STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

November 24, 2020

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; 2) Section 401 Water Quality Certification No. WQC004203, NCDWR Project No. 20191006, issued November 19, 2019 and revised January 30, 2020.

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. This request letter includes a variance request for specific cross-pipes that will not be embedded, revisions to the drainage design, and modifications to permitted impacts.

A variance is requested for cross-pipes which will not be set below the elevation of the streambed. This relates directly to General Condition 1/Project Specific Condition 8 of the 401 Water Quality Certification. A list of the applicable locations, and justification for the variance request at each location is provided on the following page (Table 1).

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

Table 1. Description of cross-pipe locations for the variance request.

Location	Permit Site	Size	Type	Reason for Variance Request
Y_S 37+39	16, 17	54" Reinforced Concrete Pipe and 42" Welded Steel Pipe	Supplement and Extend existing (US and DS)	The existing cross pipe is not embedded below the stream elevation. Due to this existing configuration, the pipe will be lined, but not embedded. The existing pipe will be supplemented with a 42" welded steel pipe via bore and jack set 1 foot higher than existing pipe.
Y_S 46+51	18, 19	54" Reinforced Concrete Pipe	Extension (US and DS)	The existing cross pipe will be extended and the replacement pipe will connect to a closed drainage network. As such, there will be no jurisdictional features upstream of this pipe, and it cannot be set below the streambed due to the configuration as a closed network.
Y_S 71+00	21, 22	3 @ 9' X 11' Reinforced Concrete Box Culvert	Extension (US and DS)	The existing culvert is not embedded below the stream bed elevation. Due to this existing configuration, and the need to satisfy FEMA floodplain requirements, it is not feasible to embed the proposed extension.
Y_S 94+06	24, 25	66" Reinforced Concrete Pipe	Extension (US and DS)	The existing cross pipe is not embedded below the stream elevation. Due to this existing configuration, and the installation of junction boxes to tie in adjacent drainage networks, it is not feasible to embed the proposed extension.
Y_N 211+51	27	60" Reinforced Concrete Pipe	Extension (DS only)	The existing cross pipe is not embedded below the stream elevation. Due to this existing configuration, and the proposed extension on only the downstream end, it is not feasible to embed the proposed extension.

Revisions resulting in changes to permitted impacts have been made to nine impact sites (Sites 2, 5, 16, 17, 19, 21, 22, 23, and 25) and are discussed in detail below. Three new impact sites are also discussed below (Sites 9A, 28, and U-4).

In addition, permitted impact Sites 9 (Permit Drawing Sheet 10 through 13) and 27 (Permit Drawing Sheets 62 through 65) are included in the revised permit drawings to highlight the changes to the drainage design from previously approved permit drawings. At Utility Site U-2, the replacement transmission tower in this location, which was originally proposed to be a metal lattice structure with four 4'x4'concrete footings, was altered to instead be a single steel 56" diameter pole (Utility Permit Drawing Sheets 4 through 7). The design changes at Sites 9, 27, and Utility Site U-2 will not result in any additional changes to the amount, type, or location of previously permitted impacts and are not discussed further.

Previously permitted stream impacts included 3,194 linear feet of permanent stream impacts (which includes 1,019 linear feet of stream bank stabilization) and 394 linear feet (0.07 acre) of temporary stream impacts. 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 2.56 acres of hand clearing in wetlands. Previously permitted impacts associated with utilities included 0.02 acre of mechanized clearing and 0.27 acre of temporary wetland fill impacts (permanent fill in wetlands and hand clearing impacts were <0.01 acre). The total permanent wetland impacts previously permitted for roadway construction and utilities was 1.41 acres.

The revised stream impacts for the project total 3,213 linear feet of permanent stream impacts (which includes 1,047 linear feet of stream bank stabilization impacts) and 471 linear feet (0.10 acre) of temporary stream impacts. The revised wetland impacts for roadway construction include 1.39 acres of permanent wetland impacts (1.06 acres of permanent fill and 0.33 acre of mechanized clearing), and 2.66 acre of temporary fill in wetlands impacts. The revised utilities impacts included 0.16 acre of mechanized clearing and 0.27 acre of temporary wetland fill impacts (permanent fill in wetlands and hand clearing impacts were <0.01 acre). The revised total permanent wetland impacts proposed for roadway construction and utilities is 1.55 acres.

This modification will result in 0.14 acre of additional mechanized clearing impacts, 2.66 acres of additional temporary wetland fill impacts, 28 linear feet of additional stream bank stabilization impacts, and 77 linear feet (0.02 acre) of additional temporary stream impacts. There will be 2.56 acres less hand clearing impacts and 9 linear feet less permanent channel impacts than previously permitted. A summary of the changes is shown in Table 2 below.

Table 2 – Summary of changes to impacts*

Impact Type	Original Permitted Impacts	Proposed Permit Modification	Difference
Roadway Impacts			
Permanent Stream Impacts[1]	3,194	3,213	+19
Bank Stabilization Impacts	*1,019*	*1,047*	+28
Temporary Stream Impacts	394	471	+77
Permanent Wetland Fill	1.06	1.06	0
Mechanized Clearing in Wetlands	0.33	0.33	0
Hand Clearing in Wetlands	2.56	0	-2.56
Temporary Wetland Fill	0	2.66	+2.66
Utility Impacts			
Permanent Wetland Fill	< 0.01	< 0.01	0
Mechanized Clearing in Wetlands	0.02	0.16	+0.14
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.
[1]Totals include bank stabilization impacts. Permanent stream impacts requiring mitigation decreased by 9 linear feet.

Please see the enclosed DWR Pre-Filing Meeting Request Form, revised DMS acceptance letter, revised permit drawings, and revised roadway plans where drainage revisions and/or field changes resulted in changes to permitted impacts. Note the three additional impact sites: Sites 9A and 28 are included in the revised roadway permit drawings and Utility Site U-4 is shown in the revised utility permit drawing. Permit impact sites where no changes were made to the drainage design or impacts are not included in the revised permit drawings. All changes to previously permitted impacts and the three additional impact sites are summarized below.

Summary of Impacts to Waters of the U.S.

Tables 3 through 5 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 each permit impact site are presented in the following section.

Table 3 – 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	Hand 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	0.62	0.02	~~0.62~~	0.05
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	~~1.94~~	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 Impacts			**1.06[1]**	**2.66**	**0.33[1]**	**~~2.56~~ 0**	**1.39[2]**

*All wetlands impacted are riparian
[1]Temporary fill impacts will result from the use of mats and crane barges
[2]Values are based on rounding, due to calculating totals with actual numbers to the thousandths

Table 4 – 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)	<0.01 (20)	--	--
3	UT to Fourth Creek SI	Perennial C	206 (0.02)	--	<0.01 (10)	206	--
5	UT to Fourth Creek SJ	Perennial C	--	--	~~<0.01 (40)~~ 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)	--	--
9	UT to Fourth Creek SL	Perennial C	747 (0.07)	--	<0.01 (10)	747	747
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

Table 4 – 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)			
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	~~112 (0.01)~~ 113 (0.01)	--	<0.01 (10)	~~112~~ 113	--
17	UT to Fourth Creek SX	Perennial C	~~115~~ 114 (0.02)	--	<0.01 (14)	~~115~~ 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 ~~(0.06)~~ (0.10)	--	<0.01 (21)	176	176
22	UT to Fourth Creek ST	Perennial C	~~467 (0.14)~~ 455 (0.18)	~~873 (0.23)~~ 901 (0.34)	~~<0.01 (10)~~	~~467~~ 455	~~467~~ 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	~~44 (<0.01)~~ 31 (<0.01)	--	~~<0.01 (32)~~ <0.01 (21)	~~44~~ 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			**~~2175~~ 2166**	**~~1019~~ 1047**	**~~0.07*~~ ~~(394)~~ 0.10* (471)**	**~~2175~~ 2166**	**~~1407~~ 1395**
			~~3194~~ 3213				

* Values are based on rounding

Table 5 – I-3819B Utility Wetland Impacts

Permit Site	Wetland ID	Impact Type	Temporary Impacts ac	Permanent Fill ac	Mechanized Clearing ac	Hand Clearing ac	Mitigation Requirement ac
U-1	WJ	Utility	0.02	--	--	--	--
U-2	WD	Utility	0.25	<0.01	0.02	--	0.02
U-3	WH	Utility	--	--	--	<0.01	--
U-4	WU	Utility	--	--	0.14	--	0.14
TOTAL IMPACTS			**0.27**	**<0.01**	~~**0.02**~~ **0.16**		~~**0.02**~~ **0.16**

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

Site 2 (Permit Drawing Sheet 2) – Although hand clearing occurred within the approved permitted boundaries in wetland WC, the 0.62 acre of hand clearing impacts in wetlands have been revised to temporary fill in wetlands to account for impacts associated with the use of timber mats and crane barges during construction.

Site 5 (Permit Drawing Sheet 46) – This site has been updated to incorporate unauthorized impacts to wetland WD and stream SJ that occurred inadvertently during construction. The 40 linear feet of permitted temporary stream impacts to stream SJ on the east side of the bridge alignment have been eliminated because the temporary pipe was not needed. However, there were 77 linear feet of unauthorized temporary stream impacts to stream SJ. Therefore, temporary stream impacts increased from 40 linear feet to 77 linear feet, which is 37 linear feet of additional temporary stream impacts. There are no permanent stream impacts proposed for this site.

Permitted hand clearing impacts have been converted to temporary wetland fill impacts in areas where mats and barges are being used during construction. In addition, 0.10 acre of temporary wetland fill outside of previously permitted hand clearing impacts were added to account for the unauthorized temporary impacts within wetland WD. Impacts for hand clearing in wetlands decreased from 1.94 acres to 0 acre, and 2.04 acres of temporary wetland fill impacts are now included. There will be no additional permanent impacts at this location.

On-site restoration was performed to mitigate for the unauthorized impacts that included 0.23 acre of temporary impacts to wetland WD (0.10 acre were outside of previously permitted hand clearing impacts) and 77 linear feet of temporary impacts to stream SJ. To restore the areas, the stream banks and a section of wetland WD were regraded and stabilized with erosion control matting. Native grass seeding and mulching were used for all temporarily impacted wetland areas and stream banks. On June 3, 2020, Lane Construction met on-site with Donna Hood with NCDWR and Matthew Evans with NCDOT to inspect the restoration areas and review the progress of restoration activities. A response to the Notice of Deficiency and the wetland restoration plan for the unauthorized impacts were submitted on June 25, 2020 to NCDWR and was accepted by NCDWR and USACE on June 30, 2020 as indicated through coordination with Donna Hood.

Site 16 (Permit Drawing Sheet 26) – Similar to the previous design, the impacts to stream SX at this site are due to the extension and supplement of an existing 54" reinforced concrete pipe (RCP) cross pipe. However, the pipe is now proposed to be lined. Otherwise there are no significant variations to the proposed design. Due to minor adjustments to the slope stake and headwall

configuration the impacts resulting from the pipe extension have increased from 13 linear feet to 15 linear feet, which is 2 feet of additional impacts. The permanent impacts due to bed stabilization have decreased from 99 linear feet to 98 linear feet. Overall, there is 1 foot of additional permanent stream impacts being proposed at this site compared to the previously permitted impacts. The design change will not result in any additional temporary stream impacts at this location.

Site 17 (Permit Drawing Sheet 26) – Similar to Site 16, the impacts at this site are due to extension and supplement of an existing 54" RCP cross pipe. However, the pipe is now proposed to be lined. Otherwise there are no significant variations to the proposed design. Due to minor adjustments to the slope stake and headwall configuration, the impacts resulting from the pipe extension have increased by 3 linear feet from 17 linear feet to 20 linear feet. The permanent impacts due to bed stabilization have decreased from 98 linear feet to 94 linear feet. Overall, there is 1 foot less of permanent stream impacts being proposed at this site compared to the previously permitted impacts. The design change will not result in any additional temporary stream impacts at this location.

Site 19 (Permit Drawing Sheet 26) – The design proposes to extend the existing 54" RCP and cover the existing stream channel with the roadway fill slope. The originally permitted permanent stream impacts were misclassified as 54" RCP extension and have been updated as roadway fill. The reclassification of impact type will not result in any additional permanent stream impacts at this location.

Site 21 (Permit Drawing Sheet 30) – There will be no changes to the design or proposed activities at this site from the approved permit; however, the jurisdictional stream boundaries of stream ST have been revised to more accurately follow the surveyed topographic contours. This revision will not result in any changes to the linear feet of permanent and temporary stream impacts. The total acreage of permanent stream impacts increased from 0.08 acre to 0.10 acre as a result of the revised jurisdictional stream boundary; temporary stream impacts will remain <0.01 acre.

Site 22 (Permit Drawing Sheet 30) **–** The jurisdictional stream boundaries of stream ST have been revised from those shown in the approved permit to more accurately follow the surveyed topographic contours. This revision will not result in any changes to the linear feet of permanent stream impacts for Site 22. Other revisions to impacts at Site 22 are as follows: in the approved permit, the permanent stream bed stabilization impacts were incorrectly calculated to extend 12 linear feet outside of the riprap in stream ST for the pipe outlet channel stabilization located at Station Number 83+85+00-Y. Also, in this location the permanent stream bank stabilization impacts should have been extended to the end of the riprap shown on the stream bank immediately adjacent to the channel, therefore the permit drawings have been revised to show an additional 16 linear feet of permanent stream bank stabilization impacts. Permanent stream bed impacts will decrease from 467 linear feet to 455 linear feet and bank stabilization impacts will increase from 873 linear feet to 901 linear feet. The previously approved 10 linear feet of temporary stream impacts were no longer needed and have been removed.

Site 23 (Permit Drawing Sheet 30) – There will be no changes to the design or proposed activities at this site from the approved permit; however, the jurisdictional stream boundaries of stream ST have been revised to more accurately follow the surveyed topographic contours. This revision will not result in any changes to the linear feet or acreage of temporary stream impacts at this location.

Site 25 (Permit Drawing Sheet 37) **–** In the approved permit, the drainage design included retaining an existing 15" RCP and connecting it to an existing 66" RCP, which carries stream SU, through a series of two junction boxes. The revised design includes replacing the 15" RCP and extending the pipe to discharge directly to stream SU instead of connecting to the existing 66" RCP. This revision will not result in any additional impacts.

Also, the detention basin shown in the original design impacting stream SU has been removed. The depth to the water table and proximity to the adjacent floodplain made the construction and operation of the detention basin infeasible. Permanent stream impacts decreased from 44 linear feet to 31 linear feet, which is a 13 linear foot decrease in impacts. Temporary stream impacts will decrease from 32 linear feet to 21 linear feet, which is an 11 linear foot decrease in impacts.

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

Site 9A (Permit Drawing Sheet 11 and 14) – At this site, a temporary work bridge that spans from top of bank to top of bank was installed for construction access to Site 9. In the approved permit, no impacts were included for the temporary work bridge, however, impacts have been revised to include 50 linear feet (0.01 acre) of temporary stream impacts to account for any temporary impacts to stream SK that may occur as a result of the temporary work bridge. There will be no permanent stream impacts at this location.

Site 28 (Permit Drawing Sheet 21a) – This site was added after it was determined the end of the existing 42" RCP outfall was structurally deficient and in need of replacement. The replacement of this section of pipe and installation of riprap outlet protection requires impacts to stream SO. At the outlet of the replacement pipe, Class I riprap will be installed in the stream bed and along the banks of stream SO for stabilization. The existing outlet in this location is perched which is being addressed through the use of a manhole drop structure in order to lower the proposed outlet to the streambed elevation. This will result in 16 linear feet of permanent stream impacts and 11 linear feet of temporary stream impacts that were not previously permitted.

Utility Site U-4 (Utility Permit Drawing Sheet 3a) – During the construction of an access road for City of Statesville Power's 334 circuit relocation work, the contractor inadvertently allowed clearing in wetland WU. This activity resulted in 0.14 acre of mechanized clearing impacts to wetland WU. The cleared wetland has been replanted with wetland seed mix following NCDOT's Roadside Environmental Unit guidance and standard procedures. The revised utility permit drawings and summary table have been updated to include the 0.14 acre of mechanized clearing impacts that were not previously permitted.

Revised Compensatory Mitigation

The North Carolina Division of Mitigation Services (NCDMS) previously provided compensatory mitigation for 2,175 linear feet of permanent stream impacts and 1.41 acres of permanent riparian wetland impacts, as referenced in the issued Section 404 Individual Permit from the USACE on January 21, 2020 and the Section 401 WQC modification from NCDWR on January 30, 2020.

Of the revised permanent stream impacts totaling 3,213 linear feet for this modification, 1,047 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 to the drainage design, permanent stream impacts that require mitigation from USACE for this project now total 2,166 linear feet, which is 9 linear feet less than previously needed. The revised permanent wetland impacts for this project total 1.55 acres and therefore this modification will require additional mitigation for 0.14 acres of permanent riparian wetland impacts. A revised DMS acceptance letter reflecting these changes was issued and received on November 23, 2020 (attached).

NCDOT requests to modify the permit for this project. Application is hereby made for modification of the USACE 404 permit and the 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,

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

cc:
NCDOT Permit Application Standard Distribution List

DWR Pre-Filing Meeting Request Form

ID#* 20191006 **Version*** 2

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

Reviewer List* Donna Hood

Pre-Filing Meeting Request submitted 9/26/2020

Contact Name* Erin Cheely

Contact Email Address* ekcheely@ncdot.gov

Project Name* I-3819B

Project Owner* NCDOT

Project County* Iredell

Owner Address:

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

Is this a transportation project?* (•) Yes ( ) No

Type(s) of approval sought from the DWR:

- [x] 401 Water Quality Certification - Regular
- [ ] 401 Water Quality Certification - Express
- [x] Individual Permit
- [x] Modification
- [ ] Shoreline Stabilization

Does this project have an existing project ID#?*

(•) Yes ( ) No

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

20191006

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

No meeting is requested.

Please give a brief project description below.*

I-3819B is the proposed improvements to the I-40 and I-77 interchange in Iredell County. NCDOT does not request a meeting.

Modification to the existing permit is anticipated at sites 2, 5, 16, 17, 19, 22, and 25 with two new permit sites, 28 and U-4.

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

Submittal Date 9/26/2020

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
TIM BAUMGARTNER
Director

NORTH CAROLINA
Environmental Quality

November 23, 2020

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 (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 and make any necessary debit adjustments to the stream mitigation for the subject project. Based on the information supplied by you on November 20, 2020, 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	0.14	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 2020 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 and 2020, 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)	2,175.0	4,350.0	**-9.0**	2,166.0
Riparian Wetland	1.41	2.82	0.14	1.55

*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 and July 12, 2019. 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. Also, the stream impacts associated with the project are anticipated to decrease. The stream mitigation requirements for this project were debited at the time of permit issuance. DMS will adjust the mitigation debits if necessary once the modified permits are issued and received. 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,

Elizabeth Harmon

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

09/28/99

TIP PROJECT: I-3819B/U-6039

PROJECT: 34192.1.2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

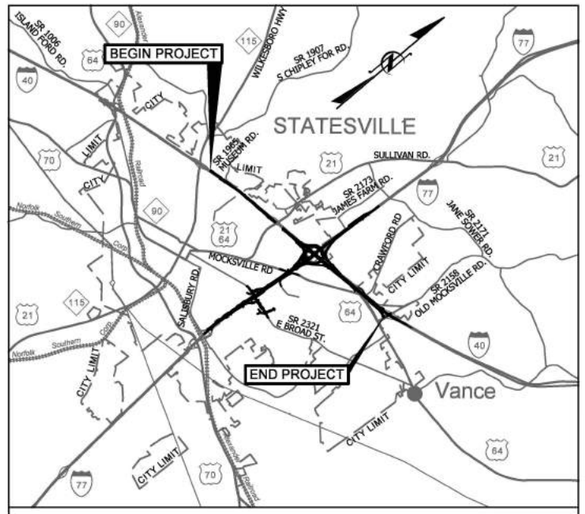
IREDELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-3819B/U-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

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*



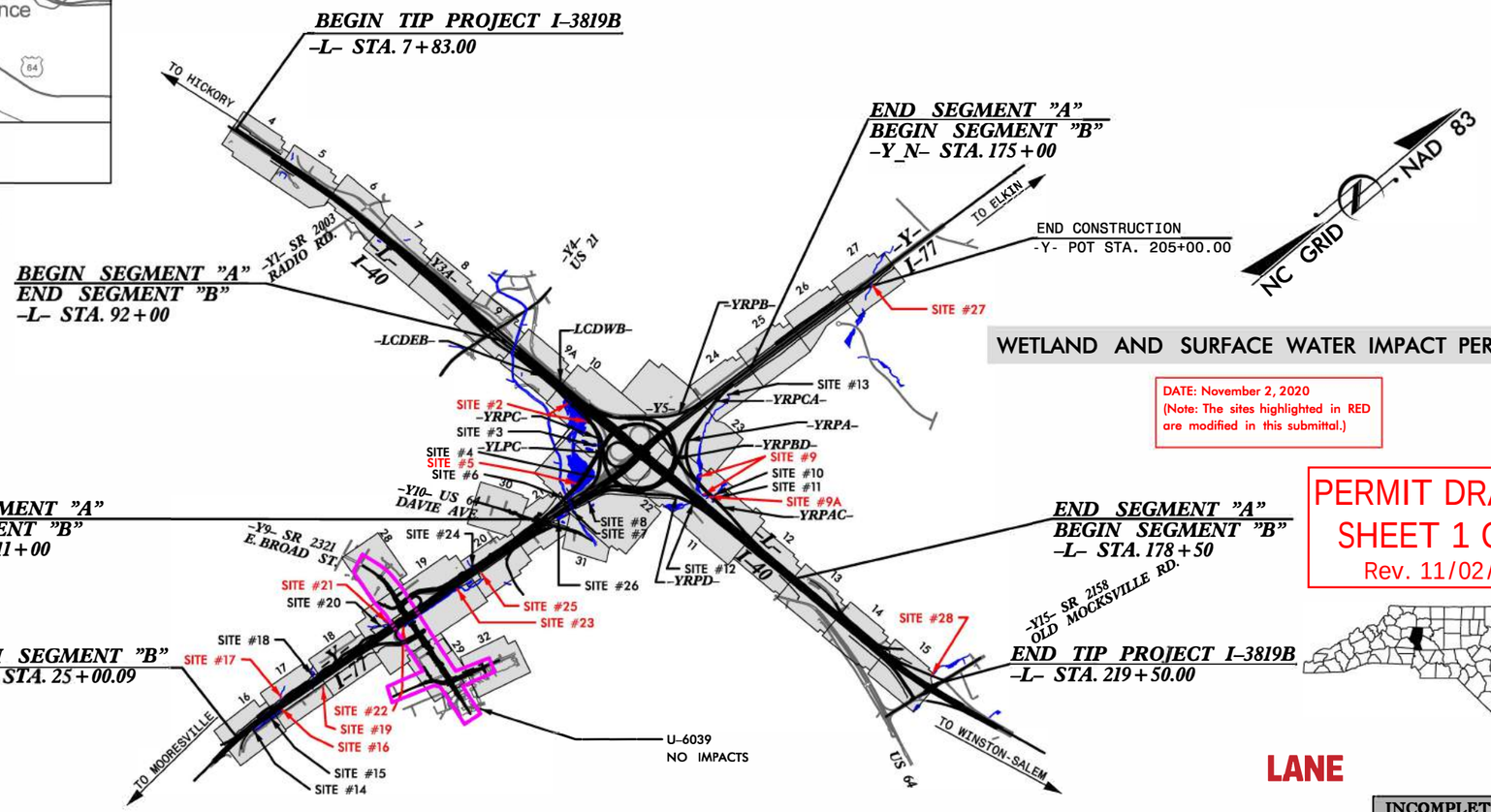
VICINITY MAP

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

50 25 0 100 200
PLANS

100 50 0 200 400
OVERSIZED PLANS

SCALE VARIES
INSETS



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

WETLAND AND SURFACE WATER IMPACT PERMITS

DATE: November 2, 2020
(Note: The sites highlighted in RED are modified in this submittal.)

PERMIT DRAWING
SHEET 1 OF 67
Rev. 11/02/2020

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.*

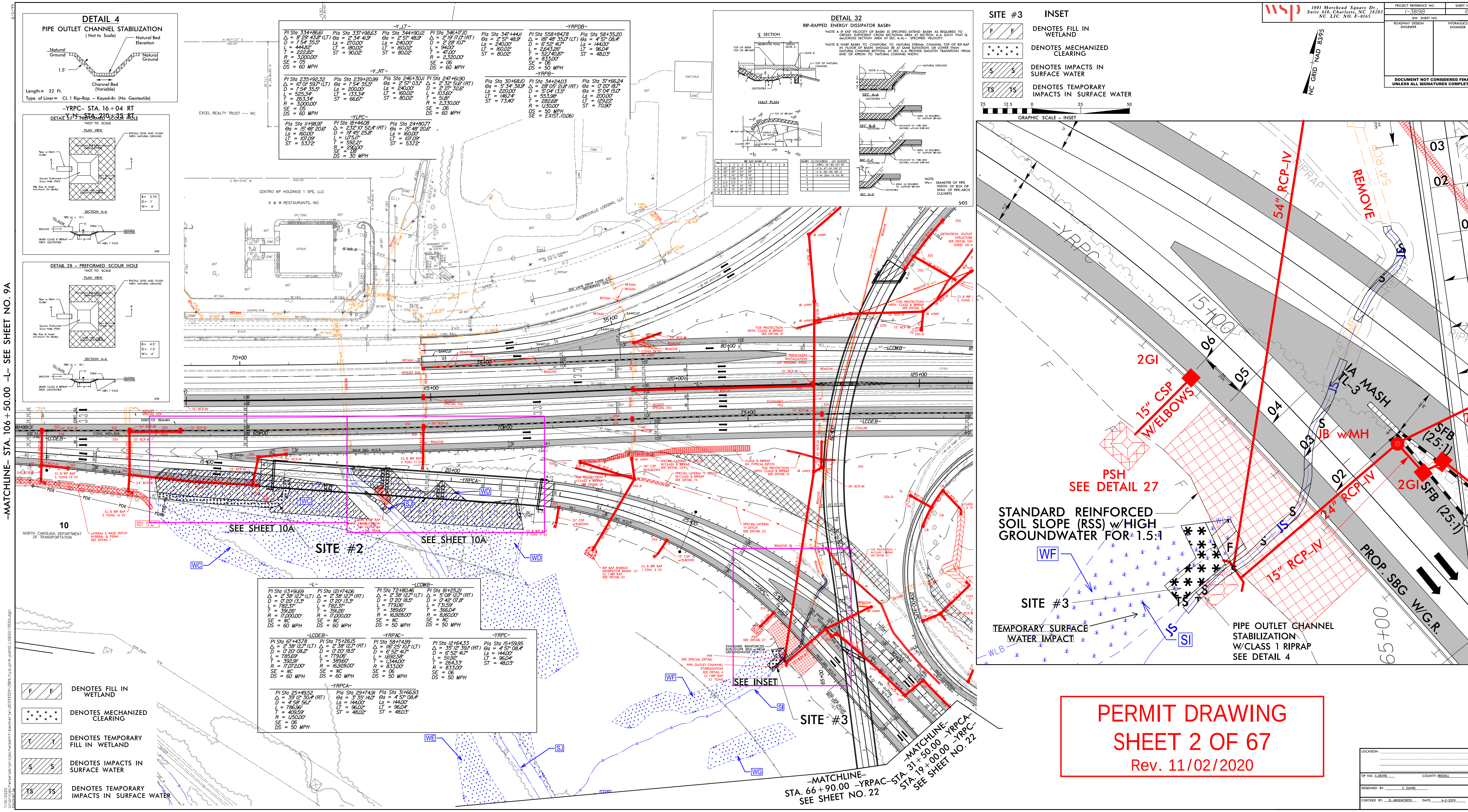
ROADWAY DESIGN ENGINEER

SIGNATURE: _____ *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER _____ *P.E.*

11/2/2020
c:\projectwise\pb\projectwiseint\becker jw\d0339329\i3819_hyd_prm_TSH.dgn
becker jw



-Y_LT-
PI Sta 334+86.61 Δ = 8°29' 43.8" (LT) D = 1°54' 35.5" L = 444.82' T = 222.82' R = 3,000.00' SE = .05 DS = 60 MPH
PIs Sta 337+98.63 θs = 2°34' 41.9" Ls = 270.00' LT = 180.02' ST = 90.02'
PIs Sta 344+90.12 θs = 2°57' 48.9" Ls = 240.00' LT = 160.02' ST = 80.02'
PI Sta 346+17.10 Δ = 2°19' 17.0" (RT) D = 2°28' 10.7" L = 94.00' T = 47.00' R = 2,320.00' SE = .06 DS = 60 MPH
PIs Sta 347+44.11 θs = 2°57' 48.9" Ls = 240.00' LT = 160.02' ST = 80.02'

-Y_RT-
PI Sta 235+92.32 Δ = 10°01' 59.7" (LT) D = 1°54' 35.5" L = 525.34' T = 263.34' R = 3,000.00' SE = .05 DS = 60 MPH
PIs Sta 239+20.99 θs = 1°54' 35.5" Ls = 200.00' LT = 133.34' ST = 66.67'
PIs Sta 246+30.11 θs = 2°57' 03.1" Ls = 240.00' LT = 160.02' ST = 80.02'
PI Sta 247+61.90 Δ = 2°32' 51.6" (RT) D = 2°27' 32.6" L = 103.60' T = 51.81' R = 2,330.00' SE = .06 DS = 60 MPH

-YRPDB-
PI Sta 558+84.78 Δ = 181°48' 35.0" (LT) D = 6°52' 41.7" L = 2,643.26' T = 52,740.87' R = 833.00' SE = .06 DS = 50 MPH
PIs Sta 58+35.20 θs = 4°57' 08.4" Ls = 144.00' LT = 96.04' ST = 48.03'

-YRPB-
PIs Sta 30+68.10 θs = 5°34' 38.9" Ls = 220.00' LT = 146.74' ST = 73.40'
PI Sta 34+24.03 Δ = 28°05' 21.8" (RT) D = 5°04' 13.5" L = 553.98' T = 282.68' R = 1,130.00' DS = 50 MPH SE = EXIST.(0.06)
PIs Sta 37+66.24 θs = 0°20' 18.7" Ls = 200.00' LT = 129.22' ST = 70.90'

-YLPC-
PIs Sta 11+98.97 θs = 15°48' 20.6" Ls = 160.00' LT = 107.09' ST = 53.72'
PI Sta 18+44.08 Δ = 232°10' 52.4" (RT) D = 19°45' 25.8" L = 1,175.17' T = 592.21' R = 290.00' SE = .08 DS = 30 MPH
PIs Sta 24+80.77 θs = 15°48' 20.6" Ls = 160.00' LT = 107.09' ST = 53.72'

-L-
PI Sta 113+91.69 Δ = 2°38' 12.7" (LT) D = 0°20' 13.3" L = 782.37' T = 391.26' R = 17,000.00' SE = NC DS = 60 MPH
PI Sta 121+74.06 Δ = 2°38' 12.7" (RT) D = 0°20' 13.3" L = 782.37' T = 391.26' R = 17,000.00' SE = NC DS = 60 MPH

-LCDWB-
PI Sta 72+80.46 Δ = 2°38' 12.7" (LT) D = 0°20' 18.5" L = 779.06' T = 389.60' R = 16,928.00' SE = NC DS = 50 MPH
PI Sta 81+25.21 Δ = 5°08' 12.7" (RT) D = 0°42' 07.8" L = 731.59' T = 366.04' R = 8,160.00' SE = NC DS = 50 MPH

-LCDEB-
PI Sta 67+43.78 Δ = 2°38' 12.7" (LT) D = 0°20' 08.2" L = 785.69' T = 392.91' R = 17,072.00' SE = NC DS = 60 MPH
PI Sta 75+26.15 Δ = 2°38' 12.7" (RT) D = 0°20' 18.5" L = 779.06' T = 389.60' R = 16,928.00' SE = NC DS = 60 MPH

-YRPAC-
PI Sta 58+74.99 Δ = 116°25' 10.1" (LT) D = 6°52' 41.7" L = 1,692.58' T = 1,344.00' R = 833.00' SE = .06 DS = 50 MPH

-YRPC-
PI Sta 12+64.33 Δ = 35°12' 39.1" (RT) D = 6°52' 41.7" L = 511.92' T = 264.33' R = 833.00' SE = .06 DS = 50 MPH
PIs Sta 15+59.95 θs = 4°57' 08.4" Ls = 144.00' LT = 96.04' ST = 48.03'

-YRPCA-
PI Sta 25+49.52 Δ = 39°12' 30.4" (RT) D = 4°58' 56.1" L = 786.96' T = 409.59' R = 1,150.00' SE = .06 DS = 50 MPH
PIs Sta 29+74.91 θs = 3°35' 14.0" Ls = 144.00' LT = 96.02' ST = 48.02'
PIs Sta 31+66.93 θs = 4°57' 08.4" Ls = 144.00' LT = 96.04' ST = 48.03'

F F DENOTES FILL IN WETLAND
* * DENOTES MECHANIZED CLEARING
T T DENOTES TEMPORARY FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE #3 INSET
F F DENOTES FILL IN WETLAND
* * DENOTES MECHANIZED CLEARING
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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

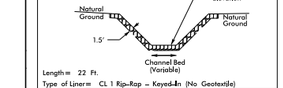
PROJECT REFERENCE NO. I-3819B SHEET NO. 10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 2 OF 67
Rev. 11/02/2020

LOCATION:
TIP NO.: I-3819B COUNTY: IREDELL
DESIGNED BY: C. DAVIS
CHECKED BY: D. AINSWORTH DATE: 4-2-2019

7/10/2020
c:\projectwise\pb\projectwiseint\becker jw\d0339329\13819_hyd_prm_psh10_L10650-13550.dgn
beckerjw

DETAIL 4
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)

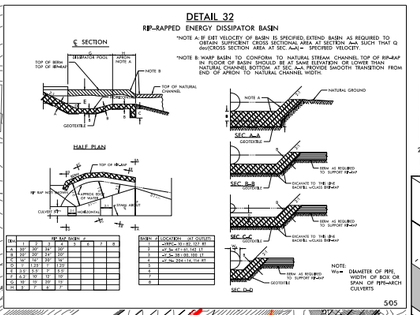


Length = 22 Ft.
Type of Liner = CL 1 Rip-Rap – Keyed-In (No Geotextile)

DETAIL 32
RIP-RAPPED ENERGY DISSIPATOR BASIN

*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED EXTEND BASIN AS REQUIRED TO ACCOMMODATE THE LENGTH OF RIP-RAP REQUIRED TO COMPLY WITH THAT Q (MAX)CROSS SECTION AREA AT SEC A=A = SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION, OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC A=A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



SITE #3 INSET

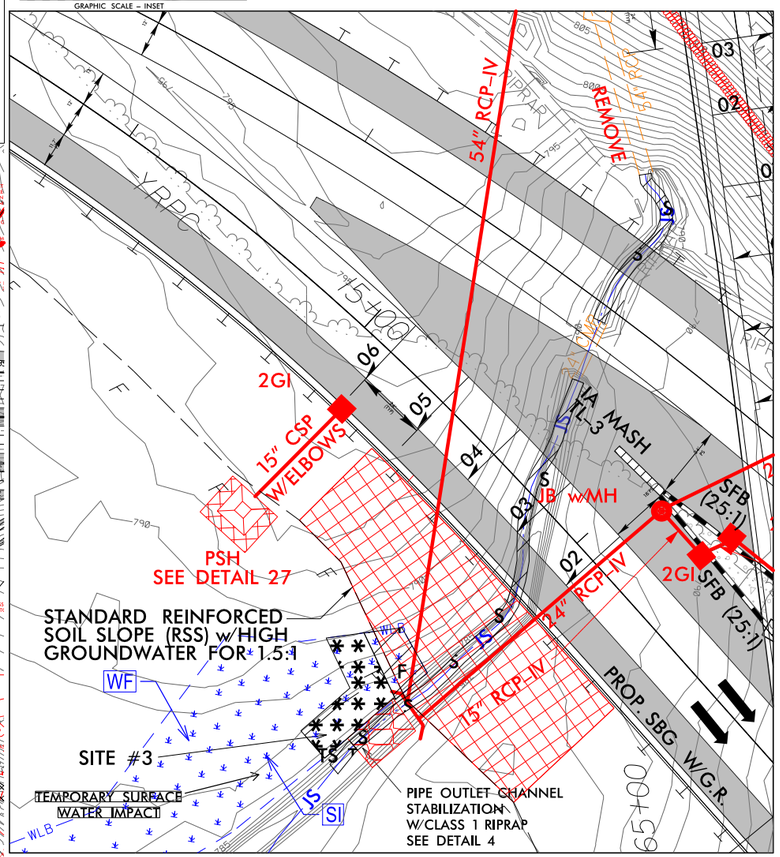
F F — DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

S S — DENOTES IMPACTS IN SURFACE WATER

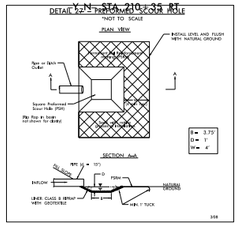
TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE – INSET



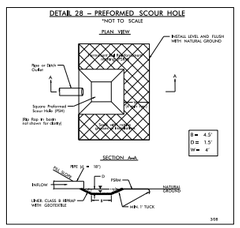
DETAIL 27 – YARD INLET
–YRPC– STA. 16+04 RT
Y-N– STA. 210+35 RT
DETAIL 27 – HARDWARE SCOUR HOLE

*NOT TO SCALE



DETAIL 28 – PREFORMED SCOUR HOLE

*NOT TO SCALE



NC GRID NAD 83/95

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

PROJECT REFERENCE NO.	SHEET NO.
I-5898	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

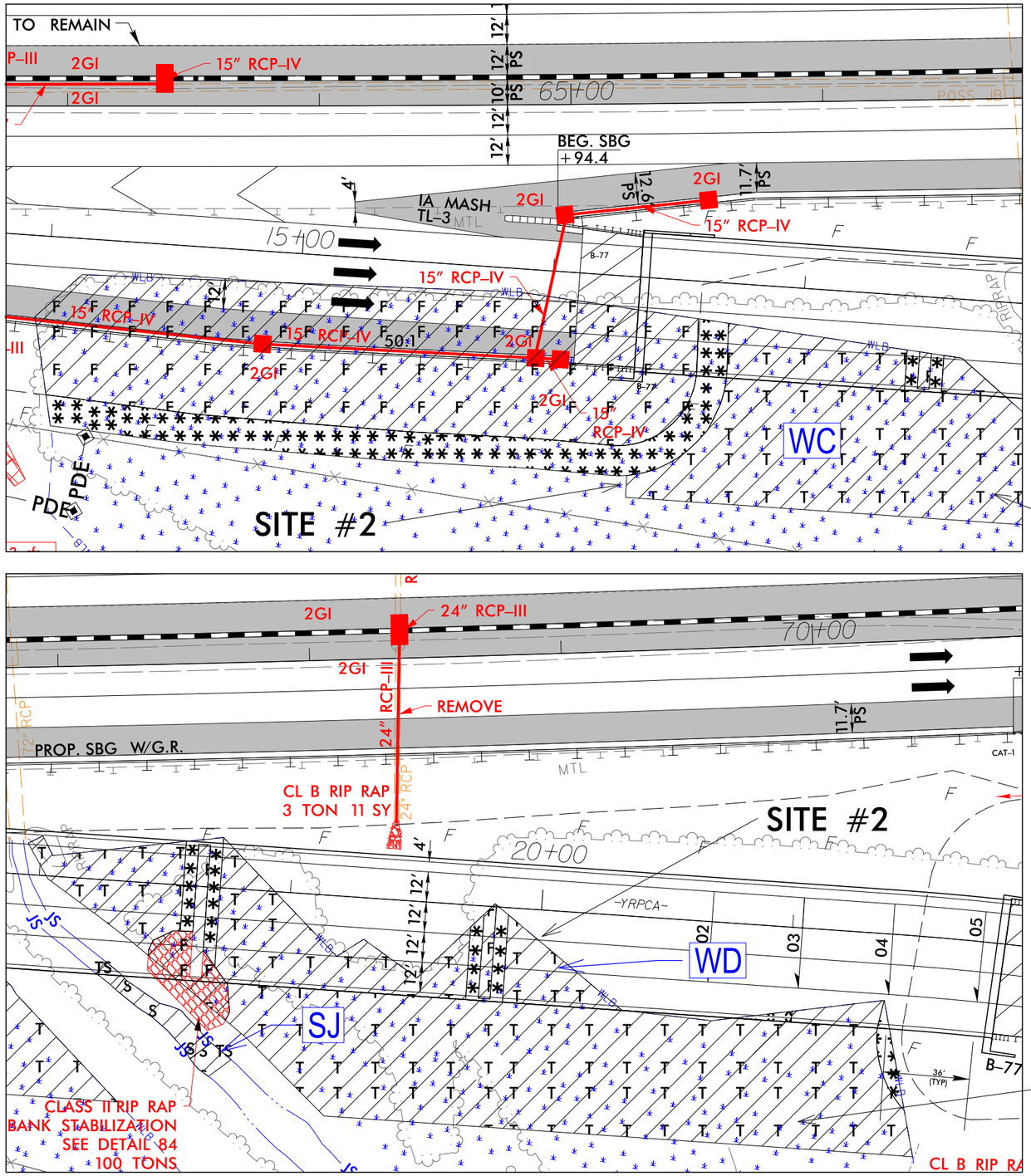
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 3 OF 67
Rev. 11/02/2020

LOCATION:
TIP NO.: I-5898 COUNTY: RIDDELL
DESIGNED BY: C. DAVIS
CHECKED BY: D. ARMSWORTH DATE: 4-23-2019

7/20/2020
10:47:27 AM
S:\DRAFT\Projects\I-5898\Roadway\Sheets\I-5898_Hyd_Sht_Layout_10.dgn

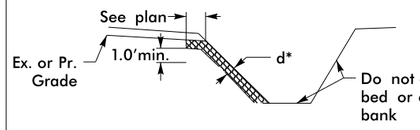
SITE #2



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

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

DETAIL 84
RIP RAP BANK STABILIZATION
(Not to Scale)



Type of Liner= CL 1 or CL 2 Rip Rap (see plan)
*d=18" for CL 1 and 30" for CL 2 (No Geotextile)

–YRPCA– STA. 18+65 RT
–YRPCA– STA. 77+00 RT

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	10A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 4 OF 67
Rev. 11/02/2020

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

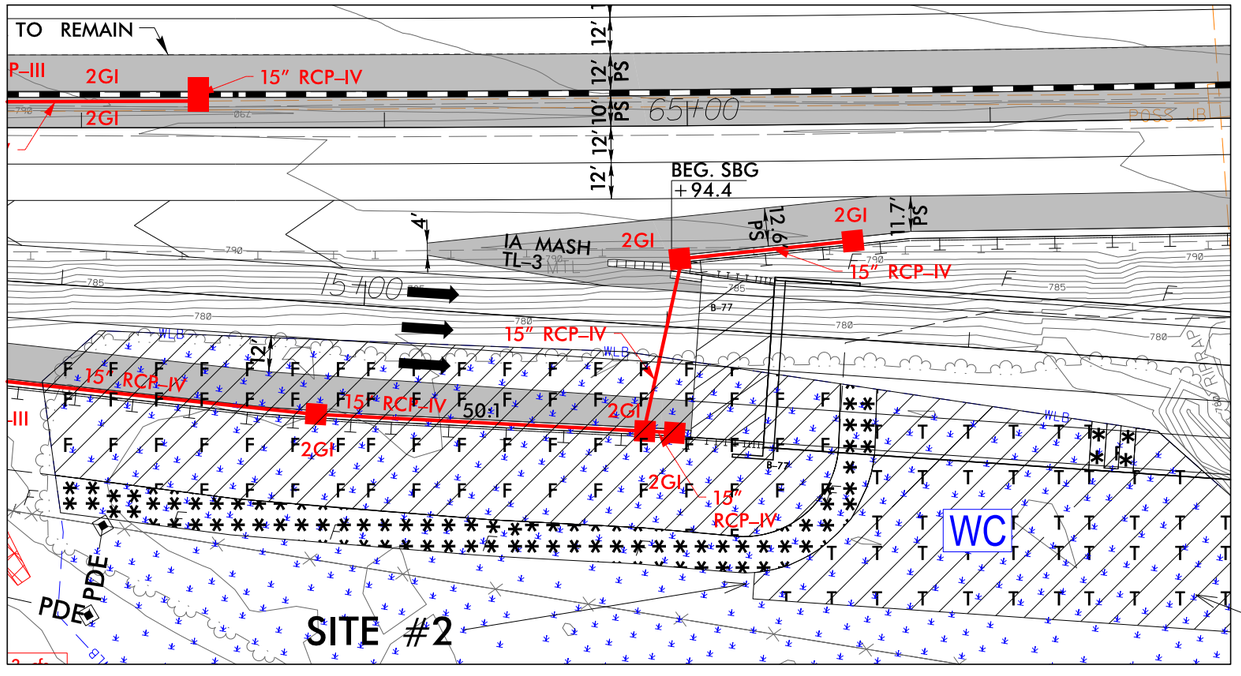
T T DENOTES TEMPORARY FILL IN WETLAND

NC GRID NAD 83/95

50 25 0 50 100
GRAPHIC SCALE – INSET

10/22/2020
c:\projectwise\pb\projectwiseint\becker_jw\d0339329\I3819_hyd_prm_psh10A_LI0650-13550.dgn
becker_jw

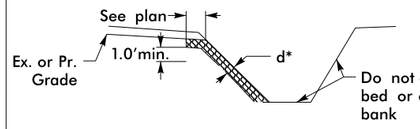
SITE #2



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

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

DETAIL 84
RIP RAP BANK STABILIZATION
(Not to Scale)



Type of Liner= CL 1 or CL 2 Rip Rap (see plan)
*d=18" for CL 1 and 30" for CL 2 (No Geotextile)

–YRPCA– STA. 18+65 RT
–YRPCA– STA. 77+00 RT

PERMIT DRAWING
SHEET 5 OF 67
Rev. 11/02/2020

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

T T DENOTES TEMPORARY FILL IN WETLAND

NC GRID NAD 83/95

50 25 0 50 100
GRAPHIC SCALE – INSET

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	10A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

10/22/2020
c:\projectwise\pb\projectwise\becker_jw\d0339329\I3819_hyd_prm_psh10A_L10650-13550.dgn
becker_jw

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

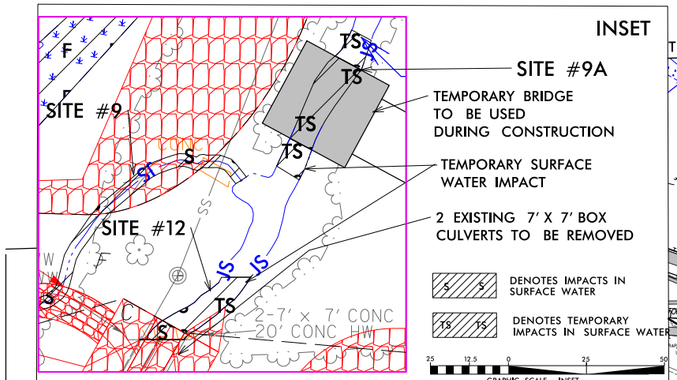
NC GRID NAD 8395

PERMIT DRAWING
SHEET 10 OF 67
Rev. 11/02/2020

REVISIONS
1. DEFICIENT PIPES – GROUP A – (EL. 144+03 –L– 153+01 (6/5/2020)
2. REVISED DRAINAGE – (L) 155+96 – 164+03 (11/2/2020)

6/2/2020
10/27/2020
11/2/2020
...\Victoria\Gateway\GD33529\I3819_hydSum_pshtL135500-164500.dgn

INSET



SITE #9A
TEMPORARY BRIDGE TO BE USED DURING CONSTRUCTION
TEMPORARY SURFACE WATER IMPACT
2 EXISTING 7' X 7' BOX CULVERTS TO BE REMOVED
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
GRAPHIC SCALE – INSET

LOCATION:	I-40 AT I-77 INTERCHANGE (EAST)
TIP NO:	I-3819B
COUNTY:	IREDELL
DESIGNED BY:	C. DAVIS
CHECKED BY:	D. AINSWORTH
DATE:	6-2-2019

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

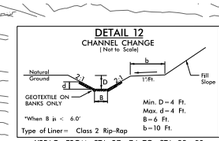
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

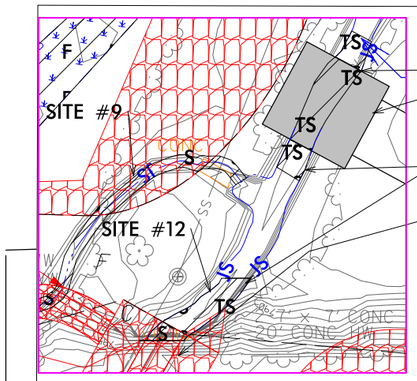
PERMIT DRAWING
SHEET 11 OF 67
Rev. 11/02/2020

DETAIL 12
CHANNEL CHANGE
(Not to Scale)



-YRPAC- FROM STA. 27+74 TO STA. 33+50

INSET



SITE #9A
TEMPORARY BRIDGE TO BE USED DURING CONSTRUCTION
TEMPORARY SURFACE WATER IMPACT
2 EXISTING 7' X 7' BOX CULVERTS TO BE REMOVED

S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE – INSET (25 12.5 0 25 50)

F F DENOTES FILL IN WETLAND
HC HC DENOTES HAND CLEARING
DENOTES MECHANIZED CLEARING
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

INSET

2 EXISTING 7' X 7' BOX CULVERTS TO BE REMOVED
TEMPORARY SURFACE WATER IMPACT

S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE – INSET (25 12.5 0 25 50)

LOCATION: I-40 AT I-77 INTERCHANGE (EAST)
TIP NO. I-3819B COUNTY: IREDELL
DESIGNED BY: C. DAVIS
CHECKED BY: D. AINSWORTH DATE: 6-2-2019

REVISIONS
1. DEFICIENT PIPES – GROUP A – (EBL 144+03 -A- 153+01 (6/5/2020)
2. REVISED DRAINAGE -A- 135+95 – 164+25 (9/9/2020)

6/27/2020
D:\Projects\Iredell\I-3819B_Victoria\Highway\Design\I-3819B_hyd_prm_pshtL_US50_6450.dgn

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 12 OF 67
Rev. 11/02/2020

TEMPORARY IMPACTS IN SURFACE WATER

CHANNEL BLOCK SEE DETAIL 65

CHANNEL CHANGE W/ 10' BERM & CL 2 RIPRAP SEE DETAIL 12

WK

CHANNEL CHANGE

15" CSP W/ELBOWS

TG1

2GI

15" RCP-IV

B-77

SITE #9

SITE #9

PROP. GUARDRAIL

PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 26 CL 1 RIP RAP 14 TONS 16 SY

TAIL 4' BASE DITCH W/CLASS B RIPRAP SEE DETAIL 11

TOE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 31

REMOVE

SL

CHANNEL BLOCK SEE DETAIL 65

CHANNEL CHANGE w/ 5' BASE & CL 2 RIPRAP

WK

CHANNEL BLOCK SEE DETAIL 65

SITE #12

NC GRID NAD 83/95

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

50 25 0 50 100
GRAPHIC SCALE – INSETS

10/21/2020
c:\projectwise\pb\projectwisent\becker_jw\d0339329\I3819_hyd_prm_psh11A_L13550-16450.dgn
becker_jw

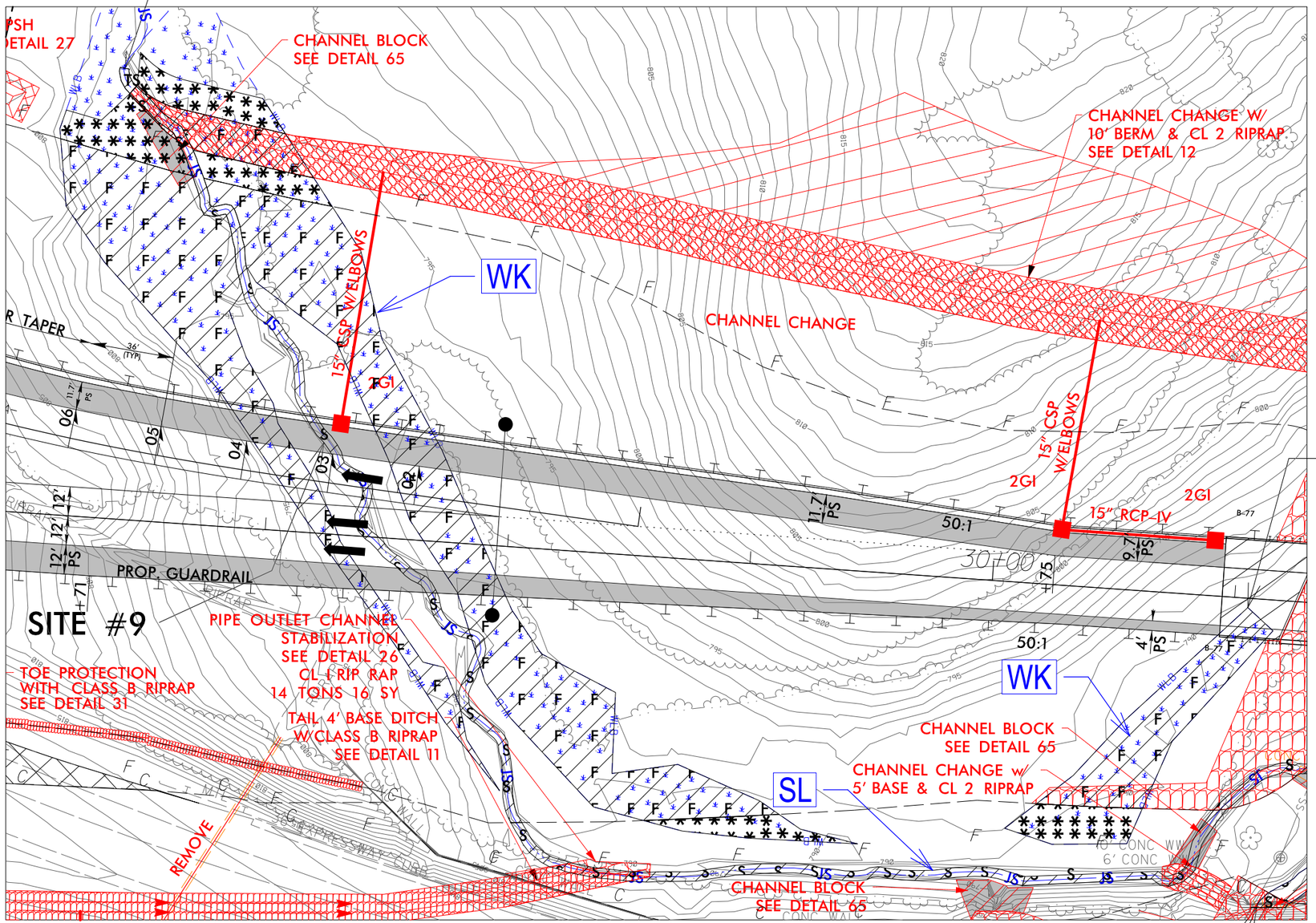
PERMIT DRAWING
SHEET 13 OF 67
Rev. 11/02/2020

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	IIA
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TEMPORARY IMPACTS IN SURFACE WATER



NC GRID NAD 83/95

S S	DENOTES IMPACTS IN SURFACE WATER
TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
F F	DENOTES FILL IN WETLAND
	DENOTES MECHANIZED CLEARING

50 25 0 50 100
GRAPHIC SCALE – INSETS

10/21/2020
c:\projectwise\pb\projectwiseint\becker_jw\d0339329\I3819_hyd_prm_pshIIA_L13550-16450.dgn
becker.jw

PERMIT DRAWING
SHEET 14 OF 67
Rev. 11/02/2020

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CHANNEL CHANGE W/
10' BERM & CL 2 RIPRAP
SEE DETAIL 12

TEMPORARY IMPACTS IN SURFACE WATER

CLASS 2 RIP RAP
AT EMBANKMENT
SEE DETAIL 13

TEMPORARY BRIDGE (30')
TO BE USED
DURING CONSTRUCTION
CL B RIP RAP
3 TON 11 SY

SITE #9

SITE #10

SITE #11

15" CSP W/ELBOWS

18" CSP W/ELBOWS

15" RCP-IV

18" RCP-III

2GI

50:1

9.7 PS

4 PS

30+00

+75

02

SK

WAN

WK

CHANNEL BLOCK
SEE DETAIL 65

EL CHANGE w/
& CL 2 RIPRAP

CHANNEL BLOCK
SEE DETAIL 65

REMOVE HW

CHANNEL REPLACING
EX. BOX CULVERT
W/CLASS II RIPRAP
SEE DETAIL 71

TEMPORARY ACCESS ROAD TO WI SE

10' CONC WW

6' CONC WW

7' x 7' CONC

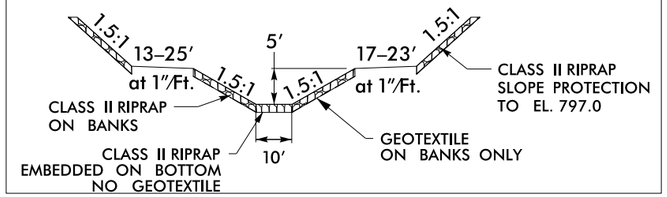
20' CONC HW

SITE #9A

SITE #12

TEMPORARY IMPACTS IN SURFACE WATER

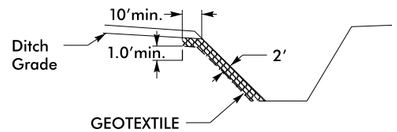
DETAIL 71
CHANNEL REPLACING EX. CULVERT
(Not to Scale)



–L– STA. 149+36

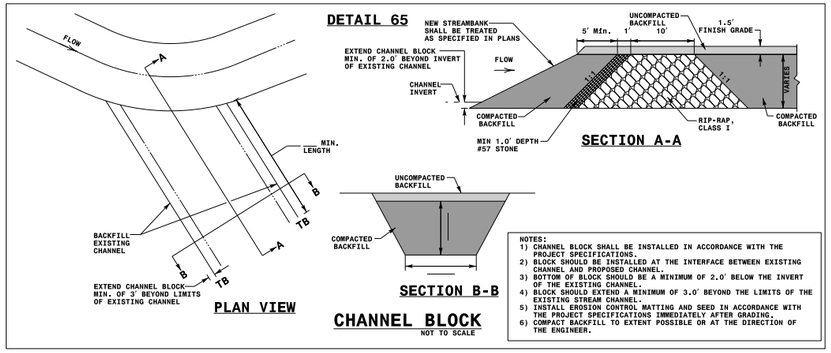
NC GRID NAD 83/95

DETAIL 13
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = Class 2 Rip-Rap

DETAIL 65



CHANNEL BLOCK
NOT TO SCALE

NOTES:
1) CHANNEL BLOCK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2) BLOCK SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
3) BOTTOM OF BLOCK SHOULD BE A MINIMUM OF 2.0' BELOW THE INVERT OF THE EXISTING CHANNEL.
4) BLOCK SHOULD EXTEND A MINIMUM OF 3.0' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
5) INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
6) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

50 25 0 50 100

GRAPHIC SCALE – INSETS

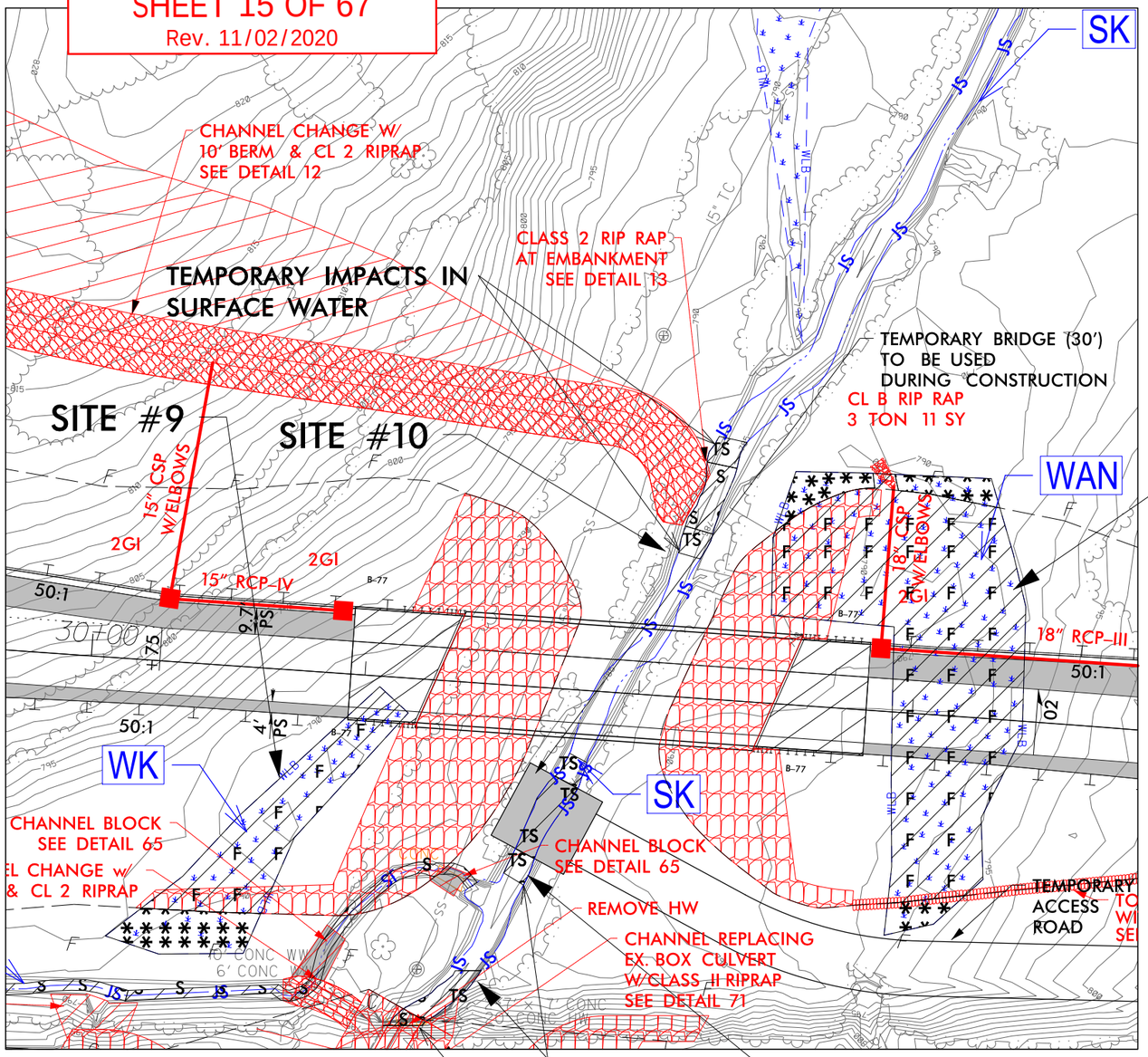
10/21/2020
c:\projectwise\pb\projectwiseint\becker_jw\d0339329\I3819_hyd_prm_pshI1B_L13550-16450.dgn
Becker, JW

PERMIT DRAWING
SHEET 15 OF 67
Rev. 11/02/2020

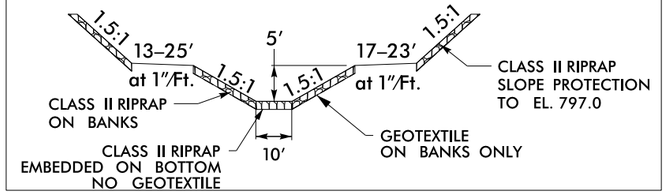
wsp
1001 Morehead Square Dr.,
Suite 610, Charlotte, NC 28203
NC LIC NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

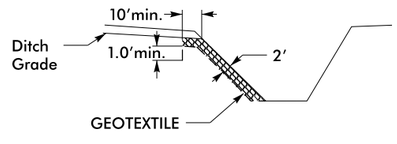


DETAIL 71
CHANNEL REPLACING EX. CULVERT
(Not to Scale)



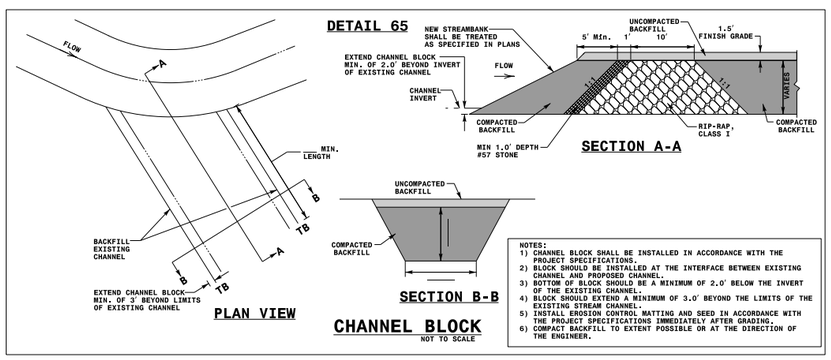
–L– STA. 149 + 36

DETAIL 13
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = Class 2 Rip-Rap

DETAIL 65



NOTES:
1) CHANNEL BLOCK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2) BLOCK SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
3) BOTTOM OF BLOCK SHOULD BE A MINIMUM OF 2.0' BELOW THE INVERT OF THE EXISTING CHANNEL.
4) BLOCK SHOULD EXTEND A MINIMUM OF 3.0' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
5) INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
6) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

50 25 0 50 100

GRAPHIC SCALE – INSETS

10/21/2020
C:\projectwise\pb\projectwisent\becker_jw\d0339329\I3819_hyd_prm_psh11B_L13550-I6450.dgn
becker.jw

PERMIT DRAWING
SHEET 21a OF 67
Rev. 11/02/2020

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL 98
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)
Natural Bed Elevation
Natural Ground
1.25'
Channel Bed (Variable)
Length – 14 Ft.
Type of Liner – CL 1 Rip-Rap – Keyed-In (No Geotextile)

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

101

J. DONALD CLINE
100

A.G. & MARGIE C. CAMPBELL IRREVOCABLE LIVING TRUST

SITE #28

SEE INSET

PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 98 CL 1 RIP RAP 27 TONS 42 SY

SO PDE 42" RCP-III JB w/MH

–SR Y15– SR 2437 WILSON PARK RD 24' BST

–Y15RPB– –Y15RPC– –Y15– –I-40 WB RAMP 24' BST– –I-40 EB RAMP 19' BST– –I-40 EB RAMP 24' BST–

–MATCHLINE– STA. 206+50.00 –L– SEE SHEET NO. 14

–MATCHLINE– STA. 220+50.00 –L– SEE SHEET NO. 15A

NC GRID NAD 83/95

TIE TO EXIST. FENCE 33.4 –L–

RETAIN

REMOVE PROP CHL FENCE

18" RCP-III 15+00 33.33' TYP.

2GI-D 18" RCP-III

MATCH EXIST

3' BASE SPECIAL CUT DITCH W/CLASS B RIPRAP SEE DETAIL 43

END WB RECONSTRUCTION END APPROACH SLAB TIE TO EXIST. BRIDGE –L– POC STA. 219+55.98

TRENCHLESS INSTALLATION 36" WELDED STEEL

36" CSP 36" RCP-III JB w/MH 6' MTL

15" CSP w/ELBOWS FLOWABLE FILL

END CONC PAV'T BEGIN APPROACH SLAB 219+27.63

I-40 WB 36' CONC

CONC BRIDGE

220+00

215+00

210+00

20+00

15+00

GREU TL-3 8:1

CGAU TYPE III

CABLE GUIDERAIL

REMOVE

RETAIN & LINE

IA MASH TL-3

END MED. BAR. +10

SPECIAL CUT DITCH W/HINGE SEE DETAIL 45

END CONC PAV'T BEGIN APPROACH SLAB 218+92.91

I-40 WB 95' BST PROP. GUARDRAIL

END EB RECONSTRUCTION END APPROACH SLAB TIE TO EXIST. BRIDGE –L– POC STA. 219+28.51

REMOVE INLET AND PIPES

15" CSP CL B RIP RAP 2 TONS 7 SY

REMOVE OEP

36" RCP-III JB w/MH RETAIN

24" RCP-III 2GI-D

BERM 'V' DITCH SEE DETAIL 42

PROP. CHL FENCE

150' TURN

BDO

18" CSP w/ELBOWS

REMOVE CONCRETE STRUCTURE

RETAIN 18" CMP COLLAR

TIE TO EXIST. FENCE 216+99.3 –L–

TEMPORARY SURFACE WATER IMPACT

WO

SITE #28 INSET

PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 98 CL 1 RIP RAP 27 TONS 42 SY

SO PDE FS S 18" WW EXISTING R/W 42" RCP-III DI 18" RCP JB w/MH

25 12.5 0 25 50
GRAPHIC SCALE – INSET

10/21/2020
c:\projectwise\pb\projectwisent\becker_jw\d0339329\I3819_hyd_prm_psh15_L20650-21770.dgn
Becker, JW

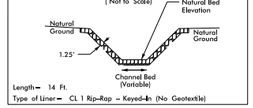
PERMIT DRAWING
SHEET 21b OF 67
Rev. 11/02/2020

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL 98
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length – 14 Ft.
Type of Liner – CL 1 Rip-Rap – Keyed-In (No Geotextile)

–Y15RPB– STA. 24+00 LT

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

SITE #28

SEE INSET

–MATCHLINE– STA. 206+50.00 –L– SEE SHEET NO. 14

–MATCHLINE– STA. 220+50.00 –L– SEE SHEET NO. 15A

SITE #28 INSET

PIPE OUTLET CHANNEL STABILIZATION
SEE DETAIL 98
CL I RIP RAP
27 TONS 42 SY

SO

PDE

TS

S

42" RCP–III

JB w/MH

18" RCP

TEMPORARY SURFACE WATER IMPACT

25 12.5 0 25 50
GRAPHIC SCALE – INSET

J. DONALD CLINE

A. C. & MARGIE C. CAMPBELL IRREVOCABLE LIVING TRUST

100

101

SR-Y15

I-40 WB RAMP 24 BST

I-40 EB RAMP 19 BST

I-40 EB RAMP 24 BST

Y15RPB

Y15RPC

TIE TO EXIST. FENCE 33.4 –L–

TIE TO EXIST. FENCE 216+99.3 –L–

END WB RECONSTRUCTION
END APPROACH SLAB
TIE TO EXIST. BRIDGE
–L– POC STA. 219+55.98

END CONC. PAV'T
BEGIN APPROACH SLAB
219+27.63

END CONC. PAV'T
BEGIN APPROACH SLAB
218+92.91

END EB RECONSTRUCTION
END APPROACH SLAB
TIE TO EXIST. BRIDGE
–L– POC STA. 219+28.51

TRENCHLESS INSTALLATION
36" WELDED STEEL

PROP. GUARDRAIL

CABLE GUIDERAIL

REMOVE

RETAIN

RETAIN & LINE

REMOVE INLET AND PIPES

FLOWABLE FILL

SPECIAL CUT DITCH W/HINGE SEE DETAIL 45

3' BASE SPECIAL CUT DITCH W/CLASS B RIPRAP SEE DETAIL 43

BERM 'V' DITCH SEE DETAIL 42

PROP. CHL FENCE

150' TURN

END MED. BAR +10

WO

NC GRID NAD 83/95

10/21/2020
c:\projectwise\pb\projectwisent\becker_jw\d0339329\I3819_hyd_prm_psh15_L20650-21770.dgn
Becker, JW

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

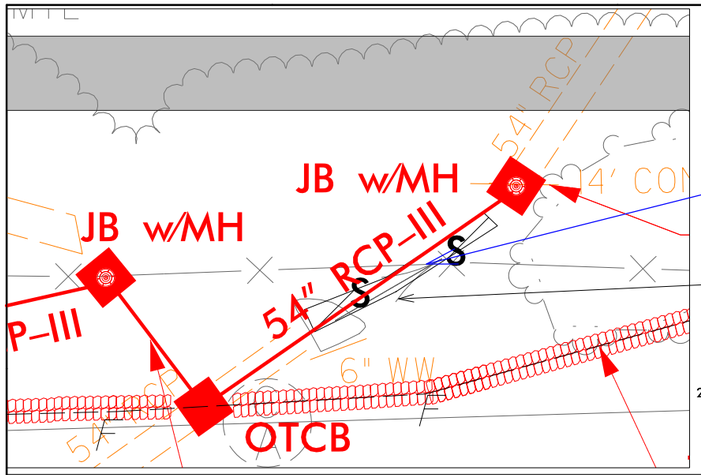
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

50 25 0 50 100
GRAPHIC SCALE

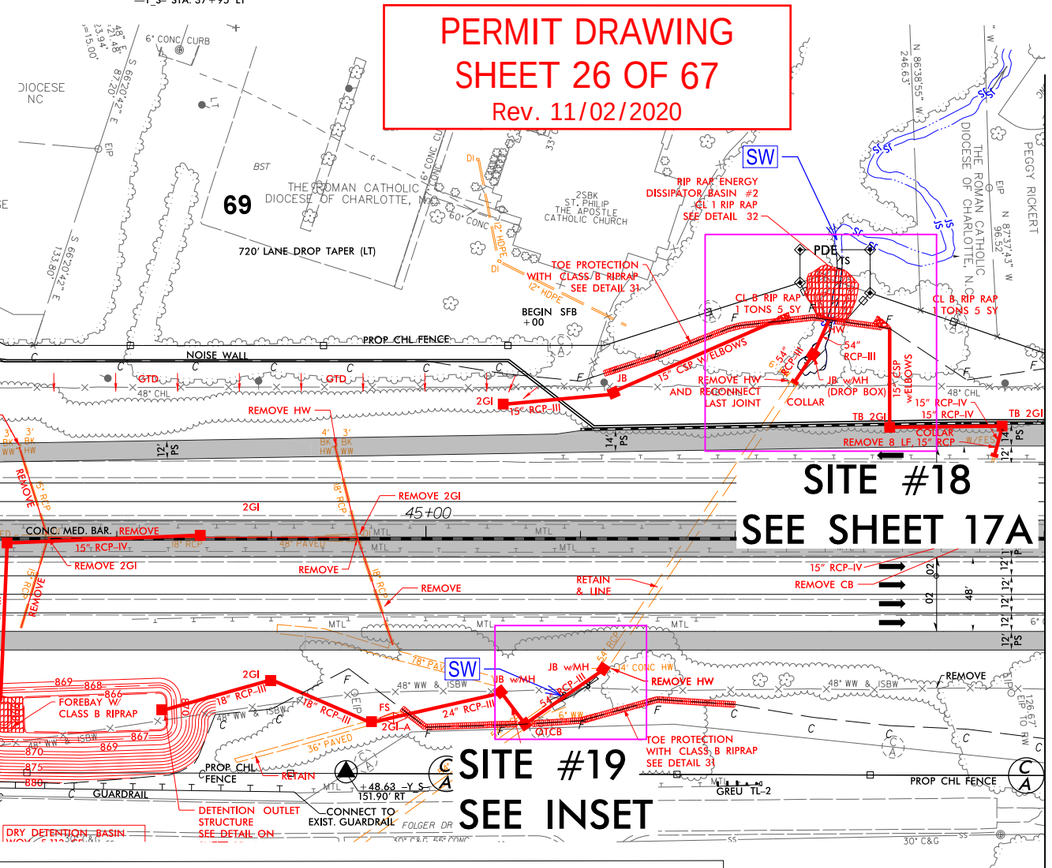
PERMIT DRAWING
SHEET 26 OF 67
Rev. 11/02/2020

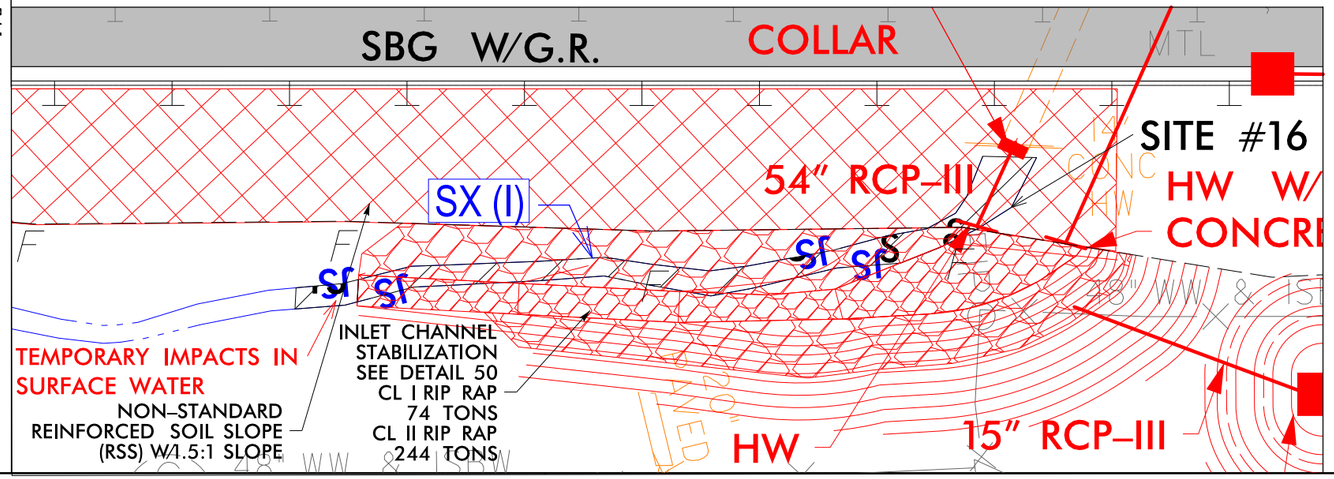
INSET



25 12.5 0 25 50
GRAPHIC SCALE – INSET

DETAIL 101
OUTLET CHANNEL STABILIZATION
(Not to Scale)
PLACEMENT DEPTH: CL 2 – 30" (No Geotextile)
NG, FLOODPLAIN BENCH, CL II RIPRAP ON BANKS, CL I RIPRAP w/ NATIVE MATERIAL PLACED ON TOP TO FILL VOIDS (ON BED), VARIES 0–8', SLOPE FROM INVERT TO NATURAL BED AT APPROX. 5%
—Y_S– STA. 37+95 LT





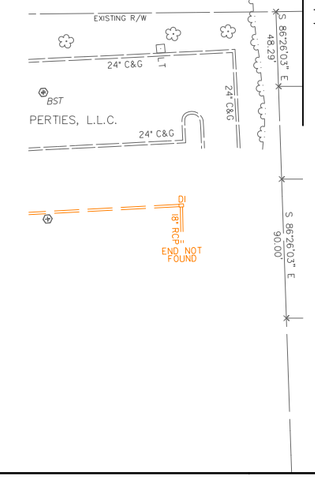
INSET

DETAIL 50
INLET CHANNEL STABILIZATION
(Not to Scale)
PLACEMENT DEPTH: CL 1 – 24" CL 2 – 30" (No Geotextile)
NG, FLOODPLAIN BENCH, CL II RIPRAP ON BANKS, CL I RIPRAP w/ NATIVE MATERIAL PLACED ON TOP TO FILL VOIDS (ON BED), VARIES 0–10', (No Geotextile)
—Y_S– STA. 37+15 RT

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSET



10/13/2020
C:\Users\kwise\pb\projectwisenl\wsp_victoria.kohley\d0339329\I3819_hyd_prm_psh17_Y3500-4900.dgn
05.K.67148

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

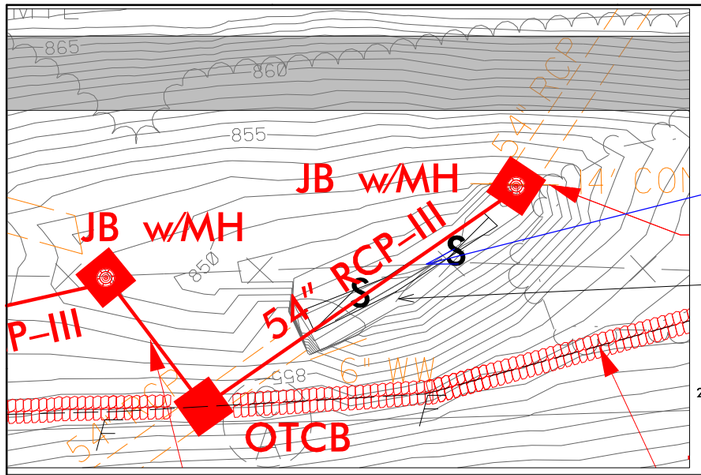
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

50 25 0 50 100
GRAPHIC SCALE

PERMIT DRAWING
SHEET 27 OF 67
Rev. 11/02/2020

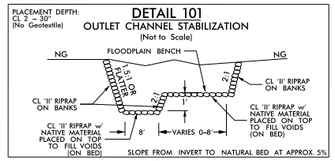
INSET



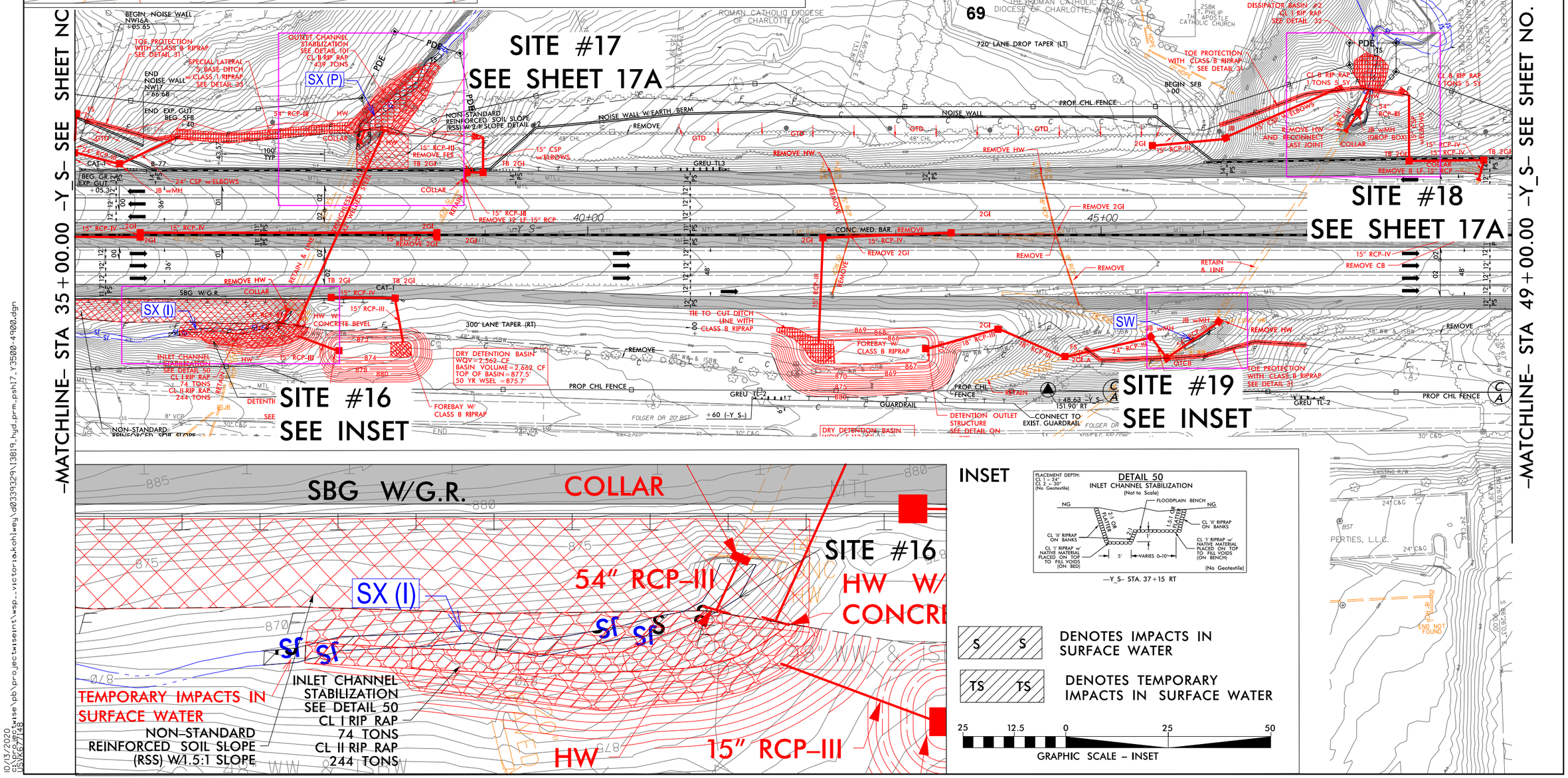
25 12.5 0 25 50
GRAPHIC SCALE – INSET

DETAIL 101
OUTLET CHANNEL STABILIZATION
(Not to Scale)

PLACEMENT DEPTH: CL 2 – 30" (No Geotextile)



—Y_S– STA. 37+95 LT



INSET

DETAIL 50
INLET CHANNEL STABILIZATION
(Not to Scale)

PLACEMENT DEPTH: CL 1 – 24" CL 2 – 30" (No Geotextile)

—Y_S– STA. 37+15 RT

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSET

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	17A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

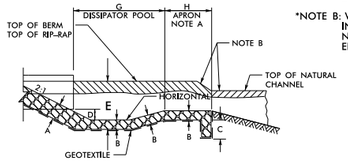
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 28 OF 67
Rev. 11/02/2020

DETAIL 32

RIP-RAPPED ENERGY DISSIPATOR BASIN

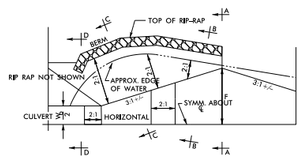
℄ SECTION



*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A)= SPECIFIED VELOCITY.

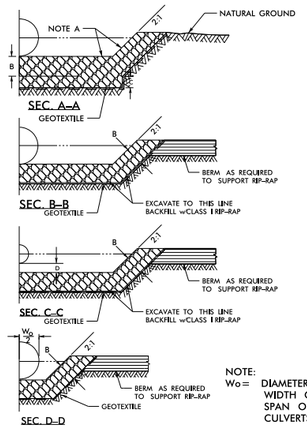
*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

HALF PLAN



DIM.	RIP RAP BASIN # 1	2	3	4	5	6	7	8
A	30"	30"						
B	20"	20"						
C	16"	16"						
D	1'	1.25'						
E	3.5'	5.5'						
F	6.3'	10'						
G	10'	15'						
H	5'	7'						

BASIN #	LOCATION (AT OUTLET)
1	–YRPC– 10+82, 127 RT
2	–Y_S– 47+61, 142 LT
3	
4	
5	
6	
7	
8	



NOTE:
Wo= DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE-ARCH CULVERTS

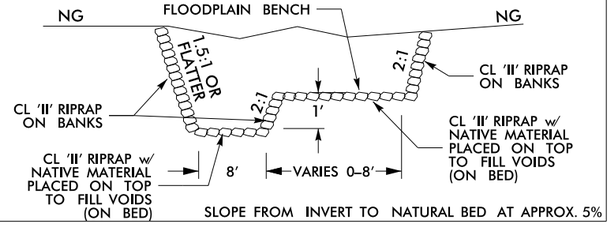
5/05

DETAIL 101

OUTLET CHANNEL STABILIZATION

(Not to Scale)

PLACEMENT DEPTH:
CL 2 – 30"
(No Geotextile)



SLOPE FROM INVERT TO NATURAL BED AT APPROX. 5%

—Y_S– STA. 37+95 LT

NC GRID | NAD 83/95

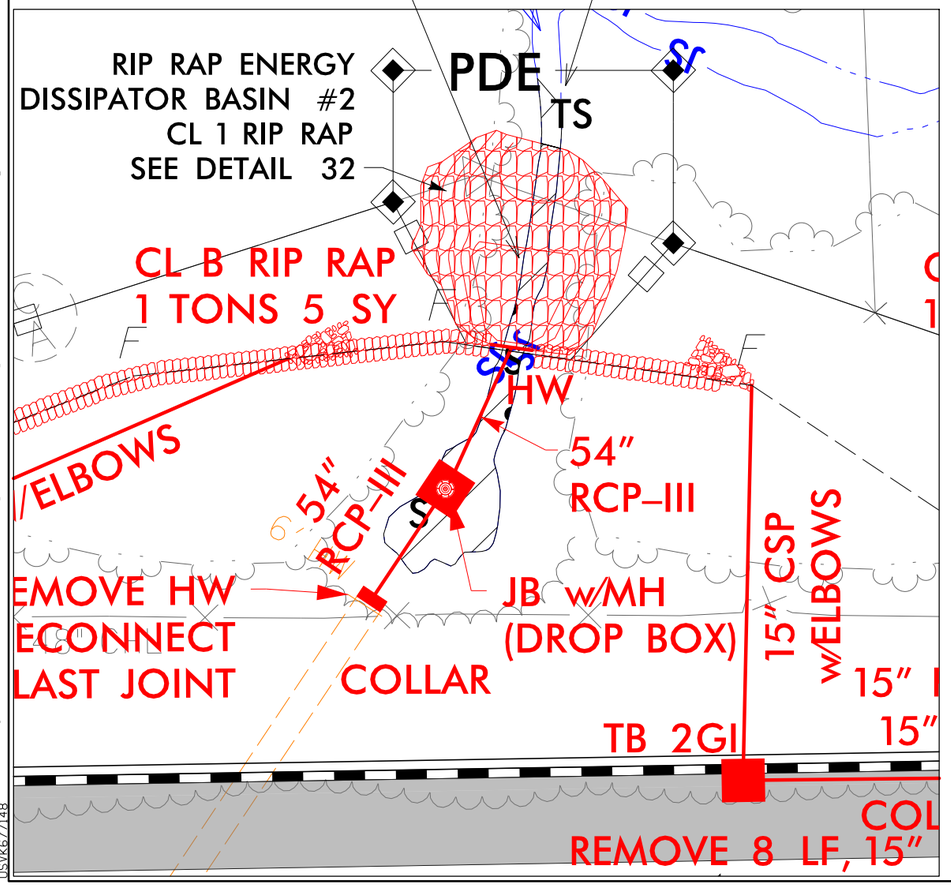
S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSETS

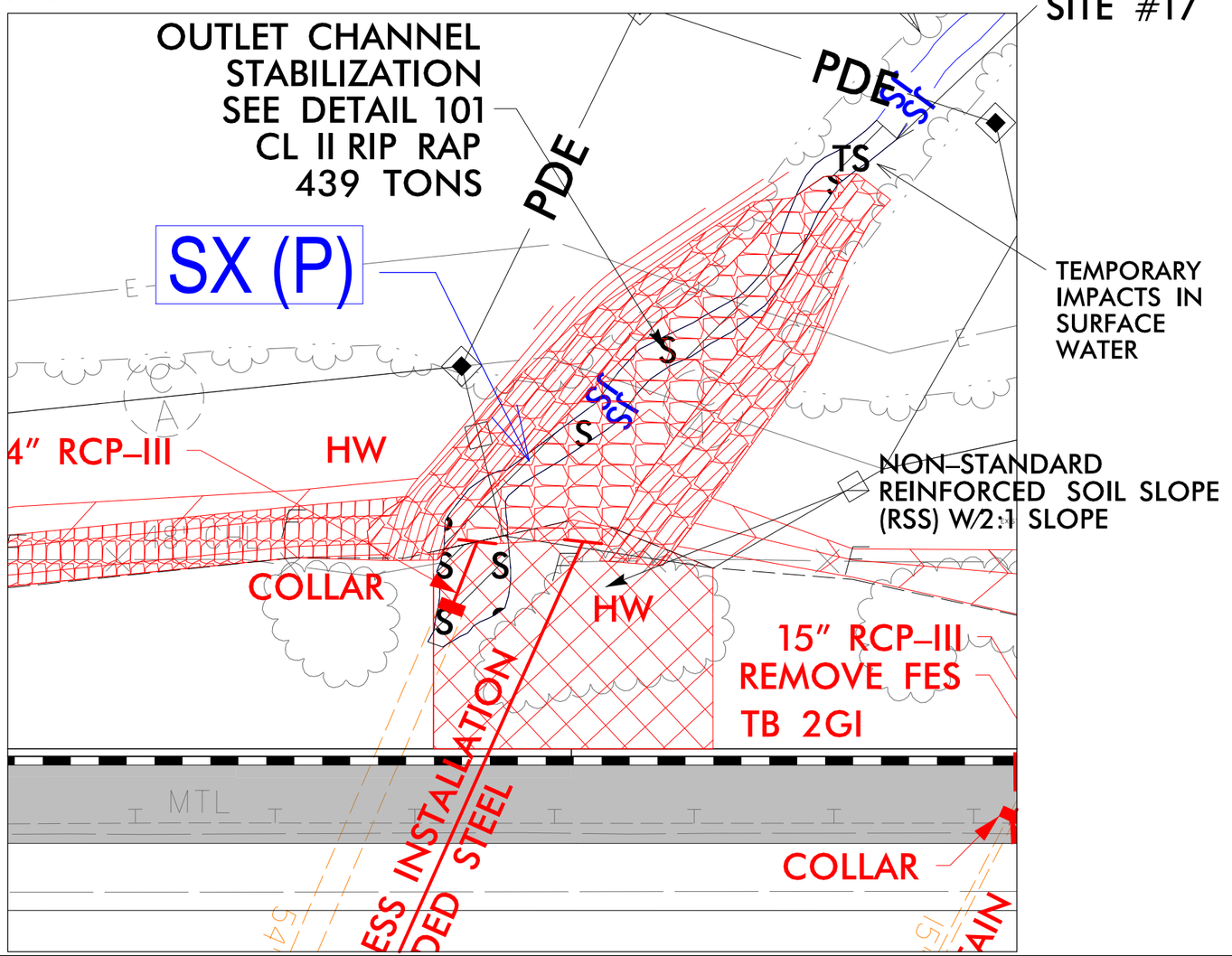
INSET

SITE #18



INSET

SITE #17



10/15/2020
dgoodwin
05-X6-7148
C:\Users\dgoodwin\wse\pb\projectwise\wsp...victoria.kohlwey\d0339329\I3819_hyd_prm_psh17A_Y3500-4900.dgn

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

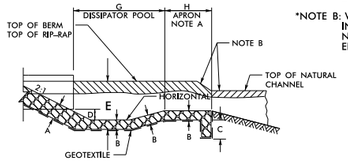
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	17A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

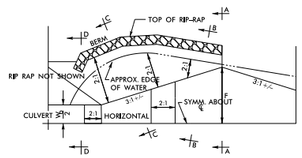
PERMIT DRAWING
SHEET 29 OF 67
Rev. 11/02/2020

DETAIL 32
RIP-RAPPED ENERGY DISSIPATOR BASIN

℄ SECTION

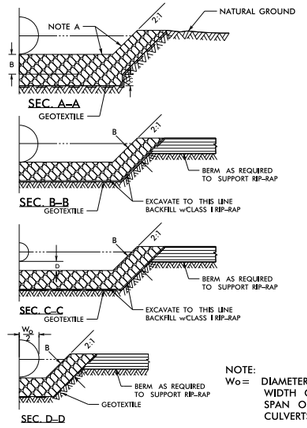


HALF PLAN



*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A)= SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



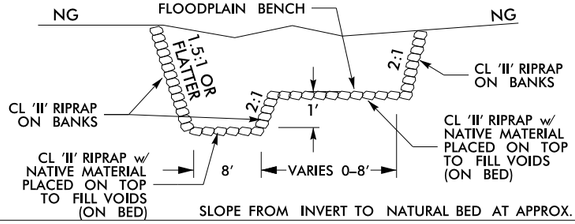
DIM.	RIP RAP BASIN # 1	2	3	4	5	6	7	8
A	30"	30"						
B	20"	20"						
C	16"	16"						
D	1'	1.25'						
E	3.5'	5.5'						
F	6.3'	10'						
G	10'	15'						
H	5'	7'						

BASIN #	LOCATION (AT OUTLET)
1	–YRPC– 10+82, 127 RT
2	–Y_S– 47+61, 142 LT
3	
4	
5	
6	
7	
8	

5/05

PLACEMENT DEPTH:
CL 2 – 30"
(No Geotextile)

DETAIL 101
OUTLET CHANNEL STABILIZATION
(Not to Scale)



—Y_S– STA. 37+95 LT

NC GRID NAD 83/95

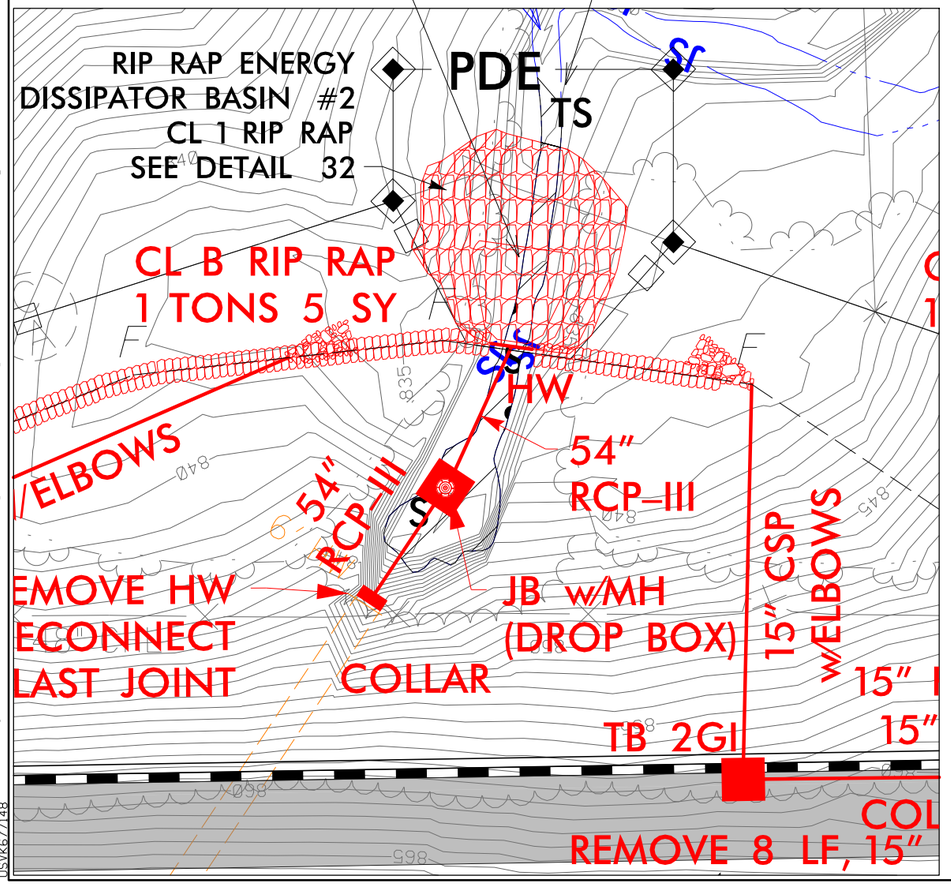
S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSETS

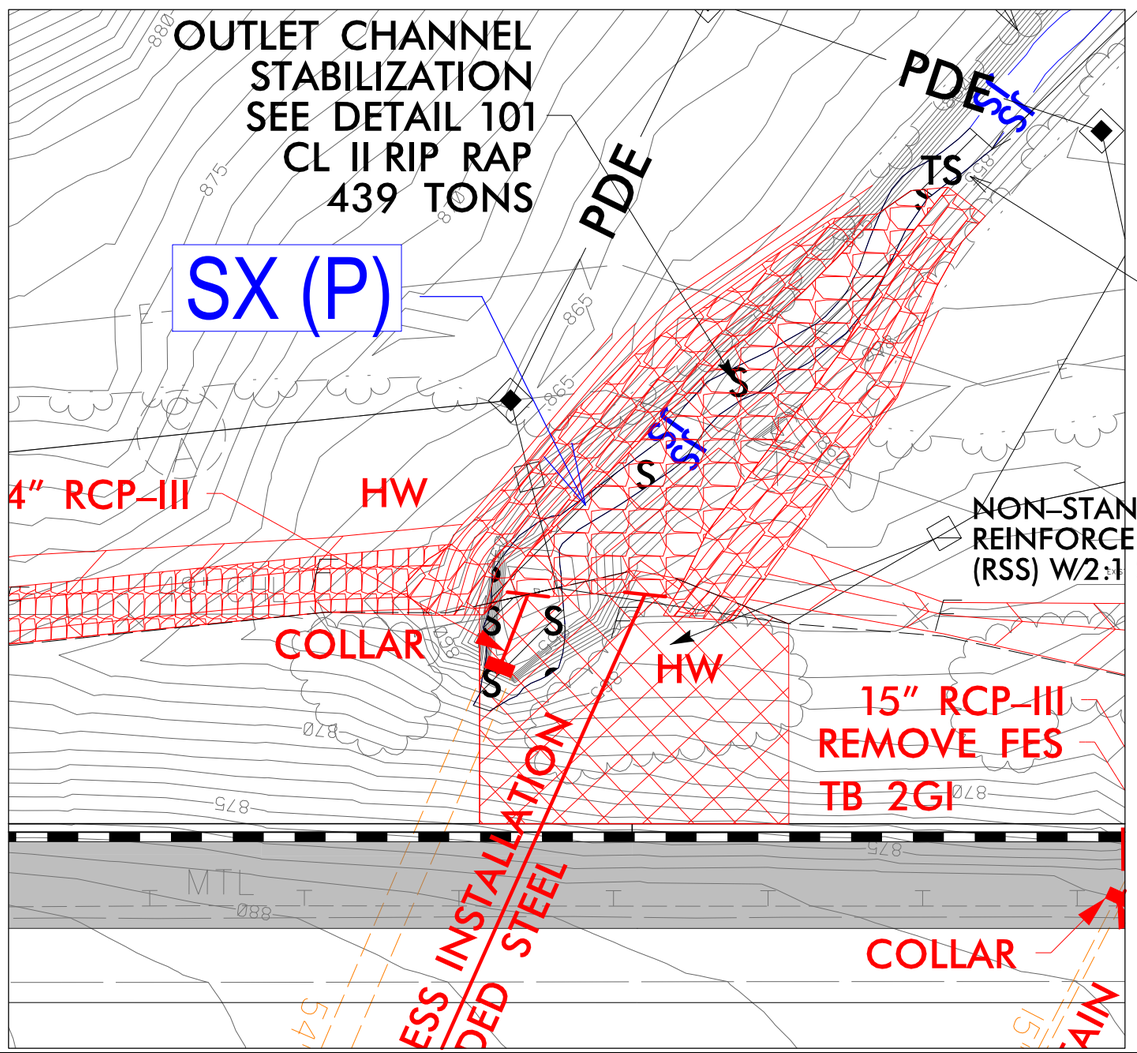
INSET

SITE #18



INSET

SITE #17



10/15/2020
C:\Projects\wse\pb\projectwsint\wsp...victoria.kohlwey\d0339329\I3819_hyd_prm_psh17A_Y3500-4900.dgn
05.K6.7148

PERMIT DRAWING
SHEET 30 OF 67
Rev. 11/02/2020

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

PROJECT REFERENCE NO.	SHEET NO.
I-5818B	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

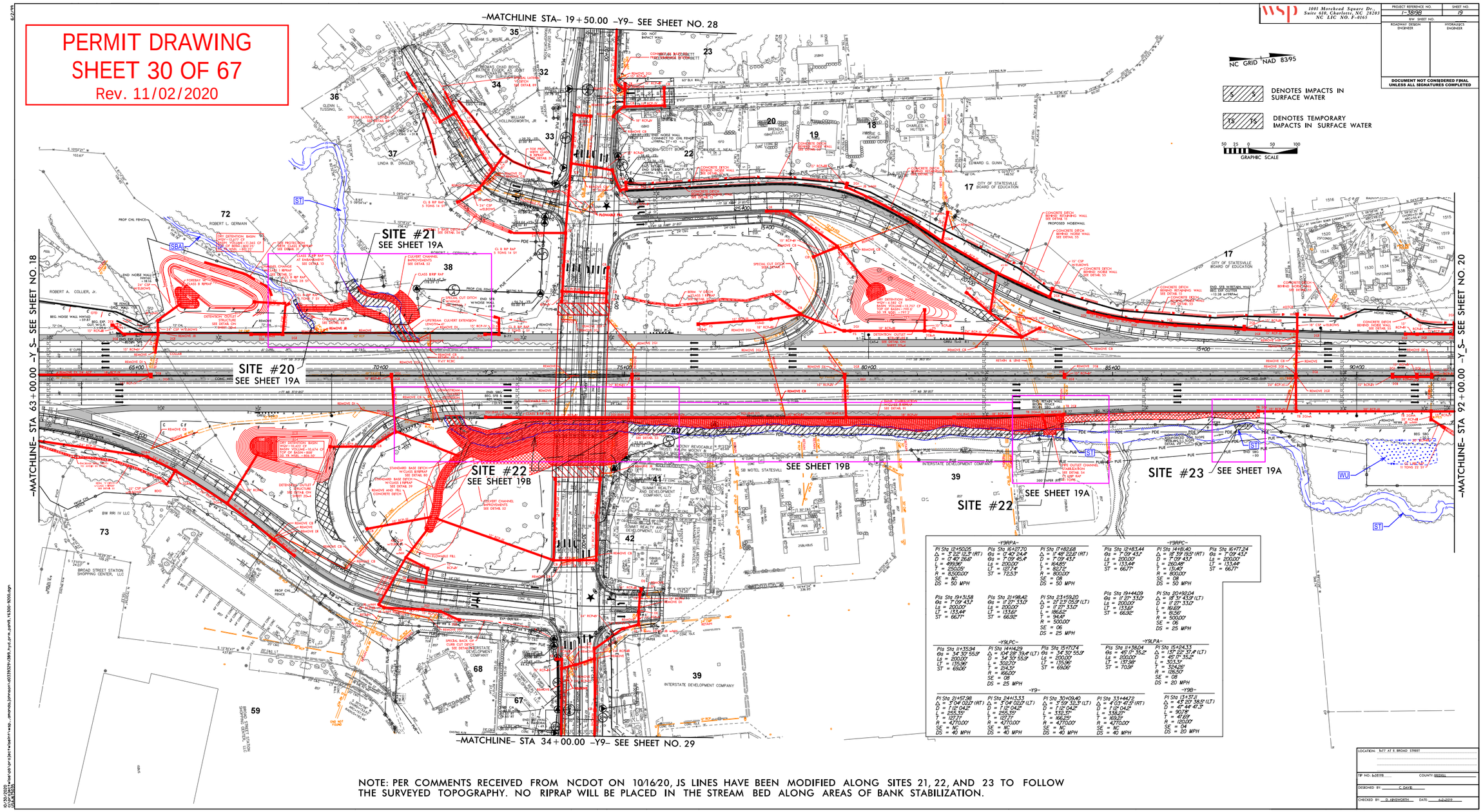
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 8395

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE 50 25 0 50 100



NOTE: PER COMMENTS RECEIVED FROM NCDOT ON 10/16/20, JS LINES HAVE BEEN MODIFIED ALONG SITES 21, 22, AND 23 TO FOLLOW THE SURVEYED TOPOGRAPHY. NO RIPRAP WILL BE PLACED IN THE STREAM BED ALONG AREAS OF BANK STABILIZATION.

LOCATION: SR77 AT E BROAD STREET

TIP NO.: I-5818B COUNTY: IREDELL

DESIGNED BY: C DAVIS

CHECKED BY: D ARNSWORTH DATE: 4-2-2018

10/29/2020
C:\Users\chris.davis.ctr\Desktop\I-5818B_Permit Drawings\I-5818B_Permit Drawings_19.dgn
USA_ft.tbl

PERMIT DRAWING
SHEET 31 OF 67
Rev. 11/02/2020

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

PROJECT REFERENCE NO.	SHEET NO.
I-5818B	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 8395

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE 50 25 0 50 100

–MATCHLINE– STA– 19+50.00 –Y9– SEE SHEET NO. 28

–MATCHLINE– STA 63+00.00 –Y_S– SEE SHEET NO. 18

–MATCHLINE– STA 92+00.00 –Y_S– SEE SHEET NO. 20

–MATCHLINE– STA 34+00.00 –Y9– SEE SHEET NO. 29

SITE #20
SEE SHEET 19A

SITE #21
SEE SHEET 19A

SITE #22
SEE SHEET 19B

SITE #22
SEE SHEET 19A

SITE #23
SEE SHEET 19A

NOTE: PER COMMENTS RECEIVED FROM NCDOT ON 10/16/20, JS LINES HAVE BEEN MODIFIED ALONG SITES 21, 22, AND 23 TO FOLLOW THE SURVEYED TOPOGRAPHY. NO RIPRAP WILL BE PLACED IN THE STREAM BED ALONG AREAS OF BANK STABILIZATION.

LOCATION: 627 AT E. BROAD STREET

TIP NO.: I-5818B COUNTY: IREDELL

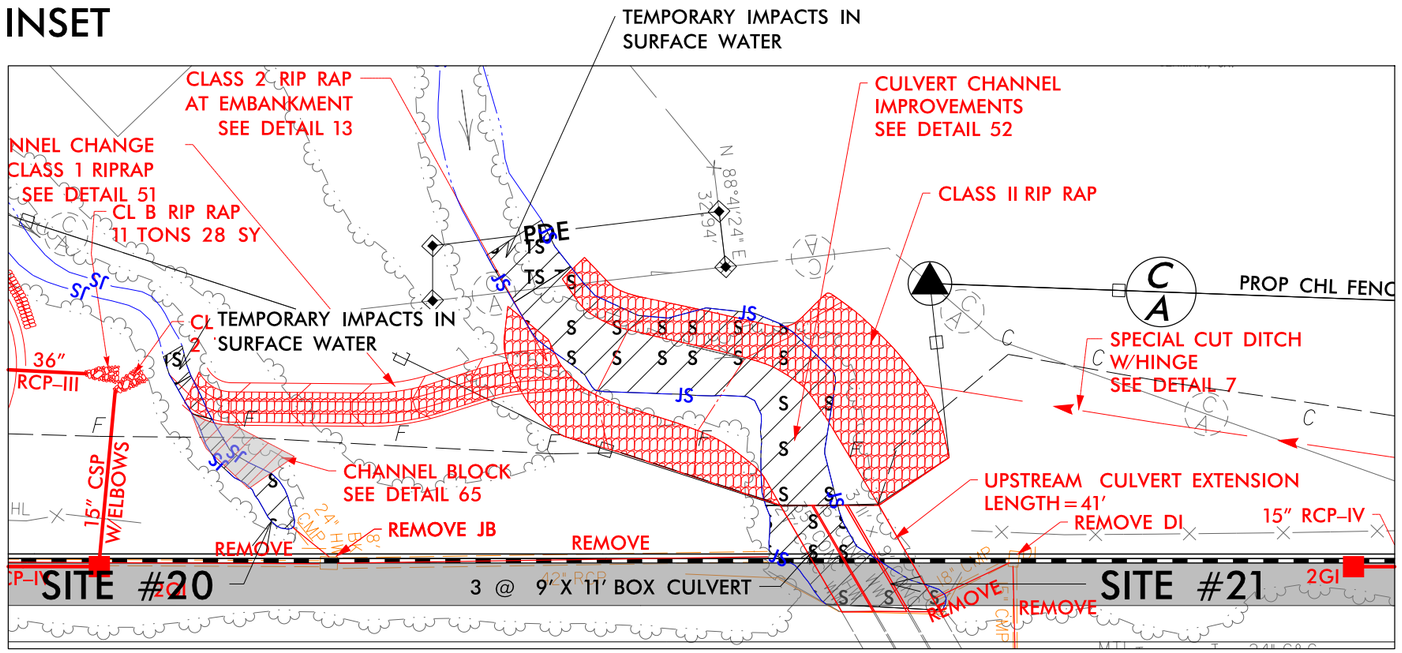
DESIGNED BY: C. DAVIS

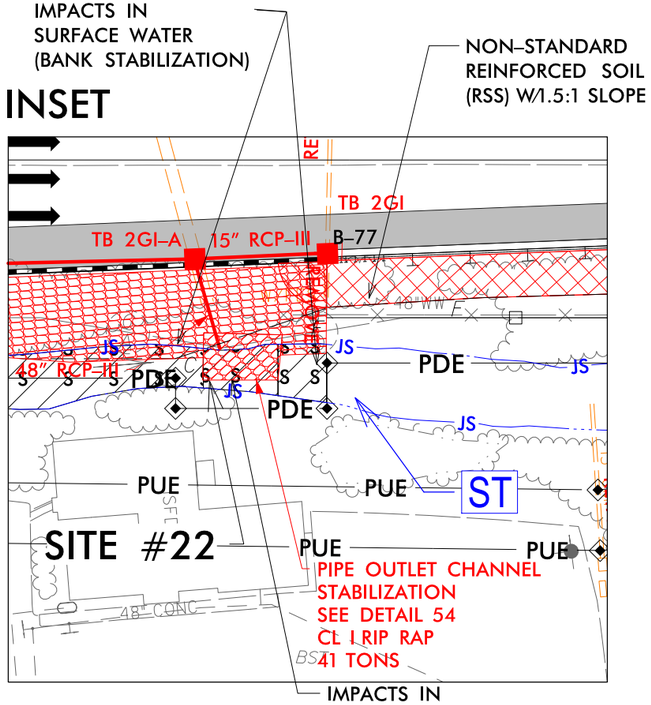
CHECKED BY: D. ARNDWORTH DATE: 4-2-2018

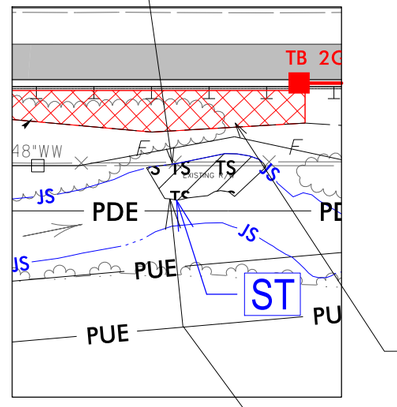
10/29/2020
C:\Users\chris.davis.ctr\Desktop\I-5818B_Iredell\I-5818B_Iredell_central.dgn

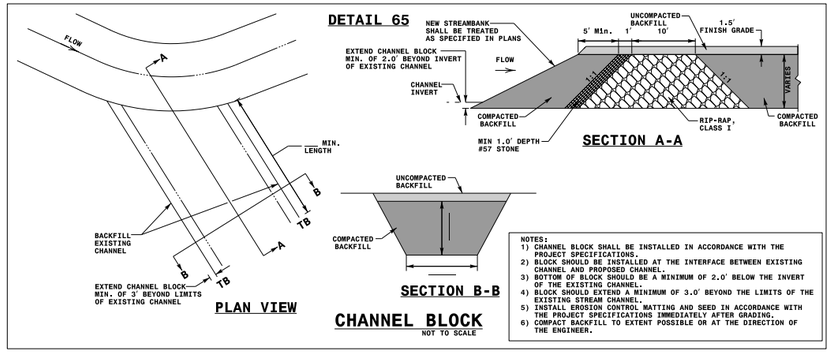
NOTE: PER COMMENTS RECEIVED FROM NCDOT ON 10/16/20, JS LINES HAVE BEEN MODIFIED ALONG SITES 21, 22, AND 23 TO FOLLOW THE SURVEYED TOPOGRAPHY. NO RIPRAP WILL BE PLACED IN THE STREAM BED ALONG AREAS OF BANK STABILIZATION.

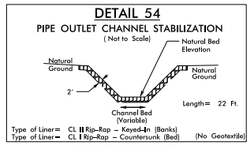
INSET









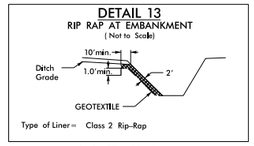


S S DENOTES IMPACTS IN SURFACE WATER

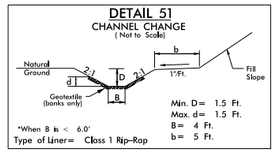
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NC GRID NAD 83/95

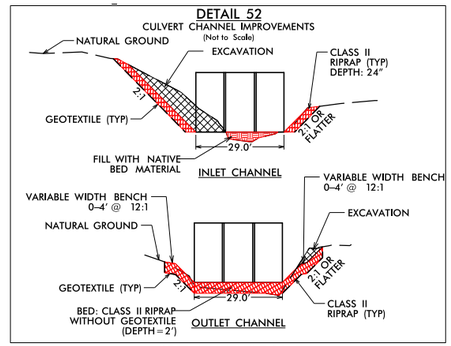
50 25 0 50 100
GRAPHIC SCALE – INSETS



–Y_S– STA. 69+50 LT



–Y_S– FROM STA. 68+38 TO STA. 69+50 LT



–Y_S– STA. 70+45 LT (INLET)
–Y_S– STA. 71+60 TO 73+25 RT (OUTLET)

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

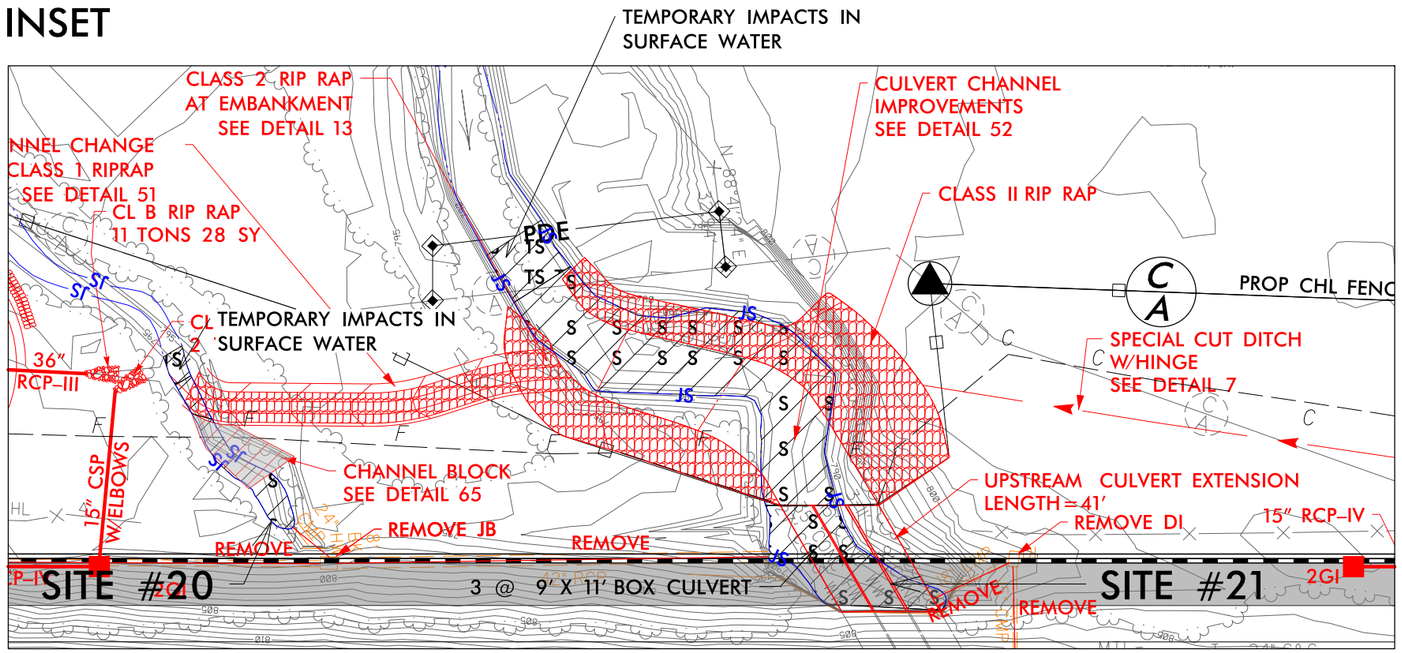
PROJECT REFERENCE NO.	SHEET NO.
I–3819B	19A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

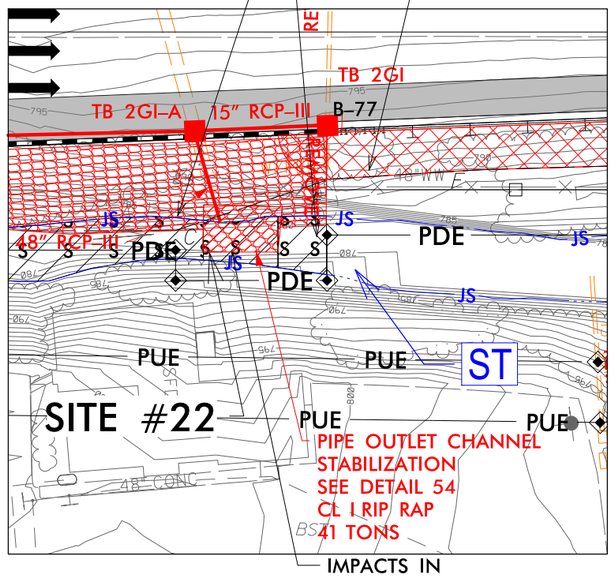
PERMIT DRAWING
SHEET 32 OF 67
Rev. 11/02/2020

NOTE: PER COMMENTS RECEIVED FROM NCDOT ON 10/16/20, JS LINES HAVE BEEN MODIFIED ALONG SITES 21, 22, AND 23 TO FOLLOW THE SURVEYED TOPOGRAPHY. NO RIPRAP WILL BE PLACED IN THE STREAM BED ALONG AREAS OF BANK STABILIZATION.

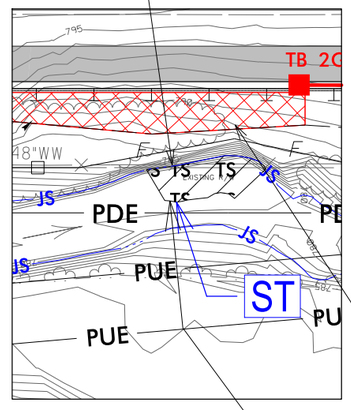
INSET

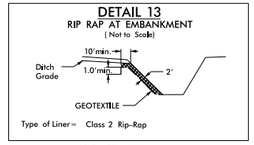


INSET

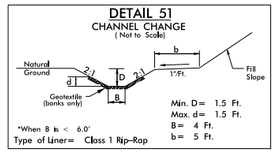


INSET

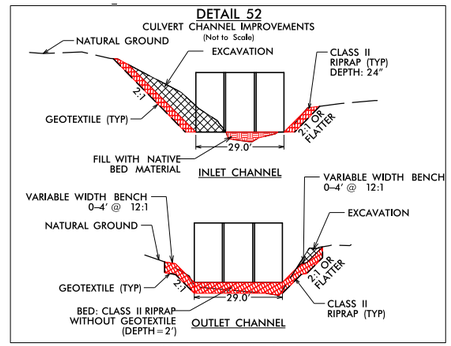




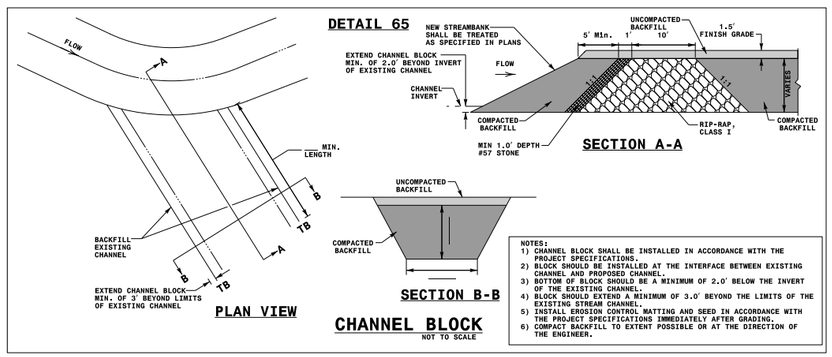
–Y_S– STA. 69+50 LT

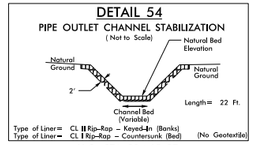


–Y_S– FROM STA. 68+38 TO STA. 69+50 LT



–Y_S– STA. 70+45 LT (INLET)
–Y_S– STA. 71+60 TO 73+25 RT (OUTLET)





–Y_S– STA. 83+65 RT
–Y_S– STA. 94+40 RT

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NC GRID NAD 83/95

50 25 0 50 100
GRAPHIC SCALE – INSETS

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	19A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 33 OF 67
Rev. 11/02/2020

10/30/2020
C:\Projectwise\pb\projectwisent\wsp...amanda.johnson\d0339329\I3819_hyd_prm_psh19A_Y2100-3500.dgn
USA/CSA05

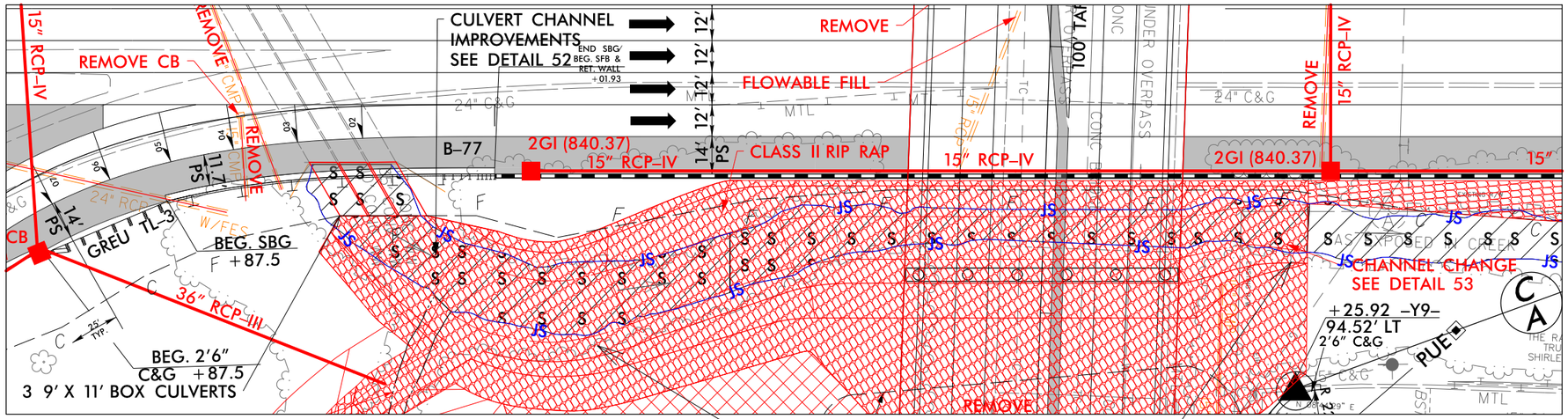
wsp
1001 Morehead Square Dr.,
Suite 610, Charlotte, NC 28203
NC LIC NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	19B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: PER COMMENTS RECEIVED FROM NCDOT ON 10/16/20, JS LINES HAVE BEEN MODIFIED ALONG SITES 21, 22, AND 23 TO FOLLOW THE SURVEYED TOPOGRAPHY. NO RIPRAP WILL BE PLACED IN THE STREAM BED ALONG AREAS OF BANK STABILIZATION.

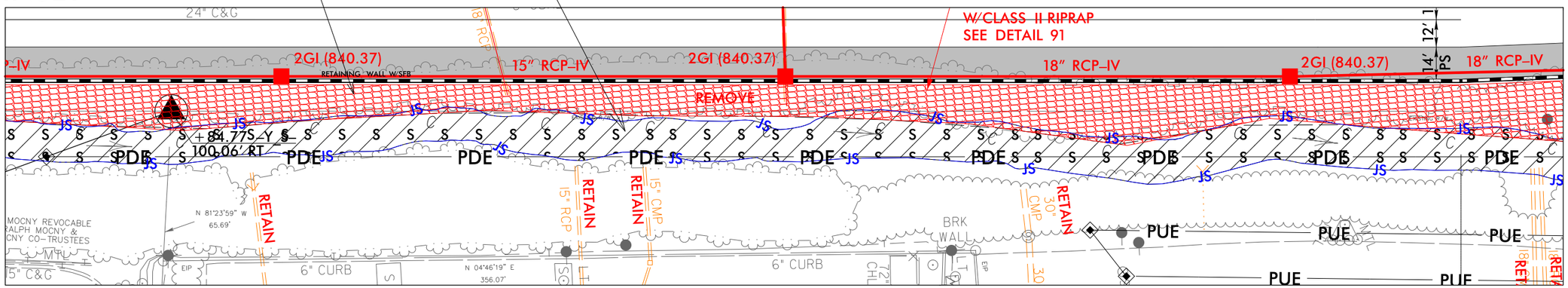
INSET



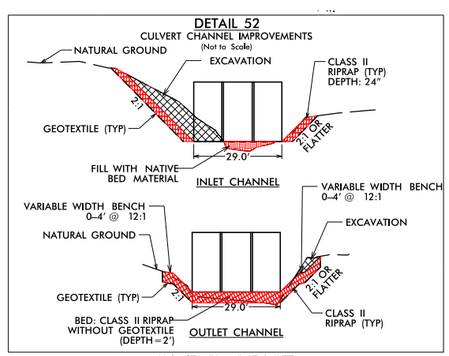
SITE #22

SITE #22

INSET

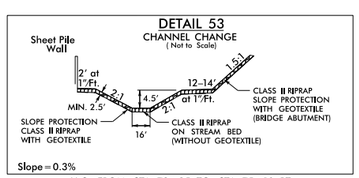


DETAIL 52
CULVERT CHANNEL IMPROVEMENTS
(Not to Scale)



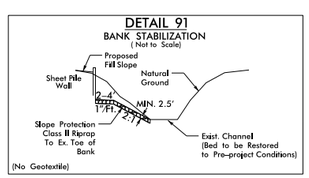
-Y_S- STA. 70+45 LT (INLET)
-Y_S- STA. 71+60 TO 73+25 RT (OUTLET)

DETAIL 53
CHANNEL CHANGE
(Not to Scale)



-Y_S- FROM STA. 73+25 TO STA. 75+10 RT

DETAIL 91
BANK STABILIZATION
(Not to Scale)



-Y_S- FROM STA. 75+10 TO STA. 84+00 RT

NC GRID NAD 83/95

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 50 100
GRAPHIC SCALE – INSETS

PERMIT DRAWING
SHEET 34 OF 67
Rev. 11/02/2020

10/30/2020
C:\Projects\se\pb\projectwsint\wsp--amanda.johnson\d0339329\I3819_hyd_prm_psh19B_Y2100-3500.dgn
USER:Amanda

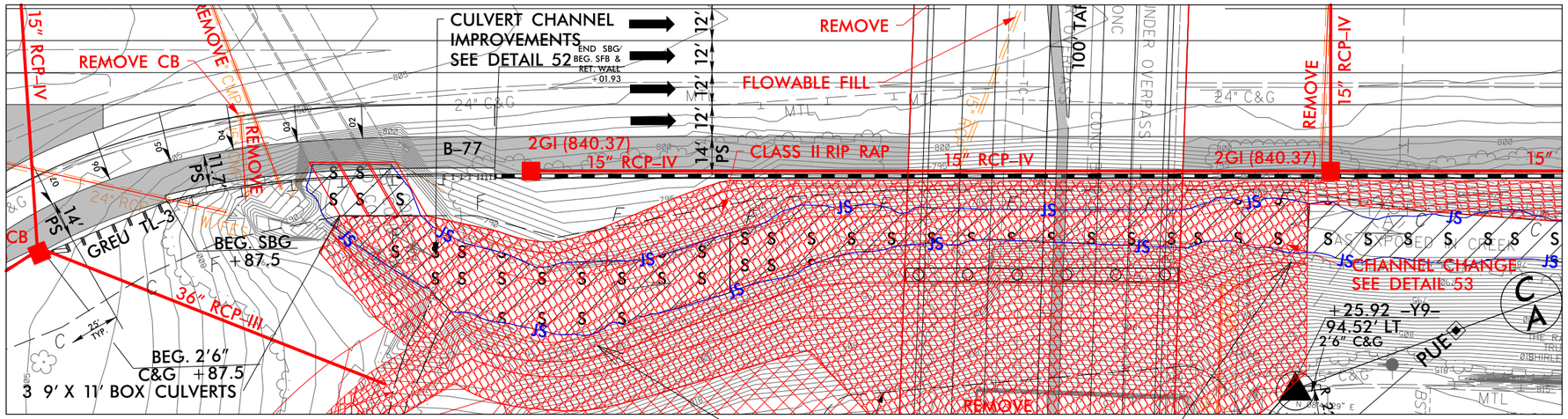
wsp
1001 Morehead Square Dr.,
Suite 610, Charlotte, NC 28203
NC LIC NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	19B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: PER COMMENTS RECEIVED FROM NCDOT ON 10/16/20, JS LINES HAVE BEEN MODIFIED ALONG SITES 21, 22, AND 23 TO FOLLOW THE SURVEYED TOPOGRAPHY. NO RIPRAP WILL BE PLACED IN THE STREAM BED ALONG AREAS OF BANK STABILIZATION.

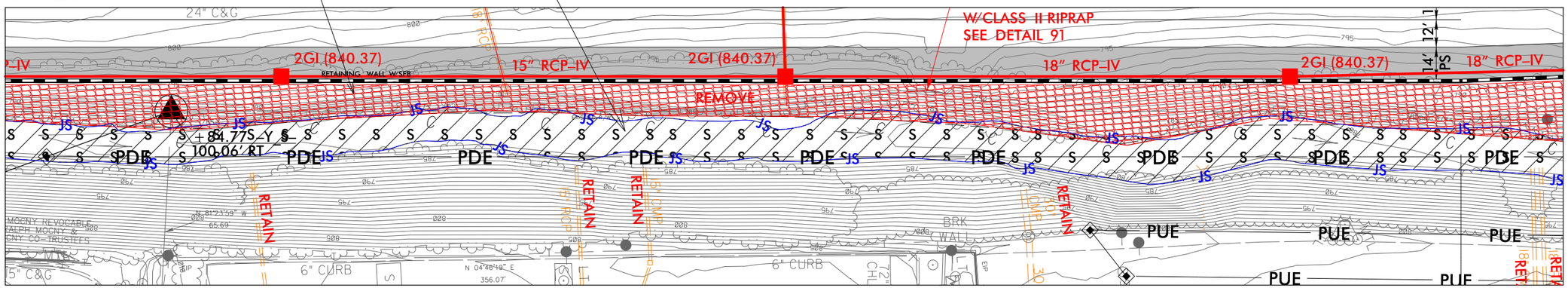
INSET

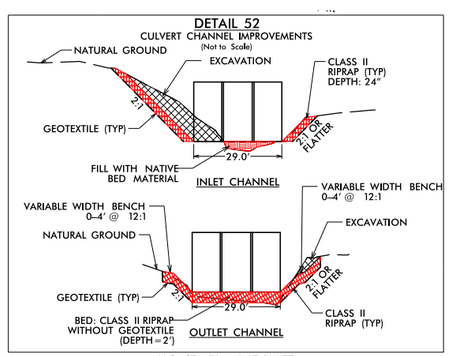


SITE #22

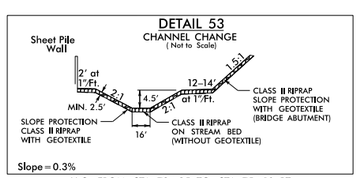
SITE #22

INSET

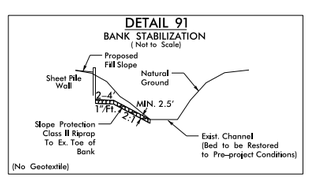




-Y_S- STA. 70+45 LT (INLET)
-Y_S- STA. 71+60 TO 73+25 RT (OUTLET)



-Y_S- FROM STA. 73+25 TO STA. 75+10 RT



-Y_S- FROM STA. 75+10 TO STA. 84+00 RT

PERMIT DRAWING
SHEET 35 OF 67
Rev. 11/02/2020

NC GRID | NAD 83/95

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 50 100
GRAPHIC SCALE – INSETS

10/30/2020
C:\Projects\se\pb\projectwsint\wsp--amanda.johnson\d0339329\I3819_hyd_prm_psh19B_Y2100-3500.dgn
USER:Amanda

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–MATCHLINE– STA 92+00.00 –Y_S– SEE SHEET NO. 19

–MATCHLINE– STA. 106+00 –Y_S– SEE SHEET NO. 21

NC GRID NAD 83/95

SITE #24

SEE SHEET 20A

SITE #25

SEE SHEET 20A

CHESNUT COMMONS HOMEOWNERS ASSOCIATION

TODD ELLIS BUILDERS, INC.

WILLIAM R. AXLEY

WILLIAM R. AXLEY, ET.AL.

INTERSTATE DEVELOPMENT COMPANY

INTERSTATE DEVELOPMENT COMPANY

76

16

SU

ST

INLET CHANNEL STABILIZATION SEE DETAIL 70 CL I RIP RAP 16 TONS 18 SY

CONCRETE 'V' DITCH BEHIND NOISE WALL SEE DETAIL 55

ROCK PLATING W/1.5:1 SLOPE +50 TO +00

CONCRETE 'L' ENDWALL

TOE PROTECTION WITH CLASS 1 RIPRAP SEE DETAIL 95

END NOISE WALL +32.1

CONCRETE DITCH BEHIND RETAINING WALL 2A SEE DETAIL 83

CONCRETE DITCH BEHIND RETAINING WALL 2A SEE DETAIL 82

300' TAPER

END EXP. GUT. BEG. SFB NOISE WALL +22.1A

SFB W/NOISE WALL

RET. WALL W/SFB

PROP WWC FENCE

REMOVE HW

REMOVE COLLAR

REMOVE 2GI

REMOVE EX. 15" RCP

REMOVE DI

REMOVE FES

REMOVE

CONC. MED. BAR.

SBG W/GUARDRAIL

SBG W/GUARDRAIL & GLARE SCREEN

BEGIN SBG BEGIN G.R. W/ GLARE SCREEN +50

END SBG BEGIN SFB W/RET. WALL +90

END SBG +90

PROP CHL FENCE

PROP CHL FENCE

BEGIN 2'-6" C&G

END 2' PS BEGIN 2'-6" C&G +50

FLOWABLE FILL

CLASS II RIPRAP IN SCOUR HOLE

PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 54 CL I RIP RAP 24 TONS CL II RIP RAP 35 TONS

PIPE OUTLET STABILIZATION SEE DETAIL 64 CL I RIP RAP 26 TONS

STANDARD 3' BASE DITCH SEE DETAIL 86

SPECIAL CUT 'V' DITCH SEE DETAIL 69

CL B RIP RAP 2 TONS 7 SY

CL B RIP RAP 5 TONS 14 SY

CL B RIP RAP 1 TONS 5 SY

SPECIAL CUT 'V' DITCH SEE DETAIL 97

TIE TO EX. DITCH W/TAIL 'V' DITCH SEE DETAIL 77

TIE TO EX. DITCH W/TAIL 'V' DITCH SEE DETAIL 77

PIPE OUTLET STABILIZATION W/CLASS I RIPRAP SEE DETAIL 64

PERMANENT DRAINAGE EASEMENT DB 2151 PG 542

CMP 36" RCP-III

24" RCP-IV

18" RCP-III

18" RCP-IV

15" RCP-III

15" RCP-IV

66" RCP-III

30" RCP

24" RCP

18" RCP

15" RCP

72" PVC

24" VCP

18" C&G

15" C&G

2GI

TB 2GI

JB w/MH

HW

PUE

EXISTING R/W

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 37 OF 67
Rev. 11/02/2020

GRAPHIC SCALE 50 25 0 50 100

–YII–			–Y_S–
PI Sta 12+82.67	PI Sta 18+66.65	PI Sta 21+31.23	PI Sta 107+16.73
Δ = 16° 28' 00.0" (RT)	Δ = 41° 46' 38.6" (RT)	Δ = 36° 23' 21.4" (RT)	Δ = 1° 47' 49.0" (LT)
D = 4° 30' 00.0"	D = 19° 45' 00.0"	D = 11° 30' 00.0"	D = 0° 10' 28.9"
L = 365.93'	L = 211.53'	L = 316.43'	L = 1,028.69'
T = 184.23'	T = 110.71'	T = 163.76'	T = 514.39'
R = 1,273.24'	R = 290.11'	R = 498.22'	R = 32,800.00'
SE = EXIST.	SE = EXIST.	SE = 06	SE = NC
DS = EXIST.	DS = EXIST.	DS = 40 MPH	DS = 60 MPH

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

–MATCHLINE– STA 92+00.00 –Y_S– SEE SHEET NO. 19

–MATCHLINE– STA. 106+00 –Y_S– SEE SHEET NO. 21

SITE #24

SITE #25

SEE SHEET 20A

SEE SHEET 20A

CHESTNUT COMMONS HOMEOWNERS ASSOCIATION

76
TODD ELLIS BUILDERS, INC.

16
INTERSTATE DEVELOPMENT COMPANY

WILLIAM R. AXLEY

WILLIAM R. AXLEY, ET AL.

INTERSTATE DEVELOPMENT COMPANY

END NOISE WALL +82.1

300' TAPER

RETAIN

ROCK PLATING W/1:1 SLOPE -50 TO +00

CONCRETE 'V' DITCH BEHIND NOISE WALL SEE DETAIL 55

CONCRETE 'V' ENDWALL

TOE PROTECTION WITH CLASS I RIPRAP SEE DETAIL 95

CONCRETE DITCH BEHIND RETAINING WALL 2A SEE DETAIL 83

CONCRETE DITCH BEHIND RETAINING WALL 2A SEE DETAIL 82

INVERT CHANNEL STABILIZATION SEE DETAIL 70 CL I RIP RAP 16 TONS 18 SY

END EXP. CUT BEG. SFB NOISE WALL +22.1

SFB W/NOISE WALL

RET. WALL W/SFB

SBG W/GUARDRAIL

SBG W/GUARDRAIL & GLARE SCREEN

BEGIN SBG BEGIN G.R. W/ GLARE SCREEN +50

END SBG/ BEGIN SFB W/RET. WALL +90

END SBG +90

REMOVE HW

REMOVE 2GI

REMOVE EX. 15" RCP

REMOVE DI

REMOVE FES

REMOVE

COLLAR

CONC. MED. BAR.

PROP. CHL FENCE

PROP. WWC FENCE

FLOWABLE FILL

CLASS II RIPRAP IN RC SCOUR HOLE

PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 54 CL I RIP RAP 24 TONS CL II RIP RAP 35 TONS

PIPE OUTLET STABILIZATION SEE DETAIL 64 CL I RIP RAP 26 TONS

PIPE OUTLET STABILIZATION W/CLASS I RIPRAP SEE DETAIL 64

STANDARD 3' BASE DITCH SEE DETAIL 86

SPECIAL CUT 'V' DITCH SEE DETAIL 69

SPECIAL CUT 'V' DITCH SEE DETAIL 97

TIE TO EX. DITCH W/TAIL 'V' DITCH SEE DETAIL 77

TIE TO EX. DITCH W/TAIL 'V' DITCH SEE DETAIL 77

CL B RIP RAP 2 TONS 7 SY

CL B RIP RAP 1 TONS 6 SY

CL B RIP RAP 5 TONS 14 SY

BEGIN 2'-6" C&G +65

END 2' PS BEGIN 2'-6" C&G +50

BEGIN 5' SW +17

105+00

100+00

20+00

15+00

-YII-		-Y_S-	
PI Sta 12+82.67	PI Sta 18+66.65	PI Sta 21+31.23	PI Sta 107+16.73
Δ = 16°28'00.0" (RT)	Δ = 41°46'38.6" (RT)	Δ = 36°23'21.4" (RT)	Δ = 1°47'49.0" (LT)
D = 4°30'00.0"	D = 19°45'00.0"	D = 11°30'00.0"	D = 0°10'28.9"
L = 365.93'	L = 211.53'	L = 316.43'	L = 1,028.69'
T = 184.23'	T = 110.71'	T = 163.76'	T = 514.39'
R = 1,273.24'	R = 290.11'	R = 498.22'	R = 32,800.00'
SE = EXIST.	SE = EXIST.	SE = 06	SE = NC
DS = EXIST.	DS = EXIST.	DS = 40 MPH	DS = 60 MPH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 38 OF 67
Rev. 11/02/2020

50 25 0 50 100
GRAPHIC SCALE

11/2/2020
C:\projectwise\pb\projectwisent\wsp...amanda.johnson\d0339329\I3819_hyd_prm_psh20_Y9200-10600.dgn
USA16.2505

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

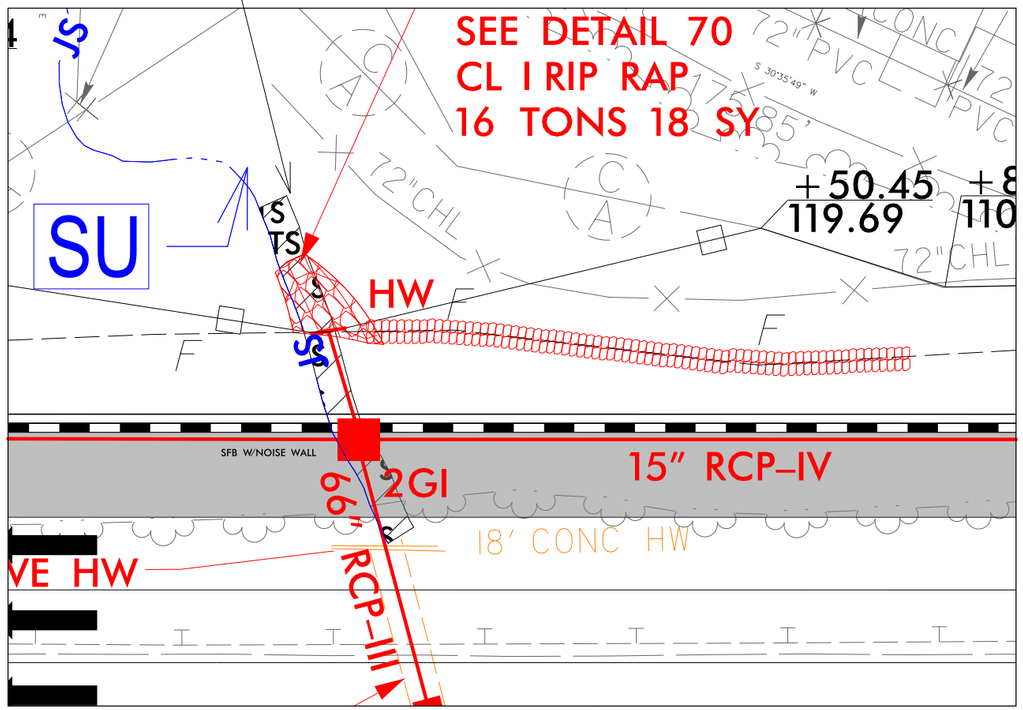
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	20A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 39 OF 67
Rev. 11/02/2020

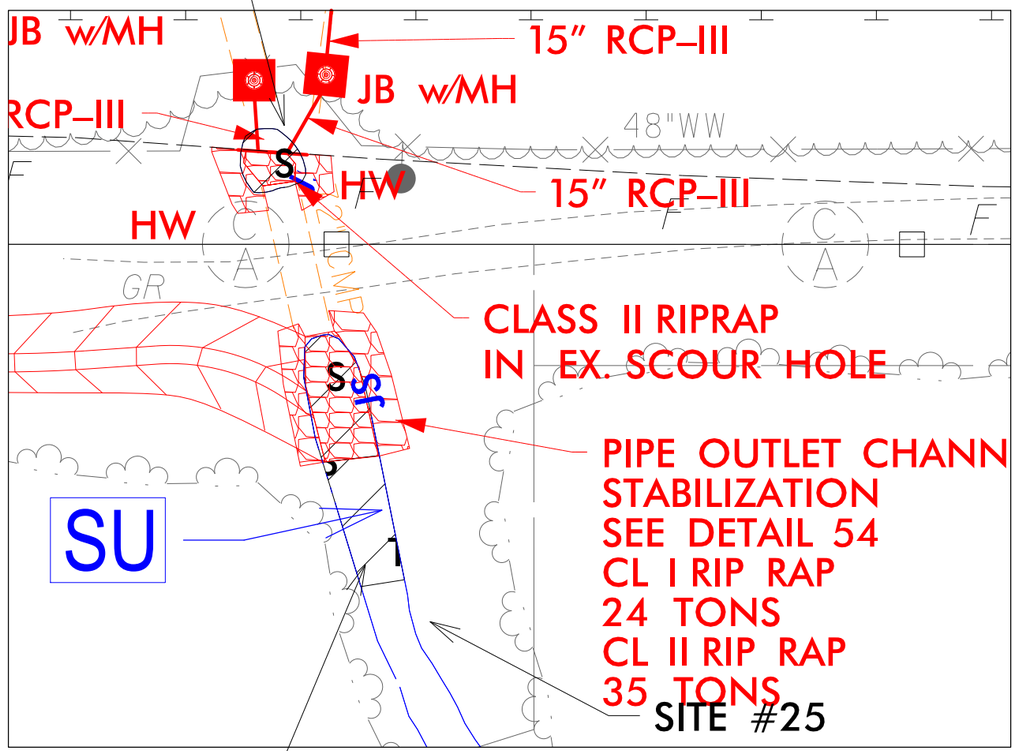
SITE #24

INSET



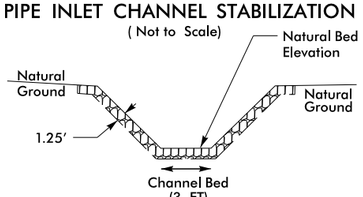
SITE #25

INSET



TEMPORARY IMPACTS
IN SURFACE WATER

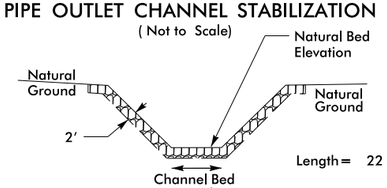
DETAIL 70
PIPE INLET CHANNEL STABILIZATION
(Not to Scale)



Length = 12 Ft.
Type of Liner = CL 1 Rip-Rap – Keyed-In (No Geotextile)

–Y_S– STA. 93+79 LT

DETAIL 54
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length = 22 Ft.
Type of Liner = CL II Rip-Rap – Keyed-In (Banks)
Type of Liner = CL I Rip-Rap – Countersunk (Bed) (No Geotextile)

NC GRID | NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSETS

11/2/2020
C:\Projects\se\pb\projectwisent\wsp--amanda.johnson\d0339329\I3819_hyd_prm_psh20A_Y10600-120000.dgn
USER:Amanda.Johnson

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

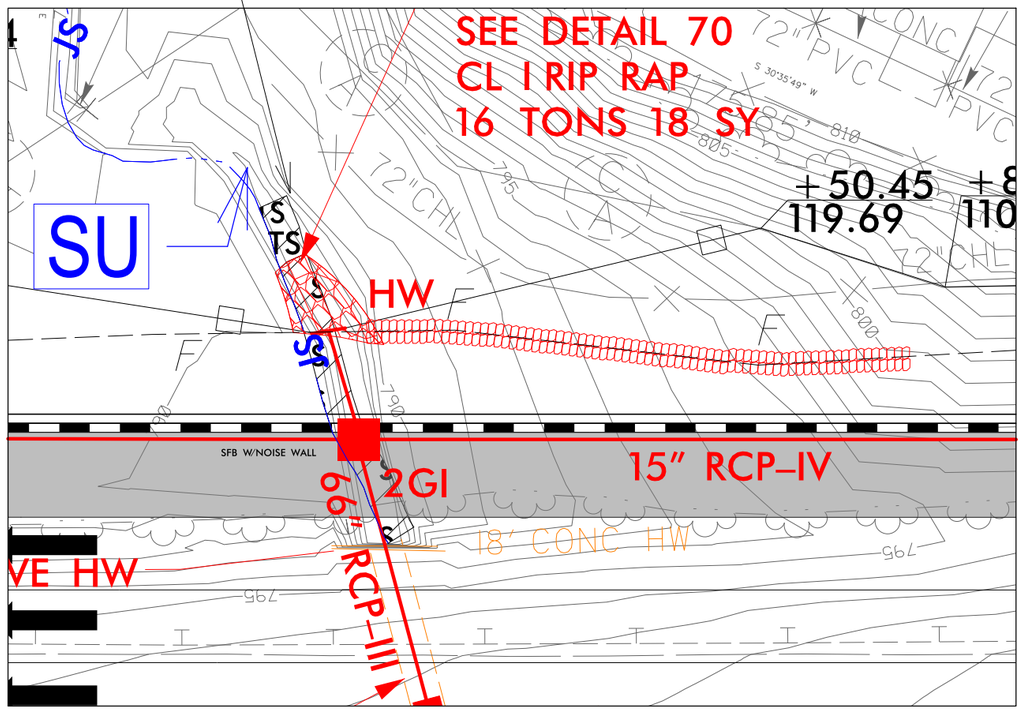
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	20A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 40 OF 67
Rev. 11/02/2020

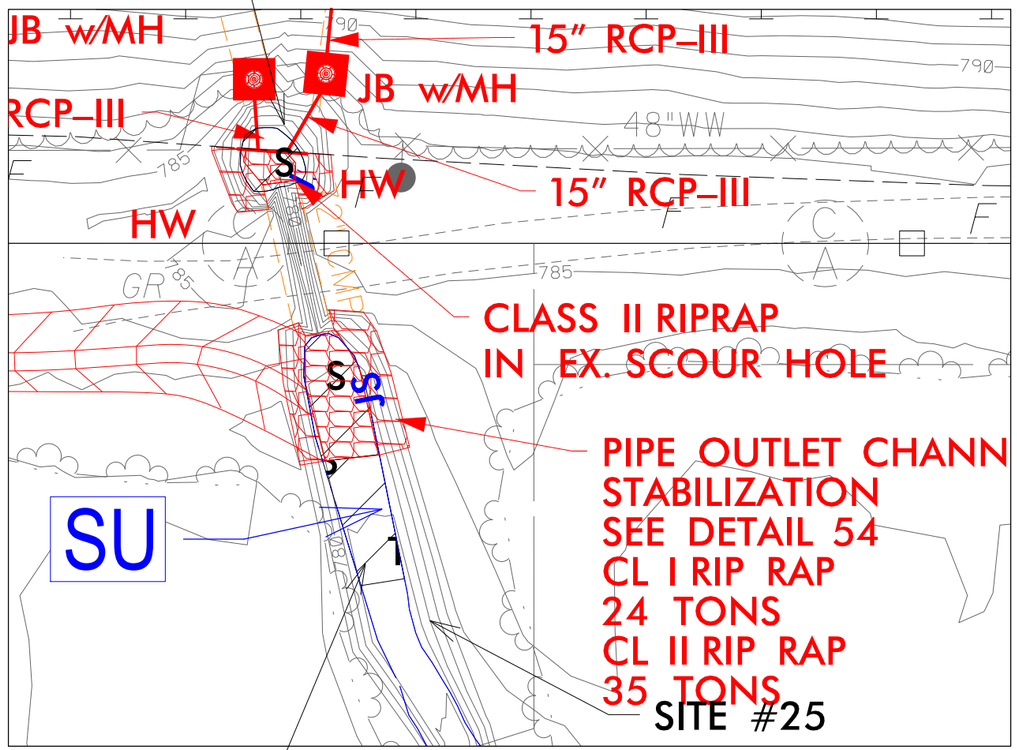
SITE #24

INSET



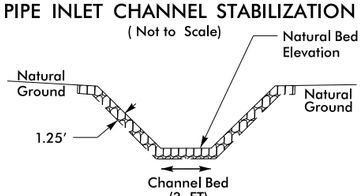
SITE #25

INSET



TEMPORARY IMPACTS
IN SURFACE WATER

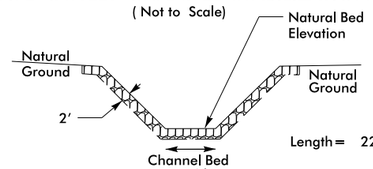
DETAIL 70
PIPE INLET CHANNEL STABILIZATION
(Not to Scale)



Length = 12 Ft.
Type of Liner = CL 1 Rip-Rap – Keyed-In (No Geotextile)

–Y_S– STA. 93+79 LT

DETAIL 54
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length = 22 Ft.
Type of Liner = CL II Rip-Rap – Keyed-In (Banks)
Type of Liner = CL I Rip-Rap – Countersunk (Bed) (No Geotextile)

NC GRID | NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSETS

11/2/2020
C:\Projects\se\pb\projectwisent\wsp--amanda.johnson\d0339329\I3819_hyd_prm_psh20A_Y10600-120000.dgn
USER:Amanda.Johnson

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

PROJECT REFERENCE NO.	SHEET NO.
I-5818B	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

PERMIT DRAWING
SHEET 46 OF 67
Rev. 11/02/2020

SITE #8 INSET

PERMANENT DRAINAGE EASEMENT
AERIAL UTILITY
PROP CHL FENCE
2GI
15" RCP-III
15" RCP-IV
15" CSP
2GI
02
PLUE

SITE #4 INSET

PLATING SLOPE
15" RCP-III
15" CSP
2GI
15" RCP
GRAPHIC SCALE - INSETS
25 12.5 0 25 50

-MATCHLINE- STA. 66+90.00 -YRPAC- SEE SHEET NO. 10
-MATCHLINE- STA. 31+50.00 -YRPCA- STA. 19+00.00 -YRPC- SEE SHEET NO. 10
-MATCHLINE- STA. 235+00 -Y_RT- SEE SHEET NO. 10
-MATCHLINE- STA. 44+50 -YRPCA- STA. 21+00 -YRPD- SEE SHEET NO. 11

SITE #5
SITE #4
SEE SHEET 22B
SITE #4 SEE INSET
SITE #8 SEE INSET
SITE #8
SITE #6
SEE SHEET 22B
SEE SHEET 22A
SEE SHEET 22A
SITE #7
-MATCHLINE- STA. 80+40.00 -YRPAC- SEE SHEET NO. 21
-MATCHLINE- STA. 120+00 -Y_S- SEE SHEET NO. 21

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
G. L. WILSON BUILDING COMPANY
CHRISTOPHER DORCY AND KRISTEN TODD
SULLIVAN ROAD PARTNERS, LLC
CITY OF STATESVILLE
DUKE ENERGY
PROP CHL FENCE
LATERAL 3' BASE DITCH W/CLASS B RIPRAP SEE DETAIL 14
CLASS 2 RIP RAP AT EMBANKMENT SEE DETAIL 13
CLASS B RIP RAP (1' TONS 7' S.Y.)
CLASS A RIP RAP (1' TONS 5' S.Y.)
CLASS B RIP RAP 2' TONS 9' S.Y.
CLASS B RIP RAP 2' TONS 10' S.Y.
CLASS B RIP RAP 2' TONS 11' S.Y.
CLASS B RIP RAP (1' TONS 7' S.Y.)
CLASS A RIP RAP (1' TONS 5' S.Y.)
SLOPE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 12
SLOPE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 12
SLOPE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 12
CONCRETE DITCH W/CLASS B RIPRAP SEE DETAIL 16
LATERAL 2' BASE DITCH SEE DETAIL 14
PSH SEE DETAIL 28
PSH SEE DETAIL 27
PSH SEE DETAIL 28
PSH SEE DETAIL 27
CSP w/ ELBOWS
TOWER RELOCATED BY OTHERS
BIKE TRAIL
BRICK WALL
CONCRETE WALL
CLASS B RIP RAP (1' TONS 7' S.Y.)
SUPPORTS IMPACTED BY SLOPES UNLESS OTHERWISE NOTED ON PLANS, ALL SUPPORTS TO BE RELOCATED AS DIRECTED BY ENGINEER

-Y_S-
PI Sta 11+58.63
Δ = 5° 29' 11.2" (RT)
D = 12° 29' 53.6"
Ls = 107.44.5'
T = 53.72.5'
R = 1,500.00'
SE = NC
DS = 60 MPH

-YRPAC-
PI Sta 74+01.12
Δ = 17° 01' 59.2" (RT)
D = 8° 14' 48.8"
L = 593.15'
T = 298.32'
R = 2,550.00'
SE = 04
DS = 50 MPH

-YRPDB-
PI Sta 14+24.03
Δ = 5° 30' 02.3" (RT)
D = 2° 39' 11.8"
L = 592.80'
T = 296.43'
R = 9,000.00'
SE = NC
DS = 50 MPH

PI Sta 23+74.30
Ls = 4° 52' 55.2"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

PI Sta 26+43.97
Δ = 29° 24' 11.0" (RT)
D = 6° 46' 50.0"
L = 453.64'
T = 231.71'
R = 845.00'
SE = 06
DS = 50 MPH

PI Sta 29+03.94
Ls = 4° 52' 55.2"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

PI Sta 30+95.94
Ls = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

-Y_LT-
PI Sta 33+17.38
Ls = 2° 34' 46.9"
Ls = 270.00'
LT = 180.02'
ST = 90.02'

PI Sta 33+48.61
D = 1° 29' 43.8" (LT)
D = 1° 54' 35.5"
L = 444.85'
T = 222.59'
R = 3,000.00'
SE = 06
DS = 60 MPH

-Y_RT-
PI Sta 232+62.32
Ls = 1° 54' 35.5"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 235+92.32
Δ = 17° 01' 59.2" (LT)
D = 1° 54' 35.5"
L = 595.74'
T = 299.34'
R = 3,000.00'
SE = 06
DS = 60 MPH

-YRPC-
PI Sta 20+25.04
Ls = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

PI Sta 24+66.93
Δ = 50° 37' 24.9" (RT)
D = 6° 52' 41.7"
L = 736.07'
T = 393.97'
R = 833.00'
SE = 06
DS = 50 MPH

PI Sta 28+57.03
Ls = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

-YRPD-
PI Sta 11+93.35
Ls = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

PI Sta 14+07.08
Δ = 22° 10' 36.4" (RT)
D = 6° 52' 41.7"
L = 327.27'
T = 165.77'
R = 833.00'
SE = 06
DS = 50 MPH

PI Sta 16+16.61
Ls = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

PI Sta 22+11.11
Δ = 5° 19' 05.0" (LT)
D = 0° 43' 40.9"
L = 730.46'
T = 365.50'
R = 7,870.00'
SE = NC
DS = 50 MPH

-YRPCA-
PI Sta 3+66.93
Ls = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

PI Sta 4+32.83
Δ = 95° 33' 05.3" (LT)
D = 6° 52' 41.7"
L = 1,389.22'
T = 917.33'
R = 833.00'
SE = 06
DS = 50 MPH

F F DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
1 1 DENOTES TEMPORARY FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

LOCATION:
TIP NO.: I-5818B COUNTY: IREDELL
DESIGNED BY: C. DAVIS
CHECKED BY: D. AINSWORTH DATE: 6-2-2019

REVISIONS
7/10/2020
P:\projects\I-5818B\roadway\plans\sheets\I-5818B_hyd_pln_sht22_10000-12500.dgn

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

PROJECT REFERENCE NO.	SHEET NO.
I-5818B	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 47 OF 67
Rev. 11/02/2020

NC GRID NAD 83/95

SITE #8 INSET

SITE #4 INSET

SITE #5

SITE #6

SITE #7

SITE #8

SITE #4

SEE SHEET 22B

SEE SHEET 22A

SEE INSET

–MATCHLINE– STA. 66+90.00 –YRPAC– SEE SHEET NO. 10

–MATCHLINE– STA. 31+50.00 –YRPCA– STA. 19+00.00 –YRPC– SEE SHEET NO. 10

–MATCHLINE– STA. 235+00 –Y_RT– SEE SHEET NO. 10

–MATCHLINE– STA. 44+50 –YRPCA– STA. 21+00 –YRPD– SEE SHEET NO. 11

–MATCHLINE– STA. 80+40.00 –YRPAC– SEE SHEET NO. 21

–MATCHLINE– STA. 120+00 –Y_S– SEE SHEET NO. 21

PLATING SLOPE

PROP CHL FENCE

PERMANENT DRAINAGE EASEMENT

AERIAL UTILITY

2GI

15" RCP–III

15" RCP–IV

15" CSP

15" RCP–I

02

GRAPHIC SCALE – INSETS

–YRPAC–
PI Sta 11+56.83
Δ = 5° 09' 03" (RT)
D = 0° 29' 53.46"
L = 107.45'
T = 53.76'
R = 11,480.00'
SE = NC
DS = 60 MPH

PI Sta 7+40.02
Δ = 17° 15' 39" (RT)
D = 6° 14' 48.8"
L = 693.05'
T = 351.32'
R = 915.00'
SE = D4
DS = 50 MPH

PI Sta 14+24.05
Δ = 5° 30' 02.7" (RT)
D = 0° 19' 11.8"
L = 300.00'
T = 150.23'
R = 3,000.00'
SE = NC
DS = 50 MPH

PI Sta 23+74.30
Δ = 4° 52' 55.2" (RT)
D = 0° 19' 11.8"
L = 144.00'
T = 96.04'
ST = 48.03'

PI Sta 26+43.81
Δ = 29° 24' 11.0" (RT)
D = 6° 46' 52.93"
L = 433.60'
T = 221.21'
R = 845.00'
SE = D6
DS = 50 MPH

PI Sta 29+03.94
Δ = 4° 52' 55.2"
D = 4° 51' 08.4"
L = 144.00'
T = 96.04'
ST = 48.03'

PI Sta 30+96.94
Δ = 4° 52' 55.2"
D = 4° 51' 08.4"
L = 144.00'
LT = 96.04'
ST = 48.03'

–Y_LT–
PI Sta 3+17+73.81
DS = 2° 34' 40.2"
Ls = 270.00'
LT = 180.02'
ST = 90.02'

PI Sta 3+54+86.61
Δ = 8° 29' 43.2" (LT)
D = 1° 54' 35.5"
L = 444.85'
T = 222.82'
R = 3,000.00'
SE = D5
DS = 60 MPH

–Y_RT–
PI Sta 6+30+62.52
DS = 1° 54' 35.5"
Ls = 270.00'
LT = 153.34'
ST = 66.67'

PI Sta 8+51+92.38
Δ = 17° 41' 35.31" (LT)
D = 5° 09' 53.4"
L = 363.53'
R = 1,110.00'
SE = D5
DS = 50 MPH

–YRPC–
PI Sta 18+20+25.04
DS = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

PI Sta 21+46+96.46
Δ = 50° 37' 24.3" (RT)
D = 6° 52' 14.2"
L = 736.00'
T = 393.91'
R = 833.00'
SE = D6
DS = 50 MPH

PI Sta 26+57.03
DS = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

–YRPD–
PI Sta 11+93.35
DS = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

PI Sta 14+07.08
Δ = 82° 10' 56.4" (RT)
D = 6° 52' 40"
L = 527.26'
T = 307.71'
R = 833.00'
SE = D5
DS = 50 MPH

PI Sta 16+16.61
DS = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

PI Sta 32+11.01
Δ = 27° 18' 05.2" (LT)
D = 0° 43' 40.9"
L = 1,904.01'
T = 965.50'
R = 1,870.00'
SE = NC
DS = 50 MPH

PI Sta 41+66.93
DS = 4° 57' 08.4"
Ls = 144.00'
LT = 96.04'
ST = 48.03'

PI Sta 44+58.83
Δ = 95° 55' 15.9" (LT)
D = 6° 52' 40"
L = 1,396.26'
T = 887.39'
R = 833.00'
SE = D6
DS = 50 MPH

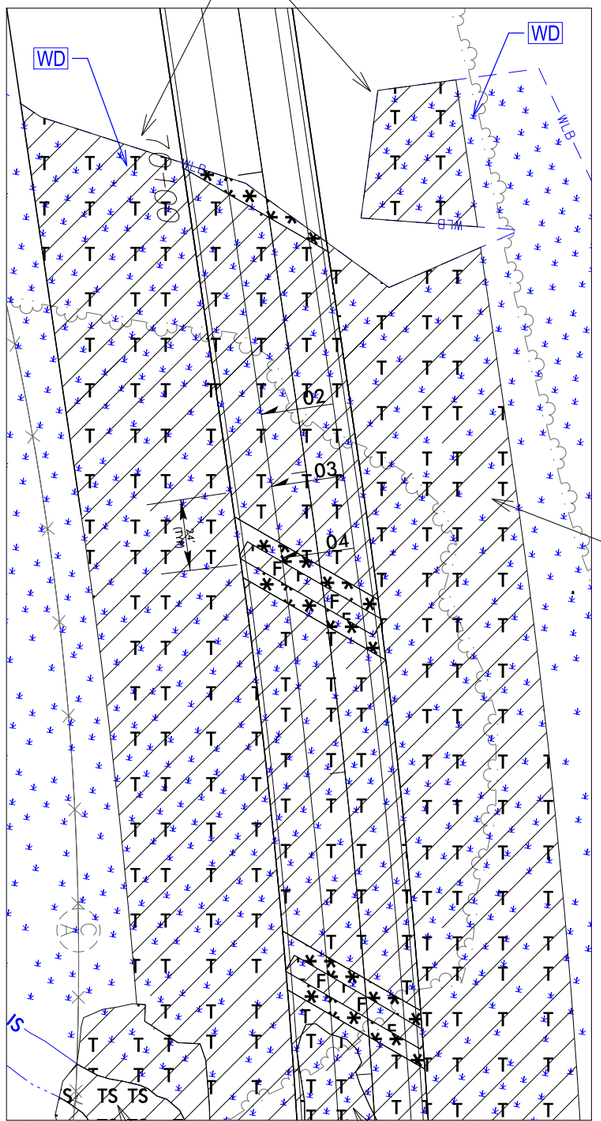
F F DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
T T DENOTES TEMPORARY FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

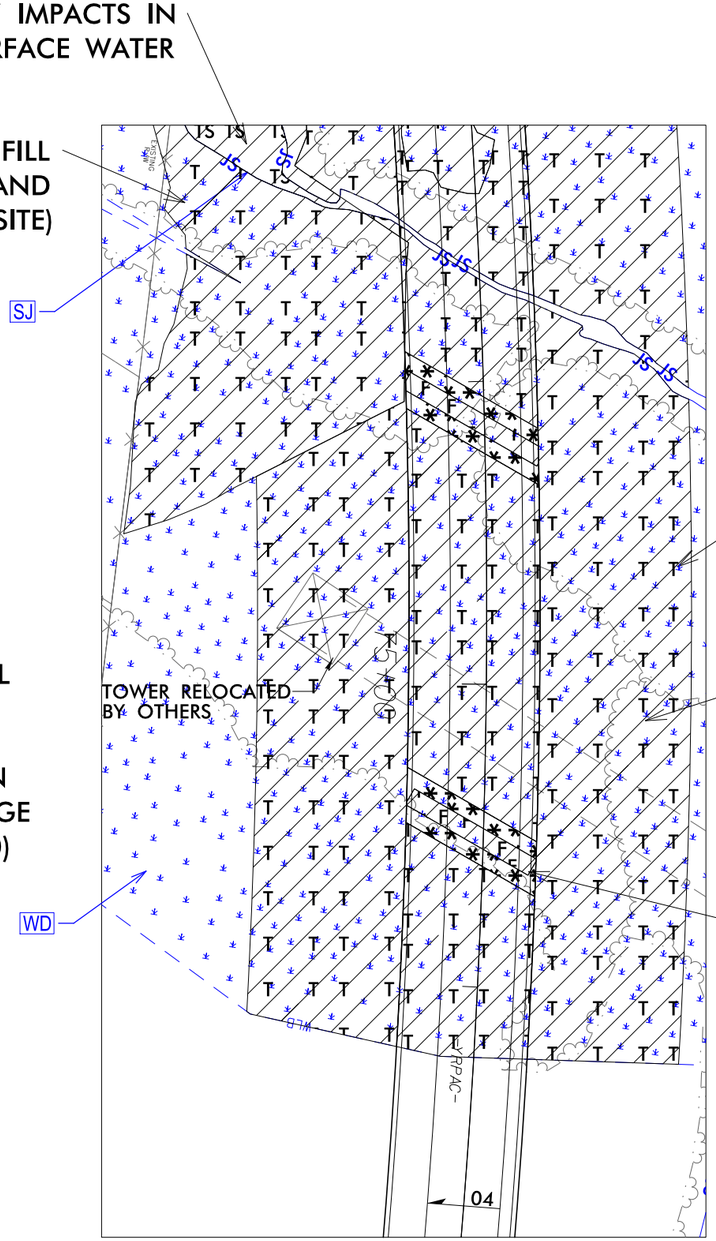
LOCATION:
TIP NO.: I-5818B COUNTY: IREDELL
DESIGNED BY: C. DAVIS
CHECKED BY: D. ARMSWORTH DATE: 4-2-2019

REVISIONS

7/10/2020
2:04:26 PM
C:\Users\cdavis\Desktop\I-5818B_Final_Permit_Set.dgn

INSET





NC GRID NAD 8395

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

T T DENOTES TEMPORARY FILL IN WETLAND

PERMIT DRAWING
SHEET 50 OF 67
Rev. 11/02/2020

50 25 0 50 100

GRAPHIC SCALE – INSETS

10/22/2020
c:\projectwise\pb\projectwisent\becker_jw\d0339329\I3819_hyd_prm_psh22B_Y12000-13500.dgn
becker_jw

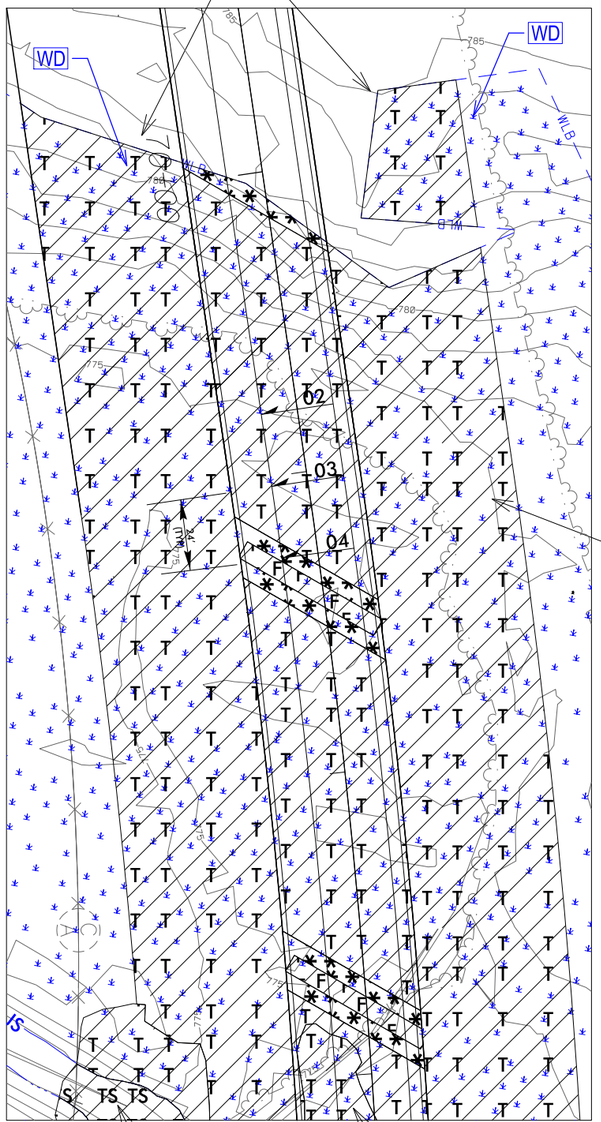
INSET

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 8395

SITE #5



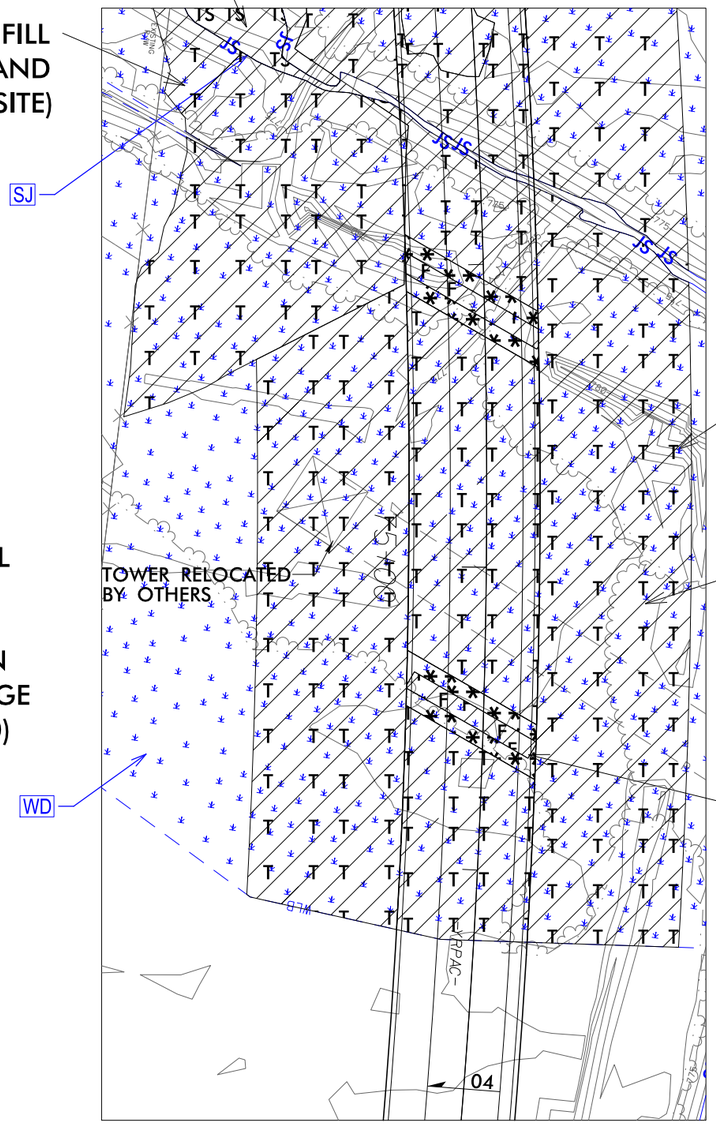
TEMPORARY IMPACTS IN SURFACE WATER

TEMPORARY FILL IN WETLAND (RESTORATION SITE)

TEMPORARY FILL IN WETLAND (MATTING FOR CONSTRUCTION ACCESS – BRIDGE STRUCTURE #10)

TEMPORARY FILL IN WETLAND (RESTORATION SITE)

TEMPORARY IMPACTS IN SURFACE WATER



SITE #5

TEMPORARY FILL IN WETLAND (MATTING FOR CONSTRUCTION ACCESS – BRIDGE STRUCTURE #10)

PERMANENT FILL AND MECHANIZED CLEARING FOR PROPOSED BENT (TYP)

TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
F F	DENOTES FILL IN WETLAND
	DENOTES MECHANIZED CLEARING
T T	DENOTES TEMPORARY FILL IN WETLAND

PERMIT DRAWING
SHEET 51 OF 67
Rev. 11/02/2020

50 25 0 50 100

GRAPHIC SCALE – INSETS

10/22/2020
c:\projectwise\pb\projectwisent\becker_jw\d0339329\I3819_hyd_prm_psh22B_Y12000-13500.dgn
becker_jw

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 62 OF 67
Rev. 11/02/2020

–MATCHLINE– STA. 203+00 –Y_N– SEE SHEET NO. 26

1
GOFORTH, GOFORTH & CLINE, LLC

END SB WIDENING/RESURF.
–Y_N– POT STA. 205+15.43

720' MEDIAN WIDTH TRANSITION (LT)
300' LANE ADD. TAPER
+20
+15.43
TIE TO EXIST. FENCE
+15.43 –Y_N–
TIE TO EX. DITCH W/TAIL 'V' DITCH SEE DETAIL 77
LATERAL 'V' DITCH SEE DETAIL 78
+65.43
101.06
CL B RIP RAP
2 TONS 7 SY
15" CSP
END SBG
+80 (52.36' LT)
SBG W/G.R.
TB 2GI
FRENCHLESS INSTALLATION 36" WELDED STEEL
RETAIN EXIST. DI
REMOVE HW
FLOWABLE FILL
TRENCHLESS INSTALLATION 48" WELDED STEEL
END 24" RCP
4' BASE HEAD DITCH W/CLASS 1 RIPRAP SEE DETAIL 87
EXISTING R/W
48" WW
205+00
MATCH EXIST
15:1
REMOVE 8 LF OF EX. 15" RCP
REMOVE EX. 24" RCP
15" RCP-III
48" RCP-III
COLLAR
CONTRACTOR TO CONFIRM EXISTING PIPE INVERT DURING CONSTRUCTION AND CONFIRM WITH ENGINEER
CL B RIP RAP
1 TONS 5 SY
CL B RIP RAP
5 TONS 14 SY
PROP. CHL FENCE
+74.17 –Y_N–
120.00' RT
+27.29 –Y_N–
120.00' RT
+15.43
150.00
PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 73
CL I RIP RAP
92 TONS 127 SY
TOE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 31
PUE
PDE
4' BASE TAIL DITCH W/CLASS B RIPRAP SEE DETAIL 88

INSET
–MATCHLINE– STA. 217+00 –Y_N– THIS SHEET
8
GOFORTH FAMILY REVOCABLE TRUST
18" RCP
CONC
MTL
8" WW
PUE
S 59°55'34" W
341.91'

END NB RECONSTRUCTION
BEG. NB WIDENING & RESURF.
–Y_N– POT STA. 209+50.00

REPLACE CONCRETE DITCH WHERE FILL SLOPE COVERS EX. CONCRETE SEE DETAIL 79
REMOVE EX. HW
CROSS PIPE END SECTION
18" RCP
RETAIN Adj. DI
210+00
REMOVE EX. 15" RCP
CONTRACTOR TO CONFIRM EXISTING PIPE INVERT DURING CONSTRUCTION AND CONFIRM WITH ENGINEER
15" RCP-IV
18" RCP-III
CL B RIP RAP
6 TONS 20 SY
+50.00 –Y_N–
120.00' RT
PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 4
CL I RIP RAP
25 TONS
SR
46" CMP
RETAIN
JS
TS

END CONSTRUCTION
END NB WIDENING & RESURF.
–Y_N– POT STA. 216+70.00

RETAIN
RESET GUARDRAIL
60" RCP
PAVED DITCH FULL OF DEBRIS
RETAIN
CONTRACTOR TO CONFIRM EXISTING PIPE INVERT DURING CONSTRUCTION AND CONFIRM WITH ENGINEER
215+00
RETAIN CONCRETE CHANNEL
TIE TO EXISTING GUARDRAIL
ASSUMED 18" RCP LOCATION TO BE RETAINED
TIE TO EX. DITCH W/TAIL 'V' DITCH SEE DETAIL 77
SPECIAL LATERAL 'V' DITCH SEE DETAIL 38
TIE TO EXIST. FENCE
+79.91 –Y_N–
98.86' RT
SPECIAL CUT DITCH SEE DETAIL 72
+94.03 –Y_N–
120.00' RT
END SBG
+50
76.33' RT
60" RCP-III
+00
JB w/MH
18" CSP w/ELBOWS
+50.00 –Y_N–
152.89' RT
TOE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 31
SPECIAL LATERAL 'V' DITCH W/CLASS B RIPRAP SEE DETAIL 74
DO NOT DISTURB SIGN
520' OUTSIDE SHOULDER TAPER
720' SHIFT & 720' INSIDE SHOULDER TAPER
720' LANE DROP TAPER
+50.00
+70.00
CAT-1
24.75'
FS
Adj. DI

RAMONA LOWE SON
WR
SR
WAB
Sr

SITE #27

2
GOFORTH FAMILY REVOCABLE TRUST

SEE SHEET 27A

–MATCHLINE– STA. 217+00 –Y_N– SEE INSET THIS SHEET

NC GRID + NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 50 100
GRAPHIC SCALE

10/21/2020
c:\projectwise\pb\projectwisent\becker_jw\d0339329\I3819_hyd_prm_psh27_Y20300_21700.dgn
becker_jw

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 63 OF 67
Rev. 11/02/2020

–MATCHLINE– STA. 203+00 –Y_N– SEE SHEET NO. 26

–MATCHLINE– STA. 217+00 –Y_N– THIS SHEET

–MATCHLINE– STA. 217+00 –Y_N– SEE INSET THIS SHEET

1
GOFORTH, GOFORTH & CLINE, LLC

2
GOFORTH FAMILY REVOCABLE TRUST

8
GOFORTH FAMILY REVOCABLE TRUST

RAMONA LOWE WILKINSON

END SB WIDENING/RESURF.
–Y_N– POT STA. 205+15.43

INSET
END NB RECONSTRUCTION
BEG. NB WIDENING & RESURF.
–Y_N– POT STA. 209+50.00

END CONSTRUCTION
END NB WIDENING & RESURF.
–Y_N– POT STA. 216+70.00

720' MEDIAN WIDTH TRANSITION (LT)
300' LANE ADD. TAPER
LATERAL 'V' DITCH SEE DETAIL 78
TIE TO EXIST. FENCE +15.43 –Y_N–
101.06 CL B RIP RAP 2 TONS 2 SY
TIE TO EX. DITCH W/TAIL 'V' DITCH SEE DETAIL 77
4' BASE HEAD DITCH W/CLASS 1 RIPRAP SEE DETAIL 87
15" CSP
END SBG +80 152.36 LT
SBG W/G.R. TB 2GI
REMOVE HW
FLOWABLE FILL
TRENCHLESS INSTALLATION 48" WELDED STEEL
REMOVE EX. 24" RCP
REMOVE 8 LF OF EX. 15" RCP
15" RCP-III
48" RCP-III
COLLAR
CL B RIP RAP 5 TONS 14 SY
4' BASE TAIL DITCH W/CLASS B RIPRAP SEE DETAIL 88
PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 73 CL I RIP RAP 92 TONS 127 SY
TOE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 31
CONTRACTOR TO CONFIRM EXISTING PIPE INVERT DURING CONSTRUCTION AND CONFIRM WITH ENGINEER
REPLACE CONCRETE DITCH WHERE FILL SLOPE COVERS EX. CONCRETE SEE DETAIL 79
REMOVE EX. HW
CROSS PIPE END SECTION
RETAIN
18" RCP-III
18" RCP-IV
15" RCP-IV
PROP. CHL FENCE
GREU TL 3
RESET GUARDRAIL
PAVED DITCH FULL OF DEBRIS
ASSUMED 18" RCP LOCATION TO BE RETAINED
TIE TO EX. DITCH W/TAIL 'V' DITCH SEE DETAIL 77
RETAIN CONCRETE CHANNEL
TIE TO EXISTING GUARDRAIL
SPECIAL LATERAL 'V' DITCH SEE DETAIL 38
SPECIAL CUT DITCH SEE DETAIL 72
TIE TO EXIST. FENCE +79.91 –Y_N–
18" CSP W/ELBOWS +50.00 –Y_N– 152.89 RT
TOE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 31
SPECIAL LATERAL 'V' DITCH W/CLASS B RIPRAP SEE DETAIL 74
DO NOT DISTURB SIGN
520' OUTSIDE SHOULDER TAPER
720' SHIFT & 720' INSIDE SHOULDER TAPER
720' LANE DROP TAPER
END SBG +00 76.33 RT
+50.00 –Y_N– 120.00 RT
+74.17 –Y_N– 120.00 RT
+27.29 –Y_N– 120.00 RT
+15.43 150.00
+79.91 –Y_N– 98.86 RT
+94.03 –Y_N– 120.00 RT
205+00
210+00
215+00
MATCH EXIST
SR
WR
WAB
WS
SS
MIDDLE
INSIDE
OUTSIDE

SITE #27
SEE SHEET 27A

NC GRID + NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 50 100
GRAPHIC SCALE

10/21/2020
c:\projectwise\pb\projectwisent\becker_jw\d0339329\I3819_hyd_prm_psh27_Y20300_21700.dgn
becker_jw

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

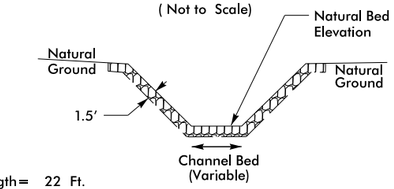
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	27A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TEMPORARY IMPACTS
IN SURFACE WATER

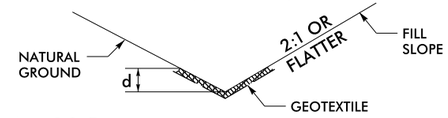
PIPE OUTLET
CHANNEL STABILIZATION
SEE DETAIL 4
CL 1 RIP RAP

DETAIL 4
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length = 22 Ft.
Type of Liner = CL 1 Rip-Rap – Keyed-In (No Geotextile)

DETAIL 31
TOE PROTECTION
(Not to Scale)

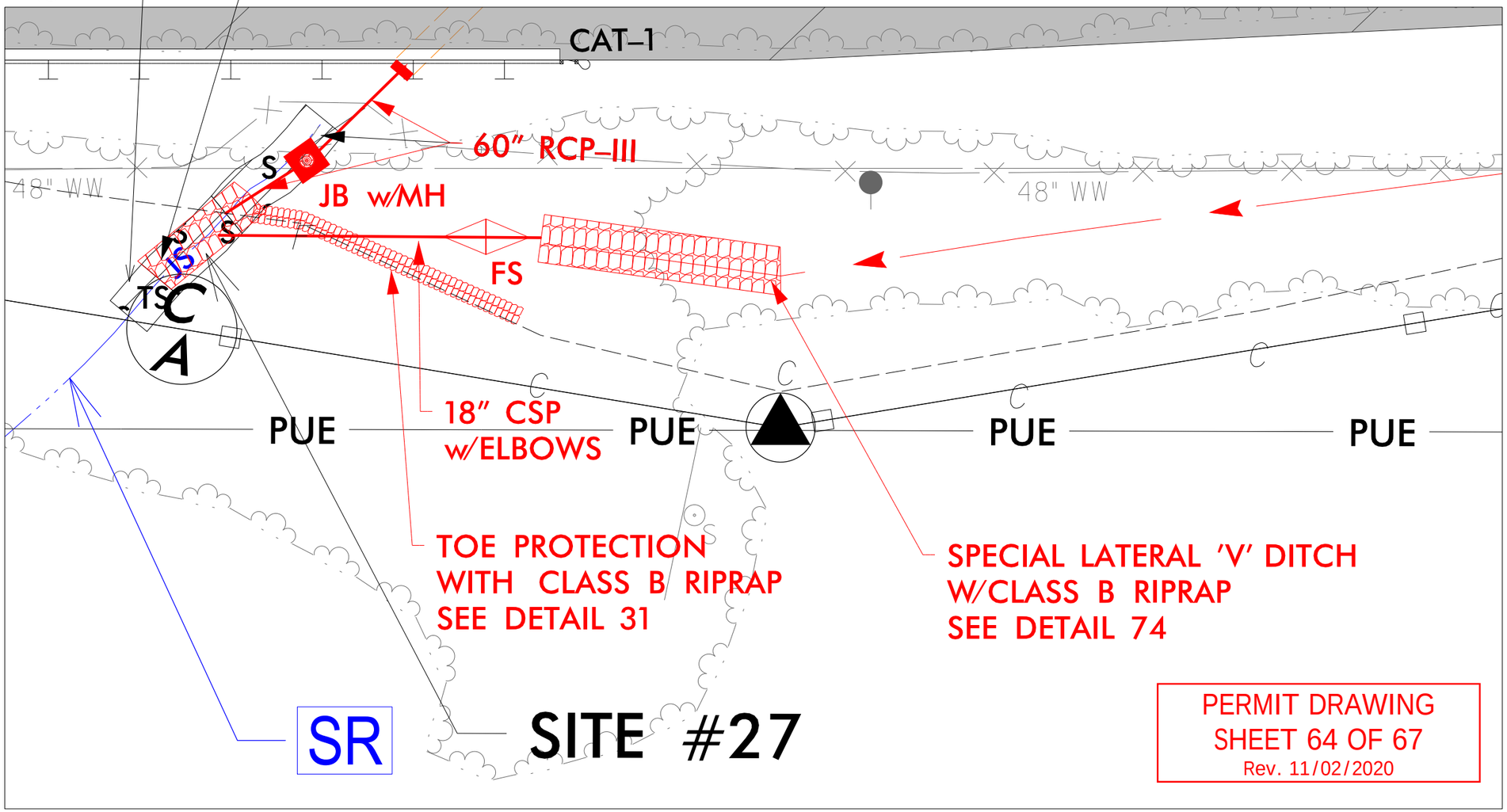


d = 1.0 Ft.

Type of Liner = Class B Rip-Rap

–YRPC– STA. 16+04 RT
–Y_N– STA. 210+35 RT

INSET



PERMIT DRAWING
SHEET 64 OF 67
Rev. 11/02/2020

NC GRID NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSETS

10/22/2020
c:\projectwise\pb\projectwiseint\becker_jw\d0339329\I3819_hyd_prm_psh27A_Y20300-21700.dgn
Becker, JW

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

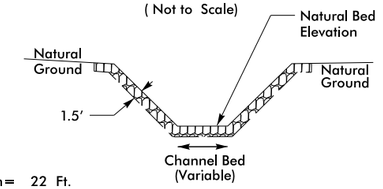
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	27A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TEMPORARY IMPACTS
IN SURFACE WATER

PIPE OUTLET
CHANNEL STABILIZATION
SEE DETAIL 4
CL 1 RIP RAP

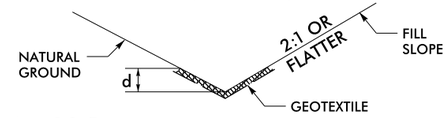
DETAIL 4
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length = 22 Ft.
Type of Liner = CL 1 Rip-Rap – Keyed-In (No Geotextile)

–YRPC– STA. 16+04 RT
–Y_N– STA. 210+35 RT

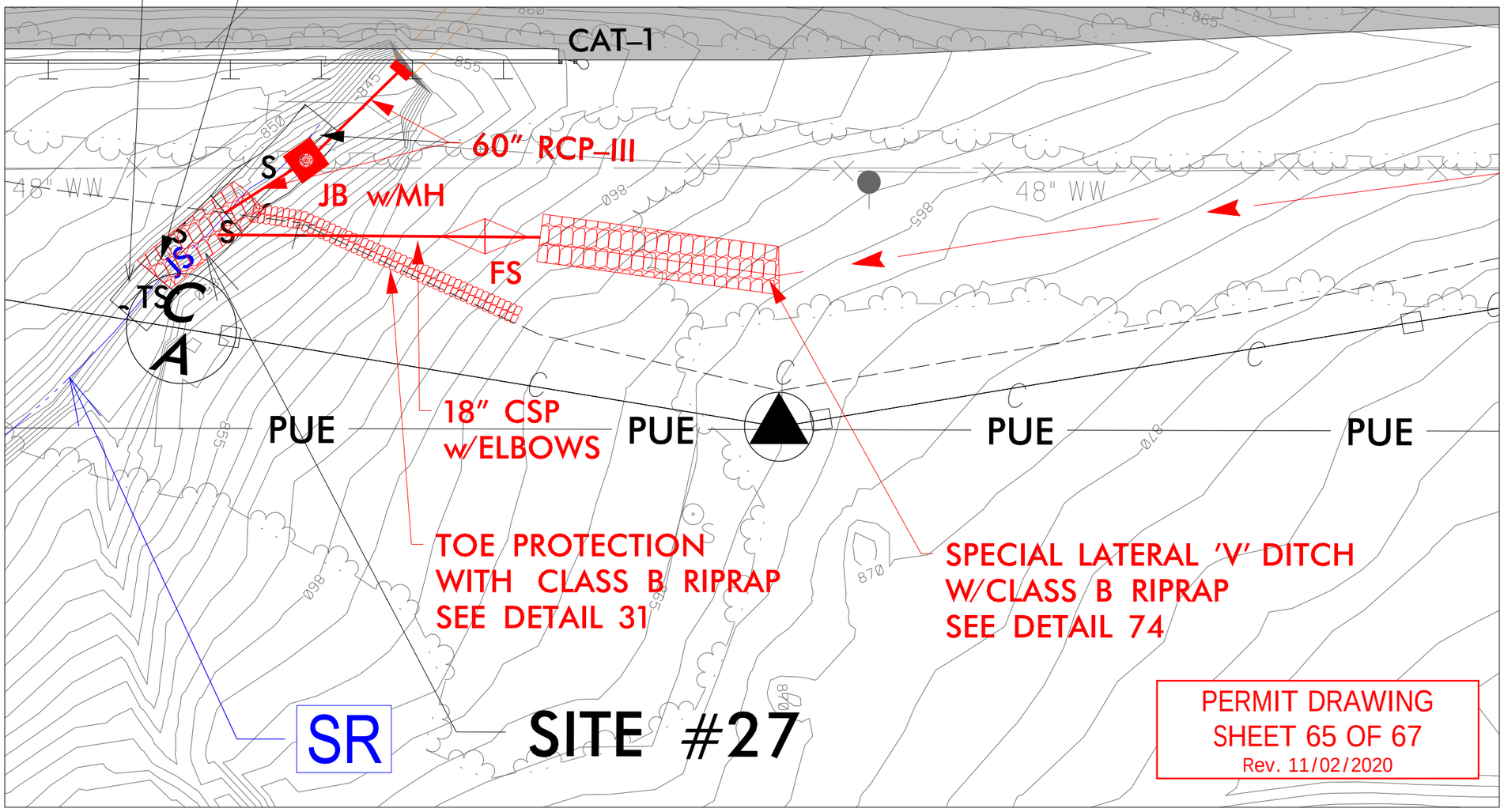
DETAIL 31
TOE PROTECTION
(Not to Scale)



d = 1.0 Ft.

Type of Liner = Class B Rip-Rap

INSET



PERMIT DRAWING
SHEET 65 OF 67
Rev. 11/02/2020

NC GRID NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSETS

10/22/2020
c:\projectwise\pb\projectwiseint\becker_jw\d0339329\I3819_hyd_prm_psh27A_Y20300-21700.dgn
Becker, JW

WETLAND AND SURACE 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)
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**	0.02	0.62		0.02		< 0.01	< 0.01	42	20	
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	
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	
18	47+50-Y-	54" RCP Extension						< 0.01		39		
SHEET 66 SUBTOTALS*:			0.97	2.66	0.00	0.29	0.00	0.16	0.07	1409	345	0.00

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

**Temporary fill in wetlands includes impacts previously classified as hand clearing, changed per NCDEQ comment (matting for construction access)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
11/02/2020
IREDELL
TIP NO. I-3819B
WBS NO.

WETLAND AND SURACE 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-	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-	New Channel						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			0.97	2.66	0.00	0.29	0.00	0.16	0.07	1409	345	0.00
SHEET 67 SUBTOTAL			0.09	0.00	0.00	0.04	0.00	0.67	0.03	1804	126	0.00
PROJECT TOTALS*:			1.06	2.66	0.00	0.33	0.00	0.83	0.10	3213	471	0.00

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

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
11/02/2020
IREDELL
TIP NO. I-3819B
WBS NO.

09/08/99

TIP PROJECT: I-3819B/U-6039

PROJECT: 34192.1.2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

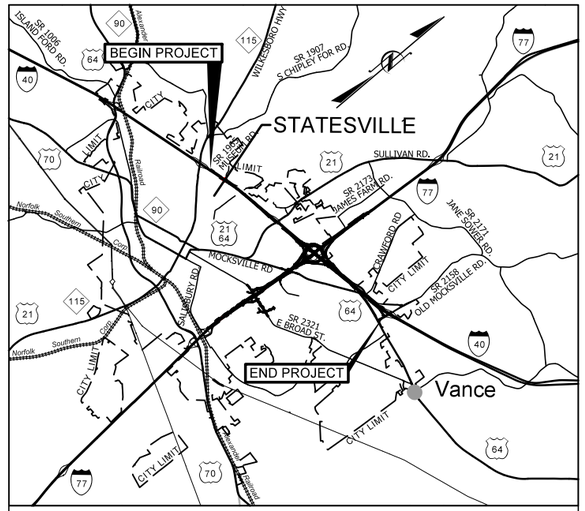
IREDELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-3819B/U-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

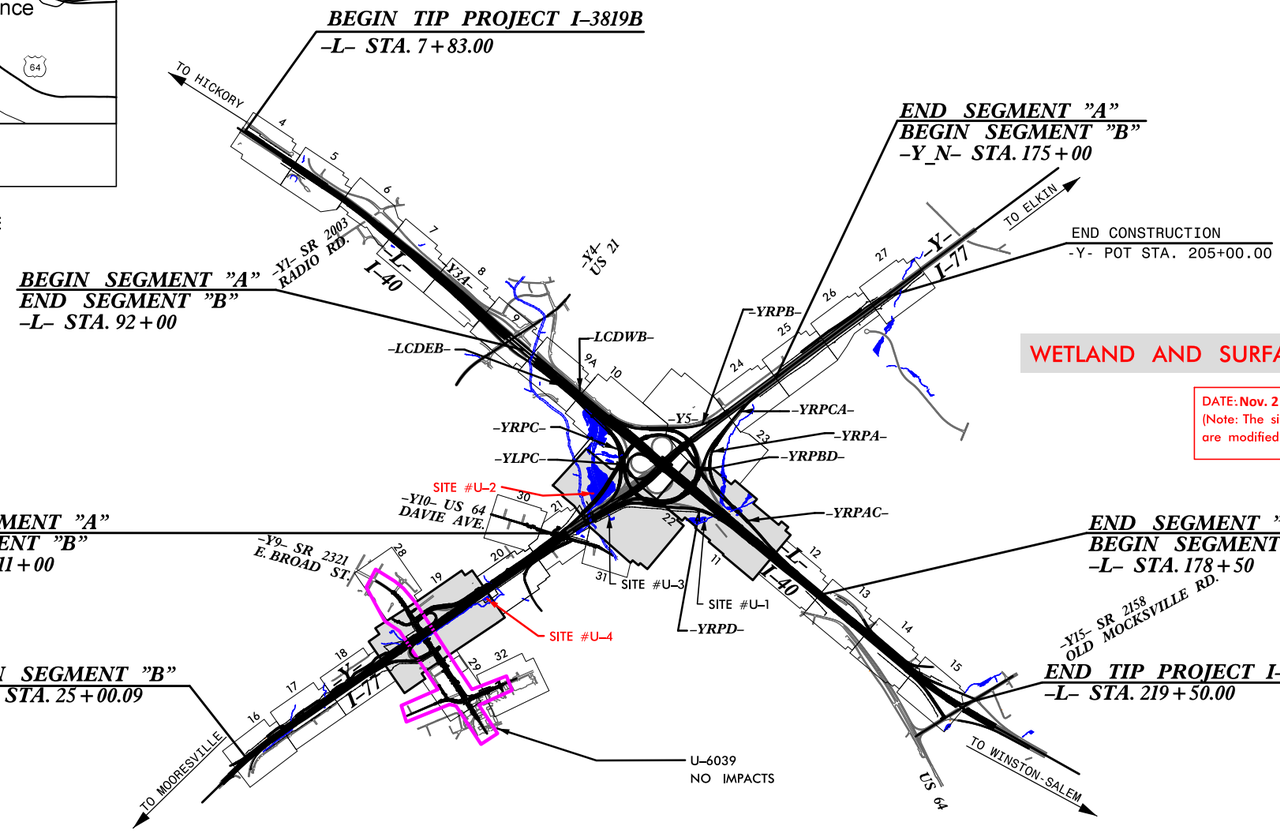
LOCATION: *I-40/I-77 INTERCHANGE INCLUDING I-40 FROM WEST OF SR 2003 (RADIO RD.) TO SR 2158 (OLD MOCKSVILLE RD.) & I-77 FROM SOUTH OF SR 2321 (EAST BROAD ST.) TO SOUTH OF SR 2171 (JANE SOWERS RD.)*

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



WETLAND AND SURFACE WATER IMPACT PERMITS

DATE: Nov. 2, 2020
(Note: The sites highlighted in RED are modified in this submittal.)

LANE

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

50 25 0 100 200
PLANS

100 50 0 200 400
OVERSIZED PLANS

SCALE VARIES
INSETS

UTILITY PERMIT DRAWING
SHEET 1 OF 8
Rev. 11/02/2020

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

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.*

9/17/2020
S:\projectwise\pb\projectwise1nt\becker jw\d0350035\I3819_hyd_prm_TSH_Utility.dgn
becker jw

UTILITY PERMIT
DRAWING
SHEET 3a OF 8
Rev. 11/02/2020

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

PROJECT REFERENCE NO.	SHEET NO.
I-5818B	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID | NAD 8395

DENOTES MECHANIZED CLEARING

50 25 0 50 100
GRAPHIC SCALE

REVISIONS
1. ADDED PUE ON PARCEL 39, REVISED NOISE WALL LOCATION & ADJUSTED DRAINAGE ALONG NOISE WALLS (3-24-2020)
2. REVISED PUE/FCE ON PARCEL 39, DIFFERENT NWS - GROUP A, 7' - 8' - 35' (6-4-2020)

-MATCHLINE- STA- 19+50.00 -Y9- SEE SHEET NO. 28

-MATCHLINE- STA 63+00.00 -Y_S- SEE SHEET NO. 18

-MATCHLINE- STA 92+00.00 -Y_S- SEE SHEET NO. 20

-MATCHLINE- STA 34+00.00 -Y9- SEE SHEET NO. 29

SITE U-4
SEE INSET
THIS SHEET

SEE INSET

INSET

SITE U-4
MECHANIZED CLEARING
UTILITY ACCESS ROAD

50 25 0 50 100
GRAPHIC SCALE - INSET

-Y9RPA-

Pi Sta 12+60.05
Δ = 5°22'10.5" (RT)
D = 1°40'26.6"
L = 493.96'
T = 250.05'
R = 3500.00'
SE = NC
DS = 50 MPH

Pi Sta 16+27.70
Δ = 12°45'54.4"
Θs = 7°09'45.4"
Ls = 200.00'
LT = 127.74'
ST = 72.53'

Pi Sta 17+82.68
Δ = 11°48'22.8" (RT)
D = 7°09'43.1"
L = 164.85'
T = 82.73'
R = 800.00'
SE = 08
DS = 50 MPH

Pis Sta 19+44.0
Θs = 11°27'33.
Ls = 200.00'
LT = 133.54'
ST = 66.77'

Pis Sta 19+31.58
Θs = 7°09'43.1
Ls = 200.00'
LT = 133.44'
ST = 66.71'

Pis Sta 21+98.42
Θs = 11°27'33.1
Ls = 200.00'
LT = 133.62'
ST = 66.82'

Pi Sta 23+59.20
Δ = 27°23'05.9" (LT)
D = 11°27'33.1
L = 186.62'
T = 94.49'
R = 500.00'
SE = 06
DS = 25 MPH

Pis Sta 19+44.0
Θs = 11°27'33.
Ls = 200.00'
LT = 133.62'
ST = 66.82'

-Y9LPC-

Pis Sta 11+35.94
Θs = 3°43'30.55.9'
Ls = 200.00'
LT = 155.96'
ST = 69.06'

Pis Sta 14+14.29
Θs = 15°48'39.4" (LT)
D = 3°43'30.55.9'
L = 214.3'
T = 214.3'
R = 166.00'
SE = 08
DS = 25 MPH

Pis Sta 15+71.74
Θs = 3°43'30.55.9'
Ls = 200.00'
LT = 155.96'
ST = 69.06'

Pis Sta 11+38.0
Θs = 45°17'.3.
Ls = 200.00'
LT = 137.28'
ST = 70.9'

-Y9-

Pi Sta 21+57.98
Δ = 5°04'00.2" (RT)
D = 1°12'04.2"
L = 265.35'
T = 127.71'
R = 4770.00'
SE = NC
DS = 40 MPH

Pi Sta 24+13.33
Δ = 5°04'00.2" (LT)
D = 1°12'04.2"
L = 265.35'
T = 127.71'
R = 4770.00'
SE = NC
DS = 40 MPH

Pi Sta 30+09.40
Δ = 3°59'32.9" (LT)
D = 1°12'04.2"
L = 332.37'
T = 166.25'
R = 4770.00'
SE = NC
DS = 40 MPH

Pi Sta 33+44.72
Δ = 4°03'47.5" (R
D = 1°12'04.2"
L = 338.27'
T = 169.21'
R = 4770.00'
SE = NC
DS = 40 MPH

LOCATION: SR77 AT E. BROAD STREET

TIP NO.: I-5818B COUNTY: IREDELL

DESIGNED BY: C. DAVIS

CHECKED BY: D. ARNOVORTH DATE: 4-2-2019

7/17/2020
2:\projects\projects\projects\I-5818B\Roadway\Plan Sheets\I-5818B_Proj_Plan_Sheets_Y19.dgn

UTILITY PERMIT
DRAWING
SHEET 3b OF 8
Rev. 11/02/2020

–MATCHLINE STA– 19+50.00 –Y9– SEE SHEET NO. 28

–MATCHLINE– STA 63+00.00 –Y–S– SEE SHEET NO. 18

–MATCHLINE– STA 92+00.00 –Y–S– SEE SHEET NO. 20

–MATCHLINE– STA 34+00.00 –Y9– SEE SHEET NO. 29

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

PROJECT REFERENCE NO.	SHEET NO.
I–5818B	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 8395

DENOTES MECHANIZED CLEARING

50 25 0 50 100
GRAPHIC SCALE

SITE U–4
SEE INSET
THIS SHEET

SEE INSET

INSET

SITE U–4
MECHANIZED CLEARING

UTILITY ACCESS ROAD

50 25 0 50 100
GRAPHIC SCALE – INSET

-Y9RPA-

PI Sta 18+50.05	PI Sta 16+97.20	PI Sta 17+82.88	PI Sta 12+67.
Δ = 5°25'15.9" (RT)	Gs = 12°45'54.4"	Δ = 14°25'5.8" (RT)	Gs = 7°09'43.
D = 11°40'25.6"	Gs = 7°09'45.4"	D = 7°09'43."	Ls = 200.00'
L = 459.36'	Ls = 200.00'	L = 904.80'	Lt = 133.44'
T = 250.05'	Lt = 127.74'	T = 462.75'	ST = 66.71'
R = 490.00'	ST = 72.23'	R = 800.00'	
SE = NC		SE = 08	
DS = 50 MPH		DS = 50 MPH	
PI Sta 19+13.58	PI Sta 21+98.40	PI Sta 23+59.20	PI Sta 19+44.
Gs = 7°09'43.2'	Ls = 200.00'	Δ = 29°23'05.9" (LT)	Gs = 11°27'33.
Ls = 200.00'	Lt = 133.62'	D = 11°27'33.0"	Ls = 200.00'
Lt = 133.44'	ST = 66.82'	L = 1866.25'	Lt = 133.62'
ST = 66.71'		T = 944.91'	ST = 66.92'
		R = 500.00'	
		SE = 06	
		DS = 25 MPH	

-Y9LPC-

PI Sta 11+35.94	PI Sta 14+14.29	PI Sta 19+71.74	Gs = 11°27'33.
Gs = 34°30'55.9"	Δ = 154°28'39.4" (LT)	Δ = 34°30'55.9"	Ls = 200.00'
Ls = 200.00'	D = 34°30'55.9"	Ls = 800.00'	Lt = 133.62'
Lt = 135.96'	T = 214.3'	Lt = 135.96'	ST = 66.92'
ST = 69.06'	R = 166.00'	ST = 69.06'	
	SE = 08		
	DS = 25 MPH		

-Y9-

PI Sta 21+57.98	PI Sta 24+13.33	PI Sta 30+09.40	PI Sta 33+44.72
Δ = 5°04'02.9" (RT)	Δ = 5°04'02.9" (LT)	Δ = 3°59'10.9" (LT)	Δ = 6°03'49.9" (R
D = 1°12'56.2"	D = 1°12'56.2"	D = 1°12'04.2"	D = 1°12'04.2"
L = 265.39'	L = 265.39'	L = 332.51'	L = 336.07'
T = 132.77'	T = 132.77'	T = 166.25'	T = 168.22'
R = 4,710.00'	R = 4,710.00'	R = 4,770.00'	R = 4,770.00'
SE = NC	SE = NC	SE = NC	SE = NC
DS = 40 MPH	DS = 40 MPH	DS = 40 MPH	DS = 40 MPH

LOCATION: 507 AT E. BROAD STREET

TIP NO.: I-5818B COUNTY: IREDELL

DESIGNED BY: C. DAVIS

CHECKED BY: D. ARNOVICH DATE: 4-2-2018

REVISIONS
1. ADDED PLR ON PARCEL 39 REVISED HORSE WALL LOCATION & ADJUSTED DRAINAGE ALONG HORSE WALLS (3-24-2020)
2. REVISED PLR/ECE ON PARCEL 39 DIFFERENT HWS - GROUP A (4-01-20 to 4-24-2020)

7/17/2020
2:07:40 PM
C:\Users\ecarter\Desktop\I-5818B_Sheets_20200715_ecarter.dgn

UTILITY PERMIT DRAWING
SHEET 4 OF 8
Rev. 11/02/2020

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

PROJECT REFERENCE NO.	SHEET NO.
I-5898	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

–MATCHLINE– STA. 66+90.00 –YRPAC– SEE SHEET NO. 10

–MATCHLINE– STA. 31+50.00 –YRPCA– STA. 19+00.00 –YRPC– SEE SHEET NO. 10

–MATCHLINE– STA. 235+00 –Y_RT– SEE SHEET NO. 10

–MATCHLINE– STA. 44+50 –YRPCA– STA. 21+00 –YRPD– SEE SHEET NO. 11

–MATCHLINE– STA. 80+40.00 –YRPAC– SEE SHEET NO. 21

–MATCHLINE– STA. 120+00 –Y_S– SEE SHEET NO. 21

SITE U–2
SEE SHEET 22A

SEE INSET

SPBR INVESTMENT COMPANY, LLC

THE CITY OF STATESVILLE, N.C.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

FOURTH CREEK

ADAM D. BROWN

943 PROPERTY NORTH CAROLINA LP

CHRISTOPHER, DICKEY AND KRISTEN TODD

G. L. WILSON BUILDING COMPANY

SULLIVAN ROAD PARTNERS, LLC

CITY OF STATESVILLE

TOWER RELOCATED BY OTHERS

PROP. CHL FENCE

PUE

LYYU

WE

WD

SH

WH

5

6

7

–YRPDB–

PI Sta 14+24.03	PIs Sta 23+74.30	PI Sta 26+43.97	PIs Sta 29+03.94	PIs Sta 30+95.94
Δ = 5° 30' 02.3" (RT)	Gs = 4° 52' 55.2"	Δ = 29° 24' 11.0" (RT)	Gs = 4° 52' 55.2"	Gs = 4° 57' 08.4"
D = 2° 39' 11.8"	Ls = 144.00'	D = 6° 48' 50.0"	Ls = 144.00'	Ls = 144.00'
L = 592.80'	LT = 96.04'	L = 453.64'	LT = 96.04'	LT = 96.04'
T = 296.53'	ST = 48.03'	T = 231.71'	ST = 48.03'	ST = 48.03'
R = 2,160.00'		R = 842.00'		
SE = NC		SE = 06		
DS = 50 MPH		DS = 50 MPH		

–Y_S–

PI Sta 17+58.63
Δ = 5° 21' 11.1" (RT)
D = 12° 29' 53.6"
L = 107.44'
T = 53.76'
R = 1,150.00'
SE = NC
DS = 60 MPH

–YRPAC–

PI Sta 74+01.12
Δ = 17° 19' 39.2" (RT)
D = 2° 14' 48.8"
L = 593.15'
T = 298.92'
R = 2,550.00'
SE = 04
DS = 50 MPH

–Y_LT–

PIs Sta 33+47.38	PI Sta 33+48.61
Gs = 2° 54' 41.9"	Δ = 8° 29' 43.8" (LT)
Ls = 270.00'	D = 1° 54' 35.0"
LT = 180.02'	L = 444.82'
ST = 90.02'	T = 222.82'
	R = 3,000.00'
	SE = 05
	DS = 60 MPH

–Y_RT–

PIs Sta 232+62.32	PI Sta 235+92.32
Gs = 1° 54' 35.0"	Δ = 17° 21' 59.7" (LT)
Ls = 200.00'	D = 1° 54' 35.0"
LT = 133.34'	L = 525.54'
ST = 66.67'	T = 265.34'
	R = 3,000.00'
	SE = 05
	DS = 60 MPH

–YRPC–

PIs Sta 20+25.04	PI Sta 24+66.97	PIs Sta 28+57.03
Gs = 4° 57' 08.4"	Δ = 57° 17' 24.9" (RT)	Gs = 4° 57' 08.4"
Ls = 144.00'	D = 61.52' 40.7"	Ls = 144.00'
LT = 96.04'	L = 1,389.22'	LT = 96.04'
ST = 48.03'	T = 757.95'	ST = 48.03'
	R = 853.00'	
	SE = 06	
	DS = 50 MPH	

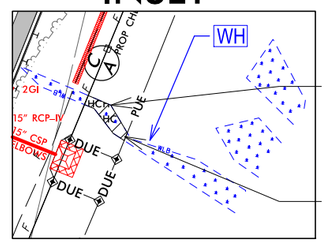
–YRPD–

PIs Sta 11+93.35	PI Sta 14+07.08	PIs Sta 16+16.61	PI Sta 22+41.11
Gs = 4° 57' 08.4"	Δ = 22° 30' 56.4" (RT)	Gs = 4° 57' 08.4"	Δ = 51° 19' 05.0" (LT)
Ls = 144.00'	D = 6° 55' 40.4"	Ls = 144.00'	D = 0° 43' 43.0"
LT = 96.04'	L = 327.27'	LT = 96.04'	L = 1,310.45'
ST = 48.03'	T = 165.77'	ST = 48.03'	T = 705.50'
	R = 853.00'		R = 7,870.00'
	SE = 06		SE = NC
	DS = 50 MPH		DS = 50 MPH

–YRPCA–

PIs Sta 31+66.93	PI Sta 41+32.83
Gs = 4° 57' 08.4"	Δ = 95° 33' 15.3" (LT)
Ls = 144.00'	D = 61.52' 40.7"
LT = 96.04'	L = 1,389.22'
ST = 48.03'	T = 917.95'
	R = 853.00'
	SE = 06
	DS = 50 MPH

INSET



SITE #U–3

HAND CLEARING

25 12.5 0 25 50

GRAPHIC SCALE – INSET

F F DENOTES FILL IN WETLAND

T T DENOTES TEMPORARY FILL IN WETLAND

DENOTES MECHANIZED CLEARING

HC HC DENOTES HAND CLEARING

LOCATION:

TIP NO.: I-5898 COUNTY: IREDELL

DESIGNED BY: C. DAVIS

CHECKED BY: D. AINSWORTH DATE: 4-24-2019

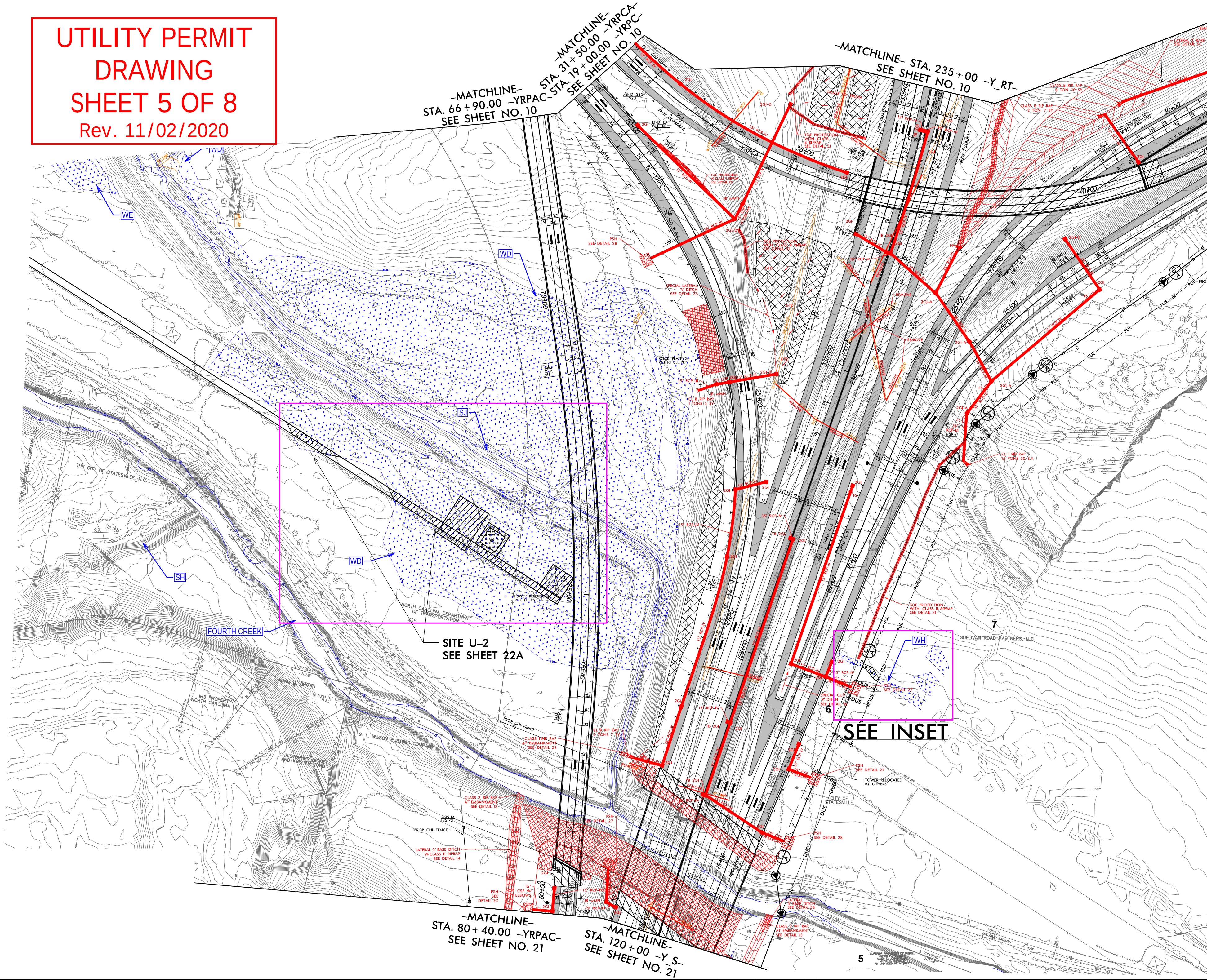
1/6/2020
11:04:27 AM
C:\PROJECTS\...\Sheet 4.dgn

UTILITY PERMIT DRAWING
SHEET 5 OF 8
Rev. 11/02/2020

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



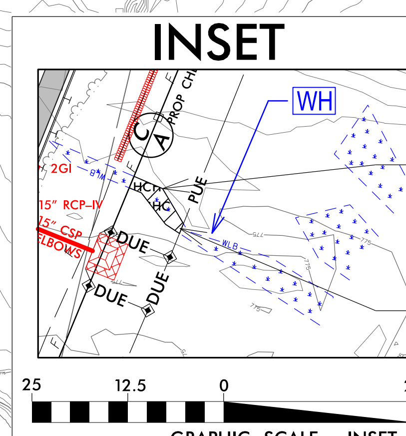
-Y_S-	-YRPAC-
PI Sta 117+68.63	PI Sta 74+01.12
Δ = 5° 21' 11.0" (RT)	Δ = 13° 19' 38.6" (RT)
D = 0° 29' 53.6"	D = 2° 14' 48.8"
L = 1,074.43'	L = 593.15'
T = 537.61'	T = 297.92'
R = 11,500.00'	R = 2,550.00'
SE = NC	SE = .04
DS = 60 MPH	DS = 50 MPH

-YRPDB-				
PI Sta 14+24.03	PIs Sta 23+74.30	PI Sta 26+43.97	PIs Sta 29+03.94	PIs Sta 30+95.94
Δ = 2° 30' 02.3" (RT)	θs = 4° 52' 55.2"	Δ = 29° 24' 11.0" (RT)	θs = 4° 52' 55.2"	θs = 4° 57' 08.4"
D = 0° 38' 11.8"	Ls = 144.00'	D = 6° 46' 50.0"	Ls = 144.00'	Ls = 144.00'
L = 392.80'	LT = 96.04'	L = 433.64'	LT = 96.04'	LT = 96.04'
T = 196.43'	ST = 48.03'	T = 221.71'	ST = 48.03'	ST = 48.03'
R = 9,000.00'		R = 845.00'		
SE = NC		SE = .06		
DS = 50 MPH		DS = 50 MPH		

-Y_LT-		-Y_RT-		-YRPC-		
PIs Sta 331+73.81	PI Sta 334+86.61	PIs Sta 232+62.32	PI Sta 235+92.32	PIs Sta 20+25.04	PI Sta 24+66.97	PIs Sta 28+57.03
θs = 2° 34' 41.9"	Δ = 8° 29' 43.8" (LT)	θs = 1° 54' 35.5"	Δ = 10° 01' 59.7" (LT)	θs = 4° 57' 08.4"	Δ = 50° 37' 24.9" (RT)	θs = 4° 57' 08.4"
Ls = 270.00'	D = 1° 54' 35.5"	Ls = 200.00'	D = 1° 54' 35.5"	Ls = 144.00'	D = 6° 52' 41.7"	Ls = 144.00'
LT = 180.02'	L = 444.82'	LT = 133.34'	L = 525.34'	LT = 96.04'	L = 736.00'	LT = 96.04'
ST = 90.02'	T = 222.82'	ST = 66.67'	T = 263.34'	ST = 48.03'	T = 393.97'	ST = 48.03'
	R = 3,000.00'		R = 3,000.00'		R = 833.00'	
	SE = .05		SE = .05		SE = .06	
	DS = 60 MPH		DS = 60 MPH		DS = 50 MPH	

-YRPD-				-YRPCA-	
PIs Sta 11+93.35	PI Sta 14+07.08	PIs Sta 16+16.61	PI Sta 22+11.11	PIs Sta 31+66.93	PI Sta 41+32.83
θs = 4° 57' 08.4"	Δ = 22° 30' 36.4" (RT)	θs = 4° 57' 08.4"	Δ = 5° 19' 05.0" (LT)	θs = 4° 57' 08.4"	Δ = 95° 33' 15.3" (LT)
Ls = 144.00'	D = 6° 52' 41.7"	Ls = 144.00'	D = 0° 43' 40.9"	Ls = 144.00'	D = 6° 52' 41.7"
LT = 96.04'	L = 327.27'	LT = 96.04'	L = 730.47'	LT = 96.04'	L = 1,389.22'
ST = 48.03'	T = 165.77'	ST = 48.03'	T = 365.50'	ST = 48.03'	T = 917.93'
	R = 833.00'		R = 7,870.00'		R = 833.00'
	SE = .06		SE = NC		SE = .06
	DS = 50 MPH		DS = 50 MPH		DS = 50 MPH

INSET



F F	DENOTES FILL IN WETLAND
T T	DENOTES TEMPORARY FILL IN WETLAND
* * *	DENOTES MECHANIZED CLEARING
HC HC	DENOTES HAND CLEARING

LOCATION:
TIP NO.: I-3819B COUNTY: IREDELL
DESIGNED BY: C. DAVIS
CHECKED BY: D. AINSWORTH DATE: 4-2-2019

6/2/99
7/15/2020 c:\projectwise\pb\projectwiseint\becker jw\d0350035\13819_hyd_prm_psh22_Utility.dgn becker jw

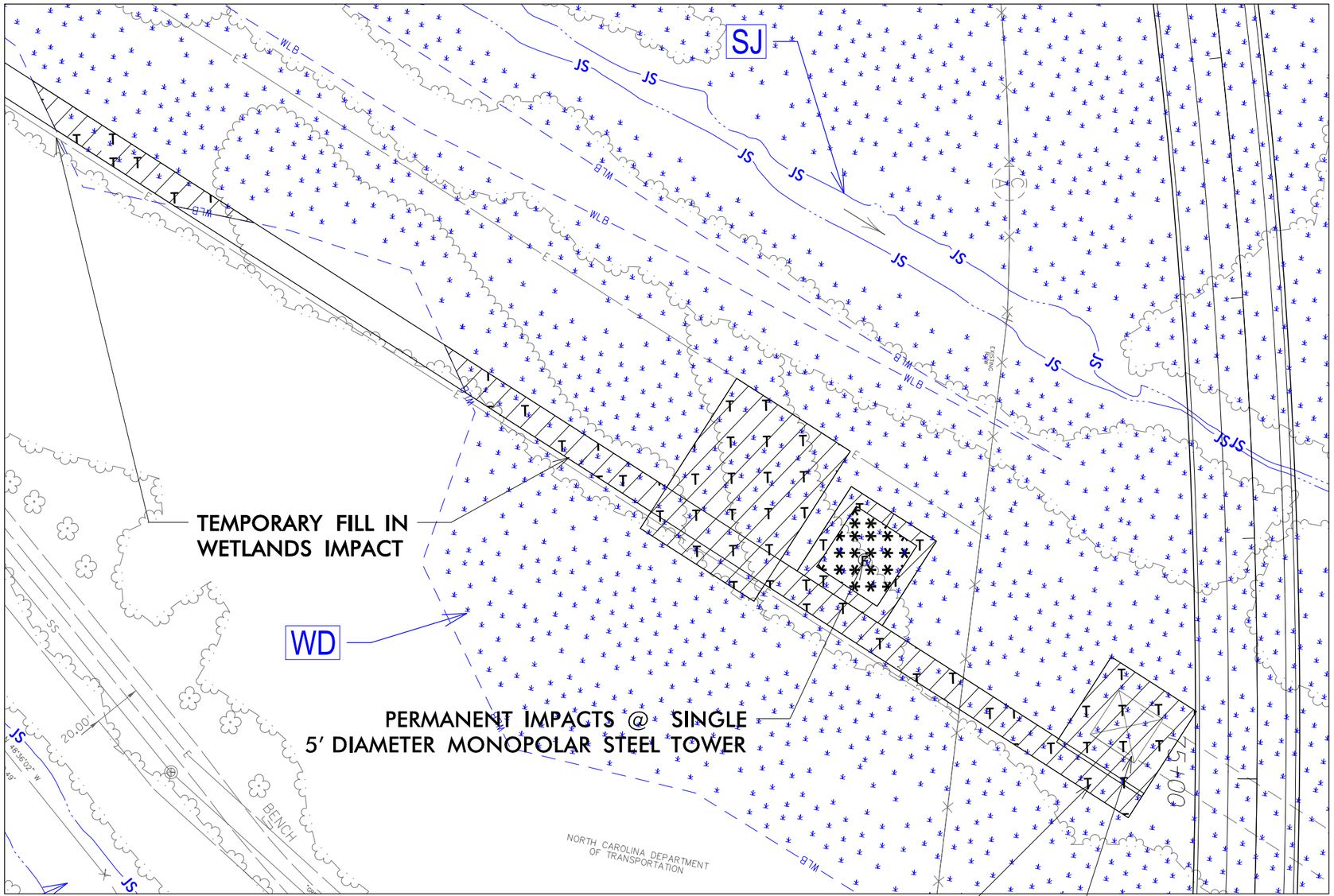
LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY PERMIT DRAWING
SHEET 6 OF 8
Rev. 11/02/2020

SITE U–2 INSET



NC GRID NAD 83/95

F F DENOTES FILL IN WETLAND

T T DENOTES TEMPORARY FILL IN WETLAND

DENOTES MECHANIZED CLEARING

50 25 0 25 50
GRAPHIC SCALE – INSETS

7/15/2020
c:\projectwise\pb\projectwiseint\becker_jw\d0350035\I3819_hyd_prm_psh22A_Utility.dgn
becker_jw

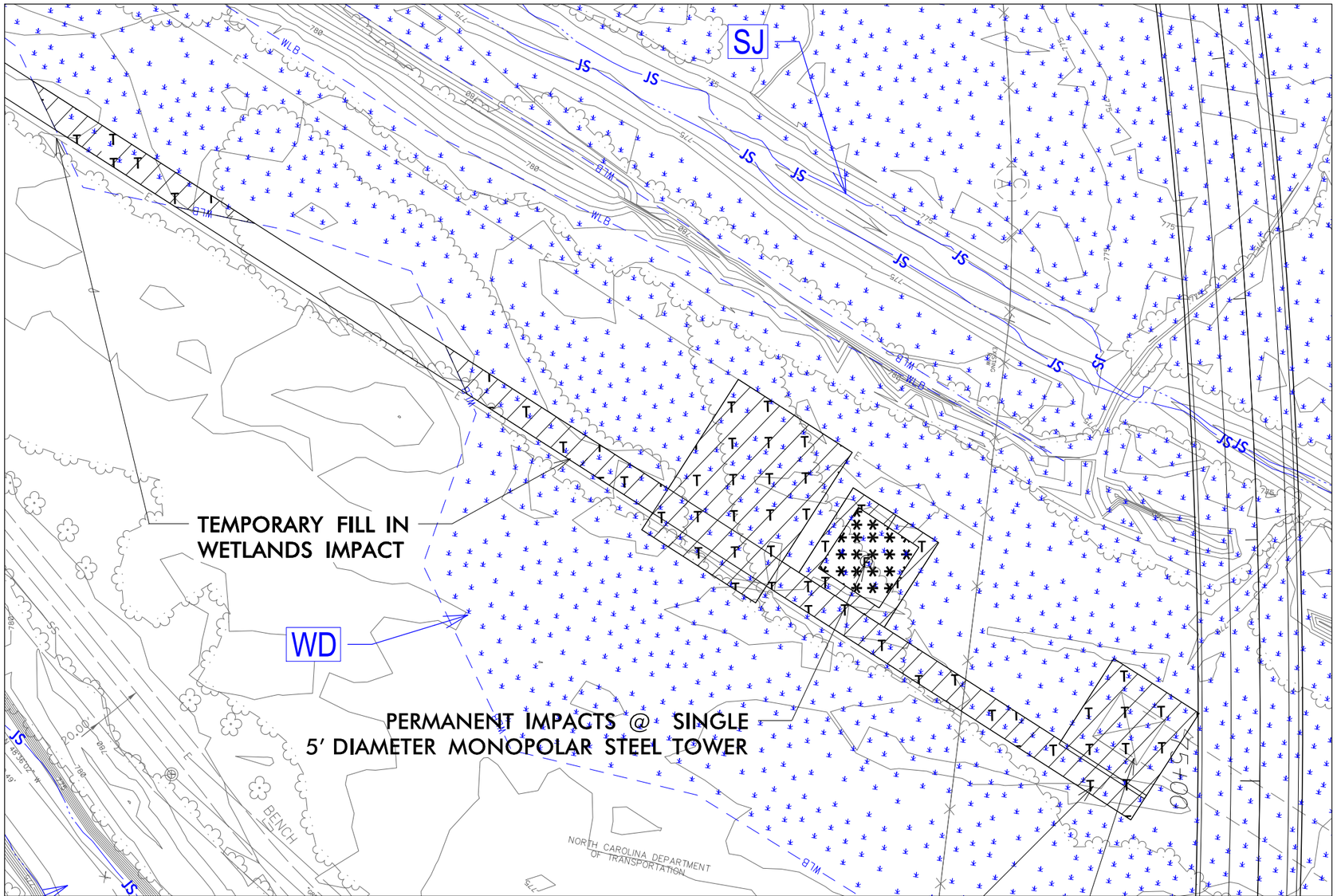
LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY PERMIT DRAWING
SHEET 7 OF 8
Rev. 11/02/2020

SITE U–2 INSET



7/15/2020
c:\projectwise\pb\projectwiseint\becker_jw\d0350035\I3819_hyd_prm_psh22A_Utility.dgn
becker_jw

WETLAND AND SURACE 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)
U-1	31+50-YRPD-	Utility		0.02								
U-2	75+00-YRPAC-**	Utility	< 0.01	0.25		0.02						
U-3	18+92-YRPDB-	Utility					< 0.01					
U-4	91+00-Y_S-	Utility				0.14						
TOTALS*:			< 0.01	0.27		0.16	< 0.01					

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

**Permanent Impact from a single 5 ft diameter monopole foundation for new transmission tower location.

Revised 2018 Feb

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
11/02/2020
IREDELL
TIP NO. I-3819B
WBS NO.
SHEET 8 OF 8

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 033007
HYDRAULICS ENGINEER — SEAL 041292

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

-MATCHLINE- STA. 57+00.00 -YRPBD- SEE SHEET NO.23

-MATCHLINE- STA. 247+00 -Y_RT- SEE SHEET NO. 23

-MATCHLINE- STA. 106+50.00 -L- SEE SHEET NO. 9A

-MATCHLINE- STA. 135+50.00 -L- SEE SHEET NO. 11

-MATCHLINE- STA. 66+90.00 -YRPAC- SEE SHEET NO. 22

-MATCHLINE- STA. 31+50.00 -YRPAC- STA. 19+00.00 -YRPC- SEE SHEET NO. 22

-MATCHLINE- STA. 235+00 -Y_RT- SEE SHEET NO. 22

-Y_LT-

PI Sta 334+86.61 Δ = 87° 29' 43.8" (LT) D = 7° 54' 35.5" L = 444.55' T = 622.82' R = 1,000.00' SE = .05 DS = 60 MPH	PIs Sta 337+98.63 Ls = 270.00' LT = 180.00' ST = 90.02'	PIs Sta 344+90.12 Ls = 240.00' LT = 160.02' ST = 80.02'	PI Sta 346+17.20 Δ = 2° 59' 17.2" (RT) D = 2° 28' 10.7" L = 94.91' T = 47.00' R = 2,320.00' SE = .06 DS = 60 MPH	PIs Sta 347+44.11 Ls = 240.00' LT = 160.02' ST = 80.02'

-Y_RT-

PI Sta 235+92.32 Δ = 107° 09' 59.7" (LT) D = 7° 54' 35.5" L = 525.34' T = 363.34' R = 1,000.00' SE = .05 DS = 60 MPH	PIs Sta 239+20.99 Ls = 270.00' LT = 133.34' ST = 66.67'	PIs Sta 246+30.11 Ls = 240.00' LT = 160.02' ST = 80.02'	PI Sta 247+61.90 Δ = 2° 32' 56.8" (RT) D = 2° 27' 33.6" L = 103.60' T = 51.81' R = 2,330.00' SE = .06 DS = 60 MPH	PIs Sta 301+68.10 Ls = 5' 34" 38.9" Ls = 240.00' LT = 146.7'4" ST = 73.40'

-YLPC-

PI Sta 111+98.97 Ls = 15° 48' 20.6" Ls = 160.00' LT = 101.09' ST = 53.72'	PI Sta 18+44.08 Δ = 2.32' 10' 52.4" (RT) D = 15° 45' 25.8" L = 147.57' T = 592.27' R = 290.00' SE = .08 DS = 30 MPH	PIs Sta 24+80.77 Ls = 15° 48' 20.6" Ls = 160.00' LT = 101.09' ST = 53.72'

-YRPDB-

PI Sta 558+84.78 Δ = 181° 48' 35.0" (LT) D = 6° 52' 40" L = 2,643.26' T = 5,574.87' R = 833.00' SE = .08 DS = 50 MPH	PIs Sta 58+35.20 Ls = 4° 57' 08.4" Ls = 144.00' LT = 96.04' ST = 48.03'	

-YRPB-

PI Sta 344+24.03 Δ = 28° 05' 01.8" (RT) D = 5° 04' 13.5" L = 553.98' T = 282.68' R = 1,130.00' DS = 50 MPH SE = EXIST.(0.06)	PI Sta 37+66.24 Ls = 17° 01' 18.7" Ls = 9° 04' 15.0" Ls = 200.00' LT = 129.22' ST = 70.09'	

-LCDWB-

PI Sta 81+25.21 Δ = 5° 08' 10.7" (RT) D = 17° 45' 01.8" L = 73.59' T = 36.82' R = 8,160.00' SE = .04 DS = 50 MPH		

-L-

PI Sta 113+91.69 Δ = 2° 38' 10.7" (LT) D = 0° 20' 13.3" L = 782.37' T = 391.29' R = 17,200.00' SE = NC DS = 60 MPH	PI Sta 121+74.06 Δ = 2° 38' 10.7" (RT) D = 0° 20' 13.3" L = 782.37' T = 391.29' R = 17,200.00' SE = NC DS = 60 MPH	PI Sta 72+80.46 Δ = 2° 38' 10.7" (LT) D = 0° 20' 18.5" L = 779.06' T = 389.60' R = 16,928.00' SE = NC DS = 50 MPH

-LCDEB-

PI Sta 67+43.78 Δ = 5° 38' 10.7" (LT) D = 0° 20' 08.2" L = 785.69' T = 392.91' R = 17,017.00' SE = NC DS = 60 MPH	PI Sta 75+26.15 Δ = 2° 38' 10.7" (RT) D = 0° 20' 18.5" L = 779.06' T = 389.60' R = 16,928.00' SE = NC DS = 60 MPH	PI Sta 58+74.99 Δ = 116° 25' 10.1" (LT) D = 6° 52' 40" L = 1,696.58' T = 1,344.07' R = 833.00' SE = .06 DS = 50 MPH

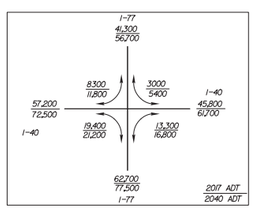
-YRPAC-

PI Sta 12+64.33 Δ = 35° 12' 39.2" (RT) D = 6° 52' 40" L = 511.92' T = 264.33' R = 833.00' SE = .06 DS = 50 MPH	PIs Sta 15+59.95 Gs = 4° 57' 08.4" Ls = 144.00' LT = 96.04' ST = 48.03'	

-YRPC-

PI Sta 25+49.52 Δ = 39° 02' 30.4" (RT) D = 4° 58' 56.2" L = 786.90' T = 409.59' R = 1,150.00' SE = .06 DS = 50 MPH	PIs Sta 29+74.91 Gs = 3° 35' 14.2" Ls = 144.00' LT = 96.02' ST = 48.02'	PIs Sta 31+66.93 Gs = 4° 57' 08.4" Ls = 144.00' LT = 96.04' ST = 48.03'

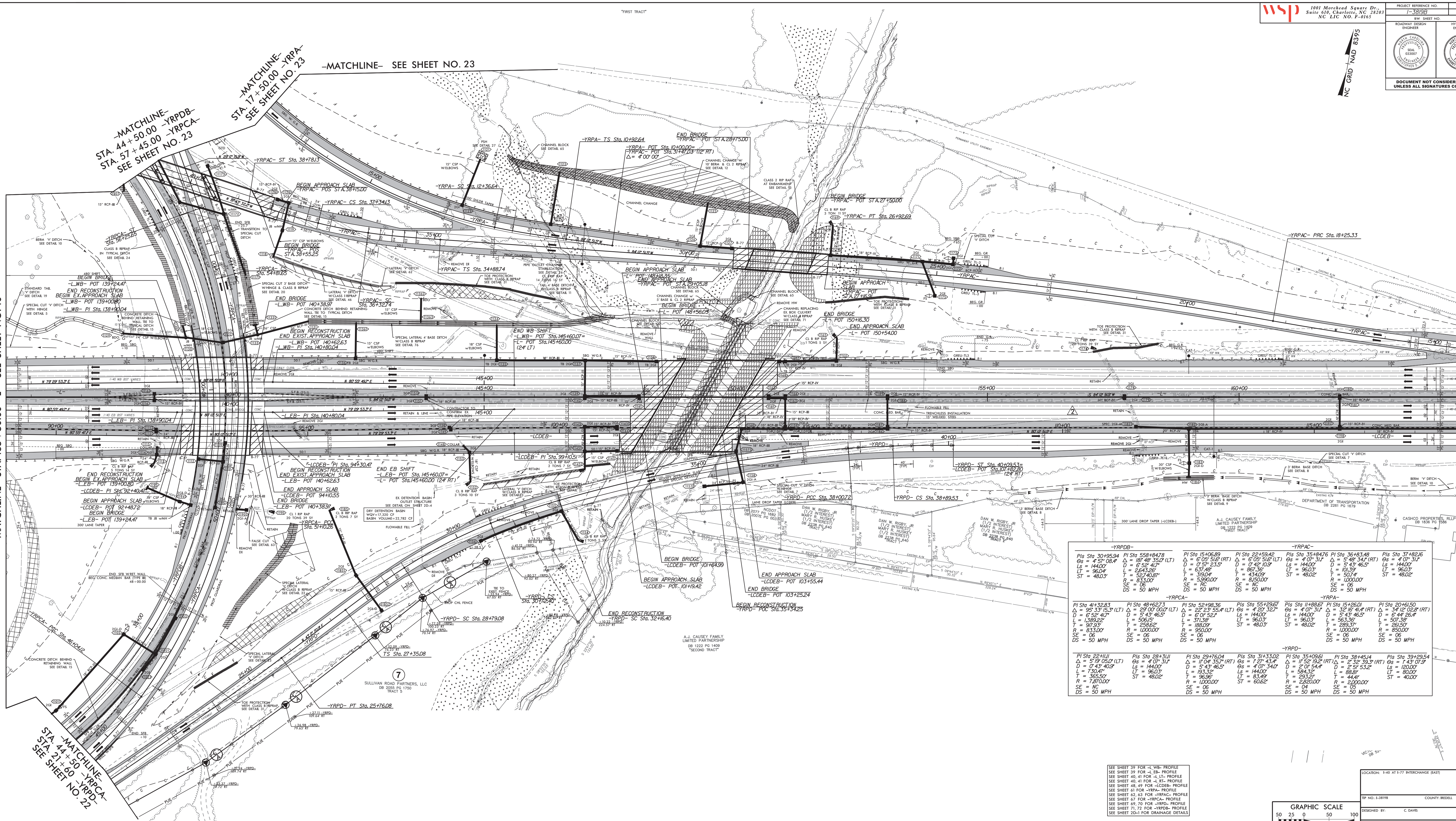
SEE SHEET 37, 38 FOR -L LT- PROFILE
SEE SHEET 37, 38 FOR -L RT- PROFILE
SEE SHEET 39 FOR -L WB- PROFILE
SEE SHEET 39 FOR -L EB- PROFILE
SEE SHEET 47, 48 FOR -LCDEB- PROFILE
SEE SHEET 56, 57 FOR -Y LT- PROFILE
SEE SHEET 56, 57 FOR -Y RT- PROFILE
SEE SHEET 63 FOR -YRPAC- PROFILE
SEE SHEET 65 FOR -YRPC- PROFILE
SEE SHEET 66 FOR -YRPDA- PROFILE
SEE SHEET 72 FOR -YRPDB- PROFILE
SEE SHEET 73 FOR -YLPC- PROFILE
SEE SHEET 2Db-1 DRAINAGE DETAILS
SEE SHEET Wa3 FOR WALL 13 ENVELOPE



GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION: I-40 AT I-77 INTERCHANGE (1)	
TIP NO.: I-3819B	COUNTY: IREDELL
DESIGNED BY: C. DAVIS	
CHECKED BY: D. AINSWORTH	DATE: 4-5-2019

Rev. 11/2/20



1. DEFICIENT PIPES – GROUP A: -L_EB- 144+03, -L- 153+01 (6/9/2020)
2. REVISED DRAINAGE: -L- 155+50 – 164+50 (9/4/2020)

-YRPDB-

- Pls Sta 30+95.94 — θs = 4°57′08.4″; Ls = 144.00′; LT = 96.04′; ST = 48.03′
- PI Sta 558+84.78 — Δ = 181°48′35.0″ (LT); D = 6°52′41.7″; L = 2,643.26′; T = 52,740.87′; R = 833.00′; SE = 06; DS = 50 MPH

-YRPAC-

- PI Sta 15+06.89 — Δ = 6°05′51.6″ (RT); D = 0°57′23.5″; L = 637.48′; T = 319.04′; R = 5,990.00′; SE = RC; DS = 50 MPH
- PI Sta 22+59.42 — Δ = 6°05′51.6″ (LT); D = 0°42′10.9″; L = 867.36′; T = 434.09′; R = 8,150.00′; SE = NC; DS = 50 MPH
- Pls Sta 35+84.76 — θs = 4°07′31.1″; Ls = 144.00′; LT = 96.03′; ST = 48.02′
- PI Sta 36+83.48 — Δ = 5°48′34.1″ (RT); D = 5°43′46.5″; L = 101.39′; T = 50.74′; R = 1,000.00′; SE = 06; DS = 50 MPH
- Pls Sta 37+82.16 — θs = 4°07′31.1″; Ls = 144.00′; LT = 96.03′; ST = 48.02′

-YRPCA-

- PI Sta 41+32.83 — Δ = 95°33′15.3″ (LT); D = 6°52′41.7″; L = 1,389.22′; T = 917.93′; R = 833.00′; SE = 06; DS = 50 MPH
- PI Sta 48+62.73 — Δ = 29°00′00.0″ (LT); D = 5°43′46.5″; L = 506.15′; T = 258.62′; R = 1,000.00′; SE = 06; DS = 50 MPH
- PI Sta 52+98.36 — Δ = 22°23′55.4″ (LT); D = 6°01′52.1″; L = 371.38′; T = 188.09′; R = 950.00′; SE = 06; DS = 50 MPH
- Pls Sta 55+29.67 — θs = 4°20′32.7″; Ls = 144.00′; LT = 96.03′; ST = 48.03′

-YRPA-

- Pls Sta 11+88.67 — θs = 4°07′31.1″; Ls = 144.00′; LT = 96.03′; ST = 48.02′
- PI Sta 15+26.01 — Δ = 32°16′41.4″ (RT); D = 5°43′46.5″; L = 563.36′; T = 289.37′; R = 1,000.00′; SE = 06; DS = 50 MPH
- PI Sta 20+61.50 — Δ = 34°12′02.8″ (RT); D = 6°44′26.4″; L = 507.38′; T = 261.50′; R = 850.00′; SE = 06; DS = 50 MPH

-YRPD-

- PI Sta 22+11.11 — Δ = 5°19′05.0″ (LT); D = 0°43′40.9″; L = 730.47′; T = 365.50′; R = 7,870.00′; SE = NC; DS = 50 MPH
- Pls Sta 28+31.11 — θs = 4°07′31.1″; Ls = 144.00′; LT = 96.03′; ST = 48.02′
- PI Sta 29+76.04 — Δ = 11°04′35.7″ (RT); D = 5°43′46.5″; L = 193.32′; T = 96.96′; R = 1,000.00′; SE = 06; DS = 50 MPH
- Pls Sta 31+33.02 — θs = 1°27′43.4″; θs = 4°07′34.0″; Ls = 144.00′; LT = 83.49′; ST = 60.62′
- PI Sta 35+09.61 — Δ = 11°52′19.2″ (RT); D = 2°01′54.4″; L = 584.32′; T = 293.21′; R = 2,820.00′; SE = 04; DS = 50 MPH
- PI Sta 38+45.14 — Δ = 2°32′39.3″ (RT); D = 2°51′53.2″; L = 88.81′; T = 44.41′; R = 2,000.00′; SE = 05; DS = 50 MPH
- Pls Sta 39+29.54 — θs = 1°43′07.9″; Ls = 120.00′; LT = 80.00′; ST = 40.00′

SEE SHEET 39 FOR -L_WB- PROFILE
SEE SHEET 39 FOR -L_EB- PROFILE
SEE SHEET 40, 41 FOR -L_LT- PROFILE
SEE SHEET 40, 41 FOR -L_RT- PROFILE
SEE SHEET 48, 49 FOR -LCDEB- PROFILE
SEE SHEET 61 FOR -YRPA- PROFILE
SEE SHEET 62, 63 FOR -YRPAC- PROFILE
SEE SHEET 67 FOR -YRPCA- PROFILE
SEE SHEET 69, 70 FOR -YRPD- PROFILE
SEE SHEET 71, 72 FOR -YRPDB- PROFILE
SEE SHEET 2D-1 FOR DRAINAGE DETAILS

GRAPHIC SCALE 50 25 0 50 100 PLANS

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 033007 ENGINEER CHRISTOPHER D. DAVIS

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 041292 ENGINEER EVERETT C. GUPTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: I-40 AT I-77 INTERCHANGE (EAST)
TIP NO.: I-3819B — COUNTY: IREDELL
DESIGNED BY: C. DAVIS
CHECKED BY: D. AINSWORTH — DATE: 4-2-2019

6/2/99
11/2/2020 \\wspdw04\cs01\CS_pdf_work_dir\85640\282440_I506775\I3819_rdy_psh11_L13550-16450.dgn

Rev. 11/2/20

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033007 ENGINEER CHRISTOPHER D DAVIS

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 041292 ENGINEER BRETT C GUPTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

–MATCHLINE– STA. 206+50.00 –L– SEE SHEET NO. 14

–MATCHLINE– STA. 220+50.00 –L– SEE SHEET NO. 15A

–SR_Y15– POT Sta. 30+07.88

–SR_Y15– PT Sta. 27+18.05

–SR_Y15– PC Sta. 12+00.00

END RESURFACING
–Y15RPB– POT Sta. 18+00.00

–Y15RPB– ST Sta. 17+45.68

–Y15RPB– CS Sta. 15+45.68

–Y15RPB– SC Sta. 12+00.00

END RECONSTRUCTION
BEGIN RESURFACING
–Y15RPB– POT Sta. 16+00.00

END RECONSTRUCTION
BEGIN WIDENING/RESURF.
–Y15RPC– POC Sta. 16+60.00

–Y15RPC– SC Sta. 12+68.26

–Y15RPC– CS Sta. 17+22.14

–Y15RPC– ST Sta. 19+22.14

END CONSTRUCTION
–Y15RPC– POT Sta. 23+99.24

–Y15RPC– POT Sta. 24+36.38

–Y15– POT Sta. 18+15.21

–Y15RPB–		
PIs Sta 11+23.95	PI Sta 13+73.31	PIs Sta 16+12.37
Θs = 0° 29' 34.4"	Δ = 10° 22' 10.8" (LT)	Θs = 2° 59' 59.2"
Θs = 2° 59' 59.9"	D = 2° 59' 59.2"	Ls = 200.00'
Ls = 200.00'	L = 345.68'	LT = 133.35'
LT = 123.95'	T = 173.31'	ST = 66.68'
ST = 76.10'	R = 1,910.00'	
	SE = 06	
	DS = 50 MPH	

–SR_Y15–	
PI Sta 25+32.96	
Δ = 36° 39' 10.6" (LT)	
D = 9° 32' 57.5"	
L = 383.83'	
T = 198.74'	
R = 600.00'	
SE = EXIST.	
DS = EXIST.	

–Y15RPC–		
PIs Sta 12+01.61	PI Sta 14+95.94	PIs Sta 17+88.82
Θs = 2° 29' 28.0"	Δ = 11° 18' 24.2" (RT)	Θs = 2° 29' 28.0"
Ls = 200.00'	D = 2° 29' 28.0"	Ls = 200.00'
LT = 133.35'	L = 453.88'	LT = 133.35'
ST = 66.68'	T = 227.68'	ST = 66.68'
	R = 2,300.00'	
	SE = 05	
	DS = 50 MPH	

–L–	
PI Sta 214+81.51	PIs Sta 225+30.99
Δ = 9° 39' 55.0" (LT)	Θs = 0° 29' 26.0"
D = 0° 29' 26.0"	Ls = 200.00'
L = 1,970.31'	LT = 133.33'
T = 987.50'	ST = 66.67'
R = 11,680.00'	
SE = 02	
DS = 60 MPH	

SEE SHEET 44, 45 FOR –L–(LT) PROFILE
SEE SHEET 44, 45 FOR –L–(RT) PROFILE
SEE SHEET 87 FOR –Y15RPB– PROFILE
SEE SHEET 88 FOR –Y15RPC– PROFILE

Rev. 11/2/20

11/2/2020
\\wsp\04\cs01\cs_pdf_work_dir\86640\282440.1506779\I3819_rdy_psh15_L20650-21770.dgn
wspdw04\cs01$

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	17
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033007 ENGINEER CHRISTOPHER D. DANIEL

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 041292 ENGINEER EVERETT C. GUPTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

–MATCHLINE– STA 35+00.00 –Y_S– SEE SHEET NO. 16

–MATCHLINE– STA 49+00.00 –Y_S– SEE SHEET NO. 18

JULIA A. SUTTON FAMILY TRUST DB 1303 PG 1480 DB 1179 PG 811

C & P PROPERTIES OF STATESVILLE, LP DB 2439 PG 433 DB 1833 PG 329

ROMAN CATHOLIC DIOCESE OF CHARLOTTE, NC DB 2439 PG 431

THE ROMAN CATHOLIC DIOCESE OF CHARLOTTE, NC DB 2430 PG 2283 DB 1551 PG 523

ISMLT&BK STATESVILLE MONTESSORI SCHOOL

25BK ST. PHILIP THE APOSTLE CATHOLIC CHURCH

PEGGY RICKERT DB 976 PG 719

BERTOLAMI FAMILY LIMITED PARTNERSHIP DB 1894 PG 1214

DT INVESTMENTS OF STATESVILLE, LLC DB 1793 PG 876

RAY LACKEY ENTERPRISES, INC. DB 2211 PG 41

FOLGER DRIVE PROPERTIES, L.L.C. DB 1189 PG 884

70 69

BEGIN NOISE WALL NW16A +05.65

TOE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 31

SPECIAL LATERAL S. BASE DITCH w/CLASS 1 RIPRAP SEE DETAIL 33

END NOISE WALL NW17 +66.68

OUTLET CHANNEL STABILIZATION SEE DETAIL 101 CL II RIP RAP 439 TONS +80.00 –Y_S– 133.40' LT

+11.86 –Y_S– 198.06' LT

+75.55 –Y_S– 176.96' LT +55.48 115.00 LATERAL 'V' DITCH SEE DETAIL 68

+87.51 –Y_S– 121.96' LT

+72.72 140.37

+82.48 147.97

+28.45 124.98

720' LANE DROP TAPER (LT)

RIP RAP ENERGY DISSIPATOR BASIN #2 CL 1 RIP RAP SEE DETAIL 32

+87.32 –Y_S– 186.95' LT

+87.32 –Y_S– 159.00' LT

+42.00 –Y_S– 186.95' LT

+42.00 –Y_S– 165.67' LT

TOE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 31

CL B RIP RAP 1 TONS 5 SY

BEGIN SFB +00

+15.45 125.04

+45.45 159.00' RT

END EXP. GUT. BEG. SFB +50.48 40 120.00

54" RCP-III

HW 1705

COLLAR 1706

HW 1709

100' TYP

42.5'

8-77

24" RCP-III

CAT-1

170

NON-STANDARD REINFORCED SOIL SLOPE (RSS) W/2:1 SLOPE DETAIL 2

NOISE WALL W/EARTH BERM

REMOVE

GTD

48" CHL

15" RCP-III REMOVE FES TB 2GI 1718

15" CSP w/ELBOWS

GREU-TL3

37.5'

8:1

REMOVE HW

NOISE WALL

PROP CHL FENCE

JB 15" CSP w/ELBOWS

REMOVE HW AND RECONNECT LAST JOINT

54" RCP-III HW 1734

JB w/MH (DROP BOX) 1735

54" RCP-III

15" RCP-IV 1746 TB 2GI

COLLAR 1736

REMOVE 8 LF 15" RCP

COLLAR 1747

SFB W/NOISE WALL

BEG. GR. EXP. GUT.

SFB W/NOISE WALL

24" CSP w/ELBOWS

JB w/MH 1700

END SFB BEG. GR. +05

15" RCP-III REMOVE 12 LF 15" RCP

COLLAR 1718

RETAIN

FENCELESS INSTALLATION

12" WELDED STEEL

40+00

45+00

–Y_S– STA 37+43.57 DETENTION OUTLET STRUCTURE SEE DETAIL ON SHEET 2D-4

15" RCP-IV 2GI 172 15" RCP-IV

15" RCP-IV REMOVE 2GI 1720 2GI

1719 2GI

N 5° 3' 02.8" E

1722

CONC. MED. BAR. REMOVE

15" RCP-IV REMOVE 2GI

1732 2GI

1733 2GI

REMOVE 2GI

REMOVE

RETAIN & LINE

15" RCP-IV

REMOVE CB

1748

1749

REMOVE HW

SBG W/G.R. 1707 COLLAR

TB 2GI 1715 15" RCP-IV

CAT-1 1714

END SBG +15 1713

8:1 +20

54" RCP-III 1710

HW w/ CONCRETE BEVEL

15" RCP-III 1711

HW 1708

+40.48 127.55

150.00'

INLET CHANNEL STABILIZATION SEE DETAIL 50 CL I RIP RAP 74 TONS CL II RIP RAP 284 TONS

875 874 878 880

DRY DETENTION BASIN WQV = 2,562 CF BASIN VOLUME = 2,662 CF TOP OF BASIN = 877.5' 50 YR WSEL = 875.7'

FOREBAY W/ CLASS B RIPRAP

300' LANE TAPER (RT)

TIE TO CUT DITCH LINE WITH CLASS B RIPRAP

+00

1731

869 868 866

FOREBAY W/ CLASS B RIPRAP

2GI 1739

18" RCP-III

JB w/MH

JB w/MH

48" WW & ISBW

54" RCP-III

CONC HW

REMOVE HW

REMOVE

TOE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 31

PROP CHL FENCE

+79.07 191.18

GREU TL-2

GUARDRAIL

1741

DETENTION OUTLET STRUCTURE SEE DETAIL ON SHEET 2D-4

CONNECT TO EXIST. GUARDRAIL

+48.63 –Y_S– 151.90' RT

RESET GUARDRAIL

PROP CHL FENCE

+60 (–Y_S–)

DRY DETENTION BASIN WQV = 5,113 CF BASIN VOLUME = 6,363 CF TOP OF BASIN = 870.0' 50 YR WSEL = 868.0'

FOLGER DR 20' BST

FOLGER DR 19.5' BST

8" VCP

30" C&G

55" CONC

21.5' BST

EXISTING R/W

15" RCP

12" RCP 15" C&G

24" C&G

48" CONC

ISFBUS

CLEAN OUT

CINEMA DR 25.5' BST

42" RCP

END NOT FOUND

36" RCP

18" RCP

48" RCP RISER

BLK DI WALL

W/FES

48" SW

48.23'

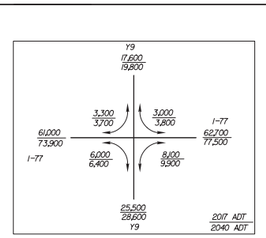
–Y_S–
PIs Sta 34+10.24
Θs = 0° 39' 58.4"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

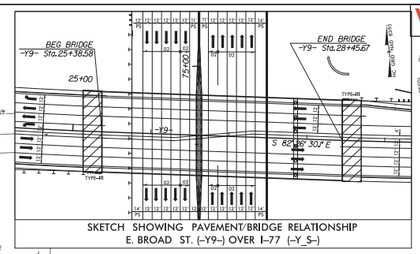
SEE SHEET 52A FOR –Y_S– PROFILE

Rev. 11/2/20

1. ADDED PIE CHI PARCEL 39; REVISED NOISE WALL LOCATION & ADJUSTED DRAINAGE ALONG NOISE WALLS (3-24-2020)
2. ADDED PIE CHI PARCEL 39; REVISED NOISE WALL LOCATION (10-26-2020)
3. DEFICIENT PIPES = GROUP B =_Y_S= 63+00x5>28 & YSRPC 21+00; SHIFT STRUCTURE 19181 =_Y_S= 73+14 (10-26-2020)

6/2/2020
V:\2020\6400\6400105\pdf_work_dir\6400105_pdf_work_dir\6400105_R0702013819_r3y_pdf19_Y6300-19200.dgn
mbeck





SKETCH SHOWING PAVEMENT/BRIDGE RELATIONSHIP
E. BROAD ST. (-Y9-) OVER I-77 (-Y_S-)

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 033007

HYDRAULICS ENGINEER — SEAL 041292

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET 28-1 FOR INTERSECTION DETAILS
SEE SHEET 53, 54 FOR -Y_S- PROFILE
SEE SHEET 74 FOR -Y9- PROFILE
SEE SHEET 76 FOR -Y9RPA- PROFILE
SEE SHEET 77 FOR -Y9RPC- PROFILE
SEE SHEET 79 FOR -Y9RA- PROFILE
SEE SHEET 79 FOR -Y9B- PROFILE
SEE SHEET 80 FOR -Y9C- PROFILE

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION: I-77 AT E. BROAD STREET

TIP NO.: I-3819B — COUNTY: IREDELL

DESIGNED BY: C. DAVIES

CHECKED BY: D. AINSWORTH — DATE: 4-24-2019

Rev. 11/2/20

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033007 ENGINEER CHRISTOPHER D. ONEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041292 ENGINEER EVERETT C. GUPTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–MATCHLINE– STA 92+00.00 –Y_S– SEE SHEET NO. 19

–MATCHLINE– STA. 106+00 –Y_S– SEE SHEET NO. 21

NC GRID NAD 83/95

CHESNUT COMMONS HOMEOWNERS ASSOCIATION DB 1969 PG 2284

76 TODD ELLIS BUILDERS, INC. DB 2053 PG 1089

WILLIAM R. AXLEY DB 1526 PG 1960 DB 1526 PG 1952

INTERSTATE DEVELOPMENT COMPANY DB 1273 PG 511 "TRACT No. 1"

16 INTERSTATE DEVELOPMENT COMPANY DB 1273 PG 511 "TRACT No. 1"

WILLIAM R. AXLEY, ET.AL. DB 2125 PG 5

I-77 SB 37.5' BST

I-77 NB 37.5' BST

CONC. MED. BAR.

N 5°31'02.8" E

–Y_S– PC Sta. 102+02.34

–Y11– PT Sta. 22+83.90

–Y11– PCC Sta. 19+67.47

END RESURFACING
BEGIN GRADE
–Y11– POC Sta. 19+00.00

–Y11– PC Sta. 17+55.94

BEGIN CONSTRUCTION
BEGIN RESURFACING
–Y11– STA.15+14.36

–Y11– PT Sta. 14+64.36

–Y11–			–Y_S–
PI Sta 12+82.67	PI Sta 18+66.65	PI Sta 21+31.23	PI Sta 107+16.73
△ = 16° 28' 00.0" (RT)	△ = 41° 46' 38.6" (RT)	△ = 36° 23' 21.4" (RT)	△ = 1° 47' 49.0" (LT)
D = 4° 30' 00.0"	D = 19° 45' 00.0"	D = 11° 30' 00.0"	D = 0° 10' 28.9"
L = 365.93'	L = 211.53'	L = 316.43'	L = 1,028.69'
T = 184.23'	T = 110.71'	T = 163.76'	T = 514.39'
R = 1,273.24'	R = 290.11'	R = 498.22'	R = 32,800.00'
SE = EXIST.	SE = EXIST.	SE = 06	SE = NC
DS = EXIST.	DS = EXIST.	DS = 40 MPH	DS = 60 MPH

Rev. 11/2/20

SEE SHEET 54 FOR –Y_S– PROFILE
SEE SHEET 89 FOR –Y11– PROFILE

11/2/2020
\\wspnc041cs01\1CS_pdf_work_dir\185618\282440.1506784\I3819_rdy_psh20_Y9200-10600.dgn
wspnc041cs01$

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033097

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 041292

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

~MATCHLINE~ STA. 66+90.00 ~YRPAC~ STA. 19+00.00 ~YRPC~ SEE SHEET NO. 10

~MATCHLINE~ STA. 31+50.00 ~YRPCA~ SEE SHEET NO. 10

~MATCHLINE~ STA. 235+00 ~Y_RT~ SEE SHEET NO. 10

~MATCHLINE~ STA. 44+50 ~YRPCA~ STA. 21+50 ~YRPD~ SEE SHEET NO. 11

~MATCHLINE~ STA. 80+40.00 ~YRPAC~ SEE SHEET NO. 21

~MATCHLINE~ STA. 120+00 ~Y_S~ SEE SHEET NO. 21

NC GRID | NAD 83/95

~YRPDB~

PI Sta 14+24.03	PIs Sta 23+74.30	PI Sta 26+43.97	PI Sta 29+03.94 Pis Sta 30+95.94
Δ = 2° 30' 02.3" (RT)	Gs = 4° 52' 55.2"	Δ = 29° 24' 11.0" (RT)	Gs = 4° 52' 55.2" Gs = 4° 51' 08.4"
D = 0° 38' 11.2"	Ls = 144.00'	D = 6° 46' 50.0"	Ls = 144.00' Ls = 144.00'
L = 392.80'	LT = 96.04'	L = 433.64'	LT = 96.04' LT = 96.04'
T = 196.43'	ST = 48.03'	T = 220.71'	ST = 48.03' ST = 48.03'
R = 9,000.00'		R = 845.00'	
SE = NC		SE = 06	
DS = 50 MPH		DS = 50 MPH	

~Y_S~

PI Sta 111+58.63	
Δ = 5° 01' 11.1" (RT)	
D = 0° 29' 53.6"	
L = 1,017.44'	
T = 537.61'	
R = 11,500.00'	
SE = NC	
DS = 60 MPH	

~YRPAC~

PI Sta 74+40.02	
Δ = 15° 19' 39.6" (RT)	
D = 2° 14' 48.8"	
L = 593.15'	
T = 297.92'	
R = 2,550.00'	
SE = 04	
DS = 50 MPH	

~Y_LT~

Pis Sta 33+17.38	
Gs = 2° 54' 41.9"	
Ls = 270.00'	
LT = 180.02'	
ST = 90.02'	

PI Sta 33+48.61	
Δ = 8° 29' 43.8" (LT)	
D = 1° 54' 35.5"	
L = 444.82'	
T = 222.82'	
R = 3,000.00'	
SE = 05	
DS = 60 MPH	

~Y_RT~

Pis Sta 232+62.32	
Gs = 1° 54' 35.5"	
Ls = 200.00'	
LT = 133.34'	
ST = 66.61'	

PI Sta 235+92.32	
Δ = 17° 01' 59.7" (LT)	
D = 1° 54' 35.5"	
L = 525.34'	
T = 265.14'	
R = 3,000.00'	
SE = 05	
DS = 60 MPH	

~YRPC~

Pis Sta 20+25.04	
Gs = 4° 51' 08.4"	
Ls = 144.00'	
LT = 96.04'	
ST = 48.03'	

PI Sta 24+66.97	
Δ = 50° 31' 24.9" (RT)	
D = 6° 52' 41.7"	
L = 736.00'	
T = 393.99'	
R = 833.00'	
SE = 08	
DS = 50 MPH	

Pis Sta 28+57.03	
Gs = 4° 51' 08.4"	
Ls = 144.00'	
LT = 96.04'	
ST = 48.03'	

~YRPD~

Pis Sta 11+93.35	
Gs = 4° 51' 08.4"	
Ls = 144.00'	
LT = 96.04'	
ST = 48.03'	

PI Sta 14+07.08	
Δ = 22° 30' 36.4" (RT)	
D = 6° 52' 41.7"	
L = 397.27'	
T = 165.77'	
R = 833.00'	
SE = 06	
DS = 50 MPH	

Pis Sta 16+16.61	
Gs = 4° 51' 08.4"	
Ls = 144.00'	
LT = 96.04'	
ST = 48.03'	

PI Sta 22+11.11	
Δ = 5° 19' 05.0" (LT)	
D = 0° 43' 40.9"	
L = 750.47'	
T = 375.50'	
R = 7,870.00'	
SE = NC	
DS = 50 MPH	

~YRPCA~

Pis Sta 31+66.93	
Gs = 4° 51' 08.4"	
Ls = 144.00'	
LT = 96.04'	
ST = 48.03'	

PI Sta 41+32.83	
Δ = 95° 33' 15.3" (LT)	
D = 6° 52' 41.7"	
L = 1,389.22'	
T = 917.93'	
R = 833.00'	
SE = 08	
DS = 50 MPH	

SEE SHEET 55 FOR ~Y_S~ PROFILE
SEE SHEET 56 FOR ~Y_LT~ PROFILE
SEE SHEET 57 FOR ~Y_RT~ PROFILE
SEE SHEET 64 FOR ~YRPAC~ PROFILE
SEE SHEET 65 FOR ~YRPC~ PROFILE
SEE SHEET 69 FOR ~YRPD~ PROFILE
SEE SHEET 71 FOR ~YRPDB~ PROFILE
SEE SHEET 2D-1 FOR DRAINAGE DETAILS

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:	I-77 AT I-40 INTERCHANGE (SOUTH)
TIP NO.:	I-3819B
COUNTY:	IREDELL
DESIGNED BY:	C. DAVIS
CHECKED BY:	D. AINSWORTH
DATE:	4-24-2019

Rev. 11/2/20

1. REVISED DRAINAGE OUTFALLS (GUARDRAIL C, 6+41-2020)
2. CHANGE DRAINAGE DITCH TO OUTFALL (6, 6+41-2020)

E:\Projects\3819B\Roadway\Plans\3819B_Sheet_Plan_Set_Roadway_Plans.dgn 12/2/2020 10:56:41 AM

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

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033007 ENGINEER CHRISTOPHER D. DAVIS

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 041292 ENGINEER EVERETT C. GUPTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

–MATCHLINE– STA. 217+00 –Y N– THIS SHEET

INSET

–Y N– SEE SHEET NO. 26

–MATCHLINE– STA. 203+00 –Y N– SEE SHEET NO. 26

–MATCHLINE– STA. 217+00 –Y N– SEE INSET THIS SHEET

1
GOFORTH, GOFORTH & CLINE, LLC
DB 1903 PG 104

2
GOFORTH FAMILY REVOCABLE TRUST
DB 1607 PG 197

8
GOFORTH FAMILY REVOCABLE TRUST
DB 1616 PG 2028

RAMONA LOWE JOHNSON
DB 1780 PG 1456

END SB WIDENING/RESURF.
–Y N– POT STA. 205+15.43

END NB RECONSTRUCTION
BEG. NB WIDENING & RESURF.
–Y N– POT STA. 209+50.00

END CONSTRUCTION
END NB WIDENING & RESURF.
–Y N– POT STA. 216+70.00

720' MEDIAN WIDTH TRANSITION (LT)
300' LANE ADD. TAPER
520' OUTSIDE SHOULDER TAPER
720' SHIFT & 720' INSIDE SHOULDER TAPER
720' LANE DROP TAPER

TIE TO EX. DITCH W/TAIL 'V' DITCH SEE DETAIL 77
LATERAL 'V' DITCH SEE DETAIL 78
TIE TO EXIST. FENCE +15.43 –Y N–
101.06 CL B RIP RAP 2 TONS 7 SY
4' BASE HEAD DITCH W/CLASS 1 RIPRAP SEE DETAIL 87
15" CSP
END SBG +80 (52.36' LT)
SBG W/G.R.
TB 2GI
TRENCHLESS INSTALLATION 36" WELDED STEEL
REMOVE HW
FLOWABLE FILL
TRENCHLESS INSTALLATION 48" WELDED STEEL
REMOVE EX. 24" RCP
REMOVE 8 LF OF EX. 15" RCP
CONTRACTOR TO CONFIRM EXISTING PIPE INVERT DURING CONSTRUCTION AND CONFIRM WITH ENGINEER
REPLACE CONCRETE DITCH WHERE FILL SLOPE COVERS EX. CONCRETE SEE DETAIL 79
REMOVE EX. HW
CROSS PIPE END SECTION
RETAIN Adj. DI
RETAIN
RESET GUARDRAIL
PAVED DITCH FULL OF DEBRIS
CONTRACTOR TO CONFIRM EXISTING PIPE INVERT DURING CONSTRUCTION AND CONFIRM WITH ENGINEER
RETAIN CONCRETE CHANNEL
TIE TO EXISTING GUARDRAIL
ASSUMED 18" RCP LOCATION TO BE RETAINED
TIE TO EX. DITCH W/TAIL 'V' DITCH SEE DETAIL 77
SPECIAL LATERAL 'V' DITCH SEE DETAIL 38
TIE TO EXIST. FENCE +79.91 –Y N–
SPECIAL CUT DITCH SEE DETAIL 72
SPECIAL LATERAL 'V' DITCH W/CLASS B RIPRAP SEE DETAIL 74
15" RCP–III
15" RCP–IV
18" RCP–III
48" RCP–III
60" RCP–III
COLLAR
JB w/MH
CL B RIP RAP 1 TONS 5 SY
CL B RIP RAP 5 TONS 14 SY
CL B RIP RAP 6 TONS 20 SY
PROP. CHL FENCE
4' BASE TAIL DITCH W/CLASS B RIPRAP SEE DETAIL 88
PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 73
CL I RIP RAP 92 TONS 127 SY
PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 4
CL I RIP RAP 25 TONS
TOE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 31
18" CSP w/ELBOWS
DO NOT DISTURB SIGN
45" CMP
RETAIN
PUE
DUE
PDE
SBOUDS
WOODS

SEE SHEET 59,60 FOR –Y N– PROFILE

Rev. 11/2/2020