



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

September 19, 2014

Washington Regulatory Field Office
US Army Corps of Engineers
2407 West 5th St.
Washington, North Carolina 27889

ATTN: Mr. Tom Steffens
NCDOT Coordinator

Dear Sir:

Subject: **Application for Section 404 Individual Permit, Tar-Pamlico Riparian Buffer Authorization and Section 401 Water Quality Certification** for the proposed replacement of Bridge Nos. 85, 141, 151 and Culvert No. C70 on US 301 over Swift Creek and Culvert No. C161 on US 301 over Lane Swamp in Nash County. Federal Aid Project No. BRSTP-0301(25), TIP No. B-5124. Debit \$570.00 from WBS 42270.1.1.

The North Carolina Department of Transportation (NCDOT), Division of Highways, in consultation with the Federal Highway Administration (FHWA), proposes to replace Bridge Nos. 141, 151, 85, and Culverts C70 and C161 on US 301 in Nash County.

The purpose of this letter is to request approval for a Section 404 Individual Permit, Tar-Pamlico Buffer Authorization and Section 401 Water Quality Certification. In addition to the cover letter, this application package includes the following for B-5124: ENG Form 4345, stormwater management plan, permit drawings, roadway plans, EEP acceptance letter, and USFWS Concurrence Letter.

1.0 Purpose and Need

The purpose for this project, as identified in the Categorical Exclusion (CE), is replace the either functionally obsolete or structurally deficient bridges and bring US 301 shoulder width up to current design standards, thus necessitating the culvert extensions.

2.0 Project Description

The project involves replacing Bridge Nos. 85, 141, and 151 and Culvert Nos. C70 and C161 along US 301.

3.0 Summary of Impacts

Waters of the U.S.: Proposed permanent impacts to jurisdictional areas total 4.17 acres of permanent wetland impacts and 108 feet of permanent stream impacts.

4.0 Summary of Mitigation

The proposed construction of B-5124 will impact 4.17 acres of riparian wetlands that will require mitigation. See attached EEP acceptance letter for additional information.

5.0 Project Schedule

Currently, B-5124 has a review date of March 3, 2015 and is scheduled to let April 21, 2015; it will be available for construction shortly thereafter. The let date, however, may advance as additional funds become available.

6.0 NEPA Document Status

The FHWA and NCDOT completed the CE in December 2013 in compliance with the NEPA guidelines. The CE explains the purpose and need for the project, provides a description of the alternatives considered, and characterizes the social, economic, and environmental effects. The CE was approved and circulated to federal, state, and local agencies. This document is posted on the NCDOT website at <https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx>, under *Quick Links > Environmental Documents*.

6.1 Independent Utility

B-5124 is in compliance with 23 CFR Part 771.111(f) which lists the FHWA characteristics of the independent utility of a project. The project meets the criteria for independent utility as discussed below:

- The project has logical termini and independent utility and is of sufficient length to address environmental matters on a broad scope;
- The project is usable and a reasonable expenditure of funds, even if no additional transportation improvements are made in the area; and
- The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

7.0 Resource Status

The project is located in the Tar-Pamlico River basin and lies within Hydrologic Unit 03020101 (Subbasin 28-78-(0.5)). This is within the Middle Atlantic Coastal Plain eco-region. The project crosses Swift Creek, as well as several tributaries to waters of the U.S., and multiple wetlands. Wetland and stream delineations were completed April 23, 2009. Jurisdictional areas within the project study area were field reviewed by the USACE (William Westcott) May 28, 2009.

7.1 Wetland Delineations

A wetland identification and preliminary assessment analysis for the study area was performed and summarized in the 2009 Natural Resources Technical Report (NRTR) and 2012 NRTR Addendum. The wetlands within the study area were delineated based on the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual and a preliminary design was prepared to avoid and minimize wetlands to the maximum extent possible.

7.2 Stream Delineations

The stream channels within the project study area were identified, evaluated, and classified using the NCDWQ stream identification form and the Cowardin classification system. Water quality information for the streams within the project study area was derived from available sources provided through the NCDENR.

7.3 B-5124: Characterization of Jurisdictional Sites

7.3.1 Wetlands

There is one wetland type found within the project study area based on the NC Wetland Assessment Method (NC WAM): Riverine Swamp Forest. More detailed information about these wetlands can be found in the CE and the NRTR which includes figures showing the wetlands within the project area.

7.3.2 Streams

The Best Usage Classification for the Swift Creek, UT's to Swift Creek and Lane Swamp, on the project is "C; NSW". Details for the jurisdictional streams within the project area are provided in the CE and NRTR.

There are no waters within the project vicinity classified as High Quality Waters (HQW). Neither Water Supplies (WS-I: undeveloped watersheds or WS-II: predominately undeveloped watersheds), nor Outstanding Resource Waters (ORW) occur within 1.0 mile of the project area. Streams within the B-5124 project area are not designated as North Carolina Natural or Scenic Rivers, or as National Wild and Scenic Rivers. Additionally, these waters are not listed on the 2014 303(d) list of impaired waters due to sedimentation or turbidity.

7.4 Impacts to Jurisdictional Resources

Impacts to jurisdictional wetlands and surface waters for B-5124 are summarized below in Tables 1 and 2 respectively.

Table 1. B-5124 Wetlands Impacts

Permit Drawing Site Number (2014)	Map Label in CE (2013)	Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)	Mitigation Required* (2:1)
1	WA & WB	Riverine Swamp Forest	0.39		Yes
2	WA & WB	Riverine Swamp Forest	1.10	0.02	Yes
3	WA & WB	Riverine Swamp Forest	1.22		Yes
4	WA & WB	Riverine Swamp Forest	0.75	0.01	Yes
5	WA & WB	Riverine Swamp Forest	0.69		Yes
Total Riparian:			4.17**	0.03	
Total Non-riparian:			0.00	0.00	
Grand Total:			4.17**	0.03	

* For permanent jurisdictional wetland impacts

**Rounded totals are sum of actual impacts

Table 2. B-5124 Surface Water Impacts

Permit Drawing Site Number	Waterbody Labeled in CE	Permanent (ft)	Permanent (ac.)	Temporary (ft)	Temporary (ac.)	USACE Mitigation Required (2:1)
1	UT to Swift Creek	18	0.03	32	0.02	No
1*	UT to Swift Creek	20				No
2	UT to Swift Creek		<0.01	56	0.05	No
3	UT to Swift Creek	5	<0.01	12	0.10	No
4	Swift Creek		<0.01	73	<0.01	No
5	Lane Swamp	19	0.02	54	0.03	No
5*	Lane Swamp	46	0.03			No
Total:		108	0.09	227	0.21	

*Denotes bank stabilization; when necessary, mitigation required by the USACE exceeds the amount required by NCDWR

Permanent Impacts: Proposed permanent impacts for B-5124 include fill, excavation, and mechanized clearing in 4.17 acres of riparian wetlands. Proposed permanent impacts to jurisdictional streams are 108 linear feet. Bank stabilization totals 66 linear feet.

Temporary Impacts: There will be 227 linear feet of temporary impacts to jurisdictional streams due to culvert installations.

Riparian Buffer Impacts: This project is located in the Tar-Pamlico River Basin; therefore, the regulations pertaining to the Tar-Pamlico River Buffer Rules apply. There will be 13,596 ft² of impacts to riparian buffers. This includes 8,384 ft² in Zone 1 and 5,215 ft² due to the bridge and culvert crossings.

Utility Impacts: There are no jurisdictional impacts resulting from utility relocations on this project.

8.0 Protected Species

The United States Fish and Wildlife Service (USFWS) list 3 federally protected species for Nash County as of the December 27, 2012 listing (Table 3).

Table 3. Federally Protected Species in Nash County

Common Name	Scientific Name	Federal Status	Habitat	Biological Conclusion
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	No	No Effect
Dwarf wedgemussel	<i>Alasmidonta heterodon</i>	E	No	MA-NLAA
Tar River spinymussel	<i>Elliptio steinstansana</i>	E	No	MA-NLAA

E - Endangered ; MA-NLAA – May Affect-Not Likely to Adversely Affect

Dwarf wedgemussel and Tar River spinymussel

Mussel surveys were conducted on May 6, 2009 and August 24, 2011 by NCDOT biologists. During the survey, no mussels or mollusks of any kind were encountered. The dwarf wedgemussel and Tar River spinymussel appear to be limited to creeks and rivers having moving, well-oxygenated water with gravel or sandy, silt-free substrate. Due to little water movement and the presence of large amounts of decaying organic material, this reach of Swift Creek is likely to have low dissolved oxygen and low pH, making it unstable for these species. Subsequent surveys were performed for Lane Swamp and Ut crossings. No suitable habitat for either species was found in these surveys. Because dwarf wedgemussel and Tar River spinymussel have been found in the Swift Creek watershed, their presence in the project area cannot be entirely ruled out. Therefore, the biological conclusion for the dwarf wedgemussel and Tar River spinymussel is “May Affect- Not Likely to Adversely Affect”. Concurrence was issued September 3, 2010 by the USFWS for Swift Creek (see attached).

8.1 Bald and Golden Eagle Protection Act (BGPA)

In the July 9, 2007 Federal Register (72:37346-37372), the bald eagle was declared recovered, and removed (de-listed) from the Federal List of Threatened and Endangered wildlife. This delisting took effect August 8, 2007. After delisting, the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668d) became the primary law protecting bald eagles. While a few large trees are present in the study area, the canopy is too closed to provide foraging habitat for bald eagle. In addition, the NCNHP database (updated July 2014) does not indicate any occurrences of bald eagle within 1.0 mile of the study area.

8.2 *Moratoria*

Anadromous fish moratorium February 15 – June 15 for Bridge Nos. 141 and 151. The moratorium does not apply to Bridge No. 85 nor Culverts 70 and 161.

9.0 *Cultural Resources*

NCDOT – Human Environment Section, under the provisions of a Programmatic Agreement with FHWA, NCDOT, HPO, OSA and the Advisory Council on Historic Preservation (effective July 1, 2009), reviewed the proposed project and determined that no surveys are required.

10.0 *FEMA Compliance*

The project has been coordinated with appropriate state and local officials and the Federal Emergency Management Agency (FEMA) to assure compliance with FEMA, state, and local floodway regulations.

11.0 *Mitigation Options*

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

11.1 Avoidance and Minimization

All jurisdictional features were delineated, field verified and surveyed within the corridor for B-5124. Using these surveyed features, preliminary designs were adjusted to avoid and/or minimize impacts to jurisdictional areas. NCDOT employs many strategies to avoid and minimize impacts to jurisdictional areas in all of its designs. Many of these strategies have been incorporated into BMP documents that have been reviewed and approved by the resource agencies and which will be followed throughout construction. All wetland areas not affected by the project will be protected from unnecessary encroachment. Individual avoidance and minimization items are as follows:

- No staging of construction equipment or storage of construction supplies will be allowed in wetlands or near surface waters.
- The project was designed to avoid or minimize disturbance to aquatic life movements.
- NCDOT and its contractors will not excavate, fill, or perform land clearing activities within Waters of the U.S. or any areas under the jurisdiction of the USACE, except as authorized by the USACE. To ensure that all borrow and waste activities occur on high ground, except as authorized by permit, the NCDOT shall require its contractors to identify all areas to be used to borrow material, or to dispose of dredged, fill or waste material. Documentation of the location and characteristics of all borrow and disposal sites associated with the project will be

available to the USACE on request.

- Grass Swale treatments have been incorporated in areas where flat slopes can be maintained.
- Proposed culverts will be buried 1 ft. to provide for fish passage.
- All wetlands will receive diffused flow.
- Special Sediment Control Fence will be used where applicable.
- The existing causeway will be utilized to minimize jurisdictional impacts.
- Maintenance of traffic via offsite detour.
- Anadromous fish moratorium February 15 – June 15 for Bridge Nos. 141 and 151. The moratorium does not apply to Bridge No. 85 nor Culverts 70 and 161.
- Bank stabilization at outlets of culverts will not impact the stream bed.
- Considering environmental, hydraulic, and roadway perspectives, 3:1 slopes are proposed within the wetlands.

11.2 Compensation

The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent possible as described above. The unavoidable impacts to Waters of the U.S. will be offset by compensatory mitigation provided by EEP.

12.0 Indirect and Cumulative Effects

The project is not in conflict with any plans, existing land use, or zoning regulation. No change in land use is expected to result from the construction of the project.

13.0 Essential Fish Habitat

The project will not impact any essential fish habitat afforded protection under the Magnuson-Stevens Act of 1996 (16 U.S.C 1801 et seq.).

14.0 Regulatory Approvals

Section 404: Application is hereby made for a USACE Individual 404 Permit as required for the above-described activities.

Section 401: We are requesting a Section 401 Water Quality Certification from NCDWR. We are providing this application to the NCDWR, for their approval. Authorization to debit the \$570 Permit Application Fee from WBS Element 42270.1.1 is hereby given.

Tar-Pamlico River Buffer Authorization: NCDOT requests that the NC Division of Water Resources review this application and issue a written approval for a Tar-Pamlico River Riparian Buffer Authorization.

A copy of this permit application will be posted on the NCDOT Website at <https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx>, under *Quick Links > Permit Applications*. A copy of the CE is also available at the above website address under *Quick Links > Environmental Documents*. Thank you for your assistance with this project. If you have any questions or need additional information, please contact John Merritt at jsmerritt@ncdot.gov or (919) 707-6140

Sincerely,



for

Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit

cc:

NCDOT Permit Application Standard Distribution List.

**U.S. ARMY CORPS OF ENGINEERS
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
33 CFR 325. The proponent agency is CECW-CO-R.**

*Form Approved -
OMB No. 0710-0003
Expires: 31-AUGUST-2013*

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

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

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Richard Middle - W. Last - Hancock, P.E. Company - NCDOT - PDEA E-mail Address -	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS: Address- 1598 Mail Service Center City - Raleigh State - NC Zip - 27699 Country - USA	9. AGENT'S ADDRESS: Address- City - State - Zip - Country -
7. APPLICANT'S PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax 919-707-6140	10. AGENTS PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

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

SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) B-5124	
13. NAME OF WATERBODY, IF KNOWN (if applicable) Swift Creek and tributaries, Lane Swamp	14. PROJECT STREET ADDRESS (if applicable) Address U.S 301 City- Battleboro State- NC Zip- 27809
15. LOCATION OF PROJECT Latitude: +N 36.078573 Longitude: -W -77.748548	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID Municipality Section - Township - Range -	

17. DIRECTIONS TO THE SITE

See attached cover letter

From Battleboro, travel north on US 301 for approximately 1/2 mile to the project site.

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

The project involves the replacement of three bridges and two culverts.

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

This project's purpose is to replace the either functionally obsolete or structurally deficient bridges and bring US 301 shoulder width up to current design standards. See attached cover letter for more information.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Roadway fill due to road construction.

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

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
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See attached cover letter & permit drawings

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

Acres See attached cover letter & permit drawings

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

See attached cover letter

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

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See list provided via email

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

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

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

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

 9-19-2014
SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

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

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



North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Michael Ellison, Director
Ecosystem Enhancement Program

John E. Skvarla, III
Secretary

September 18, 2014

Mr. Richard Hancock
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

Subject: EEP Mitigation Acceptance Letter:

B-5124, Replace Bridge Numbers 85, 141 and 151 over Swift Creek on US 301, Nash County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory riparian wetland mitigation for the subject project. Based on the information received on September 11, 2014, the impacts are located in CU 03020101 of the Tar-Pamlico River basin in the Northern Inner Coastal Plain (NICP) Eco-Region, and are as follows:

Tar-Pamlico 03020101 NICP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	0	4.17	0	0	0	0

EEP, through coordination with the NCDOT, proposes to utilize riparian wetland mitigation credits from the Gregory Mitigation site located in Tar-Pamlico 03020102. This impact and associated mitigation need were under projected by the NCDOT in the 2014 impact data. EEP will commit to provide the riparian wetland mitigation credits from the Gregory Mitigation site to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. Upon receipt of the permit, the debit in the amount required by the issued permit(s) will be made and locked to the Gregory Mitigation site. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-707-8420.

Sincerely,

James B. Stanfill
EEP Asset Management Supervisor

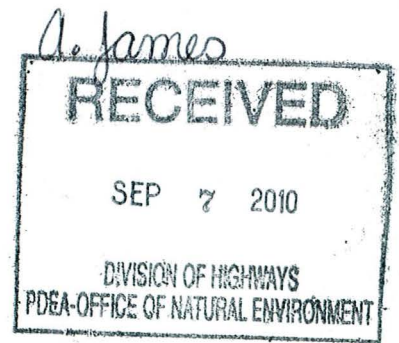
cc: Mr. Tom Steffens, USACE – Washington Regulatory Field Office
Ms. Amy Chapman, Division of Water Resources, 401/Wetlands Unit
File: B-5124



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

September 3, 2010



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:

This letter is in response to your letter of September 1, 2010 which provided the U.S. Fish and Wildlife Service (Service) with the biological conclusion of the North Carolina Department of Transportation (NCDOT) that the replacement of Bridge Nos. 141 and 151 on US 301 over Swift Creek in Nash County (TIP No. B-5124) may affect, but is not likely to adversely affect the federally endangered dwarf wedgemussel (*Alasmidonta heterodon*) and Tar River spinymussel (*Elliptio steinstansana*). These comments are provided in accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

According to information provided, mussel surveys were conducted at the crossing sites on May 6, 2009. The surveys extended 100 meters upstream and 400 meters downstream of the two crossings. No mussels of any species were observed, and suitable habitat was absent at and near the project site. However, the dwarf wedgemussel is known from the Swift Creek watershed several miles upstream in Red Bud Creek, and the Tar River spinymussel is known to occur in Swift Creek several miles upstream and downstream of the project site.

Based on the mussel survey results and other available information, the Service concurs with your determination that the proposed project may affect, but is not likely to adversely affect the dwarf wedgemussel and Tar River spinymussel. We believe that the requirements of Section 7(a)(2) of the ESA have been satisfied for these species. We remind you that obligations under Section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered in this review; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by this identified action.

The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

for 
Pete Benjamin
Field Supervisor

cc: Tom Steffens, USACE, Washington, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC
John Sullivan, FHWA, Raleigh, NC
David Harris, NCDOT, Raleigh, NC



General Project Information

Project No.:	B-5124		Date:	14-Mar-14	
City/Town:			Designer:	Jonathan Whittington, ICA	
County(ies):	Nash County		Project Manager:	Trent Cormier, ICA	
River Basin(s):	Tar-Pamlico		CAMA County?	no	TVA County? no
Primary Receiving Water:	Swift Creek Overflow, Swift Creek, and Lane Swamp		NCDWQ Stream Index:	22-37 (Swift Creek and Overflow) and 28-78-5 (Lane Swamp)	
NCDWQ Surface Water Classification for Primary Receiving Water			Supplemental:	Class C Nutrient Sensitive Waters (NSW)	
Other Stream Classification:					
303(d) Stream?	no	Type(s) of Impairment:			
State Stormwater Permit Required?	no	If yes, why?			
Could the Project Impact Threatened or Endangered Species?	no				
Description:	Dwarf wedgemussel: MA-NLAA; Tar River spiny mussel MA-NLAA				
Anadromous Fish Present?	no				
Description:					
Buffer Rules in Effect?	yes	Buffer Rules:	Tar-Pamlico River Basin		

Existing Site

Description of Existing Project Area:	Rural Coastal Plains, facility type: Minor Arterial				
Average Daily Traffic (existing):	8800				
Existing Cross Section:	open shoulder section, 2 paved lane (total 20' wide), 6' shoulder on each side, 4' paved				
Surrounding Land Use:	rural wooded with wetlands				
General Comments:	existing structures are #C-70: 4@10'x7' RCBC, 37'6" along centerline; #85: 4@24', RC floor on concrete I-beam, RC abutments on piles, interior bents: RC caps/H-piles; #141: 1@17', 4@18', 1@17', RC slab on RC full height abutments, interior bents: RC post & beam; #151: 1@17', 5@18', 1@17', RC slab on RC full height abutments, interior bents: RC caps on RC encased steel H-piles; #C-161: 3@8'x6' RCBC 40.2' along centerline				

Project Description

Description of Proposed Project:	#C-70: retain and extend RCBC 18' upstream; #85: proposed 1@70', 1@55' (24" PCCS w/ 2.5' caps); # 141: proposed 1@35', 1@55', 1@45' (21" PCCS w/ 2.5' caps); #151: proposed 1@40' (21" PCCS w/ 2.5' caps), 1@70' (24" PCCS w/ 2.5' caps), 1@35' (21" PCCS w/ 2.5' caps); #C-161: retain and extend RCBC 19' upstream				
Average Daily Traffic (proposed):	11200				
Proposed Cross-Section:	open shoulder section, 2 paved lane (total 24' wide), 10' shoulder with 4' paved on each side				
Interchange Modification:	no	Median Type:			
Terminus:					
Terminus:					
Project Length (lin. miles/feet):	1.314 miles	Added Impervious Area (ac.):	2.55		
General Comments:					



Released: July 2010 (DRAFT)

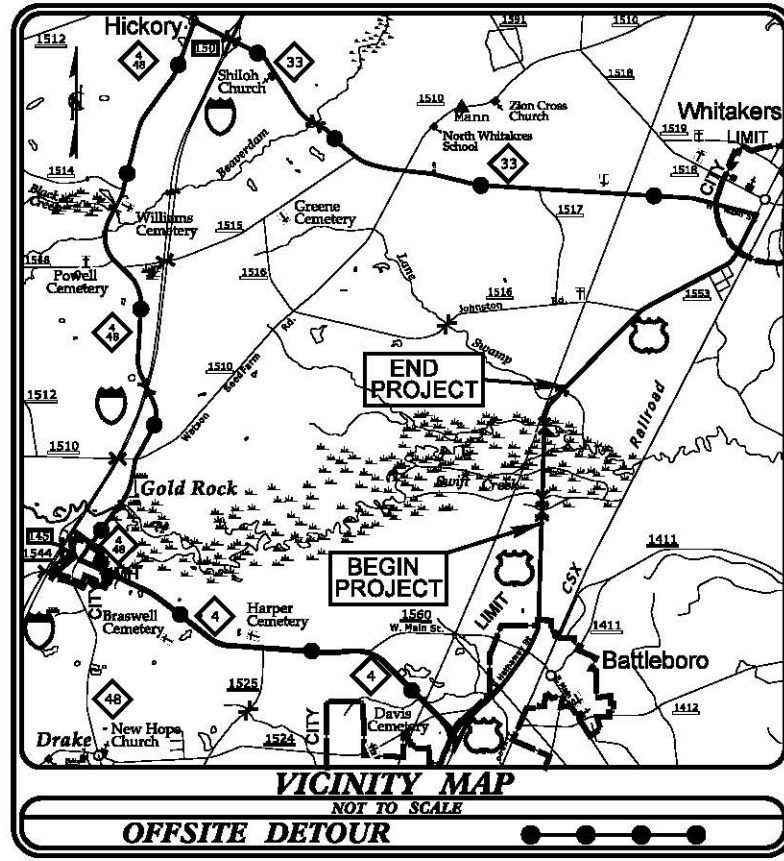


Additional Comments

To avoid direct discharge of bridge storm water into the receiving water, deck drains are not required at each bridge at Sta. 22+49, 36+88.5, and 54+85.5. Storm water impacts to the wetlands have been minimized by utilizing grated inlets and pipes to collect bridge storm water and using rip rap outlet protection at Sta. 23+50 LT & RT, 37+95 RT, and 53+75 RT to dissipate energy to provide a non-erosive sheet flow to the wetlands. All of these outlets are located outside of buffers. The roadway is in fill section at each buffer site at Sta. 36+88.5, 54+85.5, and 74+25. There are no proposed roadside ditches with concentrated flows or storm water conveyances through the buffers and the diffuse flow requirement for the buffer rule is satisfied at each buffer site. The roadway has open shoulder section with 3:1 fill slope to promote sheet flow through grass shoulder and grass fill slope to provide treatment for the stormwater runoff from the pavement (impervious) area before entering the wetlands. The proposed box culvert extensions at sta. 17+17.8 and 74+25 match existing channel geomery to maintain normal flow width, depth, and velocity. This will maintain sediment transport during bankful discharge in order to provide a stable stream (no degradation or agradation will occurs).

09/08/09

See Sheet 1-A For Index of Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
NASH COUNTY

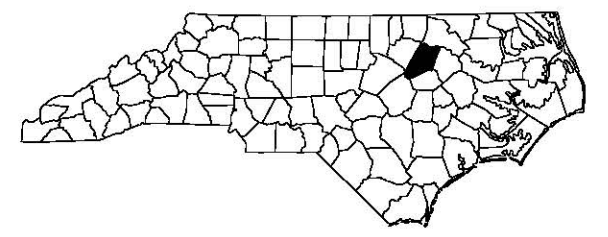
LOCATION: REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301

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

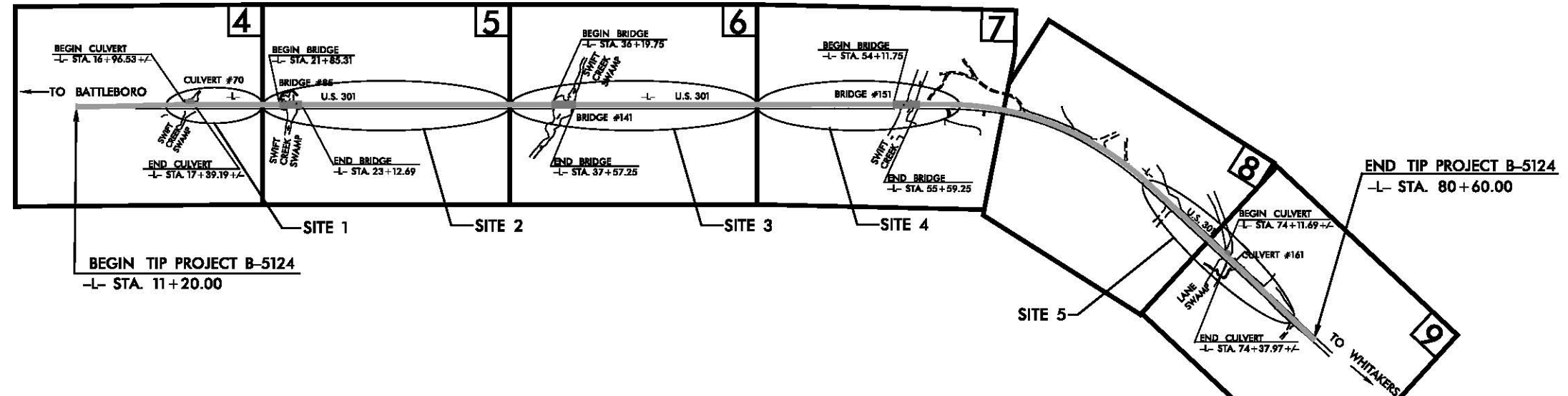


WETLAND AND SURFACE WATER IMPACTS PERMIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5124	1	
STATE PROJECT NO.	F.A. PROJECT NO.	DESCRIPTION	
42270.1.1	BRSTP-0301(25)	P.E.	
42270.2.1	BRSTP-0301(25)	R/W & UTL.	



TIP PROJECT: B-5124

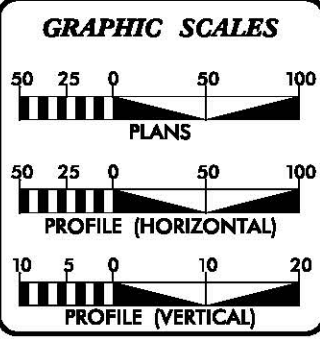


N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 42270.1.1 (B-5124)
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301
SHEET OF PERMIT DRAWING SHEET 1 OF 51

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:



DESIGN DATA

ADT 2015 =	8,800
ADT 2035 =	11,200
K =	10 %
D =	60 %
T =	7 % *
V =	60 MPH
*(TTST = 3% DUALS 4%)	
FUNC CLASS = MINOR ARTERIAL STATEWIDE TIER	

PROJECT LENGTH

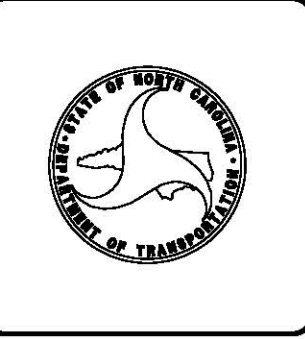
LENGTH ROADWAY TIP PROJECT B-5124 =	1.223 MILES
LENGTH STRUCTURE TIP PROJECT B-5124 =	0.091 MILES
TOTAL LENGTH OF TIP PROJECT B-5124 =	1.314 MILES

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

2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: FEBRUARY 28, 2014	GARY LOVERING, PE PROJECT ENGINEER
LETTING DATE: APRIL 21, 2015	CHRISTOPHER H. LEE PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

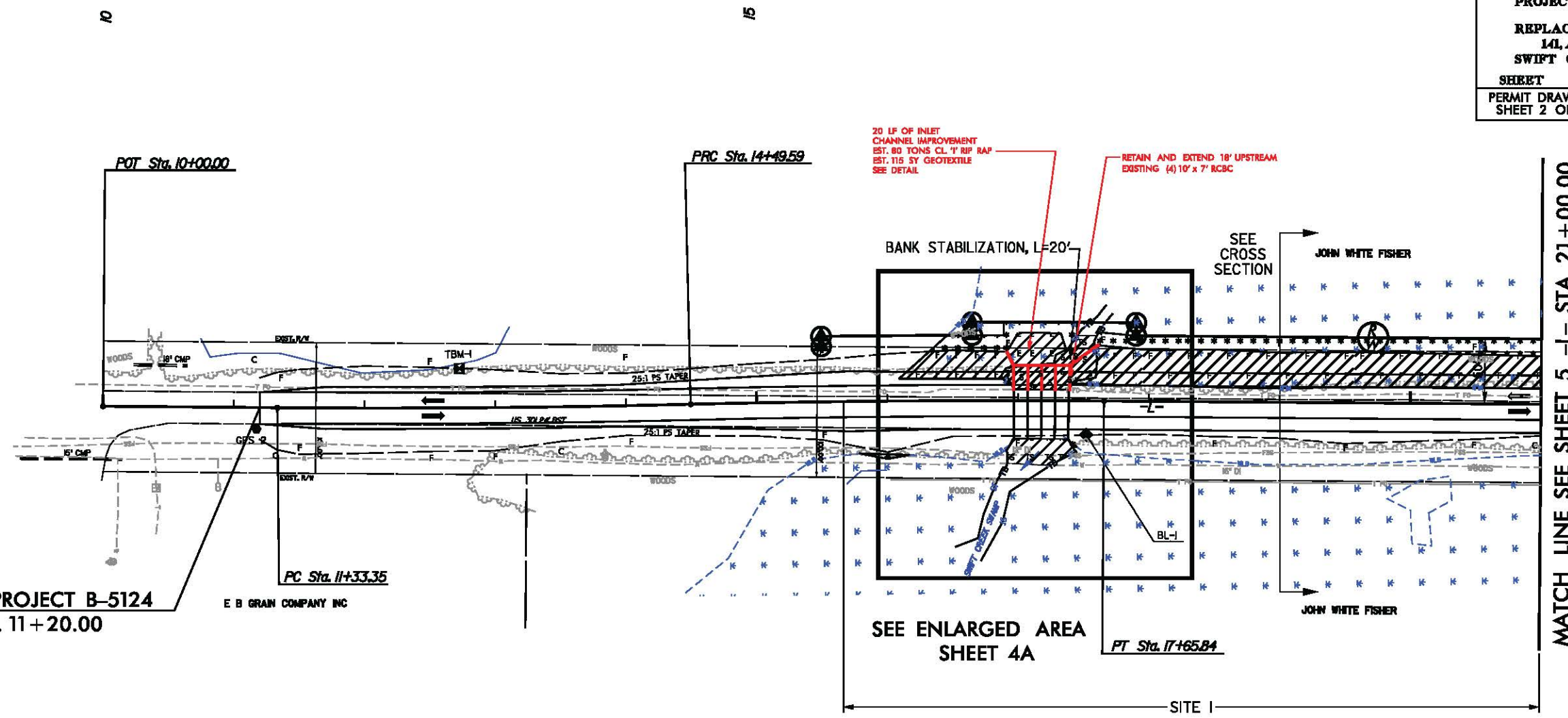
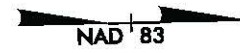
SIGNATURE: _____	P.E.
ROADWAY DESIGN ENGINEER	
SIGNATURE: _____	P.E.



4/22/2014 ICA ENGINEERING, INC. R:\Hydraulics\PERMITS_Environmental\Drawings\B5124_hyd_perm_wet_tsh.dgn

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO. B-5124	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.11 (B-5124)	
REPLACE BRIDGES NO. 86, 141, AND 151 OVER SWIFT CREEK ON US-401	
SHEET OF	
PERMIT DRAWING SHEET 2 OF 51	

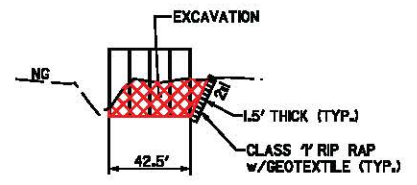


BEGIN TIP PROJECT B-5124
-L- POT STA. 11+20.00
E B GRAIN COMPANY INC

LEGEND

- WLB -- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT
- DENOTES MECHANIZED CLEARING

PLAN VIEW
SITE 1



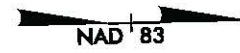
CULVERT 70 INLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

EST. DDE 240 CY

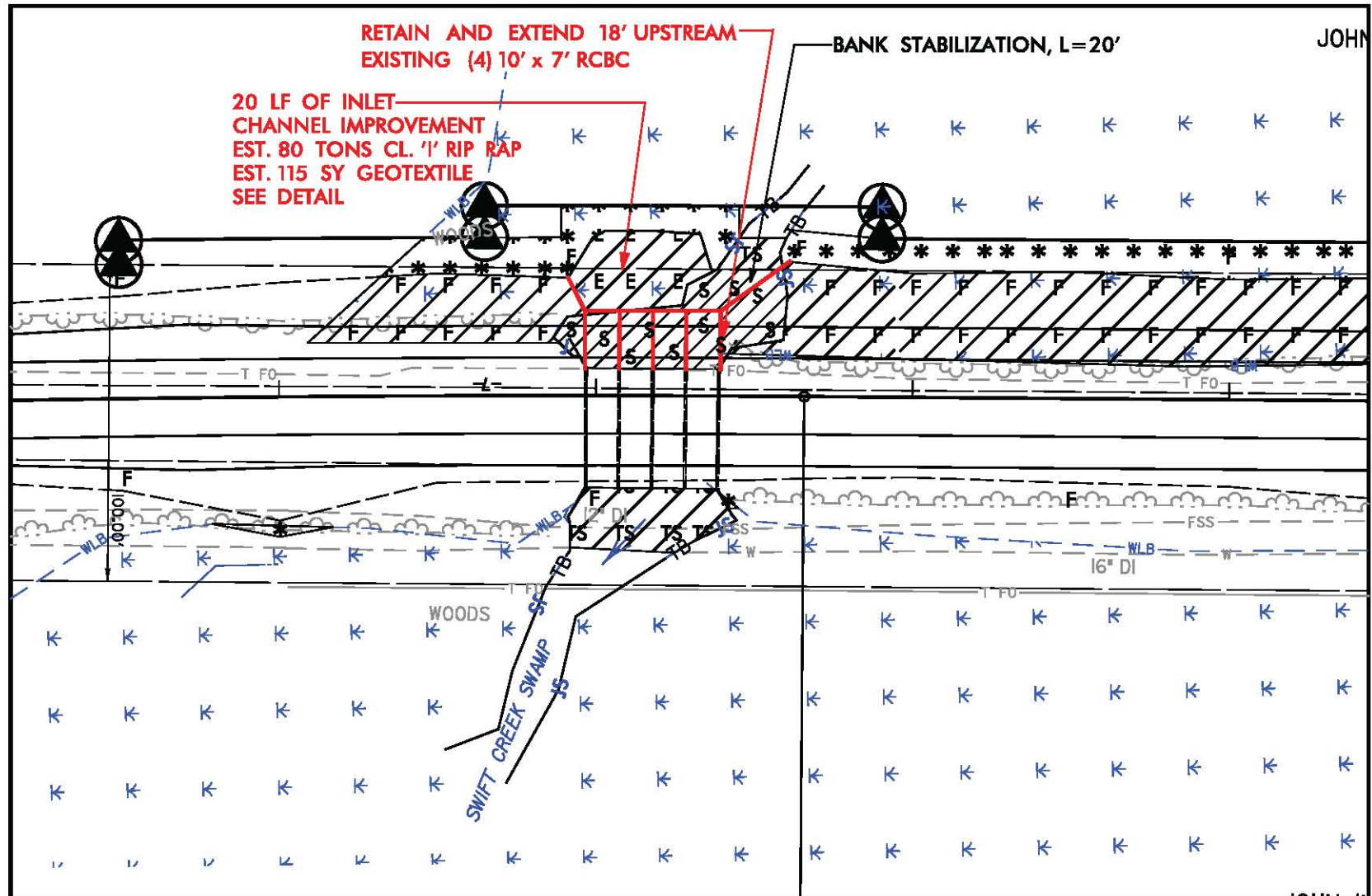
REVISIONS

4/2/2014 ICA ENGINEERING, INC. C:\Hydraulics\PERMITS_Environmental\Drawings\B5124_hyd_perm_wet_pht.dgn

WETLAND AND SURFACE WATER IMPACTS PERMIT



PROJECT REFERENCE NO. B-5124	SHEET NO. 4A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.11 (B-5124)	
REPLACE BRIDGES NO. 86, 141, AND 151 OVER SWIFT CREEK ON US-401	
SHEET OF	
PERMIT DRAWING SHEET 3 OF 51	



**ENLARGED
PLAN VIEW
SITE 1**

- LEGEND**
- DENOTES WETLAND BOUNDARY
 - DENOTES EXCAVATION IN WETLAND
 - DENOTES FILL IN WETLAND
 - DENOTES TEMPORARY SURFACE WATER IMPACT
 - DENOTES PERMANENT SURFACE WATER IMPACT
 - DENOTES MECHANIZED CLEARING



REVISIONS

4/20/14 ICA ENGINEERING, INC. r:\Hydraulics\PERMITS_Environmental\Drawings\B0124_hyd_perm_wet_jph4.dgn

B-17/99

WETLAND AND SURFACE WATER IMPACTS PERMIT

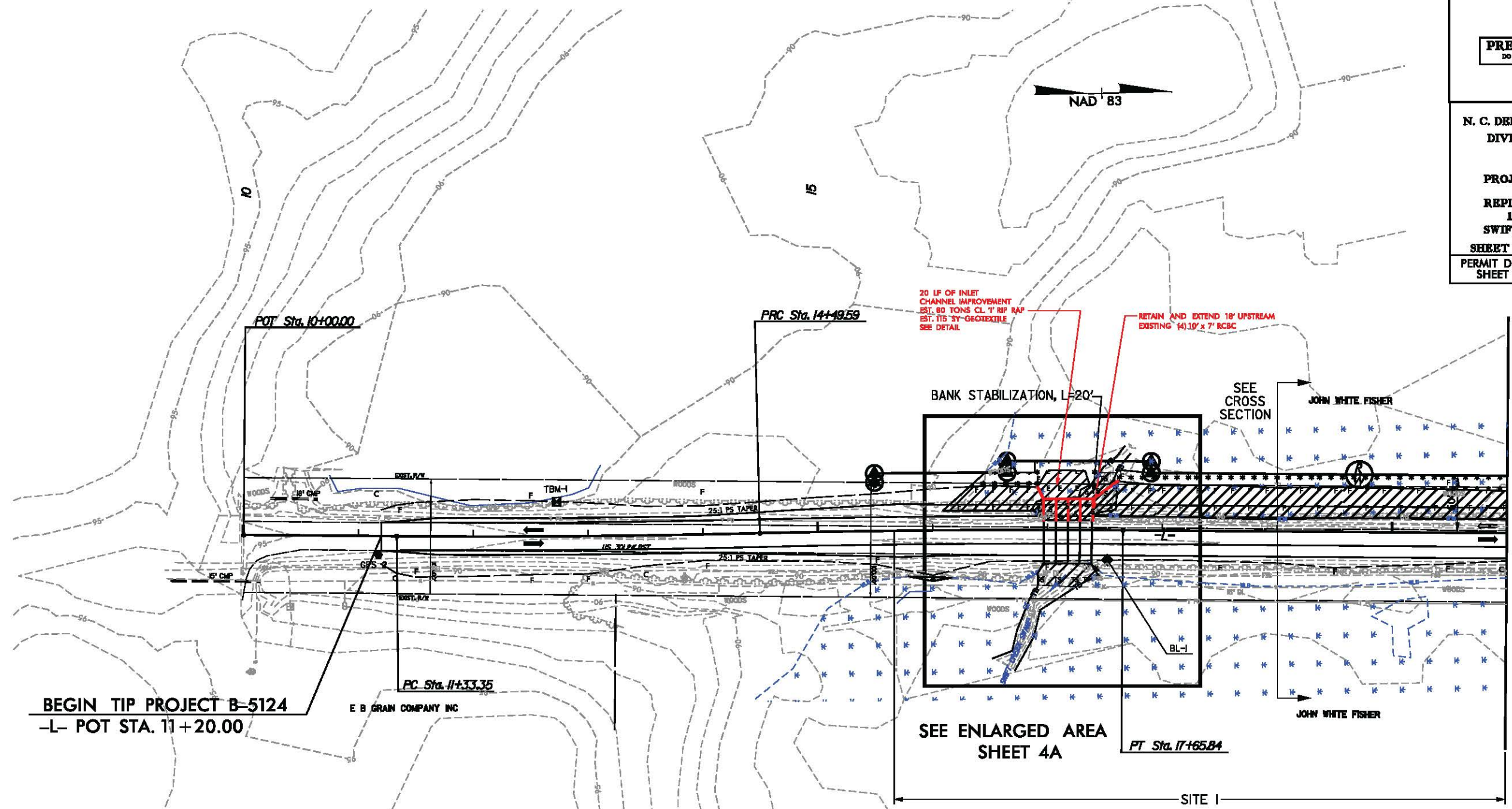
PROJECT REFERENCE NO. B-5124	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

PROJECT: 42270.11 (B-5124)

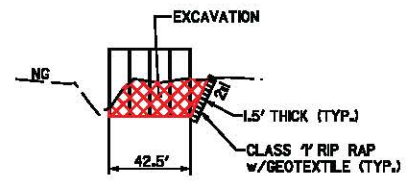
REPLACE BRIDGES NO. 86,
141, AND 151 OVER
SWIFT CREEK ON US-401

SHEET OF
PERMIT DRAWING
SHEET 4 OF 51



- LEGEND**
- WLB -- DENOTES WETLAND BOUNDARY
 - [Hatched Box] DENOTES EXCAVATION IN WETLAND
 - [Hatched Box] DENOTES FILL IN WETLAND
 - [Hatched Box] DENOTES TEMPORARY SURFACE WATER IMPACT
 - [Hatched Box] DENOTES PERMANENT SURFACE WATER IMPACT
 - [Dotted Box] DENOTES MECHANIZED CLEARING

**PLAN VIEW
SITE 1**

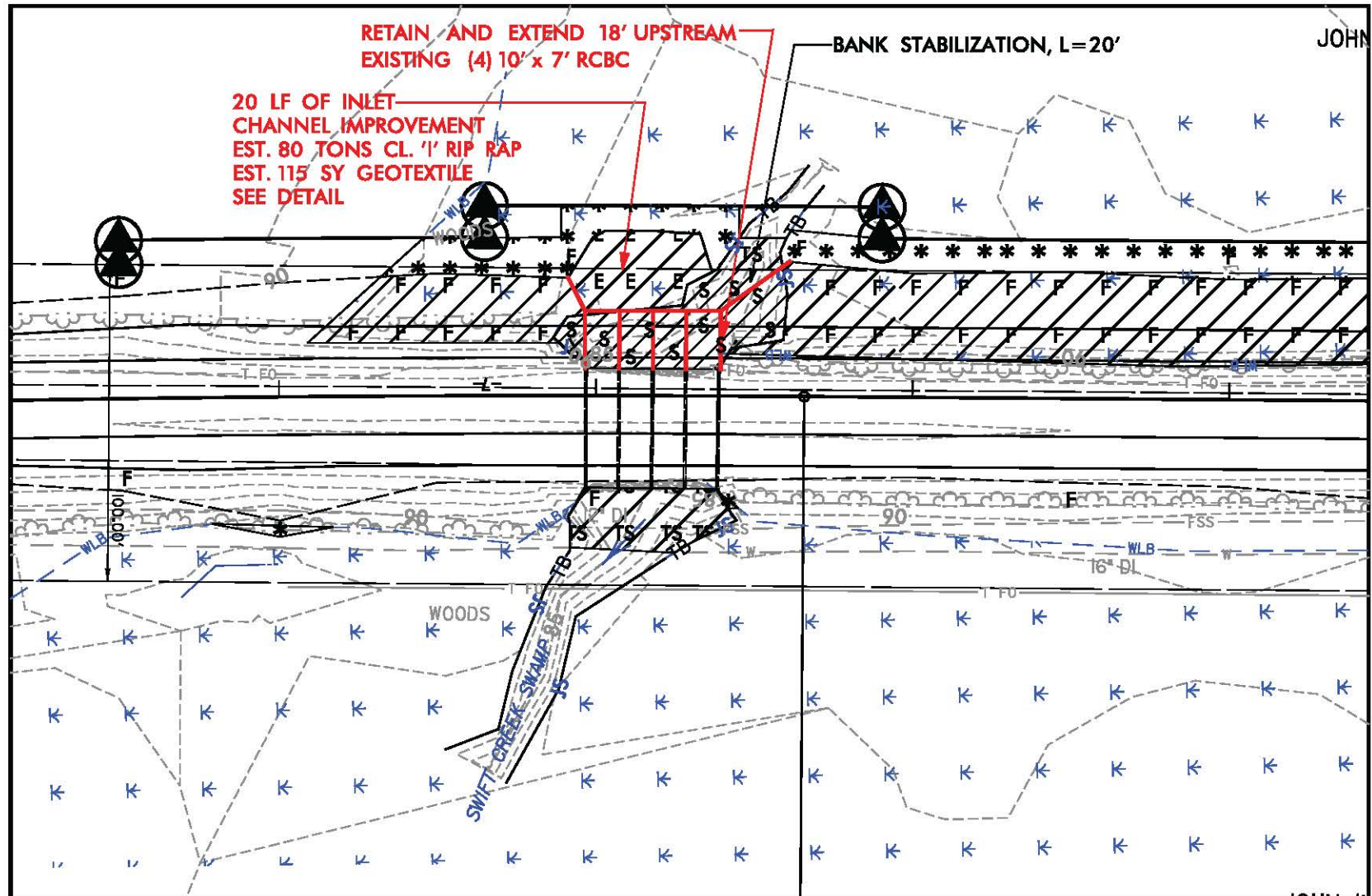
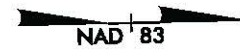


CULVERT 70 INLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

EST. DDE 240 CY

WETLAND AND SURFACE WATER IMPACTS PERMIT

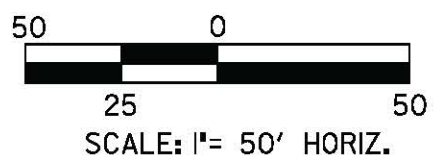
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.11 (B-5124)	
REPLACE BRIDGES NO. 86, 141, AND 151 OVER SWIFT CREEK ON US-401	
SHEET OF PERMIT DRAWING SHEET 5 OF 51	



**ENLARGED
PLAN VIEW
SITE 1**

LEGEND

- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT
- DENOTES MECHANIZED CLEARING

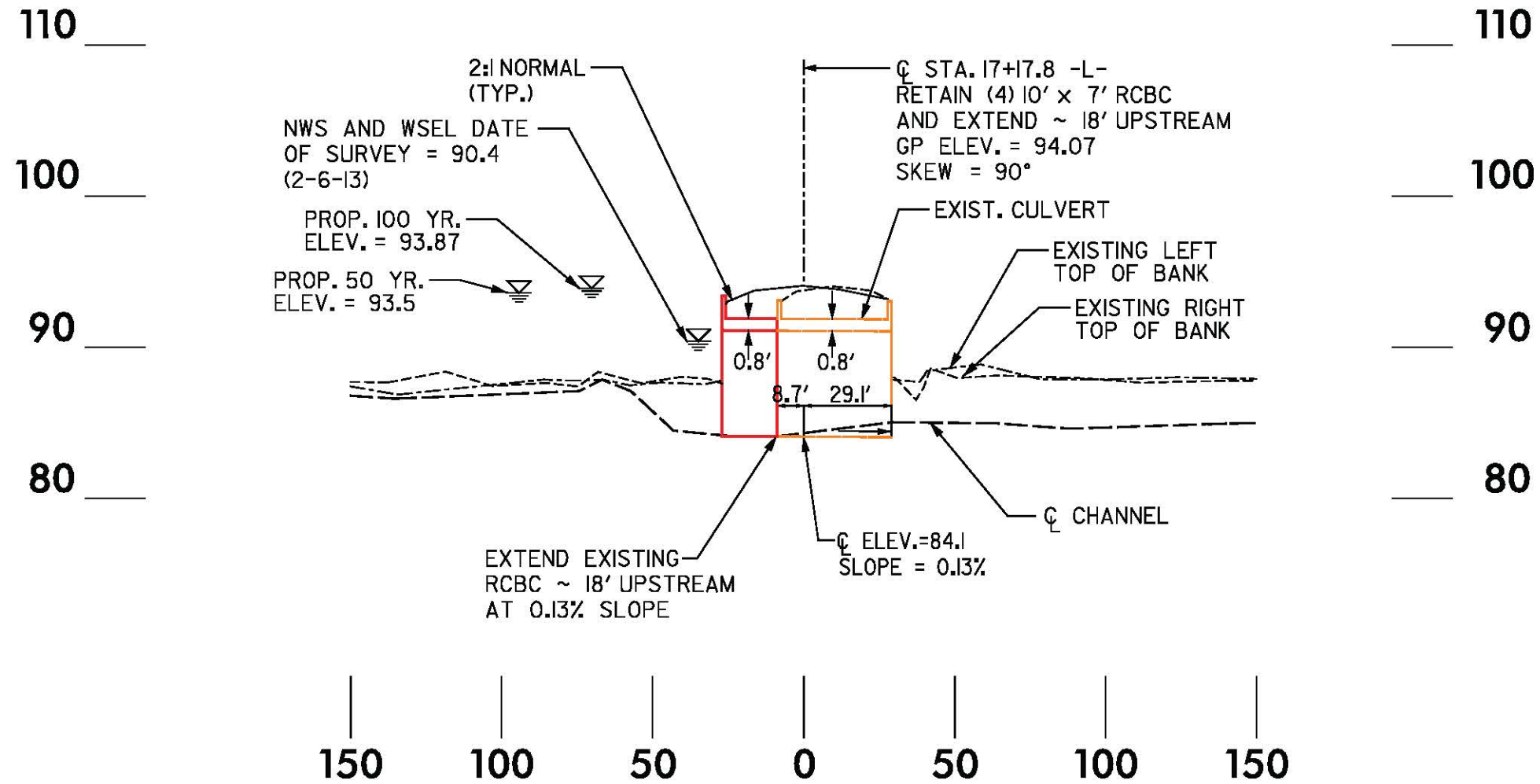


REVISIONS

4/20/14 ICA ENGINEERING, INC.
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B-17/99

WETLAND AND SURFACE WATER IMPACTS PERMIT



SITE I
PROFILE ALONG STRUCTURE
STA 17+17.8 -L-

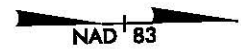
PROJECT REFERENCE NO. B-5124	SHEET NO. PAS-SI
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 0270.11 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 161 OVER SWIFT CREEK ON US-301	
SHEET OF	
PERMIT DRAWING SHEET 7 OF 51	

PHASE 1 CONSTRUCTION SEQUENCE

PHASE 1 CONSTRUCTION SEQUENCE (STA. 17+17.8 -L-)

(ROAD CLOSURE - MAINTENANCE OF TRAFFIC VIA OFFSITE DETOUR.)

1. CONSTRUCT TWO SPECIAL STILLING BASINS FOR PUMPED EFFLUENT (40' X 25') FROM DEWATERED SITE.
2. INSTALL IMPERVIOUS DIKES WHILE MAINTAINING FLOW THROUGH NORTHERN TWO BARRELS.
3. DEWATER WORK AREA.
4. EXTEND CULVERT BARRELS (2) AND INSTALL HEADWALLS, BACKFILL CULVERT.
5. INSTALL 20 LF OF INLET CHANNEL IMPROVEMENT.
6. STABILIZE THE CHANNEL BANK.
7. REMOVE IMPERVIOUS DIKES.



PHASE 2 CONSTRUCTION SEQUENCE

PHASE 2 CONSTRUCTION SEQUENCE (STA. 17+17.8 -L-)

(ROAD CLOSURE - MAINTENANCE OF TRAFFIC VIA OFFSITE DETOUR.)

1. INSTALL IMPERVIOUS DIKES WHILE MAINTAINING FLOW THROUGH SOUTHERN TWO BARRELS.
2. DEWATER WORK AREA.
3. EXTEND CULVERT BARRELS (2) AND INSTALL HEADWALLS, BACKFILL CULVERT.
4. STABILIZE THE CHANNEL BANK.
5. REMOVE IMPERVIOUS DIKES, SPECIAL STILLING BASINS, AND DEWATERING PUMP.
6. COMPLETE ROADWAY.



PROJECT REFERENCE NO. B-5124	SHEET NO. CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/CORRECTION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

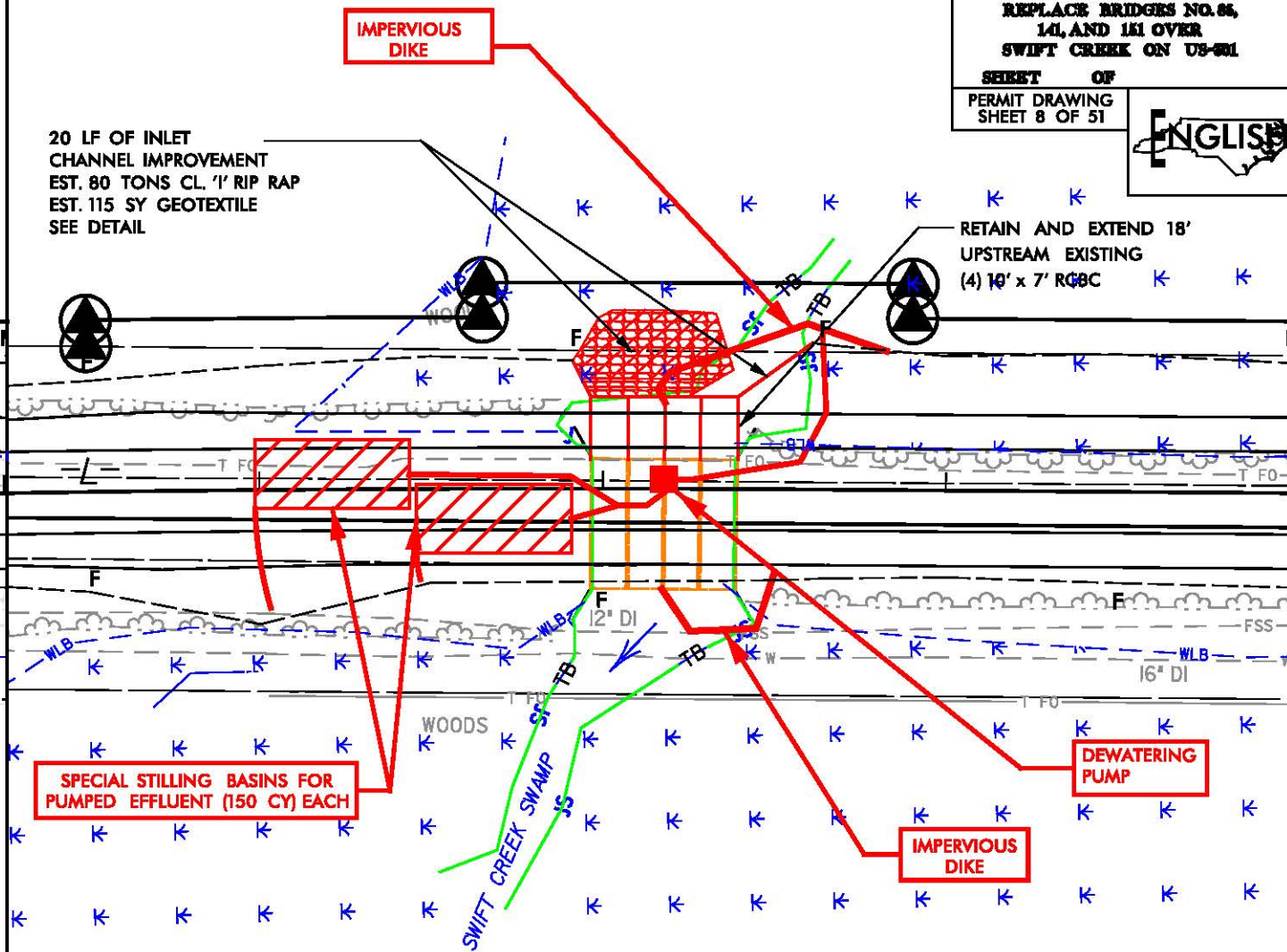
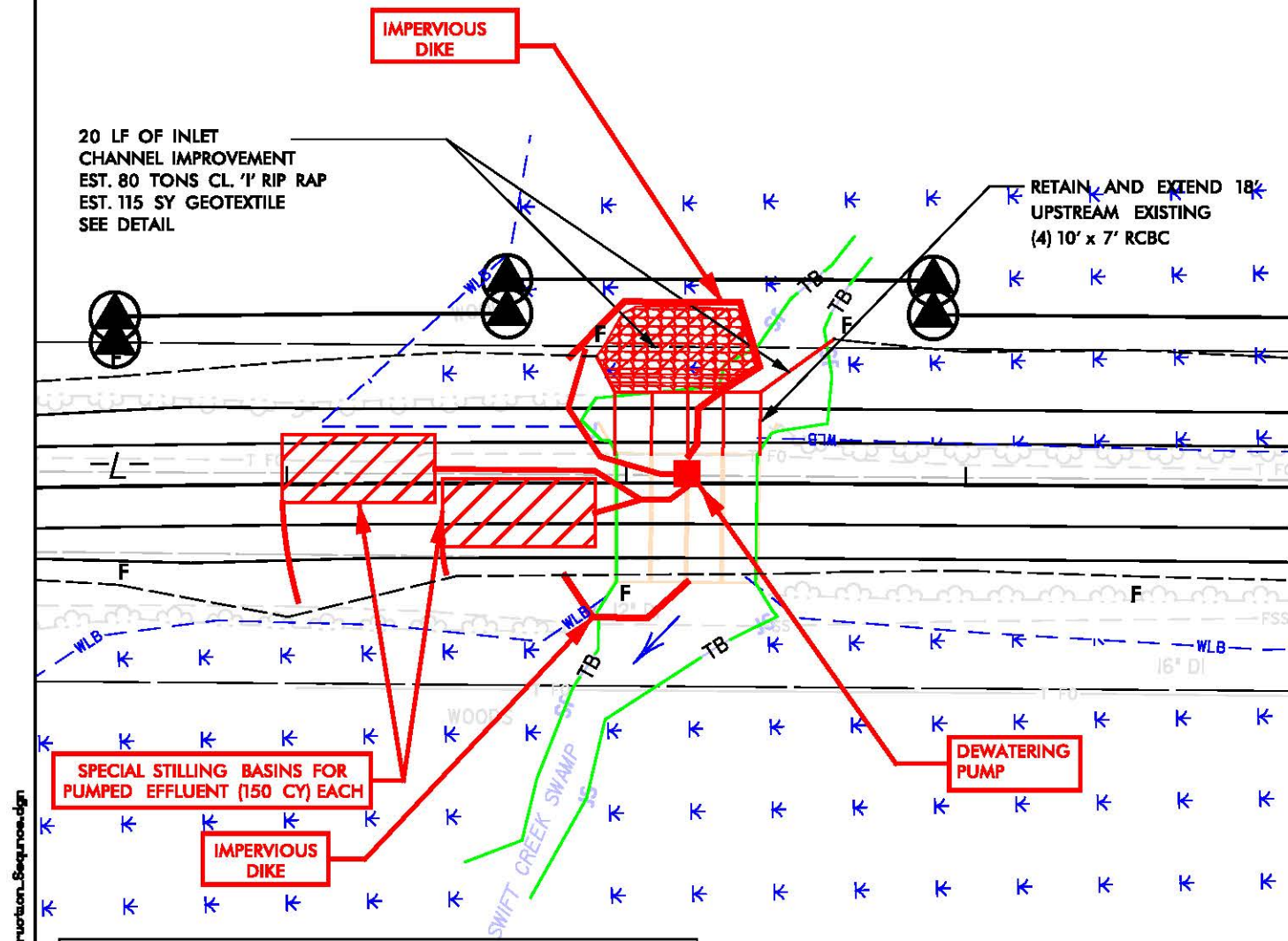
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
NASH COUNTY

PROJECT: 927411 G-1190

REPLACE BRIDGES NO. 86, 141, AND 141 OVER SWIFT CREEK ON US-401

SHEET OF
PERMIT DRAWING SHEET 8 OF 51

REVISIONS



- NOTES:**
1. CULVERT CONSTRUCTION SHALL BE PERFORMED IN ONLY DRY OR ISOLATED SECTIONS OF CHANNEL.
 2. IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW AS NECESSARY.
 3. ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
 4. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES POLYETHYLENE SHEETING, PUMPS AND HOSES.
 5. PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO DEWATER THE WORK AREA.
 6. THE CONTRACTOR SHALL NOT PUMP SEDIMENT-LADEN WATER DIRECTLY INTO STREAM. FOR DE-WATERING OF CULVERT SITES, THE CONTRACTOR SHALL FILTER SEDIMENT-LADEN WATER THROUGH SPECIAL STILLING BASIN.

C:\Users\jgarcia\Documents\Projects\B-5124_LR_9814_Construction_Sequence.dgn

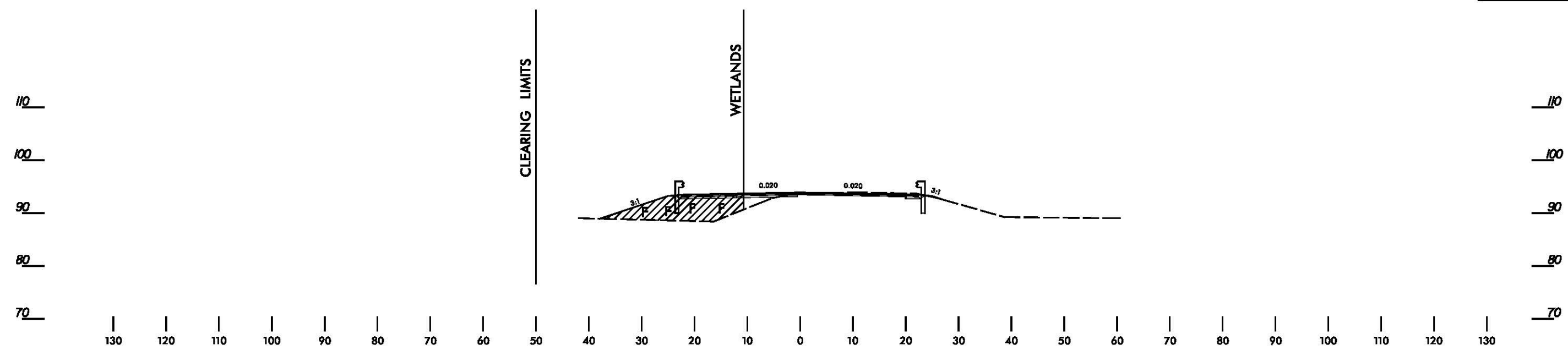
WETLAND AND SURFACE WATER IMPACTS PERMIT



PROJ. REFERENCE NO. B-5124	SHEET NO. XSC SITE 1
--------------------------------------	--------------------------------

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 42270.1.1 (B-5124)
REPLACE BRIDGES NO. 88,
141, AND 151 OVER
SWIFT CREEK ON US-301
SHEET OF
PERMIT DRAWING
SHEET 9 OF 51



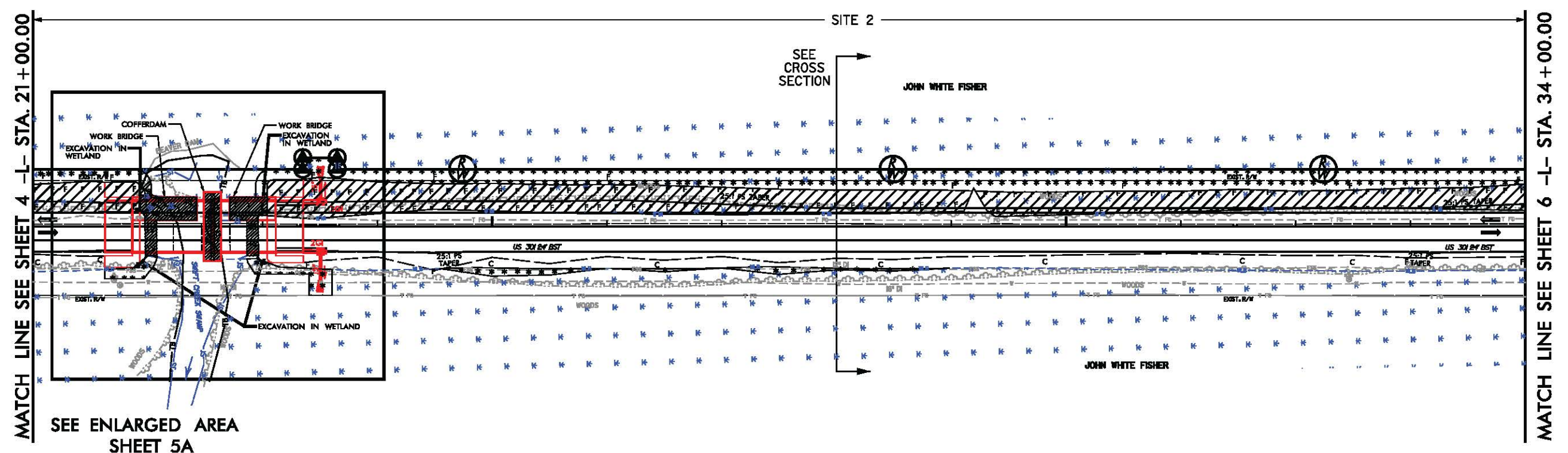
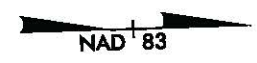
SITE I
X-SECTION
STA 19+00 -L-

LEGEND

DENOTES FILL IN WETLAND

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO. B-5124	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY PROJECT: 42270.11 (B-5124) REPLACE BRIDGES NO. 86, 141, AND 151 OVER SWIFT CREEK ON US-401	
SHEET OF	
PERMIT DRAWING SHEET 10 OF 51	



**PLAN VIEW
SITE 2**

LEGEND

- WLB --- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT

REVISIONS

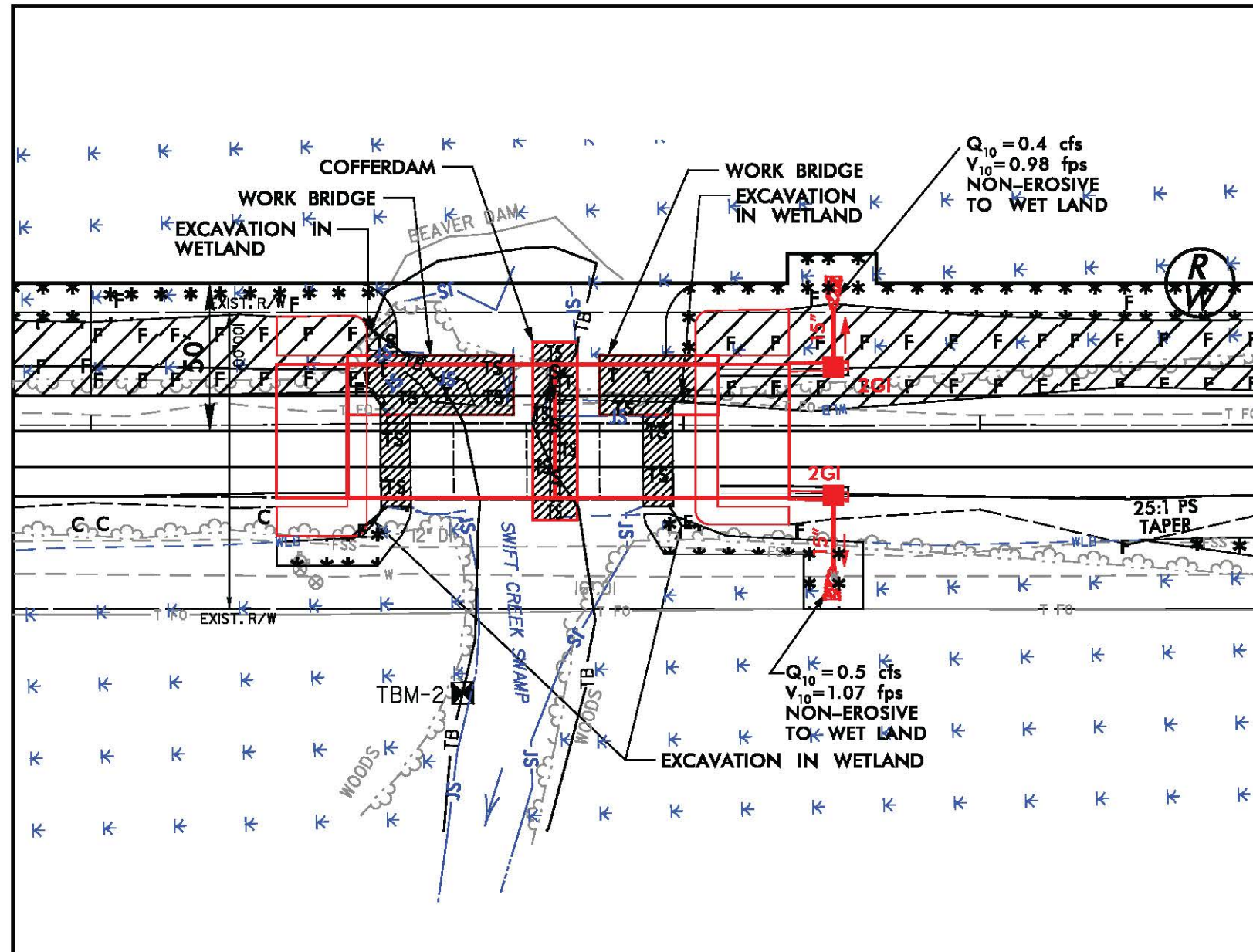
B-5124

7/22/2014
ICA ENGINEERING, INC.
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WETLAND AND SURFACE WATER IMPACTS PERMIT



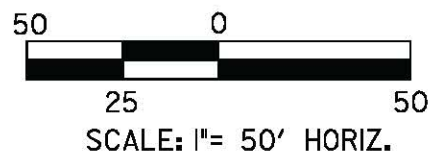
PROJECT REFERENCE NO. B-5124	SHEET NO. 5A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY PROJECT: 42270.11 (B-5124) REPLACE BRIDGES NO. 86, 141, AND 151 OVER SWIFT CREEK ON US-301 SHEET OF PERMIT DRAWING SHEET 11 OF 51	



LEGEND

- WB-- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- *** DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT

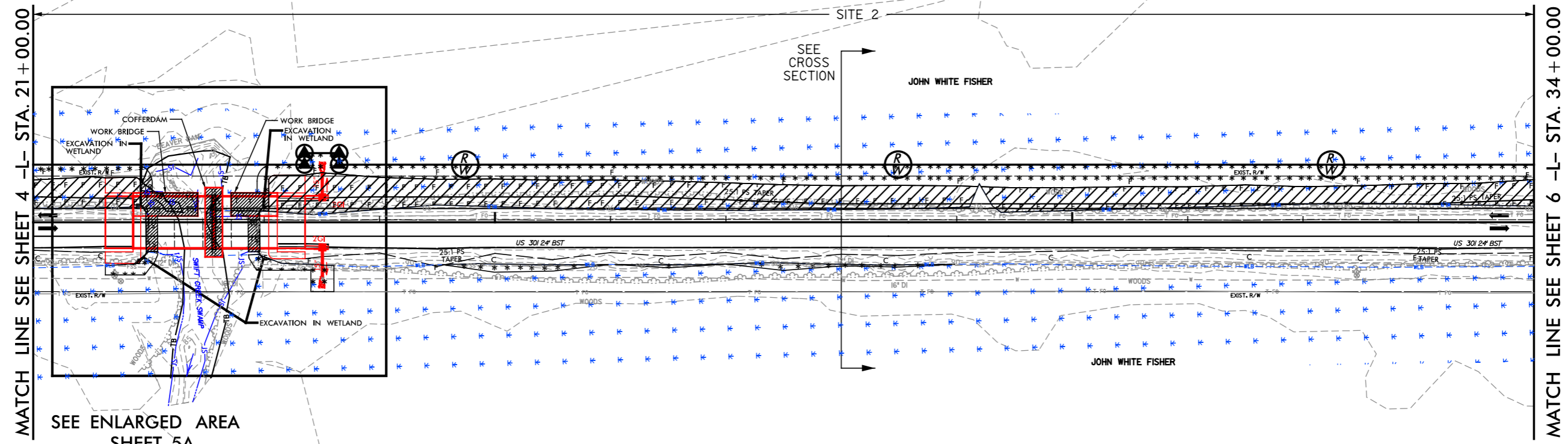
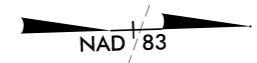
ENLARGED
PLAN VIEW
SITE 2



REVISIONS

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO. B-5124	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY PROJECT: 42270.1.1 (B-5124) REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF PERMIT DRAWING SHEET 12 OF 51	



PLAN VIEW
SITE 2

LEGEND

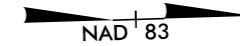
- WLB --- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT

REVISIONS

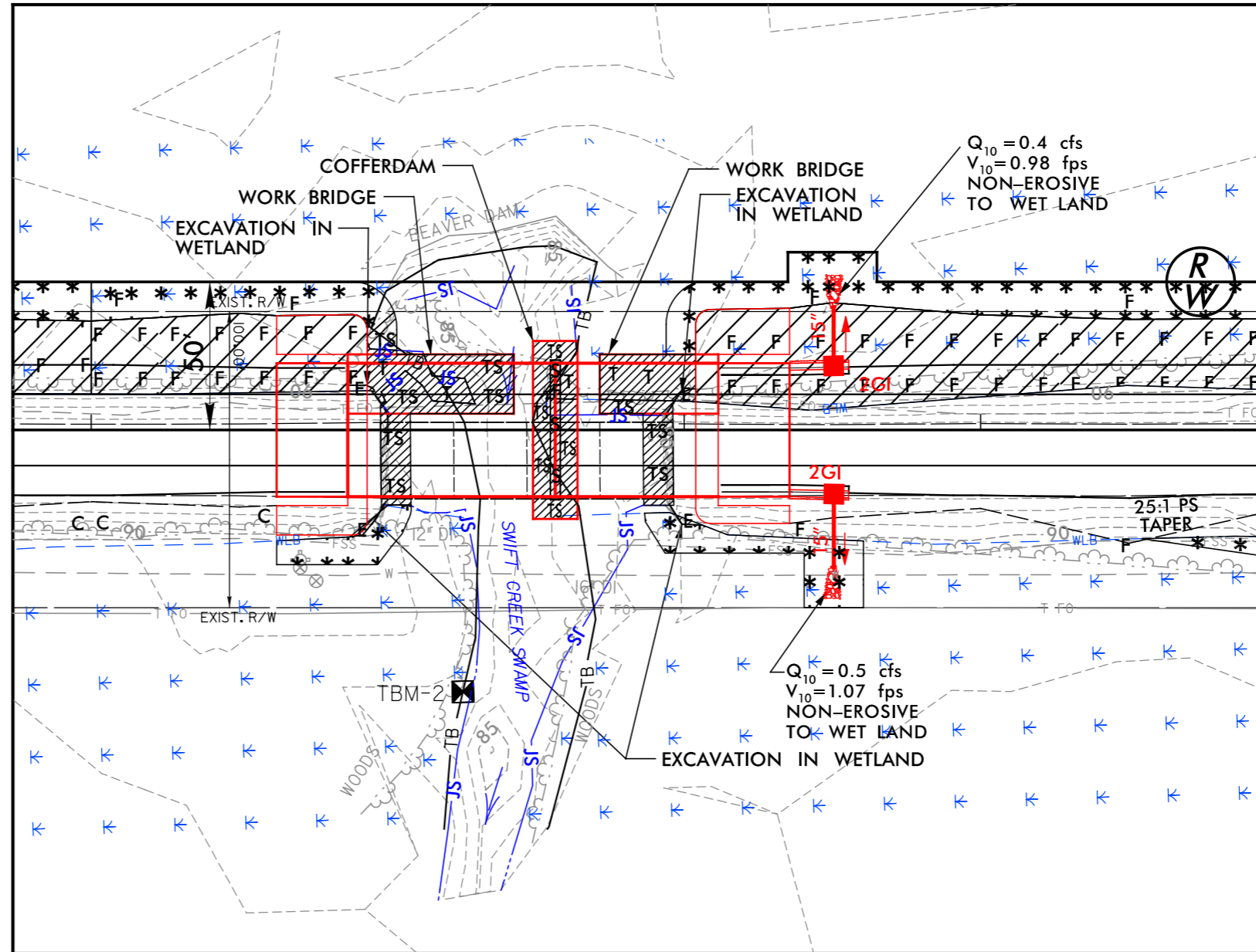
7/22/2014
ICA ENGINEERING, INC.
R:\Hydraulics\PEB0015 - Environmental\Drawings\B5124_hyd_perm_wet_pst5.dgn

B.17/99

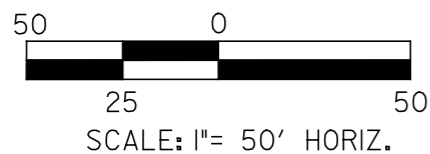
WETLAND AND SURFACE WATER IMPACTS PERMIT



PROJECT REFERENCE NO. B-5124	SHEET NO. 5A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-501	
SHEET OF	
PERMIT DRAWING SHEET 13 OF 51	ENGLISH



REVISIONS



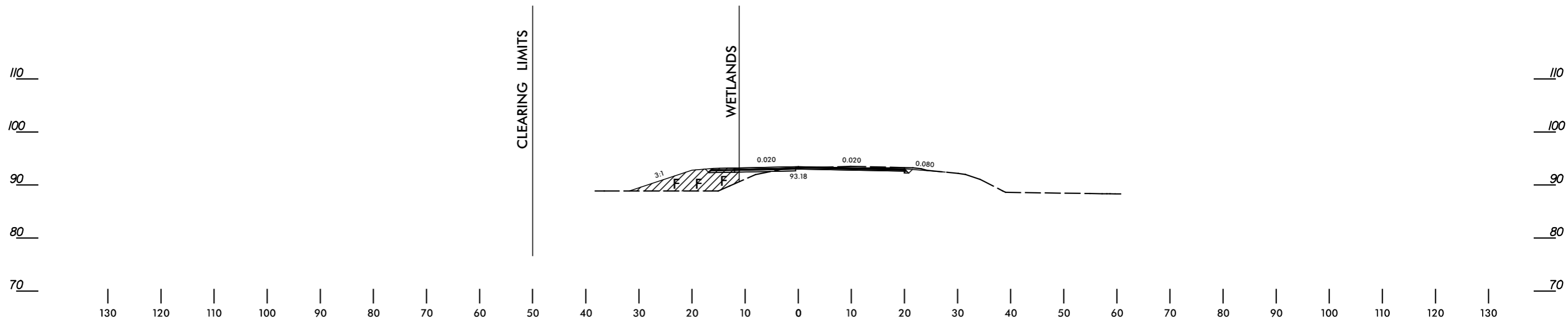
**ENLARGED
PLAN VIEW
SITE 2**

LEGEND

- WLB --- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT

WETLAND AND SURFACE WATER IMPACTS PERMIT

		PROJ. REFERENCE NO. B-5124	SHEET NO. XSC SITE 2
ROADWAY DESIGN ENGINEER	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		HYDRAULICS ENGINEER
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY PROJECT: 42270.1.1 (B-5124) REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301 SHEET OF PERMIT DRAWING SHEET 14 OF 51			



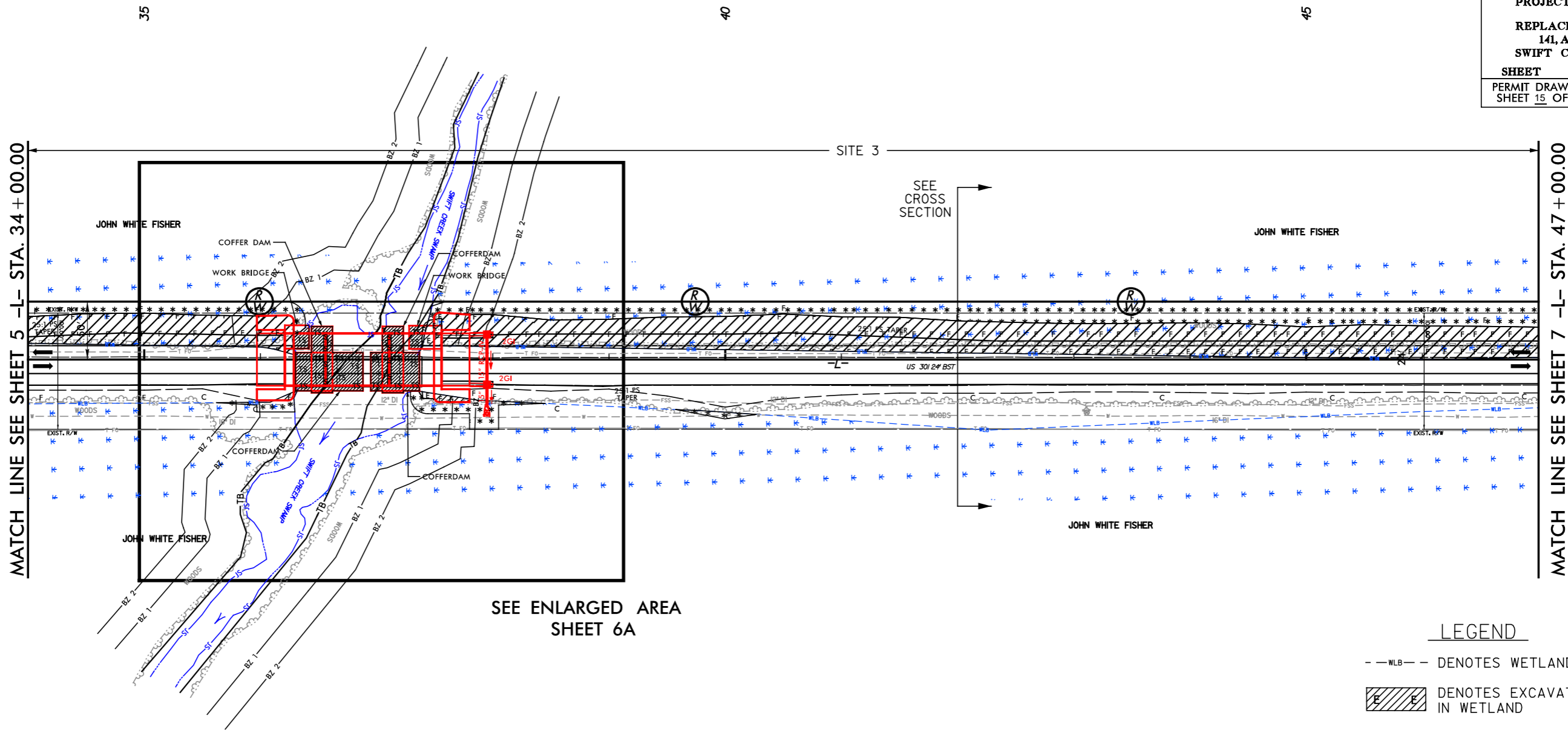
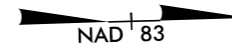
SITE 2
X-SECTION
STA 28+00 -L-

LEGEND

	DENOTES FILL IN WETLAND
--	-------------------------

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO. B-5124	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
PERMIT DRAWING SHEET 15 OF 51	



SEE ENLARGED AREA
SHEET 6A

**PLAN VIEW
SITE 3**

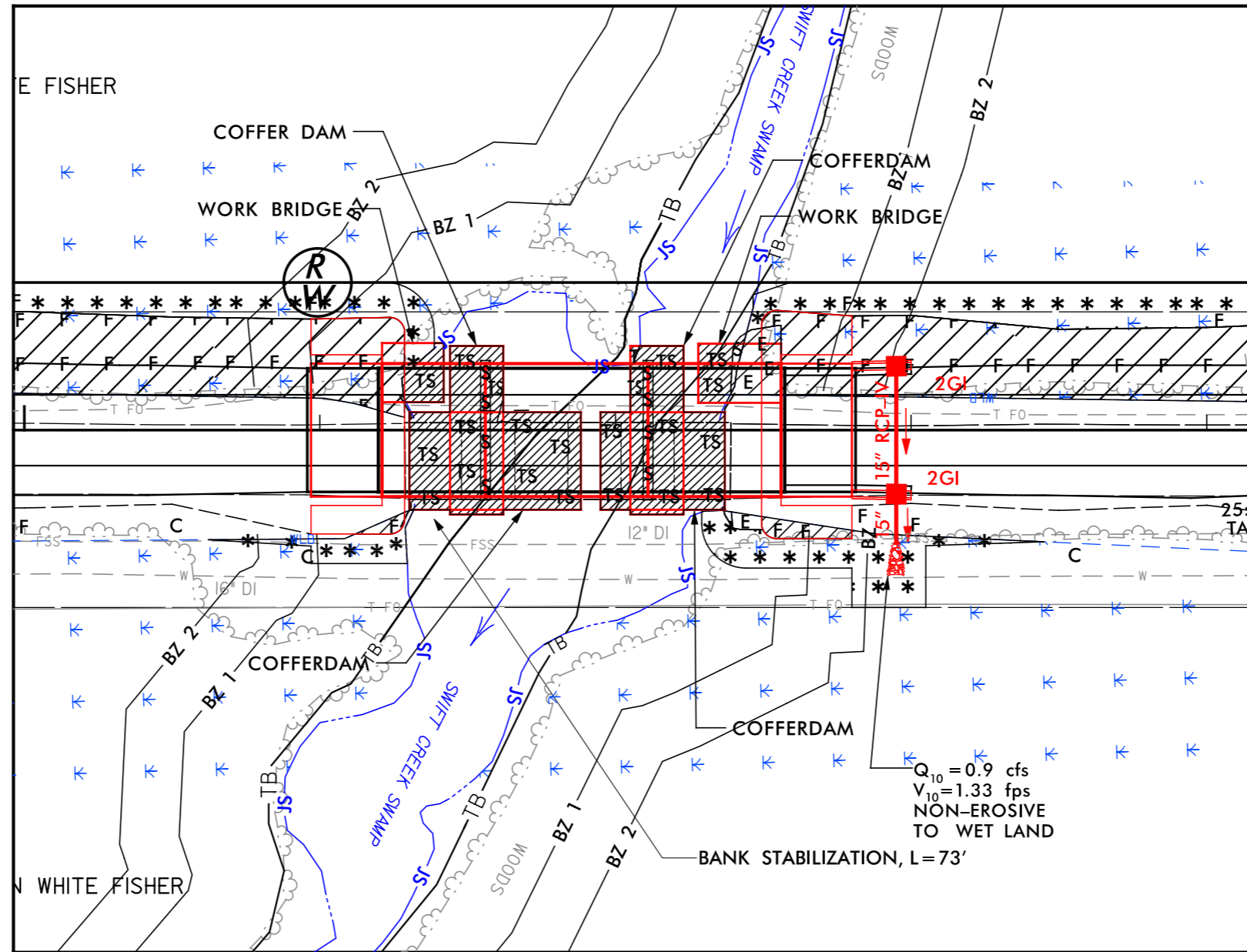
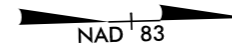
LEGEND

- WLB --- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT



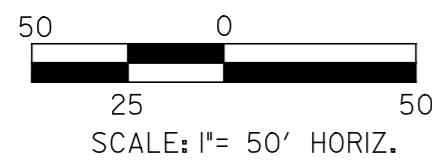
PROJECT REFERENCE NO. B-5124	SHEET NO. 6A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.11 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
PERMIT DRAWING SHEET 16 OF 51	

WETLAND AND SURFACE WATER IMPACTS PERMIT



LEGEND

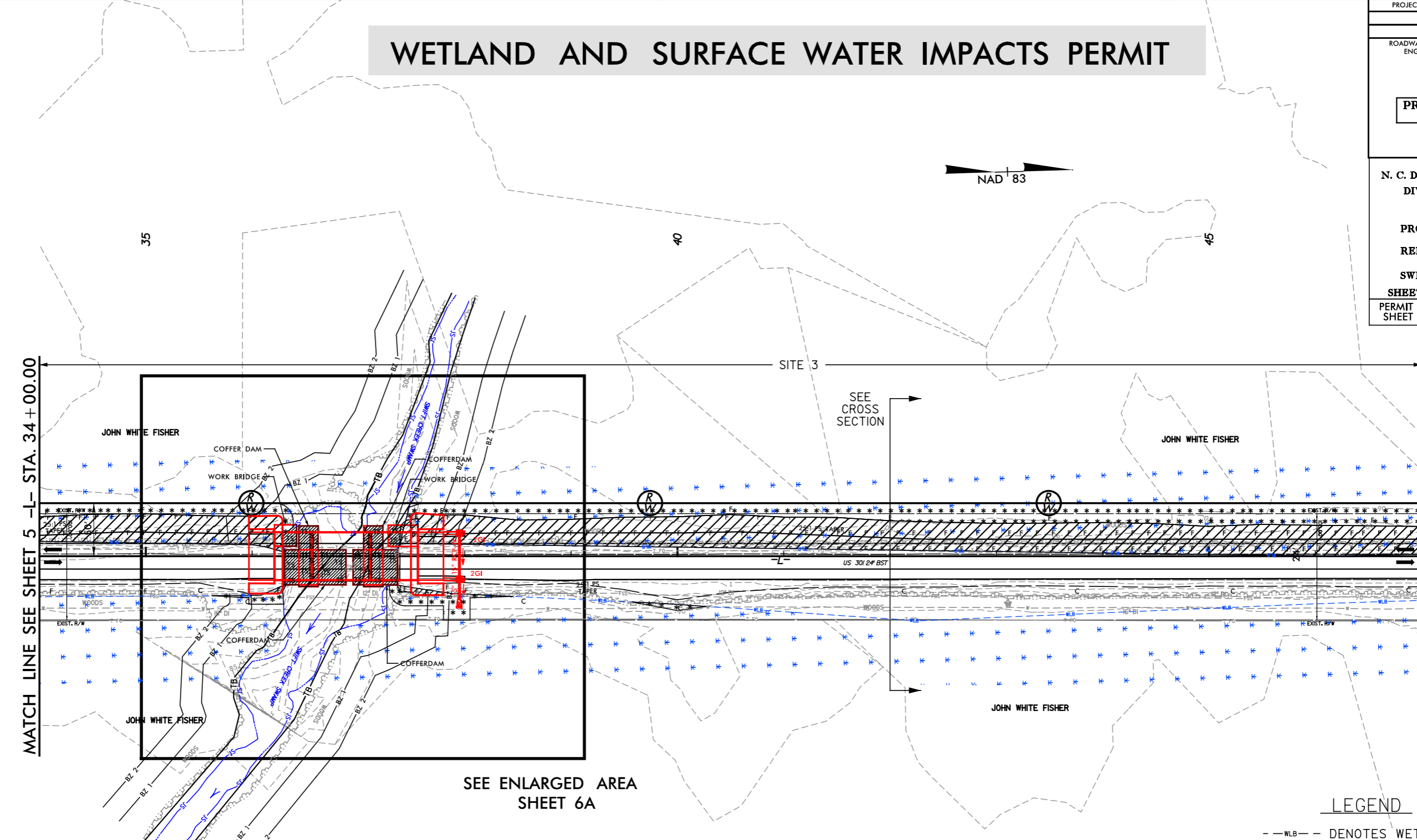
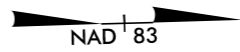
- WLB-- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT



ENLARGED
PLAN VIEW
SITE 3

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO.	SHEET NO.
B-5124	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
PERMIT DRAWING SHEET 17 OF 51	



MATCH LINE SEE SHEET 5 -L- STA. 34+00.00

MATCH LINE SEE SHEET 7 -L- STA. 47+00.00

SEE ENLARGED AREA
SHEET 6A

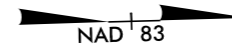
SEE CROSS SECTION

LEGEND

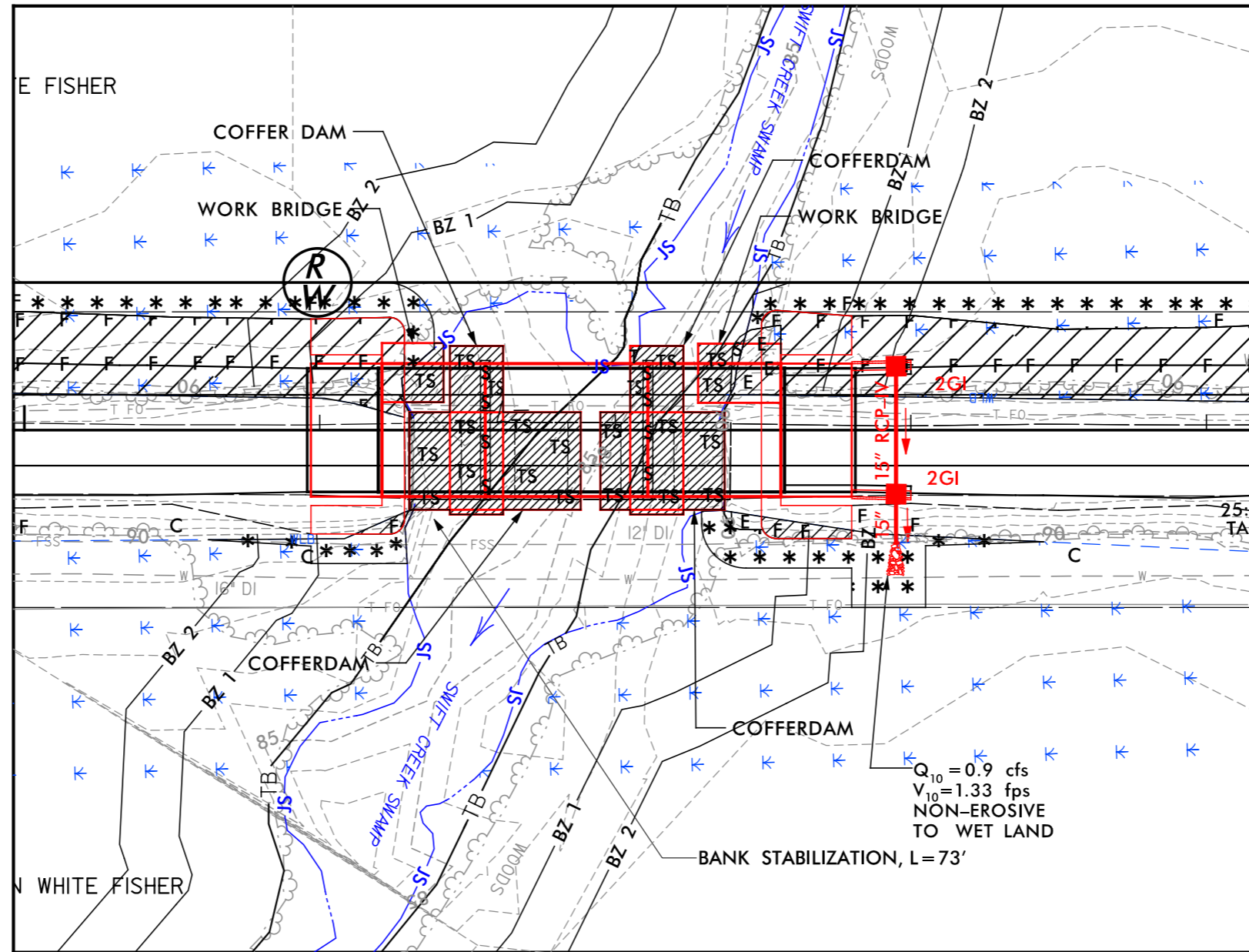
- WLB DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT

PLAN VIEW SITE 3

WETLAND AND SURFACE WATER IMPACTS PERMIT

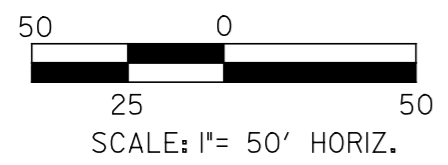


PROJECT REFERENCE NO. B-5124	SHEET NO. 6A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.11 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
PERMIT DRAWING SHEET 18 OF 51	



$Q_{10} = 0.9$ cfs
 $V_{10} = 1.33$ fps
 NON-EROSIVE
 TO WETLAND

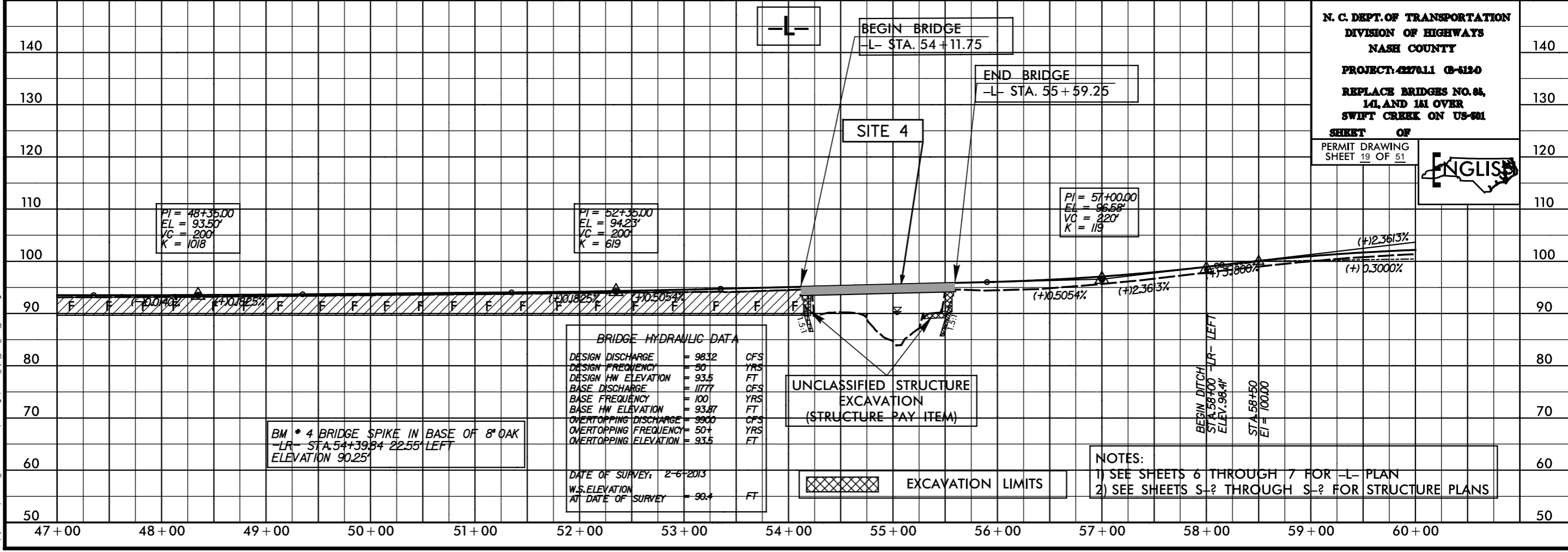
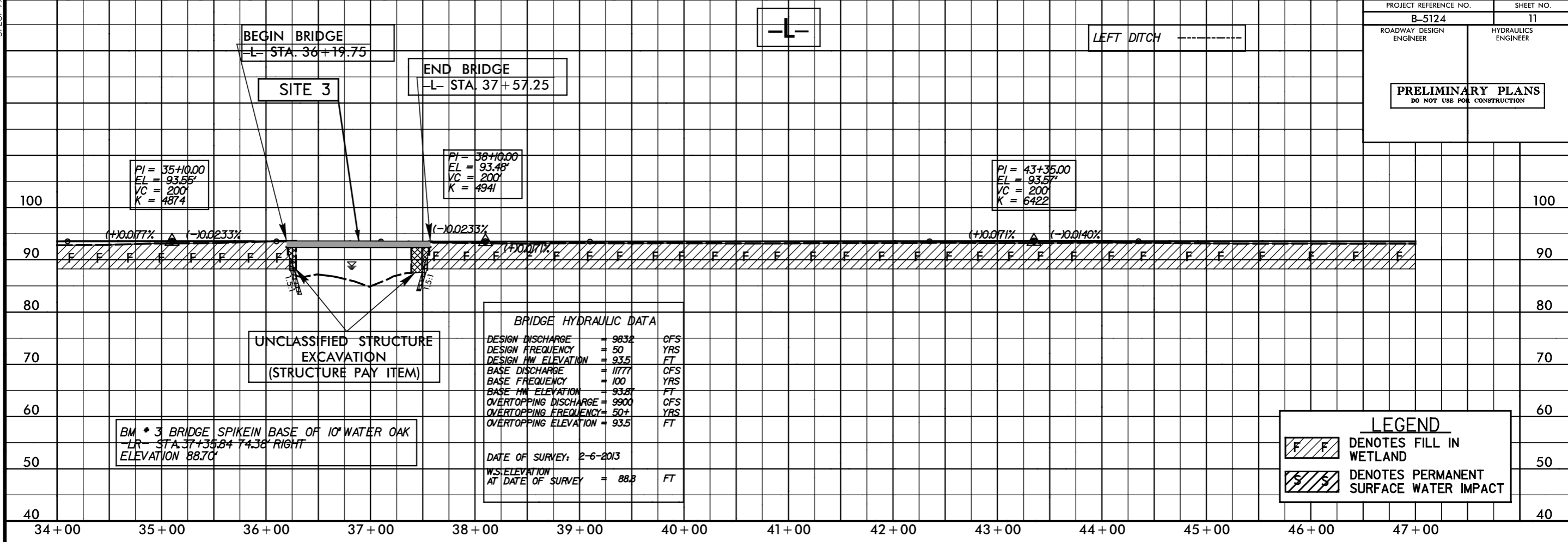
**ENLARGED
PLAN VIEW
SITE 3**



LEGEND

- WLB -- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- * * * DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT

5/28/99



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

PROJECT: 0270.11 B-5120
REPLACE BRIDGES NO. 88,
141, AND 181 OVER
SWIFT CREEK ON US-601

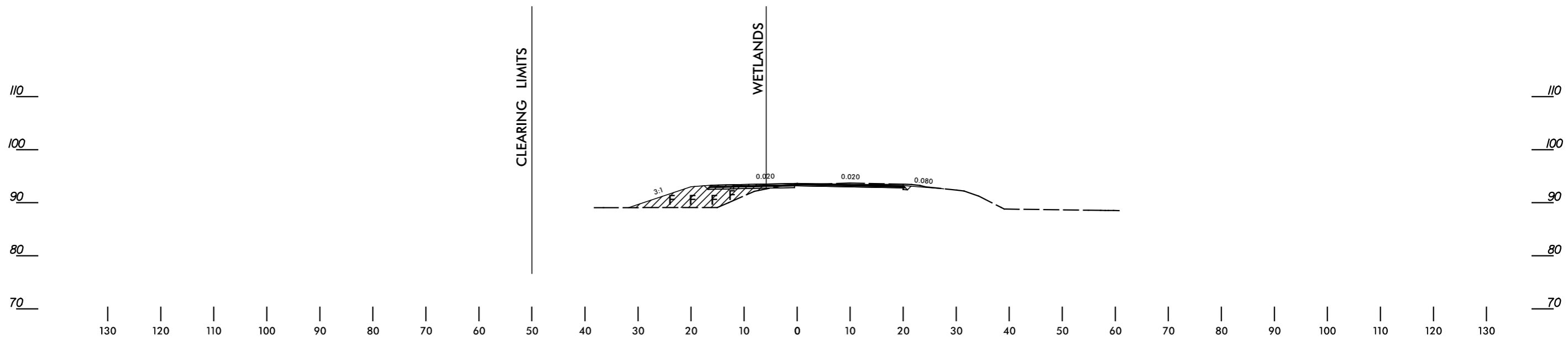
SHEET OF
 PERMIT DRAWING
 SHEET 19 OF 51

ENGLISH

3/14/2014
 ICA ENGINEERING, INC.
 R:\Hydraulics PERMITS Environmental\Drawings\B5124_hyd_perm_wet_profile.dgn

WETLAND AND SURFACE WATER IMPACTS PERMIT

		PROJ. REFERENCE NO. <i>B-5124</i>	SHEET NO. XSC SITE 3
ROADWAY DESIGN ENGINEER	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		HYDRAULICS ENGINEER
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY PROJECT: 42270.1.1 (B-5124) REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301 SHEET OF PERMIT DRAWING SHEET 20 OF 51			



SITE 3
 X-SECTION
 STA 42+00 -L-

LEGEND

	DENOTES FILL IN WETLAND
--	-------------------------

WETLAND AND SURFACE WATER IMPACTS PERMIT

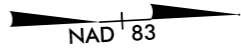
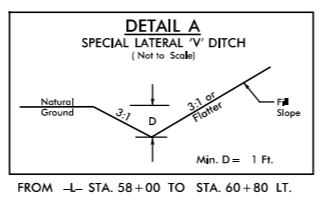
PROJECT REFERENCE NO. B-5124	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

PROJECT: 42270.1.1 (B-5124)

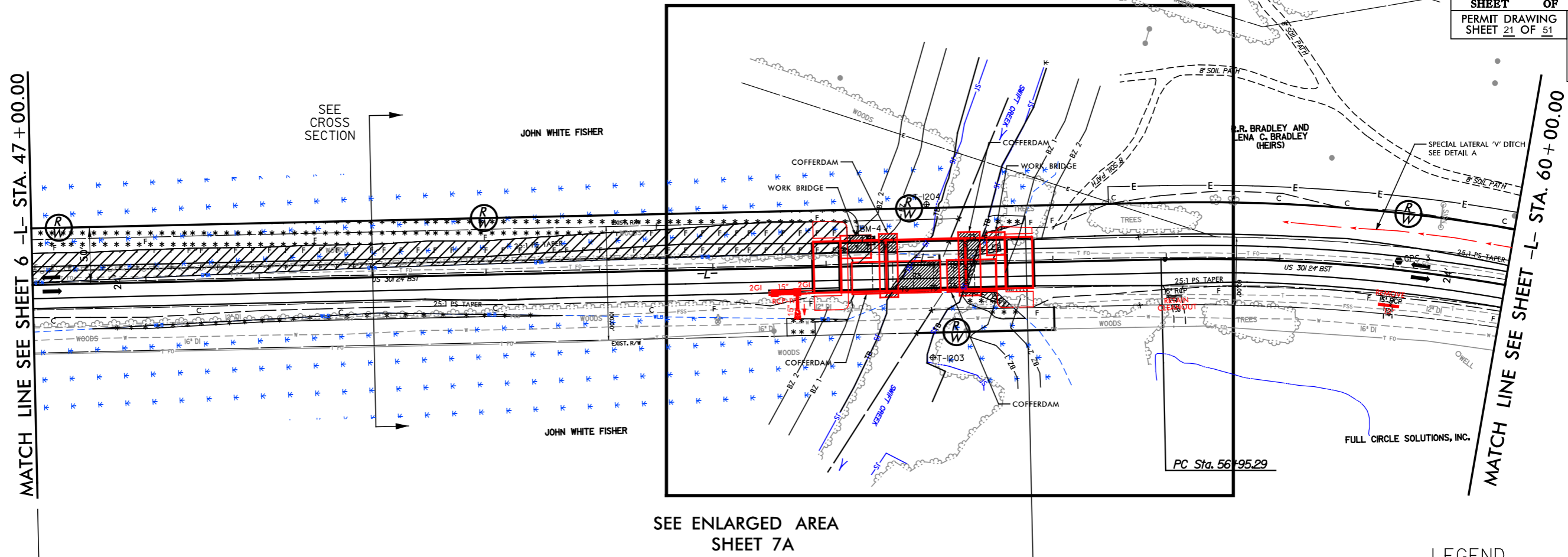
**REPLACE BRIDGES NO. 85,
141, AND 151 OVER
SWIFT CREEK ON US-301**

SHEET OF
 PERMIT DRAWING
 SHEET **21** OF **51**



MATCH LINE SEE SHEET 6 -L- STA. 47+00.00

MATCH LINE SEE SHEET -L- STA. 60+00.00



SEE ENLARGED AREA
SHEET 7A

LEGEND

- WLB --- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT

PLAN VIEW SITE 4

REVISIONS
 RW REVISION (APRIL 1, 2014): CONSTRUCTION EASEMENT ADDED TO PARCEL 2 FROM -L- STA 58+50 TO 63+65 LT. hcn

WETLAND AND SURFACE WATER IMPACTS PERMIT

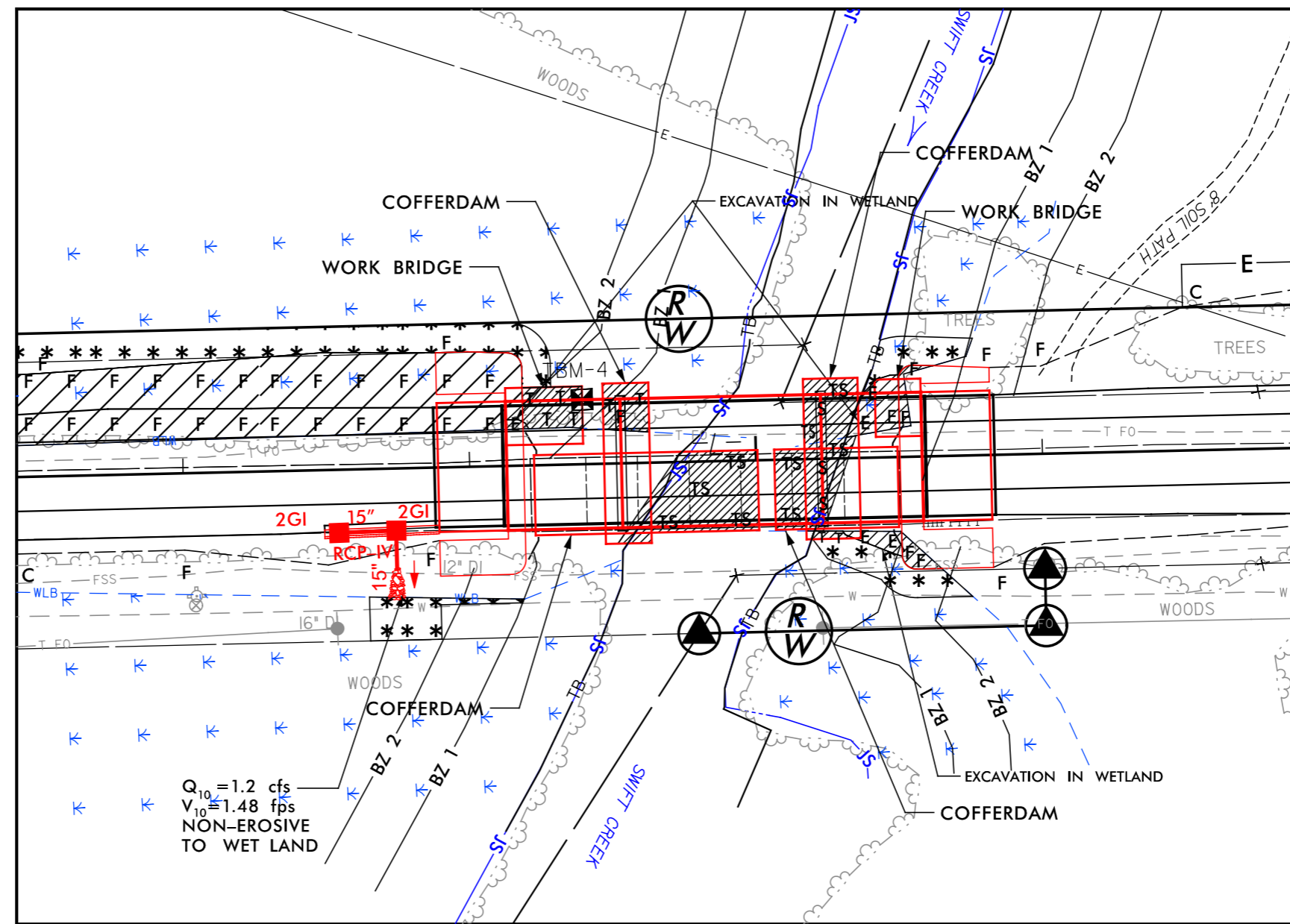
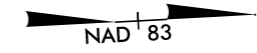
PROJECT REFERENCE NO. B-5124	SHEET NO. 7A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

PROJECT: 42270.1.1 (B-5124)

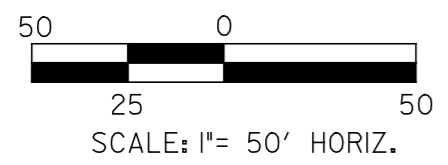
REPLACE BRIDGES NO. 85,
141, AND 151 OVER
SWIFT CREEK ON US-301

SHEET OF
PERMIT DRAWING
SHEET 22 OF 51



$Q_{10} = 1.2$ cfs
 $V_{10} = 1.48$ fps
NON-EROSIVE
TO WET LAND

- LEGEND**
- - WLB - - DENOTES WETLAND BOUNDARY
 - DENOTES EXCAVATION IN WETLAND
 - DENOTES MECHANIZED CLEARING
 - DENOTES FILL IN WETLAND
 - DENOTES TEMPORARY FILL IN WETLAND
 - DENOTES TEMPORARY SURFACE WATER IMPACT
 - DENOTES PERMANENT SURFACE WATER IMPACT



**ENLARGED
PLAN VIEW
SITE 4**

WETLAND AND SURFACE WATER IMPACTS PERMIT

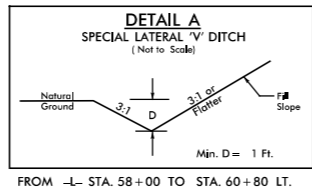
PROJECT REFERENCE NO. B-5124	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

PROJECT: 42270.11 (B-5124)

REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301

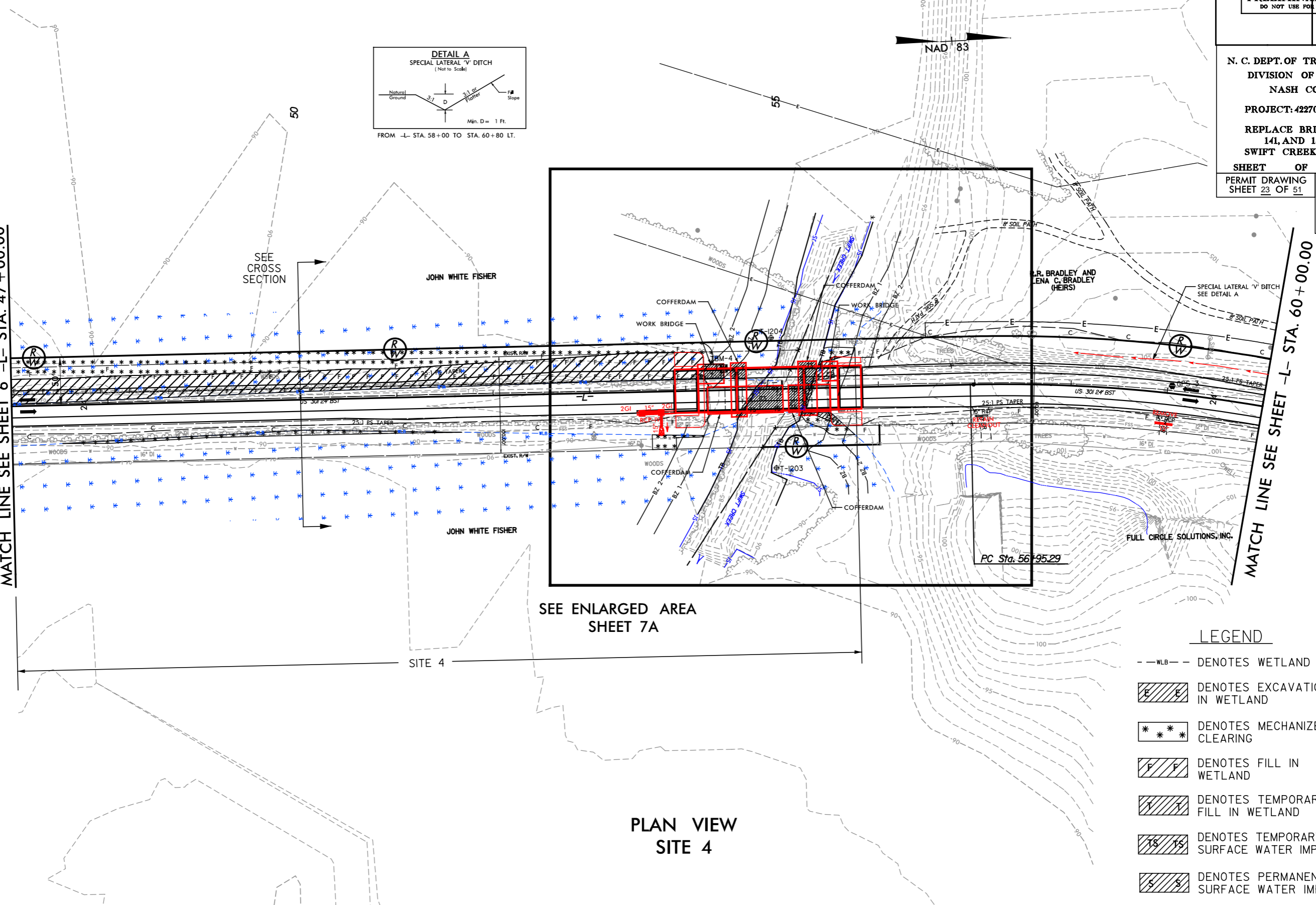
SHEET OF PERMIT DRAWING SHEET 23 OF 51



REVISIONS
 R/W REVISION (APRIL 1, 2014): CONSTRUCTION EASEMENT ADDED TO PARCEL 2 FROM -L- STA 58+50 TO 63+65 LT. hcn

MATCH LINE SEE SHEET 6 -L- STA. 47+00.00

MATCH LINE SEE SHEET -L- STA. 60+00.00



SEE ENLARGED AREA SHEET 7A

**PLAN VIEW
SITE 4**

LEGEND

- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT

B.17/99

WETLAND AND SURFACE WATER IMPACTS PERMIT

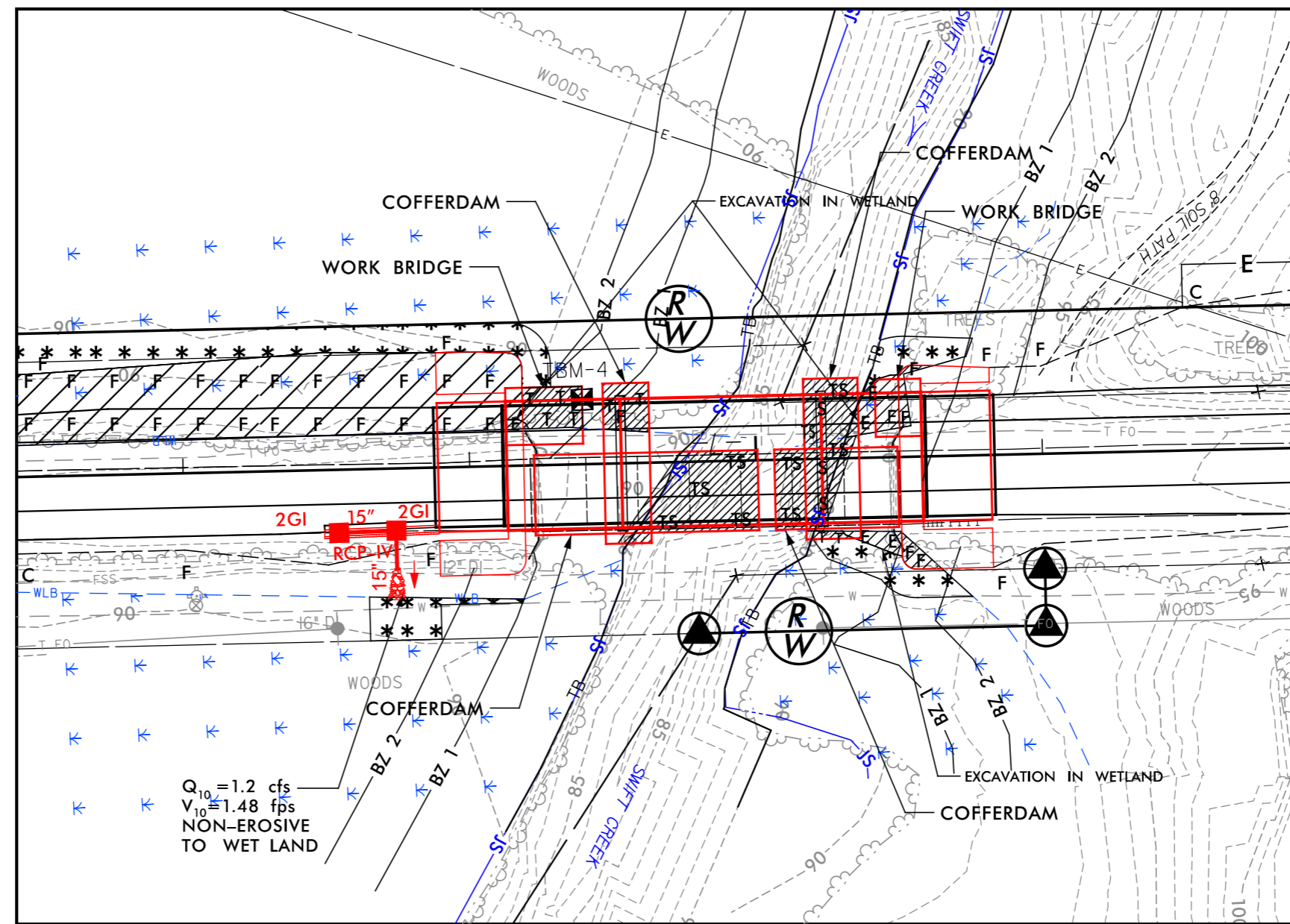
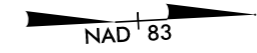
PROJECT REFERENCE NO. B-5124	SHEET NO. 7A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

PROJECT: 42270.11 (B-5124)

REPLACE BRIDGES NO. 85,
141, AND 151 OVER
SWIFT CREEK ON US-301

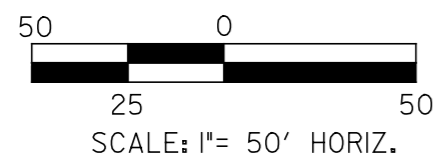
SHEET OF
PERMIT DRAWING
SHEET 24 OF 51



$Q_{10} = 1.2$ cfs
 $V_{10} = 1.48$ fps
NON-EROSIVE
TO WET LAND


LEGEND

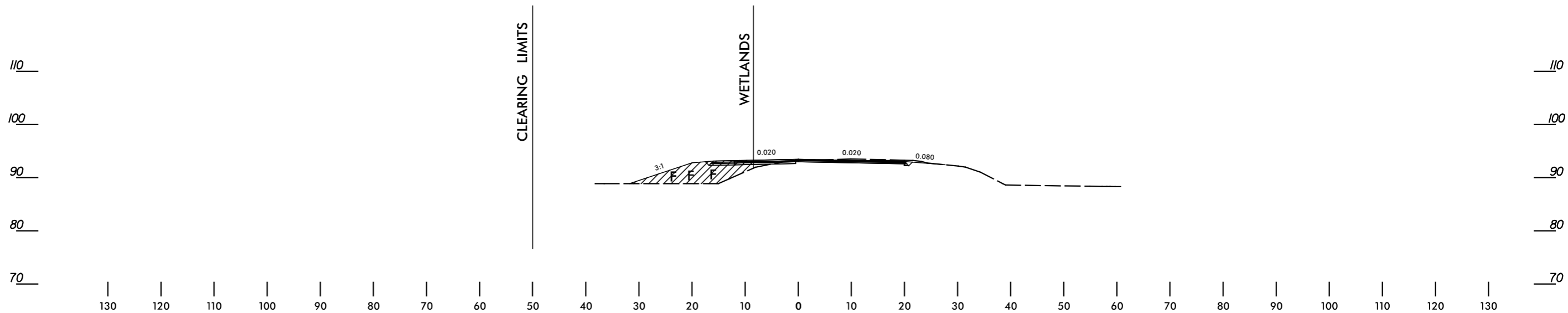
- - WLB - - DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES PERMANENT SURFACE WATER IMPACT



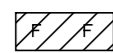
ENLARGED
PLAN VIEW
SITE 4

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJ. REFERENCE NO. <i>B-5124</i>	SHEET NO. XSC SITE 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY PROJECT: 42270.1.1 (B-5124) REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301 SHEET OF PERMIT DRAWING SHEET 25 OF 51	
	

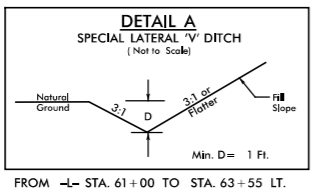


SITE 4
 X-SECTION
 STA 50+00 -L-

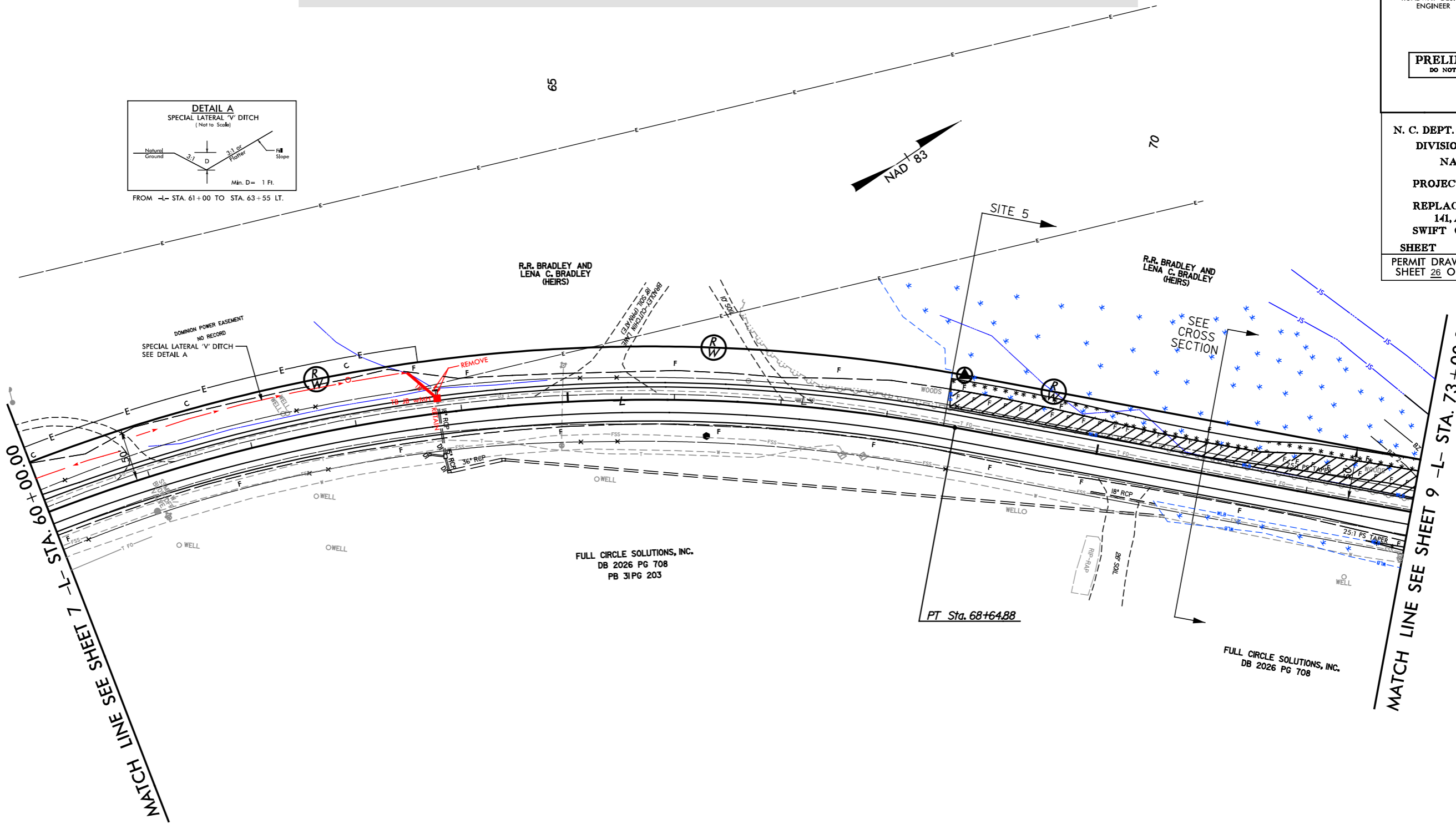
LEGEND	
	DENOTES FILL IN WETLAND

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO. B-5124	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
PERMIT DRAWING SHEET 26 OF 51	



REVISIONS
 R/W REVISION (APRIL 1, 2014): CONSTRUCTION EASEMENT ADDED TO PARCEL 2 FROM -L- STA. 58+50 TO 63+65 LT. hcn

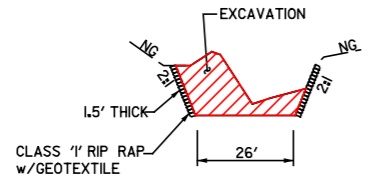


- LEGEND**
- WLB-- DENOTES WETLAND BOUNDARY
 - DENOTES MECHANIZED CLEARING
 - DENOTES FILL IN WETLAND

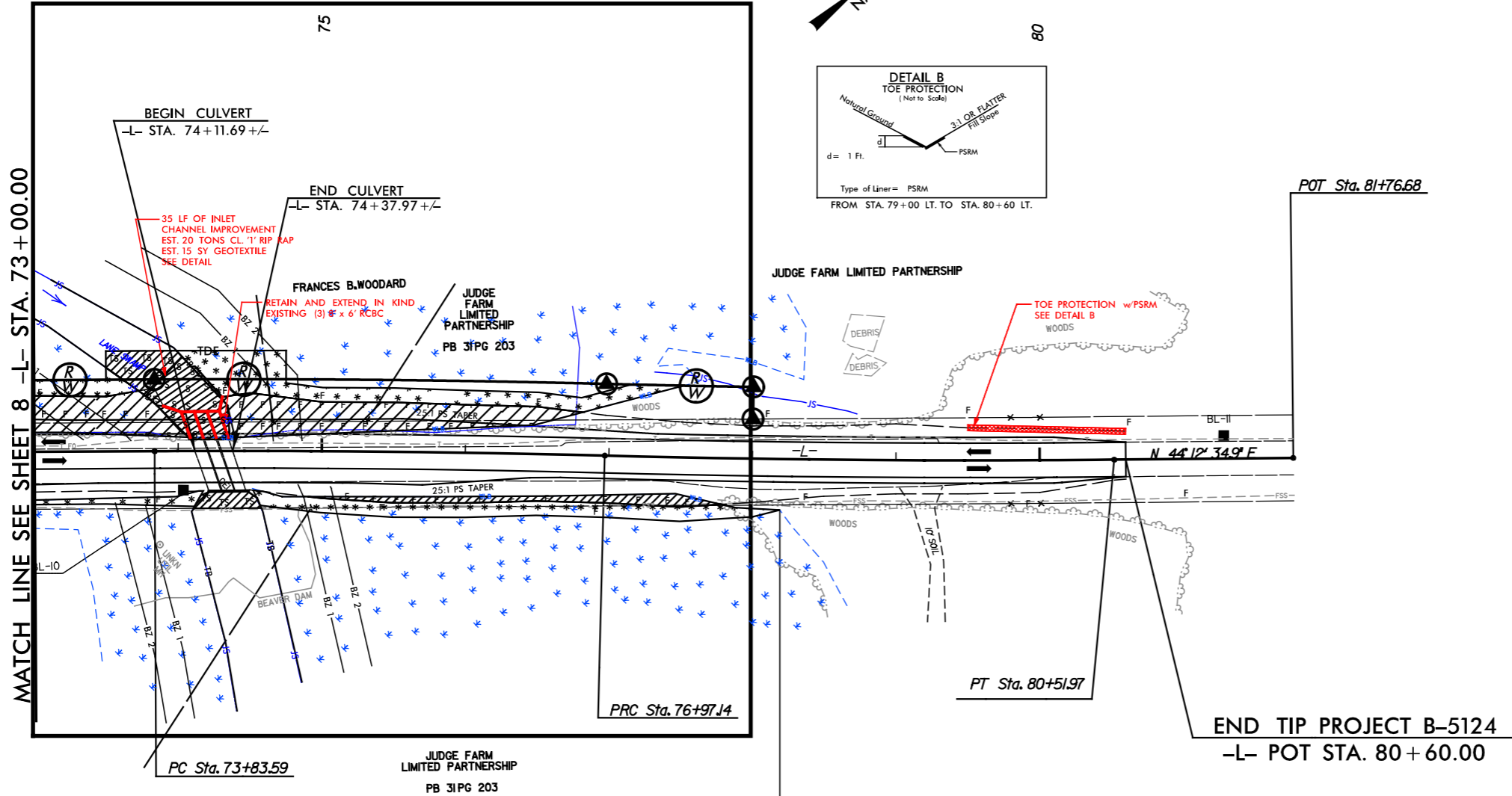
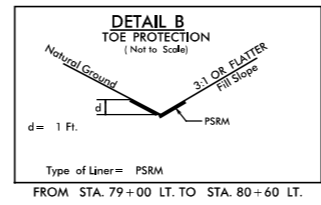
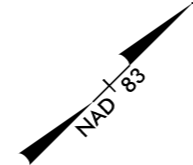
**PLAN VIEW
SITE 5**

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO. B-5124	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
PERMIT DRAWING SHEET 27 OF 51	



CULVERT 161 INLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)



LEGEND

- WLB -- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES PERMANENT SURFACE WATER IMPACT
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES MECHANIZED CLEARING

**PLAN VIEW
SITE 5**

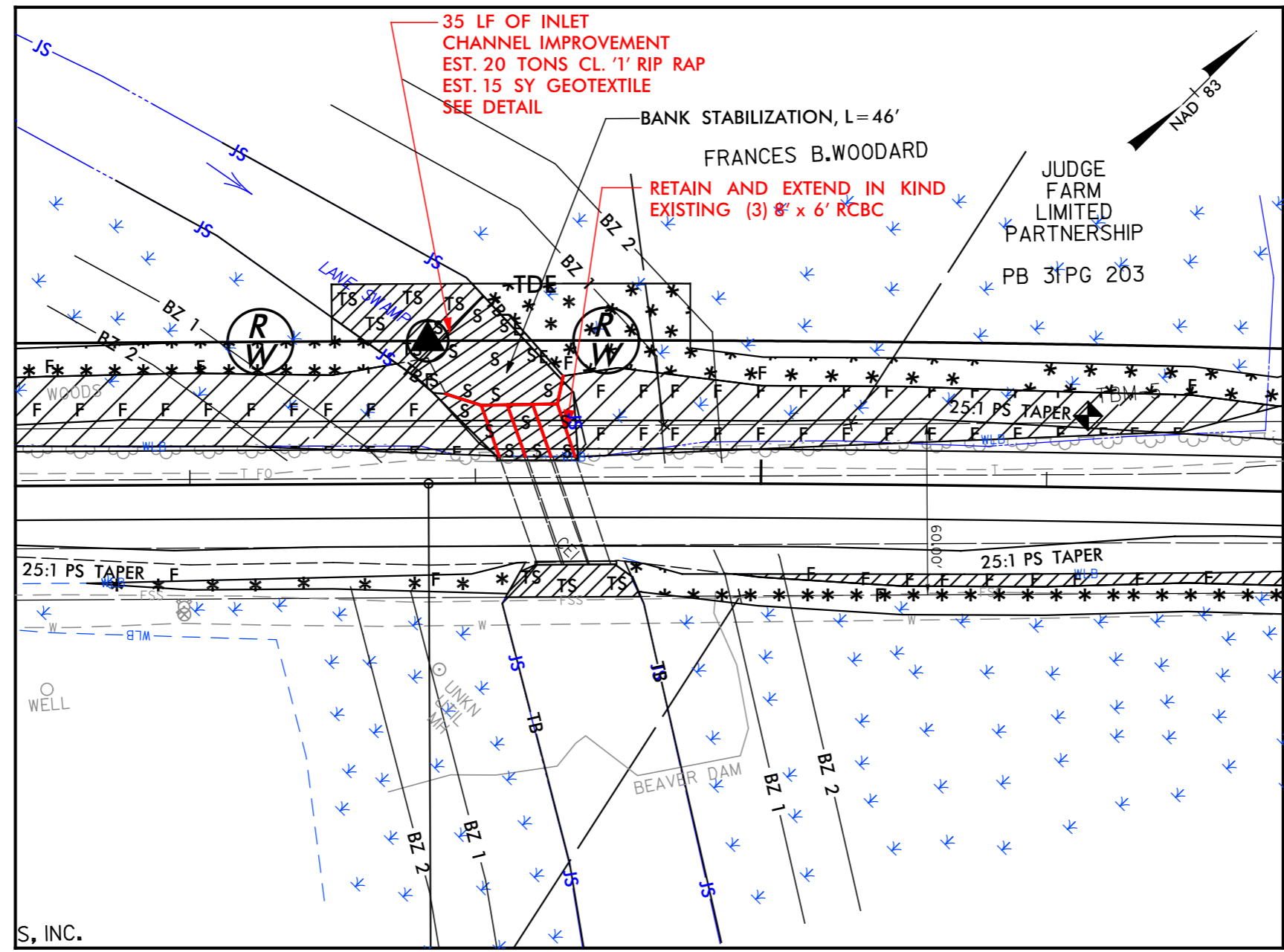
REVISIONS

4/2/2014 ICA ENGINEERING, INC.
R: Hydraulics/PERMITS/Environmental/Drawings/B5124_hyd_perm_wet_pst09.dgn

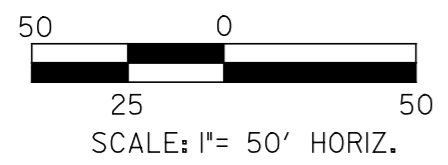
B.17/99

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO. B-5124	SHEET NO. 9A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
PERMIT DRAWING SHEET 28 OF 51	



REVISIONS



**ENLARGED
PLAN VIEW
SITE 5**

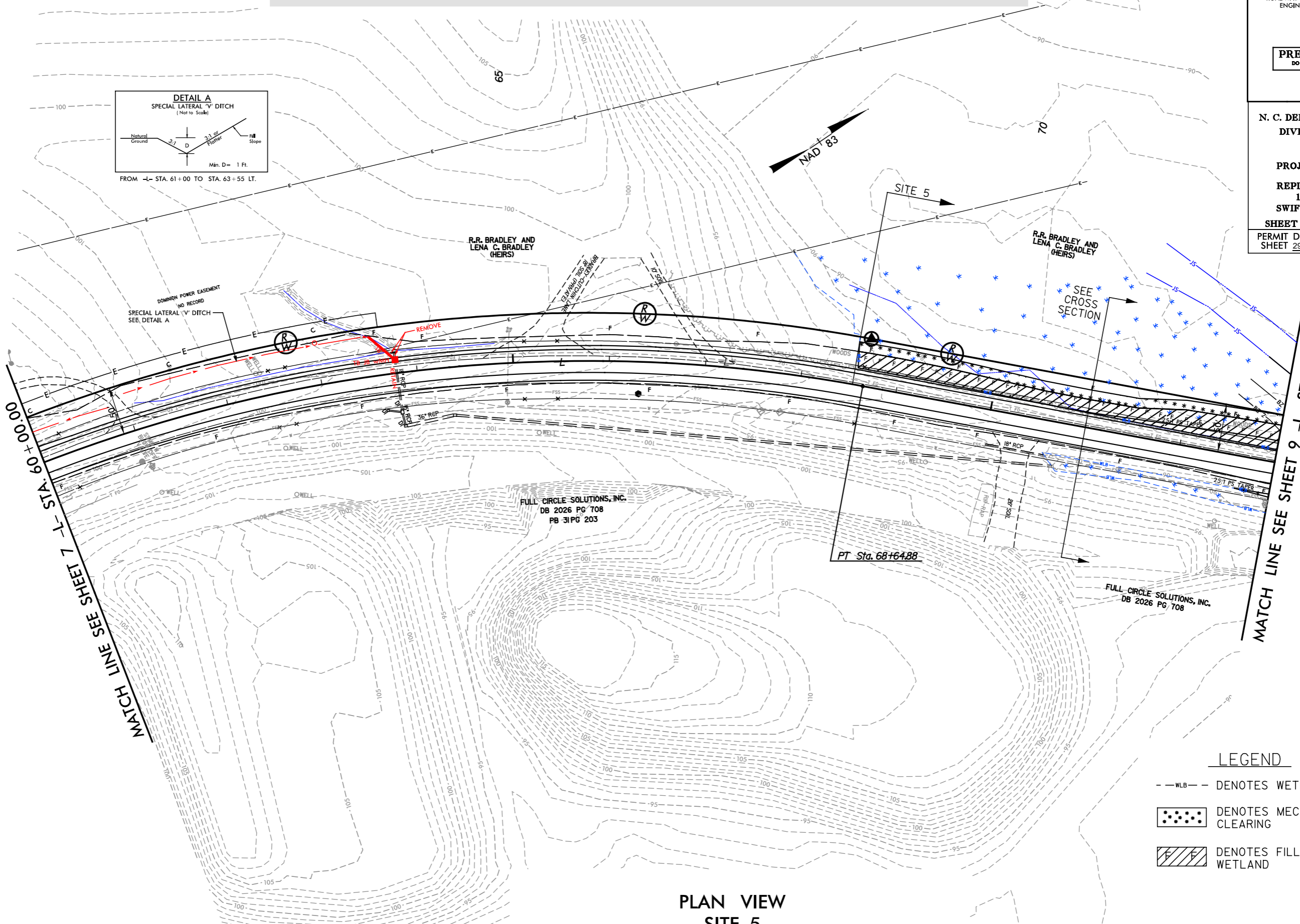
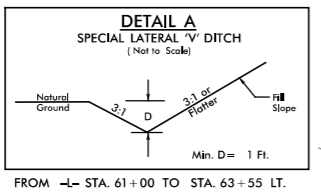
LEGEND

- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES PERMANENT SURFACE WATER IMPACT
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES MECHANIZED CLEARING

4/2/2014 ICA ENGINEERING, INC. R: Hydraulics PERMITS Environmental Drawings: B5124_hyd_perm_wet_per9a.dgn

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO. B-5124	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
PERMIT DRAWING SHEET 29 OF 51	



- LEGEND**
- WLB --- DENOTES WETLAND BOUNDARY
 - DENOTES MECHANIZED CLEARING
 - DENOTES FILL IN WETLAND

**PLAN VIEW
SITE 5**

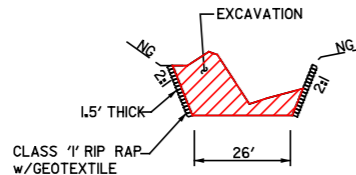
REVISIONS
 RW REVISION (APRIL 1, 2014): CONSTRUCTION EASEMENT ADDED TO PARCEL 2 FROM STA. 58+50 TO 63+65 LT. hcn

4/2/2014
 ICA ENGINEERING, INC.
 R: Hydraulics PERMITS Environmental Drawings B5124_hyd_perm_wet_pst8.dgn

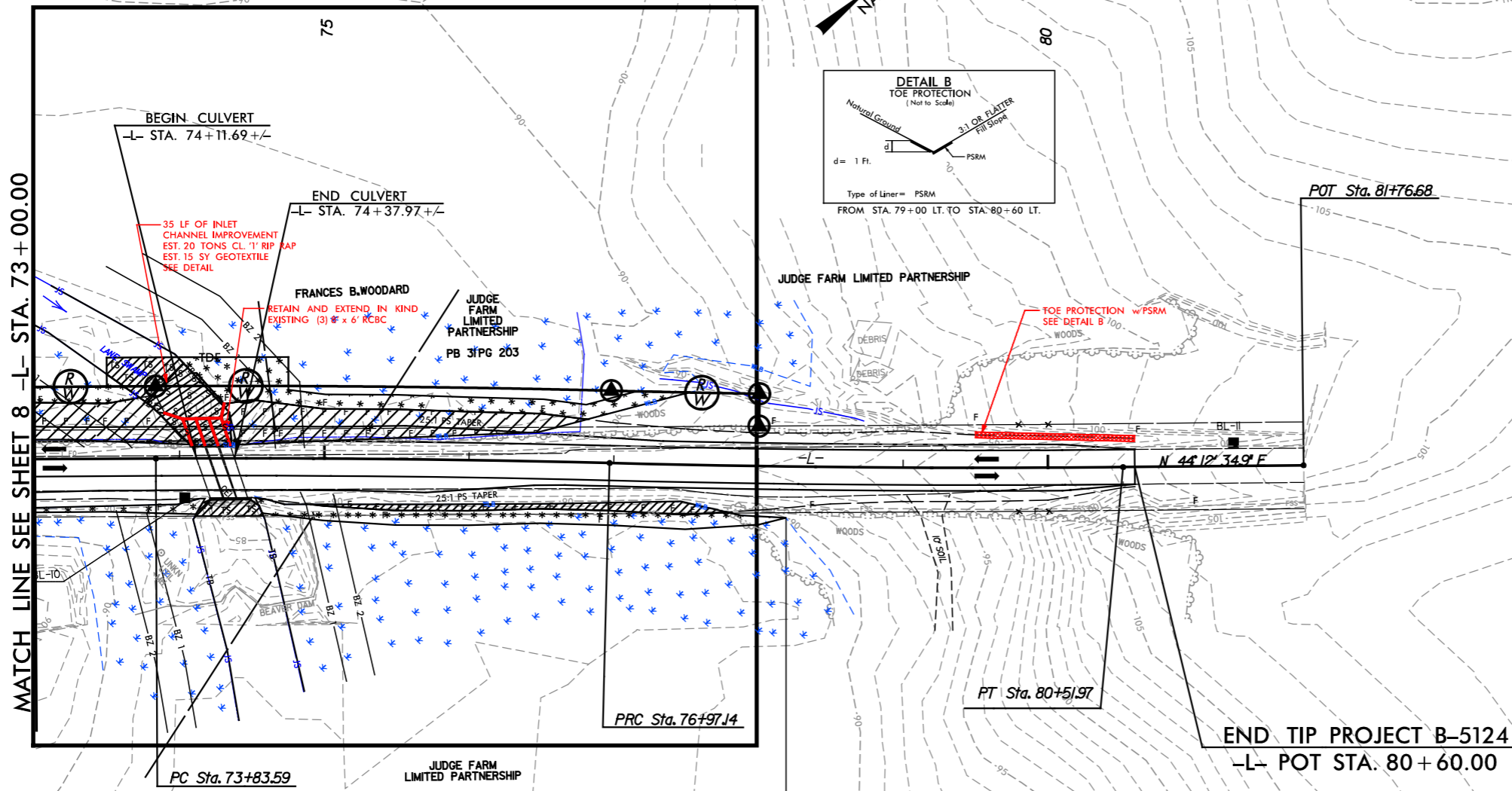
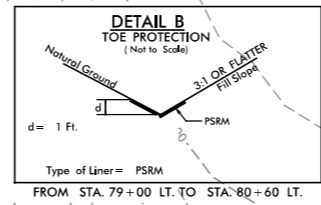
B.17/99

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO. B-5124	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
PERMIT DRAWING SHEET 30 OF 51	



CULVERT 161 INLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)



LEGEND

- WLB -- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES PERMANENT SURFACE WATER IMPACT
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES MECHANIZED CLEARING

PLAN VIEW SITE 5

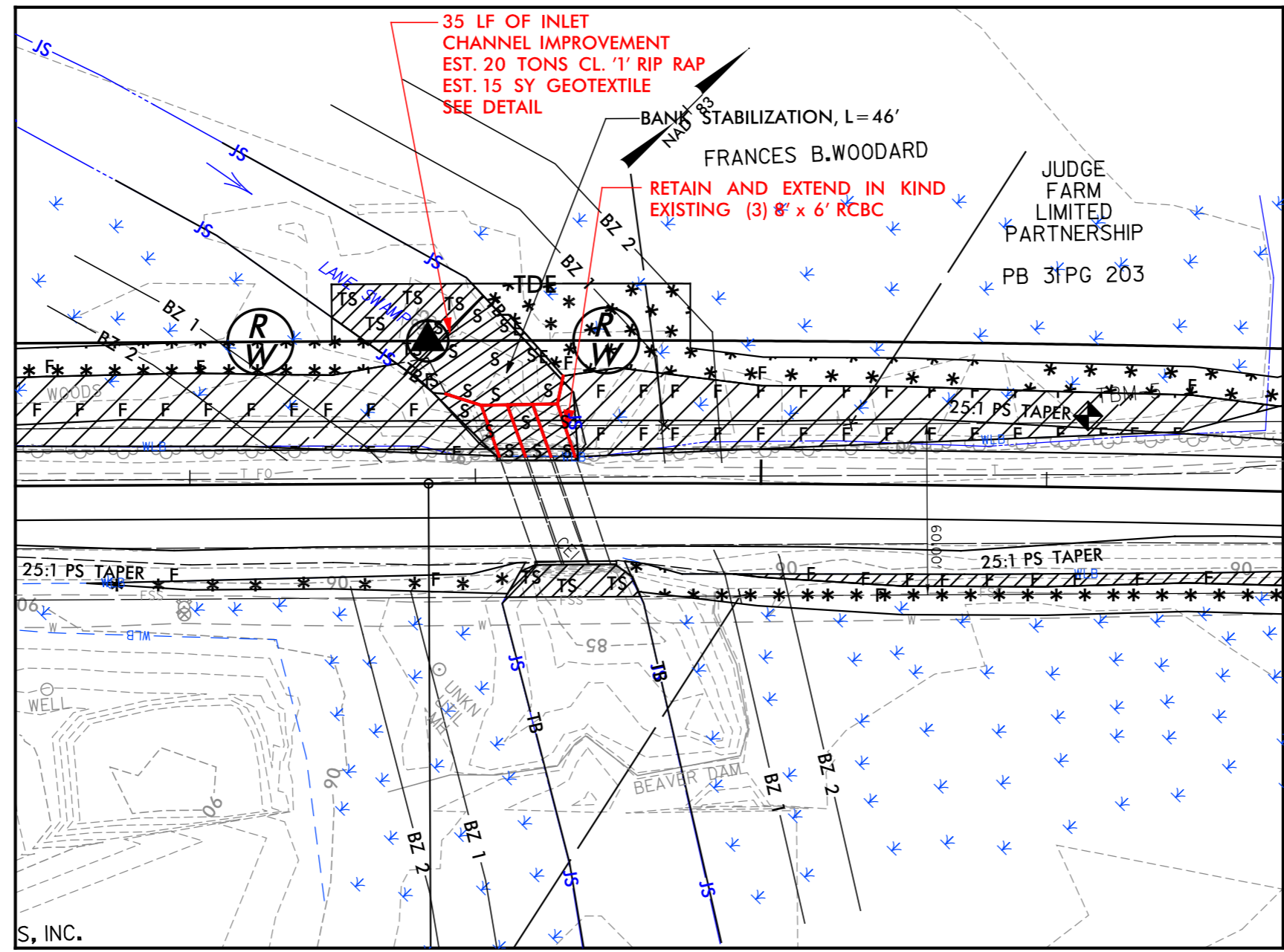
REVISIONS

4/2/2014 ICA ENGINEERING, INC. R: Hydraulics PERMITS Environmental Drawings: B5124_hyd_perm_wet_pst09.dgn

B.17/99

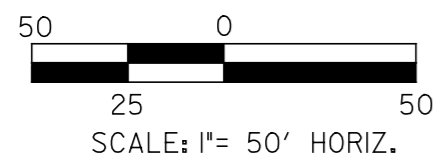
WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO. B-5124	SHEET NO. 9A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small> </div>	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY PROJECT: 42270.1.1 (B-5124) REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301 SHEET OF PERMIT DRAWING SHEET 31 OF 51	



REVISIONS

4/2/2014 ICA ENGINEERING, INC. R: Hydraulics PERMITS Environmental Drawings B5124_hyd_perm_wet_per19a.dgn

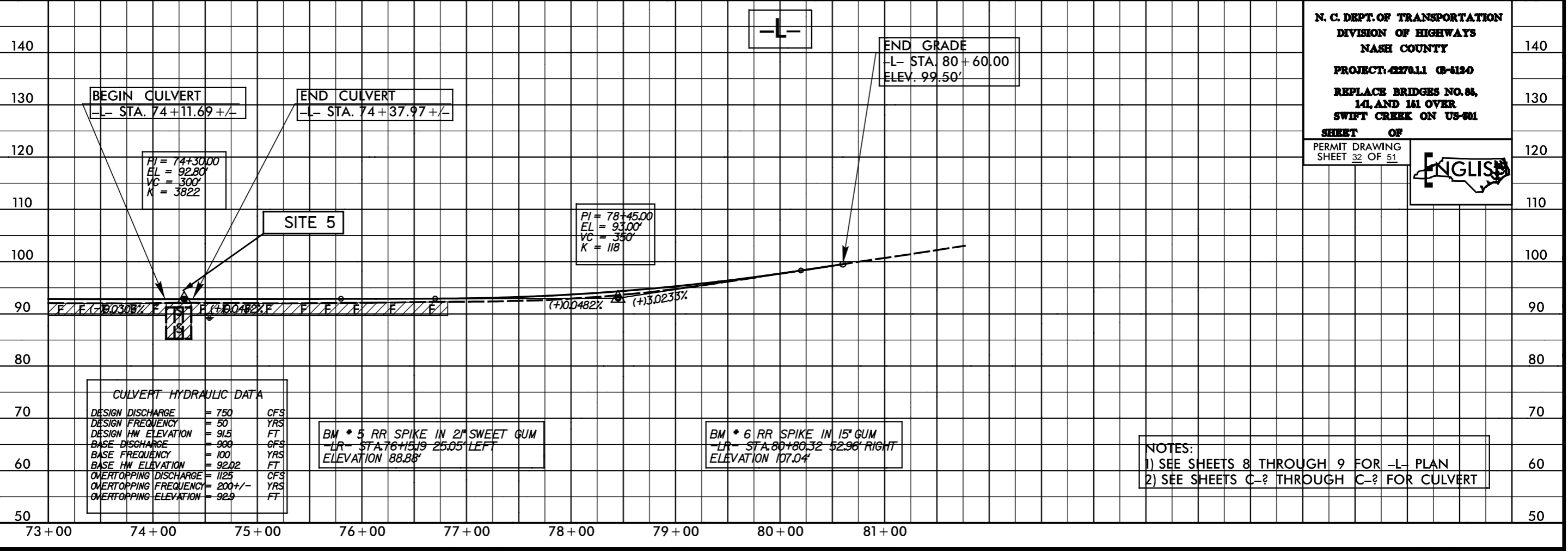
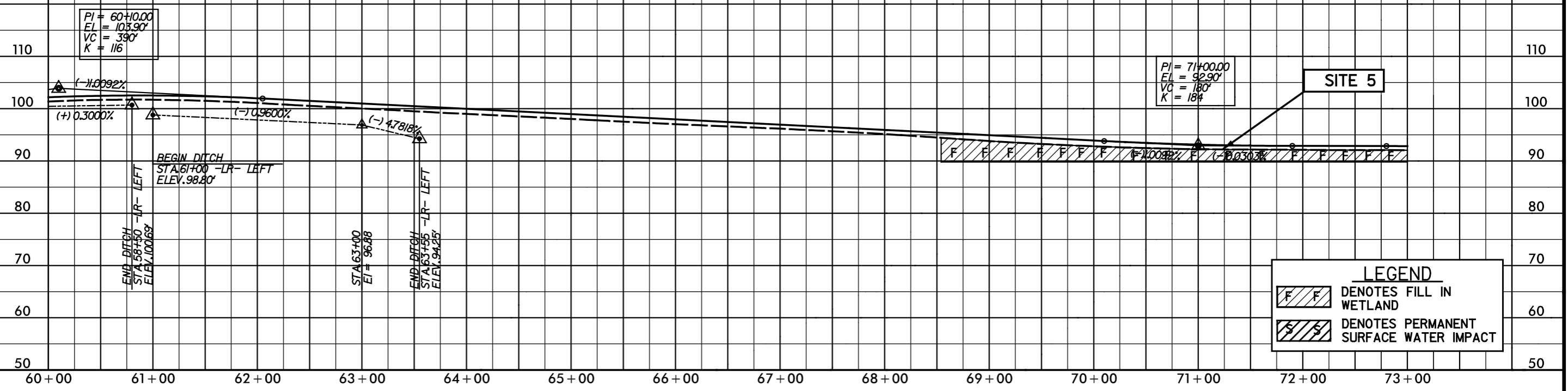


**ENLARGED
PLAN VIEW
SITE 5**

LEGEND

- DENOTES WETLAND BOUNDARY
- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES PERMANENT SURFACE WATER IMPACT
- DENOTES TEMPORARY SURFACE WATER IMPACT
- DENOTES MECHANIZED CLEARING

5/26/99



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 750	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 91.5	FT
BASE DISCHARGE	= 900	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 92.02	FT
OVERTOPPING DISCHARGE	= 1125	CFS
OVERTOPPING FREQUENCY	= 200+/-	YRS
OVERTOPPING ELEVATION	= 92.9	FT

BM * 5 RR SPIKE IN 2" SWEET GUM
 -LR- STA. 76+15.19 25.05' LEFT
 ELEVATION 88.88'

BM * 6 RR SPIKE IN 15' GUM
 -LR- STA. 80+80.32 52.96' RIGHT
 ELEVATION 107.04'

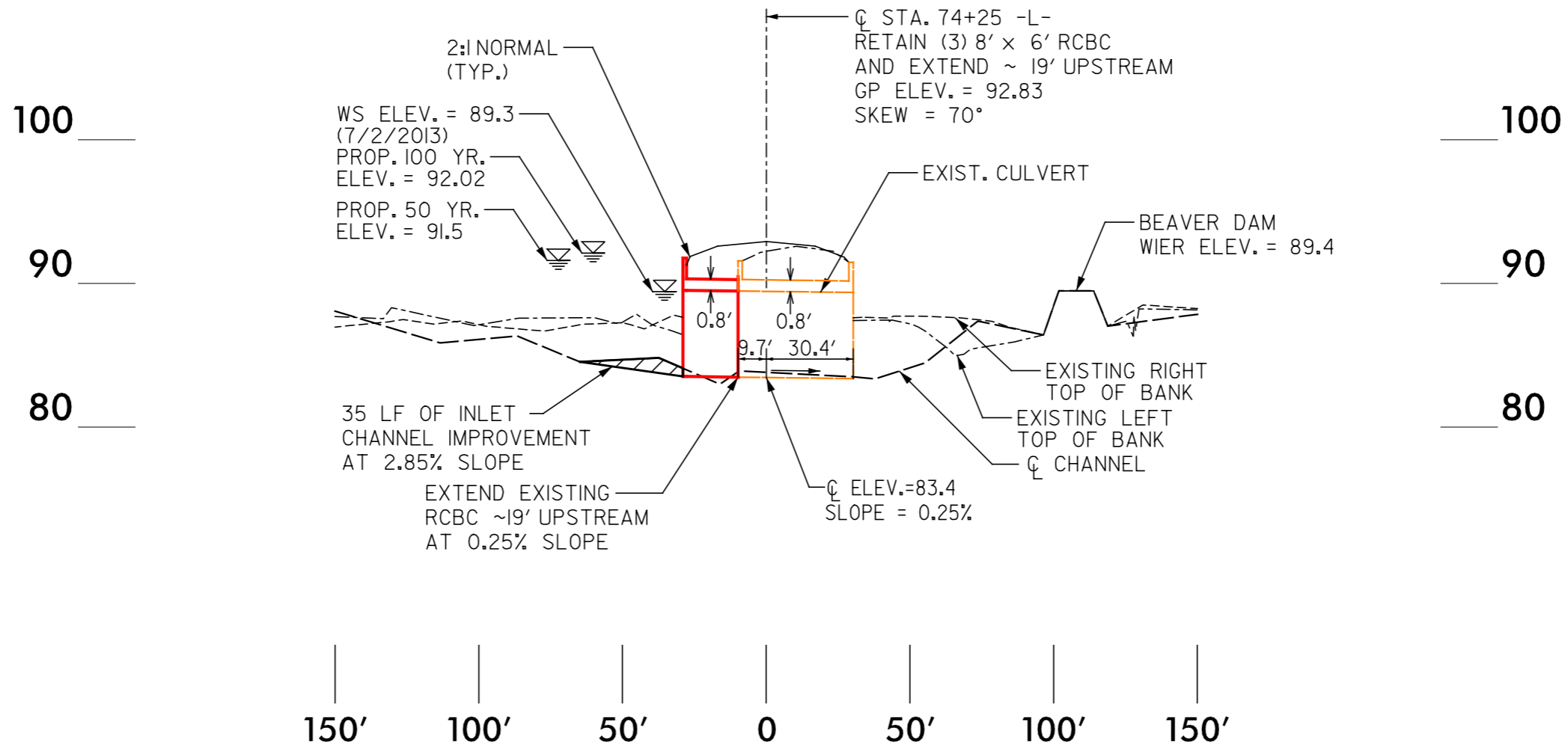
NOTES:
 1) SEE SHEETS 8 THROUGH 9 FOR -L- PLAN
 2) SEE SHEETS C-? THROUGH C-? FOR CULVERT

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 0270.11 B-5124
REPLACE BRIDGES NO. 86,
141, AND 181 OVER
SWIFT CREEK ON US-401
SHEET OF
 PERMIT DRAWING
 SHEET 32 OF 51



3/14/2014 ICA ENGINEERING, INC. R: Hydraulics PERMITS Environmental Drawings: B5124_hyd_prm_wel_profile.dgn

WETLAND AND SURFACE WATER IMPACTS PERMIT



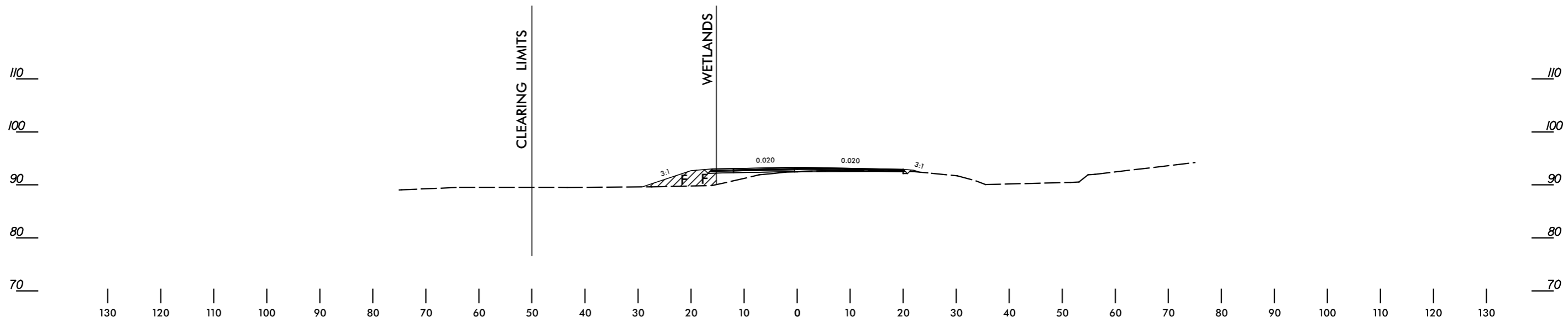
SITE 5
PROFILE ALONG STRUCTURE
STA 74+25 -L-

PROJECT REFERENCE NO. B-5124	SHEET NO. PAS-S5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY PROJECT: 42270.1.1 (B-5124) REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF PERMIT DRAWING SHEET 33 OF 51	



WETLAND AND SURFACE WATER IMPACTS PERMIT

		PROJ. REFERENCE NO. B-5124	SHEET NO. XSC SITE 5
ROADWAY DESIGN ENGINEER	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		HYDRAULICS ENGINEER
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY PROJECT: 42270.1.1 (B-5124) REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301 SHEET OF PERMIT DRAWING SHEET 35 OF 51			



SITE 5
 X-SECTION
 STA 71+00 -L-

LEGEND

	DENOTES FILL IN WETLAND
--	-------------------------

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 16+08 TO 21+00	EXTEND EX. 4@10'x7' RCBC	0.25		0.02	0.12		0.03	0.02	18	32	
1	-L- 17+10 TO 17+59	BANK STABILIZATION						< 0.01		20		
2	-L- 21+00 TO 34+00	24" PCCS BRIDGE, 1@70', 1@55'	0.60	0.02	< 0.01	0.50		< 0.01	0.05		56	
3	-L- 34+00 TO 47+00	21" PCCS BRIDGE, 1@35', 1@55', 1@45'	0.75	< 0.01	< 0.01	0.47		< 0.01	0.10	5	12	
4	-L- 47+00 TO 55+76	1@40' (21" PCCS), 1@70'(24" PCCS), 1@35' (21" PCCS)	0.40	0.01	< 0.01	0.35		< 0.01	< 0.01		73	
5	-L- 68+54 TO 78+20	EXTEND EX. 3@8'x6' RCBC	0.37		< 0.01	0.32		0.02	0.03	19	54	
5	-L- 73+77 TO 74+30	BANK STABILIZATION						0.03		46		
TOTALS*:			2.37	0.03	0.04	1.76		0.09	0.21	108	227	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 B-5124, NASH COUNTY
 REPLACE BRIDGES NO. 85, 141, AND 151
 OVER SWIFT CREEK ON US-301
 8/28/2014
 SHEET 36 OF 51

09/08/14

See Sheet 1-A For Index of Sheets

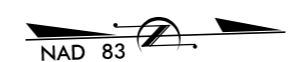
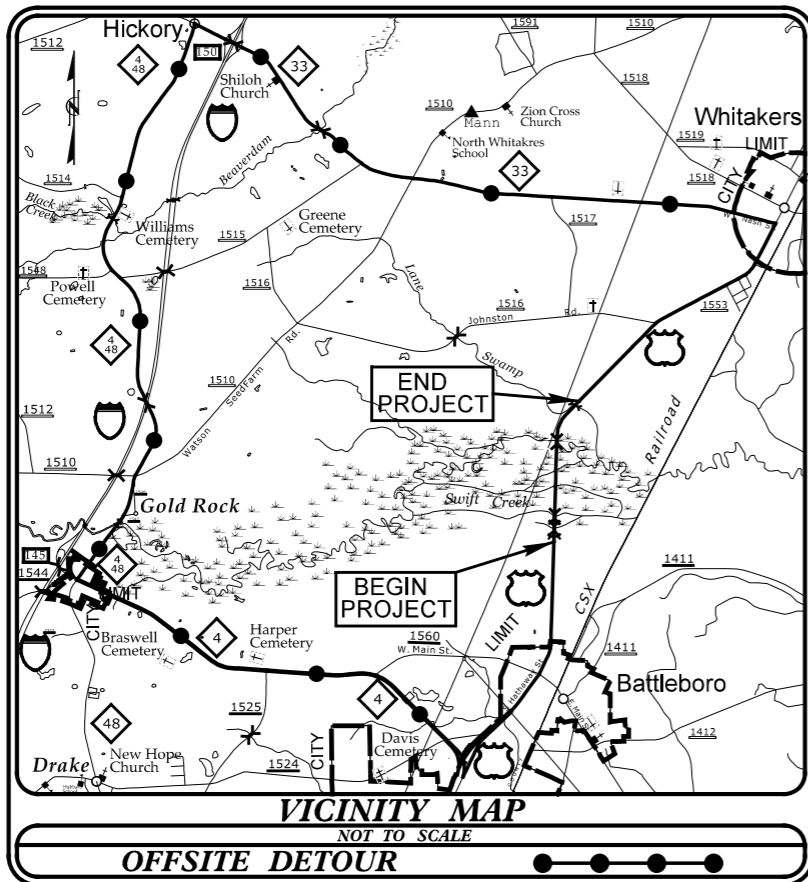
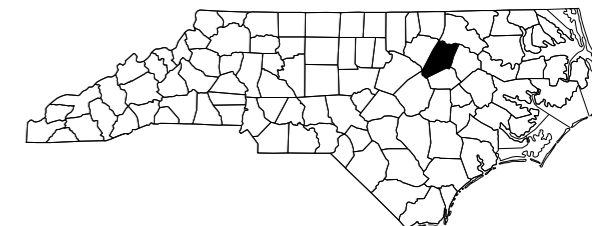
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

NASH COUNTY

**LOCATION: REPLACE BRIDGES NO. 85, 141, AND 151 OVER
SWIFT CREEK ON US-301**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES,
AND CULVERTS.**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5124	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42270.1.1	BRSTP-0301(25)	P.E.	
42270.2.1	BRSTP-0301(25)	RW & UTL.	



BUFFER IMPACTS PERMIT

ENGLISH

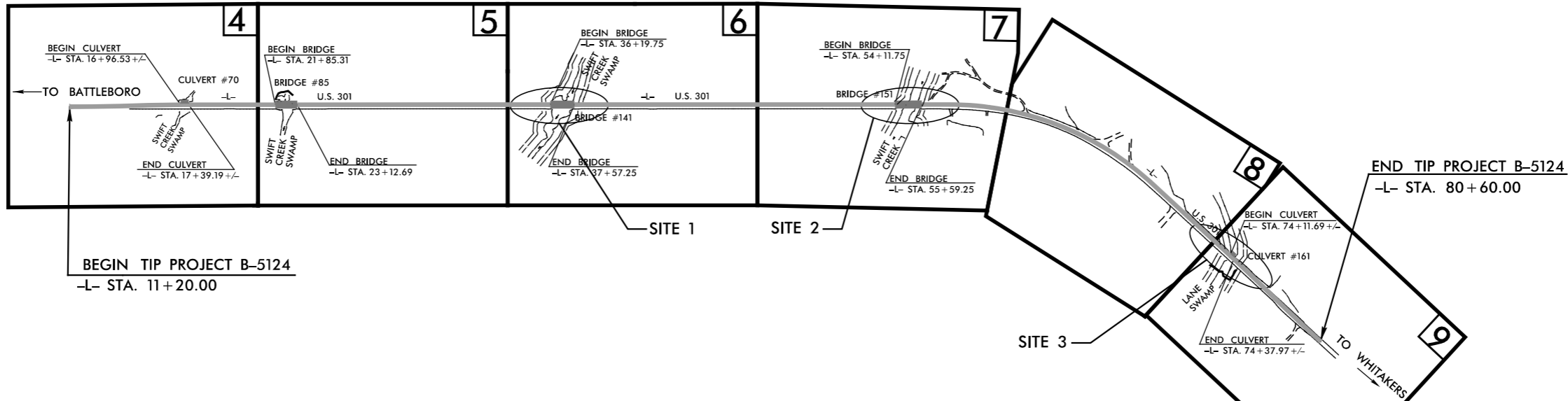
BUFFER DRAWING SHEET 37 OF 51

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

PROJECT: 42270.1.1 (B-5124)

REPLACE BRIDGES NO. 85,
141, AND 151 OVER
SWIFT CREEK ON US-301

SHEET OF

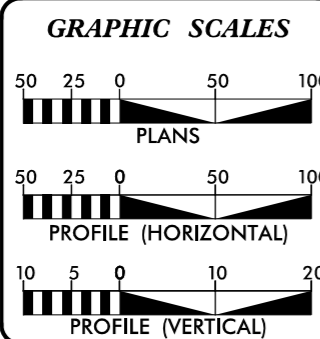


CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TIP PROJECT: B-5124

CONTRACT:



DESIGN DATA

ADT 2015 =	8,800
ADT 2035 =	11,200
K =	10 %
D =	60 %
T =	7 % *
V =	60 MPH
*(TTST = 3% DUALS 4%)	
FUNC CLASS =	
MINOR ARTERIAL	
STATEWIDE TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5124 =	1.223 MILES
LENGTH STRUCTURE TIP PROJECT B-5124 =	0.091 MILES
TOTAL LENGTH OF TIP PROJECT B-5124 =	1.314 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 28, 2014

LETTING DATE:
APRIL 21, 2015

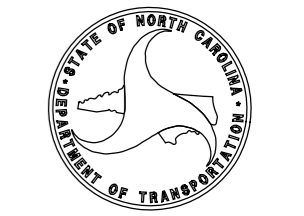
GARY LOVERING, PE
PROJECT ENGINEER

CHRISTOPHER H. LEE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.
ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.



4/22/2014 ICA ENGINEERING, INC. R:\Hydraulics\PERMITS_Environmental\Drawings\B5124_hyd_prm_buffer_ish.dgn

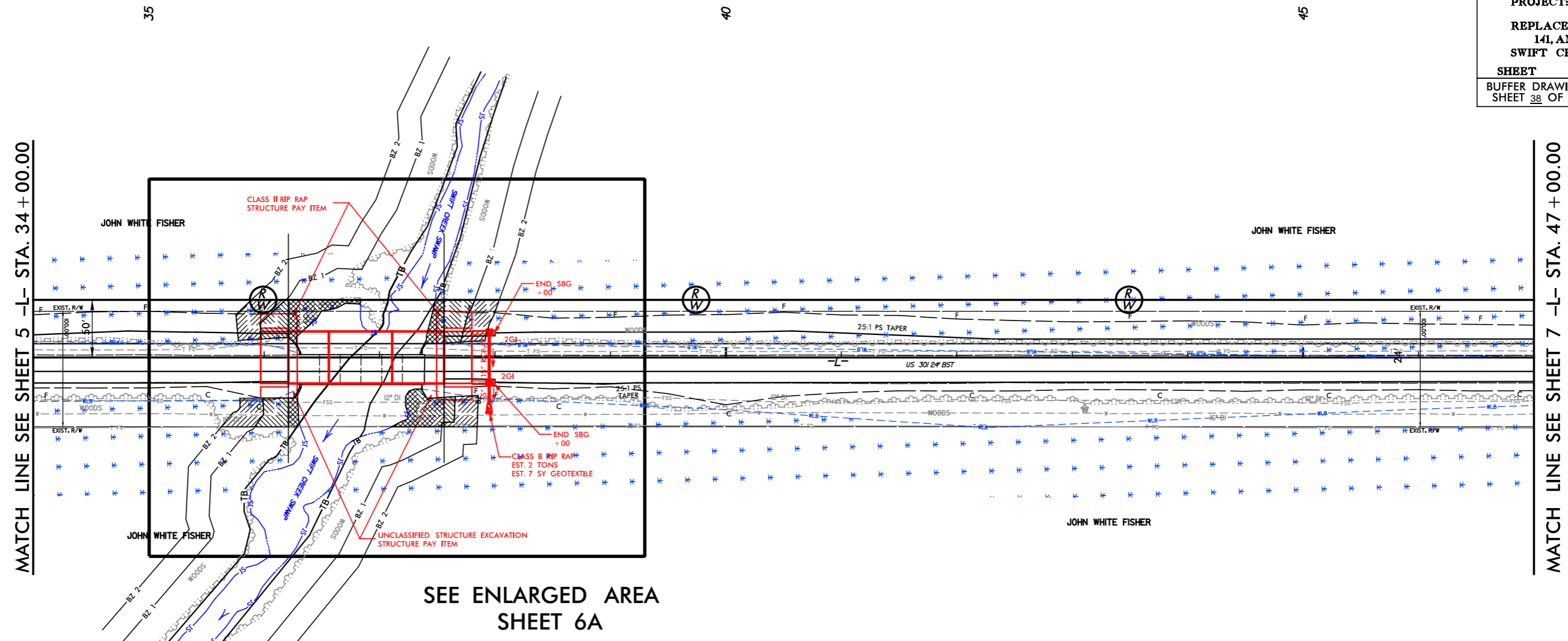
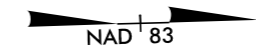
BUFFER IMPACTS IMPACTS

PROJECT REFERENCE NO. B-5124	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

PROJECT: 42270.1.1 (B-5124)
REPLACE BRIDGES NO. 85,
141, AND 151 OVER
SWIFT CREEK ON US-301

SHEET OF
BUFFER DRAWING
SHEET 38 OF 51



SEE ENLARGED AREA
SHEET 6A

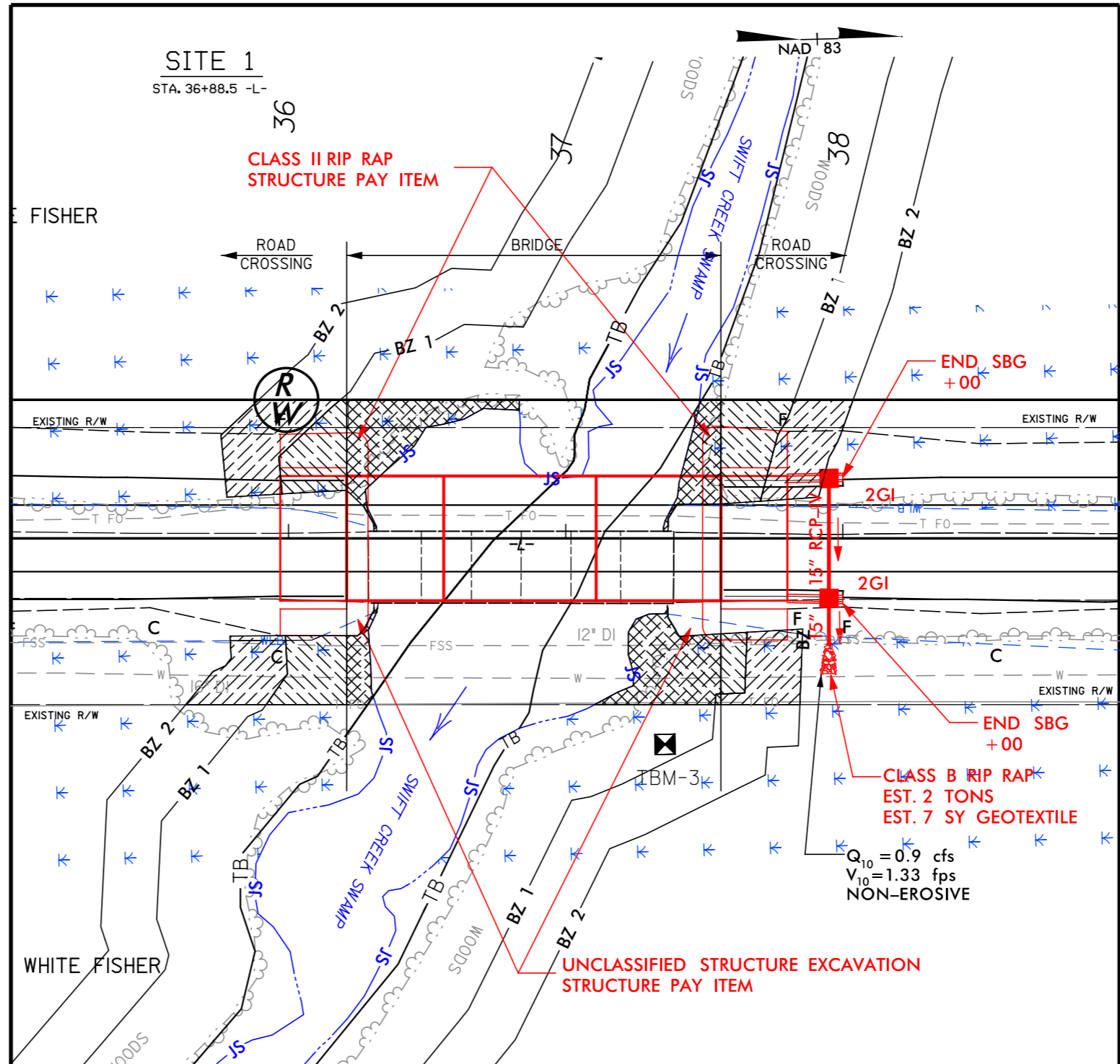
PLAN VIEW
SITE 1

LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE)

BUFFER IMPACTS

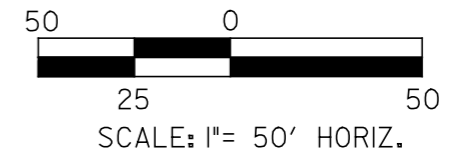
PROJECT REFERENCE NO. B-5124	SHEET NO. 6A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
BUFFER DRAWING SHEET 39 OF 51	



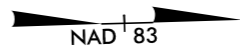
LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE)

ENLARGED PLAN VIEW SITE 1



BUFFER IMPACTS IMPACTS

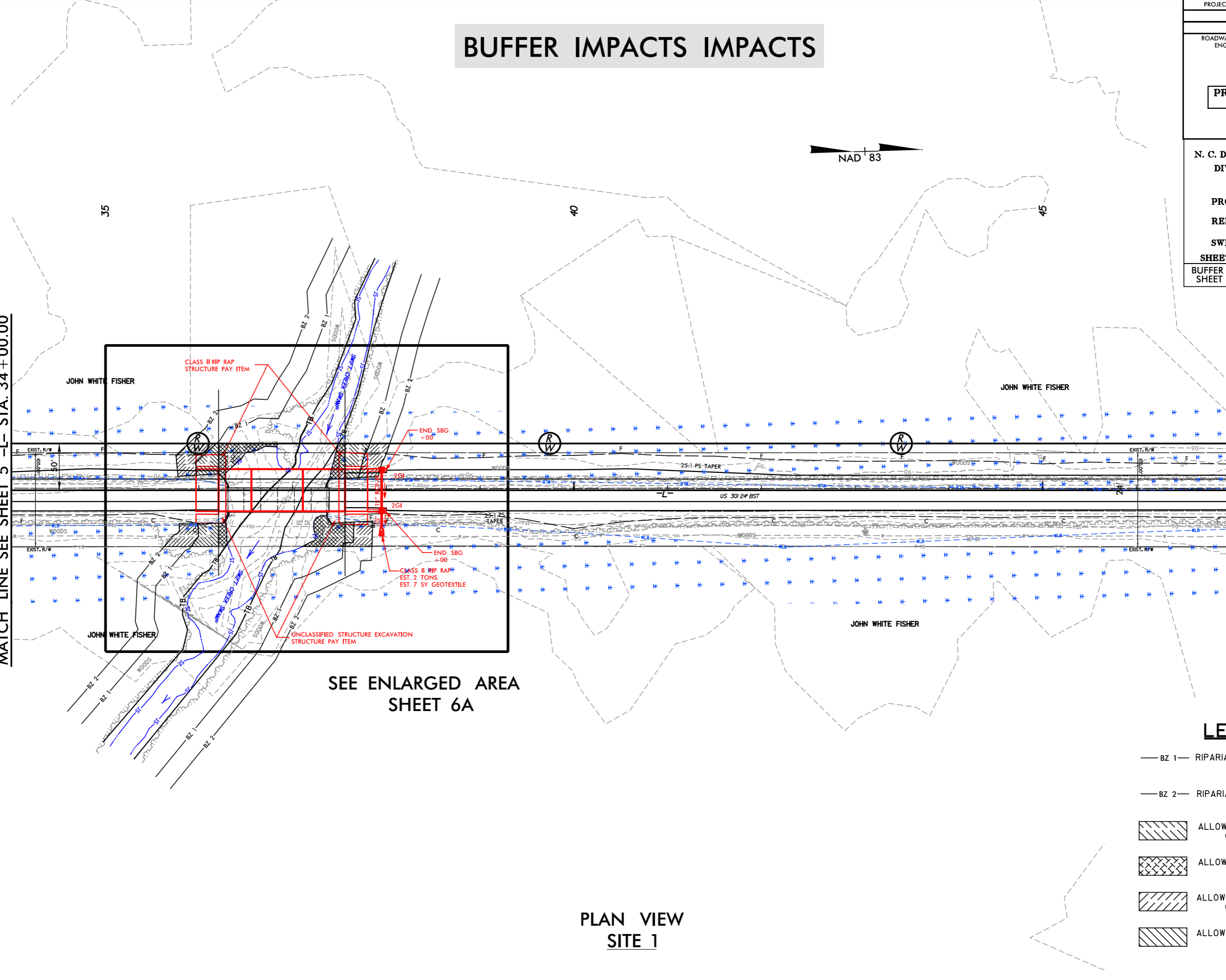


PROJECT REFERENCE NO. B-5124	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
BUFFER DRAWING SHEET 40 OF 51	



MATCH LINE SEE SHEET 5 -L- STA. 34+00.00

MATCH LINE SEE SHEET 7 -L- STA. 47+00.00



SEE ENLARGED AREA
SHEET 6A

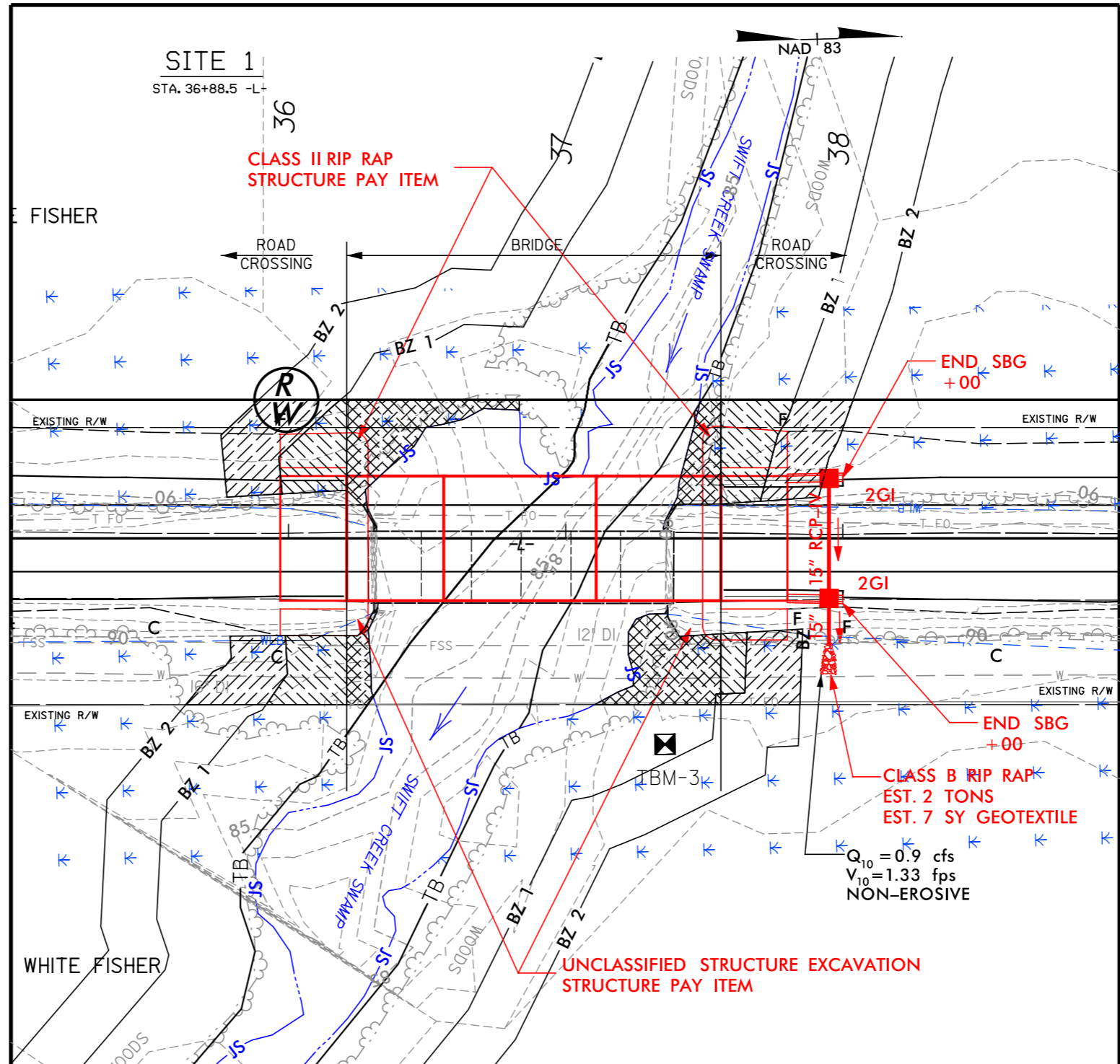
PLAN VIEW
SITE 1

LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE)

BUFFER IMPACTS

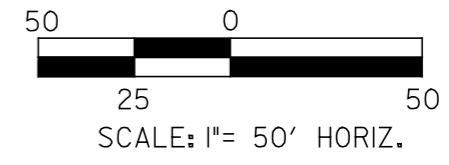
PROJECT REFERENCE NO. B-5124	SHEET NO. 6A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.11 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
BUFFER DRAWING SHEET 41 OF 51	



LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- [Hatched Box] ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- [Cross-hatched Box] ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- [Hatched Box] ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)
- [Cross-hatched Box] ALLOWABLE IMPACTS ZONE 2 (BRIDGE)

ENLARGED PLAN VIEW
SITE 1



BUFFER IMPACTS IMPACTS

PROJECT REFERENCE NO. B-5124	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

PROJECT: 42270.1.1 (B-5124)

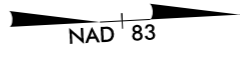
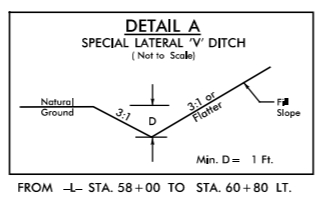
REPLACE BRIDGES NO. 85,
141, AND 151 OVER
SWIFT CREEK ON US-301

SHEET OF
BUFFER DRAWING
SHEET 42 OF 51



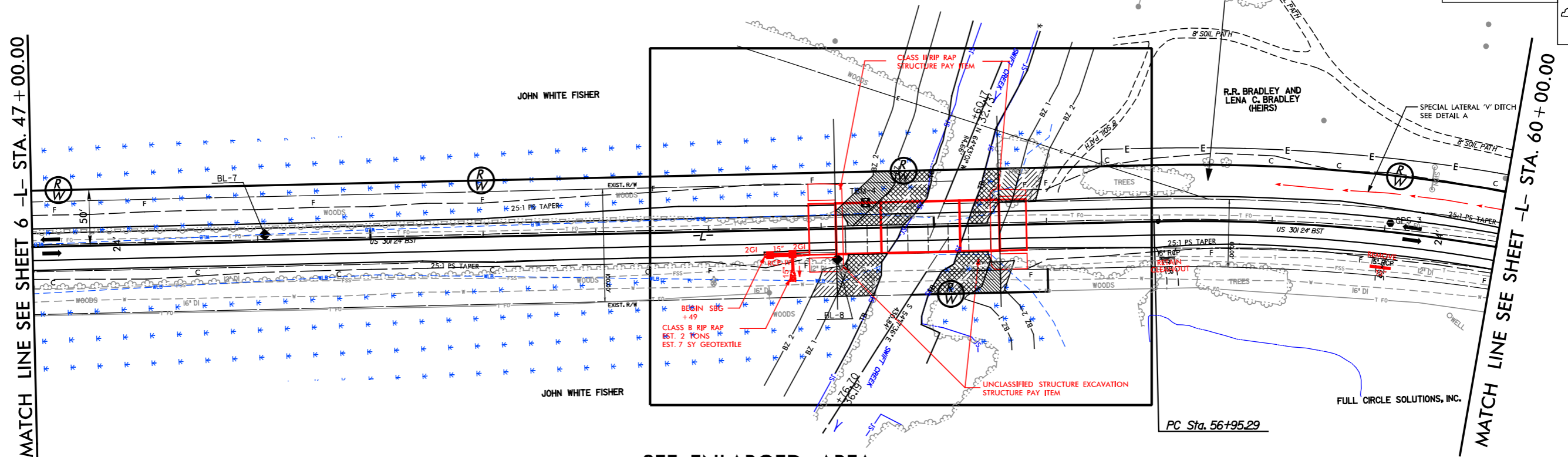
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SLOPE =	0.023
SIDE SLOPE =	3:1 & 4:1
L REQ. =	26'
L PRO. =	430'
Q2 =	0.34 cfs
V2 =	1.4 fps
Q10 =	0.44 fps
V10 =	1.5 fps



MATCH LINE SEE SHEET 6 -L- STA. 47+00.00

MATCH LINE SEE SHEET -L- STA. 60+00.00



SEE ENLARGED AREA
SHEET 7A

PLAN VIEW
SITE 2

LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE)

REVISIONS
RW REVISION (APRIL 1, 2014): CONSTRUCTION EASEMENT ADDED TO PARCEL 2 FROM -L- STA 58+50 TO 63+65 LT. hcn

4/2/2014
ICA ENGINEERING, INC.
R: Hydraulics PERMITS Environmental Drawings: B5124_hyd_perm_buffr_ash7.dgn

B:17/99

BUFFER IMPACTS

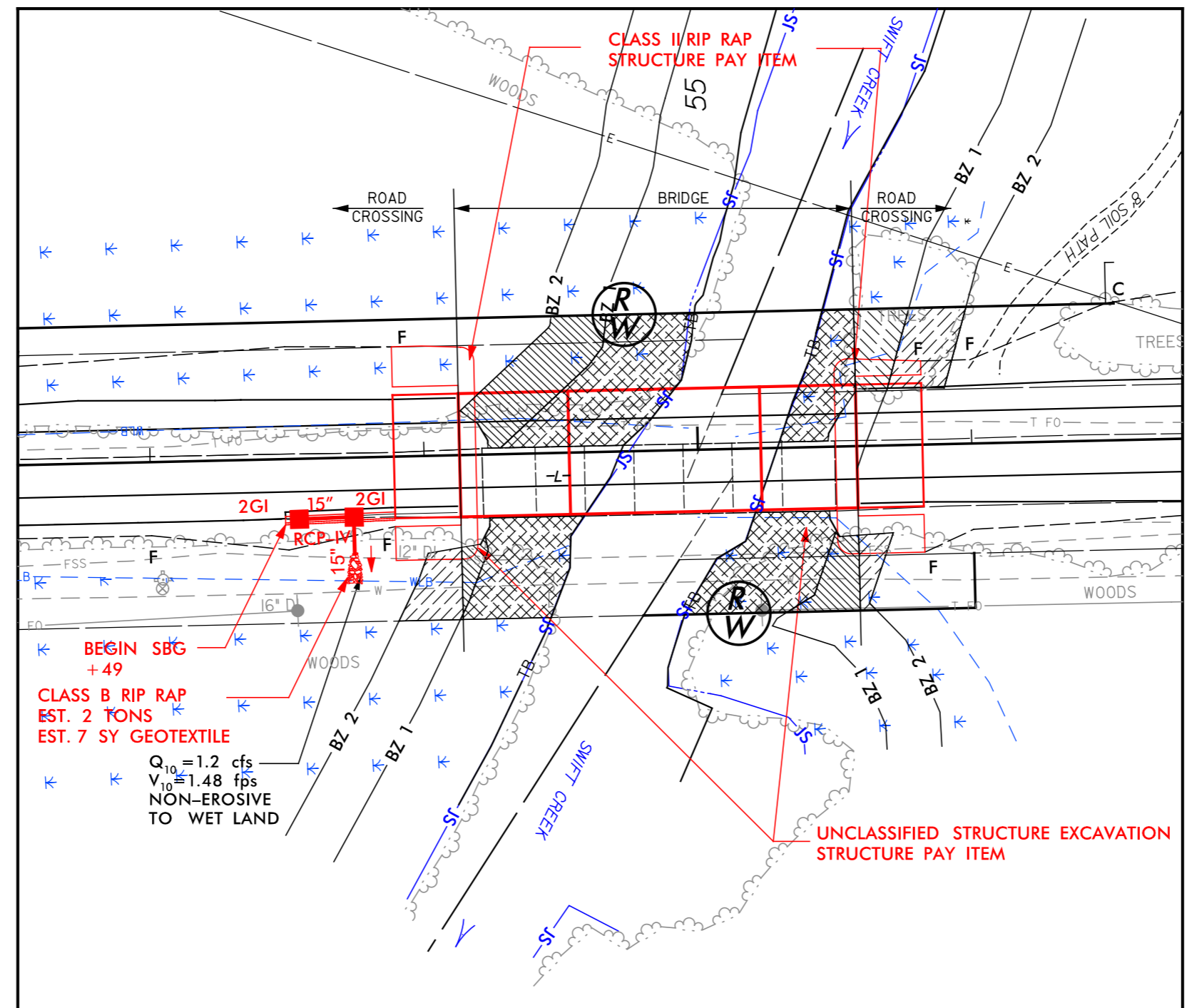
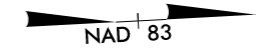
PROJECT REFERENCE NO. B-5124	SHEET NO. 7A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

PROJECT: 42270.1.1 (B-5124)

REPLACE BRIDGES NO. 85,
141, AND 151 OVER
SWIFT CREEK ON US-301

SHEET OF
BUFFER DRAWING
SHEET 43 OF 51



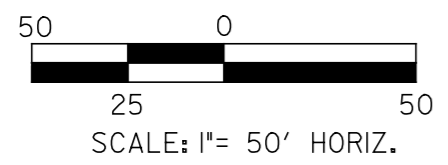
BEGIN SBG
+49
CLASS B RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE
 $Q_{10} = 1.2$ cfs
 $V_{10} = 1.48$ fps
NON-EROSIVE
TO WET LAND

UNCLASSIFIED STRUCTURE EXCAVATION
STRUCTURE PAY ITEM

CLASS II RIP RAP
STRUCTURE PAY ITEM

LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE)



ENLARGED
PLAN VIEW
SITE 2

REVISIONS
RW REVISION (APRIL 1, 2014): CONSTRUCTION EASEMENT ADDED TO PARCEL 2 FROM STA 58+50 TO 63+65 LT. hcn

4/2/2014 ICA ENGINEERING, INC.
R: Hydraulics (PERMITS - Environmental) Drawings (B5124_hyd_perm_buffr_psh7A.dgn)

B.17/99

BUFFER IMPACTS

PROJECT REFERENCE NO. B-5124	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

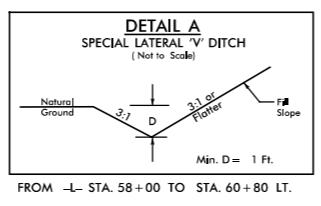
PROJECT: 42270.1.1 (B-5124)

**REPLACE BRIDGES NO. 85,
141, AND 151 OVER
SWIFT CREEK ON US-301**

SHEET OF
 BUFFER DRAWING
 SHEET 44 OF 51



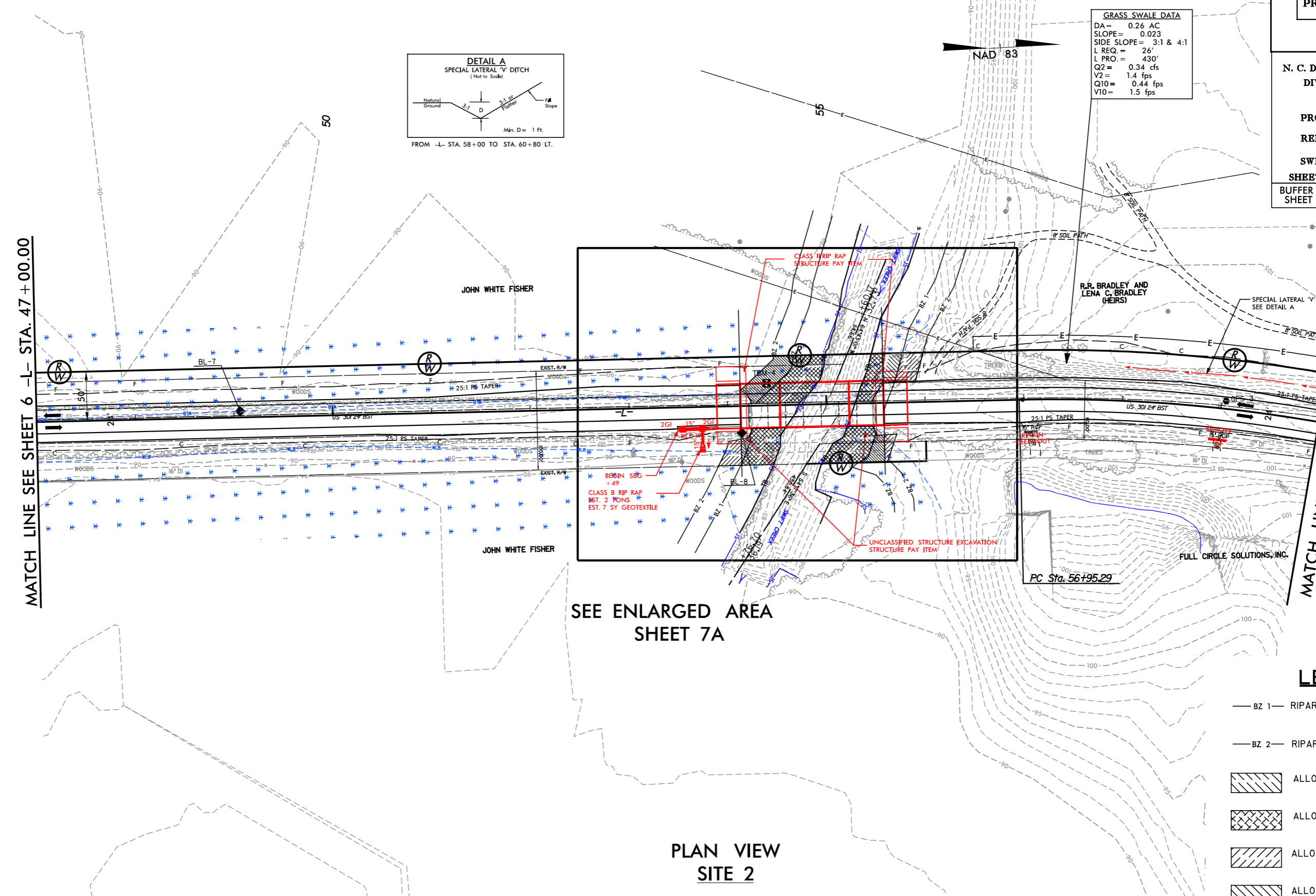
GRASS SWALE DATA	
DA =	0.26 AC
SLOPE =	0.023
SIDE SLOPE =	3:1 & 4:1
L REQ. =	26'
L PRO. =	430'
Q2 =	0.34 cfs
V2 =	1.4 fps
Q10 =	0.44 fps
V10 =	1.5 fps



REVISIONS
 RW REVISION (APRIL 1, 2014): CONSTRUCTION EASEMENT ADDED TO PARCEL 2 FROM -L- STA 58+50 TO 63+65 LT. hcn

MATCH LINE SEE SHEET 6 -L- STA. 47+00.00

MATCH LINE SEE SHEET -L- STA. 60+00.00



SEE ENLARGED AREA
SHEET 7A

**PLAN VIEW
SITE 2**

LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (BRIDGE)

BUFFER IMPACTS IMPACTS


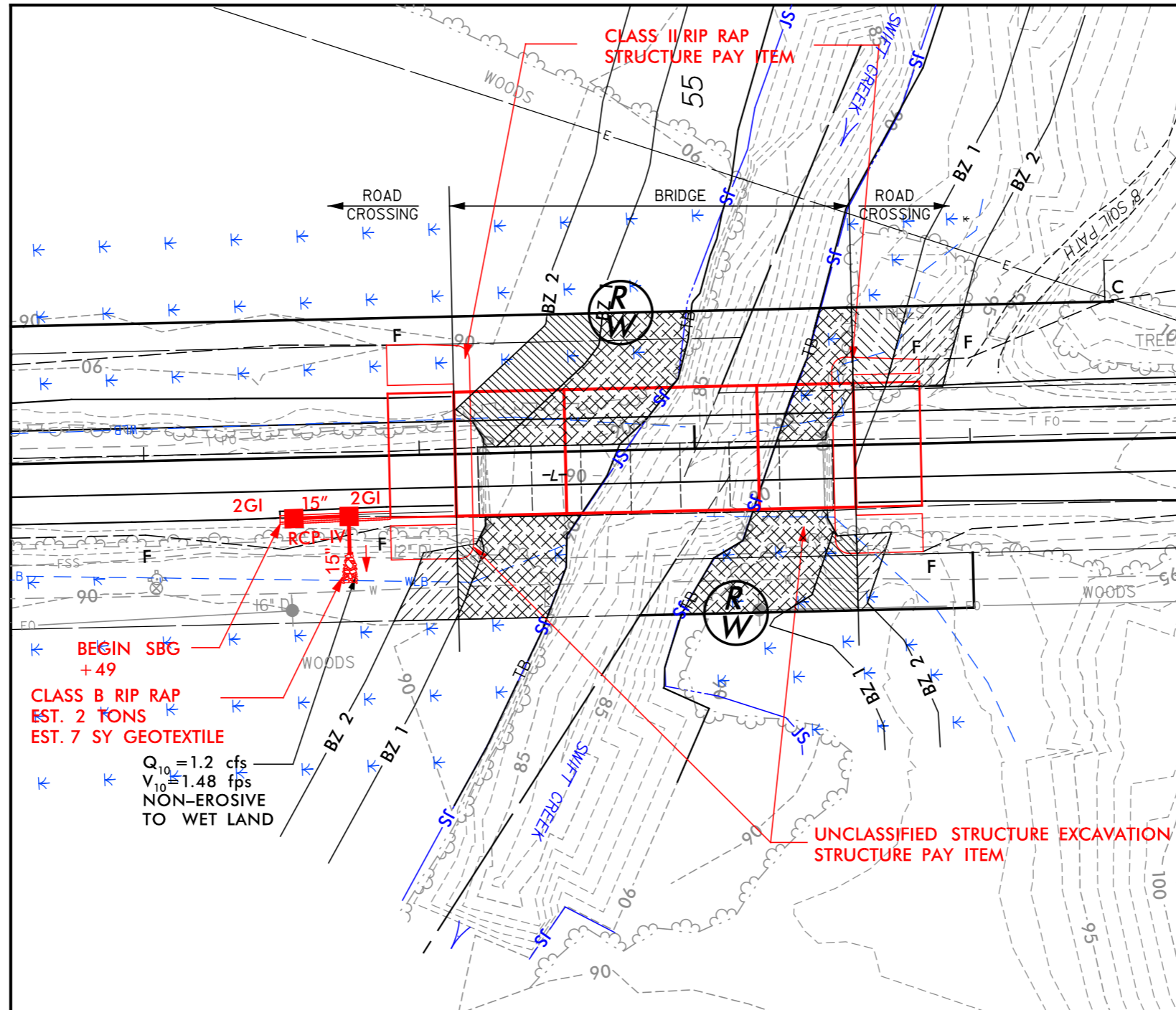
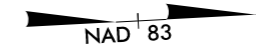
PROJECT REFERENCE NO. B-5124	SHEET NO. 7A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

PROJECT: 42270.1.1 (B-5124)

REPLACE BRIDGES NO. 85,
141, AND 151 OVER
SWIFT CREEK ON US-301

SHEET OF
BUFFER DRAWING
SHEET 45 OF 51

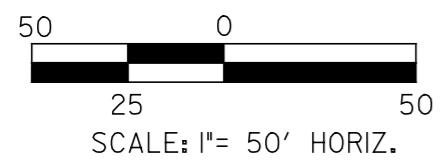
BEGIN SBG
+49

CLASS B RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE

$Q_{10} = 1.2$ cfs
 $V_{10} = 1.48$ fps
NON-EROSIVE
TO WET LAND

UNCLASSIFIED STRUCTURE EXCAVATION
STRUCTURE PAY ITEM

ENLARGED
PLAN VIEW
SITE 2



LEGEND

— BZ 1 —	RIPARIAN BUFFER ZONE 1 (30')
— BZ 2 —	RIPARIAN BUFFER ZONE 2 (20')
	ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
	ALLOWABLE IMPACTS ZONE 1 (BRIDGE)
	ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)
	ALLOWABLE IMPACTS ZONE 2 (BRIDGE)

REVISIONS
RW REVISION (APRIL 1, 2014): CONSTRUCTION EASEMENT ADDED TO PARCEL 2 FROM STA 58+50 TO 63+65 LT. hcn

4/2/2014
ICA ENGINEERING, INC.
R: Hydraulics (PERMITS - Environmental) Drawings (B-5124_hyd_perm_buffr_psh7A.dgn)

B-17/99


PROJECT REFERENCE NO. B-5124	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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

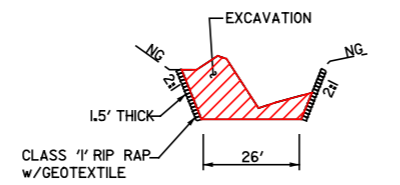
PROJECT: 42270.1.1 (B-5124)

REPLACE BRIDGES NO. 85,
141, AND 151 OVER
SWIFT CREEK ON US-301

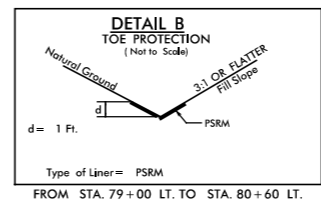
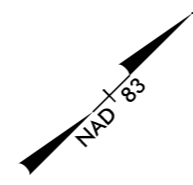
SHEET OF
BUFFER DRAWING
SHEET 46 OF 51



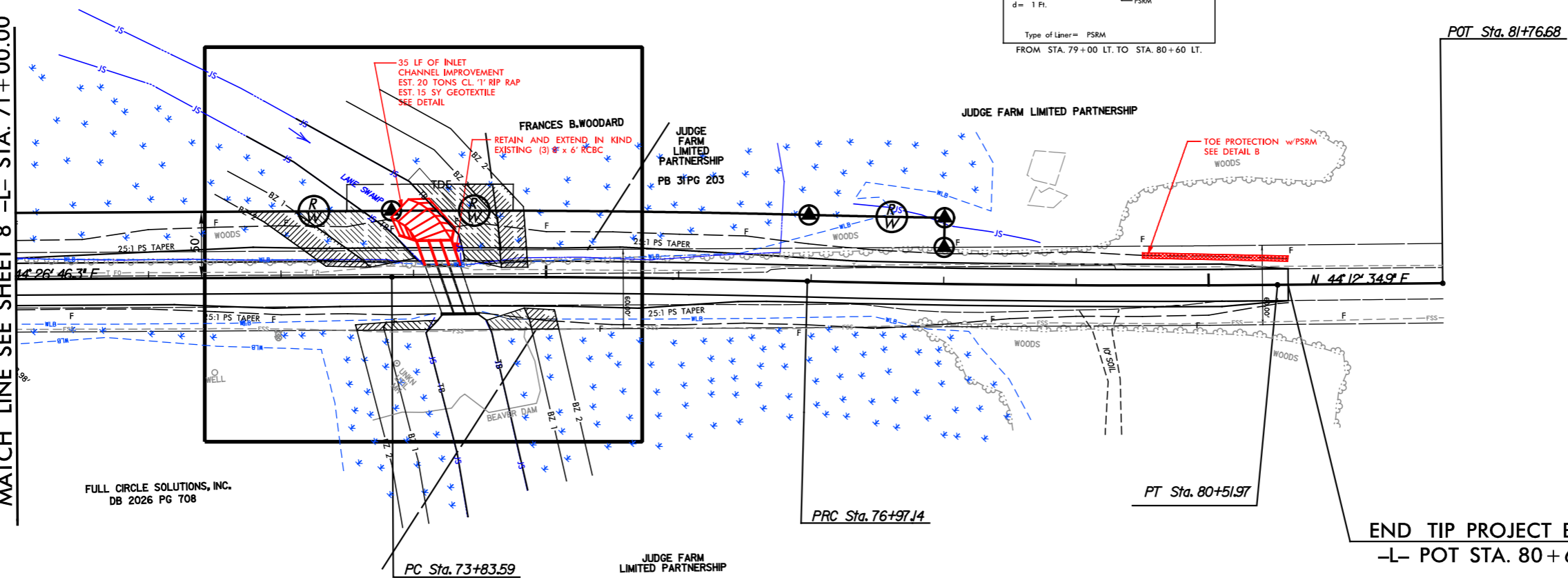
BUFFER IMPACTS



CULVERT 161 INLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)



MATCH LINE SEE SHEET 8 -L- STA. 71+00.00



FULL CIRCLE SOLUTIONS, INC.
DB 2026 PG 708

SEE ENLARGED AREA
SHEET 9A

JUDGE FARM LIMITED PARTNERSHIP
PB 31PG 203

END TIP PROJECT B-5124
-L- POT STA. 80+60.00

LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)

PLAN VIEW SITE 3

REVISIONS

4/2/2014 ICA ENGINEERING, INC. R:\Hydraulics\PERMITS_Environmental Drawings\B5124_hyd_perm_buffal_psh9.dgn

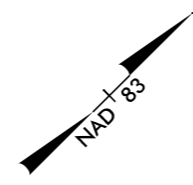
B.17/99

B.17/99

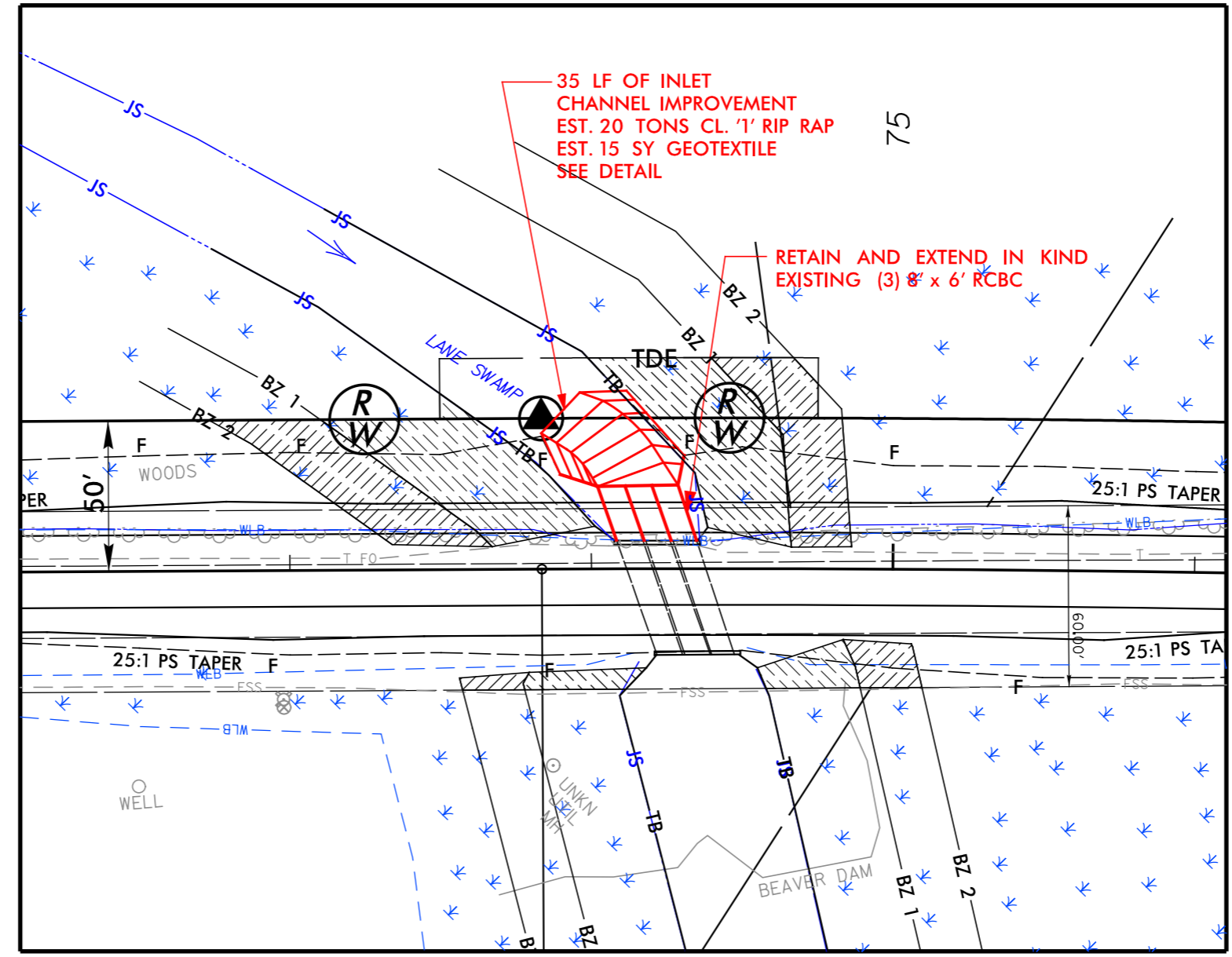
REVISIONS

4/27/14 ICA ENGINEERING, INC. R: Hydraulics\FE\BOMIS_Environmental\Drawings\B5124_hyd_prm_buffr_psh9A.dgn

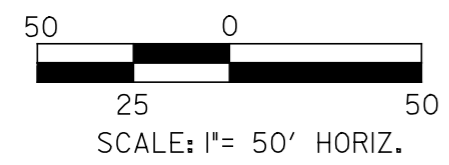
BUFFER IMPACTS IMPACTS



PROJECT REFERENCE NO. B-5124	SHEET NO. 9A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
BUFFER DRAWING SHEET 47 OF 51	



ENLARGED PLAN VIEW
SITE 3



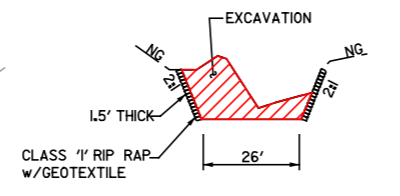
LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)

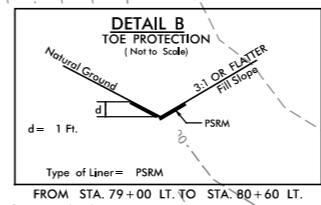
PROJECT REFERENCE NO. B-5124	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY	
PROJECT: 42270.1.1 (B-5124)	
REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF	
BUFFER DRAWING SHEET 48 OF 51	



BUFFER IMPACTS

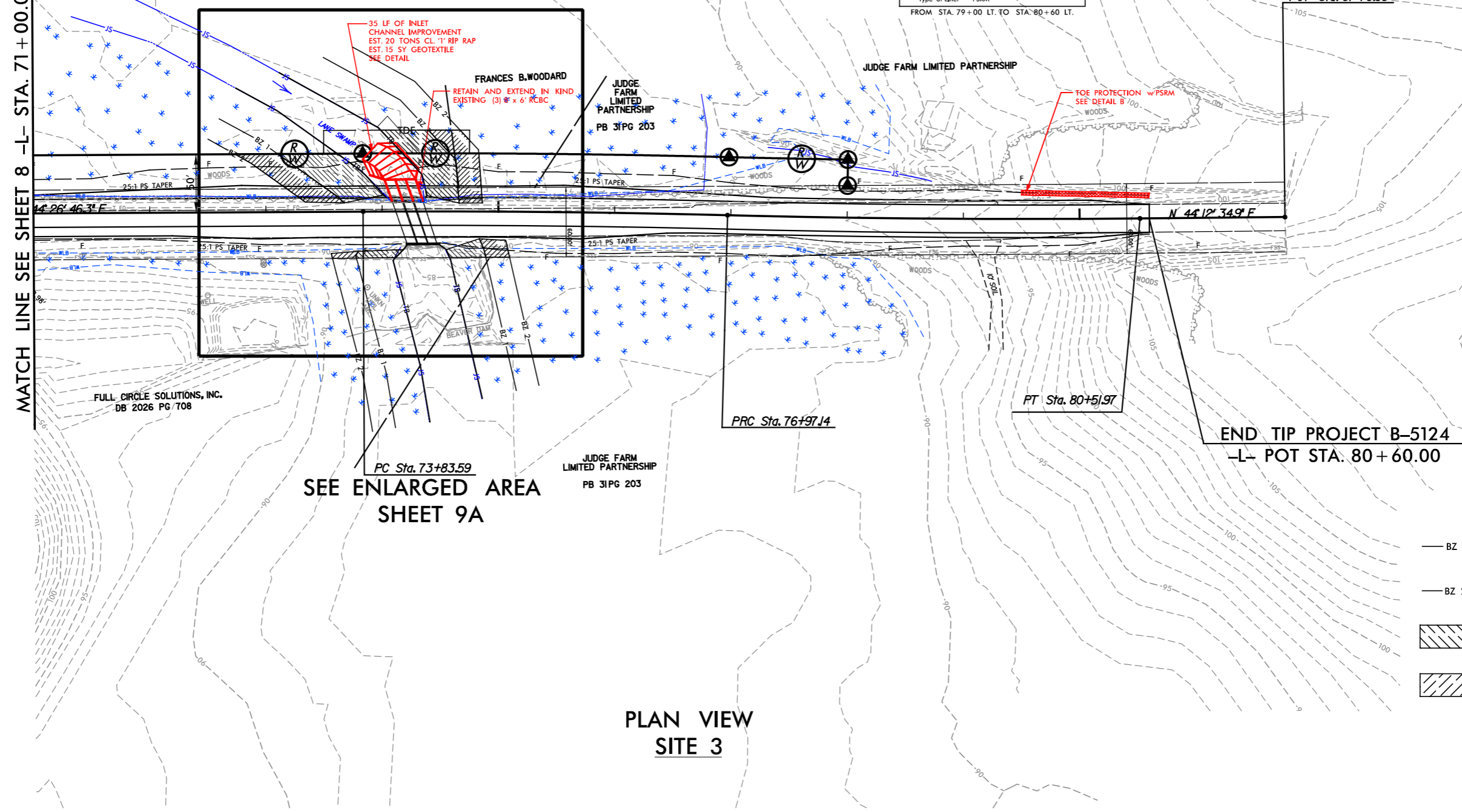


CULVERT 161 INLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)



DETAIL B
TOE PROTECTION
(Not to Scale)

MATCH LINE SEE SHEET 8 -L- STA. 71+00.00



SEE ENLARGED AREA
SHEET 9A

PLAN VIEW
SITE 3

LEGEND

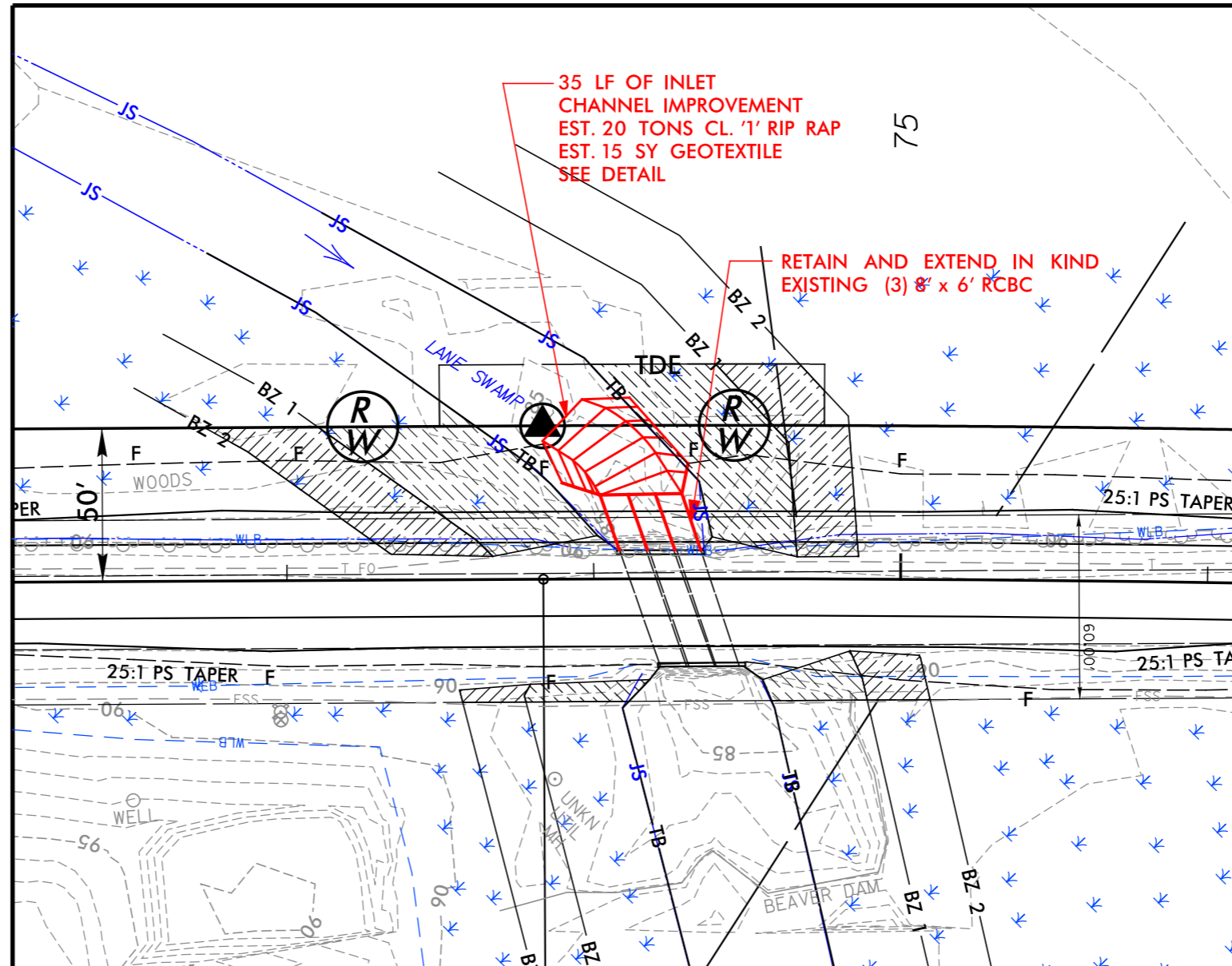
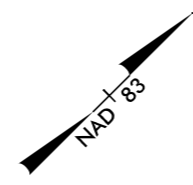
- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)

REVISIONS

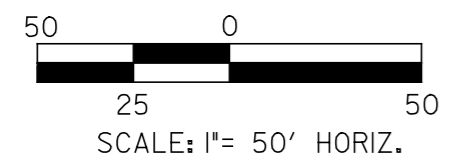
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B.17/99

BUFFER IMPACTS IMPACTS



ENLARGED
PLAN VIEW
SITE 3



PROJECT REFERENCE NO. B-5124	SHEET NO. 9A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
N. C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS NASH COUNTY PROJECT: 42270.1.1 (B-5124) REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301	
SHEET OF BUFFER DRAWING SHEET 49 OF 51	



LEGEND

- BZ 1 — RIPARIAN BUFFER ZONE 1 (30')
- BZ 2 — RIPARIAN BUFFER ZONE 2 (20')
- ALLOWABLE IMPACTS ZONE 1 (ROAD CROSSING)
- ALLOWABLE IMPACTS ZONE 2 (ROAD CROSSING)

REVISIONS

4/27/14 ICA ENGINEERING, INC.
R: Hydraulics\FE80MIS_Environmental\Drawings\B5124_hyd_prm_buffr_psh9A.dgn

B.17/99

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)		
1	21" PCCS BRIDGE, 1@35', 1@55', 1@45'	-L- 35+63 TO 38+03		X		2596	7	2603					
			X			2085	2784	4869					
2	1@40' (21" PCCS), 1@70'(24" PCCS), 1@35' (21" PCCS)	-L- 53+89 TO 55+99		X		5224	1678	6902					
			X			474	1260	1734					
3	EXTEND EX. 3@8'x6' RCBC	-L- 72+72 TO 75+09	X			4623	3220	7843					
TOTAL:						15001	8949	23950	0.0	0.0	0.0		

N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS

 B-5124
 NASH COUNTY
 REPLACE BRIDGES NO. 85, 141, AND 151
 OVER SWIFT CREEK ON US-301
 3/13/2014
 SHEET 50 OF 51

WETLANDS IN BUFFER IMPACTS SUMMARY

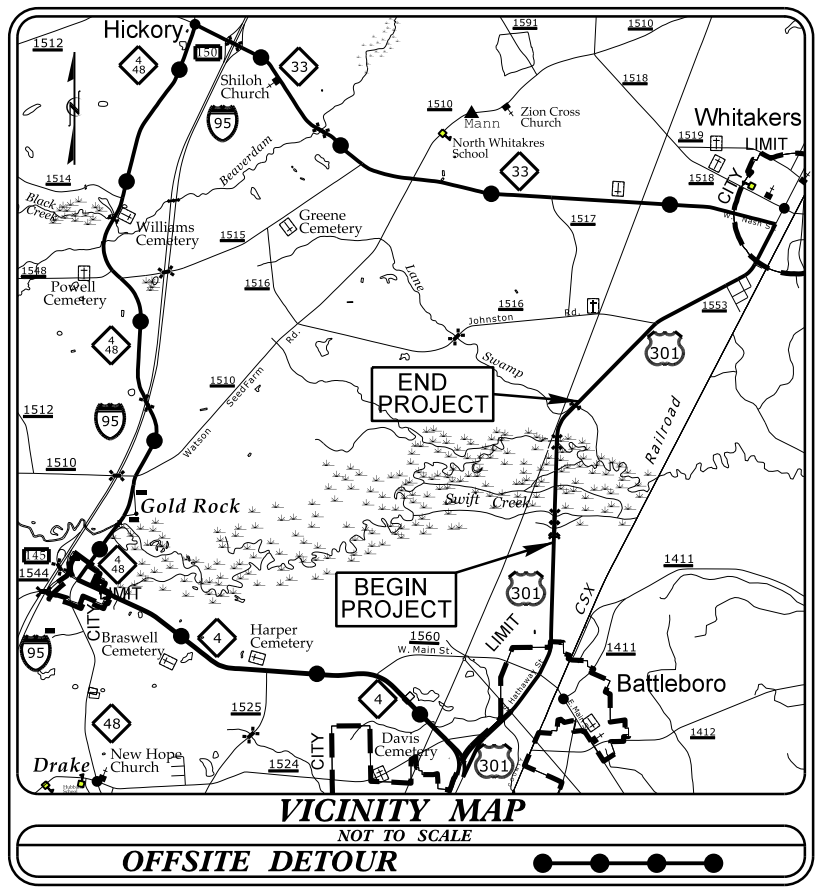
SITE NO.	STATION (FROM/TO)	WETLANDS IN BUFFERS	
		ZONE 1 (ft ²)	ZONE 2 (ft ²)
1	-L- 35+63 TO 38+03	2984	2008
2	-L- 53+89 TO 55+99	1033	463
3	-L- 72+72 TO 75+09	4367	2744
TOTAL:		8384	5215

N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS

 B-5124
 NASH COUNTY
 REPLACE BRIDGES NO. 85, 141, AND 151
 OVER SWIFT CREEK ON US-301
 3/13/2014
 SHEET 51 OF 51

09/08/99

See Sheet 1-A For Index of Sheets

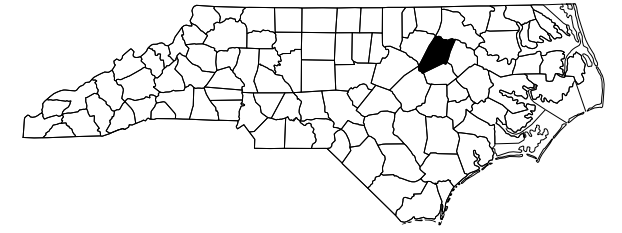


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
NASH COUNTY

LOCATION: REPLACE BRIDGES NO. 85, 141, AND 151 OVER SWIFT CREEK ON US-301

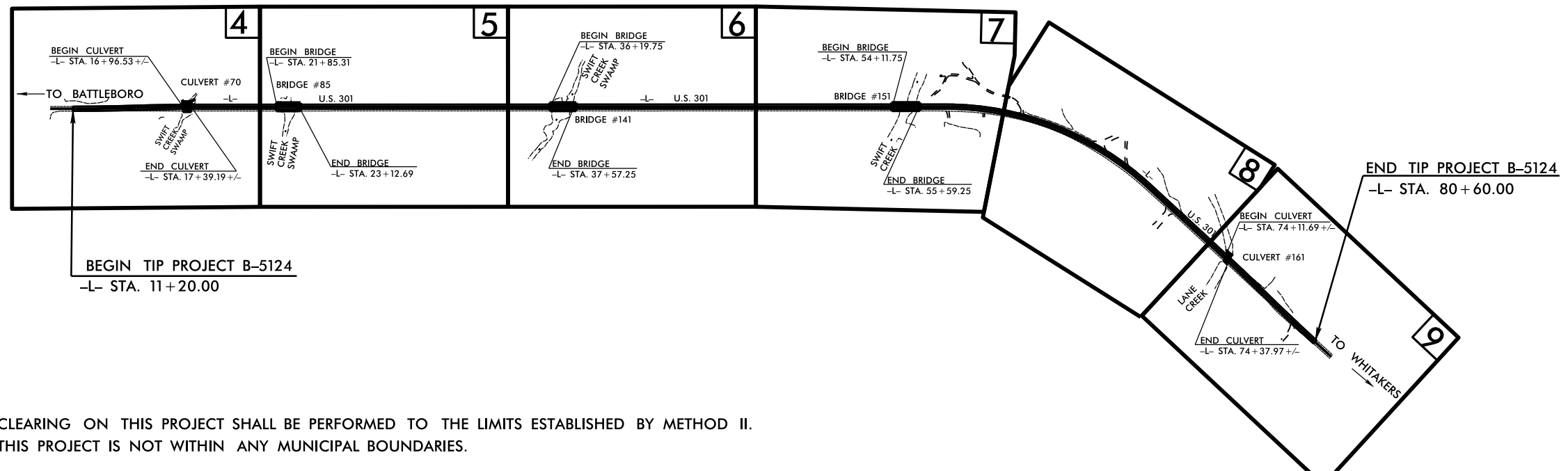
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, AND CULVERTS.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5124	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42270.1.1	BRSTP-0301(25)	P.E.	
42270.2.1	BRSTP-0301(25)	RW & UTL.	



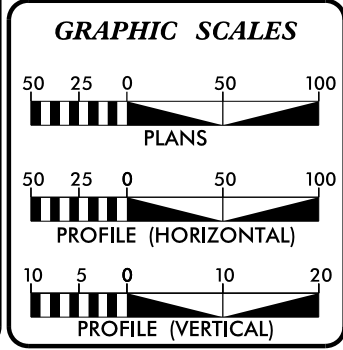
TIP PROJECT: B-5124

CONTRACT:



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II. THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA

ADT 2015 =	8,800
ADT 2035 =	11,200
K =	10 %
D =	60 %
T =	7 % *
V =	60 MPH
*(TTST = 3% DUALS 4%)	
FUNC CLASS = MINOR ARTERIAL STATEWIDE TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5124 =	1.223 MILES
LENGTH STRUCTURE TIP PROJECT B-5124 =	0.091 MILES
TOTAL LENGTH OF TIP PROJECT B-5124 =	1.314 MILES

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

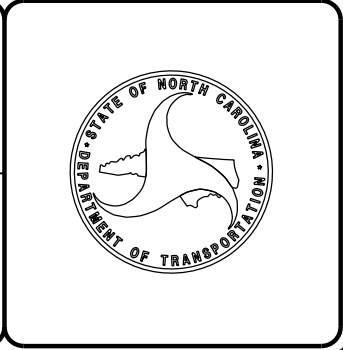
2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: FEBRUARY 28, 2014	GARY LOVERING, PE PROJECT ENGINEER
LETTING DATE: APRIL 21, 2015	CHRISTOPHER H. LEE PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



05-MAR-2014 13:56 R:\Roadway\PROJ\B5124_Rdy_1.sh.dgn \$\$\$USERNAME\$\$\$

04/16/11

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. B-5124
SHEET NO. 1-B

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ IP
Property Corner	-----
Property Monument	□ EDM
Parcel/Sequence Number	①②③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	----- MLB
Proposed Wetland Boundary	----- MLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☠ ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	⊕
Building	□
School	□
Church	□
Dam	▬

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	----- JS
Buffer Zone 1	----- BZ 1
Buffer Zone 2	----- BZ 2
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Wetland	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	○
Proposed Right of Way Line with Concrete or Granite RW Marker	○
Proposed Control of Access Line with Concrete C/A Marker	○
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Curb Ramp	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	-----
Single Tree	☼
Single Shrub	☼
Hedge	-----
Woods Line	-----

VEGETATION:

Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□
Paved Ditch Gutter	-----
Storm Sewer Manhole	○
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊠
Power Transformer	⊠
H-Frame Pole	●
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	□
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

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

GAS:

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

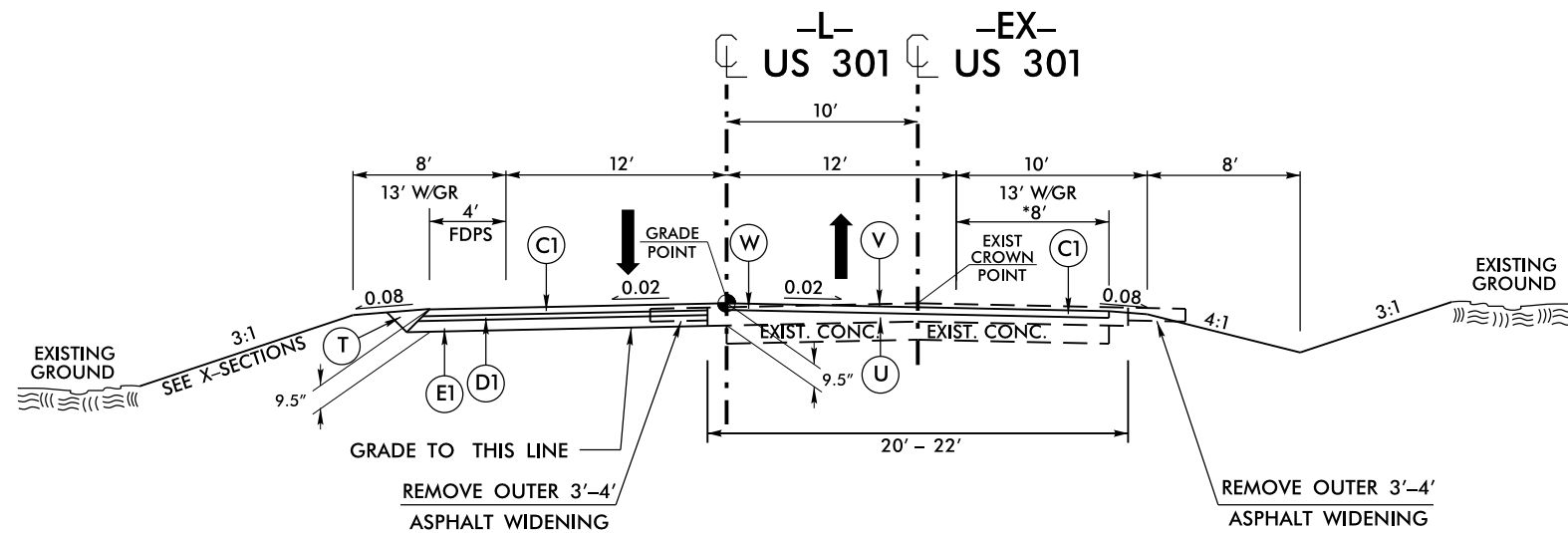
SANITARY SEWER:

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

MISCELLANEOUS:

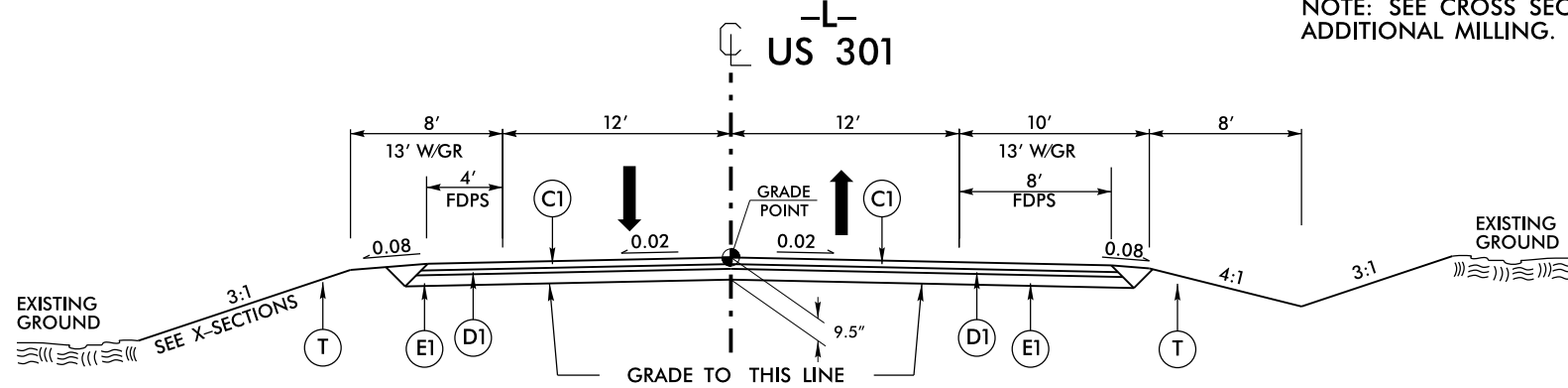
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line	-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

PROJECT REFERENCE NO. B-5124	SHEET NO. 2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

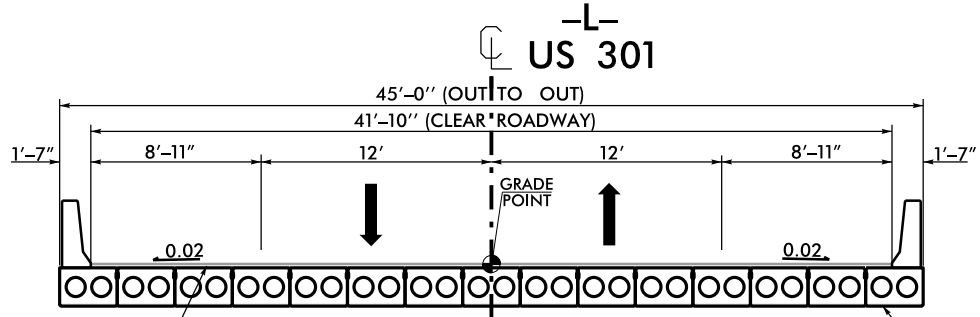


TYPICAL SECTION NO. 1
 -L- STA. 11+20.00 TO STA. 21+50.00
 -L- STA. 23+45.00 TO STA. 35+80.00
 -L- STA. 37+85.00 TO STA. 53+75.00

NOTE: PAVED TO THE FACE OF THE GUARDRAIL.
 NOTE: * 4' FDPS -L- STA. 11+70.00 TO -L- STA. 13+99.80
 NOTE: SEE CROSS SECTIONS FOR ADDITIONAL MILLING.



TYPICAL SECTION NO. 2
 -L- STA. 21+50.00 TO STA. 21+85.31 (BEGIN BRIDGE)
 -L- STA. 23+12.69 (END BRIDGE) TO STA. 23+45.00
 -L- STA. 35+80.00 TO STA. 36+19.75 (BEGIN BRIDGE)
 -L- STA. 37+57.25 (END BRIDGE) TO STA. 37+85.00
 -L- STA. 53+75.00 TO STA. 54+11.75 (BEGIN BRIDGE)
 -L- STA. 55+59.25 (END BRIDGE) TO STA. 58+00.00



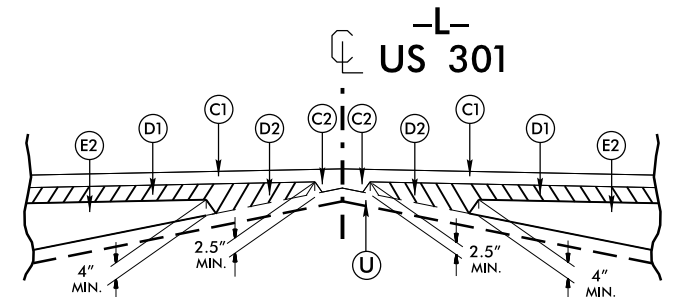
TYPICAL SECTION NO. 3
 -L- STA. 21+85.31 (BEGIN BRIDGE) TO STA. 23+12.69 (END BRIDGE)
 -L- STA. 36+19.75 (BEGIN BRIDGE) TO STA. 37+57.25 (END BRIDGE)

CONCRETE WEARING SURFACE STRUCTURE PAY ITEM

PROPOSED CORED SLAB BRIDGE SEE STRUCTURE PLANS

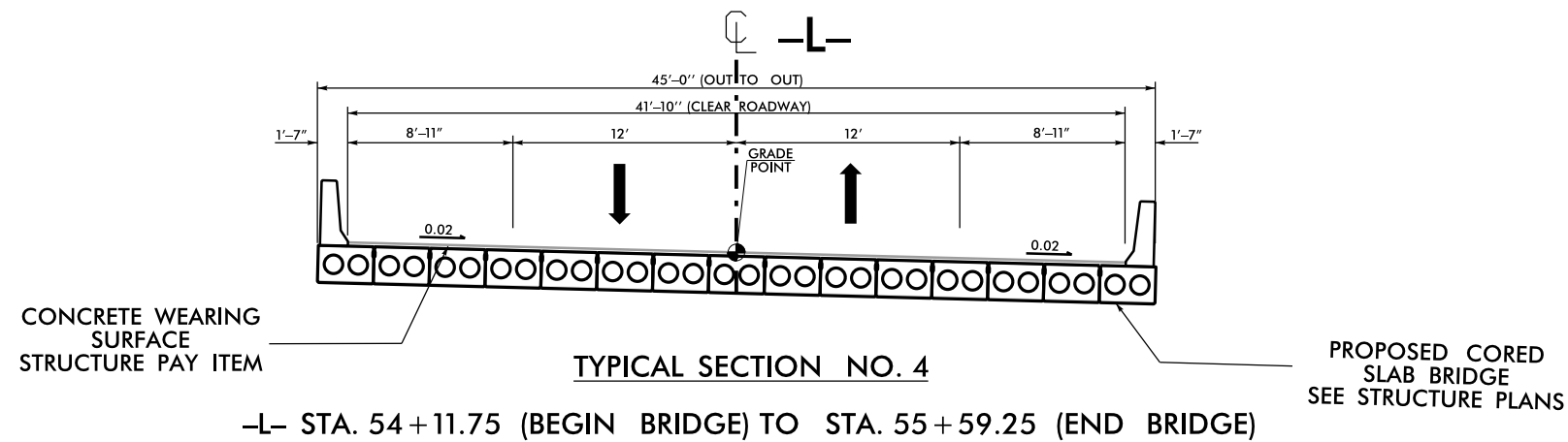
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN 11/24/12)	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ.YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2.0" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ.YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ.YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ.YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ.YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. VARIABLE DEPTH.
W	VARIABLE DEPTH ASPHALT PAVEMENT.

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

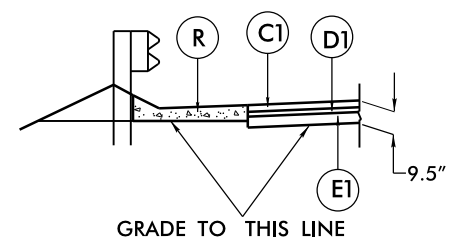
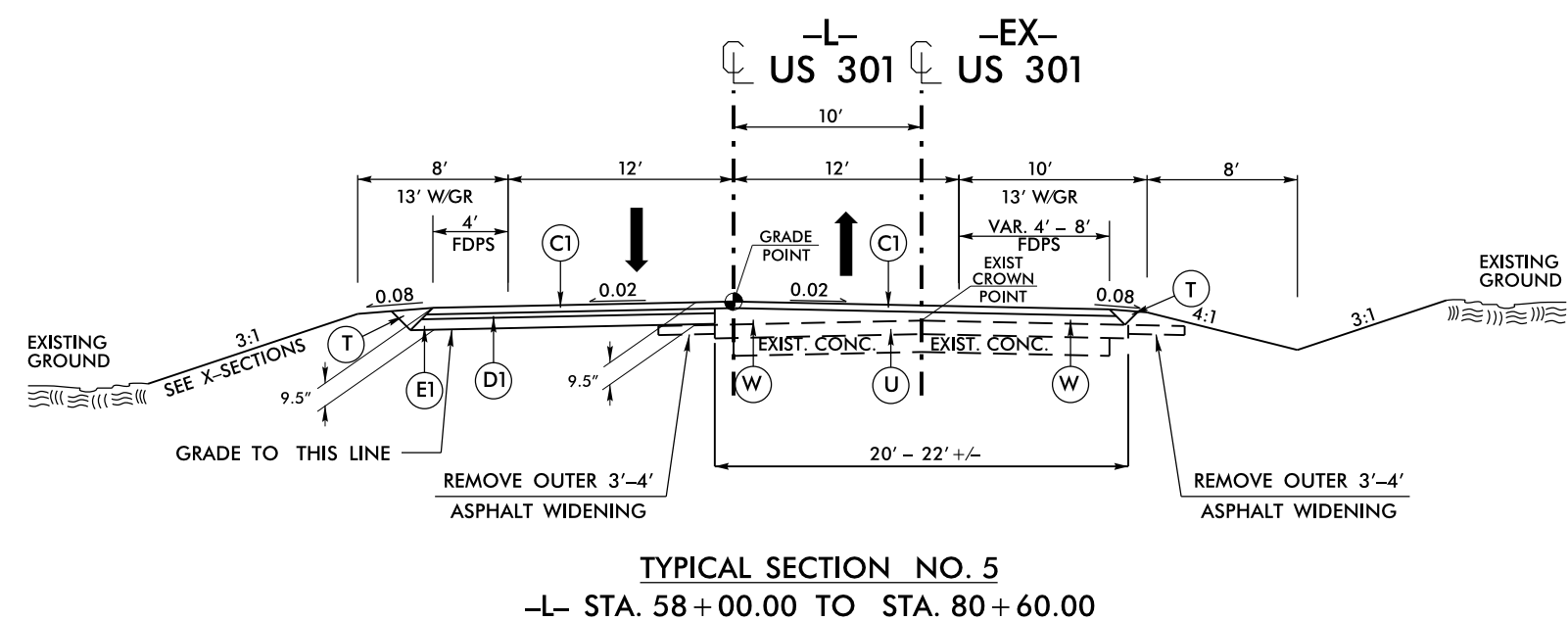


DETAIL SHOWING METHOD OF WEDGING

PROJECT REFERENCE NO. B-5124	SHEET NO. 2-A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	VAR S9.5B
D1	2.5" I19.0B
D2	VAR I19.0B
E1	4" B25.0B
E2	VAR B25.0B
R	SBG
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	VAR MILLING
W	WEDGING



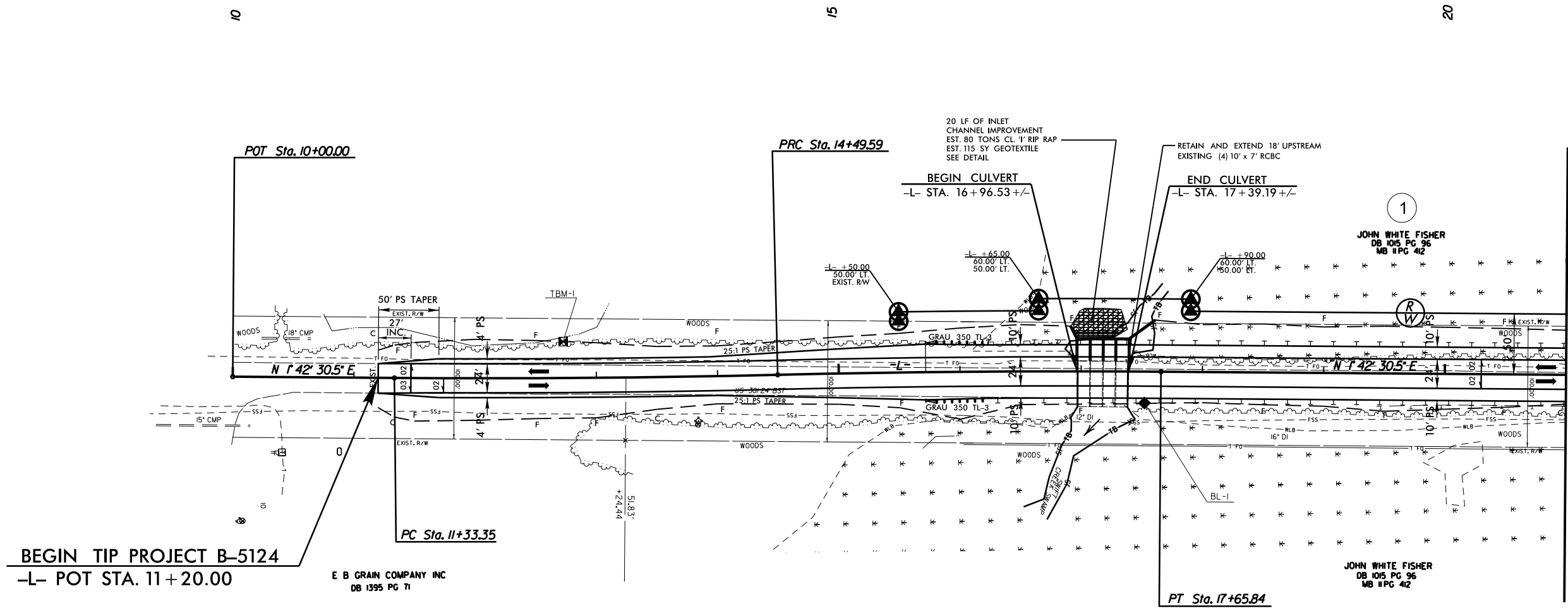
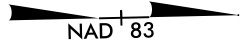
DETAIL SHOWING SHOULDER BERM GUTTER (SBG) ON TOP OF SUBGRADE

-L- STA. 23+28.55 TO -L- STA. 23+55.50 (LT & RT)
 -L- STA. 37+70.58 TO -L- STA. 38+00.00 (LT & RT)
 -L- STA. 53+49.00 TO -L- STA. 53+91.72 (RT)

8/17/99

05-MAR-2014 13:56
R:\PROJECTS\B-5124.LR_PSH4.dgn
R:\PROJECTS\B-5124.LR_PSH4.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-5124	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



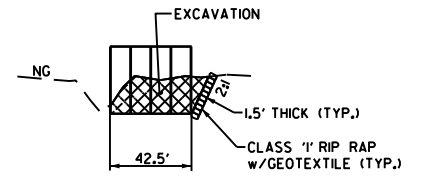
BEGIN TIP PROJECT B-5124
-L- POT STA. 11+20.00

E B GRAIN COMPANY INC
DB 1395 PG 71

MATCH LINE SEE SHEET 5 -L- STA. 21+00.00

-L-

PI Sta 12+91.49	$\Delta = 1' 48' 42.9''$ (RT)
$D = 0' 34' 22.6''$	$D = 0' 34' 22.6''$
$L = 316.24'$	$L = 316.24'$
$T = 158.13'$	$T = 158.13'$
$R = 10,000.00'$	$R = 10,000.00'$



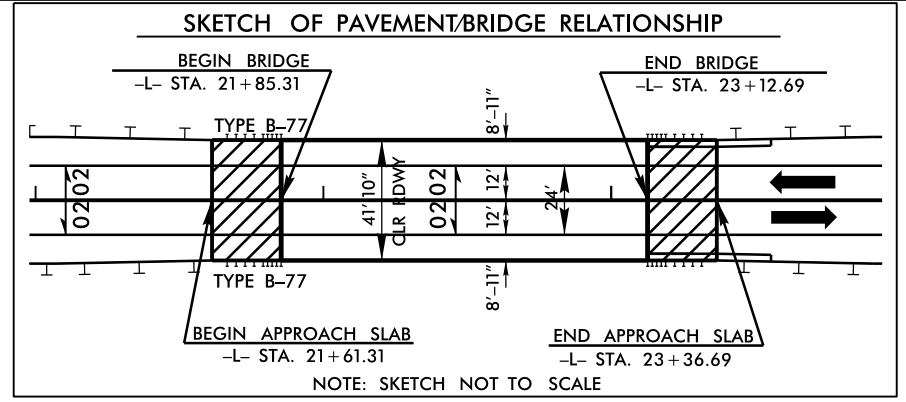
EST. DDE 240 CY

CULVERT 70 INLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

NOTES:
1) SEE SHEET 10 FOR -L- PROFILE
2) SEE SHEETS C-XX THROUGH C-XX FOR CULVERT PLANS

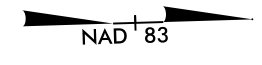
8/17/99

05-MAR-2014 13:56
R:\ROOSEVAULT\PROJECTS\B-5124.LR_PSH5.dgn
P:\USERS\PSH5



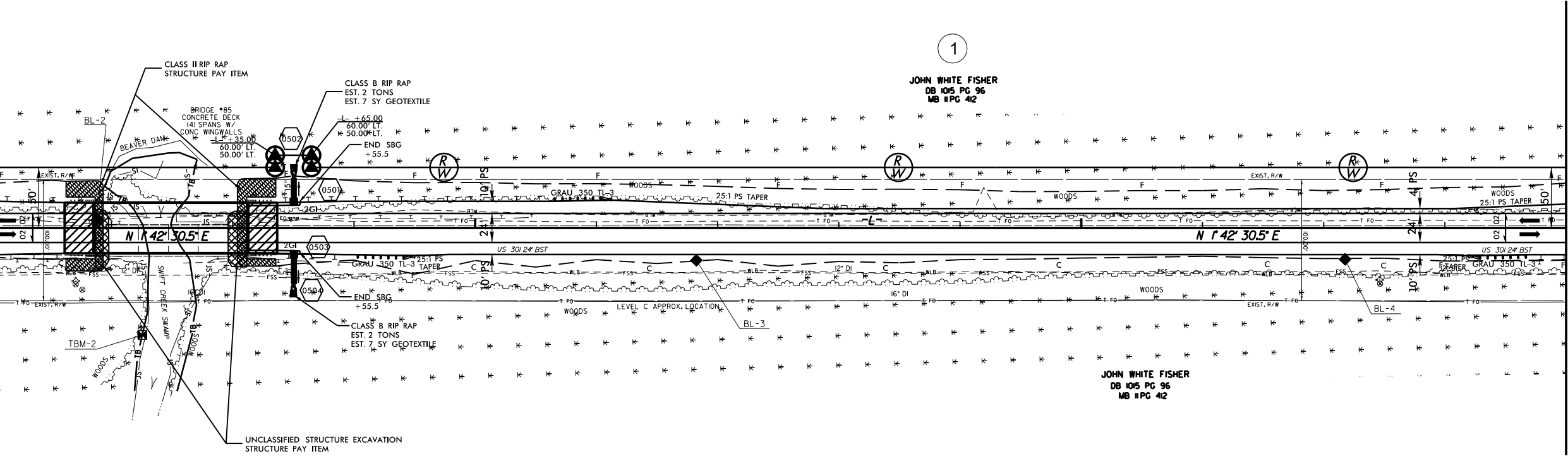
25

30



PROJECT REFERENCE NO. B-5124	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

MATCH LINE SEE SHEET 4 -L- STA. 21+00.00



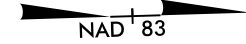
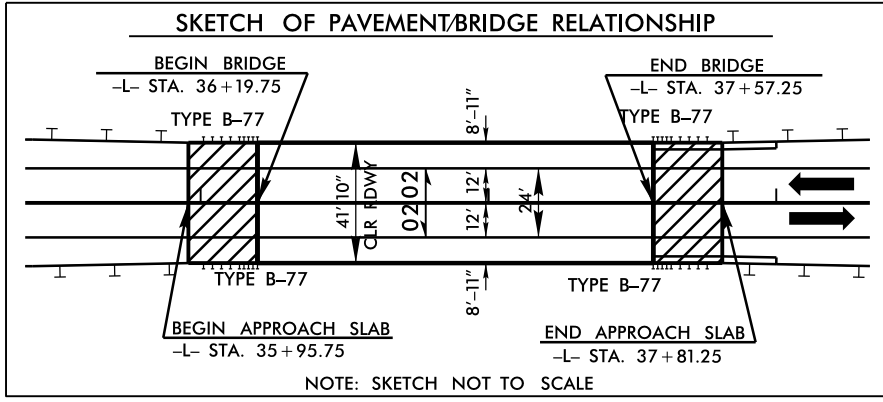
MATCH LINE SEE SHEET 6 -L- STA. 34+00.00

NOTES:
 1) SEE SHEET 10 FOR -L- PROFILE
 2) SEE SHEETS S-XX THROUGH S-XX FOR STRUCTURE PLANS

8/17/99

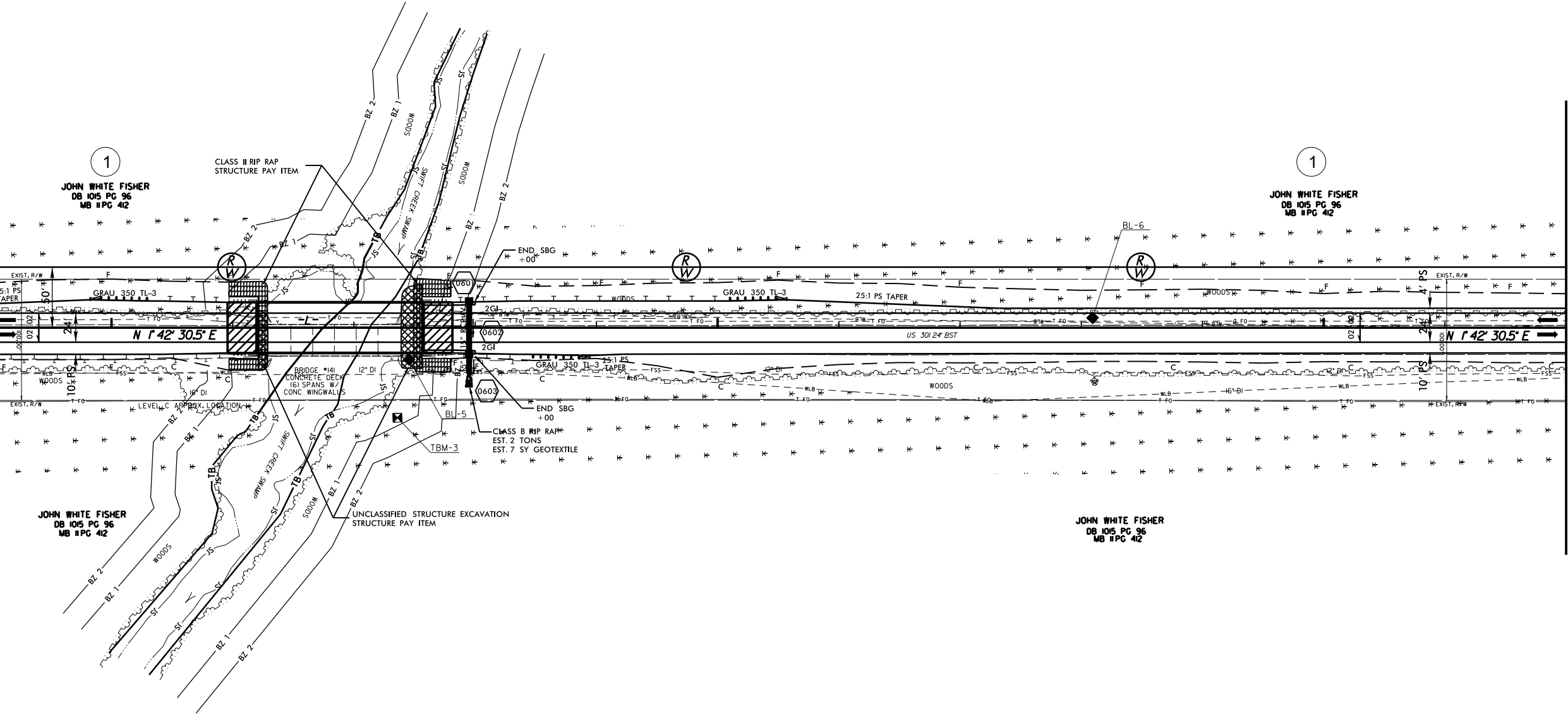
05-MAR-2014 13:56
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\$\$\$\$\$UNRENDERED\$\$\$\$\$

PROJECT REFERENCE NO. B-5124	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



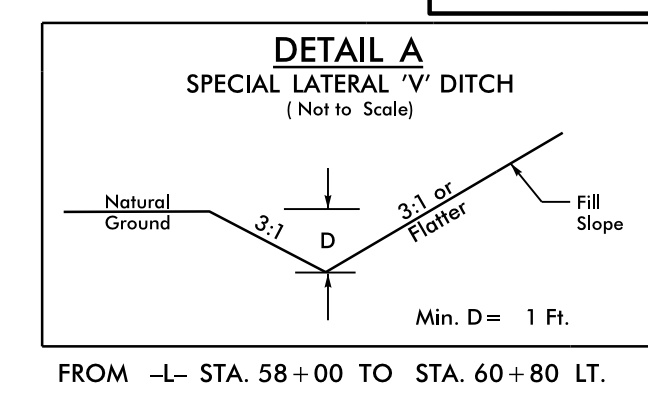
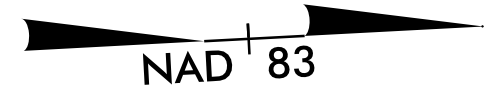
MATCH LINE SEE SHEET 5 -L- STA. 34+00.00

MATCH LINE SEE SHEET 7 -L- STA. 47+00.00



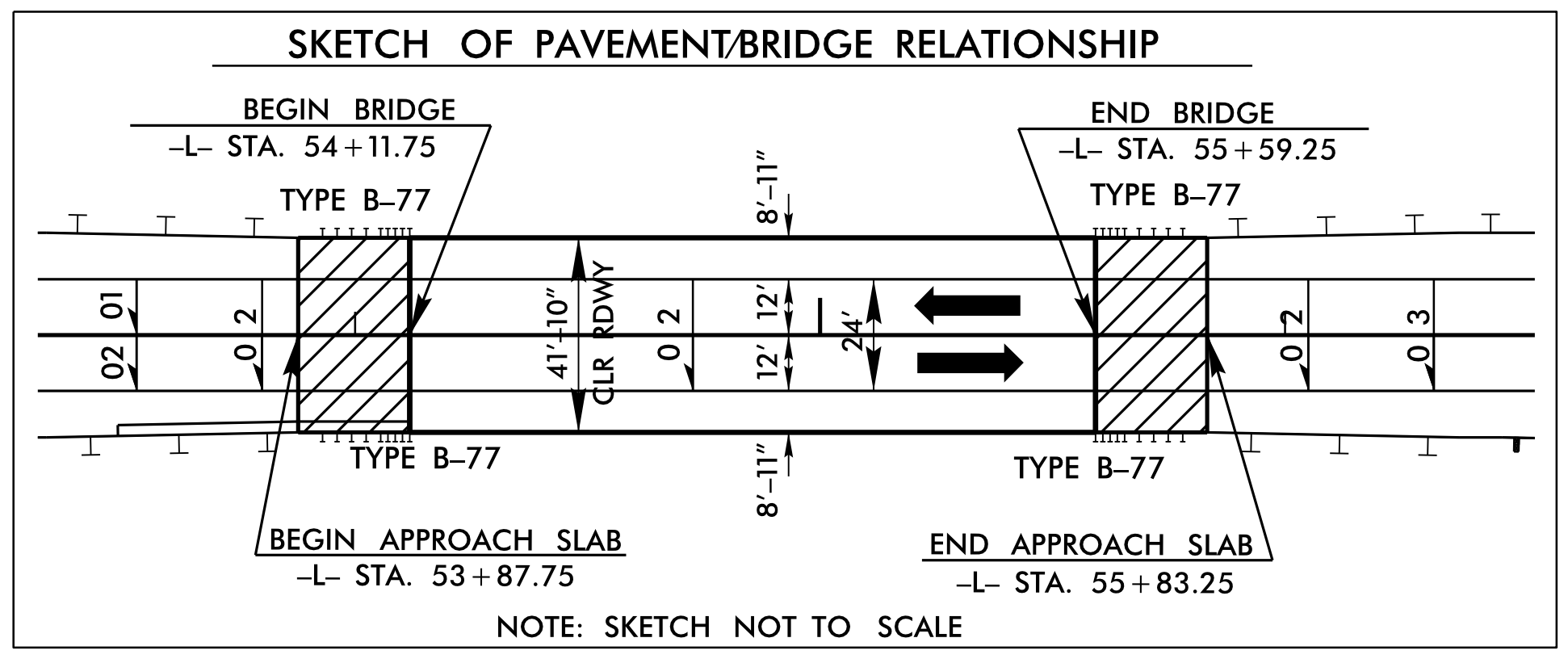
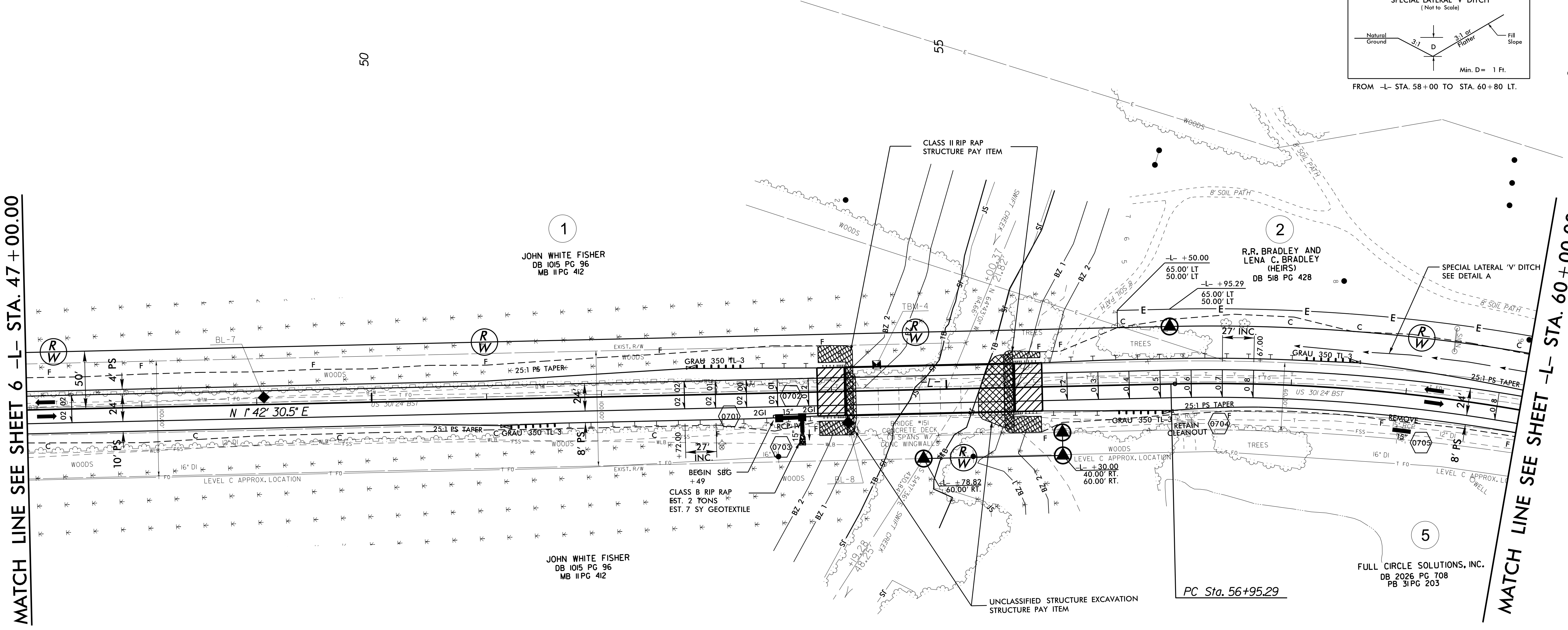
NOTES:
 1) SEE SHEET 11 FOR -L- PROFILE
 2) SEE SHEETS S-XX THROUGH S-XX FOR STRUCTURE PLANS

PROJECT REFERENCE NO.	SHEET NO.
B-5124	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



MATCH LINE SEE SHEET 6 -L- STA. 47 + 00.00

MATCH LINE SEE SHEET -L- STA. 60 + 00.00



-L-
 PI Sta 63+08.80
 $\Delta = 42^\circ 44' 15.8''$ (RT)
 $D = 3' 39' 14.6''$
 $L = 1,169.59'$
 $T = 613.51'$
 $R = 1,568.00'$

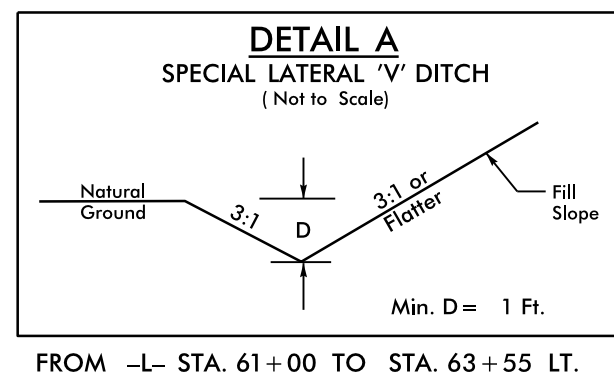
NOTES:
 1) SEE SHEET 11 FOR -L- PROFILE
 2) SEE SHEETS S-XX THROUGH S-XX FOR STRUCTURE PLANS

REVISIONS
 RW REVISION (APRIL 1, 2014): CONSTRUCTION EASEMENT ADDED TO PARCEL 2 FROM -L- STA. 58+50 TO 63+65 LT. hcn

01-APR-2014 13:49 B:\B-5124-LR.PSH7.dgn
 3:58:50 PM WAVE 3436

8/17/99

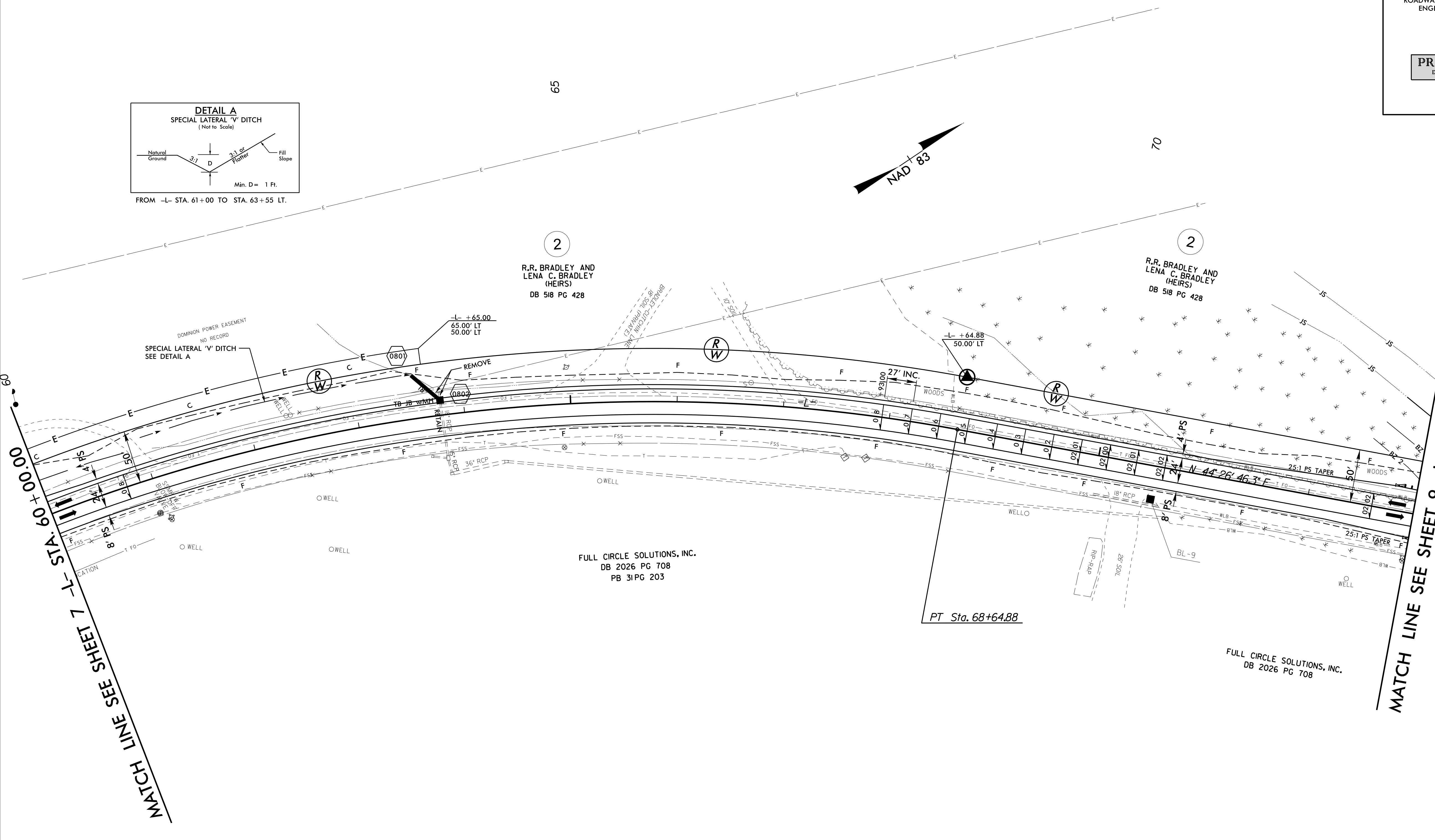
PROJECT REFERENCE NO.	SHEET NO.
B-5124	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



REVISIONS
 RW REVISION (APRIL 1, 2014): CONSTRUCTION EASEMENT ADDED TO PARCEL 2 FROM -L- STA. 58+50 TO 63+65 LT. hcn

8/17/99

01-APR-2014 13:51
 S:\PROJECTS\B-5124-LR.PSH8.dgn
 S:\PROJECTS\B-5124-LR.PSH8.dgn



-L-

PI Sta 63+08.80
 $\Delta = 42^\circ 44' 15.8''$ (RT)
 $D = 3' 39' 14.6''$
 $L = 1,169.59'$
 $T = 613.51'$
 $R = 1,568.00'$

-L-

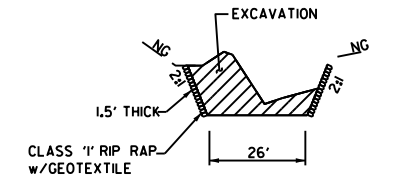
PI Sta 75+40.38
 $\Delta = 1^\circ 47' 47.4''$ (RT)
 $D = 0' 34' 22.6''$
 $L = 313.55'$
 $T = 156.79'$
 $R = 10,000.00'$

NOTES:
 1) SEE SHEET 12 FOR -L- PROFILE

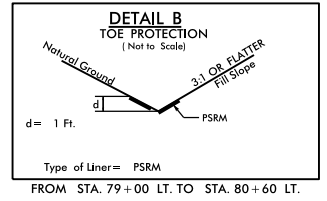
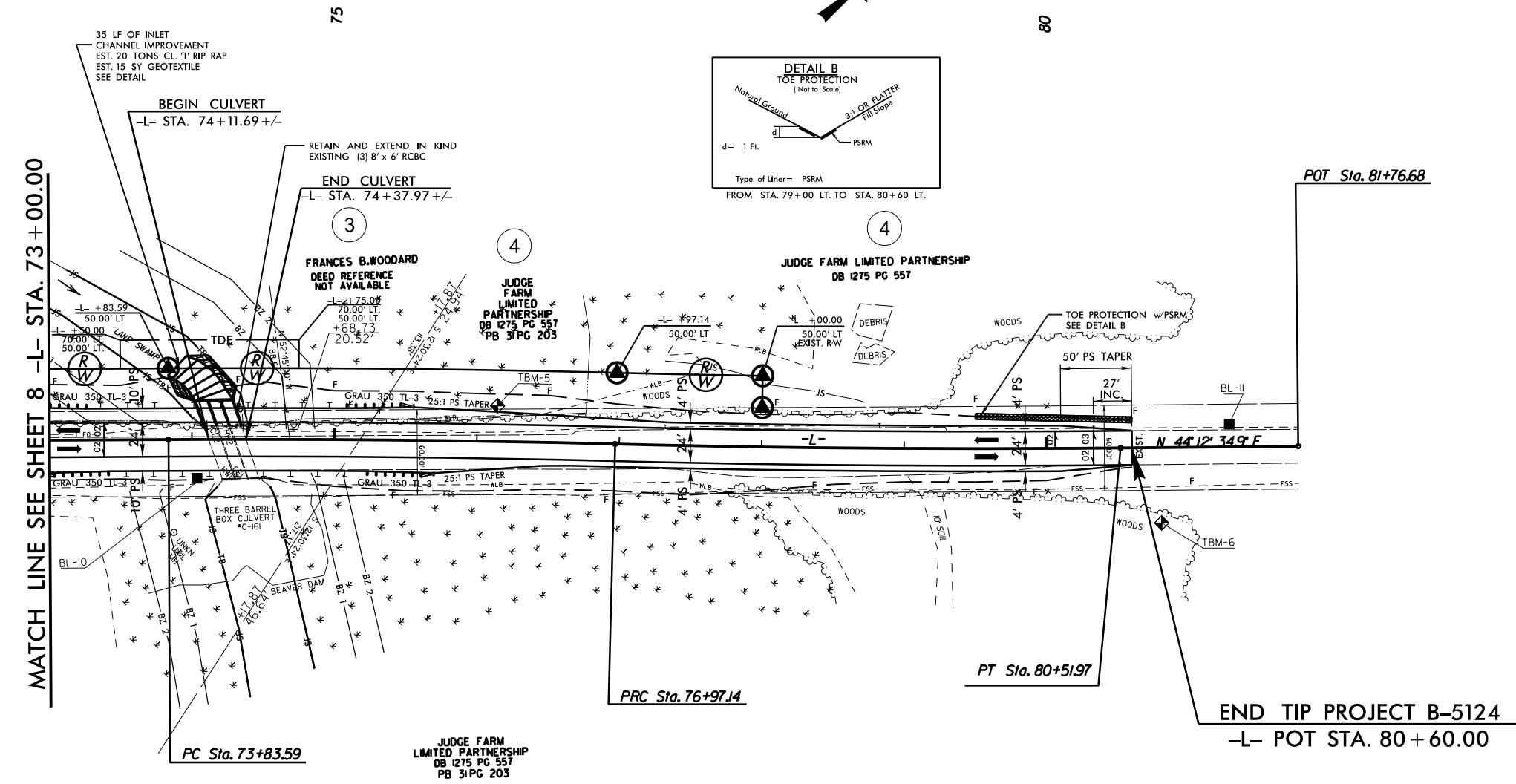
8/17/99

05-MAR-2014 13:56
R:\PROJECTS\B-5124.LR_PSH9.dgn
\$\$\$\$\$UNRENDERED\$\$\$\$\$

PROJECT REFERENCE NO. B-5124	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



CULVERT 161 INLET CHANNEL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)



MATCH LINE SEE SHEET 8 -L- STA. 73+00.00

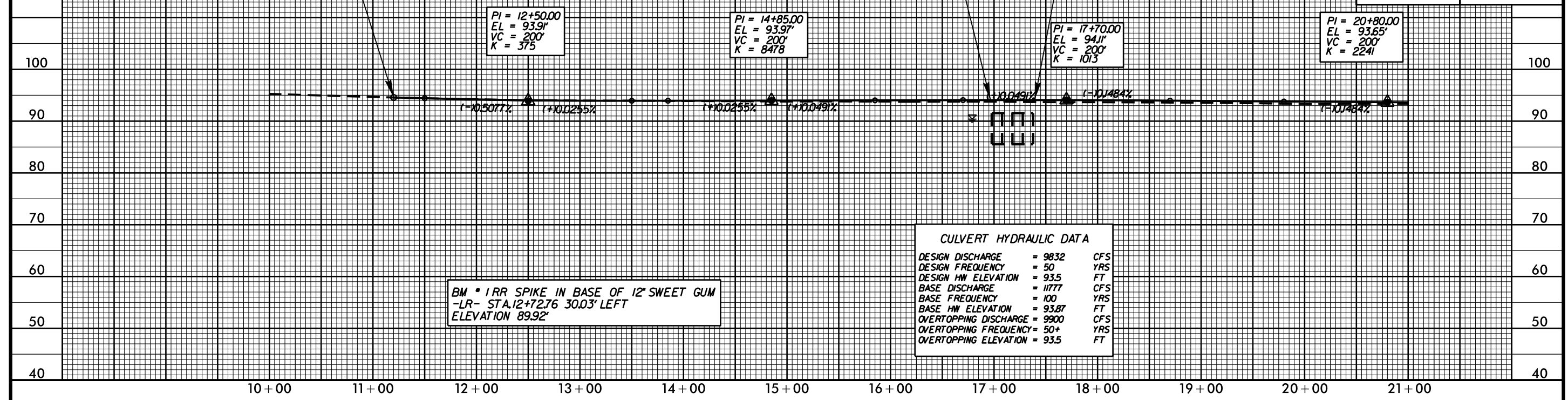
-L-
PI Sta 75+40.38
Δ = 1° 47' 47.4" (RT)
D = 0' 34' 22.6"
L = 313.55'
T = 156.79'
R = 10,000.00'

-L-
PI Sta 78+74.57
Δ = 2° 0' 58.9" (LT)
D = 0' 34' 22.6"
L = 354.83'
T = 177.43'
R = 10,000.00'

NOTES:
1) SEE SHEET 12 FOR -L- PROFILE
2) SEE SHEETS C-XX THROUGH C-XX FOR CULVERT PLANS

5/28/99

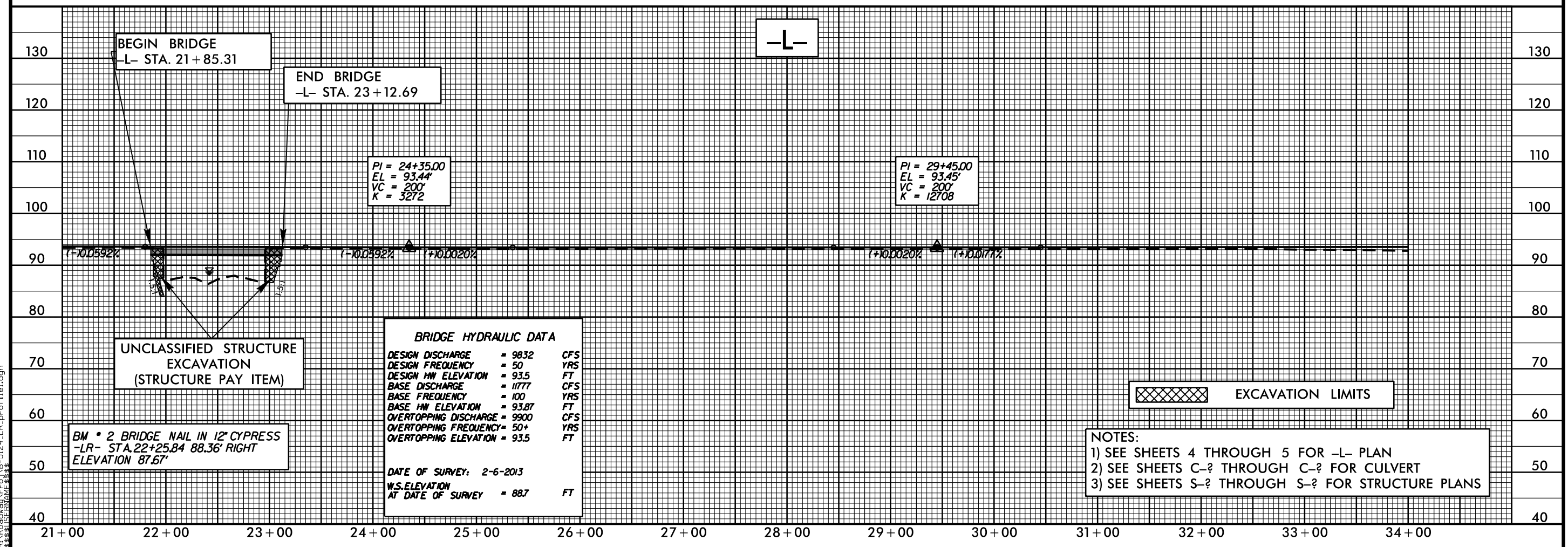
PROJECT REFERENCE NO. B-5124	SHEET NO. 10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



BM * 1 RR SPIKE IN BASE OF 12" SWEET GUM
-LR- STA. 12+72.76 30.03' LEFT
ELEVATION 89.92'

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 9832	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 93.5	FT
BASE DISCHARGE	= 11777	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 93.87	FT
OVERTOPPING DISCHARGE	= 9900	CFS
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING ELEVATION	= 93.5	FT



UNCLASSIFIED STRUCTURE
EXCAVATION
(STRUCTURE PAY ITEM)

BM * 2 BRIDGE NAIL IN 12" CYPRESS
-LR- STA. 22+25.84 88.36' RIGHT
ELEVATION 87.67'

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 9832	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 93.5	FT
BASE DISCHARGE	= 11777	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 93.87	FT
OVERTOPPING DISCHARGE	= 9900	CFS
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING ELEVATION	= 93.5	FT

DATE OF SURVEY: 2-6-2013
W.S. ELEVATION AT DATE OF SURVEY = 88.7 FT

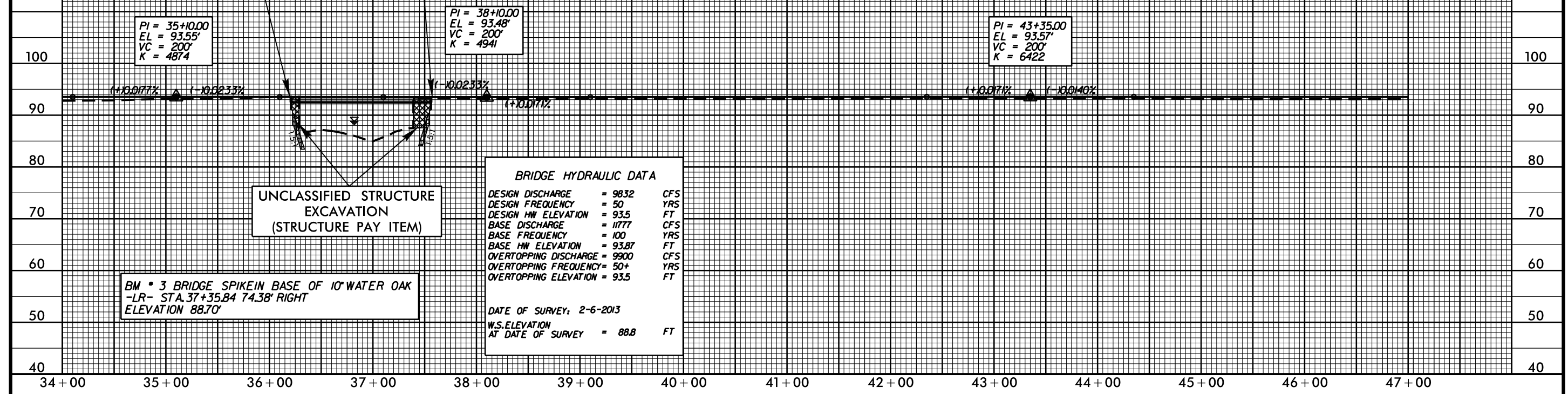
EXCAVATION LIMITS

- NOTES:**
- 1) SEE SHEETS 4 THROUGH 5 FOR -L- PLAN
 - 2) SEE SHEETS C-? THROUGH C-? FOR CULVERT
 - 3) SEE SHEETS S-? THROUGH S-? FOR STRUCTURE PLANS

05-MAR-2014 13:56 R:\PROJECTS\B-5124.LR_prof\11e1.dgn

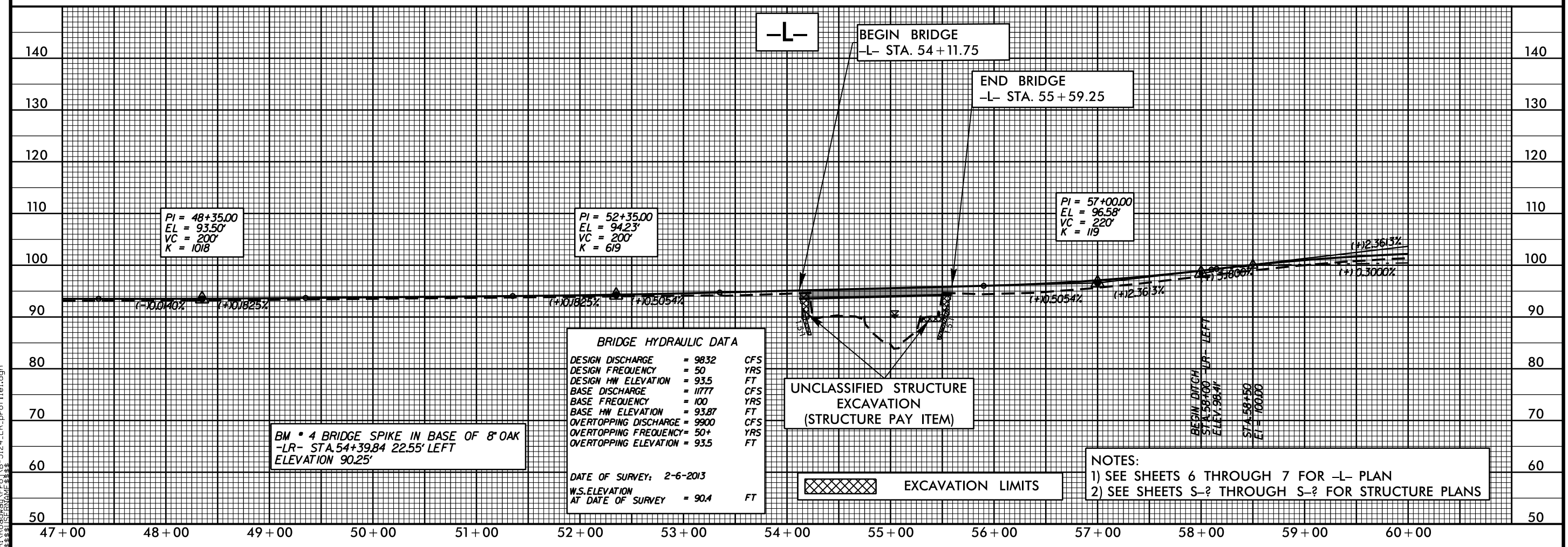
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-5124	11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



BM * 3 BRIDGE SPIKE IN BASE OF 10' WATER OAK
-LR- STA. 37+35.84 74.38' RIGHT
ELEVATION 88.70'

UNCLASSIFIED STRUCTURE
EXCAVATION
(STRUCTURE PAY ITEM)



BM * 4 BRIDGE SPIKE IN BASE OF 8' OAK
-LR- STA. 54+39.84 22.55' LEFT
ELEVATION 90.25'

UNCLASSIFIED STRUCTURE
EXCAVATION
(STRUCTURE PAY ITEM)

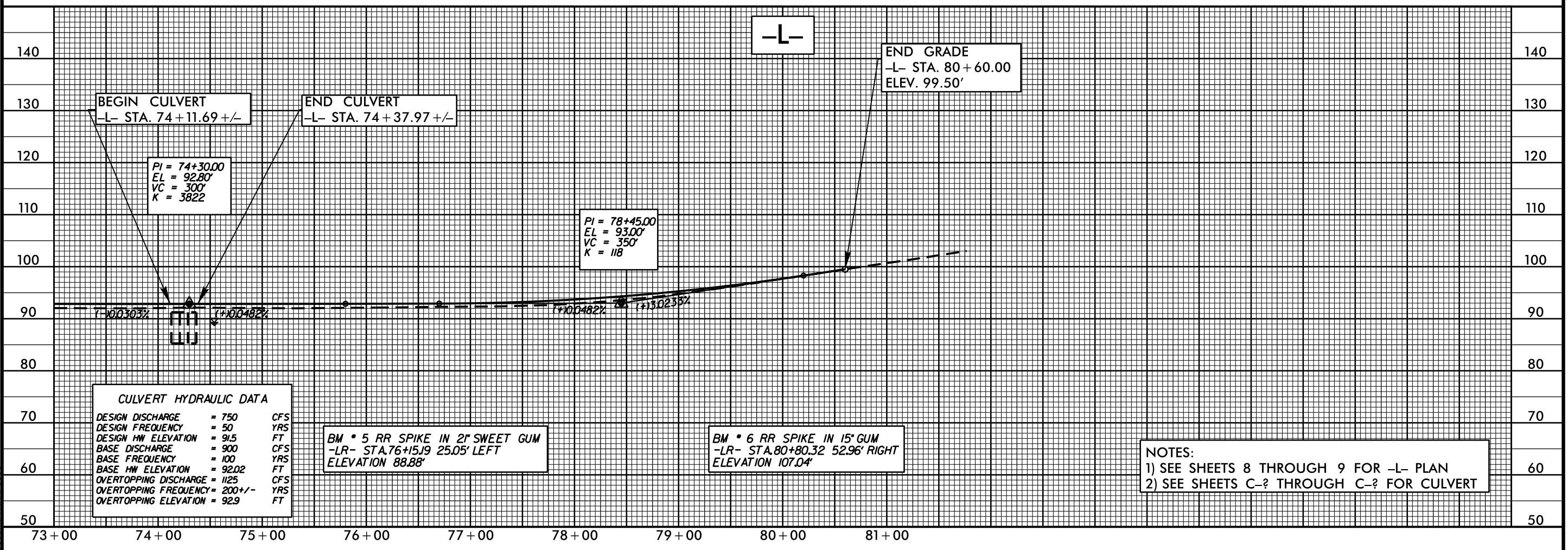
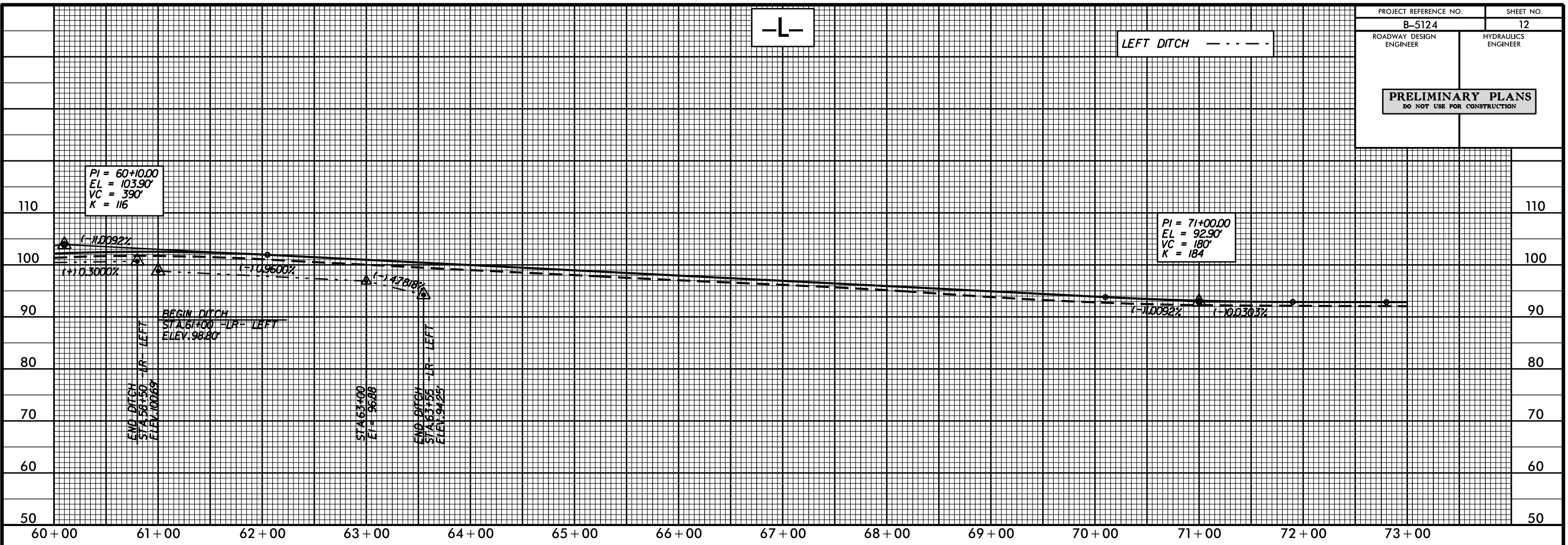
EXCAVATION LIMITS

NOTES:
1) SEE SHEETS 6 THROUGH 7 FOR -L- PLAN
2) SEE SHEETS S-? THROUGH S-? FOR STRUCTURE PLANS

05-MAR-2014 13:56
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-5124	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 750	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 91.5	FT
BASE DISCHARGE	= 900	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 92.02	FT
OVERTOPPING DISCHARGE	= 1125	CFS
OVERTOPPING FREQUENCY	= 200 +/-	YRS
OVERTOPPING ELEVATION	= 92.9	FT

BM * 5 RR SPIKE IN 2" SWEET GUM
-LR- STA. 76+15.9 25.05' LEFT
ELEVATION 88.88'

BM * 6 RR SPIKE IN 15" GUM
-LR- STA. 80+80.32 52.96' RIGHT
ELEVATION 107.04'

NOTES:
1) SEE SHEETS 8 THROUGH 9 FOR -L- PLAN
2) SEE SHEETS C-? THROUGH C-? FOR CULVERT

05-MAR-2014 13:56 R:\PROJECTS\B-5124.LR.prof11e1.dgn