







































HCM Signalized Intersection Capacity Analysis
1: State Street & Grove Street/Olive Street

2025 AM Existing
05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	16	18	5	143	71	104	373	4	52	371	228
Future Volume (vph)	9	16	18	5	143	71	104	373	4	52	371	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	10	11	12	10	11	12
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.98			0.97		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.95		1.00	1.00		1.00	0.94	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1631			3139		1652	3415		1652	3182	
Flt Permitted		0.89			0.95		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1469			2982		1652	3415		1652	3182	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	9	16	18	5	143	71	104	373	4	52	371	228
RTOR Reduction (vph)	0	16	0	0	63	0	0	1	0	0	91	0
Lane Group Flow (vph)	0	27	0	0	156	0	104	376	0	52	509	0
Confl. Peds. (#/hr)	27		11	11		27	23		3	3		23
Confl. Bikes (#/hr)			2			11			7			13
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		9.8			9.8		9.5	40.5		4.7	35.7	
Effective Green, g (s)		9.8			9.8		9.5	40.5		4.7	35.7	
Actuated g/C Ratio		0.11			0.11		0.11	0.45		0.05	0.40	
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		1.0	3.0	
Lane Grp Cap (vph)		159			324		174	1536		86	1262	
v/s Ratio Prot							c0.06	0.11		0.03	c0.16	
v/s Ratio Perm		0.02			c0.05							
v/c Ratio		0.17			0.48		0.60	0.25		0.60	0.40	
Uniform Delay, d1		36.4			37.7		38.4	15.3		41.7	19.5	
Progression Factor		1.00			1.00		1.19	0.45		1.24	0.35	
Incremental Delay, d2		0.5			1.1		5.2	0.4		7.7	0.9	
Delay (s)		36.9			38.8		51.0	7.2		59.7	7.8	
Level of Service		D			D		D	A		E	A	
Approach Delay (s)		36.9			38.8			16.7			12.0	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			18.6				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			17.0		
Intersection Capacity Utilization			46.5%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
3: State Street & Elm Street/Grand Avenue

2025 AM Existing
05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	246	152	144	0	125	0	284	58	3	323	0
Future Volume (vph)	211	246	152	144	0	125	0	284	58	3	323	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	12	12	12	11	12	12	11	12
Total Lost time (s)	5.0	5.0		5.0		5.0		5.0			5.0	
Lane Util. Factor	1.00	0.95		0.97		1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.97		1.00		1.00		1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00			1.00	
Frt	1.00	0.94		1.00		0.85		0.97			1.00	
Flt Protected	0.95	1.00		0.95		1.00		1.00			1.00	
Satd. Flow (prot)	1770	3225		3204		1583		3322			3420	
Flt Permitted	0.95	1.00		0.95		1.00		1.00			0.95	
Satd. Flow (perm)	1770	3225		3204		1583		3322			3258	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	211	246	152	144	0	125	0	284	58	3	323	0
RTOR Reduction (vph)	0	121	0	0	0	112	0	0	0	0	0	0
Lane Group Flow (vph)	211	277	0	144	0	13	0	342	0	0	326	0
Confl. Peds. (#/hr)	13		47	47		13	20		6	6		20
Confl. Bikes (#/hr)			5			1			6			8
Turn Type	Split	NA		Prot		Prot		NA		Perm		NA
Protected Phases	3	3		8		8		2				6
Permitted Phases										6		
Actuated Green, G (s)	17.6	17.6		9.4		9.4		29.0				29.0
Effective Green, g (s)	17.6	17.6		9.4		9.4		29.0				29.0
Actuated g/C Ratio	0.20	0.20		0.10		0.10		0.32				0.32
Clearance Time (s)	5.0	5.0		5.0		5.0		5.0				5.0
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0				3.0
Lane Grp Cap (vph)	346	630		334		165		1070				1049
v/s Ratio Prot	c0.12	0.09		c0.04		0.01		c0.10				
v/s Ratio Perm												0.10
v/c Ratio	0.61	0.44		0.43		0.08		0.32				0.31
Uniform Delay, d1	33.1	31.9		37.8		36.4		23.0				23.0
Progression Factor	1.00	1.00		1.00		1.00		1.16				0.88
Incremental Delay, d2	3.0	0.5		0.9		0.2		0.8				0.7
Delay (s)	36.1	32.4		38.7		36.6		27.5				21.0
Level of Service	D	C		D		D		C				C
Approach Delay (s)		33.7			37.7			27.5				21.0
Approach LOS		C			D			C				C
Intersection Summary												
HCM 2000 Control Delay			30.3									C
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			90.0							18.0		
Intersection Capacity Utilization			43.1%									A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
4: State Street & Court Street

2025 AM Existing
05/17/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	15	8	20	11	0	26	0	318	15	26	560	0		
Future Volume (vph)	15	8	20	11	0	26	0	318	15	26	560	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	12	10	12	12	12	12	12	11	12	10	11	12		
Total Lost time (s)		5.0			5.0			3.0		4.0	5.0			
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95			
Frbp, ped/bikes		0.82			0.93			1.00		1.00	1.00			
Flpb, ped/bikes		0.98			0.90			1.00		0.98	1.00			
Frt		0.94			0.91			0.99		1.00	1.00			
Flt Protected		0.98			0.99			1.00		0.95	1.00			
Satd. Flow (prot)		1289			1382			3391		1626	3421			
Flt Permitted		0.87			0.89			1.00		0.55	1.00			
Satd. Flow (perm)		1140			1243			3391		943	3421			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	15	8	20	11	0	26	0	318	15	26	560	0		
RTOR Reduction (vph)	0	0	0	0	34	0	0	3	0	0	0	0		
Lane Group Flow (vph)	0	43	0	0	3	0	0	330	0	26	560	0		
Confl. Peds. (#/hr)	20		177	177		20	25		21	21		25		
Confl. Bikes (#/hr)			5			9			8			7		
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA			
Protected Phases		7			7			1 2		3	4			
Permitted Phases	7			7						4				
Actuated Green, G (s)		7.5			7.5			46.5		37.0	36.0			
Effective Green, g (s)		7.5			7.5			46.5		37.0	36.0			
Actuated g/C Ratio		0.08			0.08			0.52		0.41	0.40			
Clearance Time (s)		5.0			5.0					4.0	5.0			
Vehicle Extension (s)		3.0			3.0					3.0	3.0			
Lane Grp Cap (vph)		95			103			1752		402	1368			
v/s Ratio Prot								c0.10		0.00	c0.16			
v/s Ratio Perm		c0.04			0.00					0.03				
v/c Ratio		0.45			0.03			0.19		0.06	0.41			
Uniform Delay, d1		39.3			37.9			11.6		16.0	19.4			
Progression Factor		1.00			1.00			0.19		0.55	0.66			
Incremental Delay, d2		3.4			0.1			0.2		0.1	0.2			
Delay (s)		42.7			38.0			2.4		9.0	12.9			
Level of Service		D			D			A		A	B			
Approach Delay (s)		42.7			38.0			2.4			12.7			
Approach LOS		D			D			A			B			
Intersection Summary														
HCM 2000 Control Delay			11.5									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.31											
Actuated Cycle Length (s)			90.0							22.0			Sum of lost time (s)	
Intersection Capacity Utilization			32.0%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis
5: State Street & Pitkin Tunnel




















2025 AM Existing
05/17/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	101	98	319	454	137
Future Volume (vph)	14	101	98	319	454	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	9	11	11	12
Total Lost time (s)	5.0	5.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1652	1478	1593	3421	4745	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1652	1478	1593	3421	4745	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	101	98	319	454	137
RTOR Reduction (vph)	0	93	0	0	52	0
Lane Group Flow (vph)	14	8	98	319	539	0
Turn Type	Prot	Prot	Prot	NA	NA	
Protected Phases	7	7	1	1 5 6	5 6	
Permitted Phases						
Actuated Green, G (s)	7.5	7.5	13.5	72.5	56.0	
Effective Green, g (s)	7.5	7.5	13.5	72.5	56.0	
Actuated g/C Ratio	0.08	0.08	0.15	0.81	0.62	
Clearance Time (s)	5.0	5.0	3.0			
Vehicle Extension (s)	3.0	3.0	3.0			
Lane Grp Cap (vph)	137	123	238	2755	2952	
v/s Ratio Prot	c0.01	0.01	c0.06	0.09	c0.11	
v/s Ratio Perm						
v/c Ratio	0.10	0.07	0.41	0.12	0.18	
Uniform Delay, d1	38.1	38.0	34.7	1.9	7.2	
Progression Factor	1.00	1.00	1.32	1.40	0.04	
Incremental Delay, d2	0.3	0.2	5.0	0.1	0.1	
Delay (s)	38.5	38.3	50.6	2.7	0.4	
Level of Service	D	D	D	A	A	
Approach Delay (s)	38.3			14.0	0.4	
Approach LOS	D			B	A	
Intersection Summary						
HCM 2000 Control Delay			9.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.24			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	22.0
Intersection Capacity Utilization			32.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

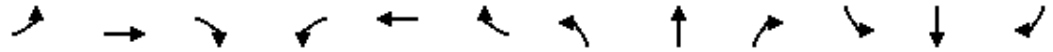
HCM Signalized Intersection Capacity Analysis
6: State Street & Chapel Street

2025 AM Existing
05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	52	41	41	186	80	46	288	12	52	362	142
Future Volume (vph)	49	52	41	41	186	80	46	288	12	52	362	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	11	12	10	11	12	9	11	10
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00			0.95		1.00	0.95		1.00	0.95	1.00
Frbp, ped/bikes		0.91			0.94		1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes		0.96			0.97		1.00	1.00		1.00	1.00	1.00
Frt		0.96			0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1433			2998		1652	3390		1593	3421	1395
Flt Permitted		0.72			0.88		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1048			2669		1652	3390		1593	3421	1395
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	52	41	41	186	80	46	288	12	52	362	142
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	142	0	0	307	0	46	300	0	52	362	142
Confl. Peds. (#/hr)	118		184	184		118	39		72	72		39
Confl. Bikes (#/hr)			6			13			3			11
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)		16.2			16.2		5.5	28.1		5.7	28.3	28.3
Effective Green, g (s)		16.2			16.2		5.5	28.1		5.7	28.3	28.3
Actuated g/C Ratio		0.18			0.18		0.06	0.31		0.06	0.31	0.31
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	0.2		3.0	3.0	3.0
Lane Grp Cap (vph)		188			480		100	1058		100	1075	438
v/s Ratio Prot							0.03	0.09		c0.03	c0.11	
v/s Ratio Perm		c0.14			0.12							0.10
v/c Ratio		0.76			0.64		0.46	0.28		0.52	0.34	0.32
Uniform Delay, d1		35.0			34.2		40.8	23.4		40.8	23.7	23.6
Progression Factor		1.00			1.30		1.00	1.00		1.27	1.36	1.35
Incremental Delay, d2		15.8			2.5		3.3	0.7		4.7	0.8	1.9
Delay (s)		50.8			46.9		44.1	24.0		56.6	33.1	33.8
Level of Service		D			D		D	C		E	C	C
Approach Delay (s)		50.8			46.9			26.7			35.4	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			37.4				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			53.2%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 8: State Street & George Street/Fair Street

2025 AM Existing
 05/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑	↗								↑↑			
Traffic Volume (vph)	0	230	213	0	0	0	0	0	0	31	260	70		
Future Volume (vph)	0	230	213	0	0	0	0	0	0	31	260	70		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	12	10	10	12	12	12	12	12	12	12	12	12		
Total Lost time (s)		5.5	5.5								5.5			
Lane Util. Factor		0.91	0.91								0.95			
Frbp, ped/bikes		0.99	0.96								0.99			
Flpb, ped/bikes		1.00	1.00								1.00			
Frt		0.96	0.85								0.97			
Flt Protected		1.00	1.00								1.00			
Satd. Flow (prot)		3014	1290								3387			
Flt Permitted		1.00	1.00								1.00			
Satd. Flow (perm)		3014	1290								3387			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	0	230	213	0	0	0	0	0	0	31	260	70		
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	0	307	136	0	0	0	0	0	0	0	361	0		
Confl. Peds. (#/hr)	21		16	16		21	18		12	12		18		
Confl. Bikes (#/hr)			1						1			11		
Turn Type		NA	Perm							Perm	NA			
Protected Phases		4									2			
Permitted Phases			4							2				
Actuated Green, G (s)		17.0	17.0								44.0			
Effective Green, g (s)		17.0	17.0								44.0			
Actuated g/C Ratio		0.17	0.17								0.44			
Clearance Time (s)		5.5	5.5								5.5			
Vehicle Extension (s)		3.0	3.0								3.0			
Lane Grp Cap (vph)		512	219								1490			
v/s Ratio Prot		0.10												
v/s Ratio Perm			c0.11									0.11		
v/c Ratio		0.60	0.62									0.24		
Uniform Delay, d1		38.4	38.5								17.6			
Progression Factor		1.00	1.00								1.00			
Incremental Delay, d2		1.9	5.4								0.4			
Delay (s)		40.3	43.9								17.9			
Level of Service		D	D								B			
Approach Delay (s)		41.4			0.0			0.0			17.9			
Approach LOS		D			A			A			B			
Intersection Summary														
HCM 2000 Control Delay			30.8									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.25											
Actuated Cycle Length (s)			100.0								15.0		Sum of lost time (s)	
Intersection Capacity Utilization			36.2%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis

2025 AM Existing

9: N. Frontage Road/Water Street & State Street & State Street N




















05/17/2022



Movement	WBL	WBT	WBR2	NBR	NBR2	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	139	0	60	206	89	45	421
Future Volume (vph)	139	0	60	206	89	45	421
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	12	12	10
Total Lost time (s)	4.9	4.9		5.6		5.5	4.2
Lane Util. Factor	0.95	0.95		0.88		1.00	0.91
Frbp, ped/bikes	1.00	0.98		1.00		1.00	1.00
Flpb, ped/bikes	0.96	0.98		1.00		1.00	1.00
Frt	1.00	0.91		0.85		1.00	1.00
Flt Protected	0.95	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1558	1468		2694		1770	4746
Flt Permitted	0.95	0.98		1.00		0.95	1.00
Satd. Flow (perm)	1558	1468		2694		1770	4746
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	139	0	60	206	89	45	421
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	103	96	0	295	0	45	421
Confl. Peds. (#/hr)	17		7	7	14	14	
Confl. Bikes (#/hr)			2	5	5		
Turn Type	Perm	NA		Prot		Prot	NA
Protected Phases		4		2		1	6
Permitted Phases	4			2			
Actuated Green, G (s)	11.2	11.2		29.1		4.7	40.7
Effective Green, g (s)	11.2	11.2		29.1		4.7	40.7
Actuated g/C Ratio	0.12	0.12		0.32		0.05	0.45
Clearance Time (s)	4.9	4.9		5.6		5.5	4.2
Vehicle Extension (s)	3.0	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	193	182		871		92	2146
v/s Ratio Prot				c0.11		c0.03	0.09
v/s Ratio Perm	c0.07	0.07					
v/c Ratio	0.53	0.53		0.34		0.49	0.20
Uniform Delay, d1	37.0	36.9		23.1		41.5	14.8
Progression Factor	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.8	2.7		1.1		4.0	0.2
Delay (s)	39.8	39.7		24.2		45.5	15.0
Level of Service	D	D		C		D	B
Approach Delay (s)		39.7					18.0
Approach LOS		D					B
Intersection Summary							
HCM 2000 Control Delay			24.4		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.26				
Actuated Cycle Length (s)			90.0		Sum of lost time (s)		20.0
Intersection Capacity Utilization			34.7%		ICU Level of Service		A
Analysis Period (min)			15				
c Critical Lane Group							



















HCM Signalized Intersection Capacity Analysis
 11: State Street N & Fair Street

2025 AM Existing
 05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations									  			
Traffic Volume (vph)	180	82	0	0	0	30	0	235	3	0	0	0
Future Volume (vph)	180	82	0	0	0	30	0	235	3	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	13	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	1.00	1.00				1.00		0.91				
Frbp, ped/bikes	1.00	1.00				0.98		1.00				
Flpb, ped/bikes	0.99	1.00				1.00		1.00				
Frt	1.00	1.00				0.86		1.00				
Flt Protected	0.95	1.00				1.00		1.00				
Satd. Flow (prot)	1640	1739				1633		4906				
Flt Permitted	0.95	1.00				1.00		1.00				
Satd. Flow (perm)	1640	1739				1633		4906				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	180	82	0	0	0	30	0	235	3	0	0	0
RTOR Reduction (vph)	68	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	112	82	0	0	0	30	0	237	0	0	0	0
Confl. Peds. (#/hr)	15		9	9		15	2		1	1		2
Confl. Bikes (#/hr)			1			1			4			1
Turn Type	Perm	NA				Perm		NA				
Protected Phases		4						2				
Permitted Phases	4					8						
Actuated Green, G (s)	62.0	62.0				62.0		30.0				
Effective Green, g (s)	62.0	62.0				62.0		30.0				
Actuated g/C Ratio	0.62	0.62				0.62		0.30				
Clearance Time (s)	4.0	4.0				4.0		4.0				
Vehicle Extension (s)	3.0	3.0				3.0		3.0				
Lane Grp Cap (vph)	1016	1078				1012		1471				
v/s Ratio Prot		0.05						c0.05				
v/s Ratio Perm	c0.07					0.02						
v/c Ratio	0.11	0.08				0.03		0.16				
Uniform Delay, d1	7.7	7.6				7.4		25.7				
Progression Factor	0.09	0.29				1.00		1.00				
Incremental Delay, d2	0.2	0.1				0.0		0.2				
Delay (s)	0.9	2.3				7.4		26.0				
Level of Service	A	A				A		C				
Approach Delay (s)		1.4			7.4			26.0				0.0
Approach LOS		A			A			C				A
Intersection Summary												
HCM 2000 Control Delay			12.8			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.13									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			36.2%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
26: State Street & Parking/Audubon



















2025 AM Existing
05/17/2022

													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Traffic Volume (vph)	35	0	34	2	0	0	0	367	0	5	386	0	
Future Volume (vph)	35	0	34	2	0	0	0	367	0	5	386	0	
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			5.0		5.0	5.0		
Lane Util. Factor	1.00	1.00			1.00			0.95		1.00	1.00		
Fr _t	1.00	0.85			1.00			1.00		1.00	1.00		
Flt Protected	0.95	1.00			0.95			1.00		0.95	1.00		
Satd. Flow (prot)	1770	1583			1770			3539		1770	1863		
Flt Permitted	0.76	1.00			0.73			1.00		0.47	1.00		
Satd. Flow (perm)	1409	1583			1369			3539		879	1863		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	35	0	34	2	0	0	0	367	0	5	386	0	
RTOR Reduction (vph)	0	21	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	35	13	0	0	2	0	0	367	0	5	386	0	
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA		
Protected Phases		6			2			4			8		
Permitted Phases	6			2							8		
Actuated Green, G (s)	33.3	33.3			33.3			24.7		24.7	24.7		
Effective Green, g (s)	33.3	33.3			33.3			24.7		24.7	24.7		
Actuated g/C Ratio	0.37	0.37			0.37			0.27		0.27	0.27		
Clearance Time (s)	5.0	5.0			5.0			5.0		5.0	5.0		
Vehicle Extension (s)	3.0	3.0			3.0			3.0		3.0	3.0		
Lane Grp Cap (vph)	521	585			506			971		241	511		
v/s Ratio Prot		0.01						0.10			c0.21		
v/s Ratio Perm	c0.02				0.00					0.01			
v/c Ratio	0.07	0.02			0.00			0.38		0.02	0.76		
Uniform Delay, d ₁	18.3	18.0			17.9			26.4		23.8	29.9		
Progression Factor	1.00	1.00			1.00			0.78		1.00	1.00		
Incremental Delay, d ₂	0.2	0.1			0.0			0.2		0.0	6.3		
Delay (s)	18.6	18.1			17.9			20.8		23.9	36.2		
Level of Service	B	B			B			C		C	D		
Approach Delay (s)		18.3			17.9			20.8			36.0		
Approach LOS		B			B			C			D		
Intersection Summary													
HCM 2000 Control Delay			27.8		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.27										
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					14.0			
Intersection Capacity Utilization			32.8%		ICU Level of Service					A			
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: State Street & Grove Street/Olive Street

2025 Existing PM
05/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	50	24	0	138	95	98	764	18	108	359	136
Future Volume (vph)	29	50	24	0	138	95	98	764	18	108	359	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	10	11	12	10	11	12
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.99			0.97		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.94		1.00	1.00		1.00	0.96	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1680			3106		1652	3407		1652	3251	
Flt Permitted		0.79			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1350			3106		1652	3407		1652	3251	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	50	24	0	138	95	98	764	18	108	359	136
RTOR Reduction (vph)	0	13	0	0	84	0	0	2	0	0	38	0
Lane Group Flow (vph)	0	90	0	0	149	0	98	780	0	108	457	0
Confl. Peds. (#/hr)	26		11	11		26	20		2	2		20
Confl. Bikes (#/hr)			3			3			7			9
Turn Type	Perm	NA			NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.8			10.8		8.8	36.2		8.0	35.4	
Effective Green, g (s)		10.8			10.8		8.8	36.2		8.0	35.4	
Actuated g/C Ratio		0.12			0.12		0.10	0.40		0.09	0.39	
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		1.0	3.0	
Lane Grp Cap (vph)		162			372		161	1370		146	1278	
v/s Ratio Prot					0.05		0.06	c0.23		c0.07	0.14	
v/s Ratio Perm		c0.07										
v/c Ratio		0.55			0.40		0.61	0.57		0.74	0.36	
Uniform Delay, d1		37.3			36.6		38.9	20.9		40.0	19.3	
Progression Factor		1.00			1.00		0.90	0.51		1.26	0.64	
Incremental Delay, d2		4.1			0.7		5.2	1.4		14.6	0.7	
Delay (s)		41.4			37.3		40.4	12.0		65.2	13.0	
Level of Service		D			D		D	B		E	B	
Approach Delay (s)		41.4			37.3			15.2			22.4	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			21.9				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				17.0	
Intersection Capacity Utilization			57.3%				ICU Level of Service				B	
Analysis Period (min)			15									
c Critical Lane Group												


















HCM Signalized Intersection Capacity Analysis
3: State Street & Elm Street/Grand Avenue

2025 Existing PM
05/18/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	322	438	190	153	0	106	0	513	62	0	380	0
Future Volume (vph)	322	438	190	153	0	106	0	513	62	0	380	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	12	12	12	11	12	12	11	12
Total Lost time (s)	5.0	5.0		5.0		5.0		5.0			5.0	
Lane Util. Factor	1.00	0.95		0.97		1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.97		1.00		1.00		1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00			1.00	
Frt	1.00	0.95		1.00		0.85		0.98			1.00	
Flt Protected	0.95	1.00		0.95		1.00		1.00			1.00	
Satd. Flow (prot)	1770	3289		3204		1583		3359			3421	
Flt Permitted	0.95	1.00		0.95		1.00		1.00			1.00	
Satd. Flow (perm)	1770	3289		3204		1583		3359			3421	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	322	438	190	153	0	106	0	513	62	0	380	0
RTOR Reduction (vph)	0	56	0	0	0	97	0	0	0	0	0	0
Lane Group Flow (vph)	322	572	0	153	0	9	0	575	0	0	380	0
Confl. Peds. (#/hr)	14		58	58		14	37		5	5		37
Confl. Bikes (#/hr)			10			2			4			7
Turn Type	Split	NA		Prot		Prot		NA			NA	
Protected Phases	3	3		8		8		2			6	
Permitted Phases										6		
Actuated Green, G (s)	22.6	22.6		7.9		7.9		25.5			25.5	
Effective Green, g (s)	22.6	22.6		7.9		7.9		25.5			25.5	
Actuated g/C Ratio	0.25	0.25		0.09		0.09		0.28			0.28	
Clearance Time (s)	5.0	5.0		5.0		5.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0			3.0	
Lane Grp Cap (vph)	444	825		281		138		951			969	
v/s Ratio Prot	c0.18	0.17		c0.05		0.01		c0.17			0.11	
v/s Ratio Perm												
v/c Ratio	0.73	0.69		0.54		0.07		0.60			0.39	
Uniform Delay, d1	30.9	30.6		39.3		37.7		27.9			26.0	
Progression Factor	1.00	1.00		1.00		1.00		0.34			0.58	
Incremental Delay, d2	5.8	2.5		2.2		0.2		2.8			1.1	
Delay (s)	36.7	33.1		41.5		37.9		12.3			16.3	
Level of Service	D	C		D		D		B			B	
Approach Delay (s)		34.3			40.0			12.3			16.3	
Approach LOS		C			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			26.0									C
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			90.0							18.0		
Intersection Capacity Utilization			54.5%									A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
4: State Street & Court Street

2025 Existing PM
05/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	14	20	11	0	11	0	492	11	60	698	0
Future Volume (vph)	27	14	20	11	0	11	0	492	11	60	698	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	12	11	12	10	11	12
Total Lost time (s)		5.0			5.0			3.0		4.0	5.0	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frbp, ped/bikes		0.89			0.98			1.00		1.00	1.00	
Flpb, ped/bikes		0.99			0.93			1.00		1.00	1.00	
Frt		0.96			0.93			1.00		1.00	1.00	
Flt Protected		0.98			0.98			1.00		0.95	1.00	
Satd. Flow (prot)		1427			1552			3407		1644	3421	
Flt Permitted		0.85			0.77			1.00		0.47	1.00	
Satd. Flow (perm)		1235			1217			3407		808	3421	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	27	14	20	11	0	11	0	492	11	60	698	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	61	0	0	4	0	0	501	0	60	698	0
Confl. Peds. (#/hr)	12		168	168			12	31		10	10	31
Confl. Bikes (#/hr)			8							4		5
Turn Type	Perm	NA		D.Pm	NA			NA		pm+pt	NA	
Protected Phases		7			6			1 2		3	4	
Permitted Phases	7			7						4		
Actuated Green, G (s)		9.5			15.0			36.9		39.0	38.0	
Effective Green, g (s)		9.5			15.0			36.9		39.0	38.0	
Actuated g/C Ratio		0.11			0.17			0.41		0.43	0.42	
Clearance Time (s)		5.0			5.0					4.0	5.0	
Vehicle Extension (s)		3.0			0.2					3.0	3.0	
Lane Grp Cap (vph)		130			202			1396		439	1444	
v/s Ratio Prot								c0.15		0.01	c0.20	
v/s Ratio Perm		c0.05			c0.00					0.04		
v/c Ratio		0.47			0.02			0.36		0.14	0.48	
Uniform Delay, d1		37.9			31.3			18.4		15.6	18.9	
Progression Factor		1.00			1.00			1.50		0.68	0.71	
Incremental Delay, d2		2.7			0.2			0.7		0.1	0.2	
Delay (s)		40.5			31.5			28.2		10.7	13.7	
Level of Service		D			C			C		B	B	
Approach Delay (s)		40.5			31.5			28.2			13.5	
Approach LOS		D			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			20.5								HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			90.0							22.0		
Intersection Capacity Utilization			41.5%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
5: State Street & Pitkin Tunnel




















2025 Existing PM
05/18/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	118	160	110	385	609	120
Future Volume (vph)	118	160	110	385	609	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	9	11	11	12
Total Lost time (s)	5.0	5.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	
Fr _t	1.00	0.85	1.00	1.00	0.98	
Fl _t Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1652	1478	1593	3421	4794	
Fl _t Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1652	1478	1593	3421	4794	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	118	160	110	385	609	120
RTOR Reduction (vph)	0	143	0	0	35	0
Lane Group Flow (vph)	118	17	110	385	694	0
Turn Type	Prot	Prot	Prot	NA	NA	
Protected Phases	7	7	1	1 5 6	5 6	
Permitted Phases						
Actuated Green, G (s)	9.5	9.5	9.5	70.5	58.0	
Effective Green, g (s)	9.5	9.5	9.5	70.5	58.0	
Actuated g/C Ratio	0.11	0.11	0.11	0.78	0.64	
Clearance Time (s)	5.0	5.0	3.0			
Vehicle Extension (s)	3.0	3.0	3.0			
Lane Grp Cap (vph)	174	156	168	2679	3089	
v/s Ratio Prot	c0.07	0.01	c0.07	0.11	c0.14	
v/s Ratio Perm						
v/c Ratio	0.68	0.11	0.65	0.14	0.22	
Uniform Delay, d ₁	38.8	36.4	38.7	2.4	6.7	
Progression Factor	1.00	1.00	1.19	0.72	0.04	
Incremental Delay, d ₂	10.0	0.3	15.9	0.1	0.2	
Delay (s)	48.8	36.7	61.8	1.8	0.4	
Level of Service	D	D	E	A	A	
Approach Delay (s)	41.9			15.1	0.4	
Approach LOS	D			B	A	
Intersection Summary						
HCM 2000 Control Delay			12.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.38			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	22.0
Intersection Capacity Utilization			37.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
6: State Street & Chapel Street

2025 Existing PM
05/18/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	61	111	60	42	183	49	45	385	28	101	484	189	
Future Volume (vph)	61	111	60	42	183	49	45	385	28	101	484	189	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	10	12	12	11	12	10	11	12	9	11	10	
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	5.0	
Lane Util. Factor		1.00			0.95		1.00	0.95		1.00	0.95	1.00	
Fr _t		0.97			0.97		1.00	0.99		1.00	1.00	0.85	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		1656			3304		1652	3386		1593	3421	1478	
Flt Permitted		0.83			0.84		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		1392			2797		1652	3386		1593	3421	1478	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	61	111	60	42	183	49	45	385	28	101	484	189	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	232	0	0	274	0	45	413	0	101	484	189	
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm	
Protected Phases		4			8		5	2		1	6		
Permitted Phases	4			8								6	
Actuated Green, G (s)		20.0			20.0		4.9	20.0		10.0	25.1	25.1	
Effective Green, g (s)		20.0			20.0		4.9	20.0		10.0	25.1	25.1	
Actuated g/C Ratio		0.22			0.22		0.05	0.22		0.11	0.28	0.28	
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	0.2		3.0	3.0	3.0	
Lane Grp Cap (vph)		309			621		89	752		177	954	412	
v/s Ratio Prot							0.03	0.12		c0.06	c0.14		
v/s Ratio Perm		c0.17			0.10							0.13	
v/c Ratio		0.75			0.44		0.51	0.55		0.57	0.51	0.46	
Uniform Delay, d ₁		32.7			30.2		41.4	31.0		38.0	27.3	26.8	
Progression Factor		1.00			1.69		1.00	1.00		1.57	0.54	0.55	
Incremental Delay, d ₂		9.8			0.5		4.5	2.9		4.3	1.9	3.6	
Delay (s)		42.5			51.6		45.8	33.9		64.0	16.5	18.4	
Level of Service		D			D		D	C		E	B	B	
Approach Delay (s)		42.5			51.6			35.1			23.2		
Approach LOS		D			D			D			C		
Intersection Summary													
HCM 2000 Control Delay			33.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.44										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	17.0
Intersection Capacity Utilization			55.1%									ICU Level of Service	B
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
8: State Street & George Street/Fair Street

2025 Existing PM
05/18/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↔	↗								↕↔		
Traffic Volume (vph)	0	377	333	0	0	0	0	0	0	51	453	81	
Future Volume (vph)	0	377	333	0	0	0	0	0	0	51	453	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	10	10	12	12	12	12	12	12	12	12	12	
Total Lost time (s)		5.5	5.5								5.5		
Lane Util. Factor		0.91	0.91								0.95		
Fr _t		0.96	0.85								0.98		
Flt Protected		1.00	1.00								1.00		
Satd. Flow (prot)		3052	1345								3451		
Flt Permitted		1.00	1.00								1.00		
Satd. Flow (perm)		3052	1345								3451		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	377	333	0	0	0	0	0	0	51	453	81	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	7	0	
Lane Group Flow (vph)	0	494	216	0	0	0	0	0	0	0	578	0	
Turn Type		NA	Perm								Perm	NA	
Protected Phases		4										2	
Permitted Phases			4								2		
Actuated Green, G (s)		23.6	23.6									37.4	
Effective Green, g (s)		23.6	23.6									37.4	
Actuated g/C Ratio		0.24	0.24									0.37	
Clearance Time (s)		5.5	5.5									5.5	
Vehicle Extension (s)		3.0	3.0									3.0	
Lane Grp Cap (vph)		720	317									1290	
v/s Ratio Prot		c0.16											
v/s Ratio Perm			0.16									0.17	
v/c Ratio		0.69	0.68									0.45	
Uniform Delay, d ₁		34.8	34.8									23.5	
Progression Factor		1.00	1.00									1.00	
Incremental Delay, d ₂		2.7	5.9									1.1	
Delay (s)		37.5	40.7									24.7	
Level of Service		D	D									C	
Approach Delay (s)		38.5			0.0			0.0				24.7	
Approach LOS		D			A			A				C	
Intersection Summary													
HCM 2000 Control Delay			32.3									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.39										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	15.0
Intersection Capacity Utilization			39.8%									ICU Level of Service	A
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 9: State Street & N. Frontage Road/Water Street


















2025 Existing PM
 05/18/2022



Movement	WBL	WBR2	NBR	NBR2	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	138	50	209	155	152	698
Future Volume (vph)	138	50	209	155	152	698
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	12	12	10
Total Lost time (s)	4.9	4.0	5.6		5.5	4.2
Lane Util. Factor	1.00	1.00	0.88		1.00	0.91
Fr _t	1.00	0.85	0.85		1.00	1.00
Fl _t Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	1583	2694		1770	4746
Fl _t Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1711	1583	2694		1770	4746
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	138	50	209	155	152	698
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	138	50	364	0	152	698
Turn Type	Perm	Perm	Prot		Prot	NA
Protected Phases			2		1	6
Permitted Phases	4	8	2			
Actuated Green, G (s)	11.7	34.6	21.1		9.2	37.2
Effective Green, g (s)	11.7	34.6	21.1		9.2	37.2
Actuated g/C Ratio	0.15	0.43	0.26		0.11	0.47
Clearance Time (s)	4.9	4.0	5.6		5.5	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	250	684	710		203	2206
v/s Ratio Prot			c0.14		c0.09	0.15
v/s Ratio Perm	c0.08	c0.03				
v/c Ratio	0.55	0.07	0.51		0.75	0.32
Uniform Delay, d ₁	31.7	13.3	25.1		34.3	13.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d ₂	2.6	0.0	2.6		14.0	0.4
Delay (s)	34.3	13.3	27.7		48.3	13.8
Level of Service	C	B	C		D	B
Approach Delay (s)						20.0
Approach LOS						B
Intersection Summary						
HCM 2000 Control Delay			23.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.43			
Actuated Cycle Length (s)			80.0		Sum of lost time (s)	20.0
Intersection Capacity Utilization			30.4%		ICU Level of Service	A
Analysis Period (min)			15			
c	Critical Lane Group					




















HCM Signalized Intersection Capacity Analysis
 11: State Street & Fair Street

2025 Existing PM
 05/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  				
Traffic Volume (vph)	265	163	0	0	0	0	0	233	9	0	0	0
Future Volume (vph)	265	163	0	0	0	0	0	233	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	13	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	1.00						0.91				
Frt	1.00	1.00						0.99				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1652	1739						4888				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1652	1739						4888				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	265	163	0	0	0	0	0	233	9	0	0	0
RTOR Reduction (vph)	101	0	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	164	163	0	0	0	0	0	238	0	0	0	0
Turn Type	Perm	NA						NA				
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	62.0	62.0						30.0				
Effective Green, g (s)	62.0	62.0						30.0				
Actuated g/C Ratio	0.62	0.62						0.30				
Clearance Time (s)	4.0	4.0						4.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	1024	1078						1466				
v/s Ratio Prot		0.09						c0.05				
v/s Ratio Perm	c0.10											
v/c Ratio	0.16	0.15						0.16				
Uniform Delay, d1	8.0	8.0						25.8				
Progression Factor	16.96	3.16						1.00				
Incremental Delay, d2	0.3	0.2						0.2				
Delay (s)	136.3	25.4						26.0				
Level of Service	F	C						C				
Approach Delay (s)		94.0			0.0			26.0			0.0	
Approach LOS		F			A			C			A	
Intersection Summary												
HCM 2000 Control Delay			69.5					HCM 2000 Level of Service		E		
HCM 2000 Volume to Capacity ratio			0.16									
Actuated Cycle Length (s)			100.0					Sum of lost time (s)		8.0		
Intersection Capacity Utilization			26.1%					ICU Level of Service		A		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
 17: State Street & Parking & Audubon

2025 Existing PM
 05/18/2022

													
Movement	NBL2	NBL	NBR	SEL	SER	SER2	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Traffic Volume (vph)	4	0	6	44	1	64	0	861	0	0	435	0	
Future Volume (vph)	4	0	6	44	1	64	0	861	0	0	435	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0		
Lane Util. Factor		1.00		1.00	1.00			0.95			1.00		
Fr _t		0.92		1.00	0.85			1.00			1.00		
Flt Protected		0.98		0.95	1.00			1.00			1.00		
Satd. Flow (prot)		1678		1770	1583			3539			1863		
Flt Permitted		0.95		0.95	1.00			1.00			1.00		
Satd. Flow (perm)		1624		1770	1583			3539			1863		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	4	0	6	44	1	64	0	861	0	0	435	0	
RTOR Reduction (vph)	0	7	0	0	44	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	3	0	44	21	0	0	861	0	0	435	0	
Turn Type	Perm	Perm		Prot	Perm			NA		Perm	NA		
Protected Phases				6!				4			8		
Permitted Phases	2	2!			6					8			
Actuated Green, G (s)		28.8		28.8	28.8			38.4			38.4		
Effective Green, g (s)		28.8		28.8	28.8			38.4			38.4		
Actuated g/C Ratio		0.32		0.32	0.32			0.43			0.43		
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0		
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0		
Lane Grp Cap (vph)		519		566	506			1509			794		
v/s Ratio Prot				c0.02				c0.24			0.23		
v/s Ratio Perm		0.00			0.01								
v/c Ratio		0.01		0.08	0.04			0.57			0.55		
Uniform Delay, d1		20.8		21.3	21.1			19.6			19.3		
Progression Factor		1.00		1.00	1.00			0.20			1.00		
Incremental Delay, d2		0.0		0.3	0.2			1.3			2.7		
Delay (s)		20.9		21.6	21.3			5.3			22.0		
Level of Service		C		C	C			A			C		
Approach Delay (s)		20.9		21.4				5.3			22.0		
Approach LOS		C		C				A			C		
Intersection Summary													
HCM 2000 Control Delay			11.8		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.31										
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					12.0			
Intersection Capacity Utilization			42.1%		ICU Level of Service					A			
Analysis Period (min)			15										
! Phase conflict between lane groups.													
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
1: State Street & Grove Street/Olive Street




















2025 AM Build
05/10/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	16	18	5	143	71	104	373	4	52	371	228
Future Volume (vph)	9	16	18	5	143	71	104	373	4	52	371	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	13	11	11	11	11	11	11
Total Lost time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.97			1.00	0.84	1.00	1.00		1.00	0.96	
Flpb, ped/bikes		0.98			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.94			1.00	0.85	1.00	1.00		1.00	0.94	
Flt Protected		0.99			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1604			1857	1375	1711	1797		1711	1623	
Flt Permitted		0.91			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1480			1841	1375	1711	1797		1711	1623	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	9	16	18	5	143	71	104	373	4	52	371	228
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	25	0
Lane Group Flow (vph)	0	27	0	0	148	71	104	377	0	52	574	0
Confl. Peds. (#/hr)	27		11	11		27	23		3	3		23
Confl. Bikes (#/hr)			2			11			7			13
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	2	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		10.4			10.4	10.4	9.3	50.4		6.5	47.6	
Effective Green, g (s)		10.4			10.4	10.4	9.3	50.4		6.5	47.6	
Actuated g/C Ratio		0.12			0.12	0.12	0.10	0.56		0.07	0.53	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		1.0	3.0	
Lane Grp Cap (vph)		171			212	158	176	1006		123	858	
v/s Ratio Prot							c0.06	0.21		0.03	c0.35	
v/s Ratio Perm		0.02			c0.08	0.05						
v/c Ratio		0.16			0.70	0.45	0.59	0.37		0.42	0.67	
Uniform Delay, d1		35.9			38.3	37.1	38.5	11.0		40.0	15.4	
Progression Factor		1.00			1.00	1.00	0.91	0.66		0.92	0.78	
Incremental Delay, d2		0.4			9.6	2.0	4.9	1.0		0.8	4.1	
Delay (s)		36.3			47.9	39.2	40.0	8.3		37.4	16.2	
Level of Service		D			D	D	D	A		D	B	
Approach Delay (s)		36.3			45.1			15.2			17.9	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			21.8				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				20.0	
Intersection Capacity Utilization			63.2%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: State Street & Elm Street/Grand Avenue

2025 AM Build
 05/10/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	246	152	144	0	125	0	284	58	29	297	0
Future Volume (vph)	211	246	152	144	0	125	0	284	58	29	297	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	3.0	5.0		5.0		5.0		5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00		1.00		1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.95		1.00		1.00		1.00		1.00	1.00	
Flpb, ped/bikes	0.97	1.00		1.00		1.00		1.00		1.00	1.00	
Frt	1.00	0.94		1.00		0.85		0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1723	3177		1711		1531		1753		1704	1801	
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.41	1.00	
Satd. Flow (perm)	1723	3177		1711		1531		1753		743	1801	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	211	246	152	144	0	125	0	284	58	29	297	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	211	398	0	144	0	125	0	342	0	29	297	0
Confl. Peds. (#/hr)	13		47	47		13	20		6	6		20
Confl. Bikes (#/hr)			5			1			6			8
Turn Type	pm+pt	NA		Prot		Prot		NA		D.Pm	NA	
Protected Phases	7	4		3		8		2			6	
Permitted Phases	4									2		
Actuated Green, G (s)	33.9	22.5		10.5		23.6		33.0		33.0	42.0	
Effective Green, g (s)	33.9	22.5		10.5		23.6		33.0		33.0	42.0	
Actuated g/C Ratio	0.38	0.25		0.12		0.26		0.37		0.37	0.47	
Clearance Time (s)	3.0	5.0		5.0		5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	648	794		199		401		642		272	840	
v/s Ratio Prot	0.04	c0.13		c0.08		0.08		c0.20			c0.16	
v/s Ratio Perm	0.08									0.04		
v/c Ratio	0.33	0.50		0.72		0.31		0.53		0.11	0.35	
Uniform Delay, d1	19.9	28.9		38.4		26.7		22.4		18.8	15.3	
Progression Factor	1.00	1.00		1.00		1.00		0.37		0.84	0.81	
Incremental Delay, d2	0.3	2.3		12.2		2.0		3.1		0.6	0.9	
Delay (s)	20.2	31.2		50.6		28.7		11.5		16.3	13.3	
Level of Service	C	C		D		C		B		B	B	
Approach Delay (s)		27.4			40.4			11.5			13.6	
Approach LOS		C			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			23.2									C
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			90.0							18.0		
Intersection Capacity Utilization			62.1%									B
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 4: State Street & Court Street

2025 AM Build
 05/10/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	8	20	11	0	26	0	318	15	0	573	0
Future Volume (vph)	15	8	20	11	0	26	0	318	15	0	573	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	11	11	11
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		0.78			0.95			1.00			1.00	
Flpb, ped/bikes		0.99			0.87			1.00			1.00	
Frt		0.94			0.91			0.99			1.00	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1224			1368			1782			1801	
Flt Permitted		0.92			0.94			1.00			1.00	
Satd. Flow (perm)		1150			1302			1782			1801	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	8	20	11	0	26	0	318	15	0	573	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	43	0	0	37	0	0	331	0	0	573	0
Confl. Peds. (#/hr)	20		177	177		20	25		21	21		25
Confl. Bikes (#/hr)			5			9			8			7
Turn Type	Perm	NA		Perm	NA			NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		23.0			23.0			57.0			57.0	
Effective Green, g (s)		23.0			23.0			57.0			57.0	
Actuated g/C Ratio		0.26			0.26			0.63			0.63	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			0.2			0.2			0.2	
Lane Grp Cap (vph)		293			332			1128			1140	
v/s Ratio Prot								0.19			c0.32	
v/s Ratio Perm		c0.04			0.03							
v/c Ratio		0.15			0.11			0.29			0.50	
Uniform Delay, d1		25.9			25.7			7.4			8.9	
Progression Factor		1.00			1.00			0.12			0.48	
Incremental Delay, d2		0.2			0.7			0.6			1.4	
Delay (s)		26.1			26.3			1.6			5.7	
Level of Service		C			C			A			A	
Approach Delay (s)		26.1			26.3			1.6			5.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.0									A
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			90.0							10.0		
Intersection Capacity Utilization			56.0%									B
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
5: State Street & Pitkin Tunnel

2025 AM Build
05/10/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	101	98	319	467	137
Future Volume (vph)	14	101	98	319	467	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1652	1478	1711	1801	1746	
Flt Permitted	0.95	1.00	0.35	1.00	1.00	
Satd. Flow (perm)	1652	1478	625	1801	1746	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	101	98	319	467	137
RTOR Reduction (vph)	0	75	0	0	0	0
Lane Group Flow (vph)	14	26	98	319	604	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	23.0	23.0	57.0	57.0	57.0	
Effective Green, g (s)	23.0	23.0	57.0	57.0	57.0	
Actuated g/C Ratio	0.26	0.26	0.63	0.63	0.63	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	0.2	0.2	0.2	
Lane Grp Cap (vph)	422	377	395	1140	1105	
v/s Ratio Prot	0.01			0.18	c0.35	
v/s Ratio Perm		c0.02	0.16			
v/c Ratio	0.03	0.07	0.25	0.28	0.55	
Uniform Delay, d1	25.2	25.4	7.2	7.4	9.3	
Progression Factor	1.00	1.00	0.68	0.71	0.20	
Incremental Delay, d2	0.0	0.1	1.3	0.5	1.7	
Delay (s)	25.2	25.5	6.2	5.8	3.6	
Level of Service	C	C	A	A	A	
Approach Delay (s)	25.4			5.9	3.6	
Approach LOS	C			A	A	
Intersection Summary						
HCM 2000 Control Delay			6.7		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.41			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			74.6%		ICU Level of Service	D
Analysis Period (min)			15			
c	Critical Lane Group					

HCM Signalized Intersection Capacity Analysis
6: State Street & Chapel Street

2025 AM Build
05/10/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	52	41	41	186	80	46	288	12	51	362	142
Future Volume (vph)	49	52	41	41	186	80	46	288	12	51	362	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	11	11	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.79		1.00	0.94		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	0.90	1.00		0.60	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.95		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1598	1328		1019	1618		1711	1776		1711	1665	
Flt Permitted	0.36	1.00		0.70	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	601	1328		747	1618		1711	1776		1711	1665	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	52	41	41	186	80	46	288	12	51	362	142
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	49	93	0	41	266	0	46	300	0	51	504	0
Confl. Peds. (#/hr)	118		184	184		118	39		72	72		39
Confl. Bikes (#/hr)			6			13			3			11
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	18.5	18.5		18.5	18.5		5.2	31.0		5.2	51.3	
Effective Green, g (s)	18.5	18.5		18.5	18.5		5.2	31.0		5.2	51.3	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.06	0.34		0.06	0.57	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	3.0	
Lane Grp Cap (vph)	123	272		153	332		98	611		98	949	
v/s Ratio Prot		0.07			c0.16		0.03	0.17		c0.03	c0.30	
v/s Ratio Perm	0.08			0.05								
v/c Ratio	0.40	0.34		0.27	0.80		0.47	0.49		0.52	0.53	
Uniform Delay, d1	30.9	30.5		30.1	34.0		41.1	23.3		41.2	11.9	
Progression Factor	1.00	1.00		0.85	0.89		1.37	1.07		0.71	1.00	
Incremental Delay, d2	2.1	0.8		0.9	12.4		3.1	2.4		4.4	1.9	
Delay (s)	33.0	31.3		26.5	42.8		59.3	27.4		33.6	13.8	
Level of Service	C	C		C	D		E	C		C	B	
Approach Delay (s)		31.9			40.7			31.6			15.7	
Approach LOS		C			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			27.2				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				17.0	
Intersection Capacity Utilization			73.6%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
8: State Street & George Street/Fair Street

2025 AM Build
05/10/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↕	↗↘		↕			↕			↕↔			
Traffic Volume (vph)	180	82	213	50	50	30	0	235	3	31	260	70		
Future Volume (vph)	180	82	213	50	50	30	0	235	3	31	260	70		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	10	10	10	10	10	10	11	11	11	11	11	11		
Total Lost time (s)		5.0	5.0		5.0			5.0			5.0			
Lane Util. Factor		1.00	0.88		1.00			1.00			0.95			
Frbp, ped/bikes		1.00	0.94		0.98			1.00			0.98			
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00			
Frt		1.00	0.85		0.97			1.00			0.97			
Flt Protected		0.97	1.00		0.98			1.00			1.00			
Satd. Flow (prot)		1681	2448		1623			1796			3221			
Flt Permitted		0.97	1.00		0.98			1.00			0.91			
Satd. Flow (perm)		1681	2448		1623			1796			2943			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	180	82	213	50	50	30	0	235	3	31	260	70		
RTOR Reduction (vph)	0	0	0	0	13	0	0	1	0	0	0	0		
Lane Group Flow (vph)	0	262	213	0	117	0	0	237	0	0	361	0		
Confl. Peds. (#/hr)	21		16	16		21	18		12	12		18		
Confl. Bikes (#/hr)			1						1			11		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0		
Turn Type	Split	NA	Perm	Split	NA			NA		Perm	NA			
Protected Phases	4	4		8	8			2			6			
Permitted Phases			4							6				
Actuated Green, G (s)		19.1	19.1		11.6			25.0			25.0			
Effective Green, g (s)		19.1	19.1		11.6			25.0			25.0			
Actuated g/C Ratio		0.21	0.21		0.13			0.28			0.28			
Clearance Time (s)		5.0	5.0		5.0			5.0			5.0			
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0			
Lane Grp Cap (vph)		356	519		209			498			817			
v/s Ratio Prot		c0.16			c0.07			c0.13						
v/s Ratio Perm			0.09								0.12			
v/c Ratio		0.74	0.41		0.56			0.48			0.44			
Uniform Delay, d1		33.1	30.6		36.8			27.1			26.8			
Progression Factor		1.00	1.00		0.97			1.62			0.73			
Incremental Delay, d2		7.7	0.5		3.2			3.2			1.6			
Delay (s)		40.8	31.1		39.1			47.1			21.1			
Level of Service		D	C		D			D			C			
Approach Delay (s)		36.5			39.1			47.1			21.1			
Approach LOS		D			D			D			C			
Intersection Summary														
HCM 2000 Control Delay			34.2									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.46											
Actuated Cycle Length (s)			90.0								19.0		Sum of lost time (s)	
Intersection Capacity Utilization			56.8%										ICU Level of Service	B
Analysis Period (min)			15											

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: N. Frontage Road/Water Street & State Street

2025 AM Build
 05/10/2022






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations				↖		↗		↑	↗	↖	↑↑		
Traffic Volume (vph)	0	0	0	139	0	60	0	206	89	45	421	0	
Future Volume (vph)	0	0	0	139	0	60	0	206	89	45	421	0	
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	5.0	5.0	5.0		
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	0.95		
Frbp, ped/bikes				1.00		0.92		1.00	0.94	1.00	1.00		
Flpb, ped/bikes				1.00		1.00		1.00	1.00	0.97	1.00		
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)				1711		1412		1801	1442	1667	3421		
Flt Permitted				0.95		1.00		1.00	1.00	0.61	1.00		
Satd. Flow (perm)				1711		1412		1801	1442	1077	3421		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	0	0	139	0	60	0	206	89	45	421	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	139	0	60	0	206	89	45	421	0	
Confl. Peds. (#/hr)				17		15	46		14	14		46	
Confl. Bikes (#/hr)						2			5			9	
Turn Type				Prot		Perm		NA	Perm	Perm		NA	
Protected Phases				3				2				6	
Permitted Phases						8			2	6			
Actuated Green, G (s)				12.6		12.6		43.4	43.4	43.4		43.4	
Effective Green, g (s)				12.6		12.6		43.4	43.4	43.4		43.4	
Actuated g/C Ratio				0.14		0.14		0.48	0.48	0.48		0.48	
Clearance Time (s)				5.0		5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)				3.0		3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)				239		197		868	695	519		1649	
v/s Ratio Prot				c0.08				0.11				c0.12	
v/s Ratio Perm						0.04			0.06	0.04			
v/c Ratio				0.58		0.30		0.24	0.13	0.09		0.26	
Uniform Delay, d1				36.2		34.8		13.6	12.9	12.6		13.8	
Progression Factor				1.00		1.00		1.00	1.00	0.39		0.39	
Incremental Delay, d2				3.6		0.9		0.6	0.4	0.3		0.4	
Delay (s)				39.8		35.6		14.3	13.2	5.2		5.7	
Level of Service				D		D		B	B	A		A	
Approach Delay (s)		0.0			38.6			14.0				5.7	
Approach LOS		A			D			B				A	
Intersection Summary													
HCM 2000 Control Delay				15.0								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio				0.24									
Actuated Cycle Length (s)				90.0								Sum of lost time (s)	13.0
Intersection Capacity Utilization				39.4%								ICU Level of Service	A
Analysis Period (min)				15									

c Critical Lane Group




















HCM Signalized Intersection Capacity Analysis
11: State Street & Audobon Street

2025 AM Build
05/10/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	0	34	0	0	4	1	375	4	5	386	0
Future Volume (vph)	35	0	34	0	0	4	1	375	4	5	386	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	14	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.95			1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		0.94	1.00	
Frt	1.00	0.85			0.86			1.00		1.00	1.00	
Flt Protected	0.95	1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1711	1447			1719			1747		1606	1786	
Flt Permitted	0.76	1.00			1.00			1.00		0.54	1.00	
Satd. Flow (perm)	1360	1447			1719			1746		918	1786	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	0	34	0	0	4	1	375	4	5	386	0
RTOR Reduction (vph)	0	27	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	35	7	0	0	1	0	0	380	0	5	386	0
Confl. Peds. (#/hr)			14	14						10	45	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	7	0	0	2	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	18.0	18.0			18.0			62.0		62.0	62.0	
Effective Green, g (s)	18.0	18.0			18.0			62.0		62.0	62.0	
Actuated g/C Ratio	0.20	0.20			0.20			0.69		0.69	0.69	
Clearance Time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	272	289			343			1202		632	1230	
v/s Ratio Prot		0.00			0.00						0.22	
v/s Ratio Perm	c0.03							c0.22		0.01		
v/c Ratio	0.13	0.02			0.00			0.32		0.01	0.31	
Uniform Delay, d1	29.6	28.9			28.8			5.6		4.4	5.6	
Progression Factor	1.00	1.00			1.00			0.33		1.00	1.00	
Incremental Delay, d2	1.0	0.2			0.0			0.7		0.0	0.1	
Delay (s)	30.5	29.1			28.8			2.5		4.4	5.7	
Level of Service	C	C			C			A		A	A	
Approach Delay (s)		29.8			28.8			2.5			5.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.3								HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.27									
Actuated Cycle Length (s)			90.0								Sum of lost time (s)	10.0
Intersection Capacity Utilization			44.1%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
1: State Street & Grove Street/Olive Street

2025 PM Build
05/11/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	50	24	0	138	95	98	764	18	108	359	136
Future Volume (vph)	29	50	24	0	138	95	98	764	18	108	359	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	13	11	11	11	11	11	11
Total Lost time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			1.00	0.84	1.00	1.00		1.00	0.97	
Flpb, ped/bikes		0.98			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97			1.00	0.85	1.00	1.00		1.00	0.96	
Flt Protected		0.99			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1651			1863	1373	1711	1794		1711	1668	
Flt Permitted		0.72			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1204			1863	1373	1711	1794		1711	1668	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	50	24	0	138	95	98	764	18	108	359	136
RTOR Reduction (vph)	0	12	0	0	0	0	0	1	0	0	11	0
Lane Group Flow (vph)	0	91	0	0	138	95	98	781	0	108	484	0
Confl. Peds. (#/hr)	27		11	11		27	23		3	3		23
Confl. Bikes (#/hr)			2			11			7			13
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	2	0
Turn Type	Perm	NA			NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		10.1			10.1	10.1	8.8	53.0		7.7	51.9	
Effective Green, g (s)		10.1			10.1	10.1	8.8	53.0		7.7	51.9	
Actuated g/C Ratio		0.11			0.11	0.11	0.10	0.59		0.09	0.58	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		1.0	3.0	
Lane Grp Cap (vph)		135			209	154	167	1056		146	961	
v/s Ratio Prot					0.07		0.06	c0.44		c0.06	0.29	
v/s Ratio Perm		c0.08				0.07						
v/c Ratio		0.67			0.66	0.62	0.59	0.74		0.74	0.50	
Uniform Delay, d1		38.4			38.3	38.1	38.9	13.5		40.2	11.4	
Progression Factor		1.00			1.00	1.00	0.91	0.29		0.92	0.72	
Incremental Delay, d2		12.3			7.6	7.2	2.2	1.9		15.1	1.8	
Delay (s)		50.7			45.9	45.3	37.5	5.9		52.0	10.0	
Level of Service		D			D	D	D	A		D	B	
Approach Delay (s)		50.7			45.6			9.4			17.5	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM 2000 Control Delay		19.1			HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio		0.74										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)				20.0			
Intersection Capacity Utilization		79.3%			ICU Level of Service				D			
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: State Street & Elm Street/Grand Avenue

2025 PM Build
 05/11/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	322	438	190	153	0	106	0	513	62	60	320	0		
Future Volume (vph)	322	438	190	153	0	106	0	513	62	60	320	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	12	12	11	11	11	11	11	11	11	11	11	11		
Total Lost time (s)	3.0	5.0		5.0		4.0		5.0		4.0	5.0			
Lane Util. Factor	1.00	0.95		1.00		1.00		1.00		1.00	1.00			
Frbp, ped/bikes	1.00	0.96		1.00		1.00		1.00		1.00	1.00			
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00			
Frt	1.00	0.95		1.00		0.85		0.99		1.00	1.00			
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	1.00			
Satd. Flow (prot)	1770	3250		1711		1531		1770		1711	1801			
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.95	1.00			
Satd. Flow (perm)	1770	3250		1711		1531		1770		1711	1801			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	322	438	190	153	0	106	0	513	62	60	320	0		
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	322	628	0	153	0	106	0	575	0	60	320	0		
Confl. Peds. (#/hr)	13		47	47		13	20		6	6		20		
Confl. Bikes (#/hr)			5			1			6			8		
Turn Type	Prot	NA		Prot		pt+ov		NA		Prot	NA			
Protected Phases	7	4		3		1 8		2		1	6			
Permitted Phases														
Actuated Green, G (s)	17.0	21.0		9.0		25.0		29.0		5.0	45.0			
Effective Green, g (s)	17.0	21.0		9.0		20.0		29.0		5.0	45.0			
Actuated g/C Ratio	0.19	0.23		0.10		0.22		0.32		0.06	0.50			
Clearance Time (s)	3.0	5.0		5.0				5.0		4.0	5.0			
Vehicle Extension (s)	3.0	3.0		3.0				3.0		3.0	3.0			
Lane Grp Cap (vph)	334	758		171		340		570		95	900			
v/s Ratio Prot	c0.18	c0.19		0.09		0.07		c0.32		c0.04	c0.18			
v/s Ratio Perm														
v/c Ratio	0.96	0.83		0.89		0.31		1.01		0.63	0.36			
Uniform Delay, d1	36.2	32.8		40.0		29.2		30.5		41.6	13.7			
Progression Factor	1.00	1.00		1.00		1.00		0.66		0.72	0.95			
Incremental Delay, d2	39.4	10.1		40.0		0.5		38.7		11.5	1.0			
Delay (s)	75.6	42.9		80.0		29.8		58.8		41.5	13.9			
Level of Service	E	D		F		C		E		D	B			
Approach Delay (s)		54.0			59.5			58.8			18.3			
Approach LOS		D			E			E			B			
Intersection Summary														
HCM 2000 Control Delay			49.7									HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio			0.95											
Actuated Cycle Length (s)			90.0							21.0			Sum of lost time (s)	
Intersection Capacity Utilization			78.6%										ICU Level of Service	D
Analysis Period (min)			15											
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis
4: State Street & Court Street

2025 PM Build
05/11/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↑	
Traffic Volume (vph)	27	14	20	11	0	11	0	492	11	0	698	0
Future Volume (vph)	27	14	20	11	0	11	0	492	11	0	698	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	11	11	11
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		0.84			0.96			1.00			1.00	
Flpb, ped/bikes		0.98			0.78			1.00			1.00	
Frt		0.96			0.93			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1343			1280			1791			1801	
Flt Permitted		0.89			0.90			1.00			1.00	
Satd. Flow (perm)		1224			1179			1791			1801	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	27	14	20	11	0	11	0	492	11	0	698	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	61	0	0	22	0	0	502	0	0	698	0
Confl. Peds. (#/hr)	20		177	177		20	25		21	21		25
Confl. Bikes (#/hr)			5			9			8			7
Turn Type	Perm	NA		Perm	NA			NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		23.0			23.0			57.0			57.0	
Effective Green, g (s)		23.0			23.0			57.0			57.0	
Actuated g/C Ratio		0.26			0.26			0.63			0.63	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			0.2			0.2			0.2	
Lane Grp Cap (vph)		312			301			1134			1140	
v/s Ratio Prot								0.28			c0.39	
v/s Ratio Perm		c0.05			0.02							
v/c Ratio		0.20			0.07			0.44			0.61	
Uniform Delay, d1		26.3			25.4			8.4			9.9	
Progression Factor		1.00			1.00			0.73			0.49	
Incremental Delay, d2		0.3			0.5			1.2			2.0	
Delay (s)		26.6			25.9			7.4			6.9	
Level of Service		C			C			A			A	
Approach Delay (s)		26.6			25.9			7.4			6.9	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.3									A
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			90.0							10.0		
Intersection Capacity Utilization			62.6%									B
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
5: State Street & Pitkin Tunnel

2025 PM Build
05/11/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	160	118	110	385	609	120
Future Volume (vph)	160	118	110	385	609	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Fr _t	1.00	0.85	1.00	1.00	0.98	
Fl _t Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1652	1478	1711	1801	1761	
Fl _t Permitted	0.95	1.00	0.27	1.00	1.00	
Satd. Flow (perm)	1652	1478	485	1801	1761	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	160	118	110	385	609	120
RTOR Reduction (vph)	0	88	0	0	0	0
Lane Group Flow (vph)	160	30	110	385	729	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	23.0	23.0	57.0	57.0	57.0	
Effective Green, g (s)	23.0	23.0	57.0	57.0	57.0	
Actuated g/C Ratio	0.26	0.26	0.63	0.63	0.63	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	0.2	0.2	0.2	
Lane Grp Cap (vph)	422	377	307	1140	1115	
v/s Ratio Prot	c0.10			0.21	c0.41	
v/s Ratio Perm		0.02	0.23			
v/c Ratio	0.38	0.08	0.36	0.34	0.65	
Uniform Delay, d ₁	27.6	25.5	7.8	7.7	10.3	
Progression Factor	1.00	1.00	0.56	0.59	0.16	
Incremental Delay, d ₂	0.6	0.1	2.6	0.6	2.4	
Delay (s)	28.2	25.6	6.9	5.2	4.1	
Level of Service	C	C	A	A	A	
Approach Delay (s)	27.1			5.6	4.1	
Approach LOS	C			A	A	
Intersection Summary						
HCM 2000 Control Delay			8.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.57			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			81.0%		ICU Level of Service	D
Analysis Period (min)			15			
c	Critical Lane Group					

HCM Signalized Intersection Capacity Analysis
6: State Street & Chapel Street

2025 PM Build
05/11/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	61	111	60	42	183	49	45	385	28	101	484	189	
Future Volume (vph)	61	111	60	42	183	49	45	385	28	101	484	189	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	11	12	11	11	11	11	11	11	11	11	11	
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0		
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00		
Frbp, ped/bikes	1.00	0.81		1.00	0.95		1.00	0.99		1.00	0.97		
Flpb, ped/bikes	0.87	1.00		0.63	1.00		1.00	1.00		1.00	1.00		
Frt	1.00	0.95		1.00	0.97		1.00	0.99		1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1538	1387		1078	1654		1711	1758		1711	1666		
Flt Permitted	0.41	1.00		0.55	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (perm)	658	1387		622	1654		1711	1758		1711	1666		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	61	111	60	42	183	49	45	385	28	101	484	189	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	61	171	0	42	232	0	45	413	0	101	673	0	
Confl. Peds. (#/hr)	118		184	184		118	39		72	72		39	
Confl. Bikes (#/hr)			6			13			3			11	
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA		
Protected Phases		4			8		5	2		1	6		
Permitted Phases	4			8									
Actuated Green, G (s)	17.1	17.1		17.1	17.1		3.2	32.0		8.8	50.7		
Effective Green, g (s)	17.1	17.1		17.1	17.1		3.2	32.0		8.8	50.7		
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.04	0.36		0.10	0.56		
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	3.0		
Lane Grp Cap (vph)	125	263		118	314		60	625		167	938		
v/s Ratio Prot		0.12			c0.14		0.03	0.23		c0.06	c0.40		
v/s Ratio Perm	0.09			0.07									
v/c Ratio	0.49	0.65		0.36	0.74		0.75	0.66		0.60	0.72		
Uniform Delay, d1	32.5	33.7		31.7	34.3		43.0	24.4		38.9	14.4		
Progression Factor	1.00	1.00		1.00	1.00		1.04	0.67		1.32	0.62		
Incremental Delay, d2	3.0	5.6		1.8	8.8		29.8	3.8		5.1	4.0		
Delay (s)	35.5	39.3		33.5	43.1		74.3	20.1		56.6	12.9		
Level of Service	D	D		C	D		E	C		E	B		
Approach Delay (s)		38.3			41.7			25.4			18.6		
Approach LOS		D			D			C			B		
Intersection Summary													
HCM 2000 Control Delay			26.6									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.76										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	21.0
Intersection Capacity Utilization			80.2%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
8: State Street & George Street/Fair Street

2025 PM Build
05/11/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	265	163	333	50	50	20	0	233	9	51	453	81		
Future Volume (vph)	265	163	333	50	50	20	0	233	9	51	453	81		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	10	10	10	10	10	10	11	11	11	11	11	11		
Total Lost time (s)		5.0	5.0		5.0			5.0			5.0			
Lane Util. Factor		1.00	0.88		1.00			1.00			0.95			
Frbp, ped/bikes		1.00	0.95		0.99			1.00			0.99			
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00			
Frt		1.00	0.85		0.98			0.99			0.98			
Flt Protected		0.97	1.00		0.98			1.00			1.00			
Satd. Flow (prot)		1686	2469		1643			1787			3265			
Flt Permitted		0.97	1.00		0.98			1.00			0.87			
Satd. Flow (perm)		1686	2469		1643			1787			2868			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	265	163	333	50	50	20	0	233	9	51	453	81		
RTOR Reduction (vph)	0	0	0	0	9	0	0	1	0	0	0	0		
Lane Group Flow (vph)	0	428	333	0	111	0	0	241	0	0	585	0		
Confl. Peds. (#/hr)	21		16	16		21	18		12	12		18		
Confl. Bikes (#/hr)			1						1			11		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0		
Turn Type	Split	NA	Perm	Split	NA			NA		Perm	NA			
Protected Phases	4	4		8	8			2			6			
Permitted Phases			4							6				
Actuated Green, G (s)		24.0	24.0		11.3			25.0			25.0			
Effective Green, g (s)		24.0	24.0		11.3			25.0			25.0			
Actuated g/C Ratio		0.27	0.27		0.13			0.28			0.28			
Clearance Time (s)		5.0	5.0		5.0			5.0			5.0			
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0			
Lane Grp Cap (vph)		449	658		206			496			796			
v/s Ratio Prot		c0.25			c0.07			0.13						
v/s Ratio Perm			0.13								c0.20			
v/c Ratio		0.95	0.51		0.54			0.48			0.73			
Uniform Delay, d1		32.4	28.0		36.9			27.1			29.5			
Progression Factor		1.00	1.00		1.00			1.39			0.72			
Incremental Delay, d2		30.6	0.6		2.9			3.3			5.0			
Delay (s)		63.1	28.6		39.8			41.0			26.1			
Level of Service		E	C		D			D			C			
Approach Delay (s)		48.0			39.8			41.0			26.1			
Approach LOS		D			D			D			C			
Intersection Summary														
HCM 2000 Control Delay			38.9									HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio			0.67											
Actuated Cycle Length (s)			90.0								19.0			
Intersection Capacity Utilization			79.8%										ICU Level of Service	D
Analysis Period (min)			15											

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: N. Frontage Road/Water Street & State Street

2025 PM Build
 05/11/2022





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖		↗		↑	↗	↖	↑↑	
Traffic Volume (vph)	0	0	0	138	0	50	0	209	155	152	698	0
Future Volume (vph)	0	0	0	138	0	50	0	209	155	152	698	0
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	5.0	5.0	5.0	
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	0.95	
Frpb, ped/bikes				1.00		0.92		1.00	0.94	1.00	1.00	
Flpb, ped/bikes				1.00		1.00		1.00	1.00	0.97	1.00	
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)				1711		1411		1801	1442	1667	3421	
Flt Permitted				0.95		1.00		1.00	1.00	0.61	1.00	
Satd. Flow (perm)				1711		1411		1801	1442	1072	3421	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	138	0	50	0	209	155	152	698	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	138	0	50	0	209	155	152	698	0
Confl. Peds. (#/hr)				17		15	46		14	14		46
Confl. Bikes (#/hr)						2			5			9
Turn Type				Prot		Perm		NA	Perm	Perm		NA
Protected Phases				3				2				6
Permitted Phases						8			2	6		
Actuated Green, G (s)				12.5		12.5		43.5	43.5	43.5	43.5	
Effective Green, g (s)				12.5		12.5		43.5	43.5	43.5	43.5	
Actuated g/C Ratio				0.14		0.14		0.48	0.48	0.48	0.48	
Clearance Time (s)				5.0		5.0		5.0	5.0	5.0	5.0	
Vehicle Extension (s)				3.0		3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)				237		195		870	696	518	1653	
v/s Ratio Prot				c0.08				0.12				c0.20
v/s Ratio Perm						0.04			0.11	0.14		
v/c Ratio				0.58		0.26		0.24	0.22	0.29	0.42	
Uniform Delay, d1				36.3		34.6		13.6	13.5	14.0	15.1	
Progression Factor				1.00		1.00		1.00	1.00	0.44	0.40	
Incremental Delay, d2				3.6		0.7		0.7	0.7	1.1	0.6	
Delay (s)				39.9		35.3		14.2	14.2	7.2	6.6	
Level of Service				D		D		B	B	A	A	
Approach Delay (s)		0.0			38.7			14.2				6.7
Approach LOS		A			D			B				A
Intersection Summary												
HCM 2000 Control Delay				13.0								HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio				0.33								B
Actuated Cycle Length (s)				90.0								Sum of lost time (s)
Intersection Capacity Utilization				43.6%								13.0
Analysis Period (min)				15								ICU Level of Service
												A

c Critical Lane Group



















HCM Signalized Intersection Capacity Analysis
11: State Street & Audobon Street

2025 PM Build
05/11/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	1	71	5	0	12	0	861	0	0	435	0
Future Volume (vph)	57	1	71	5	0	12	0	861	0	0	435	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	14	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frbp, ped/bikes	1.00	0.95			1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00			0.99			1.00			1.00	
Frt	1.00	0.85			0.90			1.00			1.00	
Flt Protected	0.95	1.00			0.99			1.00			1.00	
Satd. Flow (prot)	1711	1452			1755			1750			1786	
Flt Permitted	0.75	1.00			0.94			1.00			1.00	
Satd. Flow (perm)	1344	1452			1673			1750			1786	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	57	1	71	5	0	12	0	861	0	0	435	0
RTOR Reduction (vph)	0	57	0	0	14	0	0	0	0	0	0	0
Lane Group Flow (vph)	57	15	0	0	3	0	0	861	0	0	435	0
Confl. Peds. (#/hr)			14	14					10	45		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	7	0	0	2	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2						8		
Actuated Green, G (s)	18.0	18.0			18.0			62.0			62.0	
Effective Green, g (s)	18.0	18.0			18.0			62.0			62.0	
Actuated g/C Ratio	0.20	0.20			0.20			0.69			0.69	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	268	290			334			1205			1230	
v/s Ratio Prot		0.01						0.49			0.24	
v/s Ratio Perm	0.04				0.00							
v/c Ratio	0.21	0.05			0.01			0.71			0.35	
Uniform Delay, d1	30.1	29.1			28.9			8.6			5.8	
Progression Factor	1.00	1.00			1.00			0.10			1.00	
Incremental Delay, d2	1.8	0.3			0.1			2.5			0.2	
Delay (s)	31.9	29.4			28.9			3.4			5.9	
Level of Service	C	C			C			A			A	
Approach Delay (s)		30.5			28.9			3.4			5.9	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.9									A
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			90.0							10.0		
Intersection Capacity Utilization			68.6%									C
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
1: State Street & Grove Street/Olive Street


















2040 AM No Build
05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	16	18	5	143	71	104	373	4	52	371	228
Future Volume (vph)	9	16	18	5	143	71	104	373	4	52	371	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	10	11	12	10	11	12
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.98			0.97		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.95		1.00	1.00		1.00	0.94	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1635			3144		1652	3415		1652	3181	
Flt Permitted		0.89			0.95		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1467			2984		1652	3415		1652	3181	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	10	18	20	6	157	78	114	410	4	57	408	251
RTOR Reduction (vph)	0	18	0	0	68	0	0	1	0	0	91	0
Lane Group Flow (vph)	0	30	0	0	173	0	114	413	0	57	568	0
Confl. Peds. (#/hr)	27		11	11			27	23		3	3	23
Confl. Bikes (#/hr)			2				11			7		13
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.3			10.3		9.7	38.8		5.9	35.0	
Effective Green, g (s)		10.3			10.3		9.7	38.8		5.9	35.0	
Actuated g/C Ratio		0.11			0.11		0.11	0.43		0.07	0.39	
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		1.0	3.0	
Lane Grp Cap (vph)		167			341		178	1472		108	1237	
v/s Ratio Prot							c0.07	c0.12		0.03	c0.18	
v/s Ratio Perm		0.02			c0.06							
v/c Ratio		0.18			0.51		0.64	0.28		0.53	0.46	
Uniform Delay, d1		36.0			37.5		38.5	16.6		40.7	20.5	
Progression Factor		1.00			1.00		0.99	0.85		1.41	0.38	
Incremental Delay, d2		0.5			1.2		7.1	0.4		2.1	1.2	
Delay (s)		36.6			38.6		45.1	14.6		59.5	9.0	
Level of Service		D			D		D	B		E	A	
Approach Delay (s)		36.6			38.6			21.2			13.0	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			20.6				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				17.0	
Intersection Capacity Utilization			49.9%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: State Street & Elm Street/Grand Avenue

2040 AM No Build
05/17/2022


















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	246	152	144	0	125	0	284	58	3	323	0
Future Volume (vph)	211	246	152	144	0	125	0	284	58	3	323	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	12	12	12	11	12	12	11	12
Total Lost time (s)	5.0	5.0		5.0		5.0		5.0			5.0	
Lane Util. Factor	1.00	0.95		0.97		1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.97		1.00		1.00		1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00			1.00	
Frt	1.00	0.94		1.00		0.85		0.97			1.00	
Flt Protected	0.95	1.00		0.95		1.00		1.00			1.00	
Satd. Flow (prot)	1770	3230		3204		1583		3321			3420	
Flt Permitted	0.95	1.00		0.95		1.00		1.00			0.95	
Satd. Flow (perm)	1770	3230		3204		1583		3321			3258	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	232	271	167	158	0	138	0	312	64	3	355	0
RTOR Reduction (vph)	0	117	0	0	0	123	0	0	0	0	0	0
Lane Group Flow (vph)	232	321	0	158	0	15	0	376	0	0	358	0
Confl. Peds. (#/hr)	13		47	47		13	20		6	6		20
Confl. Bikes (#/hr)			5			1			6			8
Turn Type	Split	NA		Prot		Prot		NA		Perm		NA
Protected Phases	3	3		8		8		2				6
Permitted Phases										6		
Actuated Green, G (s)	18.6	18.6		9.8		9.8		27.6				27.6
Effective Green, g (s)	18.6	18.6		9.8		9.8		27.6				27.6
Actuated g/C Ratio	0.21	0.21		0.11		0.11		0.31				0.31
Clearance Time (s)	5.0	5.0		5.0		5.0		5.0				5.0
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0				3.0
Lane Grp Cap (vph)	365	667		348		172		1018				999
v/s Ratio Prot	c0.13	0.10		c0.05		0.01		c0.11				
v/s Ratio Perm												0.11
v/c Ratio	0.64	0.48		0.45		0.09		0.37				0.36
Uniform Delay, d1	32.6	31.5		37.6		36.1		24.4				24.3
Progression Factor	1.00	1.00		1.00		1.00		1.21				0.40
Incremental Delay, d2	3.6	0.6		0.9		0.2		1.0				0.9
Delay (s)	36.2	32.0		38.5		36.3		30.5				10.6
Level of Service	D	C		D		D		C				B
Approach Delay (s)		33.5			37.5			30.5				10.6
Approach LOS		C			D			C				B
Intersection Summary												
HCM 2000 Control Delay			28.7		HCM 2000 Level of Service						C	
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)						18.0	
Intersection Capacity Utilization			46.0%		ICU Level of Service						A	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: State Street & Court Street

2040 AM No Build

05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	8	20	11	0	26	0	318	15	26	560	0
Future Volume (vph)	15	8	20	11	0	26	0	318	15	26	560	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	12	11	12	10	11	12
Total Lost time (s)		5.0			5.0			3.0		4.0	5.0	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frbp, ped/bikes		0.83			0.93			1.00		1.00	1.00	
Flpb, ped/bikes		0.98			0.90			1.00		0.99	1.00	
Frt		0.94			0.90			0.99		1.00	1.00	
Flt Protected		0.98			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1297			1389			3390		1628	3421	
Flt Permitted		0.87			0.89			1.00		0.53	1.00	
Satd. Flow (perm)		1143			1252			3390		914	3421	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	16	9	22	12	0	29	0	350	16	29	616	0
RTOR Reduction (vph)	0	0	0	0	37	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	48	0	0	4	0	0	364	0	29	616	0
Confl. Peds. (#/hr)	20		177	177		20	25		21	21		25
Confl. Bikes (#/hr)			5			9			8			7
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	
Protected Phases		7			7			12		3	4	
Permitted Phases	7			7						4		
Actuated Green, G (s)		7.7			7.7			46.3		37.0	36.0	
Effective Green, g (s)		7.7			7.7			46.3		37.0	36.0	
Actuated g/C Ratio		0.09			0.09			0.51		0.41	0.40	
Clearance Time (s)		5.0			5.0					4.0	5.0	
Vehicle Extension (s)		3.0			3.0					3.0	3.0	
Lane Grp Cap (vph)		97			107			1743		391	1368	
v/s Ratio Prot								c0.11		0.00	c0.18	
v/s Ratio Perm		c0.04			0.00					0.03		
v/c Ratio		0.49			0.03			0.21		0.07	0.45	
Uniform Delay, d1		39.3			37.7			11.9		16.1	19.8	
Progression Factor		1.00			1.00			0.17		0.56	0.63	
Incremental Delay, d2		3.9			0.1			0.3		0.1	0.2	
Delay (s)		43.2			37.9			2.3		9.1	12.7	
Level of Service		D			D			A		A	B	
Approach Delay (s)		43.2			37.9			2.3			12.6	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.4									B
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			90.0							22.0		
Intersection Capacity Utilization			32.7%							A		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: State Street & Pitkin Tunnel

2040 AM No Build
05/17/2022






















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	101	98	319	454	137
Future Volume (vph)	14	101	98	319	454	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	9	11	11	12
Total Lost time (s)	5.0	5.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	
Fr _t	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1652	1478	1593	3421	4744	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1652	1478	1593	3421	4744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	15	111	108	351	499	151
RTOR Reduction (vph)	0	102	0	0	57	0
Lane Group Flow (vph)	15	9	108	351	593	0
Turn Type	Prot	Prot	Prot	NA	NA	
Protected Phases	7	7	1	1 5 6	5 6	
Permitted Phases						
Actuated Green, G (s)	7.7	7.7	13.3	72.3	56.0	
Effective Green, g (s)	7.7	7.7	13.3	72.3	56.0	
Actuated g/C Ratio	0.09	0.09	0.15	0.80	0.62	
Clearance Time (s)	5.0	5.0	3.0			
Vehicle Extension (s)	3.0	3.0	3.0			
Lane Grp Cap (vph)	141	126	235	2748	2951	
v/s Ratio Prot	c0.01	0.01	c0.07	0.10	c0.12	
v/s Ratio Perm						
v/c Ratio	0.11	0.08	0.46	0.13	0.20	
Uniform Delay, d1	38.0	37.9	35.1	1.9	7.3	
Progression Factor	1.00	1.00	1.35	1.34	0.03	
Incremental Delay, d2	0.3	0.3	6.0	0.1	0.1	
Delay (s)	38.3	38.1	53.4	2.7	0.4	
Level of Service	D	D	D	A	A	
Approach Delay (s)	38.2			14.6	0.4	
Approach LOS	D			B	A	
Intersection Summary						
HCM 2000 Control Delay			9.5		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.27			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	22.0
Intersection Capacity Utilization			34.0%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: State Street & Chapel Street

2040 AM No Build

















05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	52	41	41	186	80	46	288	12	52	362	142
Future Volume (vph)	49	52	41	41	186	80	46	288	12	52	362	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	11	12	10	11	12	9	11	10
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00			0.95		1.00	0.95		1.00	0.95	1.00
Frbp, ped/bikes		0.91			0.95		1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes		0.96			0.97		1.00	1.00		1.00	1.00	1.00
Frt		0.96			0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1448			3016		1652	3389		1593	3421	1393
Flt Permitted		0.68			0.88		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1008			2664		1652	3389		1593	3421	1393
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	54	57	45	45	205	88	51	317	13	57	398	156
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	156	0	0	338	0	51	330	0	57	398	156
Confl. Peds. (#/hr)	118		184	184		118	39		72	72		39
Confl. Bikes (#/hr)			6			13			3			11
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)		17.4			17.4		5.3	25.7		6.9	27.3	27.3
Effective Green, g (s)		17.4			17.4		5.3	25.7		6.9	27.3	27.3
Actuated g/C Ratio		0.19			0.19		0.06	0.29		0.08	0.30	0.30
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	0.2		3.0	3.0	3.0
Lane Grp Cap (vph)		194			515		97	967		122	1037	422
v/s Ratio Prot							0.03	0.10		c0.04	c0.12	
v/s Ratio Perm		c0.15			0.13							0.11
v/c Ratio		0.80			0.66		0.53	0.34		0.47	0.38	0.37
Uniform Delay, d1		34.7			33.5		41.1	25.4		39.8	24.7	24.6
Progression Factor		1.00			1.23		1.00	1.00		1.26	1.38	1.36
Incremental Delay, d2		20.9			2.6		5.1	1.0		2.8	1.1	2.4
Delay (s)		55.6			43.9		46.2	26.4		53.0	35.1	36.0
Level of Service		E			D		D	C		D	D	D
Approach Delay (s)		55.6			43.9			29.1			37.0	
Approach LOS		E			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			38.5				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				16.0	
Intersection Capacity Utilization			54.9%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: State Street & George Street/Fair Street

2040 AM No Build
05/17/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	0	230	213	0	0	0	0	0	0	31	260	70	
Future Volume (vph)	0	230	213	0	0	0	0	0	0	31	260	70	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	10	10	12	12	12	12	12	12	12	12	12	
Total Lost time (s)		5.5	5.5								5.5		
Lane Util. Factor		0.91	0.91								0.95		
Frbp, ped/bikes		0.99	0.96								0.99		
Flpb, ped/bikes		1.00	1.00								1.00		
Frt		0.96	0.85								0.97		
Flt Protected		1.00	1.00								1.00		
Satd. Flow (prot)		3016	1292								3386		
Flt Permitted		1.00	1.00								1.00		
Satd. Flow (perm)		3016	1292								3386		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	
Adj. Flow (vph)	0	253	234	0	0	0	0	0	0	34	286	77	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	337	150	0	0	0	0	0	0	0	397	0	
Confl. Peds. (#/hr)	21		16	16			21	18		12	12	18	
Confl. Bikes (#/hr)			1							1		11	
Turn Type		NA	Perm							Perm	NA		
Protected Phases		4										2	
Permitted Phases			4							2			
Actuated Green, G (s)		18.2	18.2								42.8		
Effective Green, g (s)		18.2	18.2								42.8		
Actuated g/C Ratio		0.18	0.18								0.43		
Clearance Time (s)		5.5	5.5								5.5		
Vehicle Extension (s)		3.0	3.0								3.0		
Lane Grp Cap (vph)		548	235								1449		
v/s Ratio Prot		0.11											
v/s Ratio Perm			c0.12									0.12	
v/c Ratio		0.61	0.64									0.27	
Uniform Delay, d1		37.7	37.9									18.5	
Progression Factor		1.00	1.00									1.00	
Incremental Delay, d2		2.1	5.6									0.5	
Delay (s)		39.7	43.4									19.0	
Level of Service		D	D									B	
Approach Delay (s)		40.9			0.0			0.0				19.0	
Approach LOS		D			A			A				B	
Intersection Summary													
HCM 2000 Control Delay			31.0		HCM 2000 Level of Service							C	
HCM 2000 Volume to Capacity ratio			0.27										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						15.0		
Intersection Capacity Utilization			37.1%		ICU Level of Service						A		
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

9: N. Frontage Road/Water Street & State Street & State Street N

2040 AM No Build

05/17/2022




















Movement	WBL	WBR2	NBR	NBR2	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	139	60	206	89	45	421
Future Volume (vph)	139	60	206	89	45	421
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	12	12	10
Total Lost time (s)	4.9	4.9	5.6		5.5	4.2
Lane Util. Factor	1.00	1.00	0.88		1.00	0.91
Frbp, ped/bikes	1.00	0.97	1.00		1.00	1.00
Flpb, ped/bikes	0.97	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1652	1538	2694		1770	4746
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1652	1538	2694		1770	4746
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	153	66	227	98	50	463
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	153	66	325	0	50	463
Confl. Peds. (#/hr)	17	7	7	14	14	
Confl. Bikes (#/hr)		2	5	5		
Turn Type	Perm	Perm	Prot		Prot	NA
Protected Phases			2		1	6
Permitted Phases	4	4	2			
Actuated Green, G (s)	13.4	13.4	27.0		4.6	38.5
Effective Green, g (s)	13.4	13.4	27.0		4.6	38.5
Actuated g/C Ratio	0.15	0.15	0.30		0.05	0.43
Clearance Time (s)	4.9	4.9	5.6		5.5	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	245	228	808		90	2030
v/s Ratio Prot			c0.12		c0.03	0.10
v/s Ratio Perm	c0.09	0.04				
v/c Ratio	0.62	0.29	0.40		0.56	0.23
Uniform Delay, d1	35.9	34.1	25.1		41.7	16.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.9	0.7	1.5		7.2	0.3
Delay (s)	40.8	34.8	26.6		48.9	16.6
Level of Service	D	C	C		D	B
Approach Delay (s)						19.7
Approach LOS						B
Intersection Summary						
HCM 2000 Control Delay			25.8		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.31			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	20.0
Intersection Capacity Utilization			25.7%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: State Street N & Fair Street




















2040 AM No Build
 05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	82	0	0	0	30	0	235	3	0	0	0
Future Volume (vph)	180	82	0	0	0	30	0	235	3	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	13	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	1.00	1.00				1.00		0.91				
Frbp, ped/bikes	1.00	1.00				0.98		1.00				
Flpb, ped/bikes	0.99	1.00				1.00		1.00				
Frt	1.00	1.00				0.86		1.00				
Flt Protected	0.95	1.00				1.00		1.00				
Satd. Flow (prot)	1640	1739				1633		4906				
Flt Permitted	0.95	1.00				1.00		1.00				
Satd. Flow (perm)	1640	1739				1633		4906				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	198	90	0	0	0	33	0	258	3	0	0	0
RTOR Reduction (vph)	75	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	123	90	0	0	0	33	0	261	0	0	0	0
Confl. Peds. (#/hr)	15		9	9		15	2		1	1		2
Confl. Bikes (#/hr)			1			1			4			1
Turn Type	Perm	NA				Perm		NA				
Protected Phases		4						2				
Permitted Phases	4					8						
Actuated Green, G (s)	62.0	62.0				62.0		30.0				
Effective Green, g (s)	62.0	62.0				62.0		30.0				
Actuated g/C Ratio	0.62	0.62				0.62		0.30				
Clearance Time (s)	4.0	4.0				4.0		4.0				
Vehicle Extension (s)	3.0	3.0				3.0		3.0				
Lane Grp Cap (vph)	1016	1078				1012		1471				
v/s Ratio Prot		0.05						c0.05				
v/s Ratio Perm	c0.07					0.02						
v/c Ratio	0.12	0.08				0.03		0.18				
Uniform Delay, d1	7.8	7.6				7.4		25.9				
Progression Factor	0.08	0.31				1.00		1.00				
Incremental Delay, d2	0.2	0.1				0.0		0.3				
Delay (s)	0.9	2.5				7.4		26.1				
Level of Service	A	A				A		C				
Approach Delay (s)		1.4			7.4			26.1			0.0	
Approach LOS		A			A			C			A	
Intersection Summary												
HCM 2000 Control Delay			12.8			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.14									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			37.1%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group



















HCM Signalized Intersection Capacity Analysis
26: State Street & Parking/Audubon

2040 AM No Build
05/17/2022

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	0	34	2	0	0	0	367	0	5	386	0
Future Volume (vph)	35	0	34	2	0	0	0	367	0	5	386	0
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			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00			1.00			0.95		1.00	1.00	
Fr _t	1.00	0.85			1.00			1.00		1.00	1.00	
Flt Protected	0.95	1.00			0.95			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583			1770			3539		1770	1863	
Flt Permitted	0.76	1.00			0.73			1.00		0.49	1.00	
Satd. Flow (perm)	1409	1583			1365			3539		909	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	38	0	37	2	0	0	0	404	0	6	425	0
RTOR Reduction (vph)	0	29	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	39	8	0	0	2	0	0	404	0	6	425	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2							8	
Actuated Green, G (s)	20.0	20.0			20.0			38.0		38.0	38.0	
Effective Green, g (s)	20.0	20.0			20.0			38.0		38.0	38.0	
Actuated g/C Ratio	0.22	0.22			0.22			0.42		0.42	0.42	
Clearance Time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	313	351			303			1494		383	786	
v/s Ratio Prot		0.01						0.11			c0.23	
v/s Ratio Perm	c0.03				0.00					0.01		
v/c Ratio	0.12	0.02			0.01			0.27		0.02	0.54	
Uniform Delay, d ₁	28.0	27.4			27.3			17.0		15.1	19.5	
Progression Factor	1.00	1.00			1.00			0.21		1.00	1.00	
Incremental Delay, d ₂	0.8	0.1			0.0			0.4		0.1	2.7	
Delay (s)	28.8	27.5			27.3			3.9		15.2	22.1	
Level of Service	C	C			C			A		B	C	
Approach Delay (s)		28.2			27.3			3.9			22.0	
Approach LOS		C			C			A			C	
Intersection Summary												
HCM 2000 Control Delay			14.5					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			90.0					Sum of lost time (s)		14.0		
Intersection Capacity Utilization			34.8%					ICU Level of Service		A		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
1: State Street & Grove Street/Olive Street



















2040 PM No Build
05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	50	24	0	138	95	98	764	18	108	359	136
Future Volume (vph)	29	50	24	0	138	95	98	764	18	108	359	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	10	11	12	10	11	12
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.99			0.97		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.94		1.00	1.00		1.00	0.96	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1684			3110		1652	3407		1652	3251	
Flt Permitted		0.74			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1266			3110		1652	3407		1652	3251	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	32	55	26	0	152	104	108	840	20	119	395	150
RTOR Reduction (vph)	0	13	0	0	92	0	0	2	0	0	39	0
Lane Group Flow (vph)	0	100	0	0	165	0	108	858	0	119	506	0
Confl. Peds. (#/hr)	26		11	11		26	20		2	2		20
Confl. Bikes (#/hr)			3			3			7			9
Turn Type	Perm	NA			NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		11.3			11.3		9.1	34.4		9.3	34.6	
Effective Green, g (s)		11.3			11.3		9.1	34.4		9.3	34.6	
Actuated g/C Ratio		0.13			0.13		0.10	0.38		0.10	0.38	
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		1.0	3.0	
Lane Grp Cap (vph)		158			390		167	1302		170	1249	
v/s Ratio Prot					0.05		0.07	c0.25		c0.07	0.16	
v/s Ratio Perm		c0.08										
v/c Ratio		0.63			0.42		0.65	0.66		0.70	0.41	
Uniform Delay, d1		37.4			36.3		38.9	23.0		39.0	20.2	
Progression Factor		1.00			1.00		0.92	0.54		1.26	0.68	
Incremental Delay, d2		8.0			0.7		6.2	1.9		9.0	0.9	
Delay (s)		45.4			37.1		42.1	14.3		58.3	14.6	
Level of Service		D			D		D	B		E	B	
Approach Delay (s)		45.4			37.1			17.4			22.4	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			23.2				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				17.0	
Intersection Capacity Utilization			61.3%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: State Street & Elm Street/Grand Avenue

2040 PM No Build
05/17/2022


















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	322	438	190	153	0	106	0	513	62	0	380	0
Future Volume (vph)	322	438	190	153	0	106	0	513	62	0	380	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	12	12	12	11	12	12	11	12
Total Lost time (s)	5.0	5.0		5.0		5.0		5.0			5.0	
Lane Util. Factor	1.00	0.95		0.97		1.00		0.95			0.95	
Frbp, ped/bikes	1.00	0.97		1.00		1.00		1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00			1.00	
Frt	1.00	0.95		1.00		0.85		0.98			1.00	
Flt Protected	0.95	1.00		0.95		1.00		1.00			1.00	
Satd. Flow (prot)	1770	3291		3204		1583		3359			3421	
Flt Permitted	0.95	1.00		0.95		1.00		1.00			1.00	
Satd. Flow (perm)	1770	3291		3204		1583		3359			3421	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	354	482	209	168	0	117	0	564	68	0	418	0
RTOR Reduction (vph)	0	56	0	0	0	107	0	0	0	0	0	0
Lane Group Flow (vph)	354	635	0	168	0	10	0	632	0	0	418	0
Confl. Peds. (#/hr)	14		58	58		14	37		5	5		37
Confl. Bikes (#/hr)			10			2			4			7
Turn Type	Split	NA		Prot		Prot		NA			NA	
Protected Phases	3	3		8		8		2			6	
Permitted Phases										6		
Actuated Green, G (s)	23.3	23.3		8.0		8.0		24.7			24.7	
Effective Green, g (s)	23.3	23.3		8.0		8.0		24.7			24.7	
Actuated g/C Ratio	0.26	0.26		0.09		0.09		0.27			0.27	
Clearance Time (s)	5.0	5.0		5.0		5.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0			3.0	
Lane Grp Cap (vph)	458	852		284		140		921			938	
v/s Ratio Prot	c0.20	0.19		c0.05		0.01		c0.19			0.12	
v/s Ratio Perm												
v/c Ratio	0.77	0.75		0.59		0.07		0.69			0.45	
Uniform Delay, d1	30.9	30.6		39.4		37.6		29.2			27.0	
Progression Factor	1.00	1.00		1.00		1.00		0.31			0.59	
Incremental Delay, d2	7.9	3.6		3.3		0.2		4.0			1.4	
Delay (s)	38.8	34.2		42.7		37.8		13.1			17.3	
Level of Service	D	C		D		D		B			B	
Approach Delay (s)		35.8			40.7			13.1			17.3	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			27.1		HCM 2000 Level of Service						C	
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					18.0		
Intersection Capacity Utilization			58.6%		ICU Level of Service					B		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: State Street & Court Street

2040 PM No Build

05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	14	20	11	0	11	0	492	11	60	698	0
Future Volume (vph)	27	14	20	11	0	11	0	492	11	60	698	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	12	11	12	10	11	12
Total Lost time (s)		5.0			5.0			3.0		4.0	5.0	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frbp, ped/bikes		0.89			0.98			1.00		1.00	1.00	
Flpb, ped/bikes		0.99			0.93			1.00		1.00	1.00	
Frt		0.96			0.93			1.00		1.00	1.00	
Flt Protected		0.98			0.98			1.00		0.95	1.00	
Satd. Flow (prot)		1426			1552			3407		1644	3421	
Flt Permitted		0.84			0.76			1.00		0.45	1.00	
Satd. Flow (perm)		1232			1212			3407		770	3421	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	30	15	22	12	0	12	0	541	12	66	768	0
RTOR Reduction (vph)	0	0	0	0	20	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	67	0	0	4	0	0	551	0	66	768	0
Confl. Peds. (#/hr)	12		168	168		12	31		10	10		31
Confl. Bikes (#/hr)			8						4			5
Turn Type	Perm	NA		D.Pm	NA			NA		pm+pt	NA	
Protected Phases		7			6			1 2		3	4	
Permitted Phases	7			7						4		
Actuated Green, G (s)		9.6			15.0			36.8		39.0	38.0	
Effective Green, g (s)		9.6			15.0			36.8		39.0	38.0	
Actuated g/C Ratio		0.11			0.17			0.41		0.43	0.42	
Clearance Time (s)		5.0			5.0					4.0	5.0	
Vehicle Extension (s)		3.0			0.2					3.0	3.0	
Lane Grp Cap (vph)		131			202			1393		426	1444	
v/s Ratio Prot								c0.16		0.02	c0.22	
v/s Ratio Perm		c0.05			c0.00					0.05		
v/c Ratio		0.51			0.02			0.40		0.15	0.53	
Uniform Delay, d1		38.0			31.4			18.8		15.8	19.4	
Progression Factor		1.00			1.00			1.61		0.66	0.70	
Incremental Delay, d2		3.3			0.2			0.8		0.1	0.3	
Delay (s)		41.3			31.5			31.1		10.6	13.9	
Level of Service		D			C			C		B	B	
Approach Delay (s)		41.3			31.5			31.1			13.6	
Approach LOS		D			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			21.7									C
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			90.0							22.0		
Intersection Capacity Utilization			42.9%									A
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: State Street & Pitkin Tunnel

2040 PM No Build
05/17/2022






















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	118	160	110	385	609	120
Future Volume (vph)	118	160	110	385	609	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	9	11	11	12
Total Lost time (s)	5.0	5.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	
Fr _t	1.00	0.85	1.00	1.00	0.98	
Fl _t Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1652	1478	1593	3421	4794	
Fl _t Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1652	1478	1593	3421	4794	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	130	176	121	424	670	132
RTOR Reduction (vph)	0	157	0	0	35	0
Lane Group Flow (vph)	130	19	121	424	767	0
Turn Type	Prot	Prot	Prot	NA	NA	
Protected Phases	7	7	1	1 5 6	5 6	
Permitted Phases						
Actuated Green, G (s)	9.6	9.6	9.4	70.4	58.0	
Effective Green, g (s)	9.6	9.6	9.4	70.4	58.0	
Actuated g/C Ratio	0.11	0.11	0.10	0.78	0.64	
Clearance Time (s)	5.0	5.0	3.0			
Vehicle Extension (s)	3.0	3.0	3.0			
Lane Grp Cap (vph)	176	157	166	2675	3089	
v/s Ratio Prot	c0.08	0.01	c0.08	0.12	c0.16	
v/s Ratio Perm						
v/c Ratio	0.74	0.12	0.73	0.16	0.25	
Uniform Delay, d ₁	39.0	36.4	39.1	2.4	6.8	
Progression Factor	1.00	1.00	1.17	0.67	0.04	
Incremental Delay, d ₂	14.9	0.3	19.7	0.1	0.2	
Delay (s)	53.9	36.7	65.3	1.7	0.4	
Level of Service	D	D	E	A	A	
Approach Delay (s)	44.0			15.8	0.4	
Approach LOS	D			B	A	
Intersection Summary						
HCM 2000 Control Delay			13.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.42			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	22.0
Intersection Capacity Utilization			40.6%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: State Street & Chapel Street

2040 PM No Build

05/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	111	60	42	183	49	45	385	28	101	484	189
Future Volume (vph)	61	111	60	42	183	49	45	385	28	101	484	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	11	12	10	11	12	9	11	10
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00			0.95		1.00	0.95		1.00	0.95	1.00
Fr _t		0.97			0.97		1.00	0.99		1.00	1.00	0.85
Fl _t Protected		0.99			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1656			3304		1652	3386		1593	3421	1478
Fl _t Permitted		0.81			0.83		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1366			2760		1652	3386		1593	3421	1478
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	67	122	66	46	201	54	50	424	31	111	532	208
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	255	0	0	301	0	50	455	0	111	532	208
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)		21.3			21.3		4.9	18.4		10.3	23.8	23.8
Effective Green, g (s)		21.3			21.3		4.9	18.4		10.3	23.8	23.8
Actuated g/C Ratio		0.24			0.24		0.05	0.20		0.11	0.26	0.26
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	0.2		3.0	3.0	3.0
Lane Grp Cap (vph)		323			653		89	692		182	904	390
v/s Ratio Prot							0.03	0.13		c0.07	c0.16	
v/s Ratio Perm		c0.19			0.11							0.14
v/c Ratio		0.79			0.46		0.56	0.66		0.61	0.59	0.53
Uniform Delay, d ₁		32.2			29.4		41.5	32.9		37.9	28.8	28.3
Progression Factor		1.00			1.65		1.00	1.00		1.58	0.59	0.61
Incremental Delay, d ₂		12.1			0.5		7.9	4.8		5.5	2.7	5.0
Delay (s)		44.3			49.2		49.4	37.7		65.5	19.7	22.3
Level of Service		D			D		D	D		E	B	C
Approach Delay (s)		44.3			49.2			38.9			26.3	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM 2000 Control Delay			35.7				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				17.0	
Intersection Capacity Utilization			57.5%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 8: State Street & George Street/Fair Street

2040 PM No Build
 05/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↔	↗								↕↔		
Traffic Volume (vph)	0	377	333	0	0	0	0	0	0	51	453	81	
Future Volume (vph)	0	377	333	0	0	0	0	0	0	51	453	81	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	10	10	12	12	12	12	12	12	12	12	12	
Total Lost time (s)		5.5	5.5								5.5		
Lane Util. Factor		0.91	0.91								0.95		
Fr _t		0.96	0.85								0.98		
Flt Protected		1.00	1.00								1.00		
Satd. Flow (prot)		3052	1345								3451		
Flt Permitted		1.00	1.00								1.00		
Satd. Flow (perm)		3052	1345								3451		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	
Adj. Flow (vph)	0	415	366	0	0	0	0	0	0	56	498	89	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	7	0	
Lane Group Flow (vph)	0	543	238	0	0	0	0	0	0	0	636	0	
Turn Type		NA	Perm								Perm	NA	
Protected Phases		4										2	
Permitted Phases			4								2		
Actuated Green, G (s)		24.8	24.8								36.2		
Effective Green, g (s)		24.8	24.8								36.2		
Actuated g/C Ratio		0.25	0.25								0.36		
Clearance Time (s)		5.5	5.5								5.5		
Vehicle Extension (s)		3.0	3.0								3.0		
Lane Grp Cap (vph)		756	333								1249		
v/s Ratio Prot		c0.18											
v/s Ratio Perm			0.18									0.18	
v/c Ratio		0.72	0.71									0.51	
Uniform Delay, d1		34.4	34.4								25.0		
Progression Factor		1.00	1.00								1.00		
Incremental Delay, d2		3.3	7.1								1.5		
Delay (s)		37.7	41.5								26.4		
Level of Service		D	D								C		
Approach Delay (s)		38.8			0.0			0.0			26.4		
Approach LOS		D			A			A			C		
Intersection Summary													
HCM 2000 Control Delay			33.2									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.43										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	15.0
Intersection Capacity Utilization			42.8%									ICU Level of Service	A
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 9: State Street & N. Frontage Road/Water Street

2040 PM No Build
 05/17/2022



Movement	WBL	WBR2	NBR	NBR2	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	138	50	209	155	152	698
Future Volume (vph)	138	50	209	155	152	698
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	12	12	10
Total Lost time (s)	4.9	4.0	5.6		5.5	4.2
Lane Util. Factor	1.00	1.00	0.88		1.00	0.91
Fr _t	1.00	0.85	0.85		1.00	1.00
Fl _t Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1711	1583	2694		1770	4746
Fl _t Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1711	1583	2694		1770	4746
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	152	55	230	170	167	768
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	152	55	401	0	167	768
Turn Type	Perm	Perm	Prot		Prot	NA
Protected Phases			2		1	6
Permitted Phases	4	8	2			
Actuated Green, G (s)	12.3	35.2	21.1		8.6	36.6
Effective Green, g (s)	12.3	35.2	21.1		8.6	36.6
Actuated g/C Ratio	0.15	0.44	0.26		0.11	0.46
Clearance Time (s)	4.9	4.0	5.6		5.5	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	263	696	710		190	2171
v/s Ratio Prot			c0.15		c0.09	0.16
v/s Ratio Perm	c0.09	c0.03				
v/c Ratio	0.58	0.08	0.56		0.88	0.35
Uniform Delay, d ₁	31.4	13.0	25.5		35.2	14.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d ₂	3.1	0.0	3.2		33.7	0.5
Delay (s)	34.5	13.0	28.7		68.9	14.5
Level of Service	C	B	C		E	B
Approach Delay (s)						24.2
Approach LOS						C
Intersection Summary						
HCM 2000 Control Delay			26.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.47			
Actuated Cycle Length (s)			80.0		Sum of lost time (s)	20.0
Intersection Capacity Utilization			32.5%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 11: State Street & Fair Street

2040 PM No Build
 05/17/2022





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	163	0	0	0	20	0	233	9	0	0	0
Future Volume (vph)	265	163	0	0	0	20	0	233	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	13	12	11	12	12	12	12
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	1.00	1.00				1.00		0.91				
Frt	1.00	1.00				0.86		0.99				
Flt Protected	0.95	1.00				1.00		1.00				
Satd. Flow (prot)	1652	1739				1665		4888				
Flt Permitted	0.95	1.00				1.00		1.00				
Satd. Flow (perm)	1652	1739				1665		4888				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	292	179	0	0	0	22	0	256	10	0	0	0
RTOR Reduction (vph)	111	0	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	181	179	0	0	0	22	0	262	0	0	0	0
Turn Type	Perm	NA				Perm		NA				
Protected Phases		4						2				
Permitted Phases	4					8						
Actuated Green, G (s)	62.0	62.0				62.0		30.0				
Effective Green, g (s)	62.0	62.0				62.0		30.0				
Actuated g/C Ratio	0.62	0.62				0.62		0.30				
Clearance Time (s)	4.0	4.0				4.0		4.0				
Vehicle Extension (s)	3.0	3.0				3.0		3.0				
Lane Grp Cap (vph)	1024	1078				1032		1466				
v/s Ratio Prot		0.10						c0.05				
v/s Ratio Perm	c0.11					0.01						
v/c Ratio	0.18	0.17				0.02		0.18				
Uniform Delay, d1	8.1	8.0				7.3		25.9				
Progression Factor	17.48	3.04				1.00		1.00				
Incremental Delay, d2	0.3	0.3				0.0		0.3				
Delay (s)	142.1	24.7				7.3		26.2				
Level of Service	F	C				A		C				
Approach Delay (s)		97.5			7.3			26.2			0.0	
Approach LOS		F			A			C			A	
Intersection Summary												
HCM 2000 Control Delay			69.9				HCM 2000 Level of Service		E			
HCM 2000 Volume to Capacity ratio			0.18									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			42.8%				ICU Level of Service		A			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
17: State Street & Parking & Audubon

2040 PM No Build
05/17/2022

												
Movement	NBL2	NBL	NBR	SEL	SER	SER2	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	4	0	6	44	1	64	0	861	0	0	435	0
Future Volume (vph)	4	0	6	44	1	64	0	861	0	0	435	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			1.00	
Fr _t		0.91		1.00	0.85			1.00			1.00	
Flt Protected		0.98		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1672		1770	1583			3539			1863	
Flt Permitted		0.95		0.95	1.00			1.00			1.00	
Satd. Flow (perm)		1621		1770	1583			3539			1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	4	0	7	48	1	70	0	947	0	0	478	0
RTOR Reduction (vph)	0	7	0	0	48	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	4	0	48	23	0	0	947	0	0	479	0
Turn Type	Perm	Perm		Prot	Perm			NA		Perm	NA	
Protected Phases				6!				4			8	
Permitted Phases	2	2!			6					8		
Actuated Green, G (s)		28.8		28.8	28.8			38.4			38.4	
Effective Green, g (s)		28.8		28.8	28.8			38.4			38.4	
Actuated g/C Ratio		0.32		0.32	0.32			0.43			0.43	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		518		566	506			1509			794	
v/s Ratio Prot				c0.03				c0.27			0.26	
v/s Ratio Perm		0.00			0.01							
v/c Ratio		0.01		0.08	0.05			0.63			0.60	
Uniform Delay, d1		20.9		21.4	21.1			20.2			19.9	
Progression Factor		1.00		1.00	1.00			0.16			1.00	
Incremental Delay, d2		0.0		0.3	0.2			1.5			3.4	
Delay (s)		20.9		21.7	21.3			4.9			23.3	
Level of Service		C		C	C			A			C	
Approach Delay (s)		20.9		21.5				4.9			23.3	
Approach LOS		C		C				A			C	

Intersection Summary

HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group




















HCM Signalized Intersection Capacity Analysis
1: State Street & Grove Street/Olive Street

2040 AM Build
05/18/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	16	18	5	143	71	104	373	4	52	371	228
Future Volume (vph)	9	16	18	5	143	71	104	373	4	52	371	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	13	11	11	11	11	11	11
Total Lost time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.97			1.00	0.84	1.00	1.00		1.00	0.96	
Flpb, ped/bikes		0.98			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.94			1.00	0.85	1.00	1.00		1.00	0.94	
Flt Protected		0.99			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1607			1856	1376	1711	1798		1711	1623	
Flt Permitted		0.87			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1408			1839	1376	1711	1798		1711	1623	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	10	18	20	6	157	78	114	410	4	57	408	251
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	25	0
Lane Group Flow (vph)	0	30	0	0	163	78	114	414	0	57	634	0
Confl. Peds. (#/hr)	27		11	11		27	23		3	3		23
Confl. Bikes (#/hr)			2			11			7			13
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	2	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		10.6			10.6	10.6	8.5	48.4		8.5	48.4	
Effective Green, g (s)		10.6			10.6	10.6	8.5	48.4		8.5	48.4	
Actuated g/C Ratio		0.12			0.12	0.12	0.09	0.54		0.09	0.54	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		1.0	3.0	
Lane Grp Cap (vph)		165			216	162	161	966		161	872	
v/s Ratio Prot							c0.07	0.23		0.03	c0.39	
v/s Ratio Perm		0.02			c0.09	0.06						
v/c Ratio		0.18			0.75	0.48	0.71	0.43		0.35	0.73	
Uniform Delay, d1		35.8			38.4	37.1	39.5	12.5		38.2	15.8	
Progression Factor		1.00			1.00	1.00	0.90	0.68		0.91	0.78	
Incremental Delay, d2		0.5			13.9	2.2	12.2	1.3		0.5	5.2	
Delay (s)		36.3			52.3	39.4	47.8	9.8		35.3	17.6	
Level of Service		D			D	D	D	A		D	B	
Approach Delay (s)		36.3			48.1			18.0			19.0	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			23.8				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				20.0	
Intersection Capacity Utilization			68.2%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 3: State Street & Elm Street/Grand Avenue

















2040 AM Build
 05/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	246	152	144	0	125	0	284	58	29	297	0
Future Volume (vph)	211	246	152	144	0	125	0	284	58	29	297	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	3.0	5.0		5.0		5.0		5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00		1.00		1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.95		1.00		1.00		1.00		1.00	1.00	
Flpb, ped/bikes	0.97	1.00		1.00		1.00		1.00		1.00	1.00	
Frt	1.00	0.94		1.00		0.85		0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1723	3177		1711		1531		1752		1705	1801	
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.37	1.00	
Satd. Flow (perm)	1723	3177		1711		1531		1752		672	1801	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	232	271	167	158	0	138	0	312	64	32	327	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	232	438	0	158	0	138	0	376	0	32	327	0
Confl. Peds. (#/hr)	13		47	47		13	20		6	6		20
Confl. Bikes (#/hr)			5			1			6			8
Turn Type	pm+pt	NA		Prot		Prot		NA		D.Pm		NA
Protected Phases	7	4		3		8		2				6
Permitted Phases	4									2		
Actuated Green, G (s)	34.2	22.4		10.6		23.2		33.0		33.0	42.0	
Effective Green, g (s)	34.2	22.4		10.6		23.2		33.0		33.0	42.0	
Actuated g/C Ratio	0.38	0.25		0.12		0.26		0.37		0.37	0.47	
Clearance Time (s)	3.0	5.0		5.0		5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	654	790		201		394		642		246	840	
v/s Ratio Prot	0.05	c0.14		c0.09		0.09		c0.21			c0.18	
v/s Ratio Perm	0.09									0.05		
v/c Ratio	0.35	0.55		0.79		0.35		0.59		0.13	0.39	
Uniform Delay, d1	20.0	29.5		38.6		27.3		23.0		19.0	15.6	
Progression Factor	1.00	1.00		1.00		1.00		0.40		0.79	0.77	
Incremental Delay, d2	0.3	2.8		18.1		2.4		3.8		0.8	1.0	
Delay (s)	20.3	32.2		56.7		29.7		13.0		15.8	13.1	
Level of Service	C	C		E		C		B		B	B	
Approach Delay (s)		28.1			44.1			13.0			13.3	
Approach LOS		C			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			24.4		HCM 2000 Level of Service						C	
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)						18.0	
Intersection Capacity Utilization			65.3%		ICU Level of Service						C	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: State Street & Court Street

2040 AM Build
05/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	8	20	11	0	26	0	318	15	0	573	0
Future Volume (vph)	15	8	20	11	0	26	0	318	15	0	573	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	11	11	11
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		0.78			0.95			1.00			1.00	
Flpb, ped/bikes		0.99			0.87			1.00			1.00	
Frt		0.94			0.90			0.99			1.00	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1230			1371			1781			1801	
Flt Permitted		0.92			0.94			1.00			1.00	
Satd. Flow (perm)		1149			1303			1781			1801	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	16	9	22	12	0	29	0	350	16	0	630	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	48	0	0	41	0	0	365	0	0	630	0
Confl. Peds. (#/hr)	20		177	177		20	25		21	21		25
Confl. Bikes (#/hr)			5			9			8			7
Turn Type	Perm	NA		Perm	NA			NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		23.0			23.0			57.0			57.0	
Effective Green, g (s)		23.0			23.0			57.0			57.0	
Actuated g/C Ratio		0.26			0.26			0.63			0.63	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			0.2			0.2			0.2	
Lane Grp Cap (vph)		293			332			1127			1140	
v/s Ratio Prot								0.21			c0.35	
v/s Ratio Perm		c0.04			0.03							
v/c Ratio		0.16			0.12			0.32			0.55	
Uniform Delay, d1		26.0			25.8			7.6			9.3	
Progression Factor		1.00			1.00			0.09			0.47	
Incremental Delay, d2		0.3			0.8			0.7			1.7	
Delay (s)		26.3			26.5			1.4			6.0	
Level of Service		C			C			A			A	
Approach Delay (s)		26.3			26.5			1.4			6.0	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.1									
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			90.0								10.0	
Intersection Capacity Utilization			59.0%								B	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: State Street & Pitkin Tunnel

2040 AM Build
05/18/2022






















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	101	98	319	467	137
Future Volume (vph)	14	101	98	319	467	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Fr _t	1.00	0.85	1.00	1.00	0.97	
Fl _t Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1652	1478	1711	1801	1745	
Fl _t Permitted	0.95	1.00	0.31	1.00	1.00	
Satd. Flow (perm)	1652	1478	555	1801	1745	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	15	111	108	351	514	151
RTOR Reduction (vph)	0	83	0	0	0	0
Lane Group Flow (vph)	15	28	108	351	665	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	23.0	23.0	57.0	57.0	57.0	
Effective Green, g (s)	23.0	23.0	57.0	57.0	57.0	
Actuated g/C Ratio	0.26	0.26	0.63	0.63	0.63	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	0.2	0.2	0.2	
Lane Grp Cap (vph)	422	377	351	1140	1105	
v/s Ratio Prot	0.01			0.19	c0.38	
v/s Ratio Perm		c0.02	0.19			
v/c Ratio	0.04	0.08	0.31	0.31	0.60	
Uniform Delay, d ₁	25.2	25.4	7.5	7.5	9.8	
Progression Factor	1.00	1.00	0.60	0.64	0.20	
Incremental Delay, d ₂	0.0	0.1	1.9	0.6	2.1	
Delay (s)	25.2	25.5	6.4	5.4	4.0	
Level of Service	C	C	A	A	A	
Approach Delay (s)	25.5			5.6	4.0	
Approach LOS	C			A	A	
Intersection Summary						
HCM 2000 Control Delay			6.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			77.9%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: State Street & Chapel Street

2040 AM Build
05/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	52	41	41	186	80	46	288	12	51	362	142
Future Volume (vph)	49	52	41	41	186	80	46	288	12	51	362	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	11	11	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.79		1.00	0.94		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	0.91	1.00		0.60	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.95		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1612	1328		1028	1619		1711	1776		1711	1665	
Flt Permitted	0.32	1.00		0.69	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	545	1328		748	1619		1711	1776		1711	1665	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	54	57	45	45	205	88	51	317	13	56	398	156
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	102	0	45	293	0	51	330	0	56	554	0
Confl. Peds. (#/hr)	118		184	184		118	39		72	72		39
Confl. Bikes (#/hr)			6			13			3			11
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	19.5	19.5		19.5	19.5		6.7	31.9		6.7	48.8	
Effective Green, g (s)	19.5	19.5		19.5	19.5		6.7	31.9		6.7	48.8	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.07	0.35		0.07	0.54	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	3.0	
Lane Grp Cap (vph)	118	287		162	350		127	629		127	902	
v/s Ratio Prot		0.08			c0.18		0.03	0.19		c0.03	c0.33	
v/s Ratio Perm	0.10			0.06								
v/c Ratio	0.46	0.36		0.28	0.84		0.40	0.52		0.44	0.61	
Uniform Delay, d1	30.7	29.9		29.4	33.7		39.7	23.0		39.9	14.1	
Progression Factor	1.00	1.00		0.83	0.87		1.35	1.06		0.72	0.97	
Incremental Delay, d2	2.8	0.8		0.9	14.8		1.7	2.6		2.1	2.7	
Delay (s)	33.5	30.7		25.3	44.3		55.4	27.0		30.7	16.4	
Level of Service	C	C		C	D		E	C		C	B	
Approach Delay (s)		31.6			41.8			30.8			17.7	
Approach LOS		C			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			28.0				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				17.0	
Intersection Capacity Utilization			77.8%				ICU Level of Service				D	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: State Street & George Street/Fair Street

2040 AM Build
05/18/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↕	↗↘		↕			↕			↕↔			
Traffic Volume (vph)	180	82	213	50	50	30	0	235	3	31	260	70		
Future Volume (vph)	180	82	213	50	50	30	0	235	3	31	260	70		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	10	10	10	10	10	10	11	11	11	11	11	11		
Total Lost time (s)		5.0	5.0		5.0			5.0			5.0			
Lane Util. Factor		1.00	0.88		1.00			1.00			0.95			
Frbp, ped/bikes		1.00	0.94		0.98			1.00			0.98			
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00			
Frt		1.00	0.85		0.97			1.00			0.97			
Flt Protected		0.97	1.00		0.98			1.00			1.00			
Satd. Flow (prot)		1681	2453		1623			1797			3221			
Flt Permitted		0.97	1.00		0.98			1.00			0.91			
Satd. Flow (perm)		1681	2453		1623			1797			2930			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%		
Adj. Flow (vph)	198	90	234	55	55	33	0	258	3	34	286	77		
RTOR Reduction (vph)	0	0	0	0	13	0	0	1	0	0	0	0		
Lane Group Flow (vph)	0	288	234	0	130	0	0	261	0	0	397	0		
Confl. Peds. (#/hr)	21		16	16		21	18		12	12		18		
Confl. Bikes (#/hr)			1						1			11		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0		
Turn Type	Split	NA	Perm	Split	NA			NA		Perm	NA			
Protected Phases	4	4		8	8			2			6			
Permitted Phases			4							6				
Actuated Green, G (s)		20.0	20.0		12.1			25.0			25.0			
Effective Green, g (s)		20.0	20.0		12.1			25.0			25.0			
Actuated g/C Ratio		0.22	0.22		0.13			0.28			0.28			
Clearance Time (s)		5.0	5.0		5.0			5.0			5.0			
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0			
Lane Grp Cap (vph)		373	545		218			499			813			
v/s Ratio Prot		c0.17			c0.08			c0.15						
v/s Ratio Perm			0.10								0.14			
v/c Ratio		0.77	0.43		0.60			0.52			0.49			
Uniform Delay, d1		32.9	30.1		36.7			27.5			27.2			
Progression Factor		1.00	1.00		0.97			1.60			0.67			
Incremental Delay, d2		9.5	0.5		4.3			3.8			1.8			
Delay (s)		42.4	30.6		40.0			47.8			19.9			
Level of Service		D	C		D			D			B			
Approach Delay (s)		37.1			40.0			47.8			19.9			
Approach LOS		D			D			D			B			
Intersection Summary														
HCM 2000 Control Delay			34.4									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.50											
Actuated Cycle Length (s)			90.0								19.0		Sum of lost time (s)	
Intersection Capacity Utilization			60.4%										ICU Level of Service	B
Analysis Period (min)			15											
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis
 9: N. Frontage Road/Water Street & State Street



















2040 AM Build
 05/18/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations				↖		↗		↑	↗	↖	↑↑		
Traffic Volume (vph)	0	0	0	139	0	60	0	206	89	45	421	0	
Future Volume (vph)	0	0	0	139	0	60	0	206	89	45	421	0	
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	5.0	5.0	5.0		
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	0.95		
Frbp, ped/bikes				1.00		0.93		1.00	0.94	1.00	1.00		
Flpb, ped/bikes				1.00		1.00		1.00	1.00	0.98	1.00		
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)				1711		1416		1801	1442	1669	3421		
Flt Permitted				0.95		1.00		1.00	1.00	0.59	1.00		
Satd. Flow (perm)				1711		1416		1801	1442	1038	3421		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	
Adj. Flow (vph)	0	0	0	153	0	66	0	227	98	50	463	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	153	0	66	0	227	98	50	463	0	
Confl. Peds. (#/hr)				17		15	46		14	14		46	
Confl. Bikes (#/hr)						2			5			9	
Turn Type				Prot		Perm		NA	Perm	Perm		NA	
Protected Phases				3				2				6	
Permitted Phases						8			2	6			
Actuated Green, G (s)				13.2		13.2		42.8	42.8	42.8		42.8	
Effective Green, g (s)				13.2		13.2		42.8	42.8	42.8		42.8	
Actuated g/C Ratio				0.15		0.15		0.48	0.48	0.48		0.48	
Clearance Time (s)				5.0		5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)				3.0		3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)				250		207		856	685	493		1626	
v/s Ratio Prot				c0.09				0.13				c0.14	
v/s Ratio Perm						0.05			0.07	0.05			
v/c Ratio				0.61		0.32		0.27	0.14	0.10		0.28	
Uniform Delay, d1				36.0		34.4		14.2	13.3	13.0		14.3	
Progression Factor				1.00		1.00		1.00	1.00	0.40		0.40	
Incremental Delay, d2				4.4		0.9		0.8	0.4	0.4		0.4	
Delay (s)				40.4		35.3		14.9	13.7	5.6		6.2	
Level of Service				D		D		B	B	A		A	
Approach Delay (s)		0.0			38.8			14.6				6.1	
Approach LOS		A			D			B				A	
Intersection Summary													
HCM 2000 Control Delay				15.5								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio				0.26									
Actuated Cycle Length (s)				90.0								Sum of lost time (s)	13.0
Intersection Capacity Utilization				40.1%								ICU Level of Service	A
Analysis Period (min)				15									
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 26: State Street & Audobon Street





















2040 AM Build
 05/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	0	34	0	0	4	0	375	4	5	386	0
Future Volume (vph)	35	0	34	0	0	4	0	375	4	5	386	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	14	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.95			1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		0.94	1.00	
Frt	1.00	0.85			0.86			1.00		1.00	1.00	
Flt Protected	0.95	1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1711	1447			1719			1747		1613	1786	
Flt Permitted	0.76	1.00			1.00			1.00		0.49	1.00	
Satd. Flow (perm)	1360	1447			1719			1747		831	1786	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	38	0	37	0	0	4	0	412	4	6	425	0
RTOR Reduction (vph)	0	30	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	39	7	0	0	1	0	0	417	0	6	425	0
Confl. Peds. (#/hr)			14	14					10	45		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	7	0	0	2	0
Turn Type	Perm	NA			NA			NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2						8		
Actuated Green, G (s)	18.0	18.0			18.0			62.0		62.0	62.0	
Effective Green, g (s)	18.0	18.0			18.0			62.0		62.0	62.0	
Actuated g/C Ratio	0.20	0.20			0.20			0.69		0.69	0.69	
Clearance Time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	272	289			343			1203		572	1230	
v/s Ratio Prot		0.01			0.00			c0.24			0.24	
v/s Ratio Perm	c0.03									0.01		
v/c Ratio	0.14	0.03			0.00			0.35		0.01	0.35	
Uniform Delay, d1	29.7	28.9			28.8			5.7		4.4	5.7	
Progression Factor	1.00	1.00			1.00			0.27		1.00	1.00	
Incremental Delay, d2	1.1	0.2			0.0			0.7		0.0	0.2	
Delay (s)	30.8	29.1			28.8			2.3		4.4	5.9	
Level of Service	C	C			C			A		A	A	
Approach Delay (s)		30.0			28.8			2.3			5.9	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.3									A
HCM 2000 Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			90.0							10.0		
Intersection Capacity Utilization			45.7%									A
Analysis Period (min)			15									

c Critical Lane Group




















HCM Signalized Intersection Capacity Analysis
 1: State Street & Grove Street/Olive Street

2040 PM Build
 2040 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	50	24	0	138	95	98	764	18	108	359	136
Future Volume (vph)	29	50	24	0	138	95	98	764	18	108	359	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	13	11	11	11	11	11	11
Total Lost time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			1.00	0.84	1.00	1.00		1.00	0.97	
Flpb, ped/bikes		0.98			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97			1.00	0.85	1.00	1.00		1.00	0.96	
Flt Protected		0.99			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1654			1863	1379	1711	1794		1711	1667	
Flt Permitted		0.72			1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1205			1863	1379	1711	1794		1711	1667	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	32	55	26	0	152	104	108	840	20	119	395	150
RTOR Reduction (vph)	0	12	0	0	0	0	0	1	0	0	11	0
Lane Group Flow (vph)	0	101	0	0	152	105	108	859	0	119	534	0
Confl. Peds. (#/hr)	27		11	11		27	23		3	3		23
Confl. Bikes (#/hr)			2			11			7			13
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	2	0
Turn Type	Perm	NA			NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		11.4			11.4	11.4	8.8	51.6		8.0	50.8	
Effective Green, g (s)		11.4			11.4	11.4	8.8	51.6		8.0	50.8	
Actuated g/C Ratio		0.13			0.13	0.13	0.10	0.57		0.09	0.56	
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		1.0	3.0	
Lane Grp Cap (vph)		152			235	174	167	1028		152	940	
v/s Ratio Prot					0.08		0.06	c0.48		c0.07	0.32	
v/s Ratio Perm		c0.08				0.08						
v/c Ratio		0.66			0.65	0.60	0.65	0.84		0.78	0.57	
Uniform Delay, d1		37.5			37.4	37.2	39.1	15.7		40.1	12.6	
Progression Factor		1.00			1.00	1.00	1.39	1.34		1.15	0.77	
Incremental Delay, d2		10.4			6.0	5.8	2.1	2.1		20.5	2.4	
Delay (s)		47.8			43.4	43.0	56.2	23.2		66.5	12.1	
Level of Service		D			D	D	E	C		E	B	
Approach Delay (s)		47.8			43.2			26.9			21.9	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			28.5				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				20.0	
Intersection Capacity Utilization			84.7%				ICU Level of Service				E	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
3: State Street & Elm Street/Grand Avenue

















2040 PM Build
2040 PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	322	438	190	153	0	106	0	513	62	60	320	0	
Future Volume (vph)	322	438	190	153	0	106	0	513	62	60	320	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	11	11	11	11	11	11	11	11	11	11	
Total Lost time (s)	3.0	5.0		5.0		4.0		5.0		4.0	5.0		
Lane Util. Factor	1.00	0.95		1.00		1.00		1.00		1.00	1.00		
Frbp, ped/bikes	1.00	0.96		1.00		1.00		1.00		1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00		
Frt	1.00	0.95		1.00		0.85		0.99		1.00	1.00		
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	1.00		
Satd. Flow (prot)	1770	3250		1711		1531		1770		1711	1801		
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.95	1.00		
Satd. Flow (perm)	1770	3250		1711		1531		1770		1711	1801		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	
Adj. Flow (vph)	354	482	209	168	0	117	0	564	68	66	352	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	354	691	0	168	0	117	0	632	0	66	352	0	
Confl. Peds. (#/hr)	13		47	47		13	20		6	6		20	
Confl. Bikes (#/hr)			5			1			6			8	
Turn Type	Prot	NA		Prot		pt+ov		NA		Prot	NA		
Protected Phases	7	4		3		1 8		2		1	6		
Permitted Phases													
Actuated Green, G (s)	17.0	21.0		9.0		25.0		29.0		5.0	45.0		
Effective Green, g (s)	17.0	21.0		9.0		20.0		29.0		5.0	45.0		
Actuated g/C Ratio	0.19	0.23		0.10		0.22		0.32		0.06	0.50		
Clearance Time (s)	3.0	5.0		5.0				5.0		4.0	5.0		
Vehicle Extension (s)	3.0	3.0		3.0				3.0		3.0	3.0		
Lane Grp Cap (vph)	334	758		171		340		570		95	900		
v/s Ratio Prot	c0.20	c0.21		0.10		0.08		c0.36		c0.04	c0.20		
v/s Ratio Perm													
v/c Ratio	1.06	0.91		0.98		0.34		1.11		0.69	0.39		
Uniform Delay, d1	36.5	33.6		40.4		29.5		30.5		41.8	14.0		
Progression Factor	1.00	1.00		1.00		1.00		0.69		1.48	0.32		
Incremental Delay, d2	65.9	17.1		63.3		0.6		69.7		17.1	1.1		
Delay (s)	102.4	50.7		103.7		30.1		90.8		79.1	5.5		
Level of Service	F	D		F		C		F		E	A		
Approach Delay (s)		68.2			73.5			90.8			17.1		
Approach LOS		E			E			F			B		
Intersection Summary													
HCM 2000 Control Delay			65.9									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.05										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	21.0
Intersection Capacity Utilization			84.4%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4: State Street & Court Street

2040 PM Build
2040 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	14	20	11	0	11	0	492	11	0	698	0
Future Volume (vph)	27	14	20	11	0	11	0	492	11	0	698	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	11	11	11
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		0.84			0.96			1.00			1.00	
Flpb, ped/bikes		0.98			0.79			1.00			1.00	
Frt		0.96			0.93			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1342			1287			1791			1801	
Flt Permitted		0.89			0.89			1.00			1.00	
Satd. Flow (perm)		1216			1179			1791			1801	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	30	15	22	12	0	12	0	541	12	0	768	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	67	0	0	24	0	0	552	0	0	768	0
Confl. Peds. (#/hr)	20		177	177		20	25		21	21		25
Confl. Bikes (#/hr)			5			9			8			7
Turn Type	Perm	NA		Perm	NA			NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		23.0			23.0			57.0			57.0	
Effective Green, g (s)		23.0			23.0			57.0			57.0	
Actuated g/C Ratio		0.26			0.26			0.63			0.63	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			0.2			0.2			0.2	
Lane Grp Cap (vph)		310			301			1134			1140	
v/s Ratio Prot								0.31			c0.43	
v/s Ratio Perm		c0.06			0.02							
v/c Ratio		0.22			0.08			0.49			0.67	
Uniform Delay, d1		26.4			25.5			8.7			10.6	
Progression Factor		1.00			1.00			0.78			0.81	
Incremental Delay, d2		0.4			0.5			1.4			2.4	
Delay (s)		26.7			26.0			8.2			11.0	
Level of Service		C			C			A			B	
Approach Delay (s)		26.7			26.0			8.2			11.0	
Approach LOS		C			C			A			B	
Intersection Summary												
HCM 2000 Control Delay			10.9									B
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			90.0								10.0	
Intersection Capacity Utilization			66.2%								C	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 5: State Street & Pitkin Tunnel

2040 PM Build
 2040 PM Peak Hour























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	160	118	110	385	609	120
Future Volume (vph)	160	118	110	385	609	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1652	1478	1711	1801	1761	
Flt Permitted	0.95	1.00	0.23	1.00	1.00	
Satd. Flow (perm)	1652	1478	407	1801	1761	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	176	130	121	424	670	132
RTOR Reduction (vph)	0	97	0	0	0	0
Lane Group Flow (vph)	176	33	121	424	802	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	23.0	23.0	57.0	57.0	57.0	
Effective Green, g (s)	23.0	23.0	57.0	57.0	57.0	
Actuated g/C Ratio	0.26	0.26	0.63	0.63	0.63	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	0.2	0.2	0.2	
Lane Grp Cap (vph)	422	377	257	1140	1115	
v/s Ratio Prot	c0.11			0.24	c0.46	
v/s Ratio Perm		0.02	0.30			
v/c Ratio	0.42	0.09	0.47	0.37	0.72	
Uniform Delay, d1	27.9	25.5	8.6	7.9	11.1	
Progression Factor	1.00	1.00	0.57	0.56	0.21	
Incremental Delay, d2	0.7	0.1	4.5	0.7	3.0	
Delay (s)	28.6	25.6	9.4	5.1	5.4	
Level of Service	C	C	A	A	A	
Approach Delay (s)	27.3			6.0	5.4	
Approach LOS	C			A	A	
Intersection Summary						
HCM 2000 Control Delay			9.7		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			84.9%		ICU Level of Service	E
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: State Street & Chapel Street



















2040 PM Build
2040 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	111	60	42	183	49	45	385	28	101	484	189
Future Volume (vph)	61	111	60	42	183	49	45	385	28	101	484	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	11	11	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	0.81		1.00	0.95		1.00	0.99		1.00	0.97	
Flpb, ped/bikes	0.88	1.00		0.65	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.97		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1557	1386		1111	1653		1711	1758		1711	1665	
Flt Permitted	0.37	1.00		0.52	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	605	1386		605	1653		1711	1758		1711	1665	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	67	122	66	46	201	54	50	424	31	111	532	208
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	67	188	0	46	255	0	50	455	0	111	740	0
Confl. Peds. (#/hr)	118		184	184		118	39		72	72		39
Confl. Bikes (#/hr)			6			13			3			11
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	17.9	17.9		17.9	17.9		4.3	31.9		8.9	48.8	
Effective Green, g (s)	17.9	17.9		17.9	17.9		4.3	31.9		8.9	48.8	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.05	0.35		0.10	0.54	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	3.0	
Lane Grp Cap (vph)	120	275		120	328		81	623		169	902	
v/s Ratio Prot		0.14			c0.15		0.03	0.26		c0.06	c0.44	
v/s Ratio Perm	0.11			0.08								
v/c Ratio	0.56	0.68		0.38	0.78		0.62	0.73		0.66	0.82	
Uniform Delay, d1	32.5	33.4		31.3	34.2		42.0	25.3		39.1	17.0	
Progression Factor	1.00	1.00		1.00	1.00		1.05	0.68		1.34	0.59	
Incremental Delay, d2	5.5	6.9		2.0	11.0		8.1	4.5		7.1	6.7	
Delay (s)	38.0	40.3		33.3	45.2		52.1	21.6		59.6	16.8	
Level of Service	D	D		C	D		D	C		E	B	
Approach Delay (s)		39.7			43.4			24.7			22.4	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			28.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			21.0			
Intersection Capacity Utilization			85.2%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 8: State Street & George Street/Fair Street

2040 PM Build
 2040 PM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	265	163	333	50	50	20	0	233	9	51	453	81		
Future Volume (vph)	265	163	333	50	50	20	0	233	9	51	453	81		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	10	10	10	10	10	10	11	11	11	11	11	11		
Total Lost time (s)		5.0	5.0		5.0			5.0			5.0			
Lane Util. Factor		1.00	0.88		1.00			1.00			0.95			
Frb, ped/bikes		1.00	0.95		0.99			1.00			0.99			
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00			
Frt		1.00	0.85		0.98			0.99			0.98			
Flt Protected		0.97	1.00		0.98			1.00			1.00			
Satd. Flow (prot)		1686	2469		1643			1787			3266			
Flt Permitted		0.97	1.00		0.98			1.00			0.84			
Satd. Flow (perm)		1686	2469		1643			1787			2747			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%		
Adj. Flow (vph)	292	179	366	55	55	22	0	256	10	56	498	89		
RTOR Reduction (vph)	0	0	0	0	9	0	0	1	0	0	0	0		
Lane Group Flow (vph)	0	471	366	0	123	0	0	265	0	0	643	0		
Confl. Peds. (#/hr)	21		16	16		21	18		12	12		18		
Confl. Bikes (#/hr)			1						1			11		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0		
Turn Type	Split	NA	Perm	Split	NA			NA		Perm	NA			
Protected Phases	4	4		8	8			2			6			
Permitted Phases			4							6				
Actuated Green, G (s)		24.0	24.0		11.8			25.0			25.0			
Effective Green, g (s)		24.0	24.0		11.8			25.0			25.0			
Actuated g/C Ratio		0.27	0.27		0.13			0.28			0.28			
Clearance Time (s)		5.0	5.0		5.0			5.0			5.0			
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0			
Lane Grp Cap (vph)		449	658		215			496			763			
v/s Ratio Prot		c0.28			c0.08			0.15						
v/s Ratio Perm			0.15								c0.23			
v/c Ratio		1.05	0.56		0.57			0.53			0.84			
Uniform Delay, d1		33.0	28.4		36.7			27.6			30.6			
Progression Factor		1.00	1.00		1.00			1.44			0.70			
Incremental Delay, d2		55.9	1.0		3.7			4.0			8.4			
Delay (s)		88.9	29.4		40.4			43.8			29.9			
Level of Service		F	C		D			D			C			
Approach Delay (s)		62.9			40.4			43.8			29.9			
Approach LOS		E			D			D			C			
Intersection Summary														
HCM 2000 Control Delay			47.3									HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio			0.75											
Actuated Cycle Length (s)			90.0								19.0			
Intersection Capacity Utilization			85.4%										ICU Level of Service	E
Analysis Period (min)			15											
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis
 9: N. Frontage Road/Water Street & State Street




















2040 PM Build
 2040 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations				↖		↗		↑	↗	↖	↑↑		
Traffic Volume (vph)	0	0	0	138	0	50	0	209	155	152	698	0	
Future Volume (vph)	0	0	0	138	0	50	0	209	155	152	698	0	
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	5.0	5.0	5.0		
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	0.95		
Frbp, ped/bikes				1.00		0.92		1.00	0.94	1.00	1.00		
Flpb, ped/bikes				1.00		1.00		1.00	1.00	0.98	1.00		
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)				1711		1415		1801	1442	1669	3421		
Flt Permitted				0.95		1.00		1.00	1.00	0.59	1.00		
Satd. Flow (perm)				1711		1415		1801	1442	1033	3421		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	
Adj. Flow (vph)	0	0	0	152	0	55	0	230	170	167	768	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	152	0	55	0	230	171	167	768	0	
Confl. Peds. (#/hr)				17		15	46		14	14		46	
Confl. Bikes (#/hr)						2			5			9	
Turn Type				Prot		Perm		NA	Perm	Perm		NA	
Protected Phases				3				2				6	
Permitted Phases						8			2	6			
Actuated Green, G (s)				13.1		13.1		42.9	42.9	42.9		42.9	
Effective Green, g (s)				13.1		13.1		42.9	42.9	42.9		42.9	
Actuated g/C Ratio				0.15		0.15		0.48	0.48	0.48		0.48	
Clearance Time (s)				5.0		5.0		5.0	5.0	5.0		5.0	
Vehicle Extension (s)				3.0		3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)				249		205		858	687	492		1630	
v/s Ratio Prot				c0.09				0.13				c0.22	
v/s Ratio Perm						0.04			0.12	0.16			
v/c Ratio				0.61		0.27		0.27	0.25	0.34		0.47	
Uniform Delay, d1				36.1		34.2		14.1	14.0	14.7		15.9	
Progression Factor				1.00		1.00		1.00	1.00	0.49		0.44	
Incremental Delay, d2				4.4		0.7		0.8	0.9	1.3		0.7	
Delay (s)				40.4		34.9		14.9	14.8	8.5		7.8	
Level of Service				D		C		B	B	A		A	
Approach Delay (s)		0.0			39.0			14.9				7.9	
Approach LOS		A			D			B				A	
Intersection Summary													
HCM 2000 Control Delay				13.9								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio				0.37									
Actuated Cycle Length (s)				90.0								Sum of lost time (s)	13.0
Intersection Capacity Utilization				45.2%								ICU Level of Service	A
Analysis Period (min)				15									
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
17: State Street & Audobon Street

2040 PM Build
2040 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	1	71	5	0	12	0	861	0	0	435	0
Future Volume (vph)	57	1	71	5	0	12	0	861	0	0	435	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	14	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frbp, ped/bikes	1.00	0.95			1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00			0.99			1.00			1.00	
Frt	1.00	0.85			0.91			1.00			1.00	
Flt Protected	0.95	1.00			0.98			1.00			1.00	
Satd. Flow (prot)	1711	1452			1758			1750			1786	
Flt Permitted	0.75	1.00			0.93			1.00			1.00	
Satd. Flow (perm)	1341	1452			1663			1750			1786	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	63	1	78	6	0	13	0	947	0	0	478	0
RTOR Reduction (vph)	0	62	0	0	15	0	0	0	0	0	0	0
Lane Group Flow (vph)	63	17	0	0	4	0	0	947	0	0	479	0
Confl. Peds. (#/hr)			14	14					10	45		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	7	0	0	2	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2						8		
Actuated Green, G (s)	18.0	18.0			18.0			62.0			62.0	
Effective Green, g (s)	18.0	18.0			18.0			62.0			62.0	
Actuated g/C Ratio	0.20	0.20			0.20			0.69			0.69	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	268	290			332			1205			1230	
v/s Ratio Prot		0.01						c0.54			0.27	
v/s Ratio Perm	c0.05				0.00							
v/c Ratio	0.24	0.06			0.01			0.79			0.39	
Uniform Delay, d1	30.2	29.1			28.9			9.5			6.0	
Progression Factor	1.00	1.00			1.00			0.79			1.00	
Incremental Delay, d2	2.1	0.4			0.1			3.2			0.2	
Delay (s)	32.3	29.5			28.9			10.7			6.2	
Level of Service	C	C			C			B			A	
Approach Delay (s)		30.7			28.9			10.7			6.2	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM 2000 Control Delay			11.3									B
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			90.0								10.0	
Intersection Capacity Utilization			73.2%									D
Analysis Period (min)			15									

c Critical Lane Group