



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

June 2, 2015

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

ATTN: Ms. Loretta Beckwith
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permits 13 and 23 and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 196 over Crab Creek on SR 1532 in Transylvania County, Federal Aid Project No. BRZ-1532(5), Division 14, TIP No. B-5403, Debit \$570 from WBS 46118.1.1.

Dear Ms. Beckwith:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 196 over Crab Creek on SR 1532 (a 28-foot bridge) with a 70-foot bridge on the existing alignment that will span Crab Creek. The project will utilize an on-site detour, located upstream. The temporary detour structure will be a 70-foot bridge.

There will be 278 linear feet (lf) of permanent stream impacts: 136 lf of bank stabilization at Site 1, of which 60 lf will be for the permanent bridge, and 76 lf will remain in place after the temporary bridge has been removed; and 142 lf for the channel change of the UT to Crab Creek (Site 2). Additionally, there will be <0.01 ac. (0.005 ac.) of wetland impact associated with the channel change to the UT to Crab Creek (Site 2). With this submittal, the NCDOT is also requesting a Preliminary Jurisdictional Determination (PJD).

The NCDOT has received Section 7 Concurrence on effects the subject bridge replacement project may have on the federally threatened northern long-eared bat (*Myotis septentrionalis*) and the federally endangered Appalachian elktoe (*Alasmidonta raveliniana*) from the USFWS.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-707-6000
FAX: 919-212-5785
WEBSITE: NCDOT.GOV

LOCATION:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

Please see enclosed copies of the Pre-Construction Notification (PCN), USFWS Concurrence Letter (dated May 19, 2015), Mitigation e-mails, PJD Packet, EEP acceptance letter, stormwater management plan, permit drawings and design plans for the above-referenced project. The Categorical Exclusion (CE) was completed in June 2014 and distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of January 19, 2016 and a review date of December 1, 2015; however, the let date may advance as additional funding becomes available.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: <http://connect.ncdot.gov/resources/Environmental>. If you have any questions or need additional information, please call Bill Barrett at (919) 707-6103.

Sincerely,



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

cc:
NCDOT Permit Application Standard Distribution List



Office Use Only:
 Corps action ID no. _____
 DWQ project no. _____
 Form Version 1.4 January 2009

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	<input checked="" type="checkbox"/> Section 404 Permit	<input type="checkbox"/> Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 13 23 or General Permit (GP) number:		
1c. Has the NWP or GP number been verified by the Corps?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1d. Type(s) of approval sought from the DWQ (check all that apply):		
<input checked="" type="checkbox"/> 401 Water Quality Certification – Regular <input type="checkbox"/> Non-404 Jurisdictional General Permit <input type="checkbox"/> 401 Water Quality Certification – Express <input type="checkbox"/> Riparian Buffer Authorization		
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	For the record only for Corps Permit: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

2. Project Information

2a. Name of project:	Replacement of Bridge 196 over Crab Creek on SR 1532
2b. County:	Transylvania
2c. Nearest municipality / town:	Little River
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no.:	B-5403

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6103
3g. Fax no.:	(919) 212-5785
3h. Email address:	wabarrett@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	<input type="checkbox"/> Agent <input type="checkbox"/> Other, specify:
4b. Name:	<i>not applicable</i>
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	<i>not applicable</i>
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 35.23456 (DD.DDDDDD) Longitude: - 82.61760 (-DD.DDDDDD)
1c. Property size:	0.4 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Crab Creek
2b. Water Quality Classification of nearest receiving water:	C;Tr;HQW
2c. River basin:	French Broad
3. Project Description	
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: predominately agriculture, with some residences.	
3b. List the total estimated acreage of all existing wetlands on the property: 0.08	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 346	
3d. Explain the purpose of the proposed project: Example: To replace a structurally deficient and functionally obsolete bridge.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 28-foot bridge with a 70-foot, single-span bridge on the existing alignment with a temporary on-site detour. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	<input type="checkbox"/> Preliminary <input type="checkbox"/> Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. NCDOT requests a PJD from the USACE (a PJD package is attached to permit application).	
5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
5b. If yes, explain in detail according to "help file" instructions.	
6. Future Project Plans	
6a. Is this a phased project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6b. If yes, explain.	

C. Proposed Impacts Inventory						
1. Impacts Summary						
1a. Which sections were completed below for your project (check all that apply):						
<input checked="" type="checkbox"/> Wetlands		<input checked="" type="checkbox"/> Streams - tributaries		<input type="checkbox"/> Buffers		
<input type="checkbox"/> Open Waters		<input type="checkbox"/> Pond Construction				
2. Wetland Impacts						
If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.						
2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction	2f. Area of impact (acres)	
Site 2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Fill *	Non-Tidal Freshwater Marsh	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	< 0.01	
2g. Total wetland impacts					<0.01 Permanent	
2h. Comments: Due to the small amount of wetland impact, USACE did not request wetland mitigation.						
3. Stream Impacts						
If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.						
3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	bank stabilization	Crab Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	10	136
Site 2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	channel change	UT to Crab Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	3	142
3h. Total stream and tributary impacts						278 Perm
3i. Comments:						
4. Open Water Impacts						
If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.						
4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)		
O1 <input type="checkbox"/> P <input type="checkbox"/> T						
O2 <input type="checkbox"/> P <input type="checkbox"/> T						
O3 <input type="checkbox"/> P <input type="checkbox"/> T						
O4 <input type="checkbox"/> P <input type="checkbox"/> T						
4f. Total open water impacts				X Permanent X Temporary		
4g. Comments:						

5. Pond or Lake Construction

If pond or lake construction proposed, then complete the chart below.

5a. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavated	Flo ode d	Filled	Excavated	Flooded
P1								
P2								
5f. Total								
5g. Comments:								
5h. Is a dam high hazard permit required?			<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, permit ID no:					
5i. Expected pond surface area (acres):								
5j. Size of pond watershed (acres):								
5k. Method of construction:								

6. Buffer Impacts (for DWQ)

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

6a. Project is in which protected basin?		<input type="checkbox"/> Neuse <input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Other: <input type="checkbox"/> Catawba <input type="checkbox"/> Randleman			
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
6h. Total buffer impacts					
6i. Comments:					

D. Impact Justification and Mitigation		
1. Avoidance and Minimization		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. The proposed bridge is 42 feet longer than the existing bridge; the proposed bridge will be at approximately the same grade as the existing structure; 3:1 fill slopes will be used where practicable, with 2:1 fill slope adjacent to the wetland.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. Deck drains will not be placed over Crab Creek, but instead the deck drains will discharge outside of the stream banks. The remaining deck drainage will be collected by inlets at each end of the bridge. The inlet at the northwest quadrant will discharge to a preformed scour hole (PSH). The inlet at the southwest quadrant will discharge to a riprap-lined channel. Grassed swales will be constructed on the east side of the roadway to replace existing roadside ditches disturbed due to the temporary alignment and roadway widening. Sediment and erosion control measures will adhere to Design Standards in Sensitive Watersheds. Demolition of the existing structure will be conducted in a manner that minimizes dropping material into Crab Creek.		
2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State		
2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, explain: NOTE: Of the 142 lf of stream impact at Site 2, 120 lf of function will be replaced by the new channel see e.mail dated 5-8-15 - attached). The remaining 22 lf of stream impact will have mitigation provided by EEP. Due to the small amount of wetland impact (<0.01 ac.), USACE did not request wetland mitigation. NCDOT does not propose mitigation for the 136 lf of bank stabilization impact at Site 1, as it does not require fill in the stream bed and therefore, under Section 404 of the Clean Water Act, does not constitute Loss of Waters of the U.S. and is not subject to compensatory mitigation. Furthermore, the proposed bank stabilization is necessary to prevent erosion and sedimentation by preventing bank destabilization and thereby minimizing impacts to the environment. Per Kevin Barnett, NCDWR, the NW13 for 136 LF of bank stabilization and NW23 for relocation of 142 LF of stream into a newly constructed 120 l.f. stream channel will not require mitigation as mitigation thresholds in the concurrent GCs are not exceeded (see e.mail dated 6-1-15 - attached).	
2b. If yes, mitigation is required by (check all that apply):	<input type="checkbox"/> DWQ <input checked="" type="checkbox"/> Corps	
2c. If yes, which mitigation option will be used for this project?	<input type="checkbox"/> Mitigation bank <input checked="" type="checkbox"/> Payment to in-lieu fee program <input type="checkbox"/> Permittee Responsible Mitigation	
3. Complete if Using a Mitigation Bank		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity

3c. Comments:

4. Complete if Making a Payment to In-lieu Fee Program

4a. Approval letter from in-lieu fee program is attached. Yes

4b. Stream mitigation requested: 22 linear feet

4c. If using stream mitigation, stream temperature: warm cool cold

4d. Buffer mitigation requested (DWQ only): square feet

4e. Riparian wetland mitigation requested: acres

4f. Non-riparian wetland mitigation requested: acres

4g. Coastal (tidal) wetland mitigation requested: acres

4h. Comments:

5. Complete if Using a Permittee Responsible Mitigation Plan

5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ

6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation? Yes No

6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.

Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
6f. Total buffer mitigation required:				

6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).

6h. Comments:

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments: If required from 1a, see attached buffer permit drawings.	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	<input type="checkbox"/> Certified Local Government <input type="checkbox"/> DWQ Stormwater Program <input checked="" type="checkbox"/> DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Coastal counties <input checked="" type="checkbox"/> HQW <input type="checkbox"/> ORW <input type="checkbox"/> Session Law 2006-246 <input type="checkbox"/> Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No n/a
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5b. Have all of the 401 Unit submittal requirements been met?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

F. Supplementary Information	
1. Environmental Documentation (DWQ Requirement)	
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Violations (DWQ Requirement)	
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2b. Is this an after-the-fact permit application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):	
3. Cumulative Impacts (DWQ Requirement)	
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.	
4. Sewage Disposal (DWQ Requirement)	
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable	

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
5c. If yes, indicate the USFWS Field Office you have contacted.	<input type="checkbox"/> Raleigh	<input checked="" type="checkbox"/> Asheville
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? USFWS and NHP websites, and on-site surveys. Received Concurrence from USFWS for MA-NLAA for NLEB and App. elktoe, in letter dated May 19, 2015 (attached).		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		
for <u>Richard W. Hancock, P.E.</u> Applicant/Agent's Printed Name	 Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	<u>6-2-2015</u> Date

Barrett, William A

From: Barnett, Kevin
Sent: Monday, June 01, 2015 1:33 PM
To: Barrett, William A
Subject: RE: B-5403 (UNCLASSIFIED)

Good Afternoon Bill:

After review of the submitted information, the NW13 for 136 linear feet of bank stabilization and NW23 for relocation of 142 linear feet of stream into a newly constructed 120 linear foot stream channel will not require mitigation as mitigation thresholds in the concurrent GC's are not exceeded.

I hope this answers your question.

Best regards,
Kevin

Kevin Barnett - Kevin.Barnett@ncdenr.gov North Carolina Dept. of Environment and Natural Resources Division of Water Resources NCDENR Asheville Water Quality Regional Operations Section
2090 U.S. 70 Highway
Swannanoa, NC 28778
Tel: 828-296-4500
Fax: 828-299-7043

E-mail correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties.

-----Original Message-----

From: Barrett, William A
Sent: Monday, June 01, 2015 12:03 PM
To: Barnett, Kevin
Subject: FW: B-5403 (UNCLASSIFIED)

Hey Kevin,

As we discussed, I am sending you the e.mail from the mitigation discussion between Lori and myself. After confirming the mitigation requirement (or the lack thereof) for NCDWR, please provide your response to this e.mail.

Thanks for your help with this!
Bill

-----Original Message-----

From: Beckwith, Loretta A SAW [<mailto:Loretta.A.Beckwith@usace.army.mil>]
Sent: Monday, May 18, 2015 5:29 PM
To: Barrett, William A
Subject: RE: B-5403 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Bill,

Yes, please provide mitigation for the channel that will be lost.

Thank you,

Lori

-----Original Message-----

From: Barrett, William A [<mailto:wabarrett@ncdot.gov>]

Sent: Monday, May 18, 2015 9:59 AM

To: Beckwith, Loretta A SAW

Subject: [EXTERNAL] B-5403

Good Monday morning Lori,

We discussed mitigation for stream impacts for B-5403 (bridge replacement over Crab Creek in Transylvania County) to the UT to Crab Creek for the impending submittal of the permit application. I have received the following information from our Hydro. Engineer: The length of the channel change being put back is 120'.

With the length of channel impact from roadway fill being 142 LF, the difference between the impact and the length of channel that would be providing function = 22 LF. During our discussion, we talked about 15 LF as sort of the demarcation point of whether mitigation would be needed. Let me know your thoughts regarding 22 LF of impact.

All other stream impacts will be to Crab Creek for bank stabilization. We have previously discussed that mitigation would not be required for the 0.005 acre of wetland impact (reported as <0.01 ac.).

Based on this information, I will obtain mitigation for the 22 LF of stream impact, unless I hear otherwise from you.

Thanks for your help with this,

Bill



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801
May 19, 2015

Mr. Richard W. Hancock, P.E.
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Hancock:

Subject: Endangered Species Concurrence for the Proposed Replacement of Bridge Number 196 on SR 1532 over Crab Creek in Transylvania County, North Carolina, Federal Project No. BRSTP-1532(5), Division 14, T.I.P No. B-5403

On March 24, 2015, we received your letter (via email) requesting section 7 concurrence on effects the subject bridge replacement project may have on the federally threatened northern long-eared bat (*Myotis septentrionalis*) and the federally endangered Appalachian elktoe (*Alasmidonta raveneliana*). The following comments are provided in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

We have reviewed the information provided in your concurrence request letter, attached survey reports, emails, and phone conversations. The action area for this proposed project is within the known range of the aforementioned species. We agree that your assessment of the bridge structure indicates that demolition will not have an effect on the species and that tree-clearing associated with the project is exempted by the northern long-eared bat 4d rule. Accordingly, we concur with your biological conclusion that the proposed construction may affect, but is not likely to adversely affect, the northern long-eared bat. Further, we agree that the proximity of the project to Appalachian elktoe habitat downstream in the Little River is of sufficient distance (1.9 kilometers) that, with careful erosion control, any erosion effects to this downstream habitat should be undetectable. Your commitment to design the project to adhere to Design Standards in Sensitive Watersheds should provide sufficient protection from site runoff to achieve this undetectable level, and we concur with your biological conclusion that the project may effect, but is not likely to adversely affect the Appalachian elktoe. Therefore, we believe the requirements under section 7(c) of the Act are fulfilled. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this

action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

If we can be of assistance or if you have any questions about these comments, please contact Mr. Jason Mays of our staff at 828/258-3939, Ext. 226. In any future correspondence concerning this project, please reference our Log Number 4-2-11-085.

Sincerely,



Janet A. Mizzi
Field Supervisor



North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Division of Mitigation Services

Donald R. van der Vaart
Secretary

May 28, 2015

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

Dear Mr. Hancock:

Subject: Mitigation Acceptance Letter:

B-5403, Replace Bridge 196 on SR 1532 over Crab Creek, Transylvania County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on May 20, 2015, the impacts are located in CU 06010105 of the French Broad River basin in the Southern Mountains (SM) Eco-Region, and are as follows:

French Broad 06010105 SM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	22.0	0	0	0	0	0	0	0

*Some of the stream impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

This impact and associated mitigation need were under projected by the NCDOT in the 2015 impact data. DMS will commit to implement sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. 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 DMS.

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

Sincerely,

James B. Stanfill
Asset Management Supervisor

cc: Ms. Lori Beckwith, USACE – Asheville Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: B-5403

1652 Mail Service Center, Raleigh, North Carolina 27699-1652
Phone: 919-707-8976 \ Internet: <http://portal.ncdenr.org/web/eep>

An Equal Opportunity \ Affirmative Action Employer – Made in part by recycled paper

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD):

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Bill Barrett, NCDOT, 1598 Mail Service Center, Raleigh, NC 27699-1598

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: CESAW-RG-

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
TIP: B-5403 Description: Replacement of Bridge No. 196 over Crab Creek on SR 1532 in Transylvania County.

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: NC County/parish/borough: Transylvania City: Little River
Center coordinates of site (lat/long in degree decimal format):
Lat. 35.234560°N, Long. -82.617573° W
Universal Transverse Mercator:
Name of nearest waterbody: Crab Creek

Identify (estimate) amount of waters in the review area:
Non-wetland waters: 585 linear feet: width (ft) and/or acres.
Cowardin Class: Riverine
Stream Flow: Perennial
Wetlands: 0.07 acres.
Cowardin Class: Emergent

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: N/A
Non-Tidal: N/A

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- Office (Desk) Determination Date:
- Field Determination Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this

preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring “pre-construction notification” (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant’s acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there “*may be*” waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply

- checked items should be included in case file and, where checked and requested, appropriately reference sources below):

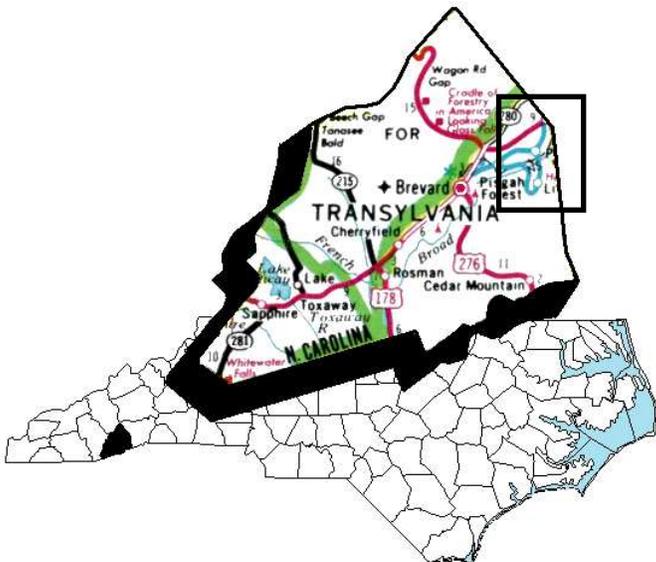
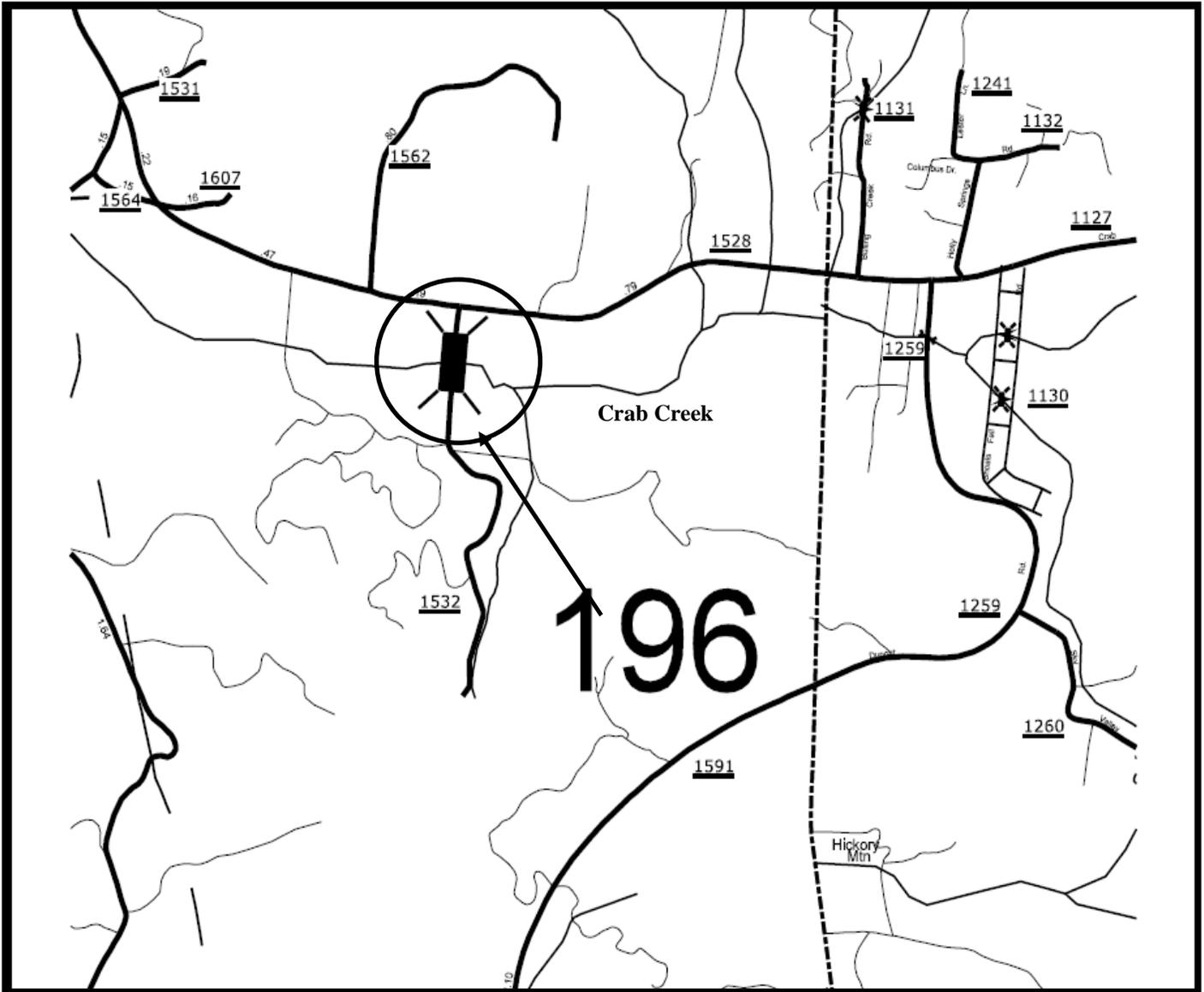
- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant
- Data sheets prepared/submitted by or on behalf of the applicant/consultant
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps
- U.S. Geological Survey map(s). Cite scale & quad name: 1:24000; Standingstone Mountain
- USDA Natural Resources Conservation Service Soil Survey
Citation:
- National wetlands inventory map(s). Cite name:
- State/Local wetland inventory map(s):
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): or Other (Name & Date):
- Previous determination(s). File no. and date of response letter:
- Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory Project Manager
(REQUIRED)



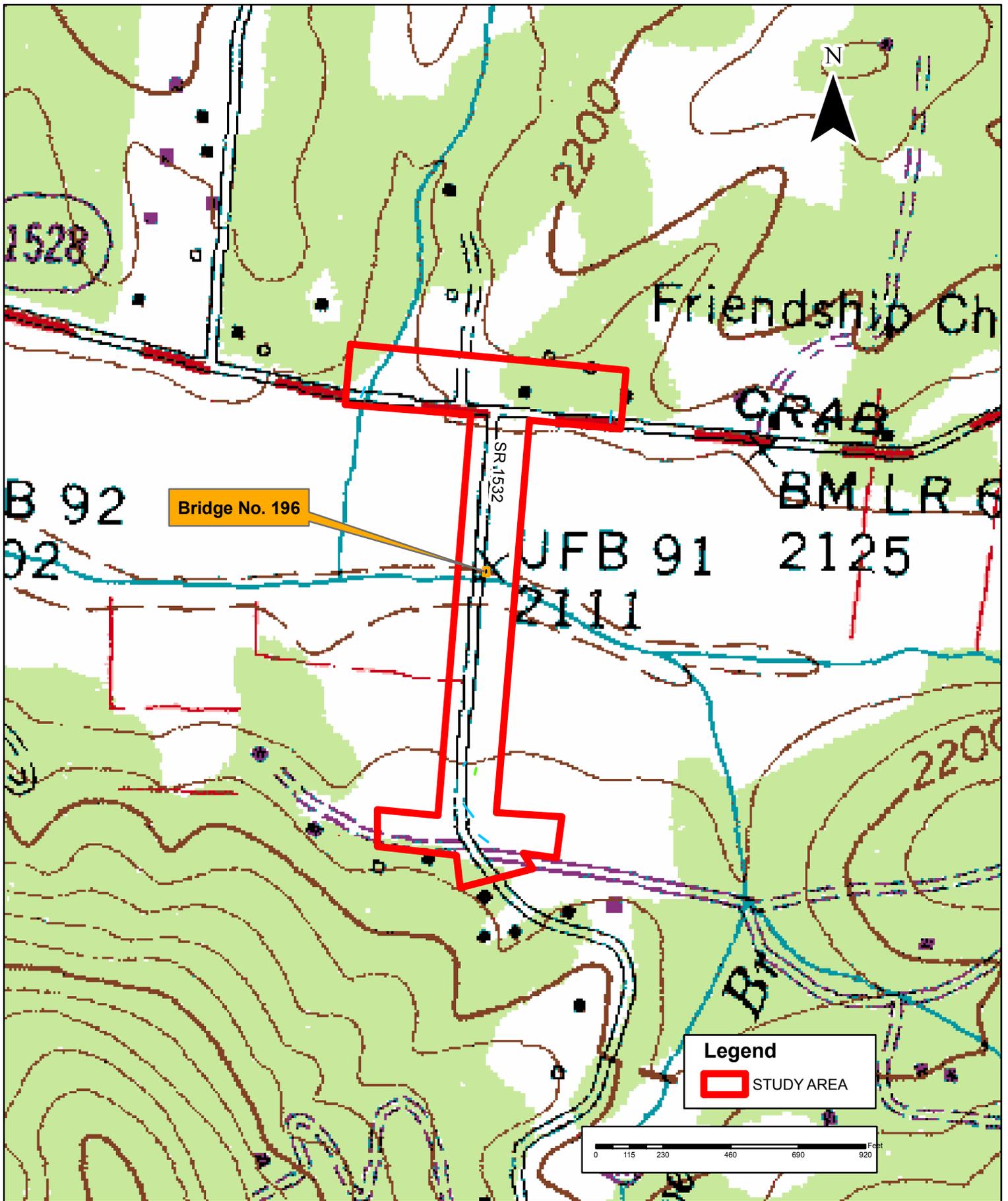
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

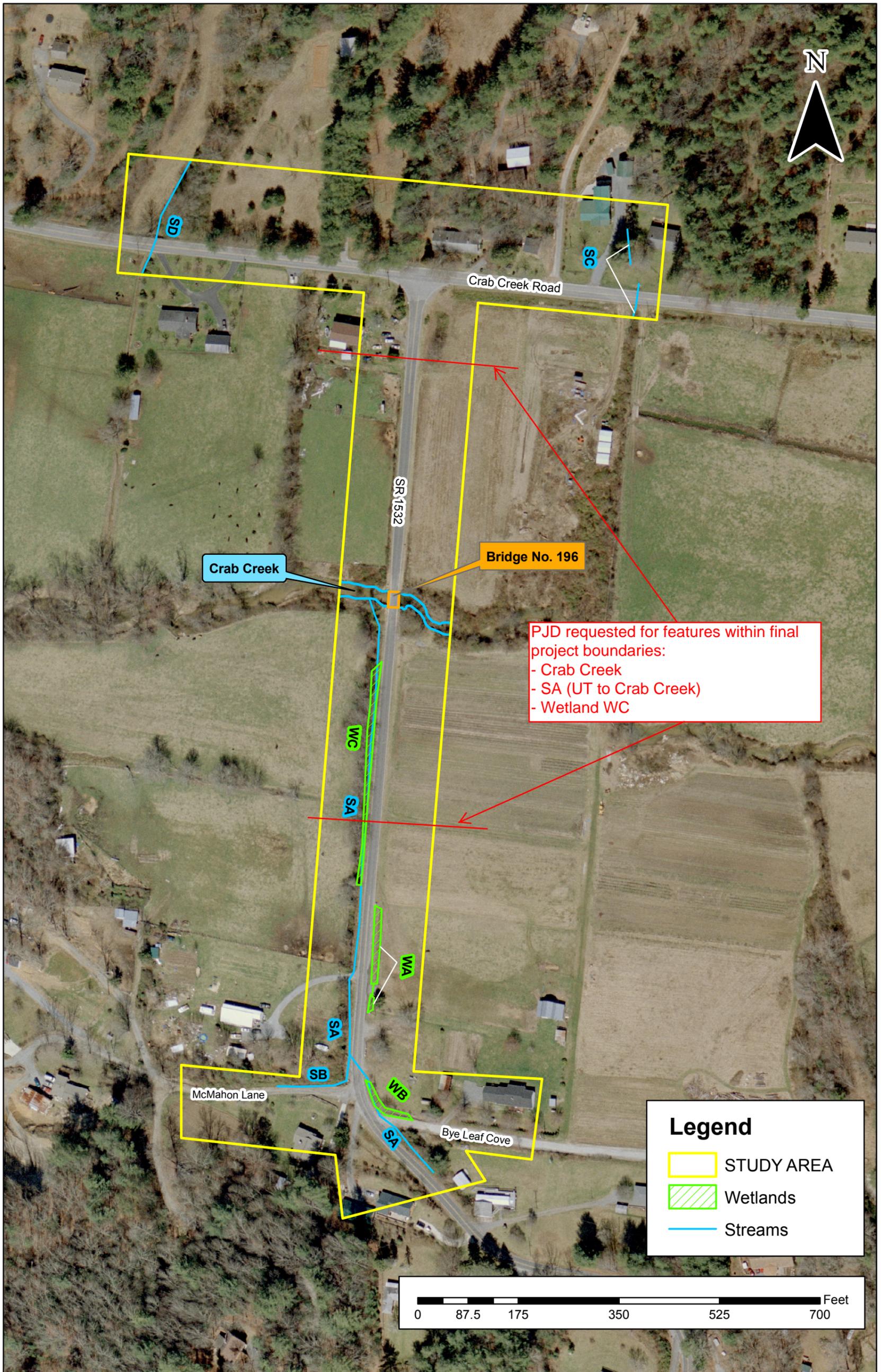


	<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH</p>
--	---

**TRANSLYVANIA COUNTY
REPLACE BRIDGE NO. 196 ON SR 1532
OVER CRAB CREEK
B-5403**

Figure 1





WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: B-5403 City/County: TRANSYLVANIA Sampling Date: 2-16-2011
 Applicant/Owner: NC DOT State: NC Sampling Point: WC
 Investigator(s): BARRETT, LEAMER, HARROD Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Along Perennial Stream/Soil Local relief (concave, convex, none): CONCAVE Slope (%): _____
 Subregion (LRR or MLRA): N Lat: 35.2339 Long: -82.6177 Datum: _____
 Soil Map Unit Name: DeB: DUNAY LOAM NWI classification: PSS1F
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>5"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>6"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WC

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			

Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Sambucus canadensis</u>	<u>65</u>	<u>Y</u>	<u>FACW</u>
2. <u>Carpinus caroliniana</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>
3. <u>Alnus serrulata</u>	<u>20</u>	<u>N</u>	<u>FACW+</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			

50 ⇒ 57.5 20 ⇒ 23 115 = Total Cover

Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Impatiens repensis</u>	<u>40</u>	<u>Y</u>	<u>FACW</u>
2. <u>Rosa multiflora</u>	<u>5</u>	<u>N</u>	<u>UPL</u>
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			

50 ⇒ 22.5 20 ⇒ 9 45 = Total Cover

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WC

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10 YR 4/1	90	10 YR 4/6	10	C	M	Silt loam	
10-12	10 YR 4/1	50	10 YR 4/6	50	C	M	Silt loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)	
<input type="checkbox"/> Stripped Matrix (S6)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: B-5403 City/County: TRANSYLVANIA Sampling Date: 2-16-2011
 Applicant/Owner: NC DOT State: NC Sampling Point: UPLAND (LA, NB & WC)
 Investigator(s): BARRETT, LEAMER, HARROD Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): NONE Slope (%): _____
 Subregion (LRR or MLRA): N Lat: 35.2325 Long: -82.6175 Datum: _____
 Soil Map Unit Name: DeB NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	
<input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) <input checked="" type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input checked="" type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UPLAND (WP, WS + WC)

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			

Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			

Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Fescue sp</u>	<u>80</u>	<u>Y</u>	<u>FXU</u>
2. <u>Lonicera japonica</u>	<u>5</u>	<u>N</u>	<u>FAC-</u>
3. <u>Rubus</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No

Remarks: (Include photo numbers here or on a separate sheet.)

WETLAND RATING WORKSHEET Fourth Version

Project Name B-5403 Nearest Road SR 1532
 County TRANSMYLVANIA Wetland area 0.08 acres Wetland width 4 feet
 Name of evaluator BARRETT Date 5-19-2011

Wetland location
 on pond or lake
 on perennial stream
 on intermittent stream
 within interstream divide
 other: _____

Adjacent land use
 (within 1/2 mile upstream, upslope, or radius)
 forested/natural vegetation 55 %
 agriculture, urban/suburban 40 %
 impervious surface 15 %

Soil series: DILLARD LOAM
 predominantly organic - humus, muck, or peat
 predominantly mineral - non-sandy
 predominantly sandy

Dominant vegetation
 (1) Sambucus canadensis
 (2) Amus serrulata
 (3) Impatiens copensis

Hydraulic factors
 steep topography
 ditched or channelized
 total wetland width ≥ 100 feet

Flooding and wetness
 semipermanently to permanently flooded or inundated
 seasonally flooded or inundated
 intermittently flooded or temporary surface water
 no evidence of flooding or surface water

Wetland type (select one)*
 Bottomland hardwood forest
 Headwater forest
 Swamp forest
 Wet flat
 Pocosin
 Bog forest

Pine savanna
 Freshwater marsh
 Bog/fen
 Ephemeral wetland
 Carolina bay
 Other: _____

* The rating system cannot be applied to salt or brackish marshes or stream channels

R	Water storage	<u>2</u>	x 4.00 =	<u>8</u>	Wetland rating <div style="border: 1px solid black; padding: 10px; font-size: 2em; margin: 10px auto;">32</div>
A	Bank/Shoreline stabilization	<u>2</u>	x 4.00 =	<u>8</u>	
T	Pollutant removal	<u>1</u> **	x 5.00 =	<u>5</u>	
I	Wildlife habitat	<u>1</u>	x 2.00 =	<u>2</u>	
N	Aquatic life value	<u>2</u>	x 4.00 =	<u>8</u>	
G	Recreation/Education	<u>1</u>	x 1.00 =	<u>1</u>	

** Add 1 point if in sensitive watershed and >10% nonpoint source disturbance within 1/2 mile upstream, upslope, or radius



North Carolina Department of Transportation
Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
 FOR NCDOT PROJECTS



(Version 2.01; Released December 2014)

WBS Element: 46118.1.1 **TIP No.:** B-5403 **County(ies):** Transylvania **Page** 1 **of** 3

General Project Information

WBS Element:	46118.1.1	TIP Number:	B-5403	Project Type:	Bridge Replacement	Date:	1/12/2015
NCDOT Contact:	Charles R. Smith, PE			Contractor / Designer:	W. Henry Wells, Jr., PE, PLS		
	Address:	Hydraulics Unit 1020 Birch Ridge Rd Raleigh, NC 27610			Address:	Sungate Design Group, PA 915 Jones Franklin Rd Raleigh, NC 27606	
	Phone:	(919) 707-6716			Phone:	(919) 859-2243	
	Email:	crsmith5@ncdot.gov			Email:	hwells@sungatedesign.com	
City/Town:	Brevard			County(ies):	Transylvania		
River Basin(s):	French Broad			CAMA County?	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	0.152 miles	Surrounding Land Use:	Agricultural					
	Proposed Project			Existing Site				
Project Built-Upon Area (ac.)	0.4	ac.	0.3	ac.				
Typical Cross Section Description:	Two (2) paved lanes each ten (10) feet wide with two (2) feet wide shoulders (five (5) with guard rail) on each side. Variable (2:1 to 6:1) cut/fill slopes.			Two (2) paved lanes each nine (9) feet wide with variable width shoulders and variable cut/fill slopes.				
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	400	Year:	2040	Existing:	300	Year:	2011

General Project Narrative:
(Description of Minimization of Water Quality Impacts)
 B-5403 involves the removal and replacement of Transylvania County bridge # 196 along with improvements to the approaches. Deck drains will not be place over the stream. Instead, the deck drains will discharge outside the stream banks. The remaining deck drainage will be collected by inlets at each end of the bridge. The inlet at the northwest quadrant will discharge to a preformed scour hole. The inlet at the southwest quadrant will discharge to a riprap lined channel. Grassed swales will be constructed on the east side of the roadway to replace existing roadside ditches disturbed due to the temporary alignment and roadway widening. SR 1532 is a dead end road so an on-site detour will be required.

Waterbody Information

Surface Water Body (1):	Crab Creek		NCDWR Stream Index No.:	6-38-23				
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class C						
	Supplemental Classification:	Trout Waters (Tr)		(HQW)				
Other Stream Classification:	None							
Impairments:	None							
Threatened/Endangered Species?	No		Comments:					
NRTR Stream ID:							Buffer Rules in Effect:	N/A
Project Includes Bridge Spanning Water Body?	Yes	Deck Drains Discharge Over Buffer?	N/A		Dissipator Pads Provided in Buffer?	N/A		
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)			(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
	(If yes, provide justification in the General Project Narrative)							

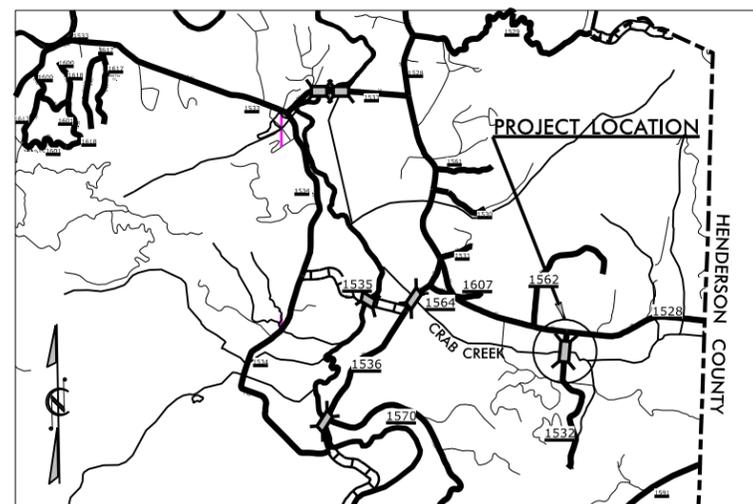
09.08/99

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**PERMIT DRAWING
SHEET 1 OF 10**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5403	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46118.1.1	BRZ-1532(5)	PE	
46118.2.FD1	BRZ-1532(5)	RW & UTIL.	



VICINITY MAP

TRANSYLVANIA COUNTY

LOCATION: BRIDGE NO. 196 OVER CRAB CREEK
ON SR 1532

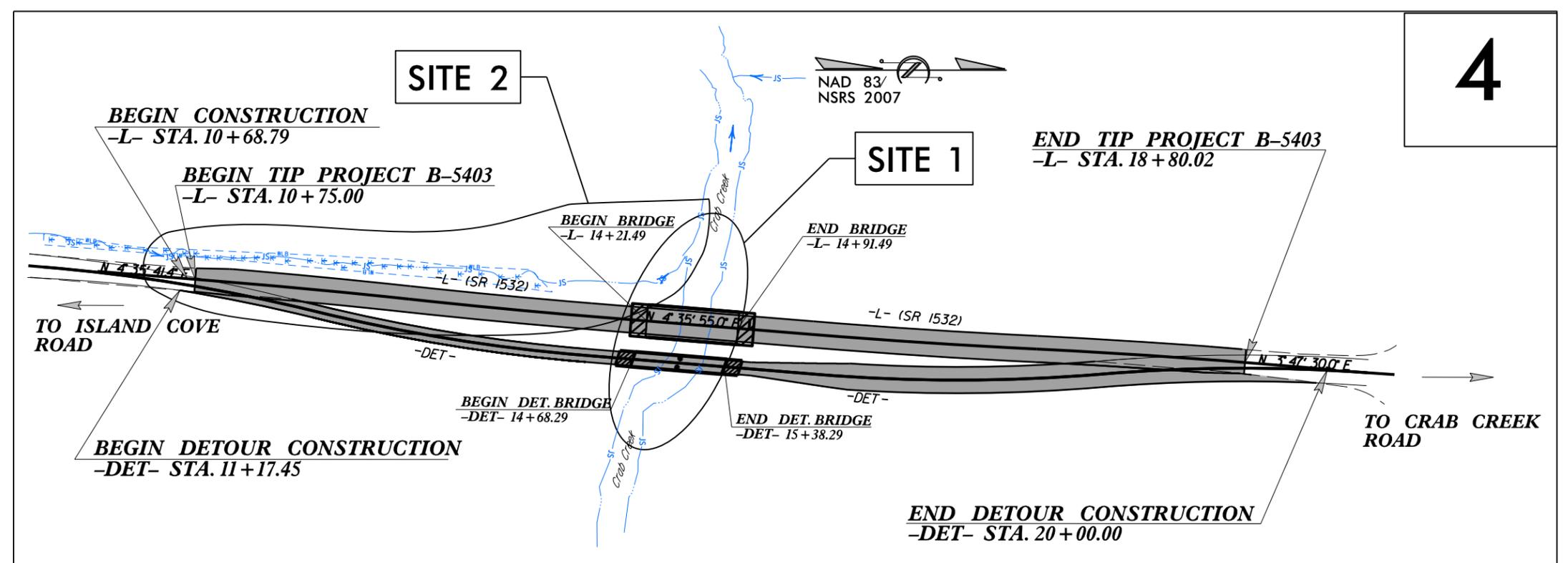
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

WETLAND AND SURFACE WATER IMPACTS PERMIT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



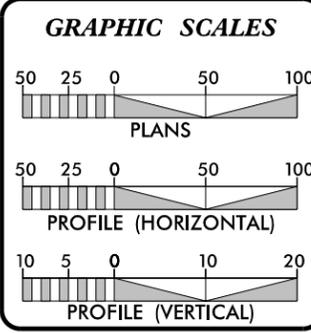
TIP PROJECT: B-5403



4

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

CONTRACT:



DESIGN DATA

ADT 2014 =	331
ADT 2040 =	400
K =	16 %
D =	65 %
T =	6 % *
V =	40 MPH
* TTST =	1% DUAL = 5%
FUNC CLASS =	LOCAL
SUB-REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5403 =	0.139 MILE
LENGTH STRUCTURE TIP PROJECT B-5403 =	0.013 MILE
TOTAL LENGTH TIP PROJECT B-5403 =	0.152 MILE

Prepared In the Office of:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

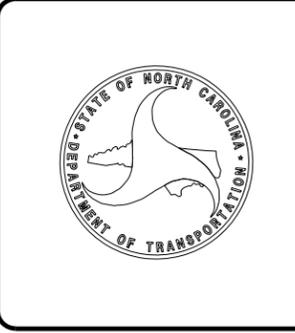
RIGHT OF WAY DATE: FEBRUARY 20, 2015	KEVIN E. MOORE, PE PROJECT ENGINEER
LETTING DATE: JANUARY 19, 2016	NATHAN N. ADIMA, PE PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

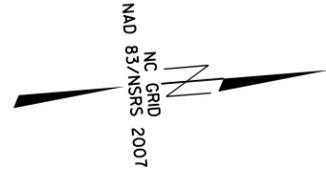


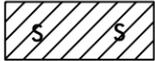
3/13/2015
B5403_Hyd.prm_wet_psh_01.dgn
Rnoward

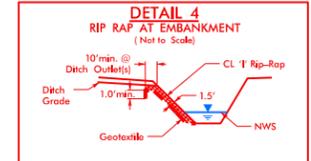
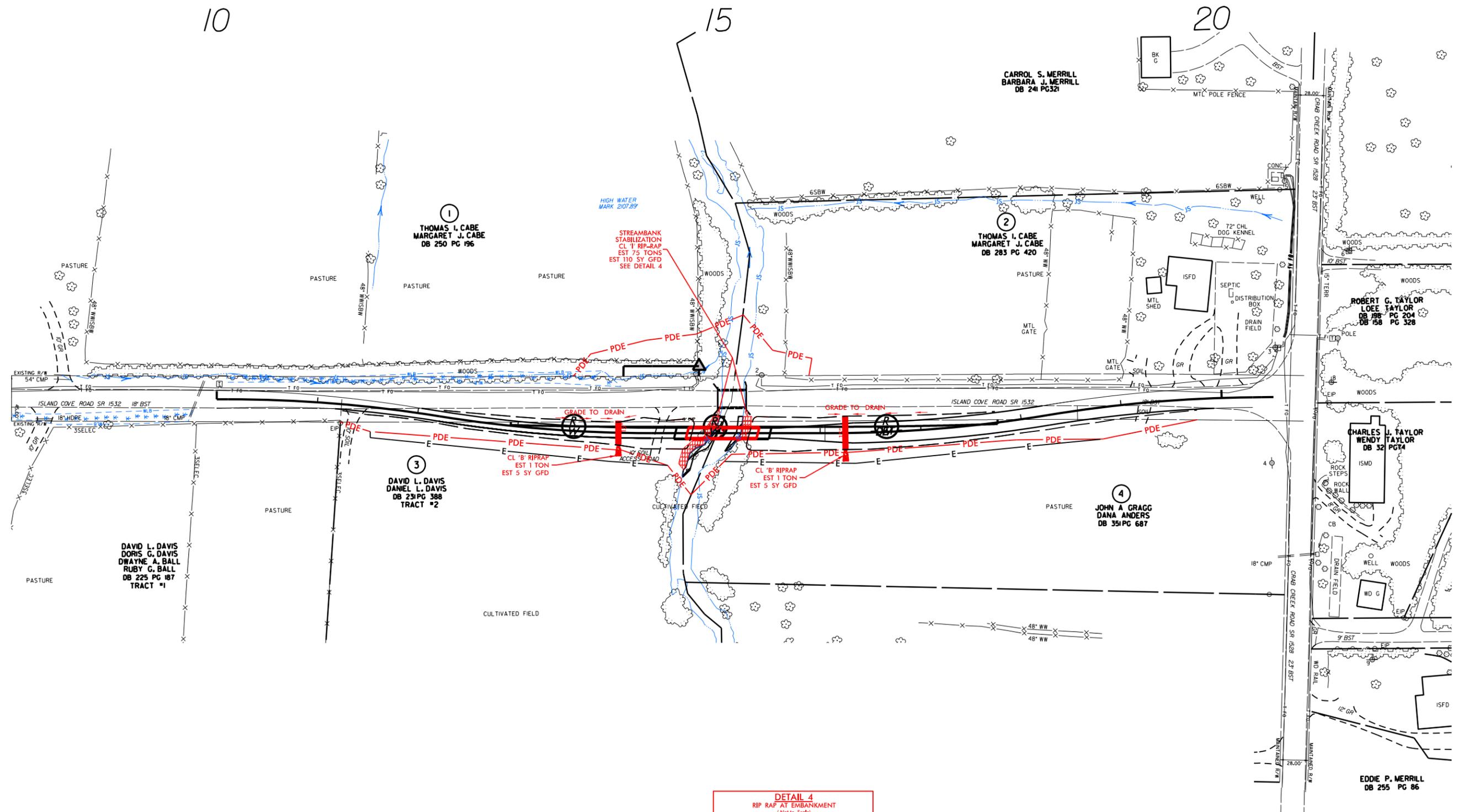
SITE 1

**PERMIT DRAWING
SHEET 2 OF 10**

PROJECT REFERENCE NO. B-5403	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



 DENOTES IMPACTS IN SURFACE WATER



FOR -DET- PROFILE SEE SHEET 5



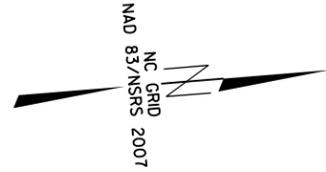
REVISIONS

8/17/09 3/13/2015 8:43:11 d:\prj\wet.psh_02B.dgn

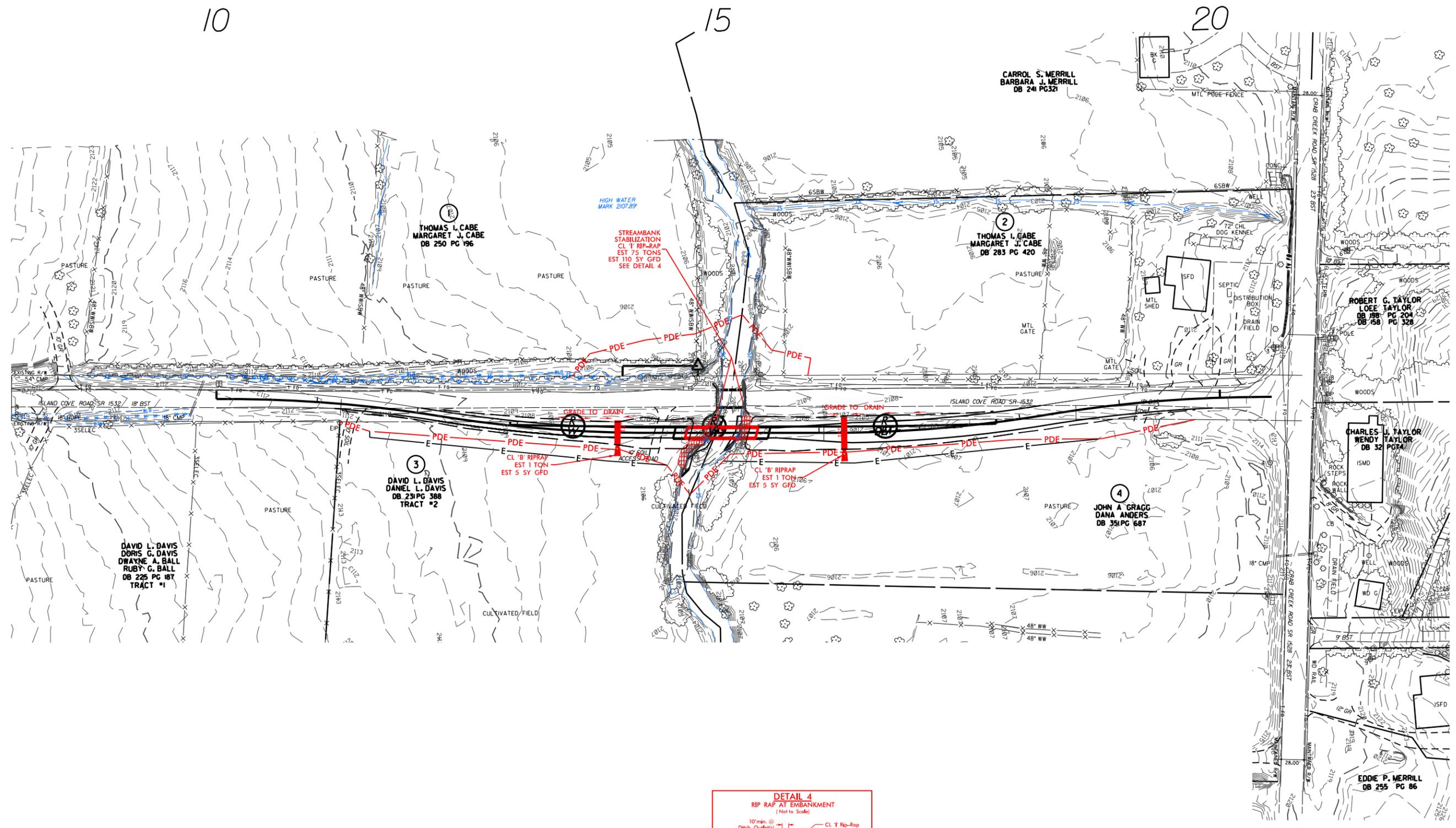
SITE 1

**PERMIT DRAWING
SHEET 3 OF 10**

PROJECT REFERENCE NO. B-5403	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



 DENOTES IMPACTS IN SURFACE WATER



FOR -DET- PROFILE SEE SHEET 5



REVISIONS

8/17/2015 3:43:11 d:\prj\wet_psh_02B_con.dgn

8/17/99

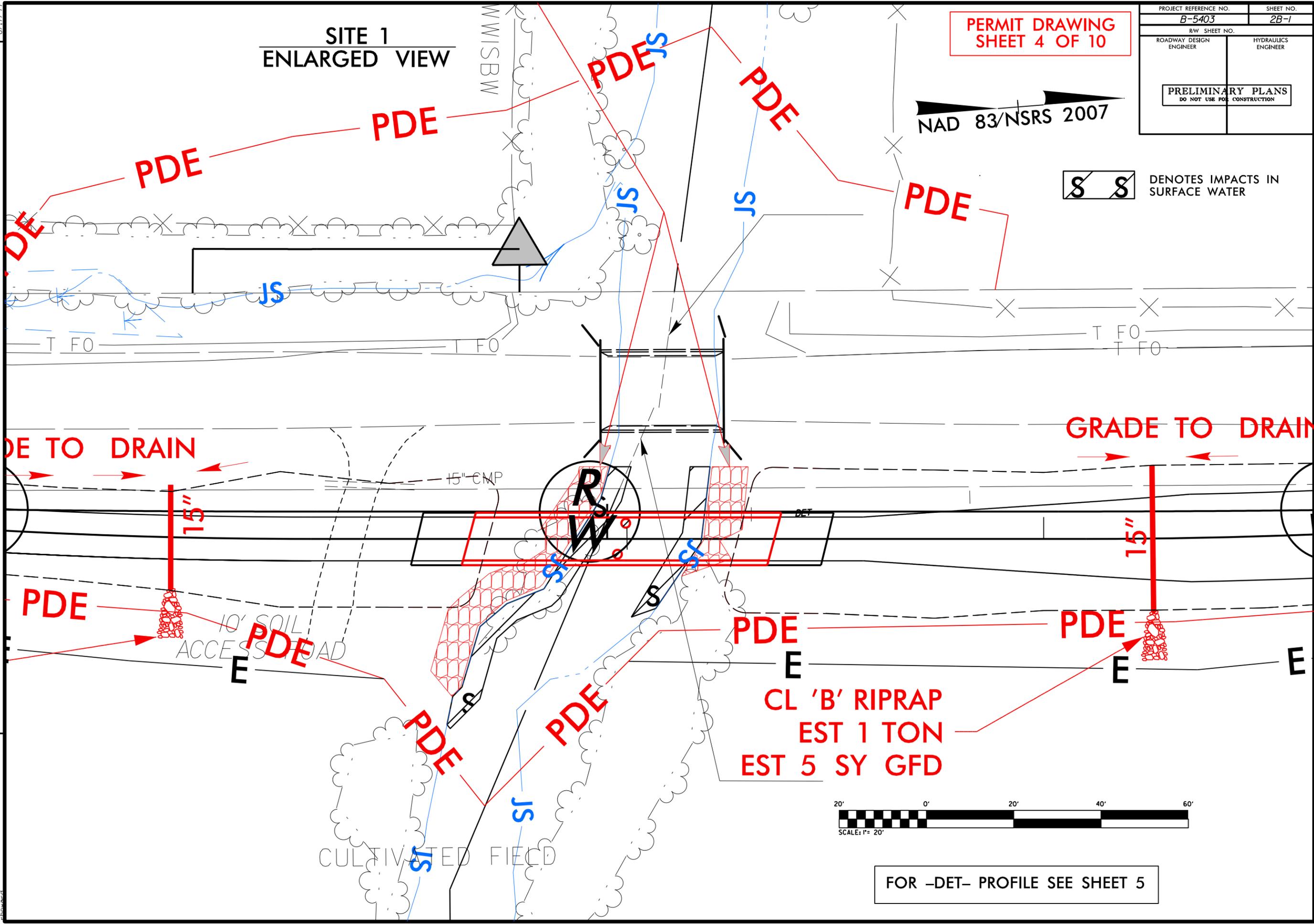
SITE 1 ENLARGED VIEW

**PERMIT DRAWING
SHEET 4 OF 10**

PROJECT REFERENCE NO. B-5403	SHEET NO. 2B-1
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NAD 83/NSRS 2007

S S DENOTES IMPACTS IN SURFACE WATER



REVISIONS

3/13/2015
B647631.dwg - prm.wet.psh_02B_enlarged.dgn
provided



FOR -DET- PROFILE SEE SHEET 5

SITE 1 & 2

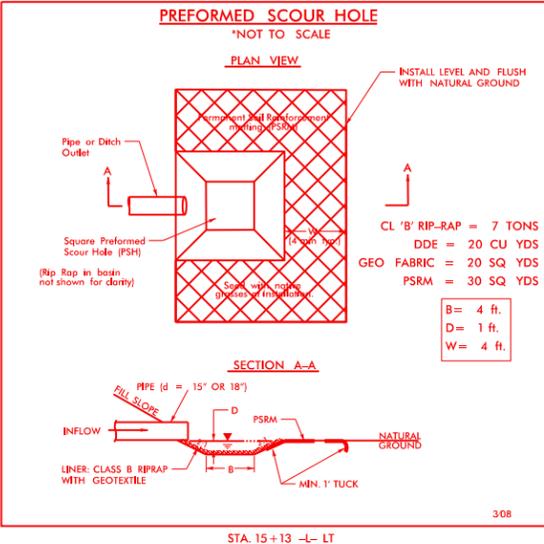
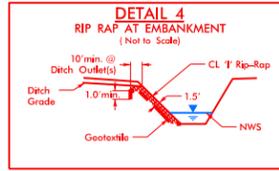
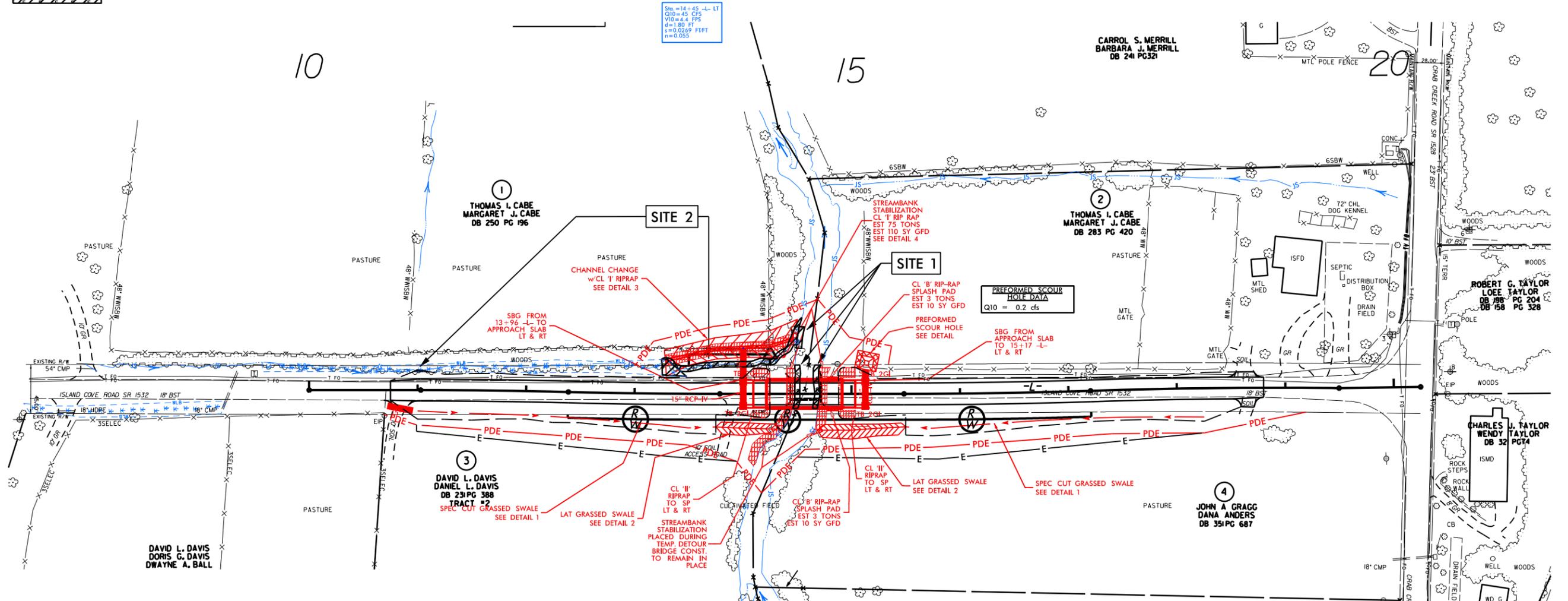
**PERMIT DRAWING
SHEET 5 OF 10**

PROJECT REFERENCE NO. B-5403	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



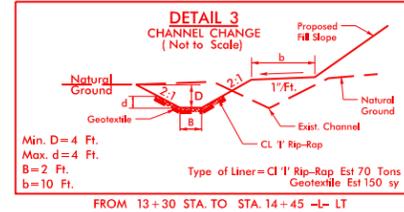
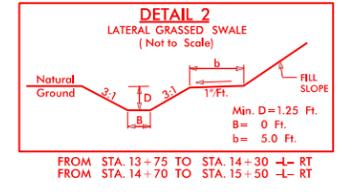
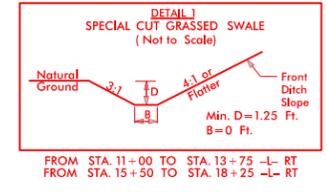
DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND



GRASS SWALE DATA		GRASS SWALE DATA	
DA = 1.25 ac.	SLOPE = 1.50%	DA = 0.95 ac.	SLOPE = 1.50%
L REQ. = 12.5 ft.	L PRO. = 390 ft.	L REQ. = 95 ft.	L PRO. = 330 ft.
Q2 = 2.7 cfs	V2 = 2.4 fps	Q2 = 1.5 cfs	V2 = 1.9 fps
D2 = 0.53 ft.	V10 = 2.2 fps	D2 = 0.51 ft.	V10 = 2.1 fps
Q10 = 2.7 cfs	D10 = 0.59 ft.	Q10 = 1.8 cfs	D10 = 0.66 ft.
STA. 13+75 -L- RT		STA. 14+70 -L- RT	

GRASS SWALE DATA		GRASS SWALE DATA	
DA = 1.90 ac.	SLOPE = 1.50%	DA = 0.85 ac.	SLOPE = 0.35%
L REQ. = 12.5 ft.	L PRO. = 390 ft.	L REQ. = 85 ft.	L PRO. = 275 ft.
Q2 = 3.0 cfs	V2 = 2.4 fps	Q2 = 1.3 cfs	V2 = 1.1 fps
D2 = 0.65 ft.	V10 = 2.6 fps	D2 = 0.59 ft.	V10 = 1.8 cfs
Q10 = 4.1 cfs	D10 = 0.73 ft.	Q10 = 1.2 cfs	D10 = 0.66 ft.
STA. 14+30 -L- RT		STA. 15+50 -L- RT	



REVISIONS

8/17/2015
13d_prm_wet_psh_04.dgn

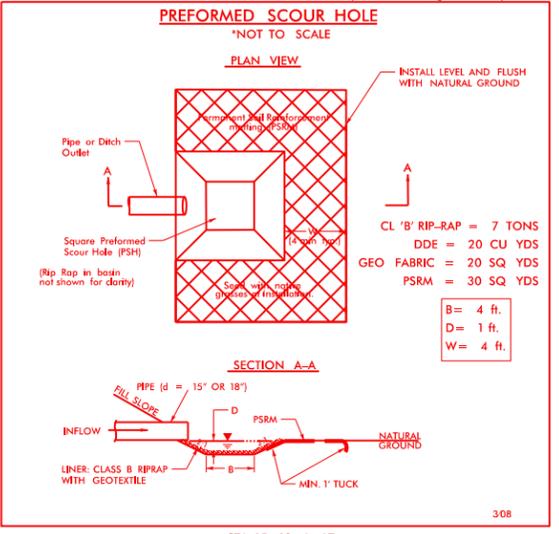
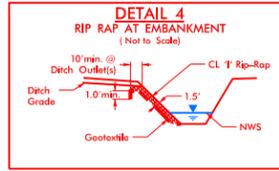
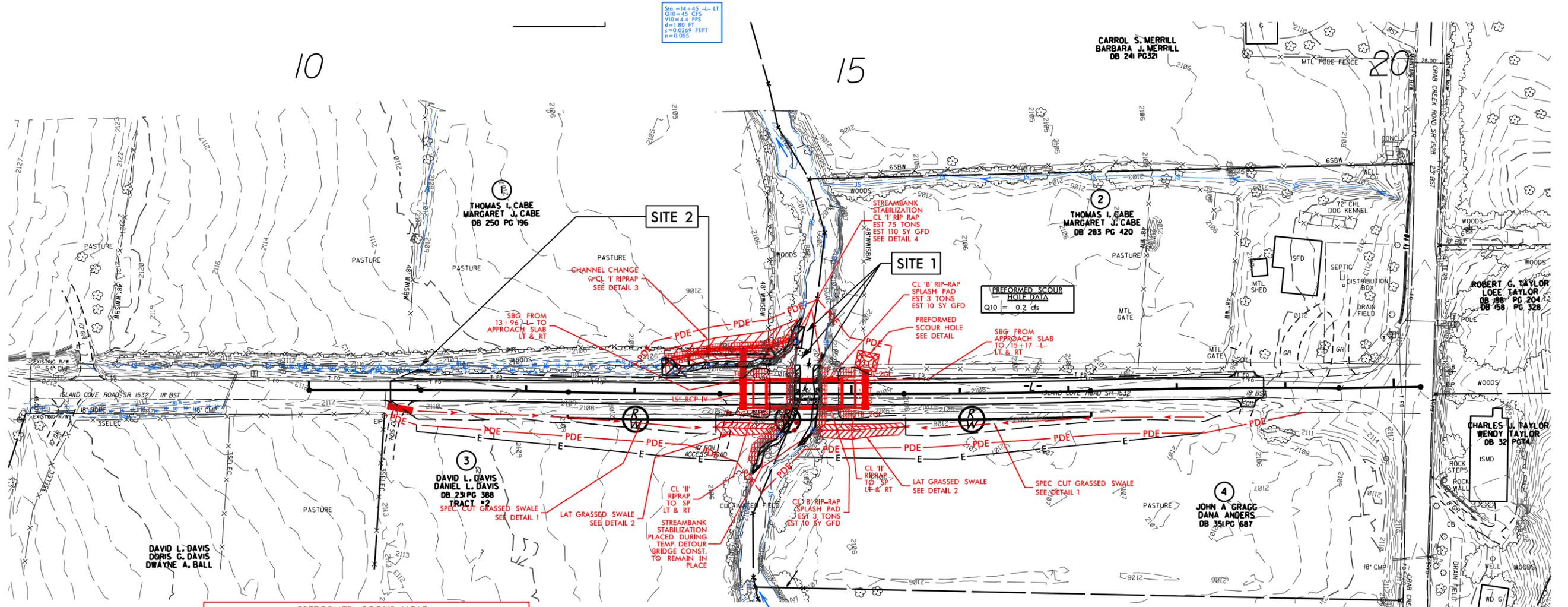
SITE 1 & 2

**PERMIT DRAWING
SHEET 6 OF 10**

PROJECT REFERENCE NO. B-5403	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



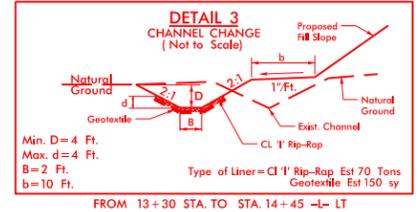
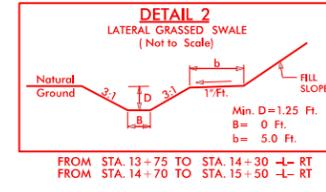
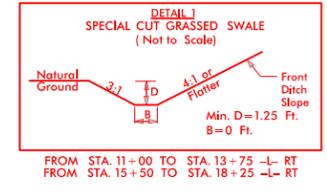
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND



GRASS SWALE DATA	GRASS SWALE DATA
DA = 1.25 ac. SLOPE = 1.50% L REQ. = 12.5 ft. L PRO. = 275 ft. Q2 = 2.0 cfs V2 = 2.0 fps D2 = 0.53 ft. Q10 = 2.7 cfs V10 = 2.2 fps D10 = 0.59 ft.	DA = 1.90 ac. SLOPE = 1.50% L REQ. = 190 ft. L PRO. = 390 ft. Q2 = 3.0 cfs V2 = 2.4 fps D2 = 0.65 ft. Q10 = 4.1 cfs V10 = 2.6 fps D10 = 0.73 ft.
STA. 13+75 -L- RT	STA. 14+30 -L- RT

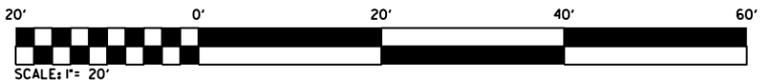
GRASS SWALE DATA
DA = 0.95 ac. SLOPE = 1.37% L REQ. = 95 ft. L PRO. = 355 ft. Q2 = 1.5 cfs V2 = 1.9 fps D2 = 0.51 ft. Q10 = 2.0 cfs V10 = 2.1 fps D10 = 0.57 ft.
STA. 14+70 -L- RT

GRASS SWALE DATA
DA = 0.85 ac. SLOPE = 0.35% L REQ. = 85 ft. L PRO. = 275 ft. Q2 = 1.3 cfs V2 = 1.1 fps D2 = 0.59 ft. Q10 = 1.8 cfs V10 = 1.2 fps D10 = 0.66 ft.
STA. 15+50 -L- RT



REVISIONS

3/17/2015 10:43:11 d:\prj\wet.psh_04_con.dgn



SITE 1 & 2 ENLARGED VIEW

**PERMIT DRAWING
SHEET 7 OF 10**

PROJECT REFERENCE NO. B-5403	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

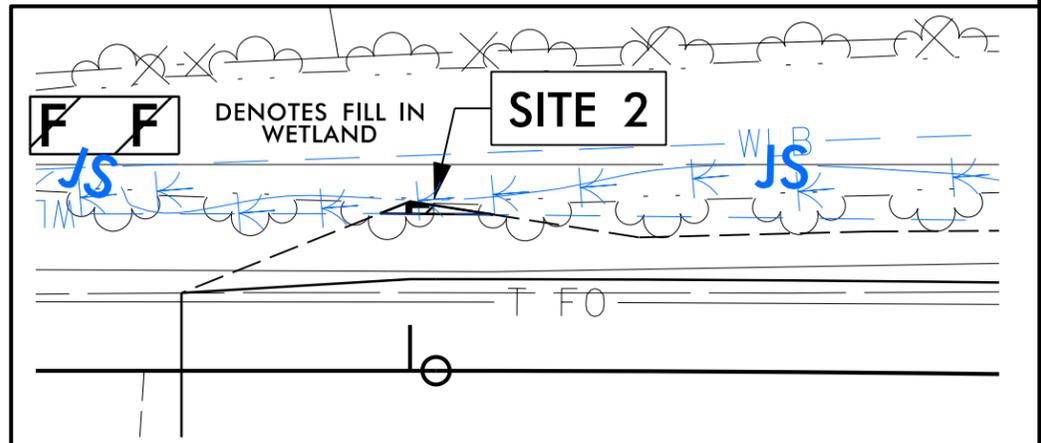
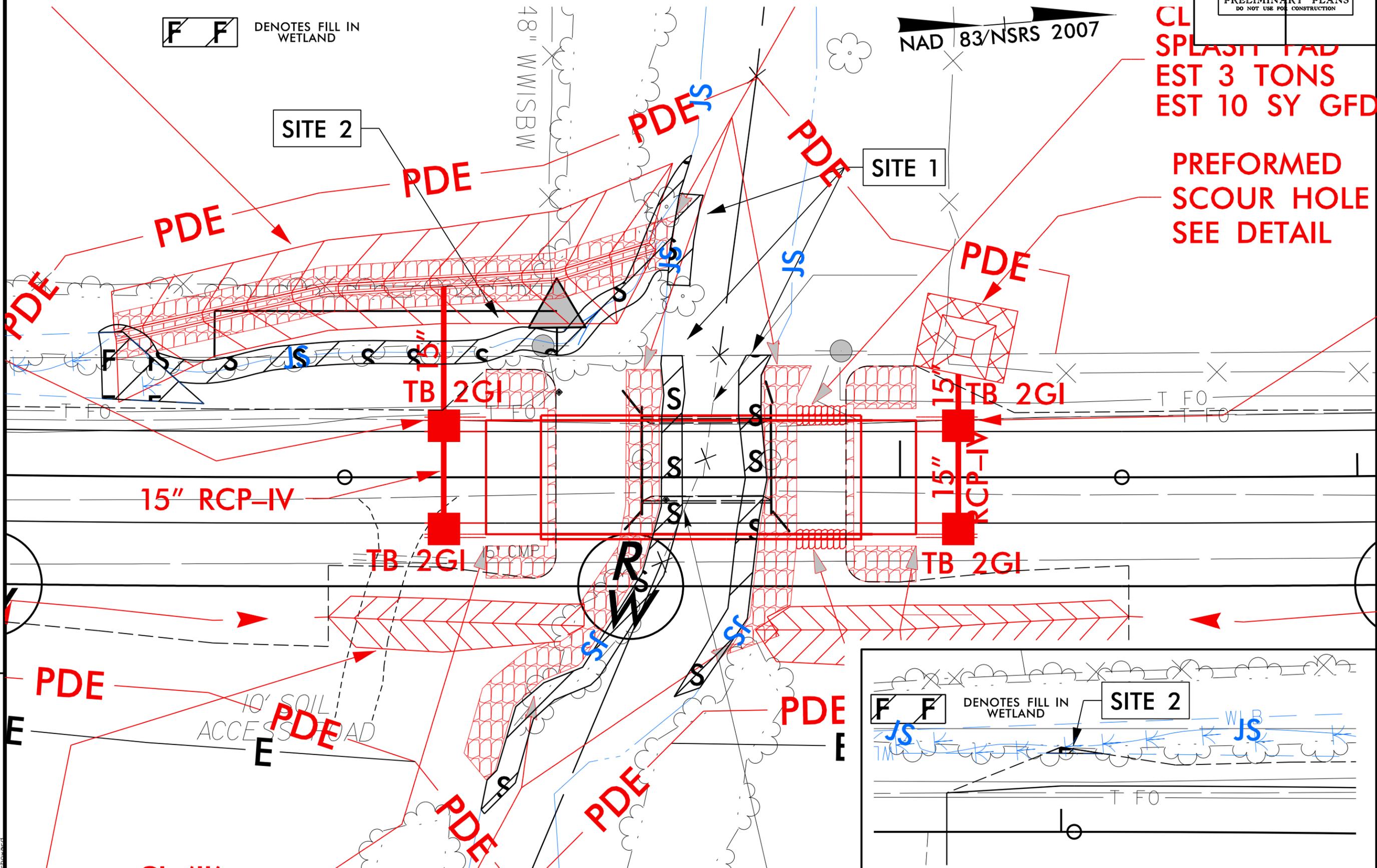
S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

NAD 83/NSRS 2007

**CL SPLASH PAD
EST 3 TONS
EST 10 SY GFD**

**PREFORMED
SCOUR HOLE
SEE DETAIL**



REVISIONS

3/13/2015
B-5403-Hyd-prm-wet.psh_04_enl-ar-ged.dgn
provided

5/28/99

PERMIT DRAWING
SHEET 8 OF 10

PROJECT REFERENCE NO. B-5403	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

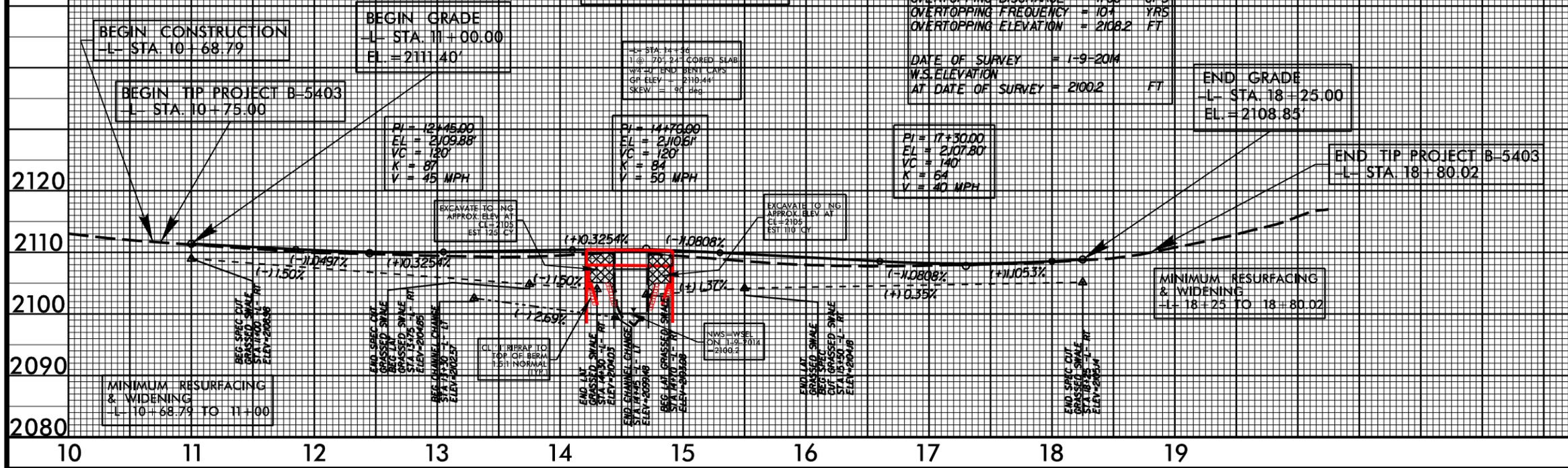
-L-

(SR 1532)

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2200 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2108.7 FT
BASE DISCHARGE	= 400 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2109.9 FT
OVERTOPPING DISCHARGE	= 1700 CFS
OVERTOPPING FREQUENCY	= 10 YRS
OVERTOPPING ELEVATION	= 2108.2 FT

DATE OF SURVEY = 1-9-2014
W.S. ELEVATION AT DATE OF SURVEY = 2100.2 FT

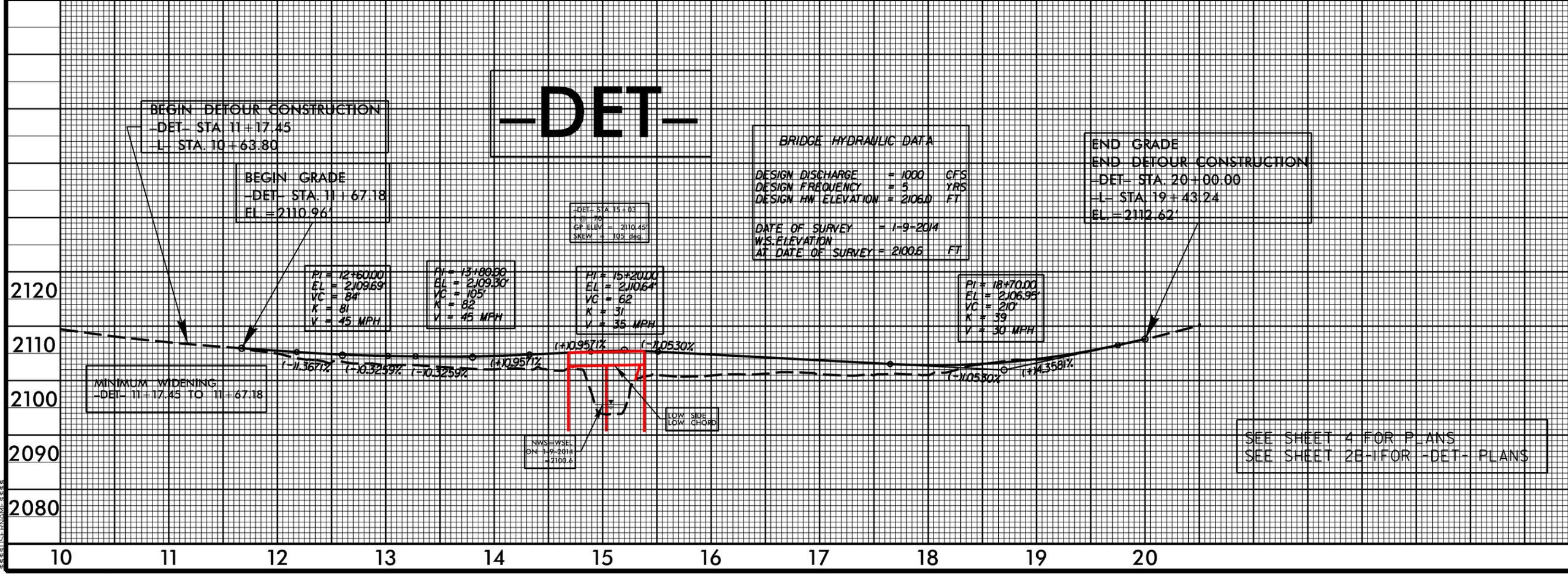


-DET-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1000 CFS
DESIGN FREQUENCY	= 5 YRS
DESIGN HW ELEVATION	= 2106.0 FT

DATE OF SURVEY = 1-9-2014
W.S. ELEVATION AT DATE OF SURVEY = 2100.6 FT



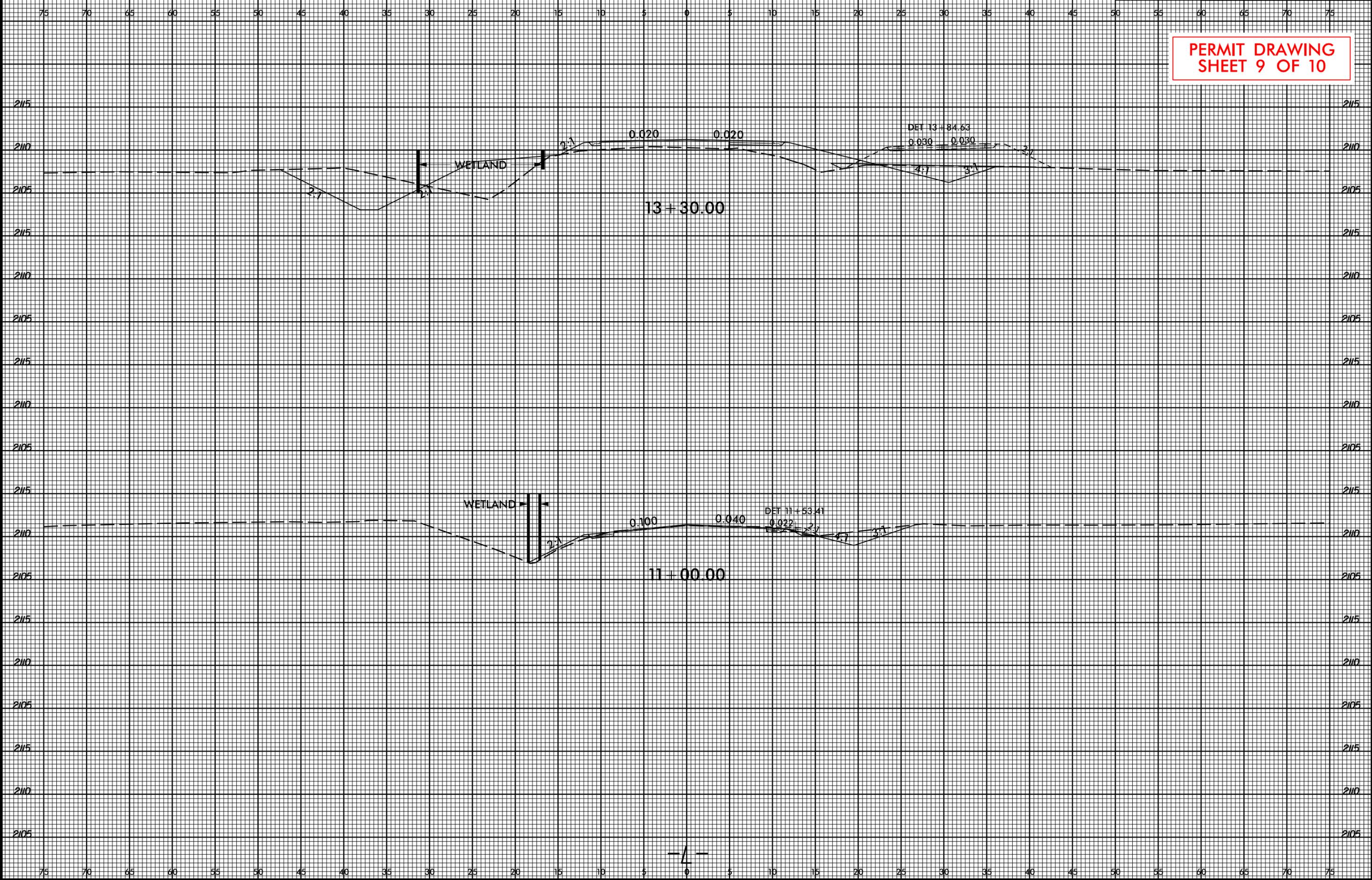
SEE SHEET 4 FOR PLANS
SEE SHEET 2B-1 FOR -DET- PLANS

5/28/99

8/23/99



PROJ. REFERENCE NO.	SHEET NO.
B-5403	XSC



**PERMIT DRAWING
SHEET 9 OF 10**

SYSTEMS
DESIGN
INC.



09/08/99

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSYLVANIA COUNTY

LOCATION: BRIDGE NO. 196 OVER CRAB CREEK
ON SR 1532

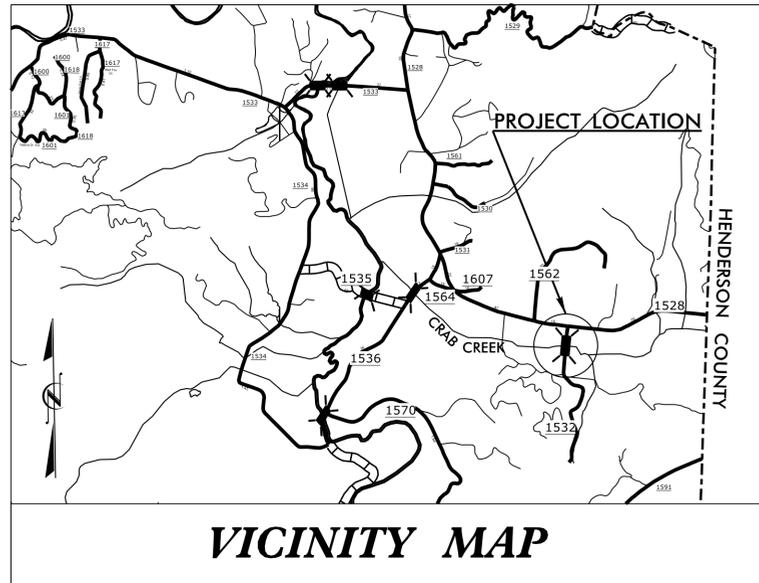
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5403	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46118.1.1	BRZ-1532(5)	PE	
46118.2.1	BRZ-1532(5)	R/W & UTIL.	

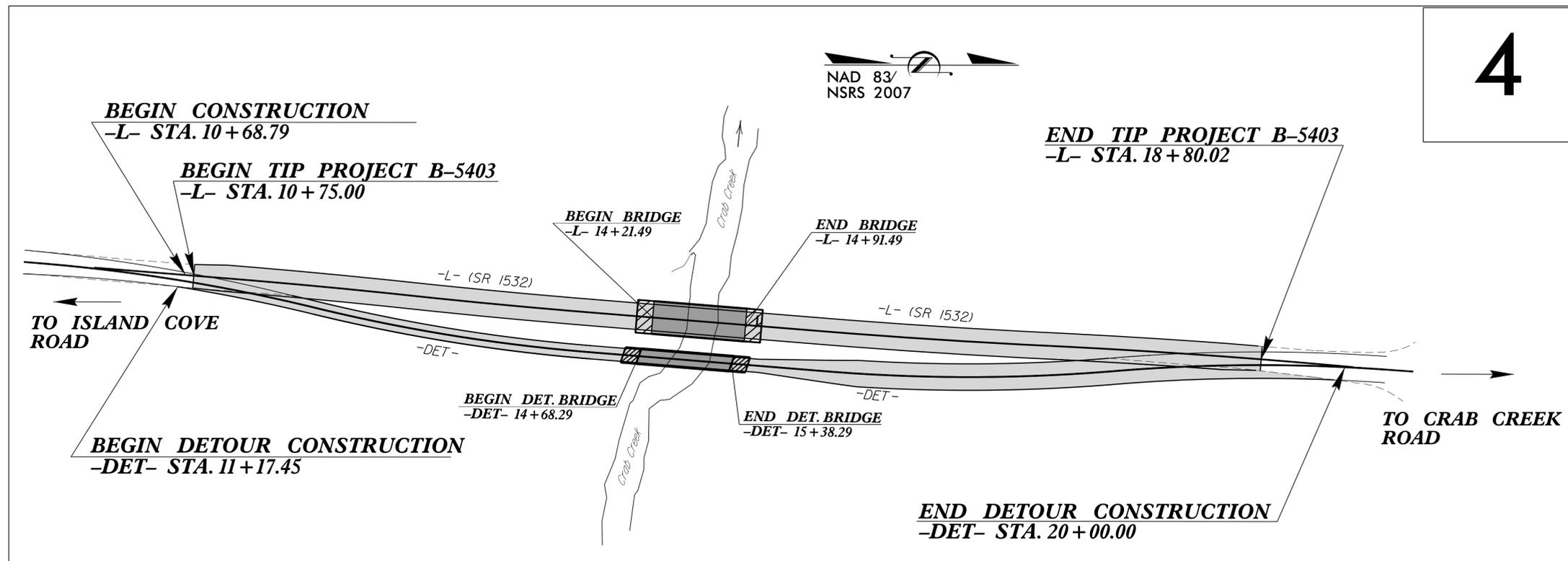
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TIP PROJECT: B-5403



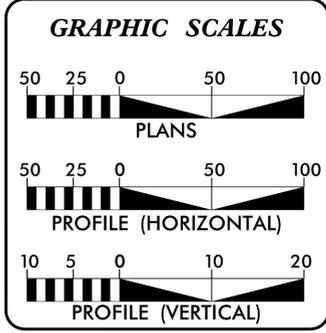
VICINITY MAP



4

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

CONTRACT:



DESIGN DATA

ADT 2014 =	331
ADT 2040 =	400
K =	16 %
D =	65 %
T =	6 % *
V =	40 MPH
* TTST =	1% DUAL = 5%
FUNC CLASS =	LOCAL
SUB-REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5403 =	0.139 MILE
LENGTH STRUCTURE TIP PROJECT B-5403 =	0.013 MILE
TOTAL LENGTH TIP PROJECT B-5403 =	0.152 MILE

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

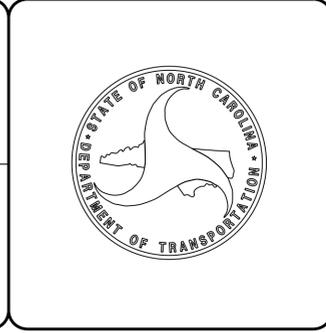
2012 STANDARD SPECIFICATIONS	RIGHT OF WAY DATE:	LETTING DATE:
	FEBRUARY 20, 2015	FEBRUARY 16, 2016

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

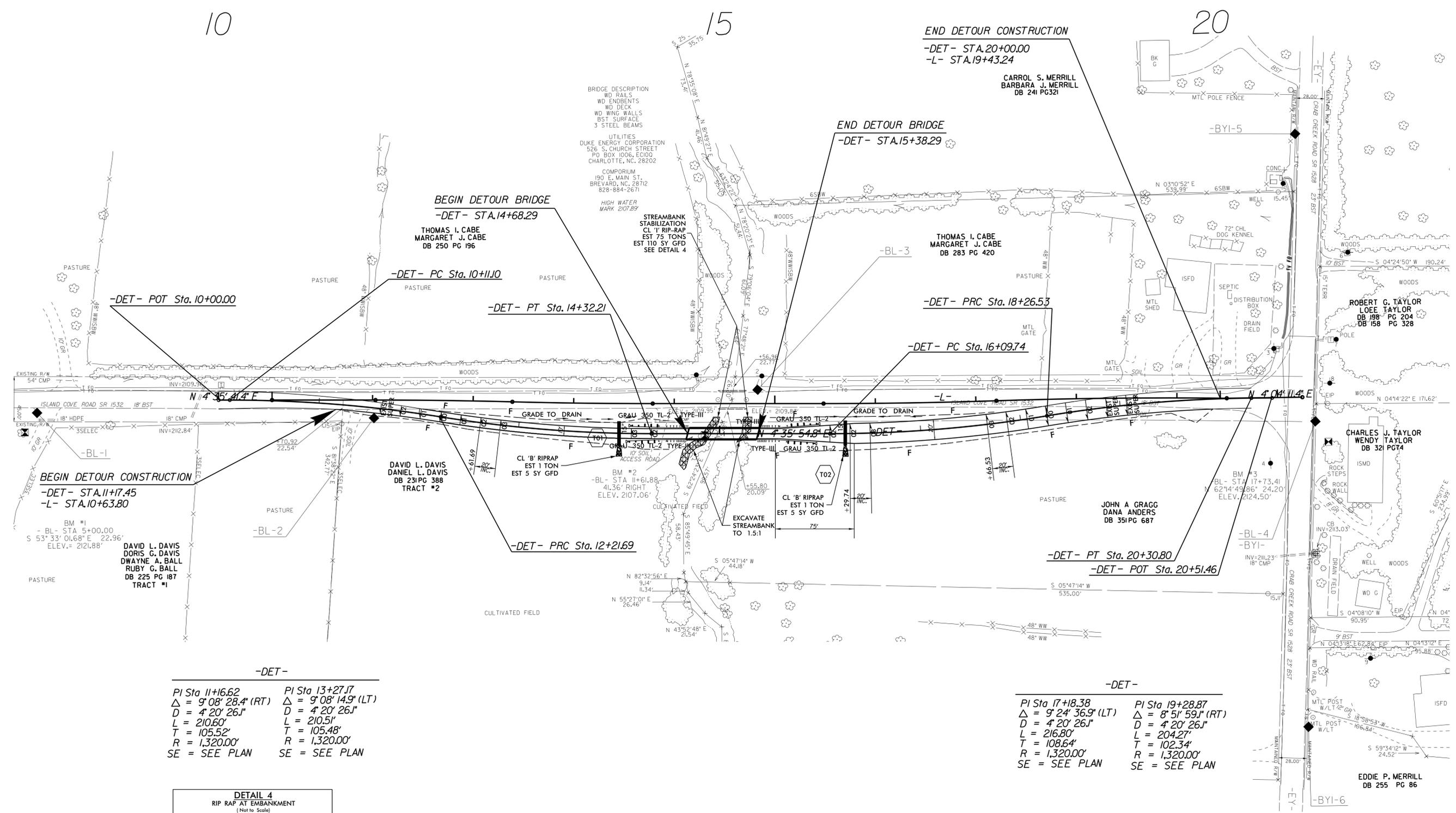
SIGNATURE: _____ P.E.



27-JAN-2015 11:58 R:\Roadway\Proj\B-5403_Rdy_t.sh.dgn \$\$\$\$USERNAME\$\$\$\$

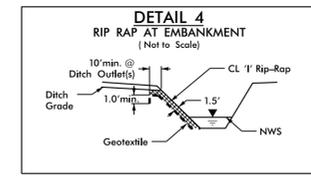
PROJECT REFERENCE NO. B-5403	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NAD 83/NSRS 2007



-DET-	
PI Sta 11+16.62	PI Sta 13+27.17
$\Delta = 9' 08'' 28.4''$ (RT)	$\Delta = 9' 08'' 14.9''$ (LT)
$D = 4' 20'' 26.1''$	$D = 4' 20'' 26.1''$
$L = 210.60'$	$L = 210.51'$
$T = 105.52'$	$T = 105.48'$
$R = 1,320.00'$	$R = 1,320.00'$
SE = SEE PLAN	SE = SEE PLAN

-DET-	
PI Sta 17+18.38	PI Sta 19+28.87
$\Delta = 9' 24'' 36.9''$ (LT)	$\Delta = 8' 51'' 59.1''$ (RT)
$D = 4' 20'' 26.1''$	$D = 4' 20'' 26.1''$
$L = 216.80'$	$L = 204.27'$
$T = 108.64'$	$T = 102.34'$
$R = 1,320.00'$	$R = 1,320.00'$
SE = SEE PLAN	SE = SEE PLAN



FOR -DET- PROFILE SEE SHEET 5

REVISIONS

8/17/99

27 JAN 2015 11:58 AM B5403.Rdy.psh.de.tdgn

