PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER PHILLIP E. ROGERS
3/29/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TAYLOR M. CARTER
3/29/2022

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

NAD 83/2011

-L_LT-

PIs Sta 48+44.89	PI Sta 52+00.98	PIs Sta 55+52.99
Θs = 6° 30' 13.8"	Δ = 18° 44' 29.8" (RT)	Θs = 6° 30' 13.8"
Ls = 336.00'	D = 3° 52' 16.8"	Ls = 336.00'
LT = 224.15'	L = 484.11'	LT = 224.15'
ST = 112.14'	T = 244.24'	ST = 112.14'
	R = 1,480.00'	

-YILT-

PI Sta 19+48.66	PIs Sta 25+32.65
Δ = 29° 44' 41.9" (LT)	Θs = 2° 48' 31.0"
D = 2° 48' 31.0"	Ls = 200.00'
L = 1,059.06'	LT = 133.35'
T = 541.75'	ST = 66.68'
R = 2,040.00'	
SE = 0.06	
DS = 55mph	

MATCHLINE -YIRT- STA. 23+00, SEE SHEET 10

MATCHLINE -L- STA. 45+00, SEE SHEET 6

MATCHLINE -L- STA. 59+00, SEE SHEET 8

-YILT- CS Sta. 24+65.97

-YILT- ST Sta. 26+65.97

-YIRT- POC STA. 26+07.66
BEGIN APPROACH SLAB
-YIRT- POC STA. 26+31.00
BEGIN BRIDGE

-L_LT- TS Sta. 46+20.74

-L_LT- SC Sta. 49+56.74

-L- POC STA. 49+91.10 =
-YIRT- POC STA. 27+54.43
Δ = 30° 34' 12.4"

-L- CS Sta. 54+04.47

-L_LT- CS Sta. 54+40.85

-YILT- POT Sta. 33+16.69 =
-L_LT- POS Sta. 56+11.71 36' LT

-L_LT- SRS Sta. 57+76.85

-L- TS Sta. 58+97.47

-L- SC Sta. 49+17.55

-L- TS Sta. 46+11.55

-L- ST Sta. 57+40.41

-L_RT- CS Sta. 55+30.36

-YIRT- PCC Sta. 32+50.64

-L_RT- SRS Sta. 58+66.36

-DET02 EB-

-DET01 EB-

-DET01 WB-

-L LT-

-L RT-

-YIRT-

-YILT-

-L-

-L_LT-

-L_RT-

-Y1RT-

-Y1LT-

-Y1RT- POC STA. 29+88.00
END BRIDGE
-Y1RT- POC STA. 30+11.05
END APPROACH SLAB

END TIP PROJECT B-3186
BEGIN TIP PROJECT B-5898
-L- STA. 46+11.55 =
-L_LT- STA. 46+01.94 11' LT. =
-L_RT- STA. 46+28.38 11' RT.

AADT YEAR 2022 / 2042
(VOLUME IN 100s)

US 19 /US 276 (-Y1RT- /-Y1LT-) — 160/182
US 23 / US 74 — 122/138
US 19 / US 23 / US 74 — 351/456
US 23 /US 74 (-L-) — 473/594

NO DECK DRAINS REQUIRED

SPREAD ANALYSIS
DA= 0.28 AC
I= 4.0 IN/HR
C= 0.9
Q= 1.0 CFS
LONGITUDINAL SLOPE= 0.024 ft/ft
CROSS SLOPE= 0.04 ft/ft
SHOULDER WIDTH= 4 FT.
SPREAD= 3.9 FT.

-L-

PIs Sta 48+35.70	PI Sta 51+77.84	PIs Sta 55+16.60	PIs Sta 60+30.80
Θs = 6° 30' 13.8"	Δ = 17° 41' 20.2" (RT)	Θs = 6° 30' 13.8"	Θs = 0° 55' 59.4"
Ls = 336.00'	D = 3° 52' 16.8"	Ls = 336.00'	Ls = 200.00'
LT = 224.15'	L = 456.92'	LT = 224.15'	LT = 133.34'
ST = 112.14'	T = 230.29'	ST = 112.14'	ST = 66.67'
	R = 1,480.00'		
	SE = 0.08		
	DS = 65mph		

-Y1RT-

PI Sta 23+10.19	PI Sta 34+31.85	PIs Sta 36+62.50
Δ = 33° 39' 33.7" (LT)	Δ = 7° 47' 39.3" (LT)	Θs = 1° 36' 55.7"
D = 1° 44' 10.5"	D = 2° 09' 14.3"	Ls = 150.00'
L = 1,938.64'	L = 361.85'	LT = 100.00'
T = 998.19'	T = 181.21'	ST = 50.00'
R = 3,300.00'	R = 2,660.00'	
SE = 0.04	SE = 0.05	
DS = 55mph	DS = 55mph	

-L_RT-

PIs Sta 47+19.53	PI Sta 51+84.75	PIs Sta 56+42.44	PIs Sta 59+66.36
Θs = 4° 58' 28.3"	Δ = 20° 41' 42.0" (RT)	Θs = 4° 58' 28.3"	Θs = 0° 30' 32.9"
Ls = 336.00'	D = 2° 57' 39.7"	Ls = 336.00'	Ls = 150.00'
LT = 224.09'	L = 698.91'	LT = 224.09'	LT = 100.00'
ST = 112.08'	T = 353.31'	ST = 112.08'	ST = 50.00'
	R = 1,935.00'		

SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS

FOR -L_LT- PROFILE, SEE PROFILE SHEET 13 & 14
FOR -L_RT- PROFILE, SEE PROFILE SHEET 13 & 14
FOR -Y1RT- PROFILE, SEE PROFILE SHEET 17 & 18
FOR -Y1LT- PROFILE, SEE PROFILE SHEET 17 & 18

PLOT DRIVER: NCDOT.pdf_color_eng_50.plt PENTABLE: NCDOT_pshpFl.tbl
USER: HBARE DATE: 3/29/2022 TIME: 11:03:20 AM
FILE: NCDOT\NCDOT-B3186_T02.c_\6.0_CAD_BIM\6.2_Work_In_Progress\B-3186-B-5898\Roadway\Proj\B3186-B5898_RDY_PSH07.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32864 ENGINEER Phillip C. Kerby

3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049035 ENGINEER Taylor M. Carter

3/17/2022

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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

ALIGNMENT -RR- BASED ON RIGHT-OF-WAY AND TRACK MAP, SOUTHERN RAILWAY COMPANY, MURPHY DIVISION, STATION 1267+20 TO 1478+40, DATED DECEMBER 31, 1927.
ALIGNMENT -RR- TIED TO FIELD SURVEY AT PC STA. 310+32.

NAD 83/2011

-L_LT-

PIs Sta 58+60.86	PI Sta 61+38.96	PIs Sta 64+16.83	PI Sta 71+70.95
Θs = 0° 35' 16.4"	Δ = 4° 24' 15.2" (LT)	Θs = 0° 35' 16.4"	Δ = 1° 59' 02.2" (RT)
Ls = 126.00'	D = 0° 55' 59.4"	Ls = 126.00'	D = 0° 35' 22.1"
LT = 84.00'	L = 471.97'	LT = 84.00'	L = 336.57'
ST = 42.00'	T = 236.10'	ST = 42.00'	T = 168.30'
	R = 6,140.00'		R = 9,720.00'

-L-

PIs Sta 60+30.80	PI Sta 62+40.07	PIs Sta 64+49.30	PIs Sta 71+33.82
Θs = 0° 55' 59.4"	Δ = 2° 39' 39.7" (LT)	Θs = 0° 55' 59.4"	Δ = 1° 35' 45.0" (RT)
Ls = 200.00'	D = 0° 55' 59.4"	Ls = 200.00'	D = 0° 35' 22.1"
LT = 133.34'	L = 285.17'	LT = 133.34'	L = 270.73'
ST = 66.67'	T = 142.61'	ST = 66.67'	T = 135.37'
	R = 6,140.00'		R = 9,720.00'
	SE = 0.03		SE = 0.03
	DS = 65mph		DS = 65mph

SPREAD ANALYSIS – EB
DA= 0.3 AC
I= 4.0 INHR
C= 0.9
Q= 0.9 CFS
LONGITUDINAL SLOPE= 0.003 ft/ft
CROSS SLOPE= 0.02 ft/ft
SHOULDER WIDTH= 10 FT.
SPREAD= 8.5 FT.

SPREAD ANALYSIS – MEDIAN
DA= 0.1 AC
I= 4.0 INHR
C= 0.9
Q= 0.3 CFS
LONGITUDINAL SLOPE= 0.003 ft/ft
CROSS SLOPE= 0.02 ft/ft
SHOULDER WIDTH= 6 FT.
SPREAD= 5.9 FT.

SPREAD ANALYSIS – WB
DA= 0.33 AC
I= 4.0 INHR
C= 0.9
Q= 1.2 CFS
LONGITUDINAL SLOPE= 0.003 ft/ft
CROSS SLOPE= 0.02 ft/ft
SHOULDER WIDTH= 10 FT.
SPREAD= 9.5 FT.

NO DECK DRAINS REQUIRED

MATCHLINE -L- STA. 59+00, SEE SHEET 7

MATCHLINE -L- STA. 73+00, SEE SHEET 9

DAVID B. ADAMS DB 580 PG 930

JANE J. YOUNG DB 467 PG 733

THUYLIEU T. NGUYEN DB 604 PG 2100

RICHARD T. KERBY DB 650 PG 298

PROPERTY OWNER UNKNOWN

K & HB ENTERPRISES, LLC DB 552 PG 2247

MCDILL INC. DB 406 PG 797

ALLISON OUTDOOR ADVERTISING, LTD. DB 404 PG 557

THE FIG TREE OF WNC, LLC DB 882 PG 81 DB 869 PG 480

W.D. SCHULHOFER 1996E PG 414 DB 314 PG 132

MCDILL INC. DB 351 PG 210

THE TRUSTEES OF HAYWOOD TECHNICAL COLLEGE DB 345 PG 228

-L_LT- SC Sta. 59+02.85
-L- SC Sta. 60+97.47
-L_LT- CS Sta. 63+82.63
-L_LT- CS Sta. 63+74.83
-L_LT- ST Sta. 65+00.83
-L- ST Sta. 65+82.63
-RR- PC Sta. 1307+03.14
-RR- PT Sta. 1307+89.92
-RR- PC Sta. 1308+35.40
-L- POT Sta. 68+72.05 =
-RR- POC Sta. 311+02.79
-L LT- POT STA. 68+03.25
BEGIN BRIDGE
-L LT- POT STA. 67+87.49
BEGIN APPROACH SLAB
-L LT- POT STA. 69+62.37
END BRIDGE
-L LT- POT STA. 69+78.13
END APPROACH SLAB
-L_LT- PC Sta. 70+02.65
-L- PT Sta. 72+69.17
-L_LT- PC Sta. 70+19.82
-L_LT- PT Sta. 72+90.89
-L- PC Sta. 69+98.45
-L RT- POT STA. 67+76.45
BEGIN BRIDGE
-L RT- POT STA. 67+60.73
BEGIN APPROACH SLAB
-L RT- POT STA. 69+50.70
END BRIDGE
-L RT- POT STA. 69+66.42
END APPROACH SLAB
-YIRT- SC Sta. 39+12.49
-YIRT- CS Sta. 41+60.85
-L_RT- CS Sta. 65+25.52
-YIRT- ST Sta. 43+10.85
-YIRT- POT Sta. 44+31.29 =
-L_RT- ST Sta. 66+75.52
-L_RT- SC Sta. 60+16.36
-YIRT- SRS Sta. 37+62.49

TOE PROTECTION W/CLASS 'B' RIPRAP EST 4 TONS 7 SY GEOTEXTILE SEE DETAIL N

CONCRETE DITCH BEHIND RETAINING WALL SEE SHEET 2D-1 DETAIL 'D'

353.55' UNIFORM MEDIAN PAVED SHOULDER TAPER LT MEDIAN 12' TO 6'

350' UNIFORM MEDIAN PAVED SHOULDER TAPER RT MEDIAN 10' TO 6'

200' UNIFORM TRANSITION MEDIAN PAVED SHOULDER WIDTH 42' (TYP) 6' TO 10' RW6

271.07' UNIFORM TRANSITION MEDIAN PAVED SHOULDER WIDTH 6' TO 10'

780' UNIFORM TAPER 48' TO 36'

CLASS 'I' RIP RAP EST. 5 TONS 14 SY GEO-TEXTILE

2' STANDARD BASE DITCH W/CLASS 'I' RIPRAP EST 181 TONS 243 SY GEOTEXTILE L=180', SLOPE=13.09% SEE SHEET 2D-1 DETAIL I

2' STANDARD BASE DITCH W/CLASS 'B' RIPRAP L=39', SLOPE=16.67% SEE SHEET 2D-1 DETAIL S

2' STANDARD BASE DITCH W/CLASS 'B' RIPRAP L=98', SLOPE=14.20% SEE SHEET 2D-1 DETAIL S

PRE VS. POST SITE 6:
PRE VS POST DISCHARGE FOR OUTLET LOCATION 71+03 -L- LT
DISCHARGE INCREASE = -0.88%

-YIRT-

PIs Sta 36+62.50	PIs Sta 38+62.50	PI Sta 40+36.71	PIs Sta 42+10.85
Θs = 1° 36' 55.7"	Θs = 1° 01' 23.3"	Δ = 3° 23' 17.0" (RT)	Θs = 1° 01' 23.3"
Ls = 150.00'	Ls = 150.00'	D = 1° 21' 51.1"	Ls = 150.00'
LT = 100.00'	LT = 100.00'	L = 248.36'	LT = 100.00'
ST = 50.00'	ST = 50.00'	T = 124.21'	ST = 50.00'
		R = 4,200.00'	
		SE = 0.03	
		DS = 50mph	

-L_RT-

PIs Sta 59+66.36	PI Sta 62+71.02	PIs Sta 65+75.52	PI Sta 71+55.36
Θs = 0° 30' 32.9"	Δ = 3° 27' 23.3" (LT)	Θs = 0° 30' 32.9"	Δ = 1° 35' 52.2" (RT)
Ls = 150.00'	D = 0° 40' 43.9"	Ls = 150.00'	D = 0° 35' 22.1"
LT = 100.00'	L = 509.16'	LT = 100.00'	L = 271.07'
ST = 50.00'	T = 254.66'	ST = 50.00'	T = 135.54'
	R = 8,440.00'		R = 9,720.00'
			SE = N C
			DS = 60mph

-RR-

PI Sta 1307+46.53	PI Sta 1310+39.71
Δ = 1° 25' 14.2" (RT)	Δ = 16° 43' 25.2" (RT)
D = 1° 38' 13.3"	D = 4° 07' 19.2"
L = 86.78'	L = 405.72'
T = 43.39'	T = 204.31'
R = 3,500.00'	R = 1,390.00'

SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS

FOR -L LT- PROFILE, SEE PROFILE SHEET 14 & 15
FOR -L RT- PROFILE, SEE PROFILE SHEET 15 & 16
FOR -Y1RT- PROFILE, SEE PROFILE SHEET 18 & 19

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt PENTABLE: NCDOT_pshdfl.tbl
USER: HBARE DATE: 3/16/2022 TIME: 1:59:44 PM
FILE: NCDOT\NCDOT-B3186_T02.c.\6.0_CAD_BIM\6.2_Work_In_Progress\B-3186-B-5898\Roadway\Pro]\B3186-B5898_RDY_PSH08.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32861 ENGINEER PHILLIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049035 ENGINEER TAYLOR M. CARTER
3/17/2022

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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

-L_LT-			
PI Sta 71+70.95	PIs Sta 74+99.24	PI Sta 76+85.23	PIs Sta 78+71.03
Δ = 1° 59' 02.2" (RT)	Θs = 2° 45' 34.8"	Δ = 6° 05' 31.5" (LT)	Θs = 2° 45' 34.8"
D = 0° 35' 22.1"	Ls = 210.00'	D = 2° 37' 41.7"	Ls = 210.00'
L = 336.57'	LT = 140.02'	L = 231.79'	LT = 140.02'
T = 168.30'	ST = 70.02'	T = 116.01'	ST = 70.02'
R = 9,720.00'		R = 2,180.00'	

NAD 83/2011

ROBERT A. GEVJAN, JR.
DB 859 PG 1556

VERONA S. LINDSEY
DB 324 PG 845

K & HB ENTERPRISES, LLC
DB 552 PG 2247

TO I-40/ASHEVILLE

MATCHLINE -L- STA. 73+00, SEE SHEET 8

-L_LT- PT Sta. 73+39.22
-L_LT- TS Sta. 73+59.22
-L_LT- SC Sta. 75+69.22
-L_LT- CS Sta. 78+01.02
-L_LT- ST Sta. 80+11.02
-L- TS Sta. 74+00.70
-L- SC Sta. 76+10.70
-L- CS Sta. 78+32.58
-L- ST Sta. 80+42.58
-L LT- POT Sta. 80+64.17 =
-L- POT Sta. 80+69.89 20.16' LT
-L_LT- POT Sta. 81+54.17 =
-L- POT Sta. 81+59.89 19.96' LT

-L LT- +00
90' LT
-L LT- +02.28
PROP. WW FENCE
-L LT- +48
EX. R/W BEG WW FENCE
-L LT- +88
62' LT
335' UNIFORM TAPER
98
END WALL BEGIN SBG
-L LT- +37.28
-L LT- +05.53
EX. R/W END WW FENCE
+50
END SBG BEGIN T BARRIER
-L LT- +99
EX. R/W
-L LT- +55
PROP. R/W
-L LT- +50
61' LT
30' (TYP)
+35.88 -L LT- END T BARRIER TIE TO EX CONC. BARRIER
+75 -L LT- TIE TO EX PS
RETAIN SYSTEM
RETAIN
PRE VS. POST SITE 3: (LOCATED AT END OF EXISTING 30" CMP; 62' PAST END OF PLANSHEET)
PRE VS POST DISCHARGE FOR OUTLET LOCATION -84+92 -L- M DISCHARGE INCREASE = 12.53%
N 65° 26' 15.2" E
N 65° 02' 58.0" E
N 65° 03' 05.2" E
N 53° 49' 34.2" E
N 53° 41' 54.7" E
75+00
80+00
DET01 EB
DET02 WBX2
DET01 WB
DET02 EBX2
-L LT-
-L RT-
REMOVE
TB 2GI
TB JB w/MH
18" RCP-IV
24" RCP-IV
2GI
2GI-A
TIE TO EXIST. GUARDRAIL
RETAIN SYSTEM
+13.37 END PAVED SHOULDER
+08.72 -L RT- END SBG
2' SPECIAL CUT BASE DITCH SEE SHEET 2D-1 DETAIL R
-L_RT- POT Sta. 83+34.64=
-L- POT Sta. 83+25.95 19.48' RT
END TIP PROJECT B-3186/B-5898
-L- STA. 81+35.95
-L RT- POT Sta. 81+44.64 =
-L- POT Sta. 81+35.95 20.03' RT
-L_RT- ST Sta. 80+84.64
PROP. ROCK PLATING
+85.50 -L RT- END EXPRESSWAY GUTTER TRANSITION TO SBG
+66.05 -L RT- BEGIN SBG END TRANSITION
-L_RT- TS Sta. 74+36.30
-L_RT- SC Sta. 76+46.30
-L_RT- CS Sta. 78+74.64
780' UNIFORM TAPER 48' TO 36'
18" CSP W/ELBOWS
BRG & INT CONTROL ACCESS LINE
BEGIN 24" C&G
SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS
FOR -L LT- PROFILE, SEE PROFILE SHEET 15 & 16
FOR -L RT- PROFILE, SEE PROFILE SHEET 16

-L_RT-		
PIs Sta 75+76.31	PI Sta 77+60.57	PIs Sta 79+44.66
Θs = 2° 45' 34.8"	Δ = 6° 00' 05.3" (LT)	Θs = 2° 45' 34.8"
Ls = 210.00'	D = 2° 37' 41.7"	Ls = 210.00'
LT = 140.02'	L = 228.34'	LT = 140.02'
ST = 70.02'	T = 114.28'	ST = 70.02'
	R = 2,180.00'	

-L-		
PIs Sta 75+40.71	PI Sta 77+21.73	PIs Sta 79+02.59
Θs = 2° 45' 34.8"	Δ = 5° 49' 53.7" (LT)	Θs = 2° 45' 34.8"
Ls = 210.00'	D = 2° 37' 41.7"	Ls = 210.00'
LT = 140.02'	L = 221.88'	LT = 140.02'
ST = 70.02'	T = 111.04'	ST = 70.02'
	R = 2,180.00'	
	SE = 0.07	
	DS = 65mph	

VP WAYNESVILLE, LLC
DB 810 PG 1554

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt PENTABLE: NCDOT_pshpfl.tbl
USER: HBARE DATE: 3/16/2022 TIME: 2:03:05 PM
FILE: NCDOT\NCDOT-B3186_T02.c.\6.0_CAD_BIM\6.2_Work_In_Progress\B-3186-B-5898\Roadway\Proj\B3186-B5898_RDY_PSH09.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32867 ENGINEER PHILLIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049035 ENGINEER TAYLOR M. CARTER
3/17/2022

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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

NAD 83/2011

-YILT-

PIs Sta 13+40.26	PI Sta 19+48.66
Θs = 2° 48' 31.0"	Δ = 29° 44' 41.9" (LT)
Ls = 200.00'	D = 2° 48' 31.0"
LT = 133.35'	L = 1,059.06'
ST = 66.68'	T = 541.75'
	R = 2,040.00'
	SE = 0.06
	DS = 55mph

-YIRT-

PIs Sta 12+45.34	PI Sta 23+10.19
Θs = 1° 44' 10.5"	Δ = 33° 39' 33.7" (LT)
Ls = 200.00'	D = 1° 44' 10.4"
LT = 133.34'	L = 1,938.64'
ST = 66.67'	T = 998.19'
	R = 3,300.00'
	SE = 0.04
	DS = 55mph

PRE VS. POST SITE 4:
(LOCATED IN EXISTING DRAW TO RICHLAND CREEK; 42' PAST END OF PLANSHEET)

PRE VS POST DISCHARGE FOR OUTLET LOCATION 8+53 -Y1LT- LT
DISCHARGE INCREASE = 0.61%

BEGIN CONSTRUCTION
BEGIN MILL/FILL AT END OF EXISTING BRIDGE (APPROX. 350' W. OF BEGIN GRADE)

BEGIN CONSTRUCTION
BEGIN MILL/FILL AT END OF EXISTING BRIDGE (APPROX. 330' W. OF BEGIN GRADE)

TO US-276

BEGIN GRADE
END MILL/FILL
-YILT- STA. 13+19.56

BEGIN GRADE
END MILL/FILL
-YIRT- STA. 13+20.00

-YILT- POT Sta. 10+00.00

-YILT- TS Sta. 12+06.91

-YILT- SC Sta. 14+06.91

-YIRT- TS Sta. 11+12.00

-YIRT- SC Sta. 13+12.00

-YIRT- POT Sta. 10+00.00

-YILT- SC Sta. 14+06.91 TO -YIRT- SC Sta. 13+12.00, SEE SHEET 7

PROPERTY OWNER UNKNOWN

LAKE JUNALUSKA ASSEMBLY, INC
DB 34 PG 476

CHARLES MADISON HOLLAND
DB 884 PG 2300
DB 594 PG 2329
DB 364 PG 264

ALAN CHARLES MARKOS
DB 909 PG 2275

KENNETH M. LAMBERT
DB 465 PG 1327

KENNETH M. LAMBERT
DB 557 PG 2081

KENNETH M. LAMBERT
DB 483 PG 2639

KENNETH M. LAMBERT
DB 483 PG 2639

WARREN C. BLACK
DB 466 PG 1490

RICHARD DEAN TRADER
DB 476 PG 651

JOSEPH WILLIAM COLLINS
DB 466 PG 1775

SOUTHERN ASSEMBLY
DB 34 PG 476

JUDITH D. ALLEN
DB 522 PG 1838

CHARLES L. TERRELL, JR.
DB 474 PG 707

CLAUDIA BICKLEY DAVIS
DB 476 PG 1960

LAKE JUNALUSKA ASSEMBLY, INC
DB 34 PG 476

CLASS 'I' RIP RAP
EST. 5 TONS
14 SY GEO-TEXTILE

CLASS 'I' RIP RAP
EST. 3 TONS
10 SY GEO-TEXTILE

CLASS 'B' RIP-RAP END SBG
EST. 3 TONS
10 SY GEO-TEXTILE

CLASS 'I' RIP RAP
EST. 3 TONS
10 SY GEO-TEXTILE

ELLIPTICAL 19"x30" RCP CLASS-III

12" FUNNEL DRAIN

GREU TL-3

FILL WITH FLOWABLE FILL

CONCRETE DITCH BEHIND RETAINING WALL SEE SHEET 2D-1 DETAIL 'D'

CONCRETE DITCH IN FRONT OF RETAINING WALL SEE SHEET 2D-1 DETAIL 'D'

660' OUTSIDE LANE DROP (24' - 16')

RETAIN SYSTEM

RETAIN -Y1LT- +00 SYSTEM

RETAIN -YIRT- SYSTEM

REMOVE CB

REMOVE

PRE VS. POST SITE 7:
PRE VS POST DISCHARGE FOR OUTLET LOCATION 14+64 -YIRT- RT
DISCHARGE INCREASE = -7.53%

SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS

FOR -Y1RT- PROFILE, SEE PROFILE SHEET 17
FOR -Y1LT- PROFILE, SEE PROFILE SHEET 17
SEE SHEET 2B-1 FOR INTERSECTION DETAIL

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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	11

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32562 ENGINEER PHILLIP E. ROGERS
Phillip E. Rogers
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TAYLOR M. CARTER
3/17/2022

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REVISIONS

PLOT DRIVER: NCDOT_pdf_color-eng-50.plt
USER: HBARE
FILE: \
PENTABLE: B-3186 B-5898 NCDOT_pshpfl.tbl
DATE: 1/13/2022
TIME: 6:58:48 AM

–L_ LT–

–L– STA. 15+00.00 =
–L LT– STA. 15+00.00 13.27′ RT
EL. 2691.75′
BEGIN PROJECT
BEGIN CONSTRUCTION

PI = 16+00.00
EL = 2,689.43′
K = 1493
VC = 200′
V = 80+ MPH

(–)2.3224%
(–)2.4564%
PROPOSED GRADE
EXISTING GROUND

FOR –L_LT– PLAN, SEE PLAN SHEET 4

2,750 2,740 2,730 2,720 2,710 2,700 2,690 2,680 2,670 2,660

15+00 16+00 17+00 18+00 19+00

–L_ RT–

–L– STA. 15+00.00 =
–L RT– STA. 15+00.00 13.42′ LT
EL. 2691.90′
BEGIN PROJECT
BEGIN CONSTRUCTION

PI = 15+80.00
EL = 2,689.66′
K = 313
VC = 160′
V = 80 MPH

STA. 16+50.00 RT
ELEV 2705.00

STA. 17+80.00 RT
ELEV 2731.50

BERM DITCH @ 1.20.38%

(–)2.8000%
(–)2.2881%
BERM DITCH @ 1+15.79%
PROPOSED GRADE
EXISTING GROUND

STA. 14+98.00 RT
ELEV 2681.00

FOR –L_RT– PLAN, SEE PLAN SHEET 4 & 5

2,750 2,740 2,730 2,720 2,710 2,700 2,690 2,680 2,670 2,660

15+00 16+00 17+00 18+00 19+00

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PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	12

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32562 ENGINEER PHILLIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TYLER M. CARTER
3/17/2022

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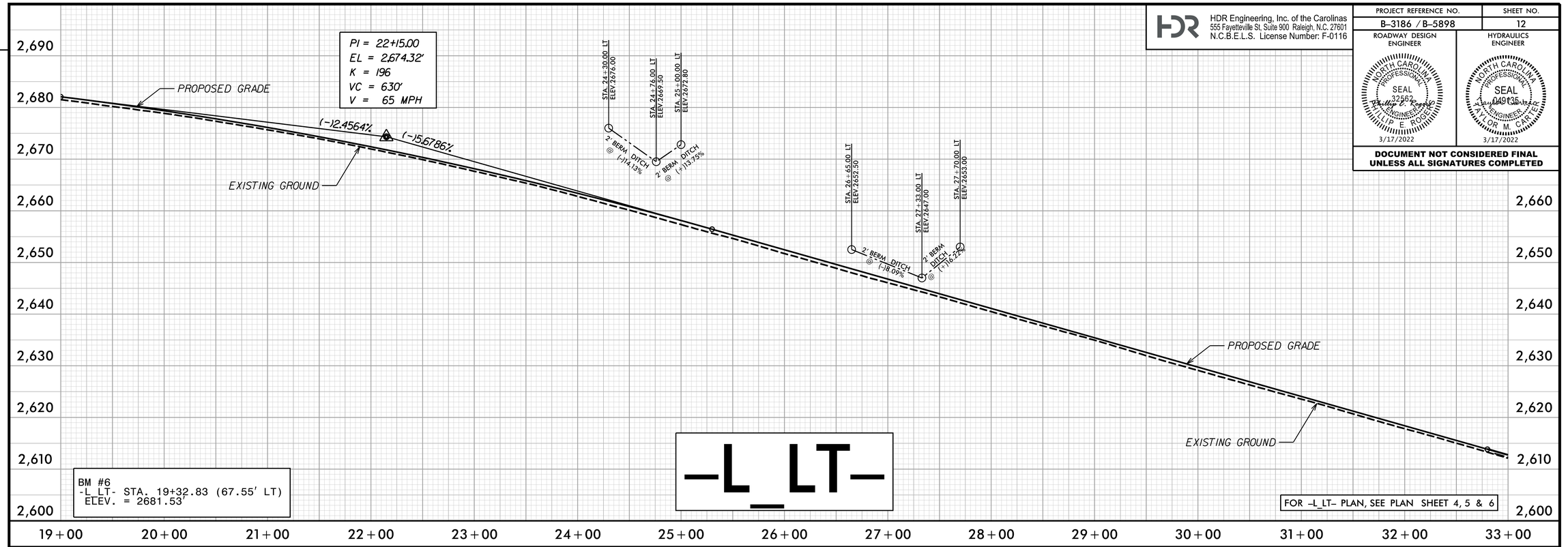

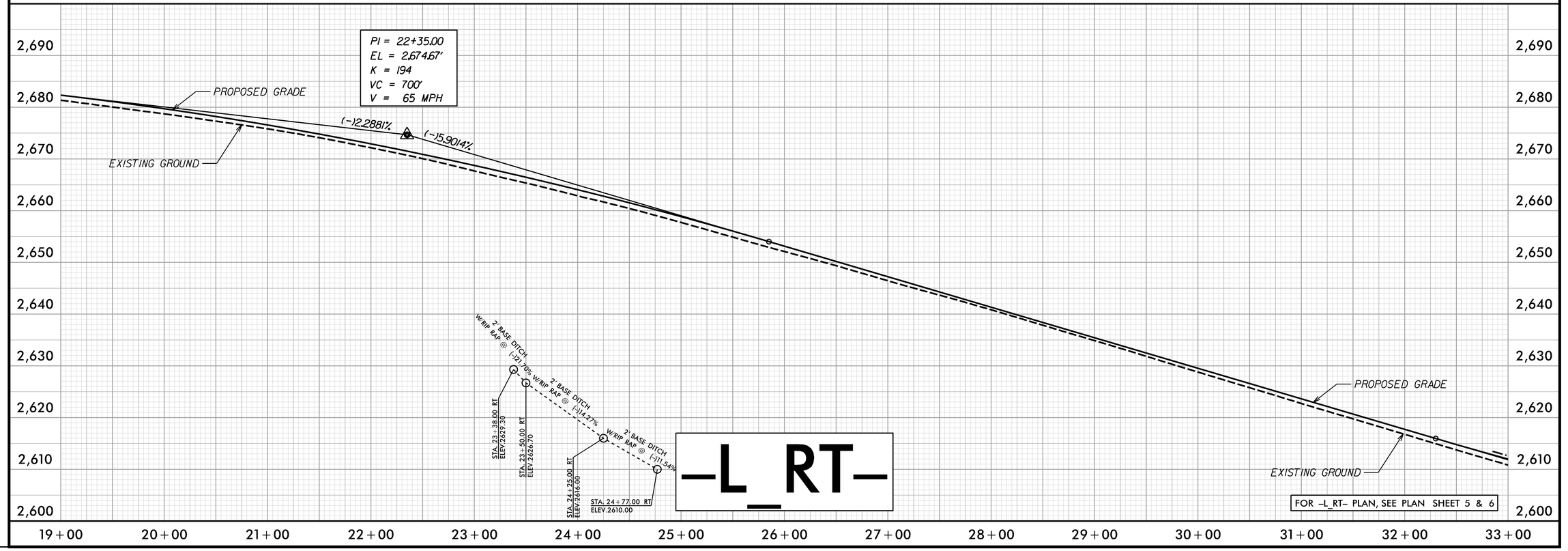

REVISIONS

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DATE: 1/13/2022
TIME: 6:58:50 AM

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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	13

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32562 ENGINEER PHILLIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TAYLOR M. CARTER
3/17/2022

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-L LT-

PI = 36+90.00
EL = 2,590.57'
K = 158
VC = 820'
V = 65 MPH

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 8700	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 2575.0	FT
BASE DISCHARGE	= 10300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2576.3	FT
OVERTOPPING DISCHARGE	= 47500	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 2590.9	FT
DATE OF SURVEY	= 05/22/2019	
W.S.ELEVATION AT DATE OF SURVEY	= 2564	FT

-L LT- STA. 41+52 +/-
BEGIN BRIDGE

-L LT- STA. 43+84 +/-
END BRIDGE

PROPOSED GRADE
EXISTING GROUND
EXISTING TOP OF ROAD
(-)15.67%
(-)10.5000%
2' BASE DITCH @ (-)2.54%
2' BASE DITCH @ (+)0.73%
2' BASE DITCH W/RIP RAP @ (-)30.00%
2' BASE DITCH W/RIP RAP @ (-)7.14%
2' BASE DITCH W/RIP RAP @ (-)10.00%
2' BASE DITCH W/RIP RAP @ (+)3.17%
2' BASE DITCH W/RIP RAP @ (+)16.67%
LOW POINT -L LT- 45+08.12, EL. 2586.65'
STA. 36+36.00 LT ELEV. 2589.90
STA. 38+45.00 LT ELEV. 2584.60
STA. 39+00.00 LT ELEV. 2585.00
STA. 41+20.00 LT ELEV. 2584.00
STA. 41+50.00 LT ELEV. 2579.90
STA. 42+00.00 LT ELEV. 2570.00
STA. 42+28.00 LT ELEV. 2568.00
STA. 44+37.00 LT ELEV. 2576.00
STA. 45+00.00 LT ELEV. 2578.00
STA. 45+45.00 LT ELEV. 2581.00
RICHLAND CREEK

BM #7
-L LT- STA. 37+32.04 (94.11' LT)
ELEV. = 2589.0'

FOR -L LT- PLAN, SEE PLAN SHEET 6 & 7

-L RT-

PI = 36+55.00
EL = 2,590.87'
K = 157
VC = 850'
V = 65 MPH

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 8700	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 2575.0	FT
BASE DISCHARGE	= 10300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2576.3	FT
OVERTOPPING DISCHARGE	= 47500	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 2590.9	FT
DATE OF SURVEY	= 05/22/2019	
W.S.ELEVATION AT DATE OF SURVEY	= 2564	FT

-L RT- STA. 41+66 +/-
BEGIN BRIDGE

-L RT- STA. 43+98 +/-
END BRIDGE

PROPOSED GRADE
EXISTING GROUND
EXISTING TOP OF ROAD
(-)15.90%
(-)10.5000%
(-)0.5000%
LOW POINT -L RT- 44+98.71, EL. 2586.83'
RICHLAND CREEK

BM #1
-L RT- STA. 35+56.32 (73.33' RT)
ELEV. = 2596.6'

FOR -L RT- PLAN, SEE PLAN SHEET 6 & 7

2,630 2,620 2,610 2,600 2,590 2,580 2,570 2,560 2,550 2,540

33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00

REVISIONS

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DATE: 1/13/2022
TIME: 6:58:52 AM

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PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	14

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32562 ENGINEER PHILLIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TAYLOR M. CARTER
3/17/2022

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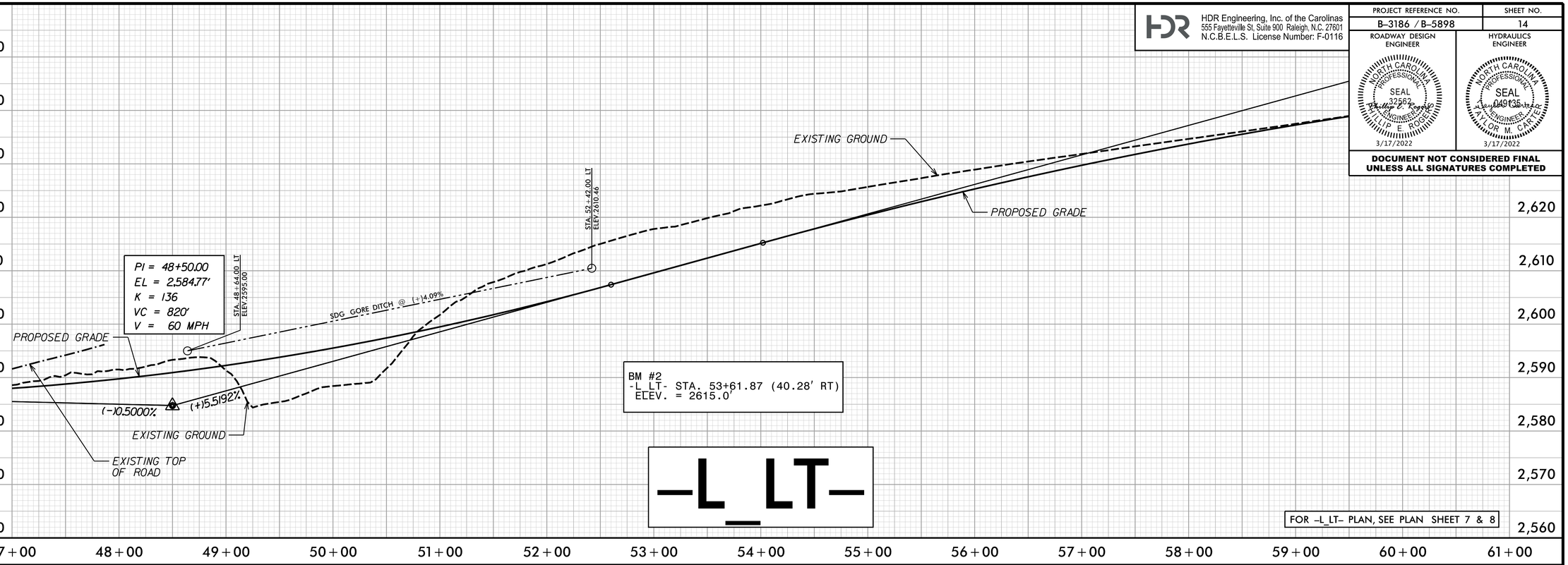

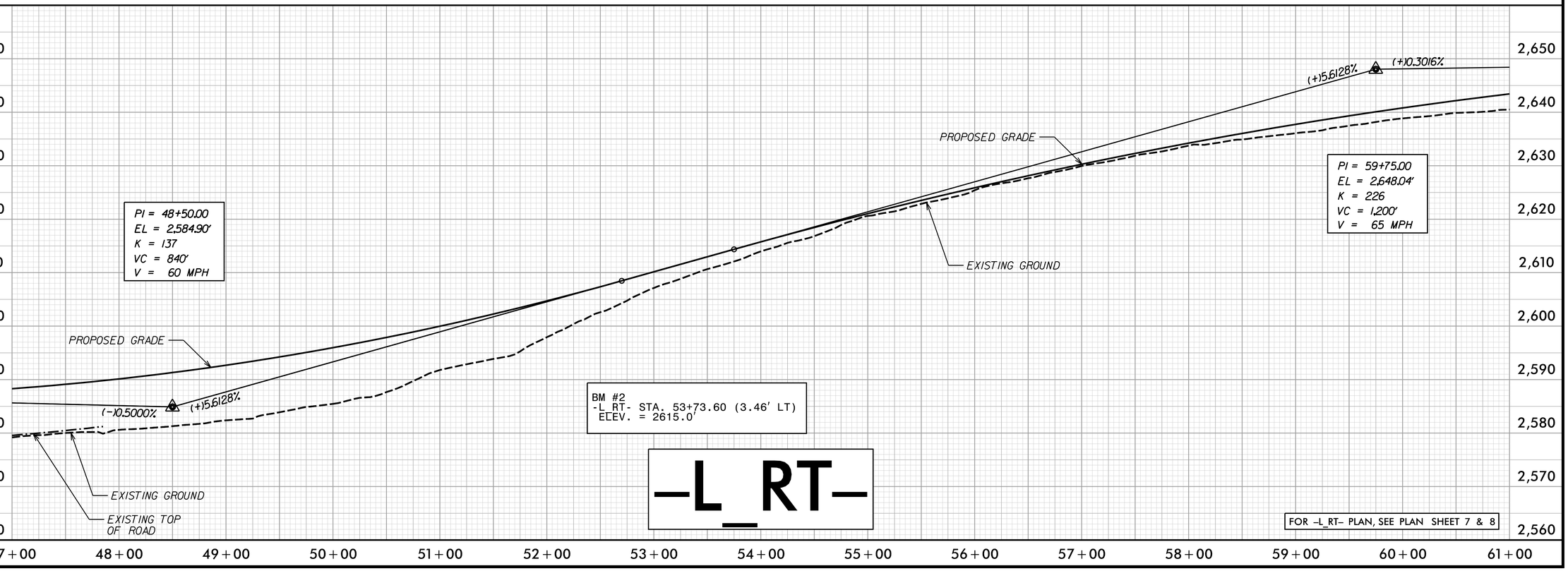

REVISIONS

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DATE: 1/13/2022
TIME: 6:58:54 AM

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PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	15

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32562 ENGINEER PHILLIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TAYLOR M. CARTER
3/17/2022

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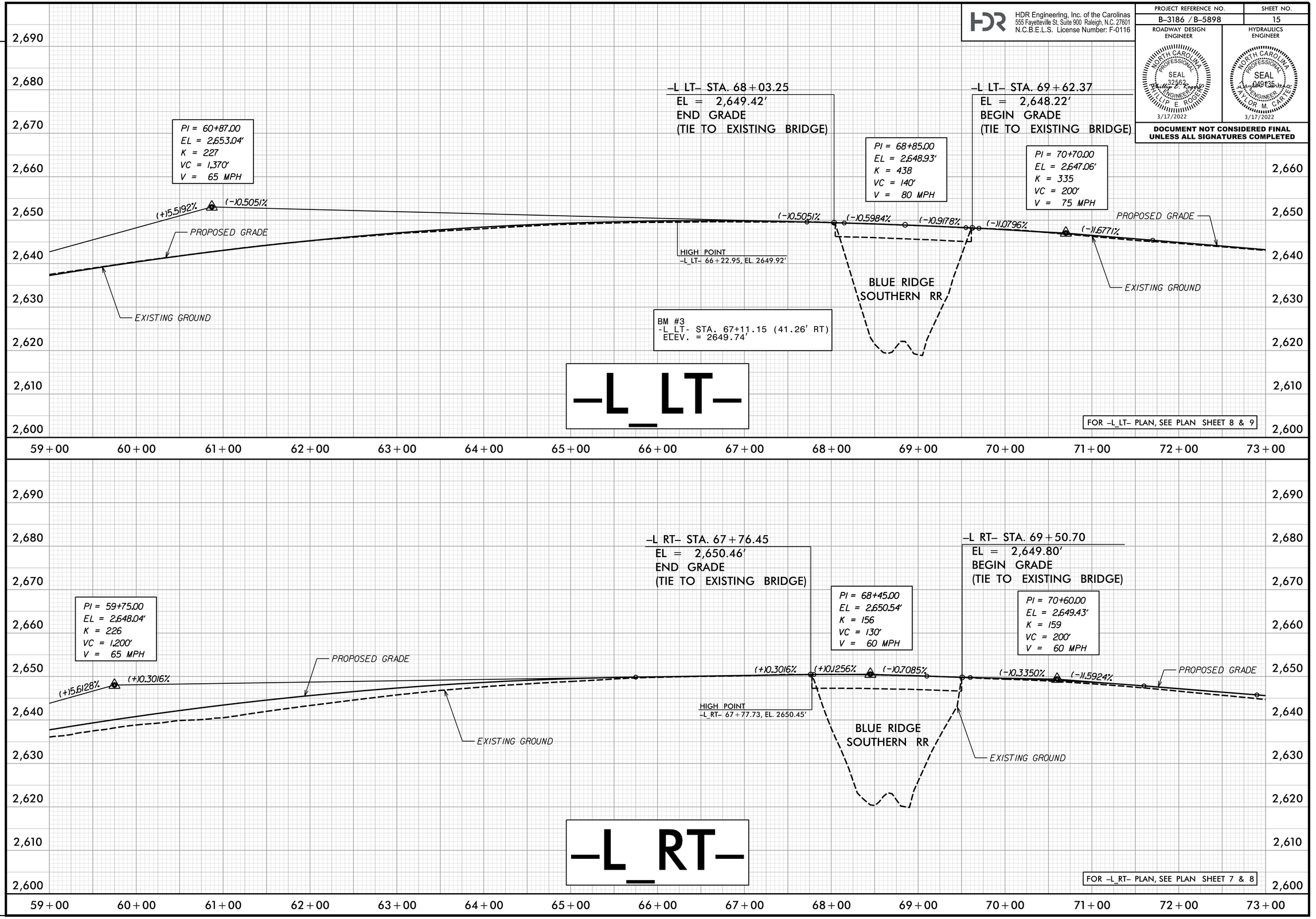

REVISIONS

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DATE: 1/13/2022
TIME: 6:58:56 AM

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PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	16

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32562 ENGINEER PHILLIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TAYLOR M. CARTER
3/17/2022

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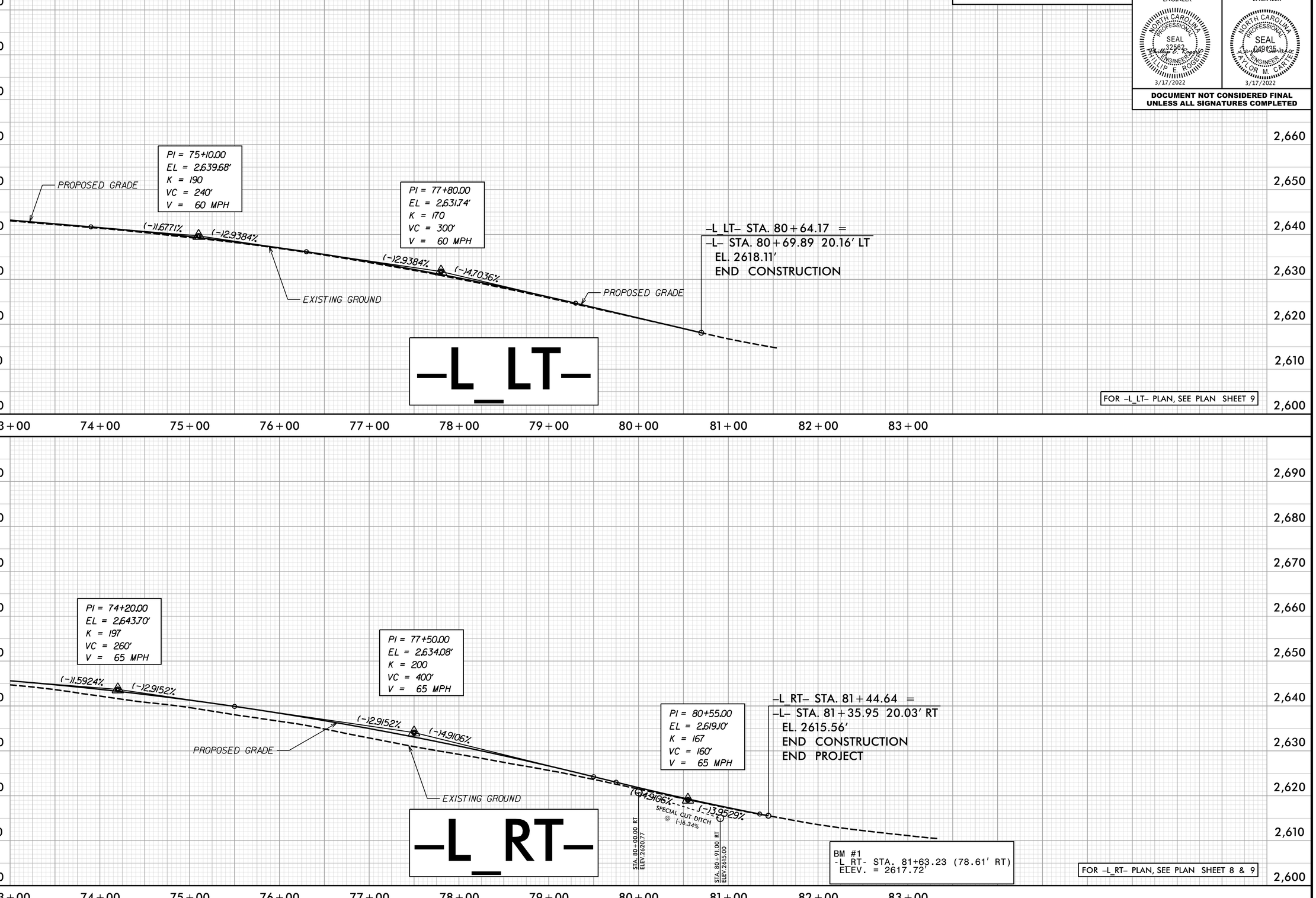

REVISIONS

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DATE: 1/13/2022
TIME: 6:58:58 AM

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PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	17

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32562 ENGINEER PHILLIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TAYLOR M. CARTER
3/17/2022

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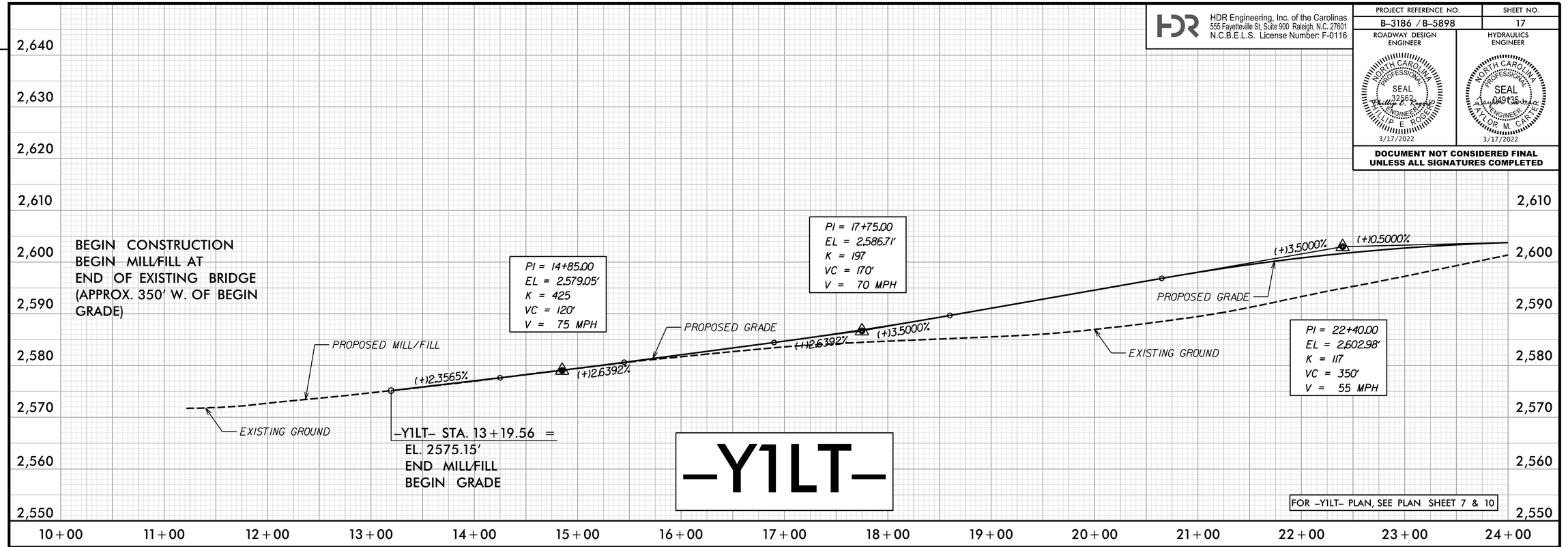

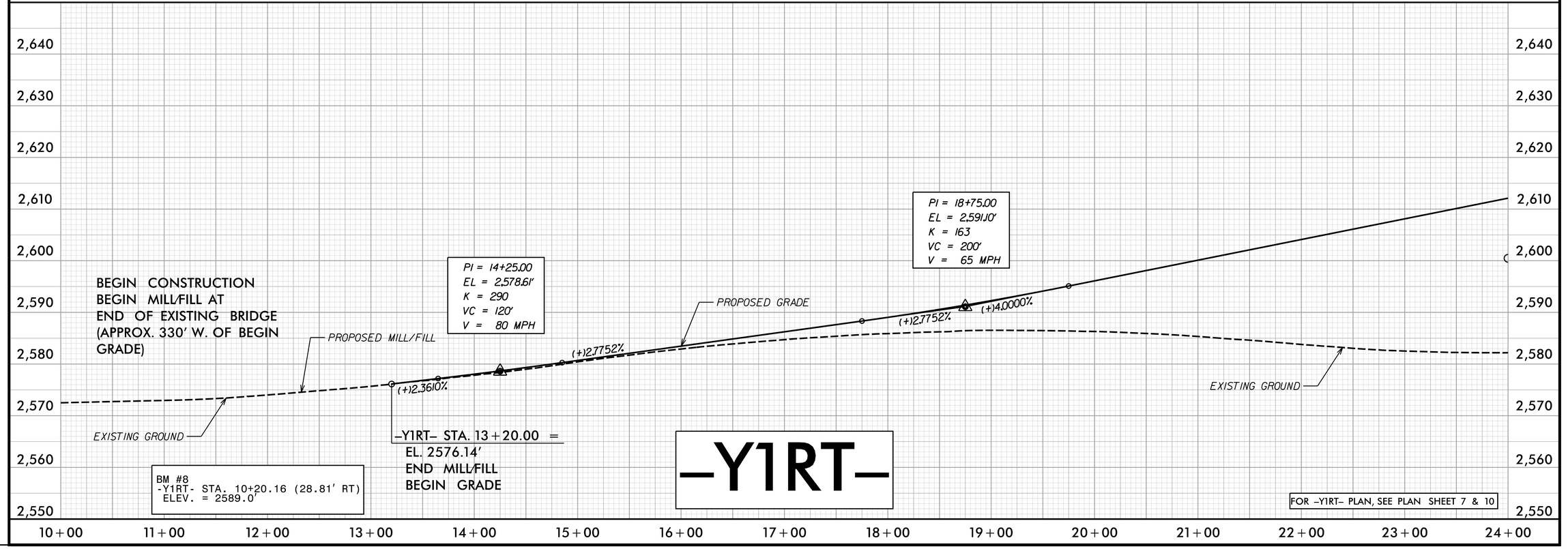

REVISIONS

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PENTABLE: B-3186 B-5898 NCDOT_pshpfl.tbl
DATE: 1/13/2022
TIME: 6:58:59 AM

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PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	18

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32562 ENGINEER PHILIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TAYLOR M. CARTER
3/17/2022

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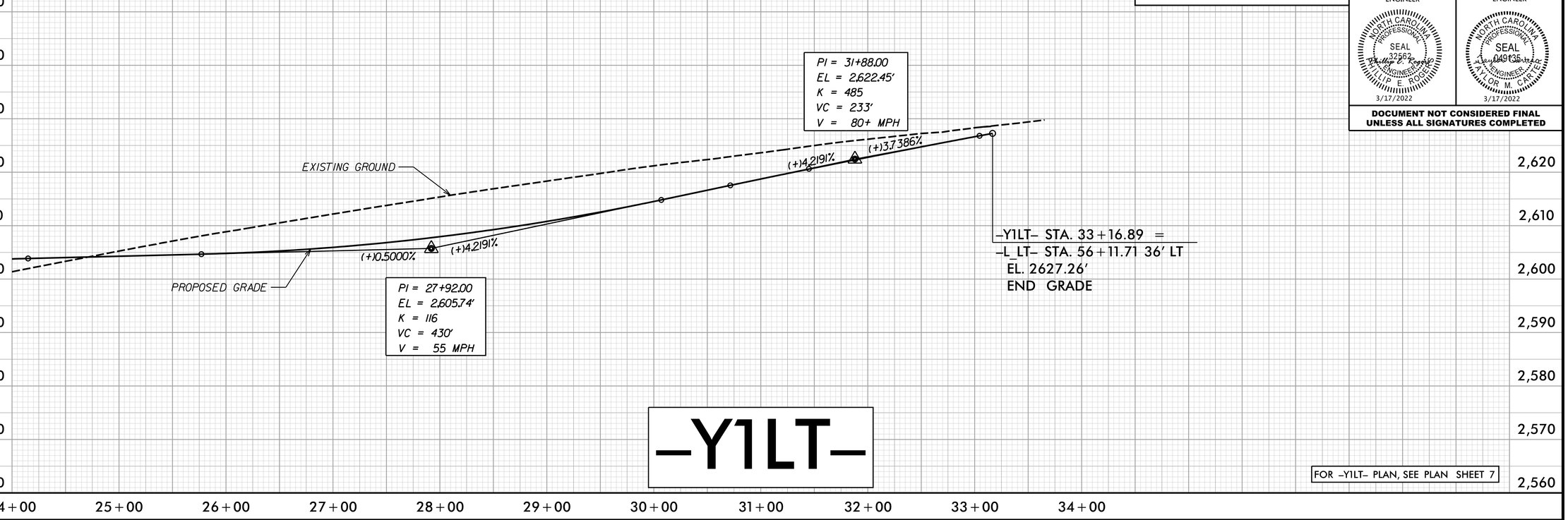

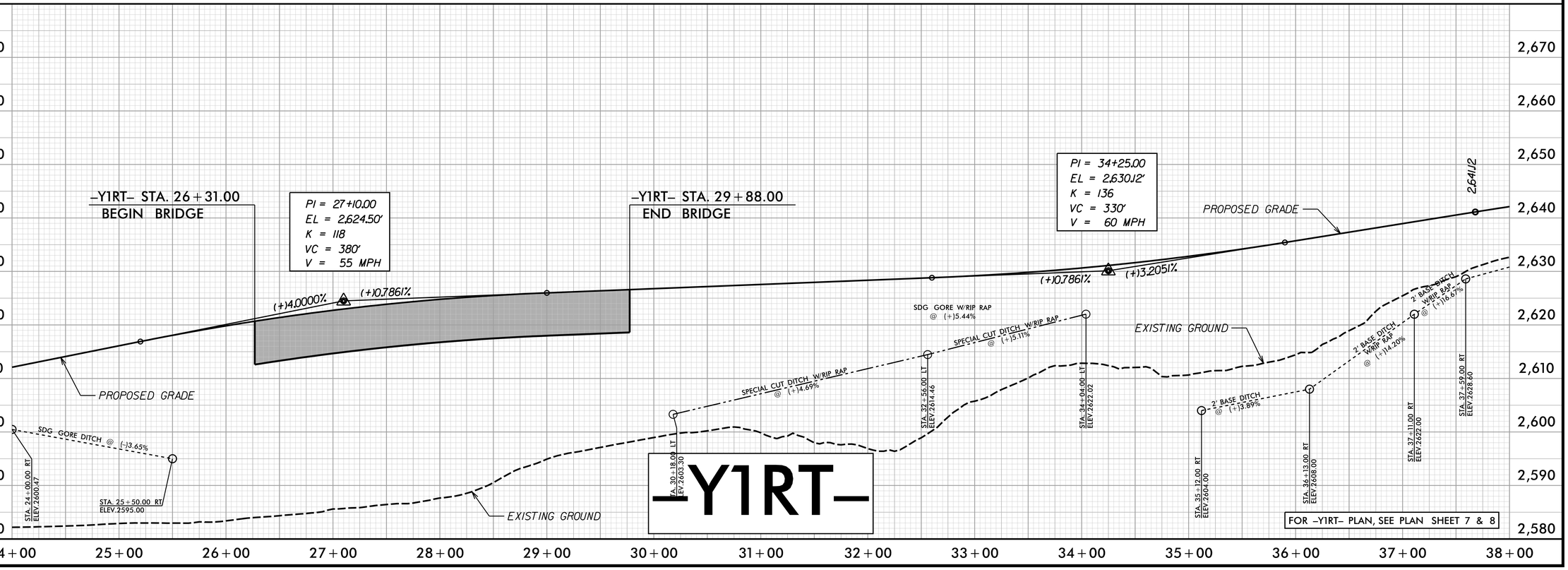

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DATE: 1/13/2022
TIME: 6:59:01 AM

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PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	19

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32562 ENGINEER PHILIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TAYLOR M. CARTER
3/17/2022

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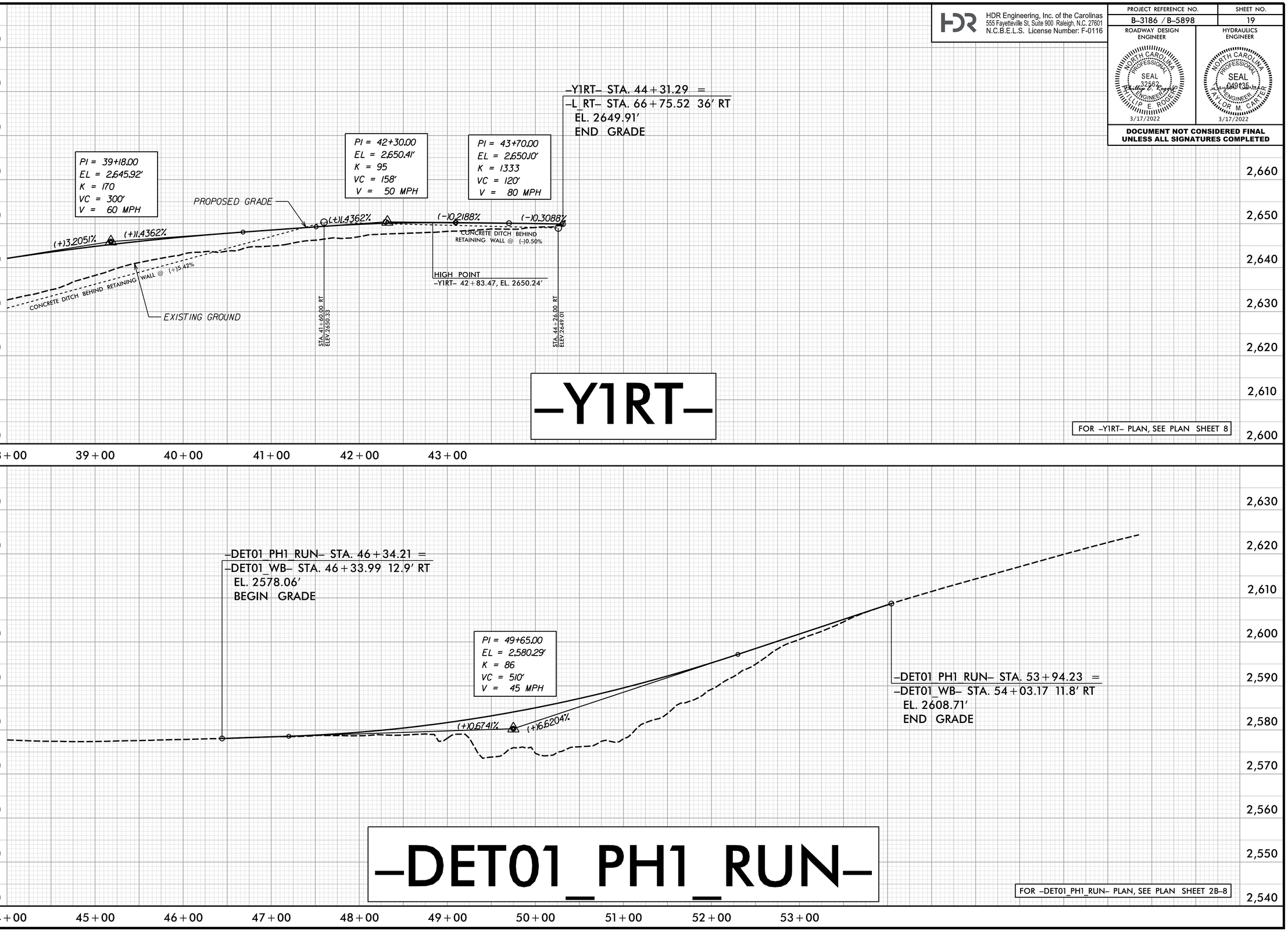
REVISIONS



FOR -Y1RT- PLAN, SEE PLAN SHEET 8

FOR -DET01_PH1_RUN- PLAN, SEE PLAN SHEET 2B-8

PLOT DRIVER: NCDOT_pdf_color-eng-50.plt
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PENTABLE: B-3186 B-5898 NCDOT_pshpfl.tbl
DATE: 1/13/2022
TIME: 6:59:03 AM

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PROJECT REFERENCE NO.	SHEET NO.
B-3186 / B-5898	20

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 32562 ENGINEER PHILLIP E. ROGERS
3/17/2022

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 049135 ENGINEER TAYLOR M. CARTER
3/17/2022

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REVISIONS

PLOT DRIVER: NCDOT_pdf_color-eng-50.plt
USER: HBARE
FILE: \
PENTABLE: B-3186 B-5898 NCDOT_pshpfl.tbl
DATE: 1/13/2022
TIME: 6:59:05 AM

PI = 22+45.00
EL = 2,672.36'
K = 109
VC = 330'
V = 50 MPH

PI = 25+00.00
EL = 2,658.20'
K = 365
VC = 180'
V = 80 MPH

PI = 28+65.00
EL = 2,639.74'
K = 371
VC = 200'
V = 75 MPH

SPECIAL CUT DITCH W/HINGE @ (–)5.40%

STA. 20+97.00 RT
ELEV. 2672.73

SPECIAL CUT DITCH W/HINGE @ (–)3.58%

STA. 20+25.00 RT
ELEV. 2676.82

STA. 21+47.00 RT
ELEV. 2670.94

(–)12.5170%

(–)15.5511%

(–)15.5511%

(–)15.0583%

(–)15.0583%

(–)15.5980%

CONCRETE DITCH BEHIND RETAINING WALL @ (–)5.45%

STA. 29+31.00 RT
ELEV. 2644.06

–DET01_EB– STA. 20+25.50
EL. 2677.88'
BEGIN DETOUR GRADE

2' BASE DITCH W/RIP RAP @ (–)1.70%

2' BASE DITCH W/RIP RAP @ (–)14.27%

2' BASE DITCH W/RIP RAP @ (–)11.54%

STA. 23+38.00 RT –L RT–
ELEV. 2629.30

STA. 23+50.00 RT –L RT–
ELEV. 2626.70

STA. 24+25.00 RT –L RT–
ELEV. 2616.00

STA. 24+77.00 RT –L RT–
ELEV. 2610.00

–DET01_EB–

FOR –DET01_EB– PLAN, SEE PLAN SHEET 2B-3

17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00

2,690 2,680 2,670 2,660 2,650 2,640 2,630 2,620 2,610 2,600

CONCRETE DITCH BEHIND RETAINING WALL @ (–)5.45%

STA. 33+79.00 RT
ELEV. 2619.66

CONCRETE DITCH BEHIND RETAINING WALL @ (–)11.71%

STA. 34+83.00 RT
ELEV. 2607.48

PI = 37+70.00
EL = 2,589.08'
K = 97
VC = 620'
V = 50 MPH

(–)15.5980%

(+)0.8025%

–DET01_EB– STA. 41+05.00
EL = 2,591.76'
BEGIN TEMPORARY BRIDGE

–DET01_EB– STA. 44+05.00
EL = 2,594.55'
END TEMPORARY BRIDGE

–DET01_EB–

FOR –DET01_EB– PLAN, SEE PLAN SHEET 2B-4

31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00

2,630 2,620 2,610 2,600 2,590 2,580 2,570 2,560 2,550 2,540