09/08/99

TIP PROJECT: I-3819B/U-6039

PROJECT: 34192.1.2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

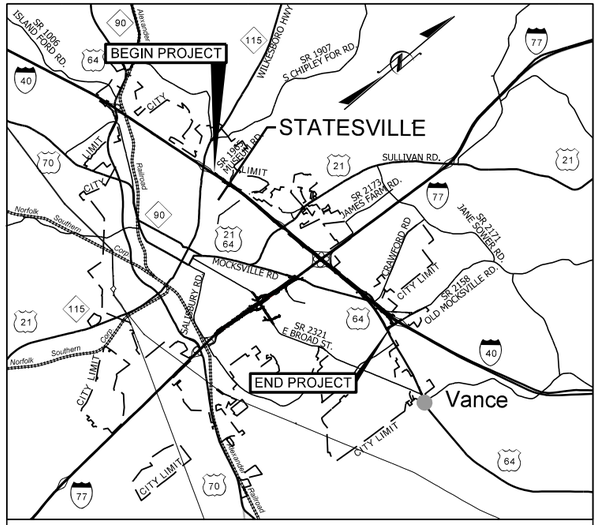
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-3819B/U-6039	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34192.1.2	IMS-40-2(124)	P.E.
34192.3.2	N/A	DESIGN BUILD

IREDELL COUNTY

LOCATION: I-40/I-77 INTERCHANGE INCLUDING I-40 FROM WEST OF SR 2003 (RADIO RD.) TO SR 2158 (OLD MOCKSVILLE RD.) & I-77 FROM SOUTH OF SR 2321 (EAST BROAD ST.) TO SOUTH OF SR 2171 (JANE SOWERS RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, RETAINING WALLS, NOISE WALLS, AND TRAFFIC CONTROL



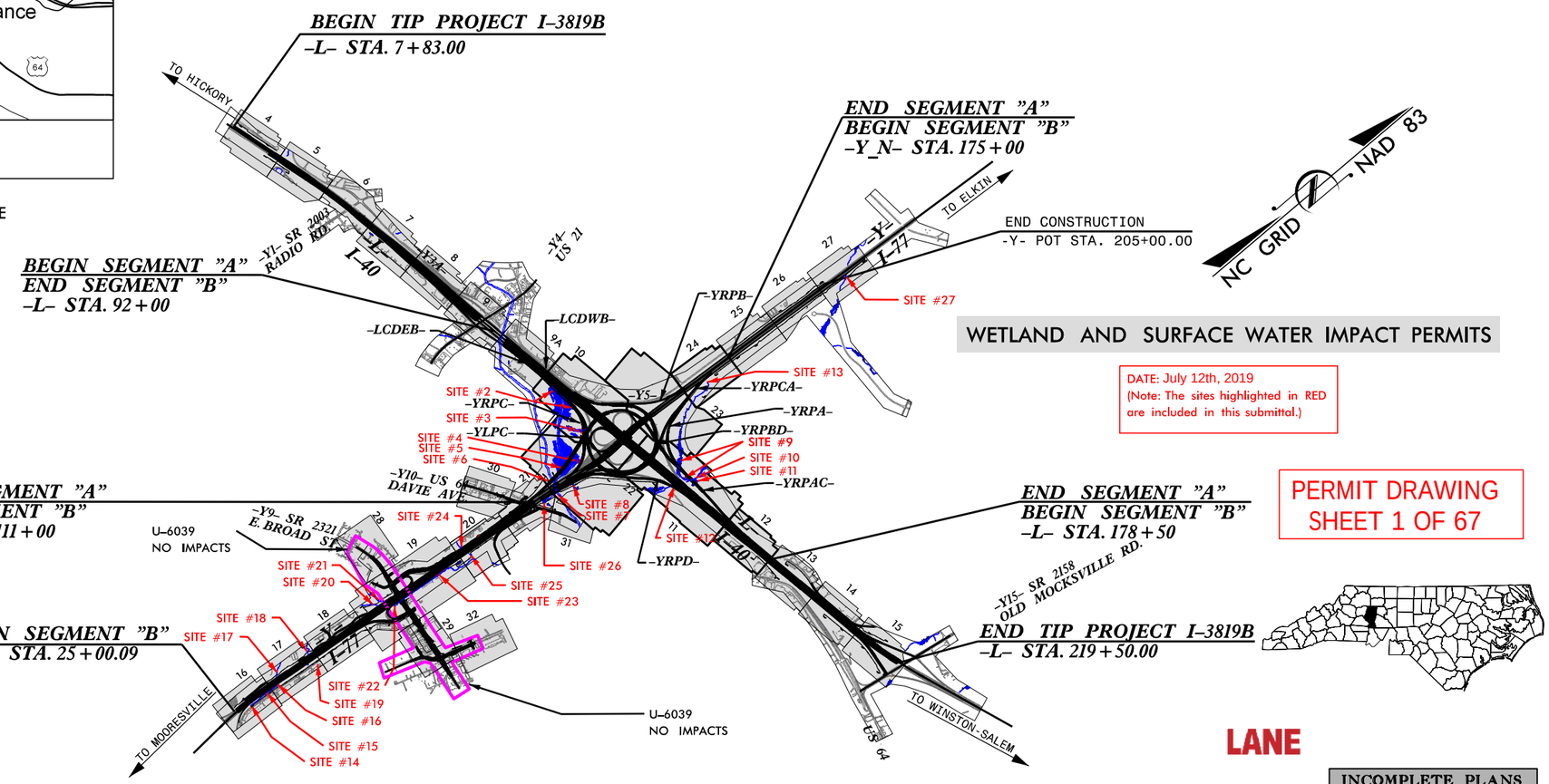
VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF STATESVILLE AND THE TOWNSHIP OF BETHANY

100 50 0 100 200
PLANS

200 100 0 200 400
OVERSIZED PLANS

SCALE VARIES
INSETS



WETLAND AND SURFACE WATER IMPACT PERMITS

DATE: July 12th, 2019
(Note: The sites highlighted in RED are included in this submittal.)

PERMIT DRAWING
SHEET 1 OF 67

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

LANE

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

GRAPHIC SCALES

SEE ABOVE

DESIGN DATA

	I-40	I-77
ADT 2018 =	57,300	62,900
ADT 2040 =	72,500	77,500
DHV =	5,800	6,200
D =	55 %	55 %
T =	16 % *	19 % **
V =	60 MPH	60 MPH

* TTST 13 + DUAL 3 (I-40)
** TTST 16 + DUAL 3 (I-77)
CLASSIFICATION: INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-3819B	=	3.885
LENGTH STRUCTURES TIP PROJECT I-3819B	=	0.124
TOTAL LENGTH OF TIP PROJECT I-3819B	=	4.009

Prepared In the Office of:
WSP
1001 Morehead Square Dr., Suite 610, Charlotte, NC 28203
NC LIC NO. F-0165

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 30, 2018

LETTING DATE:
OCTOBER 30, 2018

CHRISTOPHER D. DAVIS, P.E.
PROJECT ENGINEER

ERIC W. SECKINGER, P.E.
PROJECT DESIGN ENGINEER

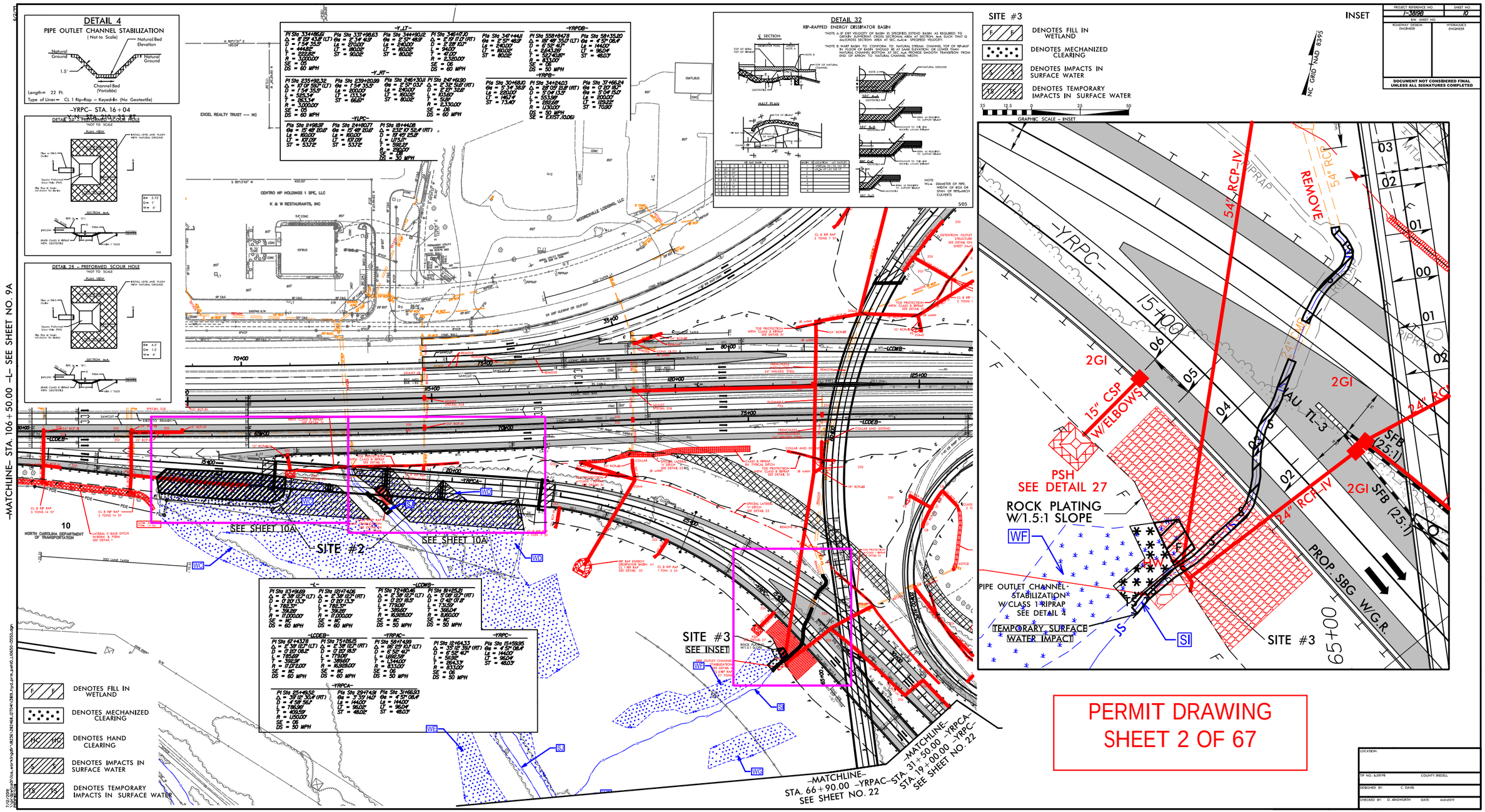
HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

6/3/2019
c:\projectwise\pb\projectwiseint\wsp__morgan.goodwin\d0339329\I3819_hyd_prm_TSH.dgn
USMG675774



PERMIT DRAWING
SHEET 2 OF 67

DETAIL 4
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)

Natural Ground — Natural Bed Elevation — 1.5' — Natural Ground — Channel Bed (Variable)

Length= 22 Ft.
Type of Liner= CL 1 Rip-Rap – Keyed-In (No Geotextile)

–YRPC– STA. 16+04

DETAIL 27 – PREFORMED SCOUR HOLE
*NOT TO SCALE

DETAIL 28 – PREFORMED SCOUR HOLE
*NOT TO SCALE

DETAIL 32
RIP-RAPPED ENERGY DISSIPATOR BASIN

*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A, SUCH THAT Q divACROSS SECTION AREA AT SEC. A-A = SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

SITE #3

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

GRAPHIC SCALE – INSET

INSET

NC GRID NAD 83/95

PROJECT REFERENCE NO.	SHEET NO.
I-3818B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–MATCHLINE– STA. 106+50.00 –L– SEE SHEET NO. 9A

SITE #2

SEE SHEET 10A

SITE #3
SEE INSET

–MATCHLINE– STA. 66+90.00 –YRPAC– SEE SHEET NO. 22

–MATCHLINE– STA. 31+50.00 –YRPCA– STA. 19+00.00 –YRPC– SEE SHEET NO. 22

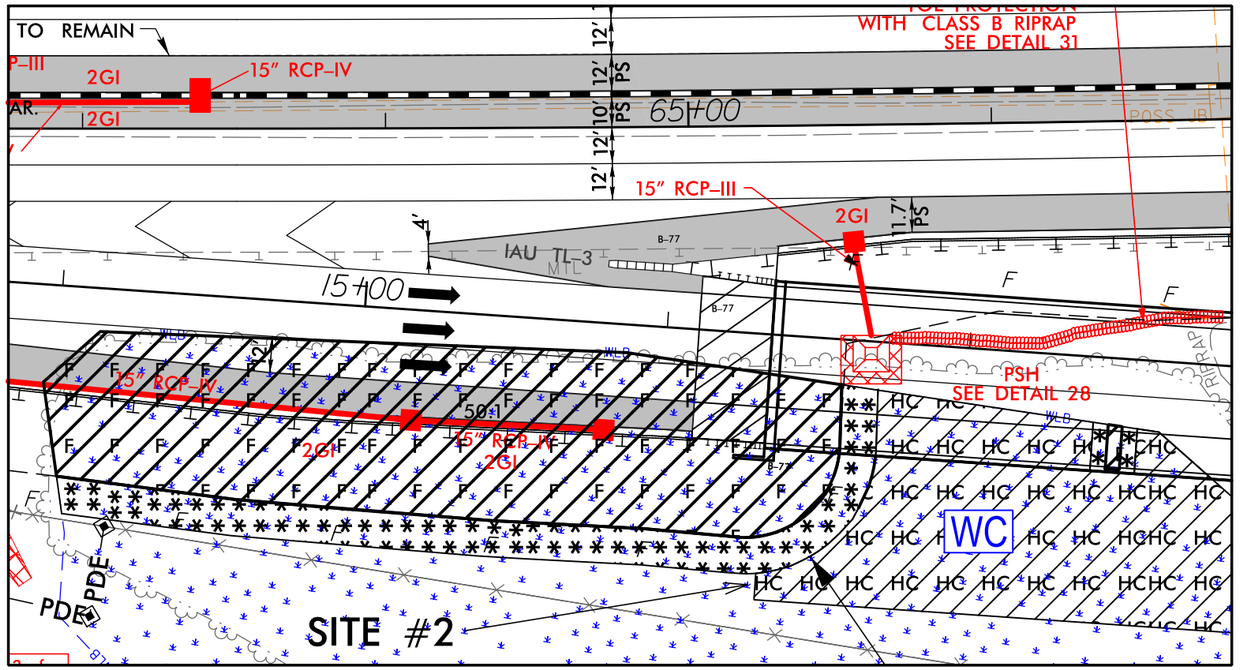
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES HAND CLEARING
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

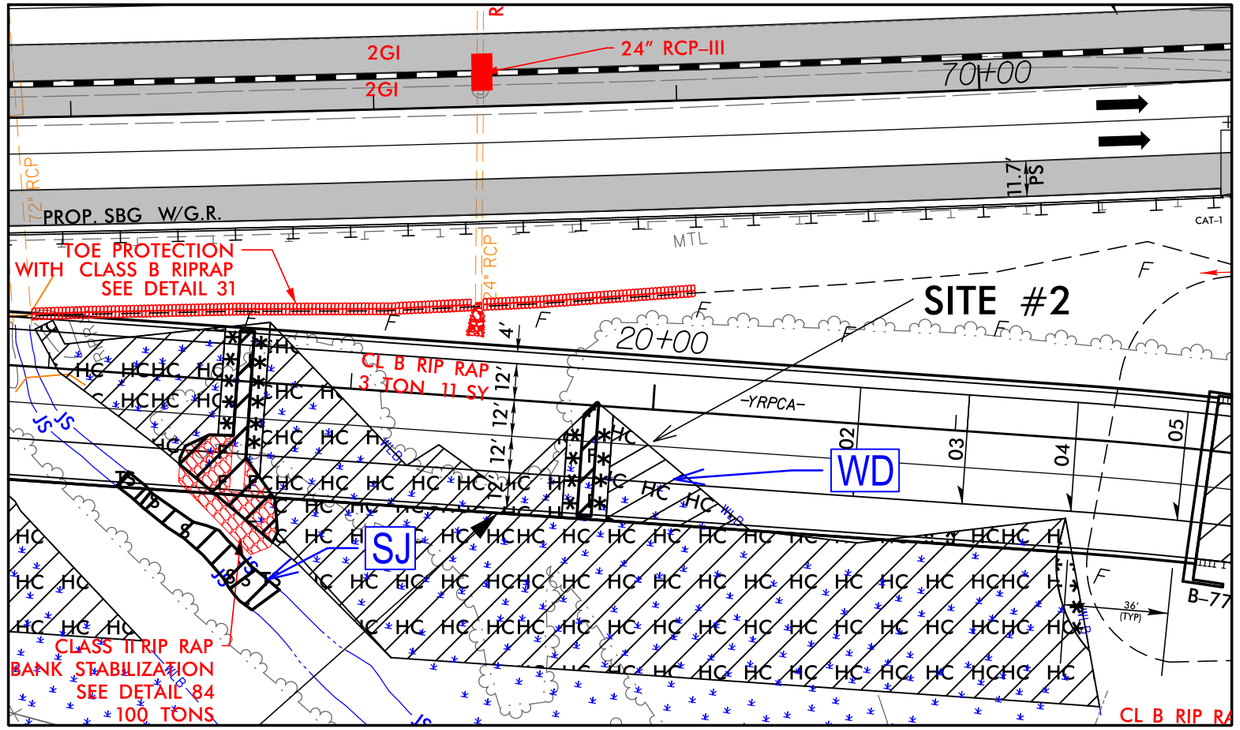
54" RCP-IV
FLOWERS
15" CSP W/ELBOWS
PSH SEE DETAIL 27
ROCK PLATING W/1.5:1 SLOPE
PIPE OUTLET CHANNEL STABILIZATION W/CLASS 1 RIPRAP SEE DETAIL 4
TEMPORARY SURFACE WATER IMPACT
24" RCP-IV
PROP. SBG W/G.R.
SITE #3

PERMIT DRAWING
SHEET 3 OF 67

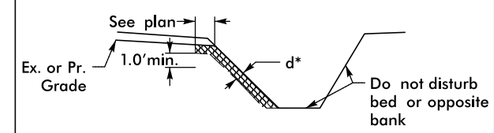
LOCATION:	
TIP NO. I-3818B	COUNTY: IREDELL
DESIGNED BY: C. DAVIS	
CHECKED BY: D. AINSWORTH	DATE: 4-24-2019

SITE #2





DETAIL 84
RIP RAP BANK STABILIZATION
(Not to Scale)



Type of Liner= CL 1 or CL 2 Rip Rap (see plan)
*d=18" for CL 1 and 30" for CL 2 (No Geotextile)

-YRPCA- STA. 18+65 RT
-YRPCA- STA. 77+00 RT

LANE WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	10A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

HC HC DENOTES HAND CLEARING

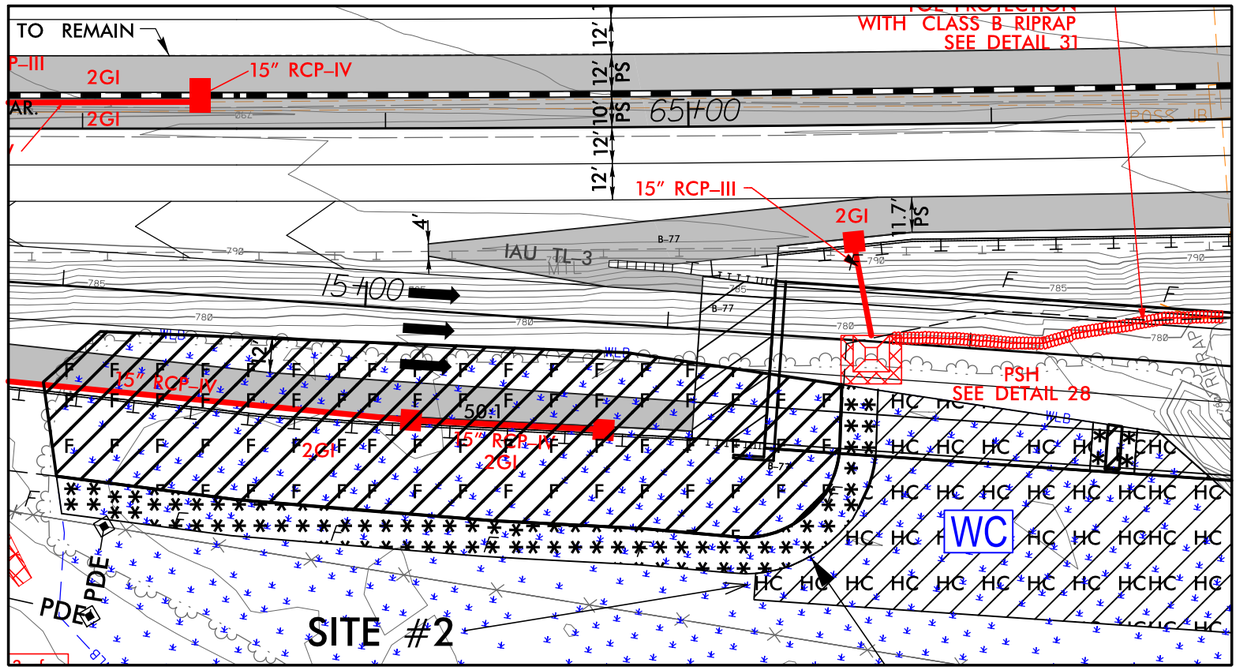
NC GRID NAD 83/95

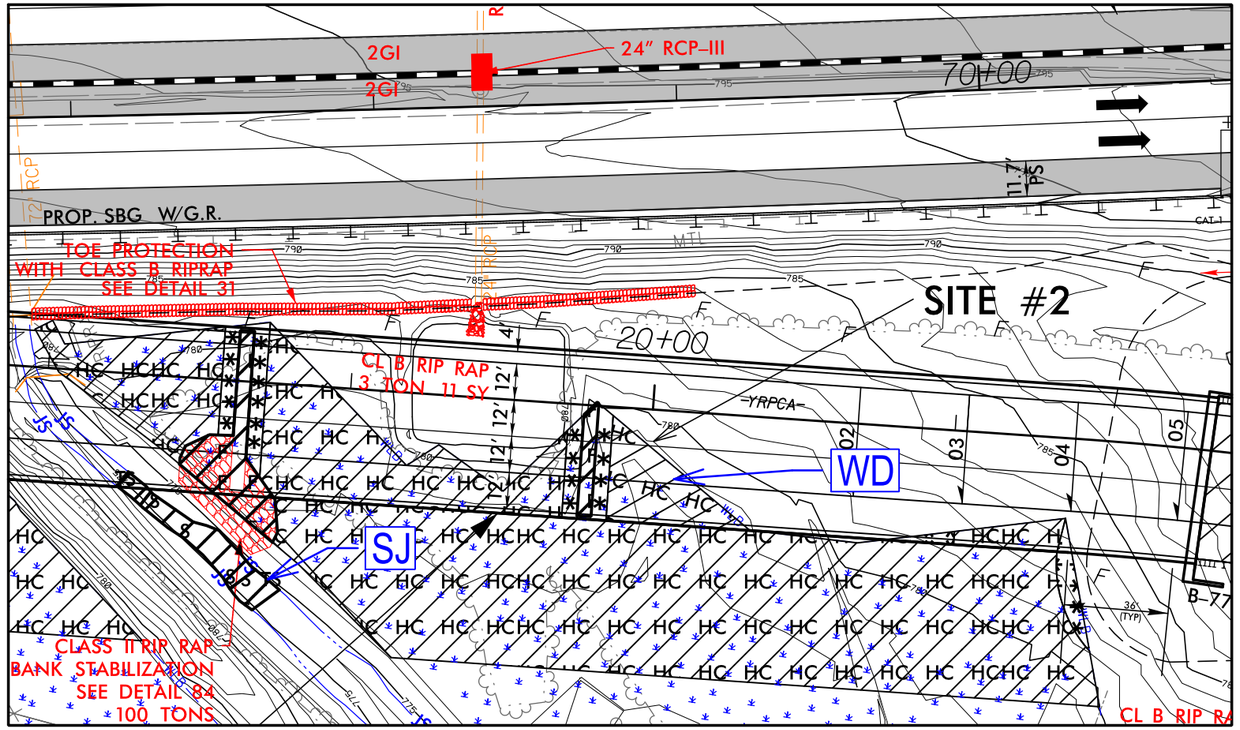
PERMIT DRAWING
SHEET 4 OF 67

50 25 0 50 100
GRAPHIC SCALE - INSET

7/12/2019
pr_dgnlsa01\ics_workingdir\18236\282468_127067\13819_hyd_prm_psh10A_L10650-13550.dgn
RIPWTS913

SITE #2

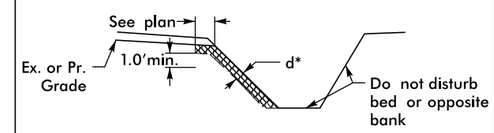




DETAIL 84

RIP RAP BANK STABILIZATION

(Not to Scale)



Type of Liner= CL 1 or CL 2 Rip Rap (see plan)
*d=18" for CL 1 and 30" for CL 2 (No Geotextile)

-YRPCA- STA. 18+65 RT
-YRPCA- STA. 77+00 RT

LANE WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	10A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

F F — DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

HC HC — DENOTES HAND CLEARING

NC GRID NAD 83/95

PERMIT DRAWING
SHEET 5 OF 67

50 25 0 50 100

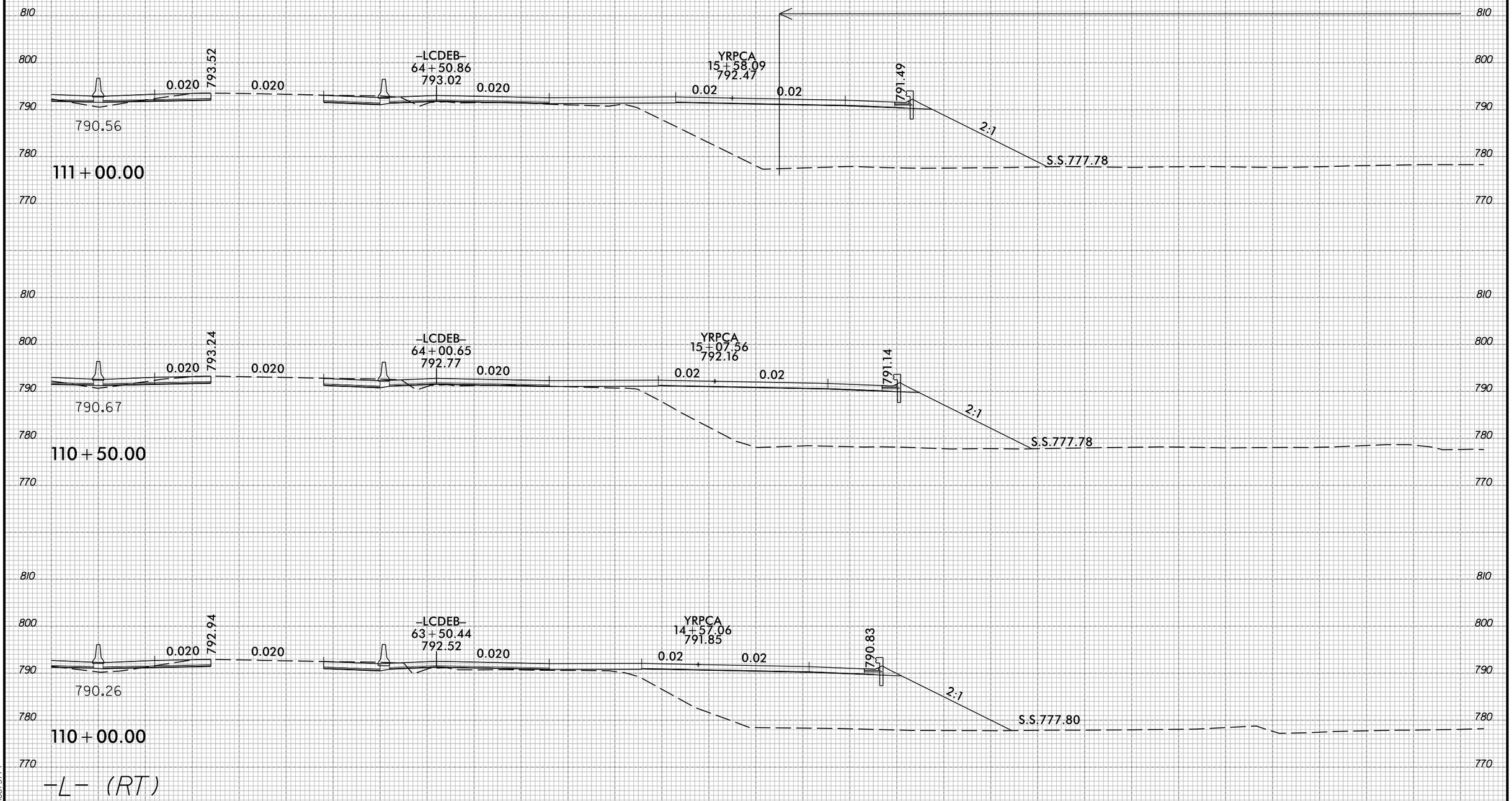
GRAPHIC SCALE - INSET

7/12/2019
DGN: pgrass01\ics_workingdir\18225\282468_127008\13819_hyd_prm_psh10A_L10650-13550.dgn
RIP: KITS013

PROJ. REFERENCE NO.	SHEET NO.
I-3819B	XA-76

PERMIT DRAWING
SHEET 6 OF 67

SITE #2
WC



8/23/99

5/31/2019
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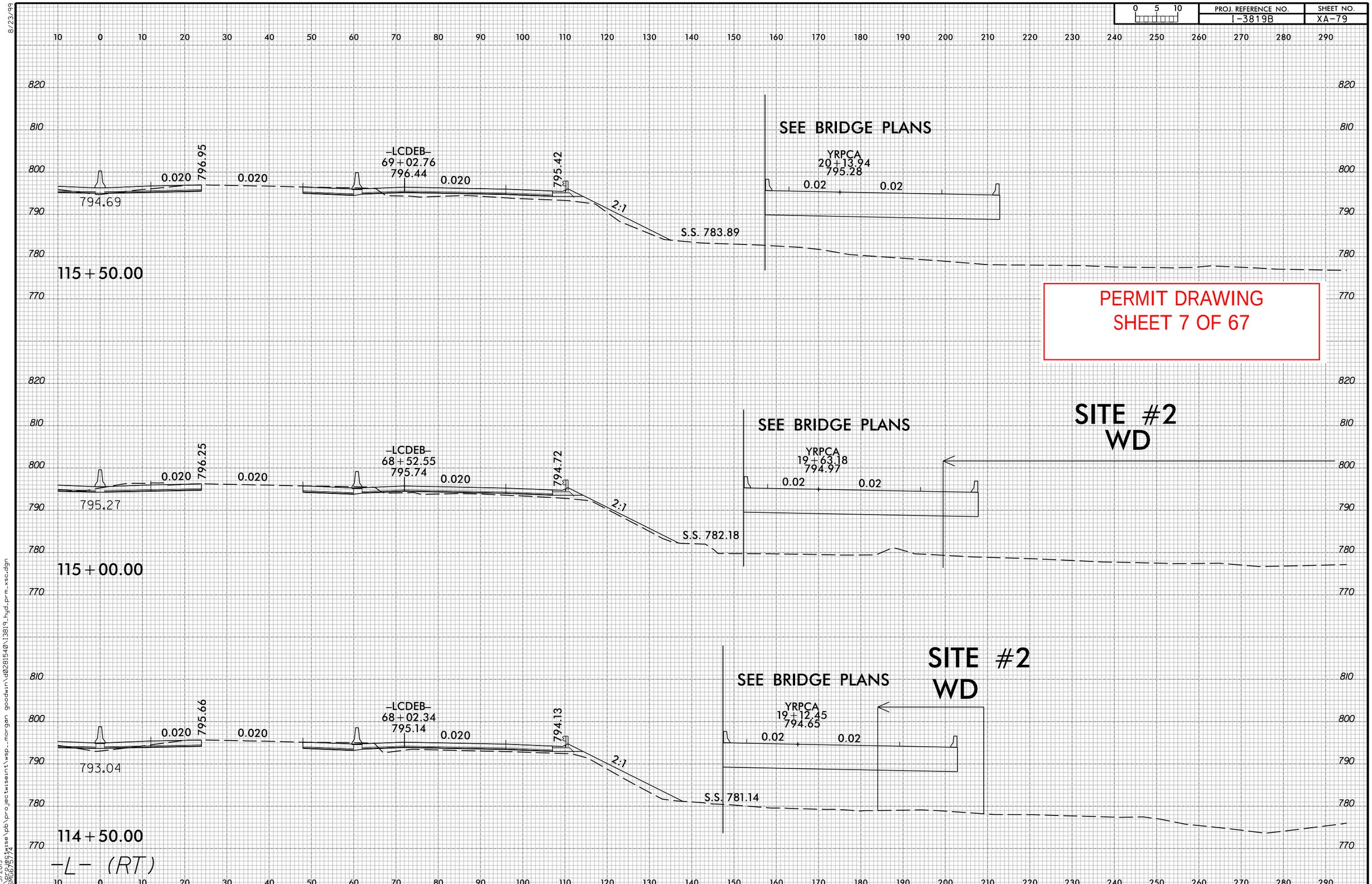

8/23/99

6/5/2019
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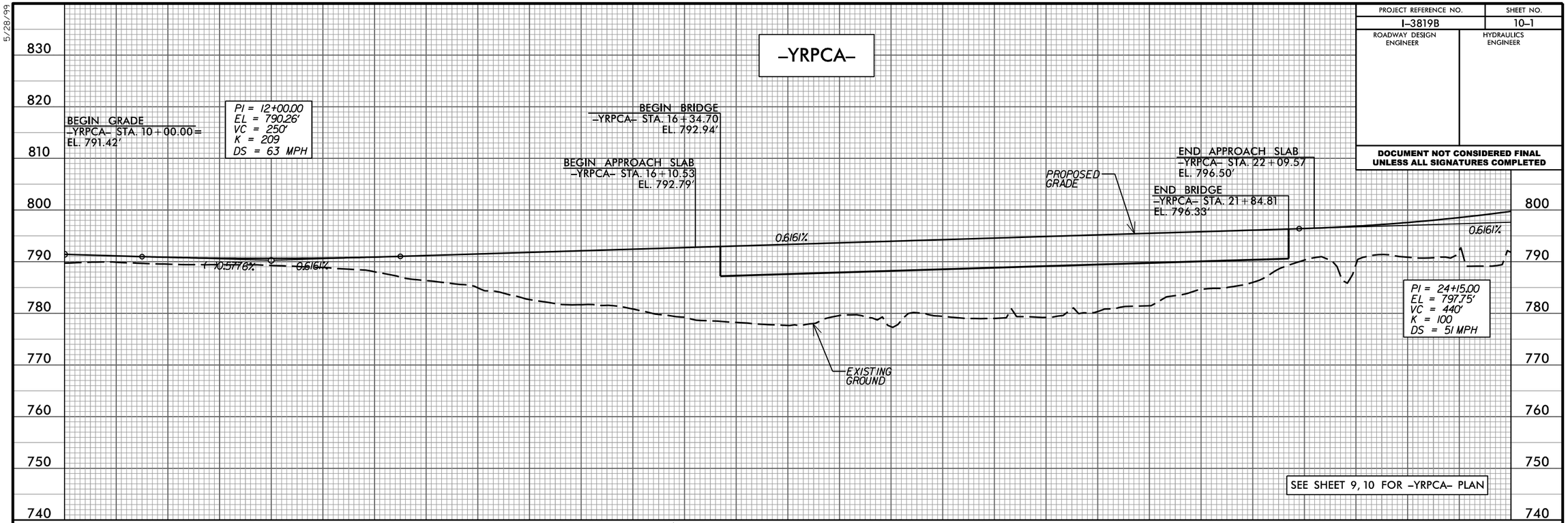
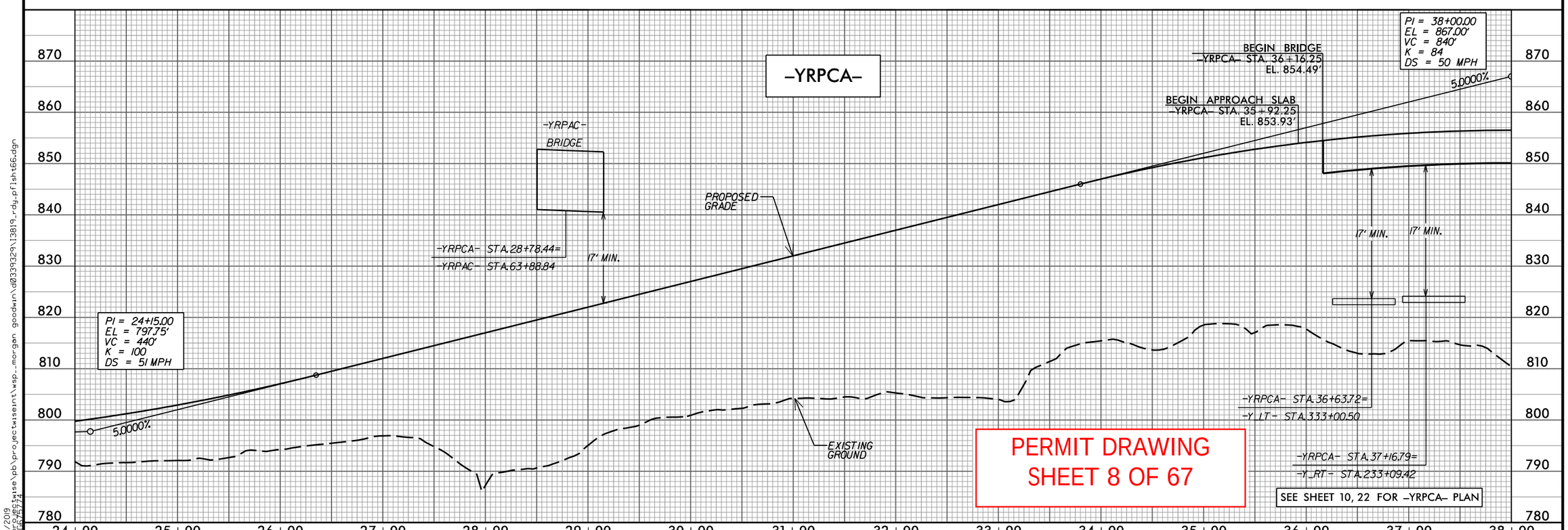
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	10-1
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





PERMIT DRAWING
SHEET 8 OF 67

5/28/99

5/31/2019
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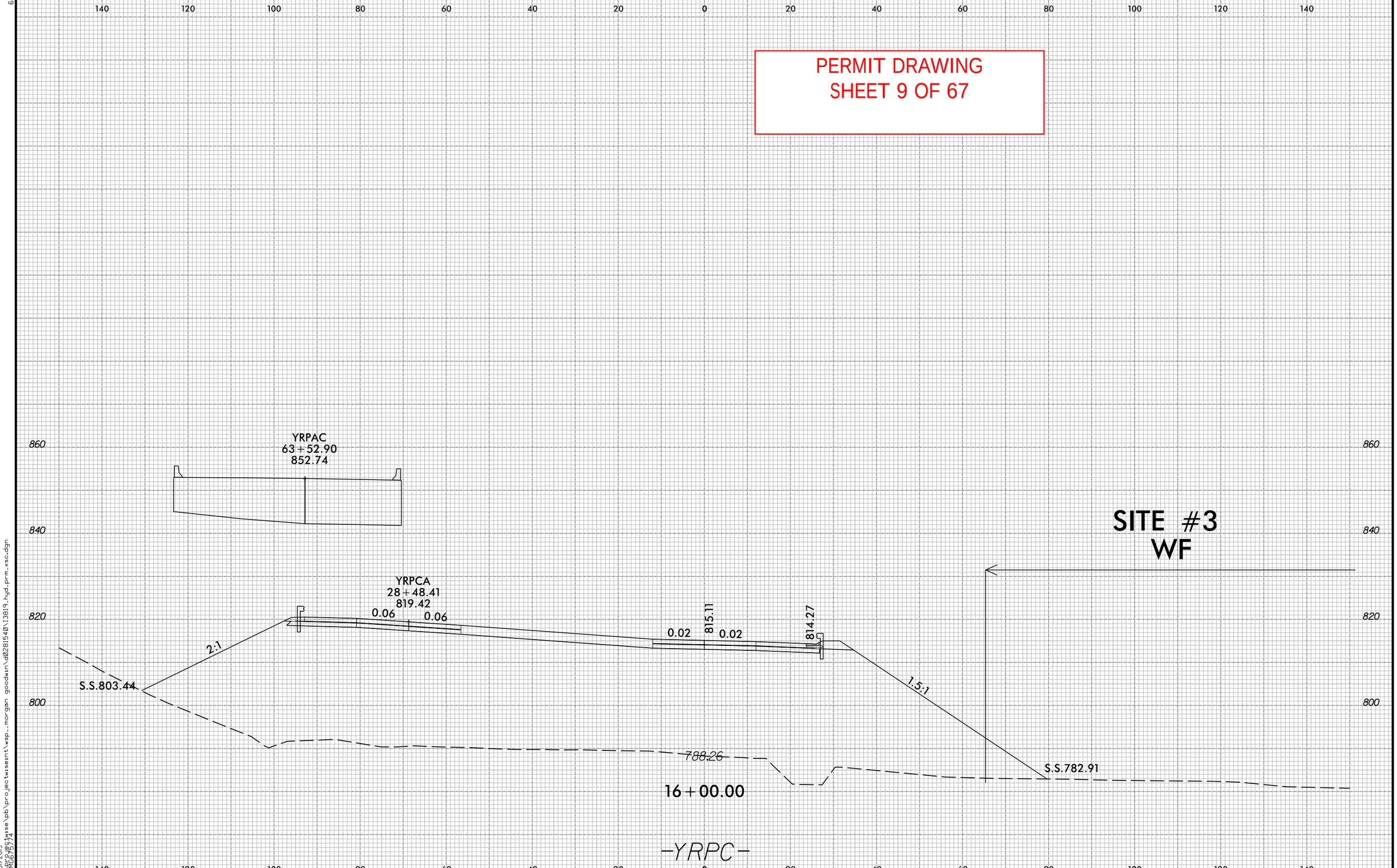
	I-3819	XA-252

PERMIT DRAWING
SHEET 9 OF 67



6/23/16

5/31/2019
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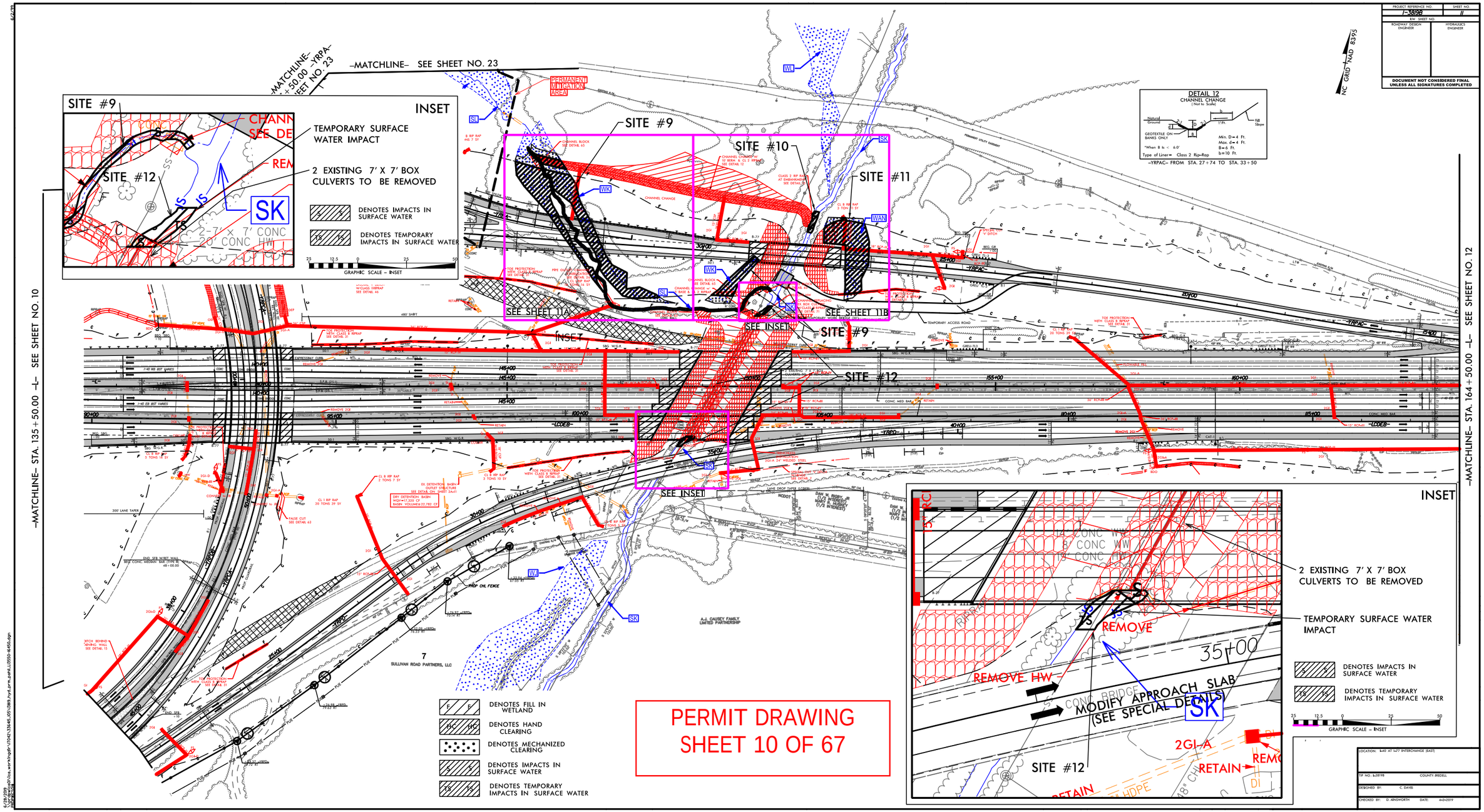
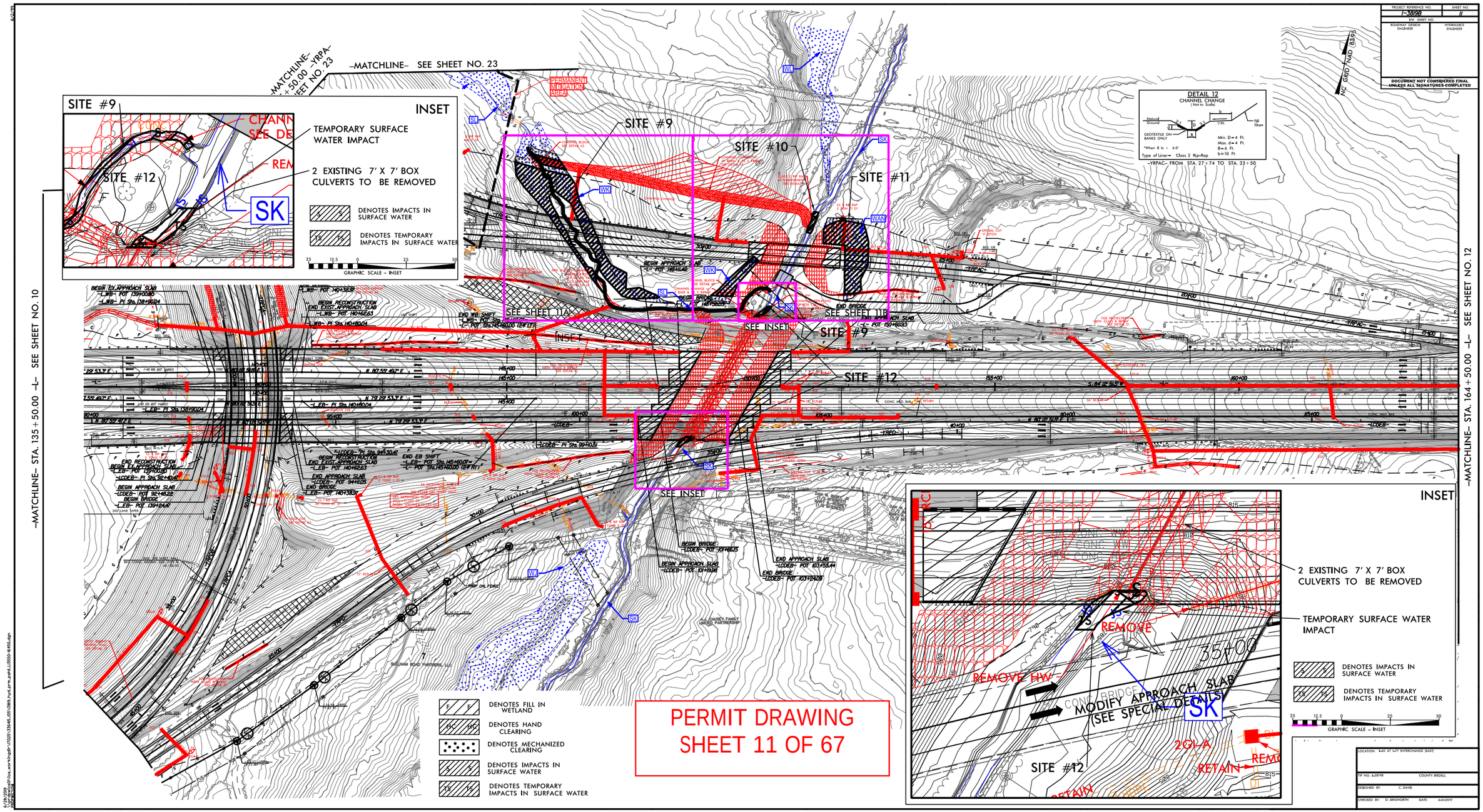


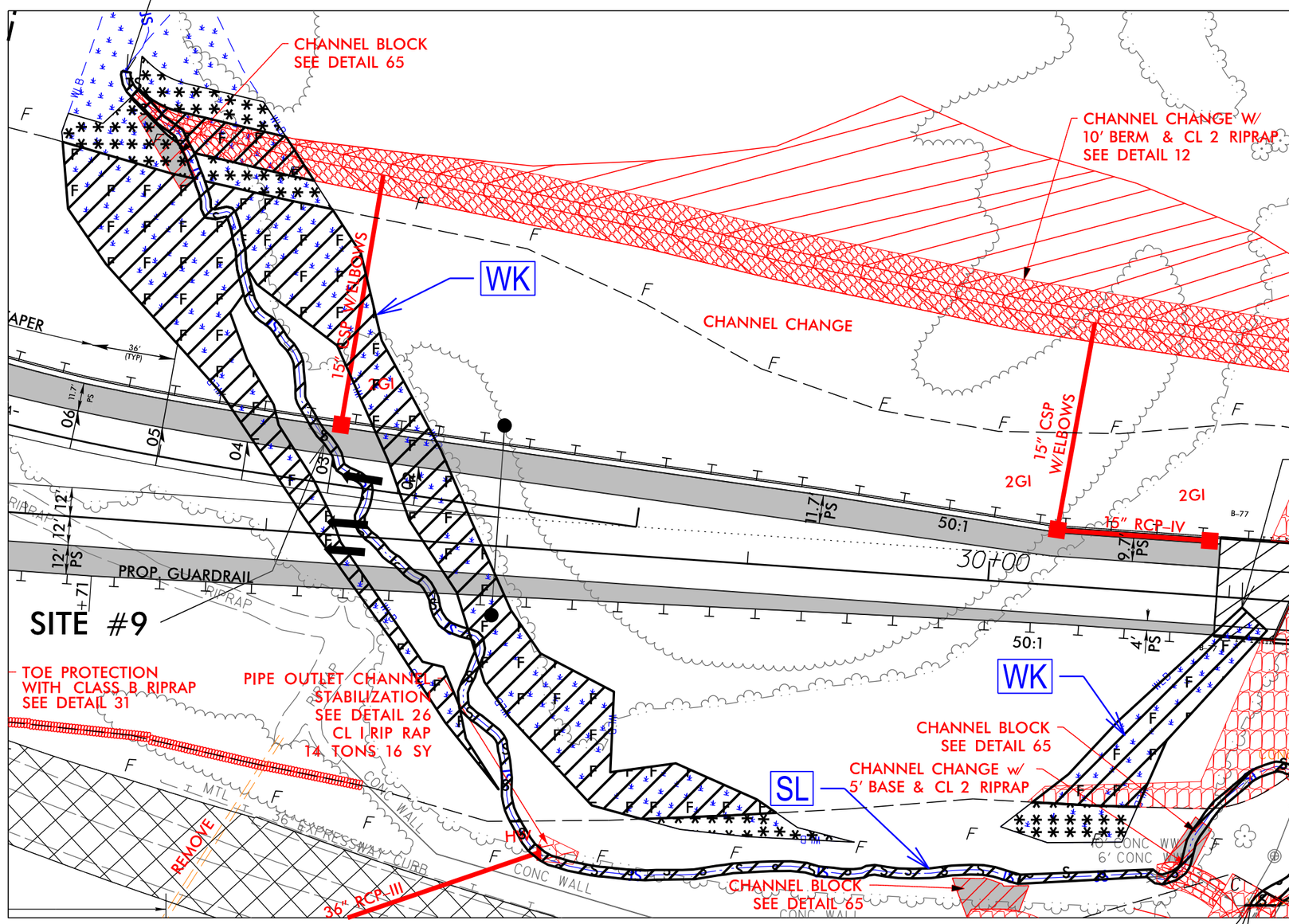
PERMIT DRAWING
SHEET 10 OF 67


-MATCHLINE- SEE SHEET NO. 23
-MATCHLINE- STA. 135+50.00 -L- SEE SHEET NO. 10
-MATCHLINE- STA. 164+50.00 -L- SEE SHEET NO. 12
INSET
SITE #9
SITE #10
SITE #11
SITE #12
SEE SHEET 11A
SEE SHEET 11B
SEE INSET
TEMPORARY SURFACE WATER IMPACT
2 EXISTING 7' X 7' BOX CULVERTS TO BE REMOVED
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
GRAPHIC SCALE - INSET
DETAIL 12
CHANNEL CHANGE
-YRPAC- FROM STA. 27+74 TO STA. 33+50
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
DENOTES MECHANIZED CLEARING
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
REMOVE
REMOVE HW
MODIFY APPROACH SLAB (SEE SPECIAL DETAILS)
RETAIN
PERMIT DRAWING
SHEET 11 OF 67
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
TIP NO. U-3818B
COUNTY: IREDELL
DESIGNED BY: C. DAVIS
CHECKED BY: D. ANGWORTH
DATE: 6-21-2019

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NC GRID NAD 83/95

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

50 25 0 50 100

GRAPHIC SCALE – INSETS

PERMIT DRAWING
SHEET 12 OF 67

07/02/19
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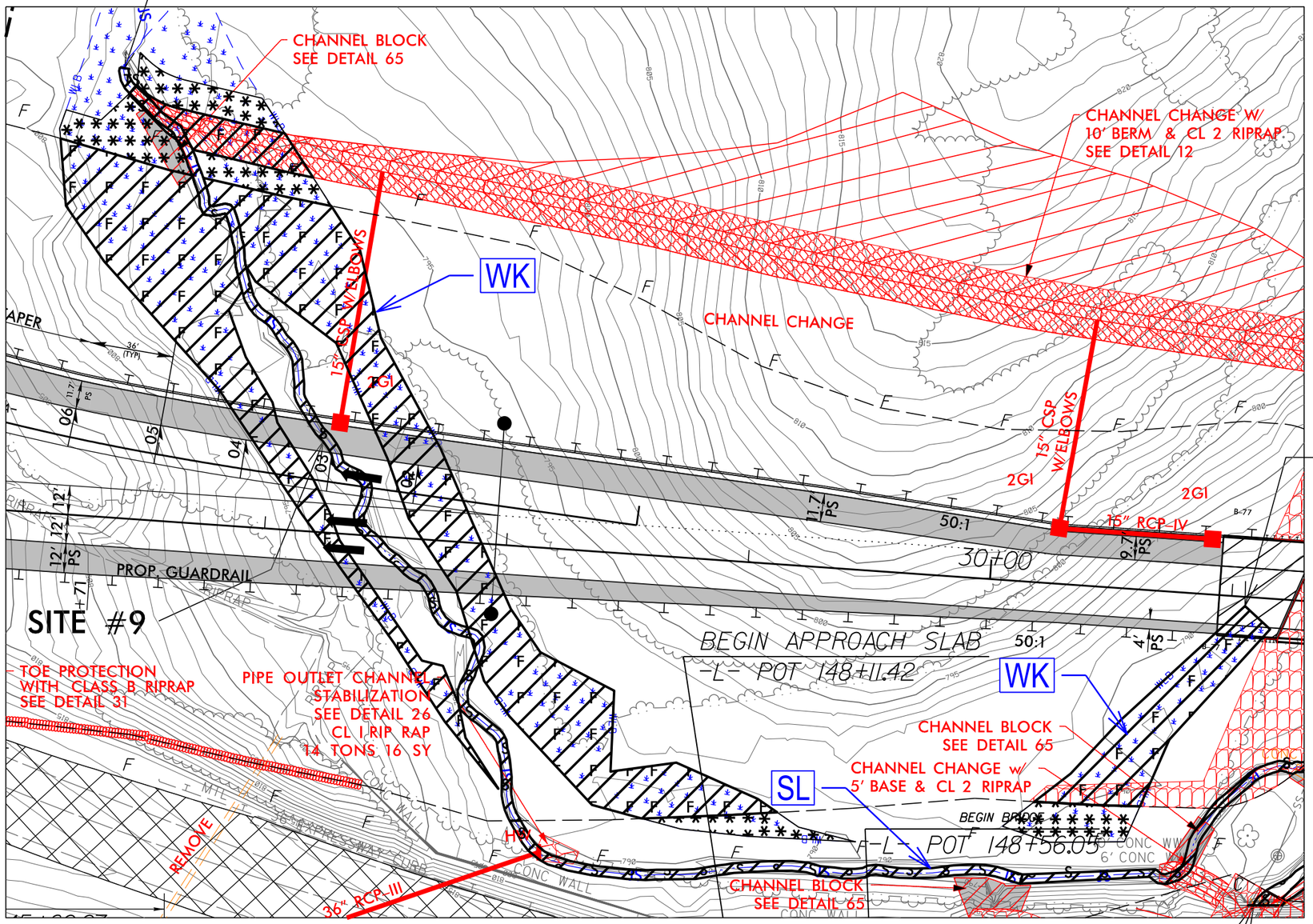
Becker, JW

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NC GRID NAD 83/95

S S	DENOTES IMPACTS IN SURFACE WATER
TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
F F	DENOTES FILL IN WETLAND
	DENOTES MECHANIZED CLEARING

50 25 0 50 100

GRAPHIC SCALE – INSETS

PERMIT DRAWING
SHEET 13 OF 67

07/02/19
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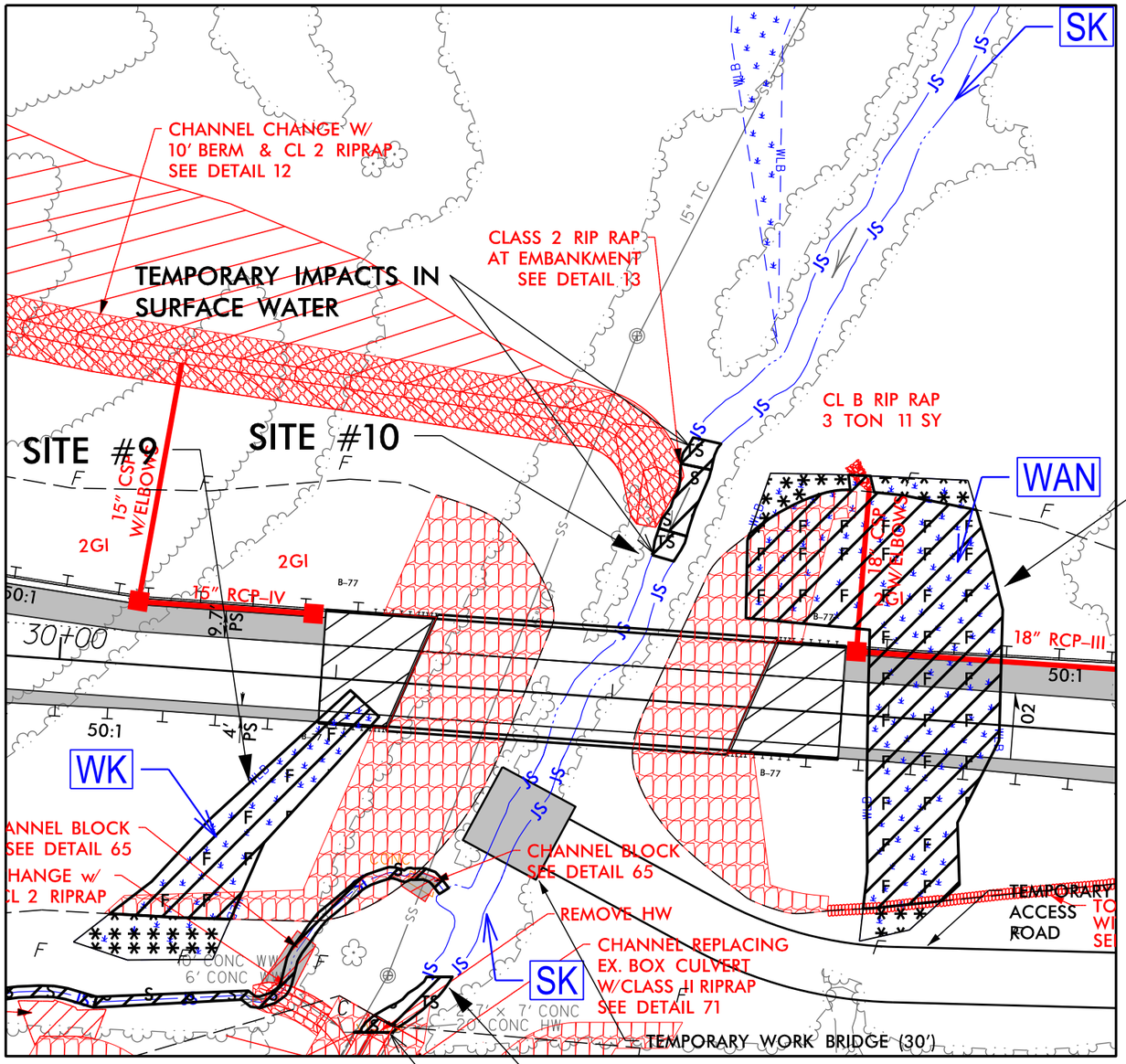
Becker, JW

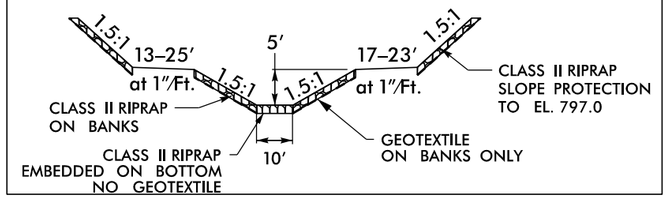
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PERMIT DRAWING
SHEET 14 OF 67

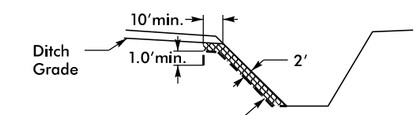
DETAIL 71
CHANNEL REPLACING EX. CULVERT
(Not to Scale)



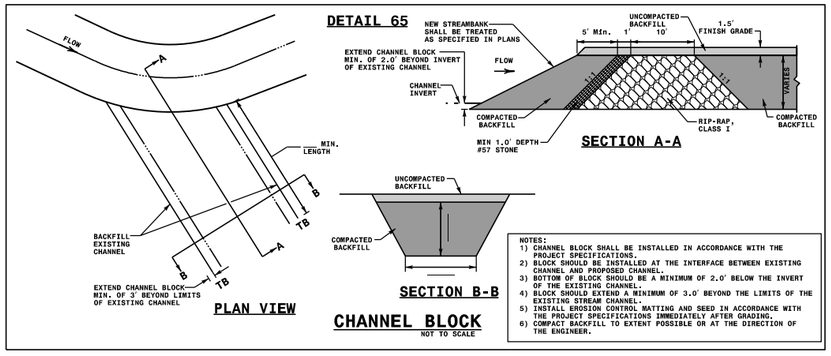
–L– STA. 149+36

NC GRID NAD 83/95

DETAIL 13
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= Class 2 Rip-Rap



DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

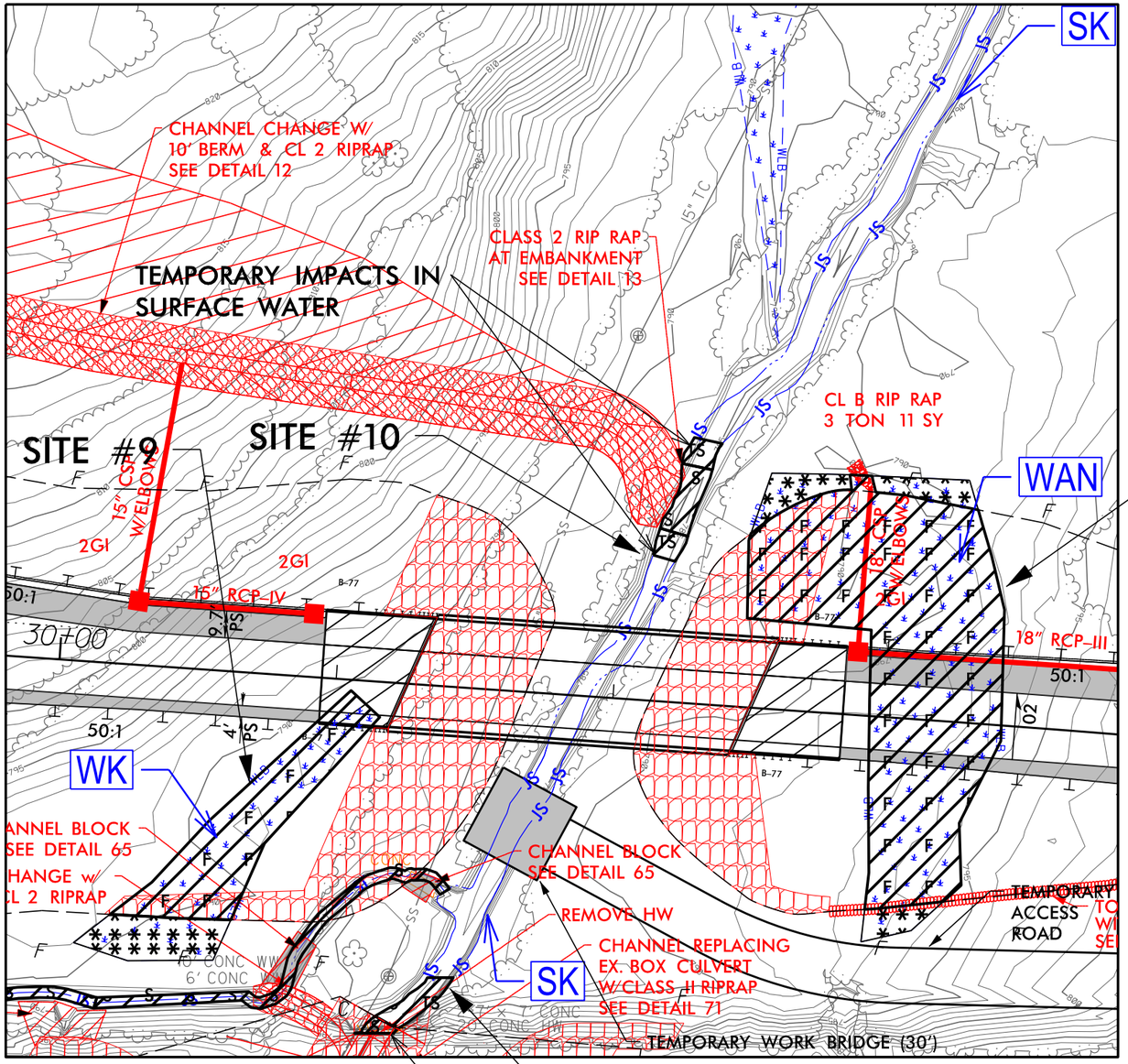
DENOTES MECHANIZED CLEARING

50 25 0 50 100
GRAPHIC SCALE – INSETS

07/02/19
c:\projectwise\pb\projectwiseint\becker_jw\d0339329\I3819_hyd_prm_psh11B_L13550-16450.dgn
Becker JW

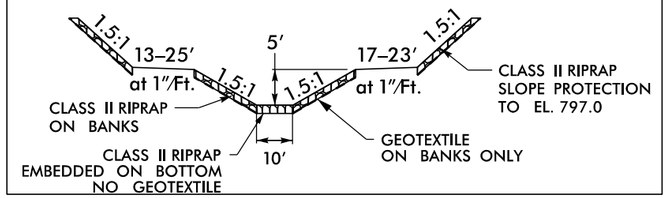
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PERMIT DRAWING
SHEET 15 OF 67

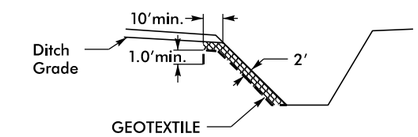
DETAIL 71
CHANNEL REPLACING EX. CULVERT
(Not to Scale)



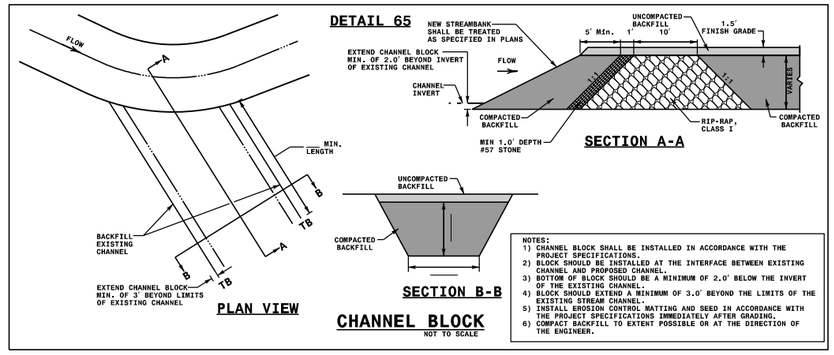
–L– STA. 149 + 36

NC GRID NAD 83/95

DETAIL 13
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = Class 2 Rip-Rap



NOTES:
1) CHANNEL BLOCK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2) BLOCK SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
3) BOTTOM OF BLOCK SHOULD BE A MINIMUM OF 2.0' BELOW THE INVERT OF THE EXISTING CHANNEL.
4) BLOCK SHOULD EXTEND A MINIMUM OF 3.0' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
5) INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
6) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F — DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

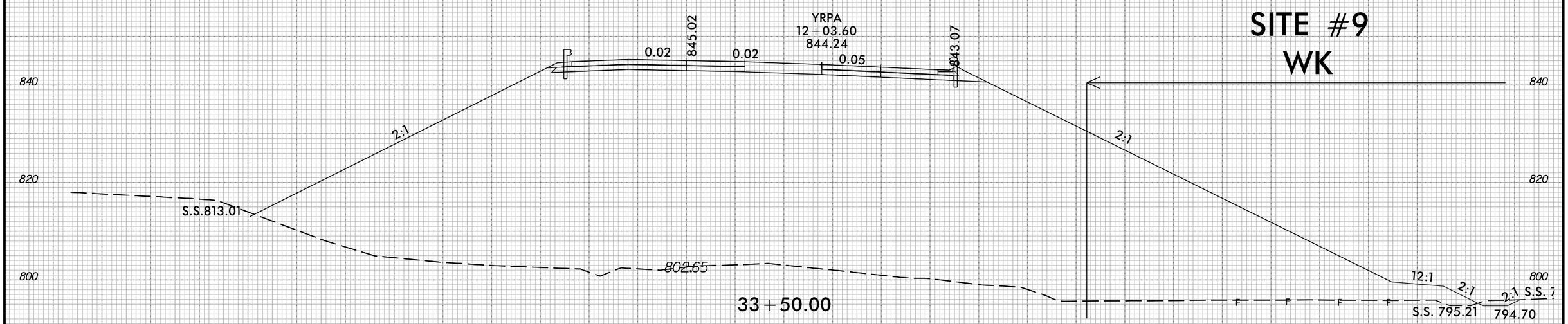
50 25 0 50 100
GRAPHIC SCALE – INSETS

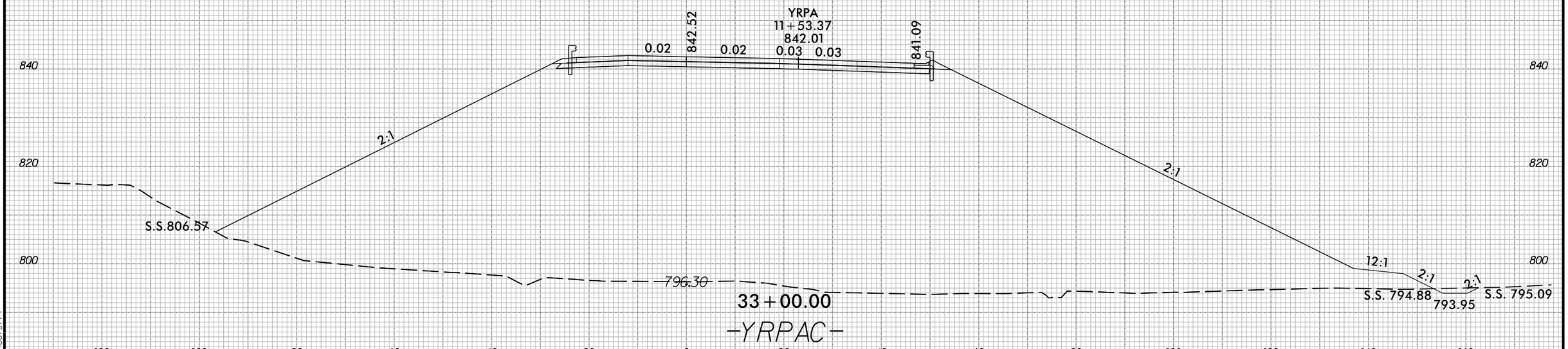
07/02/19
c:\projectwise\pb\projectwiseint\becker_jw\d0339329\13819_hyd_prm_pshi1B_L13550-16450.dgn
Becker JW

PROJ. REFERENCE NO.	SHEET NO.
II-38819B	XA-225

PERMIT DRAWING
SHEET 16 OF 67

SITE #9
WK





6/23/16

5/31/2019
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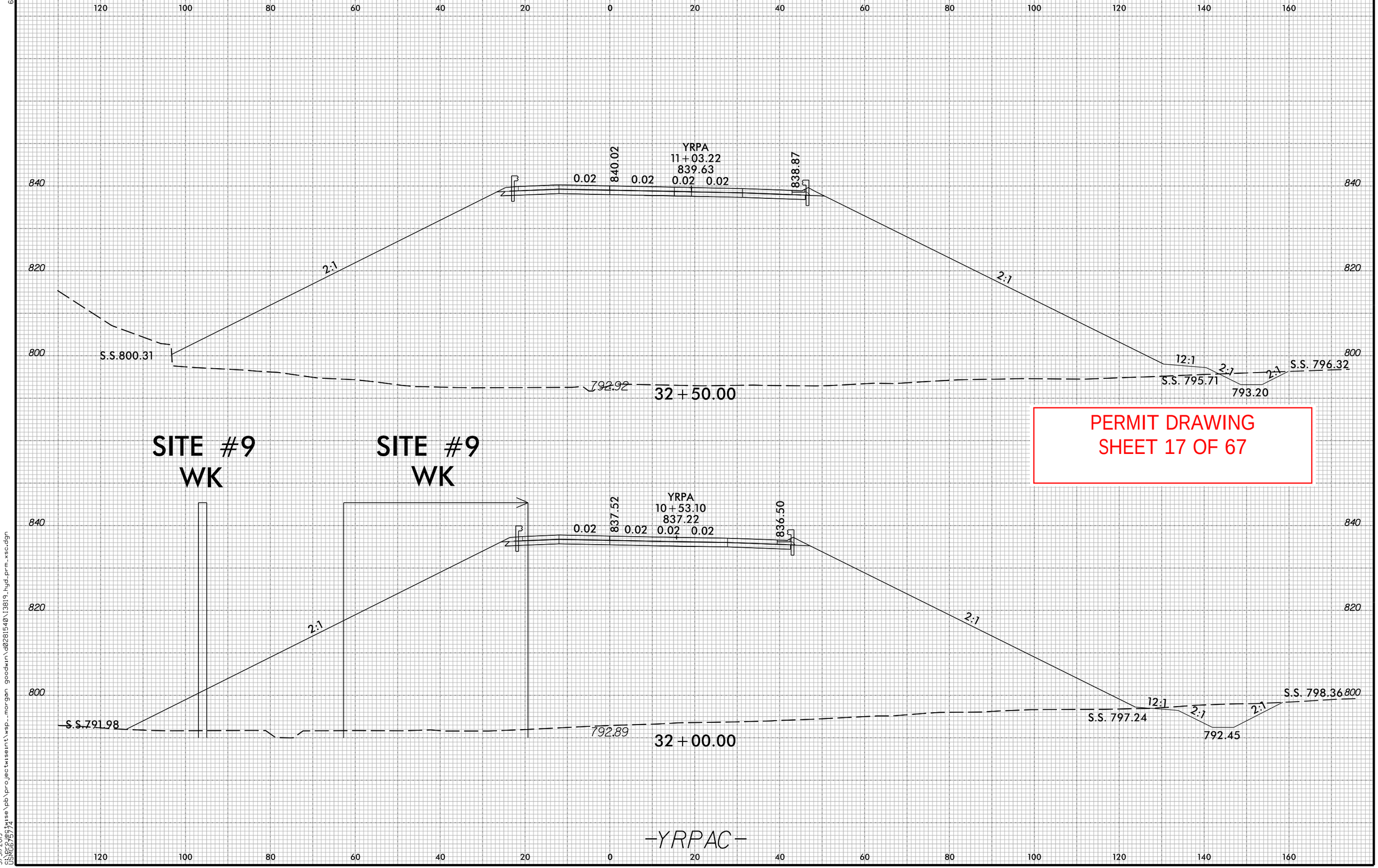
PROJ. REFERENCE NO.	SHEET NO.
II-38819B	XA-224

0 5 10

PERMIT DRAWING
SHEET 17 OF 67



6/23/16

5/3/2019
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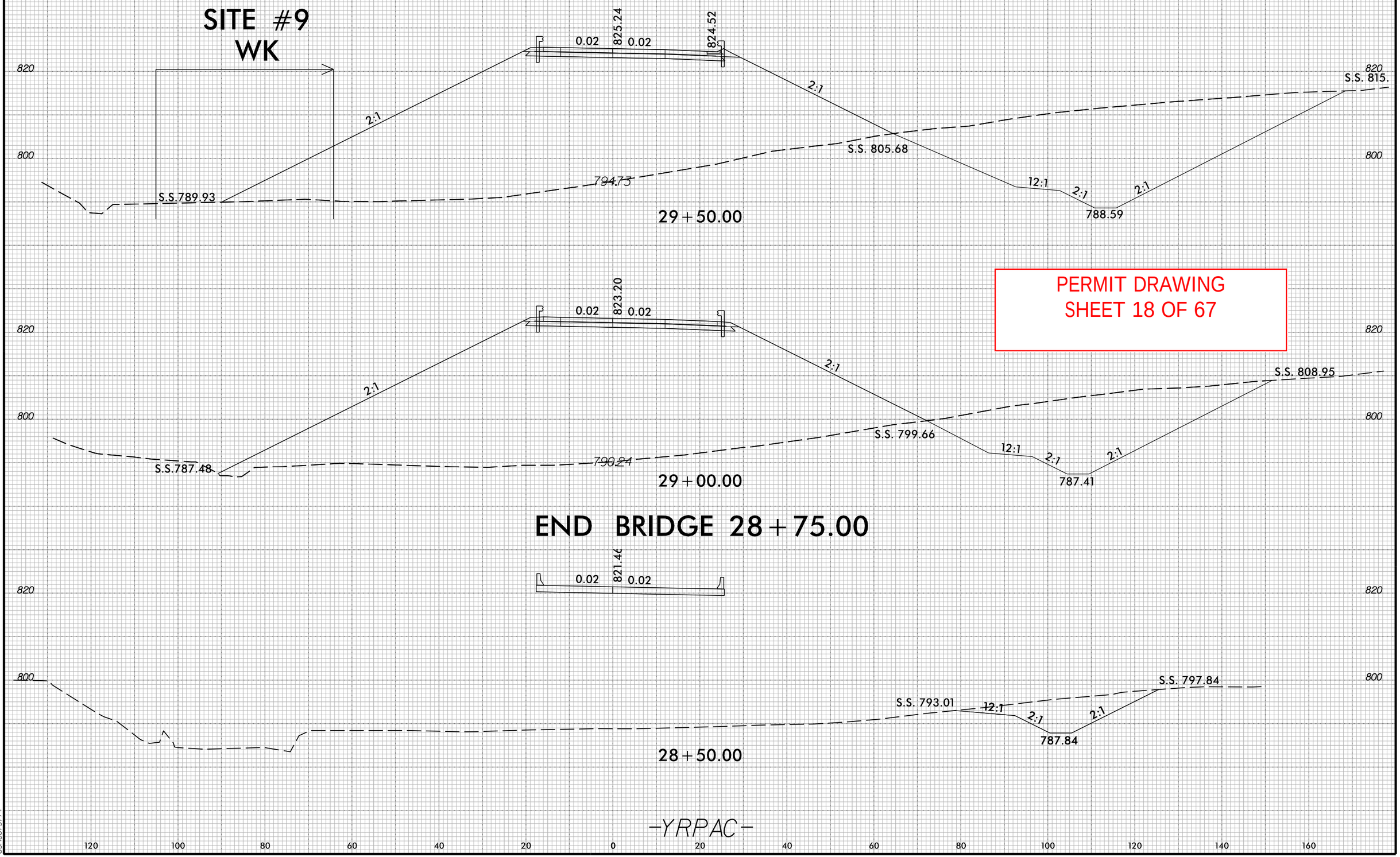
PROJ. REFERENCE NO.	SHEET NO.
II-38199B	XA-221

SITE #9 WK



PERMIT DRAWING
SHEET 18 OF 67

-YRPAC-

6/23/16

5/31/2019
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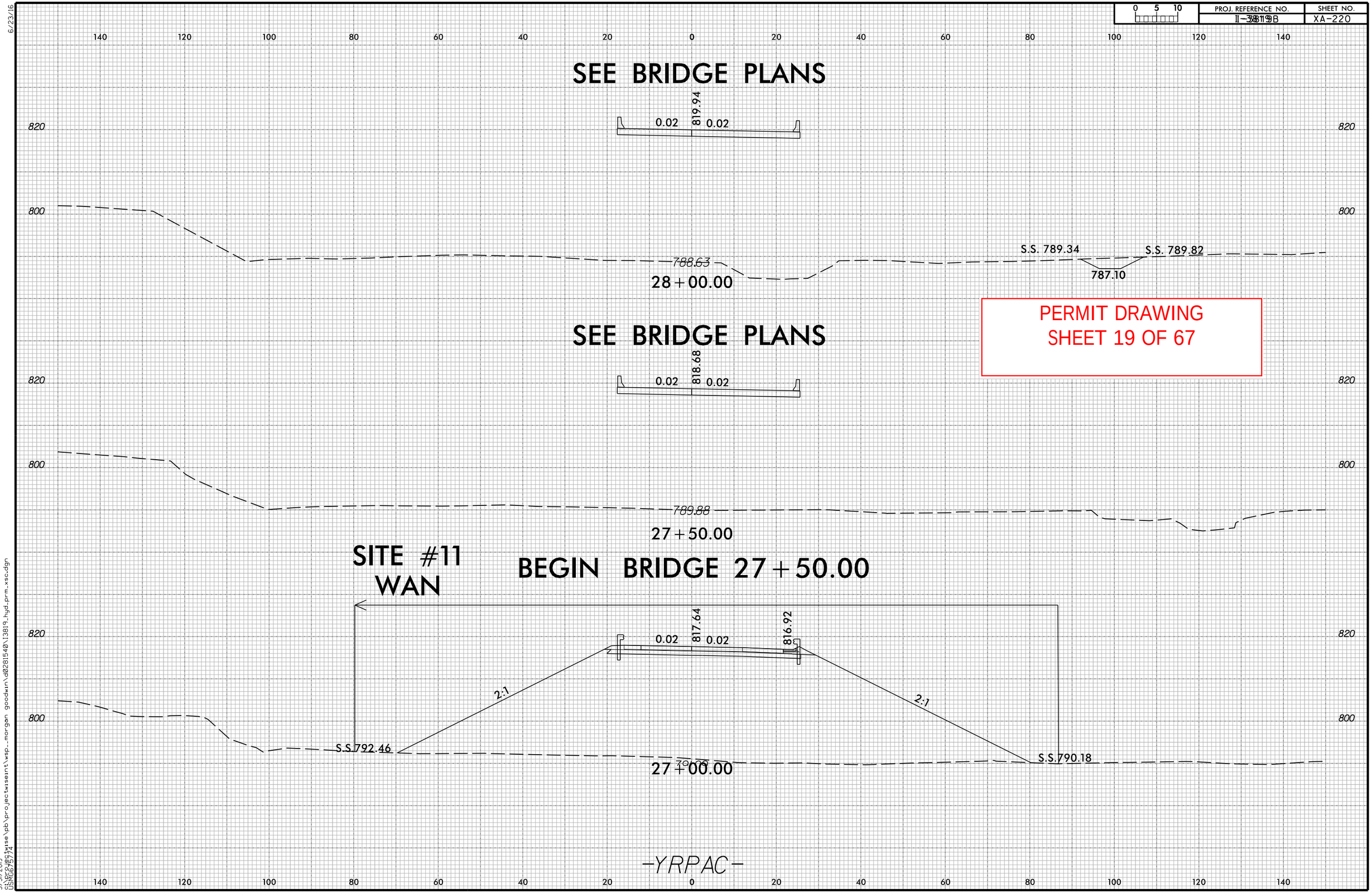

PERMIT DRAWING
SHEET 19 OF 67

6/23/16
5/31/2019
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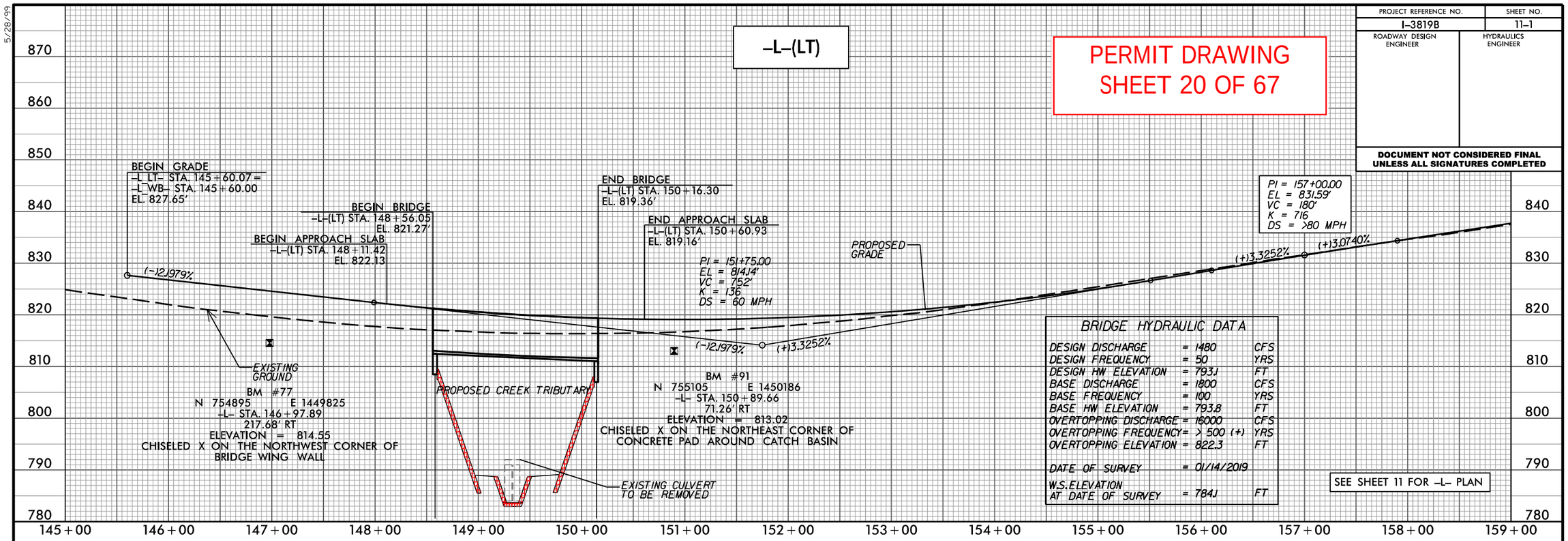
USMGB75/74

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11-1
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

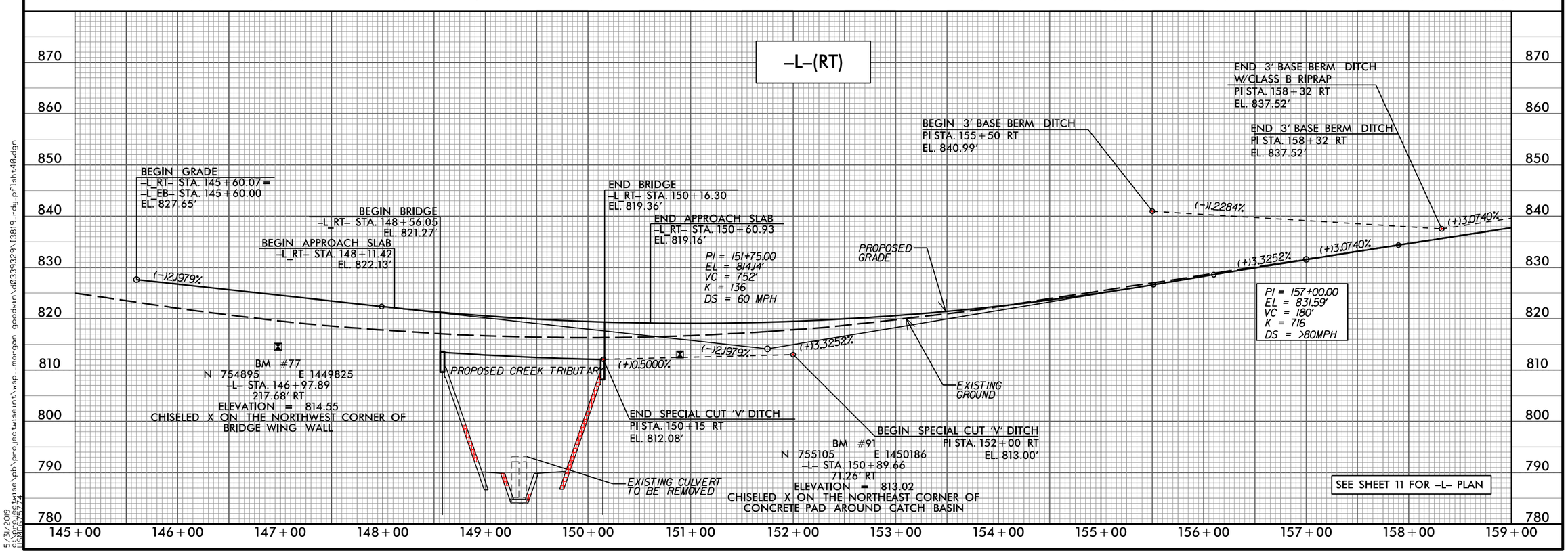
PERMIT DRAWING
SHEET 20 OF 67



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1480	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 793.1	FT
BASE DISCHARGE	= 1800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 793.8	FT
OVERTOPPING DISCHARGE	= 16000	CFS
OVERTOPPING FREQUENCY	= > 500 (+)	YRS
OVERTOPPING ELEVATION	= 822.3	FT
DATE OF SURVEY	= 01/14/2019	
W.S.ELEVATION AT DATE OF SURVEY	= 784.1	FT

SEE SHEET 11 FOR -L- PLAN



SEE SHEET 11 FOR -L- PLAN

5/28/99

5/31/2019
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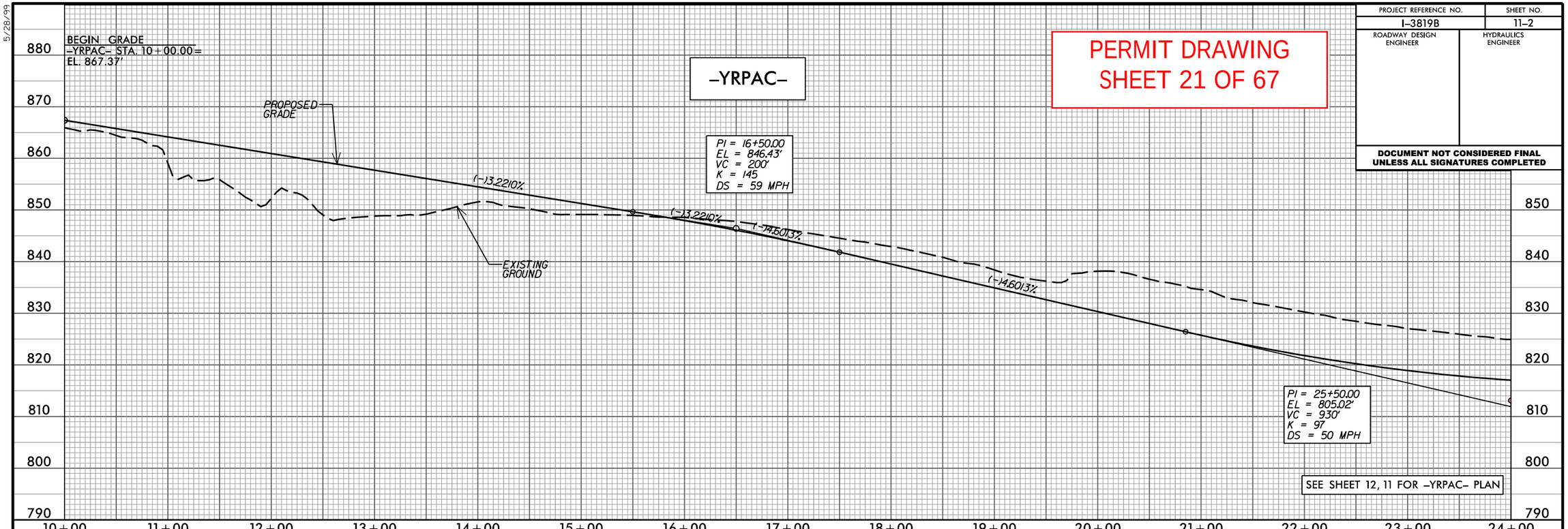
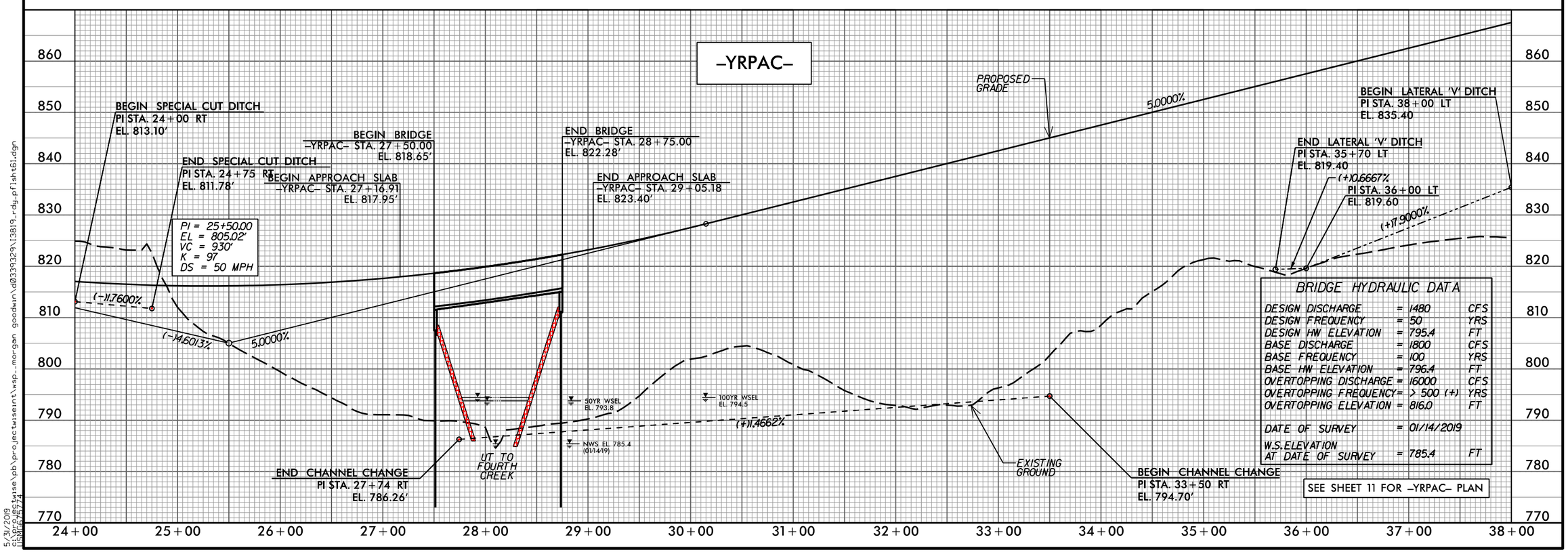
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	11-2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 21 OF 67





BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	1480	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	795.4	FT
BASE DISCHARGE	=	1800	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	796.4	FT
OVERTOPPING DISCHARGE	=	16000	CFS
OVERTOPPING FREQUENCY	=	> 500 (+)	YRS
OVERTOPPING ELEVATION	=	816.0	FT
DATE OF SURVEY	=	01/14/2019	
W.S.ELEVATION AT DATE OF SURVEY	=	785.4	FT

5/28/99

5/31/2019
c:\projectwise\pb\projectwiseint\wsp_-morgan goodwin\d0339329\I3819_rdy_pflsht61.dgn
ss06/5/74

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

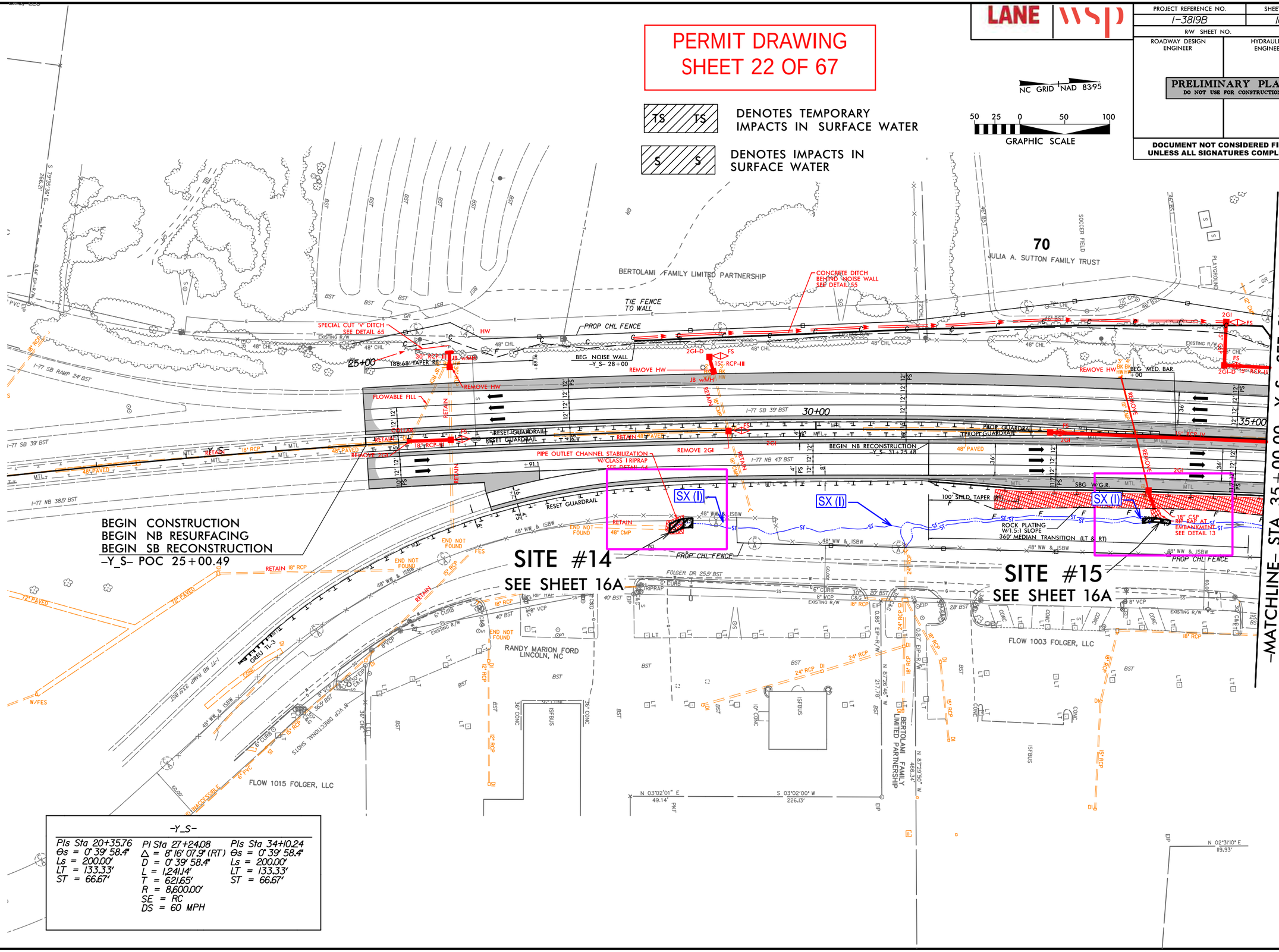
PERMIT DRAWING
SHEET 22 OF 67

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S — DENOTES IMPACTS IN SURFACE WATER

NC GRID NAD 83/95

50 25 0 50 100
GRAPHIC SCALE



-Y_S-

PIs Sta 20+35.76	PI Sta 27+24.08	PIs Sta 34+10.24
θs = 0° 39' 58.4"	Δ = 8° 16' 07.9" (RT)	θs = 0° 39' 58.4"
Ls = 200.00'	D = 0° 39' 58.4"	Ls = 200.00'
LT = 133.33'	L = 1,241.14'	LT = 133.33'
ST = 66.67'	T = 621.65'	ST = 66.67'
	R = 8,600.00'	
	SE = RC	
	DS = 60 MPH	

5/31/2019
pr0pwlcs02\ics_workingdir\5260\282468_70478\13819_hyd_prm_psh16_Y2100-3500.dgn
DGN:WLCS02$

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

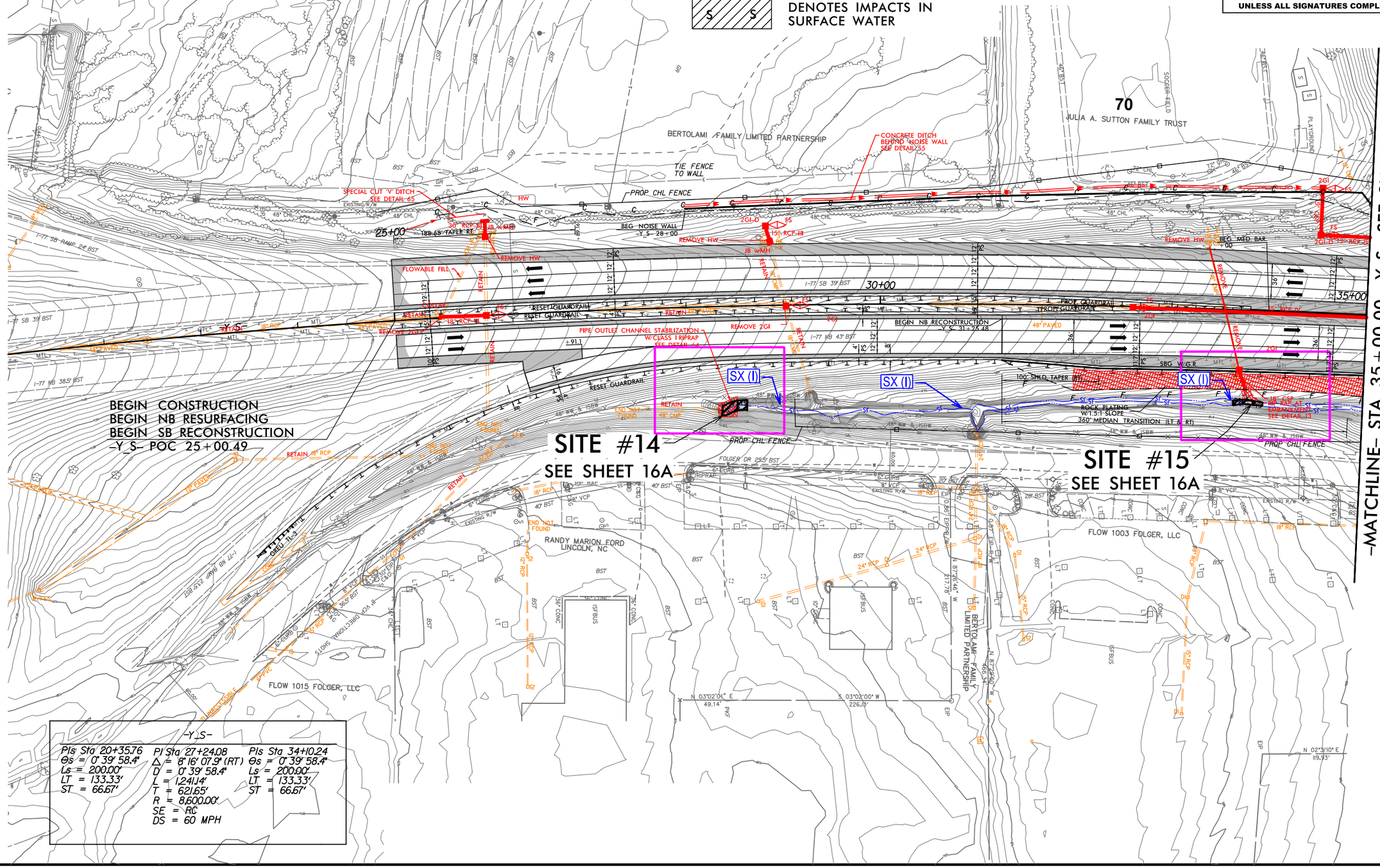
PERMIT DRAWING
SHEET 23 OF 67

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S — DENOTES IMPACTS IN SURFACE WATER

NC GRID NAD 83/95

50 25 0 50 100
GRAPHIC SCALE



5/31/2019
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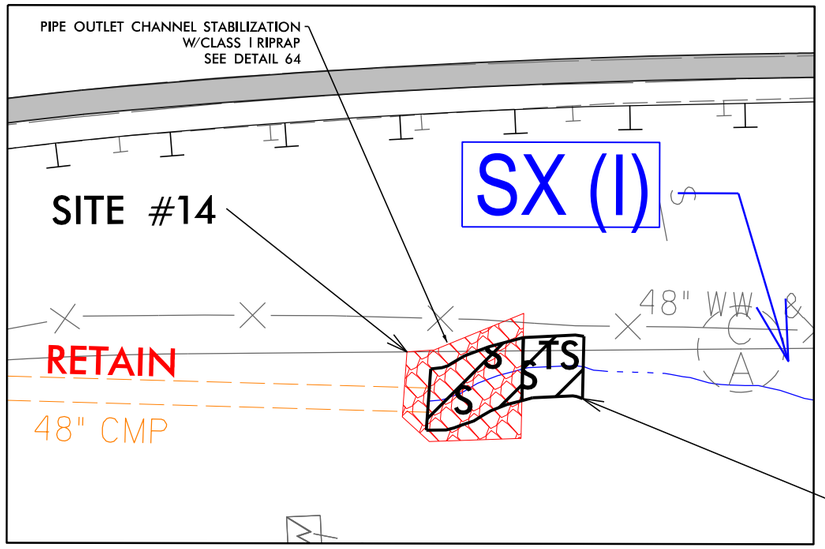
PLOT SCALE: 1:1

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	16A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

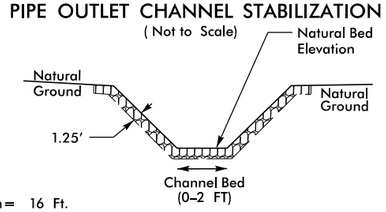
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET



TEMPORARY IMPACTS IN SURFACE WATER

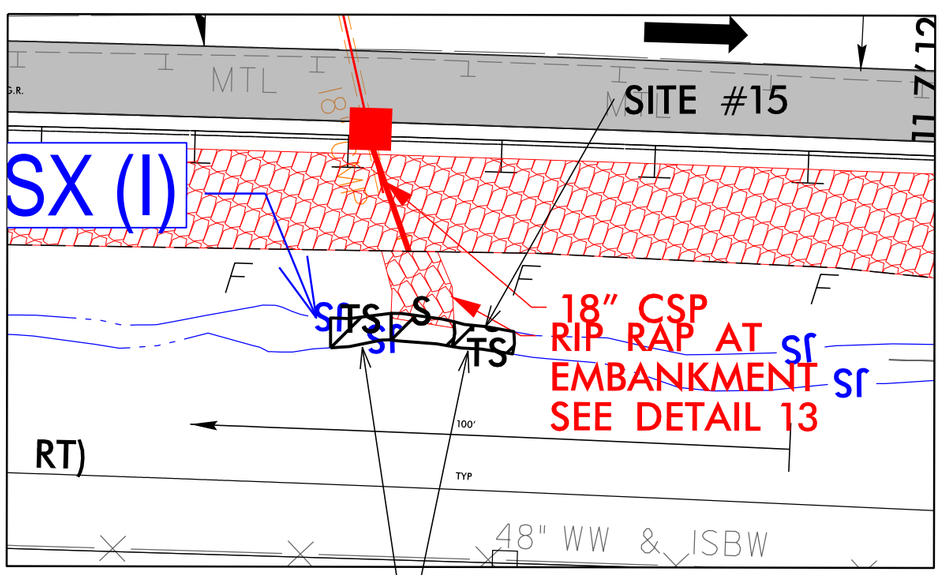
DETAIL 64
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length = 16 Ft.
Type of Liner = CL 1 Rip–Rap – Keyed–In (No Geotextile)

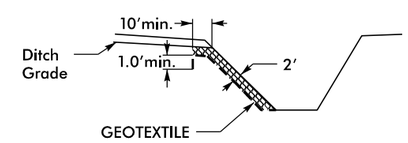
–Y S– STA. 28+35 RT

INSET



TEMPORARY IMPACTS IN SURFACE WATER

DETAIL 13
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = Class 2 Rip–Rap

–Y_S– STA. 121+45

PERMIT DRAWING
SHEET 24 OF 67

NC GRID NAD 83/95

S — DENOTES IMPACTS IN SURFACE WATER

TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSETS

07/12/19
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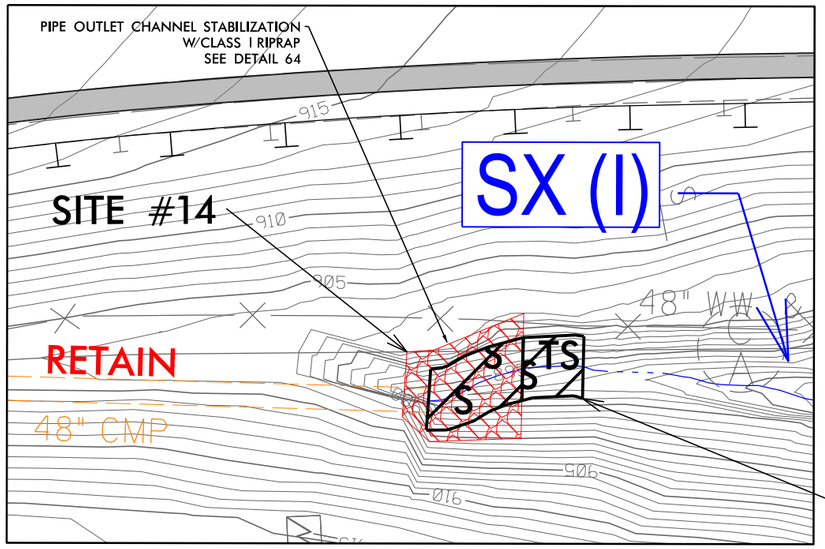
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	16A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET

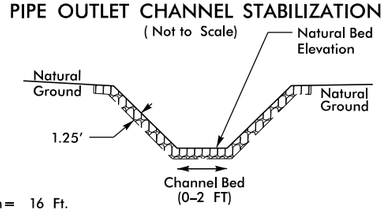


TEMPORARY IMPACTS IN SURFACE WATER

DETAIL 64

PIPE OUTLET CHANNEL STABILIZATION

(Not to Scale)

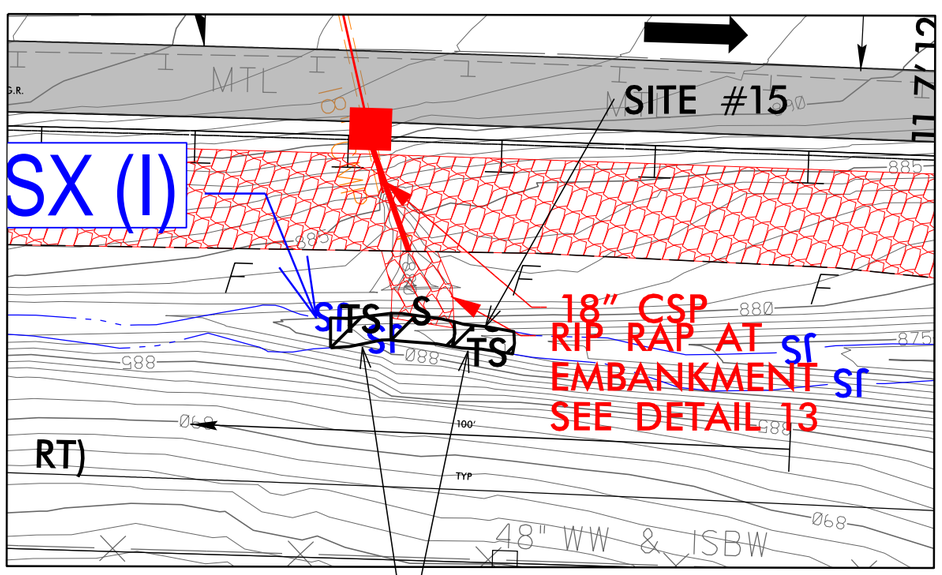


Length = 16 Ft.

Type of Liner = CL 1 Rip–Rap – Keyed–In (No Geotextile)

–Y S– STA. 28+35 RT

INSET

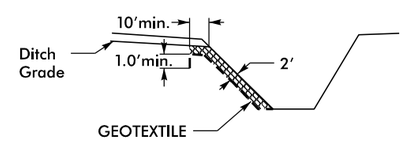


TEMPORARY IMPACTS IN SURFACE WATER

DETAIL 13

RIP RAP AT EMBANKMENT

(Not to Scale)



Type of Liner = Class 2 Rip–Rap

–Y_S– STA. 121+45

PERMIT DRAWING
SHEET 25 OF 67

NC GRID NAD 83/95

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50

GRAPHIC SCALE – INSETS

07/12/19
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Becker, JW

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

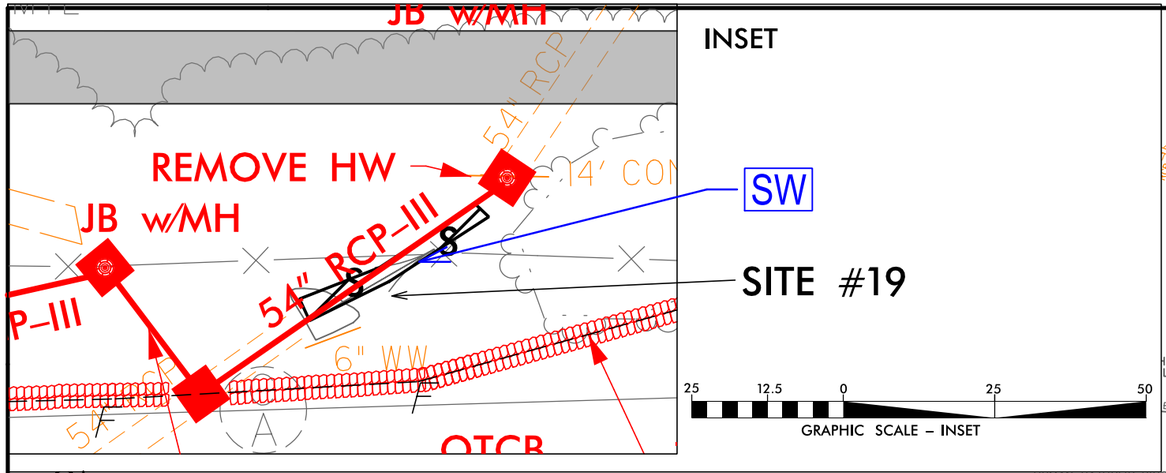
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

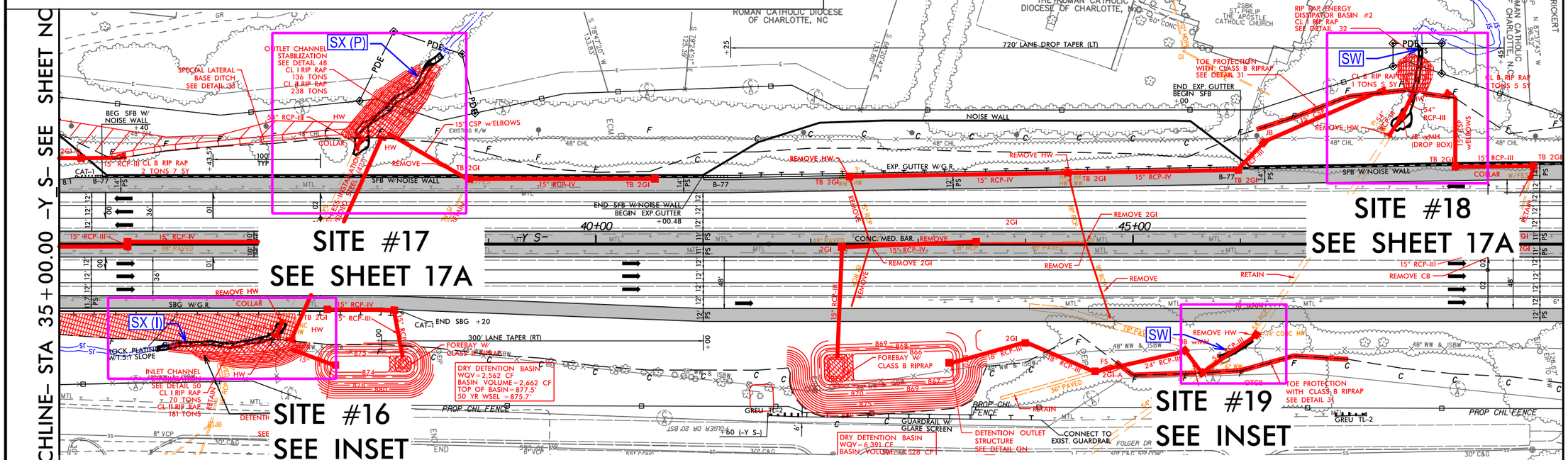
PERMIT DRAWING
SHEET 26 OF 67

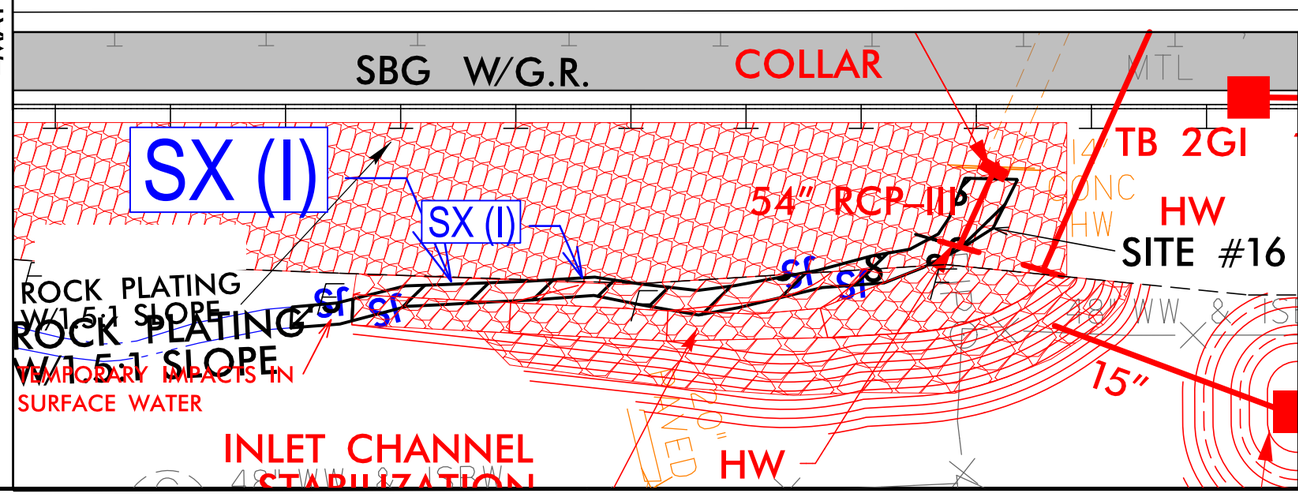
NC GRID NAD 83/95

GRAPHIC SCALE 50 25 0 50 100

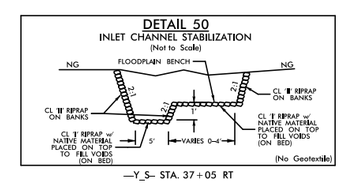
INSET







INSET



S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE – INSET 25 12.5 0 25 50

7/12/2019
pr_psh17_sw18

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

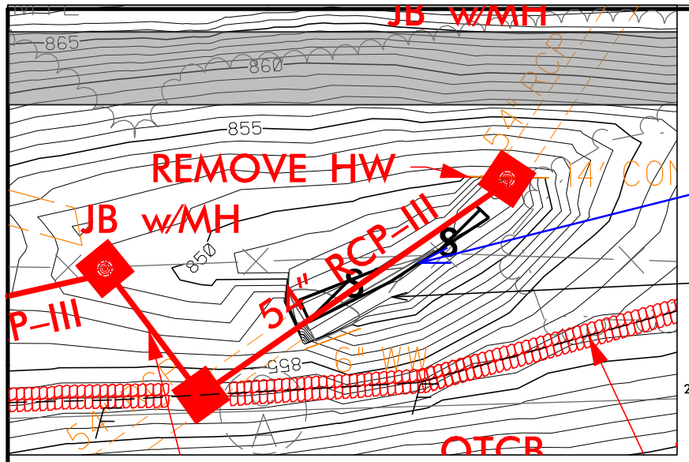
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 27 OF 67

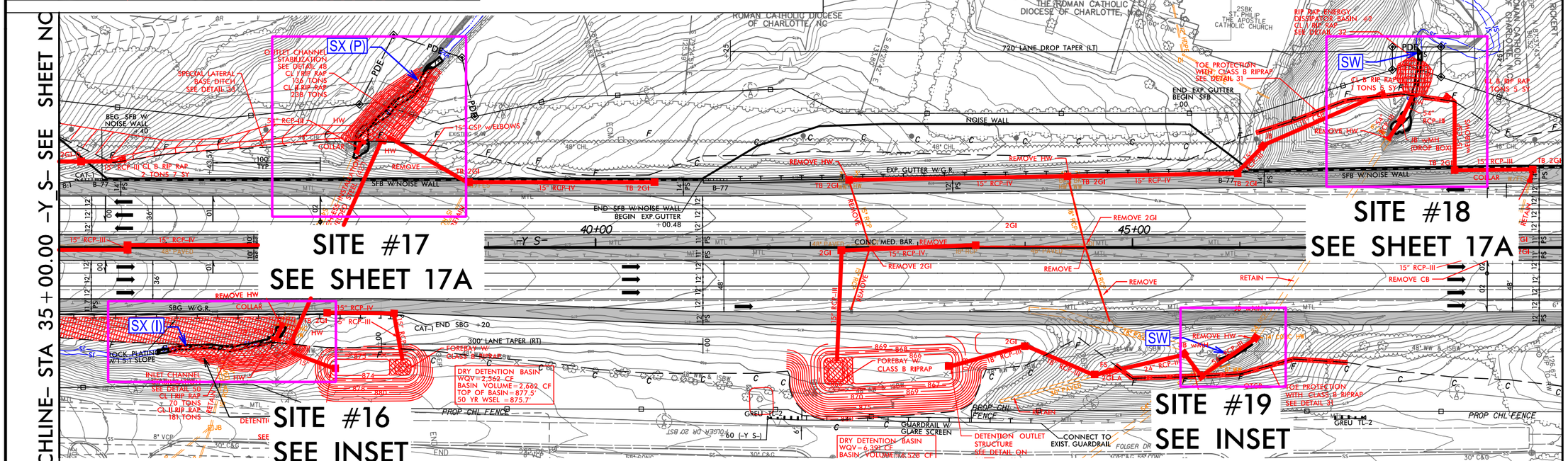
NC GRID NAD 83/95

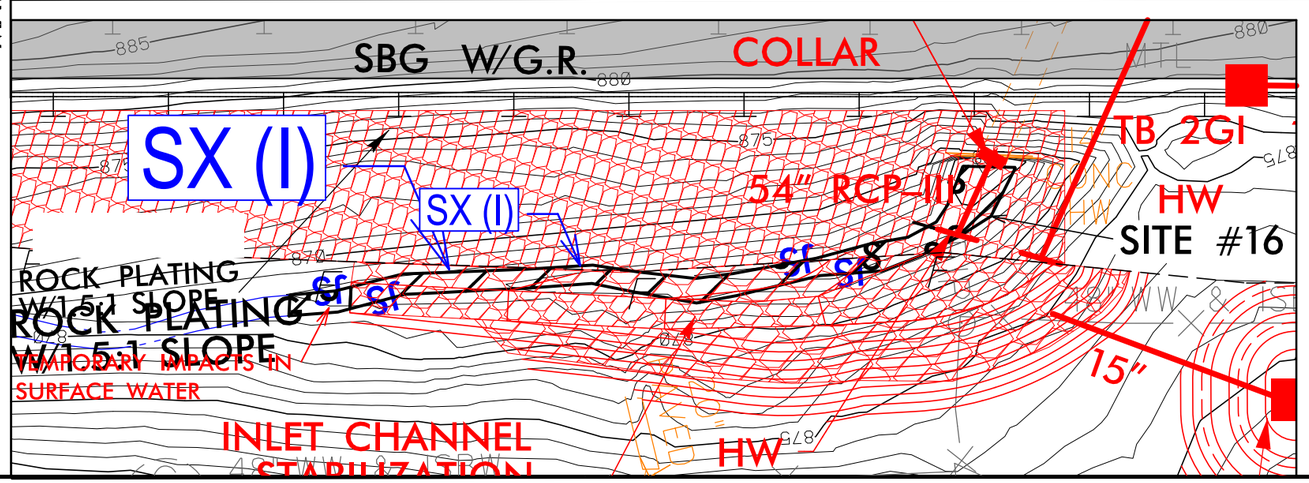
50 25 0 50 100
GRAPHIC SCALE

INSET

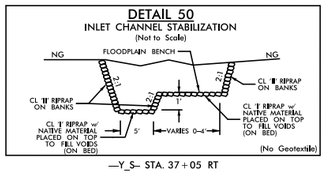


25 12.5 0 25 50
GRAPHIC SCALE – INSET





INSET



S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSET

7/12/2019
pr_prprocs01\ics_workingdir\18225\282468.126995\13819_hyd_prm_psh17_Y3500-4900.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	17A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

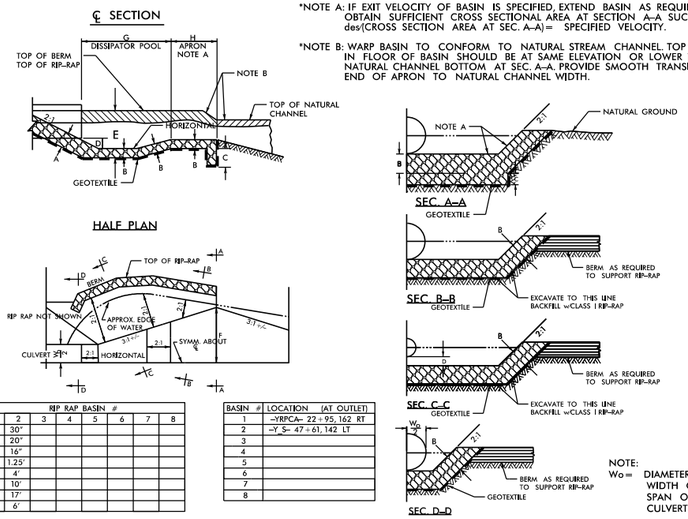
PERMIT DRAWING
SHEET 28 OF 67

DETAIL 32

RIP-RAPPED ENERGY DISSIPATOR BASIN

*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A)= SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



DIM.	RIP RAP BASIN # 1	2	3	4	5	6	7	8
A	30"	30"						
B	20"	20"						
C	16"	16"						
D	1'	1.25'						
E	3.5'	4'						
F	6.3'	10'						
G	10'	17'						
H	5'	6'						

BASIN #	LOCATION (AT OUTLET)
1	–Y-RPC A– 22+95, 162 RT
2	–Y_S– 47+61, 142 LT
3	
4	
5	
6	
7	
8	

NOTE:
Wo = DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE-ARCH CULVERTS

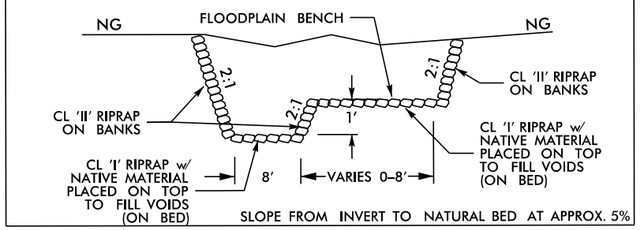
5/05

DETAIL 48

OUTLET CHANNEL STABILIZATION

(Not to Scale)

PLACEMENT DEPTH:
CL 1 – 24"
CL 2 – 30"
(No Geotextile)



—Y_S– STA. 37+95 LT

NC GRID NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

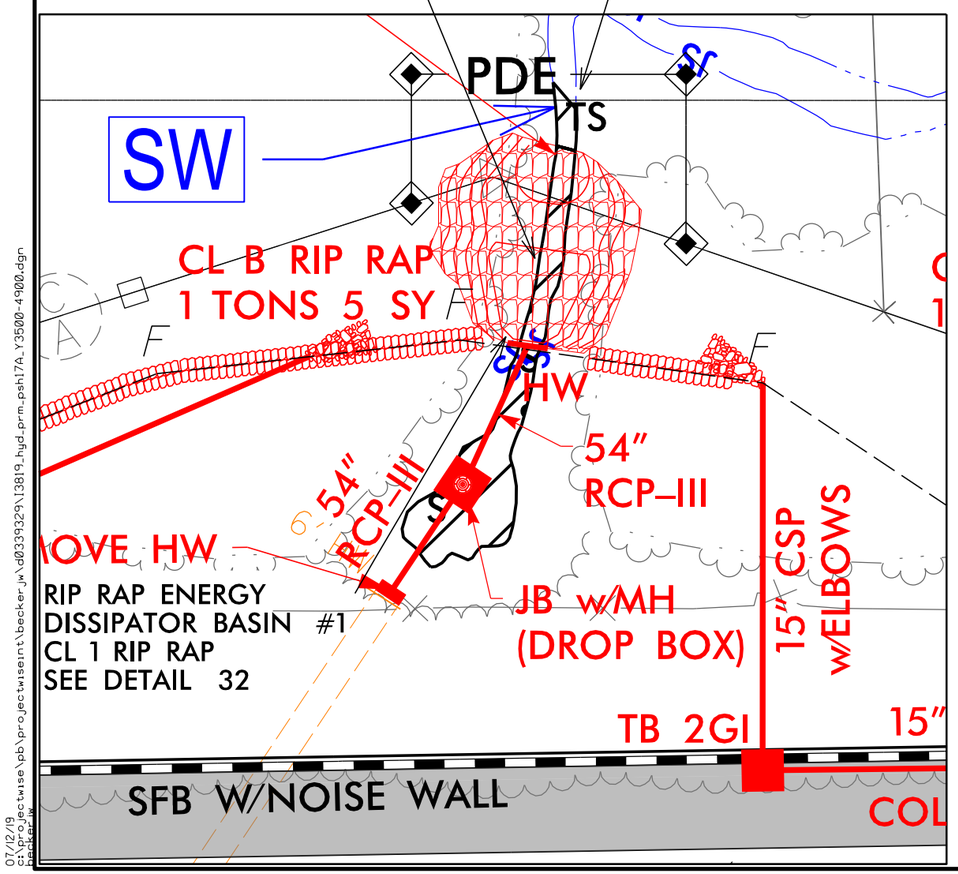
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSETS

INSET

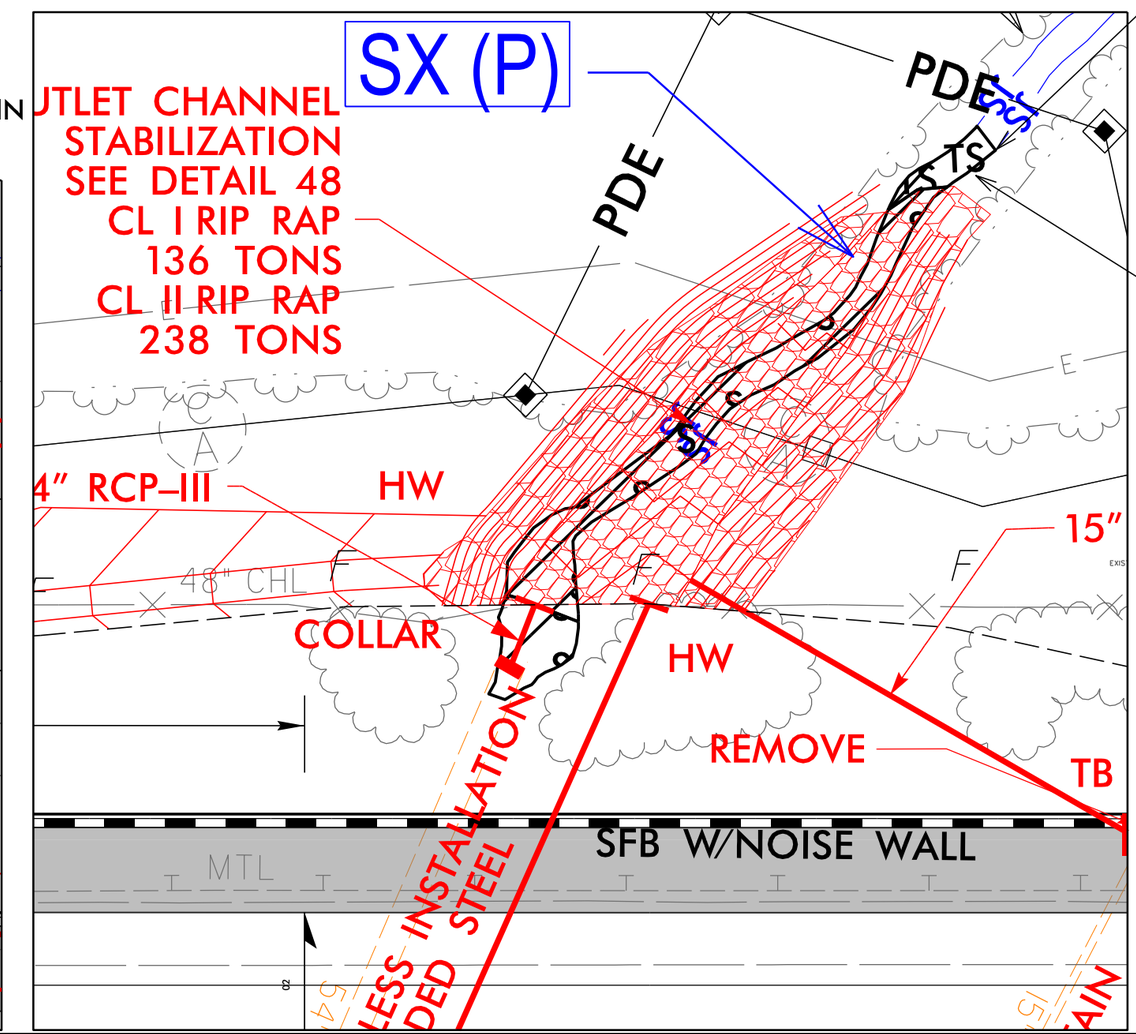
SITE #18

TEMPORARY IMPACTS IN SURFACE WATER



INSET

SITE #17



07/12/19
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Becker, JW

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	17A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LANE | WSP

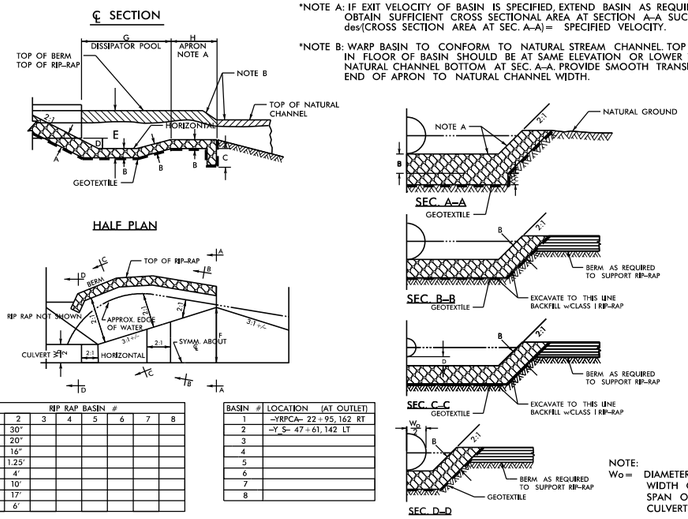
PERMIT DRAWING
SHEET 29 OF 67

DETAIL 32

RIP-RAPPED ENERGY DISSIPATOR BASIN

*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A)= SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.



DIM.	RIP RAP BASIN # 1	2	3	4	5	6	7	8
A	30"	30"						
B	20"	20"						
C	16"	16"						
D	1'	1.25'						
E	3.5'	4'						
F	6.3'	10'						
G	10'	17'						
H	5'	6'						

BASIN #	LOCATION (AT OUTLET)
1	–Y-RPC A– 22+95, 162 RT
2	–Y_S– 47+61, 142 LT
3	
4	
5	
6	
7	
8	

NOTE:
W_o = DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE-ARCH CULVERTS

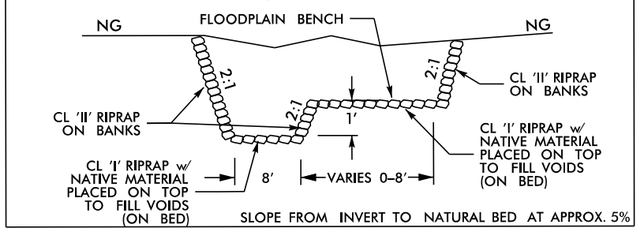
5/05

DETAIL 48

OUTLET CHANNEL STABILIZATION

(Not to Scale)

PLACEMENT DEPTH:
CL 1 – 24"
CL 2 – 30"
(No Geotextile)



—Y_S– STA. 37+95 LT

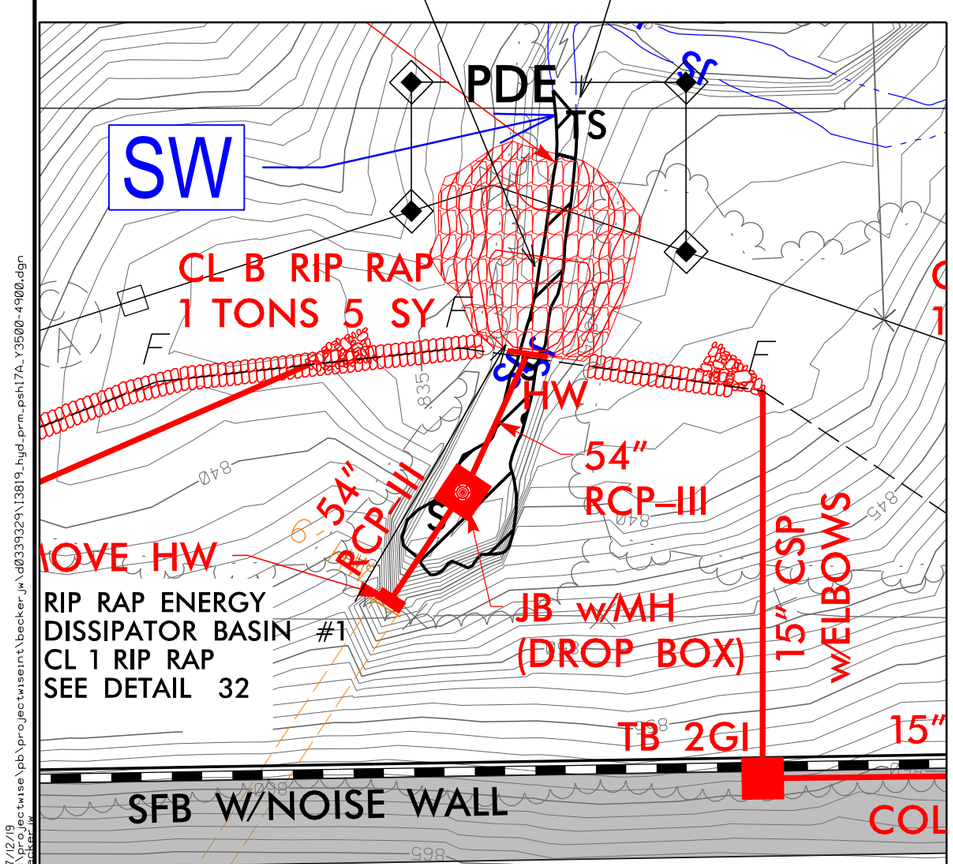
NC GRID NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

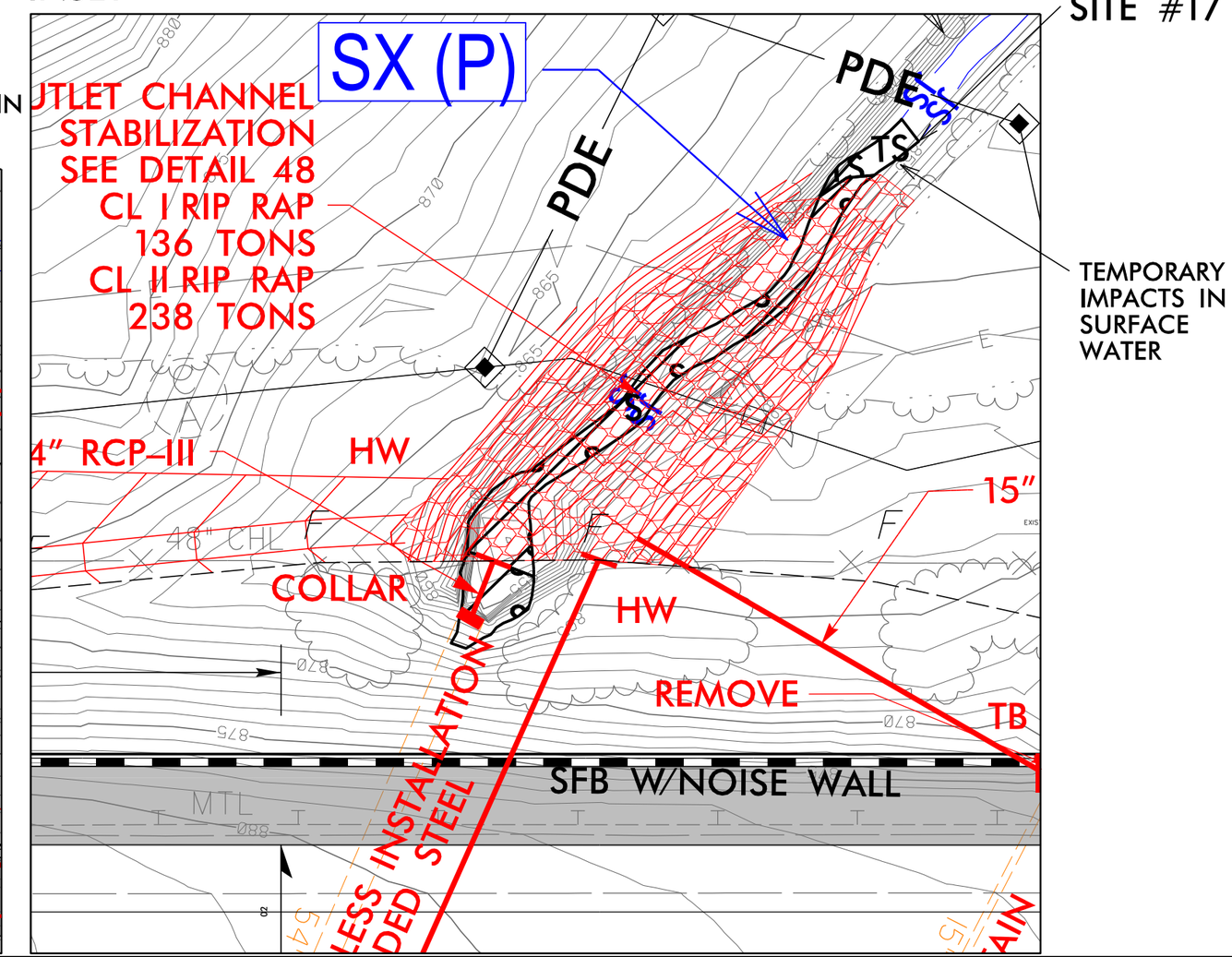
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 12.5 0 25 50
GRAPHIC SCALE – INSETS

INSET SITE #18



INSET SITE #17



07/12/19
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Becker, JW

PERMIT DRAWING
SHEET 30 OF 67

PROJECT REFERENCE NO.	SHEET NO.
I-3818B	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

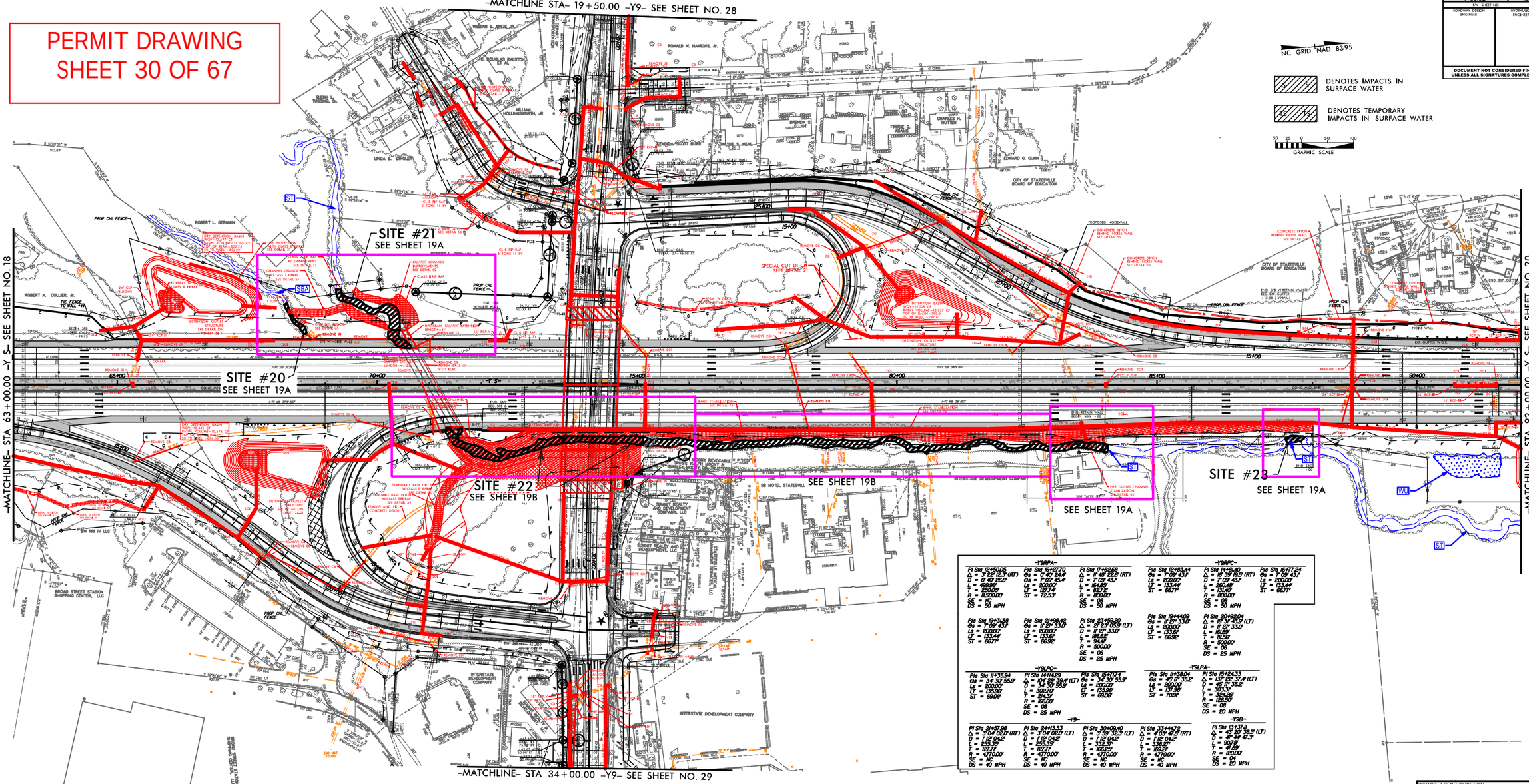
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE 50 25 0 50 100


-MATCHLINE STA- 19+50.00 -Y9- SEE SHEET NO. 28
-MATCHLINE- STA 63+00.00 -Y S- SEE SHEET NO. 18
-MATCHLINE- STA 92+00.00 -Y S- SEE SHEET NO. 20
-MATCHLINE- STA 34+00.00 -Y9- SEE SHEET NO. 29
SITE #21
SEE SHEET 19A
SITE #20
SEE SHEET 19A
SITE #22
SEE SHEET 19B
SITE #23
SEE SHEET 19A
SEE SHEET 19B
SEE SHEET 19A
ROBERT L. GERMAIN
ROBERT A. COLLIER, Jr.
ROBERT A. COLLIER
ROBERT A. COLLIER, Jr.
ROBERT A. COLLIER, Jr.
ROBERT A. COLLIER, Jr.

PERMIT DRAWING
SHEET 31 OF 67

PROJECT REFERENCE NO.	SHEET NO.
I-3818B	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

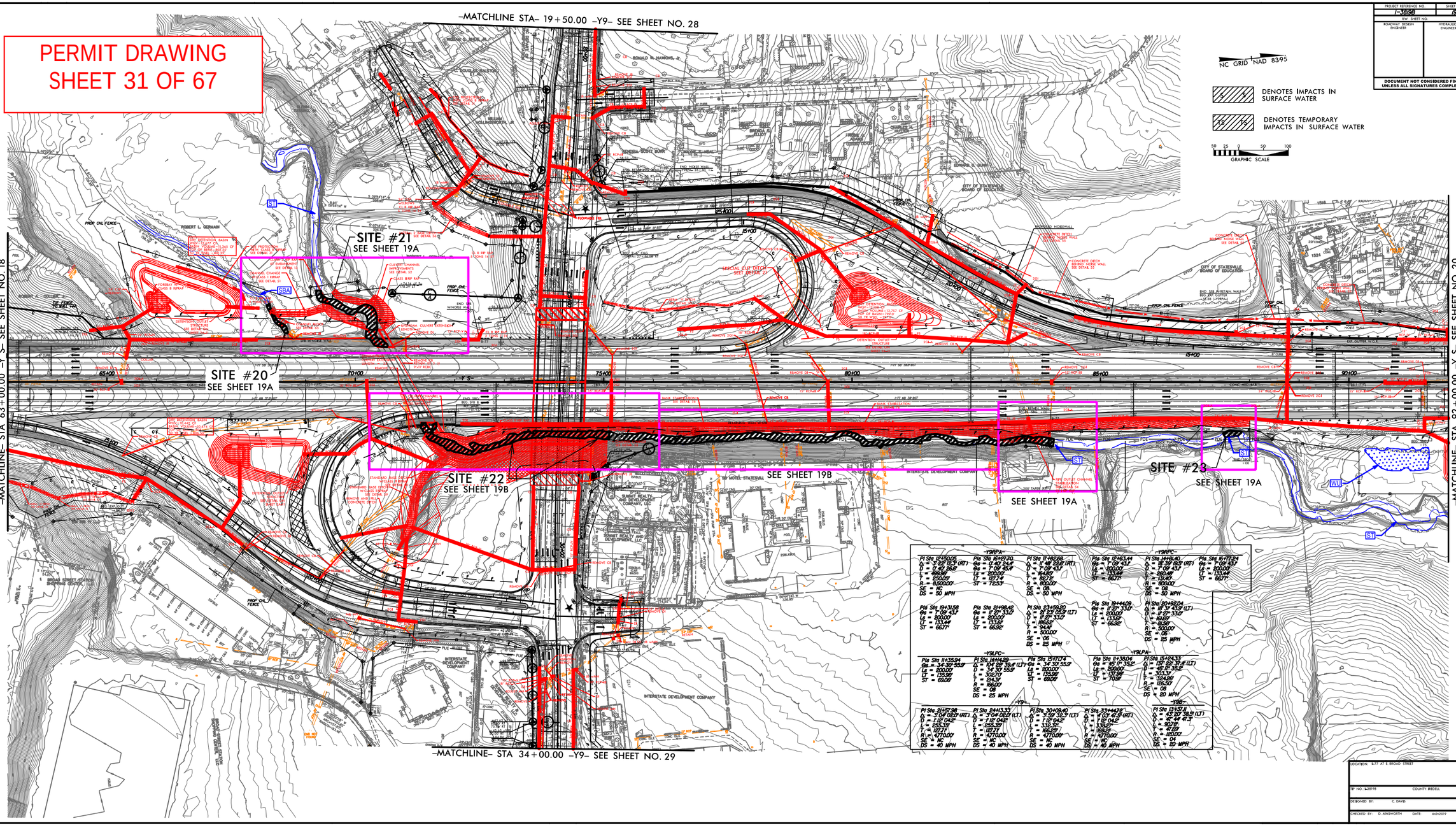
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE 50 25 0 50 100



LOCATION: I-77 AT E. BROAD STREET

TIP NO. I-3818B COUNTY: IREDELL

DESIGNED BY: C. DAVIS

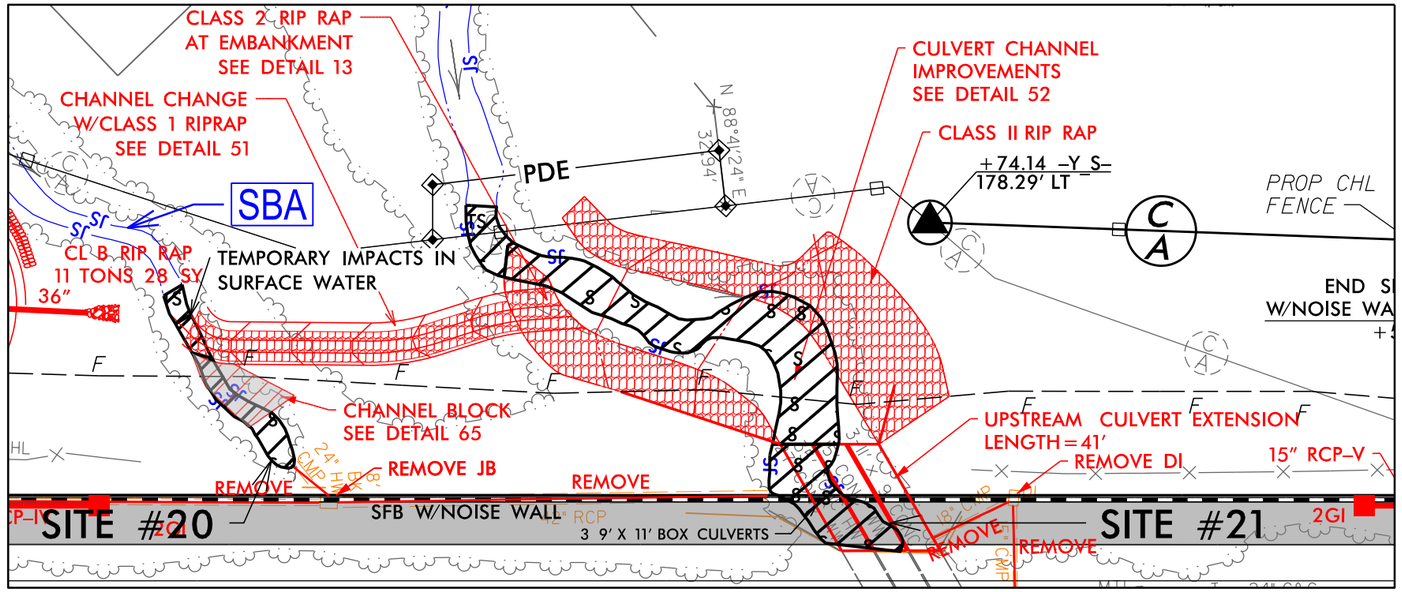
CHECKED BY: D. AINSWORTH DATE: 4-24-2019

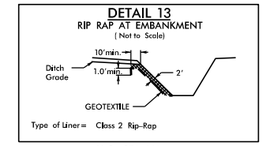
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	19A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

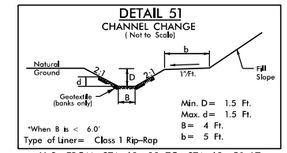
PERMIT DRAWING
SHEET 32 OF 67

INSET

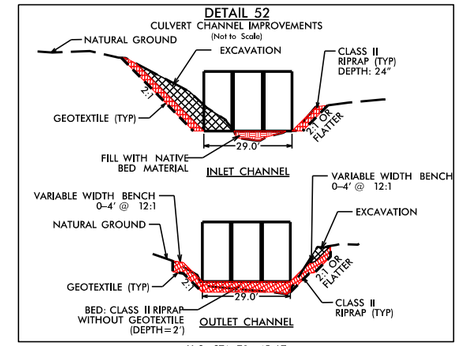




–Y S– STA. 121+45

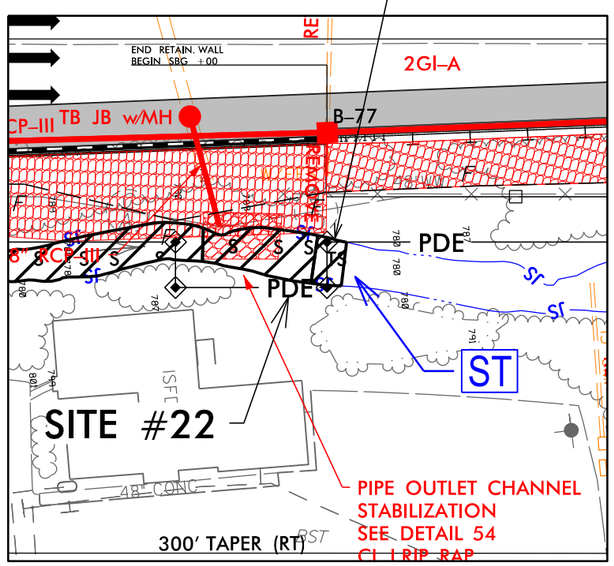


–Y S– FROM STA. 68+38 TO STA. 69+50 LT



–Y S– STA. 70+45 LT
–Y S– STA. 71+60 TO 73+25 RT

INSET



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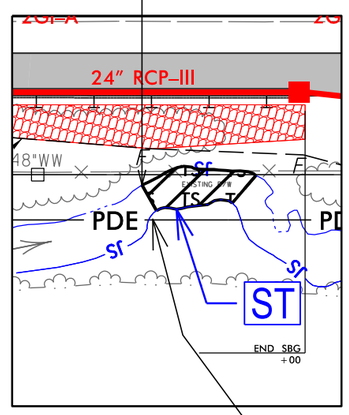

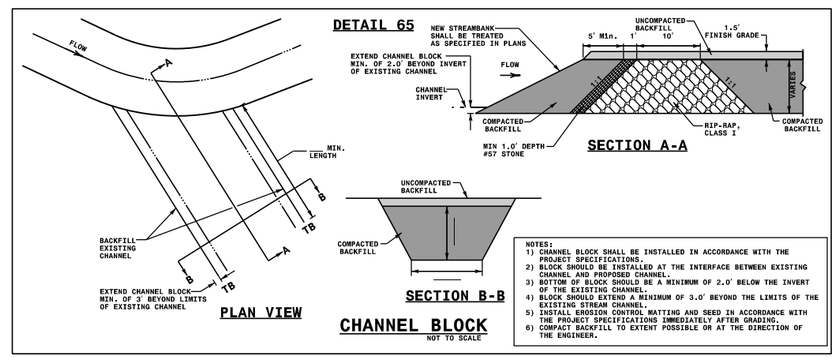

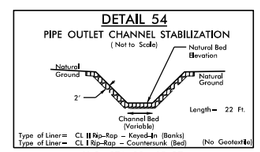

–Y S– STA. 83+65 RT
–Y S– STA. 94+40 RT

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NC GRID NAD 83/95

50 25 0 50 100
GRAPHIC SCALE – INSETS

07/12/19
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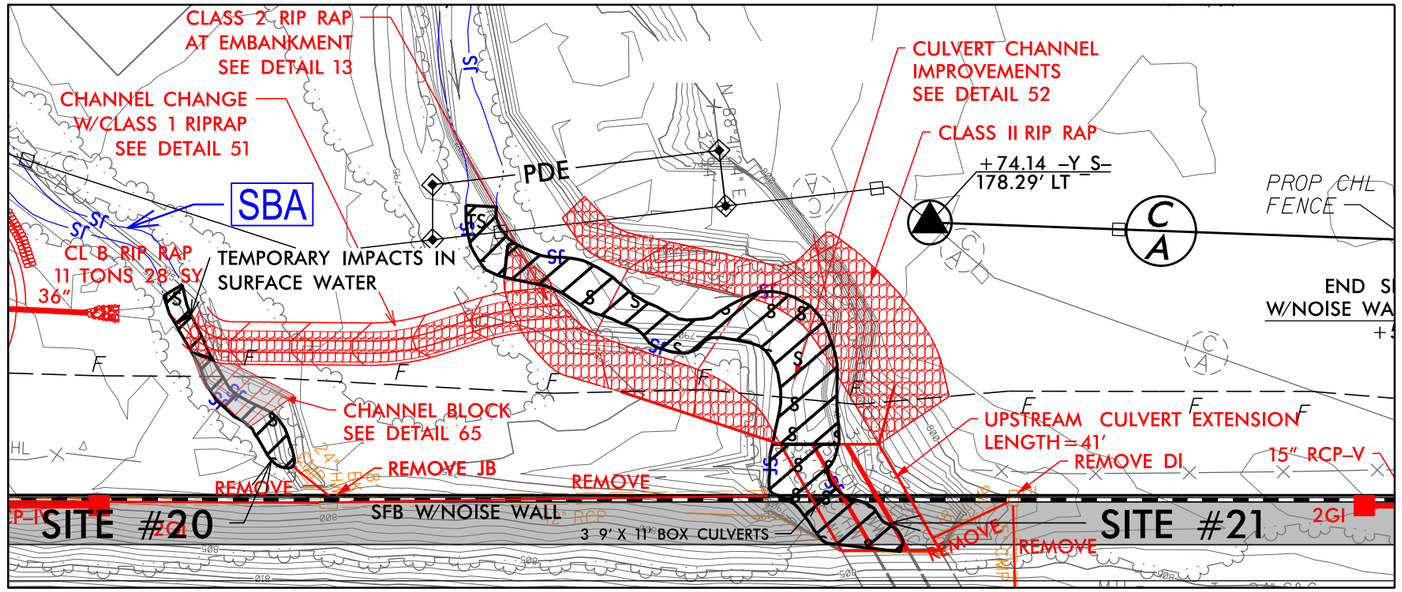
Becker jw

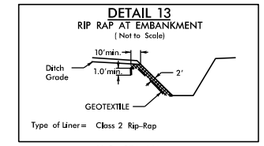
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	19A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

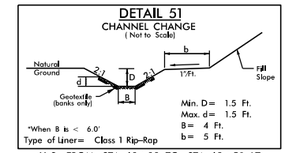
PERMIT DRAWING
SHEET 33 OF 67

INSET

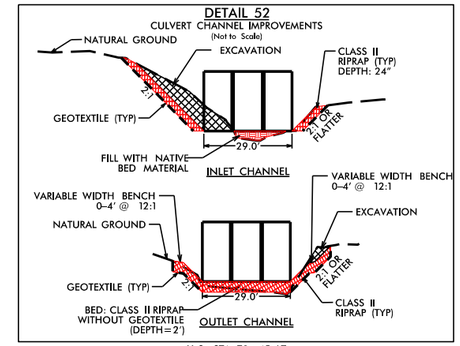




-Y_S- STA. 121+45

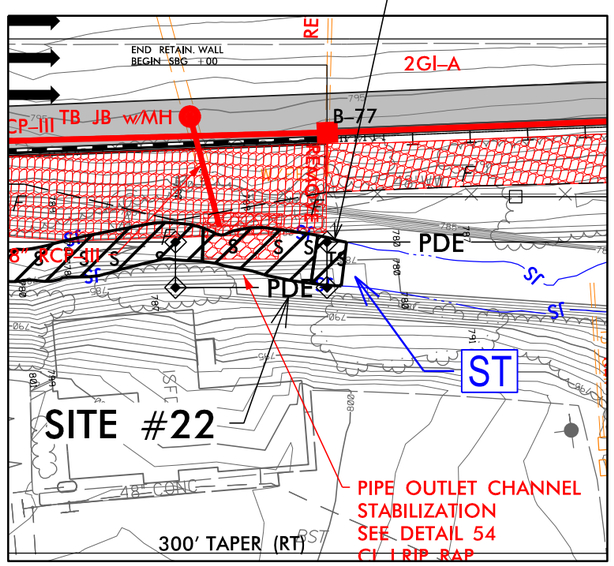


-Y_S- FROM STA. 68+38 TO STA. 69+50 LT



-Y_S- STA. 70+45 LT
-Y_S- STA. 71+60 TO 73+25 RT

INSET



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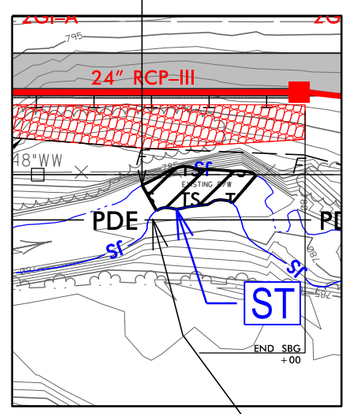
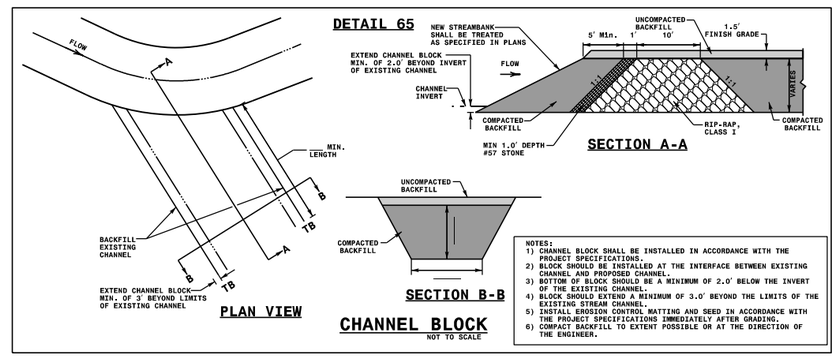
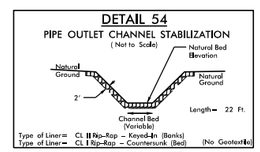






-Y_S- STA. 83+65 RT
-Y_S- STA. 94+40 RT

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NC GRID NAD 83/95

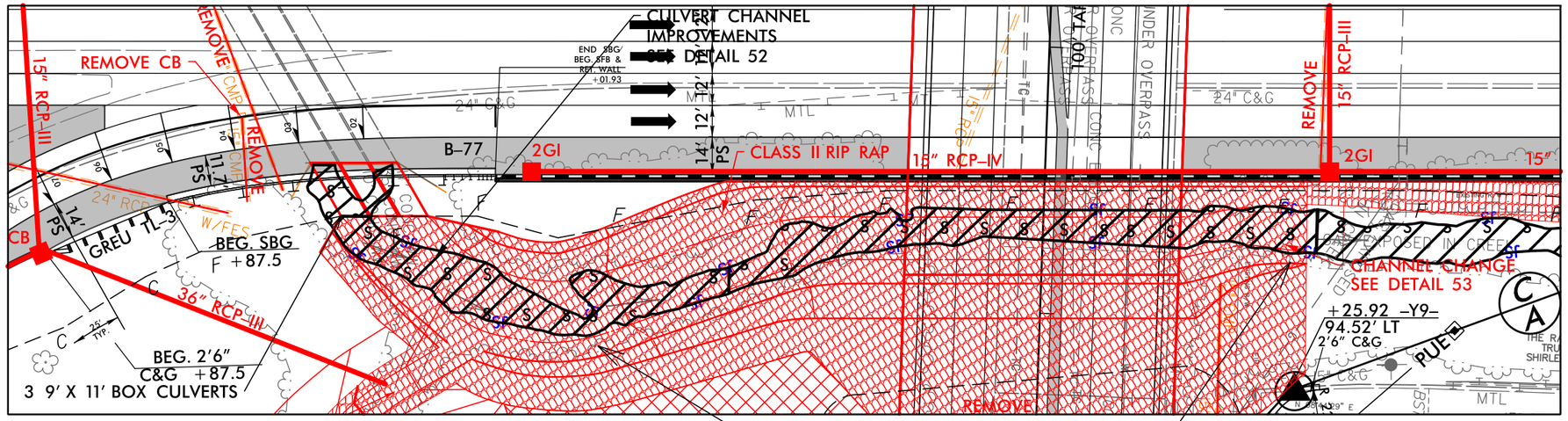
50 25 0 50 100
GRAPHIC SCALE - INSETS

07/12/19
c:\projectwise\pb\projectwisent\becker_jw\d0339329\3819_hyd_prm_psh19A_Y2100-3500.dgn
Becker,jw

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	19B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

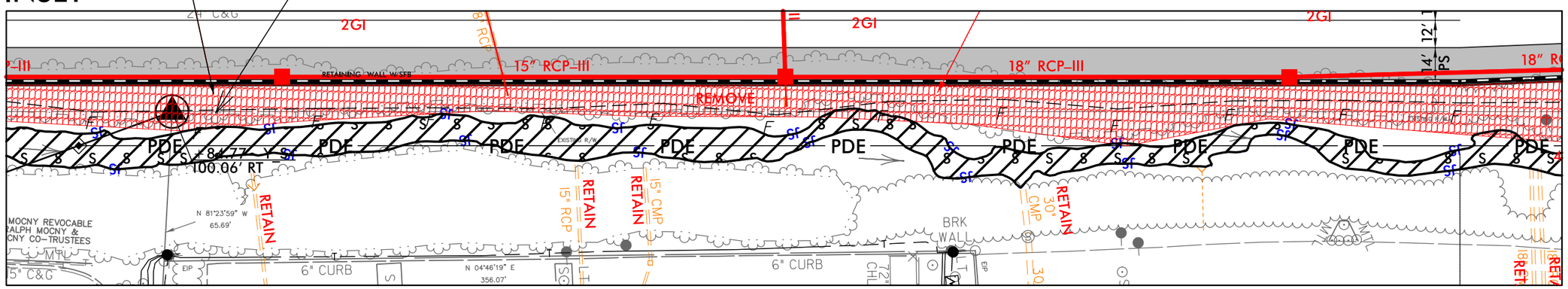
INSET

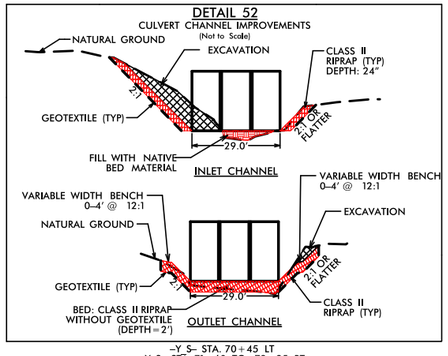


BANK STABILIZATION
SEE DETAIL 76

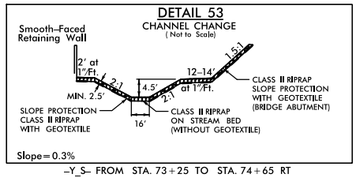
SITE #22

INSET

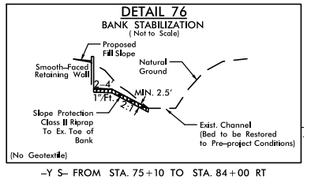




-Y S- STA. 70+45 LT
-Y_S- STA. 71+60 TO 73+25 RT



-Y_S- FROM STA. 73+25 TO STA. 74+65 RT



-Y S- FROM STA. 75+10 TO STA. 84+00 RT

NC GRID NAD 83/95

S DENOTES IMPACTS IN SURFACE WATER

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 50 100
GRAPHIC SCALE – INSETS

PERMIT DRAWING
SHEET 34 OF 67

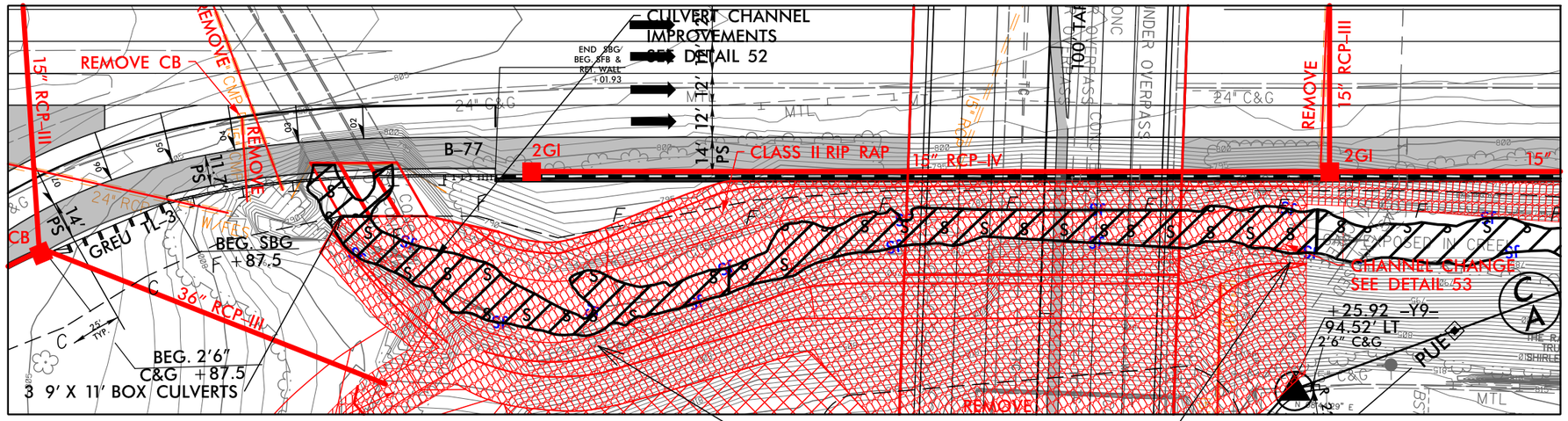
7/12/2019
DGN: proposed01\ics_workingdir\18236\282468_127082\13819_hyd_prm_psh19B_Y2100-3500.dgn

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	19B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET

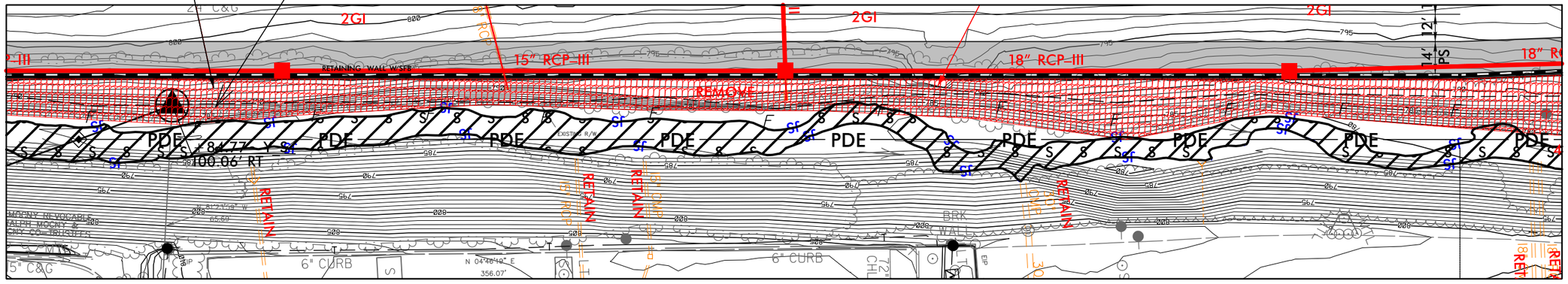


SITE #22

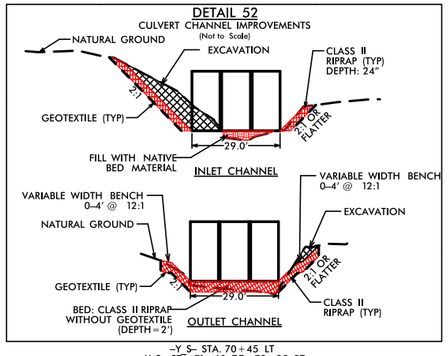
BANK STABILIZATION SEE DETAIL 76

SITE #22

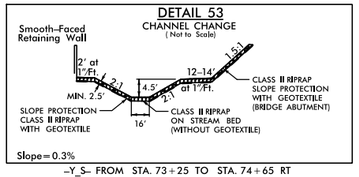
INSET



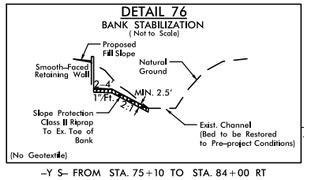
PERMIT DRAWING
SHEET 35 OF 67



-Y S- STA. 70+45 LT
-Y_S- STA. 71+60 TO 73+25 RT



-Y_S- FROM STA. 73+25 TO STA. 74+65 RT



-Y S- FROM STA. 75+10 TO STA. 84+00 RT

NC GRID NAD 83/95

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

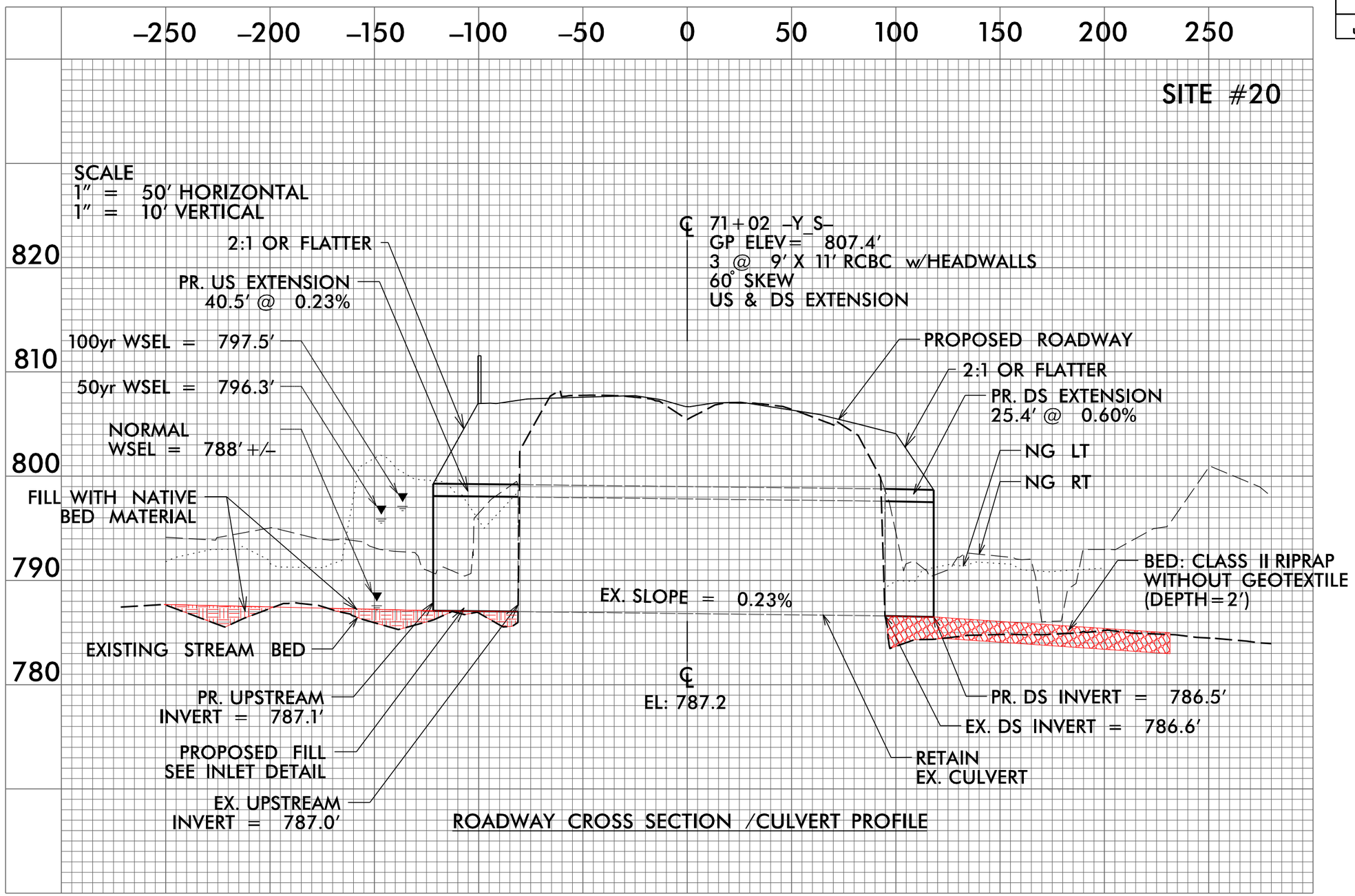
50 25 0 50 100
GRAPHIC SCALE – INSETS

7/12/2019
DGN: proj\cad01\ics_workingdir\18225\282468_127023\13819_hyd_prm_psh19B_Y2100-3500.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	19-X
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 36 OF 67



ROADWAY CROSS SECTION /CULVERT PROFILE

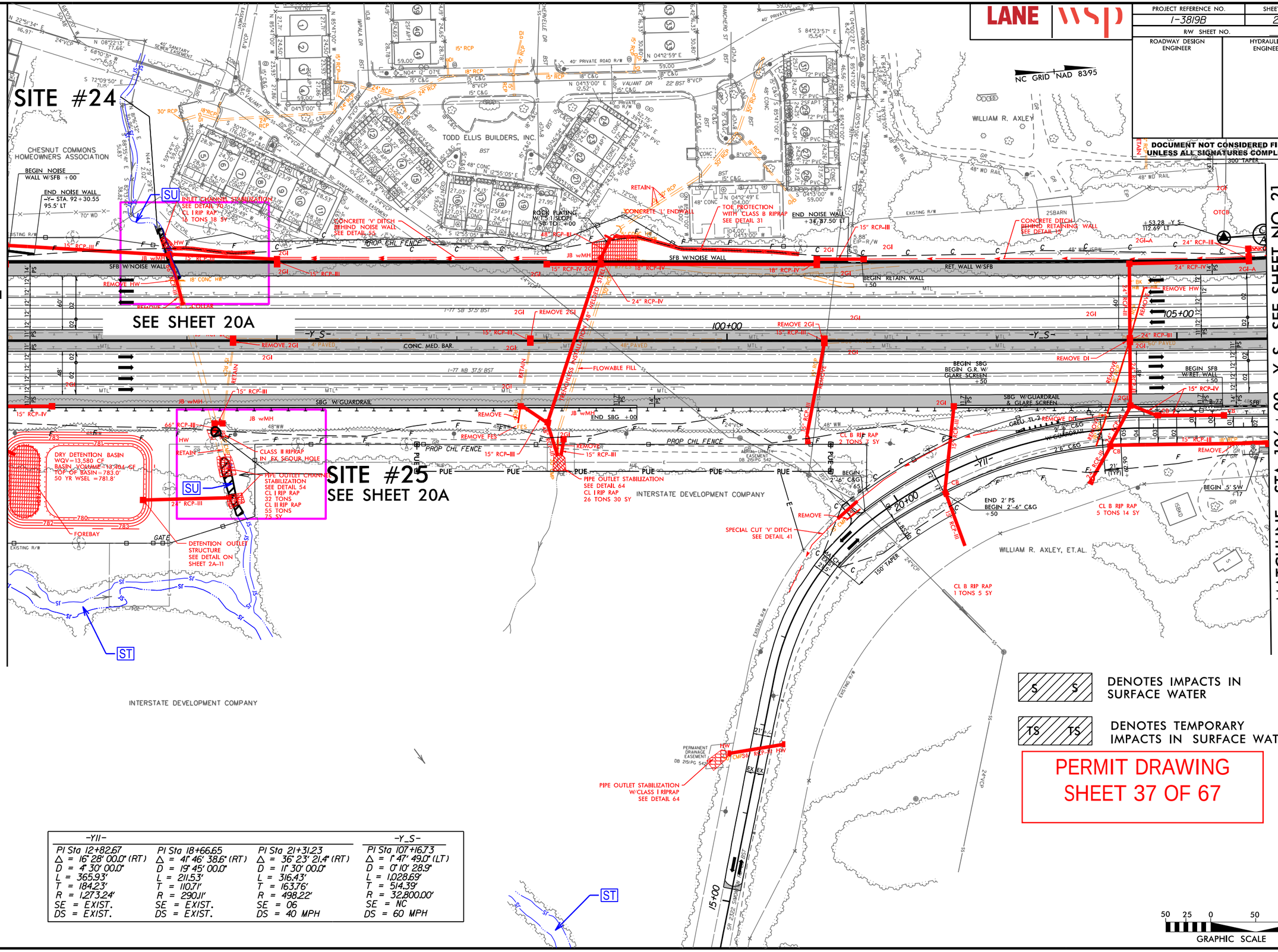
5/28/99

6/6/2019
c:\projectwise\pb\projectwiseint\wsp--morgan goodwin\d0339329\I3819_rdy_pfisht_Y-71+00.dgn
USMEP5774

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-Y11-			-Y_S-
PI Sta 12+82.67	PI Sta 18+66.65	PI Sta 21+31.23	PI Sta 107+16.73
Δ = 16° 28' 00.0" (RT)	Δ = 41° 46' 38.6" (RT)	Δ = 36° 23' 21.4" (RT)	Δ = 1° 47' 49.0" (LT)
D = 4° 30' 00.0"	D = 19° 45' 00.0"	D = 11° 30' 00.0"	D = 0° 10' 28.9"
L = 365.93'	L = 211.53'	L = 316.43'	L = 1,028.69'
T = 184.23'	T = 110.71'	T = 163.76'	T = 514.39'
R = 1,273.24'	R = 290.11'	R = 498.22'	R = 32,800.00'
SE = EXIST.	SE = EXIST.	SE = 06	SE = NC
DS = EXIST.	DS = EXIST.	DS = 40 MPH	DS = 60 MPH

S DENOTES IMPACTS IN SURFACE WATER

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 37 OF 67

07/02/19
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Becker JW

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LANE | WSP

NC GRID NAD 83/95

–MATCHLINE– STA 92+00.00 –Y_S– SEE SHEET NO. 19

–MATCHLINE– STA. 106+00 –Y_S– SEE SHEET NO. 21

SITE #24

SEE SHEET 20A

SITE #25

SEE SHEET 20A

CHESNUT COMMONS HOMEOWNERS ASSOCIATION

TODD ELLIS BUILDERS, INC.

WILLIAM R. AXLEY

WILLIAM R. AXLEY, ET AL.

INTERSTATE DEVELOPMENT COMPANY

BEGIN NOISE WALL W/SFB +00

END NOISE WALL –Y– STA. 92+30.55 95.5' LT

INLET CHANNEL STABILIZATION SEE DETAIL 70 CL I RIP RAP 12 TONS 18 SY

CONCRETE 'V' DITCH BEHIND NOISE WALL SEE DETAIL 53

ROCK PLANTING W/ 1:1 SLOPE 50' TO +00

TOE PROTECTION WITH CLASS B RIPRAP SEE DETAIL 31

END NOISE WALL +36.87.50' LT

CONCRETE DITCH BEHIND RETAINING WALL SEE DETAIL 73

BEGIN RETAIN WALL +50

RET. WALL W/SFB

SFB W/NOISE WALL

SBG W/GUARDRAIL

CONC. MED. BAR.

FLOWABLE FILL

BEGIN SBG BEGIN G.R. W/ GLARE SCREEN +50

SBG W/GUARDRAIL & GLARE SCREEN

BEGIN SFB W/RET. WALL +50

END SBG +00

PROP. CHL FENCE

DRY DETENTION BASIN WQV=13,580 CF BASIN VOLUME 14,262 CF TOP OF BASIN = 783.0' 50' YX WSEL = 781.8'

FOREBAY

GATE

CLASS II RIPRAP IN FX SCOUR HOLE

PIPE OUTLET CHANNEL STABILIZATION SEE DETAIL 54 CL I RIP RAP 32 TONS CL II RIP RAP 55 TONS 75 SY

DETENTION OUTLET STRUCTURE SEE DETAIL ON SHEET 2A-11

PIPE OUTLET STABILIZATION SEE DETAIL 64 CL I RIP RAP 26 TONS 30 SY

CL B RIP RAP 2 TONS 7 SY

BEGIN 2'-6" C&G +65

END 2' PS BEGIN 2'-6" C&G +50

CL B RIP RAP 5 TONS 14 SY

CL B RIP RAP 1 TONS 6 SY

SPECIAL CUT 'V' DITCH SEE DETAIL 41

PIPE OUTLET STABILIZATION W/CLASS I RIPRAP SEE DETAIL 64

PERMANENT DRAINAGE EASEMENT

SR 2325 SMITH RD

–Y11–			–Y_S–
PI Sta 12+82.67	PI Sta 18+66.65	PI Sta 21+31.23	PI Sta 107+16.73
Δ = 16°28' 00.0" (RT)	Δ = 41° 46' 38.6" (RT)	Δ = 36°23' 21.4" (RT)	Δ = 1° 47' 49.0" (LT)
D = 4° 30' 00.0"	D = 19° 45' 00.0"	D = 11° 30' 00.0"	D = 0° 10' 28.9"
L = 365.93'	L = 211.53'	L = 316.43'	L = 1,028.69'
T = 184.23'	T = 110.71'	T = 163.76'	T = 514.39'
R = 1,273.24'	R = 290.11'	R = 498.22'	R = 32,800.00'
SE = EXIST.	SE = EXIST.	SE = 06	SE = NC
DS = EXIST.	DS = EXIST.	DS = 40 MPH	DS = 60 MPH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 38 OF 67

50 25 0 50 100
GRAPHIC SCALE

07/02/19
c:\projectwise\pb\projectwiseint\becker_jw\d0339329\13819_hyd_prm_psh20_Y9200-10600.dgn
BECKER JW

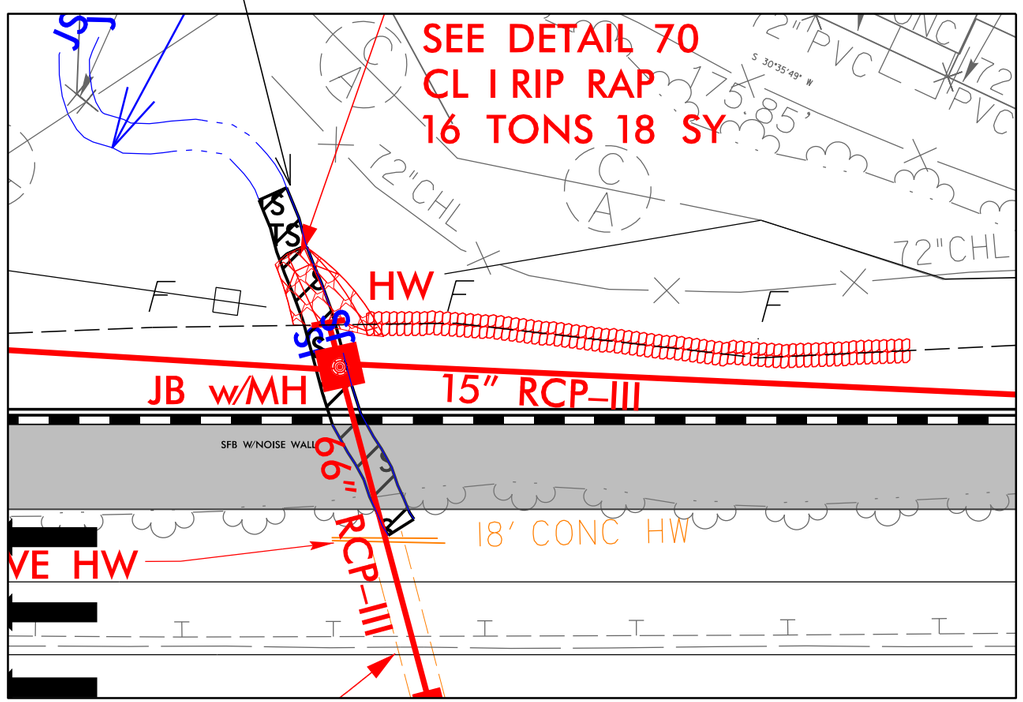
LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	20A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

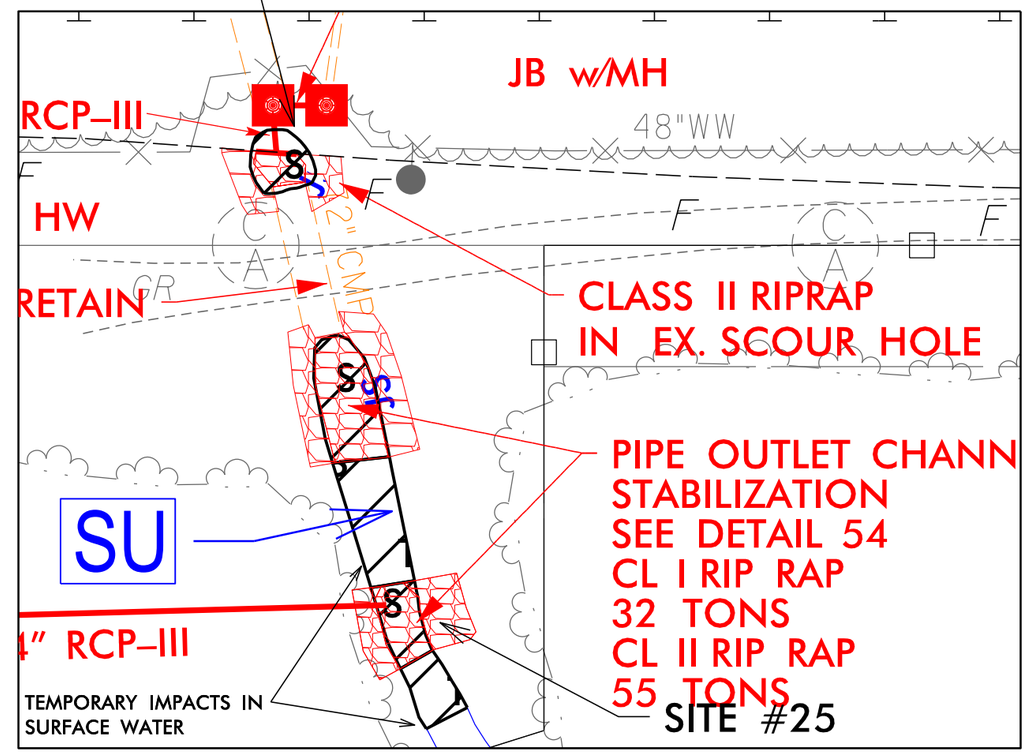
SITE #24

INSET



SITE #25

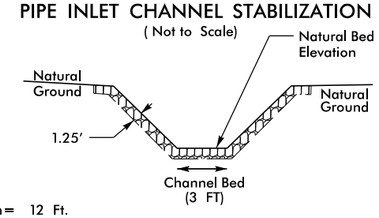
INSET



DETAIL 70

PIPE INLET CHANNEL STABILIZATION

(Not to Scale)



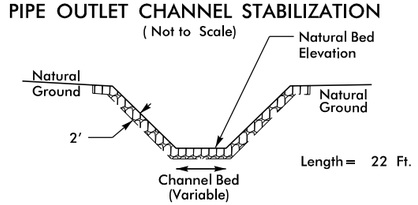
Length = 12 Ft.
Type of Liner = CL 1 Rip-Rap - Keyed-In (No Geotextile)

-Y_S- STA. 93+79 LT

DETAIL 54

PIPE OUTLET CHANNEL STABILIZATION

(Not to Scale)



Length = 22 Ft.
Type of Liner = CL II Rip-Rap - Keyed-In (Banks)
Type of Liner = CL I Rip-Rap - Countersunk (Bed) (No Geotextile)

NC GRID NAD 83/95

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 39 OF 67

25 12.5 0 25 50
GRAPHIC SCALE - INSETS

07/12/19
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Becker, JW

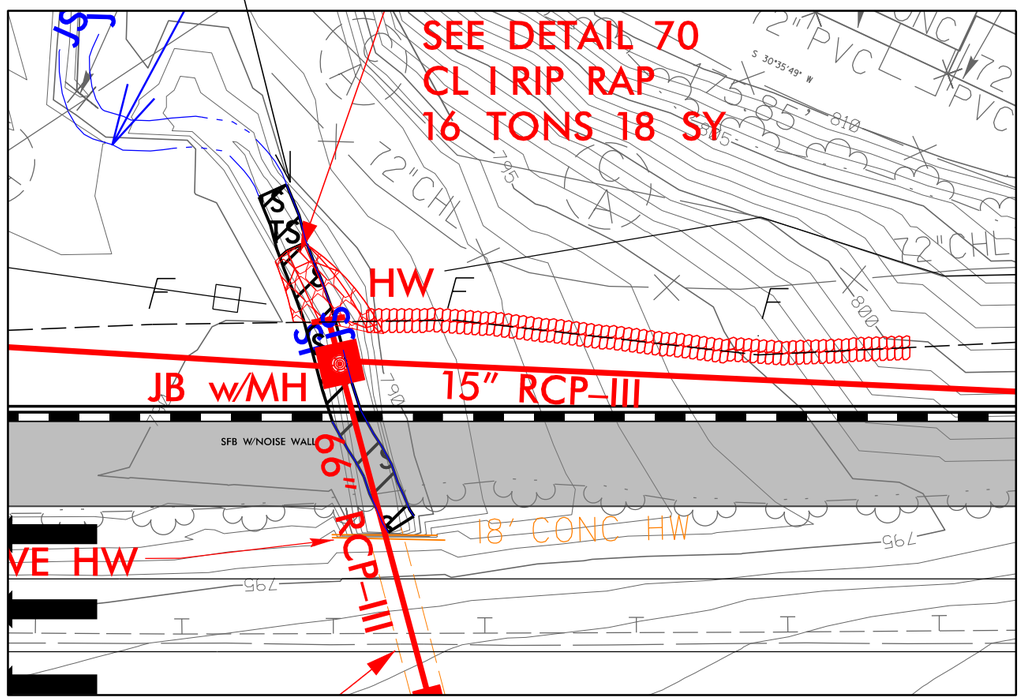
LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	20A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

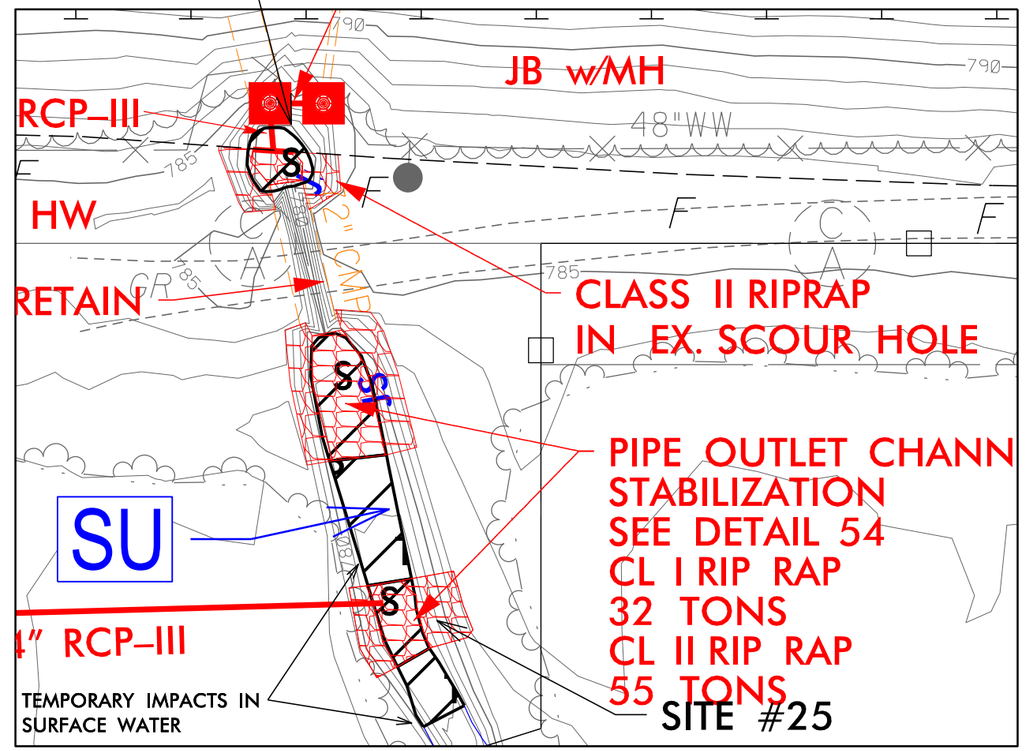
SITE #24

INSET



SITE #25

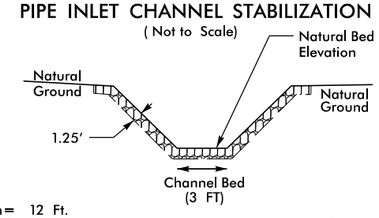
INSET



DETAIL 70

PIPE INLET CHANNEL STABILIZATION

(Not to Scale)



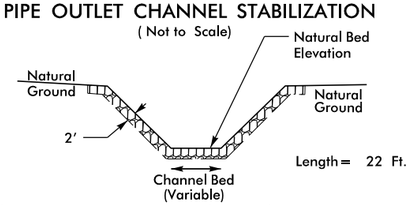
Length= 12 Ft.
Type of Liner= CL 1 Rip-Rap - Keyed-In (No Geotextile)

-Y_S- STA. 93+79 LT

DETAIL 54

PIPE OUTLET CHANNEL STABILIZATION

(Not to Scale)



Length= 22 Ft.
Type of Liner= CL II Rip-Rap - Keyed-In (Banks)
Type of Liner= CL I Rip-Rap - Countersunk (Bed) (No Geotextile)

NC GRID NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 40 OF 67

25 12.5 0 25 50
GRAPHIC SCALE - INSETS

07/12/19
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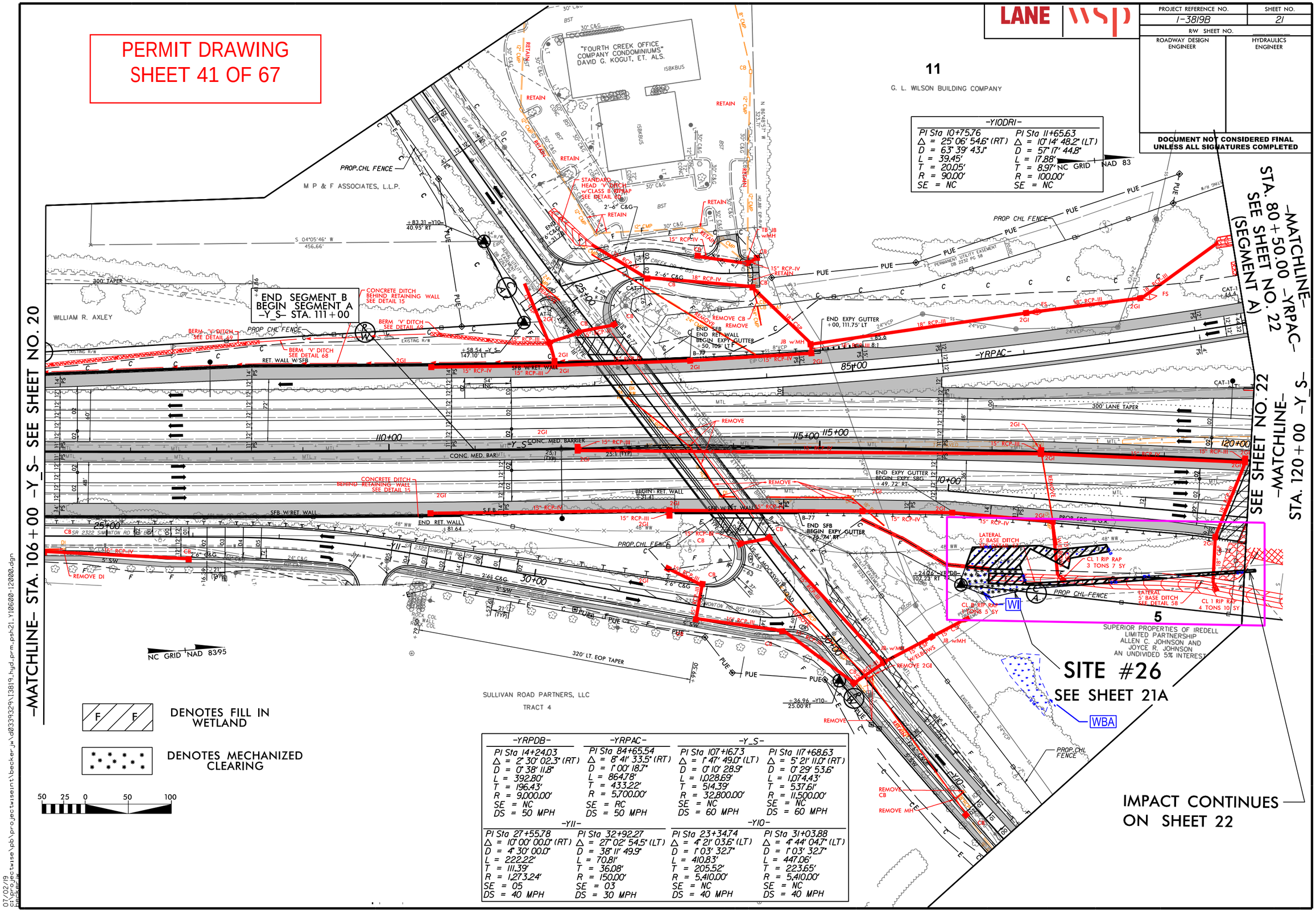
Becker, JW

PERMIT DRAWING
SHEET 41 OF 67

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-YRPDB-

PI Sta 14+24.03
Δ = 2° 30' 02.3" (RT)
D = 0° 38' 11.8"
L = 392.80'
T = 196.43'
R = 9,000.00'
SE = NC
DS = 50 MPH

-YRPAC-

PI Sta 84+65.54
Δ = 8° 41' 33.5" (RT)
D = 1° 00' 18.7"
L = 864.78'
T = 433.22'
R = 5,700.00'
SE = RC
DS = 50 MPH

-Y_S-

PI Sta 107+16.73
Δ = 1° 47' 49.0" (LT)
D = 0° 10' 28.9"
L = 1,028.69'
T = 514.39'
R = 32,800.00'
SE = NC
DS = 60 MPH

PI Sta 117+68.63
Δ = 5° 21' 11.0" (RT)
D = 0° 29' 53.6"
L = 1,074.43'
T = 537.61'
R = 11,500.00'
SE = NC
DS = 60 MPH

-YII-

PI Sta 27+55.78
Δ = 10° 00' 00.0" (RT)
D = 4° 30' 00.0"
L = 222.22'
T = 111.39'
R = 1,273.24'
SE = 05
DS = 40 MPH

PI Sta 32+92.27
Δ = 27° 02' 54.5" (LT)
D = 38° 11' 49.9"
L = 70.81'
T = 36.08'
R = 150.00'
SE = 03
DS = 30 MPH

-YIO-

PI Sta 23+34.74
Δ = 4° 21' 03.6" (LT)
D = 1° 03' 32.7"
L = 410.83'
T = 205.52'
R = 5,410.00'
SE = NC
DS = 40 MPH

PI Sta 31+03.88
Δ = 4° 44' 04.7" (LT)
D = 1° 03' 32.7"
L = 447.06'
T = 223.65'
R = 5,410.00'
SE = NC
DS = 40 MPH

07/02/19
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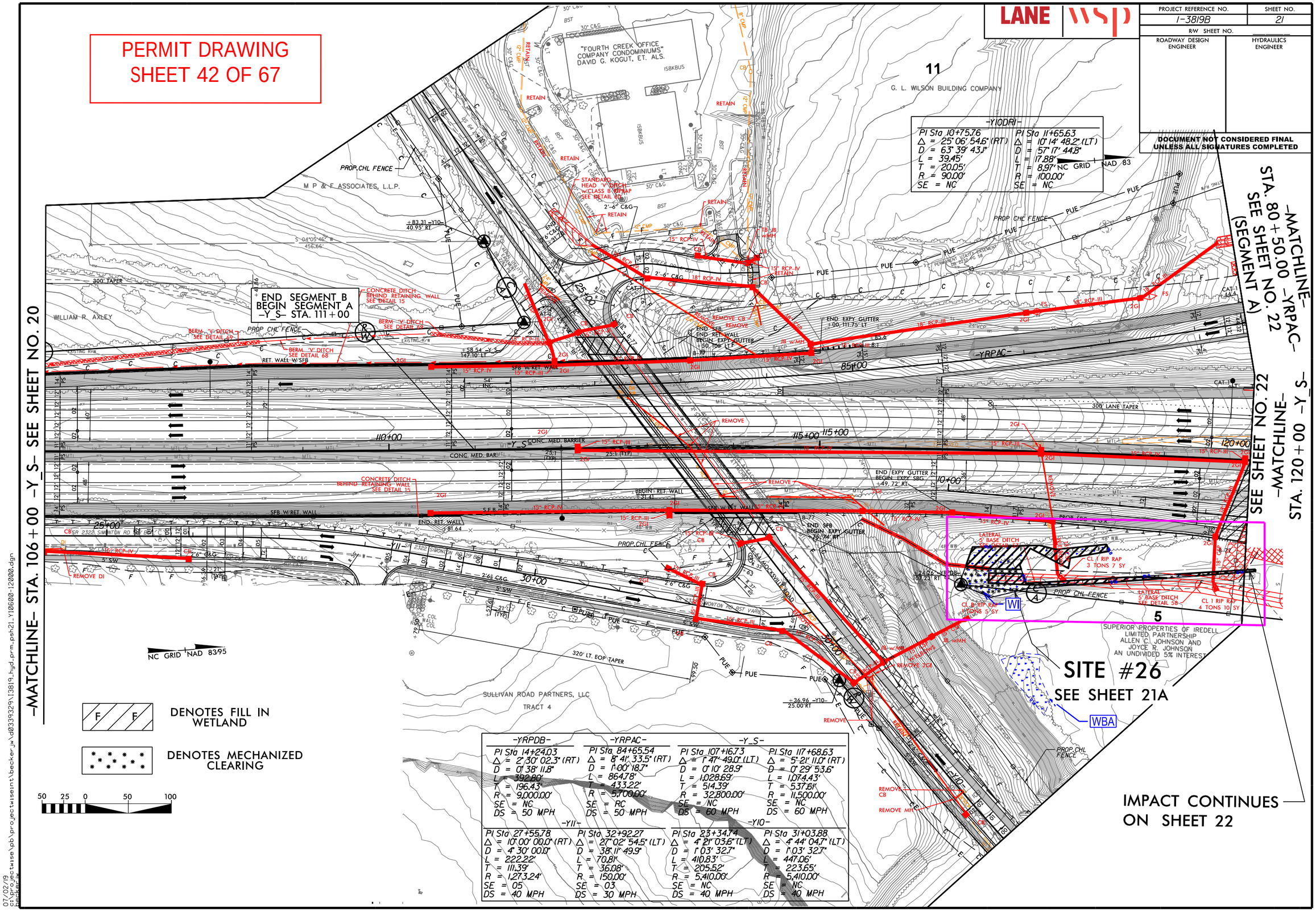
Becker, JW

PERMIT DRAWING
SHEET 42 OF 67

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



07/02/19
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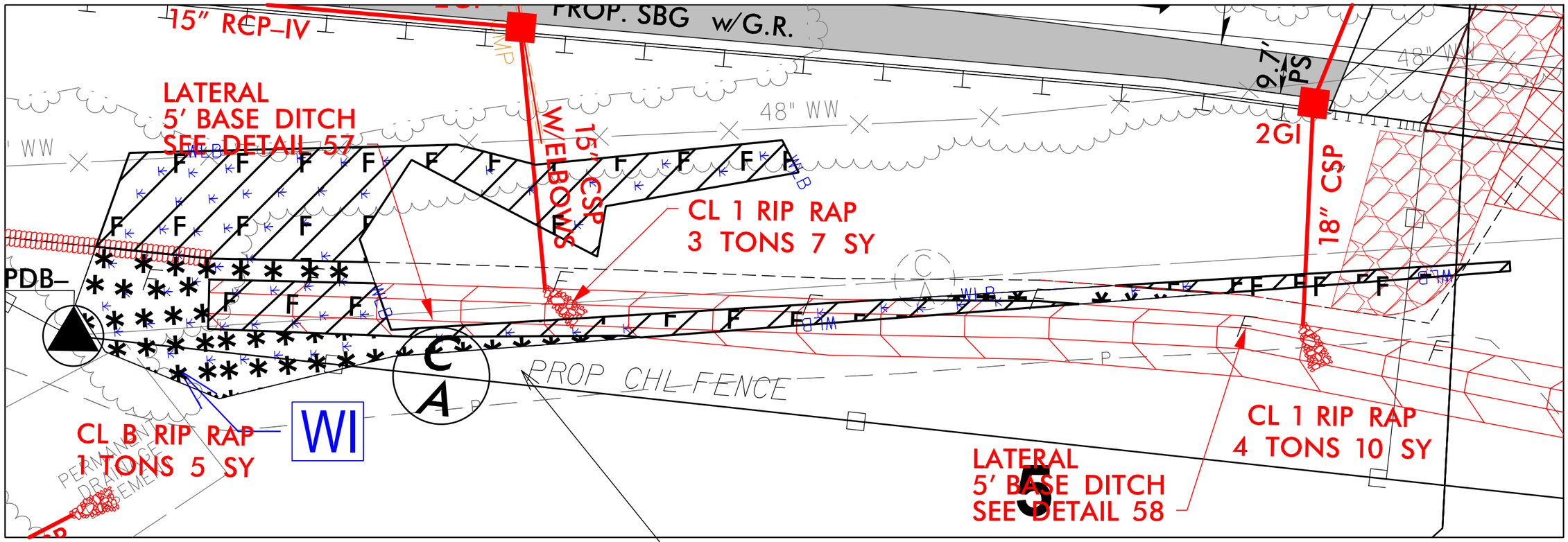
Becker, JW

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	21A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

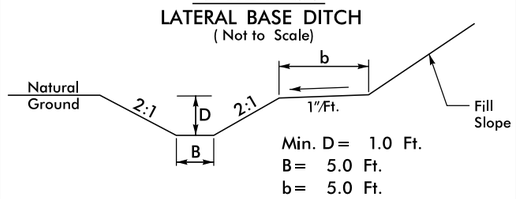


NC GRID NAD 83/95

F F DENOTES FILL IN WETLAND

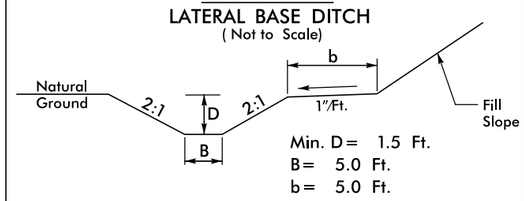
DENOTES MECHANIZED CLEARING

DETAIL 57
LATERAL BASE DITCH
(Not to Scale)



-Y_S- FROM STA. 117+00 TO STA. 118+50

DETAIL 58
LATERAL BASE DITCH
(Not to Scale)



-Y_S- FROM STA. 118+50 TO STA. 120+80

PERMIT DRAWING
SHEET 43 OF 67

25 12.5 0 25 50
GRAPHIC SCALE

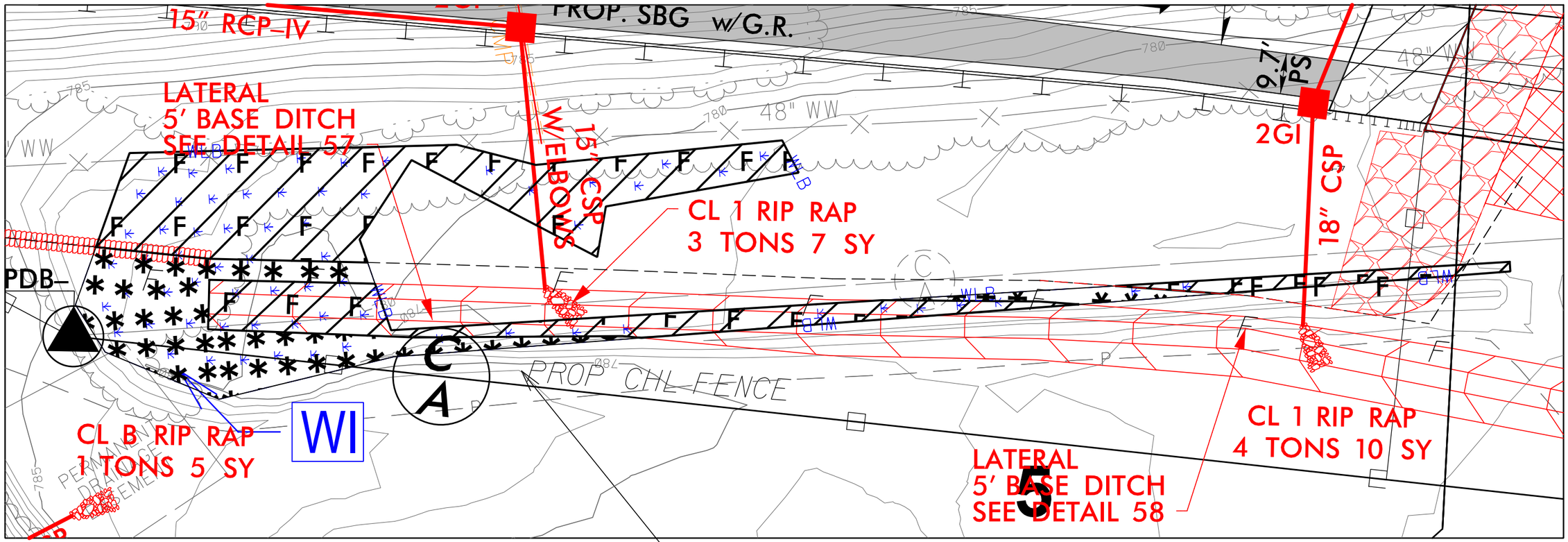
6/6/2019
pr3819b_sh01

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	21A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

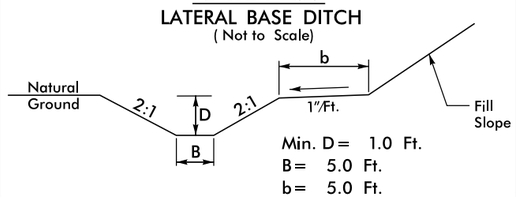
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SITE #26

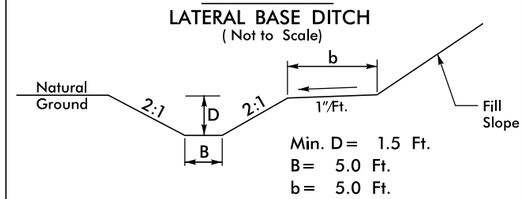
NC GRID NAD 83/95

DETAIL 57
LATERAL BASE DITCH
(Not to Scale)



-Y_S- FROM STA. 117+00 TO STA. 118+50

DETAIL 58
LATERAL BASE DITCH
(Not to Scale)



-Y_S- FROM STA. 118+50 TO STA. 120+80

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

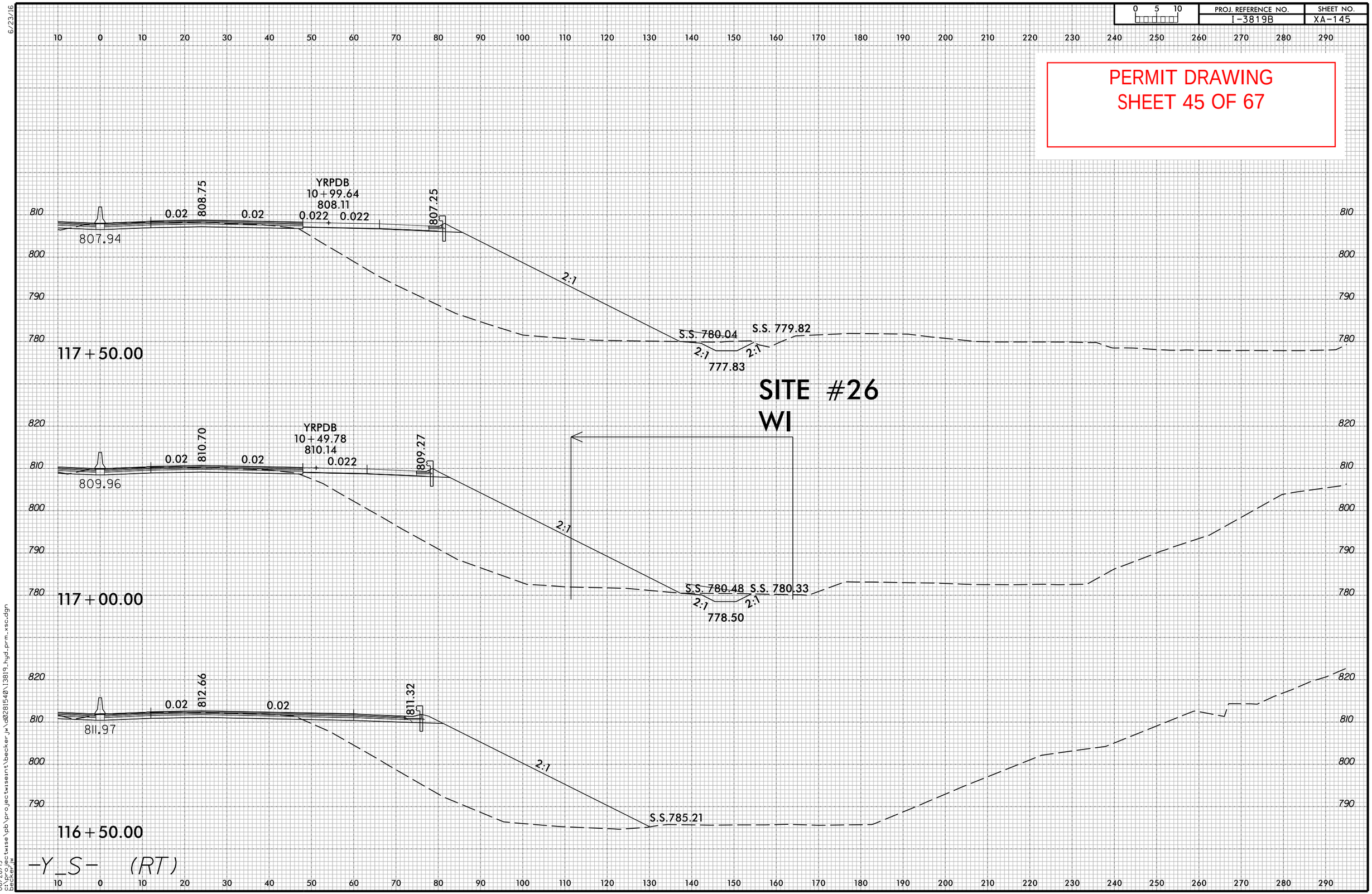
PERMIT DRAWING
SHEET 44 OF 67

25 12.5 0 25 50
GRAPHIC SCALE

6/6/2019
D:\pwworking\ics02\ics_workingdir\5440\282468_78340\I3819_hyd_prm_psh21A_Y10600-12000.dgn

PROJ. REFERENCE NO.	SHEET NO.
I-3819B	XA-145

PERMIT DRAWING
SHEET 45 OF 67



06/23/16

06/28/19
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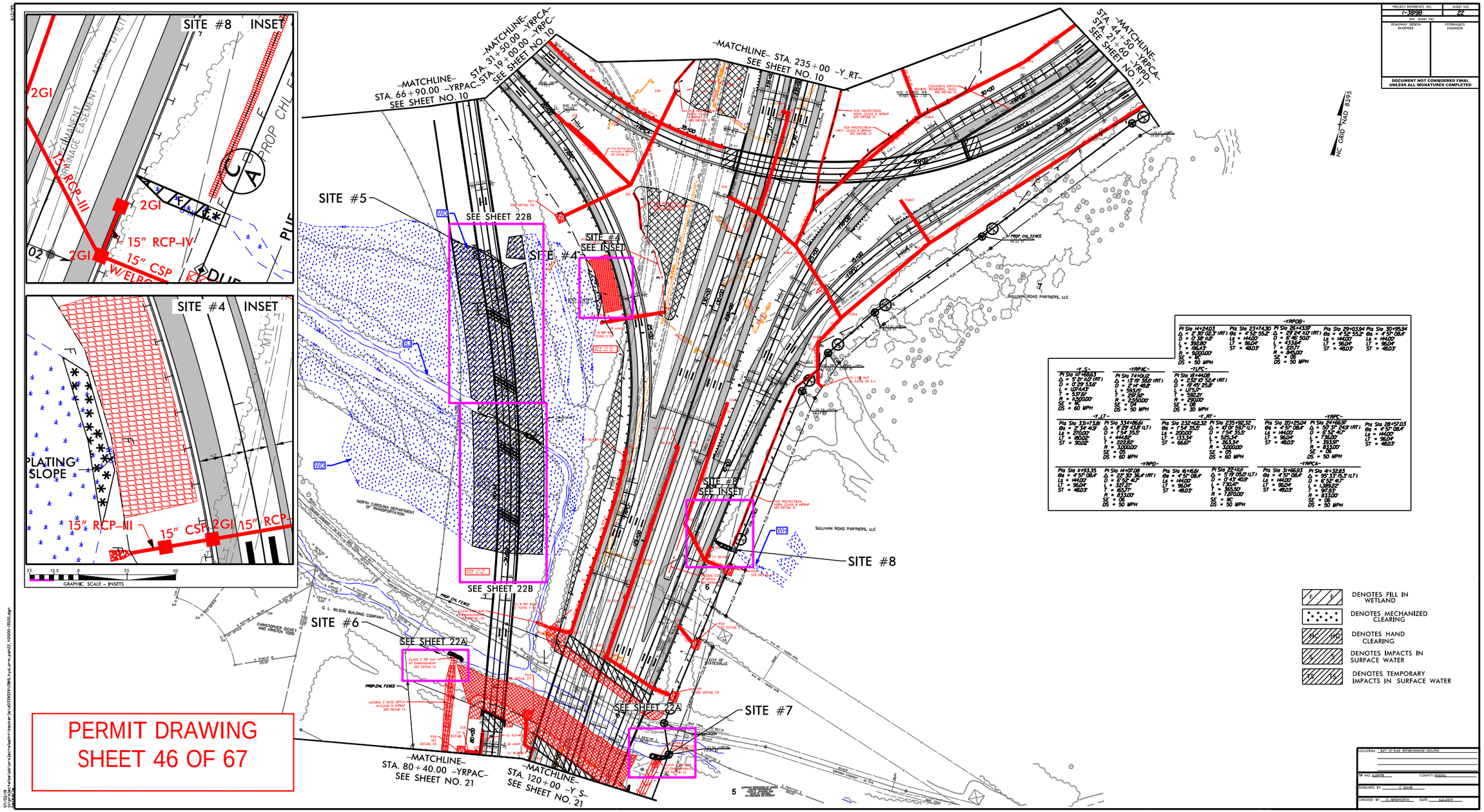
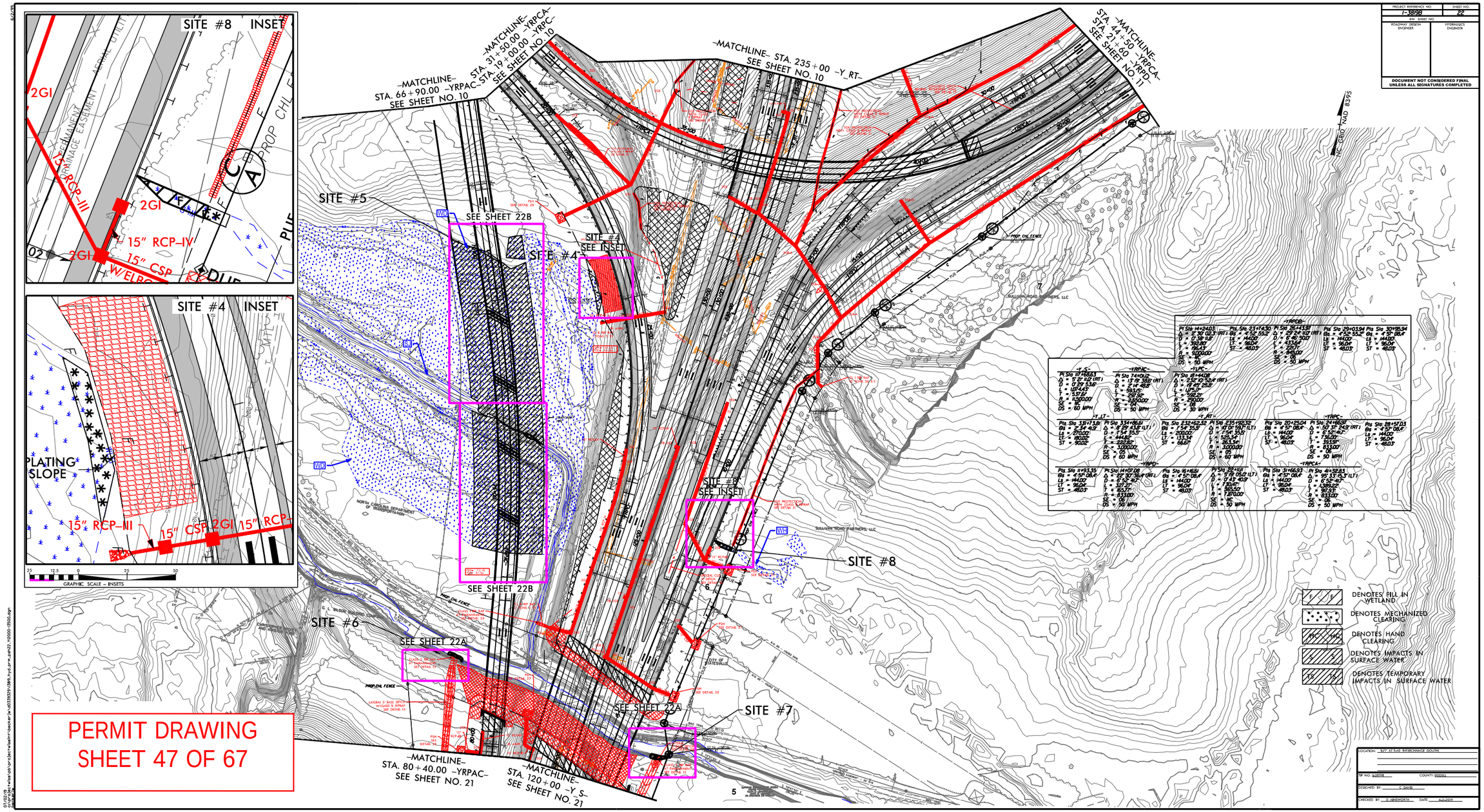
becker_jw



PERMIT DRAWING
SHEET 46 OF 67



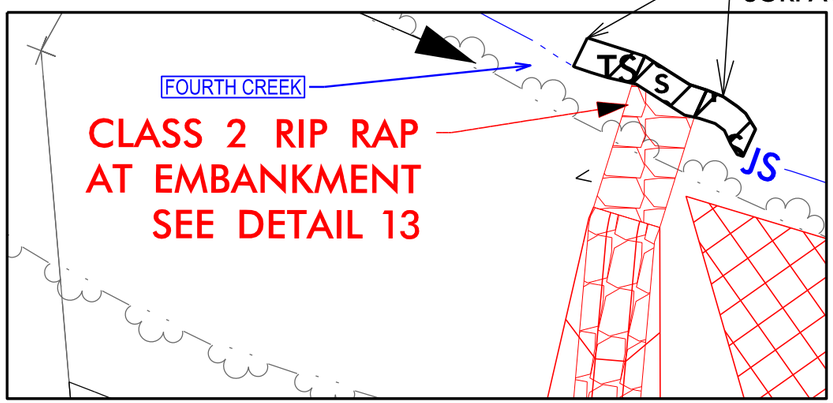
PERMIT DRAWING
SHEET 47 OF 67

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

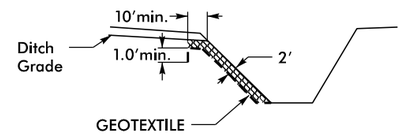
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE# 6 INSET



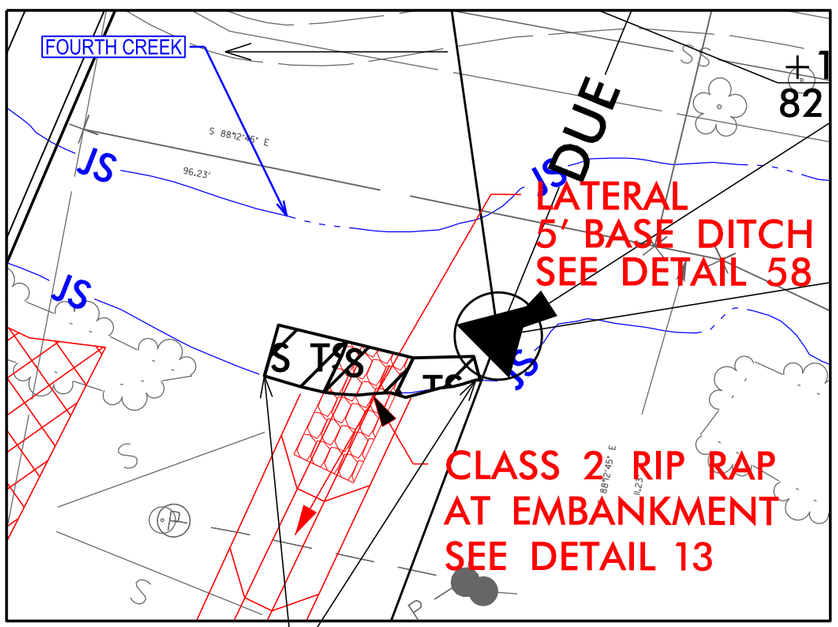
DETAIL 13
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= Class 2 Rip-Rap

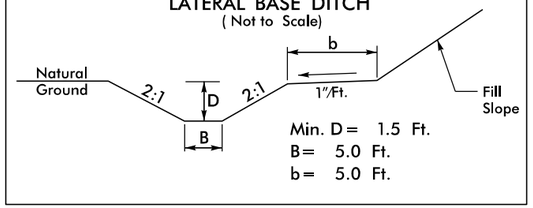
–Y_S– STA. 121+45
–YRPAC– 27+86 RT

SITE# 7 INSET



TEMPORARY IMPACTS IN SURFACE WATER

DETAIL 58
LATERAL BASE DITCH
(Not to Scale)



–Y_S– FROM STA. 118+50 TO STA. 120+80

PERMIT DRAWING
SHEET 48 OF 67

NC GRID NAD 83/95

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 25 50
GRAPHIC SCALE – INSETS

07/02/19
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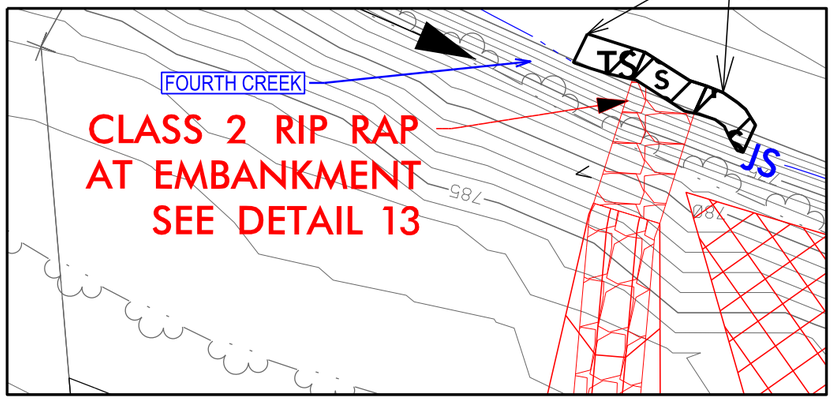
Becker, Jw

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

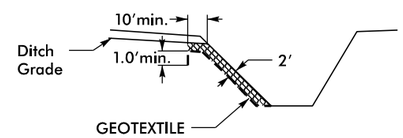
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE# 6 INSET



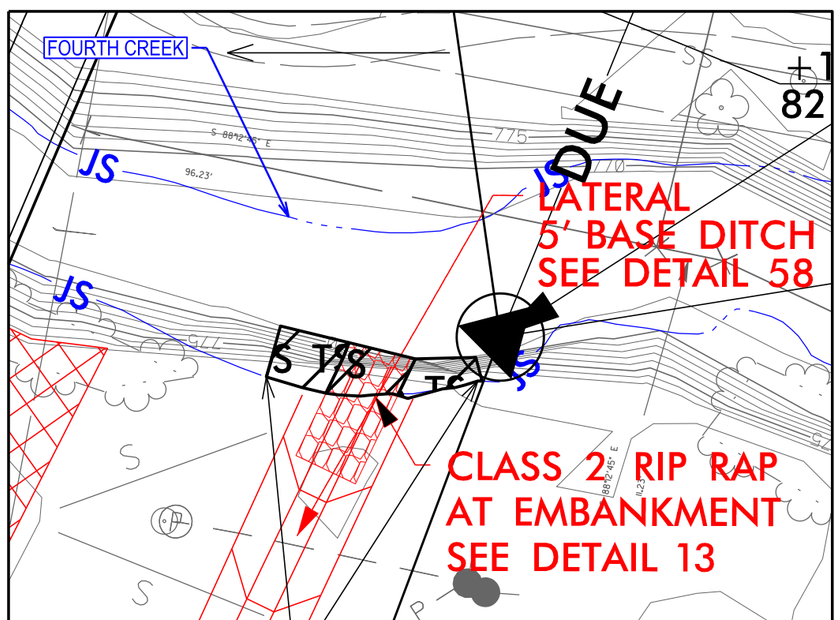
DETAIL 13
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= Class 2 Rip-Rap

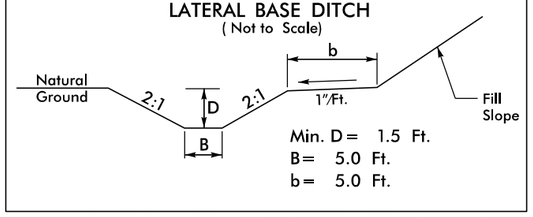
–Y_S– STA. 121+45
–YRPAC– 27+86 RT

SITE# 7 INSET



TEMPORARY IMPACTS IN SURFACE WATER

DETAIL 58
LATERAL BASE DITCH
(Not to Scale)



–Y_S– FROM STA. 118+50 TO STA. 120+80

PERMIT DRAWING
SHEET 49 OF 67

NC GRID NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 25 50
GRAPHIC SCALE – INSETS

07/02/19
c:\projectwise\pb\projectwisent\becker_jw\d0339329\I3819_hyd_prm_psh22A_Y12000-13500.dgn
becker_jw

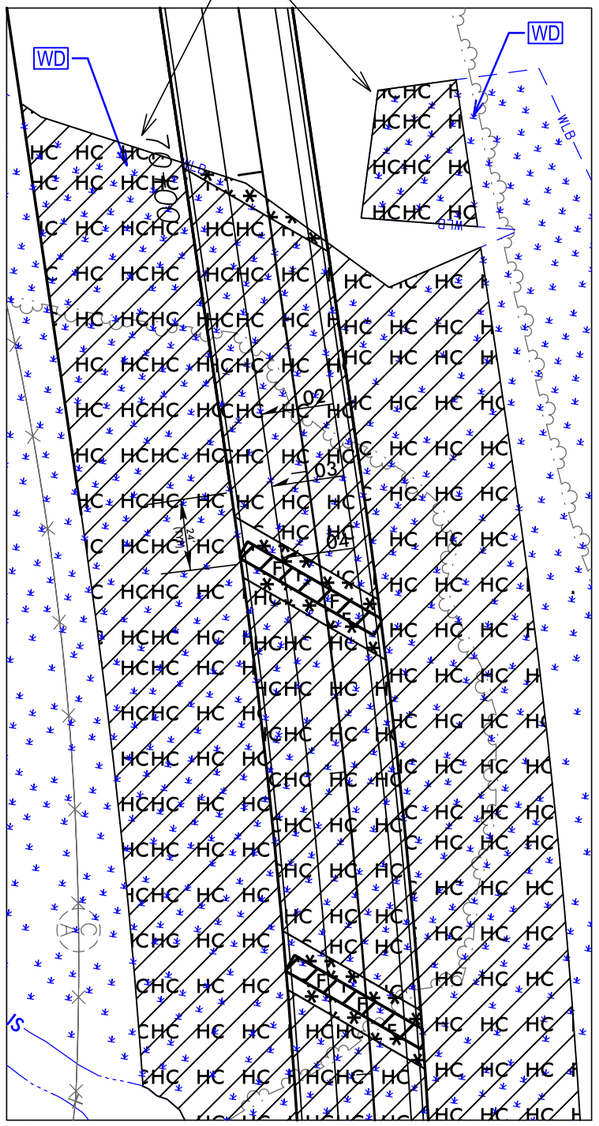
INSET

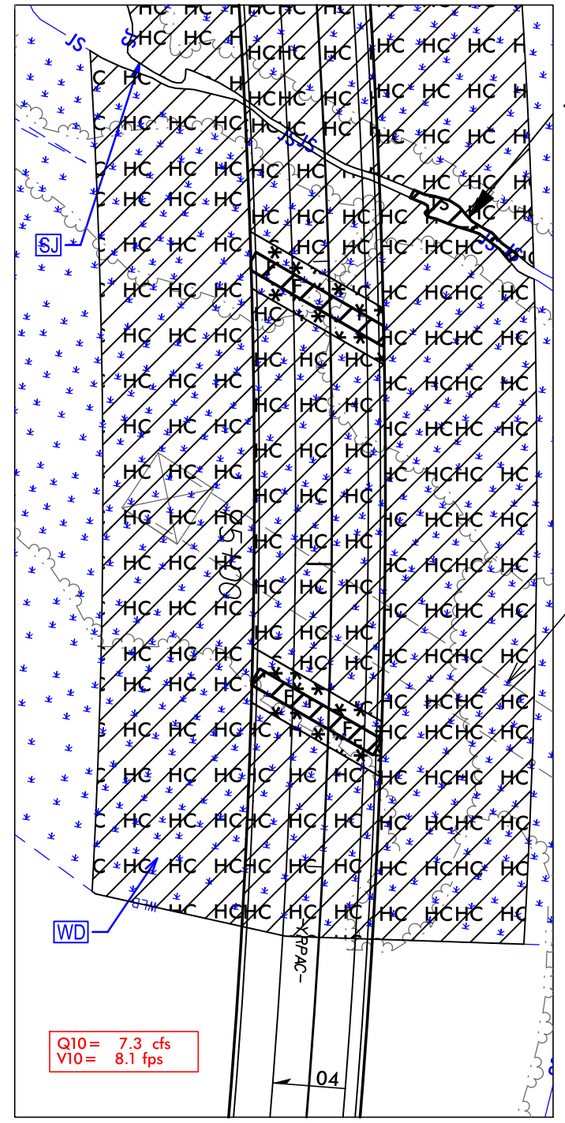
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE #5





TEMPORARY PIPE

SITE #5

NC GRID NAD 83/95

TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
F F	DENOTES FILL IN WETLAND
	DENOTES MECHANIZED CLEARING
HC HC	DENOTES HAND CLEARING

PERMIT DRAWING
SHEET 50 OF 67

25 12.5 0 50 100
GRAPHIC SCALE – INSETS

PROP-WTCS01$

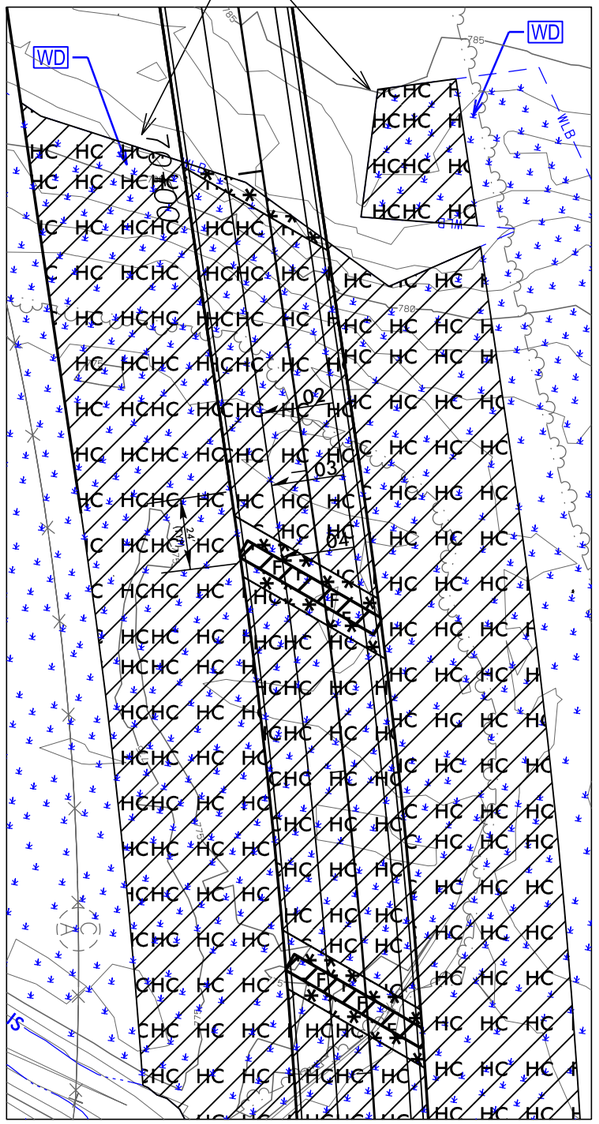
INSET

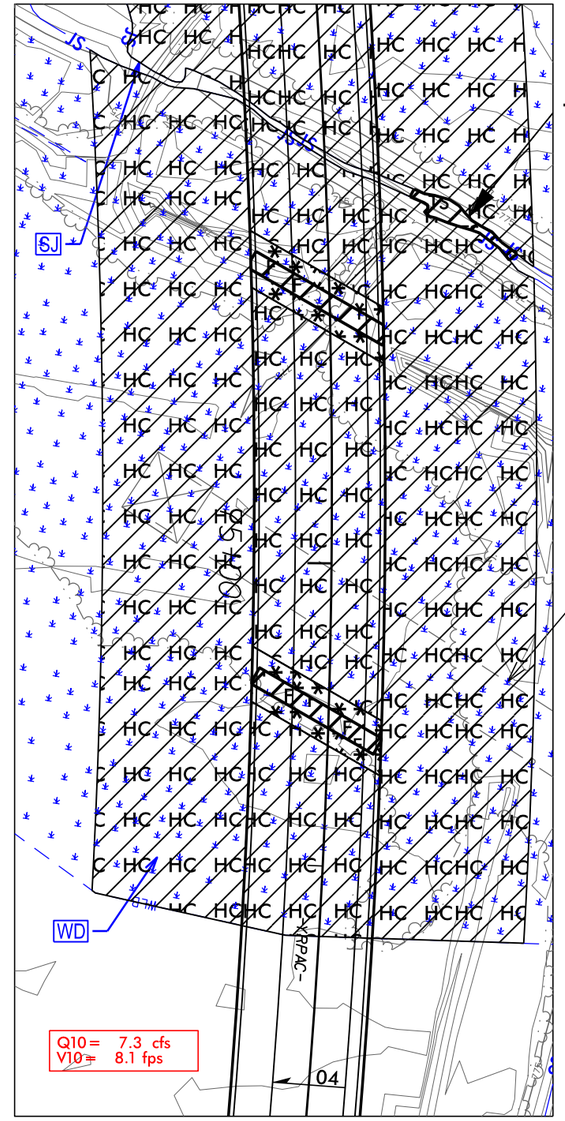
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE #5





SITE #5

NC GRID NAD 83/95

TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
F F	DENOTES FILL IN WETLAND
	DENOTES MECHANIZED CLEARING
HC HC	DENOTES HAND CLEARING

PERMIT DRAWING
SHEET 51 OF 67

25 12.5 0 50 100
GRAPHIC SCALE – INSETS

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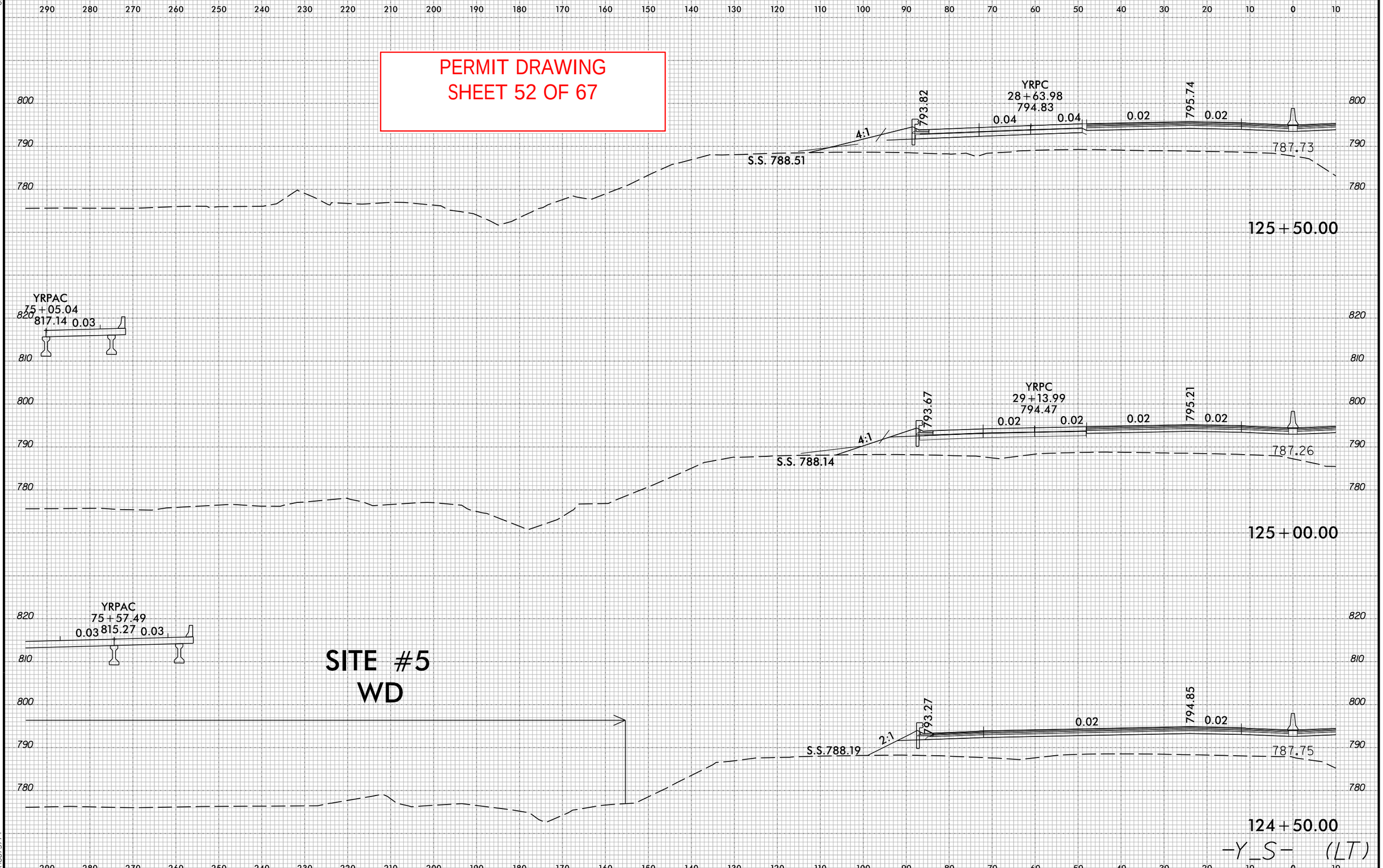
USMD67974

PROJ. REFERENCE NO.	SHEET NO.
I-3819	XA-137

PERMIT DRAWING
SHEET 52 OF 67



6/23/16

5/31/2019
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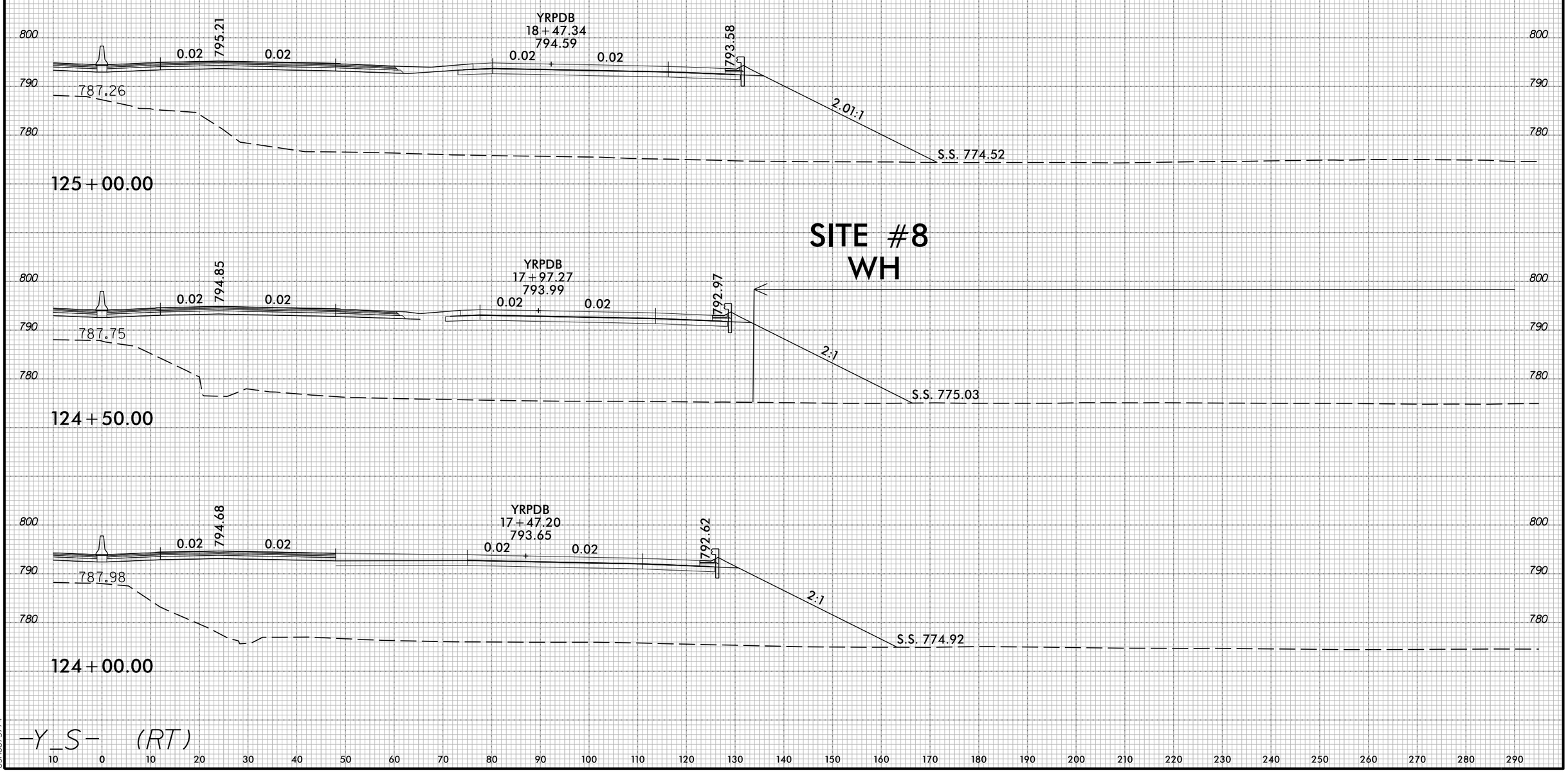
USMG67574

PROJ. REFERENCE NO.	SHEET NO.
I-3819	XA-150

PERMIT DRAWING
SHEET 53 OF 67



6/23/16

5/31/2019
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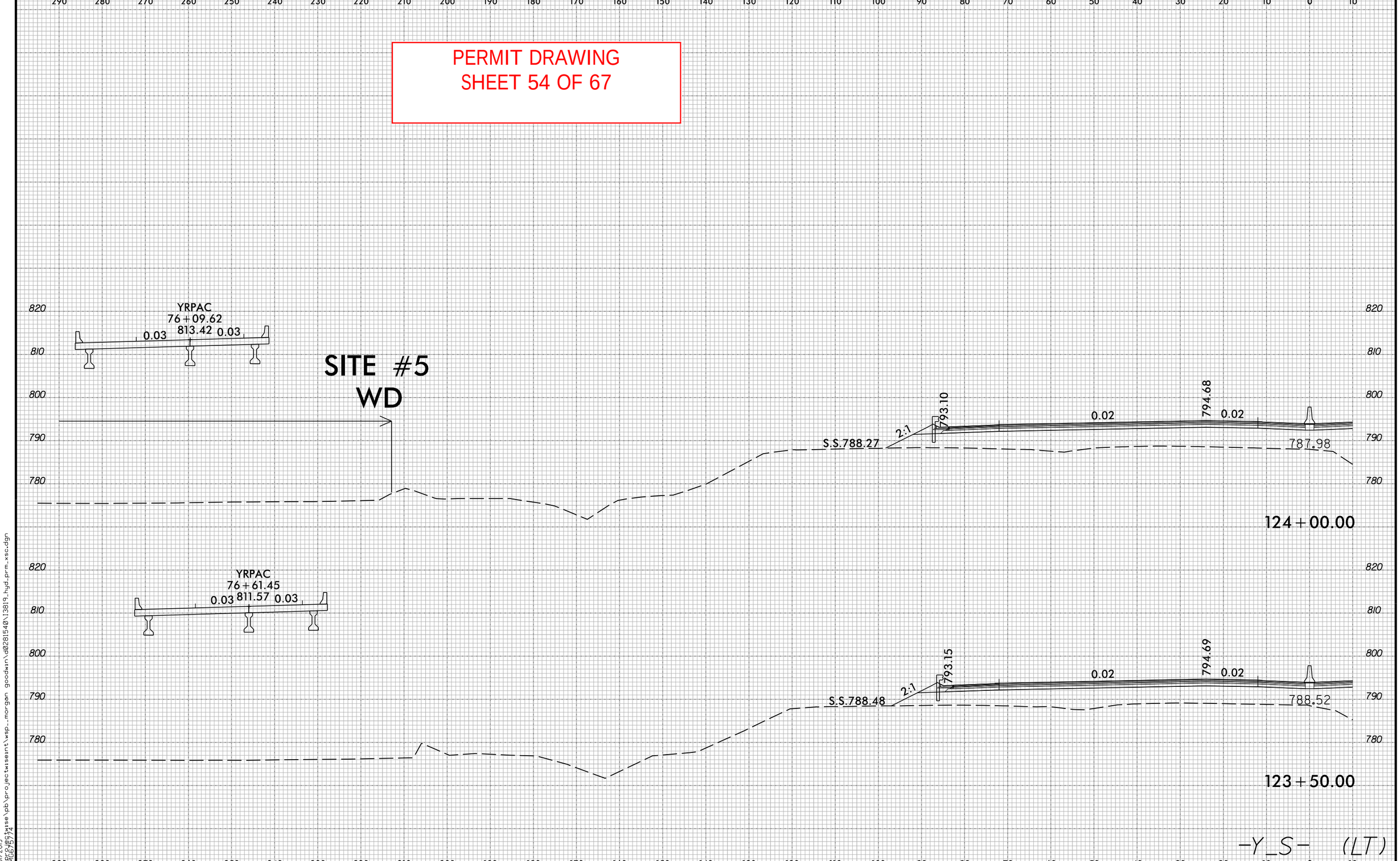
PROJ. REFERENCE NO.	SHEET NO.
I-3819	XA-136

PERMIT DRAWING
SHEET 54 OF 67



6/23/16

5/31/2019
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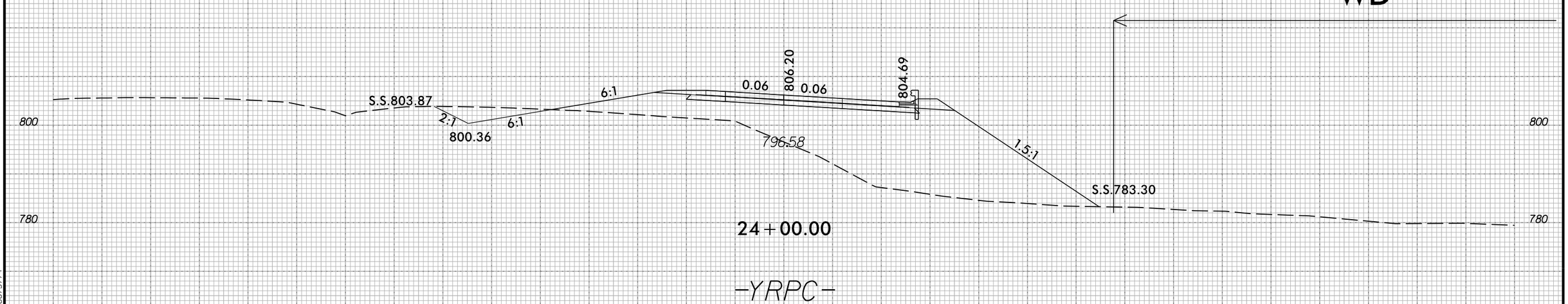
PROJ. REFERENCE NO.	SHEET NO.
I-3819	XA-261

PERMIT DRAWING
SHEET 55 OF 67

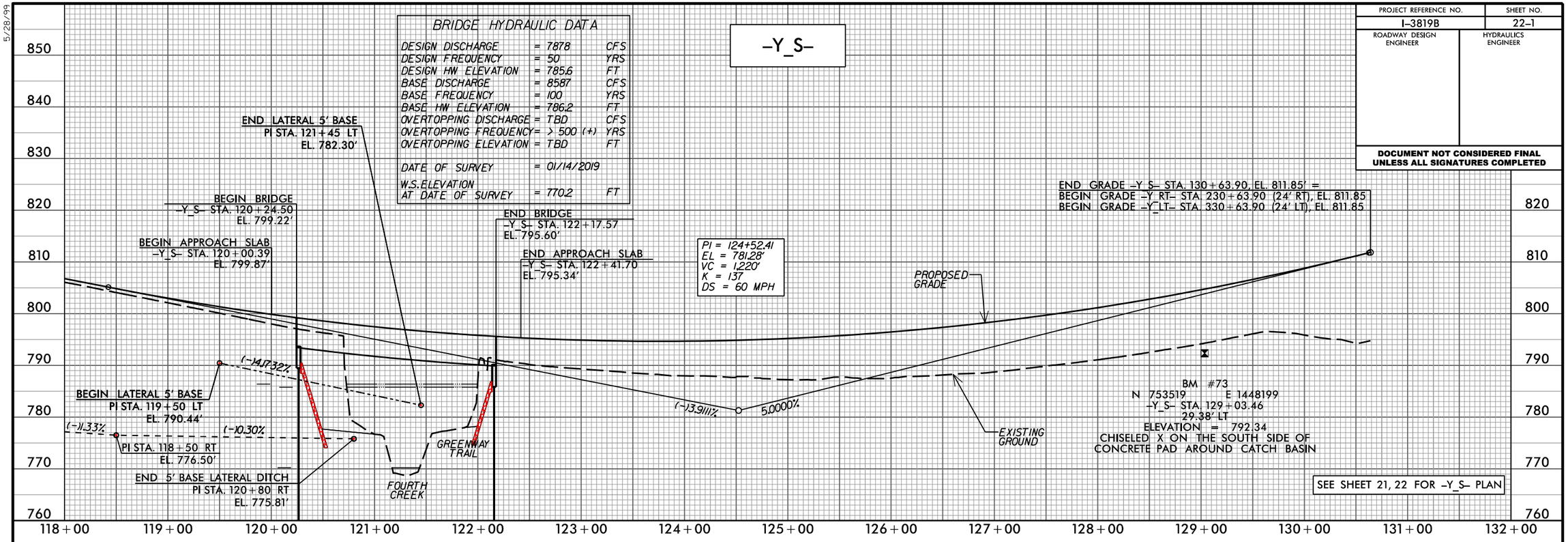


5/31/2019
USMG875/74

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22-1
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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PERMIT DRAWING
SHEET 56 OF 67

6/3/2019
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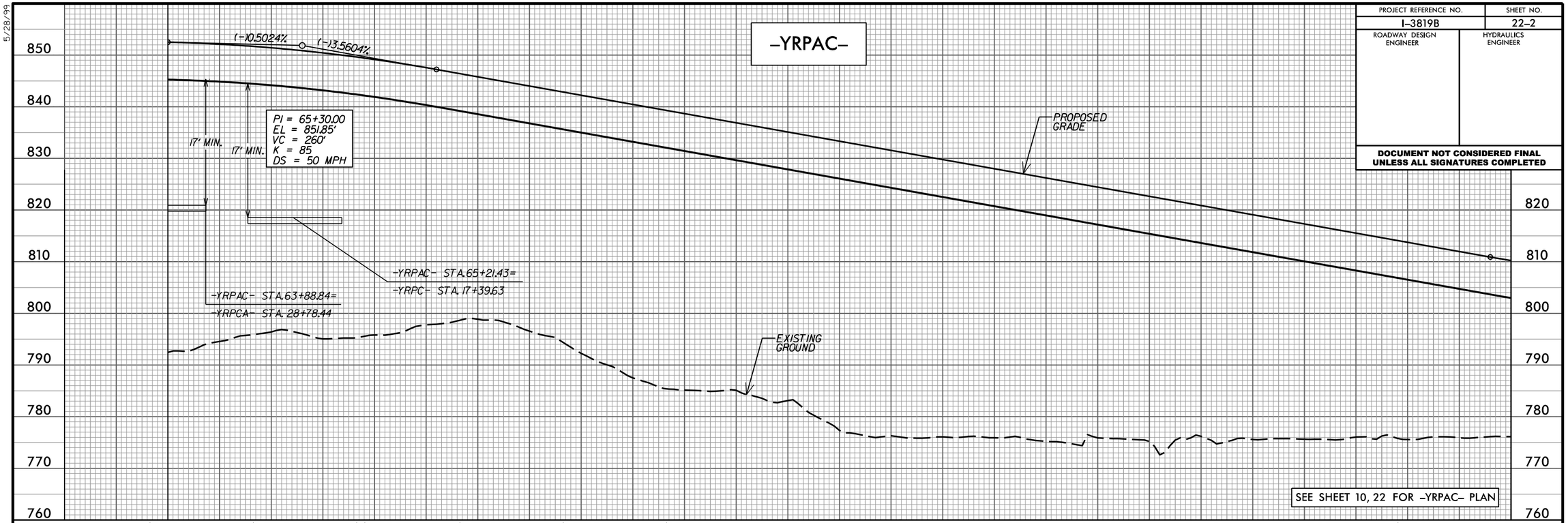
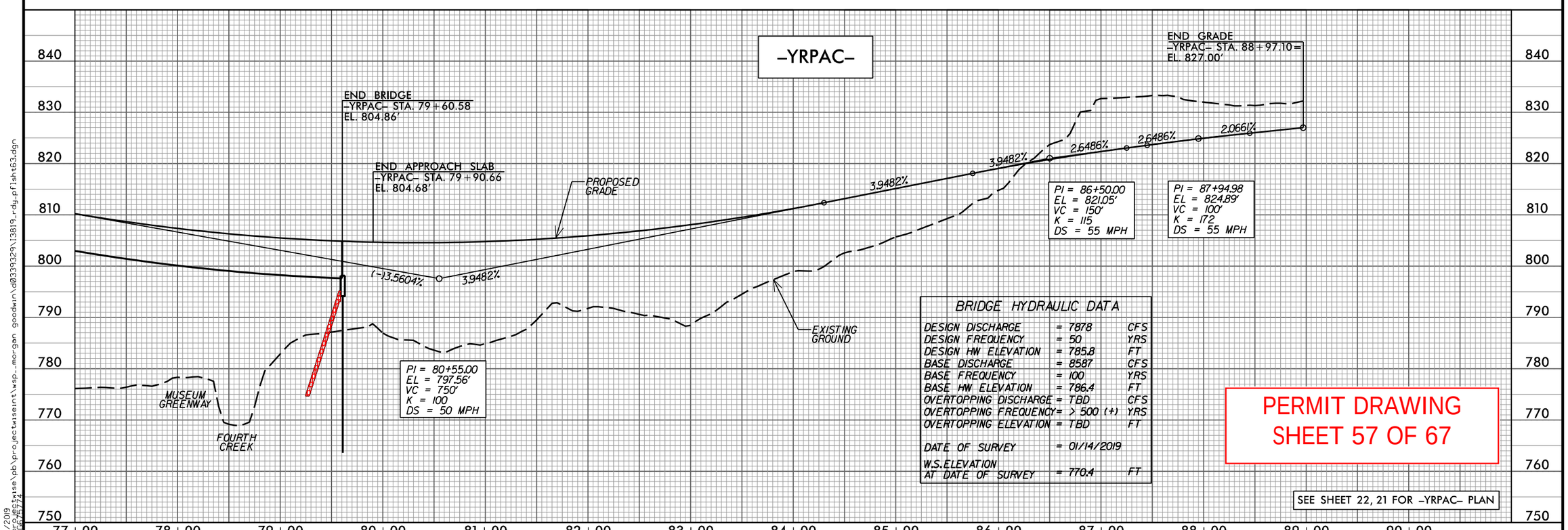
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22-2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 7878	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 785.8	FT
BASE DISCHARGE	= 8587	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 786.4	FT
OVERTOPPING DISCHARGE	= TBD	CFS
OVERTOPPING FREQUENCY	= > 500 (+)	YRS
OVERTOPPING ELEVATION	= TBD	FT
DATE OF SURVEY	= 01/14/2019	
W.S. ELEVATION AT DATE OF SURVEY	= 770.4	FT

PERMIT DRAWING
SHEET 57 OF 67

5/28/99

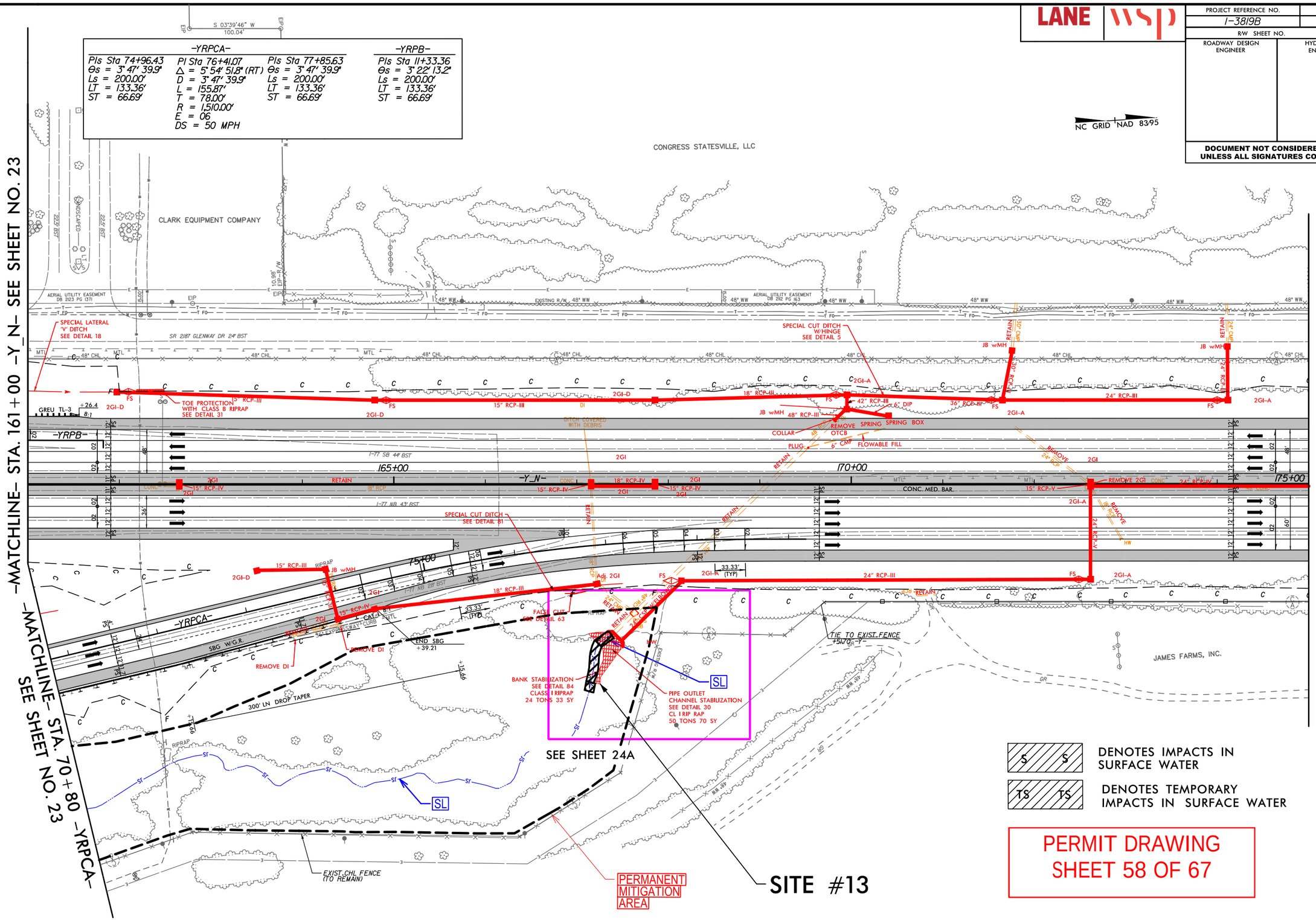
5/31/2019
C:\pwworking\wise\pb\projectwiseint\wsp__morgan goodwin\d0339329\I3819_rdy_pflsht63.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LANE | WSP

-YRPCA-			-YRPB-
PIs Sta 74+96.43	PI Sta 76+41.07	PIs Sta 77+85.63	PIs Sta 11+33.36
Θs = 3° 47' 39.9"	Δ = 5° 54' 51.8" (RT)	Θs = 3° 47' 39.9"	Θs = 3° 22' 13.2"
Ls = 200.00'	D = 3° 47' 39.9"	Ls = 200.00'	Ls = 200.00'
LT = 133.36'	L = 155.87'	LT = 133.36'	LT = 133.36'
ST = 66.69'	T = 78.00'	ST = 66.69'	ST = 66.69'
	R = 1,510.00'		
	E = 06		
	DS = 50 MPH		



PERMIT DRAWING
SHEET 58 OF 67

6/28/2009
D:\pcpacs01\ics_workingdir\17042\336415_108\3819_hyd_prm_psh24_Y16100-17500.dgn

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

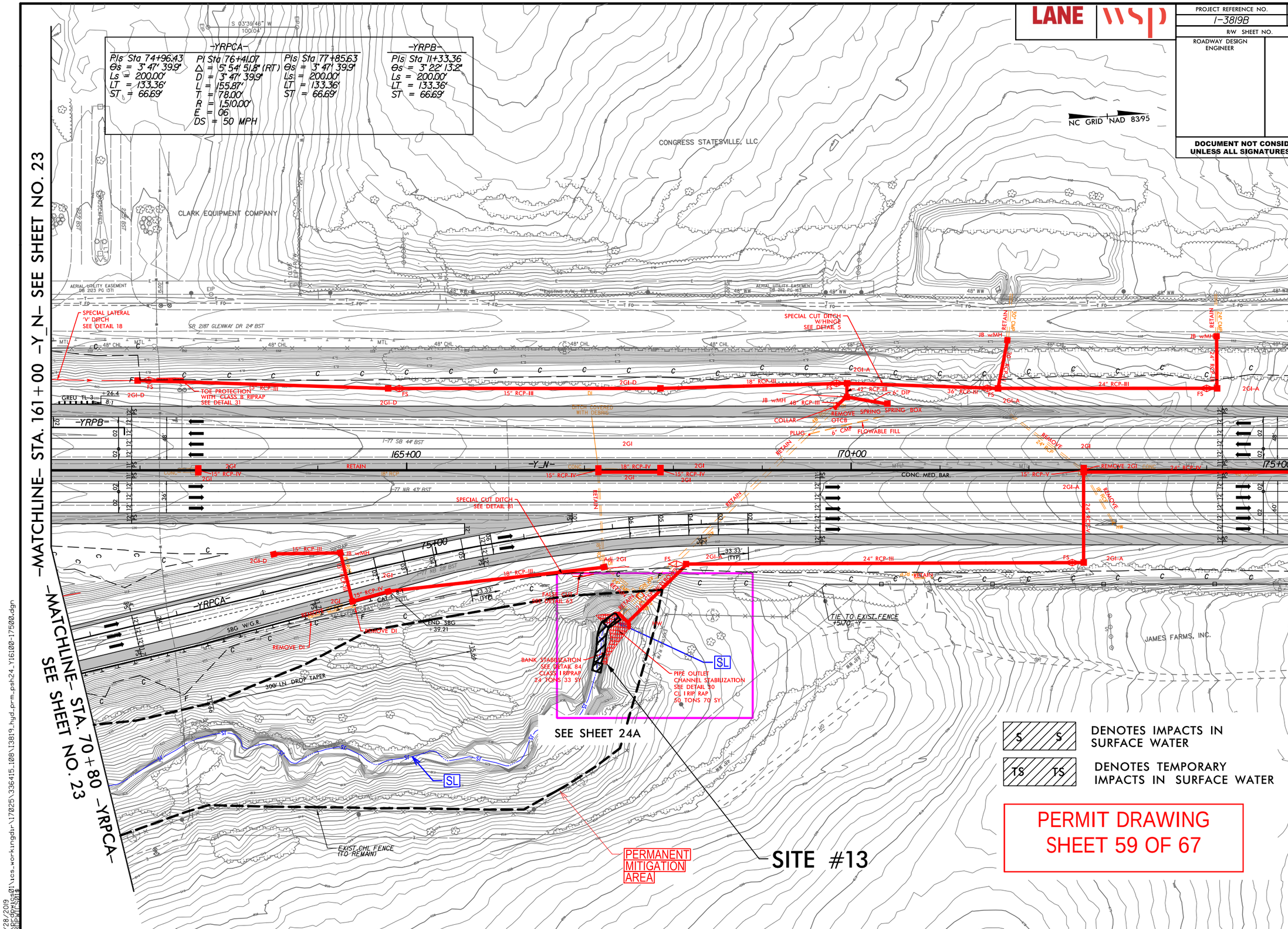
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-YRPCA-

PIs Sta 74+96.43	PI Sta 76+41.07	PIs Sta 77+85.63
Θs = 3° 47' 39.9"	Δ = 5° 54' 51.8" (RT)	Θs = 3° 47' 39.9"
Ls = 200.00'	D = 3° 47' 39.9"	Ls = 200.00'
LT = 133.36'	L = 155.87'	LT = 133.36'
ST = 66.69'	T = 78.00'	ST = 66.69'
	R = 1,510.00'	
	E = 06	
	DS = 50 MPH	

-YRPB-

PIs Sta 11+33.36
Θs = 3° 22' 13.2"
Ls = 200.00'
LT = 133.36'
ST = 66.69'



PERMIT DRAWING
SHEET 59 OF 67

6/28/2019
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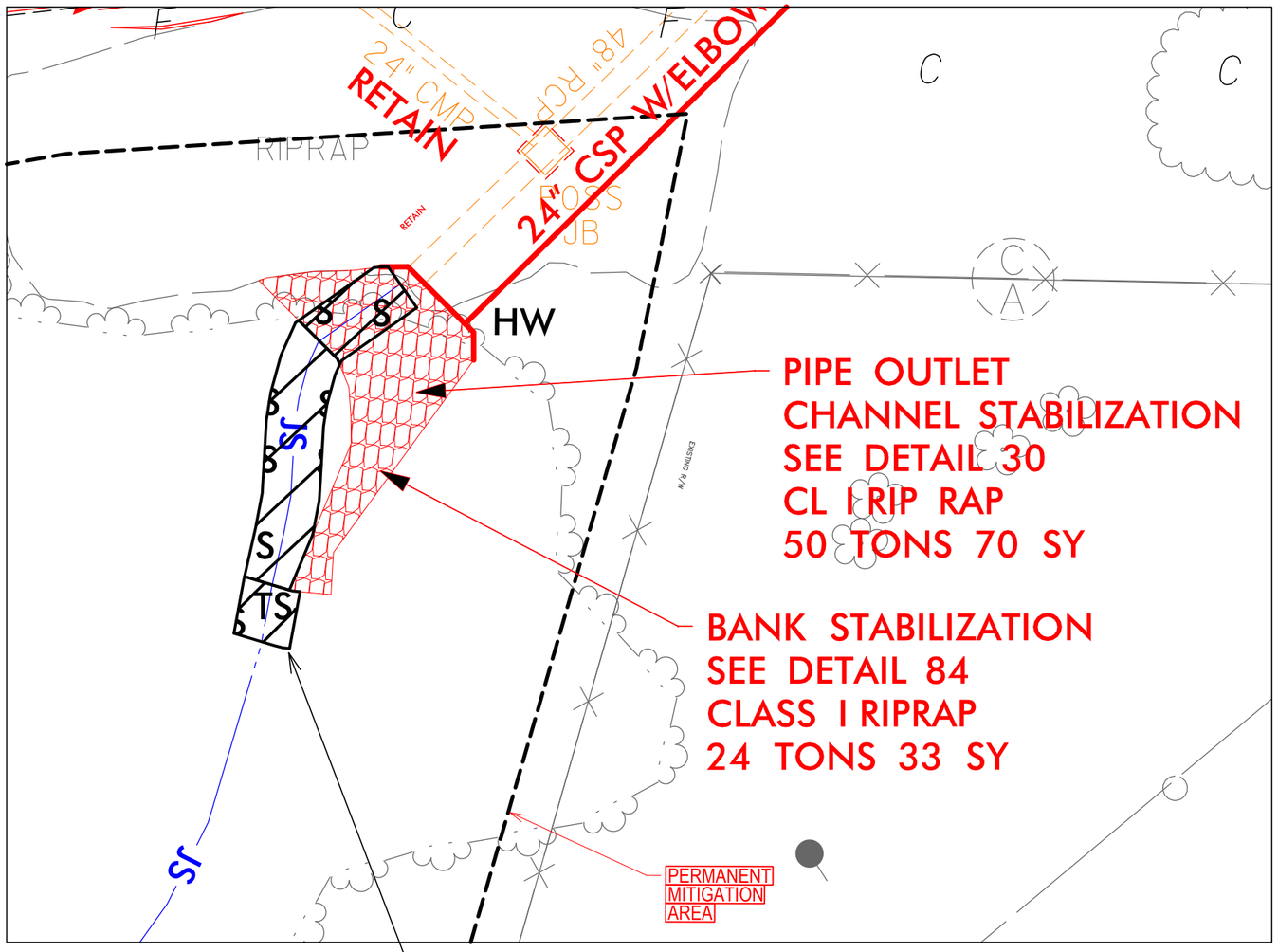
PBFWTC\$DIS

LANE | WSP

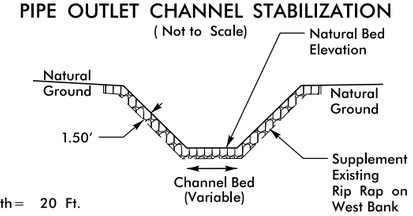
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	24A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SITE #13

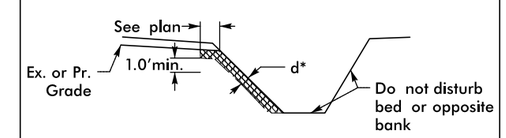
DETAIL 30
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length = 20 Ft.
Type of Liner = CL 1 Rip-Rap – Keyed-In (No Geotextile)

–Y_N– STA. 167 + 45

DETAIL 84
RIP RAP BANK STABILIZATION
(Not to Scale)



Type of Liner = CL 1 or CL 2 Rip Rap (see plan)
*d = 18" for CL 1 and 30" for CL 2 (No Geotextile)

–YRPCA– STA. 18 + 65 RT
–YRPCA– STA. 77 + 00 RT

NC GRID NAD 83/95

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 60 OF 67

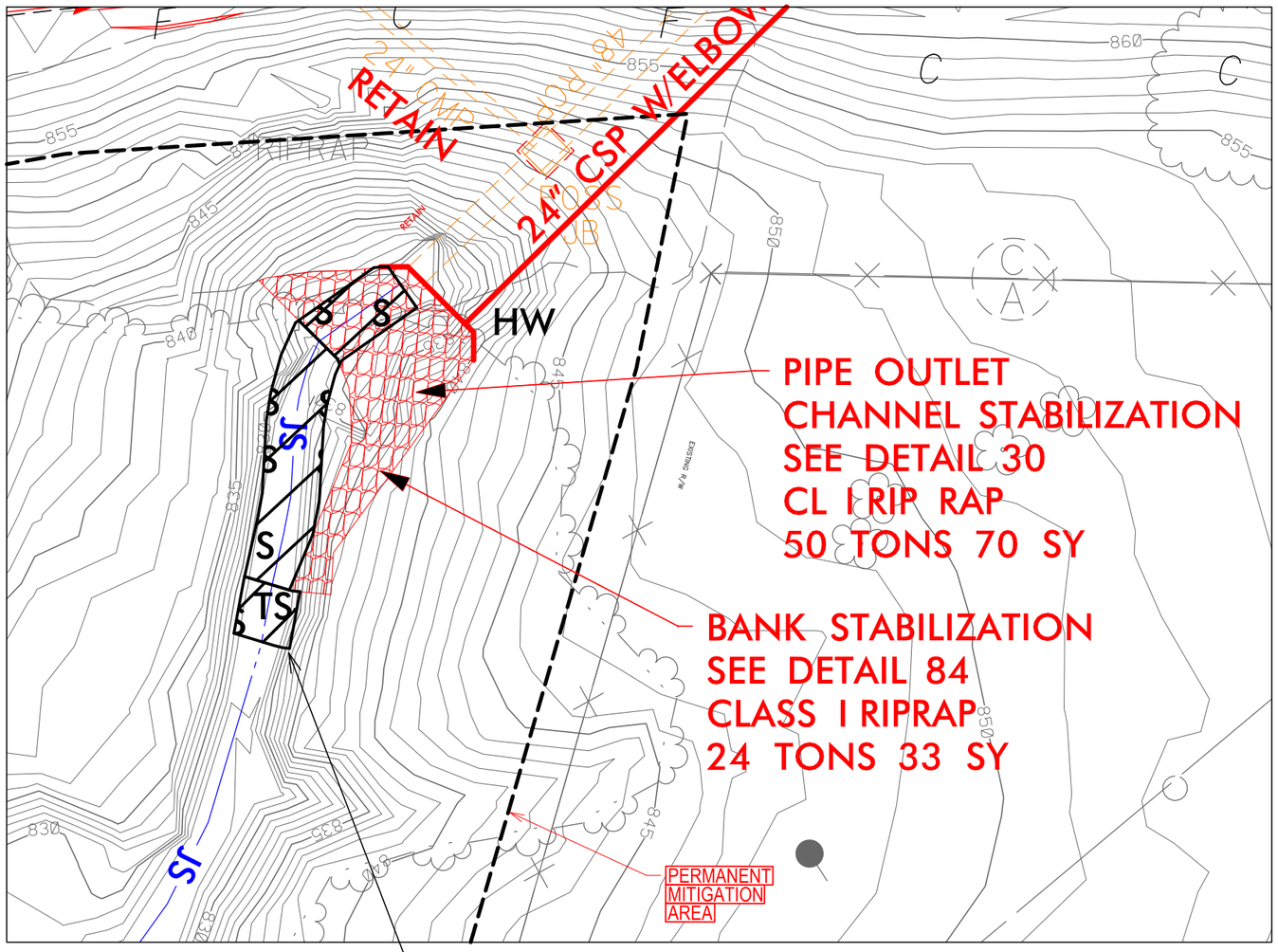
50 25 0 25 50
GRAPHIC SCALE – INSETS

7/12/2019
DGN: proj\cad01\ics_workingdir\18236\282468.127081\13819_hyd_prm_psh24A_Y16100-17500.dgn

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	24A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

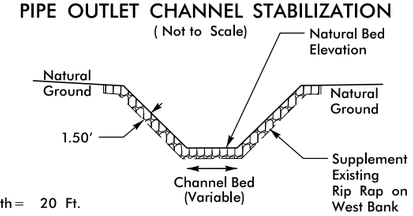


SITE #13

DETAIL 30

PIPE OUTLET CHANNEL STABILIZATION

(Not to Scale)



Length = 20 Ft.

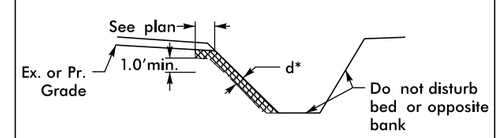
Type of Liner = CL 1 Rip-Rap – Keyed-In (No Geotextile)

–Y_N– STA. 167 + 45

DETAIL 84

RIP RAP BANK STABILIZATION

(Not to Scale)



Type of Liner = CL 1 or CL 2 Rip Rap (see plan)

*d = 18" for CL 1 and 30" for CL 2 (No Geotextile)

–YRPCA– STA. 18 + 65 RT

–YRPCA– STA. 77 + 00 RT

NC GRID NAD 83/95

S DENOTES IMPACTS IN SURFACE WATER

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 61 OF 67

50 25 0 25 50

GRAPHIC SCALE – INSETS

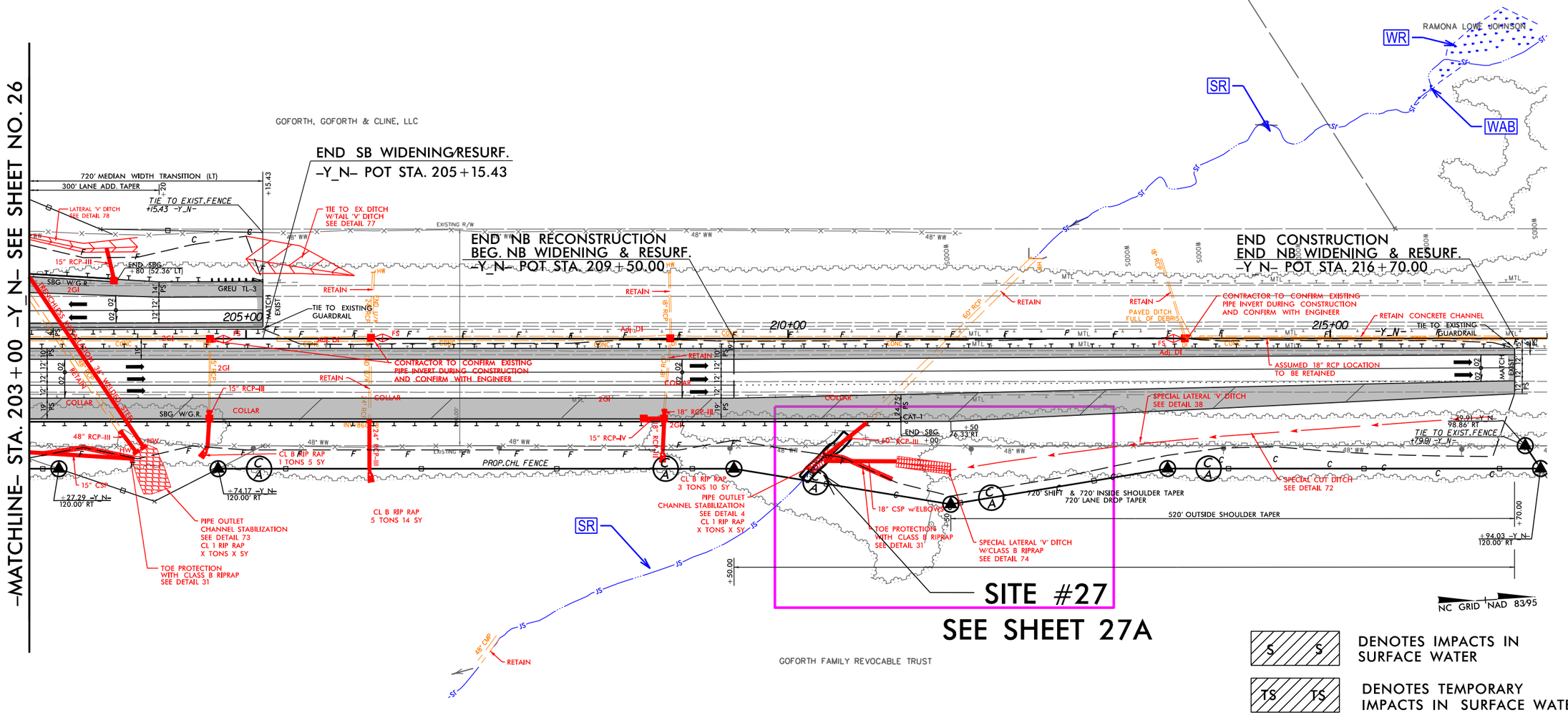
7/12/2019
DGN: proj\cad01\ics_workingdir\18225\282468.127022\13819_hyd-prm_psh24A_Y16100-17500.dgn

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



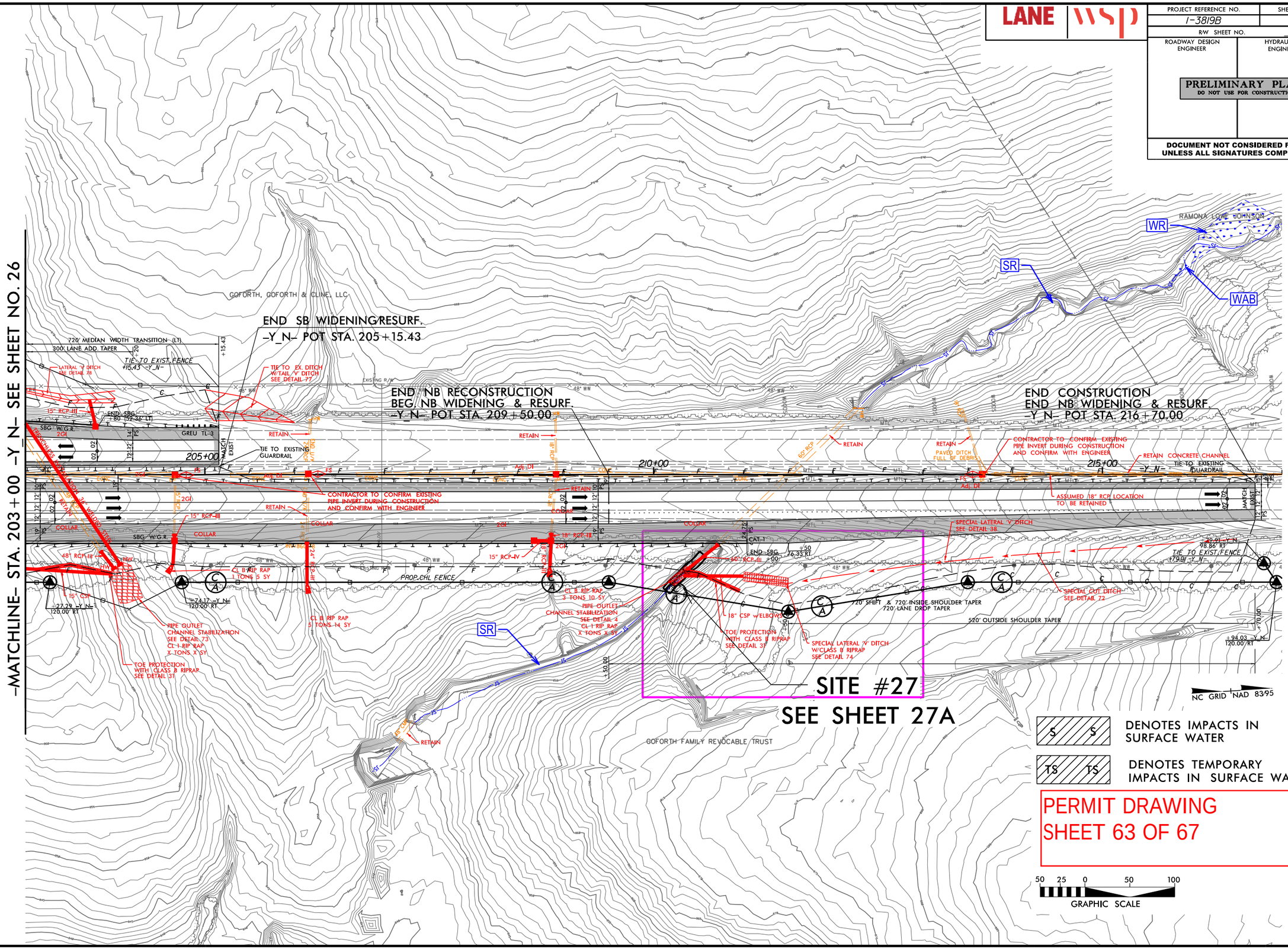
6/5/2019
$I3819B_PRELIM_SHEET_27.DGN

LANE | WSP

PROJECT REFERENCE NO.	SHEET NO.
I-3819B	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



6/5/2019
CIRCOMESTWISE\pbprojectwisent\wsp__morgan.goodwin\d0339329\I3819_hyd_prm_psh27_Y20300-217000.dgn
USMAS 22.7.4

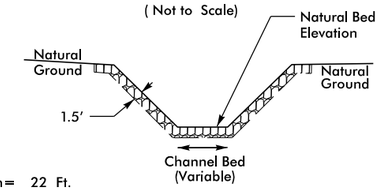
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	27A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL 4

PIPE OUTLET CHANNEL STABILIZATION

(Not to Scale)



Length= 22 Ft.

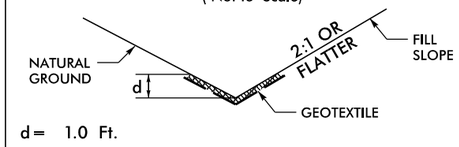
Type of Liner= CL 1 Rip-Rap - Keyed-In (No Geotextile)

-YRPC- STA. 16+04
-Y_N- STA. 210+35 RT

DETAIL 31

TOE PROTECTION

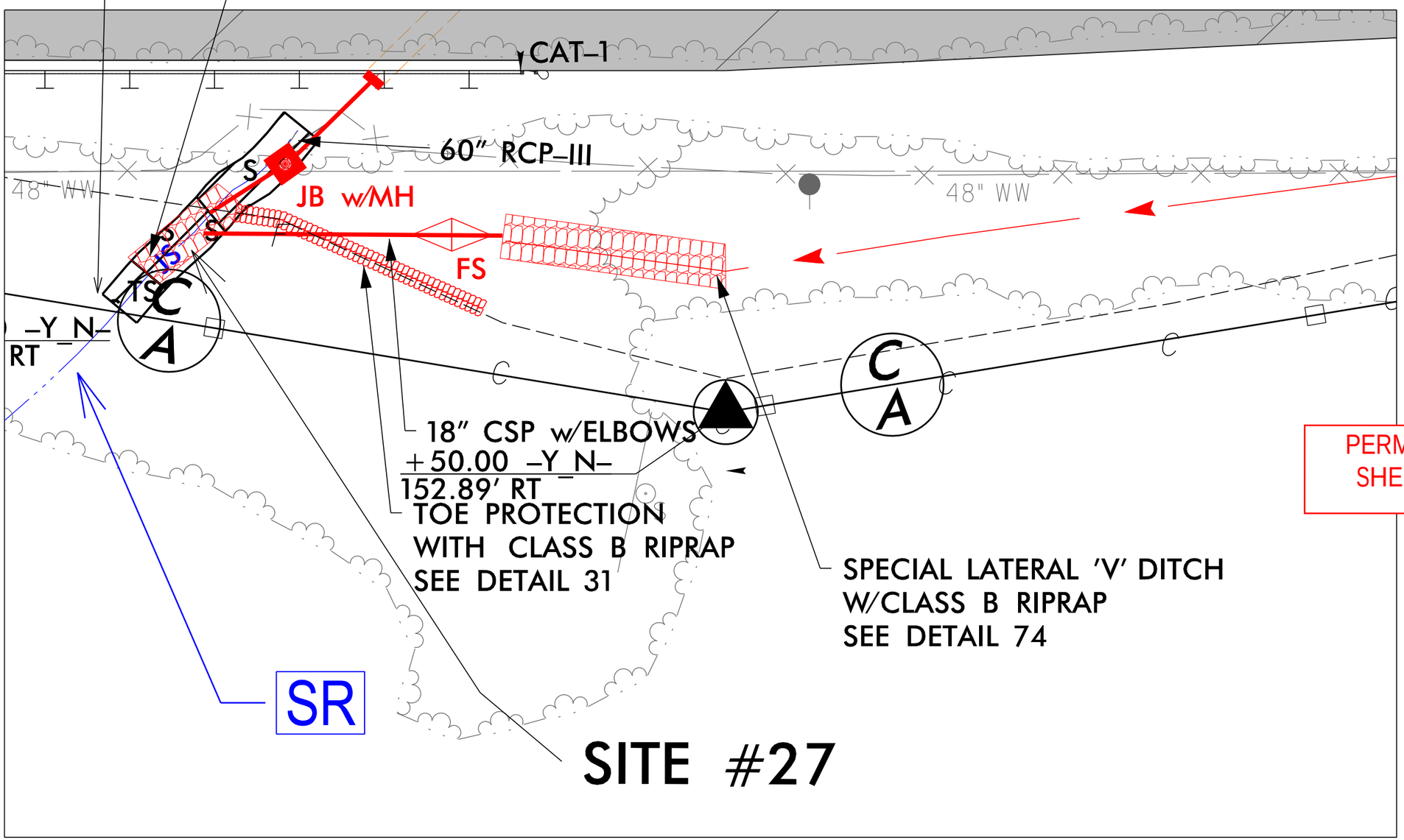
(Not to Scale)



d= 1.0 Ft.

Type of Liner= Class B Rip-Rap

INSET



PERMIT DRAWING
SHEET 64 OF 67

NC GRID NAD 83/95

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 25 50

GRAPHIC SCALE - INSETS

07/12/19
c:\projectwise\pb\projectwiseint\becker_jw\d0339329\I3819_hyd_prm_psh27A_Y20300-21700.dgn

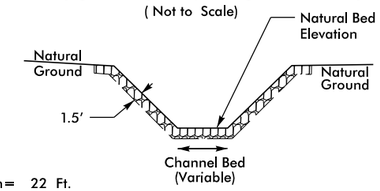
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	27A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL 4

PIPE OUTLET CHANNEL STABILIZATION

(Not to Scale)



Length= 22 Ft.

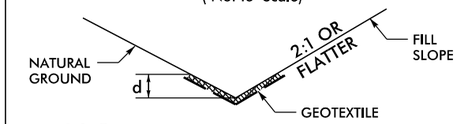
Type of Liner= CL 1 Rip-Rap - Keyed-In (No Geotextile)

-YRPC- STA. 16+04
-Y_N- STA. 210+35 RT

DETAIL 31

TOE PROTECTION

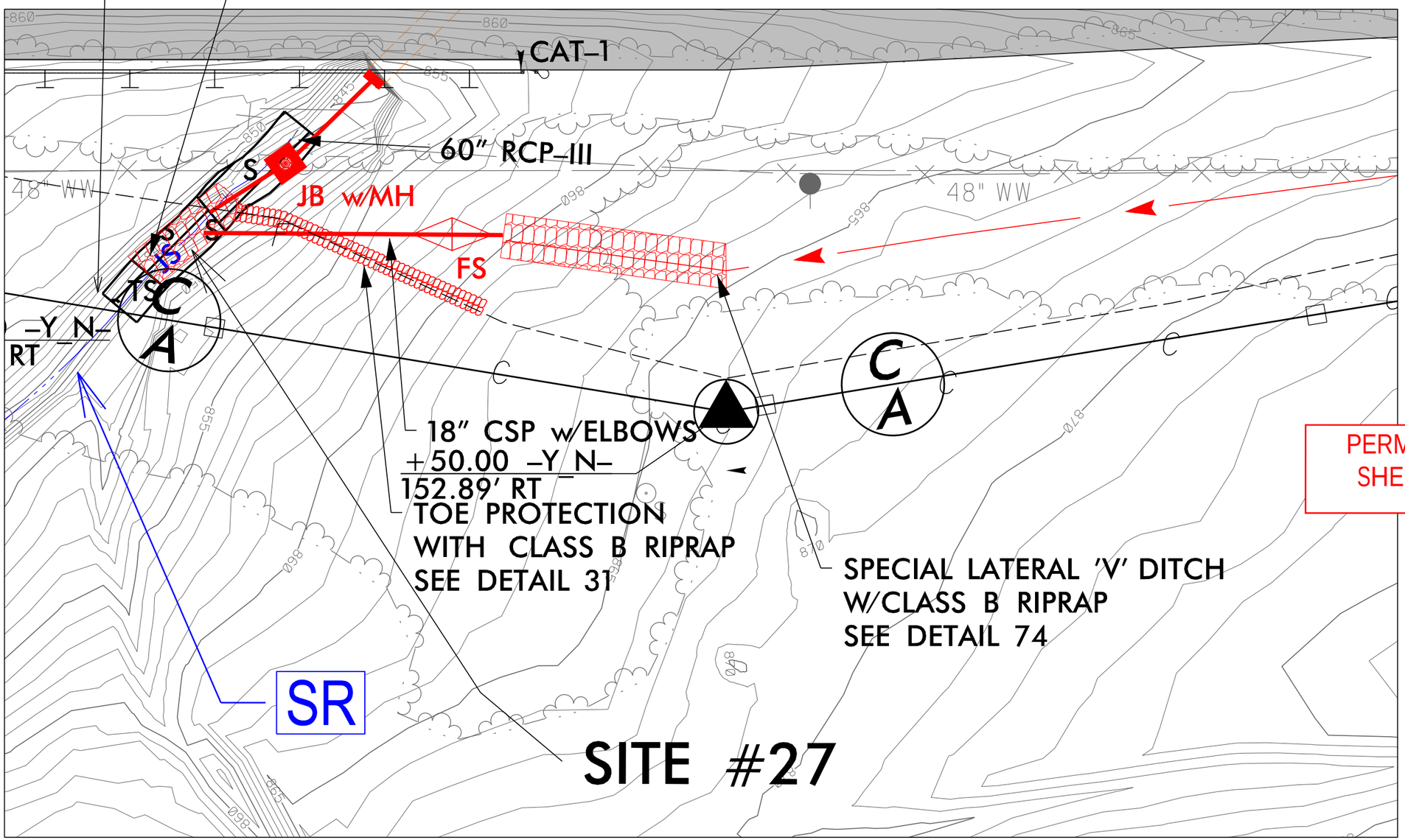
(Not to Scale)



d= 1.0 Ft.

Type of Liner= Class B Rip-Rap

INSET



PERMIT DRAWING
SHEET 65 OF 67

07/12/19
c:\projectwise\pb\projectwisemt\becker_jw\d0339329\I3819_hyd_prm_psh27A_Y20300-21700.dgn
Becker, JW

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	Site 1 Eliminated											
2	14+00 -21+50-YRPCA-	Roadway Fill	0.32			0.09						
2	16+70 - 21+50-YRPCA-	Bridge/Stream Bank Stabilization	0.02			0.02	0.62	< 0.01	< 0.01	42	20	
3	15+75-YRPC-	Roadway Fill	< 0.01			0.01		0.02	< 0.01	206	10	
4	24+00-YRPC-	Roadway Fill				0.02						
5	70+00 - 76+25 -YRPAC-	Bridge	0.03			0.05	1.94					
5	70+00 - 73+85 -YRPAC-	Temporary Pipe							< 0.01		40	
6	121+50-Y_LT-	Stream Bank Stabilization						< 0.01	< 0.01	12	20	
7	120+90-Y_RT-	Stream Bank Stabilization						< 0.01	< 0.01	12	20	
8	19+00-YRPDB-	Roadway Fill	< 0.01			< 0.01						
9	28+50 - 34+00-YRPAC-	Roadway Fill	0.40			0.08		0.07	< 0.01	747	10	
10	28+00-YRPAC-	Stream Bank Stabilization						< 0.01	< 0.01	25	20	
11	27+50 - 26+50-YRPAC	Roadway Fill	0.19			0.02						
12	149+00-150+00-L-	Bridge						< 0.01	0.01	10	54	
13	167+00-Y_RT-	Stream Bed Stabilization						< 0.01		17		
13	167+00-Y_RT-	Stream Bank Stabilization						< 0.01	< 0.01	44	10	
14	28+50-Y-	Stream Bed Stabilization						< 0.01	< 0.01	17	10	
15	33+75-Y-	Stream Bank Stabilization						< 0.01	< 0.01	11	20	
16	37+10-37+20-Y-	54" RCP Extension						< 0.01		13		
16	35+90-37+10-Y-	Stream Bed Stabilization						< 0.01	< 0.01	99	10	
17	37+70-37+80-Y-	54" RCP Extension						< 0.01		17		
17	37+80-38+50-Y-	Stream Bed Stabilization						0.01	< 0.01	98	14	
18	47+50-Y-	54" RCP Extension						< 0.01		39		
18	47+50-Y-	Stream Bed Stabilization						< 0.01	< 0.01	33	10	
SHEET 66 SUBTOTALS*:			0.97			0.29	2.56	0.16	0.04	1442	268	

*Rounded totals are sum of actual impacts for sites listed on Sheet 66. See Sheet 67 for project total.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
06/05/2019
IREDELL
TIP NO. I-3819B
WBS NO.

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
19	46+00-Y-	54" RCP Extension						< 0.01		34		
20	68+50-Y-	New Channel						< 0.01	< 0.01	13	10	
20	68+50-Y-	Roadway Fill						< 0.01		48		
21	70+20-Y-	3@9'X11" RCBC Extension						0.02		39		
21	69+20-70+20-Y-	Stream Bed Stabilization						0.05	< 0.01	137	21	
22	71+30-71+90-Y-	3@9'X11" RCBC Extension						< 0.01		45		
22	71+90-72+89-Y-	Stream Bed Stabilization						0.05		160		
22	72+89-75+10-Y-	New Channel						0.07		225		
22	75+10-83+59-Y-	Stream Bank Stabilization						0.23		873		
22	83+59-84+00-Y-	Stream Bed Stabilization						0.01	< 0.01	37	10	
23	87+70-Y-	Roadway Fill							< 0.01		33	
24	93+75-Y-	66" RCP Extension						< 0.01	< 0.01	49	10	
25	94+50-Y-	66" RCP Extension						< 0.01		10		
25	94+50-Y-	Stream Bed Stabilization						< 0.01	< 0.01	34	32	
26	116+70-120+10-Y-	Roadway Fill	0.09			0.04						
27	210+00-Y-	60" RCP Extension						< 0.01		29		
27	210+00-Y-	Stream Bed Stabilization						< 0.01	< 0.01	19	10	
SHEET 66 SUBTOTAL			0.97	0.00	0.00	0.29	2.56	0.16	0.04	1442	268	0
SHEET 67 SUBTOTAL			0.09	0.00	0.00	0.04	0.00	0.47	0.03	1752	126	0
PROJECT TOTALS*:			1.06	0.00	0.00	0.33	2.56	0.63	0.07	3194	394	0.00

*Rounded totals are sum of actual impacts for entire project area

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
06/05/2019
IREDELL
TIP NO. I-3819B
WBS NO.

Revised 2018 Feb

09/08/99

TIP PROJECT: I-3819B/U-6039

PROJECT: 34192.1.2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

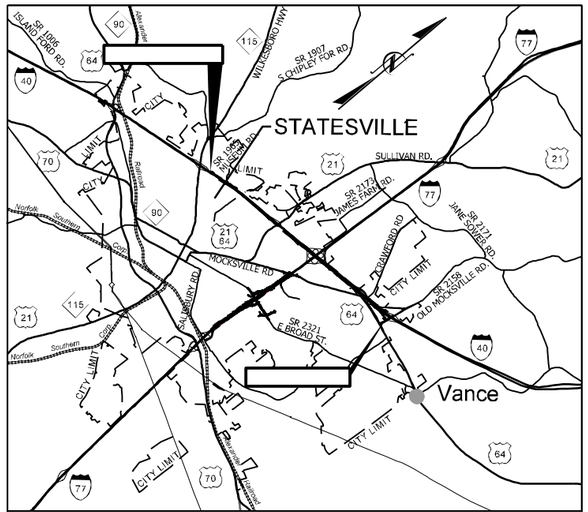
IREDELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-3819B/U-6039	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34192.1.2	IMS-40-2(124)	P.E.
34192.3.2	N/A	DESIGN BUILD

LOCATION: I-40/I-77 INTERCHANGE INCLUDING I-40 FROM WEST OF SR 2003 (RADIO RD.) TO SR 2158 (OLD MOCKSVILLE RD.) & I-77 FROM SOUTH OF SR 2321 (EAST BROAD ST.) TO SOUTH OF SR 2171 (JANE SOWERS RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, RETAINING WALLS, NOISE WALLS, AND TRAFFIC CONTROL



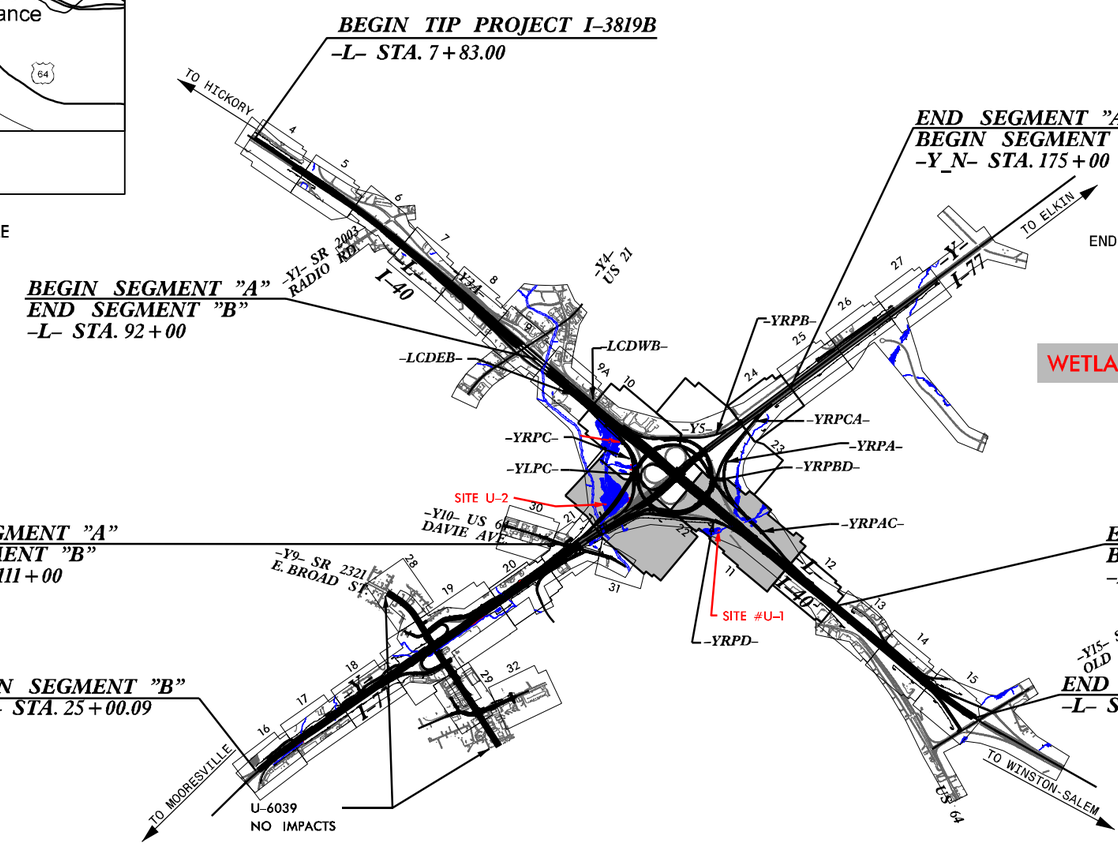
VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF STATESVILLE AND THE TOWNSHIP OF BETHANY

100 50 0 100 200
PLANS

200 100 0 200 400
OVERSIZED PLANS

SCALE VARIES
INSETS



WETLAND AND SURFACE WATER IMPACT PERMITS

DATE: JULY 8, 2019
(Note: The sites highlighted in RED are included in this submittal.)

UTILITY PERMIT DRAWING
SHEET 1 OF 8

LANE

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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

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

GRAPHIC SCALES

SEE ABOVE

DESIGN DATA

		I-40	I-77
ADT 2018	=	57,300	62,900
ADT 2040	=	72,500	77,500
DHV	=	5,800	6,200
D	=	55 %	55 %
T	=	16 % *	19 % **
V	=	60 MPH	60 MPH

* TTST 13 + DUAL 3 (I-40)
** TTST 16 + DUAL 3 (I-77)
CLASSIFICATION: INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-3819B	=	3.885
LENGTH STRUCTURES TIP PROJECT I-3819B	=	0.124
TOTAL LENGTH OF TIP PROJECT I-3819B	=	4.009

Prepared In the Office of:
WSP
1001 Morehead Square Dr., Suite 610, Charlotte, NC 28203
NC LIC NO. F-0165

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 30, 2018

LETTING DATE: OCTOBER 30, 2018

CHRISTOPHER D. DAVIS, P.E.
PROJECT ENGINEER

ERIC W. SECKINGER, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

7/8/2019
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Gupton

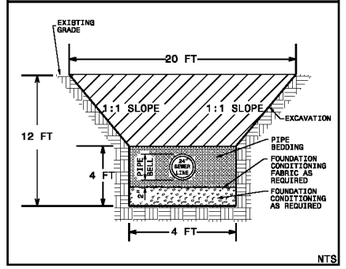
UTILITY PERMIT DRAWING
SHEET 2 OF 8

PROJECT REFERENCE NO.	SHEET NO.
I-5898	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

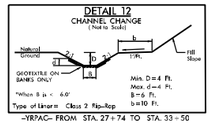
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

24" GRAVITY SEWER LINE TRENCH DETAIL



DETAIL 12
CHANNEL CHANGE
(Not to Scale)



Type of Linar= Class 2 Rip-Rap

-YRPAC- FROM STA. 27+74 TO STA. 33+50

-MATCHLINE- SEE SHEET NO. 23

-MATCHLINE- STA. 135+50.00 -L- SEE SHEET NO. 10

-MATCHLINE- STA. 164+50.00 -L- SEE SHEET NO. 12

PROP. 6' DIA. MANHOLE D1
STA. 12+76 SEWER LINE 1
STA. 27+75.03
186.18' RT OF LINE -YRPAC-

PROP. 90' OF 24" SANITARY GRAVITY SEWER (RJ DI, PC 350)

PROP. 6' DIA. MANHOLE C1
STA. 9+86 SEWER LINE 1
STA. 28+83.19
163.93' RT OF LINE -YRPAC-

PROP. 856' OF 24" SANITARY GRAVITY SEWER (RJ DI, PC 350)

PROP. 6' DIA. MANHOLE A1
STA. 0+00 SEWER LINE 1
STA. 32+50.00
218.21' RIGHT OF LINE -YRPD-

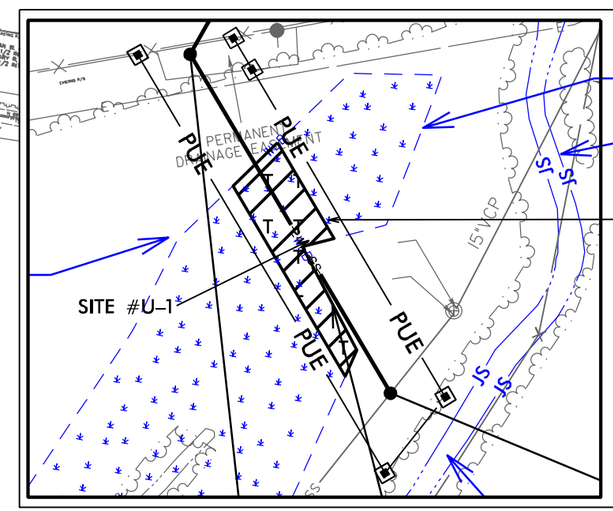
PROP. 130' OF 24" SANITARY GRAVITY SEWER (RJ DI, PC 350)

PROP. 6' DIA. MANHOLE B1
STA. 1+20 SEWER LINE 1
STA. 31+58.68
91.73' RIGHT OF LINE -YRPD-

SEE INSET

DENOTES FILL IMPACTS IN WETLANDS

INSET



DENOTES TEMPORARY FILL IN WETLAND

25 12.5 0 25 50
GRAPHIC SCALE - INSET

LOCATION: I-10 at I-77 INTERCHANGE (EAST)

TIP NO.: I-5898 COUNTY: BRUNSWICK

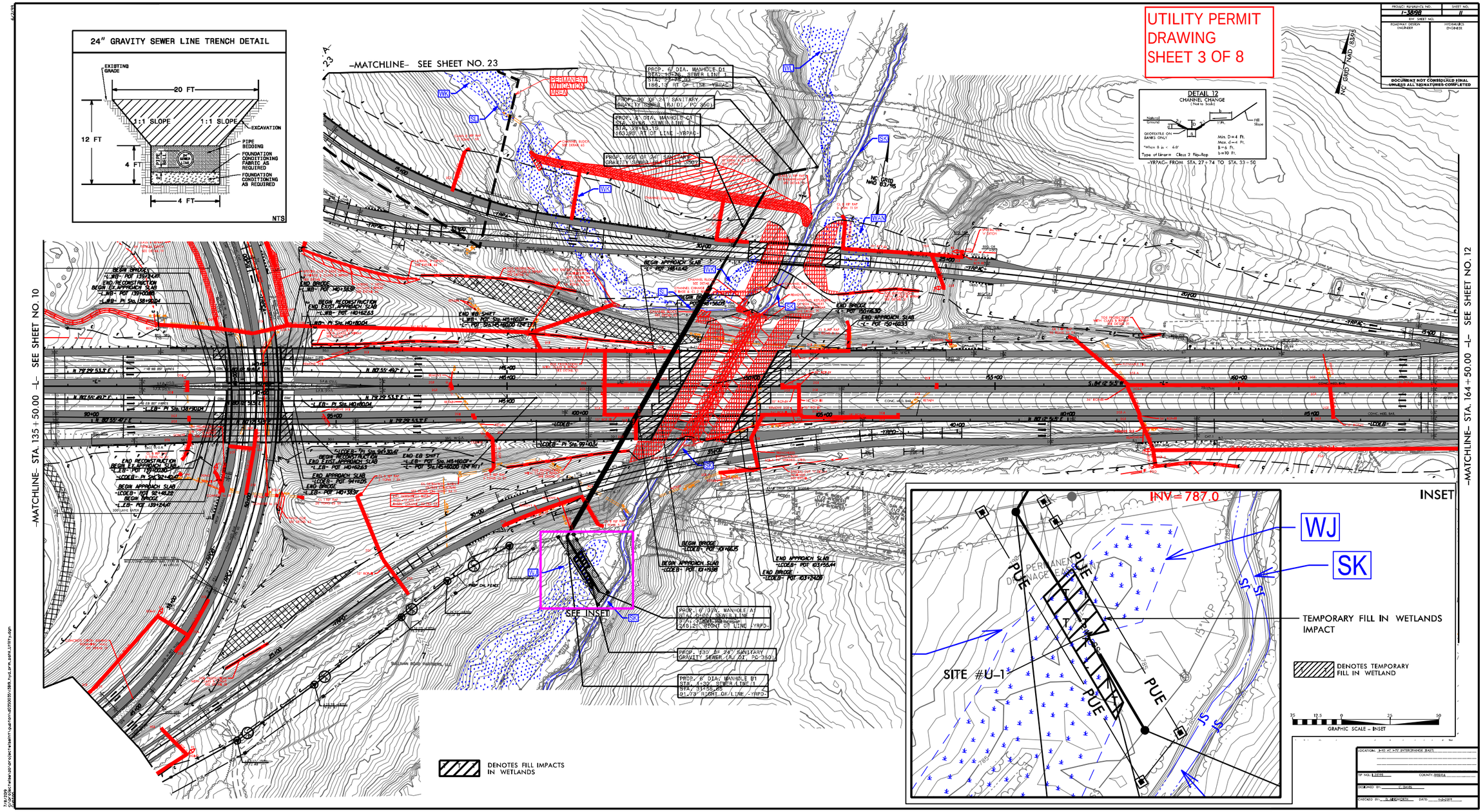
DESIGNED BY: K. DAVIS

CHECKED BY: R. ARMSWORTH DATE: 6-26-2017

UTILITY PERMIT DRAWING SHEET 3 OF 8

PROJECT REFERENCE NO.	SHEET NO.
I-3589	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

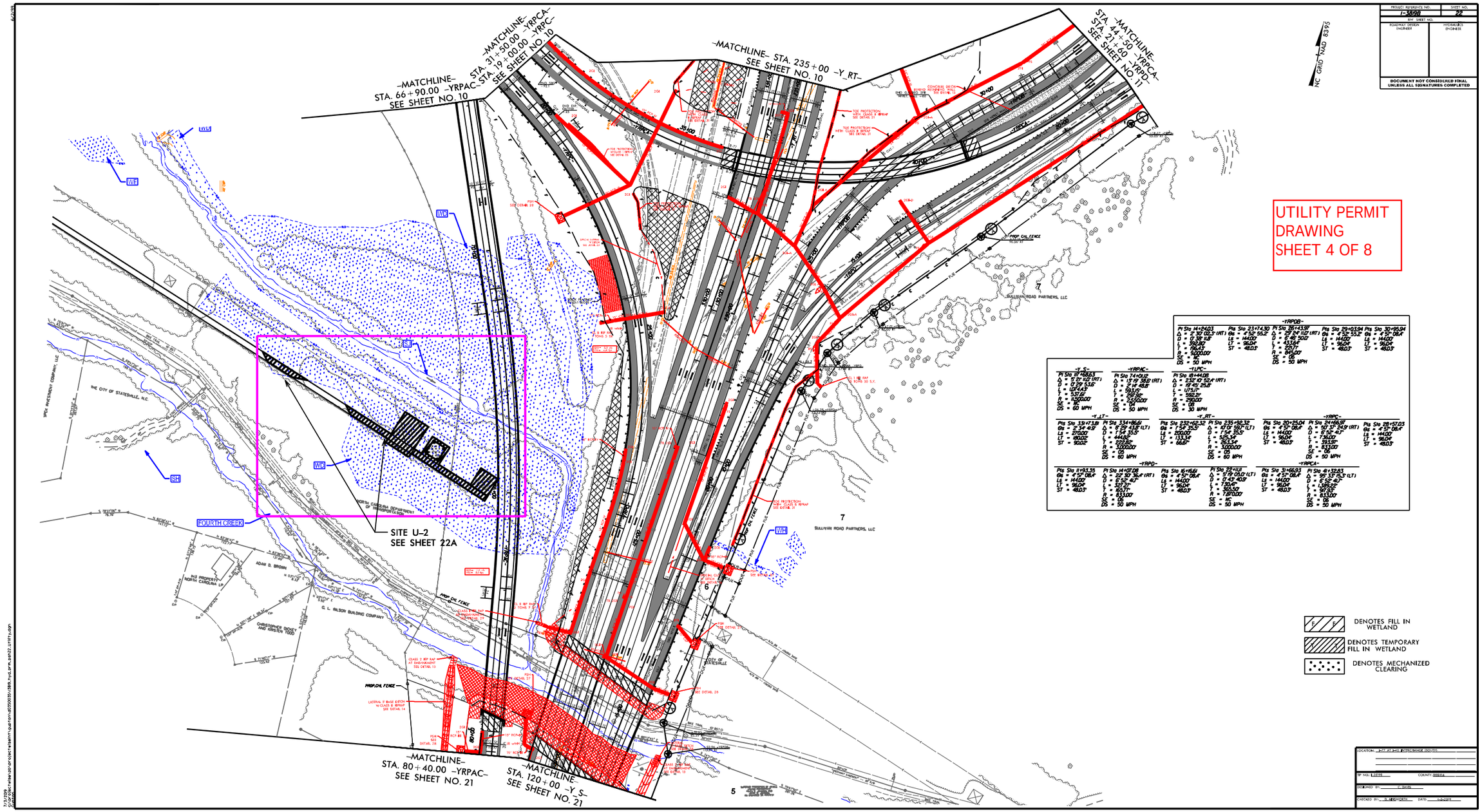


LOCATION: I-40 AT I-77 INTERCHANGE (EAST)

TIP NO. I-3589 COUNTY: IREDELL

DESIGNED BY: C. Davis

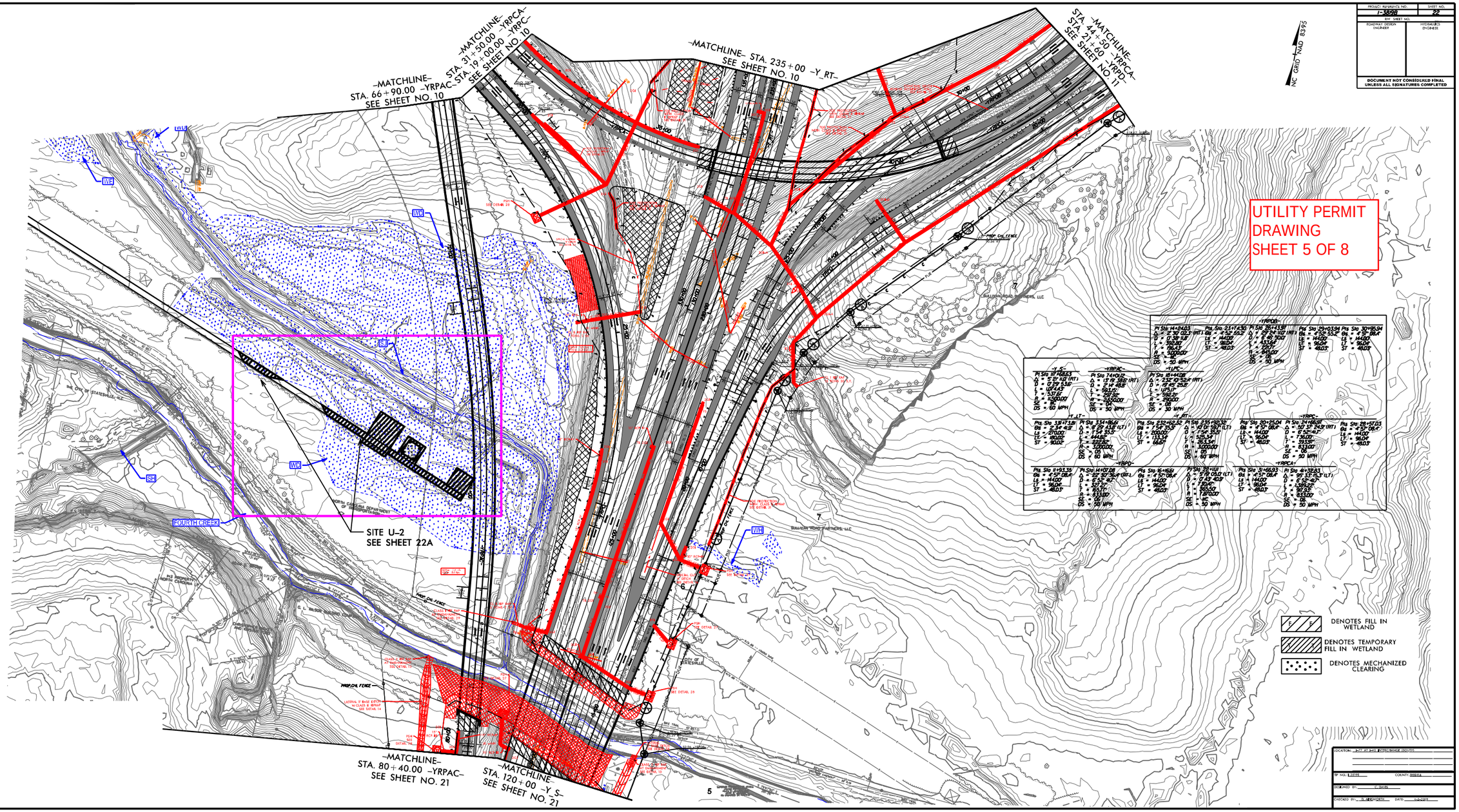
CHECKED BY: D. Arrington DATE: 6-6-2017


-MATCHLINE-
STA. 66+90.00 -YRPAC-
SEE SHEET NO. 10
-MATCHLINE-
STA. 31+50.00 -YRPCA-
STA. 19+00.00 -YRPC-
SEE SHEET NO. 10
-MATCHLINE- STA. 235+00 -Y_RT-
SEE SHEET NO. 10
-MATCHLINE-
STA. 41+50 -YRPCA-
STA. 21+80 -YRPD-
SEE SHEET NO. 11
-MATCHLINE-
STA. 80+40.00 -YRPAC-
SEE SHEET NO. 21
-MATCHLINE-
STA. 120+00 -Y_S-
SEE SHEET NO. 21
SITE U-2
SEE SHEET 22A
FOURTH CREEK
THE CITY OF STATESVILLE, N.C.
SULLIVAN ROAD PARTNERS, LLC
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ADAM D. BROWN
G. L. WILSON BUILDING COMPANY
CHRISTOPHER, RICKEY AND KRISTEN FORD
PROP. CHL FENCE
NC GRID NAD 83/95
UTILITY PERMIT
DRAWING
SHEET 4 OF 8
DENOTES FILL IN WETLAND
DENOTES TEMPORARY FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PROJECT REFERENCE NO. I-5898
SHEET NO. 22
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
LOCATION: I-77 AT I-40 INTERCHANGE SOUTH
TIP NO. I-5898
COUNTY: IREDELL
DESIGNED BY: C. DAVIS
CHECKED BY: D. ARMSWORTH
DATE: 6-26-2019

PROJECT REFERENCE NO.	SHEET NO.
I-5508	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95



LOCATION: HWY 21 AT NEW INTERCHANGE (SOUTH)

TIP NO. I-5508 COUNTY: IREDELL

DESIGNED BY: C. DAVIS

CHECKED BY: D. ARSWORTH DATE: 6/26/2012

7/1/2009
C:\pwworking\ren\ren\ren

LANE | WSP

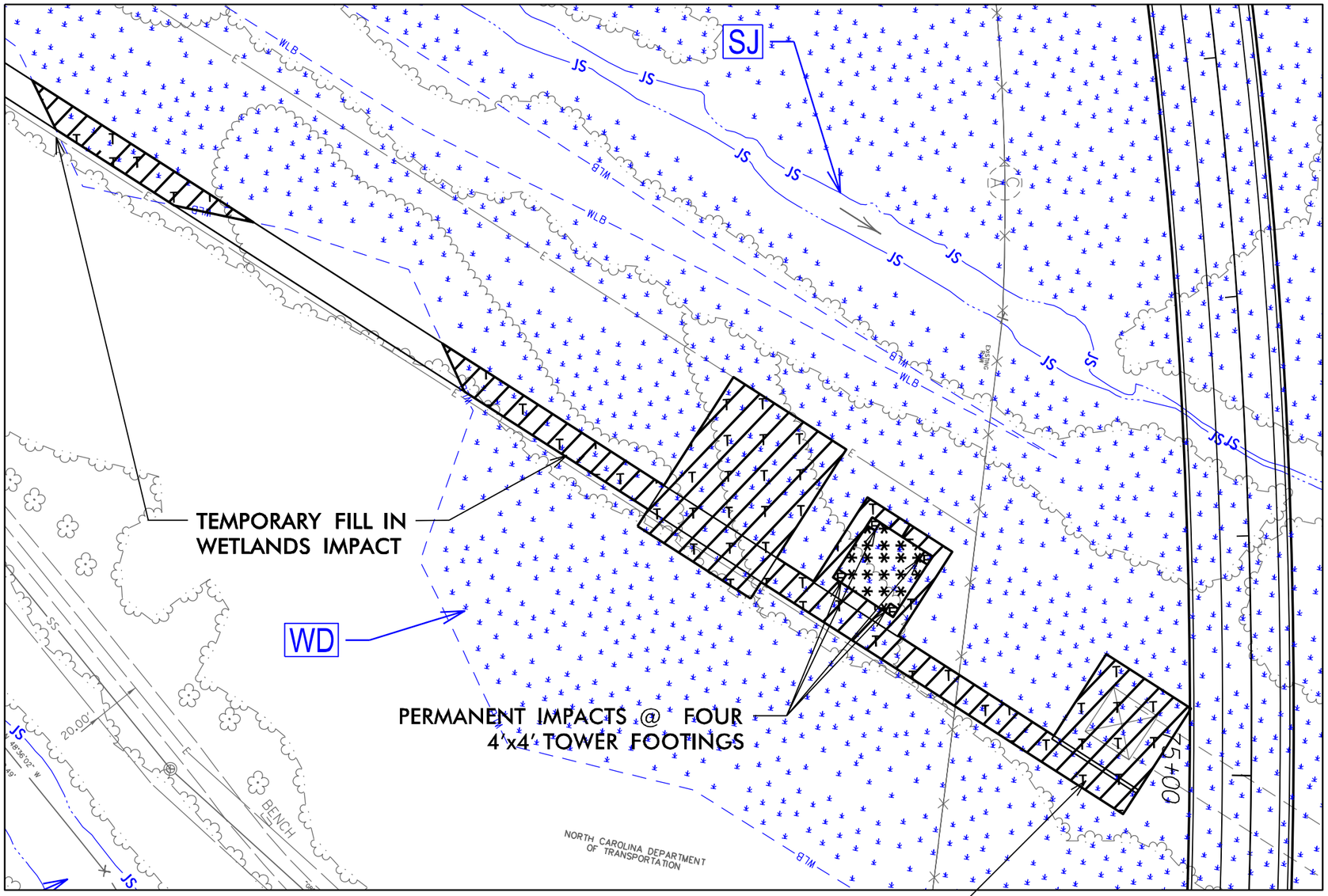
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY PERMIT DRAWING
SHEET 6 OF 8

SITE U–2 INSET



NC GRID NAD 83/95

F F DENOTES FILL IN WETLAND

T T DENOTES TEMPORARY FILL IN WETLAND

DENOTES MECHANIZED CLEARING

50 25 0 25 50
GRAPHIC SCALE – INSETS

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Gupton

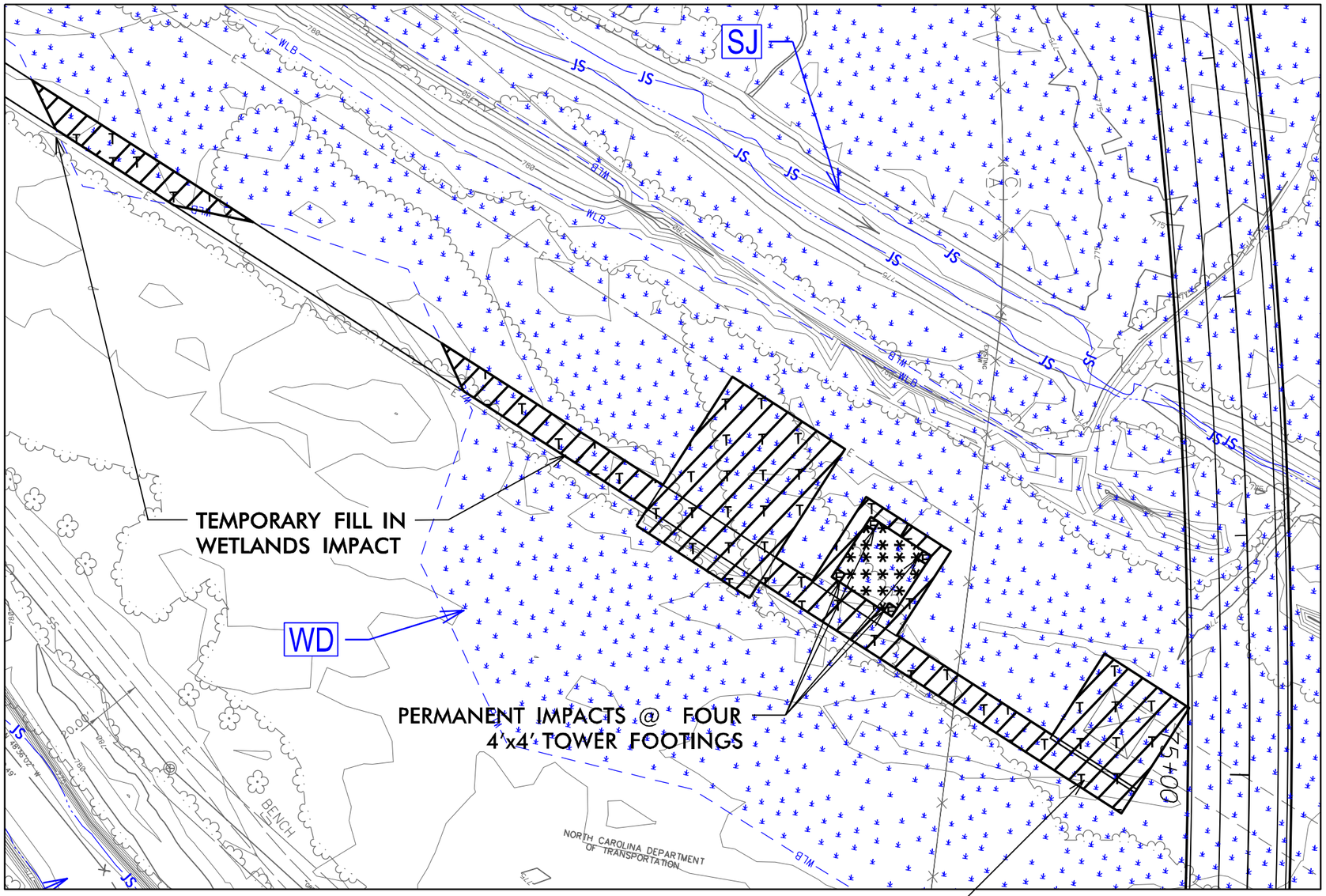
PROJECT REFERENCE NO.	SHEET NO.
I-3819B	22A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY PERMIT DRAWING
SHEET 7 OF 8

SITE U–2 INSET



AREA WITHIN 50' OF BRIDGE ALSO COUNTED AS HAND–CLEARING IMPACT IN ROADWAY & DRAINAGE PERMIT PLANS

NC GRID NAD 83/95

F F DENOTES FILL IN WETLAND

T T DENOTES TEMPORARY FILL IN WETLAND

DENOTES MECHANIZED CLEARING

50 25 0 25 50
GRAPHIC SCALE – INSETS

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Gupton

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
U-1	31+50-YRPD-	Utility		0.02								
U-2	75+00-YRPAC-**	Utility	< 0.01	0.25		0.02						
TOTALS*:			< 0.01	0.27		0.02						

*Rounded totals are sum of actual impacts for entire project area

**Permanent Impacts from four (4) 4-ft x 4-ft concrete foundations for new transmission tower locations.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
06/05/2019
IREDELL
TIP NO. I-3819B
WBS NO.

Revised 2018 Feb