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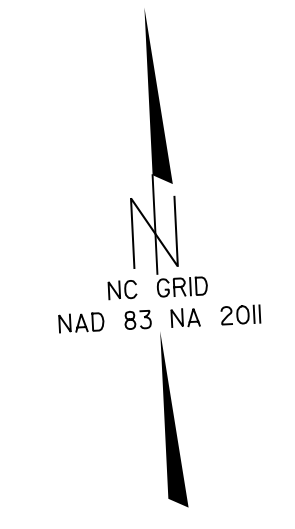
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**This file or an individual page  
shall not be considered a certified document.**

PROJECT REFERENCE NO. <i>R-5703</i>		SHEET NO. <i>18</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
<i>Michael Baker Engineering, Inc.</i> 9/14/2017	<i>Joshua G. Dalton</i> 9/14/2017		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

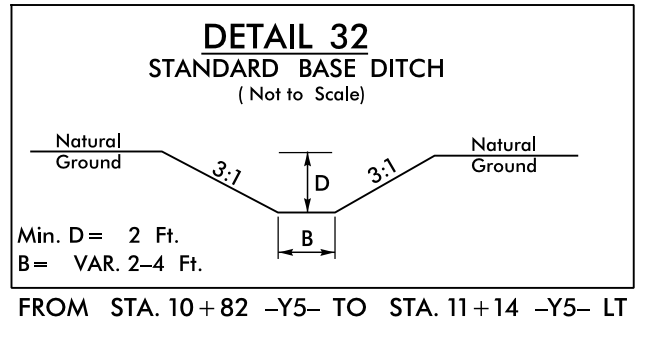
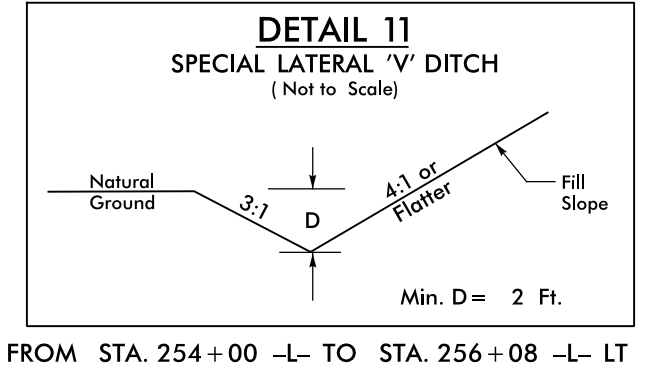
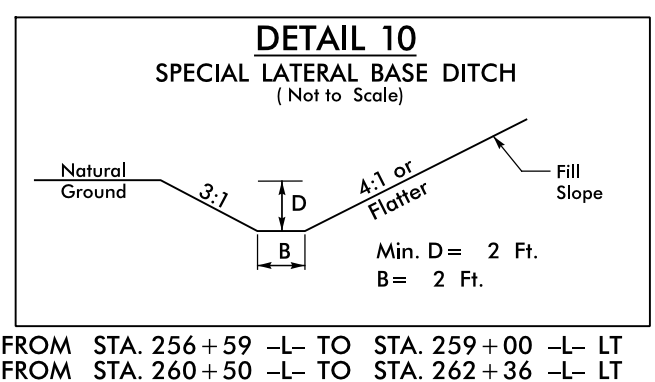
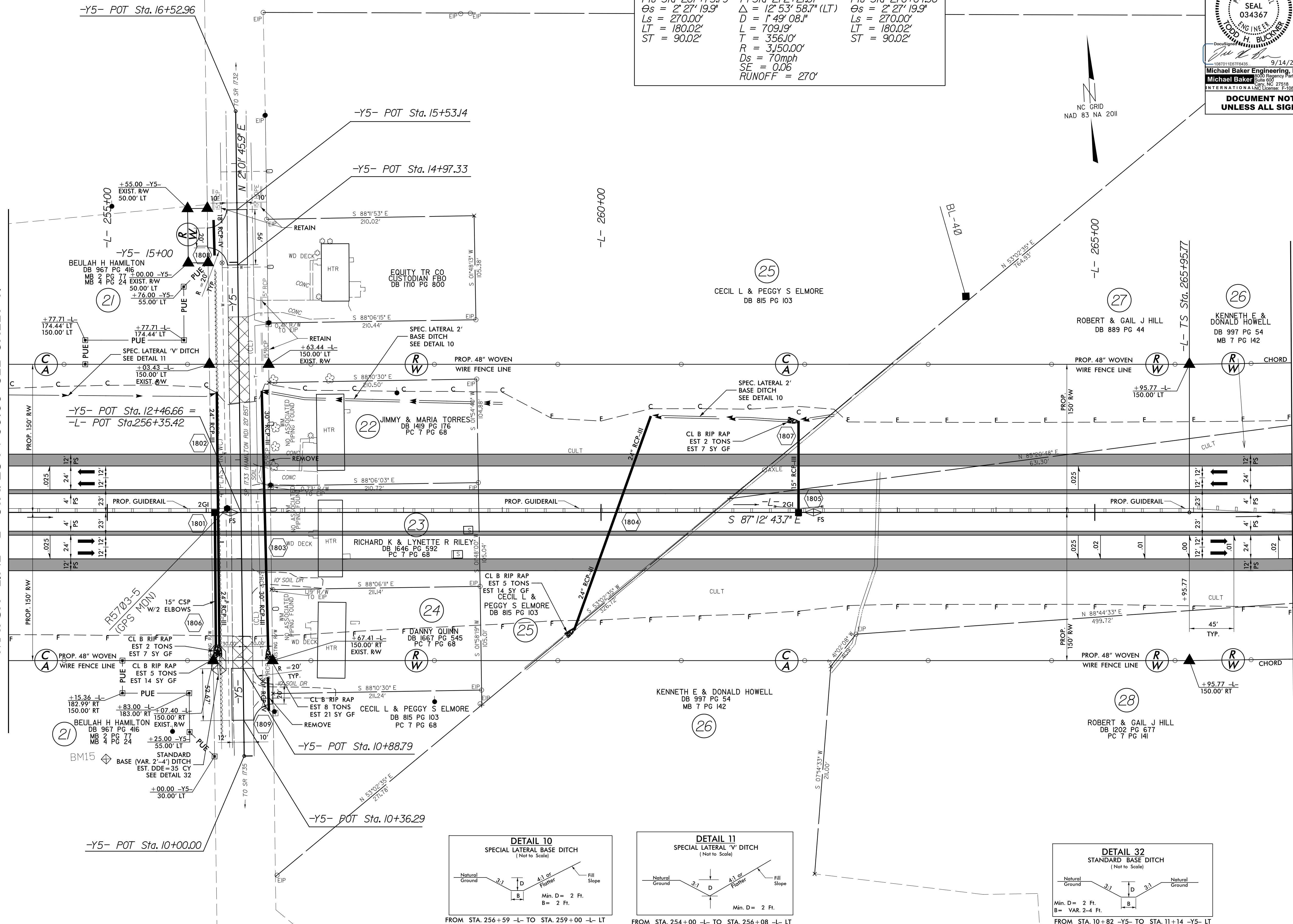
-L-

<i>Pls Sta 267+75.79</i> $\Theta_s = 2' 27'' 19.9'$ $L_s = 270.00'$ $LT = 180.02'$ $ST = 90.02'$	<i>PI Sta 272+21.87</i> $\Delta = 12' 53'' 58.7'' (LT)$ $D = 1' 49'' 08.1''$ $L = 709.19'$ $T = 356.10'$ $R = 3,150.00'$ $D_s = 70\text{mph}$ $SE = 0.06$ $RUNOFF = 270'$	<i>Pls Sta 276+64.98</i> $\Theta_s = 2' 27'' 19.9'$ $L_s = 270.00'$ $LT = 180.02'$ $ST = 90.02'$
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MATCH LINE -L- STA. 254 + 00.00 SEE SHEET 17

MATCH LINE -L- STA. 267 + 00.00 SEE SHEET 19



FOR -L- PROFILE SEE SHEET 38 & 39

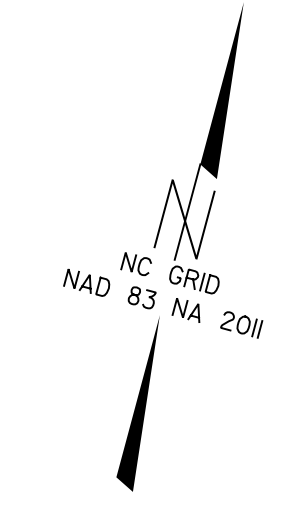
REVISIONS

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8/17/19

PROJECT REFERENCE NO. <b>R-5703</b>		SHEET NO. <b>19</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER <b>Michael Baker Engineering, Inc.</b> SEAL 034367 J. D. BUCKNER		HYDRAULICS ENGINEER <b>Michael Baker Engineering, Inc.</b> SEAL 26971 J. G. DALTON	
9/14/2017		9/14/2017	
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Charlotte, NC 27518 INTERNATIONAL INC. License: F-1084		SINGATE DESIGN GROUP P.A. 915 Jones Franklin Road Raleigh, NC 27608 NC CDR No. C-9800	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

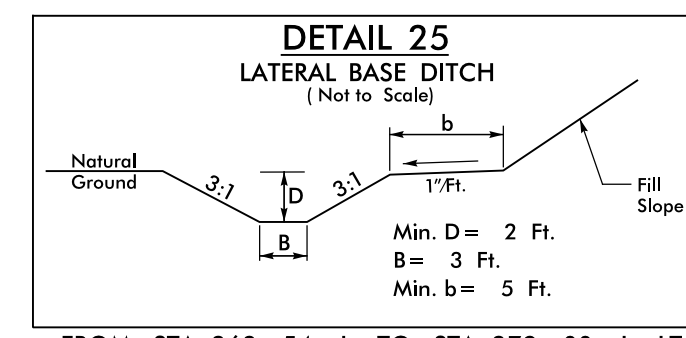
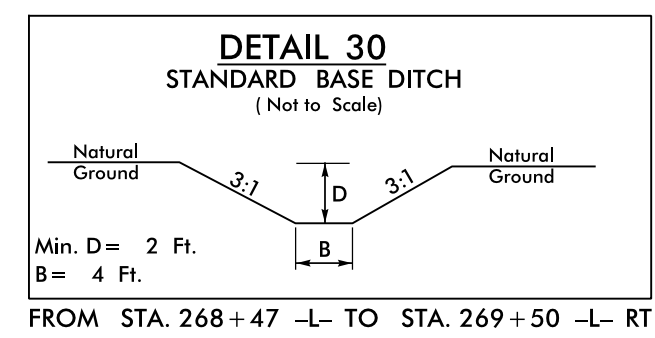
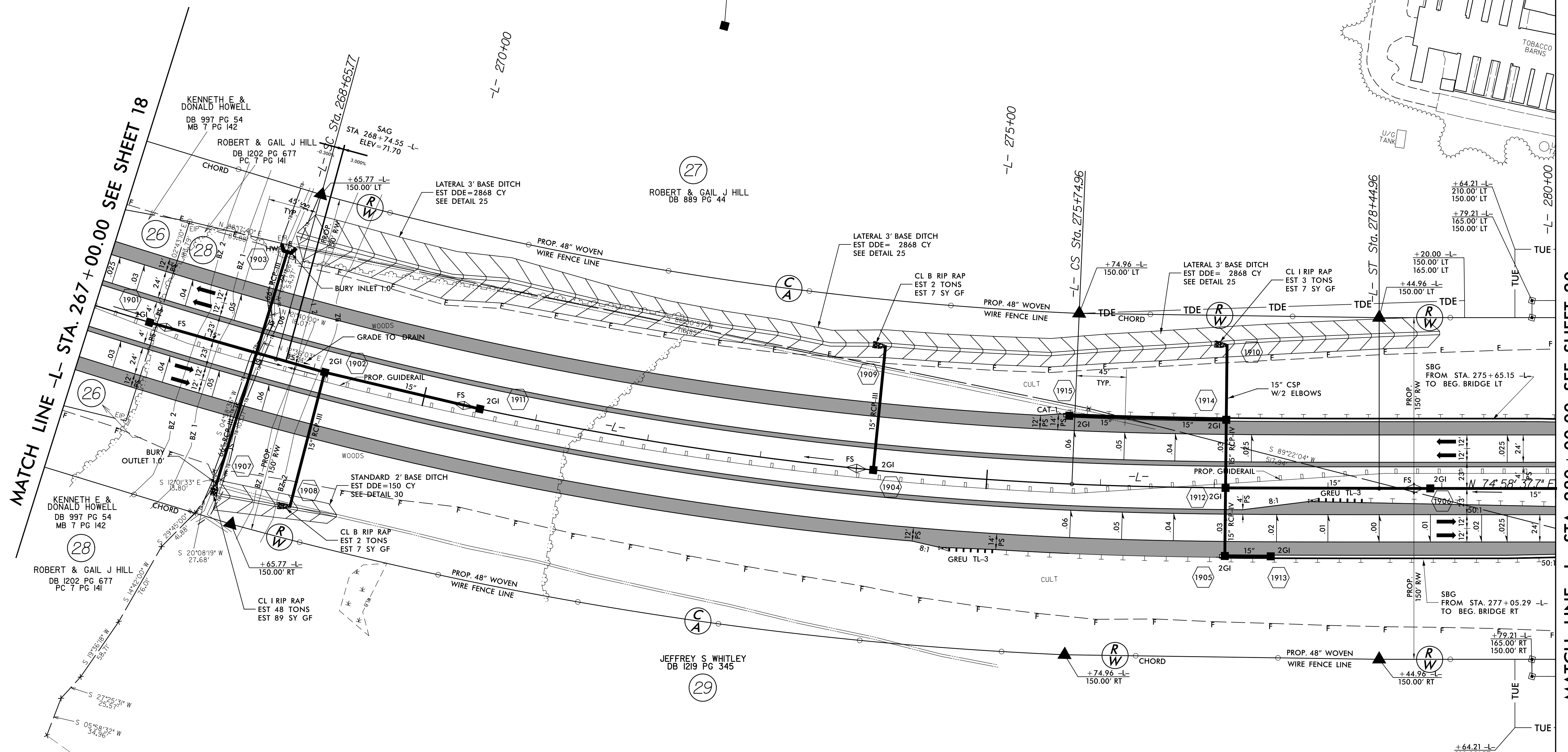
-L-		
PIs Sta 267+75.79	PI Sta 272+21.87	PIs Sta 276+64.98
$\Theta_s = 2' 27'' 19.9''$	$\Delta = 12' 53'' 58.7''$ (LT)	$\Theta_s = 2' 27'' 19.9''$
$L_s = 270.00'$	$D = 1' 49'' 08.1''$	$L_s = 270.00'$
$LT = 180.02'$	$L = 709.19'$	$LT = 180.02'$
$ST = 90.02'$	$T = 356.10'$	$ST = 90.02'$
	$R = 3,150.00'$	
	$D_s = 70\text{mph}$	
	$SE = 0.06$	
	$RUNOFF = 270'$	



REVISIONS

MATCH LINE -L- STA. 267+00.00 SEE SHEET 18

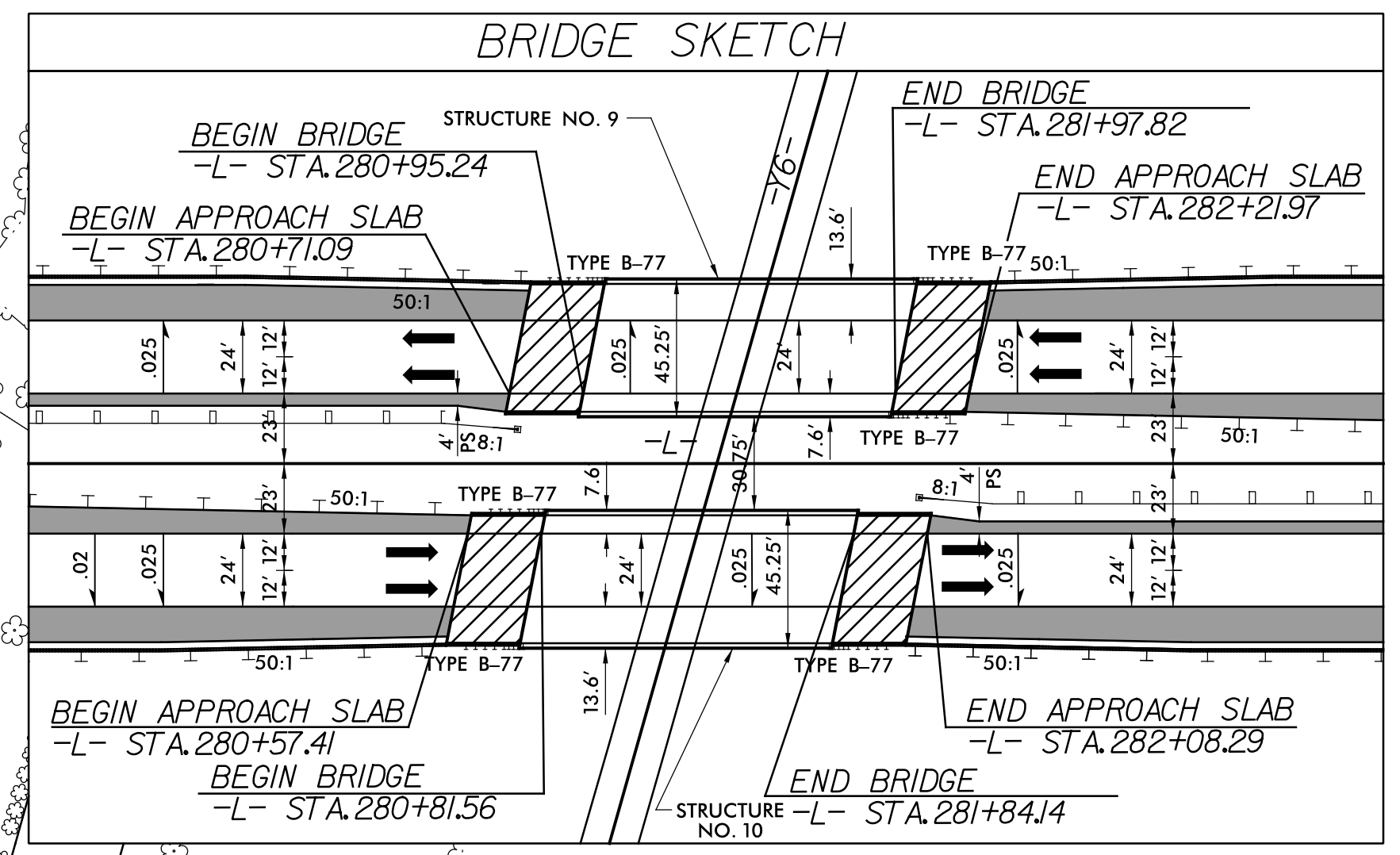
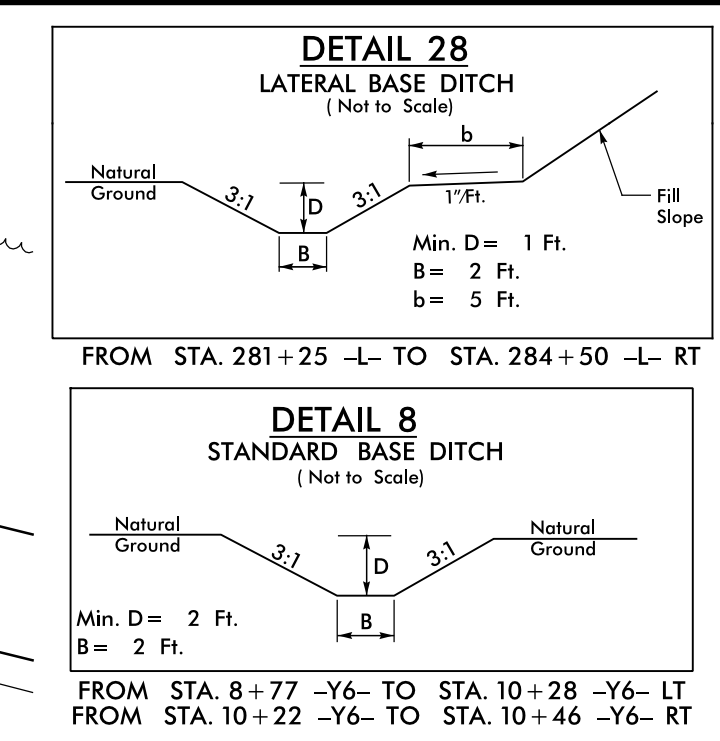
MATCH LINE -L- STA. 280+00.00 SEE SHEET 20



FOR -L- PROFILE SEE SHEET 39

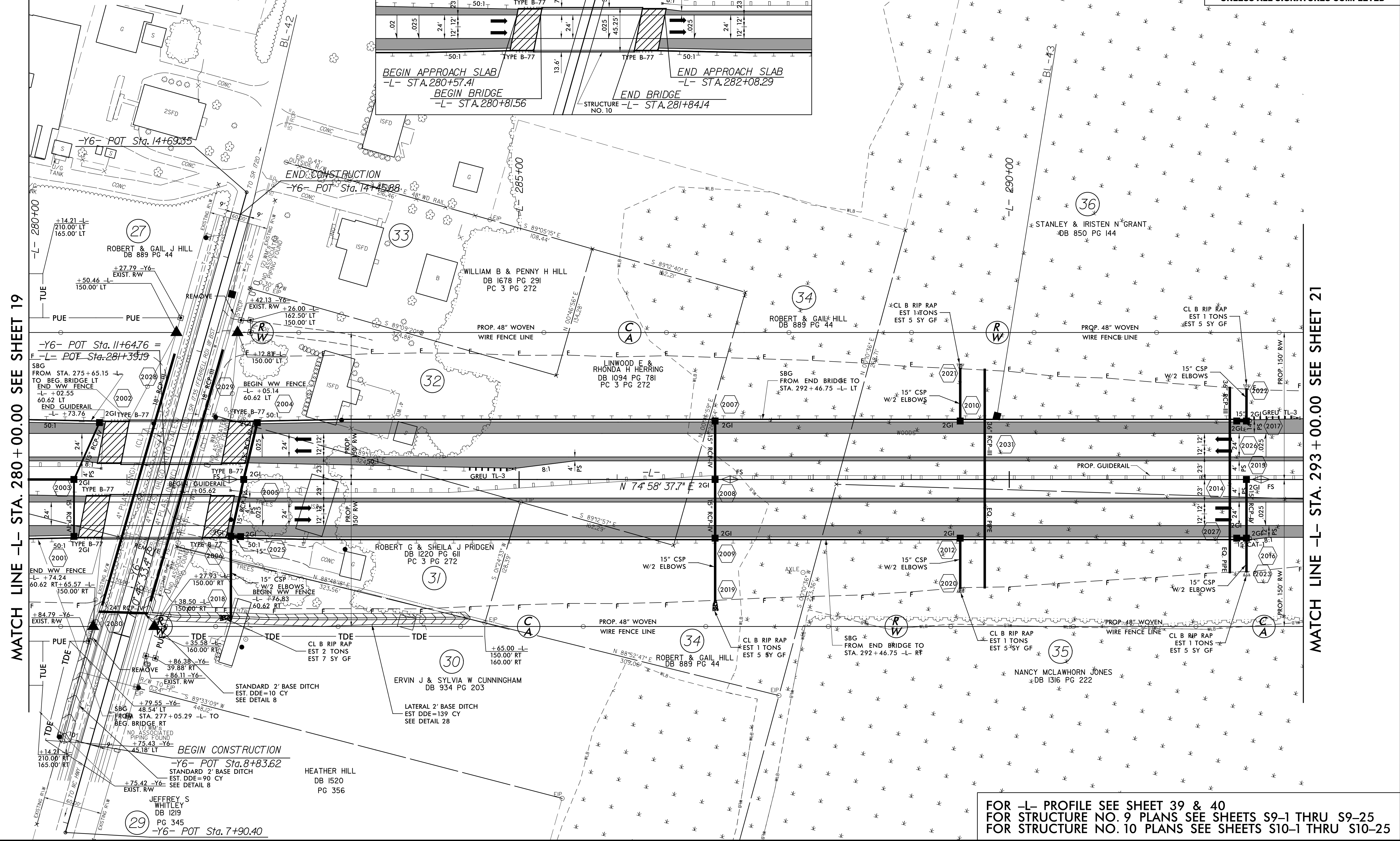
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PROJECT REFERENCE NO. <b>R-5703</b>		SHEET NO. <b>20</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER <b>Michael Baker Engineering, Inc.</b> Seal 034367 9/14/2017		HYDRAULICS ENGINEER <b>Michael Baker Engineering, Inc.</b> Seal 26971 9/14/2017	
<p style="text-align: center;"><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p>			



MATCH LINE -L- STA. 280 + 00.00 SEE SHEET 19

MATCH LINE -L- STA. 293 + 00.00 SEE SHEET 21



FOR -L- PROFILE SEE SHEET 39 & 40  
 FOR STRUCTURE NO. 9 PLANS SEE SHEETS S9-1 THRU S9-25  
 FOR STRUCTURE NO. 10 PLANS SEE SHEETS S10-1 THRU S10-25

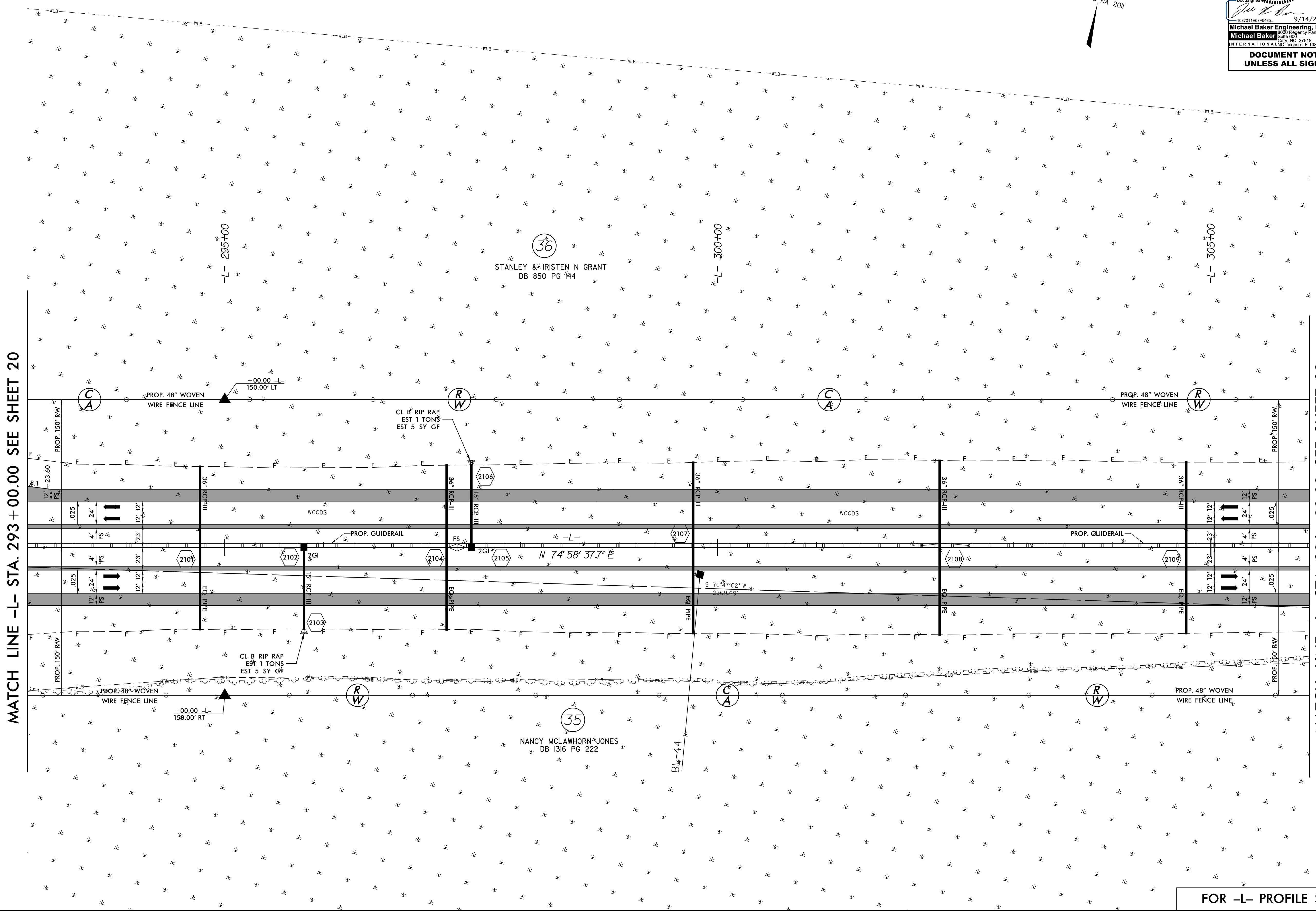
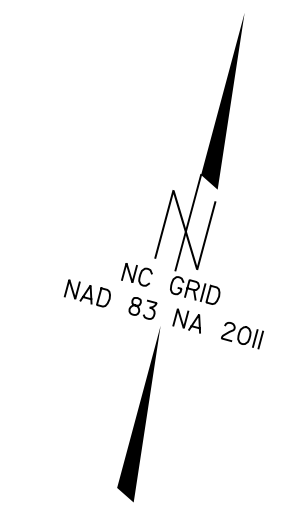
REVISIONS

8/17/19

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REVISIONS

PROJECT REFERENCE NO. <i>R-5703</i>		SHEET NO. <i>21</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
<i>Michael Baker Engineering, Inc.</i> 9/14/2017	<i>Joshua G. Dalton</i> 9/14/2017		
<small>Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Charlotte, NC 27518 NC License: F-1084</small>	<small>SUNGATE DESIGN GROUP, P.A. 915 Jones Franklin Road Raleigh, NC 27608 NC CDR No. C-1980</small>		
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			



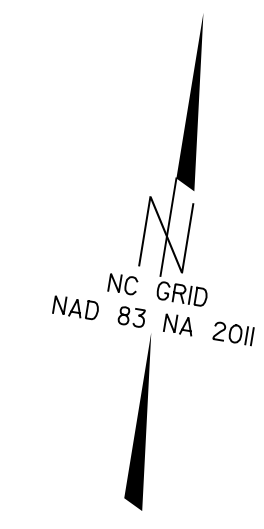
MATCH LINE -L- STA. 293 + 00.00 SEE SHEET 20

MATCH LINE -L- STA. 306 + 00.00 SEE SHEET 22

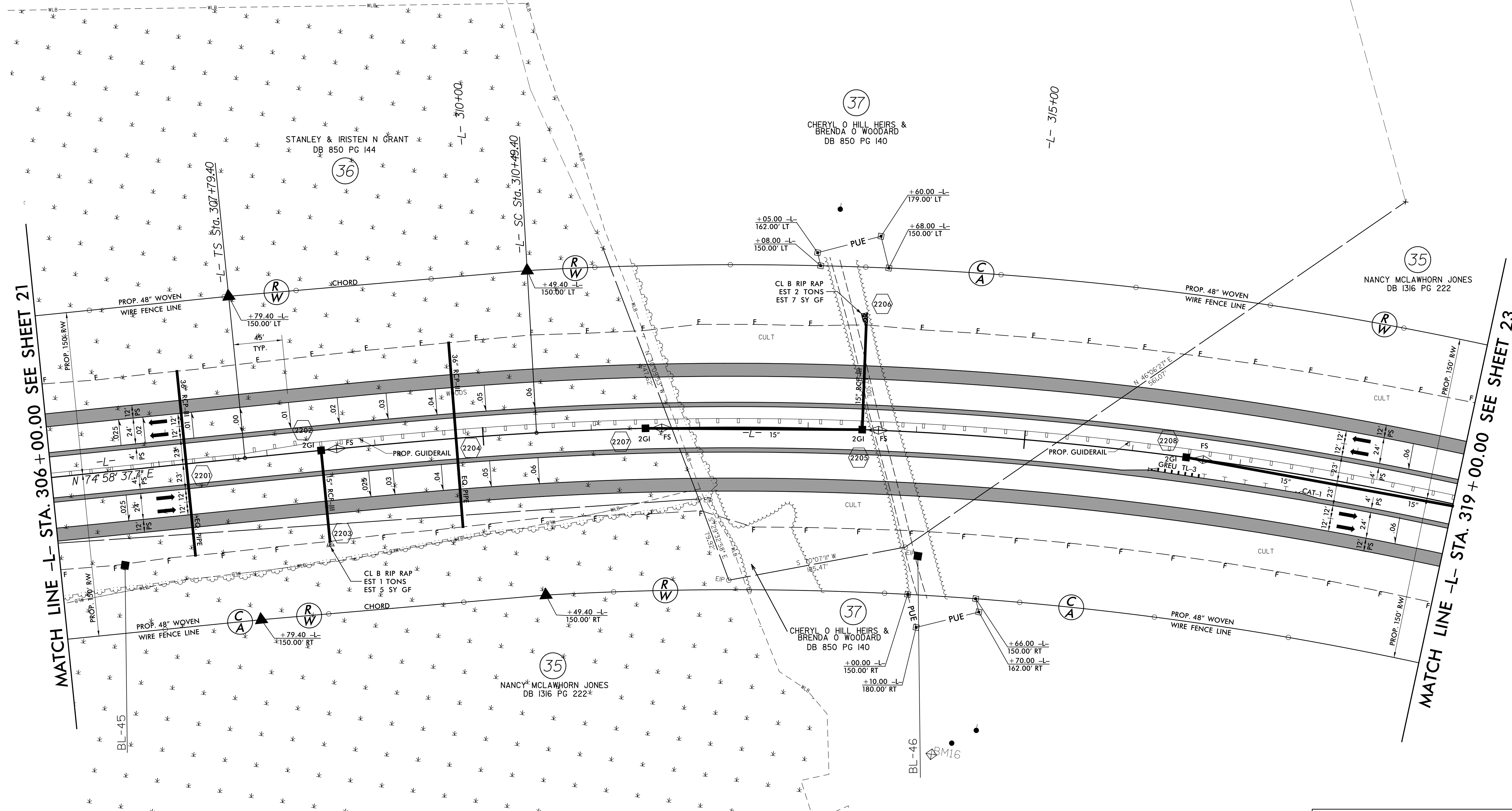
FOR -L- PROFILE SEE SHEET 40

PROJECT REFERENCE NO. R-5703		SHEET NO. 22	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER SEAL 034367 MICHAEL H. BUCKNER		HYDRAULICS ENGINEER SEAL 26971 JOSHUA G. DALTON	
9/14/2017		9/14/2017	
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Cary, NC 27518 INTERNATIONAL LIC. License: F-1084		SUNGATE DESIGN GROUP P.A. 915 Jones Franklin Road Raleigh, NC 27606 NC CDR No. C-9900	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

-L-		
Pls Sta 309+59.42	Pls Sta 319+44.04	Pls Sta 328+82.79
$\Theta_s = 2^\circ 27' 19.9"$	$\Delta = 31^\circ 42' 37.5" (RT)$	$\Theta_s = 2^\circ 27' 19.9"$
$L_s = 270.00'$	$D = 1^\circ 49' 08.1"$	$L_s = 270.00'$
$LT = 180.02'$	$L = 1743.37'$	$LT = 180.02'$
$ST = 90.02'$	$T = 894.64'$	$ST = 90.02'$
	$R = 3150.00'$	
	$D_s = 70\text{mph}$	
	$SE = 0.06$	
	$RUNOFF = 270'$	



REVISIONS



MATCH LINE -L- STA. 306 + 00.00 SEE SHEET 21

MATCH LINE -L- STA. 319 + 00.00 SEE SHEET 23

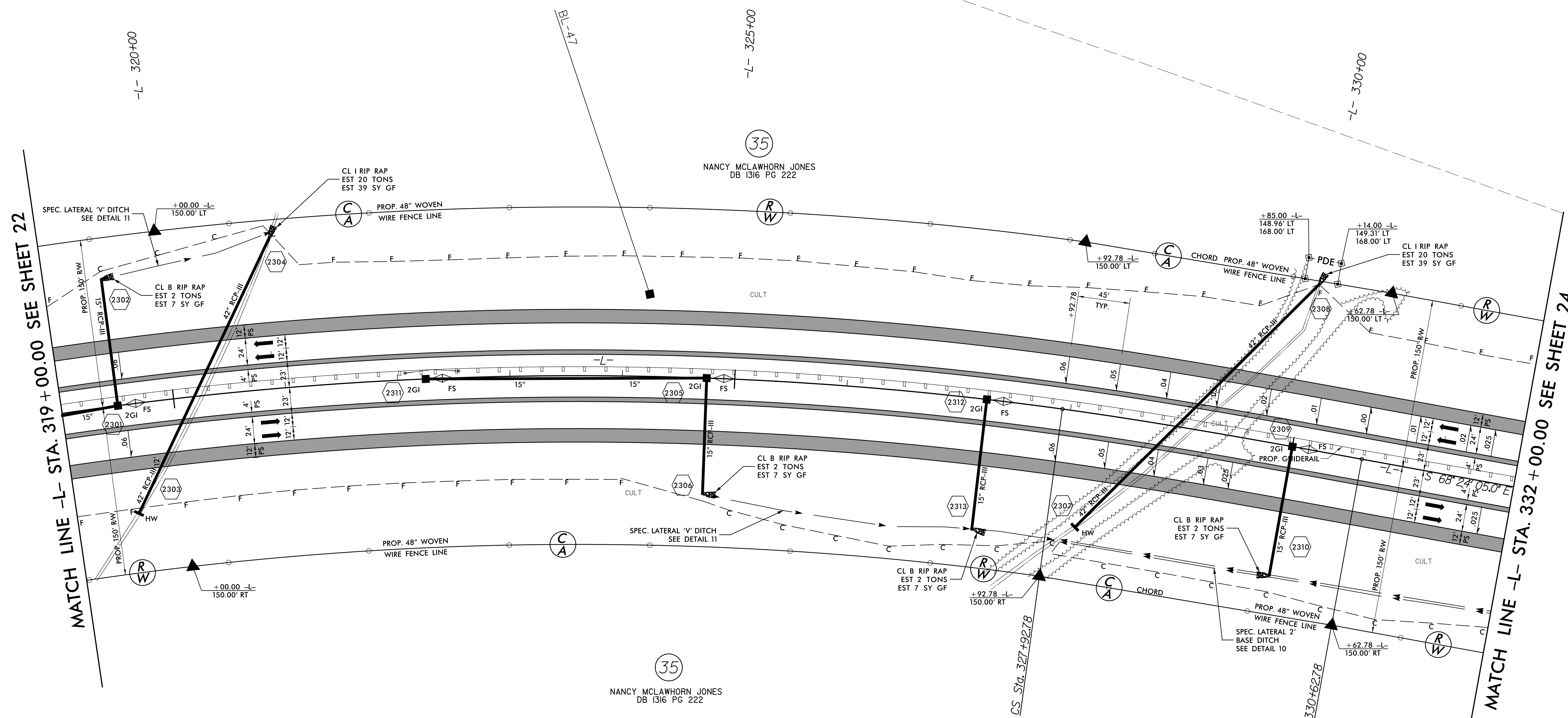
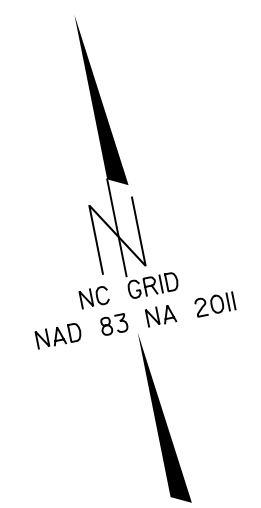
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FOR -L- PROFILE SEE SHEET 40 & 41

PROJECT REFERENCE NO. <b>R-5703</b>	SHEET NO. <b>23</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <b>SEAL 034367</b> MICHAEL H. BUCKNER	HYDRAULICS ENGINEER <b>SEAL 26971</b> JOSHUA G. DALTON
9/14/2017	9/14/2017
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Cary, NC 27518 INTERNATIONAL INC. License: F-1084	SUNGATE DESIGN GROUP P.A. 915 Jones Franklin Road Raleigh, NC 27606 NC CDR No. C-9989

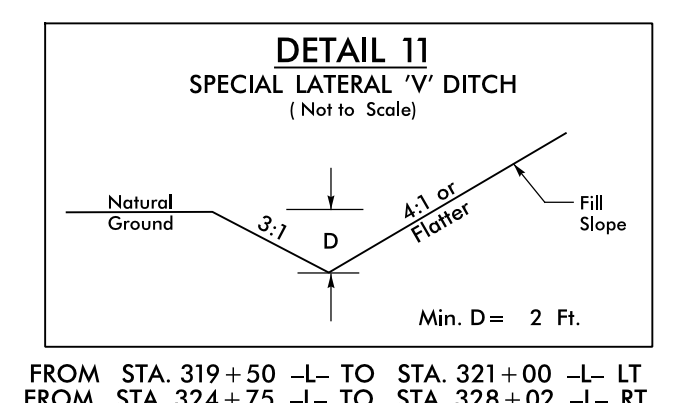
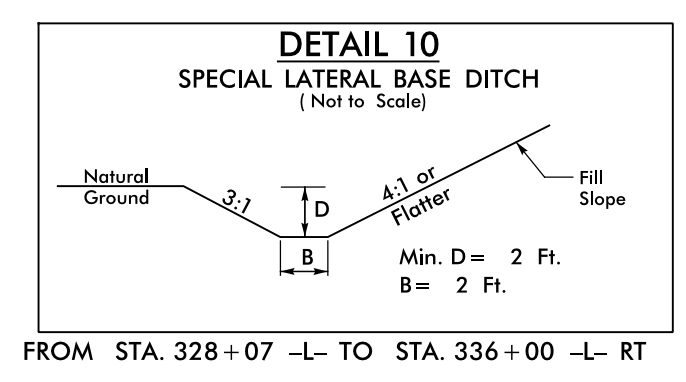
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

-L-		
PIs Sta 309+59.42 θs = 2° 27' 19.9" Ls = 270.00' LT = 180.02' ST = 90.02'	PI Sta 319+44.04 Δ = 31° 42' 37.5" (RT) D = 1° 49' 08.1" L = 1,743.37' T = 894.64' R = 3,150.00' Ds = 70mph SE = 0.06 RUNOFF = 270'	PIs Sta 328+82.79 θs = 2° 27' 19.9" Ls = 270.00' LT = 180.02' ST = 90.02'



MATCH LINE -L- STA. 319 + 00.00 SEE SHEET 22

MATCH LINE -L- STA. 332 + 00.00 SEE SHEET 24



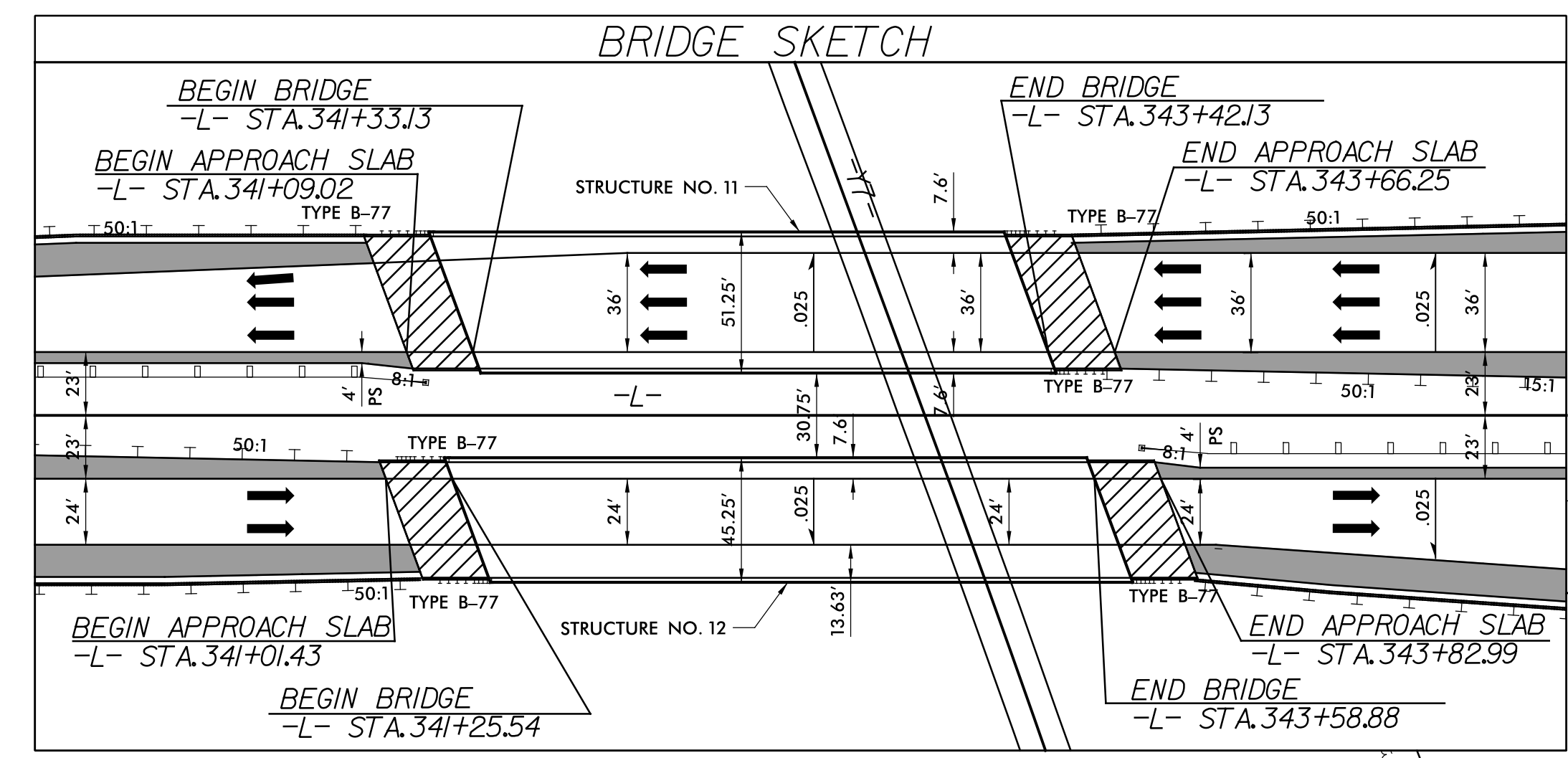
FOR -L- PROFILE SEE SHEET 41

REVISIONS

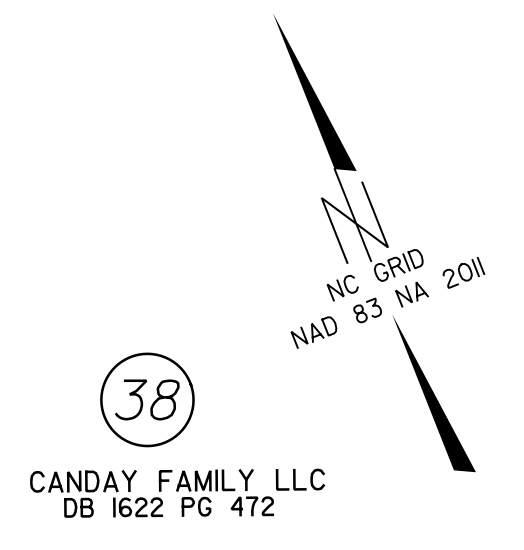
8/17/99

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PROJECT REFERENCE NO. R-5703		SHEET NO. 24	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		SEAL 034367	
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Raleigh, NC 27618 International License: F-1084		SUNGATE DESIGN GROUP P.A. 915 Jones Franklin Road Raleigh, NC 27608 NC CDR No. C-9890	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

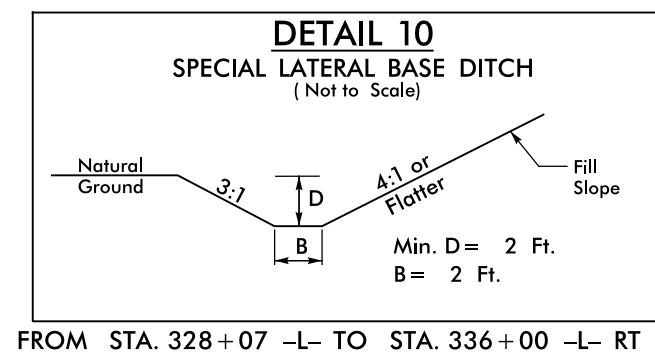
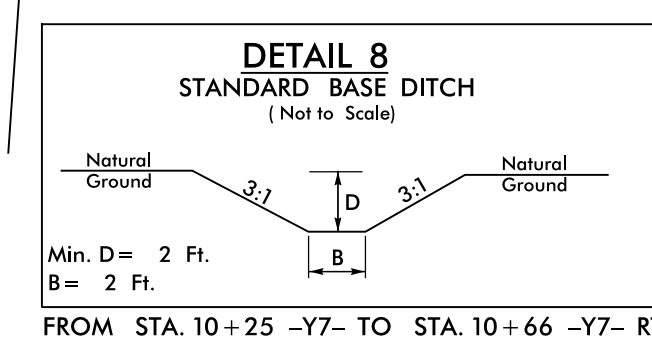
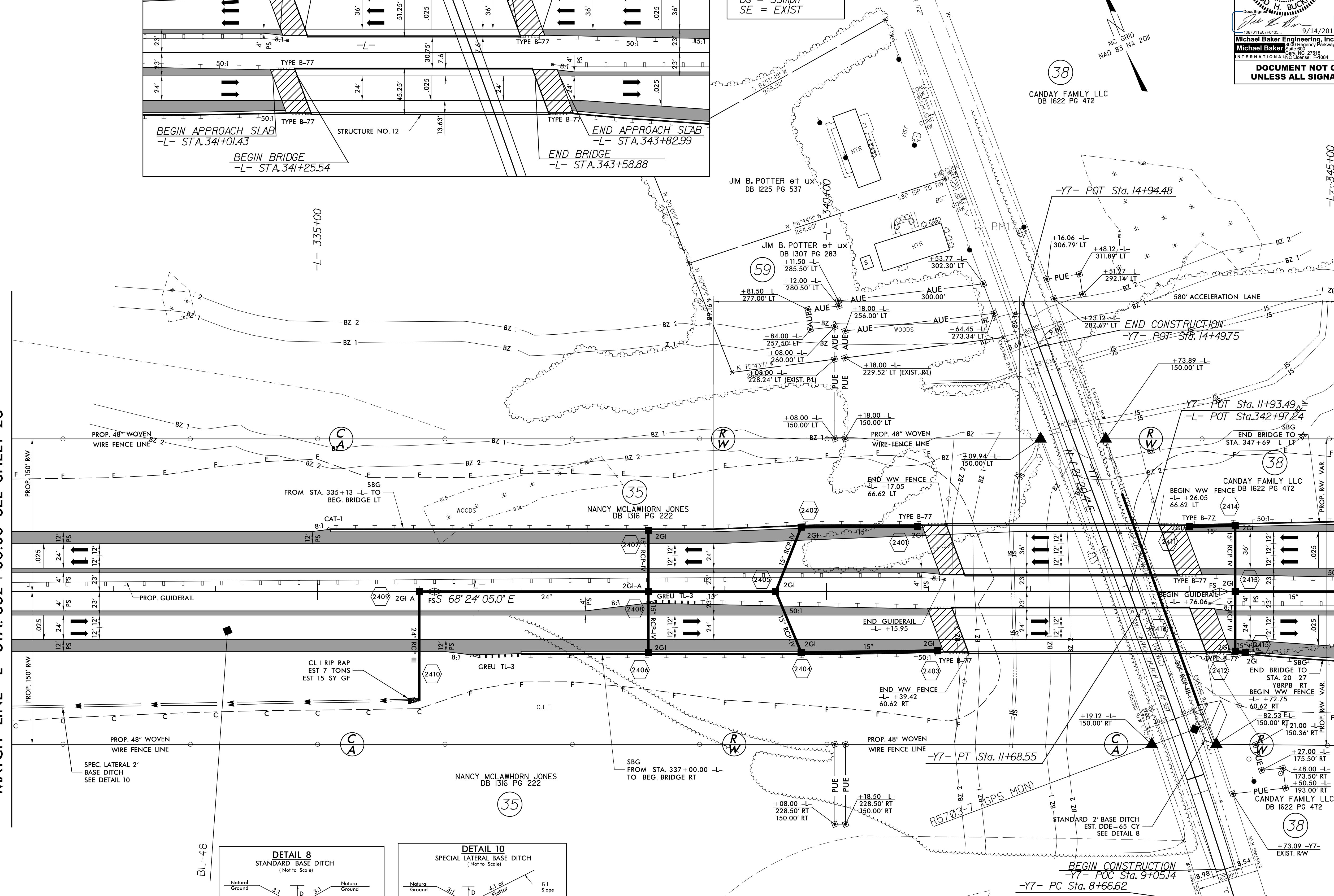


-Y7-  
 PI Sta 10+17.62  
 $\Delta = 3' 05" 21.2" (LT)$   
 $D = 1' 01" 23.3"$   
 $L = 301.93'$   
 $T = 151.00'$   
 $R = 5,600.00'$   
 $D_s = 55mph$   
 $SE = EXIST$



MATCH LINE -L- STA. 332 + 00.00 SEE SHEET 23

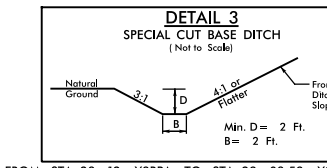
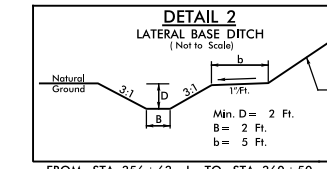
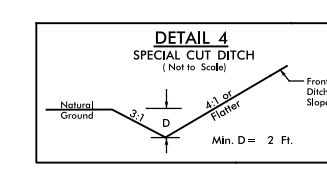
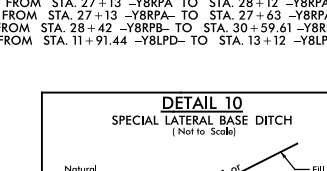
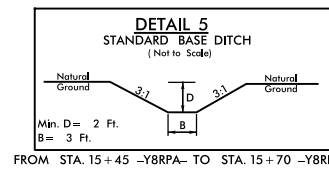
MATCH LINE -L- STA. 345 + 00.00 SEE SHEET 25



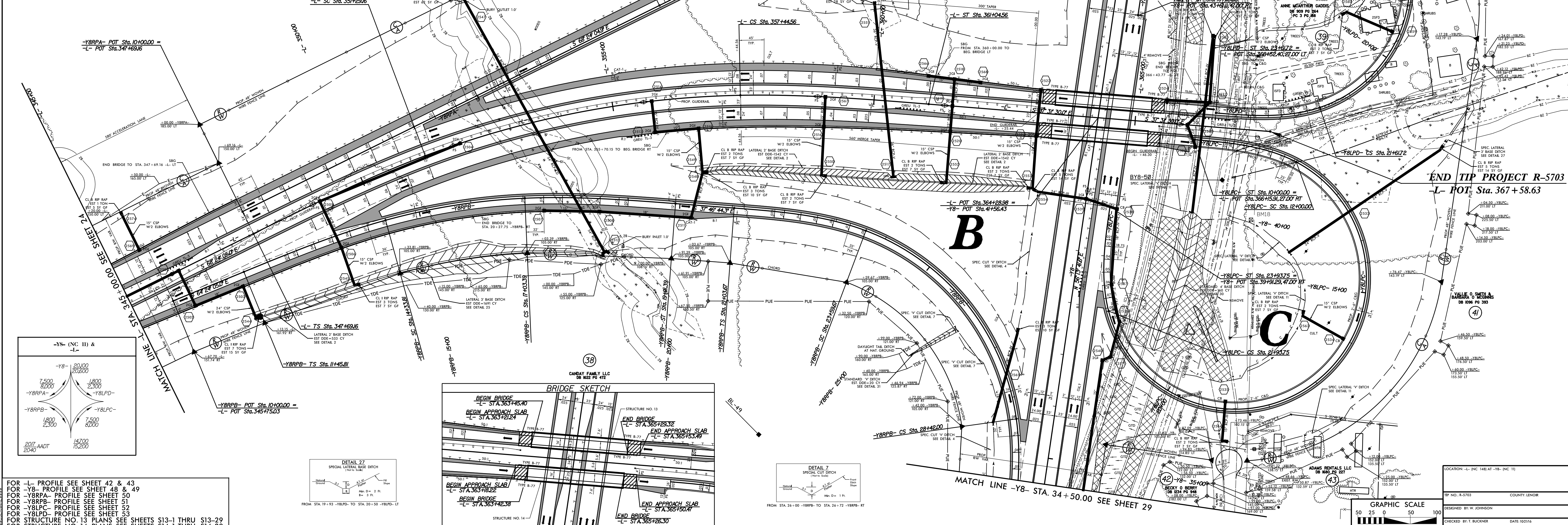
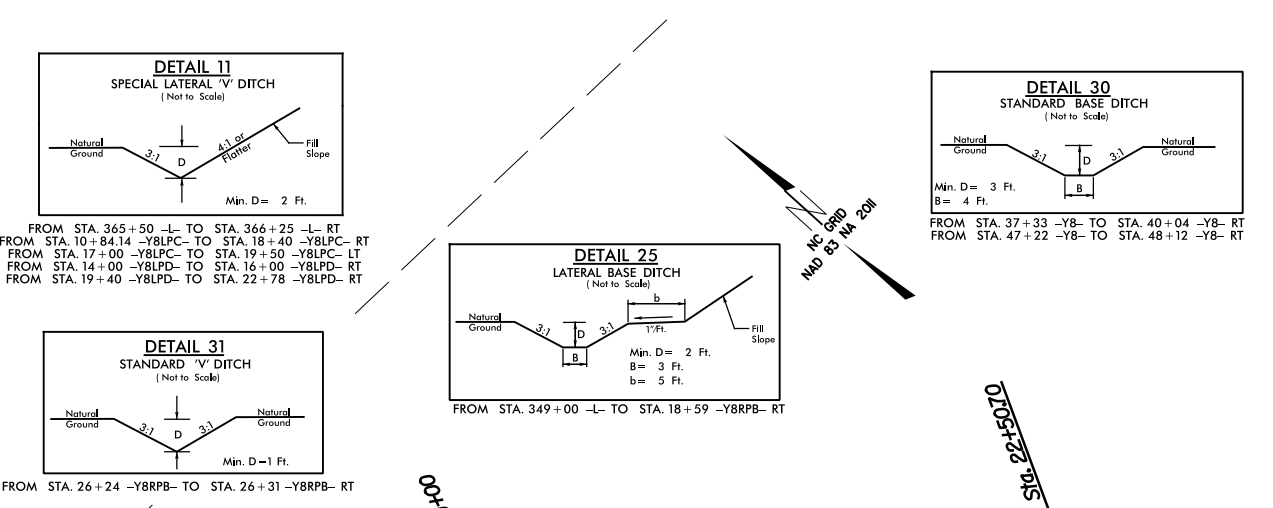
FOR -L- PROFILE SEE SHEET 41 & 42  
 FOR STRUCTURE NO. 11 PLANS SEE SHEETS S11-1 THRU S11-29  
 FOR STRUCTURE NO. 12 PLANS SEE SHEETS S12-1 THRU S12-29



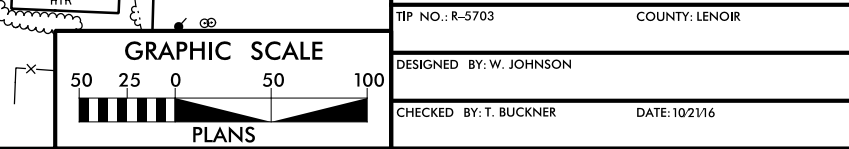
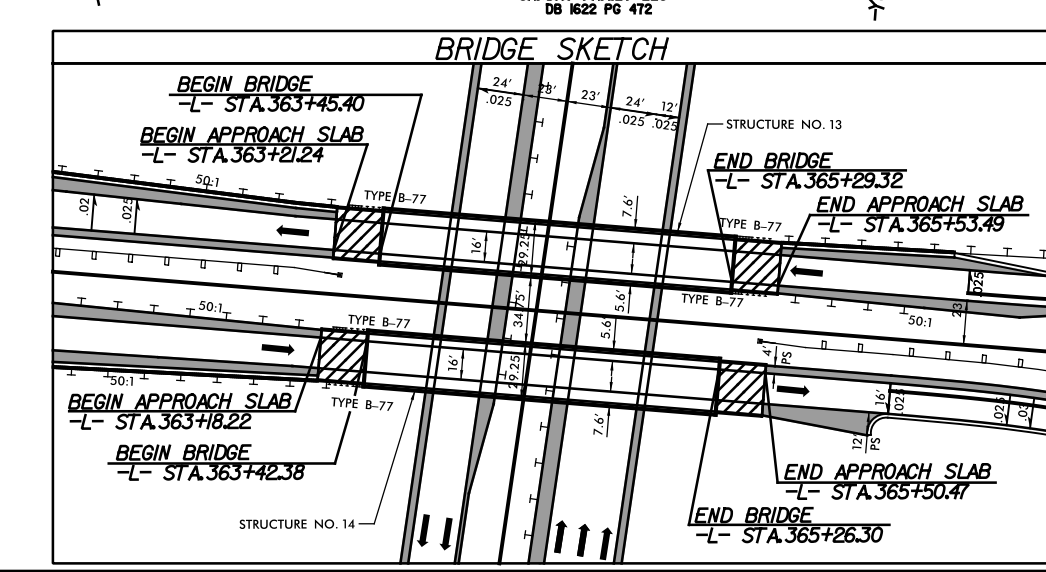
REVISIONS

 <p>FROM STA. 28+12 -YBRPA- TO STA. 29+03.59 -YBRPA- LT</p>	 <p>FROM STA. 35+13.12 -YBRPA- TO STA. 36+00 -YBRPA- LT</p>	 <p>FROM STA. 37+00 -YBRPA- TO STA. 40+00 -YBRPA- LT</p>	 <p>FROM STA. 48+50 -YBRPA- TO STA. 51+22 -YBRPA- LT</p>
 <p>FROM STA. 15+14.5 -YBRPA- TO STA. 15+70 -YBRPA- LT</p>			

<b>-YBRPA-</b> Pile Sta 19+49.12 $\Delta = 1' 47.515'$ $D = 12' 07.184'$ $LT = 106.67'$ $ST = 53.34'$ $Ds = 50mph$ $SE = 0.08$ $RUNOFF = 160'$	<b>-YBRPA-</b> Pile Sta 21+49.12 $\Delta = 1' 47.515'$ $D = 12' 07.184'$ $LT = 106.67'$ $ST = 53.34'$ $Ds = 50mph$ $SE = 0.08$ $RUNOFF = 160'$	<b>-YBRPA-</b> Pile Sta 23+49.12 $\Delta = 1' 47.515'$ $D = 12' 07.184'$ $LT = 106.67'$ $ST = 53.34'$ $Ds = 50mph$ $SE = 0.08$ $RUNOFF = 160'$	<b>-YBRPA-</b> Pile Sta 25+49.12 $\Delta = 1' 47.515'$ $D = 12' 07.184'$ $LT = 106.67'$ $ST = 53.34'$ $Ds = 50mph$ $SE = 0.08$ $RUNOFF = 160'$	<b>-YBRPA-</b> Pile Sta 27+49.12 $\Delta = 1' 47.515'$ $D = 12' 07.184'$ $LT = 106.67'$ $ST = 53.34'$ $Ds = 50mph$ $SE = 0.08$ $RUNOFF = 160'$	<b>-YBRPA-</b> Pile Sta 29+49.12 $\Delta = 1' 47.515'$ $D = 12' 07.184'$ $LT = 106.67'$ $ST = 53.34'$ $Ds = 50mph$ $SE = 0.08$ $RUNOFF = 160'$
<b>-YBRPB-</b> Pile Sta 13+37.95 $\Delta = 6' 56.314'$ $D = 7' 46.887'$ $LT = 92.12'$ $ST = 96.13'$ $Ds = 60mph$ $SE = 0.08$ $RUNOFF = 288'$	<b>-YBRPB-</b> Pile Sta 15+37.95 $\Delta = 6' 56.314'$ $D = 7' 46.887'$ $LT = 92.12'$ $ST = 96.13'$ $Ds = 60mph$ $SE = 0.08$ $RUNOFF = 288'$	<b>-YBRPB-</b> Pile Sta 17+37.95 $\Delta = 6' 56.314'$ $D = 7' 46.887'$ $LT = 92.12'$ $ST = 96.13'$ $Ds = 60mph$ $SE = 0.08$ $RUNOFF = 288'$	<b>-YBRPB-</b> Pile Sta 19+37.95 $\Delta = 6' 56.314'$ $D = 7' 46.887'$ $LT = 92.12'$ $ST = 96.13'$ $Ds = 60mph$ $SE = 0.08$ $RUNOFF = 288'$	<b>-YBRPB-</b> Pile Sta 21+37.95 $\Delta = 6' 56.314'$ $D = 7' 46.887'$ $LT = 92.12'$ $ST = 96.13'$ $Ds = 60mph$ $SE = 0.08$ $RUNOFF = 288'$	<b>-YBRPB-</b> Pile Sta 23+37.95 $\Delta = 6' 56.314'$ $D = 7' 46.887'$ $LT = 92.12'$ $ST = 96.13'$ $Ds = 60mph$ $SE = 0.08$ $RUNOFF = 288'$
<b>-YBRPC-</b> Pile Sta 11+34.47 $\Delta = 22' 55' 05.9"$ $D = 200.00'$ $LT = 134.47'$ $ST = 67.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 200'$	<b>-YBRPC-</b> Pile Sta 13+34.47 $\Delta = 22' 55' 05.9"$ $D = 200.00'$ $LT = 134.47'$ $ST = 67.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 200'$	<b>-YBRPD-</b> Pile Sta 15+34.47 $\Delta = 22' 55' 05.9"$ $D = 200.00'$ $LT = 134.47'$ $ST = 67.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 200'$	<b>-YBRPD-</b> Pile Sta 17+34.47 $\Delta = 22' 55' 05.9"$ $D = 200.00'$ $LT = 134.47'$ $ST = 67.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 200'$	<b>-YBRPD-</b> Pile Sta 19+34.47 $\Delta = 22' 55' 05.9"$ $D = 200.00'$ $LT = 134.47'$ $ST = 67.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 200'$	<b>-YBRPD-</b> Pile Sta 21+34.47 $\Delta = 22' 55' 05.9"$ $D = 200.00'$ $LT = 134.47'$ $ST = 67.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 200'$
<b>-YBRPE-</b> Pile Sta 35+09.29 $\Delta = 5' 47' 52.5"$ $D = 360.00'$ $LT = 240.12'$ $ST = 120.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 360'$	<b>-YBRPE-</b> Pile Sta 37+09.29 $\Delta = 5' 47' 52.5"$ $D = 360.00'$ $LT = 240.12'$ $ST = 120.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 360'$	<b>-YBRPE-</b> Pile Sta 39+09.29 $\Delta = 5' 47' 52.5"$ $D = 360.00'$ $LT = 240.12'$ $ST = 120.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 360'$	<b>-YBRPE-</b> Pile Sta 41+09.29 $\Delta = 5' 47' 52.5"$ $D = 360.00'$ $LT = 240.12'$ $ST = 120.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 360'$	<b>-YBRPE-</b> Pile Sta 43+09.29 $\Delta = 5' 47' 52.5"$ $D = 360.00'$ $LT = 240.12'$ $ST = 120.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 360'$	<b>-YBRPE-</b> Pile Sta 45+09.29 $\Delta = 5' 47' 52.5"$ $D = 360.00'$ $LT = 240.12'$ $ST = 120.07'$ $Ds = 70mph$ $SE = 0.08$ $RUNOFF = 360'$



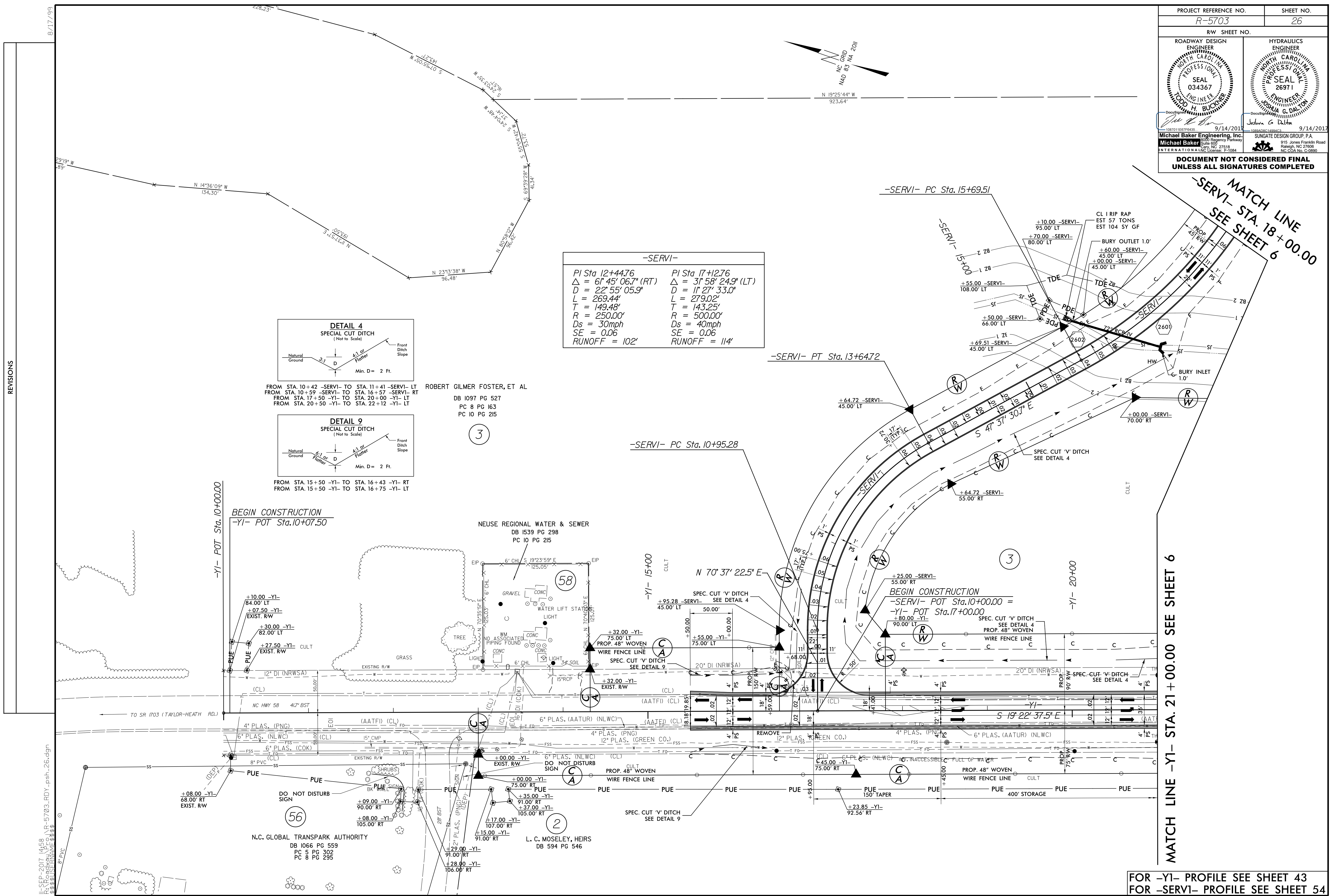
FOR -L- PROFILE SEE SHEET 42 & 43  
 FOR -YB- PROFILE SEE SHEET 48 & 49  
 FOR -YBRPA- PROFILE SEE SHEET 50  
 FOR -YBRPB- PROFILE SEE SHEET 51  
 FOR -YBRPC- PROFILE SEE SHEET 52  
 FOR -YBRPD- PROFILE SEE SHEET 53  
 FOR STRUCTURE NO. 13 PLANS SEE SHEETS S13-1 THRU S13-29  
 FOR STRUCTURE NO. 14 PLANS SEE SHEETS S14-1 THRU S14-29



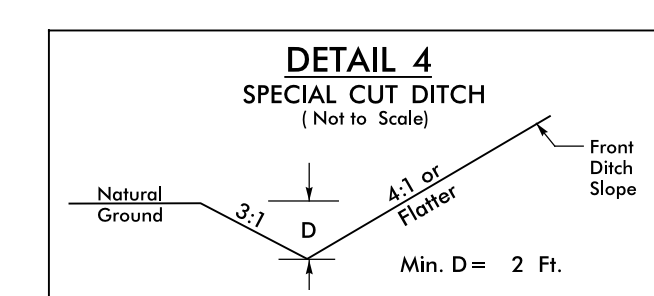
PROJECT REFERENCE NO. R-5703  
 SHEET NO. 25  
 ROADWAY DESIGN  
 SEAL  
 9/14/2017  
 DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

END TIP PROJECT R-5703  
 -L- POT Sta. 367+58.63

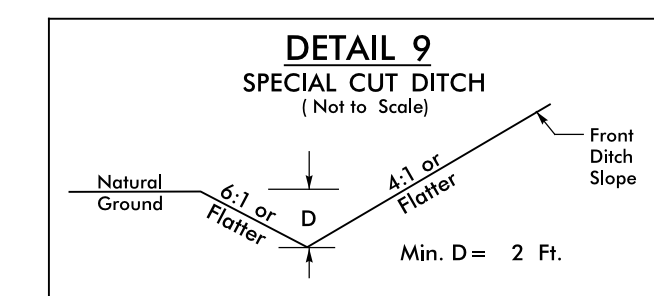
PROJECT REFERENCE NO. <b>R-5703</b>	SHEET NO. <b>26</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <b>SEAL 034367</b> MICHAEL BAKER ENGINEERING, INC. 8000 Regency Parkway Suite 600 Cary, NC 27518 INTERNATIONAL License: F-1084	HYDRAULICS ENGINEER <b>SEAL 26971</b> JOSHUA G. DALTON SUNGATE DESIGN GROUP P.A. 915 Jones Franklin Road Raleigh, NC 27608 NC CDR License: C-9800
<p>9/14/2012</p> <p>9/14/2012</p> <p><b>Michael Baker Engineering, Inc.</b></p> <p><b>SUNGATE DESIGN GROUP P.A.</b></p>	
<p><b>DOCUMENT NOT CONSIDERED FINAL</b></p> <p><b>UNLESS ALL SIGNATURES COMPLETED</b></p>	



-SERVI-	
PI Sta 12+44.76	PI Sta 17+12.76
$\Delta = 61^{\circ} 45' 06.7''$ (RT)	$\Delta = 31^{\circ} 58' 24.9''$ (LT)
$D = 22^{\circ} 55' 05.9''$	$D = 11^{\circ} 27' 33.0''$
$L = 269.44'$	$L = 279.02'$
$T = 149.48'$	$T = 143.25'$
$R = 250.00'$	$R = 500.00'$
$D_s = 30$ mph	$D_s = 40$ mph
$SE = 0.06$	$SE = 0.06$
$RUNOFF = 102'$	$RUNOFF = 114'$



FROM STA. 10+42 -SERVI- TO STA. 11+41 -SERVI- LT  
FROM STA. 10+59 -SERVI- TO STA. 16+57 -SERVI- RT  
FROM STA. 17+50 -Y1- TO STA. 20+00 -Y1- LT  
FROM STA. 20+50 -Y1- TO STA. 22+12 -Y1- LT



FROM STA. 15+50 -Y1- TO STA. 16+43 -Y1- RT  
FROM STA. 15+50 -Y1- TO STA. 16+75 -Y1- LT

ROBERT GILMER FOSTER, ET AL  
DB 1097 PG 527  
PC 8 PG 163  
PC 10 PG 215

3

-Y1- POT Sta. 10+00.00

BEGIN CONSTRUCTION  
-Y1- POT Sta. 10+07.50

NEUSE REGIONAL WATER & SEWER  
DB 1539 PG 298  
PC 10 PG 215

58

-Y1- 15+00

BEGIN CONSTRUCTION  
-SERVI- POT Sta. 10+00.00 =  
-Y1- POT Sta. 17+00.00

-Y1- 20+00

MATCH LINE -Y1- STA. 21 + 00.00 SEE SHEET 6

FOR -Y1- PROFILE SEE SHEET 43  
FOR -SERVI- PROFILE SEE SHEET 54

REVISIONS

11-SEP-2017 14:58 I:\R-5703-RDY\_psh\_26.dgn

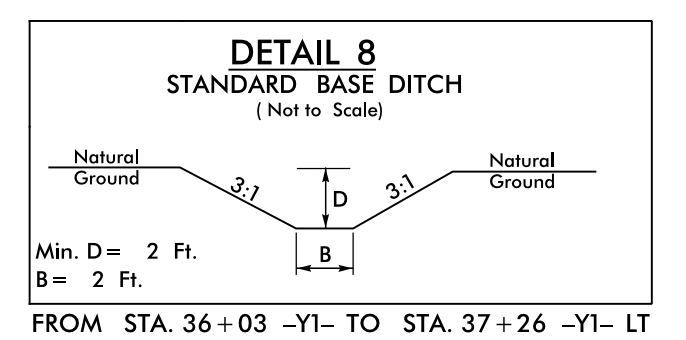
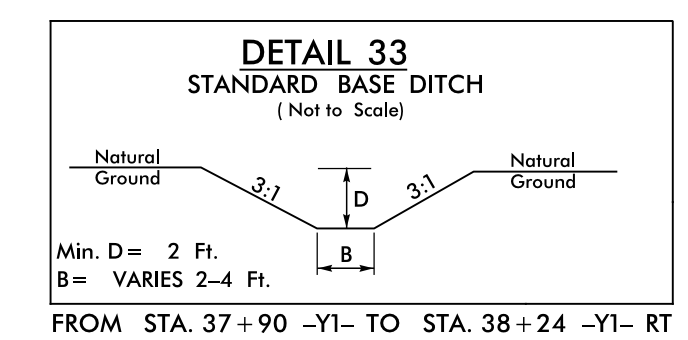
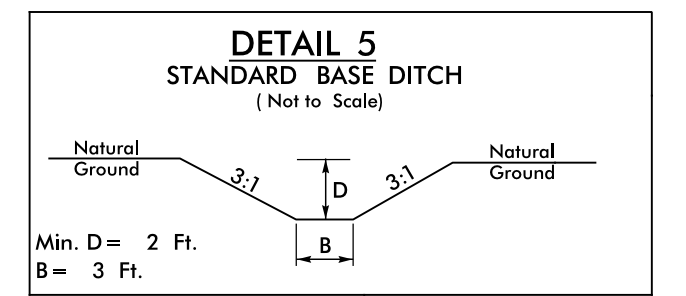
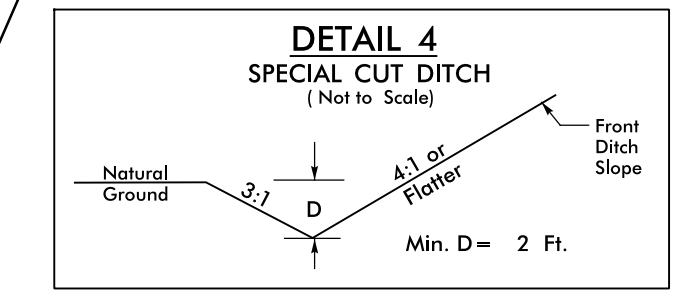
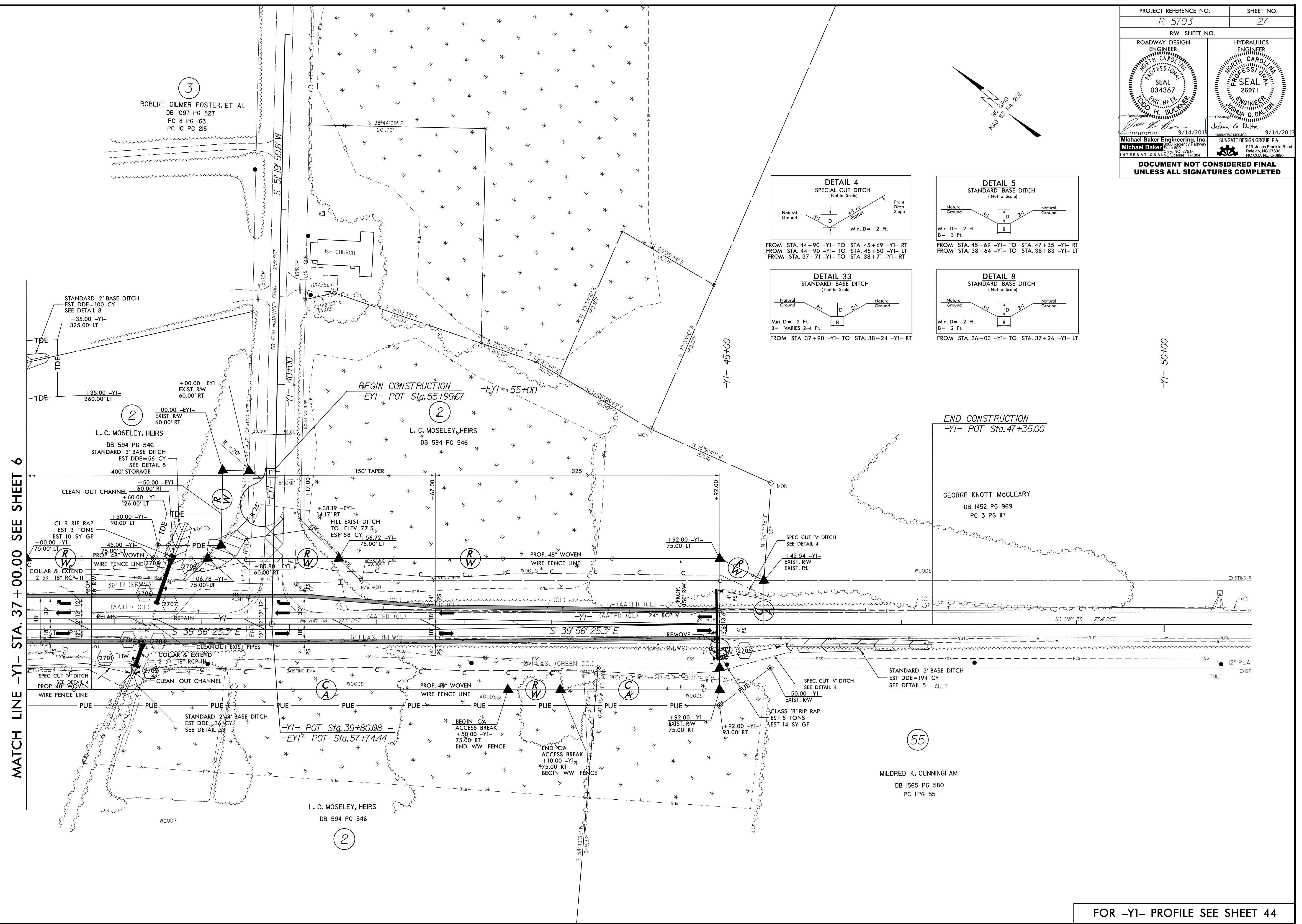
N.C. GLOBAL TRANSPARK AUTHORITY  
DB 1066 PG 559  
PC 5 PG 302  
PC 8 PG 295

L. C. MOSELEY, HEIRS  
DB 594 PG 546

56

2

PROJECT REFERENCE NO. <b>R-5703</b>	SHEET NO. <b>27</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <b>Michael Baker Engineering, Inc.</b> SEAL 034367 9/14/2017	HYDRAULICS ENGINEER <b>Michael Baker Engineering, Inc.</b> SEAL 26971 9/14/2017
<p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p>	

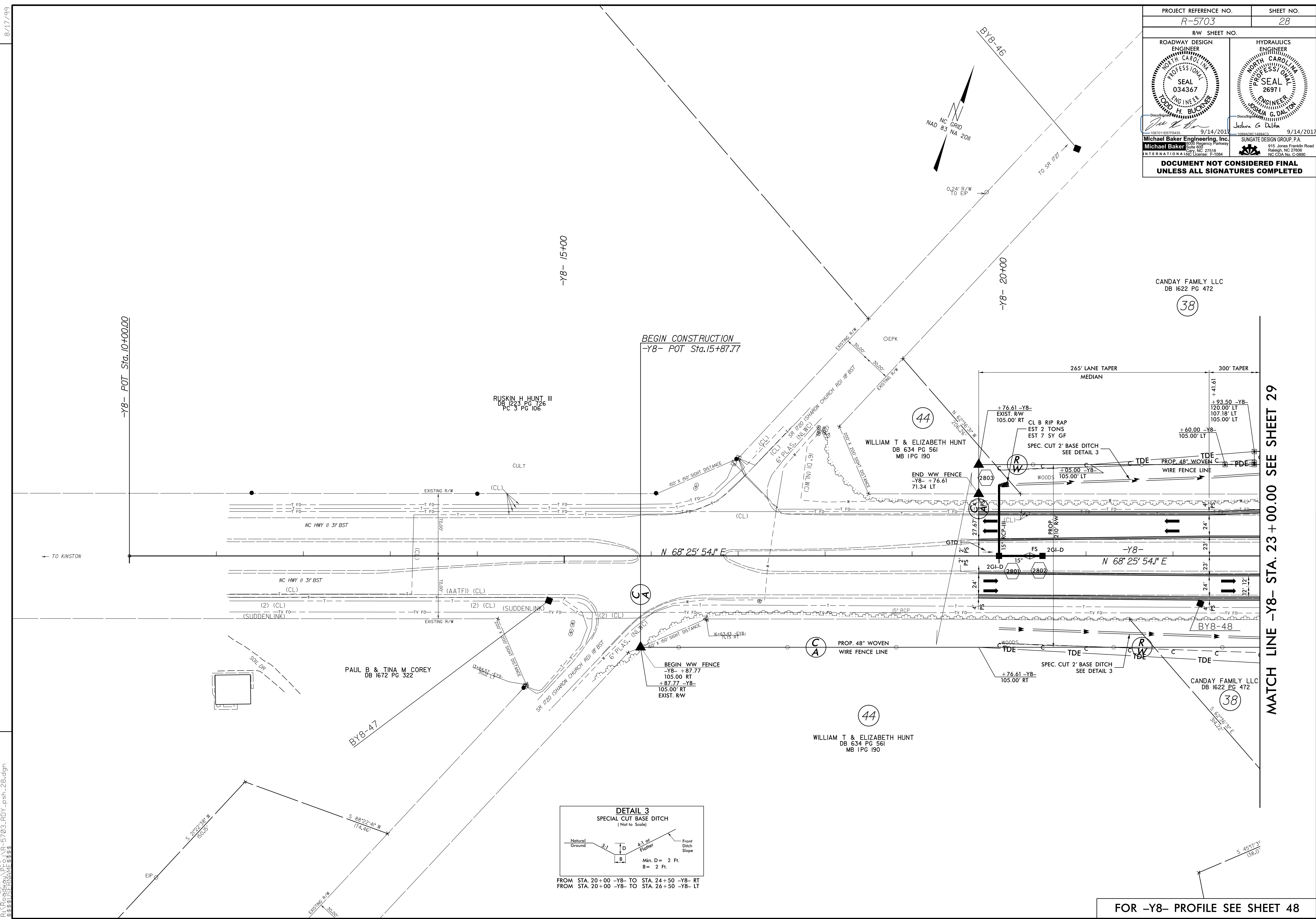


MATCH LINE -Y1- STA. 37+00.00 SEE SHEET 6

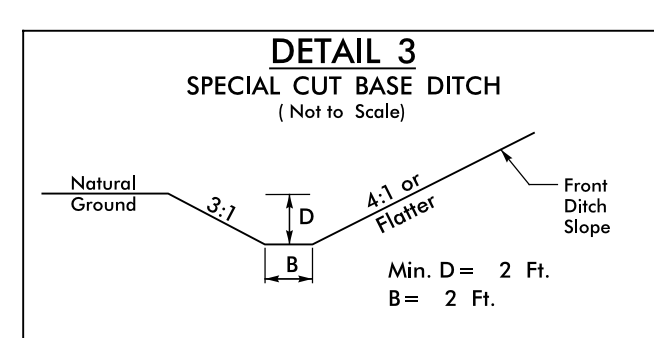
FOR -Y1- PROFILE SEE SHEET 44

PROJECT REFERENCE NO. <i>R-5703</i>		SHEET NO. <i>28</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER SEAL 034367 MICHAEL H. BUCKNER		HYDRAULICS ENGINEER SEAL 26971 JOSHUA G. DALTON	
9/14/2017		9/14/2017	
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Cary, NC 27518 INTERNATIONAL INC. License: F-1084		SUNGATE DESIGN GROUP P.A. 915 Jones Franklin Road Raleigh, NC 27606 NC CDR No. C-9800	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

CANDAY FAMILY LLC  
DB 1622 PG 472  
**38**



REVISIONS



FROM STA. 20+00 -Y8- TO STA. 24+50 -Y8- RT  
FROM STA. 20+00 -Y8- TO STA. 26+50 -Y8- LT

MATCH LINE -Y8- STA. 23 + 00.00 SEE SHEET 29

FOR -Y8- PROFILE SEE SHEET 48

8/17/99

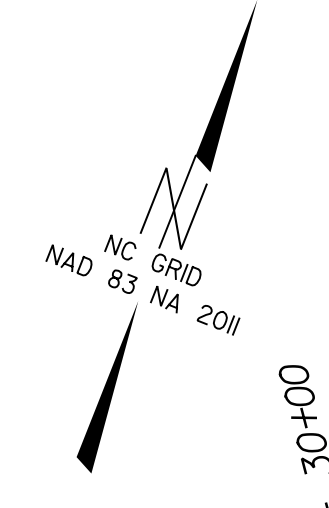
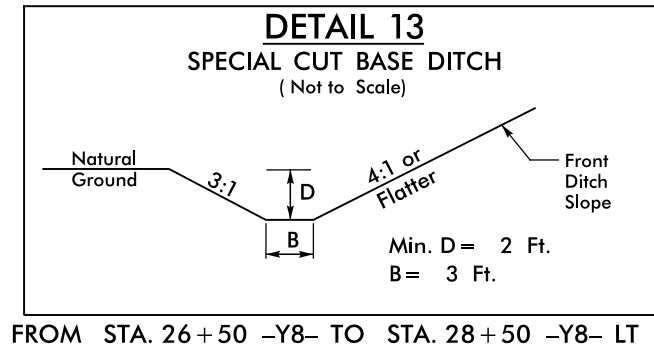
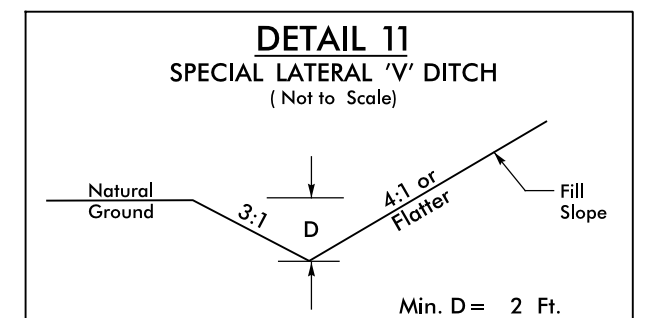
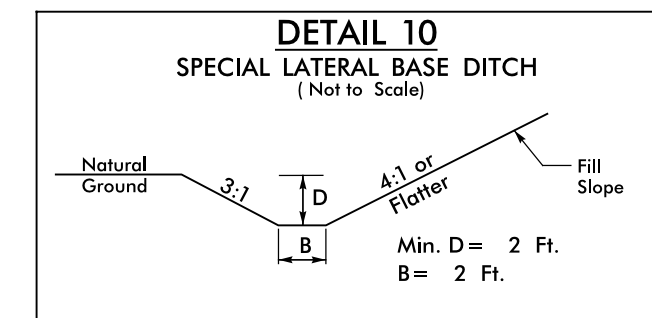
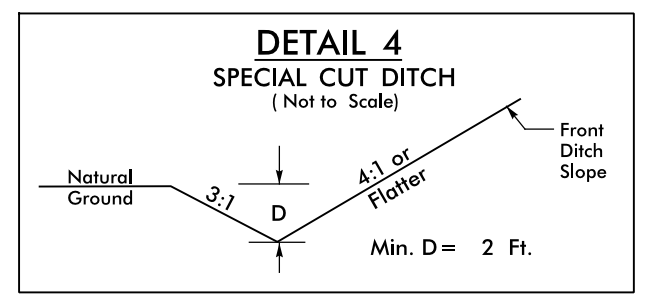
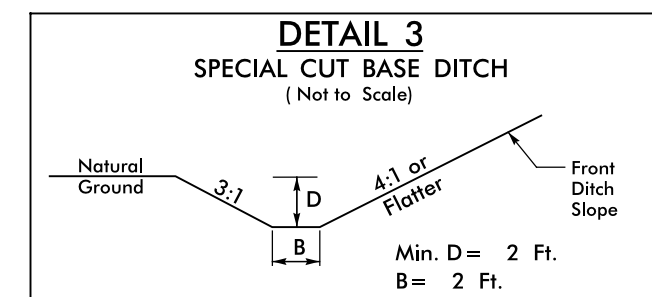
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8/17/2017 10:58:33 AM

8/17/19

PROJECT REFERENCE NO. <b>R-5703</b>		SHEET NO. <b>29</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER <b>Michael Baker Engineering, Inc.</b> SEAL 034367 9/14/2017		HYDRAULICS ENGINEER <b>Michael Baker Engineering, Inc.</b> SEAL 26971 9/14/2017	
<p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p>			

**-Y8-**

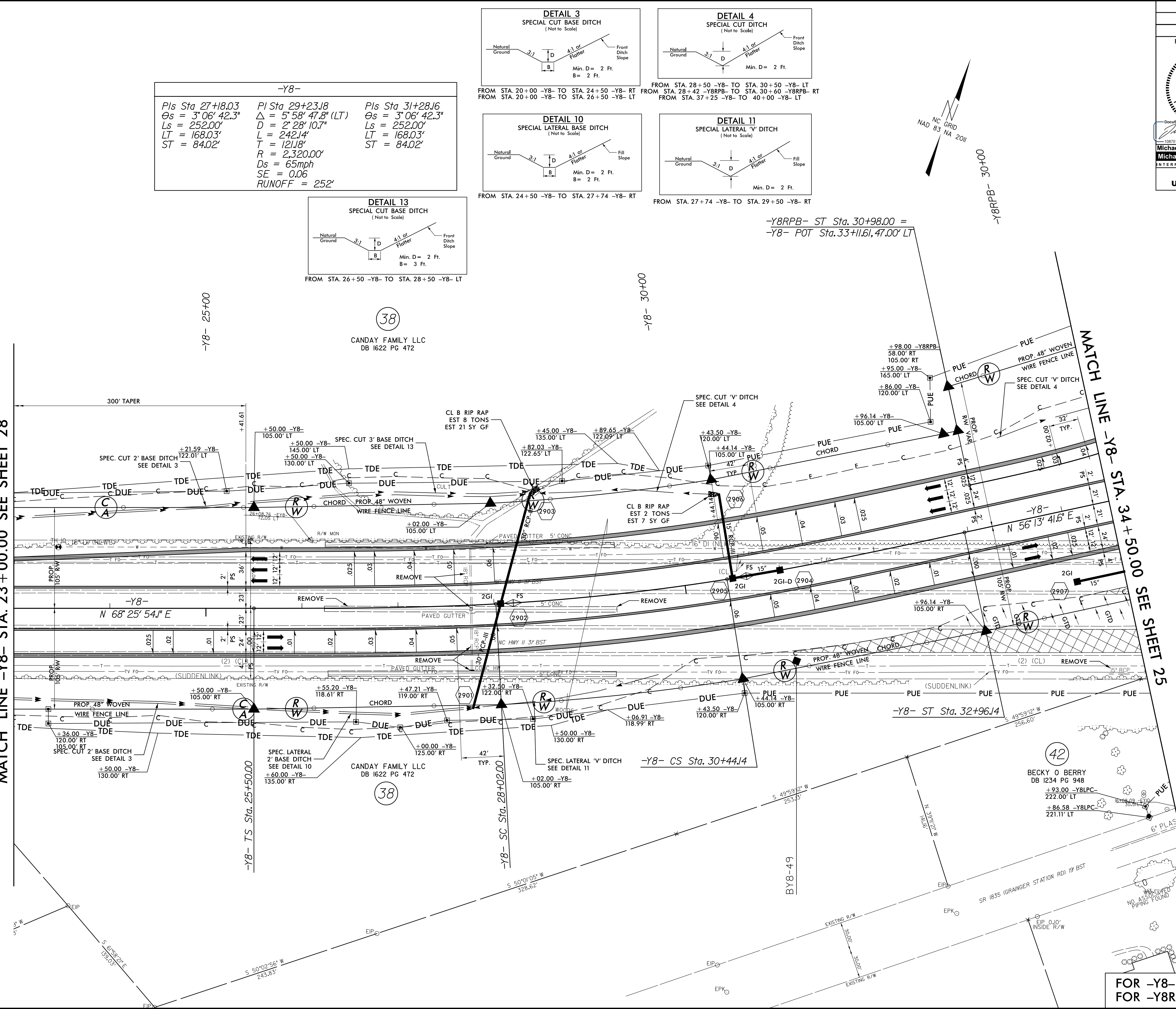
Pls Sta 27+18.03 Øs = 3'06" 42.3" Ls = 252.00' LT = 168.03' ST = 84.02'	Pls Sta 29+23.18 Δ = 5'58" 47.8" (LT) D = 2'28" 10.7" L = 242.14' R = 2,320.00' Ds = 65mph SE = 0.06 RUNOFF = 252'	Pls Sta 31+28.16 Øs = 3'06" 42.3" Ls = 252.00' LT = 168.03' ST = 84.02'
---	---	---



REVISIONS

MATCH LINE -Y8- STA. 23+00.00 SEE SHEET 28

MATCH LINE -Y8- STA. 34+50.00 SEE SHEET 25



8 SEP 2017 10:01 AM R-5703-RDY\_psh\_29.dgn

FOR -Y8- PROFILE SEE SHEET 48  
FOR -Y8RPB- PROFILE SEE SHEET 51

PROJECT REFERENCE NO. R-5703 SHEET NO. 30

RW SHEET NO.

ROADWAY DESIGN ENGINEER  
 SEAL 034367  
 JOHN H. BUCKNER

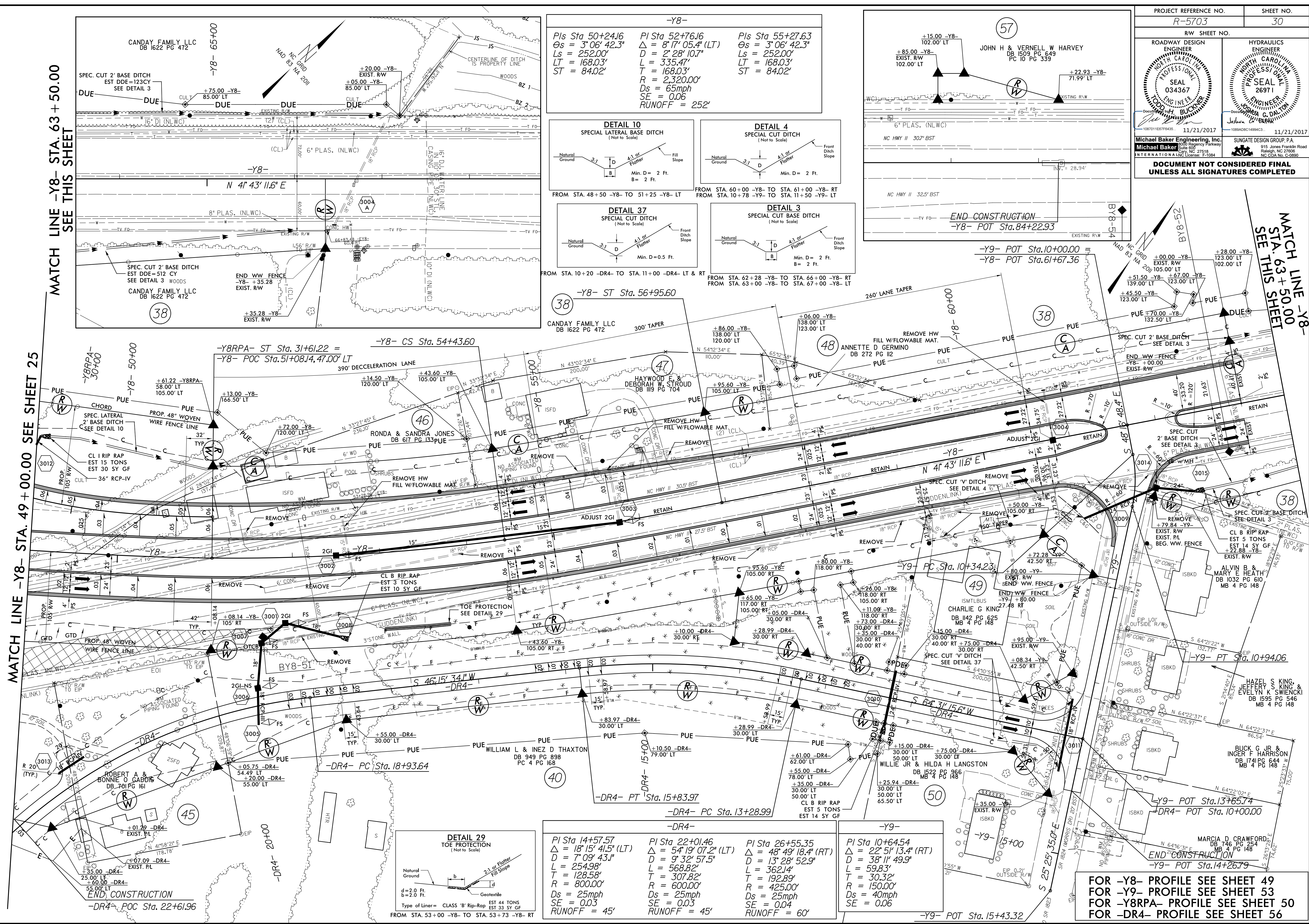
HYDRAULICS ENGINEER  
 SEAL 26971  
 JOHN H. & VERNELL W. HARVEY  
 DB 1509 PG 649  
 PC 10 PG 339

11/21/2017

Michael Baker Engineering, Inc.  
 INTERNATIONAL LICENSE F-3384

SUNGATE DESIGN GROUP P.A.  
 915 Jones Franklin Road  
 Raleigh, NC 27608  
 NC CONTRACTOR LICENSE F-3989

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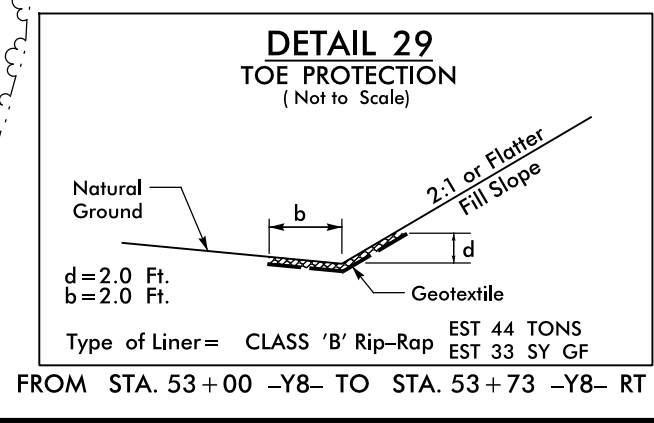
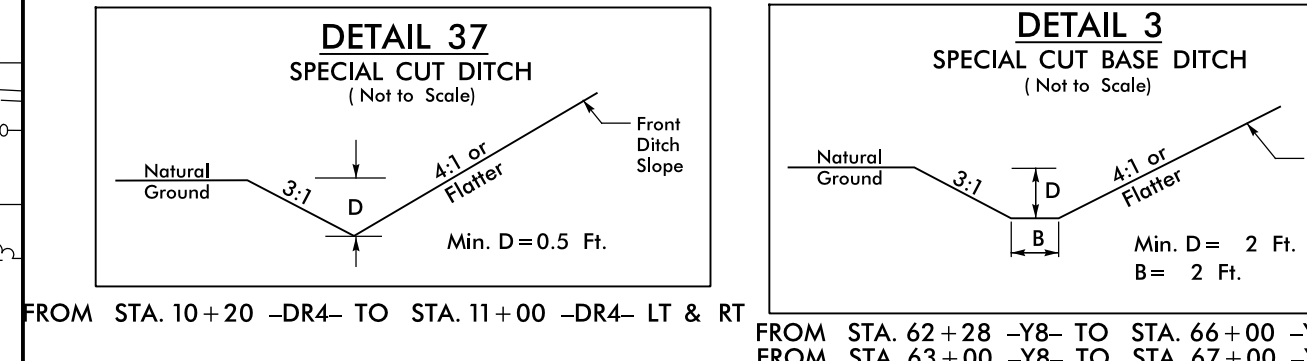
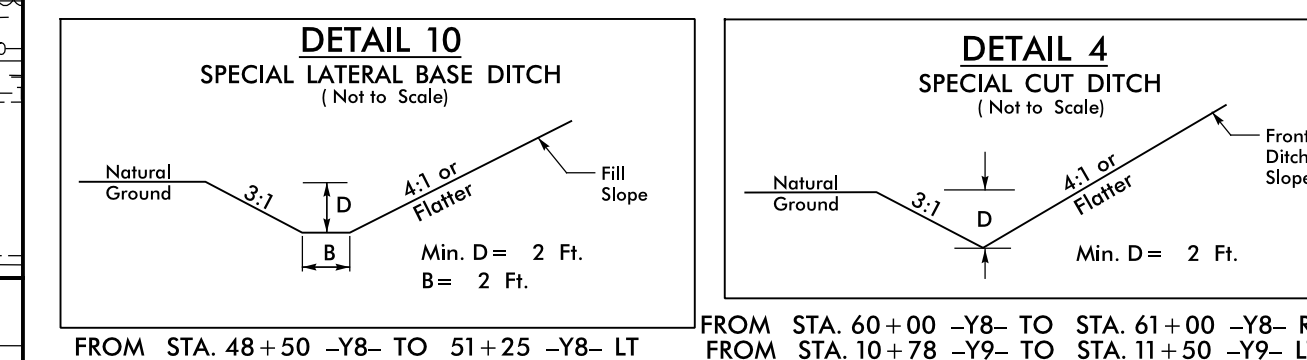
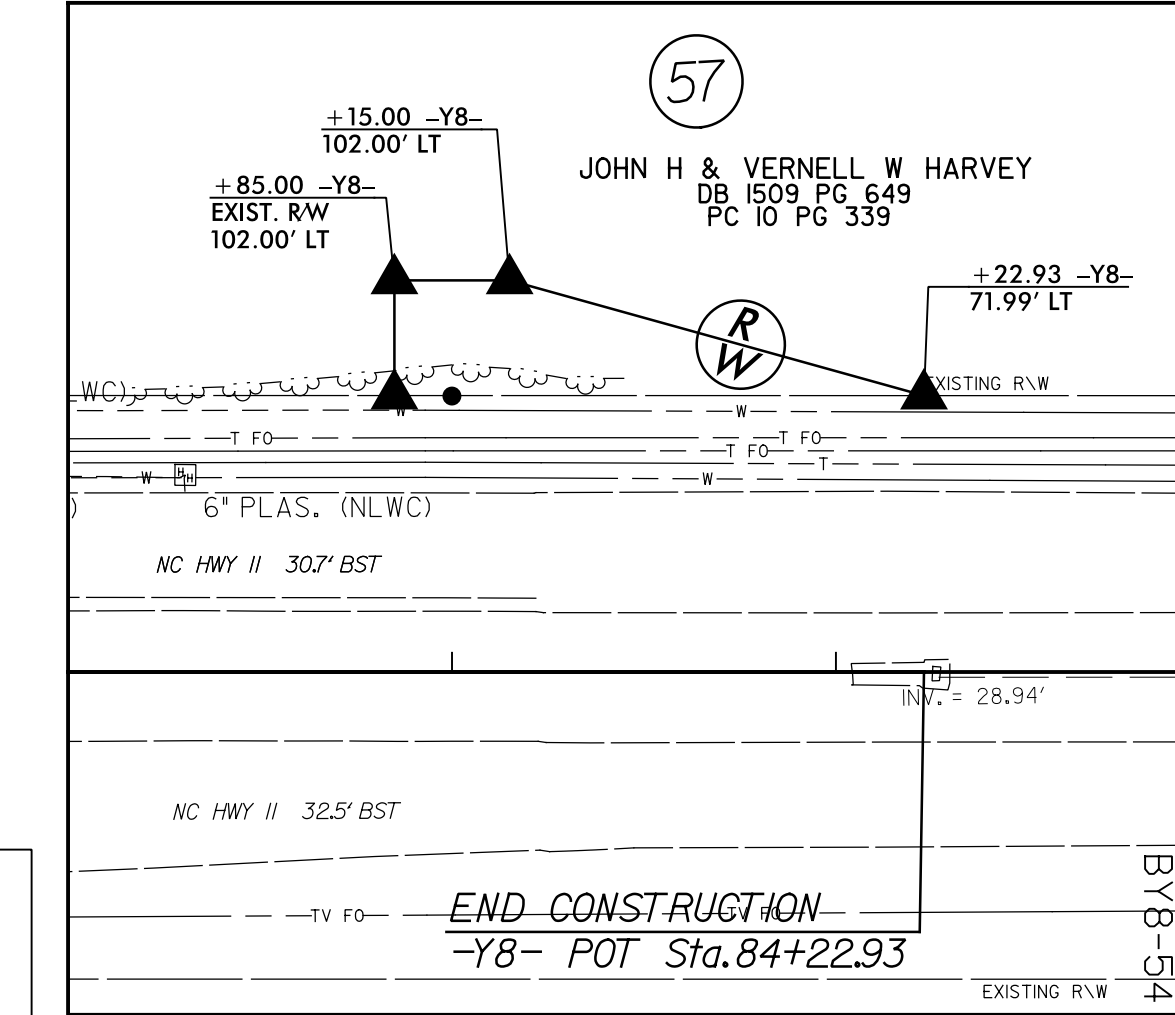


-Y8-

PI Sta 50+24.16  
 $\Delta = 3^{\circ}06'42.3''$   
 $L_s = 252.00'$   
 $L = 168.03'$   
 $T = 84.02'$   
 $R = 2,320.00'$   
 $D_s = 65\text{mph}$   
 $SE = 0.06$   
 $RUNOFF = 252'$

PI Sta 52+76.16  
 $\Delta = 8^{\circ}17'05.4''(LT)$   
 $L_s = 281.07'$   
 $L = 335.47'$   
 $T = 168.03'$   
 $R = 2,320.00'$   
 $D_s = 65\text{mph}$   
 $SE = 0.06$   
 $RUNOFF = 252'$

PI Sta 55+27.63  
 $\Delta = 3^{\circ}06'42.3''$   
 $L_s = 252.00'$   
 $L = 168.03'$   
 $T = 84.02'$   
 $R = 2,320.00'$   
 $D_s = 65\text{mph}$   
 $SE = 0.06$   
 $RUNOFF = 252'$



-DR4-

PI Sta 14+57.57  
 $\Delta = 18^{\circ}15'41.5''(LT)$   
 $D = 7^{\circ}09'43.1''$   
 $L_s = 254.98'$   
 $L = 128.58'$   
 $T = 800.00'$   
 $D_s = 25\text{mph}$   
 $SE = 0.03$   
 $RUNOFF = 45'$

PI Sta 22+01.46  
 $\Delta = 54^{\circ}19'07.2''(LT)$   
 $D = 9^{\circ}32'57.5''$   
 $L_s = 254.98'$   
 $L = 568.82'$   
 $T = 307.82'$   
 $R = 600.00'$   
 $D_s = 25\text{mph}$   
 $SE = 0.03$   
 $RUNOFF = 45'$

PI Sta 26+55.35  
 $\Delta = 48^{\circ}49'18.4''(RT)$   
 $D = 13^{\circ}28'52.9''$   
 $L_s = 254.98'$   
 $L = 362.14'$   
 $T = 192.89'$   
 $R = 425.00'$   
 $D_s = 25\text{mph}$   
 $SE = 0.04$   
 $RUNOFF = 60'$

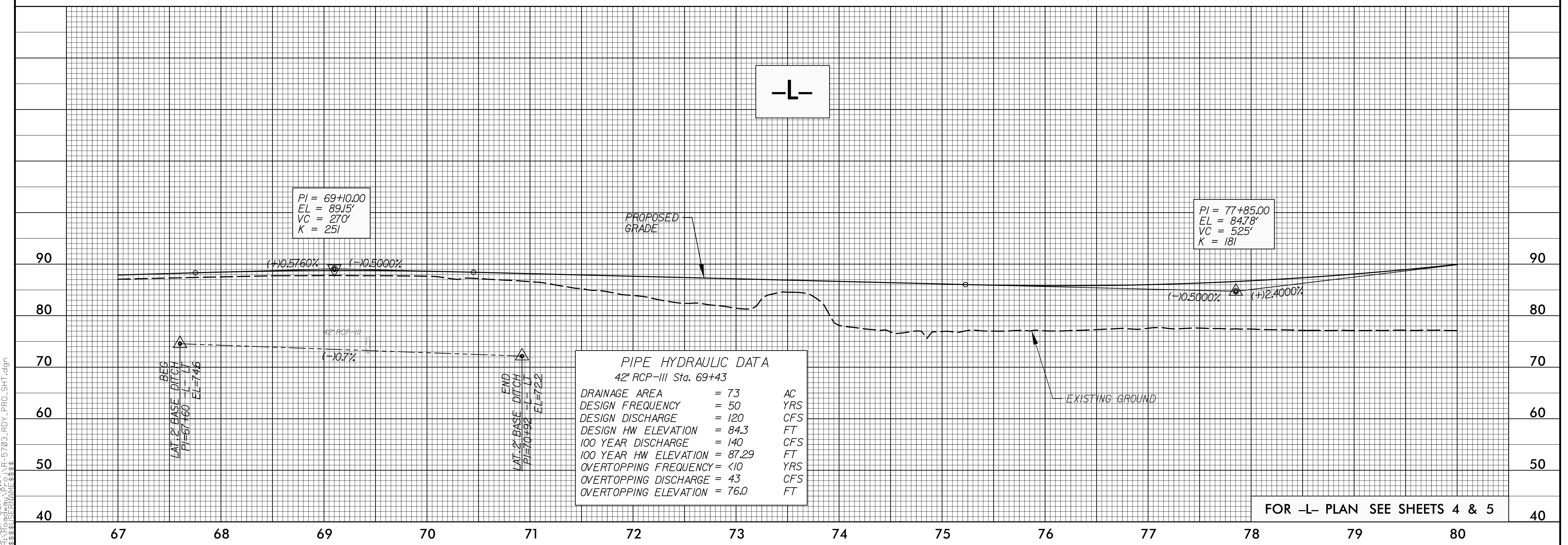
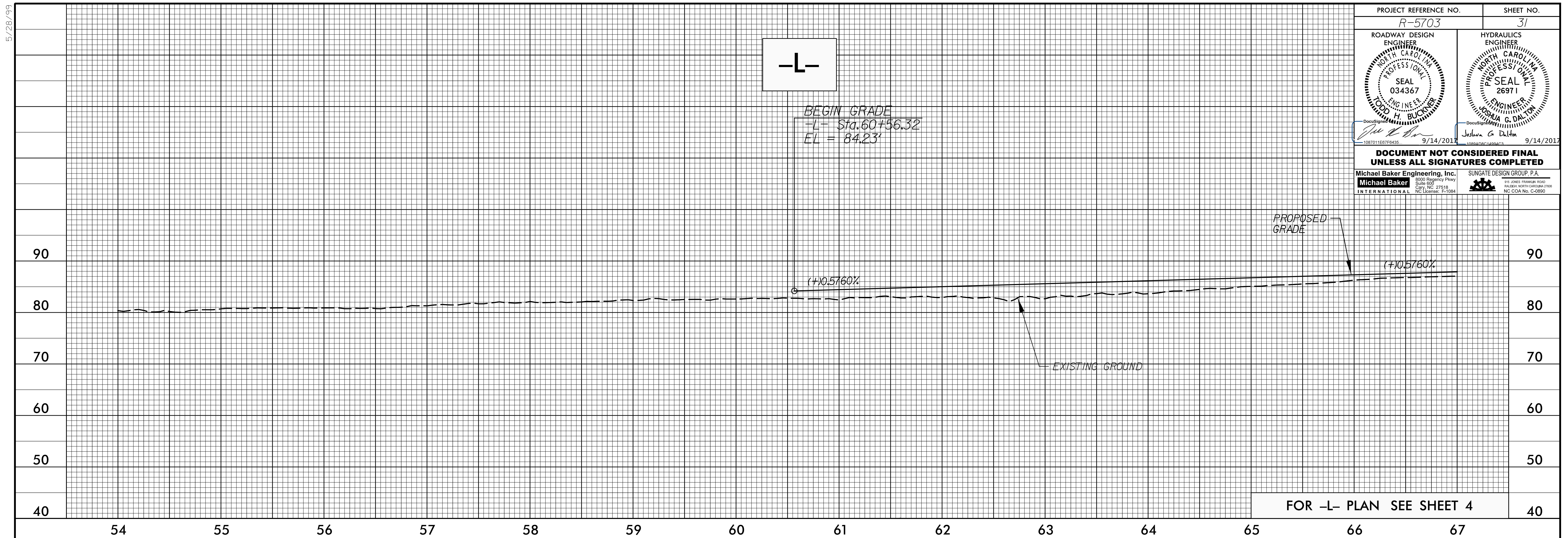
-Y9-

PI Sta 10+64.54  
 $\Delta = 22^{\circ}51'13.4''(RT)$   
 $D = 38^{\circ}11'49.9''$   
 $L_s = 254.98'$   
 $L = 59.83'$   
 $T = 30.32'$   
 $R = 150.00'$   
 $D_s = 40\text{mph}$   
 $SE = 0.06$

FOR -Y8- PROFILE SEE SHEET 49  
 FOR -Y9- PROFILE SEE SHEET 53  
 FOR -Y8RPA- PROFILE SEE SHEET 50  
 FOR -DR4- PROFILE SEE SHEET 56

8/17/99  
 REVISIONS  
 MATCH LINE -Y8- STA. 49+00.00 SEE SHEET 25  
 MATCH LINE -Y8- STA. 63+50.00 SEE THIS SHEET  
 MATCH LINE -Y8- STA. 63+50.00 SEE THIS SHEET  
 21 NOV 2017 15:18 N:\R-5703\_RDY\_psh\_30.dgn  
 8:58:30 AM  
 21 NOV 2017 15:18 N:\R-5703\_RDY\_psh\_30.dgn  
 8:58:30 AM

PROJECT REFERENCE NO. <b>R-5703</b>	SHEET NO. <b>31</b>
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER J. H. BUCKNER	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
9/14/2017 10870118878435	9/14/2017 10884831469473
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Cary, NC 27518 NC License: E-10884	SUNGATE DESIGN GROUP, P.A. 815 JONES FRANKLIN ROAD HAZLETON, NORTH CAROLINA 27840 NC CDR No. C-28980



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 \$\$\$\$\$\$ (C:\PROGRAMS)

5/28/2017

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

PROJECT REFERENCE NO. **R-5703** SHEET NO. **32**

ROADWAY DESIGN ENGINEER  
 JOSHUA G. DALTON  
 SEAL 034367  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 9/14/2017

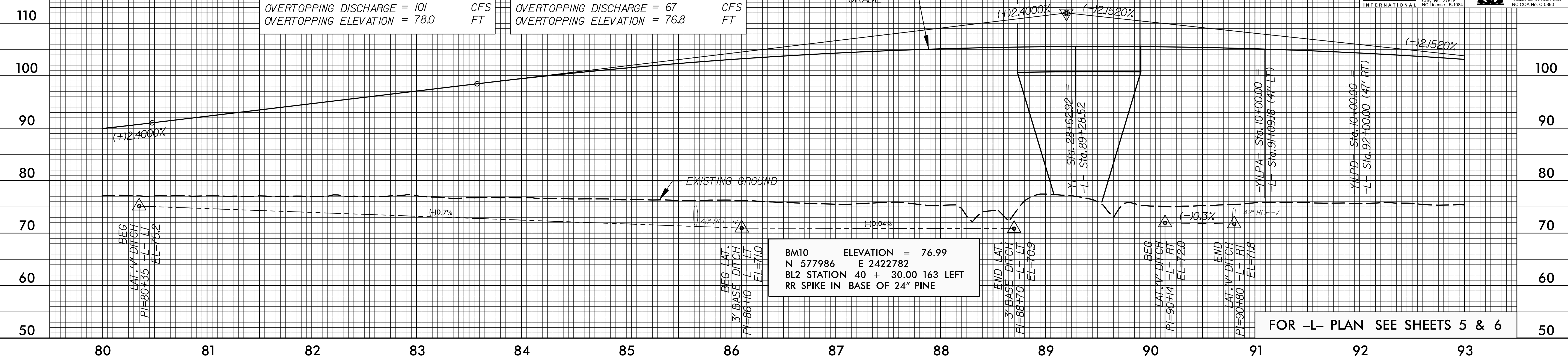
HYDRAULICS ENGINEER  
 JOSHUA G. DALTON  
 SEAL 26971  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 9/14/2017

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

Michael Baker Engineering, Inc. SUNGATE DESIGN GROUP, P.A.  
 8000 Regency Parkway Cary, NC 27518  
 INTERNATIONAL NC License: F-1084

PIPE HYDRAULIC DATA		PIPE HYDRAULIC DATA	
48" RCP-IV Sta. 85+66		42" RCP-V Sta. 90+80	
DRAINAGE AREA	= 34 AC	DRAINAGE AREA	= 33 AC
DESIGN FREQUENCY	= 50 YRS	DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 60 CFS	DESIGN DISCHARGE	= 60 CFS
DESIGN HW ELEVATION	= 75.3 FT	DESIGN HW ELEVATION	= 76.0 FT
100 YEAR DISCHARGE	= 70 CFS	100 YEAR DISCHARGE	= 70 CFS
100 YEAR HW ELEVATION	= 75.84 FT	100 YEAR HW ELEVATION	= 76.89 FT
OVERTOPPING FREQUENCY	= 200+ YRS	OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING DISCHARGE	= 101 CFS	OVERTOPPING DISCHARGE	= 67 CFS
OVERTOPPING ELEVATION	= 78.0 FT	OVERTOPPING ELEVATION	= 76.8 FT

PI = 89+20.00  
 EL = 112.02'  
 VC = 1125'  
 K = 247



FOR -L- PLAN SEE SHEETS 5 & 6

PIPE HYDRAULIC DATA	
24" RCP-III Sta. 105+42	
DRAINAGE AREA	= 6.4 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 11 CFS
DESIGN HW ELEVATION	= 76.4 FT
100 YEAR DISCHARGE	= 12 CFS
100 YEAR HW ELEVATION	= 76.63 FT
OVERTOPPING FREQUENCY	= 2+ YRS
OVERTOPPING DISCHARGE	= 6 CFS
OVERTOPPING ELEVATION	= 75.6 FT

PI = 101+00.00  
 EL = 86.62'  
 VC = 340'  
 K = 184



FOR -L- PLAN SEE SHEET 6

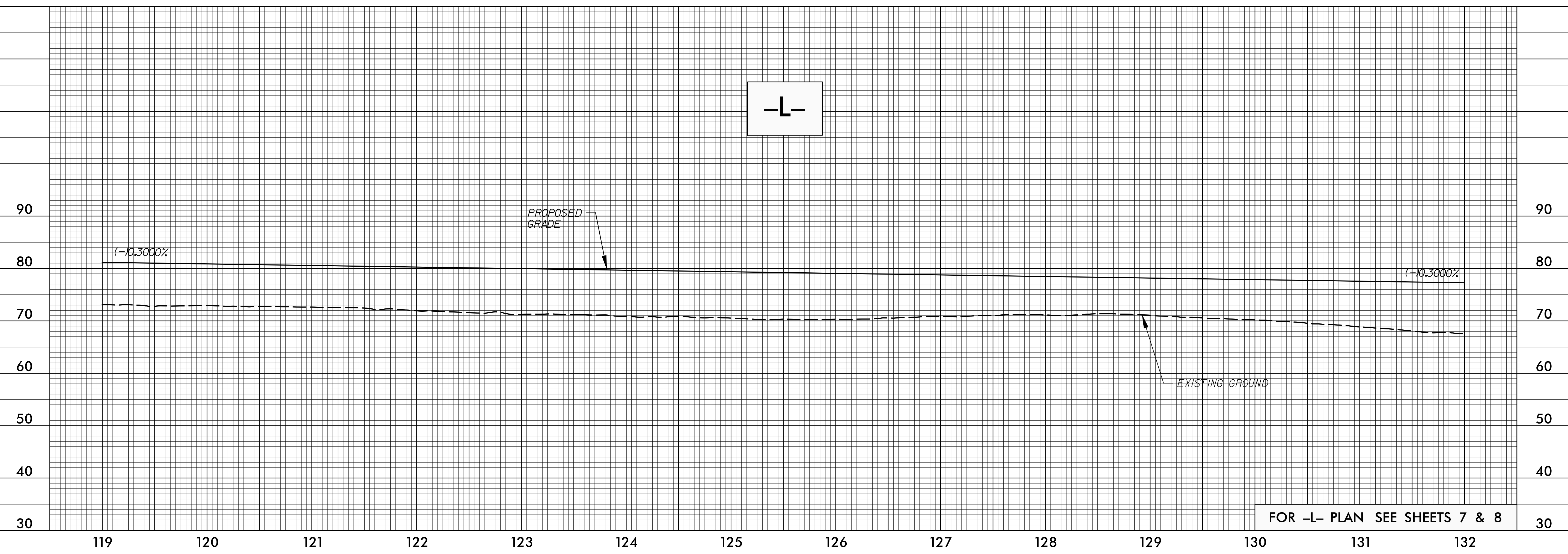
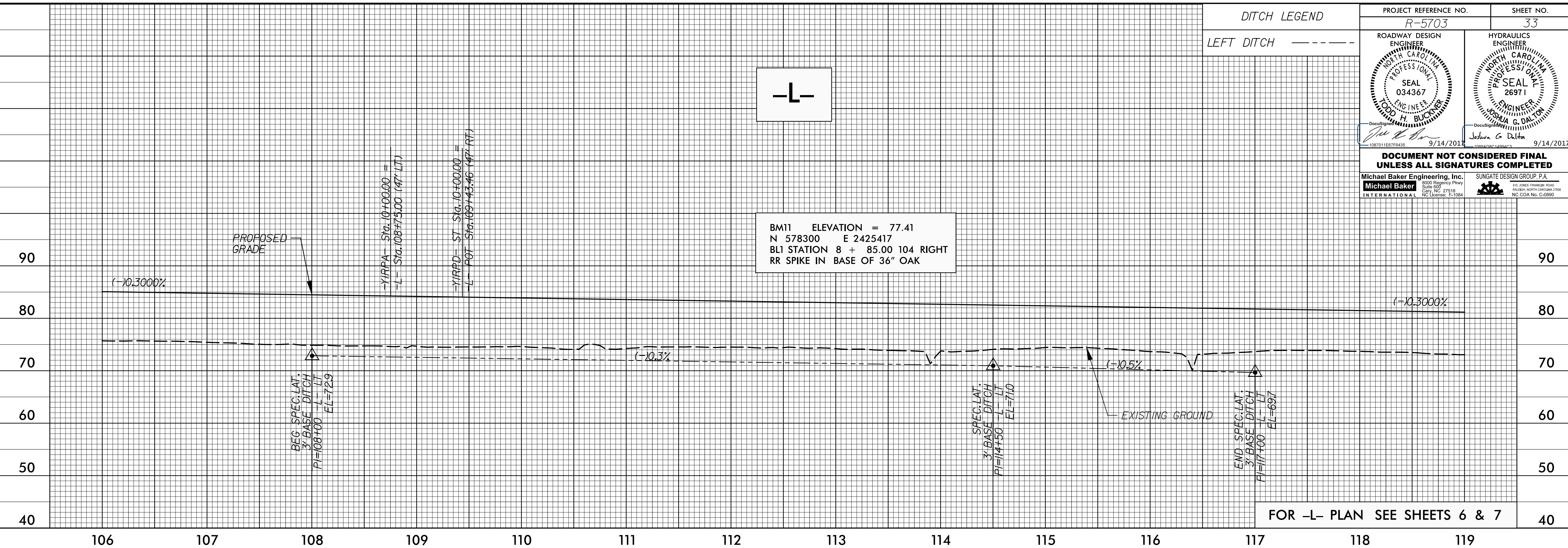
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5/28/19

DITCH LEGEND  
LEFT DITCH - - - - -

PROJECT REFERENCE NO. R-5703	SHEET NO. 33
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 034367 J. H. BUCKNER 9/14/2017	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 26971 JOSHUA G. DALTON 9/14/2017
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
Michael Baker Engineering, Inc. 8000 Regency Park Suite 600 Cary, NC 27518 NC License: E-10884	SUNGATE DESIGN GROUP, P.A. 115 JONES FRANKLIN ROAD HAZELWOOD, NORTH CAROLINA 27839 NC CDA No. C-28590



15-SEP-2017 0:37 \\R-5703-RDY\_PRO\_SHT.dgn

5/28/19

DITCH LEGEND

LEFT DITCH - - - - -

RIGHT DITCH - - - - -

PROJECT REFERENCE NO. R-5703 SHEET NO. 34

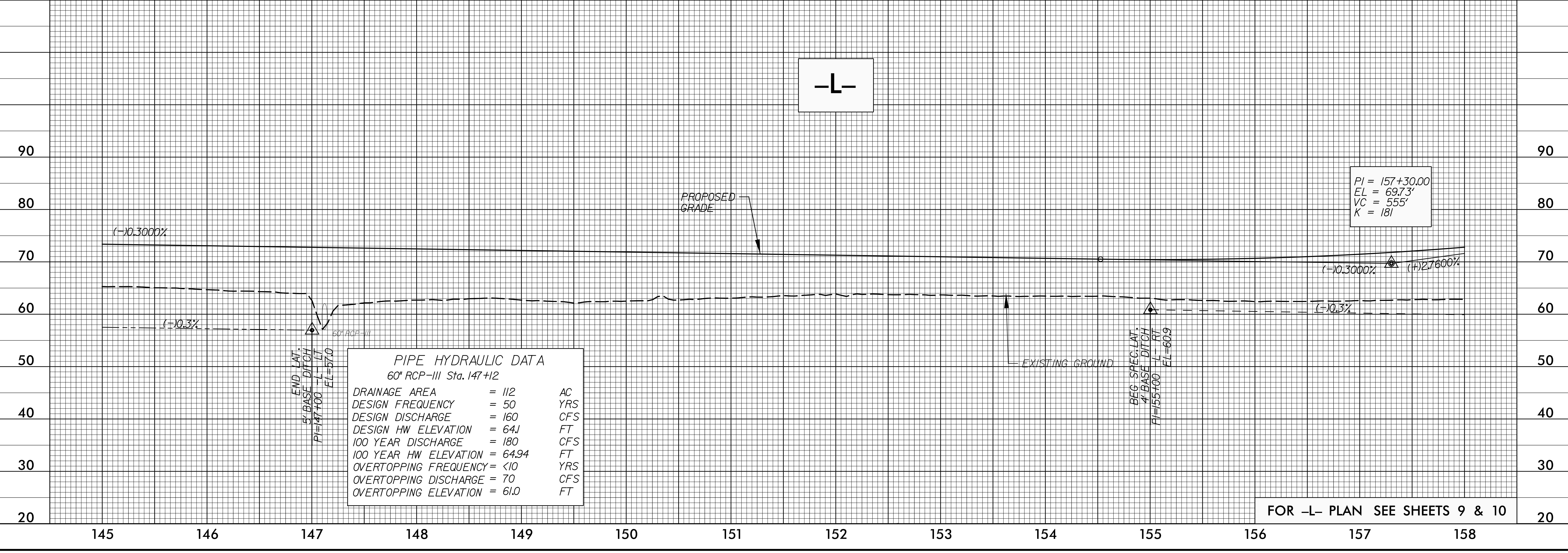
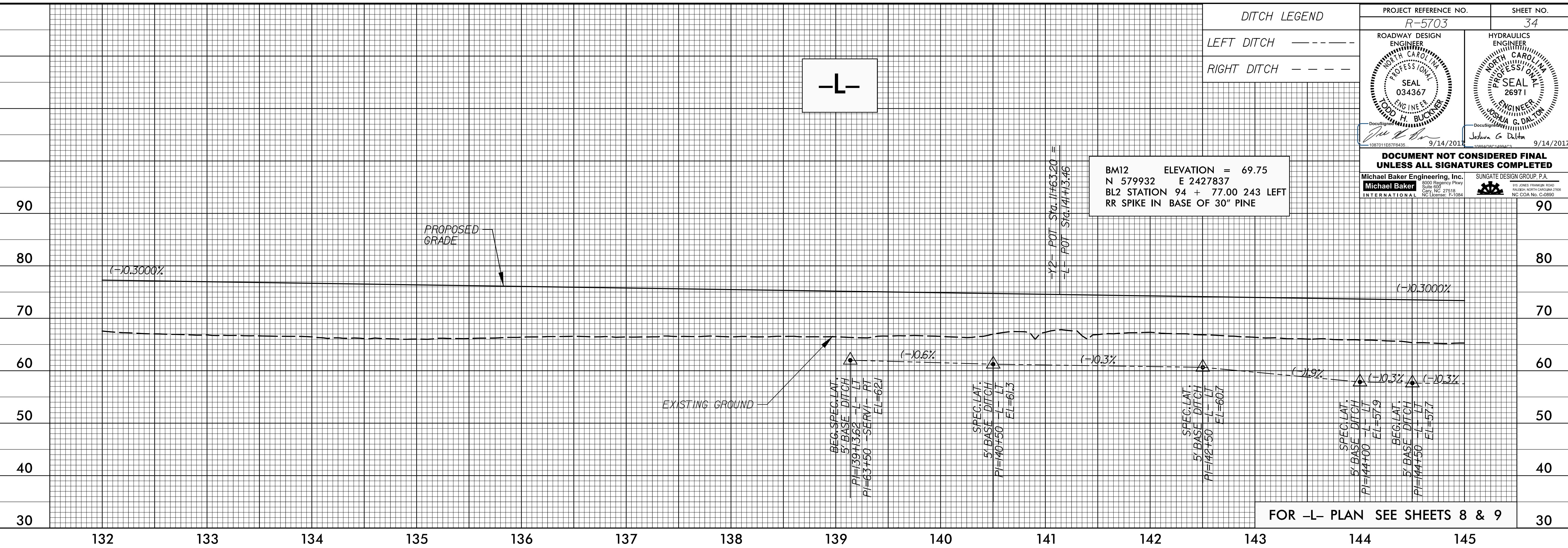
ROADWAY DESIGN ENGINEER  
 NORTH CAROLINA PROFESSIONAL SEAL  
 034367  
 J. H. BUCKNER  
 9/14/2017

HYDRAULICS ENGINEER  
 NORTH CAROLINA PROFESSIONAL SEAL  
 26971  
 JOSHUA G. DALTON  
 9/14/2017

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Michael Baker Engineering, Inc. SUNGATE DESIGN GROUP, P.A.  
 8000 Regency Parkway Suite 600 Cary, NC 27518 NC License No. C-6890

BM12 ELEVATION = 69.75  
 N 579932 E 2427837  
 BL2 STATION 94 + 77.00 243 LEFT  
 RR SPIKE IN BASE OF 30" PINE



PIPE HYDRAULIC DATA  
 60" RCP-III Sta. 147+12

DRAINAGE AREA	= 112	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 160	CFS
DESIGN HW ELEVATION	= 64.1	FT
100 YEAR DISCHARGE	= 180	CFS
100 YEAR HW ELEVATION	= 64.94	FT
OVERTOPPING FREQUENCY	= <10	YRS
OVERTOPPING DISCHARGE	= 70	CFS
OVERTOPPING ELEVATION	= 61.0	FT

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5/28/17

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

PROJECT REFERENCE NO. **R-5703** SHEET NO. **35**

ROADWAY DESIGN ENGINEER  
 JOSHUA G. DALTON  
 SEAL 034367  
 ENGINEER  
 NORTH CAROLINA PROFESSIONAL SEAL  
 26971

HYDRAULICS ENGINEER  
 JOSHUA G. DALTON  
 SEAL 26971  
 ENGINEER  
 NORTH CAROLINA PROFESSIONAL SEAL  
 26971

9/14/2017

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

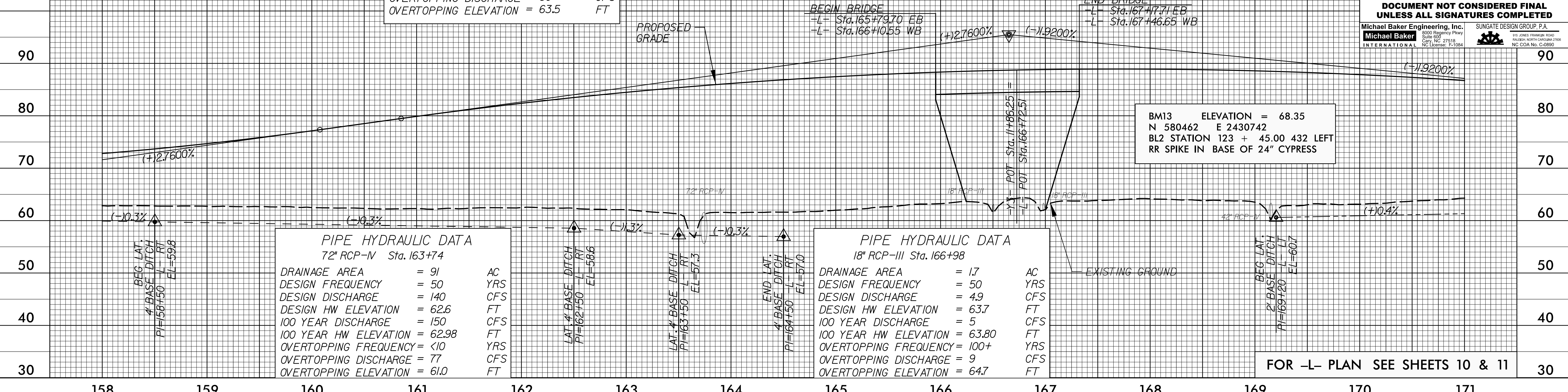
Michael Baker Engineering, Inc. SUNGATE DESIGN GROUP, P.A.  
 8000 Regency Park  
 Suite 600  
 Cary, NC 27518  
 NC License: E-1084

**PIPE HYDRAULIC DATA**  
 42" RCP-IV Sta. 169+15

DRAINAGE AREA	= 29	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 55	CFS
DESIGN HW ELEVATION	= 64.1	FT
100 YEAR DISCHARGE	= 60	CFS
100 YEAR HW ELEVATION	= 64.31	FT
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING DISCHARGE	= 39	CFS
OVERTOPPING ELEVATION	= 63.5	FT

**-L-**

PI = 166+65.00  
 EL = 95.54'  
 VC = 1160'  
 K = 248



**PIPE HYDRAULIC DATA**  
 72" RCP-IV Sta. 163+74

DRAINAGE AREA	= 91	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 140	CFS
DESIGN HW ELEVATION	= 62.6	FT
100 YEAR DISCHARGE	= 150	CFS
100 YEAR HW ELEVATION	= 62.98	FT
OVERTOPPING FREQUENCY	= <10	YRS
OVERTOPPING DISCHARGE	= 77	CFS
OVERTOPPING ELEVATION	= 61.0	FT

**PIPE HYDRAULIC DATA**  
 18" RCP-III Sta. 166+98

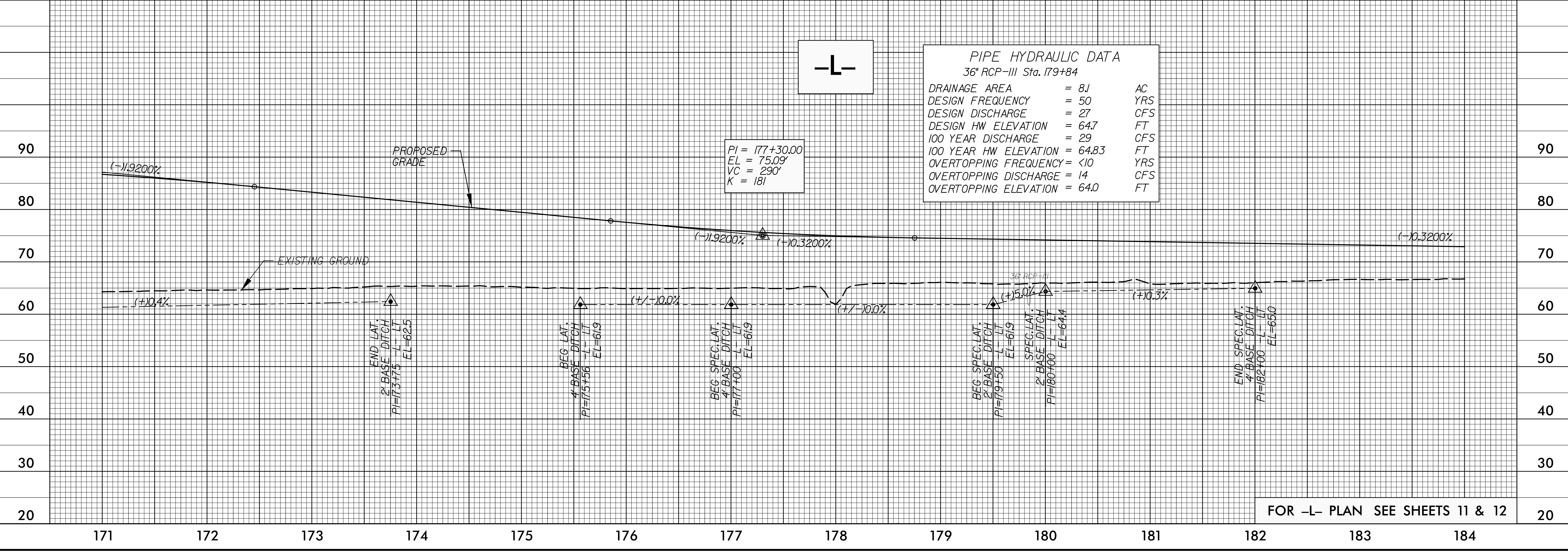
DRAINAGE AREA	= 17	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 4.9	CFS
DESIGN HW ELEVATION	= 63.7	FT
100 YEAR DISCHARGE	= 5	CFS
100 YEAR HW ELEVATION	= 63.80	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 9	CFS
OVERTOPPING ELEVATION	= 64.7	FT

**PIPE HYDRAULIC DATA**  
 36" RCP-III Sta. 179+84

DRAINAGE AREA	= 8.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 27	CFS
DESIGN HW ELEVATION	= 64.7	FT
100 YEAR DISCHARGE	= 29	CFS
100 YEAR HW ELEVATION	= 64.83	FT
OVERTOPPING FREQUENCY	= <10	YRS
OVERTOPPING DISCHARGE	= 14	CFS
OVERTOPPING ELEVATION	= 64.0	FT

**-L-**

PI = 177+30.00  
 EL = 75.09'  
 VC = 290'  
 K = 181



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5/28/99

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

PROJECT REFERENCE NO. **R-5703** SHEET NO. **36**

ROADWAY DESIGN ENGINEER  
 JAMES H. BUCKNER  
 SEAL 034367  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 9/14/2017

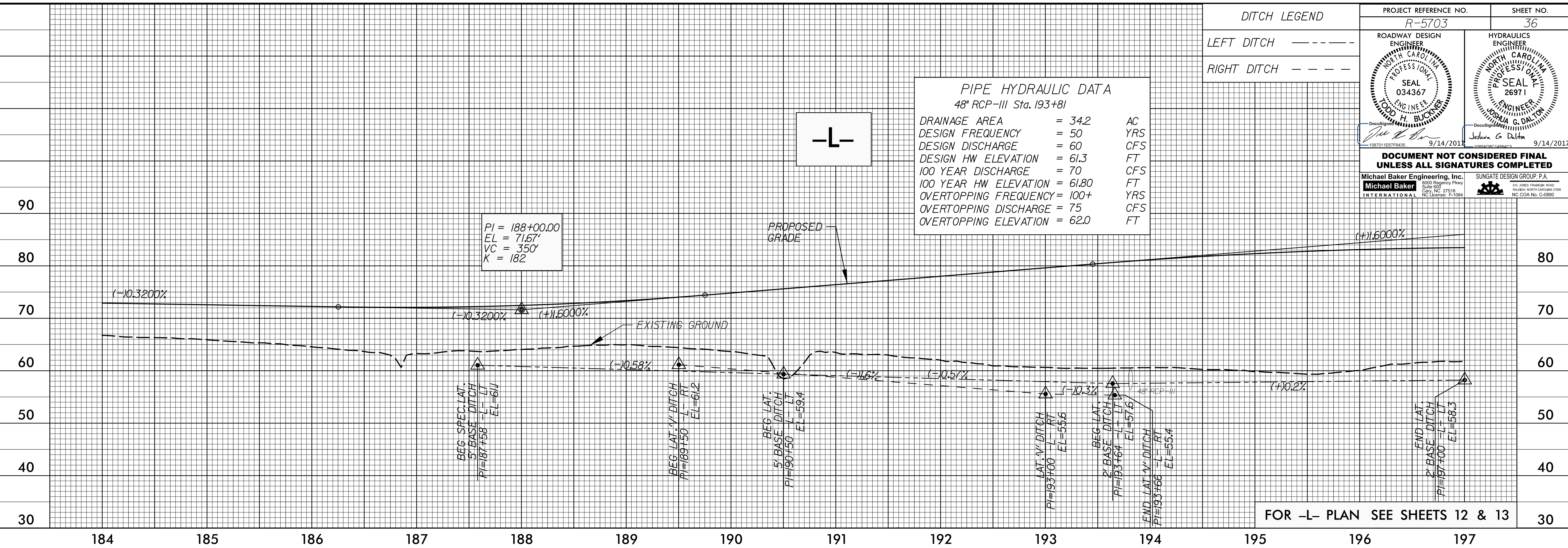
HYDRAULICS ENGINEER  
 JOSHUA G. DALTON  
 SEAL 26971  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 9/14/2017

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

Michael Baker Engineering, Inc. SUNGATE DESIGN GROUP, P.A.  
 8000 Regency Parkway Suite 600 Cary, NC 27518 NC License: F-10884

**PIPE HYDRAULIC DATA**  
 48" RCP-III Sta. 193+81

DRAINAGE AREA	= 34.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 60	CFS
DESIGN HW ELEVATION	= 61.3	FT
100 YEAR DISCHARGE	= 70	CFS
100 YEAR HW ELEVATION	= 61.80	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 75	CFS
OVERTOPPING ELEVATION	= 62.0	FT



FOR -L- PLAN SEE SHEETS 12 & 13

**PIPE HYDRAULIC DATA**  
 24" RCP-III Sta. 208+18

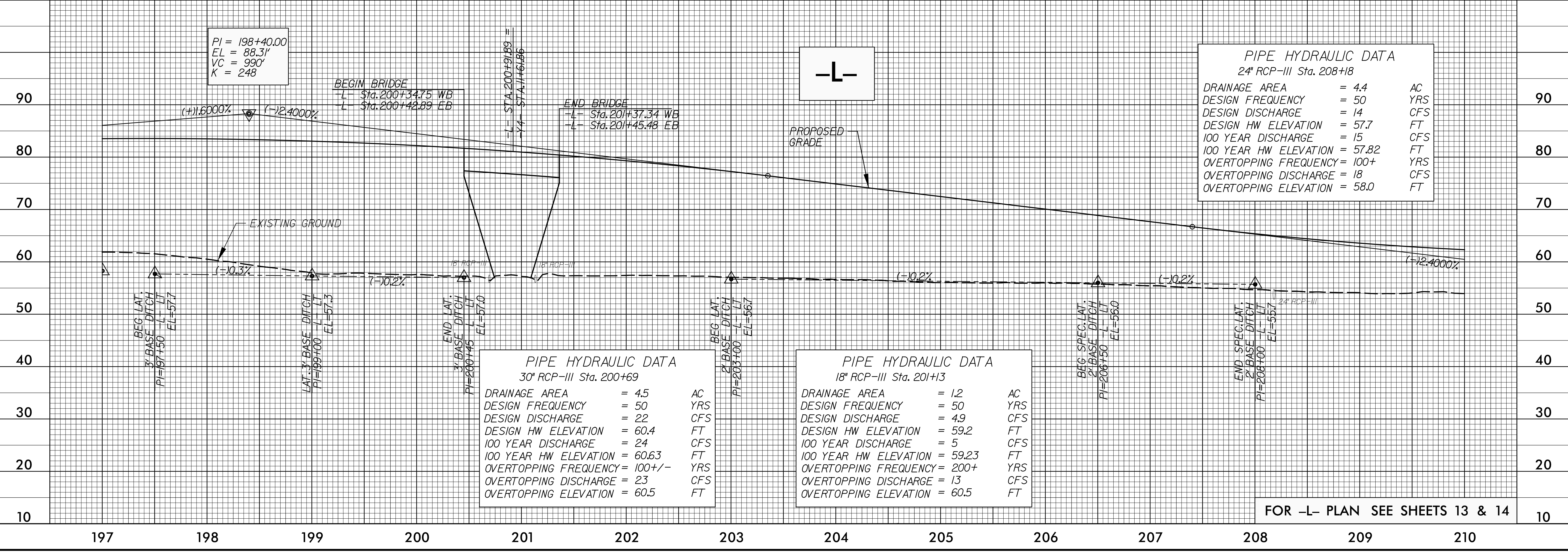
DRAINAGE AREA	= 4.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 57.7	FT
100 YEAR DISCHARGE	= 15	CFS
100 YEAR HW ELEVATION	= 57.82	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 18	CFS
OVERTOPPING ELEVATION	= 58.0	FT

**PIPE HYDRAULIC DATA**  
 30" RCP-III Sta. 200+69

DRAINAGE AREA	= 4.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 22	CFS
DESIGN HW ELEVATION	= 60.4	FT
100 YEAR DISCHARGE	= 24	CFS
100 YEAR HW ELEVATION	= 60.63	FT
OVERTOPPING FREQUENCY	= 100+/-	YRS
OVERTOPPING DISCHARGE	= 23	CFS
OVERTOPPING ELEVATION	= 60.5	FT

**PIPE HYDRAULIC DATA**  
 18" RCP-III Sta. 201+13

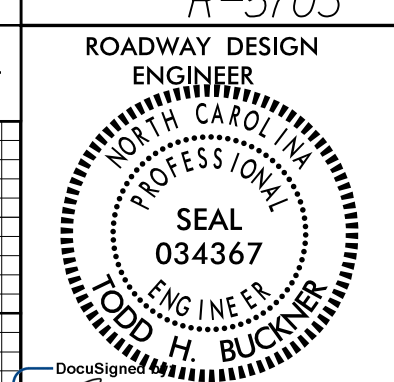
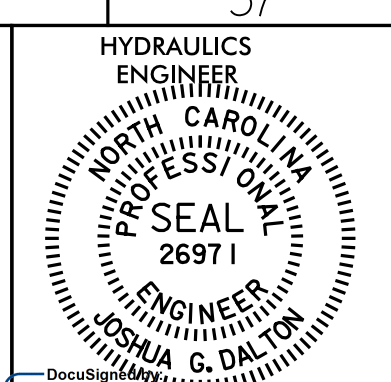
DRAINAGE AREA	= 1.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 4.9	CFS
DESIGN HW ELEVATION	= 59.2	FT
100 YEAR DISCHARGE	= 5	CFS
100 YEAR HW ELEVATION	= 59.23	FT
OVERTOPPING FREQUENCY	= 200+	YRS
OVERTOPPING DISCHARGE	= 13	CFS
OVERTOPPING ELEVATION	= 60.5	FT



FOR -L- PLAN SEE SHEETS 13 & 14

15 SEP 2017 09:38 NR-5703.RDY\_PRO\_SHT.dgn

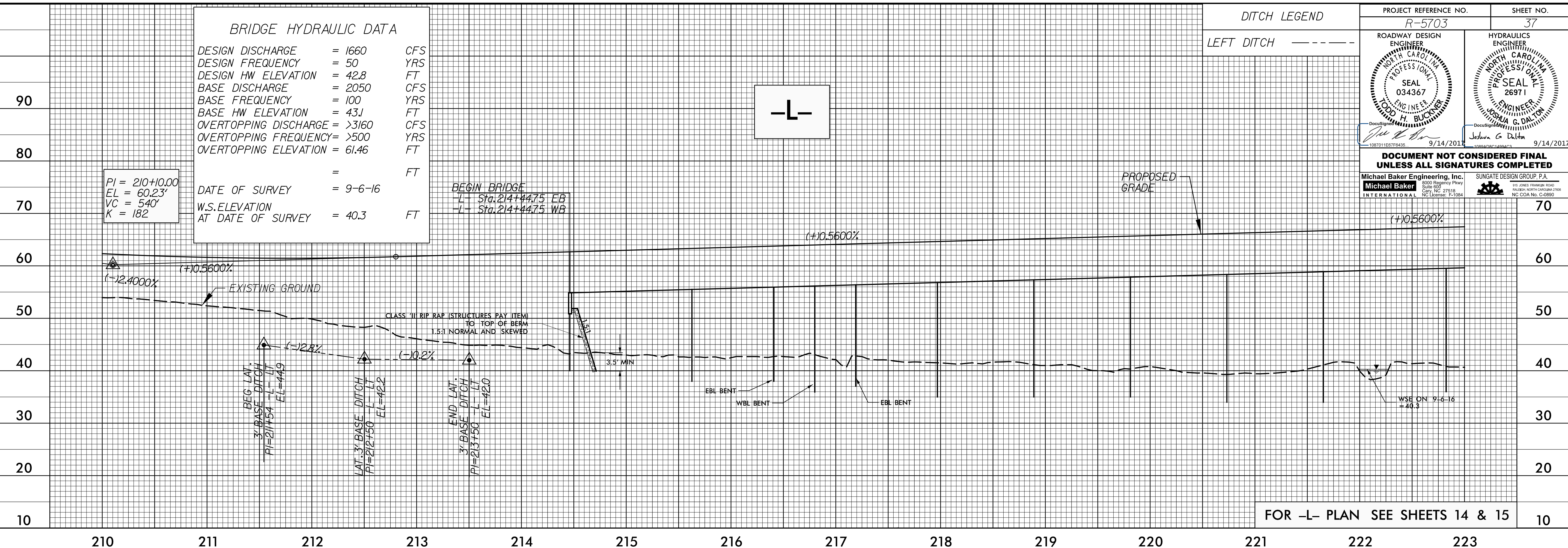
5/28/2017

DITCH LEGEND		PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH - - - - -		R-5703	37
			
ROADWAY DESIGN ENGINEER JOSHUA G. DALTON 9/14/2017		HYDRAULICS ENGINEER JOSHUA G. DALTON 9/14/2017	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
Michael Baker Engineering, Inc. 8000 Regency Parkway Cary, NC 27518 NC License: 7-1084		SUNGATE DESIGN GROUP, P.A. 115 JONES FRANKLIN ROAD HAYDEN, NORTH CAROLINA 27542 NC CDR No. C-2890	

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 1660	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 42.8	FT
BASE DISCHARGE	= 2050	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 43.1	FT
OVERTOPPING DISCHARGE	= >3160	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= 61.46	FT
DATE OF SURVEY = 9-6-16		
W.S. ELEVATION AT DATE OF SURVEY = 40.3		

PI = 210+10.00  
 EL = 60.23'  
 VC = 540'  
 K = 182

BEGIN BRIDGE  
 -L- Sta. 214+44.75 EB  
 -L- Sta. 214+44.75 WB

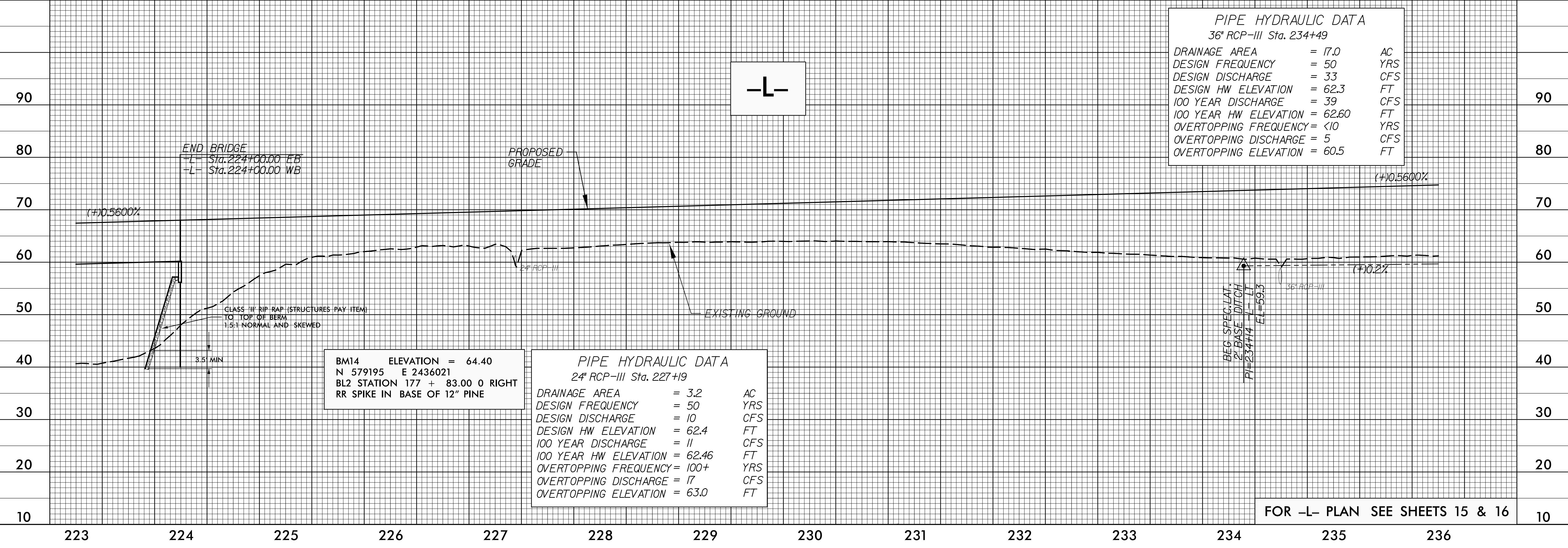


FOR -L- PLAN SEE SHEETS 14 & 15

PIPE HYDRAULIC DATA		
36" RCP-III Sta. 234+49		
DRAINAGE AREA	= 17.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 33	CFS
DESIGN HW ELEVATION	= 62.3	FT
100 YEAR DISCHARGE	= 39	CFS
100 YEAR HW ELEVATION	= 62.60	FT
OVERTOPPING FREQUENCY	= <10	YRS
OVERTOPPING DISCHARGE	= 5	CFS
OVERTOPPING ELEVATION	= 60.5	FT

BM14 ELEVATION = 64.40  
 N 579195 E 2436021  
 BL2 STATION 177 + 83.00 0 RIGHT  
 RR SPIKE IN BASE OF 12" PINE

PIPE HYDRAULIC DATA		
24" RCP-III Sta. 227+19		
DRAINAGE AREA	= 3.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 10	CFS
DESIGN HW ELEVATION	= 62.4	FT
100 YEAR DISCHARGE	= 11	CFS
100 YEAR HW ELEVATION	= 62.46	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 17	CFS
OVERTOPPING ELEVATION	= 63.0	FT



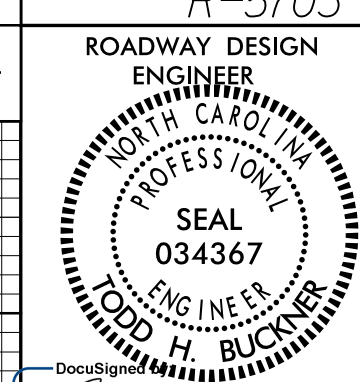
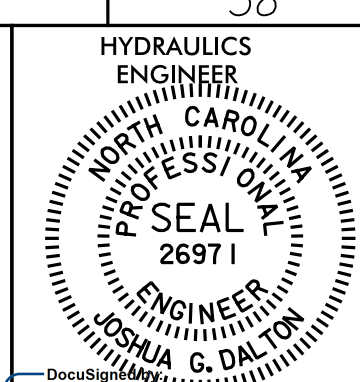
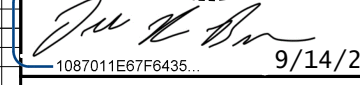
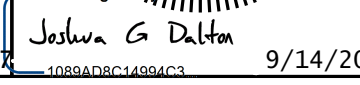


FOR -L- PLAN SEE SHEETS 15 & 16

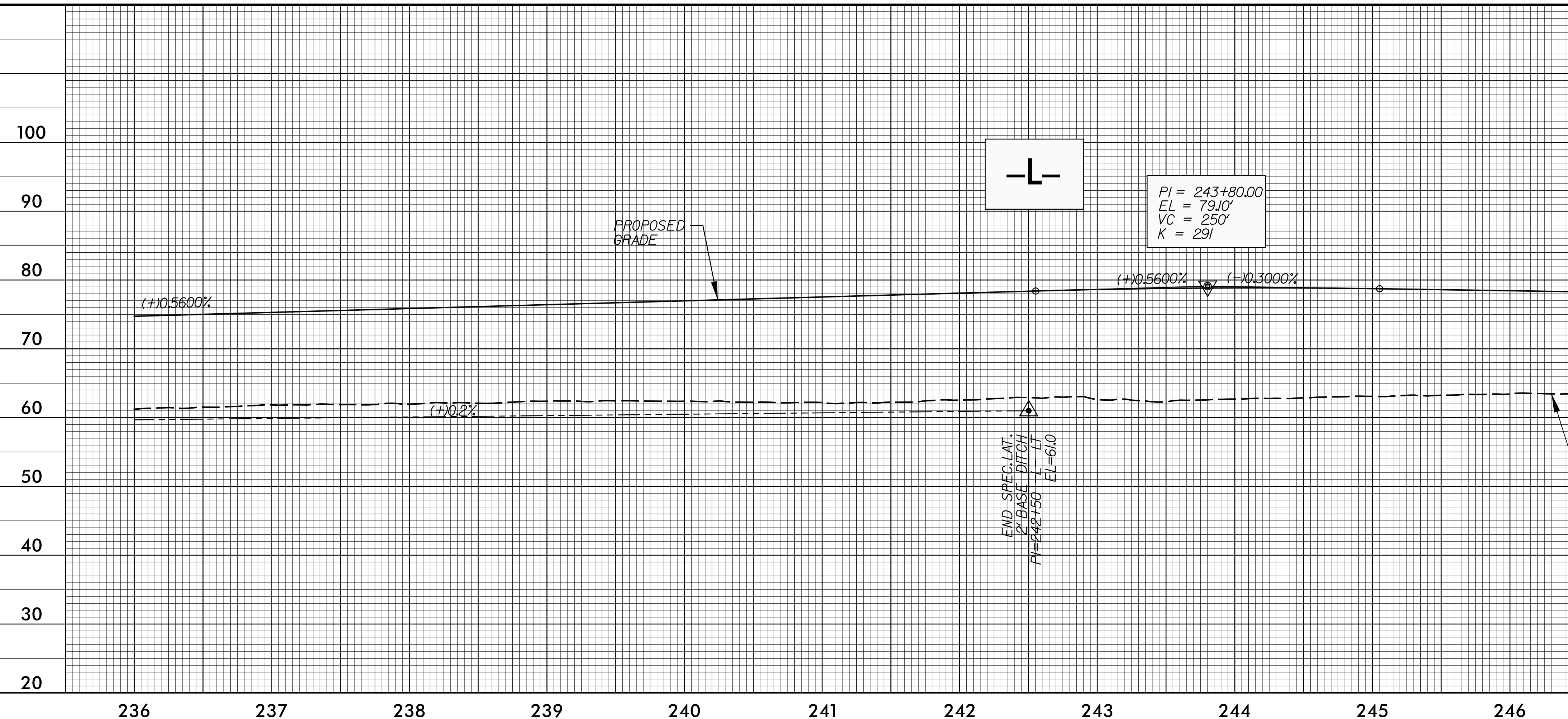
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 333.91 (C:\P\AMT\333.91)

5/28/17

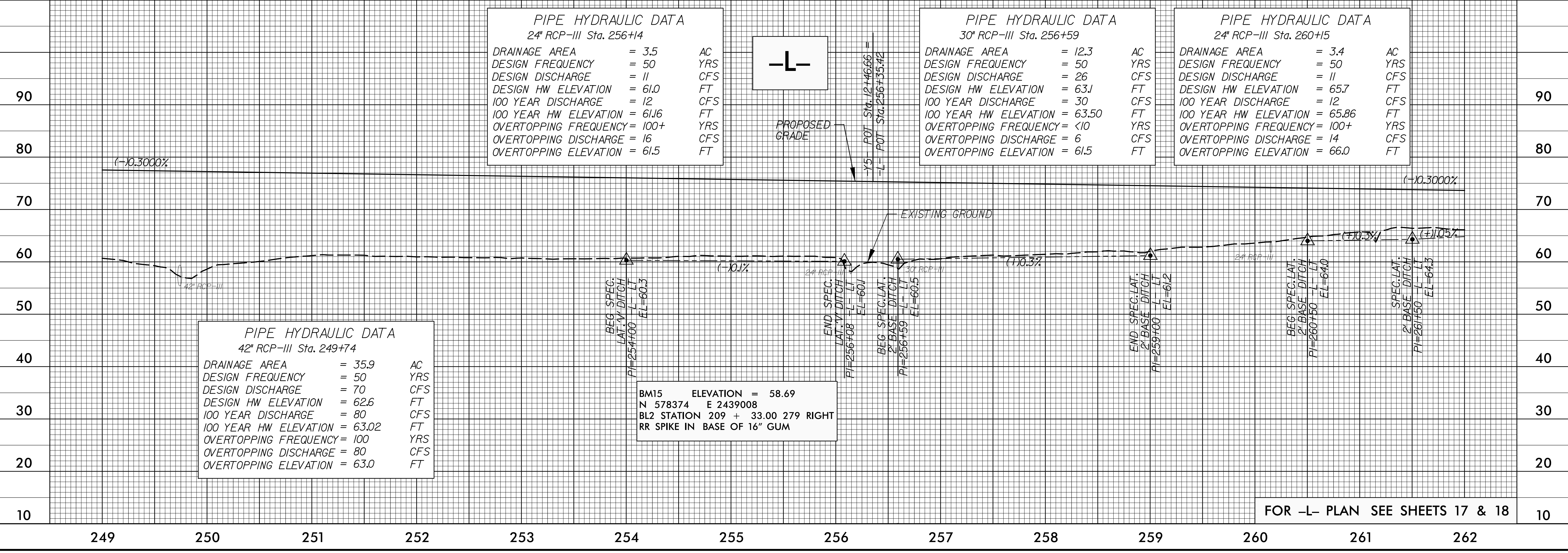
**DITCH LEGEND**

LEFT DITCH - - - - -

PROJECT REFERENCE NO. <b>R-5703</b>	SHEET NO. <b>38</b>
 ROADWAY DESIGN ENGINEER TODD H. BUCKNER 034367 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL	 HYDRAULICS ENGINEER JOSHUA G. DALTON 26971 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
 9/14/2017 10870118778435	 9/14/2017 10870118778435
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 Michael Baker International 8000 Regency Parkway Cary, NC 27518 NC License: E-10884	 SUNGATE DESIGN GROUP, P.A. 115 JONES FRANKLIN ROAD HAZEL HURTT CAMPBELL DRIVE NC License No. C-2890



FOR -L- PLAN SEE SHEETS 16 & 17



FOR -L- PLAN SEE SHEETS 17 & 18

14-SEP-2017 08:50 R-5703-RDY-PRO-SHT.dgn

5/28/2017

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

PROJECT REFERENCE NO. **R-5703** SHEET NO. **39**

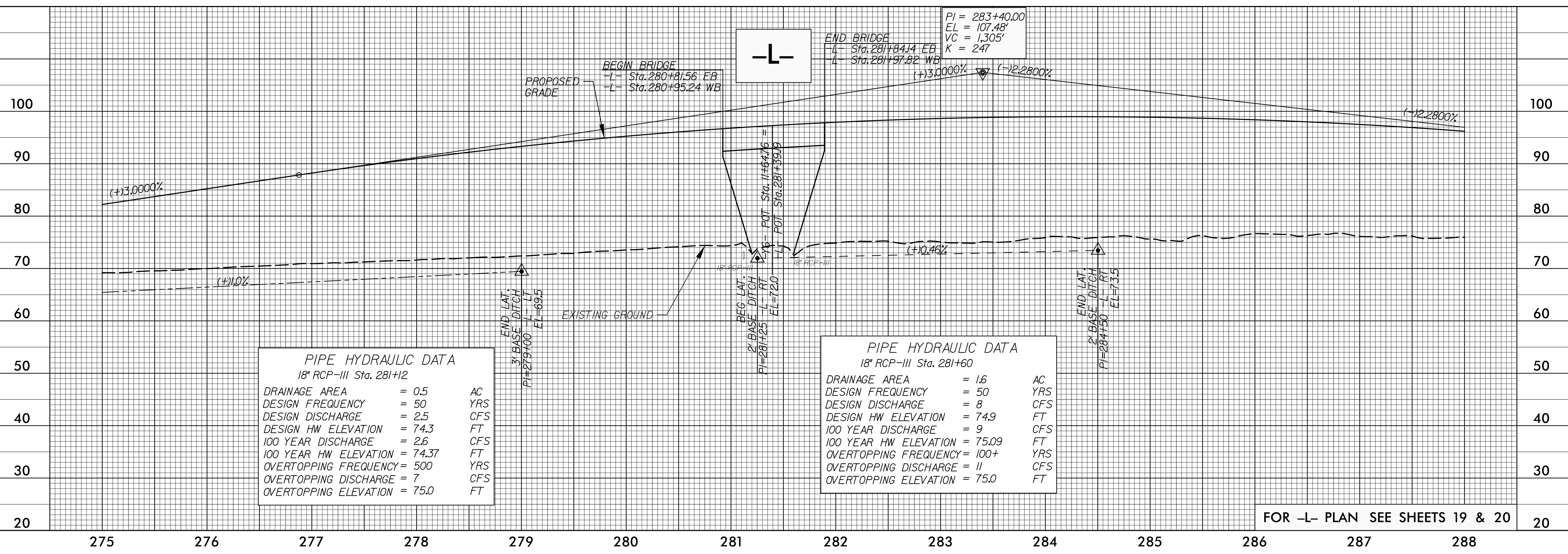
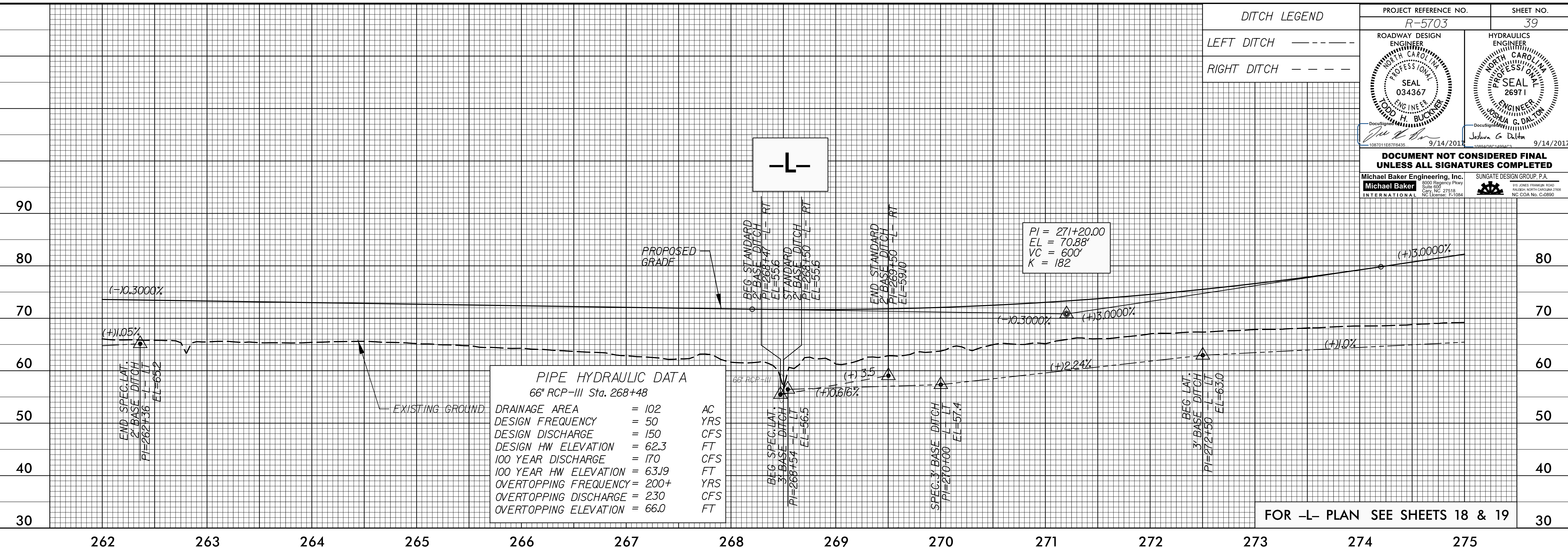
ROADWAY DESIGN ENGINEER  
 JOSHUA G. DALTON  
 SEAL 034367  
 ENGINEER  
 JOSHUA G. DALTON

HYDRAULICS ENGINEER  
 JOSHUA G. DALTON  
 SEAL 26971  
 ENGINEER  
 JOSHUA G. DALTON

10870118778435 9/14/2017  
 10870118778435 9/14/2017

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 UNLESS ALL SIGNATURES COMPLETED**

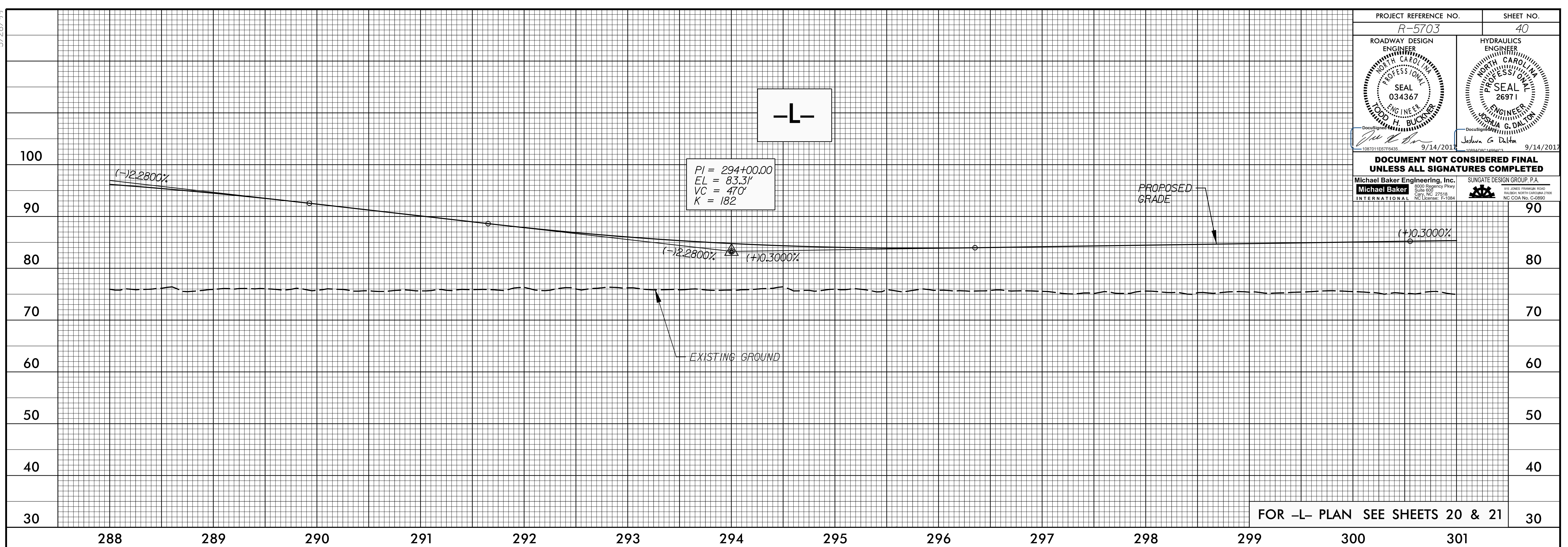
Michael Baker Engineering, Inc. SUNGATE DESIGN GROUP, P.A.  
 8000 Regency Parkway Suite 600 Cary, NC 27518 NC License: P-10884



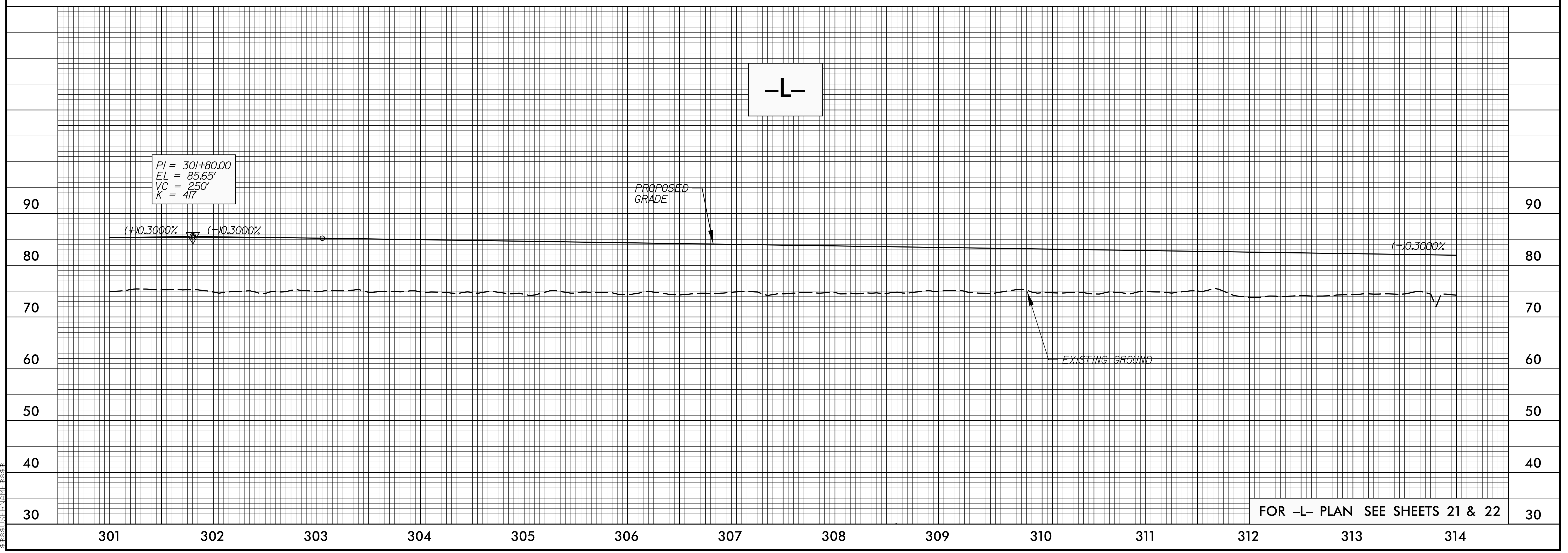
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5/28/17

PROJECT REFERENCE NO. <i>R-5703</i>	SHEET NO. 40
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 034367 ENGINEER J. H. BUCKNER	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
DocuSign <i>Joshua G Dalton</i> 108701168778435 9/14/2017	DocuSign <i>Joshua G Dalton</i> 108845814696733 9/14/2017
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Cary, NC 27518 NC License: E-1084	SUNGATE DESIGN GROUP, P.A. 115 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27608 NC CDR No. G-0890



FOR -L- PLAN SEE SHEETS 20 & 21



FOR -L- PLAN SEE SHEETS 21 & 22

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5/28/17

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

PROJECT REFERENCE NO. **R-5703** SHEET NO. **41**

ROADWAY DESIGN ENGINEER  
 SEAL 034367  
 JOSHUA G. DALTON

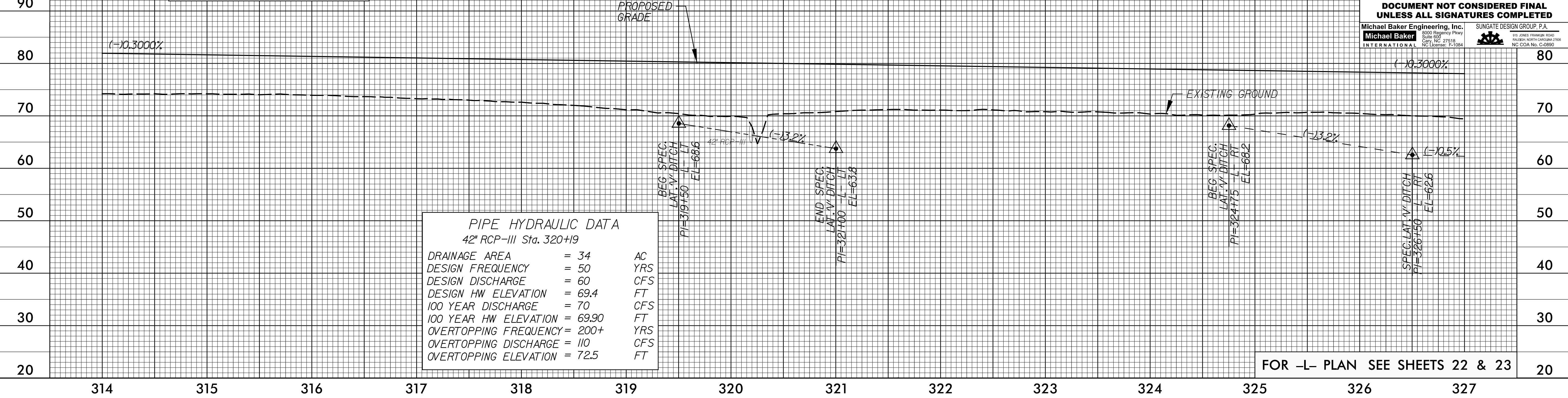
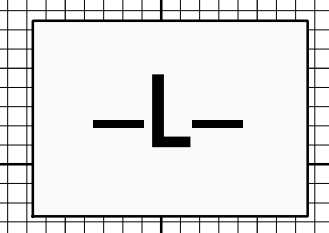
HYDRAULICS ENGINEER  
 SEAL 26971  
 JOSHUA G. DALTON

9/14/2017

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Michael Baker Engineering, Inc. SUNGATE DESIGN GROUP, P.A.  
 8000 Regency Parkway Cary, NC 27518  
 INTERNATIONAL NC License: P-10884

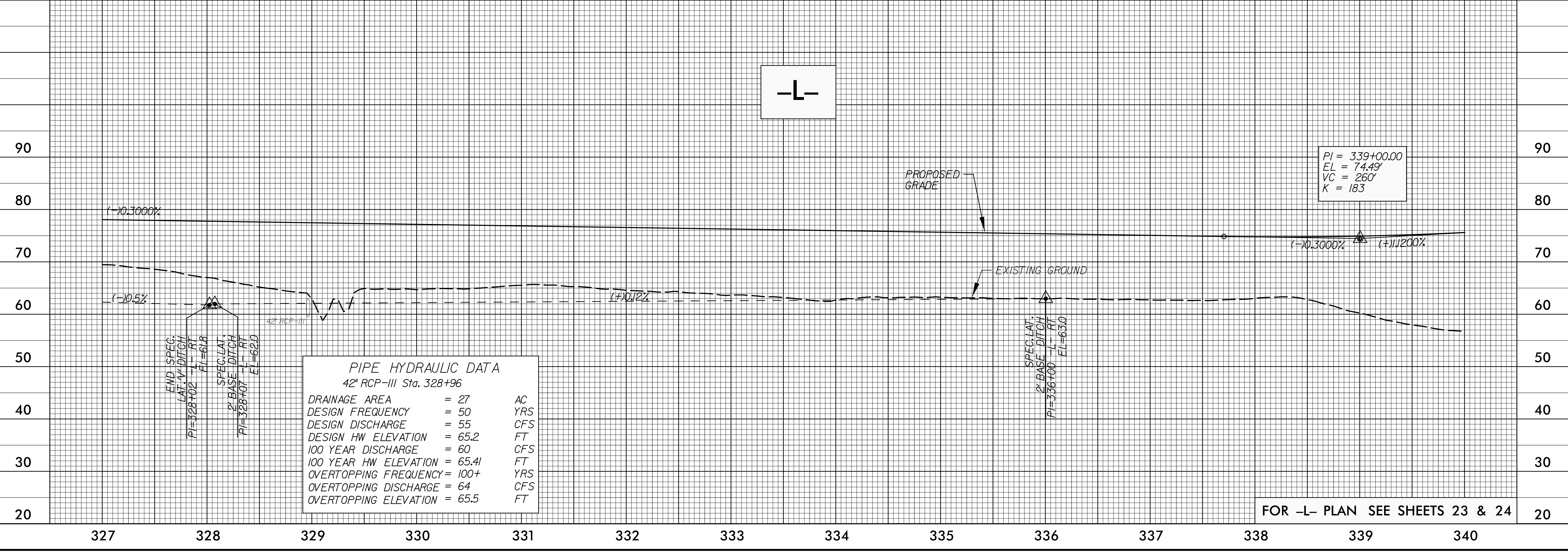
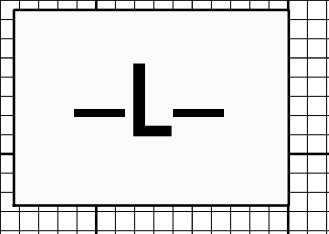
BM16 ELEVATION = 76.43  
 N 579296 E 2444854  
 BL2 STATION 267 + 37.00 182 RIGHT  
 RR SPIKE IN BASE OF 24" GUM



**PIPE HYDRAULIC DATA**  
 42" RCP-III Sta. 320+19

DRAINAGE AREA	= 34	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 60	CFS
DESIGN HW ELEVATION	= 69.4	FT
100 YEAR DISCHARGE	= 70	CFS
100 YEAR HW ELEVATION	= 69.90	FT
OVERTOPPING FREQUENCY	= 200+	YRS
OVERTOPPING DISCHARGE	= 110	CFS
OVERTOPPING ELEVATION	= 72.5	FT

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**PIPE HYDRAULIC DATA**  
 42" RCP-III Sta. 328+96

DRAINAGE AREA	= 27	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 55	CFS
DESIGN HW ELEVATION	= 65.2	FT
100 YEAR DISCHARGE	= 60	CFS
100 YEAR HW ELEVATION	= 65.41	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 64	CFS
OVERTOPPING ELEVATION	= 65.5	FT

PI = 339+00.00  
 EL = 74.49'  
 VC = 260'  
 K = 183

5/28/19

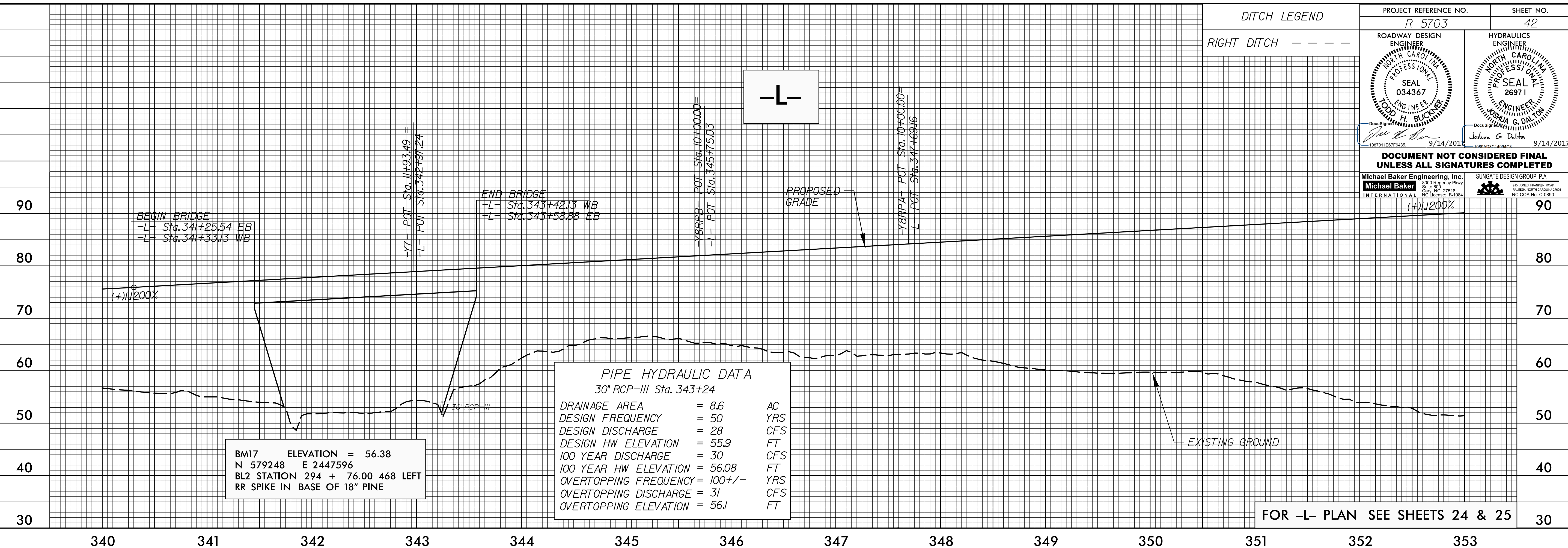
DITCH LEGEND

RIGHT DITCH - - - -

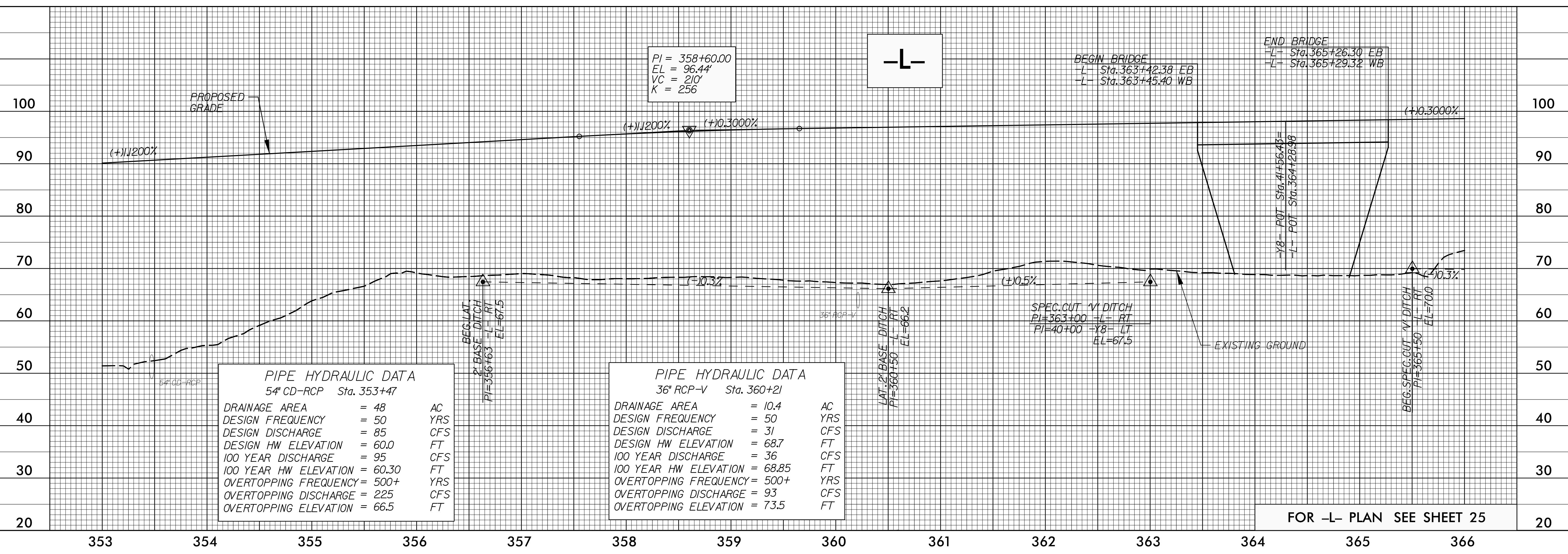
PROJECT REFERENCE NO. <b>R-5703</b>	SHEET NO. <b>42</b>
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 034367 JOSHUA G. DALTON	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 26971 JOSHUA G. DALTON
9/14/2017	9/14/2017

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8000 Regency Parkway  
Charlotte, NC 27518  
NC License: E-1084



FOR -L- PLAN SEE SHEETS 24 & 25



FOR -L- PLAN SEE SHEET 25

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5/28/19

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

PROJECT REFERENCE NO. **R-5703** SHEET NO. **43**

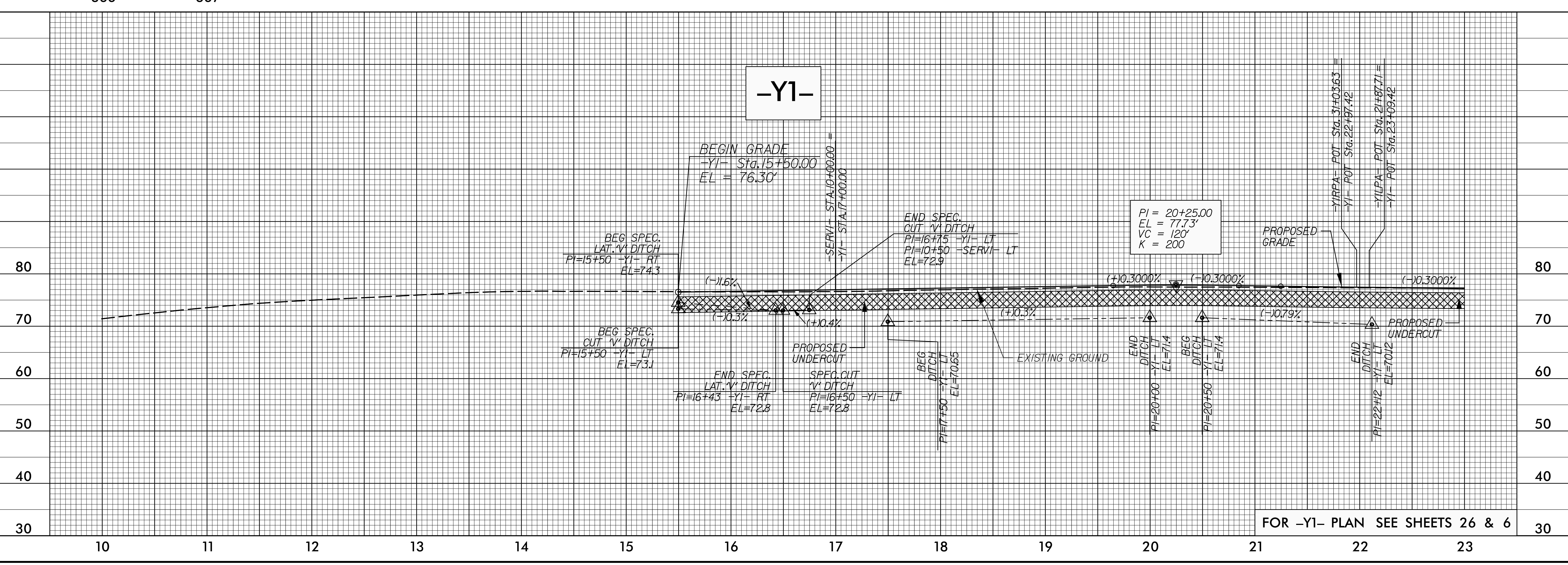
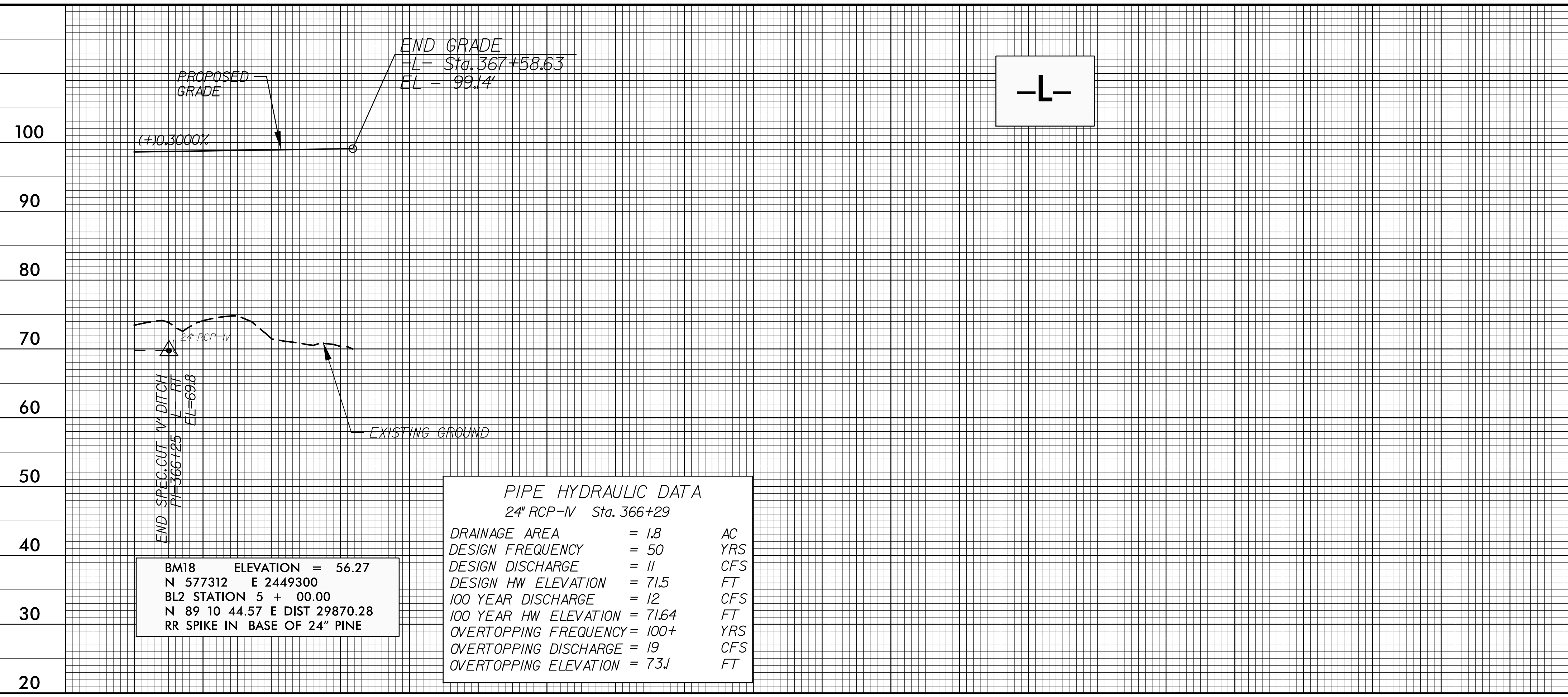
ROADWAY DESIGN ENGINEER  
 JOSHUA G. DALTON  
 SEAL 034367  
 ENGINEER  
 JOSHUA G. DALTON  
 SEAL 26971

HYDRAULICS ENGINEER  
 JOSHUA G. DALTON  
 SEAL 26971  
 ENGINEER  
 JOSHUA G. DALTON  
 SEAL 26971

9/14/2017 9/14/2017

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 8000 Regency Parkway Suite 600 Cary, NC 27518 NC License: F-10884



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5/28/19

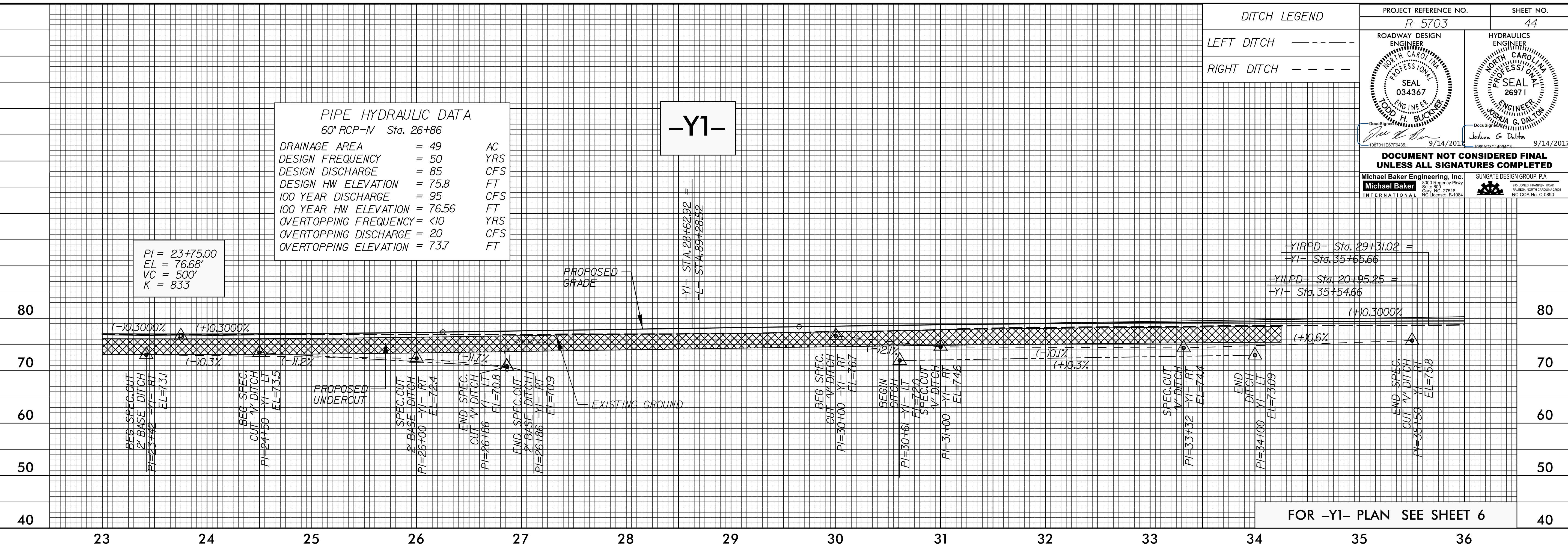
DITCH LEGEND LEFT DITCH - - - - - RIGHT DITCH - - - - -	PROJECT REFERENCE NO. R-5703	SHEET NO. 44
	ROADWAY DESIGN ENGINEER SEAL 034367 H. BUCKNER 9/14/2017	HYDRAULICS ENGINEER SEAL 26971 JOSHUA G. DALTON 9/14/2017
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>		
Michael Baker Engineering, Inc. 8000 Regency Parkway Cary, NC 27518 NC License: F-10884		SUNGATE DESIGN GROUP, P.A. 115 JONES FRANKLIN ROAD HAYDEN, NORTH CAROLINA 27539 NC CDR No. C-28990

**PIPE HYDRAULIC DATA**  
60" RCP-IV Sta. 26+86

DRAINAGE AREA	= 49	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 85	CFS
DESIGN HW ELEVATION	= 75.8	FT
100 YEAR DISCHARGE	= 95	CFS
100 YEAR HW ELEVATION	= 76.56	FT
OVERTOPPING FREQUENCY	= 10	YRS
OVERTOPPING DISCHARGE	= 20	CFS
OVERTOPPING ELEVATION	= 73.7	FT

PI = 23+75.00  
EL = 76.68'  
VC = 500'  
K = 833

-Y1-



**PIPE HYDRAULIC DATA**  
24" RCP-III Sta. 38+41

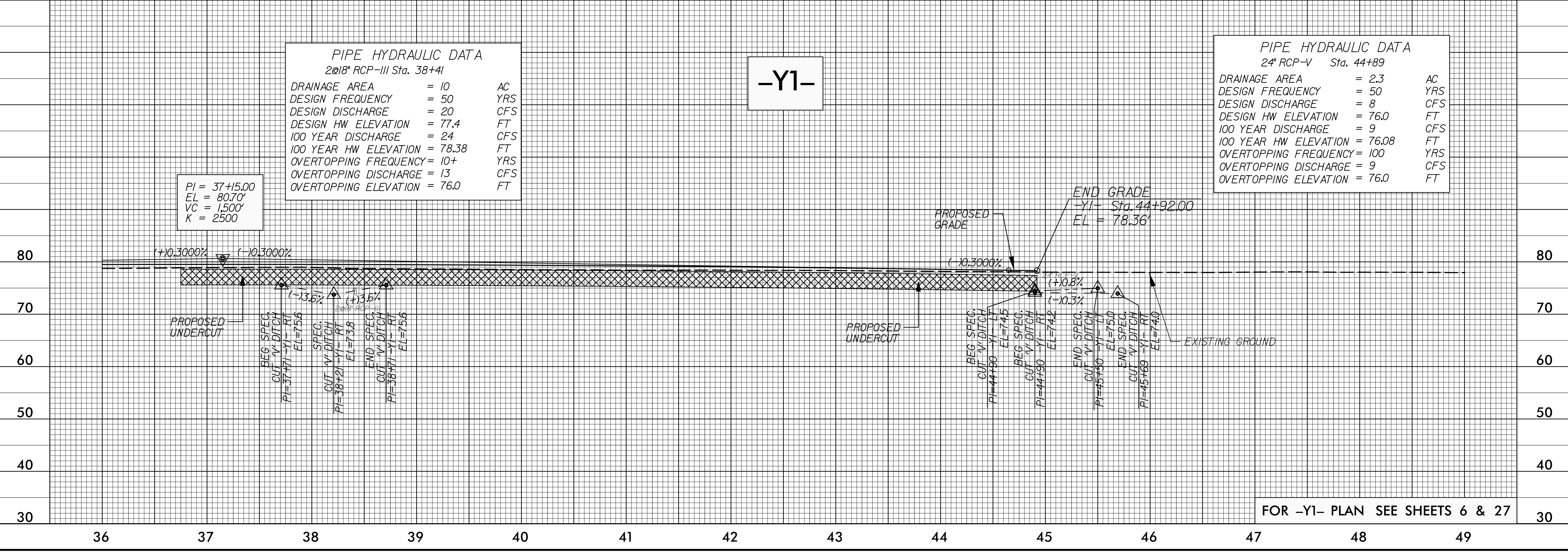
DRAINAGE AREA	= 10	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 20	CFS
DESIGN HW ELEVATION	= 77.4	FT
100 YEAR DISCHARGE	= 24	CFS
100 YEAR HW ELEVATION	= 78.38	FT
OVERTOPPING FREQUENCY	= 10+	YRS
OVERTOPPING DISCHARGE	= 13	CFS
OVERTOPPING ELEVATION	= 76.0	FT

PI = 37+15.00  
EL = 80.70'  
VC = 1,500'  
K = 2500

-Y1-

**PIPE HYDRAULIC DATA**  
24" RCP-V Sta. 44+89

DRAINAGE AREA	= 23	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 8	CFS
DESIGN HW ELEVATION	= 76.0	FT
100 YEAR DISCHARGE	= 9	CFS
100 YEAR HW ELEVATION	= 76.08	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 9	CFS
OVERTOPPING ELEVATION	= 76.0	FT



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5/28/19

**PIPE HYDRAULIC DATA**  
18" RCP-III Sta. 21+27

DRAINAGE AREA	= 2.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 6	CFS
DESIGN HW ELEVATION	= 76.7	FT
100 YEAR DISCHARGE	= 7	CFS
100 YEAR HW ELEVATION	= 77.85	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 7	CFS
OVERTOPPING ELEVATION	= 77.1	FT

**DITCH LEGEND**

LEFT DITCH - - - - -

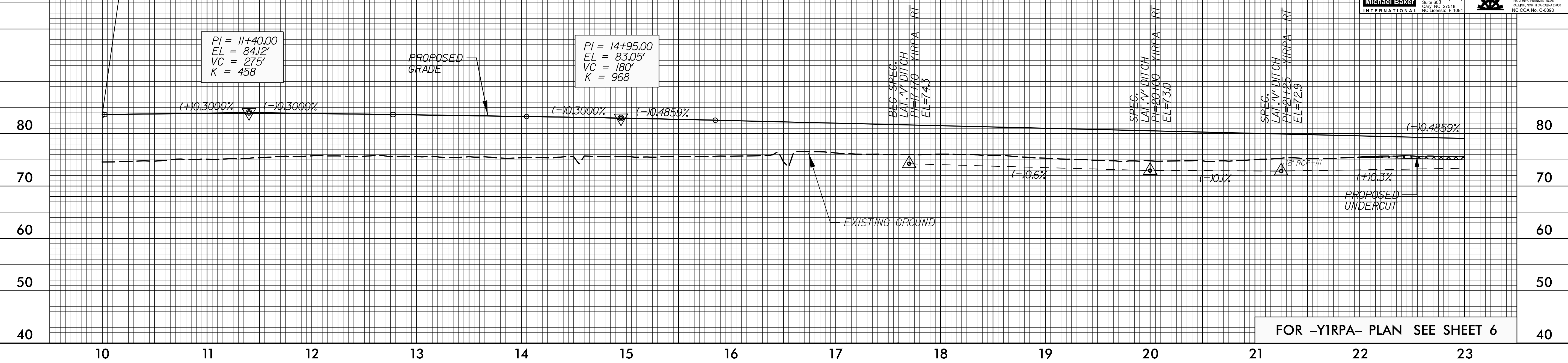
RIGHT DITCH - - - - -

PROJECT REFERENCE NO.	R-5703	SHEET NO.	45
ROADWAY DESIGN ENGINEER	SEAL 034367	HYDRAULICS ENGINEER	SEAL 26971
DATE	9/14/2017	DATE	9/14/2017
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			
Michael Baker Engineering, Inc.	SUNGATE DESIGN GROUP, P.A.		

BEGIN GRADE  
-YIRPA- Sta. 10+00.00 =  
-L- Sta. 108+75.00, 47' LT  
EL = 83.70'

PI = 11+40.00  
EL = 84.12'  
VC = 275'  
K = 458

PI = 14+95.00  
EL = 83.05'  
VC = 180'  
K = 968



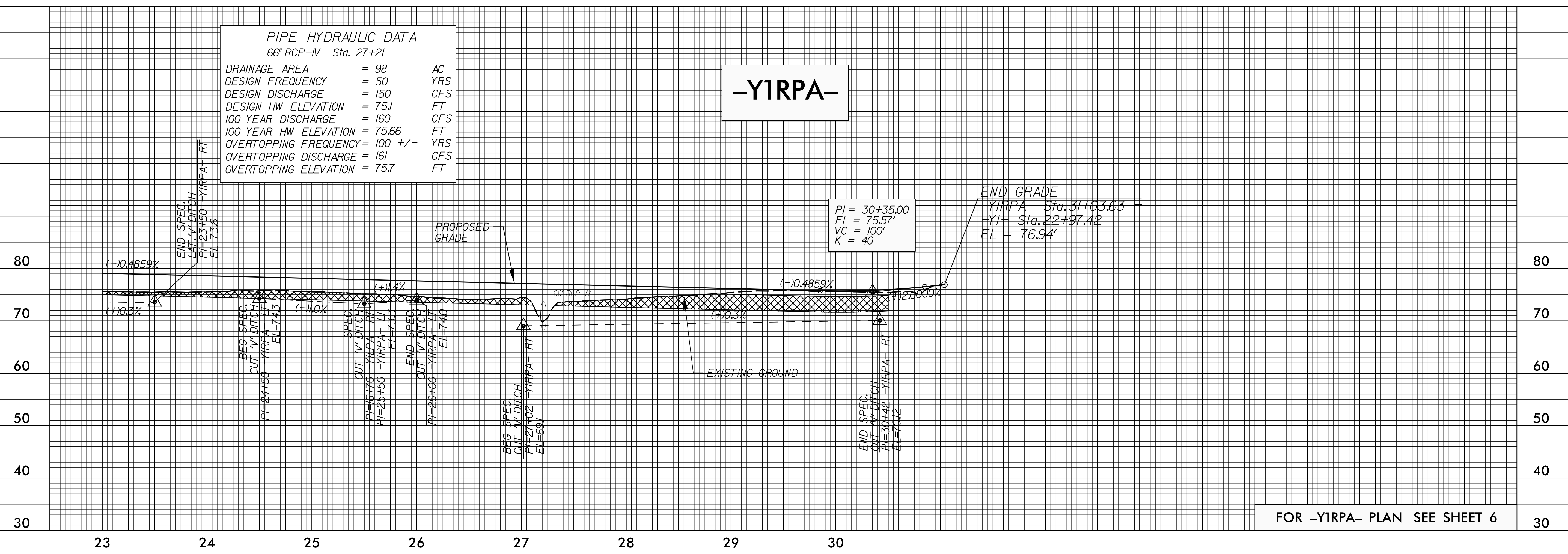
FOR -YIRPA- PLAN SEE SHEET 6

**PIPE HYDRAULIC DATA**  
66" RCP-IV Sta. 27+21

DRAINAGE AREA	= 98	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 150	CFS
DESIGN HW ELEVATION	= 75.1	FT
100 YEAR DISCHARGE	= 160	CFS
100 YEAR HW ELEVATION	= 75.66	FT
OVERTOPPING FREQUENCY	= 100 +/-	YRS
OVERTOPPING DISCHARGE	= 161	CFS
OVERTOPPING ELEVATION	= 75.7	FT

PI = 30+35.00  
EL = 75.57'  
VC = 100'  
K = 40

END GRADE  
-YIRPA- Sta. 31+03.63 =  
-YI- Sta. 22+97.42  
EL = 76.94'



FOR -YIRPA- PLAN SEE SHEET 6

15 SEP 2017 0:38 \\R-5703-RDY-PRO-SHT.dgn

5/28/2017

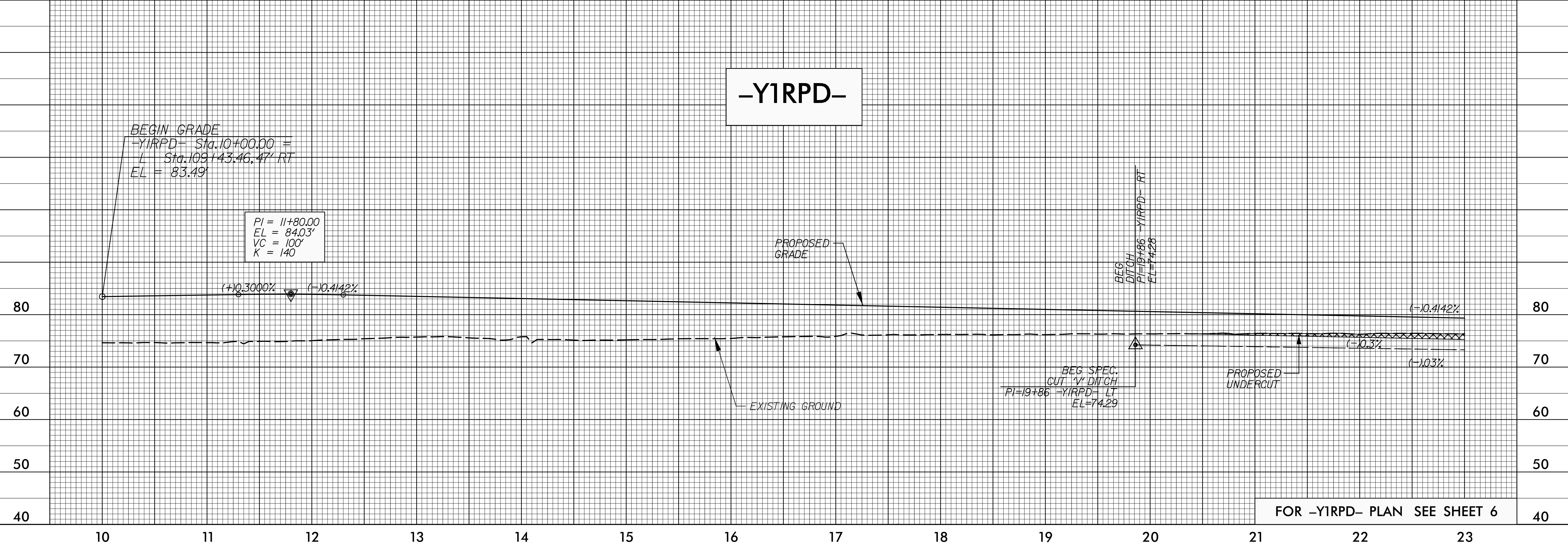
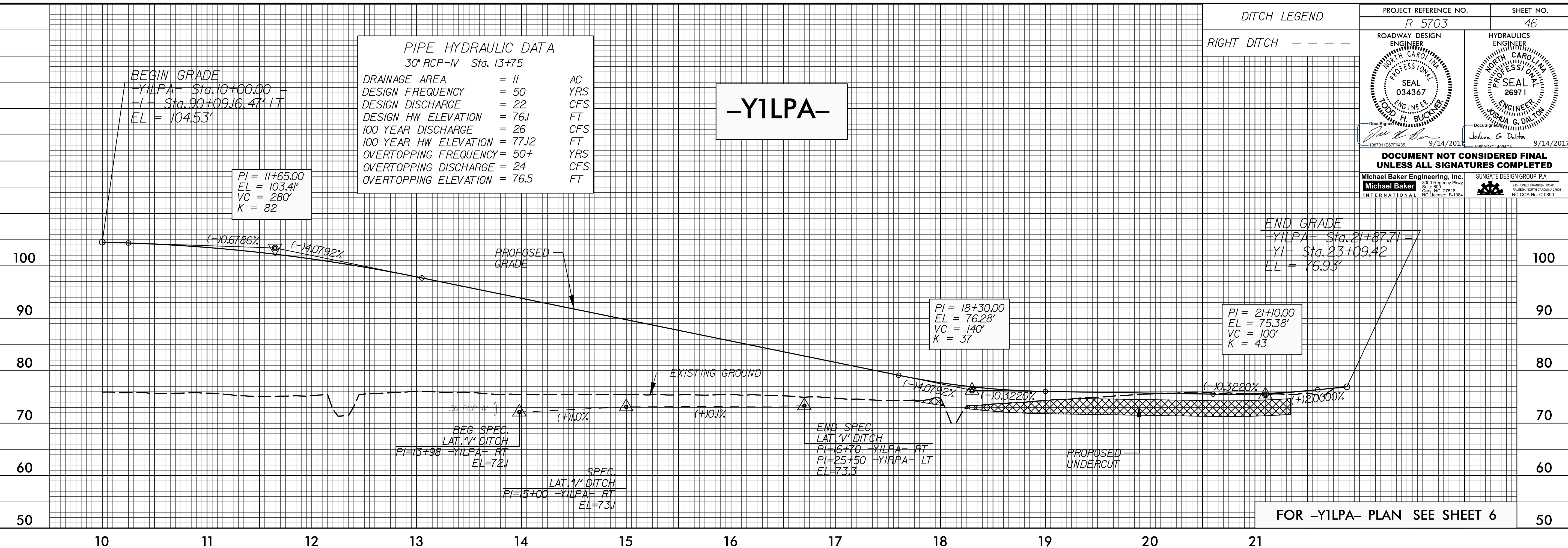
**DITCH LEGEND**

RIGHT DITCH - - - -

PROJECT REFERENCE NO. <b>R-5703</b>	SHEET NO. <b>46</b>
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 034367 JOSHUA G. DALTON 9/14/2017	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 26971 JOSHUA G. DALTON 9/14/2017
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
Michael Baker Engineering, Inc. 8000 Regency Parkway Suite 600 Cary, NC 27518 NC License: E-10884	SUNGATE DESIGN GROUP, P.A. 115 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27609 NC CDR No. C-0890

**PIPE HYDRAULIC DATA**  
30" RCP-N Sta. 13+75

DRAINAGE AREA	= 11	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 22	CFS
DESIGN HW ELEVATION	= 76.1	FT
100 YEAR DISCHARGE	= 26	CFS
100 YEAR HW ELEVATION	= 77.12	FT
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING DISCHARGE	= 24	CFS
OVERTOPPING ELEVATION	= 76.5	FT



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