



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

October 20, 2021

U.S. Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587-4346

ATTN: Mr. Monte Matthews
NCDOT Coordinator

Subject: Request for Modification to Section 404 Individual Permit and Section 401 Water Quality Certification for the I-40/I-77 interchange improvements including I-40 from west of SR 2003 (Radio Road) to SR 2158 (Old Mocksville Road) and I-77 from south of SR 2321 (East Broad Street) to south of SR 2171 (Jane Sowers Road) in Iredell County. Division 12, TIP No. I-3819B. Debit \$570.00 from WBS 34192.3.2.

References: 1) Section 404 Individual Permit, Action ID No. SAW-2018-01504, issued January 21, 2020, modified February 25, 2021; 2) Section 401 Water Quality Certification No. WQC004203, NCDWR Project No. 20191006 v.2, issued February 12, 2021.

Dear Sir:

The purpose of this letter is to request a modification to the United States Army Corps of Engineers (USACE) Section 404 Individual Permit and associated North Carolina Division of Water Resources (NCDWR) Section 401 Water Quality Certification for the above referenced project.

Revisions resulting in changes to permitted impacts have been made to one impact site (Site 2) and one impact site (Site 7A) has been added. Both sites are discussed in detail below.

Previously permitted stream impacts included 3,213 linear feet of permanent stream impacts (which includes 1,047 linear feet of stream bank stabilization) and 471 linear feet (0.10 acre) of temporary stream impacts. The total permanent wetland impacts previously permitted for roadway construction and utilities was 1.55 acres. Previously permitted wetland impacts for roadway construction included 1.39 acres of permanent wetland impacts (1.06 acres of permanent fill and 0.33 acre of mechanized clearing) and 2.66 acres of temporary fill in wetlands. Previously permitted impacts associated with utilities included 0.16 acre of mechanized clearing and 0.27 acre

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH, NC 27699-1598

Telephone: (919) 707-6000
Fax: (919) 250-4224
Customer Service: 1-877-368-4968

Website: ncdot.gov

Location:
1000 BIRCH DRIVE
RALEIGH, NC 27610

of temporary wetland fill impacts (permanent fill in wetlands and hand clearing impacts were <0.01 acre).

The revised stream impacts for the project total 3,305 linear feet of permanent stream impacts (which includes 1,139 linear feet of stream bank stabilization impacts) and 482 linear feet (0.10 acre) of temporary stream impacts. The revised wetland impacts for roadway construction include 1.40 acres of permanent wetland impacts (1.07 acres of permanent fill and 0.33 acre of mechanized clearing), and 2.64 acre of temporary wetland fill impacts. There are no changes to utilities impacts; therefore, the revised total permanent wetland impacts proposed for roadway construction and utilities is 1.56 acres.

This modification will result in 92 linear feet of additional stream bank stabilization impacts, 11 linear feet of additional temporary stream impacts, and 0.01 acre of additional permanent wetland fill impacts. There will be 0.02 acre less temporary wetland fill impacts than previously permitted. A summary of the changes is shown in Table 1 below.

Table 1 – Summary of changes to impacts*

Impact Type	Previously Permitted Impacts	Proposed Permit Modification	Difference
Roadway Impacts			
Permanent Stream Impacts	3,213	3,305	+92
<i>Bank Stabilization Impacts</i>	<i>1,047</i>	<i>1,139</i>	<i>+92</i>
Temporary Stream Impacts	471	482	+11
Permanent Wetland Fill	1.06	1.07	+0.01 ¹
Mechanized Clearing in Wetlands	0.33	0.33	0
Hand Clearing in Wetlands	0	0	0
Temporary Wetland Fill	2.66	2.64	-0.02 ¹
Utility Impacts			
Permanent Wetland Fill	< 0.01	< 0.01	0
Mechanized Clearing in Wetlands	0.16	0.16	0
Hand Clearing in Wetlands	< 0.01	< 0.01	0
Temporary Wetland Fill	0.27	0.27	0

*Stream impacts are in linear feet. Wetland impacts are in acres.

¹The impact change was 0.014 acre. Differences were calculated using impact totals.

Please see the enclosed DWR Pre-Filing Meeting Request Form, revised DMS acceptance letter, revised permit drawings, and as-built plans showing changes to permitted impacts at Site 2 and the addition of impact Site 7A. These impact modifications have been constructed and are the result of field changes approved by NCDWR prior to receiving this permit modification approval. These changes are summarized below.

Summary of Impacts to Waters of the U.S.

Tables 2 and 3 summarize the permitted and revised impacts to jurisdictional water resources for the project. Changes to permitted impacts are shown with a strikethrough and revisions are shown in red text. A narrative describing the revisions made to the two permit impact sites are presented in the following section.

Table 2 – I-3819B Wetland Impacts*

Permit Site	Wetland Number	Wetland Size ac	Permanent Fill in Wetlands ac	Temporary Fill in Wetlands ¹ ac	Mechanized Clearing ac	Impacts Requiring Mitigation ac
2	WC	2.94	0.32	--	0.09	0.41
2	WC/WD	2.94/9.57	0.02 0.04 ²	0.62 0.61 ²	0.02	0.05 0.06
3	WF	0.31	<0.01	--	0.01	0.02
4	WD	9.57	--	--	0.02	0.02
5	WD	9.57	0.03	2.04	0.05	0.09
8	WH	0.08	<0.01	--	<0.01	0.01
9	WK	1.20	0.40	--	0.08	0.47
11	WAN	0.21	0.19	--	0.02	0.21
26	WI	0.13	0.09	--	0.04	0.13
Total Wetland Impacts³			1.06 1.07 ²	2.66 2.64 ²	0.33	1.39 1.40 ⁴

*All wetlands impacted are riparian.

¹Temporary fill impacts will result from the use of mats and crane barges.

²The impact change was 0.014 acre. Values are based on rounding.

³Values are based on rounding, due to calculating totals with actual numbers to the thousandths.

⁴When permanent wetland impacts resulting from utilities are included, total impacts requiring mitigation are 1.56 acres.

Table 3 – I-3819B Stream Impacts

Permit Site	Stream Name/ NRTR ID	Status/ Class	Permanent		Temporary Channel Impacts ac (lf)	USACE Required Mitigation lf	NCDWR Required Mitigation lf
			Channel Impacts lf (ac)	Bank Stabilization lf (ac)			
2	UT to Fourth Creek SJ	Perennial C	--	42 (<0.01) 115 (0.02)	<0.01 (20) (10)	--	--
3	UT to Fourth Creek SI	Perennial C	206 (0.02)	--	<0.01 (10)	206	--
5	UT to Fourth Creek SJ	Perennial C	--	--	0.02 (77)	--	--
6	Fourth Creek	Perennial C	--	12 (<0.01)	<0.01 (20)	--	--
7	Fourth Creek	Perennial C	--	12 (<0.01)	<0.01 (20)	--	--
7A	Fourth Creek	Perennial C	--	19 (<0.01)	<0.01 (21)	--	--
9	UT to Fourth Creek SL	Perennial C	747 (0.07)	--	<0.01 (10)	747	747

Table 3 – I-3819B Stream Impacts (continued)

Permit Site	Stream Name/ NRTR ID	Status/ Class	Permanent		Temporary Channel Impacts ac (lf)	USACE Required Mitigation lf	NCDWR Required Mitigation lf
			Channel Impacts lf (ac)	Bank Stabilization lf (ac)			
9A	UT to Fourth Creek SK	Perennial C			0.01 (50)		
10	UT to Fourth Creek SK	Perennial C	--	25 (<0.01)	<0.01 (20)	--	--
12	UT to Fourth Creek SK	Perennial C	10 (<0.01)	--	0.01 (54)	10	--
13	UT to Fourth Creek SL	Perennial C	17 (<0.01)	44 (<0.01)	<0.01 (10)	17	17
14	UT to Fourth Creek SX	Intermittent C	17 (<0.01)	--	<0.01 (10)	17	--
15	UT to Fourth Creek SX	Intermittent C	--	11 (<0.01)	<0.01 (20)	--	--
16	UT to Fourth Creek SX	Intermittent C	113 (0.01)	--	<0.01 (10)	113	--
17	UT to Fourth Creek SX	Perennial C	114 (0.02)	--	<0.01 (14)	114	--
18	UT to Fourth Creek SW	Perennial C	72 (0.01)	--	<0.01 (10)	72	--
19	UT to Fourth Creek SW	Perennial C	34 (<0.01)	--	--	34	--
20	UT to Fourth Creek SBA	Perennial C	61 (0.01)	--	<0.01 (10)	61	--
21	UT to Fourth Creek ST	Perennial C	176 (0.10)	--	<0.01 (21)	176	176
22	UT to Fourth Creek ST	Perennial C	455 (0.18)	901 (0.34)	—	455	455
23	UT to Fourth Creek ST	Perennial C	--	--	<0.01 (33)	--	--
24	UT to Fourth Creek SU	Perennial C	49 (<0.01)	--	0.01 (10)	49	--
25	UT to Fourth Creek SU	Perennial C	31 (<0.01)	--	<0.01 (21)	31	--
27	UT to Fourth Creek SR	Perennial C	48 (0.01)	--	<0.01 (10)	48	--
28	UT to Beaver Creek SO	Perennial C	16 (<0.01)	--	<0.01 (11)	16	--
Total Stream Impacts			2166	1047 1139	0.10* (471) (482)	2166	1395
			3213 3305				

* Value are based on rounding.

Permit Impact Site Modifications (shown in revised permit drawings):

Site 2 (Permit Drawing Sheet 2) – This site has been updated to include riprap bank stabilization along stream SJ under the footprint of the constructed three-lane ramp bridge in this location. Because the bridge is low, the area underneath may not receive adequate sunlight to revegetate; therefore, at the request of Donna Hood with the NCDWR, Class II riprap was installed along the stream banks. Permanent stream bank stabilization impacts increased from 42 linear feet to 115 linear feet, which is 73 linear feet of additional impacts. Temporary stream impacts decreased from 20 linear feet to 10 linear feet, which is 10 linear feet less of impacts.

A section of the bank stabilization riprap was installed within wetland WD in order to reduce the potential for future erosion issues, resulting in minor additional permanent wetland impacts. The extent of the riprap was reviewed in the field and agreed to by NCDOT, Lane Construction, and NCDWR. This area (0.014 acre) was previously permitted as temporary wetland fill impacts and has been revised to permanent wetland fill impacts. Temporary wetland fill impacts decreased from 0.62 acre to 0.61 acre and permanent wetland fill impacts increased from 0.02 acre to 0.04 acre.

New Permit Impact Site (shown in revised permit drawings):

Site 7A (Permit Drawing Sheet 46) – This area was reviewed in the field by NCDWR, NCDOT, and Lane Construction. Upon review, a section of stream bank erosion along Fourth Creek near the new bridge bent was noted. This area is prone to flooding and the bank has experienced erosion during past flooding events. At the request of Donna Hood, Class II riprap was installed along the stream bank to provide stabilization in this location. Impacts resulting from this addition of riprap included 19 linear feet of permanent stream bank stabilization impacts and 21 linear feet of temporary stream impacts.

Revised Compensatory Mitigation

The North Carolina Division of Mitigation Services (NCDMS) previously provided compensatory mitigation for 2,166 linear of permanent stream impacts and 1.55 acre of permanent riparian wetland impacts, as referenced in the February 12, 2021 Section 404 Individual Permit issued from the USACE and the Section 401 WQC from NCDWR issued on February 25, 2021.

Of the revised permanent stream impacts totaling 3,305 linear feet for this modification, 1,139 linear feet are the result of bank stabilization and are not considered loss of waters and therefore do not require mitigation from USACE or NCDWR. After the revisions due to changes in the field, permanent stream impacts that require mitigation from USACE for this project have not changed from the previous DMS mitigation acceptance. The revised permanent wetland impacts for this project total 1.56 acres and therefore this modification will require additional mitigation for 0.01 acre of permanent riparian wetland impacts. A revised DMS acceptance letter reflecting this change was issued and received on October 15, 2021 (attached).

NCDOT requests to modify the permit for this project. Application is hereby made for modification of the USACE Section 404 permit and the Section 401 WQC from NCDWR as required for the above-described activities. We have provided a method of debiting \$570.00 to be submitted to the NCDWR for processing the WQC renewal for I-3819B, as noted in the subject line of this application.

A copy of this permit application and its distribution list will be posted in the NCDOT website at <http://connect.ncdot.gov/resources/Environmental>. Thank you for your assistance with this project. If you have any questions or need additional information, please contact Erin Cheely at either ekcheely@ncdot.gov or (919) 707-6108.

Sincerely,


Philip S. Harris III, P.E., C.P.M.
Environmental Analysis Unit Head

cc:
NCDOT Permit Application Standard Distribution List

Project Submittal Interim Form

Updated September 4, 2020



*Please note: fields marked with a red asterisk * below are required. You will not be able to submit the form until all mandatory questions are answered.*

Project Type: *

- ☐ For the Record Only (Courtesy Copy)
- ☐ New Project
- ☒ Modification/New Project with Existing ID
- ☐ More Information Response
- ☐ Other Agency Comments
- ☐ Pre-Application Submittal
- ☐ Re-Issuance/Renewal Request
- ☐ Stream or Buffer Appeal

Pre-Filing Meeting Information

Before submitting this form please ensure you have submitted the Pre-Filing Meeting Request Form as we will not be able to accept your application without this important first step. The Pre-Filing Meeting Request Form is used in accordance with 40 C.F.R. Section 121.4(a) "At least 30 days prior to submitting a certification request, the project proponent shall request a pre-filing meeting with the certifying agency" and in accordance with 40 C.F.R. Section 121.5(b)(7), and (c)(5) all certification requests shall include documentation that a pre-filing meeting request was submitted to the certifying authority at least 30 days prior to submitting the certification request. Click [here](#) to read more information on when this form is needed prior to application submission or [here](#) to view the form.

Attach documentation of Pre-Filing Meeting Request here: *

I-3819B
DWR Pre-
Filing
Meeting
Request 51.3...
Form -
March
2021.pdf

Date for Meeting Request * 10/20/2021

ID# 20191006

Version .2

Project Contact Information

Name: Erin Cheely
Who is submitting the information?

Email Address: * ekcheely@ncdot.gov

Project Information

Existing ID #: *

20191006

20170001 (no dashes)

Existing Version: *

2

1

Project Name: *

I-40/I-77 Interchange Improvements

Is this a public transportation project? *

☒ Yes

☐ No

Is this a DOT project? *

☒ Yes

☐ No

Is the project located within a NC DCM Area of Environmental Concern (AEC)? *

☐ Yes ☒ No ☐ Unknown

TIP#:

I-3819B

WBS#:

34192.3.2

(Applies to DOT projects only)

County (ies) *

Iredell

Please upload all files that need to be submitted.

Click the upload button or drag and drop files here to attach document

I-3819B Modification Iredell October 20 2021.pdf 25.63MB

Only pdf or kmz files are accepted.

Describe the attachments or add comments:

* ☒ By checking the box and signing box below, I certify that:

- I, the project proponent, hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief.
- I, the project proponent, hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.
- I agree that submission of this online form is a "transaction" subject to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I agree to conduct this transaction by electronic means pursuant to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I understand that an electronic signature has the same legal effect and can be enforced in the same way as a written signature; AND
- I intend to electronically sign and submit the online form.

Signature: *



Submittal Date:

Is filled in automatically once submitted.

DWR Pre-Filing Meeting Request Form



ID#* 20191006 **Version*** 3

Regional Office* Mooresville Regional Office - (704) 663-1699

Reviewer List* Donna Hood

Pre-Filing Meeting Request submitted 3/14/2021

Contact Name* Michael Turchy

Contact Email Address* maturchy@ncdot.gov

Project Name* I-3819 B

Project Owner* NCDOT

Project County* Iredell

Owner Address:

Street Address	
1598 Mail Service Center	
Address Line 2	
City	State / Province / Region
Raleigh	NC
Postal / Zip Code	Country
27699	US

Is this a transportation project?* ☒ Yes ☐ No

Type(s) of approval sought from the DWR:

- | | |
|--|--|
| ☐ 401 Water Quality Certification - Regular | ☐ 401 Water Quality Certification - Express |
| ☒ Individual Permit | ☒ Modification |
| ☐ Shoreline Stabilization | |

Does this project have an existing project ID#?*

☒ Yes ☐ No

Please list all existing project ID's associated with this projects.*

20191006v2

Do you know the name of the staff member you would like to request a meeting with?

No Meeting Requested

Please give a brief project description below and include location information.*

This is a future/anticipated modification request. No meeting is requested.

Please give a couple of dates you are available for a meeting.

Please attach the documentation you would like to have the meeting about.

pdf only

By digitally signing below, I certify that I have read and understood that per the Federal Clean Water Act Section 401 Certification Rule the following statements:

- This form completes the requirement of the Pre-Filing Meeting Request in the Clean Water Act Section 401 Certification Rule.
- I understand by signing this form that I cannot submit my application until 30 calendar days after this pre-filing meeting request.
- I also understand that DWR is not required to respond or grant the meeting request.

Your project's thirty-day clock started upon receipt of this application. You will receive notification regarding meeting location and time if a meeting is necessary. You will receive notification when the thirty-day clock has expired, and you can submit an application.

Signature

A rectangular box containing a handwritten signature in black ink that reads "Michael Tunchy".

Submittal Date

3/14/2021



October 15, 2021

Mr. Philip S. Harris, III, P.E., CPM
Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Subject: DMS Mitigation Acceptance Letter:

I-3819B, Statesville – I-40 / I-77 Interchange – I-40 from SR 2003 (Indian Ridge Road) to SR 2158 (Old Mocksville Road) and I-77 from SR 2171 (Jane Sowers Road) to SR 2321 (East Broad Street), Iredell County

References: USACE 404 Individual Permit issued January 21, 2020 and Individual Permit Modification issued February 25, 2021 (USACE Action ID 2018-01504)

NCDWR 401 Water Quality Certification issued November 19, 2019 (NCDWR ID 2019-1006)

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the additional riparian wetland mitigation for the subject project. Based on the information supplied by you on October 14, 2021, the impacts are located in CU 03040102 of the Yadkin River basin in the Central Piedmont (CP) and Central Piedmont (CP) Eco-Regions, and are as follows:

Table 1 – Additional Impacts (feet / acres)

Yadkin 03040102 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	0	0.010	0	0	0	0

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

This additional impact and associated mitigation needs were not projected by the NCDOT in the 2021 impact data. DMS is currently providing stream and riparian wetland mitigation for the impacts associated with this project located in cataloging unit 03040102 of the Yadkin River basin as required by the 404 and 401 permits issued in 2019, 2020, and 2021 as shown in the below table (in mitigation credits):



Table 2 – Current Permitted Impacts and Associated Mitigation Requirements provided by DMS (based on issued permits) and Revised Anticipated Impacts (based on mitigation request)

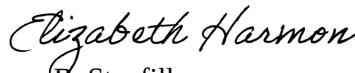
Impact Type	Total Permitted Impacts (feet / acre / sq ft)	Mitigation Provided by DMS per Issued Permits (Credits)	Additional Impact (for approval)	Revised Total Impacts*
Stream (warm)	2,166.000	4,332.000	0.000	2,166.000
Riparian Wetland	1.550	3.100	0.010	1.560

*Some of the additional impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details. DMS will provide the amount of mitigation as determined by the regulatory agencies.

This mitigation acceptance letter replaces the mitigation acceptance letter issued on May 20, 2018, July 12, 2019, and November 23, 2020. DMS commits to implementing additional riparian wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS.

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

Sincerely,



James B. Stanfill
DMS Asset Management Supervisor

cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, Division of Water Resources, Wetlands/401 Unit
File: I-3819B Additional 2

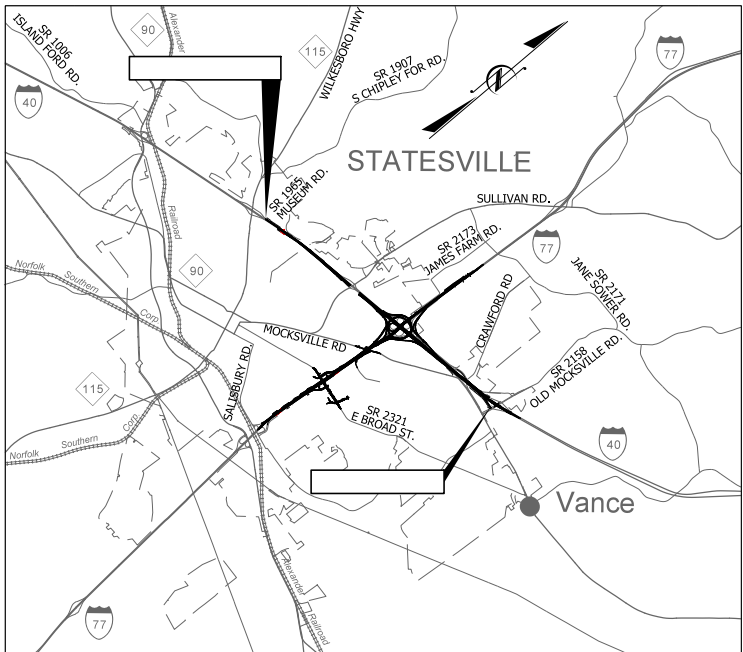


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-3819BU-6039	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34192.1.2	IMS-40-2(124)	P.E.	
34192.3.2	N/A	DESIGN BUILD	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

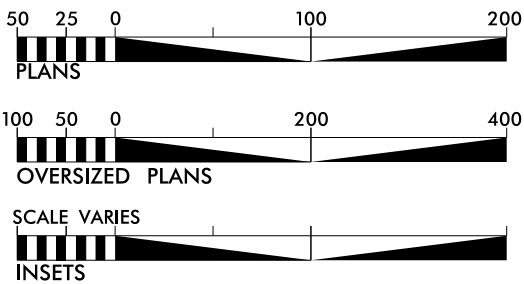
IREDELL COUNTY

LOCATION: I-40/I-77 INTERCHANGE INCLUDING I-40 FROM WEST OF
SR 2003 (RADIO RD.) TO SR 2158 (OLD MOCKSVILLE RD.) & I-77 FROM SOUTH OF
SR 2321 (EAST BROAD ST.) TO SOUTH OF SR 2171 (JANE SOWERS RD.)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES,
RETAINING WALLS, NOISE WALLS, AND TRAFFIC CONTROL



VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL
BOUNDARIES OF THE CITY OF STATESVILLE
AND THE TOWNSHIP OF BETHANY



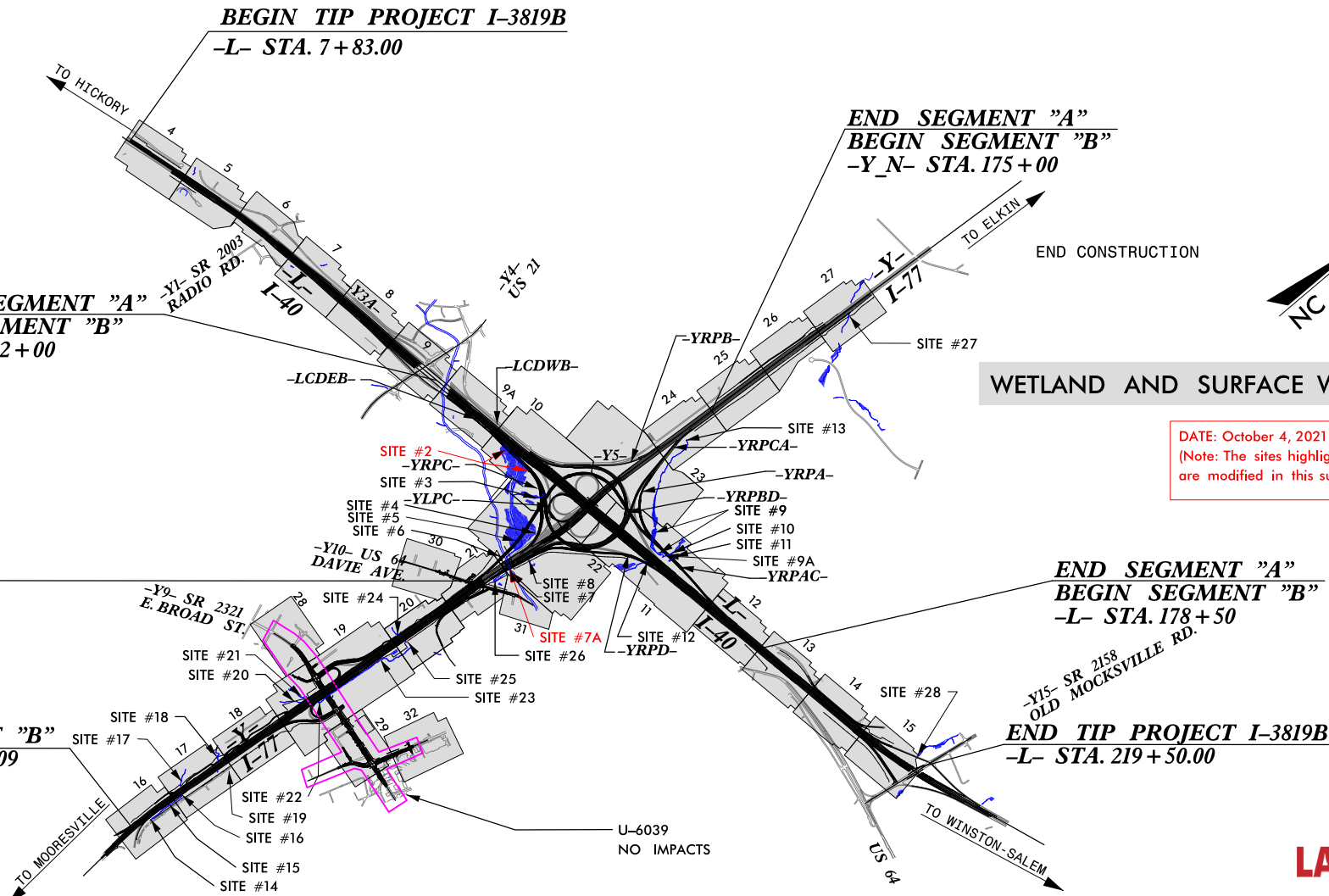
BEGIN SEGMENT "A"
END SEGMENT "B"
-L- STA. 92+00

BEGIN SEGMENT "A"
END SEGMENT "B"
-Y_S- STA. 111+00

PERMIT DRAWING
SHEET 1 OF 67
Rev. 10/04/2021

CLEARING ON THIS PROJECT SHALL BE PERFORMED
TO THE LIMITS ESTABLISHED BY METHOD III.

THIS IS A CONTROLLED ACCESS PROJECT
WITH ACCESS BEING LIMITED TO INTERCHANGES



DATE: October 4, 2021
(Note: The sites highlighted in RED
are modified in this submittal.)

END SEGMENT "A"
BEGIN SEGMENT "B"
-L- STA. 178+50

END TIP PROJECT I-3819B
-L- STA. 219+50.00

LANE

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

GRAPHIC SCALES

SEE ABOVE

DESIGN DATA

	I-40	I-77
ADT 2018 =	57,300	62,900
ADT 2040 =	72,500	77,500
DHV =	5,800	6,200
D =	55 %	55 %
T =	16 % *	19 %
V =	60 MPH	60 MPH
* TTST 13 + DUAL 3 (I-40)		
** TTST 16 + DUAL 3 (I-77)		
CLASSIFICATION: INTERSTATE		

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-3819B	=	3.885
LENGTH STRUCTURES TIP PROJECT I-3819B	=	0.124
TOTAL LENGTH OF TIP PROJECT I-3819B	=	4.009

Prepared in the Office of:

WSP

1001 Morehead Square Dr., Suite 610, Charlotte, NC 28203
NC LIC NO. F-0165

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 30, 2018

LETTING DATE:
OCTOBER 30, 2018

CHRISTOPHER D. DAVIS, P.E.
PROJECT ENGINEER

ERIC W. SECKINGER, P.E.
PROJECT DESIGN ENGINEER

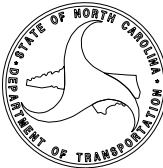
HYDRAULICS ENGINEER

SIGNATURE: P.E.

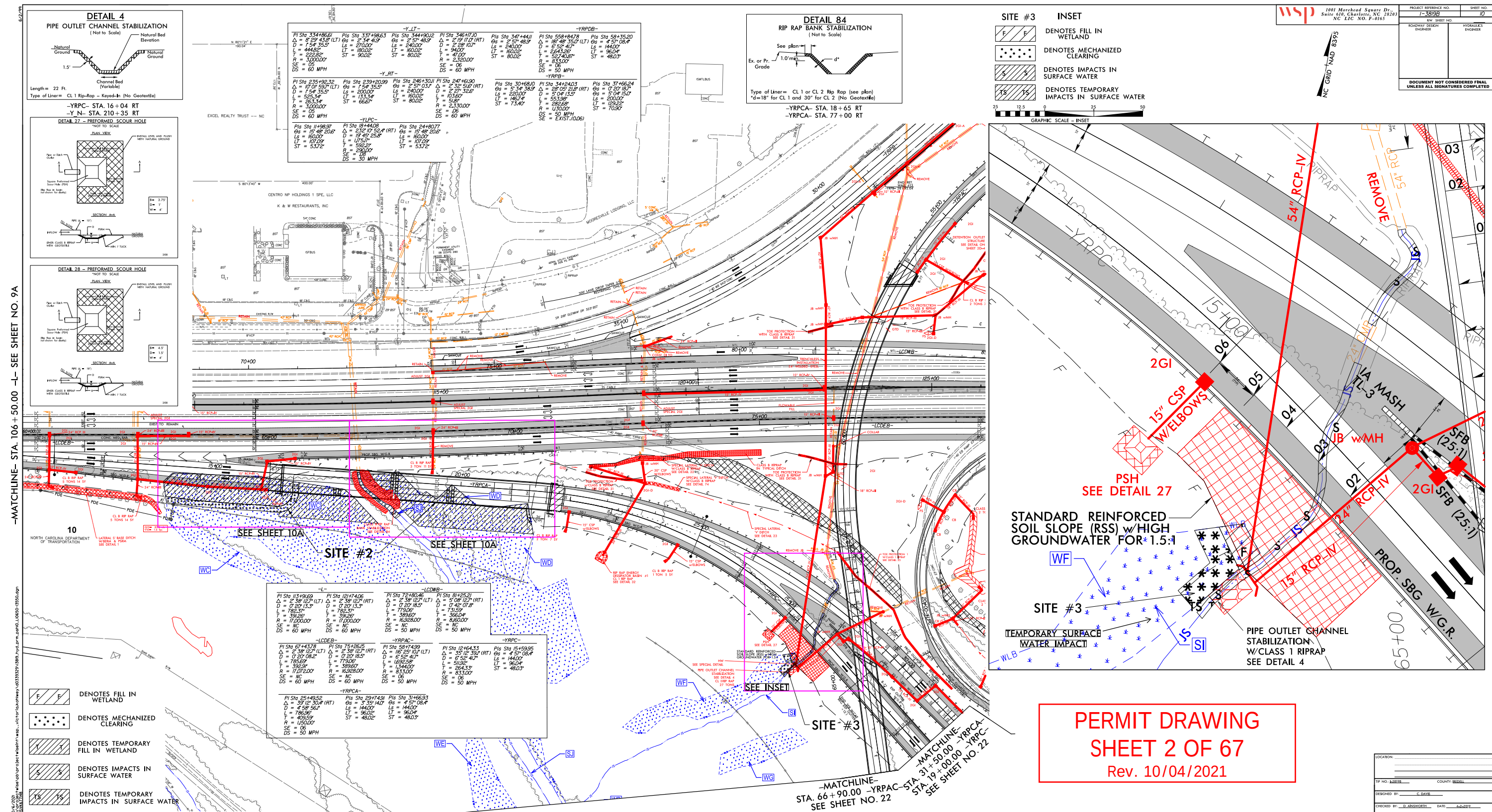
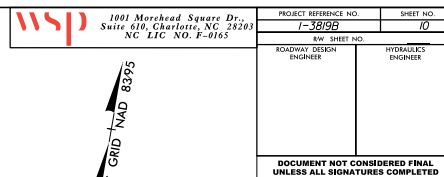
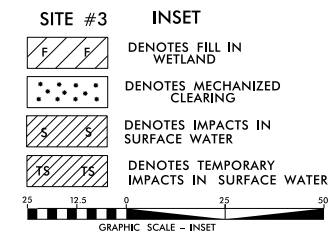
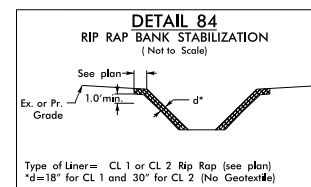
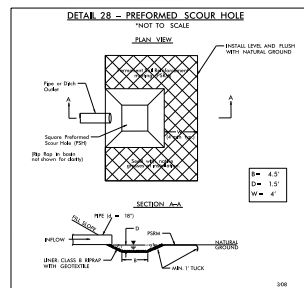
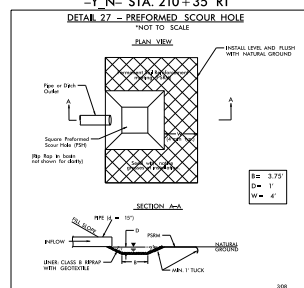
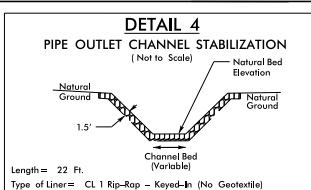
ROADWAY DESIGN
ENGINEER

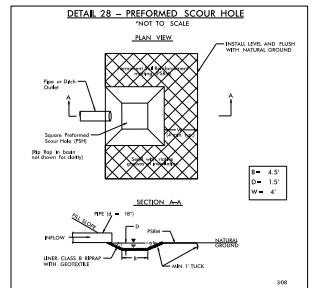
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



STATE HIGHWAY DESIGN ENGINEER P.E.





-Y-12-

Pi	Sta 334+86.6
Gr	= 14' 0" (LT)
L	= 14' 35.5"
A	= 44.482°
T	= 222.82'
R	= 3,000.00'
SE	= 60 MPH

Pi	Sta 337+98.63
Gr	= 14' 0" (LT)
L	= 27' 00"
A	= 17.002°
T	= 90.02'
R	= 2,900.00'
SE	= 60 MPH

-Y-12B-

Pi	Sta 346+17.20
Gr	= 5' 0" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

Pi	Sta 347+44.11
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

-Y-12C-

Pi	Sta 334+263.92
Gr	= 10' 0" (LT)
L	= 17' 54.35"
A	= 17.002°
T	= 133.34'
R	= 3,000.00'
SE	= 60 MPH

Pi	Sta 339+20.99
Gr	= 14' 0" (LT)
L	= 14' 0" (LT)
A	= 17.002°
T	= 133.34'
R	= 3,000.00'
SE	= 60 MPH

-Y-12D-

Pi	Sta 346+163.80
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

Pi	Sta 347+44.11
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

-Y-12B-

Pi	Sta 344+24.03
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

Pi	Sta 347+44.11
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

-Y-12B-

Pi	Sta 344+24.03
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

Pi	Sta 347+44.11
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

-Y-12B-

Pi	Sta 344+24.03
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

Pi	Sta 347+44.11
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

-Y-12B-

Pi	Sta 344+24.03
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

Pi	Sta 347+44.11
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

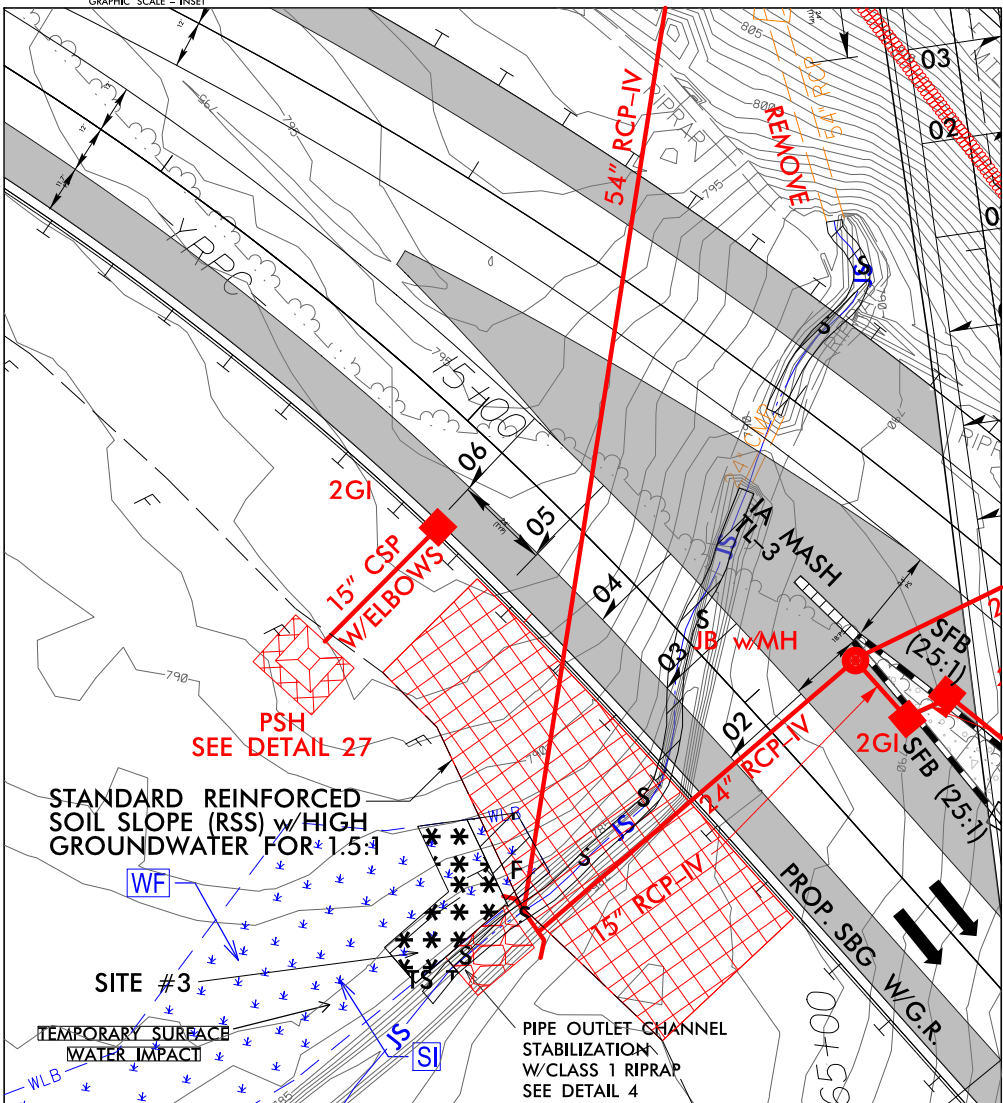
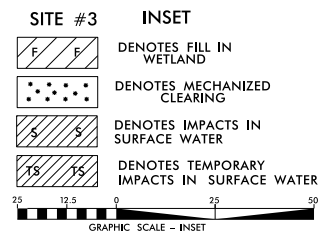
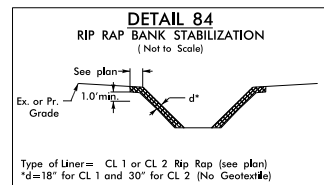
-Y-12B-

Pi	Sta 344+24.03
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

Pi	Sta 347+44.11
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)
A	= 47.00°
T	= 47.00'
R	= 2,520.00'
SE	= 60 MPH

-Y-12B-

Pi	Sta 344+24.03
Gr	= 2' 28" (LT)
L	= 2' 28" (LT)

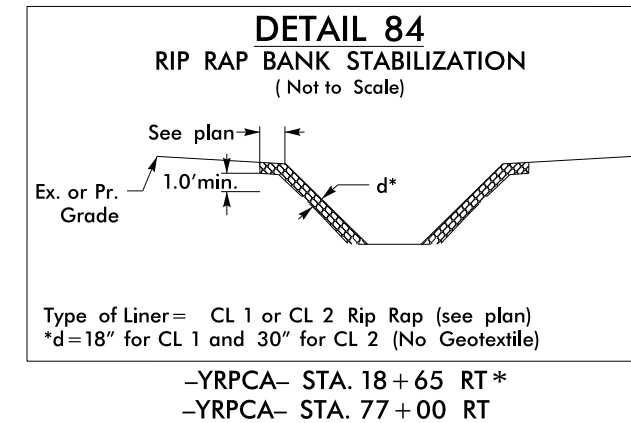


PERMIT DRAWING
SHEET 3 OF 67
Rev. 10/04/2021

LOCATION: _____

TIP NO. L-38198 COUNTY: BEDFORD
DESIGNED BY: C. DAVIS
CHECKED BY: D. AINSWORTH DATE: 6-2-2012

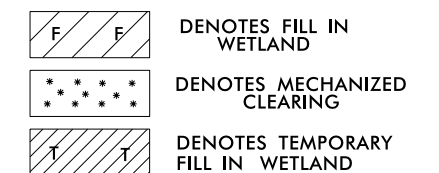
PROJECT REFERENCE NO.	SHEET NO.
1-3819B	10A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



TEMPORARY FILL
IN WETLAND
(MATTING FOR
CONSTRUCTION
ACCESS – BRIDGE
STRUCTURE #12)

PERMIT DRAWING
SHEET 4 OF 67
Rev. 10/04/2021

*NOTE: RIPRAP WAS INSTALLED
IN THE FIELD THROUGH COORDINATION
WITH NCDWR. NO RIPRAP WAS PLACED
IN STREAM BED.



TEMPORARY FILL
IN WETLAND
(MATTING FOR
CONSTRUCTION
ACCESS – BRIDGE
STRUCTURE #12)

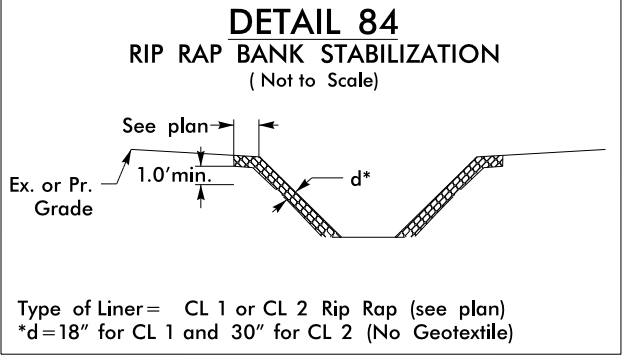
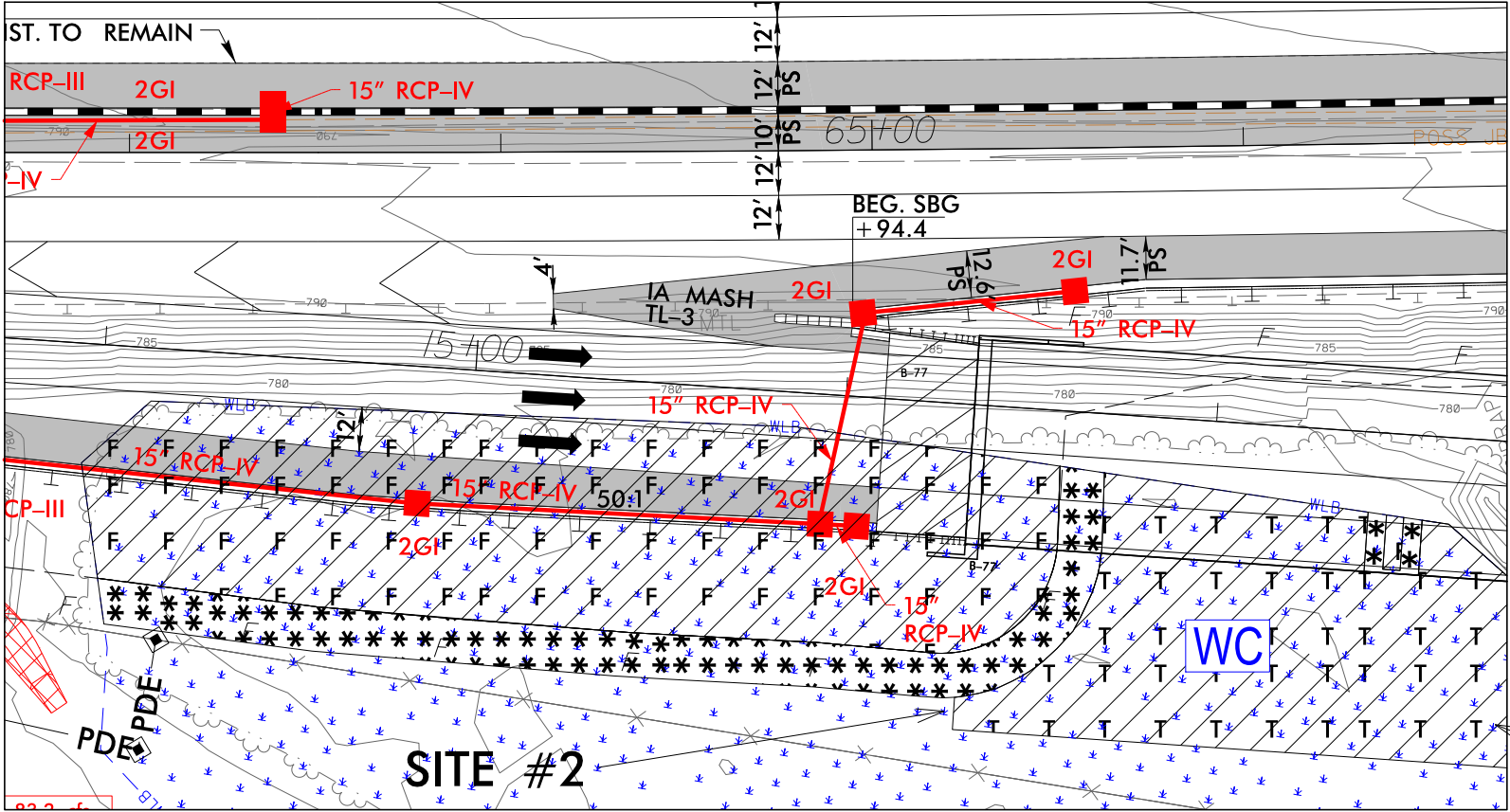


GRAPHIC SCALE – INSET

3/30/2021
\\projectwise\pb\projectwise\wsp-victoria.kohlwey\d0339329\13819_hyd-prm-psn10A.L10650-13550.dgn

SITE #2

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	10A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

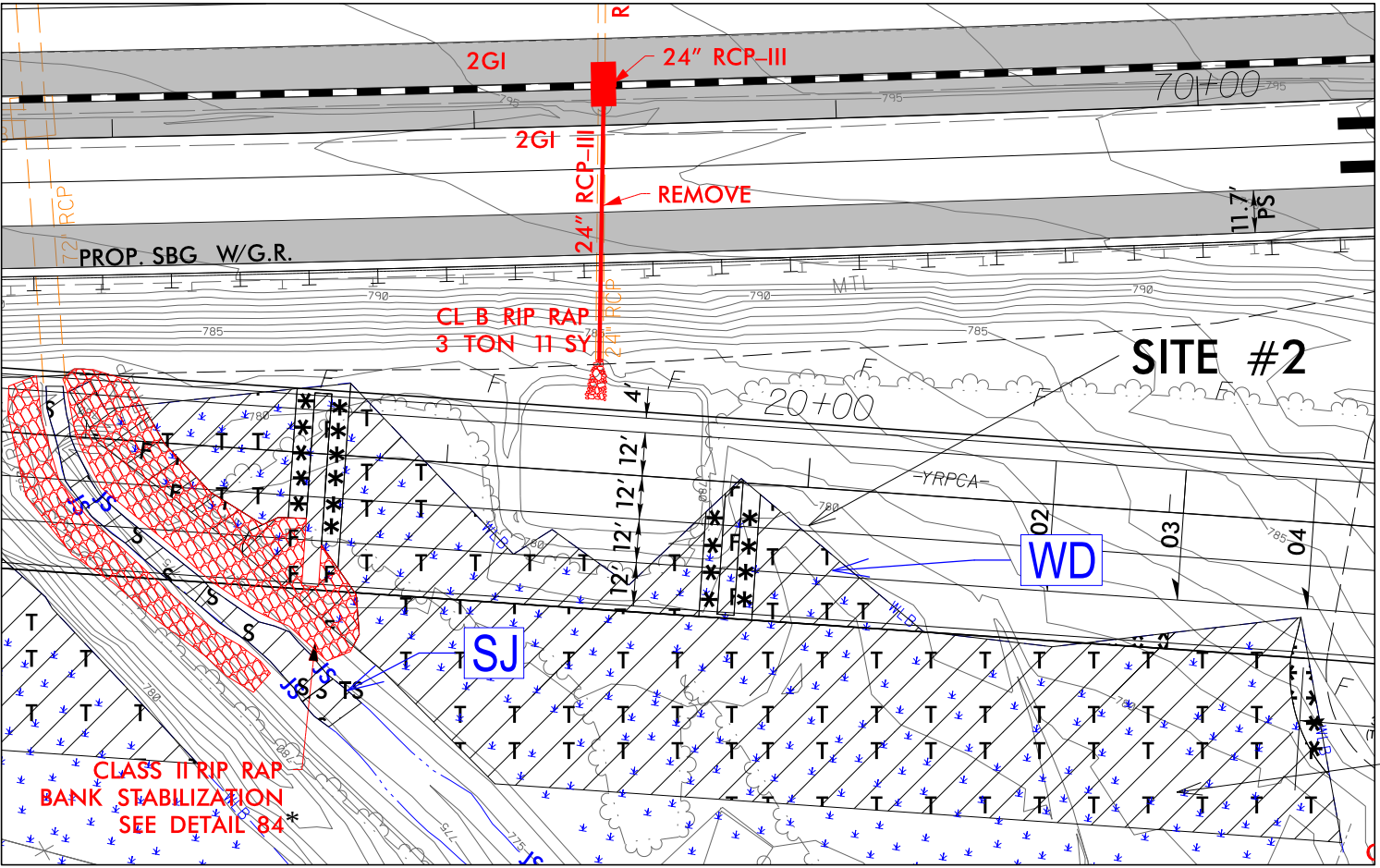


-YRPCA- STA. 18+65 RT*
-YRPCA- STA. 77+00 RT

TEMPORARY FILL
IN WETLAND
(MATTING FOR
CONSTRUCTION
ACCESS - BRIDGE
STRUCTURE #12)

PERMIT DRAWING
SHEET 5 OF 67
Rev. 10/04/2021

*NOTE: RIPRAP WAS INSTALLED
IN THE FIELD THROUGH COORDINATION
WITH NCDWR. NO RIPRAP WAS PLACED
IN STREAM BED.



TEMPORARY FILL
IN WETLAND
(MATTING FOR
CONSTRUCTION
ACCESS - BRIDGE
STRUCTURE #12)

-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES TEMPORARY FILL IN WETLAND

NC GRID NAD 83/95



GRAPHIC SCALE - INSET

PERMIT DRAWING
SHEET 46 OF 67
Rev. 10/04/2021

-YRPAC-			
PI Sta 14+24.03 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH	PI Sta 23+74.30 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH	PI Sta 26+43.37 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH	PI Sta 29+03.94 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH
-YRT-			
PI Sta 11+93.35 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH	PI Sta 14+07.08 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH	PI Sta 16+66.61 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH	PI Sta 19+05.07 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH
-YRPAC-			
PI Sta 14+24.03 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH	PI Sta 23+74.30 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH	PI Sta 26+43.37 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH	PI Sta 29+03.94 Δ = 2° 30' 02.3" (RT) D = 17° 38' 10.8" L = 1074.43' T = 531.61' R = 115000.00' SE = 05 DS = 60 MPH

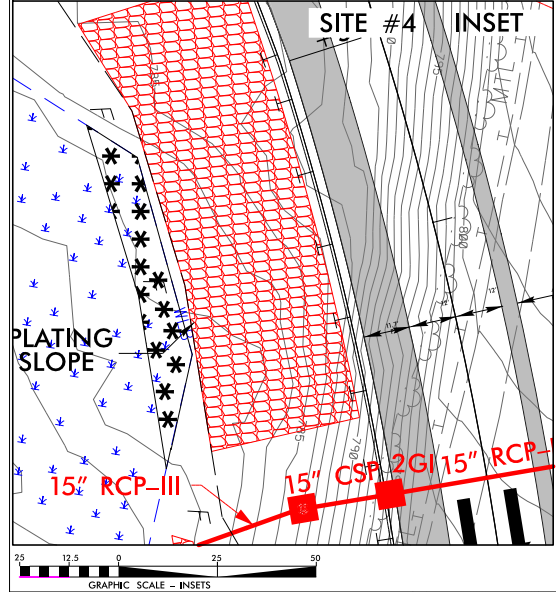
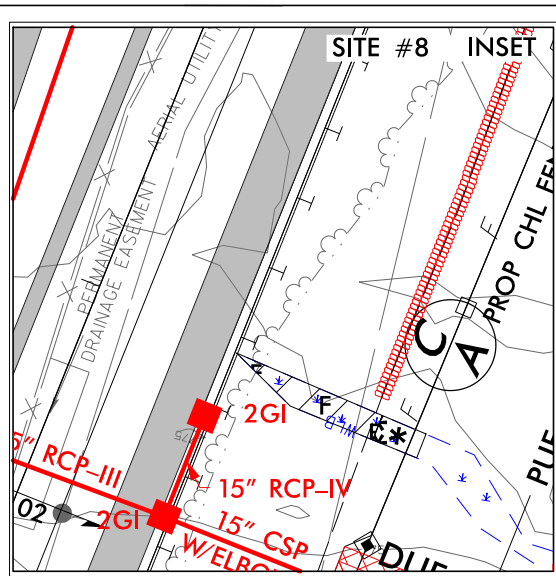
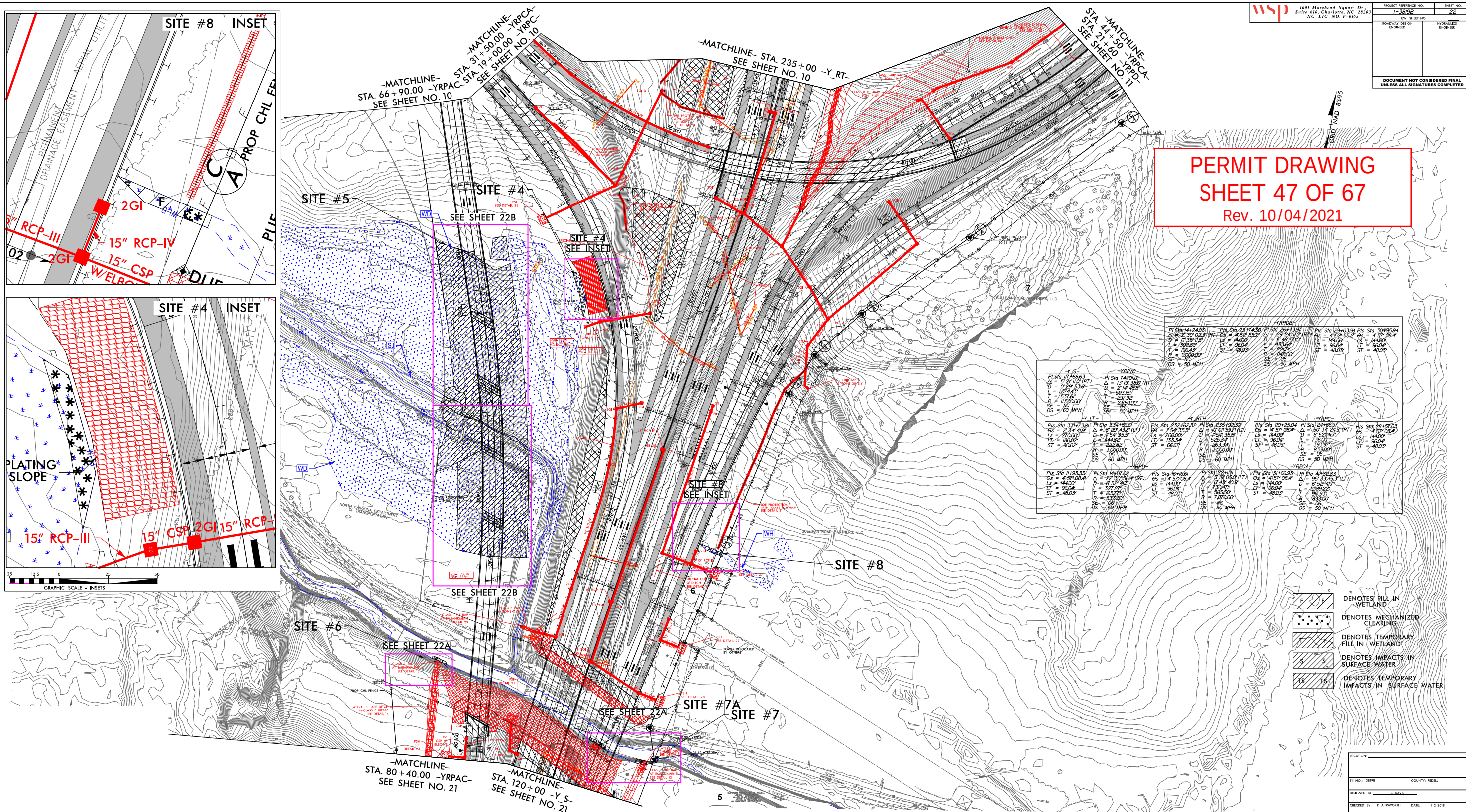
- Denotes Fill in Wetland
- Denotes Mechanized Clearing
- Denotes Temporary Fill in Wetland
- Denotes Impacts in Surface Water
- Denotes Temporary Impacts in Surface Water

LOCATION:	
TP NO. 13819B	COUNTY REBEL
DRAWN BY: C. DAVIS	
CHECKED BY: D. ARNOLD	DATE: 6-2-2021

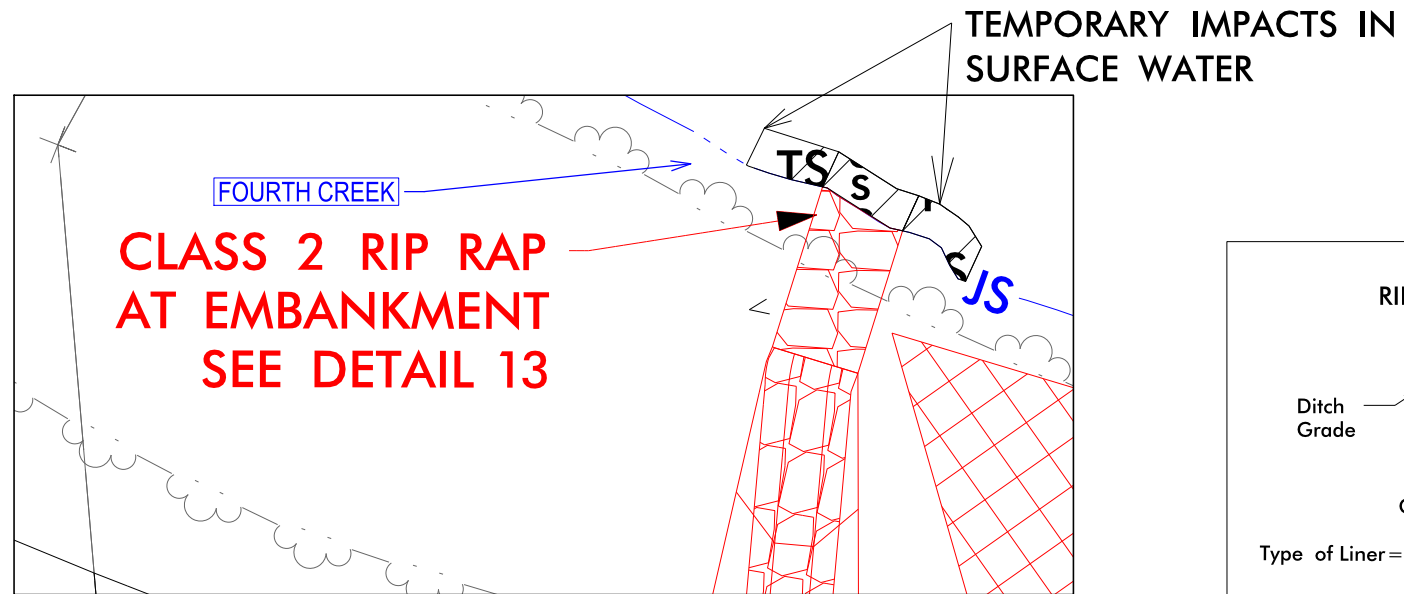
PERMIT DRAWING
SHEET 47 OF 67
Rev. 10/04/2021

- Denotes Fill in Wetland
- Denotes Mechanized Clearing
- Denotes Temporary Fill in Wetland
- Denotes Impacts in Surface Water
- Denotes Temporary Impacts in Surface Water

LOCATION:	
TP NO. 13319B	COUNTY: REDELL
DRAWN BY: C. DAVIS	
CHECKED BY: D. ARNOLD	DATE: 6-2-2021

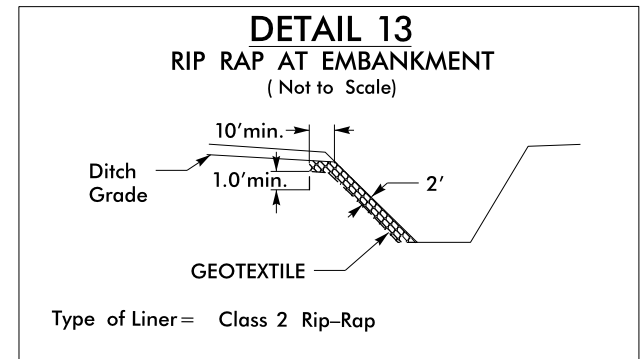


Y-RPAC	Y-RT	Y-RT	Y-RT	Y-RT
Sta 14+24.03 Δ = 17.19 L = 17.19 T = 17.19 R = 17.19 SE = 17.19 DS = 17.19	Sta 25+13.33 Δ = 17.19 L = 17.19 T = 17.19 R = 17.19 SE = 17.19 DS = 17.19	Sta 29+03.94 Δ = 17.19 L = 17.19 T = 17.19 R = 17.19 SE = 17.19 DS = 17.19	Sta 30+36.94 Δ = 17.19 L = 17.19 T = 17.19 R = 17.19 SE = 17.19 DS = 17.19	Sta 30+36.94 Δ = 17.19 L = 17.19 T = 17.19 R = 17.19 SE = 17.19 DS = 17.19



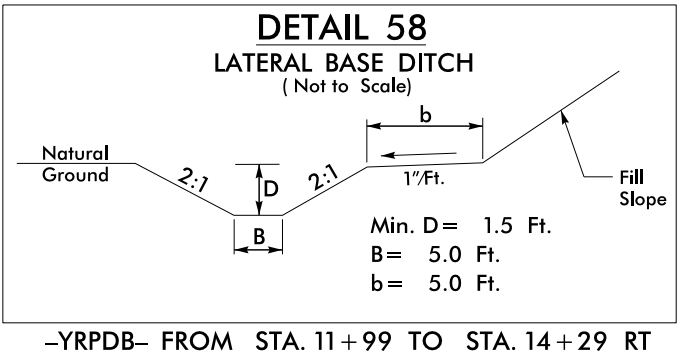
SITE# 6
INSET

NOTE: RIPRAP WAS INSTALLED
IN THE FIELD PER GUIDANCE
FROM NCDWR.

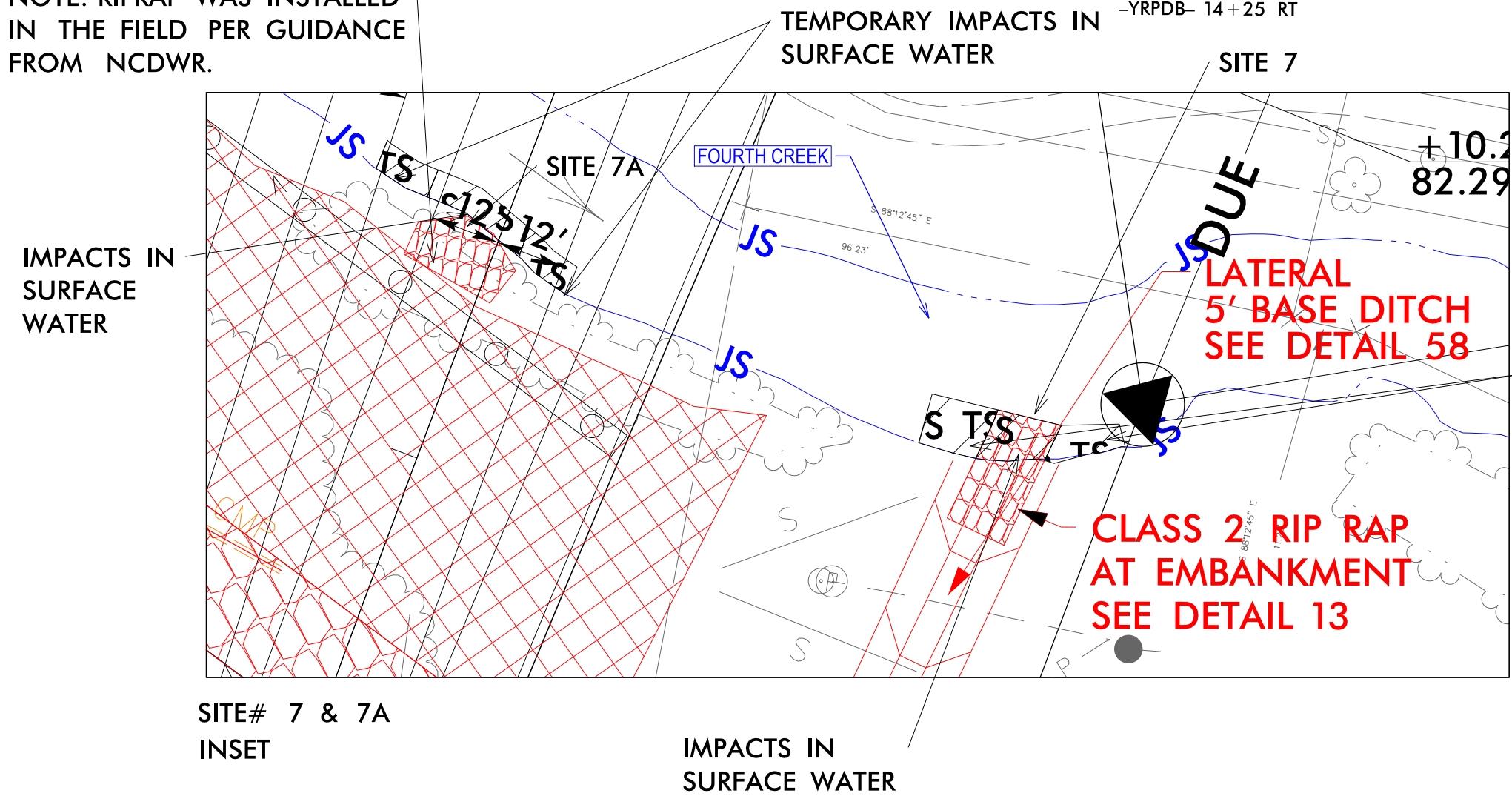


-Y S- STA. 69+50 LT
-Y S- STA. 33+80 RT
-YRPAC- 27+86 RT
-YRPAC- 78+50 RT
-YRPDB- 14+25 RT

PERMIT DRAWING
SHEET 48 OF 67
Rev. 10/04/2021



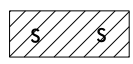
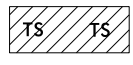
-YRPDB- FROM STA. 11+99 TO STA. 14+29 RT

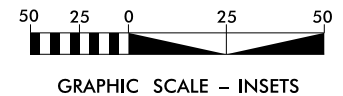


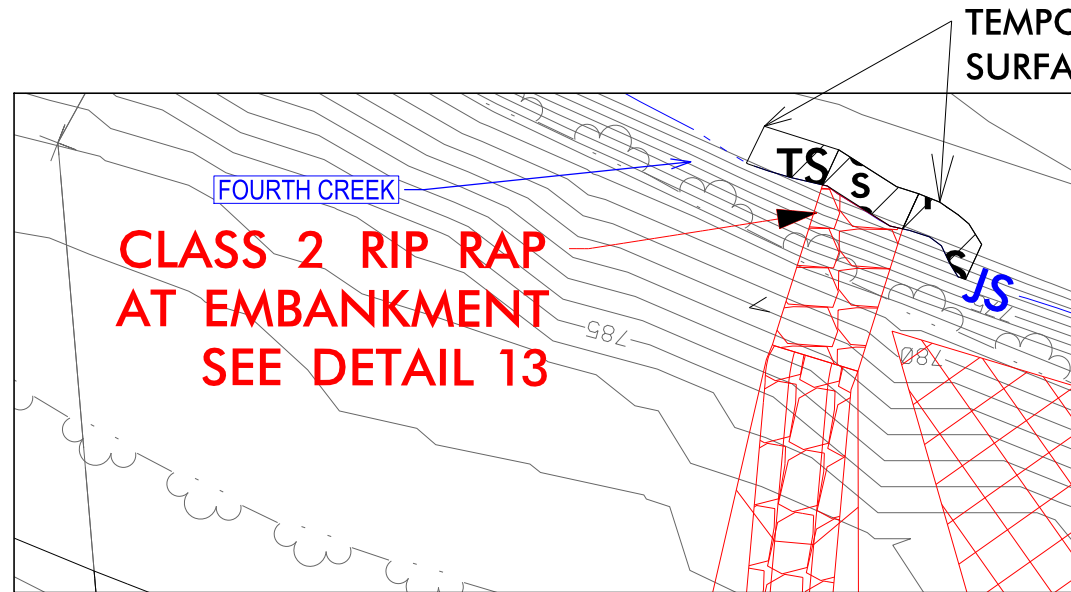
SITE# 7 & 7A
INSET

TEMPORARY IMPACTS IN SURFACE WATER



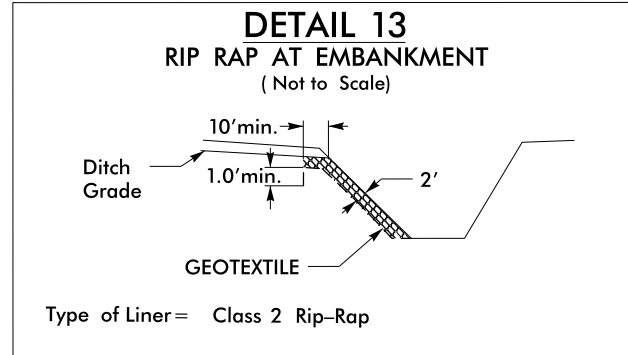
 DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER





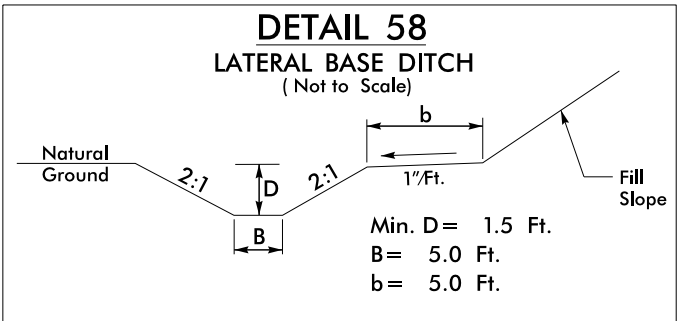
SITE# 6
INSET

TEMPORARY IMPACTS IN
SURFACE WATER



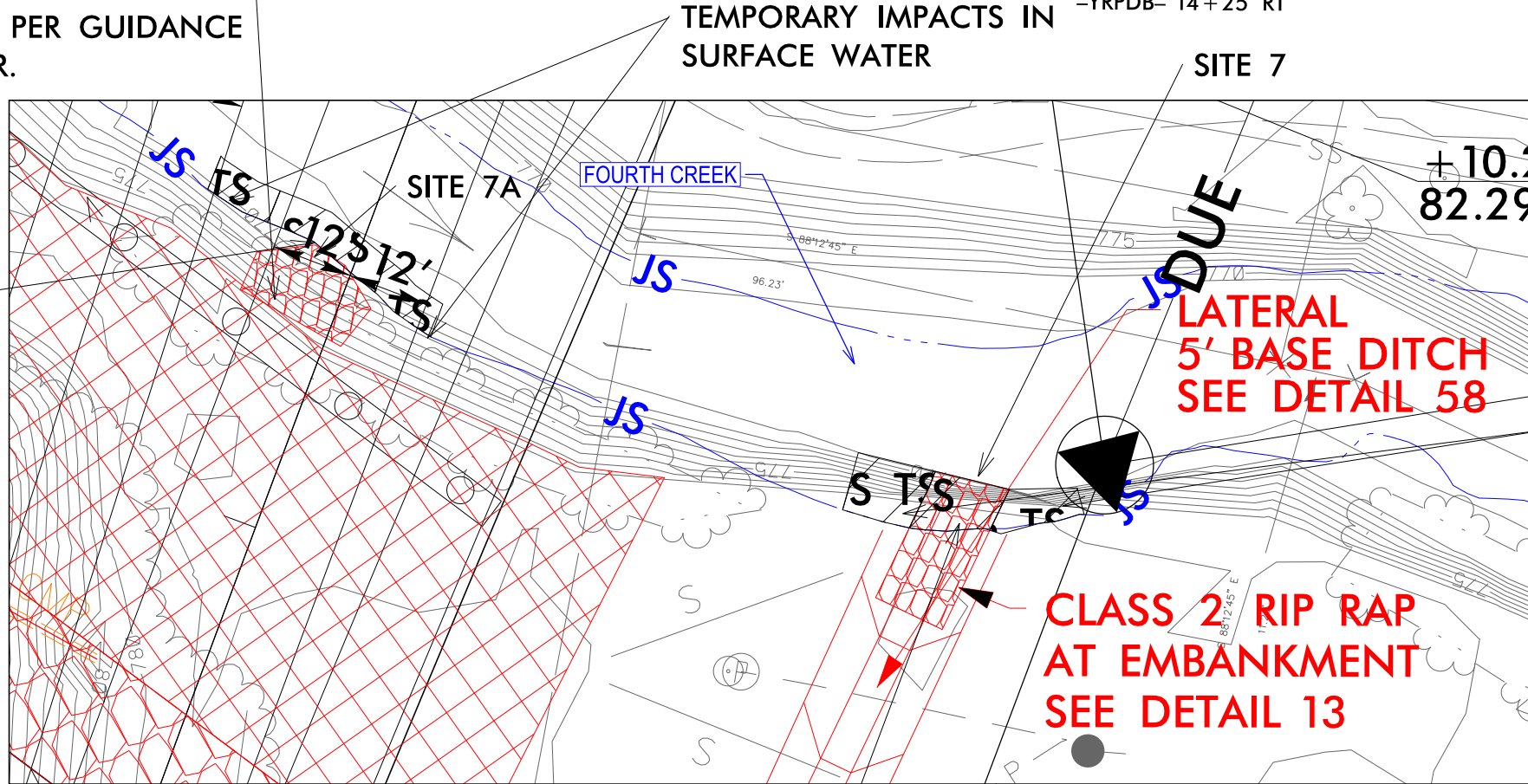
- Y S- STA. 69+50 LT
- Y S- STA. 33+80 RT
- YRPAC- 27+86 RT
- YRPAC- 78+50 RT
- YRPDB- 14+25 RT

PERMIT DRAWING
SHEET 49 OF 67
Rev. 10/04/2021



-YRPDB- FROM STA. 11+99 TO STA. 14+29 RT

NOTE: RIPRAP WAS INSTALLED
IN THE FIELD PER GUIDANCE
FROM NCDWR.



SITE# 7 & 7A
INSET

TEMPORARY IMPACTS IN
SURFACE WATER

SITE 7

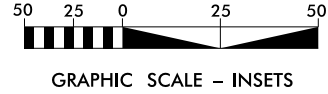
LATERAL
5' BASE DITCH
SEE DETAIL 58

CLASS 2 RIP RAP
AT EMBANKMENT
SEE DETAIL 13

TEMPORARY IMPACTS IN
SURFACE WATER



-  DENOTES IMPACTS IN
SURFACE WATER
-  DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



WETLAND AND SURFACE WATER IMPACTS 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	Site 1 Eliminated											
2	14+00 -21+50-YRPCA-	Roadway Fill	0.32			0.09						
2	16+70 - 21+50-YRPCA-	Bridge/Stream Bank Stabilization**	0.04	0.61		0.02		0.02	< 0.01	115	10	
3	15+75-YRPC-	Roadway Fill	< 0.01			0.01		0.02	< 0.01	206	10	
4	24+00-YRPC-	Roadway Fill				0.02						
5	70+00 - 76+25 -YRPAC-	Bridge	0.03	1.81		0.05						
5	72+70 - 74+50 -YRPAC-	Construction Access		0.23					0.02		77	
6	121+50-Y_LT-	Stream Bank Stabilization						< 0.01	< 0.01	12	20	
7	120+90-Y_RT-	Stream Bank Stabilization						< 0.01	< 0.01	12	20	
7A	120+95-Y_RT-	Stream Bank Stabilization**						< 0.01	< 0.01	19	21	
8	19+00-YRPDB-	Roadway Fill	< 0.01			< 0.01						
9	28+50 - 34+00-YRPAC-	Roadway Fill	0.40			0.08		0.07	< 0.01	747	10	
9A	28+10 - 28+30-YRPAC-	Construction Access							0.01		50	
10	28+00-YRPAC-	Stream Bank Stabilization						< 0.01	< 0.01	25	20	
11	27+50 - 26+50-YRPAC	Roadway Fill	0.19			0.02						
12	149+00-150+00-L-	Bridge						< 0.01	0.01	10	54	
13	167+00-Y_RT-	Stream Bed Stabilization						< 0.01		17		
13	167+00-Y_RT-	Stream Bank Stabilization						< 0.01	< 0.01	44	10	
14	28+50-Y-	Stream Bed Stabilization						< 0.01	< 0.01	17	10	
15	33+75-Y-	Stream Bank Stabilization						< 0.01	< 0.01	11	20	
16	37+10-37+20-Y-	54" RCP Extension						< 0.01		15		
16	35+90-37+10-Y-	Stream Bed Stabilization						< 0.01	< 0.01	98	10	
17	37+70-37+80-Y-	54" RCP Extension						< 0.01		20		
17	37+80-38+50-Y-	Stream Bed Stabilization						0.01	< 0.01	94	14	
SHEET 66 SUBTOTALS*:			0.98	2.64	0.00	0.29	0.00	0.16	0.07	1462	356	0.00

*Rounded totals are sum of actual impacts for sites listed on Sheet 66. See Sheet 67 for project total.

**Additional riprap was added for bank stabilization per NCDWR request

WETLAND AND SURFACE WATER IMPACTS SUMMARY												
			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
18	47+50-Y-	54" RCP Extension						< 0.01		39		
18	47+50-Y-	Stream Bed Stabilization						< 0.01	< 0.01	33	10	
19	46+00-Y-	Roadway Fill						< 0.01		34		
20	68+50-Y-	New Channel						< 0.01	< 0.01	13	10	
20	68+50-Y-	Roadway Fill						< 0.01		48		
21	70+20-Y-	3@9'X11" RCBC Extension						0.02		39		
21	69+20-70+20-Y-	Stream Bed Stabilization						0.08	< 0.01	137	21	
22	71+30-71+90-Y-	3@9'X11" RCBC Extension						0.02		45		
22	71+90-72+89-Y-	Stream Bed Stabilization						0.08		160		
22	72+89-75+10-Y-	Stream Bank Stabilization**						0.08		225		
22	75+10-84+00-Y-	Stream Bank Stabilization						0.34		901		
22	83+59-83+85-Y-	Stream Bed Stabilization						< 0.01		25		
23	87+70-Y-	Roadway Fill							< 0.01		33	
24	93+75-Y-	66" RCP Extension						< 0.01	< 0.01	49	10	
25	94+50-Y-	66" RCP Extension						< 0.01		10		
25	94+50-Y-	Stream Bed Stabilization						< 0.01	< 0.01	21	21	
26	116+70-120+10-Y-	Roadway Fill	0.09			0.04						
27	210+00-Y-	60" RCP Extension						< 0.01		29		
27	210+00-Y-	Stream Bed Stabilization						< 0.01	< 0.01	19	10	
28	24+00-Y15RPB-	Stream Bed Stabilization						< 0.01	< 0.01	16	11	
SHEET 66 SUBTOTAL			0.98	2.64	0.00	0.29	0.00	0.16	0.07	1462	356	0.00
SHEET 67 SUBTOTAL			0.09	0.00	0.00	0.04	0.00	0.67	0.03	1843	126	0.00
PROJECT TOTALS*:			1.07	2.64	0.00	0.33	0.00	0.83	0.10	3305	482	0.00

*Rounded totals are sum of actual impacts for entire project area

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
10/04/2021
IREDELL
TIP NO. I-3819B
WBS NO.
SHEET 67 OF 67

PERMIT DRAWING
SHEET 67 of 67
Rev. 10/04/2021

