



REPLY TO
ATTENTION OF:

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

July 24, 2015

Regulatory Division/1200A

Action ID: SAW-2005-21386

Mr. Richard W. Hancock, P.E.
Manager, Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

Reference the Department of the Army (DA) permit issued on April 15, 2014, to Ms. Deborah Barbour of the North Carolina Department of Transportation, for impacts associated with the project identified as U-2525BC. The project is a 9.7 mile, four-lane/six-lane divided facility on new location extending from the US 70 relocation to SR 2303 (Lawndale Drive) in Greensboro, Guilford County, North Carolina. Section B of this project begins at the US 70 relocation and terminates at US 29, and Section C begins at US 29 and ends at SR 2303 (Lawndale Drive). Coordinates (in decimal degrees) for the site are: 36.089772° North, -79.697302° West for the eastern terminus and 36.141773° North, -79.825120° West for the western terminus. The site contains portions of four (4) unnamed tributaries to South Buffalo Creek, twenty (20) unnamed tributaries to North Buffalo Creek, five (5) unnamed tributaries to an unnamed tributary at Camp Herman, fourteen (14) unnamed tributaries to Reedy Fork, a portion of Richland Creek, and ten (10) unnamed tributaries to Richland Creek, as well as 50 (50) adjacent wetland areas and five (5) open water ponds in the Cape Fear River Basin (8-Digit Cataloging Unit 03030002).

Impacts authorized by the permit as well as subsequent permit modifications dated June 18, 2014, October 31, 2014, December 4, 2014, and March 12, 2015, include: 1) The permanent placement of fill material into 23,012 linear feet of jurisdictional stream channel, 9.95 acres of adjacent riparian wetlands, and 2.32 acres of jurisdictional open waters and, 2) the temporary placement of fill material into 828 linear feet of jurisdictional stream channel and 0.26 acre of adjacent riparian wetlands associated with the relocation of utility lines. Mitigation was implemented for the unavoidable impacts by payment into the North Carolina Ecosystem Enhancement Program as well as permittee responsible mitigation referenced in the permit special conditions.

RECEIVED

Also reference your letter to the Corps, received via electronic mail on June 26, 2015, and revised information received via electronic mail on July 7, 2015, requesting modification of the permit for additional impacts to U-2525B, including the permanent discharge of fill material into 428 linear feet of stream channel, associated with:

- 1) placing 286 linear feet of stream in a culvert (loss of waters) at Permit Site 31, due to safety and slope stability concerns related to widening and adding a travel lane to US 29;
- 2) placing 28 linear feet of stream (authorized as bank stabilization in the original permit) in a culvert (loss of waters) at Permit Site 32A to correct perching at the downstream end of an existing culvert;
- 3) adding 35 linear feet of additional bank stabilization to a stream at Permit Site 10 (replacing 14 linear feet of temporary impacts authorized in the original permit), including 9 linear feet of rip rap and 26 linear feet of coir fiber matting, to account for predicted stream bank instability following closure of a temporary diversion channel; and
- 4) adding 79 linear feet of rip rap bank stabilization to a stream at Permit Site 20A (replacing 29 linear feet of temporary impacts authorized in the original permit), to account for predicted stream bank instability following release of water into the culvert currently under construction.

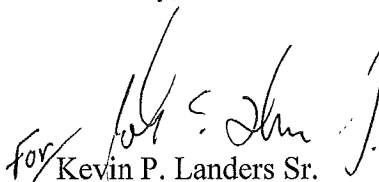
Note that your modification request, dated June 26, 2015, was sent to relevant Federal and State agencies via electronic mail on July 1, 2015, for a 15 day comment period. Following evaluation of the information submitted in your modification request, the additional justification provided via electronic mail on July 7, 2015, and comments made during the agency Public Notice period, 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 include the requested additional stream impacts. This work must be constructed for Permit Sites 20A, 31, and 32A as shown on drawings included in your modification request dated June 26, 2015 (revised Permit Drawing Sheets 54, 55, 79, and 80 of 93), and for Permit Site 10 as shown on drawings included in your revised modification request dated July 7, 2015 (revised Permit Drawing Sheets 32 and 89 of 93). 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, 2019, remain in effect as written. The U-2525BC project now totals permanent impacts to 23,412 linear feet of jurisdictional stream channel, 9.95 acres of adjacent riparian wetlands, and 2.32 acres of jurisdictional open waters and, 2) the temporary placement of fill material into 785 linear feet of jurisdictional stream channel and 0.26 acre of adjacent riparian wetlands associated with the relocation of utility lines. Should you have questions, contact Mr. David E. Bailey, Raleigh Regulatory Field Office at telephone (919) 554-4884, Extension 30 or David.E.Bailey2@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin P. Landers Sr.", with a stylized flourish at the end.

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

Attachments

Copy Furnished with Attachments:

Mr. Dave Wanucha
Transportation Permitting Unit
Division of Water Resources
North Carolina Department of
Environment and Natural Resources
450 West Hanes Mill Road, Suite 300
Winston-Salem, NC 27105

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

Ms. Carla Dagnino
North Carolina Department of Transportation
Division of Highways
1598 Mail Service Center
Raleigh, NC 27699-1598

Copy Furnished without Attachments:

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

Ms. Cynthia Van Der Wiele
U.S. Environmental Protection Agency - Region 4
Wetlands Regulatory Section
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Ms. Renee Gledhill-Early
North Carolina Division of Cultural Resources
NC State Historical Preservation Office
4617 Mail Service Center
Raleigh, NC 27699-4617

Ms. Amy Chapman
Transportation Permitting Unit
Division of Water Resources
North Carolina Department of
Environment and Natural Resources
1617 Mail Service Center
Raleigh, NC 27699-1617

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

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

Permittee: North Carolina Department of Transportation
 Project Name: NCDOT/U-2525 B and C/Division 7

Action ID: SAW-2005-21386
 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
20,784				9.95		

*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
38,591				19.88		

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 Forms dated April 14, 2014, October 31, 2014, and December 4, 2014, that were included as part of the DA Permit dated April 15, 2014 and subsequent Permit Modifications.**
- **This modification results in a net INCREASE in the number of stream credits required relative to the original DA Permit dated April 15, 2014 and subsequent Permit Modifications, consisting of additional permanent loss of 314 linear feet of stream channel at a 2:1 ratio (628 additional credits required).**
- **Additional on-site mitigation was required by special permit condition included in the original DA Permit dated April 15, 2014. This requirement has not changed as a result of this modification.**

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).* 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



USACE Project Manager Signature

July 24, 2015

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>.



North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

July 21, 2015

Mr. Colin Mellor, Group Leader
Project Development and Environmental Analysis
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina, 27699-1598

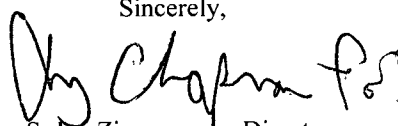
Subject: Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act for proposed Greensboro Eastern Loop from US 70 Relocation to SR 2303 (Lawndale Drive), Guilford County, Division 7. WBS Element No 34821.1.1, TIP Nos. U-2525B and U-2525C. NCDWR Project No. 20130918 ver.6.

Dear Mr. Hancock:

Attached hereto is a modification of Certification No. 3978 (ver. 6) issued to The North Carolina Department of Transportation (NCDOT) originally dated February 6, 2014 (ver. 1) with subsequent modifications dated June 24, 2014 (ver. 2), October 15, 2014 (ver. 3), December 11, 2014 (ver. 4) and March 18, 2015 (ver. 5.)

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

Sincerely,


S. Jay Zimmerman, Director
Division of Water Resources

Attachments

Electronic copy only distribution:

Dave Bailey, US Army Corps of Engineers, Raleigh Field Office
Jerry Parker, Division 7 Environmental Officer
Carla Dagnino, 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
Jason Elliott, NCDOT, Natural Environment Section
Beth Harmon, Ecosystem Enhancement Program
Dave Wanucha, NC Division of Water Resources Winston Salem Regional Office
File Copy

Modification to the 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act

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 314 feet of jurisdictional streams in Guilford County. The project shall be constructed pursuant to the modification dated June 26, 2015 and additional electronic information received on July 7, 2015. The authorized impacts are as described below:

Stream Impacts in the Cape Fear River Basin

Site	Permanent Fill in Perennial Stream (linear ft)		Temporary Fill in Perennial Stream (linear ft)	New Stream Impacts Requiring Mitigation (linear ft)
	Fill	Bank Stabilization		
Original approved impacts at Site 10	212	97	29	-
New impacts with this approval at Site 10	-	+35	-14	35
Site 10 Sub Total	212	132	15	-
Original approved impacts at Site 20A	236	-	29	-
New impacts with this approval at Site 20A	-	79	-29	79
Site 20A Sub Total	236	79	0	-
Original approved impacts at Site 31	191	21	27	-
New impacts with this approval at Site 31	+286	-	-	286
Site 31 Sub Total	477	21	27	-
Original approved impacts at Site 32A	151	28	25	-
New impacts with this approval at Site 32A—pipe extension	+28	-28	-	0
Site 32A Sub Total	179	0	25	-
Revised Totals	1,104	232	67	400*

Total Stream Impacts for Modification: 428 feet permanent impacts; 15 feet temporary impacts.

**Only 314 linear feet of permanent impacts will require mitigation because the US Army Corps of Engineers (USACE) requires a 2:1 mitigation ratio for 314 linear feet (at Sites 31 and 32A). As such, this supersedes NCDWR's mitigation requirements for 400 linear feet at 1:1, thereby providing greater benefit.*

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 modified application dated June 26, 2015 and subsequent information received via email correspondences dated July 7, 2015. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated February 6, 2014 and subsequent modifications dated June 24, 2014, October 15, 2014, December 11, 2014 and March 18, 2015 still apply, except where superseded by this certification. 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). Additional buffer impacts may require compensatory mitigation as described in 15A NCAC 02B .0268. 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:

1. This modification is applicable only to the additional proposed activities as outlined above. All of the authorized activities and conditions of certification associated with the original Water Quality Certification dated February 6, 2014 and subsequent modifications dated June 24, 2014, October 15, 2014, December 11, 2014 and March 18, 2015 still apply except where superseded by this certification.
2. Compensatory mitigation for 314 linear feet of impact to streams 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 June 16, 2015 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 July 28, 2010.

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

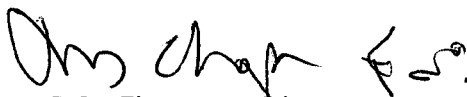
Raleigh, NC 27699-6714
Telephone: (919)-431-3000, Facsimile: (919)-431-3100

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

Mr. Sam Hayes, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center

This the 21st day of July 2015

DIVISION OF WATER RESOURCES

A handwritten signature in black ink, appearing to read "S. Jay Zimmerman". The signature is written in a cursive style with a large initial "S" and a stylized "Z".

S. Jay Zimmerman, Director
Division of Water Resources

WQC No. 3978



North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald van der Vaart
Secretary

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 _____

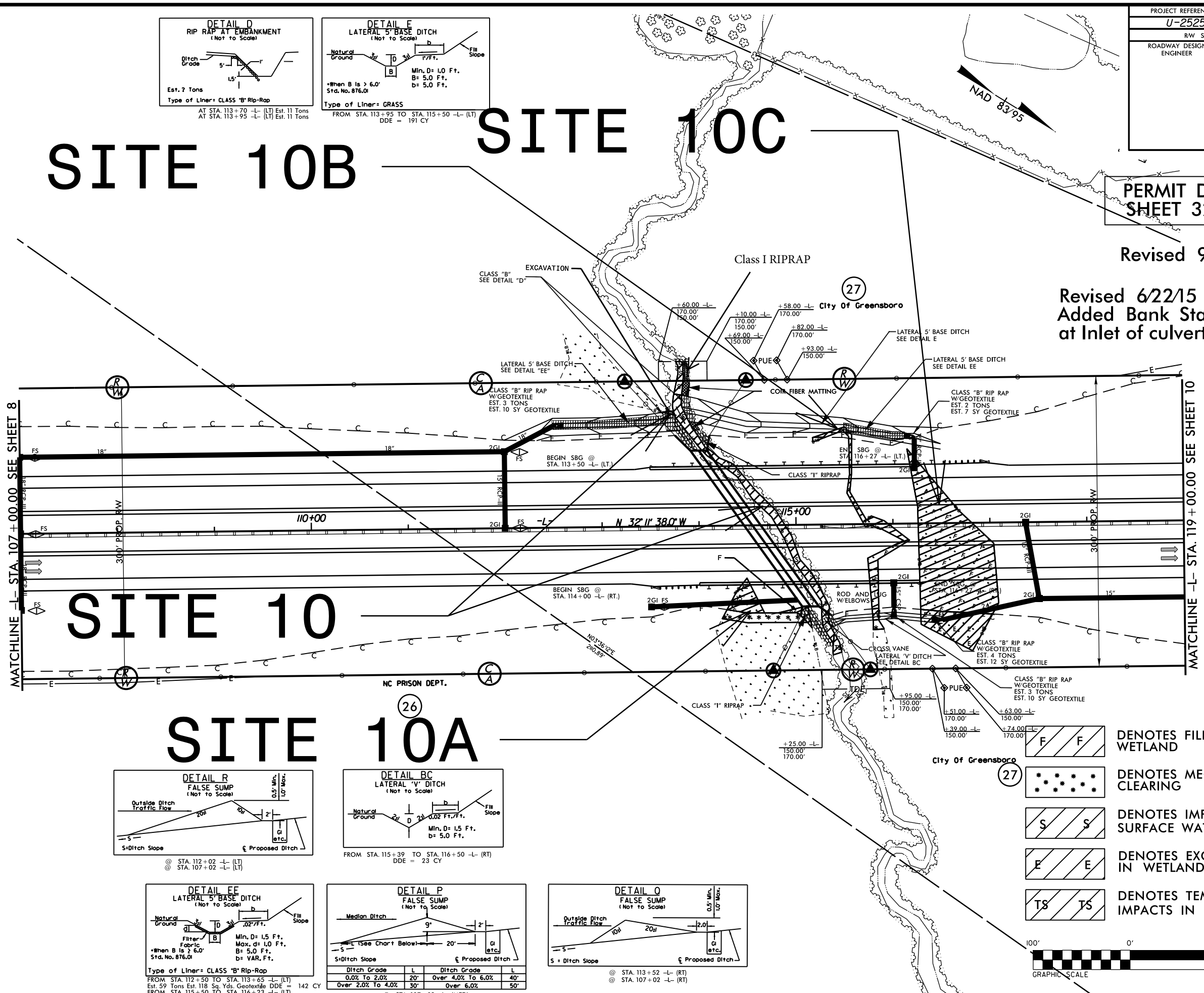
PROJECT REFERENCE NO.	SHEET NO.
U-2525B	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SITE 10B SITE 10C SITE 10A

**PERMIT DRAWING
SHEET 32 OF 93**

Revised 9/24/13

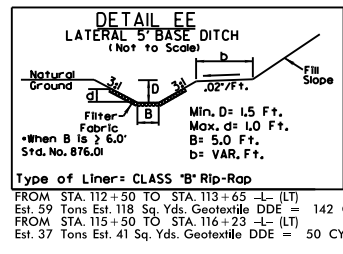
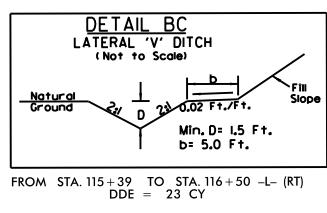
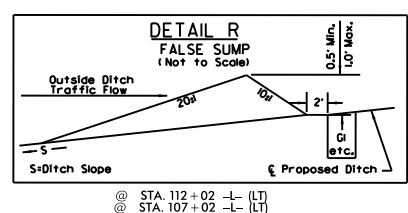
Revised 6/22/15
Added Bank Stabilization
at Inlet of culvert (Site 10)



REVISIONS

MATCHLINE -L- STA. 107+00.00 SEE SHEET 8

MATCHLINE -L- STA. 119+00.00 SEE SHEET 10

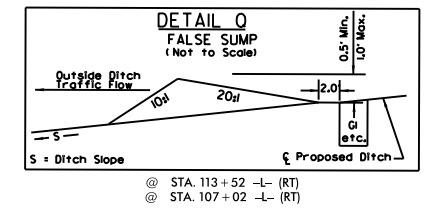


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FALSE SUMP
(Not to Scale)

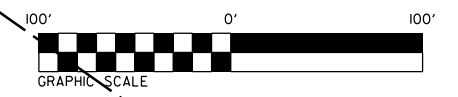
Median Ditch
L
S=Ditch Slope
Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

© STA. 107+02 -L- (MED)
© STA. 112+02 -L- (MED)



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



SEE SHEET 43 FOR -L- PROFILE
SEE SHEETS C-6 THRU C-10 FOR CULVERT PLANS

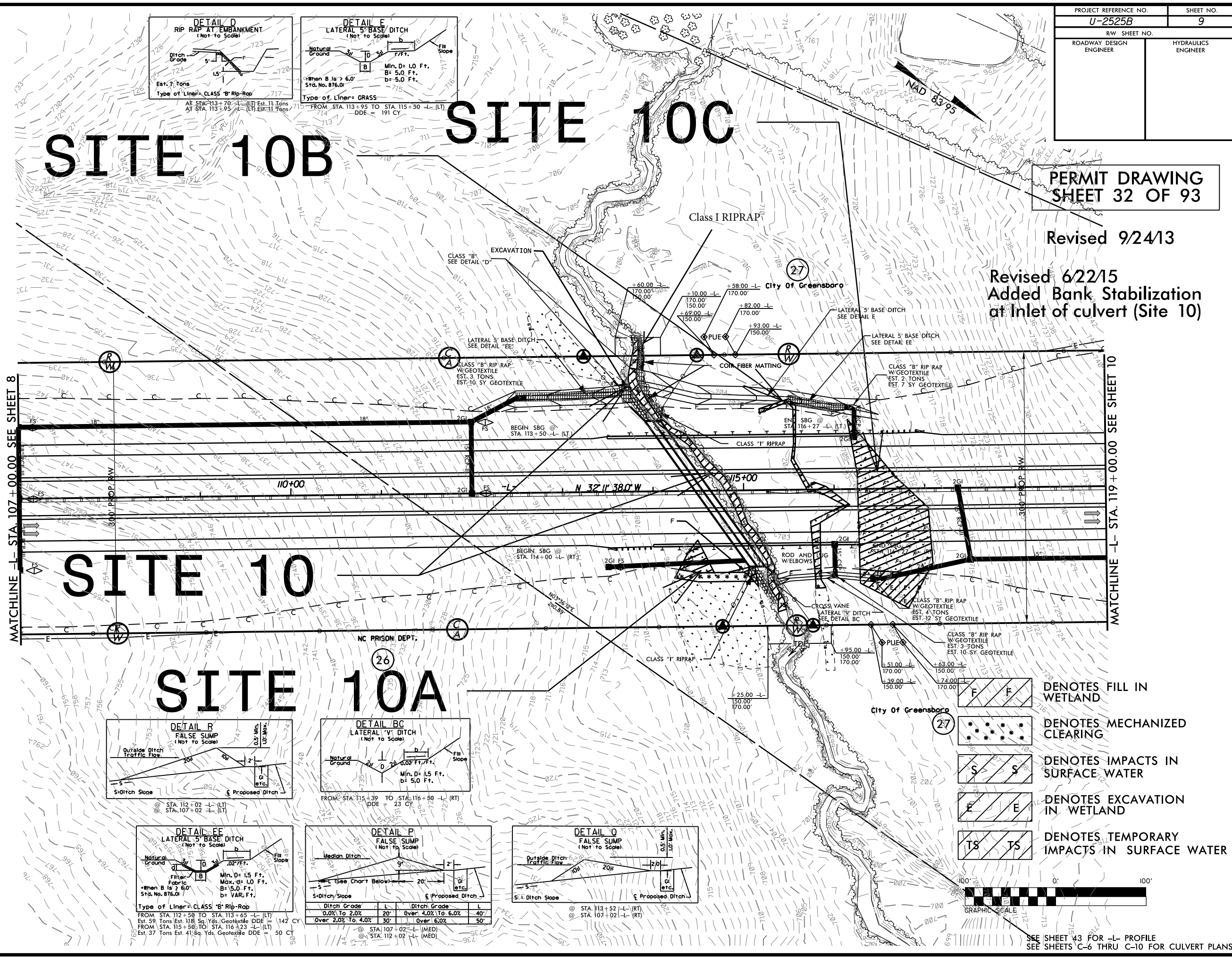
**PERMIT DRAWING
SHEET 32 OF 93**

Revised 9/24/13

Revised 6/22/15
Added Bank Stabilization
at Inlet of culvert (Site 10)

SITE 10B SITE 10C

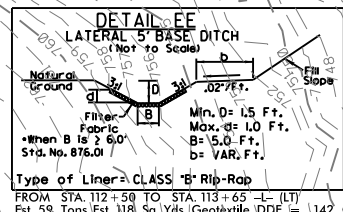
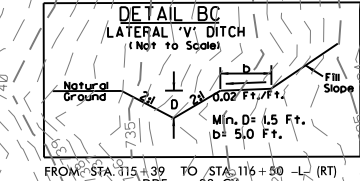
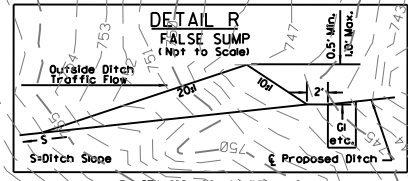
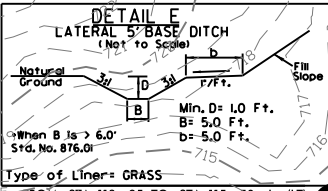
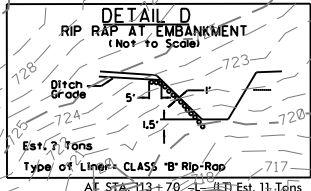
SITE 10 SITE 10A



MATCHLINE -L- STA. 107+00.00 SEE SHEET 8

MATCHLINE -L- STA. 119+00.00 SEE SHEET 10

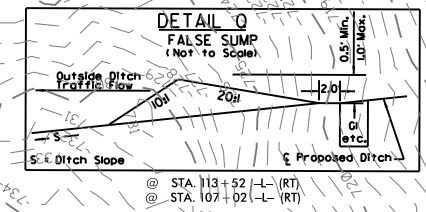
REVISIONS



DETAIL P
FALSE SUMP
(Not to Scale)

FROM STA. 117+02 -L- (MED)
@ STA. 112+02 -L- (MED)

Ditch Grade	Ditch Grade
0.0% To 2.0%	20'
Over 2.0% To 4.0%	30'
Over 4.0% To 6.0%	40'
Over 6.0%	50'



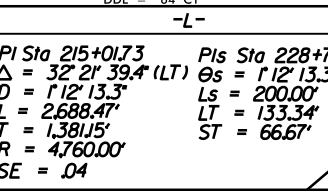
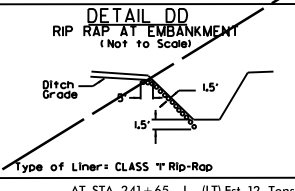
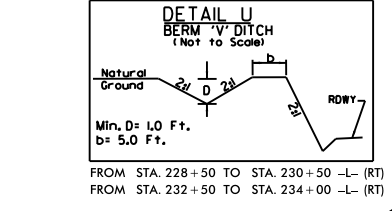
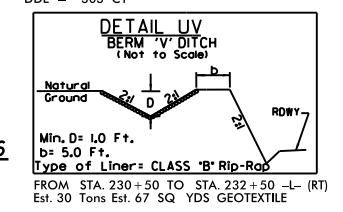
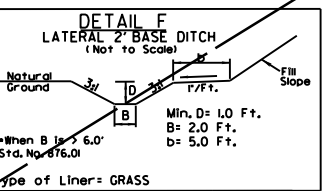
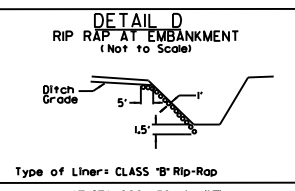
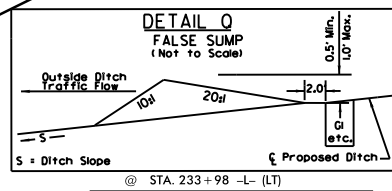
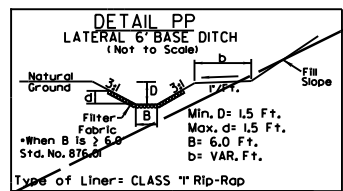
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES EXCAVATION IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



SEE SHEET 43 FOR -L- PROFILE
SEE SHEETS C-6 THRU C-10 FOR CULVERT PLANS

5/14/99

PROJECT REFERENCE NO. U-2525B	SHEET NO. 19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-L- ST Sta. 230+09.06

Van A. Johnson

Betty W. Johnson

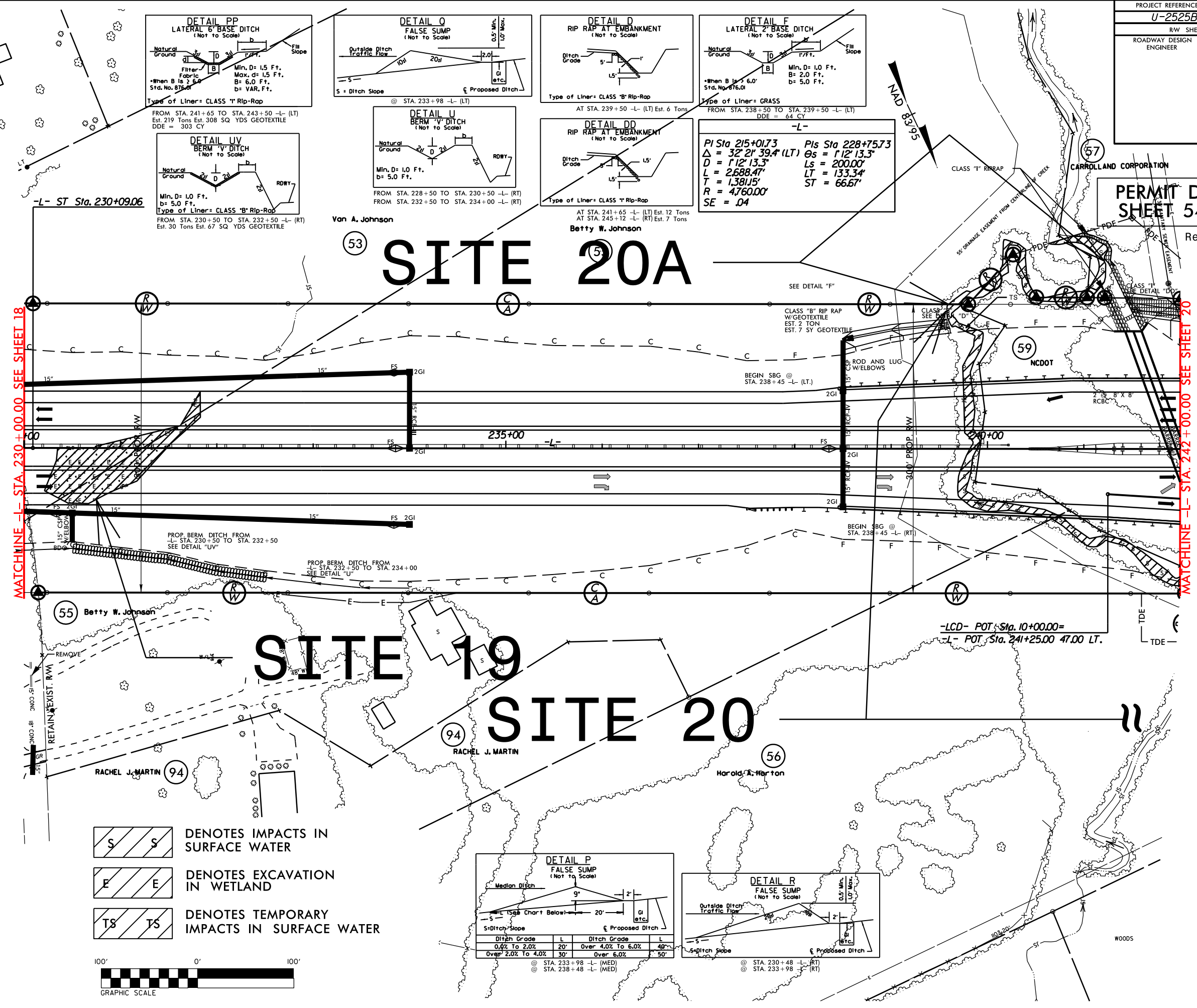
PERMIT DRAWING SHEET 54 OF 93

Revised 06/22/15

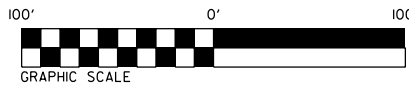
SITE 20A

MATCHLINE -L- STA. 230+00.00 SEE SHEET 18

MATCHLINE -L- STA. 242+00.00 SEE SHEET 20



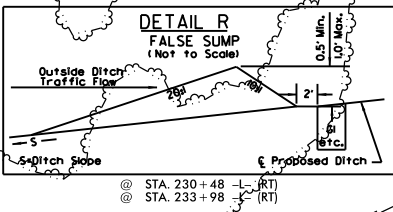
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES EXCAVATION IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



DETAIL P FALSE SUMP (Not to Scale)

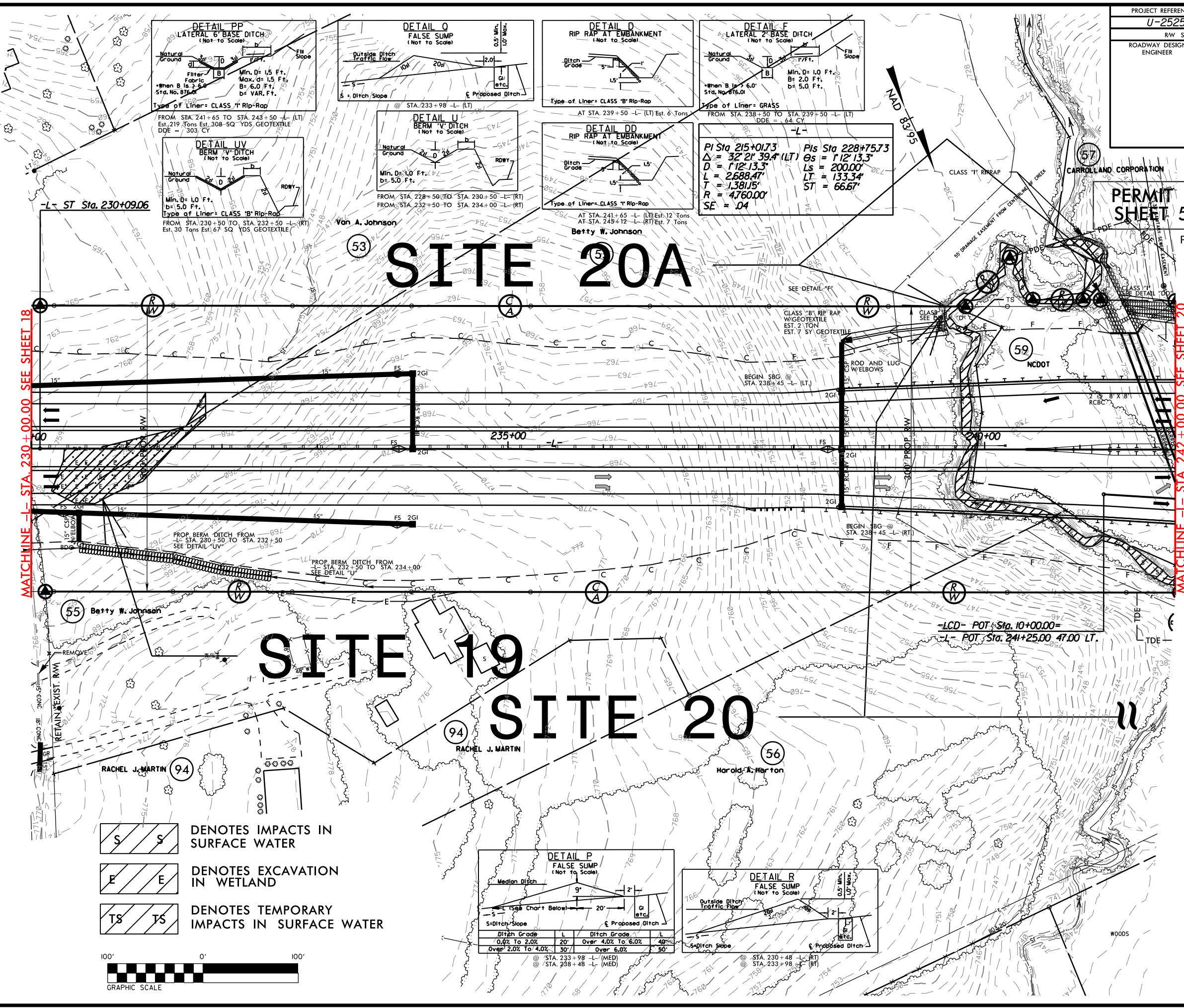
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

@ STA. 233+98 -L- (MED)
 @ STA. 238+48 -L- (MED)



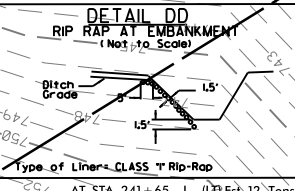
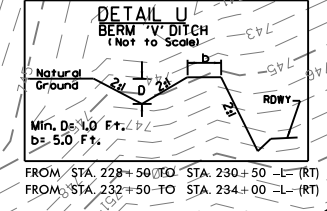
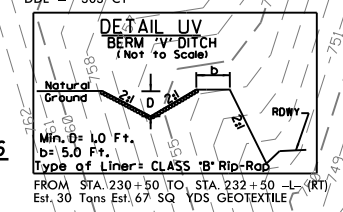
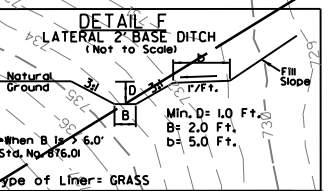
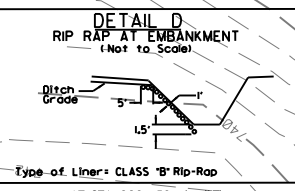
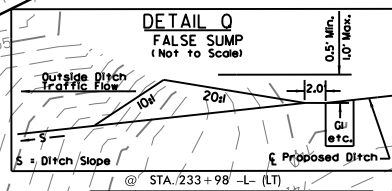
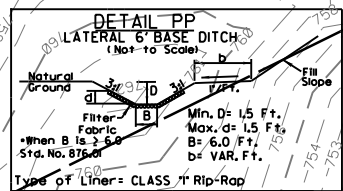
PERMIT DRAWING SHEET 55 OF 93

Revised 06/22/15



MATCHLINE -L- STA. 230+00.00 SEE SHEET 18

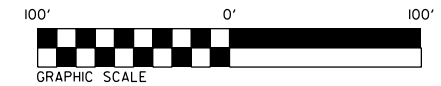
MATCHLINE -L- STA. 242+00.00 SEE SHEET 20



PI Sta 215+01.73
 $\Delta = 32' 21" 39.4'$ (LT) $\Theta_s = 1' 12" 13.3'$
D = 112' 13.3"
L = 2,688.47'
T = 1,381.5'
R = 4,760.00'
SE = .04

PIs Sta 228+75.73
 $\Delta = 1' 12" 13.3'$
Ls = 200.00'
LT = 133.34'
ST = 66.6'

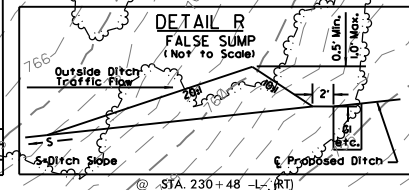
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES EXCAVATION IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



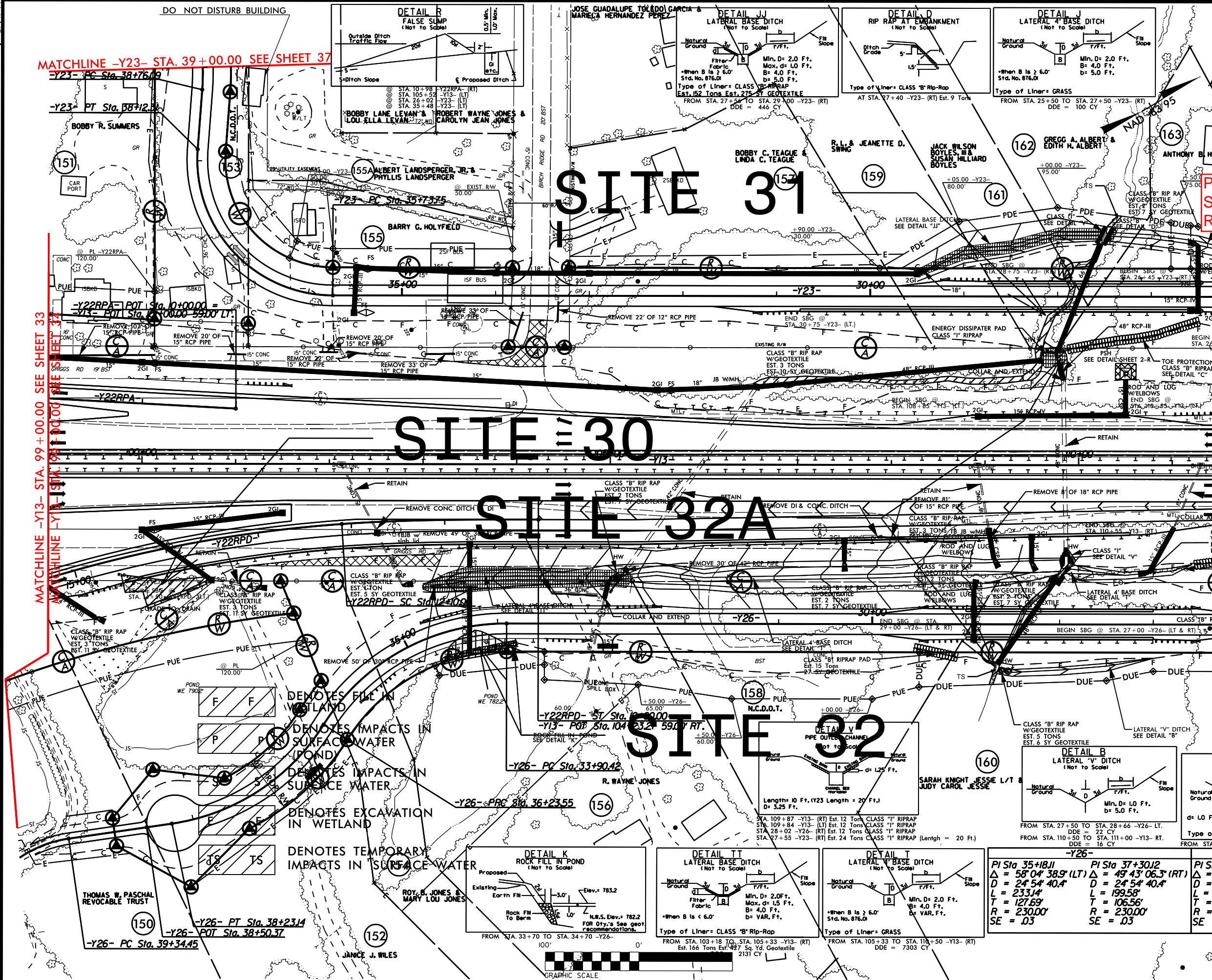
DETAIL P
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

© STA. 233+98 -L- (MED)
© STA. 238+48 -L- (MED)



5/14/99



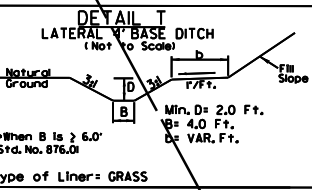
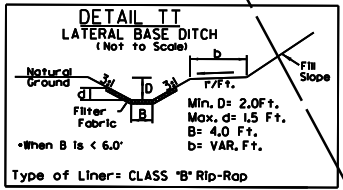
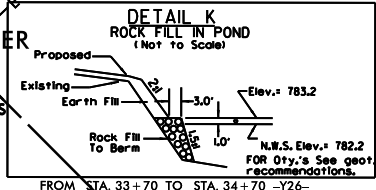
PERMIT DRAWINGS
SHEET 79 OF 93
REVISED 06/12/2015

MATCHLINE -Y23- STA. 39+00.00 SEE SHEET 37
 -Y23- PC Sta. 38+76.00

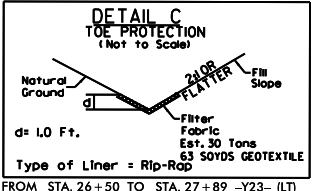
MATCHLINE -Y13- STA. 99+00.00 SEE SHEET 33
 MATCHLINE -Y13- STA. 99+00.00 SEE SHEET 34

MATCHLINE -Y13- STA. 113+00.00 SEE SHEET 35

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES EXCAVATION IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

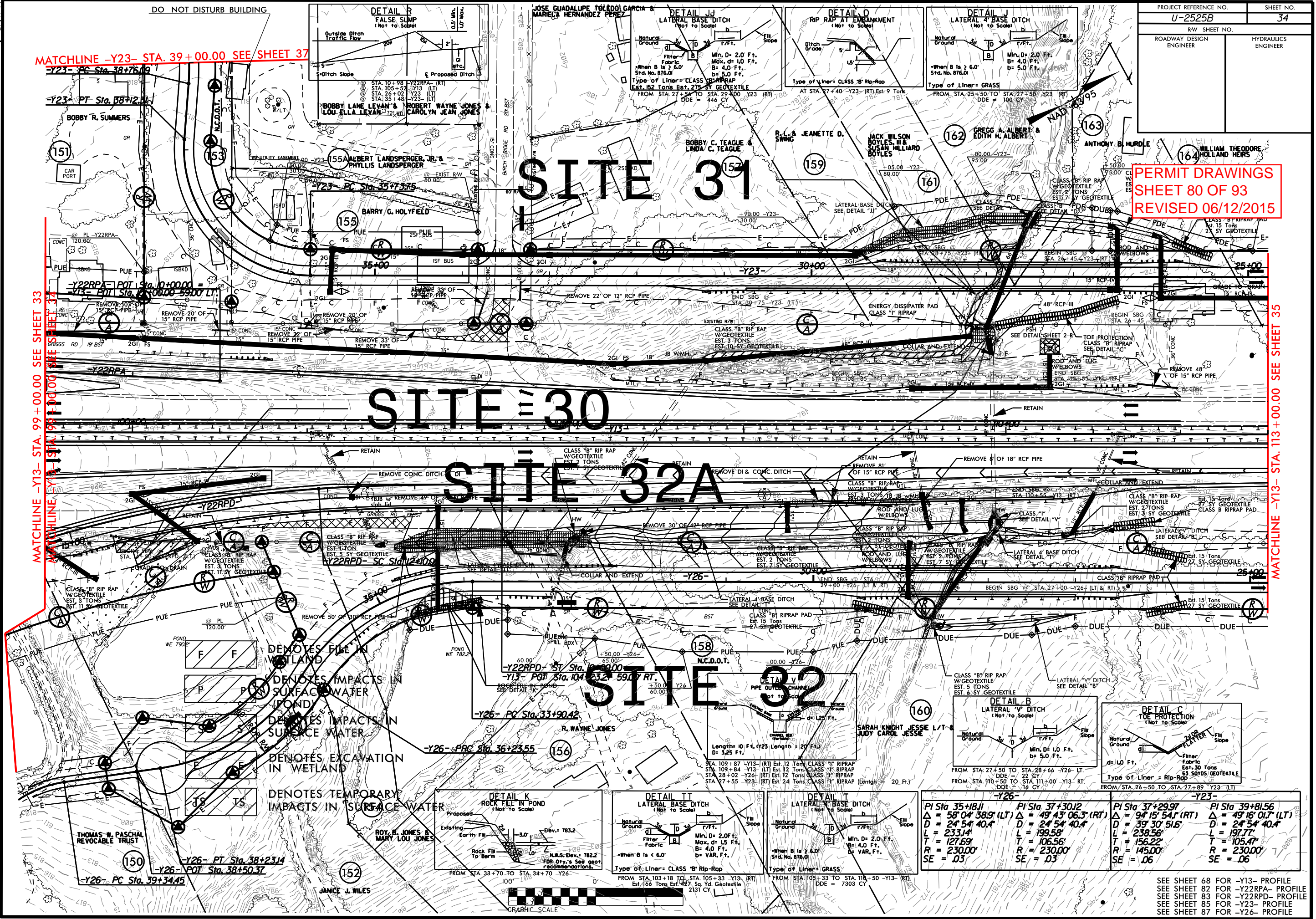


-Y26- PI Sta 35+18.11		-Y26- PI Sta 37+30.12		-Y26- PI Sta 37+29.97		-Y26- PI Sta 39+81.56	
Δ	58' 04" 38.9" (LT)	Δ	49' 43" 06.3" (RT)	Δ	94' 15" 54.1" (RT)	Δ	49' 16" 01.7" (LT)
D	24' 54" 40.4"	D	24' 54" 40.4"	D	39' 30" 51.6"	D	24' 54" 40.4"
L	233.14'	L	199.58'	L	238.56'	L	197.77'
T	127.69'	T	106.56'	T	156.22'	T	105.47'
R	230.00'	R	230.00'	R	145.00'	R	230.00'
SE	= .03	SE	= .03	SE	= .06	SE	= .06



SEE SHEET 68 FOR -Y13- PROFILE
 SEE SHEET 82 FOR -Y22RPA- PROFILE
 SEE SHEET 83 FOR -Y22RPD- PROFILE
 SEE SHEET 85 FOR -Y23- PROFILE
 SEE SHEET 87 FOR -Y26- PROFILE

**PERMIT DRAWINGS
SHEET 80 OF 93
REVISED 06/12/2015**



MATCHLINE -Y23- STA. 39+00.00 SEE SHEET 37

MATCHLINE -Y13- STA. 99+00.00 SEE SHEET 33

MATCHLINE -Y13- STA. 113+00.00 SEE SHEET 35

DENOTES FILE IN WETLAND
 DENOTES IMPACTS IN POND
 DENOTES IMPACTS IN SURFACE WATER
 DENOTES EXCAVATION IN WETLAND
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-Y26- PI Sta 35+18.11 $\Delta = 58' 04" 38.9"$ (LT) $D = 24' 54" 40.4"$ $L = 233.14'$ $T = 127.69'$ $R = 230.00'$ $SE = .03$	-Y26- PI Sta 37+30.12 $\Delta = 49' 43" 06.3"$ (RT) $D = 24' 54" 40.4"$ $L = 199.58'$ $T = 156.22'$ $R = 230.00'$ $SE = .03$	-Y26- PI Sta 37+29.97 $\Delta = 94' 15" 54.1"$ (RT) $D = 39' 30" 51.6"$ $L = 238.56'$ $T = 105.22'$ $R = 145.00'$ $SE = .06$	-Y23- PI Sta 39+81.56 $\Delta = 49' 16" 01.7"$ (LT) $D = 24' 54" 40.4"$ $L = 197.77'$ $T = 105.47'$ $R = 230.00'$ $SE = .06$
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SEE SHEET 68 FOR -Y13- PROFILE
 SEE SHEET 82 FOR -Y22RPA- PROFILE
 SEE SHEET 83 FOR -Y22RPD- PROFILE
 SEE SHEET 85 FOR -Y23- PROFILE
 SEE SHEET 87 FOR -Y26- PROFILE

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	27+25 -Y3RPA- (RT) TO 47+94 -L- (LT)	30" RCP	0.57		0.04				0.09		1684		
1A	24+84 -Y3RPA- (LT) 12+26 -Y3RPA- (LT)		0.03										
1B	37+76 -L- (LT) TO 38+18 -L- (LT)		0.01										
2	24+84 -Y3RPD- (LT)	24" RCP	0.05			<0.01							
3	38+87 -L- (LT) TO 40+30 -L- (LT)		0.12										
3A	41+86 -L- (RT) TO 43+15 -L- (LT)		0.03										
3B	44+26 -L- (LT) TO 44+86 -L- (LT)		0.02										
3C	46+46 -L- (LT) TO 47+70 -L- (RT)		0.25		0.02	0.02							
SUBTOTALS:			1.08		0.06	0.03			0.09		1684		

**PERMIT DRAWINGS
SHEET 87 OF 93**

NOTE: Rounded totals are based upon sum of actual impacts.
Also, Site 1 has 332 linear feet of intermittent stream at 1:1 mitigation; 1352 linear feet of perennial stream at 2:1 mitigation.

NC DEPARTMENT OF TRANSPORTATION
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GUILFORD COUNTY
WBS - 34821.1.1 (U-2525B)

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)
4	48+65 -L-	2 @ 9' X 9' RCBC	0.02					0.10	0.04	394	153	
	Bank Stabilization									98		
5	59+31 -L- (RT) TO	66" RCP, 24" RCP, &						0.09	<0.01	1117	20	
	81+35 -L- (LT)	42" RCP										
	Restoration							0.04		481		1307
5A	66+14 -L- (LT) TO		0.08									
	68+72 -L- (LT)											
5B	70+32 -L- (LT) TO		0.02									
	71+59 -L- (LT)											
6	21+56 -Y4 RPB-(LT) TO		0.03					0.01		138	10	
	22+00 -Y4 RPB- (RT)											
6A	22+11 -RPB-(RT) TO		0.05			<0.01						
	22+75 -RPB-(RT)											
7	77+25 -L-(LT) TO		1.29		0.05	0.03						
	25+57 -RPC-(RT)											
8	93+50 -L- TO		0.83			0.09						
	95+95 -L-(LT)											
SUBTOTALS:			2.32		0.05	0.12		0.24	0.04	2228	183	1307

PERMIT DRAWINGS

SHEET 88 OF 93

Revised 10/15/13

NOTE: Rounded totals are based upon sum of actual impacts.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
WBS - 34821.1.1 (U-2525B)

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)	
8A	33+23 -EY4-				<0.01								
9	95+78 -L- (LT) TO 102+77 -L-(RT)	15" RCP	2.01			0.15		0.03	<0.01	462	10		
9A	101+78 -L- (LT) TO 102+19 -L-(LT)	42" RCP						<0.01		84			
10	113+64 -L- (LT) TO 117+08 -L-(RT)	2 @ 7' X 8' RCBC			<0.01			0.03		212	15		
	Bank Stabilization (26' is Coir Fiber Matt.)									132			
10A	114+23 -L- (RT) TO 115+15 -L-(RT)		0.02			0.02							
10B	115+19 -L- (LT) TO 116+17 -L-(RT)		0.03		<0.01	<0.01							
10C	116+15 -L- (LT) TO 117+08 -L-(RT)		0.25		0.04								
11	123+22 -L-(LT) 127+94 -L-(RT)		0.33										
11A	13+02 -Y7-(RT) TO 13+93 -Y7- (RT)	CL II BENT PROTECTION	<0.01									18	
SUBTOTALS:			2.65		0.05	0.17		0.06	<0.01	908	25		

PERMIT DRAWINGS
SHEET 89 OF 93

NOTE: Rounded totals are based upon sum of actual impacts.

Revised 11/20/14 SITE 11A CL II BENT PROTECTION
Revised 6/22/15 SITE 10 added bank stabilization

NC DEPARTMENT OF TRANSPORTATION
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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)
12	156+90 -L- Bank Stabilization	66" RCP						0.03	<0.01	286	22	
										30		
13	174+72 -L- (RT) Bank Stabilization	DUAL BRIDGES	0.02			0.01		0.01		*169	7	
										10		
14	182+76 -L- Bank Stabilization	48" RCP						0.03	<0.01	347	35	
										10		
15	189+55 -L- Bank Stabilization	60" RCP						0.03	<0.01	292	26	
										20		
16	195+35 -L- Bank Stabilization	66" RCP	<0.01					0.05	<0.01	382	43	
										12		
17	14+26 -Y10A- (RT)	15" RCP						<0.01	<0.01	51	20	
18	218+00 -L- TO 219+51 -L- (RT) POND Bank Stabilization Restoration	2 @ 7' X 8' RCBC	0.03			0.01		0.03	<0.01	241	10	
								0.04		30		
19	230+21 -L- (RT) TO 230+83 -L- (LT)				0.14				<0.01		10	386
20	239+57 -L- (LT) TO 245+33 -L- (RT) Relocation	2 @ 8' X 8' RCBC						0.09	<0.01	520	39	
								0.06	<0.01	295	10	362
SUBTOTALS:			0.05		0.14	0.02		0.46	0.03	2695	222	748

**PERMIT DRAWINGS
SHEET 90 OF 93**

NOTE: Rounded totals are based upon sum of actual impacts.

*SITE 13 - Has 32 feet of non-migitable stream impact.

NC DEPARTMENT OF TRANSPORTATION
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WBS - 34821.1.1 (U-2525B)

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)
20A	239+59 -L- (LT) TO 241+22 -L- (LT) Bank Stabilization							0.04	<0.01	236		
20B	11+05 -LCD- (RT) TO 11+57 -LCD-		0.02					<0.01		29		
21	16+35 -Y13LPD-	24" RCP	0.34			0.04		0.03	<0.01	374	10	
22	17+40 -Y13RPB- (RT) TO 17+81 -Y13RPB- (RT)		0.03									
22A	16+67 -Y13RPB- (LT) TO 17+13 -Y13RPB- (LT) Bank Stabilization	36" RCP	0.02					0.01	<0.01	142	10	
22B	17+21 -Y13RPB- (LT) TO 17+46 -Y13RPB- (LT)		0.01									
23	16+35 -Y4A- (RT)	18" RCP	0.02				<0.01					
24	36+00 -Y4-	36" RCP	0.19				0.02					
25	33+80 -Y11- (RT) Bank Stabilization	24" RCP							<0.01	12	10	
26	29+38 -Y13RPC- Bank Stabilization	60" RCP						0.03	<0.01	319	11	
SUBTOTALS:			0.62			0.04	0.03	0.11	0.01	1225	41	

**PERMIT DRAWINGS
SHEET 91 OF 93**

NOTE: Rounded totals are based upon sum of actual impacts.

SITE 20A requires 1:1 mitigation.
 SITE 23 & 24 Have <0.01 ac. of Temp. Fill in Wetlands in Hand Clearing areas for erosion control measures.
 Revised 6/22/15 - added bank stabilization Site 20A

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 WBS - 34821.1.1 (U-2525B)

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)
27	50+09-LACFLY- (RT)TO 51+53-LACFLY- (LT)	54" RCP	0.10					0.01	<0.01	215	10	
28	31+25 -Y21- (RT) TO 27+81-Y21- (RT) POND	30" RCP						0.03		461		
								0.58				
29	22+88 -Y22RPA- Bank Stabilization	30" RCP & 18" RCP						0.02	<0.01	290 10	4	
30	13+63 -Y22 RPD- TO 15+35 -Y22 RPD-	15" RCP W/ 2GI	0.03		<0.01							
31	16+35 -Y23- Bank Stabilization	66" RCP						0.03	<0.01	477 21	27	
32	34+30 -Y26- (LT)	12" RCP						0.03				
32A	28+37 -Y26-	48" RCP						0.01	<0.01	179	25	
33	22+14 -Y26- Bank Stabilization	48" RCP						0.01	<0.01	115 17	10	
34	16+03 -Y23-	24" RCP	<0.01									
SUBTOTALS:			0.14		<0.01			0.74	<0.01	1785	76	

NOTE: Rounded totals are based upon sum of actual impacts.

**PERMIT DRAWINGS
SHEET 92 OF 93**

Revised 6/22/15 - PERMIT SITE 31 AND
32A

NC DEPARTMENT OF TRANSPORTATION
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