



PAT McCRORY  
Governor

NICHOLAS J. TENNYSON  
Secretary

July 26, 2016

MEMORANDUM TO: Mr. Mike Mills, PE  
Division 7 Engineer

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

SUBJECT: Greensboro Western Loop from North of 220 (Battleground Avenue) to SR 2303 (Lawndale Drive), Guilford County; WBS No. 38420.1.2; **TIP U-2524 C& D**

Attached are the most recent modification to the U.S. Army Corps of Engineers Section 404 Individual Permit and the N.C. Division of Water Resources (NCDWR) Section 401 Water Quality Certification. All environmental permits have been received for the continued construction of this project.

A copy of this permit package will be posted on the NCDOT website at:  
<https://connect.ncdot.gov/resources/Environmental>, under *Quick Links > Issued Permits*

cc: w/o attachment (see website for attachments)

Mr. Randy Garris, P.E. State Contract Officer  
Mr. Jerry Parker, Division Environ. Officer  
Dr. Majed Al-Ghandour, P. E., Program Dev. and TIP  
Mr. Roger Thomas, P.E., Roadway Design  
Mr. Matt Lauffer, P.E., Hydraulics  
Mr. Tom Koch, P.E., Structure Design  
Mr. Mark Staley, Roadside Environmental  
Mr. Robert Memory, Utilities Unit  
Mr. Ron Hancock, P.E., State Roadway Construction Engineer  
Mr. Kevin Bowen, P.E., State Bridge Construction Engineer  
Ms. LeiLani Paugh, Natural Environment Section  
Ms. Beth Harmon, NCEEP  
Ms. Karen Capps, PE, Transportation Program Management



# PROJECT COMMITMENTS

Greensboro Western Loop  
Guilford County  
WBS Element 34820.1.2  
Federal Aid Project STP-NHF-124(1)  
STIP Project U-2524D

## COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

### **Project Development and Environmental Analysis (PDEA) / Human Environment Section**

Noise abatement measures which will continue to be considered throughout the design process include berms, alignment shifts and noise barriers. A detailed noise barrier evaluation will be performed during final design to determine the type and location of cost-effective noise abatement measures.

NOTE: The design noise report was completed for U-2524D in August 2007. This report included proposed noise barriers north and south of the Greensboro Western Loop between Old Battleground Road and Lawndale Drive within the U-2524D project limits. Three new noise barriers were recommended after a review of the 2007 report. A new noise barrier was recommended in the southeast quadrant of the Battleground Avenue / Greensboro Western Urban Loop interchange. A new section of noise barrier was recommended for the area between the two previously-recommended barrier sections located north of the proposed Greensboro Western Urban Loop. A new noise barrier was recommended in the southeast quadrant of the Greensboro Western Urban Loop / Lawndale Drive interchange

**NOTE: A Revised Design Noise Report (DNR) was prepared in August 2015. This Revised DNR was developed to address traffic noise impacts and abatement measures in accordance with standards in the July 2011 North Carolina Department of Transportation (NCDOT) Traffic Noise Abatement Policy. Seven proposed noise walls were recommended for construction and preferred by the balloting public.**

*A PM2.5 hotspot analysis is currently completed and a public review and comment period will soon be underway for projects U-2524C and U-2524D. The PM2.5 hotspot analysis will be included as part of the construction consultation that NCDOT and FHWA will sign. NCDOT will complete the Project Level conformity determination process no later than prior to letting the project to construction.*

**NOTE: A PM2.5 Qualitative Hot-Spot Analysis report was completed for projects U-2524C and U-2524D in May 2011. The Federal Highway Administration accepted this report on May 12, 2011. Public comments were solicited in September and October 2011. NCDOT secured the final Project Level conformity determination for PM2.5 and PM10 hot spot requirements on October 7, 2011. The project segments meet all the project level conformity requirements relating to the annual PM2.5 standard. The analyzed data showed that the completion of U-2524C and U-2524D will not cause or contribute to a new violation of the PM2.5 NAAQS, or increase the frequency or severity of a violation or interfere with any interim milestones.**

**Location & Survey Unit**

Geodetic survey control monuments will be located during design and the U.S. Coastal and Geodetic Survey and North Carolina Geodetic Survey will be notified of their location.

*NOTE: Standard commitment.*

**Roadside Environmental Unit, Division Construction, PDEA/Natural Environment Section, Hydraulics Unit**

The NCDOT “Best Management Practices for Protection of Surface Waters” will be implemented where practicable to control highway runoff and minimize wetland impacts.

*NOTE: Standard commitment.*

**Roadside Environmental Unit**

During design, consideration will be given to planting trees as landscaping within the right-of-way, particularly at interchanges.

~~*NOTE: The landscaping plans will be developed during or following construction.*~~

*NOTE: Landscaping plans will be developed and implemented following construction.*

**Geotechnical Unit**

Any underground storage tanks discovered during construction will be reported to the North Carolina Division of Environmental Management.

*NOTE: If further studies indicate right of way needs to be acquired from any properties with UST's, preliminary site assessments for soil and groundwater contamination will need to be performed prior to right of way purchase.*

*NOTE: There are no known sites of concern located within the U-2524D project limits.*

**PDEA/Natural Environment Section, Hydraulics Unit**

The final designs will be coordinated with appropriate state and local officials and the Federal Emergency Management Agency (FEMA) to assure compliance with FEMA, state and local floodway regulations. Stream channel modifications will be coordinated with appropriate review agencies. State-of-the-art stream relocation techniques will be used where practicable.

*NOTE: Standard commitment.*

The project will be developed in conformance with federal and state floodplain regulations.

*NOTE: Standard commitment.*

Issues related to dam relocation or possible stream restoration for Oka T. Hester Park will be coordinated with the City of Greensboro.

*NOTE: The Oka T. Hester Park is not located within the U-2524D project limits.*

### **PDEA/Natural Environment Section**

A final wetland mitigation plan will be coordinated with the U.S. Army Corps of Engineers and other concerned review agencies as part of the permit application. The wetland mitigation plan will be implemented and the site will be preserved in perpetuity.

*NOTE: Standard permit requirement.*

### **PDEA, Roadway Design Unit**

The North Carolina Department of Transportation will continue to work with the Airport Authority during project design to minimize impact on the Piedmont Triad International Airport's access and planned expansion to the east.

*NOTE: The Piedmont Triad International Airport is outside of the U-2524D project limits.*

The maintenance of existing and proposed bicycle routes or greenways by grade separation and route modification will be coordinated with the City of Greensboro Department of Transportation during project design and the Guilford County Parks and Recreation Department.

*NOTE: An ADA-compliant grade separation is proposed at the intersection of Old Battleground Road and the Greensboro Urban Loop to accommodate an existing bicycle and pedestrian trail as requested by the City of Greensboro.*

*NOTE: The proposed bicycle/pedestrian bridge that accommodates Greensboro's Bicentennial Greenway is shown on the most recent design plans.*

### **PDEA, Roadway Design Unit, Hydraulics Unit**

A more detailed study of wetland and floodplain impacts at Horsepen Creek will be prepared during final design. Horsepen Creek floodplain and associated wetlands will be bridged as deemed necessary.

*NOTE: The Horsepen Creek floodplain and wetlands are not located within the U-2524D project limits.*

## **COMMITMENTS FROM PERMITTING**

### **Roadside Environmental Unit**

**401 Project Specific Condition 12:** The permittee shall use Design Standards in Sensitive Watersheds [15A NCAC 4B.0214(b)-(e)] through the entire project. However, due to the size of the project, the NCDOT shall not be required to meet 15A NCAC 4B.0214(a) regarding the maximum amount of uncovered acres.



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

July 15, 2016

Regulatory Division/1200A

Action ID No. SAW-2001-21125



Mr. Philip S. Harris III, P.E., C.P.M.  
Natural Environment Section Head  
North Carolina Department of Transportation  
Division of Highways  
1598 Mail Service Center  
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Reference the Department of the Army (DA) permit issued on August 1, 2013, to Mr. Gregory J. Thorpe, of the North Carolina Department of Transportation (NCDOT) for impacts associated with the new location project identified as U-2524CD. The project is a 4.8 mile, six-lane divided facility on new location extending from north of SR 2176 (Bryan Boulevard) to SR 2303 (Lawndale Drive) in Greensboro, Guilford County, North Carolina. Section C of this project begins immediately north of SR 2176 (Bryan Boulevard) and terminates immediately east of US220 (Battleground Avenue) and Section D begins immediately east of Battleground Avenue and ends at SR 2303 (Lawndale Drive). The site contains a portion of Horsepen Creek, fifteen (15) unnamed tributaries to Horsepen Creek, a portion of Richland Creek, five (5) unnamed tributaries to Richland Creek, and fifteen (15) adjacent wetland areas in the Cape Fear River Basin (8-Digit Cataloging Unit 03030002).

Total impacts authorized by the permit, as well as subsequent permit modifications dated March 25, 2014, June 6, 2014, June 19, 2015, and October 7, 2015 include: 1) the permanent placement of fill material into 7,717 linear feet of jurisdictional stream channel and 6.16 acres of adjacent riparian wetlands and 2) the temporary placement of fill material into 518 linear feet of jurisdictional stream channel and 0.63 acre of adjacent riparian wetlands. Compensatory mitigation was implemented for the unavoidable impacts by payment into the North Carolina Ecosystem Enhancement Program, now known as the North Carolina Division of Mitigation Services.

Also reference your permit modification request letter dated May 12, 2016 (received May 31, 2016), and "Modification to Request for Modification" letter submitted by e-mail and dated July 11, 2016, proposing the following:

- 1) Release of Section D of TIP U-2524 for construction per Special Condition 20 of the DA permit issued on August 1, 2013;
- 2) Authorization of permanent discharge of fill material into 5,258 linear feet of stream channel related to:
  - a. Placing 5,116 linear feet of stream channel in culverts and other fills resulting in permanent loss of waters, and;
  - b. Adding rip rap bank stabilization to 142 linear feet of stream channel;
- 3) Authorization of temporary discharge of fill material in 264 linear feet (0.06 acre) of stream channel related to:
  - a. Disturbing 174 linear feet (0.04 acre) of stream channel for temporary construction access and dewatering, and;
  - b. Disturbing 90 linear feet (0.02 acre) of stream channel associated with the installation of an 8" and 12" sanitary sewer line;
- 4) Authorization of indirect impacts to 780 linear feet of stream channel, resulting in reduced aquatic function from "isolating" a 780 linear foot reach of stream channel between two long culvert segments.

Note that your modification request letter, dated May 12, 2016, was advertised to the public as well as relevant Federal and State agencies on June 1, 2016, for a 30-day Public Notice period. Following evaluation of the information submitted in your modification request, comments made during the agency Public Notice period, and the revised modification request provided via e-mail on July 11, 2016, the U.S. Army Corps of Engineers, Wilmington District has determined that it is appropriate and reasonable and not contrary to the public interest. Therefore, the permit is modified to release the D section of U-2524 for construction, including the requested additional stream impacts. This work must be constructed as follows:

- 1) for U-2524D Permit Sites 1, 2, 3, 3A, 4, 5, 6, 7, 8 and 9, as shown on the Wetland & Stream Impacts drawings for U-2524D (Permit Drawings Sheets 1-17) submitted in the "Request for Modification Letter..." dated May 12, 2016;
- 2) for U-2524D Permit Sites 9 and 10, as shown on Permit Drawings Sheets 18, 19, and 25 (Revised 7/11/2016) submitted in the "Modification to Request for Modification" letter dated July 11, 2016, and;
- 3) for U-2524D utility Sites 1, 2, 3, 4, 5, and 6 as shown on the Utility Sheets 1-4 for U-2524D, included in the "Request for Modification Letter..." dated May 12, 2016.

In addition, the following special condition regarding additional compensatory mitigation has been incorporated:

x) In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization.

All other conditions of the permit, including the permit expiration date of December 31, 2018, remain in effect as written. The U-2524CD project now totals permanent impacts to 8,371 linear feet of jurisdictional stream channel and 6.16 acres of adjacent riparian wetlands, 2) the temporary placement of fill material into 702 linear feet of jurisdictional stream channel and 0.63 acre of adjacent riparian wetlands, and 3) indirect impacts to 780 linear feet of stream channel. Should you have questions, contact Mr. David E. Bailey, Raleigh Regulatory Field Office at telephone (919) 554-4884, Extension 30.

Sincerely,



 Kevin P. Landers Sr.  
Colonel, U.S. Army  
District Commander

Enclosures

Copies Furnished with enclosures:

Mr. Brian Wrenn  
Transportation Permitting Unit  
Division of Water Resources  
North Carolina Department of Environment and Natural Resources  
1617 Mail Service Center  
Raleigh, North Carolina 27699-1617

Ms. Erin Cheely  
North Carolina Department of Transportation  
Division of Highways  
1598 Mail Service Center  
Raleigh, North Carolina 27699-1598

Mr. Jerry Parker  
Division Environmental Supervisor, Division 7  
North Carolina Department of Transportation  
Post Office Box 14996  
Greensboro, North Carolina 27415

Copies Furnished without enclosures:

Mr. Rodger Rochelle, P.E.  
Technical Services Administrator  
North Carolina Department of Transportation  
1516 Mail Service Center  
Raleigh, North Carolina 27699-1516

Mr. Pete Benjamin  
U.S. Fish and Wildlife Services  
Fish and Wildlife Enhancement  
Post Office Box 33726  
Raleigh, North Carolina 28516

Ms. Cynthia Van Der Wiele  
U.S. Environmental Protection Agency  
Region 4 NEPA Program Office  
C/o USEPA-RTP  
109 T.W. Alexander Drive  
Mail Code: E143-08  
Research Triangle Park, North Carolina 27709

Mr. Travis Wilson  
North Carolina Wildlife Resources Commission  
1718 Hwy 56 West  
Creedmoor, North Carolina 27522

**U.S. ARMY CORPS OF ENGINEERS**  
**Wilmington District**  
**Compensatory Mitigation Responsibility Transfer Form**

Permittee: North Carolina Department of Transportation  
 Project Name: NCDOT/U-2524CD/Division 7

Action ID: SAW-2001-21125  
 County: Guilford

**Instructions to Permittee:** The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Ecosystem Enhancement Program (NCEEP), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that to the U.S. Army Corps of Engineers (USACE) Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate mitigation Sponsors.

**Instructions to Sponsor:** The Sponsor must verify that the mitigation requirements (credits) shown below are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether or not they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated bank ledger to the Permittee, the USACE Project Manager, and the Wilmington District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

**Permitted Impacts and Compensatory Mitigation Requirements:**

**Permitted Impacts Requiring Mitigation\***                      **8-digit HUC and Basin: 03030002, Cape Fear River Basin**

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
8,612			6.15			

\*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

**Compensatory Mitigation Requirements:**                      **8-digit HUC and Basin: 03030002, Cape Fear River Basin**

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
15,726			10.57			

**Mitigation Site Debited:** North Carolina Division of Mitigation Services (NCDMS)

(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCEEP, list NCEEP. If the NCEEP acceptance letter identifies a specific site, also list the specific site to be debited).

**Section to be completed by the Mitigation Sponsor**

**Statement of Mitigation Liability Acceptance:** I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCEEP), as approved by the USACE, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name: \_\_\_\_\_

Name of Sponsor's Authorized Representative: \_\_\_\_\_

\_\_\_\_\_  
 Signature of Sponsor's Authorized Representative

\_\_\_\_\_  
 Date of Signature

**USACE Wilmington District  
Compensatory Mitigation Responsibility Transfer Form, Page 2**

**Conditions for Transfer of Compensatory Mitigation Credit:**

- Once this document has been signed by the Mitigation Sponsor and the USACE is in receipt of the signed form, the Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains responsible for any other mitigation requirements stated in the permit conditions.
- Construction within jurisdictional areas authorized by the permit identified on page one of this form can begin only after the USACE is in receipt of a copy of this document signed by the Sponsor, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein. For authorized impacts conducted by the North Carolina Department of Transportation (NCDOT), construction within jurisdictional areas may proceed upon permit issuance; however, a copy of this form signed by the Sponsor must be provided to the USACE within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the USACE has received this form, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein.
- Signed copies of this document must be retained by the Permittee, Mitigation Sponsor, and in the USACE administrative records for both the permit and the Bank/ILF Instrument. It is the Permittee's responsibility to ensure that the USACE Project Manager (address below) is provided with a signed copy of this form.
- If changes are proposed to the type, amount, or location of mitigation after this form has been signed and returned to the USACE, the Sponsor must obtain case-by-case approval from the USACE Project Manager and/or North Carolina Interagency Review Team (NCIRT). If approved, higher mitigation ratios may be applied, as per current District guidance and a new version of this form must be completed and included in the USACE administrative records for both the permit and the Bank/ILF Instrument.

**Comments/Additional Conditions:**

- This Form supersedes the Compensatory Mitigation Responsibility Transfer Form dated October 7, 2015 that was included as part of the DA Permit Modification of the same date;
- This form reflects additional stream credits required as part of the U-2524CD Permit Modification dated July 14, 2016, specifically for the construction release of the D section, including:
  - permanent stream impacts at Permit Sites 2, 3, 4, 5, 6, and 9 (total of 4,729 l.f.) at a 2:1 ratio;
  - permanent stream impacts at Permit Site 7 (total of 291 l.f.) at a 1:1 ratio, and;
  - indirect stream impacts at Permit Site 3 (total of 780 l.f.) at a 0.5:1 ratio;
- The Mitigation Requirements listed on Page 1 are for the total U-2524CD project and do not reflect any stream or riparian wetland credits already accepted by NCDMS/NCEEP for this project.

This form is not valid unless signed below by the USACE Project Manager and by the Mitigation Sponsor on Page 1. **Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the USACE Project Manager at the address below, and 3) the Wilmington District Mitigation Office, Attn: Todd Tugwell, 11405 Falls of Neuse Road, Wake Forest, NC 27587 (email: [todd.tugwell@usace.army.mil](mailto:todd.tugwell@usace.army.mil)).** Questions regarding this form or any of the permit conditions may be directed to the USACE Project Manager below.

**USACE Project Manager:** David Bailey  
**USACE Field Office:** Raleigh Regulatory Field Office  
US Army Corps of Engineers  
3331 Heritage Trade Drive, Suite 105  
Wake Forest, North Carolina 27587

**Email:** [David.E.Bailey2@usace.army.mil](mailto:David.E.Bailey2@usace.army.mil)



Digitally signed by BAILEY.DAVID.E.1379283736  
DN: c=US, o=U.S. Government, ou=DoD, ou=P&E, ou=USA,  
cn=BAILEY.DAVID.E.1379283736  
Date: 2016.07.15 10:49:44 -0400

USACE Project Manager Signature

July 15, 2016

Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at <http://ribits.usace.army.mil>.

Page 2 of 2

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at our website at <http://regulatory.usacesurvey.com/> to complete the survey online.



PAT MCCRORY

*Governor*

DONALD R. VAN DER VAART

*Secretary*

S. JAY ZIMMERMAN

*Director*

July 14, 2016

Mr. Philip S. Harris, III, P.E., CPM  
Natural Environment Section Head  
Project Development and Environmental Analysis  
North Carolina Department of Transportation  
1598 Mail Service Center  
Raleigh, North Carolina, 27699-1598

Subject: Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for the proposed Greensboro Western Loop from north of SR 2176 (Bryan Boulevard) to SR 2303 (Lawndale Drive) in Guilford County, Division 7; Federal Aid Project No. STP-NHF-124(1), WBS Element 34820.1.2, TIP Project No. U-2524 C and D. NCDWR Project No. 20130223 v.6

Dear Mr. Harris:

Attached hereto is a modification of Certification No. 3965 issued to The North Carolina Department of Transportation (NCDOT) dated July 2, 2013 and subsequent modifications dated April 15, 2014, June 25, 2015, October 12, 2015, and July 8, 2016.

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

Sincerely,

A handwritten signature in blue ink, appearing to read 'S. Jay Zimmerman'.

*pa* S. Jay Zimmerman, Director  
Division of Water Resources

#### Attachments

#### Electronic copy only distribution:

David Bailey, US Army Corps of Engineers, Raleigh Field Office  
Jerry Parker, Division 7 Environmental Officer  
Rodger Rochelle, NC Department of Transportation  
Erin Cheely, NC Department of Transportation  
Dr. Cynthia Van Der Wiele, US Environmental Protection Agency  
Gary Jordan, US Fish and Wildlife Service  
Travis Wilson, NC Wildlife Resources Commission  
Beth Harmon, Division of Mitigation Services  
File Copy

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

**THIS CERTIFICATION** is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Resources (NCDWR) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to impact an additional 838 linear feet of jurisdictional streams in Guilford County. The project shall be constructed pursuant to the application dated received July 11, 2016. The authorized impacts are as described below:

**Table 1. Site Number Key**

Site Number	Original Application (July 2, 2013)	Modification Application (May 12, 2016)
1	--	1
2	1	2
3A	--	3A
3	2	3
4	3	4
5	4	5
6	5	6
7	6	7
8	--	8
9	7	9
10	--	10

**Table 2. Stream Impacts in the Cape Fear River Basin**

Site Number	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
<b>1</b>	<b>15</b>	<b>15</b>	--	--	<b>30</b>	--
Original approved impacts at Site 1*	--	--	393	10	403	393
New additional impacts at Site 2	--	--	21	--	21	21
<b>Total Impacts with this approval at Site 2</b>	--	--	<b>414</b>	<b>10</b>	<b>424</b>	<b>414</b>
Original approved impacts at Site 2*	--	--	919	10	929	919
New additional impacts at Site 3	158	--	-57	--	101	-57
<b>Total Impacts with this approval at Site 3</b>	<b>158</b>	--	<b>862</b>	<b>10</b>	<b>1,030</b>	<b>862</b>
<b>3A</b>	<b>96</b>	--	--	--	<b>96</b>	--
Original approved impacts at Site 3*	--	--	1,488	10	1,498	1,488
New additional impacts at Site 4	--	--	93	2	95	93
<b>Total Impacts with this approval at Site 4</b>	--	--	<b>1,581</b>	<b>12</b>	<b>1,593</b>	<b>1,581</b>
Original approved impacts at Site 4*†	--	--	1,253	20	1,273	1,253

Site Number	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
New additional impacts at Site 5			-61	23	-38	-61
<b>Total Impacts with this approval at Site 5</b>	--	--	<b>1,192</b>	<b>43</b>	<b>1,235</b>	<b>1,192</b>
Original approved impacts at Site 5*	141	10	--	--	151	--
New additional impacts at Site 6	17	6	--	--	23	--
<b>Total Impacts with this approval at Site 6</b>	<b>158</b>	<b>16</b>	<b>--</b>	<b>--</b>	<b>174</b>	<b>--</b>
Original approved impacts at Site 6*	--	--	311	10	321	311
New additional impacts at Site 7	--	--	3	--	3	3
<b>Total Impacts with this approval at Site 7</b>	<b>--</b>	<b>--</b>	<b>314</b>	<b>10</b>	<b>324</b>	<b>314</b>
<b>8</b>	<b>--</b>	<b>--</b>	<b>46</b>	<b>18</b>	<b>64</b>	<b>--</b>
Original approved impacts at Site 7*	--	--	99	10	109	99
New additional impacts at Site 9			289	10	299	289
<b>Total Impacts with this approval at Site 9</b>	<b>--</b>	<b>--</b>	<b>388</b>	<b>20</b>	<b>408</b>	<b>388</b>
<b>10</b>	<b>--</b>	<b>--</b>	<b>34</b>	<b>20</b>	<b>54</b>	<b>--</b>
<b>Total Original Impacts</b>	<b>141</b>	<b>10</b>	<b>4,463</b>	<b>70</b>	<b>4,684</b>	<b>4,463</b>
<b>Total Additional Impacts</b>	<b>286</b>	<b>21</b>	<b>368</b>	<b>73</b>	<b>748</b>	<b>288</b>
<b>Total Impacts</b>	<b>427</b>	<b>31</b>	<b>4,831</b>	<b>143</b>	<b>5,432</b>	<b>4,751</b>

**Total Stream Impact for R-2524D: 5,755 linear feet.**

Notes: \* See Table 1 for explanation of site numbers.

† Impacts reflect the sum of impacts at site 4 in the original certification.

**Table 3. Utility Impacts to Streams in the Cape Fear River Basin**

Site	Permanent Impacts (linear Feet)	Temporary Impacts (linear feet)	Impacts Requiring Mitigation (linear feet)
U1	--	15	--
U2	--	15	--
U3	--	15	--
U4	--	15	--
U5	--	15	--
U6	--	15	--
<b>Total Impacts</b>	<b>--</b>	<b>90</b>	<b>--</b>

**Total Utility Impacts for Modification: 90 linear feet.**

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

This approval is only valid for the purpose and design that you submitted in your application dated received May 12, 2016 and additional information dated received June 16, 2016. Should your project change, you are required to notify the NCDWR and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

**Condition(s) of Certification:**

**Project Specific Conditions**

1. This modification is applicable only to the additional proposed activities. All of the authorized activities and conditions of certification associated with the original Water Quality Certification dated July 2, 2013 and subsequent modifications dated April 15, 2014, June 25, 2015, October 12, 2015, and July 8, 2016 still apply except where superseded by this certification.
2. The NCDOT Division Environmental Officer or Environmental Assistant will conduct a pre-construction meeting with all appropriate staff to ensure that the project supervisor and essential staff understand the potential issues with stream and pipe alignment at the permitted site. NCDWR staff shall be invited to the pre-construction meeting. [15A NCAC 02H.0506(b)(2) and (b)(3)]
3. Two copies of the final construction drawings shall be furnished to the NCDWR Central Office prior to the pre-construction meeting. The permittee shall provide written verification that the final construction drawings comply with the permit drawings contained in the application dated May 12, 2016 and additional information dated received June 16, 2016. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Resources.
4. Channel relocations shall be completed and stabilized, and approved on site by NCDWR staff, prior to diverting water into the new channel. Stream banks shall be matted with coir-fiber matting. Vegetation used for bank stabilization shall be limited to native riparian vegetation, and should include establishment of a vegetated buffer on both sides of the relocated channel to the maximum extent practical. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested. Once the stream has been turned into the new channel, it may be necessary to relocate stranded fish to the new channel to prevent fish kills. [15A NCAC 02H .0506(b)(3)]
5. No drill slurry or water that has been in contact with uncured concrete shall be allowed to enter surface waters. This water shall be captured, treated, and disposed of properly. [15A NCAC 02H .0506(b)(3)]
6. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams, shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by the NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact the NCDWR for guidance on how to proceed and to determine whether or not a permit modification will be required. [15A NCAC 02H.0506(b)(2)]
7. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage. [15A NCAC 02H.0506(b)(2)]
8. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed. [15A NCAC 02H.0506(b)(2)]

9. The stream channel shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species. [15A NCAC 02H.0506(b)(2)]
10. Compensatory mitigation for 4,751 linear feet of impact to streams at a 1:1 ratio is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Division of Mitigation Service (DMS) (formerly NCEEP), and that the DMS has agreed to implement the mitigation for the project. The DMS has indicated in a letter dated May 9, 2016 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the DMS Mitigation Banking Instrument signed June 14, 2016.
11. In accordance with commitments made in your application, all clearing of vegetation for purpose of relocating overhead power lines within jurisdictional wetlands shall be performed without the use of mechanized equipment. [15A NCAC 02H.0506(b)(3)]
12. The permittee shall use *Design Standards in Sensitive Watersheds* [15A NCAC 4B.0124(b)-(e)] through the entire project. However, due to the size of the project, the NCDOT shall not be required to meet 15A NCAC 4B .0124(a) regarding the maximum amount of uncovered acres.
13. The NCDOT shall design, construct, and operate and maintain hazardous spill catch basins (HSCBs) for crossings in the Lake Brandt Critical Area watershed. The HSCBs shall be located at Station numbers – RPDY4- STA. 1+70 to STA. 5+00 LT and –L- STA. 443+75 to STA. 446+00 LT.

#### **General Conditions**

1. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWR for guidance on how to proceed and to determine whether or not a permit modification will be required. [15A NCAC 02H.0506(b)(2)]
2. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills. [15A NCAC 02B.0200]
3. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers. [15A NCAC 02H.0506(b)(2)]
4. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions. [15A NCAC 02H.0506(b)(2)]
5. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage. [15A NCAC 02H.0506(b)(2)]
6. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval. [15A NCAC 02H .0507 (c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]
7. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water. [15A NCAC 02H.0506(b)(3) and (c)(3)]
8. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream. [15A NCAC 02H.0506(b)(3)]

9. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials. [15A NCAC 02H.0506(b)(3)]
10. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification. [15A NCAC 02H.0506(b)(3)]
11. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited. [15A NCAC 02H.0506(b)(3)]
12. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If the NCDWR determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the NCDWR may reevaluate and modify this certification. [15A NCAC 02B.0200]
13. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification. [15A NCAC 02H.0506(b)(2)]
14. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]
15. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization, including all non-commercial borrow and waste sites associated with the project, shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification. [15A NCAC 02H.0501 and .0502]
16. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.
17. The Permittee shall report any violations of this certification to the Division of Water Resources within 24 hours of discovery. [15A NCAC 02B.0506(b)(2)]
18. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify the NCDWR when all work included in the 401 Certification has been completed. [15A NCAC 02H.0502(f)]
19. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction. [15A NCAC 02B.0506(b)(2)]
20. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities. [15A NCAC 02H.0506(b)(3) and (c)(3)]
21. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards [15A NCAC 02H.0506(b)(3) and (c)(3)]:
  - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
  - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
  - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.

- d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
22. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification. [15A NCAC 02H.0506(b)(3) and (c)(3)]
23. Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

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

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

Office of Administrative Hearings  
6714 Mail Service Center  
Raleigh, NC 27699-6714  
Telephone: (919) 431-3000, Facsimile: (919) 431-3100

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

Mr. Sam M. Hayes, General Counsel  
Department of Environmental Quality  
1601 Mail Service Center

This the 14th day of July 2016

DIVISION OF WATER RESOURCES



 S. Jay Zimmerman, Director



PAT MCCRORY

Governor

DONALD R. VAN DER VAART

Secretary

S. JAY ZIMMERMAN

Director

NCDWR Project No.: \_\_\_\_\_

County: \_\_\_\_\_

Applicant: \_\_\_\_\_

Project Name: \_\_\_\_\_

Date of Issuance of 401 Water Quality Certification: \_\_\_\_\_

**Certificate of Completion**

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Transportation Permitting Unit, North Carolina Division of Water Resources, 1617 Mail Service Center, Raleigh, NC, 27699-1617. This form may be returned to NCDWR by the applicant, the applicant's authorized agent, or the project engineer. It is not necessary to send certificates from all of these.

**Applicant's Certification**

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

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Agent's Certification**

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

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Engineer's Certification**

\_\_\_\_\_ Partial \_\_\_\_\_ Final

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

Signature \_\_\_\_\_ Registration No. \_\_\_\_\_ Date \_\_\_\_\_



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



(Version 2.03; Released October 2015)

**WBS Element:** 34820.1.2      **TIP No.:** U-2524D      **County(ies):** Guilford      **Page** 1 **of** 6

**General Project Information**

<b>WBS Element:</b>	34820.1.2	<b>TIP Number:</b>	U-2524D	<b>Project Type:</b>	New Location	<b>Date:</b>	11/11/2015
<b>NCDOT Contact:</b>	William (Bill) H. Elam, Jr., PE			<b>Contractor / Designer:</b>	HNTB / James A. Byrd, PE		
<b>Address:</b>	1020 Birch Ridge Road Raleigh, NC 27610			<b>Address:</b>	343 E. Six Forks Road Suite 200 Raleigh, NC 27609		
<b>Phone:</b>	(919) 707-6718			<b>Phone:</b>	(919) 424-0437		
<b>Email:</b>	belam@ncdot.gov			<b>Email:</b>	jabyrd@hntb.com		
<b>City/Town:</b>	Greensboro			<b>County(ies):</b>	Guilford		
<b>River Basin(s):</b>	Cape Fear			<b>CAMA County?</b>	No		
<b>Wetlands within Project Limits?</b>	Yes						

**Project Description**

<b>Project Length (lin. miles or feet):</b>	1.814 Miles	<b>Surrounding Land Use:</b>	Urban Residential
	<b>Proposed Project</b>		<b>Existing Site</b>
<b>Project Built-Upon Area (ac.)</b>	42.7 ac.		10.6 ac.
<b>Typical Cross Section Description:</b>	The proposed typical section for the mainline is a 6-lane divided facility consisting of 3 - 12' travel lanes with 2 - 12' paved shoulders in each direction and a 22' grassed median.		
<b>Annual Avg Daily Traffic (veh/hr/day):</b>	<b>Design/Future:</b> 71,908	<b>Year:</b> 2028	<b>Existing:</b> 41,985 <b>Year:</b> 2008
<b>General Project Narrative: (Description of Minimization of Water Quality Impacts)</b>	U-2524D is a portion of the Greensboro Western Loop from East of US 220 (Battleground Avenue) to East of SR 2303 (Lawndale Drive). The project contains 4 Reinforced Concrete Box Culverts (RCBC) conveying Richland Creek and 3 of its tributaries under the proposed project. A portion of the project is located within the "Critical Area" of Lake Brandt and will include two Hazardous Spill Basins (HSB). Where practical stormwater runoff throughout the project is being treated by grassed shoulders, grassed medians and/ or grassed typical cut ditches. Rip-rap outlet protection has been utilized at all outfalls for energy dissipation. This project is located within the Jordan Lake Watershed but is exempt from the subject buffer rules per NCDWQ.		

**Waterbody Information**

<b>Surface Water Body (1):</b>	Horsepen Creek		<b>NCDWR Stream Index No.:</b>	16-11-5-(2)	
<b>NCDWR Surface Water Classification for Water Body</b>	<b>Primary Classification:</b>	Water Supply III (WS-III)			
	<b>Supplemental Classification:</b>	Nutrient Sensitive Waters (NSW)			
<b>Other Stream Classification:</b>	None				
<b>Impairments:</b>	biological impairment				
<b>Aquatic T&amp;E Species?</b>	No	<b>Comments:</b>			
<b>NRTR Stream ID:</b>				<b>Buffer Rules in Effect:</b>	Jordan Lake
<b>Project Includes Bridge Spanning Water Body?</b>	No	<b>Deck Drains Discharge Over Buffer?</b>	N/A	<b>Dissipator Pads Provided in Buffer?</b>	N/A
<b>Deck Drains Discharge Over Water Body?</b>	N/A	(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)				



**North Carolina Department of Transportation**  
**Highway Stormwater Program**  
**STORMWATER MANAGEMENT PLAN**  
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**Additional Waterbody Information**

<b>Surface Water Body (2):</b>	Richland Creek		<b>NCDWR Stream Index No.:</b>	16-11-7-(1)	
<b>NCDWR Surface Water Classification for Water Body</b>	<b>Primary Classification:</b>	Water Supply III (WS-III)			
	<b>Supplemental Classification:</b>	Nutrient Sensitive Waters (NSW)			
<b>Other Stream Classification:</b>	None				
<b>Impairments:</b>	None				
<b>Aquatic T&amp;E Species?</b>	No	<b>Comments:</b>			
<b>NRTR Stream ID:</b>				<b>Buffer Rules in Effect:</b>	Jordan Lake
<b>Project Includes Bridge Spanning Water Body?</b>	No	<b>Deck Drains Discharge Over Buffer?</b>	N/A	<b>Dissipator Pads Provided in Buffer?</b>	N/A
<b>Deck Drains Discharge Over Water Body?</b>	N/A	(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)					



North Carolina Department of Transportation  
 Highway Stormwater Program  
**STORMWATER MANAGEMENT PLAN**  
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**Swales**

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
5	-L- 424+72 RT 36.139072 / -79.856674	(1)Horsepen Creek	0.0	6.0	6.0	0.5	53	215	2.76%	1.5	1.8	1.9	1.9	No	No
5	-L- 427+00 RT 36.139041 / -79.855934	(1)Horsepen Creek	0.0	6.0	6.0	0.9	86	388	2.32%	2.5	1.9	3.2	2.0	No	No
5	-L- 431+00 RT 36.138870 / -79.854621	(1)Horsepen Creek	0.0	6.0	6.0	0.8	81	348	2.32%	2.4	1.9	3.0	2.0	No	No
5	-L- 434+60 RT 36.138691 / -79.853422	(1)Horsepen Creek	0.0	6.0	6.0	1.5	154	753	2.32%	4.1	2.1	5.3	2.3	No	No
5	-L- 427+13 LT 36.139588 / -79.855811	(1)Horsepen Creek	0.0	6.0	6.0	0.7	72	375	2.32%	1.6	1.7	2.0	1.8	No	No
5	-L- 431+00 LT 36.139393 / -79.854502	(1)Horsepen Creek	0.0	6.0	6.0	1.3	132	360	2.32%	3.3	2.0	4.2	2.2	No	No
5	-L- 422+00 M 36.139347 / -79.857586	(1)Horsepen Creek	0.0	6.0	4.0	0.5	49	187	0.50%	1.7	1.0	2.1	1.1	No	No
5	-L- 424+00 M 36.139369 / -79.856908	(1)Horsepen Creek	0.0	6.0	4.0	0.7	69	288	1.55%	2.4	1.7	3.0	1.8	No	No
5	-L- 427+00 M 36.139323 / -79.855895	(1)Horsepen Creek	0.0	6.0	5.0	0.8	77	388	2.32%	2.5	1.9	3.2	2.1	No	No
5	-L- 431+00 M 36.139149 / -79.854558	(1)Horsepen Creek	0.0	6.0	6.0	0.4	40	348	2.32%	1.2	1.6	1.5	1.7	No	No
5	-L- 434+60 M 36.138970 / -79.853359	(1)Horsepen Creek	0.0	6.0	6.0	0.8	77	728	2.32%	2.1	1.8	2.6	1.9	No	No
6	-L- 442+25 RT 36.138346 / -79.850865	(1)Horsepen Creek	0.0	6.0	6.0	0.2	21	75	2.32%	0.6	1.3	0.8	1.4	No	No
6	-L- 443+50 RT 36.138272 / -79.850453	(1)Horsepen Creek	0.0	4.0	4.0	0.1	10	50	0.30%	0.3	0.6	0.4	0.6	No	No
6	-L- 444+00 RT 36.138248 / -79.850285	(1)Horsepen Creek	0.0	6.0	6.0	0.3	34	180	2.32%	0.8	1.4	1.0	1.5	No	No
6	-L- 442+00 M 36.138602 / -79.850894	(1)Horsepen Creek	0.0	6.0	6.0	0.2	21	188	2.32%	0.6	1.3	0.8	1.4	No	No
6	-L- 444+00 M 36.138503 / -79.850229	(1)Horsepen Creek	0.0	6.0	6.0	0.6	56	240	2.32%	1.9	1.8	2.4	1.9	No	No
6	-L- 448+21 M 36.138318 / -79.848821	(1)Horsepen Creek	0.0	4.0	6.0	0.7	73	336	2.32%	2.4	2.0	3.1	2.1	No	No
7	-L- 451+70 M 36.138263 / -79.847644	(1)Horsepen Creek	0.0	4.0	6.0	0.7	69	315	1.00%	2.3	1.4	2.9	1.5	No	No
7	-L- 458+00 M 36.138444 / -79.845524	(2)Richland Creek	0.0	4.0	6.0	0.8	79	315	1.15%	2.6	1.5	3.3	1.6	No	No

**Additional Comments**

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**Swales**

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
7	-L- 461+50 M 36.138689 / -79.844378	(2)Richland Creek	0.0	6.0	6.0	0.7	71	336	2.07%	2.3	1.8	2.9	1.9	No	No
8	-L- 476+50 RT 36.139631 / -79.839421	(2)Richland Creek	0.0	6.0	6.0	1.2	122	597	2.07%	3.6	2.0	4.6	2.1	No	No
8	-L- 467+00 M 36.139128 / -79.842596	(2)Richland Creek	0.0	6.0	6.0	0.7	67	539	2.07%	1.9	1.7	2.4	1.8	No	No
8	-L- 470+37 M 36.139396 / -79.841505	(2)Richland Creek	0.0	6.0	6.0	0.3	34	324	2.07%	1.0	1.4	1.2	1.5	No	No
8	-L- 473+50 M 36.139647 / -79.840490	(2)Richland Creek	0.0	6.0	6.0	0.3	33	297	2.07%	0.9	1.4	1.2	1.5	No	No
8	-L- 476+50 M 36.139886 / -79.839518	(2)Richland Creek	0.0	6.0	6.0	0.3	33	284	2.07%	0.9	1.4	1.2	1.5	No	No
9	-L- 480+50 RT 36.139933 / -79.838120	(2)Richland Creek	0.0	6.0	6.0	0.9	89	387	2.01%	2.6	1.8	3.3	1.9	No	No
9	-RPCY8- 1+95 RT 36.140151 / -79.837136	(2)Richland Creek	0.0	6.0	6.0	0.8	80	288	2.26%	2.2	1.8	2.9	2.0	No	No
9	-RPBY8- 10+68 LT 36.141769 / -79.834663	(2)Richland Creek	0.0	4.0	3.0	0.8	80	518	1.78%	1.7	1.8	2.2	1.9	No	No
9	-L- 480+50 M 36.140206 / -79.838221	(2)Richland Creek	0.0	6.0	6.0	0.4	42	387	2.07%	1.2	1.5	1.5	1.6	No	No
9	-L- 483+75 M 36.140467 / -79.837165	(2)Richland Creek	0.0	6.0	6.0	0.3	32	313	1.20%	0.9	1.2	1.2	1.2	No	No
9	-L- 483+77 M 36.140467 / -79.837165	(2)Richland Creek	0.0	6.0	6.0	0.6	62	577	1.86%	1.8	1.4	2.3	1.5	No	No
9	-L- 489+65 M 36.140936 / -79.835257	(2)Richland Creek	0.0	6.0	6.0	0.2	24	125	1.70%	0.7	1.2	0.9	1.3	No	No
9	-L- 491+00 M 36.141044 / -79.834819	(2)Richland Creek	0.0	6.0	6.0	0.8	75	250	1.37%	2.6	1.6	3.3	1.7	No	No
9	-L- 499+30 M 36.141498 / -79.832072	(2)Richland Creek	0.0	6.0	6.0	0.8	75	265	1.36%	2.3	1.5	2.9	1.6	No	No
9	-L- 501+00 M 36.141525 / -79.831497	(2)Richland Creek	0.0	6.0	6.0	0.3	32	158	1.92%	1.0	1.4	1.2	1.5	No	No
9	-L- 478+50 LT 36.140362 / -79.838998	(2)Richland Creek	0.0	3.0	3.0	0.4	44	50	0.50%	1.7	1.1	2.2	1.2	No	No
10	-L- 509+19 RT 36.141323 / -79.828707	(2)Richland Creek	0.0	6.0	6.0	0.8	76	119	0.33%	2.0	0.9	2.5	0.9	No	No
10	-L- 509+21 RT 36.141323 / -79.828707	(2)Richland Creek	0.0	6.0	6.0	0.8	78	215	1.08%	2.0	1.4	2.6	1.4	No	No

**Additional Comments**

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--





09/08/11

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

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524D	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34820.1.2	STP-NHF-124(1)	P.E.	
34820.2.19	STP-NHF-124(1)	R.O.W./UTILITY	

## GUILFORD COUNTY

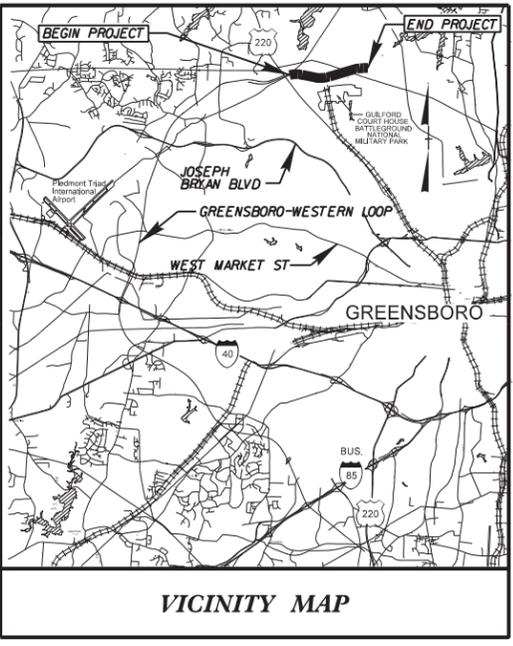
LOCATION: GREENSBORO-WESTERN LOOP FROM NORTH OF US 220  
(BATTLEGROUND AVENUE) TO NORTH OF SR 2303 (LAWNDALE DRIVE)

PERMIT DRAWINGS  
SHEET 1 OF 25

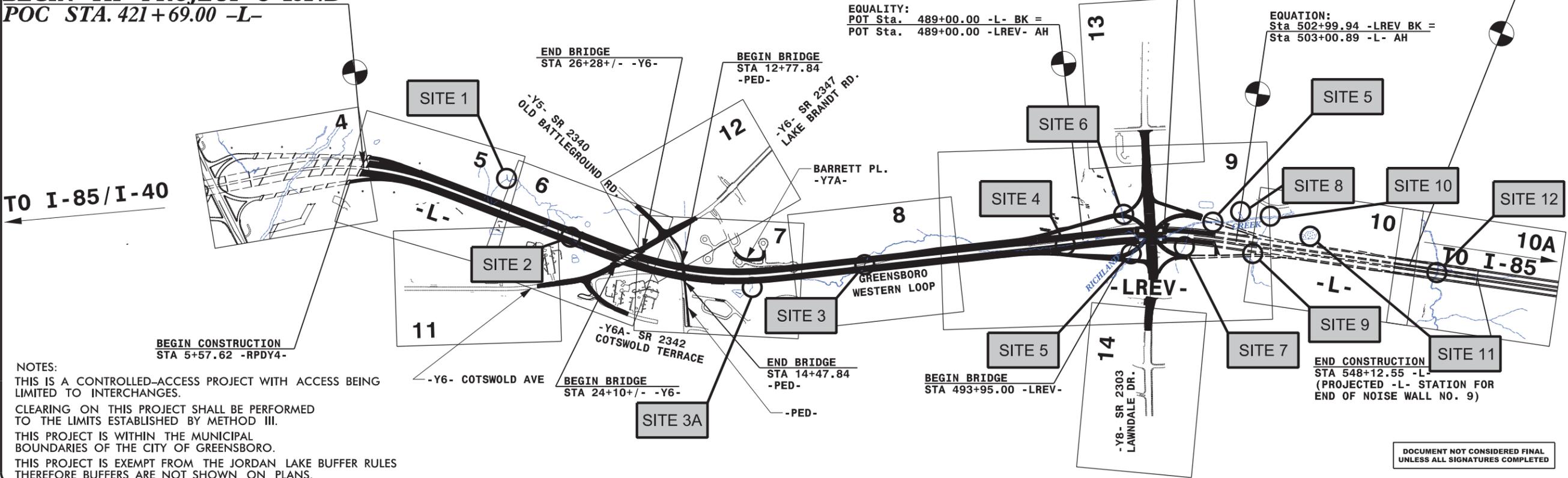
TYPE OF WORK: GRADING, PAVING, CULVERTS, DRAINAGE,  
STRUCTURES AND ITS

END TIP PROJECT U-2524D  
POT STA 520+34.53 -L- BK.  
N 871507.2766 E 1756411.5108  
END TIP PROJECT U-2525C  
POT STA 552+99.67 -L- AH.  
N 871505.0126 E 1756411.6682

## WETLAND & STREAM IMPACTS



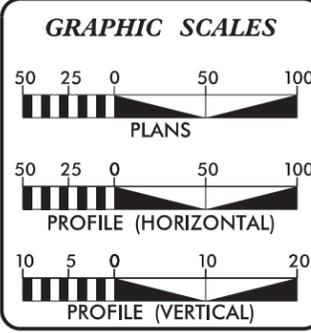
BEGIN TIP PROJECT U-2524D  
POC STA. 421+69.00 -L-



NOTES:  
THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.  
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO.  
THIS PROJECT IS EXEMPT FROM THE JORDAN LAKE BUFFER RULES THEREFORE BUFFERS ARE NOT SHOWN ON PLANS.

TIP PROJECT: U-2524D

CONTRACT:



**DESIGN DATA**

ADT 2016 =	65,756
ADT 2036 =	98,793
K =	10 %
D =	60 %
T =	14 % *
V =	70 MPH
* TTST =	8% DUAL 6%
FUNC CLASS =	FREWAY
INTERSTATE TIER	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT U-2524D	=	1.373 MILES
LENGTH STRUCTURES TIP PROJECT U-2524D	=	0.045 MILES
TOTAL LENGTH OF TIP PROJECT U-2524D	=	1.418 MILES

NCDOT CONTACT: REKHA PATEL, P.E.

PLANS PREPARED BY: **PARSONS** RALEIGH, NORTH CAROLINA

FOR THE DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 23, 2011

LETTING DATE: SEPTEMBER 20, 2016

**HNTB**  
HNTB  
543 E. SIX FORKS ROAD, SUITE 200  
RALEIGH, NC 27609  
NC License Number C-1554

TIM D. GOINS, P.E.  
PROJECT ENGINEER

DAVID GARRETT  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGNATURE: \_\_\_\_\_ P.E.

ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGNATURE: \_\_\_\_\_ P.E.

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

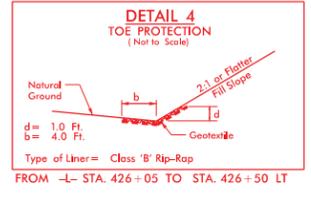
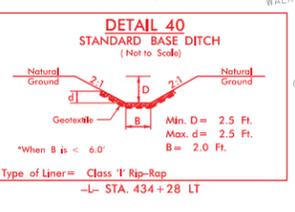
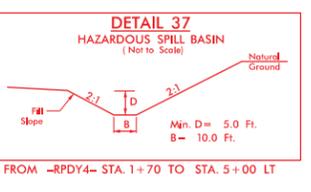
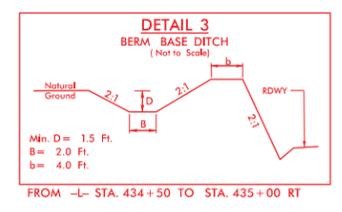
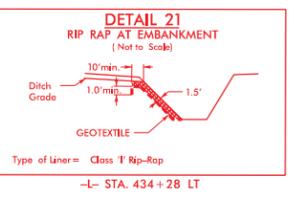
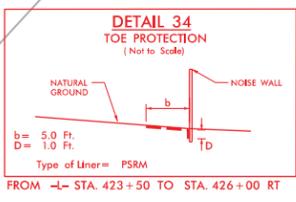
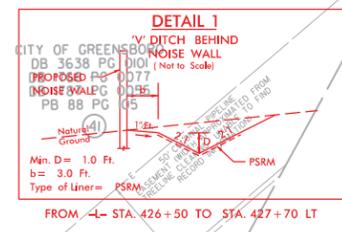
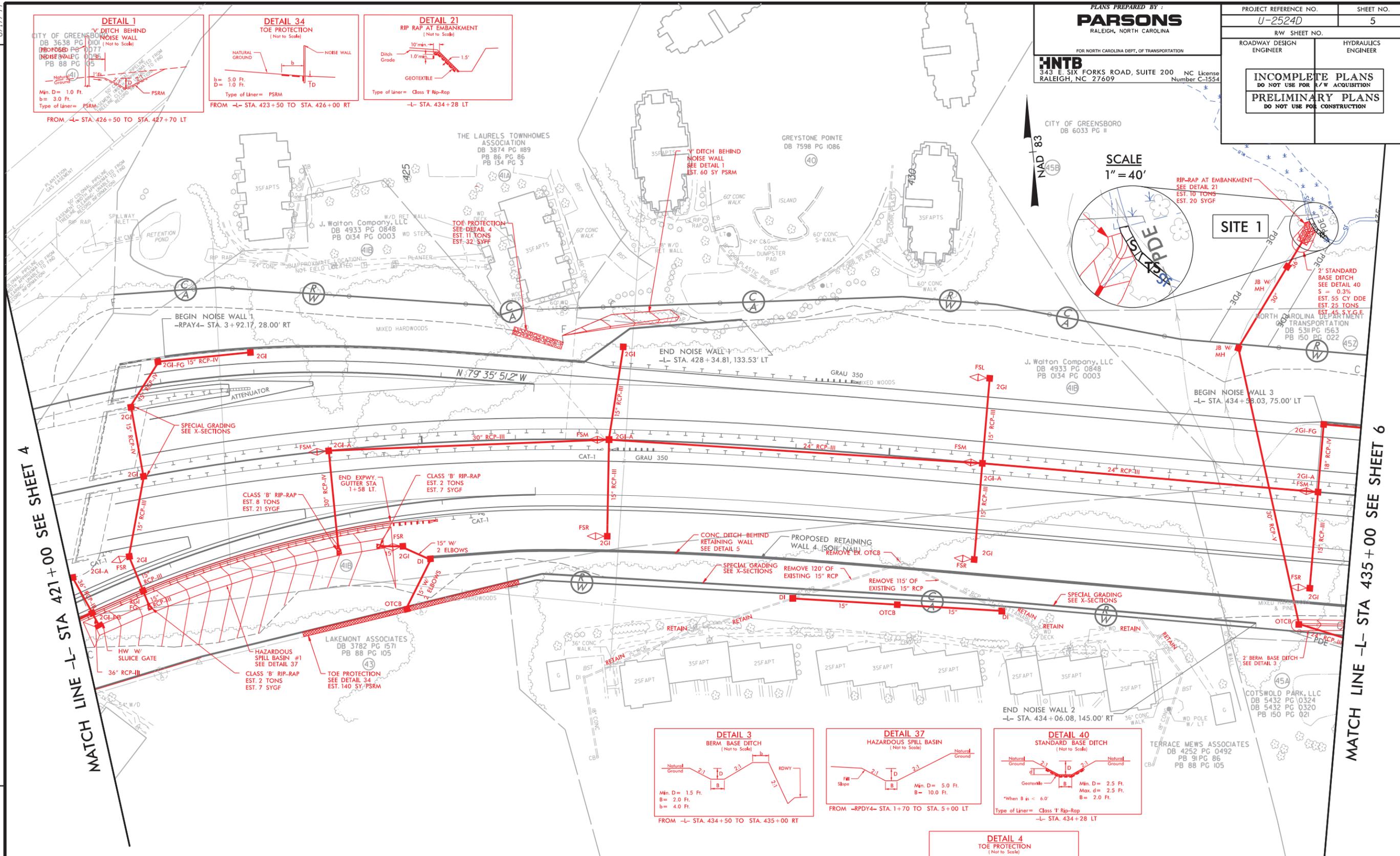
STATE HIGHWAY DESIGN ENGINEER

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\$\$\$\$\$SERVNAME\$\$\$\$\$

PROJECT REFERENCE NO. U-2524D	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/R ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

CITY OF GREENSBORO  
DB 6033 PG II

**SCALE**  
1" = 40'



**NOTE:**  
SEE SHEET 2B-2 FOR CURVE DATA  
SEE SHEET 15 & 16 FOR -L- PROFILE  
SEE SHEET 23 FOR RPAY4 PROFILE  
SEE SHEET 23 FOR RPDY4 PROFILE

PERMIT DRAWINGS  
SHEET 2 OF 25

**LEGEND**

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

MATCH LINE -L- STA 421+00 SEE SHEET 4

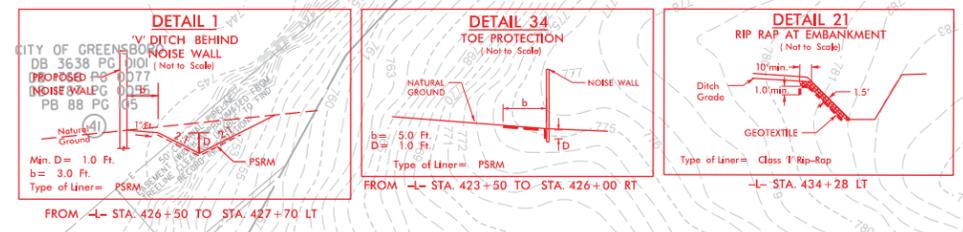
MATCH LINE -L- STA 435+00 SEE SHEET 6

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PROJECT REFERENCE NO. U-2524D	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

SCALE  
1" = 40'

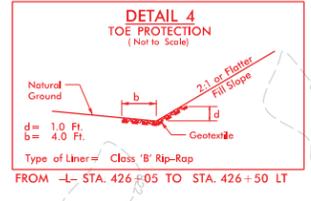
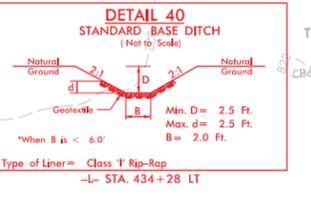
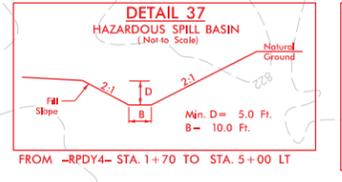
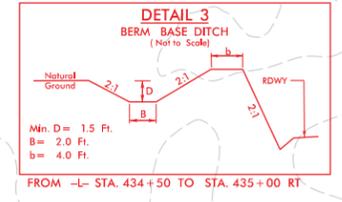
NAD 83  
458



MATCH LINE -L- STA 421+00 SEE SHEET 4

MATCH LINE -L- STA 435+00 SEE SHEET 6

NOTE:  
 SEE SHEET 2B-2 FOR CURVE DATA  
 SEE SHEET 15 & 16 FOR -L- PROFILE  
 SEE SHEET 23 FOR RPAY4 PROFILE  
 SEE SHEET 23 FOR RPDY4 PROFILE



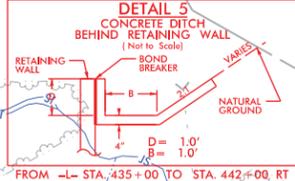
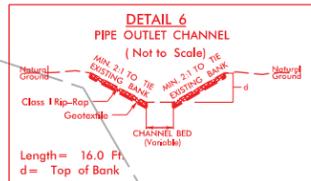
PERMIT DRAWINGS  
SHEET 3 OF 25

LEGEND

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

4:05:40 PM 4/11/2017 PSH-05.C.dgn

8/17/99



NOTE:  
 SEE SHEET 2B-1 FOR BRIDGE SKETCH  
 SEE SHEET 2B-2 FOR CURVE DATA  
 SEE SHEET 16 FOR -L- PROFILE  
 SEE SHEET 20 FOR -Y6A- PROFILE  
 SEE SHEET 21 FOR -Y6- PROFILE



PLANS PREPARED BY:  
**PARSONS**  
 RALEIGH, NORTH CAROLINA

FOR NORTH CAROLINA DEPT. OF TRANSPORTATION  
**HNTB**  
 343 E. SIX FORKS ROAD, SUITE 200 NC License Number C-1554  
 RALEIGH, NC 27609

PROJECT REFERENCE NO. U-2524D	SHEET NO. 6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

WOODLAND VILLAGE CONDO ASSOCIATION DB 3459 PG 1398

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DB 5193 PG 1105

SCALE  
1" = 40'

MATCH LINE -L- STA 435+00 SEE SHEET 5

MATCH LINE -L- STA 449+00 SEE SHEET 7

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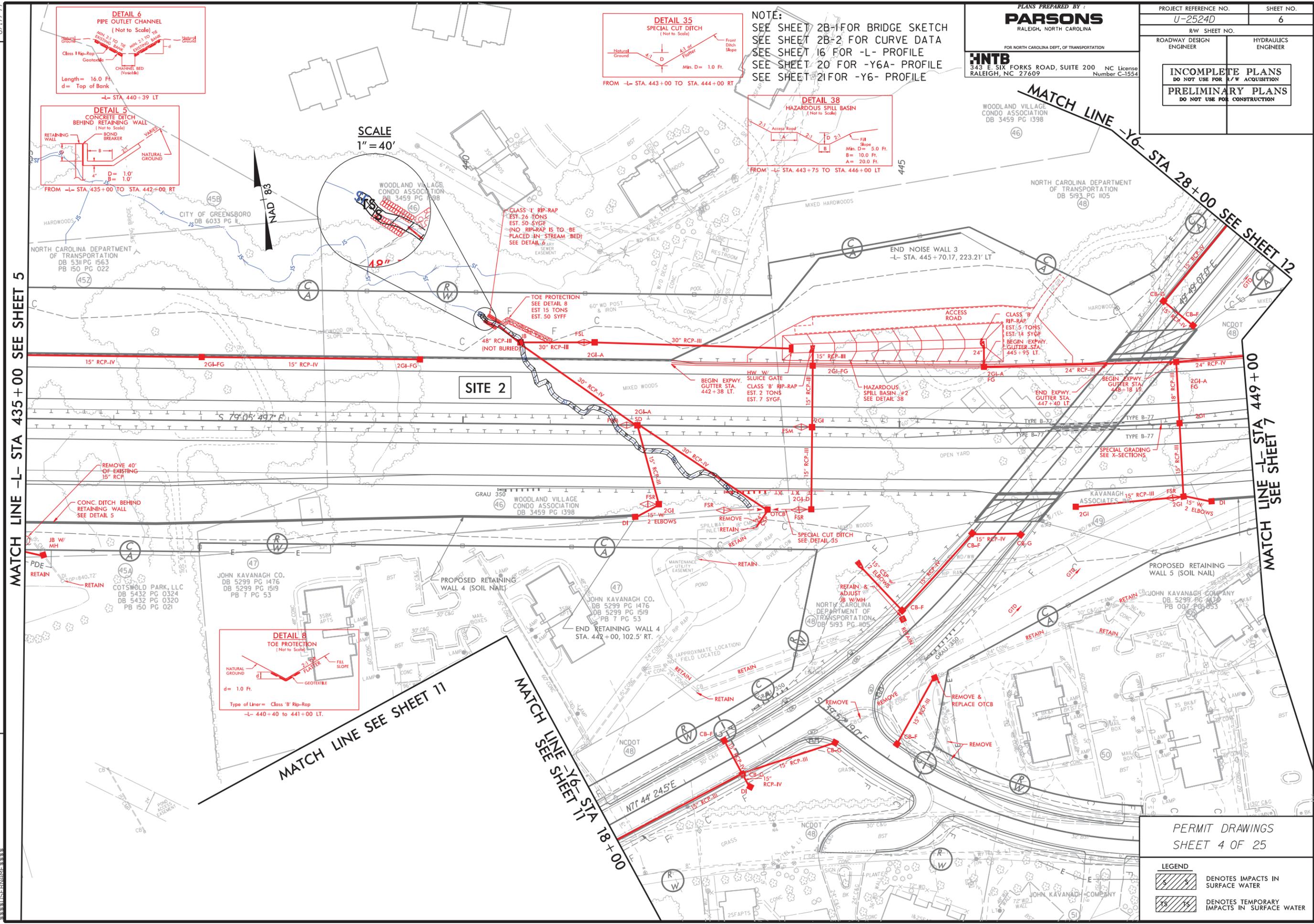
MATCH LINE SEE SHEET 11

MATCH LINE SEE SHEET 11

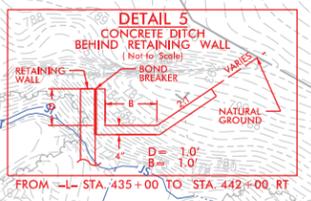
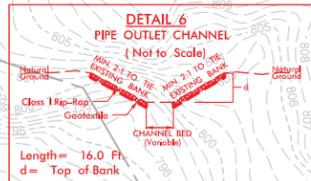
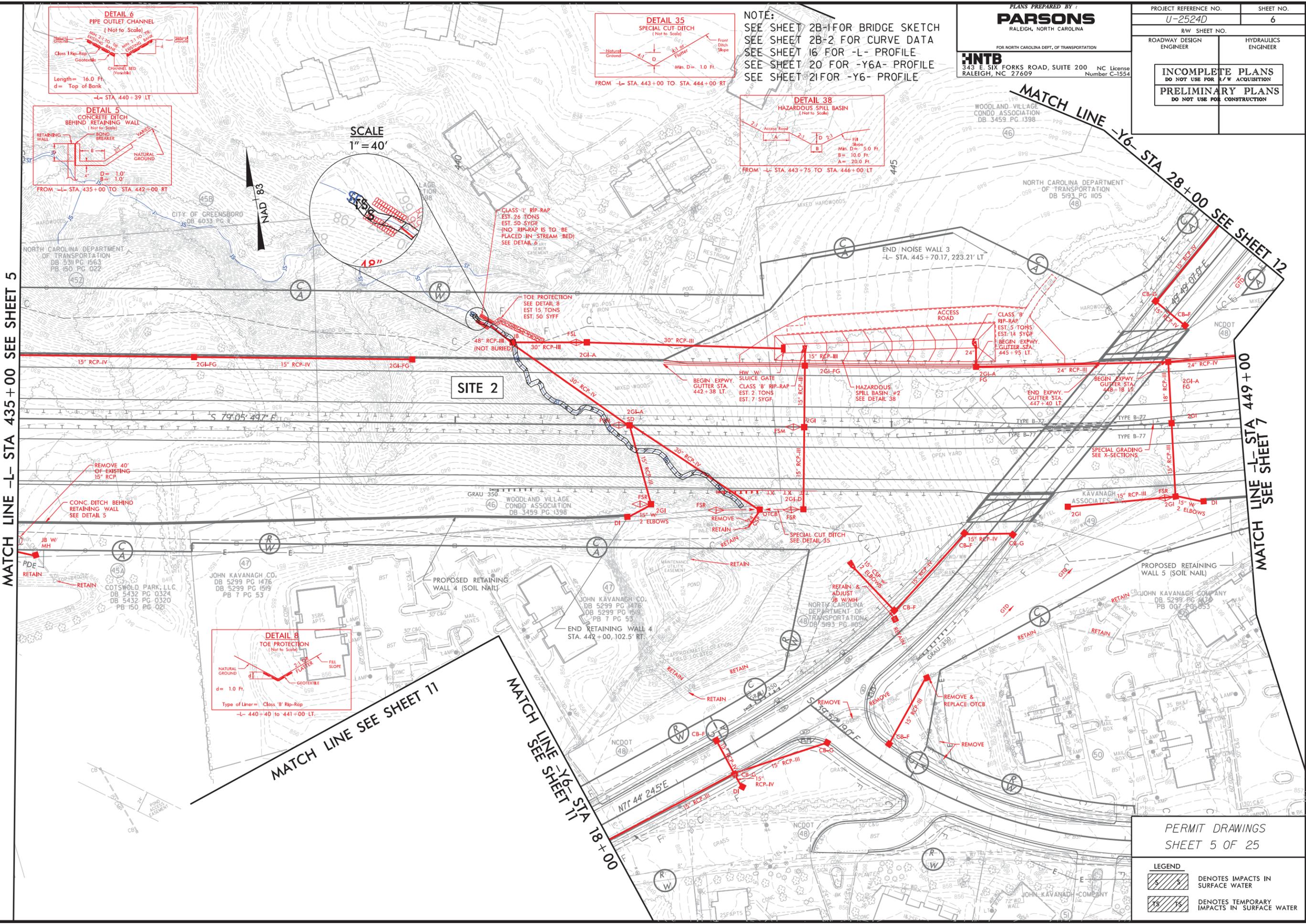
PERMIT DRAWINGS  
SHEET 4 OF 25

LEGEND

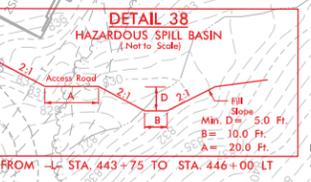
	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER



8/17/99



NOTE:  
SEE SHEET 2B-1 FOR BRIDGE SKETCH  
SEE SHEET 2B-2 FOR CURVE DATA  
SEE SHEET 16 FOR -L- PROFILE  
SEE SHEET 20 FOR -Y6A- PROFILE  
SEE SHEET 21 FOR -Y6- PROFILE



PLANS PREPARED BY:  
**PARSONS**  
RALEIGH, NORTH CAROLINA

FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

**HNTB**  
343 E. SIX FORKS ROAD, SUITE 200  
RALEIGH, NC 27609  
NC License Number C-1554

PROJECT REFERENCE NO. U-2524D	SHEET NO. 6
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

SCALE  
1" = 40'



MATCH LINE -L- STA 435+00 SEE SHEET 5

MATCH LINE -L- STA 449+00 SEE SHEET 7

MATCH LINE -Y6- STA 28+00 SEE SHEET 12

MATCH LINE -Y6- STA 18+00 SEE SHEET 11

PERMIT DRAWINGS  
SHEET 5 OF 25

**LEGEND**

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

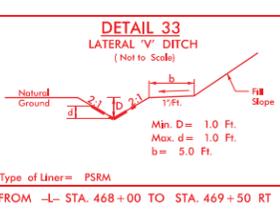
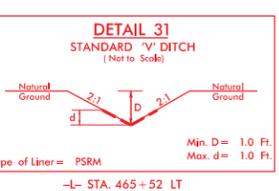
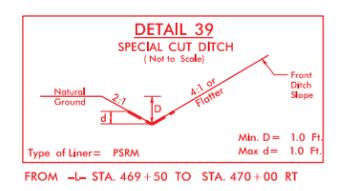
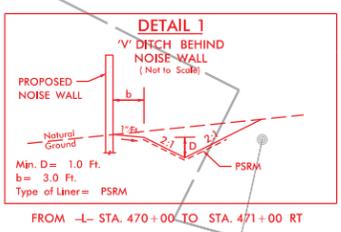
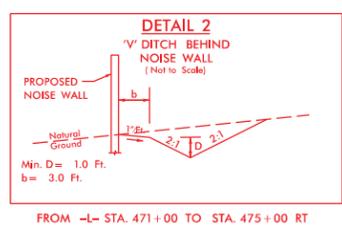
REVISIONS

10/25/03 AM 4:17 PM PSH.06. C.dgn





PROJECT REFERENCE NO. U-2524D	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

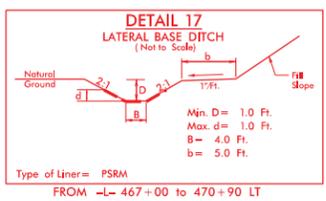
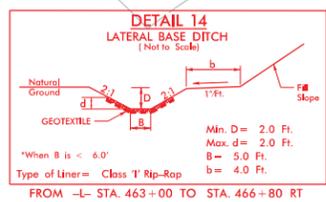
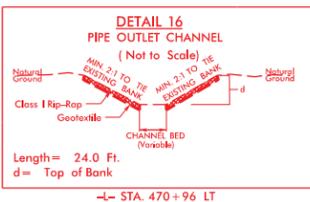
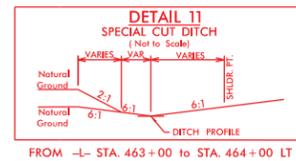
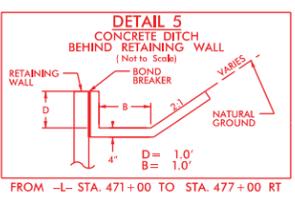
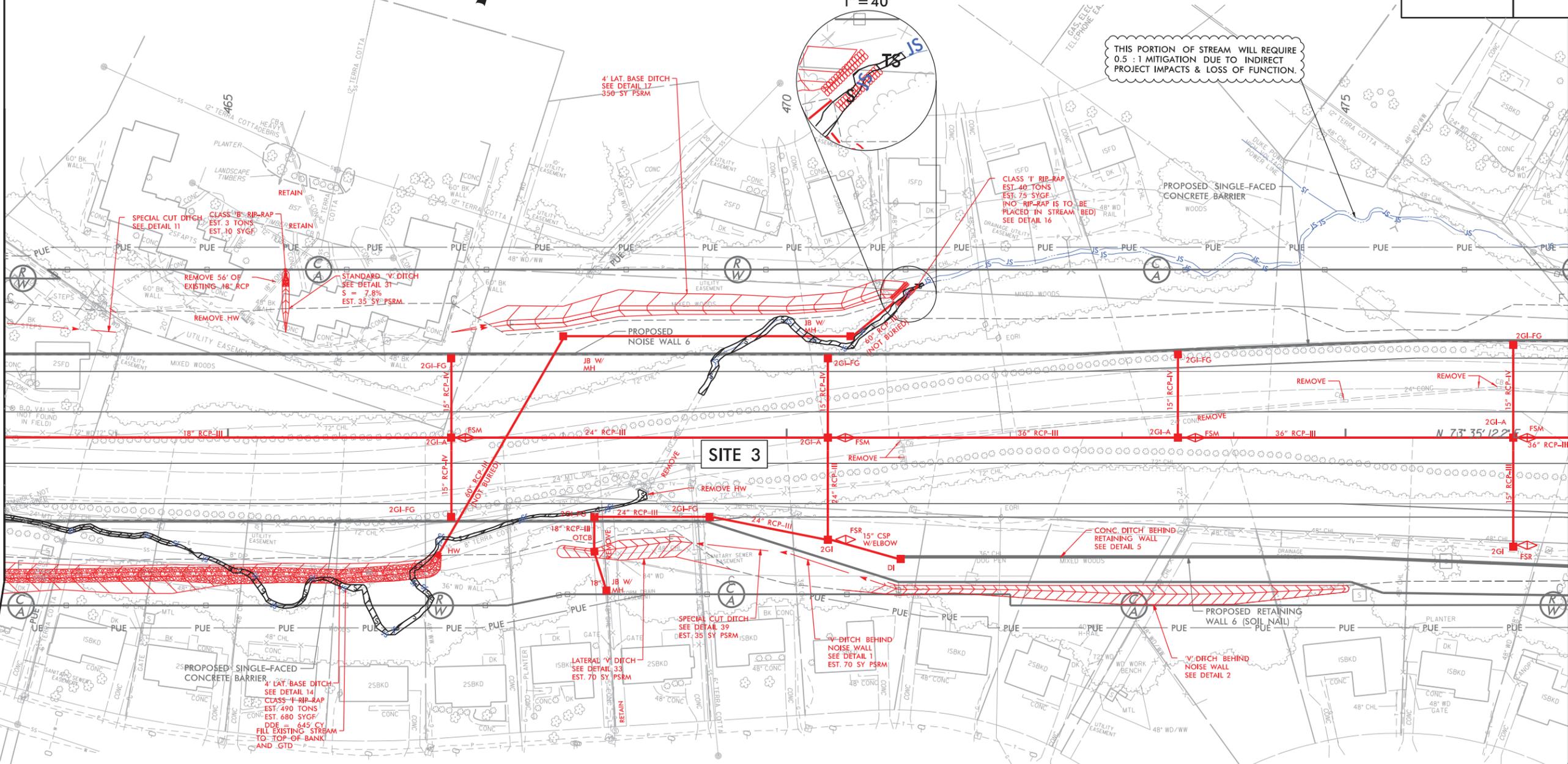


SCALE  
 1" = 40'

THIS PORTION OF STREAM WILL REQUIRE 0.5 : 1 MITIGATION DUE TO INDIRECT PROJECT IMPACTS & LOSS OF FUNCTION.

MATCH LINE -L- STA 463+00 SEE SHEET 7

MATCH LINE -L- STA 477+00 SEE SHEET 9



PERMIT DRAWINGS  
 SHEET 8 OF 25

**LEGEND**

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

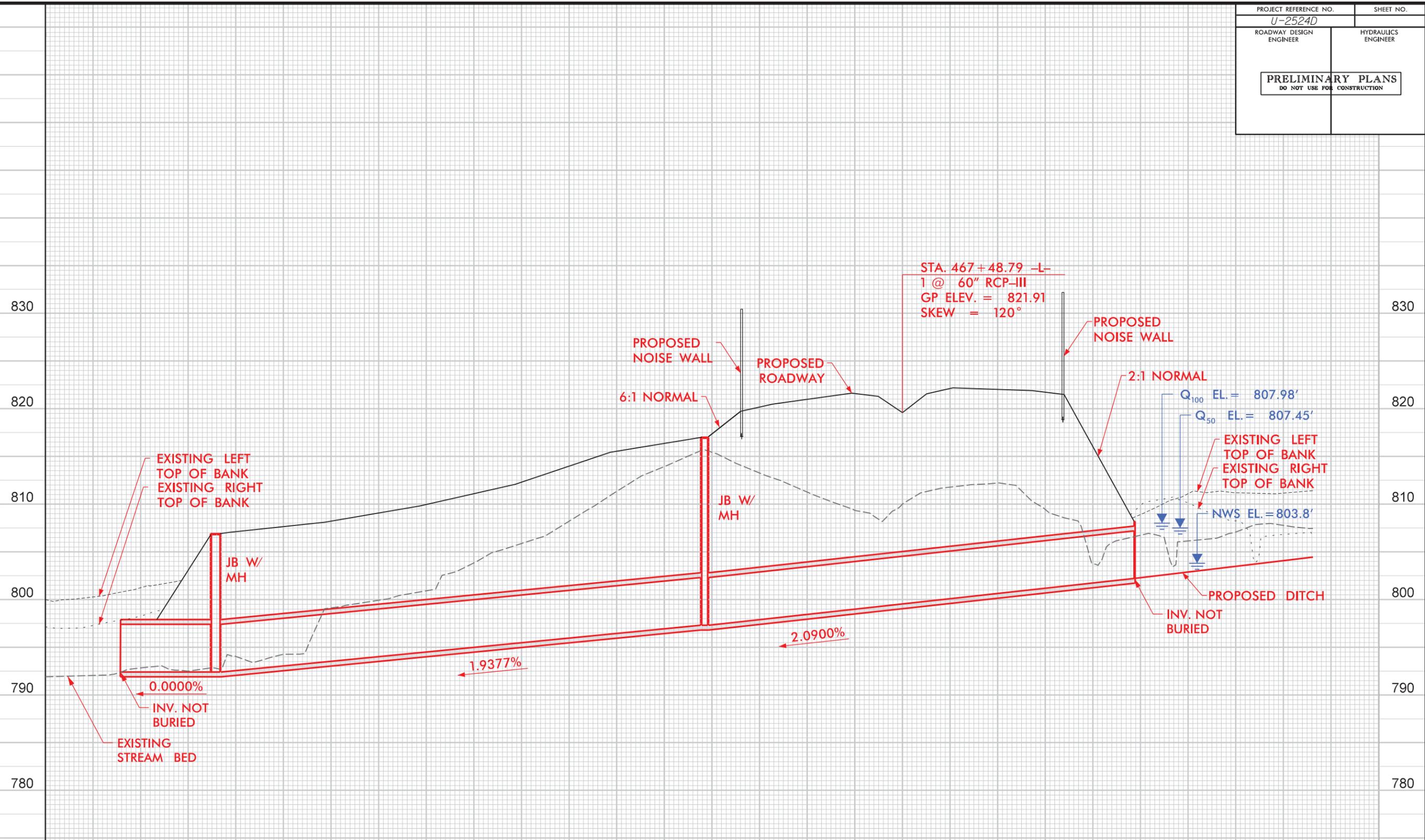
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PROJECT REFERENCE NO. U-2524D	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

5/14/99

10:46:40 AM  
C:\work\Culvert-PF.L.dgn



**PROFILE ALONG STRUCTURE**

**SITE 3**

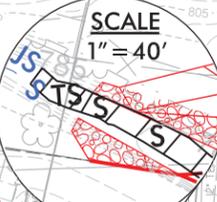
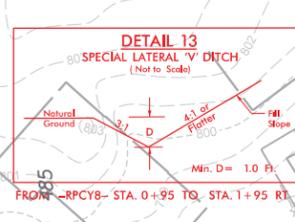
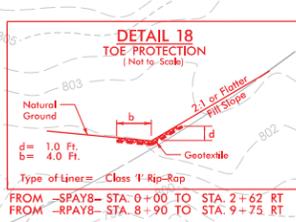
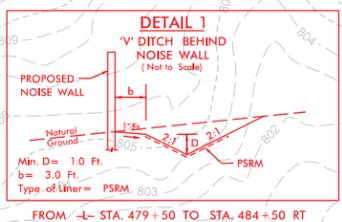
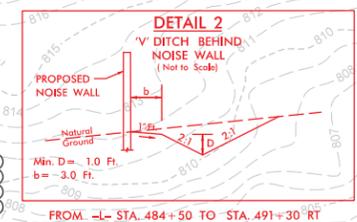
**SCALE**  
1"=50' HORIZONTAL  
1"=10' VERTICAL

GUILFORD COUNTY  
PROJECT: U-2524D  
GREENSBORO - WESTERN LOOP  
FROM EAST OF BATTLEGROUND AVENUE  
TO EAST OF LAWDALE DRIVE  
SHEET 10 OF 25      11/13/15



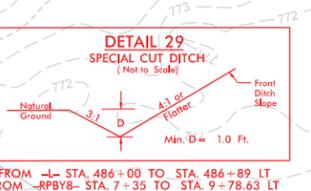
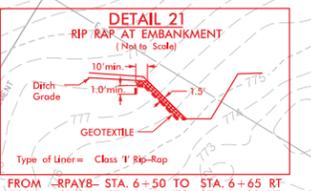
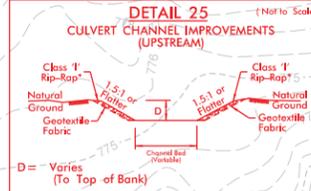
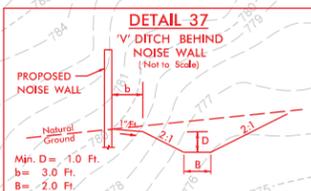
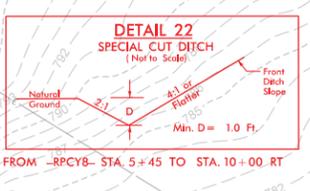
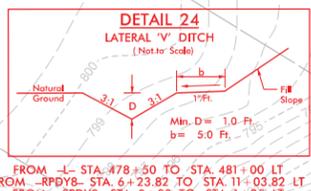
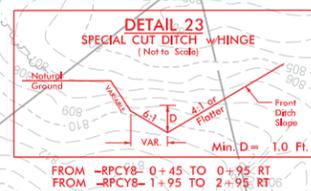
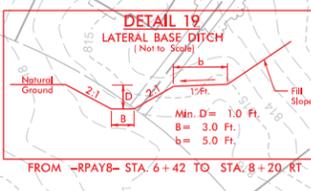
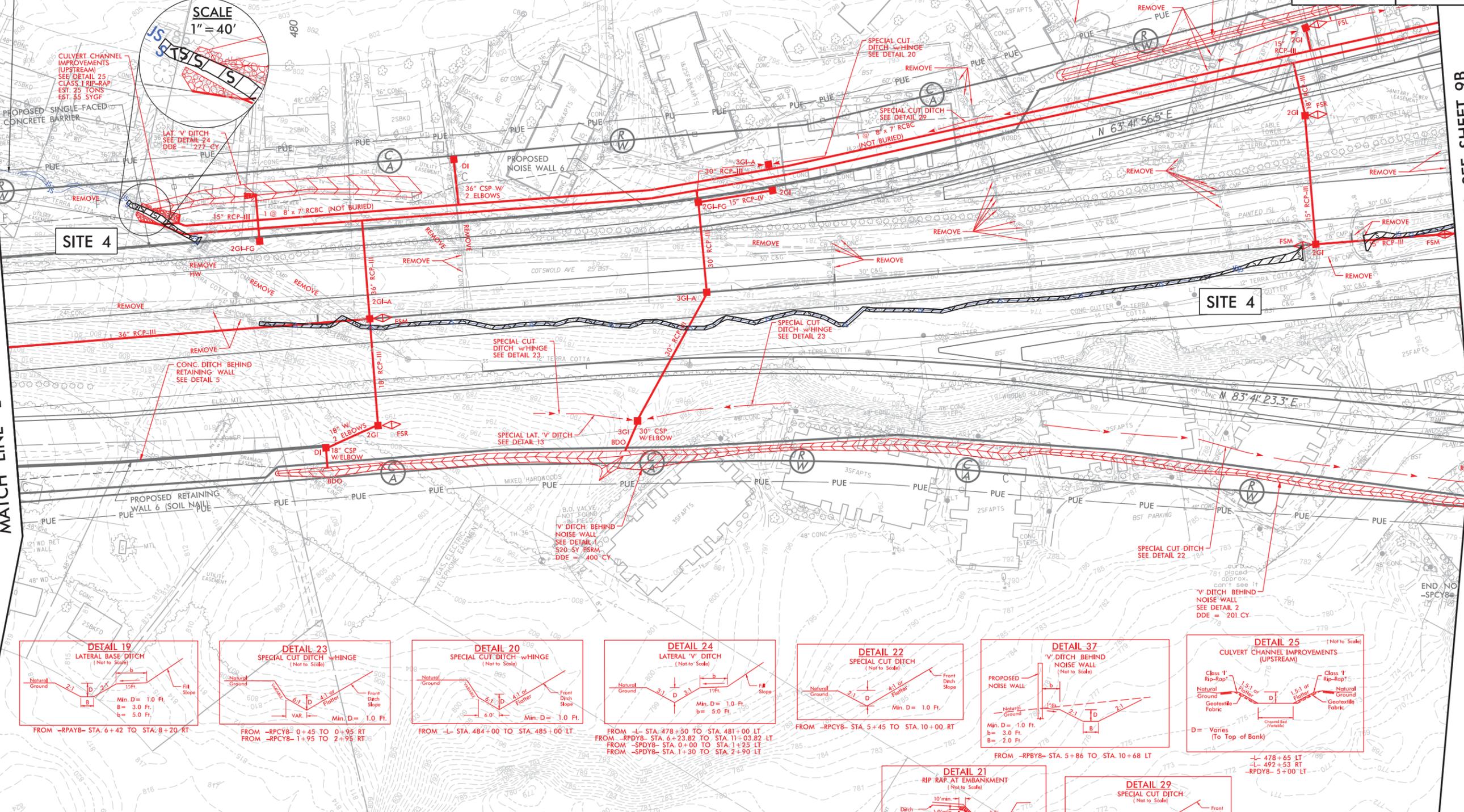
**INCOMPLETE PLANS**  
 DO NOT USE FOR A/W ACQUISITION  
**PRELIMINARY PLANS**  
 DO NOT USE FOR CONSTRUCTION

THIS PORTION OF STREAM WILL REQUIRE 0.5 : 1 MITIGATION DUE TO INDIRECT PROJECT IMPACTS & LOSS OF FUNCTION.



MATCH LINE -L- STA 477+00 SEE SHEET 8

MATCH LINE -L- STA 491+00 SEE SHEET 9B



PERMIT DRAWINGS  
 SHEET 12 OF 25

**LEGEND**

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

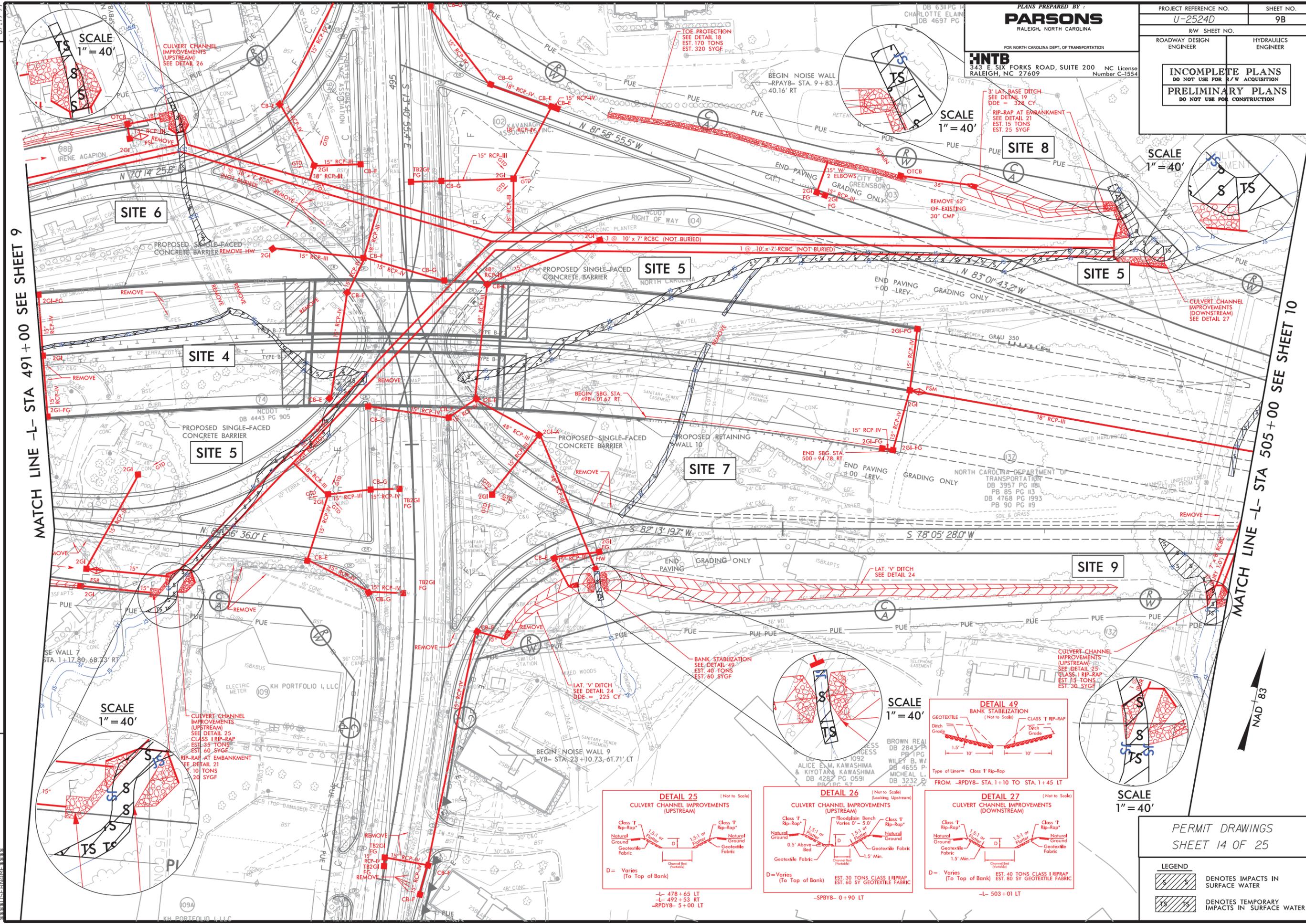
REVISIONS

4:16:36 PM 4/16/24 09:09 PSH\_09\_C.dgn



PROJECT REFERENCE NO. U-2524D	SHEET NO. 9B
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

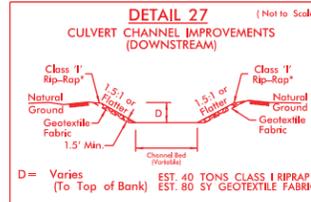
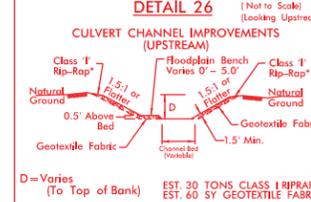
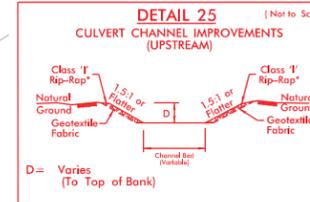
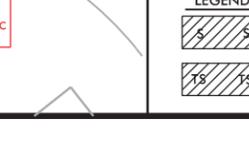
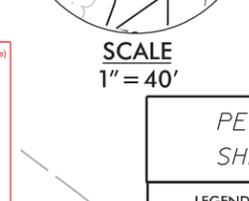
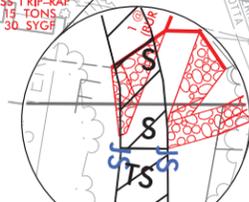
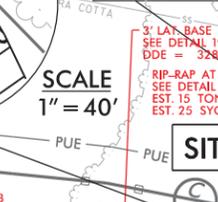
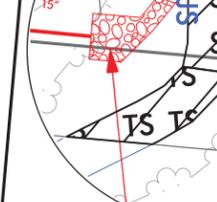
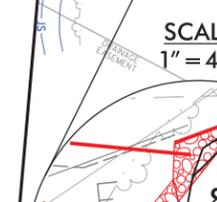
**INCOMPLETE PLANS**  
 DO NOT USE FOR A/W ACQUISITION  
**PRELIMINARY PLANS**  
 DO NOT USE FOR CONSTRUCTION



MATCH LINE -L- STA 491+00 SEE SHEET 9

MATCH LINE -L- STA 505+00 SEE SHEET 10

5:16:29 PM 12/24/2010 PSH\_09B.dgn



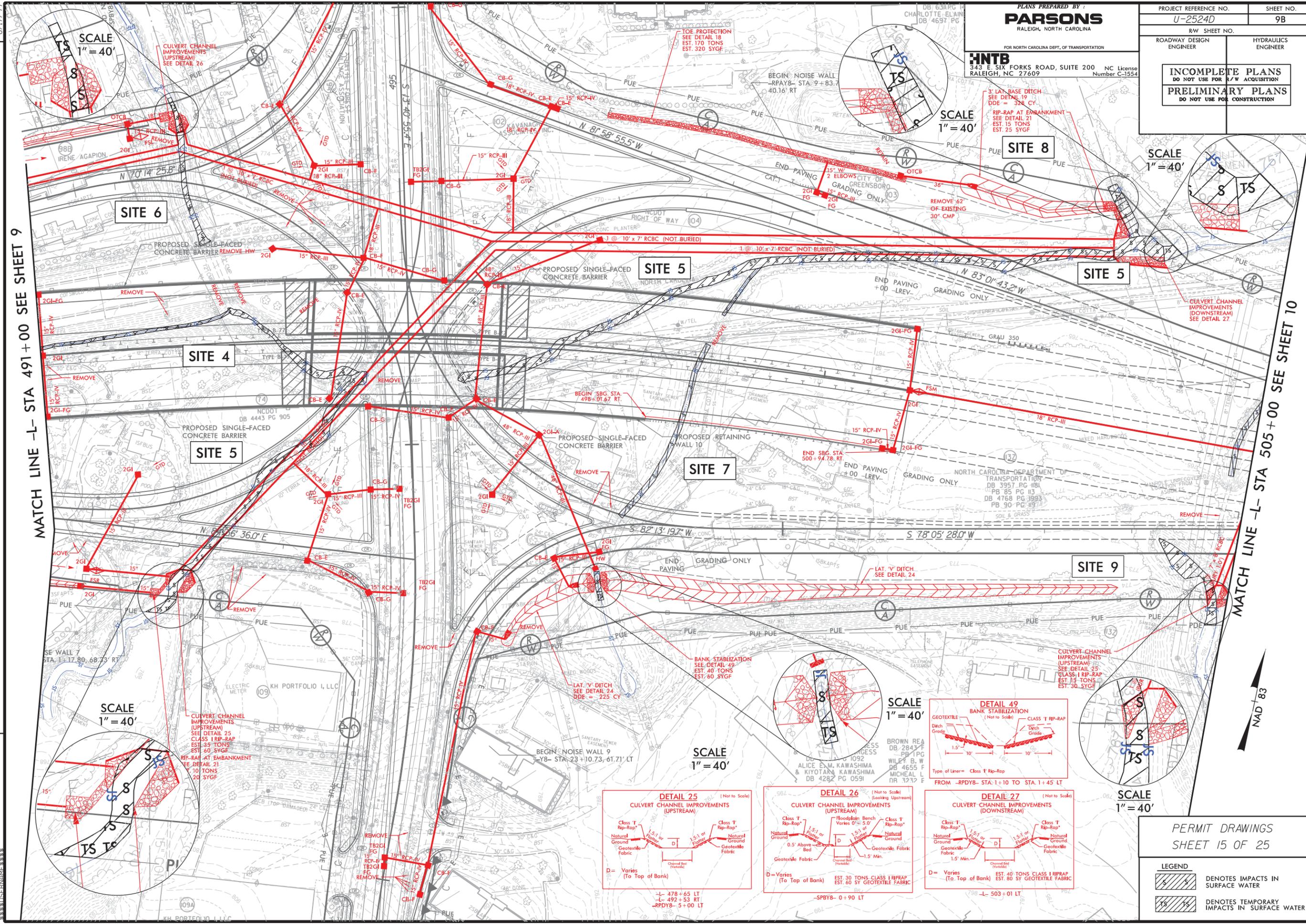
PERMIT DRAWINGS  
 SHEET 14 OF 25

**LEGEND**

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO. U-2524D	SHEET NO. 9B
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

**INCOMPLETE PLANS**  
 DO NOT USE FOR A/W ACQUISITION  
**PRELIMINARY PLANS**  
 DO NOT USE FOR CONSTRUCTION

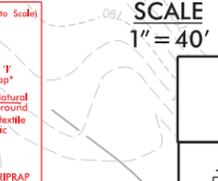
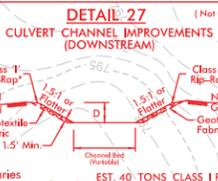
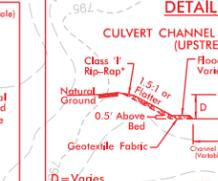
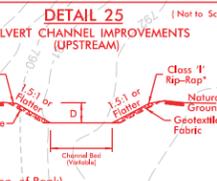
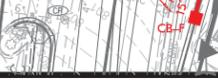
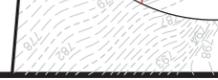
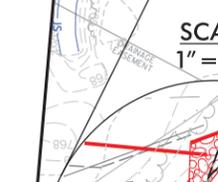


MATCH LINE -L- STA 491+00 SEE SHEET 9

MATCH LINE -L- STA 505+00 SEE SHEET 10

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REVISIONS



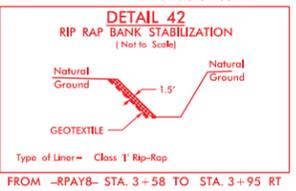
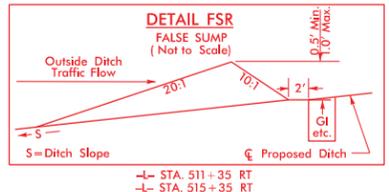
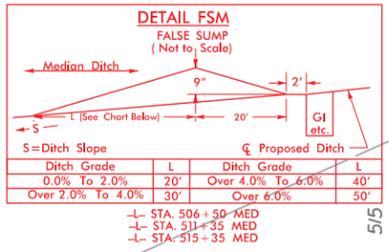
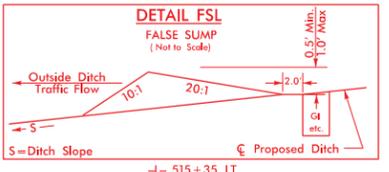
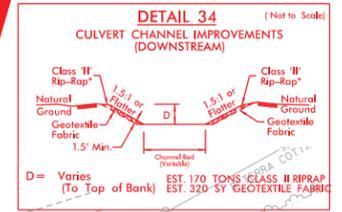
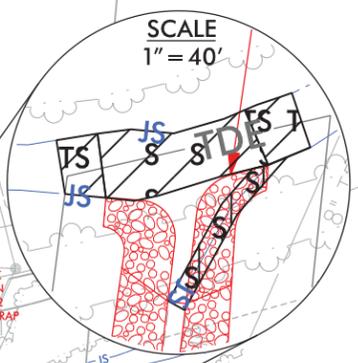
PERMIT DRAWINGS  
 SHEET 15 OF 25

**LEGEND**

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

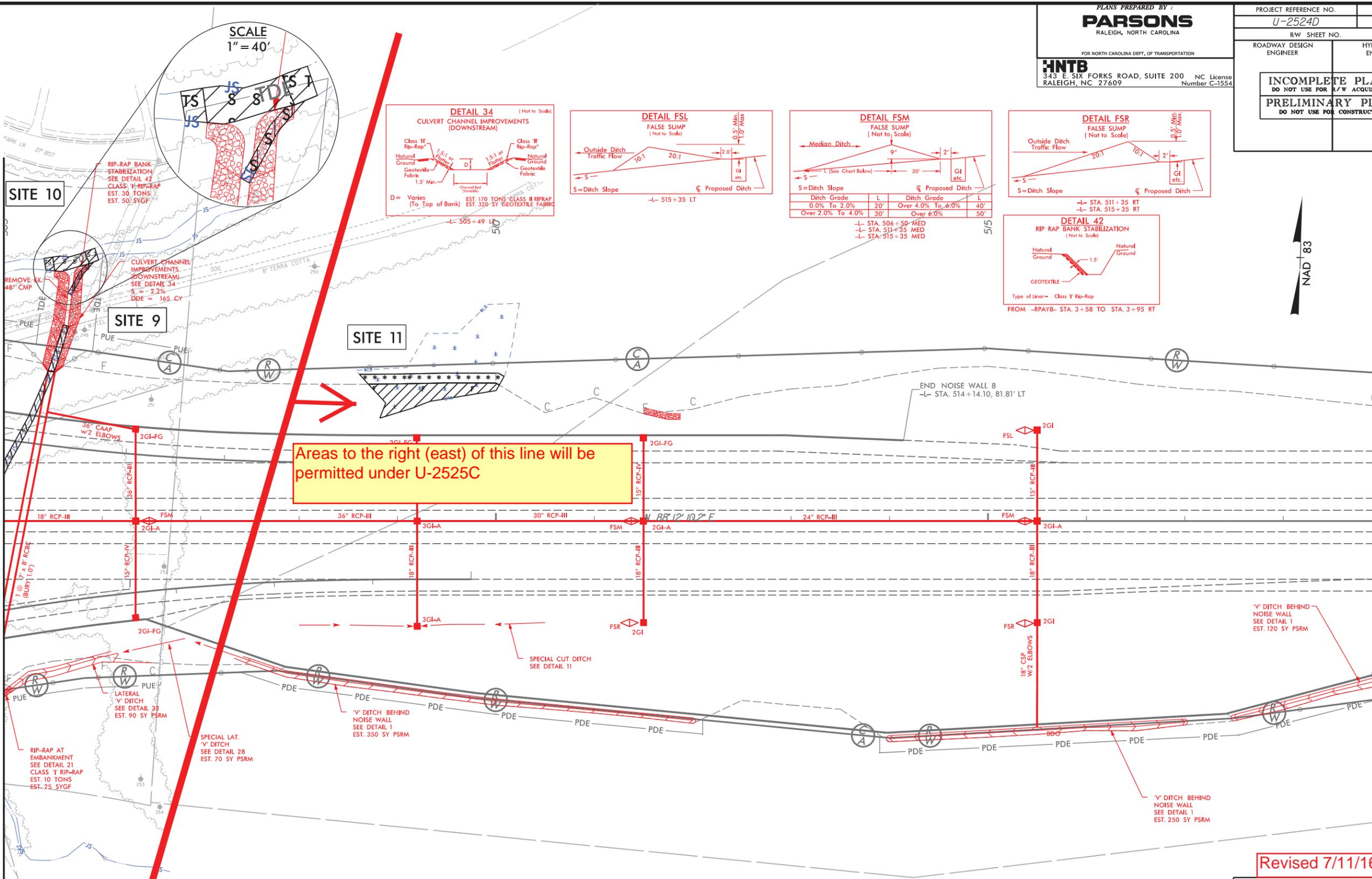






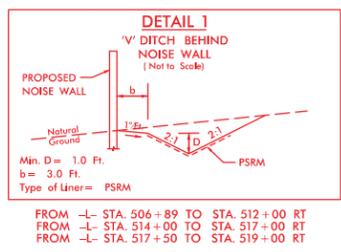
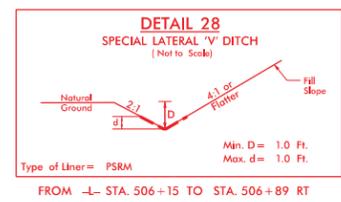
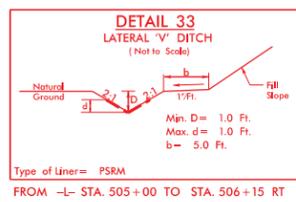
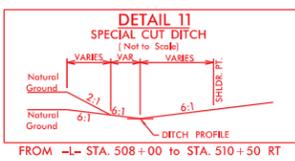
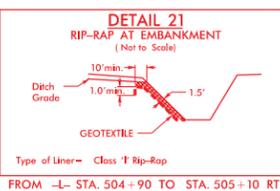
MATCH LINE -L- STA 505+00 SEE SHEET 9

MATCH LINE -L- STA 519+00 SEE SHEET 10A



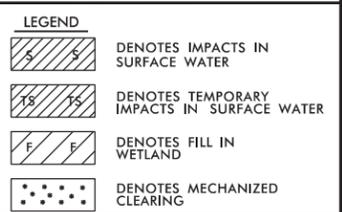
Areas to the right (east) of this line will be permitted under U-2525C

**NOTE:**  
SEE SHEET 2B-2 FOR CURVE DATA  
SEE SHEET 19 FOR -L- PROFILE  
SEE SHEET 24 FOR RPAY8 PROFILE  
SEE SHEET 27 FOR RPDY8 PROFILE



Revised 7/11/16

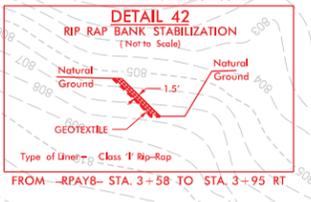
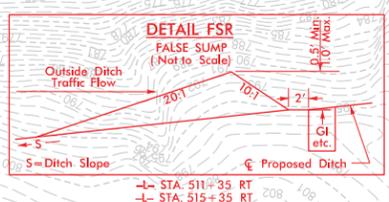
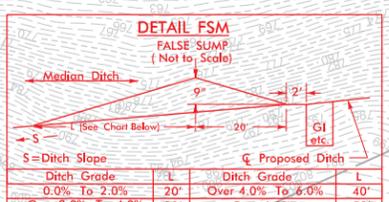
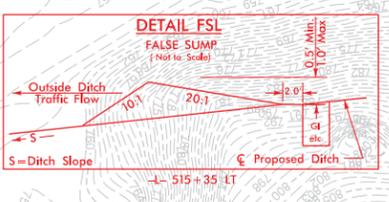
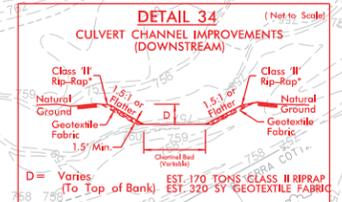
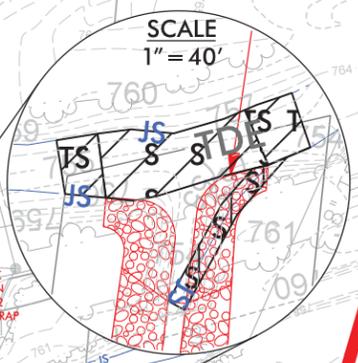
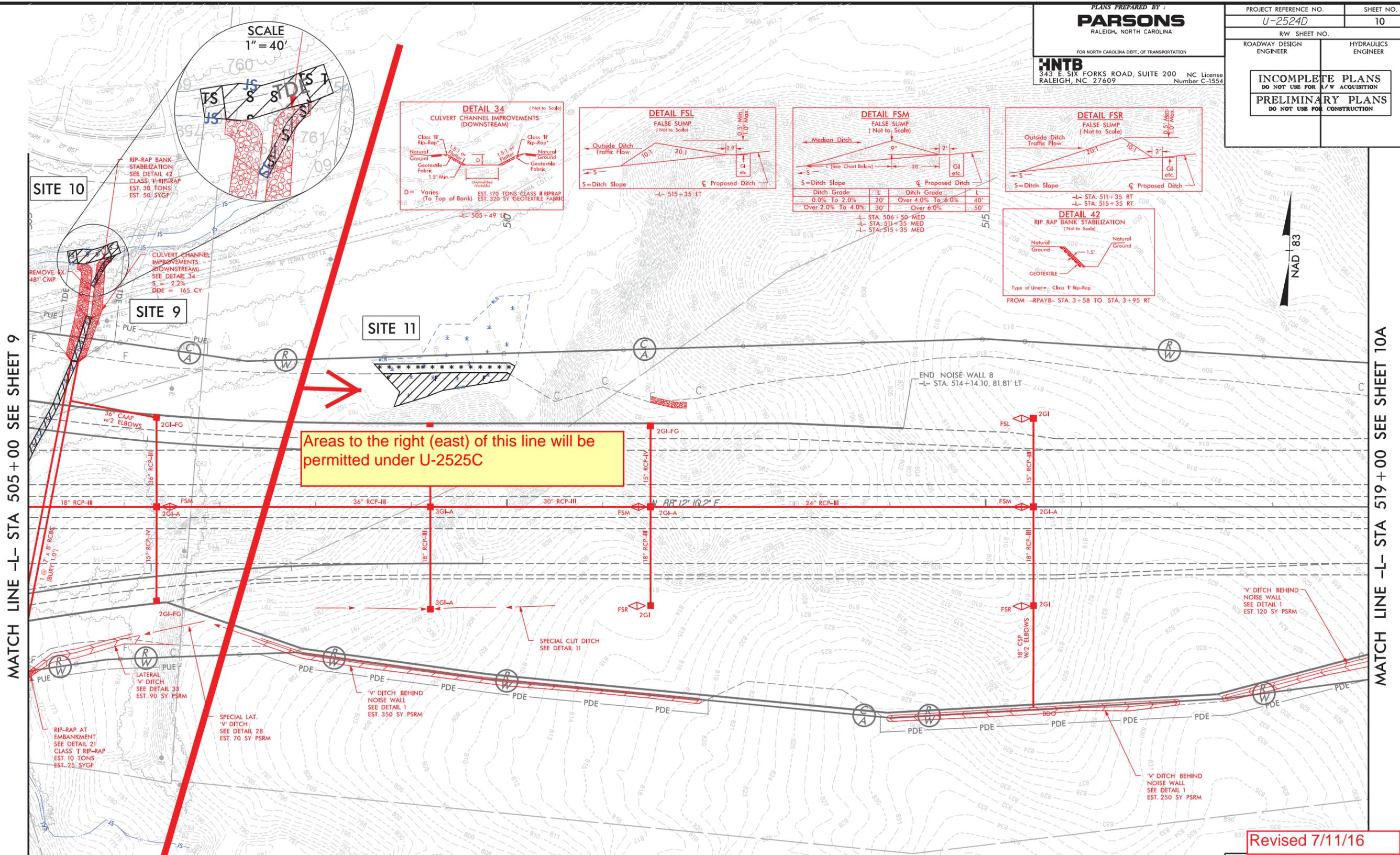
PERMIT DRAWINGS  
SHEET 18 OF 25



REVISIONS

9:50:39 AM C:\Users\j2524D\prrm\PSH\_10.dgn

PROJECT REFERENCE NO. U-2524D	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

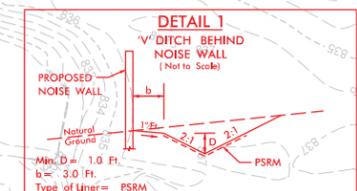
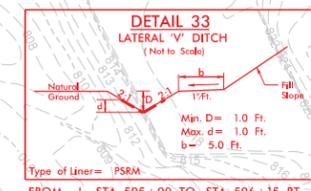


Areas to the right (east) of this line will be permitted under U-2525C

MATCH LINE -L- STA 505+00 SEE SHEET 9

MATCH LINE -L- STA 519+00 SEE SHEET 10A

**NOTE:**  
SEE SHEET 2B-2 FOR CURVE DATA  
SEE SHEET 19 FOR -L- PROFILE  
SEE SHEET 24 FOR RPY8 PROFILE  
SEE SHEET 27 FOR RPDY8 PROFILE



Revised 7/11/16

PERMIT DRAWINGS  
SHEET 19 OF 25

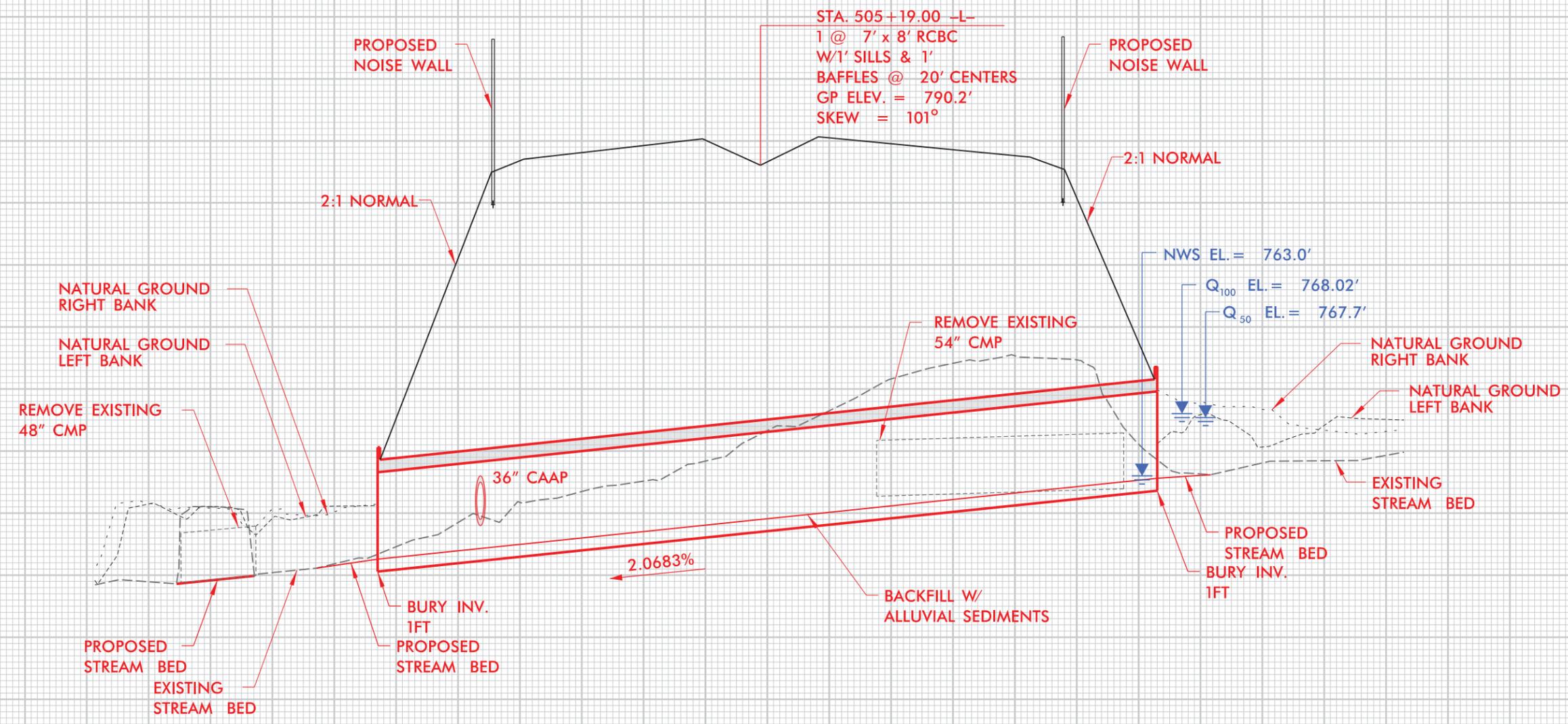
**LEGEND**

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
	DENOTES FILL IN WETLAND
	DENOTES MECHANIZED CLEARING

REVISIONS

9:52:25 AM 9/17/99 PSH.10\_C.dgn

PROJECT REFERENCE NO. U-2524D	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



**PROFILE ALONG STRUCTURE**

**SITE 9**

**SCALE**  
 1"=50' HORIZONTAL  
 1"=10' VERTICAL

GUILFORD COUNTY  
 PROJECT: U-2524D  
 GREENSBORO - WESTERN LOOP  
 FROM EAST OF BATTLEGROUND AVENUE  
 TO EAST OF LAWNSDALE DRIVE  
 SHEET 20 OF 25      11/13/15

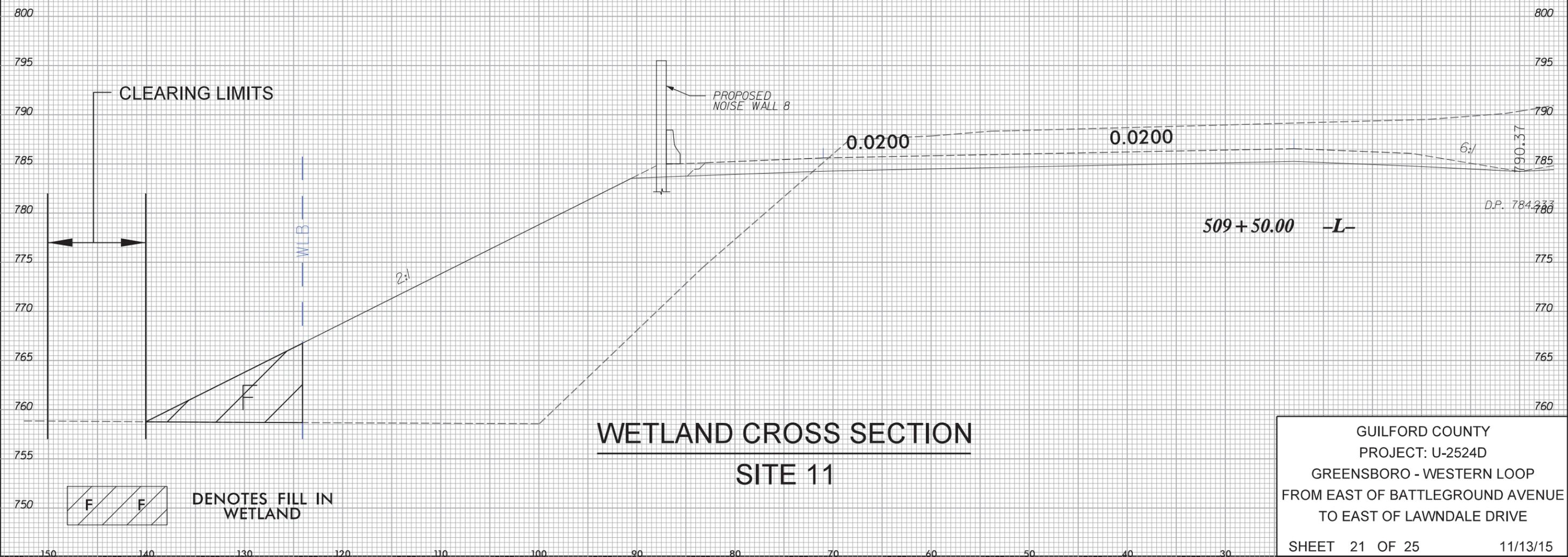
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8/23/99



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

**\*\*\* NOTE: This sheet to be permitted under U-2525C \*\*\***



DENOTES FILL IN WETLAND

**WETLAND CROSS SECTION  
SITE 11**

GUILFORD COUNTY  
PROJECT: U-2524D  
GREENSBORO - WESTERN LOOP  
FROM EAST OF BATTLEGROUND AVENUE  
TO EAST OF LAWNDALE DRIVE  
SHEET 21 OF 25 11/13/15

9:28:45 AM  
C:\Users\jg33\Documents\2524D-prm-xso.dgn

**\*\*\* NOTE: This sheet to be permitted under U-2525C \*\*\***

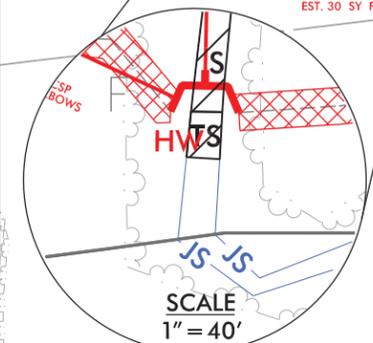
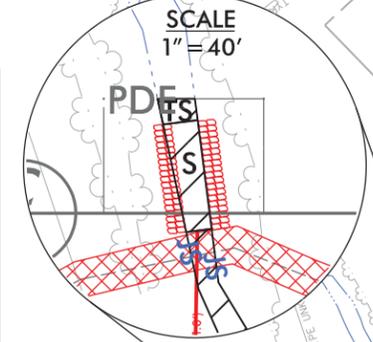
PLANS PREPARED BY:  
**PARSONS**  
RALEIGH, NORTH CAROLINA

FOR NORTH CAROLINA DEPT. OF TRANSPORTATION  
**HNTB**  
343 E. SIX FORKS ROAD, SUITE 200 NC License  
RALEIGH, NC 27609 Number C-1554

PROJECT REFERENCE NO. U-2524D	SHEET NO. 10A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



MATCH LINE -L- STA 519 + 00 SEE SHEET 10



CLASS 1 RIP-RAP  
EST. 57 TONS  
EST. 104 SYGF  
(NO RIP-RAP IS TO BE  
PLACED IN STREAM BED)  
SEE DETAIL 16

TOE PROTECTION  
SEE DETAIL 30  
EST. 315 SY PSRM

END FUTURE SBG  
STA. 524+34.50 LT.

BEGIN FUTURE SBG  
STA. 520+34.50 LT.

STUB-OUT 96 LF  
36" RCP-III FOR  
FUTURE U-2525C  
DRAINAGE

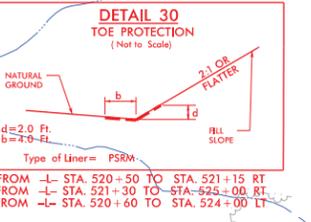
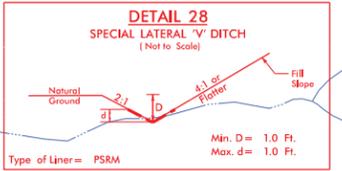
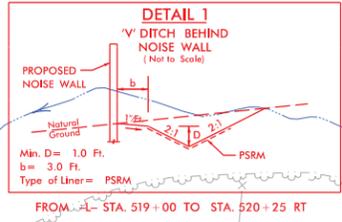
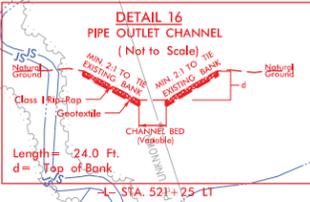
**SITE 12**

END NOISE WALL  
-L- STA. 548+12.55, 75.00' RT

"V" DITCH BEHIND  
NOISE WALL  
SEE DETAIL 1  
EST. 90 SY PSRM  
DDE = 60 CY

TOE PROTECTION  
SEE DETAIL 30  
EST. 65 SY PSRM

SPECIAL LAT.  
"V" DITCH  
SEE DETAIL 28  
EST. 30 SY PSRM



PERMIT DRAWINGS  
SHEET 22 OF 25

**LEGEND**

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:  
SEE SHEET 19 FOR -L- PROFILE

REVISIONS

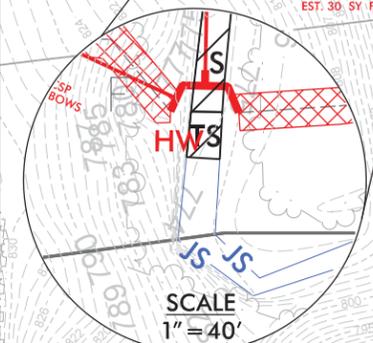
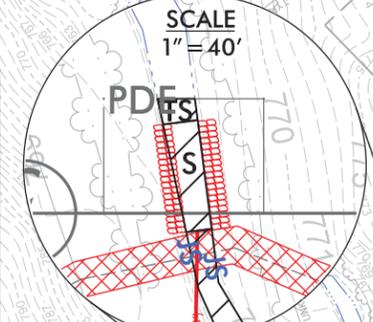
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PSH\_10A.dgn

**\*\*\* NOTE: This sheet to be permitted under U-2525C \*\*\***

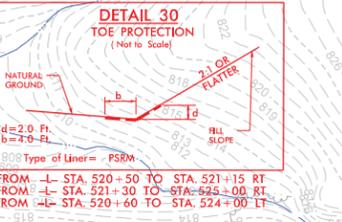
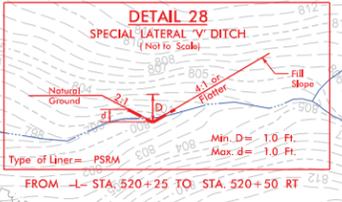
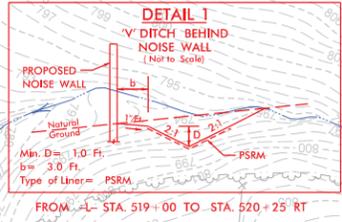
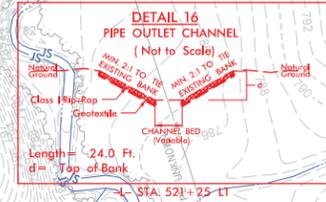
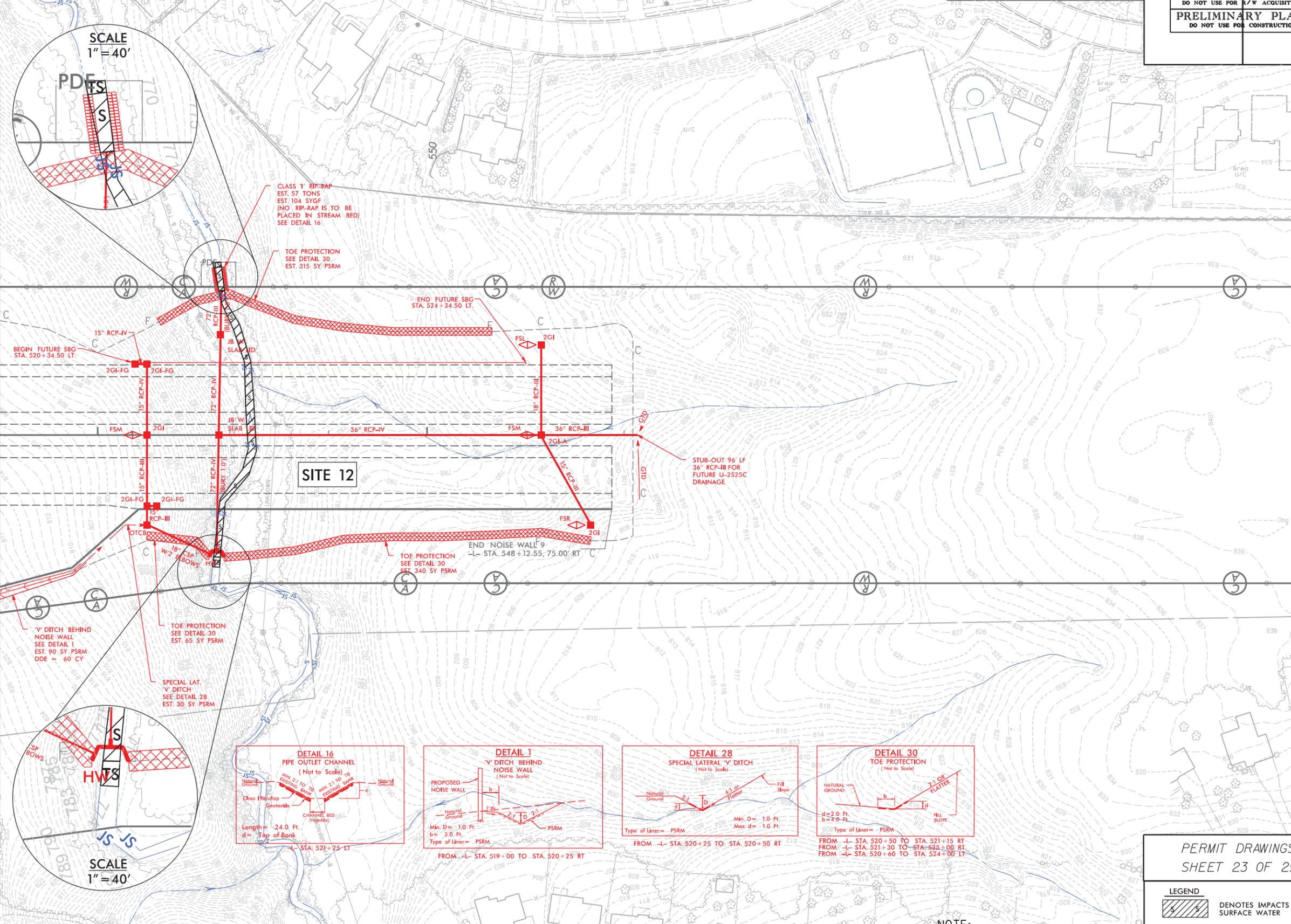
PLANS PREPARED BY:  
**PARSONS**  
RALEIGH, NORTH CAROLINA

FOR NORTH CAROLINA DEPT. OF TRANSPORTATION  
**HNTB**  
343 E. SIX FORKS ROAD, SUITE 200 NC License  
RALEIGH, NC 27609 Number C-1554

PROJECT REFERENCE NO. U-2524D	SHEET NO. 10A
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



MATCH LINE -L- STA 519 + 00 SEE SHEET 10



PERMIT DRAWINGS  
SHEET 23 OF 25

**LEGEND**

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

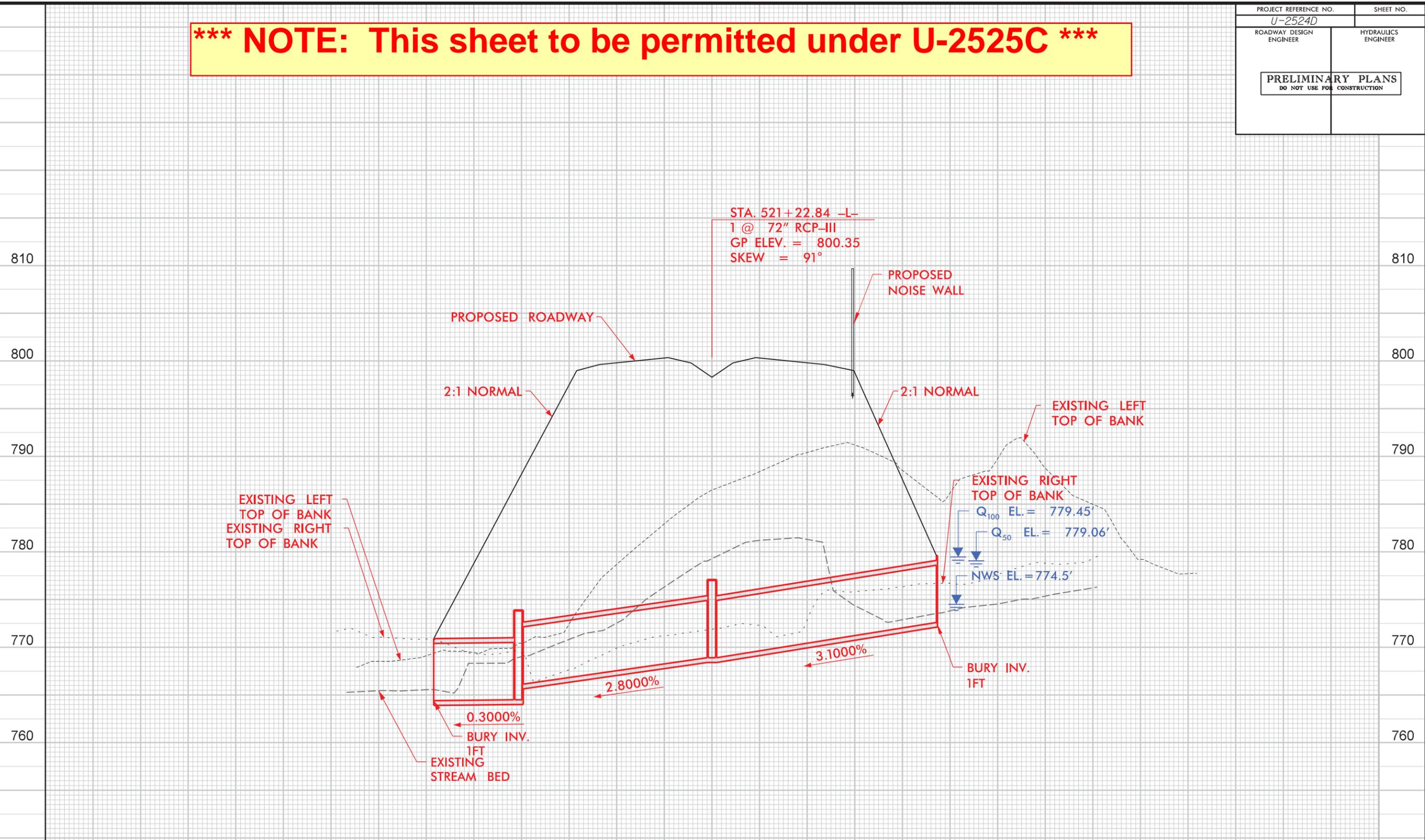
NOTE:  
SEE SHEET 19 FOR -L- PROFILE

REVISIONS

8/17/99  
10  
11:34:30 AM  
U-2524D\_PSH\_10A\_C.dgn  
3:33:11 PM

PROJECT REFERENCE NO. U-2524D	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

**\*\*\* NOTE: This sheet to be permitted under U-2525C \*\*\***



**PROFILE ALONG STRUCTURE**

**SITE 12**

**SCALE**  
 1"=50' HORIZONTAL  
 1"=10' VERTICAL

GUILFORD COUNTY  
 PROJECT: U-2524D  
 GREENSBORO - WESTERN LOOP  
 FROM EAST OF BATTLEGROUND AVENUE  
 TO EAST OF LAWNSDALE DRIVE  
 SHEET 24 OF 25      11/13/15

5/14/99  
 10:46:05 AM  
 C:\work\U-2524D\Drawings\Profile.dgn

**WETLAND PERMIT IMPACT SUMMARY**

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 434+26 - 434+49	Bank Stabilization						< 0.01	< 0.01	15	15	
2	-L- 440+16 - 443+31	48" / 30" RCP						0.05	< 0.01	414	10	
3A	-L- 458+38 - 458+84	4' Base Ditch						< 0.01		96		
3	-L- 462+49 - 471+23	4' Base Ditch / 60" RCP						0.09		996		
		Bank Stabilization						< 0.01	< 0.01	24	10	
4	-L- 478+25 - 494+65	1 @ 8' X 7' RCBC						0.15	< 0.01	1581	12	
5	-L- 491+99 - 503+80	1 @ 10' X 7' / 2 @ 10' X 7' RCBC						0.27	0.01	1192	43	
6	-L- 492+63 - 493+02	1 @ 10' X 7' RCBC						0.02	< 0.01	158	16	
7	-L- 497+58 - 499+12	48" RCP						0.04		291		
		Bank Stabilization						< 0.01	< 0.01	23	10	
8	-L- 502+83 - 503+29	Bank Stabilization						0.01	< 0.01	46	18	
9	-L- 504+11 - 505+91	1 @ 7' X 8' RCBC						0.07	< 0.01	388	20	
10	-L- 505+41 - 505+96	Bank Stabilization						0.01	< 0.01	34	20	
11	<del>-L- 508+61 - 510+08</del>	<del>Roadway Fill</del>	<del>0.05</del>			<del>0.03</del>						
12	<del>-L- 521+16 - 521+61</del>	<del>72" RCP</del>						<del>0.05</del>	<del>&lt; 0.01</del>	<del>284</del>	<del>10</del>	
		<del>Bank Stabilization</del>						<del>&lt; 0.01</del>	<del>&lt; 0.01</del>	<del>24</del>	<del>5</del>	
TOTALS*:			0.05			0.03		0.72	0.04	5258	174	0

Sites to be permitted under U-2525C

\*Rounded totals are sum of actual impacts

NOTES:

- 780 LF OF STREAM BETWEEN SITES 3 & 4 WILL REQUIRE 0.5 : 1 MITIGATION DUE TO INDIRECT PROJECT IMPACTS & LOSS OF FUNCTION.

- Sites 11 and 12 will be permitted under U-2525C but will be included in the U-2524D construction

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

11/13/15

Guilford

U-2524D

34820.1.2

Revised 7/11/16