



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

February 26, 2021

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 376731.TA2.

Reference: USACE Section 404 Authorization SAW-2009-02240, issued October 24, 2019, modified February 4, 2020, and corrected February 7, 2020, and modified April 30, 2020 and January 7, 2021.

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, and December 29, 2020.

Dear Sir:

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, and December 29, 2020 from the NC Division of Water Resources (NCDWR) and a revised Department of the Army authorization #SAW-2009-02240 on February 7, 2020, April 29, 2020, and January 7, 2021.

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

TELEPHONE: 919-707-2700
FAX: 919-715-5511
Customer Service: 1-877-3684968

Location:
1 SOUTH WILMINGTON STREET
RALEIGH NC, 27601

WEBSITE: NCDOT.GOV

This letter is a request to modification on four sites of the R-2828 section of the Complete 540 project. Sites 32, 48, 49, and a new site (Site 91) are being modified.

Permit Site 32:

This double box culvert near Jordan Road has been completed, however, before the wing wall on the inlet side could be finished, excessive rain events caused the stream banks at the inlet at the wing wall to washout. The washout has required the installation of Class II rip rap on the bank. This work has been approved by the USACE and DWR and has already occurred. The rip rap has been placed below the original high-water mark; however, it does not extend across the channel. The bank is at about a 2:1 slope now that it is completed. As this bank stabilization exceeds the limits of the approved permanent impact, a permit modification is requested.

- Permit Site 32 (Permit Drawing 74 and 75 of 171, Plan Sheet 20)
 - Additional rip rap bank stabilization:
 - Increase of 22 LF of bank stabilization impact.

Permit Sites 48 & 49:

Since the 4C meeting and receiving the final permit drawings, Lane-Blythe Joint Venture (LBJV) enlisted a trestle designer to fully design the trestle to include girder erection/sequencing, crane placement during girder erections and to improve overall safety of operations utilizing the trestle. The original trestle plan placed the trestle on the south side of the two bridges west of Swift Creek and transitioned to between the bridges east of Swift Creek (Attachment A). This bend in the trestle posed significant concerns regarding the safe delivery and erection of the girders for the proposed bridge.

The new design removes the bend with a straight haul road which results in a safer delivery and erection of the bridge girders, a depiction of which is provided in Attachment B. The new haul road design is provided in revised Plan Sheet 29, but there is no change in jurisdictional impacts. All girder deliveries will be along this straightened portion of the trestle. This proposed design improves safety related to the delivery of other related bridge materials, that include formwork and reinforcing steel and removes any turning movements for concrete deliveries. This proposed design also eliminates permitted disturbance between the bridges east of Swift Creek.

The proposed design provides the following benefits:

- The trestle crossing is more perpendicular to Swift Creek.
- This placement decreased the required clear span width of Swift Creek from 110 feet to 85 feet; thus, minimizing the potential of any issues related to the spanning of Swift Creek.
- The trestle fingers were designed with an increased distance from top of existing bank from the required minimum 10 feet to edge of the trestle pile to a minimum of 15 feet. This distance will be field verified prior to placement of the trestle pile and can be adjusted, if needed, to accommodate this requirement.

As previously committed, this trestle will not be used for the conveyance on any earthen material across Swift Creek. In addition, 10” x 10” timbers will be placed longitudinally on each edge of the trestle to act as a curb or stop which will further minimize the potential of material getting into Swift Creek and the adjacent Underhill Mitigation site.

The new trestle design will result in the following changes in permitted impacts:

- Permit Site 48 (Buffer Drawing 20 of 42, Plan Sheet 28)
 - Alteration of work trestle configuration:
 - Increase of 2,160 square feet (Sq. Ft.) of Zone 1 Buffer Impacts
 - Increase of 1,168 Sq. Ft. of Zone 2 Buffer Impacts
- Permit Site 48 (Permit Drawing 105 and 106 of 171, Plan Sheet 28)
 - Alteration of work trestle configuration:
 - Increase of 0.014 acre of Hand Clearing Impacts
- Permit Site 49 (Permit Drawing 105 and 106 of 171, Plan Sheet 28)
 - Alteration of work trestle configuration:
 - Increase of 0.06 acre of Hand Clearing Impacts

Permit Site 91:

During the design stage, a haul road was planned that traveled parallel to the project along Gentle Rain Drive, which is a little used dead-end road. The haul road then cuts over to the project area. This haul road is critical to the project. It is not only much safer by avoiding areas of high traffic volumes, but significantly decreases the haul route, thereby reducing emissions and expediting project construction. The original placement of the haul road considered jurisdictional features, but unbeknownst to the planner the mapping used to choose the route showed streams and associated riparian buffers, but not the complete wetland boundary of Wetland WED. The boundary for WED was not completely shown as it had been “clipped” to the original project area boundary. Thus, it continued just outside the project right-of-way. As a result, it was not until LBJV was performing due diligence for the haul road in January 2021 that it was realized the proposed haul road placement was through a wetland, as shown in Figure 1.

Three Oaks personnel investigated the area to determine a route that would avoid and minimize impacts to Wetland WED and other jurisdictional features. After the field investigation, it was determined that Wetland WED could be avoided but Stream SDQ, which runs between Gentle Rain Drive and the project, could not be completely avoided. However, a section of the stream was identified where there had been a crossing at some point in the past. Utilizing this crossing would minimize impacts as the vegetation here was noticeably younger, the stream was straighter, and the area had already been graded to a gentler slope. Based on this information, the haul road has been revised to cross at this area. The haul road width has been reduced to 40’ at the stream crossing and associated riparian buffers, which is the minimum needed to accommodate a single off-road scraper. This crossing will result in

- Permit Site 91 (Permit Drawing 132 and 133 of 171, Plan Sheet 37)
 - Temporary crossing of Stream SDQ due to haul road

- 66 linear feet (LF) of Temporary Stream Impacts
- Permit Site 91 (Buffer Drawing 25 of 42, Plan Sheet 37)
 - Temporary crossing of Stream SDQ due to haul road
 - Increase of 4,000 Sq. Ft. of Zone 1 Buffer Impacts
 - Increase of 2,577 Sq. Ft. of Zone 2 Buffer Impacts

The haul road will be in place for 15 months. Upon removal, the stream will be restored to pre-existing conditions and the riparian buffers revegetated. No mitigation is proposed for the temporary stream impacts and the riparian buffers impacts are an allowable activity.

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

Impact Type	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.	
Neuse River Basin (HUC 03020201)	4.80 / 19.49	0.07	0.25	8.32	n/a	16,820	1,702	2,065	1,182,975/ 719,806

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

Revised Table 19 has been modified to show the updated riparian buffer impacts and the amount that each total increased is noted in parenthesis below.

Revised Table 19. Riparian Buffer Impacts (sq ft)

Mitigation Requirement	Allowable with mitigation*	Allowable with mitigation**	Allowable [^]	Total Impacts [^]	Wetlands in Buffer ^{^^}	Impacts Requiring Mitigation
Zone 1 Impact	158,309 (0)	885,686 (0)	138,980 (6,160)	1,182,975 (6,160)	179,656 (0)	864,339 (0)
Zone 2 Impact	103,074 (0)	528,324 (0)	88,408 (3,745)	719,806 (3,745)	84,166 (0)	547,232 (0)

* Impacts other than Road Crossing. **Road Crossing, [^] Includes utility impacts, ^{^^} Allowable non-mitigable buffer impacts have been deducted from wetlands in buffers.

Compensatory Mitigation

As noted, none of the modifications require compensatory mitigation, so there are no changes to the previous tables.

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 37673.1.TA2 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/>

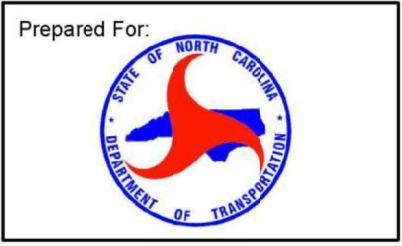
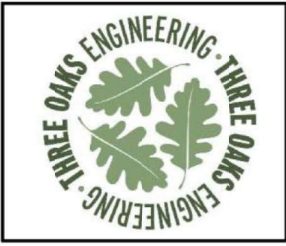
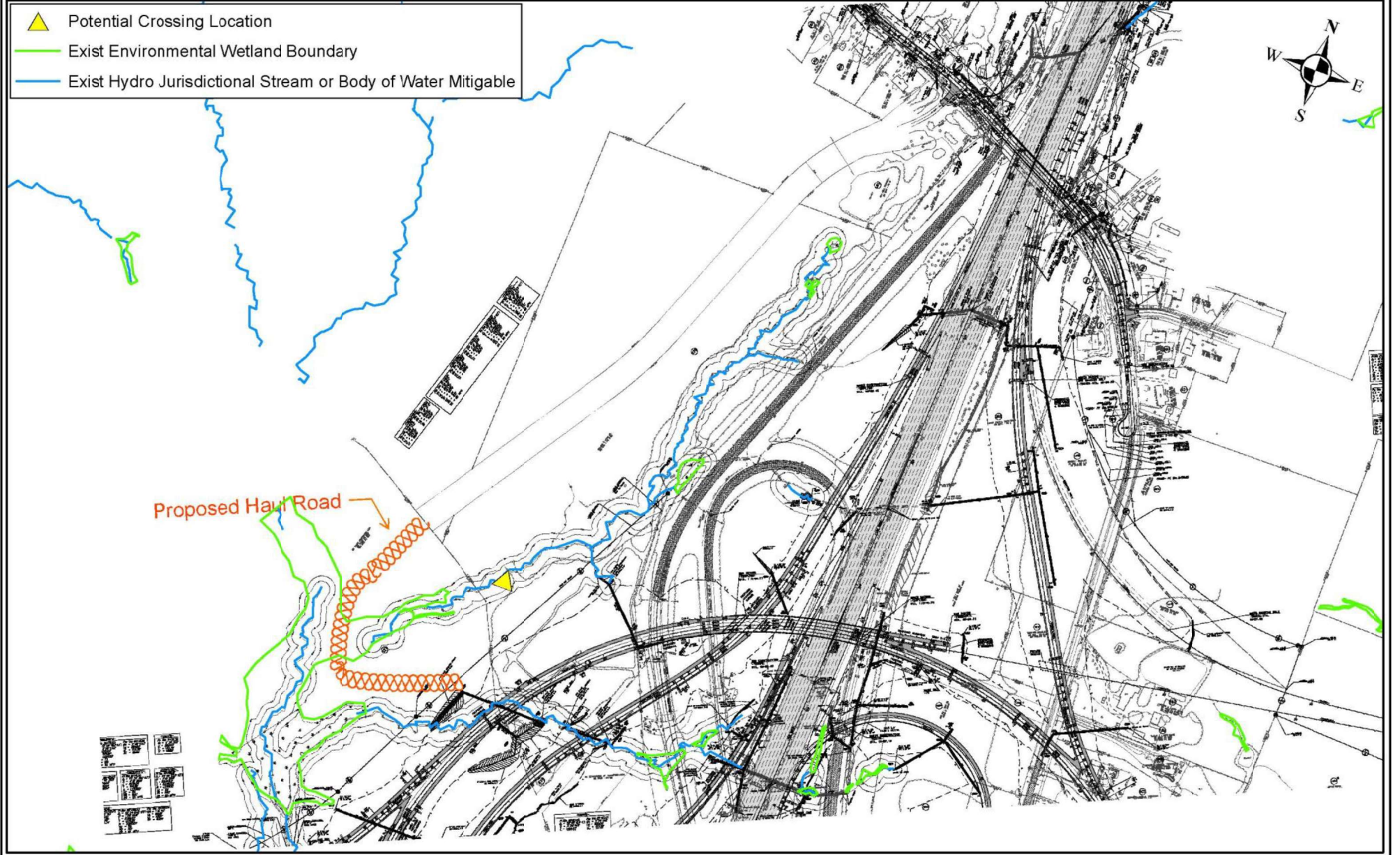
Thank you for your assistance with this project. If you have any questions or need additional information, please contact Deanna Riffey at driffey@ncdot.gov or 919-707-6151.

Sincerely,

DocuSigned by:
Rodger Rochelle
2CF80ADB9B414F0...

Rodger Rochelle, P.E.
North Carolina Turnpike Authority
Chief Engineer

cc: NCDOT Permit Application Standard Distribution List



**Complete 540
TIP R-2828**

Permit Modification #3
Proposed Haul Road

Wake & Johnston Counties, North Carolina

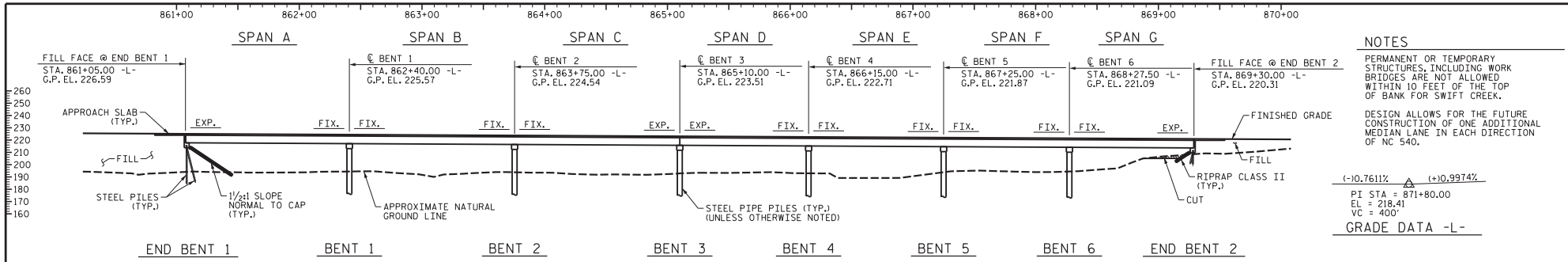
Date: January 2021

Scale: 0 150 300 Feet

Job No.: 18-105

Drawn By: NMSO
Checked By: MGW

Figure
1



NOTES

PERMANENT OR TEMPORARY STRUCTURES, INCLUDING WORK BRIDGES ARE NOT ALLOWED WITHIN 10 FEET OF THE TOP OF BANK FOR SWIFT CREEK.

DESIGN ALLOWS FOR THE FUTURE CONSTRUCTION OF ONE ADDITIONAL MEDIAN LANE IN EACH DIRECTION OF NC 540.

(-10.7611% (+10.9974%

PI STA = 871+80.00
EL = 218.41
VC = 400'

GRADE DATA -L-

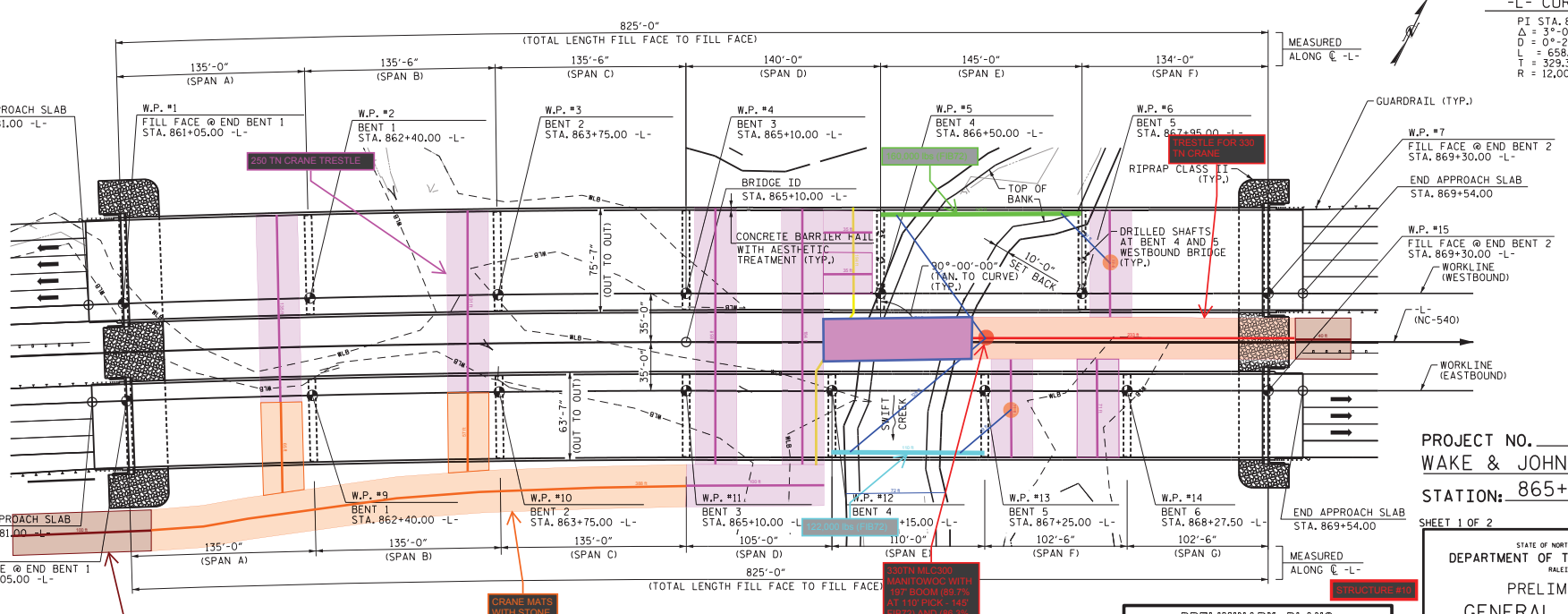
SECTION ALONG EASTBOUND WORK LINE

SECTION TAKEN AT RIGHT ANGLES TO END BENTS AND BENTS
EASTBOUND BRIDGE SHOWN, WESTBOUND BRIDGE SIMILAR

-L- CURVE DATA

PI STA. 861+96.33
Δ = 3°-08'-40.0" (RT)
D = 0°-28'-38.9"
L = 658.57'
T = 329.37'
R = 12,000.00'

10/8/2018 P:\Projects\102\pba\cc\comp\pba\81\Document\AR-2828 - NC 540\Structures\11\WSP - ATC & REVISIONS TO BASE\10\10\10_Technical\Proposals\US Drawings\101_001_R2828_SML_P10001.dgn



PLAN

PILES NOT SHOWN FOR CLARITY

**PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION**

PROJECT NO. R-2828
WAKE & JOHNSTON COUNTY
STATION: 865+10.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PRELIMINARY
GENERAL DRAWING
DUAL BRIDGES ON -L- (NC-540)
OVER SWIFT CREEK

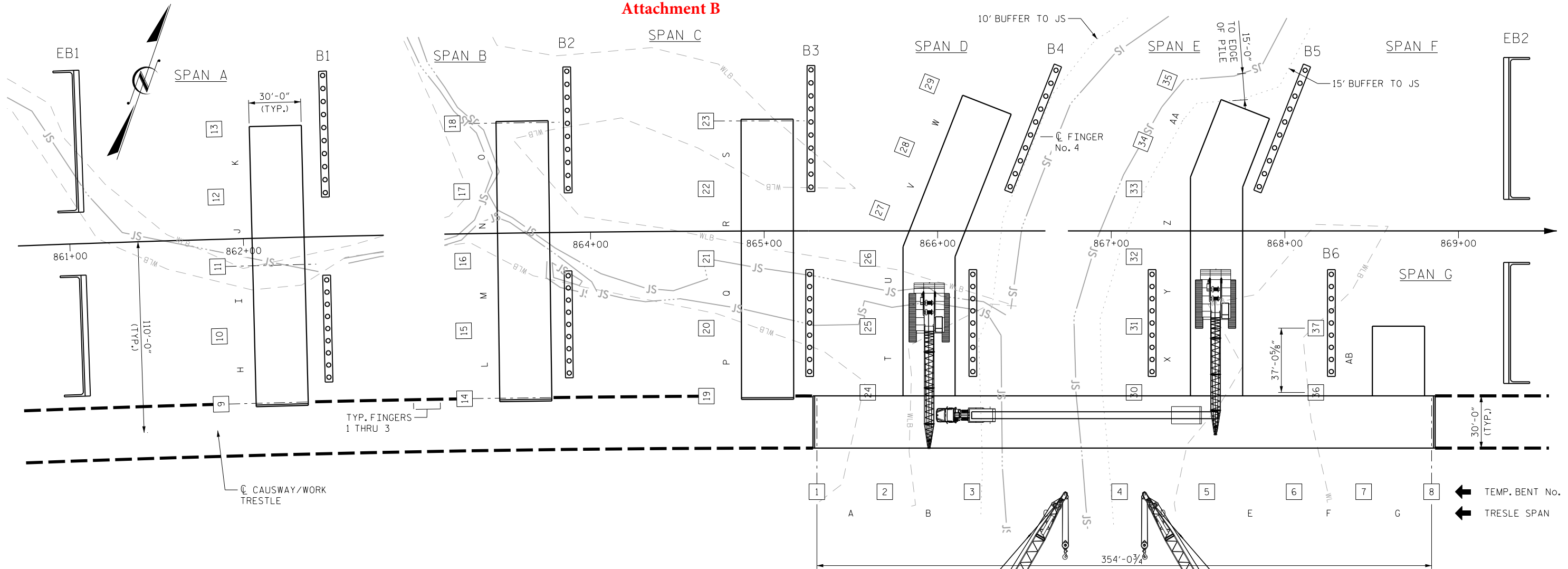


DESIGNED BY:	J. SHERMAN	DATE:	AUG 2018
DRAWN BY:	C. MAYHAY	DATE:	AUG 2018
CHECKED BY:	M. WAGNER	DATE:	AUG 2018
DESIGN ENGINEER OF RECORD:		DATE:	

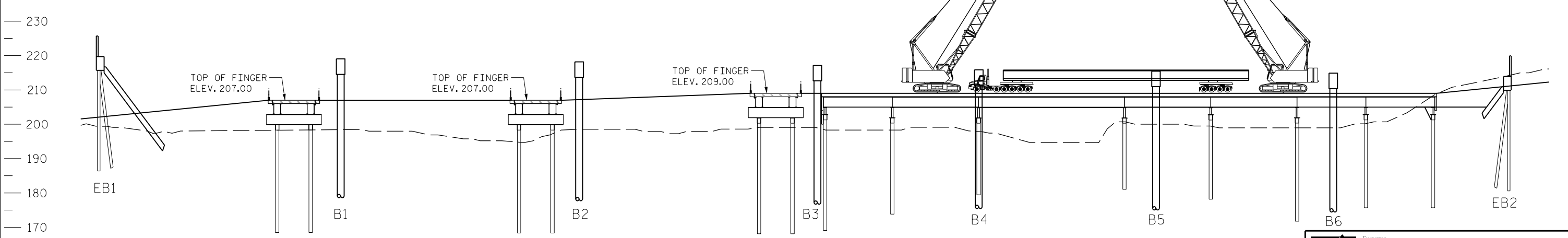
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: XX

Attachment B



PLAN



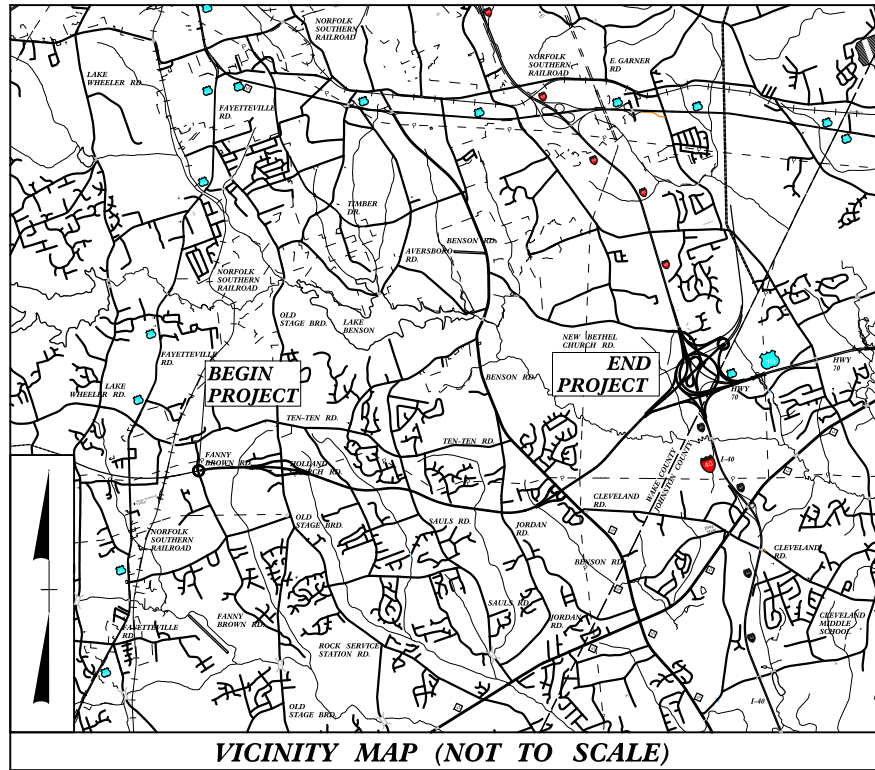
ELEVATION

<p>ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS</p> <p>ASSOCIATES OF NC www.kci.com</p>	<p>KCI ASSOCIATES OF NORTH CAROLINA, P.A. 9711 SOUTHERN PINE BLVD SUITE A CHARLOTTE, NC 28273 704-499-9452</p>
	<p>WORK TRESTLE STRUCTURE 10: DUAL BRIDGES ON -L- (NC-540) OVER SWIFT CREEK</p>
<p>WAKE AND JOHNSTON CO., NC NCDOT PROJECT NO. R-2828</p>	<p>KCI JOB #911906280 JOB REF. #C19-69.07</p>
<p>DES. BY : JMV</p>	<p>CKD. BY : AMC</p>
<p>DATE : 10/20</p>	<p>SCALE : NONE</p>
<p>SHEET NO. : 1 OF 11</p>	

11/10/2020 C:\Users\andrew.craig\OneDrive - KCI Technologies, Inc\Desktop\Structure 10 Work Trestle.dgn AMC

TIP PROJECT: R-2828

CONTRACT: C204197



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

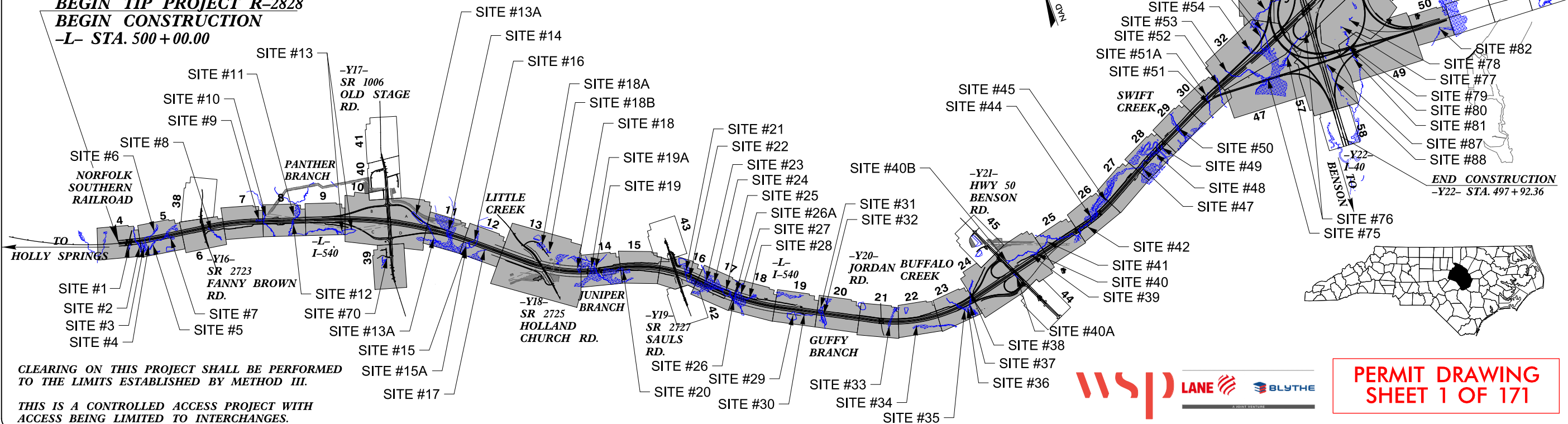
PACKAGE R-2828
DATE: FEBRUARY 16, 2021

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 02/16/21

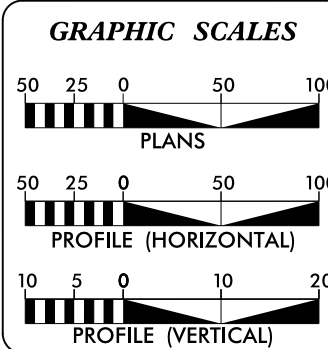
END TIP PROJECT R-2828
END CONSTRUCTION
-L- STA. 968 + 50.00

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.

PERMIT DRAWING SHEET 1 OF 171



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

WSP USA
431 FAYETTEVILLE STREET
RALEIGH, NC 27601
TEL: 1-919-836-4040
FAX: 1-919-836-0099
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

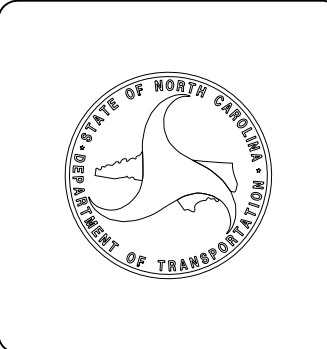
RONYELL THIGPEN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

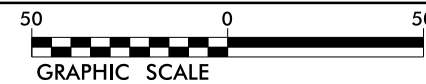
ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



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

INSET A

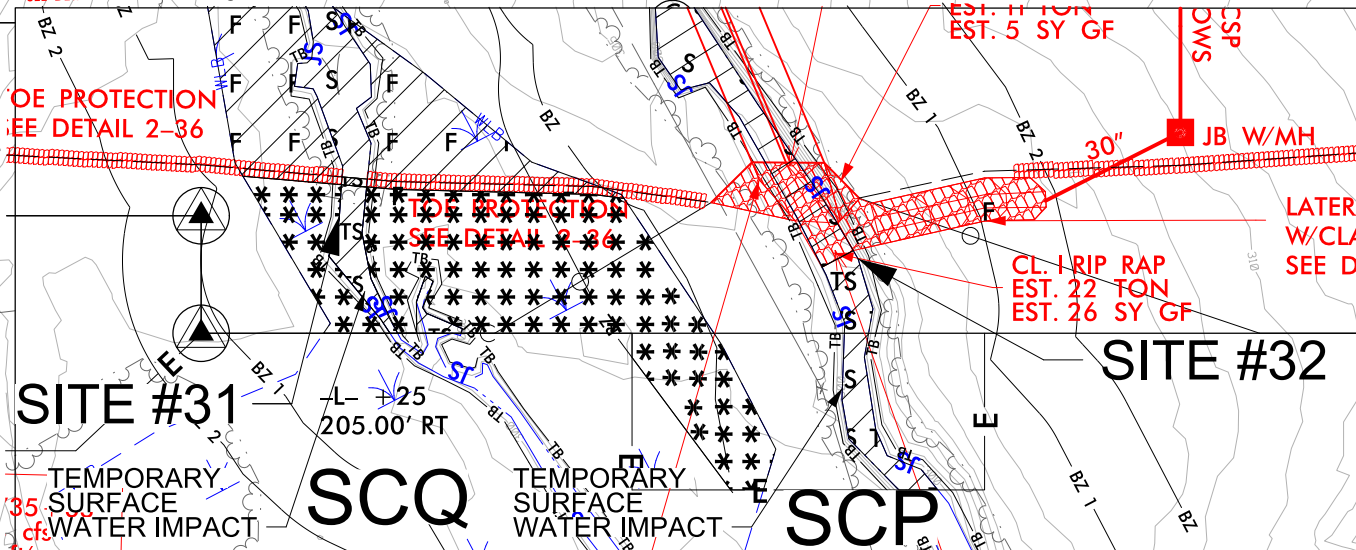
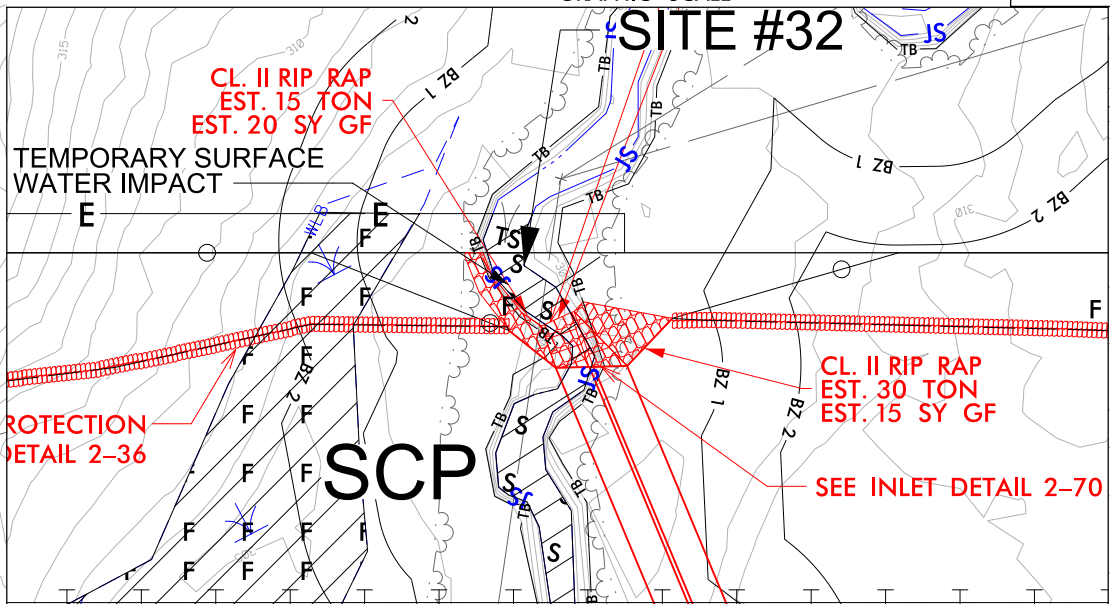
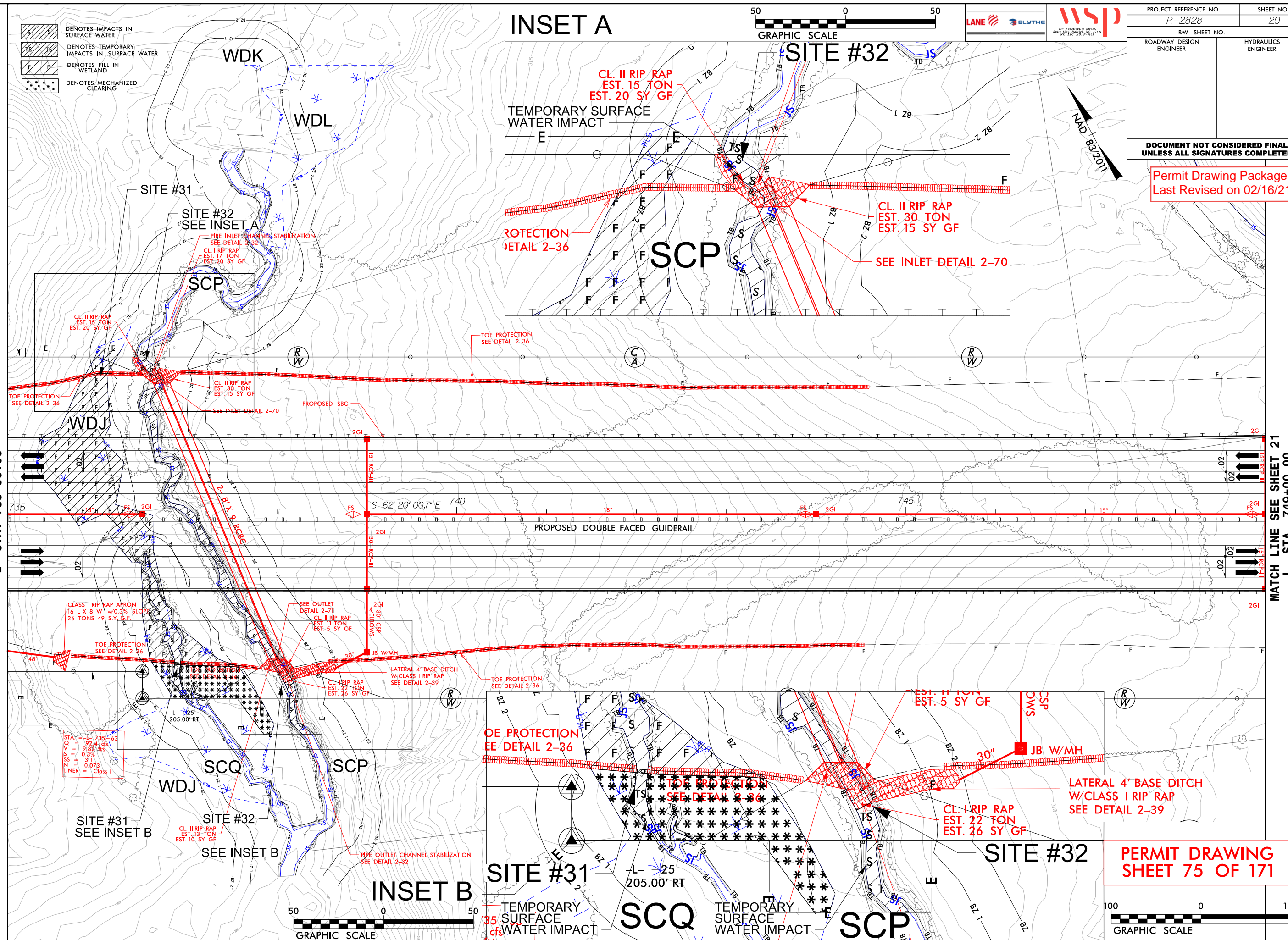


PROJECT REFERENCE NO. R-2828	SHEET NO. 20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

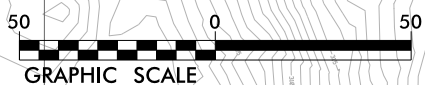
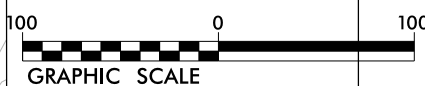
Permit Drawing Package
Last Revised on 02/16/21

MATCH LINE SEE SHEET 19
-L- STA. 735+00.00

MATCH LINE SEE SHEET 21
-L- STA. 749+00.00



PERMIT DRAWING
SHEET 75 OF 171

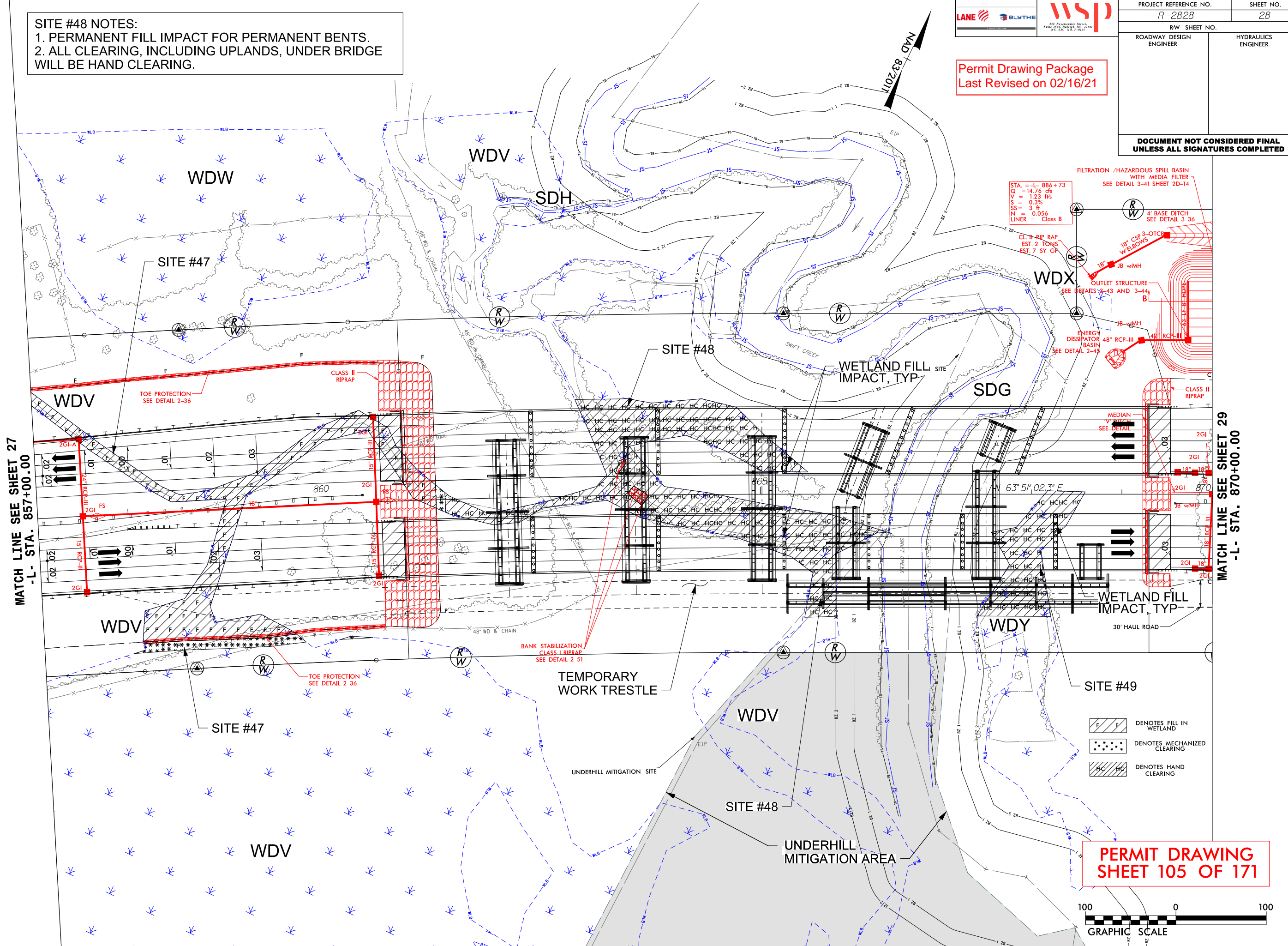


REVISIONS

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15/6/21 10:51:48

SITE #48 NOTES:
 1. PERMANENT FILL IMPACT FOR PERMANENT BENTS.
 2. ALL CLEARING, INCLUDING UPLANDS, UNDER BRIDGE WILL BE HAND CLEARING.

Permit Drawing Package
 Last Revised on 02/16/21



MATCH LINE SEE SHEET 27
 -L- STA. 857+00.00

MATCH LINE SEE SHEET 29
 -L- STA. 870+00.00

PERMIT DRAWING
 SHEET 105 OF 171

REVISIONS

2/15/2021
 C:\projects\wise\pb\project\wise\wsp...victoria\kohli\wsp...r2828\hyd_prm_wet_psh_28_cont.dgn
 JIS/K67/148

8/17/99



PROJECT REFERENCE NO. R-2828	SHEET NO. 28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SITE #48 NOTES:
 1. PERMANENT FILL IMPACT FOR PERMANENT BENTS.
 2. ALL CLEARING, INCLUDING UPLANDS, UNDER BRIDGE WILL BE HAND CLEARING.

Permit Drawing Package
 Last Revised on 02/16/21

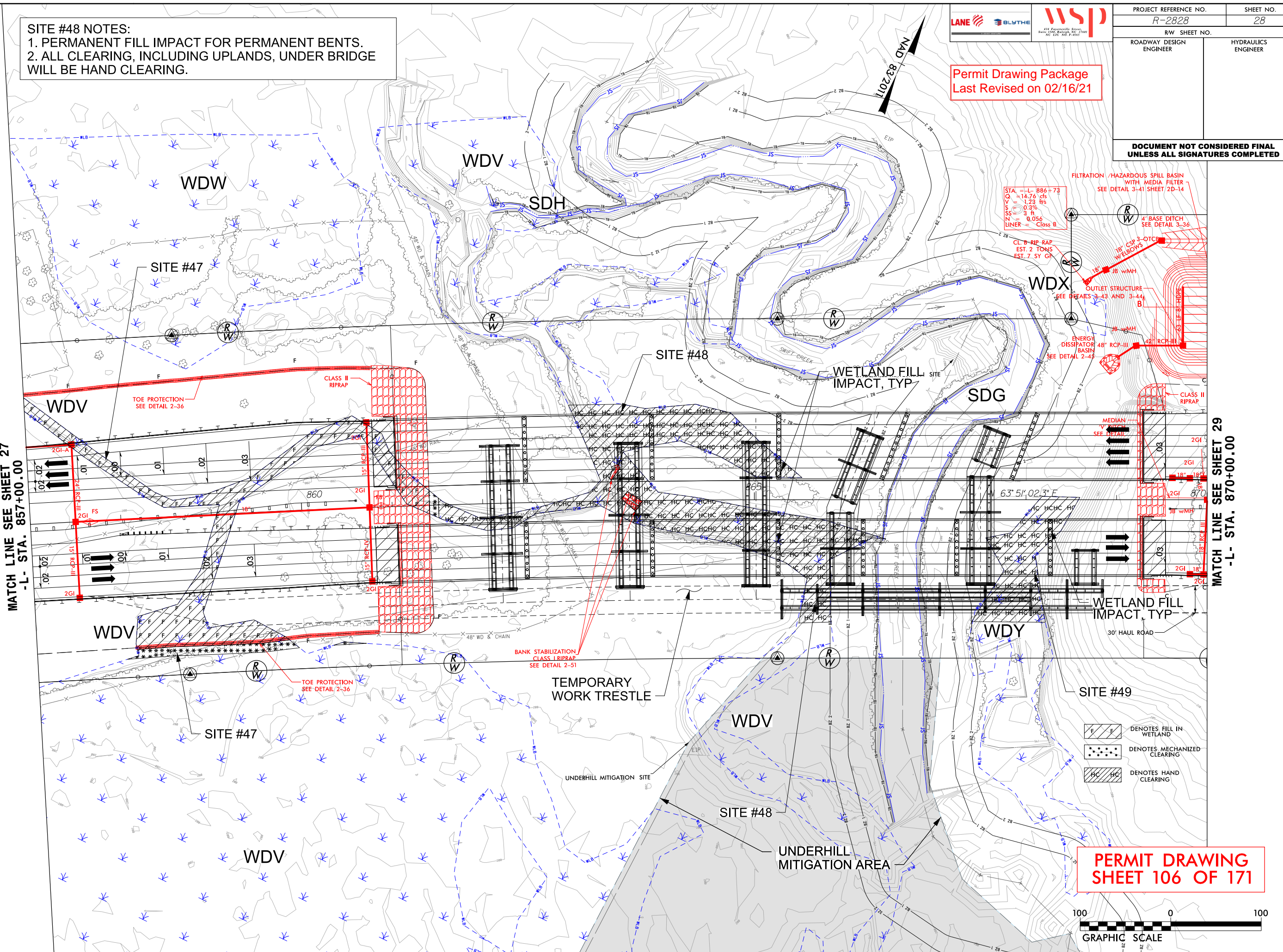
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REVISIONS

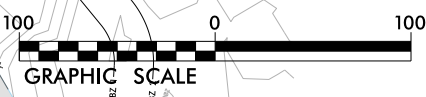
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MATCH LINE SEE SHEET 29
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2/15/2021
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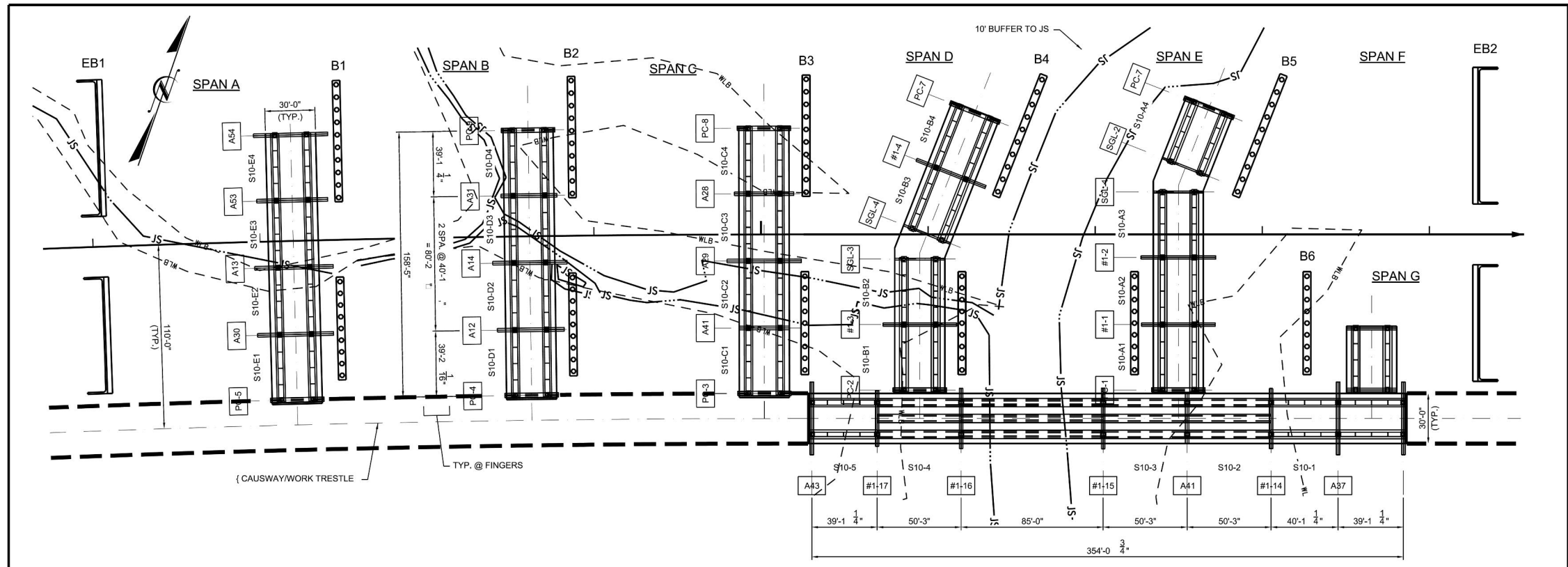


**PERMIT DRAWING
 SHEET 106 OF 171**

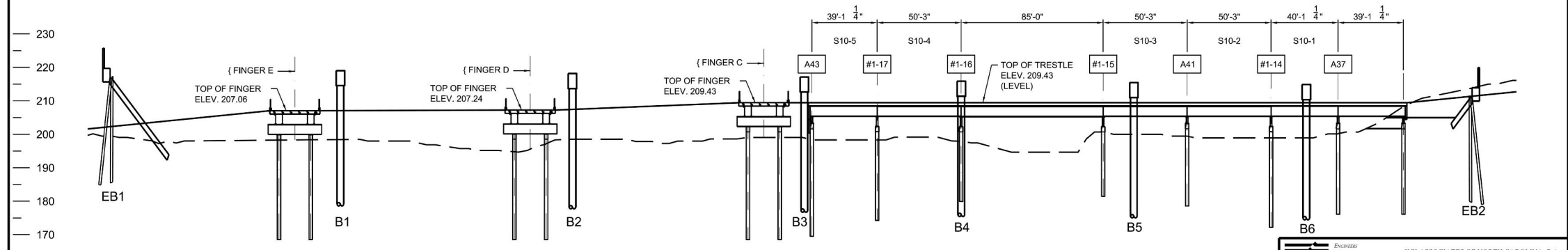


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R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

Permit Drawing Package
Last Revised on 02/16/21



PLAN



ELEVATION

WORK TRESTLE AT STRUCTURE 10

MISSING TRUCK BEAMS ON 40' SPANS

ENGINEER: KCI ASSOCIATES OF NORTH CAROLINA, P.A.
 9711 SOUTHERN PINE BLVD
 SUITE A
 CHARLOTTE, NC 28273
 704-499-9452



WORK TRESTLE				
STRUCTURE 10: DUAL BRIDGES ON -L- (NC-540) OVER SWIFT CREEK				
WAKE AND JOHNSTON CO., NC		KCI JOB #911906280		
NCDOT PROJECT NO. R-2828		JOB REF. #C19-69.07		
DES. BY: JMV	ORD. BY: AMC	DATE: 04/20	SCALE: NONE	SHEET NO.: 3 OF 3

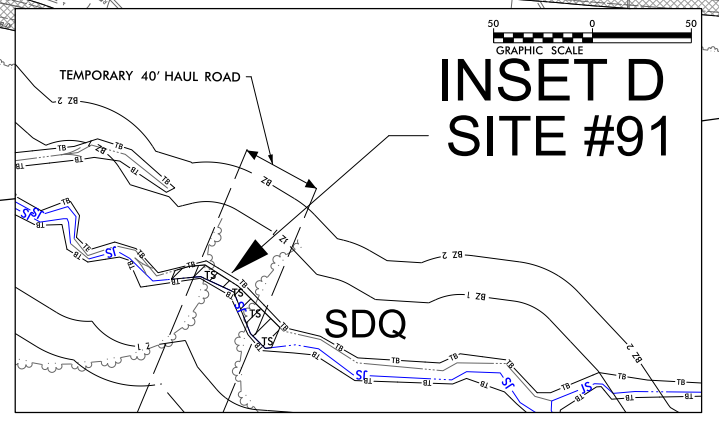
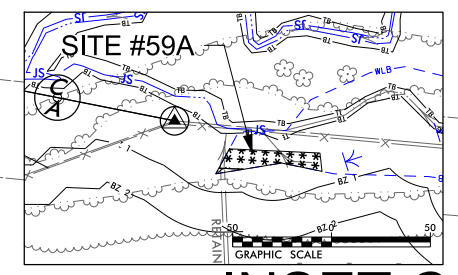
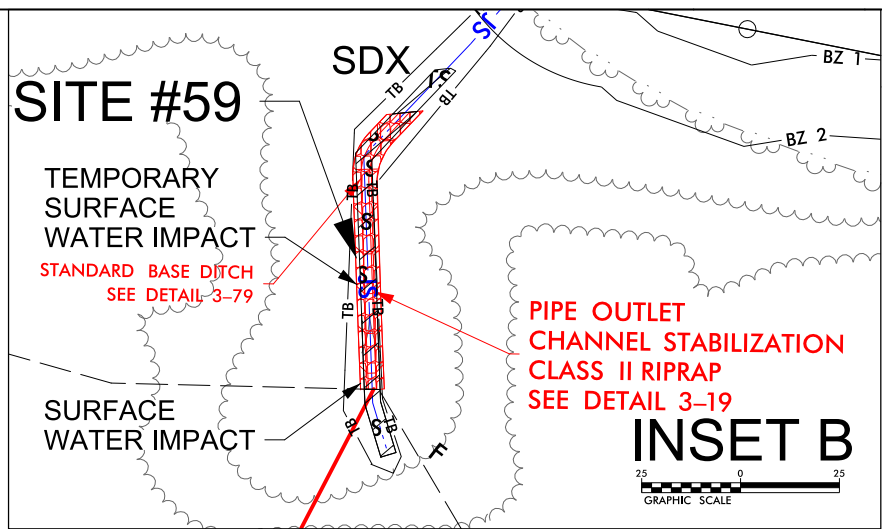
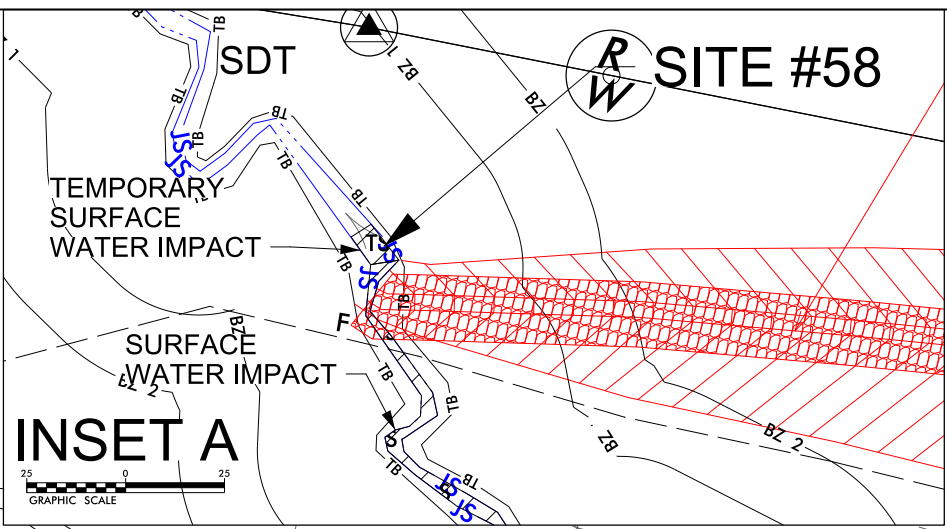
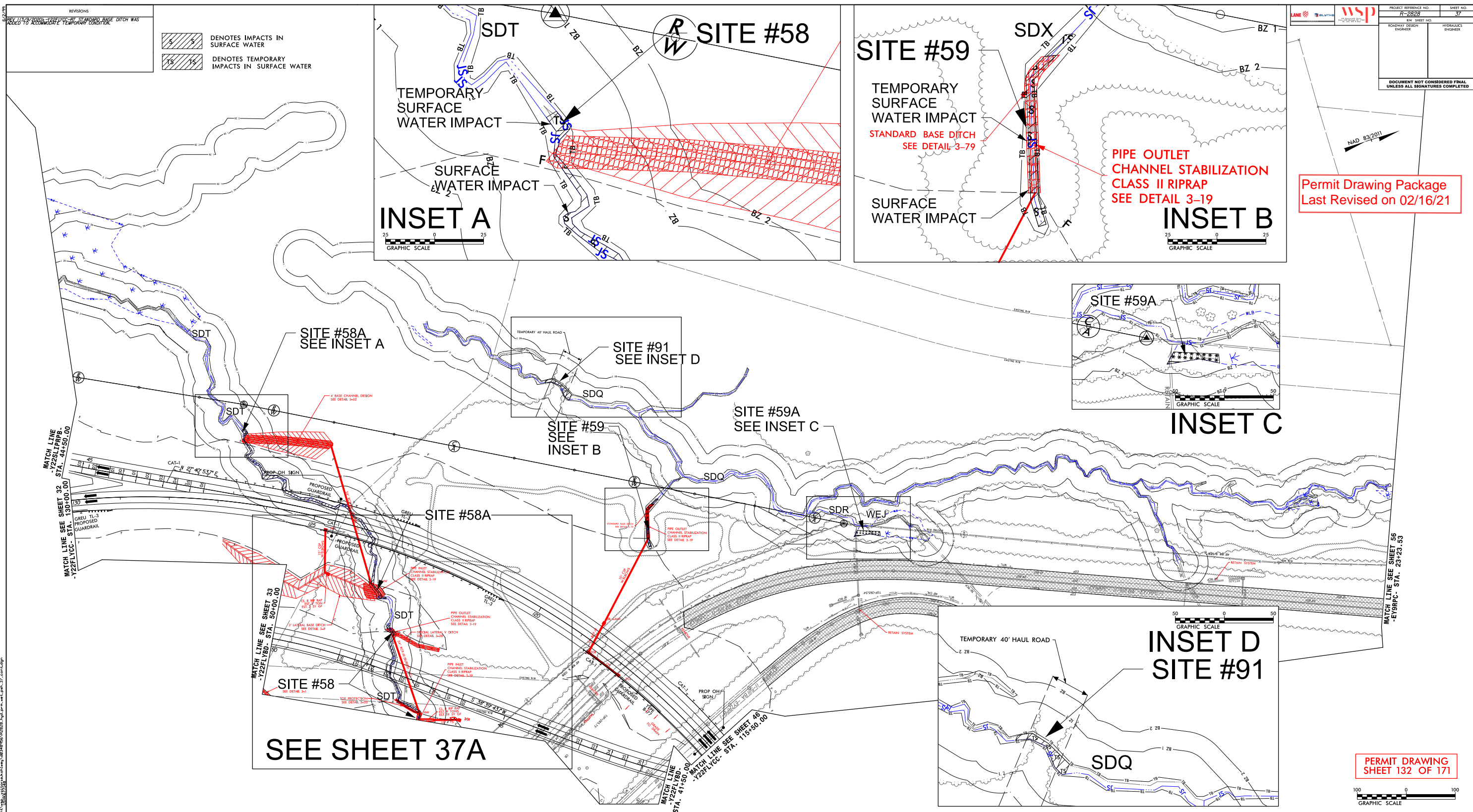
PERMIT DRAWING
SHEET 107 OF 171

REVISIONS

12/22/2020
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REVISIONS
 1. 11/15/2011: REVISION TO TEMPORARY BASE DITCH WAS
 MADE TO ACCOMMODATE TEMPORARY CONDITIONS

 DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO. R-2828	SHEET NO. 37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

Permit Drawing Package
 Last Revised on 02/16/21



PERMIT DRAWING
 SHEET 132 OF 171

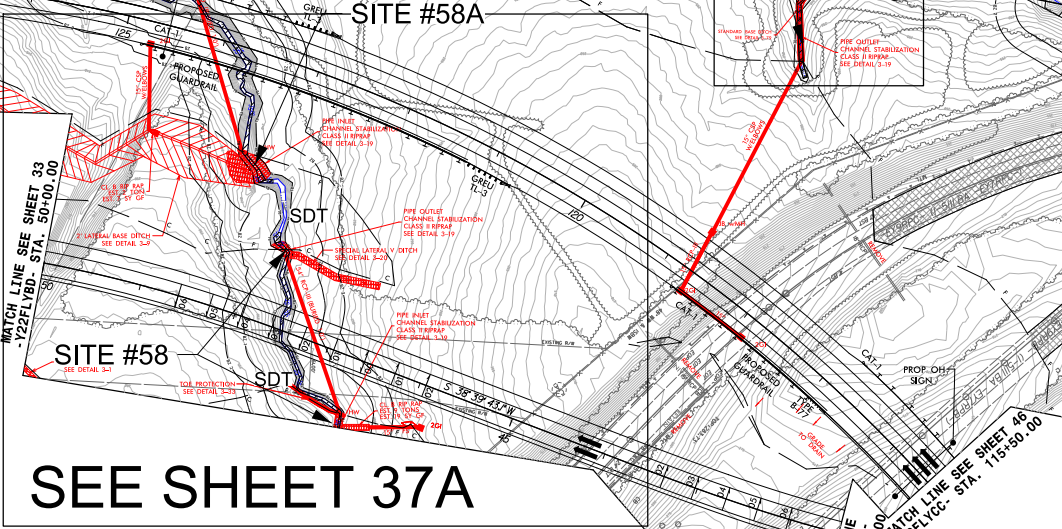
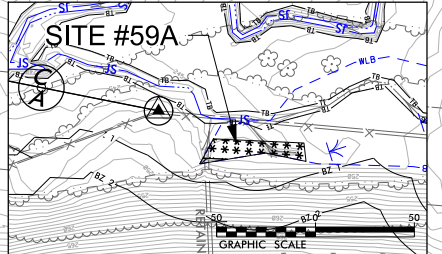
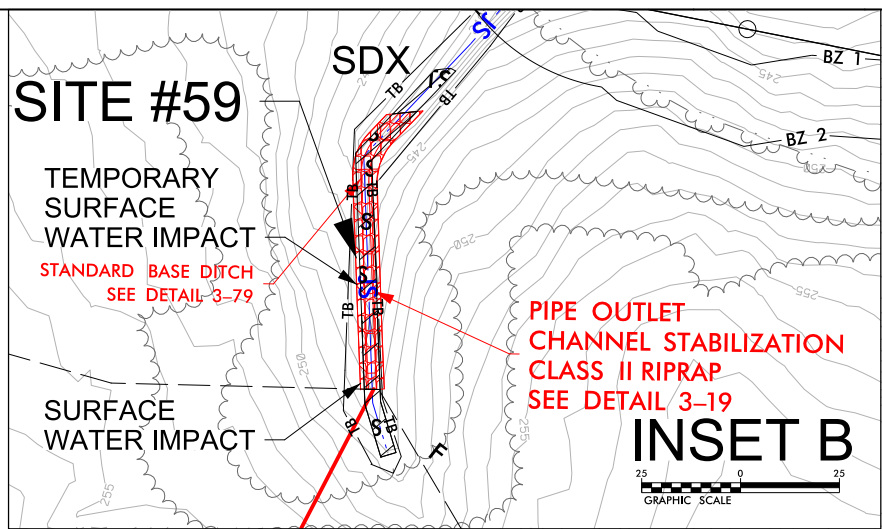
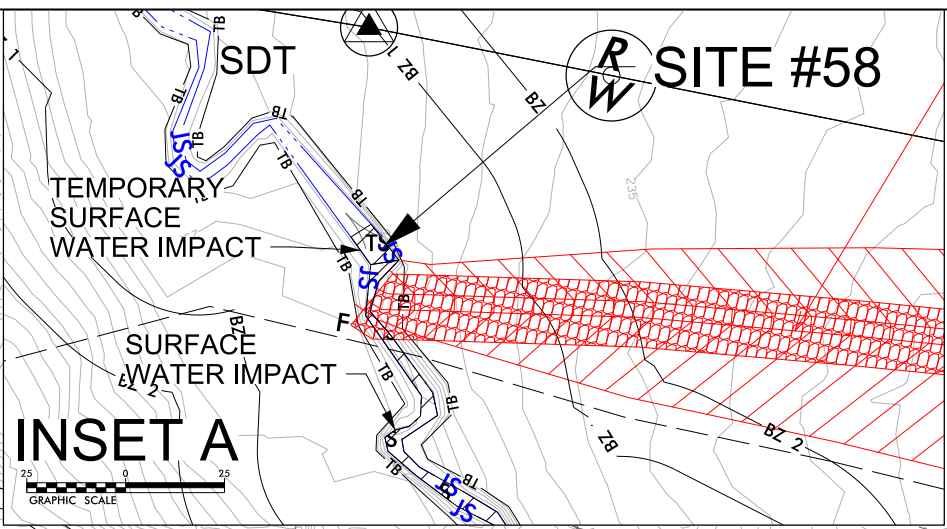
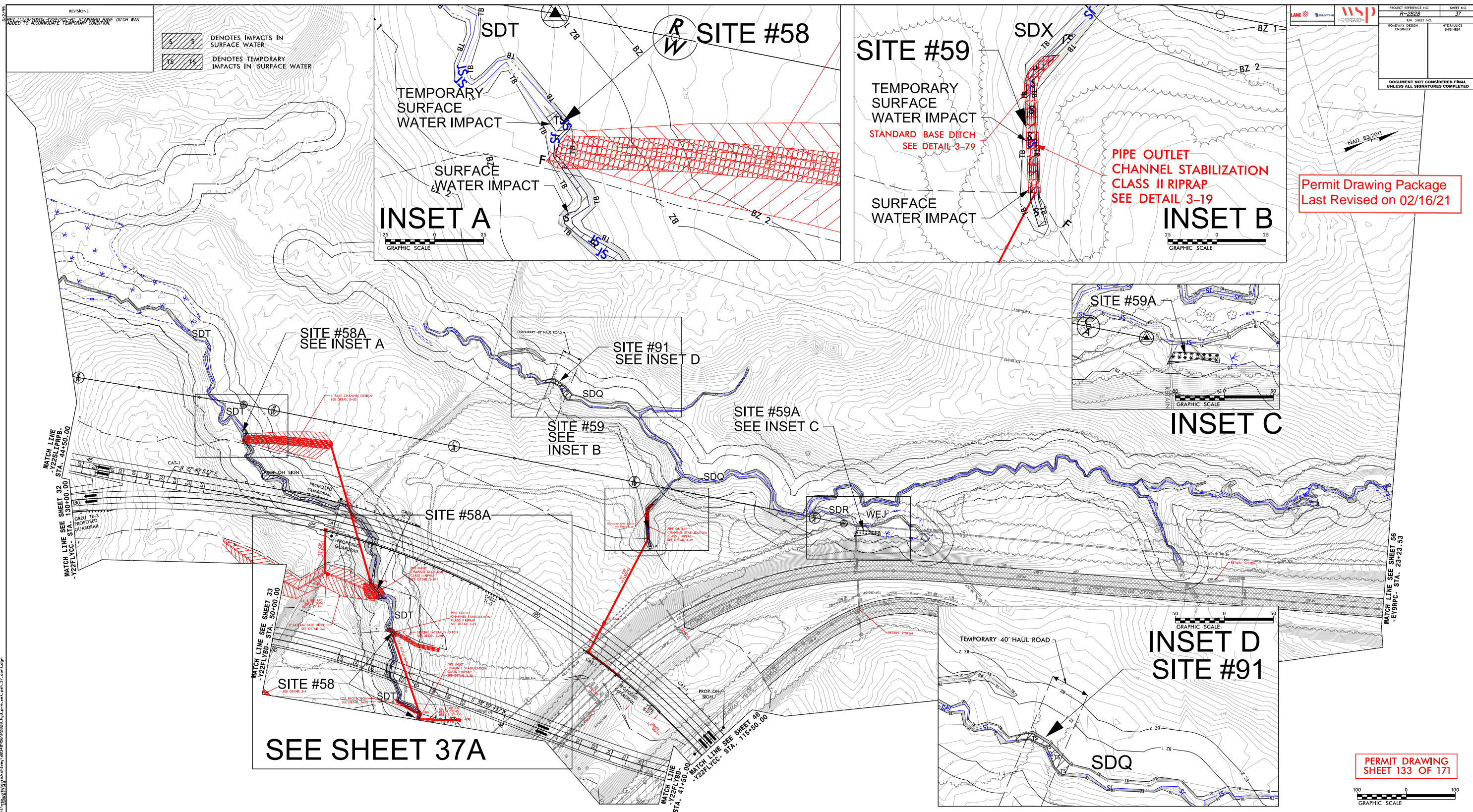


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REVISIONS

1	11/15/2018	ADDED TO ROOMMATE TEMPORARY CONDITION
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 DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO.	R-2828	SHEET NO.	37
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

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Permit Drawing Package
Last Revised on 02/16/21

PERMIT DRAWING SHEET 133 OF 171



WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
26A	707+50	Roadway Fill (SCM)						0.01	< 0.01	266	35	
26A	707+50	Culvert Stabilization (SCM)						< 0.01		65		
27	705+75 - 714+00	Roadway Fill (WDH)	2.44		0.03	0.24						
28	711+00 - 714+00 (LT)	Roadway Fill (SCN)						0.01	< 0.01	156	10	
29	726+50 - 728+00 (RT)	Drain Pond (PY)						1.40				
30	728+00 - 734+50 (RT)	Channel Change (SCQ)						0.06		673		
31	736+00	Roadway Fill (WDJ, SCQ)	0.38			0.09		0.03	< 0.01	130	58	
32	736+70 (LT) - 738+00 (RT)	2 @ 8'x9' RCBC (SCP)						0.07	0.02	379	92	
32	736+70 (LT) - 738+00 (RT)	Culvert Stabilization (SCP)						< 0.01		44		
32	736+70 (LT) - 738+00 (RT)	Bank Stabilization (SCP)						< 0.01		29		
33	759+00 (RT) - 759+82 (LT)	Roadway Fill (WDM)	0.39			0.03						
34	767+65 (RT)	Roadway Fill (WDN)				< 0.01						
35	782+00 (LT)	9'x8' RCBC (SCT)						0.05	< 0.01	441	37	
35	782+00 (LT)	Culvert Stabilization (SCT)						< 0.01		47		
35	782+00 (LT)	Bank Stabilization (SCT)						< 0.01		18		
36	782+00 - 787+20	Roadway Fill (WDO)	0.71		< 0.01	0.06						
37	785+90 (RT) - 787+70 (LT)	48" RCP (SCV)						0.03	< 0.01	394	20	
37	785+90 (RT) - 787+70 (LT)	Pipe Stabilization (SCV)						< 0.01		37		
38	788+00 (LT)	Roadway Fill (WDP)				< 0.01						
39	812+00 - 813+00 (LT)	Roadway Fill (WDS)	0.08									
40	812+90 - 813+37 (LT)	Channel Change (SDB)						< 0.01		54		
40	813+50 (LT)	Channel Change (SDC)						< 0.01		93		
40A*	-Y21- 40+00 (LT)	Roadway Fill (WDR)	0.09									
40B	-Y21- 44+40 (RT)	Roadway Fill (SCZ)						< 0.01	< 0.01	52	13	
SHEET 3 SUBTOTALS***:			4.09		0.03	0.43		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

Permit Drawing Package
Last Revised on 02/16/21

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
41	813+50 (LT) - 829+50 (RT)	Channel Change (SCY)						0.21	0.05	1453	187	
41	-Y21- 44+50 (RT)	18" CSP (SCY)						< 0.01		58		
41	-Y21- 44+50 (RT)	Pipe Stabilization (SCY)						< 0.01		21		
41	829+50 (LT) - 834+00 (RT)	Bank Stabilization (SCY)						0.08		283		
42	BRIDGE 832+50 (RT)	Work Trestle (WDU)					0.02					
44	BRIDGE	Bridge	0.02				0.55	0.05		238		
44	BRIDGE	Bank Stabilization						0.01		44		
45	841+78 - 843+00 (LT)	Roadway Fill (WDV)	0.05			0.03						
47	856+50 - 861+50	Roadway Fill (WDV)	0.37			0.05						
48	861+40 - 866+30	Work Trestle (WDV)	0.02			< 0.01	0.65					
49	867+50 - 868+50	Work Trestle (WDY)	< 0.01				0.17					
50	876+00	14'X8' RCBC (SDJ)						0.03	< 0.01	318	46	
50	876+00	Culvert Stabilization (SDJ)						< 0.01		42		
50	876+00	Bank Stabilization (SDJ)						< 0.01		48		
50A	875+50 - 877+00	Roadway Fill (WDZ)	0.56			0.09						
51	890+00	42" RCP (SDK)						< 0.01	< 0.01	32	10	
51	890+00	Pipe Stabilization (SDK)						< 0.01		21		
51A	890+00	Roadway Fill (WEA)	0.29									
52	895+00	60" RCP (SDL)						0.05	< 0.01	588	20	
52	895+00	Pipe Stabilization (SDL)						< 0.01		39		
53	900+50 (LT) - 906+50 (RT)	42" RCP (SDM)						0.05	< 0.01	948	20	
53	900+50 (LT) - 906+50 (RT)	Pipe Stabilization (SDM)						< 0.01		47		
54	911+00 (LT) - 913+75 (RT)	Roadway Fill (WEC)	1.88			0.10						
SHEET 4 SUBTOTALS***:			3.19			0.27	1.40	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

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

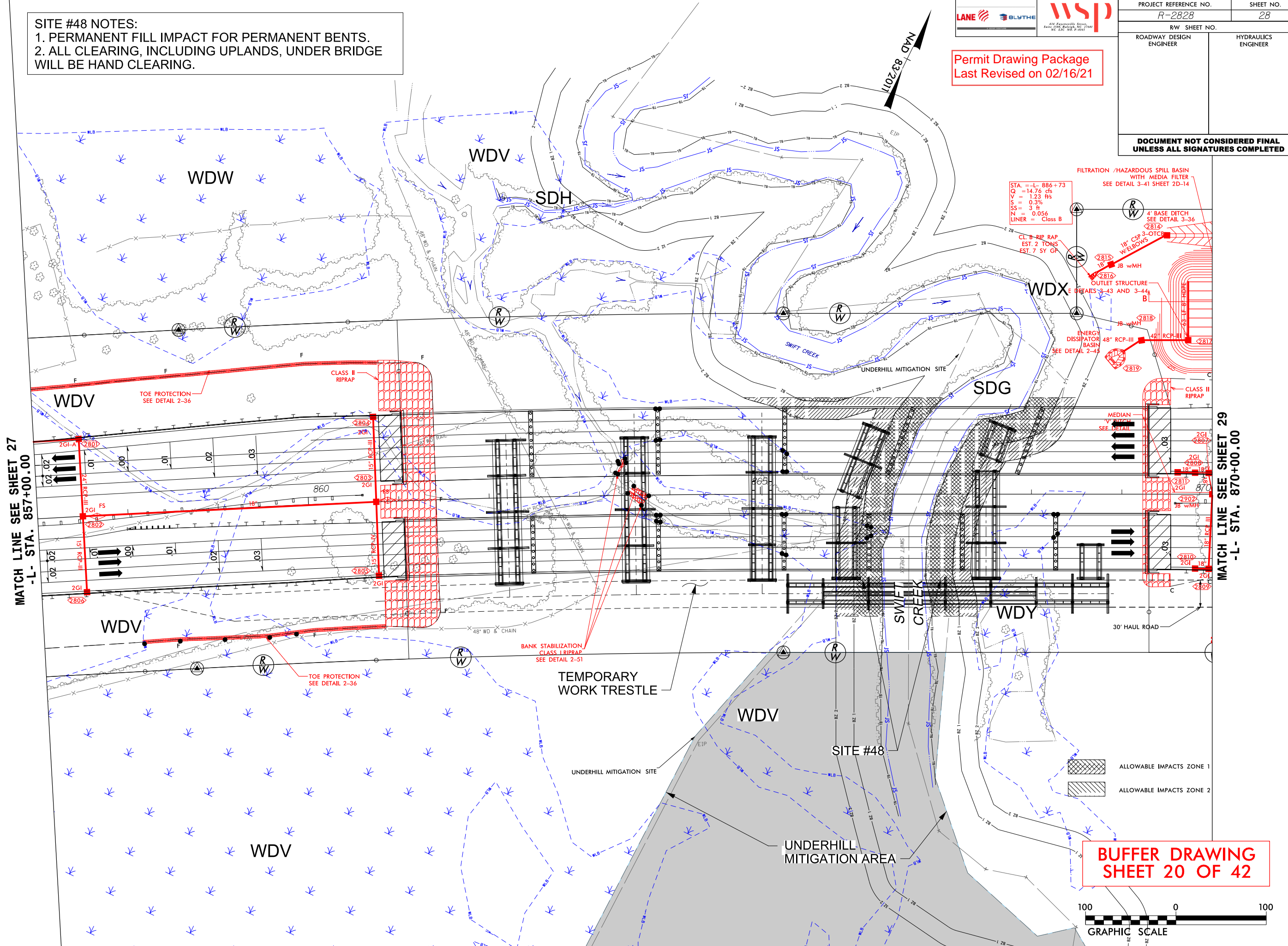
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PROJECT REFERENCE NO. R-2828		SHEET NO. 28
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

SITE #48 NOTES:
 1. PERMANENT FILL IMPACT FOR PERMANENT BENTS.
 2. ALL CLEARING, INCLUDING UPLANDS, UNDER BRIDGE WILL BE HAND CLEARING.

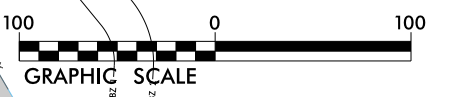
Permit Drawing Package
 Last Revised on 02/16/21



MATCH LINE SEE SHEET 27
 -L- STA. 857+00.00

MATCH LINE SEE SHEET 29
 -L- STA. 870+00.00

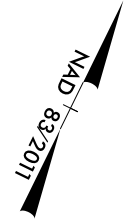
BUFFER DRAWING SHEET 20 OF 42



REVISIONS

2/15/2021
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Permit Drawing Package
Last Revised on 02/16/21

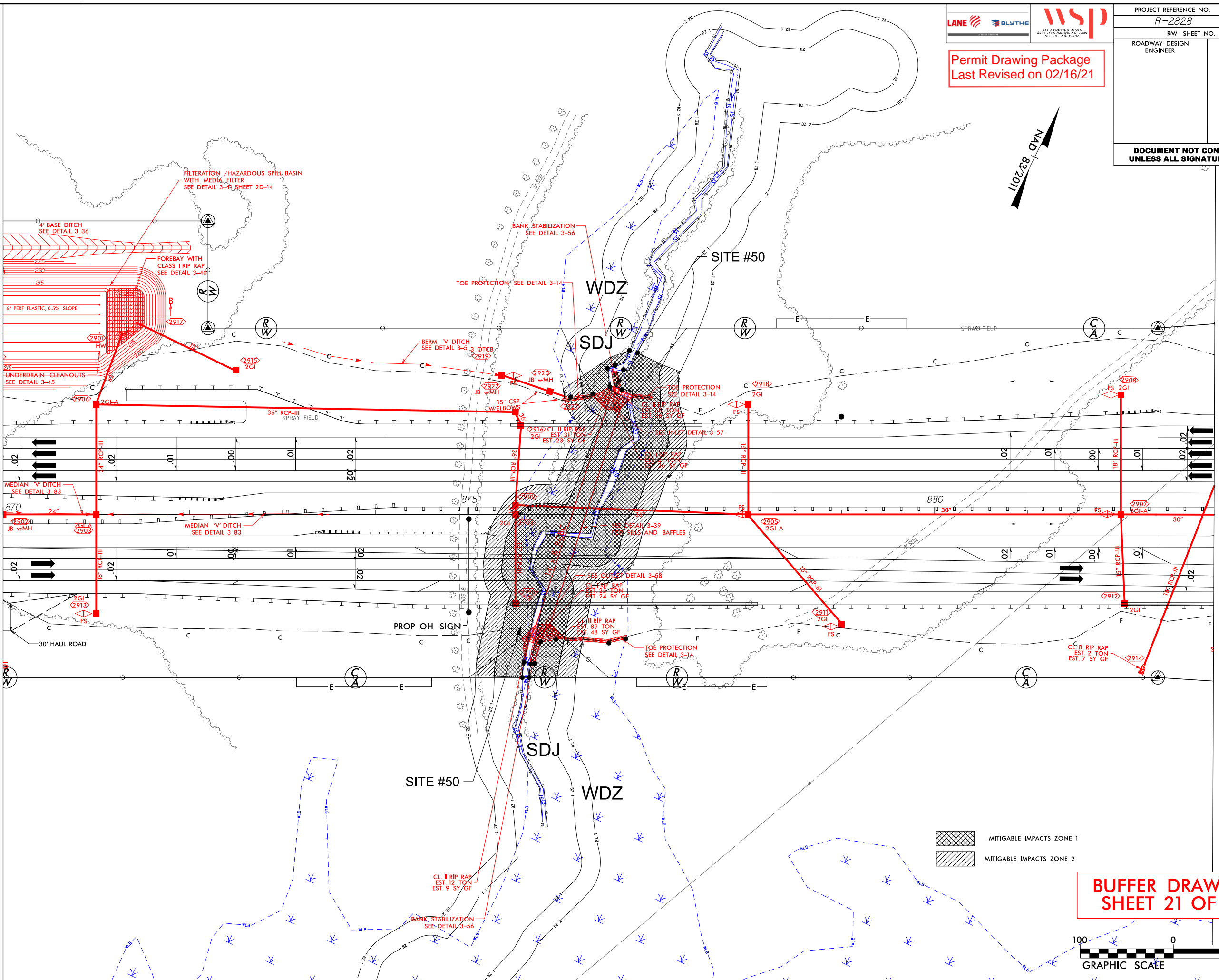


REVISIONS
 REV 2 (6/11/2020): REVISED LANE LINES AND TRANSITIONS FOR DOUBLE EXIT -L- TO -LFLYCC-
 REV 3 (7/11/2020): REVISED LANE REDUCTION AND LANE SHIFT DIMENSION CALCULATIONS.
 REV 4 (9/22/2020): SUPER ELEVATIONS SHIFTED EAST TO REMOVE ROLL-OVER AT SAG.

2/15/2021
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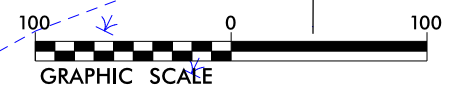
MATCH LINE SEE SHEET 28
-L- STA. 870+00.00

MATCH LINE SEE SHEET 30
-L- STA. 883+00.00



MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
 SHEET 21 OF 42



RIPARIAN BUFFER IMPACTS SUMMARY

Permit Drawing Package
Last Revised on 02/08/21

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT		
			TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)	
			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)			
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		16900	13266	30166						
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*:						111525	70812	182337	420452	268480	688932	0	0	

NOTES:

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