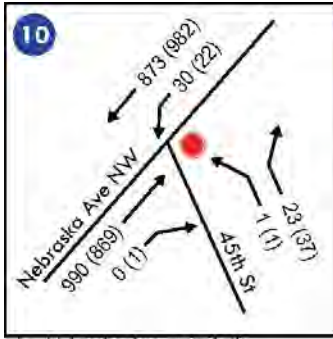
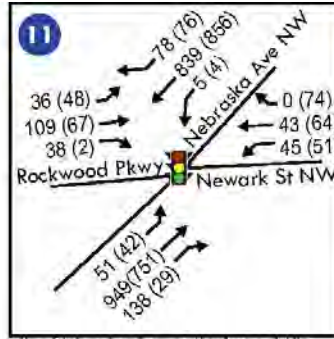


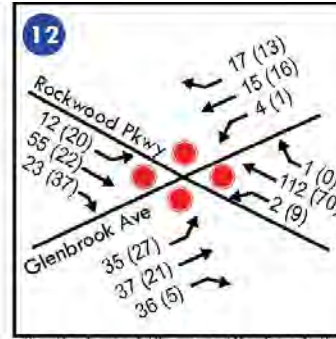
Figure 5-2 Existing Intersection Peak Hour Traffic Volumes



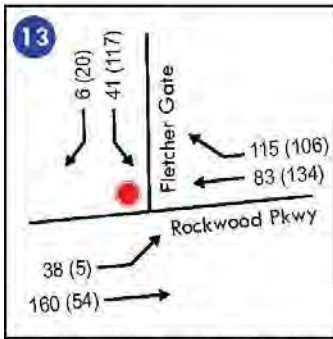
1. Nebraska Ave. at 45th St.



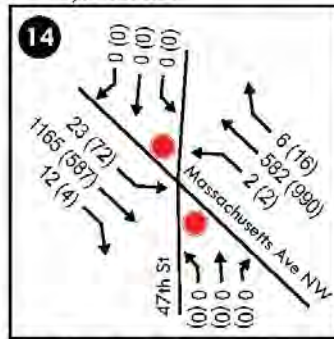
2. Nebraska Ave. at Rockwood Pkwy/Newark St.



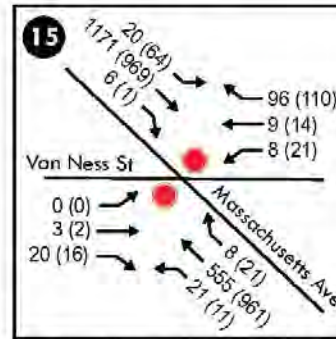
3. Rockwood Pkwy at Glenbrook Rd.



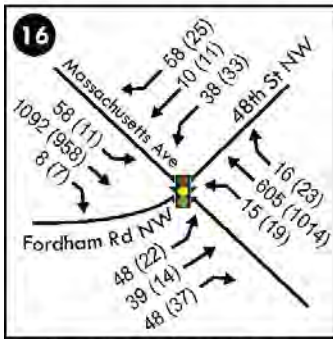
4. Rockwood Pkwy at Fletcher Gate



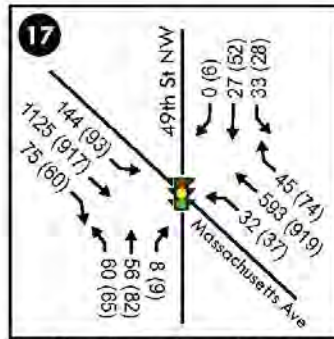
5. Massachusetts Ave. at 47th St.



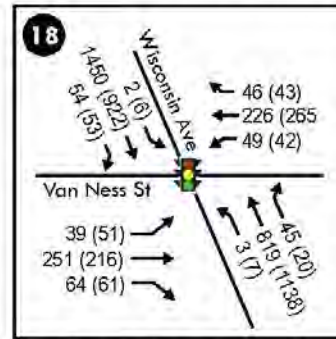
6. Massachusetts Ave. at Van Ness St.



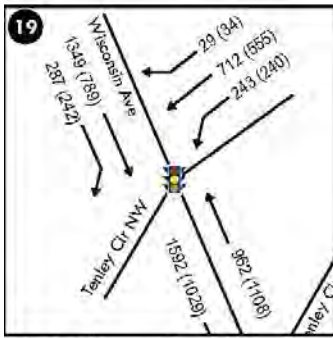
7. Massachusetts Ave. at 48th St.



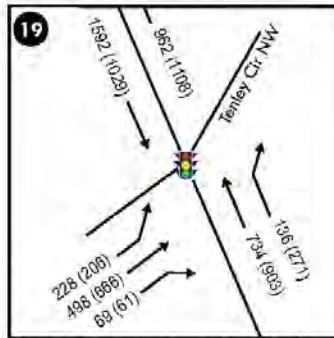
8. Massachusetts Ave. at 49th St.



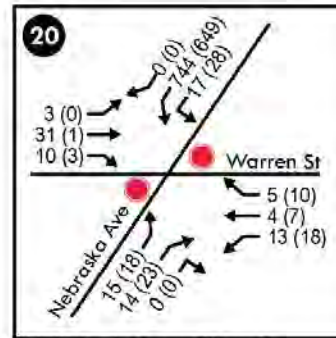
9. Wisconsin Ave. at Van Ness St.



10. (A) Wisconsin Ave. at Nebraska Ave. (Tenley Circle) North

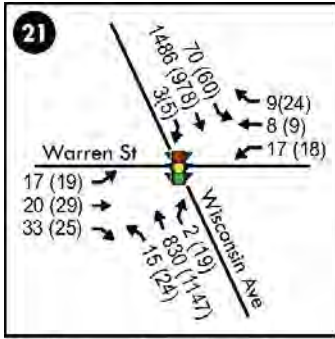


11. (B) Wisconsin Ave. at Nebraska Ave. (Tenley Circle) South

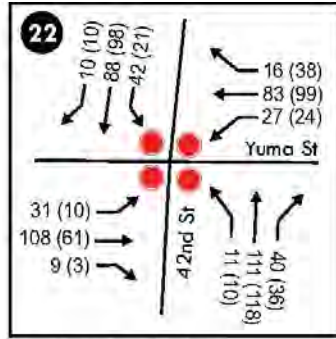


11. Nebraska Ave. at Warren St.

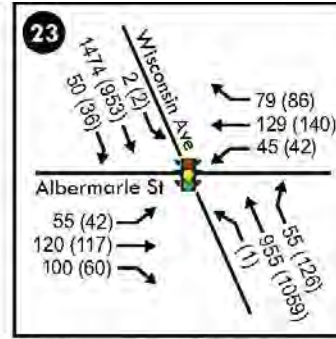
Figure 5-3 Existing Intersection Peak Hour Traffic Volumes



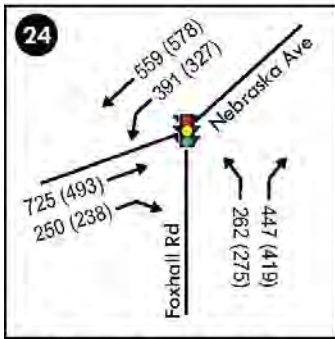
1. Wisconsin Ave. at Warren St.



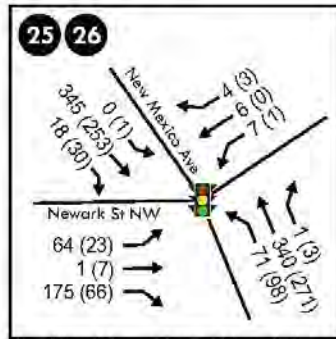
2. Yuma St. at 42nd St.



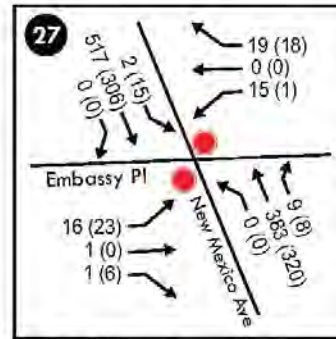
3. Wisconsin Ave. at Albermarle St.



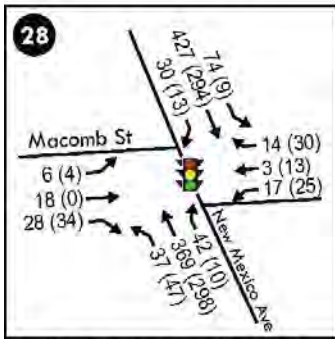
4. Nebraska Ave. at Foxhall Rd.



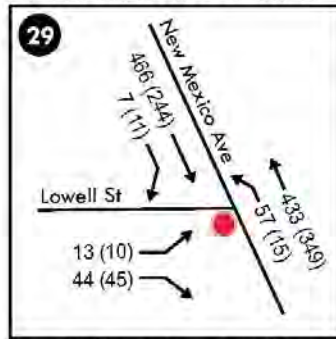
5. New Mexico Ave. at Newark St.
6. New Mexico Ave. at Westover Pl.



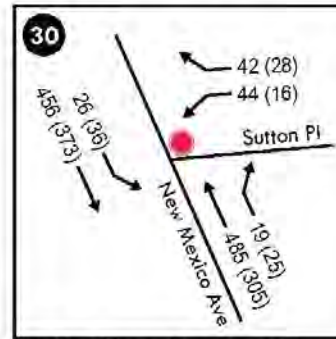
7. New Mexico Ave. at 44th St.



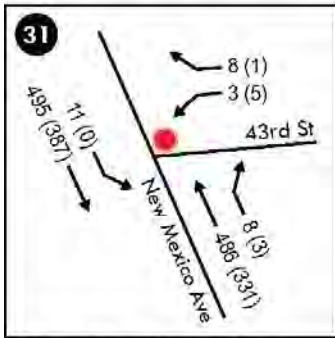
8. New Mexico Ave. at Macomb St.



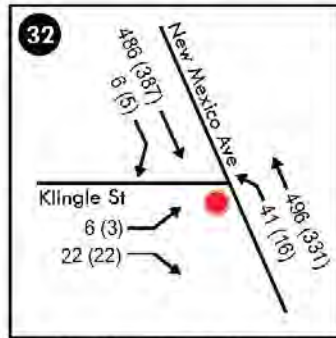
9. New Mexico Ave. at Lowell St.



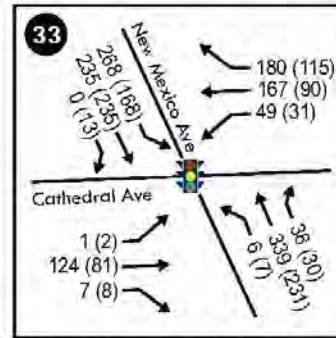
10. New Mexico Ave. at Sutton Pl.



11. New Mexico Ave. at 43rd St.

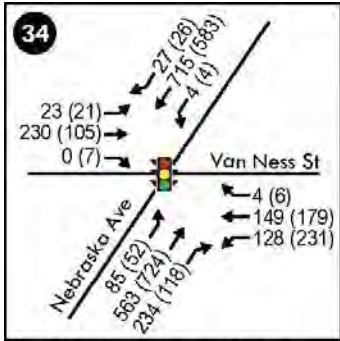


12. New Mexico Ave. at Klinge St.

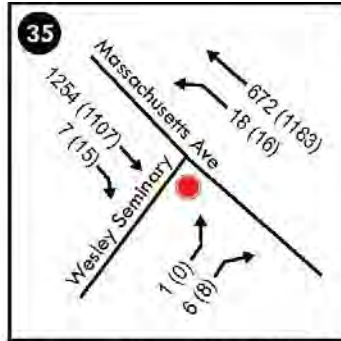


13. New Mexico Ave. at Cathedral Ave.

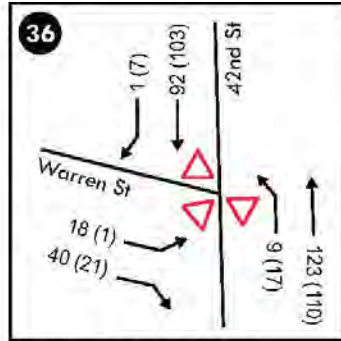
Figure 5-4 Existing Intersection Peak Hour Traffic Volumes



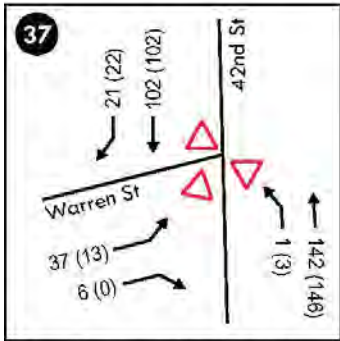
1. Nebraska Ave. at Van Ness St.



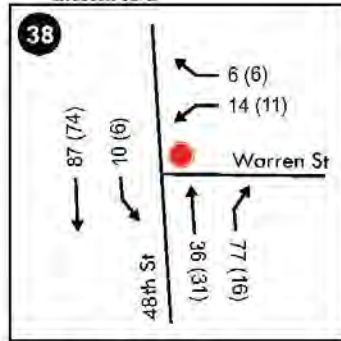
2. Wesley Seminary Drive at Massachusetts Ave.



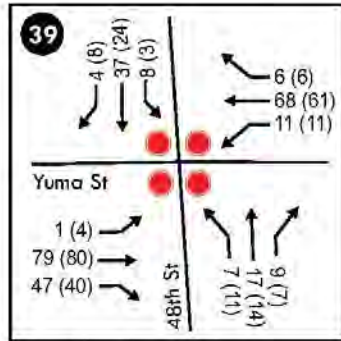
3. Warren St at 42nd St - SB



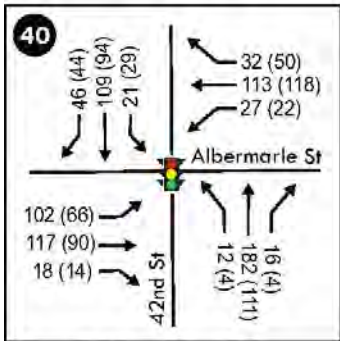
4. Warren St at 42nd St - NB



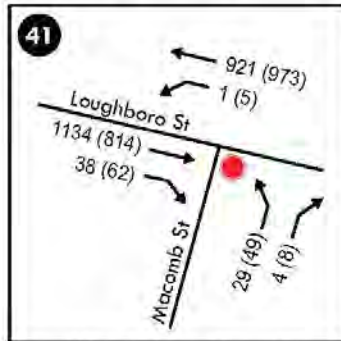
5. Warren St at 48th St.



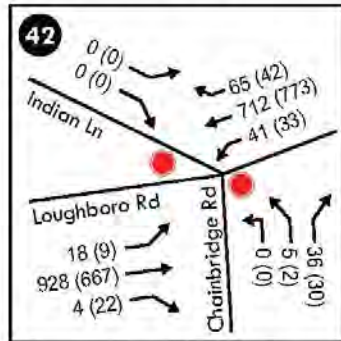
6. Yuma St at 48th St.



7. 42nd St. at Albermarle St.



8. Nebraska Ave. at Macomb St.



9. Loughboro Rd/Nebraska Ave. at Indian Ln./Chain bridge Rd.

G. 2021 Turning Movement Counts

Appendix G - 2021 Turning Movement Counts

Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Landmark Housing at Wesley Theology
 Project # : 2997-001
 Location : Washington DC
 Data Source : Gorove/Slade Associates, Inc.

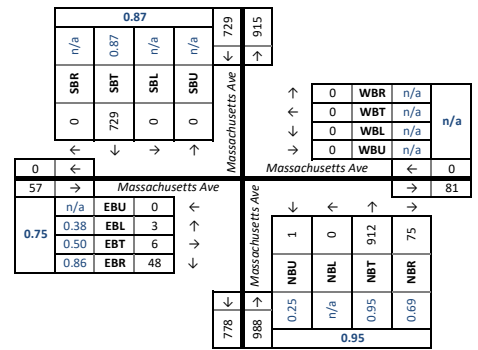
Analysis Period : STUDY PERIOD
 Date of Counts : Wednesday, September 22, 2021
 Weather : Cloudy

04:00 PM to 07:00 PM

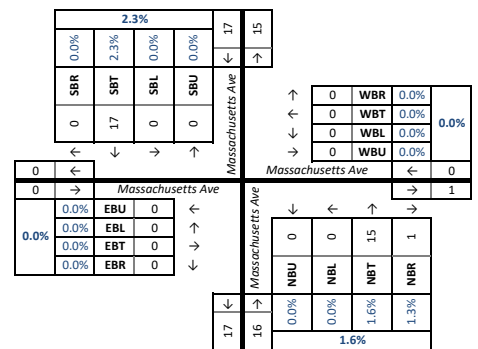
Volumes Displayed as: 1. Intersection Peak (vehicle)
 Intersection Peak Hour (all vehicles): 04:45 PM to 05:45 PM
 System Peak Hour (all vehicles): 04:45 PM to 05:45 PM
 User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection:		1. Massachusetts Ave & Massachusetts Ave																													
ALL VEHICLES	Direction: Roadway: Movement:	Southbound					Westbound					Northbound					Eastbound														
		Massachusetts Ave					Massachusetts Ave					Massachusetts Ave					Massachusetts Ave														
		U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds										
04:00 PM	to 04:15 PM	0	0	138	0	0	0	0	0	2	0	0	208	15	0	0	0	0	10	5											
04:15 PM	to 04:30 PM	0	1	133	0	0	0	0	0	3	0	0	177	16	0	0	5	0	6	1											
04:30 PM	to 04:45 PM	0	0	130	0	0	0	0	0	2	0	0	221	11	0	0	5	1	16	4											
04:45 PM	to 05:00 PM	0	0	168	0	0	0	0	0	2	0	0	207	15	0	0	2	3	14	5											
05:00 PM	to 05:15 PM	0	0	188	0	0	0	0	0	10	0	0	241	15	0	0	0	2	12	6											
05:15 PM	to 05:30 PM	0	0	210	0	0	0	0	0	4	0	0	232	27	0	0	0	0	11	7											
05:30 PM	to 05:45 PM	0	0	163	0	0	0	0	0	3	1	0	232	18	0	0	1	1	11	3											
05:45 PM	to 06:00 PM	0	0	174	0	0	0	0	0	1	0	0	207	12	0	0	2	0	5	4											
06:00 PM	to 06:15 PM	0	0	155	0	0	0	0	0	0	0	0	206	20	0	0	0	0	6	2											
06:15 PM	to 06:30 PM	0	0	180	0	0	0	0	0	0	0	0	183	12	0	0	1	3	5	0											
06:30 PM	to 06:45 PM	0	0	152	0	0	0	0	0	2	0	0	141	7	0	0	1	1	6	4											
06:45 PM	to 07:00 PM	0	0	132	0	0	0	0	0	3	0	0	151	9	0	0	1	0	7	0											
07:00 PM	to 07:15 PM																														
07:15 PM	to 07:30 PM																														
07:30 PM	to 07:45 PM																														
07:45 PM	to 08:00 PM																														
08:00 PM	to 08:15 PM																														
08:15 PM	to 08:30 PM																														
08:30 PM	to 08:45 PM																														
08:45 PM	to 09:00 PM																														
INT. PEAK HR (ALL VEH)		729					0					19					988					0					57				
04:45 PM	to 05:45 PM	0	0	729	0	0	0	0	0	0	0	1	0	912	75	0	0	3	6	48	21	0	0	0	0	0	0	3	6	48	21
Peak Hour		Overall					SB					WB					NB					EB									
Factor (PHF)		0.92					n/a					0.87					n/a					0.95					0.86				
HEAVY VEHICLES (FHWA 4+)		Direction: Roadway: Movement:					Southbound Massachusetts Ave					Westbound Massachusetts Ave					Northbound Massachusetts Ave					Eastbound Massachusetts Ave									
04:00 PM	to 04:15 PM	0	0	6	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0											
04:15 PM	to 04:30 PM	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0											
04:30 PM	to 04:45 PM	0	0	4	0	0	0	0	0	0	0	0	7	0	0	0	0	0	1	0											
04:45 PM	to 05:00 PM	0	0	6	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0											
05:00 PM	to 05:15 PM	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0											
05:15 PM	to 05:30 PM	0	0	7	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0											
05:30 PM	to 05:45 PM	0	0	3	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0											
05:45 PM	to 06:00 PM	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0											
06:00 PM	to 06:15 PM	0	0	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0											
06:15 PM	to 06:30 PM	0	0	4	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0											
06:30 PM	to 06:45 PM	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0											
06:45 PM	to 07:00 PM	0	0	6	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0											
07:00 PM	to 07:15 PM																														
07:15 PM	to 07:30 PM																														
07:30 PM	to 07:45 PM																														
07:45 PM	to 08:00 PM																														
08:00 PM	to 08:15 PM																														
08:15 PM	to 08:30 PM																														
08:30 PM	to 08:45 PM																														
08:45 PM	to 09:00 PM																														
INT. PEAK HR (ALL VEH)		17					0					16					0														
04:45 PM	to 05:45 PM	0	0	17	0	0	0	0	0	0	0	0	0	15	1	0	0	0	0	0	0	0	0	0	0	0					
Heavy Vehicle % (PHV)		0.0%					0.0%					0.0%					1.6%														
INT. PEAK HR (HV ONLY)		18					0					16					1														
04:30 PM	to 05:30 PM	0	0	18	0	0	0	0	0	0	0	0	0	15	1	0	0	0	0	0	1	0	0	0	0	1					
Heavy Vehicle % (PHV)		0.0%					0.0%					1.7%					1.5%														
BICYCLES		Direction: Roadway: Movement:					Southbound Massachusetts Ave					Westbound Massachusetts Ave					Northbound Massachusetts Ave					Eastbound Massachusetts Ave									
04:00 PM	to 04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
04:15 PM	to 04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
04:30 PM	to 04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
04:45 PM	to 05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
05:00 PM	to 05:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0											
05:15 PM	to 05:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
05:30 PM	to 05:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
05:45 PM	to 06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
06:00 PM	to 06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
06:15 PM	to 06:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0											
06:30 PM	to 06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
06:45 PM	to 07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
07:00 PM	to 07:15 PM																														
07:15 PM	to 07:30 PM																														
07:30 PM	to 07:45 PM																														
07:45 PM	to 08:00 PM																														
08:00 PM	to 08:15 PM																														
08:15 PM	to 08:30 PM																														
08:30 PM	to 08:45 PM																														
08:45 PM	to 09:00 PM																														
INT. PEAK HR (ALL VEH)		2					0					1					0														
04:45 PM	to 05:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0					
INT. PEAK HR (BIKES)		2					0					1					0														
04:45 PM	to 05:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0					

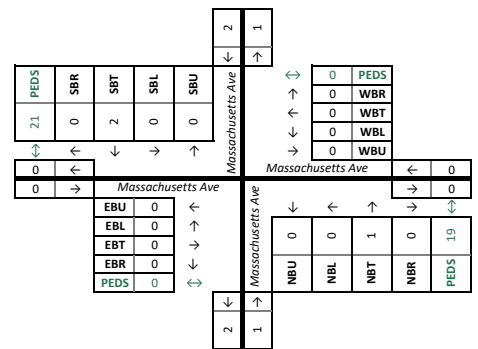
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



PED AND BIKE PEAK HOUR VOLUMES: Intersection Peak (vehicle)



DATA COLLECTION NOTES:

H. Vehicular Capacity Analysis Worksheets – 2021 Existing Conditions

Queues

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/22/2021



Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1229	8	677	152
v/c Ratio	0.62	0.01	0.37	0.57
Control Delay	11.2	5.5	2.6	52.1
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	11.2	5.5	2.9	52.1
Queue Length 50th (ft)	237	2	18	106
Queue Length 95th (ft)	299	6	24	179
Internal Link Dist (ft)	282		152	19
Turn Bay Length (ft)		90		
Base Capacity (vph)	1988	829	1820	265
Starvation Cap Reductn	0	0	445	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.01	0.49	0.57














Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021

													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations		↑↑	↗		↖						↕		
Traffic Volume (vph)	0	1168	8	13	630	0	0	0	0	85	57	3	
Future Volume (vph)	0	1168	8	13	630	0	0	0	0	85	57	3	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9	
Grade (%)		7%			-7%			0%			7%		
Total Lost time (s)		4.0	4.0		4.0						4.0		
Lane Util. Factor		0.95	1.00		0.95						1.00		
Frbp, ped/bikes		1.00	0.96		1.00						1.00		
Flpb, ped/bikes		1.00	1.00		1.00						1.00		
Frt		1.00	0.85		1.00						1.00		
Flt Protected		1.00	1.00		1.00						0.97		
Satd. Flow (prot)		2841	1185		2837						1269		
Flt Permitted		1.00	1.00		0.92						0.97		
Satd. Flow (perm)		2841	1185		2602						1269		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	0	1229	8	14	663	0	0	0	0	89	60	3	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0	
Lane Group Flow (vph)	0	1229	8	0	677	0	0	0	0	0	151	0	
Confl. Peds. (#/hr)	19		28	28		19	5					5	
Confl. Bikes (#/hr)			2									1	
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	0%	0%	0%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	7	0	0	0	0	0	0	0	0	0	
Parking (#/hr)					0					0	0	0	
Turn Type		NA	Perm	Perm	NA					Split	NA		
Protected Phases		6			2					4	4		
Permitted Phases			6	2									
Actuated Green, G (s)		82.0	82.0		82.0						23.0		
Effective Green, g (s)		84.0	84.0		84.0						25.0		
Actuated g/C Ratio		0.70	0.70		0.70						0.21		
Clearance Time (s)		6.0	6.0		6.0						6.0		
Lane Grp Cap (vph)		1988	829		1821						264		
v/s Ratio Prot		c0.43									c0.12		
v/s Ratio Perm			0.01		0.26								
v/c Ratio		0.62	0.01		0.37						0.57		
Uniform Delay, d1		9.5	5.4		7.3						42.7		
Progression Factor		1.00	1.00		0.28						1.00		
Incremental Delay, d2		1.5	0.0		0.6						8.7		
Delay (s)		11.0	5.5		2.6						51.4		
Level of Service		B	A		A						D		
Approach Delay (s)		10.9			2.6			0.0			51.4		
Approach LOS		B			A			A			D		
Intersection Summary													
HCM 2000 Control Delay			11.2		HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio			0.60										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				10.0				
Intersection Capacity Utilization			55.0%		ICU Level of Service				B				
Analysis Period (min)			15										

Existing 2021
AM PeakSynchro 10 Report
Page 2

HCM Signalized Intersection Capacity Analysis
1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021

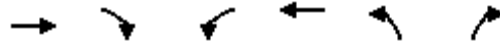
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: University Ave NW & Wesley Cir NW

The Standard at WTS

10/22/2021


















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔					↔
Traffic Volume (veh/h)	46	15	0	0	0	37
Future Volume (Veh/h)	46	15	0	0	0	37
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	17	0	0	0	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			68		60	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		60	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1533		947	1006
Direction, Lane #	EB 1	NB 1				
Volume Total	68	41				
Volume Left	0	0				
Volume Right	17	41				
cSH	1700	1006				
Volume to Capacity	0.04	0.04				
Queue Length 95th (ft)	0	3				
Control Delay (s)	0.0	8.7				
Lane LOS		A				
Approach Delay (s)	0.0	8.7				
Approach LOS		A				
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021

















												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	6	2	75	0	0	0	0	1253	0	0	652	34
Future Volume (Veh/h)	6	2	75	0	0	0	0	1253	0	0	652	34
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	6	2	77	0	0	0	0	1279	0	0	665	35
Pedestrians					16							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								232			230	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78					0.78		
vC, conflicting volume	1612	1995	640	1416	1978	366	716			1279		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1225	1715	0	975	1693	366	716			800		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	97	91	100	100	100	100			100		
cM capacity (veh/h)	105	69	848	143	72	631	874			635		
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2							
Volume Total	85	640	640	443	257							
Volume Left	6	0	0	0	0							
Volume Right	77	0	0	0	35							
cSH	481	1700	1700	1700	1700							
Volume to Capacity	0.18	0.38	0.38	0.26	0.15							
Queue Length 95th (ft)	16	0	0	0	0							
Control Delay (s)	14.1	0.0	0.0	0.0	0.0							
Lane LOS	B											
Approach Delay (s)	14.1	0.0		0.0								
Approach LOS	B											
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			50.8%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

4: University Ave NW & Sedgwick St NW/WTS Dwy

The Standard at WTS

10/22/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	0	2	1	1	4	1	25	0	0	14	1
Future Volume (Veh/h)	4	0	2	1	1	4	1	25	0	0	14	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	2	1	1	4	1	28	0	0	16	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	51	46	16	48	47	28	17			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	51	46	16	48	47	28	17			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	943	845	1063	950	844	1047	1600			1585		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	6	29	17								
Volume Left	4	1	1	0								
Volume Right	2	4	0	1								
cSH	980	990	1600	1700								
Volume to Capacity	0.01	0.01	0.00	0.01								
Queue Length 95th (ft)	0	0	0	0								
Control Delay (s)	8.7	8.7	0.3	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	8.7	8.7	0.3	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			13.3%		ICU Level of Service					A		
Analysis Period (min)			15									

Queues

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

10/22/2021



Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1476	768	30
v/c Ratio	0.54	0.23	0.02
Control Delay	1.2	0.1	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	1.2	0.1	0.0
Queue Length 50th (ft)	18	0	0
Queue Length 95th (ft)	3	0	0
Internal Link Dist (ft)	150	66	207
Turn Bay Length (ft)			
Base Capacity (vph)	2742	3405	1587
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.23	0.02
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

5: Massachusetts Ave NW & 45th St NW

The Standard at WTS

10/22/2021



Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Volume (vph)	63	1265	673	18	14	13
Future Volume (vph)	63	1265	673	18	14	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Flt		1.00	1.00		0.94	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3230	3406		1587	
Flt Permitted		0.85	1.00		0.97	
Satd. Flow (perm)		2742	3406		1587	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	1406	748	20	16	14
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1476	768	0	30	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2742	3406		1587	
v/s Ratio Prot			0.23			
v/s Ratio Perm		c0.54			0.02	
v/c Ratio		0.54	0.23		0.02	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.7	0.1		0.0	
Delay (s)		0.7	0.1		0.0	
Level of Service		A	A		A	
Approach Delay (s)		0.7	0.1		0.0	
Approach LOS		A	A		A	

Intersection Summary

HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.










c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS

10/22/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (veh/h)	0	7	1272	7	18	691
Future Volume (Veh/h)	0	7	1272	7	18	691
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	8	1413	8	20	768
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)			214			651
pX, platoon unblocked	0.76					
vC, conflicting volume	2225	710			1421	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2448	710			1421	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			96	
cM capacity (veh/h)	19	376			475	
Direction, Lane #	NB 1	SE 1	SE 2	NW 1		
Volume Total	8	942	479	788		
Volume Left	0	0	0	20		
Volume Right	8	0	8	0		
cSH	376	1700	1700	475		
Volume to Capacity	0.02	0.55	0.28	0.04		
Queue Length 95th (ft)	2	0	0	3		
Control Delay (s)	14.8	0.0	0.0	1.3		
Lane LOS	B			A		
Approach Delay (s)	14.8	0.0			1.3	
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			54.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021



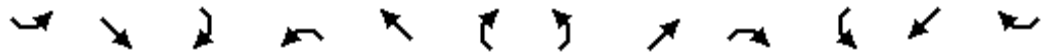
Lane Group	SET	NWT	NWR	NET	NER	SWT
Lane Group Flow (vph)	1391	754	65	30	36	29
v/c Ratio	0.70	0.66	0.08	0.25	0.24	0.15
Control Delay	12.1	11.0	1.1	52.6	7.3	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	11.0	1.1	52.6	7.3	42.3
Queue Length 50th (ft)	286	250	0	21	0	17
Queue Length 95th (ft)	394	370	10	52	12	46
Internal Link Dist (ft)	571	391		281		141
Turn Bay Length (ft)						
Base Capacity (vph)	1995	1137	863	120	148	188
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.66	0.08	0.25	0.24	0.15
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations		↕↔			↑	↗		↖	↗		↕		
Traffic Volume (vph)	22	1179	78	11	683	60	21	6	33	4	18	5	
Future Volume (vph)	22	1179	78	11	683	60	21	6	33	4	18	5	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10	
Grade (%)		4%			-4%			-1%				5%	
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0		
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00		
Frbp, ped/bikes		1.00			1.00	0.86		1.00	0.67		0.98		
Flpb, ped/bikes		1.00			1.00	1.00		0.93	1.00		0.96		
Frt		0.99			1.00	0.85		1.00	0.85		0.98		
Flt Protected		1.00			1.00	1.00		0.96	1.00		0.99		
Satd. Flow (prot)		2845			1564	1130		1089	694		1417		
Flt Permitted		0.93			0.97	1.00		0.80	1.00		0.97		
Satd. Flow (perm)		2655			1516	1130		904	694		1383		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	24	1282	85	12	742	65	23	7	36	4	20	5	
RTOR Reduction (vph)	0	4	0	0	0	16	0	0	31	0	4	0	
Lane Group Flow (vph)	0	1387	0	0	754	49	0	30	5	0	25	0	
Confl. Peds. (#/hr)	19		8	8		19	22		160	160		22	
Confl. Bikes (#/hr)			1										
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	32%	32%	32%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0	0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA		
Protected Phases		6			2			8				4	
Permitted Phases	6			2		2	8		8		4		
Actuated Green, G (s)		88.0			88.0	88.0		14.0	14.0		14.0		
Effective Green, g (s)		90.0			90.0	90.0		16.0	16.0		16.0		
Actuated g/C Ratio		0.75			0.75	0.75		0.13	0.13		0.13		
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0		
Lane Grp Cap (vph)		1991			1137	847		120	92		184		
v/s Ratio Prot													
v/s Ratio Perm		c0.52			0.50	0.04		c0.03	0.01		0.02		
v/c Ratio		0.70			0.66	0.06		0.25	0.05		0.13		
Uniform Delay, d1		7.9			7.5	3.9		46.6	45.4		45.9		
Progression Factor		1.29			1.00	1.00		1.00	1.00		1.00		
Incremental Delay, d2		1.8			3.1	0.1		4.9	1.1		1.5		
Delay (s)		11.9			10.5	4.0		51.5	46.5		47.4		
Level of Service		B			B	A		D	D		D		
Approach Delay (s)		11.9			10.0			48.8			47.4		
Approach LOS		B			B			D			D		
Intersection Summary													
HCM 2000 Control Delay			12.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			74.9%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

Queues

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/22/2021



Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1005	6	1116	131
v/c Ratio	0.49	0.01	0.55	0.64
Control Delay	6.9	3.8	4.1	62.5
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	6.9	3.8	4.2	62.5
Queue Length 50th (ft)	138	1	71	95
Queue Length 95th (ft)	176	4	84	#175
Internal Link Dist (ft)	290		149	39
Turn Bay Length (ft)		90		
Base Capacity (vph)	2064	824	2032	204
Starvation Cap Reductn	0	0	205	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.61	0.64

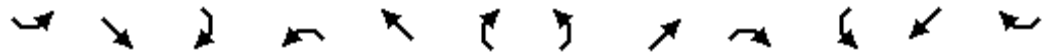
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↑		↑↑						↑↓	
Traffic Volume (vph)	0	965	6	35	1037	0	0	0	0	91	32	3
Future Volume (vph)	0	965	6	35	1037	0	0	0	0	91	32	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frbp, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2752	1099		3071						1285	
Flt Permitted		1.00	1.00		0.88						0.97	
Satd. Flow (perm)		2752	1099		2711						1285	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1005	6	36	1080	0	0	0	0	95	33	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1005	6	0	1116	0	0	0	0	0	130	0
Confl. Peds. (#/hr)	7		28	28		7	7					7
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	5	0	0	0	0	0	0	0
Parking (#/hr)		0	0							0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		88.0	88.0		88.0						17.0	
Effective Green, g (s)		90.0	90.0		90.0						19.0	
Actuated g/C Ratio		0.75	0.75		0.75						0.16	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		2064	824		2033						203	
v/s Ratio Prot		0.37									c0.10	
v/s Ratio Perm			0.01		c0.41							
v/c Ratio		0.49	0.01		0.55						0.64	
Uniform Delay, d1		5.9	3.8		6.4						47.3	
Progression Factor		1.00	1.00		0.47						1.00	
Incremental Delay, d2		0.8	0.0		1.0						14.5	
Delay (s)		6.7	3.8		4.0						61.8	
Level of Service		A	A		A						E	
Approach Delay (s)		6.7			4.0			0.0			61.8	
Approach LOS		A			A			A			E	
Intersection Summary												
HCM 2000 Control Delay			8.6		HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)			10.0				
Intersection Capacity Utilization			79.2%		ICU Level of Service			D				
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021

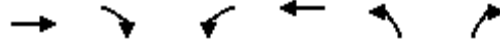
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: University Ave NW & Wesley Cir NW

The Standard at WTS

10/22/2021


















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔					↔
Traffic Volume (veh/h)	33	26	0	0	0	41
Future Volume (Veh/h)	33	26	0	0	0	41
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	29	0	0	0	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			66		52	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		52	52
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			1536		957	1016
Direction, Lane #	EB 1	NB 1				
Volume Total	66	46				
Volume Left	0	0				
Volume Right	29	46				
cSH	1700	1016				
Volume to Capacity	0.04	0.05				
Queue Length 95th (ft)	0	4				
Control Delay (s)	0.0	8.7				
Lane LOS		A				
Approach Delay (s)	0.0	8.7				
Approach LOS		A				
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	15	6	48	0	0	0	0	1056	0	0	1067	75
Future Volume (Veh/h)	15	6	48	0	0	0	0	1056	0	0	1067	75
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	16	6	50	0	0	0	0	1100	0	0	1111	78
Pedestrians					7							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								229			230	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87						0.87	
vC, conflicting volume	1656	2296	550	1760	2257	602	1196			1100		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1453	2190	180	1573	2145	602	1196				813	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	80	85	93	100	100	100	100				100	
cM capacity (veh/h)	79	39	722	53	42	443	585				709	
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2							
Volume Total	72	550	550	741	448							
Volume Left	16	0	0	0	0							
Volume Right	50	0	0	0	78							
cSH	169	1700	1700	1700	1700							
Volume to Capacity	0.43	0.32	0.32	0.44	0.26							
Queue Length 95th (ft)	48	0	0	0	0							
Control Delay (s)	41.3	0.0	0.0	0.0	0.0							
Lane LOS	E											
Approach Delay (s)	41.3	0.0		0.0								
Approach LOS	E											
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			46.7%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
4: University Ave NW & Sedgwick St NW/WTS Dwy

The Standard at WTS

10/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	0	1	1	6	12	1	8	0	0	21	5
Future Volume (Veh/h)	5	0	1	1	6	12	1	8	0	0	21	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	1	1	7	13	1	9	0	0	23	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	54	37	26	38	40	9	29			9		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	54	37	26	38	40	9	29			9		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	99	99	100			100		
cM capacity (veh/h)	927	855	1050	966	852	1073	1584			1611		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	7	21	10	29								
Volume Left	6	1	1	0								
Volume Right	1	13	0	6								
cSH	943	982	1584	1700								
Volume to Capacity	0.01	0.02	0.00	0.02								
Queue Length 95th (ft)	1	2	0	0								
Control Delay (s)	8.8	8.7	0.7	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	8.8	8.7	0.7	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization			13.3%		ICU Level of Service					A		
Analysis Period (min)			15									

Queues

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

10/22/2021



Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1227	1300	73
v/c Ratio	0.45	0.38	0.04
Control Delay	0.7	0.3	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	0.7	0.3	0.0
Queue Length 50th (ft)	6	0	0
Queue Length 95th (ft)	0	0	0
Internal Link Dist (ft)	150	66	258
Turn Bay Length (ft)			
Base Capacity (vph)	2729	3402	1637
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.38	0.04
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

5: Massachusetts Ave NW & 45th St NW

The Standard at WTS

10/22/2021



Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Volume (vph)	35	1069	1133	37	57	9
Future Volume (vph)	35	1069	1133	37	57	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.98	
Flt Protected		1.00	1.00		0.96	
Satd. Flow (prot)		3232	3403		1636	
Flt Permitted		0.84	1.00		0.96	
Satd. Flow (perm)		2728	3403		1636	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	1188	1259	41	63	10
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1227	1300	0	73	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2728	3403		1636	
v/s Ratio Prot			0.38			
v/s Ratio Perm		c0.45			0.04	
v/c Ratio		0.45	0.38		0.04	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.5	0.3		0.1	
Delay (s)		0.5	0.3		0.1	
Level of Service		A	A		A	
Approach Delay (s)		0.5	0.3		0.1	
Approach LOS		A	A		A	

Intersection Summary

HCM 2000 Control Delay	0.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.











c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS

10/22/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						 
Traffic Volume (veh/h)	0	18	1111	15	16	1170
Future Volume (Veh/h)	0	18	1111	15	16	1170
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	20	1234	17	18	1300
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	219			646		
pX, platoon unblocked	0.11	0.02			0.02	
vC, conflicting volume	1928	1242			1251	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	13			48	
cM capacity (veh/h)	55	23			34	
Direction, Lane #	NB 1	SE 1	NW 1	NW 2		
Volume Total	20	1251	451	867		
Volume Left	0	0	18	0		
Volume Right	20	17	0	0		
cSH	23	1700	34	1700		
Volume to Capacity	0.87	0.74	0.52	0.51		
Queue Length 95th (ft)	64	0	44	0		
Control Delay (s)	380.1	0.0	136.8	0.0		
Lane LOS	F		F			
Approach Delay (s)	380.1	0.0	46.8			
Approach LOS	F					
Intersection Summary						
Average Delay	26.8					
Intersection Capacity Utilization	69.4%			ICU Level of Service	C	
Analysis Period (min)	15					

SimTraffic Simulation Summary

Existing 2021

11/10/2021

Summary of All Intervals

Run Number	1	2	3	2841)\Analysis\5	Synchro\EX PM	Avg
Start Time	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2528	2572	2627	2598	2660	2529
Vehs Exited	2480	2521	2620	2533	2628	2514
Starting Vehs	116	122	138	106	119	143
Ending Vehs	164	173	145	171	151	158
Travel Distance (mi)	1303	1336	1386	1344	1391	1324
Travel Time (hr)	210.7	152.3	185.8	179.5	163.9	256.5
Total Delay (hr)	165.0	105.2	137.1	132.3	115.2	209.8
Total Stops	3624	3857	4116	3890	4027	3458
Fuel Used (gal)	82.9	69.8	79.4	76.4	73.5	93.6

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	2841)\Analysis\5	Synchro\EX PM	Avg
Vehs Entered	2528	2572	2627	2598	2660	2529
Vehs Exited	2480	2521	2620	2533	2628	2514
Starting Vehs	116	122	138	106	119	143
Ending Vehs	164	173	145	171	151	158
Travel Distance (mi)	1303	1336	1386	1344	1391	1324
Travel Time (hr)	210.7	152.3	185.8	179.5	163.9	256.5
Total Delay (hr)	165.0	105.2	137.1	132.3	115.2	209.8
Total Stops	3624	3857	4116	3890	4027	3458
Fuel Used (gal)	82.9	69.8	79.4	76.4	73.5	93.6

SimTraffic Performance Report
Existing 2021

11/10/2021

6: WTS Dwy & Massachusetts Ave NW Performance by approach

Approach	NB	SE	NW	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	31.4	1.3	4.8	3.4

Queuing and Blocking Report

Existing 2021

11/10/2021

Intersection: 6: WTS Dwy & Massachusetts Ave NW

Movement	NB	SE	B918	NW	NW
Directions Served	R	TR	T	LT	T
Maximum Queue (ft)	56	33	4	266	262
Average Queue (ft)	16	1	0	70	55
95th Queue (ft)	43	16	3	216	192
Link Distance (ft)	240	22	87	582	582
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queues

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021



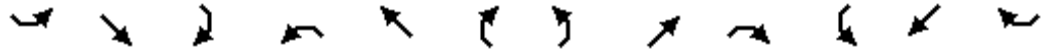
Lane Group	SET	NWT	NET	NER	SWT
Lane Group Flow (vph)	1201	1224	74	88	73
v/c Ratio	0.69	0.62	0.41	0.45	0.33
Control Delay	10.6	10.8	52.0	17.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	10.8	52.0	17.0	30.7
Queue Length 50th (ft)	210	230	52	0	28
Queue Length 95th (ft)	242	291	102	52	74
Internal Link Dist (ft)	566	391	281		141
Turn Bay Length (ft)					
Base Capacity (vph)	1747	1971	179	194	224
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.62	0.41	0.45	0.33
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕↕			↕↕			↕	↕		↕↕	
Traffic Volume (vph)	21	1012	96	15	1093	42	61	8	83	19	18	32
Future Volume (vph)	21	1012	96	15	1093	42	61	8	83	19	18	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		4%			-4%			-1%				5%
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frbp, ped/bikes		0.98			0.99			1.00	0.54		0.96	
Flpb, ped/bikes		1.00			1.00			0.94	1.00		0.89	
Frt		0.99			0.99			1.00	0.85		0.94	
Flt Protected		1.00			1.00			0.96	1.00		0.99	
Satd. Flow (prot)		2701			2996			1381	697		1221	
Flt Permitted		0.91			0.93			0.71	1.00		0.91	
Satd. Flow (perm)		2459			2781			1025	697		1132	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	22	1077	102	16	1163	45	65	9	88	20	19	34
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	73	0	26	0
Lane Group Flow (vph)	0	1195	0	0	1222	0	0	74	15	0	47	0
Confl. Peds. (#/hr)	21		41	41		21	32		428	428		32
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	5	5	0	0	0	0	0	0
Parking (#/hr)	0	0	0									
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			8				4
Permitted Phases	6			2			8		8	4		
Actuated Green, G (s)		83.0			83.0			19.0	19.0		19.0	
Effective Green, g (s)		85.0			85.0			21.0	21.0		21.0	
Actuated g/C Ratio		0.71			0.71			0.18	0.18		0.18	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)		1741			1969			179	121		198	
v/s Ratio Prot												
v/s Ratio Perm		c0.49			0.44			c0.07	0.02		0.04	
v/c Ratio		0.69			0.62			0.41	0.13		0.24	
Uniform Delay, d1		9.9			9.1			44.0	41.8		42.6	
Progression Factor		0.85			1.00			1.00	1.00		1.00	
Incremental Delay, d2		2.1			1.5			6.9	2.2		2.8	
Delay (s)		10.5			10.6			50.9	43.9		45.4	
Level of Service		B			B			D	D		D	
Approach Delay (s)		10.5			10.6			47.1			45.4	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM 2000 Control Delay			13.7								B	
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			120.0							12.0		
Intersection Capacity Utilization			72.3%								C	
ICU Level of Service												
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021

c Critical Lane Group

I. Vehicular Capacity Analysis Worksheets – 2024 Background Conditions

Queues

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/22/2021



Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1241	8	679	152
v/c Ratio	0.62	0.01	0.37	0.57
Control Delay	11.3	5.5	2.6	52.1
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	11.3	5.5	2.8	52.1
Queue Length 50th (ft)	242	2	17	106
Queue Length 95th (ft)	303	6	24	179
Internal Link Dist (ft)	282		152	19
Turn Bay Length (ft)		90		
Base Capacity (vph)	1988	829	1820	265
Starvation Cap Reductn	0	0	443	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.01	0.49	0.57

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↑		↑↑						↑↓	
Traffic Volume (vph)	0	1179	8	13	632	0	0	0	0	85	57	3
Future Volume (vph)	0	1179	8	13	632	0	0	0	0	85	57	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frbp, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2841	1185		2837						1269	
Flt Permitted		1.00	1.00		0.92						0.97	
Satd. Flow (perm)		2841	1185		2601						1269	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1241	8	14	665	0	0	0	0	89	60	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1241	8	0	679	0	0	0	0	0	151	0
Confl. Peds. (#/hr)	19		28	28		19	5					5
Confl. Bikes (#/hr)			2									1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	7	0	0	0	0	0	0	0	0	0
Parking (#/hr)					0					0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		82.0	82.0		82.0						23.0	
Effective Green, g (s)		84.0	84.0		84.0						25.0	
Actuated g/C Ratio		0.70	0.70		0.70						0.21	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		1988	829		1820						264	
v/s Ratio Prot		c0.44									c0.12	
v/s Ratio Perm			0.01		0.26							
v/c Ratio		0.62	0.01		0.37						0.57	
Uniform Delay, d1		9.6	5.4		7.3						42.7	
Progression Factor		1.00	1.00		0.28						1.00	
Incremental Delay, d2		1.5	0.0		0.6						8.7	
Delay (s)		11.1	5.5		2.6						51.4	
Level of Service		B	A		A						D	
Approach Delay (s)		11.0			2.6			0.0			51.4	
Approach LOS		B			A			A			D	
Intersection Summary												
HCM 2000 Control Delay			11.2		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					10.0		
Intersection Capacity Utilization			55.4%		ICU Level of Service					B		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: University Ave NW & Wesley Cir NW


















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔					↔
Traffic Volume (veh/h)	46	15	0	0	0	37
Future Volume (Veh/h)	46	15	0	0	0	37
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	17	0	0	0	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			68		60	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		60	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1533		947	1006
Direction, Lane #	EB 1	NB 1				
Volume Total	68	41				
Volume Left	0	0				
Volume Right	17	41				
cSH	1700	1006				
Volume to Capacity	0.04	0.04				
Queue Length 95th (ft)	0	3				
Control Delay (s)	0.0	8.7				
Lane LOS		A				
Approach Delay (s)	0.0	8.7				
Approach LOS		A				
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	6	2	75	0	0	0	0	1264	0	0	654	34
Future Volume (Veh/h)	6	2	75	0	0	0	0	1264	0	0	654	34
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	6	2	77	0	0	0	0	1290	0	0	667	35
Pedestrians					16							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								232			230	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78					0.78		
vC, conflicting volume	1624	2008	645	1424	1990	367	718			1290		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1231	1725	0	974	1703	367	718			803		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	97	91	100	100	100	100			100		
cM capacity (veh/h)	103	68	844	143	71	630	872			631		
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2							
Volume Total	85	645	645	445	257							
Volume Left	6	0	0	0	0							
Volume Right	77	0	0	0	35							
cSH	476	1700	1700	1700	1700							
Volume to Capacity	0.18	0.38	0.38	0.26	0.15							
Queue Length 95th (ft)	16	0	0	0	0							
Control Delay (s)	14.2	0.0	0.0	0.0	0.0							
Lane LOS	B											
Approach Delay (s)	14.2	0.0		0.0								
Approach LOS	B											
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			51.1%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
4: University Ave NW & Sedgwick St NW/WTS Dwy

The Standard at WTS

10/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	4	0	2	1	1	4	1	25	0	0	14	1
Future Volume (Veh/h)	4	0	2	1	1	4	1	25	0	0	14	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	2	1	1	4	1	28	0	0	16	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	51	46	16	48	47	28	17			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	51	46	16	48	47	28	17			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	943	845	1063	950	844	1047	1600			1585		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	6	29	17								
Volume Left	4	1	1	0								
Volume Right	2	4	0	1								
cSH	980	990	1600	1700								
Volume to Capacity	0.01	0.01	0.00	0.01								
Queue Length 95th (ft)	0	0	0	0								
Control Delay (s)	8.7	8.7	0.3	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	8.7	8.7	0.3	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			13.3%		ICU Level of Service					A		
Analysis Period (min)			15									

Queues

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

10/22/2021



Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1488	770	30
v/c Ratio	0.54	0.23	0.02
Control Delay	1.3	0.1	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	1.3	0.1	0.0
Queue Length 50th (ft)	18	0	0
Queue Length 95th (ft)	4	0	0
Internal Link Dist (ft)	150	66	207
Turn Bay Length (ft)			
Base Capacity (vph)	2742	3405	1587
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.23	0.02
Intersection Summary			

HCM Signalized Intersection Capacity Analysis
5: Massachusetts Ave NW & 45th St NW

The Standard at WTS

10/22/2021



Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Volume (vph)	63	1276	675	18	14	13
Future Volume (vph)	63	1276	675	18	14	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.94	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3230	3406		1587	
Flt Permitted		0.85	1.00		0.97	
Satd. Flow (perm)		2743	3406		1587	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	1418	750	20	16	14
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1488	770	0	30	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2743	3406		1587	
v/s Ratio Prot			0.23			
v/s Ratio Perm		c0.54			0.02	
v/c Ratio		0.54	0.23		0.02	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.7	0.1		0.0	
Delay (s)		0.7	0.1		0.0	
Level of Service		A	A		A	
Approach Delay (s)		0.7	0.1		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS

10/22/2021



Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations		↗	↕↗			↖
Traffic Volume (veh/h)	0	7	1283	7	18	693
Future Volume (Veh/h)	0	7	1283	7	18	693
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	8	1426	8	20	770
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)			214			651
pX, platoon unblocked	0.76					
vC, conflicting volume	2240	717			1434	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2471	717			1434	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			96	
cM capacity (veh/h)	18	372			470	
Direction, Lane #	NB 1	SE 1	SE 2	NW 1		
Volume Total	8	951	483	790		
Volume Left	0	0	0	20		
Volume Right	8	0	8	0		
cSH	372	1700	1700	470		
Volume to Capacity	0.02	0.56	0.28	0.04		
Queue Length 95th (ft)	2	0	0	3		
Control Delay (s)	14.9	0.0	0.0	1.3		
Lane LOS	B			A		
Approach Delay (s)	14.9	0.0			1.3	
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			54.3%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021



Lane Group	SET	NWT	NWR	NET	NER	SWT
Lane Group Flow (vph)	1402	757	65	30	36	29
v/c Ratio	0.70	0.67	0.08	0.25	0.24	0.15
Control Delay	12.4	11.1	1.1	52.6	7.3	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	11.1	1.1	52.6	7.3	42.3
Queue Length 50th (ft)	295	253	0	21	0	17
Queue Length 95th (ft)	400	376	10	52	12	46
Internal Link Dist (ft)	571	391		281		141
Turn Bay Length (ft)						
Base Capacity (vph)	1995	1136	863	120	148	188
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.67	0.08	0.25	0.24	0.15

Intersection Summary

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021



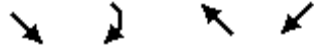
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations		↔↔			↑	↗		↖	↗		↔		
Traffic Volume (vph)	22	1190	78	11	685	60	21	6	33	4	18	5	
Future Volume (vph)	22	1190	78	11	685	60	21	6	33	4	18	5	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10	
Grade (%)		4%			-4%			-1%				5%	
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0		
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00		
Frbp, ped/bikes		1.00			1.00	0.86		1.00	0.67		0.98		
Flpb, ped/bikes		1.00			1.00	1.00		0.93	1.00		0.96		
Frt		0.99			1.00	0.85		1.00	0.85		0.98		
Flt Protected		1.00			1.00	1.00		0.96	1.00		0.99		
Satd. Flow (prot)		2846			1564	1130		1089	694		1417		
Flt Permitted		0.93			0.97	1.00		0.80	1.00		0.97		
Satd. Flow (perm)		2655			1516	1130		904	694		1383		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	24	1293	85	12	745	65	23	7	36	4	20	5	
RTOR Reduction (vph)	0	4	0	0	0	16	0	0	31	0	4	0	
Lane Group Flow (vph)	0	1398	0	0	757	49	0	30	5	0	25	0	
Confl. Peds. (#/hr)	19		8	8		19	22		160	160		22	
Confl. Bikes (#/hr)			1										
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	32%	32%	32%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0	0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA		
Protected Phases		6			2			8				4	
Permitted Phases	6			2		2	8		8		4		
Actuated Green, G (s)		88.0			88.0	88.0		14.0	14.0		14.0		
Effective Green, g (s)		90.0			90.0	90.0		16.0	16.0		16.0		
Actuated g/C Ratio		0.75			0.75	0.75		0.13	0.13		0.13		
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0		
Lane Grp Cap (vph)		1991			1137	847		120	92		184		
v/s Ratio Prot													
v/s Ratio Perm		c0.53			0.50	0.04		c0.03	0.01		0.02		
v/c Ratio		0.70			0.67	0.06		0.25	0.05		0.13		
Uniform Delay, d1		7.9			7.5	3.9		46.6	45.4		45.9		
Progression Factor		1.30			1.00	1.00		1.00	1.00		1.00		
Incremental Delay, d2		1.8			3.1	0.1		4.9	1.1		1.5		
Delay (s)		12.1			10.6	4.0		51.5	46.5		47.4		
Level of Service		B			B	A		D	D		D		
Approach Delay (s)		12.1			10.1			48.8			47.4		
Approach LOS		B			B			D			D		
Intersection Summary													
HCM 2000 Control Delay			12.9									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			75.2%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

Queues

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/22/2021



Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1008	6	1126	131
v/c Ratio	0.49	0.01	0.55	0.64
Control Delay	6.9	3.8	4.1	62.5
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	6.9	3.8	4.2	62.5
Queue Length 50th (ft)	140	1	72	95
Queue Length 95th (ft)	177	4	84	#175
Internal Link Dist (ft)	290		149	39
Turn Bay Length (ft)		90		
Base Capacity (vph)	2064	824	2034	204
Starvation Cap Reductn	0	0	197	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.61	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↑		↑↑						↑↓	
Traffic Volume (vph)	0	968	6	35	1046	0	0	0	0	91	32	3
Future Volume (vph)	0	968	6	35	1046	0	0	0	0	91	32	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frbp, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2752	1099		3071						1285	
Flt Permitted		1.00	1.00		0.88						0.97	
Satd. Flow (perm)		2752	1099		2712						1285	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1008	6	36	1090	0	0	0	0	95	33	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1008	6	0	1126	0	0	0	0	0	130	0
Confl. Peds. (#/hr)	7		28	28		7	7					7
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	5	0	0	0	0	0	0	0
Parking (#/hr)		0	0							0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		88.0	88.0		88.0						17.0	
Effective Green, g (s)		90.0	90.0		90.0						19.0	
Actuated g/C Ratio		0.75	0.75		0.75						0.16	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		2064	824		2034						203	
v/s Ratio Prot		0.37									c0.10	
v/s Ratio Perm			0.01		c0.42							
v/c Ratio		0.49	0.01		0.55						0.64	
Uniform Delay, d1		5.9	3.8		6.4						47.3	
Progression Factor		1.00	1.00		0.47						1.00	
Incremental Delay, d2		0.8	0.0		1.0						14.5	
Delay (s)		6.7	3.8		4.0						61.8	
Level of Service		A	A		A						E	
Approach Delay (s)		6.7			4.0			0.0			61.8	
Approach LOS		A			A			A			E	
Intersection Summary												
HCM 2000 Control Delay			8.6		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					10.0		
Intersection Capacity Utilization			79.5%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/22/2021

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: University Ave NW & Wesley Cir NW

The Standard at WTS

10/22/2021


















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔					↔
Traffic Volume (veh/h)	33	26	0	0	0	41
Future Volume (Veh/h)	33	26	0	0	0	41
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	29	0	0	0	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			66		52	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		52	52
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			1536		957	1016
Direction, Lane #	EB 1	NB 1				
Volume Total	66	46				
Volume Left	0	0				
Volume Right	29	46				
cSH	1700	1016				
Volume to Capacity	0.04	0.05				
Queue Length 95th (ft)	0	4				
Control Delay (s)	0.0	8.7				
Lane LOS		A				
Approach Delay (s)	0.0	8.7				
Approach LOS		A				
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS

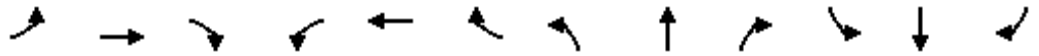
10/22/2021

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	15	6	48	0	0	0	0	1059	0	0	1077	75
Future Volume (Veh/h)	15	6	48	0	0	0	0	1059	0	0	1077	75
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	16	6	50	0	0	0	0	1103	0	0	1122	78
Pedestrians					7							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								229			230	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87						0.87	
vC, conflicting volume	1664	2310	552	1772	2271	607	1207				1103	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1461	2205	180	1586	2160	607	1207				815	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	79	84	93	100	100	100	100				100	
cM capacity (veh/h)	78	38	722	52	41	439	579				707	
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2							
Volume Total	72	552	552	748	452							
Volume Left	16	0	0	0	0							
Volume Right	50	0	0	0	78							
cSH	166	1700	1700	1700	1700							
Volume to Capacity	0.43	0.32	0.32	0.44	0.27							
Queue Length 95th (ft)	49	0	0	0	0							
Control Delay (s)	42.2	0.0	0.0	0.0	0.0							
Lane LOS	E											
Approach Delay (s)	42.2	0.0		0.0								
Approach LOS	E											
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			47.0%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
4: University Ave NW & Sedgwick St NW/WTS Dwy

The Standard at WTS

10/22/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	0	1	1	6	12	1	8	0	0	21	5
Future Volume (Veh/h)	5	0	1	1	6	12	1	8	0	0	21	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	1	1	7	13	1	9	0	0	23	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	54	37	26	38	40	9	29			9		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	54	37	26	38	40	9	29			9		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	99	99	100			100		
cM capacity (veh/h)	927	855	1050	966	852	1073	1584			1611		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	7	21	10	29								
Volume Left	6	1	1	0								
Volume Right	1	13	0	6								
cSH	943	982	1584	1700								
Volume to Capacity	0.01	0.02	0.00	0.02								
Queue Length 95th (ft)	1	2	0	0								
Control Delay (s)	8.8	8.7	0.7	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	8.8	8.7	0.7	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization			13.3%		ICU Level of Service					A		
Analysis Period (min)			15									

Queues

5: Massachusetts Ave NW & 45th St NW



Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1230	1311	73
v/c Ratio	0.45	0.39	0.04
Control Delay	0.7	0.3	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	0.7	0.3	0.0
Queue Length 50th (ft)	6	0	0
Queue Length 95th (ft)	0	0	0
Internal Link Dist (ft)	150	66	258
Turn Bay Length (ft)			
Base Capacity (vph)	2726	3402	1637
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.39	0.04
Intersection Summary			

HCM Signalized Intersection Capacity Analysis
5: Massachusetts Ave NW & 45th St NW

The Standard at WTS

10/22/2021



Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Volume (vph)	35	1072	1143	37	57	9
Future Volume (vph)	35	1072	1143	37	57	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.98	
Flt Protected		1.00	1.00		0.96	
Satd. Flow (prot)		3232	3403		1636	
Flt Permitted		0.84	1.00		0.96	
Satd. Flow (perm)		2725	3403		1636	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	1191	1270	41	63	10
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1230	1311	0	73	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2725	3403		1636	
v/s Ratio Prot			0.39			
v/s Ratio Perm		c0.45			0.04	
v/c Ratio		0.45	0.39		0.04	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.5	0.3		0.1	
Delay (s)		0.5	0.3		0.1	
Level of Service		A	A		A	
Approach Delay (s)		0.5	0.3		0.1	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS

10/22/2021



Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations		↗	↘			↖↗
Traffic Volume (veh/h)	0	18	1114	15	16	1181
Future Volume (Veh/h)	0	18	1114	15	16	1181
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	20	1238	17	18	1312
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			219			646
pX, platoon unblocked	0.11	0.02			0.02	
vC, conflicting volume	1938	1246			1255	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	12			47	
cM capacity (veh/h)	55	23			34	
Direction, Lane #	NB 1	SE 1	NW 1	NW 2		
Volume Total	20	1255	455	875		
Volume Left	0	0	18	0		
Volume Right	20	17	0	0		
cSH	23	1700	34	1700		
Volume to Capacity	0.88	0.74	0.53	0.51		
Queue Length 95th (ft)	64	0	44	0		
Control Delay (s)	385.5	0.0	140.3	0.0		
Lane LOS	F		F			
Approach Delay (s)	385.5	0.0	48.0			
Approach LOS	F					
Intersection Summary						
Average Delay			27.5			
Intersection Capacity Utilization			69.5%	ICU Level of Service	C	
Analysis Period (min)			15			

SimTraffic Simulation Summary
Background 2024

11/10/2021

Summary of All Intervals

Run Number	1	2	3	2841)	Analysis\Synchro	BG PM	Avg
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2548	2428	2541	2633	2443	2529	2520
Vehs Exited	2512	2394	2539	2557	2446	2509	2492
Starting Vehs	139	117	148	113	136	133	126
Ending Vehs	175	151	150	189	133	153	154
Travel Distance (mi)	1319	1285	1320	1353	1283	1317	1313
Travel Time (hr)	238.8	221.7	267.1	212.9	244.9	232.1	236.3
Total Delay (hr)	192.6	176.8	220.5	165.4	199.8	185.8	190.1
Total Stops	3605	3560	3536	3813	3406	3685	3599
Fuel Used (gal)	89.6	84.3	95.9	84.6	89.3	88.1	88.6

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	2841)	Analysis\Synchro	BG PM	Avg
Vehs Entered	2548	2428	2541	2633	2443	2529	2520
Vehs Exited	2512	2394	2539	2557	2446	2509	2492
Starting Vehs	139	117	148	113	136	133	126
Ending Vehs	175	151	150	189	133	153	154
Travel Distance (mi)	1319	1285	1320	1353	1283	1317	1313
Travel Time (hr)	238.8	221.7	267.1	212.9	244.9	232.1	236.3
Total Delay (hr)	192.6	176.8	220.5	165.4	199.8	185.8	190.1
Total Stops	3605	3560	3536	3813	3406	3685	3599
Fuel Used (gal)	89.6	84.3	95.9	84.6	89.3	88.1	88.6

SimTraffic Performance Report

Background 2024

11/10/2021

6: WTS Dwy & Massachusetts Ave NW Performance by approach

Approach	NB	SE	NW	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	29.9	1.1	5.1	3.6

Queuing and Blocking Report

Background 2024

11/10/2021

Intersection: 6: WTS Dwy & Massachusetts Ave NW

Movement	NB	SE	NW	NW
Directions Served	R	TR	LT	T
Maximum Queue (ft)	56	16	256	227
Average Queue (ft)	16	1	72	56
95th Queue (ft)	45	9	213	188
Link Distance (ft)	240	22	582	582
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queues

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW



Lane Group	SET	NWT	NET	NER	SWT
Lane Group Flow (vph)	1204	1234	74	88	73
v/c Ratio	0.69	0.63	0.41	0.45	0.33
Control Delay	10.6	10.8	52.0	17.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	10.8	52.0	17.0	30.7
Queue Length 50th (ft)	210	233	52	0	28
Queue Length 95th (ft)	242	295	102	52	74
Internal Link Dist (ft)	566	391	281		141
Turn Bay Length (ft)					
Base Capacity (vph)	1746	1973	179	194	224
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.63	0.41	0.45	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations		↕↕			↕↕			↕	↕		↕↕		
Traffic Volume (vph)	21	1015	96	15	1103	42	61	8	83	19	18	32	
Future Volume (vph)	21	1015	96	15	1103	42	61	8	83	19	18	32	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10	
Grade (%)		4%			-4%			-1%				5%	
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0		
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00		
Frbp, ped/bikes		0.98			0.99			1.00	0.54		0.96		
Flpb, ped/bikes		1.00			1.00			0.94	1.00		0.89		
Frt		0.99			0.99			1.00	0.85		0.94		
Flt Protected		1.00			1.00			0.96	1.00		0.99		
Satd. Flow (prot)		2701			2996			1381	697		1221		
Flt Permitted		0.91			0.93			0.71	1.00		0.91		
Satd. Flow (perm)		2458			2782			1025	697		1132		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	22	1080	102	16	1173	45	65	9	88	20	19	34	
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	73	0	26	0	
Lane Group Flow (vph)	0	1198	0	0	1232	0	0	74	15	0	47	0	
Confl. Peds. (#/hr)	21		41	41		21	32		428	428		32	
Confl. Bikes (#/hr)			3			1							
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	5	5	0	0	0	0	0	0	
Parking (#/hr)	0	0	0										
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA		
Protected Phases		6			2			8				4	
Permitted Phases	6			2			8		8	4			
Actuated Green, G (s)		83.0			83.0			19.0	19.0		19.0		
Effective Green, g (s)		85.0			85.0			21.0	21.0		21.0		
Actuated g/C Ratio		0.71			0.71			0.18	0.18		0.18		
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0		
Lane Grp Cap (vph)		1741			1970			179	121		198		
v/s Ratio Prot													
v/s Ratio Perm		c0.49			0.44			c0.07	0.02		0.04		
v/c Ratio		0.69			0.63			0.41	0.13		0.24		
Uniform Delay, d1		10.0			9.2			44.0	41.8		42.6		
Progression Factor		0.84			1.00			1.00	1.00		1.00		
Incremental Delay, d2		2.1			1.5			6.9	2.2		2.8		
Delay (s)		10.5			10.7			50.9	43.9		45.4		
Level of Service		B			B			D	D		D		
Approach Delay (s)		10.5			10.7			47.1			45.4		
Approach LOS		B			B			D			D		
Intersection Summary													
HCM 2000 Control Delay			13.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			72.4%									ICU Level of Service	C
Analysis Period (min)			15										

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021

c Critical Lane Group

J. Vehicular Capacity Analysis Worksheets – 2024 Total Future Conditions with Existing Access (Alternative A)

Queues

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/25/2021



Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1243	8	681	152
v/c Ratio	0.63	0.01	0.37	0.57
Control Delay	11.3	5.5	2.6	52.1
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	11.3	5.5	2.9	52.1
Queue Length 50th (ft)	242	2	18	106
Queue Length 95th (ft)	305	6	24	179
Internal Link Dist (ft)	282		152	19
Turn Bay Length (ft)		90		
Base Capacity (vph)	1988	829	1820	265
Starvation Cap Reductn	0	0	443	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.01	0.49	0.57

Intersection Summary

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/25/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↗		↖						↕	
Traffic Volume (vph)	0	1181	8	13	634	0	0	0	0	85	57	3
Future Volume (vph)	0	1181	8	13	634	0	0	0	0	85	57	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frbp, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2841	1185		2837						1269	
Flt Permitted		1.00	1.00		0.92						0.97	
Satd. Flow (perm)		2841	1185		2601						1269	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1243	8	14	667	0	0	0	0	89	60	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1243	8	0	681	0	0	0	0	0	151	0
Confl. Peds. (#/hr)	19		28	28		19	5					5
Confl. Bikes (#/hr)			2									1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	7	0	0	0	0	0	0	0	0	0
Parking (#/hr)					0					0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		82.0	82.0		82.0						23.0	
Effective Green, g (s)		84.0	84.0		84.0						25.0	
Actuated g/C Ratio		0.70	0.70		0.70						0.21	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		1988	829		1820						264	
v/s Ratio Prot		c0.44									c0.12	
v/s Ratio Perm			0.01		0.26							
v/c Ratio		0.63	0.01		0.37						0.57	
Uniform Delay, d1		9.6	5.4		7.3						42.7	
Progression Factor		1.00	1.00		0.28						1.00	
Incremental Delay, d2		1.5	0.0		0.6						8.7	
Delay (s)		11.1	5.5		2.6						51.4	
Level of Service		B	A		A						D	
Approach Delay (s)		11.1			2.6			0.0			51.4	
Approach LOS		B			A			A			D	
Intersection Summary												
HCM 2000 Control Delay			11.2		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				10.0			
Intersection Capacity Utilization			55.4%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/25/2021

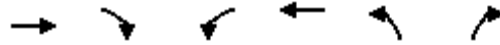
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: University Ave NW & Wesley Cir NW

The Standard at WTS

10/25/2021


















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩					↪
Traffic Volume (veh/h)	46	15	0	0	0	39
Future Volume (Veh/h)	46	15	0	0	0	39
Sign Control	Free		Free		Yield	
Grade	5%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	17	0	0	0	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			68		60	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		60	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1533		947	1006
Direction, Lane #	EB 1	NB 1				
Volume Total	68	43				
Volume Left	0	0				
Volume Right	17	43				
cSH	1700	1006				
Volume to Capacity	0.04	0.04				
Queue Length 95th (ft)	0	3				
Control Delay (s)	0.0	8.7				
Lane LOS		A				
Approach Delay (s)	0.0	8.7				
Approach LOS		A				
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS

10/25/2021

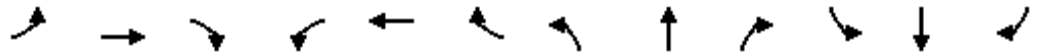
												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	8	2	75	0	0	0	0	1266	0	0	654	34
Future Volume (Veh/h)	8	2	75	0	0	0	0	1266	0	0	654	34
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	8	2	77	0	0	0	0	1292	0	0	667	35
Pedestrians					16							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								232			230	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78					0.78		
vC, conflicting volume	1626	2010	646	1424	1992	367	718			1292		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1232	1727	0	974	1704	367	718			803		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	97	91	100	100	100	100			100		
cM capacity (veh/h)	103	68	843	142	70	630	872			630		
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2							
Volume Total	87	646	646	445	257							
Volume Left	8	0	0	0	0							
Volume Right	77	0	0	0	35							
cSH	439	1700	1700	1700	1700							
Volume to Capacity	0.20	0.38	0.38	0.26	0.15							
Queue Length 95th (ft)	18	0	0	0	0							
Control Delay (s)	15.2	0.0	0.0	0.0	0.0							
Lane LOS	C											
Approach Delay (s)	15.2	0.0		0.0								
Approach LOS	C											
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			51.3%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

4: University Ave NW & Sedgwick St NW/WTS Dwy

10/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	4	0	2	1	1	6	1	25	0	0	14	1
Future Volume (Veh/h)	4	0	2	1	1	6	1	25	0	0	14	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	2	1	1	7	1	28	0	0	16	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	54	46	16	48	47	28	17			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	54	46	16	48	47	28	17			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	99	100			100		
cM capacity (veh/h)	937	845	1063	950	844	1047	1600			1585		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	9	29	17								
Volume Left	4	1	1	0								
Volume Right	2	7	0	1								
cSH	975	1009	1600	1700								
Volume to Capacity	0.01	0.01	0.00	0.01								
Queue Length 95th (ft)	0	1	0	0								
Control Delay (s)	8.7	8.6	0.3	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	8.7	8.6	0.3	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			13.3%		ICU Level of Service					A		
Analysis Period (min)			15									

Queues

5: Massachusetts Ave NW & 45th St NW



Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1490	770	30
v/c Ratio	0.54	0.23	0.02
Control Delay	1.3	0.1	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	1.3	0.1	0.0
Queue Length 50th (ft)	18	0	0
Queue Length 95th (ft)	3	0	0
Internal Link Dist (ft)	150	66	207
Turn Bay Length (ft)			
Base Capacity (vph)	2745	3405	1587
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.23	0.02
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

10/25/2021



Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Volume (vph)	63	1278	675	18	14	13
Future Volume (vph)	63	1278	675	18	14	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Fr _t		1.00	1.00		0.94	
Fl _t Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3230	3406		1587	
Fl _t Permitted		0.85	1.00		0.97	
Satd. Flow (perm)		2744	3406		1587	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	1420	750	20	16	14
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1490	770	0	30	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2744	3406		1587	
v/s Ratio Prot			0.23			
v/s Ratio Perm		c0.54			0.02	
v/c Ratio		0.54	0.23		0.02	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.7	0.1		0.0	
Delay (s)		0.7	0.1		0.0	
Level of Service		A	A		A	
Approach Delay (s)		0.7	0.1		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.










c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS

10/25/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (veh/h)	0	13	1283	7	22	693
Future Volume (Veh/h)	0	13	1283	7	22	693
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	14	1426	8	24	770
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			214			651
pX, platoon unblocked	0.76					
vC, conflicting volume	2248	717			1434	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2485	717			1434	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			95	
cM capacity (veh/h)	17	372			470	
Direction, Lane #	NB 1	SE 1	SE 2	NW 1		
Volume Total	14	951	483	794		
Volume Left	0	0	0	24		
Volume Right	14	0	8	0		
cSH	372	1700	1700	470		
Volume to Capacity	0.04	0.56	0.28	0.05		
Queue Length 95th (ft)	3	0	0	4		
Control Delay (s)	15.1	0.0	0.0	1.6		
Lane LOS	C			A		
Approach Delay (s)	15.1	0.0			1.6	
Approach LOS	C					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			57.6%	ICU Level of Service	B	
Analysis Period (min)			15			

Queues

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/25/2021



Lane Group	SET	NWT	NWR	NET	NER	SWT
Lane Group Flow (vph)	1409	761	65	30	36	29
v/c Ratio	0.71	0.67	0.08	0.25	0.24	0.15
Control Delay	12.5	11.2	1.1	52.6	7.3	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	11.2	1.1	52.6	7.3	42.3
Queue Length 50th (ft)	298	255	0	21	0	17
Queue Length 95th (ft)	401	380	10	52	12	46
Internal Link Dist (ft)	571	391		281		141
Turn Bay Length (ft)						
Base Capacity (vph)	1995	1136	863	120	148	188
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.67	0.08	0.25	0.24	0.15

Intersection Summary

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/25/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations		↔↔			↑	↗		↖	↗		↔		
Traffic Volume (vph)	22	1196	78	11	689	60	21	6	33	4	18	5	
Future Volume (vph)	22	1196	78	11	689	60	21	6	33	4	18	5	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10	
Grade (%)		4%			-4%			-1%				5%	
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0		
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00		
Frbp, ped/bikes		1.00			1.00	0.86		1.00	0.67		0.98		
Flpb, ped/bikes		1.00			1.00	1.00		0.93	1.00		0.96		
Frt		0.99			1.00	0.85		1.00	0.85		0.98		
Flt Protected		1.00			1.00	1.00		0.96	1.00		0.99		
Satd. Flow (prot)		2846			1564	1130		1089	694		1417		
Flt Permitted		0.93			0.97	1.00		0.80	1.00		0.97		
Satd. Flow (perm)		2655			1516	1130		904	694		1383		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	24	1300	85	12	749	65	23	7	36	4	20	5	
RTOR Reduction (vph)	0	4	0	0	0	16	0	0	31	0	4	0	
Lane Group Flow (vph)	0	1405	0	0	761	49	0	30	5	0	25	0	
Confl. Peds. (#/hr)	19		8	8		19	22		160	160		22	
Confl. Bikes (#/hr)			1										
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	32%	32%	32%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0	0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA		
Protected Phases		6			2			8				4	
Permitted Phases	6			2		2	8		8		4		
Actuated Green, G (s)		88.0			88.0	88.0		14.0	14.0		14.0		
Effective Green, g (s)		90.0			90.0	90.0		16.0	16.0		16.0		
Actuated g/C Ratio		0.75			0.75	0.75		0.13	0.13		0.13		
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0		
Lane Grp Cap (vph)		1991			1137	847		120	92		184		
v/s Ratio Prot													
v/s Ratio Perm		c0.53			0.50	0.04		c0.03	0.01		0.02		
v/c Ratio		0.71			0.67	0.06		0.25	0.05		0.13		
Uniform Delay, d1		8.0			7.5	3.9		46.6	45.4		45.9		
Progression Factor		1.30			1.00	1.00		1.00	1.00		1.00		
Incremental Delay, d2		1.8			3.1	0.1		4.9	1.1		1.5		
Delay (s)		12.2			10.7	4.0		51.5	46.5		47.4		
Level of Service		B			B	A		D	D		D		
Approach Delay (s)		12.2			10.1			48.8			47.4		
Approach LOS		B			B			D			D		
Intersection Summary													
HCM 2000 Control Delay			12.9		HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			120.0	Sum of lost time (s)					12.0				
Intersection Capacity Utilization			75.4%	ICU Level of Service					D				
Analysis Period (min)			15										
c Critical Lane Group													

Queues

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/25/2021



Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1013	6	1130	131
v/c Ratio	0.49	0.01	0.56	0.64
Control Delay	6.9	3.8	4.1	62.5
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	6.9	3.8	4.2	62.5
Queue Length 50th (ft)	141	1	72	95
Queue Length 95th (ft)	178	4	84	#175
Internal Link Dist (ft)	290		149	39
Turn Bay Length (ft)		90		
Base Capacity (vph)	2064	824	2032	204
Starvation Cap Reductn	0	0	195	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.62	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/25/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↑		↑↑						↑↓	
Traffic Volume (vph)	0	972	6	35	1050	0	0	0	0	91	32	3
Future Volume (vph)	0	972	6	35	1050	0	0	0	0	91	32	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frbp, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2752	1099		3071						1285	
Flt Permitted		1.00	1.00		0.88						0.97	
Satd. Flow (perm)		2752	1099		2711						1285	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1012	6	36	1094	0	0	0	0	95	33	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1013	6	0	1130	0	0	0	0	0	130	0
Confl. Peds. (#/hr)	7		28	28		7	7					7
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	5	0	0	0	0	0	0	0
Parking (#/hr)		0	0							0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		88.0	88.0		88.0						17.0	
Effective Green, g (s)		90.0	90.0		90.0						19.0	
Actuated g/C Ratio		0.75	0.75		0.75						0.16	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		2064	824		2033						203	
v/s Ratio Prot		0.37									c0.10	
v/s Ratio Perm			0.01		c0.42							
v/c Ratio		0.49	0.01		0.56						0.64	
Uniform Delay, d1		5.9	3.8		6.4						47.3	
Progression Factor		1.00	1.00		0.46						1.00	
Incremental Delay, d2		0.8	0.0		1.0						14.5	
Delay (s)		6.8	3.8		4.0						61.8	
Level of Service		A	A		A						E	
Approach Delay (s)		6.8			4.0			0.0			61.8	
Approach LOS		A			A			A			E	
Intersection Summary												
HCM 2000 Control Delay			8.6		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					10.0		
Intersection Capacity Utilization			79.6%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/25/2021

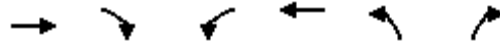
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: University Ave NW & Wesley Cir NW

The Standard at WTS

10/25/2021


















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻					↻
Traffic Volume (veh/h)	33	26	0	0	0	46
Future Volume (Veh/h)	33	26	0	0	0	46
Sign Control	Free		Free		Yield	
Grade	5%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	29	0	0	0	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			66		52	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		52	52
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			1536		957	1016
Direction, Lane #	EB 1	NB 1				
Volume Total	66	51				
Volume Left	0	0				
Volume Right	29	51				
cSH	1700	1016				
Volume to Capacity	0.04	0.05				
Queue Length 95th (ft)	0	4				
Control Delay (s)	0.0	8.7				
Lane LOS		A				
Approach Delay (s)	0.0	8.7				
Approach LOS		A				
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS

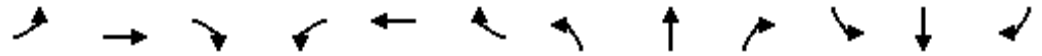
10/25/2021

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	19	6	49	0	0	0	0	1063	0	0	1077	75
Future Volume (Veh/h)	19	6	49	0	0	0	0	1063	0	0	1077	75
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	20	6	51	0	0	0	0	1107	0	0	1122	78
Pedestrians					7							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								229			230	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87					0.87		
vC, conflicting volume	1668	2314	554	1776	2275	607	1207			1107		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1464	2209	178	1588	2164	607	1207			817		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	74	84	93	100	100	100	100			100		
cM capacity (veh/h)	77	38	723	51	40	439	579			705		
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2							
Volume Total	77	554	554	748	452							
Volume Left	20	0	0	0	0							
Volume Right	51	0	0	0	78							
cSH	158	1700	1700	1700	1700							
Volume to Capacity	0.49	0.33	0.33	0.44	0.27							
Queue Length 95th (ft)	58	0	0	0	0							
Control Delay (s)	47.9	0.0	0.0	0.0	0.0							
Lane LOS	E											
Approach Delay (s)	47.9	0.0		0.0								
Approach LOS	E											
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			47.3%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
4: University Ave NW & Sedgwick St NW/WTS Dwy

The Standard at WTS

10/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	0	1	1	6	17	1	8	0	0	21	5
Future Volume (Veh/h)	5	0	1	1	6	17	1	8	0	0	21	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	1	1	7	19	1	9	0	0	23	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	60	37	26	38	40	9	29			9		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	60	37	26	38	40	9	29			9		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	99	98	100			100		
cM capacity (veh/h)	914	855	1050	966	852	1073	1584			1611		
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	7	27	10	29								
Volume Left	6	1	1	0								
Volume Right	1	19	0	6								
cSH	931	1001	1584	1700								
Volume to Capacity	0.01	0.03	0.00	0.02								
Queue Length 95th (ft)	1	2	0	0								
Control Delay (s)	8.9	8.7	0.7	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	8.9	8.7	0.7	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization			13.3%	ICU Level of Service		A						
Analysis Period (min)			15									

Queues

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

10/25/2021



Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1236	1311	74
v/c Ratio	0.46	0.39	0.05
Control Delay	0.7	0.3	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	0.7	0.3	0.0
Queue Length 50th (ft)	7	0	0
Queue Length 95th (ft)	0	0	0
Internal Link Dist (ft)	150	66	258
Turn Bay Length (ft)			
Base Capacity (vph)	2713	3402	1637
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.39	0.05
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

10/25/2021



Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Volume (vph)	36	1076	1143	37	58	9
Future Volume (vph)	36	1076	1143	37	58	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.98	
Flt Protected		1.00	1.00		0.96	
Satd. Flow (prot)		3232	3403		1636	
Flt Permitted		0.84	1.00		0.96	
Satd. Flow (perm)		2714	3403		1636	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	40	1196	1270	41	64	10
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1236	1311	0	74	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2714	3403		1636	
v/s Ratio Prot			0.39			
v/s Ratio Perm		c0.46			0.05	
v/c Ratio		0.46	0.39		0.05	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.5	0.3		0.1	
Delay (s)		0.5	0.3		0.1	
Level of Service		A	A		A	
Approach Delay (s)		0.5	0.3		0.1	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.











c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS

10/25/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						 
Traffic Volume (veh/h)	0	30	1114	20	27	1181
Future Volume (Veh/h)	0	30	1114	20	27	1181
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	33	1238	22	30	1312
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	219			646		
pX, platoon unblocked	0.12	0.02			0.02	
vC, conflicting volume	1965	1249			1260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			11	
cM capacity (veh/h)	13	22			34	
Direction, Lane #	NB 1	SE 1	NW 1	NW 2		
Volume Total	33	1260	467	875		
Volume Left	0	0	30	0		
Volume Right	33	22	0	0		
cSH	22	1700	34	1700		
Volume to Capacity	1.47	0.74	0.89	0.51		
Queue Length 95th (ft)	106	0	78	0		
Control Delay (s)	611.8	0.0	296.4	0.0		
Lane LOS	F		F			
Approach Delay (s)	611.8	0.0	103.2			
Approach LOS	F					
Intersection Summary						
Average Delay	60.2					
Intersection Capacity Utilization	69.8%			ICU Level of Service	C	
Analysis Period (min)	15					

SimTraffic Simulation Summary

Total Future Alternative A 2024

11/10/2021

Summary of All Intervals

Run Number	1	2	3	2811	Analysis	Synch	50	TF Alt A PM	Avg
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1	1	1
Vehs Entered	2536	2495	2517	2538	2536	2636	2541	2541	2541
Vehs Exited	2510	2468	2490	2515	2493	2639	2519	2519	2519
Starting Vehs	132	141	119	100	116	148	123	123	123
Ending Vehs	158	168	146	123	159	145	145	145	145
Travel Distance (mi)	1309	1289	1299	1318	1312	1364	1315	1315	1315
Travel Time (hr)	274.6	299.6	262.8	220.9	198.5	224.5	246.8	246.8	246.8
Total Delay (hr)	228.6	254.4	217.1	174.5	152.5	176.3	200.5	200.5	200.5
Total Stops	3749	3666	3598	3817	3663	3952	3737	3737	3737
Fuel Used (gal)	97.7	103.0	94.3	85.3	79.9	87.7	91.3	91.3	91.3

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	2811	Analysis	Synch	50	TF Alt A PM	Avg
Vehs Entered	2536	2495	2517	2538	2536	2636	2541	2541	2541
Vehs Exited	2510	2468	2490	2515	2493	2639	2519	2519	2519
Starting Vehs	132	141	119	100	116	148	123	123	123
Ending Vehs	158	168	146	123	159	145	145	145	145
Travel Distance (mi)	1309	1289	1299	1318	1312	1364	1315	1315	1315
Travel Time (hr)	274.6	299.6	262.8	220.9	198.5	224.5	246.8	246.8	246.8
Total Delay (hr)	228.6	254.4	217.1	174.5	152.5	176.3	200.5	200.5	200.5
Total Stops	3749	3666	3598	3817	3663	3952	3737	3737	3737
Fuel Used (gal)	97.7	103.0	94.3	85.3	79.9	87.7	91.3	91.3	91.3

SimTraffic Performance Report
Total Future Alternative A 2024

11/10/2021

6: WTS Dwy & Massachusetts Ave NW Performance by approach

Approach	NB	SE	NW	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	32.5	1.2	6.3	4.4

Queuing and Blocking Report
Total Future Alternative A 2024

11/10/2021

Intersection: 6: WTS Dwy & Massachusetts Ave NW

Movement	NB	SE	NW	NW
Directions Served	R	TR	LT	T
Maximum Queue (ft)	72	12	275	258
Average Queue (ft)	23	0	90	67
95th Queue (ft)	55	6	241	214
Link Distance (ft)	240	22	582	582
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queues

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW



Lane Group	SET	NWT	NET	NER	SWT
Lane Group Flow (vph)	1217	1246	74	88	73
v/c Ratio	0.70	0.63	0.41	0.45	0.33
Control Delay	10.8	10.9	52.0	17.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	10.9	52.0	17.0	30.7
Queue Length 50th (ft)	213	237	52	0	28
Queue Length 95th (ft)	245	300	102	52	74
Internal Link Dist (ft)	566	391	281		141
Turn Bay Length (ft)					
Base Capacity (vph)	1745	1974	179	194	224
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.63	0.41	0.45	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/25/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations		↕↕			↕↕			↕	↕		↕↕		
Traffic Volume (vph)	21	1027	96	15	1114	42	61	8	83	19	18	32	
Future Volume (vph)	21	1027	96	15	1114	42	61	8	83	19	18	32	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10	
Grade (%)		4%			-4%			-1%				5%	
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0		
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00		
Frbp, ped/bikes		0.98			0.99			1.00	0.54		0.96		
Flpb, ped/bikes		1.00			1.00			0.94	1.00		0.89		
Frt		0.99			0.99			1.00	0.85		0.94		
Flt Protected		1.00			1.00			0.96	1.00		0.99		
Satd. Flow (prot)		2702			2996			1381	697		1221		
Flt Permitted		0.91			0.93			0.71	1.00		0.91		
Satd. Flow (perm)		2459			2782			1025	697		1132		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	22	1093	102	16	1185	45	65	9	88	20	19	34	
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	73	0	26	0	
Lane Group Flow (vph)	0	1211	0	0	1244	0	0	74	15	0	47	0	
Confl. Peds. (#/hr)	21		41	41		21	32		428	428		32	
Confl. Bikes (#/hr)			3			1							
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	5	5	0	0	0	0	0	0	
Parking (#/hr)	0	0	0										
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA		
Protected Phases		6			2			8				4	
Permitted Phases	6			2			8		8	4			
Actuated Green, G (s)		83.0			83.0			19.0	19.0		19.0		
Effective Green, g (s)		85.0			85.0			21.0	21.0		21.0		
Actuated g/C Ratio		0.71			0.71			0.18	0.18		0.18		
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0		
Lane Grp Cap (vph)		1741			1970			179	121		198		
v/s Ratio Prot													
v/s Ratio Perm		c0.49			0.45			c0.07	0.02		0.04		
v/c Ratio		0.70			0.63			0.41	0.13		0.24		
Uniform Delay, d1		10.1			9.2			44.0	41.8		42.6		
Progression Factor		0.84			1.00			1.00	1.00		1.00		
Incremental Delay, d2		2.1			1.6			6.9	2.2		2.8		
Delay (s)		10.6			10.8			50.9	43.9		45.4		
Level of Service		B			B			D	D		D		
Approach Delay (s)		10.6			10.8			47.1			45.4		
Approach LOS		B			B			D			D		
Intersection Summary													
HCM 2000 Control Delay			13.8									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.63										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			72.8%									ICU Level of Service	C
Analysis Period (min)			15										

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/25/2021

c Critical Lane Group

K. Vehicular Capacity Analysis Worksheets – 2024 Total Future Conditions with Proposed Access (Alternative B)

Queues

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/25/2021



Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1243	8	683	152
v/c Ratio	0.63	0.01	0.38	0.57
Control Delay	11.3	5.5	2.6	52.1
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	11.3	5.5	2.8	52.1
Queue Length 50th (ft)	242	2	17	106
Queue Length 95th (ft)	305	6	22	179
Internal Link Dist (ft)	282		152	19
Turn Bay Length (ft)		90		
Base Capacity (vph)	1988	829	1820	265
Starvation Cap Reductn	0	0	439	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.01	0.49	0.57

Intersection Summary

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/25/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↑		↑↑						↑↓	
Traffic Volume (vph)	0	1181	8	13	636	0	0	0	0	85	57	3
Future Volume (vph)	0	1181	8	13	636	0	0	0	0	85	57	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frbp, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2841	1185		2837						1269	
Flt Permitted		1.00	1.00		0.92						0.97	
Satd. Flow (perm)		2841	1185		2601						1269	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1243	8	14	669	0	0	0	0	89	60	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1243	8	0	683	0	0	0	0	0	151	0
Confl. Peds. (#/hr)	19		28	28		19	5					5
Confl. Bikes (#/hr)			2									1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	7	0	0	0	0	0	0	0	0	0
Parking (#/hr)					0					0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		82.0	82.0		82.0						23.0	
Effective Green, g (s)		84.0	84.0		84.0						25.0	
Actuated g/C Ratio		0.70	0.70		0.70						0.21	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		1988	829		1820						264	
v/s Ratio Prot		c0.44									c0.12	
v/s Ratio Perm			0.01		0.26							
v/c Ratio		0.63	0.01		0.38						0.57	
Uniform Delay, d1		9.6	5.4		7.3						42.7	
Progression Factor		1.00	1.00		0.27						1.00	
Incremental Delay, d2		1.5	0.0		0.6						8.7	
Delay (s)		11.1	5.5		2.5						51.4	
Level of Service		B	A		A						D	
Approach Delay (s)		11.1			2.5			0.0			51.4	
Approach LOS		B			A			A			D	
Intersection Summary												
HCM 2000 Control Delay			11.2		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					10.0		
Intersection Capacity Utilization			55.4%		ICU Level of Service					B		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/25/2021

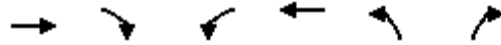
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

2: University Ave NW & Wesley Cir NW

10/25/2021


















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔					↔
Traffic Volume (veh/h)	46	15	0	0	0	33
Future Volume (Veh/h)	46	15	0	0	0	33
Sign Control	Free		Free		Yield	
Grade	5%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	17	0	0	0	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			68		60	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		60	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1533		947	1006
Direction, Lane #	EB 1	NB 1				
Volume Total	68	37				
Volume Left	0	0				
Volume Right	17	37				
cSH	1700	1006				
Volume to Capacity	0.04	0.04				
Queue Length 95th (ft)	0	3				
Control Delay (s)	0.0	8.7				
Lane LOS		A				
Approach Delay (s)	0.0	8.7				
Approach LOS		A				
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS

10/25/2021

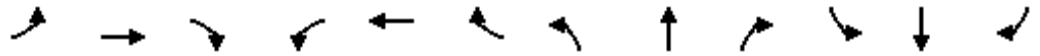
												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	2	2	75	0	0	0	0	1266	0	0	662	34
Future Volume (Veh/h)	2	2	75	0	0	0	0	1266	0	0	662	34
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	2	2	77	0	0	0	0	1292	0	0	676	35
Pedestrians					16							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								232			230	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78					0.78		
vC, conflicting volume	1630	2019	646	1434	2002	372	727			1292		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1238	1738	0	985	1716	372	727			803		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	97	91	100	100	100	100			100		
cM capacity (veh/h)	102	67	843	140	69	626	866			630		
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2							
Volume Total	81	646	646	451	260							
Volume Left	2	0	0	0	0							
Volume Right	77	0	0	0	35							
cSH	575	1700	1700	1700	1700							
Volume to Capacity	0.14	0.38	0.38	0.27	0.15							
Queue Length 95th (ft)	12	0	0	0	0							
Control Delay (s)	12.3	0.0	0.0	0.0	0.0							
Lane LOS	B											
Approach Delay (s)	12.3	0.0		0.0								
Approach LOS	B											
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			50.9%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

4: University Ave NW & Sedgwick St NW/WTS Dwy

10/25/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	4	0	2	0	0	0	1	25	0	0	14	1
Future Volume (Veh/h)	4	0	2	0	0	0	1	25	0	0	14	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	2	0	0	0	1	28	0	0	16	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	46	46	16	48	47	28	17			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	46	46	16	48	47	28	17			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	954	845	1063	950	844	1047	1600			1585		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	0	29	17								
Volume Left	4	0	1	0								
Volume Right	2	0	0	1								
cSH	988	1700	1600	1700								
Volume to Capacity	0.01	0.01	0.00	0.01								
Queue Length 95th (ft)	0	0	0	0								
Control Delay (s)	8.7	0.0	0.3	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	8.7	0.0	0.3	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			13.3%		ICU Level of Service					A		
Analysis Period (min)			15									

Queues

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

10/25/2021



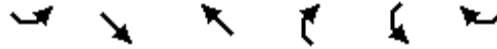
Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1490	779	30
v/c Ratio	0.54	0.23	0.02
Control Delay	1.3	0.1	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	1.3	0.1	0.0
Queue Length 50th (ft)	18	0	0
Queue Length 95th (ft)	4	0	0
Internal Link Dist (ft)	150	66	207
Turn Bay Length (ft)			
Base Capacity (vph)	2739	3405	1587
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.23	0.02
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

10/25/2021



Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Volume (vph)	63	1278	683	18	14	13
Future Volume (vph)	63	1278	683	18	14	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Fr _t		1.00	1.00		0.94	
Fl _t Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3230	3406		1587	
Fl _t Permitted		0.85	1.00		0.97	
Satd. Flow (perm)		2739	3406		1587	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	1420	759	20	16	14
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1490	779	0	30	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2739	3406		1587	
v/s Ratio Prot			0.23			
v/s Ratio Perm		c0.54			0.02	
v/c Ratio		0.54	0.23		0.02	
Uniform Delay, d ₁		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d ₂		0.7	0.1		0.0	
Delay (s)		0.7	0.1		0.0	
Level of Service		A	A		A	
Approach Delay (s)		0.7	0.1		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.










c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

6: WTS Dwy & Massachusetts Ave NW

10/25/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (veh/h)	0	21	1283	9	22	701
Future Volume (Veh/h)	0	21	1283	9	22	701
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	23	1426	10	24	779
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	214			651		
pX, platoon unblocked	0.75					
vC, conflicting volume	2258	718	1436			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2506	718	1436			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	95			
cM capacity (veh/h)	17	371	469			
Direction, Lane #	NB 1	SE 1	SE 2	NW 1		
Volume Total	23	951	485	803		
Volume Left	0	0	0	24		
Volume Right	23	0	10	0		
cSH	371	1700	1700	469		
Volume to Capacity	0.06	0.56	0.29	0.05		
Queue Length 95th (ft)	5	0	0	4		
Control Delay (s)	15.3	0.0	0.0	1.6		
Lane LOS	C					A
Approach Delay (s)	15.3	0.0	1.6			
Approach LOS	C					
Intersection Summary						
Average Delay	0.7					
Intersection Capacity Utilization	58.0%			ICU Level of Service	B	
Analysis Period (min)	15					

Queues

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/25/2021



Lane Group	SET	NWT	NWR	NET	NER	SWT
Lane Group Flow (vph)	1418	770	65	30	36	29
v/c Ratio	0.71	0.68	0.08	0.25	0.24	0.15
Control Delay	12.6	11.4	1.1	52.6	7.3	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	11.4	1.1	52.6	7.3	42.3
Queue Length 50th (ft)	303	262	0	21	0	17
Queue Length 95th (ft)	404	389	10	52	12	46
Internal Link Dist (ft)	571	391		281		141
Turn Bay Length (ft)						
Base Capacity (vph)	1995	1136	863	120	148	188
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.68	0.08	0.25	0.24	0.15

Intersection Summary

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/25/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations		↔↔			↑	↗		↖	↗		↔		
Traffic Volume (vph)	22	1204	78	11	697	60	21	6	33	4	18	5	
Future Volume (vph)	22	1204	78	11	697	60	21	6	33	4	18	5	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10	
Grade (%)		4%			-4%			-1%				5%	
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0		
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00		
Frbp, ped/bikes		1.00			1.00	0.86		1.00	0.67		0.98		
Flpb, ped/bikes		1.00			1.00	1.00		0.93	1.00		0.96		
Frt		0.99			1.00	0.85		1.00	0.85		0.98		
Flt Protected		1.00			1.00	1.00		0.96	1.00		0.99		
Satd. Flow (prot)		2846			1564	1130		1089	694		1417		
Flt Permitted		0.93			0.97	1.00		0.80	1.00		0.97		
Satd. Flow (perm)		2655			1516	1130		904	694		1383		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	24	1309	85	12	758	65	23	7	36	4	20	5	
RTOR Reduction (vph)	0	4	0	0	0	16	0	0	31	0	4	0	
Lane Group Flow (vph)	0	1414	0	0	770	49	0	30	5	0	25	0	
Confl. Peds. (#/hr)	19		8	8		19	22		160	160		22	
Confl. Bikes (#/hr)			1										
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	32%	32%	32%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0	0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA		
Protected Phases		6			2			8				4	
Permitted Phases	6			2		2	8		8		4		
Actuated Green, G (s)		88.0			88.0	88.0		14.0	14.0		14.0		
Effective Green, g (s)		90.0			90.0	90.0		16.0	16.0		16.0		
Actuated g/C Ratio		0.75			0.75	0.75		0.13	0.13		0.13		
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0		
Lane Grp Cap (vph)		1991			1137	847		120	92		184		
v/s Ratio Prot													
v/s Ratio Perm		c0.53			0.51	0.04		c0.03	0.01		0.02		
v/c Ratio		0.71			0.68	0.06		0.25	0.05		0.13		
Uniform Delay, d1		8.0			7.6	3.9		46.6	45.4		45.9		
Progression Factor		1.30			1.00	1.00		1.00	1.00		1.00		
Incremental Delay, d2		1.9			3.2	0.1		4.9	1.1		1.5		
Delay (s)		12.3			10.9	4.0		51.5	46.5		47.4		
Level of Service		B			B	A		D	D		D		
Approach Delay (s)		12.3			10.3			48.8			47.4		
Approach LOS		B			B			D			D		
Intersection Summary													
HCM 2000 Control Delay			13.1									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.63										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			75.6%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

Queues

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

11/10/2021



Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1013	6	1137	131
v/c Ratio	0.49	0.01	0.56	0.64
Control Delay	6.9	3.8	4.1	62.5
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	6.9	3.8	4.2	62.5
Queue Length 50th (ft)	141	1	71	95
Queue Length 95th (ft)	178	4	83	#175
Internal Link Dist (ft)	290		149	39
Turn Bay Length (ft)		90		
Base Capacity (vph)	2064	824	2034	204
Starvation Cap Reductn	0	0	183	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.61	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

11/10/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↑		↑↑						↑↓	
Traffic Volume (vph)	0	972	6	35	1057	0	0	0	0	91	32	3
Future Volume (vph)	0	972	6	35	1057	0	0	0	0	91	32	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frbp, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2752	1099		3071						1285	
Flt Permitted		1.00	1.00		0.88						0.97	
Satd. Flow (perm)		2752	1099		2713						1285	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1012	6	36	1101	0	0	0	0	95	33	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1013	6	0	1137	0	0	0	0	0	130	0
Confl. Peds. (#/hr)	7		28	28		7	7					7
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	5	0	0	0	0	0	0	0
Parking (#/hr)		0	0							0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		88.0	88.0		88.0						17.0	
Effective Green, g (s)		90.0	90.0		90.0						19.0	
Actuated g/C Ratio		0.75	0.75		0.75						0.16	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		2064	824		2034						203	
v/s Ratio Prot		0.37									c0.10	
v/s Ratio Perm			0.01		c0.42							
v/c Ratio		0.49	0.01		0.56						0.64	
Uniform Delay, d1		5.9	3.8		6.5						47.3	
Progression Factor		1.00	1.00		0.45						1.00	
Incremental Delay, d2		0.8	0.0		1.0						14.5	
Delay (s)		6.8	3.8		4.0						61.8	
Level of Service		A	A		A						E	
Approach Delay (s)		6.8			4.0			0.0			61.8	
Approach LOS		A			A			A			E	
Intersection Summary												
HCM 2000 Control Delay			8.5		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					10.0		
Intersection Capacity Utilization			79.8%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

11/10/2021

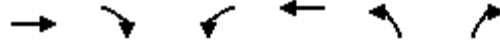
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

2: University Ave NW & Wesley Cir NW

11/10/2021


















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻					↻
Traffic Volume (veh/h)	33	26	0	0	0	29
Future Volume (Veh/h)	33	26	0	0	0	29
Sign Control	Free		Free		Yield	
Grade	5%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	29	0	0	0	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			66		52	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		52	52
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			1536		957	1016
Direction, Lane #	EB 1	NB 1				
Volume Total	66	32				
Volume Left	0	0				
Volume Right	29	32				
cSH	1700	1016				
Volume to Capacity	0.04	0.03				
Queue Length 95th (ft)	0	2				
Control Delay (s)	0.0	8.7				
Lane LOS		A				
Approach Delay (s)	0.0	8.7				
Approach LOS		A				
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS

11/10/2021

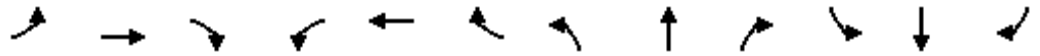
												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (veh/h)	3	6	49	0	0	0	0	1063	0	0	1100	75
Future Volume (Veh/h)	3	6	49	0	0	0	0	1063	0	0	1100	75
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	3	6	51	0	0	0	0	1107	0	0	1146	78
Pedestrians					7							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)								229			230	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87					0.87		
vC, conflicting volume	1680	2338	554	1800	2299	619	1231			1107		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1477	2236	178	1615	2191	619	1231			817		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	83	93	100	100	100	100			100		
cM capacity (veh/h)	76	36	723	49	39	432	567			705		
Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2							
Volume Total	60	554	554	764	460							
Volume Left	3	0	0	0	0							
Volume Right	51	0	0	0	78							
cSH	217	1700	1700	1700	1700							
Volume to Capacity	0.28	0.33	0.33	0.45	0.27							
Queue Length 95th (ft)	27	0	0	0	0							
Control Delay (s)	27.8	0.0	0.0	0.0	0.0							
Lane LOS	D											
Approach Delay (s)	27.8	0.0		0.0								
Approach LOS	D											
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			47.0%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

4: University Ave NW & Sedgwick St NW/WTS Dwy

11/10/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	0	1	0	0	0	1	8	0	0	21	5
Future Volume (Veh/h)	5	0	1	0	0	0	1	8	0	0	21	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	1	0	0	0	1	9	0	0	23	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	37	37	26	38	40	9	29			9		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	37	37	26	38	40	9	29			9		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	100	100			100		
cM capacity (veh/h)	968	855	1050	966	852	1073	1584			1611		
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	7	0	10	29								
Volume Left	6	0	1	0								
Volume Right	1	0	0	6								
cSH	979	1700	1584	1700								
Volume to Capacity	0.01	0.00	0.00	0.02								
Queue Length 95th (ft)	1	0	0	0								
Control Delay (s)	8.7	0.0	0.7	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	8.7	0.0	0.7	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			13.3%	ICU Level of Service		A						
Analysis Period (min)			15									

Queues

5: Massachusetts Ave NW & 45th St NW



Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1235	1338	74
v/c Ratio	0.45	0.39	0.05
Control Delay	0.7	0.3	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	0.7	0.3	0.0
Queue Length 50th (ft)	7	0	0
Queue Length 95th (ft)	0	0	0
Internal Link Dist (ft)	150	66	258
Turn Bay Length (ft)			
Base Capacity (vph)	2716	3402	1637
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.39	0.05
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

11/10/2021



Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Volume (vph)	35	1076	1166	38	58	9
Future Volume (vph)	35	1076	1166	38	58	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Fr _t		1.00	1.00		0.98	
Fl _t Protected		1.00	1.00		0.96	
Satd. Flow (prot)		3232	3403		1636	
Fl _t Permitted		0.84	1.00		0.96	
Satd. Flow (perm)		2716	3403		1636	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	1196	1296	42	64	10
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1235	1338	0	74	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2716	3403		1636	
v/s Ratio Prot			0.39			
v/s Ratio Perm		c0.45			0.05	
v/c Ratio		0.45	0.39		0.05	
Uniform Delay, d ₁		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d ₂		0.5	0.3		0.1	
Delay (s)		0.5	0.3		0.1	
Level of Service		A	A		A	
Approach Delay (s)		0.5	0.3		0.1	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.











c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

6: WTS Dwy & Massachusetts Ave NW

11/10/2021

						
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						 
Traffic Volume (veh/h)	0	54	1114	20	27	1205
Future Volume (Veh/h)	0	54	1114	20	27	1205
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	60	1238	22	30	1339
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			219			646
pX, platoon unblocked	0.12	0.02			0.02	
vC, conflicting volume	1978	1249			1260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			11	
cM capacity (veh/h)	13	22			34	
Direction, Lane #	NB 1	SE 1	NW 1	NW 2		
Volume Total	60	1260	476	893		
Volume Left	0	0	30	0		
Volume Right	60	22	0	0		
cSH	22	1700	34	1700		
Volume to Capacity	2.67	0.74	0.89	0.53		
Queue Length 95th (ft)	191	0	78	0		
Control Delay (s)	1116.9	0.0	296.3	0.0		
Lane LOS	F		F			
Approach Delay (s)	1116.9	0.0	103.1			
Approach LOS	F					
Intersection Summary						
Average Delay			77.4			
Intersection Capacity Utilization			69.9%		ICU Level of Service	C
Analysis Period (min)			15			

Since the static HCM unsignalized analyses do not adequately account for gaps in through traffic created by the upstream traffic signals, this intersection was further analyzed using the SimTraffic analyses software.

SimTraffic Simulation Summary

Total Future Alternative B 2024

11/10/2021

Summary of All Intervals

Run Number	1	2	3	2811)\Analysis\Synchro5\TF Alt B PM2	Avg
Start Time	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60
# of Intervals	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1
Vehs Entered	2515	2603	2642	2554	2583
Vehs Exited	2469	2549	2633	2556	2559
Starting Vehs	104	119	159	161	132
Ending Vehs	150	173	168	159	155
Travel Distance (mi)	1291	1342	1406	1344	1347
Travel Time (hr)	219.7	225.8	229.7	214.3	231.1
Total Delay (hr)	174.5	178.7	180.5	167.2	183.9
Total Stops	3677	4133	4467	3746	3884
Fuel Used (gal)	84.3	87.7	89.8	85.3	88.5

Interval #0 Information Seeding

Start Time 4:45

End Time 5:00

Total Time (min) 15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time 5:00

End Time 6:00

Total Time (min) 60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	2811)\Analysis\Synchro5\TF Alt B PM2	Avg
Vehs Entered	2515	2603	2642	2554	2583
Vehs Exited	2469	2549	2633	2556	2559
Starting Vehs	104	119	159	161	132
Ending Vehs	150	173	168	159	155
Travel Distance (mi)	1291	1342	1406	1344	1347
Travel Time (hr)	219.7	225.8	229.7	214.3	231.1
Total Delay (hr)	174.5	178.7	180.5	167.2	183.9
Total Stops	3677	4133	4467	3746	3884
Fuel Used (gal)	84.3	87.7	89.8	85.3	88.5

The traffic simulations were prepared by taking the average of five (5) model runs with 15-minute seed times and 60-minute run times.

SimTraffic Performance Report
Total Future Alternative B 2024

11/10/2021

6: WTS Dwy & Massachusetts Ave NW Performance by approach

Approach	NB	SE	NW	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	28.3	1.2	6.7	4.9

The traffic simulations were prepared by taking the average of five (5) model runs with 15-minute seed times and 60-minute run times.

Queuing and Blocking Report
Total Future Alternative B 2024

11/10/2021

Intersection: 6: WTS Dwy & Massachusetts Ave NW

Movement	NB	SE	NW	NW
Directions Served	R	TR	LT	T
Maximum Queue (ft)	82	35	274	290
Average Queue (ft)	33	1	106	83
95th Queue (ft)	70	15	254	233
Link Distance (ft)	240	22	582	582
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queues

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

11/10/2021



Lane Group	SET	NWT	NET	NER	SWT
Lane Group Flow (vph)	1242	1272	74	88	73
v/c Ratio	0.71	0.65	0.41	0.45	0.33
Control Delay	11.1	11.2	52.0	17.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	11.2	52.0	17.0	30.7
Queue Length 50th (ft)	219	247	52	0	28
Queue Length 95th (ft)	251	312	102	52	74
Internal Link Dist (ft)	566	391	281		141
Turn Bay Length (ft)					
Base Capacity (vph)	1746	1971	179	194	224
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.65	0.41	0.45	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

11/10/2021



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations		↕↕			↕↕			↕	↕		↕↕		
Traffic Volume (vph)	21	1051	96	15	1138	42	61	8	83	19	18	32	
Future Volume (vph)	21	1051	96	15	1138	42	61	8	83	19	18	32	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10	
Grade (%)		4%			-4%			-1%				5%	
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0		
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00		
Frbp, ped/bikes		0.98			0.99			1.00	0.54		0.96		
Flpb, ped/bikes		1.00			1.00			0.94	1.00		0.89		
Frt		0.99			0.99			1.00	0.85		0.94		
Flt Protected		1.00			1.00			0.96	1.00		0.99		
Satd. Flow (prot)		2704			2997			1381	697		1221		
Flt Permitted		0.91			0.93			0.71	1.00		0.91		
Satd. Flow (perm)		2459			2781			1025	697		1132		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	22	1118	102	16	1211	45	65	9	88	20	19	34	
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	73	0	26	0	
Lane Group Flow (vph)	0	1236	0	0	1270	0	0	74	15	0	47	0	
Confl. Peds. (#/hr)	21		41	41		21	32		428	428		32	
Confl. Bikes (#/hr)			3			1							
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	5	5	0	0	0	0	0	0	
Parking (#/hr)	0	0	0										
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA		
Protected Phases		6			2			8				4	
Permitted Phases	6			2			8		8	4			
Actuated Green, G (s)		83.0			83.0			19.0	19.0		19.0		
Effective Green, g (s)		85.0			85.0			21.0	21.0		21.0		
Actuated g/C Ratio		0.71			0.71			0.18	0.18		0.18		
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0		
Lane Grp Cap (vph)		1741			1969			179	121		198		
v/s Ratio Prot													
v/s Ratio Perm		c0.50			0.46			c0.07	0.02		0.04		
v/c Ratio		0.71			0.64			0.41	0.13		0.24		
Uniform Delay, d1		10.3			9.4			44.0	41.8		42.6		
Progression Factor		0.84			1.00			1.00	1.00		1.00		
Incremental Delay, d2		2.3			1.6			6.9	2.2		2.8		
Delay (s)		10.9			11.0			50.9	43.9		45.4		
Level of Service		B			B			D	D		D		
Approach Delay (s)		10.9			11.0			47.1			45.4		
Approach LOS		B			B			D			D		
Intersection Summary													
HCM 2000 Control Delay			14.0									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.64										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			73.5%									ICU Level of Service	D
Analysis Period (min)			15										

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

11/10/2021

c Critical Lane Group