

Scoping Attachments

Wesley Theological Seminary

Washington, DC

September 26, 2025

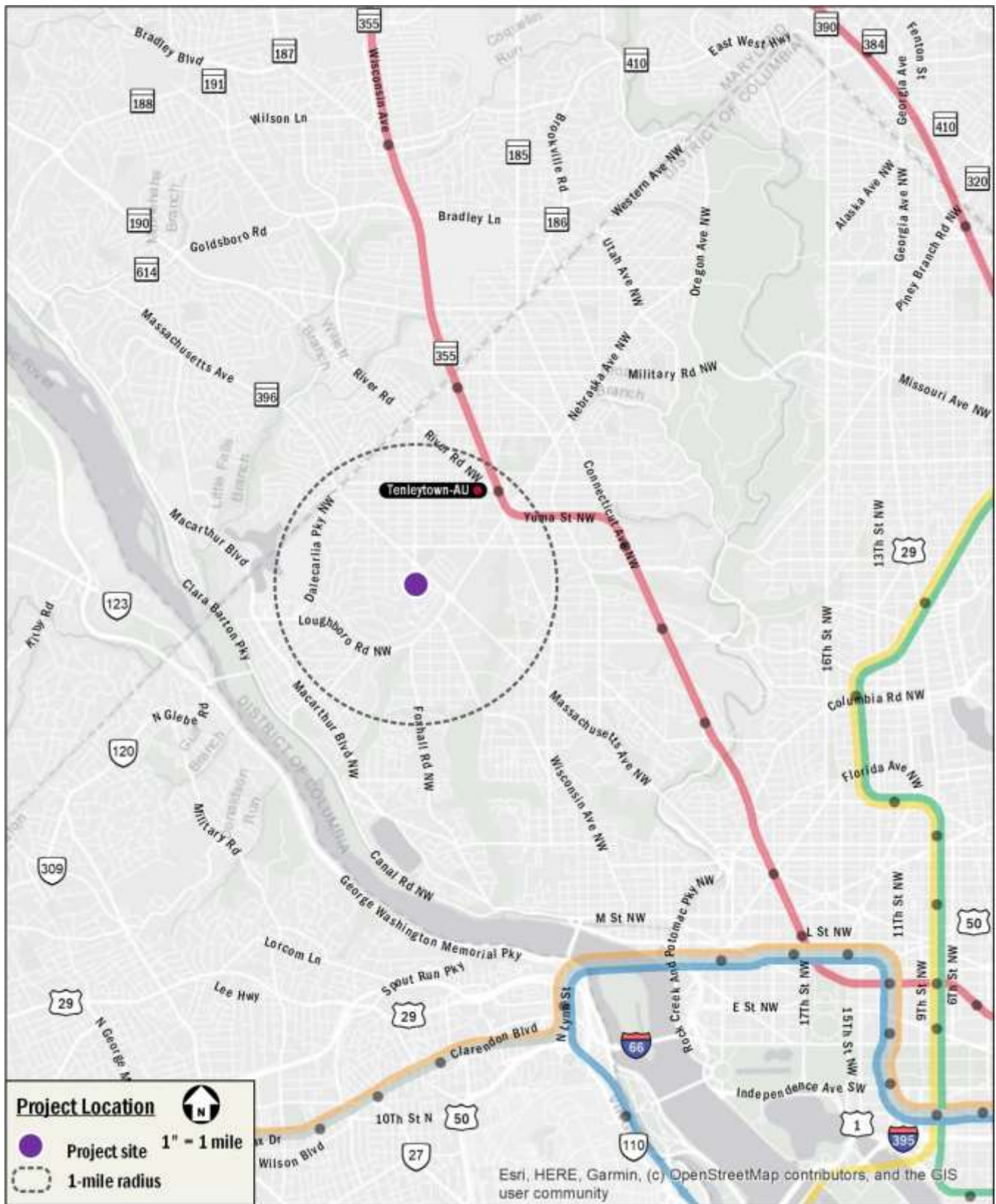
GOROVE SLADE
Transportation Planners and Engineers

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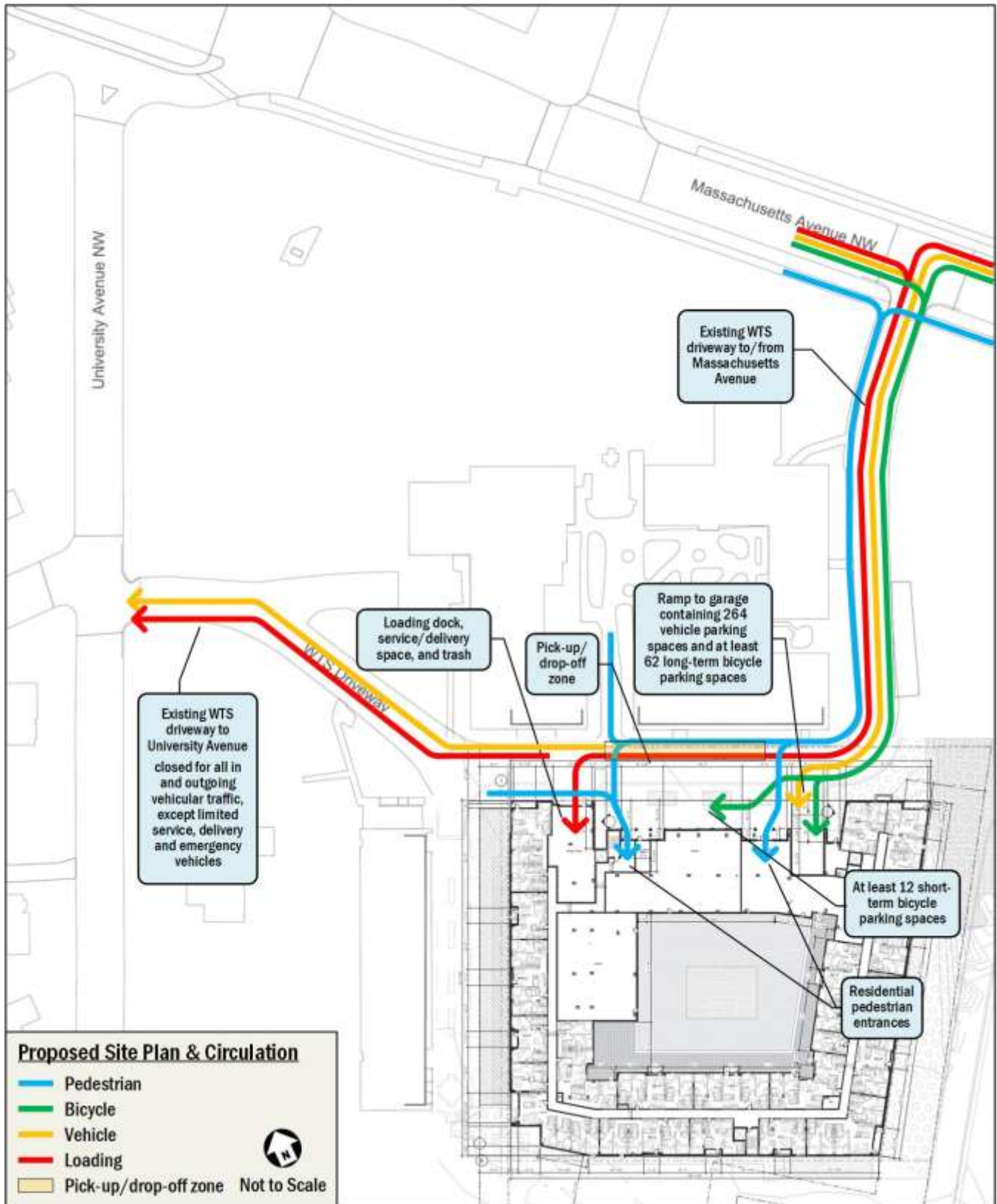
A. Project Location



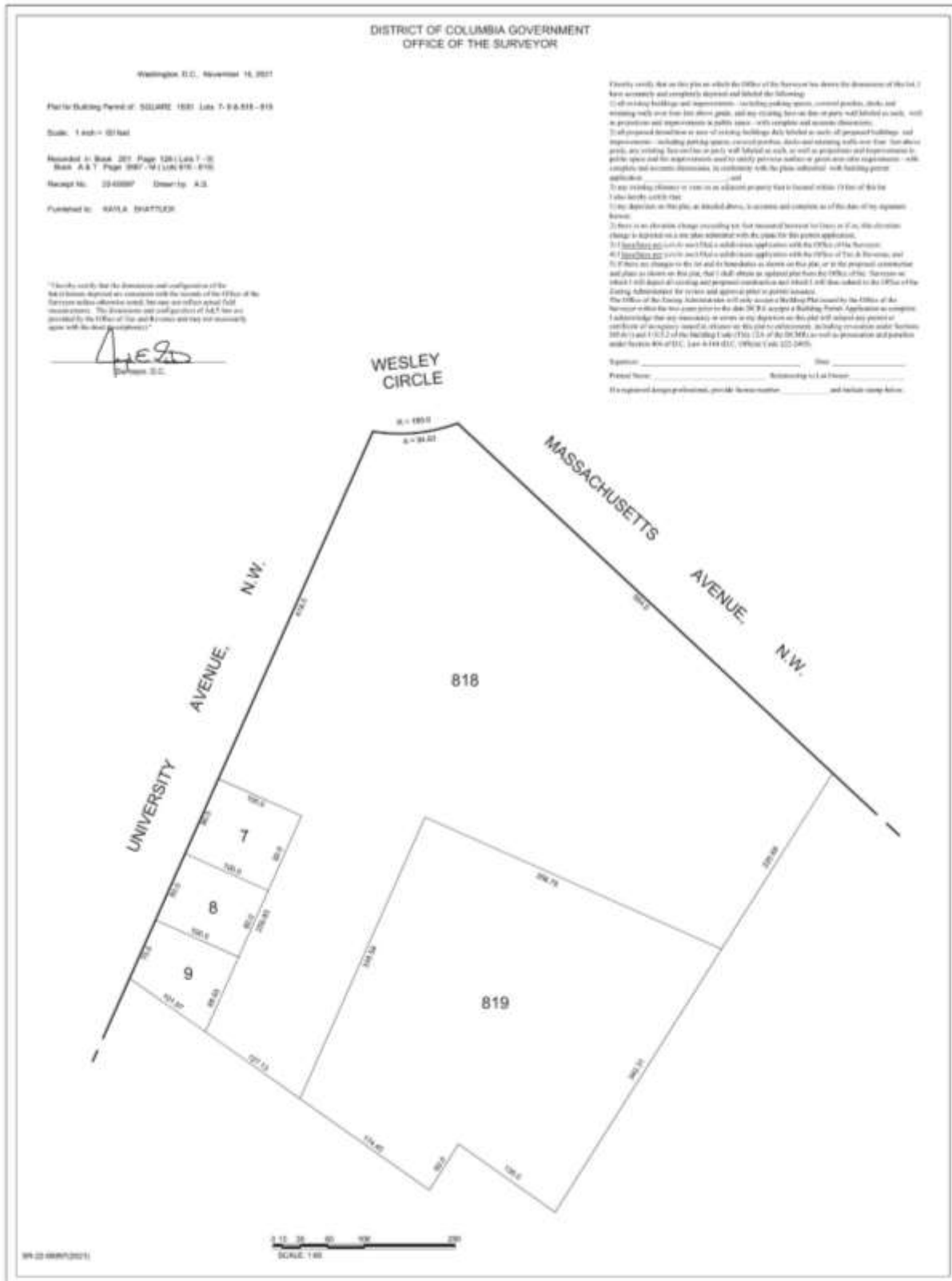
B. Site Aerial



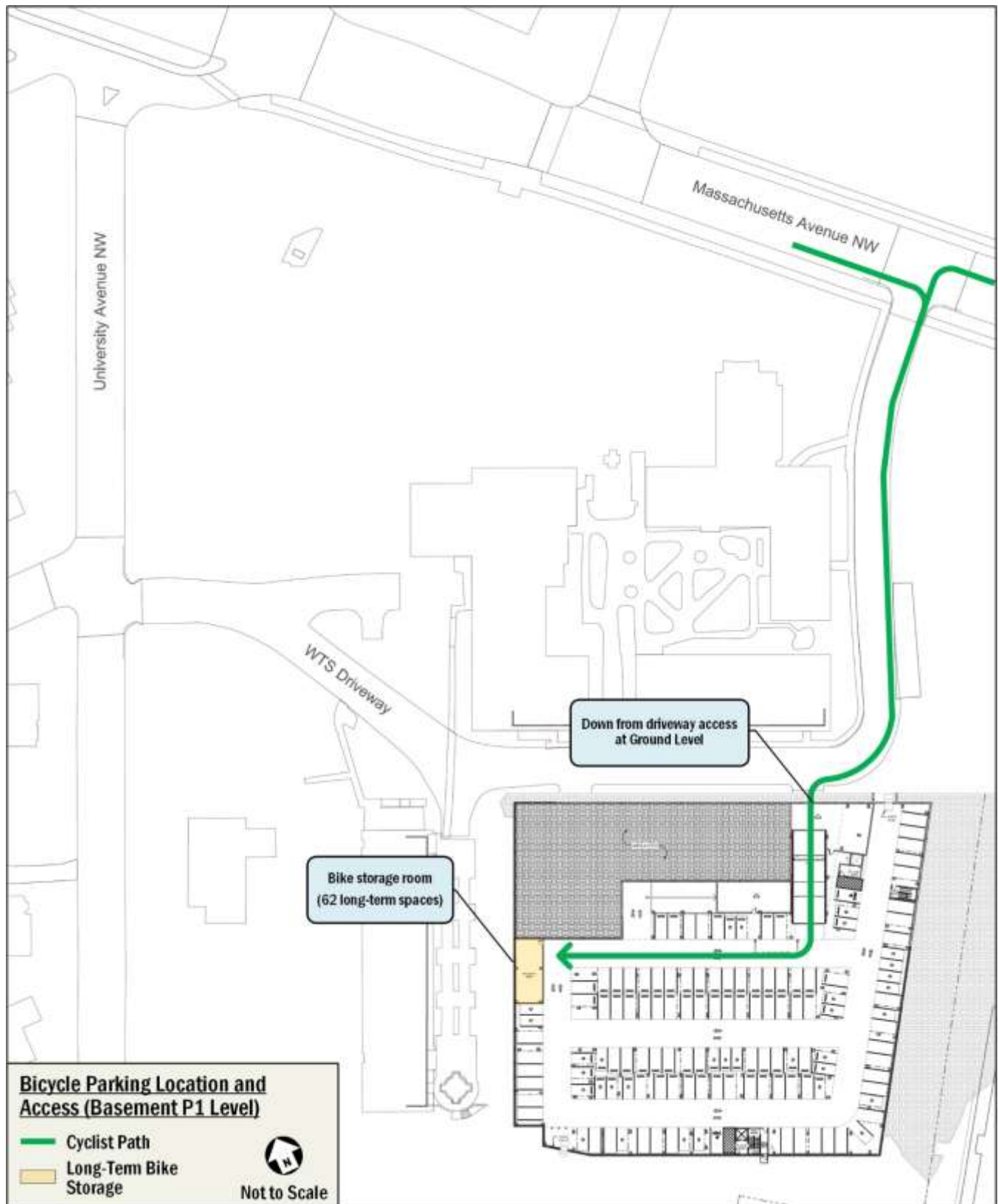
C. Proposed Site Plan and Access



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E. Long-term Bicycle Parking Location and Access



F. Detailed Trip Generation and Mode Split Information

Mode Split Assumptions

Residential Component

Pertinent Mode Split data from other sources:

Information Source	Mode							
	SOV	Carpool	Rideshare	Transit	Bike	Walk	Telecommute	Other
CTPP - TAZ Residents (Average of Census Tracts 8.03, 9.03, 10.02, 10.03, 10.04)	38%	5%	---	20%	3%	9%	23%	2%
State of the Commute 2016 (of District residents)	35%	4%	---	42%	16%		3%	
AU 2021 Campus Plan - student commute to campus	14%	2%	4%	50%	28%		---	2%
WMATA Ridership Survey Table 9 (Residential Mode Share for All Trips by Concentric Location Typology)	39%		---	48%	13%		---	

Mode Split assumed in TIS:

Land Use	Mode					
	Drive		Transit	Bike	Walk	Telecommute/Other
Residential Mode Split	20%		50%	5%	25%	---

Notes: Mode split based primarily on census data and mode split for AU students commuting to campus, adjusted for the project site being located on campus.

ITE 12th Edition Trip Generation, LUC 225

Step 1: Base trip generation using ITEs' Trip Generation

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	225	569 br	26 veh/hr	42 veh/hr	68 veh/hr	68 veh/hr	69 veh/hr	137 veh/hr	2031 veh
Calculation Details:			38%	62%	=0.12X	50%	50%	=0.24X	=3.57X

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	31 ppl/hr	49 ppl/hr	80 ppl/hr	80 ppl/hr	82 ppl/hr	162 ppl/hr	2397 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	Auto	20%	6 ppl/hr	10 ppl/hr	16 ppl/hr	16 ppl/hr	16 ppl/hr	32 ppl/hr	479 ppl
Apartments	Transit	50%	16 ppl/hr	24 ppl/hr	40 ppl/hr	40 ppl/hr	41 ppl/hr	81 ppl/hr	1199 ppl
Apartments	Bike	5%	2 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	4 ppl/hr	8 ppl/hr	120 ppl
Apartments	Walk	25%	8 ppl/hr	12 ppl/hr	20 ppl/hr	20 ppl/hr	21 ppl/hr	41 ppl/hr	599 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	5 veh/hr	9 veh/hr	14 veh/hr	14 veh/hr	13 veh/hr	27 veh/hr	406 veh

Trip Gen Summary for Residential

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	5 veh/hr	9 veh/hr	14 veh/hr	14 veh/hr	13 veh/hr	27 veh/hr	406 veh
Transit	16 ppl/hr	24 ppl/hr	40 ppl/hr	40 ppl/hr	41 ppl/hr	81 ppl/hr	1199 ppl
Bike	2 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	4 ppl/hr	8 ppl/hr	120 ppl
Walk	8 ppl/hr	12 ppl/hr	20 ppl/hr	20 ppl/hr	21 ppl/hr	41 ppl/hr	599 ppl

ITE 12th Edition Trip Generation, LUC 226Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	226	569 br	18 veh/hr	22 veh/hr	40 veh/hr	56 veh/hr	63 veh/hr	119 veh/hr	1462 veh
Calculation Details:			46%	54%	=0.07X	47%	53%	=0.21X	=2.57X

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	21 ppl/hr	26 ppl/hr	47 ppl/hr	66 ppl/hr	74 ppl/hr	140 ppl/hr	1725 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	Auto	20%	4 ppl/hr	5 ppl/hr	9 ppl/hr	13 ppl/hr	15 ppl/hr	28 ppl/hr	345 ppl
Apartments	Transit	50%	11 ppl/hr	13 ppl/hr	24 ppl/hr	33 ppl/hr	37 ppl/hr	70 ppl/hr	863 ppl
Apartments	Bike	5%	1 ppl/hr	1 ppl/hr	2 ppl/hr	3 ppl/hr	4 ppl/hr	7 ppl/hr	86 ppl
Apartments	Walk	25%	5 ppl/hr	7 ppl/hr	12 ppl/hr	17 ppl/hr	18 ppl/hr	35 ppl/hr	431 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	3 veh/hr	5 veh/hr	8 veh/hr	11 veh/hr	13 veh/hr	24 veh/hr	292 veh

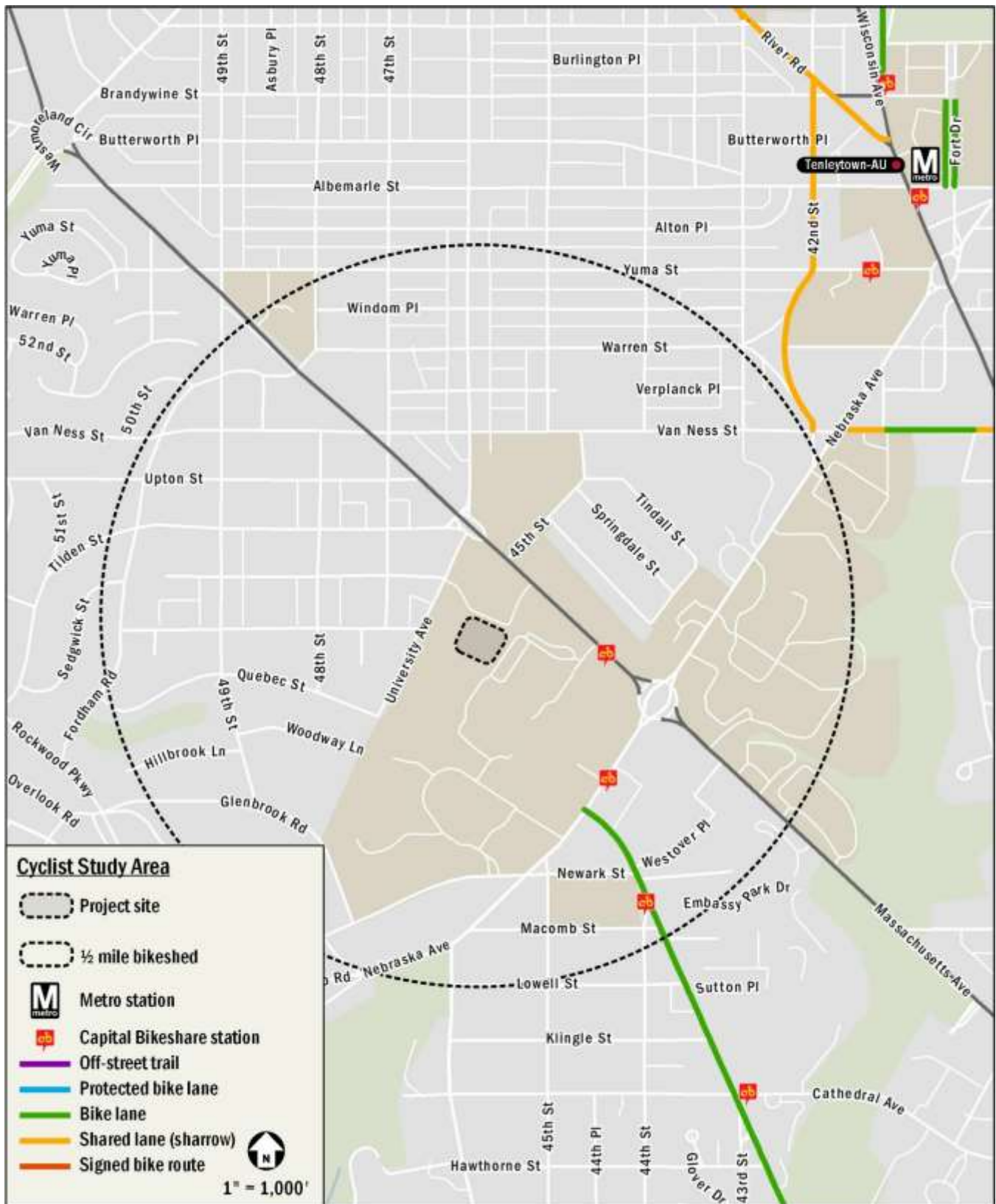
Trip Gen Summary for Residential

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	3 veh/hr	5 veh/hr	8 veh/hr	11 veh/hr	13 veh/hr	24 veh/hr	292 veh
Transit	11 ppl/hr	13 ppl/hr	24 ppl/hr	33 ppl/hr	37 ppl/hr	70 ppl/hr	863 ppl
Bike	1 ppl/hr	1 ppl/hr	2 ppl/hr	3 ppl/hr	4 ppl/hr	7 ppl/hr	86 ppl
Walk	5 ppl/hr	7 ppl/hr	12 ppl/hr	17 ppl/hr	18 ppl/hr	35 ppl/hr	431 ppl

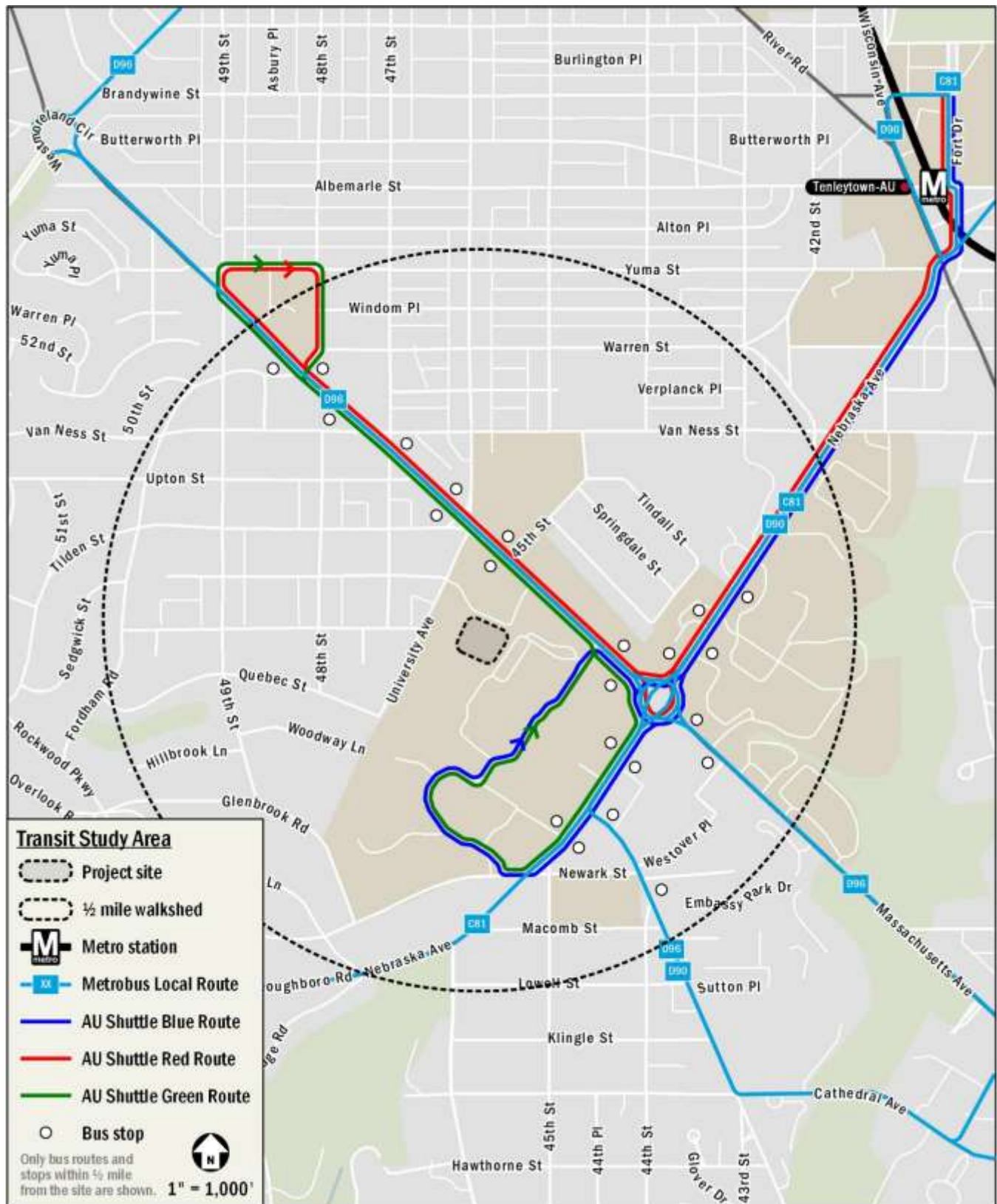
G. Pedestrian Study Area



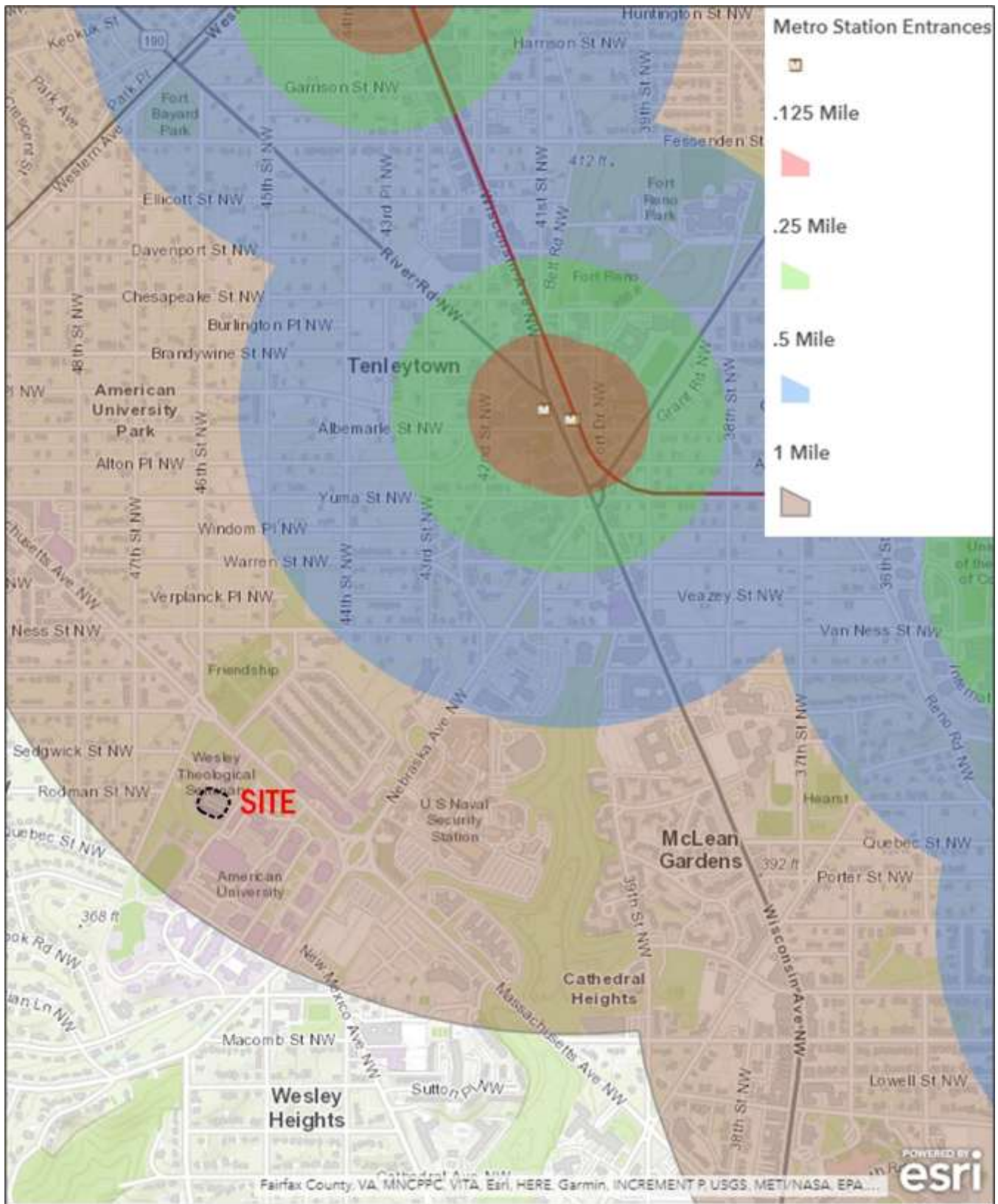
H. Bicycle Network Study Area

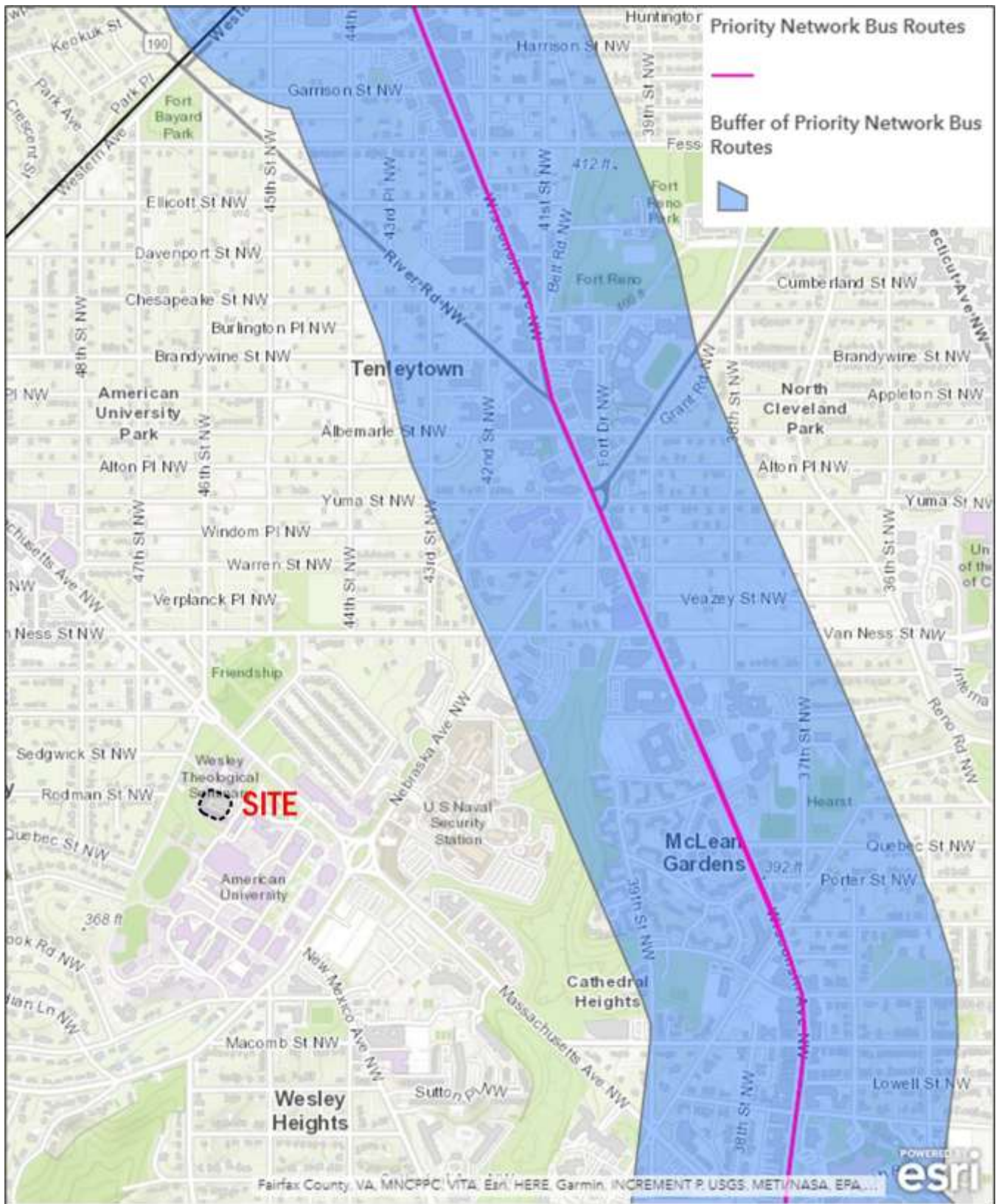


I. Transit Network Study Area



J. DDOT Metrорail and Transit Buffer Maps

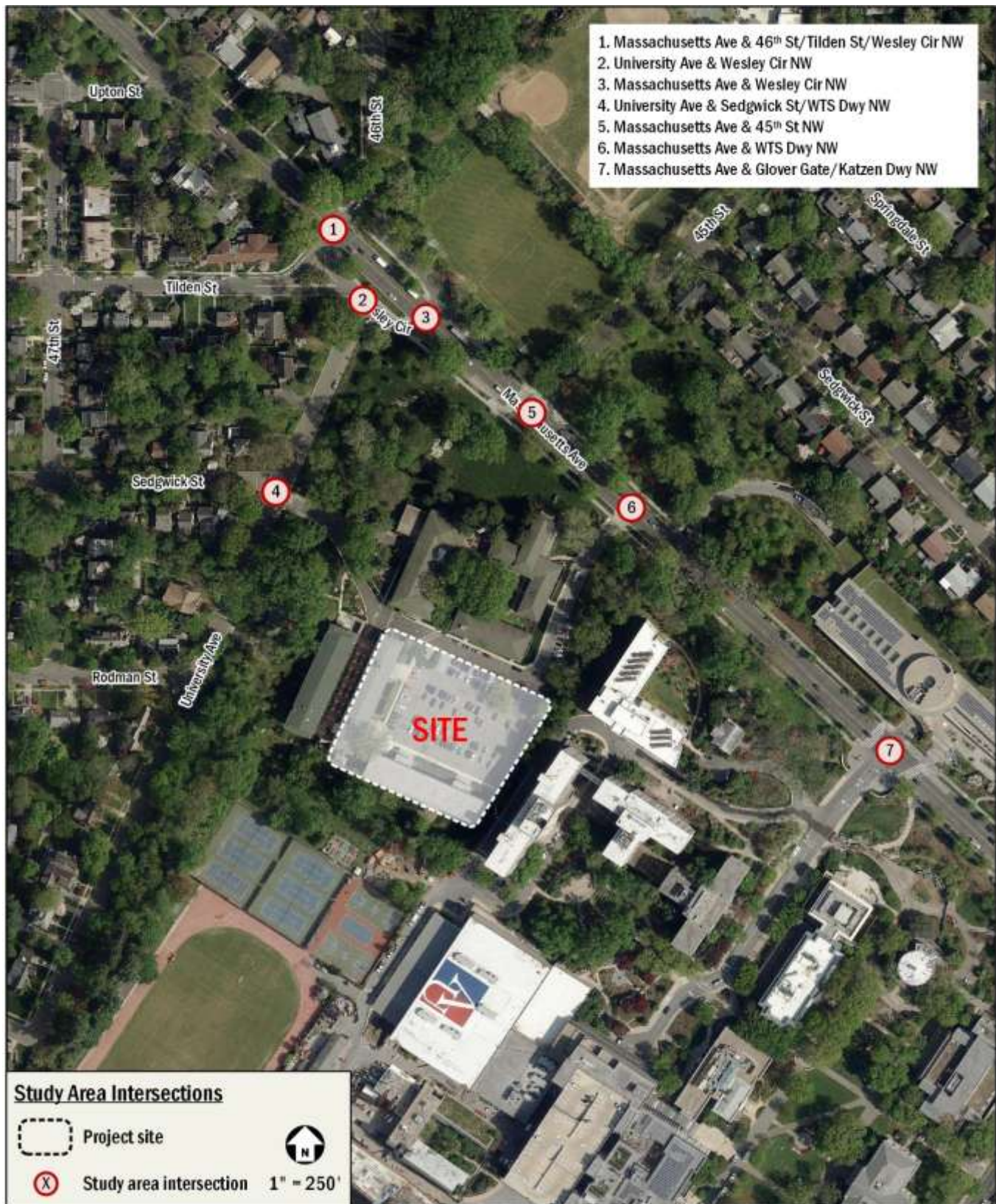




K. Parking Occupancy and Curbside Management Study Area



L. Study Area Intersections



M. Background Developments



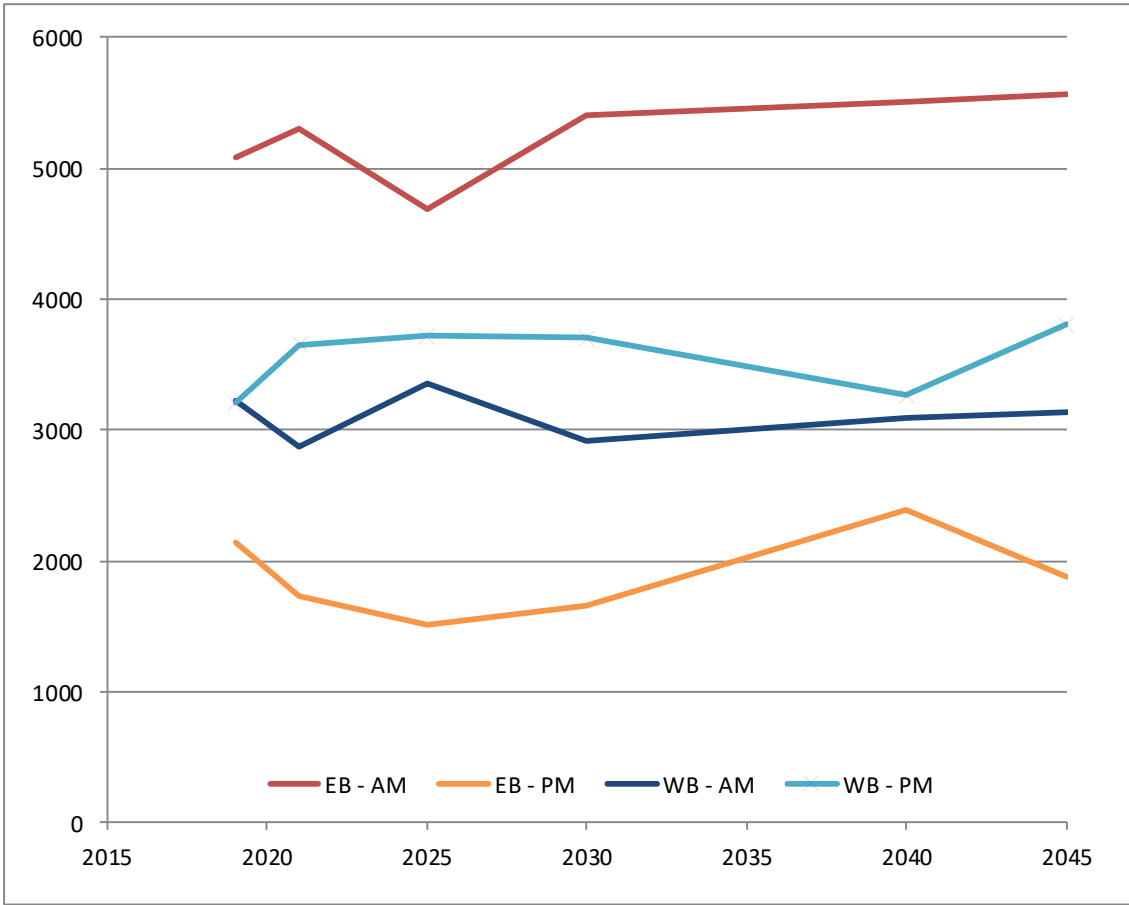
N. Growth Rate Visualizations

Growth Rate Information & Assumptions

Massachusetts Ave NW aggregate

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
EB - AM	5077	5307	4683	5406	5508	5560 Peak
EB - PM	2147	1735	1508	1653	2385	1872
WB - AM	3228	2877	3361	2911	3086	3140
WB - PM	3203	3655	3718	3706	3266	3803 Peak

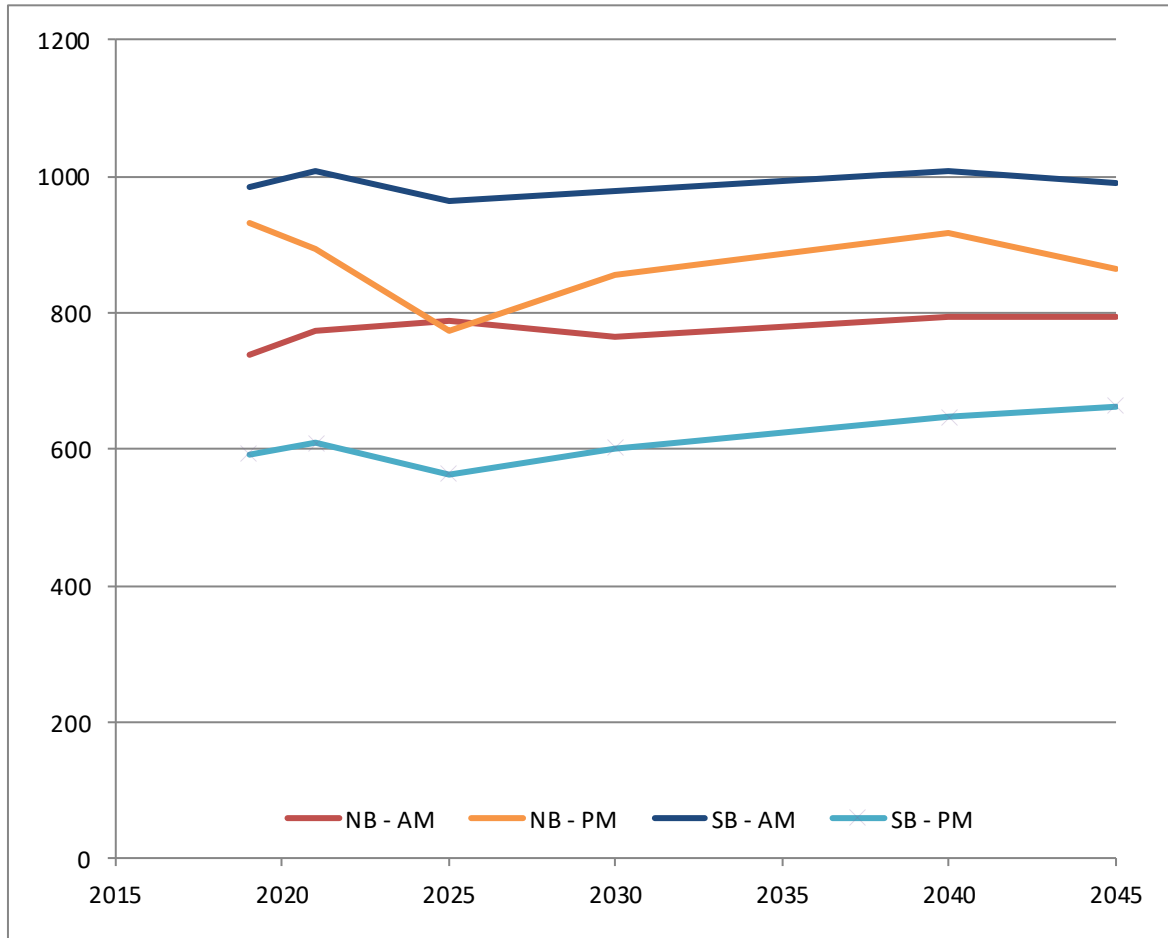


Year of data collection: 2025
Project completion date: 2029

Direction/Period	Growth per year	
EB - AM	2.24%	0.50% Peak
EB - PM	-10.10%	0.10%
WB - AM	-5.60%	0.10%
WB - PM	6.82%	0.50% Peak

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045	
NB - AM	737	772	787	765	793	795	
NB - PM	932	893	773	854	917	863	Peak
SB - AM	983	1008	963	979	1008	991	Peak
SB - PM	592	609	564	601	647	663	



Year of data collection: 2025
Project completion date: 2029

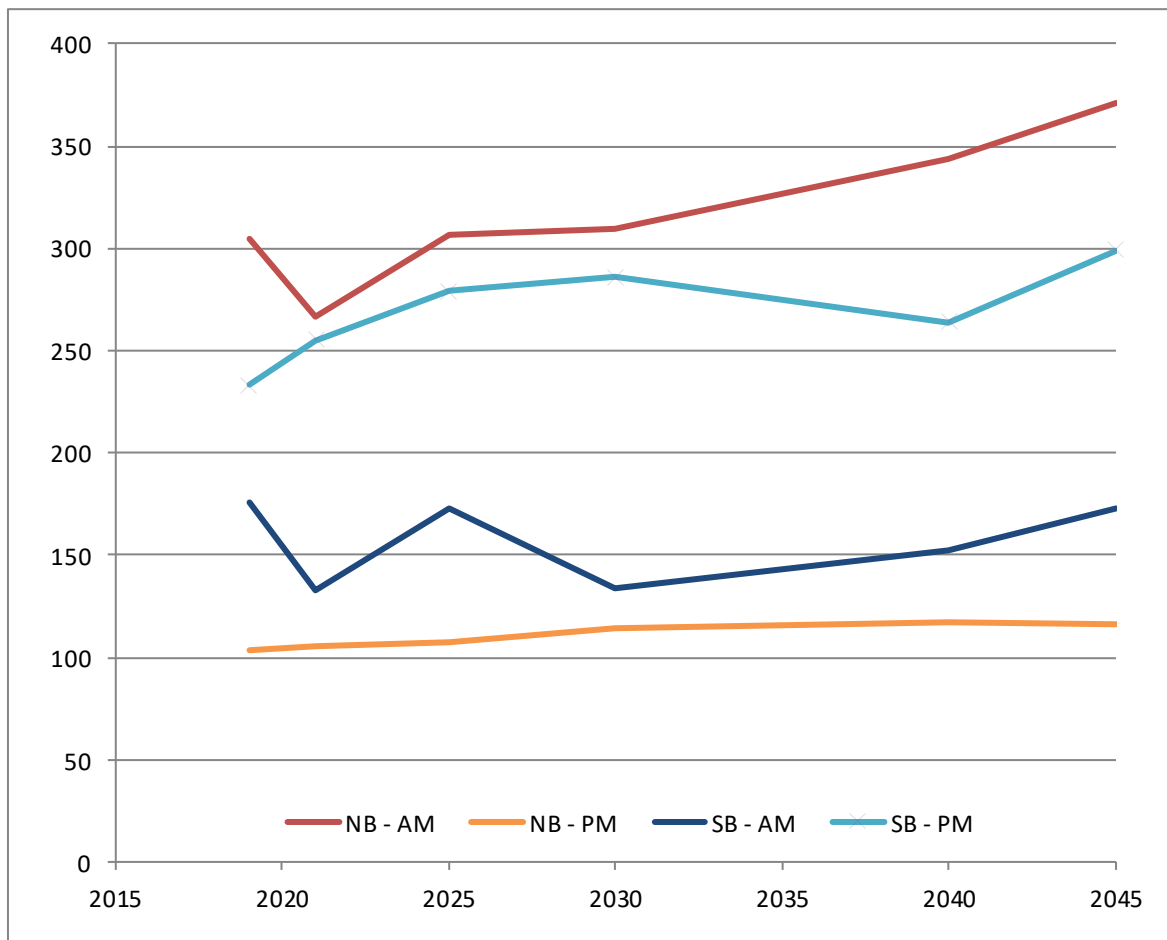
Direction/Period	Growth per year between 2020 & 2021		
NB - AM	2.35%	2.00%	
NB - PM	-2.11%	0.10%	Peak
SB - AM	1.26%	0.50%	Peak
SB - PM	1.43%	1.43%	

Growth Rate Information & Assumptions

University Ave NW

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045	
NB - AM	305	267	307	310	344	371	Peak
NB - PM	104	106	108	114	117	116	
SB - AM	176	133	173	134	152	173	
SB - PM	233	255	279	286	264	299	Peak



Year of data collection: 2025
 Project completion date: 2029

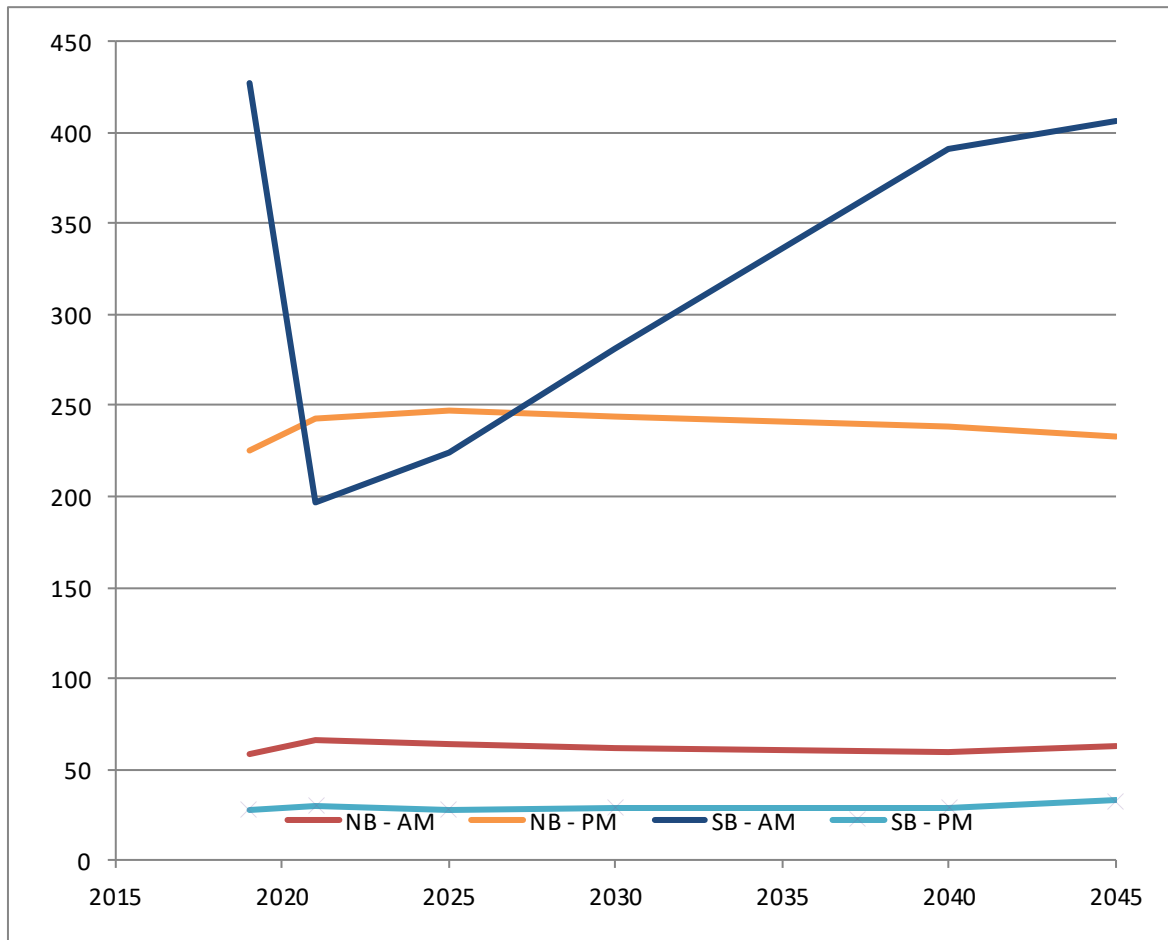
Direction/Period	Growth per year between 2020 & 2021		
NB - AM	-6.44%	0.10%	Peak
NB - PM	0.96%	0.96%	
SB - AM	-13.07%	0.10%	
SB - PM	4.61%	0.50%	Peak

Growth Rate Information & Assumptions

45th St NW

MWCOG Model Volumes (v2.3.78)

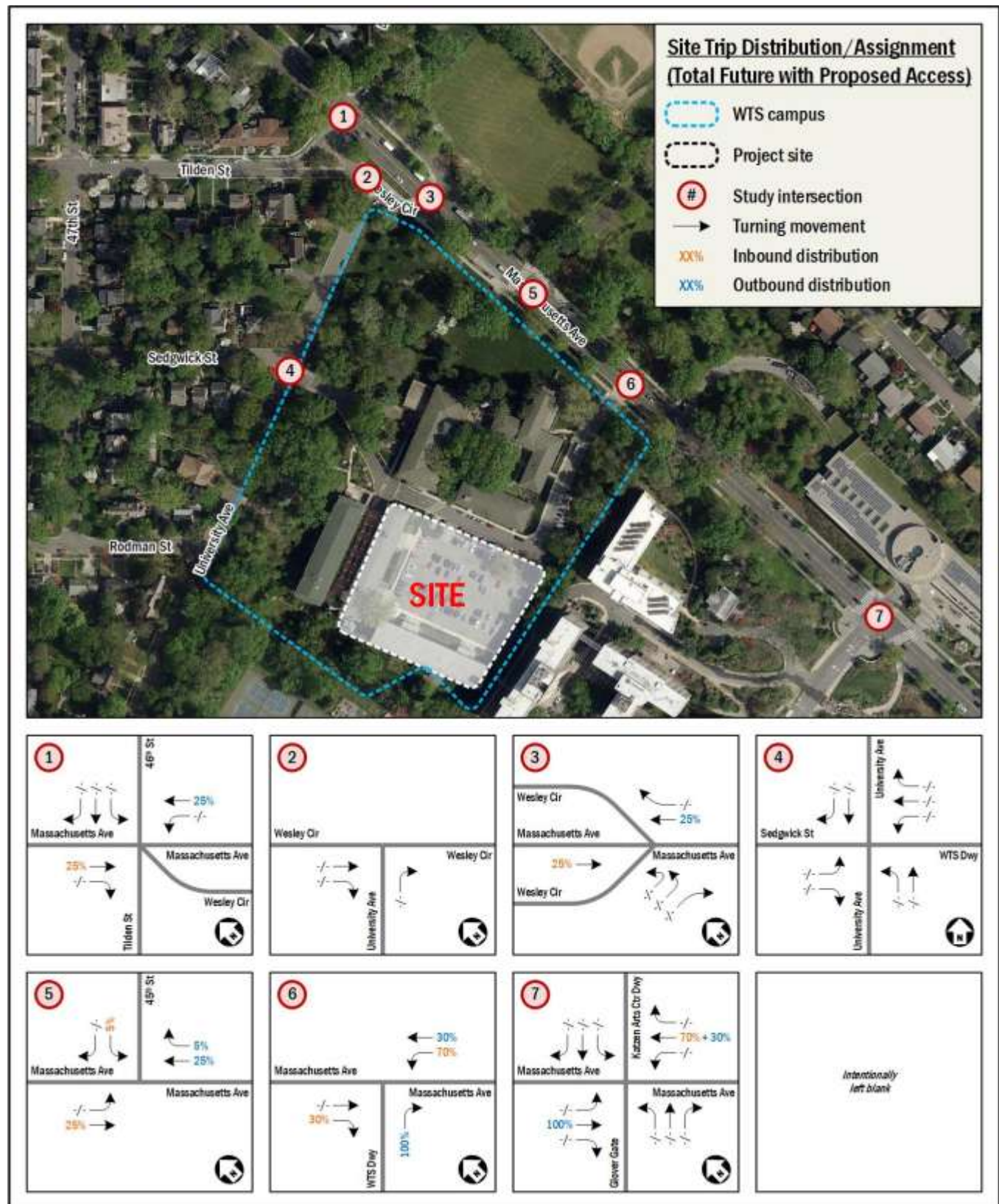
Direction/Period	2019	2021	2025	2030	2040	2045	
NB - AM	58	66	64	62	60	63	
NB - PM	225	243	247	244	238	233	Peak
SB - AM	427	197	224	281	391	406	Peak
SB - PM	28	30	28	29	29	33	



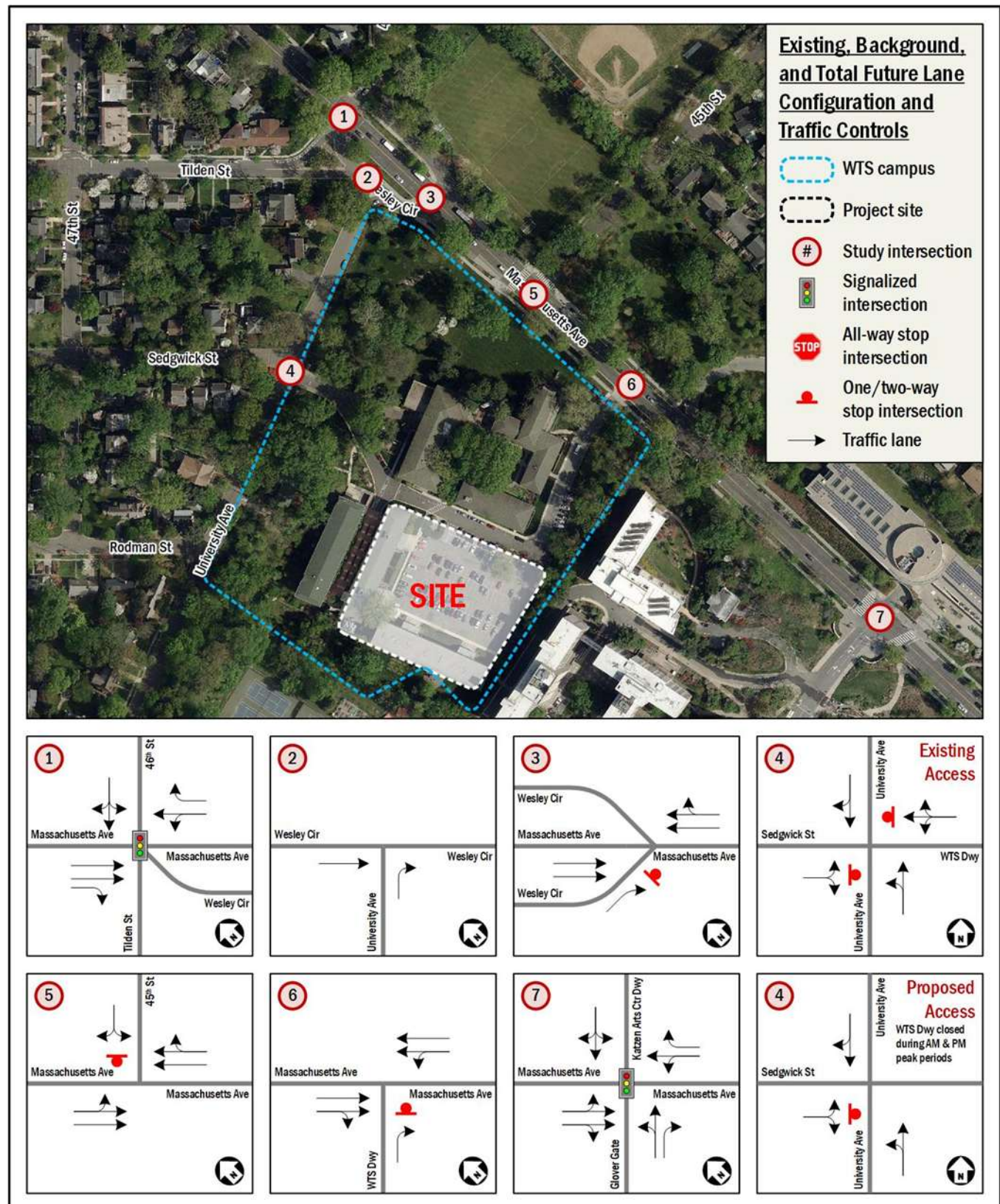
Year of data collection: 2025
Project completion date: 2029

Direction/Period	Growth per year between 2020 & 2021	
NB - AM	6.67%	2.00%
NB - PM	3.92%	0.50% Peak
SB - AM	-32.08%	0.10% Peak
SB - PM	3.51%	2.00%

O. Site Trip Distributions, As Approved from Previous CTR



P. Existing, Background, and Total Future Lane Configurations and Traffic Controls



E. 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.

F. 2025 Turning Movement Counts

Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Wesley Theological Seminary Further
Project # : 2997-002
Location : Washington, DC
Data Source : Gorove/Slade Associates, Inc.

Analysis Period: STUDY PERIOD
Date of Counts: Thursday, September 11, 2025
Weather: Partly Cloudy

06:30 AM to 09:30 AM

Volumes Displayed as: 2. System Peak (vehicle)

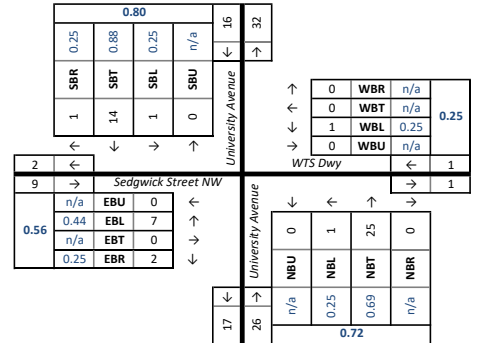
Intersection Peak Hour (all vehicles): 07:30 AM to 08:30 AM

System Peak Hour (all vehicles): 07:45 AM to 08:45 AM

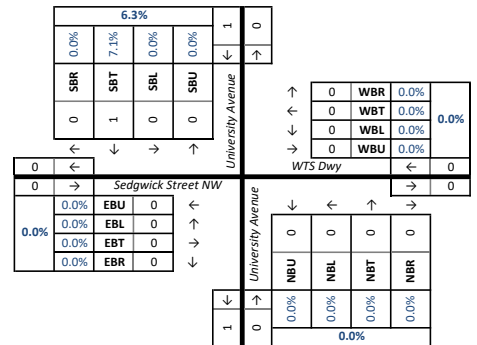
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. University Avenue & WTS Dwy/Sedgwick Street NW											
ALL VEHICLES	Direction:	Southbound					Westbound				
	Roadway:	University Avenue					WTS Dwy				
	Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
06:30 AM	to 06:45 AM	0	0	0	0	0	0	0	0	0	0
06:45 AM	to 07:00 AM	0	0	1	0	1	0	0	0	0	0
07:00 AM	to 07:15 AM	0	0	1	0	1	0	0	0	0	1
07:15 AM	to 07:30 AM	0	0	1	0	1	0	0	0	1	0
07:30 AM	to 07:45 AM	0	0	2	0	0	0	0	0	1	0
07:45 AM	to 08:00 AM	0	0	4	0	0	0	1	0	0	2
08:00 AM	to 08:15 AM	0	1	4	0	0	0	0	0	0	2
08:15 AM	to 08:30 AM	0	0	4	1	0	0	0	0	0	0
08:30 AM	to 08:45 AM	0	0	2	0	0	0	0	0	0	1
08:45 AM	to 09:00 AM	1	0	5	0	0	0	0	0	2	0
09:00 AM	to 09:15 AM	0	0	5	0	1	0	0	0	1	2
09:15 AM	to 09:30 AM	0	0	4	0	0	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										
SYSTEM PEAK HR (VEH.)		16					1				
07:45 AM	to 08:45 AM	0	1	14	1	0	0	1	0	0	5
Peak Hour	Overall	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB
Factor (PHF)	0.87	n/a	0.25	0.88	0.25	0.80	n/a	0.25	n/a	n/a	0.25
HEAVY VEHICLES (FHWA 4+)	Direction:	Southbound					Westbound				
	Roadway:	University Avenue					WTS Dwy				
	Movement:	U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM	to 06:45 AM	0	0	0	0		0	0	0	0	
06:45 AM	to 07:00 AM	0	0	0	0		0	0	0	0	
07:00 AM	to 07:15 AM	0	0	0	0		0	0	0	0	
07:15 AM	to 07:30 AM	0	0	0	0		0	0	0	0	
07:30 AM	to 07:45 AM	0	0	0	0		0	0	0	0	
07:45 AM	to 08:00 AM	0	0	1	0		0	0	0	0	
08:00 AM	to 08:15 AM	0	0	0	0		0	0	0	0	
08:15 AM	to 08:30 AM	0	0	0	0		0	0	0	0	
08:30 AM	to 08:45 AM	0	0	0	0		0	0	0	0	
08:45 AM	to 09:00 AM	0	0	0	0		0	0	0	0	
09:00 AM	to 09:15 AM	0	0	0	0		0	0	0	0	
09:15 AM	to 09:30 AM	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										
SYSTEM PEAK HR (VEH.)		1					0				
07:45 AM	to 08:45 AM	0	0	1	0		0	0	0	0	
Heavy Vehicle % (PHV)		0.0%	0.0%	7.1%	0.0%	6.3%	0.0%	0.0%	0.0%	0.0%	0.0%
INT. PEAK HR (HV ONLY)		0					0				
06:30 AM	to 07:30 AM	0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
BICYCLES	Direction:	Southbound					Westbound				
	Roadway:	University Avenue					WTS Dwy				
	Movement:	U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM	to 06:45 AM	0	0	0	0		0	0	0	0	
06:45 AM	to 07:00 AM	0	0	0	0		0	0	0	0	
07:00 AM	to 07:15 AM	0	0	1	0		0	0	0	0	
07:15 AM	to 07:30 AM	0	0	0	0		0	0	0	0	
07:30 AM	to 07:45 AM	0	0	0	0		0	0	0	0	
07:45 AM	to 08:00 AM	0	0	0	0		0	0	0	0	
08:00 AM	to 08:15 AM	0	0	0	0		0	0	0	0	
08:15 AM	to 08:30 AM	0	0	0	0		0	0	0	0	
08:30 AM	to 08:45 AM	0	0	0	0		0	0	0	0	
08:45 AM	to 09:00 AM	0	0	0	0		0	0	0	0	
09:00 AM	to 09:15 AM	0	0	0	0		0	0	0	0	
09:15 AM	to 09:30 AM	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										
SYSTEM PEAK HR (VEH.)		0					0				
07:45 AM	to 08:45 AM	0	0	0	0		0	0	0	0	
INT. PEAK HR (BIKES)		1					0				
07:00 AM	to 08:00 AM	0	0	1	0		0	0	0	0	

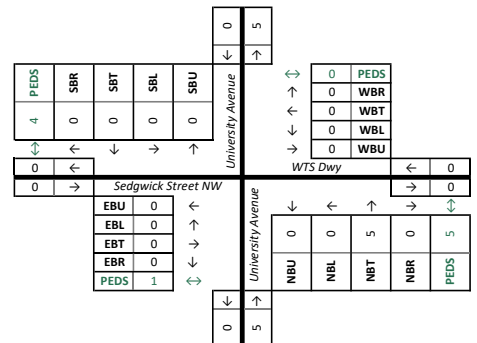
VEHICLE PEAK HOUR VOLS AND PHF: System Peak (vehicle)



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



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



DATA COLLECTION NOTES:

Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Wesley Theological Seminary Further
Project # : 2997-002
Location : Washington, DC
Data Source : Gorove/Slade Associates, Inc.

Analysis Period: STUDY PERIOD
Date of Counts: Thursday, September 11, 2025
Weather: Partly Cloudy

06:30 AM to 09:30 AM

Volumes Displayed as: 2. System Peak (vehicle)

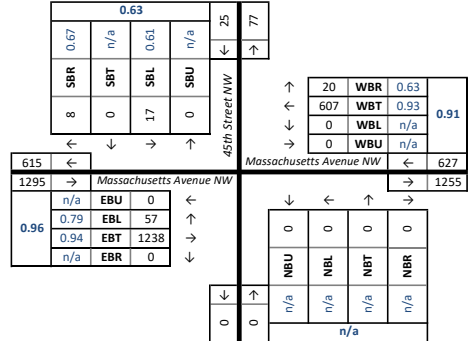
Intersection Peak Hour (all vehicles): 07:45 AM to 08:45 AM

System Peak Hour (all vehicles): 07:45 AM to 08:45 AM

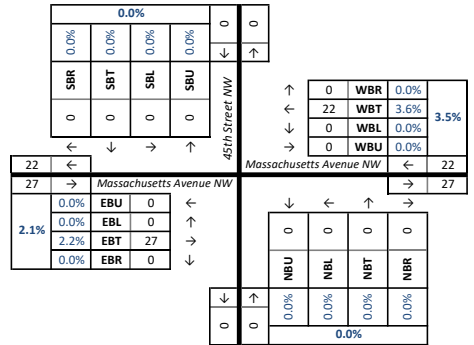
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. 45th Street NW/ & Massachusetts Avenue NW											
ALL VEHICLES	Direction:	Southbound					Westbound				
	Roadway:	45th Street NW					Massachusetts Avenue NW				
	Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
06:30 AM	to 06:45 AM	0	2	0	0	3	0	0	67	0	0
06:45 AM	to 07:00 AM	0	1	0	1	1	0	0	67	1	1
07:00 AM	to 07:15 AM	0	2	0	0	1	0	0	93	1	0
07:15 AM	to 07:30 AM	0	6	0	1	3	0	0	103	2	0
07:30 AM	to 07:45 AM	0	2	0	1	4	0	0	112	1	0
07:45 AM	to 08:00 AM	0	4	0	3	3	0	0	154	6	0
08:00 AM	to 08:15 AM	0	2	0	0	3	0	0	164	8	0
08:15 AM	to 08:30 AM	0	4	0	2	1	0	0	155	2	1
08:30 AM	to 08:45 AM	0	7	0	3	2	0	0	134	4	0
08:45 AM	to 09:00 AM	0	6	0	0	4	0	0	129	4	0
09:00 AM	to 09:15 AM	0	1	0	4	5	0	0	93	3	0
09:15 AM	to 09:30 AM	0	7	0	2	16	0	0	112	4	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										
SYSTEM PEAK HR (VEH.)		25					627				
07:45 AM	to 08:45 AM	0	17	0	8	9	0	0	607	20	1
Peak Hour	Overall	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
Factor (PHF)	0.99	n/a	0.61	n/a	0.67	0.63	n/a	n/a	0.93	0.63	0.91
HEAVY VEHICLES (FHWA 4+)	Direction:	Southbound					Westbound				
	Roadway:	45th Street NW					Massachusetts Avenue NW				
	Movement:	U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM	to 06:45 AM	0	0	0	0		0	0	2	0	
06:45 AM	to 07:00 AM	0	0	0	1		0	0	3	0	
07:00 AM	to 07:15 AM	0	0	0	0		0	0	12	0	
07:15 AM	to 07:30 AM	0	0	0	0		0	0	6	0	
07:30 AM	to 07:45 AM	0	0	0	0		0	0	5	0	
07:45 AM	to 08:00 AM	0	0	0	0		0	0	7	0	
08:00 AM	to 08:15 AM	0	0	0	0		0	0	6	0	
08:15 AM	to 08:30 AM	0	0	0	0		0	0	5	0	
08:30 AM	to 08:45 AM	0	0	0	0		0	0	4	0	
08:45 AM	to 09:00 AM	0	0	0	0		0	0	6	1	
09:00 AM	to 09:15 AM	0	0	0	0		0	0	5	0	
09:15 AM	to 09:30 AM	0	0	0	0		0	0	1	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										
SYSTEM PEAK HR (VEH.)		0					22				
07:45 AM	to 08:45 AM	0	0	0	0		0	0	22	0	
Heavy Vehicle % (PHV):		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.6%	0.0%	3.5%
INT. PEAK HR (HV ONLY)		0					23				
07:30 AM	to 08:30 AM	0	0	0	0		0	0	23	0	
Heavy Vehicle % (PHV):		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.9%	0.0%	3.8%
BICYCLES	Direction:	Southbound					Westbound				
	Roadway:	45th Street NW					Massachusetts Avenue NW				
	Movement:	U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM	to 06:45 AM	0	1	0	0		0	0	0	0	
06:45 AM	to 07:00 AM	0	0	0	0		0	0	0	0	
07:00 AM	to 07:15 AM	0	0	0	0		0	0	0	0	
07:15 AM	to 07:30 AM	0	2	0	0		0	0	0	0	
07:30 AM	to 07:45 AM	0	0	0	0		0	0	0	0	
07:45 AM	to 08:00 AM	0	1	0	1		0	0	1	0	
08:00 AM	to 08:15 AM	0	1	0	0		0	0	2	1	
08:15 AM	to 08:30 AM	0	2	0	0		0	0	0	0	
08:30 AM	to 08:45 AM	0	2	0	0		0	0	0	0	
08:45 AM	to 09:00 AM	0	0	0	1		0	0	1	0	
09:00 AM	to 09:15 AM	0	0	0	0		0	0	1	0	
09:15 AM	to 09:30 AM	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										
SYSTEM PEAK HR (VEH.)		7					4				
07:45 AM	to 08:45 AM	0	6	0	1		0	0	3	1	
INT. PEAK HR (BIKES)		7					4				
07:45 AM	to 08:45 AM	0	6	0	1		0	0	3	1	

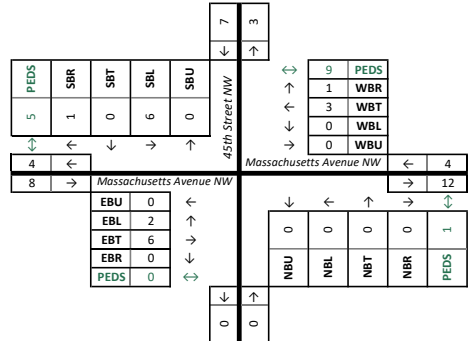
VEHICLE PEAK HOUR VOLS AND PHF: System Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: System Peak (vehicle)



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



DATA COLLECTION NOTES:

G. Vehicular Capacity Analysis Worksheets – 2025 Existing Conditions

Queues

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

Existing 2025

Timing Plan: AM Peak



Lane Group	EBT	EBR	WBT	SBT
Lane Group Flow (vph)	1144	7	581	155
v/c Ratio	0.57	0.01	0.32	0.59
Control Delay	10.4	5.6	4.4	53.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.4	5.6	4.4	53.1
Queue Length 50th (ft)	208	1	22	109
Queue Length 95th (ft)	262	6	27	183
Internal Link Dist (ft)	1432		152	19
Turn Bay Length (ft)		90		
Base Capacity (vph)	2008	786	1793	262
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	61	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.01	0.32	0.59
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

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

Existing 2025
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↖						↕	
Traffic Volume (vph)	0	1133	7	19	556	0	0	0	0	129	22	3
Future Volume (vph)	0	1133	7	19	556	0	0	0	0	129	22	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	0.97		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						0.96	
Satd. Flow (prot)		2869	1123		2861						1254	
Flt Permitted		1.00	1.00		0.89						0.96	
Satd. Flow (perm)		2869	1123		2563						1254	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	1144	7	19	562	0	0	0	0	130	22	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1144	7	0	581	0	0	0	0	0	154	0
Confl. Peds. (#/hr)	7		9	9		7	5					5
Confl. Bikes (#/hr)			6			1			1			4
Heavy Vehicles (%)	2%	2%	10%	5%	4%	2%	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)		2008	786		1794						261	
v/s Ratio Prot		c0.40									c0.12	
v/s Ratio Perm			0.01		0.23							
v/c Ratio		0.57	0.01		0.32						0.59	
Uniform Delay, d1		9.0	5.4		7.0						42.9	
Progression Factor		1.00	1.00		0.56						1.00	
Incremental Delay, d2		1.2	0.0		0.4						9.5	
Delay (s)		10.2	5.5		4.3						52.4	
Level of Service		B	A		A						D	
Approach Delay (s)		10.1			4.3			0.0			52.4	
Approach LOS		B			A			A			D	
Intersection Summary												
HCM 2000 Control Delay			11.8		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				10.0			
Intersection Capacity Utilization			56.5%		ICU Level of Service				B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: University Ave NW & Wesley Cir NW

Existing 2025
Timing Plan: AM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	19	16	0	0	0	22
Future Volume (Veh/h)	19	16	0	0	0	22
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	22	19	0	0	0	26
Pedestrians						8
Lane Width (ft)						10.0
Walking Speed (ft/s)						4.0
Percent Blockage						1
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			49		40	40
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			49		40	40
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)			1549		967	1026
Direction, Lane #	EB 1	NB 1				
Volume Total	41	26				
Volume Left	0	0				
Volume Right	19	26				
cSH	1700	1026				
Volume to Capacity	0.02	0.03				
Queue Length 95th (ft)	0	2				
Control Delay (s)	0.0	8.6				
Lane LOS		A				
Approach Delay (s)	0.0	8.6				
Approach LOS		A				
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization			15.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Wesley Cir NW & Massachusetts Ave NW

Existing 2025
Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	1258	0	0	573	42	2	3	36	0	0	0
Future Volume (Veh/h)	5	1258	0	0	573	42	2	3	36	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			-7%			5%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	5	1271	0	0	579	42	2	3	36	0	0	0
Pedestrians					1			5			6	
Lane Width (ft)					12.0			12.0			0.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)	232			230								
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	627			1276			1576	1913	642	1290	1892	316
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	627			871			1241	1657	87	888	1632	316
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			98	96	95	100	100	100
cM capacity (veh/h)	951			621			105	77	769	177	81	679
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	429	847	386	235	41							
Volume Left	5	0	0	0	2							
Volume Right	0	0	0	42	36							
cSH	951	1700	1700	1700	391							
Volume to Capacity	0.01	0.50	0.23	0.14	0.10							
Queue Length 95th (ft)	0	0	0	0	9							
Control Delay (s)	0.2	0.0	0.0	0.0	15.3							
Lane LOS	A				C							
Approach Delay (s)	0.1		0.0		15.3							
Approach LOS					C							
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			52.8%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

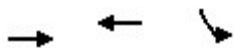
4: University Ave NW & Sedgwick St NW/WTS Dwy

Existing 2025
Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	2	1	0	0	1	25	0	1	14	1
Future Volume (Veh/h)	7	0	2	1	0	0	1	25	0	1	14	1
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	8	0	2	1	0	0	1	29	0	1	16	1
Pedestrians	4			5			1					
Lane Width (ft)	10.0			10.0			10.0					
Walking Speed (ft/s)	4.0			4.0			4.0					
Percent Blockage	0			0			0					
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	54	58	22	58	59	34	21				34	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	54	58	22	58	59	34	21				34	
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)	937	826	1052	928	826	1036	1590				1572	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	10	1	30	18								
Volume Left	8	1	1	1								
Volume Right	2	0	0	1								
cSH	958	928	1590	1572								
Volume to Capacity	0.01	0.00	0.00	0.00								
Queue Length 95th (ft)	1	0	0	0								
Control Delay (s)	8.8	8.9	0.2	0.4								
Lane LOS	A	A	A	A								
Approach Delay (s)	8.8	8.9	0.2	0.4								
Approach LOS	A	A										
Intersection Summary												
Average Delay				1.9								
Intersection Capacity Utilization				15.2%	ICU Level of Service				A			
Analysis Period (min)				15								

Queues
5: Massachusetts Ave NW & 45th St NW

Existing 2025
Timing Plan: AM Peak

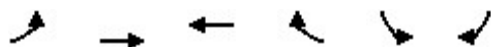


Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	1309	633	25
v/c Ratio	0.58	0.45	0.02
Control Delay	6.5	6.4	5.3
Queue Delay	0.0	0.0	0.0
Total Delay	6.5	6.4	5.3
Queue Length 50th (ft)	111	142	4
Queue Length 95th (ft)	125	174	14
Internal Link Dist (ft)	150	134	207
Turn Bay Length (ft)			
Base Capacity (vph)	2264	1397	1274
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.45	0.02
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

5: Massachusetts Ave NW & 45th St NW

Existing 2025
Timing Plan: AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	1238	607	20	17	8
Future Volume (vph)	57	1238	607	20	17	8
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	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	1.00		0.96	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3230	1757		1600	
Flt Permitted		0.88	1.00		0.97	
Satd. Flow (perm)		2848	1757		1600	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	58	1251	613	20	17	8
RTOR Reduction (vph)	0	0	1	0	2	0
Lane Group Flow (vph)	0	1309	632	0	23	0
Confl. Peds. (#/hr)	9			9	1	5
Confl. Bikes (#/hr)				4		7
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		88.2	88.2		88.2	
Effective Green, g (s)		90.2	90.2		90.2	
Actuated g/C Ratio		0.75	0.75		0.75	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2140	1320		1202	
v/s Ratio Prot			0.36			
v/s Ratio Perm		0.46			0.01	
v/c Ratio		0.61	0.48		0.02	
Uniform Delay, d1		6.8	5.8		3.8	
Progression Factor		0.60	0.68		1.00	
Incremental Delay, d2		1.1	1.0		0.0	
Delay (s)		5.2	4.9		3.8	
Level of Service		A	A		A	
Approach Delay (s)		5.2	4.9		3.8	
Approach LOS		A	A		A	
Intersection Summary						
HCM 2000 Control Delay			5.1		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.52			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	13.0
Intersection Capacity Utilization			99.6%		ICU Level of Service	F
Analysis Period (min)			15			
! Phase conflict between lane groups.						
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

6: WTS Dwy & Massachusetts Ave NW

Existing 2025
Timing Plan: AM Peak

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↘			↖		↗
Traffic Volume (veh/h)	1245	10	4	626	0	2
Future Volume (Veh/h)	1245	10	4	626	0	2
Sign Control	Free			Free	Stop	
Grade	4%			-7%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1258	10	4	632	0	2
Pedestrians					26	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	214			651		
pX, platoon unblocked			0.83		0.92	0.83
vC, conflicting volume			1294		1929	660
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			952		1288	191
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	100
cM capacity (veh/h)			587		139	670
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	839	429	636	2		
Volume Left	0	0	4	0		
Volume Right	0	10	0	2		
cSH	1700	1700	587	670		
Volume to Capacity	0.49	0.25	0.01	0.00		
Queue Length 95th (ft)	0	0	1	0		
Control Delay (s)	0.0	0.0	0.2	10.4		
Lane LOS			A	B		
Approach Delay (s)	0.0		0.2	10.4		
Approach LOS				B		
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			44.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

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

Existing 2025

Timing Plan: AM Peak



Lane Group	EBT	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	1295	653	34	25	14	16
v/c Ratio	0.64	0.62	0.04	0.16	0.08	0.09
Control Delay	4.7	10.1	0.3	48.9	0.8	39.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	10.1	0.3	48.9	0.8	39.0
Queue Length 50th (ft)	43	203	0	17	0	8
Queue Length 95th (ft)	48	305	2	45	0	30
Internal Link Dist (ft)	571	391		281		141
Turn Bay Length (ft)						
Base Capacity (vph)	2017	1055	920	157	186	183
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	0.64	0.62	0.04	0.16	0.08	0.09
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

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

Existing 2025
Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1178	63	30	603	33	18	6	14	3	9	4
Future Volume (vph)	16	1178	63	30	603	33	18	6	14	3	9	4
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	0.90		1.00	0.79		0.98	
Flpb, ped/bikes		1.00			1.00	1.00		0.96	1.00		0.96	
Frt		0.99			1.00	0.85		1.00	0.85		0.97	
Flt Protected		1.00			1.00	1.00		0.96	1.00		0.99	
Satd. Flow (prot)		2845			1572	1206		1366	984		1380	
Flt Permitted		0.94			0.89	1.00		0.82	1.00		0.96	
Satd. Flow (perm)		2687			1406	1206		1157	984		1340	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	16	1214	65	31	622	34	19	6	14	3	9	4
RTOR Reduction (vph)	0	3	0	0	0	9	0	0	12	0	3	0
Lane Group Flow (vph)	0	1292	0	0	653	26	0	25	2	0	13	0
Confl. Peds. (#/hr)	17		17	17		17	14		77	77		14
Confl. Bikes (#/hr)			11			2						
Heavy Vehicles (%)	2%	3%	5%	10%	3%	2%	10%	2%	10%	2%	2%	2%
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)		2015			1054	904		154	131		178	
v/s Ratio Prot												
v/s Ratio Perm		c0.48			0.46	0.02		c0.02	0.00		0.01	
v/c Ratio		0.64			0.62	0.03		0.16	0.01		0.07	
Uniform Delay, d1		7.2			7.0	3.8		46.1	45.2		45.5	
Progression Factor		0.45			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		1.3			2.7	0.1		2.3	0.2		0.8	
Delay (s)		4.6			9.7	3.9		48.3	45.4		46.3	
Level of Service		A			A	A		D	D		D	
Approach Delay (s)		4.6			9.5			47.3			46.3	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			7.4				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)			12.0		
Intersection Capacity Utilization			80.7%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

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

Existing 2025

Timing Plan: PM Peak



Lane Group	EBT	EBR	WBT	SBT
Lane Group Flow (vph)	913	3	1056	106
v/c Ratio	0.43	0.00	0.58	0.50
Control Delay	6.6	4.0	3.3	54.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.6	4.0	3.3	54.4
Queue Length 50th (ft)	122	1	2	75
Queue Length 95th (ft)	155	3	1	135
Internal Link Dist (ft)	1432		152	19
Turn Bay Length (ft)		90		
Base Capacity (vph)	2127	892	1831	210
Starvation Cap Reductn	0	0	51	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.00	0.59	0.50
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

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

Existing 2025
Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑						↑↓	
Traffic Volume (vph)	0	849	3	48	934	0	0	0	0	75	21	2
Future Volume (vph)	0	849	3	48	934	0	0	0	0	75	21	2
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						0.96	
Satd. Flow (prot)		2869	1203		2915						1258	
Flt Permitted		1.00	1.00		0.85						0.96	
Satd. Flow (perm)		2869	1203		2470						1258	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	913	3	52	1004	0	0	0	0	81	23	2
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	913	3	0	1056	0	0	0	0	0	105	0
Confl. Peds. (#/hr)	16		22	22		16	3					3
Confl. Bikes (#/hr)			3			11			1			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)		87.0	87.0		87.0						18.0	
Effective Green, g (s)		89.0	89.0		89.0						20.0	
Actuated g/C Ratio		0.74	0.74		0.74						0.17	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		2127	892		1831						209	
v/s Ratio Prot		0.32									c0.08	
v/s Ratio Perm			0.00		c0.43							
v/c Ratio		0.43	0.00		0.58						0.50	
Uniform Delay, d1		5.9	4.0		7.0						45.5	
Progression Factor		1.00	1.00		0.29						1.00	
Incremental Delay, d2		0.6	0.0		1.2						8.4	
Delay (s)		6.5	4.0		3.2						53.9	
Level of Service		A	A		A						D	
Approach Delay (s)		6.5			3.2			0.0			53.9	
Approach LOS		A			A			A			D	
Intersection Summary												
HCM 2000 Control Delay			7.3		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			81.3%		ICU Level of Service				D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: University Ave NW & Wesley Cir NW

Existing 2025
Timing Plan: PM Peak

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱					↲
Traffic Volume (veh/h)	17	24	0	0	0	25
Future Volume (Veh/h)	17	24	0	0	0	25
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	20	28	0	0	0	29
Pedestrians					3	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			51		37	37
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			51		37	37
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	97
cM capacity (veh/h)			1552		973	1016
Direction, Lane #	EB 1	NB 1				
Volume Total	48	29				
Volume Left	0	0				
Volume Right	28	29				
cSH	1700	1016				
Volume to Capacity	0.03	0.03				
Queue Length 95th (ft)	0	2				
Control Delay (s)	0.0	8.6				
Lane LOS		A				
Approach Delay (s)	0.0	8.6				
Approach LOS		A				
Intersection Summary						
Average Delay		3.3				
Intersection Capacity Utilization		14.3%	ICU Level of Service		A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

3: Wesley Cir NW & Massachusetts Ave NW

Existing 2025
Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	922	0	0	982	88	1	7	35	0	0	0
Future Volume (Veh/h)	1	922	0	0	982	88	1	7	35	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			-7%			5%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1002	0	0	1067	96	1	8	38	0	0	0
Pedestrians								22			14	
Lane Width (ft)								12.0			0.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								2			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		232			230							
pX, platoon unblocked	0.87			0.89			0.92	0.92	0.89	0.92	0.92	0.87
vC, conflicting volume	1177			1024			1560	2203	523	1674	2155	596
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	894			780			898	1597	217	1022	1545	222
tC, single (s)	4.1			4.1			7.5	6.5	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			100			100	92	94	100	100	100
cM capacity (veh/h)	653			728			208	95	677	152	103	676
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	335	668	711	452	47							
Volume Left	1	0	0	0	1							
Volume Right	0	0	0	96	38							
cSH	653	1700	1700	1700	323							
Volume to Capacity	0.00	0.39	0.42	0.27	0.15							
Queue Length 95th (ft)	0	0	0	0	13							
Control Delay (s)	0.1	0.0	0.0	0.0	18.0							
Lane LOS	A				C							
Approach Delay (s)	0.0		0.0		18.0							
Approach LOS					C							
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			43.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

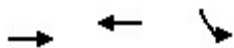
4: University Ave NW & Sedgwick St NW/WTS Dwy

Existing 2025
Timing Plan: PM Peak

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	5	1	3	0	0	3	2	16	0	0	17	5	
Future Volume (Veh/h)	5	1	3	0	0	3	2	16	0	0	17	5	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
Hourly flow rate (vph)	6	1	4	0	0	4	2	19	0	0	20	6	
Pedestrians					3								2
Lane Width (ft)					10.0								10.0
Walking Speed (ft/s)					4.0								4.0
Percent Blockage					0								0
Right turn flare (veh)													
Median type							None						None
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	52	49	23	54	52	24	26				22		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	52	49	23	54	52	24	26				22		
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)	940	840	1054	936	837	1049	1588				1590		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total	11	4	21	26									
Volume Left	6	0	2	0									
Volume Right	4	4	0	6									
cSH	967	1049	1588	1590									
Volume to Capacity	0.01	0.00	0.00	0.00									
Queue Length 95th (ft)	1	0	0	0									
Control Delay (s)	8.8	8.4	0.7	0.0									
Lane LOS	A	A	A										
Approach Delay (s)	8.8	8.4	0.7	0.0									
Approach LOS	A	A											
Intersection Summary													
Average Delay				2.3									
Intersection Capacity Utilization				15.9%	ICU Level of Service			A					
Analysis Period (min)				15									

Queues
5: Massachusetts Ave NW & 45th St NW

Existing 2025
Timing Plan: PM Peak

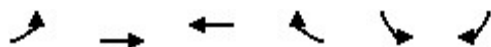


Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	1051	1198	42
v/c Ratio	0.45	0.44	0.03
Control Delay	5.5	4.0	4.1
Queue Delay	0.0	0.0	0.0
Total Delay	5.6	4.0	4.1
Queue Length 50th (ft)	125	92	4
Queue Length 95th (ft)	145	105	17
Internal Link Dist (ft)	150	134	207
Turn Bay Length (ft)			
Base Capacity (vph)	2342	2698	1238
Starvation Cap Reductn	153	0	0
Spillback Cap Reductn	0	14	6
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.48	0.45	0.03
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

5: Massachusetts Ave NW & 45th St NW

Existing 2025
Timing Plan: PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Volume (vph)	17	939	1047	43	16	22
Future Volume (vph)	17	939	1047	43	16	22
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	
Frpb, ped/bikes		1.00	1.00		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.99		0.92	
Flt Protected		1.00	1.00		0.98	
Satd. Flow (prot)		3234	3393		1553	
Flt Permitted		0.91	1.00		0.98	
Satd. Flow (perm)		2944	3393		1553	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	19	1032	1151	47	18	24
RTOR Reduction (vph)	0	0	2	0	6	0
Lane Group Flow (vph)	0	1051	1196	0	36	0
Confl. Peds. (#/hr)	28			28	1	19
Confl. Bikes (#/hr)				15		
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		88.2	88.2		88.2	
Effective Green, g (s)		90.2	90.2		90.2	
Actuated g/C Ratio		0.75	0.75		0.75	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2212	2550		1167	
v/s Ratio Prot			0.35			
v/s Ratio Perm		c0.36			0.02	
v/c Ratio		0.48	0.47		0.03	
Uniform Delay, d1		5.8	5.7		3.8	
Progression Factor		0.65	0.47		1.00	
Incremental Delay, d2		0.7	0.5		0.0	
Delay (s)		4.4	3.2		3.8	
Level of Service		A	A		A	
Approach Delay (s)		4.4	3.2		3.8	
Approach LOS		A	A		A	
Intersection Summary						
HCM 2000 Control Delay		3.8		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.40				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)		13.0
Intersection Capacity Utilization		61.4%		ICU Level of Service		B
Analysis Period (min)		15				
! Phase conflict between lane groups.						
c Critical Lane Group						

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

Existing 2025
Timing Plan: PM Peak

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱↱		↱
Traffic Volume (veh/h)	951	6	14	1090	0	4
Future Volume (Veh/h)	951	6	14	1090	0	4
Sign Control	Free			Free	Stop	
Grade	4%			-7%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1045	7	15	1198	0	4
Pedestrians					36	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	214			651		
pX, platoon unblocked			0.25		0.33	0.25
vC, conflicting volume			1088		1714	1084
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		346	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	99
cM capacity (veh/h)			401		195	268
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	1052	414	799	4		
Volume Left	0	15	0	0		
Volume Right	7	0	0	4		
cSH	1700	401	1700	268		
Volume to Capacity	0.62	0.04	0.47	0.01		
Queue Length 95th (ft)	0	3	0	1		
Control Delay (s)	0.0	1.2	0.0	18.6		
Lane LOS		A		C		
Approach Delay (s)	0.0	0.4		18.6		
Approach LOS				C		
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			60.4%		ICU Level of Service	B
Analysis Period (min)			15			

Queues

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

Existing 2025

Timing Plan: PM Peak



Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	1100	1147	93	111	54
v/c Ratio	0.57	0.61	0.51	0.47	0.27
Control Delay	7.8	10.7	55.6	15.0	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	10.7	55.6	15.0	33.0
Queue Length 50th (ft)	105	213	66	0	22
Queue Length 95th (ft)	118	266	122	54	61
Internal Link Dist (ft)	571	391	281		141
Turn Bay Length (ft)					
Base Capacity (vph)	1923	1876	184	236	198
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	0.57	0.61	0.51	0.47	0.27
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

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

Existing 2025
Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	917	54	31	968	21	76	7	99	21	8	19
Future Volume (vph)	8	917	54	31	968	21	76	7	99	21	8	19
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		0.99			1.00			1.00	0.66		0.96	
Flpb, ped/bikes		1.00			1.00			0.92	1.00		0.87	
Frt		0.99			1.00			1.00	0.85		0.95	
Flt Protected		1.00			1.00			0.96	1.00		0.98	
Satd. Flow (prot)		2872			3013			1386	829		1184	
Flt Permitted		0.94			0.88			0.73	1.00		0.86	
Satd. Flow (perm)		2710			2647			1055	829		1037	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	9	1030	61	35	1088	24	85	8	111	24	9	21
RTOR Reduction (vph)	0	4	0	0	1	0	0	0	92	0	17	0
Lane Group Flow (vph)	0	1097	0	0	1146	0	0	93	19	0	37	0
Confl. Peds. (#/hr)	10		19	19		10	39		190	190		39
Confl. Bikes (#/hr)			2			5			1			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	8%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	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)		1919			1874			184	145		181	
v/s Ratio Prot												
v/s Ratio Perm		0.40			c0.43			c0.09	0.02		0.04	
v/c Ratio		0.57			0.61			0.51	0.13		0.20	
Uniform Delay, d1		8.6			9.0			44.8	41.8		42.3	
Progression Factor		0.77			1.00			1.00	1.00		1.00	
Incremental Delay, d2		1.1			1.5			9.6	1.9		2.5	
Delay (s)		7.7			10.5			54.4	43.7		44.8	
Level of Service		A			B			D	D		D	
Approach Delay (s)		7.7			10.5			48.6			44.8	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM 2000 Control Delay			13.1				HCM 2000 Level of Service		B			
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		12.0			
Intersection Capacity Utilization			73.8%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												