



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY PERDUE
GOVERNOR

EUGENE CONTI
SECRETARY

October 30, 2012

MEMORANDUM TO: Joel Setzer, P.E.
Division 14 Engineer

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

SUBJECT: Haywood County, I-40 Slope Stabilization Measures; Federal Aid
Project No. IMS-040-1(220)35; W.B.S. No. 46282.1.1
TIP I-5402

E. L. Fush

Please find attached the U.S. Army Corps of Engineers Section 404 Individual Permit and the corresponding NC Division of Water Quality Section 401 Water Quality Certification. All environmental permits have been received for the construction of this project.

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

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

Mr. Randy Garris, P.E. State Contract Officer
Mr. Mark Davis, Division 14 Environmental Officer
Mr. Majed Alghandour, P. E., Program and TIP
Mr. Jay Bennett, P.E., Roadway Design
Mr. Art McMillan, P.E., Hydraulics
Mr. Tom Koch, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Mr. Mike Robinson, P.E., State Bridge Construction Engineer
Ms. Jennifer Harris, P.E., PDEA Western Section
Mr. Clarence Coleman, P.E., FHWA
Mr. Chris Militscher, EPA
Mr. Anthony Summit, TVA

PROJECT COMMITMENTS

T.I.P. No I-5402

I-40 Slope Stabilization Measures

Haywood County

Federal Aid Project No. IMS-040-1(220)35

W.B.S. No. 46282.1.1

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

No Commitments were developed during project development and design.

COMMITMENTS FROM PERMITTING

All Design Groups/Division, Resident, & Construction Engineer – Trout Issues

The permittee shall ensure that all in-stream work is avoided during the trout moratorium of October 15-April 15 of any year, OR, if the permittee chooses to conduct in-stream work during this period, all work is conducted in the dry and well maintained sediment and erosion control measures that meet the Design Standards in Sensitive Watersheds must be used.

Natural Environment Section-Onsite Mitigation

NCDOT will mitigate for the 392 feet of stream impacts by performing the mitigation in accordance with the mitigation plan titled "Revised On-site Mitigation Plan for I-40 Slope Stabilization Haywood County, North Carolina T.I.P. Number I-5402 WBS No. 46282.1.1 Revised September 28, 2012."

The permittee shall monitor the on-site mitigation areas in accordance with Monitoring Level 2, as outlined in the April 2003 Stream Mitigation Guidelines. Data must be collected each year for five (5) years at the same time of year. No less than two bankfull flow events must be documented during the required five year monitoring period. If less than two bankfull events occur during the first five years, monitoring will continue until the second bankfull event is documented. The bankfull events must occur in separate monitoring years. Physical measurements of channel stability/morphology will not be performed.

NCDOT will provide functional restoration of the site by removing all of the degrading factors including removal of the mobile home, storage buildings, structures, trash and debris from the stream and livestock within 50-foot of the streams. (See October 11, 2012 email attached)

Compensatory mitigation for impacts to jurisdictional streams shall be provided by on-site stream restoration of 615 linear feet of two (2) unnamed tributaries (Stream SA and SE) to Hominy Creek. The onsite mitigation shall be constructed in accordance with the

design submitted in the mitigation plan revised September 28, 2012. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit geodatabase. Please be reminded that as-builts for the completed streams shall be submitted to the NCDWQ 401 Wetlands Unit with the as-builts for the rest of the project. If the parameters of this condition are not met, then the permittee shall supply additional stream mitigation for the 392 linear feet of impacts. All channel restoration work will be constructed in a dry work area, will be completed and stabilized with rolled erosion product(RECP). The stream restoration shall have a 30-foot wide native wooded buffer planted on both sides of the stream with the exception of portions of Stream SA where the stream is too close to the road to allow a 30 foot wooded buffer. (See October 11, 2012 email attached)

The permittee shall submit As Built plans to the USACE within sixty (60) day of completion of the mitigation are as to verify actual mitigation areas constructed and planted.



REPLY TO
ATTENTION OF:

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



October 24, 2012

Regulatory Division

Action ID: SAW-2012-00546

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

Dear Dr. Thorpe:

In accordance with your written request of March 12, 2012, and the ensuing administrative record, enclosed is a copy of a Department of the Army (DA) Permit authoring you to permanently impact 392 linear feet (lf) of waters of the U.S. to address an eroding streambed that is located adjacent to and south of the east-bound lane of I-40, between Mile Post 35 and Mile Post 36, near Canton in Haywood County, North Carolina (TIP No. I5402). This permit also authorizes you to conduct work in 615 lf of waters of the U.S. to implement the on-site mitigation plan for this project.

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

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

- a. You must complete construction before December 31, 2017.
- b. You must notify this office in advance as to when you intend to commence and complete work.
- c. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.

You should address all questions regarding this authorization to Ms. Lori Beckwith in the Asheville Regulatory Field Office, telephone number (828) 271-7980, extension 233.

Thank you in advance for completing our Customer Survey Form. This can be accomplished by visiting our web-site at <http://per2.nwp.usace.army.mil.survey.html> and completing the survey on-line. We value your comments and appreciate your taking the time to complete a survey each time you interact with our office.

Sincerely,



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

Enclosures

Copies Furnished (with enclosures):

Chief, Source Data Unit
NOAA/National Ocean Service
1315 East-west Hwy., Rm 7316
Silver Spring, MC 20910-3282

Mr. Jeffrey Garnett
Wetlands and Marine Regulatory Section
Water Protection Division - Region IV
U. S. Environmental Protection Agency
61 Forsyth St. SW
Atlanta, GA 30303-8931

Copies Furnished with special conditions
and plans:

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

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

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

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

Ms. Jennifer Derby, Chief
Wetlands Protection Section – Region IV
Water Management Division
U. S. Environmental Protection Agency
61 Forsyth Street
Atlanta, Georgia 30303

DEPARTMENT OF THE ARMY PERMIT

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

Permit No: SAW-2012-00546

Issuing Office: USAED, WILMINGTON

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

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

Project Description: Dr. Gregory J. Thorpe, on behalf of the North Carolina Department of Transportation, is hereby authorized to conduct the following activities in waters of the U.S. for TIP No. I-5402: (1) permanently impact 392 linear feet (lf) of waters of the U.S., and (2) conduct work in 615 lf of waters of the U.S. to implement the on-site mitigation plan for this project. These impacts are associated with addressing an eroding streambed that is located adjacent to and south of the east-bound lane of I-40, between Mile Post 35 and Mile Post 36, near Canton in Haywood County, North Carolina.

All work will be conducted in accordance with the information submitted by NCDOT and with the general and special conditions of this permit.

Project Location: The project, known as TIP I-5402, is located adjacent to and south of the east-bound lane of I-40, between Mile Post 35 and Mile Post 36, near Canton in Haywood County, North Carolina within the French Broad River Basin (HUC 06010105). There are five streams in the study area; four are perennial and one is intermittent and all are unnamed tributaries (UTs) to Hominy Creek. The approximate center of the project is at 35.5411 N., and -82.7952 W.

Permit Conditions:

General Conditions:

1. The time Limit for completing the work authorized ends on **December 31, 2017**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Conditions 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site eligible for listing in the National Register of Historic Places.

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

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

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

Special Conditions:

***SEE ATTACHED SPECIAL CONDITIONS**

Further Information:

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

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

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

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

2. Limits of this authorization.

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

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

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

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

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

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

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

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

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

- e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
- a. You fail to comply with the terms and conditions of this permit.
 - b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).
 - c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

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

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

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

E. L. Lusk for 2 10.18.12
 (PERMITTEE) NORTH DEPARTMENT OF TRANSPORTATION (DATE)
 ATTN: DR. GREGORY J. THORPE, PH.D.

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

Melby 10/24/12
 (DISTRICT ENGINEER) STEVEN A. BAKER, COLONEL (DATE)

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

 (Transferee) (DATE)

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

Work Limits

- 1) All work authorized by this permit must be performed in strict compliance with the attached plans (Sheets 1-7 of the Permit Drawings and Sheets OSM-1, OSM-2, and RF-1-RF-3 (revised to show 50' buffers) of the on-site mitigation plan) and all project descriptions/details in the application/cover letter dated March 12, 2012, which are now parts of this permit. Any modification to these plans or descriptions/details must be approved by the USACE prior to implementation.
- 2) Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.
- 3) Except as specified in the plans attached to this permit and submitted project descriptions/details, or any USACE approved modifications to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.
- 4) The permittee, upon receipt of a notice of revocation of this permit, or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.

Related Laws

- 5) All mechanized equipment would be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the permittee shall immediately report it to the N.C. Division of Water Quality at (919) 733-5083, Ext. 526 or (800) 662-7956 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act would be followed.

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- 6) The North Carolina Division of Water Quality has issued a conditioned Water Quality Certification for this project. The conditions of that certification are hereby incorporated as special conditions of this permit. A copy of this certification is attached.
- 7) This Department of the Army permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.
- 8) The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).
- 9) If the permittee discovers any previously unknown historic or archaeological sites while accomplishing the authorized work, he shall immediately stop work and notify the Corps of Engineers, Asheville Regulatory Field Office NCDOT Regulatory Project Manager who will initiate the required State/Federal coordination.

Project Maintenance

- 10) The permittee shall advise the USACE in writing at least two weeks prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.
- 11) Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source and would be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris shall not be used.
- 12) The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions, shall be available at the project site during construction and maintenance of this project.
- 13) If concrete is used during any work in waters of the U.S. on this project, the permittee shall ensure that all necessary measures will be taken to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with streams until the concrete has cured.

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- 14) The permittee shall implement all reasonable and practicable measures to ensure that equipment, structures, fill pads, work, and operation associated with this project do not adversely affect upstream and/or downstream reaches. Adverse effects include, but are not limited to, channel instability, flooding, and/or stream bank erosion. The permittee shall routinely monitor for these effects, cease all work when detected, take initial corrective measures to correct actively eroding areas, and notify this office immediately. Permanent corrective measures may require additional authorization by the USACE.
- 15) The permittee shall ensure that all excavation and/or construction areas in the stream are temporarily dewatered during work.
- 16) The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.
- 17) No fill or excavation for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless it is included on the plan drawings and specifically authorized by this permit.
- 18) The permittee will ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Written verification shall be provided that the final construction drawings comply with the attached permit drawings prior to any active construction in waters of the United States, including wetlands. Any deviation in the construction design plans will be brought to the attention of the Corps of Engineers, Asheville Regulatory Field Office prior to any active construction in waters or wetlands.
- 19) Prior to commencing construction within jurisdictional waters of the United States for any portion of the proposed project, the permittee shall forward the latest version of project construction drawings to the Corps of Engineers, Asheville Regulatory Field Office NCDOT Regulatory Project Manager. Half-size drawings will be acceptable.
- 20) During the clearing phase of the project, heavy equipment shall not be operated in surface waters or stream channels. Temporary stream crossings shall be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings shall be constructed of nonerodable materials. Grubbing of riparian vegetation shall not occur until immediately before construction begins on a given segment of stream channel.

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21) The permittee shall ensure that all in-stream work is avoided during the trout moratorium of October 15-April 15 of any year, OR, if the permittee chooses to conduct in-stream work during this period, all work is conducted in the dry and well maintained sediment and erosion control measures that meet the Design Standards in Sensitive Watersheds must be used.

22) The permittee shall schedule a pre-construction meeting between their representatives, the contractor, and the USACE, Wilmington District, Asheville Regulatory Field Office, NCDOT Regulatory Project Manager, prior to any work in jurisdictional waters of the U.S. to ensure that there is a mutual understanding of all terms and conditions contained in this DA permit. The permittee shall provide the NCDOT Regulatory Project Manager with a copy of the final plans at least two (2) weeks prior to the pre-construction meeting along with a description of any changes that have been made to the project's design, construction methodology or construction timeframe. The permittee shall schedule the pre-construction meeting for a time when the USACE and the North Carolina Division of Water Quality (NCDWQ) Project Managers can attend. The permittee shall notify the USACE and NCDWQ Project Managers a minimum of thirty (30) days in advance of the meeting.

23) Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in the disequilibrium of wetlands, streambeds or stream banks adjacent to, upstream of or downstream of the structures. For all culvert construction activities, the dimension, pattern, and profile of the stream, (above and below a pipe or culvert), shall not be modified by widening the stream channel or by reducing the depth of the stream. Riprap armoring of streams at culvert inlets and outlets shall be minimized above ordinary high water elevation in favor of bioengineering techniques such as bank sloping, erosion control matting and revegetation with deep-rooted native woody plants.

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

Mitigation

25) The permittee shall monitor the on-site mitigation areas in accordance with Monitoring Level 2, as outlined in the April 2003 Stream Mitigation Guidelines. Data must be collected each year for five (5) years at the same time of year. No less than two bankfull flow events must be documented during the required five years monitoring period. If less than two bankfull events

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occur during the first five years, monitoring will continue until the second bankfull event is documented. The bankfull events must occur in separate monitoring years. Physical measurements of channel stability/morphology will not be performed.

26) The permittee shall submit As Built plans to the USACE within sixty (60) day of completion of the mitigation areas to verify actual mitigation areas constructed and planted.

27) All monitoring activities would be conducted for five years post-construction and documented in an annual report distributed to the regulatory agencies.

28) The permittee shall conduct all mitigation activities in accordance with the mitigation plan titled "Revised On-site Mitigation Plan for I-40 Slope Stabilization Haywood County, North Carolina T.I.P. Number I-5402 WBS No. 46282.1.1 Revised September 28, 2012," along with the monitoring and reporting requirements noted in special condition 25 of this permit.

29) Success of the mitigation areas will be determined by the USACE and will be based upon successful completion of work, in accordance with the Revised On-site Mitigation Plan of September 28, 2012, and meeting success criteria at the end of the monitoring period.

30) If the USACE determines that any part of the relocated channel is not stable (e.g., excessive erosion, aggradation, etc.), or is trending toward instability, and/or if the vegetative planting is not successful at the end of the monitoring period, the permittee shall submit an adaptive plan to this office to correct any stability or planting deficiency. Plan submissions shall specify the scope of work needed to remedy the problem(s), types of equipment to be utilized, construction methodologies, and a timeline for completion.

Enforcement

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

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND
REQUEST FOR APPEAL**

Applicant: North Carolina Department of Transportation; Dr. Gregory J. Thorpe, Ph.D.,		File Number: SAW-2012-00546	Date: October 18, 2012
Attached is:			See Section below
X	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

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

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

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

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

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

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

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

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

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

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

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

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

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:
District Engineer, Wilmington Regulatory Division,
Attn: Lori Beckwith
151 Patton Ave, Room 208
Asheville, NC 28806
(828) 271-7980

If you only have questions regarding the appeal process you may also contact:
Mr. Jason Steele, Administrative Appeals Review Officer, CESAD-PDO
U.S. Army Corps of Engineers, South Atlantic Division
60 Forsyth Street, Room 10M15
Atlanta, GA 30303-8801
Telephone: (404) 562-5137

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

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

District Engineer, Wilmington Regulatory Division, Attn: Lori Beckwith, Project Manager, Asheville Regulatory Field Office, 151 Patton Avenue, Room 208, Asheville, NC 28801.

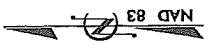
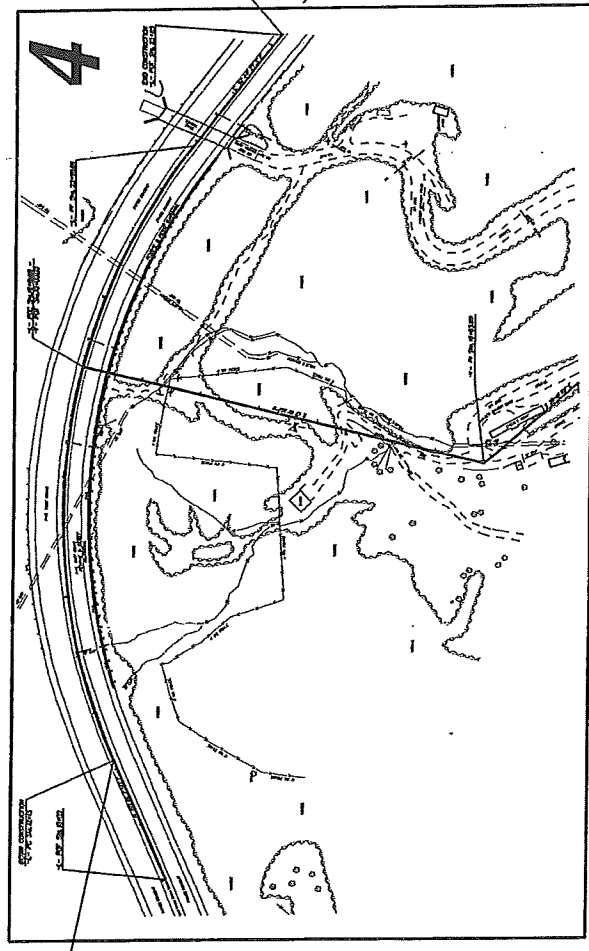
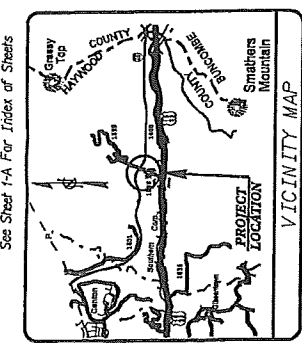
For Permit denials and Proffered Permits send this form to:

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

STATE	N.C.	PROJECT NUMBER	I-5402	SHEET NO.	1	TOTAL SHEETS	1
PROJECT TITLE	I-5402						
DATE	4/28/21	DESIGNER	IMS-040-1 (220)	DATE	PE		
	4/28/21	CONTRACTOR	IMS-040-1 (220) RW & UTILITIES	DATE	CONSTRUCTION		

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
HAYWOOD COUNTY

LOCATION: I-40 EBL FROM MP 35 TO MP 36
TYPE OF WORK: ADDRESS SLOPE INSTABILITY.
PERMIT DRAWING
SURFACE WATER IMPACTS



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

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

RIGHT OF WAY DATE: SEPTEMBER 27, 2011
LETTING DATE: NOVEMBER 18, 2012

PROJECT ENGINEER: JIMMY S. GOODNIGHT, PE
PROJECT DESIGN ENGINEER: STEVE D. KENDALL, PE

HYDRAULICS ENGINEER: [Signature]
ROADWAY DESIGN ENGINEER: [Signature]

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT IMS-040-1 (220) = 0.229 MILES
TOTAL LENGTH STATE PROJECT 46282.2.1 = 0.229 MILES

DESIGN DATA

ADT 2000 = 43,350
ADT 2020 = 71,000
DRY = 12 %
D = 60 %
T = 31 %
V = 70 MPH
* TTST = 25% DUAL 6%
FUNC CLASS = INTERSTATE
STATESIDE TIER

GRAPHIC SCALES

PLANS: 1" = 100'

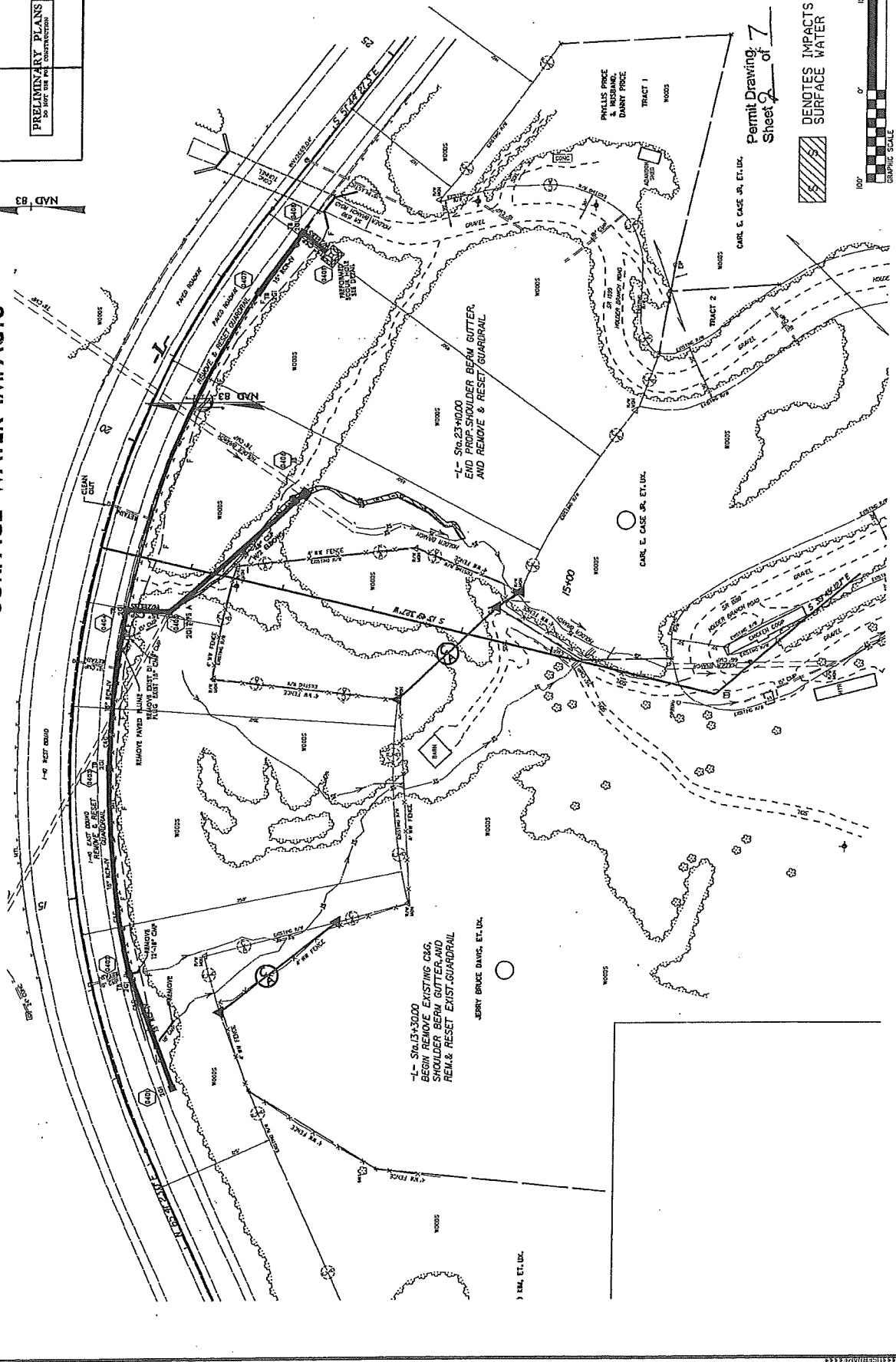
PROFILE (HORIZONTAL): 1" = 50'

PROFILE (VERTICAL): 1" = 20'


PERMIT DRAWING SURFACE WATER IMPACTS

PROJECT REFERENCE NO. 1-5002	SHEET NO. 4
DESIGNED BY M. J. BRUCE	CHECKED BY M. J. BRUCE
APPROVED BY M. J. BRUCE	DATE 10/1/00
PRELIMINARY PLANS FOR THE CONSTRUCTION OF THE PROJECT	

NAD 83



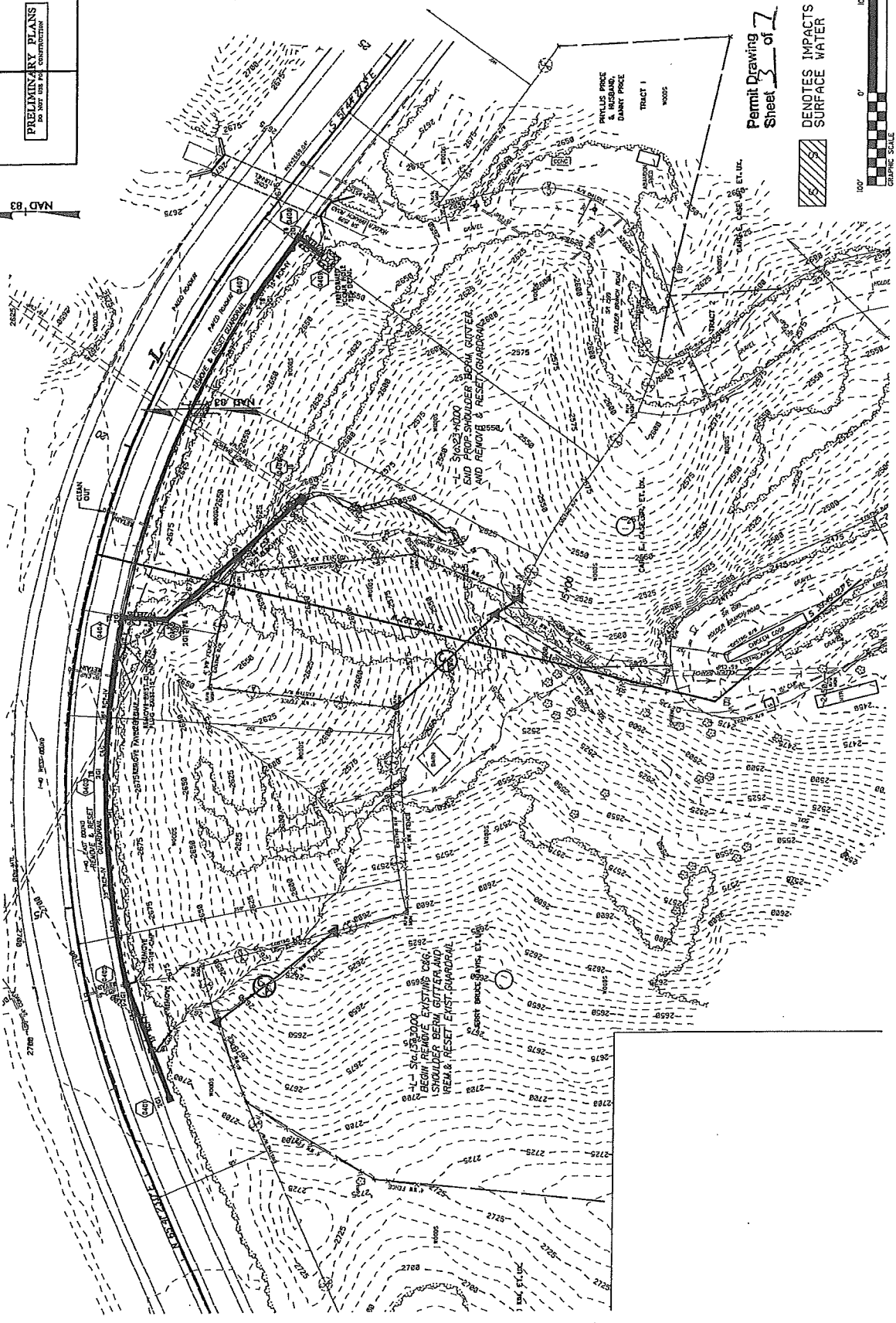
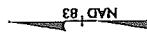
Permit Drawing of 7
Sheet 2 of 7


 DENOTES IMPACTS IN
 SURFACE WATER



 GRAPHIC SCALE

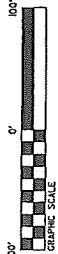
PERMIT DRAWING SURFACE WATER IMPACTS

PROJECT DISTRICT NO.	7-5402
SHEET NO.	7
DESIGNED BY	W. J. HARRIS
CHECKED BY	W. J. HARRIS
DATE	10/1/83
ENGINEER	W. J. HARRIS
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

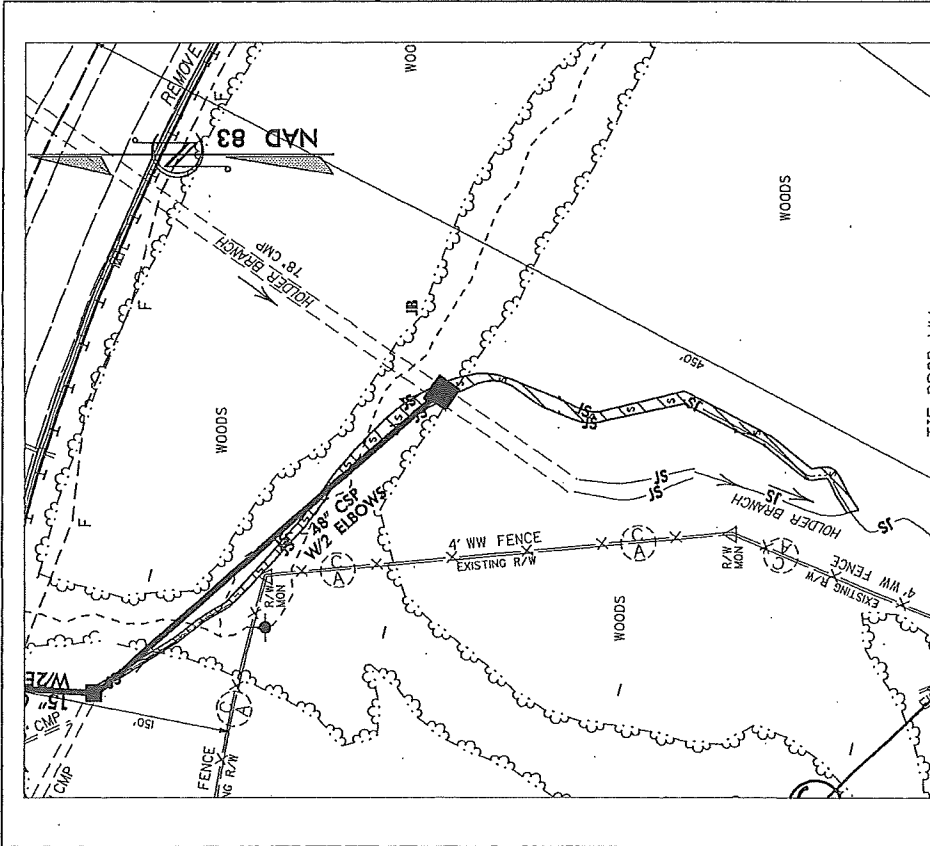


Permit Drawing
Sheet 7 of 7

 DENOTES IMPACTS IN SURFACE WATER



GRAPHIC SCALE

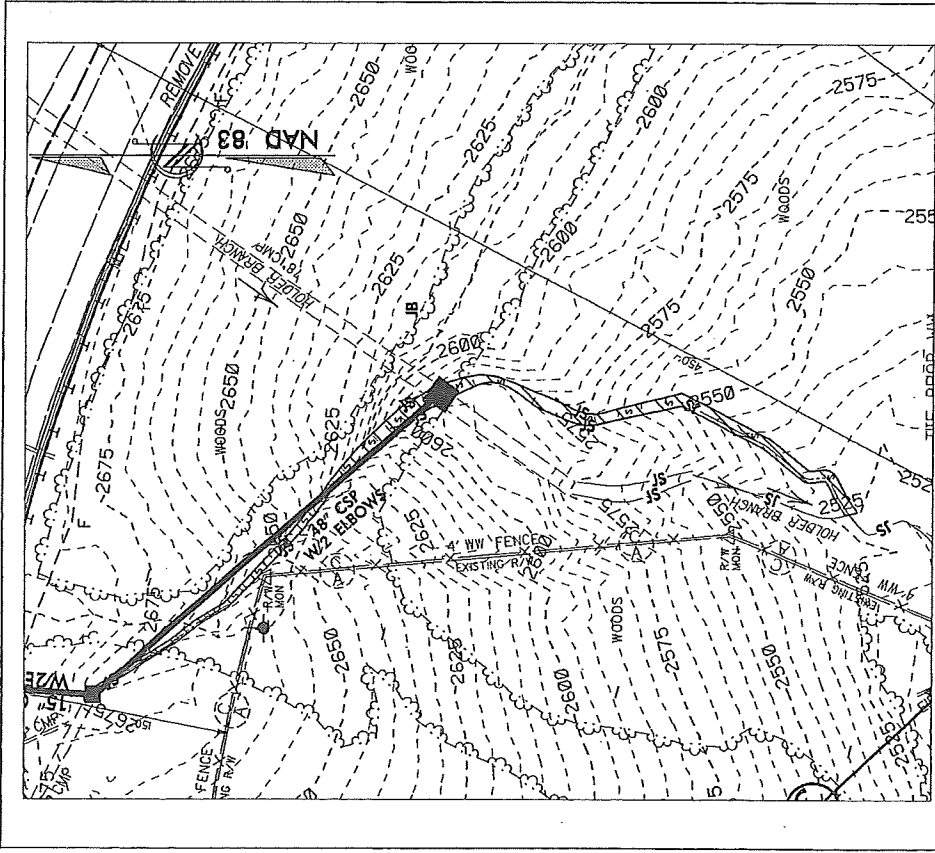


**PERMIT DRAWING
SURFACE WATER IMPACTS**

 DENOTES IMPACTS IN
SURFACE WATER



NCDOT
DIVISION OF HIGHWAYS
HAYWOOD COUNTY
PROJECT-46282.11 (I-5402)
I-40 EBL
MP 55 TO MP 56
ADDRESS SLOPE INSTABILITY



**PERMIT DRAWING
SURFACE WATER IMPACTS**

 DENOTES IMPACTS IN
SURFACE WATER



NCDOT
 DIVISION OF HIGHWAYS
 HAYWOOD COUNTY
 PROJECT: 46282 LI G-5402
 I-40 EBL
 MP 35 TO MP 36
 ADDRESS SLOPE INSTABILITY
 SHEET **5** OF **7** 11/28/11

WETLAND PERMIT IMPACT SUMMARY												
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW Impacts (ac)	Temp. SW Impacts (ac)	Existing Channel Impacts (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	18+29/20+11 -L-	48" CSP W/2 ELBS						0.04		392		
TOTALS:								0.04		392		

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 HAYWOOD COUNTY
 WBS - 46282.1.1. (I-5402)
 SHEET 6 OF 7 11/28/2011

PROPERTY OWNERS

Jerry and Carol Davis 235 Holder Branch Rd. Canton NC 28716

Carl E. Case, Jr., et. Ux. 258 Alvany Grey Rd. Canton NC 28716

Phyllis and Danny Price 91 Star Ridge Rd. Canton NC 28716

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

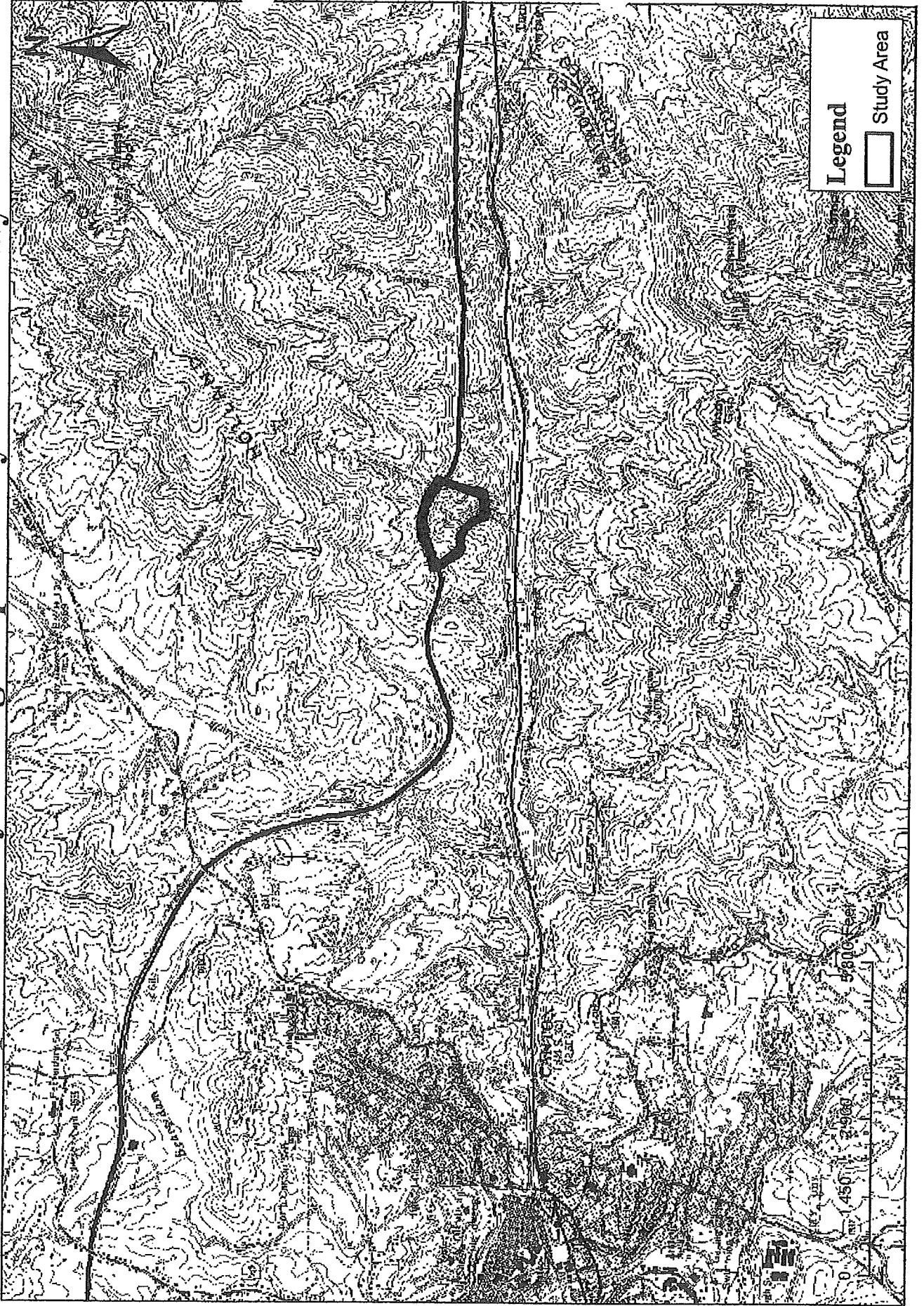
HAYWOOD COUNTY
WBS - 46282.1.1. (I-5402)

SHEET

7 of 27

11/28/2011

Figure 1: I-5402 Project Study Region: Address slope instability through repair- Haywood County

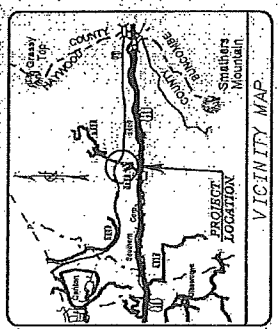
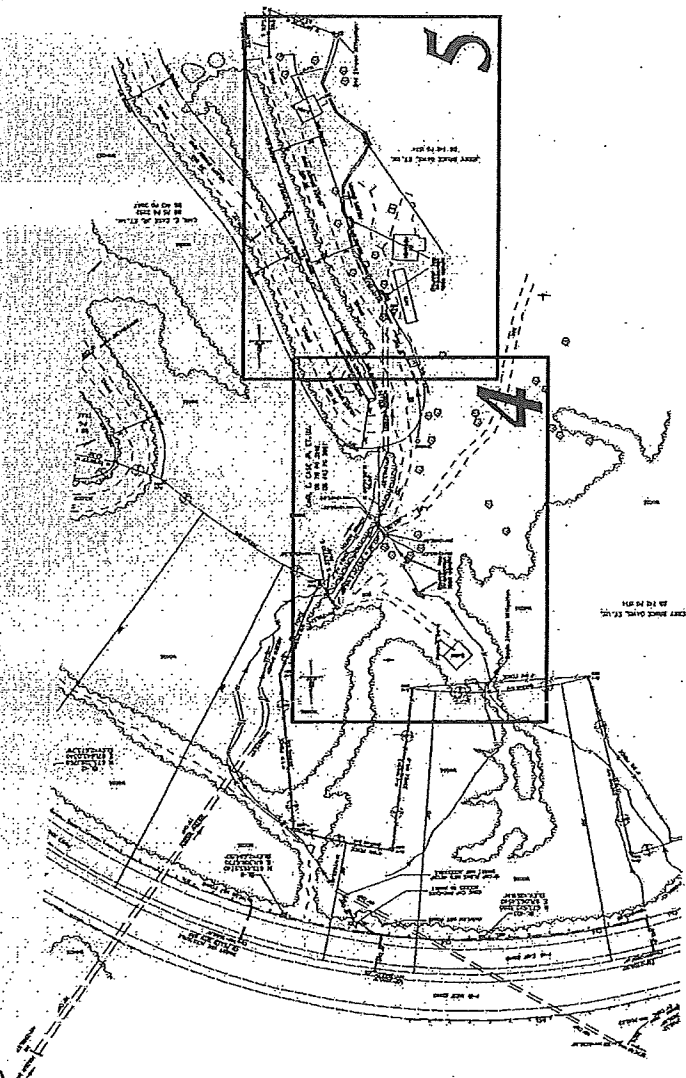


STATE	NC	PROJECT NUMBER	L-5402	CONTRACT	0243-1
COUNTY	HAYWOOD	DATE	09/27/11	BY	BE
PROJECT NAME	I-40 EBL FROM MP 35 TO MP 36				
CONTRACT NUMBER	46282.21				
CONTRACT DESCRIPTION	RW & UTILITIES CONSTRUCTION				



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
HAYWOOD COUNTY

LOCATION: I-40 EBL FROM MP 35 TO MP 36
TYPE OF WORK: STREAM MITIGATION



See Sheet I-4 for Index of Sheets

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

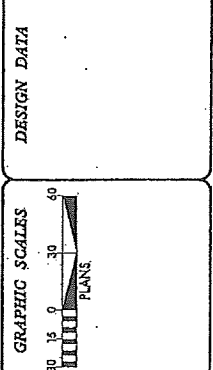
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Prepared in the office of
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh, NC 27610
REG. STANDARD PROFESSIONAL ENGINEER

RIGHT OF WAY DATE: SEPTEMBER 27, 2011
LETTING DATE: NOVEMBER 19, 2012
JAMIE LANCASTER, PE
PROJECT MANAGER

DESIGN DATA

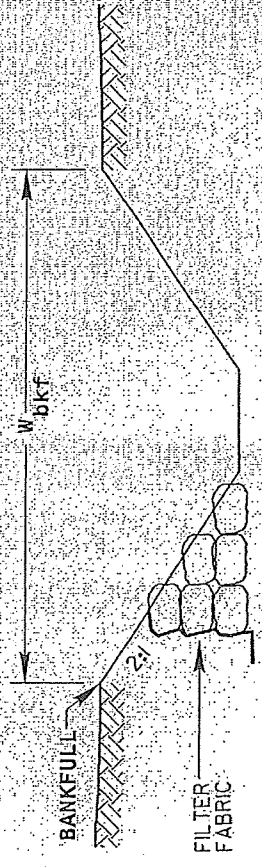
PROJECT LENGTH = 015 FEET
TOTAL STREAM LENGTH



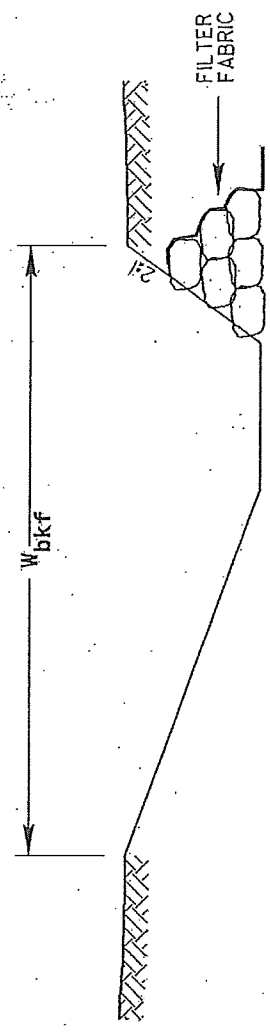
TYP PROJECT: I-5402 **CONTRACT: 46282.21**

13-JUL-2013 09:00
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J:\P06242499

PROJECT REFERENCE NO.	7-222
SHEET NO.	OSH-2
DESIGNER	HYDRAULICS
DATE	APRIL 1964
BY	W. J. HARRIS
FOR	U.S. ARMY CORPS OF ENGINEERS
PROJECT TITLE	INCOMPLETE PLANS FOR THE 100% DESIGN PRELIMINARY PLANS FOR THE 10% DESIGN



**TYPICAL RIFFLE WITH
BOULDER TOE PROTECTION**



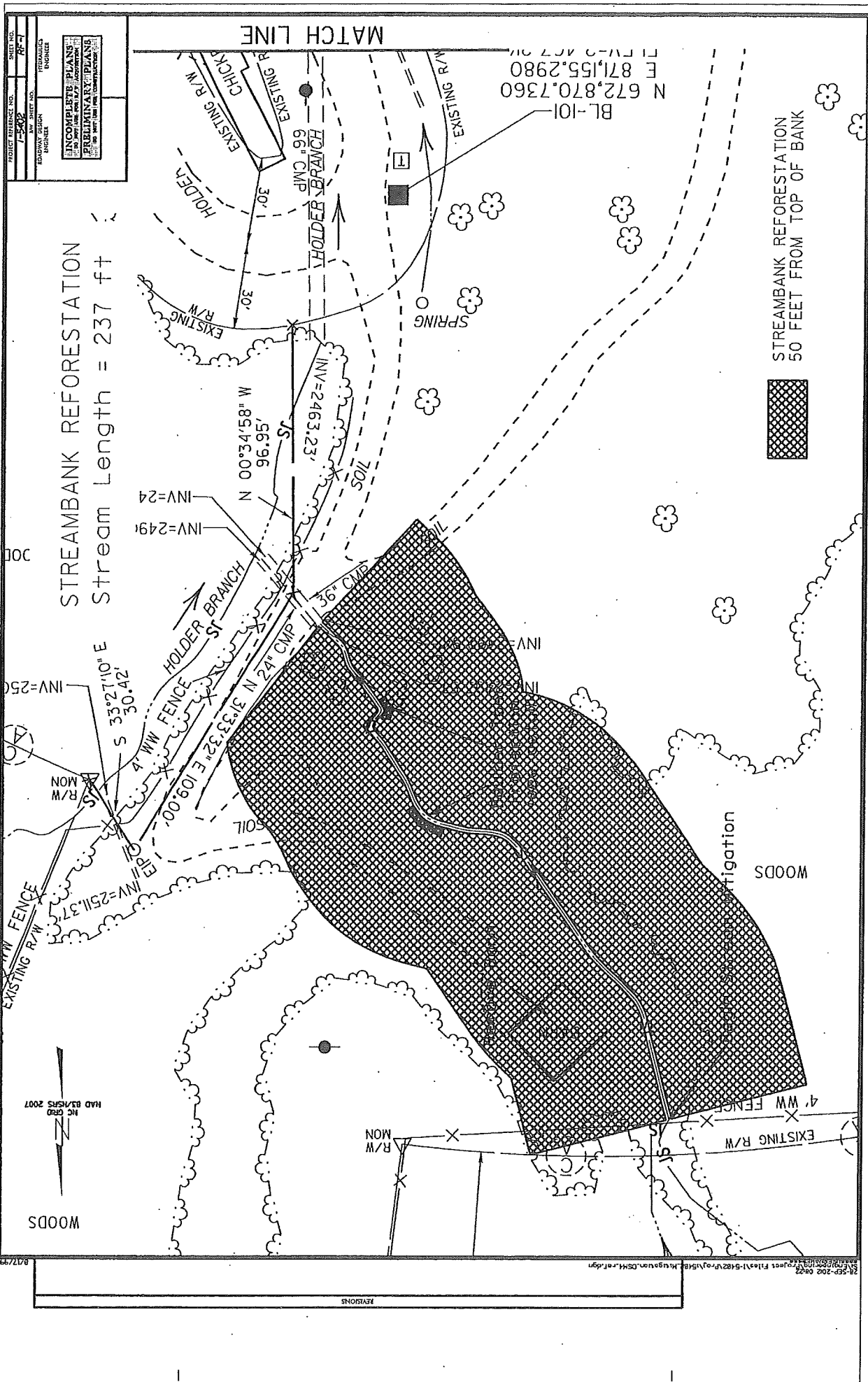
**TYPICAL POOL WITH
BOULDER TOE PROTECTION**

8/27/99

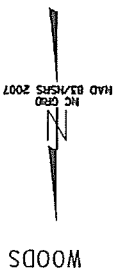
8-15-2002 08:17 C:\Engines\727\99\82\Files\1542\VOA\1548-1\figs\pool.dgn

PROJECT REFERENCE NO.	7-202
SHEET NO.	26-1
DATE	08-14-07
DESIGNER	HYDRAULICS
CHECKER	HYDRAULICS
APPROVED	HYDRAULICS

STREAMBANK REFORESTATION
Stream Length = 237 ft



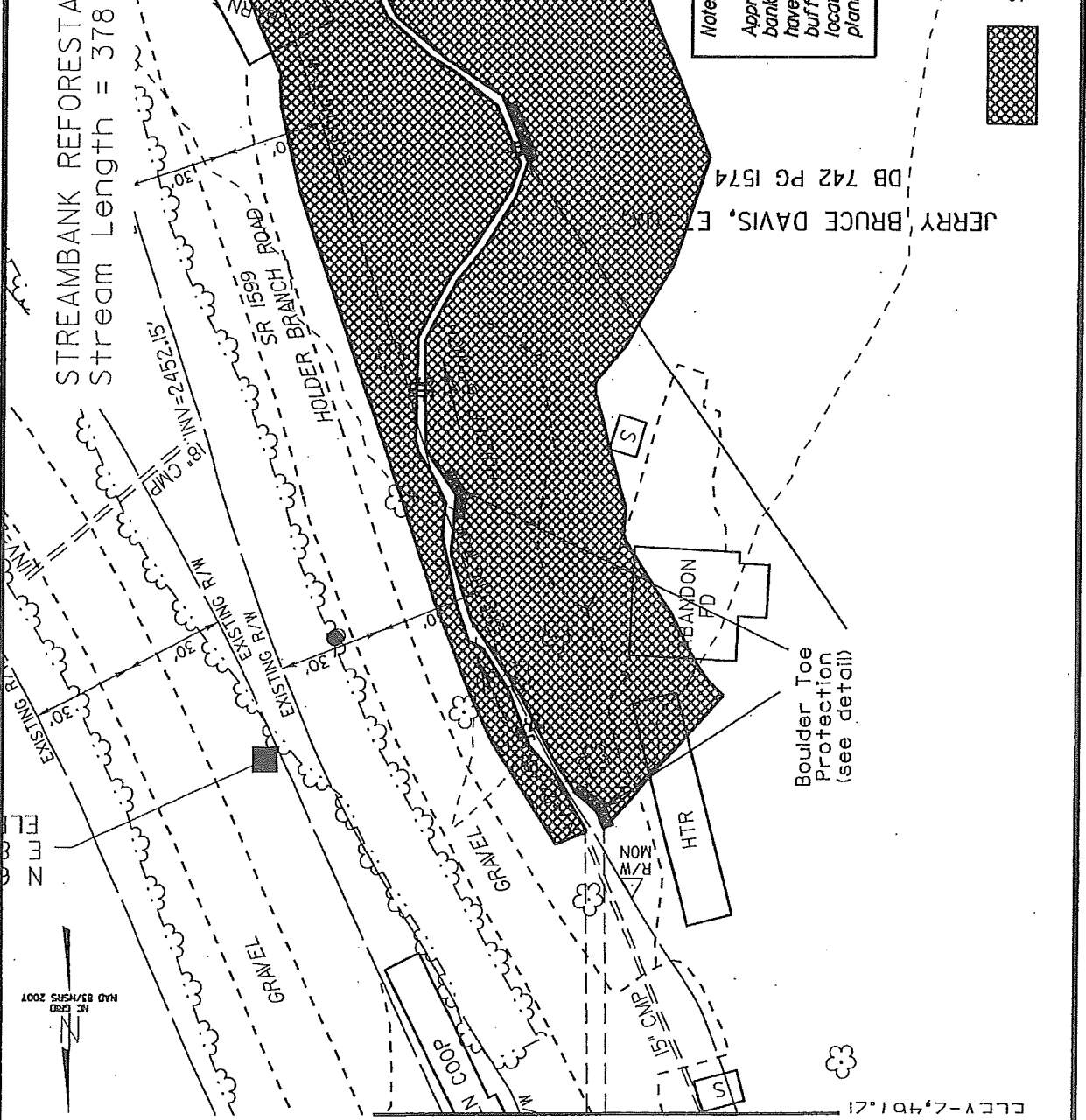
STREAMBANK REFORESTATION
50 FEET FROM TOP OF BANK



24-SEP-2008 08:22
C:\Users\jg\Documents\Projects\Flashy-5182\Drawings\Site_Revision_CSM4.dwg
B47/74

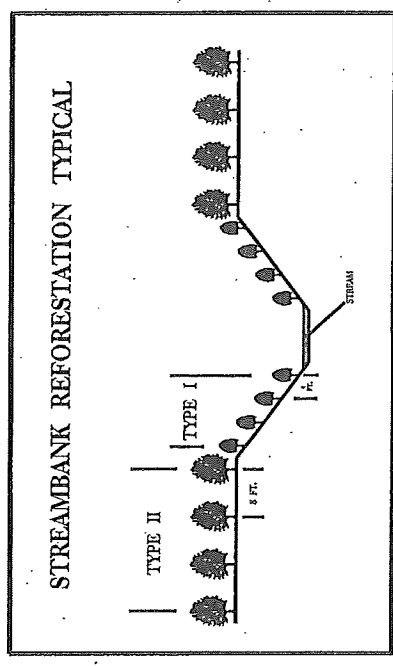
PROJECT REFERENCE NO.	1-548
SHEET NO.	18-2
HYDRAULIC DESIGN	
PRELIMINARY PLANS	

INCOMPLETE PLANS
 THE DATE OF THIS PLAN IS 12/1/2007
 THIS PLAN IS NOT TO BE CONSIDERED
 A FINAL DESIGN UNLESS OTHERWISE NOTED



JERRY BRUCE DAVIS, EITC
 DB 742 PG 1574
 CLCV-2,401,21
 HAD 83/HSS 2007
 24-SEP-2002 08:20
 9/17/09

- TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.
- TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.
- NOTE TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"



STREAMBANK REFORESTATION MIXTURE, TYPE, SIZE AND FURNISH SHALL CONFORM TO THE FOLLOWING:

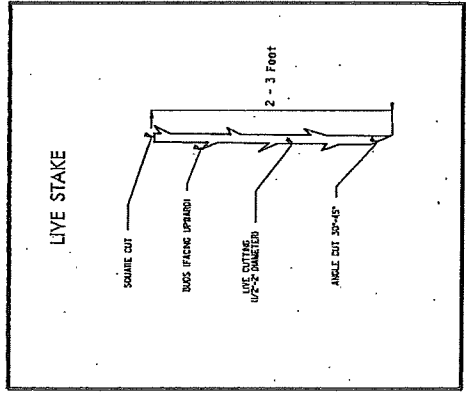
TYPE 1	50% SALIX NIGRA	2 ft - 3 ft LIVE STAKES
	50% CORNUS AMOMUM	2 ft - 3 ft LIVE STAKES
TYPE 2	25% LIRIODENDRON TULIPIFERA	12 in - 18 in BR
	25% PLATANUS OCCIDENTALIS	12 in - 18 in BR
	25% QUERCUS ALBA	12 in - 18 in BR
	25% FRAXINUS PENNSYLVANICA	12 in - 18 in BR

SEE PLAN SHEETS FOR AREAS TO BE PLANTED

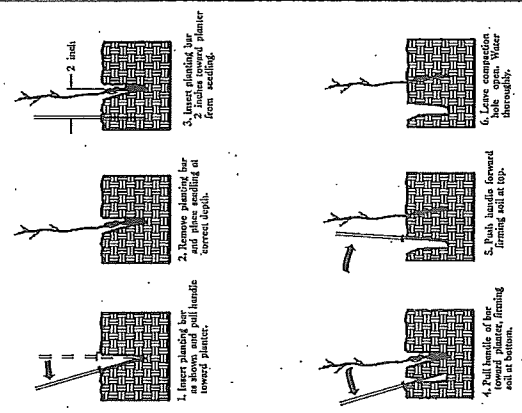
STREAMBANK REFORESTATION
DETAIL SHEET 1 OF 1
 NCDOT - ROADSIDE ENVIRONMENTAL UNIT

PLANTING DETAILS

LIVE STAKES PLANTING DETAIL

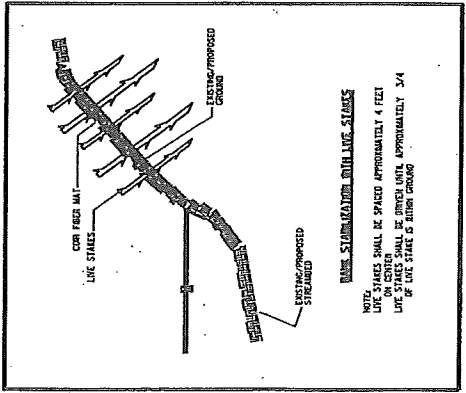


BAREROOT PLANTING DETAIL
 DIBBLE PLANTING METHOD
 USING THE RBC PLANTING BAR



PLANTING NOTES:

- PLANTING BAG** - Plants shall be packed in bags with a triangular bottom and a top diameter of 12 inches long. Root system from 30% to 40% shall be retained.
- RBC PLANTING BAR** - Bareroot shall have a hole in the bottom of the bar to allow water to pass through. The hole shall be 1/2 inch in diameter.
- ROOT PLANTING** - Plants shall be planted in rows with no rows closer than 12 feet between rows. Root collar shall be 1/2 inch above the soil surface.





North Carolina Department of Environment and Natural Resources

Division of Water Quality
Charles Wakild, P.E.
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

June 13, 2012

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

JUN 18 2012

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water with ADDITIONAL CONDITIONS for Proposed Slope Stabilization Measures Adjacent to I-40 between Mile Posts 35 and 36 in Haywood County, Federal Aid Project No. IMS-040-1(220)35, State Project No. WBS 46282.1.1, TIP I-5402
NCDWQ Project No. 20120309

Dear Dr. Thorpe:

Attached hereto is a copy of Certification No. 3917 issued to The North Carolina Department of Transportation (NCDOT) dated June 13, 2012

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

Sincerely,

for

Charles Wakild
Director

Attachments

cc: Lori Beckwith, US Army Corps of Engineers, Asheville Field Office (electronic copy only)
Mark Davis, Division 14 Environmental Officer
Chris Militscher, Environmental Protection Agency (electronic copy only)
Marella Buncick US Fish and Wildlife Service (electronic copy only)
Marla Chambers, NC Wildlife Resources Commission
Jason Elliott, NCDOT, Roadside Environmental Unit
Mike Parker,, NCDWQ Asheville Regional Office
File Copy

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

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One
North Carolina
Naturally

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

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to impact 392 linear feet of jurisdictional streams in Haywood County. The project shall be constructed pursuant to the application dated received March 27, 2012. The authorized impacts are as described below:

Stream Impacts in the French Broad River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	0	0	392	0	392	392
Total	0	0	392	0	392	392

Total Stream Impact for Project: 392 linear feet

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

This approval is only valid for the purpose and design that you submitted in your application dated received March 12, 2012. Should your project change, you are required to notify the NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Conditions of Certification:

1. The NCDOT Division Environmental Officer, Environmental Specialist will conduct a pre-construction meeting with all appropriate staff to ensure that the project supervisor and essential staff understand the potential issues with stream and piping alignment at the permitted site(s). NCDWQ staff shall be invited to the pre-construction meeting.
2. NCDOT will provide functional restoration of the site by removing all of the degrading factors including removal of the mobile home, storage building, structures, trash and debris from the stream and livestock from the property.
3. Compensatory mitigation for impacts to 392 linear feet of streams at a replacement ratio of 1:1 is required. Compensatory mitigation shall be supplied as detailed in the table below:

<u>Mitigation Type</u>	<u>Mitigation Credits</u>
On-site – Stream SA and SE	392

4. Compensatory mitigation for impacts to jurisdictional streams shall be provided by on-site stream restoration of 584 linear feet of two (2) unnamed tributaries (Stream SA and SE) to Hominy Creek. The

on-site stream restoration shall be constructed in accordance with the design submitted in the mitigation plan dated April 26, 2012. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase. Please be reminded that as-builts for the completed streams shall be submitted to the North Carolina Division of Water Quality 401 Wetlands Unit with the as-builts for the rest of the project. If the parameters of this condition are not met, then the permittee shall supply additional stream mitigation for the 392 linear feet of impacts. All channel restoration work will be constructed in a dry work area, will be completed and stabilized with rolled erosion control product (RECP). The stream restoration shall have a **30-foot wide native wooded buffer planted on both sides of the stream** unless otherwise authorized by this Certification.

5. The permittee shall visually monitor the vegetative plantings to assess and ensure complete stabilization of the mitigation stream segments. The monitoring shall be conducted annually for a minimum of five (5) years after final planting. Photo documentation shall be utilized to document the success of the riparian vegetation and submitted to NCDWQ in a final report within sixty (60) days after completing monitoring. After five (5) years the NCDOT shall contact the NCDWQ to schedule a site visit to "close out" the mitigation site.

General Conditions

1. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.
2. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored upon completion of the project.
3. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:
 - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
 - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
 - d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
4. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.
5. NCDOT will need to adhere to all appropriate in-water work moratoria (including the use of pile driving or vibration techniques) prescribed by the North Carolina Wildlife Resources Commission.

6. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.
7. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.
8. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species.
9. The dimension, pattern and profile of the stream, above and below the crossing, shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions.
10. Native riparian vegetation (e.g. rhododendron, dog hobble, willows, alders, sycamores, dogwoods, black walnut and red maple) must be reestablished within the construction limits of the project by the end of the growing season following completion of construction.
11. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.
12. Rip-rap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.
13. Heavy equipment shall be operated from the banks rather than in the stream channels in order to minimize sedimentation and reduce the introduction of other pollutants into the stream.
14. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.
15. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.
16. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.
17. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.
18. No rock, sand or other materials shall be dredged from the stream channel, except where authorized by this certification.
19. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.
20. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification.
21. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.
22. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.
23. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If NCDWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, NCDWQ may reevaluate and modify this certification.
24. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.
25. The Permittee shall report any violations of this certification to the Division of Water Quality within 24-hours of discovery.

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

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

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

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

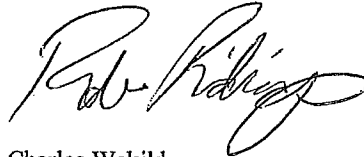
Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-733-2698, Facsimile: (919)-733-3478

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

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

This the 13th day of June 2012

DIVISION OF WATER QUALITY



For Charles Wakild
Director

WQC No. 3917

NCDWQ Project No.: _____

County: _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

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

Applicant's Certification

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

Signature: _____ Date: _____

Agent's Certification

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

Signature: _____ Date: _____

Engineer's Certification

_____ Partial _____ Final

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

Signature _____ Registration No. _____

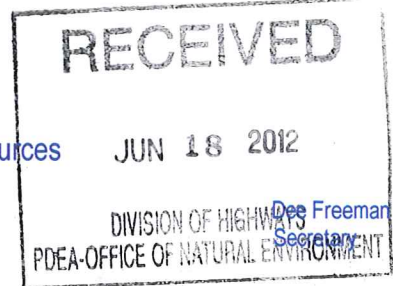
Date _____



North Carolina Department of Environment and Natural Resources

Division of Water Quality
Charles Wakild, P.E.
Director

Beverly Eaves Perdue
Governor



June 13, 2012

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


Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water with ADDITIONAL CONDITIONS for Proposed Slope Stabilization Measures Adjacent to I -40 between Mile Posts 35 and 36 in Haywood County, Federal Aid Project No. IMS-040-1(220)35, State Project No. WBS 46282.1.1, TIP I-5402
NCDWQ Project No. 20120309

Dear Dr. Thorpe:

Attached hereto is a copy of Certification No. 3917 issued to The North Carolina Department of Transportation (NCDOT) dated June 13, 2012

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

Sincerely,

for 
Charles Wakild
Director

Attachments

- cc: Lori Beckwith, US Army Corps of Engineers, Asheville Field Office (electronic copy only)
- Mark Davis, Division 14 Environmental Officer
- Chris Militscher, Environmental Protection Agency (electronic copy only)
- Marella Buncick US Fish and Wildlife Service (electronic copy only)
- Marla Chambers, NC Wildlife Resources Commission
- Jason Elliott, NCDOT, Roadside Environmental Unit
- Mike Parker,, NCDWQ Asheville Regional Office
- File Copy

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

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

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (NCDWQ) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to impact 392 linear feet of jurisdictional streams in Haywood County. The project shall be constructed pursuant to the application dated received March 27, 2012. The authorized impacts are as described below:

Stream Impacts in the French Broad River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	0	0	392	0	392	392
Total	0	0	392	0	392	392

Total Stream Impact for Project: 392 linear feet

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

This approval is only valid for the purpose and design that you submitted in your application dated received March 12, 2012. Should your project change, you are required to notify the NCDWQ and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Conditions of Certification:

1. The NCDOT Division Environmental Officer, Environmental Specialist will conduct a pre-construction meeting with all appropriate staff to ensure that the project supervisor and essential staff understand the potential issues with stream and piping alignment at the permitted site(s). NCDWQ staff shall be invited to the pre-construction meeting.
2. NCDOT will provide functional restoration of the site by removing all of the degrading factors including removal of the mobile home, storage building, structures, trash and debris from the stream and livestock from the property. *within 50' of stream (see Oct 11, 2012 email, attached)*
3. Compensatory mitigation for impacts to 392 linear feet of streams at a replacement ratio of 1:1 is required. Compensatory mitigation shall be supplied as detailed in the table below:

Mitigation Type	Mitigation Credits
On-site – Stream SA and SE	392

4. Compensatory mitigation for impacts to jurisdictional streams shall be provided by on-site stream restoration of 584 linear feet of two (2) unnamed tributaries (Stream SA and SE) to Hominy Creek. The

on-site stream restoration shall be constructed in accordance with the design submitted in the mitigation plan dated April 26, 2012. All on-site mitigation sites shall be protected in perpetuity by a conservation easement or through NCDOT fee simple acquisition and recorded in the NCDOT Natural Environment Unit mitigation geodatabase. Please be reminded that as-builts for the completed streams shall be submitted to the North Carolina Division of Water Quality 401 Wetlands Unit with the as-builts for the rest of the project. If the parameters of this condition are not met, then the permittee shall supply additional stream mitigation for the 392 linear feet of impacts. All channel restoration work will be constructed in a dry work area, will be completed and stabilized with rolled erosion control product (RECP). The stream restoration shall have a **30-foot wide native wooded buffer planted on both sides of the stream** unless otherwise authorized by this Certification. (see Oct 11, 2012 email, attached)

5. The permittee shall visually monitor the vegetative plantings to assess and ensure complete stabilization of the mitigation stream segments. The monitoring shall be conducted annually for a minimum of five (5) years after final planting. Photo documentation shall be utilized to document the success of the riparian vegetation and submitted to NCDWQ in a final report within sixty (60) days after completing monitoring. After five (5) years the NCDOT shall contact the NCDWQ to schedule a site visit to "close out" the mitigation site.

General Conditions

1. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.
2. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, they shall be removed and the natural grade restored upon completion of the project.
3. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:
 - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
 - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
 - d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
4. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.
5. NCDOT will need to adhere to all appropriate in-water work moratoria (including the use of pile driving or vibration techniques) prescribed by the North Carolina Wildlife Resources Commission.

6. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.
7. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.
8. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species.
9. The dimension, pattern and profile of the stream, above and below the crossing, shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions.
10. Native riparian vegetation (e.g. rhododendron, dog hobble, willows, alders, sycamores, dogwoods, black walnut and red maple) must be reestablished within the construction limits of the project by the end of the growing season following completion of construction.
11. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.
12. Rip-rap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.
13. Heavy equipment shall be operated from the banks rather than in the stream channels in order to minimize sedimentation and reduce the introduction of other pollutants into the stream.
14. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.
15. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.
16. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.
17. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.
18. No rock, sand or other materials shall be dredged from the stream channel, except where authorized by this certification.
19. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.
20. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification.
21. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.
22. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.
23. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If NCDWQ determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, NCDWQ may reevaluate and modify this certification.
24. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.
25. The Permittee shall report any violations of this certification to the Division of Water Quality within 24-hours of discovery.

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

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

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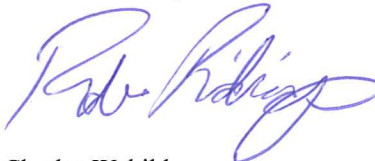
Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-733-2698, Facsimile: (919)-733-3478

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

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

This the 13th day of June 2012

DIVISION OF WATER QUALITY


For Charles Wakild
Director

WQC No. 3917

NCDWQ Project No.: _____

County: _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

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

Applicant's Certification

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

Signature: _____ Date: _____

Agent's Certification

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

Signature: _____ Date: _____

Engineer's Certification

_____ Partial _____ Final

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

Signature _____ Registration No. _____

Date _____

Feulner, Brett M

From: Parker, Mike
Sent: Thursday, October 11, 2012 8:06 AM
To: Feulner, Brett M
Subject: RE: I-5402-401 Permit conditions

Brett, I have received your e-mail and am aware of the differences in the 30 foot buffer and NCDWQ would not require NCDOT to remove trash and buildings greater than 50 feet of any stream channel on the property. Mike

Mike Parker - Mike.Parker@ncdenr.gov
North Carolina Dept. of Environment and Natural Resources
Asheville Regional Office
Division of Water Quality - Surface Water Protection
2090 U.S. 70 Highway
Swannanoa, NC 28778
Tel: 828-296-4500
Fax: 828-299-7043

From: Feulner, Brett M
Sent: Thursday, October 11, 2012 8:02 AM
To: Parker, Mike
Subject: I-5402-401 Permit conditions

Mike,
This email is a follow up of our previous email conversation regarding some of the conditions on the 401 issued June 13, 2012 for TIP I-5402.

On Condition 4, there are portions of the lower stream included in the mitigation plan that we will not be able to plant a 30 foot buffer due to the proximity of the road.

In condition 2 we only intend to remove the trash and buildings within 50 feet of the stream channel due to limited access on portions of the property.

Can you please confirm that you received this email and are aware of the above mentioned.

Thanks

Brett

919-707-6116

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

**Revised On-site Mitigation Plan for
I-40 Slope Stabilization
Haywood County, North Carolina
T.I.P. Number I-5402
WBS No. 46282.1.1
Revised September 28, 2012**

OBJECTIVES

The proposed mitigation site will provide mitigation for unavoidable impacts due to TIP I-5402. NCDOT will be enhancing two UTs to Hominy Creek for a total of 615 linear feet of stream mitigation. NCDOT previously stated that up to 584 feet of stream enhancement was available onsite, however after the enclosed design was completed 615 linear feet of stream enhancement is available onsite. The functional enhancement of the site will occur through the removal of all of the degrading factors including removal of the mobile home residence, storage buildings, livestock, and trash from the stream. Additional measures taken will be stabilizing the banks, and reestablishing a buffer along the stream. Enhancement of the streams will address the watershed needs, including reducing sediment discharging into Hominy Creek.

SITE SELECTION

The proposed mitigation site was chosen because the streams are extremely degraded and the proximity to the resources impacted. The majority of the vegetation along both streams have either been removed or over grazed, leaving no effective riparian buffer. The streams are currently degraded due to direct access to the stream by livestock resulting in no riparian buffer and no bank vegetation to filter containments and sediment before entering the stream. There are also portions of the streams that are experiencing bank failures, due to the lack of buffer and the presence of livestock accessing the stream. There are portions of the streams and stream banks that contain trash including tires and appliances. Downstream of the project, Hominy Creek is listed by the NCDWQ as a 303(d) impaired stream due to sedimentation. Therefore, the mitigation site will help address needs within the watershed to decrease turbidity in Hominy Creek.

SITE PROTECTION INSTRUMENT

The mitigation areas are presently located within the NCDOT Right-of-Way for the project. They will be managed to prohibit all use inconsistent with its use as mitigation property, including any activity that would materially alter the biological integrity or functional and educational value of the site, consistent with the mitigation plan.

The site is designated on the plan sheets as a mitigation area and will be placed on the Natural Environment Section's Mitigation GeoDatabase. This database is provided to all NCDOT personnel as a record of mitigation sites and their attributes, including prohibited activities. NCDOT is held by virtue of the permit associated with this mitigation site and the associated roadway impacts to protect the site in perpetuity.

BASELINE INFORMATION

NCDOT proposes to perform on-site mitigation for unavoidable stream impacts associated with Transportation Improvement Program (TIP) I-5402. The primary purpose of TIP I-5402 is to address slope instabilities adjacent to I-40 related to an eroding reach of an Unnamed Tributary (UT) to Hominy Creek. The project boundary is within the Southern Mountains physiographic province. Land use within the watershed is primarily agriculture and forestry. The project is located within USGS Hydrologic Cataloging Unit 06010105, and NC Division of Water Quality (NCDWQ) sub-basin 06-01-01 within the French Broad River Basin.

The proposed mitigation site contains two UT's to Hominy Creek which is currently used as a watering source for livestock, and also contains a residence. Hominy Creek and its tributaries have been assigned a best usage classification of C by NCDWQ. There is currently no wooded buffer along the streams and only portions of the streams have grass buffers, with portions of the stream buffer containing no vegetation. The livestock are currently grazing the buffer area and have direct access to the streams. Stream names (SA and SE) used in this plan reflect the names that are used in the NRTR dated April 2011 as well as the Categorical Exclusion (CE) dated August 2011.

Stream SA

This stream currently flows adjacent to the mobile home and an older home that is currently used for storage. The stream then flows adjacent to the area that is used to house poultry and goats and eventually flows to Hominy Creek after leaving the property. Approximately 378 feet of Stream SA is located within the proposed mitigation area. Downstream of the project, Hominy Creek is listed by the NCDWQ as a 303(d) impaired stream due to sedimentation.

The majority of the vegetation along stream SA has either been removed or over grazed, leaving no effective riparian buffer. Stream SA is currently degraded due to direct access to the stream by livestock resulting in no riparian buffer to filter containments and sediment before entering the stream. There are also portions of the stream that are experiencing bank failures, due to the lack of buffer and the presence of livestock accessing the stream.

Stream SE

Stream SE is located upstream of Stream SA in an area that is currently used as pasture land for goats. Approximately 237 feet of stream SE is located within the proposed mitigation area. The majority of the vegetation on stream SE has been removed and therefore there is no effective riparian buffer. There are portions of the channel and banks that have been impacted and degraded due to the goats having direct access to the stream channel. There are portions of the stream and stream bank that contain trash including tires and appliances. Stream SE is currently degraded because the animals are directly accessing the channel and there is no buffer to filter contaminants before entering the stream.

DETERMINATION OF CREDITS

NCDOT proposes the following types of mitigation and ratios for each site.

Table 1: Stream Credits

Stream Description	Total Stream Length (feet)	Stream Length Adjustment	Enhancement Credits(1:1.5)	Credit Increase Allowance (+9%)	Total Credits
50 foot buffer on one side	160	80*	53	7	60
50 foot buffer on both sides	455	455	303	41	344
Total Mitigation Credits			356	48	404

*Adjustment determined by the following; $160/2=80$

NCDOT and the USACE has agreed to a 1.5:1 mitigation ratio because the factors contributing to degradation of streams SA and SE including the lack of a riparian buffer, eroding banks and the use of the streams and land immediately adjacent to the streams as pasture land for livestock will be addressed. Addressing the degrading factors will improve the overall quality of streams SA and SE including stability of the stream, wildlife habitat and biological diversity within and surrounding the streams. Stream enhancement will also address water quality needs within the watershed, including decreasing sediment discharging into Hominy Creek.

Stream SA includes 160 feet that will only include a wooded buffer of 10 feet on one side of the stream, and therefore subject to a reduction of stream credits. Credits received for the 160 foot portion of Stream SA will be reduced by half due to the reduced buffer width on one side of the stream. However, there will be a minimum of a 50 foot wooded buffer on the opposite side of the stream.

The remainder of Stream SA (218 feet) and all of Stream SE (237 feet) will include a wooded buffer of at least 50 feet on both stream banks, for a total of 455 feet. The 455 feet on Streams SA and SE are therefore subject to an increase of 9% of stream credits and is reflected above in Table 1. The 160 foot portion of Stream SA with a 50 foot wooded buffer will also receive a 9% increase in stream credits. The USACE determined that the 9% increase is appropriate for this project based on surrounding land use, site conditions, and the proposed work.

An as-built report will be submitted within 60 days of completion of the mitigation site to verify actual mitigation areas constructed and planted. The success of the mitigation areas and determination of final credits will be based upon successful completion and closeout of the monitoring period.

MITIGATION WORK PLAN

The mitigation site will be constructed concurrently with the roadway project. Enhancement of the streams will include removal of all of the livestock from the property and all structures, debris and trash within 50 feet of the streams. Following removal of the livestock and structures, channel work will commence. Stream work will include construction of a minimum of five areas of boulder toe protection. Areas proposed for boulder toe protection are shown in the attached mitigation plans. It is anticipated that during construction that there will be portions of the stream

banks that will require grading. The portions of the stream bank that are graded and any other changes to the planned stream work during construction will be reflected in the as-builts provided to the USACE and NCDWQ following the completion of construction. After construction work on the streams is completed, the stream banks and the buffer will be replanted with a mixture of native hardwood species according to the standard procedures of NCDOT's Roadside Environmental Unit. A copy of the planting plan has been included with the attached mitigation plan sheets.

MAINTENANCE PLAN

The site will be held by NCDOT and placed on the NES mitigation Geodatabase. If an appropriate third party recipient is identified in the future, then the transfer of the property will include a conservation easement or other measure to protect the natural features and mitigation value of the site in perpetuity.

PERFORMANCE STANDARDS

Success will be based on the completion of the removal of the degrading factors that are decreasing the stream function. Success for vegetation monitoring within the riparian buffer are based on the survival of at least 260 stems of five year old trees at year five. Assessment of channel stability will be based on the survival of riparian vegetation and lack of significant bank erosion, channel widening or down-cutting. Additional performance standards include evaluating stream SA and SE using the USACE Stream Quality Assessment Worksheet at the completion of the monitoring period to demonstrate an improvement in stream function.

MONITORING REQUIREMENTS

Photo points will be located within the stream mitigation areas at equal intervals along the channel with upstream and downstream views. Vegetation monitoring will consist of visual monitoring within the riparian buffer areas. The entire reach will be visually inspected for channel stability and vegetation survival. NCDOT will also conduct surveys for macro benthos once a year for five years following completion of construction on the streams.

These monitoring activities will be conducted for five years and documented in an annual report distributed to the regulatory agencies. Once monitoring is completed and the site is closed out, it will be placed in the NCDOT Stewardship Program for long term maintenance and protection.

LONG TERM ADAPTIVE MANAGEMENT PLAN

The site will be managed by the NCDOT according to the mitigation plan. In the event that unforeseen issues arise that affect the management of the site, any remediation will be addressed by NCDOT in coordination with the Interagency Review Team.

FINANCIAL ASSURANCES

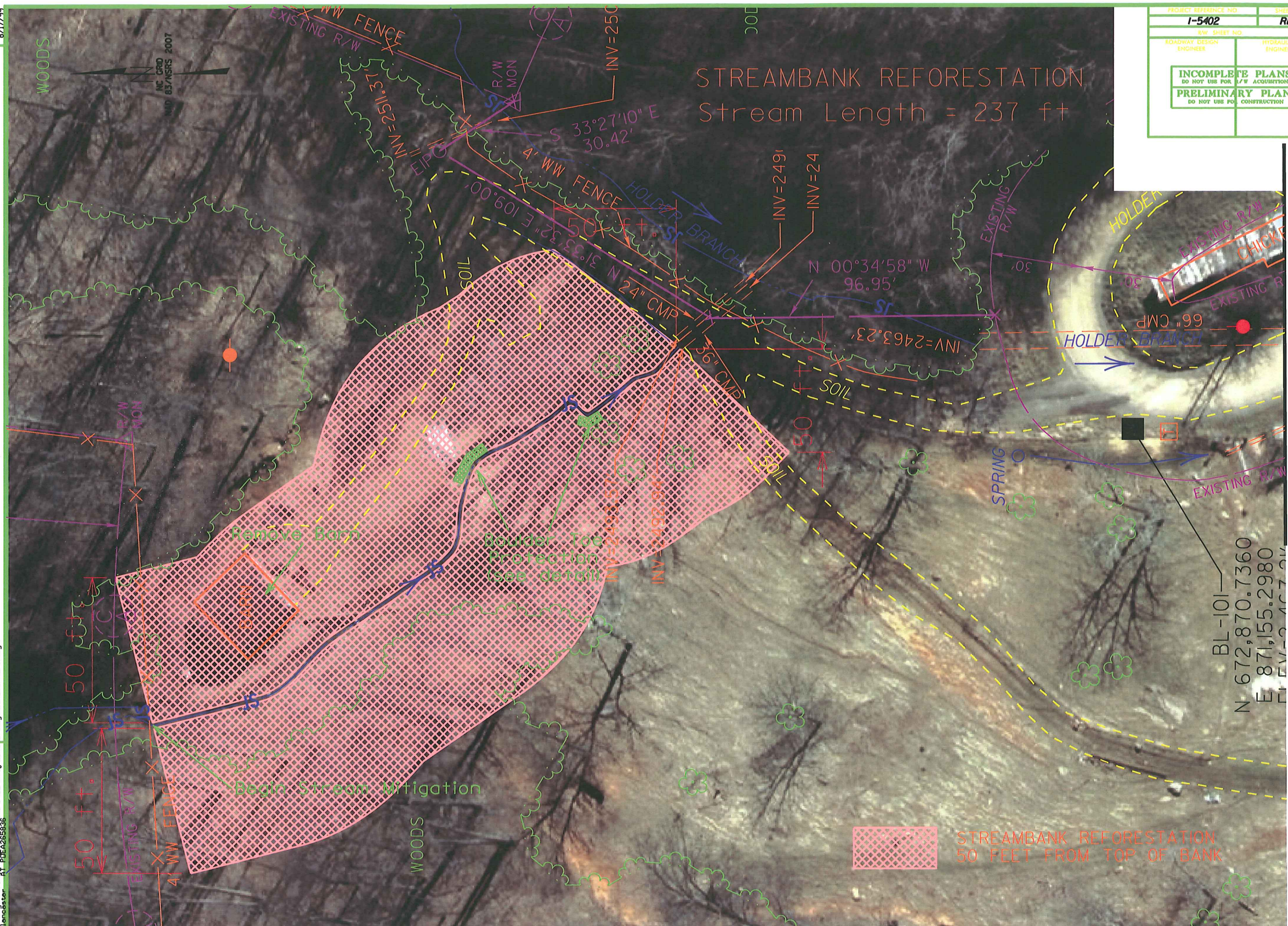
NCDOT is held by permit conditions associated with I-5402 to preserve the stream mitigation area. NCDOT has established funds for each project and within each Division to monitor the mitigation site and to protect it in perpetuity.

8/17/99

PROJECT REFERENCE NO. I-5402	SHEET NO. RF-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

STREAMBANK REFORESTATION

Stream Length = 237 ft



MATCH LINE

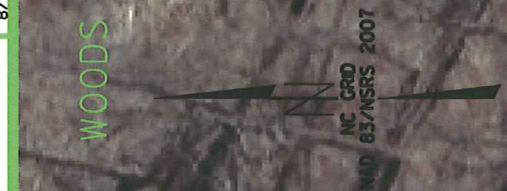
BL-101
 N 672,870.7360
 E 871,155.2980
 EL EV=2,467.91

 STREAMBANK REFORESTATION
 50 FEET FROM TOP OF BANK

REVISIONS

28 SEP 2012 08:30
 j.lancaster
 C:\projects\F\I-5402\Proj\15402_Mitigation_DSM4_ref.dgn

50 ft.
 50 ft.
 50 ft.



8/17/99

PROJECT REFERENCE NO. 1-5402	SHEET NO. RF-2
RDW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

STREAMBANK REFORESTATION

Stream Length = 378 ft

MATCH LINE



Note:
Approximately 160 feet of left hand bank below the pipe outlet will not have a 50 foot buffer planted. The buffer is only about 10 feet at this location. A 50 foot buffer will be planted on the rest of the stream.

STREAMBANK REFORESTATION

REVISIONS

28-SEP-2012 08:31 S:\Engineer\proj\1-5402\Proj\1-5402_Mitigation_DSMS_ref.dgn Jencaster

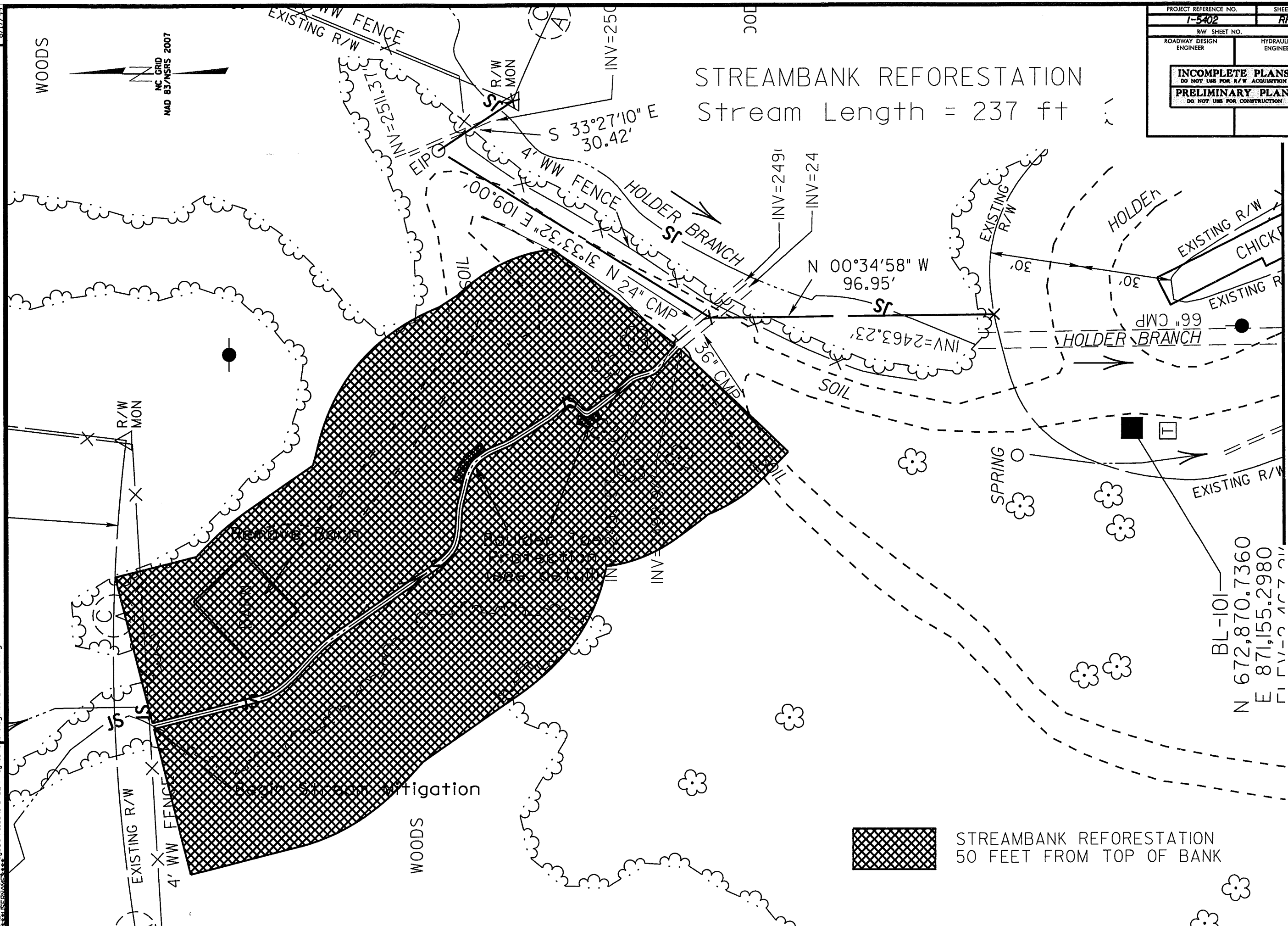
ELEV - 2,400 ±

JERRY BRUCE DAVIS, ET. UX.
DB 742 PG 1574

PROJECT REFERENCE NO. 1-5402	SHEET NO. RF-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

STREAMBANK REFORESTATION

Stream Length = 237 ft

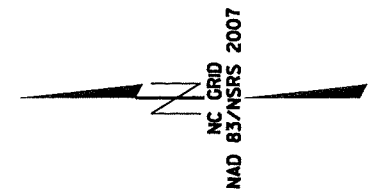


STREAMBANK REFORESTATION
50 FEET FROM TOP OF BANK

BL-101
N 672,870.7360
E 871,155.2980

MATCH LINE

WOODS



REVISIONS

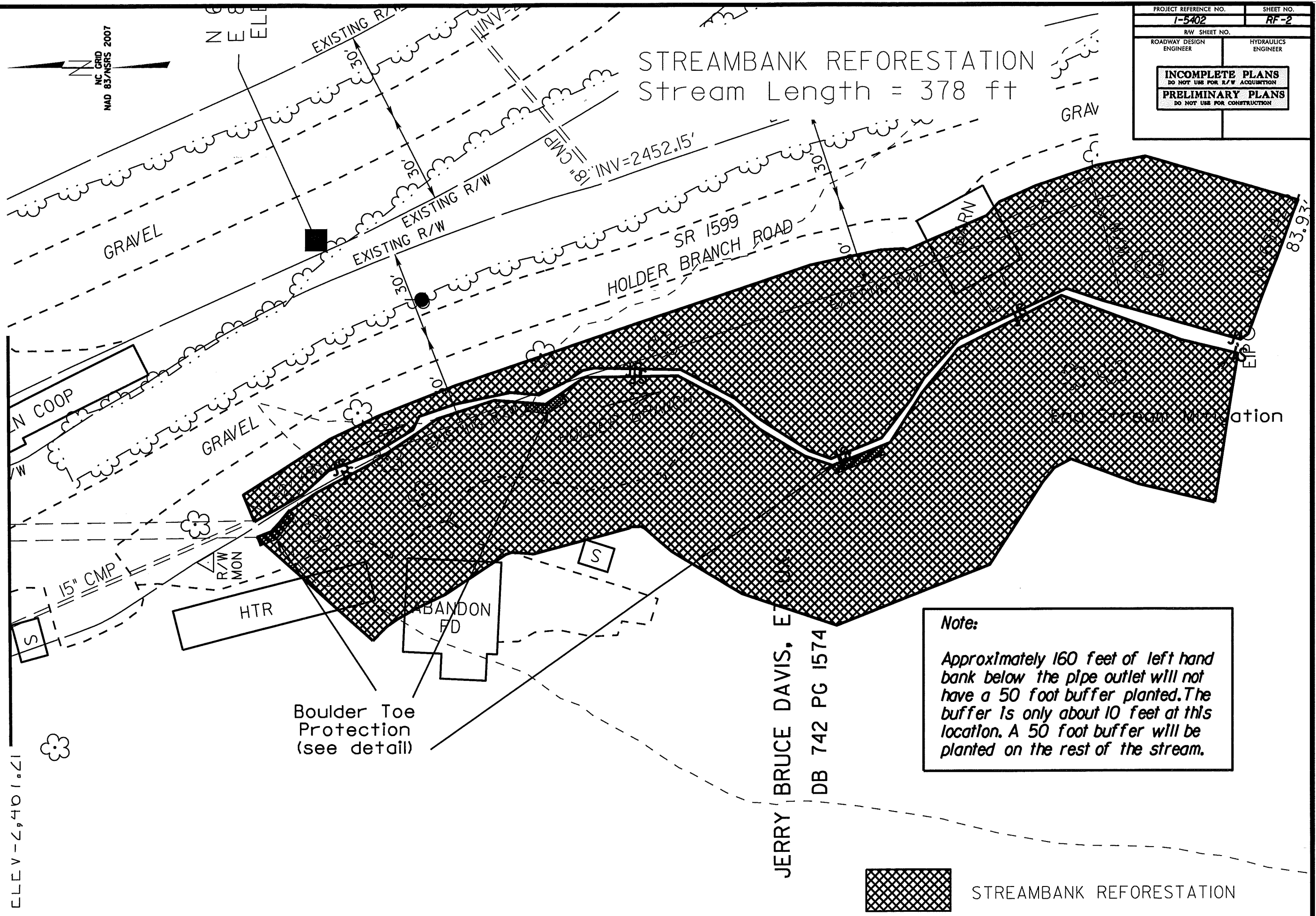
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8/17/99

PROJECT REFERENCE NO. I-5402	SHEET NO. RF-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

STREAMBANK REFORESTATION

Stream Length = 378 ft



Note:
 Approximately 160 feet of left hand bank below the pipe outlet will not have a 50 foot buffer planted. The buffer is only about 10 feet at this location. A 50 foot buffer will be planted on the rest of the stream.

STREAMBANK REFORESTATION

MATCH LINE

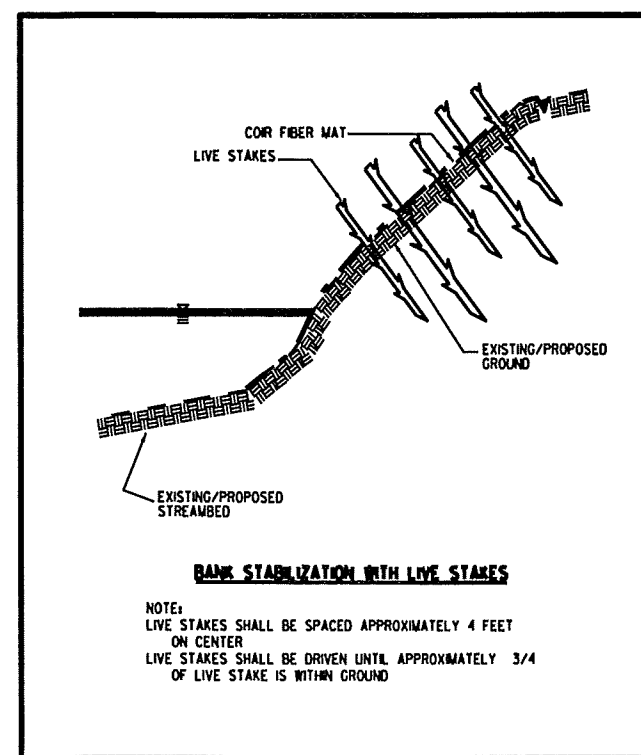
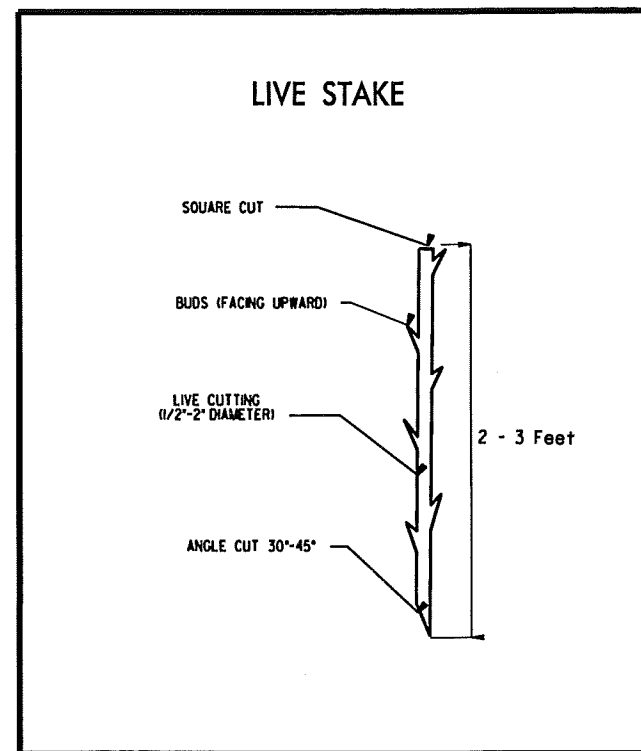
ELEV - 2,401.21

JERRY BRUCE DAVIS, EIT
 DB 742 PG 1574

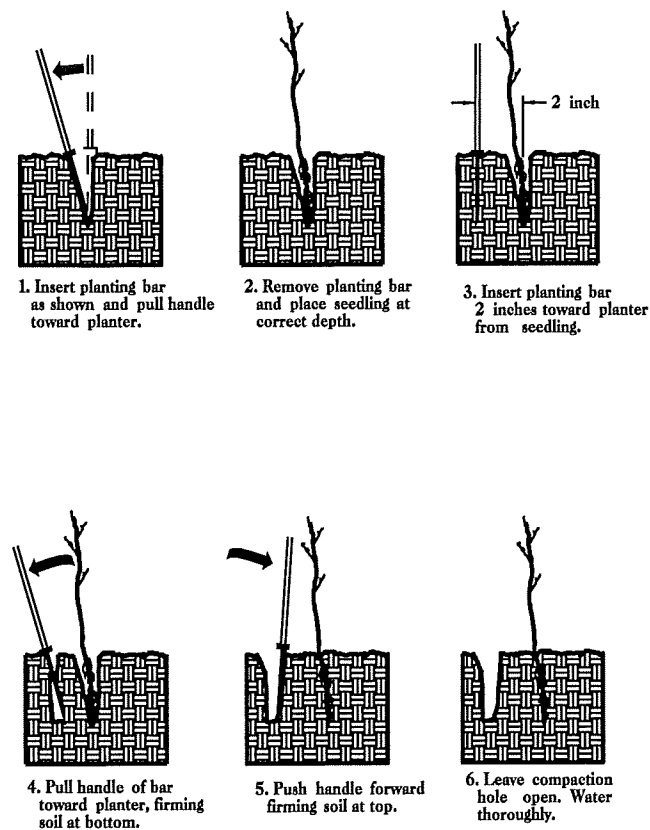
8/17/99
 NC GRID
 MAD 83/NSRS 2007
 REVISIONS
 28-SEP-2012 08:20
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PLANTING DETAILS

LIVE STAKES PLANTING DETAIL



BAREROOT PLANTING DETAIL DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



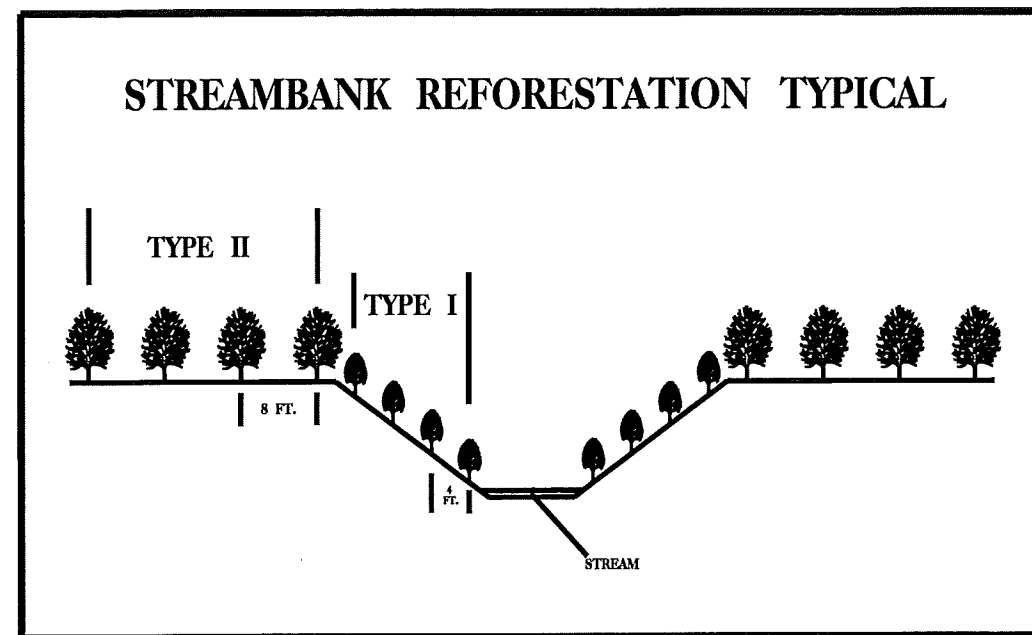
KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

- TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.
- TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.
- NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"

STREAMBANK REFORESTATION TYPICAL



STREAMBANK REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

TYPE 1

50% SALIX NIGRA	BLACK WILLOW	2 ft - 3 ft LIVE STAKES
50% CORNUS AMOMUM	SILKY DOGWOOD	2 ft - 3 ft LIVE STAKES

TYPE 2

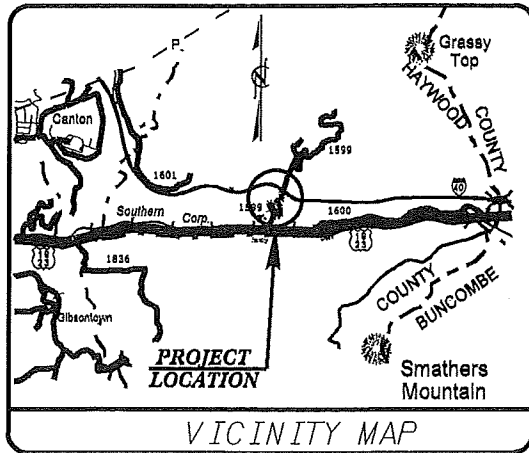
25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in BR
25% QUERCUS ALBA	WHITE OAK	12 in - 18 in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR

SEE PLAN SHEETS FOR AREAS TO BE PLANTED

**STREAMBANK REFORESTATION
DETAIL SHEET 1 OF 1
N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT**

09/08/19

See Sheet 1-A For Index of Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

LOCATION: I-40 EBL FROM MP 35 TO MP 36

TYPE OF WORK: ADDRESS SLOPE INSTABILITY.

PERMIT DRAWING
SURFACE WATER IMPACTS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5402	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46282.1.1	IMS-040-1 (220)	PE	
46282.2.1	IMS-040-1(220)35	RW & UTILITIES CONSTRUCTION	

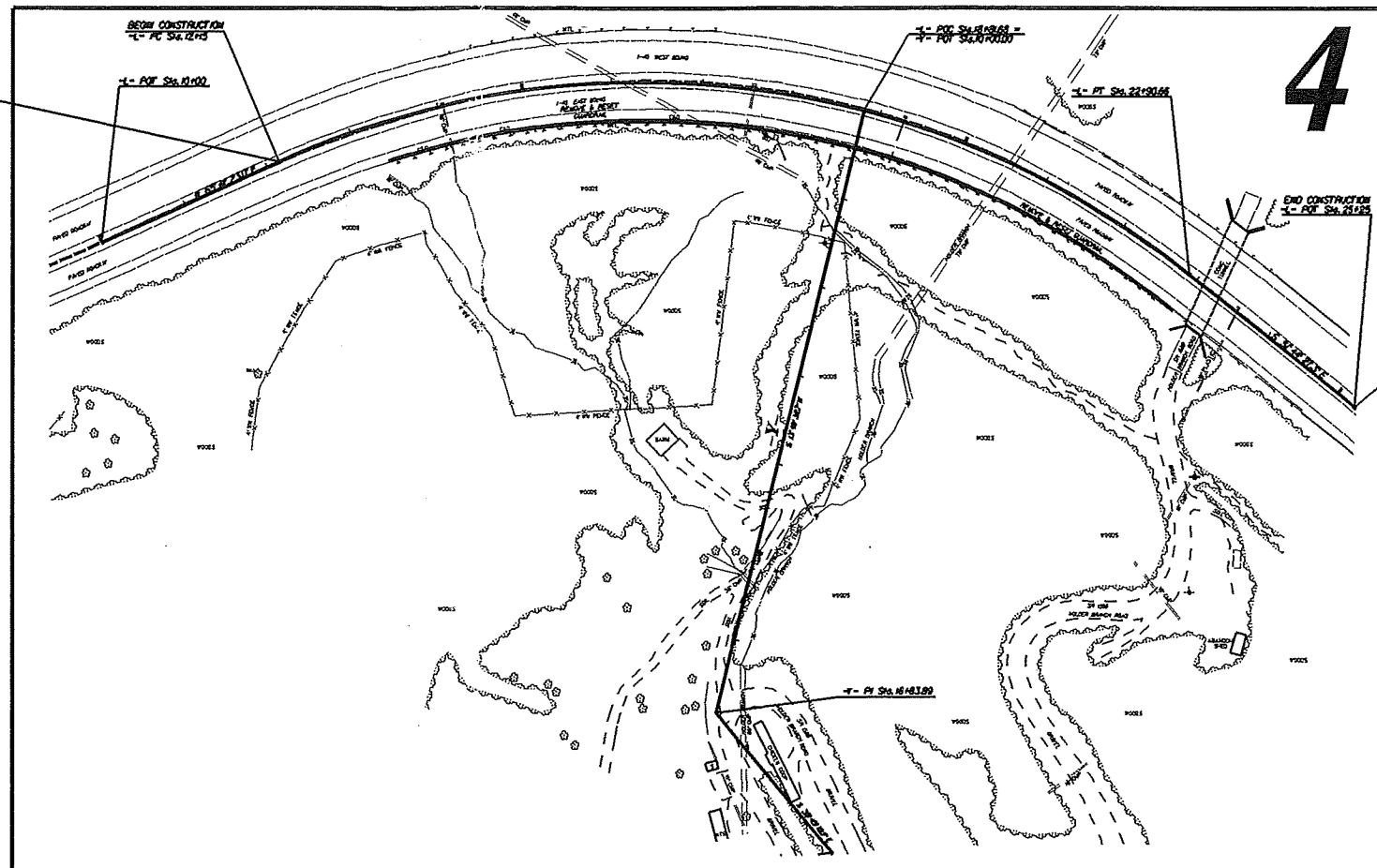


TIP PROJECT: I-5402

CONTRACT: 46282.2.1

BEGIN PROJECT I-5402
-L- 12+15.00

TO CANTON



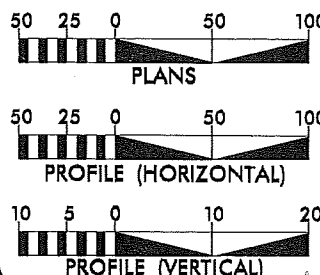
END PROJECT I-5402
-L- 24+25.00

TO WIGGINS RD.

Permit Drawing
Sheet 1 of 7

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2000 = 43,350
ADT 2020 = 71,000
DHV = 12 %
D = 60 %
T = 31 % *
V = 70 MPH
* TTST = 25% DUAL 6%
FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT IMS-040-1 (220) = 0.229 MILES
TOTAL LENGTH STATE PROJECT 46282.1.1 = 0.229 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 27, 2011

LETTING DATE:
NOVEMBER 18, 2012

JIMMY S. GOODNIGHT, PE
PROJECT ENGINEER

STEVE D. KENDALL, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



STATE HIGHWAY DESIGN ENGINEER

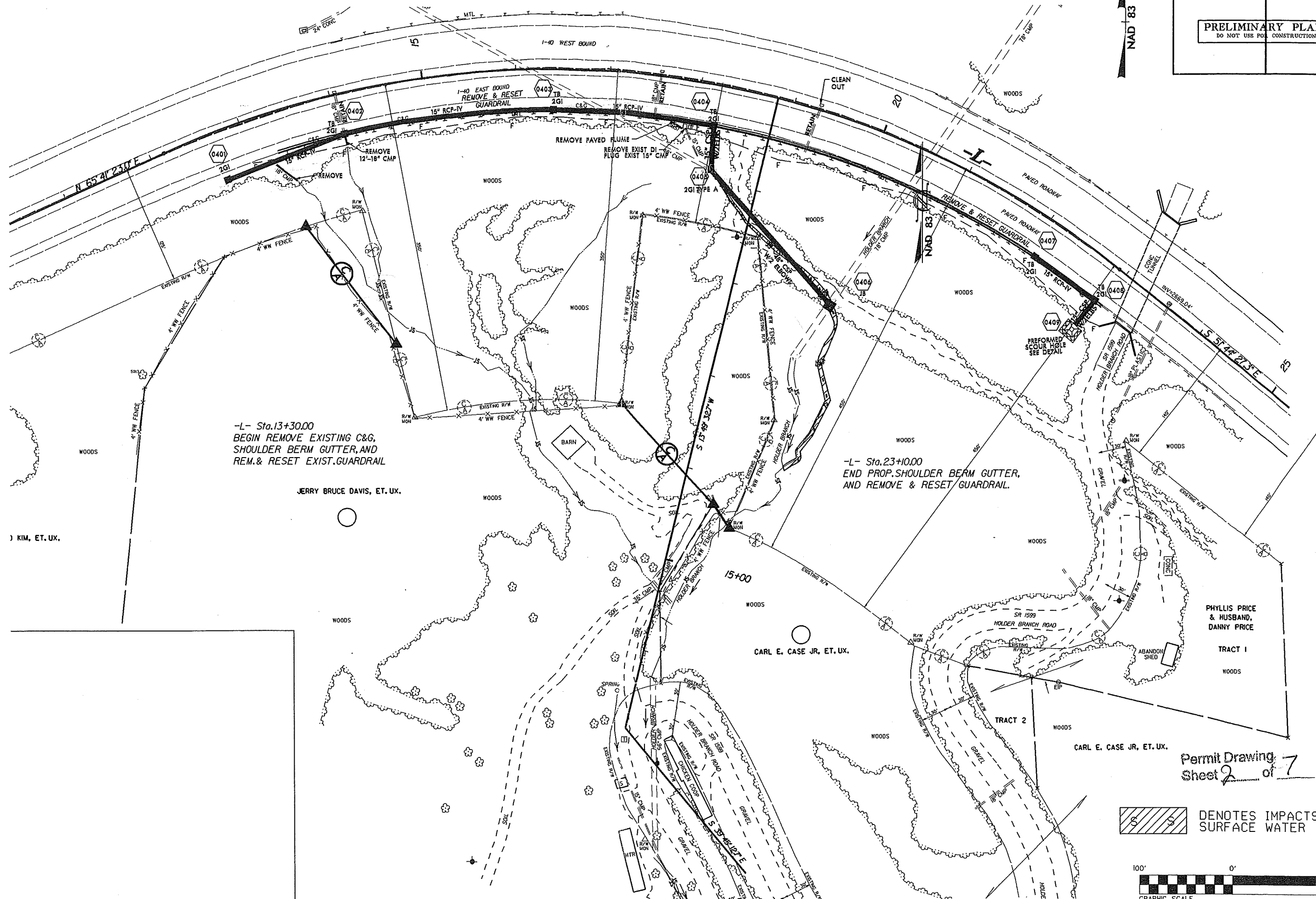
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8/17/99

PERMIT DRAWING SURFACE WATER IMPACTS

PROJECT REFERENCE NO. 1-5402	SHEET NO. 4
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

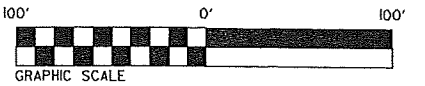
NAD 83



-L- Sta.13+30.00
 BEGIN REMOVE EXISTING C&G,
 SHOULDER BERM GUTTER, AND
 REM. & RESET EXIST. GUARDRAIL

-L- Sta.23+10.00
 END PROP. SHOULDER BERM GUTTER,
 AND REMOVE & RESET GUARDRAIL.

 DENOTES IMPACTS IN SURFACE WATER



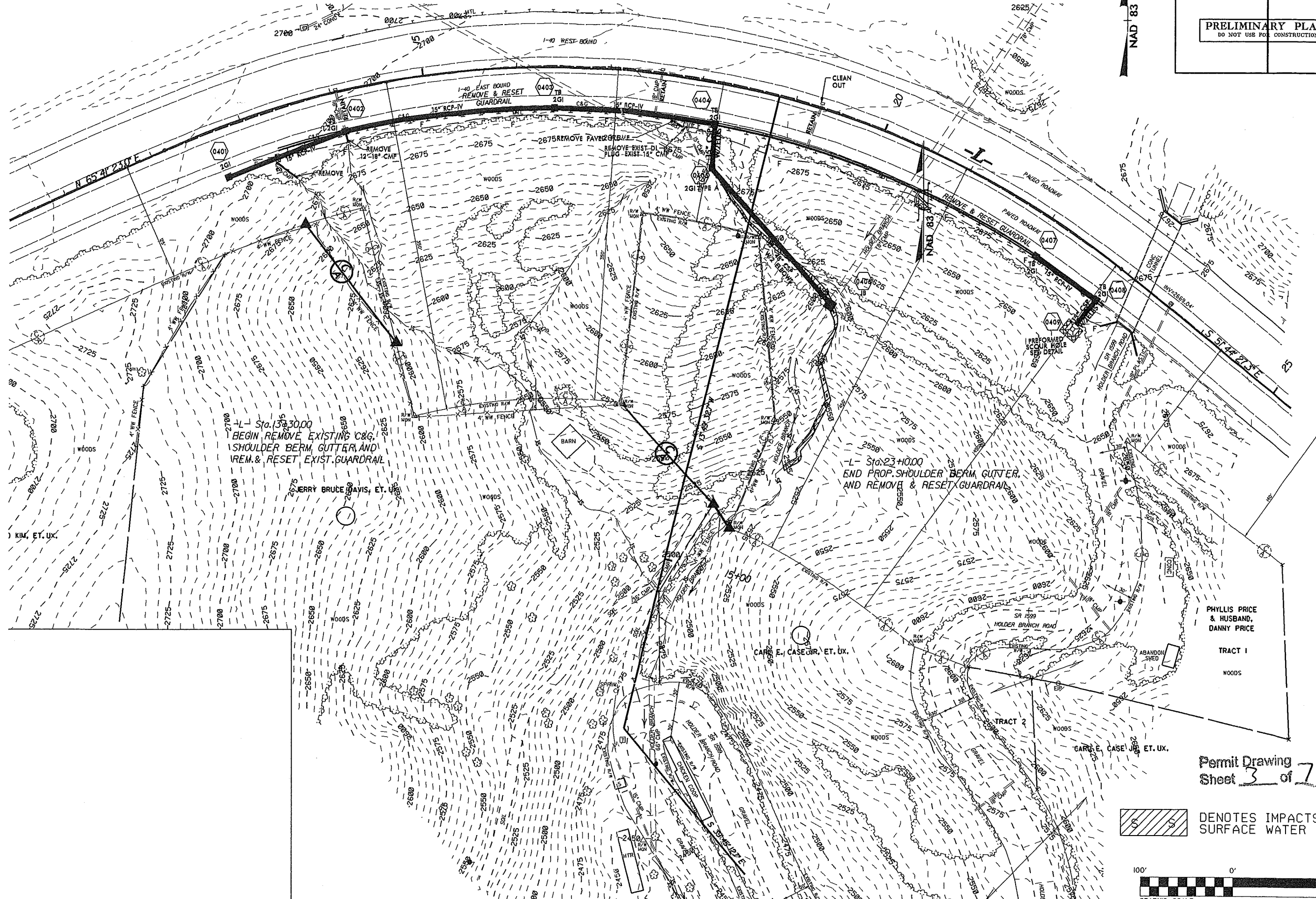
Permit Drawing
 Sheet 2 of 7

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PERMIT DRAWING SURFACE WATER IMPACTS

PROJECT REFERENCE NO. 1-5402	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NAD 83

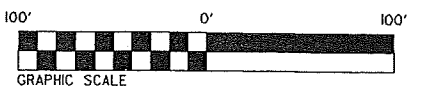


-L- Sta. 13+30.00
 BEGIN REMOVE EXISTING C&G,
 SHOULDER BERM, GUTTER AND
 REM. & RESET EXIST. GUARDRAIL

-L- Sta. 23+00.00
 END PROP. SHOULDER BERM, GUTTER,
 AND REMOVE & RESET GUARDRAIL

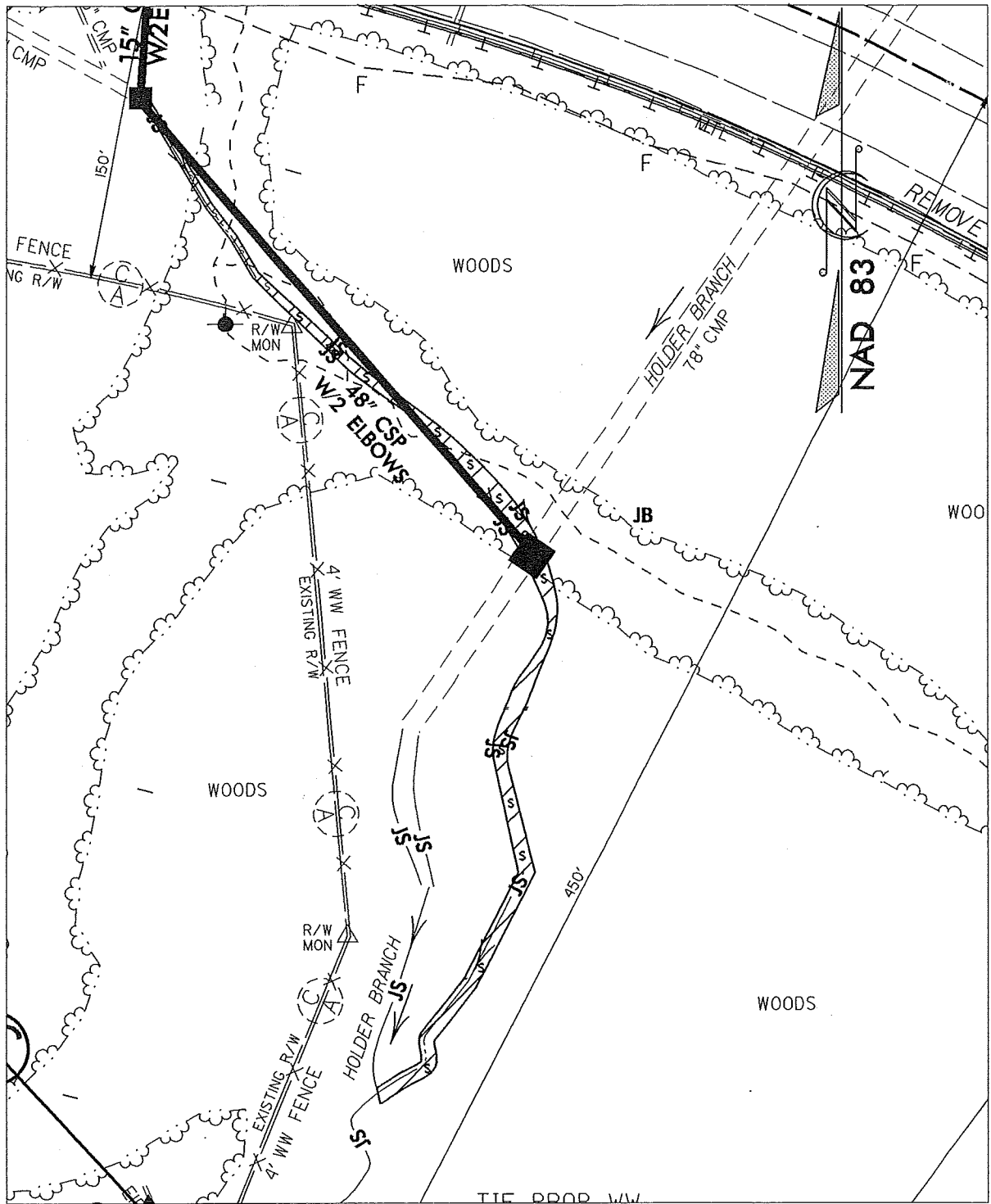
Permit Drawing
 Sheet 3 of 7

 DENOTES IMPACTS IN SURFACE WATER



8/17/99

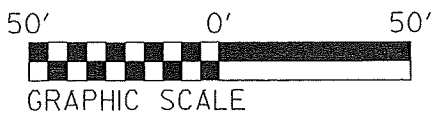
SYSTEMS DESIGN
 SYSTEMS DESIGN
 SYSTEMS DESIGN



PERMIT DRAWING SURFACE WATER IMPACTS



DENOTES IMPACTS IN
SURFACE WATER



NCDOT

DIVISION OF HIGHWAYS
HAYWOOD COUNTY

PROJECT: 46282.1.1 (I-5402)

I-40 EBL

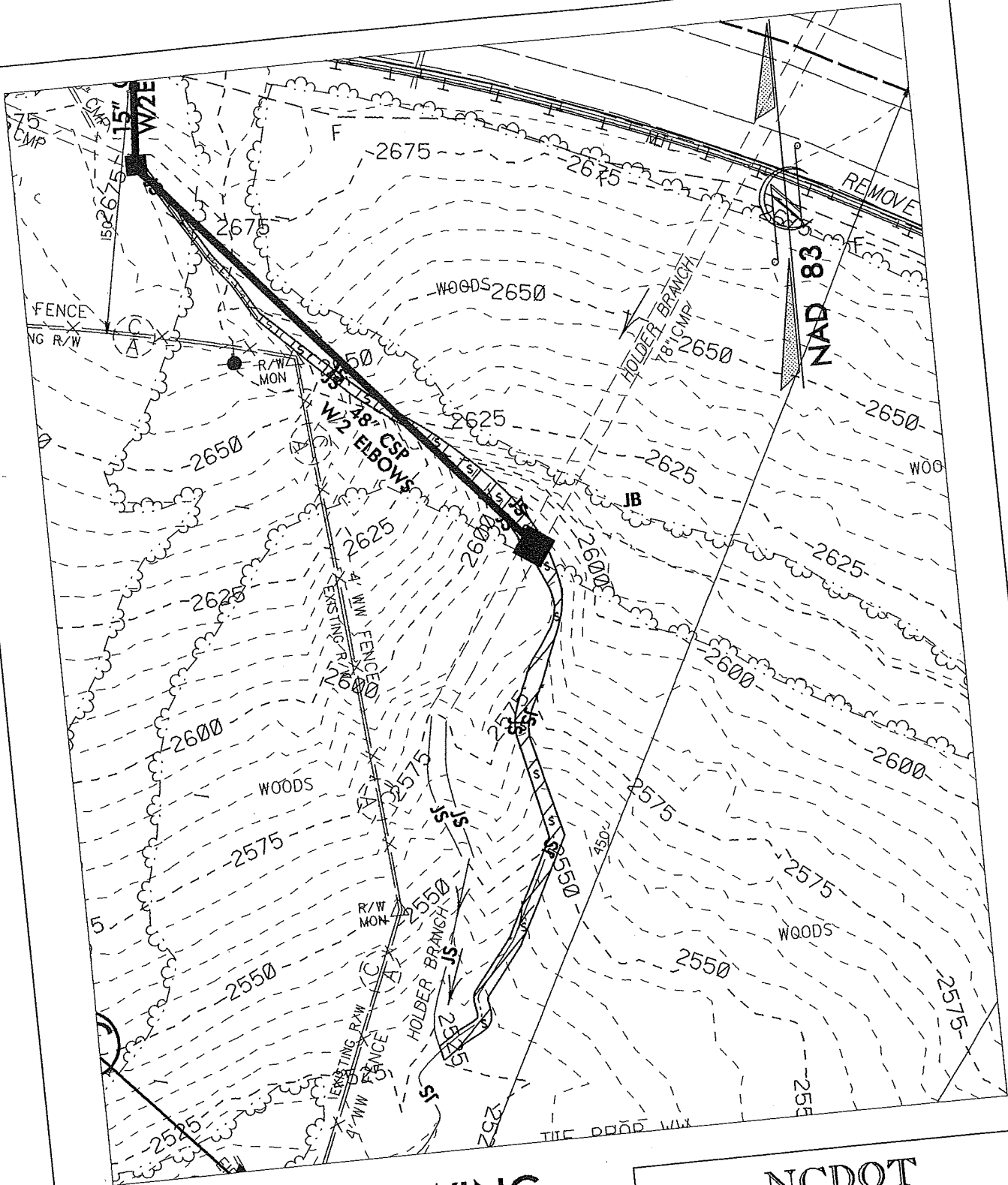
MP 35 TO MP 36

ADDRESS SLOPE INSTABILITY

SHEET

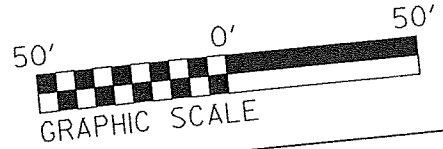
4 OF 7

11/28/11



**PERMIT DRAWING
SURFACE WATER IMPACTS**

 DENOTES IMPACTS IN SURFACE WATER



NCDOT
 DIVISION OF HIGHWAYS
 HAYWOOD COUNTY
 PROJECT: 46282.1.1 (I-5402)
 I-40 EBL
 MP 35 TO MP 36
 ADDRESS SLOPE INSTABILITY

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS						SURFACE WATER IMPACTS						
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)			
1	18+29/20+11 -L-	48" CSP W/2 ELBS								0.04			392		
TOTALS:										0.04			392		

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 HAYWOOD COUNTY
 WBS - 46282.1.1. (I-5402)

607

PROPERTY OWNERS

Jerry and Carol Davis 235 Holder Branch Rd. Canton NC 28716

Carl E. Case, Jr., et. Ux. 258 Alvany Grey Rd. Canton NC 28716

Phyllis and Danny Price 91 Star Ridge Rd. Canton NC 28716

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

HAYWOOD COUNTY
WBS - 46282.1.1. (I-5402)

SHEET

7 of 7

11/28/2011

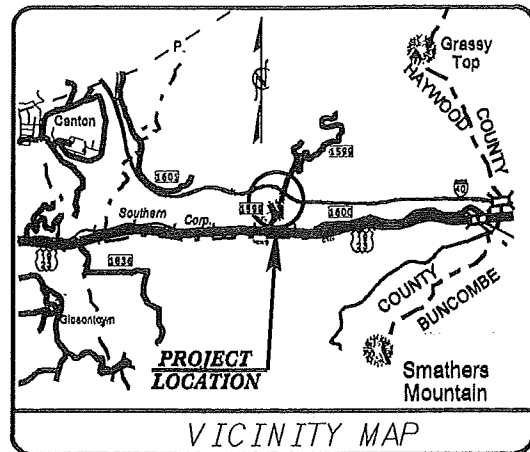
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

LOCATION: I-40 EBL FROM MP 35 TO MP 36

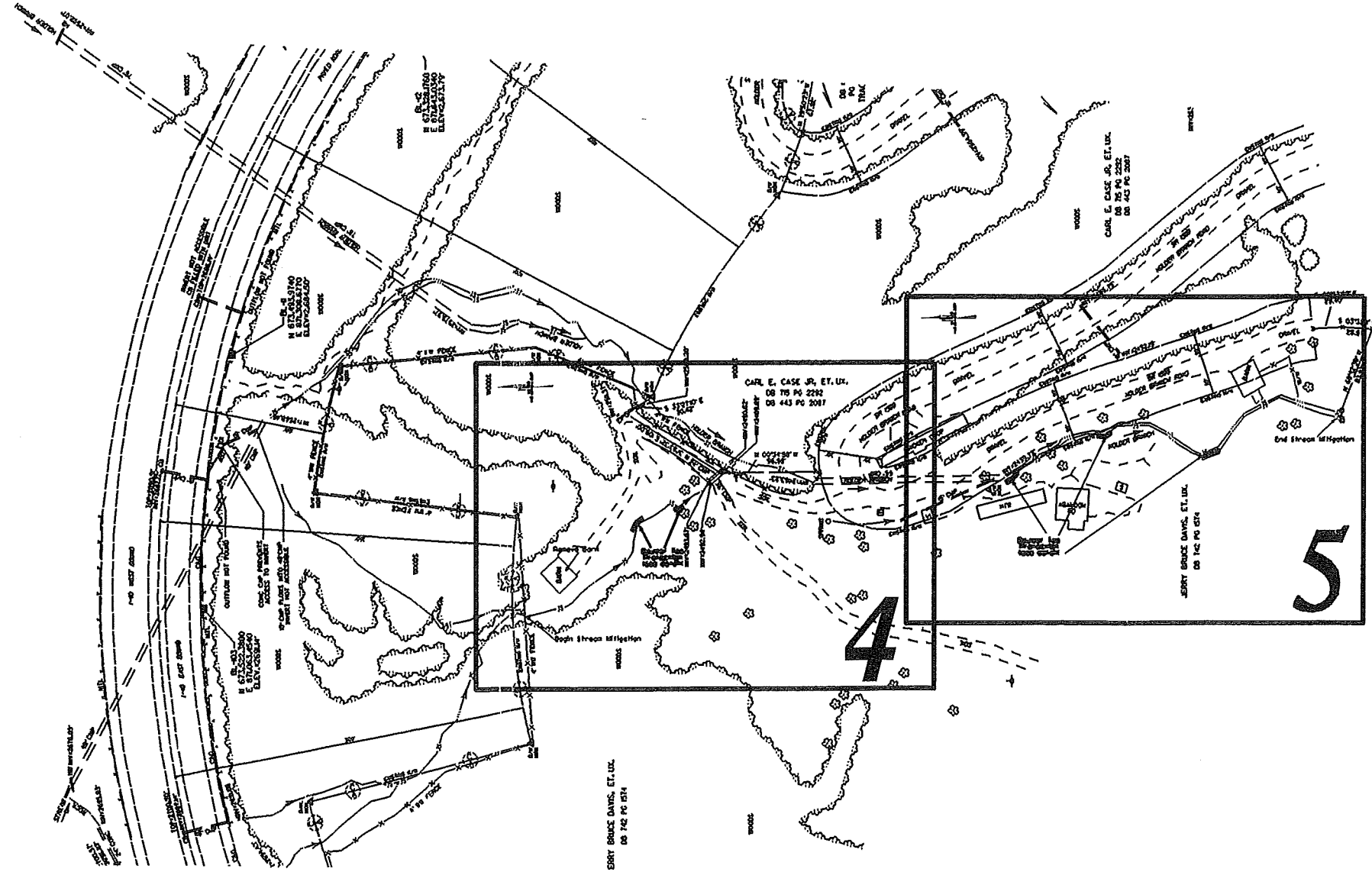
TYPE OF WORK: STREAM MITIGATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5402	OSM-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
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46282.2.1	IMS-040-1(220)35	RAW & UTILITIES CONSTRUCTION	

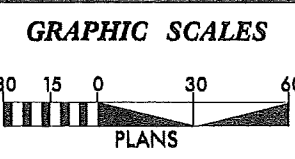


TIP PROJECT: I-5402

CONTRACT: 46282.2.1



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA

PROJECT LENGTH

TOTAL STREAM LENGTH = 615 FEET

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 27, 2011

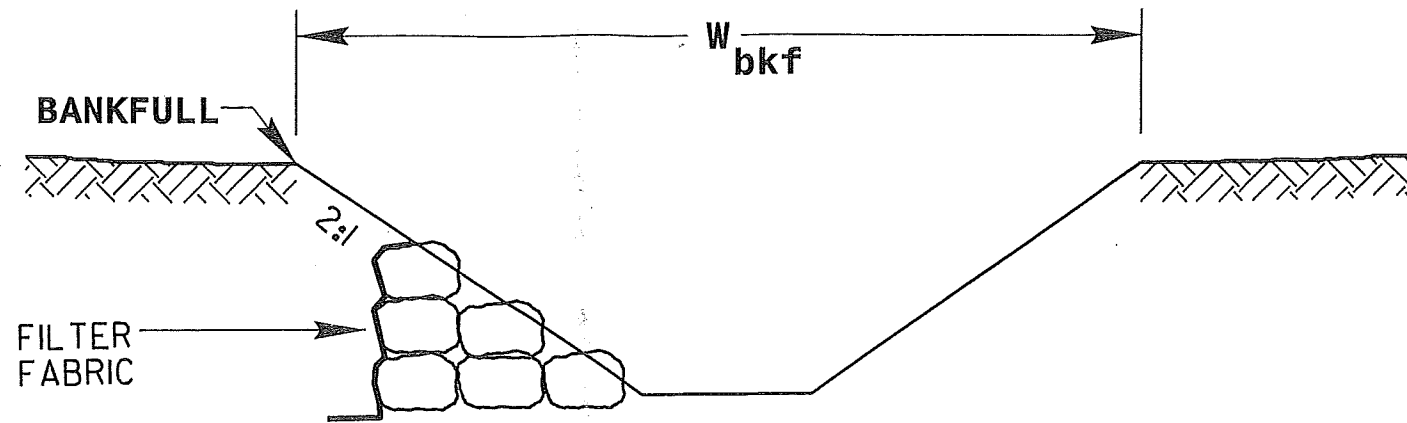
LETTING DATE:
NOVEMBER 18, 2012

JAMIE LANCASTER, PE
PROJECT ENGINEER

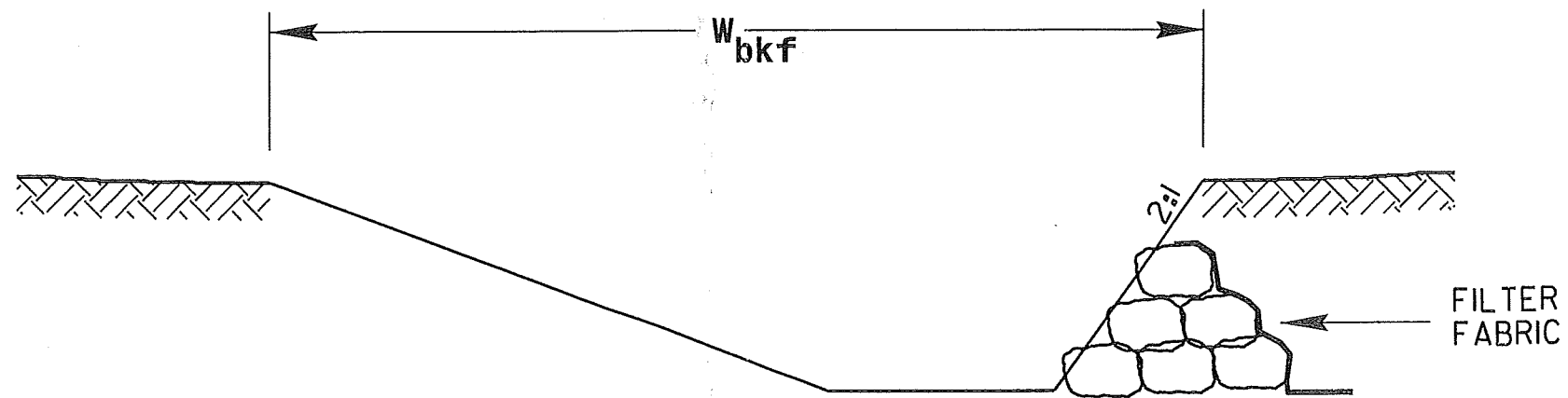
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



PROJECT REFERENCE NO. 1-5402	SHEET NO. OSM-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS <small>DO NOT USE FOR ACQUISITION</small>	
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	



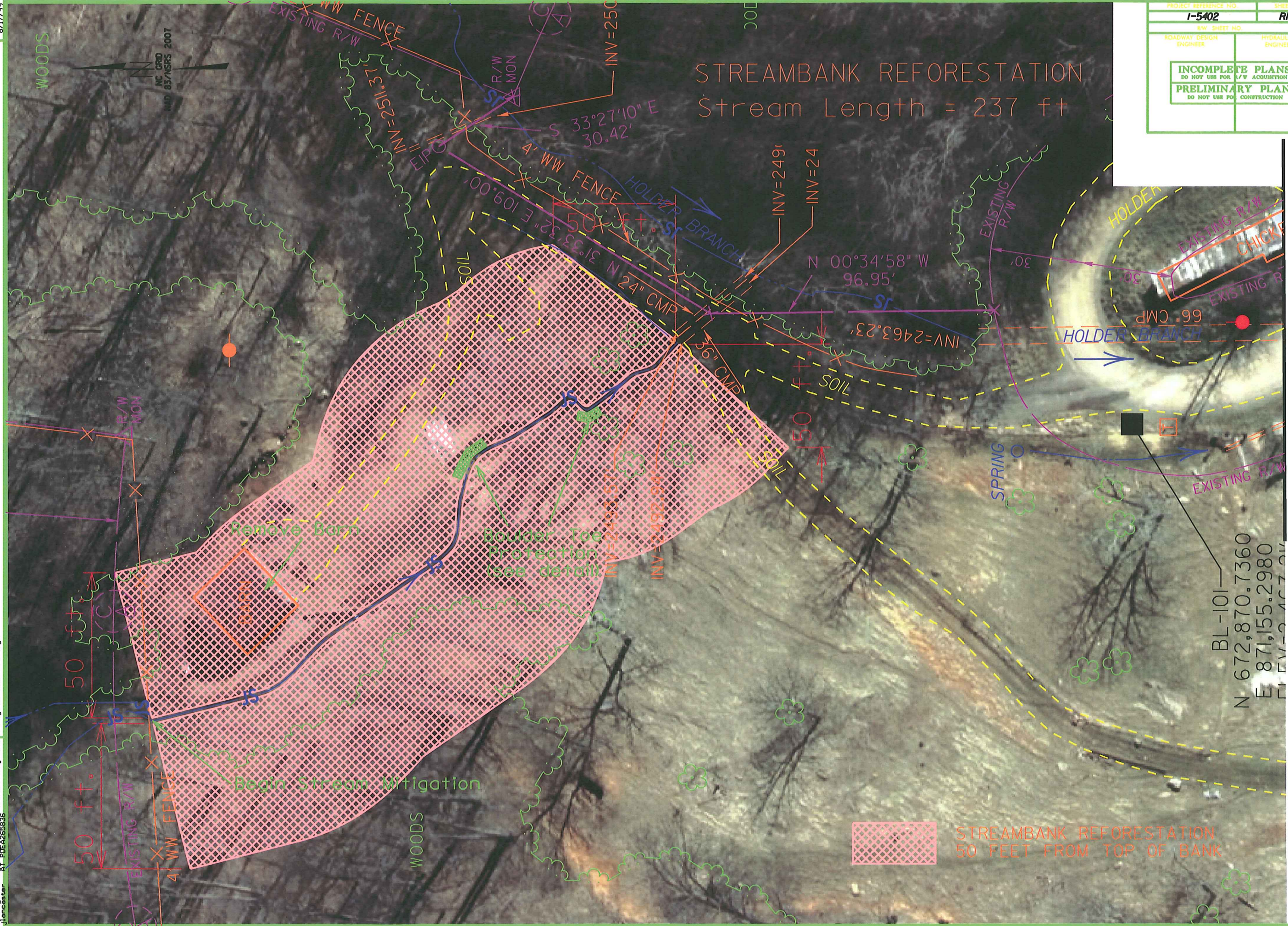
**TYPICAL RIFFLE WITH
BOULDER TOE PROTECTION**



**TYPICAL POOL WITH
BOULDER TOE PROTECTION**

8/17/05
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8/17/99
28-SEP-2012 08:50
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Planner



PROJECT REFERENCE NO.	SHEET NO.
I-5402	RF-1
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	CONSTRUCTION
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

REVISIONS

MATCH LINE

STREAMBANK REFORESTATION
50 FEET FROM TOP OF BANK

8/17/99

PROJECT REFERENCE NO. 1-5402	SHEET NO. RF-2
RDW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

STREAMBANK REFORESTATION

Stream Length = 378 ft

MATCH LINE



Note:
 Approximately 160 feet of left hand bank below the pipe outlet will not have a 50 foot buffer planted. The buffer is only about 10 feet at this location. A 50 foot buffer will be planted on the rest of the stream.

 STREAMBANK REFORESTATION

REVISIONS

25 SEP 2012 08:51
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 jancaster

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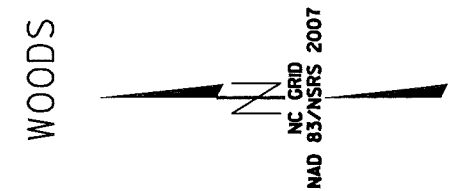
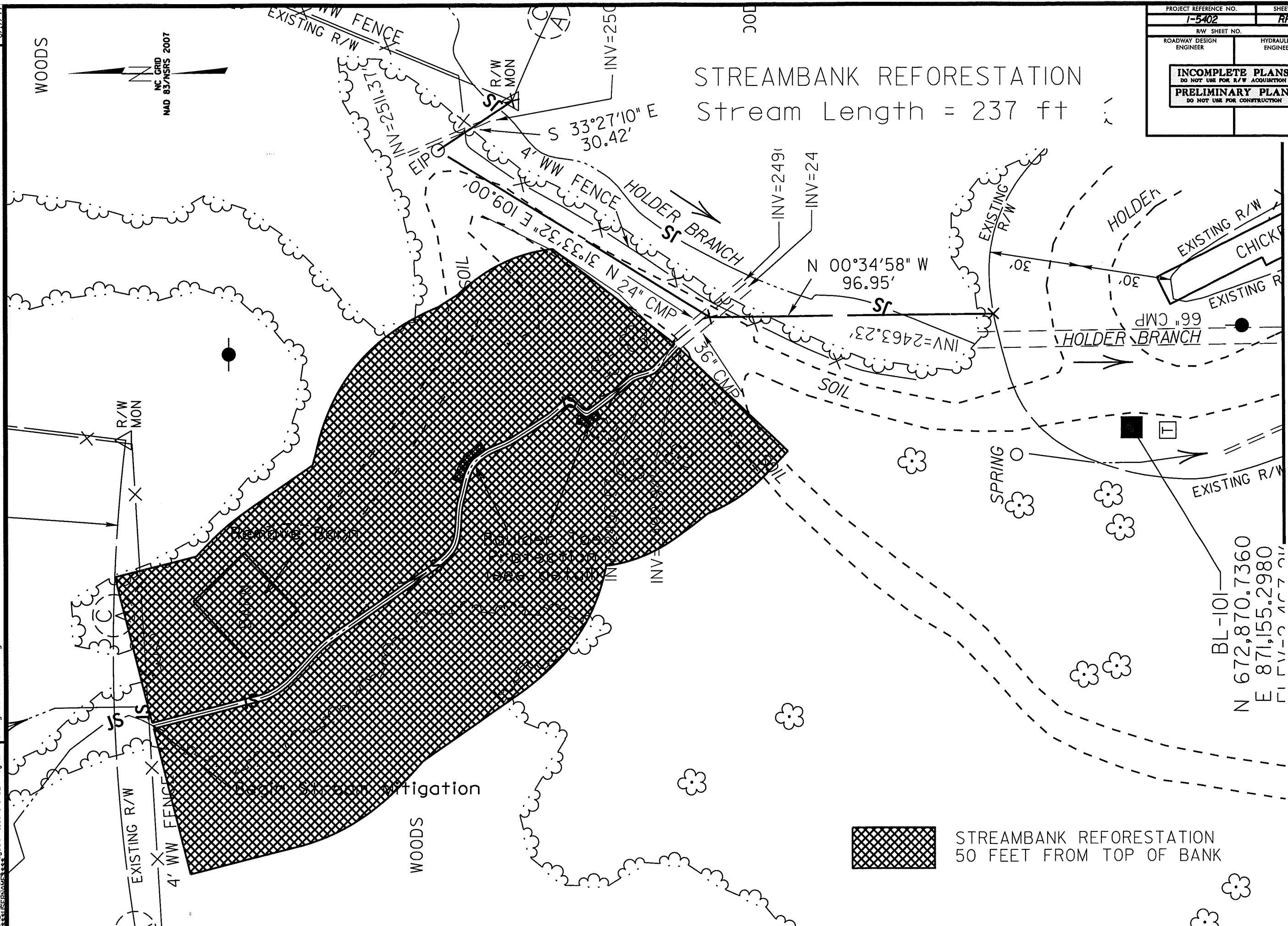
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JERRY BRUCE DAVIS, ET. UX.
 DB 742 PG 1574

PROJECT REFERENCE NO. I-5402	SHEET NO. RF-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

STREAMBANK REFORESTATION

Stream Length = 237 ft



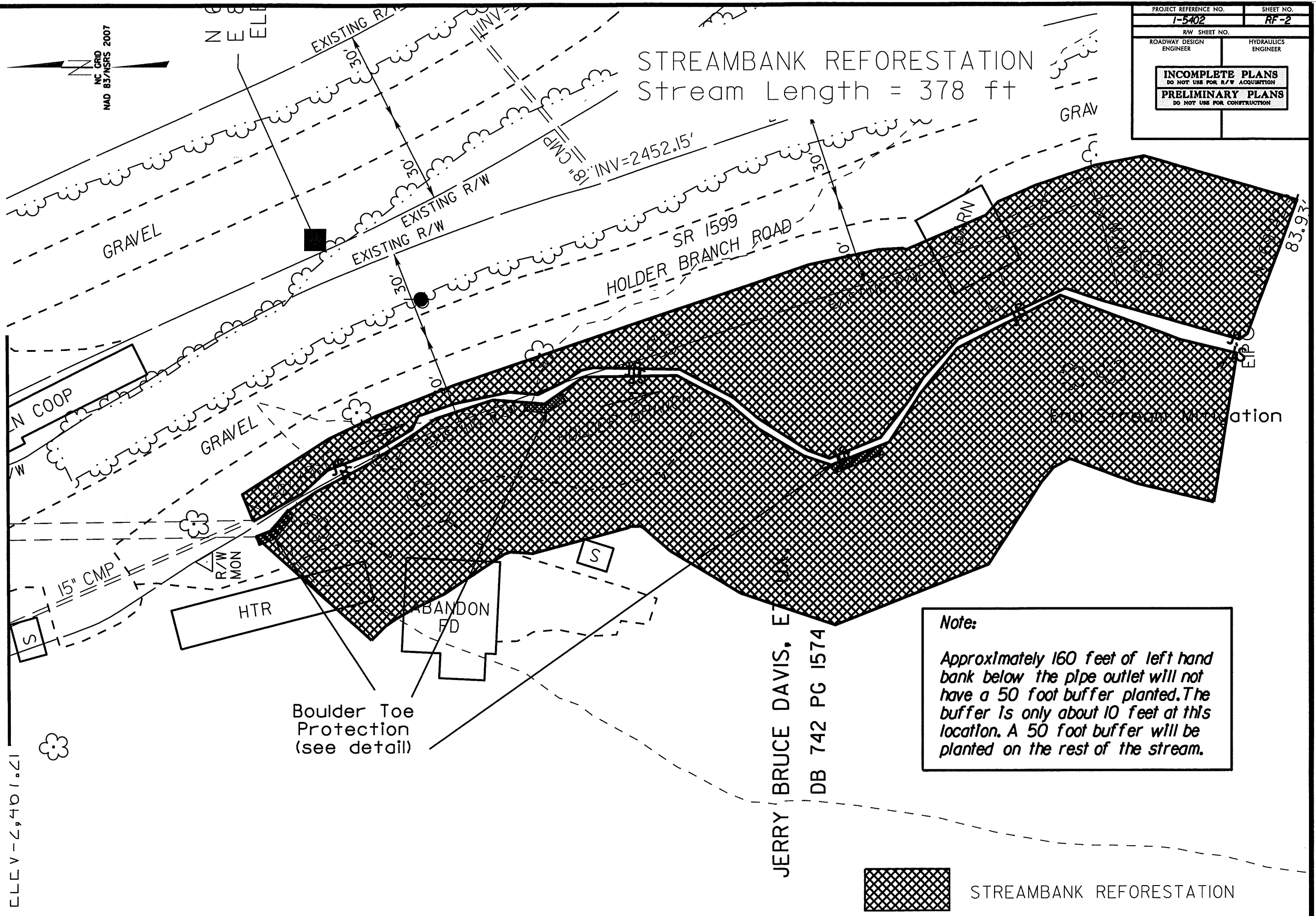
STREAMBANK REFORESTATION
50 FEET FROM TOP OF BANK

BL-101
N 672,870.7360
E 871,155.2980

28-SEP-2012 08:22 Project Files\I-5402\Proj\15402_Mitigation_DSM4_ref.dgn
 8/17/99
 REVISIONS

PROJECT REFERENCE NO. 1-5402	SHEET NO. RF-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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Stream Length = 378 ft



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 STREAMBANK REFORESTATION

JERRY BRUCE DAVIS, EIT
DB 742 PG 1574

MATCH LINE

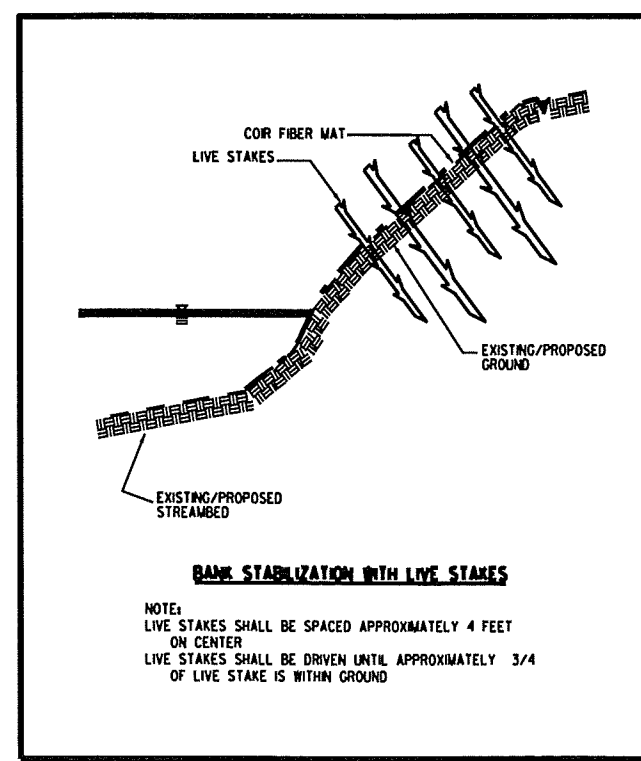
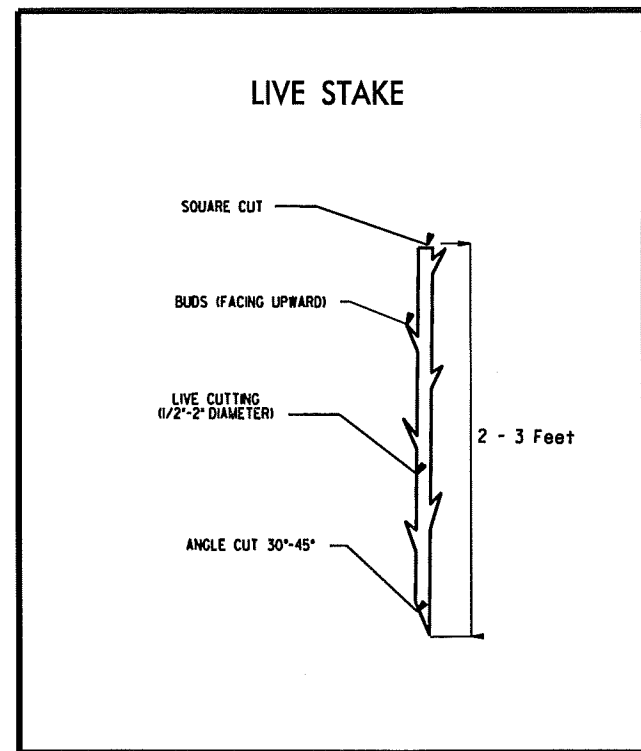
NC GRID
MAD 83/NSRS 2007

REVISIONS

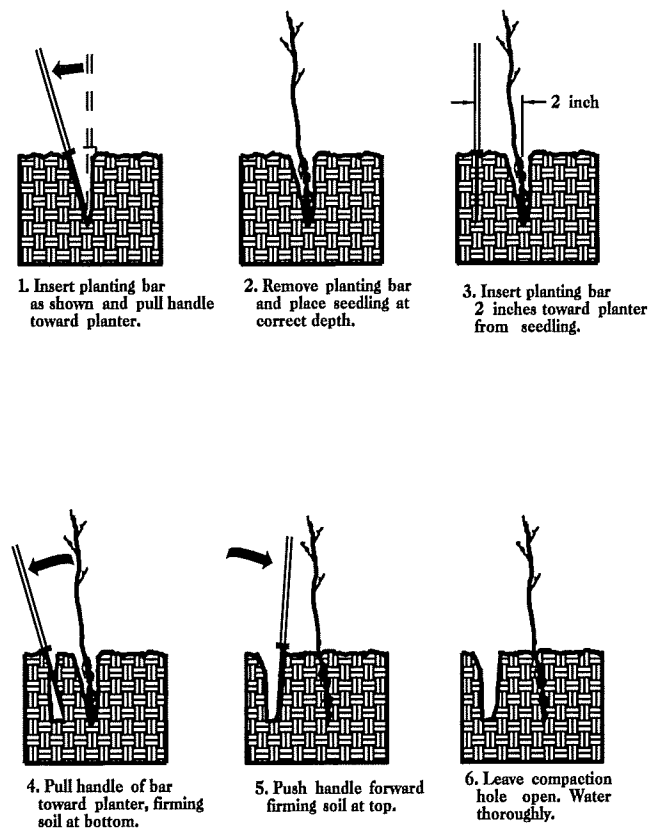
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PLANTING DETAILS

LIVE STAKES PLANTING DETAIL



BAREROOT PLANTING DETAIL DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



PLANTING NOTES:

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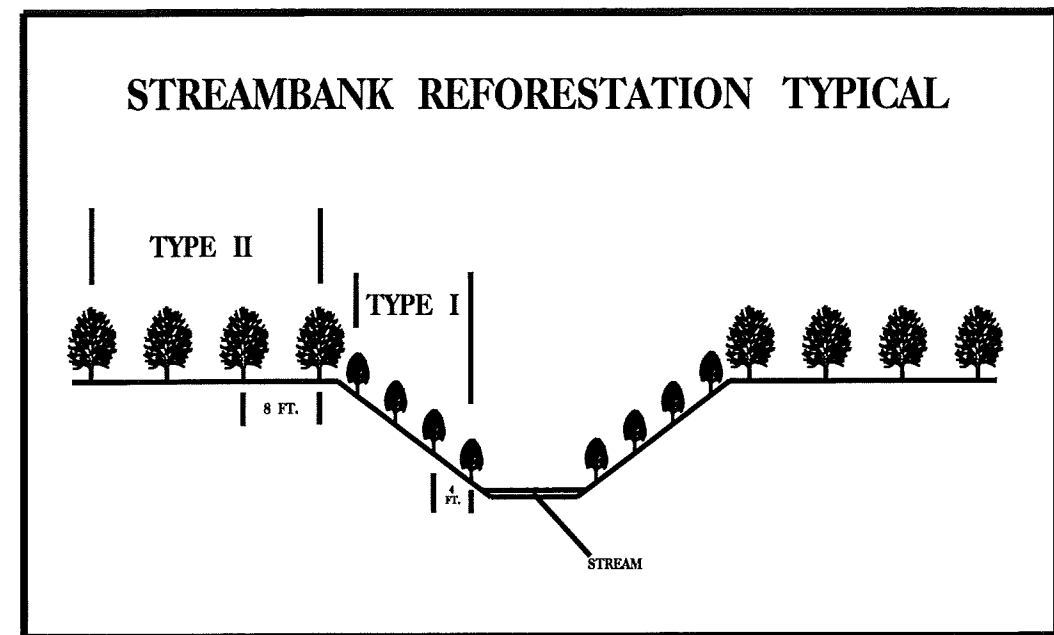
KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

- TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.
- TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.
- NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"

STREAMBANK REFORESTATION TYPICAL



STREAMBANK REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

TYPE 1

50% SALIX NIGRA	BLACK WILLOW	2 ft - 3 ft LIVE STAKES
50% CORNUS AMOMUM	SILKY DOGWOOD	2 ft - 3 ft LIVE STAKES

TYPE 2

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in BR
25% QUERCUS ALBA	WHITE OAK	12 in - 18 in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR

- SEE PLAN SHEETS FOR AREAS TO BE PLANTED

STREAMBANK REFORESTATION

DETAIL SHEET 1 OF 1

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT