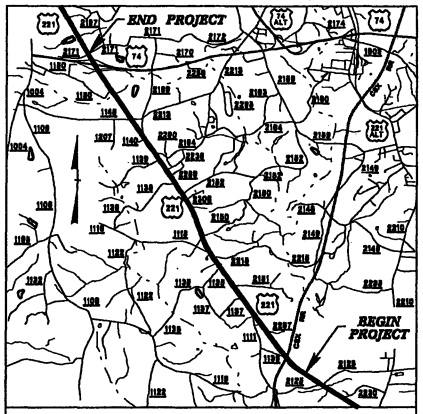
Coleen H. Sullins
Director

WQC No. 3784

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/

CONTRACT: TIP PROJECT: R-2233AB

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

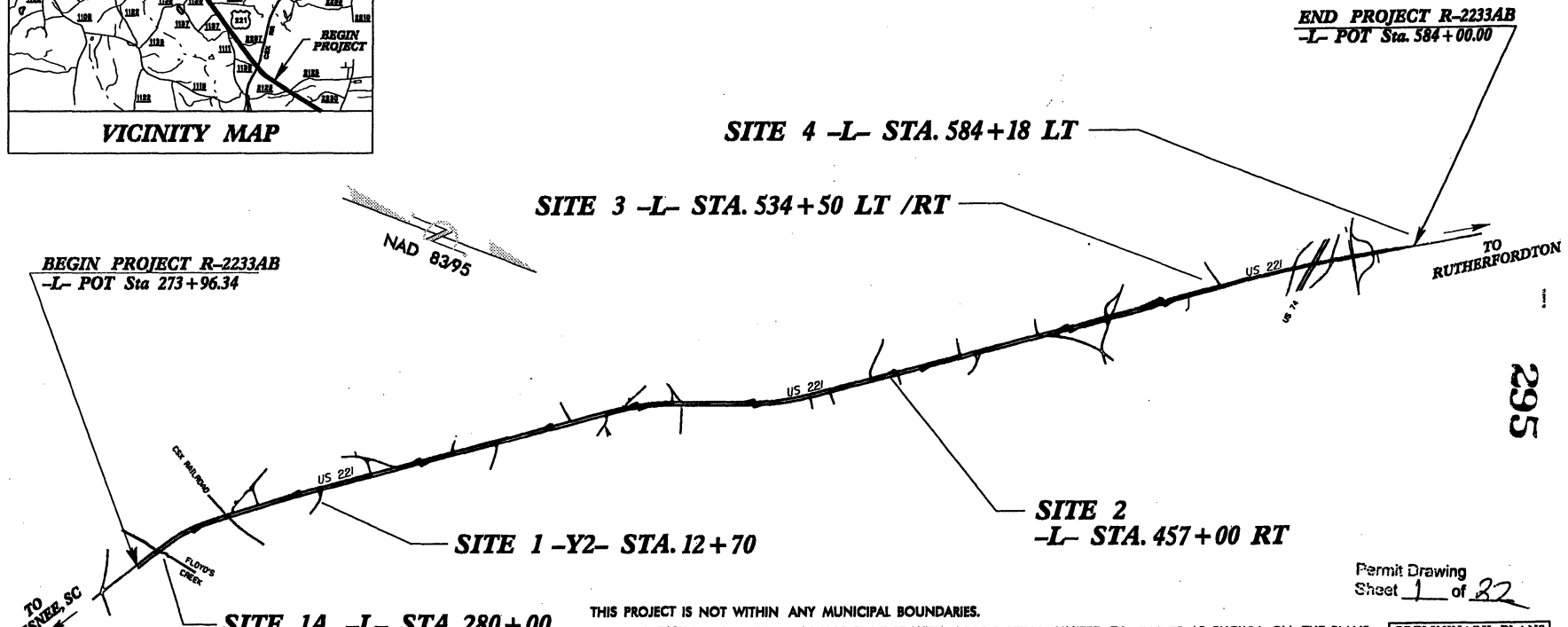
RUTHERFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2233AB	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34400.1.1	NHF-221(9)	P.E.
34400.2.3		R/W, UTIL.

LOCATION: US 221 FROM SOUTH OF FLOYD'S CREEK TO NORTH OF US 74 BYPASS

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES



295

Permit Drawing
Sheet 1 of 22

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II .

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2005 =	10,900
ADT 2030 =	19,000
DHV =	11 %
D =	55 %
T =	12 % *
V =	60 MPH
FUNC. CLASS =	ARTERIAL
* TTST 7%	DUAL 5%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2233AB = 5.755 MILES
LENGTH STRUCTURE TIP PROJECT R-2233AB = 0.117 MILES
TOTAL LENGTH TIP PROJECT R-2233AB = 5.872 MILES

*LENGTHS BASED ON NBL BRIDGES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 28, 2007

LETTING DATE: DECEMBER 15, 2009

ROGER D. THOMAS, PE
PROJECT ENGINEER

BRIAN P. ROBINSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

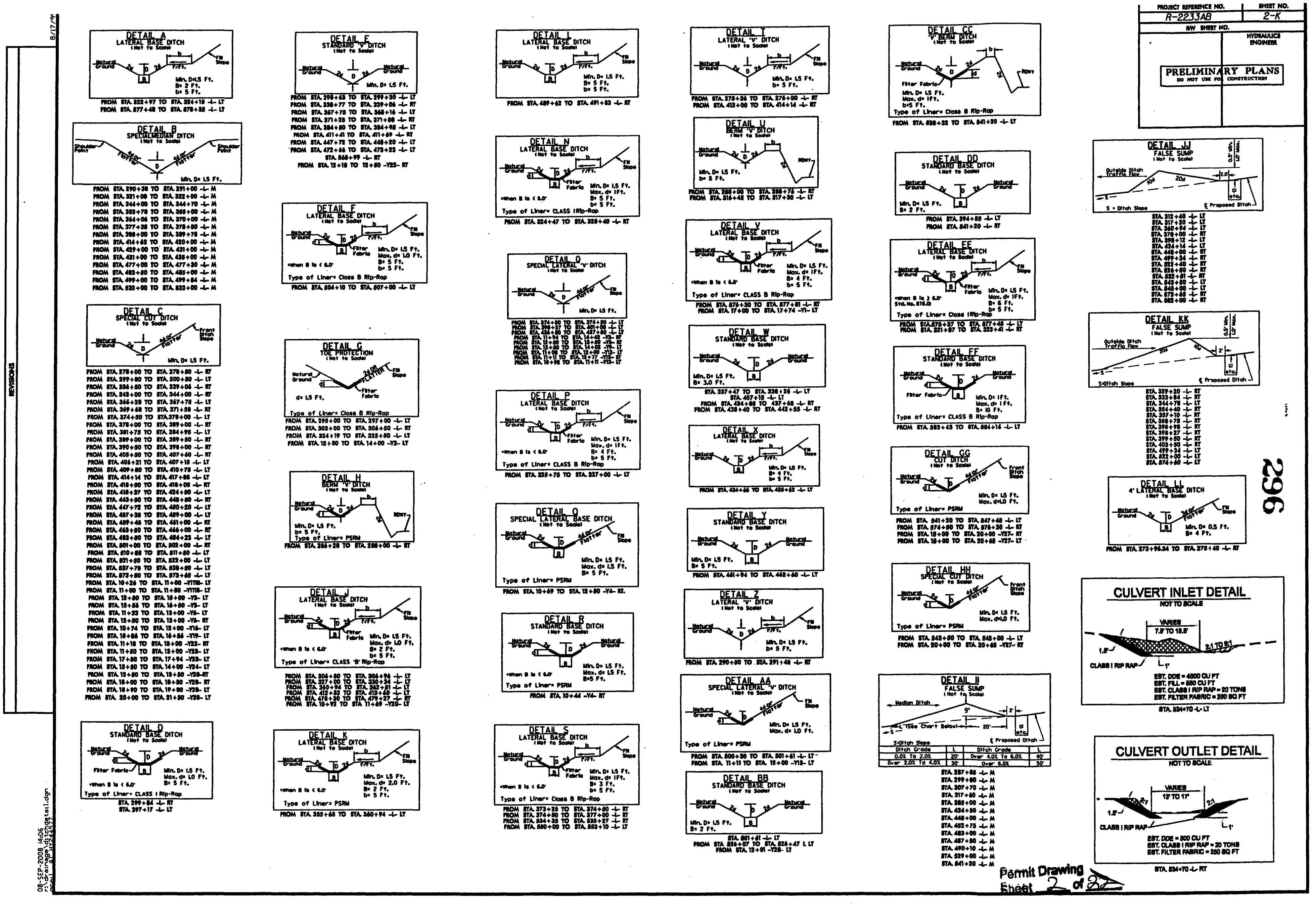
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

08-SEP-2008 07:30
C:\Projects\environmental\drawings\r2233ab_rdy_permit_site_vicinity.dgn
dcalf AT HY2445T7

09/09/08

296


PROJECT REFERENCE NO.
R-2233AB
SHEET NO.
2-K
RW SHEET NO.
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DETAIL A
LATERAL BASE DITCH
DETAIL B
SPECIAL MEDIAN DITCH
DETAIL C
SPECIAL CUT DITCH
DETAIL D
STANDARD BASE DITCH
DETAIL E
STANDARD 'V' DITCH
DETAIL F
LATERAL BASE DITCH
DETAIL G
TOE PROTECTION
DETAIL H
BERM 'V' DITCH
DETAIL J
LATERAL BASE DITCH
DETAIL K
LATERAL BASE DITCH
DETAIL L
LATERAL BASE DITCH
DETAIL N
LATERAL BASE DITCH
DETAIL O
SPECIAL LATERAL 'V' DITCH
DETAIL P
LATERAL BASE DITCH
DETAIL Q
SPECIAL LATERAL BASE DITCH
DETAIL R
STANDARD BASE DITCH
DETAIL S
LATERAL BASE DITCH
DETAIL T
LATERAL 'V' DITCH
DETAIL U
BERM 'V' DITCH
DETAIL V
LATERAL BASE DITCH
DETAIL W
STANDARD BASE DITCH
DETAIL X
LATERAL BASE DITCH
DETAIL Y
STANDARD BASE DITCH
DETAIL Z
LATERAL 'V' DITCH
DETAIL AA
SPECIAL LATERAL 'V' DITCH
DETAIL BB
STANDARD BASE DITCH
DETAIL CC
'V' BERM DITCH
DETAIL DD
STANDARD BASE DITCH
DETAIL EE
LATERAL BASE DITCH
DETAIL FF
STANDARD BASE DITCH
DETAIL GG
CUT DITCH
DETAIL HH
SPECIAL CUT DITCH
DETAIL II
FALSE SUMP
DETAIL JJ
FALSE SUMP
DETAIL KK
FALSE SUMP
DETAIL LL
4' LATERAL BASE DITCH
CULVERT INLET DETAIL
NOT TO SCALE
VARIES
7.5' TO 15.5'
CLASS I RIP RAP
EST. DDE = 4000 CU FT
EST. FILL = 550 CU FT
EST. CLASS I RIP RAP = 20 TONS
EST. FILTER FABRIC = 250 SQ FT
STA. 534+70 -L- LT
CULVERT OUTLET DETAIL
NOT TO SCALE
VARIES
13' TO 17'
CLASS I RIP RAP
EST. DDE = 500 CU FT
EST. CLASS I RIP RAP = 20 TONS
EST. FILTER FABRIC = 250 SQ FT
STA. 534+70 -L- RT
REVISIONS
08-SEP-2008 14:06
Permit Drawing
Sheet 2 of 22

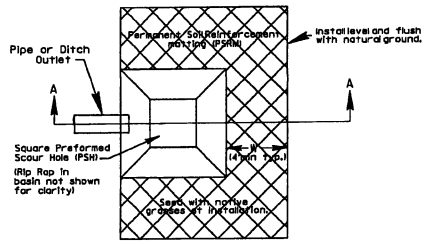
PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	2-L
	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

6/2/99

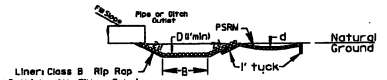
PREFORMED SCOUR HOLE

PLAN VIEW



SECTION A-A

NOTE: SEE PLANS FOR DIMENSIONS ON INDIVIDUAL BASINS

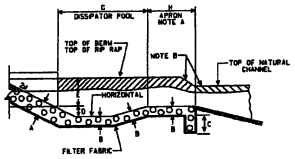


5/05

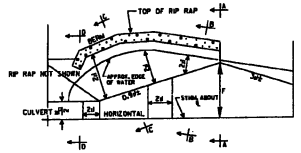
STA. 279+72 -L- RT
STA. 280+44 -L- LT
STA. 297+50 -L- RT
STA. 321+90 -L- RT
STA. 345+30 -L- LT
STA. 351+70 -L- LT
STA. 385+00 -L- LT
STA. 426+50 -L- RT
STA. 543+020 -L- RT
STA. 583+020 -L- RT
STA. 12+50 -Y5- LT
STA. 11+00 -Y7- LT

RIP-RAPPED ENERGY DISSIPATOR BASIN

℄ SECTION

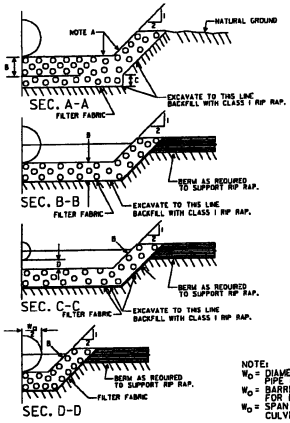


HALF PLAN



NOTE A IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q des /CROSS SECTION AREA AT SEC. A-A ≤ SPECIFIED EXIT VELOCITY.

NOTE B WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



DIM.	RIP RAP BASIN *							
	1	2	3	4	5	6	7	8
A	1.5							
B	0.75							
C	2							
D	2.5							
E	1.5							
F	25							
G	23							
H	13							
I	N/A							
J	N/A							

*ALL DIMENSIONS APPROXIMATE IN FEET

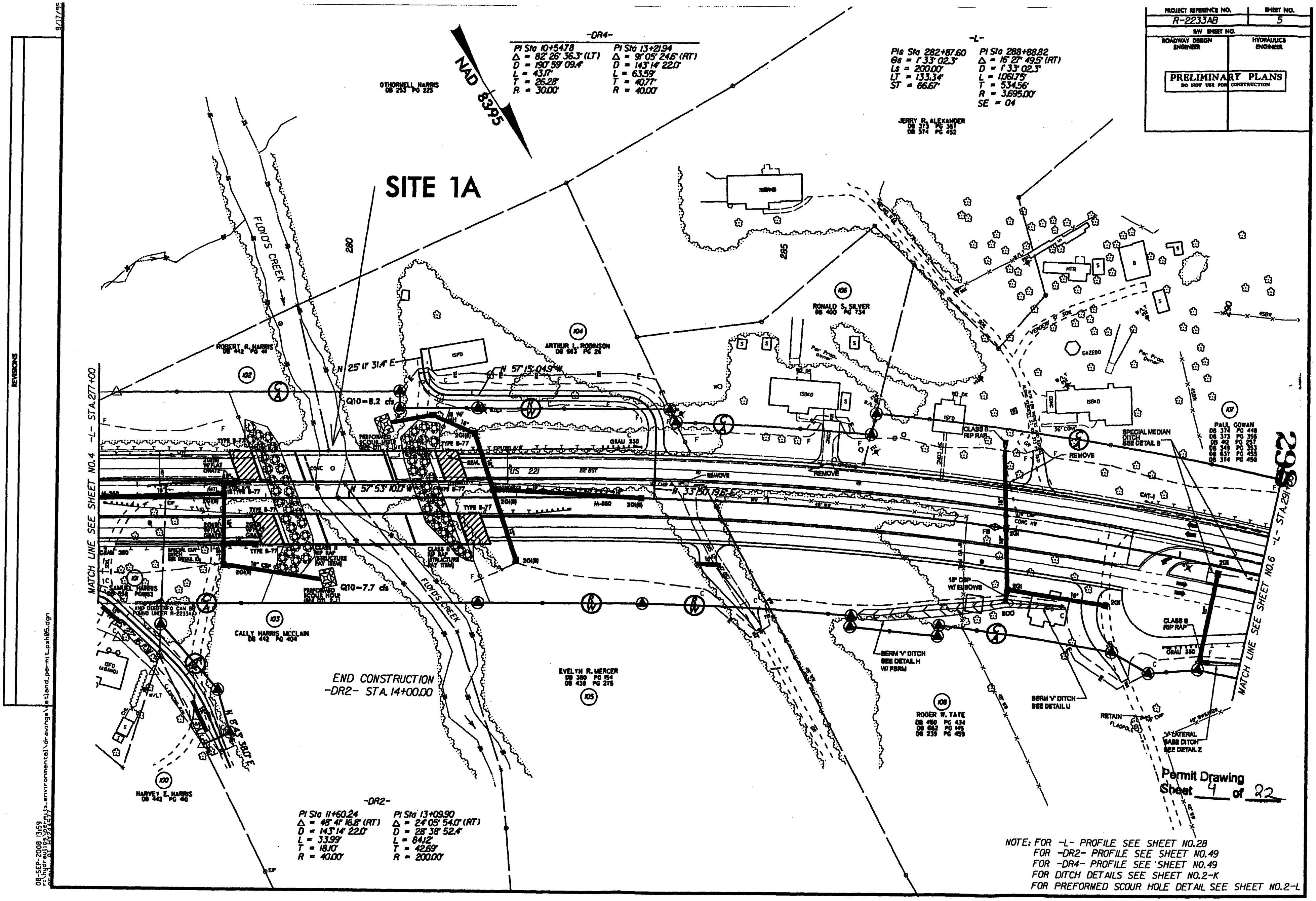
BASIN *	LOCATION (AT OUTLET)
1	456+87 -L- RT
2	
3	
4	
5	
6	
7	
8	

NOTE:
W_o = DIAMETER FOR PIPE CULVERT
W_o = BARREL WIDTH FOR BOX CULVERT
W_o = SPAN OF PIPE-ARCH CULVERT

STA. 456+87 -L- RT

262

Permit Drawing Sheet 3 of 28


PROJECT REFERENCE NO. R-2233AB
SHEET NO. 5
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SITE 1A
NAD 83/95
-DR4-
PI Sta 10+54.78
Δ = 82° 26' 36.3" (LT)
D = 190° 59' 09.4"
L = 43.17'
T = 26.28'
R = 30.00'
PI Sta 13+21.94
Δ = 91° 05' 24.6" (RT)
D = 143° 14' 22.0"
L = 63.59'
T = 40.77'
R = 40.00'
-L-
PIs Sta 282+87.60
θs = 1° 33' 02.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'
PI Sta 288+88.82
Δ = 16° 27' 49.5" (RT)
D = 1° 33' 02.3"
L = 1,061.75'
T = 534.56'
R = 3,695.00'
SE = .04
-DR2-
PI Sta 11+60.24
Δ = 48° 41' 16.8" (RT)
D = 143° 14' 22.0"
L = 33.99'
T = 18.10'
R = 40.00'
PI Sta 13+09.90
Δ = 24° 05' 54.0" (RT)
D = 28° 38' 52.4"
L = 84.12'
T = 42.69'
R = 200.00'
OTHORNELL HARRIS DB 253 PG 225
JERRY R. ALEXANDER DB 373 PG 361 DB 374 PG 452
ROBERT R. HARRIS DB 442 PG 41
ARTHUR L. ROBINSON DB 563 PG 26
RONALD S. SILVER DB 400 PG 134
PAUL GOWAN
CALLY HARRIS MCCLAIN DB 442 PG 404
EVELYN R. MERCER DB 380 PG 154 DB 439 PG 275
ROGER W. TATE DB 490 PG 434 DB 662 PG 145 DB 239 PG 459
HARVEY E. HARRIS DB 442 PG 40
SAMUEL HARRIS
FLOYD'S CREEK
US 221
Q10-8.2 cfs
Q10-7.7 cfs
N 25° 11' 31.4" E
N 57° 15' 04.9" W
N 57° 53' 10.0" W
N 33° 50' 19.5" E
N 6° 43' 38.0" E
PREFORMED SCOUR HOLE
CLASS II RIP RAP (STRUCTURE PAY ITEM)
CLASS B RIP RAP
SPECIAL MEDIAN DITCH SEE DETAIL B
BERM 'V' DITCH SEE DETAIL H W/ PSRM
BERM 'V' DITCH SEE DETAIL U
V-LATERAL BASE DITCH SEE DETAIL Z
18" CMP W/ ELBOWS
REMOVE
END CONSTRUCTION -DR2- STA. 14+00.00
MATCH LINE SEE SHEET NO.4 -L- STA.277+00
MATCH LINE SEE SHEET NO.6 -L- STA.291+00
298
Permit Drawing Sheet 4 of 22
NOTE: FOR -L- PROFILE SEE SHEET NO.28
FOR -DR2- PROFILE SEE SHEET NO.49
FOR -DR4- PROFILE SEE SHEET NO.49
FOR DITCH DETAILS SEE SHEET NO.2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO.2-L
REVISIONS
8/17/99
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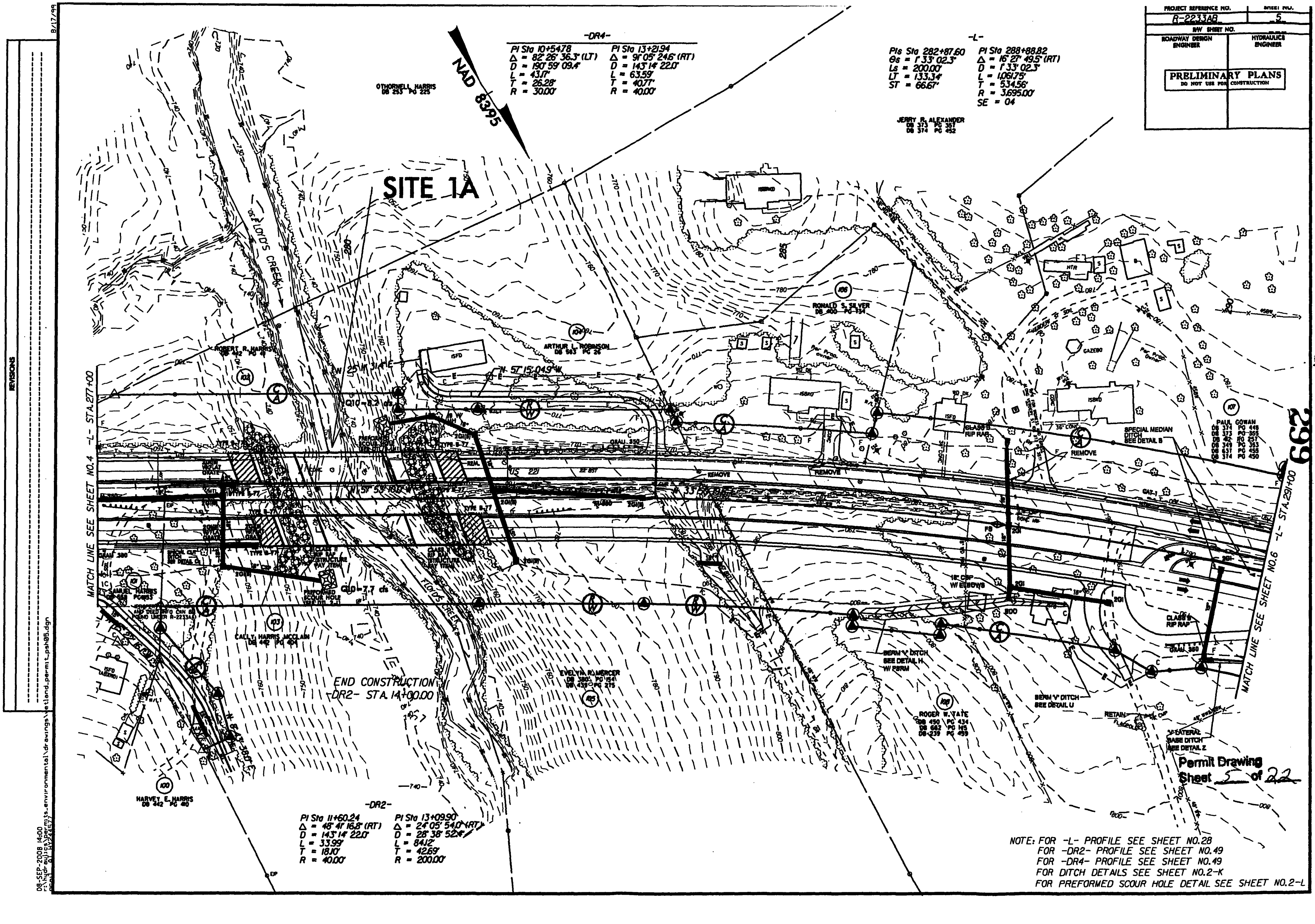
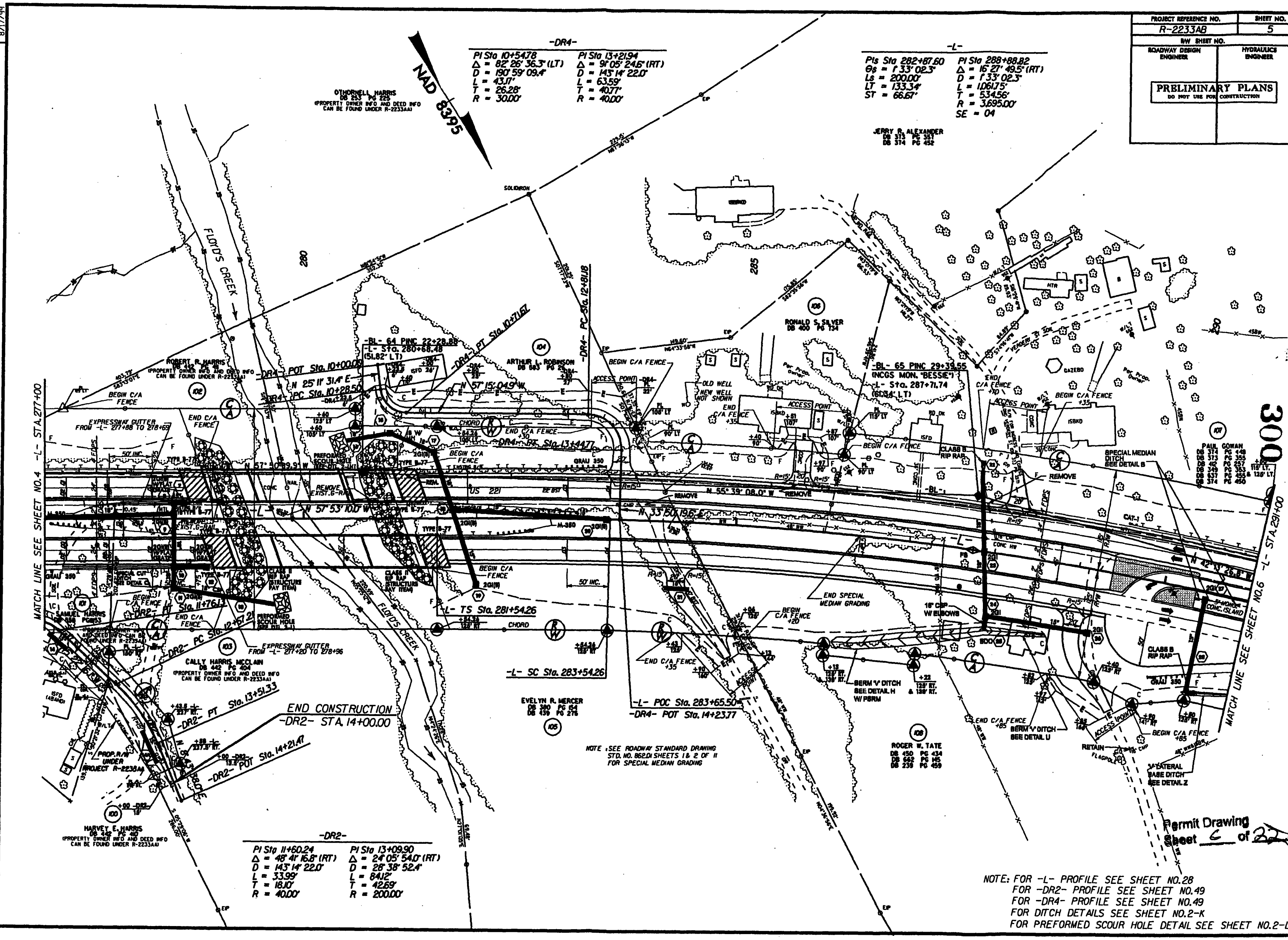

PROJECT REFERENCE NO.
R-2233AB
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SITE 1A
NAD 83/95
-DR4-
PI Sta 10+54.78
Δ = 82° 26' 36.3" (LT)
D = 190° 59' 09.4"
L = 43.17'
T = 26.28'
R = 30.00'
PI Sta 13+21.94
Δ = 9° 05' 24.6" (RT)
D = 143° 14' 22.0"
L = 63.59'
T = 40.77'
R = 40.00'
-L-
PIs Sta 282+87.60
θs = 1° 33' 02.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'
PI Sta 288+88.82
Δ = 16° 27' 49.5" (RT)
D = 1° 33' 02.3"
L = 1,061.75'
T = 534.56'
R = 3,695.00'
SE = 04
OTHORNELL HARRIS
DB 253 PG 225
JERRY R. ALEXANDER
DB 373 PG 357
DB 374 PG 452
RONALD S. SILVER
DB 400 PG 134
ARTHUR L. ROBINSON
DB 663 PG 26
ROBERT R. HARRIS
DB 442 PG 41
PAUL GOWAN
LLOYD'S CREEK
FLOYDS CREEK
US 221
REMOVE
SPECIAL MEDIAN DITCH SEE DETAIL B
CLASS B RIP RAP
PREFORMED SCOUR HOLE
Q10 = 8.2 cfs
Q10 = 7.7 cfs
CALLY HARRIS MCCLAIN
DB 442 PG 404
SAMUEL HARRIS FORBES
EVELYN R. MERCER
DB 380 PG 154
DB 435 PG 275
ROGER W. YATE
DB 450 PG 434
DB 662 PG 165
DB 239 PG 459
HARVEY E. HARRIS
DB 442 PG 40
END CONSTRUCTION
-DR2- STA. 14+00.00
BERM 'V' DITCH SEE DETAIL H W/ PERM
BERM 'V' DITCH SEE DETAIL U
LATERAL BASE DITCH SEE DETAIL Z
18" CSP W/ ELBOWS
MATCH LINE SEE SHEET NO.4 -L- STA.277+00
MATCH LINE SEE SHEET NO.6 -L- STA.291+00
299
-DR2-
PI Sta 11+60.24
Δ = 48° 41' 16.8" (RT)
D = 143° 14' 22.0"
L = 33.99'
T = 18.10'
R = 40.00'
PI Sta 13+09.90
Δ = 24° 05' 54.0" (RT)
D = 28° 38' 52.4"
L = 84.12'
T = 42.69'
R = 200.00'
Permit Drawing
Sheet 5 of 22
NOTE: FOR -L- PROFILE SEE SHEET NO.28
FOR -DR2- PROFILE SEE SHEET NO.49
FOR -DR4- PROFILE SEE SHEET NO.49
FOR DITCH DETAILS SEE SHEET NO.2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO.2-L
REVISIONS
8/17/99
08-SEP-2008 14:00



REVISIONS

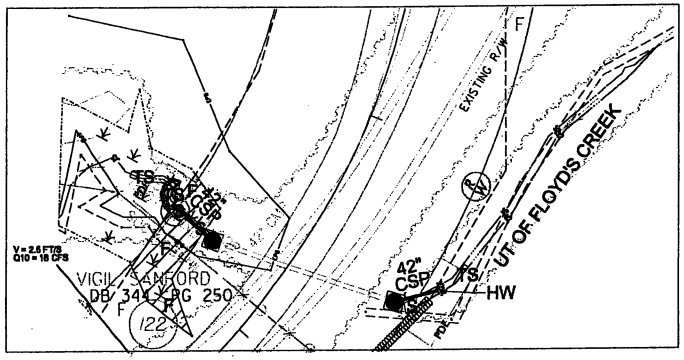
8/17/99

08-SEP-2008 09:46
r:\roadway\proj\r2233ab_rdy_dsn_psh05.dgn

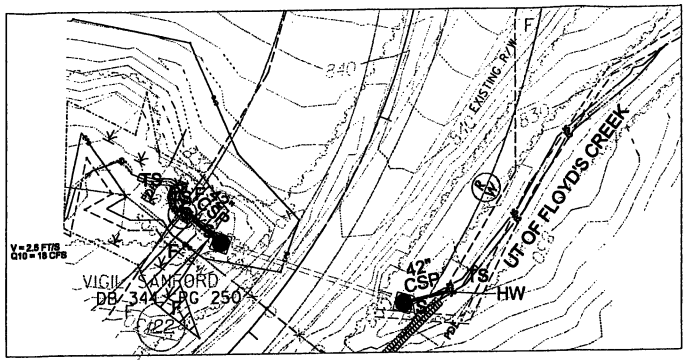
BEGIN CONSTRUCTION
-Y3- POC STA 12+25.00

R-2233AB	8
BW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

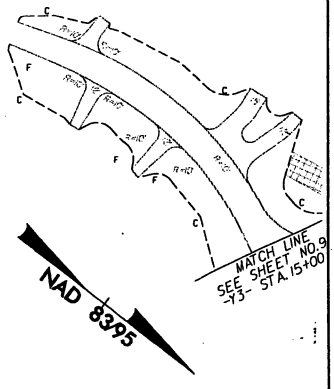
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



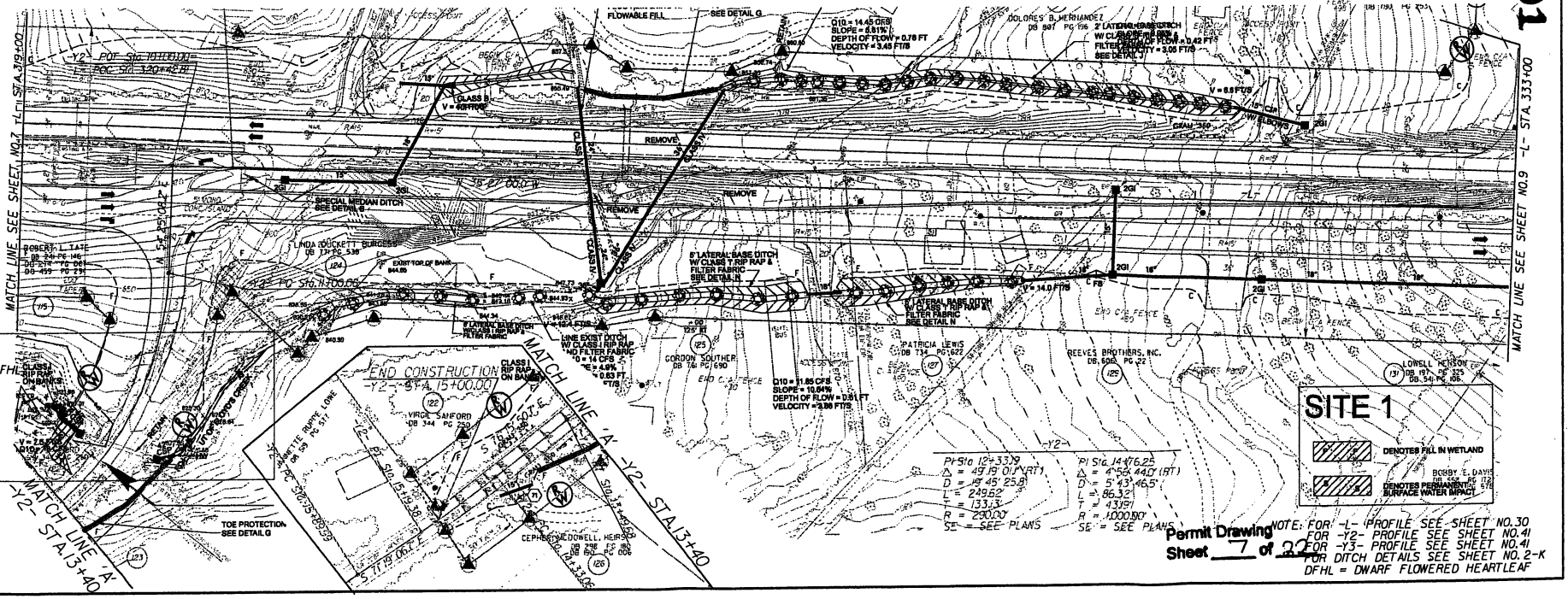
SITE 1 ENLARGED PLAN



SITE 1 ENLARGED PLAN
(WITH CONTOURS)



SITE 1 SEE ENLARGED PLAN

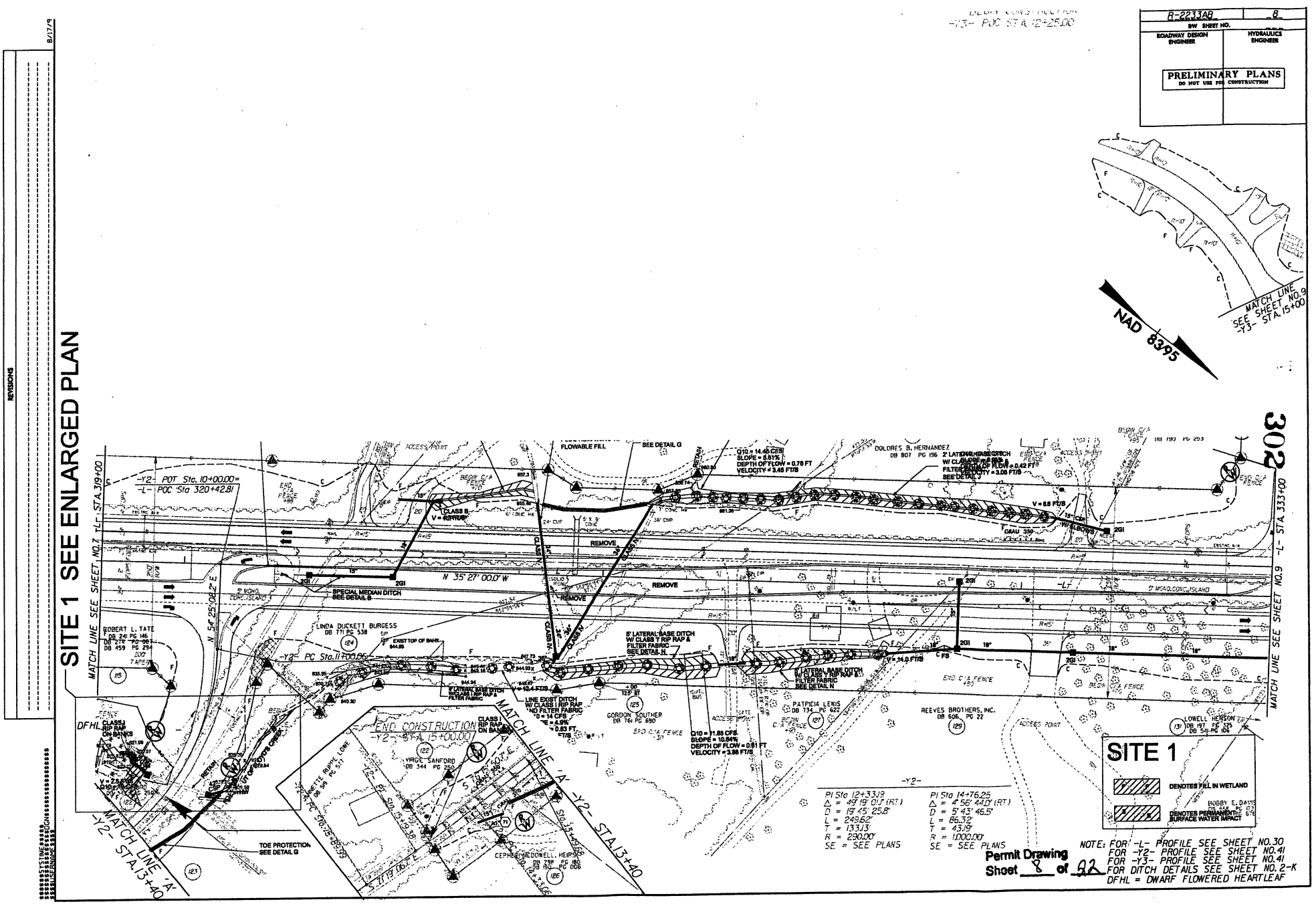


Permit Drawing
Sheet 7 of 22

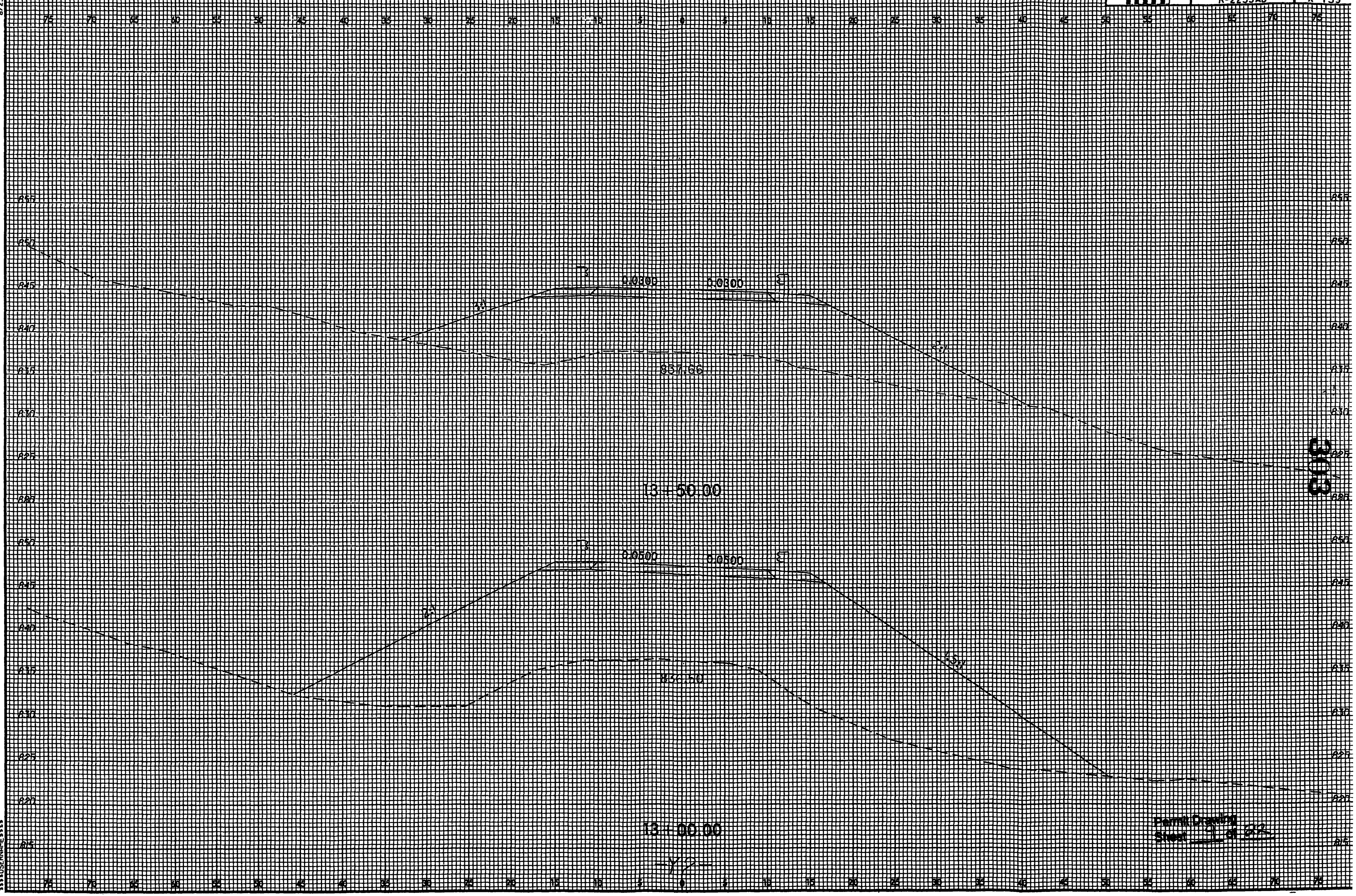
NOTE: FOR -L- PROFILE SEE SHEET NO.30
FOR -Y2- PROFILE SEE SHEET NO.41
FOR -Y3- PROFILE SEE SHEET NO.41
FOR DITCH DETAILS SEE SHEET NO. 2-K
DFHL = DWARF FLOWERED HEARTLEAF

301

REVISIONS
8/17/9


SITE 1 SEE ENLARGED PLAN
REVISIONS
8/17/9
R-2233AB
8
SW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-Y3- PVC STA 12+25.00
MATCH LINE SEE SHEET NO.9 -Y3- STA.15+00
NAD 8395
-Y2- POT Sta. 10+00.00=
-L- POC Sta 320+42.81
MATCH LINE SEE SHEET NO.7 -L- STA.319+00
-Y2- PC Sta.11+00.65
MATCH LINE SEE SHEET NO.9 -L- STA 333+00
302
FLOWABLE FILL
SEE DETAIL G
CLASS B V = 4.0 FT/S
REMOVE
N 35° 27' 00.0" W
N 54° 25' 08.2" E
SPECIAL MEDIAN DITCH SEE DETAIL B
5' LATERAL BASE DITCH W/ CLASS I RIP RAP & FILTER FABRIC SEE DETAIL N
LINE EXIST DITCH W/ CLASS I RIP RAP AND FILTER FABRIC
Q10 = 14.45 CFS SLOPE = 6.81% DEPTH OF FLOW = 0.76 FT VELOCITY = 3.45 FT/S
Q10 = 71.86 CFS SLOPE = 10.84% DEPTH OF FLOW = 0.91 FT VELOCITY = 3.88 FT/S
DOLORES B. HERNANDEZ DB 807 PG 196
GRAU 359
ROBERT L. TATE DB 241 PG 146 DB 279 PG 981 DB 459 PG 294
LINDA DUCKETT BURGESS DB 771 PG 538
GORDON SOUTHER DB 761 PG 690
PATRICIA LEWIS DB 734 PG 622
REEVES BROTHERS, INC. DB 606 PG 22
LOWELL HERSON DB 197 PG 525 DB 541 PG 106
BOBBY E. DAVIS DB 558 PG 673
VIRGIE SANFORD DB 344 PG 250
CEPHUS MCDOWELL, HEIRS DB 288 PG 180 DB 851 PG 006
DFHL CLASS I RIP RAP ON BANKS
TOE PROTECTION SEE DETAIL G
END CONSTRUCTION -Y2- STA.15+00.00
MATCH LINE -A- -Y2- STA.13+40
MATCH LINE -A- -Y2- STA.13+40
-Y2-
PI Sta 12+33.19
Δ = 49° 19' 01" (RT)
D = 19° 45' 25.8"
L = 249.62'
T = 133.13'
R = 290.00'
SE = SEE PLANS
PI Sta 14+76.25
Δ = 4° 56' 44.0" (RT)
D = 5° 43' 46.5"
L = 86.32'
T = 43.19'
R = 1000.00'
SE = SEE PLANS
SITE 1
DENOTES FILL IN WETLAND
DENOTES PERMANENT SURFACE WATER IMPACT
NOTE: FOR -L- PROFILE SEE SHEET NO.30
FOR -Y2- PROFILE SEE SHEET NO.41
FOR -Y3- PROFILE SEE SHEET NO.41
FOR DITCH DETAILS SEE SHEET NO. 2-K
DFHL = DWARF FLOWERED HEARTLEAF
Permit Drawing Sheet 8 of 22

PROJ. REFERENCE NO.	SHEET NO.
R-2233AB	X-139



8/23/9

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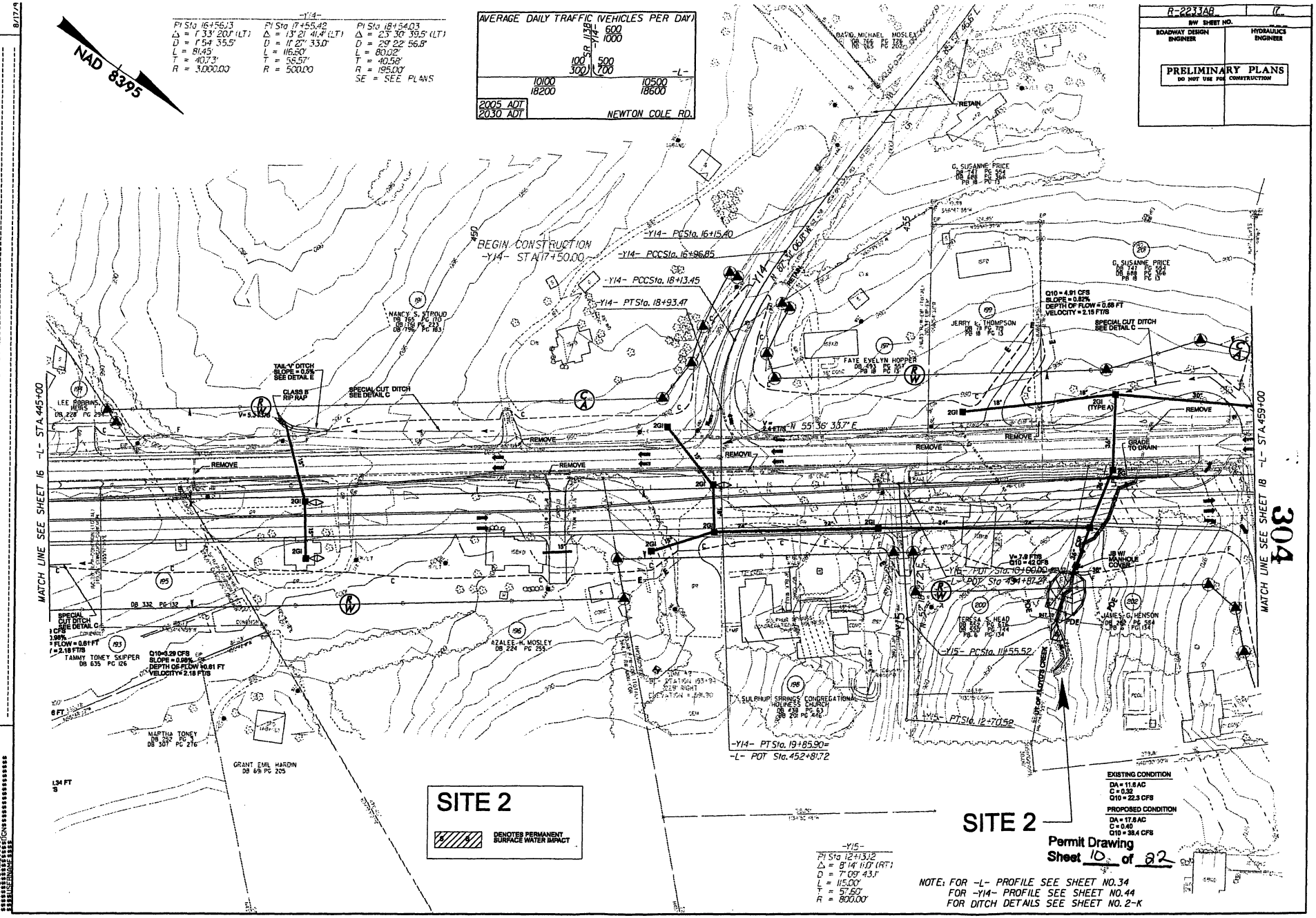
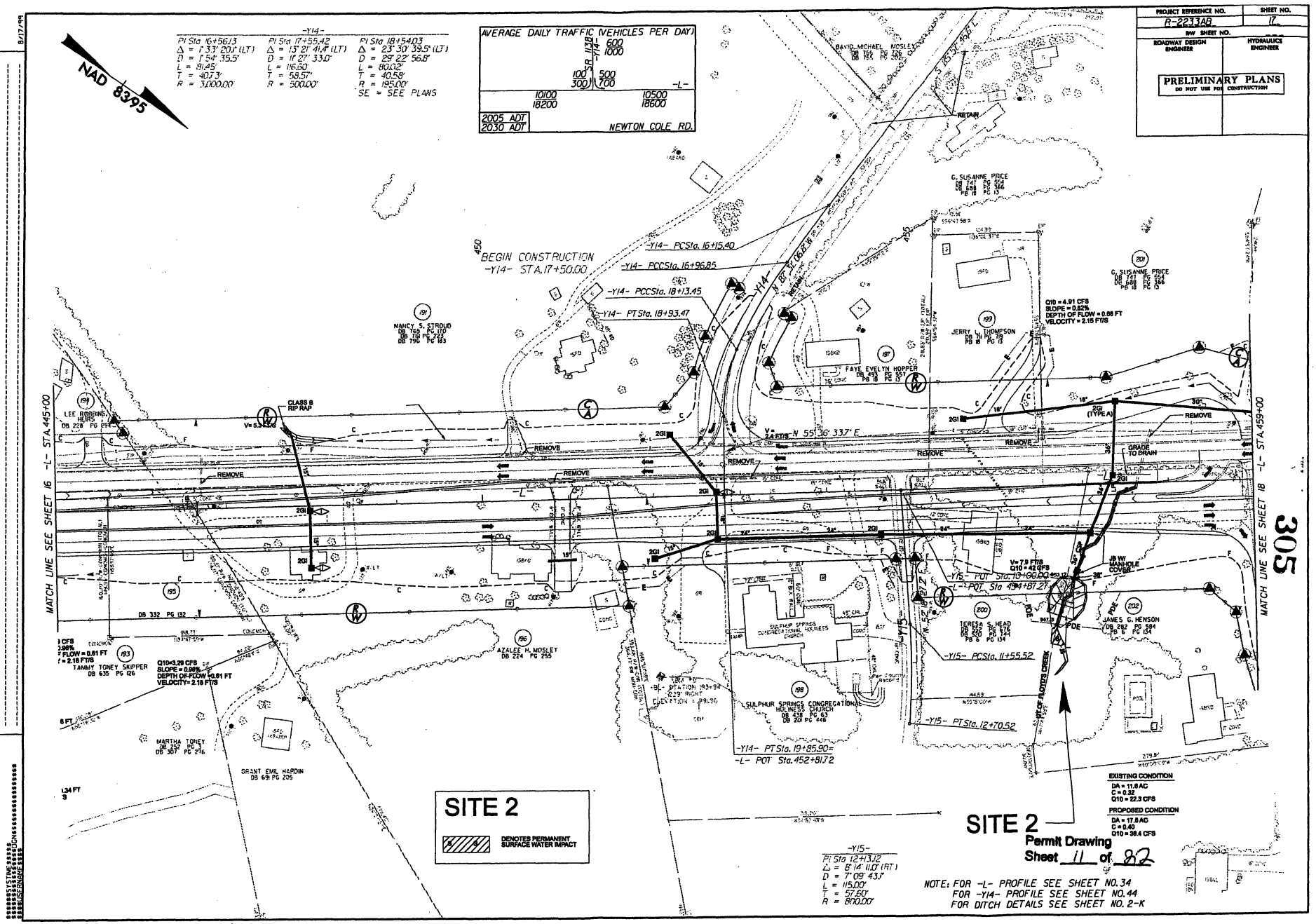
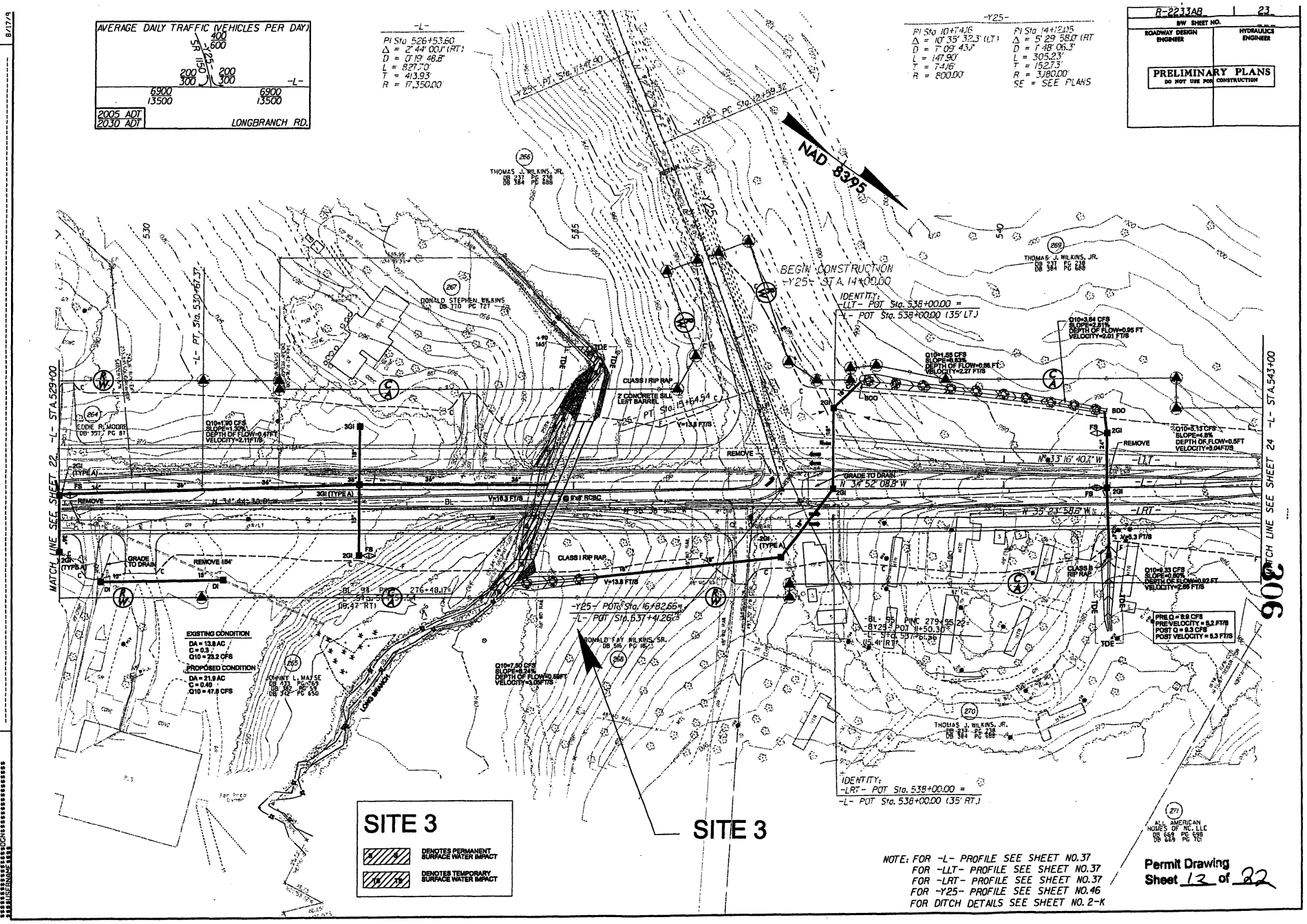
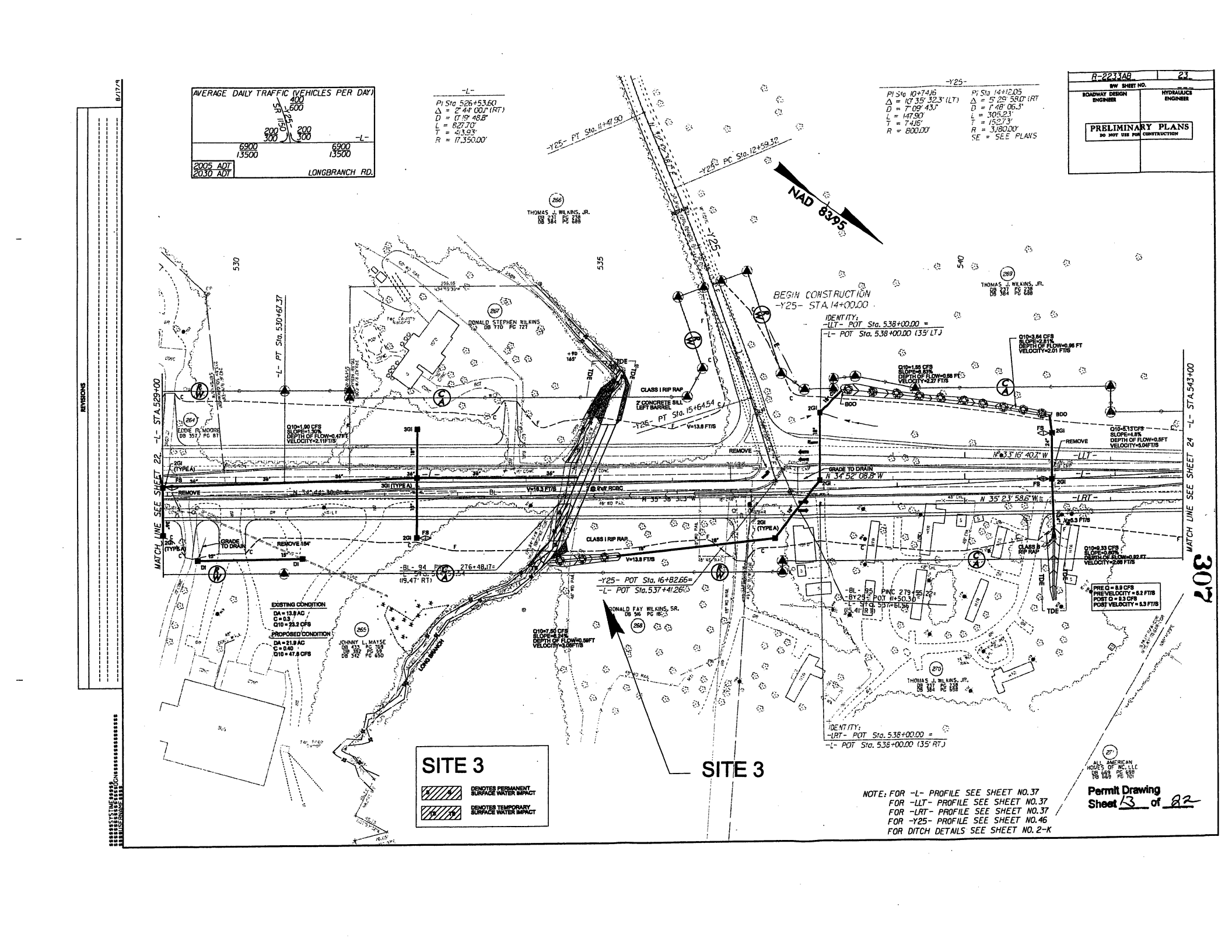
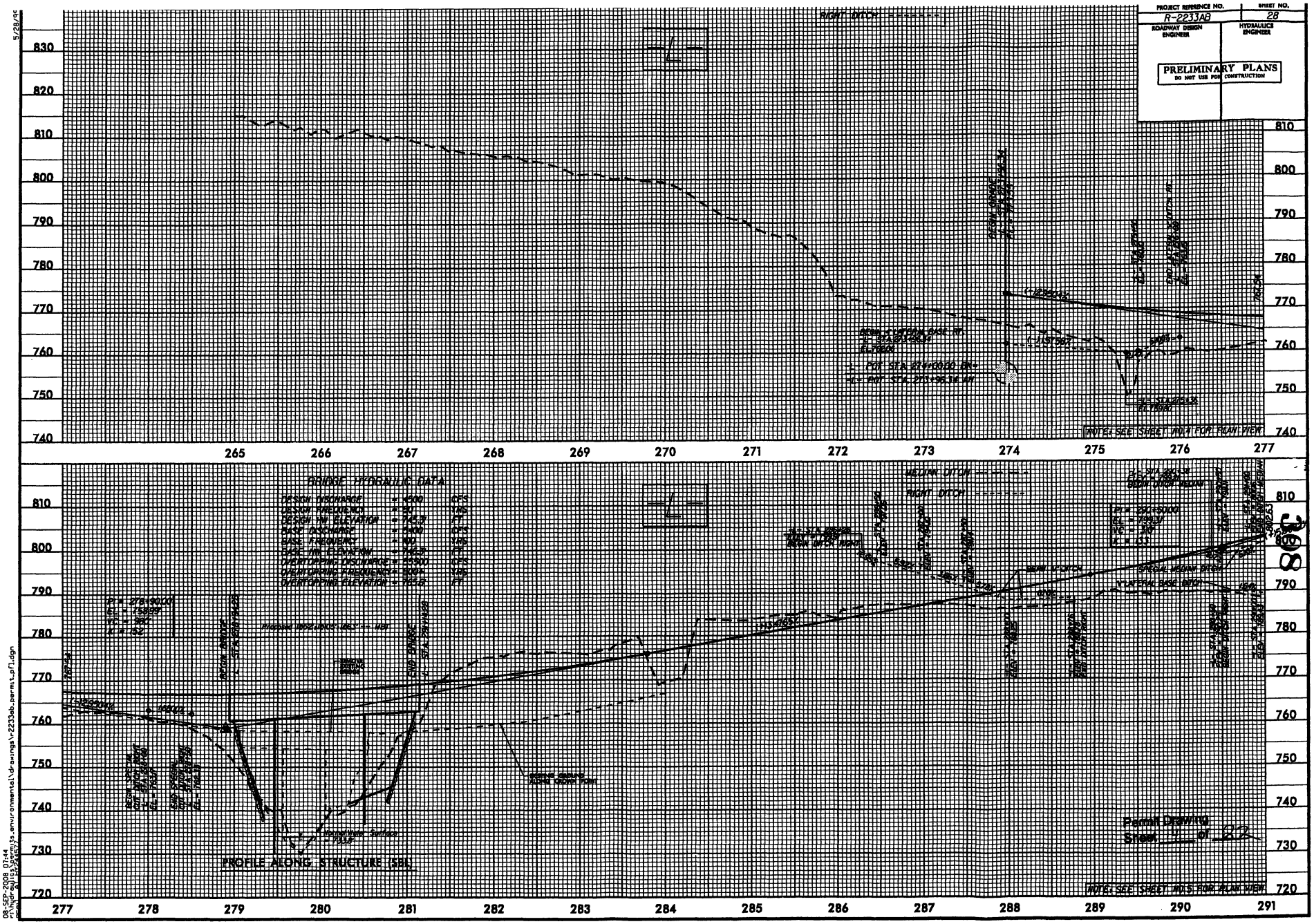
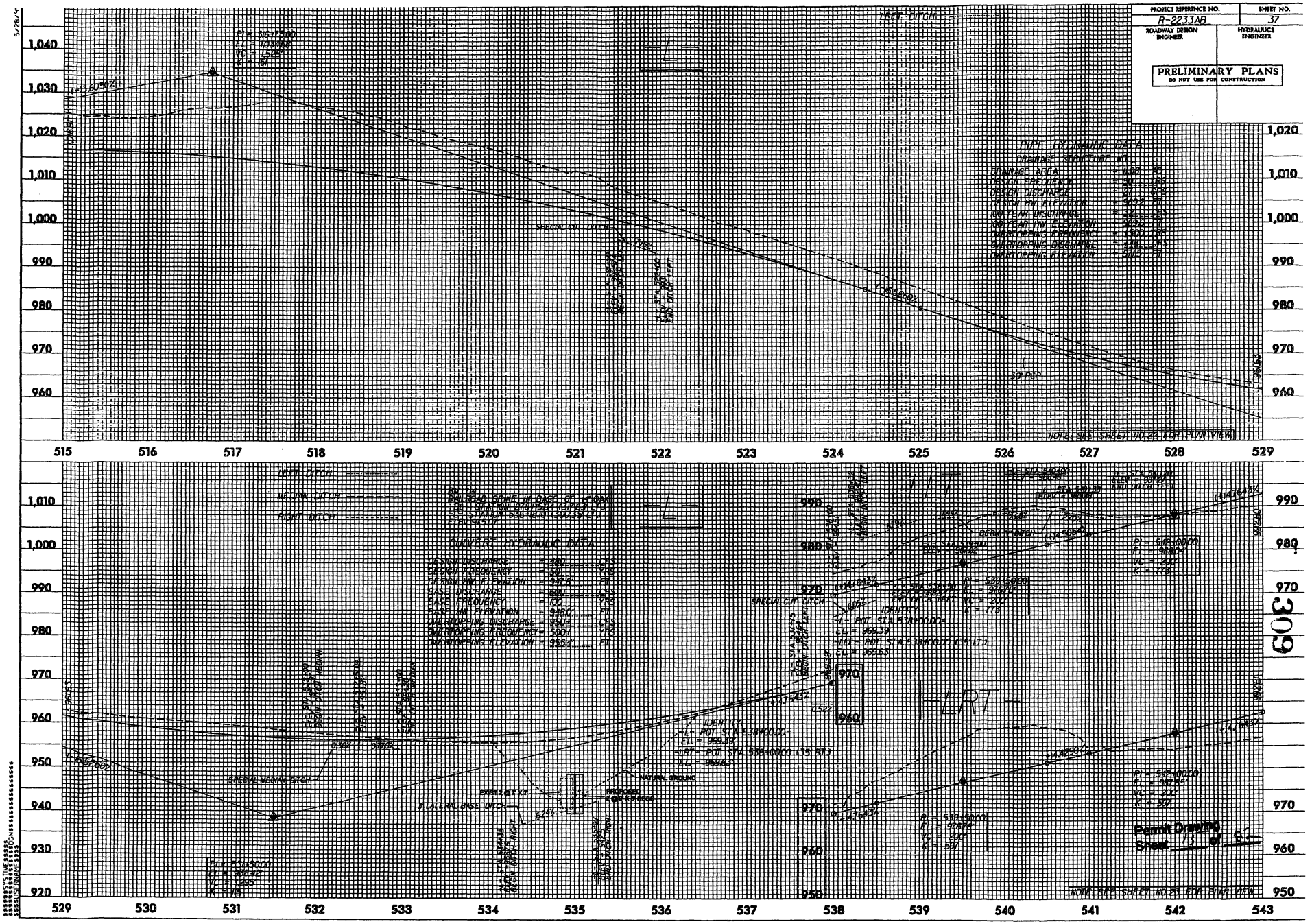

NAD 8395
-Y14-
PI Sta 16+56.13
Δ = 1° 33' 20" (LT)
D = 1° 54' 35.5"
L = 81.45'
T = 40.73'
R = 3,000.00'
PI Sta 17+55.42
Δ = 13° 21' 41.4" (LT)
D = 11° 27' 33.0"
L = 116.50'
T = 58.57'
R = 500.00'
PI Sta 18+54.03
Δ = 23° 30' 39.5" (LT)
D = 29° 22' 56.8"
L = 80.02'
T = 40.58'
R = 195.00'
SE = SEE PLANS
AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
SR 1138
NEWTON COLE RD.
2005 ADT
2030 ADT
10100
18200
10500
18600
100
300
500
700
600
1000
R-2233AB
17
SW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
REVISIONS
8/17/9
MATCH LINE SEE SHEET 16 -L- STA 445+00
MATCH LINE SEE SHEET 18 -L- STA 459+00
BEGIN CONSTRUCTION -Y14- STA 17+50.00
-Y14- PCSta. 16+15.40
-Y14- PCCSta. 16+96.85
-Y14- PCCSta. 18+13.45
-Y14- PTSta. 18+93.47
-Y14- PTSta. 19+85.90
-L- POT Sta. 452+81.72
-Y15- PCSta. 11+55.52
-Y15- PTSta. 12+70.52
-L- POT Sta. 454+87.28
-Y15- POT Sta. 16+00.00
N 55° 36' 33.7" E
-Y15-
PI Sta 12+13.12
Δ = 8° 14' 11.0" (RT)
D = 7° 09' 43.1"
L = 115.00'
T = 57.60'
R = 800.00'
SITE 2
DENOTES PERMANENT SURFACE WATER IMPACT
SITE 2
EXISTING CONDITION
DA = 11.6 AC
C = 0.32
Q10 = 22.3 CFS
PROPOSED CONDITION
DA = 17.8 AC
C = 0.40
Q10 = 38.4 CFS
Permit Drawing
Sheet 10 of 22
NOTE: FOR -L- PROFILE SEE SHEET NO. 34
FOR -Y14- PROFILE SEE SHEET NO. 44
FOR DITCH DETAILS SEE SHEET NO. 2-K
304
RETAIN
REMOVE
GRADE TO DRAIN
SPECIAL CUT DITCH SEE DETAIL C
TAIL "A" DITCH SLOPE = 0.5% SEE DETAIL E
CLASS B RIP RAP
Q10 = 4.91 CFS
SLOPE = 0.82%
DEPTH OF FLOW = 0.68 FT
VELOCITY = 2.15 FT/S
Q10=3.29 CFS
SLOPE = 0.98%
DEPTH OF FLOW = 0.61 FT
VELOCITY = 2.18 FT/S
JB WW MANHOLE COVER
BASIL MICHAEL MOSLEY
G. SUSANNE PRICE
JERRY L. THOMPSON
FAYE EVELYN HOPPER
NANCY S. STROUD
LEE ROBBINS HEIRS
TAMMY TONEY SKIPPER
AZALEE H. MOSLEY
SULPHUR SPRINGS CONGREGATIONAL HOLINESS CHURCH
TERESA S. HEAD
JAMES G. HENSON
MARTHA TONEY
GRANT EARL HARDIN
2GI
2GI (TYPE A)
JB
DB 332 PG 132

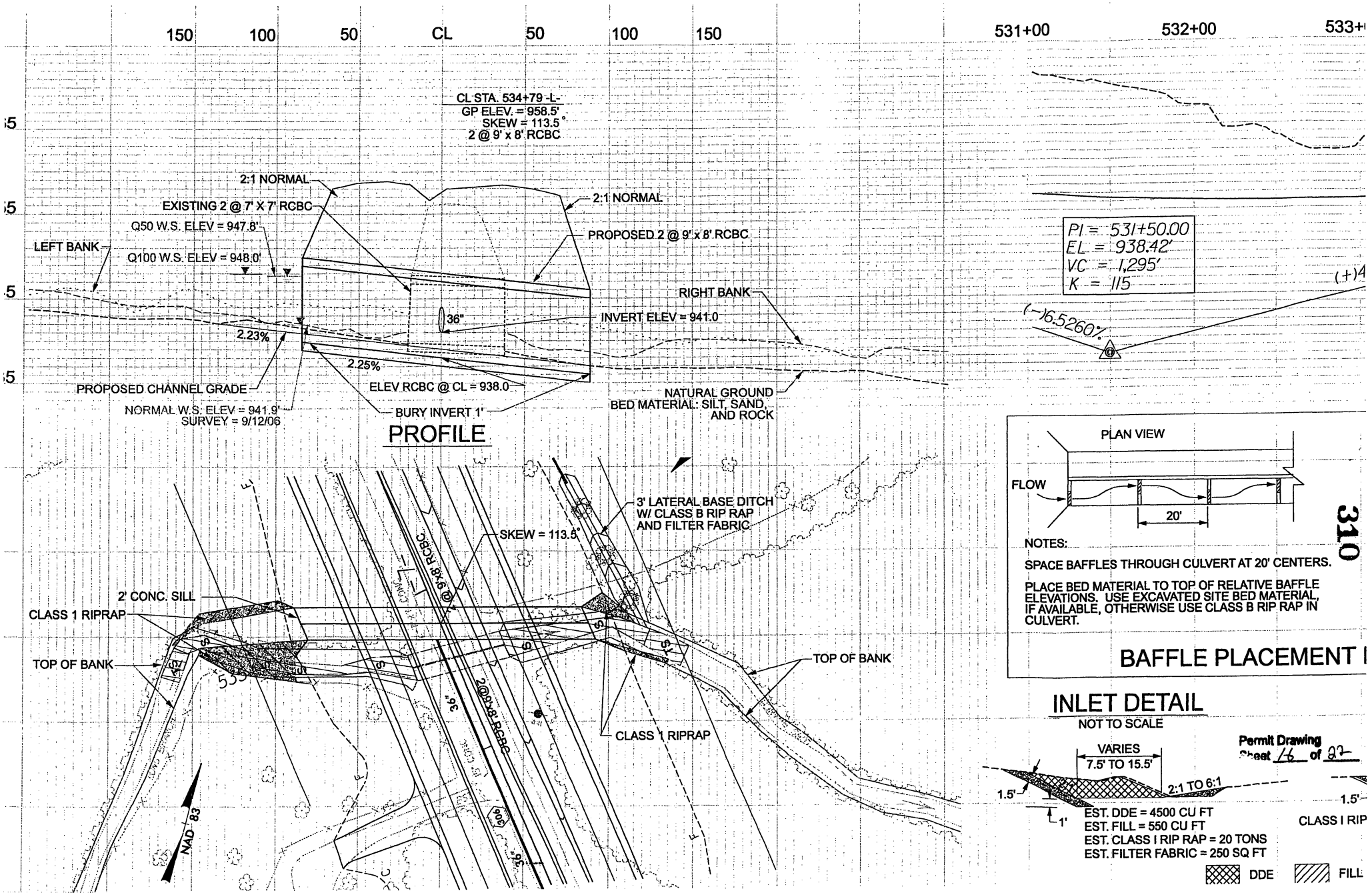

NAD 8395
-Y14-
PI Sta 16+56.13
Δ = 1° 33' 20.1" (LT)
D = 1° 54' 35.5"
L = 81.45'
T = 40.73'
R = 3,000.00'
-Y14-
PI Sta 17+55.42
Δ = 13° 21' 41.4" (LT)
D = 11° 27' 33.0"
L = 116.50'
T = 58.57'
R = 500.00'
PI Sta 18+54.03
Δ = 23° 30' 39.5" (LT)
D = 29° 22' 56.8"
L = 80.02'
T = 40.58'
R = 195.00'
SE = SEE PLANS
AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
SR 1138 -Y14-
600
1000
100
300
500
700
-L-
10100
18200
10500
18600
2005 ADT
2030 ADT
NEWTON COLE RD.
PROJECT REFERENCE NO.
R-2233AB
SHEET NO.
11
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
REVISIONS
8/17/99
MATCH LINE SEE SHEET 16 -L- STA 445+00
MATCH LINE SEE SHEET 18 -L- STA 459+00
BEGIN CONSTRUCTION -Y14- STA 17+50.00
-Y14- PCSta. 16+15.40
-Y14- PCCSta. 16+96.85
-Y14- PCCSta. 18+13.45
-Y14- PTSta. 18+93.47
N 87° 56' 26" W
N 55° 36' 33.7" E
CLASS B RIP RAP
REMOVE
GRADE TO DRAIN
2GI
2GI (TYPE A)
18" RCP
24" RCP
30" RCP
36" RCP
Q10 = 4.91 CFS
SLOPE = 0.82%
DEPTH OF FLOW = 0.68 FT
VELOCITY = 2.15 FT/S
Q10=3.29 CFS
SLOPE = 0.86%
DEPTH OF FLOW = 0.61 FT
VELOCITY = 2.18 FT/S
-Y15- POT Sta. 10+90.00
-L- POT Sta 451+87.27
-Y15- PCSta. 11+55.52
-Y15- PTSta. 12+70.52
-Y14- PTSta. 19+85.90=
-L- POT Sta. 452+81.72
-Y15-
PI Sta 12+13.12
Δ = 8° 14' 11.0" (RT)
D = 7° 09' 43.1"
L = 115.00'
T = 57.60'
R = 800.00'
EXISTING CONDITION
DA = 11.8 AC
C = 0.32
Q10 = 22.3 CFS
PROPOSED CONDITION
DA = 17.8 AC
C = 0.40
Q10 = 38.4 CFS
V= 5.5 FT/S
V= 7.9 FT/S
Q10 = 42 CFS
JB W/ MANHOLE COVER
GRANT EMIL HARDIN DB 691 PG 205
MARTHA TONEY DB 332 PG 3 DB 307 PG 276
TAMMY TONEY SKIPPER DB 635 PG 126
LEE ROBBINS HEIRS DB 228 PG 294
NANCY S. STROUD DB 755 PG 170 DB 752 PG 272 DB 796 PG 183
DB 332 PG 132
AZALEE H. MOSLEY DB 224 PG 255
SULPHUR SPRINGS CONGREGATIONAL HOLINESS CHURCH DB 458 PG 69 DB 20 PG 498
-BL- STATION 193+34 0.39' RIGHT ELEVATION = 1291.90
DAVID MICHAEL MOSLEY DB 766 PG 126 DB 766
RETAIN
C. SUSANNE PRICE DB 747 PG 554 DB 698 PG 566 PB 18 PG 13
JERRY L. THOMPSON DB 711 PG 79 PB 18 PG 13
FAYE EVELYN HOPPER DB 493 PG 357 PB 18 PG 13
TERESA S. HEAD DB 762 PG 676 DB 250 PG 144 PB 6 PG 134
JAMES G. HENSON DB 282 PG 584 PB 6 PG 34
EDGE OF SLOTES CREEK
SITE 2
DENOTES PERMANENT SURFACE WATER IMPACT
SITE 2
Permit Drawing
Sheet 11 of 82
NOTE: FOR -L- PROFILE SEE SHEET NO. 34
FOR -Y14- PROFILE SEE SHEET NO. 44
FOR DITCH DETAILS SEE SHEET NO. 2-K
305

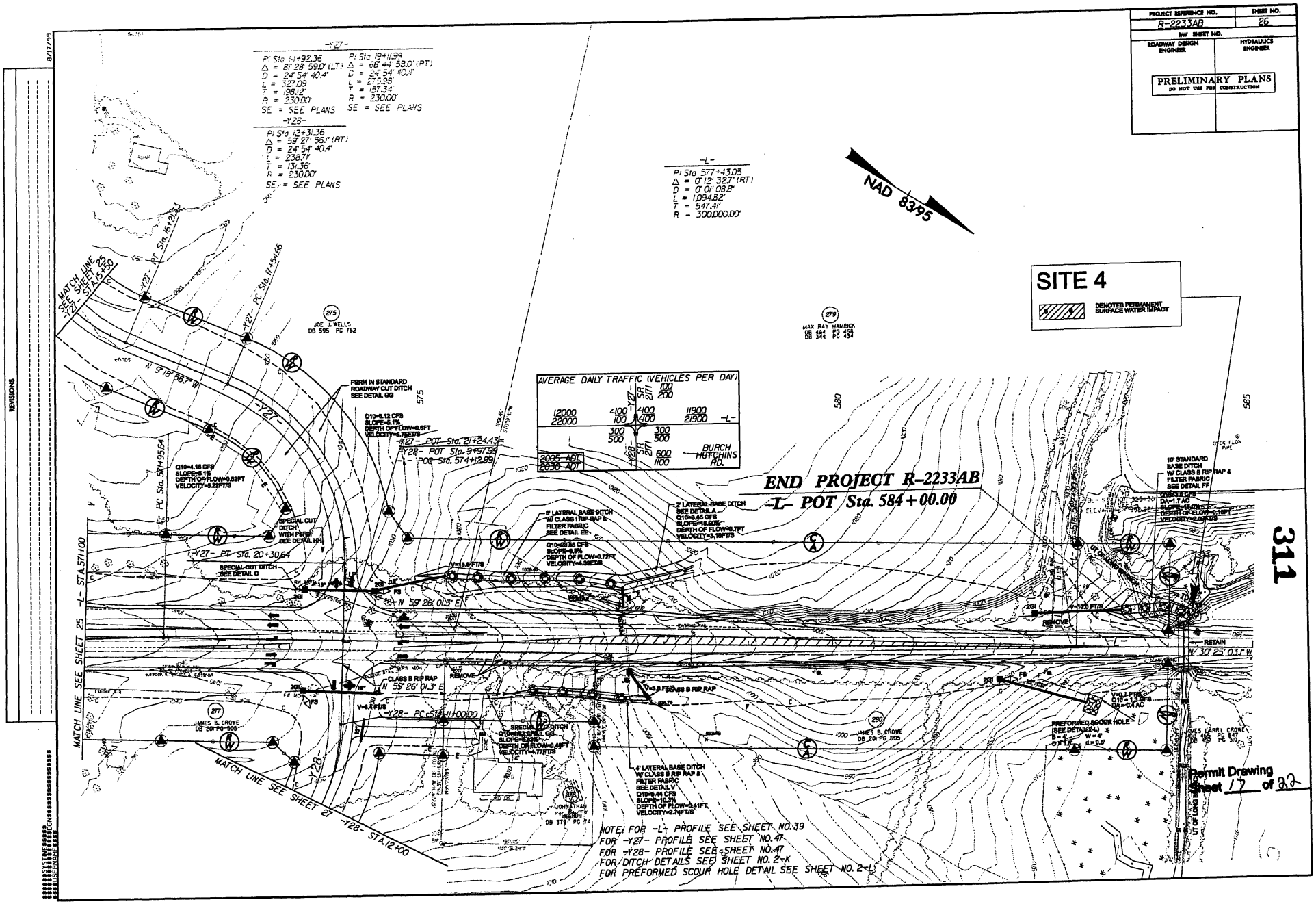

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
SR 1150
400
600
200
300
200
300
-L-
6900
13500
6900
13500
2005 ADT
2030 ADT
LONGBRANCH RD.
-L-
PI Sta 526+53.60
Δ = 2° 44' 00.1" (RT)
D = 0° 19' 48.8"
L = 827.70'
T = 413.93'
R = 17,350.00'
-Y25-
PI Sta 10+74.16
Δ = 10° 35' 32.3" (LT)
D = 7° 09' 43.4"
L = 147.90'
T = 74.16'
R = 800.00'
PI Sta 14+12.05
Δ = 5° 29' 58.0" (RT
D = 1° 48' 06.3"
L = 305.23'
T = 152.73'
R = 3,180.00'
SE = SEE PLANS
R-2233AB
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83/95
BEGIN CONSTRUCTION -Y25- STA. 14+00.00
IDENTITY: -LLT- POT Sta. 538+00.00 = -L- POT Sta. 538+00.00 (35' LT)
IDENTITY: -LRT- POT Sta. 538+00.00 = -L- POT Sta. 538+00.00 (35' RT.)
-L- PT Sta. 530+67.37
-Y25- PT Sta. 11+47.80
-Y25- PC Sta. 12+59.32
-Y25- PT Sta. 15+54.54
MATCH LINE SEE SHEET 22 -L- STA.529+00
MATCH LINE SEE SHEET 24 -L- STA.543+00
CLASS I RIP RAP
2' CONCRETE SILL LEFT BARREL
REMOVE
GRADE TO DRAIN
N 34° 52' 08.8" W
N 33° 16' 40.7" W
N 35° 23' 58.6" W
EXISTING CONDITION
DA = 13.8 AC
C = 0.3
Q10 = 29.2 CFS
PROPOSED CONDITION
DA = 21.9 AC
C = 0.40
Q10 = 47.6 CFS
-Y25- POT Sta. 16+82.65
-L- POT Sta. 537+41.26
-BL- 98 POT 276+48.175
-BL- 98 PINC 279+55.22
-BY25- POT 11+50.36
-L- Sta. 537+61.36
(15.41' RT)
SITE 3
DENOTES PERMANENT SURFACE WATER IMPACT
DENOTES TEMPORARY SURFACE WATER IMPACT
SITE 3
NOTE: FOR -L- PROFILE SEE SHEET NO.37
FOR -LLT- PROFILE SEE SHEET NO.37
FOR -LRT- PROFILE SEE SHEET NO.37
FOR -Y25- PROFILE SEE SHEET NO.46
FOR DITCH DETAILS SEE SHEET NO. 2-K
Permit Drawing
Sheet 12 of 22
REVISIONS
8/17/9

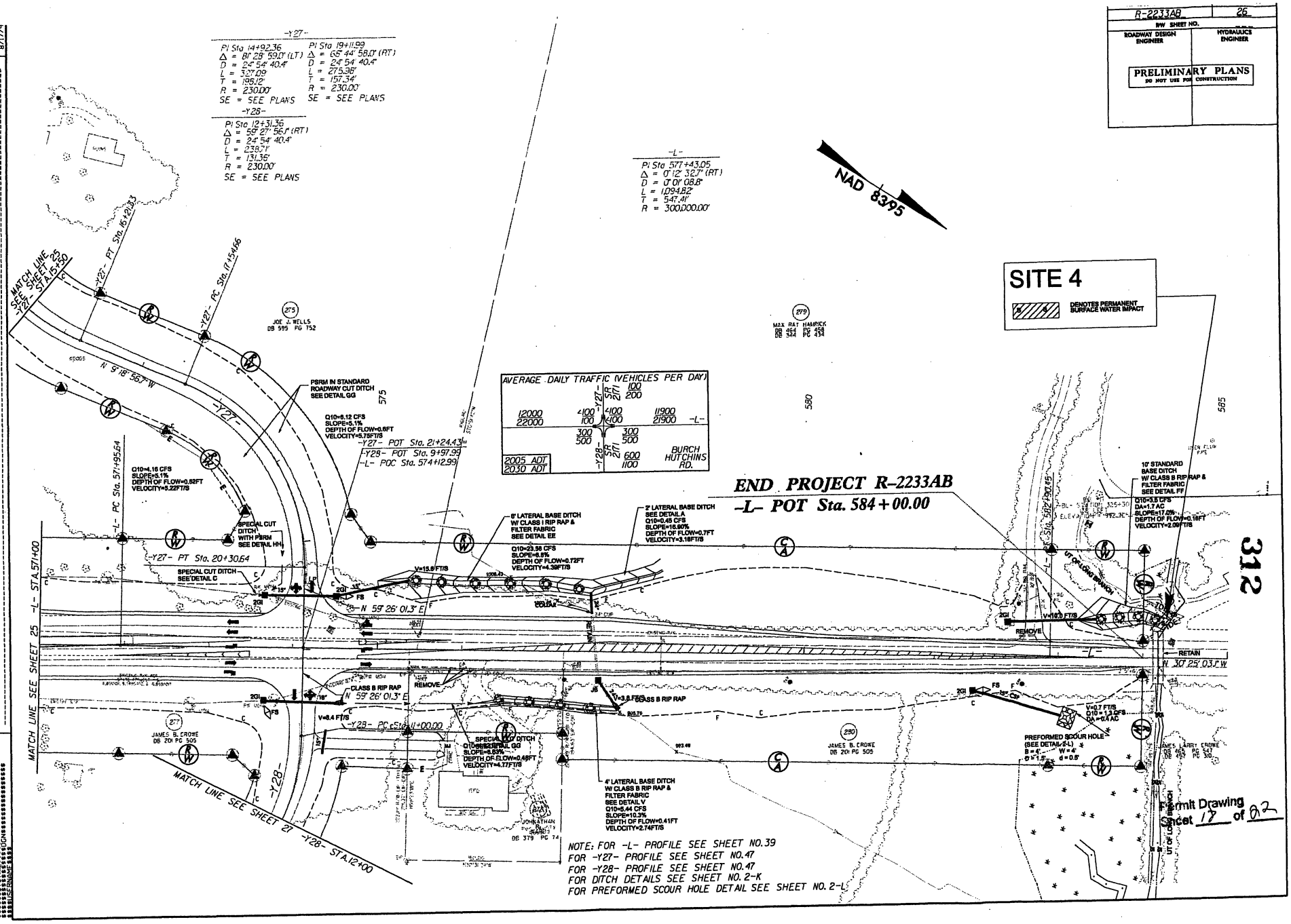

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
400
SR 1150
600
25
200
300
200
300
-L-
6900
13500
6900
13500
2005 ADT
2030 ADT
LONGBRANCH RD.
-L-
PI Sta 526+53.60
Δ = 2° 44' 00.1" (RT)
D = 07° 19' 48.8"
L = 827.70'
T = 413.93'
R = 17,350.00'
-Y25-
PI Sta 10+74.16
Δ = 10° 35' 32.3" (LT)
D = 7° 09' 43.1"
L = 147.90'
T = 74.16'
R = 800.00'
PI Sta 14+12.05
Δ = 5° 25' 58.0" (RT)
D = 1° 48' 06.3"
L = 305.23'
T = 152.73'
R = 3,180.00'
SE = SEE PLANS
R-2233AB
SW SHEET NO. 23
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83/95
-Y25- PT Sta. 11+47.90
-Y25- PC Sta. 12+59.32
-L- PT Sta. 530+67.37
MATCH LINE SEE SHEET 22 -L- STA.529+00
MATCH LINE SEE SHEET 24 -L- STA.543+00
BEGIN CONSTRUCTION
-Y25- STA. 14+00.00
IDENTITY;
-LLT- POT Sta. 538+00.00 =
-L- POT Sta. 538+00.00 (35' LT)
IDENTITY;
-LRT- POT Sta. 538+00.00 =
-L- POT Sta. 538+00.00 (35' RT)
-Y25- PT Sta. 15+64.54
V=13.8 FT/S
-Y25- POT Sta. 16+82.66=
-L- POT Sta. 537+41.26
-BL- 94 PINC 276+48.17=
-L- Sta. 537+54
(19.47' RT)
-BL- 95 PINC 279+55.22=
-BY25- POT 11+50.36
-L- Sta. 537+61.36
(15.41' RT)
THOMAS J. WILKINS, JR.
DB 227 PG 238
DB 564 PG 688
DONALD STEPHEN WILKINS
DB 770 PG 727
EDDIE R. MOORE
DB 357 PG 87
JOHNNY L. MAYSE
DB 433 PG 759
DB 382 PG 59
DB 542 PG 650
DONALD FAY WILKINS, SR.
DB 516 PG 18
ALL AMERICAN HOMES OF NC, LLC
DB 669 PG 698
DB 669 PG 701
Q10=1.90 CFS
SLOPE=1.30%
DEPTH OF FLOW=0.47FT
VELOCITY=2.11FT/S
Q10=1.55 CFS
SLOPE=6.83%
DEPTH OF FLOW=0.58 FT
VELOCITY=4.27 FT/S
Q10=3.64 CFS
SLOPE=2.81%
DEPTH OF FLOW=0.95 FT
VELOCITY=2.01 FT/S
Q10=5.13 CFS
SLOPE=4.8%
DEPTH OF FLOW=0.5FT
VELOCITY=5.04FT/S
Q10=0.33 CFS
SLOPE=0.80%
DEPTH OF FLOW=0.92 FT
VELOCITY=2.08 FT/S
Q10=7.50 CFS
SLOPE=4.34%
DEPTH OF FLOW=0.59FT
VELOCITY=3.06FT/S
PRE Q = 8.9 CFS
PRE VELOCITY = 5.2 FT/S
POST Q = 8.3 CFS
POST VELOCITY = 5.3 FT/S
EXISTING CONDITION
DA = 13.9 AC
C = 0.3
Q10 = 23.2 CFS
PROPOSED CONDITION
DA = 21.9 AC
C = 0.40
Q10 = 47.8 CFS
CLASS I RIP RAP
7' CONCRETE SILL LEFT BARREL
GRADE TO DRAIN
N 34° 52' 08.8" W
N 35° 23' 58.6" W
N 35° 38' 31.3" W
N 34° 44' 30.8" W
N 33° 16' 40.7" W
REMOVE
REMOVE 154'
@ RWP, RCBC
LONG BRANCH
SITE 3
DENOTES PERMANENT SURFACE WATER IMPACT
DENOTES TEMPORARY SURFACE WATER IMPACT
NOTE: FOR -L- PROFILE SEE SHEET NO.37
FOR -LLT- PROFILE SEE SHEET NO.37
FOR -LRT- PROFILE SEE SHEET NO.37
FOR -Y25- PROFILE SEE SHEET NO.46
FOR DITCH DETAILS SEE SHEET NO. 2-K
Permit Drawing
Sheet 13 of 82
307
REVISIONS
8/17/9


PROJECT REFERENCE NO.
R-2233AB
SHEET NO.
28
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
RIGHT DITCH
PROFILE ALONG STRUCTURE (SB)
BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 4000 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 762.9 FT
BASE DISCHARGE = 7900 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 763.2 FT
OVERTOPPING DISCHARGE = 25300 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 765.2 FT
Permit Drawing
Sheet 11 of 22
NOTE: SEE SHEET NO.5 FOR PLAN VIEW
NOTE: SEE SHEET NO.7 FOR PLAN VIEW
08-SEP-2008 07:44
I:\hydraulics_projects\environmental\drawings\r-2233ab_permit_pfl.dgn


PROJECT REFERENCE NO.
R-2233AB
SHEET NO.
37
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
LEFT DITCH
RIGHT DITCH
RETURN DITCH
CULVERT HYDRAULIC DATA
DRAINAGE STRUCTURE NO.
DESIGN DISCHARGE
DESIGN FREQUENCY
DESIGN HW ELEVATION
100 YEAR DISCHARGE
100 YEAR HW ELEVATION
OVERTOPPING FREQUENCY
OVERTOPPING DISCHARGE
OVERTOPPING ELEVATION
NOTE: SEE SHEET NO.2A FOR PLAN VIEW
NOTE: SEE SHEET NO.2B FOR PLAN VIEW
Permit Drawing Sheet 6 of 6
306


150
100
50
CL
50
100
150
531+00
532+00
533+
CL STA. 534+79 -L-
GP ELEV. = 958.5'
SKEW = 113.5°
2 @ 9' x 8' RCBC
2:1 NORMAL
EXISTING 2 @ 7' X 7' RCBC
Q50 W.S. ELEV = 947.8'
LEFT BANK
Q100 W.S. ELEV = 948.0'
2:1 NORMAL
PROPOSED 2 @ 9' x 8' RCBC
RIGHT BANK
36"
INVERT ELEV = 941.0
2.23%
2.25%
PROPOSED CHANNEL GRADE
ELEV RCBC @ CL = 938.0
NORMAL W.S. ELEV = 941.9'
SURVEY = 9/12/06
BURY INVERT 1'
NATURAL GROUND
BED MATERIAL: SILT, SAND,
AND ROCK
PI = 531+50.00
EL = 938.42'
VC = 1,295'
K = 115
(+)4
(-)6.5260%
PROFILE
3' LATERAL BASE DITCH
W/ CLASS B RIP RAP
AND FILTER FABRIC
SKEW = 113.5°
2' CONC. SILL
CLASS 1 RIPRAP
TOP OF BANK
TOP OF BANK
CLASS 1 RIPRAP
NAD 83
PLAN VIEW
FLOW
20'
NOTES:
SPACE BAFFLES THROUGH CULVERT AT 20' CENTERS.
PLACE BED MATERIAL TO TOP OF RELATIVE BAFFLE ELEVATIONS. USE EXCAVATED SITE BED MATERIAL, IF AVAILABLE, OTHERWISE USE CLASS B RIP RAP IN CULVERT.
BAFFLE PLACEMENT
310
INLET DETAIL
NOT TO SCALE
VARIES
7.5' TO 15.5'
2:1 TO 6:1
1.5'
1'
1.5'
CLASS I RIP
EST. DDE = 4500 CU FT
EST. FILL = 550 CU FT
EST. CLASS I RIP RAP = 20 TONS
EST. FILTER FABRIC = 250 SQ FT
DDE
FILL
Permit Drawing
Sheet 16 of 32


PROJECT REFERENCE NO.
R-2233AB
SHEET NO.
26
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-Y27-
PI Sta 14+92.36
Δ = 87° 28' 59.0" (LT)
D = 24° 54' 40.4"
L = 327.09'
T = 198.12'
R = 230.00'
SE = SEE PLANS
PI Sta 19+11.99
Δ = 66° 41' 58.0" (RT)
D = 24° 54' 40.4"
L = 271.98'
T = 157.34'
R = 230.00'
SE = SEE PLANS
-Y26-
PI Sta 12+31.36
Δ = 59° 27' 56.1" (RT)
D = 24° 54' 40.4"
L = 238.71'
T = 131.36'
R = 230.00'
SE = SEE PLANS
-L-
PI Sta 577+43.05
Δ = 0° 12' 32.7" (RT)
D = 0° 01' 08.8"
L = 1094.82'
T = 547.41'
R = 300,000.00'
NAD 83'95
SITE 4
DENOTES PERMANENT SURFACE WATER IMPACT
AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
2095 ADT
2035 ADT
BURCH HUTCHINS RD.
END PROJECT R-2233AB
-L- POT Sta. 584+00.00
MATCH LINE SEE SHEET 25 -Y27- STA.15+50
MATCH LINE SEE SHEET 25 -L- STA.57+00
MATCH LINE SEE SHEET 27 -Y28- STA.12+00
-Y27- PT Sta. 16+12.43
-Y27- PC Sta. 17+54.66
-Y27- PT Sta. 20+30.64
PC Sta. 56+95.64
-Y27- POT Sta. 21+24.43
-Y28- POT Sta. 3+97.99
-L- POC Sta. 574+12.99
-Y28- PC Sta. 1+00.00
-Y28- PT Sta. 2+00.00
N 9° 18' 56.7" W
N 59° 26' 01.3" E
PERM IN STANDARD ROADWAY CUT DITCH SEE DETAIL GG
SPECIAL CUT DITCH WITH PERM SEE DETAIL HH
SPECIAL CUT DITCH SEE DETAIL C
CLASS B RIP RAP
SPECIAL CUT DITCH SEE DETAIL GG
6' LATERAL BASE DITCH W/ CLASS I RIP-RAP & FILTER FABRIC SEE DETAIL BB
2' LATERAL BASE DITCH SEE DETAIL A
4' LATERAL BASE DITCH W/ CLASS B RIP RAP & FILTER FABRIC SEE DETAIL V
15' STANDARD BASE DITCH W/ CLASS B RIP RAP & FILTER FABRIC SEE DETAIL FF
PREFORMED SCOUR HOLE (SEE DETAIL K-L)
REMOVE
RETAIN
JOE L. WELLS DB 595 PG 752
MAX RAY HAMRICK DB 464 PG 458 DB 324 PG 434
JAMES B. CROWE DB 20-PG 305
JAMES B. CROWE DB 20-PG 805
JAMES LARRY CROWE DB 547 PG 547
JOHNATHAN DB 379 PG 74
NOTE: FOR -L- PROFILE SEE SHEET NO.39
FOR -Y27- PROFILE SEE SHEET NO.47
FOR -Y28- PROFILE SEE SHEET NO.47
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L
REVISIONS
311
Permit Drawing Sheet 17 of 32


R-2233AB
26
NW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-Y27-
PI Sta 14+92.36
Δ = 81° 28' 59.0" (LT)
D = 24° 54' 40.4"
L = 327.09'
T = 195.12'
R = 230.00'
SE = SEE PLANS
PI Sta 19+11.99
Δ = 65° 44' 58.0" (RT)
D = 24° 54' 40.4"
L = 275.38'
T = 157.34'
R = 230.00'
SE = SEE PLANS
-Y28-
PI Sta 12+31.36
Δ = 59° 27' 56.1" (RT)
D = 24° 54' 40.4"
L = 238.71'
T = 131.35'
R = 230.00'
SE = SEE PLANS
-L-
PI Sta 577+43.05
Δ = 0° 12' 32.7" (RT)
D = 0° 01' 08.8"
L = 1094.82'
T = 547.41'
R = 300,000.00'
NAD 83/95
SITE 4
DENOTES PERMANENT SURFACE WATER IMPACT
AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
2005 ADT
2030 ADT
BURCH HUTCHINS RD.
SR 2171
-Y27-
-Y28-
-L-
12000
22000
11900
21900
4100
100
300
500
600
1100
MATCH LINE SEE SHEET 25 -Y27- STA 15+30
-Y27- PT Sta 16+21.83
-Y27- PC Sta 17+54.56
N 9° 18' 56.7" W
PSRM IN STANDARD ROADWAY CUT DITCH SEE DETAIL GG
Q10=6.12 CFS
SLOPE=5.1%
DEPTH OF FLOW=0.6FT
VELOCITY=5.75FT/S
-Y27- POT Sta. 21+24.43
-Y28- POT Sta. 9+97.99
-L- POC Sta. 574+12.99
-L- PC Sta. 571+95.64
Q10=4.16 CFS
SLOPE=5.1%
DEPTH OF FLOW=0.52FT
VELOCITY=5.22FT/S
SPECIAL CUT DITCH WITH PSRM SEE DETAIL HH
-Y27- PT Sta. 20+30.64
SPECIAL CUT DITCH SEE DETAIL C
5' LATERAL BASE DITCH W/ CLASS I RIP RAP & FILTER FABRIC SEE DETAIL EE
Q10=23.58 CFS
SLOPE=6.9%
DEPTH OF FLOW=0.72FT
VELOCITY=4.39FT/S
2' LATERAL BASE DITCH SEE DETAIL A
Q10=0.45 CFS
SLOPE=16.80%
DEPTH OF FLOW=0.7FT
VELOCITY=3.18FT/S
END PROJECT R-2233AB
-L- POT Sta. 584+00.00
10' STANDARD BASE DITCH W/ CLASS B RIP RAP & FILTER FABRIC SEE DETAIL FF
Q10=3.8 CFS
DA=1.7 AC
SLOPE=17.0%
DEPTH OF FLOW=0.76FT
VELOCITY=2.09FT/S
N 59° 26' 01.3" E
CLASS B RIP RAP
REMOVE
RETAIN
N 30° 25' 03.1" W
-Y28- PC Sta 11+00.00
SPECIAL CUT DITCH SEE DETAIL GG
Q10=8.53 CFS
SLOPE=6.83%
DEPTH OF FLOW=0.48FT
VELOCITY=4.77FT/S
4' LATERAL BASE DITCH W/ CLASS B RIP RAP & FILTER FABRIC SEE DETAIL V
Q10=5.44 CFS
SLOPE=10.3%
DEPTH OF FLOW=0.41FT
VELOCITY=2.74FT/S
PREFORMED SCOUR HOLE (SEE DETAIL -L-)
B = 4'
W = 4'
d = 0.5'
d = 1.5'
MATCH LINE SEE SHEET 21 -Y28- STA 12+00
-L- STA 571+00 SEE SHEET 25
JOE J. WELLS DB 595 PG 752
MAX RAY HAMRICK DB 451 PG 458 DB 344 PG 434
JAMES B. CROWE DB 201 PG 505
JOHNATHAN D. BARNES DB 379 PG 74
JAMES LARRY CROWE DB 465 PG 547 DB 459 PG 500
NOTE: FOR -L- PROFILE SEE SHEET NO.39
FOR -Y27- PROFILE SEE SHEET NO.47
FOR -Y28- PROFILE SEE SHEET NO.47
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L
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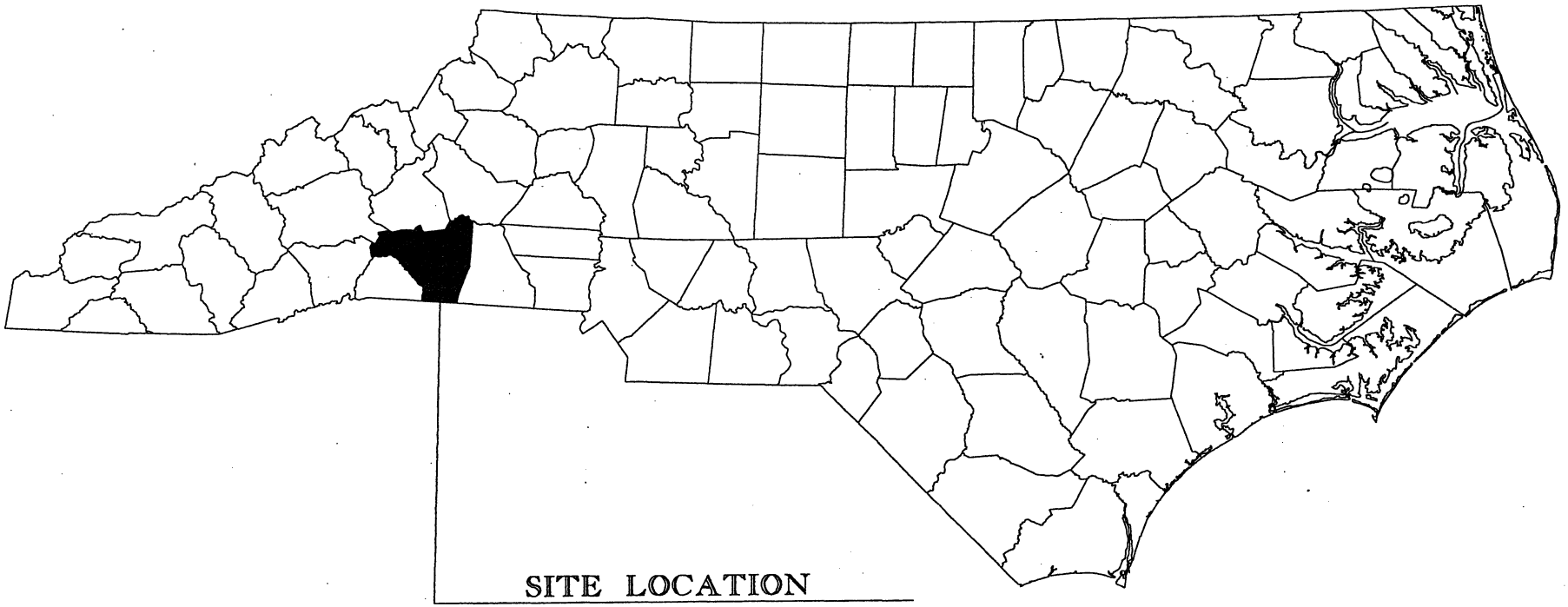
Permit Drawing Sheet 17 of 82
REVISIONS
8/17/9

COUNTY LOCATION VICINITY MAP



SITE LOCATION
IN RUTHERFORD COUNTY

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

PROJECT: 34400.1.1 (R-2233AB)
US 221 FROM SOUTH OF
FLOYD'S CREEK TO
NORTH OF US 74 BYPASS

SHEET 19 OF 22 7-16-08

WETLAND 314 LEGEND

WLB —— WETLAND BOUNDARY

WLB / WLB — WETLAND

F F — DENOTES FILL IN WETLAND

S S — DENOTES FILL IN SURFACE WATER

P P — DENOTES FILL IN SURFACE WATER (POND)

T T — DENOTES TEMPORARY FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

TS TS — DENOTES TEMPORARY SURFACE WATER IMPACTS

S S — DENOTES PERMANENT SURFACE WATER IMPACTS

DENOTES MECHANIZED CLEARING

—— —— FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

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

PROJECT: 34400.1.1 (R-2233AB)
US 221 FROM SOUTH OF FLOYD'S CREEK TO NORTH OF US 74 BYPASS

SHEET 20 OF 22 — 7-16-08

PROPERTY OWNERS

PARCEL	OWNER NAME	ADDRESS
122	VIRGIL SANFORD	775 S. CHURCH ST. APT. 602-A FOREST CITY, NC 28043
123	L. C. WRIGHT	147 JAYNES RD. FOREST CITY, NC 28043
200	TERESA S. HEAD	2943 US HIGHWAY 221 SOUTH FOREST CITY, NC 28043
202	JAMES G. HENSON	128 ROBBINS DR. FOREST CITY, NC 28043
266	THOMAS J. WILKINS	2257 US HIGHWAY 221 SOUTH FOREST CITY, NC 28043
267	DONALD STEPHEN WILKINS	2150 US HIGHWAY 221 SOUTH FOREST CITY, NC 28043
279	MAX RAY HAMRICK	1800 US HIGHWAY 221 SOUTH FOREST CITY, NC 28043

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N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY
PROJECT: 3400.1.1 (R-2233AB)
US 221 FROM SOUTH OF
FLOYD'S CREEK TO
NORTH OF US 74 BYPASS

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts - Bank Stabilization (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1A	-L- 280+00	Bridge						0	0	0	0	0	
1	-Y2-12+58 TO 13+18 RT	42" CSP	0.020							50	10	20	
2	-L- 456+60 TO 457+64 RT	36" CSP						0.02		170	56		
3	-L- 534+17 RT TO 535+17 LT	2 - 9' x 8' RCBC						0.05	0.010	134	94	45	
4	-L-584+11 TO 584+34 LT	10' BASE DITCH AT BANK									15	10	
TOTALS:			0.02	0.00	0.00	0.00	0.00	0.07	0.01	354		75	0

No Impacts anticipated to construct proposed or remove existing bridges.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RUTHERFORD COUNTY
PROJECT 34400.1.1 (R-2233AB)
US 221 FROM SOUTH OF FLOYD'S CREEK TO
NORTH OF US 74 BYPASS
SHEET 22 OF 22 September-08

ATN Revised 3/31/05