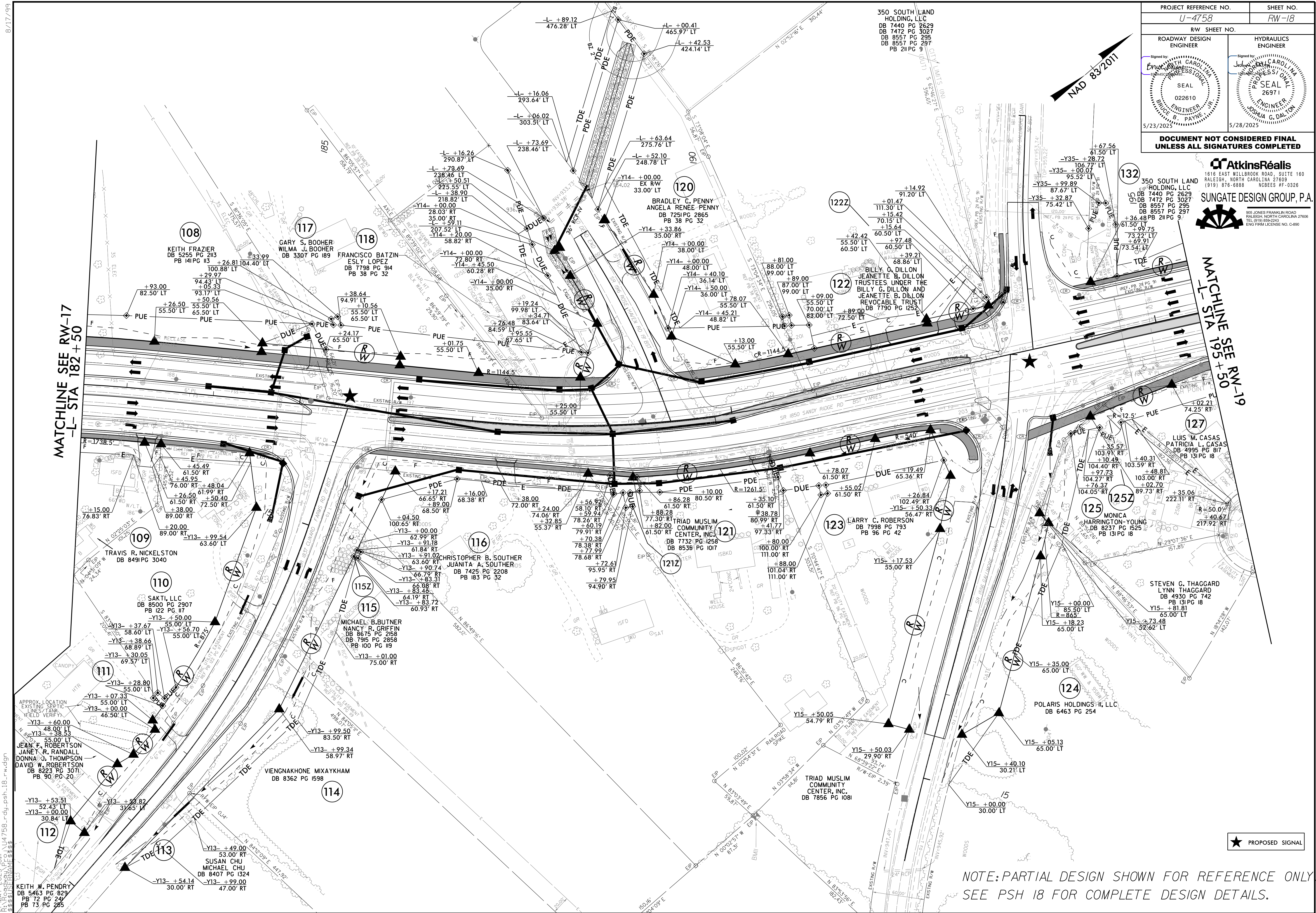
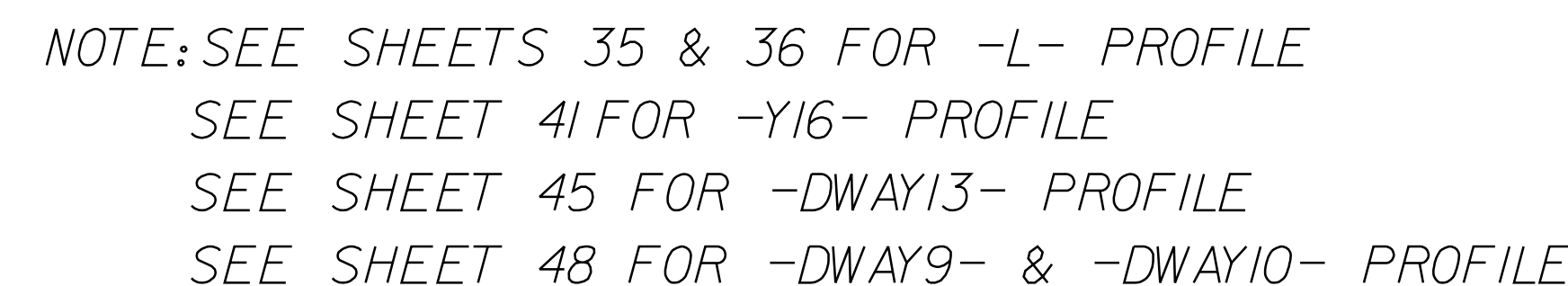
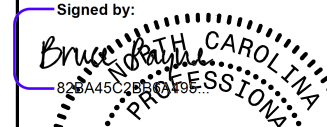




NOTE: PARTIAL DESIGN SHOWN FOR REFERENCE ONLY
SEE PSN 18 FOR COMPLETE DESIGN DETAILS.

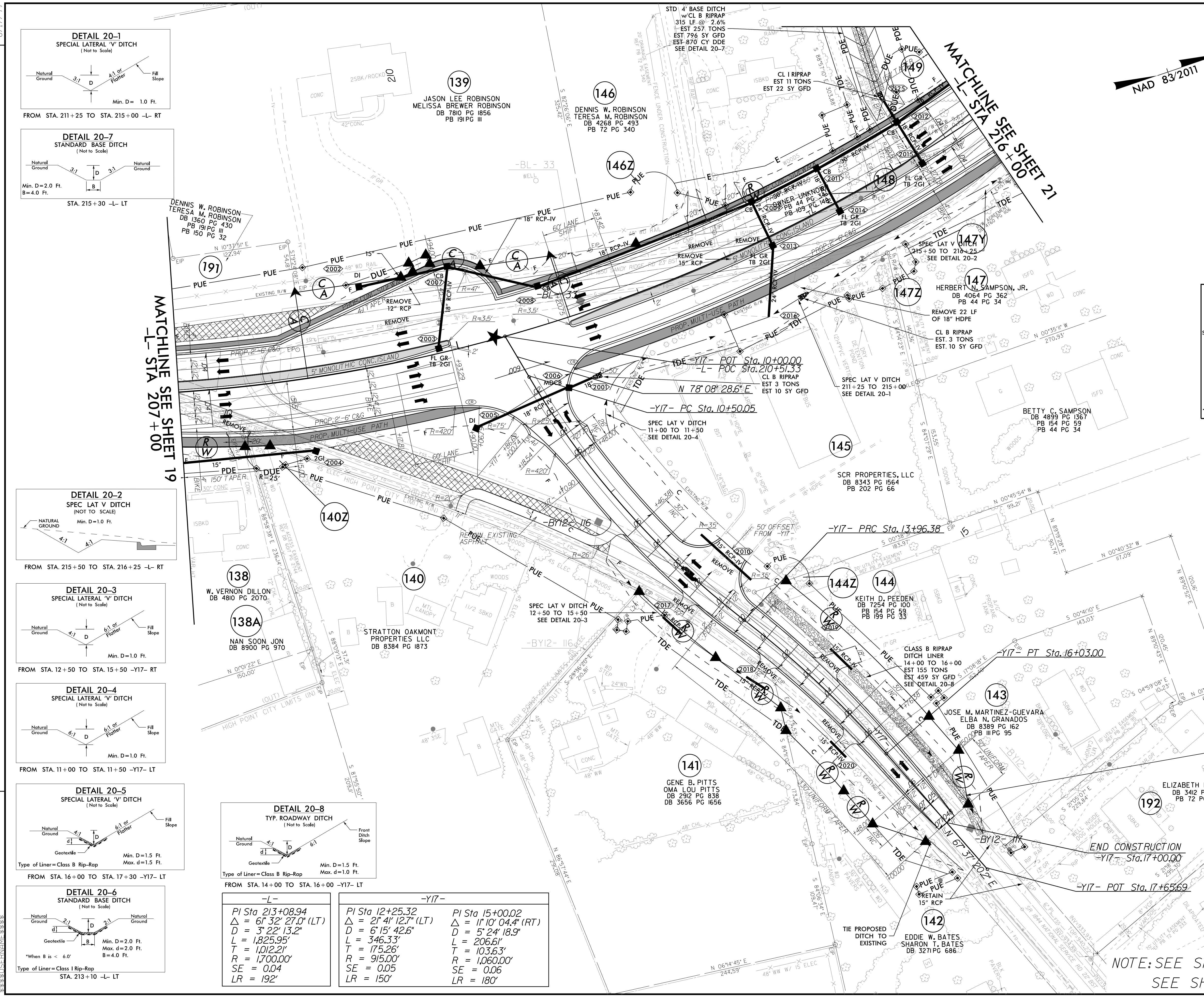
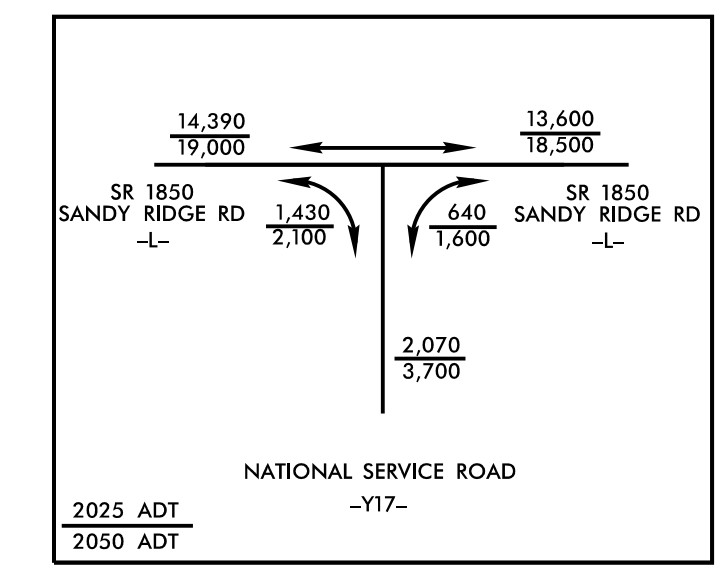
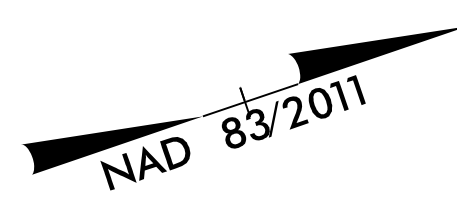




PROJECT REFERENCE NO. U-4758		SHEET NO. 20	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		SEAL	
Signed by:  BRUCE S. PAYNE 022610 5/23/2025		Signed by:  JOSHUA G. DALTON 26971 5/28/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

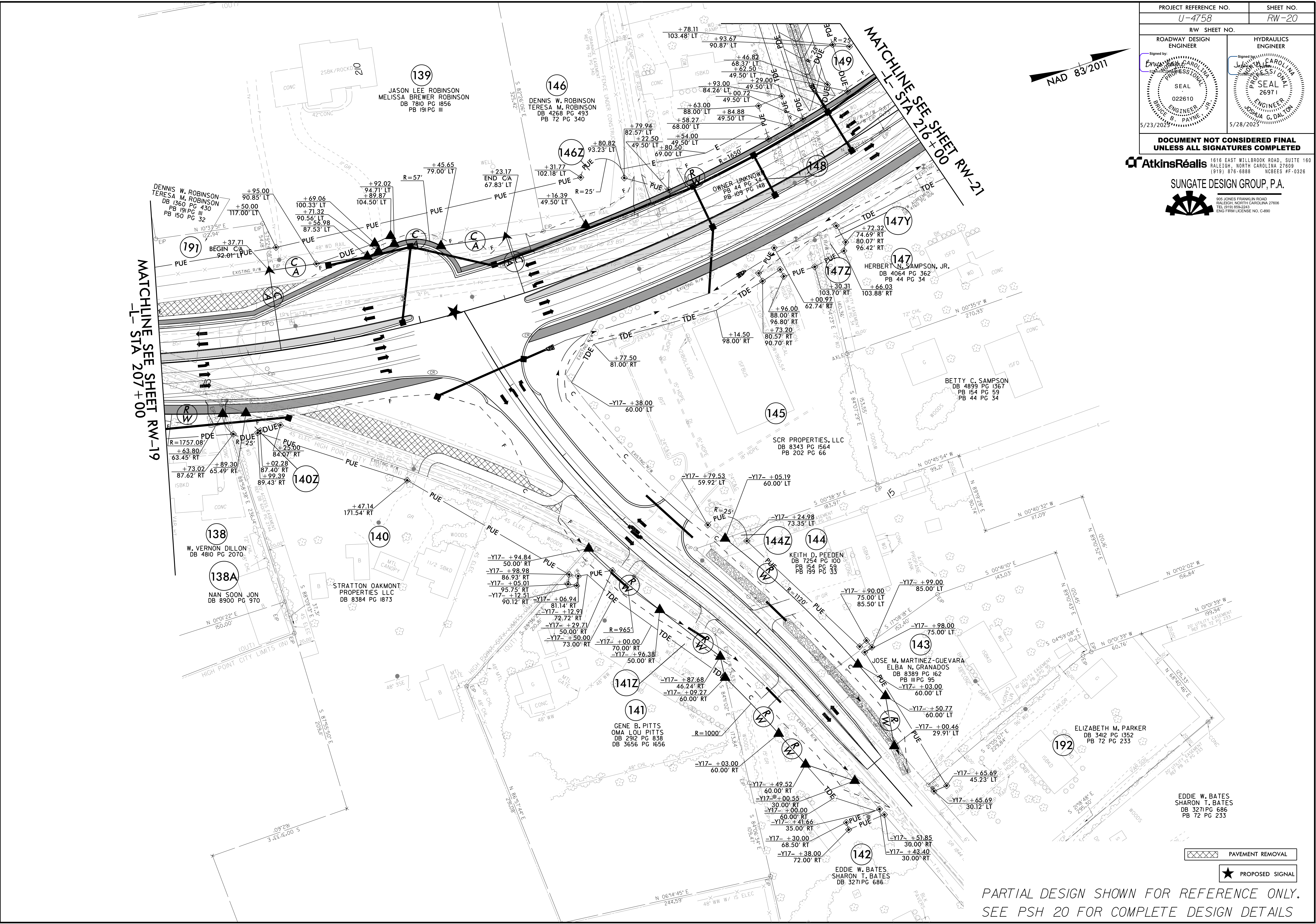
AtkinsRéalis 1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 878-6888 NCBEES #F-0326

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL (919) 888-2243
ENG FIRM LICENSE NO. C-880



-L-	-Y17-
PI Sta 213+08.94 Δ = 61° 32' 27.0" (LT) D = 3' 22' 13.2" L = 1,825.95' T = 1,012.21' R = 1,700.00' SE = 0.04 LR = 192'	PI Sta 12+25.32 Δ = 21° 41' 12.7" (LT) D = 6' 15' 42.6" L = 346.33' T = 175.26' R = 915.00' SE = 0.05 LR = 150'
PI Sta 15+00.02 Δ = 11° 10' 04.4" (RT) D = 5' 24' 18.9" L = 206.61' T = 103.63' R = 1,060.00' SE = 0.06 LR = 180'	

NOTE: SEE SHEET 36 FOR -L- PROFILE
SEE SHEET 42 FOR -Y17- PROFILE



PROJECT REFERENCE NO. U-4758		SHEET NO. RW-20	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Signed by: B. PAYNE Professional Engineer 022610 5/23/2023		Signed by: J. S. DALTON Professional Engineer 26971 5/28/2023	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

AtkinsRéalis 1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #P-0326

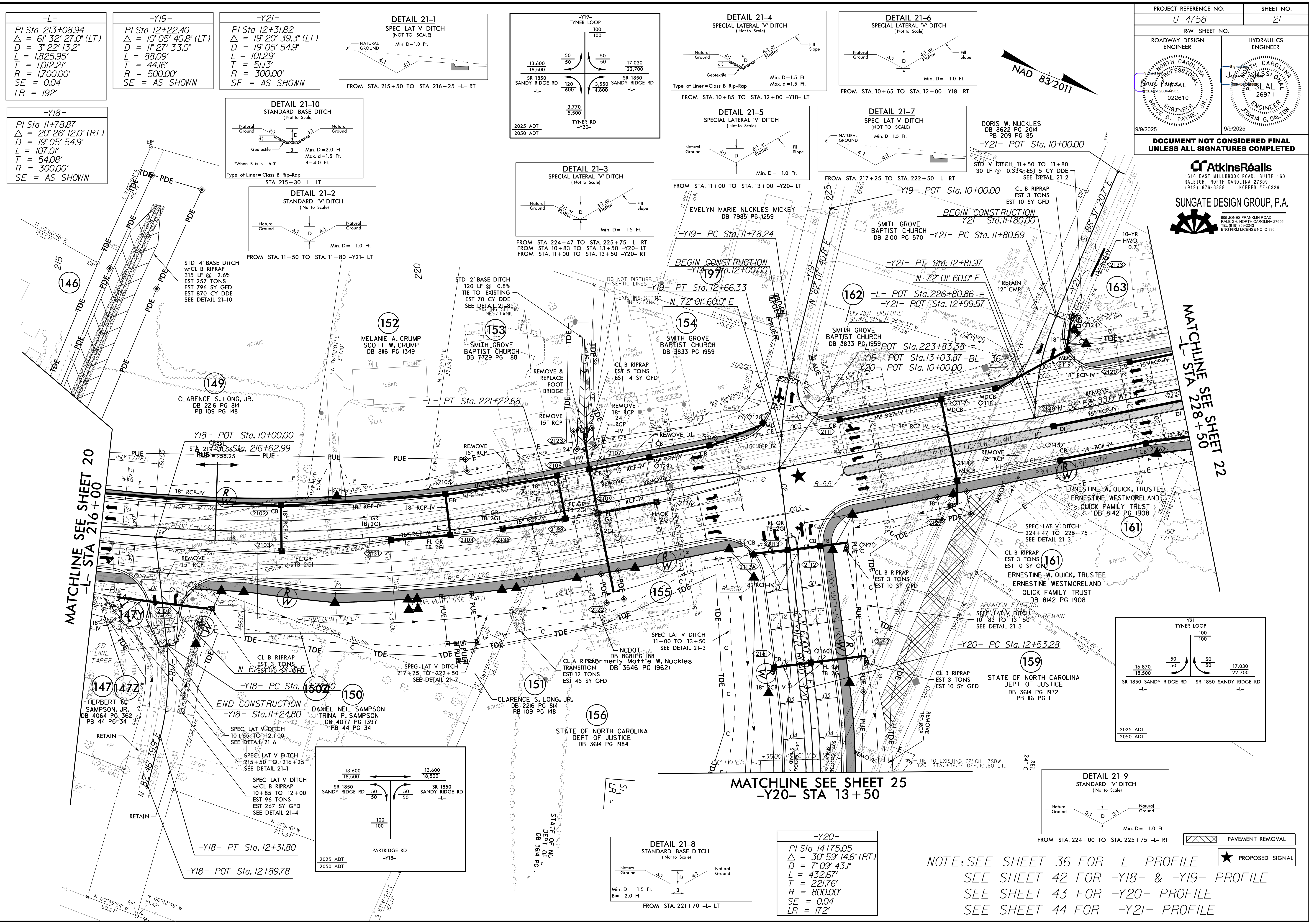
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL (919) 888-2243
ENG FIRM LICENSE NO. C-880

21-MAY-2025 16:57
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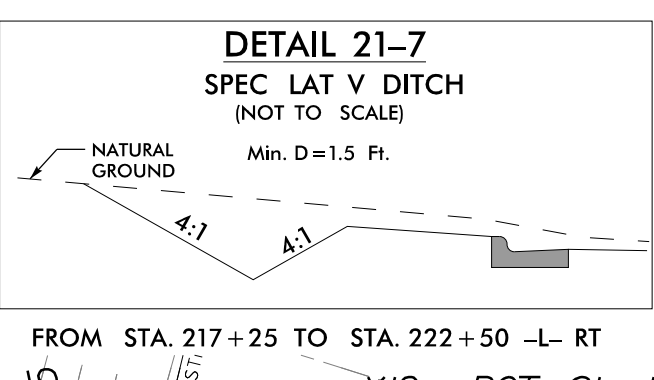
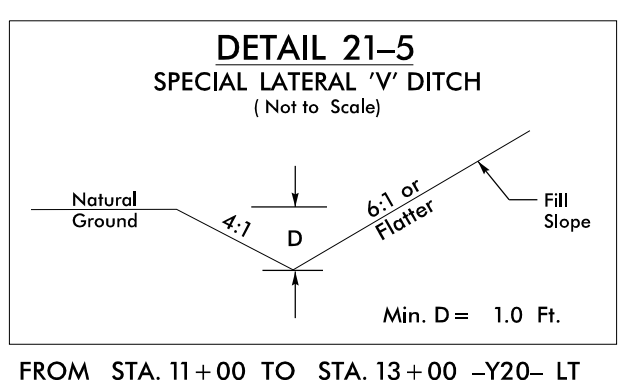
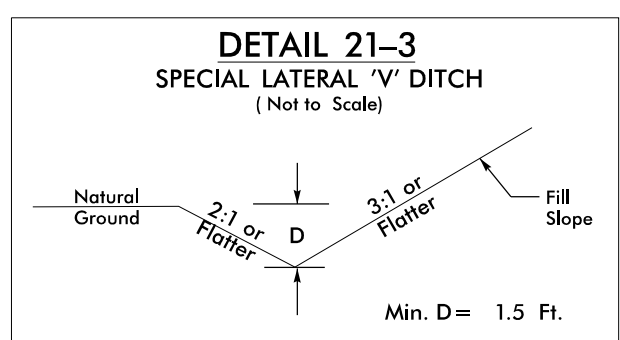
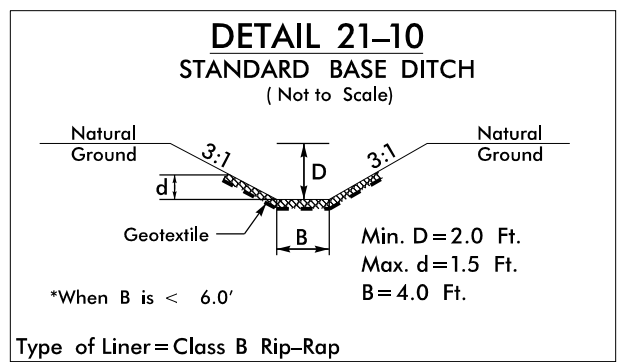
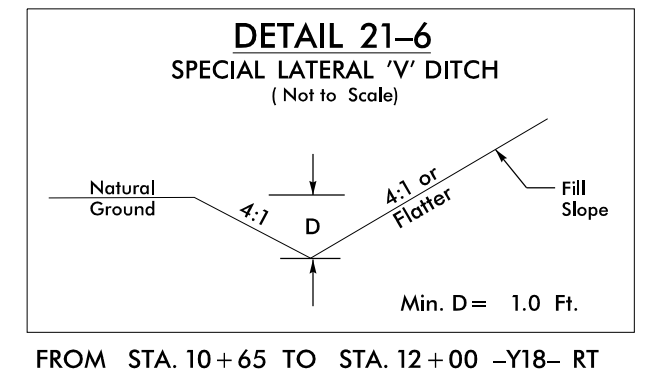
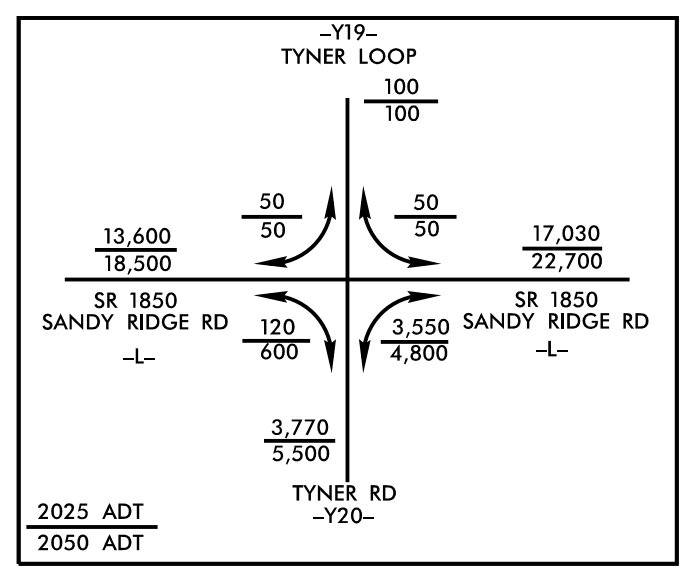
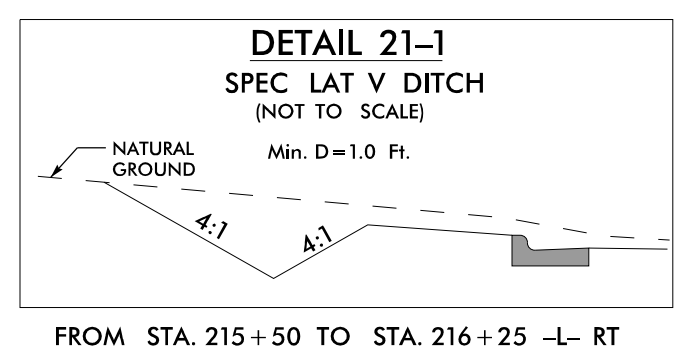
REVISIONS

PARTIAL DESIGN SHOWN FOR REFERENCE ONLY.
SEE PSH 20 FOR COMPLETE DESIGN DETAILS

8/17/99



-L- PI Sta 213+08.94 Δ = 6' 32" 27.0" (LT) D = 3' 22" 13.2" L = 1,825.95' T = 1,012.21' R = 1,700.00' SE = 0.04 LR = 192'	-Y19- PI Sta 12+22.40 Δ = 10' 05" 40.8" (LT) D = 1' 27" 33.0" L = 88.09' T = 44.16' R = 500.00' SE = AS SHOWN	-Y21- PI Sta 12+31.82 Δ = 19' 05" 39.3" (LT) D = 19' 05" 54.9" L = 101.29' T = 51.13' R = 300.00' SE = AS SHOWN
---	---	---



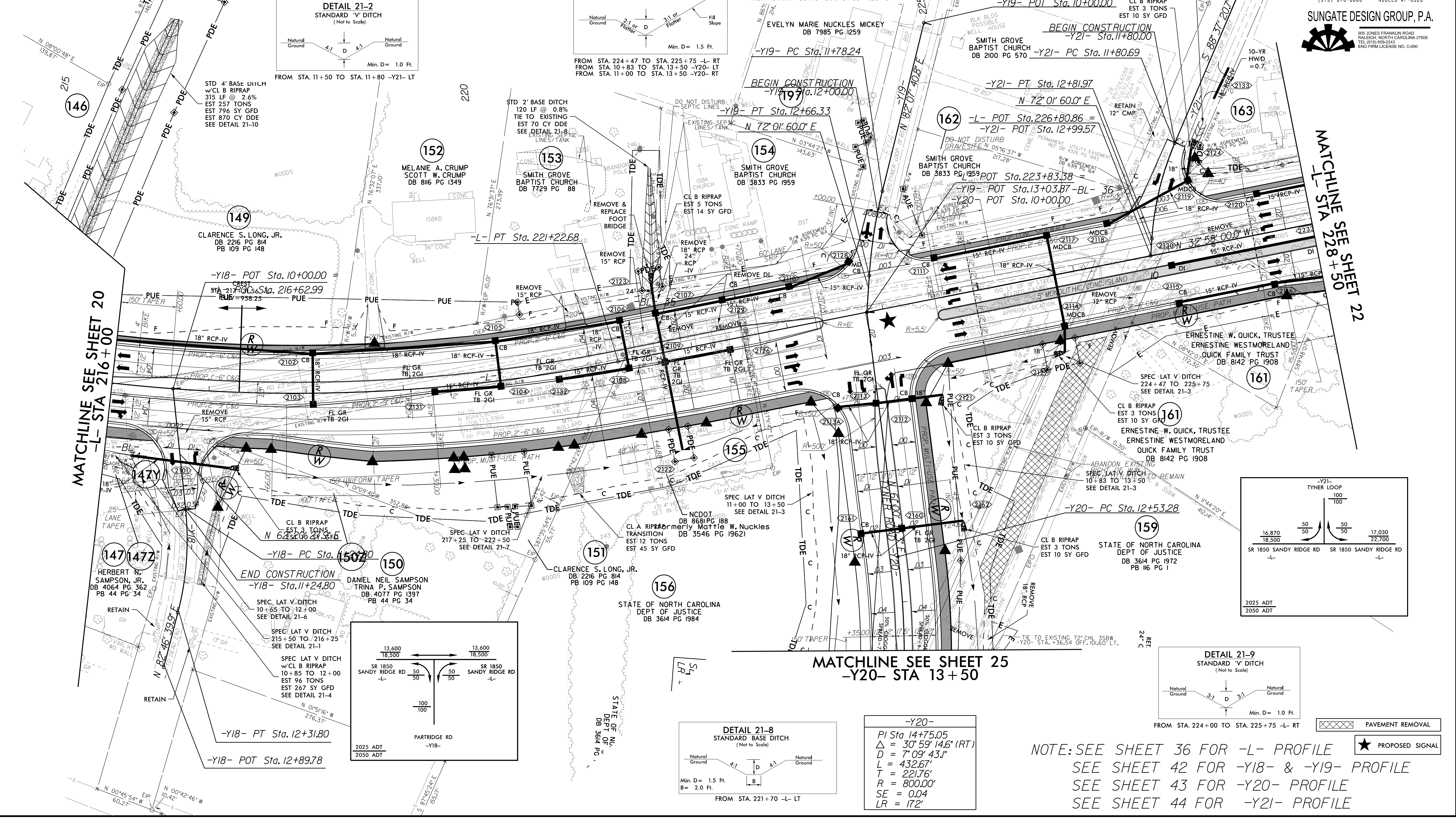
DORIS W. NUCKLES
DB 8622 PG 2014
PB 209 PG 85

-Y21- POT Sta. 10+00.00

PROJECT REFERENCE NO. U-4758		SHEET NO. 21	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

AtkinsRealis
1616 EAST WILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SUNGATE DESIGN GROUP, P.A.
809 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
(919) 859-2243
ENG FIRM LICENSE NO. C-4860



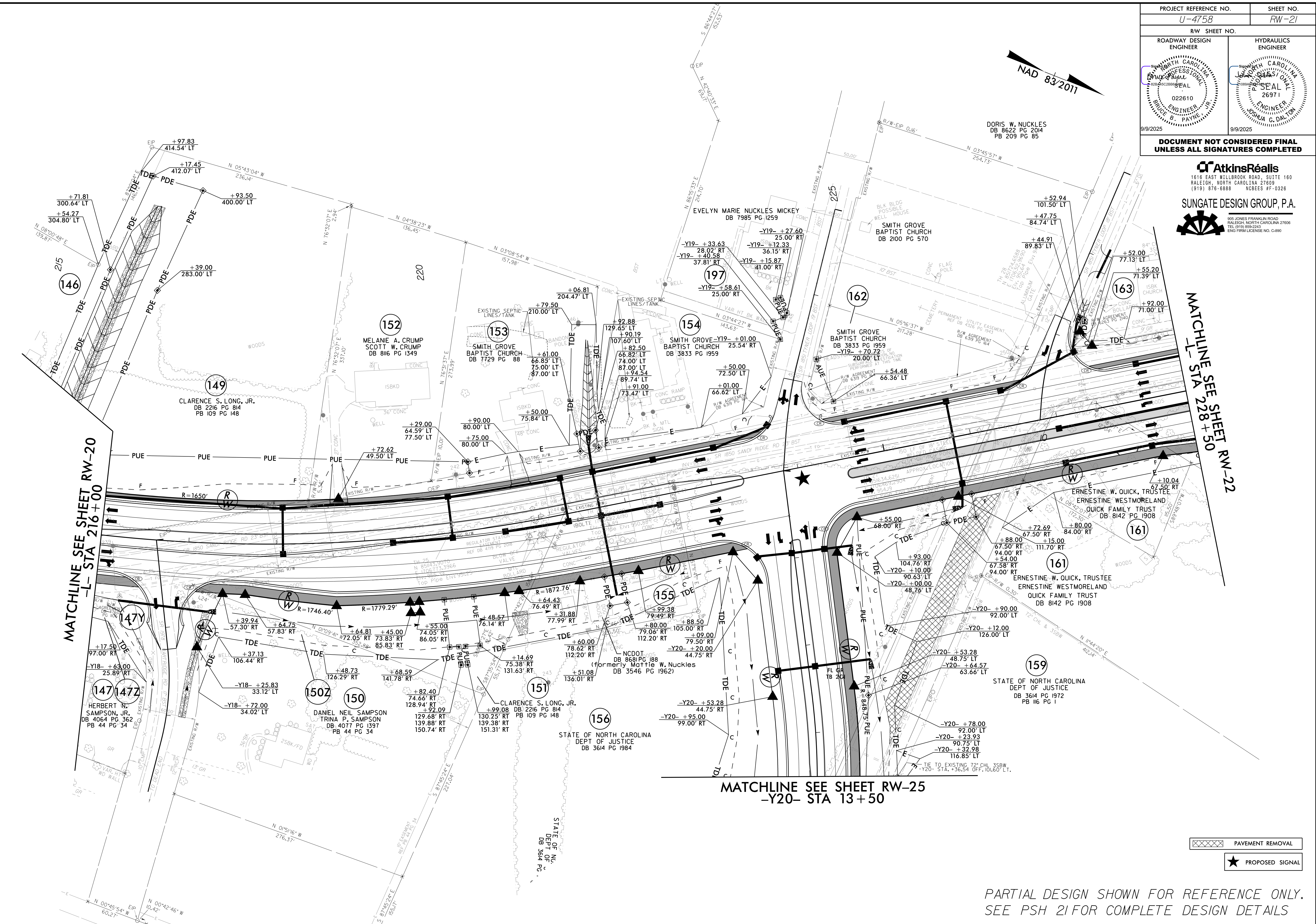
REVISIONS

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8/17/99

REVISIONS

09-SEP-2025 16:55
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\$\$\$\$\$SYSTRAME\$\$\$\$\$



PROJECT REFERENCE NO. U-4758		SHEET NO. RW-21	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

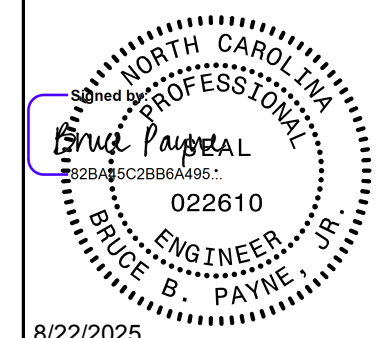
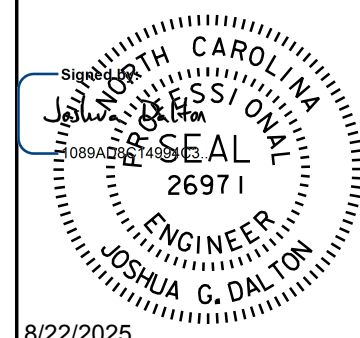
AtkinsRéalis
1616 EAST WILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SUNGATE DESIGN GROUP, P.A.
809 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 559-2243
ENG FIRM LICENSE NO. C-480

PAVEMENT REMOVAL

PROPOSED SIGNAL

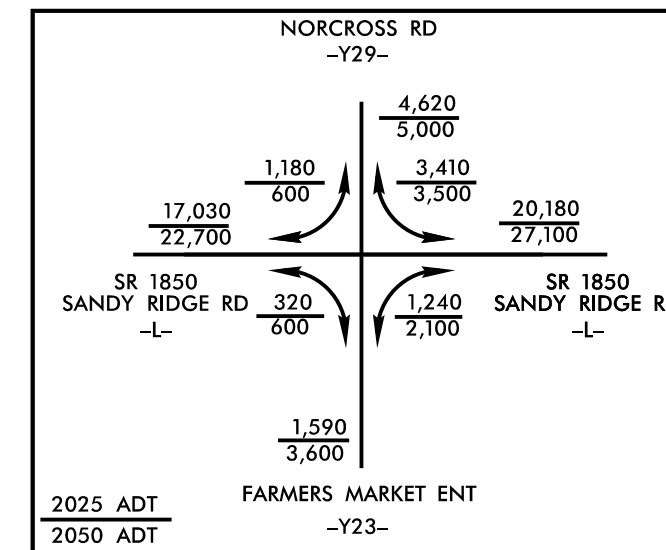
PARTIAL DESIGN SHOWN FOR REFERENCE ONLY.
SEE PSH 21 FOR COMPLETE DESIGN DETAILS

PROJECT REFERENCE NO.		SHEET NO.
U-4758		22
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

AtkinsRéalis 1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #P-0326

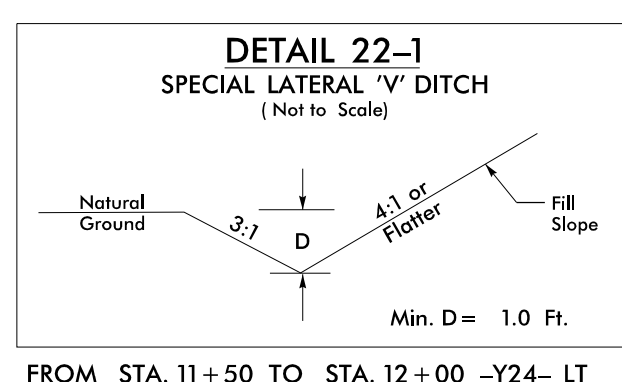
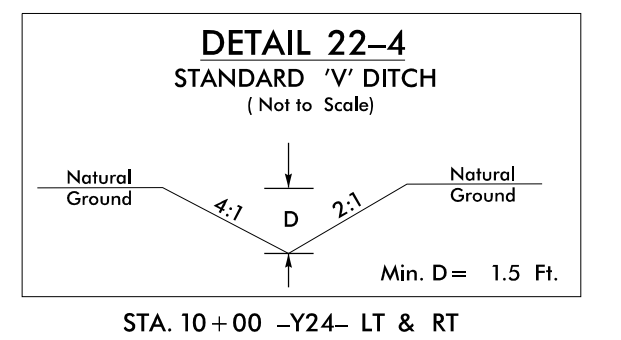
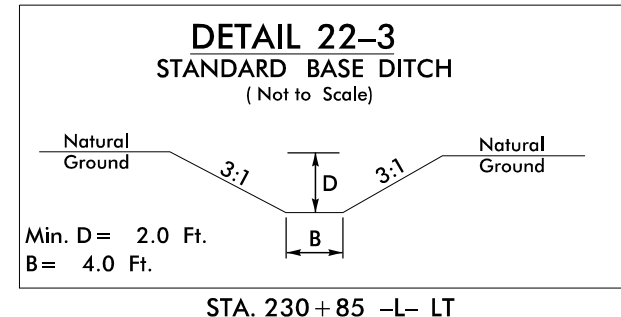
SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL (919) 858-2543
ENG FIRM LICENSE NO. C-880

-L-	-Y24-		
PI Sta 236+00.34 $\Delta = 17^{\circ}24'28.7"$ (RT) $D = 4^{\circ}05'33.2"$ $L = 425.36'$ $T = 214.33'$ $R = 1,400.00'$ $SE = 0.04$ $LR = 240'$	PI Sta 10+28.95 $\Delta = 44^{\circ}56'32.2"$ (RT) $D = 81^{\circ}51'04.0"$ $L = 54.91'$ $T = 28.95'$ $R = 70.00'$ $SE = AS SHOWN$	PI Sta 10+89.89 $\Delta = 1^{\circ}00'08.1"$ (RT) $D = 1^{\circ}25'56.6"$ $L = 69.97'$ $T = 34.99'$ $R = 4,000.00'$ $SE = NC$	PI Sta 12+47.49 $\Delta = 15^{\circ}01'13.0"$ (LT) $D = 11^{\circ}27'33.0"$ $L = 131.08'$ $T = 65.92'$ $R = 500.00'$ $SE = AS SHOWN$
-Y23-	-Y29-		
PI Sta 12+38.81 $\Delta = 27^{\circ}51'08.3"$ (RT) $D = 7^{\circ}38'22.0"$ $L = 364.59'$ $T = 185.97'$ $R = 750.00'$ $SE = AS SHOWN$	PI Sta 32+66.36 $\Delta = 89^{\circ}06'45.3"$ (LT) $D = 1^{\circ}48'48.8"$ $L = 754.32'$ $T = 477.55'$ $R = 485.00'$ $SE = 0.04$ $LR = 126'$		



MATCHLINE SEE SHEET 21
-L- STA 228+50

MATCHLINE SEE SHEET 23
-LI- STA 12+00



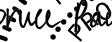
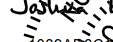
FROM STA. 11+50 TO STA. 12+00 -Y24- LT

NOTE: SEE SHEET 36 & 37 FOR -L- PROFILE
SEE SHEET 37 FOR -LI- PROFILE
SEE SHEET 44 FOR -Y23- & -Y24 PROFILE
SEE SHEET 45 FOR -Y29- PROFILE
SEE SHEET 2B-7 FOR INTERSECTION DETAIL

- ★ PROPOSED SIGNAL
- PAVEMENT REMOVAL

REVISIONS

22-AUG-2025 13:13
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\$\$\$\$SYTIME\$\$\$\$

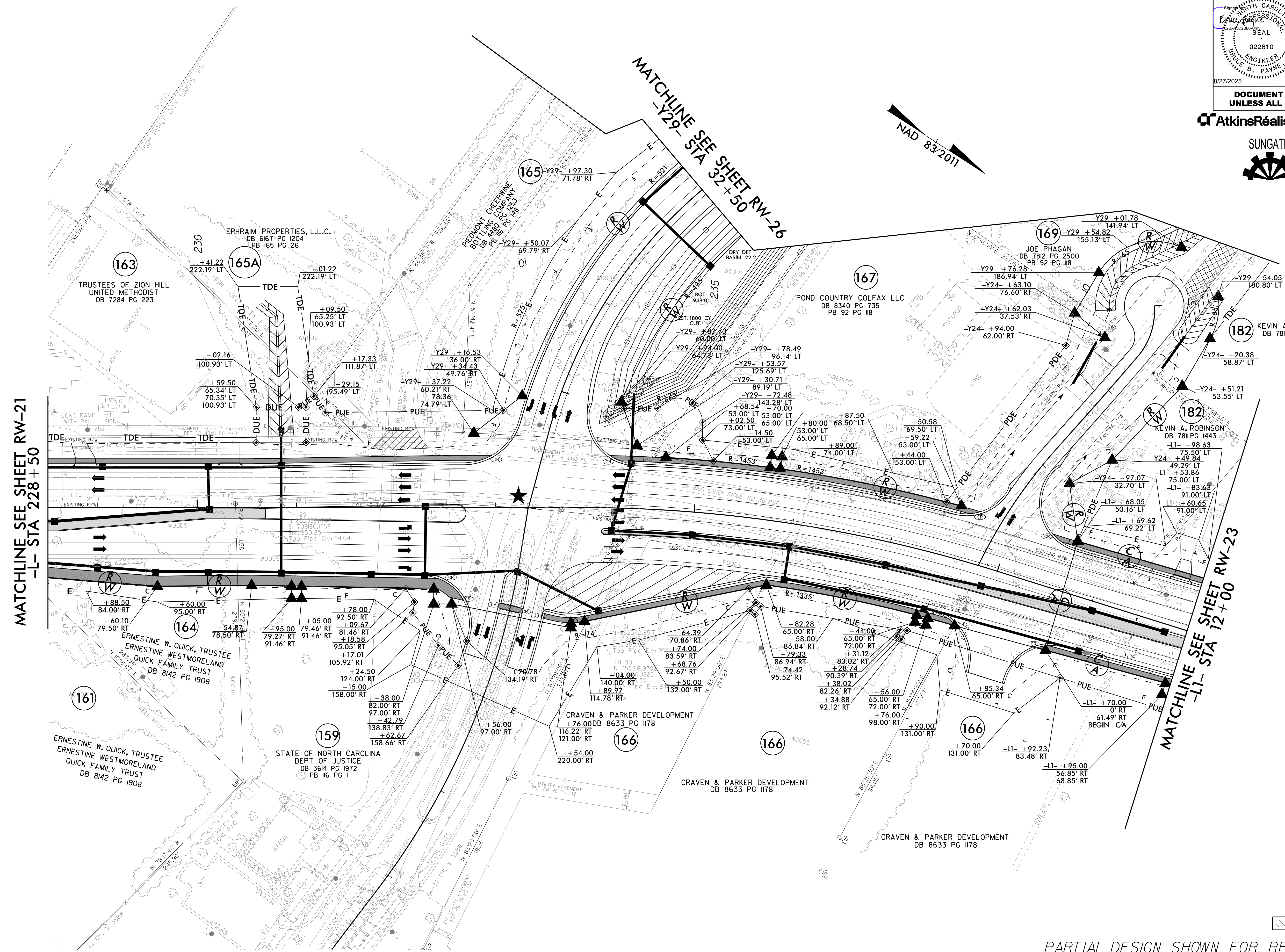
PROJECT REFERENCE NO.		SHEET NO.	
U-4758		RW-22	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Signature:  022610 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 ENGINEER BRUCE B. PAYNE, JR.		Signature:  022610 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 ENGINEER JOSHUA G. DALTON	
8/27/2025		8/27/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #P-0326



SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL: (919) 898-2243
ENG FIRM LICENSE NO. C-880

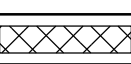


REVISIONS

27-AUG-2025 09:34
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\$\$\$\$\$SYTIME\$\$\$\$\$

PARTIAL DESIGN SHOWN FOR REFERENCE ONLY.
SEE PSH 22 FOR COMPLETE DESIGN DETAILS.

 PROPOSED SIGNAL

 PAVEMENT REMOVAL

AtkinsRealis 1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SUNGATE DESIGN GROUP, P.A.

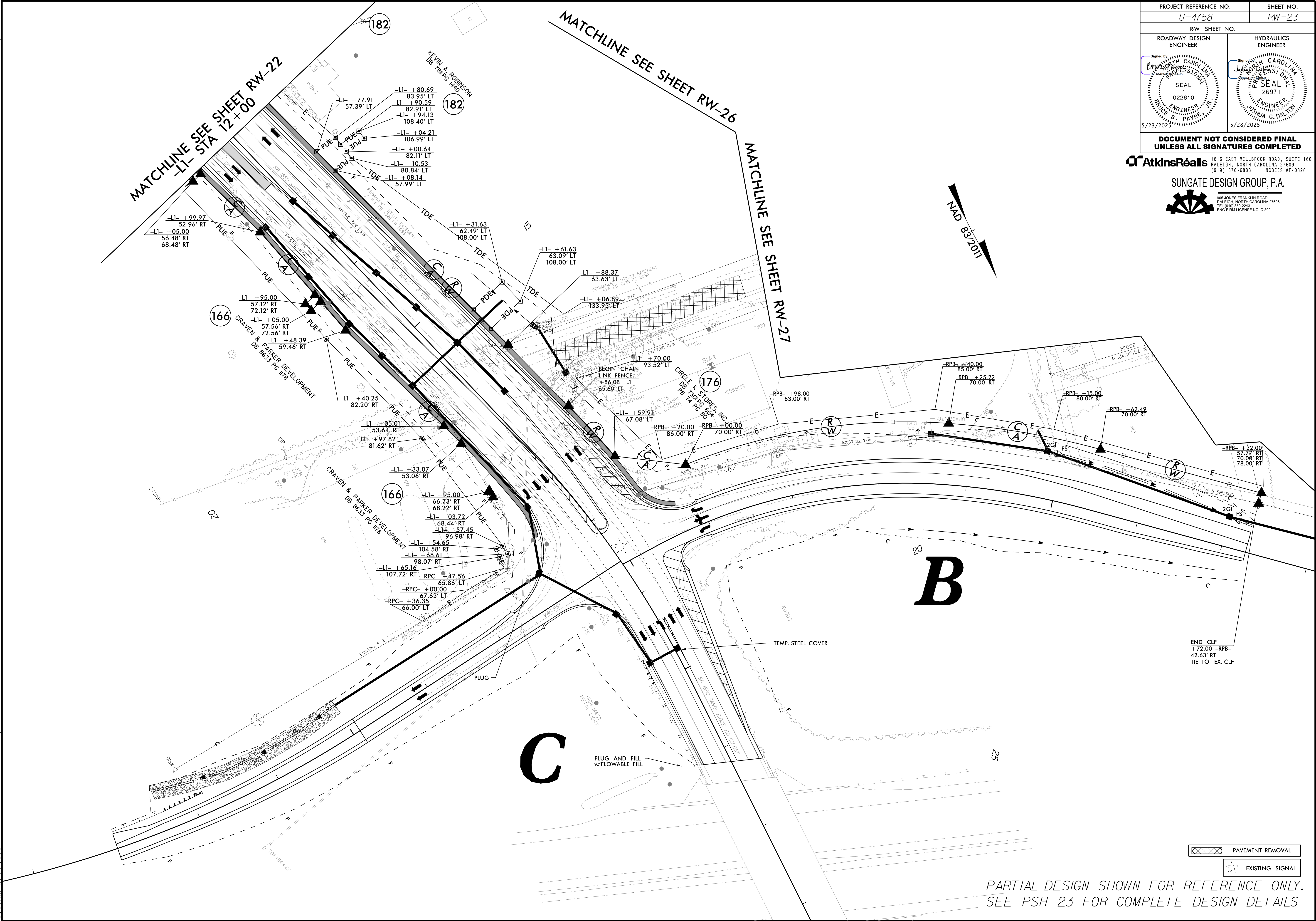
 905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

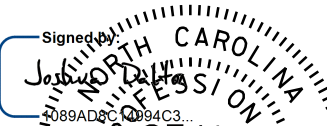
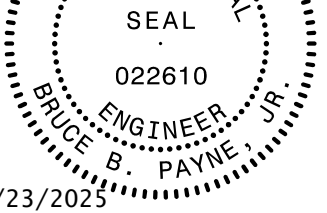
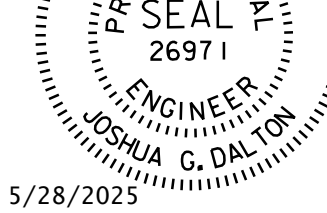


8/17/99

REVISIONS

22-MAY-2025_08:01
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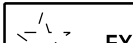
PROJECT REFERENCE NO.		SHEET NO.	
U-4758		RW-23	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Signed by: 		Signed by: 	
			
5/23/2025		5/28/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



1616 EAST WILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCRES #F-0326



SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 858-2243
ENG FIRM LICENSE NO. C-880

	PAVEMENT REMOVAL
	EXISTING SIGNAL

PARTIAL DESIGN SHOWN FOR REFERENCE ONLY.
SEE PSH 23 FOR COMPLETE DESIGN DETAILS

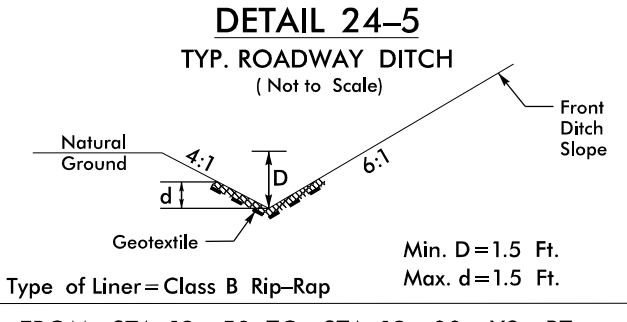
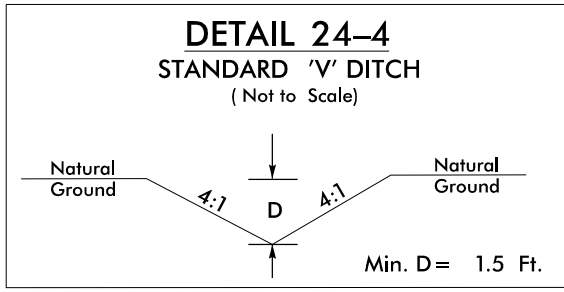
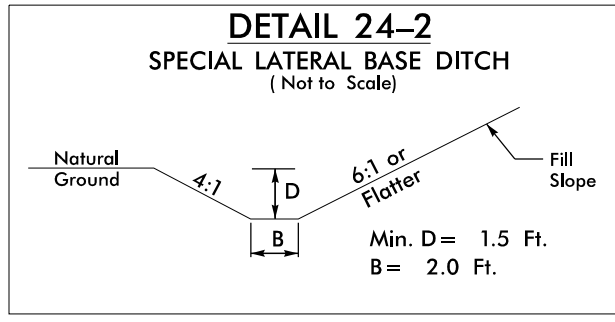
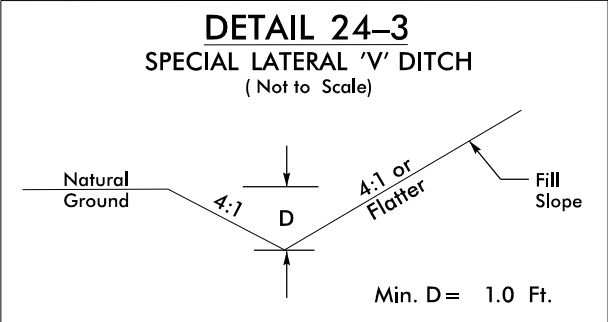
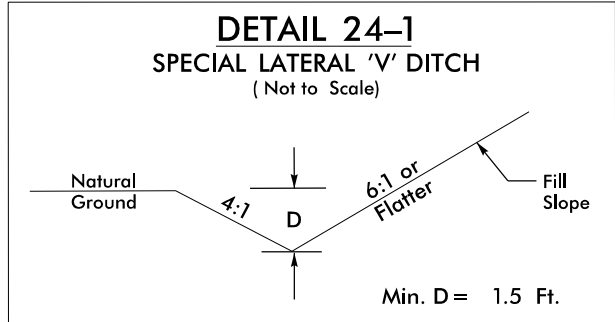
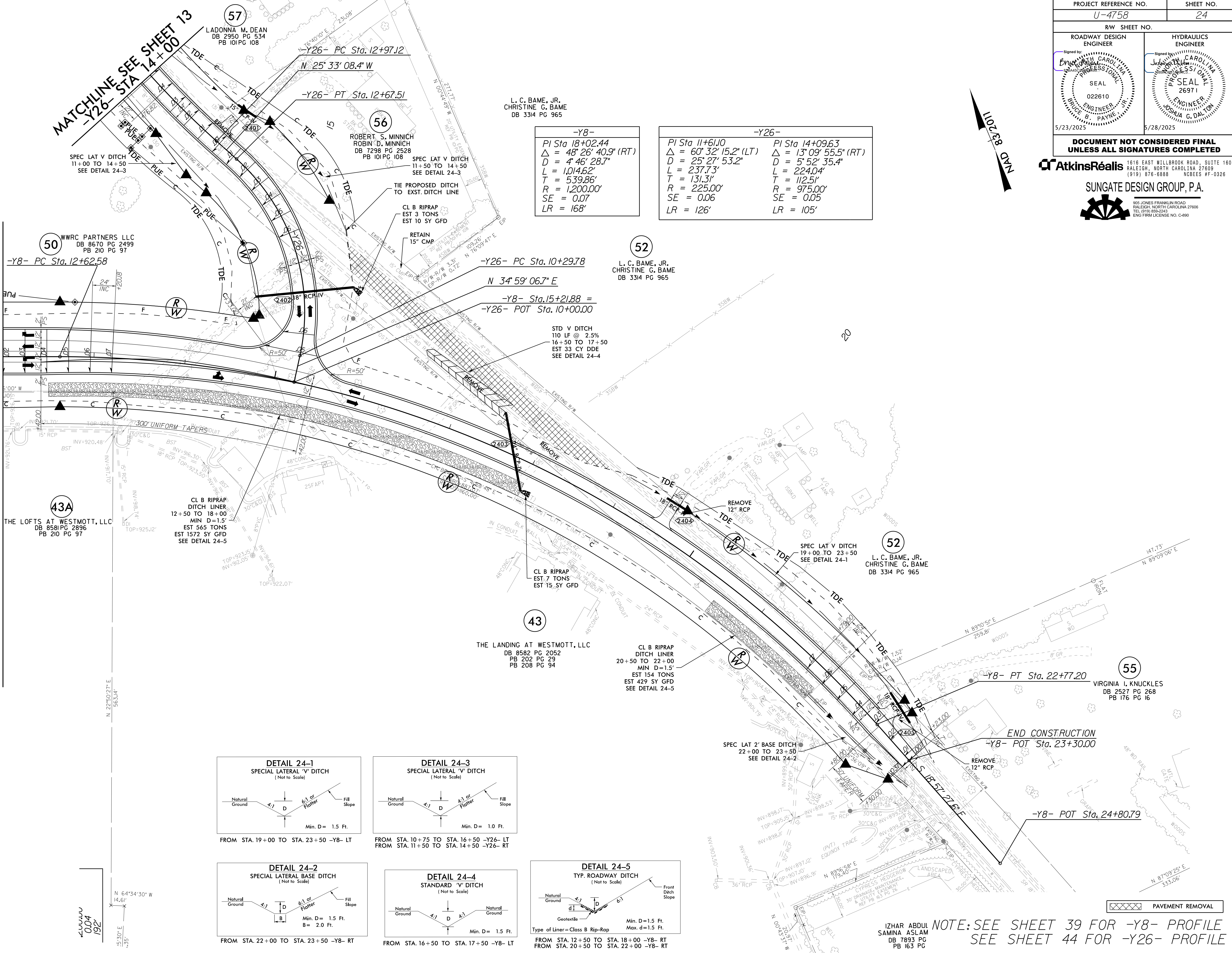
8/17/99

REVISIONS

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MATCHLINE SEE SHEET 12
-Y8- STA 12+00

MATCHLINE SEE SHEET 13
-Y26- STA 14+00



-Y8-

PI Sta 18+02.44
$\Delta = 48^{\circ} 26' 40.9''$ (RT)
$D = 4' 46'' 28.7''$
$L = 1,014.62'$
$T = 539.86'$
$R = 1,200.00'$
$SE = 0.07$
$LR = 168'$

-Y26-

PI Sta 11+61.10	PI Sta 14+09.63
$\Delta = 60^{\circ} 32' 15.2''$ (LT)	$\Delta = 13^{\circ} 09' 55.5''$ (RT)
$D = 25' 27'' 53.2''$	$D = 5' 52'' 35.4''$
$L = 237.73'$	$L = 224.04'$
$T = 131.31'$	$T = 112.51'$
$R = 225.00'$	$R = 975.00'$
$SE = 0.06$	$SE = 0.05$
$LR = 126'$	$LR = 105'$

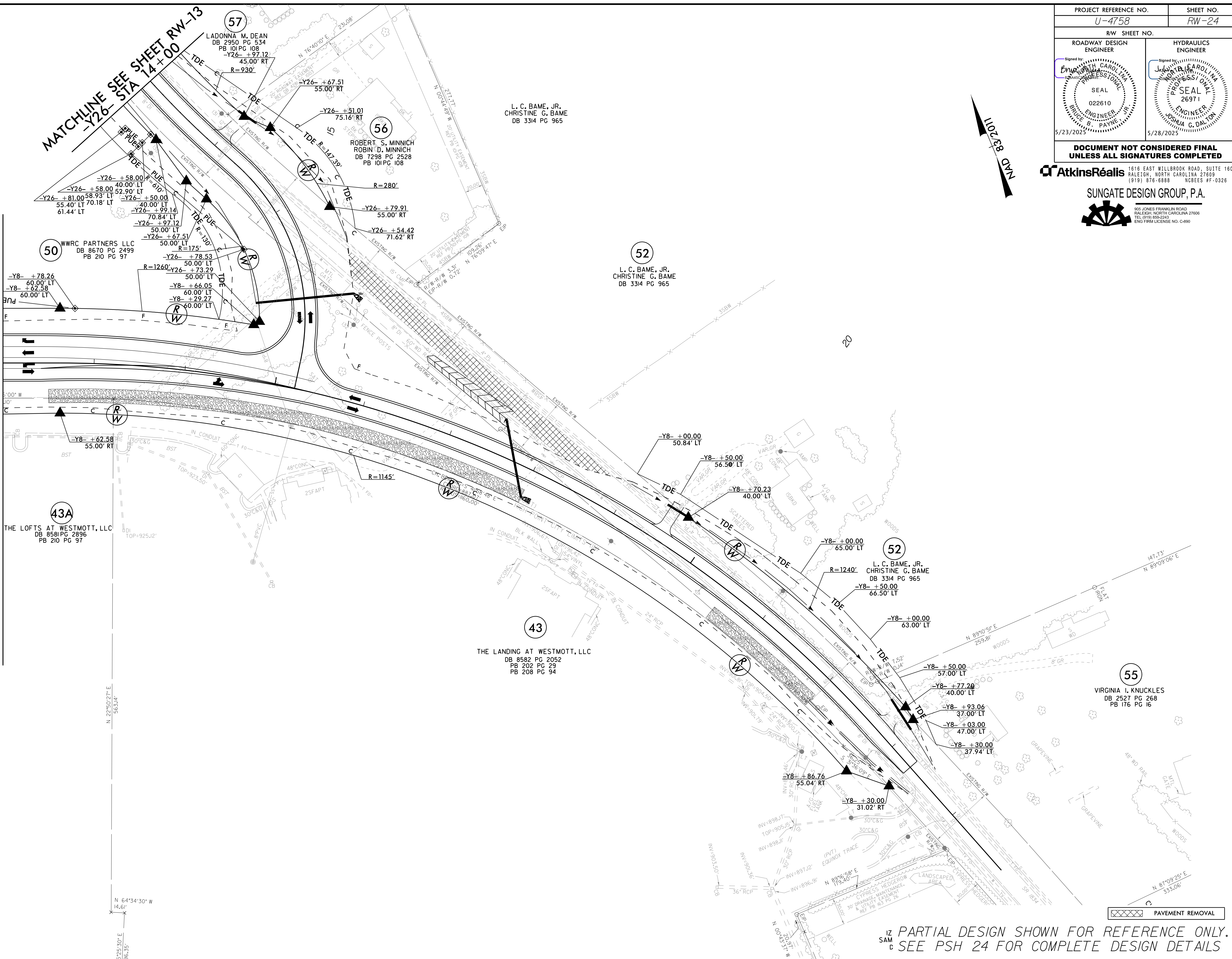
PROJECT REFERENCE NO.	SHEET NO.
U-4758	24
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Signed by: [Signature] BRUCE B. PAYNE PROFESSIONAL ENGINEER 022610 5/23/2025	Signed by: [Signature] JOSHUA G. DALTON PROFESSIONAL ENGINEER 26971 5/28/2025
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

AtkinsRéalis 1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #P-0326

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL (919) 888-2543
ENG FIRM LICENSE NO. C-880

NOTE: SEE SHEET 39 FOR -Y8- PROFILE
SEE SHEET 44 FOR -Y26- PROFILE

MATCHLINE SEE SHEET RW-12
-Y8- STA 12+00



1Z
SAM
C PARTIAL DESIGN SHOWN FOR REFERENCE ONLY.
SEE PSH 24 FOR COMPLETE DESIGN DETAILS

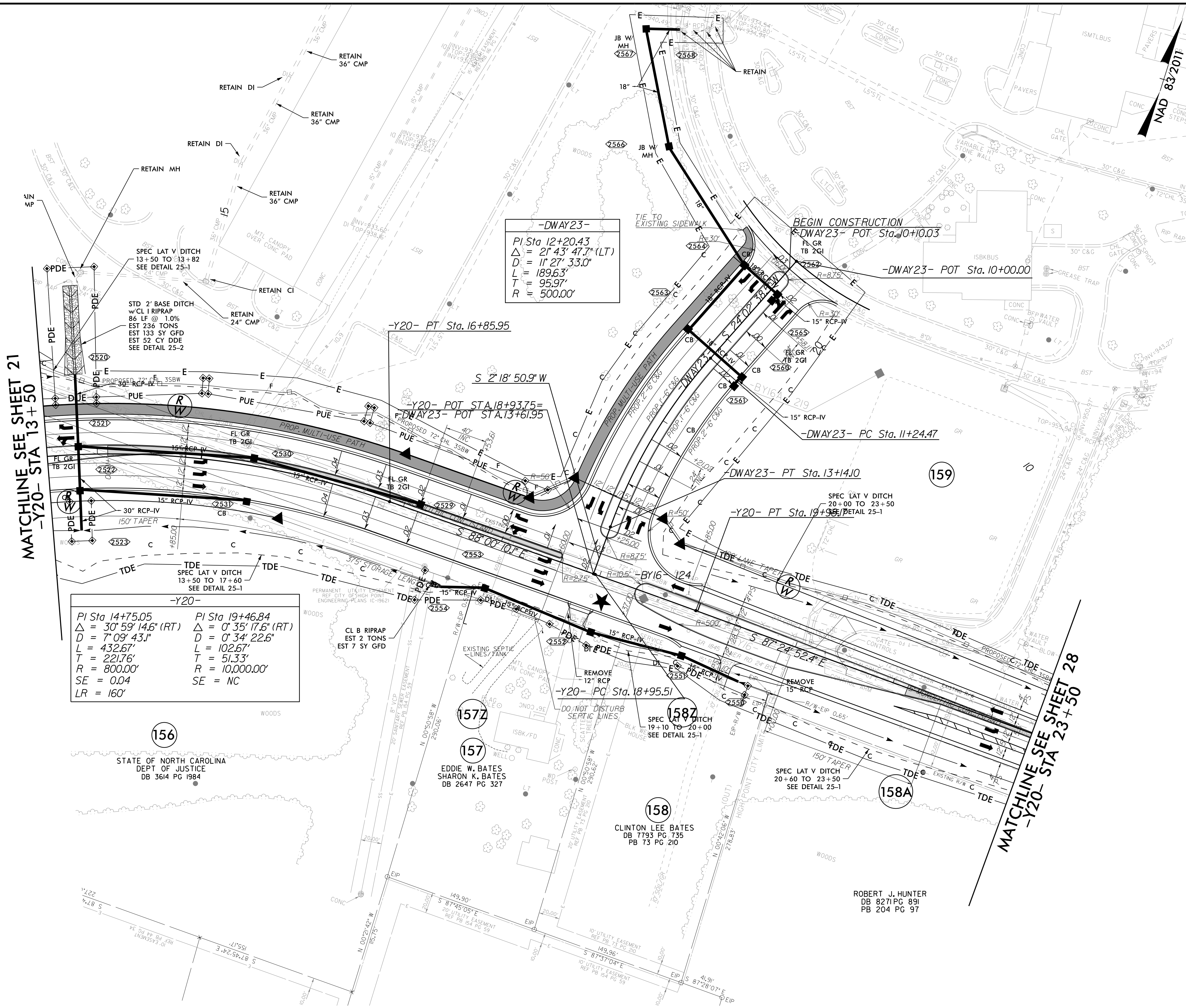
8/17/99

REVISIONS

27 MAY 2025 15:40
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\$\$\$\$\$SYTIME\$\$\$\$\$

MATCHLINE SEE SHEET 21
-Y20- STA 13+50

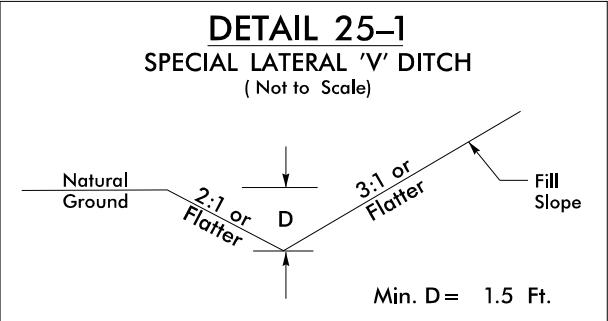
MATCHLINE SEE SHEET 28
-Y20- STA 23+50



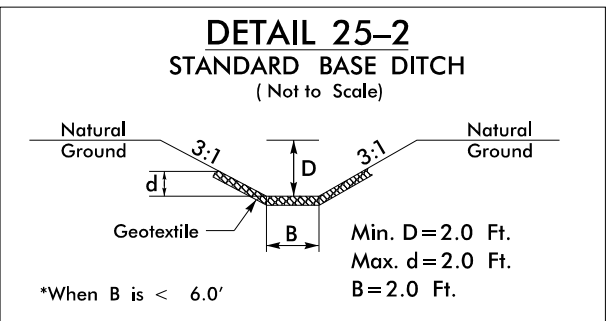
PROJECT REFERENCE NO.		SHEET NO.
U-4758		25
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

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RALEIGH, NORTH CAROLINA 27609
(919) 878-6888 NCBEES #F-0326

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL: (919) 888-2243
ENG FIRM LICENSE NO. C-880



FROM STA. 13+50 TO STA. 13+82 -Y20- LT
FROM STA. 20+00 TO STA. 23+50 -Y20- LT
FROM STA. 13+50 TO STA. 17+60 -Y20- RT
FROM STA. 19+10 TO STA. 20+00 -Y20- RT
FROM STA. 20+60 TO STA. 23+50 -Y20- RT



*When B is < 6.0'
Type of Liner = Class I Rip-Rap
STA. 13+82 -Y20- LT

PAVEMENT REMOVAL

NOTE: SEE SHEET 43 FOR -Y20- PROFILE
SEE SHEET 49 FOR -DWAY23- PROFILE

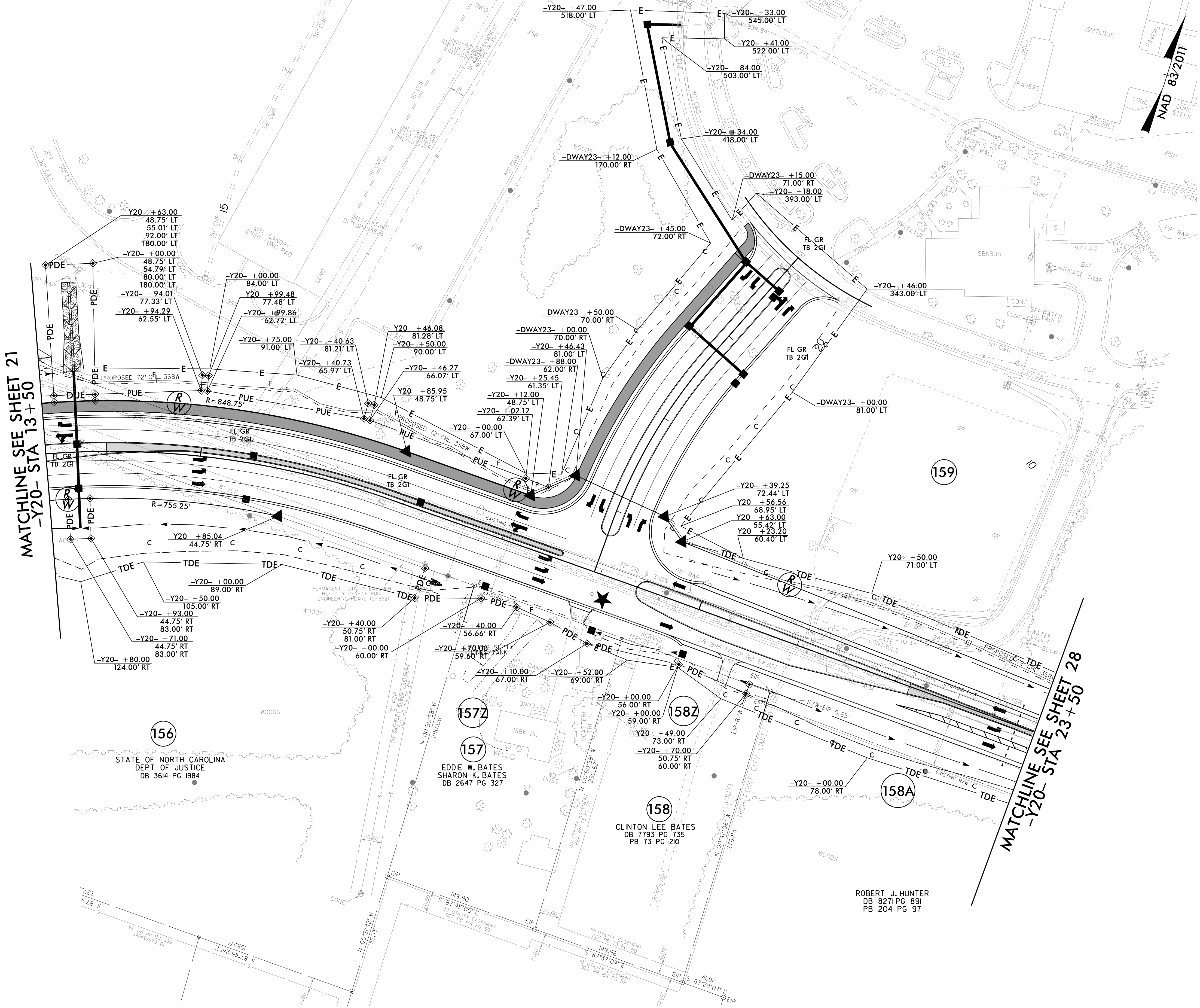
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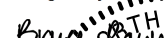
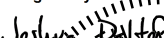
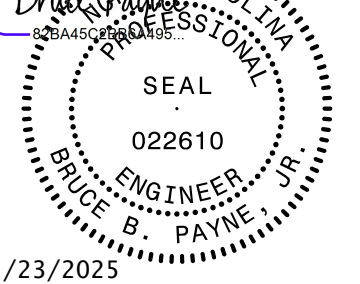
REVISIONS

21 MAY 2025 16:23
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MATCHLINE SEE SHEET 21
-Y20- STA 13+50

MATCHLINE SEE SHEET 28
-Y20- STA 23+50



PROJECT REFERENCE NO.		SHEET NO.	
U-4758		RW-25	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Signed by: 		Signed by: 	
			
5/23/2025		5/28/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

AtkinsRéalis 1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 878-6888 NCBEES #P-0326

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL (919) 888-2243
ENG FIRM LICENSE NO. C-880

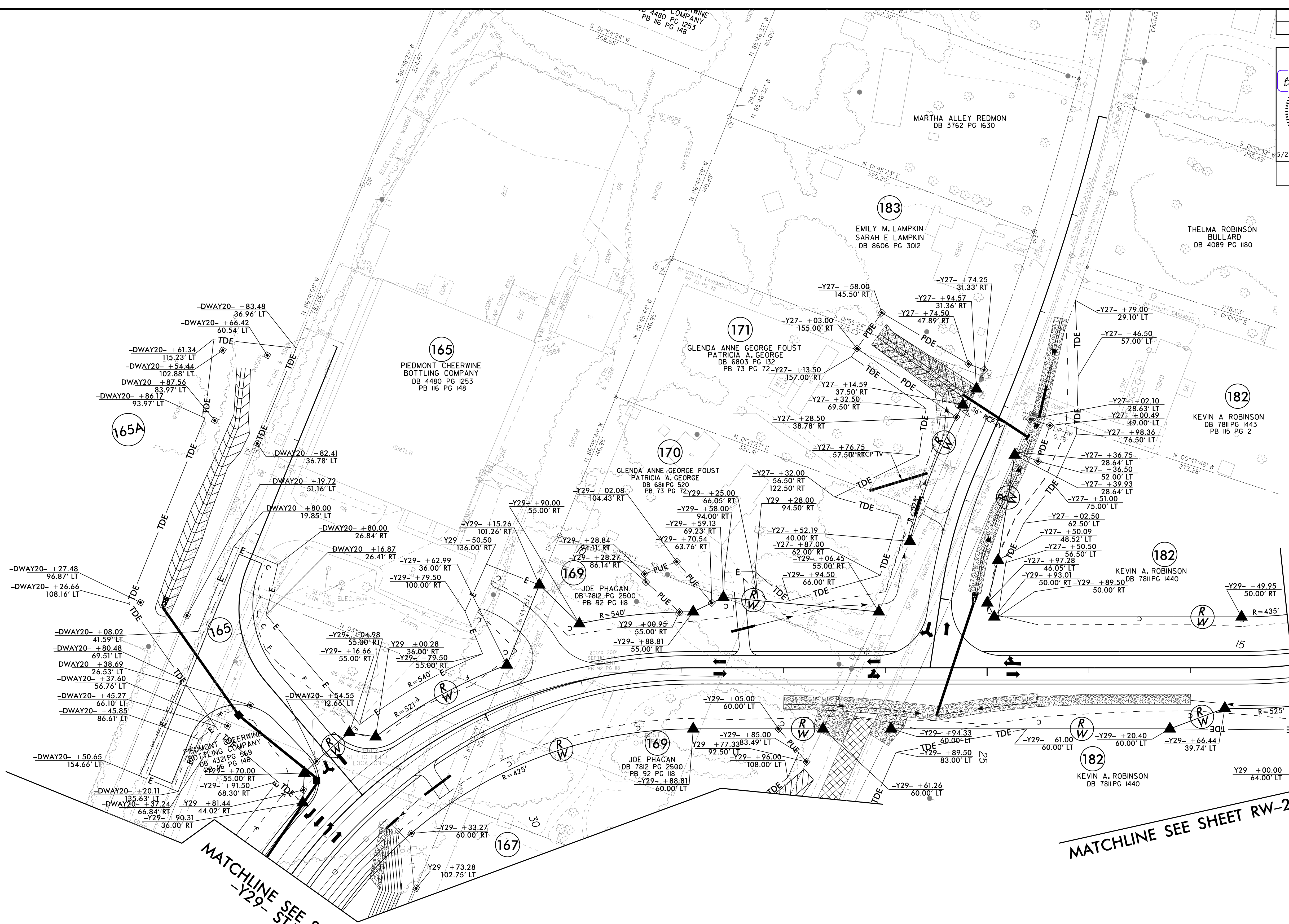
XXXXX PAVEMENT REMOVAL

PARTIAL DESIGN SHOWN FOR REFERENCE ONLY.
SEE PSH 25 FOR COMPLETE DESIGN DETAILS

8/17/99

REVISIONS

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\$\$\$\$SYSTRAN\$\$\$\$



PROJECT REFERENCE NO. U-4758		SHEET NO. RW-26	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER Signed by: SEAL 022610 ENGINEER, JR. BRUCE B. PAYNE, JR. 5/23/2025		HYDRAULICS ENGINEER Signed by: SEAL 26971 ENGINEER JOSHUA G. DALTON 5/28/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

AtkinsRéalis
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #P-0326

SUNGATE DESIGN GROUP, P.A.
805 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 858-2243
ENG FIRM LICENSE NO. C-680

MATCHLINE SEE SHEET RW-27
-Y29- STA 22+00

MATCHLINE SEE SHEET RW-23
-Y29- STA 32+50

PAVEMENT REMOVAL

PARTIAL DESIGN SHOWN FOR REFERENCE ONLY.
SEE PSH 26 FOR COMPLETE DESIGN DETAILS

PROJECT REFERENCE NO.
U-4758

SHEET NO.
27

RW SHEET NO.

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

North Carolina
Professional Engineer
022610
BRUCE B. PAYNE
5/29/2025

North Carolina
Professional Engineer
26971
JAMES G. ORLTON
5/28/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis

1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 976-6888 NCBEES #P-0326

SUNGATE DESIGN GROUP, P.A.

905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 888-2243
ENG FIRM LICENSE NO. C-880

MATCHLINE SEE SHEET 23

MATCHLINE SEE SHEET 26
-Y29- STA 22+00

DETAIL 27-1
SPECIAL 'V' DITCH
(Not to Scale)

FROM STA. 18+00 TO STA. 19+50 -Y29- LT

DETAIL 27-2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 14+50 TO STA. 15+50 -Y29- RT
FROM STA. 14+50 TO STA. 17+00 -Y29- LT
FROM STA. 17+00 TO STA. 18+50 -Y29- RT
FROM STA. 20+22 TO STA. 23+00 -Y29- LT
FROM STA. 10+00 TO STA. 10+62 -DWAY22- LT

-Y29-	
PI Sta. 14+31.45	PI Sta. 20+48.86
$\Delta = 3^{\circ} 54' 37.6''$ (LT)	$\Delta = 5^{\circ} 13' 13.7''$ (RT)
D = 3' 22' 13.2"	D = 11' 48' 48.8"
L = 116.03'	L = 433.57'
T = 58.04'	T = 232.48'
R = 1,700.00'	R = 485.00'
SE = 0.06	SE = 0.06
LR = 126'	LR = 126'

PAVEMENT REMOVAL

NOTE: SEE SHEET 45 FOR -Y29- PROFILE
SEE SHEET 49 FOR -DWAY22- PROFILE

REVISIONS

27 MAY 2025 15:57 R:\Haddad\PCP\U4758.rdw.psh.27.dgn
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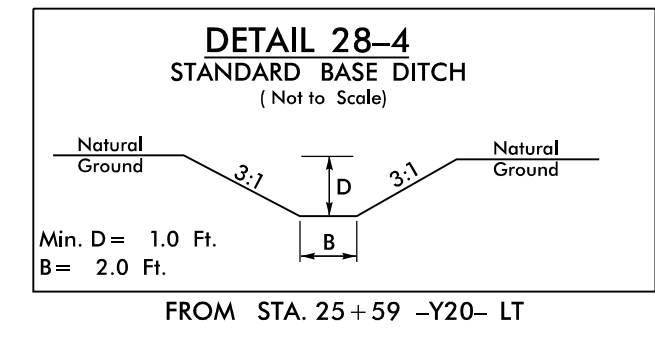




 **AtkinsRéalis** 1616 EAST HILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SUNGATE DESIGN GROUP, P.A.

 905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2343
ENG FIRM LICENSE NO. C-380

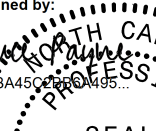
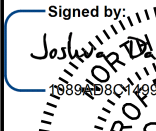


NOTE: SEE SHEET 43 FOR -Y20- PROFILE
SEE SHEET 49 FOR -DWAY24- PROFILE
SEE SHEET 49 FOR -DWAY26- PROFILE

MATCHLINE SEE SHEET RW-25
-Y20- STA 23+50

NEW BREMEN INVESTMENTS INC
DB 6865 PG 170
PB 80 PG 122

NOTE: PARTIAL DESIGN SHOWN FOR REFERENCE ONLY.
SEE PSH 28 FOR COMPLETE DETAILS.

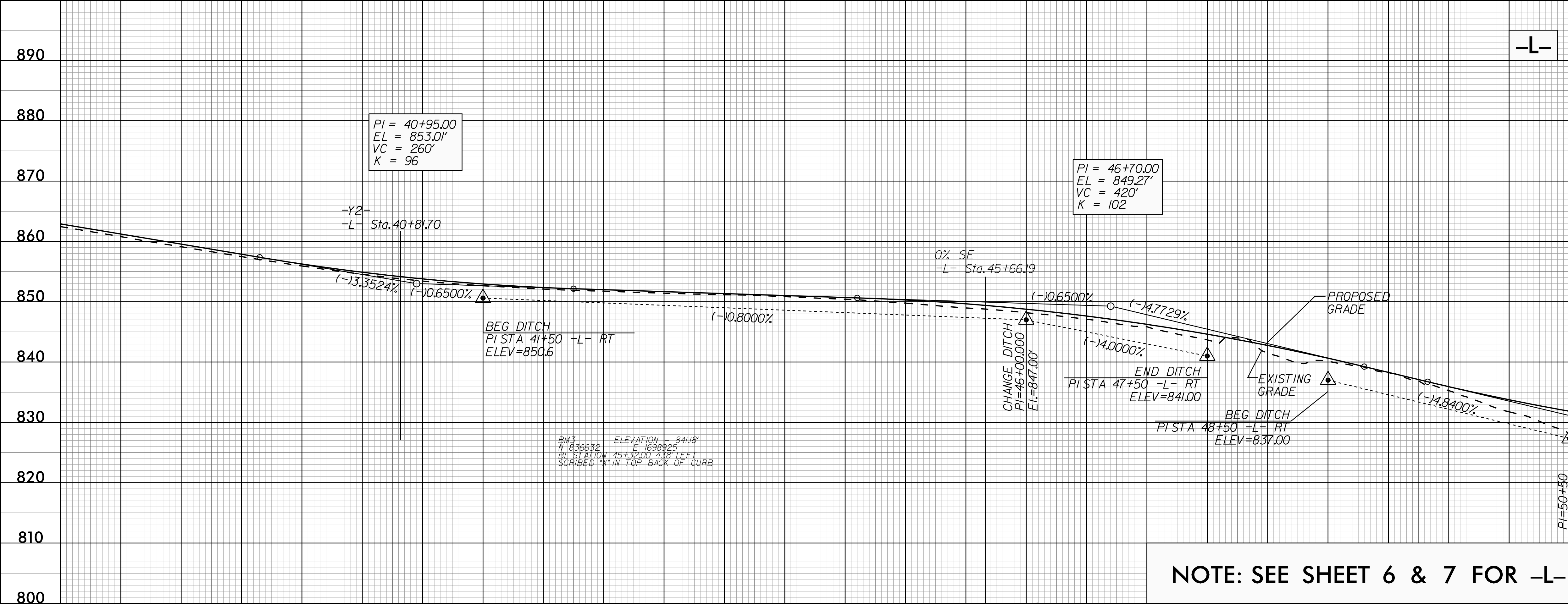
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U-4758		RW-28	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Signed by 		Signed by 	
5/23/2025		5/28/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

AtkinsRéalis 1616 EAST WILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

SUNGATE DESIGN GROUP, P.A.

 905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 850-2245
ENG FIRM LICENSE NO. C-890

5/28/2025



PROJECT REFERENCE NO.
U-4758

SHEET NO.
30

ROADWAY DESIGN ENGINEER

Joshua G. Dalton
022610
5/23/2025

HYDRAULICS ENGINEER

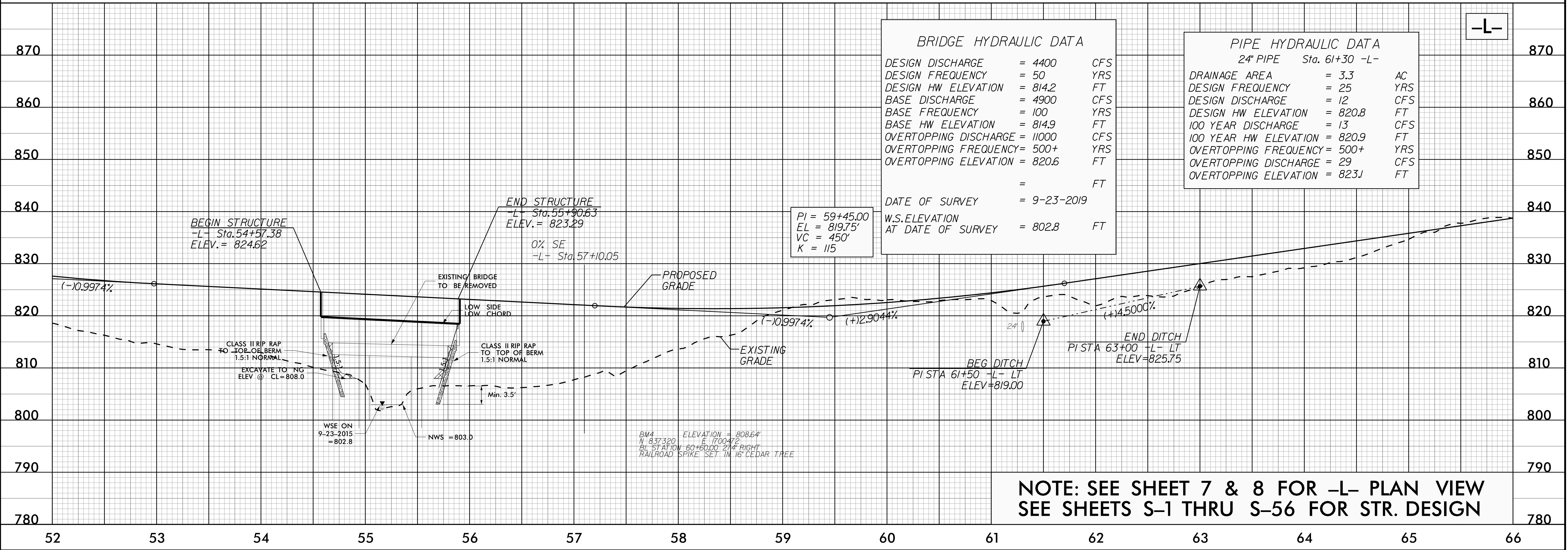
Joshua G. Dalton
022610
5/23/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SUNGATE DESIGN GROUP, P.A.

1616 EAST WILLOWBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27608
(919) 876-8888 NCES #F-0326
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL (919) 886-2245 ENG FIRM LICENSE NO. C-890

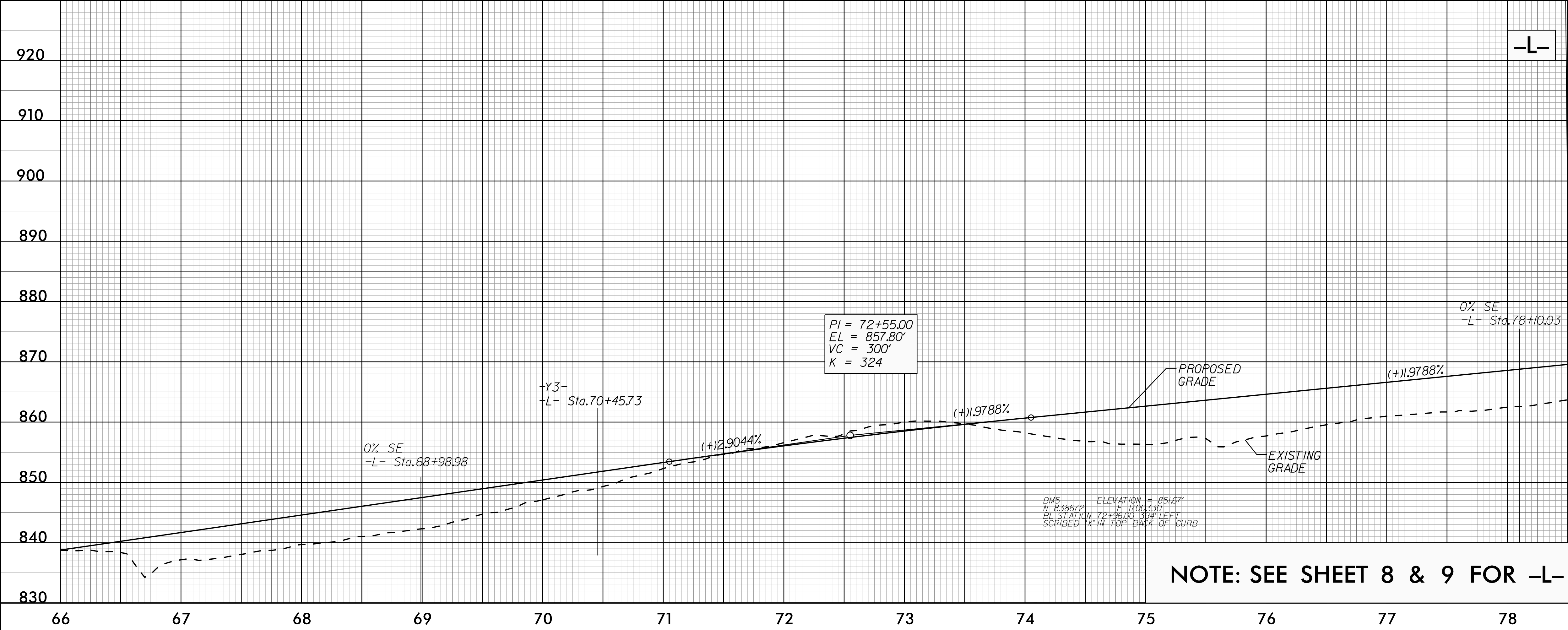
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BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 4400	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 814.2	FT
BASE DISCHARGE	= 4900	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 814.9	FT
OVERTOPPING DISCHARGE	= 11000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 820.6	FT
	=	FT
DATE OF SURVEY	= 9-23-2019	
W.S. ELEVATION		
AT DATE OF SURVEY	= 802.8	FT

PIPE HYDRAULIC DATA		
24" PIPE	Sta. 61+30	-L-
DRAINAGE AREA	= 3.3	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 12	CFS
DESIGN HW ELEVATION	= 820.8	FT
100 YEAR DISCHARGE	= 13	CFS
100 YEAR HW ELEVATION	= 820.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 29	CFS
OVERTOPPING ELEVATION	= 823.1	FT

5/28/24



PROJECT REFERENCE NO.
U-4758

SHEET NO.
31

ROADWAY DESIGN ENGINEER

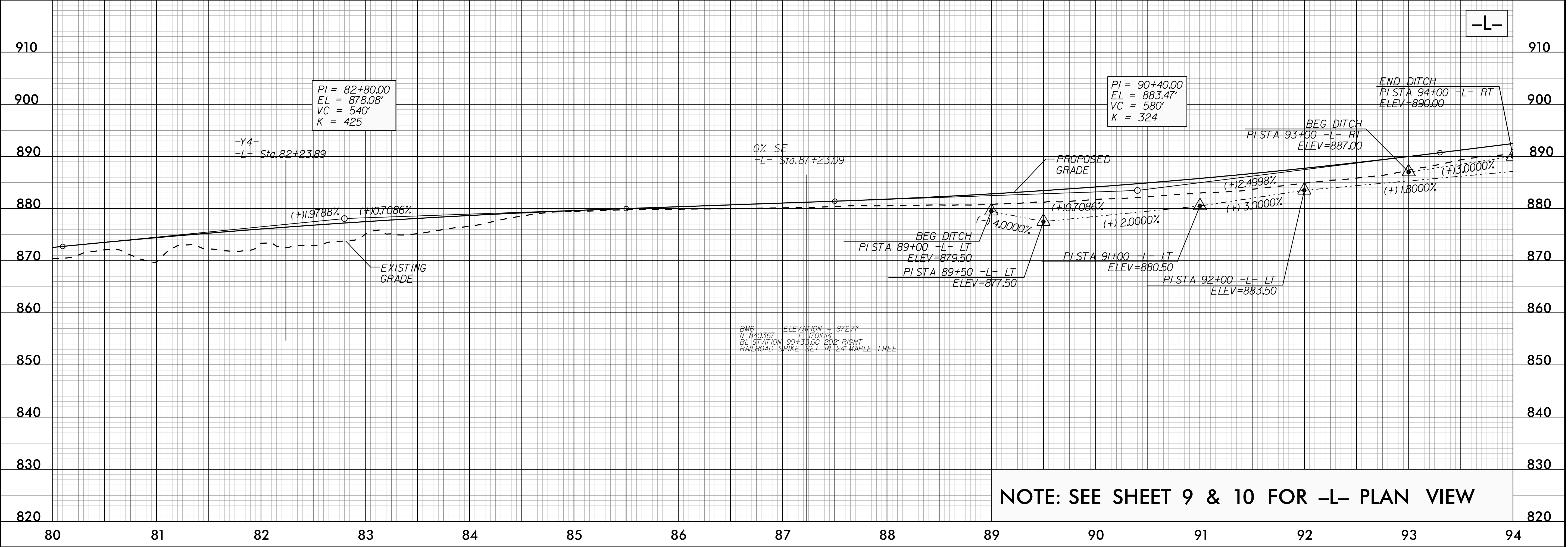
HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

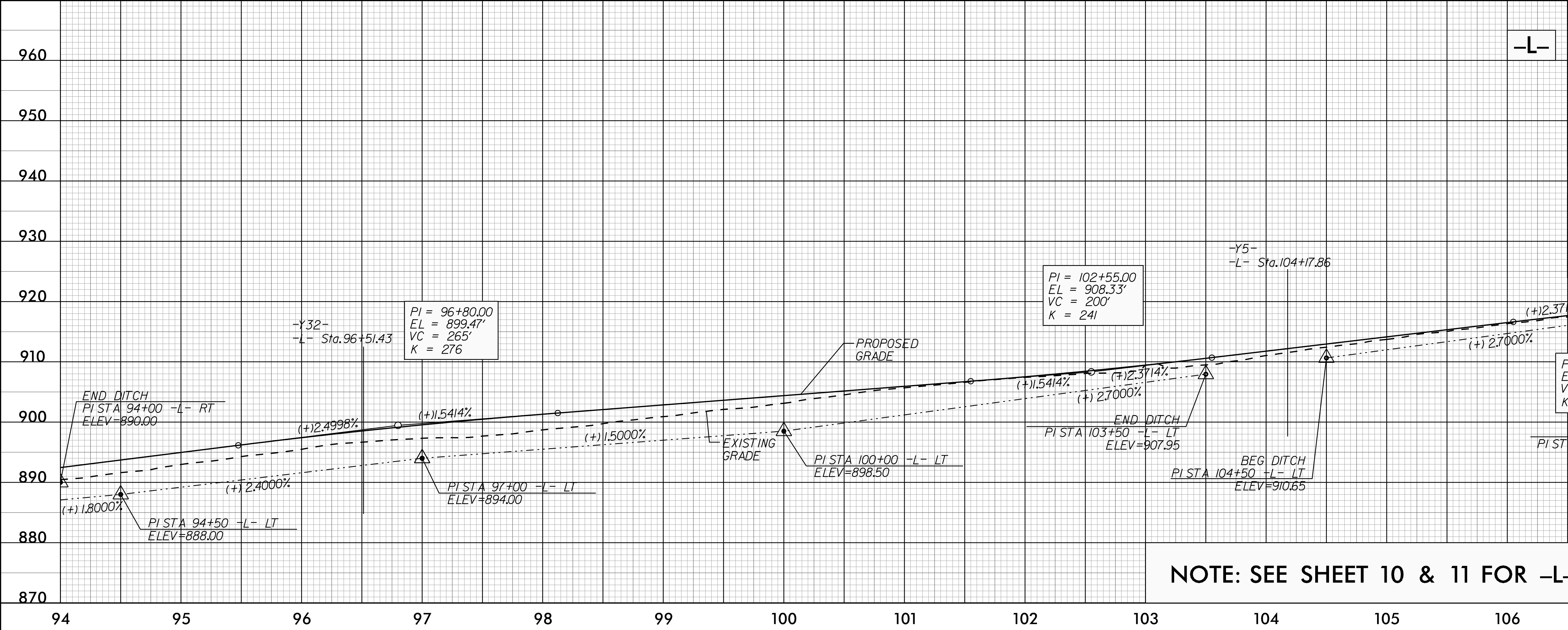
AtkinsRéalis
SUNGATE DESIGN GROUP, P.A.

1616 EAST WILLOWBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-8888 NCCEES #F-0326
995 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 886-2245
ENG FIRM LICENSE NO. C-890

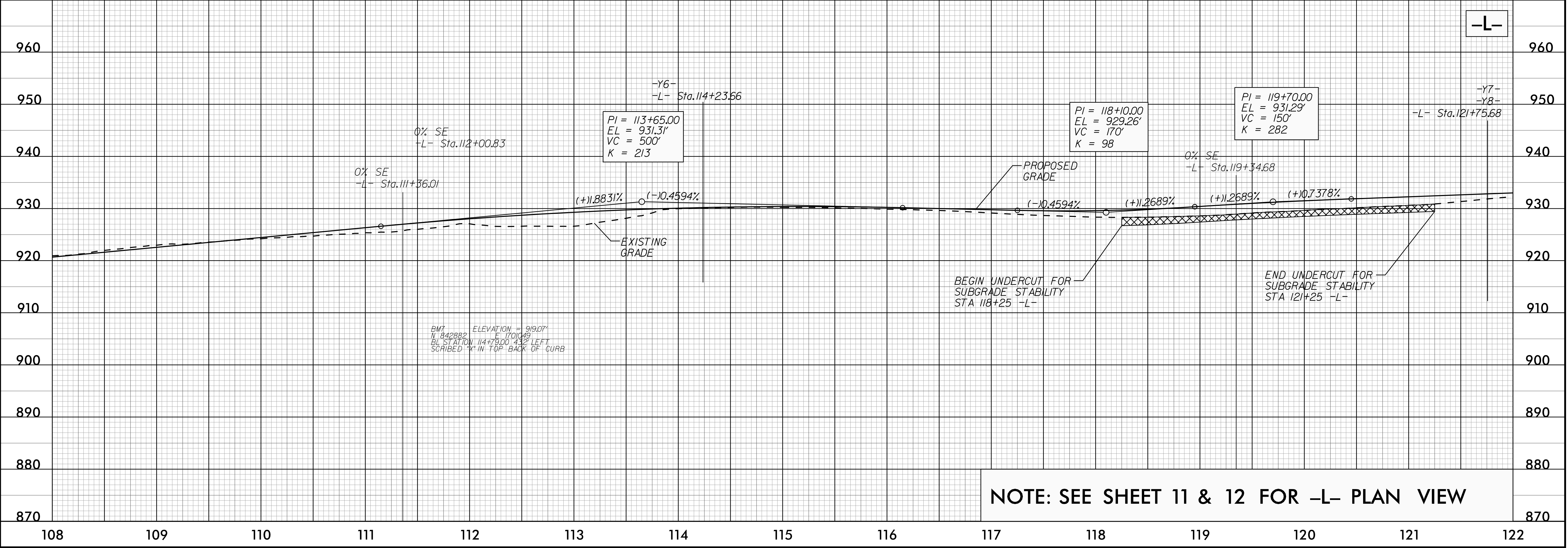
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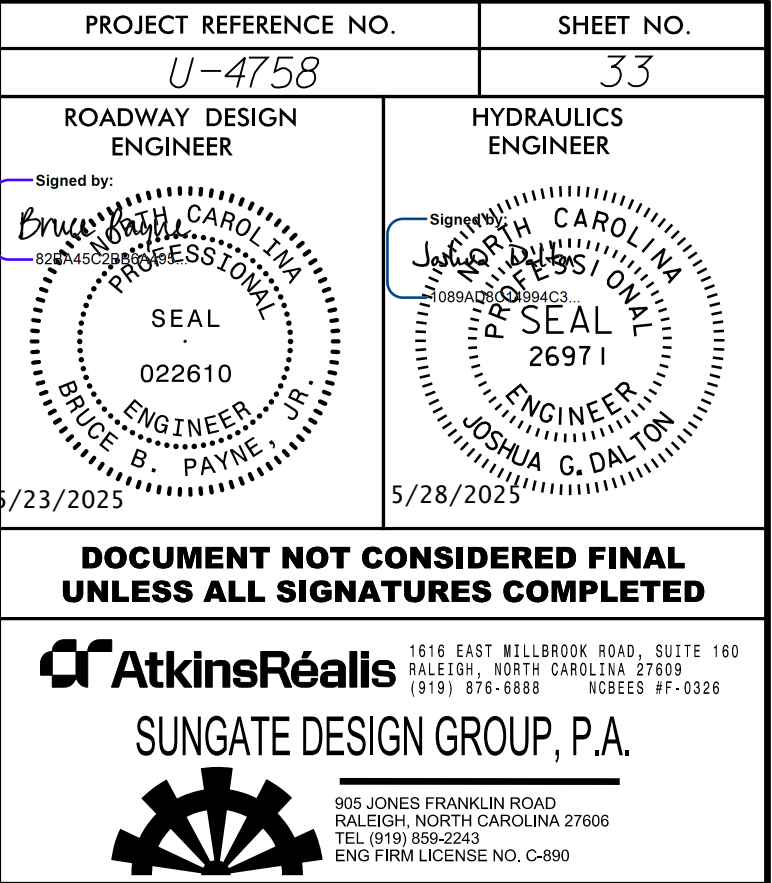
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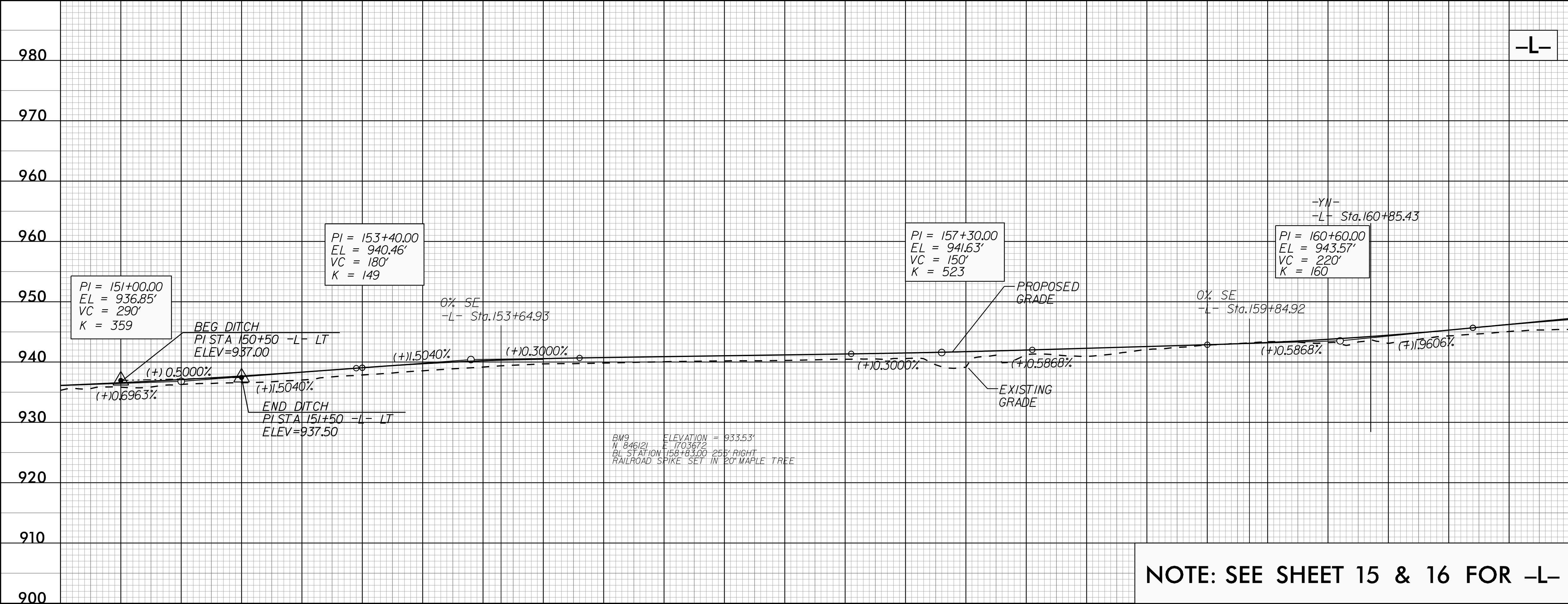
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ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 	
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 SUNGATE DESIGN GROUP, P.A. 1616 EAST WILLOW ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27608 (919) 876-8888 NCES #F-0326 905 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27608 TEL (919) 886-2245 ENG FIRM LICENSE NO. C-890		



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5/28/24



PROJECT REFERENCE NO.
U-4758

SHEET NO.
34

ROADWAY DESIGN ENGINEER
Enric Papp
NORTH CAROLINA PROFESSIONAL ENGINEER
BRIDGE B. PAYNE
5/29/2025

HYDRAULICS ENGINEER
Julius Dalton
NORTH CAROLINA PROFESSIONAL ENGINEER
5/28/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

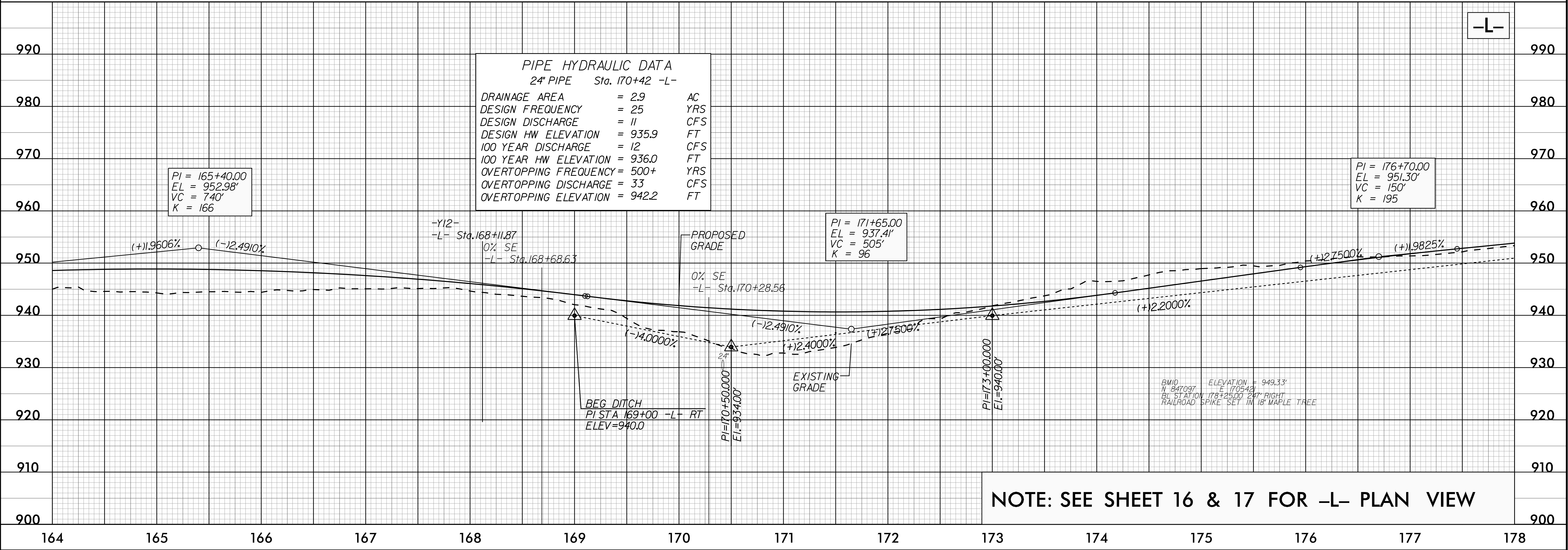
AtkinsRéalis

SUNGATE DESIGN GROUP, P.A.

1616 EAST WILLOWBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27608
(919) 876-8888 NCES #F-0326

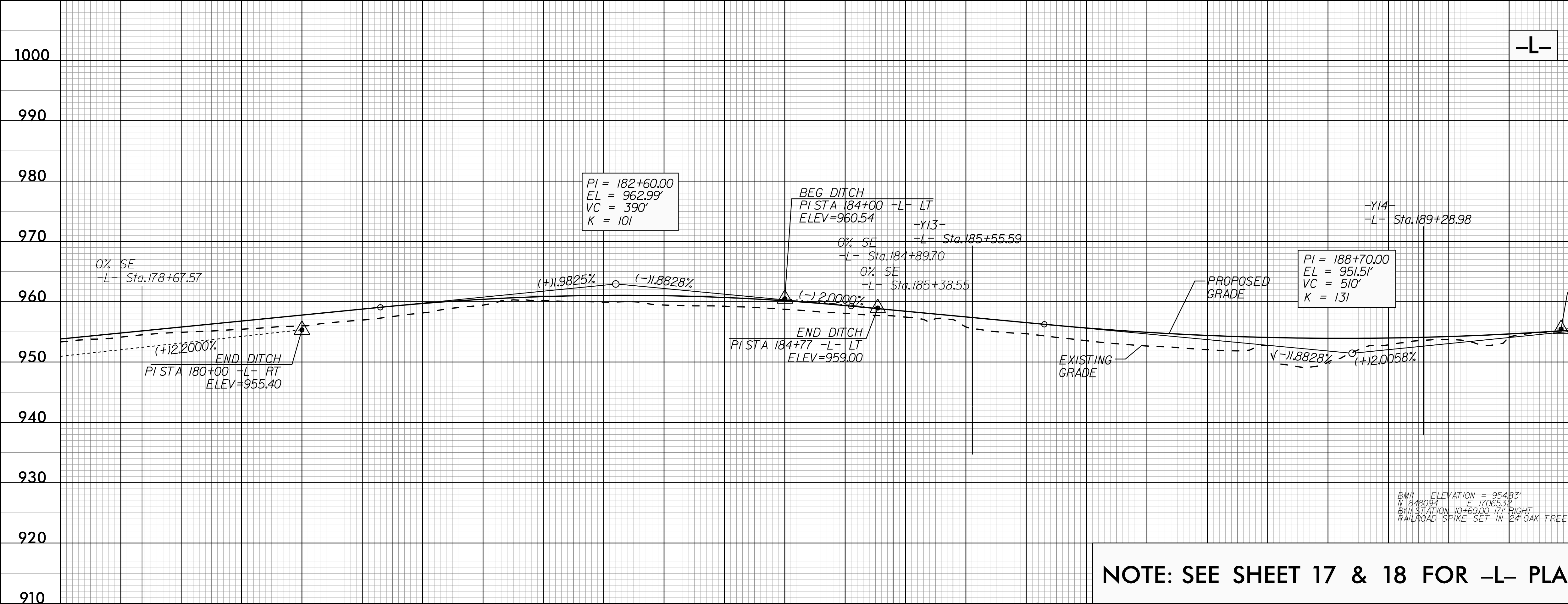
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
TEL (919) 856-2245
ENG FIRM LICENSE NO. C-890

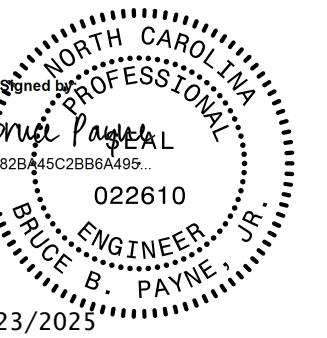
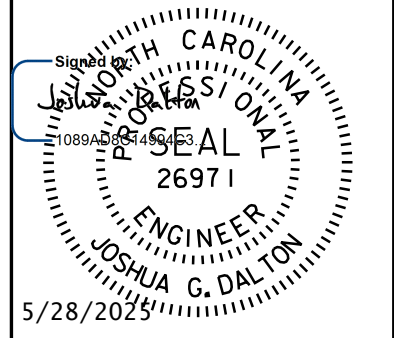
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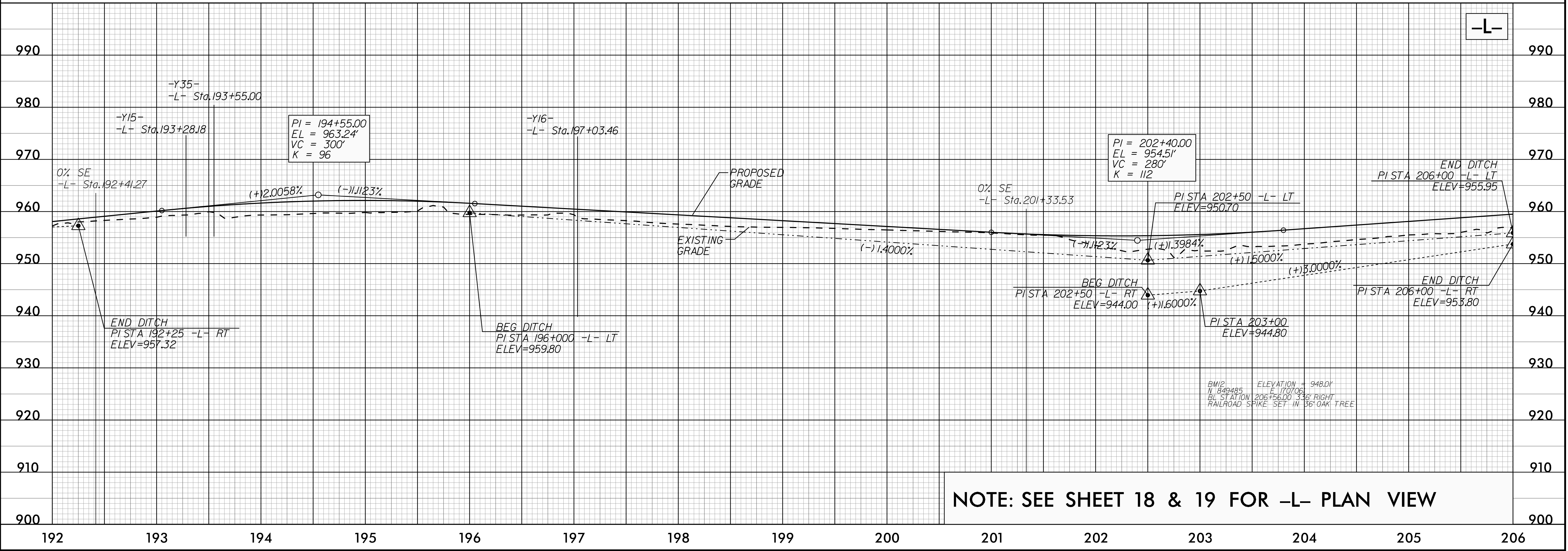


PIPE HYDRAULIC DATA		
24" PIPE	Sta. 170+42	-L-
DRAINAGE AREA	= 2.9	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 11	CFS
DESIGN HW ELEVATION	= 935.9	FT
100 YEAR DISCHARGE	= 12	CFS
100 YEAR HW ELEVATION	= 936.0	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 33	CFS
OVERTOPPING ELEVATION	= 942.2	FT

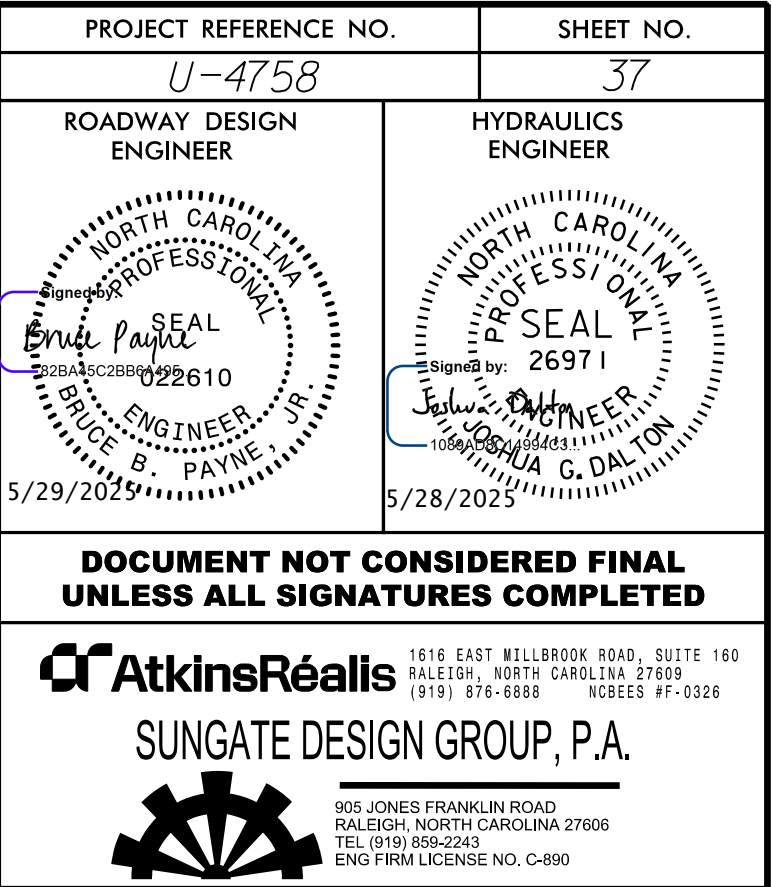
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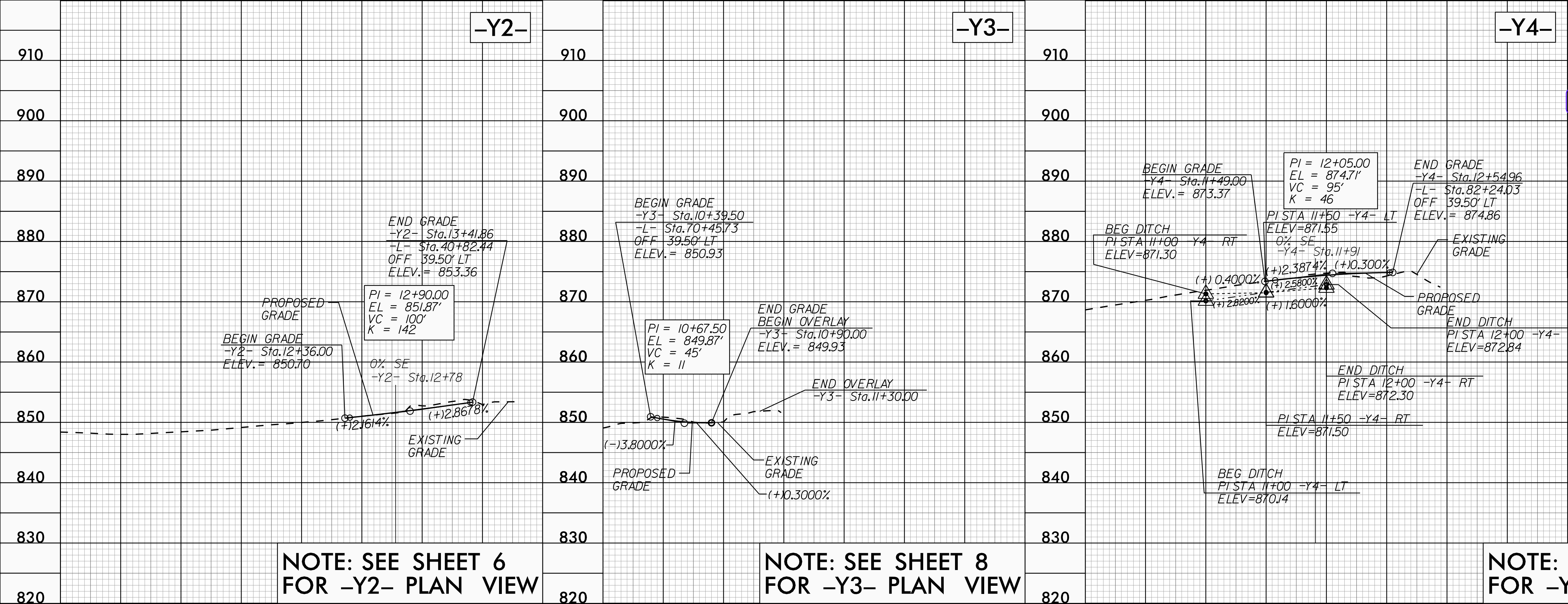
PROJECT REFERENCE NO. U-4758		SHEET NO. 35
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
 SUNGATE DESIGN GROUP, P.A.  1616 EAST WILLOWBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27608 TEL: (919) 856-2245 NCEES #F-0326 905 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27608 TEL: (919) 856-2245 ENG FIRM LICENSE NO. C-890		



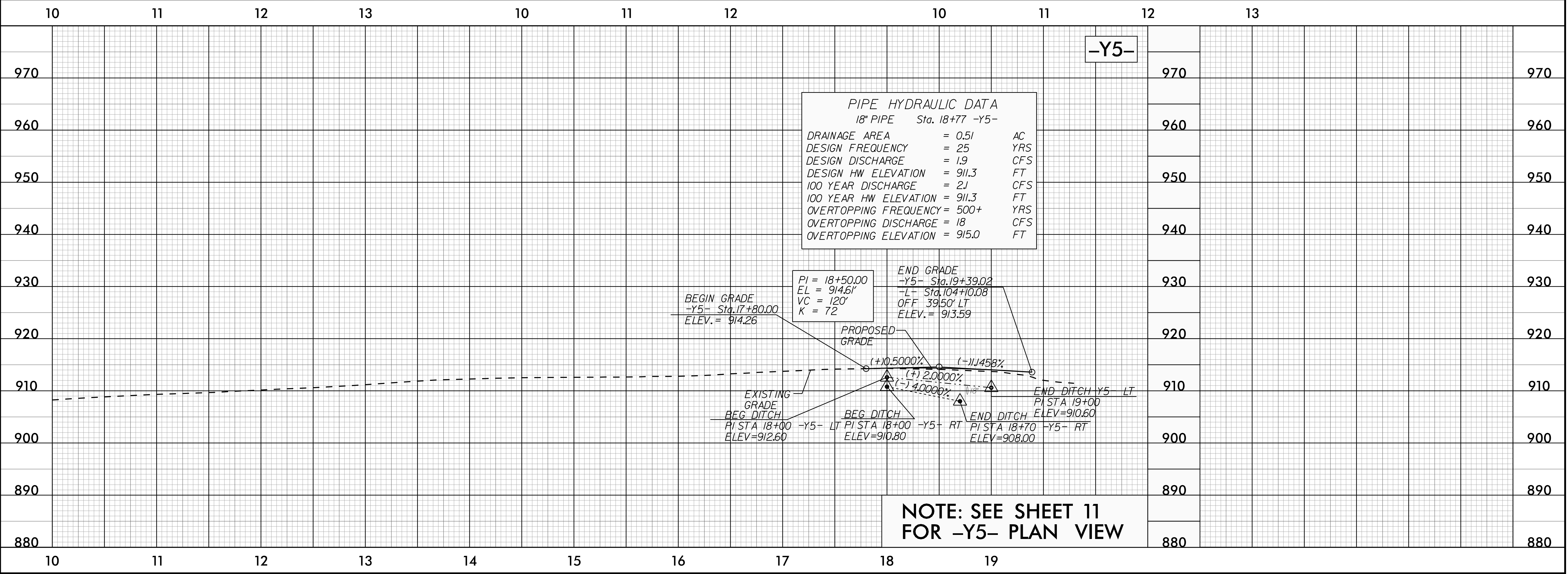
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5/28/24

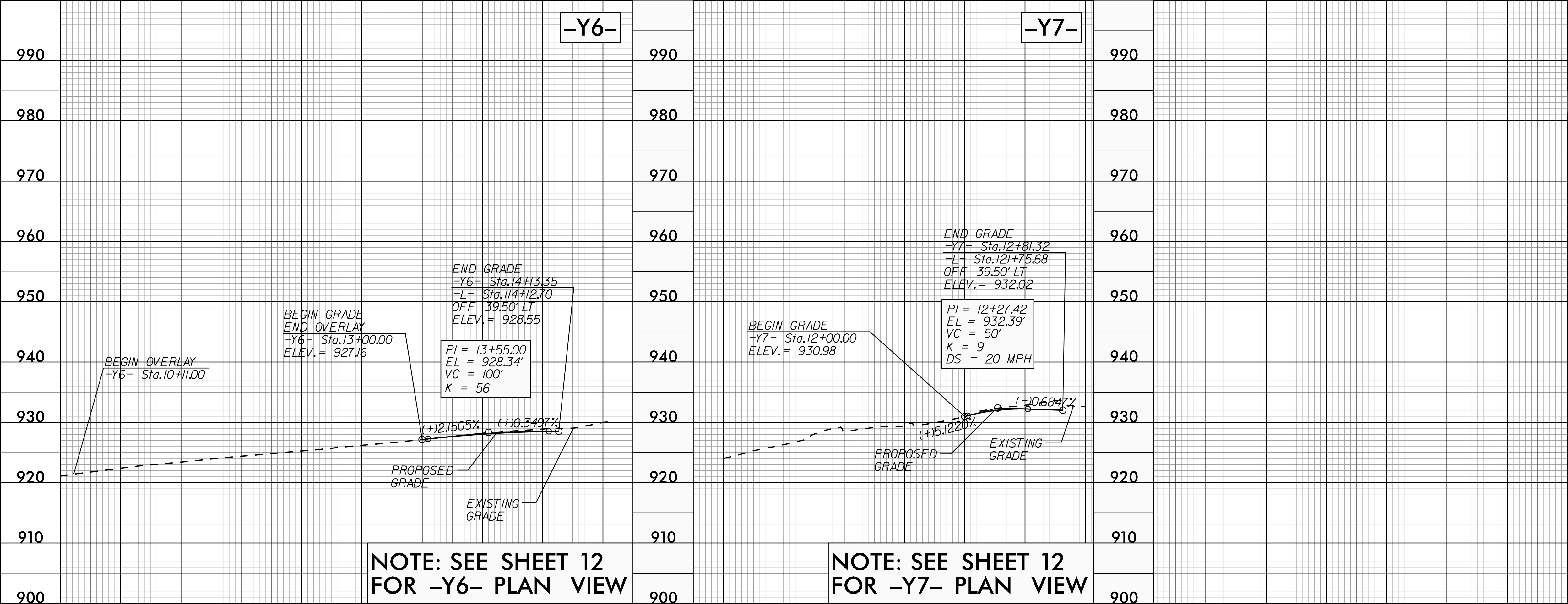


PROJECT REFERENCE NO. <i>U-4758</i>		SHEET NO. <i>38</i>	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
		1616 EAST WILLOWBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27608 (919) 876-8888 NCES 97-0326	
		905 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27608 TEL (919) 886-2245 ENG FIRM LICENSE NO. C-890	



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\$\$\$\$\$SYTIME\$\$\$\$\$

5/28/24



PROJECT REFERENCE NO.
U-4758

SHEET NO.
39

ROADWAY DESIGN ENGINEER
Engr. Paula

HYDRAULICS ENGINEER
Engr. Joshua G. Dalton

Seal
NORTH CAROLINA PROFESSIONAL ENGINEER
BRUCE B. PAYNE
0022610
5/23/2025

Seal
NORTH CAROLINA PROFESSIONAL ENGINEER
JOSHUA G. DALTON
26971
5/28/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

AtkinsRéalis

SUNGATE DESIGN GROUP, P.A.

1616 EAST WILLOWBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27608
TEL: (919) 886-2245
ENG FIRM LICENSE NO. C-890

1616 EAST WILLOWBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27608
TEL: (919) 876-8888
NCEES #F-0326

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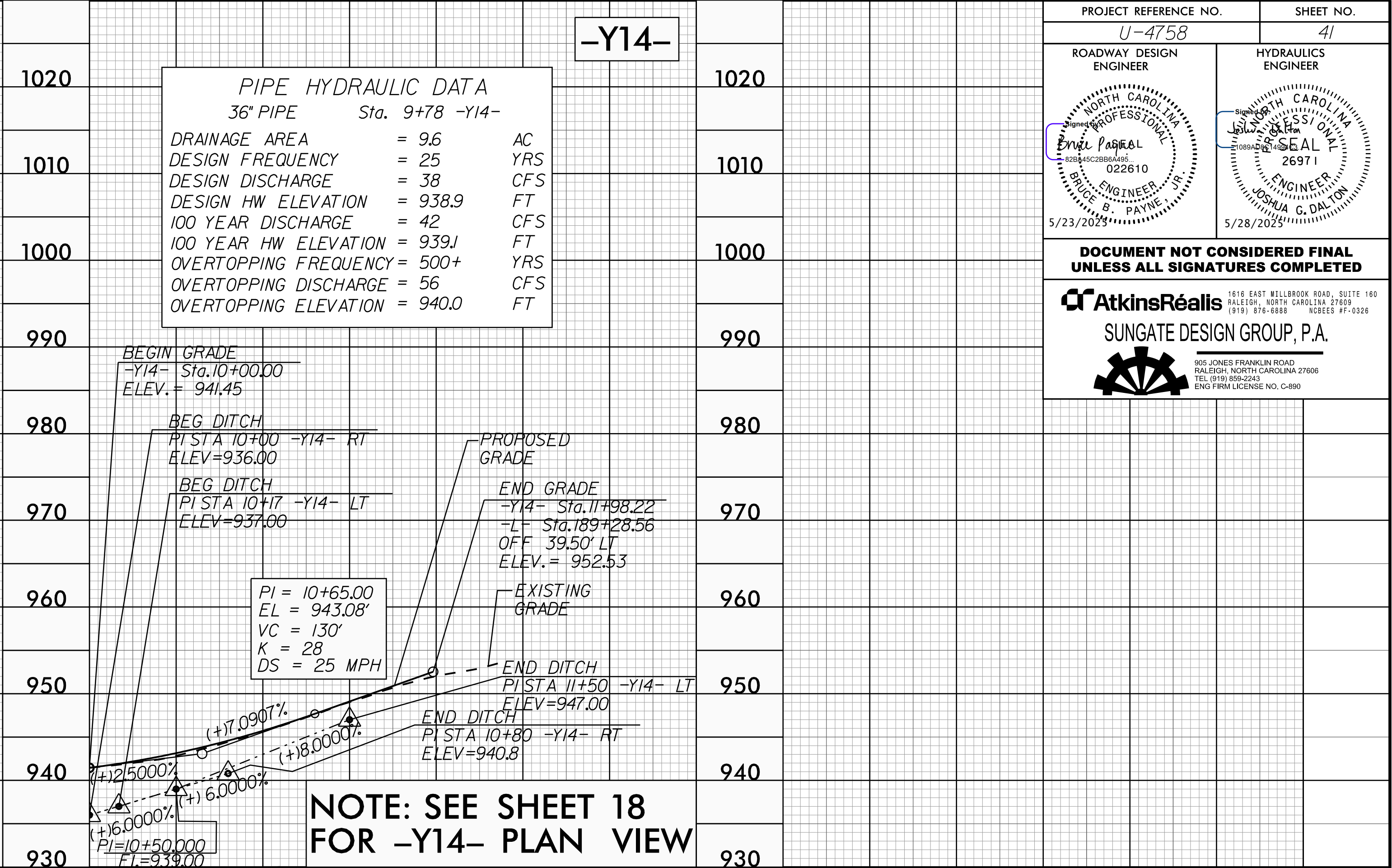
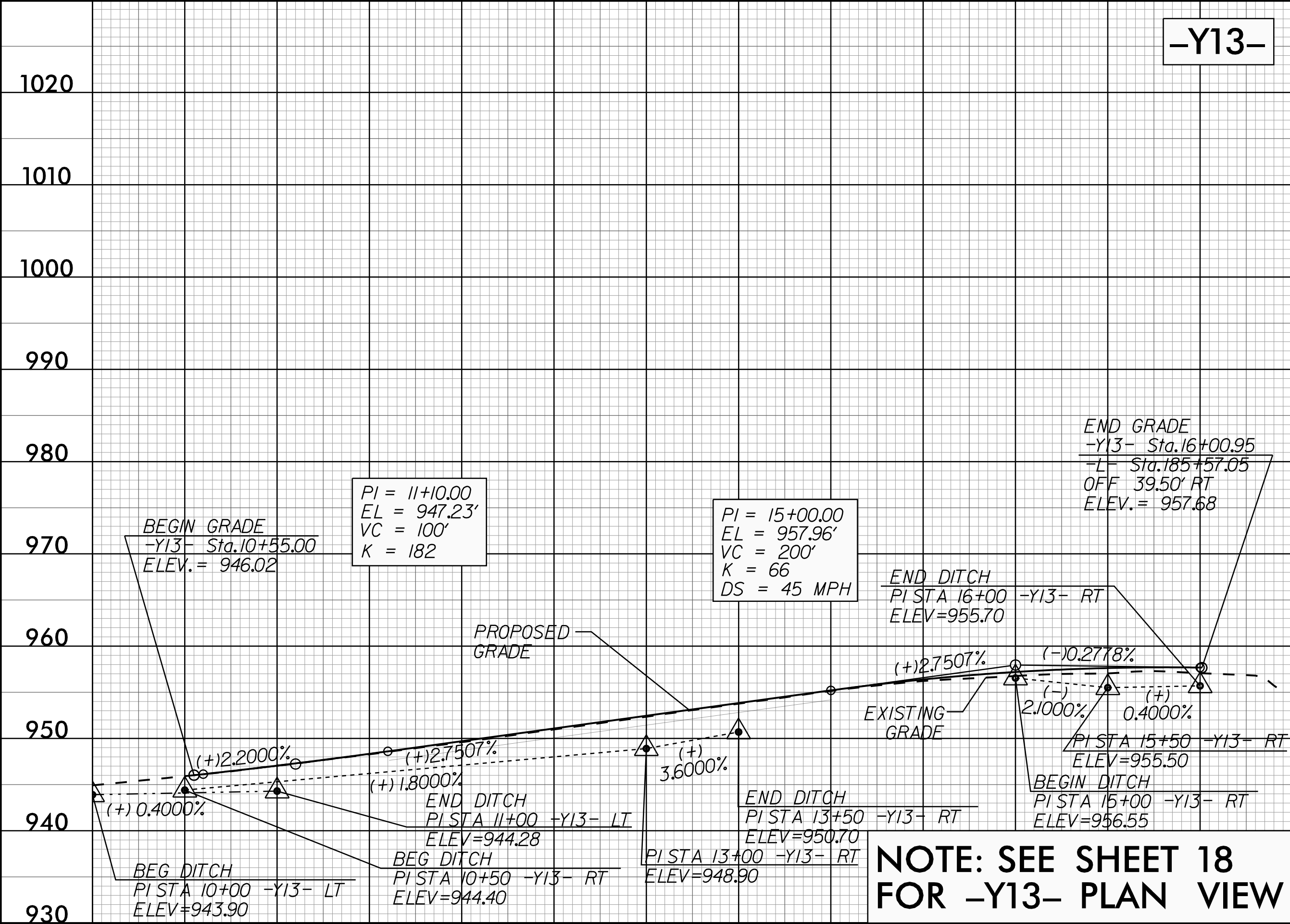
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Section -Y8-: Shows a proposed grade (dashed line) and existing grade (solid line). Key features include a vertical curve with PI = 12+55.00, EL = 932.89', VC = 390', K = 86. The proposed grade starts at Sta. 10+39.50 (Elev. 932.02) and ends at Sta. 12+75.68 (Elev. 932.02). A note indicates to see sheet 12 & 24 for the plan view.

PIPE HYDRAULIC DATA: 24" PIPE Sta. 17+77 -Y8-
DRAINAGE AREA = 2.4 AC
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 8.8 CFS
DESIGN HW ELEVATION = 910.9 FT
100 YEAR DISCHARGE = 9.6 CFS
100 YEAR HW ELEVATION = 911.0 FT
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING DISCHARGE = 12 CFS
OVERTOPPING ELEVATION = 911.2 FT

Other features: Vertical curves with PI = 17+90.00, EL = 910.82', VC = 340', K = 99; and PI = 20+50.00, EL = 909.00', VC = 180', K = 141. Ditch locations are marked at Sta. 19+00 (Elev. 908.30), Sta. 22+00 (Elev. 902.80), and Sta. 23+50 (Elev. 901.30).

5/28/24



PROJECT REFERENCE NO. U-4758		SHEET NO. 41	
ROADWAY DESIGN ENGINEER 		HYDRAULICS ENGINEER 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
		1616 EAST WILLOWBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27608 (919) 876-8888 NCES 07-0326	
SUNGATE DESIGN GROUP, P.A.		905 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27608 TEL (919) 886-2245 ENG FIRM LICENSE NO. C-890	

19 MAY 2025 09:27
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