

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2829A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35517.3.TA1	N/A, 0540047	DESIGN-BUILD	
35517.3.TAGVI	N/A, 0540047	DESIGN-BUILD	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

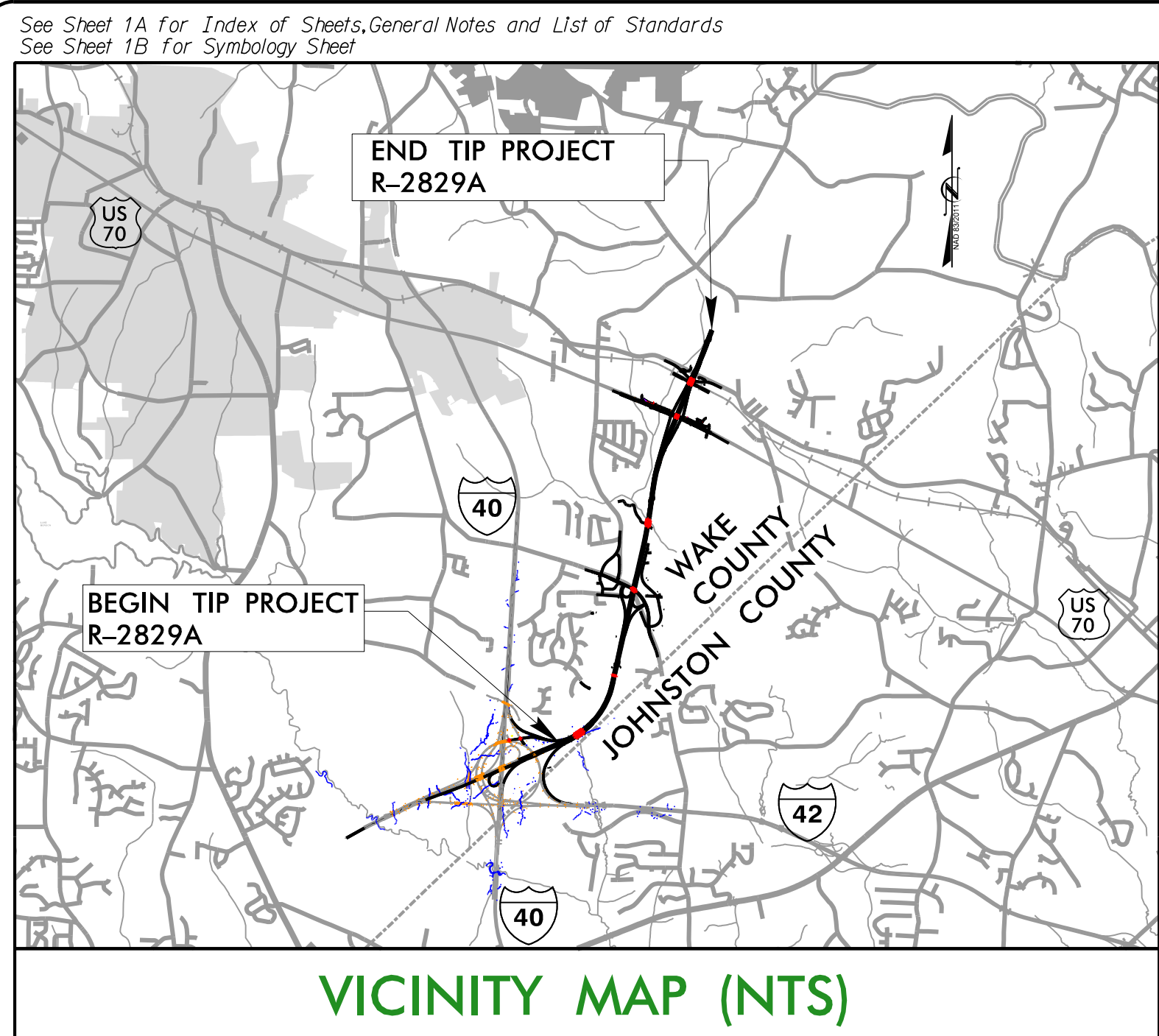
WAKE COUNTY

**LOCATION: TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION
FROM I-40 TO SOUTH OF SR 2542 (ROCK QUARRY RD.)**

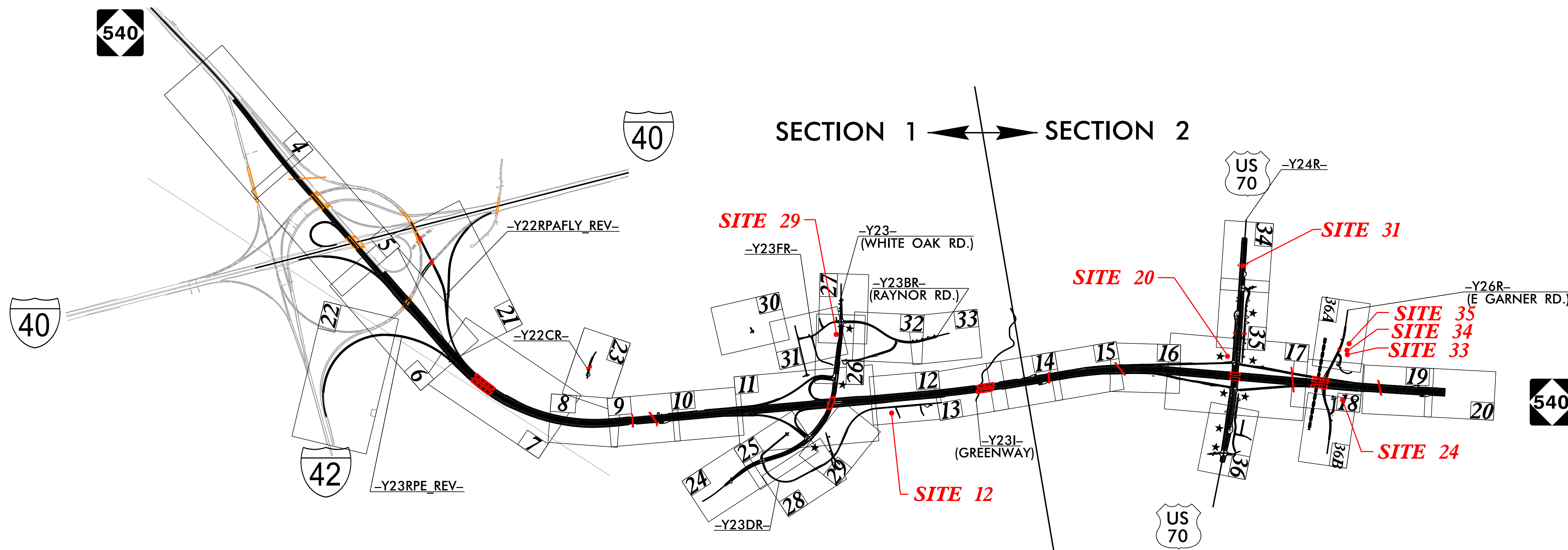
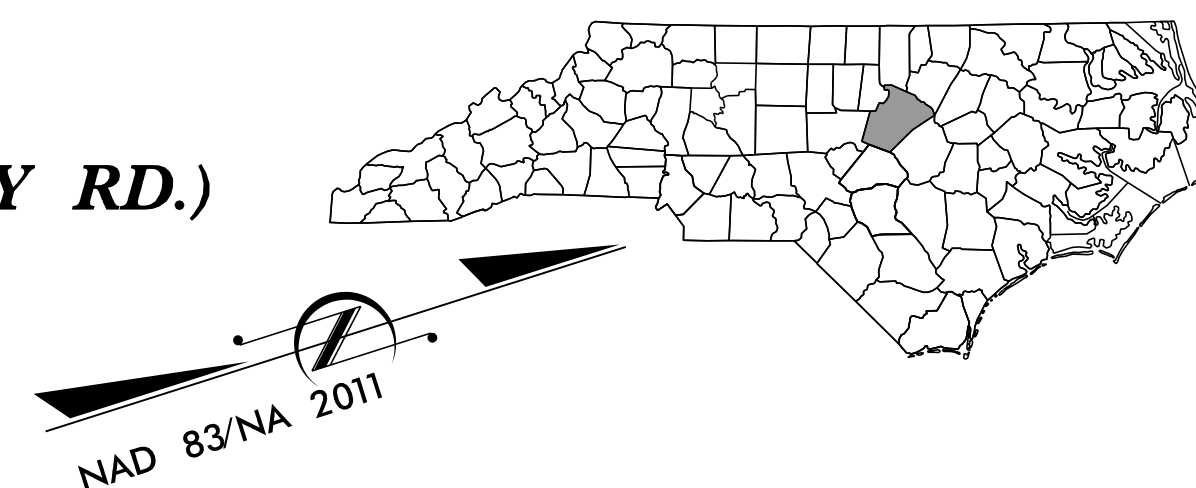
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, LIGHTING,
SIGNING, ITS, CULVERTS & STRUCTURES**

**SAFETEA-LU SECTION 6002
HYDRAULIC DESIGN MEETING PLANS**

**UTILITY PERMIT DRAWING
SHEET 1 OF 11**



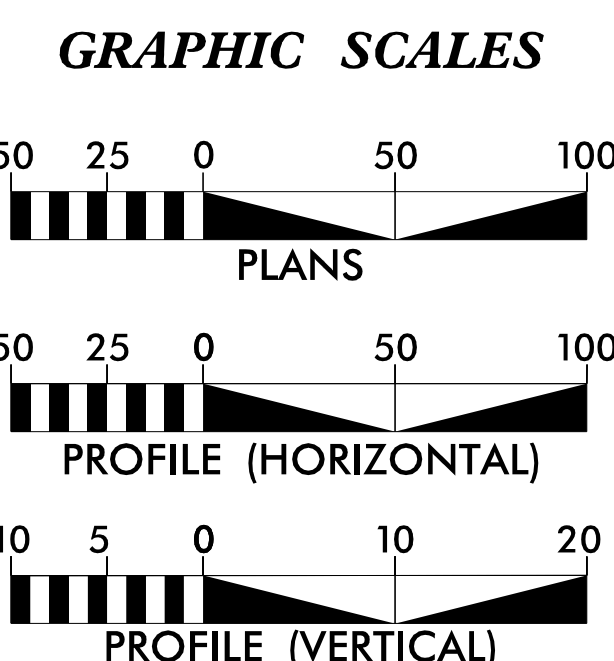
VICINITY MAP (NTS)



- NOTES:
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III MODIFIED.
2. THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
3. THIS PROJECT IS NOT WITHIN MUNICIPAL LIMITS.

★ PROPOSED TRAFFIC SIGNAL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2023	=	15,440
ADT 2043	=	22,040
K	=	12%
D	=	65%
T	=	10% *
V	=	75 MPH

FUNC CLASS: INTERSTATE
* (TTST 4% + DUALS 6%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2829A.....	3.924 MILES
LENGTH STRUCTURE TIP PROJECT R-2829A.....	0.241 MILES
TOTAL LENGTH TIP PROJECT R-2829A.....	4.165 MILES

NCTA CONTACT

Ron McCollum, PE
DEPUTY CHIEF ENGINEER for PRECONSTRUCTION
TURNPIKE AUTHORITY

PLANS PREPARED BY:

RK&K
RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615-3960
NC LICENSE NO. P-0112

FOR NORTH CAROLINA
TURNPIKE AUTHORITY

2018 STANDARD SPECIFICATIONS

LETTING DATE:
October 17, 2023

C. Byron Holden, PE
PROJECT ENGINEER

Anthony A. Houser, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

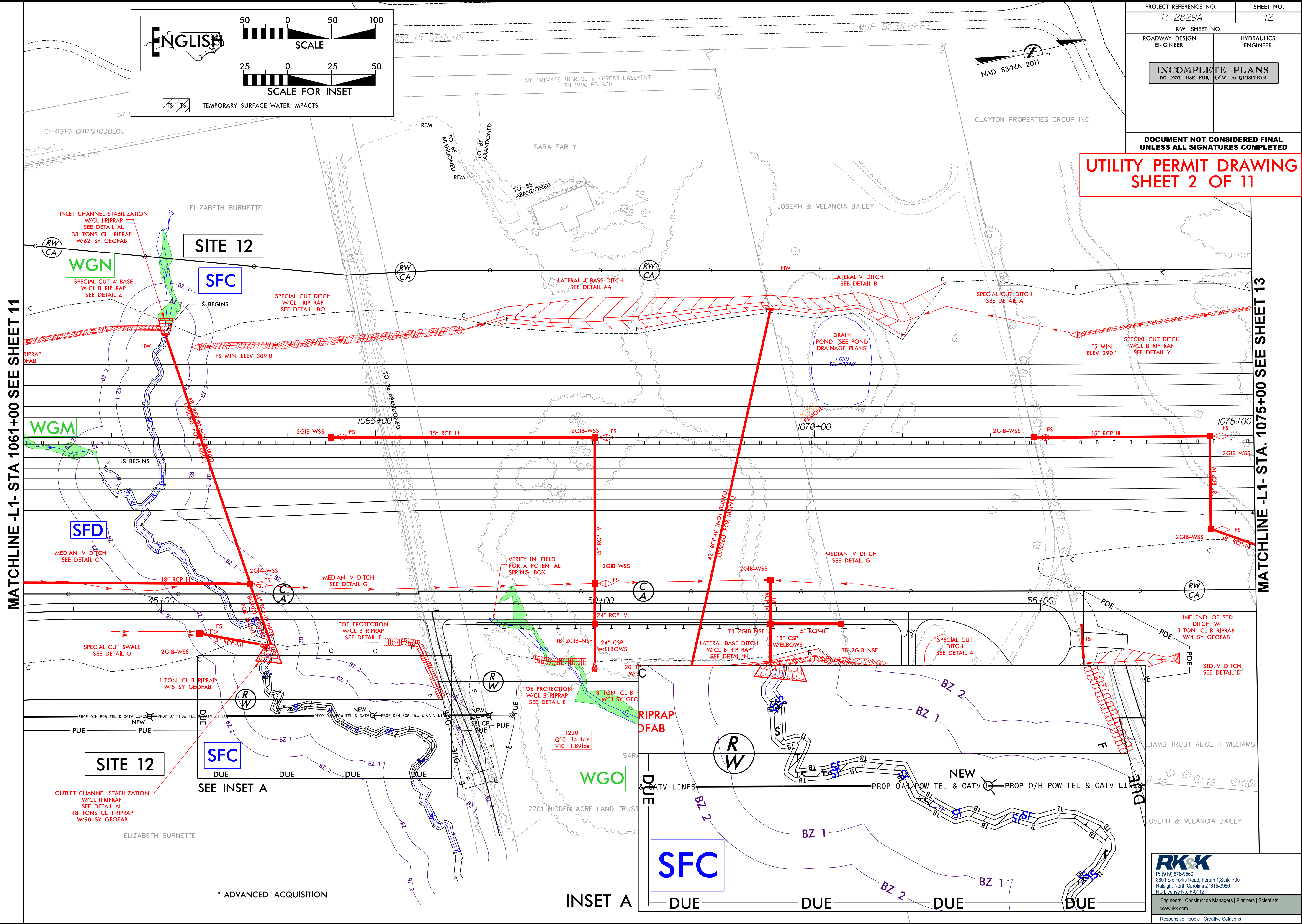
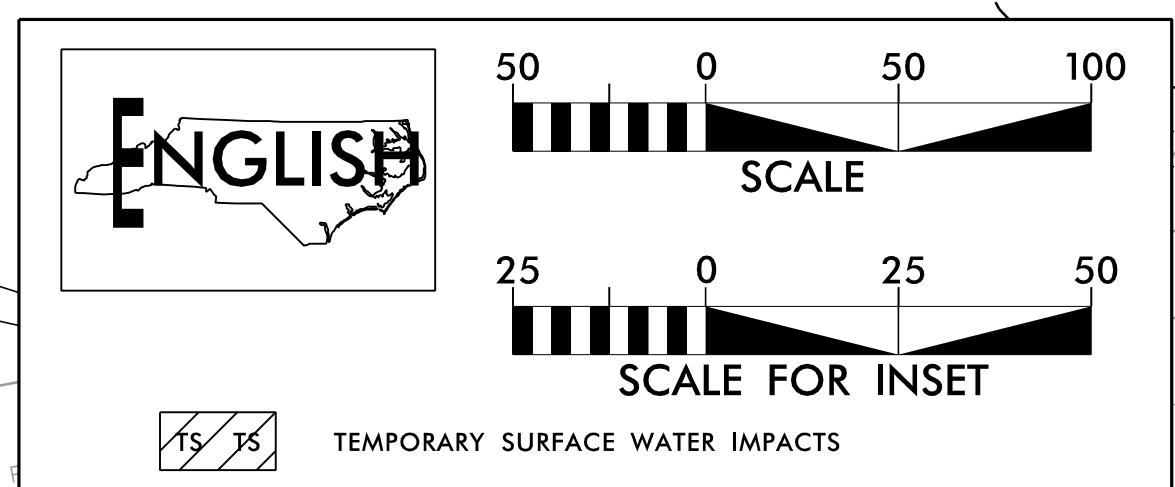


CONTRACT: C204824 TIP PROJECT: R-2829A

PROJECT REFERENCE NO. R-2829A	SHEET NO. 12
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

UTILITY PERMIT DRAWING
SHEET 2 OF 11

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MATCHLINE -L1- STA 1061+00 SEE SHEET 11

MATCHLINE -L1- STA. 1075+00 SEE SHEET 13

8/17/19

C:\Users\Public\Documents\Drawings\4C\Utilities\R-2829A_hyd_4c_wet_psh_12.dgn

8/17/2024

* ADVANCED ACQUISITION

RK&K
 P: (919) 873-9560
 8601 Six Forks Road, Forum 1, Suite 700
 Raleigh, North Carolina 27615-3960
 NC License No. F-1112
 Engineers | Construction Managers | Planners | Scientists
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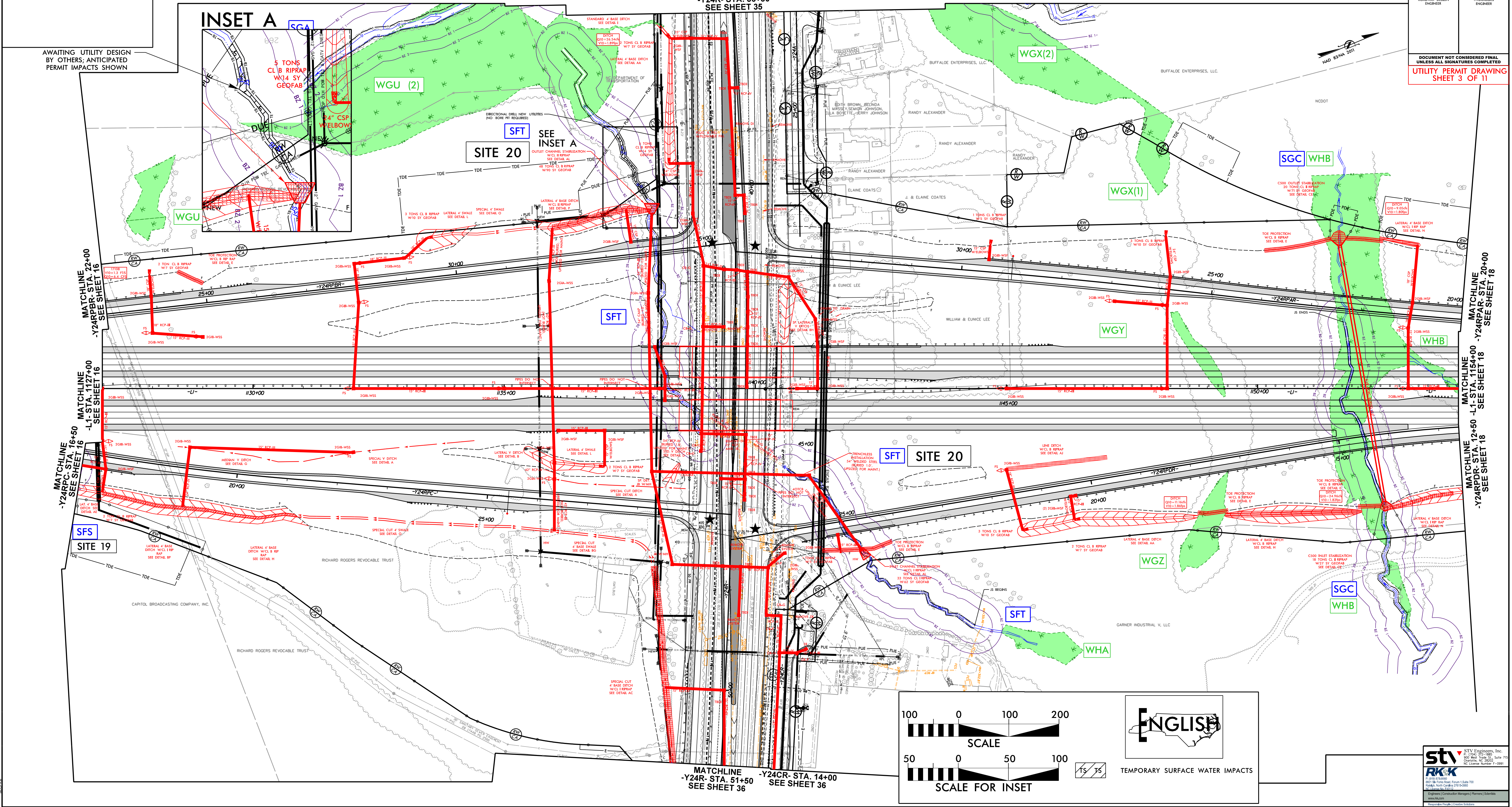
REVISIONS

AWAITING UTILITY DESIGN BY OTHERS; ANTICIPATED PERMIT IMPACTS SHOWN

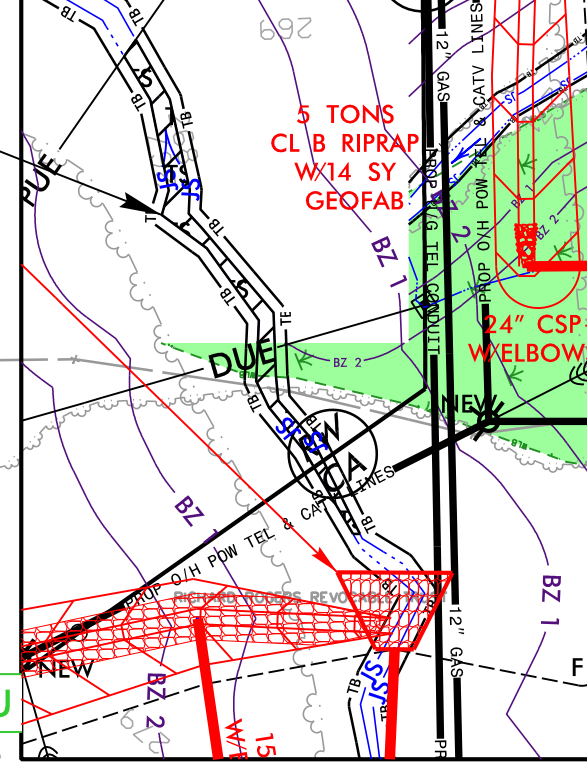
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SEE SHEET 35

PROJECT REFERENCE NO.	P-2829A
SHEET NO.	11
ROADWAY DESIGN ENGINEER	
HYDRAULICS ENGINEER	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
UTILITY PERMIT DRAWING
SHEET 3 OF 11



INSET A



SFT
SITE 20
SEE INSET A

SFT
SITE 20

SFS
SITE 19

MATCHLINE
-Y24R- STA. 22+00
SEE SHEET 16

MATCHLINE
-L1- STA. 1127+00
SEE SHEET 16

MATCHLINE
-Y24R- STA. 16+50
SEE SHEET 16

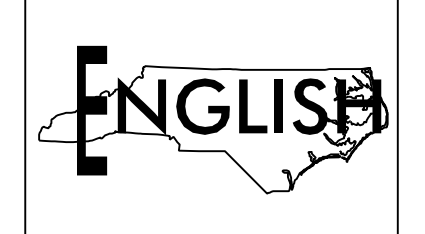
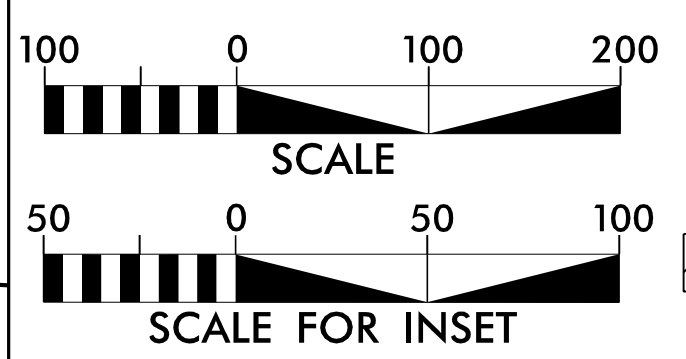
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SEE SHEET 18

MATCHLINE
-L1- STA. 1154+00
SEE SHEET 18

MATCHLINE
-Y24R- STA. 12+50
SEE SHEET 18

MATCHLINE
-Y24R- STA. 51+50
SEE SHEET 36

MATCHLINE
-Y24CR- STA. 14+00
SEE SHEET 36



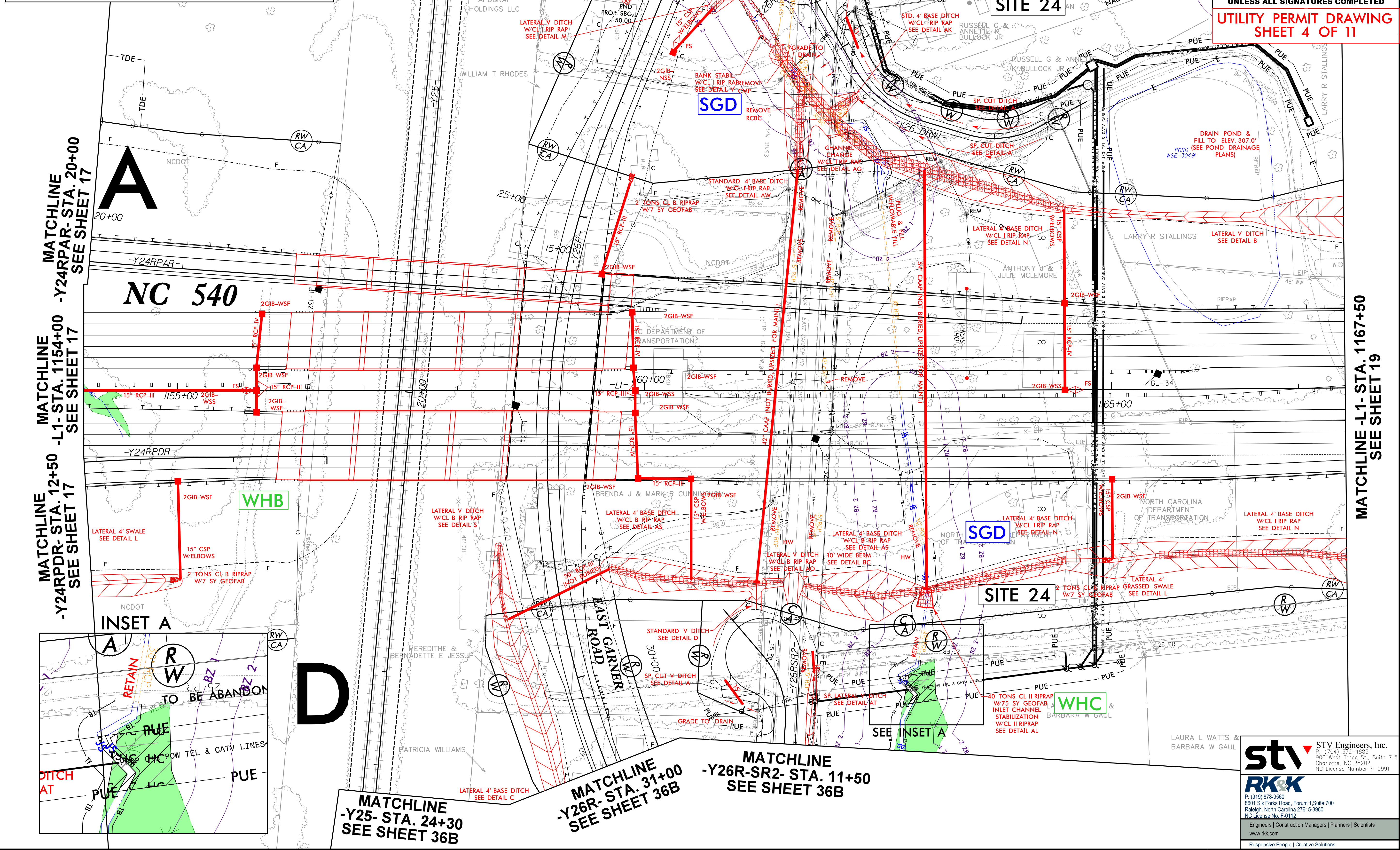
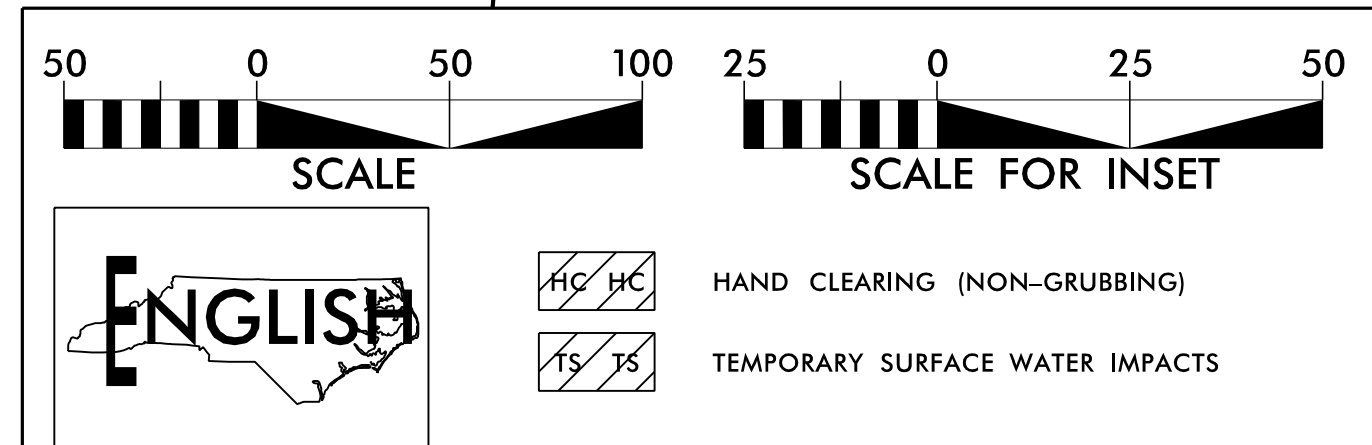
TEMPORARY SURFACE WATER IMPACTS

st STV Engineers, Inc.
rk R&K
 2011 St. Paul Street, Suite 100
 St. Paul, MN 55102
 Phone: 651.426.0000
 Fax: 651.426.0001
 www.stv.com

PROJECT REFERENCE NO. R-2829A	SHEET NO. 18
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

**UTILITY PERMIT DRAWING
SHEET 4 OF 11**



MATCHLINE
-Y24RPAR- STA. 20+00
SEE SHEET 17

MATCHLINE
-L1- STA. 1154+00
SEE SHEET 17

MATCHLINE
-Y24RPDR- STA. 12+50
SEE SHEET 17

MATCHLINE
-Y25- STA. 15+00
SEE SHEET 36A

MATCHLINE
-Y26R- STA. 22+00
SEE SHEET 36A

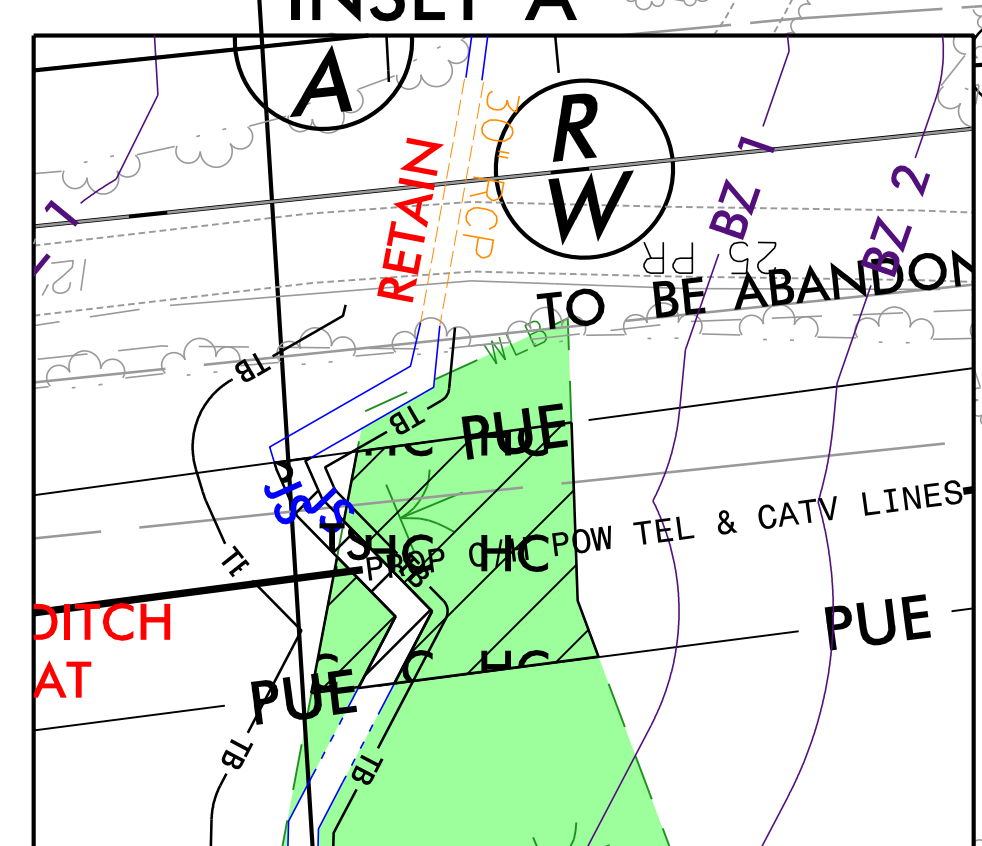
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-Y26R-SR1- STA. 12+50
SEE SHEET 36A

MATCHLINE
-Y24RPDR- STA. 12+50
SEE SHEET 17

MATCHLINE
-Y25- STA. 24+30
SEE SHEET 36B

MATCHLINE
-Y26R-SR2- STA. 11+50
SEE SHEET 36B

**MATCHLINE -L1- STA. 1167+50
SEE SHEET 19**



STV STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

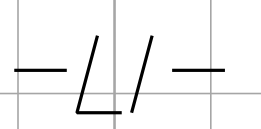
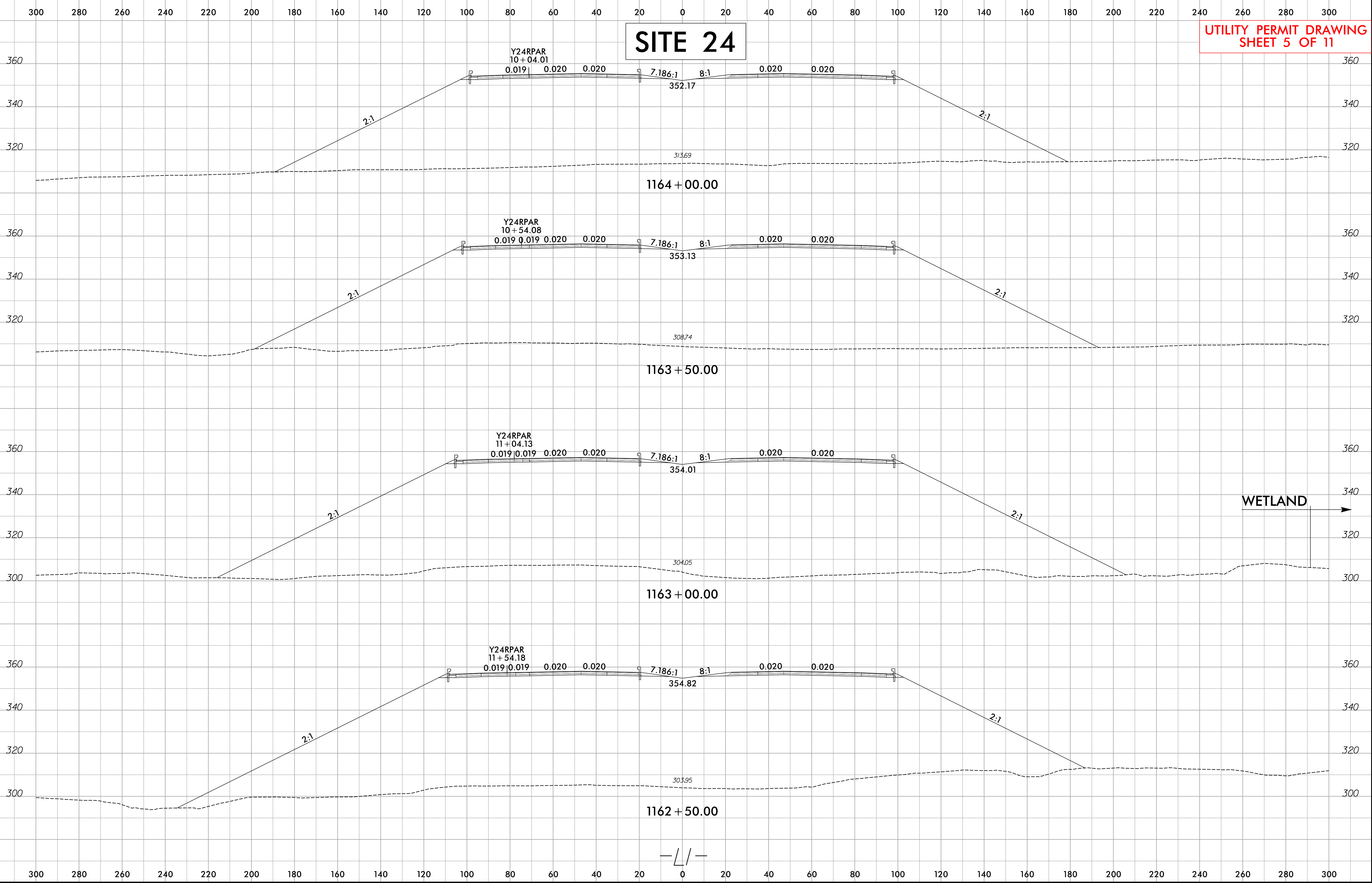
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P: (919) 878-9560
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8/17/2024
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SITE 24

UTILITY PERMIT DRAWING
SHEET 5 OF 11



PROJECT REFERENCE NO. R-2829A	SHEET NO. 34
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

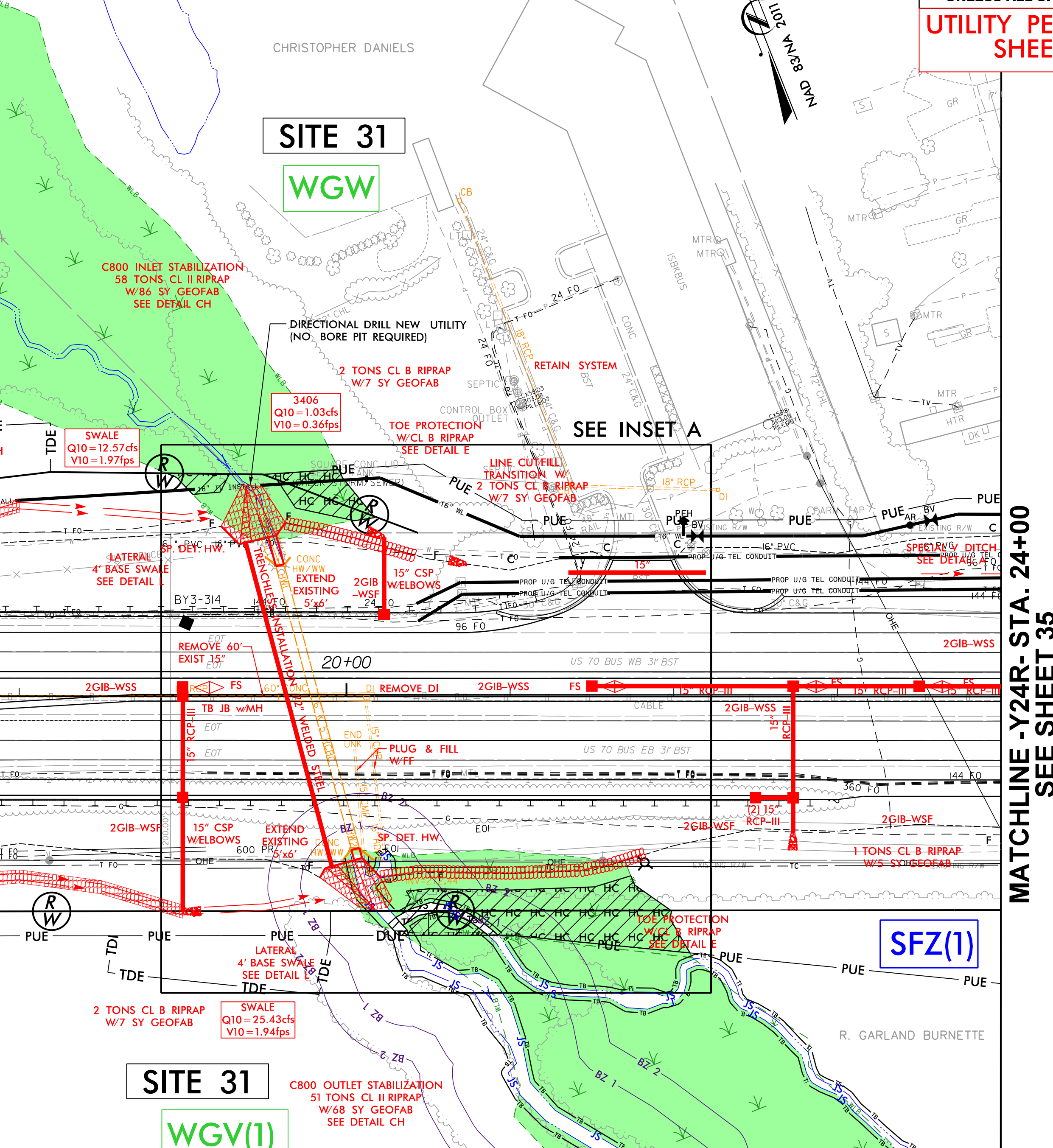
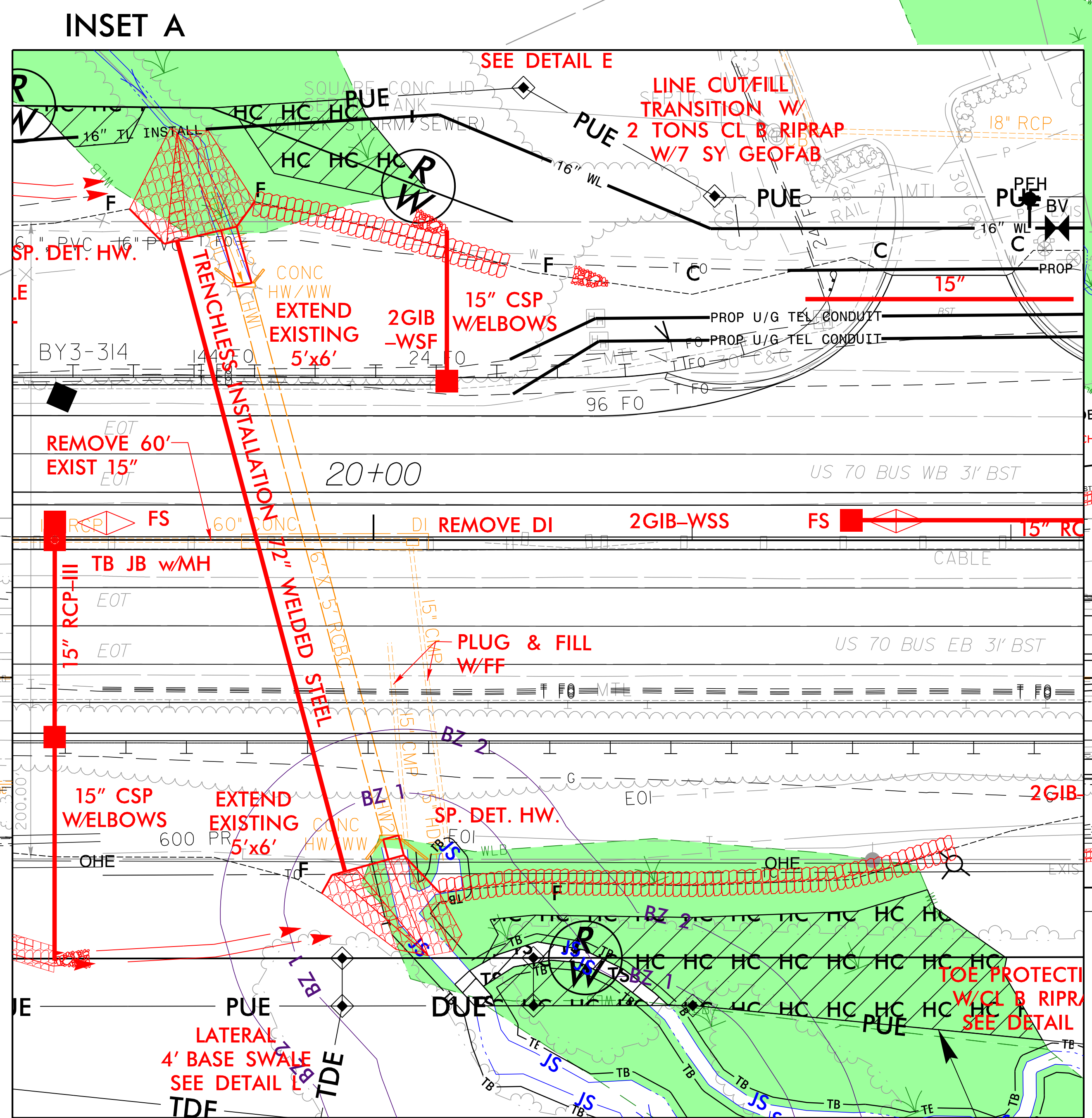
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

**UTILITY PERMIT DRAWING
SHEET 7 OF 11**

ENGLISH

50 0 50 100
SCALE
25 0 25 50
SCALE FOR INSET

HC HC HAND CLEARING (NON-GRUBBING)
TS TS TEMPORARY SURFACE WATER IMPACTS



**MATCHLINE -Y24R- STA. 24+00
SEE SHEET 35**

AWAITING UTILITY DESIGN
BY OTHERS; ANTICIPATED
PERMIT IMPACT SHOWN

stv STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

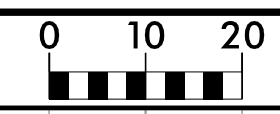
RK&K
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8601 Six Forks Road, Forum 1, Suite 700
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6/23/16

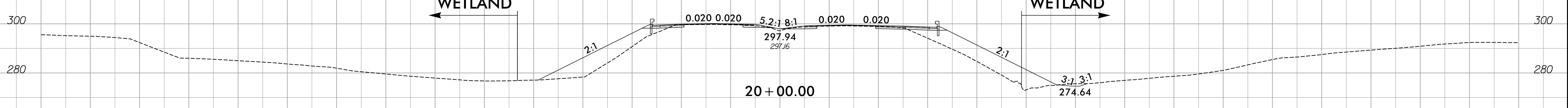
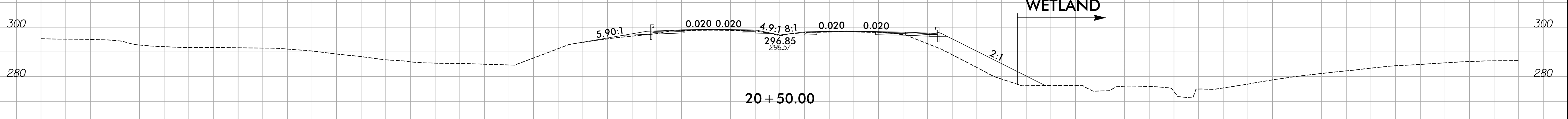
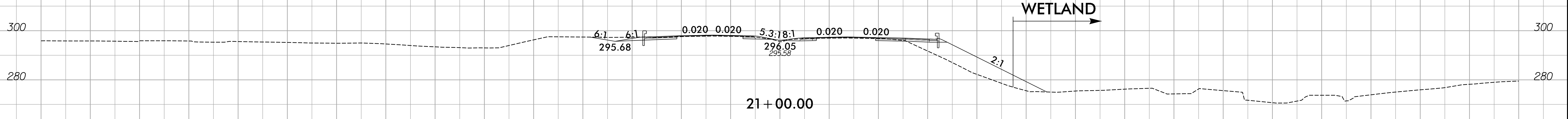
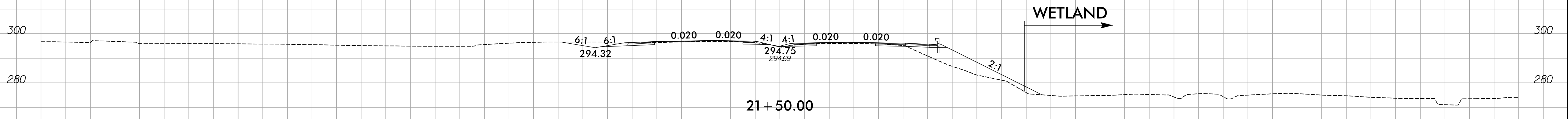
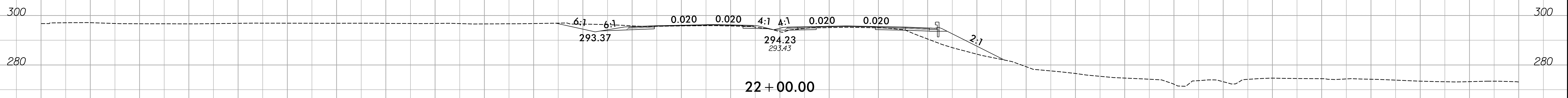


PROJ. REFERENCE NO.	SHEET NO.
R-2829A	S2 X-40

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

SITE 31

UTILITY PERMIT DRAWING
SHEET 8 OF 11



-Y24R-

6/5/2024
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PROJECT REFERENCE NO. R-2829A	SHEET NO. 36A
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

UTILITY PERMIT DRAWING
SHEET 9 OF 11

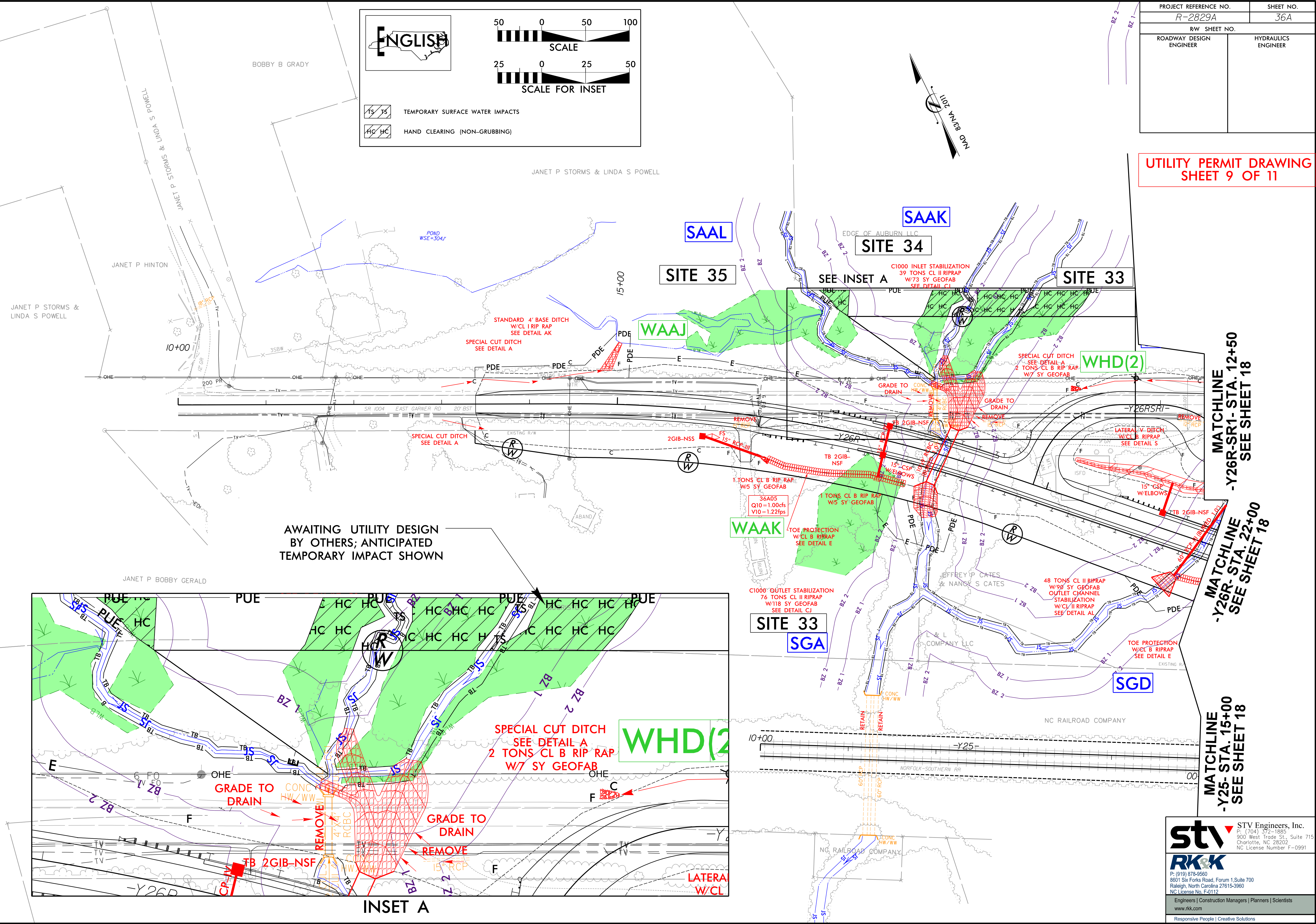
ENGLISH

50 0 50 100
SCALE

25 0 25 50
SCALE FOR INSET

TS JS TEMPORARY SURFACE WATER IMPACTS

HC HC HAND CLEARING (NON-GRUBBING)

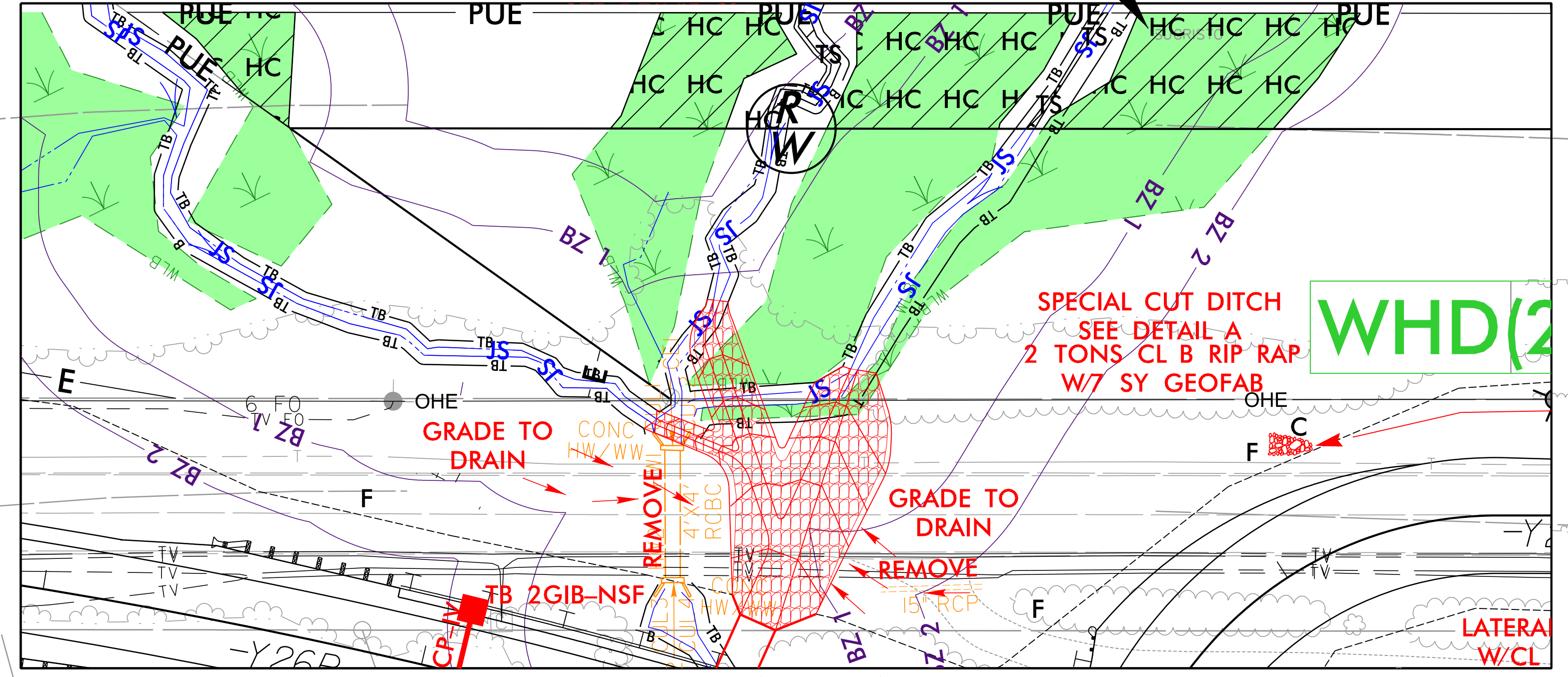


AWAITING UTILITY DESIGN BY OTHERS; ANTICIPATED TEMPORARY IMPACT SHOWN

MATCHLINE
-Y26R-SR1- STA. 12+50
SEE SHEET 18

MATCHLINE
-Y26R- STA. 22+00
SEE SHEET 18

MATCHLINE
-Y25- STA. 15+00
SEE SHEET 18



INSET A

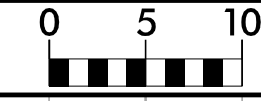
STV STV Engineers, Inc.
P: (704) 372-1885
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8/17/2024
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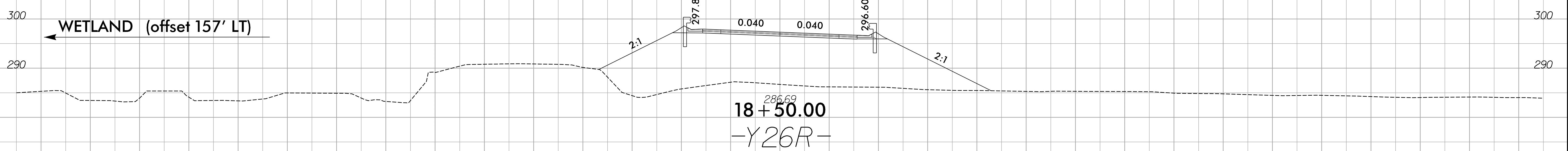
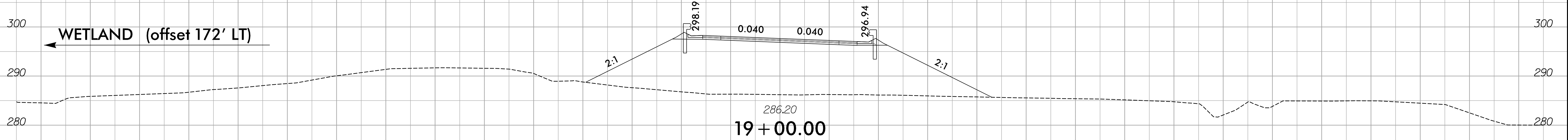
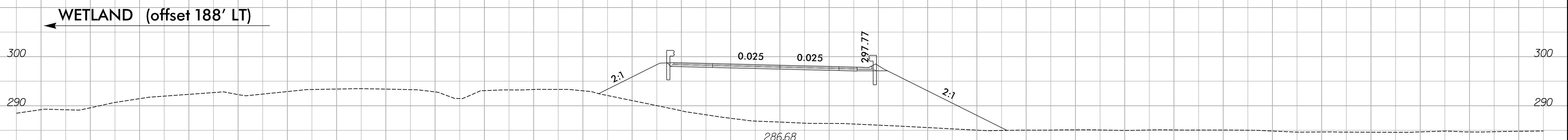
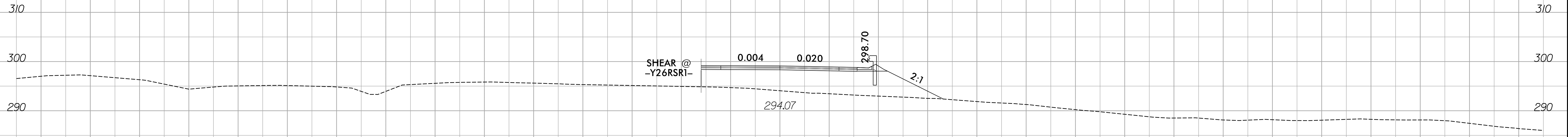
6/23/16



PROJ. REFERENCE NO.	SHEET NO.
R-2829A	S2 X-85

SITE 33 & 35

UTILITY PERMIT DRAWING
SHEET 10 OF 11



6/5/2024
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aburke

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)
12	-Y23DR- 46+16 - 48+11 RT	Overhead Power: SFC						0.023		301		
20	-L1- 1137+23 - 1137+85 LT	Overhead Power, UG Gas & Telephone: SFT						0.013		145		
24	-L1- 1162+71 - 1163+11 RT	Overhead Power: SGD WHC					0.020	0.003		36		
29	-Y23R- 61+07 - 61+18 LT	Overhead Power: SFJ						0.002		21		
31	-Y24R- 18+90 - 20+18 LT -Y24R-20+37 - 22+10 RT	UG Waterline: WGW Overhead Power & Anticipated Utility Line: SFY					0.034	0.007		68		
	-Y24R- 20+25 - 20+38 RT	WGV(1) SFZ(1)					0.120	0.002		12		
33	-Y26R- 18+14 - 19+77 LT	Anticipated Utility Line: SGA WHD					0.096	0.001		36		
34	-Y26R- 18+50 - 18+63 LT	Anticipated Utility Line: SAAK						0.002		46		
35	-Y26R- 17+05 - 17+37 LT	Anticipated Utility Line: WAAJ					0.012					
PROJECT TOTALS*:			0.000	0.000	0.000	0.000	0.282	0.000	0.053	0	665	0

*Rounded totals are sum of actual impacts

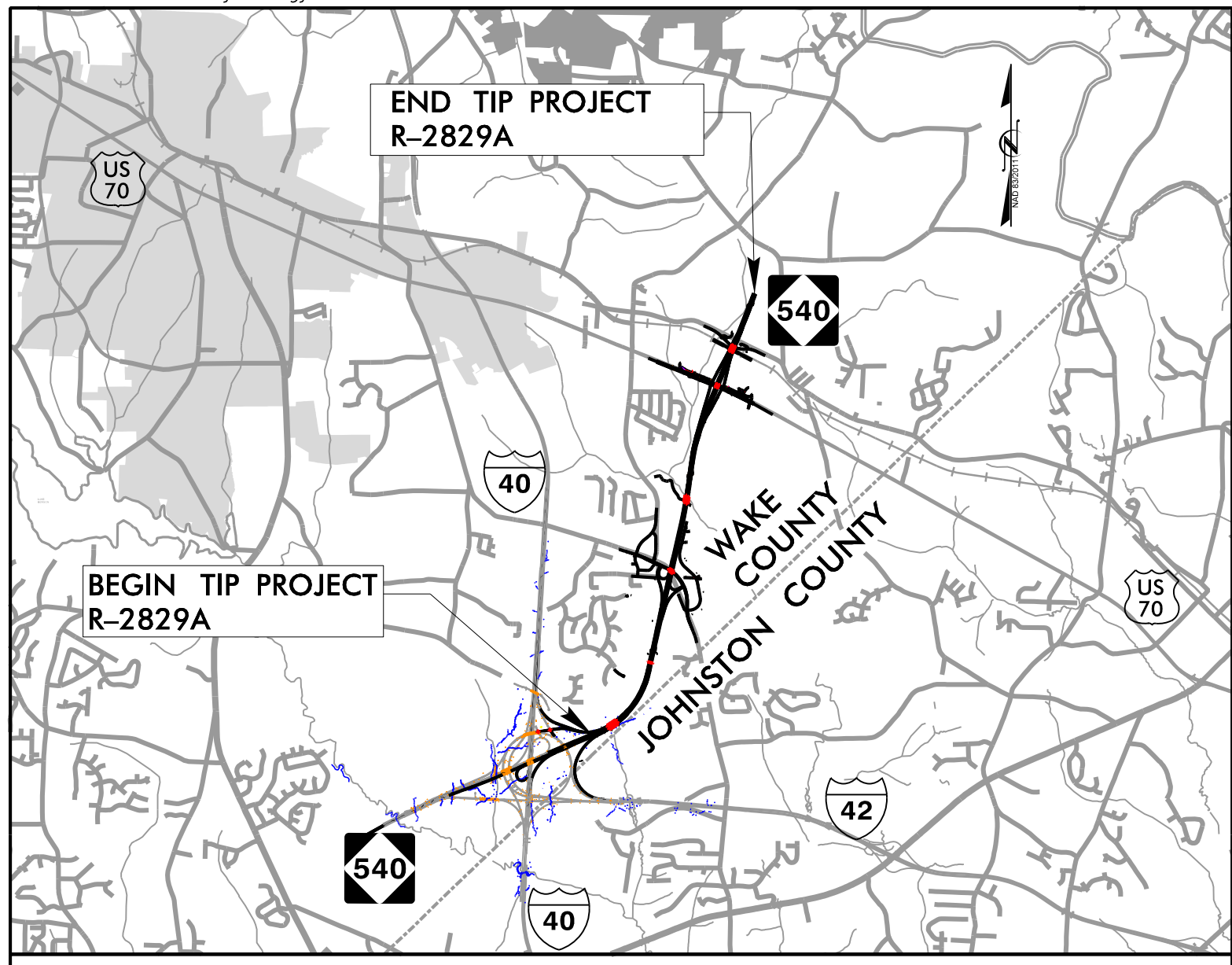
NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6/6/2024
Wake County
R-2829A

09/08/19
 6/5/2024
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 aburke

CONTRACT: C204824 **TIP PROJECT: R-2829A**

See Sheet 1A for Index of Sheets, General Notes and List of Standards
 See Sheet 1B for Symbolology Sheet



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

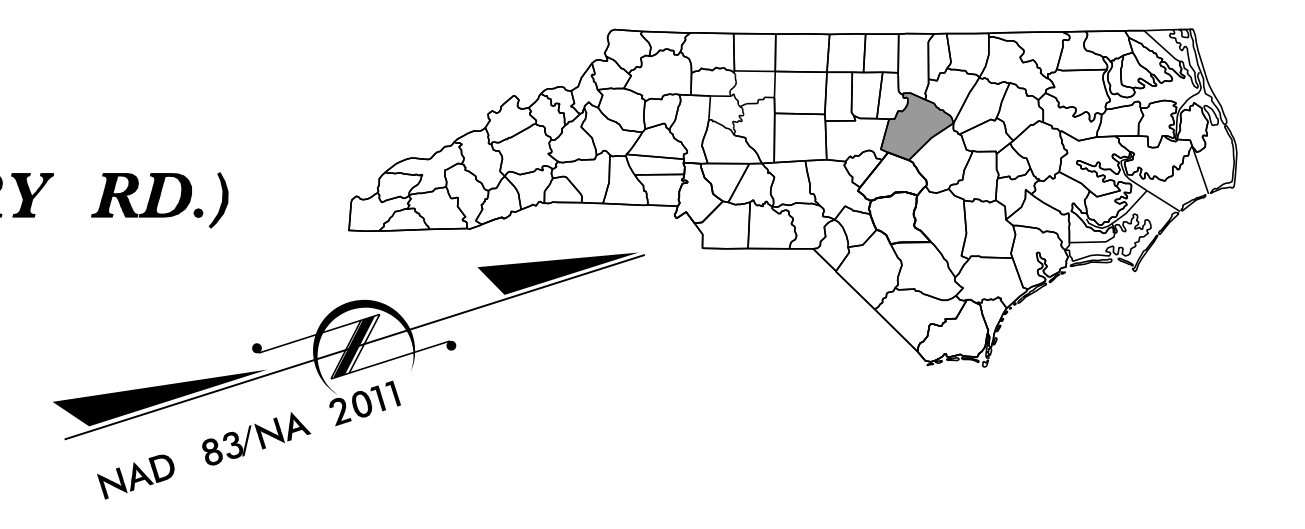
WAKE COUNTY

**LOCATION: TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION
 FROM I-40 TO SOUTH OF SR 2542 (ROCK QUARRY RD.)**

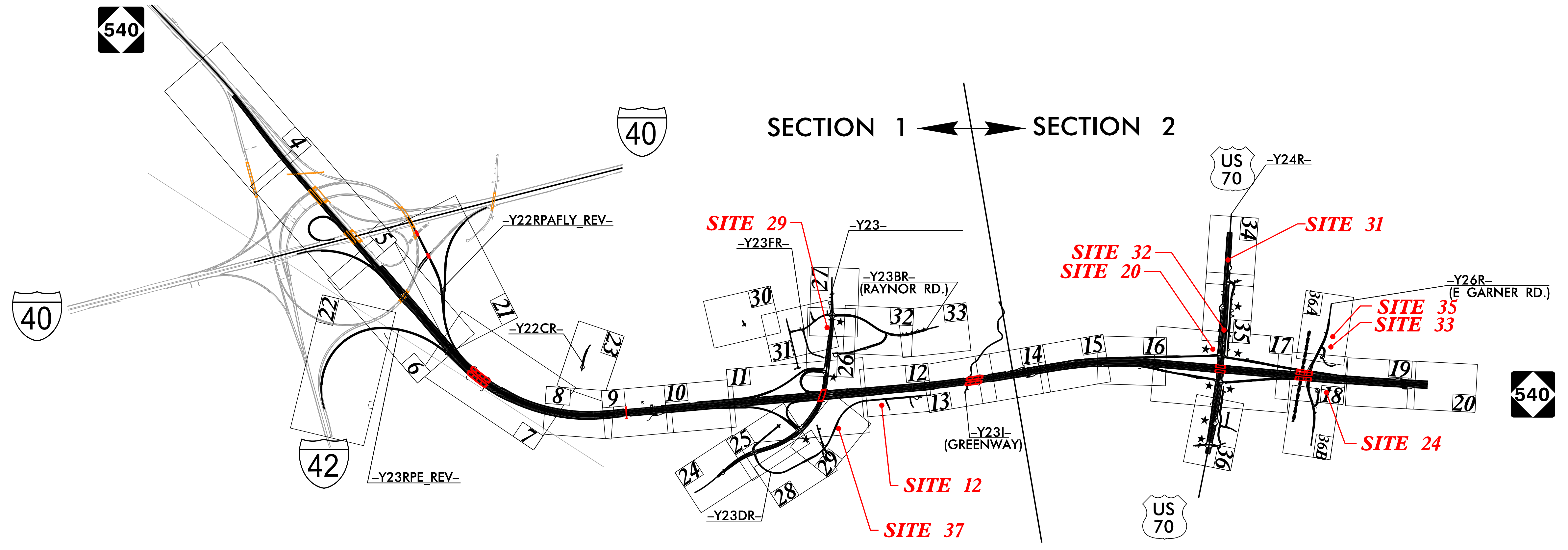
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, LIGHTING,
 SIGNING, ITS, CULVERTS & STRUCTURES**

**SAFETEA-LU SECTION 6002
 HYDRAULIC DESIGN MEETING PLANS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2829A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35517.3.TA1	N/A, 0540047	DESIGN-BUILD	
35517.3.TAGVI	N/A, 0540047	DESIGN-BUILD	

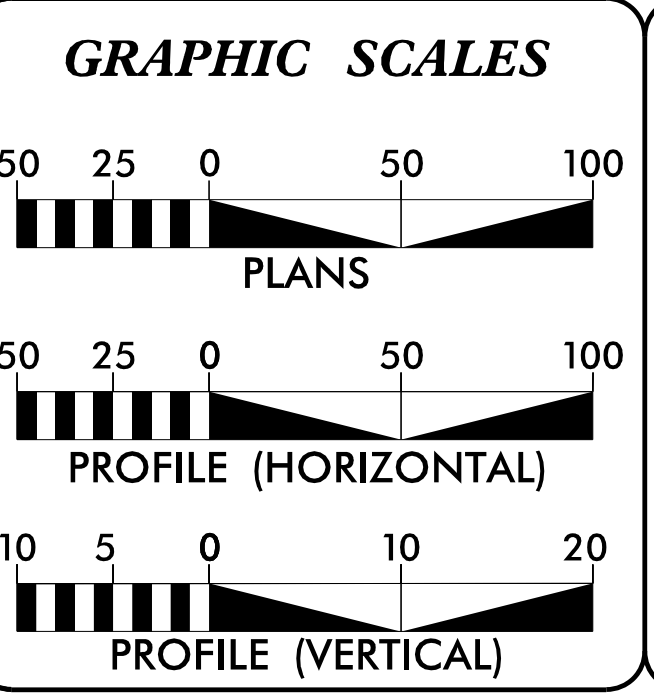


**UTILITY BUFFER DRAWING
 SHEET 1 OF 11**



- NOTES:
 1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III MODIFIED.
 2. THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
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ADT 2043	=	22,040
K	=	12%
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FUNC CLASS: INTERSTATE
 * (TTST 4% + DUALS 6%)

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TOTAL LENGTH TIP PROJECT R-2829A	4.165 MILES

NCTA CONTACT

Ron McCollum, PE
 DEPUTY CHIEF ENGINEER for PRECONSTRUCTION
 TURNPIKE AUTHORITY

PLANS PREPARED BY:

RK&K
 RUMMEL, KLEPPER & KAHN, LLP
 8601 SIX FORKS ROAD, FORUM 1, SUITE 700
 RALEIGH, NORTH CAROLINA 27615-3960
 NC LICENSE NO. F-0112

FOR NORTH CAROLINA
 TURNPIKE AUTHORITY

2018 STANDARD SPECIFICATIONS

LETTING DATE:
 October 17, 2023

C. Byron Holden, PE
 PROJECT ENGINEER

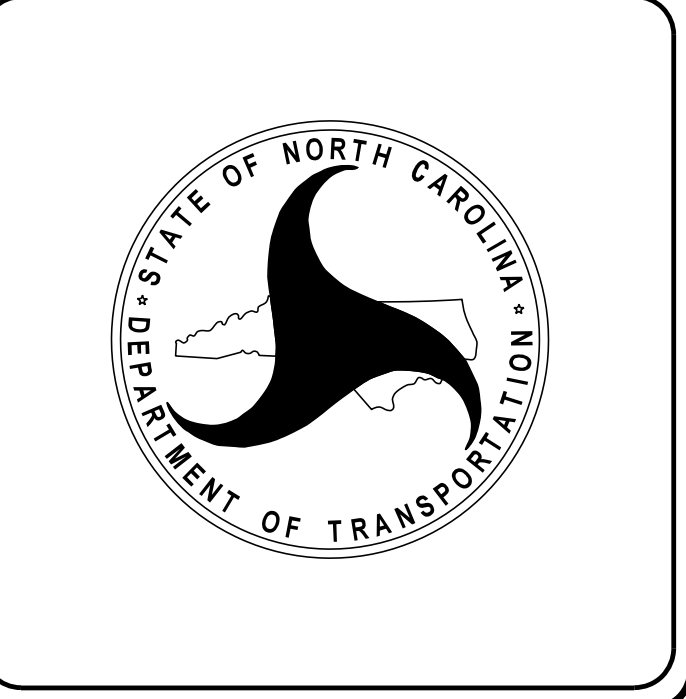
Anthony A. Houser, PE
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

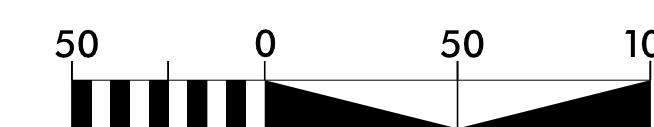
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PROJECT REFERENCE NO. R-2829A	SHEET NO. 12
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

**DOCUMENT NOT CONSIDERED FINAL
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**UTILITY BUFFER DRAWING
SHEET 2 OF 11**



SCALE

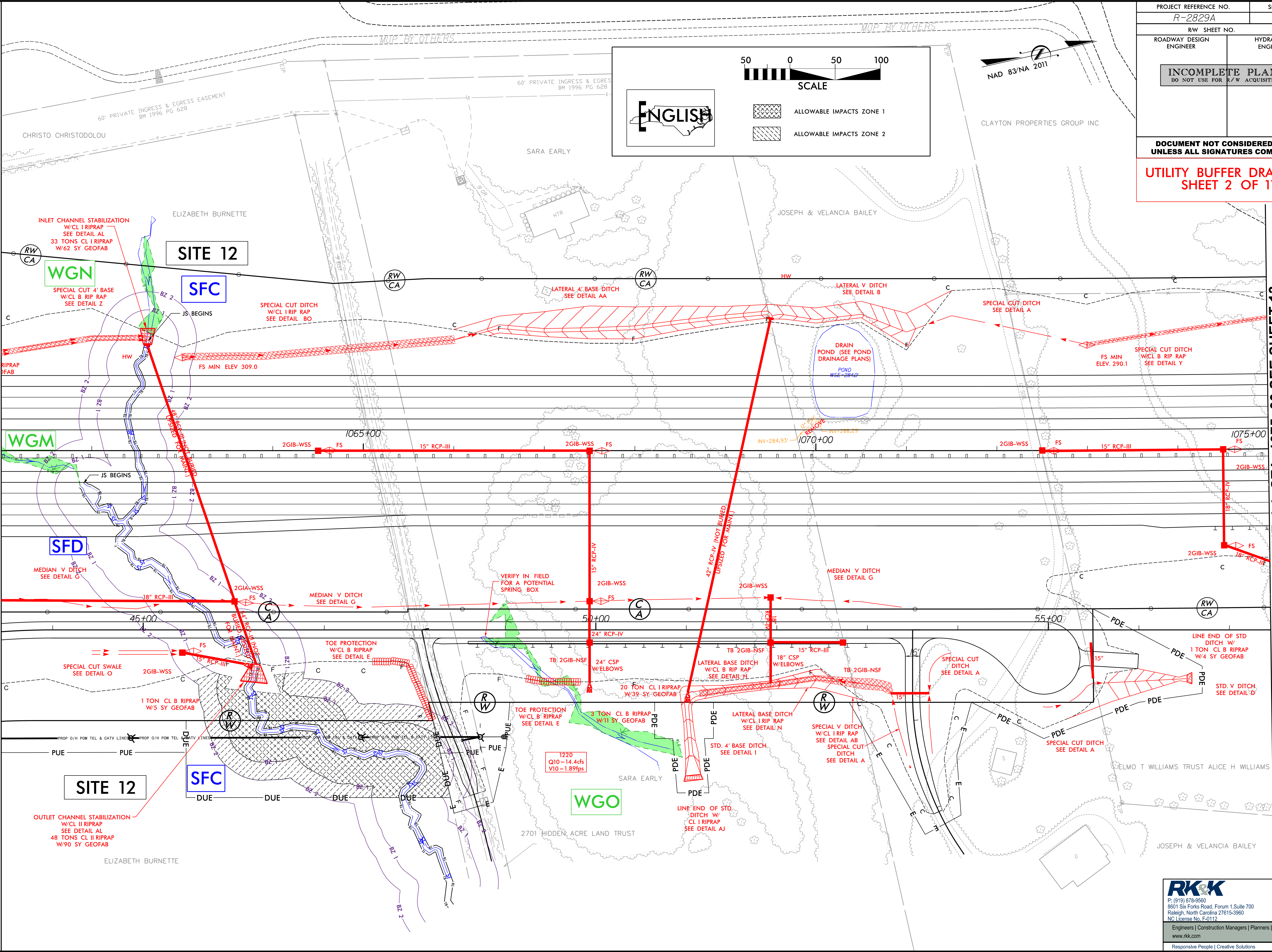
ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2



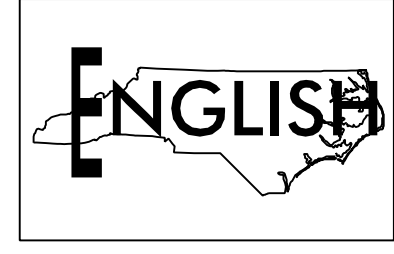
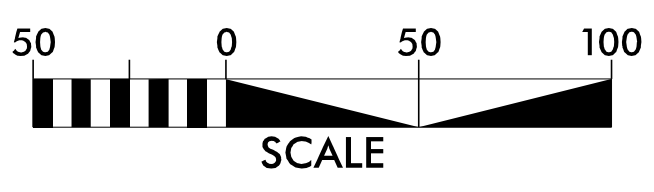
MATCHLINE -L1- STA 1061+00 SEE SHEET 11

MATCHLINE -L1- STA. 1075+00 SEE SHEET 13



8/17/199
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ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

**MATCHLINE
-Y25- STA. 15+00
SEE SHEET 36A**

**MATCHLINE
-Y26R- STA. 22+00
SEE SHEET 36A**

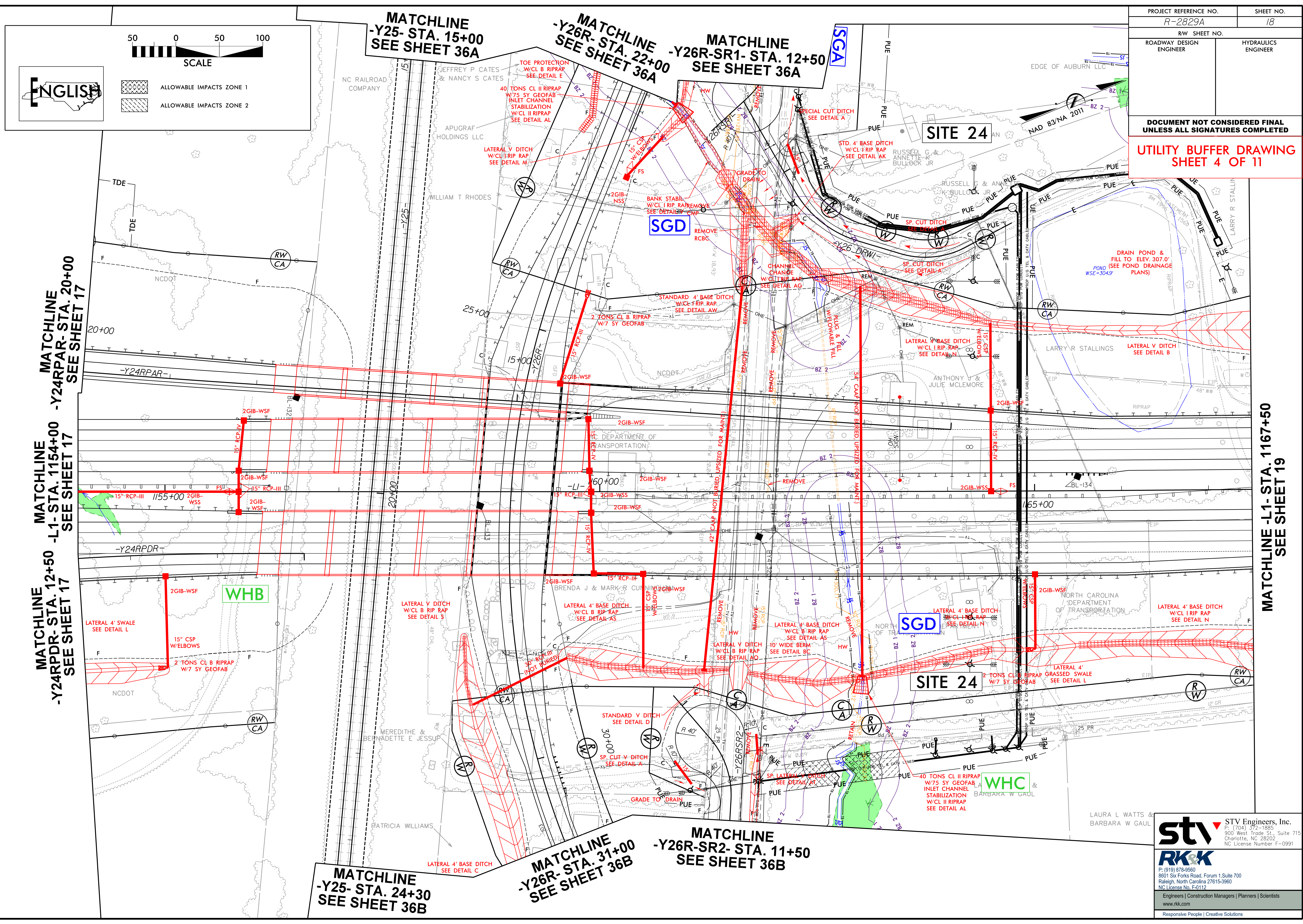
**MATCHLINE
-Y26R-SR1- STA. 12+50
SEE SHEET 36A**

**MATCHLINE
-Y24RPAR- STA. 20+00
SEE SHEET 17**

**MATCHLINE
-L1- STA. 1154+00
SEE SHEET 17**

**MATCHLINE
-Y24RPDR- STA. 12+50
SEE SHEET 17**

**MATCHLINE -L1- STA. 1167+50
SEE SHEET 19**



TDE

20+00

1155+00

-Y24RPDR

WHB

LATERAL 4' SWALE
SEE DETAIL L

15" CSP
W/ELBOWS

2 TONS CL B RIPRAP
W/7 SY GEOFAB

2GIB-WSF

LATERAL V DITCH
W/CL B RIP RAP
SEE DETAIL S

LATERAL 4' BASE DITCH
W/CL B RIP RAP
SEE DETAIL AS

LATERAL V DITCH
W/CL B RIP RAP
SEE DETAIL AO

10' WIDE BERM
SEE DETAIL BC

WHC

40 TONS CL II RIPRAP
W/75 SY GEOFAB
INLET CHANNEL
STABILIZATION
W/CL II RIPRAP
SEE DETAIL AL

STANDARD V DITCH
SEE DETAIL D

SP CUT-Y DITCH
SEE DETAIL A

SP LATERAL DITCH
SEE DETAIL AT

GRADE TO DRAIN

**MATCHLINE
-Y25- STA. 24+30
SEE SHEET 36B**

**MATCHLINE
-Y26R- STA. 31+00
SEE SHEET 36B**

**MATCHLINE
-Y26R-SR2- STA. 11+50
SEE SHEET 36B**

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PROJECT REFERENCE NO. R-2829A	SHEET NO. 26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

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UNLESS ALL SIGNATURES COMPLETED

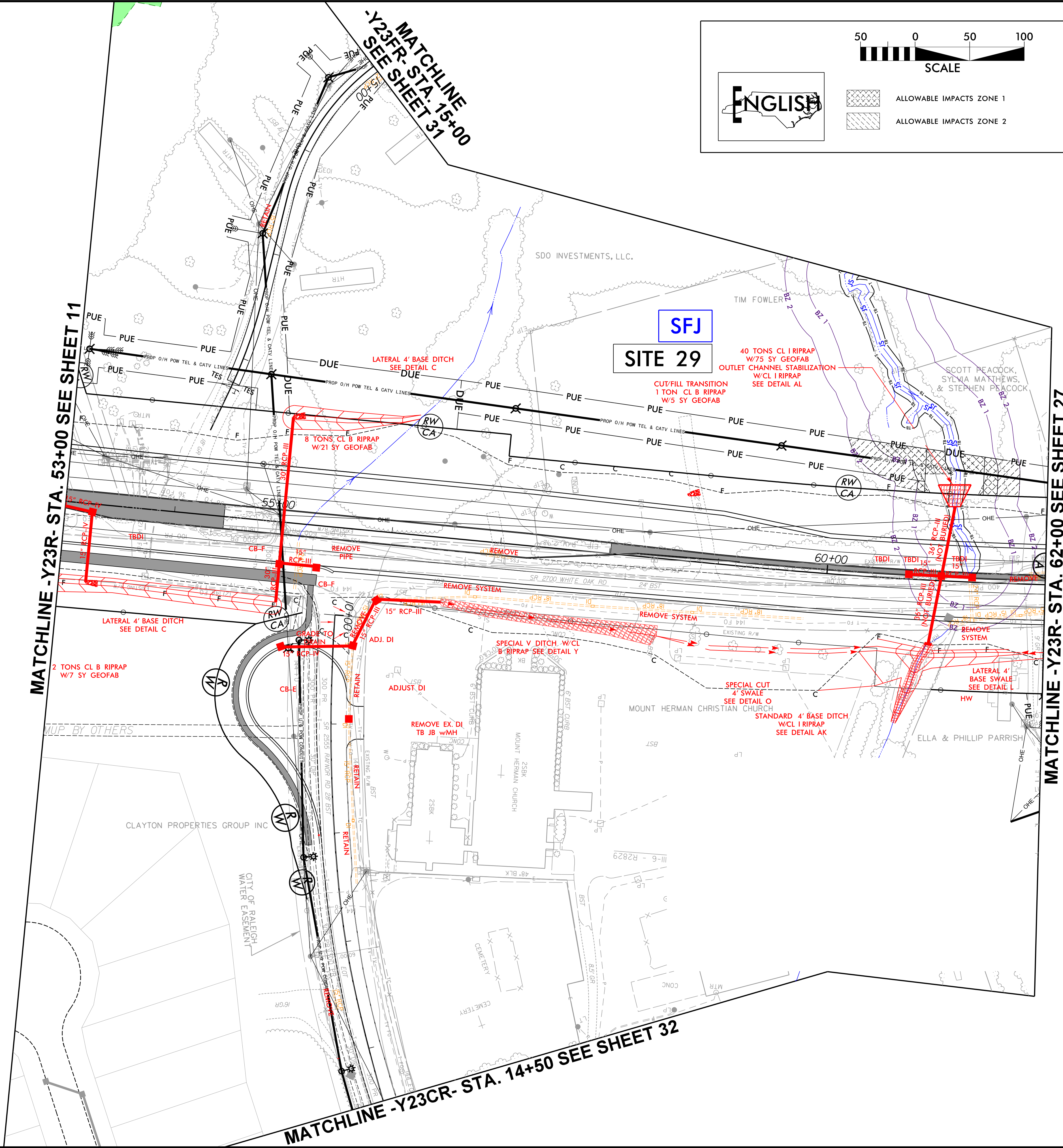
UTILITY BUFFER DRAWING
SHEET 5 OF 11

50 0 50 100
SCALE

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2



MATCHLINE -Y23R- STA. 53+00 SEE SHEET 11

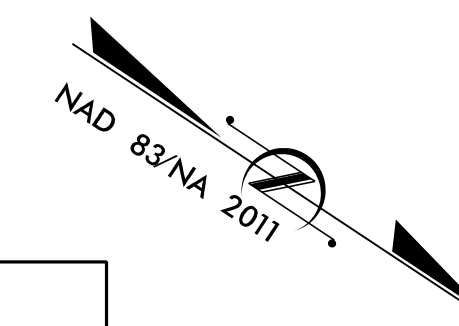
MATCHLINE -Y23R- STA. 15+00
SEE SHEET 31

MATCHLINE -Y23R- STA. 62+00 SEE SHEET 27

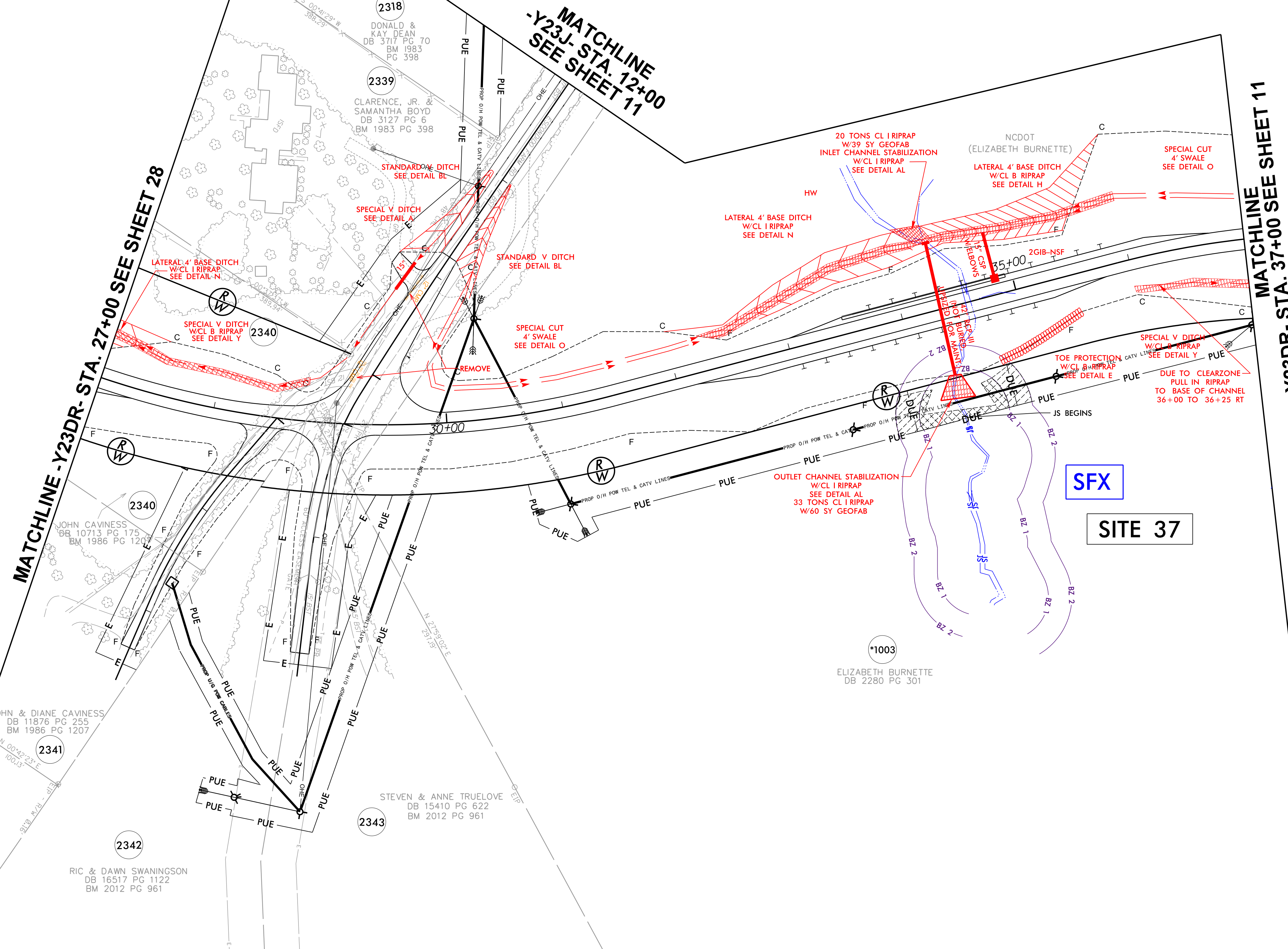
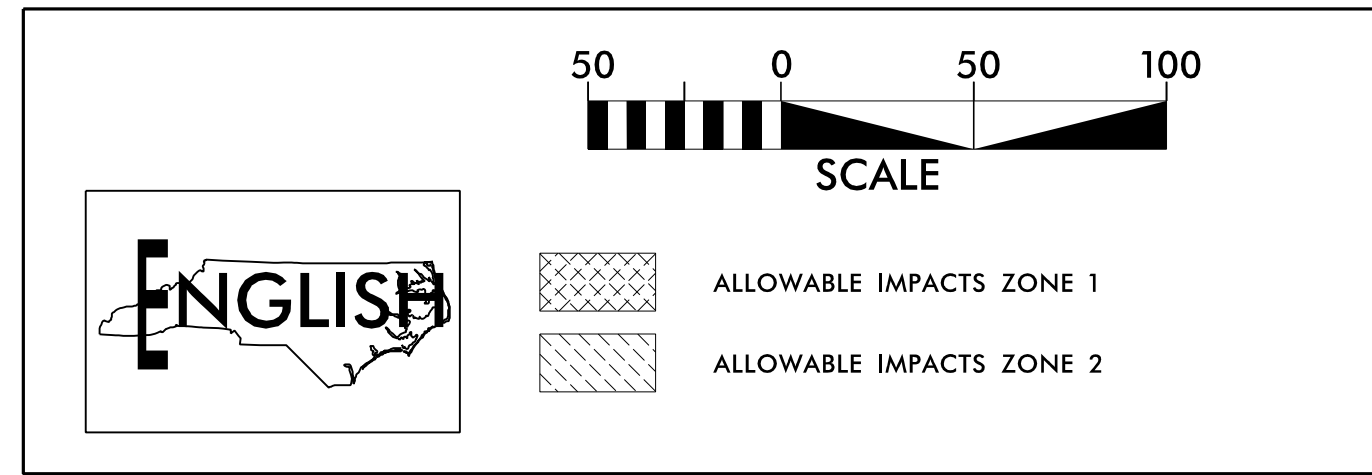
MATCHLINE -Y23CR- STA. 14+50 SEE SHEET 32

8/17/19

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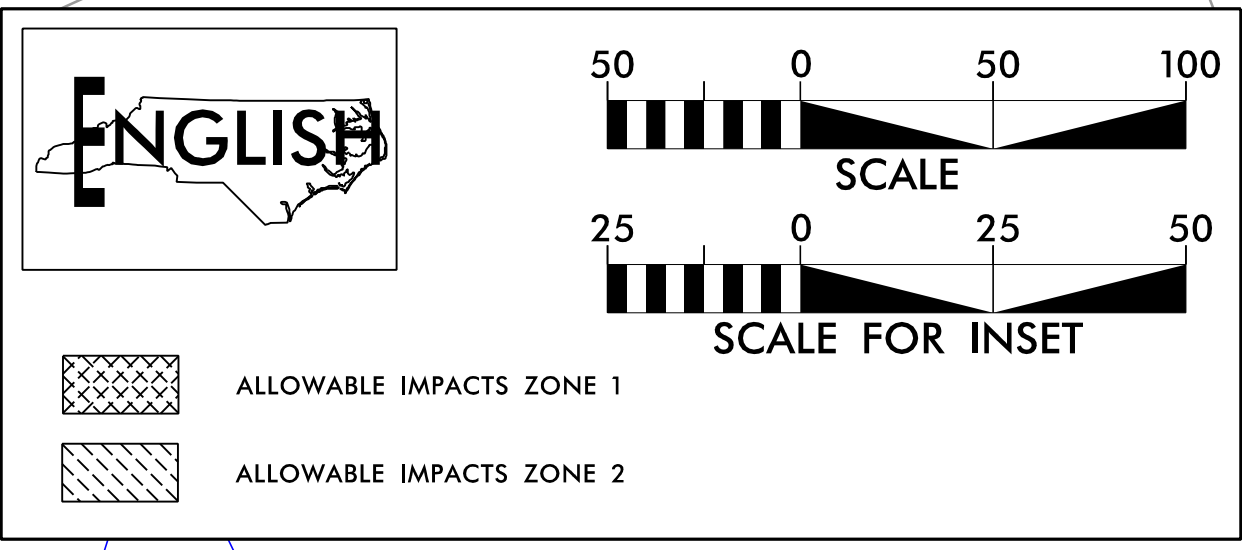
PROJECT REFERENCE NO. R-2829A	SHEET NO. 29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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UTILITY BUFFER DRAWING SHEET 6 OF 11	



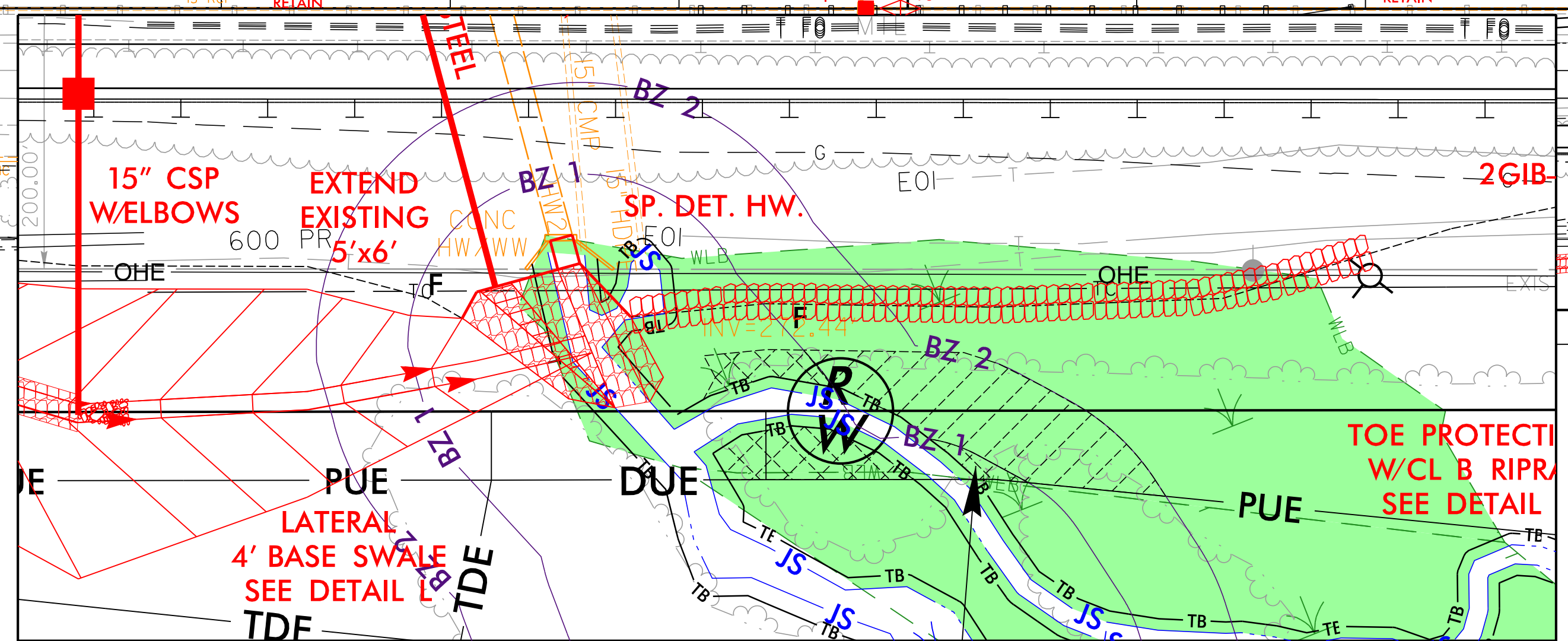
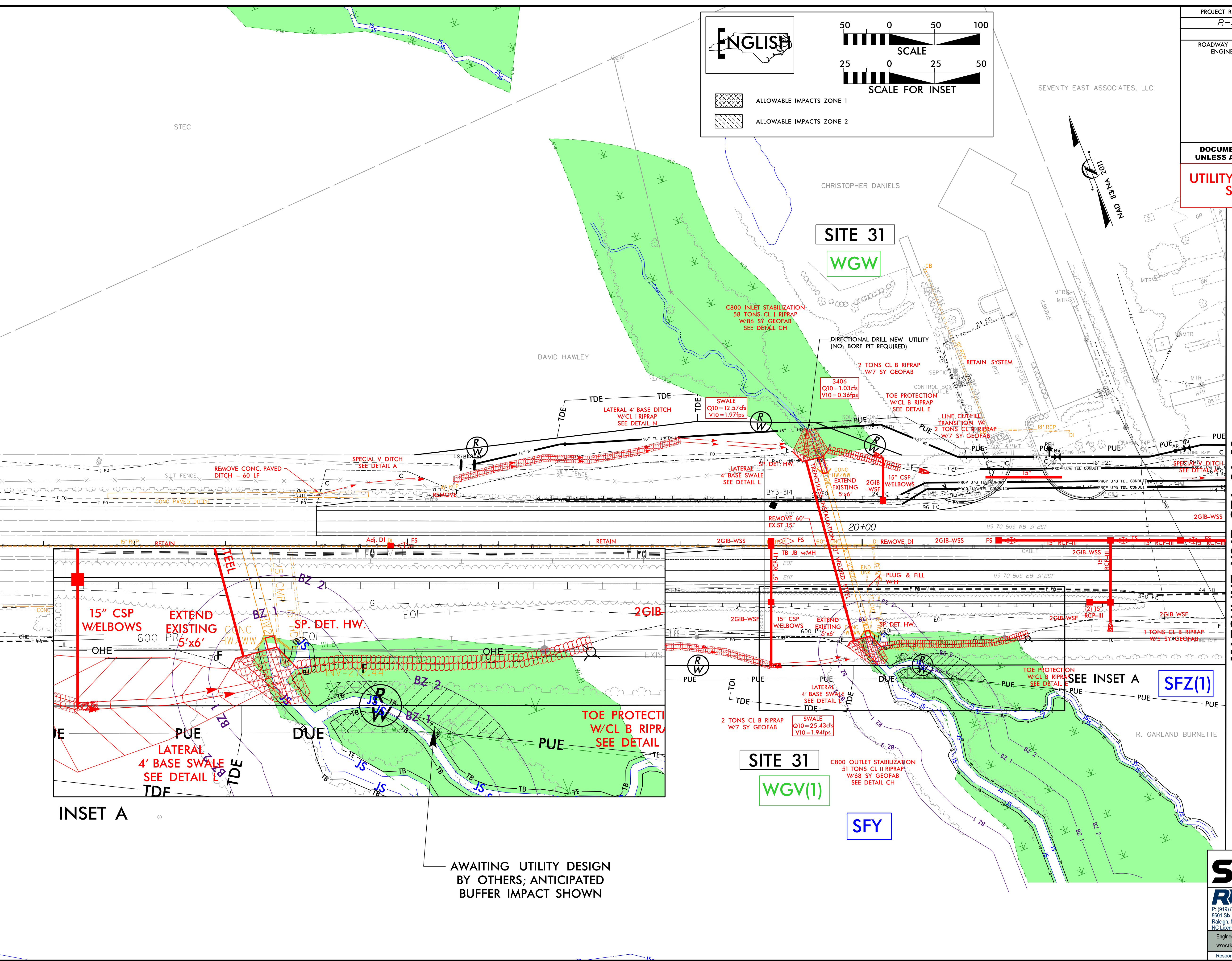
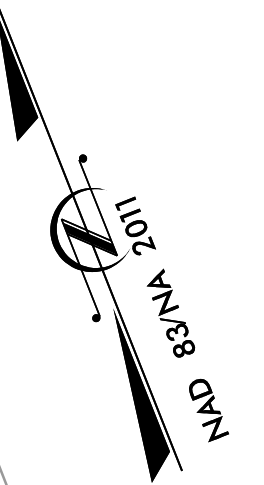
PROJECT REFERENCE NO. R-2829A	SHEET NO. 34
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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**UTILITY BUFFER DRAWING
SHEET 7 OF 11**



SEVENTY EAST ASSOCIATES, LLC.



**MATCHLINE -Y24R- STA. 24+00
SEE SHEET 35**

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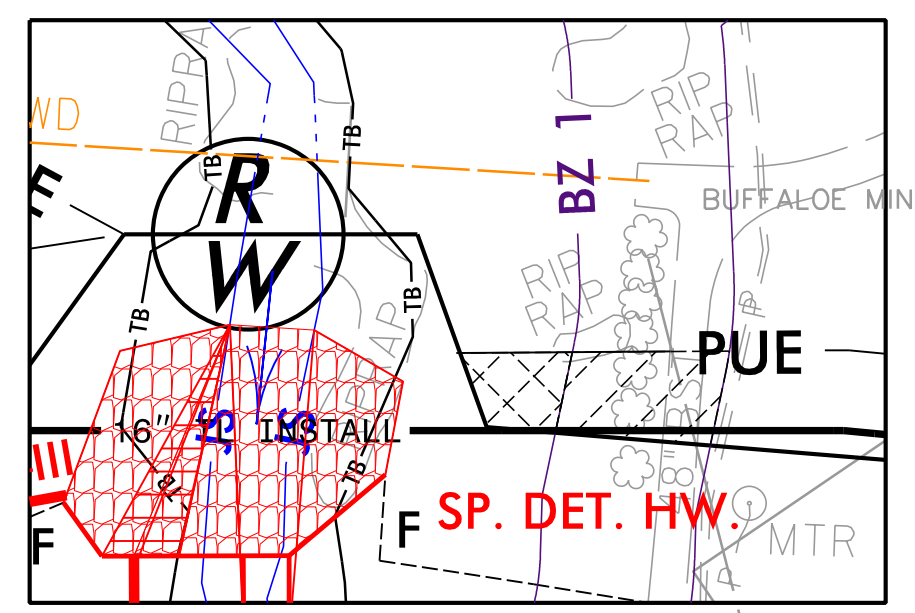
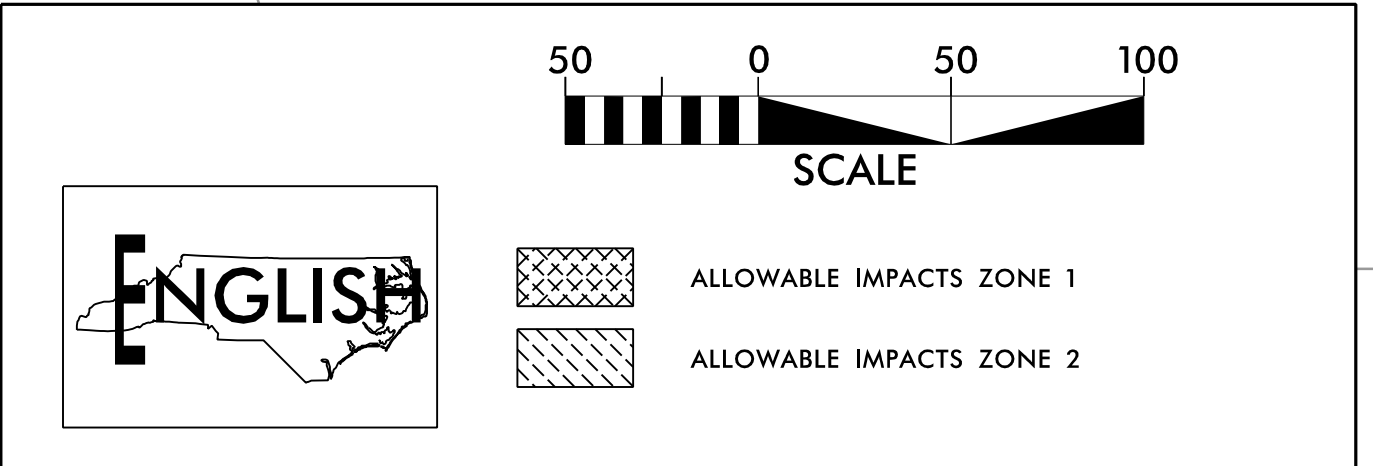
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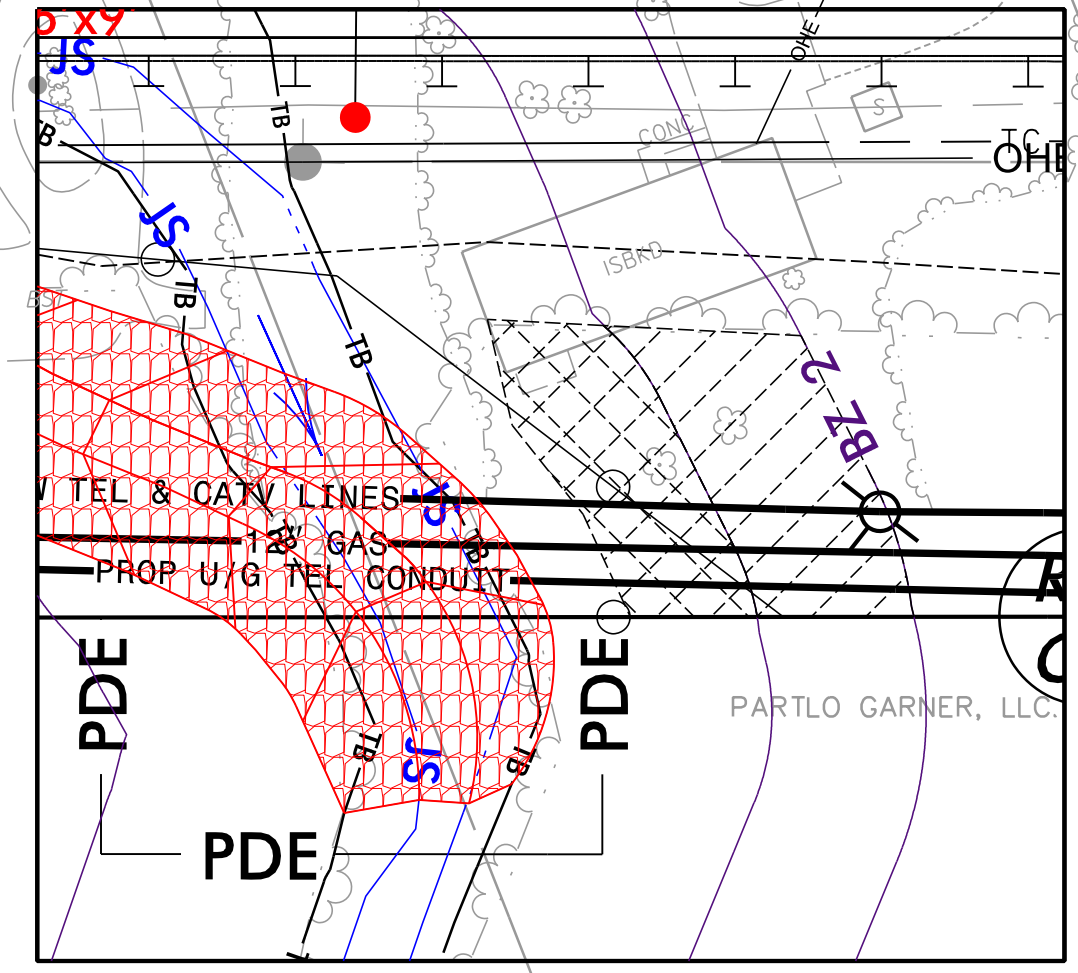
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UTILITY BUFFER DRAWING
SHEET 8 OF 11



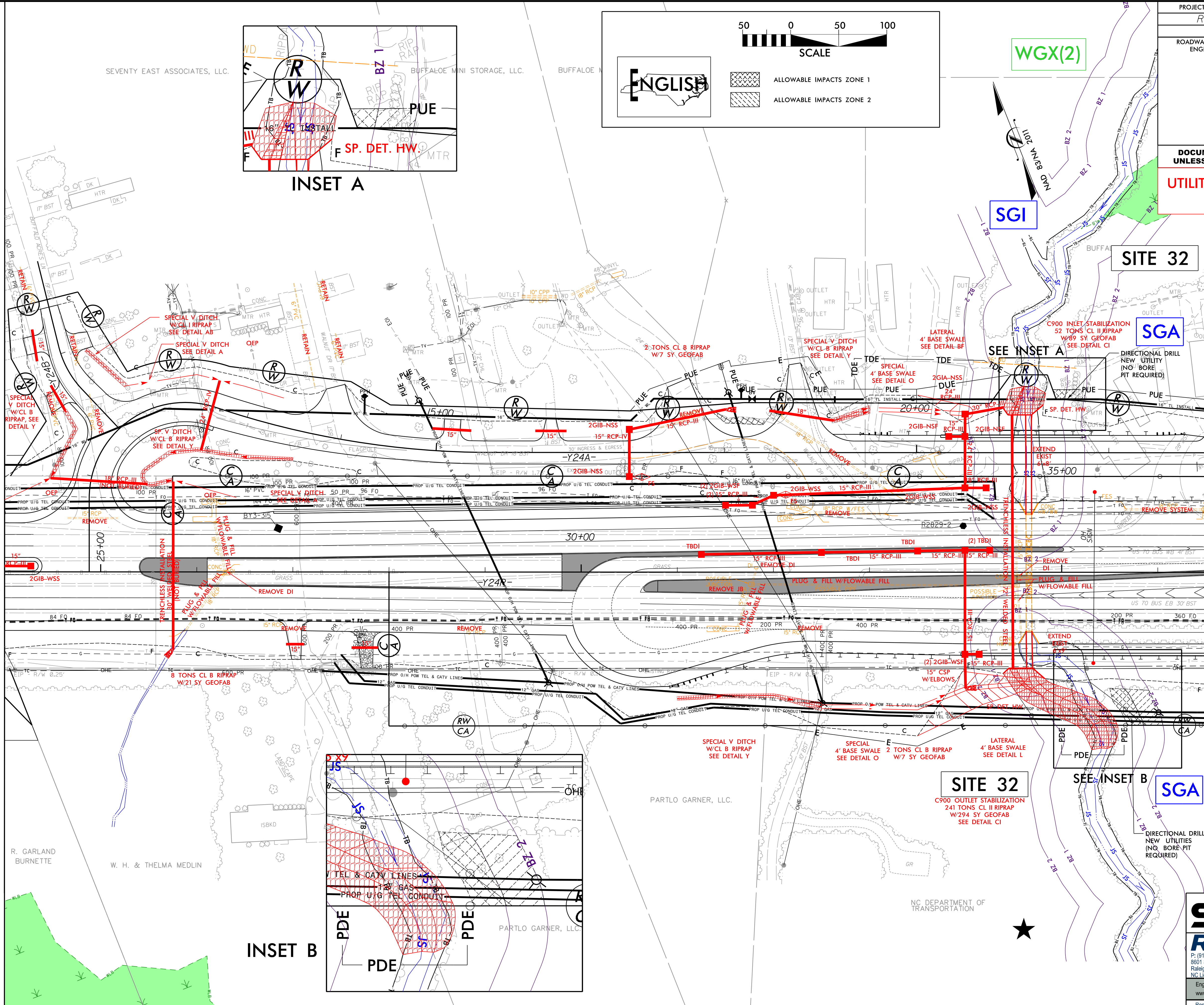
INSET A



INSET B

MATCHLINE -Y24R- STA. 24+00
SEE SHEET 34

MATCHLINE -Y24R- STA. 36+50
SEE SHEET 17



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RIPARIAN BUFFER IMPACTS SUMMARY

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)		
12	-Y23DR- 45+55- 48+40 RT	Overhead Power: SFC	X			16522	8773	25295					
20	-Y24R- 38+43 - 40+25 RT	Overhead Power, UG Gas & Telephone: SFT	X						8805	5650	14455		
24	-L1- 1162+12 - 1163+45 RT	Overhead Power: SGD, WHC	X			2110	1269	3379					
29	-Y23R- 60+10- 61+74 LT	Overhead Power: SFJ	X			1984	2013	3997					
31	-Y24R- 20+37 - 21+38 RT	Overhead Power & Anticipated Duke Line: SFY, WGV(1)	X			592	1175	1767					
32	-Y24R- 34+93 - 35+25 LT	UG Waterline: SGA	X			118	232	350					
	-Y24R- 35+50 - 36+06 RT	UG Gas, UG Telephone & Overhead Power: SGA	X			699	818	1517					
33	-Y26R- 18+47 - 19+87 LT	Anticipated Utility Line: SGA	X			2317	1487	3804					
35	-Y26R- 16+97 - 17+74 LT	Anticipated Utility Line: SAAL	X			899	631	1530					
37	-Y23DR- 33+72 - 34+89 RT	Overhead Power: SFX	X			1018	1389	2407					
TOTALS*:						26259	17787	44046	8805	5650	14455	0	0

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 6/6/2024
 Wake County
 R-2829A

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)	WETLANDS IN BUFFERS	
		ZONE 1 (ft ²)	ZONE 2 (ft ²)
24	-L1- 1162+12 RT	715	
31	-Y24R- 20+50 RT	533	1175
33	-Y26R- 19+15 LT	2082	1081
35	-Y26R- 17+30 LT	527	
TOTAL:		3857	2256

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
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 Wake County
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SHEET 11 OF 11