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8/17/09

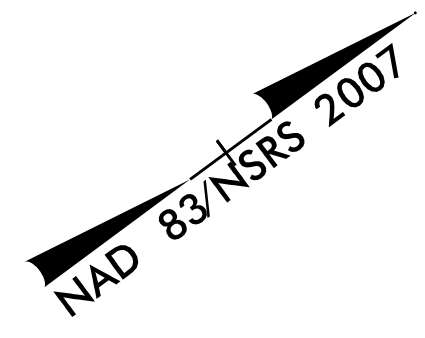
MATCHLINE -L- STA 131+00 SEE SHEET 10

MATCHLINE -L- STA 145+00 SEE SHEET 12

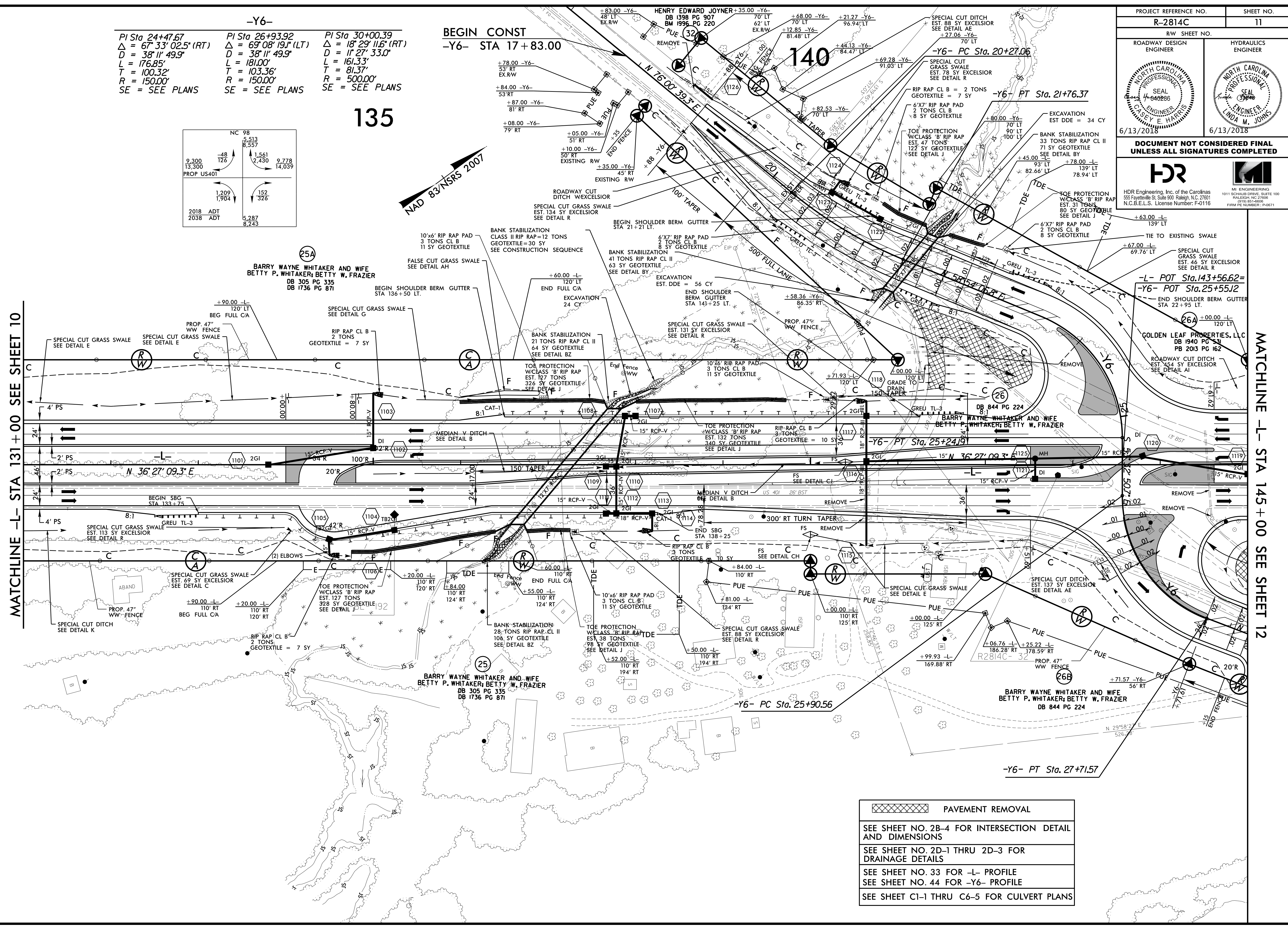
-Y6-		
PI Sta 24+47.67 Δ = 67° 33' 02.5" (RT) D = 38' 11" 49.9" L = 176.85' T = 100.32' R = 150.00' SE = SEE PLANS	PI Sta 26+93.92 Δ = 69° 08' 19.1" (LT) D = 38' 11" 49.9" L = 181.00' T = 103.36' R = 150.00' SE = SEE PLANS	PI Sta 30+00.39 Δ = 18° 29' 11.6" (RT) D = 11' 27" 33.0" L = 161.33' T = 81.37' R = 500.00' SE = SEE PLANS

BEGIN CONST
-Y6- STA 17+83.00

9.300 13.300 PROP US401	-48 126	9.513 8.537	1.561 2.430	9.778 14.039
2018 ADT 2038 ADT	1,209 1,904	152 326	5,287 8,243	



PROJECT REFERENCE NO. R-2814C	SHEET NO. 11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS

	PAVEMENT REMOVAL
SEE SHEET NO. 2B-4 FOR INTERSECTION DETAIL AND DIMENSIONS	
SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS	
SEE SHEET NO. 33 FOR -L- PROFILE	
SEE SHEET NO. 44 FOR -Y6- PROFILE	
SEE SHEET C1-1 THRU C6-5 FOR CULVERT PLANS	

6/13/2018 12:28:14C_psh.s11.dgn

8/17/19

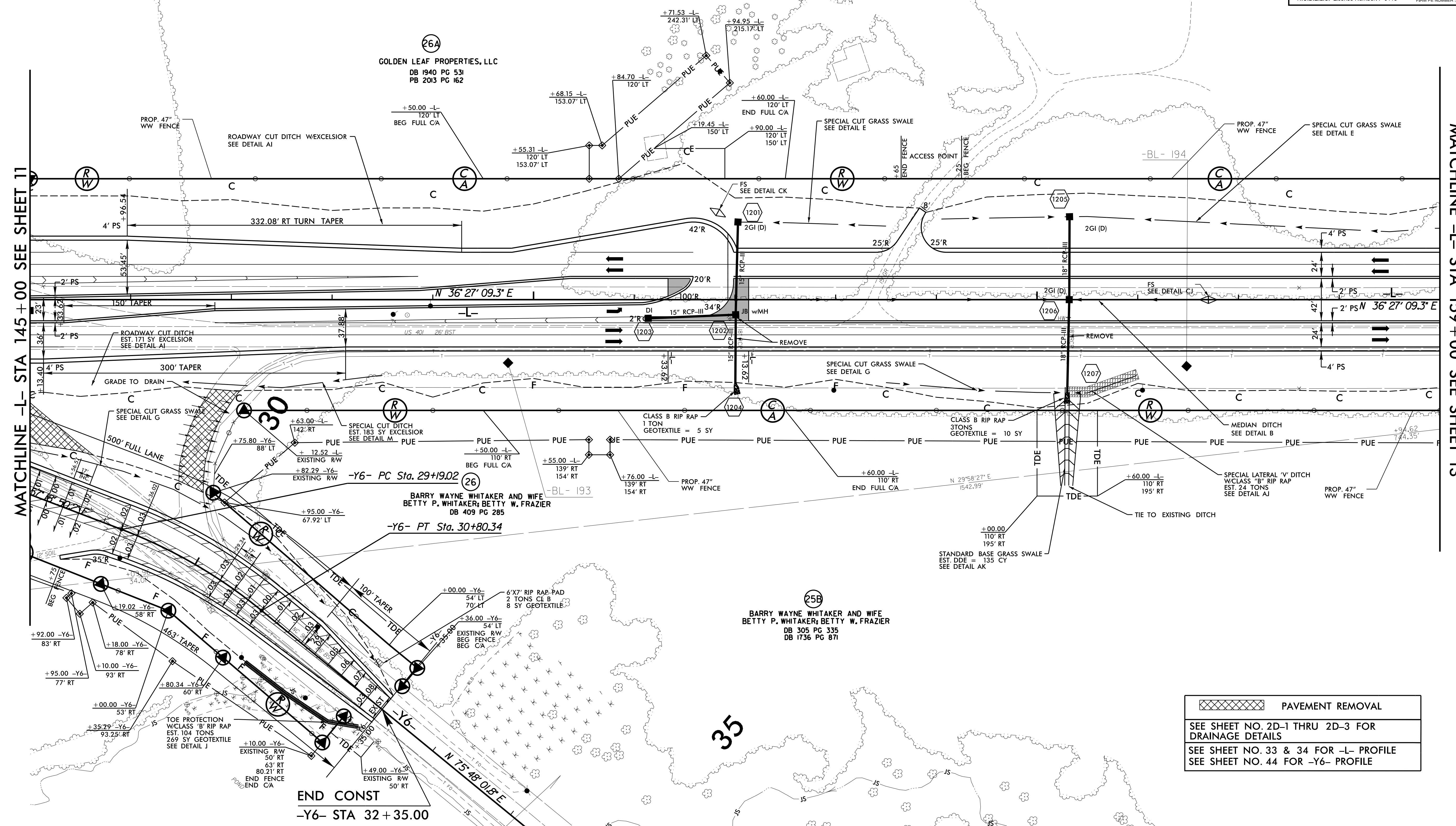
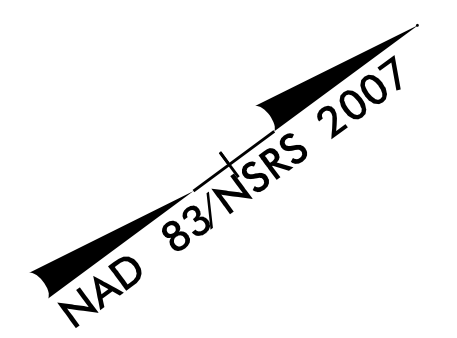
PROJECT REFERENCE NO. R-2814C	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
HDR Engineering, Inc. of the Carolinas 355 Fayetteville St., Suite 900, Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27608 (919) 851-6606 FORM PE NUMBER: P-0671

145

150

155

-Y6-
 PI Sta 30+00.39
 $\Delta = 18^{\circ} 29' 11.6" (RT)$
 $D = 17' 27.33.0"$
 $L = 161.33'$
 $T = 81.37'$
 $R = 500.00'$
 SE = SEE PLANS



MATCHLINE -L- STA 145 + 00 SEE SHEET 11

MATCHLINE -L- STA 159 + 00 SEE SHEET 13

REVISIONS

PAVEMENT REMOVAL

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS

SEE SHEET NO. 33 & 34 FOR -L- PROFILE

SEE SHEET NO. 44 FOR -Y6- PROFILE

END CONST
-Y6- STA 32+35.00

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8/17/99

PROJECT REFERENCE NO. R-2814C	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/13/2018	6/13/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	MI ENGINEERING 1011 SCHAUSS DRIVE, SUITE 100 RALEIGH, NC 27608 (919) 851-6606 FORM NO. NUMBER: 1-06071

160

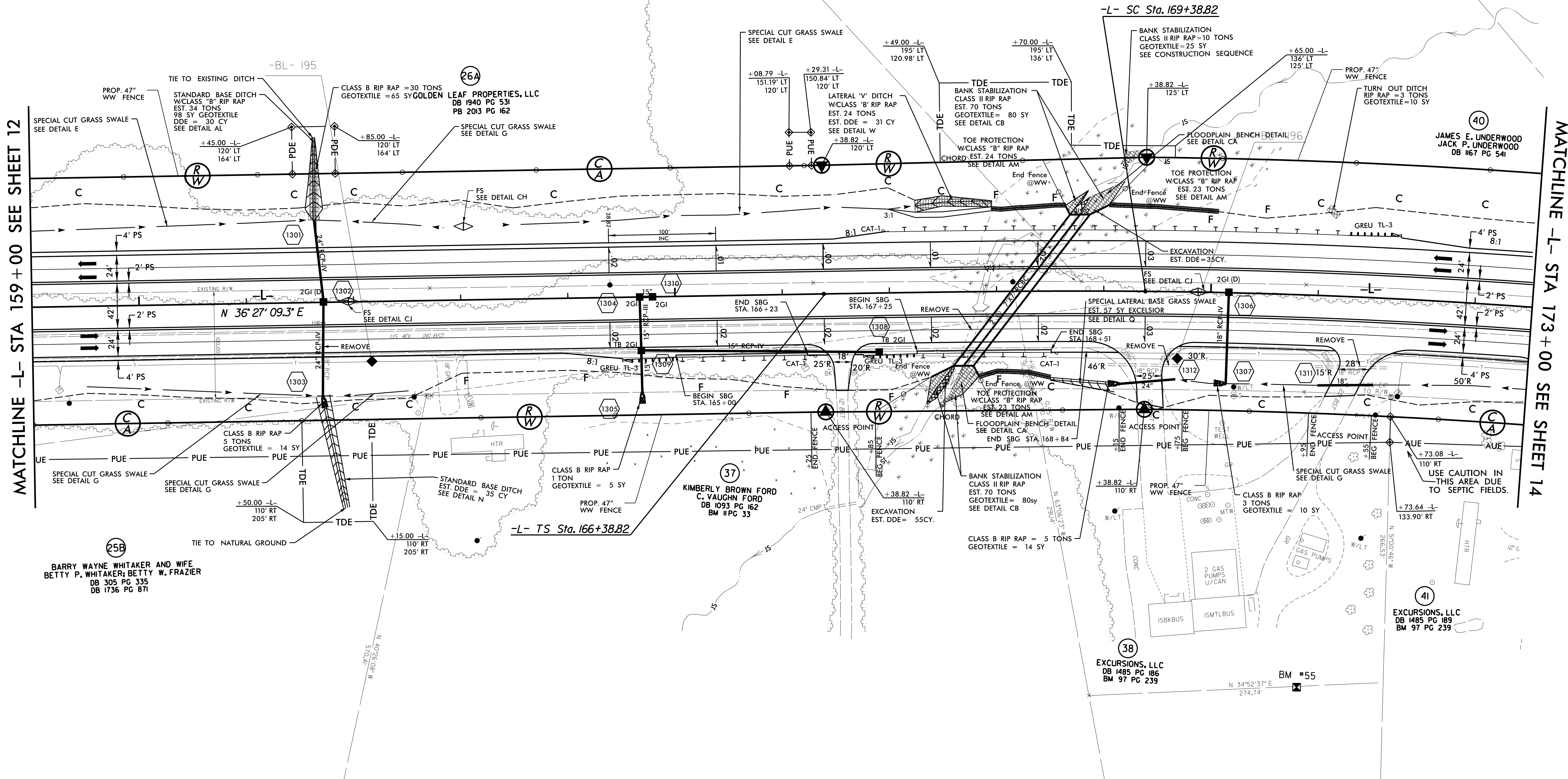
165

-L-

170

PI Sta 168+38.83
 $\Delta s = 1' 29' 59.6"$
 $Ls = 300.00'$
 $LT = 200.01'$
 $ST = 100.01'$
 $SE = \text{SEE PLANS}$

PI Sta 181+74.04
 $\Delta = 24' 19' 49.1" (RT)$
 $D = 0' 59' 59.7"$
 $L = 2,433.21'$
 $T = 1,235.22'$
 $R = 5,730.00'$
 $SE = \text{SEE PLANS}$



MATCHLINE -L- STA 159+00 SEE SHEET 12

MATCHLINE -L- STA 173+00 SEE SHEET 14

REVISIONS

25B
 BARRY WAYNE WHITAKER AND WIFE
 BETTY P. WHITAKER; BETTY W. FRAZIER
 DB 305 PG 335
 DB 1736 PG 871

37
 KIMBERLY BROWN FORD
 C. VAUGHN FORD
 DB 1093 PG 162
 BM 11 PG 33

38
 EXCURSIONS, LLC
 DB 1485 PG 186
 BM 97 PG 239

41
 EXCURSIONS, LLC
 DB 1485 PG 189
 BM 97 PG 239

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS
 SEE SHEET NO. 34 FOR -L- PROFILE
 SEE SHEET C1-1 THRU C6-5 FOR CULVERT PLAN

5/14/2016 R2814C_psh.s13.dgn
 T:\11111111

8/17/19

PROJECT REFERENCE NO. R-2814C		SHEET NO. 14	
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
<small>HDR Engineering, Inc. of the Carolinas 55 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116</small>		<small>M1 ENGINEERING 1011 SCHAUER DRIVE, SUITE 100 RALEIGH, NC 27609 (919) 851-6606 FIRM REG. NUMBER: P-0671</small>	

-L-

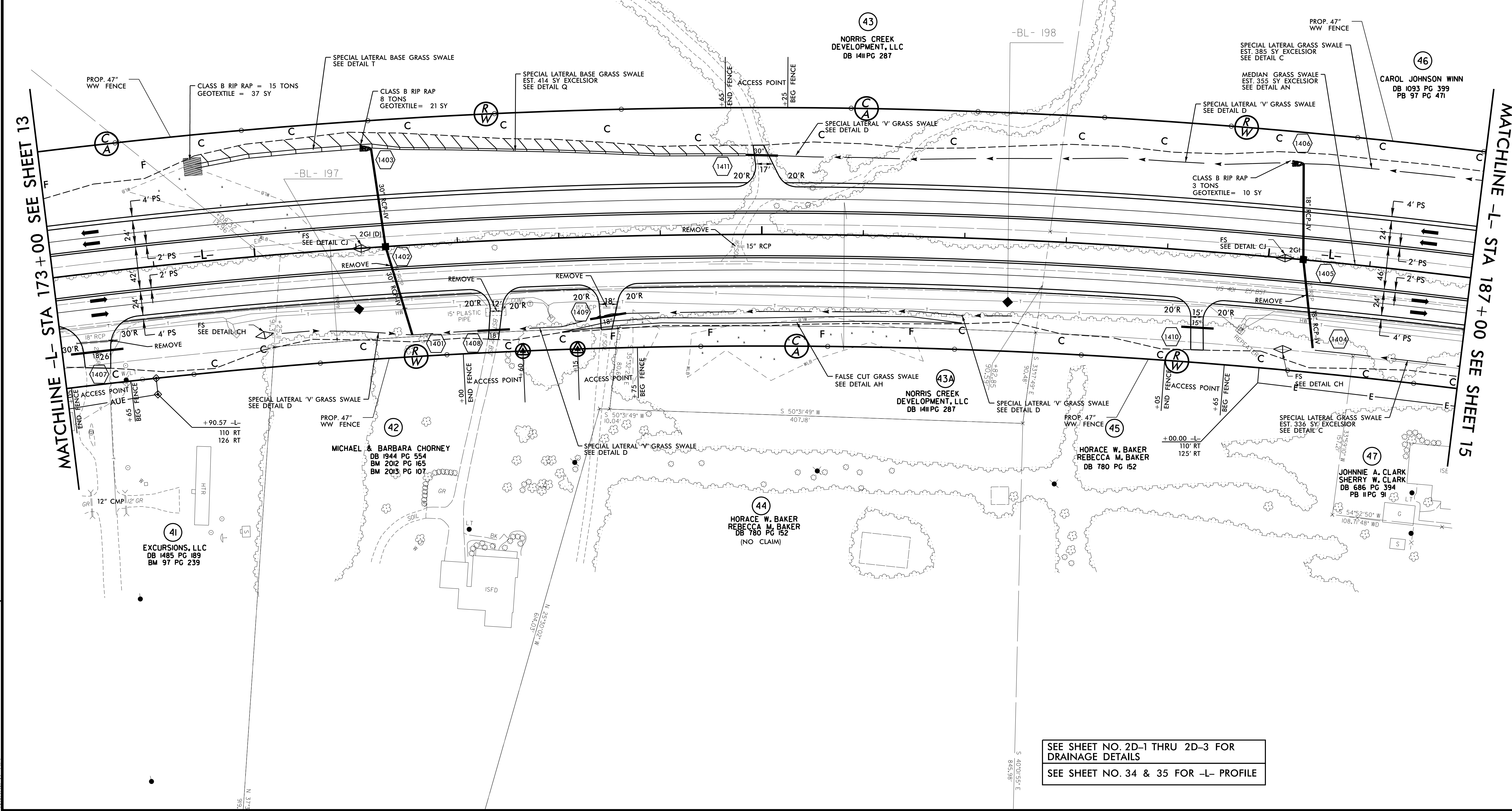
PI Sta 181+74.04
 $\Delta = 24' 19" 49.1" (RT)$
 $D = 0' 59" 59.7"$
 $L = 2,433.21'$
 $T = 1,235.22'$
 $R = 5,730.00'$
 SE = SEE PLANS



175

180

185




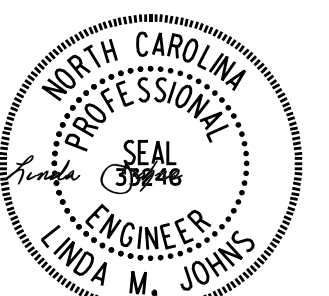


MATCHLINE -L- STA 173+00 SEE SHEET 13

MATCHLINE -L- STA 187+00 SEE SHEET 15

REVISIONS

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS
 SEE SHEET NO. 34 & 35 FOR -L- PROFILE

6/13/2018
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PROJECT REFERENCE NO. R-2814C	SHEET NO. 15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
6/13/2018	6/13/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 400 Raleigh, NC 27601 N.C.B.E.L.S. License Number: F-0116	M1 ENGINEERING 1011 SCHUBERT DRIVE, SUITE 100 RALEIGH, NC 27609 (919) 851-6608 FIRM REG. NUMBER: 1P-0071

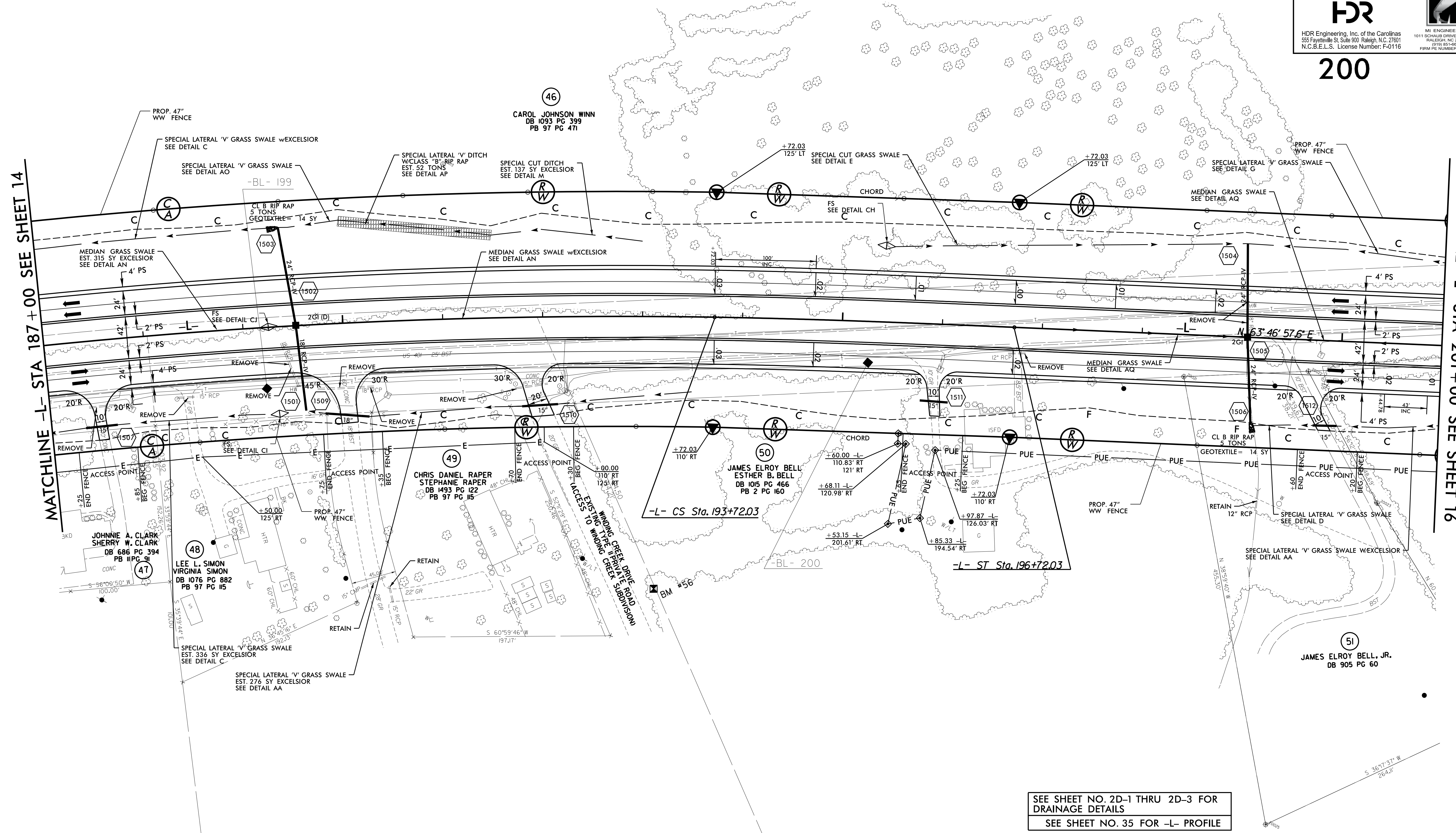
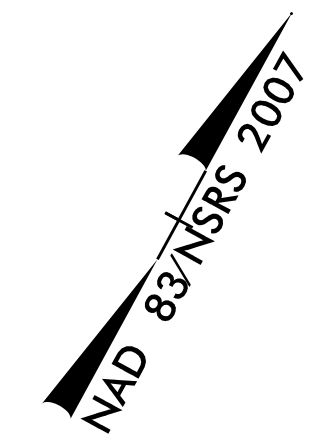
190

195

200

-L-

$PI\ Sta\ 181+74.04$	$PIs\ Sta\ 194+72.04$
$\Delta = 24^{\circ}19'49.1''\ (RT)$	$\Theta_s = 1^{\circ}29'59.6''$
$D = 0^{\circ}59'59.7''$	$L_s = 300.00'$
$L = 2,433.21'$	$LT = 200.01'$
$T = 1,235.22'$	$ST = 100.01'$
$R = 5,730.00'$	
$SE = SEE\ PLANS$	


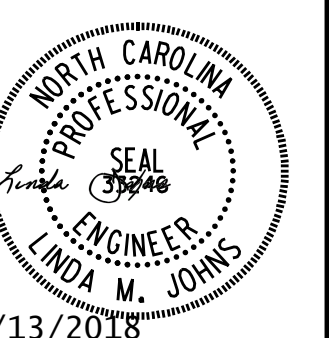




REVISIONS

MATCHLINE -L- STA 187+00 SEE SHEET 14

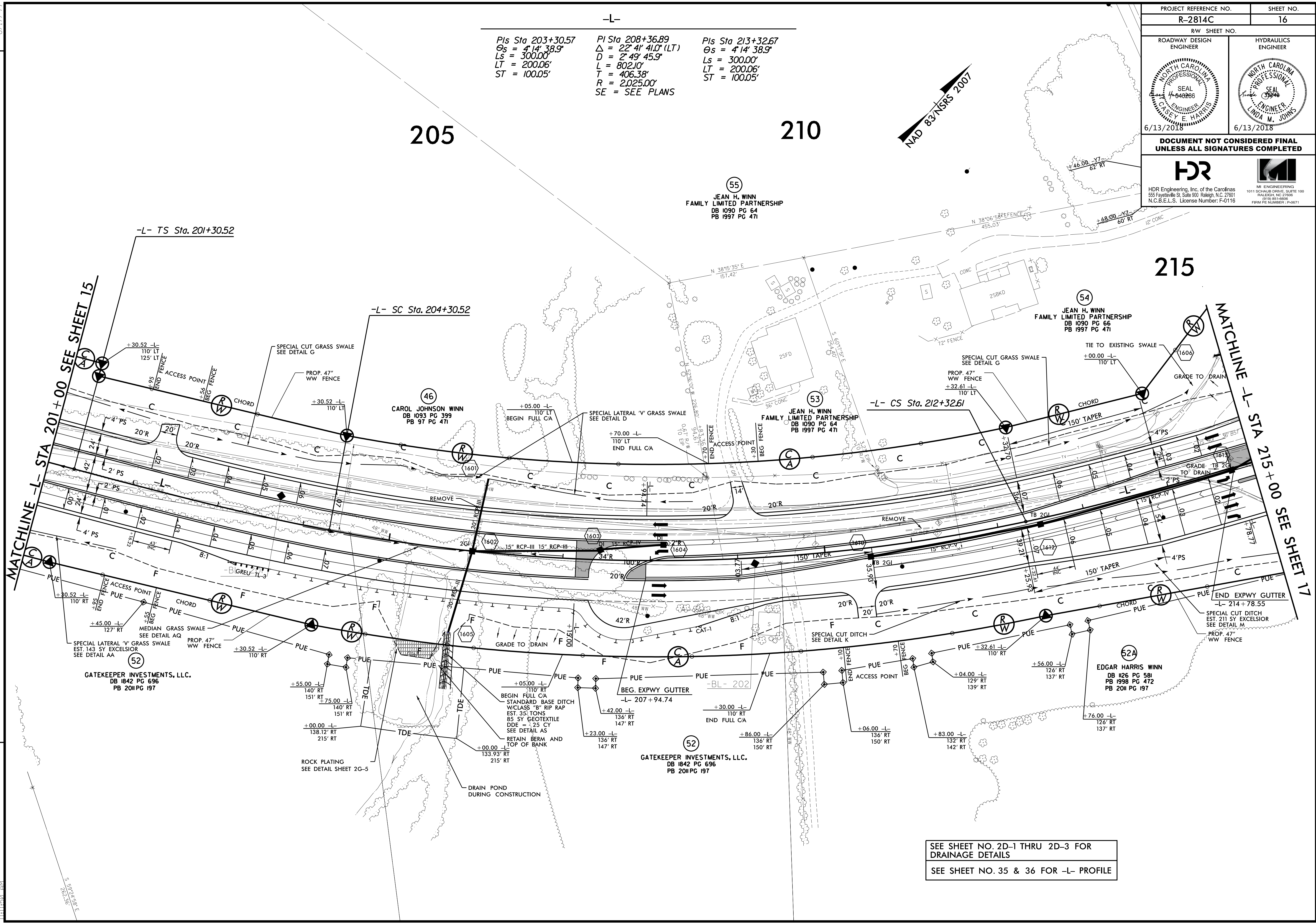
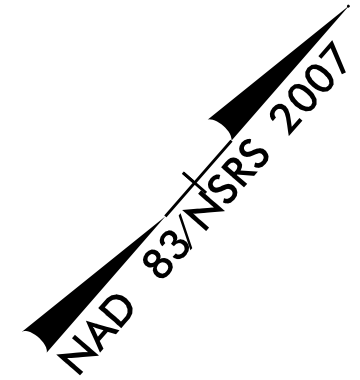
MATCHLINE -L- STA 201+00 SEE SHEET 16

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS
SEE SHEET NO. 35 FOR -L- PROFILE

PROJECT REFERENCE NO. R-2814C		SHEET NO. 16	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
6/13/2018		6/13/2018	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
			
<small>HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900, Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116</small>		<small>MI ENGINEERING 1011 SCHAUSS DRIVE, SUITE 100 FALEIGH, NC 27608 (919) 851-6606 FORM PE NUMBER: P-06071</small>	

-L-

<i>Pls Sta 203+30.57</i> $\Theta_s = 4'14" 38.9"$ $L_s = 300.00'$ $LT = 200.06'$ $ST = 100.05'$	<i>Pls Sta 208+36.89</i> $\Delta = 22' 41" 41.0" (LT)$ $D = 2' 49" 45.9"$ $L = 802.10'$ $T = 406.38'$ $R = 2,025.00'$ $SE = SEE PLANS$	<i>Pls Sta 213+32.67</i> $\Theta_s = 4'14" 38.9"$ $L_s = 300.00'$ $LT = 200.06'$ $ST = 100.05'$
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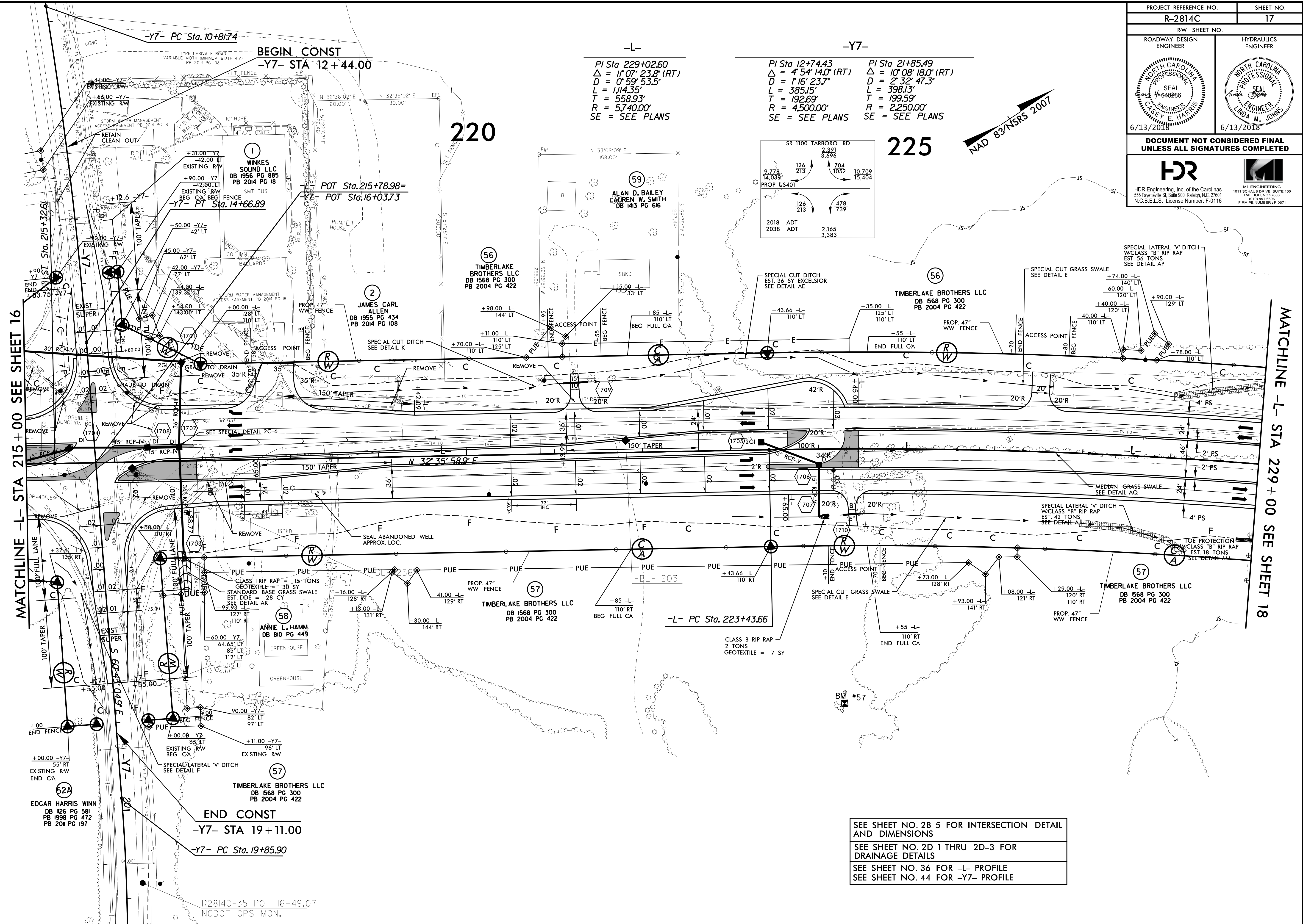


SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS
SEE SHEET NO. 35 & 36 FOR -L- PROFILE

REVISIONS

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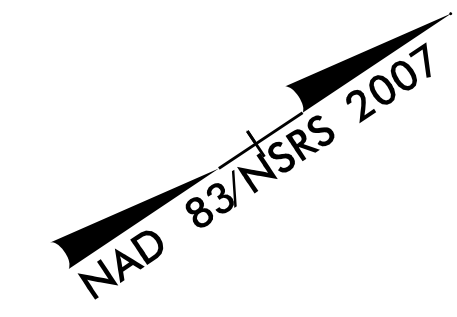
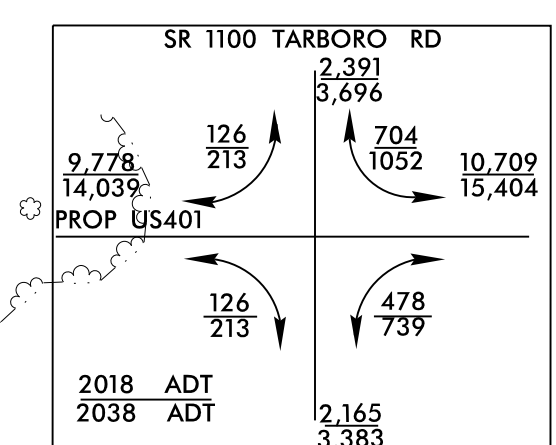
PROJECT REFERENCE NO. R-2814C		SHEET NO. 17	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
6/13/2018		6/13/2018	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116		MI ENGINEERING 1011 SCHAUSS DRIVE, SUITE 100 RALEIGH, NC 27608 (919) 851-6600 FORM PE NUMBER: 1-P0671	



-L-
 PI Sta 229+02.60
 $\Delta = 11^{\circ} 07' 23.8''$ (RT)
 $D = 0' 59' 53.5''$
 $L = 1,114.35'$
 $T = 558.93'$
 $R = 5,740.00'$
 SE = SEE PLANS

-Y7-
 PI Sta 12+74.43
 $\Delta = 4^{\circ} 54' 14.0''$ (RT)
 $D = 1' 16' 23.7''$
 $L = 385.15'$
 $T = 192.69'$
 $R = 4,500.00'$
 SE = SEE PLANS

-Y7-
 PI Sta 21+85.49
 $\Delta = 10^{\circ} 08' 18.0''$ (RT)
 $D = 2' 32' 47.3''$
 $L = 398.13'$
 $T = 199.59'$
 $R = 2,250.00'$
 SE = SEE PLANS



MATCHLINE -L- STA 215+00 SEE SHEET 16

MATCHLINE -L- STA 229+00 SEE SHEET 18

SEE SHEET NO. 2B-5 FOR INTERSECTION DETAIL AND DIMENSIONS
 SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS
 SEE SHEET NO. 36 FOR -L- PROFILE
 SEE SHEET NO. 44 FOR -Y7- PROFILE

END CONST
 -Y7- STA 19+11.00
 -Y7- PC Sta. 19+85.90

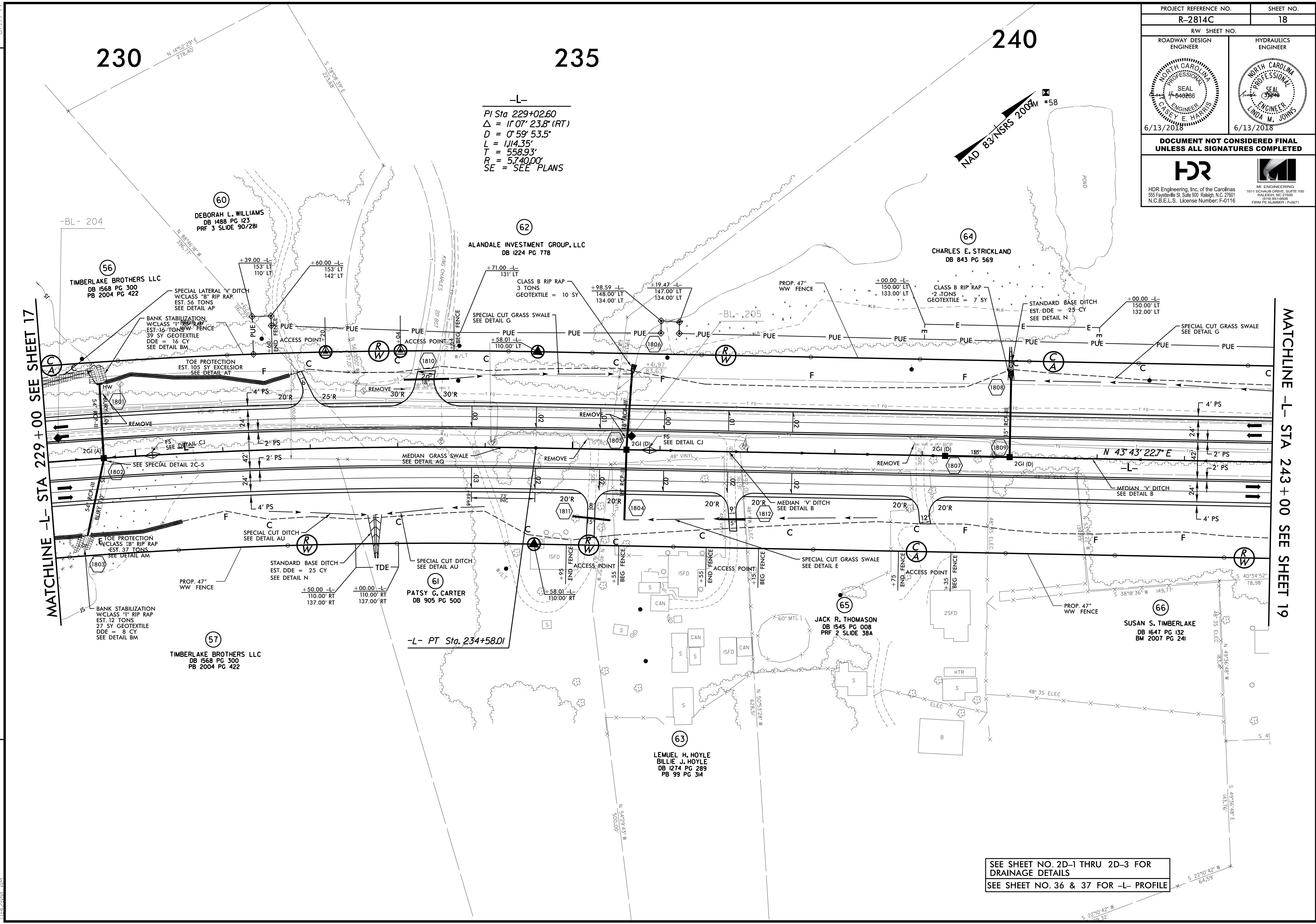
R2814C-35 POT 16+49.07
 NCDOT GPS MON.

REVISIONS

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PROJECT REFERENCE NO. R-2814C		SHEET NO. 18	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900, Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116		MI ENGINEERING 1011 SCHAUER DRIVE, SUITE 100 RALEIGH, NC 27608 (919) 851-6606 FORM PE NUMBER: P-06071	



-L-
 PI Sta 229+02.60
 $\Delta = 1^\circ 07' 23.8'' (RT)$
 $D = 0' 59' 53.5''$
 $L = 1114.35'$
 $T = 558.93'$
 $R = 5,740.00'$
 SE = SEE PLANS

NAD 83 NSRS 2008M #58

MATCHLINE -L- STA 229+00 SEE SHEET 17

MATCHLINE -L- STA 243+00 SEE SHEET 19

SEE SHEET NO. 2D-1 THRU 2D-3 FOR
DRAINAGE DETAILS
SEE SHEET NO. 36 & 37 FOR -L- PROFILE

REVISIONS

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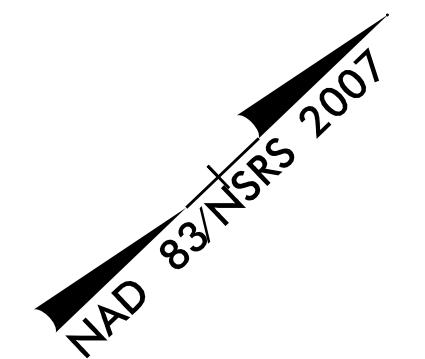
8.17/99

8.17.17.99

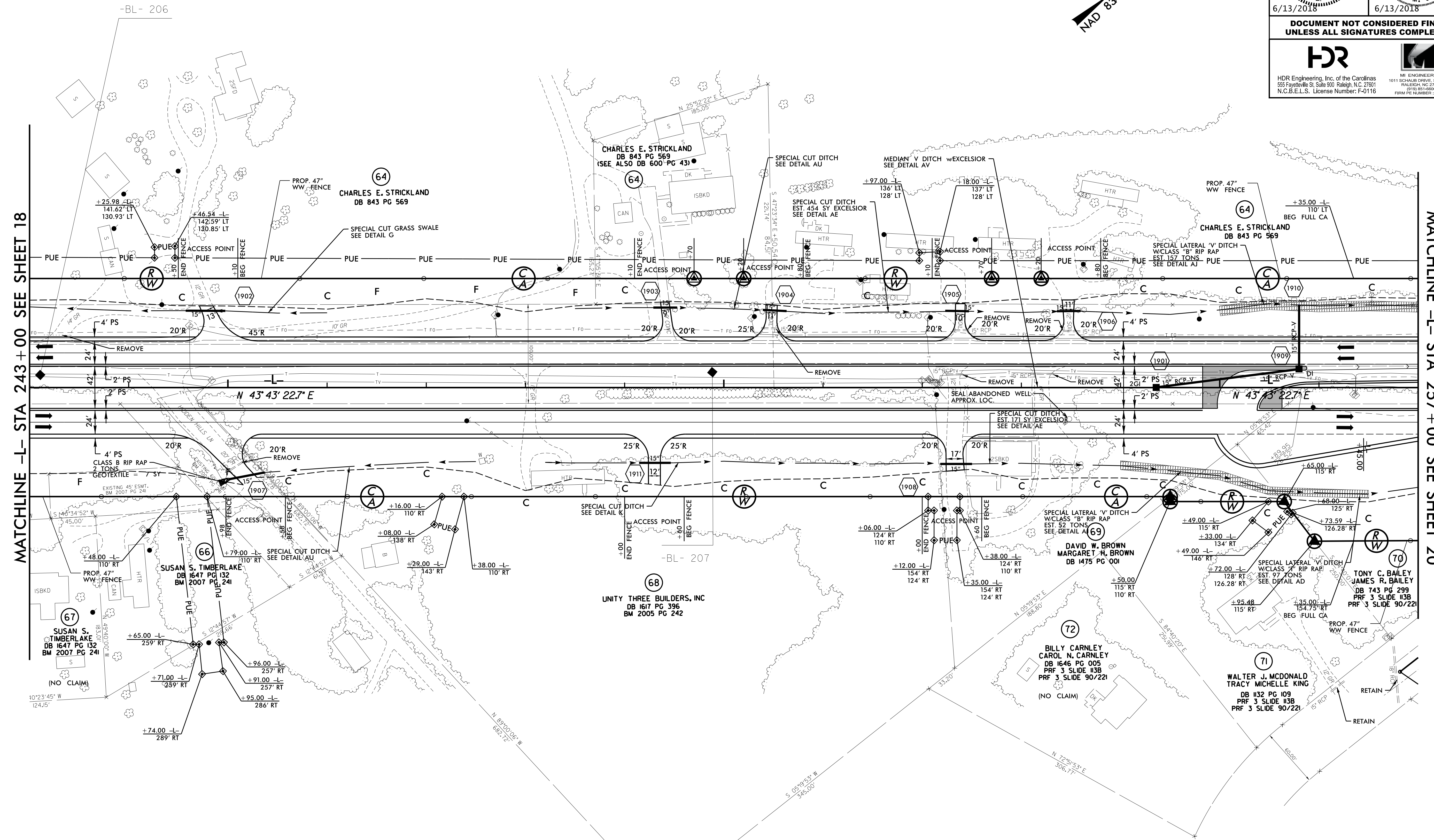
245

250

255



PROJECT REFERENCE NO. R-2814C	SHEET NO. 19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/13/2018	6/13/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900, Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	MI ENGINEERING 1011 SCHAUSS DRIVE, SUITE 100 FALEIGH, NC 27608 (919) 851-6600 FORM PE NUMBER: 1-P0671



REVISIONS

MATCHLINE -L- STA 243+00 SEE SHEET 18

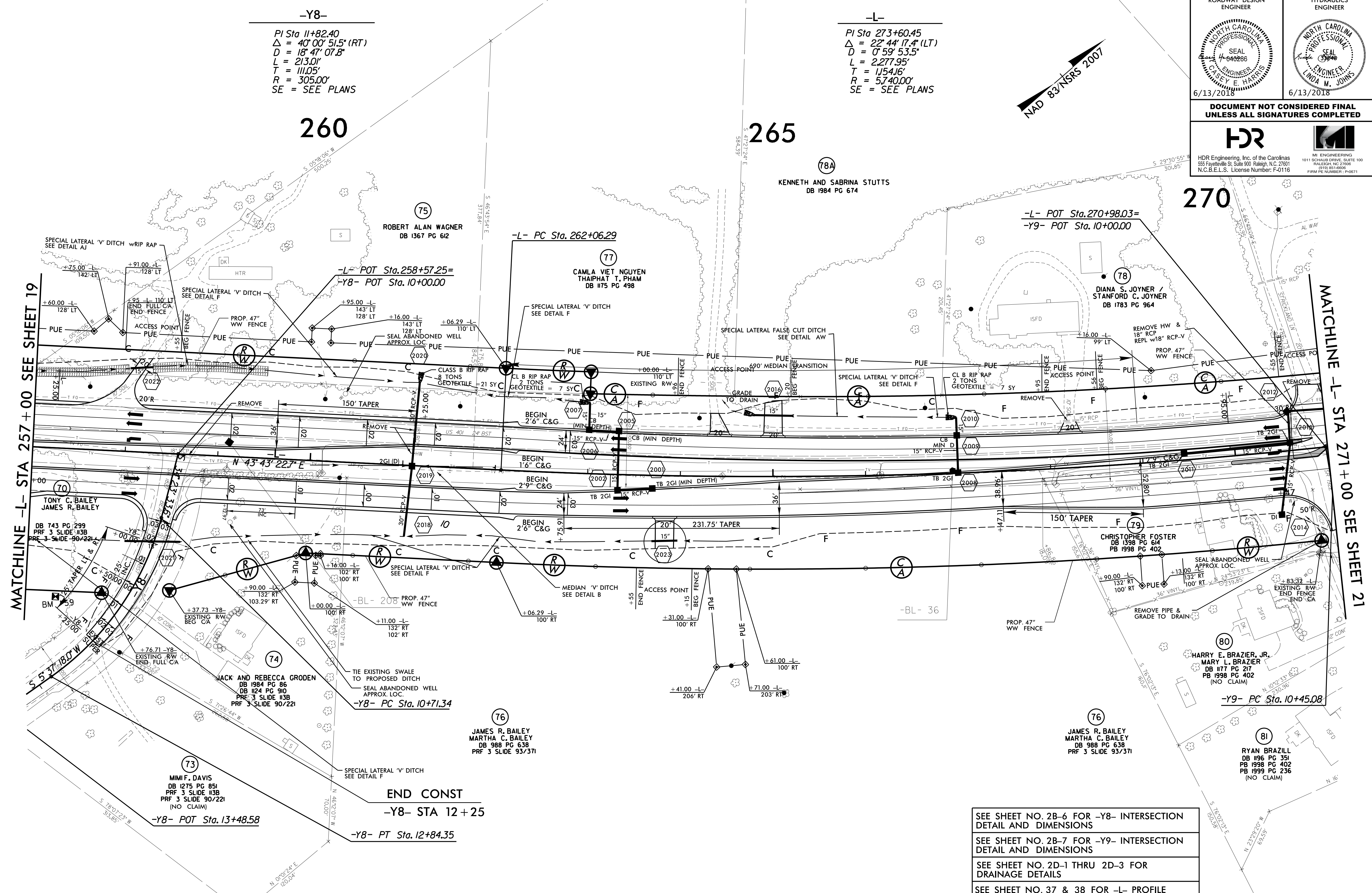
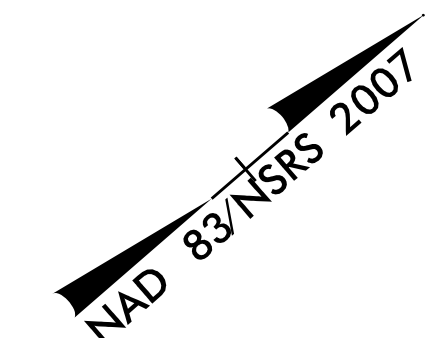
MATCHLINE -L- STA 257+00 SEE SHEET 20

SEE SHEET NO. 2D-1 THRU 2D-3 FOR
DRAINAGE DETAILS

SEE SHEET NO. 37 FOR -L- PROFILE

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PROJECT REFERENCE NO. R-2814C	SHEET NO. 20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
<small>HDR Engineering, Inc. of the Carolinas 55 Fayetteville St., Suite 900, Raleigh, NC 27601 N.C.B.E.L.S. License Number: F-0116</small>	



MATCHLINE -L- STA 257+00 SEE SHEET 19

MATCHLINE -L- STA 271+00 SEE SHEET 21

-Y8-
 PI Sta 11+82.40
 $\Delta = 40^{\circ}00'51.5"$ (RT)
 $D = 18^{\circ}47'07.8"$
 $L = 213.01'$
 $T = 111.05'$
 $R = 305.00'$
 SE = SEE PLANS

-L-
 PI Sta 273+60.45
 $\Delta = 22^{\circ}44'17.4"$ (LT)
 $D = 0^{\circ}59'53.5"$
 $L = 2,277.95'$
 $T = 1,154.16'$
 $R = 5,740.00'$
 SE = SEE PLANS

SEE SHEET NO. 2B-6 FOR -Y8- INTERSECTION
DETAIL AND DIMENSIONS

SEE SHEET NO. 2B-7 FOR -Y9- INTERSECTION
DETAIL AND DIMENSIONS

SEE SHEET NO. 2D-1 THRU 2D-3 FOR
DRAINAGE DETAILS

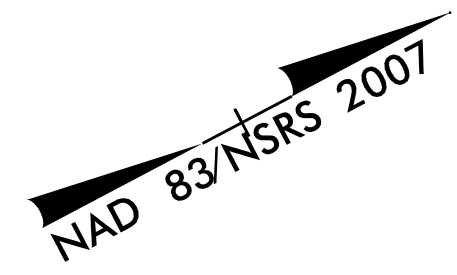
SEE SHEET NO. 37 & 38 FOR -L- PROFILE
SEE SHEET NO. 44 FOR -Y8- PROFILE

REVISIONS

8/17/99

6/13/2018
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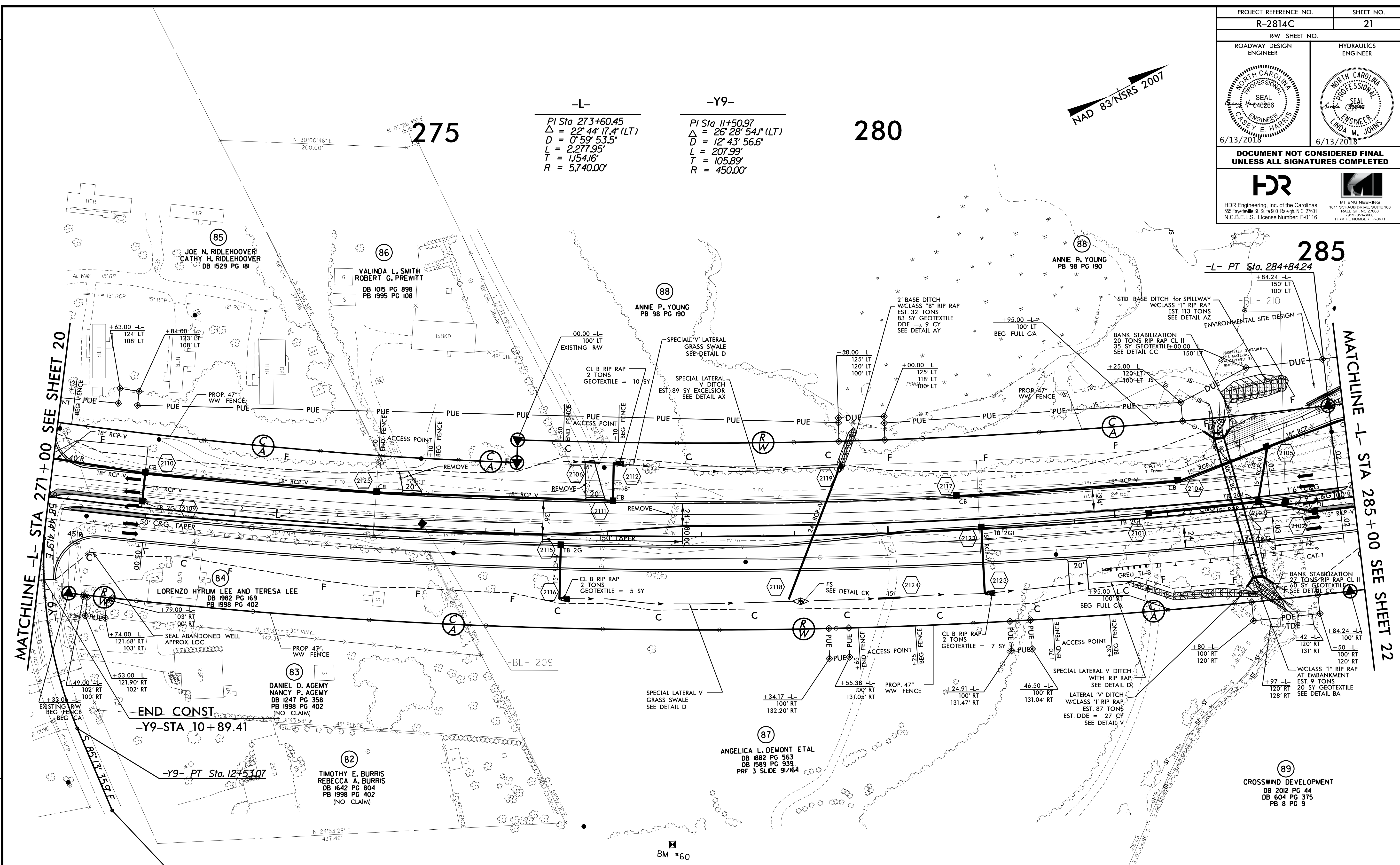
PROJECT REFERENCE NO. R-2814C	SHEET NO. 21
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
<small>HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116</small>	<small>M ENGINEERING 1011 SCHUBERT DRIVE, SUITE 100 WALTON, NC 27087 (919) 851-6606 FIRM REG. NUMBER: P-00671</small>



-L-
 PI Sta 273+60.45
 $\Delta = 22' 44" 17.4" (LT)$
 $D = 0' 59" 53.5"$
 $L = 2,277.95'$
 $T = 1,154.16'$
 $R = 5,740.00'$

-Y9-
 PI Sta 11+50.97
 $\Delta = 26' 28' 54" (LT)$
 $D = 12' 43' 56.6"$
 $L = 207.99'$
 $T = 105.89'$
 $R = 450.00'$

280



MATCHLINE -L- STA 271+00 SEE SHEET 20

MATCHLINE -L- STA 285+00 SEE SHEET 22

END CONST
-Y9- STA 10+89.41

-Y9- PT Sta. 12+53.07

-Y9- POT Sta. 13+48.64

SEE SHEET NO. 2B-7 FOR -Y9- INTERSECTION
DETAIL AND DIMENSIONS

SEE SHEET NO. 2D-1 THRU 2D-3 FOR
DRAINAGE DETAILS

SEE SHEET NO. 38 FOR -L- PROFILE
SEE SHEET NO. 44 FOR -Y9- PROFILE

SEE SHEET C1-1 TO C6-5 FOR CULVERT PLANS

REVISIONS

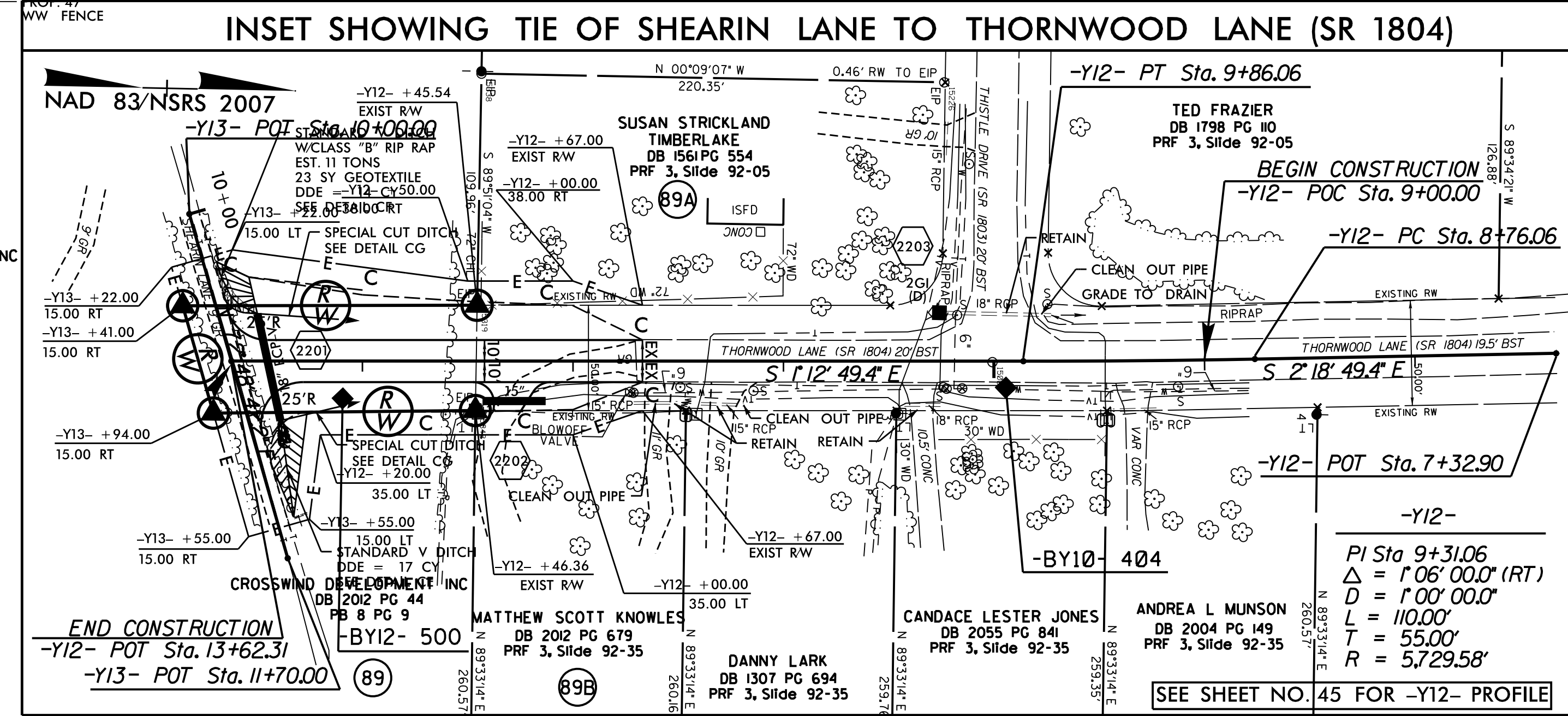
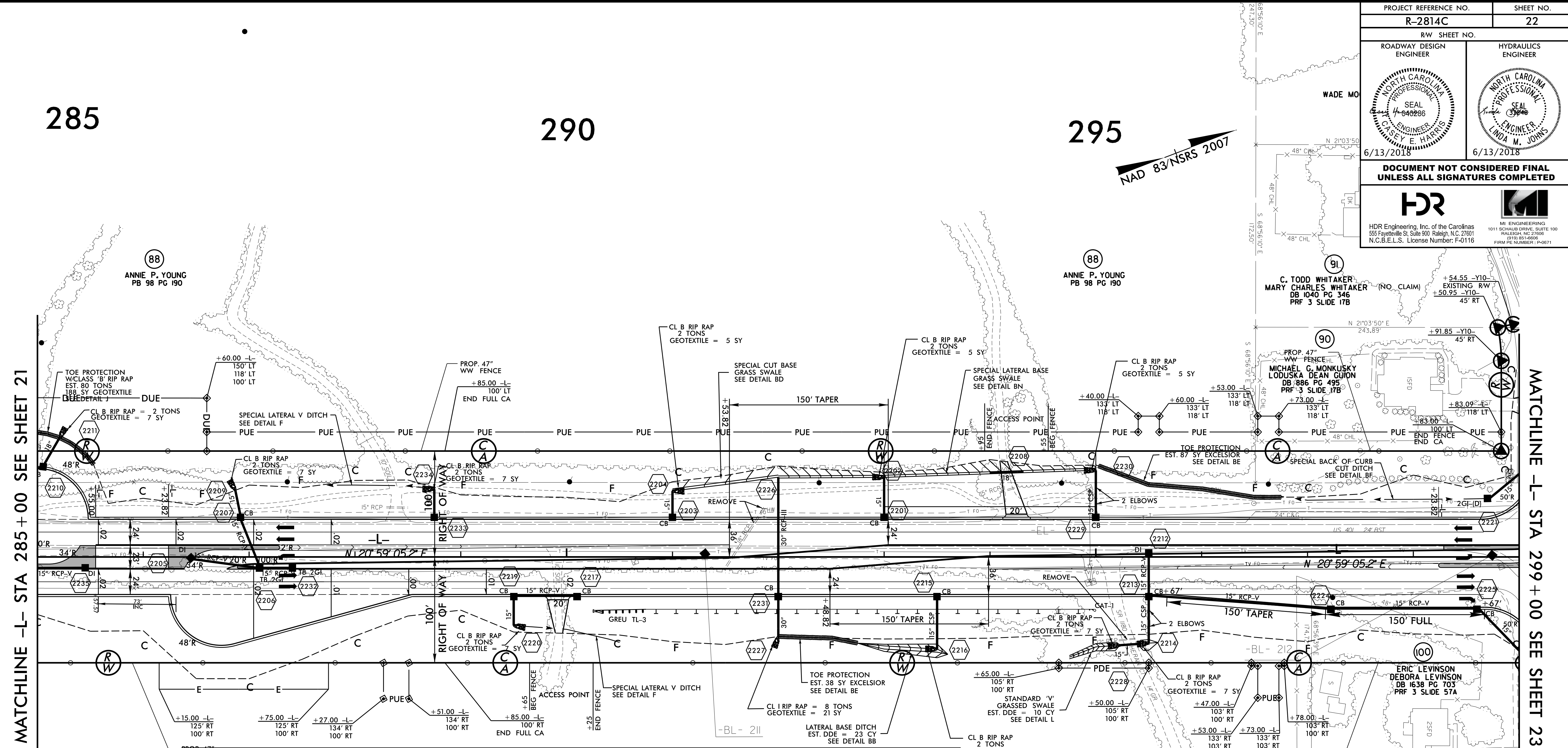
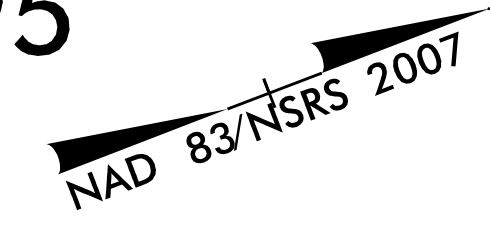
6/13/2018 R2814C.psh.s21.dgn
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PROJECT REFERENCE NO. R-2814C	SHEET NO. 22
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
<small>HDR Engineering, Inc. of the Carolinas 55 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116</small>	

285

290

295



SEE SHEET NO. 2B-8 FOR -Y10- INTERSECTION
DETAIL AND DIMENSIONS

SEE SHEET NO. 2D-1 THRU 2D-3 FOR
DRAINAGE DETAILS

SEE SHEET NO. 38 & 39 FOR -L- PROFILE

SEE SHEET NO. 45 FOR -Y12- PROFILE

REVISIONS

MATCHLINE -L- STA 285 + 00 SEE SHEET 21

MATCHLINE -L- STA 299 + 00 SEE SHEET 23

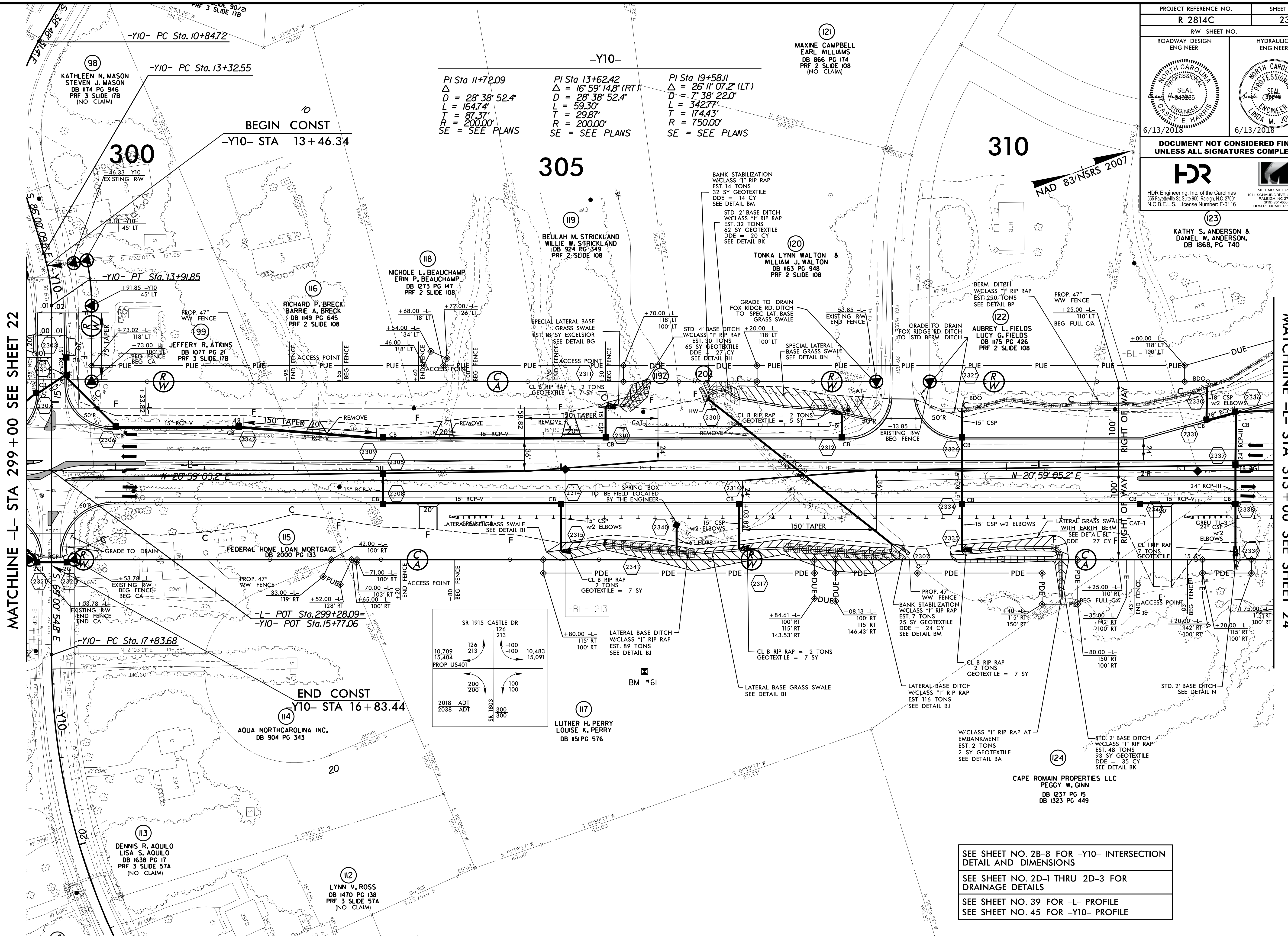
8/17/99

6/13/2018

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PROJECT REFERENCE NO.		SHEET NO.	
R-2814C		23	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
HDR Engineering, Inc. of the Carolinas 355 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116		M.I. ENGINEERING 1011 SCHAUSS DRIVE, SUITE 100 FALEIGH, NC 27608 (919) 851-6606 FORM PE NUMBER: P-06071	
<p>(123) KATHY S. ANDERSON & DANIEL W. ANDERSON, DB 1868, PG 740</p>			



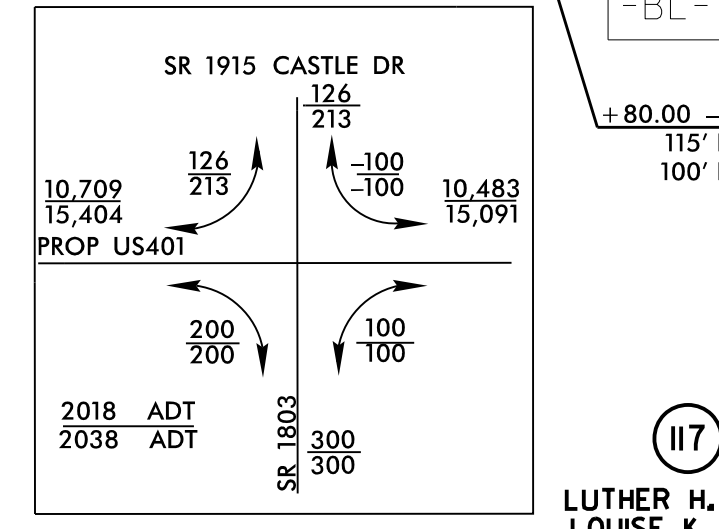
MATCHLINE -L- STA 299+00 SEE SHEET 22

MATCHLINE -L- STA 313+00 SEE SHEET 24

PI Sta 11+72.09
 $\Delta = 28^\circ 38' 52.4"$
 $L = 164.74'$
 $T = 87.37'$
 $R = 200.00'$
 SE = SEE PLANS

PI Sta 13+62.42
 $\Delta = 16^\circ 59' 14.8" (RT)$
 $D = 28^\circ 38' 52.4"$
 $L = 59.30'$
 $T = 29.87'$
 $R = 200.00'$
 SE = SEE PLANS

PI Sta 19+58.11
 $\Delta = 26^\circ 11' 07.2" (LT)$
 $D = 7^\circ 38' 22.0"$
 $L = 342.77'$
 $T = 174.43'$
 $R = 750.00'$
 SE = SEE PLANS



SEE SHEET NO. 2B-8 FOR -Y10- INTERSECTION
 DETAIL AND DIMENSIONS

SEE SHEET NO. 2D-1 THRU 2D-3 FOR
 DRAINAGE DETAILS

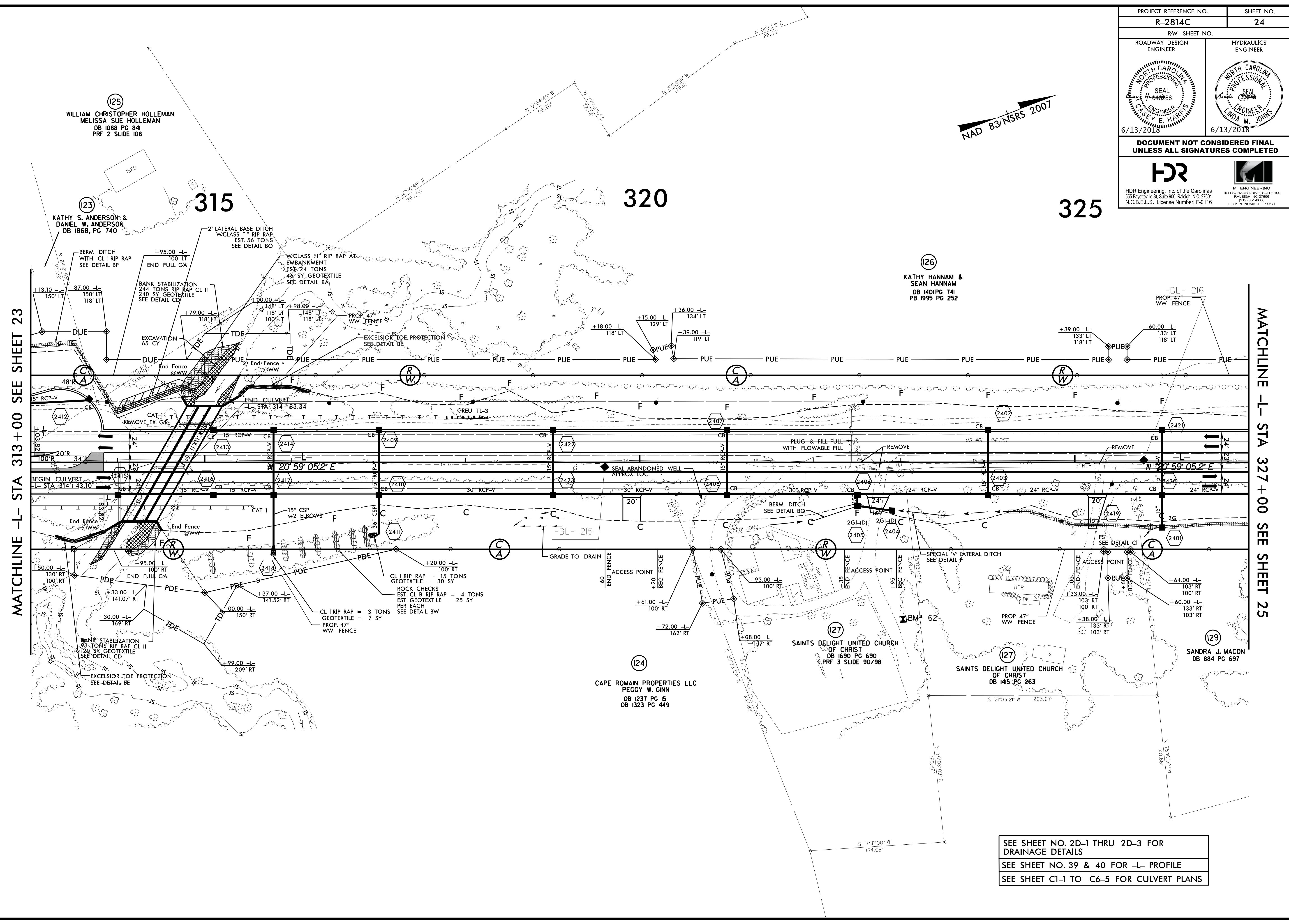
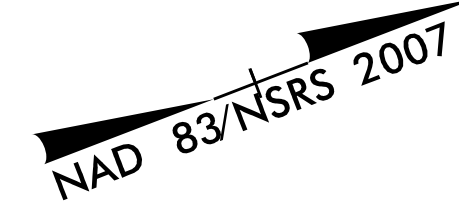
SEE SHEET NO. 39 FOR -L- PROFILE
 SEE SHEET NO. 45 FOR -Y10- PROFILE

REVISIONS

5/14/2018 R2814C_psh_s23.dgn
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8/17/19

PROJECT REFERENCE NO. R-2814C		SHEET NO. 24	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
<small>HDR Engineering, Inc. of the Carolinas 55 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116</small>		<small>M1 ENGINEERING 1011 SCHUBERT DRIVE, SUITE 100 RALEIGH, NC 27609 (919) 851-6606 FIRM REG. NUMBER: P-10671</small>	



MATCHLINE -L- STA 313+00 SEE SHEET 23

MATCHLINE -L- STA 327+00 SEE SHEET 25

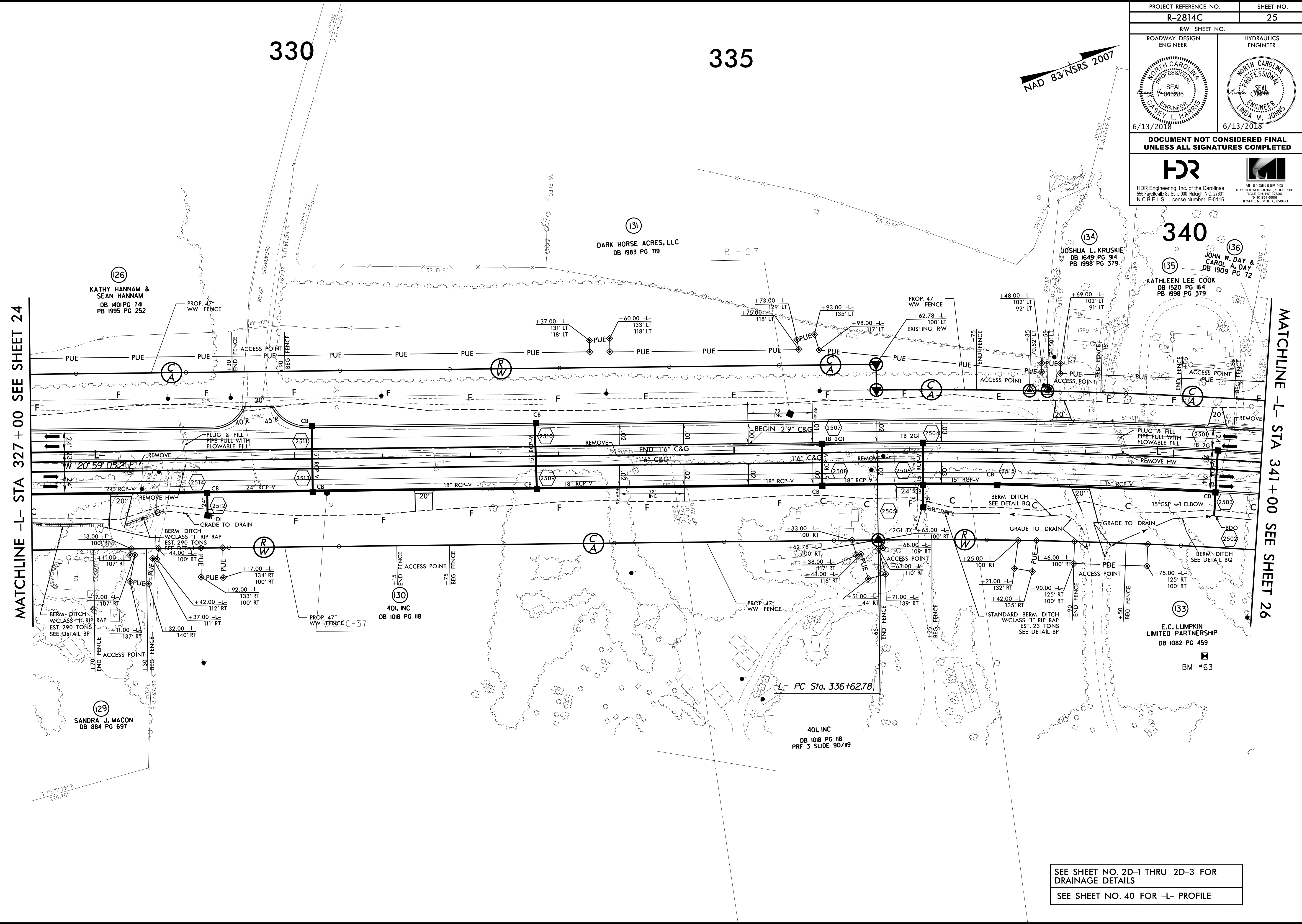
REVISIONS

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS
 SEE SHEET NO. 39 & 40 FOR -L- PROFILE
 SEE SHEET C1-1 TO C6-5 FOR CULVERT PLANS

6/13/2018
 P:\Projects\2814C_psh_s24.dgn
 10:44:43 AM

8/17/19

PROJECT REFERENCE NO. R-2814C	SHEET NO. 25
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
<small>HDR Engineering, Inc. of the Carolinas 55 Fayetteville St., Suite 900 Raleigh, NC 27601 N.C.B.E.L.S. License Number: F-0116</small>	



MATCHLINE -L- STA 327+00 SEE SHEET 24

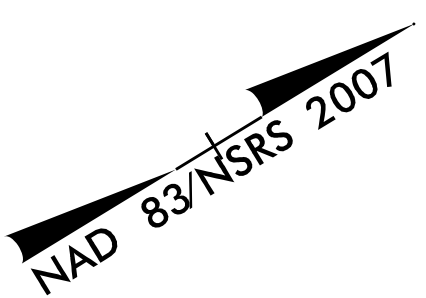
MATCHLINE -L- STA 341+00 SEE SHEET 26

REVISIONS

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS
SEE SHEET NO. 40 FOR -L- PROFILE

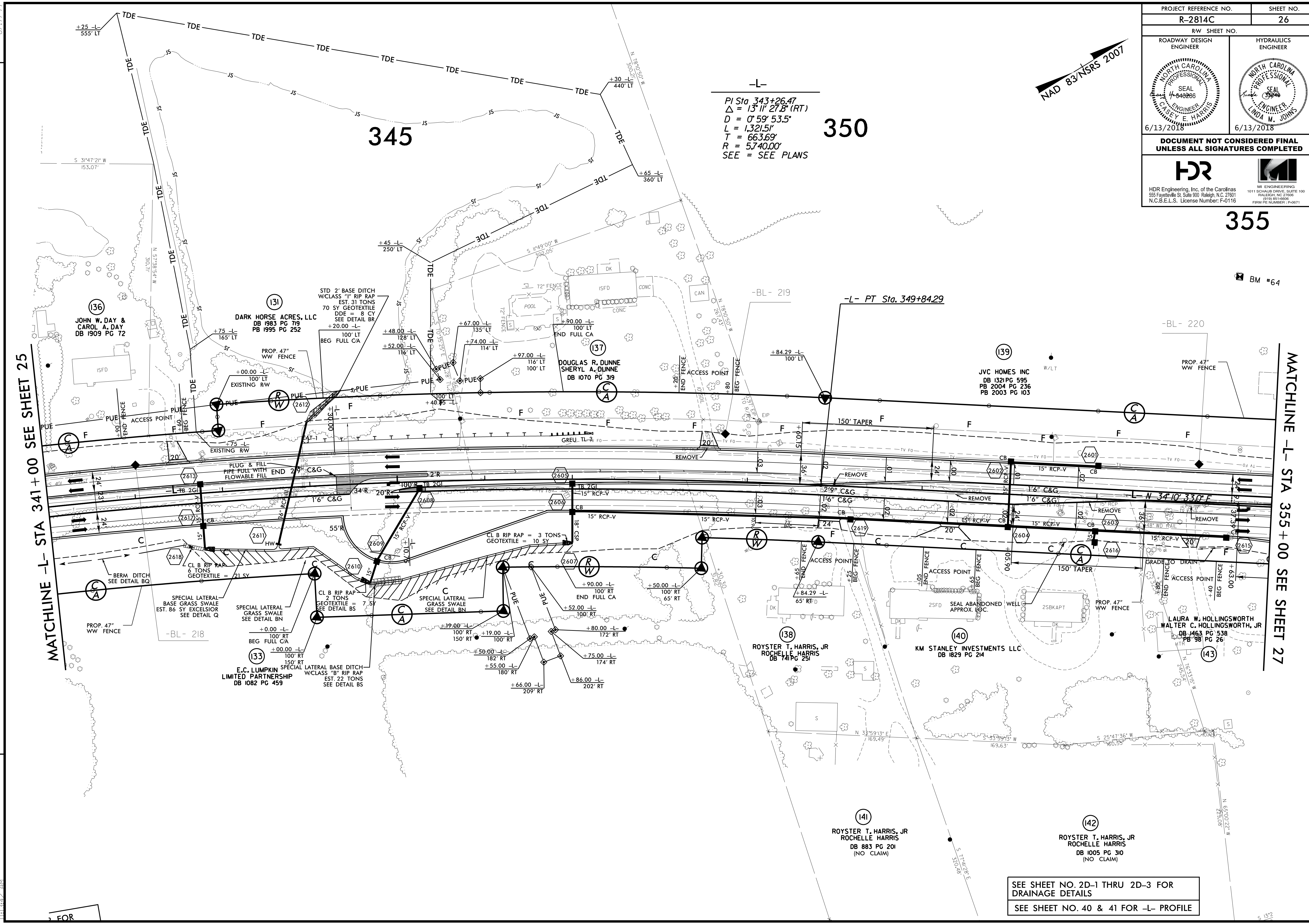
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PROJECT REFERENCE NO. R-2814C	SHEET NO. 26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/13/2018	6/13/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900, Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	M ENGINEERING 1011 SCHAUSS DRIVE, SUITE 100 RALEIGH, NC 27608 (919) 851-6600 FORM PE NUMBER: P-06071



-L-

PI Sta 343+26.47
 $\Delta = 13' 11" 27.8" (RT)$
 $D = 0' 59' 53.5"$
 $L = 1,321.5'$
 $T = 663.69'$
 $R = 5,740.00'$
 SEE = SEE PLANS



MATCHLINE -L- STA 341+00 SEE SHEET 25

MATCHLINE -L- STA 355+00 SEE SHEET 27


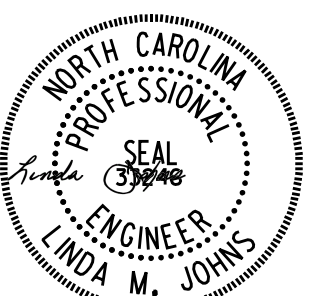


REVISIONS

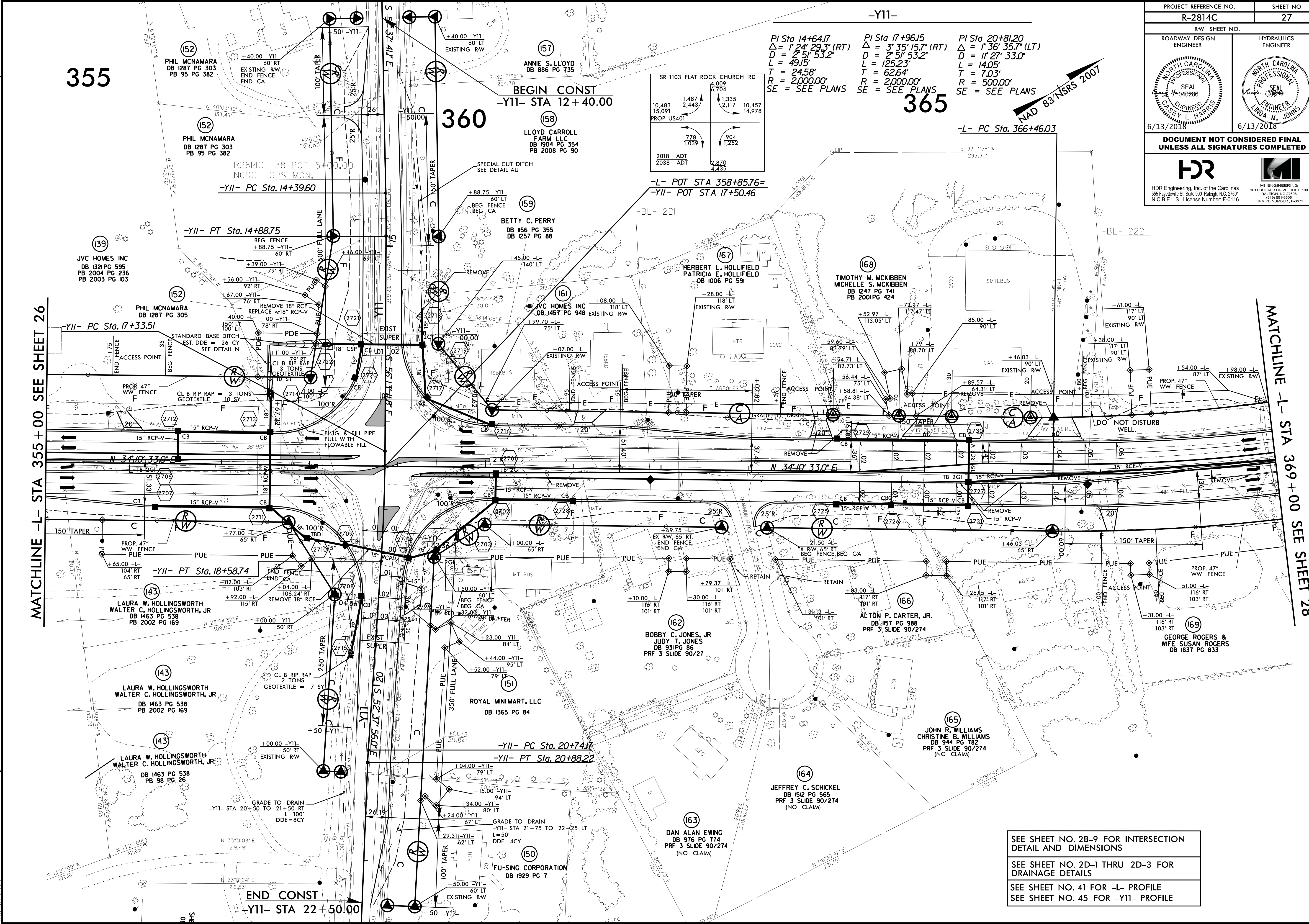
5/14/2018 R2814C_psh_s26.dgn

SEE SHEET NO. 2D-1 THRU 2D-3 FOR
DRAINAGE DETAILS

SEE SHEET NO. 40 & 41 FOR -L- PROFILE

FOR

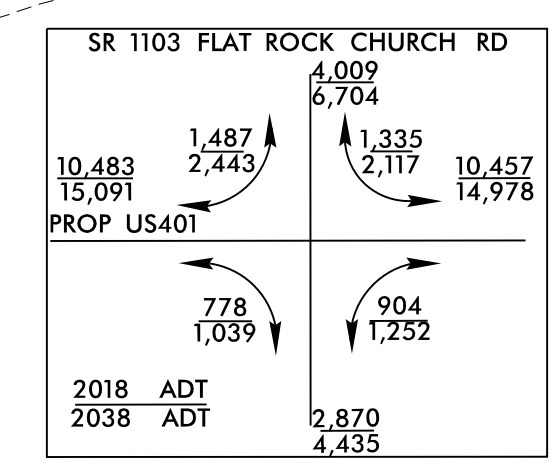
PROJECT REFERENCE NO. R-2814C		SHEET NO. 27	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
6/13/2018		6/13/2018	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
			
HDR Engineering, Inc. of the Carolinas 55 Fayetteville St., Suite 900 Raleigh, NC 27601 N.C.B.E.L.S. License Number: F-0116		M ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27609 (919) 851-6606 FIRM REG. NUMBER: P-0671	



PI Sta 14+64.17
 $\Delta = 1' 24' 29.3''$ (RT)
 $D = 2' 51' 53.2''$
 $L = 49.15'$
 $T = 24.58'$
 $R = 2,000.00'$
 SE = SEE PLANS

PI Sta 17+96.15
 $\Delta = 3' 35' 15.7''$ (RT)
 $D = 2' 51' 53.2''$
 $L = 125.23'$
 $T = 62.64'$
 $R = 2,000.00'$
 SE = SEE PLANS

PI Sta 20+81.20
 $\Delta = 1' 36' 35.7''$ (LT)
 $D = 1' 27' 33.0''$
 $L = 140.5'$
 $T = 70.3'$
 $R = 500.00'$
 SE = SEE PLANS



MATCHLINE -L- STA 355+00 SEE SHEET 26

MATCHLINE -L- STA 369+00 SEE SHEET 28

SEE SHEET NO. 2B-9 FOR INTERSECTION
DETAIL AND DIMENSIONS

SEE SHEET NO. 2D-1 THRU 2D-3 FOR
DRAINAGE DETAILS

SEE SHEET NO. 41 FOR -L- PROFILE
SEE SHEET NO. 45 FOR -Y11- PROFILE

REVISIONS

6/13/2018 R2814C.psh_s27.dgn
12:59:14 AM

8/17/19

PROJECT REFERENCE NO. R-2814C	SHEET NO. 28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	M ENGINEERING 1011 SCHUBERT DRIVE, SUITE 100 RALEIGH, NC 27608 (919) 851-6606 FIRM REG. NUMBER: P-06071

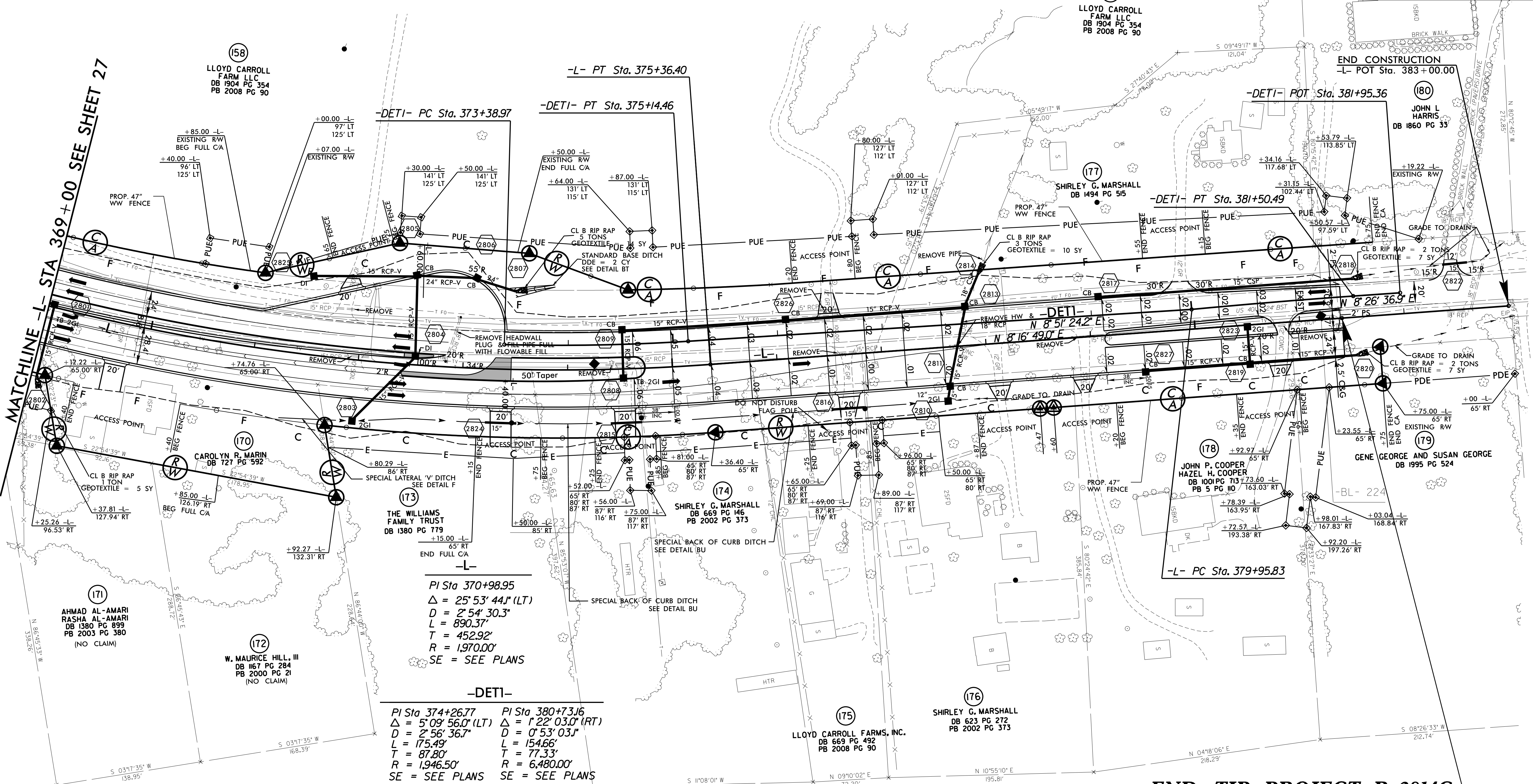
NAD 83/NSRS 2007

370

375

380

MATCHLINE -L- STA 369+00 SEE SHEET 27



(158)
LLOYD CARROLL
FARM LLC
DB 1904 PG 354
PB 2008 PG 90

(158)
LLOYD CARROLL
FARM LLC
DB 1904 PG 354
PB 2008 PG 90

END CONSTRUCTION
-L- POT Sta. 383+00.00

(180)
JOHN L
HARRIS
DB 1860 PG 33

(177)
SHIRLEY G. MARSHALL
DB 1494 PG 515

(170)
CAROLYN R. MARIN
DB 172 PG 592

(173)
THE WILLIAMS
FAMILY TRUST
DB 1380 PG 779

(174)
SHIRLEY G. MARSHALL
DB 669 PG 146
PB 2002 PG 373

(178)
JOHN P. COOPER
HAZEL H. COOPER
DB 1001 PG 713
PB 5 PG 10 / 163.03' RT

(179)
GENE GEORGE AND SUSAN GEORGE
DB 1995 PG 524

(171)
AHMAD AL-AMARI
RASHA AL-AMARI
DB 1380 PG 899
PB 2003 PG 380
(NO CLAIM)

(172)
W. MAURICE HILL, III
DB 1167 PG 284
PB 2000 PG 21
(NO CLAIM)

(175)
LLOYD CARROLL FARMS, INC.
DB 669 PG 492
PB 2008 PG 90

(176)
SHIRLEY G. MARSHALL
DB 623 PG 272
PB 2002 PG 373

PI Sta 370+98.95
Δ = 25° 53' 44" (LT)
D = 2' 54' 30.3"
L = 890.37'
T = 452.92'
R = 1,970.00'
SE = SEE PLANS

-DETI-
PI Sta 374+26.77 Δ = 5° 09' 56.0" (LT) D = 2' 56' 36.7" L = 175.49' T = 87.80' R = 1,946.50' SE = SEE PLANS
PI Sta 380+73.16 Δ = 1° 22' 03.0" (RT) D = 0' 53' 03.1" L = 154.66' T = 77.33' R = 6,480.00' SE = SEE PLANS



SEE SHEET NO. 2D-1 THRU 2D-3 FOR
DRAINAGE DETAILS
SEE SHEET NO. 41 & 42 FOR -L- PROFILE

END TIP PROJECT R-2814C
-L- STA 381+40.55

REVISIONS



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5/28/19

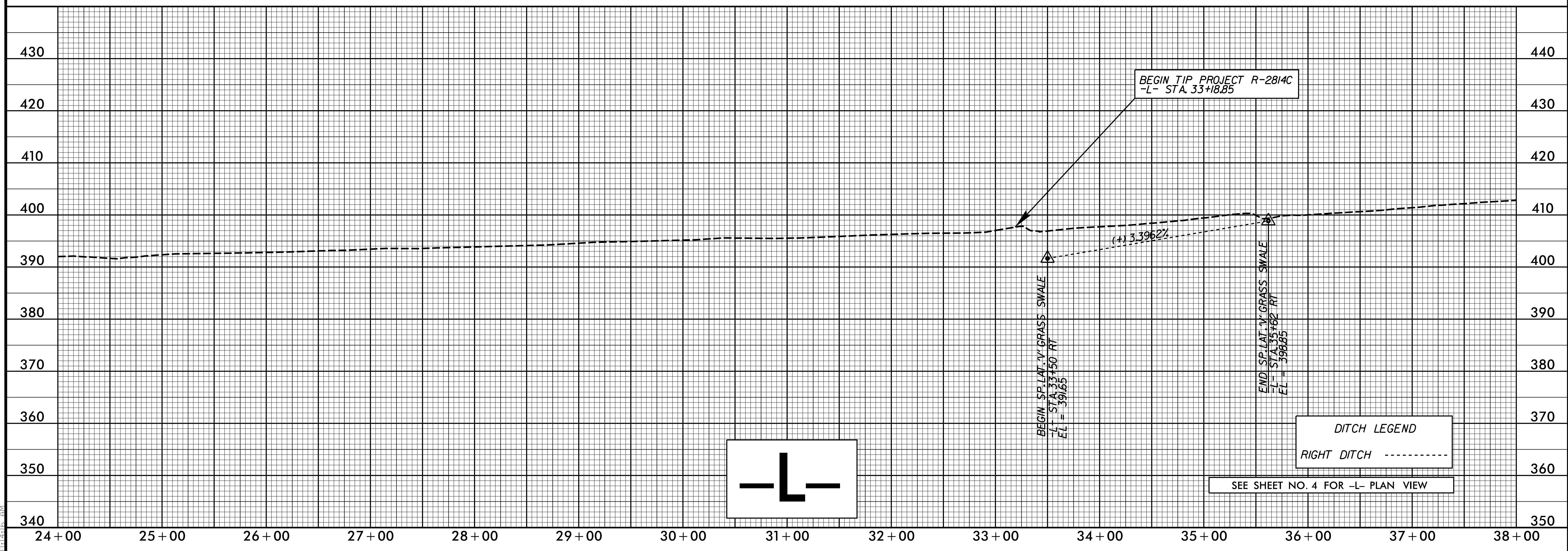
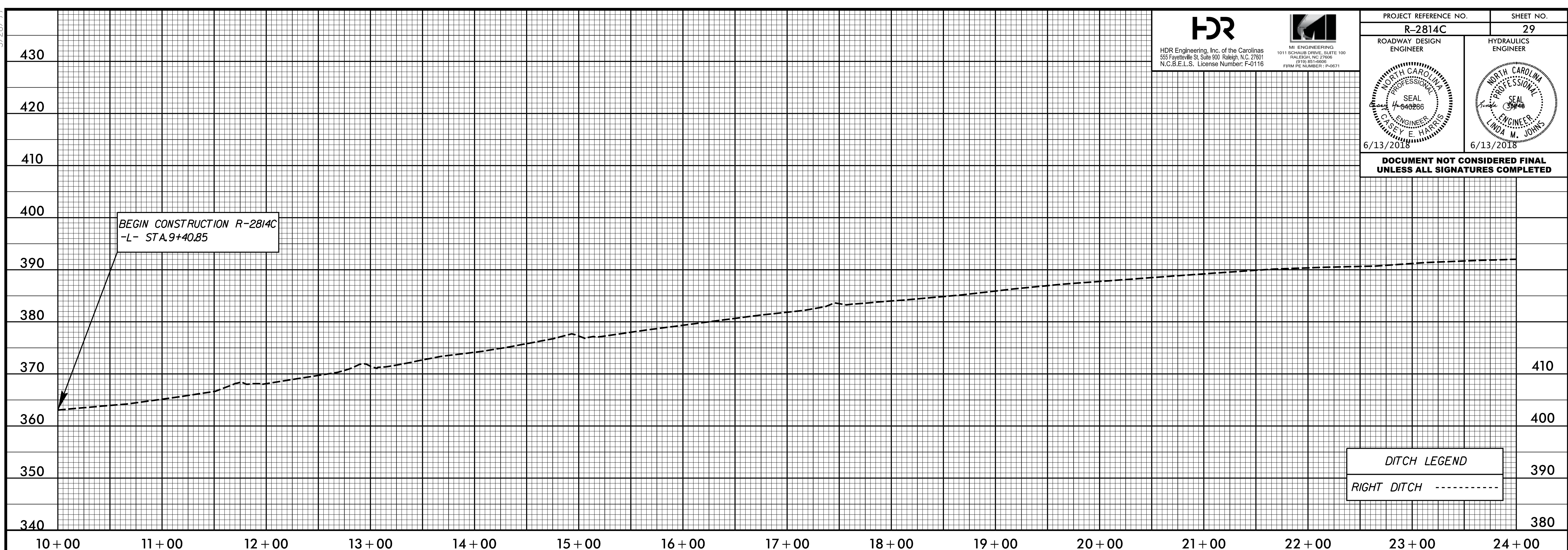



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

M.E. ENGINEERING
1011 SCHUBERT DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-5206
FIRM PE NUMBER: P-0671

PROJECT REFERENCE NO. R-2814C	SHEET NO. 29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

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UNLESS ALL SIGNATURES COMPLETED**



5/14/2018 10:41:23 AM
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HDR
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-01116

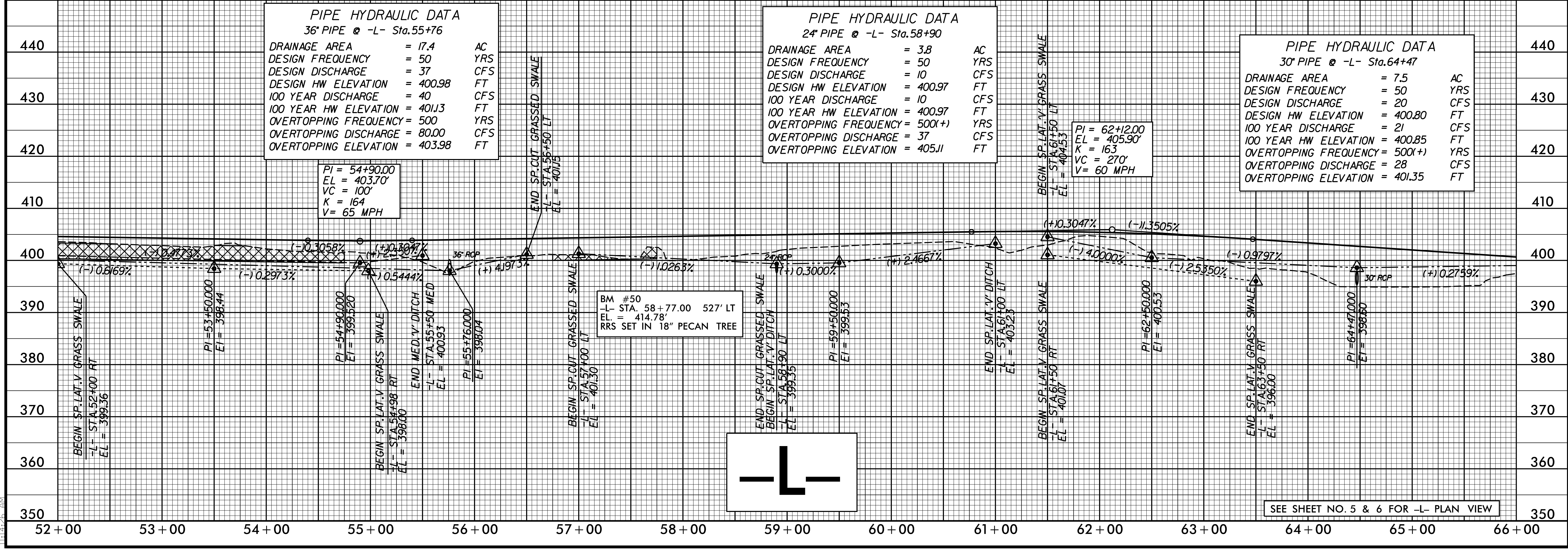
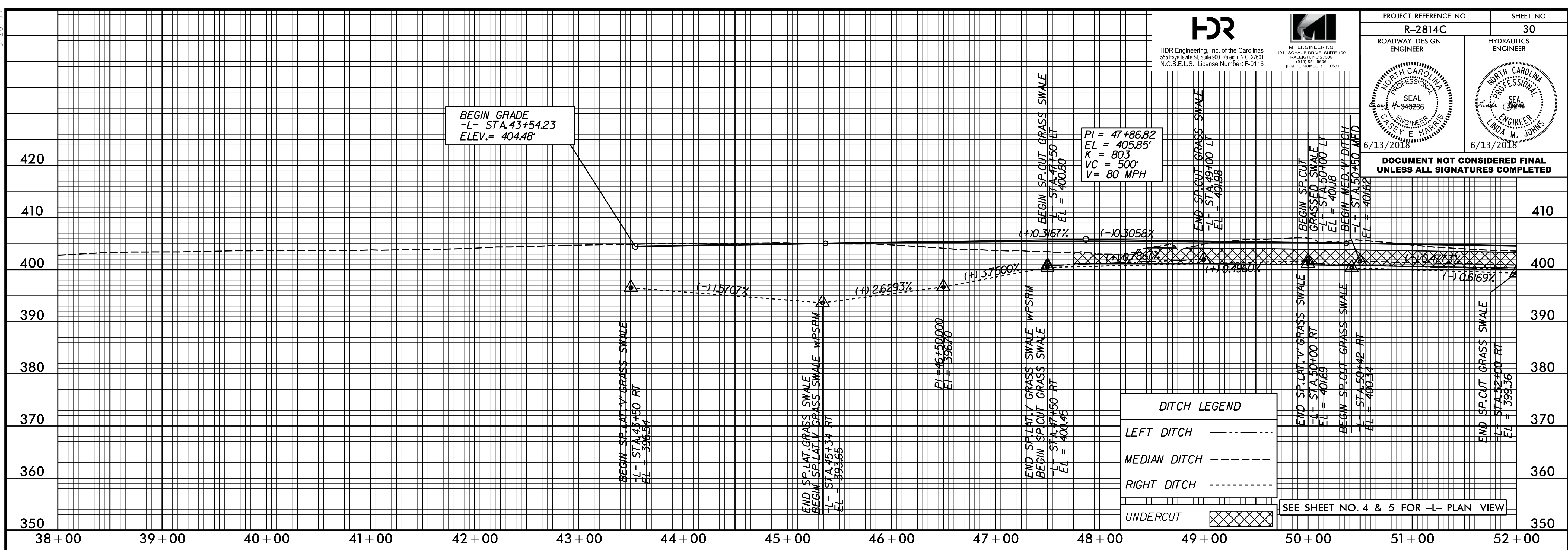
MJ ENGINEERING
1011 SCHUBERT DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6206
FIRM PE NUMBER: P-0671

PROJECT REFERENCE NO. **R-2814C** SHEET NO. **30**

ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

6/13/2018

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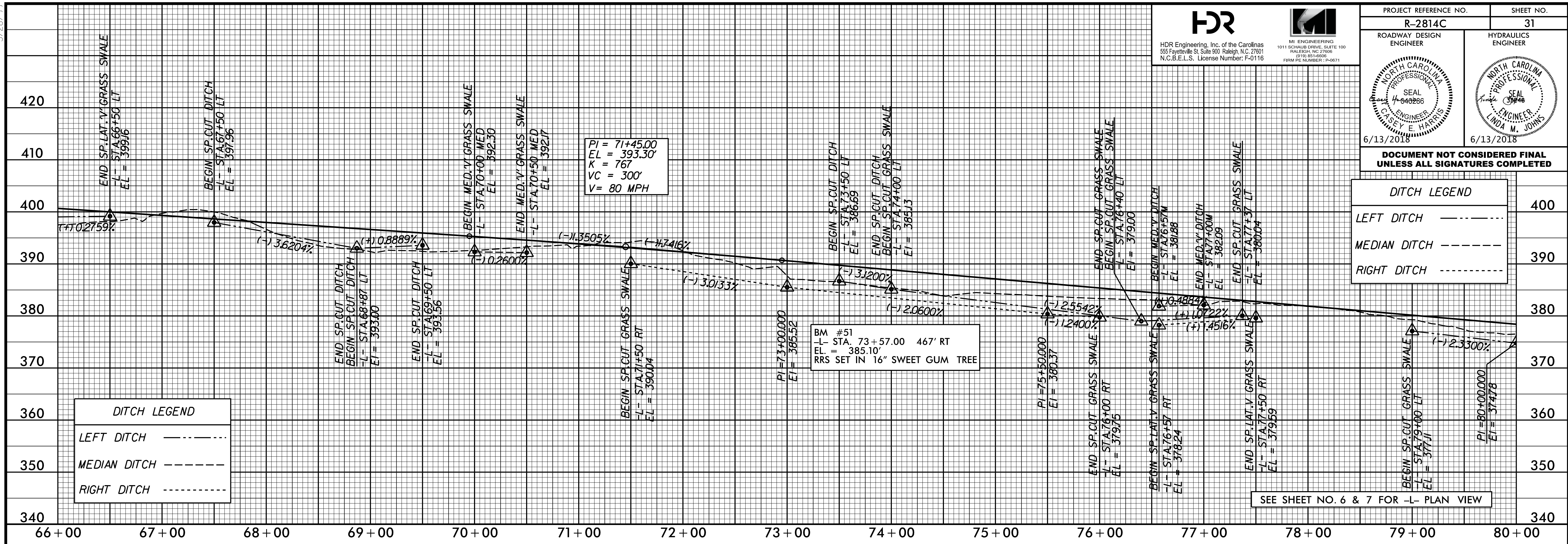


PROJECT REFERENCE NO. R-2814C SHEET NO. 31

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

6/13/2018 6/13/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DITCH LEGEND

LEFT DITCH - - - - -

MEDIAN DITCH - - - - -

RIGHT DITCH - - - - -

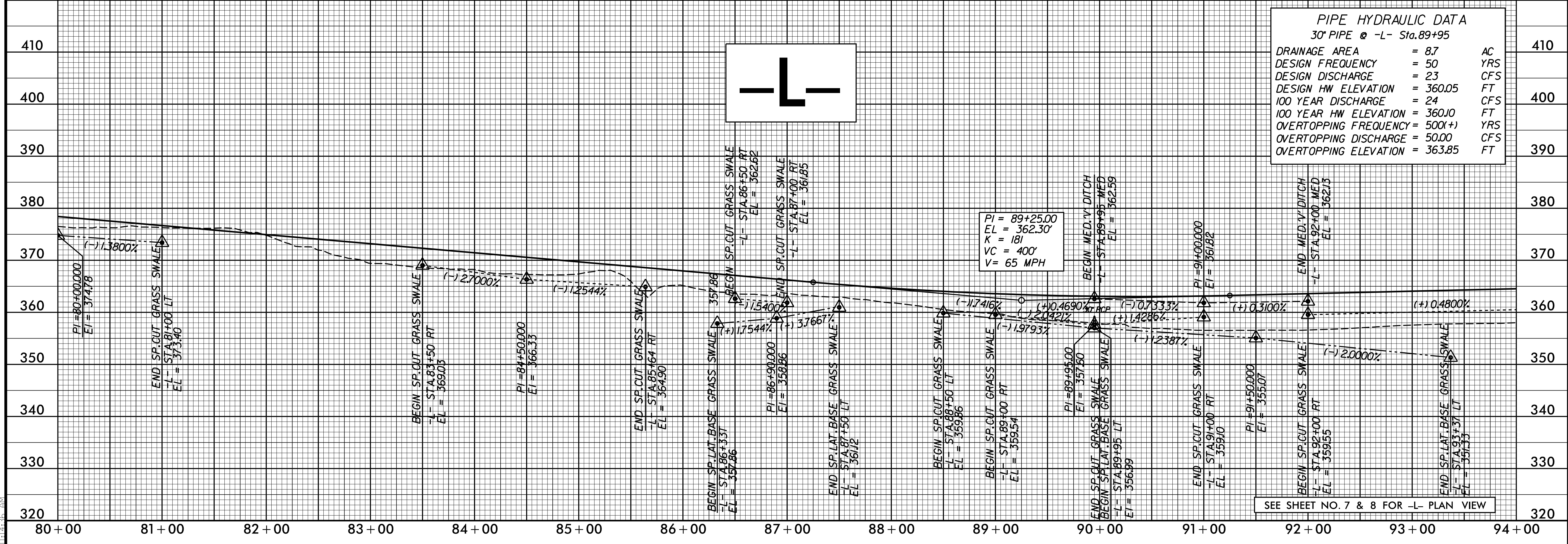
DITCH LEGEND

LEFT DITCH - - - - -

MEDIAN DITCH - - - - -

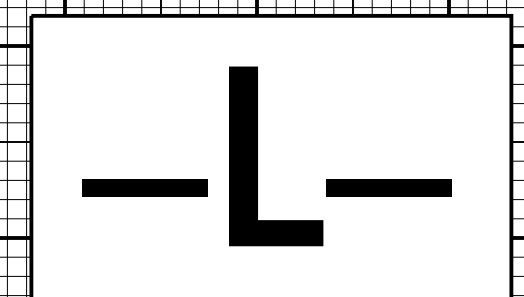
RIGHT DITCH - - - - -

SEE SHEET NO. 6 & 7 FOR -L- PLAN VIEW



PIPE HYDRAULIC DATA
30" PIPE @ -L- Sta. 89+95

DRAINAGE AREA	= 8.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 23	CFS
DESIGN HW ELEVATION	= 360.05	FT
100 YEAR DISCHARGE	= 24	CFS
100 YEAR HW ELEVATION	= 360.10	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 50.00	CFS
OVERTOPPING ELEVATION	= 363.85	FT



SEE SHEET NO. 7 & 8 FOR -L- PLAN VIEW

5/28/2018

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

M.I. ENGINEERING
1011 SCHUBERT DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6206
FIRM REG. NUMBER: P-0671

PROJECT REFERENCE NO. R-2814C	SHEET NO. 32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/13/2018	6/13/2018

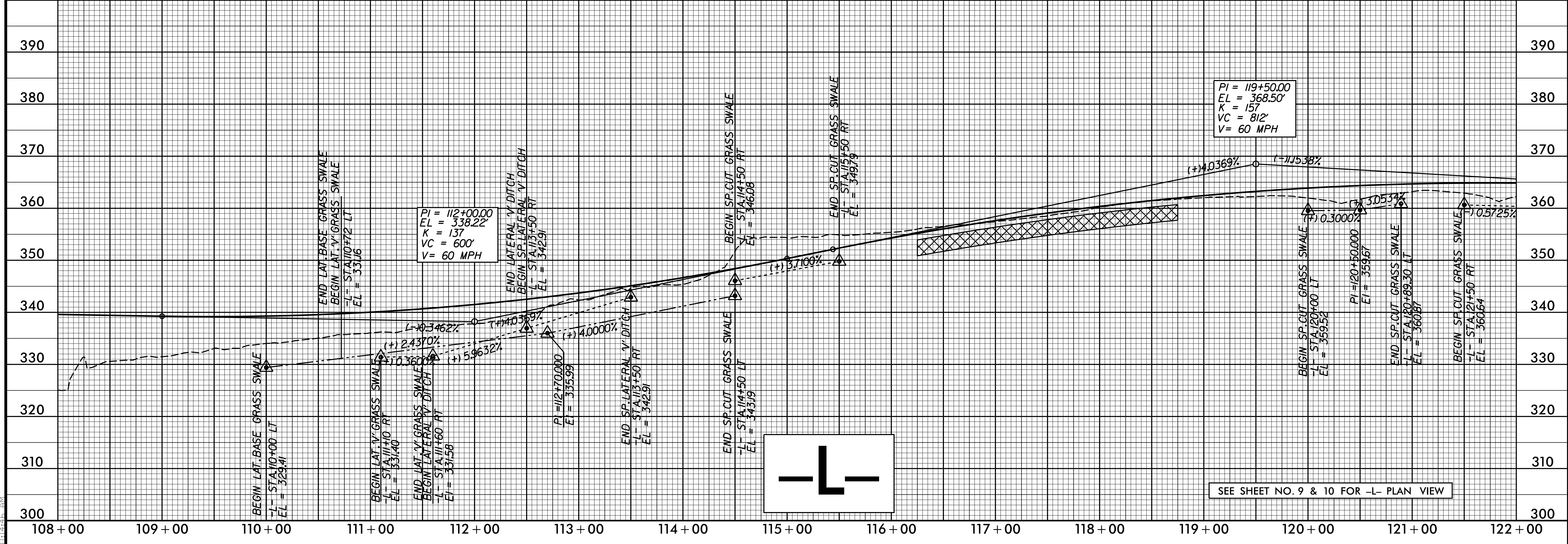
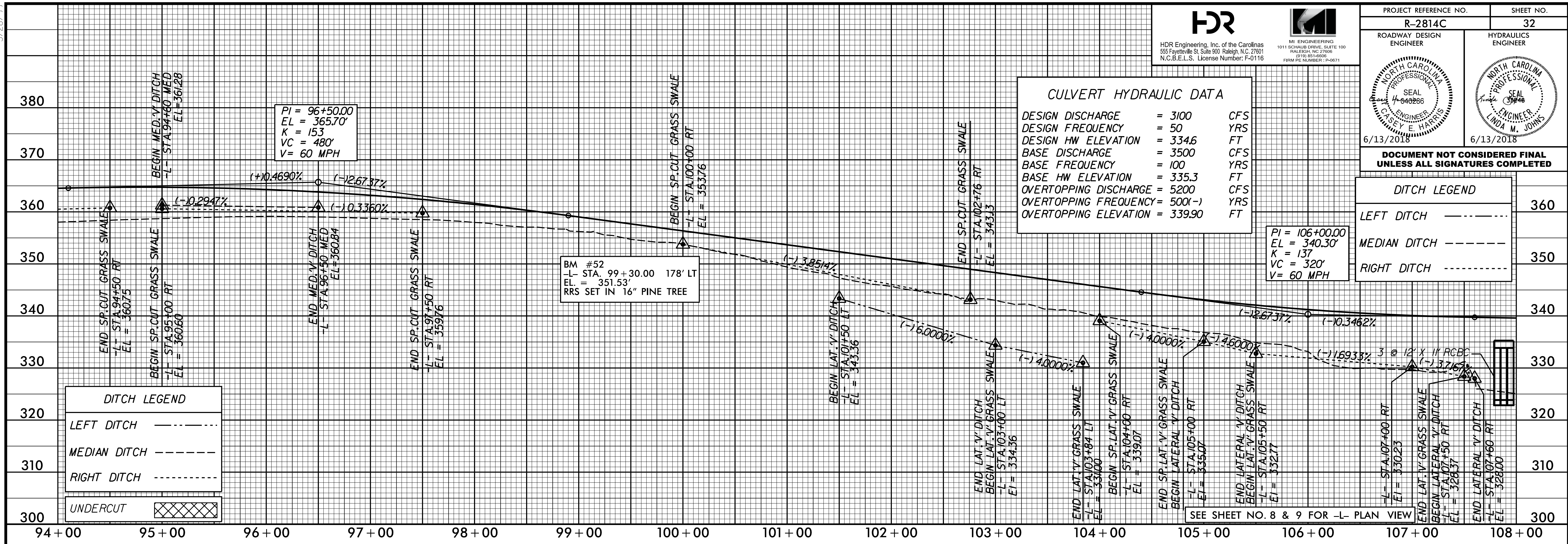
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 3100	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 334.6	FT
BASE DISCHARGE	= 3500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 335.3	FT
OVERTOPPING DISCHARGE	= 5200	CFS
OVERTOPPING FREQUENCY	= 500(-)	YRS
OVERTOPPING ELEVATION	= 339.90	FT

DITCH LEGEND

LEFT DITCH	-----
MEDIAN DITCH	-----
RIGHT DITCH	-----



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5/28/2016

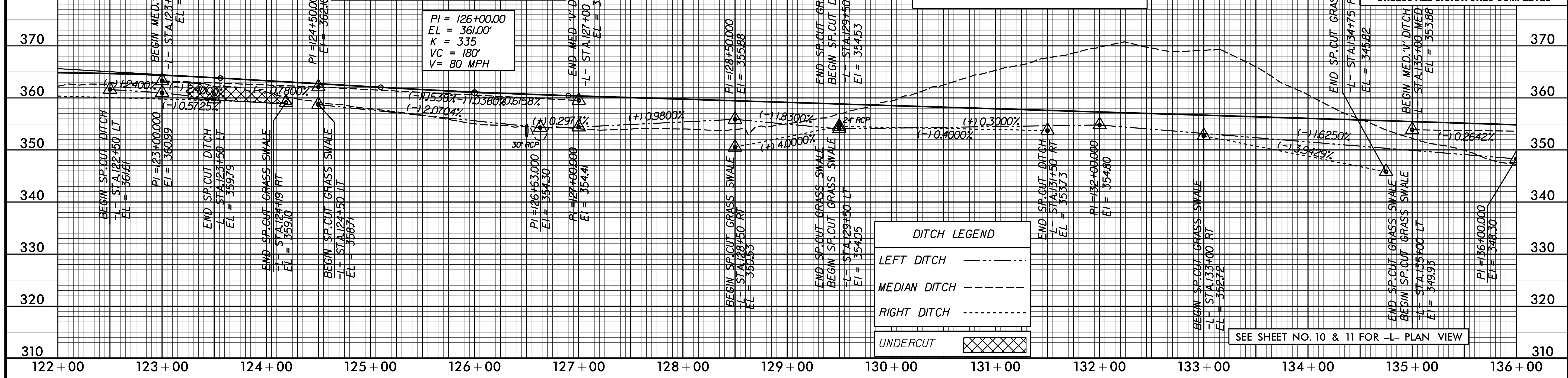
PROJECT REFERENCE NO. R-2814C	SHEET NO. 33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PIPE HYDRAULIC DATA
30" PIPE @ -L- Sta.126+59

DRAINAGE AREA	= 7.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 29	CFS
DESIGN HW ELEVATION	= 356.78	FT
100 YEAR DISCHARGE	= 31	CFS
100 YEAR HW ELEVATION	= 356.91	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 31	CFS
OVERTOPPING ELEVATION	= 356.90	FT

PIPE HYDRAULIC DATA
24" PIPE @ -L- Sta.129+50

DRAINAGE AREA	= 5.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 18	CFS
DESIGN HW ELEVATION	= 356.45	FT
100 YEAR DISCHARGE	= 19	CFS
100 YEAR HW ELEVATION	= 356.57	FT
OVERTOPPING FREQUENCY	= 200(+)	YRS
OVERTOPPING DISCHARGE	= 20.00	CFS
OVERTOPPING ELEVATION	= 356.71	FT



CULVERT HYDRAULIC DATA

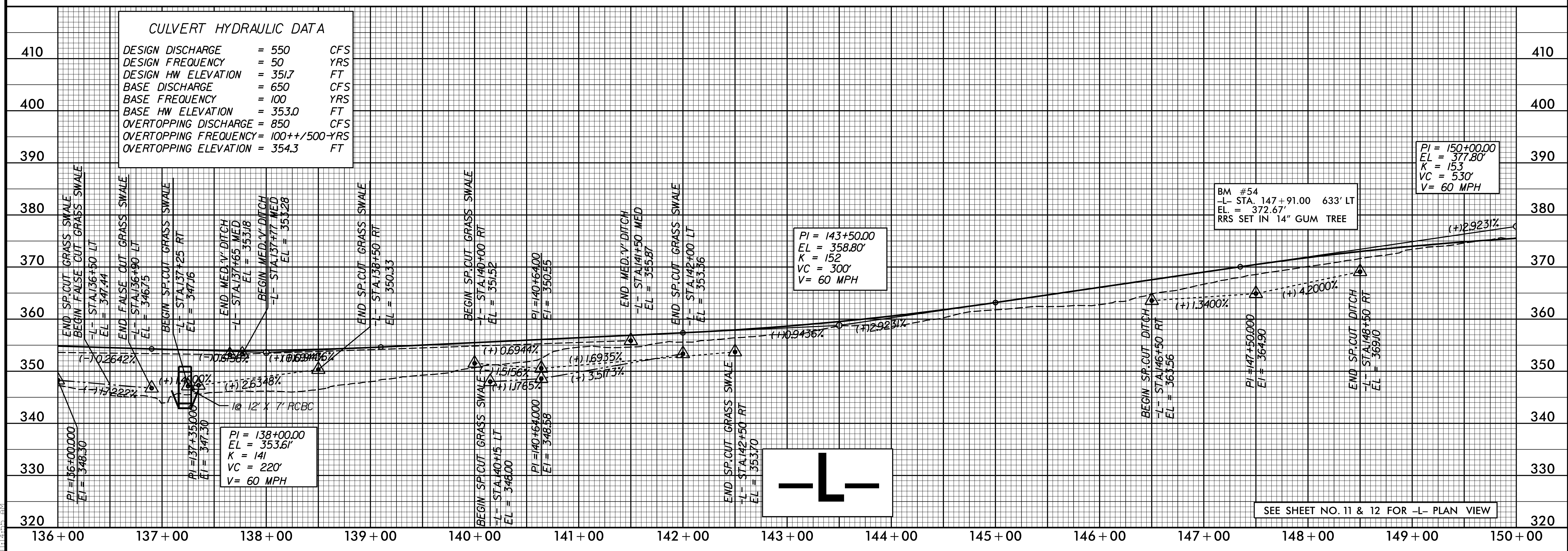
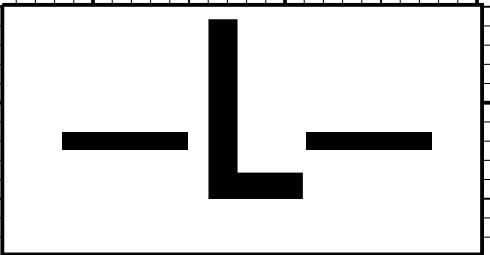
DESIGN DISCHARGE	= 550	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 351.7	FT
BASE DISCHARGE	= 650	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 353.0	FT
OVERTOPPING DISCHARGE	= 850	CFS
OVERTOPPING FREQUENCY	= 100++/500	YRS
OVERTOPPING ELEVATION	= 354.3	FT

PI = 143+50.00
EL = 358.80'
K = 152
VC = 300'
V = 60 MPH

PI = 150+00.00
EL = 377.80'
K = 153
VC = 530'
V = 60 MPH

BM #54
-L- STA. 147+91.00 633' LT
EL. = 372.67'
RRS SET IN 14" GUM TREE

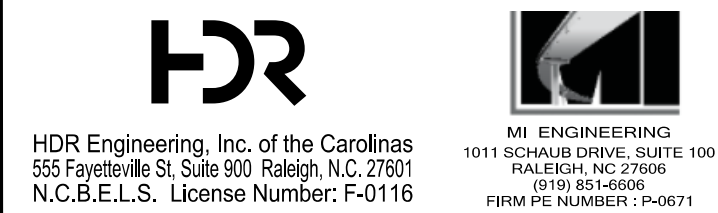
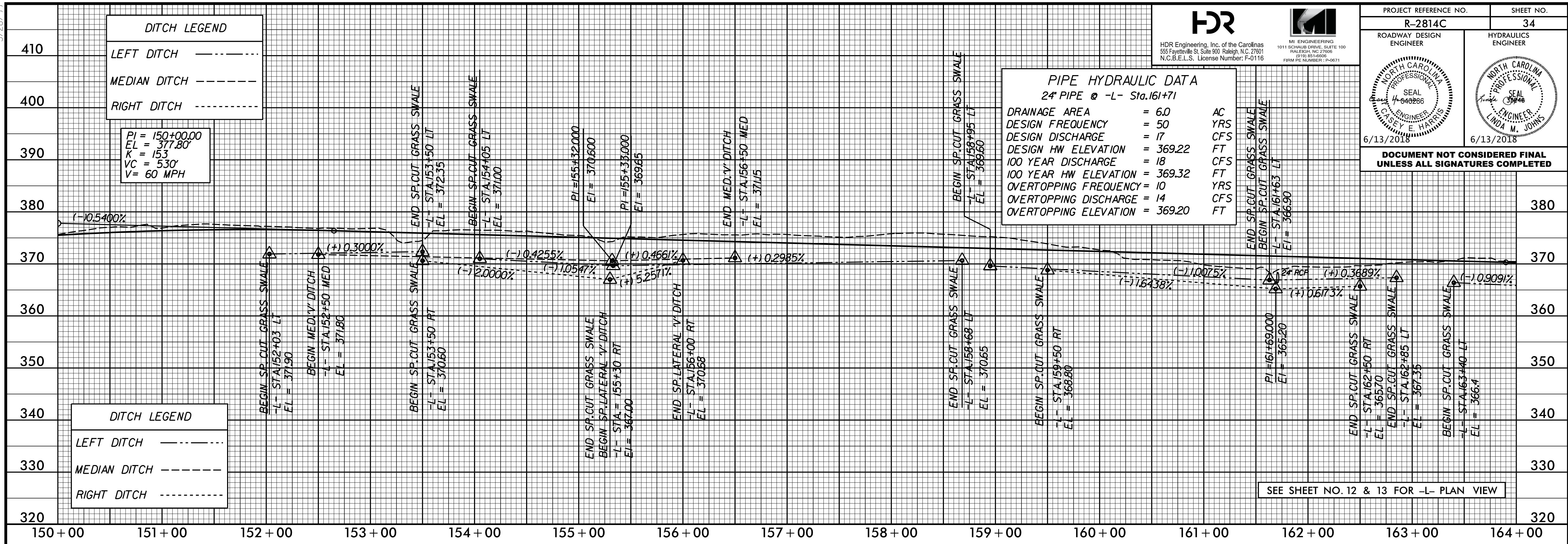
PI = 138+00.00
EL = 353.61'
K = 141
VC = 220'
V = 60 MPH



SEE SHEET NO. 11 & 12 FOR -L- PLAN VIEW

5/14/2016 R-2814C_rdy_pf_s33.dgn
11:44:55 AM

5/28/2018



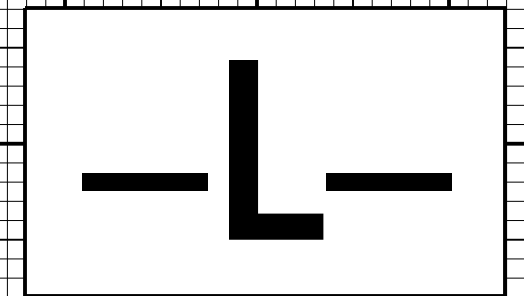
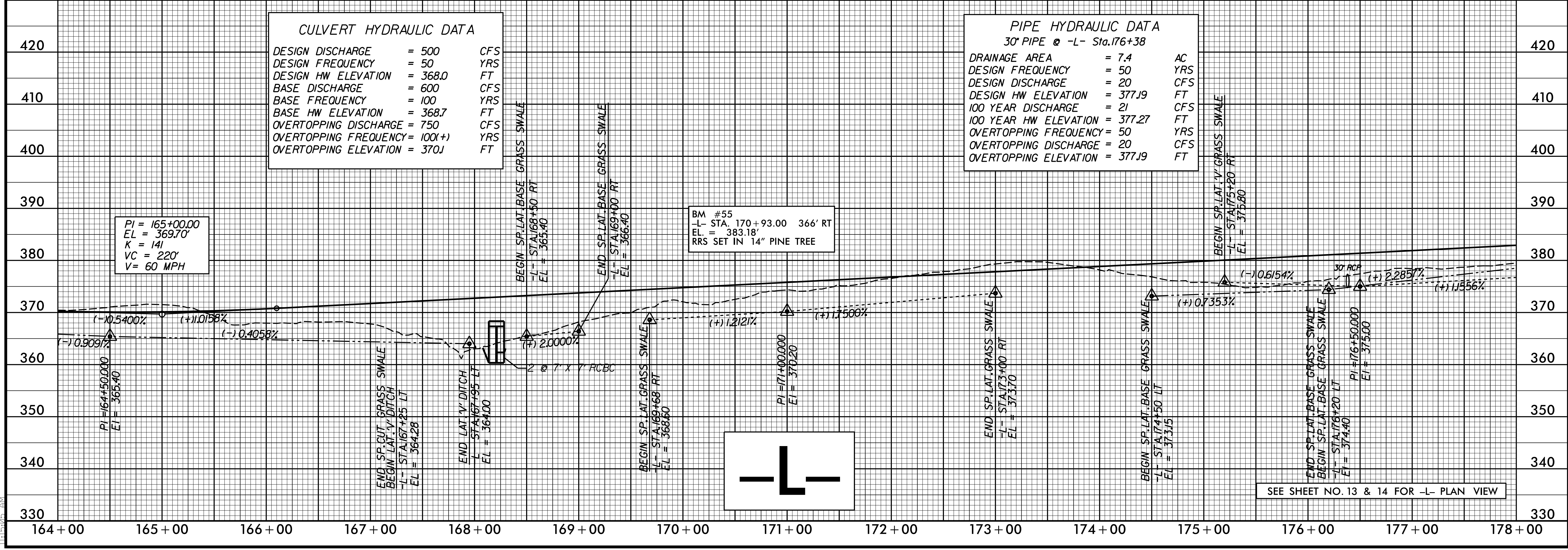
PROJECT REFERENCE NO. R-2814C SHEET NO. 34

ROADWAY DESIGN ENGINEER
 HYDRAULICS ENGINEER

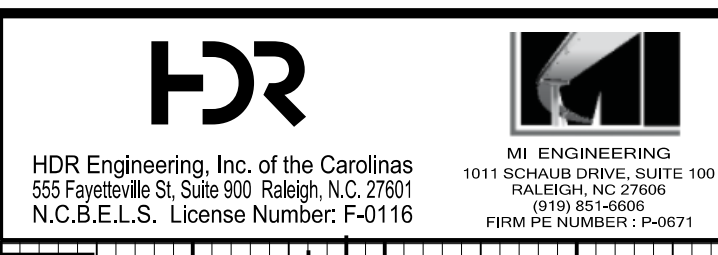
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5/14/2018 R2814C_rdy_pfs34.dgn



5/28/19



PROJECT REFERENCE NO. R-2814C	SHEET NO. 35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/13/2018	6/13/2018

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PIPE HYDRAULIC DATA
18" PIPE @ -L- Sta.185+41

DRAINAGE AREA	= 1.47	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 5	CFS
DESIGN HW ELEVATION	= 388.39	FT
100 YEAR DISCHARGE	= 6	CFS
100 YEAR HW ELEVATION	= 388.45	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 5	CFS
OVERTOPPING ELEVATION	= 388.4	FT

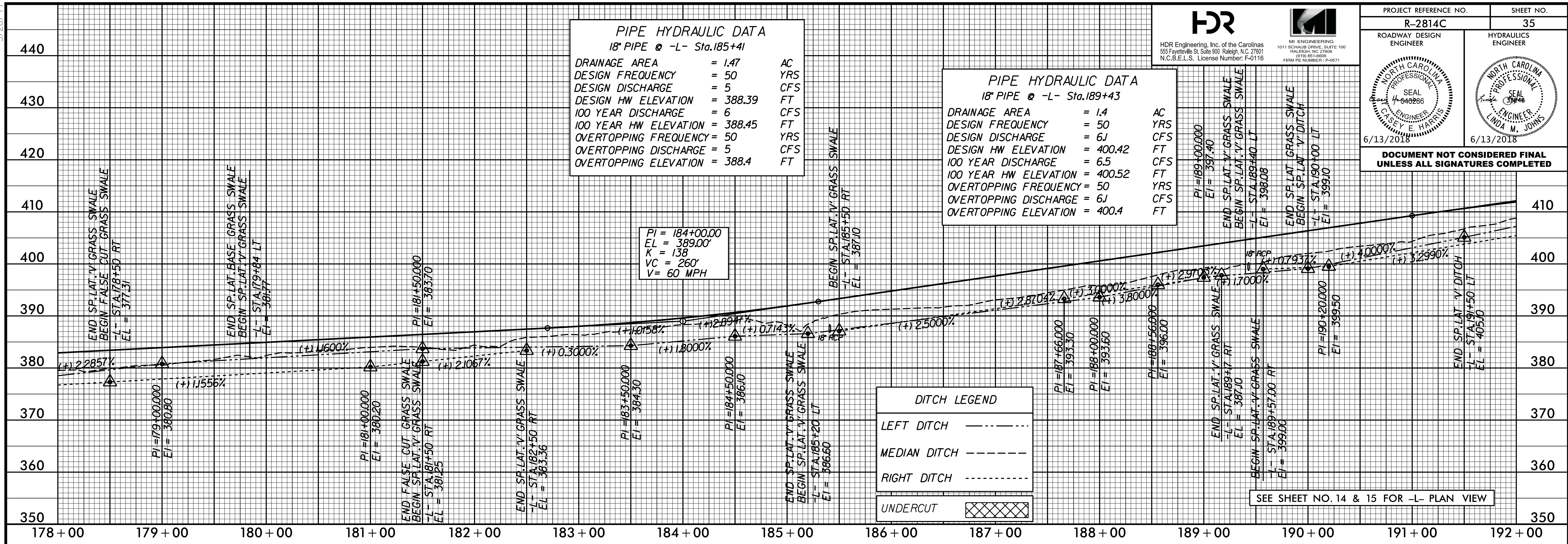
PIPE HYDRAULIC DATA
18" PIPE @ -L- Sta.189+43

DRAINAGE AREA	= 1.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 6J	CFS
DESIGN HW ELEVATION	= 400.42	FT
100 YEAR DISCHARGE	= 6.5	CFS
100 YEAR HW ELEVATION	= 400.52	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 6J	CFS
OVERTOPPING ELEVATION	= 400.4	FT

PI = 184+00.00
EL = 389.00'
K = 138
VC = 260'
V = 60 MPH

DITCH LEGEND

- LEFT DITCH
- MEDIAN DITCH
- RIGHT DITCH
- UNDERCUT



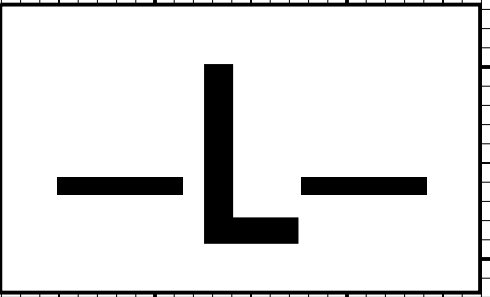
SEE SHEET NO. 14 & 15 FOR -L- PLAN VIEW

PIPE HYDRAULIC DATA
24" PIPE @ -L- Sta.199+03

DRAINAGE AREA	= 6.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 18	CFS
DESIGN HW ELEVATION	= 414.40	FT
100 YEAR DISCHARGE	= 19	CFS
100 YEAR HW ELEVATION	= 414.52	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 18	CFS
OVERTOPPING ELEVATION	= 414.40	FT

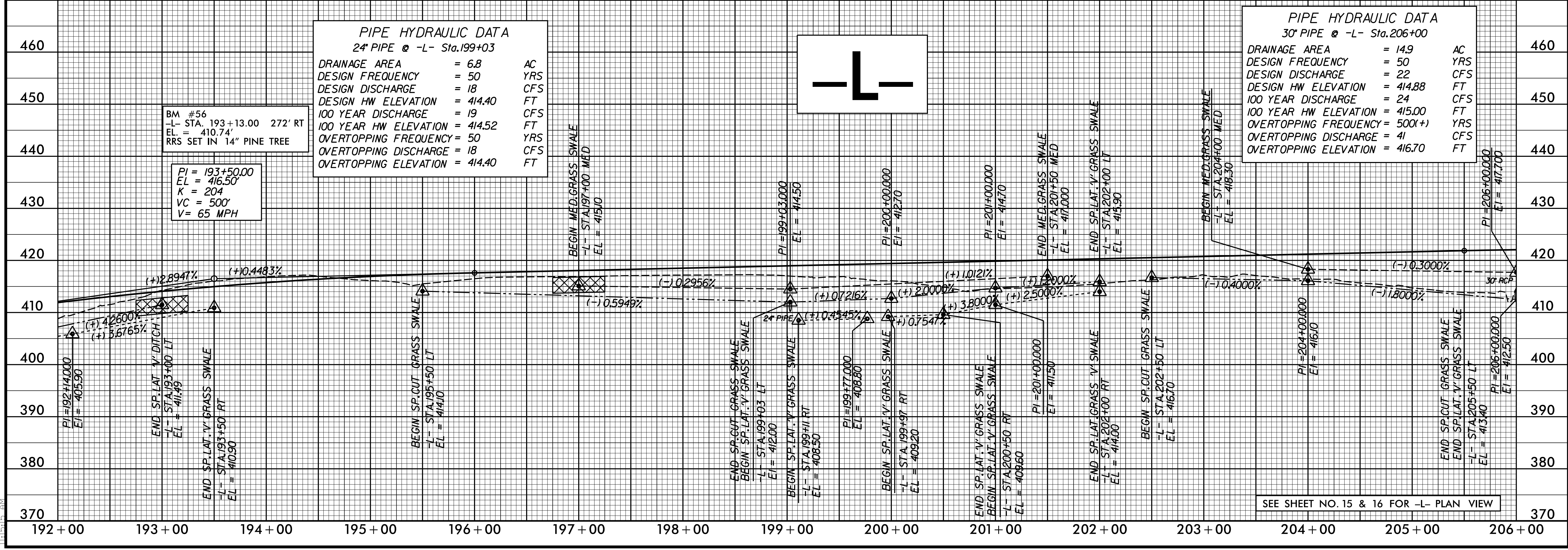
BM #56
-L- STA. 193+13.00 272' RT
EL = 410.74'
RRS SET IN 14" PINE TREE

PI = 193+50.00
EL = 416.50'
K = 204
VC = 500'
V = 65 MPH



PIPE HYDRAULIC DATA
30" PIPE @ -L- Sta.206+00

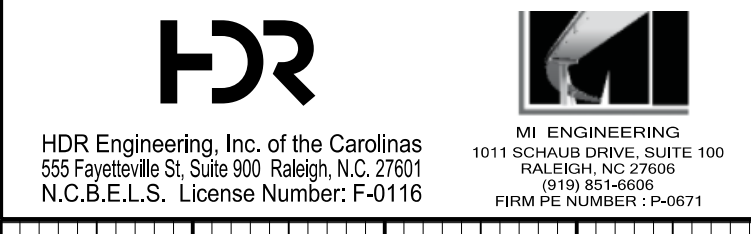
DRAINAGE AREA	= 14.9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 22	CFS
DESIGN HW ELEVATION	= 414.88	FT
100 YEAR DISCHARGE	= 24	CFS
100 YEAR HW ELEVATION	= 415.00	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 4I	CFS
OVERTOPPING ELEVATION	= 416.70	FT



SEE SHEET NO. 15 & 16 FOR -L- PLAN VIEW

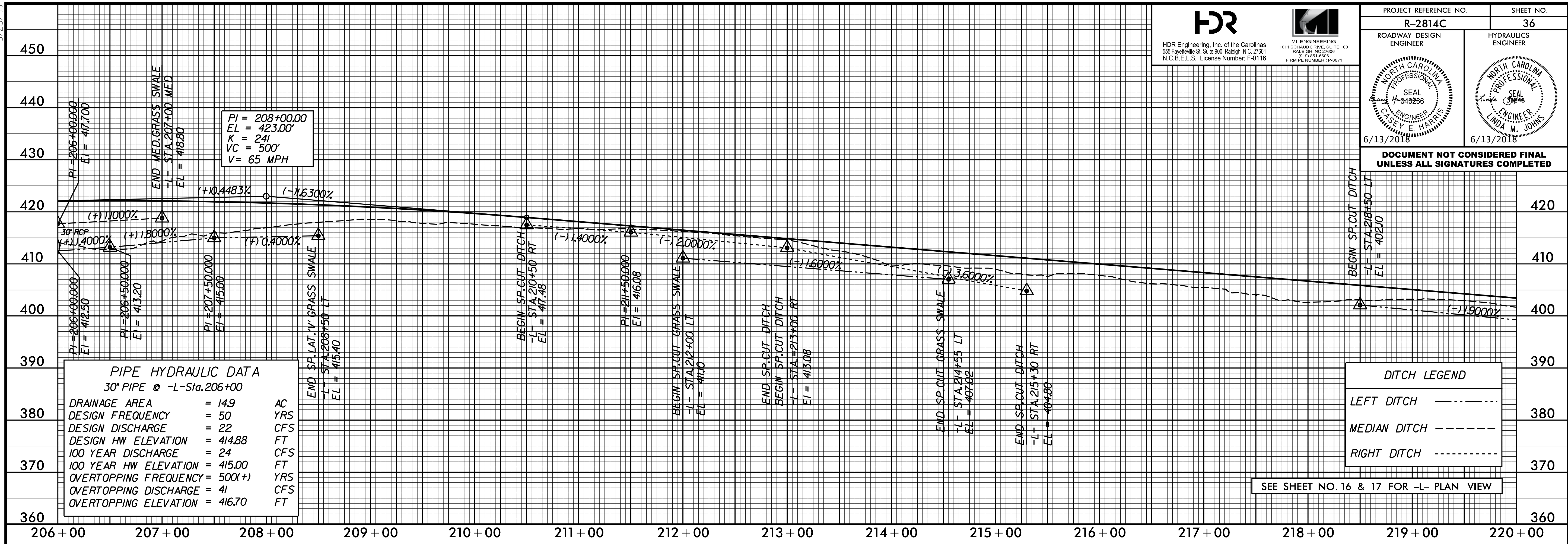
5/14/2018 R2814C_rdy_pfs35.dgn

5/28/19



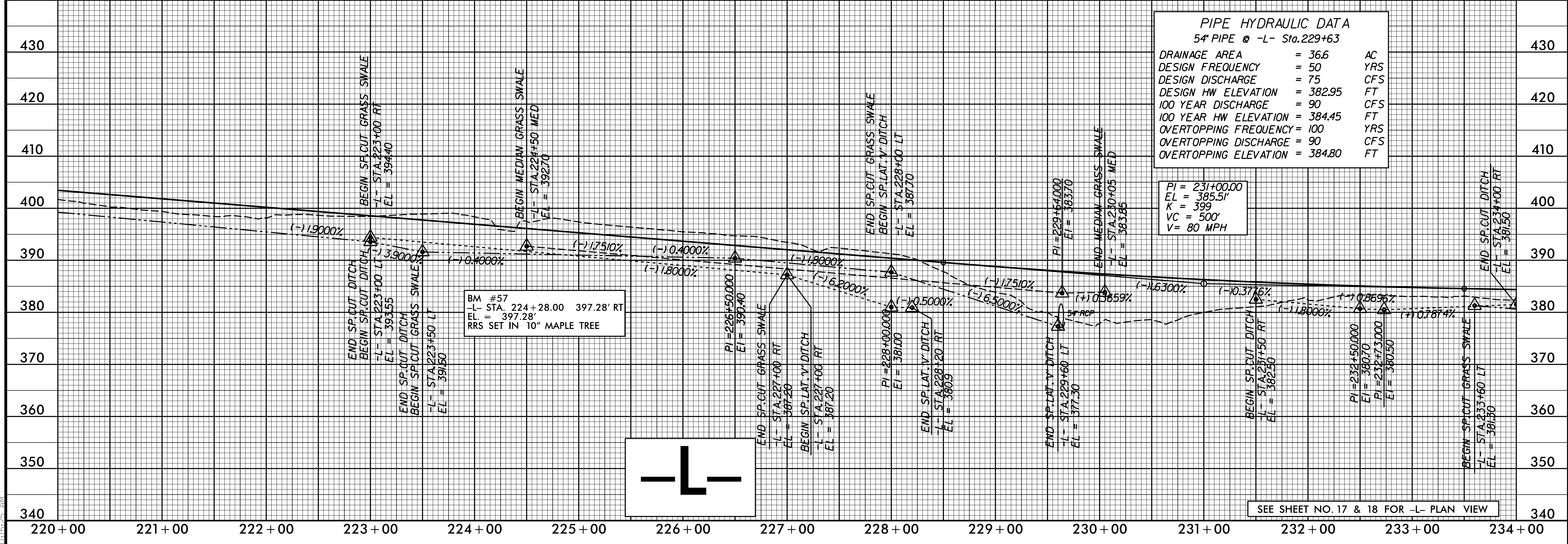
PROJECT REFERENCE NO. R-2814C	SHEET NO. 36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/13/2018	6/13/2018

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

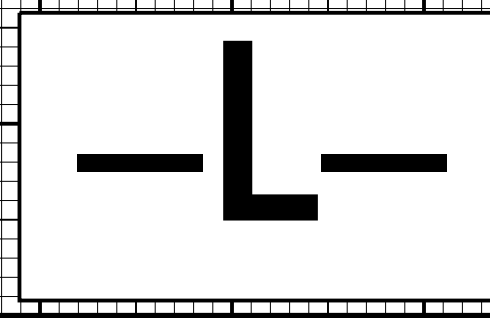


LEFT DITCH	-----
MEDIAN DITCH	-----
RIGHT DITCH	-----

SEE SHEET NO. 16 & 17 FOR -L- PLAN VIEW



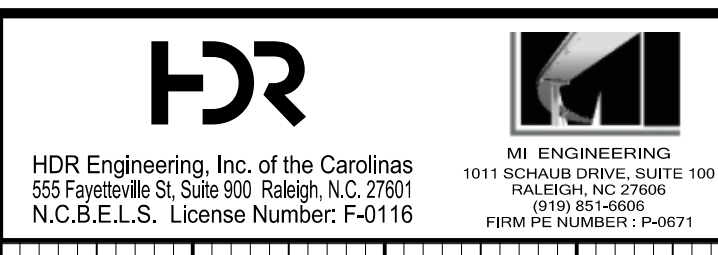
BM #57
 -L- STA. 224+28.00 397.28' RT
 EL. = 397.28'
 RRS SET IN 10" MAPLE TREE



SEE SHEET NO. 17 & 18 FOR -L- PLAN VIEW

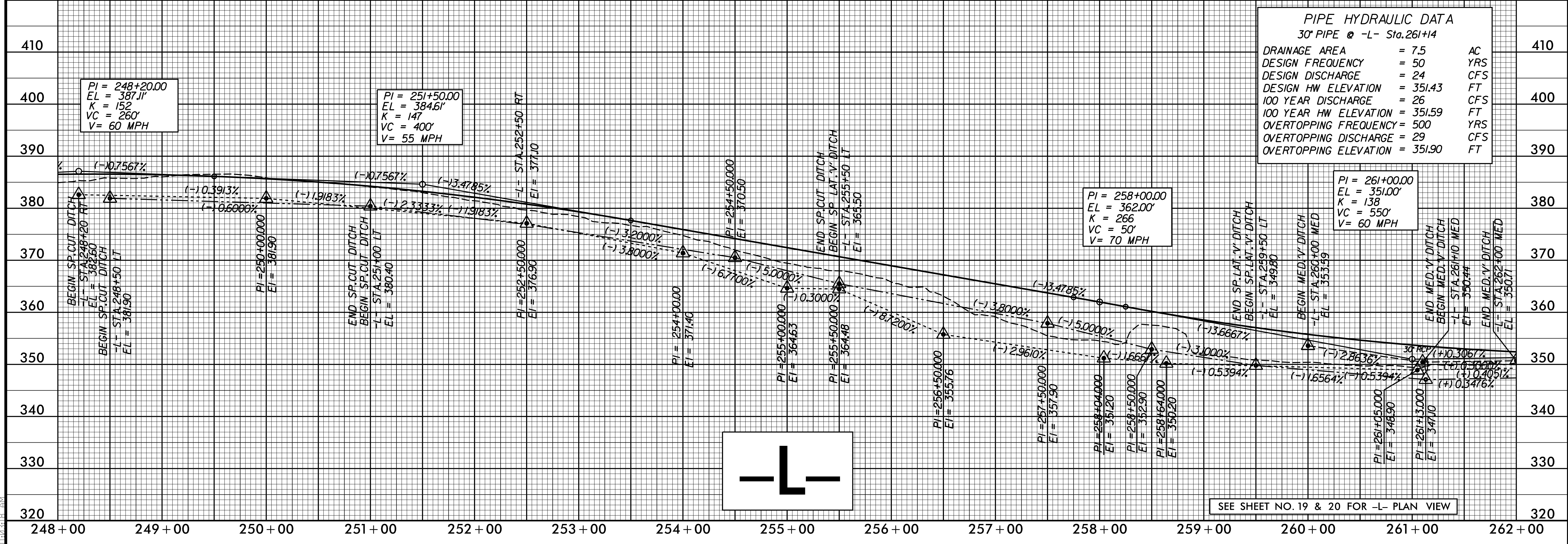
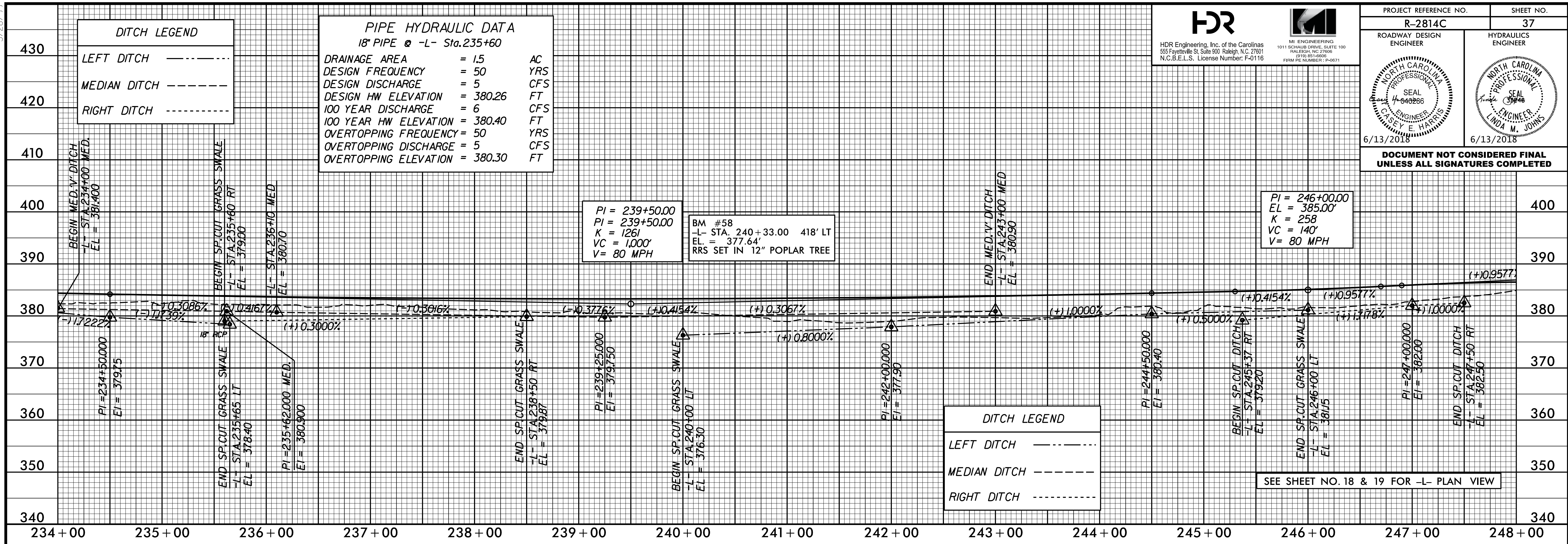
5/14/2018 R2814C_rdy_pfs36.dgn

5/28/2016



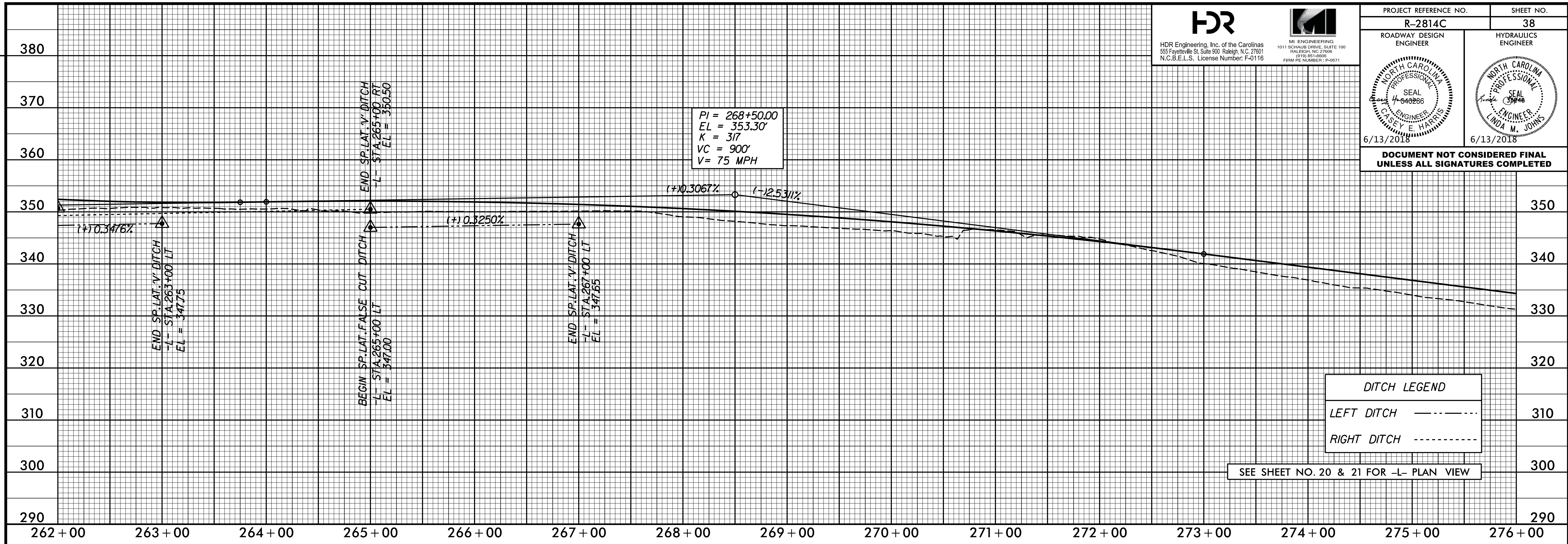
PROJECT REFERENCE NO. R-2814C	SHEET NO. 37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/13/2018	6/13/2018

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



6/13/2016 R2814C_rdy_pfs37.dgn

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



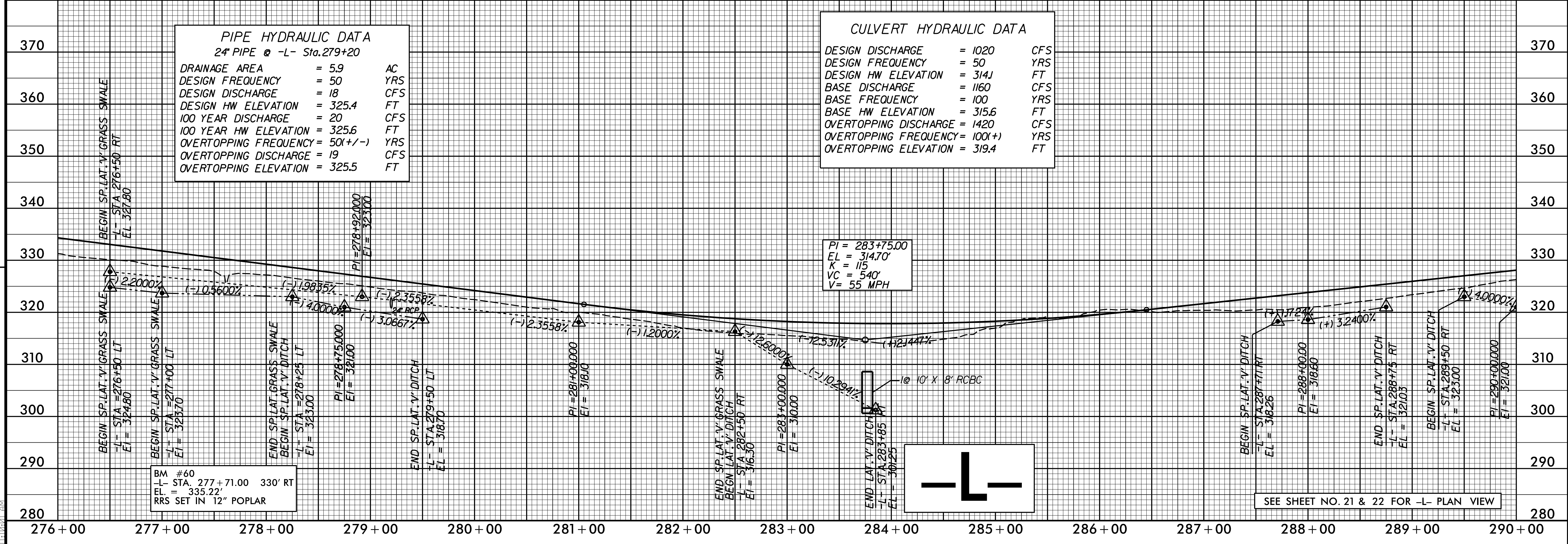
DITCH LEGEND

LEFT DITCH

RIGHT DITCH

SEE SHEET NO. 20 & 21 FOR -L- PLAN VIEW

REVISIONS



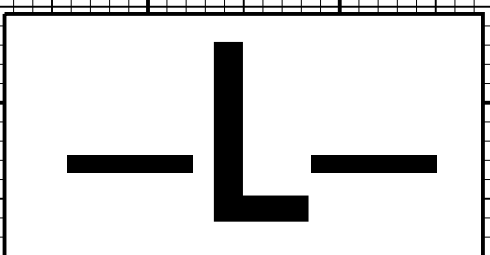
PIPE HYDRAULIC DATA
 24" PIPE @ -L- Sta. 279+20

DRAINAGE AREA	= 5.9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 18	CFS
DESIGN HW ELEVATION	= 325.4	FT
100 YEAR DISCHARGE	= 20	CFS
100 YEAR HW ELEVATION	= 325.6	FT
OVERTOPPING FREQUENCY	= 50(+/-)	YRS
OVERTOPPING DISCHARGE	= 19	CFS
OVERTOPPING ELEVATION	= 325.5	FT

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1020	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 314.1	FT
BASE DISCHARGE	= 1160	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 315.6	FT
OVERTOPPING DISCHARGE	= 1420	CFS
OVERTOPPING FREQUENCY	= 100(+)	YRS
OVERTOPPING ELEVATION	= 319.4	FT

BM #60
 L- STA. 277+71.00 330' RT
 EL = 335.22'
 RRS SET IN 12" POPLAR



SEE SHEET NO. 21 & 22 FOR -L- PLAN VIEW

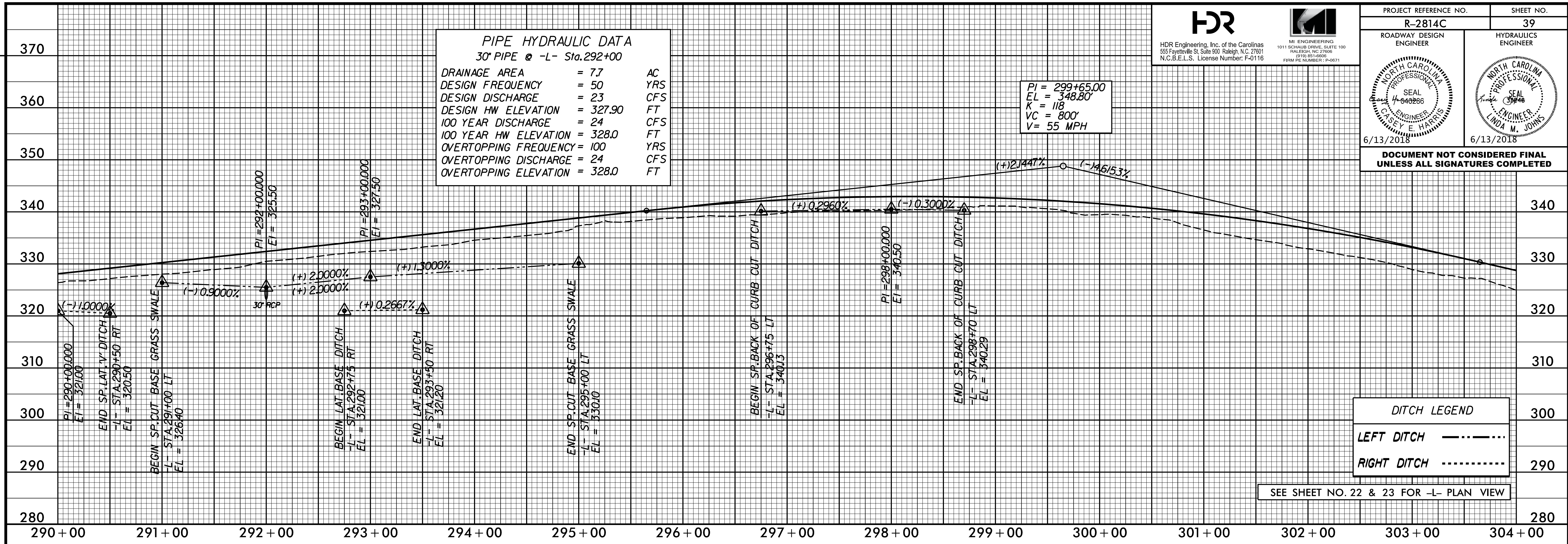
6/13/2018 R2814C_rdy_pfs38.dgn
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UNLESS ALL SIGNATURES COMPLETED**

PIPE HYDRAULIC DATA
 30" PIPE @ -L- Sta.292+00

DRAINAGE AREA	= 7.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 23	CFS
DESIGN HW ELEVATION	= 327.90	FT
100 YEAR DISCHARGE	= 24	CFS
100 YEAR HW ELEVATION	= 328.0	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 24	CFS
OVERTOPPING ELEVATION	= 328.0	FT

PI = 299+65.00
 EL = 348.80'
 K = 118
 VC = 800'
 V = 55 MPH



DITCH LEGEND
 LEFT DITCH - - - - -
 RIGHT DITCH -

SEE SHEET NO. 22 & 23 FOR -L- PLAN VIEW

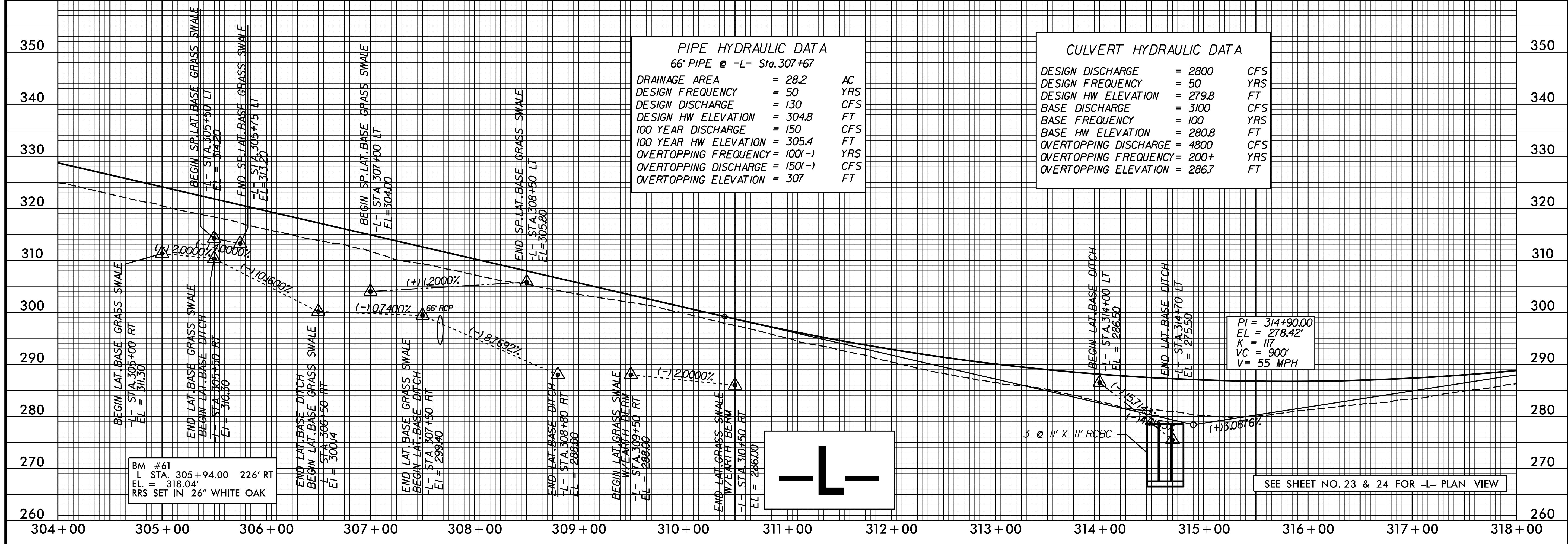
PIPE HYDRAULIC DATA
 66" PIPE @ -L- Sta.307+67

DRAINAGE AREA	= 28.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 130	CFS
DESIGN HW ELEVATION	= 304.8	FT
100 YEAR DISCHARGE	= 150	CFS
100 YEAR HW ELEVATION	= 305.4	FT
OVERTOPPING FREQUENCY	= 100(-)	YRS
OVERTOPPING DISCHARGE	= 150(-)	CFS
OVERTOPPING ELEVATION	= 307	FT

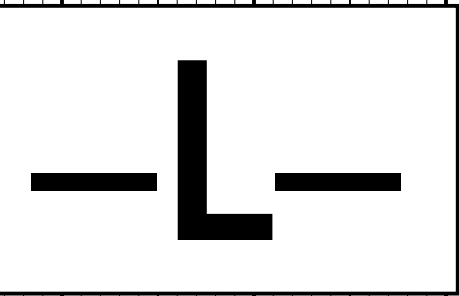
CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 2800	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 279.8	FT
BASE DISCHARGE	= 3100	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 280.8	FT
OVERTOPPING DISCHARGE	= 4800	CFS
OVERTOPPING FREQUENCY	= 200+	YRS
OVERTOPPING ELEVATION	= 286.7	FT

PI = 314+90.00
 EL = 278.42'
 K = 117
 VC = 900'
 V = 55 MPH

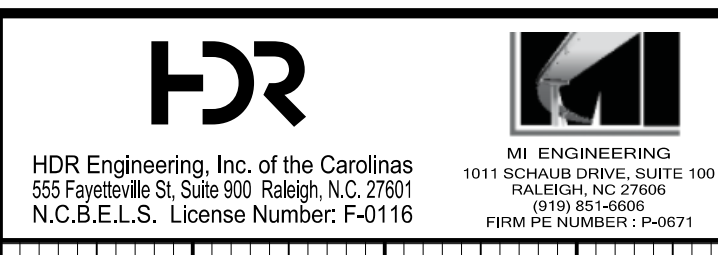


BM #61
 -L- STA. 305+94.00 226' RT
 EL = 318.04'
 RRS SET IN 26" WHITE OAK



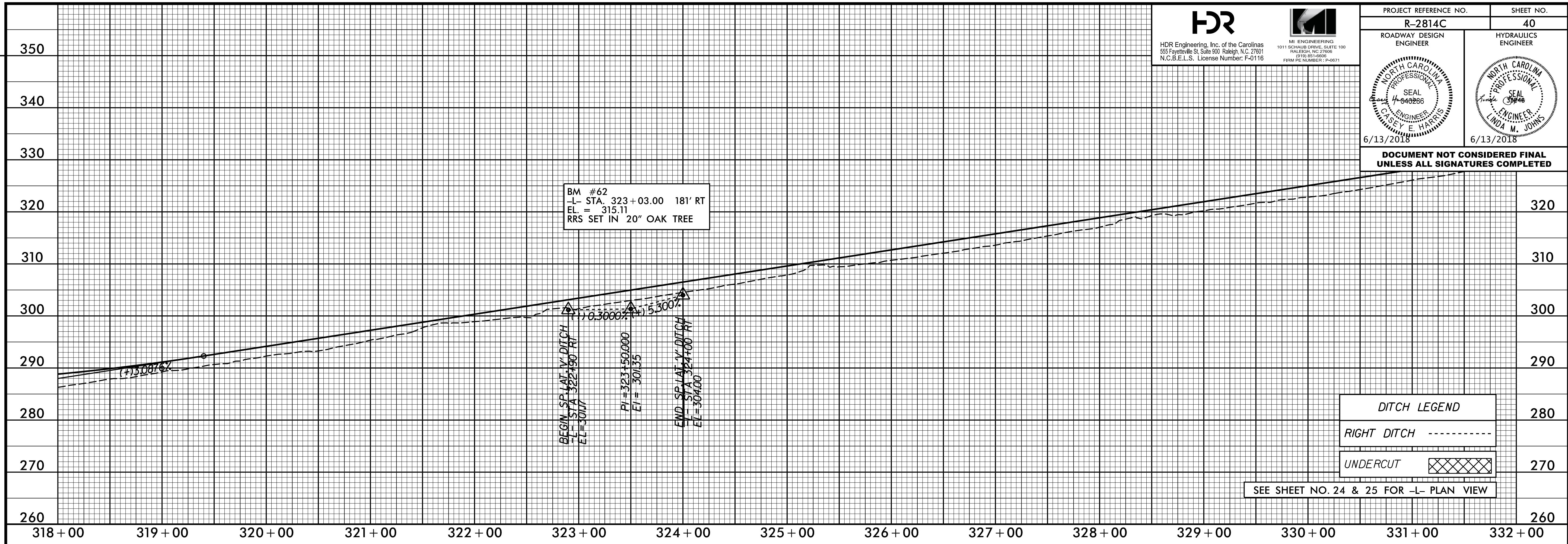
SEE SHEET NO. 23 & 24 FOR -L- PLAN VIEW

REVISIONS
 6/13/2018 11:23:33 AM
 2814C_rdy_pfs39.dgn



PROJECT REFERENCE NO. R-2814C	SHEET NO. 40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/13/2018	6/13/2018

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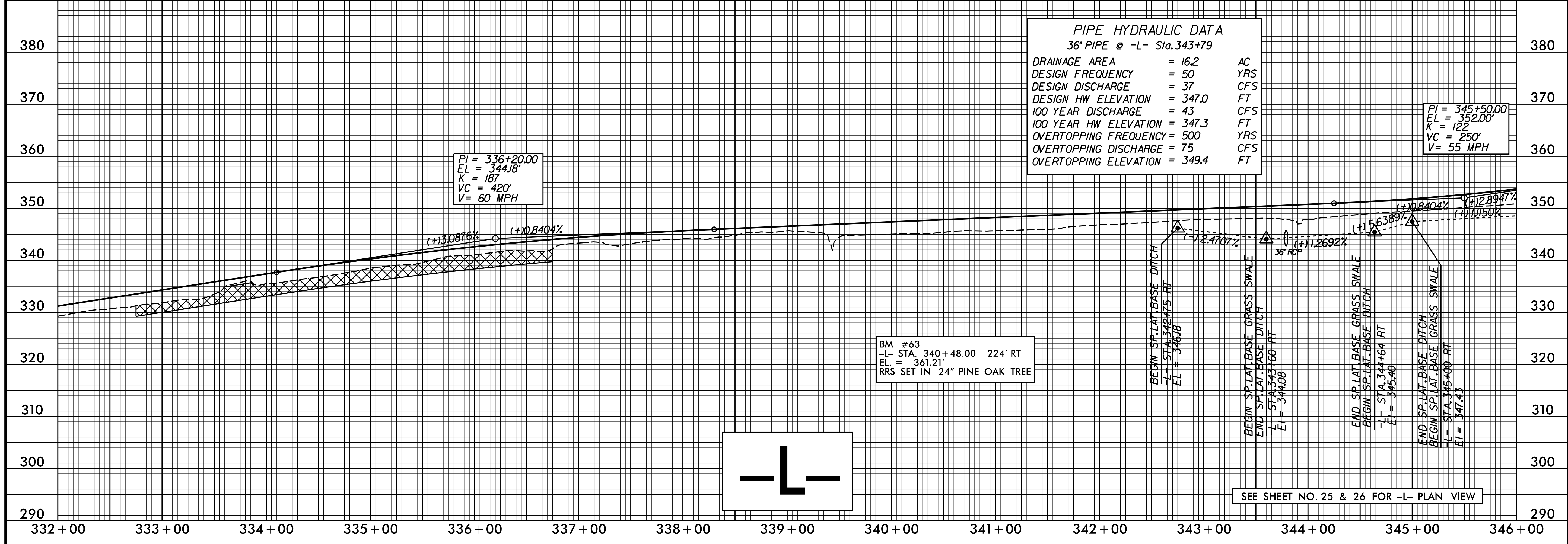


DITCH LEGEND

RIGHT DITCH -----

UNDERCUT

SEE SHEET NO. 24 & 25 FOR -L- PLAN VIEW

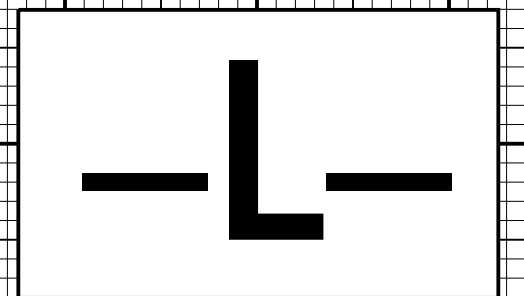


PIPE HYDRAULIC DATA
36" PIPE @ -L- Sta. 343+79

DRAINAGE AREA	= 16.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 37	CFS
DESIGN HW ELEVATION	= 347.0	FT
100 YEAR DISCHARGE	= 43	CFS
100 YEAR HW ELEVATION	= 347.3	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 75	CFS
OVERTOPPING ELEVATION	= 349.4	FT

PI = 345+50.00
EL = 352.00
K = 122
VC = 250'
V = 55 MPH

BM #63
-L- STA. 340+48.00 224' RT
EL. = 361.21'
RRS SET IN 24" PINE OAK TREE



SEE SHEET NO. 25 & 26 FOR -L- PLAN VIEW

REVISIONS

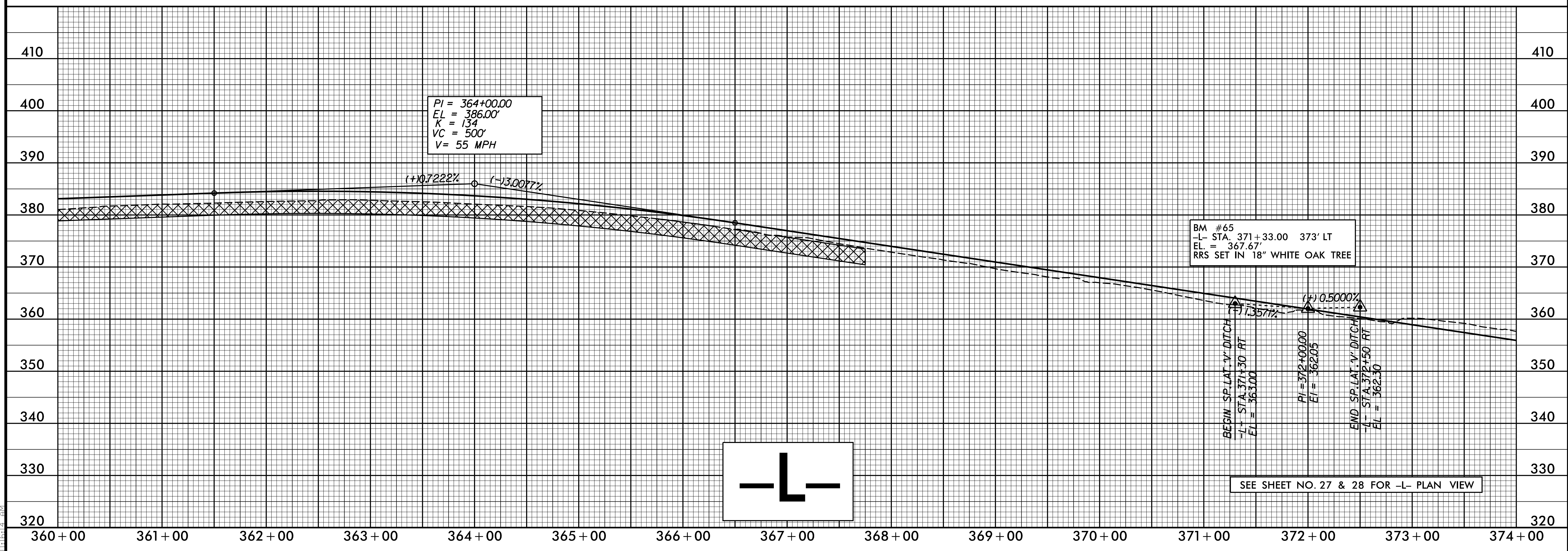
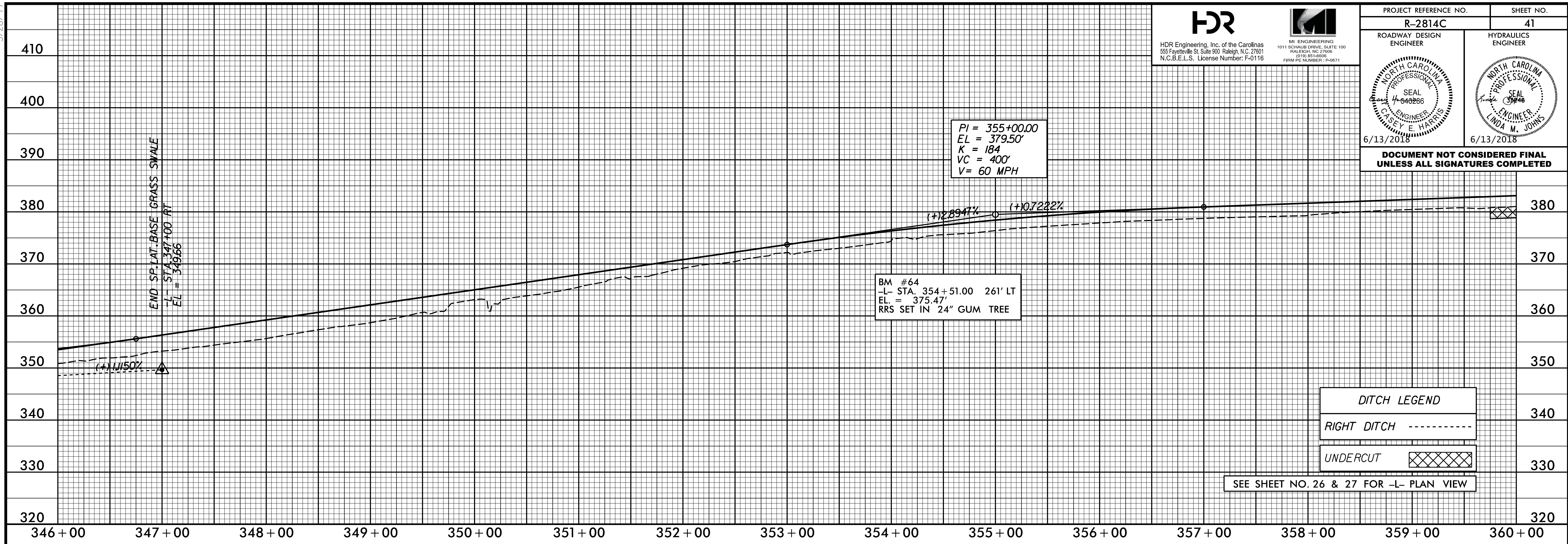
5/14/2018 R2814C_rdy-pfs40.dgn
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5/28/19







PROJECT REFERENCE NO. R-2814C	SHEET NO. 41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/13/2018	6/13/2018

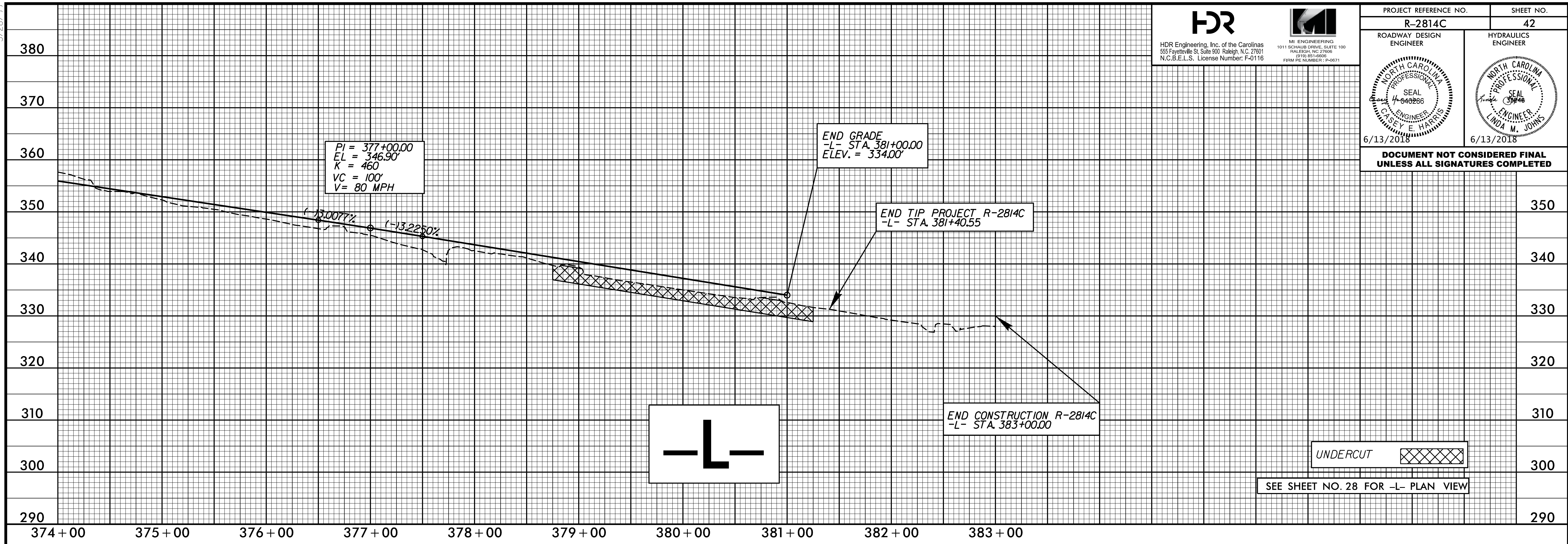
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5/14/2018 11:16:13 AM R2814C_rdy_pfs41.dgn

5/28/19

PROJECT REFERENCE NO. R-2814C		SHEET NO. 42
 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116		 MI ENGINEERING 1011 SCHUBB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-5206 FIRM PE NUMBER: P-0671
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
 CASEY E. HARRIS 6/13/2018	 LINDA M. JOHNS 6/13/2018	



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5/28/2018

PIPE HYDRAULIC DATA
24" PIPE @ -Y2- Sta. 12+82

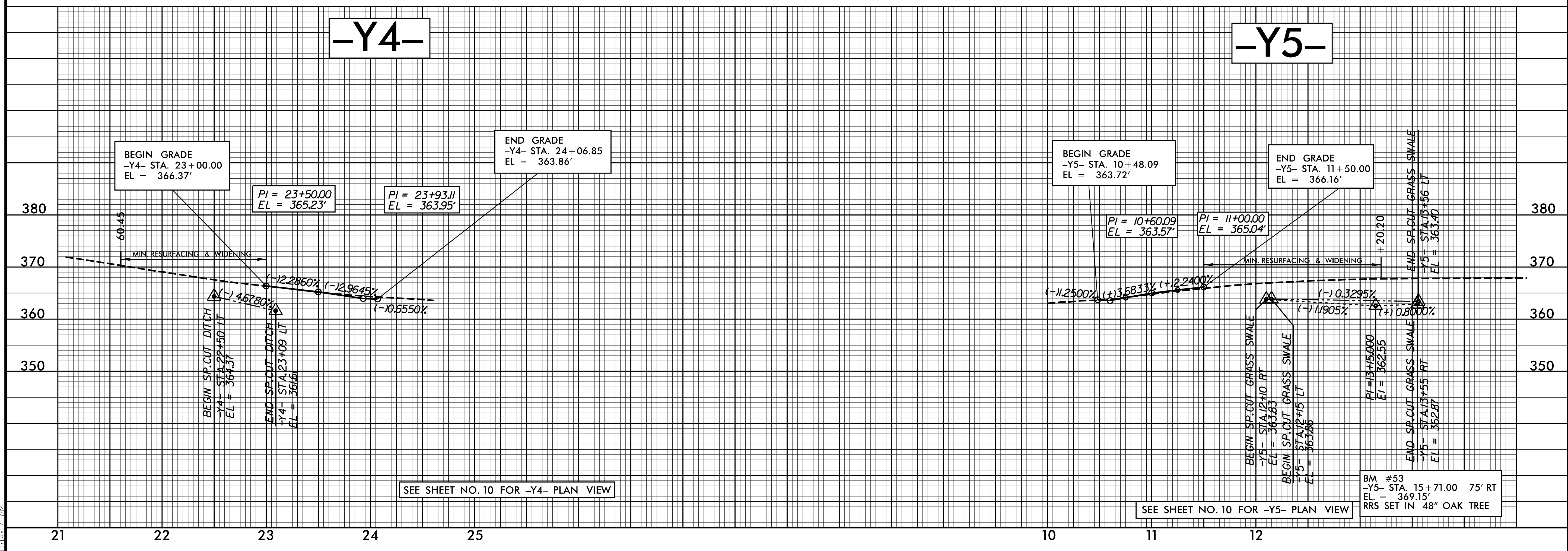
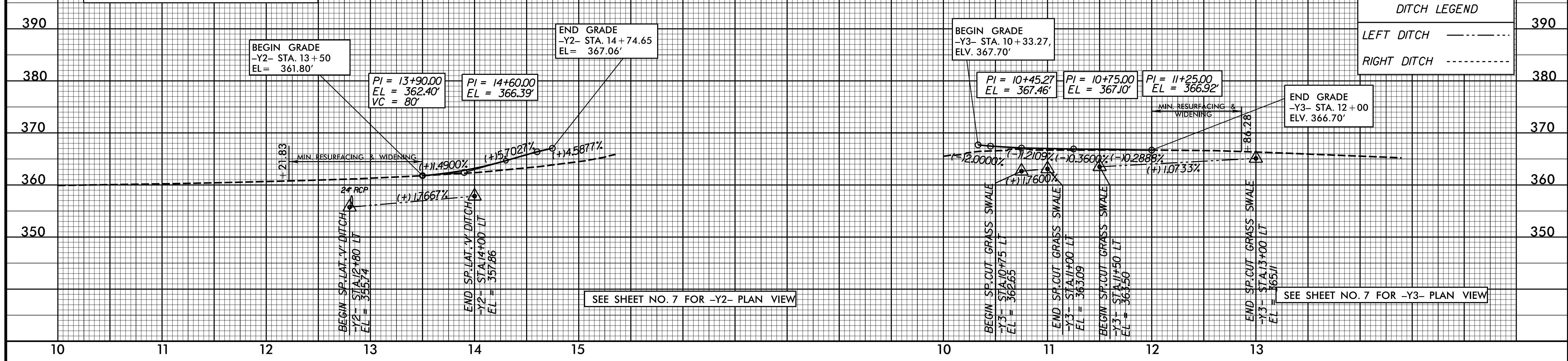
DRAINAGE AREA	= 4.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 12	CFS
DESIGN HW ELEVATION	= 357.90	FT
100 YEAR DISCHARGE	= 13	CFS
100 YEAR HW ELEVATION	= 357.99	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 20	CFS
OVERTOPPING ELEVATION	= 358.77	FT

HDR
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

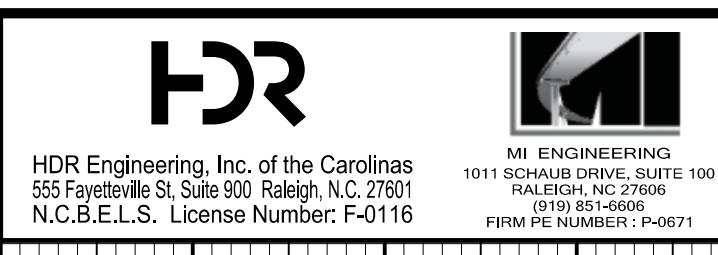
MI ENGINEERING
1011 SCHUBERT DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-5006
FIRM PE NUMBER: P-0671

PROJECT REFERENCE NO.	R-2814C	SHEET NO.	43
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

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6/13/2018 R-2814C_rdy_pfs43.dgn

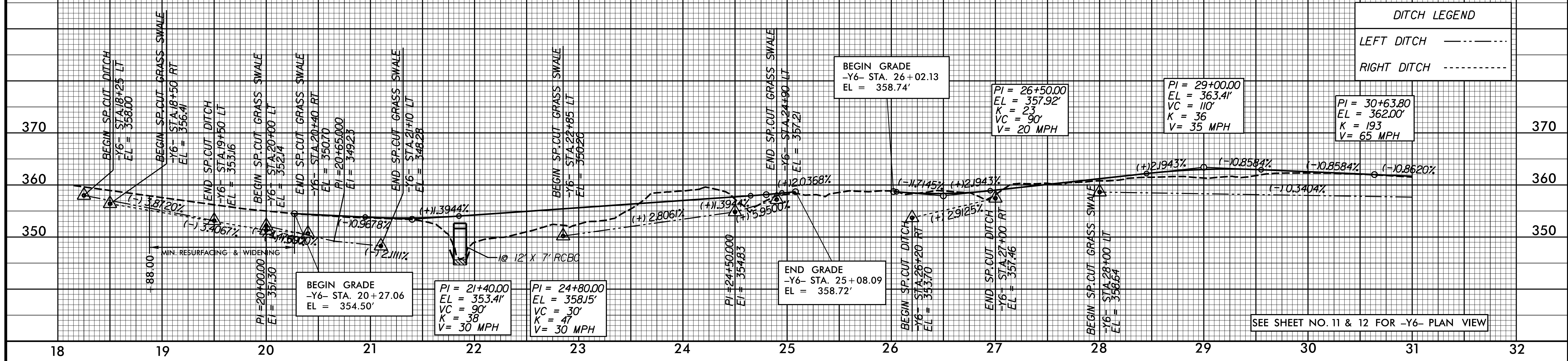


PROJECT REFERENCE NO. R-2814C	SHEET NO. 44
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 550	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 353.2	FT
BASE DISCHARGE	= 650	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 354.5	FT
OVERTOPPING DISCHARGE	= 600	CFS
OVERTOPPING FREQUENCY	= 50 +	YRS
OVERTOPPING ELEVATION	= 353.9	FT

-Y6-



DITCH LEGEND

LEFT DITCH -----

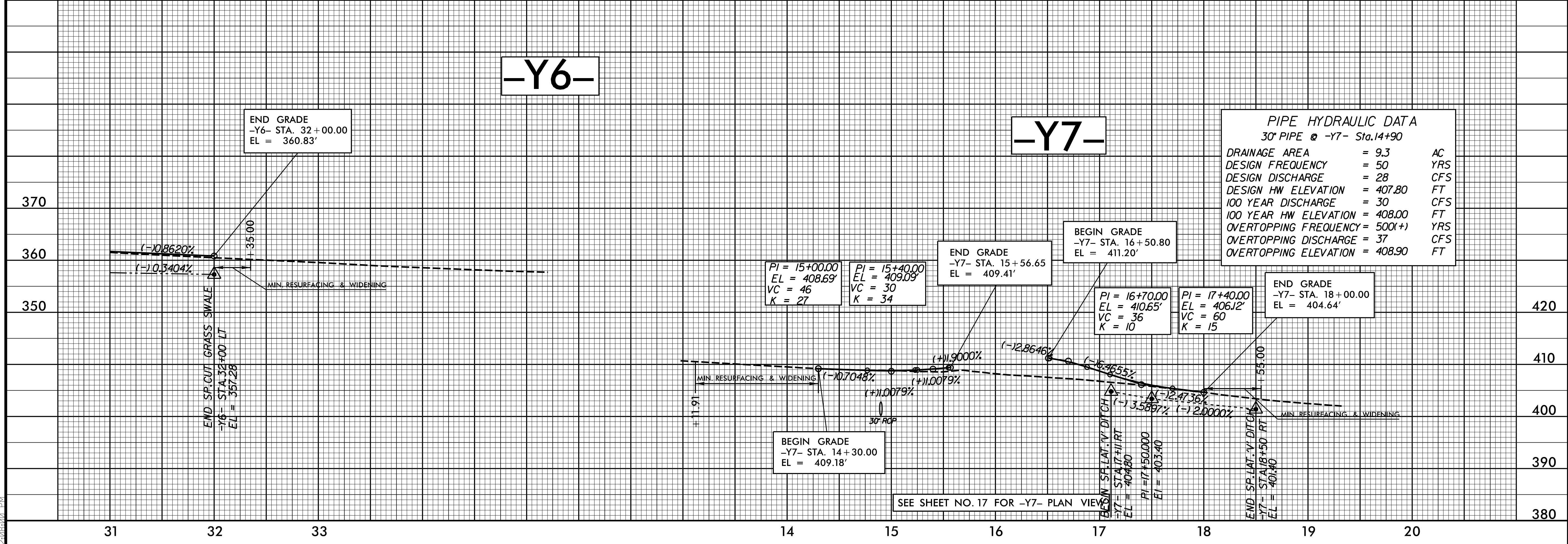
RIGHT DITCH -----

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET NO. 11 & 12 FOR -Y6- PLAN VIEW

-Y6-

-Y7-



PIPE HYDRAULIC DATA
30" PIPE @ -Y7- Sta. 14+90

DRAINAGE AREA	= 9.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 28	CFS
DESIGN HW ELEVATION	= 407.80	FT
100 YEAR DISCHARGE	= 30	CFS
100 YEAR HW ELEVATION	= 408.00	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 37	CFS
OVERTOPPING ELEVATION	= 408.90	FT

SEE SHEET NO. 17 FOR -Y7- PLAN VIEW

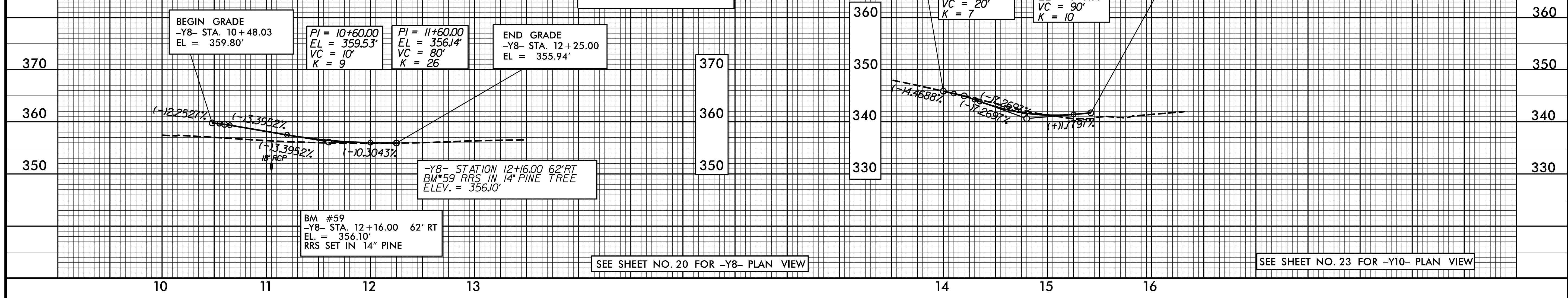
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PIPE HYDRAULIC DATA
 18" PIPE @ -Y8- Sta. 11+05

DRAINAGE AREA	= 2.5	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 8	CFS
DESIGN HW ELEVATION	= 352.91	FT
100 YEAR DISCHARGE	= 9	CFS
100 YEAR HW ELEVATION	= 353.05	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= 14	CFS
OVERTOPPING ELEVATION	= 354.17	FT

-Y8-

-Y10-

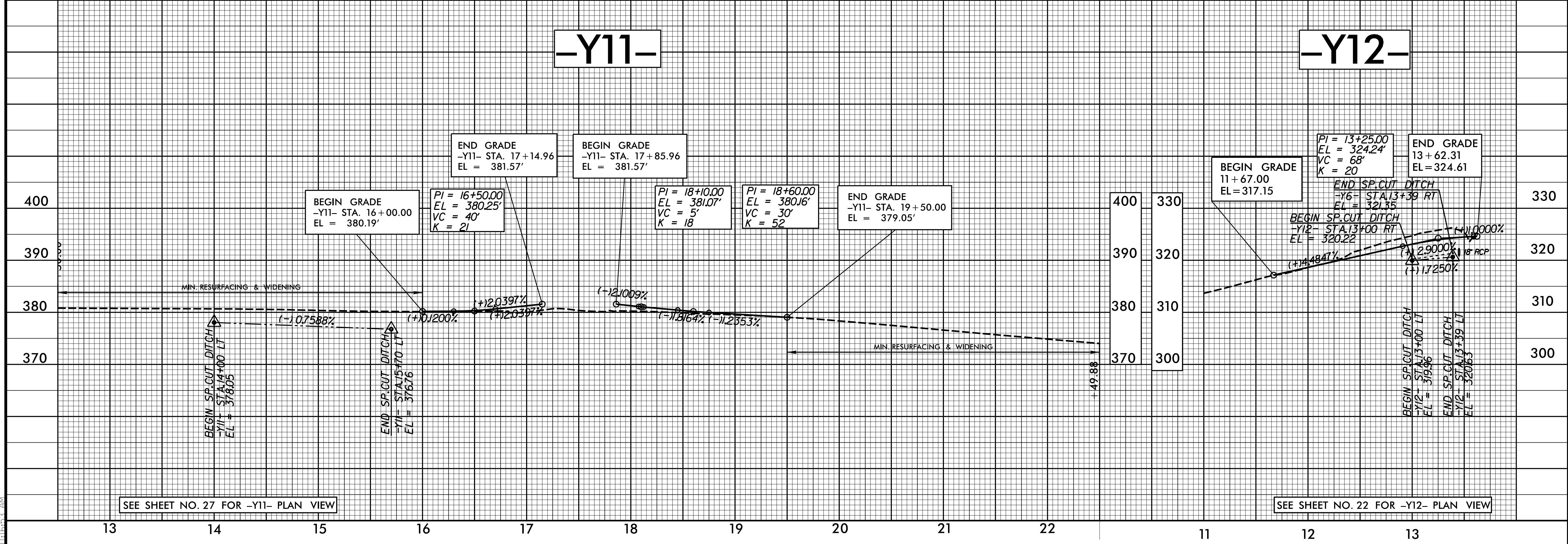


SEE SHEET NO. 20 FOR -Y8- PLAN VIEW

SEE SHEET NO. 23 FOR -Y10- PLAN VIEW

-Y11-

-Y12-



SEE SHEET NO. 27 FOR -Y11- PLAN VIEW

SEE SHEET NO. 22 FOR -Y12- PLAN VIEW

5/28/19

HDR
 HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

M ENGINEERING
 1011 SCHUBB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-5206
 FIRM PE NUMBER: P-0671

PROJECT REFERENCE NO. R-2814C	SHEET NO. 46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-TEMPALIG2-



SEE SHEET NO. 2B-10 FOR -TEMPALIGN- DETAIL

5/14/2016 11:17:07 AM R2814C_rdy-pfs16.dgn