



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

January 9, 2023

U.S. Army Corps of Engineers
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587

NCDEQ Water Resources
1611 Mail Service Center
Raleigh, NC 27699-1611

ATTN: Mr. Eric Alsmeyer and Mr. Rob Ridings

Subject: Request for Modification of the Phased Section 404 Individual Permit and Section 401 Individual Water Quality Certification, Neuse River Riparian Buffer Authorization for the construction of the Triangle Expressway Southeast Extension from NC-55 Bypass in Apex to I-40, Wake and Johnston Counties. TIP Nos. R-2721, R-2828, and R-2829. Debit \$570 from WBS 35516.1.TA1.

Reference: USACE Section 404 Authorization SAW-2009-02240, issued October 24, 2019, modified February 4, 2020 (corrected revision issued February 7, 2020) modified April 29, 2020, January 7, 2021, March 19, 2021, March 3, 2022, July 1, 2022, and September 13, 2022.

NCDWR Water Quality Certification Number 4179 and Neuse River Riparian Buffer Authorization, issued February 15, 2019, modified January 30, 2020, April 20, 2020, June 1, 2020, December 29, 2020, March 9, 2021, April 8, 2021, November 1, 2021, May 18, 2022, and July 22, 2022.

Dear Sirs:

As you are aware, the North Carolina Department of Transportation (NCDOT) applied for a phased Section 404 Individual Permit, Section 401 Individual Water Quality Certification (WQC), Neuse River Riparian Buffer Authorization, Non-404 Jurisdictional Wetlands and Waters Permit for the subject project in September 2018. The project, also known as Complete 540, encompasses three NCDOT Transportation Improvement Plan (TIP) projects: R-2721 (NC-55 Bypass to US-401), R-2828 (east of US-401 to I-40 Interchange) and R-2829 (east of I-40 to US 64/264). Revised permit applications were submitted in February 2019 and the NCDWR 401 and USACE 404 Permits were issued in February and October of 2019. Additionally, NCDOT received a modified 401 WQC for the Complete 540 Project on January 30, 2020, April 23, 2020, June 1, 2020, December 29, 2020, March 9, 2021, April 8, 2021, November 1, 2021, May 18, 2022, and July 22, 2022 from the NC Division of Water Resources (NCDWR) and a modified

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
TURNPIKE AUTHORITY
1578 MAIL SERVICE CENTER
RALEIGH NC 27699-1578

TELEPHONE: 919-707-2700
FAX: 919-715-551
Customer Service: 1-877-3684968

WEBSITE: NCDOT.GOV

Location:
1 SOUTH WILMINGTON STREET
RALEIGH NC, 27601

Department of the Army authorization #SAW-2009-02240 on February 4, 2020 (revision issued on February 7, 2020), April 29, 2020, January 7, 2021, March 19, 2021, March 3, 2022, July 1, 2022, and September 13, 2022.

This letter is a request for a modification to the R-2828 section of the Complete 540 project that will add impacts at two new sites (Site 92 and Site 93) for the demolition and removal of two US 70 flyover bridges over I-40. The bridges will be removed sequentially, so work will not be happening on the two bridges concurrently. First the end bents will be demolished using excavators and hydraulic hammers. Then the span deck will be removed with excavators and hydraulic hammers, working along each span. Once all the spans are demolished, girders of each span will be removed using cranes that are only placed in upland areas. Interior bents, end bents and slope protection demolition will be completed using excavators and hydraulic hammers (see attached Demolition Plans for more details).

Protective fencing will be installed around the jurisdictional areas, clearly delineating the areas that are permitted for impacts. Temporary wetland impacts are needed for the demolition material that will fall into the jurisdictional areas. Equipment can access the bridges from either side of the jurisdictional features, so there is no need for equipment crossings.

The preferred demolition process will consist of using a hydraulic hammer attached to an excavator to remove the deck from the bridge while the machine is located on the bridge deck. Small pieces of concrete are expected to fall from the deck to the ground below. Prior to demolition, protective measures for the jurisdictional resources will be employed. First, any trees in the area under the bridge will be cleared, but not grubbed. A layer of geotextile fabric will be placed under the width of bridge plus 10-feet outside of drip edge and between the buffer limits to protect wetlands (WEL and WEK). At the stream crossing (SDS), crane mats will be installed from bank to bank, thereby not impacting flow or the stream channel. Fabric will be placed on the mats located over the stream as well, to prevent material and debris from falling into the flow line of the stream. Then an additional layer of crane mats will be placed on top of the fabric for added protection. Straw bales will be placed along the edges of the mats to inhibit material from rolling off once debris has fallen.

The entire span of bridge structure, concrete deck and beams will be removed before demolition debris and protection materials are gathered for removal from site for safety reasons. In the event too much demolition material accumulates on the mats, and there is potential for rubble to spread into the stream and surrounding riparian area, the demolition process will be paused, and concrete cleared from the mats, before the demolition process can proceed. The demolition process is estimated to take two weeks.

Once all non-native materials have been removed the areas previously cleared and matted will be replanted. Riparian seed, wetland seed, coir fiber matting and live stakes will be placed as needed in the impacted areas, as per NCDOT guidelines (see <https://connect.ncdot.gov/resources/roadside/Pages/Soil-Water.aspx> for details).

Avoidance/Minimization

The standard bridge removal process is to saw cut and lift the slabs out for removal. However, these structures were built in 2007 and used a different construction method from older bridges. This newer construction method used steel beams with shear studs that are bonded to the deck and sawing the sections for removal would not work. The only method of releasing this bond is to use a hydraulic hammer. By this method, the dropped slabs would be broken up on the ground. It was anticipated that this process would have the potential to cause significant and extensive damage to the surrounding jurisdictional features.

The permanent stream impact previously permitted at Site 57 will also be utilized as the temporary crossing of Stream SDT needed to facilitate the bridge removal to avoid additional stream and buffer impacts.

Jurisdictional Impacts

The proposed activity requires the addition of temporary fill in wetlands and temporary stream impacts in the Neuse River Basin (HUC 03020201), as detailed below. Included in this package are updated drawings for Site 92 and 93 (Permit Sheets 1, 128, 129, 130, 131 of 171), updated permit summary sheets 166 through 171 of 171, and updated buffer drawings (Buffer Sheets 1 and 24 of 42) and updated buffer summary sheets 37 through 42 of 42. Per directive of NCDWR, the buffer impacts are considered temporary, and no mitigation is required.

Permit Site 92:

The proposed impacts to Site 92 (WEL and SDS) are associated with the removal of the eastbound flyover ramp and are described below. Temporary buffer impacts are listed for informational purposes only:

- Permit Site 92 (Permit Drawing 128, 129, 130, and 131 of 171, Plan Sheet 33 and 33A)
 - Limited area of temporary fill:
 - Increase of 0.05 acre of temporary fill in wetland impact.
 - Increase of 92 linear feet of temporary stream impact.
- Buffer Site 92 (Buffer Drawing 24 of 42, Plan Sheet 33)
 - Temporary buffer impacts
 - Increase of 4,979 square feet of buffer zone 1 impacts
 - Increase of 3,158 square feet of buffer zone 2 impacts

Permit Site 93:

The proposed impacts to Site 93 (WEK and SDS) are associated with the removal of the westbound flyover ramp and are described below. Temporary buffer impacts are listed for informational purposes only:

- Permit Site 93 (Permit Drawing 128, 129, 130, and 131 of 171, Plan Sheet 33 and 33A)
 - Limited area of temporary fill:
 - Increase of <0.01 acre of temporary fill in wetland impact.

- Increase of 35 linear feet of temporary stream impact.
- Buffer Site 93 (Buffer Drawing 24 of 42, Plan Sheet 33)
 - Temporary buffer impacts
 - Increase of 2,495 square feet of buffer zone 1 impacts
 - Increase of 3,071 square feet of buffer zone 2 impacts

Revised Impacts Summary R-2828

Due to the changes described above for R-2828, the total project impacts will now be as listed below.

Revised Table 4. R-2828 Jurisdictional Resources Impacts

Riparian Wetlands Temp./ Perm. (ac)	Non-Riparian Wetlands Perm. (ac)	Isolated Wetlands (ac)	Ponds (ac)	Isolated Ponds (ac)	Streams (lf)			Riparian Buffer (sq ft) Zone 1/2
					Perm.	Temp.	Structure* Stab.	
4.85 / 19.55	0.07	0.25	8.32	n/a	16,842	1,829	2,065	2,609,814/ 830,157

*Structure stabilization is pipe, culvert, and bank stabilization.

Compensatory Mitigation

NCDOT has requested wetland mitigation for R-2828 from NCDMS for 19.56 acres of wetland impacts. As this modification is for an increase in temporary wetland impacts, we are not proposing any additional wetland mitigation. Additionally, riparian buffer impacts will be limited to clearing with no grubbing. Therefore, the buffer impacts are considered temporary, and no mitigation is required.

REGULATORY APPROVALS

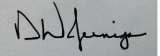
Section 404: We are requesting a modification to the USACE Permit Number SAW-2009-02240 Section 404 Individual Permit for the above-described activities.

Section 401: We are requesting a modification to the WQC Permit Number 4179 Section 401 Individual Water Quality Certification and the Neuse Riparian Buffer Authorization. We are providing this application to NCDEQ, for their approval. Authorization to debit the \$570.00 Permit Modification Fee from TIP No. R-2828/WBS 35516.1.TA1 is hereby given.

The individual permit modification package for the Complete 540 project (STIP Projects R-2721, R-2828, and R-2829) is available at <https://xfer.services.ncdot.gov/pdea/PermApps/>

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Deanna Riffey at driffey@ncdot.gov or 919-707-6151.

Sincerely,

DocuSigned by:

F33D97B5AF E368E

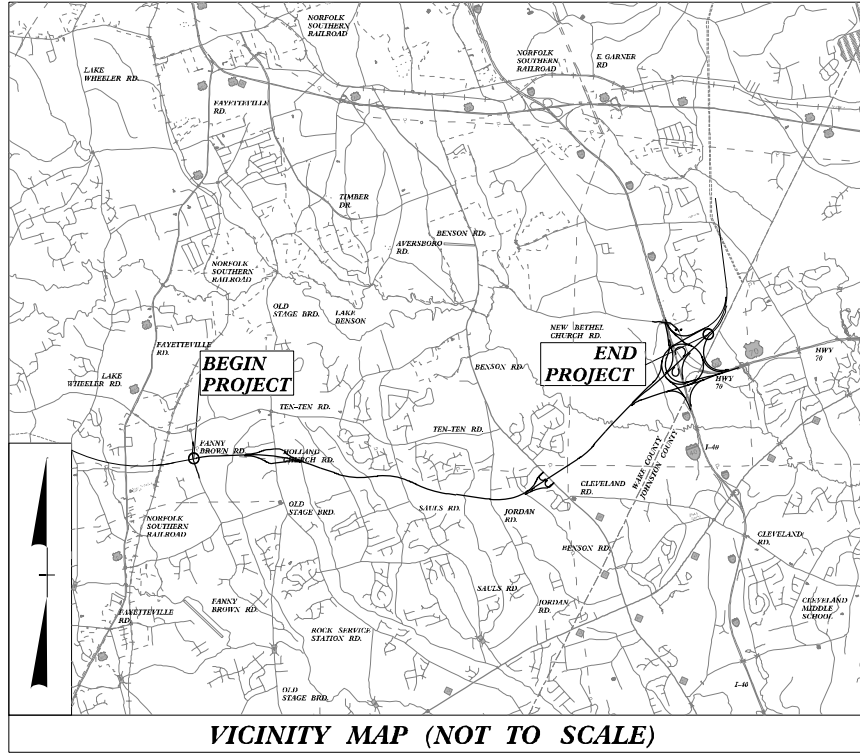
Dennis Jernigan, P.E.
North Carolina Turnpike Authority
Interim Chief Engineer

cc: NCDOT Permit Application Standard Distribution List

09/08/99 2/7/2022 c:\projects\wise\projectwise\nt\vidya.mohandas\d0348956\R2828_hyd.prm_wet_psh_01.dgn USW04588

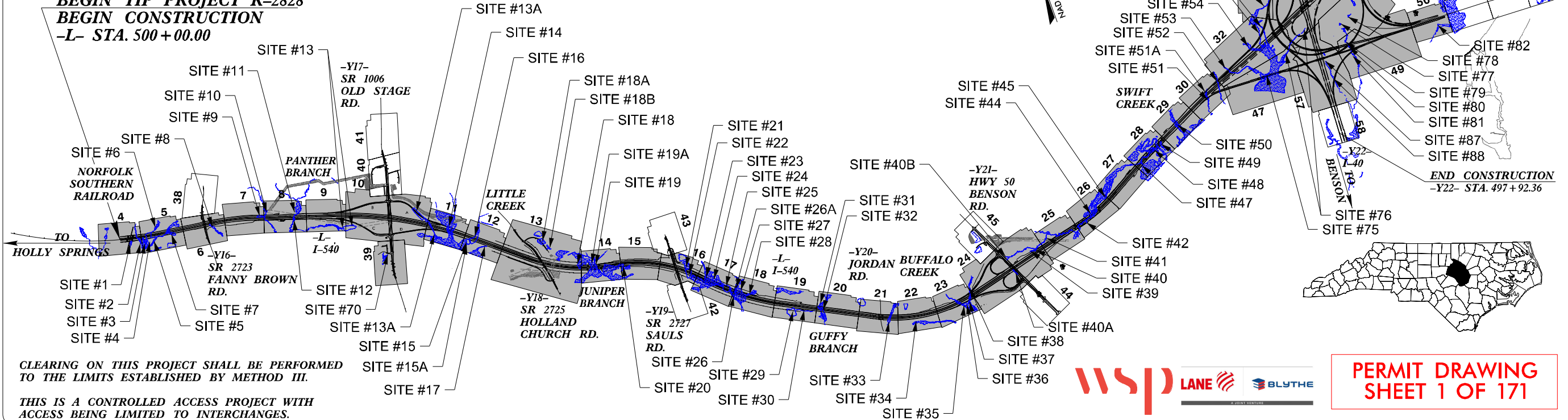
TIP PROJECT: R-2828

CONTRACT: C204197



VICINITY MAP (NOT TO SCALE)

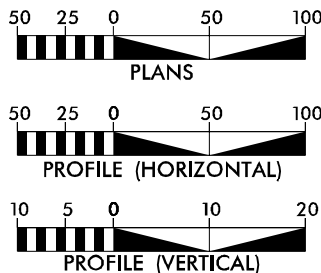
END TIP PROJECT R-2721B
BEGIN TIP PROJECT R-2828
BEGIN CONSTRUCTION
-L- STA. 500+00.00



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



DESIGN DATA

ADT 2018 = NA
ADT 2040 = 53,400
DHV = 12 %
D = 65 %
T = 11 % *
V = 75 MPH
*(TTST 4 + DUAL 7)

FUNCTIONAL CLASS:
FREEWAY

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT R-2828 = 8.055 Miles
LENGTH OF STRUCTURE PROJECT R-2828 = 0.562 Miles
TOTAL LENGTH OF TIP PROJECT R-2828 = 8.617 Miles

NCDOT CONTACT:

DESIGN BUILD PROJECT ENGINEER -
TRANSPORTATION PROGRAM MANAGEMENT UNIT

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE & JOHNSTON COUNTY

LOCATION: TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM
EAST OF US 401 TO EAST OF I-40

TYPE OF WORK: DESIGN-BUILD AS SPECIFIED IN THE SCOPE
OF WORK CONTAINED IN THE REQUEST FOR
PROPOSALS

WETLAND AND SURFACE WATER IMPACTS PERMIT

PACKAGE R-2828
DATE: JANUARY 05, 2023

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2828	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
35516.3.GV1	NHP-0540(043)	DESIGN-BUILD	
35516.2.3	NHP-0540(043)	R/W	
35516.2.TA1	NHP-0540(043)	R/W	

Permit Drawing Package
Last Revised on 01/05/23

END TIP PROJECT R-2828
END CONSTRUCTION
-L- STA. 968+50.00

BEGIN CONSTRUCTION
-Y22- STA. 382+01.19

TO SELMA

END CONSTRUCTION
-Y22- STA. 497+92.36

PERMIT DRAWING
SHEET 1 OF 171



Prepared in the Office of



WSP USA
134 FAYETTEVILLE STREET
SUITE 1000
RALEIGH, NC 27601
TEL: 919.836.4040
FAX: 919.836.4099
LICENSE NO. E-0165

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPT. 09, 2019

LETTING DATE:
DEC. 11, 2019

DANIEL BRIDGES, PE
PROJECT ENGINEER

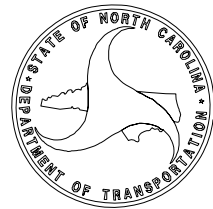
RONYELL THIGPEN, PE
PROJECT DESIGN ENGINEER

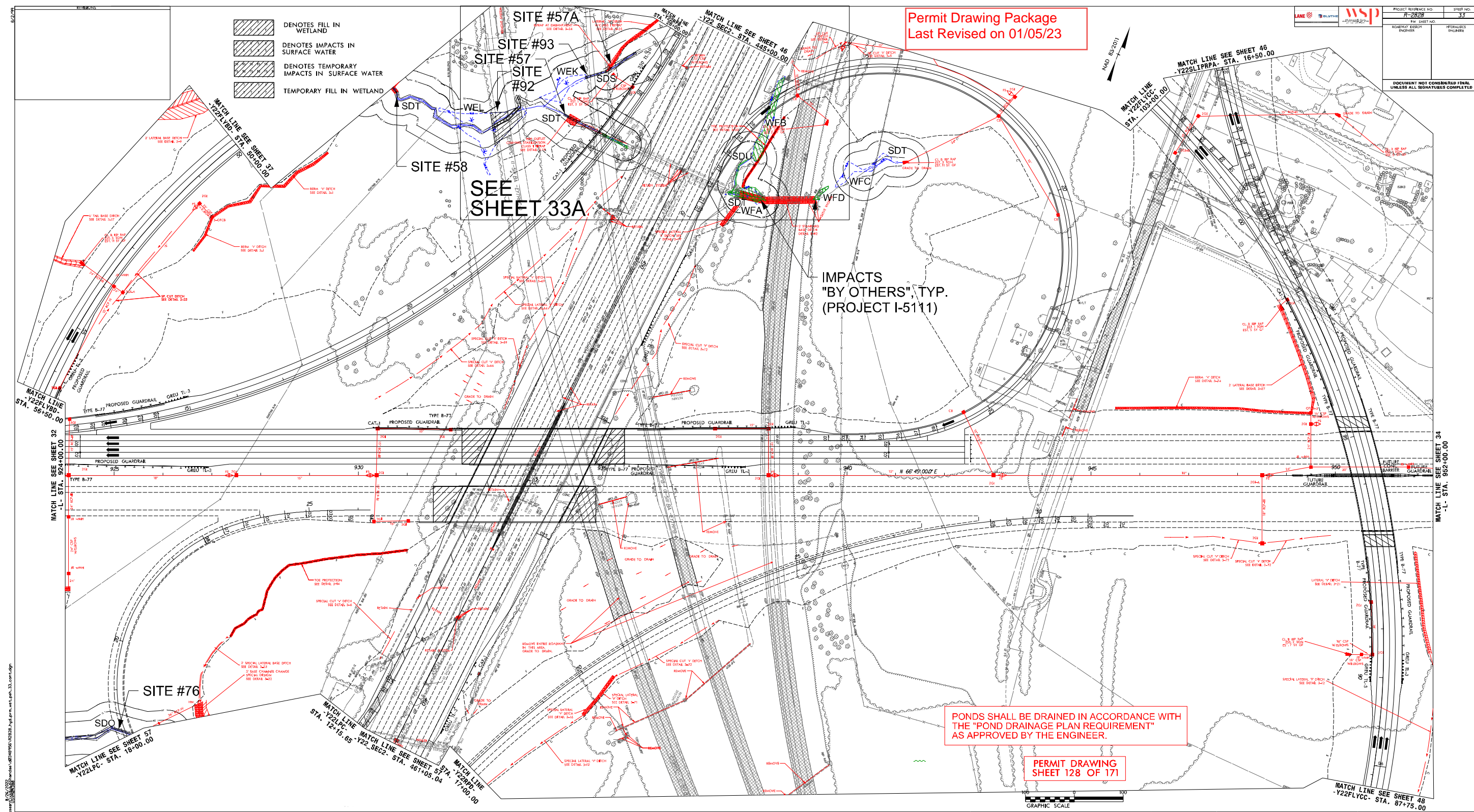
HYDRAULICS ENGINEER

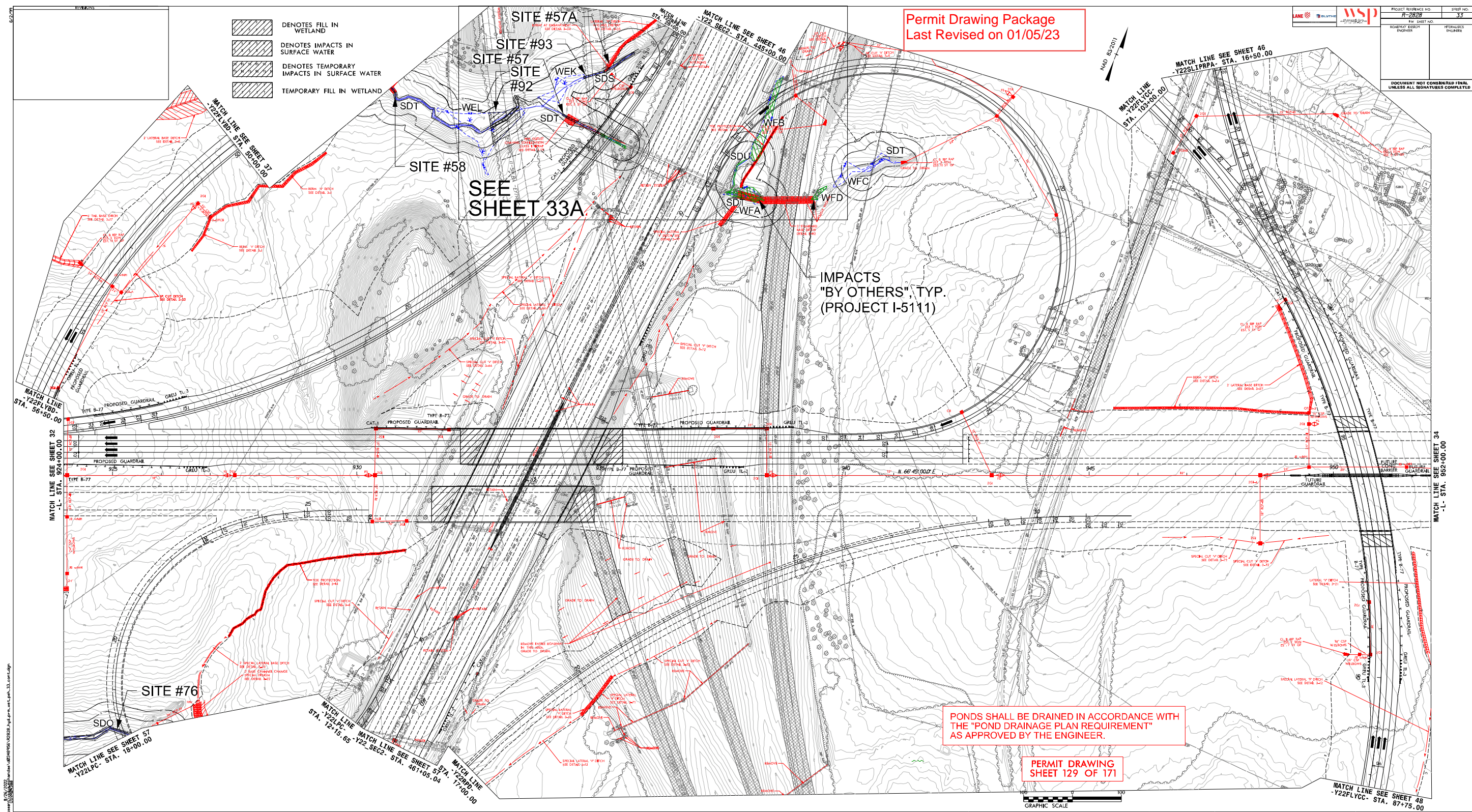
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ROADWAY DESIGN
ENGINEER

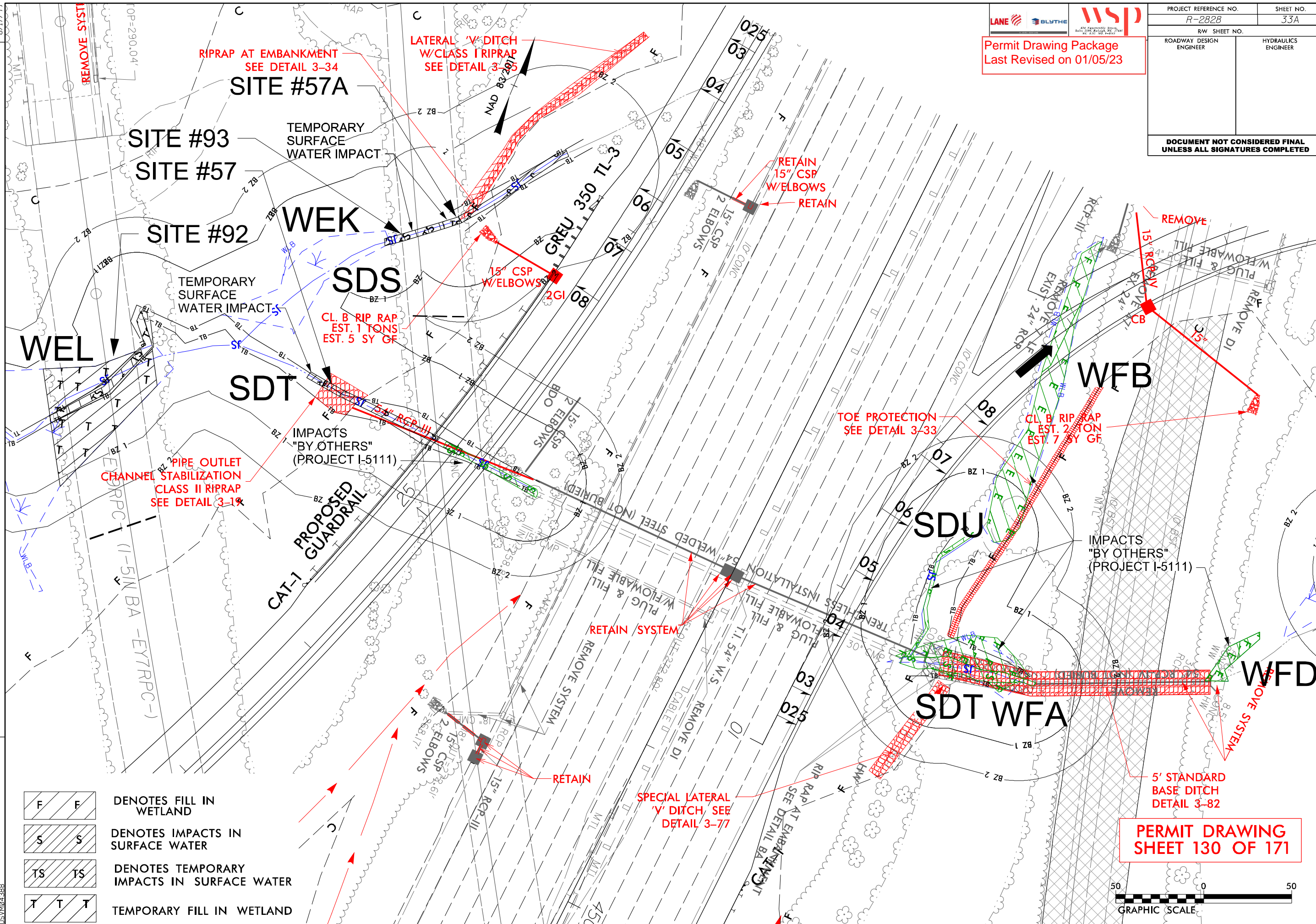
SIGNATURE: P.E.







PROJECT REFERENCE NO. <i>R-2828</i>		SHEET NO. <i>33A</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



PERMIT DRAWING
SHEET 130 OF 171



WETLAND AND SURFACE WATER IMPACTS SUMMARY												
			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1*	503+27 (RT)	RDWY Fill (WCD)	0.161									
2	505+24, 505+63 (LT)	9'x8' RCBC (SBP)						0.03	0.002	519.00	20.000	
2	505+24, 505+63 (LT)	9'x8' RCBC Pipe Stabil. (SBP)						0.01		95.00		
3	506+50 (RT)	42" RCP(WCE(1),WCE(2),SBR)	0.546			0.007		0.00	0.000	90.00	10.000	
3	506+50 (RT)	42" RCP Pipe Stabilization (SBR)						0.00		35.00		
4	508+50 (LT)- 511+70 (RT)	Drain Pond (PM)						1.57				
5**	508+60-515+40 (RT)	RDWY Fill (WCF) / Stream (SBR)	0.033					0.03		462.00		
6	512+15 (LT)	RDWY Fill (WCH) / Stream (SBU)	0.018		0.009	0.035		0.02	0.004	173.00	33.000	
7	515+32 (LT) - 520+00 (LT)	RDWY Fill (WCI) / Stream (SBS)	0.673		0.067	0.054		0.00		27.00		
8	529+75 - 531+00 (RT)	Roadway Fill (WCJ)	0.118			0.010						
9	545+63 - 548+40	Roadway Fill (WCL)	0.220									
10	548+68 (LT)-549+40 (RT)	6'x8' RCBC (SBY, WCM)				0.003		0.05	0.002	485.00	18.000	
10	548+68 (LT)-549+40 (RT)	Culvert Stabilization (SBY)						0.01		77.00		
10	548+68 (LT)-549+40 (RT)	Bank Stabilization (SBY)						0.00		14.00		
11	557+67 (RT)-559+60 (LT)	9'x8' RCBC (WCQ, SBX)	0.077			0.043		0.08	0.004	484.00	22.000	
11	557+67 (RT)-559+60 (LT)	9'x8' RCBC Culvert Stabil. (SBX)						0.01		70.00		
11	557+67 (RT)-559+60 (LT)	Bank Stabilization (SBX)						0.00		7.00		
12	558+00 (RT)	Roadway Fill (WCR)	0.055									
13	Ramp Quad C (-Y17-)	Drain Pond (PN)						1.04				
13	Ramp Quad C (-Y17-)	Roadway Fill (WCV)	0.020			0.005						
13**	Ramp Quad C (-Y17-)	Roadway Fill (WCW)	0.043									
13A	Ramp Quad A (-Y17-)	Drain Pond (PP)						1.01				
13A	Ramp Quad A (-Y17-)	Roadway Fill WCZ(2)	0.400	0.001								
SHEET 1 SUBTOTALS***:			2.36	0.00	0.08	0.16	0.00	3.88	0.01	2538	103	0

NOTES:

*Represents an isolated wetland impact (also non-riparian)

**Represents any non-riparian wetland impact

***Rounded totals are sum of actual impacts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/04/2020
WAKE & JOHNSTON
TIP NO. R-2828
WBS NO. 37673.1.TA2

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)
14	609+07 (LT)-610+38 (RT)	Roadway Fill (WCZ(1))	1.284			0.271						
14	609+07 (LT)-610+38 (RT)	10'x8' RCBC (SCC)						0.02	0.001	322.00	10.000	
14	609+07 (LT)-610+38 (RT)	Culvert Stabilization (SCC)						0.01		78.00		
14	609+07 (LT)-610+38 (RT)	10'x8' RCBC (SCK)						0.02	0.001	257.00	10.000	
14	609+07 (LT)-610+38 (RT)	Culvert Stabilization (SCK)						0.00		26.00		
15	616+50 (RT)	Drain Pond PQ, WCZ(2)						0.35				
15A	616+50 (RT)	Energy Dissipator (WCZ(2)	0.000			0.002						
16	618+00 (RT)	Drain Pond (PR)						1.01				
17	622+30 - 622+54 (RT)	Roadway Fill (WCZ(1))	0.014			0.005						
18	653+75 - 655 + 50 (LT)	Roadway Fill (WDB)	0.356			0.037						
18A	-Y18A- 15+00 - 17+50	Roadway Fill (WDD)	0.196			0.096						
18B	-Y18A- 19+50	18" RCP (SCF)						0.01	0.001	47.00	10.000	
18B	-Y18A- 19+50	18" RCP Pipe Stabil. (SCF)						0.01		17.00		
19	BRIDGE	Bank Stabilization (SCG)						0.00	0.003	10.00	17.000	
19A	BRIDGE	Roadway Fill (WDB)	0.033			0.020	0.853					
20	662+00 - 671+00	Roadway Fill (WDB)	2.000			0.117						
21	689+00 - 691+00 (LT)	Roadway Fill (WDF)	0.186		0.018	0.049						
22	690+00 - 691+75 (RT)	Drain Pond (PU)						0.87				
23	692+20 - 703+00	Roadway Fill (WDG(1))	2.754		0.375	0.261						
24	699+00 - 700+00 (LT)	Drain Pond (PW)						0.12				
25	703+00 - 705+40	Drain Pond (PV)						0.93				
26	697+00 -709+00	Roadway Fill (SCL)						0.06	0.001	1047.00	10.000	
26	697+00 -709+00	Culvert Stabilization (SCL)						0.00		30.00		
SHEET 2 SUBTOTALS***:			6.823	0.000	0.394	0.858	0.853	3.404	0.007	1834.000	57.000	0.000

NOTES:

*Represents an isolated wetland impact (also non-riparian)

** Represents an isolated wetland impact

***Rounded totals are sum of actual impacts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/04/2020
WAKE & JOHNSTON
TIP NO.R-2828
WBS NO. 37673.1.TA2

WETLAND AND SURFACE WATER IMPACTS SUMMARY												
			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
26A	707+50	Roadway Fill (SCM)						0.01	0.002	266.00	35.000	
26A	707+50	Culvert Stabilization (SCM)						0.00		65.00		
27	705+75 - 714+00	Roadway Fill (WDH)	2.443		0.030	0.236						
28	711+00 - 714+00 (LT)	Roadway Fill (SCN)						0.01	0.001	156.00	10.000	
29	726+50 - 728+00 (RT)	Drain Pond (PY)						1.40				
30	728+00 - 734+50 (RT)	Channel Change (SCQ)						0.06		673.00		
31	736+00	Roadway Fill (WDJ, SCQ)	0.375			0.092		0.03	0.007	130.00	58.000	
32	736+70 (LT) - 738+00 (RT)	2 @ 8'x9' RCBC (SCP)						0.07	0.016	379.00	92.000	
32	736+70 (LT) - 738+00 (RT)	Culvert Stabilization (SCP)						0.01		44.00		
32	736+70 (LT) - 738+00 (RT)	Bank Stabilization (SCP)						0.00		29.00		
33	759+00 (RT) - 759+82 (LT)	Roadway Fill (WDM)	0.392			0.030						
34	767+65 (RT)	Roadway Fill (WDN)				0.001						
35	782+00 (LT)	9'x8' RCBC (SCT)						0.05	0.004	441.00	37.000	
35	782+00 (LT)	Culvert Stabilization (SCT)						0.01		47.00		
35	782+00 (LT)	Bank Stabilization (SCT)						0.00		18.00		
36	782+00 - 787+20	Roadway Fill (WDO)	0.707		0.002	0.060						
37	785+90 (RT) - 787+70 (LT)	48" RCP (SCV)						0.03	0.003	394.00	20.000	
37	785+90 (RT) - 787+70 (LT)	Pipe Stabilization (SCV)						0.00		37.00		
38	788+00 (LT)	Roadway Fill (WDP)				0.006						
39	812+00 - 813+00 (LT)	Roadway Fill (WDS)	0.080									
40	812+90 - 813+37 (LT)	Channel Change (SDB)						0.01		54.00		
40	813+50 (LT)	Channel Change (SDC)						0.01		93.00		
40A*	-Y21- 40+00 (LT)	Roadway Fill (WDR)	0.091									
40B	-Y21- 44+40 (RT)	Roadway Fill (SCZ)						0.00	0.001	52.00	13.000	
SHEET 3 SUBTOTALS***:			4.09	0.00	0.03	0.43	0.00	1.70	0.03	2878	265	0

NOTES:

*Represents an isolated wetland impact (also non-riparian)

**Represents any non-riparian wetland impact

***Rounded totals are sum of actual impacts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/04/2020
WAKE & JOHNSTON
TIP NO.R-2828
WBS NO. 37673.1.TA2

WETLAND AND SURFACE WATER IMPACTS SUMMARY												
			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
41	813+50 (LT) - 829+50 (RT)	Channel Change (SCY)						0.21	0.046	1453.00	187.000	
41	-Y21- 44+50 (RT)	18" CSP (SCY)						0.00		58.00		
41	-Y21- 44+50 (RT)	Pipe Stabilization (SCY)						0.00		21.00		
41	829+50 (LT) - 834+00 (RT)	Bank Stabilization (SCY)						0.08		283.00		
42	BRIDGE 832+50 (RT)	Work Trestle (WDU)					0.024					
44	BRIDGE	Bridge****	0.019		0.015		0.536		0.049		238.000	
44	BRIDGE	Bank Stabilization						0.01		44.00		
45	841+78 - 843+00 (LT)	Roadway Fill (WDV)	0.048			0.031						
47	856+50 - 861+50	Roadway Fill (WDV)	0.366			0.051						
48	861+40 - 866+30	Work Trestle (WDV)	0.019			0.006	0.650					
49	867+50 - 868+50	Work Trestle (WDY)	0.002				0.170					
50	876+00	14'X8' RCBC (SDJ)						0.03	0.003	318.00	46.000	
50	876+00	Culvert Stabilization (SDJ)						0.00		42.00		
50	876+00	Bank Stabilization (SDJ)						0.00		48.00		
50A	875+50 - 877+00	Roadway Fill (WDZ)	0.564			0.088						
51	890+00	42" RCP (SDK)						0.00	0.001	32.00	10.000	
51	890+00	Pipe Stabilization (SDK)						0.00		21.00		
51A	890+00	Roadway Fill (WEA)	0.290									
52	895+00	60" RCP (SDL)						0.05	0.002	588.00	20.000	
52	895+00	Pipe Stabilization (SDL)						0.00		39.00		
53	900+50 (LT) - 906+50 (RT)	42" RCP (SDM)						0.05	0.001	948.00	20.000	
53	900+50 (LT) - 906+50 (RT)	Pipe Stabilization (SDM)						0.00		47.00		
54	911+00 (LT) - 913+75 (RT)	Roadway Fill (WEC)	1.879			0.097						
SHEET 4 SUBTOTALS*:			3.19	0.00	0.02	0.27	1.38	0.45	0.10	3942	521	0

NOTES:
*Represents an isolated wetland impact (also non-riparian)
**Represents any non-riparian wetland impact
***Rounded totals are sum of actual impacts
****Impacts are rounded to the nearest hundreds

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)
55	914+00 (RT)-918+50 (LT)	2@ 9'x9' RCBC (SDW)						0.12	< 0.01	834	10	
55	914+00 (RT)-918+50 (LT)	Culvert Stabilization (SDW)						< 0.01		18		
55	914+00 (RT)-918+50 (LT)	Bank Stabilization (SDW)						< 0.01		4		
56	Y22SLIPRPB 38+50 (LT)	Channel Change (SDV)						0.02	< 0.01	518	10	
57	-Y22RPB- 25+42 (LT)	54" RCP (SDT)						0.01	< 0.01	113	10	
57	-Y22RPB- 25+42 (LT)	Pipe Stabilization (SDT)						< 0.01		22		
57A	-Y22RPB- 26+50 (LT)	Channel Change (SDS)						< 0.01	< 0.01	72	10	
58	Y22FLYBD 46+50-47+75	42" RCP (SDT)						0.01	< 0.01	196	20	
58	Y22FLYBD 46+50-47+75	Pipe Stabilization (SDT)						< 0.01		47		
58A	Y22FLYCC 123+00-127+00	54" RCP (SDT)						0.05	< 0.01	485	20	
58A	Y22FLYCC 123+00-127+00	Pipe Stabilization (SDT)						< 0.01		57		
59	Y22FLYCC 119+00 (RT)	15" CSP (SDX)						< 0.01		17	15	
59	Y22FLYCC 119+00 (RT)	Pipe Stabilization (SDX)						< 0.01	< 0.01	75		
59A	Y22FLYCC 119+00 (RT)	Roadway Fill (WEJ)	< 0.01			< 0.01						
70	-Y17- 28+50	24" Pipe Stabilization SCB(1)						< 0.01	< 0.01	20	10	
72	REMOVED	Non-Jurisdictional Pond (PAB)										
73	Y22FLYBD 34+70 (RT)	30" RCP Extension (SDR)						< 0.01	< 0.01	10	10	
73	Y22FLYBD 34+70 (RT)	Pipe Stabilization (SDR)						< 0.01		57		
75	Y22FLYCC 34+00-41+00	Bridge (WEC, SDV)	0.03			0.02	1.56		0.01		254	
76	Y22FLYCC 143+00 (RT)	42" RCP (WEC, SDO)	< 0.01			< 0.01		0.08	< 0.01	1101	10	
77	Y22FLYCC 71+00 (615' LT)	Roadway Fill (WEY)	0.06									
78	REMOVED	60" RCP Pipe Removal (SET)										
79	Y22FLYBD 83+00 (LT)	54" RCP (SET)						0.04	< 0.01	563	20	
79	Y22FLYBD 83+00 (LT)	Pipe Stabilization (SET)						< 0.01		44		
SHEET 5 SUBTOTALS***:			0.09			0.03	1.56	0.36	0.02	4253	399	0

NOTES:

*Represents an isolated wetland impact (also non-riparian)

**Represents any non-riparian wetland impact

***Rounded totals are sum of actual impacts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/04/2020
WAKE & JOHNSTON
TIP NO.R-2828
WBS NO. 37673.1.TA2

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)
80	-Y22FLYBD- 83+50 (RT)	Roadway Fill (WEV)	0.03									
81	-Y22RPDE- 29+50 (RT)	Roadway Fill (WEU)	0.04									
82	-Y22FLYBD- 113+30 (RT)	HSB Outlet SEH, (WFN(2))				0.05			< 0.01		10	
82	-Y22FLYBD- 113+30 (RT)	12" Pipe Stabil. (SEH)						< 0.01		15		
82A	-Y22SEC2- 382+00 - 386+00 (LT)	Channel Change (SEM)						0.04	< 0.01	422	20	
83	-Y22SEC2- 396+50 (LT)	Channel Change (SEK, WFF)				< 0.01		< 0.01	< 0.01	28	13	
84	-Y22SEC2- 405+00 (LT)	60" CMP & 72" WSP (SEL)							< 0.01		10	
84	-Y22SEC2- 405+00 (LT)	Pipe Stabilizatoin (SEL)						< 0.01		37		
85	-Y22SEC2- 416+00 (LT)	30" RCP Pipe Extension (SEV)						< 0.01	< 0.01	59	10	
85	-Y22SEC2- 416+00 (LT)	Pipe Stabilizatoin (SEV)						< 0.01		19		
87	-Y22SEC2- 474+20 (LT)	42" Pipe (SES)							< 0.01		10	
87	-Y22SEC2- 474+20 (LT)	Pipe Stabilization (SES)						< 0.01		10		
88	-Y22SEC2 (LT) - 80+00 (LT)	48" RCP (SES)						0.02	< 0.01	244	20	
88	-Y22SEC2 (LT) - 80+00 (LT)	Pipe Stabilizatoin (SES)						< 0.01		30		
91	Y22FLYCC 121+30/121+90 (RT)	Haul Road (SDQ)							0.01		66	
92	Y22RPB 23+65/24+85 (LT)	Ex. Piers & Bridge Demolition (WEL, SDS)		0.05					< 0.01		92	
93	Y22RPB 26+27 (LT)	Ex. Piers & Bridge Demolition (WEK, SDS)		< 0.01					< 0.01		35	
	SHEET 1 SUBTOTALS		2.36	< 0.01	0.08	0.16		3.88	0.01	2538	103	
	SHEET 2 SUBTOTALS		6.82		0.39	0.86	0.85	3.40	< 0.01	1834	57	
	SHEET 3 SUBTOTALS		4.09		0.03	0.43		1.70	0.03	2878	265	
	SHEET 4 SUBTOTALS		3.19		0.02	0.27	1.38	0.45	0.10	3942	521	
	SHEET 5 SUBTOTALS		0.09			0.03	1.56	0.36	0.02	4253	399	
TOTALS***:			16.62	0.05	0.52	1.79	3.79	9.88	0.21	16309	1631	0

NOTES:

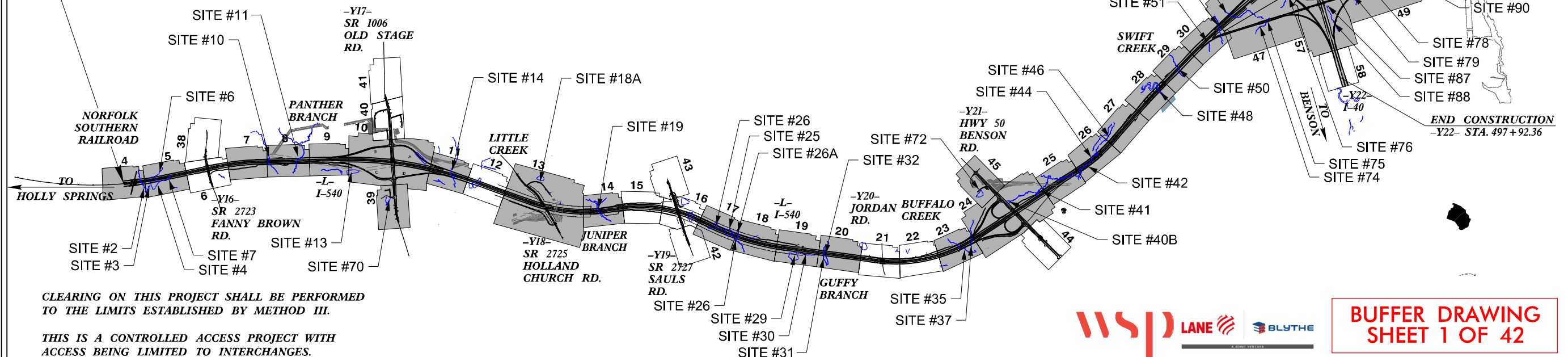
*Represents an isolated wetland impact (also non-riparian)

**Represents any non-riparian wetland impact

***Rounded totals are sum of actual impacts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/04/2020
WAKE & JOHNSTON
TIP NO.R-2828
WBS NO. 37673.1.TA2

CONTRACT: C204197



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2828	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
35516.3.GV1	NHP-0540(043)	DESIGN-BUILD	
35516.2.3	NHP-0540(043)	R/W	
35516.2.TA1	NHP-0540(043)	R/W	

Permit Drawing Package
Last Revised on 01/05/23

END TIP PROJECT R-2828
END CONSTRUCTION
-L-STA. 968 + 50.00

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

WAKE & JOHNSTON COUNTY

**TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM
EAST OF US 401 TO EAST OF I-40
DESIGN-BUILD AS SPECIFIED IN THE SCOPE
OF WORK CONTAINED IN THE REQUEST FOR
PROPOSALS**

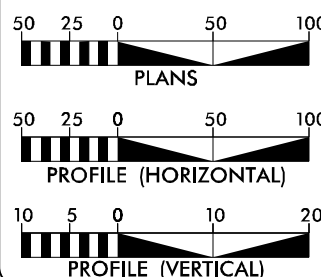
BUFFER IMPACTS PACKAGE

PACKAGE R-2828
DATE: JANUARY 05, 2023

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



DESIGN DATA

ADT 2018 = NA
ADT 2040 = 53,400
DHV = 12 %
D = 65 %
T = 11 % *
V = 75 MPH
*(TTST 4 + DUAL 7)

FUNCTIONAL CLASS:
FREEWAY

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT R-2828	=	8.055 Miles
LENGTH OF STRUCTURE PROJECT R-2828	=	0.562 Miles
TOTAL LENGTH OF TIP PROJECT R-2828	=	8.617 Miles

NCDOT CONTACT:

DESIGN BUILD PROJECT ENGINEER -
TRANSPORTATION PROGRAM MANAGEMENT UNIT

Prepared in the Office of



FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RIGHT OF WAY DATE:
SEPT. 09, 2019

LETTING DATE:
DEC. 11, 2019

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. E-0165

DANIEL BRIDGES, PE
PROJECT ENGINEER

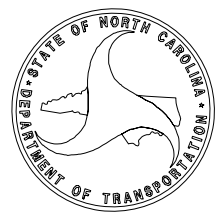
RONYELL THIGPEN, PE
PROJECT DESIGN ENGINEER

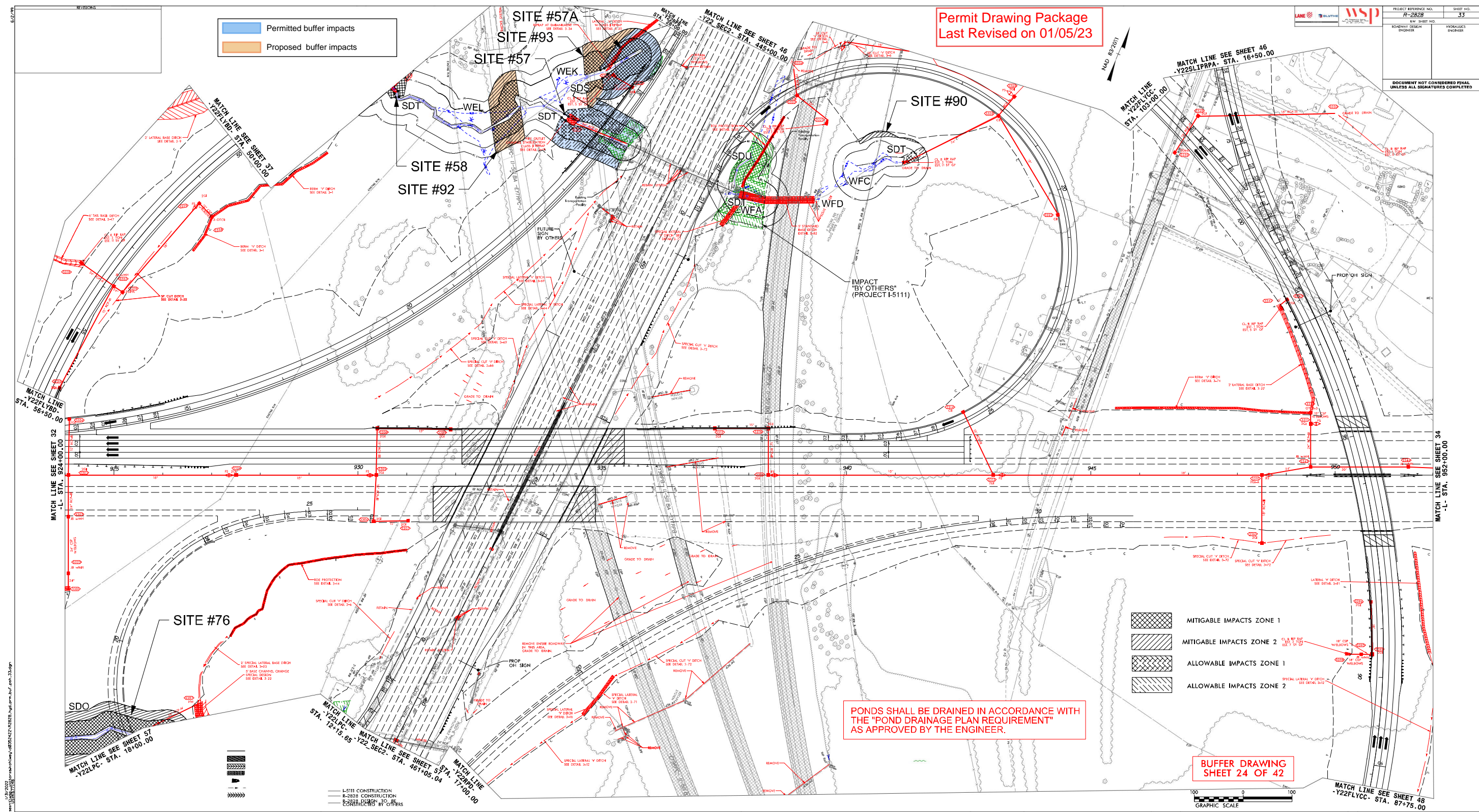
HYDRAULICS ENGINEER

SIGNATURE: _____ *P.E.*

**ROADWAY DESIGN
ENGINEER**

SIGNATURE: _____ *P.E.*





RIPARIAN BUFFER IMPACTS SUMMARY

Permit Drawing Package
Last Revised on 02/08/21

			IMPACTS									BUFFER REPLACEMENT	
Site No.	Station (From/To)	Structure Size / Type	TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)
2	504+97/506+71	9'x 8' RCBC (SBP)	x						35356	21738	57094		
3	507+31/508+60	42" RCP (SBR)	x						7141	3053	10194		
4	508+63/512+01	Drain Pond (PM)	x						35178	17273	52451		
6	510+58/513+01	Roadfill and ditch (SBU)	x						12287	9439	21726		
7	512+00/515+95	Roadfill (SBR)	x						28472	20582	49054		
7	516+00	Roadfill (SBS)	x			13	1188	1201					
10	547+53/548+95	6'x8' RCBC (SBY)	x						31339	19181	50520		
11	557+20/560+26	9'x8' RCBC (SBX)	x						32579	20144	52723		
13	Y17RPC 17+84/22+90	Drain Pond PN	x						31217	16189	47406		
14	608+59/609+98	10'x8' RCBC (SBX)	x						25640	15608	41248		
18A	636+21/637+82	Roadfill			x				130	3197	3327		
19	659+00/660+60	Bridge (SCG)		x		13347	9046	22393					
19	659+68/660+37 (LT)	Drainage Ditch	x						1018	765	1783		
25	702+59/705+63	Drain Pond (PV)	x						21884	12478	34362		
26	696+93/702+59	Roadfill (SCL)	x						36364	21292	57656		
26	705+63/707+50	Roadfill Ditch (SCL)	x						24121	11956	36077		
26A	707+50/708+33	10'x8' RCBC (SCM)	x						19525	11354	30879		
29	724+43/728+35	Drain Pond (PY)	x						29652	9461	39113		
30	728+35/734+79	Roadfill and Ditch (SCQ)	x						41465	25923	67388		
31	736+09/737+12	Roadfill (SCQ)	x						12230	5453	17683		
32	737+12/737+67	2@ 9'x8' RCBC (SCP)	x						29672	13897	43569		
35	781+52/783+35	9'x8' RCBC (SCT)	x						31457	19477	50934		
37	785+28/788+61	48" RCP (SCV)	x						27178	17260	44438		
TOTALS*:						13360	10234	23594	513905	295720	809625	0	0

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/04/2020
WAKE & JOHNSTON
TIP NO. R-2828
WBS NO. 37673.1.TA2
SHEET 37 OF 42

RIPARIAN BUFFER IMPACTS SUMMARY

Permit Drawing Package
Last Revised on 02/08/21

			IMPACTS									BUFFER REPLACEMENT	
Site No.	Station (From/To)	Structure Size / Type	TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft²)	ZONE 2 (ft²)	TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)	TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)
40B	803+66/804+26	Roadfill Ditch (SCY)			x				5079	2317	7396		
41	803+66/804+26	18" CSP (SCY)			x				5095	1729	6824		
41	812+81/827+66	Roadfill Ditch (SCY)			x				79241	46967	126208		
41	831+01/831+19	New Channel Tie In	x						1027	911	1938		
41	828+33/838+25	Bridge (SCY)		x		65438	37217	102655					
46	844+25/844+76	36" RCP			x					270	270		
48	866+00/868+47	Bridge (SDG)		x		14740	12098	26838					
50	875+30/877+40	14'X8' RCBC (SDJ)	x						25494	15386	40880		
51	888+93/889+94	42" RCP (SDK)	x			6023	5029	11052					
52	894+45/895+98	60" RCP (SDL)	x						36709	21474	58183		
53	900+35/907+05	42" RCP (SDM)	x						59490	36433	95923		
55	914+63/919+22	2@ 9'x9' RCBC (SDW)	x						50950	33292	84242		
56	913+58/917+59	Roadway Fill (SDV)	x						31949	22268	54217		
57	Y22RPB 24+86/26+00	54" RCP Pipe Extension (SDT)	x			6816	4456	11272					
57A	Y22RPB 25+94/27+66	Roadway Fill (SDS)			x				6090	4471	10561		
58	Y22FLYBD 48+12/46+10	42" pipe (SDT)	x						14654	8100	22754		
58A	Y22FLYCC 127+31/122+31	54" pipe (SDT)	x						32839	21340	54179		
59A	Y22FLYCC 116+13/117+87	Roadfill (SDQ)			x				3201	4149	7350		
70	Y17A 11+15/11+61	24" CSP (SCB1)	x						1931	589	2520		
72	Y21C 10+70/11+70	Roadfill			x				829	1377	2206		
73	Y22FLYBD 35+23/34+64	Roadfill	x			2357	1339	3696					
74	Y22FLYCC 33+58/34+58	Roadfill (SDV)			x				1566	2406	3972		
75	Y22FLYCC 36+14/38+48	Bridge		x		13991	9505	23496					
76	919+00/929+36	Roadfill (SDO)	x						64308	45001	109309		
TOTALS*:						109365	69644	179009	420452	268480	688932	0	0

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
02/24/2020
WAKE & JOHNSTON
TIP NO. R-2828
WBS NO. 37673.1.TA2
SHEET 38 OF 42

RIPARIAN BUFFER IMPACTS SUMMARY

Permit Drawing Package
Last Revised on 01/05/23

			IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
Site No.	Station (From/To)	Structure Size / Type	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft²)	ZONE 2 (ft²)	TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)	TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)
78	Y22FLYCC 75+50	60" RCP Pipe Removal (SET)	x			785	618	1403	213	969	1182		
79	Y22FLYBD 82+61/84+16	54" RCP (SET)	x						37554	25277	62831		
79A	Y22RPDE 26+30/28+76	Borrow Site Excavation			x				0	721	721		
82	Y22FLYBD 113+57/113+98	Widening HSB (SEH)	x			2133	1426	3559					
82A	Y22 382+23/385+82	New Channel Tie In			x				13251	880	14131		
83	Y22 395+85/397+04	54" RCP (SEK)	x			1507	377	1884					
84	Y22 403+56/405+39	60" CMP & 72" WSP (SEL)	x			2355	565	2920					
87	Y22_SEC2 473+60/474+66	36" RCP (SES)	x			2764	1099	3863	0	397	397		
88	Y22RPDE 19+72/17+57	42" RCP (SES)	x						16259	8963	25222		
88A	Y22RPDE 13+30	Borrow Site Excavation			x				0	1075	1075		
90	Y22LPA 14+70/16+90	Roadway Fill (SDT)			x	551	405	956		857	857		
91	Y22FLYCC 121+30/121+90	Haul Road (SDQ)	x			4000	2577	6577					
92	Y22RPB 23+54/25+28	Ex. Piers & Bridge Demolition		x		4979	3158	8137					
93	Y22RPB 26+27	Ex. Piers & Bridge Demolition		x		2495	3071	5566					
	SHEET 1 SUBTOTALS					13360	10234	23594	513905	295720	809625	0	0
	SHEET 2 SUBTOTALS					109365	69644	179009	420452	268480	688932	0	0
TOTALS*:						144294	93174	237468	1001634	603339	1604973	0	0

NOTES:

Site 92: There will be 4979 sq ft (BZ1) and 3158 sq ft (BZ2) of temporary buffer impacts associated with the eastbound flyover removal
Site 93: There will be 2495 sq ft (BZ1) and 3071 sq ft (BZ2) of temporary buffer impacts associated with the westbound flyover removal

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/04/2020
WAKE & JOHNSTON
TIP NO. R-2828
WBS NO. 37673.1.TA2
SHEET 39 OF 42

WETLANDS IN BUFFER IMPACTS SUMMARY

Permit Drawing Package
Last Revised on 02/24/20

			WETLANDS IN BUFFERS	
SITE NO.	STATION (FROM/TO)	DESCRIPTION	ZONE 1 (ft²)	ZONE 2 (ft²)
2	L 506+46/507+16	9'x 8' RCBC (SBP)	1396	3691
3	L 507+48/508+52	42" RCP (SBR)	4171	2863
4	L 508+26/511+89	Drain Pond PM	631	1726
6	L 511+56/512+37	Roadfill and ditch (SBU)	2384	283
7	L 515+57/515+94	Roadfill (SBR)	2008	2537
10	L 547+49/548+06	6'x8' RCBC (SBY)	650	681
11	L 558+64/559+60	9'x8' RCBC (SBX)	4324	2818
13	Y17RPC 17+84/22+90	Drain Pond PN	1729	159
14	L 608+20/611+17	10'x8' RCBC (SBX)	25393	12147
19	659+00/660+60	Bridge (SCG)	196	0
25	L 702+23/703+26	Drain Pond PV	3121	1106
26	696+93/702+59	Roadfill (SCL)	32328	15602
26	L 705+70/707+62	Roadfill Ditch (SCL)	13385	4752
26A	L 707+62/709+45	10'x8' RCBC (SCM)	19287	9113
31	L 736+24/736+62	Roadfill (SCQ)	5534	1171
32	L 735+32/736+61	2@ 9'x8' RCBC (SCP)	693	3339
35	L 782+01/784+39	9'x8' RCBC (SCT)	12459	2798
37	L 785+57/786+74	48" RCP (SCV)	10913	1451
TOTAL:			140602	66237

NOTE: Only Mitigable Buffers Impacts in Wetlands are calculated.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/04/2020
WAKE & JOHNSTON
TIP NO. R-2828
WBS NO. 37673.1.TA2
SHEET 40 OF 42

Revised 2018 Feb

WETLANDS IN BUFFER IMPACTS SUMMARY

Permit Drawing Package
Last Revised on 02/24/20

			WETLANDS IN BUFFERS	
SITE NO.	STATION (FROM/TO)	Description	ZONE 1 (ft²)	ZONE 2 (ft²)
41	812+81/827+66	Roadfill Ditch (SCY)	34	386
41	828+33/838+25	Bridge (SCY)	0	0
48	866+00/868+47	Bridge (SDG)	0	0
50	875+63/876+59	14'x8' RCBC (SDJ)	15100	5744
51	888+93/889+94	42" RCP (SDK)	0	0
55	914+64/916+53	2@ 9'x9' RCBC (SDW)	10220	5534
56	914+16/914+83	Roadway Fill (SDV)	275	634
59A	Y22FLYCC 116+13/117+87	Roadfill (SDQ)	313	0
74	Y22FLYCC 33+58/34+58	Roadfill (SDV)	232	0
75	Y22FLYCC 36+14/38+48	Bridge	0	0
76	919+00/929+36	Roadfill (SDO)	142	0
TOTAL:			26316	12298

NOTE: Only Mitigable Buffers Impacts in Wetlands are calculated.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
02/24/2020
WAKE & JOHNSTON
TIP NO. R-2828
WBS NO. 37673.1.TA2

SHEET 41 OF 42

WETLANDS IN BUFFER IMPACTS SUMMARY

Permit Drawing Package
Last Revised on 01/05/23

			WETLANDS IN BUFFERS	
SITE NO.	STATION (FROM/TO)	Description	ZONE 1 (ft²)	ZONE 2 (ft²)
79	Y22FLYBD 82+61/84+16	54" RCP (SET)	2469	0
82	Y22FLYBD 113+57/113+98	Widening HSB (SEH)	0	0
92	Y22RPB 23+54/25+28	Ex. Piers & Bridge Demolition	1873	23
93	Y22RPB 26+27	Ex. Piers & Bridge Demolition	2	
TOTAL:			4344	23

NOTE: Only Mitigable Buffers Impacts in Wetlands are calculated.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/04/2020
WAKE & JOHNSTON
TIP NO. R-2828
WBS NO. 37673.1.TA2



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DEMOLITION PLAN FOR STRUCTURE 087

Project: C204197 (Wake County, NC)

Location: Bridge 87 (Loop B Bridge on US-70 over I-40 EB/WB)

This plan is based on available plan information and site visits at the existing structure. Modifications of the plan may be needed during the demolition operation to ensure the safety of the demolition personnel, the traveling public and to complete the demolition project in a timely manner.

Step 1/Shifts 1 (Night): Beginning at end bent 1 and working west the existing deck of span A over the slope and westbound I-40 will be demolished with excavators and hydraulic hammers (*see notes 1 and 2*).

Traffic Control Required: Detour of I-40WB

Step 2/Shift 2 (Night): Beginning at the break line, demolition of span A deck will continue with excavators and hydraulic hammers.

Traffic Control Required: Detour of I-40WB

Step 3/Shift 3 (Night): Beginning at the break line, demolition of span A deck will continue with excavators and hydraulic hammers.

Traffic Control Required: Detour of I-40WB

Step 4/Shift 4 (Night): Beginning at the break line, demolition of span B deck will begin.

Traffic Control Required: Detour of I-40EB

Step 5/Shift 5 (Night): Beginning at the break line, demolition of span B deck will continue.

Traffic Control Required: Detour of I-40EB

Step 6/Shift 6 (Night): Beginning at the break line, demolition of span C deck will be performed.

Traffic Control Required: Outside lane closure(s) of I-40EB

Step 7/Shift 7 (Night or Day): Beginning at the break line, demolition of span C deck will continue.

Traffic Control Required: None – working away from traffic

Step 8/Shift 8 (Night or Day): Beginning at the break line, demolition of span C deck will be completed.

Traffic Control Required: None – working away from traffic.

Step 9/Shift 9 (Night or Day): Beginning at the break line, demolition of span D will begin.

Traffic Control Required: None – working away from traffic.

Step 10/Shift 10 (Night or Day): Beginning at the break line, demolition of span D will be completed.

Traffic Control Required: None – working away from traffic.

Step 11/Shift 11 (Night): Girders of span A will be removed with cranes.

Traffic Control Required: Detour of I-40WB, inside lane closures of I-40EB

C204197 (Wake County) Bridge 87 Demolition Plan

Step 12/Shift 12 (Night): Remaining girders of span A will be removed with crane(s).

Traffic Control Required: Detour of I-40WB, inside lane closures of I-40EB

Step 13/Shift 13 (Night): Girders of span B will be removed with cranes.

Traffic Control Required: Detour of I-40EB, inside lane closure of I-40WB.

Step 14/Shift 14 (Night): Remaining girders of span B will be removed with crane.

Traffic Control Required: Detour of I-40EB, inside lane closure of I-40WB

Step 15/Shift 15 (Night): Interior bent 1, end bent 1 and slope protection will be demolished with excavators and hydraulic hammers.

Traffic Control Required: Detour of I-40WB, inside lane closure of I-40EB

Step 16/Shift 16 (Night): Interior bent 1, end bent 1 and slope protection demolition will be completed.

Traffic Control Required: Detour of I-40WB, inside lane closure of I-40EB

Step 17/Shift 17 (Day): Beams of span C will be removed with cranes

Traffic Control Required: None – working away from traffic

Step 18/Shift 18 (Day): Beams of span C will be removed with cranes

Traffic Control Required: None – working away from traffic

Step 19/Shift 19 (Day): Beams of span D will be removed with cranes

Traffic Control Required: None – working away from traffic

Step 20/Shift 20 (Day): Interior bents 2 and 3 will be demolished with excavators and hydraulic hammers.

Traffic Control Required: None – working away from traffic

Step 21/Shift 21 (Day): Interior bents 2 and 3 will be demolished with excavators and hydraulic hammers.

Traffic Control Required: None – working away from traffic

Steps 22-30/Shifts 22-30 (Day): End bent 2 and slope protection will be demolished with excavators and hydraulic hammers. Debris will be processed (rebar removed) and transported off-site for recycling.

Beam removal summary (spans A and B): During the removal of the existing beams two cranes will be utilized to remove the beams. Beam 4 will be rigged to two cranes and the diaphragms cut. The beam will be cut over the cap leaving the bolts attached to the cap. The beam will be lifted and removed. Cranes will be rigged to beam 3 and diaphragms will be cut, and the beam will be separated over the cap leaving the bolts and the remaining beam. On night two, beam 2 will be rigged and two additional cranes will be rigged to beam 1 to maintain stability. Diaphragms between beam 1 and 2 will be cut and the beams will be cut above the cap leaving the bolts intact, both beams will be removed. During beam removal on spans C and D two cranes will be utilized and the cutting pattern will be repeated. To expedite the project, excavators may be utilized to remove the beams on spans C and D away from traffic.

C204197 (Wake County) Bridge 87 Demolition Plan

Concrete debris will be removed to one or more of these locations for recycling:

1. Wise Recycling at 440 S. Tech Park Lane, Clayton, NC
2. ST Wooten Concrete Plant at Uzzle Industrial Drive, Clayton, NC
3. Godwin Recycling at 1409 S. Clinton Ave., Dunn, NC

Rebar and steel debris will be removed to:

1. Wise Recycling at 440 S. Tech Park Lane, Clayton NC

Note 1: Prior to demolition over an active roadway, roadway protection (screenings/sand) will be installed.

Note 2: Prior to demolition of the deck a saw cut line will be made to provide a clean break/stopping line for each night of demolition.

Note 3: The plan/sequence is our guide, multiple steps may be performed concurrently provided the steps can be performed safely for all workers and the traveling public.

Note 4: Bent stems/piles will be demolished two feet below finished grade or as needed for new construction.

Note 5: In the event of inclement weather, NCDOT and/or the contractor shall make a determination of installing traffic control.

Note 6: Starting location/direction of demolition may be reversed to accommodate the contractors needs to continue work on the project.

Note 7: The traffic control requirements supplied are a guide. Smith-Rowe and the contractor will coordinate the exact needs of traffic control to ensure the safety of the traveling public and all workers.

Note 8: The sequence of Steps/Shifts does not imply continuous work. Our schedule will consist of a 5-day week with an option for a 6th day if required to recover lost time due to weather or other issues.

Note 9: Prior to demolition of the deck, girder locations will be identified and marked so operators are aware of the top flange locations. Supervisor(s) will monitor the operation to ensure minimal or no damage occurs to the beams.

Note 10: After each shift, girders will be inspected and cleaned by hand and with blowers to remove any loose debris prior to opening the roadway to traffic.

Note 11: Concrete slurry from the sawing operations shall be collected and disposed of at one of the area S.T. Wooten Concrete Plants for recycling.

Note 12: Prior to demolition over any jurisdictional feature, all applicable requirements of the permit will be adhered to in order to protect these jurisdictional features.

Submitted by Jonathan Randall, Smith-Rowe, LLC

Revised 11/9/22 to add Note 12



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DEMOLITION PLAN FOR STRUCTURE 088

Project: C204197 (Wake County, NC)

Location: Bridge 88 (Flyover East US-70 Bypass over I-40 EB/WB)

This plan is based on available plan information and site visits at the existing structure. Modifications of the plan may be needed during the demolition operation to ensure the safety of the demolition personnel, the traveling public and to complete the demolition project in a timely manner.

Step 1/Shifts 1 (Night): Beginning at end bent 1 and working west the existing deck of span A over the slope and westbound I-40 will be demolished with excavators and hydraulic hammers (*see notes 1 and 2*).

Traffic Control Required: Detour of I-40WB

Step 2/Shift 2 (Night): Beginning at the break line, demolition of span A deck will continue with excavators and hydraulic hammers.

Traffic Control Required: Detour of I-40WB

Step 3/Shift 3 (Night): Beginning at the break line, demolition of span A deck will continue with excavators and hydraulic hammers.

Traffic Control Required: Detour of I-40WB

Step 4/Shift 4 (Night): Beginning at the break line, demolition of span B deck will begin.

Traffic Control Required: Detour of I-40EB

Step 5/Shift 5 (Night): Beginning at the break line, demolition of span B deck will continue.

Traffic Control Required: Detour of I-40EB

Step 6/Shift 6 (Night): Beginning at the break line, demolition of span C deck will be performed.

Traffic Control Required: Outside lane closure(s) of I-40EB

Step 7/Shift 7 (Night or Day): Beginning at the break line, demolition of span C deck will continue.

Traffic Control Required: None – working away from traffic

Step 8/Shift 8 (Night or Day): Beginning at the break line, demolition of span C deck will be completed.

Traffic Control Required: None – working away from traffic.

Step 9/Shift 9 (Night or Day): Beginning at the break line, demolition of span D will begin.

Traffic Control Required: None – working away from traffic.

Step 10/Shift 10 (Night or Day): Beginning at the break line, demolition of span D will be completed.

Traffic Control Required: None – working away from traffic.

Step 11/Shift 11 (Night or Day): Beginning at the break line, demolition of span E will begin.

Traffic Control Required: None – working away from traffic.

Step 12/Shift 12 (Night or Day): Beginning at the break line, demolition of span E will be completed.

Traffic Control Required: None – working away from traffic.

C204197 (Wake County) Bridge 88 Demolition Plan

Step 13/Shift 13 (Night): Girders of span A will be removed with cranes.

Traffic Control Required: Detour of I-40WB, inside lane closures of I-40EB

Step 14/Shift 14 (Night): Remaining girders of span A will be removed with crane(s).

Traffic Control Required: Detour of I-40WB, inside lane closures of I-40EB

Step 15/Shift 15 (Night): Girders of span B will be removed with cranes.

Traffic Control Required: Detour of I-40EB, inside lane closure of I-40WB.

Step 16/Shift 16 (Night): Remaining girders of span B will be removed with crane.

Traffic Control Required: Detour of I-40EB, inside lane closure of I-40WB

Step 17/Shift 17 (Night): Interior bent 1, end bent 1 and slope protection will be demolished with excavators and hydraulic hammers.

Traffic Control Required: Detour of I-40WB, inside lane closure of I-40EB

Step 18/Shift 18 (Night): Interior bent 1, end bent 1 and slope protection demolition will be completed.

Traffic Control Required: Detour of I-40WB, inside lane closure of I-40EB

Step 19/Shift 19 (Day): Beams of span C will be removed with cranes

Traffic Control Required: None – working away from traffic

Step 20/Shift 20 (Day): Beams of span C will be removed with cranes

Traffic Control Required: None – working away from traffic

Step 21/Shift 21 (Day): Beams of span D will be removed with cranes

Traffic Control Required: None – working away from traffic

Step 22/Shift 22 (Day): Beams of span E will be removed with cranes

Traffic Control Required: None – working away from traffic

Step 23/Shift 23 (Day): Interior bents 2 and 3 will be demolished with excavators and hydraulic hammers.

Traffic Control Required: None – working away from traffic

Step 24/Shift 24 (Day): Interior bents 2 and 3 will be demolished with excavators and hydraulic hammers.

Traffic Control Required: None – working away from traffic

Steps 25-32/Shifts 25-32 (Day): End bent 2, interior bent 4 and slope protection will be demolished with excavators and hydraulic hammers. Debris will be processed (rebar removed) and transported off-site for recycling.

Beam removal summary (spans A and B): During the removal of the existing beams two cranes will be utilized to remove the beams. Beam 4 will be rigged to two cranes and the diaphragms cut. The beam will be cut over the cap leaving the bolts attached to the cap. The beam will be lifted and removed. Cranes will be rigged to beam 3 and diaphragms will be cut, and the beam will be separated over the cap leaving the bolts and the remaining beam. On night two, beam 2 will be rigged and two additional cranes will be rigged to beam 1 to maintain stability. Diaphragms between beam 1 and 2 will be cut and the beams will be cut above the cap leaving the bolts intact, both beams will be removed. During beam removal on spans C and D two cranes will be utilized and the cutting pattern will be repeated. To expedite the project, excavators may be utilized to remove the beams on spans C and D away from traffic.

C204197 (Wake County) Bridge 88 Demolition Plan

Concrete debris will be removed to one or more of these locations for recycling:

1. Wise Recycling at 440 S. Tech Park Lane, Clayton, NC
2. ST Wooten Concrete Plant at Uzzle Industrial Drive, Clayton, NC
3. Godwin Recycling at 1409 S. Clinton Ave., Dunn, NC

Rebar and steel debris will be removed to:

1. Wise Recycling at 440 S. Tech Park Lane, Clayton NC

Note 1: Prior to demolition over an active roadway, roadway protection (screenings/sand) will be installed.

Note 2: Prior to demolition of the deck a saw cut line will be made to provide a clean break/stopping line for each night of demolition.

Note 3: The plan/sequence is our guide, multiple steps may be performed concurrently provided the steps can be performed safely for all workers and the traveling public.

Note 4: Bent stems/piles will be demolished two feet below finished grade or as needed for new construction.

Note 5: In the event of inclement weather, NCDOT and/or the contractor shall make a determination of installing traffic control.

Note 6: Starting location/direction of demolition may be reversed to accommodate the contractors needs to continue work on the project.

Note 7: The traffic control requirements supplied are a guide. Smith-Rowe and the contractor will coordinate the exact needs of traffic control to ensure the safety of the traveling public and all workers.

Note 8: The sequence of Steps/Shifts does not imply continuous work. Our schedule will consist of a 5-day week with an option for a 6th day if required to recover lost time due to weather or other issues.

Note 9: Prior to demolition of the deck, girder locations will be identified and marked so operators are aware of the top flange locations. Supervisor(s) will monitor the operation to ensure minimal or no damage occurs to the beams.

Note 10: After each shift, girders will be inspected and cleaned by hand and with blowers to remove any loose debris prior to opening the roadway to traffic.

Note 11: Concrete slurry from the sawing operations shall be collected and disposed of at one of the area S.T. Wooten Concrete Plants for recycling.

Note 12: Prior to demolition over any jurisdictional features, all applicable requirements of the permit will be adhered to in order to protect these jurisdictional features.

Submitted by Jonathan Randall, Smith-Rowe, LLC

Revised 11/9/22 to add Note 12