

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

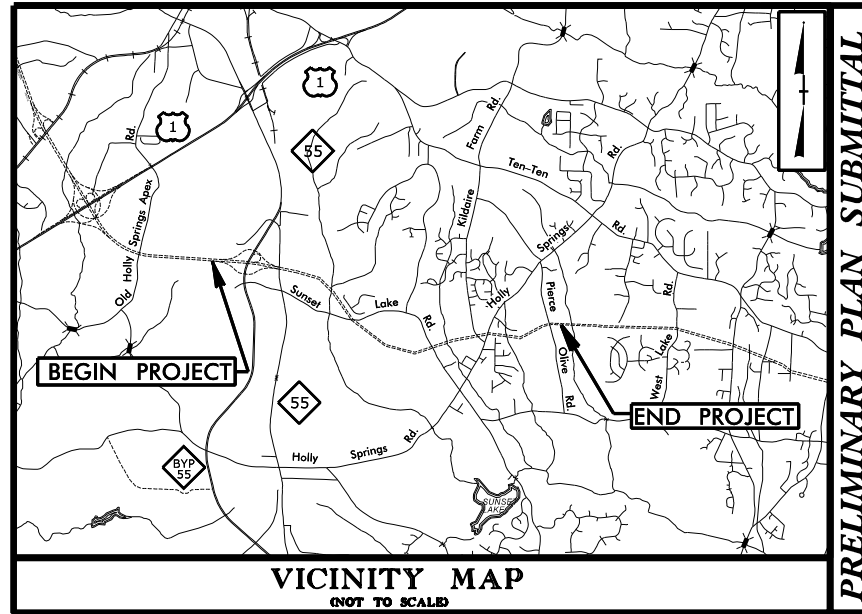
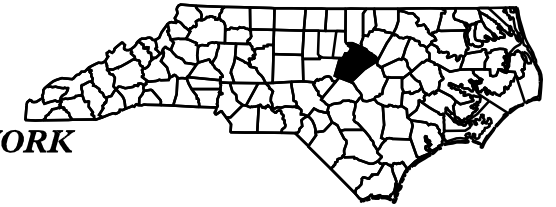
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2721A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
37673.3.GV3	(A) NHP-0540(041)	PE, R/W	

WAKE COUNTY

LOCATION: COMPLETE 540 - FROM WEST OF NC55 BYPASS TO EAST OF PIERCE OLIVE ROAD (SR 1389)

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



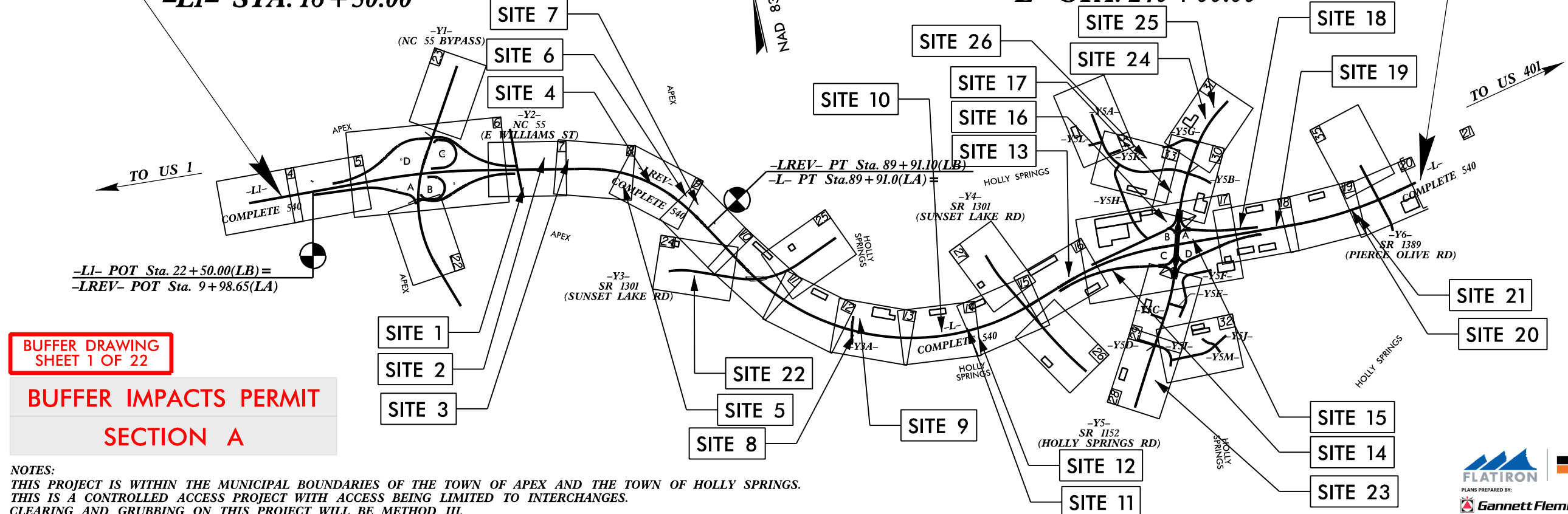
TIP PROJECT: R-2721A

PRELIMINARY PLAN SUBMITTAL

BEGIN TIP PROJECT R-2721A
-L1- STA. 16+50.00

END TIP PROJECT R-2721A
BEGIN TIP PROJECT R-2721B
-L- STA. 240+00.00

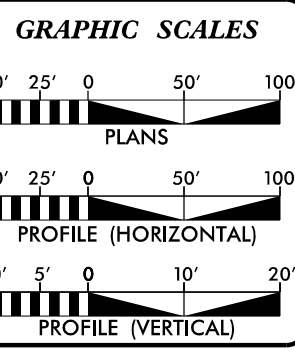
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



BUFFER DRAWING SHEET 1 OF 22

BUFFER IMPACTS PERMIT SECTION A

NOTES:
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF APEX AND THE TOWN OF HOLLY SPRINGS.
THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
CLEARING AND GRUBBING ON THIS PROJECT WILL BE METHOD III.



DESIGN DATA

ADT 2020	=	22,800
ADT 2040	=	49,200
K	=	12 %
D	=	65 %
T	=	11 % *
V	=	75 MPH
* TTST	=	4% DUAL 7%
FUNC CLASS	=	FREEWAY
STATEWIDE TIER	=	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2721A	=	4.311 Miles
LENGTH STRUCTURES	=	0.159 Miles*
TOTAL LENGTH TIP PROJECT R-2721A	=	4.470 Miles

*LENGTH BASED ON EB BRIDGES

NCDOT CONTACT: **RODGER ROCHELLE, PE**
TURNPIKE AUTHORITY
CHIEF ENGINEER, INNOVATIVE DELIVERY

Prepared for the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

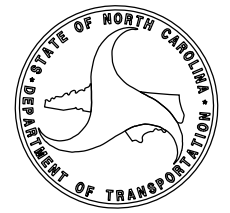
2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	THOMAS K. GOODWIN, PE PROJECT ENGINEER
LETTING DATE:	JERRY P. PAGE, PE PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

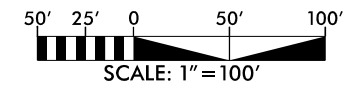
SIGNATURE: _____ P.E.



CONTRACT: C204196

12/3/2019 9:14:10 AM I:\RA\10372\CADD\RA-2721A\Hydrolics\PERMITS_Environment\RA\2721A_Hyd_prm_buf_psh_R2721_Hyd_prm_buf_psh_01.dgn

**BUFFER DRAWING
SHEET 2 OF 22**

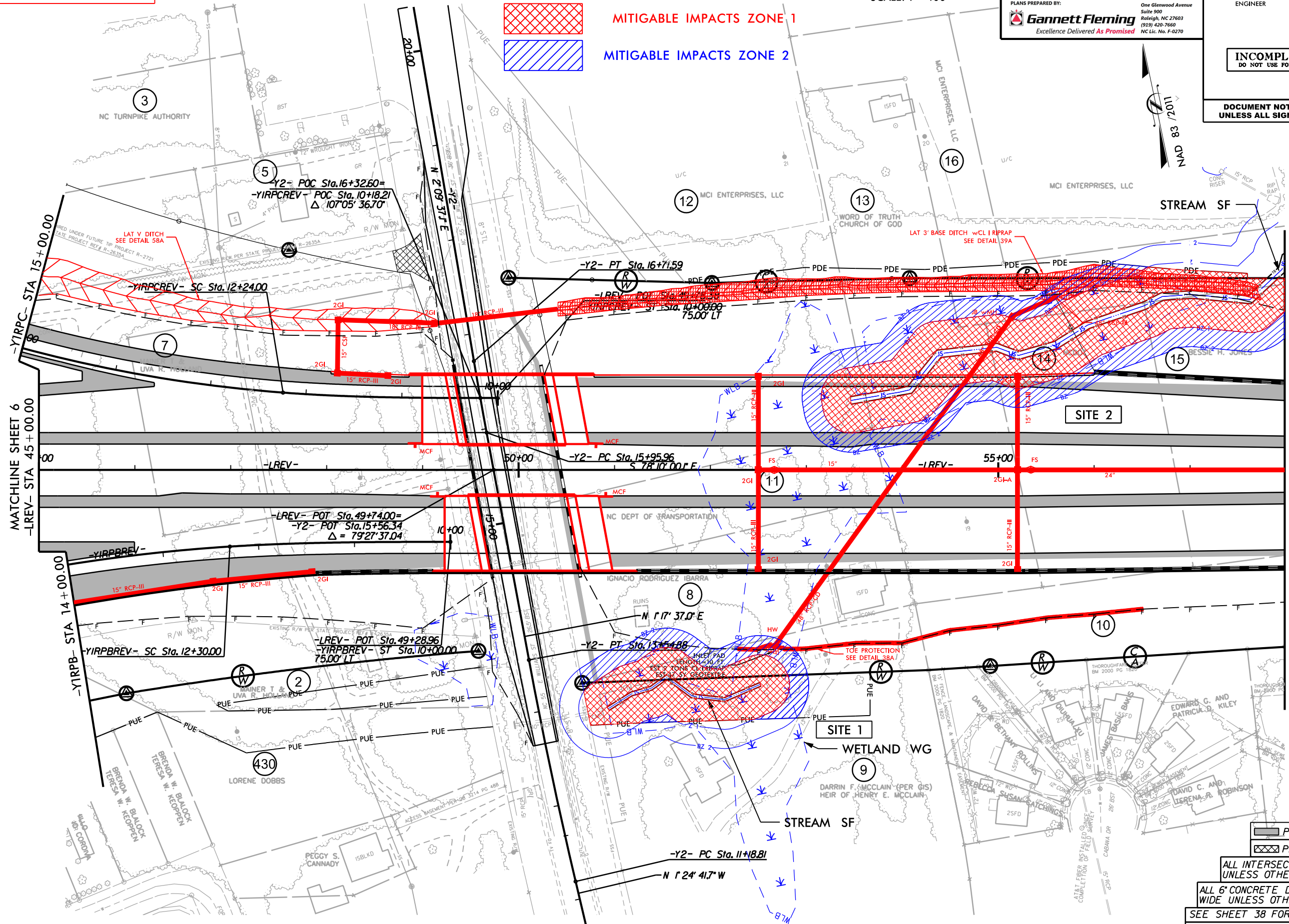


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

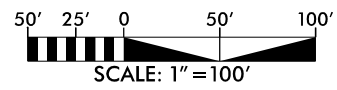
PROJECT REFERENCE NO. R-2721A	SHEET NO. 7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



- PAVED SHOULDER
- PAVEMENT REMOVAL
- ALL INTERSECTION RADII ARE 40' UNLESS OTHERWISE NOTED.
- ALL 6" CONCRETE DRIVEWAYS ARE 20' WIDE UNLESS OTHERWISE NOTED.
- SEE SHEET 38 FOR -LREV- PROFILE
- SEE SHEET 46 FOR -YIRPB- PROFILE
- SEE SHEET 47 FOR -YIRPC- PROFILE

15/2/2019 12:21:21 21A Hydraulic PERMITS Environmental R2721_Hyd_prm_buf_psh_r2721_Hyd_prm_buf_psh_07.dgn

**BUFFER DRAWING
SHEET 3 OF 22**

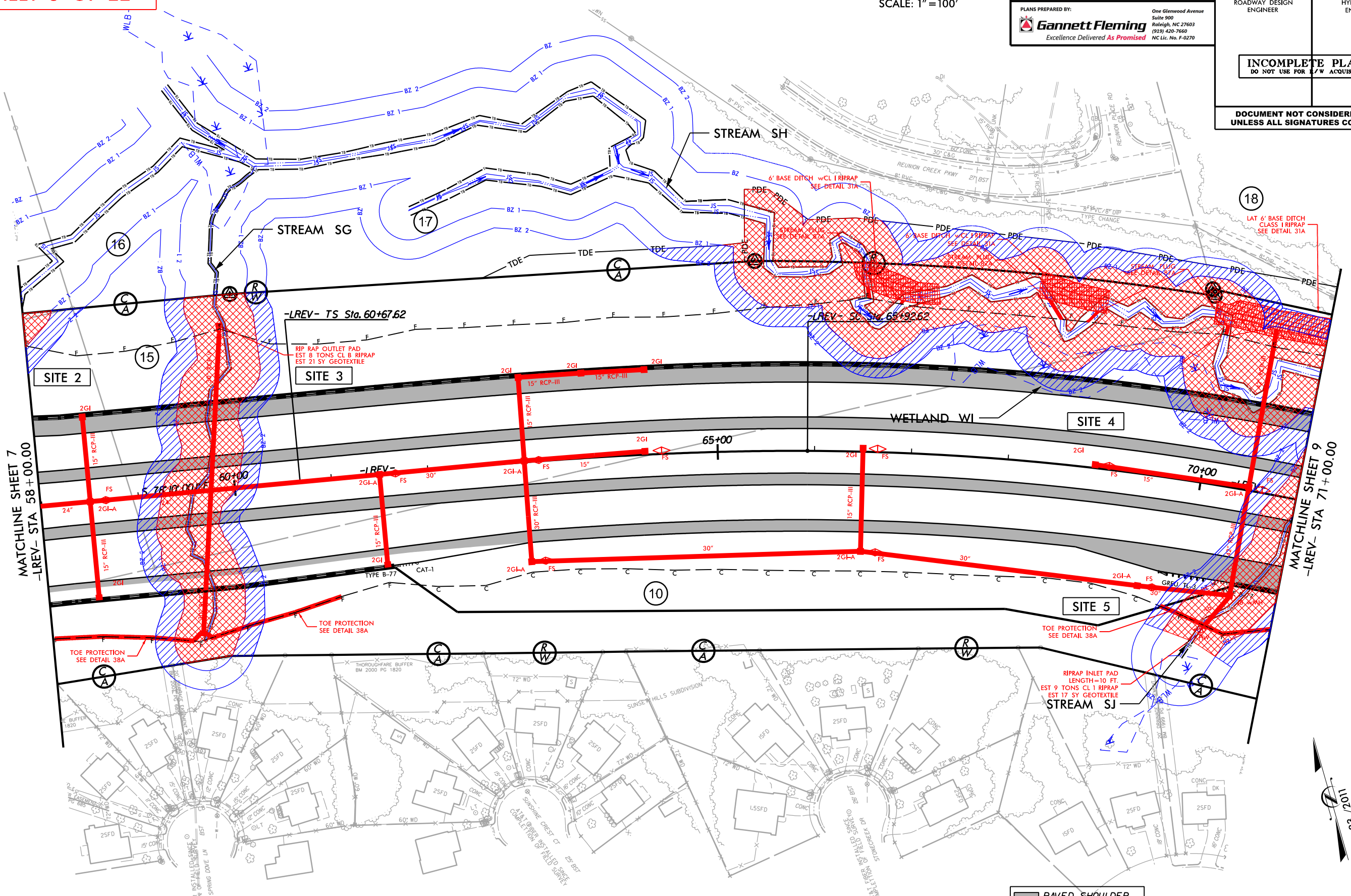


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE SHEET 7
-LREV- STA 58+00.00

MATCHLINE SHEET 9
-LREV- STA 71+00.00

▬ PAVED SHOULDER
▨ PAVEMENT REMOVAL

ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.
ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

SEE SHEET 38 FOR -LREV- PROFILE

5/14/2019 12:28:01 PM 21A Hydraulic PERMITS Environmental R2721_Hyd_prm_buf_psh(R2721_Hyd_prm_buf_psh_08.dgn)

**BUFFER DRAWING
SHEET 4 OF 22**



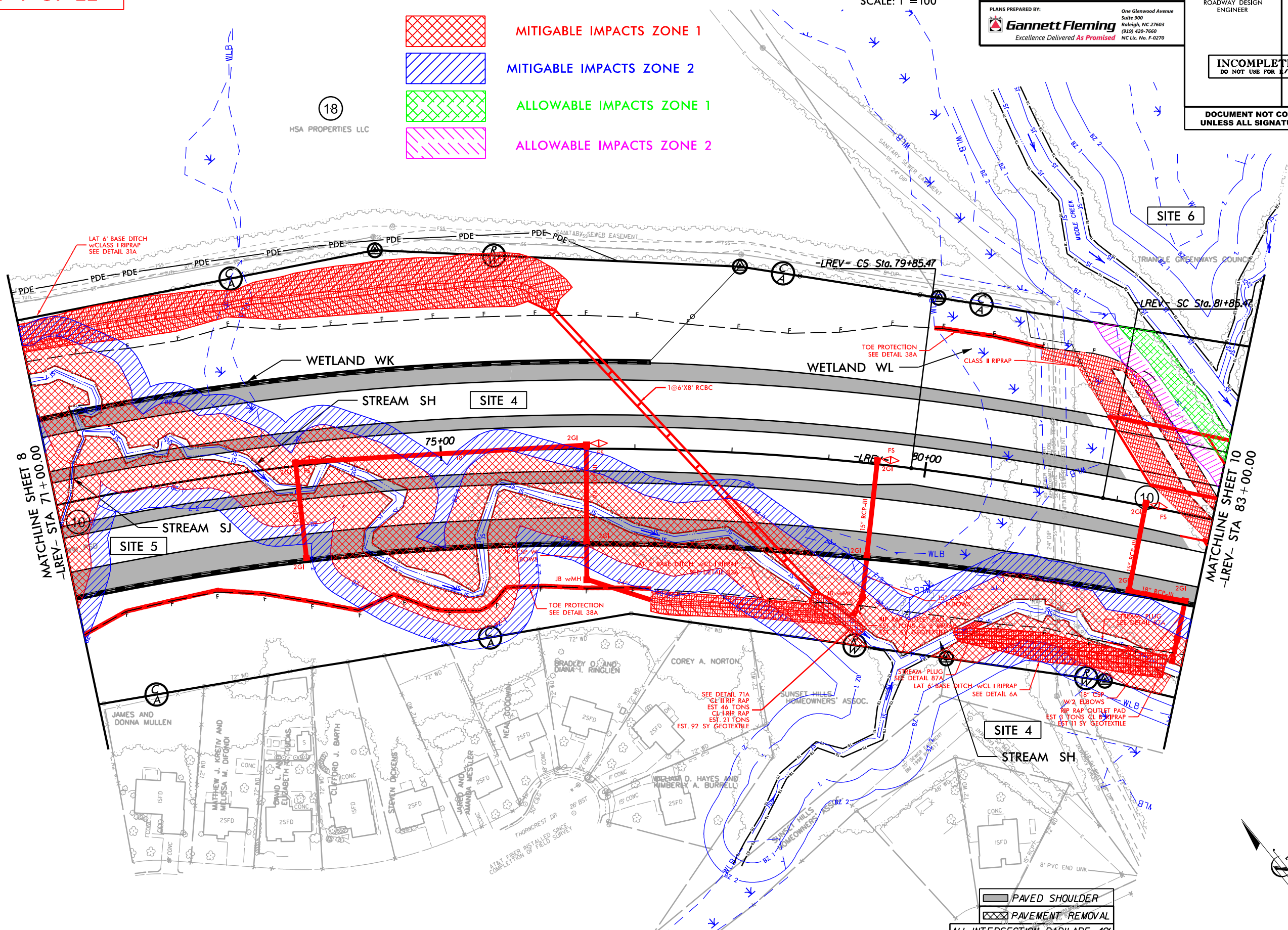
FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
 Excellence Delivered As Promised

One Glenwood Avenue
 Suite 900
 Raleigh, NC 27603
 (919) 420-7660
 NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



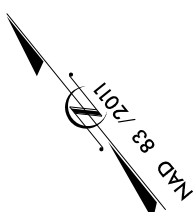
- PAVED SHOULDER
- PAVEMENT REMOVAL

ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.

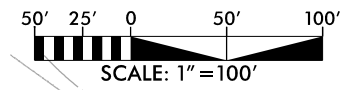
ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

SEE SHEET 39 FOR -LREV- PROFILE

5/1/2019 12:28:19 21A Hydraulic PERMITS Environmental R2721_Hyd_prm_buf_psh(R2721_Hyd_prm_buf_psh_09.dgn)



**BUFFER DRAWING
SHEET 5 OF 22**

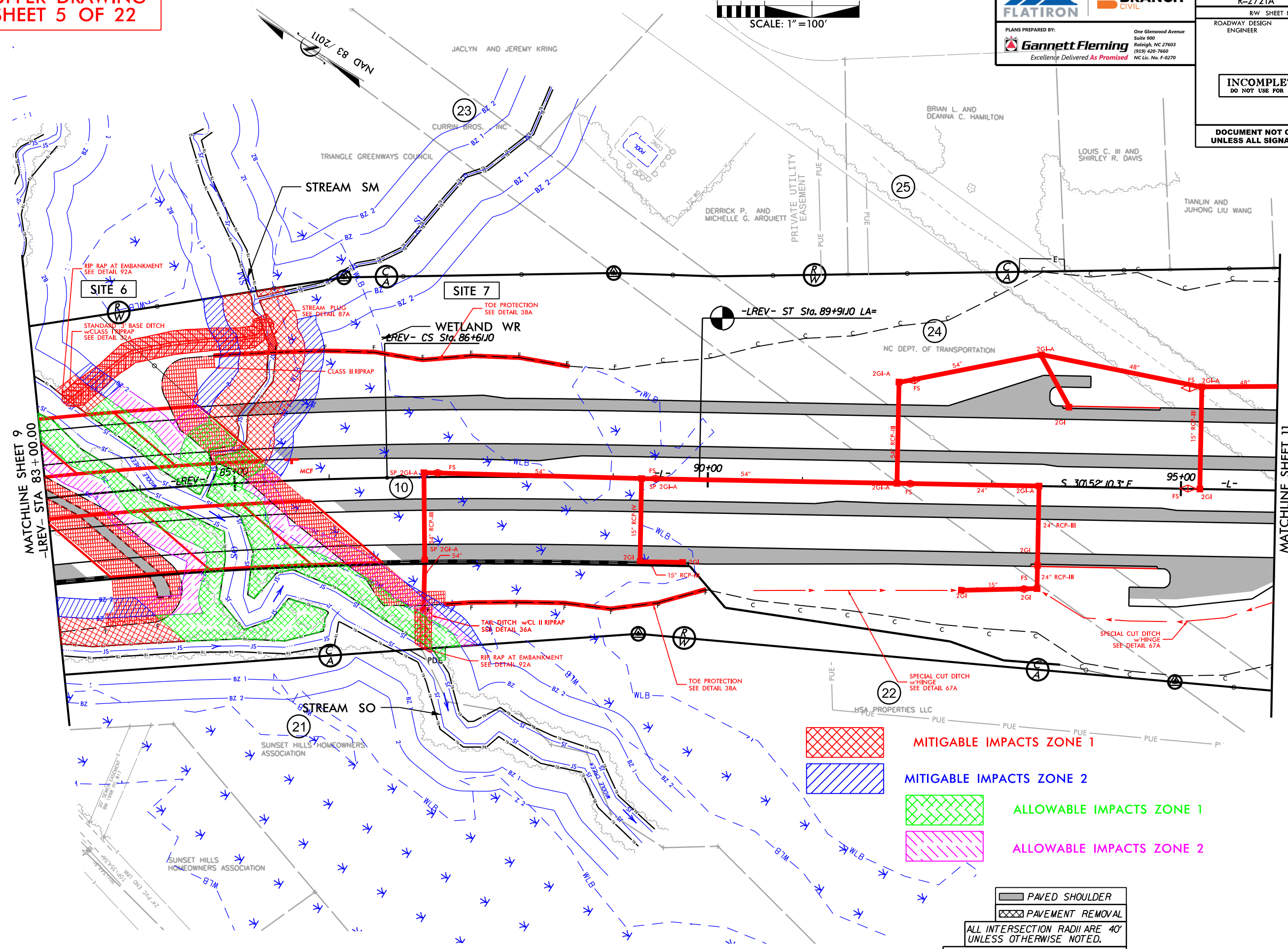


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 500
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR P/L W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE SHEET 9
-LREV- STA 83+00.00

MATCHLINE SHEET 11
-L- STA 96+00.00

MITIGABLE IMPACTS ZONE 1 (Red cross-hatch pattern)

MITIGABLE IMPACTS ZONE 2 (Blue diagonal lines pattern)

ALLOWABLE IMPACTS ZONE 1 (Green cross-hatch pattern)

ALLOWABLE IMPACTS ZONE 2 (Pink diagonal lines pattern)

PAVED SHOULDER
PAVEMENT REMOVAL

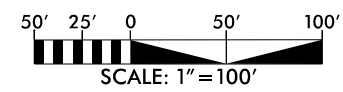
ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.

ALL 6\"/>

SEE SHEET 39 FOR -LREV- PROFILE

12/2/2019 12:21:19 21A (Hydraulics) REGMIS - Environmental R2721_Hyd_prm_buf_psh R2721_Hyd_prm_buf_psh_10.dgn

BUFFER DRAWING SHEET 6 OF 22



FLATIRON **BRANCH CIVIL**

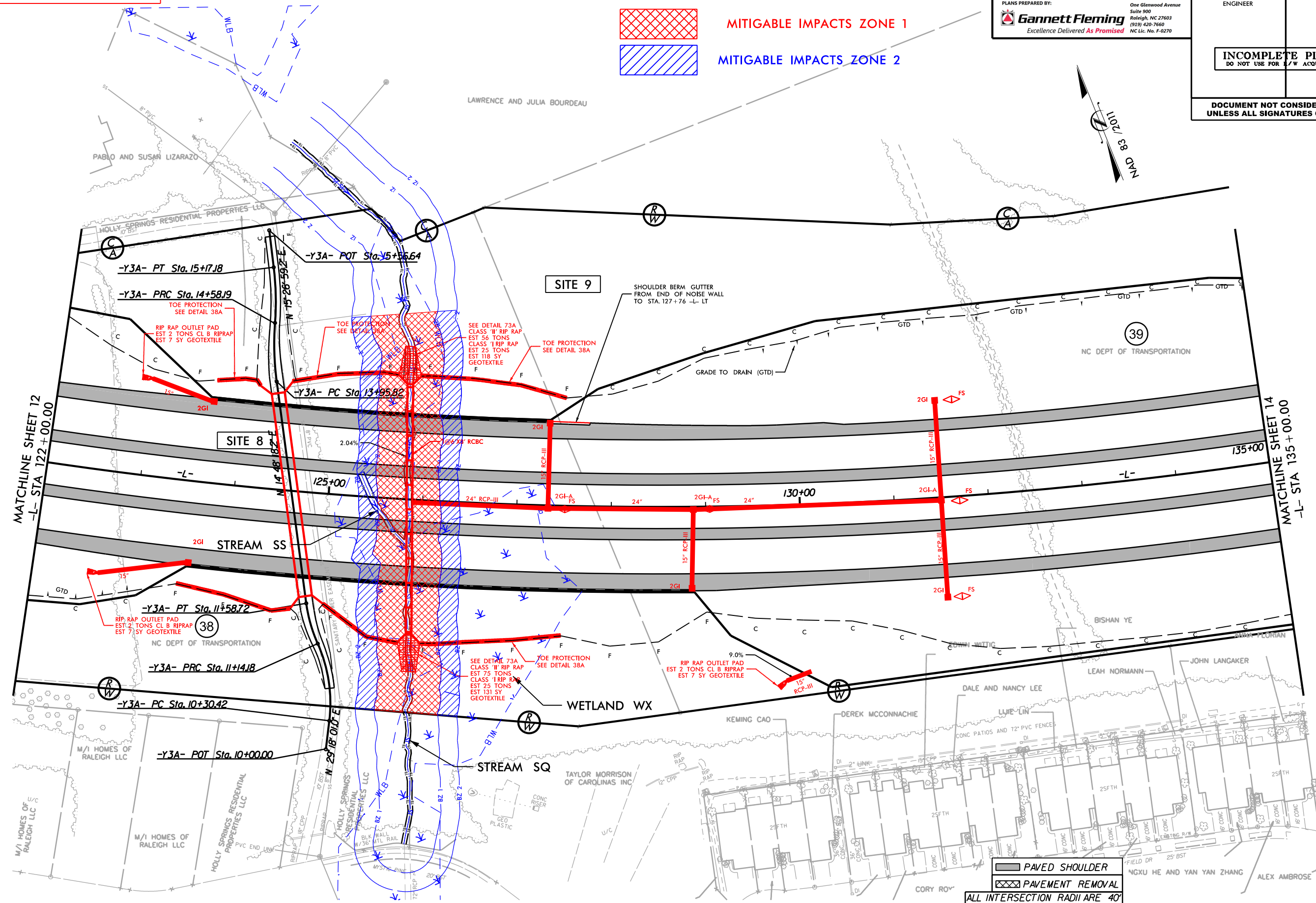
PLANS PREPARED BY:
Gannett Fleming
 Excellence Delivered As Promised

One Glenwood Avenue
 Suite 500
 Raleigh, NC 27603
 (919) 420-7660
 NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2



PAVED SHOULDER

PAVEMENT REMOVAL

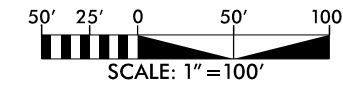
ALL INTERSECTION RADII ARE 40' UNLESS OTHERWISE NOTED.

ALL 6" CONCRETE DRIVEWAYS ARE 20' WIDE UNLESS OTHERWISE NOTED.

SEE SHEET 4I FOR -L- PROFILE
 SEE SHEET 5I FOR -Y3A- PROFILE

5/14/2019 12:20:19 21A (Hydraulics) - Environmental (R2721_Hyd_prm_buf_psh_13.dgn)

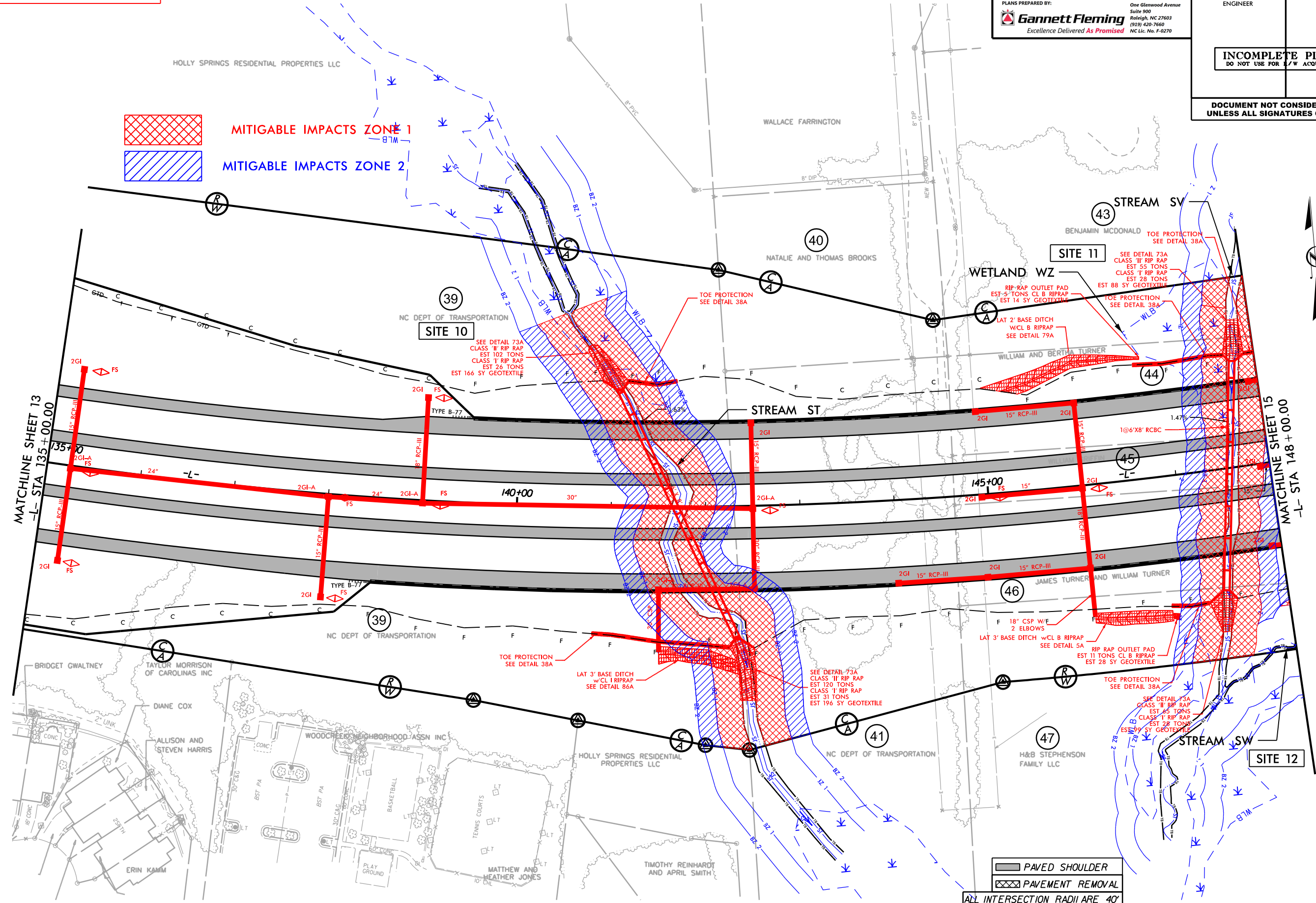
**BUFFER DRAWING
SHEET 7 OF 22**



FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE SHEET 13
-L- STA 135+00.00

MATCHLINE SHEET 15
-L- STA 148+00.00

PAVED SHOULDER
PAVEMENT REMOVAL

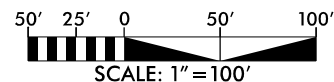
ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.
ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

SEE SHEET 41 FOR -L- PROFILE

NAD 83 / 2011

12/2/2019 12:21:21 21A Hydraulics - Environmental R2721_Hyd_prm_buf_psh_14.dgn

**BUFFER DRAWING
SHEET 8 OF 22**



FLATIRON **BRANCH CIVIL**

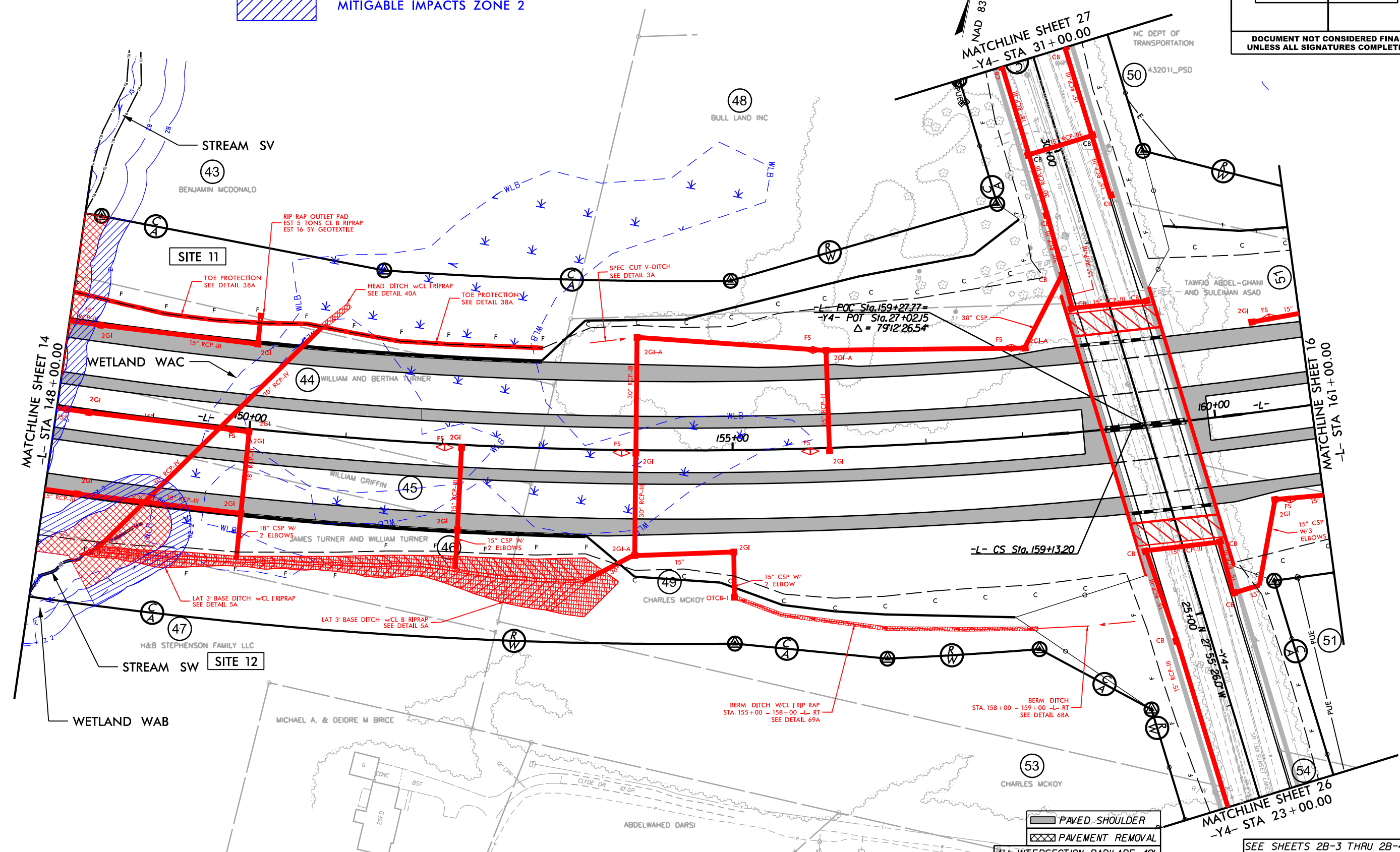
PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised


One Glenwood Avenue
Suite 500
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270


PROJECT REFERENCE NO. R-2721A	SHEET NO. 15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

 MITIGABLE IMPACTS ZONE 1

 MITIGABLE IMPACTS ZONE 2



 PAVED SHOULDER

 PAVEMENT REMOVAL

ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.

ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

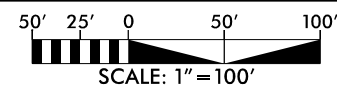
SEE SHEETS 2B-3 THRU 2B-4
FOR -Y4DET- PLAN VIEW

SEE SHEET 42 FOR -L- PROFILE

SEE SHEET 52 FOR -Y4- PROFILE

12/2/2019 21A Hydraulics Environmental R2721_Hyd_prm_buf_psh_15.dgn

**BUFFER DRAWING
SHEET 9 OF 22**

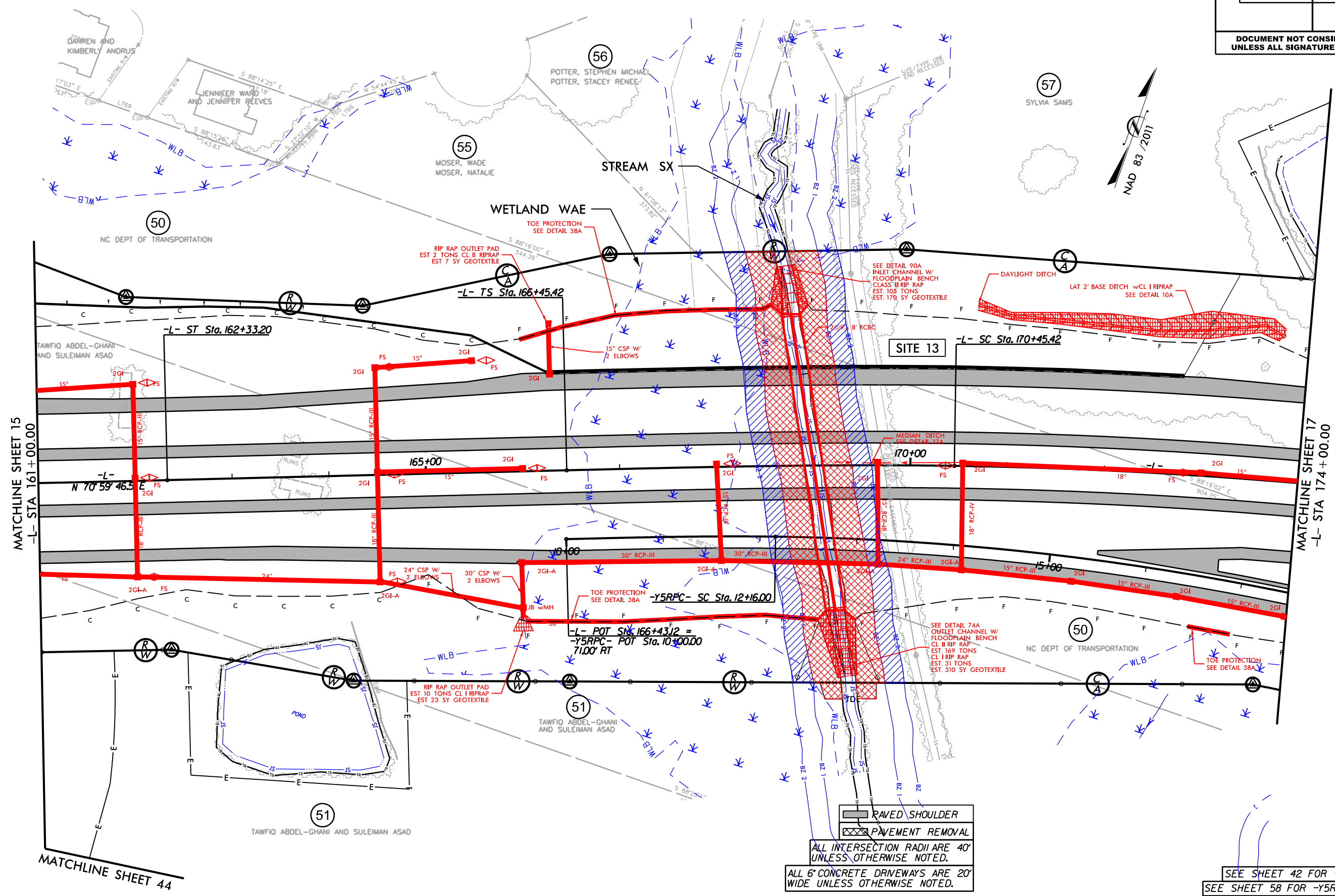


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE SHEET 15
-L- STA 161+00.00

MATCHLINE SHEET 17
-L- STA 174+00.00

RAVED SHOULDER
PAVEMENT REMOVAL
ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.
ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

SEE SHEET 42 FOR -L- PROFILE
SEE SHEET 58 FOR -Y5RPC- PROFILE

15.02.019
21A (Hydraulics) REGMIS - Environmental (R2721_Hyd_prm_buf_psh_16.dgn)

NO.	REVISIONS

**BUFFER DRAWING
SHEET 10 OF 22**

 MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

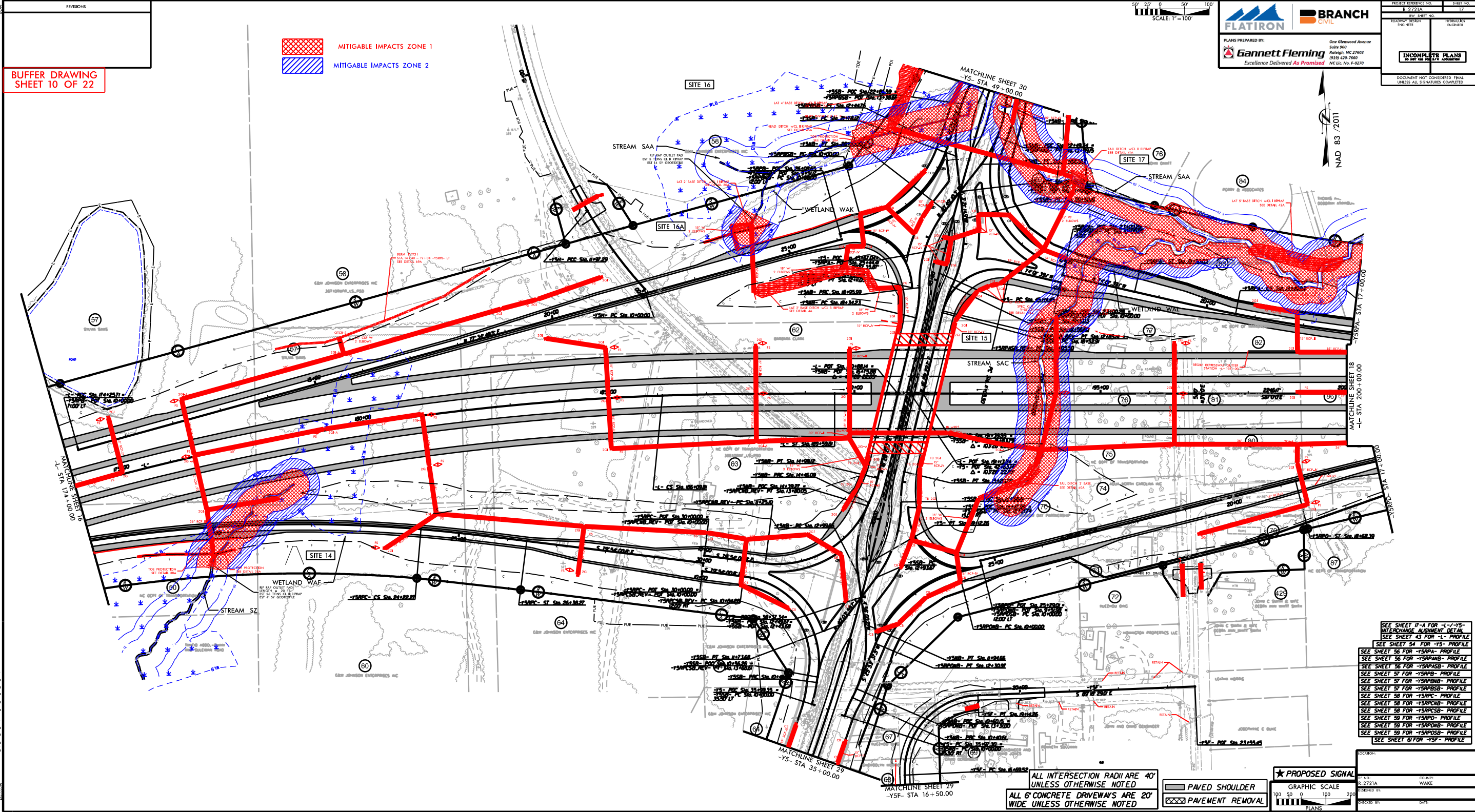


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 300
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-4270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 17
ROADWAY DESIGN ENGINEER	REGISTERED ENGINEER
INCOMPLETE PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	





- SEE SHEET 17-A FOR -L-1-Y-S- INTERCHANGING ALIGNMENT DETAIL
- SEE SHEET 43 FOR -L-1- PROFILE
- SEE SHEET 54 FOR -Y3- PROFILE
- SEE SHEET 56 FOR -Y3A- PROFILE
- SEE SHEET 56 FOR -Y3A1A- PROFILE
- SEE SHEET 56 FOR -Y3A1B- PROFILE
- SEE SHEET 57 FOR -Y3A2- PROFILE
- SEE SHEET 57 FOR -Y3A2A- PROFILE
- SEE SHEET 57 FOR -Y3A2B- PROFILE
- SEE SHEET 58 FOR -Y3A3- PROFILE
- SEE SHEET 58 FOR -Y3A3A- PROFILE
- SEE SHEET 58 FOR -Y3A3B- PROFILE
- SEE SHEET 58 FOR -Y3A3C- PROFILE
- SEE SHEET 58 FOR -Y3A3D- PROFILE
- SEE SHEET 58 FOR -Y3A3E- PROFILE
- SEE SHEET 58 FOR -Y3A3F- PROFILE
- SEE SHEET 58 FOR -Y3A3G- PROFILE
- SEE SHEET 58 FOR -Y3A3H- PROFILE
- SEE SHEET 58 FOR -Y3A3I- PROFILE
- SEE SHEET 58 FOR -Y3A3J- PROFILE
- SEE SHEET 58 FOR -Y3A3K- PROFILE
- SEE SHEET 58 FOR -Y3A3L- PROFILE
- SEE SHEET 58 FOR -Y3A3M- PROFILE
- SEE SHEET 58 FOR -Y3A3N- PROFILE
- SEE SHEET 58 FOR -Y3A3O- PROFILE
- SEE SHEET 58 FOR -Y3A3P- PROFILE
- SEE SHEET 58 FOR -Y3A3Q- PROFILE
- SEE SHEET 58 FOR -Y3A3R- PROFILE
- SEE SHEET 58 FOR -Y3A3S- PROFILE
- SEE SHEET 58 FOR -Y3A3T- PROFILE
- SEE SHEET 58 FOR -Y3A3U- PROFILE
- SEE SHEET 58 FOR -Y3A3V- PROFILE
- SEE SHEET 58 FOR -Y3A3W- PROFILE
- SEE SHEET 58 FOR -Y3A3X- PROFILE
- SEE SHEET 58 FOR -Y3A3Y- PROFILE
- SEE SHEET 58 FOR -Y3A3Z- PROFILE

ALL INTERSECTION RADII ARE 40' UNLESS OTHERWISE NOTED

ALL 6" CONCRETE DRIVEWAYS ARE 20' WIDE UNLESS OTHERWISE NOTED

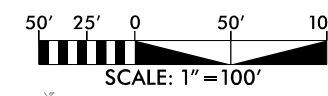
PROPOSED SIGNAL

GRAPHIC SCALE
1" = 100'
0 25 50 100 200

LEGEND:
 PAVED SHOULDER
 PAVEMENT REMOVAL

G:\PROJECTS\2020\20200121\20200121.dwg, 1/21/2020, 10:00 AM

**BUFFER DRAWING
SHEET 11 OF 22**

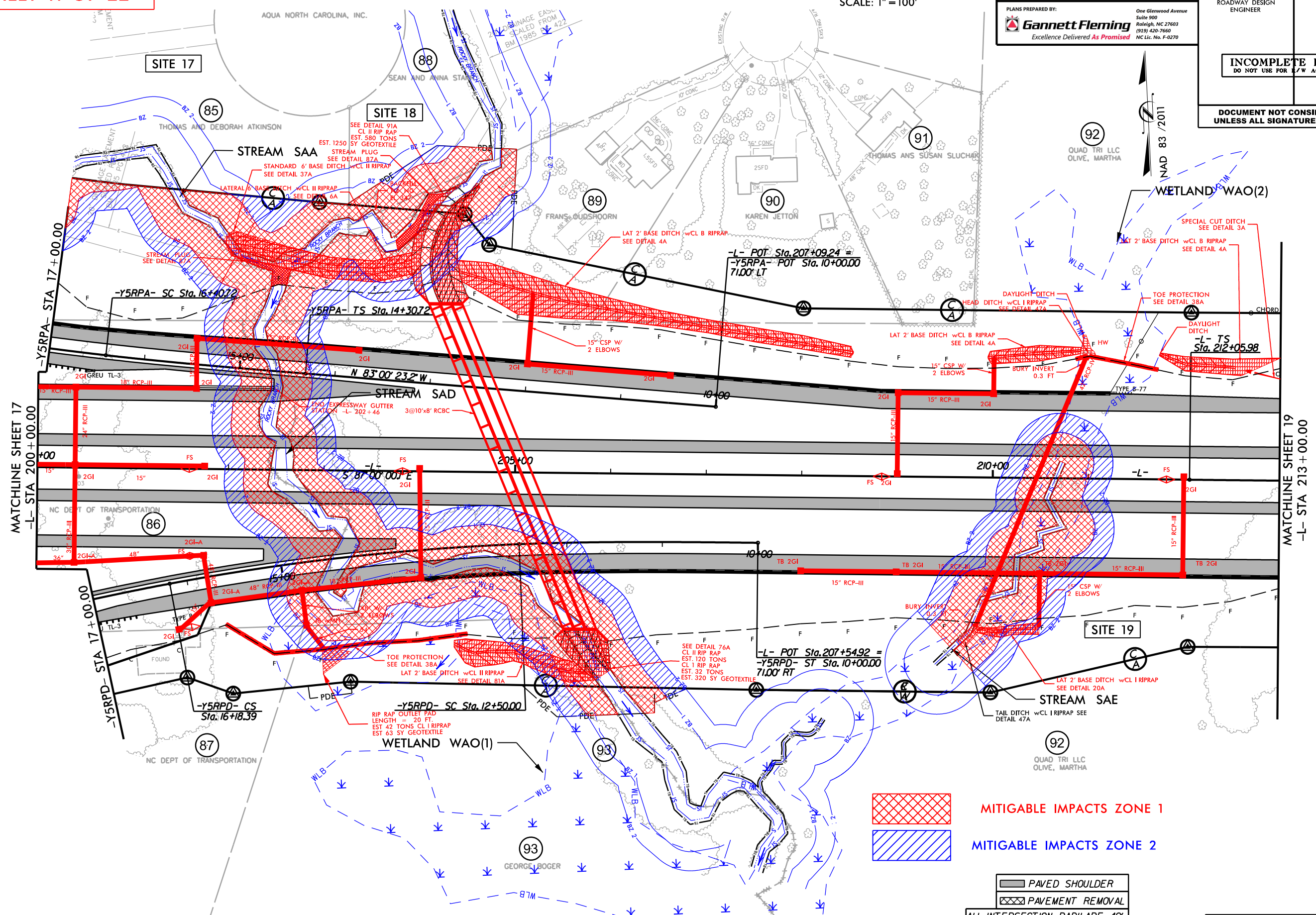


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE SHEET 17
-L- STA 200+00.00

MATCHLINE SHEET 19
-L- STA 213+00.00

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PAVED SHOULDER

PAVEMENT REMOVAL

ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.

ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

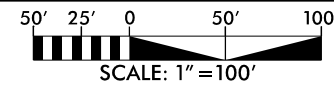
SEE SHEET 44 FOR -L- PROFILE

SEE SHEET 56 FOR -Y5RPA- PROFILE

SEE SHEET 57 FOR -Y5RPD- PROFILE

18.0019
21A (Hydraulics) (R2721) Environmental (R2721) Hyd_prm_buf_psh_18.dgn

**BUFFER DRAWING
SHEET 12 OF 22**



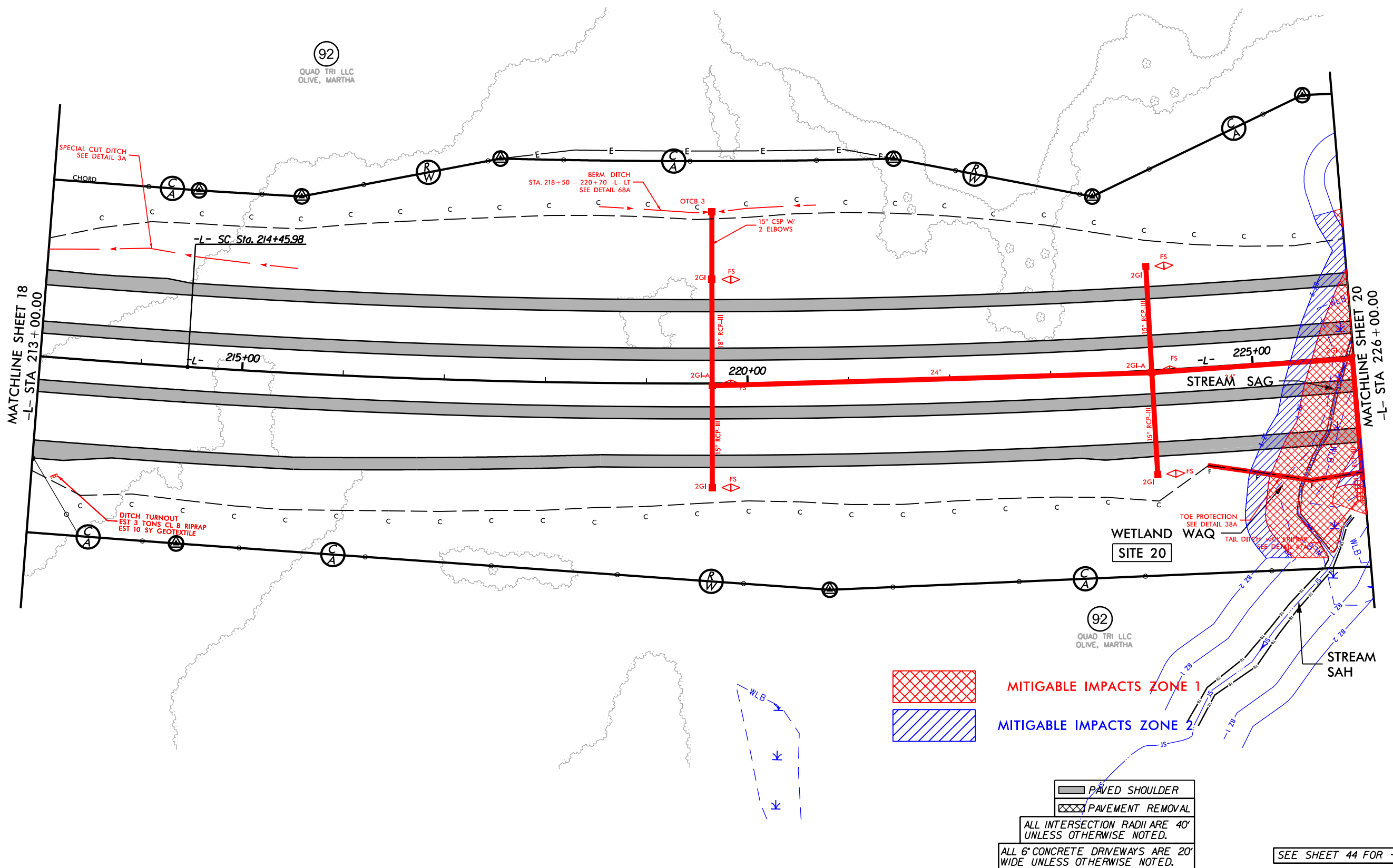
NAD 83 / 2011

FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
 Excellence Delivered As Promised

One Glenwood Avenue
 Suite 500
 Raleigh, NC 27603
 (919) 420-7660
 NC Lic. No. F-0270

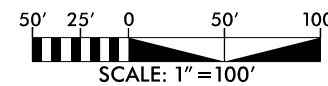
PROJECT REFERENCE NO. R-2721A	SHEET NO. 19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR P/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



19.dwg
21A (Hydraulics) (REG) Environmental (R2721_Hyd_prm_buf_psh_19.dgn)

SEE SHEET 44 FOR -L- PROFILE

**BUFFER DRAWING
SHEET 13 OF 22**

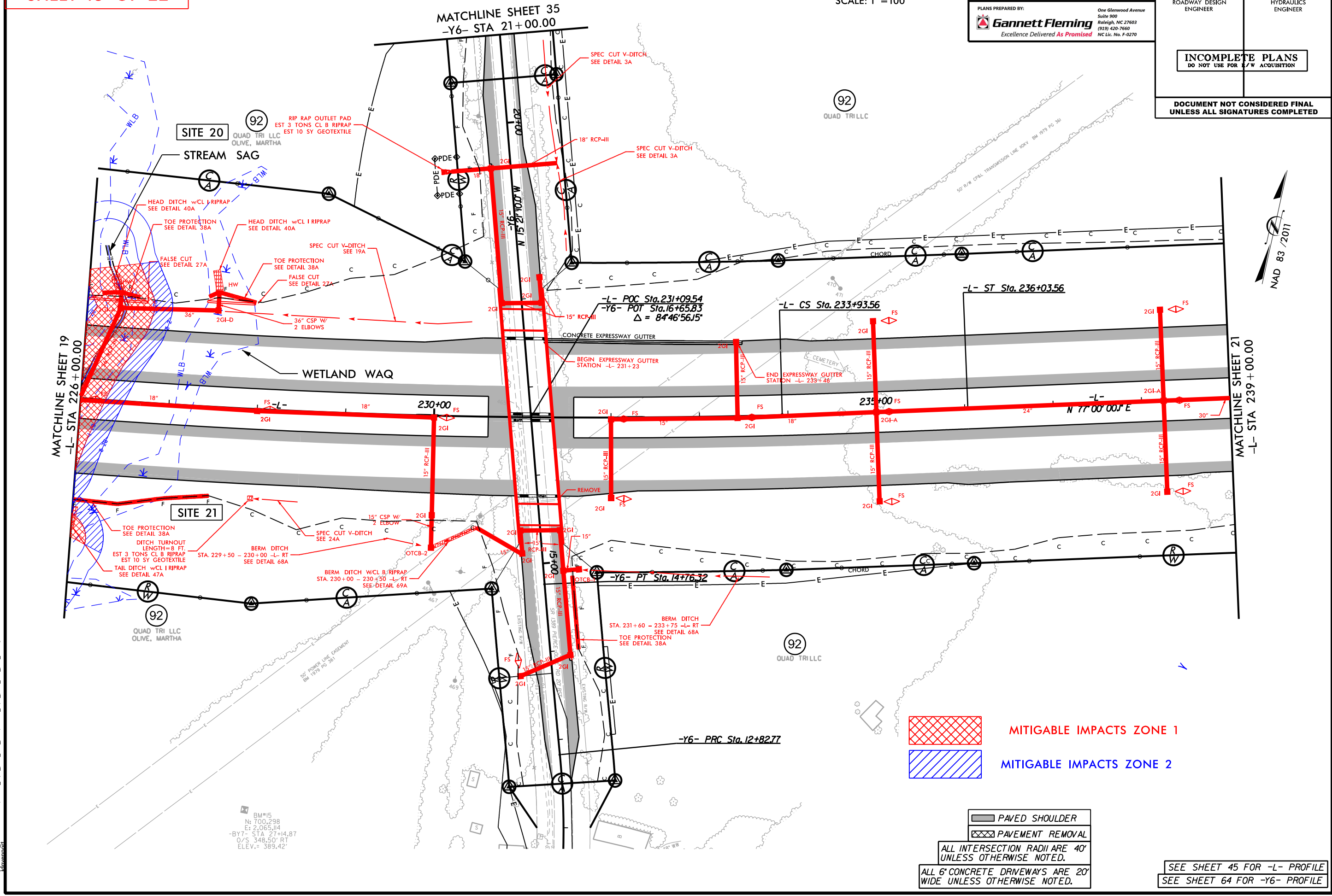


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 500
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

- PAVED SHOULDER
- PAVEMENT REMOVAL

ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.

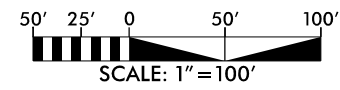
ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

SEE SHEET 45 FOR -L- PROFILE
SEE SHEET 64 FOR -Y6- PROFILE

13.2.2019 21A Hydraulic PERMITS Environmental R2721_Hyd_prm_buf_psh\2721_Hyd_prm_buf_psh_20.dgn

BM#15
N: 700.298
E: 2,065.114
O/S STA 27+14.87
O/S 348.50' RT
ELEV. = 389.42'

**BUFFER DRAWING
SHEET 14 OF 22**

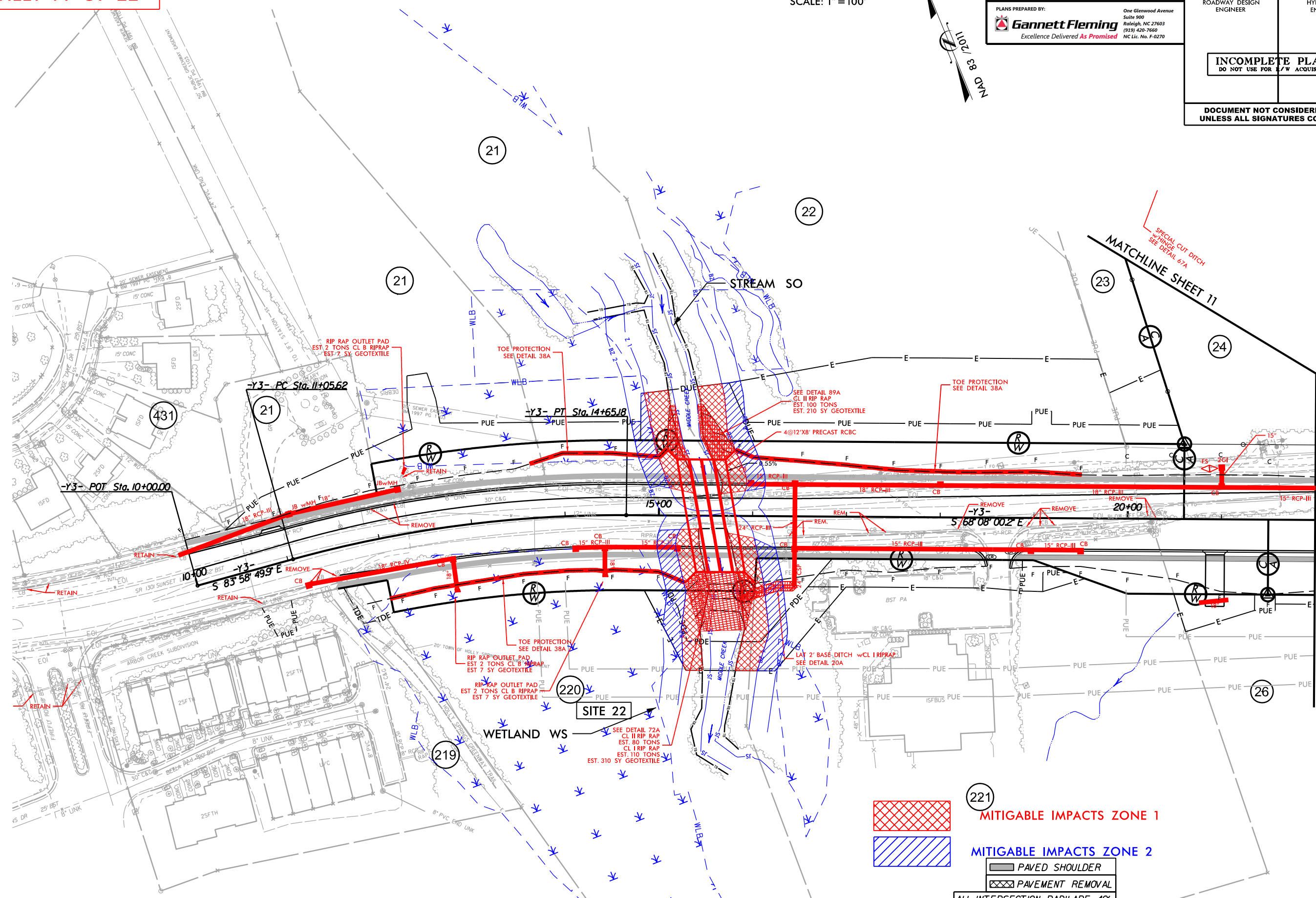


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 500
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



221

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PAVED SHOULDER

PAVEMENT REMOVAL

ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.

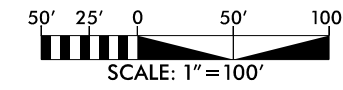
ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

SEE SHEET 2B-1 THRU 2B-3
FOR -Y3DET- PLAN VIEW

SEE SHEET 50 FOR -Y3- PROFILE

15.02.019
21A Hydraulic PERMITS Environmental R2721_Hyd_prm_buf_psh(R2721_Hyd_prm_buf_psh_24.dgn)

**BUFFER DRAWING
SHEET 15 OF 22**

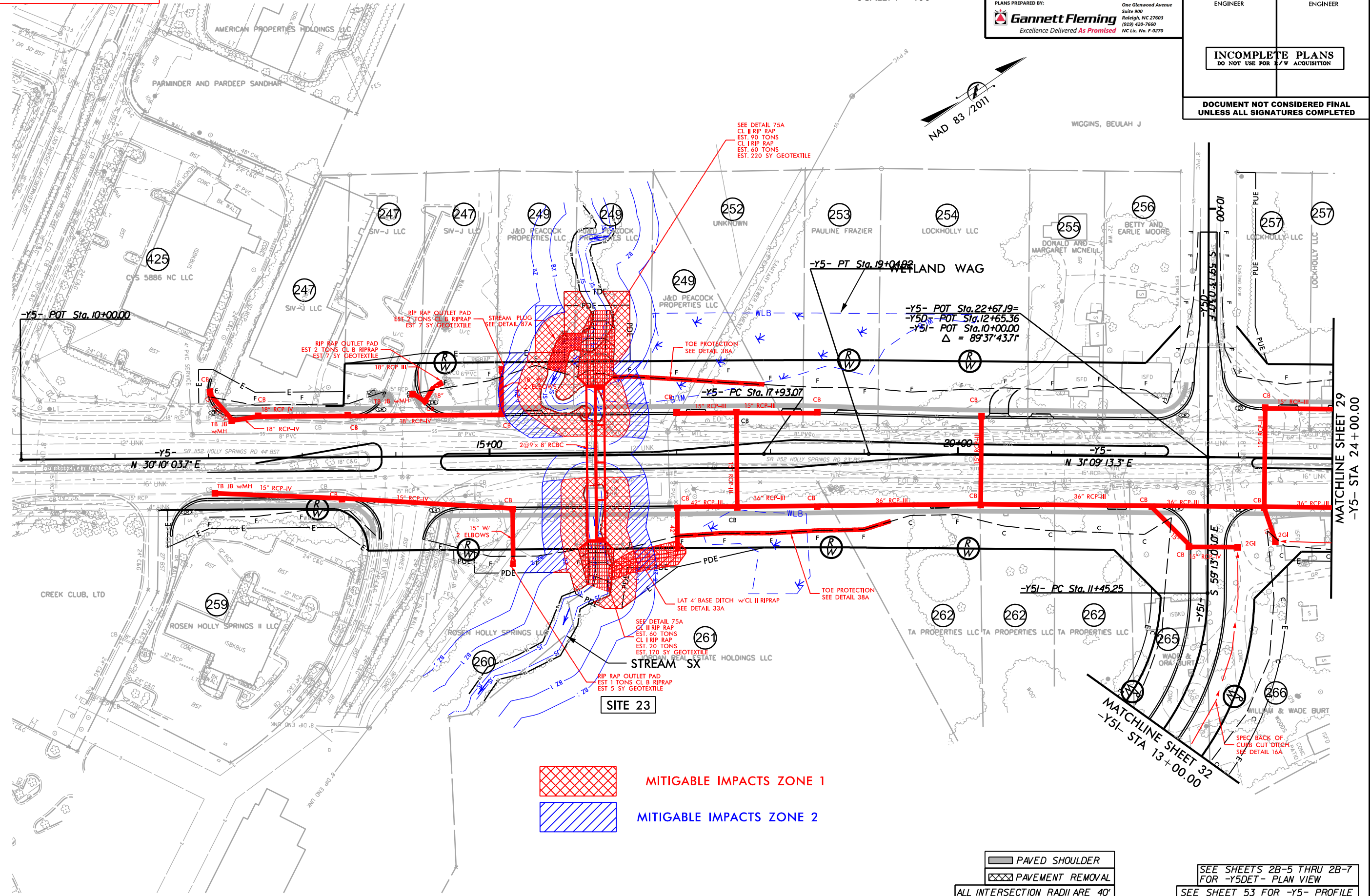


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 500
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PAVED SHOULDER

PAVEMENT REMOVAL

ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.

ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

SEE SHEETS 2B-5 THRU 2B-7
FOR -Y5DET- PLAN VIEW

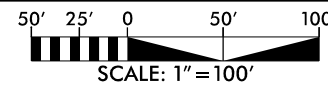
SEE SHEET 53 FOR -Y5- PROFILE

SEE SHEET 61 FOR -Y5D- PROFILE

SEE SHEET 62 FOR -Y5I- PROFILE

15/2/2019 12:21A Hydraulics PERMITS Environmental R2721_Hyd_perm_buf_psh_R2721_Hyd_perm_buf_psh_28.dgn

**BUFFER DRAWING
SHEET 16 OF 22**

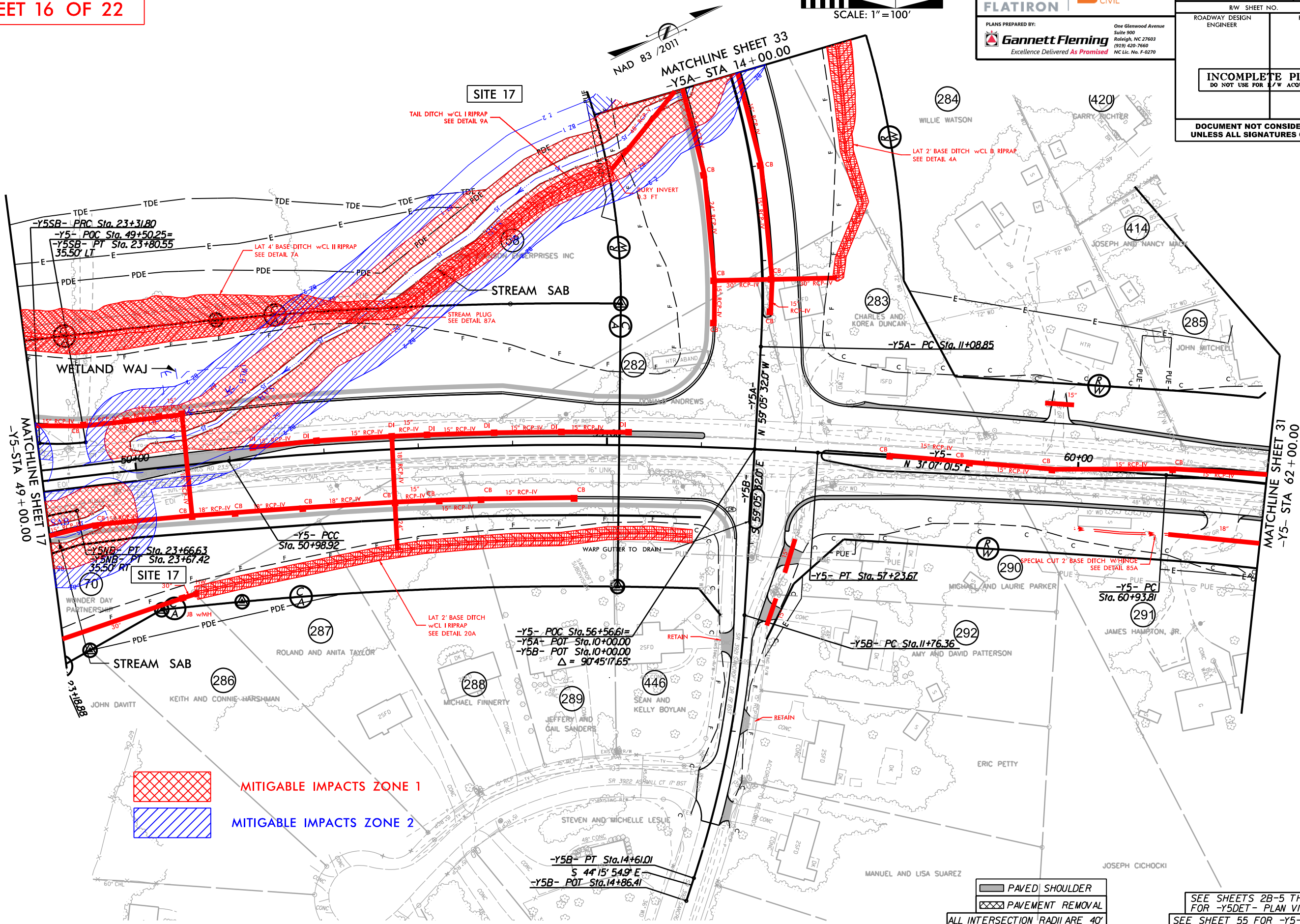


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR P/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PAVED SHOULDER

PAVEMENT REMOVAL

ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.

ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

SEE SHEETS 2B-5 THRU 2B-7
FOR -Y5DET- PLAN VIEW

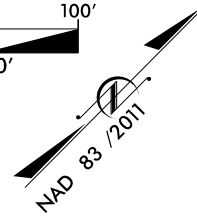
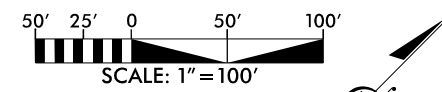
SEE SHEET 55 FOR -Y5- PROFILE

SEE SHEET 60 FOR -Y5A- PROFILE

SEE SHEET 61 FOR -Y5B- PROFILE

15:25:19 21A Hydraulic PERMITS Environmental R2721_Hyd_prm_buf_psh R2721_Hyd_prm_buf_psh_30.dgn

**BUFFER DRAWING
SHEET 17 OF 22**

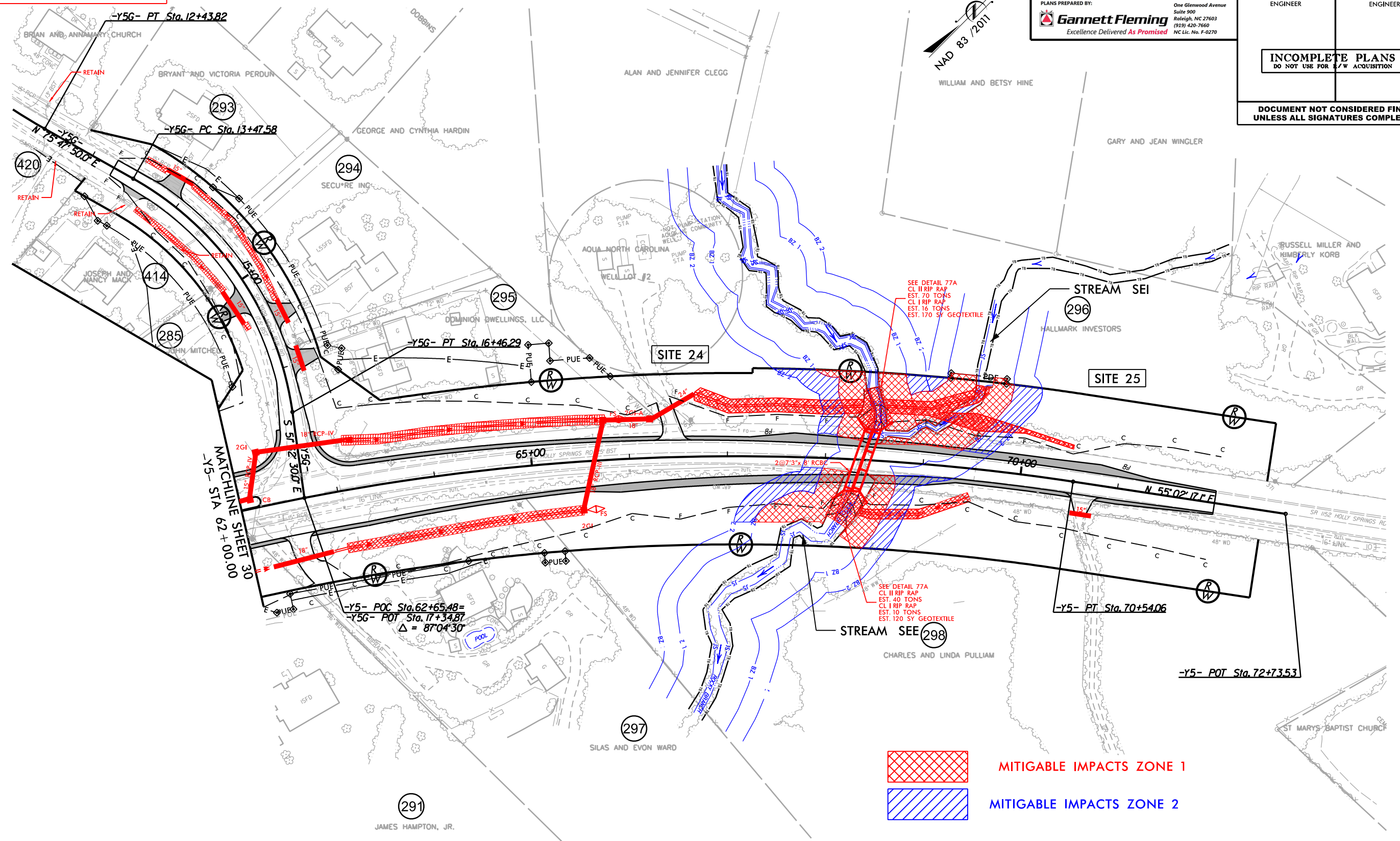


FLATIRON **BRANCH CIVIL**

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PAVED SHOULDER

PAVEMENT REMOVAL

ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.

ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

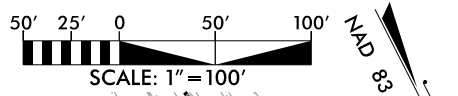
SEE SHEETS 2B-5 THRU 2B-7
FOR -Y5DET- PLAN VIEW

SEE SHEET 55 FOR -Y5- PROFILE

SEE SHEET 62 FOR -Y5G- PROFILE

12/2/2019 21A (Hydraulics) REGMIS - Environmental (R2721_Hyd_prm_buf_psh_31.dgn)

**BUFFER DRAWING
SHEET 18 OF 22**



FLATIRON **BRANCH CIVIL**

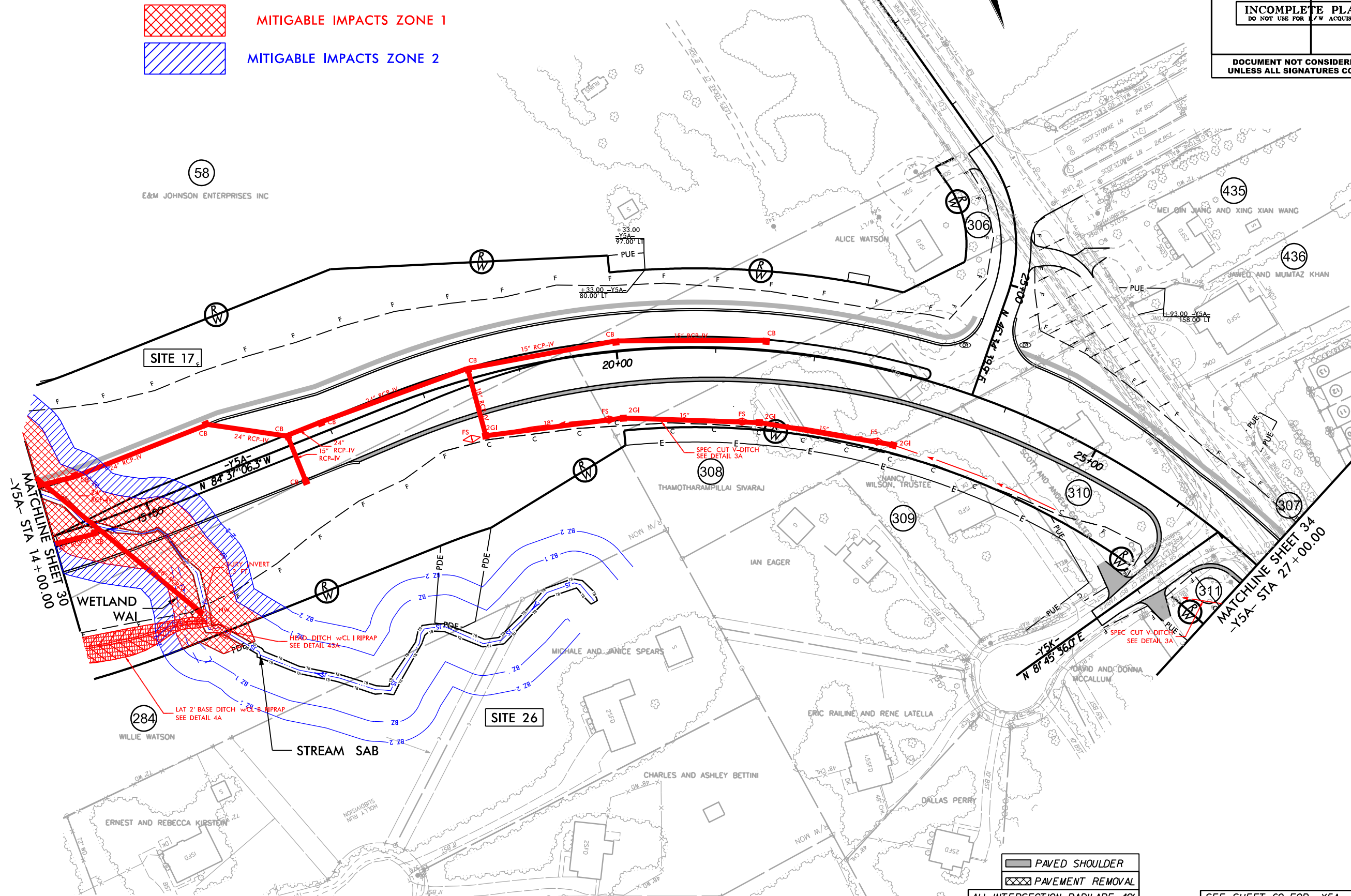
PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

PROJECT REFERENCE NO. R-2721A	SHEET NO. 33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR P/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2



PAVED SHOULDER

PAVEMENT REMOVAL

ALL INTERSECTION RADII ARE 40'
UNLESS OTHERWISE NOTED.

ALL 6" CONCRETE DRIVEWAYS ARE 20'
WIDE UNLESS OTHERWISE NOTED.

SEE SHEET 60 FOR -Y5A- PROFILE
SEE SHEET 62 FOR -Y5H- PROFILE
SEE SHEET 63 FOR -Y5K- PROFILE

15.2.2019 12:21:21 21A Hydraulic PERMITS Environmental R2721_Hyd_perm_buf_psh\2721_Hyd_perm_buf_psh_33.dgn

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)		
1	52+27 to 52+90-LREV-RT	48" RCP			X				11887	6469	18356		
2	52+98 to 58+31 -LREV-LT	ROADWAY FILL			X				30036	20253	50289		
3	59+05 to 60+25-LREV-	30" RCP	X						24234	16102	40336		
4	65+01 to 84+43-LREV-	ROADWAY FILL			X				59975	31004	90979		
	65+01 to 84+43-LREV-	1@6'x8' RCBC	X						84394	45535	129929		
5	69+55 to 71+59 -LREV-	36" RCP	X						13310	8641	21951		
6	81+45 to 87+64-LREV-	BRIDGE		X		27484	17336	44820					
	81+45 to 87+64-LREV-	ROADWAY FILL	X						1035	1518	2553		
7	84+38 to 85+96 -LREV-LT	BRIDGE		X		3126	1011	4137					
	84+38 to 85+96 -LREV-LT	ROADWAY FILL	X						9984	6085	16069		
8	SITE	REMOVED											
9	124+47 to 126+48 -L-	1@6'x8' RCBC	X						25718	16949	42667		
10	140+32 to 142+97-L-	1@6'x8' RCBC	X						30892	21347	52239		
11	146+80 to 148+37-L-	1@6'x8' RCBC	X						21649	15710	37359		
12	147+44 to 149+51-L-RT	30" RCP			X				7006	6475	13481		
13	168+13 to 169+95-L-	2@9'x8' RCBC	X						26300	17852	44152		
14	19+36 to 22+13-Y5RPC-	ROADWAY FILL	X						17040	12724	29764		
15	192+63 to 197+32-L-	ROADWAY FILL	X						46768	31001	77769		
16	46+92 to 49+14 -Y5-LT	ROADWAY FILL			X				16145	10114	26259		
16A	24+27 to 24+54 -Y5RPB-	24" RCP-IV	X						3590	4011	7601		
17	15+80-Y5A- to 48+68-Y5-(SAB)	ROADWAY FILL	X		X				61126	39512	100638		
	48+68-Y5- to 202+41-L-(SAA)	ROADWAY FILL	X		X				52559	28321	80880		
18	201+74 to 206+80-L-	3@9'x8' RCBC	X						62659	35870	98529		
19	209+01 to 211.28 -L-	42" RCP	X						17332	12563	29895		
TOTALS*:						30610	18347	48957	623639	388056	1011695	0	0

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 12/3/2019
 WAKE COUNTY
 R-2721
 6.401078

SHEET 19 OF 22

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)			
20	224+83 to 226+97-L-	36" RCP	X							22902	13676	36578		
21	225+70 to 226+35-L-LT	42" RCP			X					1087	1181	2268		
22	14+60 to 16+35 -Y3-	4@12'x8' RCBC	X							13000	9300	22300		
23	15+10 to 16+77-Y5-	2@9'x8' RCBC	X							17568	9279	26847		
24	66+72 to 69+30 -Y5-	2@7'x8' RCBC	X							8416	5987	14403		
25	69+01 to 69+70-Y5-LT	ROADWAY FILL			X					4877	2282	7159		
26	SITE	REMOVED												
		TOTALS FROM THIS SHEET				0	0	0	67850	41705	109555	0	0	
		TOTALS FROM SHEET 19				30610	18347	48957	623639	388056	1011695	0	0	
TOTALS*:						30610	18347	48957	691489	429761	1121250	0	0	

NOTES:
 Site 26 Removed as drainage was rerouted to avoid impacts at that location.

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 12/3/2019
 WAKE COUNTY
 R-2721
 6.401078
 SHEET 20 OF 22

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)	Structure Size/Type	WETLANDS IN BUFFERS	
			ZONE 1 (ft ²)	ZONE 2 (ft ²)
1	52+27 to 52+90-LREV-RT	48" RCP	8993	1960
2	52+98 to 58+31 -LREV-LT	ROADWAY FILL	22034	8886
4	65+01 to 84+43-LREV-	ROADWAY FILL	4296	8371
6	81+45 to 87+64-LREV-	BRIDGE	306	5131
	81+45 to 87+64-LREV-	ROADWAY FILL	0	717
7	84+38 to 85+96 -LREV-LT	BRIDGE	2	225
	84+38 to 85+96 -LREV-LT	ROADWAY FILL	1610	3472
8	SITE REMOVED			
9	124+47 to 126+48 -L-	1@6'x8' RCBC	17881	7814
10	140+32 to 142+97-L-	1@6'x8' RCBC	3933	2242
11	146+80 to 148+37-L-	1@6'x8' RCBC	5120	2781
12	147+44 to 149+51-L-RT	30" RCP	1147	1788
13	168+13 to 169+95-L-	2@9'x8' RCBC	3483	3388
14	19+36 to 22+13-Y5RPC-	ROADWAY FILL	11351	6545
15	192+63 to 197+32-L-	ROADWAY FILL	6717	1278
16	46+92 to 49+14 -Y5-LT	ROADWAY FILL	12045	3997
16A	24+27 to 24+54 -Y5RPB-	24" RCP-IV	3513	3181
17	15+80-Y5A- to 48+68-Y5-(SAB)	ROADWAY FILL	3406	2052
18	201+74 to 206+80-L-	3@9'x8' RCBC	3969	6105
19	209+01 to 211.28 -L-	42" RCP	8507	741
TOTAL:			109805	69933

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 12/3/2019
 WAKE COUNTY
 R-2721
 6.401078

SHEET 21 OF 22

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)	Structure Size/Type	WETLANDS IN BUFFERS	
			ZONE 1 (ft ²)	ZONE 2 (ft ²)
20	224+83 to 226+97-L-	ROADWAY FILL	10729	109
21	209+01 to 211.28 -L-	ROADWAY FILL	576	367
22	224+83 to 226+97-L-	4@12'x8' RCBC	97	1025
23	225+70 to 226+35-L-LT	2@9'x8' RCBC	472	594
	TOTAL FROM THIS SHEET		11874	2095
	TOTAL FROM SHEET 21		109805	69933
TOTAL:			121679	72028

Site 22 wetland boundary was clipped by the extent of the survey. Previous estimate left for zone 2 instead of 1,873 sf which was measure in file.

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 12/3/2019
 WAKE COUNTY
 R-2721
 6.401078
 SHEET 22 OF 22