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COMPUTED BY: SSL DATE: 06/25/18
CHECKED BY: FEJ DATE: 06/27/18

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	3B-03

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS GREU TL-3	ANCHORS CAT-1	ANCHORS B-77	IMPACT ATTENUATOR TYPE 350 NO.	PERMITTED G	PERMITTED NG	RELAP GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMARKS
L	17+00.00	I95_RPD 16+00.00	RT	425.00			18+00.00	I95_RPD 16+00	10	13	50		1		1	1						603	
L	19+62.21	21+99.71	RT	237.50			21+99.71		4	13	214.63		4.29		1		1					211	
L	19+41.93	21+79.43	LT	237.50				21+79.43	4	13		214.63		4.29		1	1					224	
L	24+77.77	27+15.27	LT	237.50			24+77.77		4	13	214.63		4.29		1		1					274	
L	24+97.72	I95_RPA 14+46.93	RT	400.00	50		I95_RPD 14+40	24+97.72	4	13	50	300	1	6	1		1					250	(20) 8' POSTS ARE REQUIRED AT RETAINING WALL
L	I95_RPA 13+94.94	29+50.14	RT	287.50			I95_RPA 14+70.00	29+50.14	10	13	50		1		1	1						490	
L	81+91.16	87+67.16	RT	575.00			84+00.00	87+17.16	10	13	50	50	1	1	2							302	
L	84+42.13	88+02.63	LT	362.50			85+70.38	85+99.37	10	13	50	50	1	1	2							229	GREU-3 @ TRAILING REQ'D FOR CONST. PHASING
L	137+00.00	144+62.50	RT	762.5			138+50.00	144+75.00	10	13	50		1		1	1							
L	140+00.00	146+00.00	LT	600.00			144+50.00	140+00.00	10	13	50		1		1	1							
L	150+43.90		RT	62.50												2							
L	166+76.25	169+91.75	RT	312.50			169+91.75		10	13	50		1		1		1						
L	166+68.25	169+68.25	RT MED	300.00			169+68.25		4	13	277.13		5.54		1		1				300		REQUIRED FOR CONST. PHASING
L	166+44.74	169+44.74	LT MED	300.00			169+44.74		4	13	277.13		5.54		1		1				300		REQUIRED FOR CONST. PHASING
L	167+33.73	169+21.23	LT	187.50				169+21.23	10	13	50		1		1		1						
L	170+49.23	191+27.35	LT	2087.50			170+49.23	191+27.35	6	13		200	4				2						
L	170+72.74	173+72.74	LT MED	300.00			170+72.74		4	13	277.13		5.54		1		1						
L	170+96.25	173+96.25	RT MED	300.00			170+96.25		4	13	277.13		5.54		1		1				300		RELAPPING REQUIRED
L	171+19.75	191+37.34	RT	2025.00			191+37.34	171+19.75	6	13	200		4				2						
L	188+33.78	191+33.00	RT MED	300.00			191+33.00		4	13	277.13		5.54		1		1						
L	193+88.18	197+88.25	LT	475.00			193+88.18	197+88.25	6	13							2						
L	193+91.72	197+88.27	LT MED	475.00			193+91.72	197+88.27	4	13							2						
L	193+94.64	197+88.29	RT MED	475.00			197+88.29	193+94.64	4	13							2						
L	193+98.18	197+88.32	RT	475.00			197+88.32	193+23.23	6	13							2						
L	198+92.00	201+42.00	LT	250.00			198+92.00		6	13	227.13		4.34		1		1						
L	198+92.00	201+92.00	LT MED	300.00			198+92.00		4	13	277.13		5.54		1		1						
Y9RPD	10+00.00	20+25.00	LT	1025.00			18+75.00	11+50.00	12	15	50		1		1	1							
Y13A	19+75.00	27+28.46	RT	750.00			21+00.00	26+00.00	6	9	50	50	1	1	2								
L	248+00.00	253+50.00	LT	550.00			252+00.00	248+00.00	10	13	50		1		1	1							
L	282+62.02	288+12.02	RT	600.00			284+12.02	290+12.02	10	13	50	50	1		2							492	
L	282+92.67	289+92.67	LT	700.00			287+42.67	288+42.67	10	13	50		1		1	1						427	
Y9	30+45.00																					26	
L	27+58.14	29+79.34	RT																			677	
SUB TOTAL				16,375	50																		
	LESS ANCHOR		DEDUCTIONS																				
	GREU TL-3		27 @ 50.00	-1350																			
	CAT-1		10 @ 6.25	-62.50																			
	B-77		25 @ 22.875	-571.875																			
TOTAL				14,390.625	50										27	10	25				900	4,205	
SAY				14,400	50																900	4,300	

ADDITIONAL GUARDRAIL POSTS = 15 EA

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CHECKED BY: _____ DATE: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	3B-04

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE Nos:P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
L	17+93	18+63	RT	21.22
I95_RPC	12+47	13+17	RT	23.36
I95_RPC	13+40	13+47	LT	1.08
RPCD_R			CL	450.42
I95_RPD	12+19	17+40	RT	1043.87
I95_RPB	17+03	17+66	RT	52.29
RPAB_R			CL	478.75
I95_RPA	16+39	16+45	LT	0.77
L	29+55	30+18	RT	58.33
L	30+55	32+71	RT	349.22
L	32+95	38+08	RT	1723.37
L	33+85	34+39	CL	58.75
L	39+01	44+67	RT	351.50
L	43+61	45+22	CL	29.90
L	44+90	45+51	RT	4.35
L	51+03	56+00	RT	602.76
L	60+52	65+19	CL	842.11
L	80+88	91+33	CL	159.15
L	107+00	109+00	LT	553.80
L	123+31	127+79	CL	658.04
L	127+84	131+05	RT	954.03
L	150+45	152+69	RT	52.19
L	152+93	154+24	CL	194.92
L	154+29	156+45	LT	386.66
Y9	13+00	14+85	RT	37.33
Y9	21+62	23+56	RT	26.55
Y9	26+53	28+40	RT	10.85
Y9	28+85	29+51	RT	12.33
Y9RPD_R			CL	303.32
Y9RPA_R			CL	234.95
Y10	10+59	11+30	RT	4.66
Y10	10+59	11+30	LT	6.76
L	268+41	275+77	LT	2257.30
Y13	11+81	13+78	LT	207.84
Y13	11+76	13+44	RT	509.13
L	275+95	288+39	LT	2383.18
L	299+35	316+79	CL	626.26
L	299+27	305+77	LT	133.11
Y15	10+60	11+65	CL	1061.48
Y15	12+29	13+00	RT	40.03
L	322+92	324+65	CL	157.12
Y16	18+00	19+08	LT	18.72
Y16	20+69	23+00	RT	567.06
L	331+85	333+26	CL	77.11
L	334+24	352+50	CL	3478.78
Y17	12+95	13+47	CL	263.59
L	354+08	375+67	LT	3383.80
L	379+67	387+47	CL	1661.82
L	387+58	403+25	LT	2699.71
L	402+50	407+00	LT	1397.63
L	415+00	419+00	LT	1236.32
L	423+20	441+17	LT	3613.72
L	442+70	447+50	CL	1438.74
DET_2	124+00	131+20	CL	876.14
DET_3	11+10	17+87	CL	1815.45
DET_4A	175+25	185+07	CL	844.62
DET_4B	175+55	182+79	CL	768.71
DET_5	247+47	253+42	CL	600.58
			TOTAL:	41,805.57
			SAY:	41,810.00

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
I95_RPD	13+99	17+50	CL	838.46
I95_RPD	14+50	16+25	CL	448.60
L	30+95	32+45	RT	239.05
L	33+50	35+00	RT	303.88
L	39+00	43+00	RT	1451.48
L	43+00	61+17	RT	4126.50
Y3	10+45	11+00	CL	181.28
L	81+00	90+00	LT	2374.36
L	124+50	125+75	LT	248.65
L	126+72	128+68	RT	321.84
L	151+84	153+70	RT	410.86
L	153+59	154+88	LT	207.88
Y6	10+86	11+00	LT	76.46
L	281+79	292+50	LT	2965.05
L	301+00	341+00	LT	11576.61
Y16	18+50	19+00	CL	165.08
L	357+00	382+54	LT	4199.94
L	372+55	382+64	LT	2074.80
L	385+34	389+81	LT	702.24
L	393+23	402+50	LT	1778.39
L	407+00	415+00	LT	2507.98
L	419+00	428+50	LT	2697.28
L	452+00	454+50	LT	778.78
DET_1	10+00	16+65	CL	1414.14
DET_2	121+00	124+00	CL	932.97
			TOTAL:	41,735.51
			SAY:	41,740.00

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LENGTH
L	17+35	19+93	RT	319.0
L	20+42	21+83	RT	145.0
L	19+94	21+60	LT	185.0
L	24+96.52	26+76	LT	190.0
L	25+12	27+05.23	RT	213.0
L	85+02.35	87+17.24	RT	215.0
L	85+02.35	87+17.24	LT	215.0
L	139+38.34	144+75.69	RT	525.0
L	167+38.15	169+66.41	RT	228.0
L	171+41.72	191+13.11	RT	1987.0
L	170+75	191+03.60	LT	2014.0
L	194+22	197+64.14	RT	343.0
L	194+12	197+64.07	LT	352.0
L	248+45	252+00	LT	355.0
L	284+45	288+00	RT	354.0
I95_RPA	14+45	16+34	RT	206.0
Y13A	20+45	26+00	RT	555.0
			TOTAL:	8401.0
			SAY:	8401

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COMPUTED BY:	AECOM	DATE:	6/6/18
CHECKED BY:	Summit Design & Engineering Services	DATE:	2/1/19

PROJECT NO.	SHEET NO.
R-2582A	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	42	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G
L 16+94	46	RT	0406							52																																	
L 17+40	27	RT	0408		136.7																																1						
			0408	0409		132.4	129.2							32																													
I95_RPD 16+60	23	LT	0410		139.7																																1						
			0410	0411		135.7	125.5							52																													
RPCD_R 12+10	24	RT	0412		143.8																																1						
			0412	0413		140.6	127.4							56																													
L 21+25	16	LT	0414		147.3																																1						
			0414	0415		143.1	142.9												32																								
L 21+25	23	RT	0415		147.3																																1						
			0415	0416		142.9	140.5												76																								
L 20+50	41	RT	0416		144.7																																1						
			0416	0417		140.5	124.0								76																												
I95_RPC 12+67	69	RT	0418		128.3																																						
L 21+23	115	LT	0420		123.7																																1						
			0420	0421		120.7	120.3	5.8											104																								
L 20+82	210	LT	0421		123.8																																1						
I95_RPA 15+91	85	LT	0424		125.5																																						
			0424	0425		124.0	122.7																								204												
L 28+99	104	RT	0426		125.1																													3.500								
			0426	0427		122.1	122.0																									208											
I95_RPD 14+27	49	LT	0428		125.8																																						
I95_RPD 17+41	101	LT	0430		127.5																																						
			0430	0431		126.0	125.6												44																								
I95_RPD 17+29	60	LT	0431		127.1																																						
I95_RPB 15+66	72	RT	0432		124.7																																						
			0432	0436		123.2	121.7																								208												
RPAB_R 12+80	34	RT	0433		145.7																																1						
			0433	0434		141.5	125.2								84																												
RPAB_R 10+55	27	RT	0435		146.8																																1						
			0435	0433		143.3	141.5												124																								
I95_RPA 14+50	32	RT	0437		137.4																																1						
			0437	0438		134.2	124.9							48																													
L 35+50	0	CL	0439		127+80																																1						
			0439	0440		125.1	124.0																			68																	
Y1 22+54	25	RT	0441		129.0																																						
			0441	0442		127.5	127.2																				56																
Y1 16+37	40	RT	0443		128.2																																						
			0443	0444		126.7	125.6	0.3											84																								
L 18+36	549	LT	0445		124.0																																1						
L 38+06	68	RT	0503		124.7																																						
			0503	0504		122.7	122.3	0.4												88																							
L 39+05	88	RT	0505		125.2																																						
			0505	0506		122.2	119.8															180																					
L 43+70	0	CL	0507		129.6																																1						
			0507	0508		126.8	125.4											88																									
L 43+50	87	LT	0509		126.7																																						
			0509	0509_OUT		125.2	123.8	0.7											112																								
L 44+82	77	RT	0511							24																																	
L 46+16	77	RT	0513							24																																	
SHEET TOTALS										100				188	160			88	576	88		180				68	56				412	208			3.500		14						

LINE & STATION	FROM	TO	CONCRETE TRANSITIONAL SECTION: D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 16+94	0406																																													
L 17+40	0408																									1	1																			
	0408	0409																																	2											
I95_RPD 16+60	0410																									1	1																			
	0410	0411																																	2											
RPCD_R 12+10	0412																									1	1																			
	0412	0413																																	2											
L 21+25	0414																									1	1																			
	0414	0415																																												
L 21+25	0415																									1	1																			
	0415	0416																																												
L 20+50	0416																									1	1																			
	0416	0417																																		2										
I95_RPC 12+67	0418																																													Retain Exist 18" RCP
L 21+23	0420								1						1																															Retain Exist DI
	0420	0421																																												Rmove/Replace 18" RCP
L 20+82	0421								1						1																															
I95_RPA 15+91	0424																																													
	0424	0425																																												Trenchless Construction
L 28+99	0426																																													
	0426	0427																																												Trenchless Construction
I95_RPD 14+27	0428																																													Retain Exist. Pipe
I95_RPD 17+41	0430																																													
	0430	0431																																												
I95_RPD 17+29	0431																																										0.4465			Extend Exist. Pipe
I95_RPB 15+66	0432																																													
	0432	0436																																												Trenchless Construction
RPAB_R 12+80	0433																									1	1																			
	0433	0434																																		2										
RPAB_R 10+55	0435																									1	1																			
	0435	0433																																												
I95_RPA 14+50	0437																									1	1																			
	0437	0438																																	2											
L 35+50	0439									1							1																													
	0439	0440																																												
Y1 22+54	0441																																													
	0441	0442																																												
Y1 16+37	0443																																													
	0443	0444																																												
L 18+36	0445									1			1																																	
L 38+06	0503																																													
	0503	0504																																												
L 39+05	0505																																													
	0505	0506																																												
L 43+70	0507									1							1																													
	0507	0508																																												
L 43+50	0509																																													
	0509	0509_OUT																																												
L 44+82	0511																																													
L 46+16	0513																																													
SHEET TOTALS									2	3			1		2		2									9	9								8	4							0.4465			

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY:	AECOM	DATE:	6/6/18
CHECKED BY:	Summit Design & Engineering Services	DATE:	2/1/19

PROJECT NO.	SHEET NO.
R-2582A	3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	42	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
SIZE / THICKNESS OR GAUGE																																											
L 45+83	78 LT	0514							20																																		
L 47+05	78 LT	0515							24																																		
L 42+16	73 RT	0517							24																																		
L 42+53	73 RT	0518							24																																		
L 50+65	85 RT	0519							100																																		
L 54+00	0 CL	0601		131.2																																1							
		0601	0603		128.4	126.5			380																																		
L 58+00	82 LT	0602		126.2																																							
		0602	0603		124.2	123.6													76																								
L 57+85	9 LT	0603		130.7																																1	2.1						
		0603	0606		123.6	121.5	0.4												116																								
L 59+90	10 LT	0604		132.0																																1							
		0604	0605		128.8	127.4			48																																		
L 59+40	10 LT	0605		130.1																																1							
		0605	0603		127.4	126.6			152																																		
L 51+65	83 LT	0607							40																																		
L 55+28	101 RT	0608							20																																		
L 55+65	101 RT	0609							20																																		
L 56+72	105 RT	0610							24																																		
L 68+00	0 CL	0701		124.4																																1							
		0701	0703		121.7	117.3	0.4		464																																		
L 72+60	83 LT	0702		118.0																																							
		0702	0703		116.0	115.5													84																								
L 72+60	0 CL	0703		120.1																																1							
		0703	0704		115.0	114.0													88																								
L 68+30	83 LT	0706								20																																	
L 67+75	96 RT	0707							28																																		
L 76+89	88 LT	0708							24																																		
L 76+80	83 RT	0709							28																																		
L 85+50	0 CL	0803		80.9																																1							
		0803	0804		78.2	77.4			148																																		
L 84+00	0 CL	0804		82.8																																1	1.2						
		0804	0805		76.6	76.0	0.4											96																									
L 86+67	56 RT	0806		82.0																																1							
		0806	0807		79.3	67.6							48																														
L 86+67	56 LT	0808		82.0																																1							
		0808	0809		79.3	69.7							60																														
L 91+33	85 RT	0901		84.6																																							
		0901	0904		82.6	82.2													68																								
L 93+00	10 RT	0902		94.5																																1							
		0902	0903		91.7	90.3											68																										
L 92+35	9 LT	0903		93.5																																1							
		0903	0904		90.3	86.8											104																										
L 91+33	18 RT	0904		90.0																																1	2.7						
		0904	0905		82.2	76.0	0.3												156																								
L 95+50	9 RT	0906		103.8																																1							
		0906	0907		101.1	99.0											84																										
L 95+50	75 LT	0907		101.3																																1							
		0907	0908		99.0	91.2	1.7						36																														
L 101+00	0 CL	0909		113.4																																1							
							SHEET TOTALS		1568	20			144				256	96	588																	16	6.0						

LINE & STATION	FROM	TO	CONCRETE TRANSITIONAL SECTION: D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION: C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 45+83	0514																																													
L 47+05	0515																																													
L 42+16	0517																																													Remove and Replace Pipe
L 42+53	0518																																													Remove and Replace Pipe
L 50+65	0519																																													
L 54+00	0601									1							1																													
	0601	0603																																												
L 58+00	0602																																													
	0602	0603																																												
L 57+85	0603									1							1																													
	0603	0606																																												Remove and Replace Pipe
L 59+90	0604		1				1	1																																						
	0604	0605																																												
L 59+40	0605									1							1																													
	0605	0603																																												
L 51+65	0607																																													
L 55+28	0608																																													
L 55+65	0609																																													
L 56+72	0610																																													
L 68+00	0701									1							1																													
	0701	0703																																												
L 72+60	0702																																													
	0702	0703																																												
L 72+60	0703									1							1																													
	0703	0704																																												
L 68+30	0706																																													
L 67+75	0707																																													
L 76+89	0708																																													
L 76+80	0709																																													
L 85+50	0803									1							1																													
	0803	0804																																												
L 84+00	0804									1							1																													
	0804	0805																																												
L 86+67	0806									1			1																																	
	0806	0807																																		2										
L 86+67	0808									1			1																																	
	0808	0809																																		2										
L 91+33	0901																																													
	0901	0904																																												
L 93+00	0902									1							1																													
	0902	0903																																												
L 92+35	0903		1				1	1																																						
	0903	0904																																												
L 91+33	0904		1				1	1																																						
	0904	0905																																												
L 95+50	0906									1							1																													
	0906	0907																																												
L 95+50	0907									1					1																															
	0907	0908																																		2										
L 101+00	0909									1							1																													
SHEET TOTALS			3				3	3		13			2		1		10																			6										

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

7RDWY042018B

COMPUTED BY: AECOM DATE: 6/6/18

CHECKED BY: Summit Design & Engineering Services DATE: 2/1/19

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2582A	3D-3

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)				C. S. PIPE				R. C. PIPE CLASS III								R. C. PIPE CLASS IV					
SIZE								12	15	18	24	12	15	18	24	12	15	18	24	30	36	42	48	12	15	18	24	30	42
THICKNESS OR GAUGE				FT.	FT.	FT.	%					.064	.064	.064	.064														
		0909	0910		110.4	106.8	0.5											88											
Y4 11+00	26 RT	0911		113.1																									
		0911	0911_OUT		110.7	111.6												76											
L 100+75	88 RT	0912								40																			
L 117+60	85 LT	1001		134.0																									
		1001	1002		132.5	127.1	0.6											188											
L 115+01	92 LT	1003							24																				
L 116+80	81 LT	1004							20																				
L 117+77	92 LT	1005							20																				
L 120+44	90 RT	1101							20																				
L 119+74	91 LT	1102							48																				
L 120+89	93 LT	1103							36																				
L 122+09	93 LT	1104							32																				
L 126+50	0 CL	1105		124.2																									
		1105	1106		121.5	119.4	0.4		132																				
L 127+85	0 CL	1106		122.1																									
		1106	1107		119.4	114.7	0.5										92												
L 132+10	0 CL	1108		116.4																									
		1108	1201		113.7	113.2											104												
Y5A 13+13	39 LT	1109		117.2																									
		1109	1109_OUT		115.7	115.1																				136			
L 131+93	82 LT	1111							32																				
L 133+15	18 LT	1201		118.9																									
		1201	1202		113.2	112.9											44												
L 133+50	10 RT	1202		119.0																									
		1202	1203		112.9	112.5	0.4		100																				
L 134+50	10 RT	1203		119.1																									
		1203	1204		112.2	111.6				152																			
L 136+00	10 RT	1204		119.3																									
		1204	1206		111.6	110.2				300																			
L 141+00	1 LT	1205		119.1																									
		1205	1206		116.1	115.1				200																			
L 139+00	0 CL	1206		118.6																									
		1206	1207		109.7	106.7	1.4											116											
L 141+86	102 RT	1208		110.3																									
		1208	1209		106.3	103.9																228							
L 142+50	56 RT	1212		119.3																									
		1212	1213		116.6	115.5											208												
L 144+68	56 RT	1213		120.0																									
		1213	1214		115.5	110.2	0.5						40																
L 151+20	72 RT	1305		116.6																									
		1305	1306		112.6	111.6																	200						
L 156+15	0 CL	1307		123.8																									
		1307	1308		121.0	120.5											104												
L 155+10	19 RT	1308		126.0																									
		1308	1309		120.5	119.9											112												
L 154+00	12 LT	1309		125.5																									
		1309	1310		119.9	119.2	0.3		148																				
L 152+50	10 LT	1310		124.7																									
		1310	1311		119.2	118.4	0.5		148																				
						SHEET TOTALS			760	692			40				664	468				228	200			136			

STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
1105								1															1							1																													
1106								1															1							1																													
1108								1															1							1																													
1201								1	0.7							1				1	1																																						
1202								1	1.0														1							1																													
1203								1	1.8														1							1																													
1204								1	2.7														1							1																													
1205								1															1							1																													
1206								1	3.9														1							1																													
1208						4.500																																																						
1212								1															1			1																																	
1213								1															1			1																																	
1305						6.000																																																						
1307								1															1					1																															
1308								1	0.4							1				1	1																																						
1309								1	0.6														1					1																															
1310								1	0.5														1					1																															
SHEET TOTALS						10.500		15	11.6							2				2	2		13			2		3		8																													

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY:	AECOM	DATE:	6/6/18
CHECKED BY:	Summit Design & Engineering Services	DATE:	2/1/19

PROJECT NO.	SHEET NO.
R-2582A	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	Side Drain Pipe 15	Side Drain Pipe 18	Side Drain Pipe 24	C. S. PIPE 12 .064	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	R. C. PIPE CLASS III 12	R. C. PIPE CLASS III 15	R. C. PIPE CLASS III 18	R. C. PIPE CLASS III 24	R. C. PIPE CLASS III 30	R. C. PIPE CLASS III 36	R. C. PIPE CLASS III 42	R. C. PIPE CLASS III 48	R. C. PIPE CLASS IV 12	R. C. PIPE CLASS IV 15	R. C. PIPE CLASS IV 18	R. C. PIPE CLASS IV 24	R. C. PIPE CLASS IV 30	R. C. PIPE CLASS IV 42	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 151+00	10 LT	1311		123.9																																	1	0.7														1					1																															
		1311	1312		118.2	113.8	0.7										104																																																																						
Y6 12+00	25 RT	1313		124.8																																																																																			
		1313	1313_OUT		122.8	122.5																					56																																																												
L 154+77	120 LT	1314										36																																																																												
L 159+00	0 CL	1401		126.9																																	1															1					1																															
		1401	1307		124.2	121.0			284																																																																														
L 162+00	91 RT	1402		132.1																																																																																			
		1402	1403		130.6	129.5	0.3											132																																																																					
L 161+00	0 CL	1403		131.7																																	1																1				1																															
		1403	1404		129.5	127.9	0.5											140																																																																					
L 169+47	56 RT	1405		161.4																																	1																															1	1																			
		1405	1406		157.4	150.7											200																																																																						
L 167+43	56 RT	1406		154.7																																	1																															1	1																			
		1406	1408		150.4	150.2												56																																																																					
L 169+00	0 CL	1407		160.4																																	1															1					1																															
		1407	1408		157.6	152.6			148																																																																														
L 167+50	0 CL	1408		155.4																																	1	0.2														1					1																															
		1408	1409		150.2	146.7				148																																																																													
L 166+00	0 CL	1409		149.7																																	1															1					1																															
		1409	1410		146.7	140.6				148																																																																													
L 164+50	0 CL	1410		143.6																																	1															1					1																															
		1410	1411		140.6	132.5												144																																																																					
L 171+30	56 LT	1412		170.2																																	1																															1	1																			
		1412	1413		166.0	140.0	6.5						100																																																															2											
L 171+97	56 RT	1501		170.3																																	1																															1	1																			
		1501	1502		167.1	166.6											60																																																																						
L 171+69	0 CL	1502		169.4																																	1															1					1																															
		1502	1412		166.5	166.0	0.9										60																																																																						
L 174+23	145 RT	1503		151.2																																																																																			
		1503	1505		149.2	149.0																					300																																																												
L 174+35	0 CL	1504		175.9																																	1															1					1																															
		1504	1502		173.1	166.5			264																																																																														
L 186+00	55 LT	1601		174.5																																	1																															1	1																			
		1601	1602		171.4	170.2											56																																																																						
L 186+00	0 CL	1602		172.9																																	1															1					1																															
		1602	1603		169.9	169.6												56																																																																					
L 186+00	55 RT	1603		177.2																																	1	2.6																														1	1																			
		1603	1604		169.6	112.4	1.4							200																																																															2										
L 191+75	62 LT	1605		158.4																																	1																															1	1																			
		1605	1606		155.2	154.9											64																																																																						
L 191+75	0 CL	1606		158.4																																	1															1							1																													
		1606	1607		154.9	154.6	0.5										64																																																																						
L 191+75	64 RT	1607		158.0																																	1																															1	1																			
		1607	1608		154.4	102.0	1.4							176																																																															2										
L 191+92	211 LT	1609		109.5																																																																																			
		1609	1610		106.0	102.0																											300																																																						Contractor Design Pipe
L 193+77	193 LT	1611		104.0																																																																																			
		1611	1612		104.0	99.5																										368																																																							Contractor Design Pipe
L 197+35	63 LT	1613		131.8																																	1																															1	1																			
SHEET TOTALS										696	296	36		100	376			608	528									356					368	300			20	3.5														10	1				10		1									9	9								2	4										

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY:	AECOM	DATE:	6/6/18
CHECKED BY:	Summit Design & Engineering Services	DATE:	2/1/19

PROJECT NO.	SHEET NO.
R-2582A	3D-5

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".**

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	42	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN
		1613	1616		127.7	100.0	1.7							104																			
L 197+35	0 CL	1614		132.1																													
		1614	1613		128.0	127.7												64															
L 197+35	65 RT	1615		131.8																													
		1615	1614		128.4	128.0												64															
Y9_LPD 11+20	14 RT	1617		122.0																													
		1617	1618		118.8	95.5	0.3						124																				
Y9_LPA 11+50	14 LT	1619		121.2																													
		1619	1620		118.2	97.0	0.4						116																				
Y9 31+45	41 LT	1621		101.8																													
		1621	1621_OUT		99.3	97.2														156													
Y9 29+87	62 LT	1622		100.0																													
		1622	1622_OUT		97.0	95.0															136												
Y9_LPA 17+17	14 LT	1623																															
Y9_LPA 15+00	14 LT	1625		102.9																													
		1625	1626		99.9	96.2											44																
Y9_LPD 15+00	14 RT	1627		109.6																													
		1627	1628		106.5	95.4							72																				
Y9_LPD 18+31	14 LT	1629																															
Y9 19+00	59 LT	1632		100.8																													
		1632	1632_OUT		97.3	96.3															116												
Y9_RPD 24+95	36 LT	1633		96.5																													
		1633	1634		93.0	92.7																256											
Y9_LPD 14+21	94 RT	1635		97.5																													
		1635	1636		95.0	94.0														188													
Y9_RPD 20+59	61 LT	1637		99.8																													
		1637	1637_OUT		97.8	96.9												124															
L 204+25	159 RT	1638		96.7																													
		1638	1639		93.2	92.7	0.5																						648				
L 204+50	0 CL	1640		118.3																													
		1640	1641		115.8	93.3							164																				
Y9_RPA 27+03	73 LT	1642		96.5																													
		1642	1643		92.5	92.2																	472										
Y9_RPA 30+10	62 LT	1644		98.0																													
		1644	1645		94.0	92.5															320												
L 212+90	0 CL	1648		115.3																													
		1648	1649		112.3	108.2	0.8											104															
L 198+01	123 RT	1655		100.3																													
		1655	1655_OUT		98.8	98.1												248															
L 222+00	104 LT	1701		106.0																													
		1701	1702		104.0	103.7													104														
L 222+00	0 CL	1702		112.5																													
		1702	1708		103.7	102.7													200														
L 225+84	0 CL	1705		111.4																													
		1705	1706		108.7	104.7											104																
L 222+10		1707	1708		103.0	102.7																				104							
L 231+62	0 CL	1801		109.8																													
		1801	1802		107.1	105.4			336																								
L 235+00	0 CL	1802		109.2																													
		1802	1804		105.4	104.7			148																								
							SHEET TOTALS		484				476	104			148	604	304	344	572	256	472			104			648				

FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
1613	1616																																												2										
1614				1															1							1																													
1614	1613																																																						
1615				1																															1	1																			
1615	1614																																																						
1617				1			1		1																																														
1617	1618																																											2											
1619				1			1			1																																													
1619	1620																																											2											
1621																																																							
1621	1621_OUT																																																						
1622		3.400																																																					
1622	1622_OUT																																																						
1623																																																		1					
1625				1			1		1																																														
1625	1626																																																						
1627				1			1		1																																														
1627	1628																																											2											
1629																																																		1					
1632		3.400																																																					
1632	1632_OUT																																																						Remove and Replace Pipe
1633		6.000																																																					
1633	1634																																																						2 @ 128 EACH
1635																																																							
1635	1636																																																						
1637																																																							
1637	1637_OUT																																																						
1638		6.000																																																					
1638	1639																																																						2 @ 324 EACH
1640				1															1							1																													
1640	1641																																											2											
1642		8.000																																																					
1642	1643																																																						2 @ 236 EACH
1644		4.500																																																					
1644	1645																																																						2 @ 160 EACH
1648				1															1							1																													
1648	1649																																																						
1655																																																							
1655	1655_OUT																																																						
1701																																																							
1701	1702																																																						
1702				1	3.9														1					1																															
1702	1708																																																						
1705				1															1					1																															
1705	1706																																																						
1707	1708																																																						
1801				1															1					1																															
1801	1802																																																						
1802				1															1					1																															
1802	1804																																																						
SHEET TOTALS		31.300		12	3.9		4		3	1									7					4		3									1	1								8	2					2					

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

7RDWY042018B

COMPUTED BY:	AECOM	DATE:	6/6/18
CHECKED BY:	Summit Design & Engineering Services	DATE:	2/1/19

PROJECT NO.	SHEET NO.
R-2582A	3D-6

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

ABBREVIATIONS
- C.A.A. CORRUGATED ALUMINIUM ALLOY
- C.B. CATCH BASIN
- C.S. CORRUGATED STEEL
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- H.D.P.E. HIGH DENSITY POLYETHYLENE
- J.B. JUNCTION BOX
- M.H. MANHOLE
- N.S. NARROW SLOT
- P.V.C. POLYVINYL CHLORIDE
- R.C. REINFORCED CONCRETE
- T.B.D.I. TRAFFIC BEARING DROP INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX
- W.S. WIDE SLOT

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	C. S. PIPE 12	15	18	24	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	42
THICKNESS OR GAUGE													.064	.064	.064	.064														
L 236+50	85	LT	1803		106.5																									
			1803	1804		104.5	103.9													84										
L 236+50	0	CL	1804		109.3																									
			1804	1805		103.9	103.2													144										
Y13A 10+50 R2	25	LT	1806	1807		104.8	103.0																				56			
			1808																									24		
L 244+00	0	CL	1901		111.6																									
			1901	1902		108.8	104.2											84												
L 244+00	83	RT	1902		106.9																									
			1902	1904		104.2	101.9	0.4		448																				
L 248+50	0	CL	1903		112.9																									
			1903	1904		110.2	106.0											84												
L 248+50	83	RT	1904		108.7																									
			1904	1905		101.2	101.0													44										
Y13A 21+50	15	RT	1905		112.4																									
			1905	1906		101.0	89.5	0.7								80														
L 252+00	0	CL	1907		114.0																									
			1907	1908		111.2	107.4											84												
L 252+00	83	RT	1908		110.2																									
			1908	1912		107.4	107.2											40												
L 248+50	56	LT	1910		115.1																									
			1910	1903		112.4	110.2											56												
Y13A 20+50	15	RT	1911		111.9																									
			1911	1905		109.1	108.6											96												
Y13A 25+00	15	RT	1912		114.1																									
			1912	1909		107.2	84.0	0.8						100																
L 258+50	0	CL	2001		115.9																									
			2001	2002		113.1	108.5											96												
L 266+06	14	RT	2003		119.1																									
			2003	2004		115.9	114.6																			104				
L 265+00	2	RT	2004		117.3																									
			2004	2005		114.6	111.8											80												
Y13A 29+92	62	LT	2006		107.6																									
			2006	2007		105.6	97.0													156										
Y13A 37+87	40	LT	2008		108.8																									
			2008	2009		107.3	105.7	0.5											136											
L 269+90	85	LT	2101		110.4																									
			2101	2102		108.9	108.6												92											
L 269+90	7	RT	2102		112.1																									
			2102	2103		108.6	106.7												72											
L 275+00	8	LT	2105		103.0																									
			2105	2106		100.3	98.3																			100				
L 276+00	10	RT	2106		101.5																									
			2106	2107		97.3	90.7											68												
L 276+00	77	RT	2107		93.4																									
			2107	2202		90.7	79.3	1.6		668																				
Y14 12+94	29	LT	2108		113.5																									
			2108	2109		111.5	110.8												120											
Y14 17+41	52	LT	2110		102.2																									
			2110	2111		100.7	100.3												120											
SHEET TOTALS										1116				100		80		688	540	428						204	56	24		

LINE & STATION	FROM	TO	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28
L 236+50	1803																								
	1803	1804																							
L 236+50	1804								1	0.4														1	
	1804	1805																							
Y13A 10+50 R2	1806	1807																							
	1808																								
L 244+00	1901								1															1	
	1901	1902																							
L 244+00	1902								1															1	
	1902	1904																							
L 248+50	1903								1															1	
	1903	1904																							
L 248+50	1904								1	2.6														1	
	1904	1905																							
Y13A 21+50	1905								1	5.0	1.4														
	1905	1906																							
L 252+00	1907								1															1	
	1907	1908																							
L 252+00	1908								1															1	
	1908	1912																							
L 248+50	1910								1															1	
	1910	1903																							
Y13A 20+50	1911								1																
	1911	1905																							
Y13A 25+00	1912								1	1.9															
	1912	1909																							
L 258+50	2001								1															1	
	2001	2002																							
L 266+06	2003								1								1				1	1			
	2003	2004																							
L 265+00	2004								1															1	
	2004	2005																							
Y13A 29+92	2006																								
	2006	2007																							
Y13A 37+87	2008																								
	2008	2009																							
L 269+90	2101																								
	2101	2102																							
L 269+90	2102								1															1	
	2102	2103																							
L 275+00	2105								1															1	
	2105	2106																							
L 276+00	2106								1								1				1	1			
	2106	2107																							
L 276+00	2107								1															1	
	2107	2202																							
Y14 12+94	2108																								
	2108	2109																							
Y14 17+41	2110																								
	2110	2111																							
SHEET TOTALS									18	9.9	1.4						2				2	2		13	

LINE & STATION	FROM	TO	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE
L 236+50	1803																							
	1803	1804																						
L 236+50	1804					1																		
	1804	1805																						
Y13A 10+50 R2	1806	1807																						
	1808																							
L 244+00	1901					1																		
	1901	1902																						
L 244+00	1902					1																		
	1902	1904																						
L 248+50	1903					1																		
	1903	1904																						
L 248+50	1904					1																		
	1904	1905																						
Y13A 21+50	1905									1						1								
	1905	1906																						
L 252+00	1907					1																		
	1907	1908																						
L 252+00	1908					1																		
	1908	1912																						
L 248+50	1910			1																				
	1910	1903																						
Y13A 20+50	1911									1						1								
	1911	1905																						
Y13A 25+00	1912									1						1								
	1912	1909																						
L 258+50	2001					1																		
	2001	2002																						
L 266+06	2003																							
	2003	2004																						
L 265+00	2004							1																
	2004	2005																						
Y13A 29+92	2006																							
	2006	2007																						
Y13A 37+87	2008																							
	2008	2009																						
L 269+90	2101																							
	2101	2102																						
L 269+90	2102							1																
	2102	2103																						
L 275+00	2105							1																
	2105	2106																						
L 276+00	2106																							
	2106	2107																						
L 276+00	2107					1																		
	2107	2202																						
Y14 12+94	2108																							
	2108	2109																						
Y14 17+41	2110																							
	2110	2111																						
SHEET TOTALS				1		9		3		3						3								

LINE & STATION	FROM	TO	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 236+50	1803														
	1803	1804													
L 236+50	1804														
	1804	1805													
Y13A 10+50 R2	1806	1807													
	1808														
L 244+00	1901														
	1901	1902													
L 244+00	1902														
	1902	1904													
L 248+50	1903														
	1903	1904													
L 248+50	1904														
	1904	1905													
Y13A 21+50	1905														
	1905	1906				2									
L 252+00	1907														
	1907	1908													
L 252+00	1908														
	1908	1912													
L 248+50	1910														
	1910	1903													
Y13A 20+50	1911														
	1911	1905													
Y13A 25+00	1912														
	1912	1909		2											
L 258+50	2001														
	2001	2002													
L 266+06	2003														
	2003	2004													
L 265+00	2004														
	2004	2005													
Y13A 29+92	2006														
	2006	2007													
Y13A 37+87	2008														
	2008	2009													
L 269+90	2101														
	2101	2102													
L 269+90	2102														
	2102	2103													
L 275+00	2105														
	2105	2106													
L 276+00	2106														
	2106	2107													
L 276+00	2107														
	2107	2202	2												
Y14 12+94	2108														
	2108	2109													
Y14 17+41	2110														
	2110	2111													
SHEET TOTALS			2	2		2									

7RDWY042018B

COMPUTED BY: AECOM DATE: 6/6/18
CHECKED BY: Summit Design & Engineering Services DATE: 2/1/19

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2582A	3D-7

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	Side Drain 15	Side Drain 18	Side Drain 24	C. S. PIPE 12 .064	C. S. 15 .064	C. S. 18 .064	C. S. 24 .064	R. C. PIPE CLASS III 12	III 15	III 18	III 24	III 30	III 36	III 42	III 48	R. C. PIPE CLASS IV 12	IV 15	IV 18	IV 24	IV 30	IV 42
Y13 12+93	53	LT	2112		101.0																									
			2112	2113		99.5	96.7	1.1											116											
Y13 11+29	60	LT	2114		99.9																									
			2114	2115		99.0	97.1												160											
L 272+90	80	RT	2116							44																				
L 283+00	0	CL	2201		85.0																									
			2201	2202		82.3	79.3	0.3										76												
L 283+00	76	RT	2202		82.0																									
			2202	2203		79.0	77.8	0.4				68																		
L 290+00	0	CL	2206		89.5																									
			2206	2207		86.7	84.1											76												
L 290+00	75	RT	2207		86.8																									
			2207	2208		84.1	74.0	0.9		108																				
L 285+35	0	CL	2209		83.7																									
			2209	2210		80.9	80.7											56												
L 285+35	56	RT	2210		85.3																									
			2210	2211		80.7	80.2	0.4										80												
L 284+50	56	RT	2211		85.8																									
			2211	2212		80.2	77.8	0.4										40												
L 292+49	81	LT	2213							40																				
L 299+42	77	RT	2301		100.5																									
			2301	2302		99.0	98.6												76											
L 299+42	0	CL	2302		102.0																									
			2302	2303		98.6	98.0	0.5											80											
L 295+16	81	LT	2304							36																				
L 296+98	78	LT	2305							32																				
L 300+56	80	LT	2306							36																				
L 302+63	83	LT	2307							28																				
L 295+77	82	RT	2308							36																				
L 316+50	92	RT	2401		101.5																									
			2401	2404		100.0	99.5												92											
L 318+50	11	RT	2402		107.7																									
			2402	2403		105.0	104.6																			80				
L 317+73	18	LT	2403		109.0																									
			2403	2404		104.6	103.6											124												
L 316+50	0	CL	2404		106.4																									
			2404	2405		99.5	99.0												96											
L 307+74	91	RT	2406		100.5																									
			2406	2407		98.0	97.5														92									
L 307+74	0	CL	2407		104.5																									
			2407	2408		97.5	97.0														96									
L 321+72	93	LT	2409							48																				
L 324+70	81	RT	2501		100.0																									
			2501	2502		97.0	96.7															96								
L 324+50	11	LT	2502		104.8																									
			2502	2503		96.7	96.4															96								
L 325+00	14	RT	2504		105.8																									
			2504	2505		102.6	102.3																			52				
L 325+44	14	LT	2505		105.5																									
			2505	2506		102.3	101.6											140												
								SHEET TOTALS		408		68						592	620		188	192				132				

FROM	TO	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29
2112																															
2112	2113																														
2114																															
2114	2115																														
2116																															
2201								1														1								1		
2201	2202																														
2202								1														1						1				
2202	2203																														
2206								1														1								1		
2206	2207																														
2207								1														1						1				
2207	2208																														
2209								1														1								1		
2209	2210																														
2210								1														1				1						
2210	2211																														
2211								1	0.5													1				1						
2211	2212																														
2213																															
2301																															
2301	2302																														
2302								1														1								1		
2302	2303																														
2304																															
2305																															
2306																															
2307																															
2308																															
2401																															
2401	2404																														
2402								1														1								1		
2402	2403																														
2403								1							1				1	1											
2403	2404																														
2404								1	1.8													1						1				
2404	2405																														
2406																															
2406	2407																														
2407								1	2.0													1								1		
2407	2408																														
2409																															
2501						3.400																									
2501	2502																														
2502								1	3.1													1								1		
2502	2503																														
2504								1							1				1	1											
2504	2505																														
2505								1							1				1	1											
2505	2506																														
SHEET TOTALS						3.400		15	7.4						3				3	3		12			2		3		7		

FROM	TO	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
2112																												
2112	2113																											Remove Exist 24" and Rrplace it with 18"
2114																												
2114	2115																											
2116																												
2201																												
2201	2202																											
2202																												
2202	2203																											
2206																												
2206	2207																											
2207																												
2207	2208															2												
2209																												
2209	2210																											
2210																												
2210	2211																											
2211																												
2211	2212																											
2213																												
2301																												
2301	2302																											
2302																												
2302	2303																											
2304																												
2305																												
2306																												
2307																												
2308																												
2401																												
2401	2404																											
2402																												
2402	2403																											
2403																												
2403	2404																											
2404																												
2404	2405																											
2406																												
2406	2407																											
2407																												
2407	2408																											
2409																												
2501																												
2501	2502																											
2502																												
2502	2503																											
2504																												
2504	2505																											
2505																												
2505	2506																											
SHEET TOTALS																2												

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

7RDWY042018B

COMPUTED BY:	AECOM	DATE:	6/6/18
CHECKED BY:	Summit Design & Engineering Services	DATE:	2/1/19

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2582A	3D-8

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	C. S. PIPE 12 .064	15 .064	18 .064	24 .064	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	42	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) A 0' THRU 5' EACH	B 5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 326+86	18 LT	2506		104.8																																1							1				1	1																																								
		2506	2508		101.6	100.9																			64																																																																
L 327+45	84 RT	2507		99.2																																																																																					
		2507	2508		97.2	97.1													72																																																																						
L 327+45	11 RT	2508		103.6																																1	1.6														1								1																																
		2508	2509		97.1	96.7													88																																																																						
L 334+50	0 CL	2510		102.4																																1															1								1																																
		2510	2511		99.7	99.1											120																																																																										
L 333+30	18 RT	2511		104.9																																1	0.9						1				1	1																																									
		2511	2512		99.1	98.8											40																																																																										
L 333+00	11 LT	2512		103.7																																1															1								1																																
		2512	2514		98.8	98.2			328																																																																															
L 329+70	82 RT	2513		99.7																																																																																			
		2513	2514		97.2	97.0														84																																																																						
L 329+70	0 CL	2514		104.0																																1	2.0														1								1																																
		2514	2515		96.9	96.7														76																																																																					
L 342+56	76 RT	2601		105.4																														3.400																																																								
		2601	2602		102.4	102.2															76																																																																				
L 342+56	0 CL	2602		107.2																																1															1								1																																
		2602	2603		102.2	101.8															88																																																																				
L 342+80	86 LT	2604							32																																																																																
L 341+06	77 RT	2606							40																																																																																
L 352+00	74 LT	2701		108.0																																																																																					
		2701	2702		106.5	106.2												80																																																																							
L 352+28	0 CL	2702		108.3																																1																1							1																																
		2702	2703		106.2	105.6												88																																																																							
L 361+60	79 LT	2704		103.5																																																																																				
		2704	2705		102.0	101.7												88																																																																							
L 362+00	0 CL	2705		105.4																																1															1								1																																
		2705	2706		101.7	101.4	0.3											92																																																																								
L 356+33	78 LT	2711							44																																																																																
L 354+59	75 LT	2708							28																																																																																
L 355+57	75 LT	2709							36																																																																																
L 355+76	75 RT	2710							44																																																																																
L 364+69	0 CL	2801		104.8																																1															1								1																																
		2801	2802		102.0	101.2											80																																																																									
L 365+45	79 LT	2803							24																																																																																
L 366+86	81 LT	2804							28																																																																																
L 368+83	82 LT	2805		103.0																																																																																				
		2805	2806		101.5	101.2	0.4											84																																																																								
L 369+00	0 CL	2806		105.8																																1															1								1																																
		2806	2807		101.2	100.7	0.5											92																																																																									
L 370+52	83 LT	2808							28																																																																																	
L 376+40	10 LT	2809		107.5																																1															1								1																																
		2809	2904		104.7	104.3											92																																																																										
L 384+00	0 CL	2901		100.4																																1															1								1																																
		2901	2902		97.7	97.2			96																																																																																			
L 385+00	0 CL	2902		100.7																																1															1								1																																
		2902	2903		97.2	96.7											84																																																																									
L 377+34	16 LT	2904		107.5																																1							1				1	1																																									
						SHEET TOTALS			728								416	524	160	160	164				64									3.400		15	4.5						3				3	3		11	1						12																																		

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: AECOM	DATE: 6/6/18	PROJECT NO. R-2582A	SHEET NO. 3D-9
CHECKED BY: Summit Design & Engineering Services	DATE: 2/1/19		

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	Side Drain Pipe 15	Side Drain Pipe 18	Side Drain Pipe 24	C. S. PIPE 12 (.064)	C. S. PIPE 15 (.064)	C. S. PIPE 18 (.064)	C. S. PIPE 24 (.064)	R. C. PIPE CLASS III 12	R. C. PIPE CLASS III 15	R. C. PIPE CLASS III 18	R. C. PIPE CLASS III 24	R. C. PIPE CLASS III 30	R. C. PIPE CLASS III 36	R. C. PIPE CLASS III 42	R. C. PIPE CLASS III 48	R. C. PIPE CLASS IV 12	R. C. PIPE CLASS IV 15	R. C. PIPE CLASS IV 18	R. C. PIPE CLASS IV 24	R. C. PIPE CLASS IV 30	R. C. PIPE CLASS IV 42
		2904	2905		104.3	103.3											76												
L 378+10	18 LT	2905		106.5																									
		2905	2906		103.3	100.7											140												
L 379+50	10 RT	2906		103.4																									
		2906	2909		100.4	98.6												68											
L 377+19	2 RT	2907		108.0																									
		2907	2904		104.9	104.3											24												
L 383+56	80 LT	2908								20																			
L 391+40	85 RT	3001		99.0																									
		3001	3002		97.0	94.8													184										
L 398+00	0 CL	3003		99.1																									
		3003	3004		96.3	94.0											88												
L 401+60	75 RT	3005		95.7																									
		3005	3006		92.7	92.3															84								
L 402+00	0 CL	3006		96.2																									
		3006	3007		92.3	91.5															100								
L 406+10	0 CL	3101		94.1																									
		3101	3102		91.3	90.7											80												
L 409+35	81 RT	3103		92.5																									
		3103	3104		90.5	90.2													92										
L 409+80	0 CL	3104		95.1																									
		3104	3105		90.2	89.7													92										
L 405+65	83 LT	3106									32																		
L 405+65	80 LT	3107									32																		
L 415+07	85 LT	3108							24																				
L 419+50	0 CL	3202		89.2																									
		3202	3201		86.4	84.3											84												
L 422+10	0 CL	3205		90.6																									
		3205	3204		82.6	82.1																96							
L 422+20	95 RT	3206		86.6																									
		3206	3205		83.1	82.6																96							
L 432+55	90 RT	3207		90.4																									
		3207	3208		87.3	86.4															184								
L 420+01	87 RT	3209									28																		
L 433+20	0 CL	3302		91.2																									
		3302	3301		88.2	86.9	0.4											100											
L 434+15	18 LT	3303		93.9																									
		3303	3302		90.4	88.4	0.4										96												
L 434+18	20 RT	3304		95.7																									
		3304	3303		92.5	90.8											36												
L 435+00	10 RT	3305		93.6																									
		3305	3303		90.9	90.4											88												
L 440+00	9 LT	3307		96.0																									
		3307	3306		93.3	90.1											84												
L 442+06	9 LT	3308		98.0																									
		3308	3307		94.8	93.3											204												
L 451+50	7 LT	3401		89.8																									
		3401	3402		87.1	81.2											100												
L 449+23	91 RT	3403								44																			
L 448+98	2 LT	3404																							64				
						SHEET TOTALS			24	64	92						1100	168	368		368	192			64				

LINE & STATION	FROM	TO	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) A: 0' THRU 5' EACH	B: 5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
	2904	2905														
L 378+10	2905								1							
	2905	2906														
L 379+50	2906								1							
	2906	2909														
L 377+19	2907								1							
	2907	2904														
L 383+56	2908															
L 391+40	3001															
	3001	3002														
L 398+00	3003								1							
	3003	3004														
L 401+60	3005						3.400									
	3005	3006														
L 402+00	3006								1							
	3006	3007														
L 406+10	3101								1							
	3101	3102														
L 409+35	3103															
	3103	3104														
L 409+80	3104								1							
	3104	3105														
L 405+65	3106															
L 405+65	3107															
L 415+07	3108															
L 419+50	3202								1							
	3202	3201														
L 422+10	3205								1	3.0						
	3205	3204														
L 422+20	3206						4.500									
	3206	3205														
L 432+55	3207						3.400									
	3207	3208														
L 420+01	3209															
L 433+20	3302								1							
	3302	3301														
L 434+15	3303								1							
	3303	3302														
L 434+18	3304								1							
	3304	3303														
L 435+00	3305								1							
	3305	3303														
L 440+00	3307								1							
	3307	3306														
L 442+06	3308								1							
	3308	3307														
L 451+50	3401								1							
	3401	3402														
L 449+23	3403															
L 448+98	3404															
SHEET TOTALS							11.300		16	3.0						

LINE & STATION	FROM	TO	D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
	2904	2905																																												
L 378+10	2905		1				1	1																																						
	2905	2906																																												
L 379+50	2906									1							1																													
	2906	2909																																												
L 377+19	2907		1				1	1																																						
	2907	2904																																												
L 383+56	2908																																													
L 391+40	3001																																													
	3001	3002																																												
L 398+00	3003									1							1																													
	3003	3004																																												
L 401+60	3005																																													
	3005	3006																																												
L 402+00	3006										1						1																													
	3006	3007																																												
L 406+10	3101										1						1																													
	3101	3102																																												
L 409+35	3103																																													
	3103	3104																																												
L 409+80	3104									1							1																													
	3104	3105																																												
L 405+65	3106																																													
L 405+65	3107																																													
L 415+07	3108																																													
L 419+50	3202									1							1																													
	3202	3201																																												
L 422+10	3205								1								1																													
	3205	3204																																												
L 422+20	3206																																													
	3206	3205																																												
L 432+55	3207																																													
	3207	3208																																												
L 420+01	3209																																													
L 433+20	3302									1							1																													
	3302	3301																																												
L 434+15	3303		1				1	1																																						
	3303	3302																																												
L 434+18	3304		1				1	1																																						
	3304	3303																																												
L 435+00	3305									1							1																													
	3305	3303																																												
L 440+00	3307									1							1																													
	3307	3306																																												
L 442+06	3308		1				1	1																																						
	3308	3307																																												
L 451+50	3401									1							1																													
	3401	3402																																												
L 449+23	3403																																													
L 448+98	3404																																													
SHEET TOTALS			5				5	5	1	8	2						11																													

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

7RDWY042018B

COMPUTED BY:	AECOM	DATE:	6/6/18
CHECKED BY:	Summit Design & Engineering Services	DATE:	2/1/19

PROJECT NO.	SHEET NO.
R-2582A	3D-10

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION (SIZE / THICKNESS OR GAUGE)	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	C. S. PIPE 12 .064	15 .064	18 .064	24 .064	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	42
Y9 17+35	51	RT	3501		98.3																									
			3501	3501_OUT		96.8	96.6												68											
Y9 12+88	27	LT	3502							28																				
Y9 14+38	31	LT	3503							60																				
Y9 16+74	39	LT	3504							64																				
Y9 13+86	34	RT	3505							20																				
Y9 15+68	42	RT	3506							24																				
Y9 16+13	44	RT	3507							20																				
Y9 16+83	47	RT	3508							20																				
Y9 32+14	31	LT	3601							24																				
Y9 32+75	35	LT	3602							52																				
DRIVE 12+11	56	LT	0000																											
L 419+70	34	LT	0000																											
L 323+53	61	LT	0000																											
L 324+56	24	LT	0000																											
Y16 21+63	36	LT	0000																											
I95_RPD 13+02	45	LT	0000																											
I95_RPA 16+02	52	RT	0000																											
I95_RPA 15+91	65	LT	0000																											
I95_RPB 15+66	54	RT	0000																											
DRIVE 13+20	47	LT	0000																											
L 34+12	2	RT	0000																											
L 32+75	4	LT	0000																											
L 35+26	63	RT	0000																											
L 35+79	63	RT	0000																											
L 36+31	62	RT	0000																											
L 42+15	69	RT	0000																											
L 42+52	68	RT	0000																											
L 43+29	69	RT	0000																											
L 44+78	64	RT	0000																											
L 42+93	2	RT	0000																											
L 37+53	64	RT	0000																											
L 38+47	66	RT	0000																											
L 38+73	38	RT	0000																											
L 45+84	10	RT	0000																											
L 46+94	14	RT	0000																											
L 47+41	13	RT	0000																											
L 47+52	57	RT	0000																											
L 51+63	16	RT	0000																											
L 55+23	76	RT	0000																											
L 55+63	77	RT	0000																											
L 56+66	74	RT	0000																											
L 68+01	13	LT	0000																											
L 69+20	13	LT	0000																											
L 72+86	56	LT	0000																											
L 72+61	35	LT	0000																											
L 76+56	13	LT	0000																											
L 76+91	59	LT	0000																											
L 90+71	34	LT	0000																											
L 92+45	55	LT	0000																											
SHEET TOTALS										312									68											

LINE & STATION	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
Y9 17+35																																																										
Y9 12+88																																																										
Y9 14+38																																																										
Y9 16+74																																																										
Y9 13+86																																																										
Y9 15+68																																																										
Y9 16+13																																																										
Y9 16+83																																																										
Y9 32+14																																																										
Y9 32+75																																																										
DRIVE 12+11																																																									200	
L 419+70																																																									67	
L 323+53																																																									196	
L 324+56																																																									75	
Y16 21+63																																																									68	
I95_RPD 13+02																																																									85	
I95_RPA 16+02																																																									19	
I95_RPA 15+91																																																									18	
I95_RPB 15+66																																																									22	
DRIVE 13+20																																																									52	
L 34+12																																																									60	
L 32+75																																																									21	
L 35+26																																																									32	
L 35+79																																																									32	
L 36+31																																																									20	
L 42+15																																																									20	
L 42+52																																																									20	
L 43+29																																																									20	
L 44+78																																																									20	
L 42+93																																																									158	
L 37+53																																																									20	
L 38+47																																																									90	
L 38+73																																																									69	
L 45+84																																																									20	
L 46+94																																																									21	
L 47+41																																																									18	
L 47+52																																																									22	
L 51+63																																																									45	
L 55+23																																																									20	
L 55+63																																																									22	
L 56+66																																																									18	
L 68+01																																																									30	
L 69+20																																																									19	
L 72+86																																																									41	
L 72+61																																																									37	
L 76+56																																																									55	
L 76+91																																																									20	
L 90+71																																																									42	
L 92+45																																																									33	
SHEET TOTALS																																																									1847	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY:	AECOM	DATE:	6/6/18
CHECKED BY:	Summit Design & Engineering Services	DATE:	2/1/19

PROJECT NO.	SHEET NO.
R-2582A	3D-11

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION (FT.)	INVERT ELEVATION (FT.)	INVERT ELEVATION (FT.)	MINIMUM REQUIRED SLOPE (%)	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	42	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) (CY)	DRAINAGE STRUCTURE MASONRY (CY)	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' (EACH)	A 5' THRU 10' (LIN. FT.)	B 10' AND ABOVE (LIN. FT.)	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	MODIFED CONCRETE FLUME (EA)	FLOWABLE FILL (CY)	CONCRETE COLLARS CL. "B" STD. 840.72 (CY)	CONCRETE AND BRICK PIPE PLUG STD. 840.71 (CY)	PIPE REMOVAL (LIN. FT.)	REMARKS
L 95+75	35	LT	0000																																																																																			42	
L 100+21	13	LT	0000																																																																																						30	
Y4 10+65	2	LT	0000																																																																																					32	
L 114+98	60	LT	0000																																																																																					34	
L 116+82	59	LT	0000																																																																																					17	
L 117+47	1	RT	0000																																																																																					27	
L 117+80	58	LT	0000																																																																																					21	
L 117+63	36	LT	0000																																																																																					39	
L 119+84	57	LT	0000																																																																																				17	
L 120+89	56	LT	0000																																																																																				21	
L 122+10	57	LT	0000																																																																																				23	
L 131+32	152	RT	0000																																																																																				49	
Y5B 13+90	18	RT	0000																																																																																				68	
Y5B 16+46	66	LT	0000																																																																																				54	
L 154+45	16	LT	0000																																																																																				21	
L 154+89	94	LT	0000																																																																																			26	
Y6 11+38	21	RT	0000																																																																																			21	
Y9 12+86	23	LT	0000																																																																																			21	
Y9 14+32	25	LT	0000																																																																																			60	
Y9 13+85	29	RT	0000																																																																																			17	
Y9 15+68	27	RT	0000																																																																																			21	
Y9 16+14	29	RT	0000																																																																																			17	
Y9 16+83	28	RT	0000																																																																																			18	
Y9 16+79	25	LT	0000																																																																																			46	
Y9 17+72	29	RT	0000																																																																																			46	
Y9 18+17	30	RT	0000																																																																																			43	
Y9 18+61	33	RT	0000																																																																																			43	
Y9 32+14	28	LT	0000																																																																																			22	
Y9 32+54	29	LT	0000																																																																																			52	
Y9 18+92	35	RT	0000																																																																																			13	
Y9 18+84	2	RT	0000																																																																																			63	
Y9 21+12	24	LT	0000																																																																																			29	
Y9 21+90	29	RT	0000																																																																																			37	
Y9 22+23	24	LT	0000																																																																																			21	
Y9 23+23	24	LT	0000																																																																																			21	
Y9 23+17	29	RT	0000																																																																																			14	
Y9 18+56	29	LT	0000																																																																																			21	
Y9 24+12	24	LT	0000																																																																																			21	
Y9 24+08	29	RT	0000																																																																																			17	
Y9 25+76	22	LT	0000																																																																																			25	
Y9 25+89	30	RT	0000																																																																																			29	
Y9 26+82	30	RT	0000																																																																																			21	
Y9 27+24	25	LT	0000																																																																																			22	
Y9 29+18	27	LT	0000																																																																																			20	
Y9 29+51	26	LT	0000																																																																																			20	
Y9 30+67	26	LT	0000																																																																																			40	
Y9 31+16	26	LT	0000																																																																																			40	
Y9_LPD 14+09	55	LT	0000																																																																																			46	
Y9_RPD 24+94	31	LT	0000																																																																																			26	
Y13 11+65	73	RT	0000																																																																																			89	
							SHEET TOTALS																																																																																		1583	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

7RDWY0420188

COMPUTED BY:	AECOM	DATE:	6/6/18
CHECKED BY:	Summit Design & Engineering Services	DATE:	2/1/19

PROJECT NO.	SHEET NO.
R-2582A	3D-12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

Other column headings (empty in every row on this sheet): Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12, 15, 18, 24; C. S. PIPE 12, 15, 18, 24 (.064); R. C. PIPE CLASS III 12, 15, 18, 24, 30, 36, 42, 48; R. C. PIPE CLASS IV 12, 15, 18, 24, 30, 42; 18" WELDED STEEL PIPE 0.5" THICK, GRADE B; 36" WELDED STEEL PIPE 0.5" THICK, GRADE B; 24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN; 30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN; ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY; DRAINAGE STRUCTURE MASONRY CY; QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)): 0' THRU 5' EACH, A 5' THRU 10' LIN. FT., B 10' AND ABOVE LIN. FT.; C.B. STD. 840.01 OR STD. 840.02; FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E, F, G; CONCRETE TRANSITIONAL SECTION: D.I. STD. 852.04 OR STD. 852.06, C.B. STD. 852.05; OPEN THROAT C.B. STD. 840.04 OR STD. 840.05; CONCRETE BRIDGE APPROACH D.I. STD. 840.13; D.I. STD. 840.14 OR STD. 840.15; D.I. FRAME AND GRATES STD. 840.16; G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26; G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27; G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28; G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20; G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20; G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22; G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22; G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24; G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24; G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29; G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29; DRIVEWAY D.I. STD. 840.30; FRAME W/ GRATE FOR DRIVEWAY STD. 840.30; J.B. STD. 840.31 OR STD. 840.32; ANGLED VANE GRATES AND FRAMES STD. 840.33; T.B.J.B. STD. 840.34; T.B.D.I. STD. 840.35; T.B.D.I. FOR STEEL GRATES STD. 840.36; STEEL FRAME WITH TWO GRATES STD. 840.37; TEMP STEEL PLATE COVER MASONRY DRAINAGE; SPRING BOX STD. 840.41; M.H. STD. 840.51, STD. 840.52, OR STD. 840.53; M.H. FRAME AND COVER STD. 840.54; 18" RCP JACK AND BORE; 36" RCP JACK AND BORE; 15" SIDE DRAIN PIPE ELBOW; 15" C.S. ELBOW; 18" C.S. ELBOW; 24" C.S. ELBOW; 30" C.S. ELBOW; 36" C.S. ELBOW; BERM DITCH OUTLET STD. 850.10 (PER EACH); MODIFED CONCRETE FLUME EA; FLOWABLE FILL CY; CONCRETE COLLARS CL. "B" STD. 840.72 CY; CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY.

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	PIPE REMOVAL LIN. FT.	REMARKS
L 271+68	153	LT	0000						70	
L 292+47	68	LT	0000						30	
L 295+16	67	LT	0000						30	
L 296+01	68	LT	0000						27	
L 295+60	7	LT	0000						30	
L 297+00	68	LT	0000						31	
L 299+52	37	LT	0000						56	
L 300+58	67	LT	0000						30	
L 302+65	70	LT	0000						24	
L 304+51	79	LT	0000						122	
L 310+50	3	LT	0000						25	
L 313+62	73	LT	0000						30	
L 318+42	33	LT	0000						60	
L 307+75	35	LT	0000						68	
L 320+91	61	LT	0000						17	
L 321+83	60	LT	0000						28	
L 326+16	38	RT	0000						73	
L 327+25	35	LT	0000						77	
L 335+28	2	RT	0000						29	
L 336+09	3	RT	0000						29	
L 341+32	4	RT	0000						38	
L 342+28	25	LT	0000						90	
L 342+36	12	RT	0000						30	
L 342+84	60	LT	0000						32	
L 350+93	29	LT	0000						67	
L 352+65	65	LT	0000						44	
L 353+63	66	LT	0000						30	
L 355+52	67	LT	0000						29	
L 355+73	8	LT	0000						31	
L 356+33	69	LT	0000						39	
L 361+57	44	LT	0000						60	
L 365+45	86	LT	0000						20	
L 366+88	90	LT	0000						29	
L 368+82	61	LT	0000						61	
L 370+53	93	LT	0000						21	
L 372+25	89	LT	0000						20	
L 383+76	25	LT	0000						29	
L 391+36	75	LT	0000						67	
L 402+30	38	LT	0000						68	
L 405+60	71	LT	0000						51	
L 412+90	67	LT	0000						33	
L 415+68	67	LT	0000						29	
L 415+05	67	LT	0000						29	
L 422+78	1	LT	0000						47	
L 422+13	37	LT	0000						67	
L 432+23	71	LT	0000						61	
L 449+52	6	LT	0000						36	
Y2 13+33	20	LT	0000						42	
L 45+58	61	RT	0000						20	
L 46+15	58	RT	0000						15	
SHEET TOTALS									2121	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

7RDWY042018B

COMPUTED BY:	AECOM	DATE:	6/6/18
CHECKED BY:	Summit Design & Engineering Services	DATE:	2/1/19

PROJECT NO.	SHEET NO.
R-2582A	3D-13

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
Y9 29+90	2	RT	0000					
L 409+92	37	LT	0000					
L 46+94	14	RT	0000					
L 45+84	10	RT	0000					
L 42+93	2	RT	0000					
L 43+29	69	RT	0000					
L 44+78	64	RT	0000					
Y5A 12+67	25	RT	0000					
I95_RPA 15+97	3	RT	0000					
L 28+18	10	RT	0000					
I95_RPB 15+92	7	LT	0000					
Y9 18+84	2	RT	0000					
SHEET TOTALS								
PROJECT TOTALS								

	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	C. S. PIPE 12	15 (.064)	18 (.064)	24 (.064)	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	42
SHEET TOTALS																						
PROJECT TOTALS		6196	1072	196		1048	640	80		4560	4192	1936	692	1476	676	672		532	352	380		648

	18" WELDED STEEL PIPE 0.5" THICK, GRADE B	36" WELDED STEEL PIPE 0.5" THICK, GRADE B	24" R.C. PIPE CULVERTS, CONTRACTOR DEISGN	30" R.C. PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
SHEET TOTALS														
PROJECT TOTALS	412	208	368	300	63.400		141	51.6		4		3	1	

	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33
SHEET TOTALS																					
PROJECT TOTALS	18				18	18	3	90	4		8		32		57		3				

	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" RCP JACK AND BORE	36" RCP JACK AND BORE	15" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)
SHEET TOTALS																	
PROJECT TOTALS		3	19	19							4	26	10	2			

LINE & STATION	MODIFED CONCRETE FLUME EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
Y9 29+90					70	
L 409+92					61	
L 46+94					21	
L 45+84					20	
L 42+93					158	
L 43+29					20	
L 44+78					20	
Y5A 12+67					18	
I95_RPA 15+97		8				Plug 18" RCP
L 28+18		18				Plug 24" RCP
I95_RPB 15+92		5				Plug 15" RCP
Y9 18+84		4				
SHEET TOTALS		35			388	
PROJECT TOTALS	2	35	0.4465		5939	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: AECOM DATE: 6/6/18

CHECKED BY: Summit Design & Engineering Services DATE: 2/1/19

7RDWY042018B

PROJECT NO.	SHEET NO.
R-2582A	3D-14

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54 INCHES & OVER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 54	60	66	72	78	84		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 54	60	66	72	78	84				R. C. PIPE CLASS III 54	60	66	72	78	84		R. C. PIPE CLASS IV 54	60	66	72	78	84		STRUCTURAL PLATE PIPE 60	66	72			ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY
L 248+71	151 LT	1913																																																7.1
		1913	1914																																						456										
SHEET TOTALS																																							456										7.100
PROJECT TOTALS																																							456										7.100

DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) A: 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: Tyler C. Bottoms DATE: 3/14/18
CHECKED BY: Jinyoung Park DATE: 03/20/19

(5-15-18)

PROJECT NO.	SHEET NO.
R-2582A	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	2400
				TOTAL LF:	2400

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			AST	3					500
CONTINGENCY			ASU(1)	12	500	1000	1500		
CONTINGENCY			ASU(1)	12	1000	1900	3000		
			TOTAL CY/TONS/SY:		1500	2900**	4500**	0	500

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
1	-L- 191+10±	65±	LT
2	-L- 191+15±	20±	LT
3	-L- 191+20±	20±	RT
4	-L- 191+20±	65±	RT
5	-L- 192+25±	40±	LT
6	-L- 192+30±	40±	RT
7	-L- 193+15±	40±	LT
8	-L- 193+20±	40±	RT
9	-L- 194+05±	65±	LT
10	-L- 194+05±	20±	LT
11	-L- 194+10±	20±	RT
12	-L- 194+15±	65±	RT
13	-L- 197+75±	65±	LT
14	-L- 197+75±	65±	RT
15	-L- 199+05±	65±	LT
16	-L- 199+05±	65±	RT
	TOTAL GAUGES (EACH):		16

Note : Contractor shall monitor the top of rail elevations at every 100 feet along CSX A-Line (-Y7-) and CSX SA-Line (-Y8-) to 100 feet beyond the retaining walls or embankment fill limits before and during construction of retaining walls or embankment and proposed waiting period. Payment for monitoring top of rail elevations is incidental to the cost of Embankment Settlement Gauges.

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Br. No. 126 on -L- over -Y7- (CSX A-Line), LL, Site 1	EB1, EB2	1
Br. No. 127 on -L- over -Y7- (CSX A-Line), RL, Site 1	EB1, EB2	1
Br. No. 128 on -L- over -Y8- (CSX SA-Line), LL, Site 2	EB1,B1, B2,EB2	5*
Br. No. 129 on -L- over -Y8- (CSX SA-Line), RL, Site 2	EB1,B1, B2,EB2	5*
Br. No. 124 on -L- over -Y9- (US 301), RL	EB1, EB2	4
Br. No. 125 on -L- over -Y9- (US 301), LL	EB1, EB2	4

* Staged construction recommended for approach to Site 2 End Bent 1. See Sheets 2G-2 and 2G-3.

PROJ. REFERENCE NO.	SHEET NO.
R-2582A	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	KAPSTONE KRAFT PAPER CORP.
2	4	ANNA R. JONES
3	4	MDT INC.
4	4	LYNN WOODRUFF
5	4	MDT
5A	4	NATIONAL PROPERTIES, INC
7	4	RENA DEVELOPMENT, LLC
7A	4	O. S. SUITER, JR
7B	4	O. S. SUITER, JR
8	4	NEW DIXIE OIL CORP.
9	4	W. J. LONG & JUNE LONG (NO CLAIM)
9A	4	OAK GROVE BAPTIST CHURCH (NO CLAIM)
10	4	LUICILLE IVEY HEIRS
11	4,5	WILLIAM R. GARNER
12	4,5	JERRY WRIGHT
13	4,5	CAROLYN N. BARDEN
14	5	BEATRICE GARNER HEIRS
15	5	LAWRENCE C. KING
16	5	WILLARD LEE BELFIELD
18	5	FLORA R. PITCHFORD ET AL
19	5	MICHAEL H. WRAY ET UX
20	5	JUDITH SYKES
21	5	WALTER SYKES ET UX
22	5	ASHBY SYKES HEIRS
23	5	ROBERT L. SYKES ET UX
24	5	ROBERT L. EDMONDS JR. ET UX
25	5	CORA MAE MAYO
26	5	FESSIE PORCH ET AL
27	5	J. E. ROSCOE HEIRS
28	5	ANNIE P. WILLIAMS
28A	5,6	JESSE J. ROOK HEIRS
29	5,6	JESSE J. ROOK
30	5,6	GEORGE INGRAM ET UX
31	6,7,8,10	ANNIE TUDOR
31A	7	THOMAS TUDOR
31B	10	ANNIE TUDOR
32	6	JESSE J. ROOK
33	6	BRIDGETT DANIELS
34	6	GILBERT EDWARD HEIRS
35	6	ADAM CLEMONTS
36	6	SHARON F. PEELE
37	6	ELLA JOYNER
38	6	JESSE MALLORY HEIRS
39	6,7	CONSTANCE DICKERSON
40	7	DAVID M. GRANT ET UX
41	7	HENRY B. LONG
42	7,8	HENRY LONG
43	8,9,10	O. S. SUITER, JR
44	8,9,10	SAND RIDGE DEVELOPMENT ASSN, INC.
44A	8	NEDA SOBHANI
44B	9	SAND RIDGE DEVELOPMENT, INC.
44C	9, 10	SAND RIDGE DEVELOPMENT, INC.
45	10,11	S & S MEMORY REALTY, LLC
46	10	GLADIES MOODY
47	10	SHAWN TORRES
48	10,11	MARISSA D. JORDAN
49	10,11	CATHERINE B. MOODY ET VIR
49A	10,11	THEODORE E. MOODY
50	11	STATE OF NORTH CAROLINA
51	11	W. A. BUFFALOE

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
52	11	VICKY COTTON BENNETT
53	11	ROBINSON FARMS LLC
54	11,12	NEWTON STEPHENSON
55	13	JANE F. WILLIFORD
56	13,14	JOHN B. SANFILIPPO & SONS. INC
57	13	JOHN L. FITZHUGH, JR. ET UX
58	13	WILBERT V. WARREN, JR.
59	14	NORTHAMPTON COUNTY
60	14,15,16	JANE F. WILLIFORD
61	14,15	CSX RAILWAY
62	14,15	JOHN L. FITZHUGH, JR.
62A	16,36	LOUISE P. GREGORY
62B	36	BIANCA M. BROWN
63	16	TOSCA VIOLA TOWNES
64	16	NORTHAMPTON COUNTY UTILITIES
65	16	VIRGINIA W. COLEMAN
66	16	LAWRENCE C. PITTMAN, JR. AND CLAUDIA PITTMAN
67	16	ROZELIA C. PITTMAN AND LAWRENCE C. PITTMAN, JR.
68	16	ROZELIA C. PITTMAN
69	16	JAMES TINSLEY COLEMAN
70	16	JAMES W. SIMMONS
71	16	WALTER LEE CLABOINE
72	16,35	MINNIE ANNE SMITH AND JOSEPH SMITH, SR …
73	16,35	FWZY TALB ALI-GHLIS
75	16	MATT JOSEPH ALSTON AND MARGARET S. ALSTON
76	16,3	AILZEAN CLEMENTS
77	16	DEPARTMENT OF TRANSPORTATION
78	16	JAMES WASHINGTON
79	16	ELLA MAE COLEMAN
80	16	MILDRED GATLING WILLIAMS
81	16	JAMES T. COLEMAN AND MALINDA P. COLEMAN
82	16,17,36	WILLIAM SCHELL SR. CO-TRUSTEE
83	17,18,18A	NANCY BLALOCK HEIRS & OTHERS
84	18,18A,19,20,21,22	KATHERINE ROBINSON, TRUSTEE
85	18,19	ELLIS ROBINSON HARRIS
86	22,23,24,25	CURTIS R. TURNER, JR.
87	22,23	ELNORA T. TUNER, ET VIR
88	23	L. H. MOSELLEY. ET UX
89	23	ELIJAH LAWRENCE WILLIAMS
90	23	AUDREY W. BANKSTON
91	23	DEBRA TUCK
92	23	NORTHAMPTON COUNTY VICINITY MISSIONARY
93	23,24	STEPHENSON BROTHERS
94	24	WILLIAM T. VASSOR, ET UX
95	24	ALEJANDRO MATOS, JR.
96	24,25	TONYA SCHAEFER
97	24,25	TONYA SCHAEFER
98	25	MARY EASTEP
99	25	VERNON T. BRADLEY JR. LIVING TRUST
100	25,26	ELANOR PRUDEN & HUGH WITT III HEIRS
101	25,26	BARBARA A. STEPHENSON
102	25,26	HENRY B. STEPHENSON
104	26,27,28,29	TAYLOR FARM PROPERTIES
105	27	DFLOSSIE T. DEBERRY
106	27	DANNY T. JERNIGAN & DARLENE E. JERNIGAN
108	28	EDWARD H. PATE
109	28	THOMAS JERNIGAN & REBECCA JERNIGAN
110	28	THOMAS JERNIGAN & REBECCA JERNIGAN
111	8,29,30,31,32,33,34	MILDRED S. EDWARDS ET AL
112	29	ELSIE BROWN SMITH

PROJ. REFERENCE NO.	SHEET NO.
R-2582A	3P-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
112A	29	ELSIE BROWN SMITH
113	29,30,32	JBJB, LLC
115	31	LARRY E. DAVIS
116	31	EMMETT DAVIS HEIRS
117	32,33,34	W&M ASSOCIATES
122	35	TOMMIE L. LOWE, SR.
123	35	ALEXANDER PEEBLES AND EVELYN M. PEEBLES
124	35	EDDIE C. PEEBLES & MARY J. PEEBLES
125	35	LLOYD GHEE AND VIOLA W. GHEE

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

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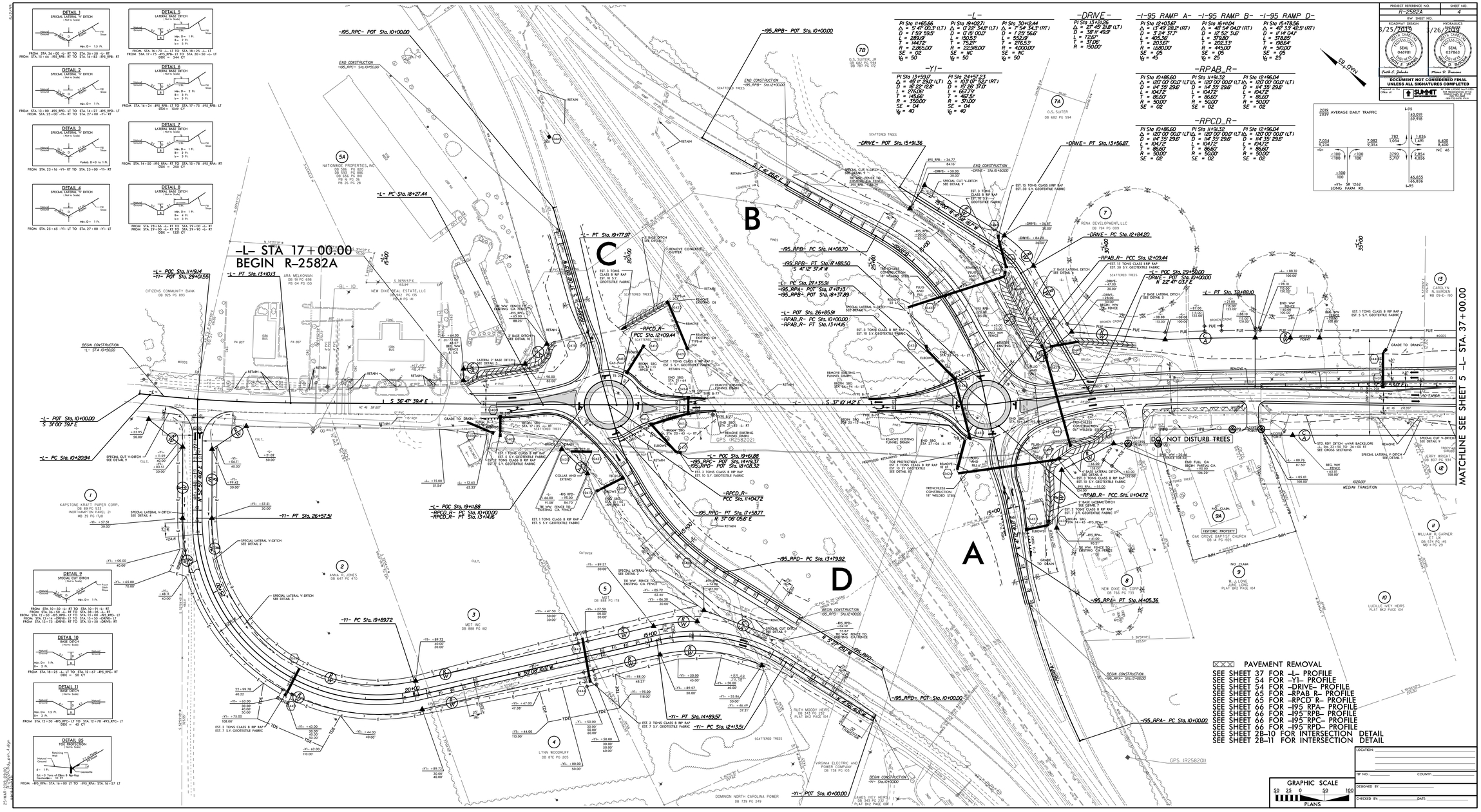

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PROJECT REFERENCE NO.	SHEET NO.
R-2582A	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER 3/25/2019 — NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE — DocuSign Faith E. Jahnke

HYDRAULICS ENGINEER 3/26/2019 — NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEMO D. BUSCEMI — DocuSign Memo D. Buscemi

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES — NC FIRM LICENSE No: P-0339, 504 Meadowlands Drive, Hillsborough, NC 27278, (919) 732-3883, (919) 732-6676 (FAX)

DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground; 3:1 or Flatter; D; 4:1 or Flatter; Fill Slope
Min. D= 1.5 Ft.
FROM STA. 38+65 –L– LT TO STA. 42+40 –L– LT
FROM STA. 38+90 –L– RT TO STA. 47+30 –L– RT
FROM STA. 43+50 –L– LT TO STA. 47+00 –L– LT
FROM STA. 49+50 –L– LT TO STA. 58+00 –L– LT

DETAIL 9
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground; 3:1 or Flatter; D; 4:1 or Flatter; Front Ditch Slope
Min. D= 1 Ft.
FROM STA. 36+50 –L– RT TO STA. 38+05 –L– RT

DETAIL 12
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground; 3:1; D; 4:1 or Flatter; Fill Slope; B
Min. D= 1 Ft.
B= 2 Ft.
FROM STA. 13+00 –Y2– LT TO STA. 13+75 –Y2– LT

DETAIL 13
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground; 3:1; D; d; 3:1; Fill Slope
Min. D= 1 Ft.
Max. d= 1 Ft.
Est.= 22 SY of PSRM
FROM STA. 12+95 –Y2– RT TO STA. 13+27 –Y2– RT

DETAIL 16
PIPE OUTLET CHANNEL
(Not to Scale)
Natural Ground; EXISTING BANK; D; d= 1.5 Ft. (to TOB); GEOTEXTILE; CHANNEL BED (Variable)
Length= 10 Ft.
D= 1.5 Ft.
Est.= 11 Tons of Class B Rip-Rap
Geotextile = 8 SY
STA. 38+59 –L– LT

DETAIL 14
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground; 3:1 or Flatter; D; 4:1 or Flatter; Front Ditch Slope
Min. D= 1.5 Ft.
FROM STA. 47+00 –L– LT TO STA. 48+35 –L– LT

DETAIL 15
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground; 3:1; D; 3:1 or Flatter; Fill Slope
Min. D= 1 Ft.
FROM STA. 10+84 –Y3– RT TO STA. 11+00 –Y3– RT
FROM STA. 10+99 –Y3– LT TO STA. 11+60 –Y3– LT

–L–

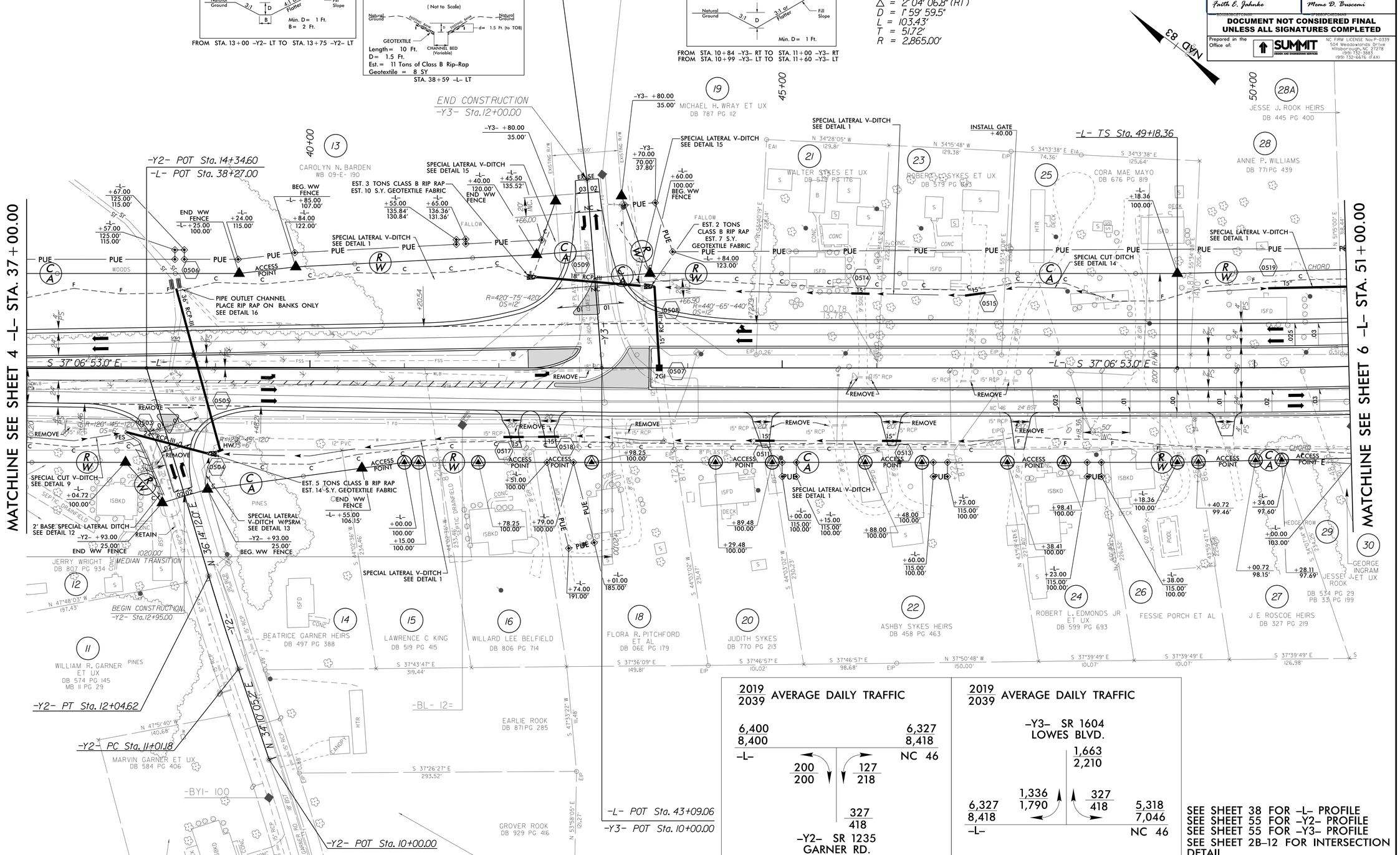
PIs Sta 51+18.42
Θs = 4° 05' 33.2"
Ls = 300.00'
LT = 200.05'
ST = 100.05'

PI Sta 58+36.35
Δ = 32° 47' 46.4" (LT)
D = 2° 43' 42.1"
L = 1,202.04'
T = 617.99'
R = 2,100.00'
SE = 06
Vg = 70

PIs Sta 65+20.46
Θs = 4° 05' 33.2"
Ls = 300.00'
LT = 200.05'
ST = 100.05'

–Y2–

PI Sta 11+52.91
Δ = 2° 04' 06.8" (RT)
D = 1° 59' 59.5"
L = 103.43'
T = 51.72'
R = 2,865.00'



2019 / 2039 AVERAGE DAILY TRAFFIC

–L– NC 46: 6,400 / 8,400 — 6,327 / 8,418
–Y2– SR 1235 GARNER RD.: 200 / 200 — 127 / 218 — 327 / 418

2019 / 2039 AVERAGE DAILY TRAFFIC

–Y3– SR 1604 LOWES BLVD.: 1,663 / 2,210
–L– NC 46: 6,327 / 8,418 — 1,336 / 1,790 — 327 / 418 — 5,318 / 7,046

SEE SHEET 38 FOR –L– PROFILE
SEE SHEET 55 FOR –Y2– PROFILE
SEE SHEET 55 FOR –Y3– PROFILE
SEE SHEET 2B-12 FOR INTERSECTION DETAIL

8/17/99

25-MAR-2019 09:00
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke
BUSINESS CONTACT

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Busceni
BUSINESS CONTACT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

-L- PIs Sta 51+18.42, Θs = 4°05' 33.2", Ls = 300.00', LT = 200.05', ST = 100.05'

-L- PI Sta 58+36.35, Δ = 32° 47' 46.4" (LT), D = 2° 43' 42.1", L = 1,202.04', T = 617.99', R = 2,100.00', SE = 06, V_d = 70

-L- PIs Sta 65+20.46, Θs = 4°05' 33.2", Ls = 300.00', LT = 200.05', ST = 100.05'

NAD 83

-L- SC Sta. 52+18.36

MATCHLINE SEE SHEET 5 -L- STA. 51+00.00

MATCHLINE SEE SHEET 7 -L- STA. 64+00.00

55+00

60+00

ANNIE TUDOR DB 02E PG 164 (31)

JESSE J. ROOK HEIRS DB 445 PG 400 (28A)

GEORGE INGRAM ET UX (29)

JESSE ROOK DB 534 PG 99, PB 33 PG 29 (30)

JESSE J. ROOK DB 391 PG 164 (32)

BRIDGETT DANIELS DB 1023 PG 404 (33)

GILBERT EDWARD HEIRS DB 743 PG 12 (34)

ADAM CLEMONTS DB 760 PG 827 (35)

SHARON F. PEELE DB 690 PG 320 (36)

ELLA JOYNER FIKES DUFAU DB 09E PG 70 (37)

JESSE MALLORY HEIRS DB 485 PG 381 (38)

CONSTANCE DICKERSON DB 931 PG 941 (39)

-BL- 13

-BL- 14

BEG. WW FENCE +05.00 100.57'

ACCESS POINT (0607)

SPECIAL LATERAL V-DITCH SEE DETAIL 1

INSTALL GATE +34.50

SPECIAL LATERAL V-DITCH SEE DETAIL 1

SPECIAL CUT V-DITCH SEE DETAIL 14

150' TAPER

REMOVE

24" RCP III

10' x 20' PSRM PAD

INSTALL GATE +75.00

SPECIAL LATERAL V-DITCH SEE DETAIL 4

BEG. WW FENCE +50.00 107.11'

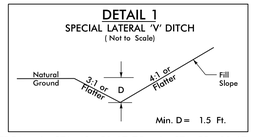
EST. 5 TONS CLASS B RIP RAP
EST. 14 S.Y. GEOTEXTILE FABRIC

SPECIAL LATERAL V-DITCH SEE DETAIL 4

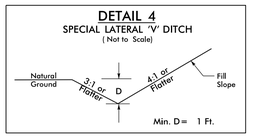
NC 46 24' BST

8" PLASTIC

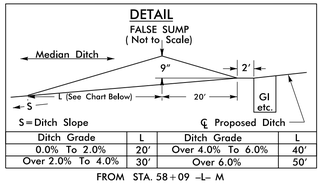
EXISTING R/W



FROM -L- STA. 49+50 LT TO -L- STA. 58+00 LT
FROM -L- STA. 58+00 LT TO -L- STA. 60+65 LT

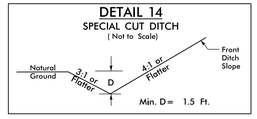


FROM -L- STA. 55+00 RT TO -L- STA. 57+82 RT
FROM -L- STA. 62+00 RT TO -L- STA. 72+50 RT



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 58+09 -L- M



FROM -L- STA. 62+00 LT TO -L- STA. 72+60 LT

SEE SHEET 38 FOR -L- PROFILE
SEE SHEET 2B-9 FOR INTERSECTION DETAIL

25-MAR-2019 09:00
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke
BD02B5B5C7C0485...

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Busceni
B0A0B8B4D7C0408...

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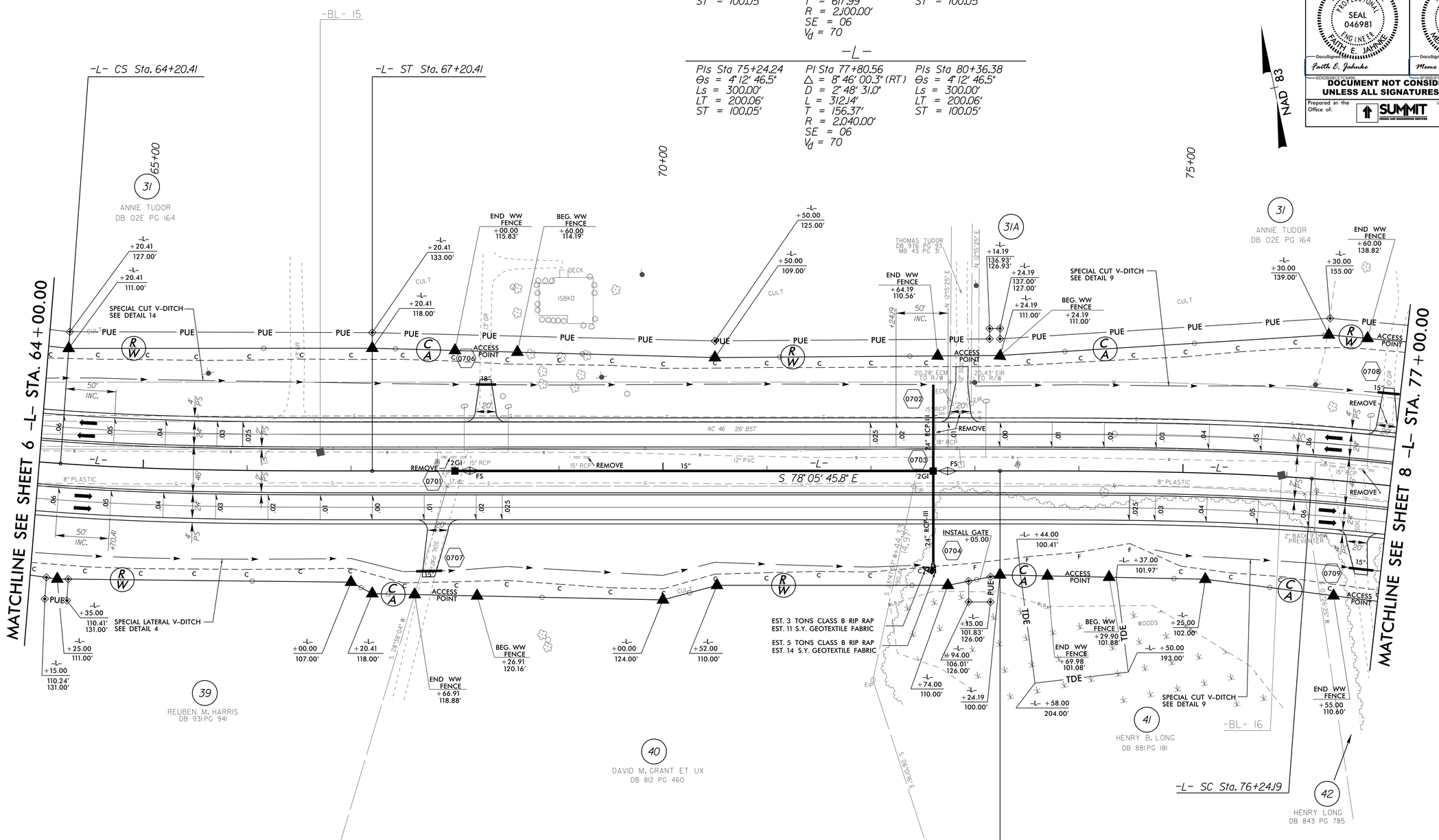
Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

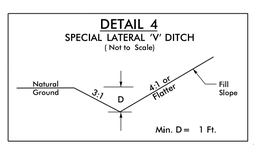
NAD 83

-L-		
PIs Sta 51+18.42 Θs = 4° 05' 33.2" Ls = 300.00' LT = 200.05' ST = 100.05'	PI Sta 58+36.35 Δ = 32° 47' 46.4" (LT) D = 2° 43' 42.1" L = 1,202.04' T = 617.99' R = 2,100.00' SE = 06 V_d = 70	PIs Sta 65+20.46 Θs = 4° 05' 33.2" Ls = 300.00' LT = 200.05' ST = 100.05'

-L-		
PIs Sta 75+24.24 Θs = 4° 12' 46.5" Ls = 300.00' LT = 200.06' ST = 100.05'	PI Sta 77+80.56 Δ = 8° 46' 00.3" (RT) D = 2° 48' 31.0" L = 312.14' T = 156.37' R = 2,040.00' SE = 06 V_d = 70	PIs Sta 80+36.38 Θs = 4° 12' 46.5" Ls = 300.00' LT = 200.06' ST = 100.05'

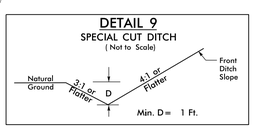


DETAIL 4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



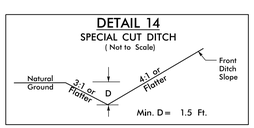
FROM -L- STA. 62+00 RT TO -L- STA. 72+50 RT

DETAIL 9
SPECIAL CUT DITCH
(Not to Scale)



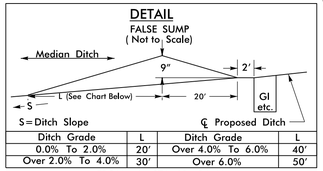
FROM -L- STA. 73+00 LT TO -L- STA. 79+50 LT
FROM -L- STA. 75+00 RT TO -L- STA. 80+50 RT

DETAIL 14
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 62+00 LT TO -L- STA. 72+60 LT

DETAIL
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM -L- STA. 68+24 M
FROM -L- STA. 72+84 M

SEE SHEET 39 FOR -L- PROFILE

25-MAR-2019 09:00
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sparkins1

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PROJECT REFERENCE NO.	SHEET NO.
R-2582A	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke
8D0028B0E7C4485...

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Buscemi
8D9BB8F4C8C9B4B...

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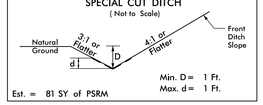
Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

DETAIL 9
SPECIAL CUT DITCH
(Not to Scale)

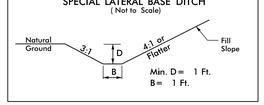
FROM –L– STA. 73+00 LT TO –L– STA. 79+50 LT
FROM –L– STA. 75+00 RT TO –L– STA. 80+50 RT
FROM –L– STA. 88+50 RT TO –L– STA. 91+00 RT
FROM –L– STA. 89+50 LT TO –L– STA. 90+50 LT

DETAIL 17
SPECIAL CUT DITCH
(Not to Scale)



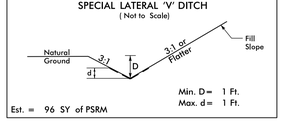
Est. = 81 SY of PSRM
FROM –L– STA. 83+00 RT TO –L– STA. 84+00 RT

DETAIL 18
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 79+50 LT TO –L– STA. 81+60 LT

DETAIL 19
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

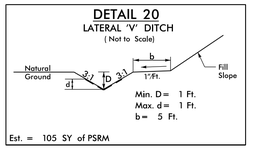


Est. = 96 SY of PSRM
FROM –L– STA. 84+24 LT TO –L– STA. 85+60 LT

–L–

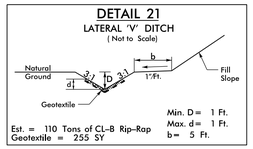
PIs Sta 75+24.24	PI Sta 77+80.56	PIs Sta 80+36.38
Θs = 4° 12' 46.5"	Δ = 8° 46' 00.3" (RT)	Θs = 4° 12' 46.5"
Ls = 300.00'	D = 2° 48' 31.0"	Ls = 300.00'
LT = 200.06'	L = 312.14'	LT = 200.06'
ST = 100.05'	T = 156.37'	ST = 100.05'
	R = 2,040.00'	
	SE = 06	
	V_d = 70	

DETAIL 20
LATERAL 'V' DITCH
(Not to Scale)



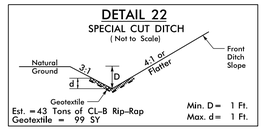
Est. = 105 SY of PSRM
FROM –L– STA. 84+00 RT TO –L– STA. 85+50 RT
DDE = 827 CY

DETAIL 21
LATERAL 'V' DITCH
(Not to Scale)



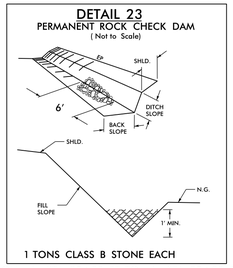
Est. = 110 Tons of CL-B Rip-Rap
Geotextile = 255 SY
FROM –L– STA. 86+03 LT TO –L– STA. 89+50 LT
DDE = 115 CY

DETAIL 22
SPECIAL CUT DITCH
(Not to Scale)



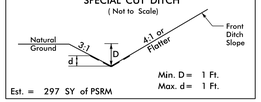
Est. = 43 Tons of CL-B Rip-Rap
Geotextile = 99 SY
FROM –L– STA. 87+33 RT TO –L– STA. 88+50 RT

DETAIL 23
PERMANENT ROCK CHECK DAM
(Not to Scale)



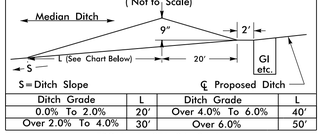
FROM –L– STA. 85+00 RT TO –L– STA. 85+08 RT

DETAIL 24
SPECIAL CUT DITCH
(Not to Scale)



Est. = 297 SY of PSRM
FROM –L– STA. 87+33 RT TO –L– STA. 91+00 RT

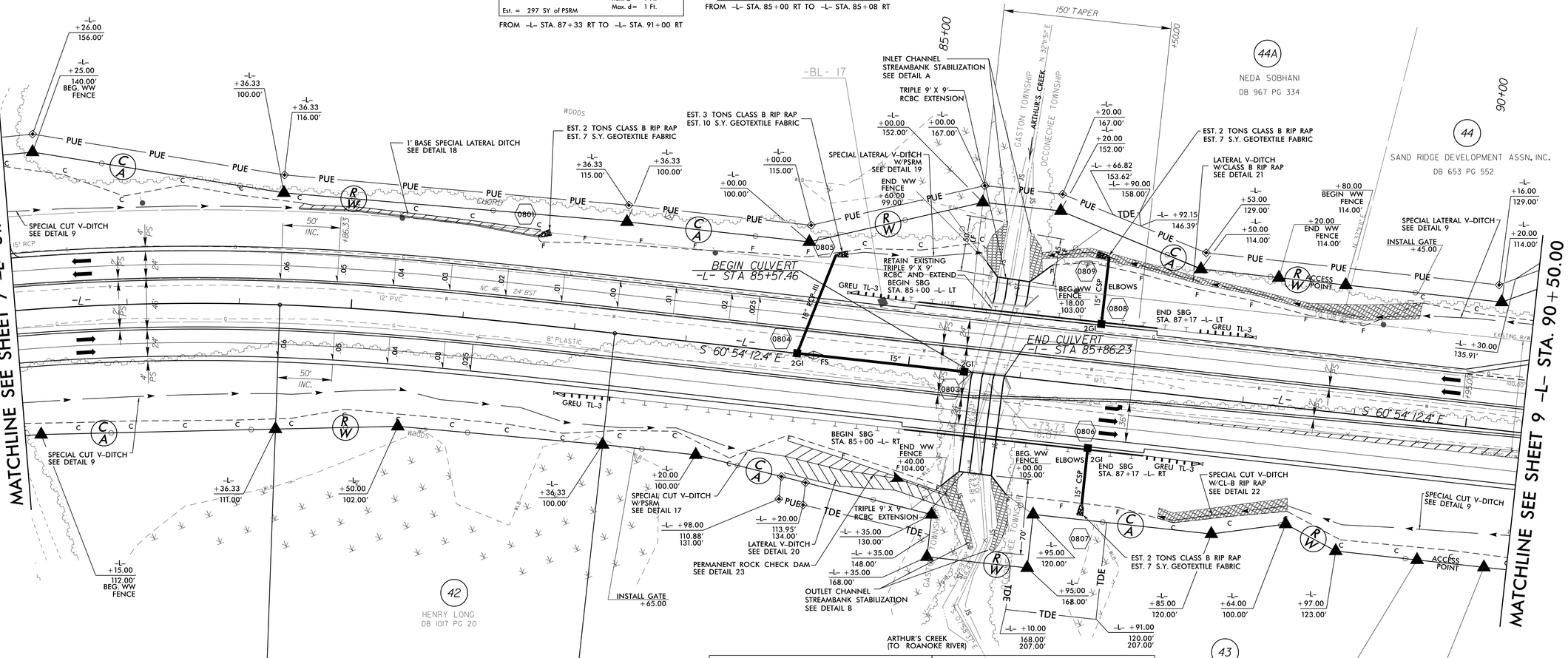
DETAIL
FALSE SUMP
(Not to Scale)



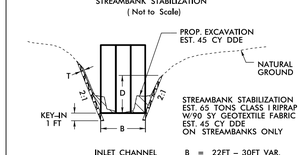
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM –L– STA. 84+24 M

NAD 83



DETAIL A
INLET CHANNEL STREAMBANK STABILIZATION
(Not to Scale)

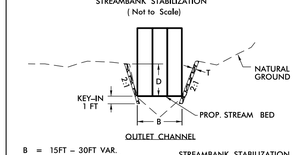


INLET CHANNEL

B = 22FT – 30FT VAR.
D = 2.5FT – 4.5FT VAR. (TO TOB)
T = 1.5 FT

STREAMBANK STABILIZATION
EST. 65 TONS CLASS I RIPRAP
W/90 SY GEOTEXTILE FABRIC
EST. 45 CY DDE
ON STREAMBANKS ONLY

DETAIL B
OUTLET CHANNEL STREAMBANK STABILIZATION
(Not to Scale)



OUTLET CHANNEL

B = 15FT – 30FT VAR.
D = 2.5FT – 4.5FT VAR. (TO TOB)
T = 1.5 FT

STREAMBANK STABILIZATION
EST. 90 TONS CLASS I RIPRAP
W/120 SY GEOTEXTILE FABRIC
ON STREAMBANKS ONLY

SEE SHEET 39 FOR –L– PROFILE

25-MAR-2019 09:00
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Buscemi

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NC FIRM LICENSE No: P-0339
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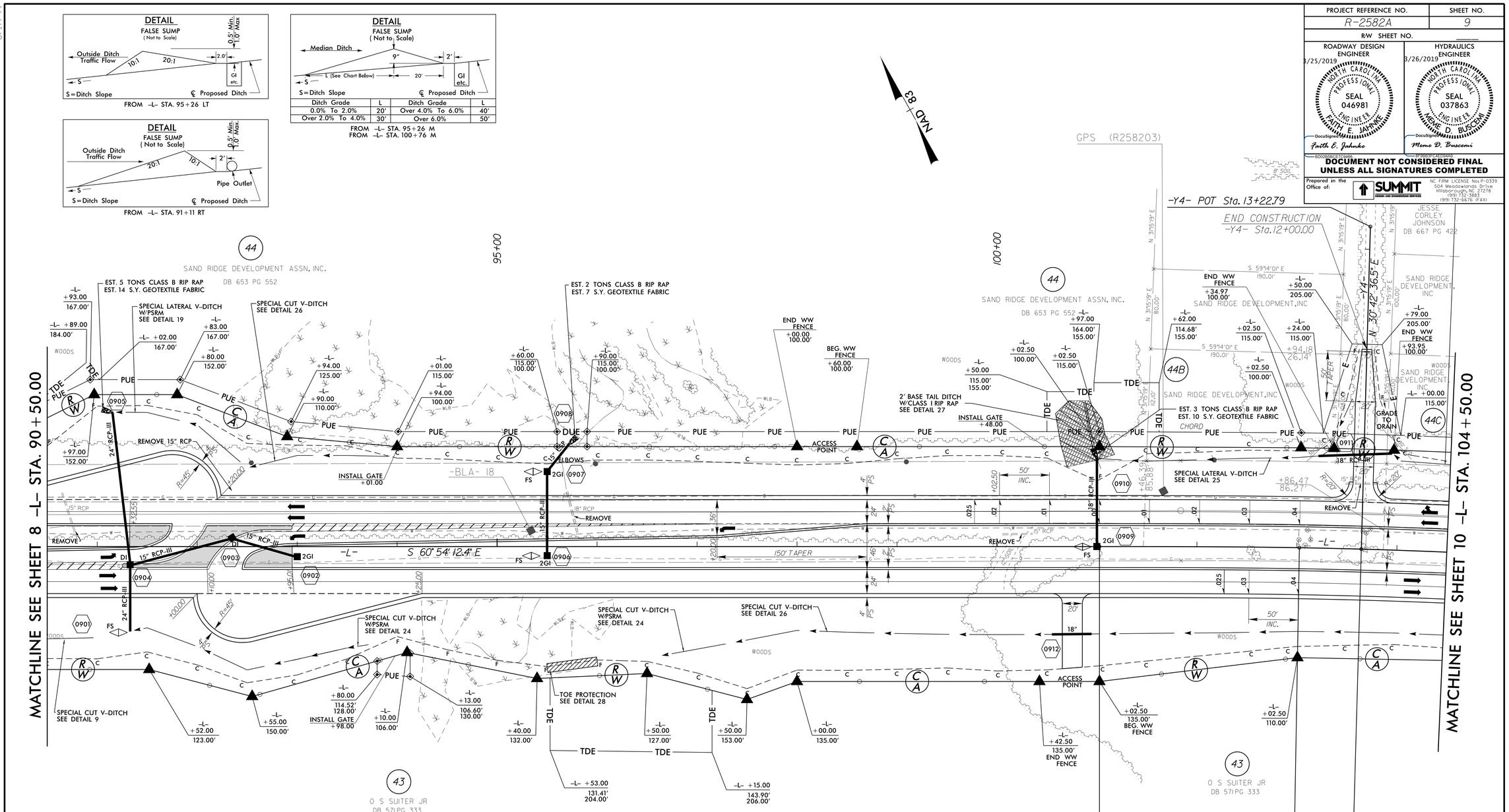
(919) 732-3883
(919) 732-6676 (FAX)

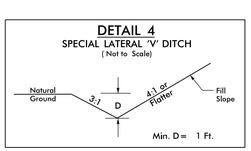


FROM -L- STA. 95+26 LT

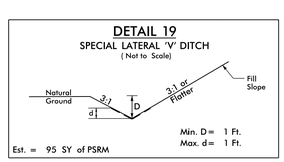
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM -L- STA. 95+26 M
FROM -L- STA. 100+76 M

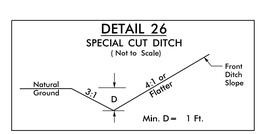
FROM -L- STA. 91+11 RT



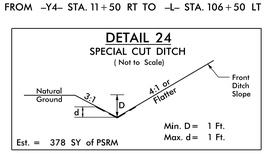
FROM -Y4- STA. 11+50 RT TO -L- STA. 106+50 LT



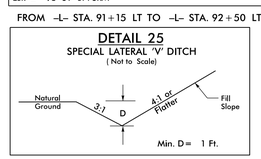
FROM -L- STA. 91+15 LT TO -L- STA. 92+50 LT



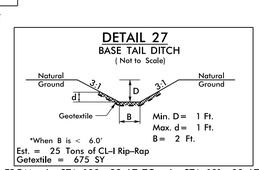
FROM -L- STA. 92+50 LT TO -L- STA. 94+00 LT
FROM -L- STA. 98+00 RT TO -L- STA. 114+00 RT



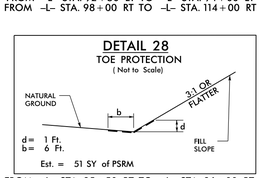
FROM -L- STA. 91+33 RT TO -L- STA. 94+00 RT
FROM -L- STA. 96+00 RT TO -L- STA. 98+00 RT



FROM -L- STA. 101+00 LT TO -Y4- STA. 11+50 LT
FROM -Y4- STA. 11+50 RT TO -L- STA. 106+50 LT



FROM -L- STA. 100+88 LT TO -L- STA. 101+00 LT
DDE = 400 CY



FROM -L- STA. 95+50 RT TO -L- STA. 96+00 RT

-L-

PIs Sta 102+35.83	PI Sta 107+85.54	PIs Sta 113+33.00
Θs = 0° 59' 47.2"	Δ = 9° 36' 14.6" (RT)	Θs = 0° 59' 47.2"
Ls = 200.00'	D = 0° 59' 47.2"	Ls = 200.00'
LT = 133.34'	L = 963.83'	LT = 133.34'
ST = 66.67'	T = 483.05'	ST = 66.67'
	R = 5,750.00'	
	SE = NC	
	V_d = 70+	

SEE SHEET 40 FOR -L- PROFILE
SEE SHEET 55 FOR -Y4- PROFILE
SEE SHEET 2B-9 FOR INTERSECTION DETAIL

25-MAR-2019 09:00
R2582A_RDy_0900_sarajones1.pse_9.dgn

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PROJECT REFERENCE NO.	SHEET NO.
R-2582A	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Buscemi

BID02BEGINSTCHARS
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BID02ENDSTCHARS

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

DETAIL 4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Fill Slope
Min. D= 1 Ft.
FROM –Y4– STA. 11+50 RT TO –L– STA. 106+50 LT

DETAIL 9
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1 or Flatter, D, 4:1 or Flatter, Front Ditch Slope
Min. D= 1 Ft.
FROM –L– STA. 118+00 LT TO –L– STA. 125+00 LT

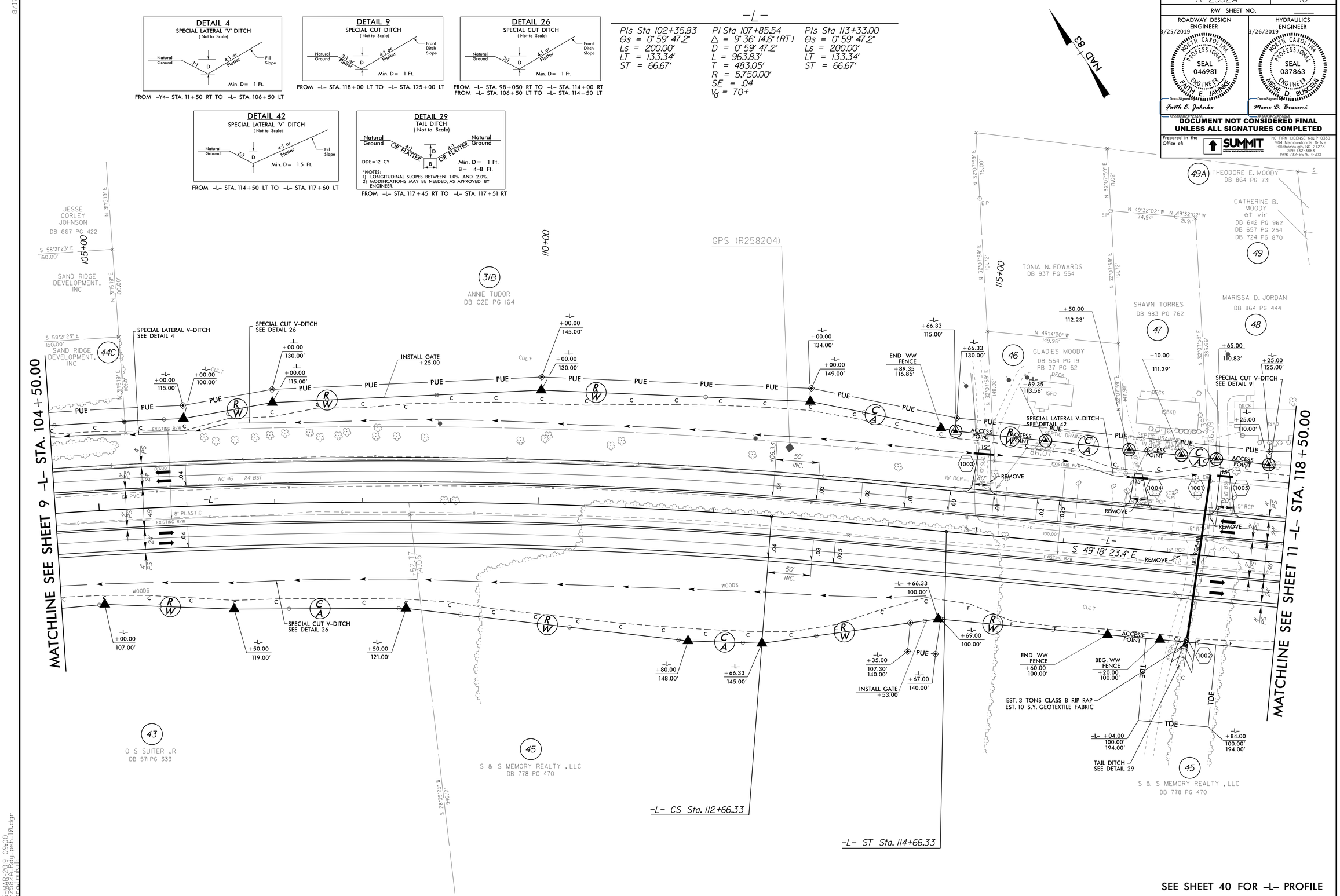
DETAIL 26
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D= 1 Ft.
FROM –L– STA. 98+050 RT TO –L– STA. 114+00 RT
FROM –L– STA. 106+50 LT TO –L– STA. 114+50 LT

–L–

PIs Sta 102+35.83	PI Sta 107+85.54	PIs Sta 113+33.00
Θs = 0° 59' 47.2"	Δ = 9° 36' 14.6" (RT)	Θs = 0° 59' 47.2"
Ls = 200.00'	D = 0° 59' 47.2"	Ls = 200.00'
LT = 133.34'	L = 963.83'	LT = 133.34'
ST = 66.67'	T = 483.05'	ST = 66.67'
	R = 5,750.00'	
	SE = .04	
	Vd = 70+	

DETAIL 42
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Fill Slope
Min. D= 1.5 Ft.
FROM –L– STA. 114+50 LT TO –L– STA. 117+60 LT

DETAIL 29
TAIL DITCH
(Not to Scale)
Natural Ground, OR FLATTER, 4:1 OR FLATTER, Natural Ground, D, B
DDE=12 CY
Min. D= 1 Ft.
B= 4-8 Ft.
*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 1.0% AND 2.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.
FROM –L– STA. 117+45 RT TO –L– STA. 117+51 RT



SEE SHEET 40 FOR –L– PROFILE

25-MAR-2019 09:00
R2582A_sht_plan_ppsl_10.dgn

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke
BD028B9D3F7D4AB...

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEMO D. BUSCEMI
DocuSigned by: Memo D. Buscemi
B4D0B3B0A3C7D4A...

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NC FIRM LICENSE: Non-P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

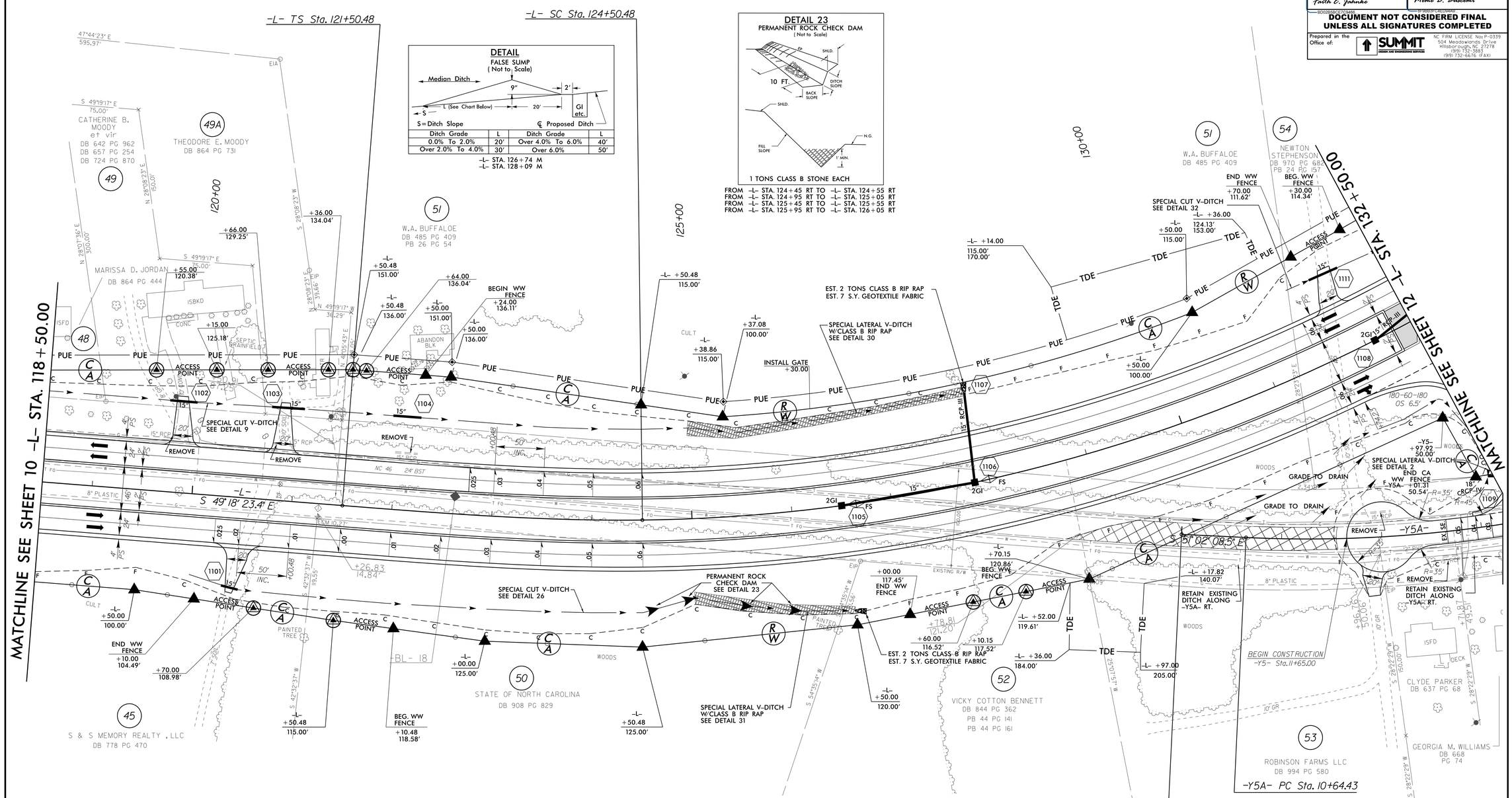
-L-

PIs Sta 123+50.56	PI Sta 130+71.11	PIs Sta 137+38.40	PIs Sta 141+38.41	PI Sta 155+83.30	PIs Sta 165+99.14
Θs = 5° 10' 38.4"	Δ = 40° 59' 57.1" (LT)	Θs = 5° 10' 38.4"	Θs = 5° 10' 38.4"	Δ = 78° 01' 49.4" (RT)	Θs = 5° 10' 38.4"
Ls = 300.00'	D = 3° 27' 05.6"	Ls = 300.00'	Ls = 300.00'	D = 3° 27' 05.6"	Ls = 300.00'
LT = 200.09'	L = 1,187.85'	LT = 200.09'	LT = 200.09'	L = 2,260.73'	LT = 200.09'
ST = 100.08'	T = 620.64'	ST = 100.08'	ST = 100.08'	T = 1,344.97'	ST = 100.08'
	R = 1,660.00'			R = 1,660.00'	
	SE = 06			SE = 06	
	V_d = 65			V_d = 65	

-Y5A-

PI Sta 12+93.94
Δ = 20° 19' 50.5" (LT)
D = 4° 28' 34.4"
L = 454.19'
T = 229.51'
R = 1,280.00'
SE = NC
V_d = 60+

NAD 83



DETAIL
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

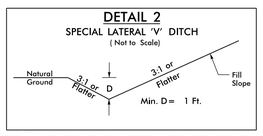
-L- STA. 126+74 M
-L- STA. 128+09 M

DETAIL 23
PERMANENT ROCK CHECK DAM
(Not to Scale)

1 TONS CLASS B STONE EACH

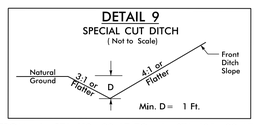
FROM -L- STA. 124+45 RT TO -L- STA. 124+55 RT
FROM -L- STA. 124+95 RT TO -L- STA. 125+05 RT
FROM -L- STA. 125+45 RT TO -L- STA. 125+55 RT
FROM -L- STA. 125+95 RT TO -L- STA. 126+05 RT

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



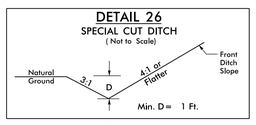
FROM -Y5- STA. 13+00 LT TO -Y5A- STA. 12+88 LT

DETAIL 9
SPECIAL CUT DITCH
(Not to Scale)



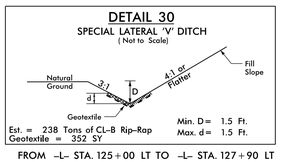
FROM -L- STA. 118+00 LT TO -L- STA. 125+00 LT

DETAIL 26
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 120+00 RT TO -L- STA. 125+00 RT

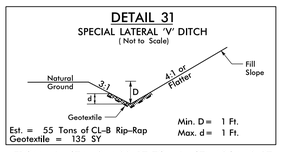
DETAIL 30
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Est. = 238 Tons of CL-B Rip-Rap
Geotextile = 352 SY

FROM -L- STA. 125+00 LT TO -L- STA. 127+90 LT

DETAIL 31
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Est. = 55 Tons of CL-B Rip-Rap
Geotextile = 135 SY

FROM -L- STA. 125+00 RT TO -L- STA. 126+50 RT

PAVEMENT REMOVAL
SEE SHEET 41 FOR -L- PROFILE
SEE SHEET 55 FOR -Y5A- PROFILE
SEE SHEET 2B-12 FOR INTERSECTION DETAIL

25-MAR-2019 09:00
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PROJECT REFERENCE NO.	SHEET NO.
R-2582A	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
4/5/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER JEME D. BUSCEMI

DocuSigned by: Faith E. Jahnke
BD02...

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NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (Fax)

8/17/99

2019 / 2039 AVERAGE DAILY TRAFFIC

5,318 / 7,045 –L–
5,318 / 7,045 BYPASS
327 / 418
827 / 418
654 / 836
327 / 418
327 / 418
327 / 418
NC 46
<100 / <100
327 / 418
–Y5– SR 1231 VINCENT LOOP RD.

DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1 or Flatter, D, 4:1 or Flatter, Fill Slope
Min. D = 1.5 Ft.
FROM –L– STA. 136+00 LT TO –L– STA. 139+00 LT

DETAIL 32
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D = 1.5 Ft.
FROM –L– STA. 131+50 LT TO –L– STA. 136+00 LT

DETAIL 33
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, B, 4:1 or Flatter, Fill Slope
Min. D = 1.5 Ft.
B = 2 Ft.
FROM –L– STA. 139+00 LT TO –L– STA. 140+00 LT

DETAIL 35
PSRM
(Not to Scale)
PLAN VIEW: L, w = 6 Ft., L = 10 Ft., PSRM
PROFILE VIEW: END OF PROPOSED DITCH GRADE, Prop. ditch grade, See Roadway profiles, 3:1, w, Natural Ground, PSRM w/1' TUCK ALL SIDES
FROM –L– STA. 140+00 LT TO –L– STA. 140+16 LT
Est. = 50 SY of PSRM

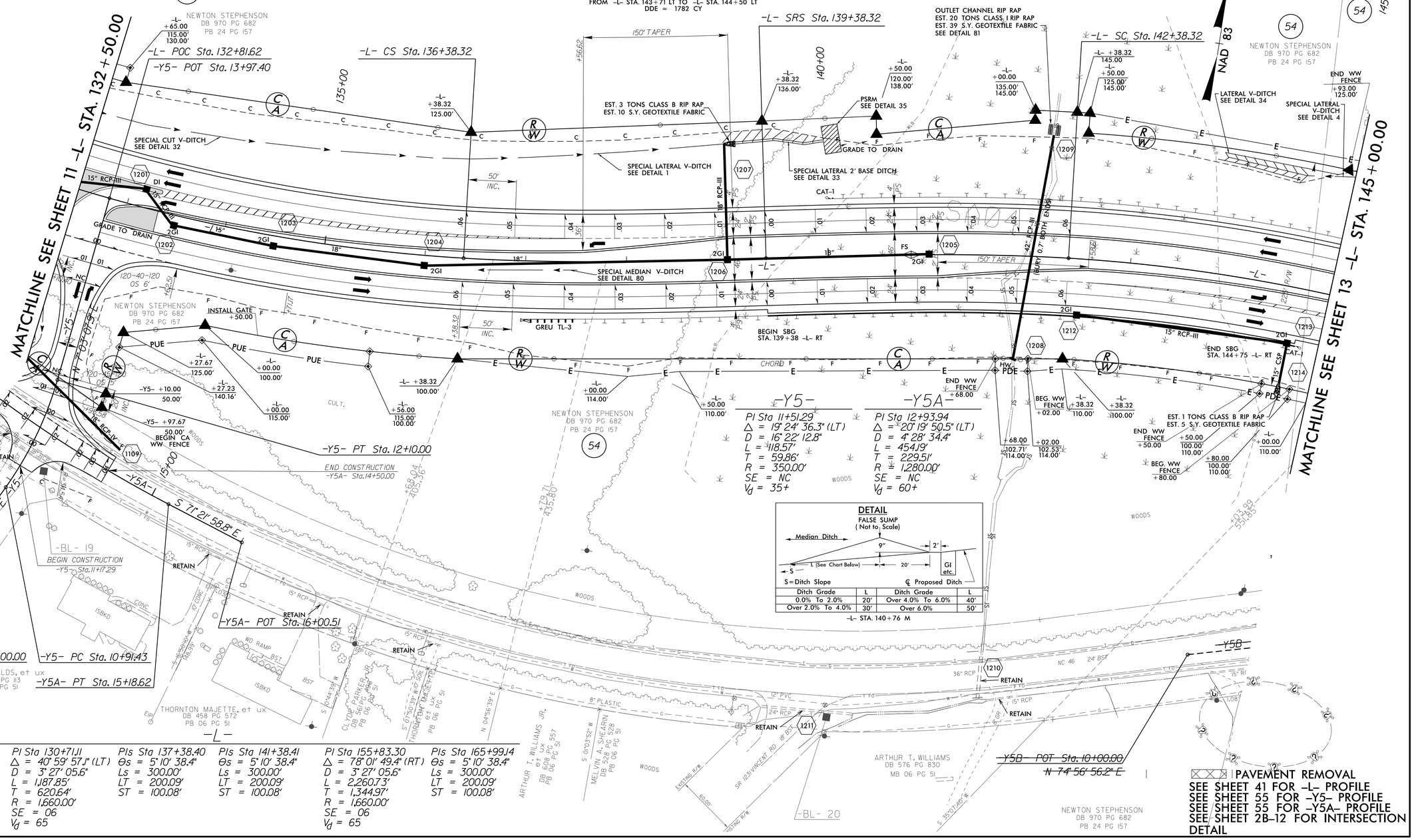
DETAIL 81
OUTLET CHANNEL RIP RAP
(Not to Scale)
Ground, 1.0' min., 1.25' min, 1, GEOTEXTILE
Type of Liner = 20 Tons of CL I Rip-Rap
Geotextile = 39 sy
–L– STA. 142+18 LT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1 or Flatter, D, 3:1 or Flatter, Fill Slope
Min. D = 1 Ft.
FROM –L– STA. 131+50 RT TO –Y5– STA. 12+15 LT
FROM –Y5A– STA. 12+86 LT TO –Y5A– STA. 13+13 LT

DETAIL 4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1 or Flatter, D, 4:1 or Flatter, Fill Slope
Min. D = 1 Ft.
FROM –L– STA. 144+50 LT TO –L– STA. 147+00 LT

DETAIL 34
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, b, 1'Ft., Fill Slope
Min. D = 1 Ft.
b = 5 Ft.
FROM –L– STA. 143+71 LT TO –L– STA. 144+50 LT
DDE = 1782 CY

DETAIL 80
SPECIAL MEDIAN V DITCH
(Not to Scale)
Shoulder Point, 6:1, 6:5:1 or Flatter, Shoulder Point
FROM –L– STA. 136+50 M TO –L– STA. 137+50 M



DETAIL
FALSE SUMP
(Not to Scale)
Median Ditch, 9", 2', L (See Chart Below), 20', Gi etc., S
S = Ditch Slope
℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

–L– STA. 140+76 M

PIs Sta 123+50.56
Θs = 5° 10' 38.4"
Ls = 300.00'
LT = 200.09'
ST = 100.08'

PI Sta 130+71.11
Δ = 40° 59' 57.1" (LT)
D = 3° 27' 05.6"
L = 1,187.85'
T = 620.64'
R = 1,660.00'
SE = 06
Vd = 65

PIs Sta 137+38.40
Θs = 5° 10' 38.4"
Ls = 300.00'
LT = 200.09'
ST = 100.08'

PIs Sta 141+38.41
Θs = 5° 10' 38.4"
Ls = 300.00'
LT = 200.09'
ST = 100.08'

PI Sta 155+83.30
Δ = 78° 01' 49.4" (RT)
D = 3° 27' 05.6"
L = 2,260.73'
T = 1,344.97'
R = 1,660.00'
SE = 06
Vd = 65

PIs Sta 165+99.14
Θs = 5° 10' 38.4"
Ls = 300.00'
LT = 200.09'
ST = 100.08'

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PROJECT REFERENCE NO.	SHEET NO.
R-2582A	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
4/5/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke

HYDRAULICS ENGINEER
4/5/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Buscemi

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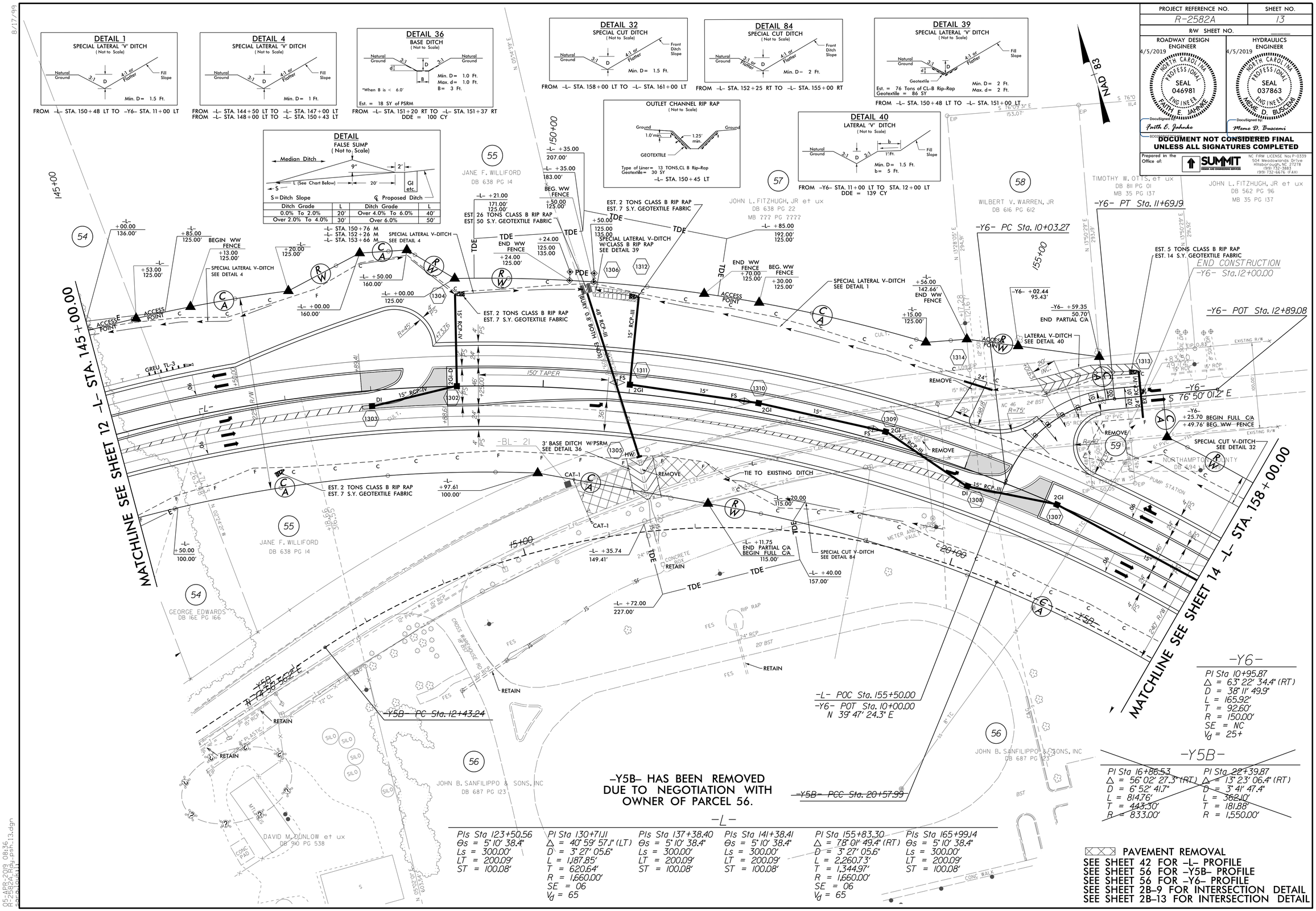
(919) 732-3883
(919) 732-6676 (FAX)



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PROJECT REFERENCE NO.	SHEET NO.
R-2582A	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAPINKE
DocuSigned by: Faith E. Japinke

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Buscemi

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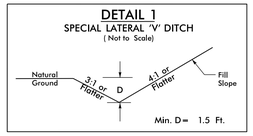
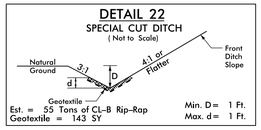
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



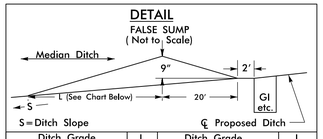
FROM –L– STA. 161+00 LT TO –L– STA. 162+00 LT

DETAIL 22
SPECIAL CUT DITCH
(Not to Scale)



FROM –L– STA. 162+00 RT TO –L– STA. 163+50 RT

DETAIL
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

–L– STA. 158+76 M
–L– STA. 160+76 M
–L– STA. 164+26 M
–L– STA. 167+26 M
–L– STA. 168+76 M
–L– STA. 171+45 M

DETAIL 20
LATERAL 'V' DITCH
(Not to Scale)

FROM –L– STA. 166+00 RT TO –L– STA. 167+00 RT
DDE = 72 CY

DETAIL 25
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM –L– STA. 163+50 RT TO –L– STA. 166+00 RT
FROM –Y5B– STA. 26+15 RT TO –Y5B– STA. 30+00 RT

DETAIL 32
SPECIAL CUT DITCH
(Not to Scale)

FROM –L– STA. 158+00 LT TO –L– STA. 161+00 LT

–L–

PIs Sta 123+50.56
Θs = 5° 10' 38.4"
Ls = 300.00'
LT = 200.09'
ST = 100.08'

PI Sta 130+71.11
Δ = 40° 59' 57.1" (LT)
D = 3° 27' 05.6"
L = 1,187.85'
T = 620.64'
R = 1,660.00'
SE = 06
V_d = 65

PIs Sta 137+38.40
Θs = 5° 10' 38.4"
Ls = 300.00'
LT = 200.09'
ST = 100.08'

PIs Sta 141+38.41
Θs = 5° 10' 38.4"
Ls = 300.00'
LT = 200.09'
ST = 100.08'

PI Sta 155+83.30
Δ = 78° 01' 49.4" (RT)
D = 3° 27' 05.6"
L = 2,260.73'
T = 1,344.97'
R = 1,660.00'
SE = 06
V_d = 65

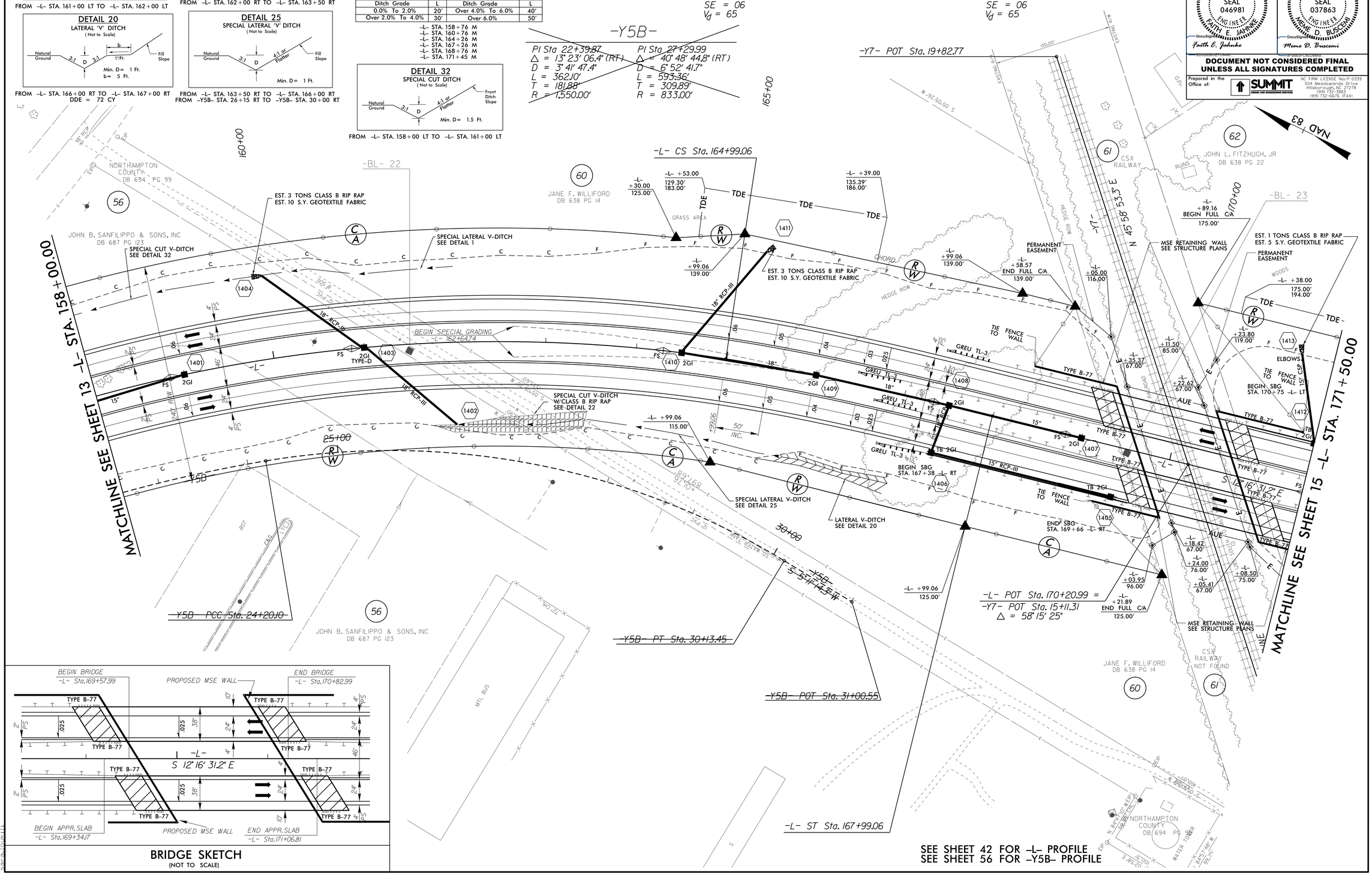
PIs Sta 165+99.14
Θs = 5° 10' 38.4"
Ls = 300.00'
LT = 200.09'
ST = 100.08'

–Y5B–

PI Sta 22+39.87
Δ = 13° 23' 06.4" (RT)
D = 3° 41' 47.4"
L = 362.10'
T = 181.88'
R = 1,550.00'

PI Sta 27+29.99
Δ = 40° 48' 44.8" (RT)
D = 6° 52' 41.7"
L = 593.36'
T = 309.89'
R = 833.00'

–Y7– POT Sta. 19+82.77



BRIDGE SKETCH
(NOT TO SCALE)

SEE SHEET 42 FOR –L– PROFILE
SEE SHEET 56 FOR –Y5B– PROFILE

25 MAR 2019 09:01
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PROJECT REFERENCE NO.	SHEET NO.
R-2582A	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSign Envelope ID: 82501217-B42B-467C-BD70-B488FE522ABF
Faith E. Jahnke

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSign Envelope ID: 82501217-B42B-467C-BD70-B488FE522ABF
Meme D. Buscemi

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Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

-L-

PIs Sta 177+23.52
Θs = 1° 52' 29.5"
Ls = 250.00'
LT = 166.68'
ST = 83.34'

PI Sta 182+08.93
Δ = 12° 01' 02.4" (LT)
D = 1° 29' 59.6"
L = 801.22'
T = 402.08'
R = 3,820.00'
SE = .05
Vg = 70+

PIs Sta 186+91.40
Θs = 1° 52' 29.5"
Ls = 250.00'
LT = 166.68'
ST = 83.34'

NAD 83

-L- SC Sta. 178+06.84

-L- TS Sta. 175+56.84

MATCHLINE SEE SHEET 14 -L- STA. 171+50.00

MATCHLINE SEE SHEET 16 -L- STA. 185+50.00

175+00 180+00 185+00

62 JOHN L. FITZHUGH, JR DB 638 PG 22

60 JANE F. WILLIFORD DB 638 PG 14

61 CSX RAILWAY NOT FOUND

WOODS

-L- +60.00 175.00' 194.00'

-L- +83.00 175.00' 213.00'

-L- +23.00 175.00'

-L- +42.00 231.00'

-L- +48.08 172.19'

-L- +56.84 160.00'

-L- +06.84 176.00'

-L- +50.00 207.00'

-L- +60.00 101.15'

-L- +87.13 BEGIN FULL C/A 145.00'

-L- +56.84 167.00'

-L- +06.84 180.00'

-L- +00.00 270.00'

-L- +05.00 270.75' 335.00'

-BL- 24

TDE

CHORD

EST. 3 TONS CLASS B RIP RAP
EST. 11 S.Y. GEOTEXTILE FABRIC

1505

24" RCP-IV

50' INC.

+56.84

LATERAL V-DITCH SEE DETAIL 34

BEGIN SPECIAL GRADING -L- 184+53.77

END SPECIAL GRADING -L- 177+76.25

-L-

S 12° 16' 31.2" E

GREU TL-3 15"

FS 2GI 1502 1504

TB 2GI

TIE FENCE TO WALL

1501 BEGIN SBG STA. 171+42 -L- RT

1503

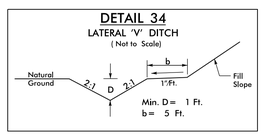
24" RCP-III

S 49° 32' 49" W 1136.50'

N 43° 27' 11" W 1136.50'

-Y7- POT Sta. 10+00.00

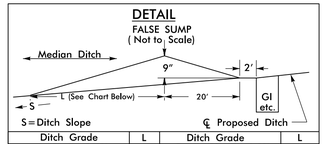
DETAIL 34
LATERAL "V" DITCH
(Not to Scale)



Min. D= 1 Ft.
b= 5 Ft.

FROM -L- STA. 172+50 RT TO -L- STA. 174+23 RT
FROM -L- STA. 174+23 RT TO -L- STA. 177+00 RT
FROM -L- STA. 177+50 LT TO -L- STA. 186+00 LT
DDE = 1526 CY

DETAIL
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 174+11 -L- M
FROM STA. 171+45 -L- M

SEE SHEET 43 FOR -L- PROFILE

25-MIP-209 0901
R-2582A Rdy_plan_15.dgn
ser-blank(1)

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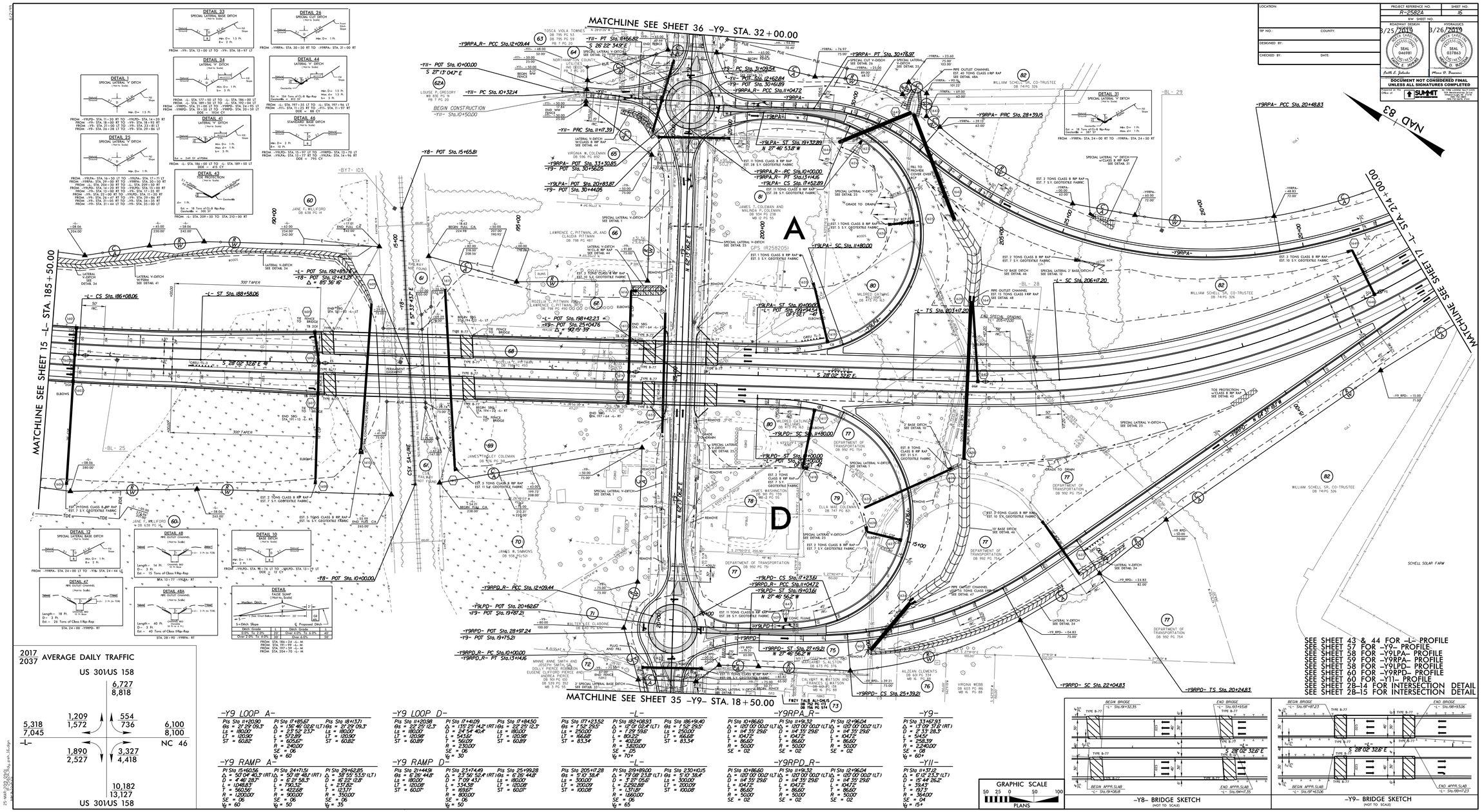

DocuSign Envelope ID: 82501217-B42B-467C-BD70-B488FE522ABF

8/17/99

-L-

PIs Sta 205+17.28	PI Sta 219+89.00	PIs Sta 230+10.5
Θs = 5° 10' 38.4"	Δ = 79° 08' 23.8" (LT)	Θs = 5° 10' 38.4"
Ls = 300.00'	D = 3° 27' 05.6"	Ls = 300.00'
LT = 200.09'	L = 2,292.88'	LT = 200.09'
ST = 100.08'	T = 1,371.81'	ST = 100.08'
	R = 1,660.00'	
	SE = 06	
	V_d = 65	

-Y9 RAMP A-

PI Sta 15+60.56	PI Sta 24+71.51	PI Sta 29+62.85
Δ = 50° 04' 40.3" (RT)	Δ = 50° 18' 48.1" (RT)	Δ = 38° 55' 53.5" (LT)
D = 4° 46' 28.7"	D = 6° 21' 58.3"	D = 16° 22' 12.8"
L = 1,048.83'	L = 790.32'	L = 237.82'
T = 560.56'	T = 422.68'	T = 123.71'
R = 1,200.00'	R = 900.00'	R = 350.00'
SE = 06	SE = 06	SE = 06
V_d = 60	V_d = 50	V_d = 35

-Y9 RAMP D-

PIs Sta 21+44.91	PI Sta 23+74.49	PIs Sta 25+99.28
Θs = 6° 26' 44.8"	Δ = 23° 56' 52.4" (RT)	Θs = 6° 26' 44.8"
Ls = 180.00'	D = 7° 09' 43.1"	Ls = 180.00'
LT = 120.08'	L = 334.38'	LT = 120.08'
ST = 60.07'	T = 169.67'	ST = 60.07'
	R = 800.00'	
	SE = 06	
	V = 50	

-Y13A-

PI Sta 55+34.36
Δ = 35° 41' 13.25" (LT)
D = 3° 27' 05.59"
L = 1,033.94
T = 534.36'
R = 1,660.00'
SE = 05
V = 55

DETAIL 49
TOE PROTECTION
(Not to Scale)

FROM -L- STA. 216+00 TO STA. 222+00 LT

DETAIL 50
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM -L- STA. 222+00 TO STA. 229+00 LT

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	17
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke
6D0DB8D17C4A4E...

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEMO D. BUSCEMI
DocuSigned by: Memo D. Buscemi
B4D0D3A7A7A3402...

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Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE: Non-P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
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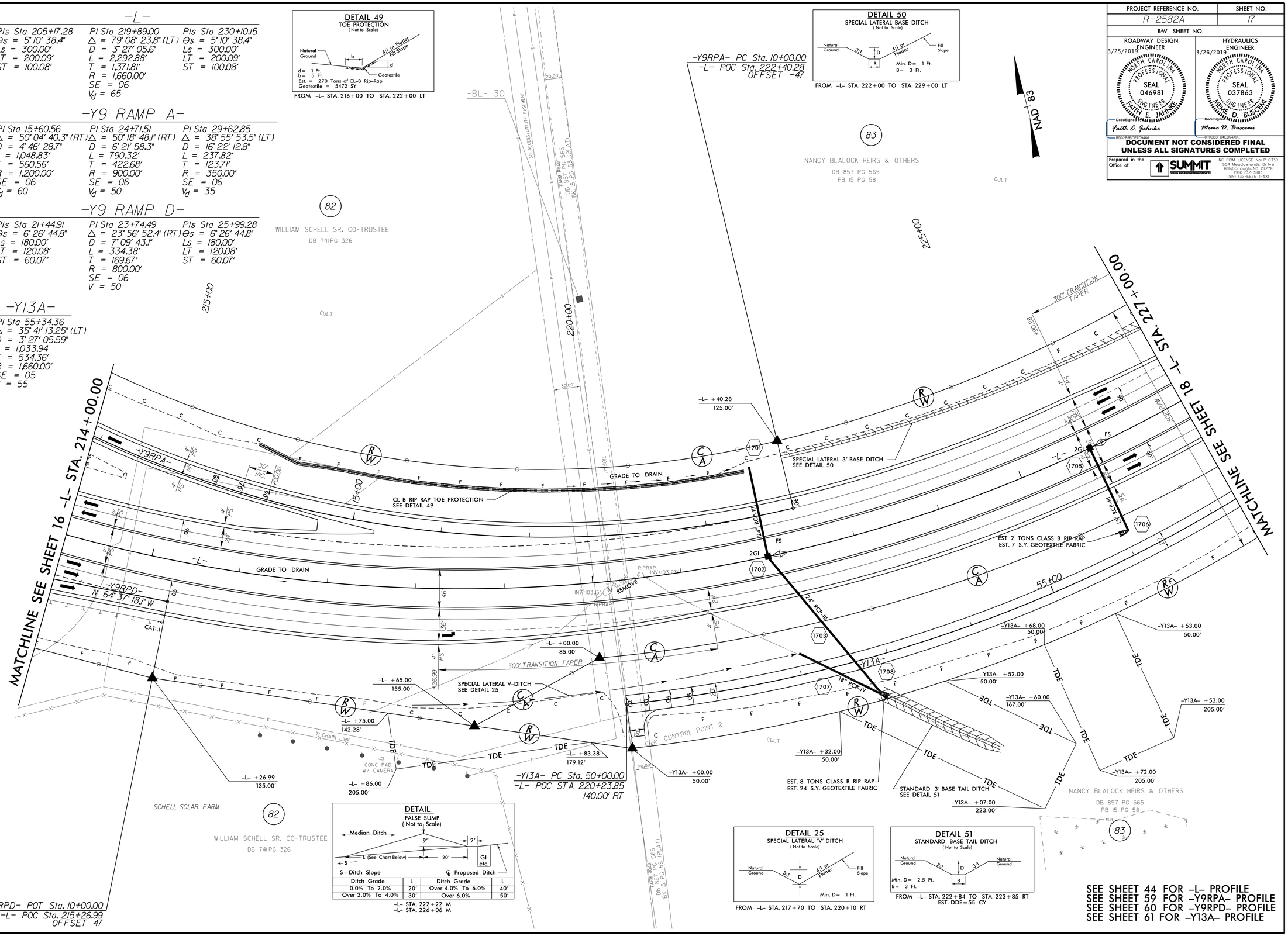

DETAIL
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- STA. 222+22 M
-L- STA. 226+06 M

DETAIL 25
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM -L- STA. 217+70 TO STA. 220+10 RT

DETAIL 51
STANDARD BASE TAIL DITCH
(Not to Scale)

FROM -L- STA. 222+84 TO STA. 223+85 RT
EST. DDE = 55 CY

SEE SHEET 44 FOR -L- PROFILE
SEE SHEET 59 FOR -Y9RPA- PROFILE
SEE SHEET 60 FOR -Y9RPD- PROFILE
SEE SHEET 61 FOR -Y13A- PROFILE

25-MAR-2019 09:01
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PROJECT REFERENCE NO.	SHEET NO.
R-2582A	18
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Buscemi

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Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

8/17/99

-Y13A-

PI Sta 55+34.36
△ = 35° 41' 13.25" (LT)
D = 3° 27' 05.59"
L = 1,033.94
T = 534.36'
R = 1,660.00'
SE = 05
V = 55

-L-

PIs Sta 205+17.28
Θs = 5° 10' 38.4"
Ls = 300.00'
LT = 200.09'
ST = 100.08'

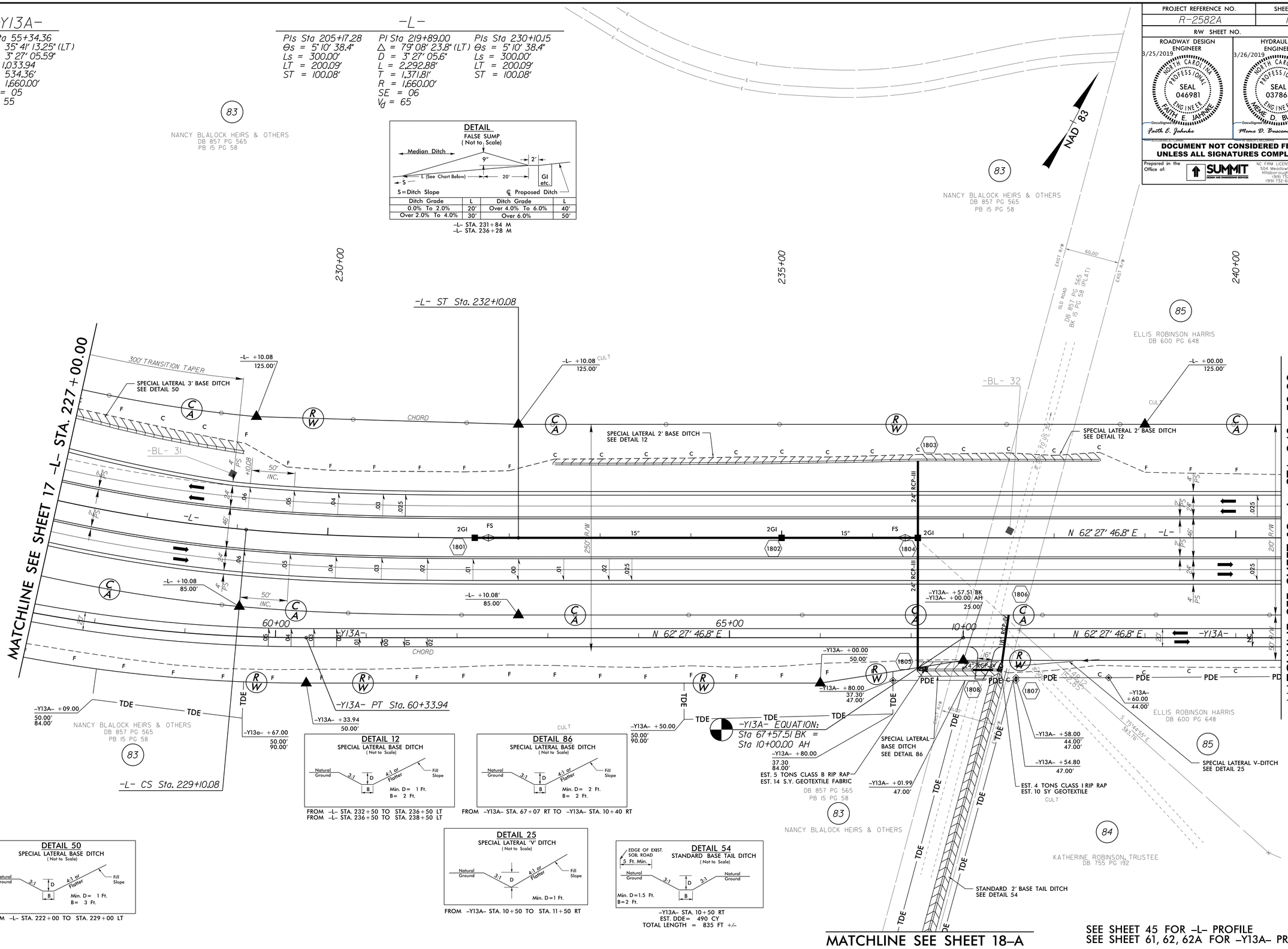
PI Sta 219+89.00
△ = 79° 08' 23.8" (LT)
D = 3° 27' 05.6'
L = 2,292.88'
T = 1,371.81'
R = 1,660.00'
SE = 06
V_d = 65

PIs Sta 230+10.15
Θs = 5° 10' 38.4"
Ls = 300.00'
LT = 200.09'
ST = 100.08'

DETAIL
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- STA. 231+84 M
-L- STA. 236+28 M



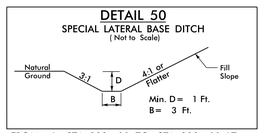
DETAIL 12
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM -L- STA. 232+50 TO STA. 236+50 LT
FROM -L- STA. 236+50 TO STA. 238+50 LT

DETAIL 86
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM -Y13A- STA. 67+07 RT TO -Y13A- STA. 10+40 RT

DETAIL 50
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 222+00 TO STA. 229+00 LT

DETAIL 25
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM -Y13A- STA. 10+50 TO STA. 11+50 RT

DETAIL 54
STANDARD BASE TAIL DITCH
(Not to Scale)

-Y13A- STA. 10+50 RT
EST. DDE = 490 CY
TOTAL LENGTH = 835 FT +/-

SEE SHEET 45 FOR -L- PROFILE
SEE SHEET 61, 62, 62A FOR -Y13A- PROFILE

25-MAR-2019 09:01
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sacalulkin

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	18-A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Buscemi

SIGNED CATEGORICAL EXCLUSION
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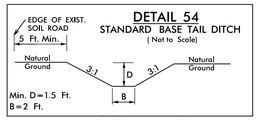
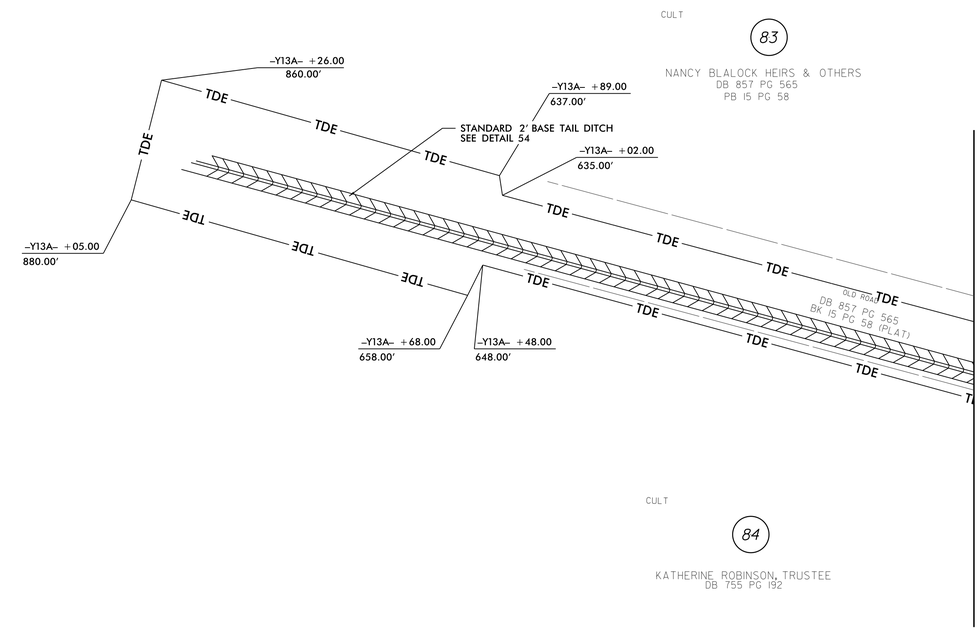
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

NAD 83

DETAIL 54
STANDARD BASE TAIL DITCH
(Not to Scale)



-Y13A- STA. 10+50 RT
EST. DDE= 490 CY
TOTAL LENGTH = 835 FT +/-



MATCHLINE SHEET 18

25-MAR-2019 09:01
R:\Roadway\Proj\R2582A_sht_18a.dgn
sarjahnke

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHANKE
DocuSigned by: Faith E. Jahanke

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEMO D. BUSCEMI
DocuSigned by: Memo D. Busceni

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NC FIRM LICENSE Nos P-0339
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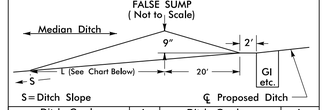
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

DETAIL
FALSE SUMP
(Not to Scale)

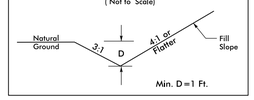


S = Ditch Slope ℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

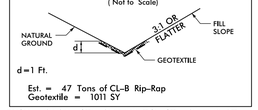
-L- STA. 243+78 M
-L- STA. 243+78 RT
-L- STA. 248+28 M
-L- STA. 248+28 RT
-L- STA. 251+78 M
-L- STA. 251+78 RT

DETAIL 25
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM -Y13A- STA. 15+00 TO STA. 16+50 RT

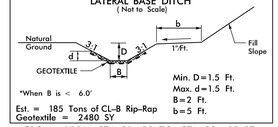
DETAIL 55
TOE PROTECTION
(Not to Scale)



Est. = 47 Tons of CL-B Rip-Rap
Geotextile = 1011 SY

FROM -Y13A- STA. 20+00 TO STA. 21+50 RT

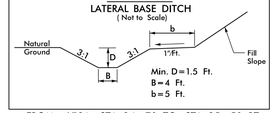
DETAIL 45
LATERAL BASE DITCH
(Not to Scale)



Est. = 185 Tons of CL-B Rip-Rap
Geotextile = 2480 SY

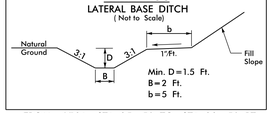
FROM -Y13A- STA. 21+50 TO STA. 23+65 RT
DDE = 78 CY

DETAIL 56
LATERAL BASE DITCH
(Not to Scale)



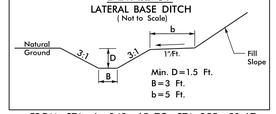
FROM -Y13A- STA. 24+70 TO STA. 25+50 RT
DDE = 50 CY

DETAIL 58
LATERAL BASE DITCH
(Not to Scale)



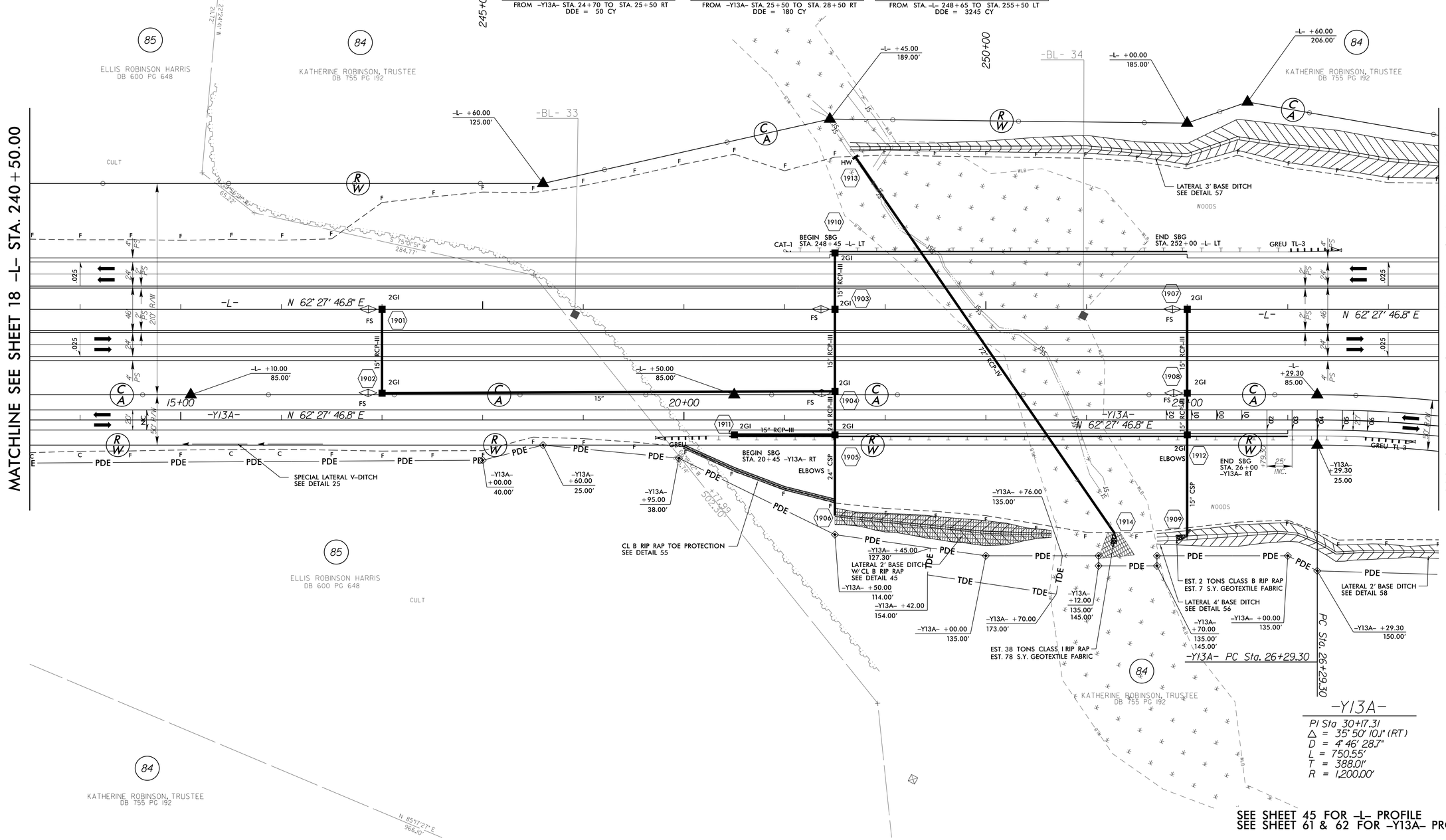
FROM -Y13A- STA. 25+50 TO STA. 28+50 RT
DDE = 180 CY

DETAIL 57
LATERAL BASE DITCH
(Not to Scale)



FROM STA. -L- 248+65 TO STA. 255+50 LT
DDE = 3245 CY

NAD 83



-Y13A-
PI Sta 30+17.31
Δ = 35° 50' 10.1" (RT)
D = 4° 46' 28.7"
L = 750.55'
T = 388.01'
R = 1,200.00'

SEE SHEET 45 FOR -L- PROFILE
SEE SHEET 61 & 62 FOR -Y13A- PROFILE

25-MAR-2019 09:02
R:\Roadway\Proj\2582a_rdy_psh_19.dgn
ramjahankii

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
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DOCUSIGN ENVELOPE ID: 82501217-B42B-467C-BD70-B488FE522ABF

HYDRAULICS ENGINEER
3/26/2019
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(919) 732-3883
(919) 732-6676 (FAX)

DETAIL
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

–L– STA. 258+28 M

DETAIL 25
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM –L– STA. 257+00 TO STA. 261+50 RT
FROM –Y13A– STA. 34+50 TO STA. 36+93 RT
FROM –Y13A– STA. 35+00 TO STA. 37+90 LT
FROM –Y13A– STA. 36+93 TO STA. 39+50 RT

DETAIL 57
LATERAL BASE DITCH
(Not to Scale)

FROM STA. –L– 248+65 TO STA. 255+50 LT
DDE = 3245 CY

DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM –Y13A– STA. 29+90 TO STA. 32+00 LT

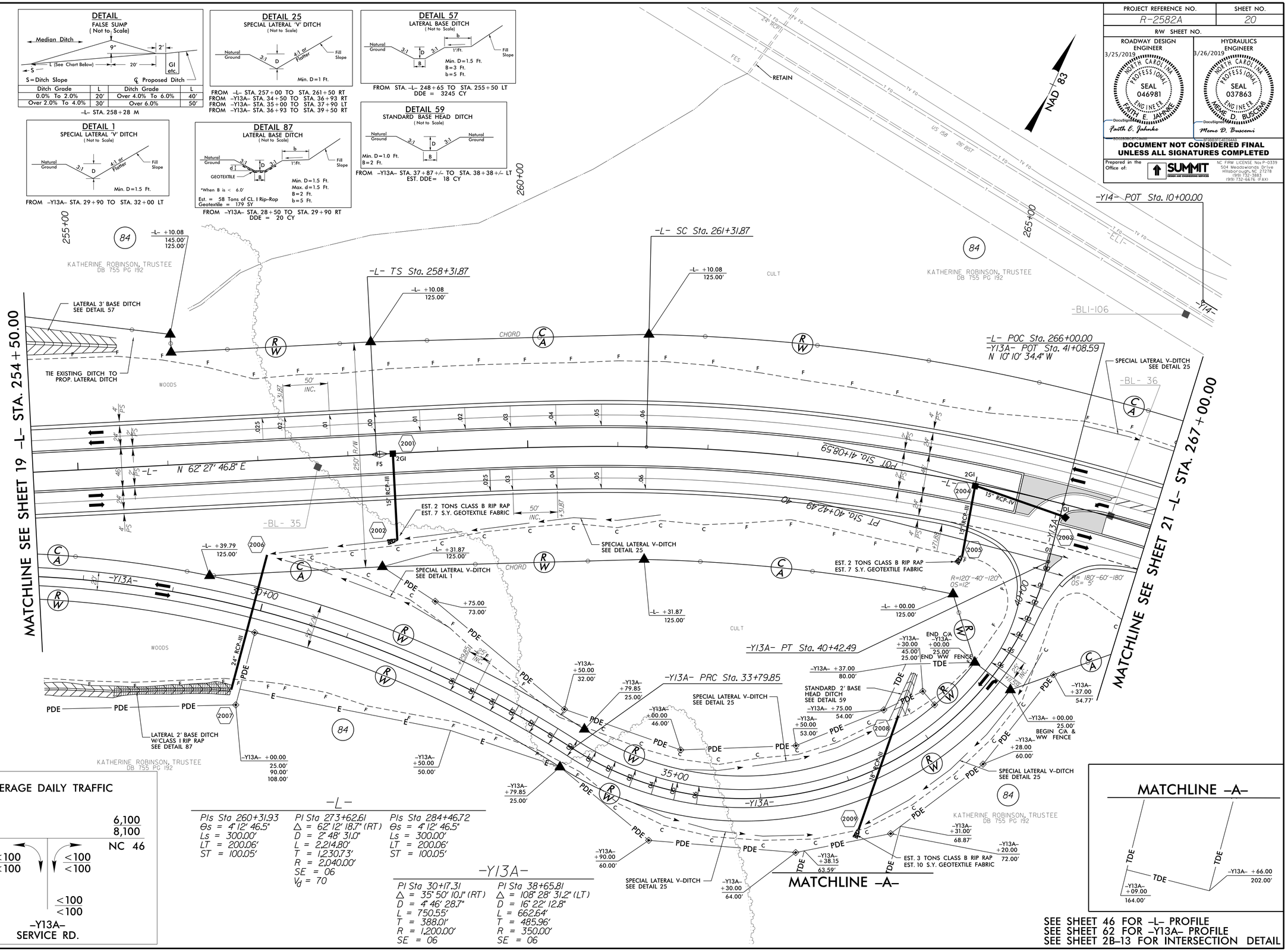
DETAIL 87
LATERAL BASE DITCH
(Not to Scale)

*When B is < 6.0'
Est. = 58 Tons of CL I Rip-Rap Geotextile = 179 SY

FROM –Y13A– STA. 28+50 TO STA. 29+90 RT
DDE = 20 CY

DETAIL 59
STANDARD BASE HEAD DITCH
(Not to Scale)

FROM –Y13A– STA. 37+87 +/– TO STA. 38+38 +/– LT
EST. DDE= 18 CY



2019 / 2039 AVERAGE DAILY TRAFFIC

–L–	NC 46
6,100 / 8,100	6,100 / 8,100
<100 / <100	<100 / <100
<100 / <100	

–Y13A–
SERVICE RD.

–L–

PIs Sta 260+31.93
Θs = 4° 12' 46.5"
Ls = 300.00'
LT = 200.06'
ST = 100.05'

PI Sta 273+62.61
Δ = 62° 12' 18.7" (RT)
D = 2° 48' 31.0"
L = 2,214.80'
T = 1,230.73'
R = 2,040.00'
SE = 06
V_d = 70

PIs Sta 284+46.72
Θs = 4° 12' 46.5"
Ls = 300.00'
LT = 200.06'
ST = 100.05'

–Y13A–

PI Sta 30+17.31
Δ = 35° 50' 10.1" (RT)
D = 4° 46' 28.7"
L = 750.55'
T = 388.01'
R = 1,200.00'
SE = 06

PI Sta 38+65.81
Δ = 108° 28' 31.2" (LT)
D = 16° 22' 12.8"
L = 662.64'
T = 485.96'
R = 350.00'
SE = 06

MATCHLINE –A–

25-MAR-2019 09:02
R:\Roadway\Proj\2582a_rdy_psh_2a.dgn

DocuSign Envelope ID: 82501217-B42B-467C-BD70-B488FE522ABF

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PROJECT REFERENCE NO.	SHEET NO.
R-2582A	21

R/W SHEET NO.

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEMO D. BUSCEMI
DocuSigned by: Memo D. Buscemi

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Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

2017/2037 AVERAGE DAILY TRAFFIC

–Y13– SR 1310
OLD HIGHWAY RD.

654 / 836

<100 / <100
<100 / <100

US 158 CONNECTOR

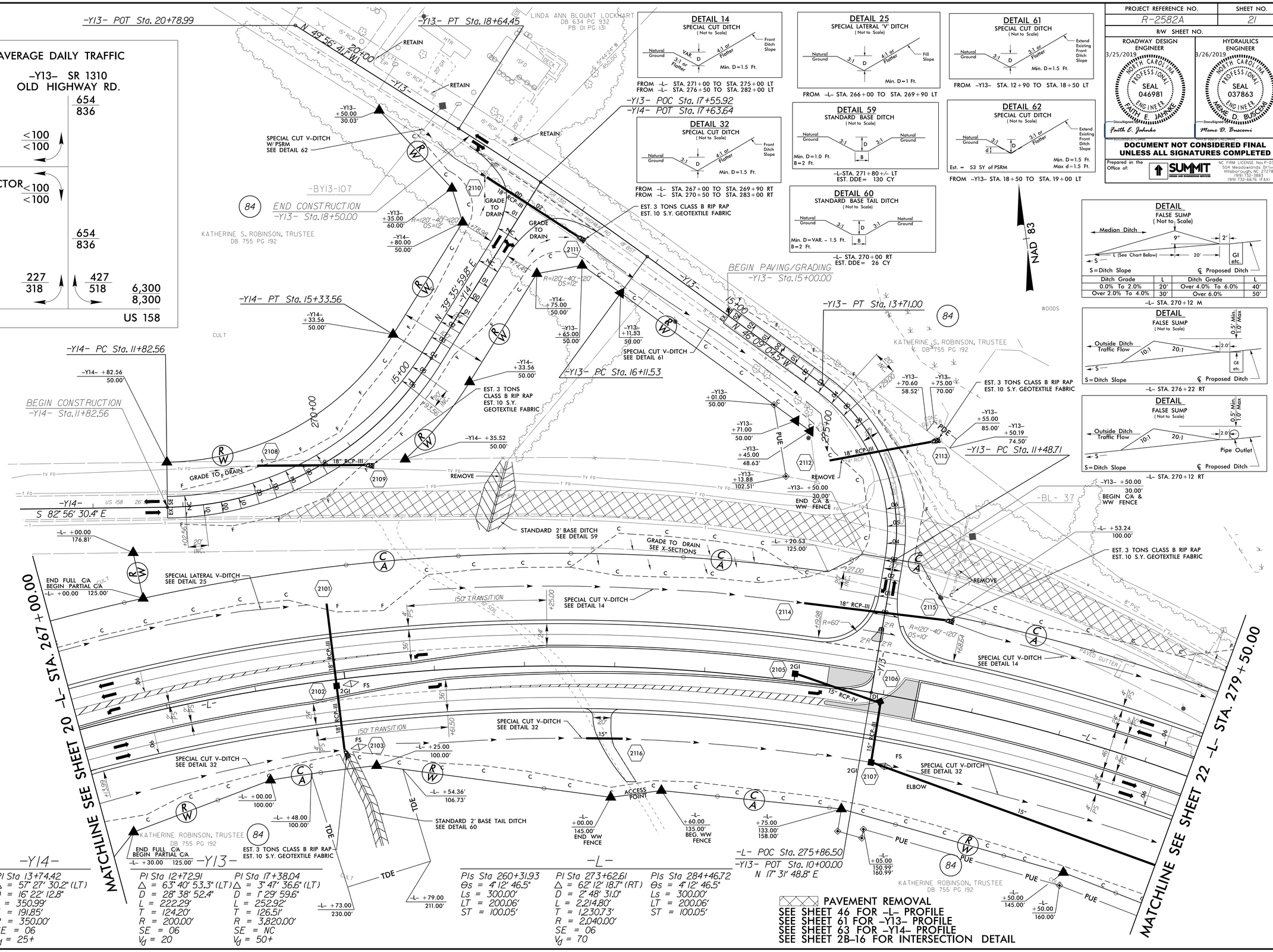
<100 / <100
<100 / <100

654 / 836

227 / 318 — 427 / 518

6,100 / 8,100 — 6,300 / 8,300

–L– US 158



DETAIL 14
SPECIAL CUT DITCH
(Not to Scale)

FROM –L– STA. 271+00 TO STA. 275+00 LT
FROM –L– STA. 276+50 TO STA. 282+00 LT

DETAIL 25
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM –L– STA. 266+00 TO STA. 269+90 LT

DETAIL 61
SPECIAL CUT DITCH
(Not to Scale)

FROM –Y13– STA. 12+90 TO STA. 18+50 LT

DETAIL 32
SPECIAL CUT DITCH
(Not to Scale)

FROM –L– STA. 267+00 TO STA. 269+90 RT
FROM –L– STA. 270+50 TO STA. 283+00 RT

DETAIL 59
STANDARD BASE DITCH
(Not to Scale)

–L–STA. 271+80 +/– LT
EST. DDE= 130 CY

DETAIL 62
SPECIAL CUT DITCH
(Not to Scale)

Est. = 53 SY of PSRM

FROM –Y13– STA. 18+50 TO STA. 19+00 LT

DETAIL 60
STANDARD BASE TAIL DITCH
(Not to Scale)

–L– STA. 270+00 RT
EST. DDE= 26 CY

DETAIL
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

–L– STA. 270+12 M

DETAIL
FALSE SUMP
(Not to Scale)

–L– STA. 276+22 RT

DETAIL
FALSE SUMP
(Not to Scale)

–L– STA. 270+12 RT

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	22

R/W SHEET NO.

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Buscemi
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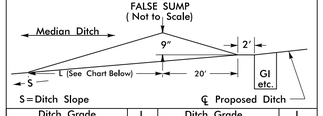
NC FIRM LICENSE: Non-P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

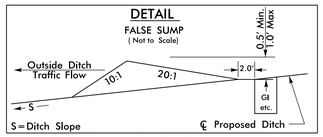
DETAIL
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

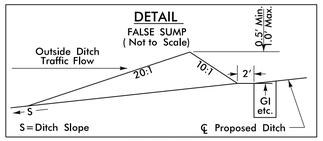
-L- STA. 283+22 M
-L- STA. 289+78 M

DETAIL
FALSE SUMP
(Not to Scale)



-L- STA. 283+22 RT

DETAIL
FALSE SUMP
(Not to Scale)

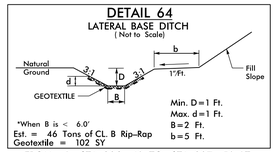


-L- STA. 289+88 RT

-L-

PIs Sta 260+31.93	PI Sta 273+62.61	PIs Sta 284+46.72
Θs = 4°12' 46.5"	Δ = 62°12' 18.7" (RT)	Θs = 4°12' 46.5"
Ls = 300.00'	D = 2°48' 31.0"	Ls = 300.00'
LT = 200.06'	L = 2,214.80'	LT = 200.06'
ST = 100.05'	T = 1,230.73'	ST = 100.05'
	R = 2,040.00'	
	SE = 06	
	V_d = 70	

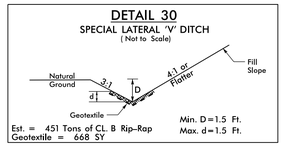
DETAIL 64
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'
Est. = 46 Tons of CL. B Rip-Rap
Geotextile = 102 SY

FROM -L- STA. 286+40 TO STA. 287+50 LT
DDE = 64 CY

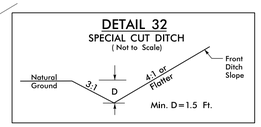
DETAIL 30
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



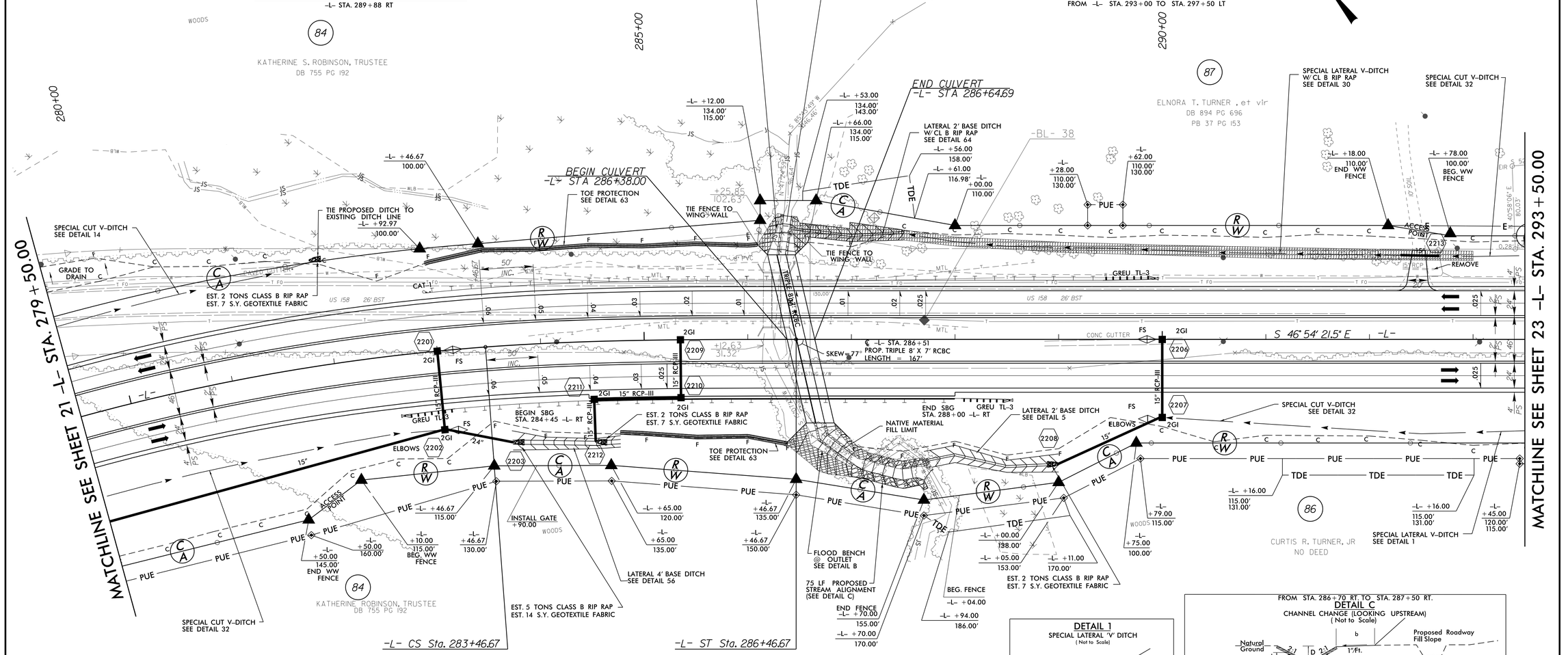
Est. = 451 Tons of CL. B Rip-Rap
Geotextile = 668 SY

FROM -L- STA. 287+50 TO STA. 293+00 LT

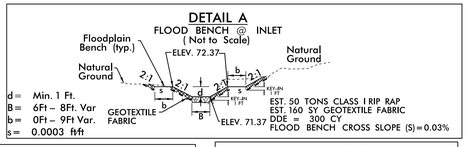
DETAIL 32
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 293+00 TO STA. 297+50 LT



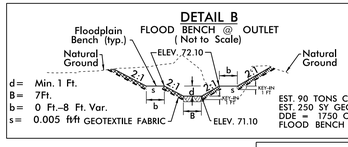
DETAIL A
FLOOD BENCH @ INLET
(Not to Scale)



d = Min. 1 Ft.
B = 6Ft – 8Ft. Var
b = 0Ft – 9Ft Var.
s = 0.0003 ft/ft

EST. 50 TONS CLASS I RIP RAP
EST. 160 SY GEOTEXTILE FABRIC
DDE = 300 CY
FLOOD BENCH CROSS SLOPE (S)=0.03%

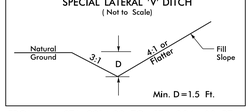
DETAIL B
FLOOD BENCH @ OUTLET
(Not to Scale)



d = Min. 1 Ft.
B = 7Ft.
b = 0 Ft.–8 Ft. Var.
s = 0.005 ft/ft

EST. 90 TONS CLASS I RIP RAP
EST. 250 SY GEOTEXTILE FABRIC
DDE = 1750 CY
FLOOD BENCH CROSS SLOPE (S)=0.5%

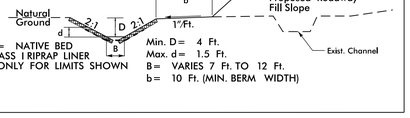
DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM -L- STA. 291+00 TO STA. 294+00 RT

FROM STA. 286+70 RT. TO STA. 287+50 RT.

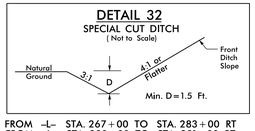
DETAIL C
CHANNEL CHANGE (LOOKING UPSTREAM)
(Not to Scale)



Type of Liner = NATIVE BED MATERIAL; CLASS I RIPRAP LINER ON BANKS ONLY FOR LIMITS SHOWN

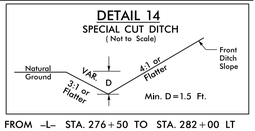
Min. D = 4 Ft.
Max. d = 1.5 Ft.
B = VARIES 7 Ft. TO 12 Ft.
b = 10 Ft. (MIN. BERM WIDTH)

DETAIL 32
SPECIAL CUT DITCH
(Not to Scale)



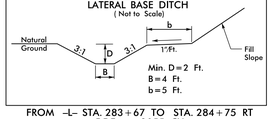
FROM -L- STA. 267+00 TO STA. 283+40 RT
FROM -L- STA. 290+00 TO STA. 291+00 RT

DETAIL 14
SPECIAL CUT DITCH
(Not to Scale)



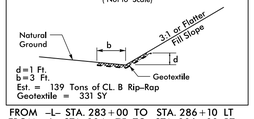
FROM -L- STA. 276+50 TO STA. 282+00 LT

DETAIL 56
LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 283+67 TO STA. 284+75 RT
DDE = 2055 CY

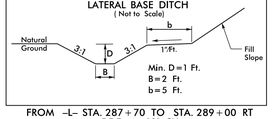
DETAIL 63
TOE PROTECTION
(Not to Scale)



d = 1 Ft.
b = 3 Ft.
Est. = 139 Tons of CL. B Rip-Rap
Geotextile = 331 SY

FROM -L- STA. 283+00 TO STA. 286+10 LT
FROM -L- STA. 284+75 TO STA. 286+38 RT

DETAIL 5
LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 287+70 TO STA. 289+00 RT
DDE = 131 CY

SEE SHEET 47 FOR -L- PROFILE

25-MAR-2019 09:02
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sdpriddy1

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PROJECT REFERENCE NO.	SHEET NO.
R-2582A	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSign envelope ID: Faith E. Jahnke

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSign envelope ID: Meme D. Buscemi

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NC FIRM LICENSE No: P-0339
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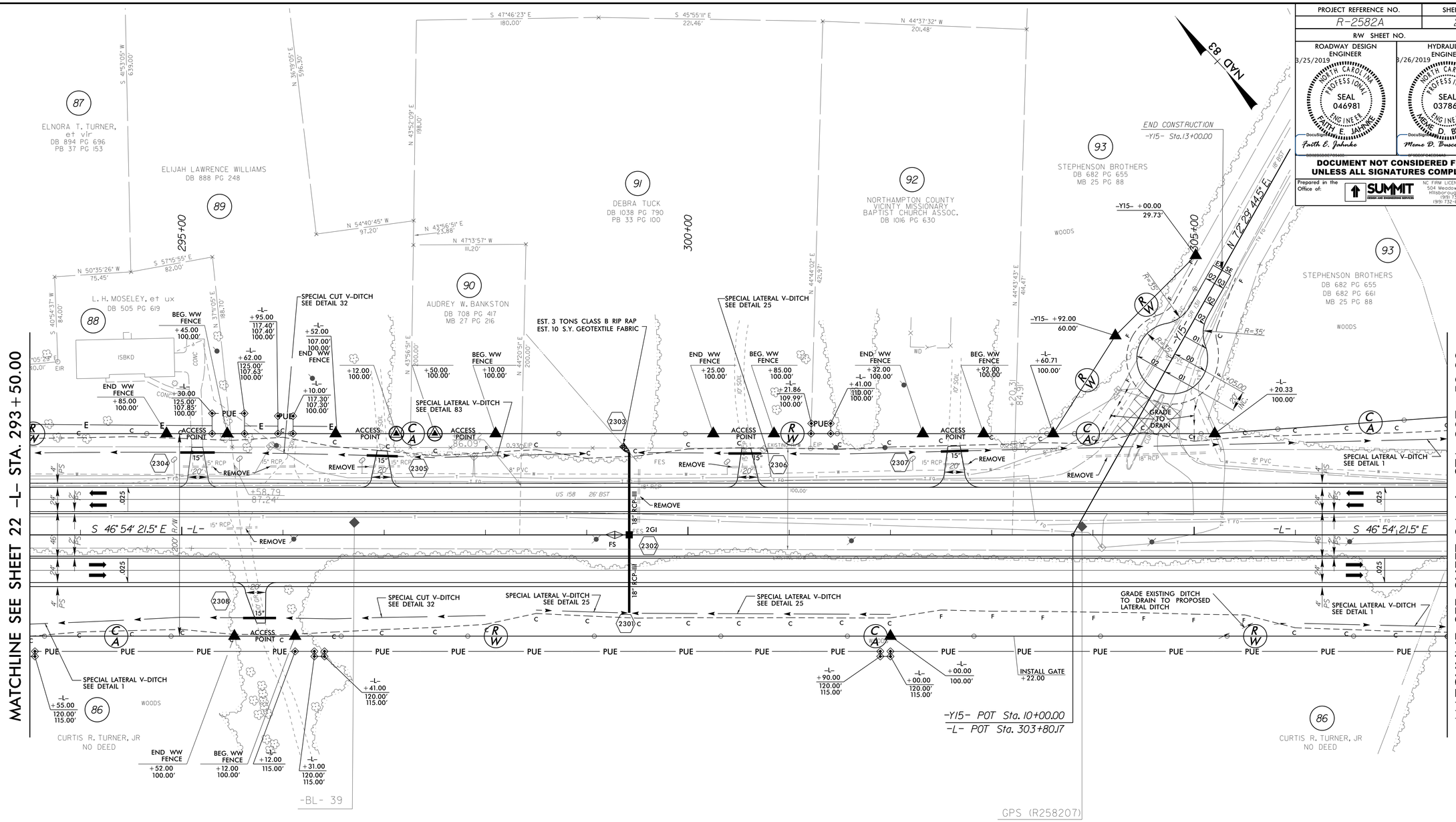
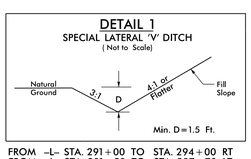
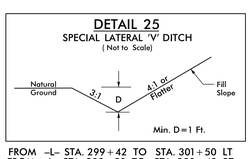
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

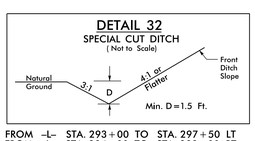




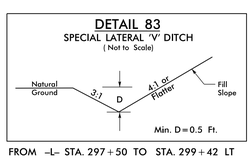
FROM –L– STA. 291+00 TO STA. 294+00 RT
FROM –L– STA. 301+50 TO STA. 307+70 LT
FROM –L– STA. 305+70 TO STA. 307+74 RT



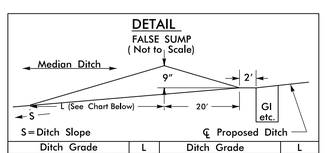
FROM –L– STA. 299+42 TO STA. 301+50 LT
FROM –L– STA. 298+50 TO STA. 299+42 RT
FROM –L– STA. 299+42 TO STA. 302+00 RT



FROM –L– STA. 293+00 TO STA. 297+50 LT
FROM –L– STA. 294+00 TO STA. 298+00 RT



FROM –L– STA. 297+50 TO STA. 299+42 LT



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

–L– STA. 299+20 M

PAVEMENT REMOVAL

SEE SHEET 47 FOR –L– PROFILE
SEE SHEET 63 FOR –Y15– PROFILE

25-MAR-2019 09:02
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sarajones1

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
3/25/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke

HYDRAULICS ENGINEER
3/26/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Buscemi

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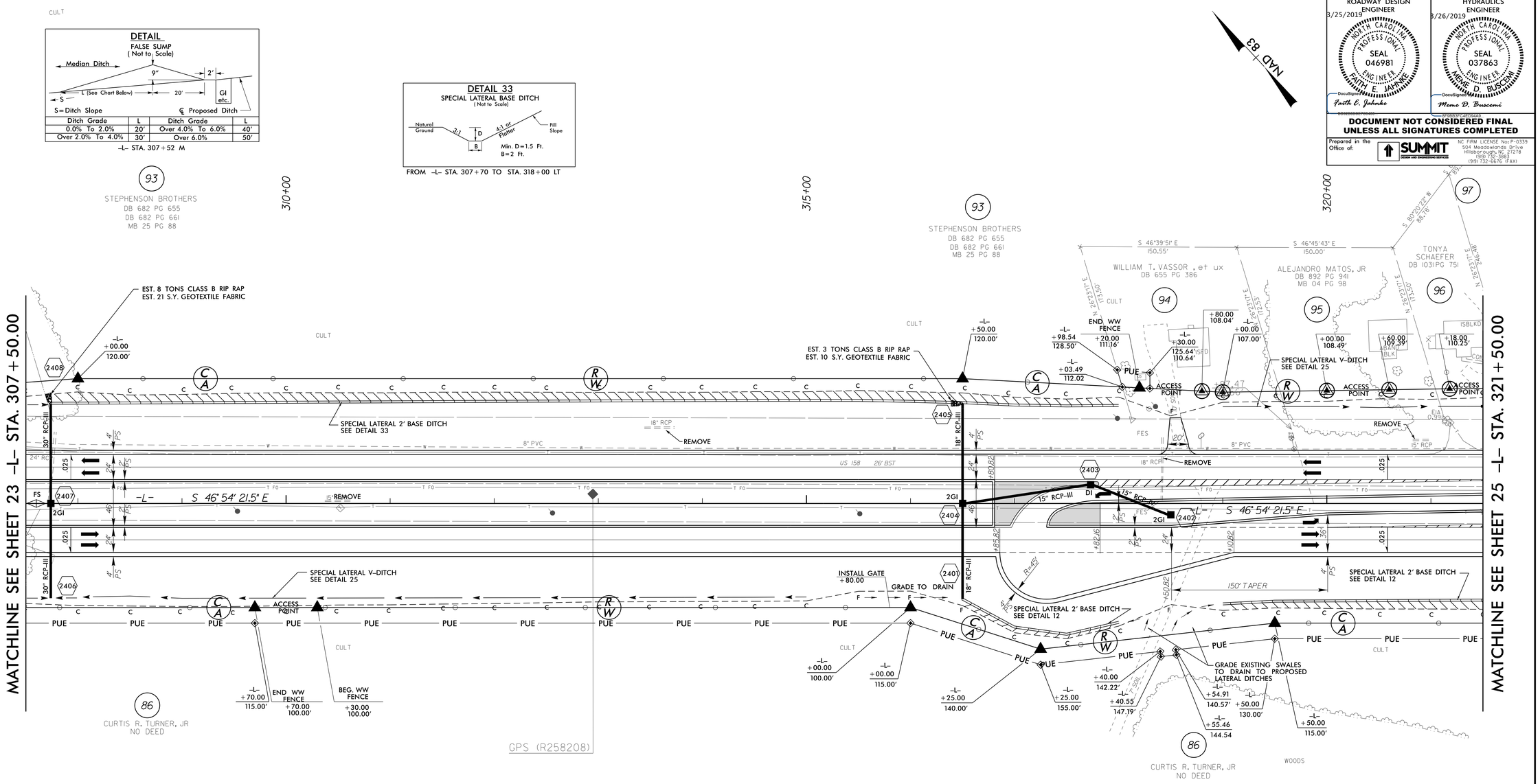
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)



DETAIL

FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

–L– STA. 307+52 M

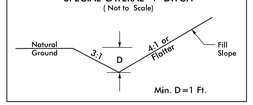
DETAIL 33

SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM –L– STA. 307+70 TO STA. 318+00 LT

DETAIL 25

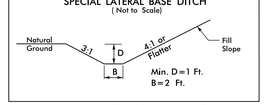
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM –L– STA. 307+74 TO STA. 315+00 RT
FROM –L– STA. 319+00 TO STA. 324+24 LT

DETAIL 12

SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 316+50 TO STA. 318+28 RT
FROM –L– STA. 319+00 TO STA. 324+70 RT

SEE SHEET 48 FOR –L– PROFILE
SEE SHEET 2B-9 FOR INTERSECTION DETAIL

25-MAR-2019 09:02
R-2582A_sht_dist_24.dgn
sarajenkins

DocuSign Envelope ID: CF5392BE-22A6-40C8-805D-DCAF0CEA4DA6

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2582A	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
4/5/2019
NORTH CAROLINA PROFESSIONAL SEAL 046981 ENGINEER FAITH E. JAHNKE
DocuSigned by: Faith E. Jahnke

HYDRAULICS ENGINEER
4/5/2019
NORTH CAROLINA PROFESSIONAL SEAL 037863 ENGINEER MEME D. BUSCEMI
DocuSigned by: Meme D. Buscemi

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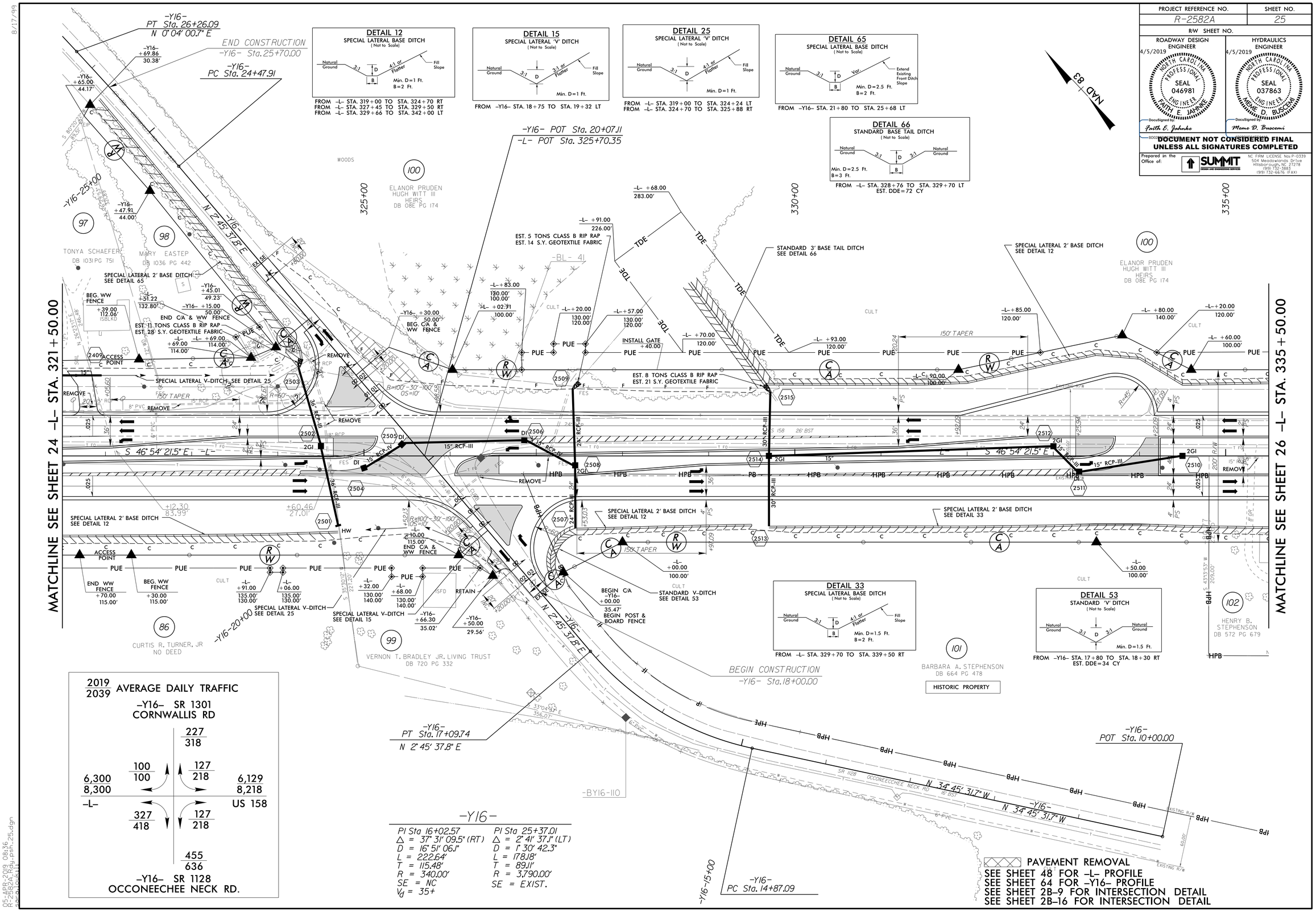

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sarahlukin