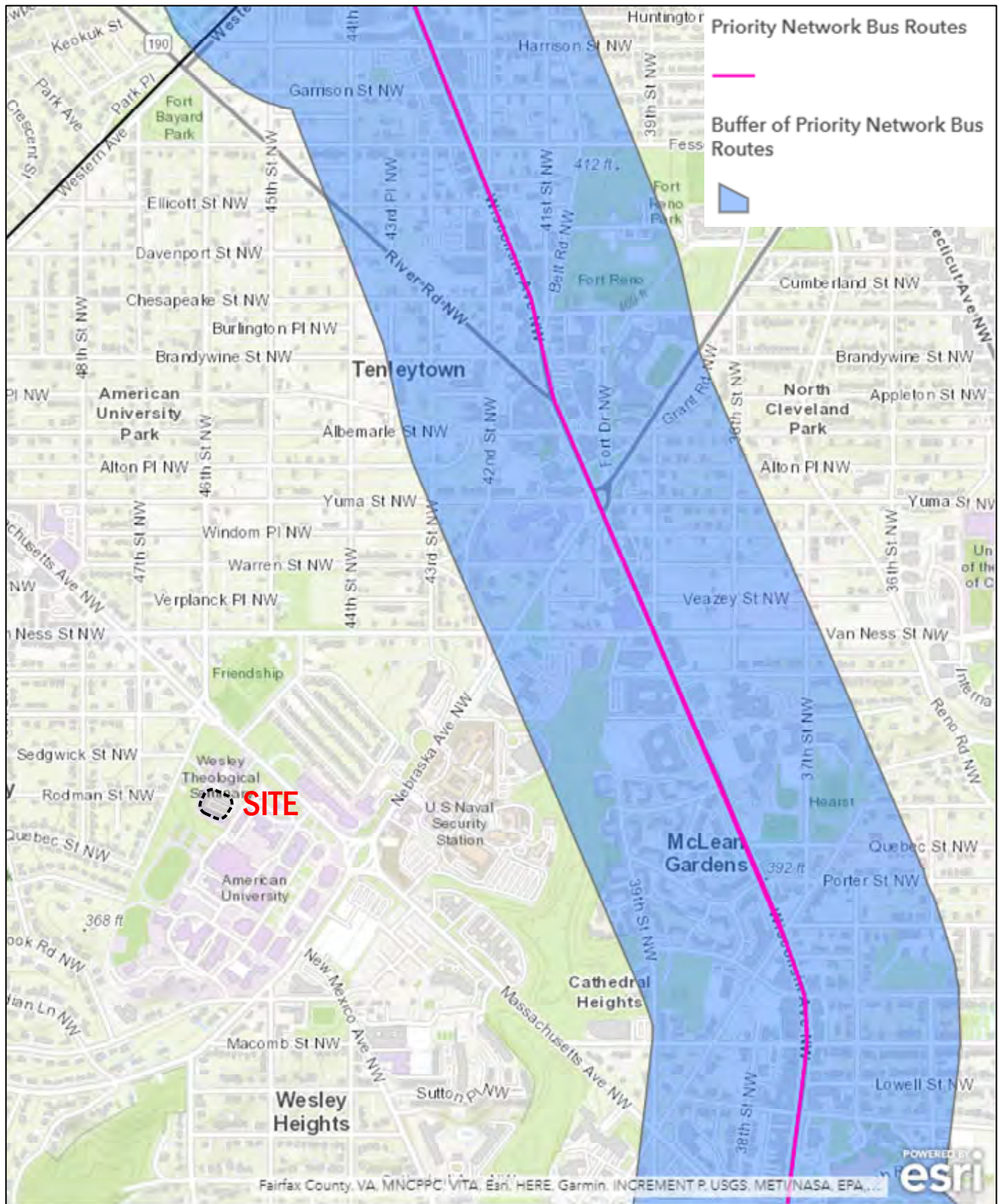
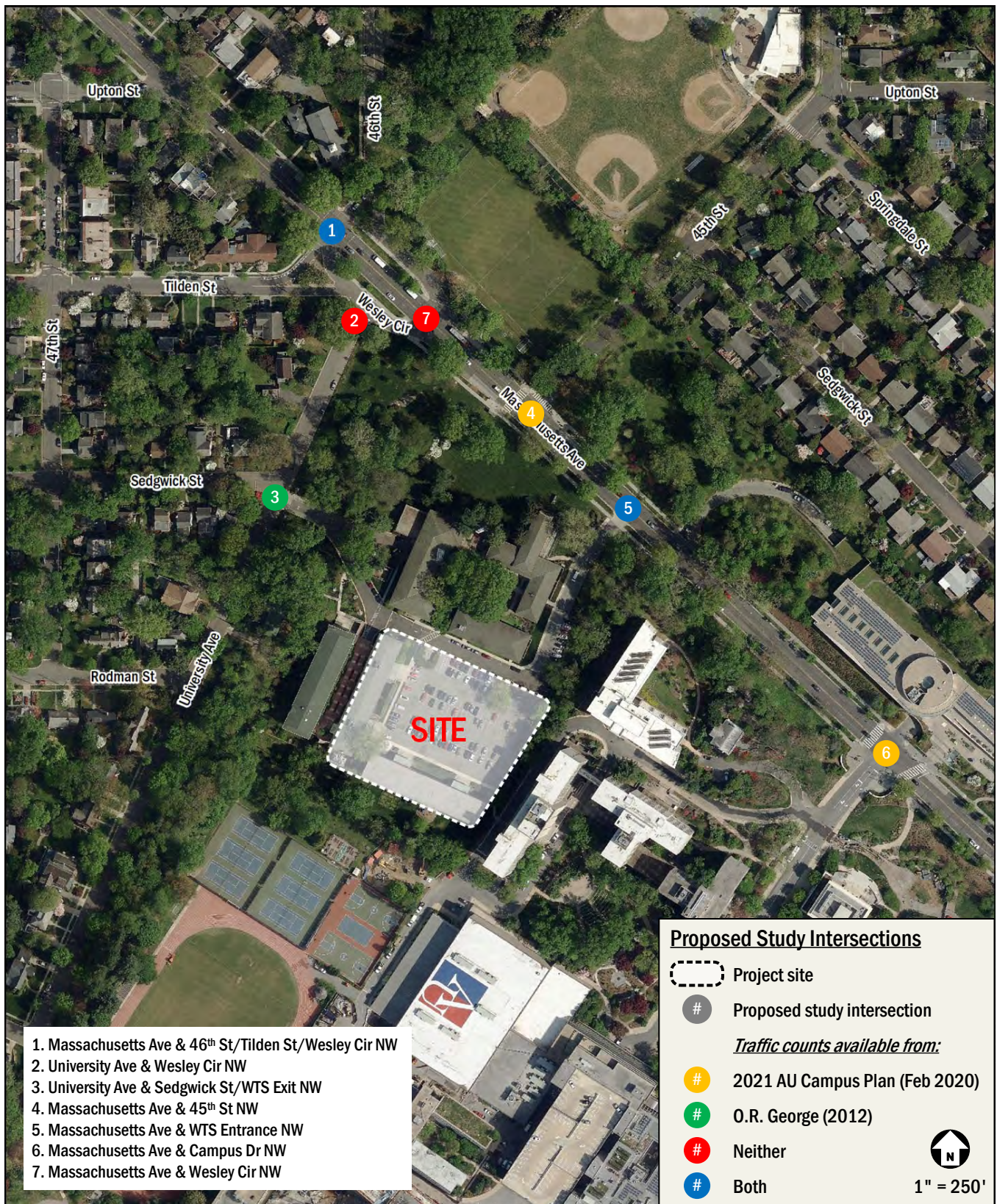




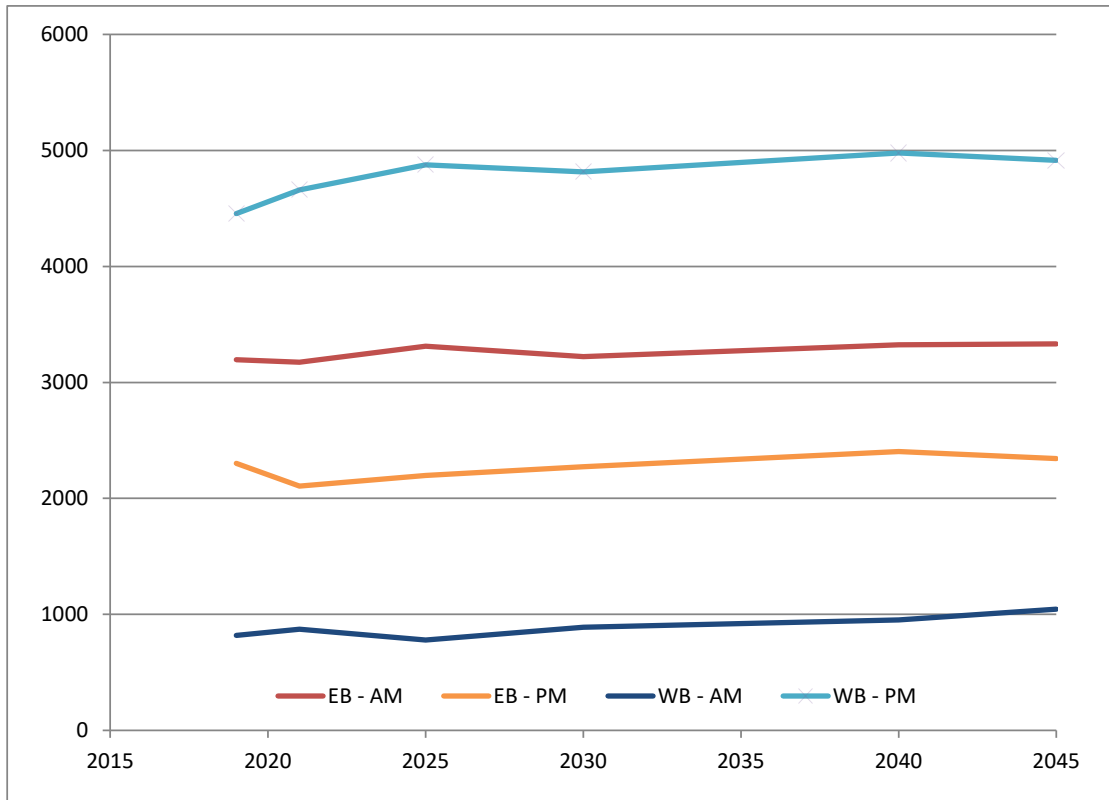


Growth Rate Information & Assumptions

Massachusetts Ave NW west of Wesley Cir

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
EB - AM	3195	3174	3312	3221	3323	3332
EB - PM	2303	2106	2198	2274	2404	2344
WB - AM	819	871	779	890	952	1045
WB - PM	4455	4660	4875	4815	4978	4914



Growth Rate Information & Assumptions**Massachusetts Ave NW west of Wesley Cir****Historical DDOT AADTs in thousands**

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Massachusetts Ave NW west of Wesley Cir	17.5	16.9	17	18.6	18.7	19	19.2	19.7	19.9	20.4

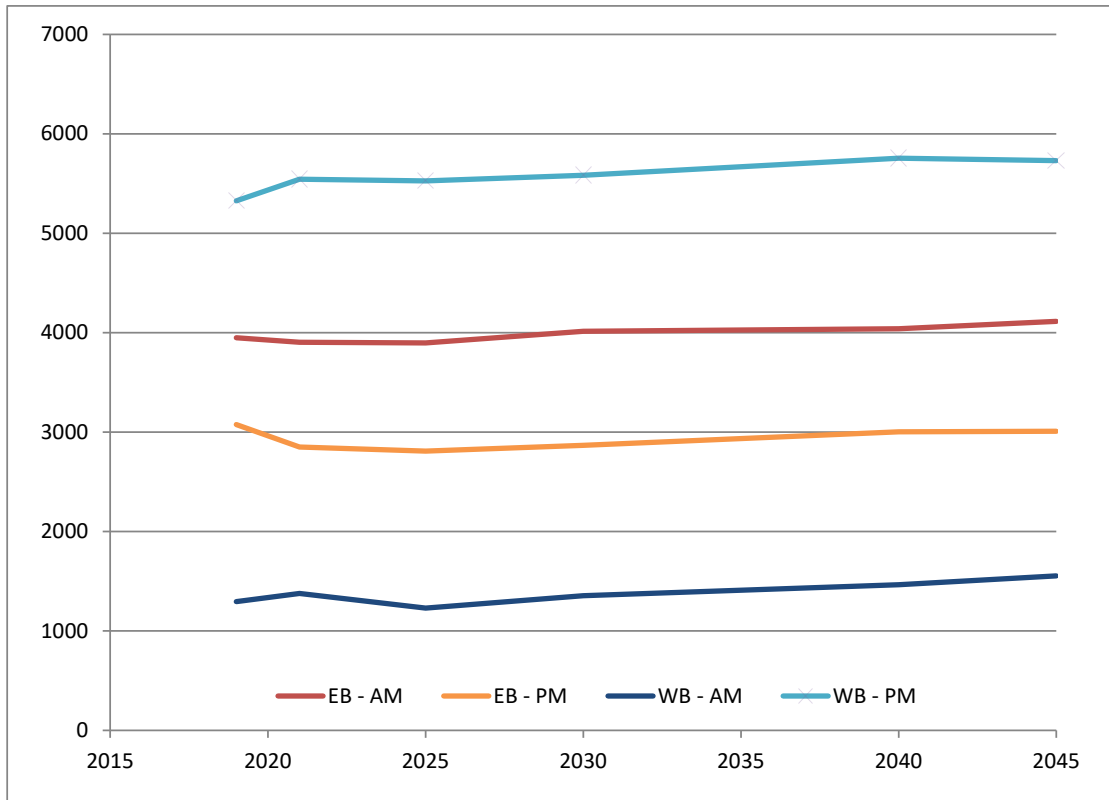
Growth per year since:	2009	2012	2015
	1.5%	1.3%	1.5%

Growth Rate Information & Assumptions

Massachusetts Ave NW btwn Wesley Cir and 45th St

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
EB - AM	3949	3904	3897	4015	4039	4114
EB - PM	3076	2851	2809	2867	3002	3008
WB - AM	1294	1378	1230	1354	1464	1554
WB - PM	5326	5544	5528	5582	5755	5731



Growth Rate Information & Assumptions**Massachusetts Ave NW btwn Wesley Cir and 45th St****Historical DDOT AADTs in thousands**

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Massachusetts Ave NW btwn Wesley Cir and	22.9	22.1	22.2	22	22.1	19.7	20	20.8	20.9	21.0

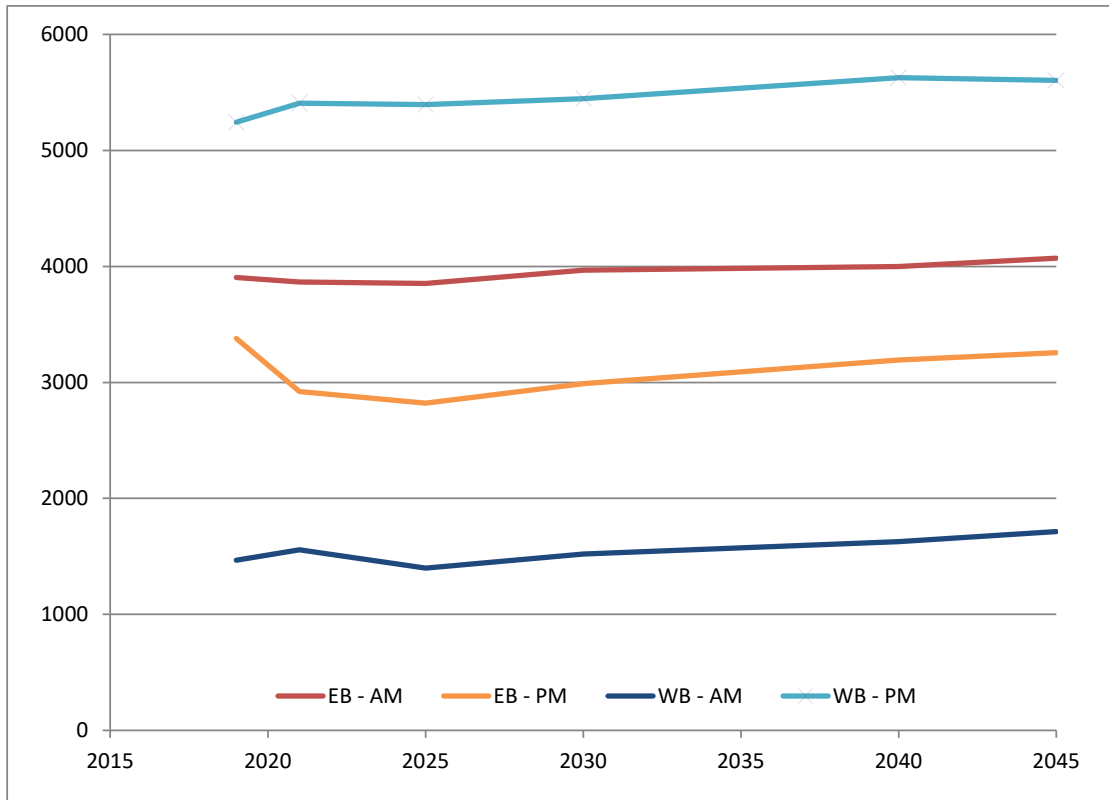
Growth per year since:	2009	2012	2015
	-0.9%	-0.7%	1.2%

Growth Rate Information & Assumptions

Massachusetts Ave NW east of 45th St

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
EB - AM	3905	3865	3853	3968	3998	4071
EB - PM	3379	2921	2821	2988	3192	3256
WB - AM	1467	1556	1399	1521	1627	1714
WB - PM	5243	5408	5394	5446	5627	5603



Growth Rate Information & Assumptions**Massachusetts Ave NW east of 45th St****Historical DDOT AADTs in thousands**

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Massachusetts Ave NW east of 45th St	22.9	22.1	22.2	22	22.1	19.7	20	20.8	20.9	21.0

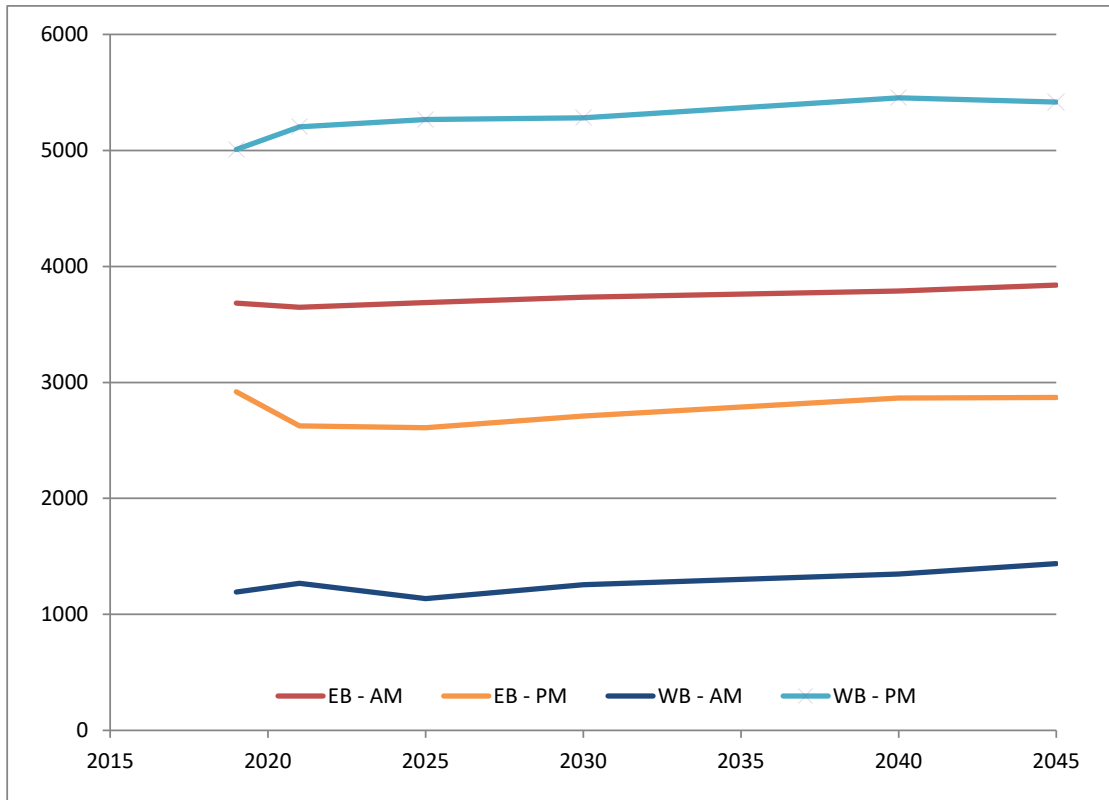
Growth per year since:	2009	2012	2015
	-0.9%	-0.7%	1.2%

Growth Rate Information & Assumptions

Massachusetts Ave NW aggregate

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
EB - AM	3683	3648	3687	3735	3787	3839
EB - PM	2919	2626	2609	2710	2866	2869
WB - AM	1193	1268	1136	1255	1348	1438
WB - PM	5008	5204	5266	5281	5453	5416



Year of data collection: 2020

Project completion date: 2021

Direction/Period	Growth per year between 2020 & 2021
EB - AM	-0.48%
EB - PM	-5.16%
WB - AM	3.09%
WB - PM	1.94%

Growth Rate Information & Assumptions**Massachusetts Ave NW aggregate****Historical DDOT AADTs in thousands**

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Massachusetts Ave NW aggregate	21.1	20.4	20.5	20.9	21.0	19.5	19.7	20.4	20.6	20.8

Growth per year since:	2009	2012	2015
	-0.1%	0.0%	1.3%

Proposed Growth Rates for Use in Study:

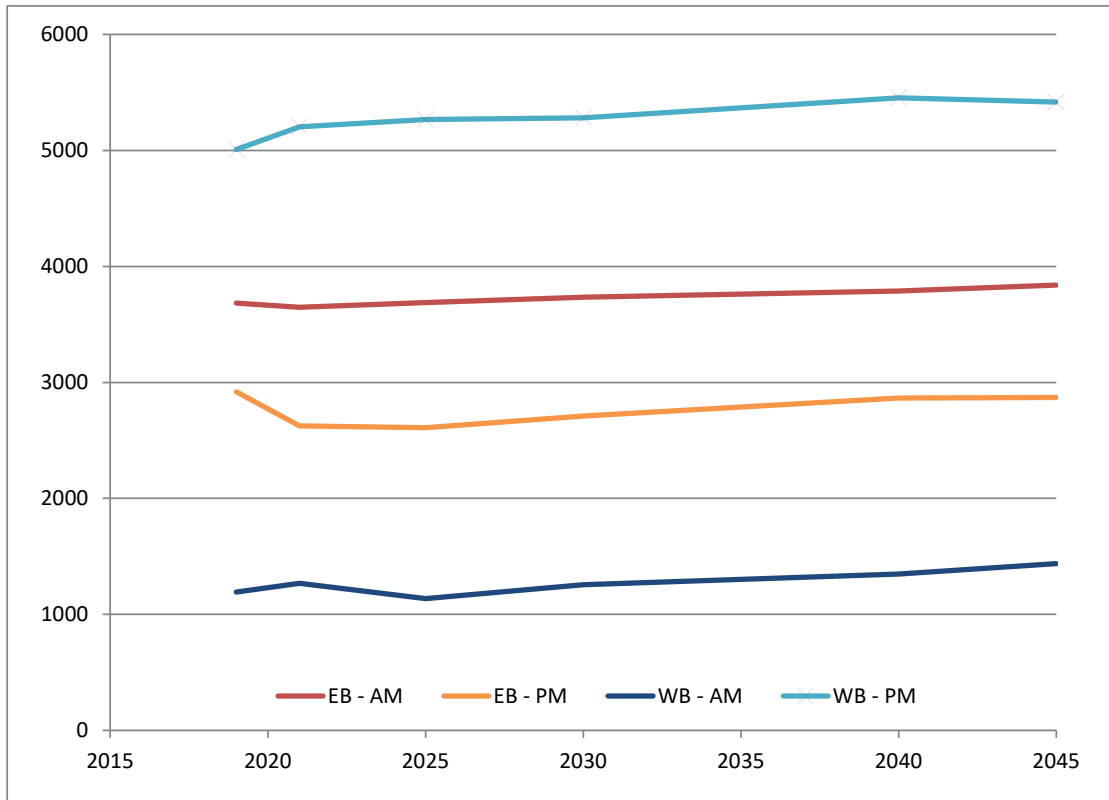
Direction/Period	Per year btwn 2020 & 2021	Total btwn 2020 & 2021
EB - AM	0.10%	0.10%
EB - PM	0.10%	0.10%
WB - AM	2.00%	2.00%
WB - PM	0.50%	0.50%

Growth Rate Information & Assumptions

Massachusetts Ave NW aggregate

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
EB - AM	3683	3648	3687	3735	3787	3839
EB - PM	2919	2626	2609	2710	2866	2869
WB - AM	1193	1268	1136	1255	1348	1438
WB - PM	5008	5204	5266	5281	5453	5416



Year of data collection: 2021
 Project completion date: 2024

Direction/Period	Growth per year between 2021 & 2024
EB - AM	0.27%
EB - PM	-0.16%
WB - AM	-2.72%
WB - PM	0.29%

Growth Rate Information & Assumptions**Massachusetts Ave NW aggregate****Historical DDOT AADTs in thousands**

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Massachusetts Ave NW aggregate	21.1	20.4	20.5	20.9	21.0	19.5	19.7	20.4	20.6	20.8

Growth per year since:	2009	2012	2015
	-0.1%	0.0%	1.3%

Proposed Growth Rates for Use in Study:

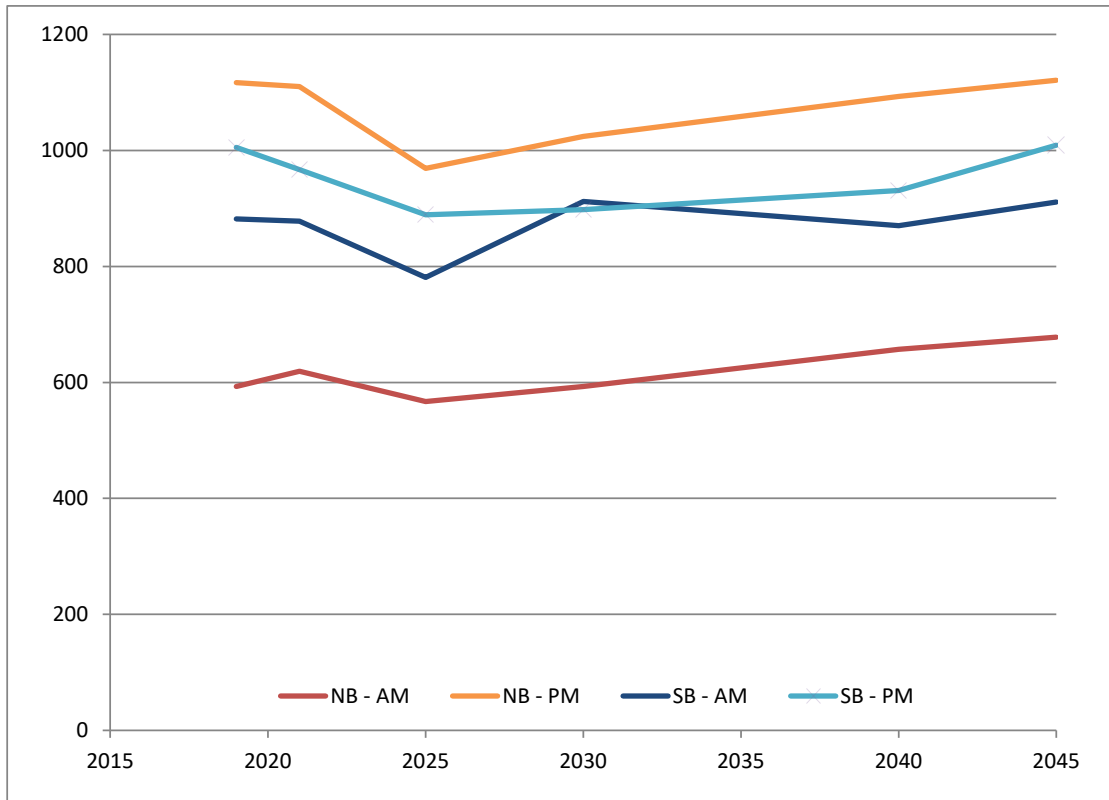
Direction/Period	Per year btwn 2021 & 2024	Total btwn 2021 & 2024
EB - AM	0.30%	0.90%
EB - PM	0.10%	0.30%
WB - AM	0.10%	0.30%
WB - PM	0.30%	0.90%

Growth Rate Information & Assumptions

46th St NW

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
NB - AM	593	619	567	593	657	678
NB - PM	1117	1110	969	1024	1093	1121
SB - AM	882	878	781	912	870	911
SB - PM	1005	967	889	898	931	1009



Year of data collection: 2020
 Project completion date: 2021

Direction/Period	Growth per year between 2020 & 2021
NB - AM	2.17%
NB - PM	-0.31%
SB - AM	-0.23%
SB - PM	-1.91%

Growth Rate Information & Assumptions**46th St NW****Historical DDOT AADTs in thousands**

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
46th St NW	2.3	2.2	2.2	2.2	2.2	2.6	2.7	2.8	2.8	2.8

Growth per year since:	2009	2012	2015
	2.0%	3.5%	0.9%

Proposed Growth Rates for Use in Study:

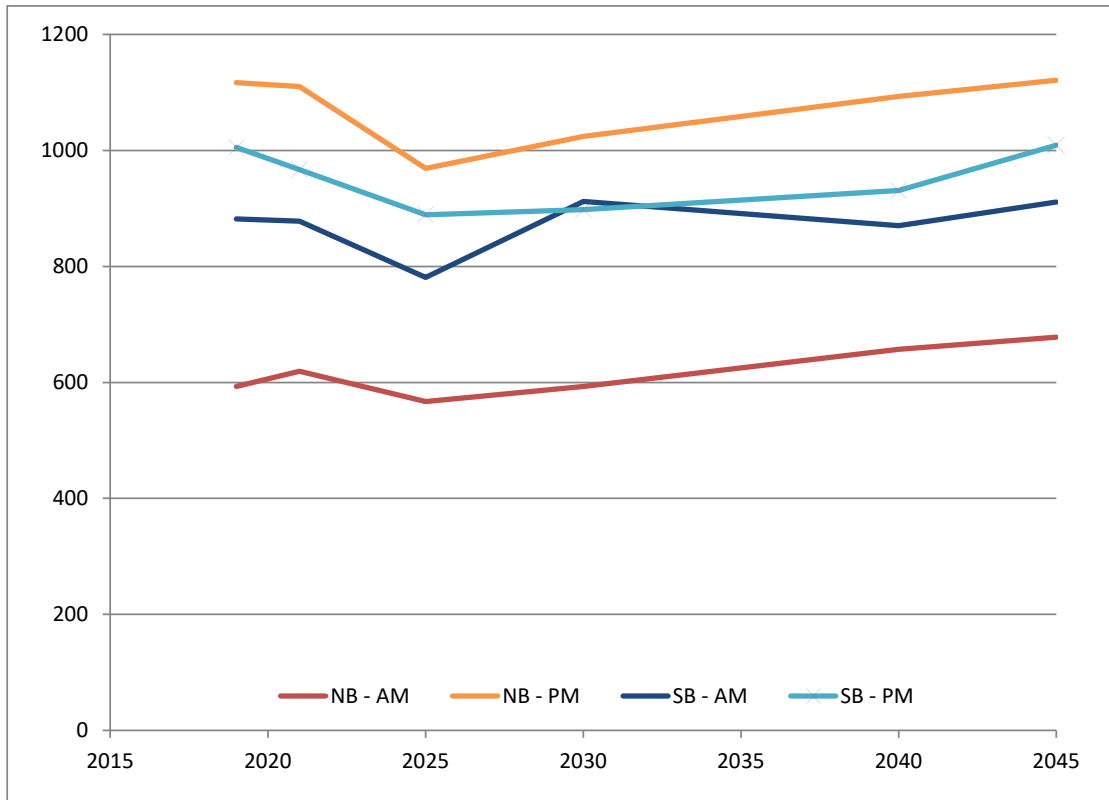
Direction/Period	Per year btwn 2020 & 2021	Total btwn 2020 & 2021
NB - AM	2.00%	2.00%
NB - PM	0.10%	0.10%
SB - AM	0.10%	0.10%
SB - PM	0.10%	0.10%

Growth Rate Information & Assumptions

46th St NW

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
NB - AM	593	619	567	593	657	678
NB - PM	1117	1110	969	1024	1093	1121
SB - AM	882	878	781	912	870	911
SB - PM	1005	967	889	898	931	1009



Year of data collection: 2021
 Project completion date: 2024

Direction/Period	Growth per year between 2021 & 2024
NB - AM	-2.17%
NB - PM	-3.34%
SB - AM	-2.88%
SB - PM	-2.08%

Growth Rate Information & Assumptions**46th St NW****Historical DDOT AADTs in thousands**

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
46th St NW	2.3	2.2	2.2	2.2	2.2	2.6	2.7	2.8	2.8	2.8

Growth per year since:	2009	2012	2015
	2.0%	3.5%	0.9%

Proposed Growth Rates for Use in Study:

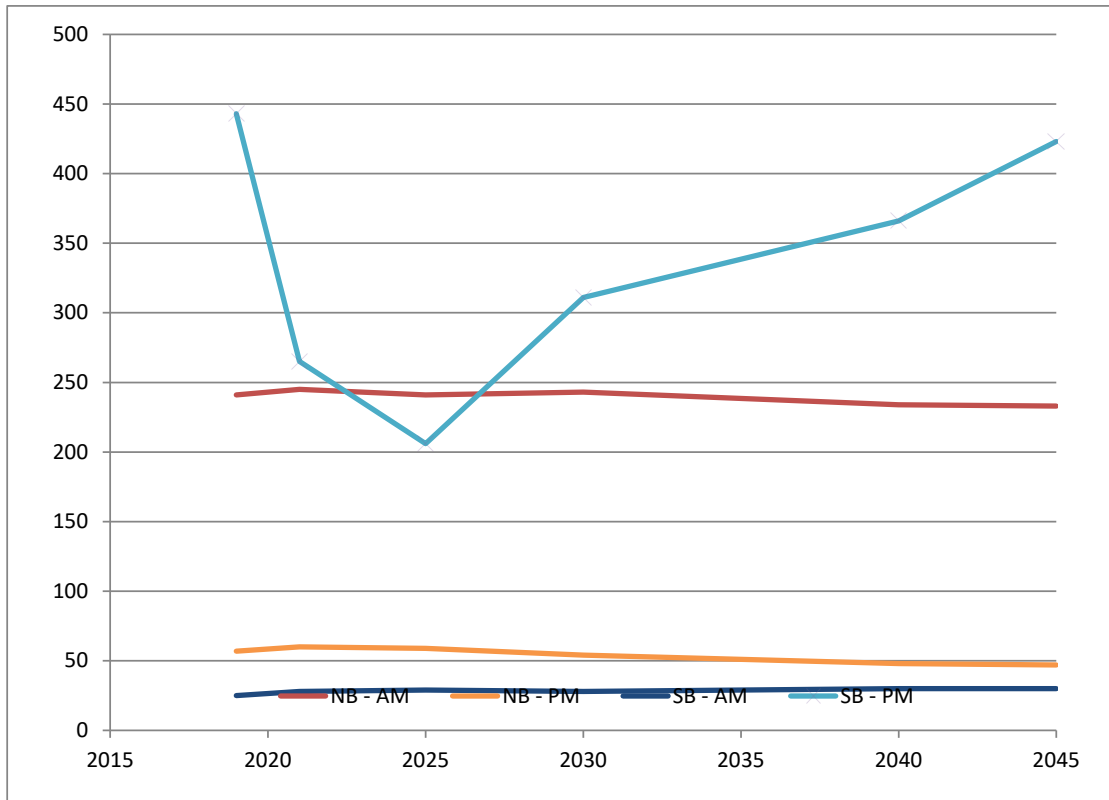
Direction/Period	Per year btwn 2021 & 2024	Total btwn 2021 & 2024
NB - AM	0.10%	0.30%
NB - PM	0.10%	0.30%
SB - AM	0.10%	0.30%
SB - PM	0.10%	0.30%

Growth Rate Information & Assumptions

45th St NW

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
NB - AM	241	245	241	243	234	233
NB - PM	57	60	59	54	48	47
SB - AM	25	28	29	28	30	30
SB - PM	443	265	206	311	366	423



Year of data collection: 2020
 Project completion date: 2021

Direction/Period	Growth per year between 2020 & 2021
NB - AM	0.83%
NB - PM	2.60%
SB - AM	5.83%
SB - PM	-22.66%

Growth Rate Information & Assumptions**45th St NW****Historical DDOT AADTs in thousands**

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
45th St NW										

Growth per year since:	2009	2012	2015
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Proposed Growth Rates for Use in Study:

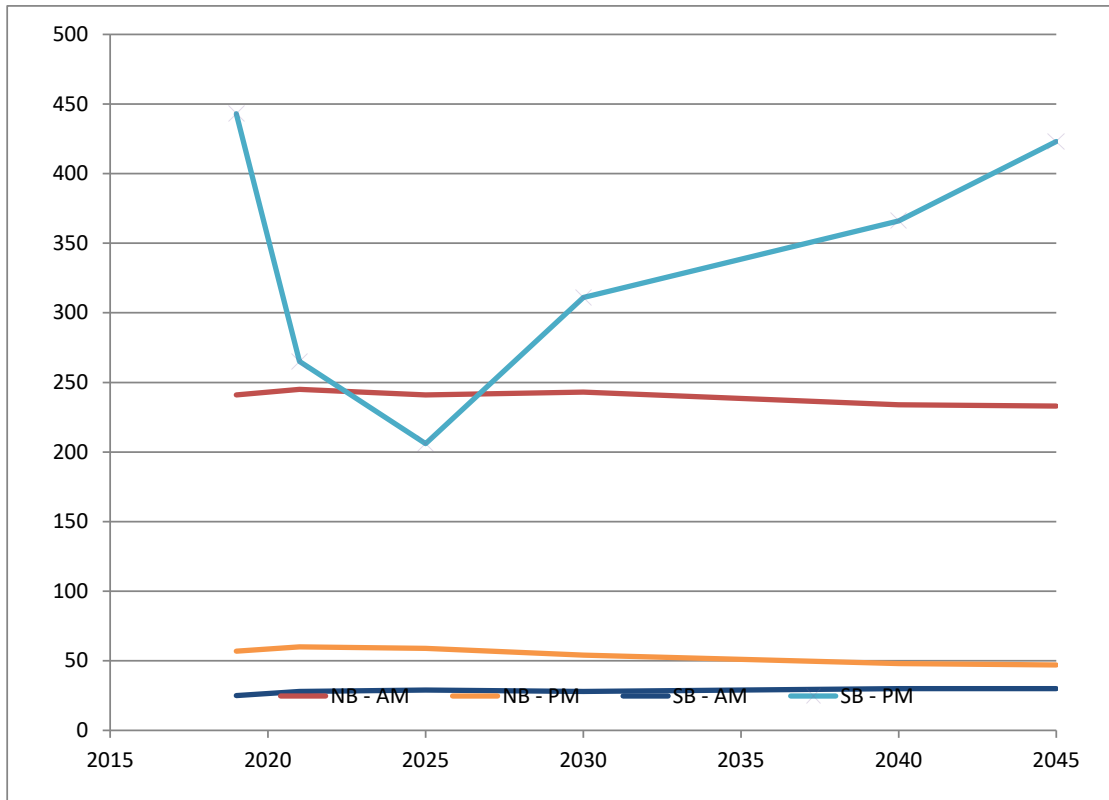
Direction/Period	Per year btwn 2020 & 2021	Total btwn 2020 & 2021
NB - AM	0.50%	0.50%
NB - PM	0.50%	0.50%
SB - AM	2.00%	2.00%
SB - PM	0.10%	0.10%

Growth Rate Information & Assumptions

45th St NW

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
NB - AM	241	245	241	243	234	233
NB - PM	57	60	59	54	48	47
SB - AM	25	28	29	28	30	30
SB - PM	443	265	206	311	366	423



Year of data collection: 2021
 Project completion date: 2024

Direction/Period	Growth per year between 2021 & 2024
NB - AM	-0.41%
NB - PM	-0.42%
SB - AM	0.88%
SB - PM	-6.10%

Growth Rate Information & Assumptions**45th St NW****Historical DDOT AADTs in thousands**

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
45th St NW										

Growth per year since:	2009	2012	2015
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Proposed Growth Rates for Use in Study:

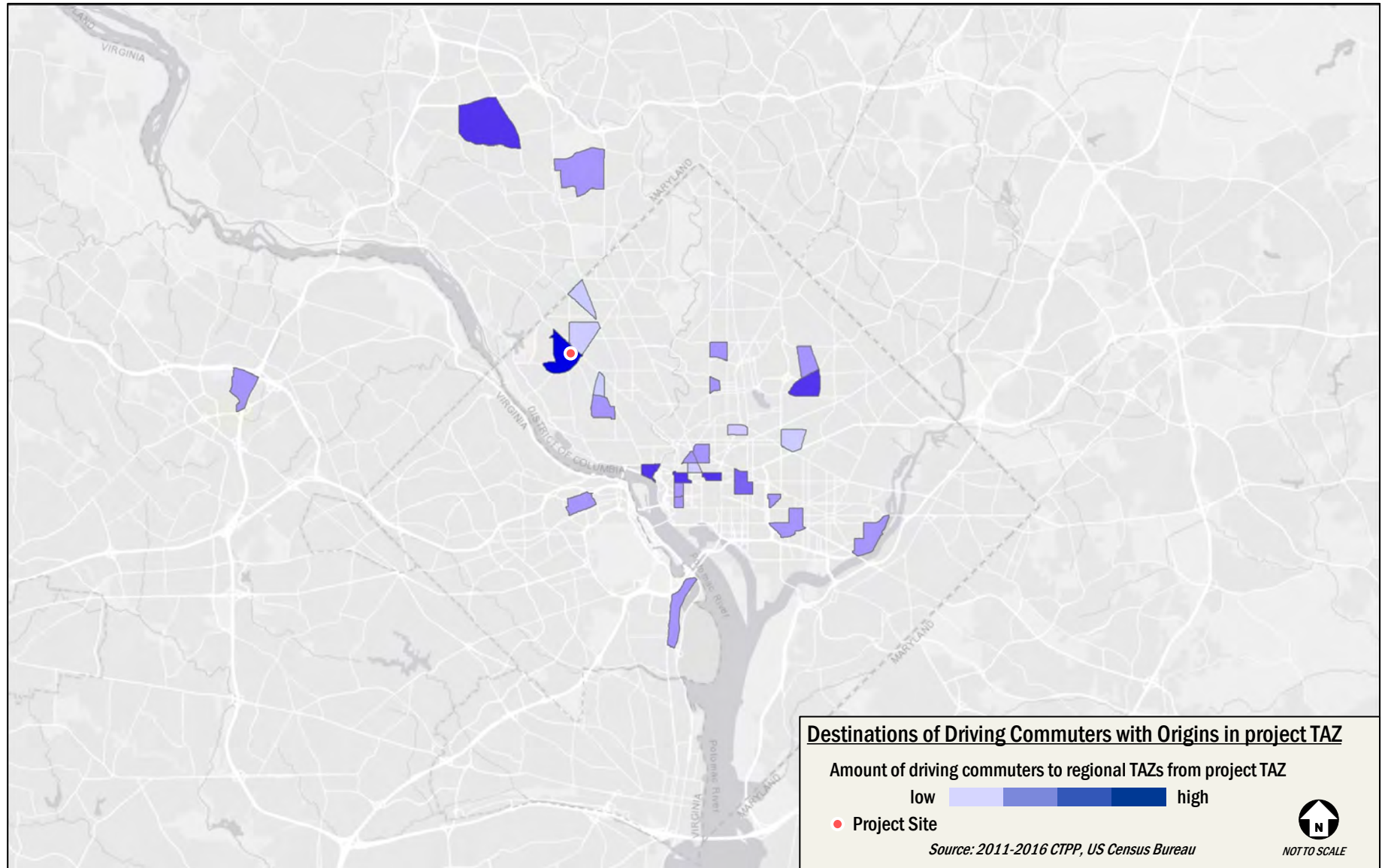
Direction/Period	Per year btwn 2021 & 2024	Total btwn 2021 & 2024
NB - AM	0.10%	0.30%
NB - PM	0.10%	0.30%
SB - AM	0.90%	2.72%
SB - PM	0.10%	0.30%

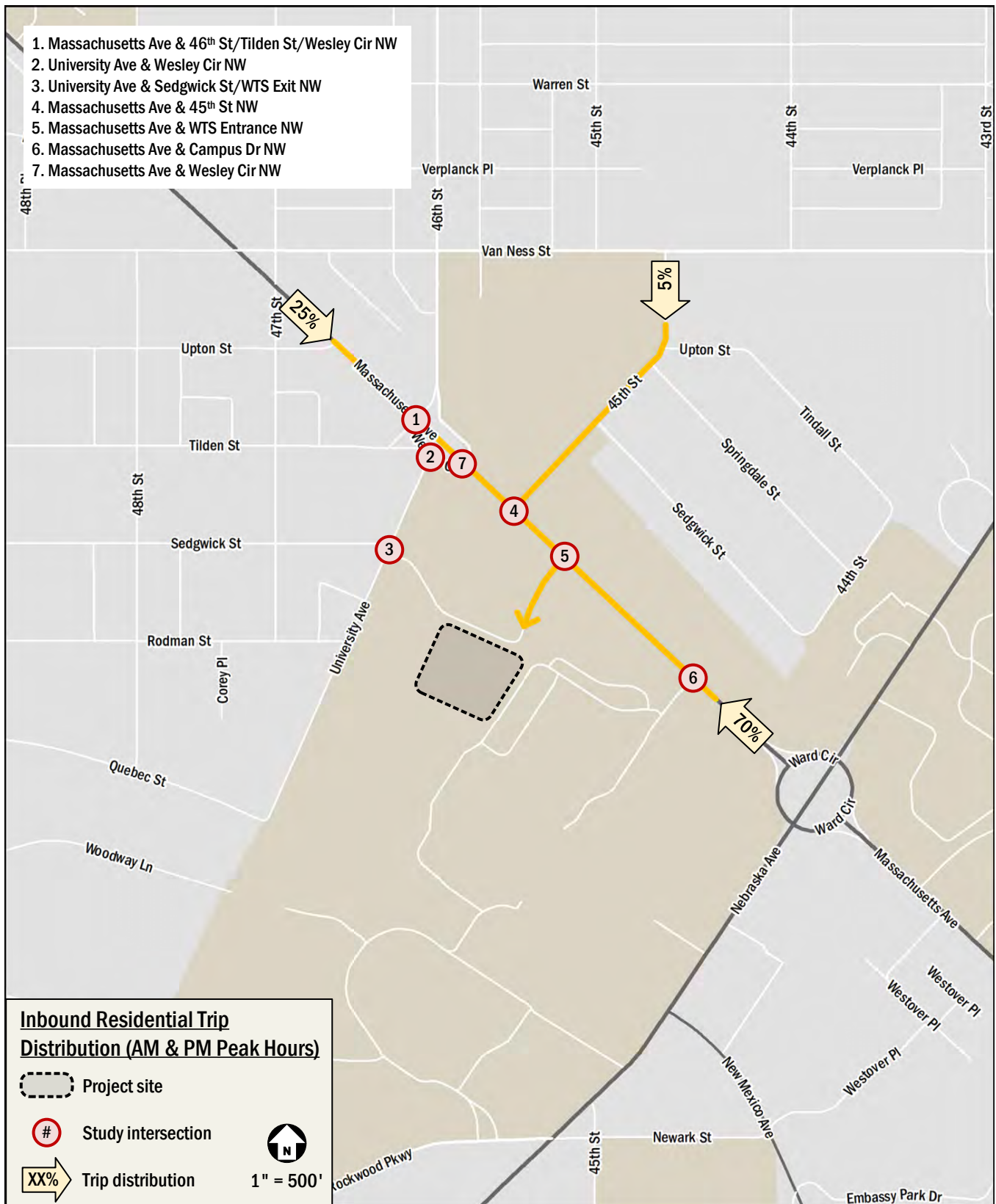
Roadway	Dir.	Proposed Annual Growth Rate Between 2020 and 2021 ¹		Proposed Total Growth Between 2020 and 2021		Proposed Annual Growth Rate Between 2021 and 2024 ²		Proposed Total Growth Between 2021 and 2024	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Massachusetts Ave NW	EB	0.10%	0.10%	0.10%	0.10%	0.30%	0.10%	0.90%	0.30%
	WB	2.00%	0.50%	2.00%	0.50%	0.10%	0.30%	0.30%	0.90%
Tilden St NW	EB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	WB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
46th St NW	NB	2.00%	0.10%	2.00%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
University Ave NW ³	NB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
45th St NW	NB	0.50%	0.50%	0.50%	0.50%	0.10%	0.10%	0.30%	0.30%
	SB	2.00%	0.10%	2.00%	0.10%	0.90%	0.10%	2.72%	0.30%
Campus Dr NW	NB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%

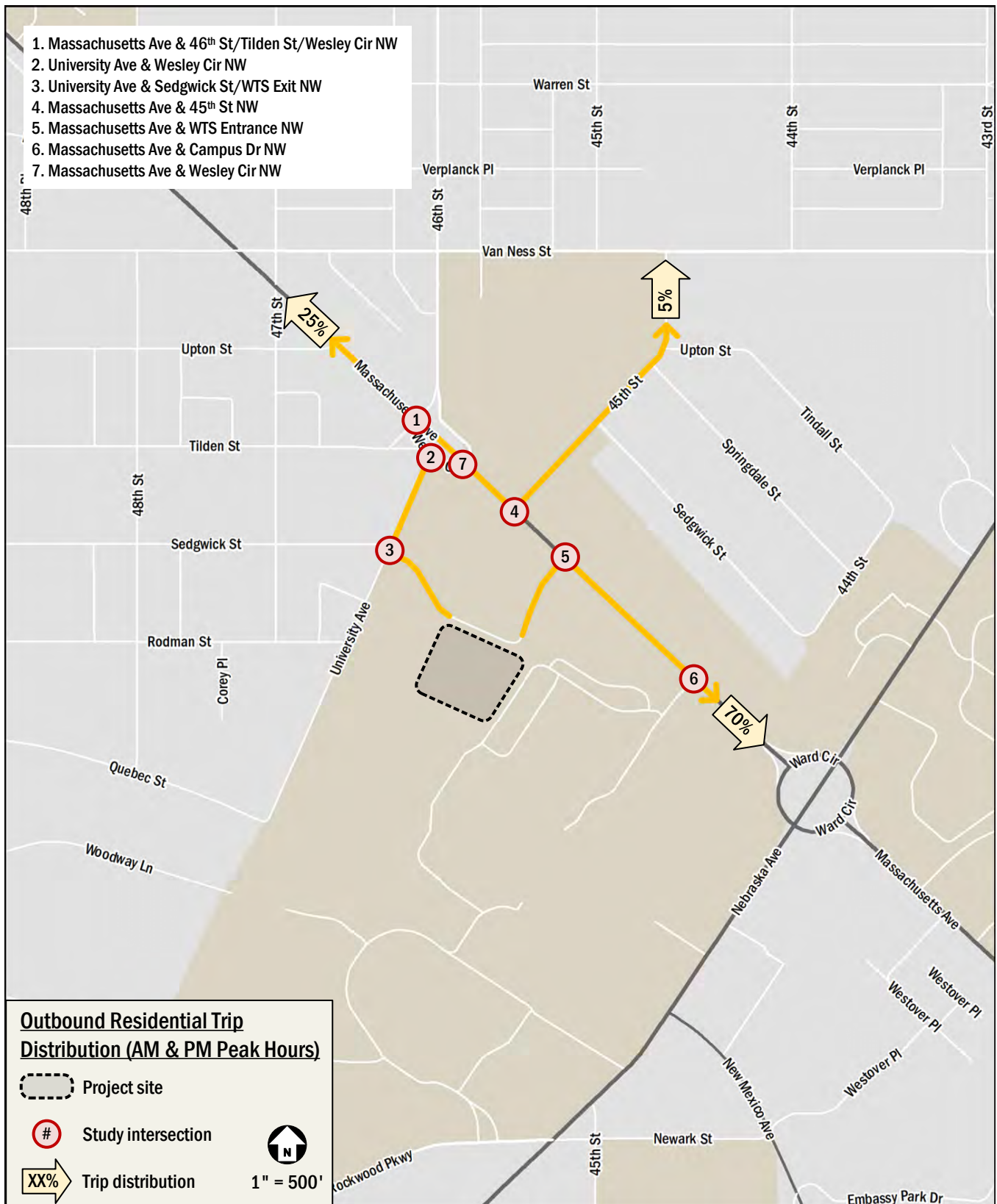
¹ These rates were applied to volumes recorded in February 2020 that were used to establish 2021 existing conditions. Rates are based on MWCOG's currently adopted regional transportation model for this time period.

² These rates were applied to volumes grown from 2021 existing conditions. Rates are based on MWCOG's currently adopted regional transportation model for this time period.

³ Study intersection #3 (University Ave & Sedgwick St/WTS Exit NW) only has available traffic counts from 2012, not February 2020 like the other study intersections. Therefore, to establish 2021 Existing Conditions, annual growth rates of 0.10% will be applied to the northbound and southbound volumes of University Ave NW at this intersection for every year between 2012 and 2021, totaling 0.90% for each direction.







D. Vehicle Level of Service Definitions



A. LEVEL OF SERVICE DEFINITIONS

All capacity analyses are based on the procedures specified by the Transportation Research Board, Special Report 209: Highway Capacity Manual (HCM), 2000. Levels of service (LOS) range from A to F. A brief description of each level of service for signalized and unsignalized intersections is provided below.

SIGNALIZED INTERSECTIONS

Level of service is based upon the traffic volume present in each lane on the roadway, the capacity of each lane at the intersection and the delay associated with each directional movement. The levels of service for signalized intersections are defined below:

- **LOS A** describes operations with very low average delay per vehicle, i.e., less than 10.0 seconds. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop. Short signal cycle lengths may also contribute to low delay.
- **LOS B** describes operations with average delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
- **LOS C** describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level although many still pass through the intersection without stopping. This is generally considered the lower end of the range of the acceptable level of service in rural areas.
- **LOS D** describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and/or high traffic volumes as compared to the roadway capacity. Many vehicles are required to stop and the number of vehicles that do not have to stop declines. Individual signal cycle failures, where all waiting vehicles do not clear the intersection during a single green time, are noticeable. This is generally considered the lower end of the range of the acceptable level of service in urban areas.
- **LOS E** describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. These higher delay values generally indicate poor progression, long cycle lengths, and high traffic volumes. Individual cycle failures are frequent occurrences. LOS E has been set as the limit of acceptable conditions.
- **LOS F** describes operations with average delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation, i.e., when traffic arrives at a flow rate that exceeds the capacity of the intersection. It may also occur at high volumes with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such delays.

UNSIGNALIZED INTERSECTIONS

At an unsignalized intersection, the major street through traffic and right turns are assumed to operate unimpeded and therefore receive no level of service rating. The level of service for the minor street and the major street left turn traffic is dependent on the volume and capacity of the available lanes, and, the number and frequency of acceptable gaps in the major street traffic to make a conflicting turn.

The level of service grade is provided for each conflicting movement at an unsignalized intersection and is based on the total average delay experienced by each vehicle. The delay includes the time it takes a vehicle to move from the back of a queue through the intersection.



The unsignalized intersection level of service analysis does not account for variations in driver behavior or the effects of nearby traffic signals. Therefore, the results from this analysis usually indicate worse levels of service than may be experienced in the field. The unsignalized intersection level of service descriptions are provided below:

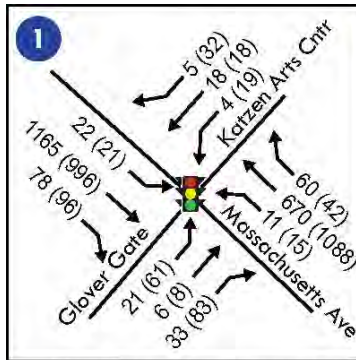
- **LOS A** describes operations where there is very little to no conflicting traffic for a minor side street movement, i.e., an average total delay of less than 10.0 seconds per vehicle.
- **LOS B** describes operations with average total delay in the range of 10.1 to 15.0 seconds per vehicle.
- **LOS C** describes operations with average total delay in the range of 15.1 to 25.0 second per vehicle.
- **LOS D** describes operations with average total delay in the range of 25.1 to 35.0 seconds per vehicle.
- **LOS E** describes operations with average total delay in the range of 35.1 to 50.0 seconds per vehicle.
- **LOS F** describes operations with average total delay of 50 seconds per vehicle. LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through or enter a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queuing on the minor approaches. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal driver behavior.

E. 2012 Turning Movement Counts

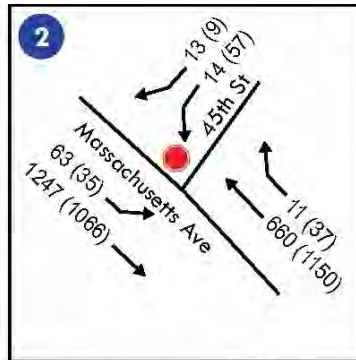


F. February 2020 Turning Movement Counts

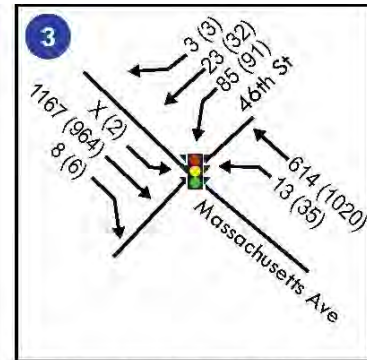
Figure 5-1 Existing Intersection Peak Hour Traffic Volumes



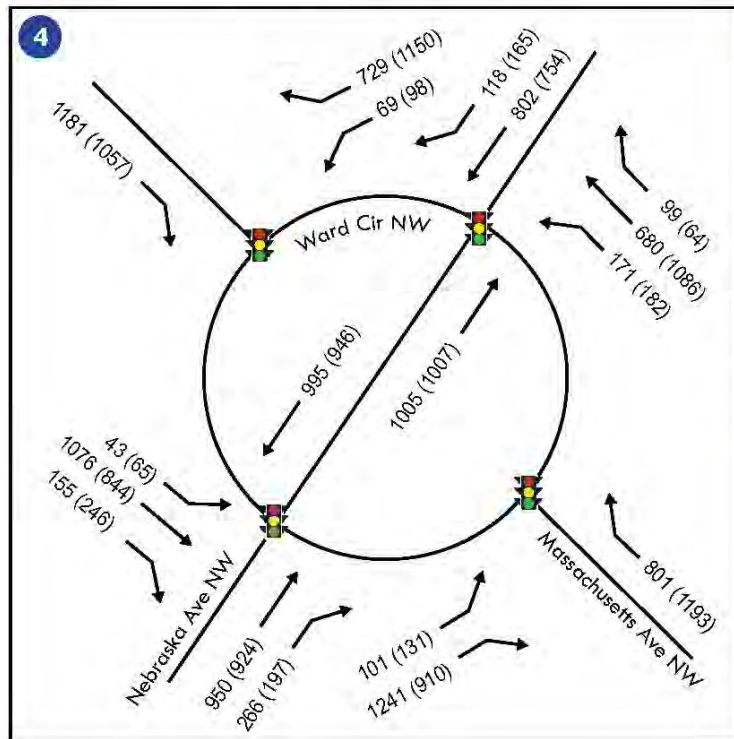
1. Massachusetts Ave. at Glover Gate



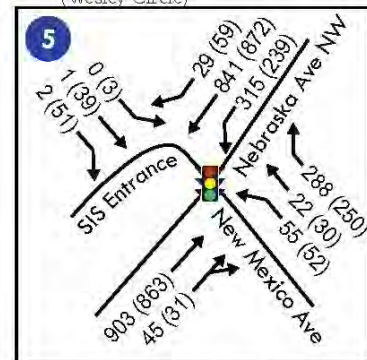
2. Massachusetts Ave. at 45th St.



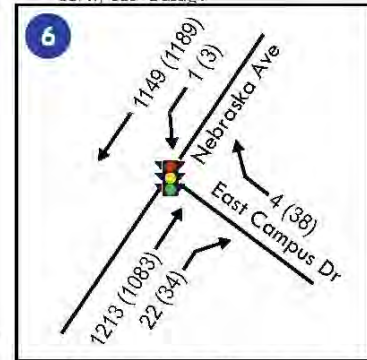
3. Massachusetts Ave. at 46th St. (Wesley Circle)



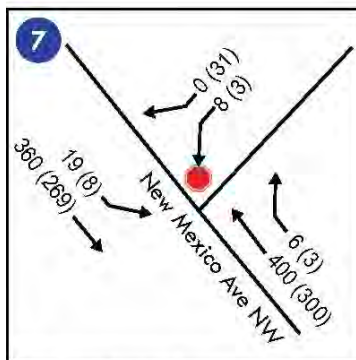
4. Massachusetts Ave. at Nebraska Ave. (Ward Circle)



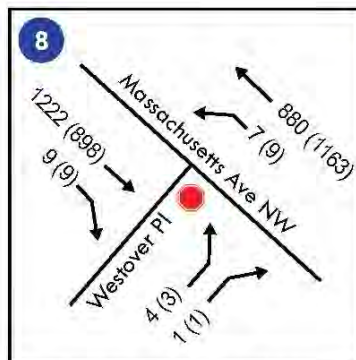
5. Nebraska Ave. at New Mexico Ave./SIS Garage



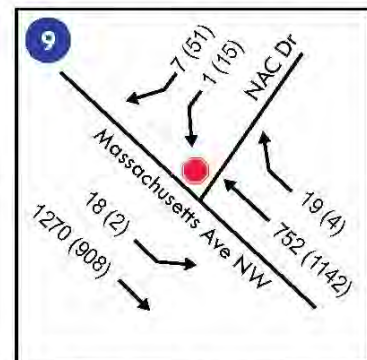
6. Nebraska Ave. at East Campus Dr.



7. New Mexico Ave. at East Campus Dr.



8. Massachusetts Ave. at Westover Pl.



9. Massachusetts Ave. at NAC Dr.

Figure 5-2 Existing Intersection Peak Hour Traffic Volumes

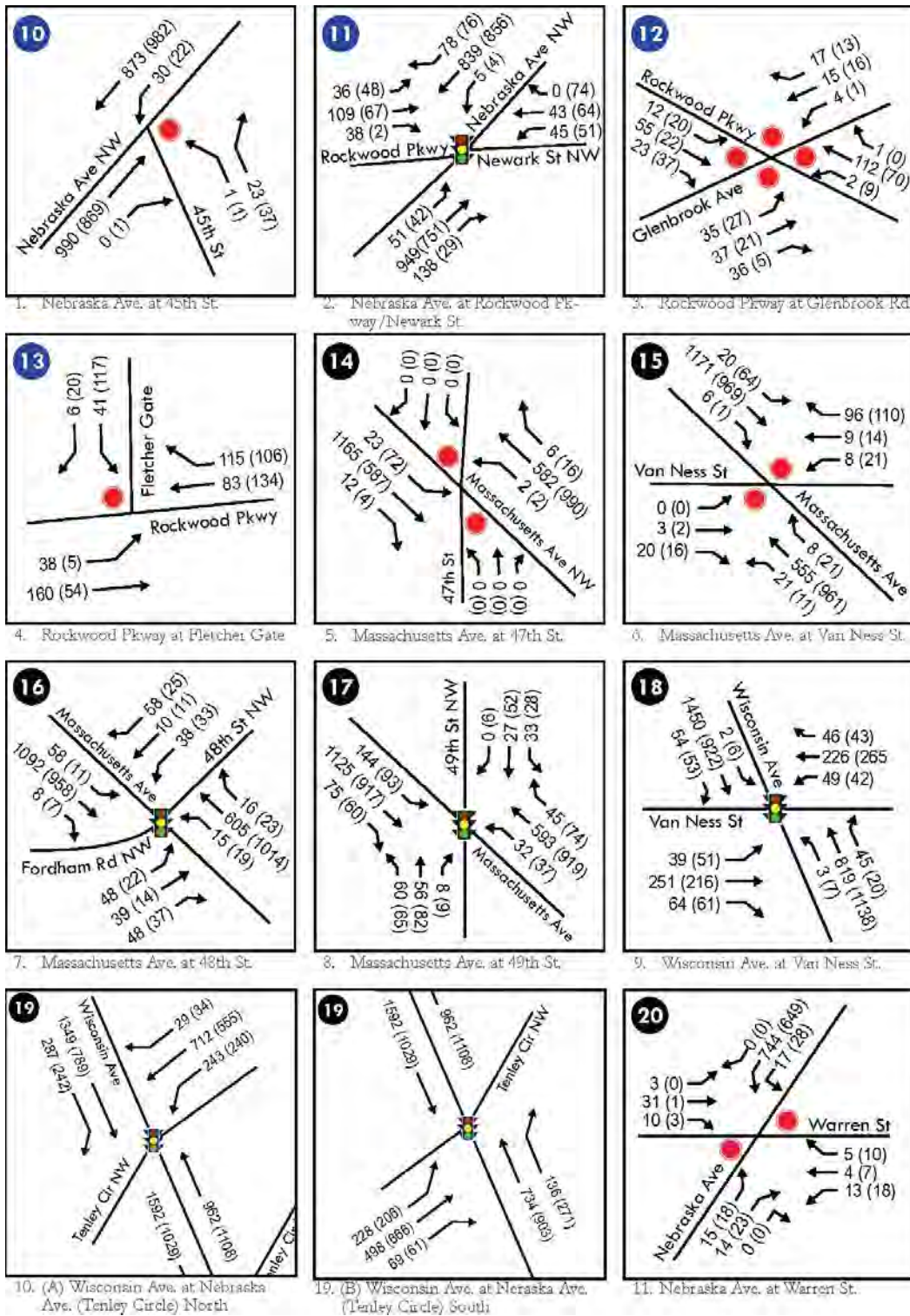


Figure 5-3 Existing Intersection Peak Hour Traffic Volumes

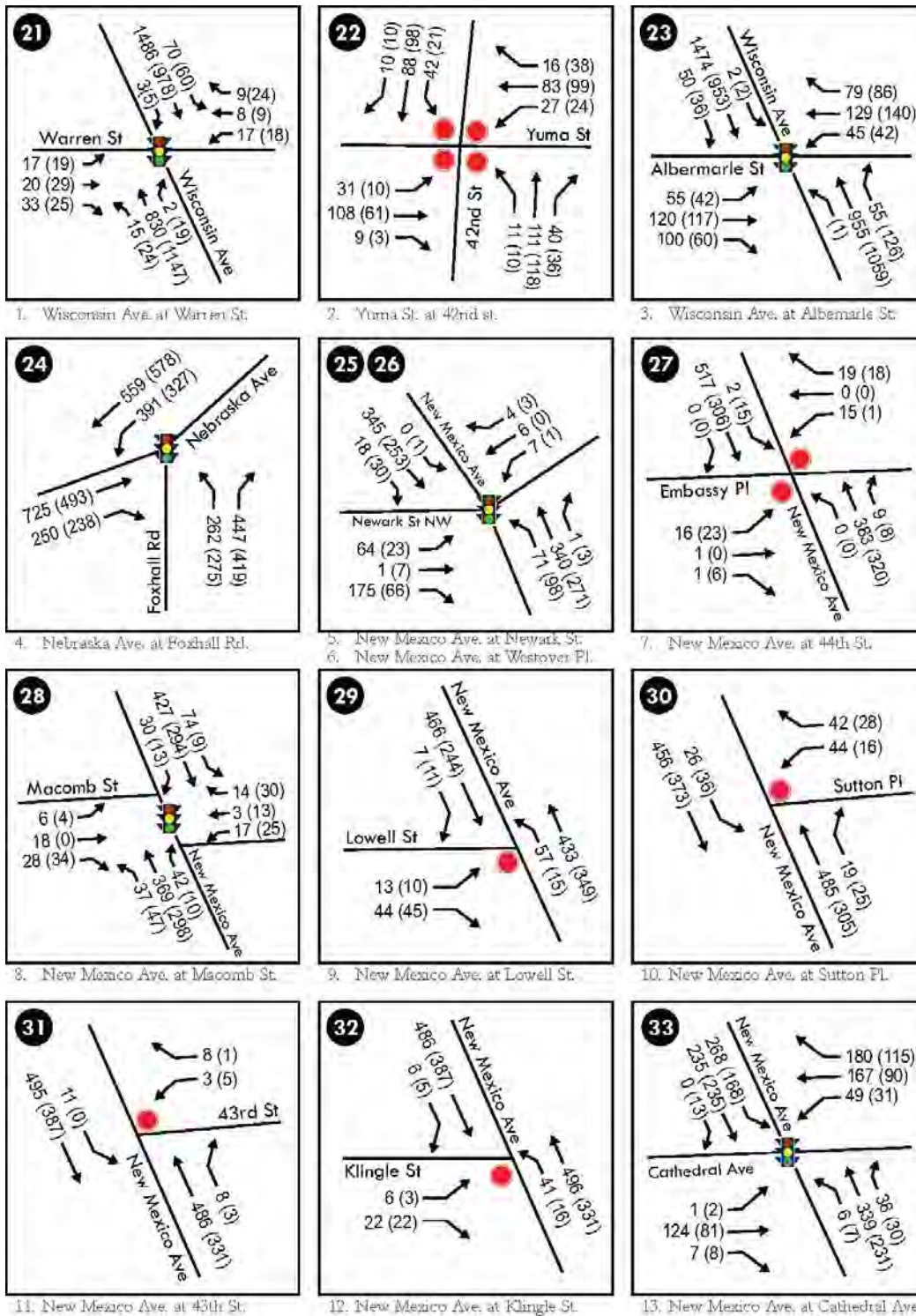
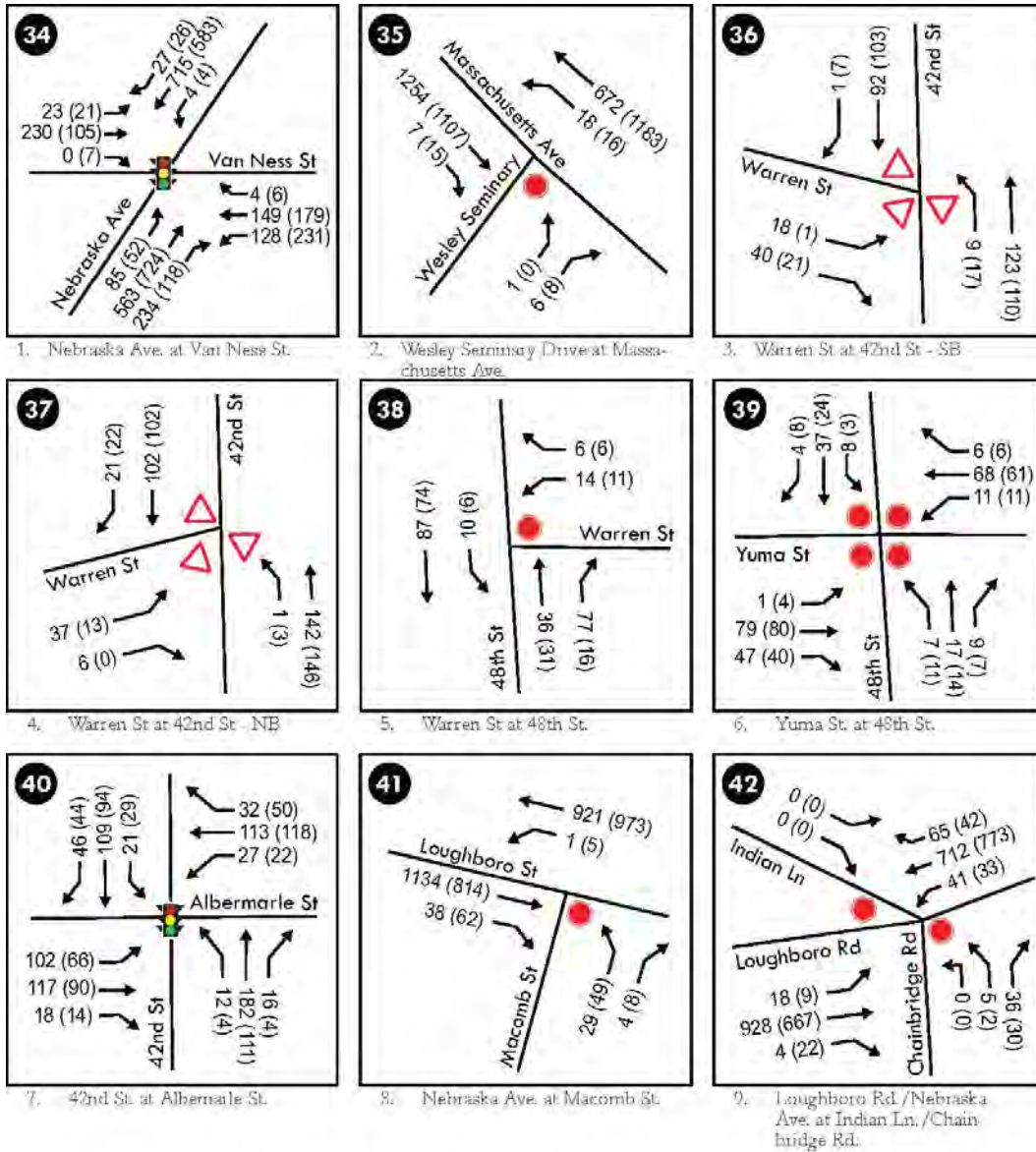


Figure 5-4 Existing Intersection Peak Hour Traffic Volumes



G. 2021 Turning Movement Counts

Gorove/Slade Associates - Multimodal Turning Movement Count Report

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

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Wednesday, September 22, 2021
Weather: Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)

Intersection Peak Hour (all vehicles): 07:30 AM to 08:30 AM

System Peak Hour (all vehicles): 07:30 AM to 08:30 AM

User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection:		1. Wesley Circle NW & /University Avenue																			
ALL VEHICLES	Direction:	Southbound					Westbound					Northbound					Eastbound				
	Roadway:	Wesley Circle NW										Wesley Circle NW					University Avenue				
	Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
06:30 AM	to 06:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
06:45 AM	to 07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
07:00 AM	to 07:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
07:15 AM	to 07:30 AM	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
07:30 AM	to 07:45 AM	0	0	13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
07:45 AM	to 08:00 AM	0	0	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
08:00 AM	to 08:15 AM	0	0	17	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	11	0
08:15 AM	to 08:30 AM	0	0	6	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
08:30 AM	to 08:45 AM	0	0	6	3	1	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0
08:45 AM	to 09:00 AM	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
09:00 AM	to 09:15 AM	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
09:15 AM	to 09:30 AM	0	0	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
09:30 AM	to 09:45 AM																				
09:45 AM	to 10:00 AM																				
10:00 AM	to 10:15 AM																				
10:15 AM	to 10:30 AM																				
10:30 AM	to 10:45 AM																				
10:45 AM	to 11:00 AM																				
11:00 AM	to 11:15 AM																				
11:15 AM	to 11:30 AM																				
INT. PEAK HR (ALL VEH)		61					0					0					34				
07:30 AM to 08:30 AM		0	0	46	15	1	0	0	0	0	0	0	0	0	0	0	1	0	0	33	0
Peak Hour Factor (PHF)	Overall	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
	0.77	n/a	n/a	0.68	0.47	0.80	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.25	n/a	n/a	0.75	0.71
HEAVY VEHICLES (FHWA 4+)	Direction:	Southbound					Westbound					Northbound					Eastbound				
	Roadway:	Wesley Circle NW										Wesley Circle NW					University Avenue				
	Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM	to 06:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 AM	to 07:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 AM	to 07:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:15 AM	to 07:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:30 AM	to 07:45 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:45 AM	to 08:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:00 AM	to 08:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:15 AM	to 08:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:30 AM	to 08:45 AM	0	0	1	1		0	0	0	0		0	0	0	0		0	0	0	0	
08:45 AM	to 09:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:00 AM	to 09:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
09:15 AM	to 09:30 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:30 AM	to 09:45 AM																				
09:45 AM	to 10:00 AM																				
10:00 AM	to 10:15 AM																				
10:15 AM	to 10:30 AM																				
10:30 AM	to 10:45 AM																				
10:45 AM	to 11:00 AM																				
11:00 AM	to 11:15 AM																				
11:15 AM	to 11:30 AM																				
INT. PEAK HR (ALL VEH)		1					0					0					0				
07:30 AM to 08:30 AM		0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):		0.0%	0.0%	2.2%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
INT. PEAK HR (HV ONLY)		4					0					0					2				
08:30 AM to 09:30 AM		0	0	3	1		0	0	0	0		0	0	0	0		0	0	0	2	
Heavy Vehicle % (PHV):		0.0%	0.0%	10.0%	14.3%	10.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	14.3%	
BICYCLES	Direction:	Southbound					Westbound					Northbound					Eastbound				
	Roadway:	Wesley Circle NW										Wesley Circle NW					University Avenue				
	Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM	to 06:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 AM	to 07:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 AM	to 07:15 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:15 AM	to 07:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:30 AM	to 07:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:45 AM	to 08:00 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:00 AM	to 08:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:15 AM	to 08:30 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:30 AM	to 08:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:45 AM	to 09:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:00 AM	to 09:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:15 AM	to 09:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:30 AM	to 09:45 AM																				
09:45 AM	to 10:00 AM																				
10:00 AM	to 10:15 AM																				
10:15 AM	to 10:30 AM																				
10:30 AM	to 10:45 AM																				
10:45 AM	to 11:00 AM																				
11:00 AM	to 11:15 AM																				
11:15 AM	to 11:30 AM																				
INT. PEAK HR (ALL VEH)		2					0					0					0				
07:30 AM to 08:30 AM		0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0	
INT. PEAK HR (BIKES)		2					0					0					0				
07:00 AM to 08:00 AM		0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0	

Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name :	Landmark Housing at Wesley Theolo	Analysis Period:	STUDY_PERIOD	06:30 AM	to	09:30 AM
Project # :	2997-001	Date of Counts:	Wednesday, September 22, 2021			
Location	Washington DC	Weather:	Cloudy			
Data Source:	Gorove/Slade Associates, Inc.					

Volumes Displayed as: 1. Intersection Peak (vehicle)			
Intersection Peak Hour (all vehicles):	07:30 AM	to	08:30 AM
System Peak Hour (all vehicles):	07:30 AM	to	08:30 AM
User-Defined Peak Hour:	07:30 AM	to	08:30 AM

Intersection:		1. Massachusetts Ave & Massachusetts Ave																				
ALL VEHICLES	Direction:	Southbound					Westbound					Northbound					Eastbound					
	Roadway:	Massachusetts Ave					Massachusetts Ave					Massachusetts Ave					Massachusetts Ave					
	Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	
06:30 AM	to 06:45 AM	0	0	51	0	0	0	0	0	0	4	0	0	39	1	0	0	0	0	1	1	
06:45 AM	to 07:00 AM	0	0	78	0	0	0	0	0	0	2	0	0	36	3	0	0	0	0	2	2	
07:00 AM	to 07:15 AM	0	0	82	0	0	0	0	0	0	3	0	0	56	3	0	0	0	0	2	1	
07:15 AM	to 07:30 AM	0	0	175	0	0	0	0	0	0	1	0	0	73	5	0	0	0	1	2	5	
07:30 AM	to 07:45 AM	0	1	311	0	0	0	0	0	0	3	0	0	91	5	0	0	0	0	17	0	
07:45 AM	to 08:00 AM	0	2	246	0	0	0	0	0	0	0	0	0	118	3	0	0	1	1	17	1	
08:00 AM	to 08:15 AM	0	1	254	0	0	0	0	0	0	0	0	0	145	11	0	0	0	0	28	2	
08:15 AM	to 08:30 AM	0	2	210	0	0	0	0	0	0	5	0	0	131	15	0	0	1	1	13	1	
08:30 AM	to 08:45 AM	0	0	243	0	0	0	0	0	0	8	0	0	125	10	2	0	0	1	9	3	
08:45 AM	to 09:00 AM	0	1	211	0	0	0	0	0	0	6	0	0	119	10	0	0	0	0	5	5	
09:00 AM	to 09:15 AM	0	0	169	0	0	0	0	0	0	7	0	0	112	9	0	0	0	0	13	2	
09:15 AM	to 09:30 AM	0	0	155	0	0	0	0	0	0	3	0	0	89	6	0	0	1	0	15	1	
09:30 AM	to 09:45 AM																					
09:45 AM	to 10:00 AM																					
10:00 AM	to 10:15 AM																					
10:15 AM	to 10:30 AM																					
10:30 AM	to 10:45 AM																					
10:45 AM	to 11:00 AM																					
11:00 AM	to 11:15 AM																					
11:15 AM	to 11:30 AM																					
INT. PEAK HR (ALL VEH)		1027					0					519					79					
07:30 AM	to 08:30 AM	0	6	1021	0		0	0	0	0	8	0	0	485	34	0	0	2	2	75	4	
Peak Hour		Overall	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
Factor (PHF)		0.93	n/a	0.75	0.82	n/a	0.82	n/a	n/a	n/a	n/a	n/a	n/a	0.84	0.57	0.83	n/a	0.50	0.50	0.67	0.71	
HEAVY VEHICLES (FHWA 4+)	Direction:	Southbound					Westbound					Northbound					Eastbound					
	Roadway:	Massachusetts Ave					Massachusetts Ave					Massachusetts Ave					Massachusetts Ave					
	Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		
06:30 AM	to 06:45 AM	0	0	2	0		0	0	0	0		0	0	2	0		0	0	0	0		
06:45 AM	to 07:00 AM	0	0	4	0		0	0	0	0		0	0	1	0		0	0	0	0		
07:00 AM	to 07:15 AM	0	0	5	0		0	0	0	0		0	0	5	0		0	0	0	0		
07:15 AM	to 07:30 AM	0	0	2	0		0	0	0	0		0	0	2	2		0	0	0	0		
07:30 AM	to 07:45 AM	0	0	4	0		0	0	0	0		0	0	3	0		0	0	0	0		
07:45 AM	to 08:00 AM	0	0	4	0		0	0	0	0		0	0	3	0		0	0	0	0		
08:00 AM	to 08:15 AM	0	0	6	0		0	0	0	0		0	0	3	0		0	0	0	0		
08:15 AM	to 08:30 AM	0	0	6	0		0	0	0	0		0	0	4	1		0	0	0	0		
08:30 AM	to 08:45 AM	0	0	10	0		0	0	0	0		0	0	4	0		0	0	0	1		
08:45 AM	to 09:00 AM	0	0	3	0		0	0	0	0		0	0	3	0		0	0	0	0		
09:00 AM	to 09:15 AM	0	0	2	0		0	0	0	0		0	0	3	0		0	0	0	2		
09:15 AM	to 09:30 AM	0	0	7	0		0	0	0	0		0	0	7	0		0	0	0	3		
09:30 AM	to 09:45 AM																					
09:45 AM	to 10:00 AM																					
10:00 AM	to 10:15 AM																					
10:15 AM	to 10:30 AM																					
10:30 AM	to 10:45 AM																					
10:45 AM	to 11:00 AM																					
11:00 AM	to 11:15 AM																					
11:15 AM	to 11:30 AM																					
INT. PEAK HR (ALL VEH)		20					0					14					0					
07:30 AM	to 08:30 AM	0	0	20	0		0	0	0	0		0	0	13	1		0	0	0	0		
Heavy Vehicle % (PHV):		0.0%	0.0%	2.0%	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	2.9%	2.7%	0.0%	0.0%	0.0%	0.0%	0.0%	
INT. PEAK HR (HV ONLY)		22					0					17					6					
08:30 AM	to 09:30 AM	0	0	22	0		0	0	0	0		0	0	17	0		0	0	0	6		
Heavy Vehicle % (PHV):		0.0%	0.0%	2.8%	0.0%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.8%	0.0%	3.5%	0.0%	0.0%	0.0%	14.3%	13.6%	
BICYCLES	Direction:	Southbound					Westbound					Northbound					Eastbound					
	Roadway:	Massachusetts Ave					Massachusetts Ave					Massachusetts Ave					Massachusetts Ave					
	Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		
06:30 AM	to 06:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
06:45 AM	to 07:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
07:00 AM	to 07:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1		
07:15 AM	to 07:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
07:30 AM	to 07:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
07:45 AM	to 08:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
08:00 AM	to 08:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
08:15 AM	to 08:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
08:30 AM	to 08:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
08:45 AM	to 09:00 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0		
09:00 AM	to 09:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
09:15 AM	to 09:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
09:30 AM	to 09:45 AM																					
09:45 AM	to 10:00 AM																					
10:00 AM	to 10:15 AM																					
10:15 AM	to 10:30 AM																					
10:30 AM	to 10:45 AM																					
10:45 AM	to 11:00 AM																					
11:00 AM	to 11:15 AM																					
11:15 AM	to 11:30 AM																					
INT. PEAK HR (ALL VEH)		0					0					0					0					
07:30 AM	to 08:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
INT. PEAK HR (BIKES)		2					0					0					0					
08:00 AM	to 09:00 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0		

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): 04:00 PM to 05:00 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. Wesley Circle NW & /University Avenue																				
ALL VEHICLES	Direction: Roadway: Movement:	Southbound					Westbound					Northbound					Eastbound					
		Wesley Circle NW										Wesley Circle NW					University Avenue					
		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	8	5	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	
04:15 PM	to 04:30 PM	0	0	6	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	
04:30 PM	to 04:45 PM	0	0	9	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	1	
04:45 PM	to 05:00 PM	0	0	10	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1	
05:00 PM	to 05:15 PM	0	0	9	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	
05:15 PM	to 05:30 PM	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	
05:30 PM	to 05:45 PM	0	0	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	
05:45 PM	to 06:00 PM	0	0	5	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	
06:00 PM	to 06:15 PM	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	
06:15 PM	to 06:30 PM	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	
06:30 PM	to 06:45 PM	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	
06:45 PM	to 07:00 PM	0	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	
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)		53					0					0					30					
04:00 PM to 05:00 PM		0	0	33	20	3	0	0	0	0	0	0	0	0	0	0	0	1	0	29	2	
Peak Hour		Overall	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
Factor (PHF)		0.74	n/a	n/a	0.83	0.83	0.83	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.25	n/a	0.56	0.58
HEAVY VEHICLES (FHWA 4+)	Direction: Roadway: Movement:	Southbound					Westbound					Northbound					Eastbound					
		Wesley Circle NW										Wesley Circle NW					University Avenue					
		U <th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th></th></th></th></th></th>	Left <th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th></th></th></th></th>	Thru <th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th></th></th></th>	Right <th></th> <th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th></th></th>		U <th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th></th>	Left <th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th>	Thru <th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th>	Right <th></th> <th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th>		U <th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th>	Left <th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th>	Thru <th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th>	Right <th></th> <th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th>		U <th>Left<th>Thru<th>Right<th></th></th></th></th>	Left <th>Thru<th>Right<th></th></th></th>	Thru <th>Right<th></th></th>	Right <th></th>		
04:00 PM	to 04:15 PM	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		
04:30 PM	to 04:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1		
04:45 PM	to 05:00 PM	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	0		0	0	0	0		
05:15 PM	to 05:30 PM	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	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		
06:00 PM	to 06:15 PM	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	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		
06:45 PM	to 07:00 PM	0	0	0	1		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)		0					0					0					1					
04:00 PM to 05:00 PM		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1		
Heavy Vehicle % (PHV):		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	3.3%	
INT. PEAK HR (HV ONLY)		0					0					0					1					
04:00 PM to 05:00 PM		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1		
Heavy Vehicle % (PHV):		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	3.3%	
BICYCLES	Direction: Roadway: Movement:	Southbound					Westbound					Northbound					Eastbound					
		Wesley Circle NW										Wesley Circle NW					University Avenue					
		U <th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th></th></th></th></th></th>	Left <th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th></th></th></th></th>	Thru <th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th></th></th></th>	Right <th></th> <th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th></th></th>		U <th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th></th>	Left <th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th></th>	Thru <th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th></th>	Right <th></th> <th>U<th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th></th>		U <th>Left<th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th></th>	Left <th>Thru<th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th></th>	Thru <th>Right<th></th><th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th></th>	Right <th></th> <th>U<th>Left<th>Thru<th>Right<th></th></th></th></th></th>		U <th>Left<th>Thru<th>Right<th></th></th></th></th>	Left <th>Thru<th>Right<th></th></th></th>	Thru <th>Right<th></th></th>	Right <th></th>		
04:00 PM	to 04:15 PM	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		
04:30 PM	to 04:45 PM	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		
05:00 PM	to 05:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
05:15 PM	to 05:30 PM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0		
05:30 PM	to 05:45 PM	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		
06:00 PM	to 06:15 PM	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	0		0	0	0	0		
06:30 PM	to 06:45 PM	0	0	1	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		
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)		0					0					0					0					
04:00 PM to 05:00 PM		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
INT. PEAK HR (BIKES)		0					0					1					0					
04:30 PM to 05:30 PM		0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0		

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)

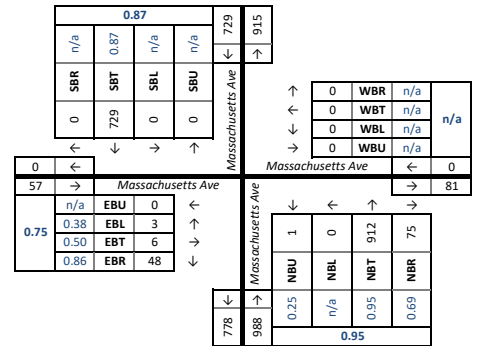
Intersection Peak Hour (all vehicles): 04:45 PM to 05:45 PM

System Peak Hour (all vehicles): 04:45 PM to 05:45 PM

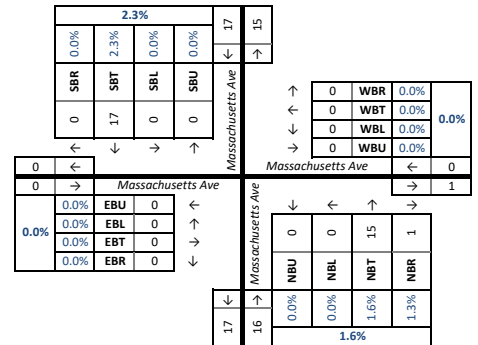
User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection: 1. Massachusetts Ave & Massachusetts Ave											
ALL VEHICLES	Direction:	Southbound					Westbound				
	Roadway:	Massachusetts Ave					Massachusetts Ave				
	Movement:	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	0	2
04:15 PM to 04:30 PM		0	1	133	0	0	0	0	0	0	3
04:30 PM to 04:45 PM		0	0	130	0	0	0	0	0	0	2
04:45 PM to 05:00 PM		0	0	168	0	0	0	0	0	0	2
05:00 PM to 05:15 PM		0	0	188	0	0	0	0	0	0	10
05:15 PM to 05:30 PM		0	0	210	0	0	0	0	0	0	4
05:30 PM to 05:45 PM		0	0	163	0	0	0	0	0	0	3
05:45 PM to 06:00 PM		0	0	174	0	0	0	0	0	0	1
06:00 PM to 06:15 PM		0	0	155	0	0	0	0	0	0	0
06:15 PM to 06:30 PM		0	0	180	0	0	0	0	0	0	0
06:30 PM to 06:45 PM		0	0	152	0	0	0	0	0	0	2
06:45 PM to 07:00 PM		0	0	132	0	0	0	0	0	0	3
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				
04:45 PM to 05:45 PM		0	0	729	0	0	0	0	0	0	19
Peak Hour		U	Left	Thru	Right	SB	U	Left	Thru	Right	WB
Factor (PHF)		n/a	n/a	n/a	0.87	n/a	n/a	n/a	n/a	n/a	n/a
HEAVY VEHICLES (FHWA 4+)		Southbound					Westbound				
ALL VEHICLES	Direction:	Massachusetts Ave					Massachusetts Ave				
	Roadway:	Massachusetts Ave					Massachusetts Ave				
	Movement:	U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM		0	0	6	0		0	0	0	0	
04:15 PM to 04:30 PM		0	0	2	0		0	0	2	0	
04:30 PM to 04:45 PM		0	0	4	0		0	0	7	0	
04:45 PM to 05:00 PM		0	0	6	0		0	0	4	0	
05:00 PM to 05:15 PM		0	0	1	0		0	0	3	0	
05:15 PM to 05:30 PM		0	0	7	0		0	0	1	1	
05:30 PM to 05:45 PM		0	0	3	0		0	0	7	0	
05:45 PM to 06:00 PM		0	0	1	0		0	0	4	0	
06:00 PM to 06:15 PM		0	0	1	0		0	0	4	0	
06:15 PM to 06:30 PM		0	0	4	0		0	0	3	0	
06:30 PM to 06:45 PM		0	0	3	0		0	0	2	0	
06:45 PM to 07:00 PM		0	0	6	0		0	0	5	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				
04:45 PM to 05:45 PM		0	0	17	0		0	0	15	1	
Heavy Vehicle % (PHV)		0.0%	0.0%	2.3%	0.0%	2.3%	0.0%	0.0%	1.6%	1.3%	1.6%
INT. PEAK HR (HV ONLY)		18					0				
04:30 PM to 05:30 PM		0	0	18	0		0	0	15	1	
Heavy Vehicle % (PHV)		0.0%	0.0%	2.6%	0.0%	2.6%	0.0%	0.0%	1.7%	1.5%	1.7%
BICYCLES		Southbound					Westbound				
ALL VEHICLES	Direction:	Massachusetts Ave					Massachusetts Ave				
	Roadway:	Massachusetts Ave					Massachusetts Ave				
	Movement:	U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM		0	0	0	0		0	0	0	0	
04:15 PM to 04:30 PM		0	0	0	0		0	0	0	0	
04:30 PM to 04:45 PM		0	0	0	0		0	0	0	0	
04:45 PM to 05:00 PM		0	0	0	0		0	0	0	0	
05:00 PM to 05:15 PM		0	0	0	0		0	0	1	0	
05:15 PM to 05:30 PM		0	0	1	0		0	0	0	0	
05:30 PM to 05:45 PM		0	0	1	0		0	0	0	0	
05:45 PM to 06:00 PM		0	0	0	0		0	0	0	0	
06:00 PM to 06:15 PM		0	0	0	0		0	0	0	0	
06:15 PM to 06:30 PM		0	0	0	0		0	0	1	0	
06:30 PM to 06:45 PM		0	0	0	0		0	0	0	0	
06:45 PM to 07:00 PM		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				
04:45 PM to 05:45 PM		0	0	2	0		0	0	1	0	
INT. PEAK HR (BIKES)		2					0				
04:45 PM to 05:45 PM		0	0	2	0		0	0	1	0	

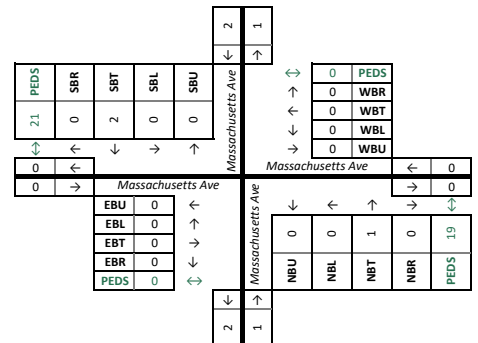
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: 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	
Frpb, 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
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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

The Standard at WTS

2: University Ave NW & Wesley Cir NW

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

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

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

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

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	
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)		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	
Frpb, 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												

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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	
Frpb, 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									

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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

The Standard at WTS

2: University Ave NW & Wesley Cir NW

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

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

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 Analysis4: 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

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

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\Synchro	EX 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	2528	2572	2627	2598	2660	2529	2587
Vehs Exited	2480	2521	2620	2533	2628	2514	2550
Starting Vehs	116	122	138	106	119	143	116
Ending Vehs	164	173	145	171	151	158	159
Travel Distance (mi)	1303	1336	1386	1344	1391	1324	1347
Travel Time (hr)	210.7	152.3	185.8	179.5	163.9	256.5	191.4
Total Delay (hr)	165.0	105.2	137.1	132.3	115.2	209.8	144.1
Total Stops	3624	3857	4116	3890	4027	3458	3827
Fuel Used (gal)	82.9	69.8	79.4	76.4	73.5	93.6	79.3

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	2841	Analysis\Synchro	EX PM	Avg
Vehs Entered	2528	2572	2627	2598	2660	2529	2587
Vehs Exited	2480	2521	2620	2533	2628	2514	2550
Starting Vehs	116	122	138	106	119	143	116
Ending Vehs	164	173	145	171	151	158	159
Travel Distance (mi)	1303	1336	1386	1344	1391	1324	1347
Travel Time (hr)	210.7	152.3	185.8	179.5	163.9	256.5	191.4
Total Delay (hr)	165.0	105.2	137.1	132.3	115.2	209.8	144.1
Total Stops	3624	3857	4116	3890	4027	3458	3827
Fuel Used (gal)	82.9	69.8	79.4	76.4	73.5	93.6	79.3

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	
Frpb, 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			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			72.3%			ICU Level of Service			C			
Analysis Period (min)			15									

Existing 2021
PM PeakSynchro 10 Report
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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

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)	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	
Frpb, 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

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

The Standard at WTS

2: University Ave NW & Wesley Cir NW

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

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

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

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

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

The Standard at WTS

6: WTS Dwy & Massachusetts Ave NW

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	
Frpb, 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

The Standard at WTS

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

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	
Frpb, 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

The Standard at WTS

2: University Ave NW & Wesley Cir NW

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

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

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

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

10/22/2021



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

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

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

The Standard at WTS

6: WTS Dwy & Massachusetts Ave NW

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
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	2548	2428	2541	2633	2443	2529
Vehs Exited	2512	2394	2539	2557	2446	2509
Starting Vehs	139	117	148	113	136	133
Ending Vehs	175	151	150	189	133	153
Travel Distance (mi)	1319	1285	1320	1353	1283	1317
Travel Time (hr)	238.8	221.7	267.1	212.9	244.9	232.1
Total Delay (hr)	192.6	176.8	220.5	165.4	199.8	185.8
Total Stops	3605	3560	3536	3813	3406	3685
Fuel Used (gal)	89.6	84.3	95.9	84.6	89.3	88.1

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
Vehs Exited	2512	2394	2539	2557	2446	2509
Starting Vehs	139	117	148	113	136	133
Ending Vehs	175	151	150	189	133	153
Travel Distance (mi)	1319	1285	1320	1353	1283	1317
Travel Time (hr)	238.8	221.7	267.1	212.9	244.9	232.1
Total Delay (hr)	192.6	176.8	220.5	165.4	199.8	185.8
Total Stops	3605	3560	3536	3813	3406	3685
Fuel Used (gal)	89.6	84.3	95.9	84.6	89.3	88.1

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

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)	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	
Frpb, 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

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)	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	
Frpb, 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									

Total Future Alternative A 2024
AM PeakSynchro 10 Report
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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	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

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

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

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

10/25/2021



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	
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)		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

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	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

The Standard at WTS

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	
Frpb, 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												

Total Future Alternative A 2024
AM PeakSynchro 10 Report
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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	
Frpb, 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									

Total Future Alternative A 2024
PM PeakSynchro 10 Report
Page 2

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)	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

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

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

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)	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							None			None		
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

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	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\Synchro\TF Alt A PM	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	2536	2495	2517	2538	2541
Vehs Exited	2510	2468	2490	2515	2519
Starting Vehs	132	141	119	100	123
Ending Vehs	158	168	146	123	145
Travel Distance (mi)	1309	1289	1299	1318	1315
Travel Time (hr)	274.6	299.6	262.8	220.9	246.8
Total Delay (hr)	228.6	254.4	217.1	174.5	200.5
Total Stops	3749	3666	3598	3817	3737
Fuel Used (gal)	97.7	103.0	94.3	85.3	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\Synchro\TF Alt A PM	Avg
Vehs Entered	2536	2495	2517	2538	2541
Vehs Exited	2510	2468	2490	2515	2519
Starting Vehs	132	141	119	100	123
Ending Vehs	158	168	146	123	145
Travel Distance (mi)	1309	1289	1299	1318	1315
Travel Time (hr)	274.6	299.6	262.8	220.9	246.8
Total Delay (hr)	228.6	254.4	217.1	174.5	200.5
Total Stops	3749	3666	3598	3817	3737
Fuel Used (gal)	97.7	103.0	94.3	85.3	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

The Standard at WTS

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

10/25/2021



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	
Frpb, 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										

Total Future Alternative A 2024
PM PeakSynchro 10 Report
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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

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)	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	
Frpb, 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									

Total Future Alternative B 2024
AM PeakSynchro 10 Report
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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

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

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	
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)		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, 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	87.4%	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

The Standard at WTS

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	
Frpb, 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												

Total Future Alternative B 2024
AM PeakSynchro 10 Report
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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	
Frpb, 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									

Total Future Alternative B 2024
PM PeakSynchro 10 Report
Page 2

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

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

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							None			None		
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

The Standard at WTS

5: Massachusetts Ave NW & 45th St NW

11/10/2021



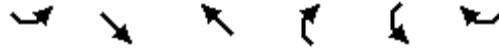
Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1235	1338	74
v/c Ratio	0.45	0.39	0.05
Control Delay	0.7	0.3	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	0.7	0.3	0.0
Queue Length 50th (ft)	7	0	0
Queue Length 95th (ft)	0	0	0
Internal Link Dist (ft)	150	66	258
Turn Bay Length (ft)			
Base Capacity (vph)	2716	3402	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	
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)		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, 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	78.4%	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

The Standard at WTS

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	
Frpb, 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									

Total Future Alternative B 2024
PM PeakSynchro 10 Report
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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