North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

General Project Information

WBS Element:	44385.1.3	**TIP Number:**	U-5813	**Project Type:** Roadway Widening	**Date:** 9/2/2020
NCDOT Contact:	Tatia L White, PE, PLS	**Contractor / Designer:**	John Hornback		
Address:	1000 Birch Ridge Drive Raleigh, NC 27610	**Address:**	343 E. Six Forks Road Suite 200 Raleigh, NC 27609		
Phone:	(919) 707-6342	**Phone:**	(919)-424-3301		
Email:	tlwhite@ncdot.gov	**Email:**	ghornbeck@HNTB.com		
City/Town:	Asheboro	**County(ies):**	Randolph		
River Basin(s):	Yadkin-Pee Dee	**CAMA County?**	No		
Wetlands within Project Limits?	Yes				

Project Description

Project Length (lin. miles or feet):	1.97	**Surrounding Land Use:**	Urban

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	34.8 ac.	26.0 ac.
Typical Cross Section Description:	4-lane divided roadway consisting of 12' travel lanes and curb and gutter	3-lane divided roadway consisting of 12' travel lanes and 4' shoulders
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 35700 Year: 2040	Existing: 32200 Year: 2020

General Project Narrative:
(Description of Minimization of Water Quality Impacts)

Minimum measures for the drainage design included:
- Maintaining existing drainage patterns to the maximum extent practical.
- Maximum side slopes of 2:1.
- Rip-rap pads utilized at the outlet of any open pipe.
- Rip-rap proposed in ditches with high velocity and shear stress.
- No wetland impacts.
- Minimized to 610 linear feet if permanent stream impacts.

Waterbody Information

Surface Water Body (1):	UT to Cedar Fork Creek		**NCDWR Stream Index No.:**	13-2-3-3-2	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:			
Other Stream Classification:					
Impairments:					
Aquatic T&E Species?		Comments:			
NRTR Stream ID:	SK			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

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Additional Waterbody Information

Surface Water Body (2):	UT to Cedar Fork Creek		**NCDWR Stream Index No.:**	13-2-3-3-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	SJ			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):	UT to Cedar Fork Creek		**NCDWR Stream Index No.:**	12-2-3-3-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	SH			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (4):	UT to Cedar Fork Creek		**NCDWR Stream Index No.:**	12-2-3-3-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	SI			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (5):	UT to Cedar Fork Creek		**NCDWR Stream Index No.:**	12-2-3-3-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	SF			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

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(Version 2.08; Released April 2018)

Additional Waterbody Information

Surface Water Body (6):	UT to Cedar Fork Creek		**NCDWR Stream Index No.:**	12-2-3-3-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	SG			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (7):	UT to Little River		**NCDWR Stream Index No.:**	13-25-(1)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	SA			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (8):	UT to Little River		**NCDWR Stream Index No.:**	13-25-(1)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	SC			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (9):	UT to Little River		**NCDWR Stream Index No.:**	13-25-(1)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	SE			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

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WBS Element:	44385.1.3	TIP No.:	U-5813	County(ies):	Randolph	Page	4	of	6

Additional Waterbody Information

Surface Water Body (10):	UT to Little River		**NCDWR Stream Index No.:**	13-25-(1)			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C				
		Supplemental Classification:					
Other Stream Classification:							
Impairments:							
Aquatic T&E Species?		Comments:					
NRTR Stream ID:	SD			**Buffer Rules in Effect:**	N/A		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A		
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
(If yes, provide justification in the General Project Narrative)							

Surface Water Body (11):	UT to Cable Creek		**NCDWR Stream Index No.:**	13-2-3-3-3			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C				
		Supplemental Classification:					
Other Stream Classification:							
Impairments:							
Aquatic T&E Species?		Comments:					
NRTR Stream ID:	SL			**Buffer Rules in Effect:**	N/A		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A		
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
(If yes, provide justification in the General Project Narrative)							

Surface Water Body (12):	Little River		**NCDWR Stream Index No.:**	13-25-(1)			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C				
		Supplemental Classification:					
Other Stream Classification:							
Impairments:							
Aquatic T&E Species?		Comments:					
NRTR Stream ID:	Little River			**Buffer Rules in Effect:**	N/A		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A		
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
(If yes, provide justification in the General Project Narrative)							

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 44385.1.3 **TIP No.:** U-5813 **County(ies):** Randolph

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
5	-L- 28+73 LT 35.694189, -79.856446	(11)UT to Cable Creek	4.0	2.0	2.0	13.3	1330	77	0.70%	23.2	2.6	29.5	2.8	No	No
5	-L- 26+28 RT 35.693823, -79.857481	(11)UT to Cable Creek	3.0	2.0	2.0	32.2	3220	120	3.50%	51.9	4.2	62.3	4.8	No	No
6	-L- 40+46 LT 35.692608, -79.853007	(11)UT to Cable Creek	0.0	2.0	2.0	0.4	40	58	0.98%	1.1	1.4	1.4	1.5	No	No
6	-L- 43+50 LT 35.692232, -79.852098	(11)UT to Cable Creek	0.0	2.0	3.0	0.7	70	246	0.93%	1.7	1.6	2.2	1.7	No	No
7	-L- 46+52 RT 35.691511, -79.851399	(1)UT to Cedar Fork Creek	0.0	6.0	6.0	1.3	130	52	2.04%	3.4	1.9	4.3	2.1	No	No
7	-L- 54+32 RT 35.690440, -79.849116	(2)UT to Cedar Fork Creek	5.0	2.0	2.0	90.2	9020	158	4.00%	103.5	4.7	138.3	5.1	No	No
8	-L- 58+00 RT 35.690073, -79.847959	(2)UT to Cedar Fork	0.0	6.0	6.0	1.5	150	50	5.68%	4.5	2.2	5.7	2.4	No	No
9	-L- 83+29 LT 35.687599, -79.839952		0.0	4.0	2.0	3.0	300		0.50%	4.7	1.5	6.0	1.5	No	No
10	-L- 91+60 LT 35.686411, -79.837606		2.0	4.0	2.0	6.8	679	333	1.18%	7.7	2.2	10.2	2.4	No	No
11	-L- 103+00 LT 35.685545, -79.833907		0.0	2.0	2.0	3.0	297	215	2.66%	5.0	2.8	6.4	2.9	No	No
12	-L- 109+79 LT 35.685640, -79.831761		2.0	3.0	2.0	5.7	566	432	1.07%	4.1	1.9	5.2	2.0	No	No
13	-L- 121+25 LT 35.686725, -79.828179		0.0	3.0	2.0	0.1	12	210	0.74%	0.2	0.8	0.3	0.9	No	No
6	-Y1- 10+75 RT 35.692925, -79.853726		0.0	2.0	2.0	1.9	190	350	5.72%	3.5	2.8	2.7	2.7	No	No
6	-Y1- 11+00 LT 35.693053, -79.853874		0.0	2.0	2.0	0.3	31	288	5.08%	0.8	2.3	1.0	2.4	No	No
7	-Y5- 11+70 LT 35.691764, -79.850077	(1)UT to Cedar Fork	3.0	2.0	2.0	12.5	1250	108	3.19%	22.8	4.5	30.0	4.9	No	No

Additional Comments

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WBS Element: 44385.1.3 **TIP No.:** U-5813 **County(ies):** Randolph

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
7	-Y5- 13+50 RT 35.691792, -79.849408	(2)UT to Cedar Fork	2.0	2.0	2.0	0.8	75	125	10.00%	2.4	2.7	3.0	2.9	No	No
8	-Y7- 11+50 RT 35.688539,-79.845392	(4)UT to Cedar Fork	0.0	2.0	2.0	6.0	603	123	2.50%	9.5	2.5	12.2	2.6	No	No
9	-Y8- 13+00 RT 35.688619, -79.842595	(4)UT to Cedar Fork	0.0	2.0	2.0	0.7	70	250	3.50%	1.8	2.6	2.3	2.7	No	No
11	-Y19- 10+00 LT 35.685700, -79.833761	(6)UT to Cedar Fork	0.0	3.0	2.0	1.1	114	125	1.66%	1.8	1.9	2.3	2.0	No	No
12	-RPA- 14+00 LT 35.689212, -79.830821	(5)UT to Cedar Fork	4.0	2.0	2.0	8.9	890	125	8.71%	18.4	4.2	23.9	4.5	No	No
12	-RPA- 16+00 LT 35.688767, -79.830458	(5)UT to Cedar Fork	0.0	6.0	2.0	0.5	50	100	1.60%	1.1	1.5	1.4	1.6	No	No
12	.-RPB- 12+00 RT 35.689004,-79.831806	(5)UT to Cedar Fork	2.0	2.0	2.0	5.5	554	300	0.50%	12.7	1.6	16.0	1.7	No	No
12	-RPB- 15+07 RT 35.688148, -79.831932	(5)UT to Cedar Fork	0.0	4.0	2.0	5.5	554	125	4.31%	15.2	3.7	19.5	3.7	No	No
12	-RPD- 13+50 LT 35.684235, -79.829220	(7)UT to Little River	2.0	2.0	4.0	0.3	25	100	3.05%	0.5	1.4	0.6	1.5	No	No
12	-RPD- 16+75 LT 35.685111, -79.828897	(7)UT to Little River	3.0	3.0	2.0	13.2	1320	100	2.50%	30.5	3.5	39.5	3.7	No	No
12	-Y- 29+50 LT 35.686660, -79.833825	(6)UT to Cedar Fork	0.0	4.0	4.0	1.2	122	300	4.00%	2.9	2.4	2.4	1.4	No	No

Additional Comments

09/08/99

TIP PROJECT: U-5813

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5813	1	

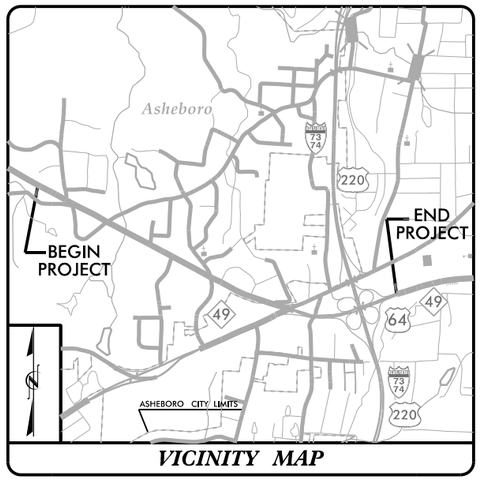
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
44385.1.3	NHP-0095(045)	PE
44385.2.3	NHP-0095(045)	R/W /UTILITIES
44385.3.2	NHP-0095(045)	CONSTRUCTION

PERMIT DRAWING
SHEET 1 OF 19

LOCATION: *US 64 FROM ASHEBORO BYPASS TO EAST OF I-73/I-74/US 220 TO ASHEBORO*

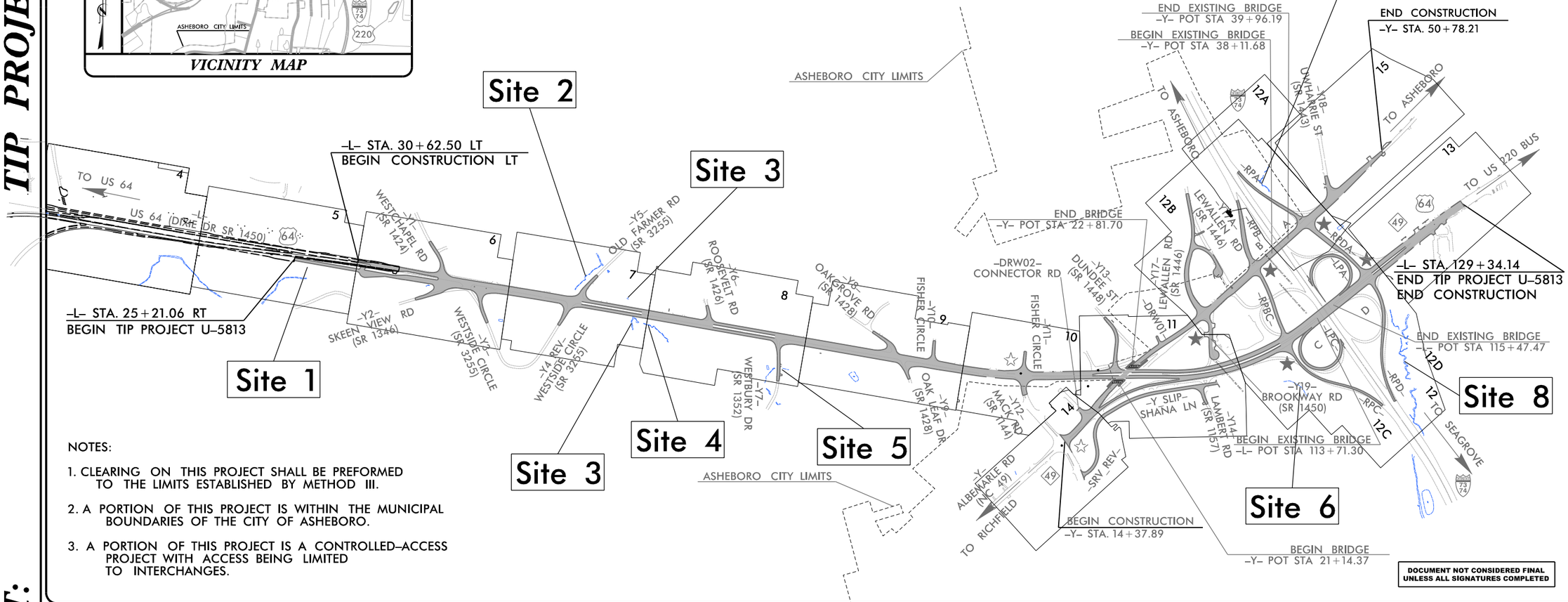
TYPE OF WORK: *GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERT & SIGNALS*

WETLAND AND SURFACE WATER IMPACTS PERMIT



VICINITY MAP

NAD 83/NA 2011



NOTES:

1. CLEARING ON THIS PROJECT SHALL BE PREFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
2. A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF ASHEBORO.
3. A PORTION OF THIS PROJECT IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2020 = 32,200
ADT 2040 = 35,700
K = 8%
D = 55%
T = 4 % *
V = 60 MPH / 50 MPH (C&G)
* TTST = 3% DUAL 1%
FUNC CLASS = PRINCIPAL ARTERIAL STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5813 = 1.972 MILES

TOTAL LENGTH TIP PROJECT U-5813 = 1.972 MILES

TOTAL LENGTH BASED ON –L– CENTERLINE AND RIGHT SIDE BEGIN CONSTRUCTION

PREPARED IN THE OFFICE OF:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
FOR NCDOT

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 15, 2021

LETTING DATE: SEPTEMBER 20, 2022

G. JOHN HORNBECK, PE
PROJECT ENGINEER

ROY H. TELLIER, PE
PROJECT DESIGN ENGINEER

MELANIE NGUYEN, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

10/6/2020
...\U-5813_HYD_PRM_TSH.dgn
HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U-5813	2D-1

HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 2 OF 19

U-5813 PROPOSED DITCH TYPICALS

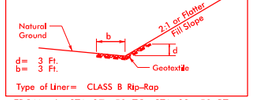
DETAIL 1
STANDARD BASE DITCH
(Not to Scale)

Min. D= 2 Ft.
Max. d= 2 Ft.
B= 3 Ft.

Type of Liner= Class II Rip-Rap

FROM –L– STA. 26+28 TO STA. 26+82 RT

DETAIL 2
TOE PROTECTION
(Not to Scale)

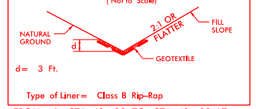


d= 3 Ft.
b= 3 Ft.

Type of Liner= CLASS B Rip-Rap

FROM –L– STA. 27+50 TO STA. 32+50 RT
FROM –L– STA. 91+50 TO STA. 92+50 RT
FROM –RPC– STA. 17+50 TO STA. 20+50 LT
FROM –YSLIP– STA. 14+00 TO STA. 16+00 LT
FROM –RPB– STA. 11+00 TO STA. 12+85 RT
FROM –LPC– STA. 11+75 TO STA. 15+00 RT

DETAIL 3
TOE PROTECTION
(Not to Scale)

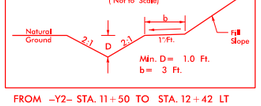


d= 3 Ft.

Type of Liner= Class B Rip-Rap

FROM –L– STA. 48+00 TO STA. 48+80 LT
FROM –L– STA. 53+00 TO STA. 54+15 RT
FROM –Y7– STA. 11+41 TO STA. 12+22 LT
FROM –Y7– STA. 12+00 TO STA. 12+55 RT

DETAIL 4
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.0 Ft.
b= 3 Ft.

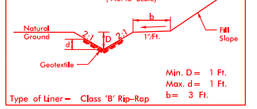
FROM –Y2– STA. 11+50 TO STA. 12+42 LT

DETAIL 5
SPECIAL CUT 'V' DITCH
(Not to Scale)

Min. D= 1.5 Ft.

FROM –L– STA. 40+46 TO STA. 43+50 LT
FROM –L– STA. 78+32 TO STA. 81+25 RT
FROM –Y– STA. 31+25 TO STA. 31+50 LT
FROM –Y– STA. 33+50 TO STA. 35+50 LT

DETAIL 6
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.
Max. d= 1 Ft.
b= 3 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM –Y2– STA. 11+50 TO STA. 13+00 RT

DETAIL 7
STANDARD BASE DITCH
(Not to Scale)

Min. D= 3 Ft.
B= 4 Ft.

FROM –L– STA. 28+73 TO STA. 29+50 LT

DETAIL 8
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Min. D= 2.0 Ft.

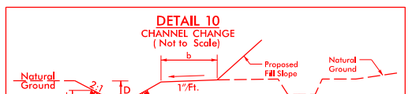
FROM –Y3– STA. 10+00 TO STA. 12+50 RT
FROM –Y6– STA. 11+22 TO STA. 11+50 RT

DETAIL 9
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Min. D= 2.5 Ft.

FROM –L– STA. 46+00 TO STA. 46+52 RT

DETAIL 10
CHANNEL CHANGE
(Not to Scale)

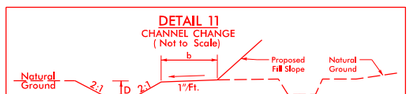


Min. D= 3.0 Ft.
Max. d= 2.5 Ft.
B= 5 Ft.
b= 5 Ft.

Type of Liner= Class II Rip-Rap

FROM –L– STA. 54+32 TO STA. 56+30 RT

DETAIL 11
CHANNEL CHANGE
(Not to Scale)



D= 1.5 Ft.
B= 3 Ft.
b= 3 Ft.

Type of Liner= Grass

FROM –Y5– STA. 10+82 TO STA. 11+69 LT

DETAIL 12
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)

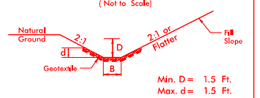
STA. –Y5– 10+81 LT
STA. –Y4– 12+50 RT

DETAIL 13
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Min. D= 1.5 Ft.

FROM –RPDA– STA. 11+25 TO STA. 12+00 RT
FROM –Y17– STA. 13+75 TO STA. 15+25 RT
FROM –Y17– STA. 13+75 TO STA. 15+75 RT

DETAIL 14
SPECIAL LATERAL BASE DITCH
(Not to Scale)

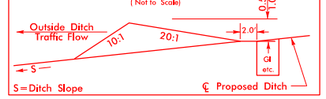


Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

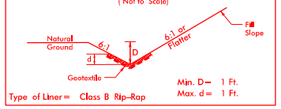
FROM –Y5– STA. 11+25 TO STA. 11+61 RT
FROM –Y5– STA. 12+25 TO STA. 13+50 RT
FROM –RPB– STA. 12+00 TO STA. 13+50 RT

DETAIL 15
FALSE SUMP
(Not to Scale)



–L– STA. 73+19 LT
–RPB– STA. 15+16 RT
–RPD– STA. 16+60 LT

DETAIL 16
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

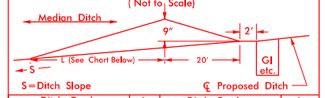


Min. D= 1 Ft.
Max. d= 1 Ft.

Type of Liner= Class B Rip-Rap

FROM –L– STA. 58+00 TO STA. 58+50 RT
FROM –L– STA. 73+28 TO STA. 74+00 LT

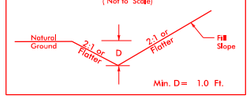
DETAIL 17
FALSE SUMP
(Not to Scale)



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

–L– STA. 25+38 MED.
–L– STA. 28+38 MED.

DETAIL 18
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.0 Ft.

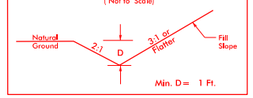
FROM –Y1– STA. 12+50 TO STA. 13+60 LT
FROM –Y7– STA. 10+00 TO STA. 11+00 RT
FROM –Y8– STA. 10+50 TO STA. 13+00 RT

DETAIL 19
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Min. D= 1 Ft.
B= 2 Ft.

FROM –L– STA. 91+60 TO STA. 94+93 LT
FROM –RPB– STA. 13+00 TO STA. 17+00 LT
FROM –RPD– STA. 13+50 TO STA. 14+50 LT

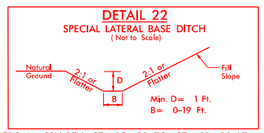
DETAIL 21
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.

FROM –L– STA. 121+25 TO STA. 123+35 LT
FROM –Y– STA. 49+37 TO STA. 50+50 RT
FROM –RPA– STA. 16+00 TO STA. 17+00 LT
FROM –Y19– STA. 10+00 TO STA. 12+25 LT

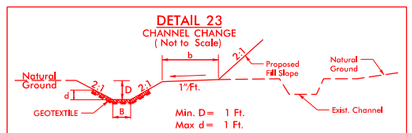
DETAIL 22
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
B= 0–19 Ft.

FROM –SRV_REV– STA. 15+50 TO STA. 21+00 LT
FROM –RPA– STA. 14+75 TO STA. 15+10 RT
FROM –SRV_REV– STA. 25+21 TO STA. 26+00 LT

DETAIL 23
CHANNEL CHANGE
(Not to Scale)

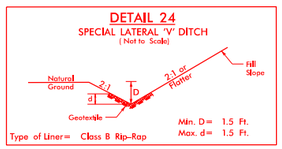


Min. D= 1 Ft.
Max d= 1 Ft.
B= 4 Ft.
b= 0 Ft.

Type of Liner= Class I Rip-Rap

FROM –RPA– STA. 14+00 TO STA. 15+25 LT

DETAIL 24
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

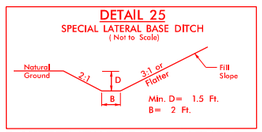


Min. D= 1.5 Ft.
Max. d= 1.5 Ft.

Type of Liner= Class B Rip-Rap

FROM –RPA– STA. 15+25 TO STA. 16+00 LT
FROM –Y7– STA. 11+50 TO STA. 12+00 RT

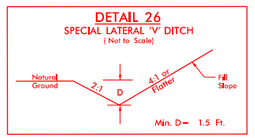
DETAIL 25
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
B= 2 Ft.

FROM –L– STA. 105+47 TO STA. 109+79 LT
FROM –Y_SLIP– STA. 17+00 TO STA. 21+25 RT

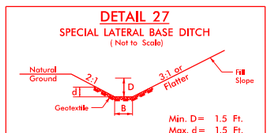
DETAIL 26
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.5 Ft.

FROM –L– STA. 81+25 TO STA. 84+50 RT

DETAIL 27
SPECIAL LATERAL BASE DITCH
(Not to Scale)

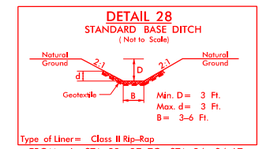


Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3 Ft.

Type of Liner= Class I Rip-Rap

FROM –RPD– STA. 16+75 TO STA. 20+75 LT

DETAIL 28
STANDARD BASE DITCH
(Not to Scale)

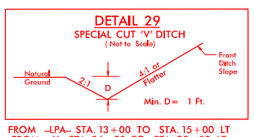


Min. D= 3 Ft.
Max. d= 3 Ft.
B= 3–6 Ft.

Type of Liner= Class II Rip-Rap

FROM –L– STA. 83+27 TO STA. 84+34 LT

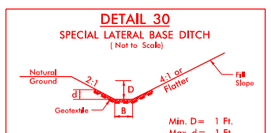
DETAIL 29
SPECIAL CUT 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.

FROM –LPA– STA. 13+00 TO STA. 15+00 LT
FROM –Y– STA. 26+50 TO STA. 29+50 LT
FROM –SRV_REV– STA. 11+00 TO STA. 15+50 LT
FROM –SRV_REV– STA. 13+50 TO STA. 20+75 RT
FROM –SRV_REV– STA. 21+50 TO STA. 24+00 RT
FROM –SRV_REV– STA. 25+25 TO STA. 26+00 RT
FROM –Y14– STA. 10+75 TO STA. 11+39 LT

DETAIL 30
SPECIAL LATERAL BASE DITCH
(Not to Scale)

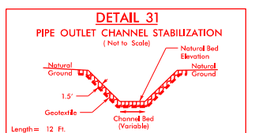


Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM –Y13– STA. 10+50 TO STA. 14+50 LT
FROM –RPB– STA. 15+25 TO STA. 17+75 RT

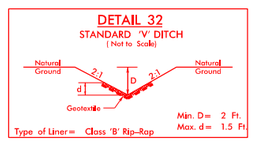
DETAIL 31
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length= 12 Ft.
Est.= 13 TONS CL I Rip-Rap – Keyed-In

–RPA– STA. 13+98 LT

DETAIL 32
STANDARD 'V' DITCH
(Not to Scale)

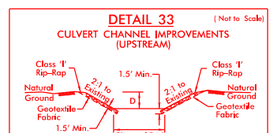


Min. D= 2 Ft.
Max. d= 1.5 Ft.

Type of Liner= Class 'B' Rip-Rap

–SRV– STA. 11+00 RT

DETAIL 33
(Not to Scale)
CULVERT CHANNEL IMPROVEMENTS
(UPSTREAM)

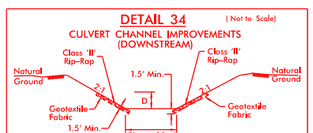


D= Varies
(To Top of Bank)

EST. 26 TONS CLASS I RIP RAP
EST. 37 SY GEOTEXTILE FABRIC

–L– STA. 54+22 RT

DETAIL 34
(Not to Scale)
CULVERT CHANNEL IMPROVEMENTS
(DOWNSTREAM)

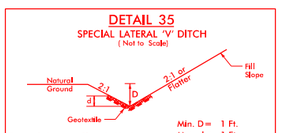


D= Varies
(To 50–yr WSE)

EST. 61 TONS CLASS II RIP RAP
EST. 86 SY GEOTEXTILE FABRIC
EST. 1025 CY DDE

–L– STA. 53+77 LT

DETAIL 35
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

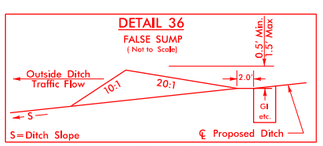


Min. D= 1 Ft.
Max. d= 1 Ft.

Type of Liner= Class B Rip-Rap

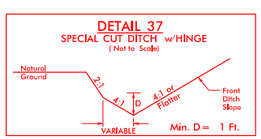
FROM –Y1– STA. 10+75 TO –Y1– STA. 12+30 RT
FROM –Y1– STA. 12+25 TO –Y1– STA. 12+50 LT

DETAIL 36
FALSE SUMP
(Not to Scale)



–L– STA. 67+17 LT

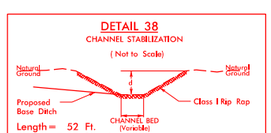
DETAIL 37
SPECIAL CUT DITCH w/HINGE
(Not to Scale)



Min. D= 1 Ft.

FROM –RPDA– STA. 14+00 TO STA. 15+00 LT
FROM –RPDA– STA. 13+50 TO STA. 14+50 RT
FROM –L– STA. 101+00 TO STA. 103+00 LT

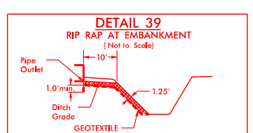
DETAIL 38
CHANNEL STABILIZATION
(Not to Scale)



Length= 52 Ft.
d= to Top of Bank
Est.= 50 Tons of Class I Rip-Rap

FROM –L– STA. 25+90 TO STA. 26+52 RT

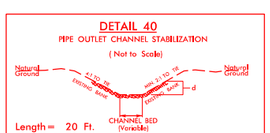
DETAIL 39
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 5 TONS,CL B Rip-Rap; Geotextile= 14 sy

FROM –Y7– STA. 11+08 TO STA. 11+20 RT

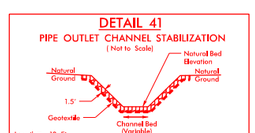
DETAIL 40
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length= 20 Ft.
d= 3 Ft.
Est.= 30 TONS CL I Rip-Rap – Keyed-In

–RPC– STA. 18+30 LT

DETAIL 41
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length= 12 Ft.
Est.= 15 TONS CL I Rip-Rap – Keyed-In

–RPD– STA. 18+00 RT

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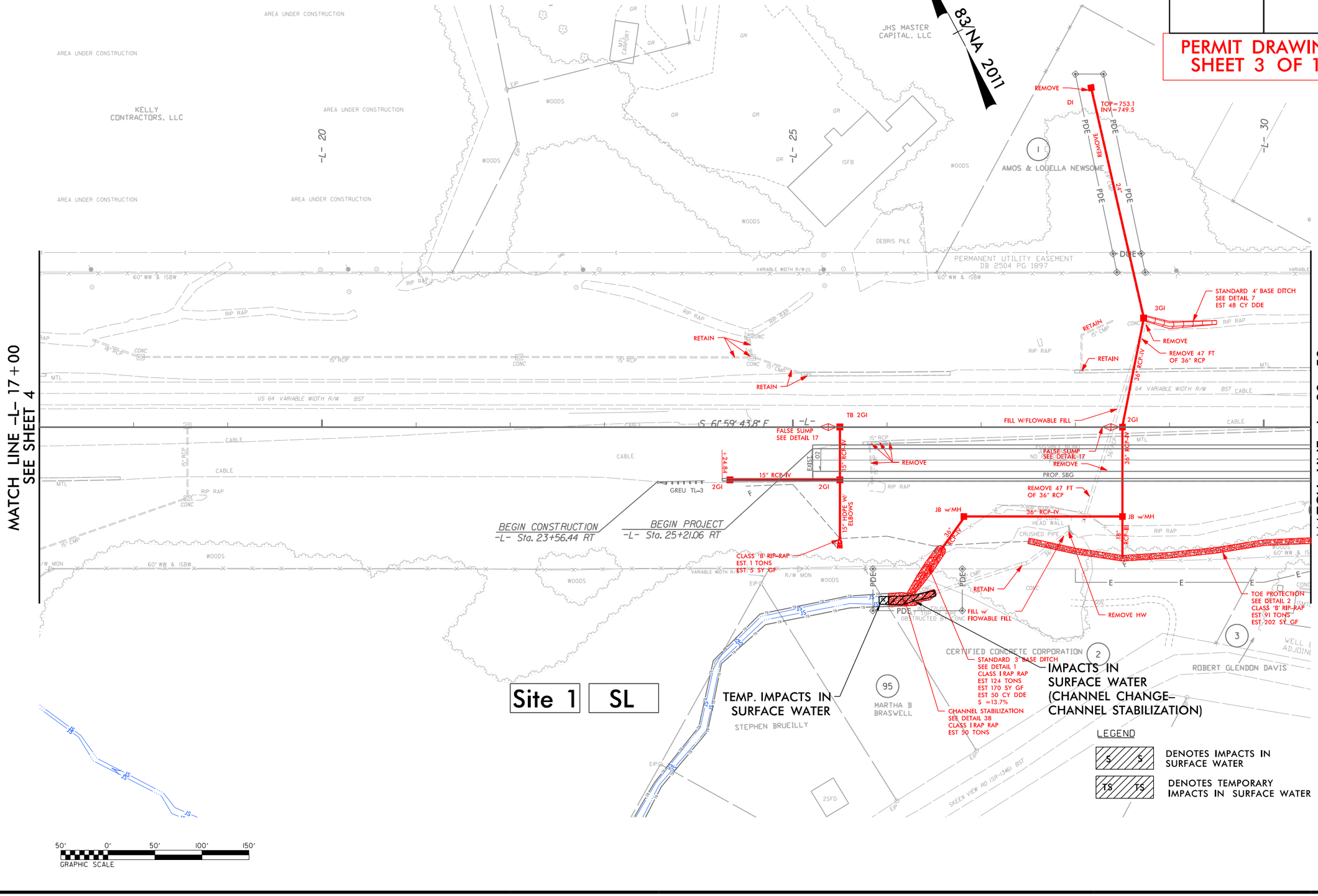
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U-5813	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 3 OF 19

WETLAND & STREAM IMPACTS

NAD 83/NA 2011



10/1/2008
U-5813_HYD_PRM_PSH_05.dgn
HNTB

8/17/99

HNTB NORTH CAROLINA, P.C.
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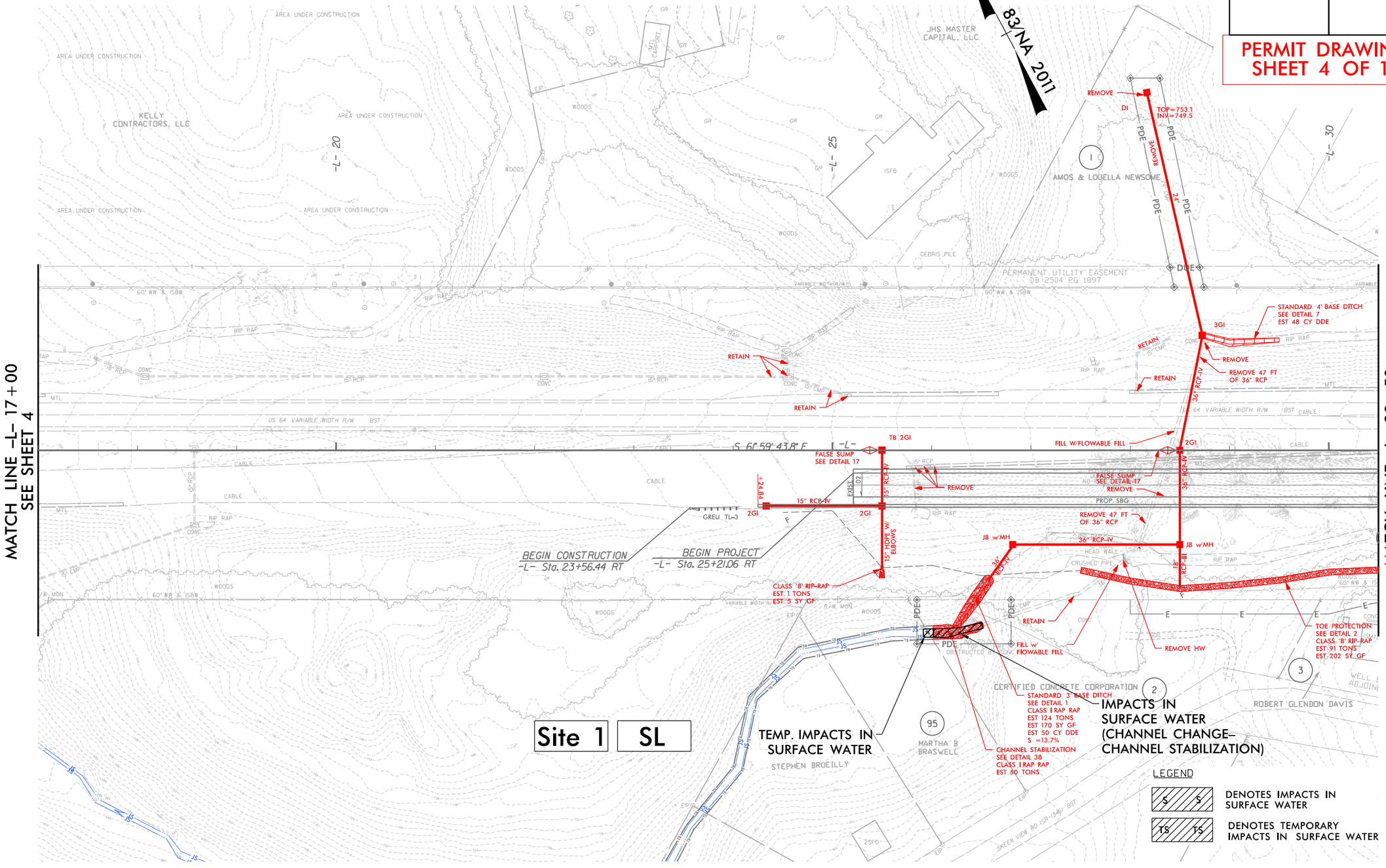
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U-5813	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 4 OF 19

WETLAND & STREAM IMPACTS

NAD 83/NA 2011



10/1/2008
U-5813_HYD_PRM_PSH_05.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U-5813	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 5 OF 19

NAD 83/NA 2011

MATCH LINE -L- 43+50 SEE SHEET 6

MATCH LINE -L- 55+50 SEE SHEET 8

Site 2 SK

Site 3 SJ

Site 3 SJ

Site 4 SH

TEMP. IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER (STREAM RELOCATION)

IMPACTS IN SURFACE WATER (BANK STABILIZATION) SEE DETAIL 34

IMPACTS IN SURFACE WATER (STREAM RELOCATION)

IMPACTS IN SURFACE WATER (9' X 8' RCBC)

IMPACTS IN SURFACE WATER (BANK STABILIZATION) SEE DETAIL 33

TEMP. IMPACTS IN SURFACE WATER

CHANNEL CHANGE SEE DETAIL 11

BANK & SCOUR HOLE STABILIZATION CLASS I RIP-RAP 5EST. 8 TONS EST. 11 SY GF SEE DETAIL 12

TOE PROTECTION CLASS 'B' RIP-RAP EST. 24 TONS EST. 54 SY SEE DETAIL 3

SPECIAL LATERAL 'V' DITCH SEE DETAIL 9

COLLAR AND EXTEND 24" RCP

24" RCP-III

15" RCP-III

JB w/MH

SPECIAL 2' LATERAL BASE DITCH CLASS 'B' RIP-RAP EST. 38 TONS EST. 84 SY GF SEE DETAIL 14

SPECIAL 2' LATERAL BASE DITCH CLASS 'B' RIP-RAP EST. 11 TONS EST. 23 SY GF SEE DETAIL 14

DO NOT DISTURB EXISTING 3-54" RCP CULVERTS

CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM) SEE DETAIL 34

CLASS 'B' RIP-RAP EST. 2 TONS EST. 7 SY GF

TOE PROTECTION CLASS 'B' RIP-RAP EST. 14 TONS EST. 31 SY GF SEE DETAIL 3

CULVERT CHANNEL IMPROVEMENTS (UPSTREAM) SEE DETAIL 33

CHANNEL CHANGE CLASS II RIP-RAP EST. 50 TONS EST. 85 SY GF SEE DETAIL 10

RALPH AMOS NEWSOME AND WIFE JUDY M NEWSOME

ABAC LLC

JOHN L VESTAL AND WIFE, VIRGINIA G VESTAL

MITCHELL LEE HOGAN AND WIFE CAROL F HOGAN

KENNETH CECIL SMALL

TIMOTHY S SATTERFIELD TRUSTEE

BRENDA S BRANSON

BRANSON-COLEMAN PROPERTIES, LLC

LEGEND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 0' 50' 100' 150'
GRAPHIC SCALE

10/6/2020
U-5813_HYD_PRM_PSH_07.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U-5813	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 6 OF 19

NAD 83/NA 2011

MATCH LINE –L– 43+50 SEE SHEET 6

MATCH LINE –L– 55+50 SEE SHEET 8

Site 2 SK

Site 3 SJ

Site 3 SJ

Site 4 SH

RALPH AMOS NEWSOME AND WIFE JUDY M NEWSOME

ABAC LLC

JOHN L VESTAL AND WIFE, VIRGINIA G VESTAL

MITCHELL LEE HOGAN AND WIFE CAROL F HOGAN

KENNETH CECIL SMALL

BRENDA S BRANSON

TIMOTHY S SATTERFIELD TRUSTEE

BRANSON-COLEMAN PROPERTIES, LLC

CHANNEL CHANGE SEE DETAIL 11

BANK & SCOUR HOLE STABILIZATION CLASS I RIP-RAP EST. 8 TONS EST. 11 SY GF SEE DETAIL 12

TEMP. IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER (STREAM RELOCATION)

TOE PROTECTION CLASS 'B' RIP-RAP EST. 24 TONS EST. 54 SY SEE DETAIL 3

SPECIAL 2' LATERAL BASE DITCH CLASS 'B' RIP-RAP EST. 38 TONS EST. 84 SY GF SEE DETAIL 14

SPECIAL 2' LATERAL BASE DITCH CLASS 'B' RIP-RAP EST. 11 TONS EST. 23 SY GF SEE DETAIL 14

DO NOT DISTURB EXISTING 3-54" RCP CULVERTS

CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM) SEE DETAIL 34

IMPACTS IN SURFACE WATER (BANK STABILIZATION) SEE DETAIL 34

IMPACTS IN SURFACE WATER (STREAM RELOCATION)

IMPACTS IN SURFACE WATER (9' X 8' RCBC)

IMPACTS IN SURFACE WATER (BANK STABILIZATION) SEE DETAIL 33

CLASS 'B' RIP-RAP EST. 2 TONS EST. 7 SY GF

TEMP. IMPACTS IN SURFACE WATER

TOE PROTECTION CLASS 'B' RIP-RAP EST. 14 TONS EST. 31 SY GF SEE DETAIL 3

CULVERT CHANNEL IMPROVEMENTS (UPSTREAM) SEE DETAIL 33

CHANNEL CHANGE CLASS II RIP-RAP EST. 50 TONS EST. 85 SY GF SEE DETAIL 10

COLLAR AND EXTEND 24" RCP

SPECIAL LATERAL 'V' DITCH SEE DETAIL 9

BANK & SCOUR HOLE STABILIZATION CLASS I RIP-RAP EST. 5 TONS EST. 6 SY GF SEE DETAIL 12

LEGEND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 0' 50' 100' 150'
GRAPHIC SCALE

10/6/2020
U-5813_HYD_PRM_PSH_07.dgn
HNTB

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-5813	

PERMIT DRAWING
SHEET 7 OF 19

DETAIL C1
(NOT TO SCALE)

SINGLE BARREL CULVERT SKEWED LOW FLOW CHANNEL AND SILLS

*NOTES:

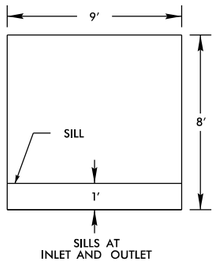
1) NATIVE MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS/BAFFLES ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

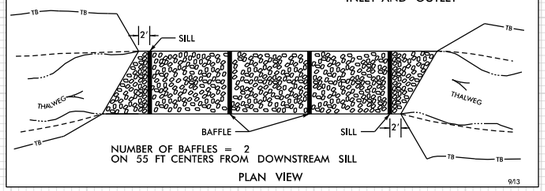
3) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

4) DO NOT SET ELEVATION OF HIGH SILL/BAFFLES ABOVE BANK FULL.

5) NUMBER OF SILL/BAFFLES DETERMINED BY THE ENGINEER.



SILLS AT
INLET AND OUTLET

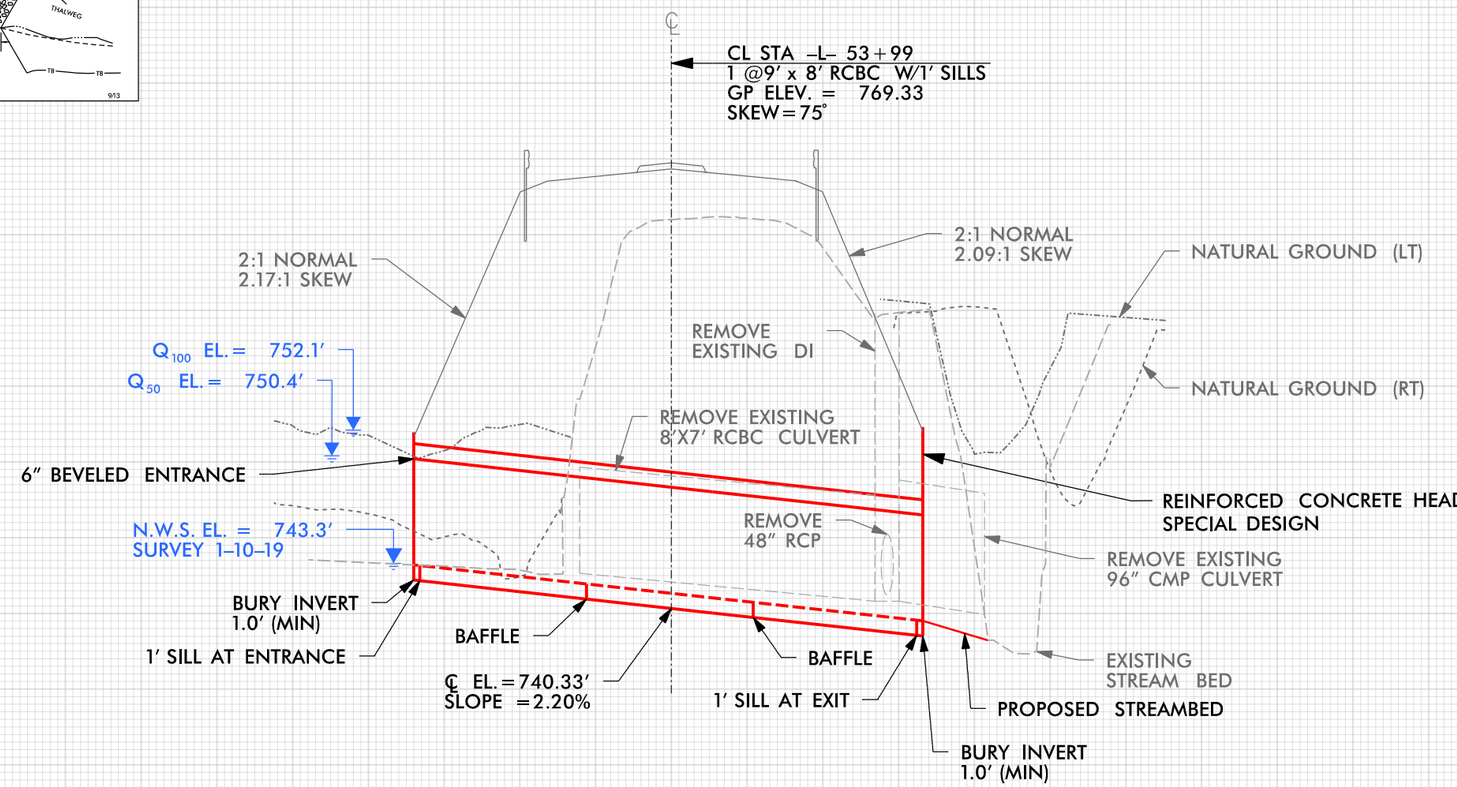


NUMBER OF BAFFLES = 2
ON 55 FT CENTERS FROM DOWNSTREAM SILL

PLAN VIEW

9/13

Site 3



RANDOLPH COUNTY
PROJECT: U-5813
US-64
FROM ASHEBORO BYPASS TO
EAST OF I-73/I-74/US 220

9/29/2020
U-5813_HYD_PRM_PSH_07_PFL.dgn
HNTB

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-5813	

PERMIT DRAWING
SHEET 8 OF 19

(–) 150 (–) 100 (–) 50 0 50 100 150

Site 4

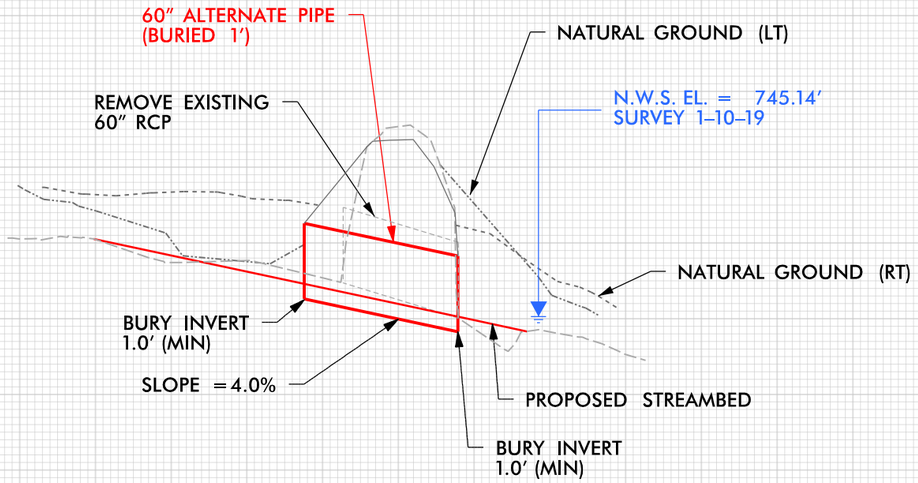
770 770

760 760

750 750

740 740

730 730



RANDOLPH COUNTY
PROJECT: U-5813
US-64
FROM ASHEBORO BYPASS TO
EAST OF I-73/I-74/US 220

9/29/2020
U-5813_HYD_PRM_PSH_07_PFL.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U-5813	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 9 OF 19

PARCEL NO.	PARCEL OWNER	DEED BOOK/PAGE
29	RICHARD DOSIER CRIDER AND WIFE, DOLLIE FRYER CRIDER	

NAD 83/NA 2011

MATCH LINE –L– 55+50 SEE SHEET 7

MATCH LINE –L– 69+00 SEE SHEET 9

RODNEY D. DAVIS AND WIFE KAREN I. DAVIS

OMAYRA ROBLES AND HUSBAND ALVIS H. ADAMES

ALVIN B MCELREATEH AND WIFE RUTH I MCELREATH

ALVIN B MCELREATEH AND WIFE RUTH I MCELREATH

TYLER L COLE AND WIFE, DEBORAH W COLE

ABAC LLC

SHJ CAPITAL LLC

SCHWARZ PROPERTIES, LLC

CAROL W BRUTON

LUIS ANTONIO MARTINEZ MEDINA AND WIFE, OSVELIA AGUIRRE GOMEZ

SAMRETH KEM

DAVID L BURTON AND WIFE, BETTY J BURTON

LARRY BARNS JR. AND WIFE LORRANE C. BARNES

BRANSON-COLEMAN PROPERTIES, LLC

JONATHAN ERIC PHILLIPS

ACBC LLC

SPECIAL LATERAL 'V' DITCH SEE DETAIL 8

FALSE SUMP SEE DETAIL 36

IMPACTS IN SURFACE WATER (STREAM RELOCATION)

TEMP. IMPACTS IN SURFACE WATER

TEMP. IMPACTS IN SURFACE WATER

TEMP. IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER (RIPRAP AT EMBANKMENT)

CHANNEL CHANGE CLASS II RIP-RAP EST. 72 TONS EST. 122 SY GF SEE DETAIL 10

BACKFILL EXISTING CHANNEL W/ SUITABLE MATERIAL EST 120 CY

TOE PROTECTION CLASS 'B' RIP-RAP EST. 30 TONS EST. 66 SY SEE DETAIL 3

TOE PROTECTION CLASS 'B' RIP-RAP EST. 75 TONS EST. 54 SY GF SEE DETAIL 3

SPECIAL LATERAL V DITCH SEE DETAIL 24

CLASS 'B' RIP-RAP EST. 18 TONS EST. 38 SY GF

RIP-RAP AT EMBANKMENT SEE DETAIL 39

RETAIN AND REPAIR LAST TWO JOINTS ON DOWNSTREAM END OF PIPE

SPECIAL LATERAL V DITCH SEE DETAIL 18

Site 4 SH

Site 5 SI

LEGEND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE 50' 0' 50' 100' 150'

10/6/2020
U-5813_HYD_PRM_PSH_08.dgn
HNTB

8/17/99

WETLAND & STREAM IMPACTS

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
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NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U-5813	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 10 OF 19

PARCEL NO.	PARCEL OWNER	DEED BOOK/PAGE
29	RICHARD DOSIER CRIDER AND WIFE, DOLLIE FRYER CRIDER	

NAD 83/NA 2011

MATCH LINE -L- 55+50 SEE SHEET 7

MATCH LINE -L- 69+00 SEE SHEET 9

RODNEY D. DAVIS AND WIFE KAREN I. DAVIS

OMAYRA ROBLES AND HUSBAND ALVIS H. ADAMES

ALVIN B MCELREATEH AND WIFE RUTH I MCELREATH

ALVIN B MCELREATEH AND WIFE, RUTH I MCELREATH

TYLER L COLE AND WIFE, DEBORAH W COLE

ABAC LLC

SHJ CAPITAL LLC

SCHWARZ PROPERTIES, LLC

CAROL W BRUTON

BRANSON-COLEMAN PROPERTIES, LLC

JONATHAN ERIC PHILLIPS

ACBC LLC

LUIS ANTONIO MARTINEZ MEDINA AND WIFE, OSVELIA AGUIRRE GOMEZ

SAMRETH KEM

DAVID L BURTON AND WIFE, BETTY J BURTON

LARRY BARNS JR. AND WIFE LORRANE C. BARNES

SPECIAL LATERAL 'V' DITCH SEE DETAIL 8

RETAIN

REMOVE

REMOVE 36' OF 36" RCP

18" RCP-III

JB w/MH

36" RCP-III

18" RCP-III

18" RCP-VI

FALSE SUMP SEE DETAIL 36

24" RCP-III

15" RCP-IV

2GI

2GI-FG

15" HDPE W/ELBOWS

IMPACTS IN SURFACE WATER (STREAM RELOCATION)

TEMP. IMPACTS IN SURFACE WATER

BACKFILL EXISTING CHANNEL W/SUITABLE MATERIAL EST 120 CY

CHANNEL CHANGE CLASS II RIP-RAP EST. 72 TONS EST. 122 SY GF SEE DETAIL 10

TOE PROTECTION CLASS 'B' RIP-RAP EST. 30 TONS EST. 66 SY SEE DETAIL 3

TOE PROTECTION CLASS 'B' RIP-RAP EST. 75 TONS EST. 54 SY GF SEE DETAIL 3

SPECIAL LATERAL V DITCH SEE DETAIL 24

CLASS 'B' RIP-RAP EST. 18 TONS EST. 38 SY GF

RIP-RAP AT EMBANKMENT SEE DETAIL 39

RETAIN AND REPAIR LAST TWO JOINTS ON DOWNSTREAM END OF PIPE

SPECIAL LATERAL V DITCH SEE DETAIL 18

IMPACTS IN SURFACE WATER (RIPRAP AT EMBANKMENT)

Site 4 SH

Site 5 SI

LEGEND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 0' 50' 100' 150'
GRAPHIC SCALE

10/6/2020
U-5813_HYD_PRM_PSH_08.dgn
HNTB

WETLAND & STREAM IMPACTS

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U-5813	12
RW. SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/NA 2011

PERMIT DRAWING
SHEET 11 OF 19

DETAIL SHEET FOR SITE 7
SHEET 15 OF 19

MATCH LINE –Y– 44+00
SEE SHEET 15

MATCH LINE –L– 120+50
SEE SHEET 13

DETAIL SHEET FOR SITE 8
SHEET 17 OF 19

IMPACTS IN
SURFACE WATER
(CHANNEL CHANGE)

TEMP. IMPACTS IN
SURFACE WATER

IMPACTS IN
SURFACE WATER
(36" RCP–IV)

TEMP. IMPACTS IN
SURFACE WATER

Site 7 | SF

Site 8 | SA

IMPACTS IN
SURFACE WATER
(18" HDPE)

IMPACTS IN
SURFACE WATER
(STREAM RELOCATION)

A

B

A

D

C

IMPACTS IN
SURFACE WATER
(36" HDPE)

DETAIL SHEET FOR SITE 6
SHEET 13 OF 19

MATCH LINE –L– 106+00
SEE SHEET 11

MATCH LINE –Y– 29+25
SEE SHEET 11

MATCH LINE
–Y– 11+75
SEE SHEET 11

TEMP. IMPACTS IN
SURFACE WATER
(OUTLET PROTECTION AND
PIPE REMOVEAL)

TEMP. IMPACTS IN
SURFACE WATER

Site 6 | SE

NOTE:
1.) ALL DRIVEWAY RADII ARE 20' UNLESS OTHERWISE NOTED

GRAPHIC SCALE
100 50 0 100 200
PLANS

WETLAND & STREAM IMPACTS

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U-5813	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/NA 2011

PERMIT DRAWING
SHEET 12 OF 19

DETAIL SHEET FOR SITE 7
SHEET 15 OF 19

MATCH LINE –Y– 44+00
SEE SHEET 15

MATCH LINE –L– 120+50
SEE SHEET 13

DETAIL SHEET FOR SITE 8
SHEET 17 OF 19

IMPACTS IN SURFACE WATER (CHANNEL CHANGE)

IMPACTS IN SURFACE WATER (36" RCP–IV)

TEMP. IMPACTS IN SURFACE WATER

TEMP. IMPACTS IN SURFACE WATER

Site 7 | SF

Site 8 | SA

IMPACTS IN SURFACE WATER (18" HDPE)

IMPACTS IN SURFACE WATER (STREAM RELOCATION)

A

A

D

B

C

IMPACTS IN SURFACE WATER (36" HDPE)

DETAIL SHEET FOR SITE 6
SHEET 13 OF 19

TEMP. IMPACTS IN SURFACE WATER (OUTLET PROTECTION AND PIPE REMOVEAL)

TEMP. IMPACTS IN SURFACE WATER

Site 6 | SE

MATCH LINE –Y– 29+25
SEE SHEET 11

MATCH LINE –Y– 11+75
SEE SHEET 11

MATCH LINE –L– 106+00
SEE SHEET 11

NOTE:
1.) ALL DRIVEWAY RADII ARE 20' UNLESS OTHERWISE NOTED

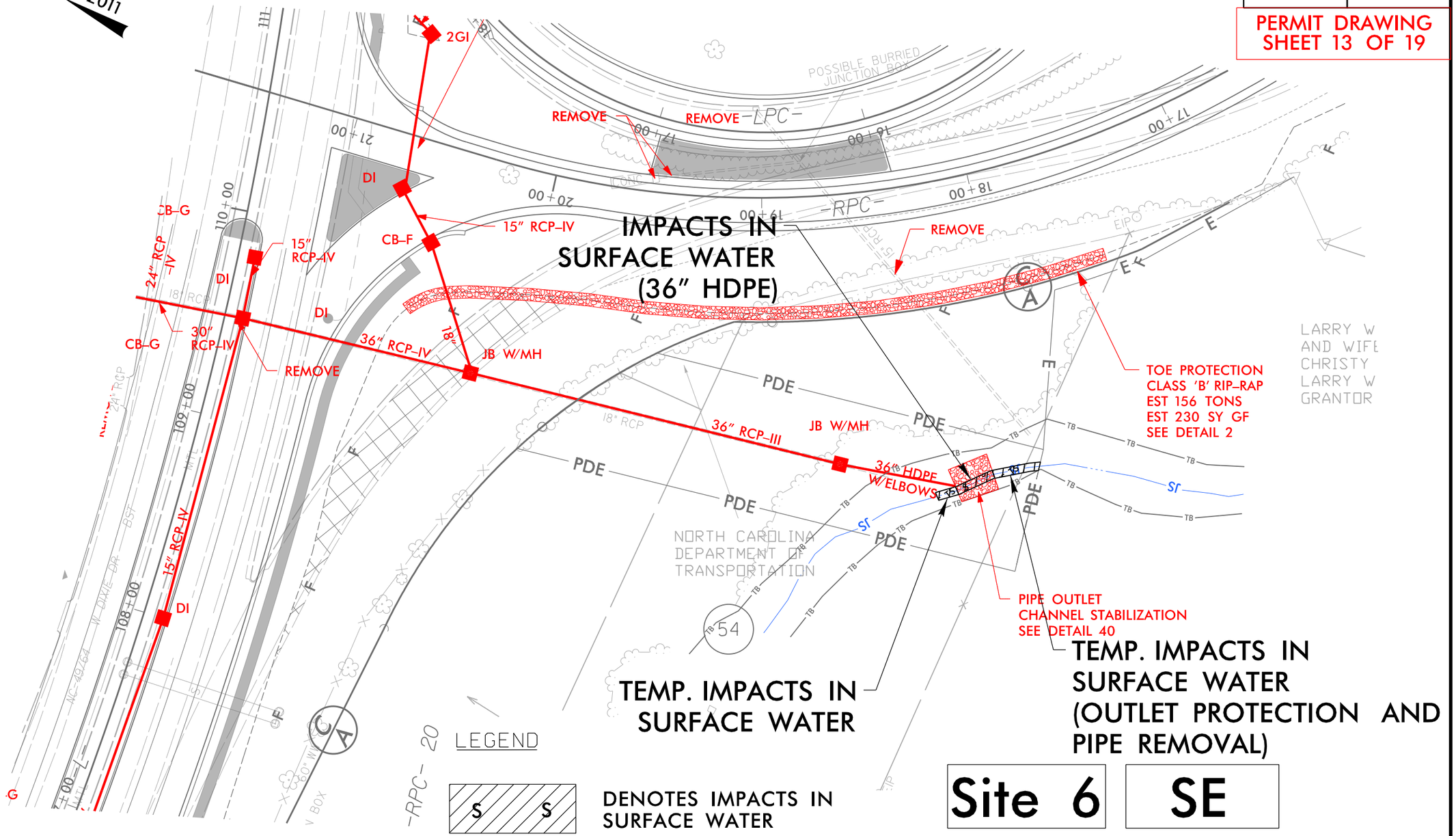
GRAPHIC SCALE
100 50 0 100 200
PLANS

WETLAND & STREAM IMPACTS

PROJECT REFERENCE NO.	SHEET NO.
U-5813	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 13 OF 19

NAD 83/NA 2011



LEGEND

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

Site 6 **SE**

50' 0' 50' 100' 150'

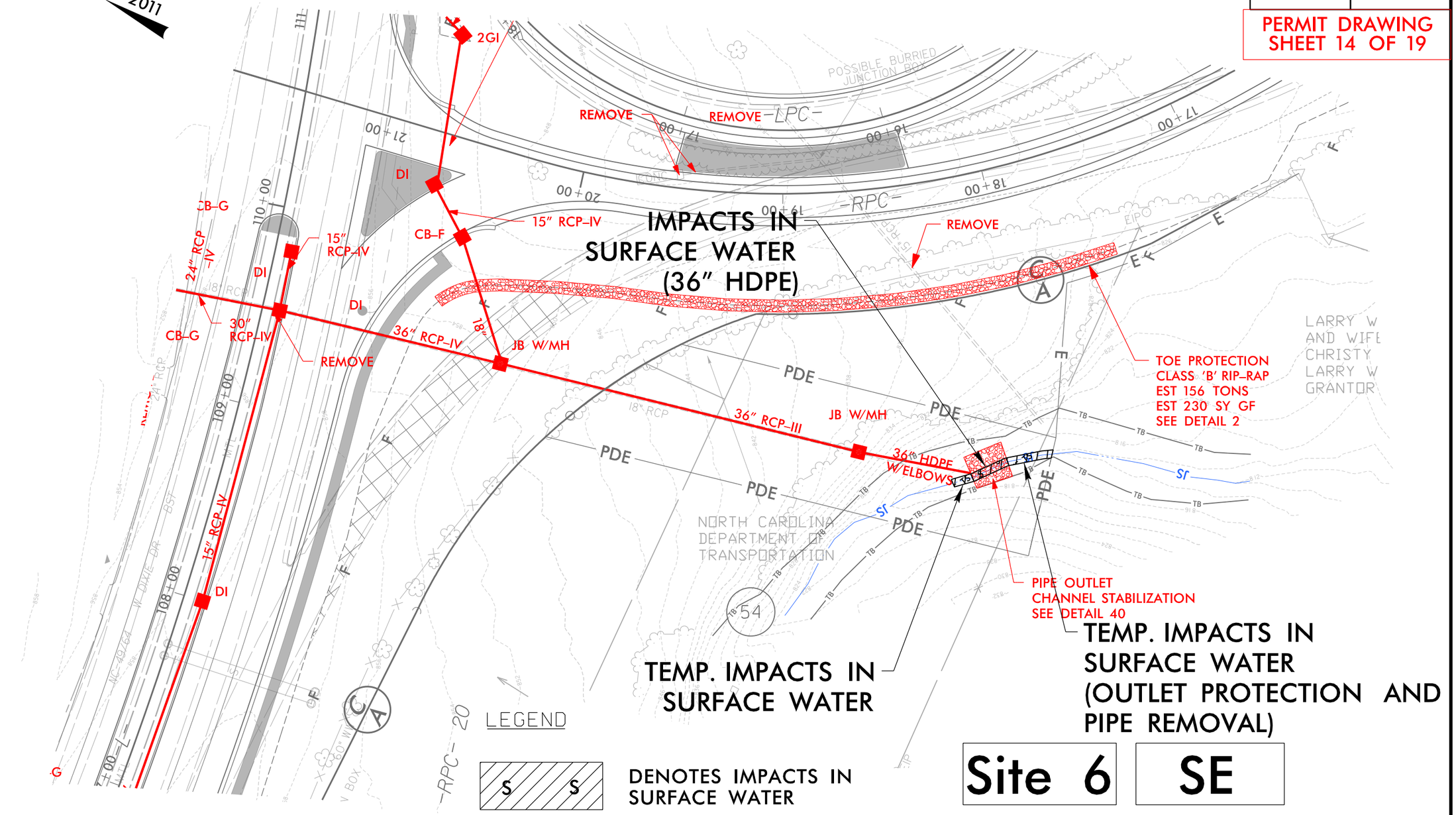
GRAPHIC SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-5813	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 14 OF 19

WETLAND & STREAM IMPACTS

NAD 83/NA 2011



LEGEND

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

Site 6 **SE**

50′ 0′ 50′ 100′ 150′

GRAPHIC SCALE

WETLAND & STREAM IMPACTS

PROJECT REFERENCE NO.	SHEET NO.
U-5813	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 15 OF 19

NAD 83/NA 2011

Site 7 SF

TEMP. IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER (18" HDPE)

IMPACTS IN SURFACE WATER (CHANNEL CHANGE)

IMPACTS IN SURFACE WATER (STREAM RELOCATION)

CLASS 'B' RIP-RAP
EST. 2 TONS
EST. 7 SYGF

PIPE OUTLET CHANNEL STABILIZATION
SEE DETAIL 31
CLASS I RIP-RAP
EST. 13 TONS
EST. 18 SYGF

CHANNEL CHANGE
SEE DETAIL 23
CLASS I RIP-RAP
EST. 134 TONS
EST. 190 SYGF

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 24
CLASS B RIP-RAP
EST. 88 TONS
EST. 125 SYGF

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 21

CLASS 'B' RIP-RAP
EST. 3 TONS
EST. 10 SYGF

18" HDPE W/ELBOWS

15" HDPE W/ELBOWS

JB W/MH

REMOVE

RETAIN

30" WELDED STEEL PIPE TRENCHLESS INSTALLATION

FILL W/ FLOWABLE FILL

RETAIN AND TV INSPECT

SPECIAL LATERAL VARIABLE BASE DITCH
SEE DETAIL 22

LEGEND

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 0' 50' 100' 150'
GRAPHIC SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-5813	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 16 OF 19

WETLAND & STREAM IMPACTS

NAD 83/NA 2011

Site 7 **SF**

CLASS 'B' RIP-RAP
EST. 2 TONS
EST. 7 SYGF

TEMP. IMPACTS IN SURFACE WATER

PIPE OUTLET CHANNEL STABILIZATION
SEE DETAIL 31
CLASS I RIP-RAP
EST. 13 TONS
EST. 18 SYGF

CHANNEL CHANGE
SEE DETAIL 23
CLASS I RIP-RAP
EST. 134 TONS
EST. 190 SYGF

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 24
CLASS B RIP-RAP
EST. 88 TONS
EST. 125 SYGF

IMPACTS IN SURFACE WATER (CHANNEL CHANGE)

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 21

CLASS 'B' RIP-RAP
EST. 3 TONS
EST. 10 SYGF

18" HDPE W/ELBOWS

REMOVE

JB W/MH

24" RCP-JH

118" RCP-JH

15" HDPE W/ELBOWS

18" HDPE W/ELBOWS

JB W/MH

JB W/MH

RETAIN

IMPACTS IN SURFACE WATER (18" HDPE)

IMPACTS IN SURFACE WATER (STREAM RELOCATION)

30" WELDED STEEL PIPE TRENCHLESS INSTALLATION

FILL W/ FLOWABLE FILL

RETAIN

RETAIN AND TV INSPECT

JB W/MH

SPECIAL LATERAL VARIABLE BASE DITCH
SEE DETAIL 22

TB 2GI 15" 2GI

LEGEND

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

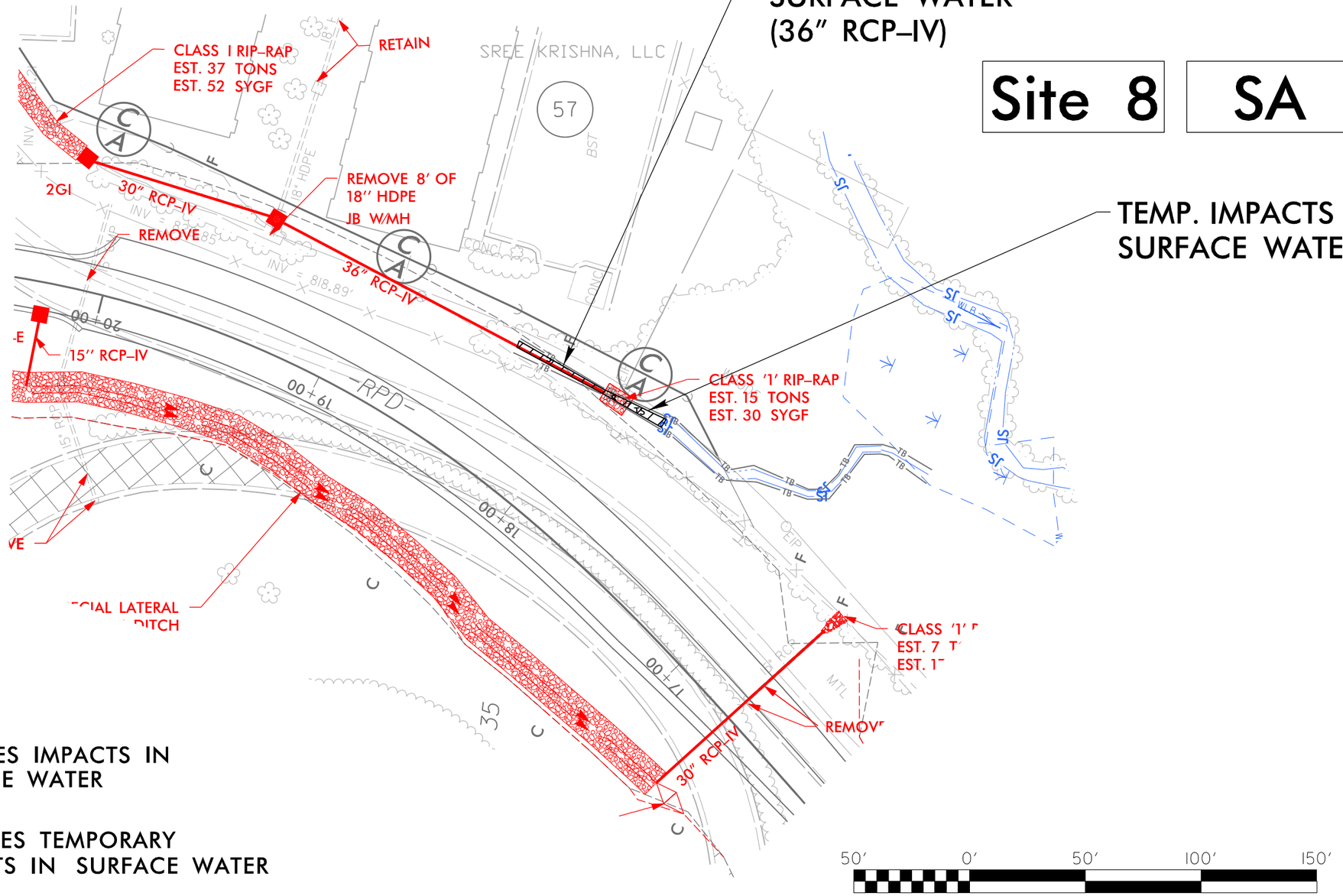
50' 0' 50' 100' 150'
GRAPHIC SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-5813	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 17 OF 19

WETLAND & STREAM IMPACTS

NAD 83/NA 2011



Site 8 | SA

LEGEND

S S — DENOTES IMPACTS IN SURFACE WATER

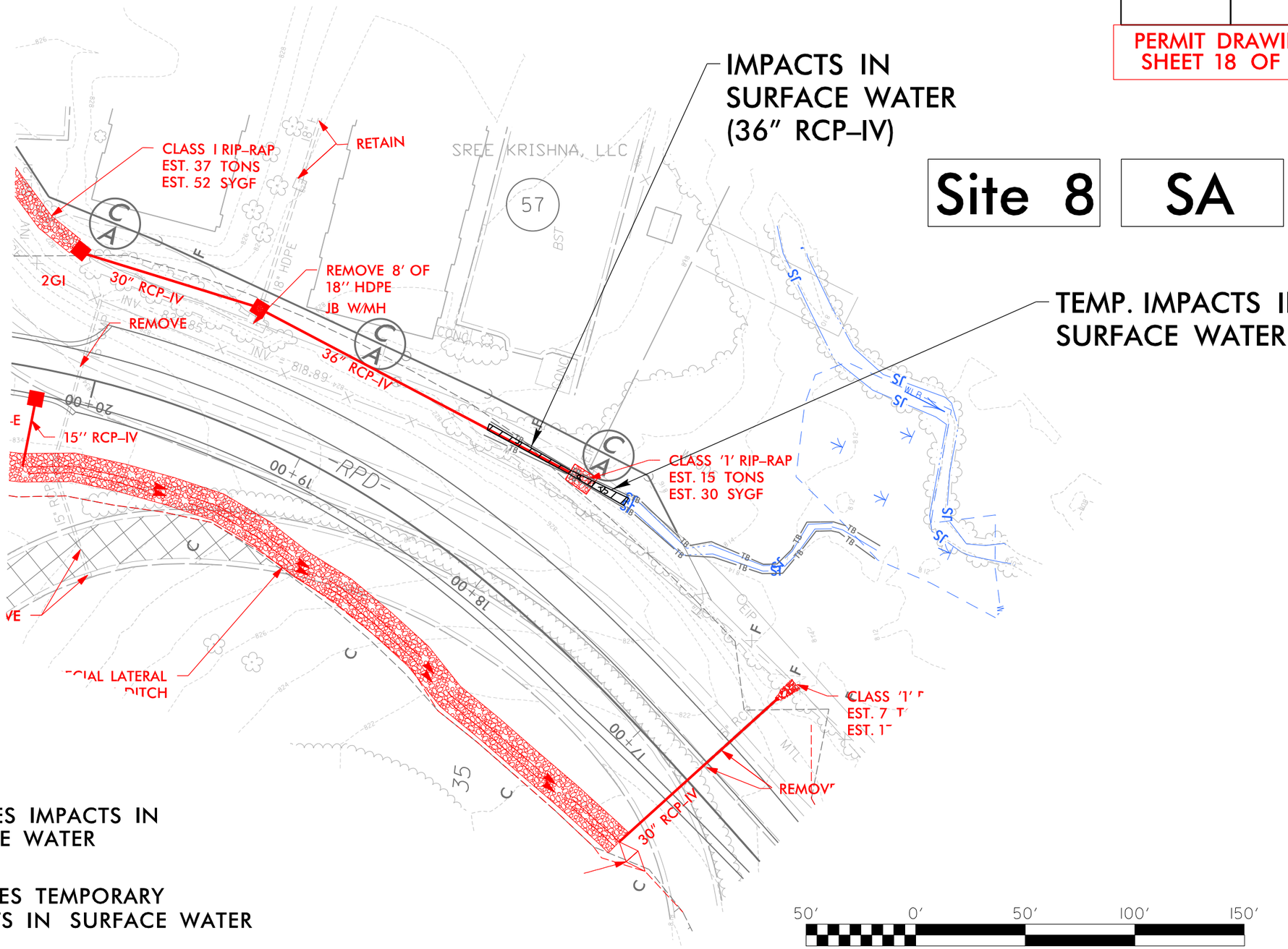
TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
U-5813	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 18 OF 19

WETLAND & STREAM IMPACTS

NAD 83/NA 2011



Site 8 | **SA**

LEGEND

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

WETLAND AND SURFACE WATER IMPACTS SUMMARY

				WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Stream Name Stream ID	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	UT to Cable Creek / SL	-L- 25+91 to 26+52 RT	Channel Stabilization						< 0.01	< 0.01	52	10	
2	UT to Cedar Fork Creek / SK	-Y5- 10+82 to 11+91 LT	Stream Relocation						< 0.01	< 0.01	103	31	
3	UT to Cedar Fork Creek / SJ	-L- 53+47 to 53+66 LT	Bank Stabilization						< 0.01	< 0.01	14	5	
3	UT to Cedar Fork Creek / SJ	-L- 54+18 to 54+35 RT	9' X 8' RCBC						< 0.01		53		
3	UT to Cedar Fork Creek / SJ	-L- 54+19 to 54+38 RT	Bank Stabilization						< 0.01	< 0.01	36	10	
4	UT to Cedar Fork Creek / SH	-L- 54+33 to 56+40 RT	Stream Relocation						0.02	< 0.01	190	11	
5	UT to Cedar Fork Creek / SI	-Y7- 11+04 to 11+11 LT/RT	Riprap at embankment						< 0.01	< 0.01	5	20	
6	UT to Little River / SE	-RPC- 17+98 to 18+37 LT	36" HDPE						< 0.01	< 0.01	19	23	
7	UT to Cedar Fork Creek / SF	-RPA- 13+66 to 14+04 LT	18" HDPE						< 0.01	< 0.01	16	20	
7	UT to Cedar Fork Creek / SF	-RPA- 13+87 to 14+00 LT	Channel Change						< 0.01	< 0.01	12	10	
7	UT to Cedar Fork Creek / SF	-RPA- 14+02 to 15+22 LT	Stream Relocation						0.01		120		
8	UT to Little River / SA	-RPD- 17+75 to 18+38 RT	36" RCP-IV						< 0.01	< 0.01	55	17	
TOTALS*:									0.068	0.014	675	157	

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
10/6/2020
Randolph County
U-5813
44385.1.3
SHEET 19 OF 19

Revised 2018 Feb