STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

October 27, 2004

U. S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Mr. Steve Lund
NCDOT Coordinator

Dear Sir:

Subject: Proposed improvements to NC 150 from US 321 in Lincolnton to US 321 Bypass, Lincoln County. Federal Aid Project No. STP-150(3). State Project No. 8.1830402. TIP No. R-617C.

The North Carolina Department of Transportation (NCDOT) proposes to make improvements to NC 150 by constructing project R-617C. The proposed project is 2.22 miles in length, primarily on new location eastward to a proposed interchange at US 321 Bypass, ending at a point just east of SR 1301 (Janice Road). The proposed cross-section will consist of a four-lane divided median controlled access facility.

Summary of Impacts: Impacts to jurisdictional wetlands will consist of 0.19 acre of permanent fill and 0.1 acre of excavation. There will also be 0.28 acre of permanent fill in surface waters and 3,136 linear feet of jurisdictional stream impacts.

Summary of Mitigation: The project has been redesigned to further avoid and minimize impacts to the jurisdictional wetlands and streams as follows:

- The stream crossing at St. 2+20Y40RPC and St.3+30Y40RPD will be bridged to avoid 1,696 feet of stream impacts and 0.1 acre of jurisdictional wetland impacts.
- Stream and Wetland Mitigation: There will be 1,605 feet of Natural Stream Design through onsite perennial stream restoration. The remaining unavoidable 1,144 linear feet of important perennial stream impacts as well as 0.29 acre of wetland impacts, will be mitigated by using mitigation credit from the N.C. Ecosystem Enhancement Program (EEP).

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794

WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

NEPA DOCUMENT STATUS

An Environmental Assessment (EA) was submitted by the NCDOT in compliance with the National Environmental Policy Act. The EA was approved on July 12, 1993. A Finding of No Significant Impact (FONSI) was approved on January 31, 1994. The EA explains the purpose and need for the project, provides a description of the alternatives considered, and characterizes the social, economic, and environmental effects. After the EA was approved it was circulated to federal state and local agencies. Copies of the EA and FONSI have been provided to regulatory review agencies involved in the approval process. Additional copies will be provided upon request.

R-617C is in compliance with 23 CFR Part 771.111(f) which lists the FHWA characteristics of independent utility of a project:

> (1) The project connects logical termini and is of sufficient length to address environmental matters on a broad scope;
> (2) The project is usable and a reasonable expenditure, even if no additional transportation improvements are made in the area;
> (3) The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

RESOURCE STATUS

Surface Waters: Two unnamed tributaries to Lithia Branch (DWQ Index No. 11-129-6) and four unnamed tributaries to Muddy Creek (DWQ Index No. 11-129-10(1) are crossed by the project. Each of these streams are in the Catawba River Basin (Hydrologic Unit 03050102) and carry a Best Usage Classification of WS-IV. Details for all jurisdictional impacts are listed on the summary sheet with the attached permit drawings. Mr. John Hendrix of the USACE Asheville Regulatory Field Office verified stream determinations on June 17, 2002. The total impacts for jurisdictional surface waters associated with the project is 0.38 acre or 3,136 linear feet (perennial: 2,749 linear feet, intermittent-unimportant: 387 linear feet). Compensatory mitigation, consisting of 1,605 linear feet of onsite perennial stream restoration and 1,144 linear feet of perennial stream impacts, will be provided by EEP (see attached acceptance letter). Copies of the USACE Intermittent Channel Evaluation Forms, as well as the NCDWQ Stream Classification Form, are included with this permit application.

Jurisdictional Wetlands: Wetland delineations were conducted using the criteria specified in the 1987 Corps of Engineers Wetland Delineation Manual. Mr. Steve Lund of the USACE Asheville Regulatory Field Office verified wetland delineations on May 10, 1999. Several of these wetlands have been revisited and have maintained their jurisdictional status. The attached permit drawings depict proposed jurisdictional impacts. As previously mentioned, permanent wetland impacts due to the proposed construction of R-617C will consist of 0.19 acre of fill and 0.1 acre of excavation. This excavation is proposed in an area that was originally a pond during the design of the project as shown on (Site 1, Sheet 1G). The pond has since been allowed to drain therefore lowering the water level to a point adequate for wetland conditions to exist. Copies of the USACE Wetland Data Sheets are included with this permit application.

Table 1. Impacts Wetlands and Jurisdictional Surface Waters from R-617C

Site	Station	Wetland Impacts (ac)*	Stream Impacts (ft)	Surface Water Impacts (ac)
1	14+80 L 3+20 RPA	0.29	2,096 P	0.28
2	15+60 L	n/a	118 I-U	0.03
3	27+00 L	n/a	269 I-U	0.01
4	31+40 L	n/a	318 P	0.02
5	35+40	n/a	335 P	0.06
	TOTAL	**0.29**	**3,136**	**0.38**

Note: P -Perennial stream
I-U - Intermittent Unimportant stream

Endangered Species: Plants and animals with Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003 the U.S. Fish and Wildlife Service (FWS) lists two federally protected species for Lincoln County (Table 2).

Table 2. Federally Protected Species for Lincoln County

SCIENTIFIC NAME	COMMON NAME	STATUS
Hexastylis naniflora	dwarf-flowered heartleaf	T
Rhus michauxii	Michaux's sumac	E

"T" denotes Threatened (a species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range).
"E" denotes Endangered (a species that is in danger of extinction throughout all or a significant portion of its range).

A biological conclusion of "No Effect" was reached for both species in the EA. Neither species were found within the project study area at that time, and it was noted that prime habitat for dwarf-flowered heartleaf was generally lacking. Due to the time that has lapsed since the original survey, any areas that provide suitable habitat will be re-surveyed before construction to insure that the project will not impact any federally protected species. Surveys conducted by NCDOT personnel in 1999 revealed approximately dwarf-flowered heartleaf eight plants, or rosettes for which a NCNHP Endangered and Rare Plant Field Survey Form was completed and submitted to the NCNHP (Element Occurrence Code PDARI03060*047*NC). Subsequent surveys by NCDOT personnel in May 2002, September 2002, and April 2003 revealed one, zero, and one plant, respectively.

Most recently, a field survey was completed on May 5, 2004 by an environmental consultant. Survey methods consisted of two scientists spending 7.5 man hours walking parallel transects in five separate locations within the project's action area that was previously designated by NCDOT as containing suitable dwarf-flowered heartleaf habitat. Transect widths varied between 10 and 50 feet, depending on the density of ground cover vegetation at the time of the survey. Each of the habitat areas is situated along or near a jurisdictional stream that crosses through the project's proposed right-of-way limits. Of the five areas of dwarf-flowered heartleaf habitat, the May 2004 survey confirmed a population of seven rosettes in the same location as that of previously noted dwarf-flowered heartleaf. No other populations of dwarf-flowered heartleaf were observed within the project study area during any of the field surveys.

An Endangered Species Act §7 Biological Assessment was prepared by an environmental consulting firm in August 2004 which yielded a "May Affect – Likely to Adversely Affect" for dwarf-flowered heartleaf. NCDOT forwarded this Biological Assessment on August 3, 2004 to the U.S. Fish and Wildlife Service through the Federal Highway Administration and requested initiation of a formal Endangered Species Act §7 consultation for dwarf-flowered heartleaf.

Additional surveys for Michaux's sumac were conducted by NCDOT personnel in May 2002 and an environmental consultant in June 2004. No Michaux's sumac was observed in either of these surveys. Therefore it can be concluded that this project will have no effect on this species.

Cultural Resources: There are two historic sites located within R-617 C project area that were evaluated for eligibility for the National Register of Historic Places. The Shull House was determined to be not eligible for the National Register. The Kelly-Link Farmstead was determined to be eligible for the National Register however, the proposed project would have no effect on the property. This determination was issued by the State Historic Preservation Office (SHPO) on July 2, 1993. A copy of this letter is located in Appendix C of the EA for this project.

An archaeological survey for the entire R-617 project resulted in the identification of 32 historic and prehistoric archaeological sites. The study assessed all 32 archaeological sites as not significant. The Deputy State Historic Preservation Officer, in a letter dated December 13, 1991, responded that all 32 sites were determined not eligible for listing in the National Register of Historic Places. A copy of this letter is located in Appendix C of the EA for this project.

MITIGATION OPTIONS

The Corps of Engineers has adopted, through the Council on Environmental Quality (CEQ), a wetland mitigation policy that embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of the Waters of the United States. Mitigation of wetland and surface water impacts has been defined by the CEQ to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts (40 CFR 1508.20). Executive Order 11990 (Protection of Wetlands) and Department of Transportation Order 5660.1A (Preservation of the Nations Wetlands), emphasize protection of the functions and values provided by wetlands. These directives require that new construction in wetlands be avoided as much as possible and that all practicable measures are taken to minimize or mitigate impacts to wetlands.

AVOIDANCE AND MINIMIZATION: The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design.

1. Station 2+20 Y40RPC, 3+30 Y40RPD (former Site 6): The interchange with US 321 was redesigned to avoid impacts to a perennial stream and jurisdictional wetland at this location. As a result, impacts to 1,696 linear feet of stream impacts and 0.1 acre wetland were eliminated through use of a bridge at this location.

2. Slopes: Fill slopes in wetlands are at a 2:1 ratio, with the exception of at L-17+00 left. A slope of 2.5:1 is needed in this area for ramps from existing NC 150.

3. Best Management Practices: Strict enforcement of sedimentation and erosion control Best Management Practices (BMP) for the protection of surface waters and wetlands will be enforced.

4. Ditching: It is the policy of the NCDOT to eliminate lateral ditching in wetlands as much as possible, thus preserving the hydrology of adjacent wetlands.

COMPENSATION: The primary emphasis of the compensatory mitigation is to reestablish a condition that would have existed if the project were not built. As previously stated, mitigation is limited to reasonable expenditures and practicable considerations related to highway operation. Mitigation is generally accomplished through a combination of methods designed to replace wetland functions and values lost as a result of construction of the project. These methods consist of creation of new wetlands from uplands, borrow pits, and other non-wetland areas; restoration of wetlands; and enhancement of existing wetlands. Where such options may not be available, or when existing wetlands and wetland-surface water complexes are considered to be important resources worthy of preservation, consideration is given to preservation as at least one component of a compensatory mitigation proposal.

FHWA STEP DOWN COMPLIANCE: All compensatory mitigation must be in compliance with 23 CFR Part 777.9, "Mitigation of Impacts" that describes the actions that should be followed to qualify for Federal-aid highway funding. This process is known as the FHWA "Step Down" procedures:

1. Consideration must be given to mitigation within the right-of-way and should include the enhancement of existing wetlands and the creation of new wetlands in the highway median, borrow pit areas, interchange areas and along the roadside.

2. Where mitigation within the right-of-way does not fully offset wetland losses, compensatory mitigation may be conducted outside the right-of-way including enhancement, creation, and preservation.

Based upon the agreements stipulated in the "Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District" (MOA), it is understood that the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP) will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for NCDOT projects that are listed in Exhibit 1 of the subject MOA during the EEP transition period which ends on June 30, 2005.

Since the subject project is listed in Exhibit 1, the necessary compensatory mitigation to offset unavoidable impacts to waters that are jurisdictional under the federal Clean Water Act will be provided by the EEP. The offsetting mitigation will derive from an inventory of assets already in existence within the same 8-digit cataloguing unit. The Department has avoided and minimized impacts to jurisdictional resources to the greatest extent possible as described above. The

remaining, unavoidable impacts to 0.29 acres of jurisdictional wetlands and to 1,144 feet of jurisdictional streams will be offset by compensatory mitigation provided by the EEP program.

REGULATORY APPROVALS

Application is hereby made for a Department of the Army Individual 404 Permit as required for the above-described activities. We are also hereby requesting a 401 Water Quality Certification from the Division of Water Quality. In compliance with Section 143-215.3D(e) of the NCAA we have enclosed a check for $475.00 to act as payment for processing the Section 401 permit application. We are providing seven copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their review.

If you have any questions or need additional information please call Mr. Chris Rivenbark at (919) 715-1460.

Sincerely,

Gregory J. Thorpe, PhD, Manager
Project Development & Environmental Analysis Branch

GJT/mcr

Cc: w/attachment

Mr. John Hennessy, Division of Water Quality (7 copies)
Ms. Marella Buncick, USFWS
Ms. Marla Chambers, NCWRC
Ms. Kathy Matthews, USEPA
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. M.L,. Holder, P.E. (Div. 12), Division Engineer
Ms. Trish Simon (Div. 12), DEO

w/o attachment

Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Mark Staley, Roadside Environmental
Mr. David Franklin, USACE, Wilmington (Cover Letter only)
Ms. Beth Harmon, EEP
Mr. Michael Penny, PDEA

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)

OMB APPROVAL NO. 0710-003
Expires December 31, 2004

Public reporting burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: Rivers and Harbors Act, Section 10, 33 USC 403: Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research and Sanctuaries Act, 33 USC 1413, Section 103. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
North Carolina Department of Transportation Project Development & Environmental Analysis	
6. APPLICANT'S ADDRESS	**9. AGENT'S ADDRESS**
1548 Mail Service Center Raleigh, NC 27699-1548	
7. APPLICANT'S PHONE NOs. W/AREA CODE	**10. AGENT'S PHONE NOs. W/AREA CODE**
a. Residence b. Business 919-733-3141	a. Residence b. Business

11. STATEMENT OF AUTHORIZATION

I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ APPLICANT'S SIGNATURE

_____ DATE

NAME, LOCATION, AND DESCRIPTION OR PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions
R-617C, Improvements to NC 150

13. NAME OF WATERBODY, IF KNOWN (if applicable)
Unnamed tributaries to Muddy Creek and Unnamed tributaries to Lithia Branch

14. PROJECT STREET ADDRESS (if applicable)

15. LOCATION OF PROJECT

Lincoln (COUNTY) NC (STATE)

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) **Section, Township, Range, Lat/Lon, and/or Accessors's Parcel Number, for example.**
NC 150 south of Lincolnton

17. DIRECTIONS TO THE SITE
Please see attached vicinity map and cover letter.

18. Nature of Activity (Description of project, include all features)

Construction of new location section of highway primarily on new location eastward on new location to a proposed interchange at US 321 Bypass, ending at a point just east of SR 1301 (Janice Road).

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Public transportation; to improve traffic flow and increase safety.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Necessary for road construction

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

Earthen fill material, pipe culverts

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

3,136 linear feet of streams, 0.28 acres of surface waters, and 0.19 acres of wetlands

23. Is Any Portion of the Work Already Complete? Yes ___ No _X___ IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins theWaterbody (If more than can be entered here, please attach a supplemental list).

Please see sheets 33 & 34 of 35 in the permit drawing package.

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein oram acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE
[signature]	11/26/04		

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

NCDENR
North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

September 15, 2004

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
NCDOT - Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Dr. Thorpe:

Subject: NC 150 Improvements, R-617C, Lincoln County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide compensation for the subject project. Based on the information supplied by you in a letter dated September 3, 2004, the impacts are located in CU 3050102 of the Catawba River Basin in the Southern Piedmont Eco-Region, and are as follows:

Stream Impacts: 1,144 feet; Wetland Impacts: 0.29 acre Riverine

As stated in your letter, the subject project is listed in Exhibit 2 of the Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, Wilmington District dated July 22, 2003. The stream and riverine wetland mitigation for the subject project will be provided in accordance with this agreement.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

William D. Gilmore, P.E.
Transition Manager

cc: Steve Lund, USACE-Asheville
John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: R-617C

NC DENR Ecosystem Enhancement Program
1652 Mail Service Center, Raleigh, North Carolina 27699-1652
Phone: 919-715-1413 \ FAX: 919-715-2219 \ Internet: h2o.enr.state.nc.us/wrp/

NCDENR
North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

September 15, 2004

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

Dear Mr. Lund:

Subject: NC 150 Improvements, R-617C, Lincoln County
Southern Piedmont Eco-Region

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) proposes to provide preservation to compensate for the unavoidable 0.29-acre of riverine wetland impacts of the subject project in the following manner:

Wetland Preservation (10:1) in same eco-region (2.90 acres)
Drowning Creek II/Rankin Site, Richmond and Moore Counties

Also, the EEP will provide compensation for the 1,144 feet of unavoidable stream impact. The EEP intends to provide compensatory stream mitigation up to a 2:1 ratio in Cataloging Unit 3050102 of the Catawba River Basin.

The subject TIP project is listed in Exhibit 2 of the Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, Wilmington District dated July 22, 2003. The riverine wetland and stream and mitigation for the project will be provided in accordance with this Agreement.

If you have any questions or need additional information, please contact Ms. Beth Harmon at (919) 715-1929.

Sincerely,

William D. Gilmore, P.E.
Transition Manager

cc: Phil Harris, Office of Natural Environment, NCDOT
John Hennessey, Division of Water Quality, Wetlands/401 Unit
File: R-617C

NC DENR Ecosystem Enhancement Program
1652 Mail Service Center, Raleigh, North Carolina 27699-1652
Phone: 919-715-1413 \ FAX: 919-715-2219 \ Internet: h2o.enr.state.nc.us/wrp/

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: R-617 C **Applicant / Owner:** NCDOT **Investigator:** Chris Rivenbark, Bruce Ellis	**Date:** 2/15/99 **County:** Lincoln **State:** NC
Do normal circumstances exist on the site? Yes ✓ No ___ **Is the site significantly disturbed (Atypical situation)?** Yes ___ No ✓ **Is the area a potential problem area?** Yes ___ No ✓ **(explain on reverse if needed)**	**Community ID:** A **Transect ID:** wetland **Plot ID:** ___ sheet 6 of 35 permit drawings

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Arundinaria gigantea	Herb/Grass	FACW	9.		
2. Lonicera japonica	Vine	FAC-	10.		
3. Liquidambar styraciflua	Tree	FAC+	11.		
4. Smilax rotundifolia	Vine	FAC	12.		
5. Liriodendron tulipifera	Tree	FACU	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 75%

Remarks: Wetland Vegetation Present Based Upon Greater than 50% of the Plant Species **are/are not** Classified as FAC-OBL in the National List of Plant Species that Occur in Wetlands. Sample plot was taken... Prevalence of hydrophytic vegetation

HYDROLOGY

___ **Recorded Data (Describe In Remarks):**
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ **No Recorded Data Available**

Field Observations:

Depth of Surface Water: ___ (in.)

Depth to Free Water in Pit: ___ (in.)

Depth to Saturated Soil: 5 (in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ✓ Saturated in Upper 12"
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ✓ Drainage Patterns in Wetlands

Secondary Indicators:
- ✓ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

Wetland hydric soils present

SOILS

Map Unit Name (Series and Phase): Pacolet sandy clay loam **Drainage Class:** _____

Taxonomy (Subgroup): thermic Typic Hapludalfs **Confirm Mapped Type? Yes** ___ **No** ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 3/1			silty

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ✓ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed On Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

Hydric soils present

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes ✓ No ___
Wetland Hydrology Present? Yes ✓ No ___
Hydric Soils Present? Yes ✓ No ___

Is the Sampling Point Within a Wetland? Yes ✓ No ___

Remarks: Location (describe) is/~~is not~~ classified as a wetland based upon the criteria set forth in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: R-6177C **Applicant / Owner:** NC DOT **Investigator:** Chris Rivenbark, Bruce Ellis	**Date:** 2/15/99 **County:** Lincoln **State:** NC
Do normal circumstances exist on the site? Yes ✓ No ___ **Is the site significantly disturbed (Atypical situation)?** Yes ___ No ✓ **Is the area a potential problem area?** Yes ___ No ✓ **(explain on reverse if needed)**	**Community ID:** A **Transect ID:** upland **Plot ID:** ___ sheet #6 of 35 permit drawings

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Quercus Alba	Tree	FACU	9.		
2. Lonicera japonica	Vine	FAC-	10.		
3. Smilax rotundifolia	Vine	FAC	11.		
4. Betula Lenta	Tree	FACU	12.		
5. Carya tomentosa	Tree		13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 25%

Remarks: Wetland Vegetation Present Based Upon Greater than 50% of the Plant Species **are/~~are not~~**
Classified as FAC-OBL in the National List of Plant Species that Occur in Wetlands. Sample plot was taken…

HYDROLOGY

___ **Recorded Data (Describe In Remarks):**
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ **No Recorded Data Available**

Field Observations:

Depth of Surface Water: _____(in.)

Depth to Free Water in Pit: _____(in.)

Depth to Saturated Soil: _____(in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12"
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators:
- ___ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

Wetland hydrology not present

SOILS

Map Unit Name (Series and Phase): Pacolet sandy clay loam **Drainage Class:** _____

Taxonomy (Subgroup): thermic Typic Hapludalfs **Confirm Mapped Type? Yes** ___ **No** ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 3/6			Silty

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed On Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

hydric soils not present

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** ___	**No** ✓	**Is the Sampling Point**	
Wetland Hydrology Present?	**Yes** ___	**No** ✓	**Within a Wetland?**	**Yes** ___ **No** ✓
Hydric Soils Present?	**Yes** ___	**No** ✓		

Remarks: **Location (describe) is/~~is~~ not** classified as a wetland based upon the criteria set forth in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: R - 617 C **Applicant / Owner:** NC DOT **Investigator:** Chris Rivenbark, Bruce Ellis	**Date:** 2/15/99 **County:** Lincoln **State:** NC
Do normal circumstances exist on the site? Yes ✓ No ___ **Is the site significantly disturbed (Atypical situation)?** Yes ___ No ✓ **Is the area a potential problem area?** Yes ___ No ✓ **(explain on reverse if needed)**	**Community ID:** B **Transect ID:** Wetland **Plot ID:** ___ sheets 7&8 of permit drawings

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Ligustrum sinense	Shrub	FAC	9.		
2. Lonicera japonica	Vine	FAC-	10.		
3. Alnus serrulata	Shrub	FACW+	11.		
4. Liquidambar styraciflua	Tree	FAC+	12.		
5. Cornus ammomum	Shrub	FACW+	13.		
6. Liriodendron tulipifera	tree	FACU	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 80 %

Remarks: Wetland Vegetation Present Based Upon Greater than 50% of the Plant Species ~~are~~/**are not** Classified as FAC-OBL in the National List of Plant Species that Occur in Wetlands. Sample plot was taken…

HYDROLOGY

___ **Recorded Data (Describe In Remarks):**
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ **No Recorded Data Available**

Field Observations:

Depth of Surface Water: ___ (in.)

Depth to Free Water in Pit: ___ (in.)

Depth to Saturated Soil: 6 (in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ✓ Saturated in Upper 12"
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ✓ Drainage Patterns in Wetlands

Secondary Indicators:
- ✓ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

Wetland hydrology present

SOILS

Map Unit Name (Series and Phase): Pacolet sandy clay loam **Drainage Class:** _____

Taxonomy (Subgroup): thermic typic hapludefs **Confirm Mapped Type? Yes** ___ **No** ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-5		7.5 YR 4/6			silty
5-12		2.5 YR 4/2	7.5YR 4/4		silty

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ✓ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed On Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

Hydric soils present

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** ✓	**No** ___	**Is the Sampling Point**	
Wetland Hydrology Present?	**Yes** ✓	**No** ___	**Within a Wetland?**	**Yes** ✓ **No** ___
Hydric Soils Present?	**Yes** ✓	**No** ___		

Remarks: **Location (describe) is/~~is~~ not** classified as a wetland based upon the criteria set forth in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: R-617C **Applicant / Owner:** NC DOT **Investigator:** Chris Rivenbark, Bruce Ellis	**Date:** 2/15/99 **County:** Lincoln **State:** NC
Do normal circumstances exist on the site? Yes ✓ No ____ **Is the site significantly disturbed (Atypical situation)?** Yes ____ No ✓ **Is the area a potential problem area?** Yes ____ No ✓ **(explain on reverse if needed)**	**Community ID:** B **Transect ID:** upland **Plot ID:** ____ sheets 7&8 of permit drawings

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Quercus Alba	Tree	FACU	9.		
2. Carya tomentosa	Tree		10.		
3. Prunus Serotina	Tree	FACU	11.		
4. Lonicera japonica	vine	FAC-	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 0%

Remarks: Wetland Vegetation Present Based Upon Greater than 50% of the Plant Species **are/~~are not~~**
Classified as FAC-OBL in the National List of Plant Species that Occur in Wetlands. Sample plot was taken…

HYDROLOGY

___ **Recorded Data (Describe In Remarks):**
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ **No Recorded Data Available**

Field Observations:

Depth of Surface Water: _____(in.)

Depth to Free Water in Pit: _____(in.)

Depth to Saturated Soil: _____(in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12"
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators:
- ___ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

~~non~~ wetland hydrology not present

SOILS

Map Unit Name (Series and Phase): Pacolet sandy clay loam **Drainage Class:** _____

Taxonomy (Subgroup): thermic typic hapludalfs **Confirm Mapped Type? Yes** ___ **No** ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 3/3			silty

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer in Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed On Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks:

Non hydric soils

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes ___ No ✓
Wetland Hydrology Present? Yes ___ No ✓
Hydric Soils Present? Yes ___ No ✓

Is the Sampling Point Within a Wetland? Yes ___ No ✓

Remarks: Location (describe) is (is not) classified as a wetland based upon the criteria set forth in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: R-617C **Applicant / Owner:** NC DOT **Investigator:** Chris Rivenbark, Bruce Ellis	**Date:** 2/15/99 **County:** Lincoln **State:** NC
Do normal circumstances exist on the site? Yes ✓ No ___ **Is the site significantly disturbed (Atypical situation)?** Yes ___ No ✓ **Is the area a potential problem area?** Yes ___ No ✓ **(explain on reverse if needed)**	**Community ID:** C **Transect ID:** wetland **Plot ID:** ___ sheets 9 & 10 of permit drawings

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Polygonum sagittatum	Herb/Grass	OBL	9.		
2. Alnus serrulata	Shrub	FACW+	10.		
3. Microstegium vimineum	Herb/Grass	FAC+	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 100%

Remarks: Wetland Vegetation Present Based Upon Greater than 50% of the Plant Species (are) are not Classified as FAC-OBL in the National List of Plant Species that Occur in Wetlands. Sample plot was taken…

HYDROLOGY

___ **Recorded Data (Describe In Remarks):**
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ **No Recorded Data Available**

Field Observations:

Depth of Surface Water: 4 (in.)

Depth to Free Water in Pit: ___ (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ✓ Saturated in Upper 12"
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators:
- ___ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

Wetland hydrology present

SOILS

Map Unit Name (Series and Phase): Pacolet Sandy clay loam **Drainage Class:** _____

Taxonomy (Subgroup): thermic typic hapludafs **Confirm Mapped Type? Yes** ___ **No** ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-5		10YR 3/6			silty
5-12		10YR 3/1			silty

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ✓ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed On Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

hydric soils present

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** ✓	**No** ___	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** ✓	**No** ___	**Within a Wetland?**	**Yes** ✓	**No** ___
Hydric Soils Present?	**Yes** ✓	**No** ___			

Remarks: **Location (described) is/~~is~~ not** classified as a wetland based upon the criteria set forth in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: R - 617 C **Applicant / Owner:** NC DOT **Investigator:** Chris Riverbark, Bruce Ellis	**Date:** 2/15/99 **County:** Lincoln **State:** NC
Do normal circumstances exist on the site? Yes ✓ No ___ **Is the site significantly disturbed (Atypical situation)?** Yes ___ No ✓ **Is the area a potential problem area?** Yes ___ No ✓ **(explain on reverse if needed)**	**Community ID:** C **Transect ID:** upland **Plot ID:** ___ sheets 9 & 10 of permit drawings

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Quercus alba	Tree	FACU	9.		
2. Lonicera japonica	Vine	FAC-	10.		
3. Ligustrum sinense	Shrub	FAC	11.		
4. Acer rubrum	Tree	FAC	12.		
5. Liquidambar styaciflua	Tree	FAC+	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 50%

Remarks: Wetland Vegetation Present Based Upon Greater than 50% of the Plant Species ~~are~~/are not Classified as FAC-OBL in the National List of Plant Species that Occur in Wetlands. Sample plot was taken…

HYDROLOGY

___ **Recorded Data (Describe In Remarks):**
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ **No Recorded Data Available**

Field Observations:

Depth of Surface Water: _____(in.)

Depth to Free Water in Pit: _____(in.)

Depth to Saturated Soil: _____(in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12"
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators:
- ___ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

Wetland hydrology not present

SOILS

Map Unit Name (Series and Phase): Pacolet sandy clay loam **Drainage Class:** _____

Taxonomy (Subgroup): thermic typic hapludafs **Confirm Mapped Type? Yes** ___ **No** ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 3/4			silty

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer in Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed On Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks:

Hydric soils not present

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes ✓ No ___
Wetland Hydrology Present? Yes ___ No ✓
Hydric Soils Present? Yes ___ No ✓

Is the Sampling Point Within a Wetland? Yes ___ No ✓

Remarks: Location (describe) is (is not) classified as a wetland based upon the criteria set forth in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: R-617C Applicant / Owner: NCDOT Investigator: Chris Rivenbark, Chris Manley	Date: August 12, 2004 County: Lincoln State: NC
Do normal circumstances exist on the site? Yes ✓ No ___ Is the site significantly disturbed (Atypical situation)? Yes ___ No ✓ Is the area a potential problem area? Yes ___ No ✓ (explain on reverse if needed)	Community ID: 2 Transect ID: wetland Plot ID: ___ sheet 11 of permit drawings

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Alnus serrulata	Shrub	FACW+	9. Liriodendron tulipifera	shrub	FAC
2. Microstegium	Herb	FAC+	10.		
3. Salix nigra	Shrub	OBL	11.		
4. Lonicera japonica	Vine	FAC-	12.		
5. Rubus laciniatus	Shrub		13.		
6. ~~Populus deltoides~~	Tree		14.		
7. Platanus occidentalis	Tree	FACW-	15.		
8. Juniperus virginiana	Tree	FACU-	16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 71%

Remarks:

Prevalance of hydric vegetation

HYDROLOGY

___ Recorded Data (Describe In Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: ___ (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ✓ Saturated in Upper 12"
- ___ Water Marks
- ✓ Drift Lines
- ___ Sediment Deposits
- ✓ Drainage Patterns in Wetlands

Secondary Indicators:
- ___ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

Wetland hydrology present

SOILS

Map Unit Name (Series and Phase): Pacolet sandy clay loam **Drainage Class:** _____

Taxonomy (Subgroup): thermic Typic Hapludalfs **Confirm Mapped Type? Yes** ___ **No** ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
~~0-4~~					
0-4		10YR 2/1			loamy sand
4-12+		10YR 4/4			sandy clay loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ✓ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed On Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

Hydric soils present

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** ✓	**No** ___	**Is the Sampling Point**	
Wetland Hydrology Present?	**Yes** ✓	**No** ___	**Within a Wetland?**	**Yes** ✓ **No** ___
Hydric Soils Present?	**Yes** ✓	**No** ___		

Remarks:

Wetland area was formally a pond,

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Project / Site: R-617C Applicant / Owner: NCDOT Investigator: Chris Rivenbark, Chris Manley	Date: August 12, 2004 County: Lincoln State: NC
Do normal circumstances exist on the site? Yes ✓ No ___ Is the site significantly disturbed (Atypical situation)? Yes ___ No ✓ Is the area a potential problem area? Yes ___ No ✓ (explain on reverse if needed)	Community ID: 2 Transect ID: upland Plot ID: sheet 11 of permit drawings

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Rubus laciniatus	Shrub		9.		
2. Ambrosia	Herb		10.		
3. Andropogon virginicus	Grass	FAC-	11.		
4. Solidago	Shrub		12.		
5. Daucus carota	Herb		13.		
6. Plantago	Herb		14.		
7. Eupatorium capillifolium	Herb		15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 0

Remarks:

Prevalence of non hydrophytic vegetation

HYDROLOGY

___ Recorded Data (Describe In Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____(in.)

Depth to Free Water in Pit: _____(in.)

Depth to Saturated Soil: _____(in.)

Wetland Hydrology Indicators

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12"
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators:
- ___ Oxidized Roots Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

Wetland hydrology not present

SOILS

Map Unit Name (Series and Phase): Pacolet sandy clay loam **Drainage Class:** _____

Taxonomy (Subgroup): thermic Typic Hapludalfs **Confirm Mapped Type?** Yes ___ No ___

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3		7.5YR 3/3			clay loam
3-12		2.5YR 4/8			clay

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed On Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

non hydric soil

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes ___	No ✓	**Is the Sampling Point**	
Wetland Hydrology Present?	Yes ___	No ✓	**Within a Wetland?**	Yes ___ No ✓
Hydric Soils Present?	Yes ___	No ✓		

Remarks:

Non wetland

INTERMITTENT CHANNEL EVALUATION FORM

ACTION ID _____ APPLICANT NAME NCDOT (R-6170) DATE 8/12/04

PROPOSED CHANNEL WORK (i.e., culvert, relocation, etc.) culvert (sheet 27 of 35 permit drawings)

WATERBODY/RIVER BASIN Ut to Lithia Branch/Catawba COUNTY/CITY Lincoln/Lincolnton

RECENT WEATHER CONDITIONS rain w/i last 6 hrs

P	SP	NP	Observation	Comments or Description
		✓	Fish/Shellfish/Crustaceans Present	
✓			Benthic Macro Invertebrates	
✓			Amphibians Present/Breeding	
✓			Algae And/Or Fungus (water quality function)	
		✓	Wildlife Channel Use (i.e. tracks, feces, shells, others)	
✓			Federally Protected Species Present (Discontinue)	
✓			Riffle/Pool Structure	
✓			Stable Streambanks	
✓			Channel Substrate (i.e. gravel, cobble, rock, coarse sand)	sand, cobble, rock
✓			Riparian Canopy Present (SP =/> 50% closure)	
✓			Undercut Banks/Instream Habitat Structure	
✓			Flow In Channel	slight
		✓	Wetlands Adjacent To/Contig. With Channel (Discontinue)	
✓			Persistent Pools/Saturated Bottom (June through Sept.)	
✓			Seeps/Groundwater Discharge (June through Sept.)	spring fed
		✓	Adjacent Floodplain Present	
		✓	Wrack Material or Drift Lines	
✓			Hydrophytic Vegetation in/adjacent to channel	

Important To Domestic Water Supply? Y / (N)

Does Channel Appear On A Quad Or Soils Map? (Y) / N **Approx. Drainage Area:** _____

Determination:

- [ ] Perennial Channel (stop)
- [x] Intermittent Channel (proceed)
- [ ] Ephemeral Channel (no jd)
- [ ] Ditch Through Upland (no jd)

- [ ] Important Channel: _____ LF
- [x] Unimportant Channel: 118 LF

(attach map indicating location of important/unimportant channel)

PROJECT MGR. Initials _____

Evaluator's Signature: Mark C. Riwl III
(if other than C.O.E. project manager)

P=Present SP=Stongly Present NP=Not Present

NCDWQ Stream Classification Form

sheet 27 of 35 permit drawings

Project Name: R-617 C | River Basin: Catawba | County: Lincoln | Evaluator: Chris Rivenbark

DWQ Project Number: | Nearest Named Stream: Lithia Branch | Latitude: 35.449548 | Signature: Mark C. Riv III

Date: 8/12/04 | USGS QUAD: Lincolnton East | Longitude: 81.245139 | Location/Directions: see vicinity map

PLEASE NOTE:** ***If evaluator and landowner agree that the feature is a man-made ditch, then use of this form is not necessary. Also, if in the best professional judgement of the evaluator, the feature is a man-made ditch and not a modified natural stream—this rating system should not be used*

Primary Field Indicators: *(Circle One Number Per Line)*

I. Geomorphology	Absent	Weak	Moderate	Strong
1) Is There A Riffle-Pool Sequence?	0	1	(2)	3
2) Is The USDA Texture In Streambed Different From Surrounding Terrain?	0	(1)	2	3
3) Are Natural Levees Present?	(0)	1	2	3
4) Is The Channel Sinuous?	0	(1)	2	3
5) Is There An Active (Or Relic) Floodplain Present?	(0)	1	2	3
6) Is The Channel Braided?	(0)	1	2	3
7) Are Recent Alluvial Deposits Present?	(0)	1	2	3
8) Is There A Bankfull Bench Present?	(0)	1	2	3
9) Is A Continuous Bed & Bank Present?	0	1	(2)	3
*(*NOTE: If Bed & Bank Caused By Ditching And **WITHOUT** Sinuosity Then Score=0*)*				
10) Is A 2nd Order Or Greater Channel (As Indicated On Topo Map ***And/Or*** In Field) Present?	***Yes***=3		***No***=0	

PRIMARY GEOMORPHOLOGY INDICATOR POINTS: 6

II. Hydrology	Absent	Weak	Moderate	Strong
1) Is There A Groundwater Flow/Discharge Present?	0	(1)	2	3

PRIMARY HYDROLOGY INDICATOR POINTS: 1

III. Biology	Absent	Weak	Moderate	Strong
1) Are Fibrous Roots Present In Streambed?	3	2	(1)	0
2) Are Rooted Plants Present In Streambed?	3	2	(1)	0
3) Is Periphyton Present?	(0)	1	2	3
4) Are Bivalves Present?	(0)	1	2	3

PRIMARY BIOLOGY INDICATOR POINTS: 2

Secondary Field Indicators: *(Circle One Number Per Line)*

I. Geomorphology	Absent	Weak	Moderate	Strong
1) Is There A Head Cut Present In Channel?	0	.5	(1)	1.5
2) Is There A Grade Control Point In Channel?	0	.5	1	(1.5)
3) Does Topography Indicate A Natural Drainage Way?	0	.5	(1)	1.5

SECONDARY GEOMORPHOLOGY INDICATOR POINTS: 3.5

II. Hydrology	Absent	Weak	Moderate	Strong
1) Is This Year's (Or Last's) Leaflitter Present In Streambed?	1.5	1	(.5)	0
2) Is Sediment On Plants (Or Debris) Present?	(0)	.5	1	1.5
3) Are Wrack Lines Present?	0	(.5)	1	1.5
4) Is Water In Channel ***And*** >48 Hrs. Since Last ***Known*** Rain? *(*NOTE: If Ditch Indicated In #9 Above Skip This Step And #5 Below*)*	0	(.5)	1	1.5
5) Is There Water In Channel During Dry Conditions ***Or*** In Growing Season)?	0	(.5)	1	1.5
6) Are Hydric Soils Present In Sides Of Channel (Or In Headcut)?	***Yes***=1.5		***No***=0	

SECONDARY HYDROLOGY INDICATOR POINTS: 2

III. Biology	Absent	Weak	Moderate	Strong
1) Are Fish Present?	(0)	.5	1	1.5
2) Are Amphibians Present?	0	.5	(1)	1.5
3) Are AquaticTurtles Present?	(0)	.5	1	1.5
4) Are Crayfish Present?	(0)	.5	1	1.5
5) Are Macrobenthos Present?	0	.5	(1)	1.5
6) Are Iron Oxidizing Bacteria/Fungus Present?	(0)	.5	1	1.5
7) Is Filamentous Algae Present?	(0)	.5	1	1.5

8) Are Wetland Plants In Streambed?	SAV	Mostly OBL	Mostly FACW	Mostly FAC	Mostly FACU	Mostly UPL
(NOTE: If Total Absence Of All Plants In Streambed As Noted Above Skip This Step UNLESS SAV Present*).*	2	1	.75	(.5)	0	0

SECONDARY BIOLOGY INDICATOR POINTS: 2.5

TOTAL POINTS *(**Primary** + **Secondary**)*= 17 *(**If Greater Than Or Equal To 19 Points The Stream Is At Least Intermittent**)*

INTERMITTENT CHANNEL EVALUATION FORM

ACTION ID _____ APPLICANT NAME NCDOT (R-617 C) DATE 8/12/04

PROPOSED CHANNEL WORK (i.e., culvert, relocation, etc.) culvert (sheet 28 of 35 permit drawings)

WATERBODY/RIVER BASIN Ut to Muddy Creek/Catawba COUNTY/CITY Lincoln/Lincolnton

RECENT WEATHER CONDITIONS rain w/i last 6 hrs.

P	SP	NP	Observation	Comments or Description
		✓	Fish/Shellfish/Crustaceans Present	
		✓	Benthic Macro Invertebrates	
		✓	Amphibians Present/Breeding	
		✓	Algae And/Or Fungus (water quality function)	
		✓	Wildlife Channel Use (i.e. tracks, feces, shells, others)	
		✓	Federally Protected Species Present (Discontinue)	
✓			Riffle/Pool Structure	
✓			Stable Streambanks	
		✓	Channel Substrate (i.e. gravel, cobble, rock, coarse sand)	silt
		✓	Riparian Canopy Present (SP =/> 50% closure)	
		✓	Undercut Banks/Instream Habitat Structure	
✓			Flow In Channel	rain
		✓	Wetlands Adjacent To/Contig. With Channel (Discontinue)	
		✓	Persistent Pools/Saturated Bottom (June through Sept.)	not likely
		✓	Seeps/Groundwater Discharge (June through Sept.)	
		✓	Adjacent Floodplain Present	
✓			Wrack Material or Drift Lines	
		✓	Hydrophytic Vegetation in/adjacent to channel	

Important To Domestic Water Supply? Y /(N)

Does Channel Appear On A Quad Or Soils Map? (Y)/ N **Approx. Drainage Area:** _____

Determination:

- [ ] Perennial Channel (stop)
- [✓] Intermittent Channel (proceed)
- [ ] Ephemeral Channel (no jd)
- [ ] Ditch Through Upland (no jd)

- [ ] Important Channel: _____ LF
- [ ] Unimportant Channel: 269 LF

(attach map indicating location of important/unimportant channel)

PROJECT MGR. Initials _____

Evaluator's Signature: Mark CRM III
(if other than C.O.E. project manager)

P=Present SP=Stongly Present NP=Not Present

NCDWQ Stream Classification Form

Project Name: R-617C | River Basin: Catawba | County: Lincoln | Evaluator: Chris Rivenbark

DWQ Project Number: | Nearest Named Stream: Muddy Creek | Latitude: ~~35.445579~~ 35.450159 | Signature: Mark C. Riv III

Date: 8/12/04 | USGS QUAD: Lincolnton East | Longitude: ~~81.245184~~ 81.228858 | Location/Directions: see vicinity map

2

PLEASE NOTE:** ***If evaluator and landowner agree that the feature is a man-made ditch, then use of this form is not necessary. Also, if in the best professional judgement of the evaluator, the feature is a man-made ditch and not a modified natural stream—this rating system should not be used*

sheet 28 of 35 permit drawings

Primary Field Indicators: *(Circle One Number Per Line)*

I. Geomorphology	Absent	Weak	Moderate	Strong
1) Is There A Riffle-Pool Sequence?	0	(1)	2	3
2) Is The USDA Texture In Streambed Different From Surrounding Terrain?	(0)	1	2	3
3) Are Natural Levees Present?	(0)	1	2	3
4) Is The Channel Sinuous?	(0)	1	2	3
5) Is There An Active (Or Relic) Floodplain Present?	(0)	1	2	3
6) Is The Channel Braided?	(0)	1	2	3
7) Are Recent Alluvial Deposits Present?	(0)	1	2	3
8) Is There A Bankfull Bench Present?	(0)	1	2	3
9) Is A Continuous Bed & Bank Present?	0	(1)	2	3

*(*NOTE: If Bed & Bank Caused By Ditching And **WITHOUT** Sinuosity Then Score=0*)*

10) Is A 2nd Order Or Greater Channel (As Indicated On Topo Map ***And/Or*** In Field) Present? *Yes*=3 (*No*=0)

PRIMARY GEOMORPHOLOGY INDICATOR POINTS: 2

II. Hydrology	Absent	Weak	Moderate	Strong
1) Is There A Groundwater Flow/Discharge Present?	(0)	1	2	3

PRIMARY HYDROLOGY INDICATOR POINTS: 0

III. Biology	Absent	Weak	Moderate	Strong
1) Are Fibrous Roots Present In Streambed?	3	(2)	1	0
2) Are Rooted Plants Present In Streambed?	3	(2)	1	0
3) Is Periphyton Present?	(0)	1	2	3
4) Are Bivalves Present?	(0)	1	2	3

PRIMARY BIOLOGY INDICATOR POINTS: 3

Secondary Field Indicators: *(Circle One Number Per Line)*

I. Geomorphology	Absent	Weak	Moderate	Strong
1) Is There A Head Cut Present In Channel?	0	(.5)	1	1.5
2) Is There A Grade Control Point In Channel?	0	(.5)	1	1.5
3) Does Topography Indicate A Natural Drainage Way?	0	(.5)	1	1.5

SECONDARY GEOMORPHOLOGY INDICATOR POINTS: 1.5

II. Hydrology	Absent	Weak	Moderate	Strong
1) Is This Year's (Or Last's) Leaflitter Present In Streambed?	1.5	1	(.5)	0
2) Is Sediment On Plants (Or Debris) Present?	(0)	.5	1	1.5
3) Are Wrack Lines Present?	0	.5	(1)	1.5
4) Is Water In Channel ***And*** >48 Hrs. Since Last ***Known*** Rain? *(*NOTE: If Ditch Indicated In #9 Above Skip This Step And #5 Below*)*	(0)	.5	1	1.5
5) Is There Water In Channel During Dry Conditions ***Or*** In Growing Season)?	(0)	.5	1	1.5

6) Are Hydric Soils Present In Sides Of Channel (Or In Headcut)? *Yes=1.5* (*No*=0)

SECONDARY HYDROLOGY INDICATOR POINTS: 1.5

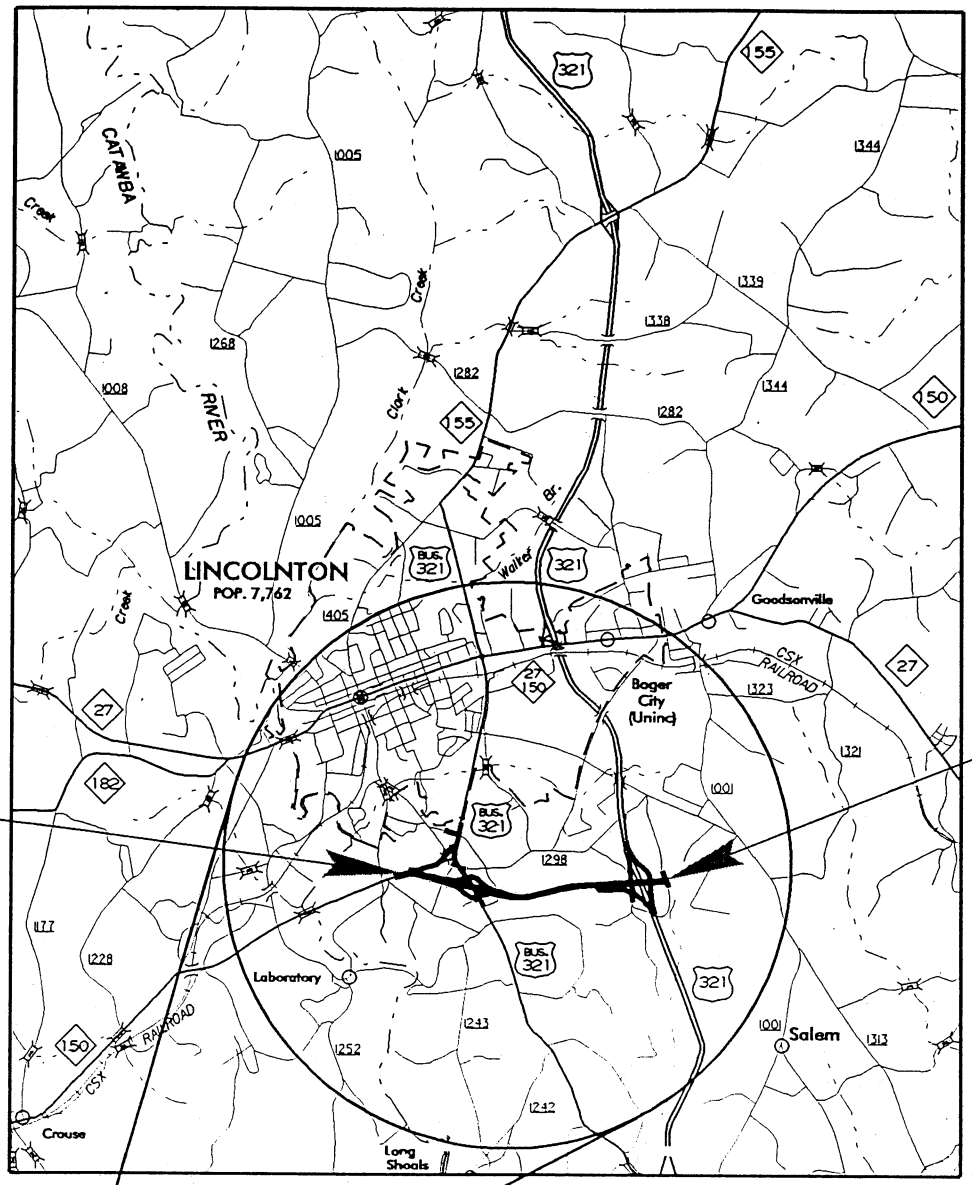
III. Biology	Absent	Weak	Moderate	Strong
1) Are Fish Present?	(0)	.5	1	1.5
2) Are Amphibians Present?	(0)	.5	1	1.5
3) Are AquaticTurtles Present?	(0)	.5	1	1.5
4) Are Crayfish Present?	(0)	.5	1	1.5
5) Are Macrobenthos Present?	0	(.5)	1	1.5
6) Are Iron Oxidizing Bacteria/Fungus Present?	(0)	.5	1	1.5
7) Is Filamentous Algae Present?	(0)	.5	1	1.5

8) Are Wetland Plants In Streambed?	SAV	Mostly OBL	Mostly FACW	Mostly FAC	Mostly FACU	Mostly UPL
(NOTE: If Total Absence Of All Plants In Streambed As Noted Above Skip This Step UNLESS SAV Present*)*	2	1	.75	.5	(0)	0

SECONDARY BIOLOGY INDICATOR POINTS: 0.5

TOTAL POINTS *(Primary + Secondary)*= 8.5 *(If Greater Than Or Equal To 19 Points The Stream Is At Least Intermittent)*

VICINITY MAP



BEGIN PROJECT

END PROJECT

SITE

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

METRIC

NOT TO SCALE

DATE: 04-07-04

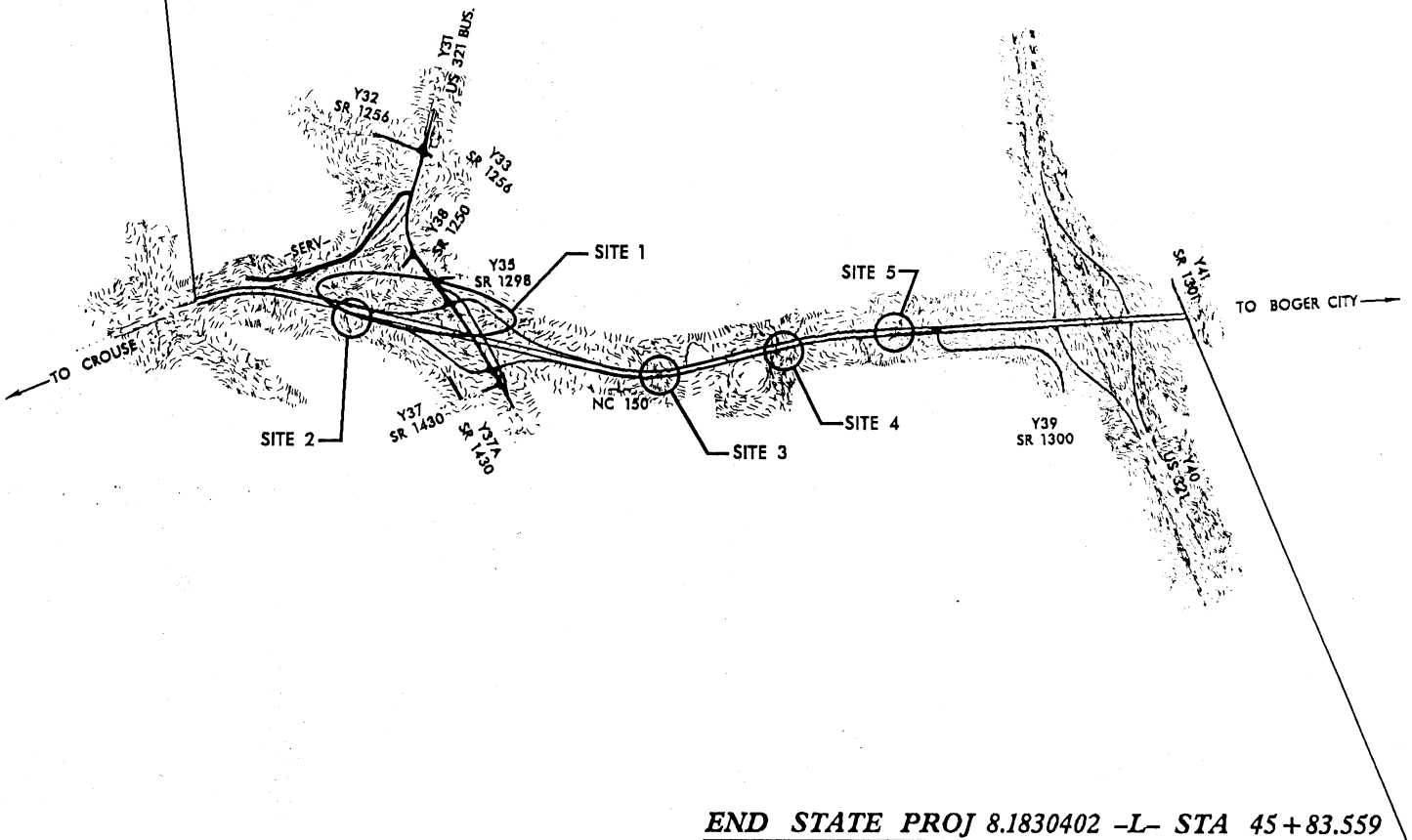
SHEET 1 OF 35

$DATE$
$TIME$
$FILE$

BEGIN STATE PROJ 8.1830402 -LNBL- STA 10+00.000 =
BEGIN STATE PROJ 8.1830402 -L- STA 10+00.000 (10.6m LT)
BEGIN FA PROJ STP-150(3) -L- STA 10+00.000

NAD 83

METRIC



END STATE PROJ 8.1830402 -L- STA 45+83.559
END FA PROJ STP-150(3) -L- STA 45+83.559

SITE MAP

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)
NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

NOT TO SCALE

DATE: 04-07-04

LEGEND

WLB — WETLAND BOUNDARY

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 FILL IN SURFACE WATER

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

X X X X X — LIVE STAKES

BOULDER

COIR FIBER ROLLS

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

VANE

RIP RAP

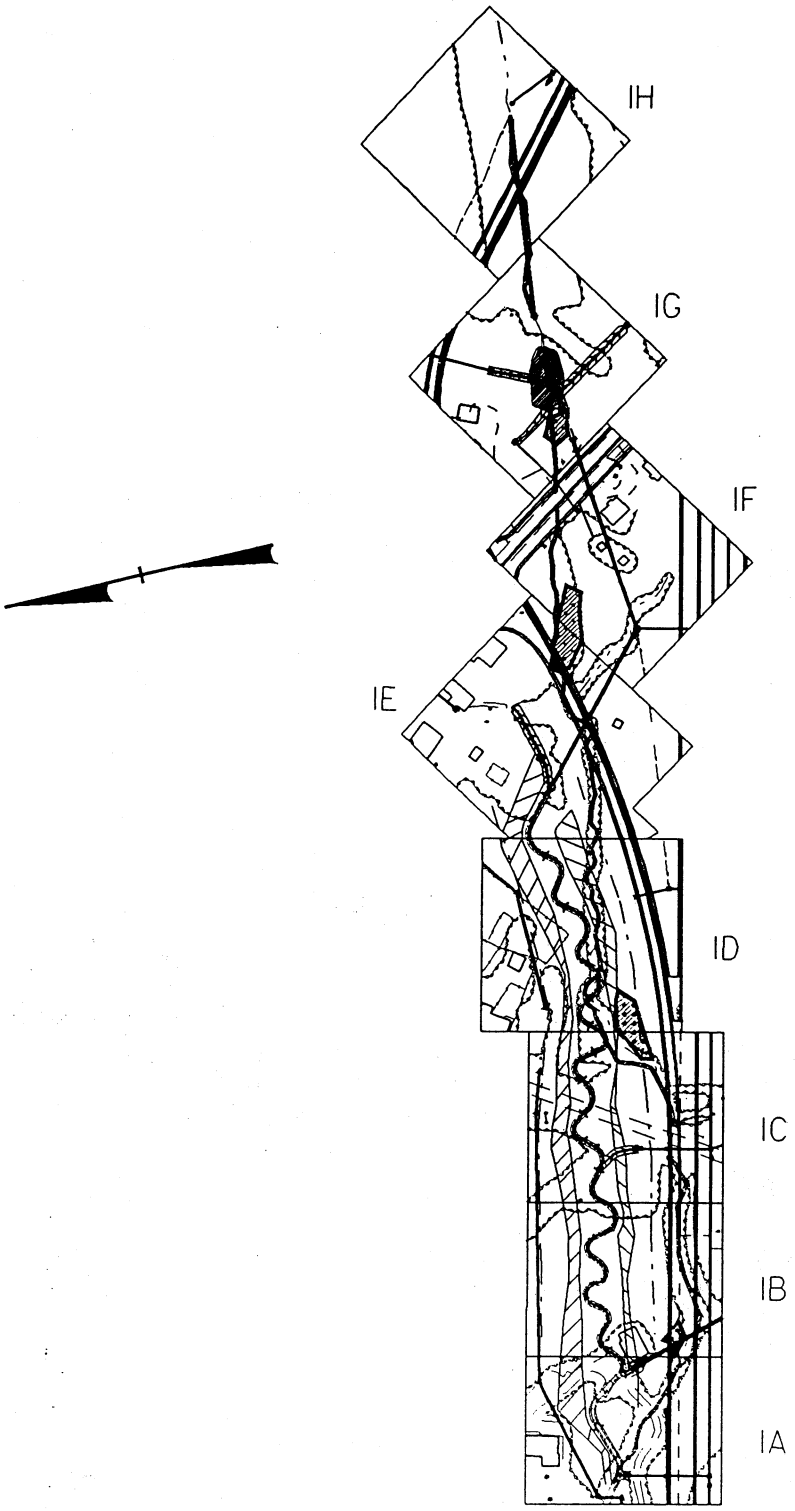
RIP RAP ENERGY DISSIPATOR BASIN

BUFFER ZONE — BUFFER ZONE

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS



SHEET LAYOUT
SITE I

TRIB TO LITHIA BRANCH

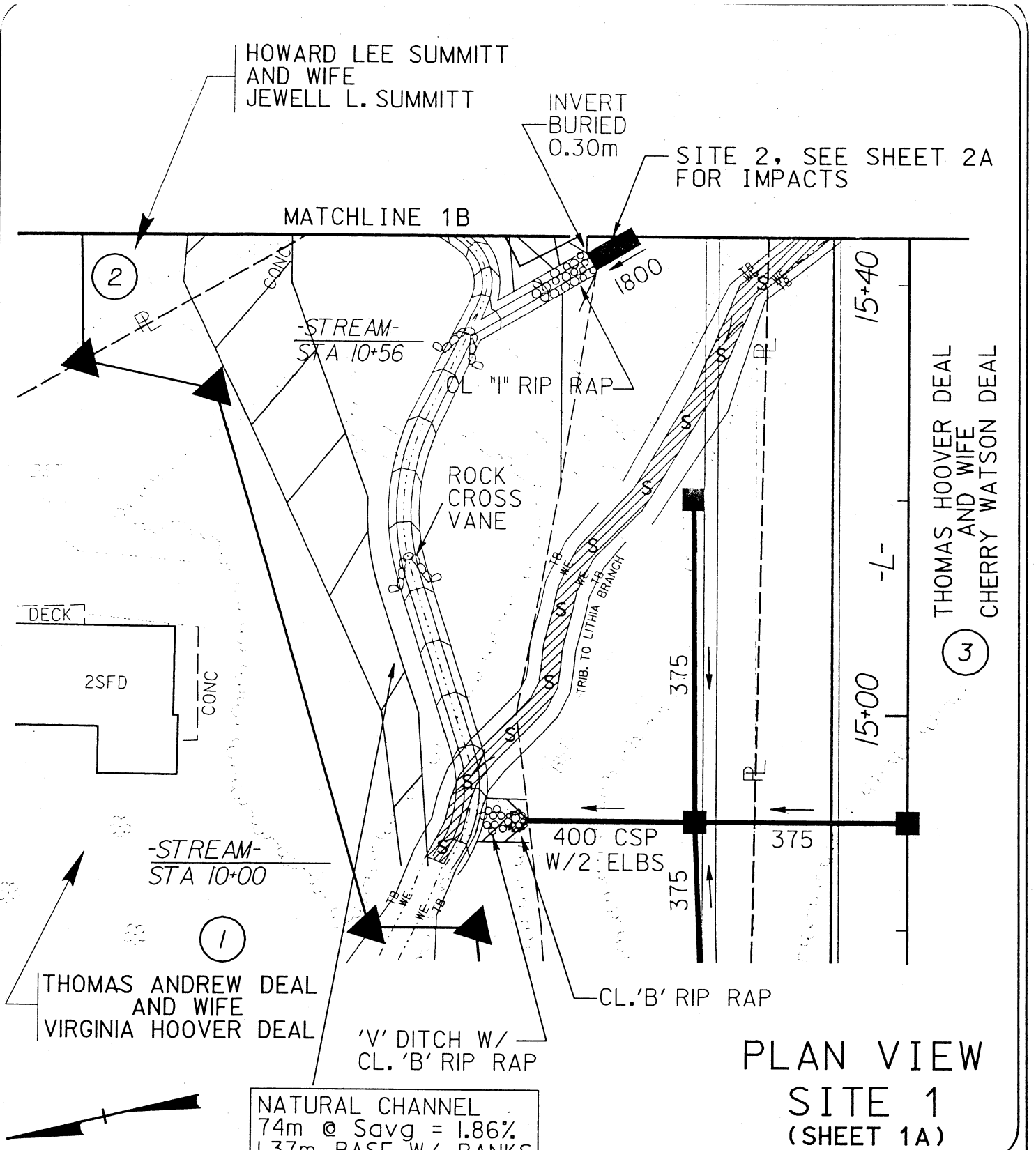
METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

NOT TO SCALE



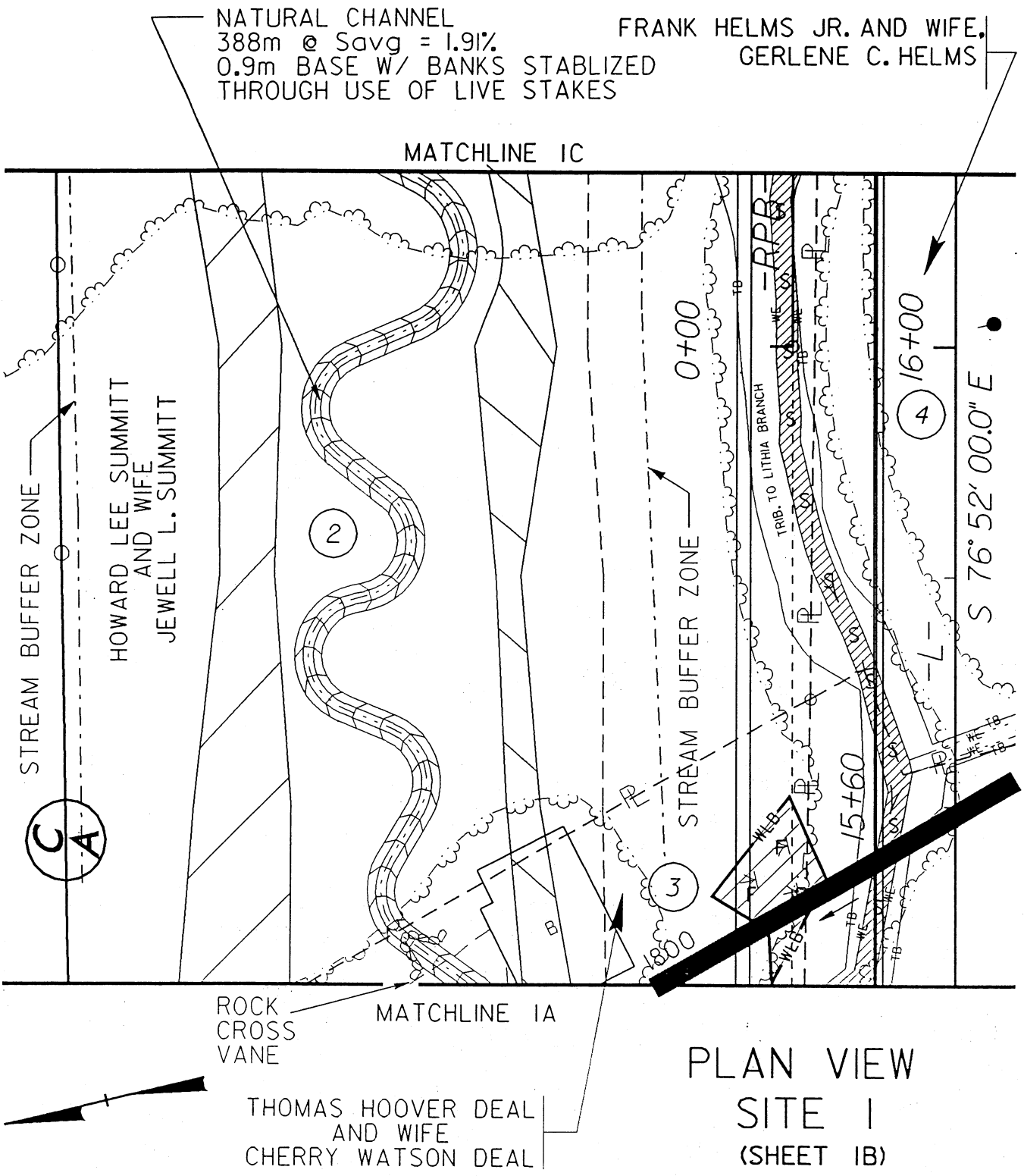
PLAN VIEW
SITE 1
(SHEET 1A)

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 09-16-04



PLAN VIEW
SITE 1
(SHEET 1B)

LEGEND

—WLB— WETLAND

F F DENOTES FILL IN WETLAND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

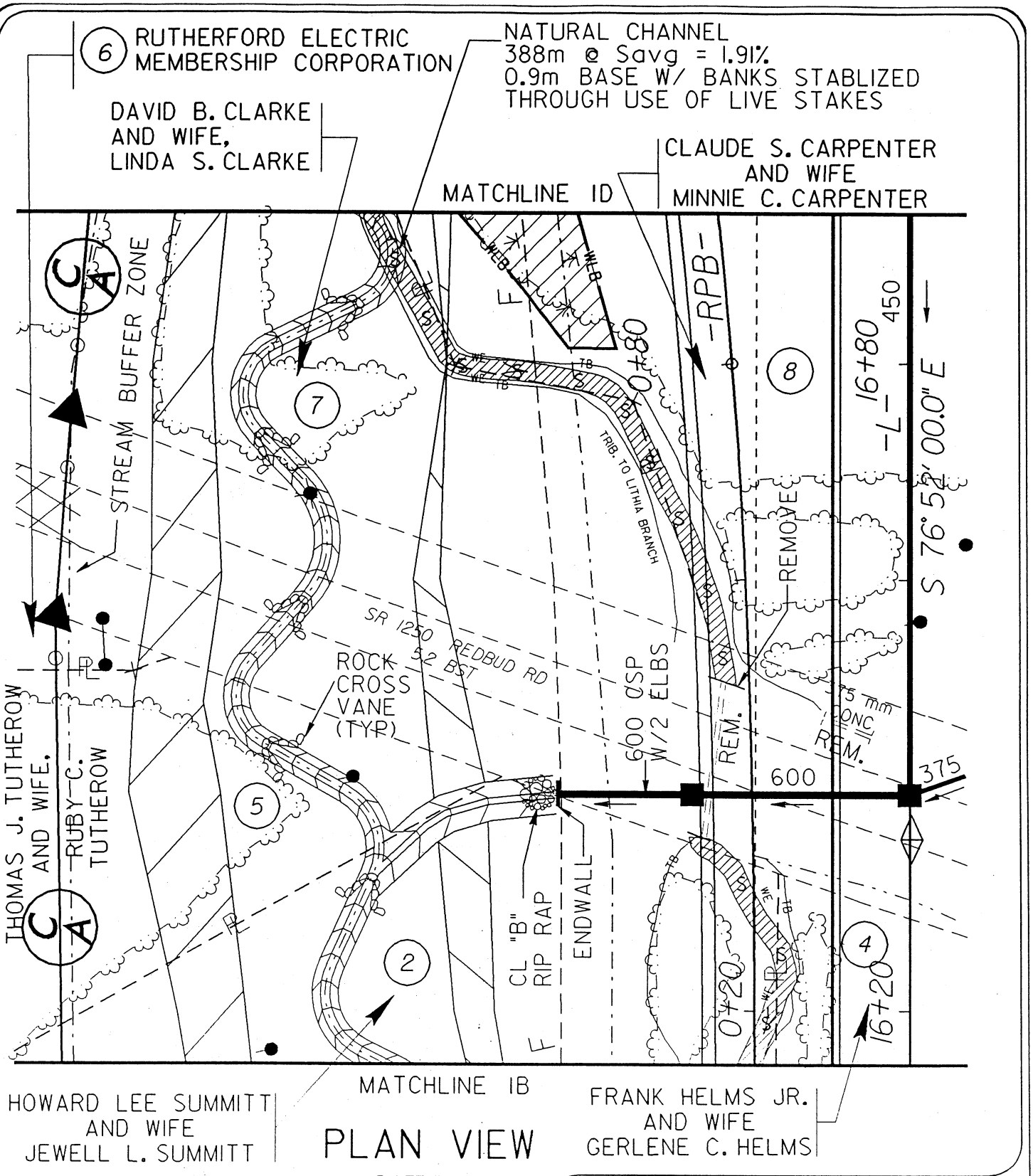
LINCOLN COUNTY
8.1830402 (R-0617C)

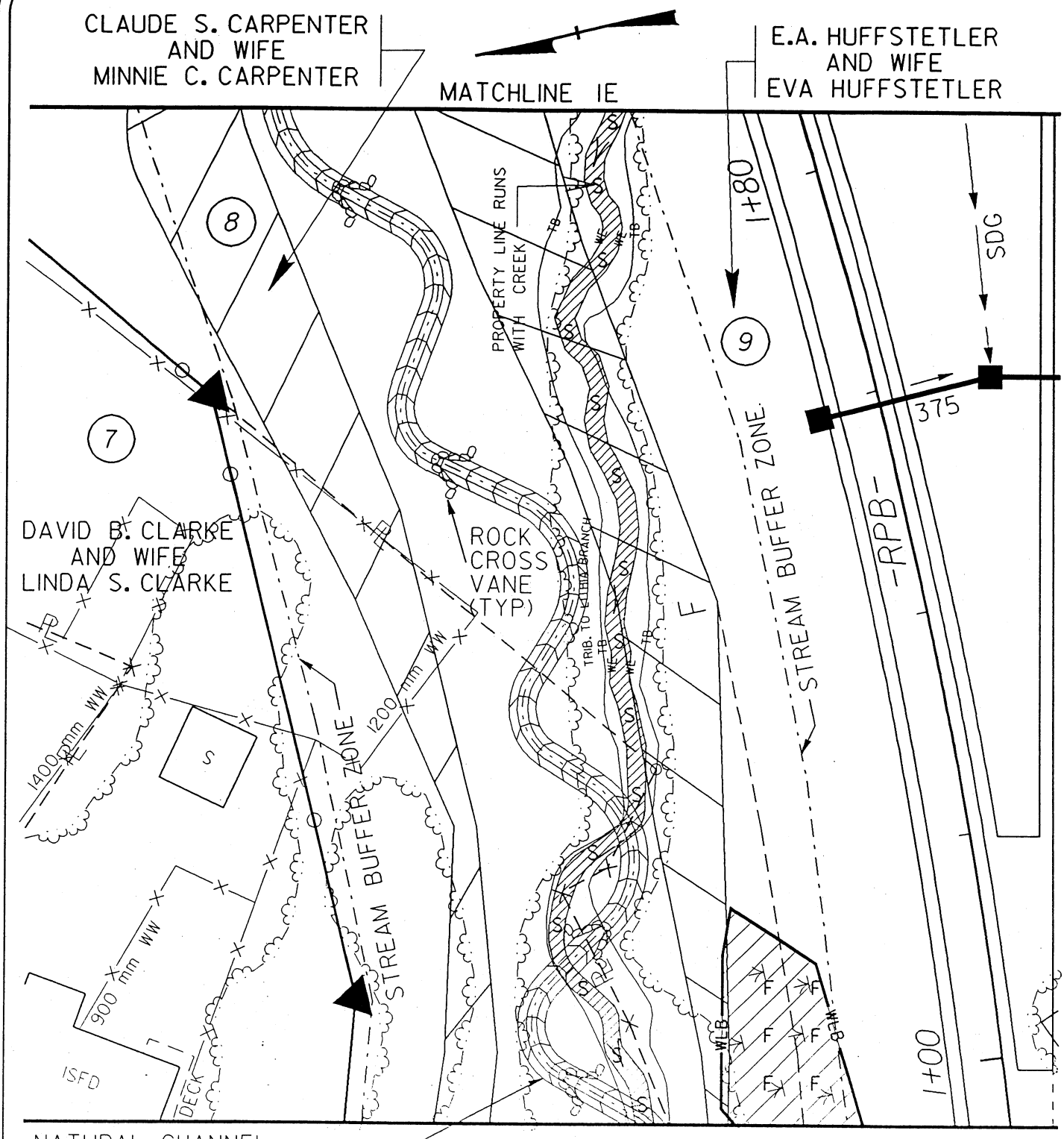
NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 6 OF 35

$DATE$
$TIME$
$FILE$


6 RUTHERFORD ELECTRIC MEMBERSHIP CORPORATION
NATURAL CHANNEL
388m @ Savg = 1.91%
0.9m BASE W/ BANKS STABLIZED
THROUGH USE OF LIVE STAKES
DAVID B. CLARKE AND WIFE, LINDA S. CLARKE
CLAUDE S. CARPENTER AND WIFE MINNIE C. CARPENTER
MATCHLINE ID
STREAM BUFFER ZONE
SR 1250 REDBUD RD
5.2 BST
ROCK CROSS VANE (TYP)
TRIB. TO LITHIA BRANCH
REMOVE
600 CSP W/2 ELBS
REM.
600
375
S 76°52'00.0" E
16+80
450
0+80
-RPB-
CL "B" RIP RAP
ENDWALL
0+20
16+20
THOMAS J. TUTHEROW AND WIFE, RUBY C. TUTHEROW
HOWARD LEE SUMMITT AND WIFE JEWELL L. SUMMITT
FRANK HELMS JR. AND WIFE GERLENE C. HELMS
MATCHLINE IB
PLAN VIEW
SITE 1
(SHEET 1C)
LEGEND
WLB WETLAND
F F DENOTES FILL IN WETLAND
S S DENOTES SURFACE WATER LOSS
5 0 10
SCALE
METRIC
NORTH CAROLINA
DEPARTMENT OF HIGHWAYS
LINCOLN COUNTY
8.1830402 (R-0617C)
NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS
DATE: 04-07-04
SHEET 7 OF 35



NATURAL CHANNEL
388m @ Savg = 1.91%
0.9m BASE W/ BANKS STABLIZED
THROUGH USE OF LIVE STAKES

LEGEND

—WLB— WETLAND

F F DENOTES FILL IN WETLAND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE

PLAN VIEW
SITE 1
(SHEET 1D)

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

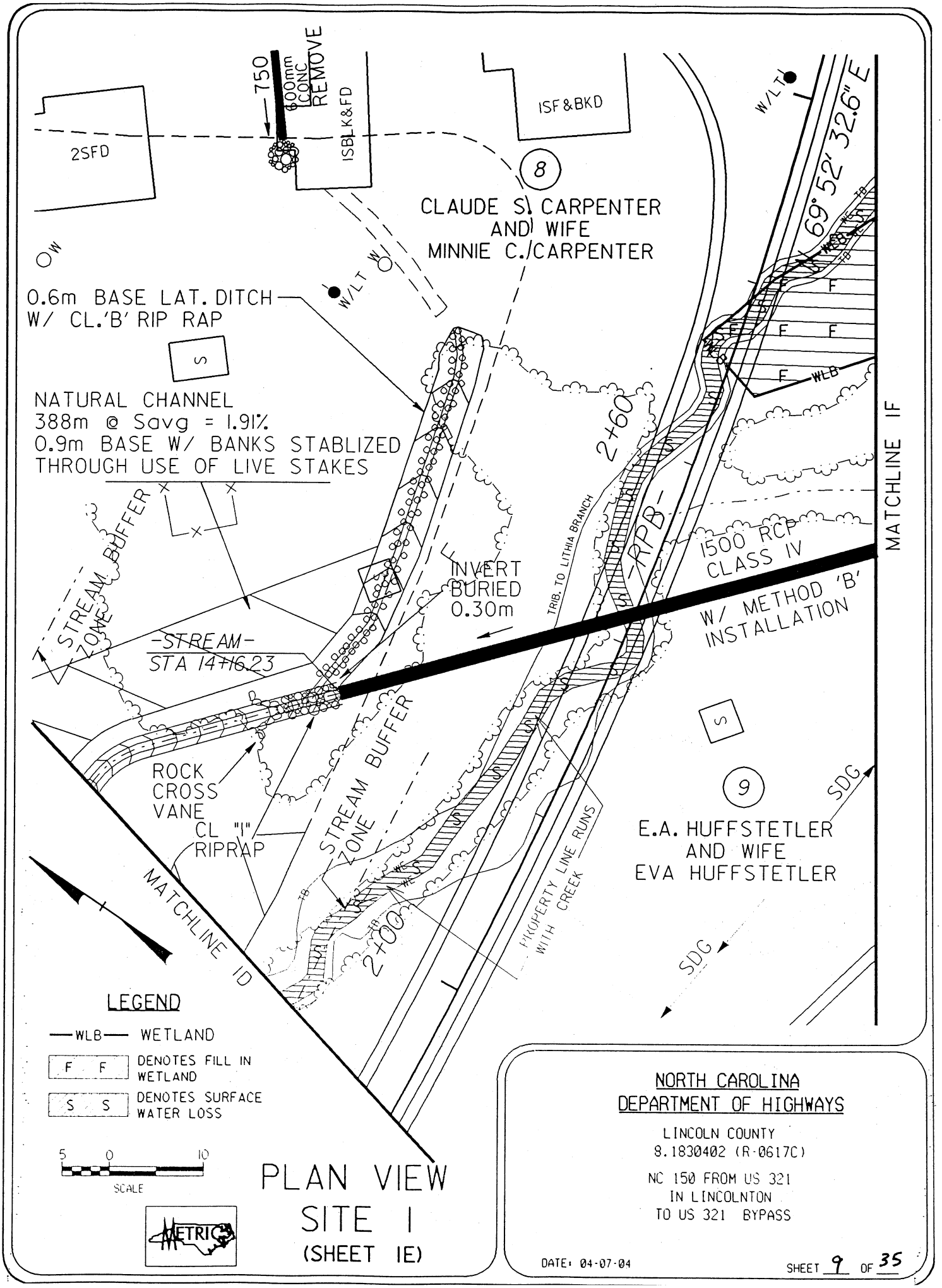
LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 8 OF 35

$DATES
$TIMES
$FILES



PLAN VIEW
SITE 1
(SHEET 1E)

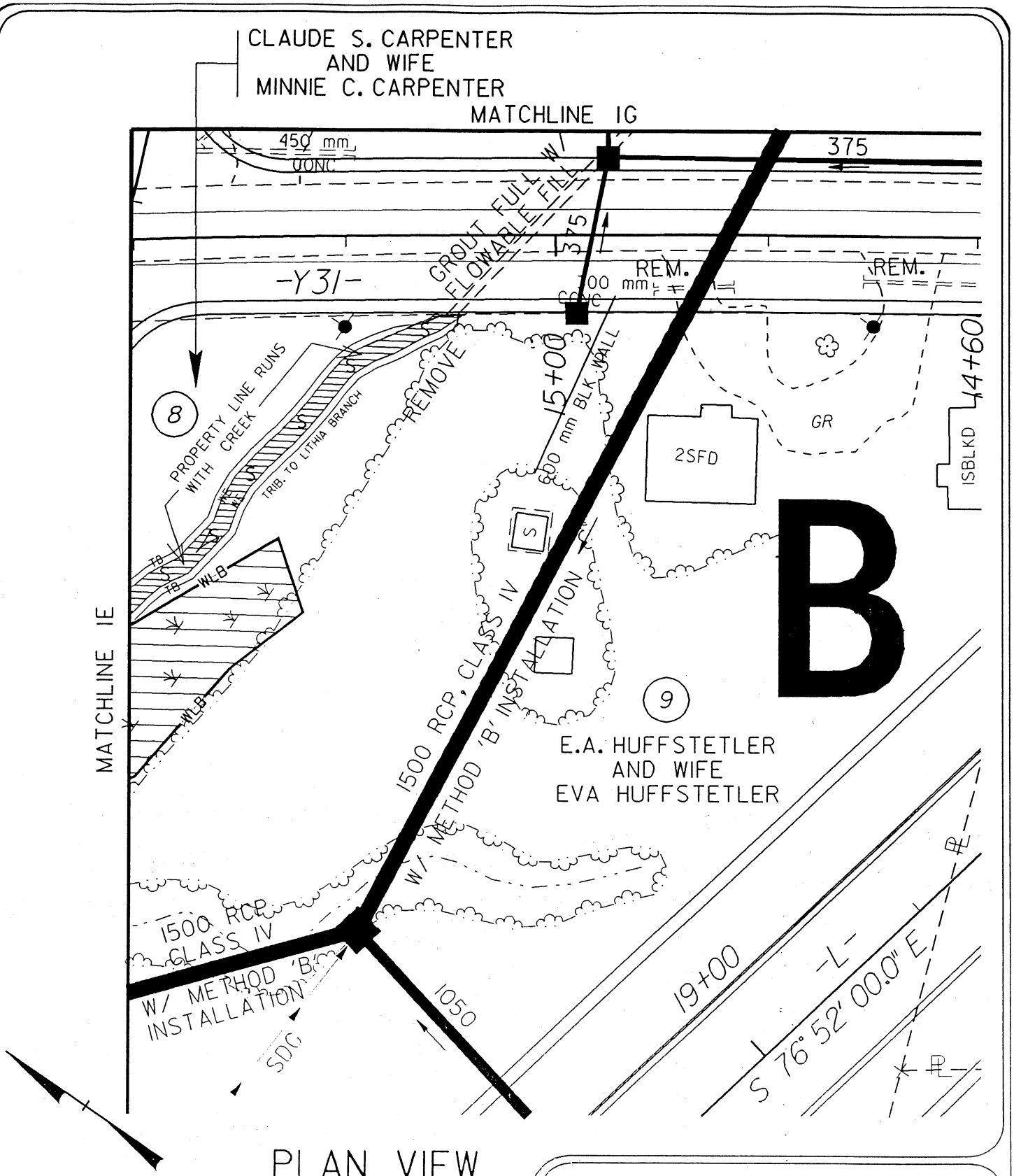
NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

$DATE$
$TIME$
$FILE$



PLAN VIEW
SITE 1
(SHEET 1F)

LEGEND

—WLB— WETLAND

F / F DENOTES FILL IN WETLAND

S S DENOTES SURFACE WATER LOSS

5 0 10

SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

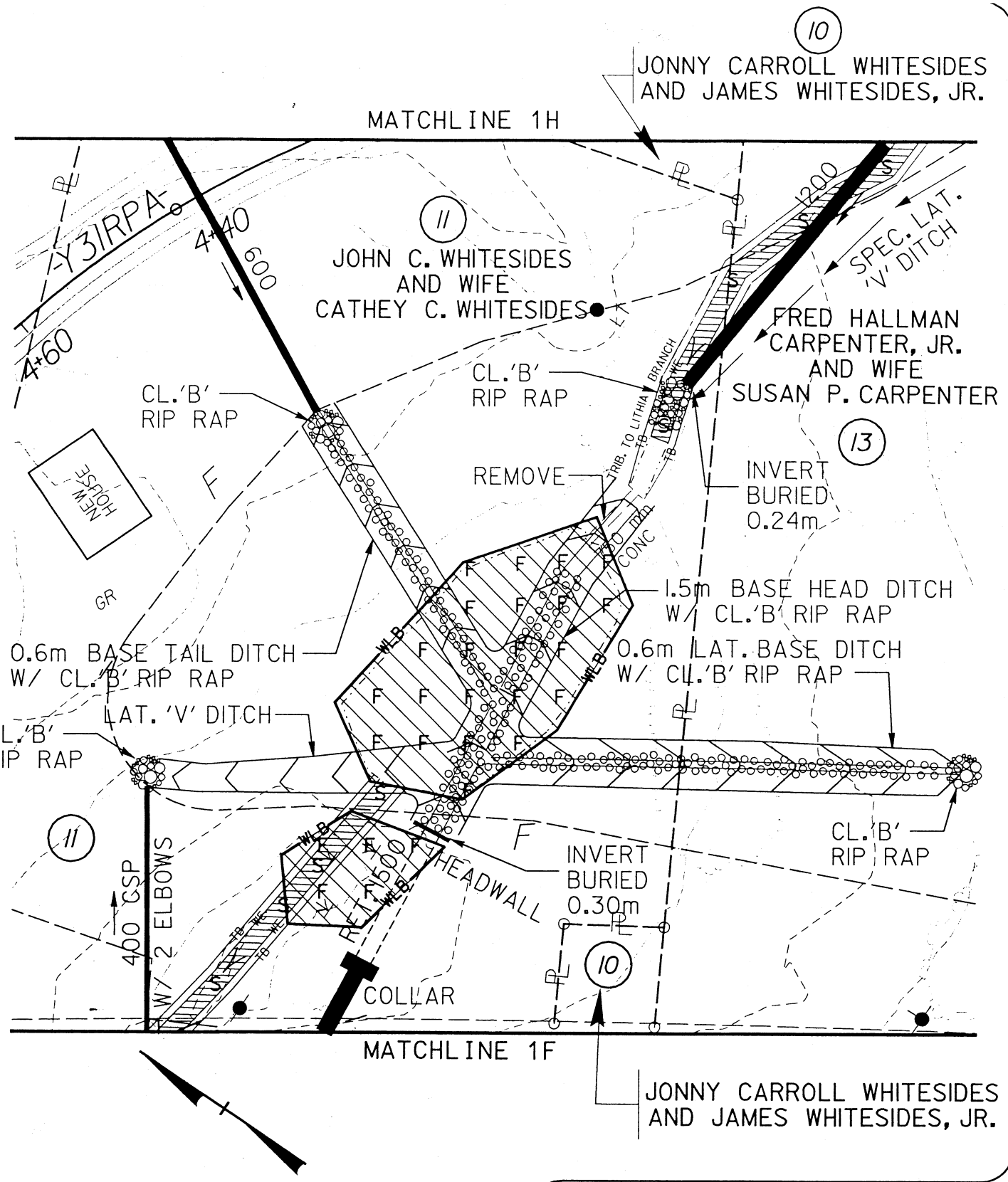
LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 10 OF 35

DATES
ESTIMATES
FILES



PLAN VIEW
SITE 1
(SHEET 1G)

LEGEND

—WLB— WETLAND

F F DENOTES FILL IN WETLAND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 09-16-04

SHEET 11 OF 35

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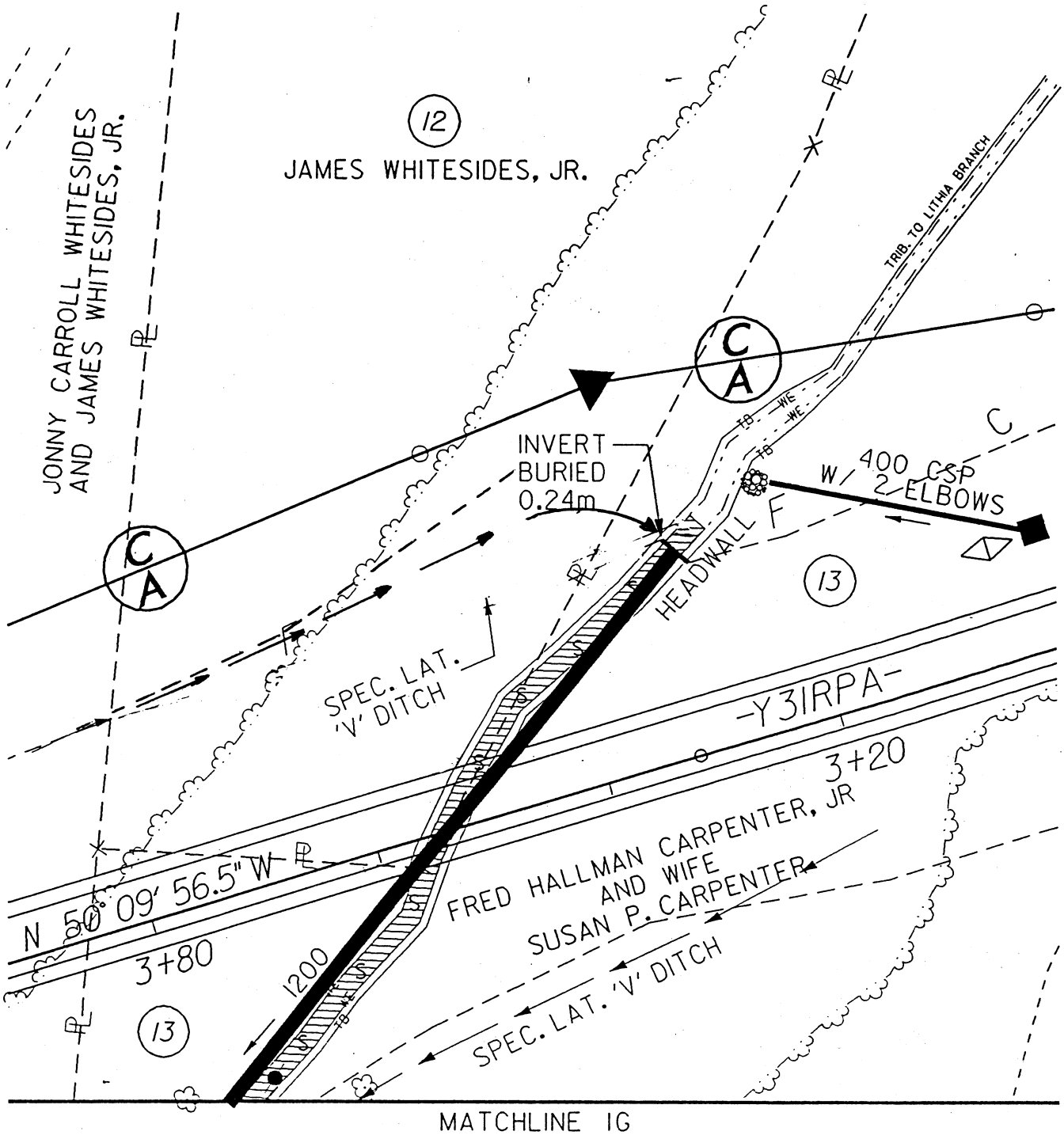


PLAN VIEW
SITE 1
(SHEET 1H)

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 12 OF 35

NCDOT Project I.D. R-0617C
Lincoln County, North Carolina
NC 150 from US 321 in Lincolnton to US 321 Bypass

Prepared by: Ko & Associates, PC
1011 Schaub Drive, Suite 200
Raleigh, North Carolina 27606

February 24, 2004

NATURAL CHANNEL DESIGN

UNNAMED TRIBUTARY TO LITHIA BRANCH

Left of Project Station 14+90 -L-
Permit Site 1

The alignment of NC 150 will require that a portion of an unnamed Tributary to Lithia Branch be relocated from Project Station 14+90 Lt to Station 18+10 Lt for approximately 372 meters in length. The proposed channel relocation is designed according to "Natural Channel" design principles proposed by Dave Rosgen.

The drainage area for the unnamed tributary is mixed rural wooded and residential in nature but is expected to become urban with the construction of the NC 150 / US 321 Business interchange. The stream was found to be perennial in nature, having flow through the riffles and pools.

There are no hydraulic gage data available on this stream nor on nearby streams. Current discharges were estimated using the NCDOT procedures for rural watersheds.

EXISTING CHANNEL

A Representative portion of the existing channel, between Stations 14+00 and 17+50, was surveyed in detail for the purpose of channel classification. The existing channel was measured to have an entrenchment ratio of 1.9, a width/depth ratio of 5, a sinuosity of 1.05 and an average slope of 0.0284 m/m. From the pebble count performed, the D50 channel material was classified as course gravel. The channel was classified to be a G4 stream type according to the Rosgen classification system.

SITE 1
(SHEET IN)

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

NOT TO SCALE

DATE: 04-07-04

SHEET 13 OF 35

$DATE$
$TIME$
$FILE$

NCDOT Project I.D. R-0617C
Lincoln County, North Carolina
NC 150 from US 321 in Lincolnton to US 321 Bypass

REFERENCE REACH

The reference reach utilized on this design has been classified as a B4c channel. Silas Creek is located within the same ecoregion, Southern Outer Piedmont, as the proposed channel. Silas Creek has an entrenchment ration of 1.43, a width/depth ration of 15, a sinuosity of 1.07 and an average slope of 0.0082 m/m.

PROPOSED CHANNEL

The proposed channel has been divided into two segments: a lower section, sta 10+00 to 10+74, and an upper section, sta 10+74 to 14+62. The channel gradient is controlled by the natural channel tie at the downstream limit, sta 10+00, and by 0.3 meters above the invert for the proposed 1500 mm reinforced concrete culvert at the upstream limit, sta 14+62. Based upon the existing valley type and the flood prone width desired, the proposed channel has been designed as a type B4. Design data is given in the attached tables along with the existing / reference reach data. Mean bankfull depth was set at 1.0 and 0.7 feet, respectively. Above bankfull depth it is proposed to excavate an approximately 16-20 foot wide floodplain (including the channel).

It is believed that by forming a flood plain above bankfull depth, channel stability will be enhanced by reducing velocities for those discharges above the bankfull discharge. This should lead to a more stable channel during and after watershed development. It is anticipated that the proposed channel sections will have a gravel bed. Maximum pool depths between 0.55 meters (1.8 feet) and 0.73 meters (2.4 feet) are proposed at the outside bends of the meanders.

Using the proposed channel geometry, sediment transport computations were performed to determine whether the bankfull discharge would be able to initiate movement of the largest particle obtained from the bar sample. The proposed bankfull shear stress has been reduced for the upper section from 1.75 to 0.78 (lbs/ft sq) and the lower section was to 1.02 (lbs/ft sq). The largest particle recorded during the bar sample was 86mm. Using Rosgen*s version of Shields Curve the shear stress to initiate movement of a 86mm particle can be as low as 0.30 (lbs/ft sq). Therefore since the proposed shear stress for the Type B channel is less than the existing conditions the proposed channel should be stable.

The proposed channel stabilization is shown on the attached detail sheet. It is anticipated that the channel banks and floodplain will be planted with native trees and shrubs above the bankfull depth. Live stakes, plantings, coir fiber matting and Rock Cross Vanes will be utilized to control near bank shear stress.

SITE 1
(SHEET 10)

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

NOT TO SCALE

DATE: 04-07-04

SHEET 14 OF 35

$DATE$
$TIME$
$FILE$

KO & ASSOCIATES, P.C.
Consulting Engineers

PERMIT SITE: 1
STREAM STATION: 10+00 TO 10+74
MITIGATION PLAN: UT TO LITHIA BRANCH
WATERSHED: CATAWBA RIVER
COUNTY: LINCOLN
DESIGN BY: R. KEVIN WILLIAMS, PE

ITEM	EXISTING CONDITIONS	PROPOSED CONDITIONS	REFERENCE REACH
LOCATION	UT TO LITHIA BRANCH	UT TO LITHIA BRANCH	SILAS CREEK
STREAM TYPE	G4	B4	B4C/1
DRAINAGE AREA (DA)	95 AC	185 AC	2112 AC
BANKFULL WIDTH (W_{BKF})	5.5 FT	9.6 FT	25.7 FT
BANKFULL MEAN DEPTH (D_{BKF})	1.1 FT	1.0 FT	1.7 FT
WIDTH/DEPTH RATIO (W_{BKF}/D_{BKF})	5	10	15
BANKFULL X-SECTION AREA (A_{BKF})	6.2 FT^2	9.2 FT^2	43.7 FT^2
BANKFULL MEAN VELOCITY, FPS	3.7 FPS	4.1 FPS	4.6 FPS
BANKFULL DISCHARGE, CFS	23 CFS	36 CFS	199 CFS
BANKFULL MAX DEPTH (D_{MAX})	1.6 FT	1.5 FT	2.7 FT
WIDTH FLOOD-PRONE AREA (W_{FPA})	10 FT	20 FT	37 FT
ENTRENCHMENT RATIO (ER)	1.9	2.1	1.4
MEANDER LENGTH (LM)	49 - 164 FT	67 - 115 FT	169 - 169 FT
RATIO OF LM TO W_{BKF}	8.9 - 29.8	7.0 - 12.0	6.6 - 6.6
RADIUS OF CURVATURE	10 - 43 FT	19 - 38 FT	20 - 54 FT
RATIO OF RC TO W_{BKF}	1.8 - 7.8	2.0 - 4.0	0.8 - 3.6
BELT WIDTH	33 FT	29 - 58 FT	43.7 FT
MEANDER WIDTH RATIO	6.0	3.0 - 6.0	1.7
SINUOSITY (K)	1.05	1.15	1.07
VALLEY SLOPE	2.98 %	2.45 %	0.88 %
AVERAGE SLOPE (S)	2.84 %	1.86 %	0.82 %
POOL SLOPE	0.00 %	0.37 %	0.00 %
RATIO OF POOL SLOPE TO AVERAGE SLOPE	0.0 - 0.1	0.20	0.00
MAX POOL DEPTH	2.2 FT	2.4 FT	2.6 FT
RATIO OF POOL DEPTH TO AVERAGE BANKFULL DEPTH	2.0	2.5	1.5
POOL WIDTH	8.7 FT	14.4 FT	26.1 FT
RATIO OF POOL WIDTH TO BANKFULL WIDTH	1.6	1.5	1.0
POOL TO POOL SPACING	30 - 63 FT	34 FT	0 FT
RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	5.5 - 11.5	3.5	0

SITE 1
(SHEET IV)

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

KO & ASSOCIATES, P.C.
Consulting Engineers

PERMIT SITE: 1
STREAM STATION: 10+00 TO 10+74
MITIGATION PLAN: UT TO LITHIA BRANCH
WATERSHED: CATAWBA RIVER
COUNTY: LINCOLN
DESIGN BY: R. KEVIN WILLIAMS, PE

ITEM	EXISTING CONDITIONS	PROPOSED CONDITIONS	REFERENCE REACH
LOCATION	UT TO LITHIA BRANCH	UT TO LITHIA BRANCH	SILAS CREEK
STREAM TYPE	G4	B4	B4C/1
DRAINAGE AREA (DA)	38 HA	75 HA	855 HA
BANKFULL WIDTH (W_{BKF})	1.7 M	2.9 M	7.8 M
BANKFULL MEAN DEPTH (D_{BKF})	0.34 M	0.29 M	0.52 M
WIDTH/DEPTH RATIO (W_{BKF}/D_{BKF})	5	10	15
BANKFULL X-SECTION AREA (A_{BKF})	0.58 M^2	0.86 M^2	4.06 M^2
BANKFULL MEAN VELOCITY, FPS	1.1 MPS	1.2 MPS	1.4 MPS
BANKFULL DISCHARGE, CFS	0.65 CMS	1.03 CMS	5.64 CMS
BANKFULL MAX DEPTH (D_{MAX})	0.49 M	0.47 M	0.82 M
WIDTH FLOOD-PRONE AREA (W_{FPA})	3 M	6 M	11 M
ENTRENCHMENT RATIO (ER)	1.9	2.1	1.4
MEANDER LENGTH (LM)	15 - 50 M	20 - 35 M	51 - 51 M
RATIO OF LM TO W_{BKF}	8.9 - 29.8	7.0 - 12.0	6.6 - 6.6
RADIUS OF CURVATURE	3 - 13 M	6 - 12 M	6 - 17 M
RATIO OF RC TO W_{BKF}	1.8 - 7.8	2.0 - 4.0	0.8 - 3.6
BELT WIDTH	10 M	9 - 18 M	13.3 M
MEANDER WIDTH RATIO	6.0	3.0 - 6.0	1.7
SINUOSITY (K)	1.05	1.15	1.07
VALLEY SLOPE	2.98 %	2.45 %	0.88 %
AVERAGE SLOPE (S)	2.84 %	1.86 %	0.82 %
POOL SLOPE	0.00 %	0.37 %	0.00 %
RATIO OF POOL SLOPE TO AVERAGE SLOPE	0.0 - 0.1	0.20	0.00
MAX POOL DEPTH	0.68 M	0.73 M	0.80 M
RATIO OF POOL DEPTH TO AVERAGE BANKFULL DEPTH	1.99	2.50	1.54
POOL WIDTH	2.66 M	4.39 M	7.95 M
RATIO OF POOL WIDTH TO BANKFULL WIDTH	1.6	1.5	1.0
POOL TO POOL SPACING	9 - 19 M	10 M	0 M
RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	5.5 - 11.5	3.5	0

SITE 1
(SHEET 1T)

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

KO & ASSOCIATES, P.C.
Consulting Engineers

PERMIT SITE: 1
STREAM STATION: 10+74 TO 14+62
MITIGATION PLAN: UT TO LITHIA BRANCH
WATERSHED: CATAWBA RIVER
COUNTY: LINCOLN
DESIGN BY: R. KEVIN WILLIAMS, PE

ITEM	EXISTING CONDITIONS	PROPOSED CONDITIONS	REFERENCE REACH
LOCATION	UT TO LITHIA BRANCH	UT TO LITHIA BRANCH	SILAS CREEK
STREAM TYPE	G4	B4	B4C/1
DRAINAGE AREA (DA)	95 AC	95 AC	2112 AC
BANKFULL WIDTH (W_{BKF})	5.5 FT	8.0 FT	25.7 FT
BANKFULL MEAN DEPTH (D_{BKF})	1.1 FT	0.7 FT	1.7 FT
WIDTH/DEPTH RATIO (W_{BKF}/D_{BKF})	5	11	15
BANKFULL X-SECTION AREA (A_{BKF})	6.2 FT^2	5.8 FT^2	43.7 FT^2
BANKFULL MEAN VELOCITY, FPS	3.7 FPS	3.9 FPS	4.6 FPS
BANKFULL DISCHARGE, CFS	23 CFS	23 CFS	199 CFS
BANKFULL MAX DEPTH (D_{MAX})	1.6 FT	1.2 FT	2.7 FT
WIDTH FLOOD-PRONE AREA (W_{FPA})	10 FT	16 FT	37 FT
ENTRENCHMENT RATIO (ER)	1.9	2.0	1.4
MEANDER LENGTH (LM)	49 - 164 FT	56 - 96 FT	169 - 169 FT
RATIO OF LM TO W_{BKF}	8.9 - 29.8	7.0 - 12.0	6.6 - 6.6
RADIUS OF CURVATURE	10 - 43 FT	16 - 32 FT	20 - 54 FT
RATIO OF RC TO W_{BKF}	1.8 - 7.8	2.0 - 4.0	0.8 - 3.6
BELT WIDTH	33 FT	24 - 48 FT	43.7 FT
MEANDER WIDTH RATIO	6.0	3.0 - 6.0	1.7
SINUOSITY (K)	1.05	1.32	1.07
VALLEY SLOPE	2.98 %	3.08 %	0.88 %
AVERAGE SLOPE (S)	2.84 %	1.91 %	0.82 %
POOL SLOPE	0.00 %	0.38 %	0.00 %
RATIO OF POOL SLOPE TO AVERAGE SLOPE	0.0 - 0.1	0.20	0.00
MAX POOL DEPTH	2.2 FT	1.8 FT	2.6 FT
RATIO OF POOL DEPTH TO AVERAGE BANKFULL DEPTH	2.0	2.5	1.5
POOL WIDTH	8.7 FT	12.0 FT	26.1 FT
RATIO OF POOL WIDTH TO BANKFULL WIDTH	1.6	1.5	1.0
POOL TO POOL SPACING	30 - 63 FT	28 FT	0 FT
RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	5.5 - 11.5	3.5	0

SITE 1
(SHEET 10)

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

KO & ASSOCIATES, P.C.
Consulting Engineers

PERMIT SITE: 1
STREAM STATION: 10+74 TO 14+62
MITIGATION PLAN: UT TO LITHIA BRANCH
WATERSHED: CATAWBA RIVER
COUNTY: LINCOLN
DESIGN BY: R. KEVIN WILLIAMS, PE

ITEM	EXISTING CONDITIONS	PROPOSED CONDITIONS	REFERENCE REACH
LOCATION	UT TO LITHIA BRANCH	UT TO LITHIA BRANCH	SILAS CREEK
STREAM TYPE	G4	B4	B4C/1
DRAINAGE AREA (DA)	38 HA	38 HA	855 HA
BANKFULL WIDTH (W_{BKF})	1.7 M	2.4 M	7.8 M
BANKFULL MEAN DEPTH (D_{BKF})	0.34 M	0.22 M	0.52 M
WIDTH/DEPTH RATIO (W_{BKF}/D_{BKF})	5	11	15
BANKFULL X-SECTION AREA (A_{BKF})	0.58 M^2	0.54 M^2	4.06 M^2
BANKFULL MEAN VELOCITY, FPS	1.1 MPS	1.2 MPS	1.4 MPS
BANKFULL DISCHARGE, CFS	0.65 CMS	0.64 CMS	5.64 CMS
BANKFULL MAX DEPTH (D_{MAX})	0.49 M	0.35 M	0.82 M
WIDTH FLOOD-PRONE AREA (W_{FPA})	3 M	5 M	11 M
ENTRENCHMENT RATIO (ER)	1.9	2.0	1.4
MEANDER LENGTH (LM)	15 - 50 M	17 - 29 M	51 - 51 M
RATIO OF LM TO W_{BKF}	8.9 - 29.8	7.0 - 12.0	6.6 - 6.6
RADIUS OF CURVATURE	3 - 13 M	5 - 10 M	6 - 17 M
RATIO OF RC TO W_{BKF}	1.8 - 7.8	2.0 - 4.0	0.8 - 3.6
BELT WIDTH	10 M	7 - 15 M	13.3 M
MEANDER WIDTH RATIO	6.0	3.0 - 6.0	1.7
SINUOSITY (K)	1.05	1.32	1.07
VALLEY SLOPE	2.98 %	3.08 %	0.88 %
AVERAGE SLOPE (S)	2.84 %	1.91 %	0.82 %
POOL SLOPE	0.00 %	0.38 %	0.00 %
RATIO OF POOL SLOPE TO AVERAGE SLOPE	0.0 - 0.1	0.20	0.00
MAX POOL DEPTH	0.68 M	0.55 M	0.80 M
RATIO OF POOL DEPTH TO AVERAGE BANKFULL DEPTH	1.99	2.50	1.54
POOL WIDTH	2.66 M	3.66 M	7.95 M
RATIO OF POOL WIDTH TO BANKFULL WIDTH	1.6	1.5	1.0
POOL TO POOL SPACING	9 - 19 M	9 M	0 M
RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	5.5 - 11.5	3.5	0

SITE 1
(SHEET 15)

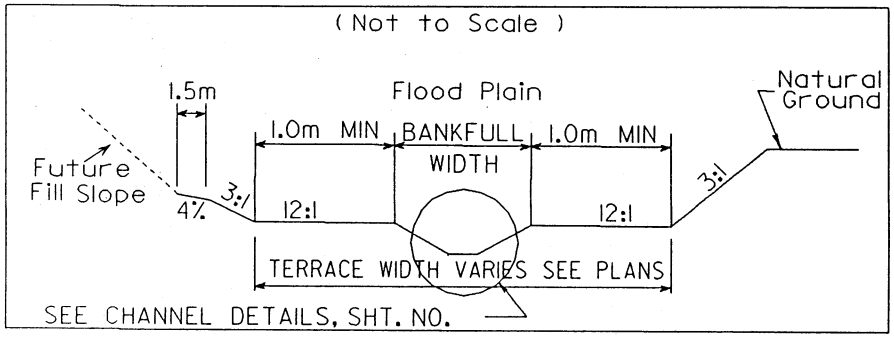
NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

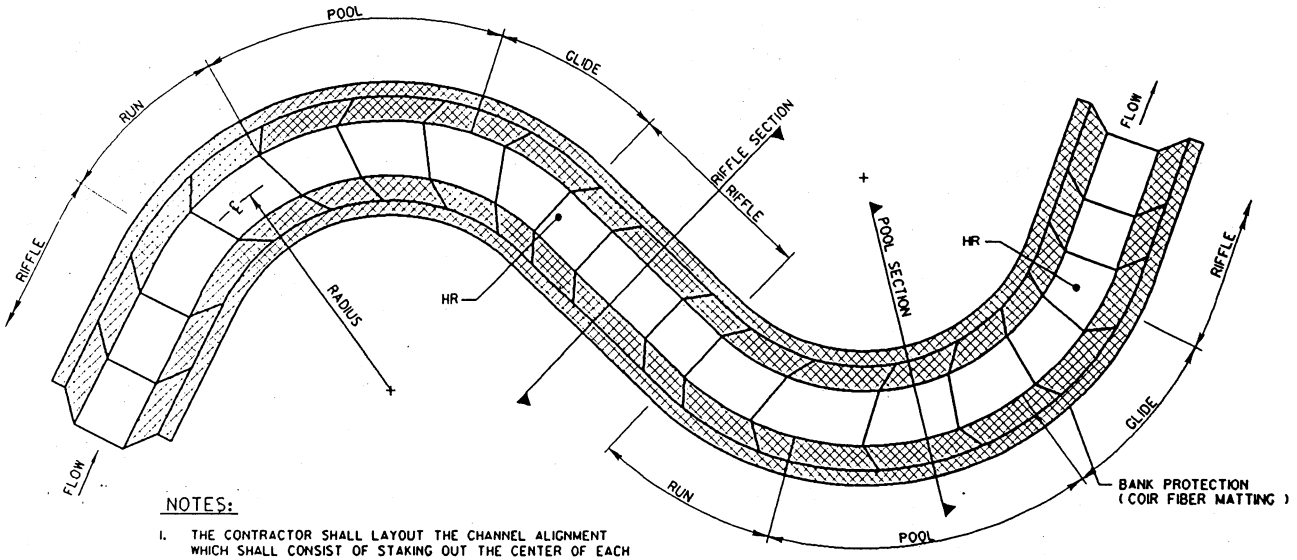
LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

$DATE$
$TIME$
$FILE$

NATURAL CHANNEL DESIGN TYPICALS





NOTES:

1. THE CONTRACTOR SHALL LAYOUT THE CHANNEL ALIGNMENT WHICH SHALL CONSIST OF STAKING OUT THE CENTER OF EACH RADIUS, SCRIBING THE CENTER LINE OF THE CHANNEL FOR EACH BEND USING THE INDICATED RADIUS, AND SCRIBING CENTERLINE OF THE TANGENT SECTIONS BY CONNECTING SUCCESSIVE BENDS WITH A STRAIGHT LINE.
2. FIELD ADJUSTMENTS OF THE ALIGNMENT MAY BE REQUIRED TO AVOID CERTAIN OBSTACLES. APPROVAL BY THE ENGINEER OF THE STAKE-OUT ALIGNMENT SHALL BE REQUIRED PRIOR TO INITIATION OF THE CONSTRUCTION OF THE CHANNEL.
3. LOCATE ROCK VANES ACCORDING TO PLAN SHEET.
4. BEGIN AND END STREAM ELEVATIONS SHOULD BE CHECKED PRIOR TO CONSTRUCTION TO ENSURE PROPOSED STREAM GRADE (AND ELEVATIONS) ARE ACCURATE. ELEVATIONS MAY VARY FROM PRIOR SURVEYS.

NATURAL CHANNEL PLAN VIEW

SITE 1
(SHEET IP)

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)
NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

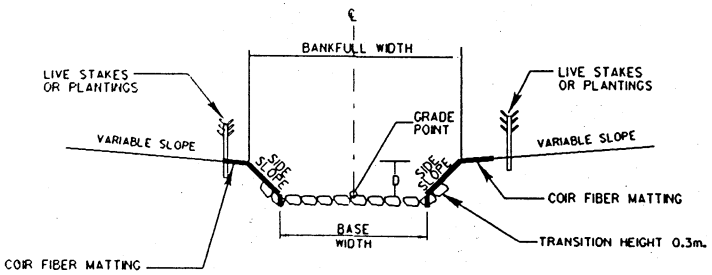
NOT TO SCALE

DATE: 04-07-04

SHEET 19 OF 35

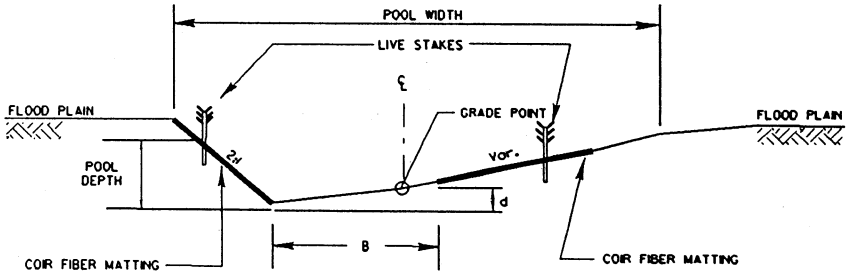
$DATE$
$TIME$
$FILE$

SITE 1
(SHEET 10)



TYPICAL RIFFLE SECTION
NOT TO SCALE

STA - STA	BANKFULL WIDTH	BASE WIDTH	D	SIDE SLOPE
10+00 - 10+74	2.9	1.37	0.47	2.46:1
10+74 - 14+62	2.4	0.9	0.35	2.74:1



TYPICAL POOL SECTION
NOT TO SCALE

POOL WIDTH	B	POOL DEPTH	d
4.39	1.37	0.73	0.26
3.66	0.9	0.55	0.2

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)
NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS
NOT TO SCALE

DATE: 04-08-04

SHEET 20 OF 35

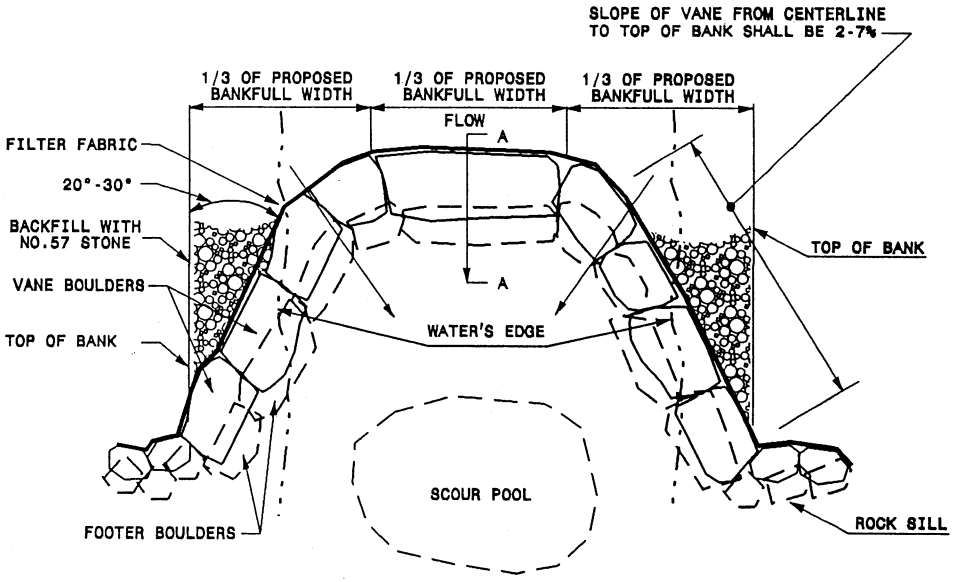
$DATE$
$TIME$
$FILE$

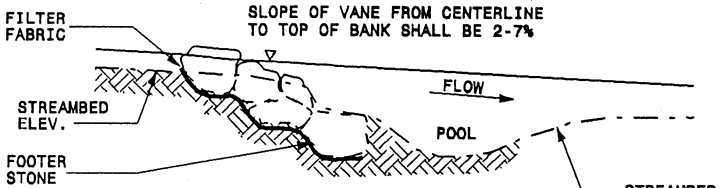
ROCK CROSS VANE

SCALE:NTS

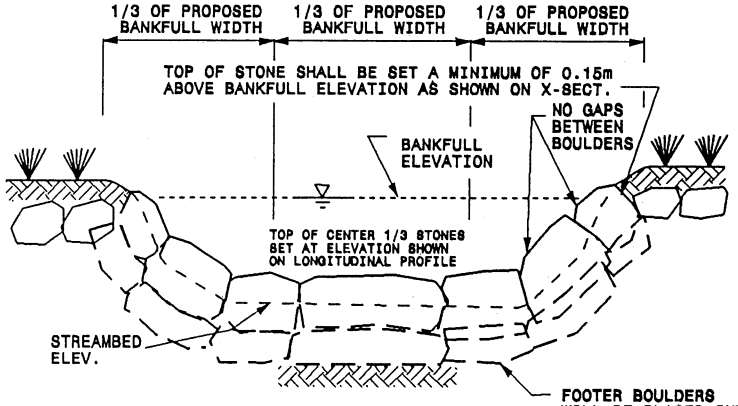
NOTES:
1. ALL STONES ARE TO BE STRUCTURE STONE.
2. GAPS BETWEEN BOULDERS SHALL BE MINIMIZED BY FITTING BOULDERS TOGETHER, PLUGGING WITH STRUCTURE STONE CLASS A AND NO.57 AND LINING WITH FILTER FABRIC.
3. DIMENSIONS AND SLOPES MAY BE ADJUSTED TO FIT BY THE DESIGNER.
4. A DOUBLE FOOTER BOULDER SHALL BE UTILIZED IN SAND BED MATERIAL.
5. FOOTER BOULDERS AND VANE BOULDERS SHALL BE NATIVE STONE OR SHOT ROCK, CUBICAL OR RECTANGULAR IN NATURE.

FILTER FABRIC SHALL BE PLACED ON THE UPSTREAM SIDE OF THE STRUCTURE TO PREVENT WASHOUT OF SEDIMENT THROUGH BOULDER GAPS. FILTER FABRIC SHALL EXTEND FROM THE BOTTOM OF THE FOOTER BOULDER TO THE FINISHED GRADE ELEVATION AND SHALL BE PLACED THE ENTIRE LENGTH OF STRUCTURE.





SECTION A-A



CROSS SECTION

METRIC

SITE 1
(SHEET 1R)

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)
NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

NOT TO SCALE

DATE: 04-07-04

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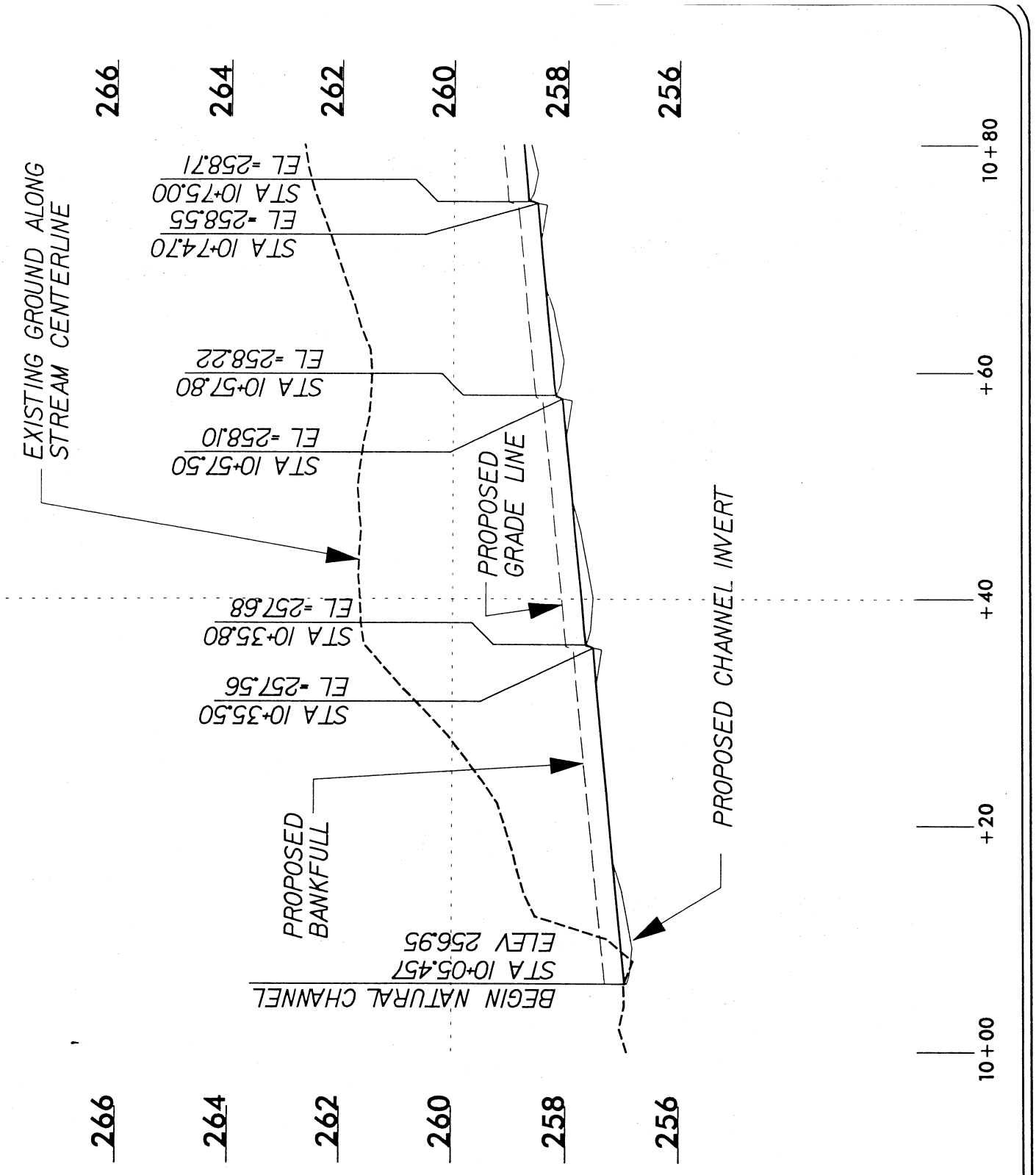

PLAN VIEW
SITE 1
(SHEET 1I)

5 0 20
HORIZONTAL SCALE

5 0 10
VERTICAL SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 09-16-04

SHEET 22 OF 35

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DATE
TIME
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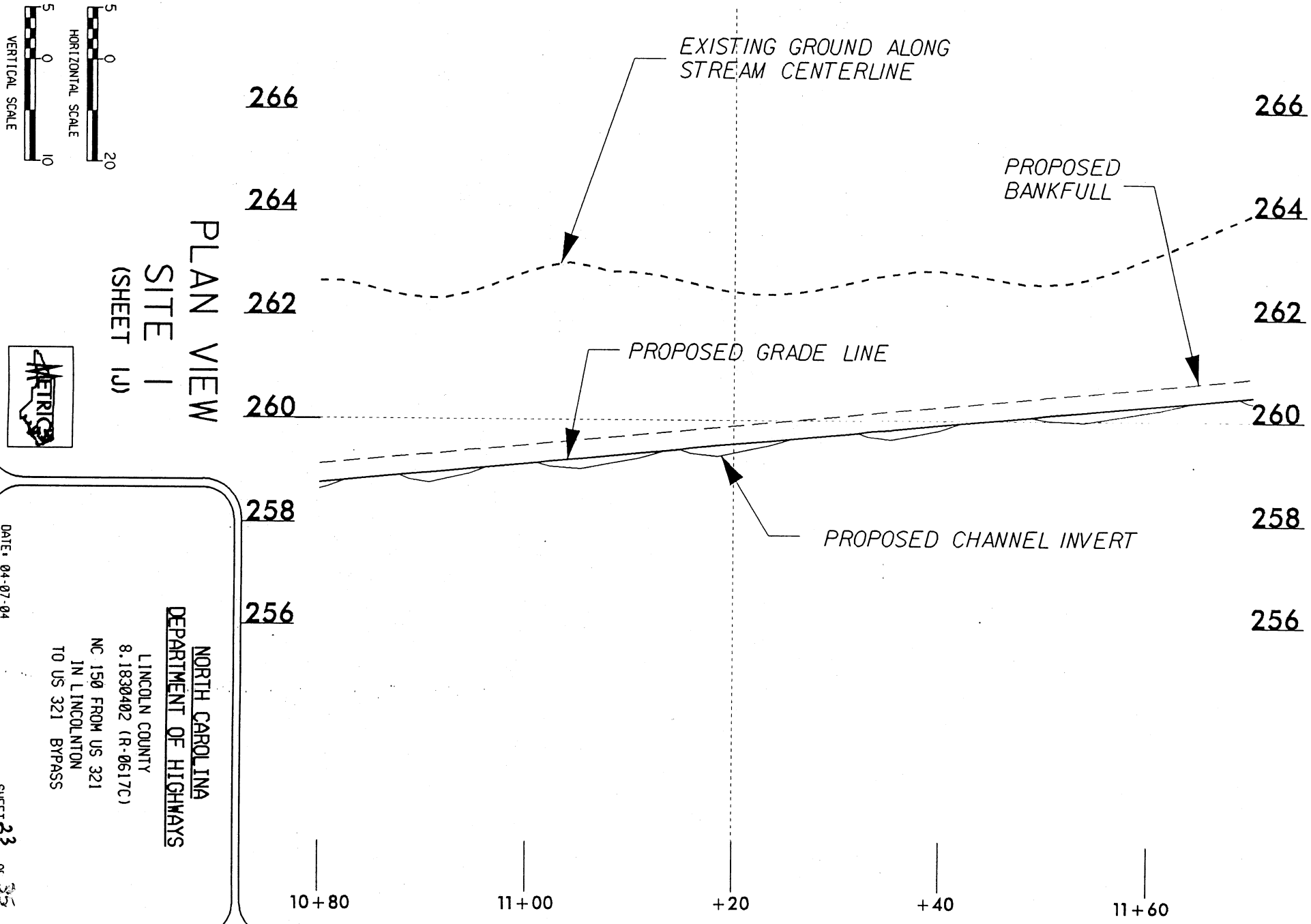
PLAN VIEW
SITE 1
(SHEET 1J)



NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)
NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

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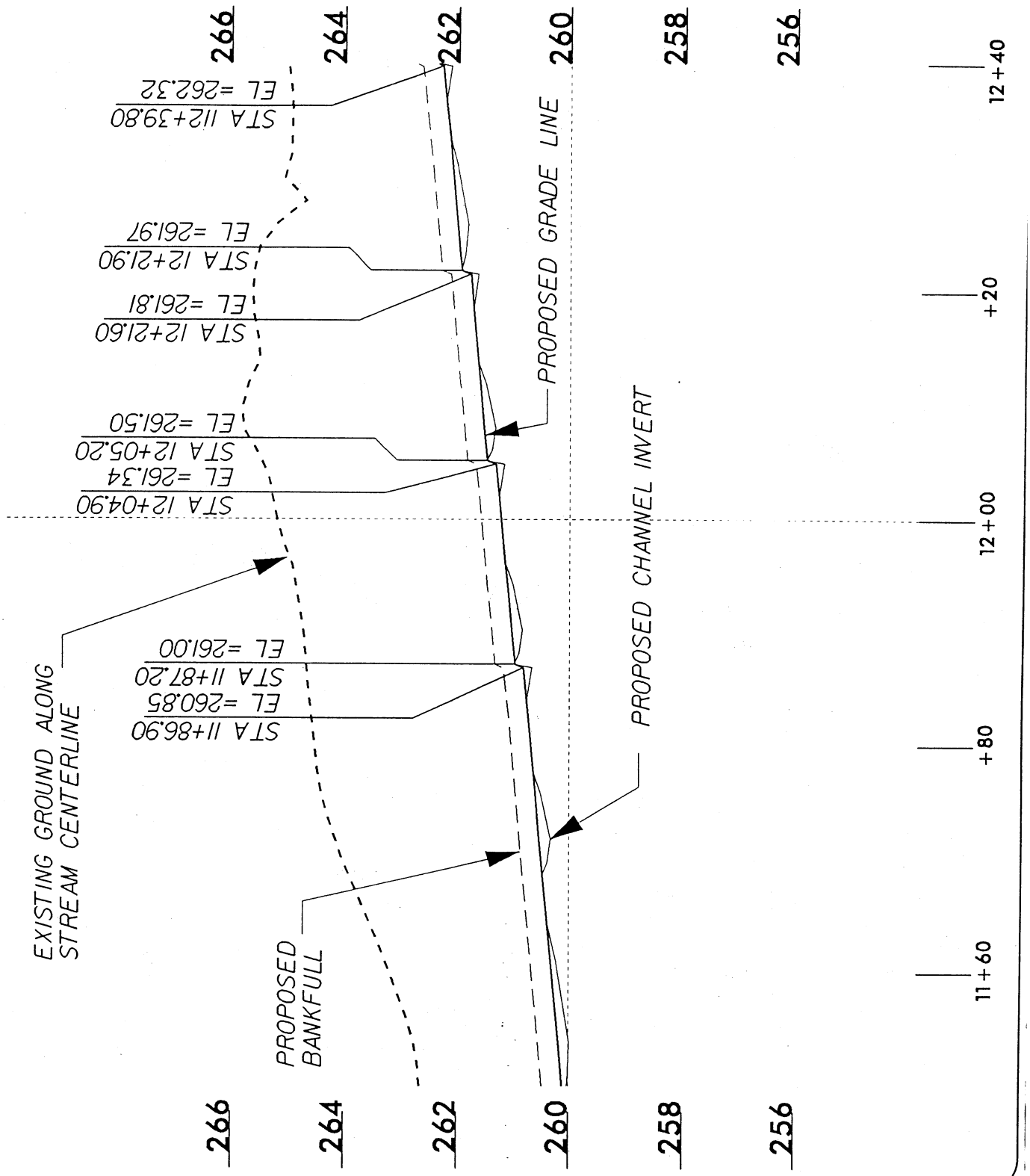


PLAN VIEW
SITE 1
(SHEET 1K)

5 0 20
HORIZONTAL SCALE

5 0 10
VERTICAL SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

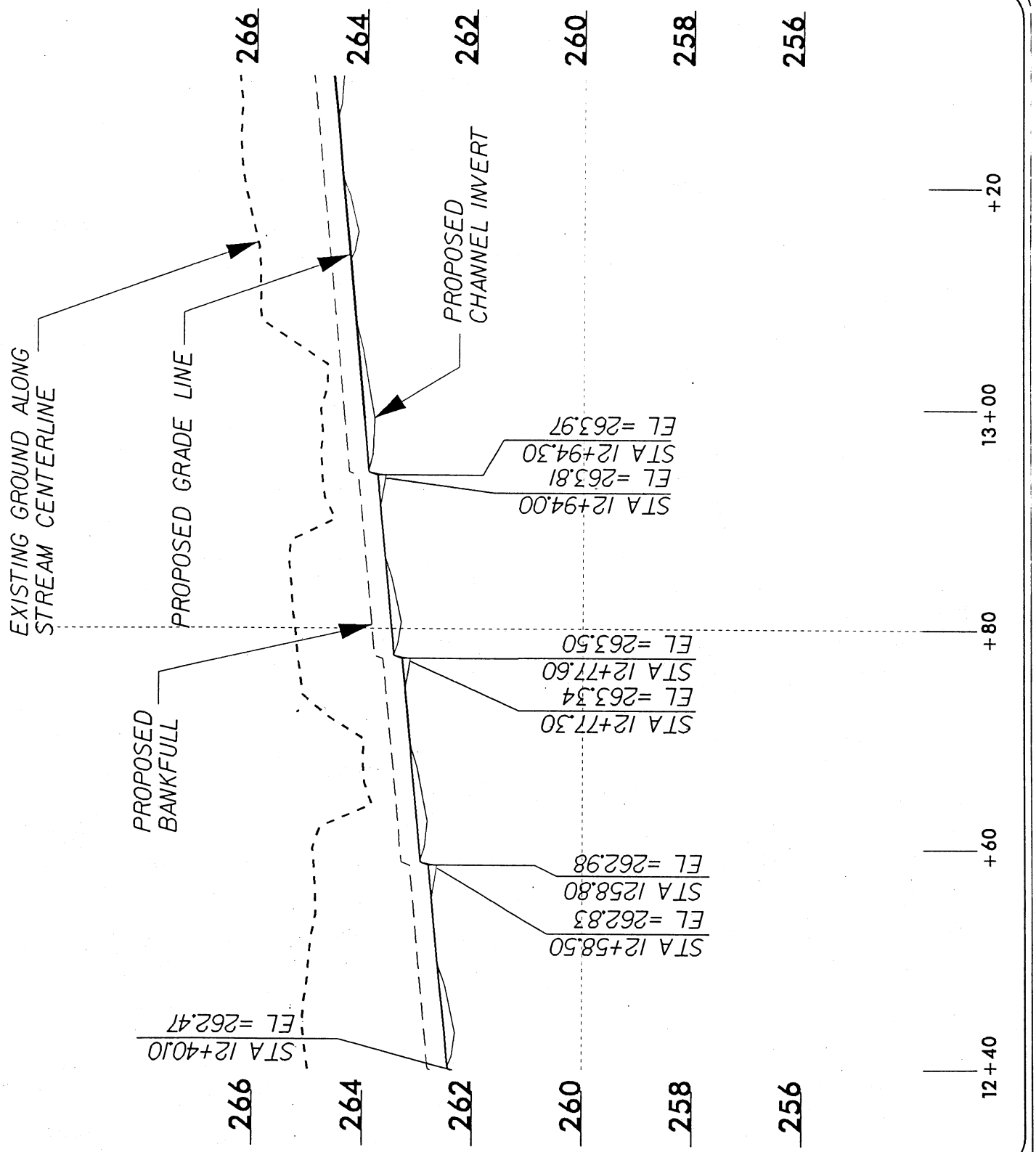
LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 24 OF 35

$DATE$
$TIME$
$FILE$



PLAN VIEW
SITE 1
(SHEET 1L)

5 0 20
HORIZONTAL SCALE

5 0 10
VERTICAL SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

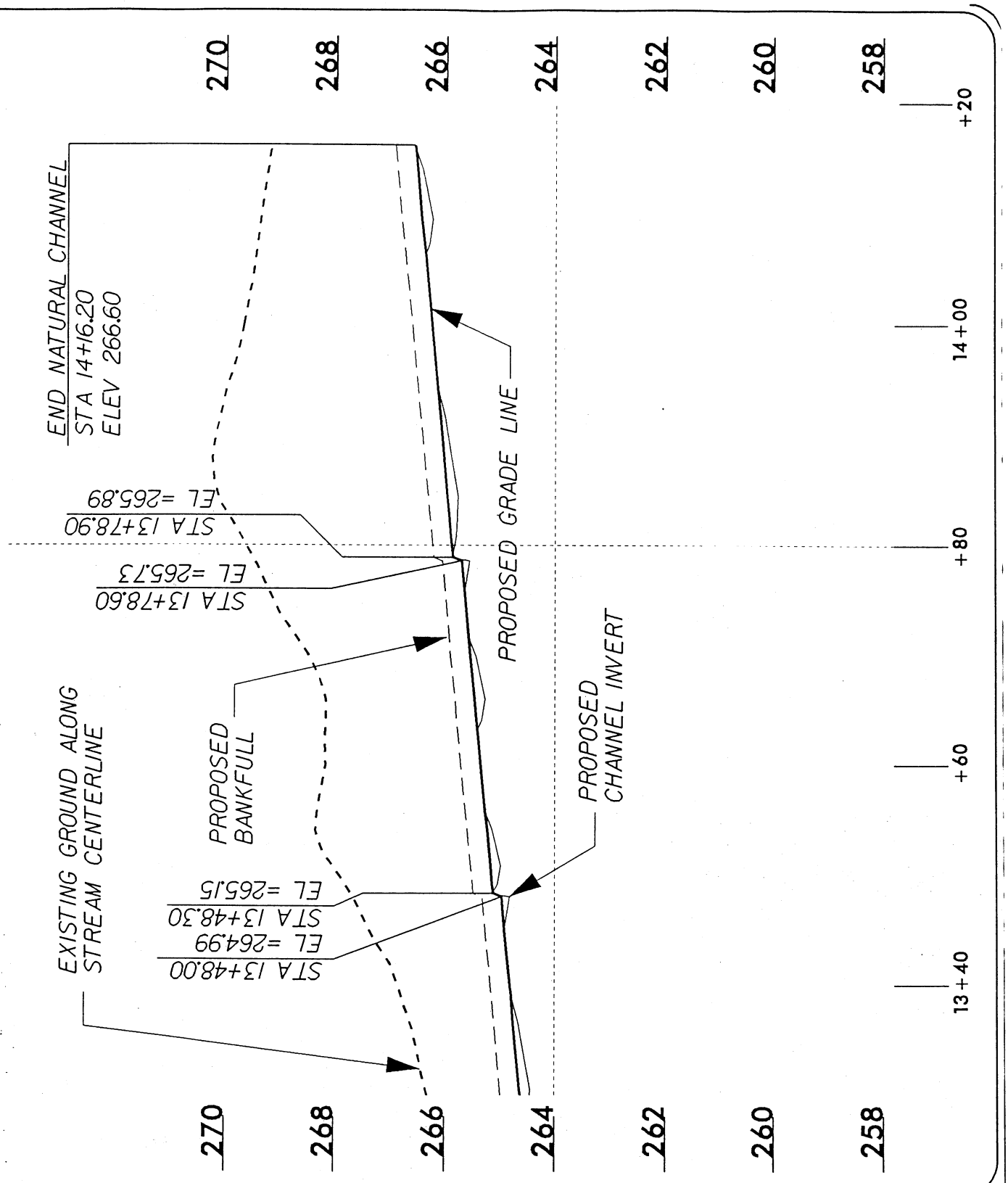
LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 25 OF 35

$DATE$
$TIME$
$FILE$



PLAN VIEW
SITE 1
(SHEET 1M)

5 0 20
HORIZONTAL SCALE

5 0 10
VERTICAL SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

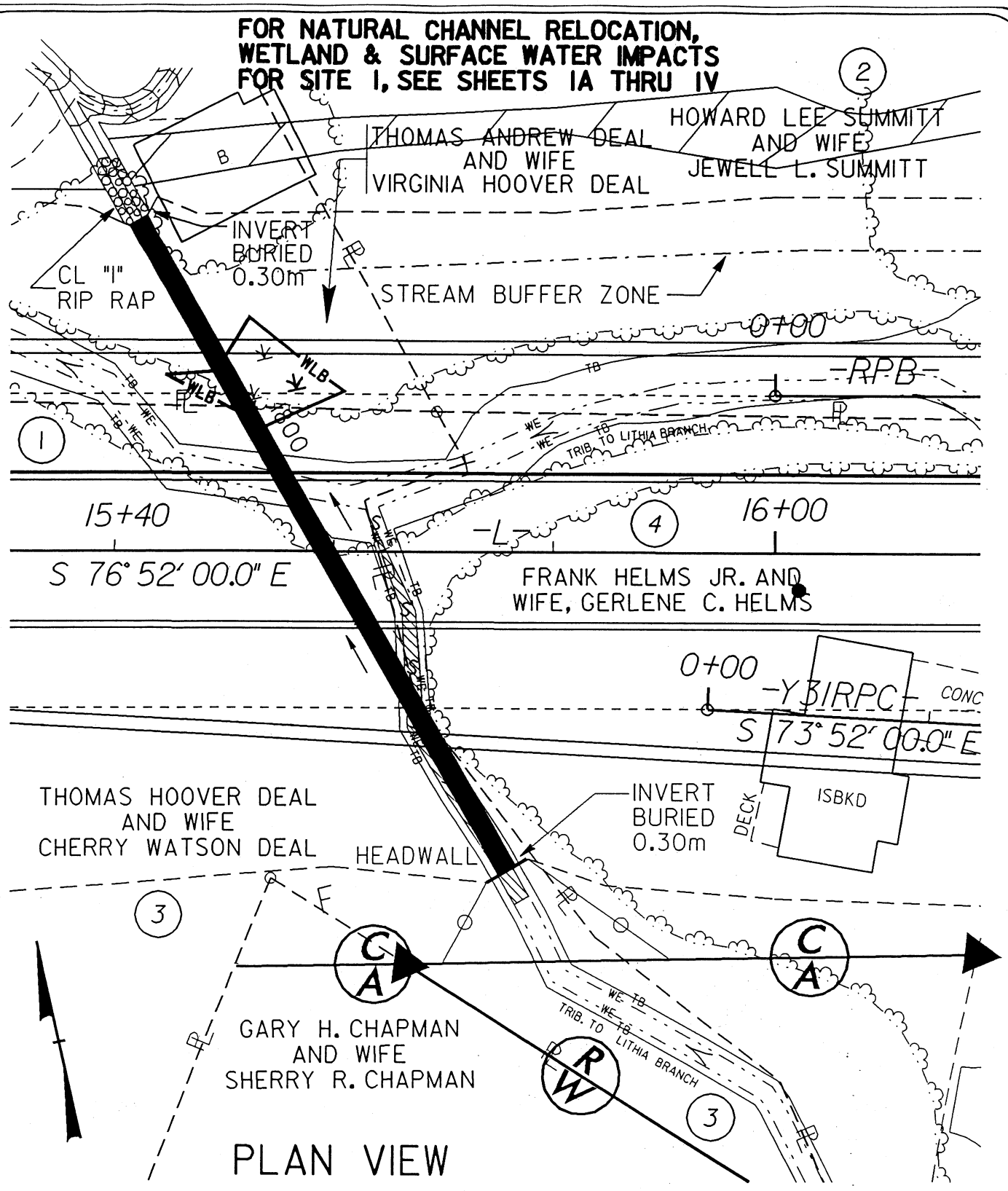
LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 26 OF 35

$DATE$
$TIME$
$FILE$



PLAN VIEW
SITE 2
(SHEET 2A)

LEGEND

—WLB— WETLAND

F F DENOTES FILL IN WETLAND

S S DENOTES SURFACE WATER LOSS

5 0 10

SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 27 OF 35

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$TIME$
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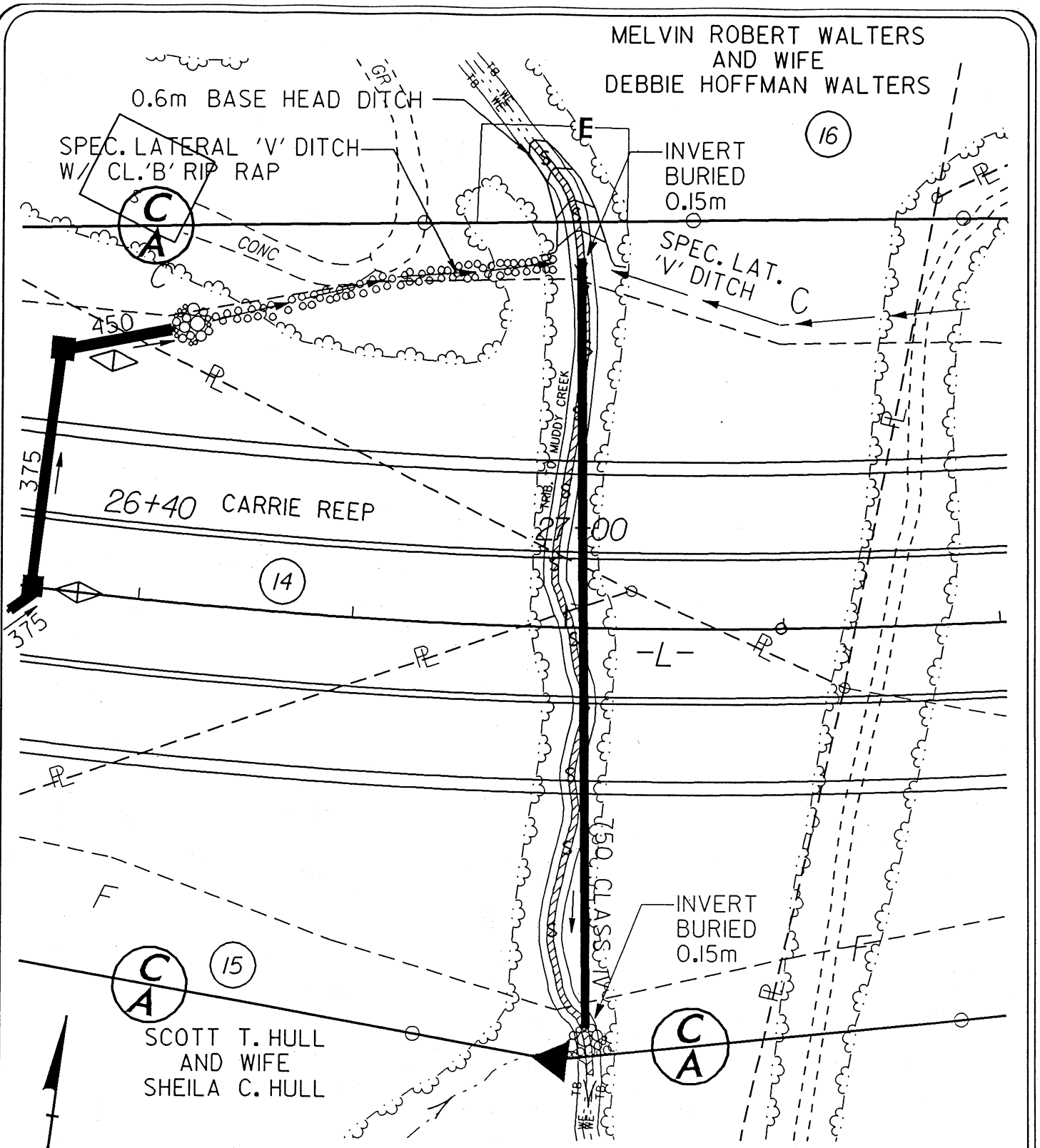


PLAN VIEW
SITE 3
(SHEET 3A)

LEGEND

DENOTES SURFACE WATER LOSS

5 0 10
SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

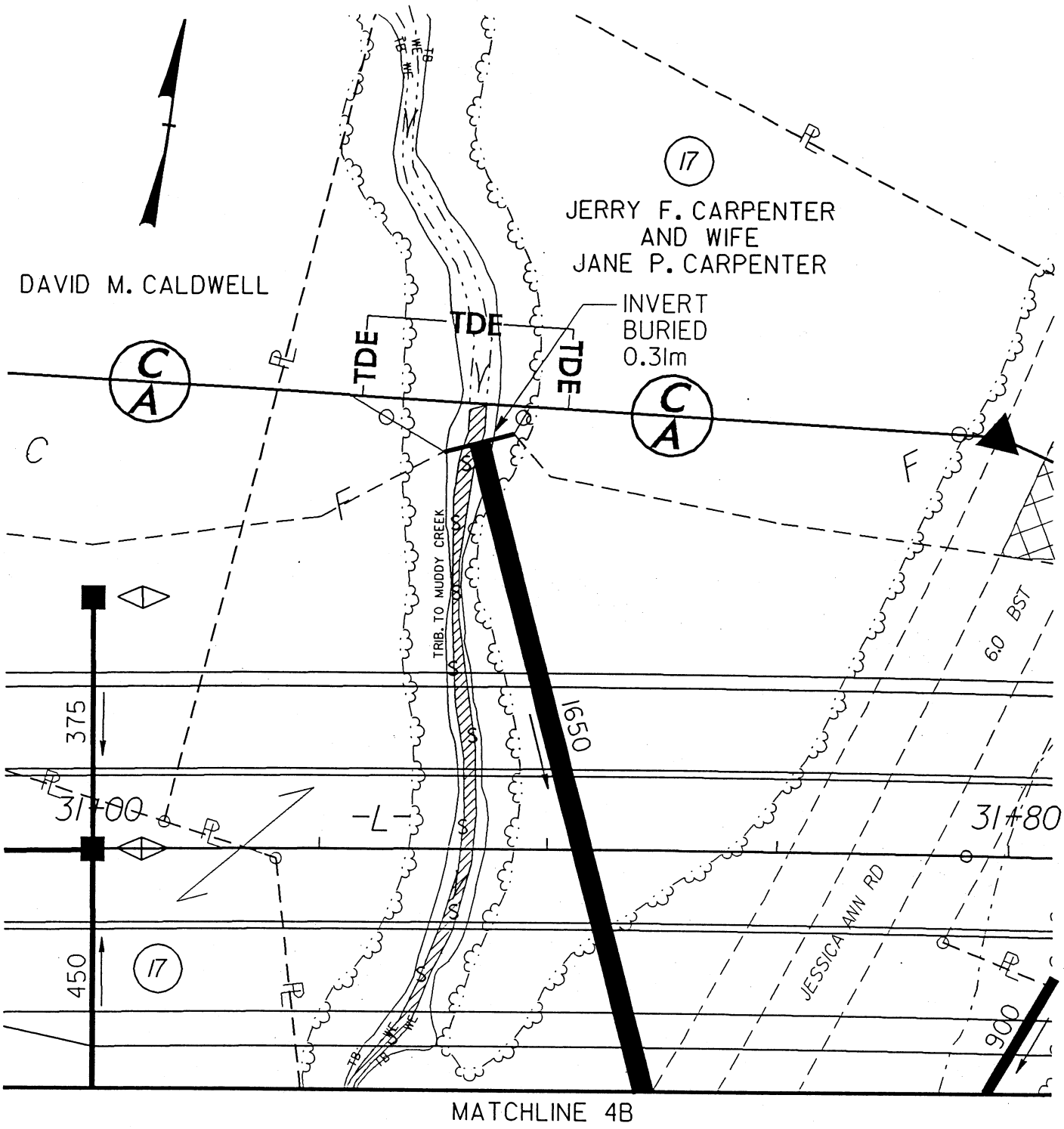
LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 28 OF 35

DATE:
TIME:
FILE:



PLAN VIEW
SITE 4
(SHEET 4A)

LEGEND

DENOTES SURFACE WATER LOSS

5 0 10
SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

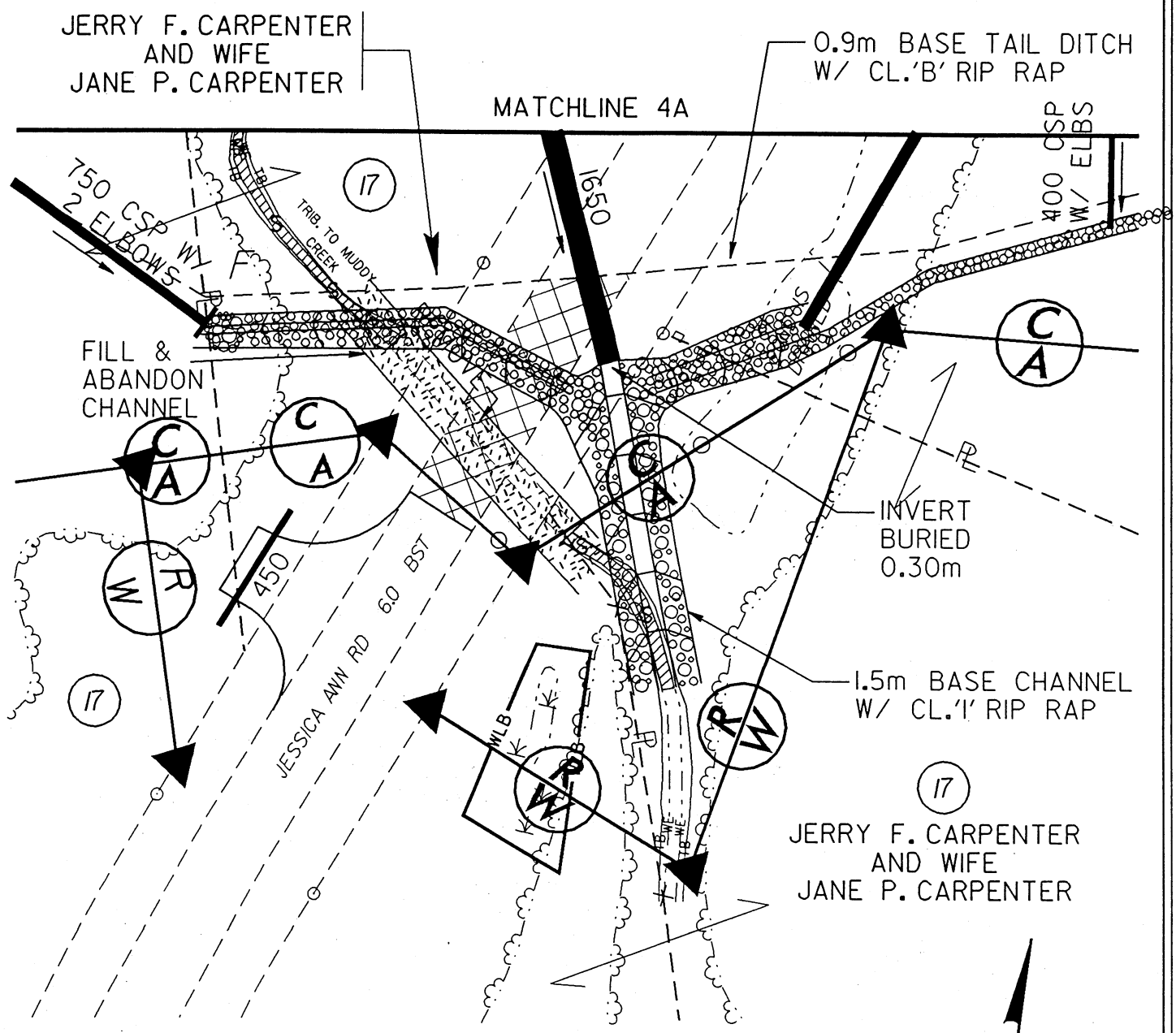
LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 29 OF 35

$DATE$
$TIME$
$FILE$



PLAN VIEW
SITE 4
(SHEET 4B)

LEGEND

—WLB— WETLAND

DENOTES SURFACE WATER LOSS

5 0 10
SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 30 OF 35

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&TIME&
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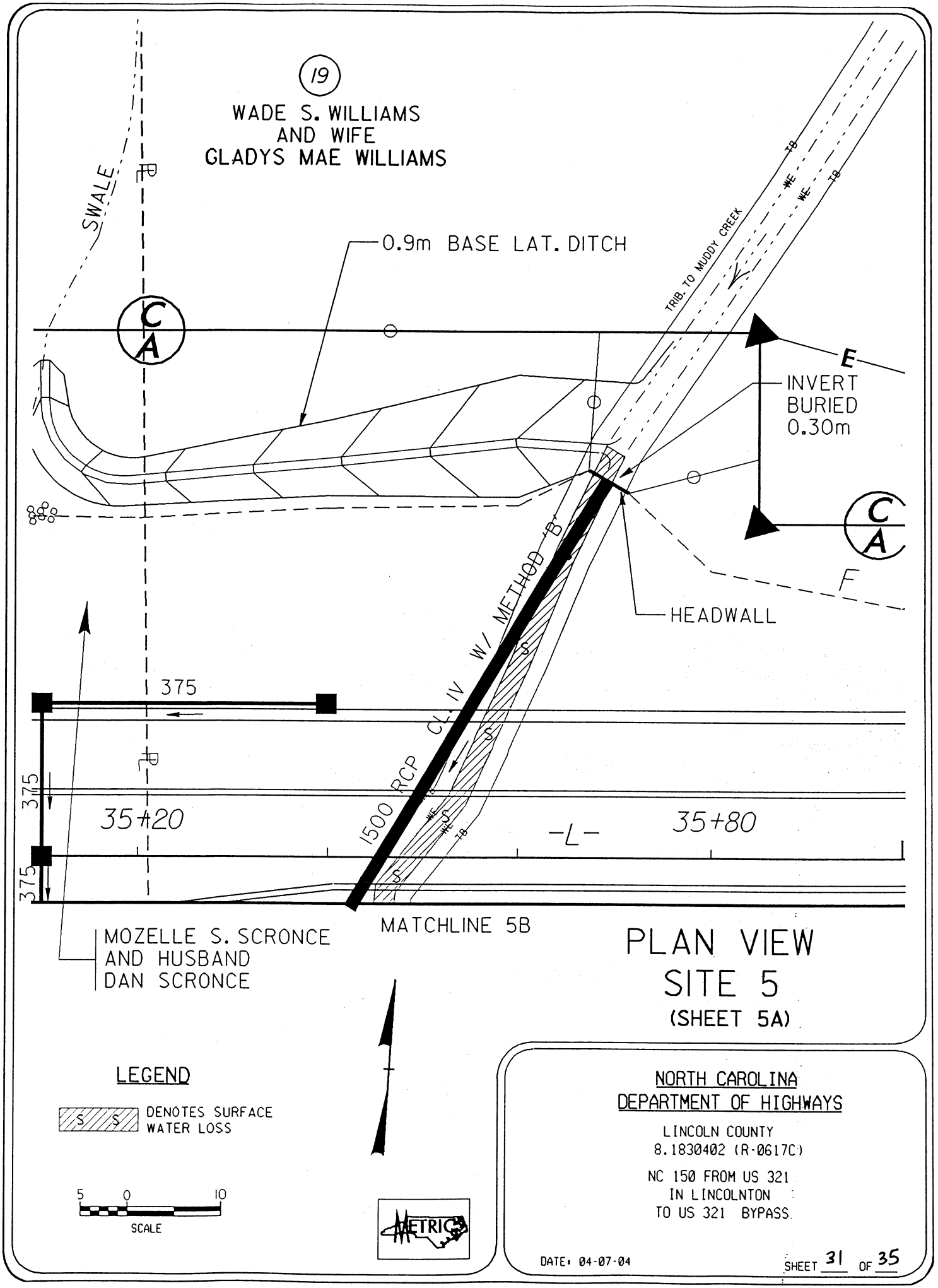


PLAN VIEW
SITE 5
(SHEET 5A)

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

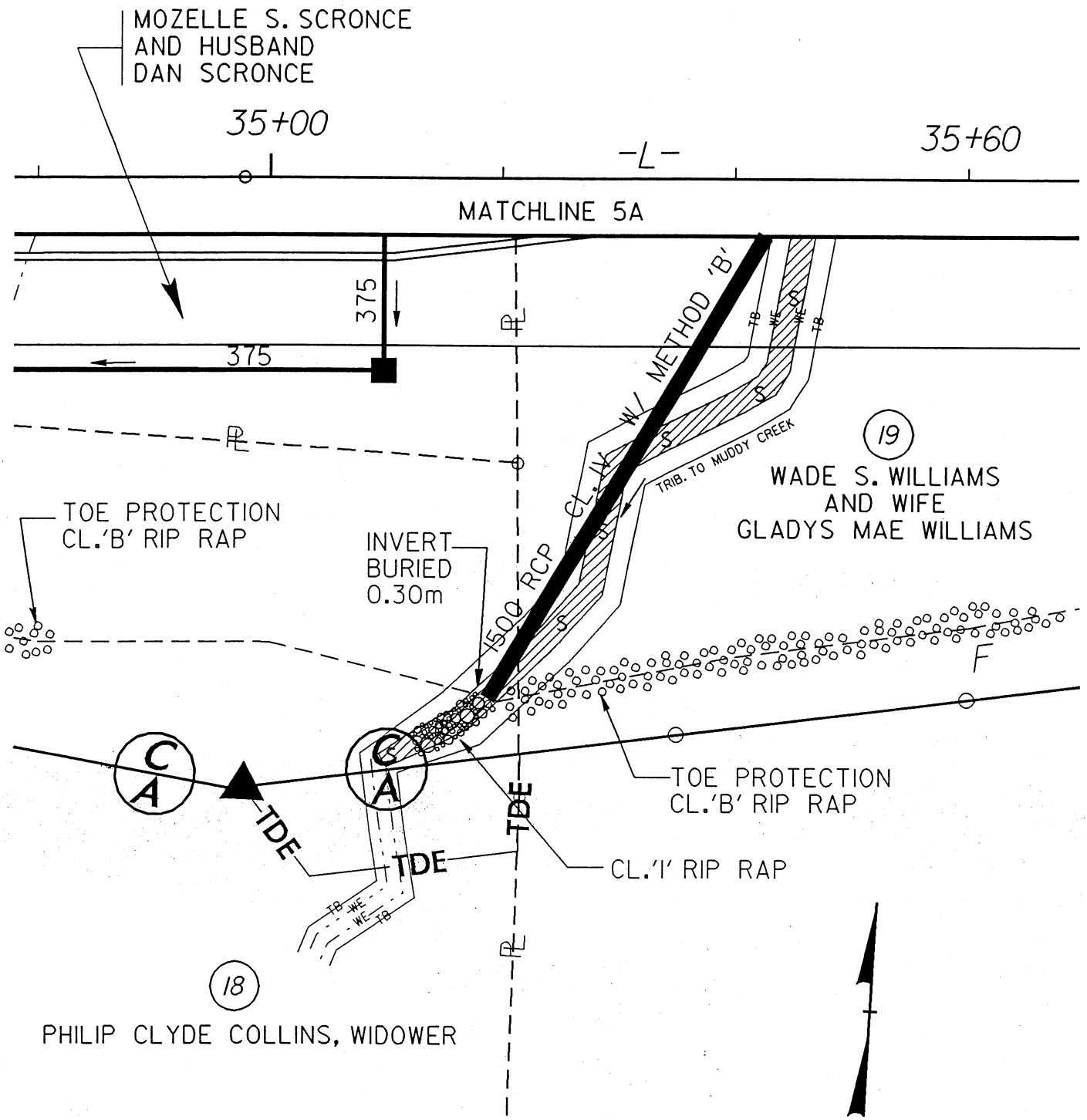
LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 31 OF 35

DATE:
TIME:
FILE:



PLAN VIEW
SITE 5
(SHEET 5B)

LEGEND

S S DENOTES SURFACE WATER LOSS

5 0 10
SCALE

METRIC

NORTH CAROLINA
DEPARTMENT OF HIGHWAYS

LINCOLN COUNTY
8.1830402 (R-0617C)

NC 150 FROM US 321
IN LINCOLNTON
TO US 321 BYPASS

DATE: 04-07-04

SHEET 32 OF 35

$DATE$
$TIME$
$FILE$

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
1	THOMAS ANDREW DEAL AND WIFE, VIRGINIA HOOVER DEAL	299 ROCKY LANE LINCOLNTON NC 28092	1
2	HOWARD LEE SUMMITT AND WIFE, JEWELL L. SUMMITT	213 ROCKY LANE LINCOLNTON NC 28092	1& 2
3	THOMAS HOOVER DEAL AND WIFE. CHERRY WATSON DEAL	233 ROCKY LANE LINCOLNTON NC 28092	1& 2
4	FRANK HELMS, JR AND WIFE, GERLENE C. HELMS	1424 RED BUD RD LINCOLNTON NC 28092	1& 2
5	THOMAS J. TUTHEROW AND WIFE, RUBY C. TUTHEROW	195 ROCKY LANE LINCOLNTON NC 28092	1
6	RUTHERFORD ELECTRIC MEMBERSHIP CORPORATION	202 HUDLOW RD FOREST CITY NC 28043	1
7	DAVID B. CLARKE AND WIFE, LINDA S. CLARKE	132 WOODVALE CIR LINCOLNTON NC 28092	1
8	CLAUDE S. CARPENTER AND WIFE, MINNIE C. CARPENTER	217 E. PINE ST LINCOLNTON NC 28092	1
9	E.A. HUFFSTETLER AND WIFE, EVA HUFFSTETLER	2656 BROOKWOOD RD LINCOLNTON NC 28092	1
10	JOHNNY CARROLL WHITESIDES AND JAMES WHITESIDES, JR.	226 VICTORY GRV. CHURCH RD LINCOLNTON NC 28092	1
11	JOHN C. WHITESIDES AND WIFE, CATHEY C. WHITESIDES	226 VICTORY GRV. CHURCH RD LINCOLNTON NC 28092	1
12	JAMES WHITESIDES, JR.	226 VICTORY GRV. CHURCH RD LINCOLNTON NC 28092	1
13	FRED HALLMAN CARPENTER, JR AND WIFE, SUSAN P. CARPENTER	1948 STARTOWN RD LINCOLNTON NC 28092	1
14	CARRIE REEP	1544 REEP HILL TRL LINCOLNTON NC 28092	3

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SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
15	SCOTT T. HULL AND WIFE, SHEILA C. HULL	1857 TIN MINE RD LINCOLNTON NC 28092	3
16	MELVIN ROBERT WALTERS AND WIFE, DEBBIE HOFFMAN	458 MINERS RD LINCOLNTON NC 28092	3
17	JERRY F. CARPENTER AND WIFE, JANE P. CARPENTER	386 VICTORY GRV. CHURCH RD LINCOLNTON NC 28092	4
18	PHILLIP CLYDE COLLINS	1587 MOLLY ACRES LANE LINCOLNTON NC 28092	5
19	WADE S. WILLIAMS AND WIFE, GLADYS MAE WILLIAMS	1434 SMITH FARM RD LINCOLNTON NC 28092	5

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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				
			Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	14+80 -L-	1500 CL IV & 1200 RCP	0.19	---	---	---	0.26	0.09	---	2096	1516
	3+20 RP A										
2	15+60 -L-	1800 RCP	---	---	---	---	0.03	---	---	118	33
3	27+00 -L-	750 RCP	---	---	---	---	0.01	---	---	269	43
4	31+40 -L-	1650 RCP	---	---	---	---	0.02	---	---	318	89
5	35+40 -L-	1500 RCP	---	---	---	---	0.06	---	---	335	---
TOTALS:			0.19	0.00	0.00	0.00	0.38	0.09	0.00	3136	1680

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

LINCOLN COUNTY
PROJECT: 8.1830402 (R-0617C)

4/7/04
SHEET 35 OF 35

Form Revised 3/22/01