
























I-85/I-385 Interchange Improvements























2015 Alternate 4A AM

1: Woodruff Road & Roper Mountain Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	381	210	216	258	37	261	818	162	184	860	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3255		1719	3438	1538	1719	3438	1538	3335	3438	1538
Flt Permitted	0.58	1.00		0.31	1.00	1.00	0.30	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1042	3255		565	3438	1538	542	3438	1538	3335	3438	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	132	423	233	240	287	41	290	909	180	204	956	102
RTOR Reduction (vph)	0	93	0	0	0	34	0	0	108	0	0	47
Lane Group Flow (vph)	132	563	0	240	287	7	290	909	72	204	956	55
Turn Type	pm+pt			pm+pt		Perm	Perm		Perm	Prot		Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8		8	2		2			6
Actuated Green, G (s)	18.8	10.8		22.8	12.8	12.8	32.2	32.2	32.2	6.0	43.2	43.2
Effective Green, g (s)	18.8	10.8		22.8	12.8	12.8	32.2	32.2	32.2	6.0	43.2	43.2
Actuated g/C Ratio	0.24	0.14		0.29	0.16	0.16	0.40	0.40	0.40	0.08	0.54	0.54
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.3	5.5		4.3	5.5	5.5	4.9	4.9	4.9	4.3	4.9	4.9
Lane Grp Cap (vph)	313	439		305	550	246	218	1384	619	250	1857	831
v/s Ratio Prot	0.04	c0.17		c0.10	0.08			0.26		c0.06	0.28	
v/s Ratio Perm	0.06			0.13		0.00	c0.54		0.05			0.04
v/c Ratio	0.42	1.28		0.79	0.52	0.03	1.33	0.66	0.12	0.82	0.51	0.07
Uniform Delay, d1	25.4	34.6		24.3	30.8	28.3	23.9	19.4	15.0	36.5	11.7	8.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.71	0.69
Incremental Delay, d2	1.5	144.0		13.7	2.0	0.1	176.6	2.5	0.4	15.0	0.8	0.1
Delay (s)	26.8	178.6		38.0	32.8	28.5	200.5	21.9	15.4	46.7	9.1	6.1
Level of Service	C	F		D	C	C	F	C	B	D	A	A
Approach Delay (s)		153.2			34.7			58.6			14.9	
Approach LOS		F			C			E			B	
Intersection Summary												
HCM Average Control Delay			60.1			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.26									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			25.0			
Intersection Capacity Utilization			85.8%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

2: Woodruff Road & Costco Driveway





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	18	756	25	56	551	28	25	1	53	7	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	3421		1719	3438	1538	1719	1543		1719	1810	1538
Flt Permitted	0.36	1.00		0.33	1.00	1.00	0.76	1.00		0.72	1.00	1.00
Satd. Flow (perm)	655	3421		591	3438	1538	1370	1543		1299	1810	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	20	840	28	62	612	31	28	1	59	8	1	12
RTOR Reduction (vph)	0	3	0	0	0	13	0	52	0	0	0	10
Lane Group Flow (vph)	20	865	0	62	612	18	28	8	0	8	1	2
Turn Type	pm+pt			Perm		Perm	Perm			Perm		pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			6		6	8			4		4
Actuated Green, G (s)	53.0	53.0		43.3	43.3	43.3	9.0	9.0		9.0	9.0	12.2
Effective Green, g (s)	53.0	53.0		43.3	43.3	43.3	9.0	9.0		9.0	9.0	12.2
Actuated g/C Ratio	0.71	0.71		0.58	0.58	0.58	0.12	0.12		0.12	0.12	0.16
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	4.3	5.5		5.5	5.5	5.5	5.5	5.5		5.5	5.5	4.3
Lane Grp Cap (vph)	508	2418		341	1985	888	164	185		156	217	383
v/s Ratio Prot	0.00	c0.25			0.18			0.01			0.00	0.00
v/s Ratio Perm	0.03			0.10		0.01	c0.02			0.01		0.00
v/c Ratio	0.04	0.36		0.18	0.31	0.02	0.17	0.04		0.05	0.00	0.01
Uniform Delay, d1	3.6	4.3		7.5	8.1	6.8	29.6	29.2		29.2	29.1	26.3
Progression Factor	1.00	1.00		0.31	0.35	0.52	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.4		1.1	0.4	0.0	1.2	0.2		0.3	0.0	0.0
Delay (s)	3.6	4.7		3.4	3.2	3.6	30.9	29.4		29.6	29.1	26.3
Level of Service	A	A		A	A	A	C	C		C	C	C
Approach Delay (s)		4.7			3.2			29.9			27.7	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			





















I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

3: Green Heron Road & Woodruff Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	4	1	26	1	1	6	8	576	45	54	814	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frt		0.88			1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.99			0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1592			1765	1538	1719	3401		1719	3438	1538
Flt Permitted		0.96			0.87	1.00	0.31	1.00		0.39	1.00	1.00
Satd. Flow (perm)		1545			1577	1538	565	3401		704	3438	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	1	29	1	1	7	9	640	50	60	904	4
RTOR Reduction (vph)	0	26	0	0	0	6	0	7	0	0	0	1
Lane Group Flow (vph)	0	8	0	0	2	1	9	683	0	60	904	3
Turn Type	Perm			Perm		Perm	Perm			Perm		Perm
Protected Phases		8			4			2			6	
Permitted Phases	8			4		4	2			6		6
Actuated Green, G (s)		7.6			7.6	7.6	56.1	56.1		56.1	56.1	56.1
Effective Green, g (s)		7.6			7.6	7.6	56.1	56.1		56.1	56.1	56.1
Actuated g/C Ratio		0.10			0.10	0.10	0.75	0.75		0.75	0.75	0.75
Clearance Time (s)		5.0			5.0	5.0	6.3	6.3		6.3	6.3	6.3
Vehicle Extension (s)		4.3			4.3	4.3	5.5	5.5		5.5	5.5	5.5
Lane Grp Cap (vph)		157			160	156	423	2544		527	2572	1150
v/s Ratio Prot								0.20			c0.26	
v/s Ratio Perm		c0.01			0.00	0.00	0.02			0.09		0.00
v/c Ratio		0.05			0.01	0.00	0.02	0.27		0.11	0.35	0.00
Uniform Delay, d1		30.4			30.3	30.3	2.4	3.0		2.6	3.2	2.4
Progression Factor		1.00			1.00	1.00	0.37	0.60		0.61	0.68	0.61
Incremental Delay, d2		0.2			0.0	0.0	0.1	0.2		0.4	0.4	0.0
Delay (s)		30.7			30.4	30.3	1.0	2.0		2.0	2.6	1.5
Level of Service		C			C	C	A	A		A	A	A
Approach Delay (s)		30.7			30.3			2.0			2.5	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM Average Control Delay			3.0				HCM Level of Service			A		
HCM Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			75.0				Sum of lost time (s)			11.3		
Intersection Capacity Utilization			68.8%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												


















I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

4: Woodruff Industrial Lane & Woodruff Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	36	5	58	21	5	2	12	512	79	156	834	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.86		1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	1561		1719	1742		1719	3369		1719	3417	
Flt Permitted	0.61	1.00		0.71	1.00		0.28	1.00		0.35	1.00	
Satd. Flow (perm)	1098	1561		1287	1742		513	3369		642	3417	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	40	6	64	23	6	2	13	569	88	173	927	39
RTOR Reduction (vph)	0	59	0	0	2	0	0	5	0	0	1	0
Lane Group Flow (vph)	40	11	0	23	6	0	13	652	0	173	965	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	20.1	12.4		15.3	10.0		101.1	98.5		114.3	105.7	
Effective Green, g (s)	20.1	12.4		15.3	10.0		101.1	98.5		114.3	105.7	
Actuated g/C Ratio	0.13	0.08		0.10	0.07		0.67	0.66		0.76	0.70	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.3	4.3		4.3	4.3		4.3	5.5		4.3	5.5	
Lane Grp Cap (vph)	179	129		147	116		367	2212		560	2408	
v/s Ratio Prot	c0.01	0.01		0.01	0.00		0.00	0.19		c0.02	c0.28	
v/s Ratio Perm	c0.02			0.01			0.02			0.22		
v/c Ratio	0.22	0.09		0.16	0.05		0.04	0.29		0.31	0.40	
Uniform Delay, d1	57.6	63.6		61.3	65.6		8.1	11.0		5.4	9.1	
Progression Factor	1.00	1.00		1.00	1.00		1.23	1.31		0.21	0.50	
Incremental Delay, d2	1.0	0.5		0.8	0.3		0.1	0.3		0.5	0.5	
Delay (s)	58.6	64.0		62.1	65.9		10.0	14.7		1.6	5.0	
Level of Service	E	E		E	E		B	B		A	A	
Approach Delay (s)		62.1			63.1			14.6			4.5	
Approach LOS		E			E			B			A	
Intersection Summary												
HCM Average Control Delay			12.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				18.0		
Intersection Capacity Utilization			61.5%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												












I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

5: I-85 SB Ramps & Woodruff Road

											
Movement	WBL2	WBL	WBR	SEL	SET	SER	NWL	NWT	NWR	NEL	NER
Lane Configurations											
Volume (vph)	326	0	203	0	509	82	464	822	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0		6.3	6.3	6.5	6.1			
Lane Util. Factor	0.97		0.88		0.95	1.00	1.00	0.95			
Frt	1.00		0.85		1.00	0.85	1.00	1.00			
Flt Protected	0.95		1.00		1.00	1.00	0.95	1.00			
Satd. Flow (prot)	3335		2707		3438	1538	1719	3438			
Flt Permitted	0.95		1.00		1.00	1.00	0.37	1.00			
Satd. Flow (perm)	3335		2707		3438	1538	672	3438			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	362	0	226	0	566	91	516	913	0	0	0
RTOR Reduction (vph)	0	0	191	0	0	41	0	0	0	0	0
Lane Group Flow (vph)	362	0	35	0	566	50	516	913	0	0	0
Turn Type	custom		custom		Perm		pm+pt				
Protected Phases					2		1		6		
Permitted Phases	4		4		2		6				
Actuated Green, G (s)	23.0		23.0		81.9		115.9		115.9		
Effective Green, g (s)	23.0		23.0		81.9		115.9		115.9		
Actuated g/C Ratio	0.15		0.15		0.55		0.77		0.77		
Clearance Time (s)	5.0		5.0		6.3		6.5		6.1		
Vehicle Extension (s)	4.3		4.3		4.3		4.3		4.3		
Lane Grp Cap (vph)	511		415		1877		710		2656		
v/s Ratio Prot					0.16		c0.13		0.27		
v/s Ratio Perm	c0.11		0.01				0.03		c0.43		
v/c Ratio	0.71		0.08		0.30		0.73		0.34		
Uniform Delay, d1	60.3		54.5		18.5		7.3		5.3		
Progression Factor	1.00		1.00		0.40		1.49		1.09		
Incremental Delay, d2	5.0		0.1		0.4		3.7		0.3		
Delay (s)	65.3		54.6		7.9		14.7		6.0		
Level of Service	E		D		A		A		B		
Approach Delay (s)	61.2				7.6		9.2		0.0		
Approach LOS	E				A		A		A		
Intersection Summary											
HCM Average Control Delay			20.2		HCM Level of Service		C				
HCM Volume to Capacity ratio			0.71								
Actuated Cycle Length (s)			150.0		Sum of lost time (s)		11.5				
Intersection Capacity Utilization			73.7%		ICU Level of Service		D				
Analysis Period (min)			15								
c Critical Lane Group											

I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

6: I-85 NB Ramps & Woodruff Rd

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (vph)	331	583	678	157	0	955
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	6.5	6.5		6.5
Lane Util. Factor	0.97	0.88	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3335	2707	3438	1538		3438
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3335	2707	3438	1538		3438
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	368	648	753	174	0	1061
RTOR Reduction (vph)	0	402	0	77	0	0
Lane Group Flow (vph)	368	246	753	97	0	1061
Turn Type		Prot		Perm		
Protected Phases	3	3	2			2 4
Permitted Phases				2		
Actuated Green, G (s)	35.4	35.4	83.5	83.5		102.5
Effective Green, g (s)	35.4	35.4	83.5	83.5		95.5
Actuated g/C Ratio	0.24	0.24	0.56	0.56		0.64
Clearance Time (s)	5.6	5.6	6.5	6.5		
Vehicle Extension (s)	4.3	4.3	4.3	4.3		
Lane Grp Cap (vph)	787	639	1914	856		2189
v/s Ratio Prot	c0.11	0.09	0.22			c0.31
v/s Ratio Perm				0.06		
v/c Ratio	0.47	0.39	0.39	0.11		0.48
Uniform Delay, d1	49.2	48.2	18.9	15.7		14.3
Progression Factor	1.00	1.00	1.13	3.69		0.81
Incremental Delay, d2	0.7	0.6	0.6	0.2		0.2
Delay (s)	49.9	48.8	21.9	58.3		11.8
Level of Service	D	D	C	E		B
Approach Delay (s)	49.2		28.7			11.8
Approach LOS	D		C			B
Intersection Summary						
HCM Average Control Delay			29.7		HCM Level of Service	C
HCM Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	18.6
Intersection Capacity Utilization			49.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

I-85/I-385 Interchange Improvements
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








7: Carolina Point Pkwy & Woodruff Road



Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations	↰↰	↱	↰↰	↱	↰	↰↰
Volume (vph)	113	86	1103	158	130	1450
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	6.5	6.5	6.5	6.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3335	1538	3438	1538	1719	3438
Flt Permitted	0.95	1.00	1.00	1.00	0.22	1.00
Satd. Flow (perm)	3335	1538	3438	1538	390	3438
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	126	96	1226	176	144	1611
RTOR Reduction (vph)	0	88	0	29	0	0
Lane Group Flow (vph)	126	8	1226	147	144	1611
Turn Type	Perm		Perm		Perm	
Protected Phases	4		2 3 6			2 3 6
Permitted Phases	4	4		2 3 6	2 3 6	
Actuated Green, G (s)	12.0	12.0	125.4	125.4	125.4	125.4
Effective Green, g (s)	12.0	12.0	125.4	125.4	125.4	125.4
Actuated g/C Ratio	0.08	0.08	0.84	0.84	0.84	0.84
Clearance Time (s)	7.0	7.0				
Vehicle Extension (s)	4.3	4.3				
Lane Grp Cap (vph)	267	123	2874	1286	326	2874
v/s Ratio Prot	c0.04		0.36			c0.47
v/s Ratio Perm		0.00		0.10	0.37	
v/c Ratio	0.47	0.06	0.43	0.11	0.44	0.56
Uniform Delay, d1	66.0	63.8	3.1	2.2	3.2	3.8
Progression Factor	1.00	1.00	0.34	0.00	0.06	0.05
Incremental Delay, d2	2.1	0.3	0.1	0.1	1.1	0.2
Delay (s)	68.0	64.1	1.2	0.1	1.3	0.4
Level of Service	E	E	A	A	A	A
Approach Delay (s)	66.4		1.1			0.5
Approach LOS	E		A			A
Intersection Summary						
HCM Average Control Delay			5.1		HCM Level of Service	A
HCM Volume to Capacity ratio			0.56			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	13.5
Intersection Capacity Utilization			59.7%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						
























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8: Woodruff Road & Market Point Drive

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	97	1041	51	27	1484	63	33	1	34	27	1	63	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.1	6.1	5.8	6.1	6.1	6.1	5.8	5.8	6.1	5.8	5.8	5.8	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3335	3438	1538	1719	3438	1538	1719	1810	1538	3335	3438	1538	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3335	3438	1538	1719	3438	1538	1719	1810	1538	3335	3438	1538	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	108	1157	57	30	1649	70	37	1	38	30	1	70	
RTOR Reduction (vph)	0	0	15	0	0	20	0	0	33	0	0	66	
Lane Group Flow (vph)	108	1157	42	30	1649	50	37	1	5	30	1	4	
Turn Type	Prot	pm+ov		Prot	Perm		Prot	pm+ov		Prot	Perm		
Protected Phases	5	2	3	1	6	3		8	1	7	4		
Permitted Phases	2			6						8			4
Actuated Green, G (s)	9.9	102.9	111.3	6.9	99.9	99.9	8.4	12.2	19.1	4.2	8.0	8.0	
Effective Green, g (s)	9.9	102.9	111.3	6.9	99.9	99.9	8.4	12.2	19.1	4.2	8.0	8.0	
Actuated g/C Ratio	0.07	0.69	0.74	0.05	0.67	0.67	0.06	0.08	0.13	0.03	0.05	0.05	
Clearance Time (s)	6.1	6.1	5.8	6.1	6.1	6.1	5.8	5.8	6.1	5.8	5.8	5.8	
Vehicle Extension (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
Lane Grp Cap (vph)	220	2358	1141	79	2290	1024	96	147	196	93	183	82	
v/s Ratio Prot	0.03	c0.34	0.00	0.02	c0.48	c0.02		0.00	c0.00	0.01	0.00		
v/s Ratio Perm	0.03			0.03				0.00			c0.00		
v/c Ratio	0.49	0.49	0.04	0.38	0.72	0.05	0.39	0.01	0.02	0.32	0.01	0.05	
Uniform Delay, d1	67.6	11.1	5.1	69.5	16.1	8.6	68.3	63.3	57.3	71.5	67.2	67.4	
Progression Factor	1.15	0.64	0.76	0.73	0.14	0.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.5	0.7	0.0	3.8	1.6	0.1	4.0	0.0	0.1	3.2	0.0	0.4	
Delay (s)	80.0	7.8	3.9	54.5	3.8	0.1	72.3	63.4	57.4	74.7	67.3	67.7	
Level of Service	F	A	A	D	A	A	E	E	E	E	E	E	
Approach Delay (s)	13.6		4.5				64.7			69.8			
Approach LOS	B		A				E			E			
Intersection Summary													
HCM Average Control Delay			11.6	HCM Level of Service					B				
HCM Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			150.0	Sum of lost time (s)					29.9				
Intersection Capacity Utilization			63.0%	ICU Level of Service					B				
Analysis Period (min)			15										
c Critical Lane Group													


















I-85/I-385 Interchange Improvements
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9: Woodruff Road & Garlington Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	216	773	113	106	1040	469	253	243	66	140	112	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.1	6.1	5.2	6.1	6.1	5.2	5.2		5.2	5.2	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00		0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3335	3438	1538	1719	3438	1538	3335	1752		3335	1810	1538
Flt Permitted	0.95	1.00	1.00	0.27	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3335	3438	1538	482	3438	1538	3335	1752		3335	1810	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	240	859	126	118	1156	521	281	270	73	156	124	312
RTOR Reduction (vph)	0	0	63	0	0	212	0	7	0	0	0	0
Lane Group Flow (vph)	240	859	63	118	1156	309	281	336	0	156	124	312
Turn Type	Prot		Perm	pm+pt		Perm	Prot			Prot		Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6						Free
Actuated Green, G (s)	15.1	74.9	74.9	78.2	69.0	69.0	18.1	33.5		10.7	26.1	150.0
Effective Green, g (s)	15.1	74.9	74.9	78.2	69.0	69.0	18.1	33.5		10.7	26.1	150.0
Actuated g/C Ratio	0.10	0.50	0.50	0.52	0.46	0.46	0.12	0.22		0.07	0.17	1.00
Clearance Time (s)	5.2	6.1	6.1	5.2	6.1	6.1	5.2	5.2		5.2	5.2	
Vehicle Extension (s)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3		4.3	4.3	
Lane Grp Cap (vph)	336	1717	768	327	1581	707	402	391		238	315	1538
v/s Ratio Prot	c0.07	0.25		0.02	c0.34		c0.08	c0.19		0.05	0.07	
v/s Ratio Perm			0.04	0.17		0.20						0.20
v/c Ratio	0.71	0.50	0.08	0.36	0.73	0.44	0.70	0.86		0.66	0.39	0.20
Uniform Delay, d1	65.4	25.1	19.6	19.2	33.0	27.4	63.3	56.0		67.9	54.9	0.0
Progression Factor	1.25	0.67	0.97	0.53	0.52	0.09	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.0	0.9	0.2	0.9	2.6	1.7	5.9	17.8		7.4	1.3	0.3
Delay (s)	88.8	17.7	19.2	11.1	19.7	4.2	69.2	73.7		75.3	56.2	0.3
Level of Service	F	B	B	B	B	A	E	E		E	E	A
Approach Delay (s)		31.8			14.6			71.7			31.8	
Approach LOS		C			B			E			C	
Intersection Summary												
HCM Average Control Delay			30.4				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			21.7		
Intersection Capacity Utilization			74.0%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												





















I-85/I-385 Interchange Improvements
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10: Woodruff Road & I-385 SB Ramps

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	830	149	64	1100	0	0	0	0	832	0	515
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.6		6.6	6.6					5.7		4.0
Lane Util. Factor		0.95		1.00	0.95					0.97		1.00
Frt		0.98		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3359		1719	3438					3335		1538
Flt Permitted		1.00		0.14	1.00					0.95		1.00
Satd. Flow (perm)		3359		261	3438					3335		1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	922	166	71	1222	0	0	0	0	924	0	572
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1079	0	71	1222	0	0	0	0	924	0	572
Turn Type				pm+pt						Prot		Free
Protected Phases		2		1	6					4		
Permitted Phases				6								Free
Actuated Green, G (s)		73.1		87.8	87.8					49.9		150.0
Effective Green, g (s)		73.1		87.8	87.8					49.9		150.0
Actuated g/C Ratio		0.49		0.59	0.59					0.33		1.00
Clearance Time (s)		6.6		6.6	6.6					5.7		
Vehicle Extension (s)		4.3		4.3	4.3					4.3		
Lane Grp Cap (vph)		1637		232	2012					1109		1538
v/s Ratio Prot		c0.32		0.02	c0.36					c0.28		
v/s Ratio Perm				0.16								0.37
v/c Ratio		0.66		0.31	0.61					0.83		0.37
Uniform Delay, d1		29.0		18.5	20.0					46.2		0.0
Progression Factor		0.77		0.07	0.18					1.01		1.00
Incremental Delay, d2		1.8		0.3	0.3					5.9		0.7
Delay (s)		24.2		1.5	4.0					52.5		0.7
Level of Service		C		A	A					D		A
Approach Delay (s)		24.2			3.9			0.0			32.7	
Approach LOS		C			A			A			C	
Intersection Summary												
HCM Average Control Delay			20.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				18.9		
Intersection Capacity Utilization			115.3%			ICU Level of Service				H		
Analysis Period (min)			15									
c Critical Lane Group												





















I-85/I-385 Interchange Improvements
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11: Woodruff Road & I-385 NB Ramps

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Volume (vph)	605	1057	0	0	632	614	532	0	254	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1			6.1	6.1	5.0		5.0			
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1719	3438			3438	1538	1719		1538			
Flt Permitted	0.10	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	188	3438			3438	1538	1719		1538			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	672	1174	0	0	702	682	591	0	282	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	463	0	0	52	0	0	0
Lane Group Flow (vph)	672	1174	0	0	702	219	591	0	230	0	0	0
Turn Type	pm+pt				Perm		Prot	custom				
Protected Phases	5	2			6		8					
Permitted Phases	2					6			8			
Actuated Green, G (s)	88.9	88.9			32.3	32.3	50.0		50.0			
Effective Green, g (s)	88.9	88.9			32.3	32.3	50.0		50.0			
Actuated g/C Ratio	0.59	0.59			0.22	0.22	0.33		0.33			
Clearance Time (s)	6.1	6.1			6.1	6.1	5.0		5.0			
Vehicle Extension (s)	4.3	4.3			4.3	4.3	4.3		4.3			
Lane Grp Cap (vph)	627	2038			740	331	573		513			
v/s Ratio Prot	c0.36	0.34			0.20		c0.34					
v/s Ratio Perm	c0.27					0.14			0.15			
v/c Ratio	1.07	0.58			0.95	0.66	1.03		0.45			
Uniform Delay, d1	42.8	18.9			58.0	53.9	50.0		39.2			
Progression Factor	0.86	0.91			0.82	2.05	1.00		1.00			
Incremental Delay, d2	51.4	0.8			17.9	7.2	45.9		1.0			
Delay (s)	88.4	18.1			65.5	117.7	95.9		40.2			
Level of Service	F	B			E	F	F		D			
Approach Delay (s)		43.7			91.2			77.9			0.0	
Approach LOS		D			F			E			A	
Intersection Summary												
HCM Average Control Delay			67.0			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			11.1			
Intersection Capacity Utilization			115.3%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												



















I-85/I-385 Interchange Improvements
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12: Woodruff Road & Commercial Drive

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	116	1102	93	21	1099	44	85	5	7	78	20	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.5		5.5	5.5		5.3	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3398		1719	3418		1719	1654		1719	1604	
Flt Permitted	0.10	1.00		0.19	1.00		0.42	1.00		0.75	1.00	
Satd. Flow (perm)	177	3398		347	3418		760	1654		1354	1604	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	129	1224	103	23	1221	49	94	6	8	87	22	69
RTOR Reduction (vph)	0	8	0	0	4	0	0	6	0	0	62	0
Lane Group Flow (vph)	129	1319	0	23	1266	0	94	8	0	87	29	0
Turn Type	pm+pt			Perm			pm+pt			Perm		
Protected Phases	5	2			6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	45.9	45.9		35.5	35.5		18.2	18.2		8.0	8.0	
Effective Green, g (s)	45.9	45.9		35.5	35.5		18.2	18.2		8.0	8.0	
Actuated g/C Ratio	0.61	0.61		0.47	0.47		0.24	0.24		0.11	0.11	
Clearance Time (s)	5.3	5.5		5.5	5.5		5.3	5.4		5.4	5.4	
Vehicle Extension (s)	4.3	4.3		4.3	4.3		4.3	4.3		4.3	4.3	
Lane Grp Cap (vph)	213	2080		164	1618		247	401		144	171	
v/s Ratio Prot	0.04	c0.39			c0.37		c0.02	0.00			0.02	
v/s Ratio Perm	0.33			0.07			0.07			c0.06		
v/c Ratio	0.61	0.63		0.14	0.78		0.38	0.02		0.60	0.17	
Uniform Delay, d1	11.3	9.2		11.1	16.5		23.0	21.6		32.0	30.5	
Progression Factor	1.78	0.79		0.56	0.70		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	1.2		1.6	3.4		1.5	0.0		8.7	0.8	
Delay (s)	25.1	8.6		7.8	14.9		24.5	21.6		40.6	31.2	
Level of Service	C	A		A	B		C	C		D	C	
Approach Delay (s)		10.0			14.8			24.1			35.8	
Approach LOS		B			B			C			D	
Intersection Summary												
HCM Average Control Delay			14.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			21.7			
Intersection Capacity Utilization			71.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												




















I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

13: Woodruff Road & Smith Hines Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	1017	164	124	1088	1	74	1	104	1	1	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.0	6.0			5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1719	3367		1719	3438			1633			1667	
Flt Permitted	0.21	1.00		0.18	1.00			0.86			0.94	
Satd. Flow (perm)	376	3367		329	3438			1441			1584	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	7	1130	182	138	1209	1	82	1	116	1	1	2
RTOR Reduction (vph)	0	17	0	0	0	0	0	68	0	0	2	0
Lane Group Flow (vph)	7	1295	0	138	1210	0	0	131	0	0	2	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	2			6			8			4		
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	53.4	53.4		53.7	53.7			10.3			10.3	
Effective Green, g (s)	53.4	53.4		53.7	53.7			10.3			10.3	
Actuated g/C Ratio	0.71	0.71		0.72	0.72			0.14			0.14	
Clearance Time (s)	6.3	6.3		6.0	6.0			5.0			5.0	
Vehicle Extension (s)	4.3	4.3		4.3	4.3			4.3			4.3	
Lane Grp Cap (vph)	268	2397		236	2462			198			218	
v/s Ratio Prot	0.38			0.35								
v/s Ratio Perm	0.02			c0.42				c0.09			0.00	
v/c Ratio	0.03	0.54		0.58	0.49			0.66			0.01	
Uniform Delay, d1	3.2	5.1		5.2	4.7			30.7			27.9	
Progression Factor	0.41	0.29		2.19	1.54			1.00			1.00	
Incremental Delay, d2	0.1	0.7		1.0	0.1			9.2			0.0	
Delay (s)	1.5	2.2		12.3	7.3			39.9			28.0	
Level of Service	A	A		B	A			D			C	
Approach Delay (s)	2.2			7.8				39.9			28.0	
Approach LOS	A			A				D			C	
Intersection Summary												
HCM Average Control Delay	7.5			HCM Level of Service			A					
HCM Volume to Capacity ratio	0.60											
Actuated Cycle Length (s)	75.0			Sum of lost time (s)			11.0					
Intersection Capacity Utilization	90.0%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												























I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

14: Woodruff Road & Walmart Driveway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	1445	17	14	3250	83	49	2	25	84	1	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.0	5.0			5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.86			0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	
Satd. Flow (prot)	1719	3432		1719	3425		1719	1556			1711	
Flt Permitted	0.03	1.00		0.14	1.00		0.79	1.00			0.73	
Satd. Flow (perm)	62	3432		251	3425		1421	1556			1296	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	23	1606	19	16	3611	92	54	2	28	93	1	9
RTOR Reduction (vph)	0	0	0	0	1	0	0	25	0	0	3	0
Lane Group Flow (vph)	23	1625	0	16	3702	0	54	5	0	0	100	0
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	120.6	120.6		110.3	110.3		18.1	18.1			18.1	
Effective Green, g (s)	120.6	120.6		110.3	110.3		18.1	18.1			18.1	
Actuated g/C Ratio	0.80	0.80		0.74	0.74		0.12	0.12			0.12	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.0	5.0			5.0	
Vehicle Extension (s)	4.3	4.3		4.3	4.3		4.3	4.3			4.3	
Lane Grp Cap (vph)	94	2759		185	2519		171	188			156	
v/s Ratio Prot	0.01	c0.47			c1.08			0.00				
v/s Ratio Perm	0.19			0.06			0.04				c0.08	
v/c Ratio	0.24	0.59		0.09	1.47		0.32	0.03			0.64	
Uniform Delay, d1	45.7	5.5		5.6	19.9		60.3	58.2			62.9	
Progression Factor	1.42	0.71		0.58	0.53		1.00	1.00			1.00	
Incremental Delay, d2	2.0	0.9		0.4	212.4		1.7	0.1			10.3	
Delay (s)	67.1	4.7		3.7	222.8		62.0	58.3			73.2	
Level of Service	E	A		A	F		E	E			E	
Approach Delay (s)		5.6			221.9			60.7			73.2	
Approach LOS		A			F			E			E	
Intersection Summary												
HCM Average Control Delay			152.5			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.35									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			17.6			
Intersection Capacity Utilization			113.8%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												




















I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

15: Woodruff Road & Verdin Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	746	20	94	2081	54	337	247	27	47	200	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.2	5.0	5.0	5.2	5.2	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1719	3425		1719	3425		1719	1810	1538	1719	1738	
Flt Permitted	0.04	1.00		0.28	1.00		0.16	1.00	1.00	0.59	1.00	
Satd. Flow (perm)	81	3425		510	3425		287	1810	1538	1069	1738	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	829	22	104	2312	60	374	274	30	52	222	79
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	20	0	9	0
Lane Group Flow (vph)	44	850	0	104	2371	0	374	274	10	52	292	0
Turn Type	Perm			Perm			pm+pt			Perm	Perm	
Protected Phases	2			6			3		8		4	
Permitted Phases	2			6			8		8		4	
Actuated Green, G (s)	89.7	89.7		89.7	89.7		49.0	49.0	49.0	19.8	19.8	
Effective Green, g (s)	89.7	89.7		89.7	89.7		49.0	49.0	49.0	19.8	19.8	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.33	0.33	0.33	0.13	0.13	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.2	5.0	5.0	5.2	5.2	
Vehicle Extension (s)	4.3	4.3		4.3	4.3		4.3	4.3	4.3	4.3	4.3	
Lane Grp Cap (vph)	48	2048		305	2048		321	591	502	141	229	
v/s Ratio Prot		0.25			c0.69		c0.18	0.15			0.17	
v/s Ratio Perm	0.55			0.20			c0.20		0.01	0.05		
v/c Ratio	0.92	0.41		0.34	1.16		1.17	0.46	0.02	0.37	1.28	
Uniform Delay, d1	26.8	16.1		15.2	30.1		45.8	40.1	34.2	59.4	65.1	
Progression Factor	1.19	1.18		0.67	0.74		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	95.8	0.5		1.9	74.8		102.9	0.9	0.0	2.6	153.8	
Delay (s)	127.8	19.5		12.2	97.0		148.7	41.0	34.2	62.0	218.9	
Level of Service	F	B		B	F		F	D	C	E	F	
Approach Delay (s)		24.9			93.4			100.1			195.8	
Approach LOS		C			F			F			F	
Intersection Summary												
HCM Average Control Delay	88.7			HCM Level of Service			F					
HCM Volume to Capacity ratio	1.14											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)			11.5					
Intersection Capacity Utilization	125.4%			ICU Level of Service			H					
Analysis Period (min)	15											
c Critical Lane Group												



















I-85/I-385 Interchange Improvements
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16: Woodruff Road & Butler Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	708	52	533	1893	1	162	28	390	22	29	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3		6.3	6.3			5.0	6.3	5.0	5.0	
Lane Util. Factor		0.95		1.00	0.95			1.00	1.00	1.00	1.00	
Frt		0.99		1.00	1.00			1.00	0.85	1.00	0.97	
Flt Protected		1.00		0.95	1.00			0.96	1.00	0.95	1.00	
Satd. Flow (prot)		3402		1719	3438			1735	1538	1719	1750	
Flt Permitted		0.93		0.19	1.00			0.73	1.00	0.38	1.00	
Satd. Flow (perm)		3150		341	3438			1318	1538	688	1750	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	787	58	592	2103	1	180	31	433	24	32	9
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	36	0	7	0
Lane Group Flow (vph)	0	847	0	592	2104	0	0	211	397	24	34	0
Turn Type	Perm			pm+pt			Perm		pm+ov		Perm	
Protected Phases		2		1	6			8	1		4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)		61.5		110.3	110.3			28.4	70.9	28.4	28.4	
Effective Green, g (s)		61.5		110.3	110.3			28.4	70.9	28.4	28.4	
Actuated g/C Ratio		0.41		0.74	0.74			0.19	0.47	0.19	0.19	
Clearance Time (s)		6.3		6.3	6.3			5.0	6.3	5.0	5.0	
Vehicle Extension (s)		4.3		4.3	4.3			4.3	4.3	4.3	4.3	
Lane Grp Cap (vph)		1292		641	2528			250	727	130	331	
v/s Ratio Prot				c0.26	0.61				0.15		0.02	
v/s Ratio Perm		0.27		c0.42				c0.16	0.10	0.03		
v/c Ratio		0.66		0.92	0.83			0.84	0.55	0.18	0.10	
Uniform Delay, d1		35.7		31.4	13.5			58.7	28.1	51.1	50.3	
Progression Factor		0.56		1.16	0.52			1.00	1.00	1.00	1.00	
Incremental Delay, d2		2.4		2.6	0.3			23.3	1.2	1.1	0.2	
Delay (s)		22.5		38.9	7.4			81.9	29.3	52.2	50.5	
Level of Service		C		D	A			F	C	D	D	
Approach Delay (s)		22.5			14.3			46.5			51.1	
Approach LOS		C			B			D			D	
Intersection Summary												
HCM Average Control Delay			21.4			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			11.3			
Intersection Capacity Utilization			109.1%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												
























I-85/I-385 Interchange Improvements
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17: Woodruff Road & Bell Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1105	90	28	2672	17	139	1	34	14	1	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2			5.4			5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.97			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1719	3399		1719	3435			1694			1600	
Flt Permitted	0.03	1.00		0.18	1.00			0.66			0.94	
Satd. Flow (perm)	62	3399		326	3435			1161			1526	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	1228	100	31	2969	19	154	1	38	16	1	66
RTOR Reduction (vph)	0	4	0	0	0	0	0	6	0	0	5	0
Lane Group Flow (vph)	28	1324	0	31	2988	0	0	187	0	0	78	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	2			6			8			4		
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	116.8	116.8		116.8	116.8			21.6			21.6	
Effective Green, g (s)	116.8	116.8		116.8	116.8			21.6			21.6	
Actuated g/C Ratio	0.78	0.78		0.78	0.78			0.14			0.14	
Clearance Time (s)	6.2	6.2		6.2	6.2			5.4			5.4	
Vehicle Extension (s)	4.3	4.3		4.3	4.3			4.3			4.3	
Lane Grp Cap (vph)	48	2647		254	2675			167			220	
v/s Ratio Prot	0.39			c0.87								
v/s Ratio Perm	0.45			0.10				c0.16			0.05	
v/c Ratio	0.58	0.50		0.12	1.12			1.12			0.35	
Uniform Delay, d1	6.7	6.0		4.1	16.6			64.2			57.9	
Progression Factor	2.06	1.59		0.71	0.49			1.00			1.00	
Incremental Delay, d2	37.0	0.6		0.4	55.2			105.4			1.6	
Delay (s)	50.9	10.2		3.3	63.3			169.6			59.5	
Level of Service	D	B		A	E			F			E	
Approach Delay (s)	11.0			62.7				169.6			59.5	
Approach LOS	B			E				F			E	
Intersection Summary												
HCM Average Control Delay	52.0			HCM Level of Service			D					
HCM Volume to Capacity ratio	1.12											
Actuated Cycle Length (s)	150.0			Sum of lost time (s)			11.6					
Intersection Capacity Utilization	100.6%			ICU Level of Service			G					
Analysis Period (min)	15											
c Critical Lane Group												

I-85/I-385 Interchange Improvements
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18: Woodruff Road & SC 14
























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	598	92	50	1477	199	369	384	132	132	229	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	5.0	6.3	6.3		5.0	5.0	6.3	5.0	5.0	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1719	3377		1719	1810	1538	1719	1810	1538
Flt Permitted	0.05	1.00	1.00	0.36	1.00		0.17	1.00	1.00	0.22	1.00	1.00
Satd. Flow (perm)	94	3438	1538	656	3377		315	1810	1538	402	1810	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	168	664	102	56	1641	221	410	427	147	147	254	354
RTOR Reduction (vph)	0	0	33	0	7	0	0	0	70	0	0	18
Lane Group Flow (vph)	168	664	69	56	1855	0	410	427	77	147	254	336
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6		3	8	1	7	4	5
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	88.9	77.2	102.2	79.9	72.7		48.0	35.0	42.2	26.0	18.0	29.7
Effective Green, g (s)	88.9	77.2	102.2	79.9	72.7		48.0	35.0	42.2	26.0	18.0	29.7
Actuated g/C Ratio	0.59	0.51	0.68	0.53	0.48		0.32	0.23	0.28	0.17	0.12	0.20
Clearance Time (s)	6.3	6.3	5.0	6.3	6.3		5.0	5.0	6.3	5.0	5.0	6.3
Vehicle Extension (s)	4.3	4.3	4.3	4.3	4.3		4.3	4.3	4.3	4.3	4.3	4.3
Lane Grp Cap (vph)	182	1769	1048	400	1637		335	422	433	140	217	305
v/s Ratio Prot	0.07	c0.19	0.01	0.01	c0.55		c0.20	0.24	0.01	0.06	0.14	c0.09
v/s Ratio Perm	0.48		0.03	0.07			c0.19		0.04	0.13		0.13
v/c Ratio	0.92	0.38	0.07	0.14	1.13		1.22	1.01	0.18	1.05	1.17	1.10
Uniform Delay, d1	48.9	21.9	8.0	17.1	38.6		45.7	57.5	40.8	59.9	66.0	60.1
Progression Factor	1.05	0.56	1.35	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	41.8	0.5	0.0	0.3	68.1		124.5	46.8	0.3	90.0	114.8	82.0
Delay (s)	93.0	12.8	10.8	17.4	106.8		170.2	104.3	41.1	149.9	180.8	142.1
Level of Service	F	B	B	B	F		F	F	D	F	F	F
Approach Delay (s)		27.0			104.1			122.3			156.6	
Approach LOS		C			F			F			F	

Intersection Summary

HCM Average Control Delay	101.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	106.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

19: E Parkins Mill Road & US 276

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	100	49	136	23	103	97	1419	75	84	1240	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0	6.0	4.0	7.0	7.0	4.0	7.0	7.0
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Flt Protected	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3269		3335	1810	1538	1719	4940	1538	3335	4940	1538
Satd. Flow (perm)	1340	3269		3335	1810	1538	1719	4940	1538	3335	4940	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	117	111	54	151	26	114	108	1577	83	93	1378	99
RTOR Reduction (vph)	0	49	0	0	0	100	0	0	48	0	0	62
Lane Group Flow (vph)	117	116	0	151	26	14	108	1577	35	93	1378	37
Turn Type	pm+pt			Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8					4			6			2
Actuated Green, G (s)	9.8	5.8		6.0	7.8	7.8	7.6	27.2	27.2	5.0	24.6	24.6
Effective Green, g (s)	9.8	5.8		6.0	7.8	7.8	7.6	27.2	27.2	5.0	24.6	24.6
Actuated g/C Ratio	0.15	0.09		0.09	0.12	0.12	0.12	0.42	0.42	0.08	0.38	0.38
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	4.3	4.9		4.3	4.9	4.9	4.3	4.9	4.9	4.3	4.9	4.9
Lane Grp Cap (vph)	225	292		308	217	185	201	2067	644	257	1870	582
v/s Ratio Prot	0.03	0.04		c0.05	0.01		c0.06	c0.32		0.03	0.28	
v/s Ratio Perm	c0.05					0.01			0.02			0.02
v/c Ratio	0.52	0.40		0.49	0.12	0.07	0.54	0.76	0.05	0.36	0.74	0.06
Uniform Delay, d1	25.2	27.9		28.0	25.5	25.4	27.0	16.1	11.2	28.5	17.4	12.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.87	0.89	0.82	1.00	1.00	1.00
Incremental Delay, d2	3.2	1.8		1.9	0.5	0.3	3.2	2.2	0.1	1.4	2.6	0.2
Delay (s)	28.3	29.7		30.0	26.0	25.7	26.8	16.6	9.3	29.9	20.0	13.1
Level of Service	C	C		C	C	C	C	B	A	C	C	B
Approach Delay (s)		29.2			28.0			16.9			20.2	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM Average Control Delay			19.9			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			58.2%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

























20: Duvall Drive & US 276



Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Volume (vph)	346	96	1198	227	104	1245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.3		6.3	6.3
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1719	1538	4822		1719	4940
Flt Permitted	0.95	1.00	1.00		0.12	1.00
Satd. Flow (perm)	1719	1538	4822		221	4940
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	384	107	1331	252	116	1383
RTOR Reduction (vph)	0	38	42	0	0	0
Lane Group Flow (vph)	384	69	1541	0	116	1383
Turn Type	Perm			Perm		
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	15.0	15.0	37.7		37.7	37.7
Effective Green, g (s)	15.0	15.0	37.7		37.7	37.7
Actuated g/C Ratio	0.23	0.23	0.58		0.58	0.58
Clearance Time (s)	6.0	6.0	6.3		6.3	6.3
Vehicle Extension (s)	4.9	4.9	4.9		4.9	4.9
Lane Grp Cap (vph)	397	355	2797		128	2865
v/s Ratio Prot	c0.22		0.32			0.28
v/s Ratio Perm		0.04			c0.52	
v/c Ratio	0.97	0.19	0.55		0.91	0.48
Uniform Delay, d1	24.8	20.1	8.4		12.1	8.0
Progression Factor	1.00	1.00	0.18		1.00	1.00
Incremental Delay, d2	36.7	0.5	0.6		57.5	0.6
Delay (s)	61.5	20.7	2.1		69.6	8.5
Level of Service	E	C	A		E	A
Approach Delay (s)	52.6		2.1			13.3
Approach LOS	D		A			B
Intersection Summary						
HCM Average Control Delay			13.7		HCM Level of Service	B
HCM Volume to Capacity ratio			0.92			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	12.3
Intersection Capacity Utilization			76.2%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						





















I-85/I-385 Interchange Improvements
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23: US 276 & Millennium Blvd

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	102	1205	210	24	1680	57	71	75	61	4	14	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.5	6.5	4.5	6.5	6.5	6.0	6.0		6.0	6.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95		1.00	1.00	0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	3335	3206		1719	1810	2707
Flt Permitted	0.06	1.00	1.00	0.15	1.00	1.00	0.95	1.00		1.00	1.00	1.00
Satd. Flow (perm)	115	3438	1538	279	3438	1538	3335	3206		1810	1810	2707
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	113	1339	233	27	1867	63	79	83	68	4	16	42
RTOR Reduction (vph)	0	0	88	0	0	26	0	62	0	0	0	37
Lane Group Flow (vph)	113	1339	145	27	1867	37	79	89	0	4	16	5
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot			pm+pt		pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2		2	6		6				4		4
Actuated Green, G (s)	71.2	63.2	63.2	62.9	59.3	59.3	8.0	9.0		7.0	4.0	12.0
Effective Green, g (s)	71.2	63.2	63.2	62.9	59.3	59.3	8.0	9.0		7.0	4.0	12.0
Actuated g/C Ratio	0.70	0.62	0.62	0.62	0.58	0.58	0.08	0.09		0.07	0.04	0.12
Clearance Time (s)	4.0	6.5	6.5	4.5	6.5	6.5	6.0	6.0		6.0	6.0	4.0
Vehicle Extension (s)	4.3	4.9	4.9	4.3	4.9	4.9	4.3	6.4		4.3	6.4	4.3
Lane Grp Cap (vph)	206	2134	955	223	2003	896	262	283		122	71	319
v/s Ratio Prot	c0.04	0.39		0.00	c0.54		c0.02	c0.03		0.00	0.01	0.00
v/s Ratio Perm	0.34		0.09	0.07		0.02				0.00		0.00
v/c Ratio	0.55	0.63	0.15	0.12	0.93	0.04	0.30	0.31		0.03	0.23	0.02
Uniform Delay, d1	19.9	12.0	8.1	8.7	19.4	9.1	44.3	43.5		44.2	47.4	39.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.2	0.8	0.1	0.4	8.9	0.0	1.0	2.0		0.2	5.0	0.0
Delay (s)	24.1	12.8	8.2	9.0	28.3	9.1	45.3	45.5		44.4	52.4	39.7
Level of Service	C	B	A	A	C	A	D	D		D	D	D
Approach Delay (s)		12.9			27.4			45.4			43.3	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM Average Control Delay			22.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			101.8			Sum of lost time (s)				26.5		
Intersection Capacity Utilization			75.5%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

I-85/I-385 Interchange Improvements
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24: Pelham Road & The Parkway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	234	936	955	0	1657	774	0	0	0	276	502	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8		5.8	5.3				5.3	5.3	5.3
Lane Util. Factor	0.97	0.95	1.00		0.95	1.00				1.00	1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.85				1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)	3335	3438	1538		3438	1538				1719	1810	1538
Flt Permitted	0.95	1.00	1.00		1.00	1.00				0.95	1.00	1.00
Satd. Flow (perm)	3335	3438	1538		3438	1538				1719	1810	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	260	1040	1061	0	1841	860	0	0	0	307	558	200
RTOR Reduction (vph)	0	0	29	0	0	2	0	0	0	0	0	107
Lane Group Flow (vph)	260	1040	1032	0	1841	858	0	0	0	307	558	93
Turn Type	Prot		Perm	Perm		custom				Perm		Perm
Protected Phases	5	2			6	4					4	
Permitted Phases			2	6		6				4		4
Actuated Green, G (s)	8.2	68.2	68.2		54.2	84.9				30.7	30.7	30.7
Effective Green, g (s)	8.2	68.2	68.2		54.2	84.9				30.7	30.7	30.7
Actuated g/C Ratio	0.07	0.62	0.62		0.49	0.77				0.28	0.28	0.28
Clearance Time (s)	5.8	5.8	5.8		5.8	5.3				5.3	5.3	5.3
Vehicle Extension (s)	4.3	4.3	4.3		4.3	4.3				4.3	4.3	4.3
Lane Grp Cap (vph)	249	2132	954		1694	1187				480	505	429
v/s Ratio Prot	0.08	0.30			0.54	0.20					c0.31	
v/s Ratio Perm			c0.67			0.36				0.18		0.06
v/c Ratio	1.04	0.49	1.08		1.09	0.72				0.64	1.10	0.22
Uniform Delay, d1	50.9	11.4	20.9		27.9	6.5				34.8	39.6	30.4
Progression Factor	1.00	1.00	1.00		0.82	0.89				1.00	1.00	1.00
Incremental Delay, d2	69.1	0.8	53.9		42.2	0.6				3.4	71.9	0.4
Delay (s)	120.0	12.2	74.8		65.2	6.4				38.1	111.5	30.8
Level of Service	F	B	E		E	A				D	F	C
Approach Delay (s)		52.2			46.5			0.0			75.2	
Approach LOS		D			D			A			E	
Intersection Summary												
HCM Average Control Delay			53.7		HCM Level of Service					D		
HCM Volume to Capacity ratio			1.09									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)					11.1		
Intersection Capacity Utilization			145.4%		ICU Level of Service					H		
Analysis Period (min)			15									
c Critical Lane Group												

I-85/I-385 Interchange Improvements
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25: Pelham Road & I-85 SB off ramp



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑↑
Volume (vph)	0	1212	1222	0	649	1209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.6	5.6		5.3	5.3
Lane Util. Factor		0.95	0.95		1.00	0.88
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3438	3438		1719	2707
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3438	3438		1719	2707
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1347	1358	0	721	1343
RTOR Reduction (vph)	0	0	0	0	0	11
Lane Group Flow (vph)	0	1347	1358	0	721	1332
Turn Type					Perm	
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		45.4	45.4		53.7	53.7
Effective Green, g (s)		45.4	45.4		53.7	53.7
Actuated g/C Ratio		0.41	0.41		0.49	0.49
Clearance Time (s)		5.6	5.6		5.3	5.3
Vehicle Extension (s)		4.3	4.3		4.3	4.3
Lane Grp Cap (vph)		1419	1419		839	1322
v/s Ratio Prot		0.39	c0.39		0.42	
v/s Ratio Perm						c0.49
v/c Ratio		0.95	0.96		0.86	1.01
Uniform Delay, d1		31.2	31.4		24.8	28.1
Progression Factor		0.93	0.84		1.00	1.00
Incremental Delay, d2		13.0	13.7		9.2	26.7
Delay (s)		42.0	40.1		34.1	54.8
Level of Service		D	D		C	D
Approach Delay (s)		42.0	40.1		47.6	
Approach LOS		D	D		D	
Intersection Summary						
HCM Average Control Delay			43.9		HCM Level of Service	D
HCM Volume to Capacity ratio			0.98			
Actuated Cycle Length (s)			110.0		Sum of lost time (s)	10.9
Intersection Capacity Utilization			122.0%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						




















I-85/I-385 Interchange Improvements
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26: Pelham Road & I-85 NB off ramp

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↘	↗
Volume (vph)	1110	0	0	647	910	948
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8			5.8	5.0	5.0
Lane Util. Factor	0.95			0.95	0.97	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3438			3438	3335	1538
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3438			3438	3335	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1233	0	0	719	1011	1053
RTOR Reduction (vph)	0	0	0	0	0	3
Lane Group Flow (vph)	1233	0	0	719	1011	1050
Turn Type					Perm	
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	36.2			36.2	63.0	63.0
Effective Green, g (s)	36.2			36.2	63.0	63.0
Actuated g/C Ratio	0.33			0.33	0.57	0.57
Clearance Time (s)	5.8			5.8	5.0	5.0
Vehicle Extension (s)	4.3			4.3	4.3	4.3
Lane Grp Cap (vph)	1131			1131	1910	881
v/s Ratio Prot	c0.36			0.21	0.30	
v/s Ratio Perm						c0.68
v/c Ratio	1.09			0.64	0.53	1.19
Uniform Delay, d1	36.9			31.3	14.4	23.5
Progression Factor	0.74			0.84	1.00	1.00
Incremental Delay, d2	46.9			2.2	0.4	97.8
Delay (s)	74.3			28.6	14.8	121.3
Level of Service	E			C	B	F
Approach Delay (s)	74.3			28.6	69.1	
Approach LOS	E			C	E	
Intersection Summary						
HCM Average Control Delay			63.5		HCM Level of Service	E
HCM Volume to Capacity ratio			1.16			
Actuated Cycle Length (s)			110.0		Sum of lost time (s)	10.8
Intersection Capacity Utilization			135.4%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						






















I-85/I-385 Interchange Improvements
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27: Pelham Road & Boland Court

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	1425	600	141	869	8	305	2	148	26	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7		6.7	6.7			6.3	6.3		6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	0.96		1.00	1.00			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.97	
Satd. Flow (prot)	1719	3285		1719	3433			1724	1538		1682	
Flt Permitted	0.29	1.00		0.06	1.00			0.69	1.00		0.51	
Satd. Flow (perm)	532	3285		110	3433			1258	1538		880	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	1583	667	157	966	9	339	2	164	29	2	13
RTOR Reduction (vph)	0	42	0	0	1	0	0	0	82	0	10	0
Lane Group Flow (vph)	37	2208	0	157	974	0	0	341	82	0	34	0
Turn Type	Perm			pm+pt			Perm			Perm	Perm	
Protected Phases	2			1		6	8			8		4
Permitted Phases	2			6			8			8		4
Actuated Green, G (s)	59.0	59.0		71.0	71.0		26.0		26.0		26.0	
Effective Green, g (s)	59.0	59.0		71.0	71.0		26.0		26.0		26.0	
Actuated g/C Ratio	0.54	0.54		0.65	0.65		0.24		0.24		0.24	
Clearance Time (s)	6.7	6.7		6.7	6.7		6.3		6.3		6.3	
Vehicle Extension (s)	4.9	4.9		4.3	4.9		4.3		4.3		4.3	
Lane Grp Cap (vph)	285	1762		149	2216		297		364		208	
v/s Ratio Prot	c0.67			c0.05		0.28						
v/s Ratio Perm	0.07			0.63			c0.27		0.05		0.04	
v/c Ratio	0.13	1.25		1.05		0.44	1.15		0.22		0.16	
Uniform Delay, d1	12.7	25.5		33.1		9.7	42.0		33.9		33.4	
Progression Factor	0.62	0.54		1.00		1.00	1.00		1.00		1.00	
Incremental Delay, d2	0.1	114.3		88.7		0.6	98.5		0.5		0.6	
Delay (s)	7.9	128.1		121.8		10.3	140.5		34.4		34.0	
Level of Service	A	F		F		B	F		C		C	
Approach Delay (s)	126.1			25.8			106.0			34.0		
Approach LOS	F			C			F			C		
Intersection Summary												
HCM Average Control Delay			93.9		HCM Level of Service			F				
HCM Volume to Capacity ratio			1.21									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)			19.7				
Intersection Capacity Utilization			106.5%		ICU Level of Service			G				
Analysis Period (min)			15									
c Critical Lane Group												


















I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

28: Forsythia Dr & E Butler Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	0	16	16	0	118	2	978	11	41	882	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.88		1.00	1.00		1.00	1.00	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1719	1538		1585		1719	3432		1719	3432	
Flt Permitted		0.68	1.00		0.96		0.27	1.00		0.23	1.00	
Satd. Flow (perm)		1234	1538		1524		487	3432		422	3432	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	0	18	18	0	131	2	1087	12	46	980	11
RTOR Reduction (vph)	0	0	15	0	68	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	21	3	0	81	0	2	1098	0	46	990	0
Turn Type	Perm		Perm	Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		10.0	10.0		10.0		43.0	43.0		43.0	43.0	
Effective Green, g (s)		10.0	10.0		10.0		43.0	43.0		43.0	43.0	
Actuated g/C Ratio		0.15	0.15		0.15		0.66	0.66		0.66	0.66	
Clearance Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		4.3	4.3		4.3		4.3	4.3		4.3	4.3	
Lane Grp Cap (vph)		190	237		234		322	2270		279	2270	
v/s Ratio Prot								c0.32				0.29
v/s Ratio Perm		0.02	0.00		c0.05		0.00			0.11		
v/c Ratio		0.11	0.01		0.35		0.01	0.48		0.16	0.44	
Uniform Delay, d1		23.7	23.3		24.6		3.7	5.5		4.2	5.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		0.52	0.55	
Incremental Delay, d2		0.4	0.0		1.4		0.0	0.7		1.2	0.6	
Delay (s)		24.1	23.3		26.0		3.8	6.2		3.3	3.4	
Level of Service		C	C		C		A	A		A	A	
Approach Delay (s)		23.7			26.0			6.2			3.4	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM Average Control Delay		6.5			HCM Level of Service			A				
HCM Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		65.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		58.9%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												





















I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

30: E Butler Road & I-385 SB Ramps

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	0	1052	65	179	714	0	557	0	245	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0		6.0			
Lane Util. Factor		0.95		1.00	0.95		1.00		1.00			
Frt		0.99		1.00	1.00		1.00		0.85			
Flt Protected		1.00		0.95	1.00		0.95		1.00			
Satd. Flow (prot)		3408		1719	3438		1719		1538			
Flt Permitted		1.00		0.07	1.00		0.95		1.00			
Satd. Flow (perm)		3408		130	3438		1719		1538			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1169	72	199	793	0	619	0	272	0	0	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	99	0	0	0
Lane Group Flow (vph)	0	1238	0	199	793	0	619	0	173	0	0	0
Turn Type				pm+pt			Prot		custom			
Protected Phases		2		1	6		4					
Permitted Phases				6					4			
Actuated Green, G (s)		49.5		70.0	70.0		48.0		48.0			
Effective Green, g (s)		49.5		70.0	70.0		48.0		48.0			
Actuated g/C Ratio		0.38		0.54	0.54		0.37		0.37			
Clearance Time (s)		6.0		6.0	6.0		6.0		6.0			
Vehicle Extension (s)		4.3		4.3	4.3		4.3		4.3			
Lane Grp Cap (vph)		1298		247	1851		635		568			
v/s Ratio Prot		c0.36		c0.09	0.23		c0.36					
v/s Ratio Perm				0.34					0.11			
v/c Ratio		0.95		0.81	0.43		0.97		0.30			
Uniform Delay, d1		39.1		36.3	18.0		40.4		29.1			
Progression Factor		0.91		0.90	1.63		1.00		1.00			
Incremental Delay, d2		15.0		14.1	0.5		29.4		0.5			
Delay (s)		50.6		46.8	29.9		69.8		29.6			
Level of Service		D		D	C		E		C			
Approach Delay (s)		50.6			33.3			57.5			0.0	
Approach LOS		D			C			E			A	
Intersection Summary												
HCM Average Control Delay			47.1			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			86.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												
























I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

31: E Butler Road & I-385 NB Ramps

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		 			 							
Volume (vph)	413	1196	0	0	875	512	0	0	0	18	0	304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0	6.0				6.0		6.0
Lane Util. Factor	1.00	0.95			0.95	1.00				1.00		1.00
Frt	1.00	1.00			1.00	0.85				1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95		1.00
Satd. Flow (prot)	1719	3438			3438	1538				1719		1538
Flt Permitted	0.14	1.00			1.00	1.00				0.95		1.00
Satd. Flow (perm)	260	3438			3438	1538				1719		1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	459	1329	0	0	972	569	0	0	0	20	0	338
RTOR Reduction (vph)	0	0	0	0	0	309	0	0	0	0	0	63
Lane Group Flow (vph)	459	1329	0	0	972	260	0	0	0	20	0	275
Turn Type	pm+pt				custom				custom			custom
Protected Phases	5	2										8
Permitted Phases	2				6	6				8		
Actuated Green, G (s)	91.0	91.0			53.4	53.4				27.0		27.0
Effective Green, g (s)	91.0	91.0			53.4	53.4				27.0		27.0
Actuated g/C Ratio	0.70	0.70			0.41	0.41				0.21		0.21
Clearance Time (s)	6.0	6.0			6.0	6.0				6.0		6.0
Vehicle Extension (s)	4.3	4.3			4.3	4.3				4.3		4.3
Lane Grp Cap (vph)	537	2407			1412	632				357		319
v/s Ratio Prot	c0.21	0.39										c0.18
v/s Ratio Perm	c0.39				0.28	0.17				0.01		
v/c Ratio	0.85	0.55			0.69	0.41				0.06		0.86
Uniform Delay, d1	29.3	9.5			31.5	27.2				41.3		49.7
Progression Factor	0.67	0.41			1.00	1.00				1.00		1.00
Incremental Delay, d2	4.5	0.3			2.8	2.0				0.1		21.4
Delay (s)	24.1	4.2			34.2	29.1				41.4		71.1
Level of Service	C	A			C	C				D		E
Approach Delay (s)		9.3			32.3			0.0			69.4	
Approach LOS		A			C			A			E	
Intersection Summary												
HCM Average Control Delay			24.8		HCM Level of Service					C		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			130.0		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			86.9%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												




















I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

34: Frontage Road & Roper Mountain Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	61	94	69	14	11	526	766	647	61	1087	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Flt Protected	1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Permitted	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1719	1645		1633	1664	1538	1719	3438	1538	1719	3427	
Satd. Flow (perm)	1719	1645		1633	1664	1538	219	3438	1538	601	3427	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	68	104	77	16	12	584	851	719	68	1208	26
RTOR Reduction (vph)	0	68	0	0	0	11	0	0	213	0	2	0
Lane Group Flow (vph)	2	104	0	46	47	1	584	851	506	68	1232	0
Turn Type	Split			Split		Perm	pm+pt		Perm	Perm		
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases						8	2		2	6		
Actuated Green, G (s)	5.0	5.0		4.0	4.0	4.0	53.0	53.0	53.0	27.0	27.0	
Effective Green, g (s)	5.0	5.0		4.0	4.0	4.0	53.0	53.0	53.0	27.0	27.0	
Actuated g/C Ratio	0.06	0.06		0.05	0.05	0.05	0.66	0.66	0.66	0.34	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	4.9	4.9		4.9	4.9	4.9	4.3	4.9	4.9	4.9	4.9	
Lane Grp Cap (vph)	107	103		82	83	77	520	2278	1019	203	1157	
v/s Ratio Prot	0.00	c0.06		0.03	c0.03		c0.28	0.25			0.36	
v/s Ratio Perm						0.00	c0.46		0.33	0.11		
v/c Ratio	0.02	1.01		0.56	0.57	0.01	1.12	0.37	0.50	0.33	1.06	
Uniform Delay, d1	35.2	37.5		37.1	37.2	36.1	23.2	6.1	6.8	19.8	26.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.11	0.70	1.37	1.00	1.00	
Incremental Delay, d2	0.1	90.2		13.3	13.4	0.1	68.8	0.2	0.9	4.4	45.5	
Delay (s)	35.3	127.7		50.4	50.6	36.2	94.5	4.5	10.2	24.2	72.0	
Level of Service	D	F		D	D	D	F	A	B	C	E	
Approach Delay (s)		126.6			48.9			30.8			69.5	
Approach LOS		F			D			C			E	
Intersection Summary												
HCM Average Control Delay			49.3				HCM Level of Service			D		
HCM Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			80.0				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			92.2%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												













I-85/I-385 Interchange Improvements
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35: I-385 NB Ramps & Roper Mountain Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	659	0	934	164	1005	0	0	963	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	0.88	0.97	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1633	1633	2707	3335	3438			3438	1538
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1633	1633	2707	3335	3438			3438	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	732	0	1038	182	1117	0	0	1070	319
RTOR Reduction (vph)	0	0	0	0	0	62	0	0	0	0	0	207
Lane Group Flow (vph)	0	0	0	366	366	976	182	1117	0	0	1070	112
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				28.0	28.0	28.0	6.0	40.0			28.0	28.0
Effective Green, g (s)				28.0	28.0	28.0	6.0	40.0			28.0	28.0
Actuated g/C Ratio				0.35	0.35	0.35	0.08	0.50			0.35	0.35
Clearance Time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)				4.9	4.9	4.9	4.3	4.9			4.9	4.9
Lane Grp Cap (vph)				572	572	947	250	1719			1203	538
v/s Ratio Prot							0.05	c0.32			c0.31	
v/s Ratio Perm				0.22	0.22	c0.36						0.07
v/c Ratio				0.64	0.64	1.03	0.73	0.65			0.89	0.21
Uniform Delay, d1				21.8	21.8	26.0	36.2	14.8			24.5	18.2
Progression Factor				1.00	1.00	1.00	1.32	0.12			0.49	0.46
Incremental Delay, d2				3.2	3.2	37.2	8.7	1.5			1.1	0.1
Delay (s)				25.0	25.0	63.2	56.4	3.2			13.1	8.5
Level of Service				C	C	E	E	A			B	A
Approach Delay (s)		0.0			47.4			10.6			12.0	
Approach LOS		A			D			B			B	
Intersection Summary												
HCM Average Control Delay			25.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			88.0%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												





















I-85/I-385 Interchange Improvements
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36: Roper Mountain Road & I-385 SB Ramps

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑↑↑	↑	↑	↑↑		↑	↑	↑↑			
Volume (vph)	0	661	236	608	1014	0	508	0	304	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.4	6.4	5.8	6.4		6.1	6.1	6.1			
Lane Util. Factor		0.91	1.00	1.00	0.95		0.95	0.95	0.88			
Frt		1.00	0.85	1.00	1.00		1.00	1.00	0.85			
Flt Protected		1.00	1.00	0.95	1.00		0.95	0.95	1.00			
Satd. Flow (prot)		4940	1538	1719	3438		1633	1633	2707			
Flt Permitted		1.00	1.00	0.34	1.00		0.95	0.95	1.00			
Satd. Flow (perm)		4940	1538	615	3438		1633	1633	2707			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	734	262	676	1127	0	564	0	338	0	0	0
RTOR Reduction (vph)	0	0	160	0	0	0	0	0	172	0	0	0
Lane Group Flow (vph)	0	734	102	676	1127	0	282	282	166	0	0	0
Turn Type		Perm		pm+pt			Perm		Perm			
Protected Phases		2		1	6			4				
Permitted Phases			2	6			4		4			
Actuated Green, G (s)		31.0	31.0	54.2	53.6		13.9	13.9	13.9			
Effective Green, g (s)		31.0	31.0	54.2	53.6		13.9	13.9	13.9			
Actuated g/C Ratio		0.39	0.39	0.68	0.67		0.17	0.17	0.17			
Clearance Time (s)		6.4	6.4	5.8	6.4		6.1	6.1	6.1			
Vehicle Extension (s)		4.9	4.9	4.3	4.9		4.9	4.9	4.9			
Lane Grp Cap (vph)		1914	596	649	2303		284	284	470			
v/s Ratio Prot		0.15		c0.22	0.33							
v/s Ratio Perm			0.07	c0.49			c0.17	0.17	0.06			
v/c Ratio		0.38	0.17	1.04	0.49		0.99	0.99	0.35			
Uniform Delay, d1		17.6	16.1	14.2	6.5		33.0	33.0	29.1			
Progression Factor		0.30	0.26	0.67	0.75		1.00	1.00	1.00			
Incremental Delay, d2		0.6	0.6	38.6	0.4		51.4	51.4	0.9			
Delay (s)		5.8	4.7	48.1	5.3		84.4	84.4	30.0			
Level of Service		A	A	D	A		F	F	C			
Approach Delay (s)		5.5			21.3			64.0			0.0	
Approach LOS		A			C			E			A	
Intersection Summary												
HCM Average Control Delay			27.5			HCM Level of Service			C			
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			11.9			
Intersection Capacity Utilization			88.0%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

I-85/I-385 Interchange Improvements
2015 Alternate 4A AM

37: Roper Mountain Road & Congaree Road

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	273	700	1	4	933	381	196	2	202	1	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	6.4			6.4	6.4	6.1	6.1			6.1	6.1
Lane Util. Factor	1.00	0.91			0.95	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (prot)	1719	4939			3437	1538	1719	1540			1780	1538
Flt Permitted	0.15	1.00			0.95	1.00	0.76	1.00			0.91	1.00
Satd. Flow (perm)	268	4939			3273	1538	1368	1540			1647	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	303	778	1	4	1037	423	218	2	224	1	2	1
RTOR Reduction (vph)	0	0	0	0	0	236	0	179	0	0	0	1
Lane Group Flow (vph)	303	779	0	0	1041	187	218	47	0	0	3	0
Turn Type	pm+pt			Perm		Perm	Perm			Perm		Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	51.3	51.3			35.3	35.3	16.2	16.2			16.2	16.2
Effective Green, g (s)	51.3	51.3			35.3	35.3	16.2	16.2			16.2	16.2
Actuated g/C Ratio	0.64	0.64			0.44	0.44	0.20	0.20			0.20	0.20
Clearance Time (s)	5.8	6.4			6.4	6.4	6.1	6.1			6.1	6.1
Vehicle Extension (s)	4.3	4.9			4.9	4.9	4.9	4.9			4.9	4.9
Lane Grp Cap (vph)	357	3167			1444	679	277	312			334	311
v/s Ratio Prot	c0.11	0.16						0.03				
v/s Ratio Perm	c0.44				0.32	0.12	c0.16				0.00	0.00
v/c Ratio	0.85	0.25			0.72	0.27	0.79	0.15			0.01	0.00
Uniform Delay, d1	13.9	6.1			18.3	14.2	30.3	26.2			25.5	25.4
Progression Factor	1.07	1.35			0.68	0.56	1.00	1.00			1.00	1.00
Incremental Delay, d2	15.0	0.2			2.8	0.9	15.6	0.5			0.0	0.0
Delay (s)	29.8	8.4			15.2	8.9	45.8	26.7			25.5	25.4
Level of Service	C	A			B	A	D	C			C	C
Approach Delay (s)		14.4			13.4			36.1			25.5	
Approach LOS		B			B			D			C	
Intersection Summary												
HCM Average Control Delay			17.1		HCM Level of Service				B			
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			80.0		Sum of lost time (s)			11.9				
Intersection Capacity Utilization			84.2%		ICU Level of Service				E			
Analysis Period (min)			15									
c Critical Lane Group												