

09/08/19

TIP PROJECT: R-2828

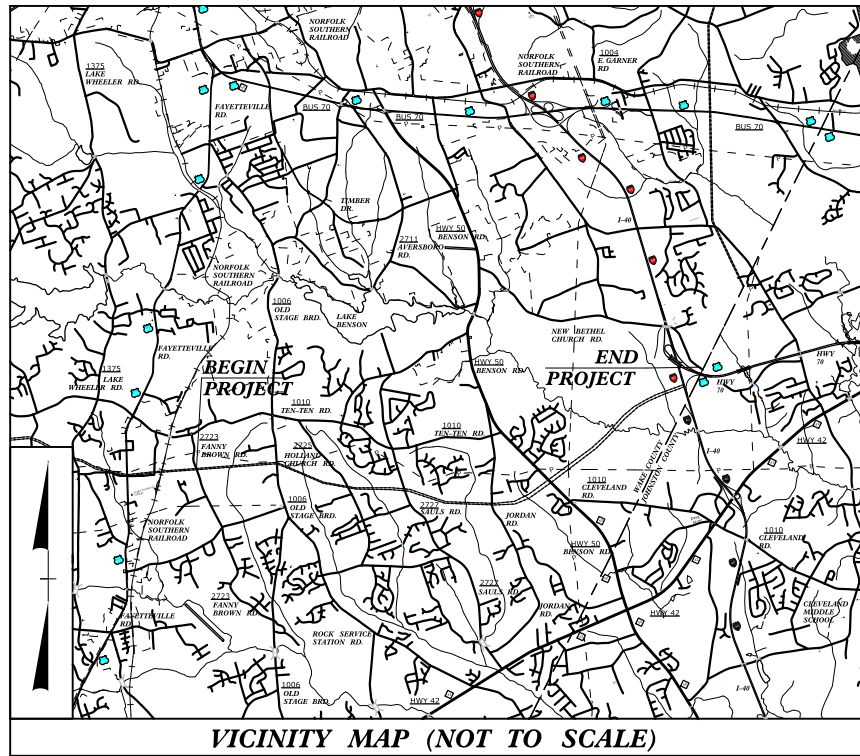
CONTRACT: C204197

7/18/2019 \\prod\w\cs0\ics_wor\kingdir\19094\336429_956\R2828_hyd_prm_buf_psh_01.dgn PROPWCS01\$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE & JOHNSTON COUNTY

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	



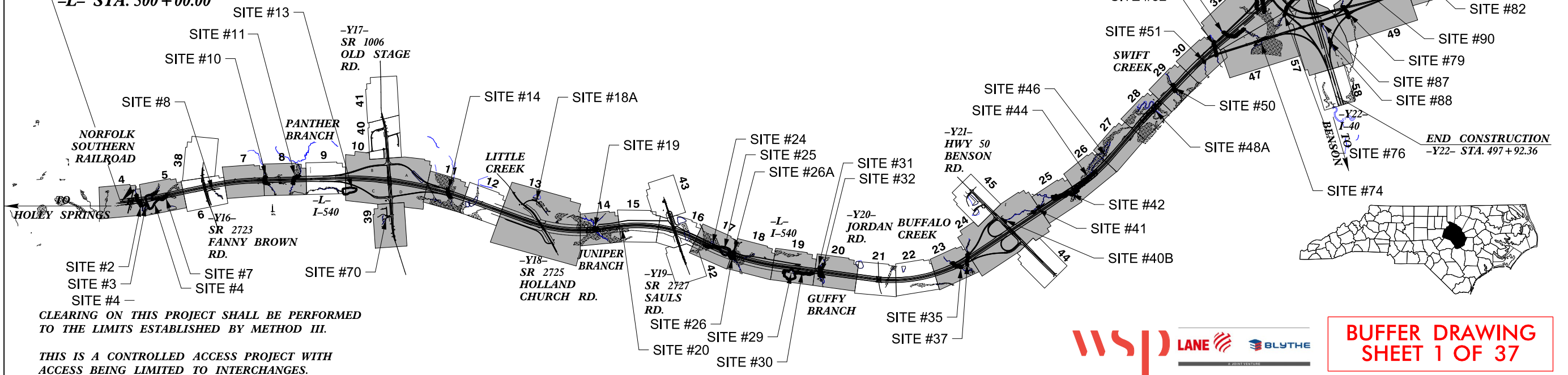
VICINITY MAP (NOT TO SCALE)

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: JULY 18, 2019

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

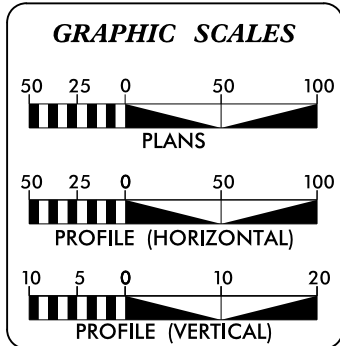


CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.



BUFFER DRAWING SHEET 1 OF 37



DESIGN DATA

ADT 2016 =	
ADT 2040 =	534,000
DHV =	12 %
D =	65 %
T =	11 % *
V =	75 MPH
*(TTST 4 + DUAL 7)	
FUNCTIONAL CLASS:	FREWAY

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
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 09, 2019

LETTING DATE:
DECEMBER 12, 2019

DANIEL BRIDGES, PE
PROJECT ENGINEER

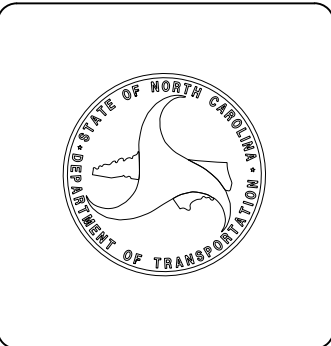
RONYELL THIGPEN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



8/17/99

REVISIONS

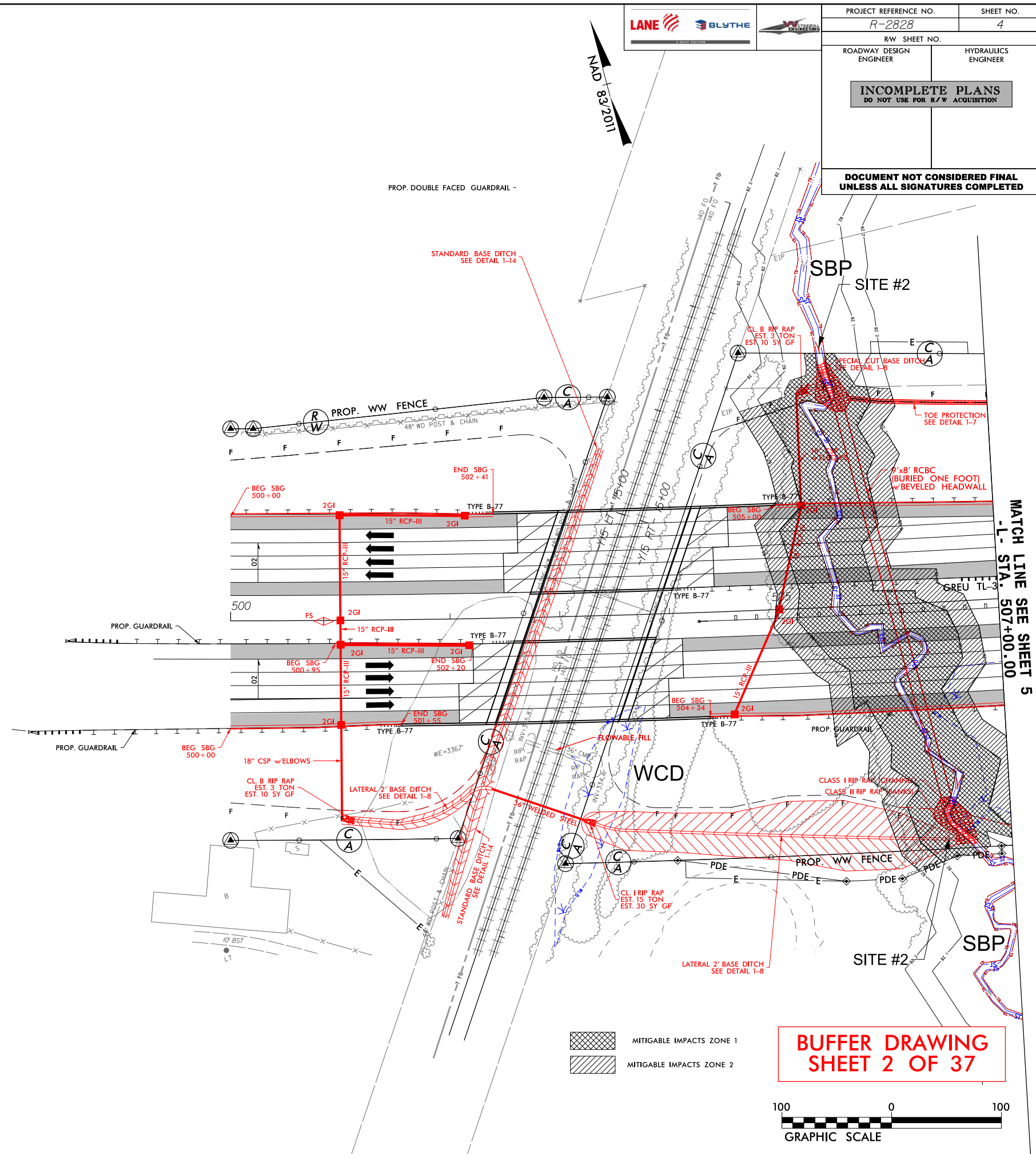
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PDEWIC501E



PROJECT REFERENCE NO. R-2828	SHEET NO. 4
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

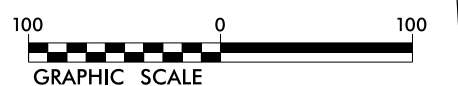
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MATCH LINE SEE SHEET 5
-1- STA. 507+00.00

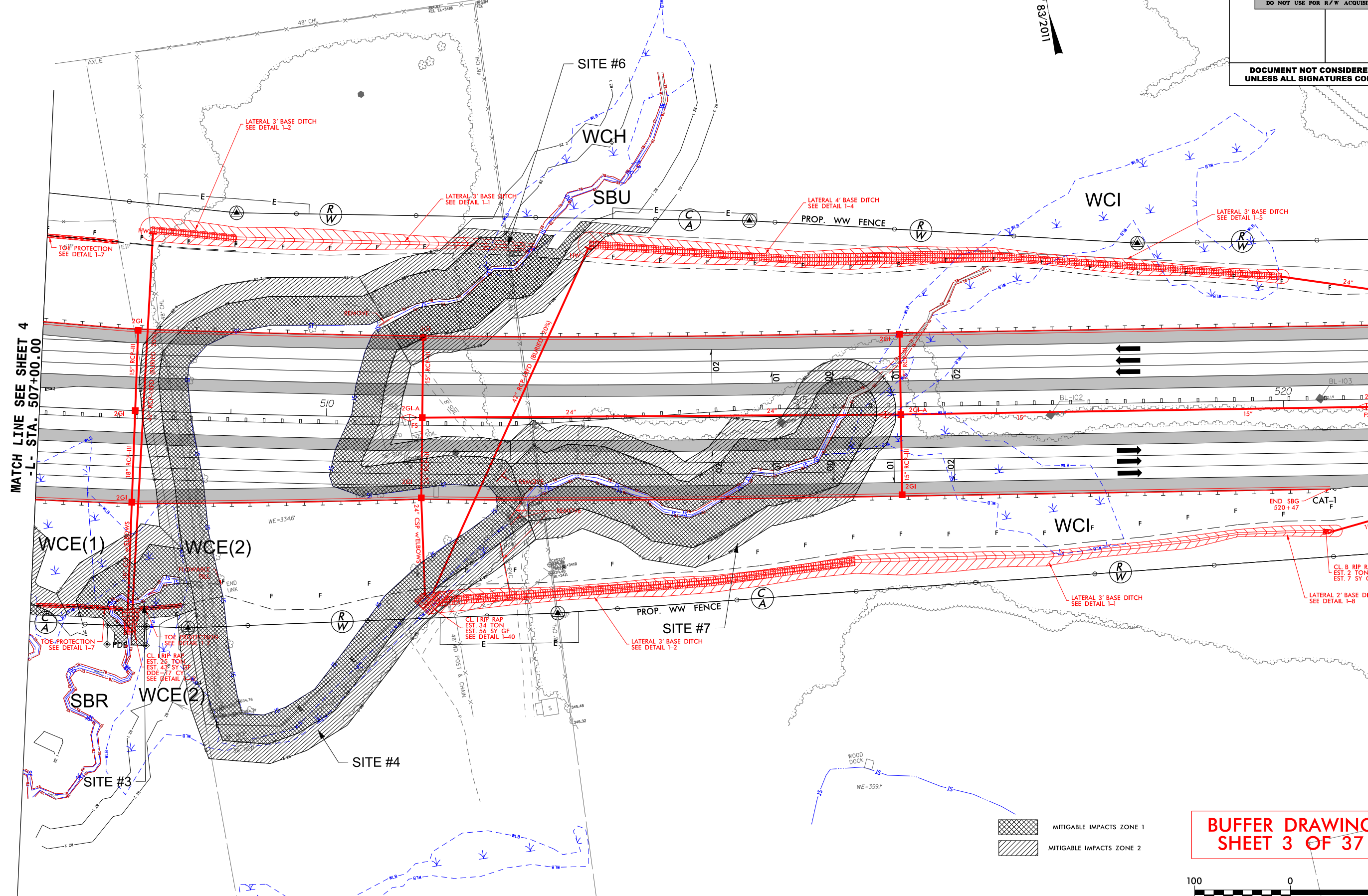
MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 2 OF 37



PROJECT REFERENCE NO. R-2828	SHEET NO. 5
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NAD 83/2011

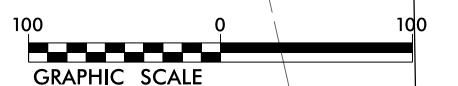


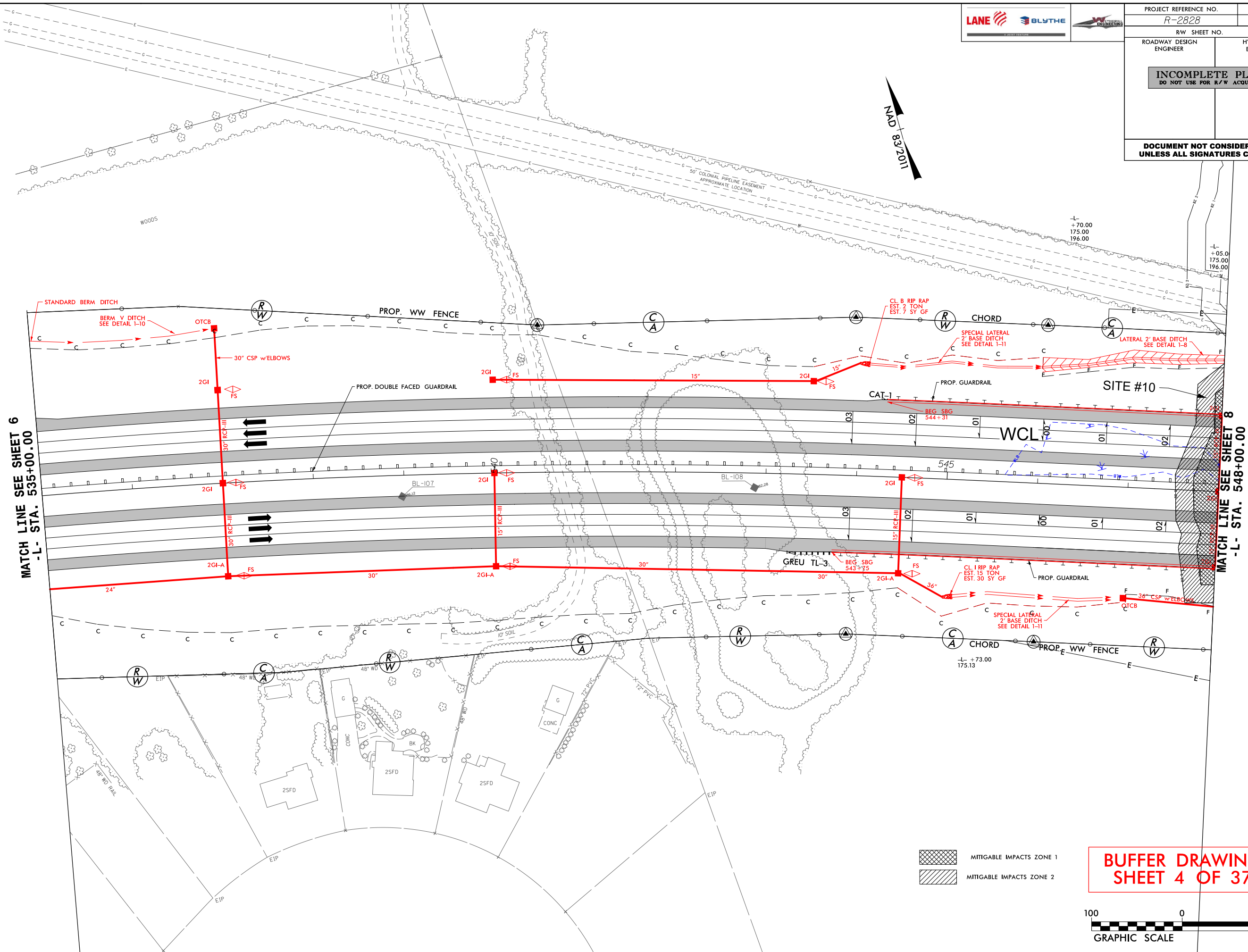
REVISIONS

7/18/2019
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MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 3 OF 37







MATCH LINE SEE SHEET 6
-L- STA. 535+00.00

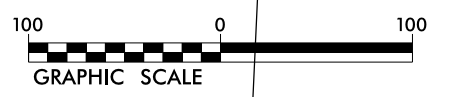
MATCH LINE SEE SHEET 8
-L- STA. 548+00.00

REVISIONS

7/18/2019
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 MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 4 OF 37



8/17/99

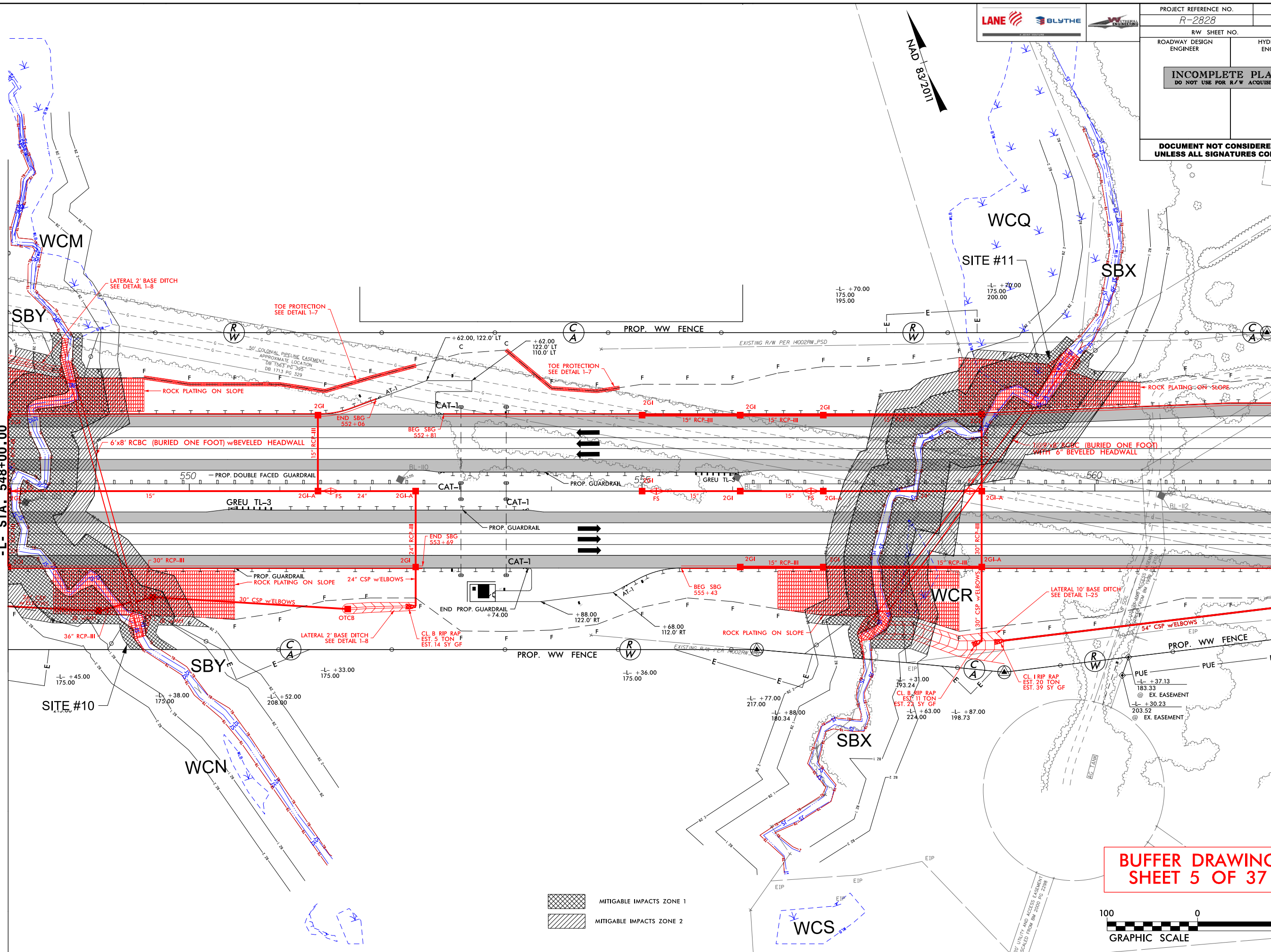


PROJECT REFERENCE NO. R-2828	SHEET NO. 8
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

REVISIONS

MATCH LINE SEE SHEET 7
-L- STA. 548+00.00

MATCH LINE SEE SHEET 9
-L- STA. 562+00.00



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BUFFER DRAWING
SHEET 5 OF 37



MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

8/17/99

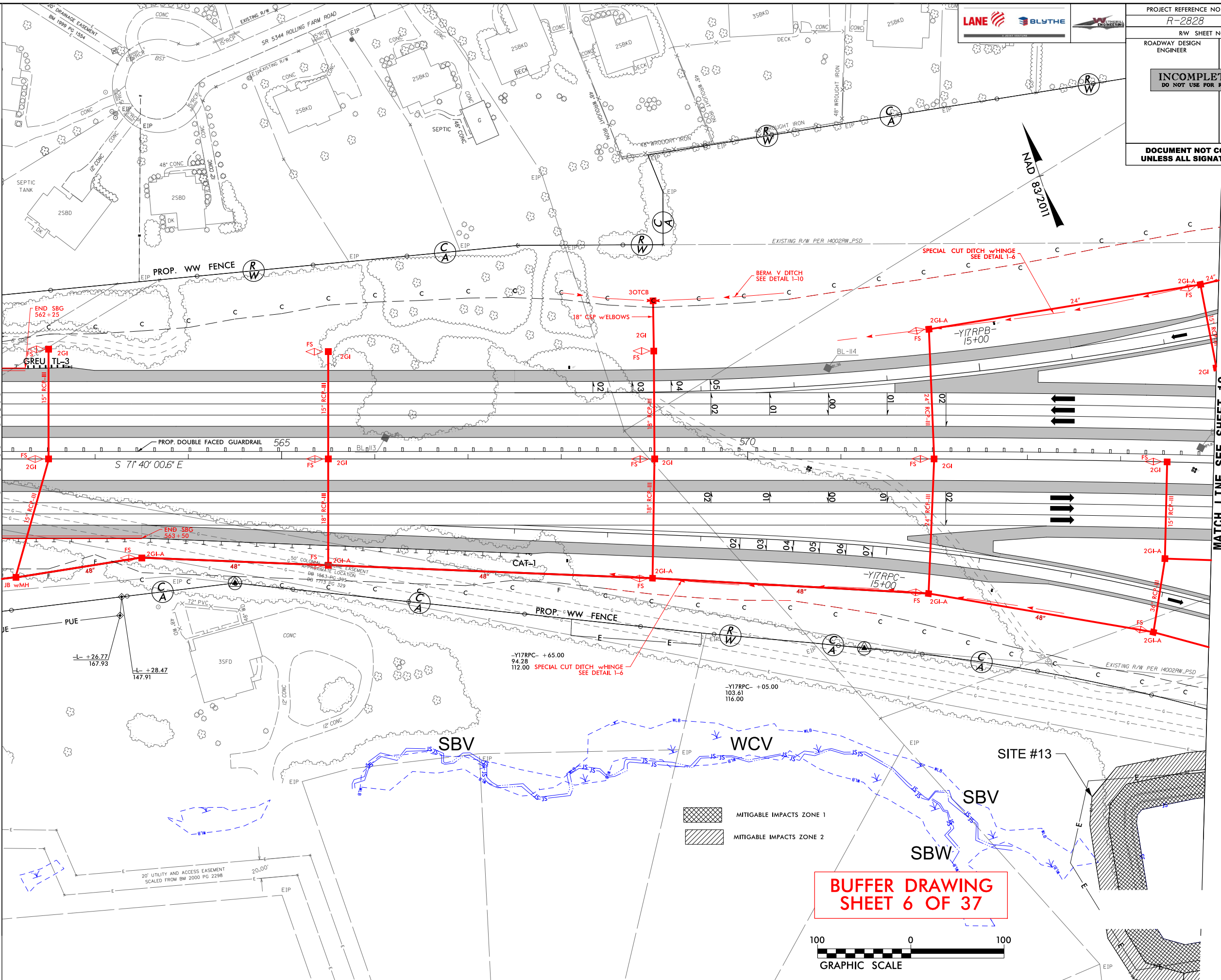


PROJECT REFERENCE NO. R-2828	SHEET NO. 9
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

REVISIONS

MATCH LINE SEE SHEET 8
-L- STA. 562+00.00

MATCH LINE SEE SHEET 10
-L- STA. 575+00.00

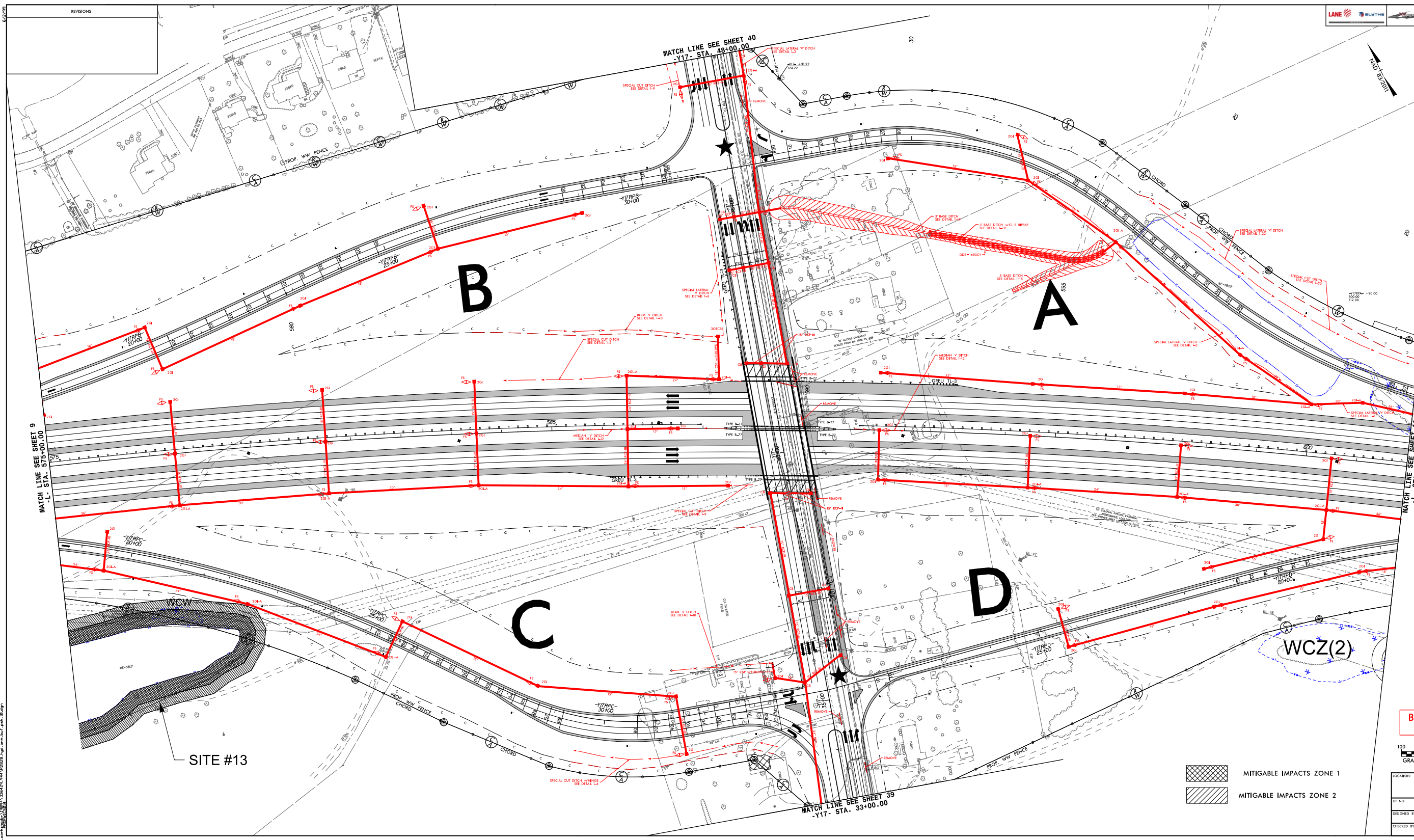


- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

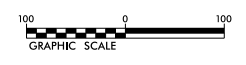
BUFFER DRAWING
SHEET 6 OF 37



7/18/2019
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BUFFER DRAWING SHEET 7 OF 37

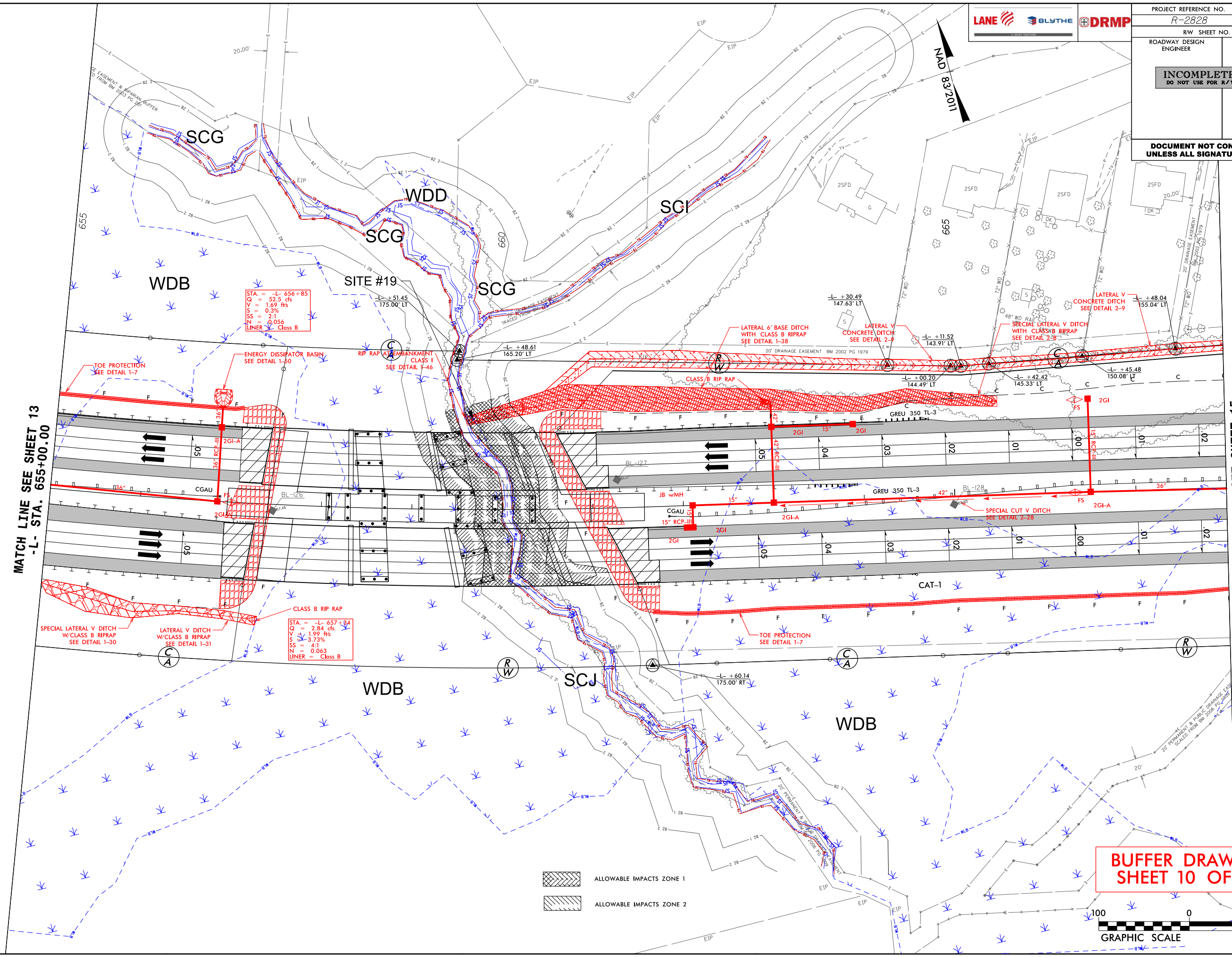


- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

LOCATION: _____
 TP NO.: _____ COUNTY: _____
 DESIGNED BY: _____
 CHECKED BY: _____ DATE: _____

6/2/2024
 1306424_144182628_buf.dwg
 10/10/2024 10:00:00 AM

8/17/99
7/18/2019
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MATCH LINE SEE SHEET 13
-L- STA. 655+00.00

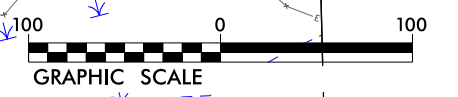
MATCH LINE SEE SHEET 15
-L- STA. 668+00.00

STA. = -L- 656+85
Q = 52.5 cfs
V = 1.69 f/s
S = 0.3%
SS = 2:1
N = 0.056
LINER = Class B

STA. = -L- 657+84
Q = 2.84 cfs
V = 1.99 f/s
S = 3.73%
SS = 4:1
N = 0.063
LINER = Class B

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 10 OF 37



REVISIONS



8/17/99

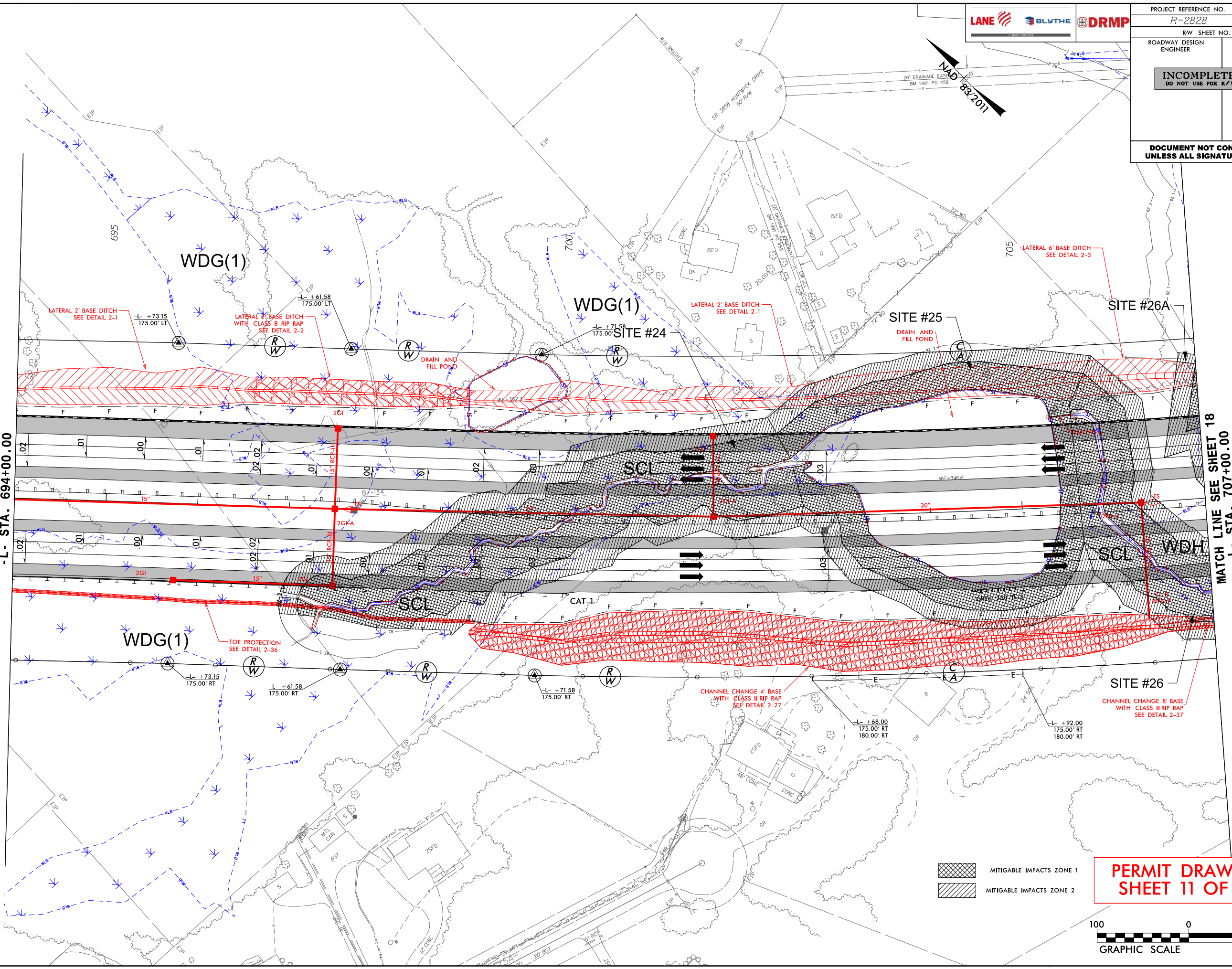


PROJECT REFERENCE NO. R-2828	SHEET NO. 17
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

REVISIONS

MATCH LINE SEE SHEET 16
-L- STA. 694+00.00

MATCH LINE SEE SHEET 18
-L- STA. 707+00.00

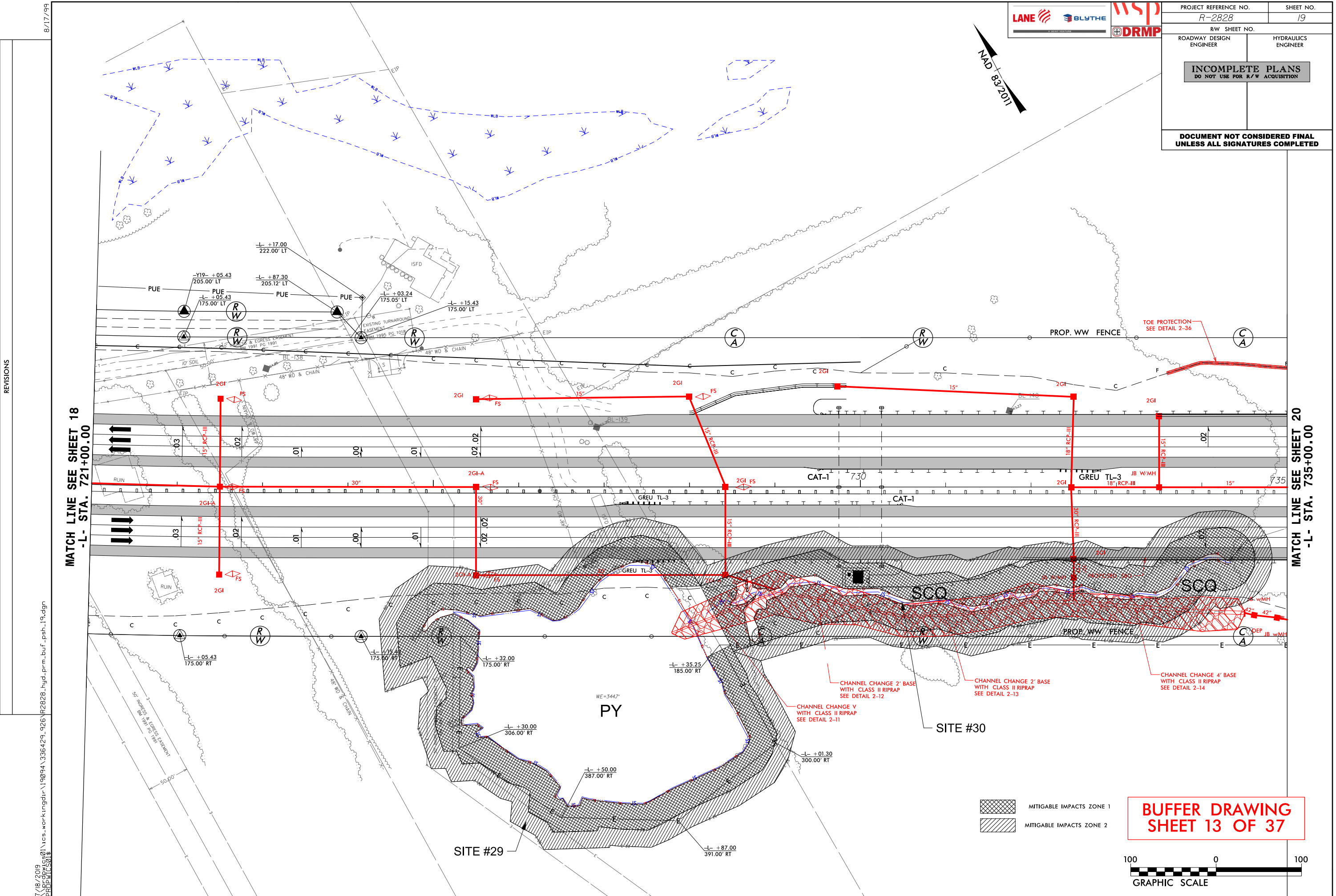
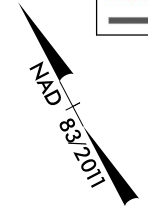


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MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2



PERMIT DRAWING
 SHEET 11 OF 37



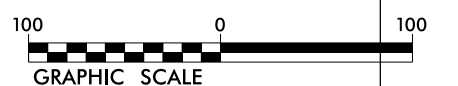


MATCH LINE SEE SHEET 18
 -L- STA. 721+00.00

MATCH LINE SEE SHEET 20
 -L- STA. 735+00.00

 MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 13 OF 37



REVISIONS

8/17/99
 7/18/2019
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8/17/99

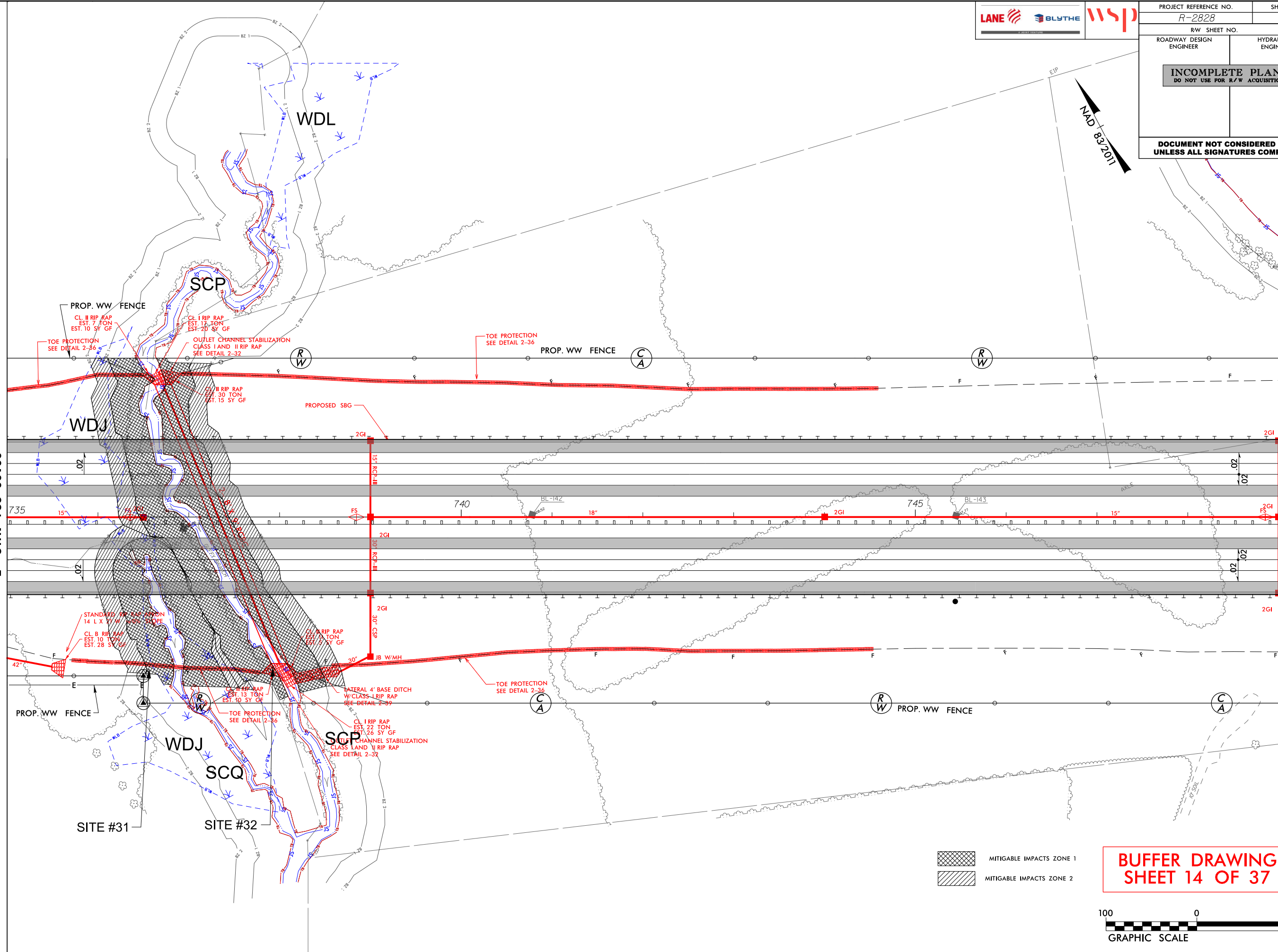


PROJECT REFERENCE NO. R-2828	SHEET NO. 20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

REVISIONS

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

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



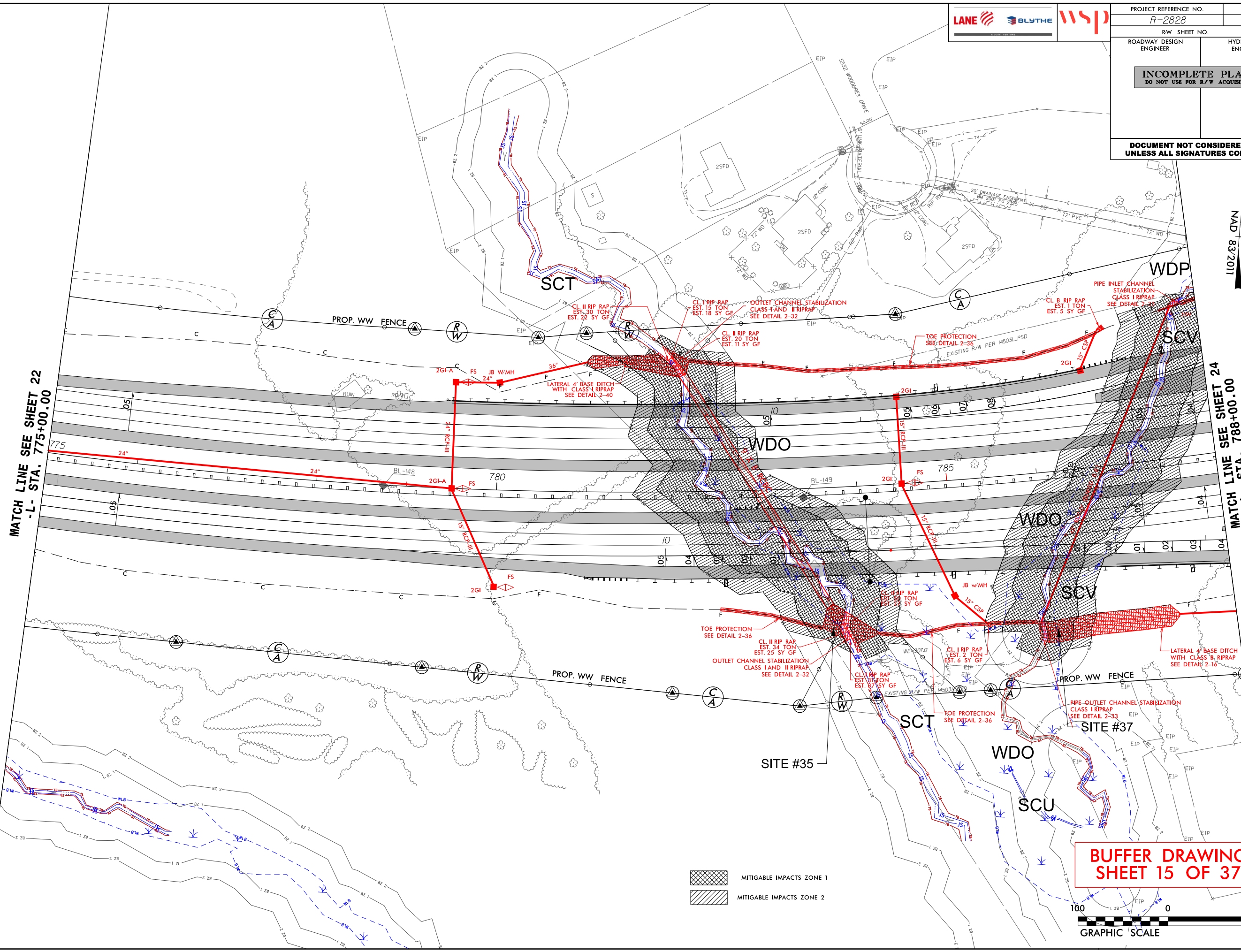
7/18/2019
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MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 14 OF 37



PROJECT REFERENCE NO. R-2828	SHEET NO. 23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

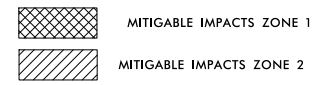


MATCH LINE SEE SHEET 22
-L- STA. 775+00.00

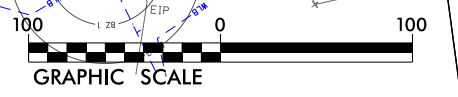
MATCH LINE SEE SHEET 24
-L- STA. 788+00.00

REVISIONS

7/18/2019
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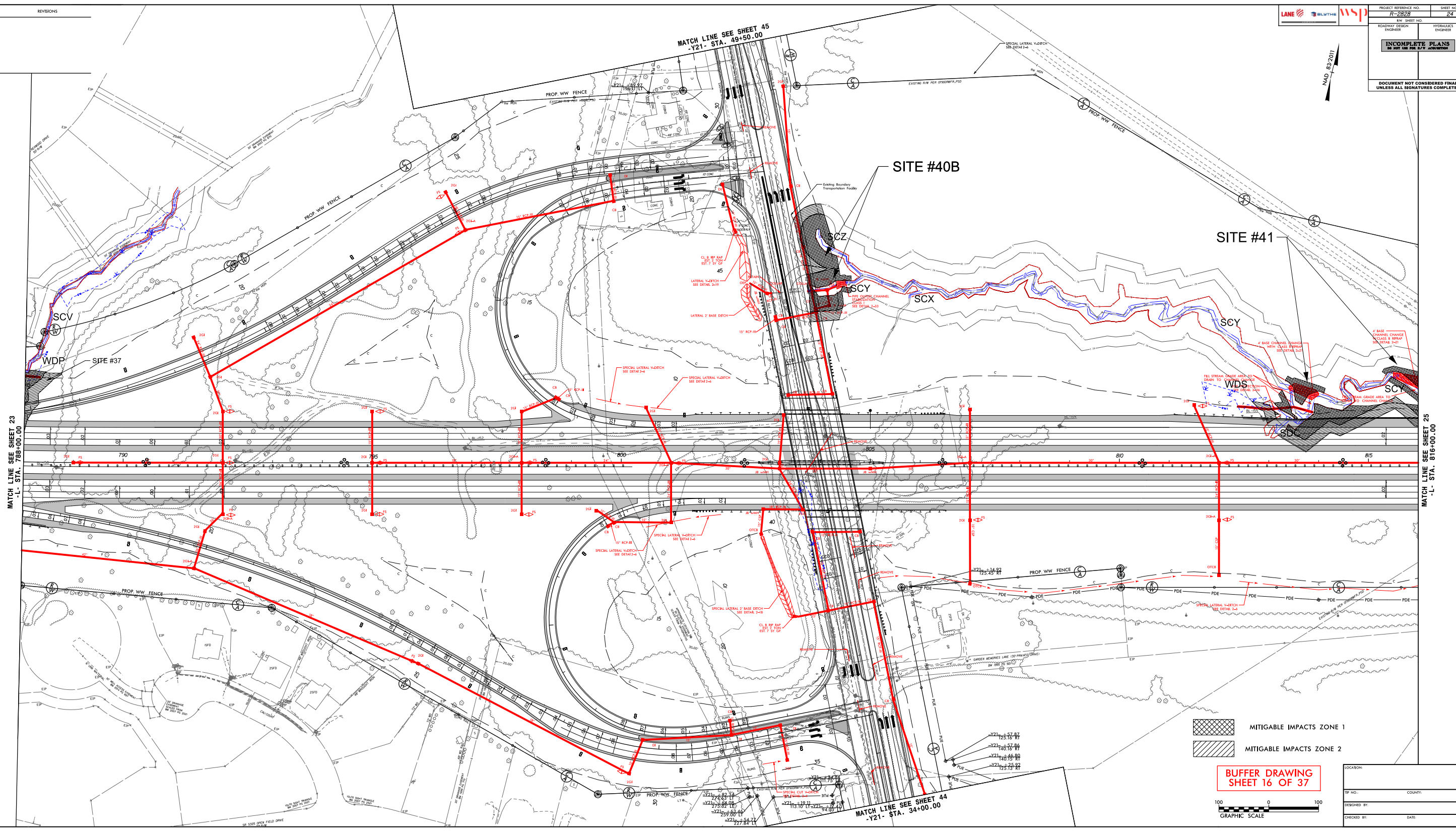


BUFFER DRAWING
SHEET 15 OF 37



INCOMPLETE PLANS
 DO NOT USE FOR B/V ADJUSTMENT

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
 SHEET 16 OF 37



LOCATION:	
TIP NO.:	COUNTY:
DESIGNED BY:	
CHECKED BY:	DATE:

MATCH LINE SEE SHEET 23
 -L- STA. 788+00.00

MATCH LINE SEE SHEET 25
 -L- STA. 816+00.00

MATCH LINE SEE SHEET 45
 -Y21- STA. 49+50.00

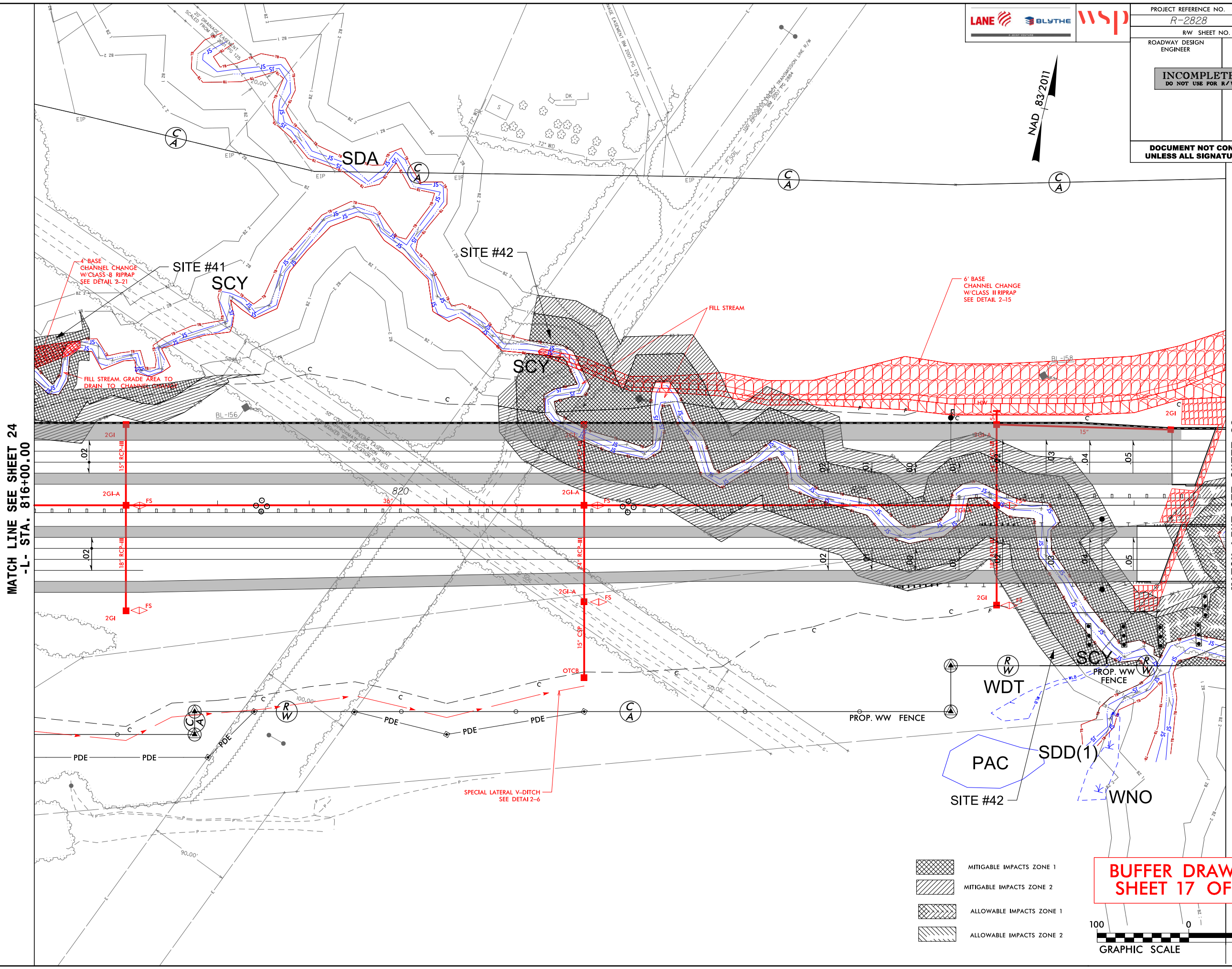
MATCH LINE SEE SHEET 44
 -Y21- STA. 34+00.00

6/2/2024

8/17/99



PROJECT REFERENCE NO. R-2828	SHEET NO. 25
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCH LINE SEE SHEET 24
-L- STA. 816+00.00

MATCH LINE SEE SHEET 26
-L- STA. 829+00.00

REVISIONS

7/18/2019
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- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

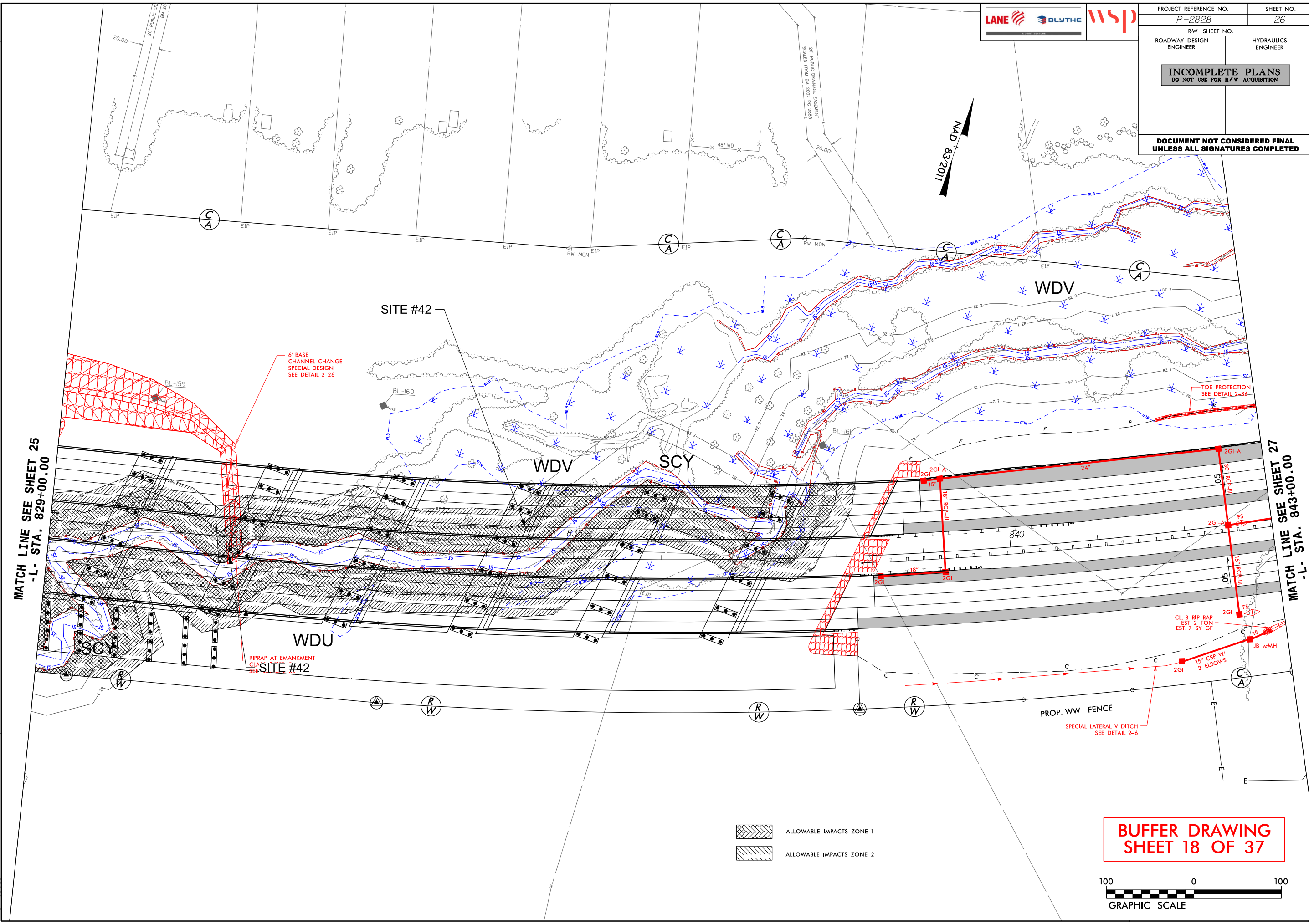
BUFFER DRAWING
SHEET 17 OF 37



PROJECT REFERENCE NO. R-2828	SHEET NO. 26
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

8/17/99
 7/18/2019
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REVISIONS



ALLOWABLE IMPACTS ZONE 1
 ALLOWABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 18 OF 37



8/17/99

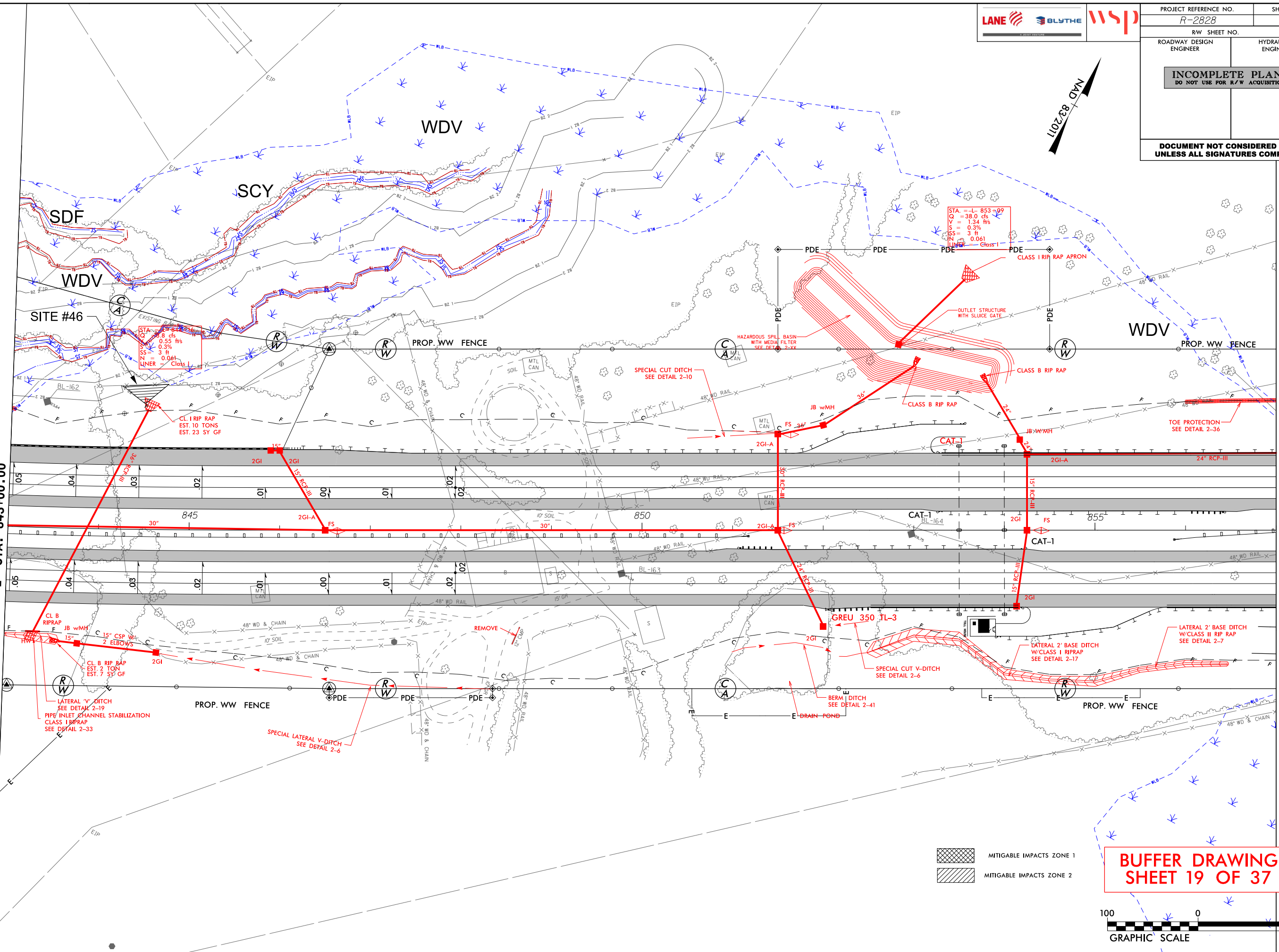


PROJECT REFERENCE NO. R-2828	SHEET NO. 27
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCH LINE SEE SHEET 26
-L- STA. 843+00.00

MATCH LINE SEE SHEET 28
-L- STA. 857+00.00



STA. = L 853+00
 Q = 38.0 cfs
 V = 1.34 f/s
 S = 0.3%
 SS = 3 ft
 N = 0.061
 LINER = Class 1

EXISTING
 STA. = L 843+00
 Q = 8 cfs
 V = 0.55 f/s
 S = 0.3%
 SS = 3 ft
 N = 0.061
 LINER = Class 1

CL. I RIP RAP
 EST. 10 TONS
 EST. 23 SY GF

CL. B RIP RAP
 EST. 2 TON
 EST. 7 SY GF

LATERAL V-DITCH
 SEE DETAIL 2-19
 PIPE INLET CHANNEL STABILIZATION
 CLASS I RIPRAP
 SEE DETAIL 2-33

SPECIAL LATERAL V-DITCH
 SEE DETAIL 2-6

SPECIAL CUT DITCH
 SEE DETAIL 2-10

HAZARDOUS SPILL BASIN
 WITH MEDIA FILTER
 SEE DET. 2-XX

OUTLET STRUCTURE
 WITH SLUICE GATE

CLASS B RIP RAP

TOE PROTECTION
 SEE DETAIL 2-36

GREU 350 TL-3

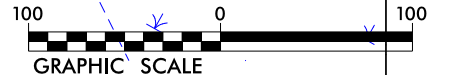
LATERAL 2' BASE DITCH
 W/CLASS I RIPRAP
 SEE DETAIL 2-17

LATERAL 2' BASE DITCH
 W/CLASS II RIP RAP
 SEE DETAIL 2-7

BERM DITCH
 SEE DETAIL 2-41

MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 19 OF 37



REVISIONS

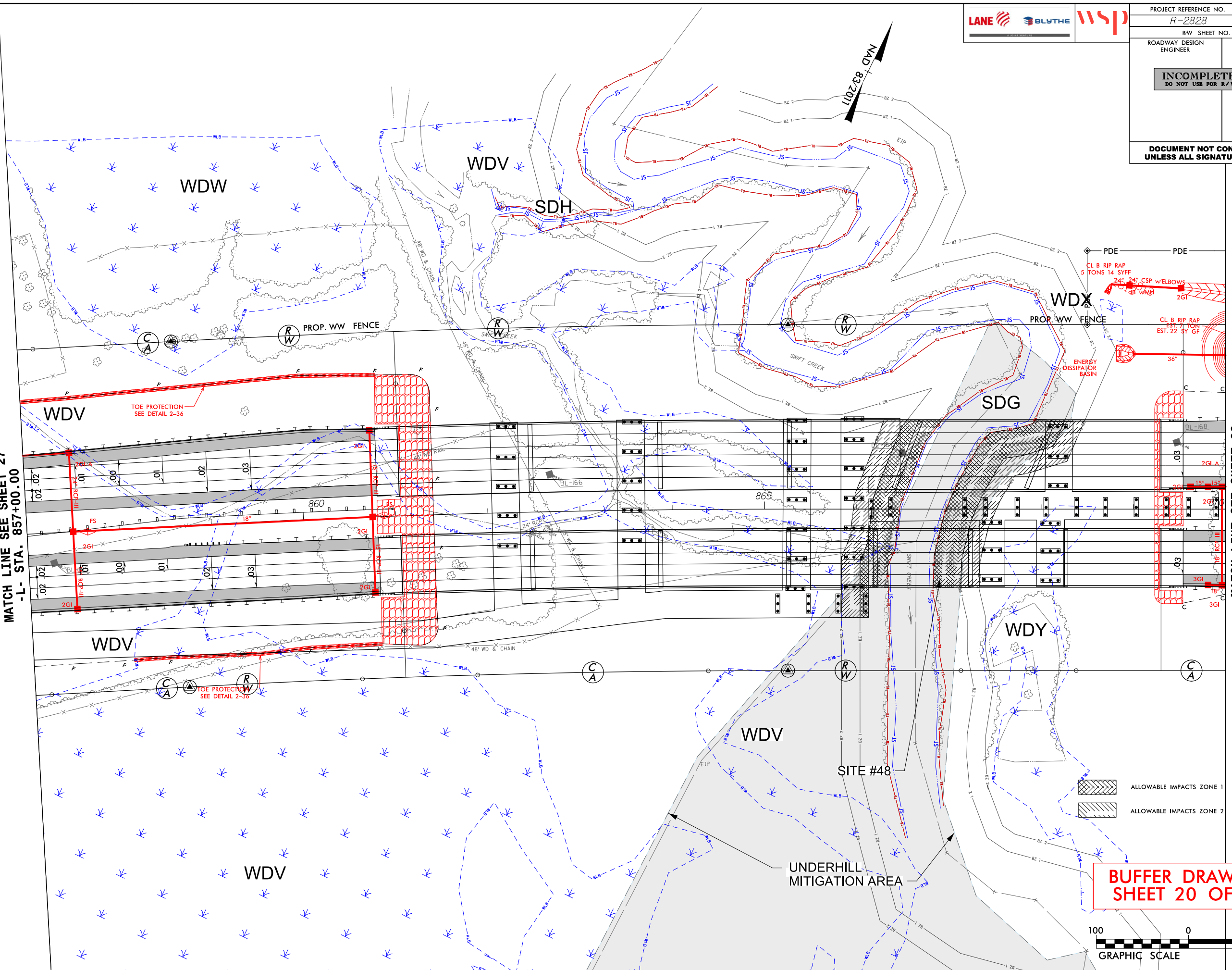
7/18/2019
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PROJECT REFERENCE NO. R-2828	SHEET NO. 28
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

REVISIONS

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

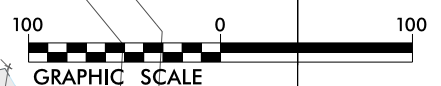
MATCH LINE SEE SHEET 29
-L- STA. 870+00.00



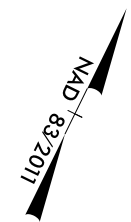
7/18/2019
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PDE\WCS01E

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 20 OF 37



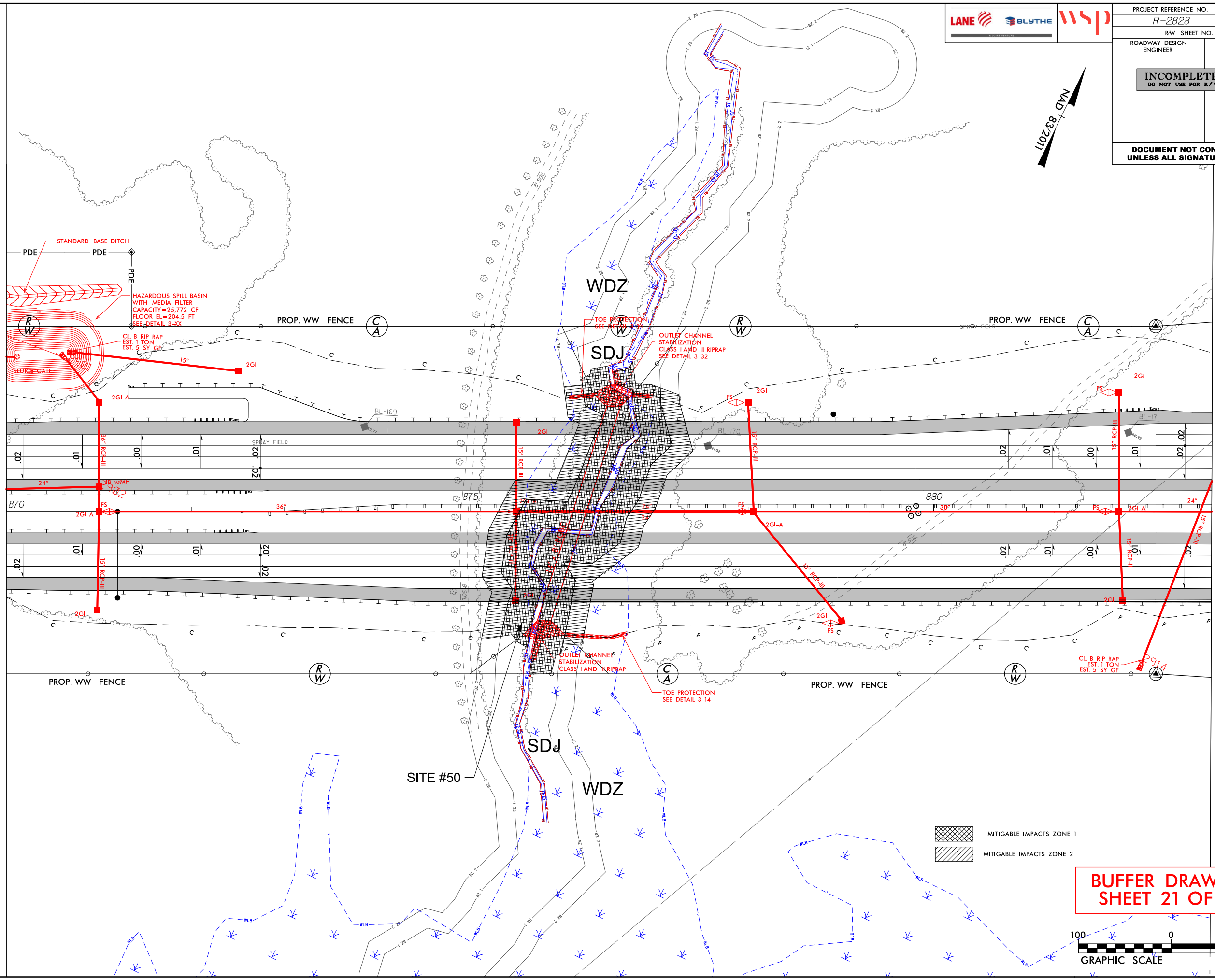
PROJECT REFERENCE NO. R-2828	SHEET NO. 29
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	





REVISIONS

MATCH LINE SEE SHEET 28
-L- STA. 870+00.00

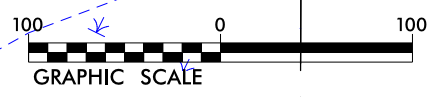
MATCH LINE SEE SHEET 30
-L- STA. 883+00.00



7/18/2019
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P:\proj\2828\1\cs_workingdir\19095\336429_934\2828_hyd_prm_buf_psh_29.dgn

 MITIGABLE IMPACTS ZONE 1
 MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 21 OF 37



8/17/99



PROJECT REFERENCE NO.	SHEET NO.
R-2828	30
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

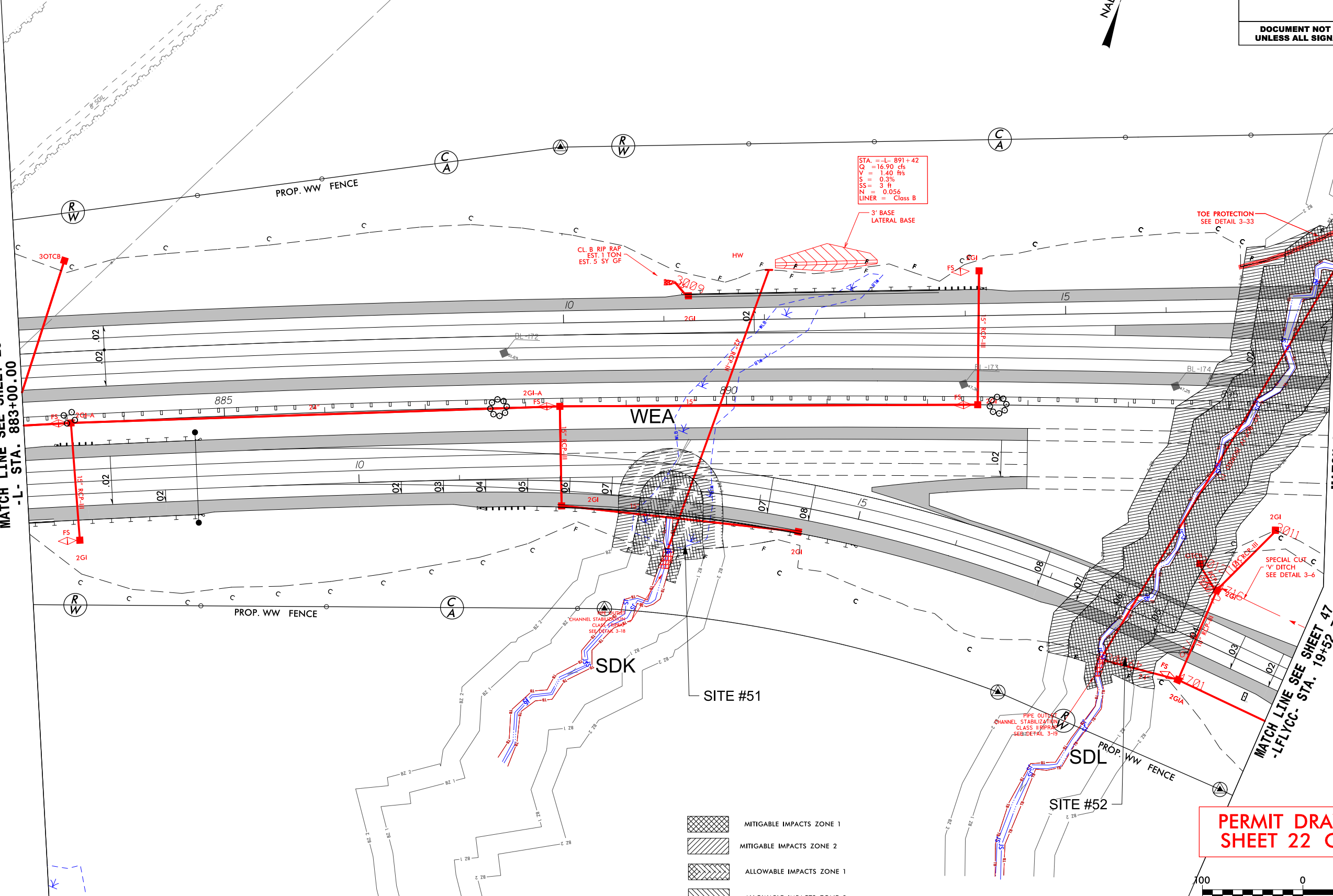


REVISIONS

MATCH LINE SEE SHEET 29
-L- STA. 883+00.00

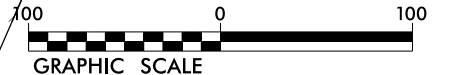
MATCH LINE SEE SHEET 32
-L- STA. 896+00.00

MATCH LINE SEE SHEET 47
-LFLYCC- STA. 19+52.79



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

**PERMIT DRAWING
SHEET 22 OF 37**

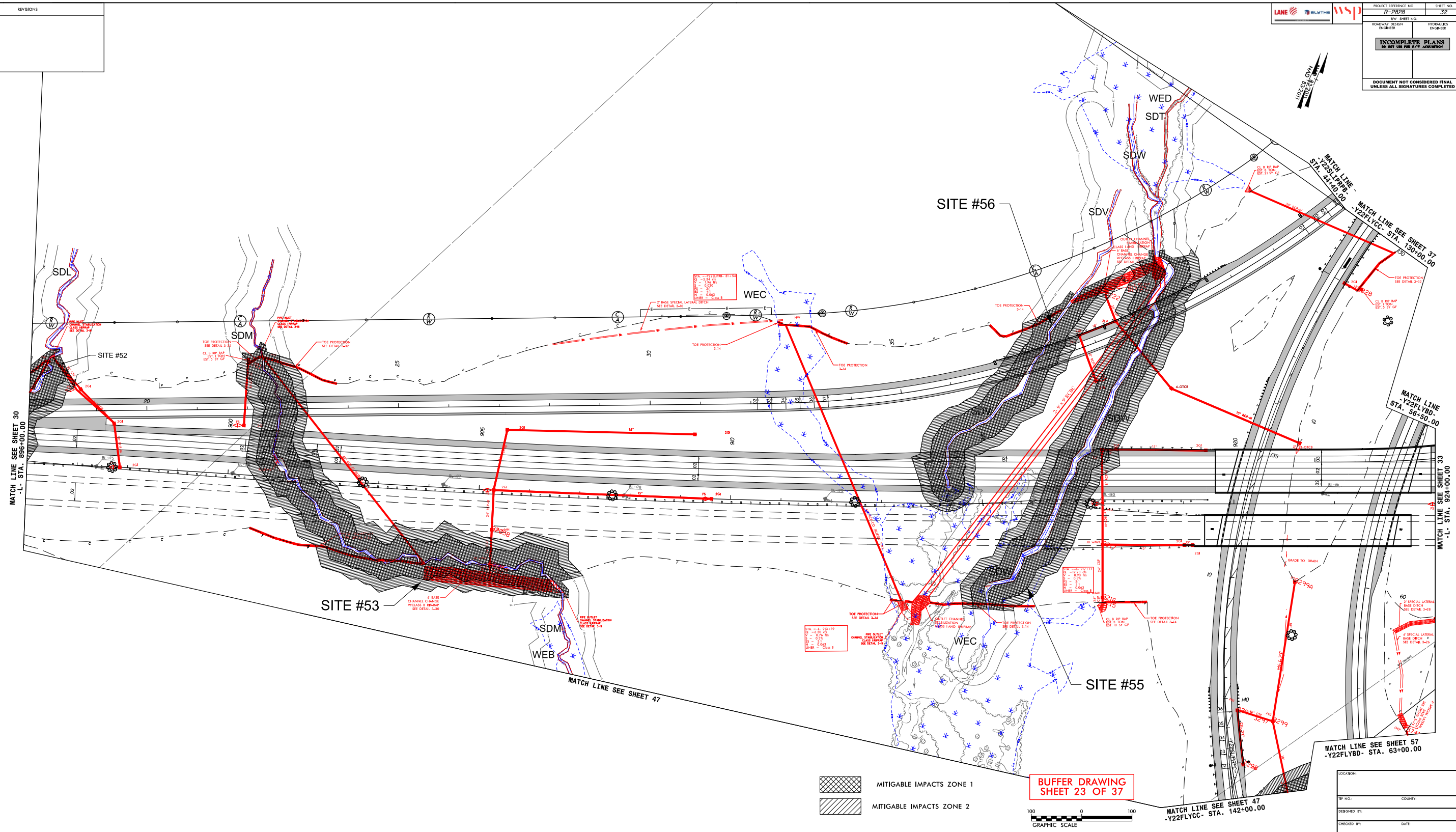


7/18/2019
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6/2/2014

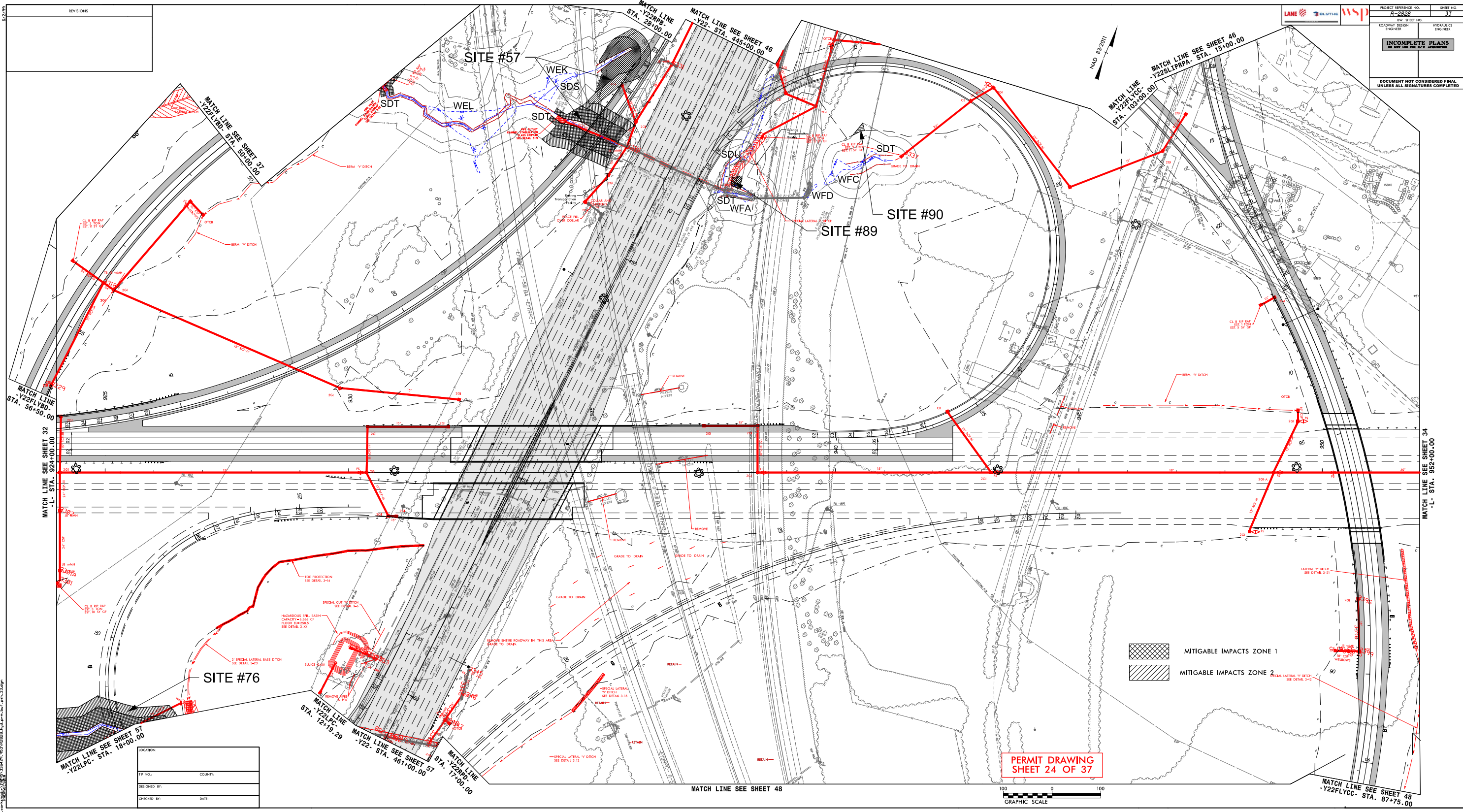
REVISIONS

PROJECT REFERENCE NO. R-2022	SHEET NO. 32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/F V. ADJUSTMENT	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



BUFFER DRAWING SHEET 23 OF 37

LOCATION:	
TP NO.:	COUNTY:
DESIGNED BY:	
CHECKED BY:	DATE:



REVISIONS

PROJECT REFERENCE NO. R-2828 SHEET NO. 33

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS DO NOT USE FOR R/T JURISDICTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION:

PERMIT DRAWING SHEET 24 OF 37

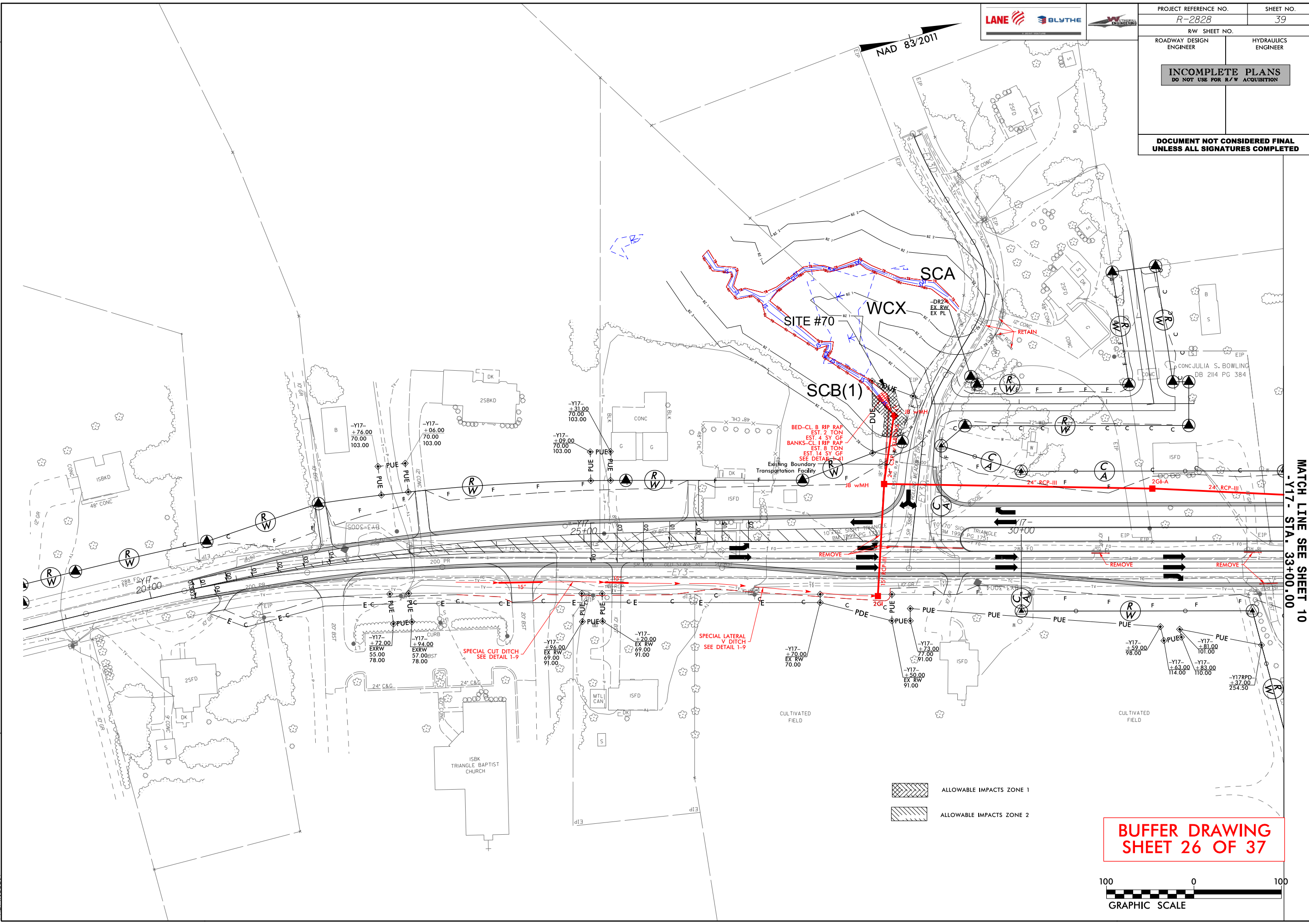


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PROJECT REFERENCE NO. R-2828	SHEET NO. 39
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NAD 83/2011

REVISIONS



7/18/2019
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MATCH LINE SEE SHEET 10
-Y17- STA. 33+00.00

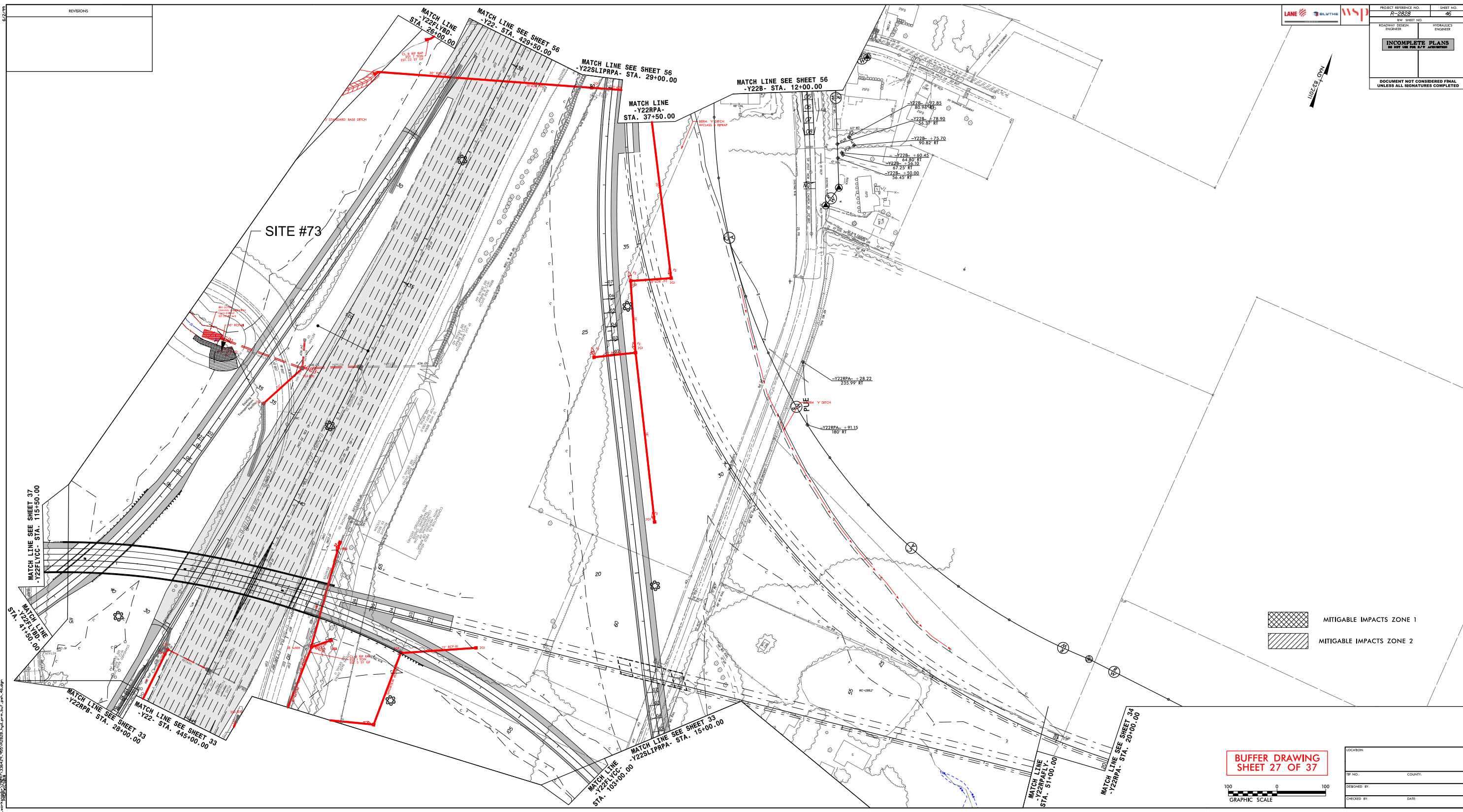
ALLOWABLE IMPACTS ZONE 1
 ALLOWABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 26 OF 37





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REVISIONS



PROJECT REFERENCE NO. R-2022	SHEET NO. 46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR B/V JURISDICTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-  MITIGABLE IMPACTS ZONE 1
-  MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 27 OF 37

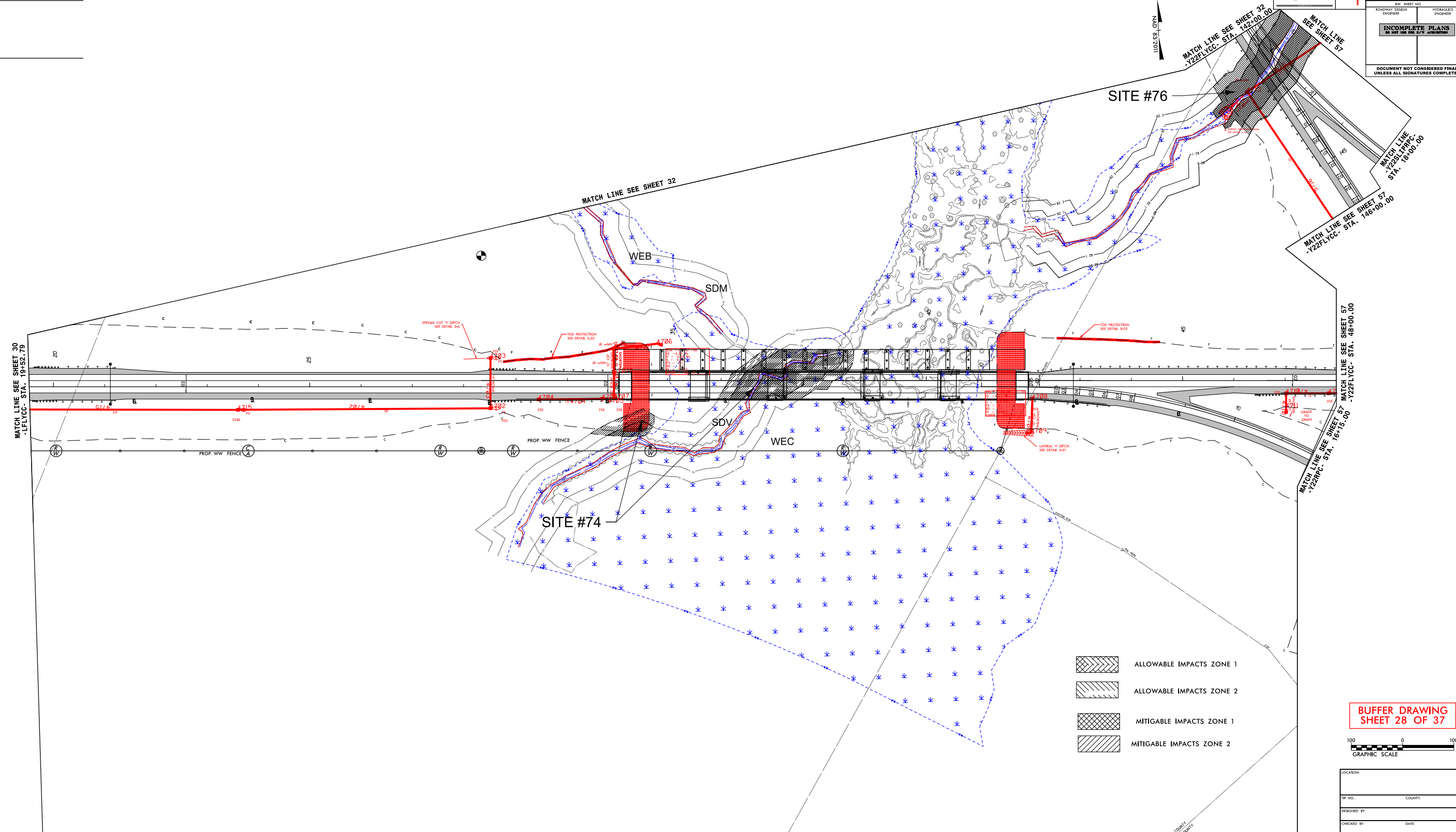


LOCATION:	
TP NO.:	COUNTY:
DESIGNED BY:	
CHECKED BY:	DATE:

6/2/2024
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2022	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR B/V JURISDICTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



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

BUFFER DRAWING SHEET 28 OF 37



LOCATION:	
TP NO.:	COUNTY:
DESIGNED BY:	
CHECKED BY:	DATE:

PROJECT REFERENCE NO. R-2828	SHEET NO. 50
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS

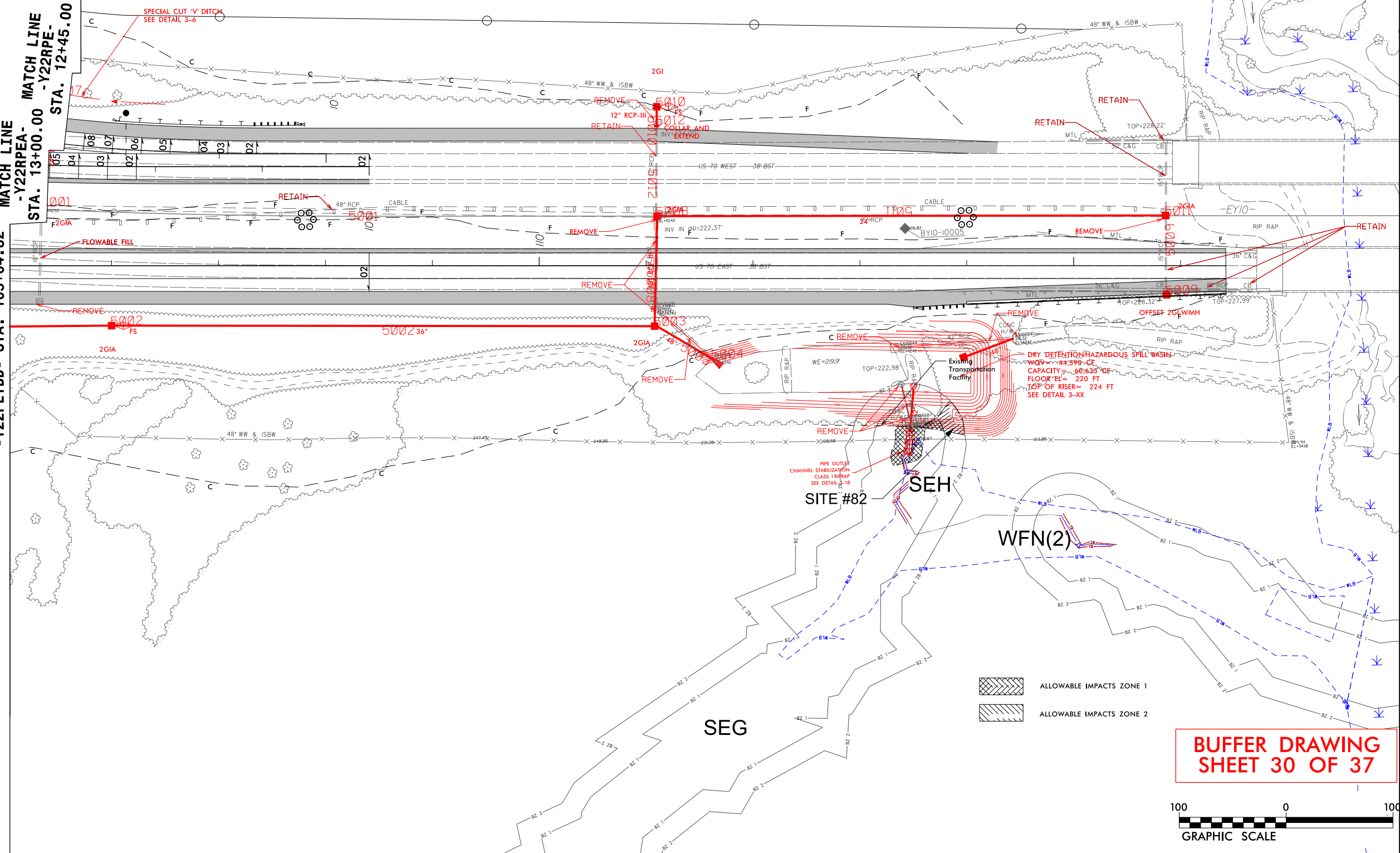
8/17/99

7/18/2019
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MATCH LINE SEE SHEET 49
-Y22FLYBD - STA. 105+04.82

MATCH LINE
-Y22RPEA-
STA. 13+00.00

MATCH LINE
-Y22RPE-
STA. 12+45.00



MATCH LINE SEE SHEET 51
-Y22RPE- STA. 63+00.00

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

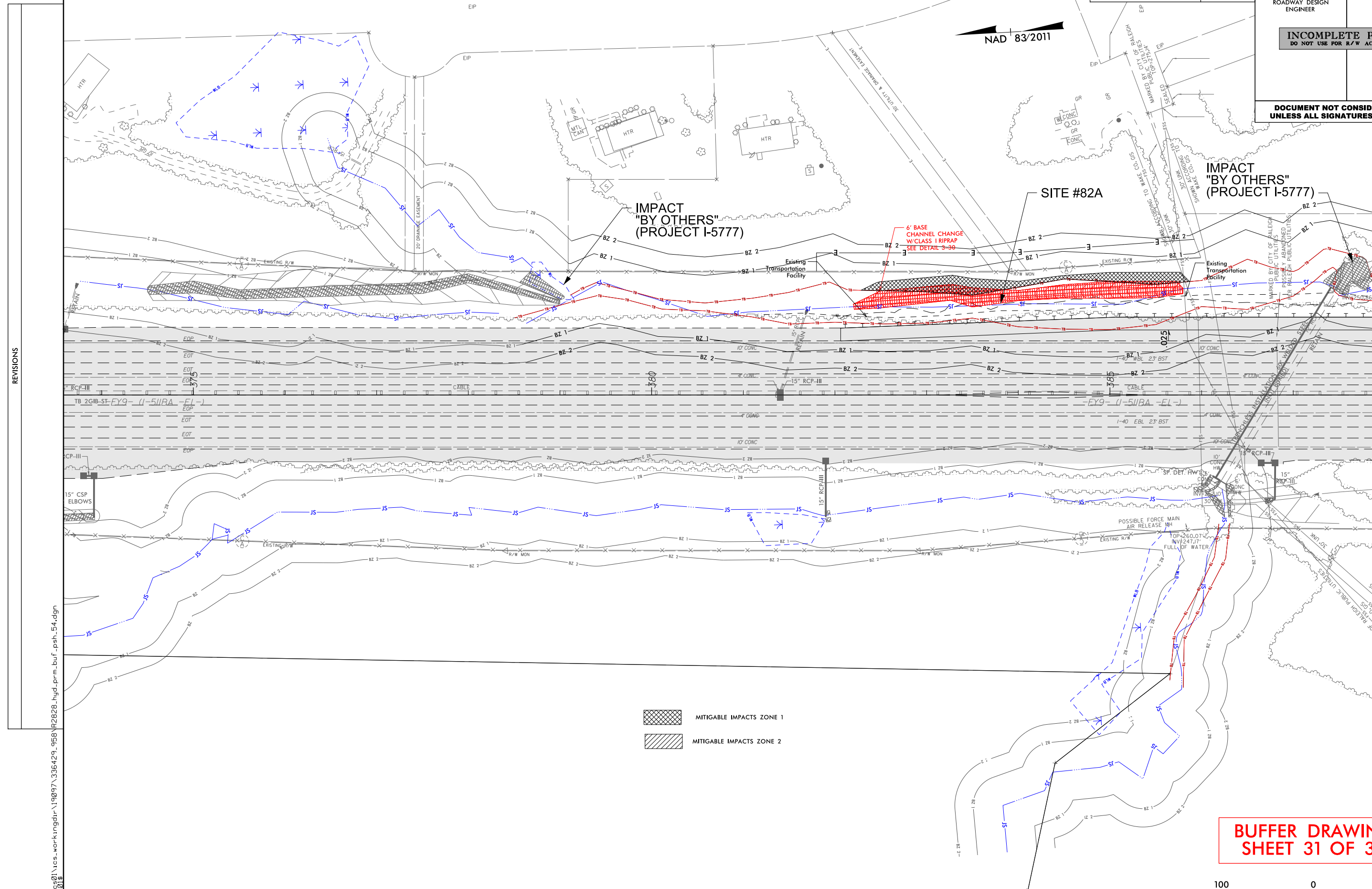
**BUFFER DRAWING
SHEET 30 OF 37**



8/17/99



PROJECT REFERENCE NO. R-2828	SHEET NO. 54
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS

MATCH LINE SEE SHEET 55
-Y22 - STA. 388+00.00

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING
SHEET 31 OF 37



7/18/2019
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8/17/99



PROJECT REFERENCE NO. R-2828	SHEET NO. 55
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

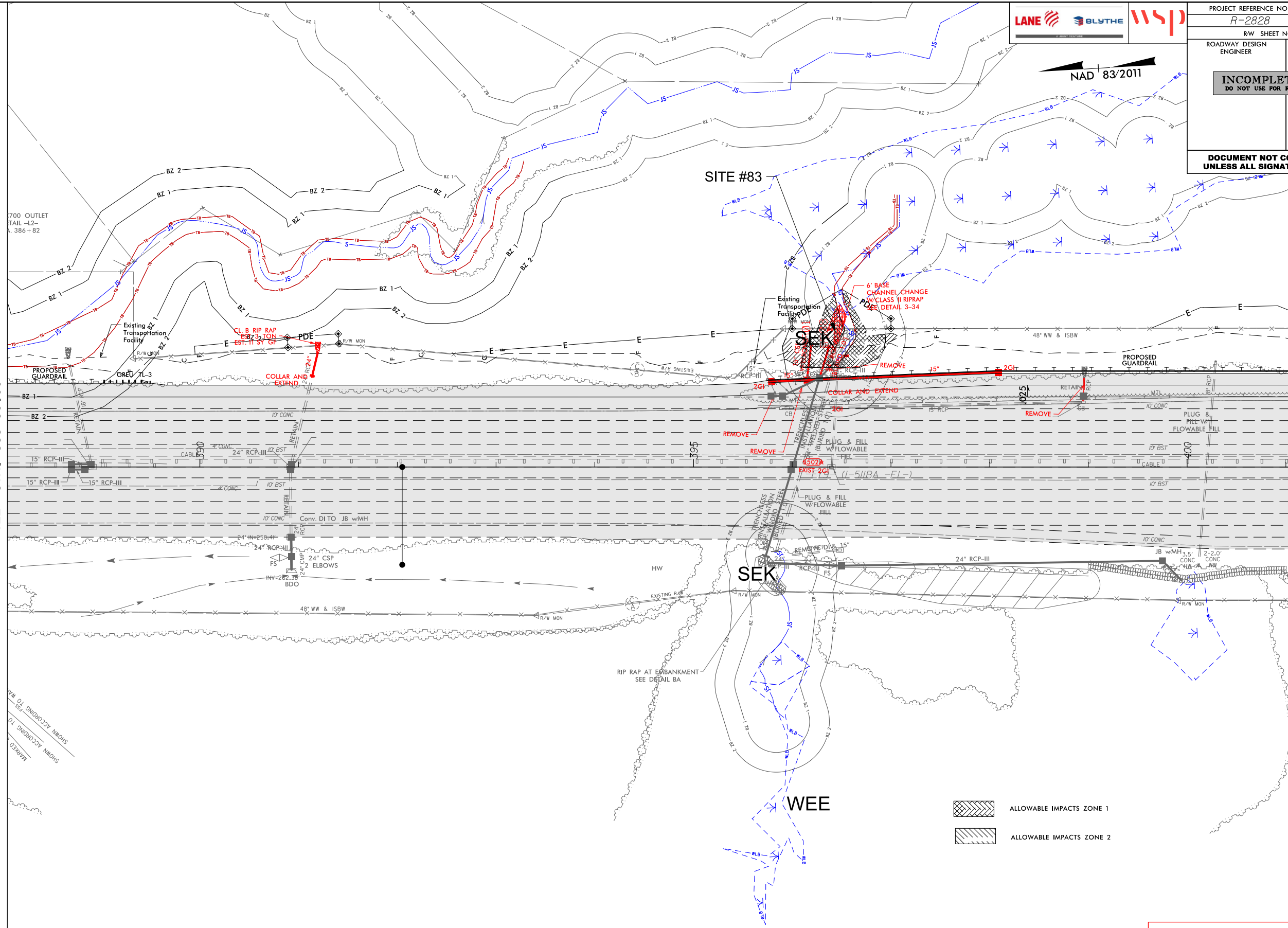


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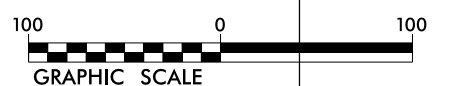
MATCH LINE SEE SHEET 56
-Y22- STA. 401+00.00

REVISIONS

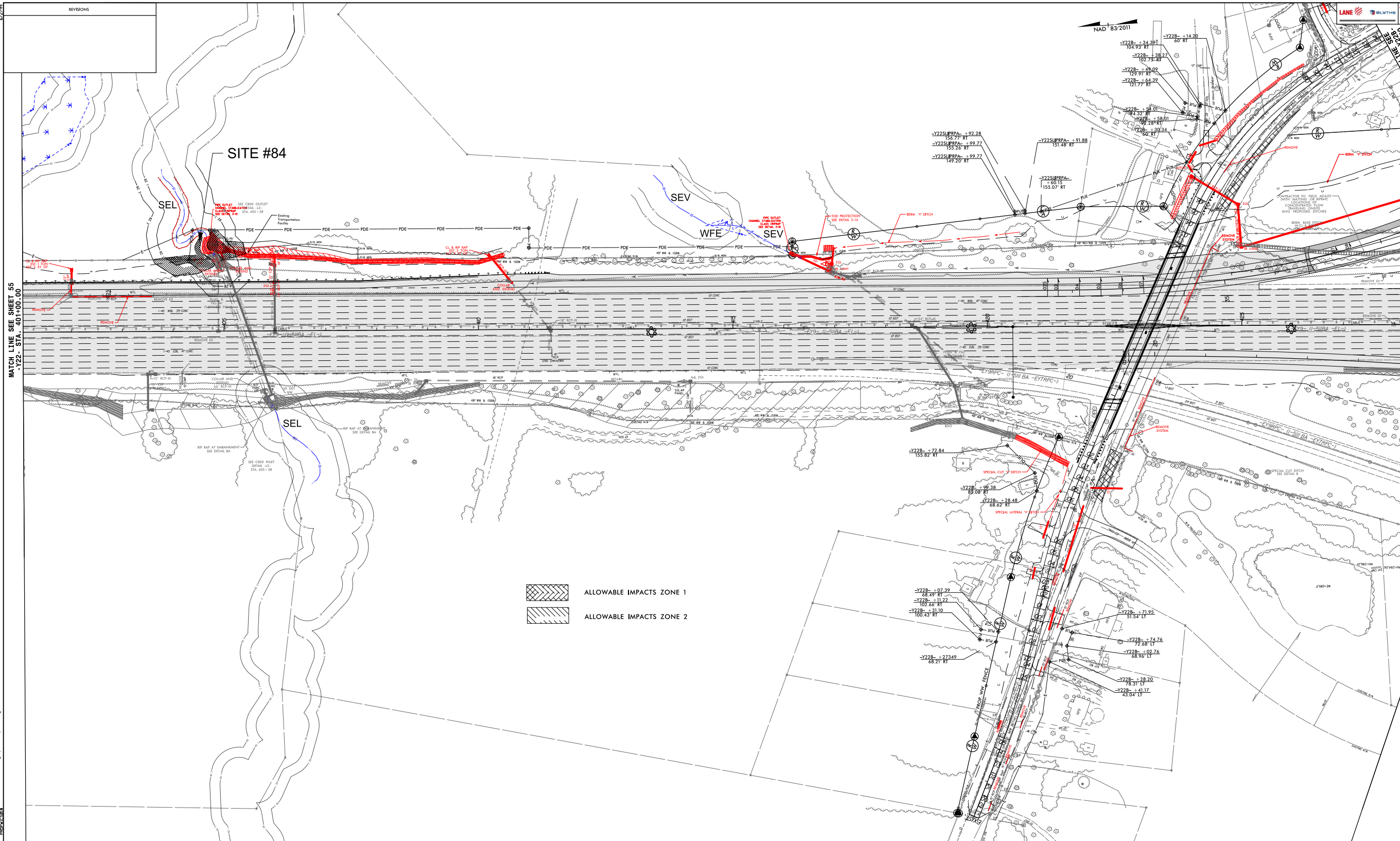
7/18/2019
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P:\p-cad\lgs01\ics_workingdir\19097\336429_950\2828_hyd_prm_buf_psh_55.dgn



BUFFER DRAWING
SHEET 32 OF 37



6/2/2024
MATCH LINE SEE SHEET 55
-Y22- STA. 40+100.00

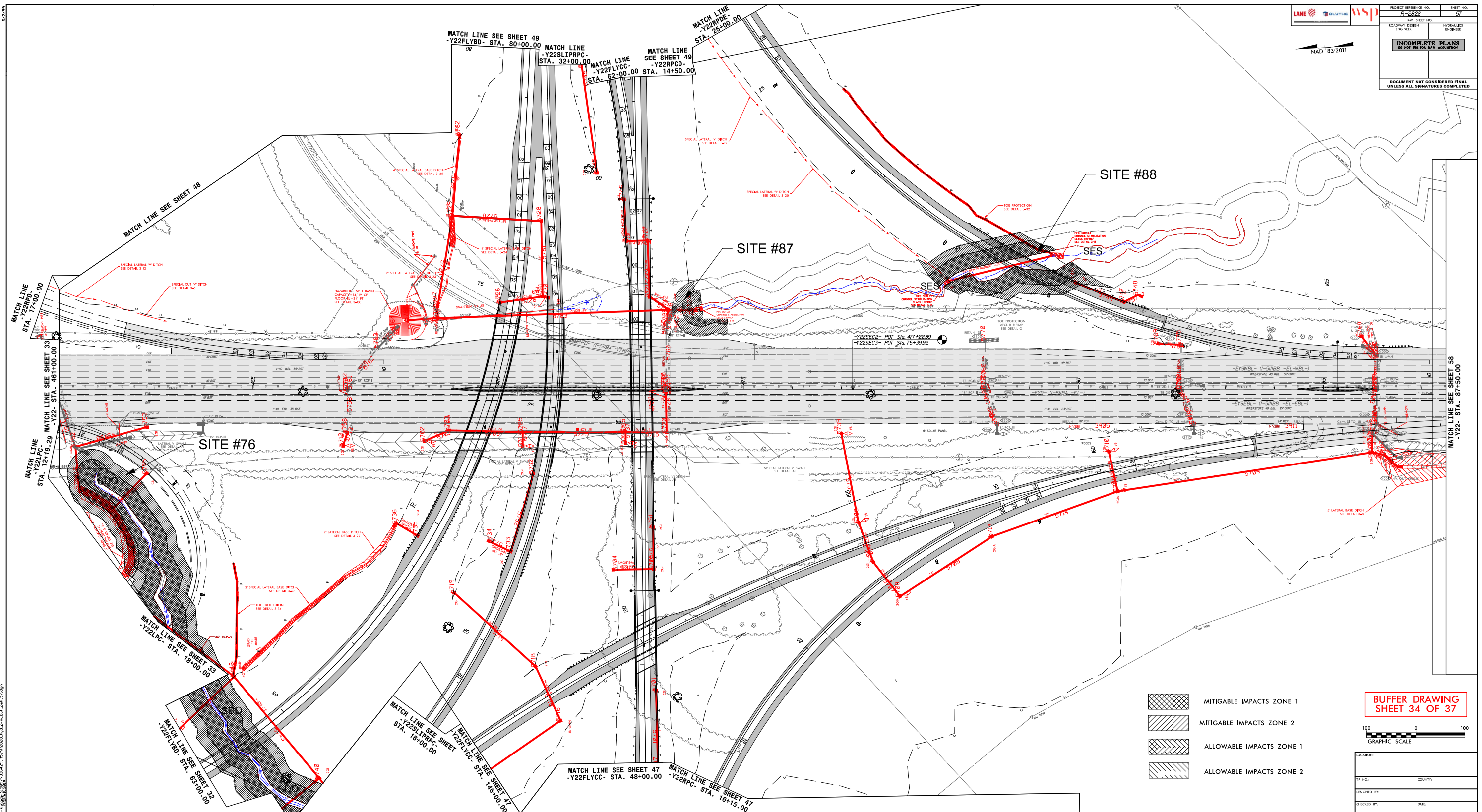


PROJECT REFERENCE NO. R-2828 SHEET NO. 55
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR B/V JURISDICTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 33 OF 37

100 0 100
GRAPHIC SCALE

LOCATION: _____
TP NO. _____ COUNTY: _____
DESIGNED BY: _____
CHECKED BY: _____ DATE: _____



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

BUFFER DRAWING
SHEET 34 OF 37
 100 0 100
 GRAPHIC SCALE
 LOCATION
 TWP NO. COUNTY.
 DESIGNED BY:
 CHECKED BY: DATE:

6/2/2024
 I:\Projects\2022\2022-R-2022\Drawings\34-Buffer\34-Buffer.dwg