380 MAPLE AVENUE WEST

Traffic Impact Study

PREPARED FOR

J.D.A. CUSTOM HOMES

SEPTEMBER 20, 2018
UPDATED:
NOVEMBER 29, 2018
MARCH 18, 2019

Prepared By:

Kimley»Horn

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Prepared under the Supervision of:

Andrew T. Smith, P.E.
Kimley-Horn and Associates, Inc.
Email: Andy.Smith@Kimley-Horn.com

11400 Commerce Park Drive, Suite 400
Reston, VA 20191
Phone: (703) 674-1300
Fax: (703) 674-1361

COMMONWEALTH OF VIRGINIA
3/18/19
ANDREW T. SMITH
Lic. No. 0402053042
PROFESSIONAL ENGINEER

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EXECUTIVE SUMMARY

PURPOSE AND DESCRIPTION OF PROPOSED DEVELOPMENT

This report presents the results of a traffic impact study to support a rezoning application for a proposed mixed-use development at 380 Maple Avenue West in the Town of Vienna, Virginia. The proposed development is located on a 36,842-square foot site currently occupied by a 23,620-square foot office building.

The applicant proposes to rezone the site to the Maple Avenue Commercial (MAC) district and to re-develop with up to 8,500 square feet of retail and up to 42 multi-family residential units. Access to the site is planned to be provided by three access points, all along Wade Hampton Drive Southwest. Out of the three access points, the closest to Maple Avenue West (VA 123) will serve as the service vehicle loading/unloading access, while the other two access points will serve the retail and residential components on the site.

The proposed site will include 125 parking spaces divided among above- and below-grade garage parking to accommodate employees, visitors, patrons, and residents.

ANALYSIS PROCEDURE

Per the scoping document between the applicant and the Town of Vienna, a traffic impact study was conducted to describe the area transportation system, existing traffic volumes and analysis, the calculation of background traffic volumes and analysis, traffic generated by the proposed development, calculation of total future volumes and analysis, and vehicle queuing patterns.

Intersection capacity and queueing analyses were performed for the weekday AM and PM peak hours and for the Saturday midday peak hour at six study intersections. Per the scoping document, intersection capacity analyses are based on the 2010 Highway Capacity Manual (HCM).

CONCLUSIONS

Based on the intersection capacity analyses that were conducted, it is concluded that the proposed development will result in minimal traffic impacts to the area transportation network and that parking will be provided in accordance with the Town's Zoning Ordinance.

Under existing conditions, all signalized study intersections operate at or better than overall intersection LOS D during the AM, PM, and Saturday midday peak hours.

Under background conditions, both the intersection of Nutley Street Southwest and Courthouse Road Southwest and the intersection of Maple Avenue West and Nutley Street Southwest will operate at LOS E during the AM peak hour, which is below the intersection operation standard of LOS D identified in the scoping document.

These results suggest that the background traffic associated with regional growth and pipeline developments impact signalized intersection operations.

The delays at the signalized intersections also increase under the total future conditions, i.e. with the proposed development in place. It is noted, however, that all signalized intersections operate at the same LOS when compared to background conditions. This confirms that the traffic impacts on congestion and

delay associated with the proposed development will be minimal, specifically when compared to the traffic impacts of the regional growth and the traffic generated by pipeline developments.

Under total future conditions, the intersection of Nutley Street Southwest and Courthouse Road Southwest and the intersection of Maple Avenue West and Nutley Street Southwest will continue to operate at LOS E during the AM peak hour; this is below the intersection operation standard identified in the scoping document. It is noted, however, that the traffic generated by the proposed development only adds 0.2 seconds of overall intersection delay to the Nutley Street Southwest and Courthouse Road Southwest intersection during the AM peak hour. Similarly, the traffic generated by the proposed developments only adds 2.4 seconds of overall intersection delay to the Maple Avenue West and Nutley Street Southwest intersection during the AM peak hour.

Under total future conditions, significant delays are anticipated at the northbound approach of Wade Hampton Drive Southwest at Maple Avenue West. Traffic exiting the proposed site is anticipated to experience delays accessing Maple Avenue (particularly for those vehicles that are turning left). Due the heavy east-west traffic flows along Maple Avenue West during the peak hours, additional delays are experienced for vehicles turning from the minor streets along Maple Avenue West. It is noted that these delays are not uncommon or unexpected for unsignalized approaches to congested corridors. It is anticipated that motorists will find a balance between waiting out the delays at the northbound approach of Wade Hampton Drive Southwest and the extra travel time required to identify and use an alternate route.

To mitigate the impacts at the intersection of Wade Hampton Southwest at Maple Avenue West, the project will change the northbound approach from a single, left-through-right lane to one left-through lane and one right-turn only lane. This improvement provides a significant benefit for the approach by allowing right-turning vehicles their own lane so that they are not blocked by left-turning or through vehicles which experience heavier delay. This also allows vehicles that would normally turn left onto Maple Avenue West the option to easily turn right if they determine that the delay for the left-turn movement is long than they would prefer to wait.

The maximum northbound queueing at this location is approximately 3.5 vehicles waiting to turn onto Maple Avenue West. This is not anticipated to negatively impact access and egress to the proposed site or to impact the local neighborhood intersections and streets.

Realistically, there are few mitigation options to reduce the delay at the minor street approach; the traffic volumes do not warrant a signal (which is also precluded by intersection spacing along Maple Avenue West) and the east-west travel pattern along Maple Avenue is dependent on efficient intersection to intersection progression, which limits the number of gaps available for left turn movements from the minor streets. The separation of the northbound approach into a left-through lane and right-turn lane at this location provides a considerable benefit.

Should the Town determine that the real or forecasted delays at this intersection are too much to bear, potential mitigation options may include restricting certain turning movements during the peak hours or installing “do not block the intersection” signage and/or pavement markings to facilitate the creation of gaps in traffic during congested conditions. The developer has also expressed a desire to work with the Town and the community to develop strategies to minimize the impact of traffic on residential streets. One such strategy is the proposed prohibition of left turns exiting the site, which will reduce the possibility of site traffic driving through neighborhood streets.

Table E1: Summary of 2020 Total Future Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)										
Intersection		Existing (2018)			Background (2020)			Total Future (2020)		
Approach	**Mvmnt**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
1. Nutley Street Southwest and Courthouse Road Southwest (signalized)										
Northbound (Nutley Street Southwest)	L	26.1 (C)	17.7 (B)	14.3 (B)	23.0 (C)	16.7 (B)	14.2 (B)	23.2 (C)	16.7 (B)	14.3 (B)
	T	40.9 (D)	22.5 (C)	20.2 (C)	36.9 (D)	24.6 (C)	1.5 (A)	37.4 (D)	24.9 (C)	1.6 (A)
	R	41.9 (D)	23.1 (C)	21.0 (C)	37.2 (D)	24.7 (C)	1.5 (A)	37.7 (D)	25.0 (C)	1.6 (A)
	Overall	40.3 (D)	*21.8 (C)*	*20.0 (C)*	36.1 (D)	*23.2 (C)*	*2.6 (A)*	36.5 (D)	*23.4 (C)*	*2.7 (A)*
Southbound (Nutley Street Southwest)	L	30.7 (C)	20.5 (C)	16.1 (B)	27.0 (C)	21.7 (C)	15.3 (B)	27.3 (C)	21.8 (C)	15.4 (B)
	T	33.8 (C)	25.3 (C)	18.4 (B)	23.3 (C)	2.4 (A)	0.9 (A)	23.6 (C)	2.4 (A)	0.9 (A)
	R	33.9 (C)	25.6 (C)	18.5 (B)	23.2 (C)	2.4 (A)	0.9 (A)	23.5 (C)	2.4 (A)	0.9 (A)
	Overall	33.7 (C)	*25.4 (C)*	*18.3 (B)*	23.4 (C)	*2.8 (A)*	*1.7 (A)*	23.7 (C)	*2.8 (A)*	*1.7 (A)*
Eastbound (Courthouse Road Southwest)	L	43.1 (D)	53.5 (D)	47.4 (D)	53.8 (D)	76.5 (E)	63.1 (E)	53.8 (D)	76.5 (E)	63.1 (E)
	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	R	65.2 (E)	55.8 (E)	49.7 (D)	155.4 (F)	92.4 (F)	69.5 (E)	155.4 (F)	92.4 (F)	69.5 (E)
	Overall	*56.1 (E)*	*54.6 (D)*	*48.6 (D)*	*113.6 (F)*	*84.3 (F)*	*66.3 (E)*	*113.6 (F)*	*84.3 (F)*	*66.3 (E)*
Westbound (Courthouse Road Southwest)	L	63.1 (E)	49.7 (D)	48.3 (D)	73.8 (E)	72.6 (E)	69.7 (E)	74.3 (E)	73.1 (E)	70.0 (E)
	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	R	56.5 (E)	52.5 (D)	43.9 (D)	56.4 (E)	86.9 (F)	57.0 (E)	56.1 (E)	86.9 (F)	56.7 (E)
	Overall	*61.2 (E)*	*51.1 (D)*	*46.6 (D)*	*68.7 (E)*	*80.5 (F)*	*64.9 (E)*	*69.1 (E)*	*80.7 (F)*	*65.0 (E)*
Overall Intersection		***45.3 (D)***	**31.4 (C)**	**27.8 (C)**	***56.4 (E)***	**34.3 (C)**	**20.1 (C)**	***56.6 (E)***	**34.4 (C)**	**20.1 (C)**
2. Nutley Street Southwest and Maple Avenue West (signalized)										
Northbound (Nutley Street Southwest)	L	62.0 (E)	73.1 (E)	53.7 (D)	72.6 (E)	116.0 (F)	57.4 (E)	72.8 (E)	116.0 (F)	57.4 (E)
	T	54.9 (D)	75.2 (E)	56.6 (E)	56.0 (E)	111.9 (F)	59.6 (E)	56.3 (E)	112.0 (F)	59.7 (E)
	R	37.7 (D)	38.0 (D)	32.5 (C)	20.2 (C)	51.1 (D)	5.4 (A)	20.4 (C)	48.3 (D)	4.7 (A)
	Overall	*49.1 (D)*	*58.9 (E)*	*41.7 (D)*	*45.7 (D)*	*88.4 (F)*	*29.1 (C)*	*45.9 (D)*	*88.8 (F)*	*28.5 (C)*
Southbound (Nutley Street Southwest)	L	47.9 (D)	59.1 (E)	52.7 (D)	51.3 (D)	62.5 (E)	56.6 (E)	51.4 (D)	62.8 (E)	56.9 (E)
	T	73.4 (E)	74.1 (E)	57.9 (E)	99.6 (F)	89.8 (F)	65.7 (E)	99.6 (F)	89.8 (F)	65.7 (E)
	R	-	-	-	-	-	-	-	-	-
	Overall	*68.4 (E)*	*70.6 (E)*	*56.4 (E)*	*87.6 (F)*	*82.2 (F)*	*62.5 (E)*	*87.5 (F)*	*82.0 (F)*	*62.5 (E)*
Eastbound (Maple Avenue West)	L	23.7 (C)	27.5 (C)	22.0 (C)	30.6 (C)	35.5 (D)	30.8 (C)	31.1 (C)	35.8 (D)	31.5 (C)
	T	48.3 (D)	36.2 (D)	40.1 (D)	84.5 (F)	43.3 (D)	79.7 (E)	91.5 (F)	43.8 (D)	91.3 (F)
	R	-	-	-	-	-	-	-	-	-
	Overall	*47.8 (D)*	35.9 (D)	39.4 (D)	*83.2 (F)*	43.0 (D)	77.4 (E)	*90.1 (F)*	43.5 (D)	88.5 (F)
Westbound (Maple Avenue West)	L	39.2 (D)	23.0 (C)	26.7 (C)	89.5 (F)	45.2 (D)	64.2 (E)	90.0 (F)	49.1 (D)	62.2 (E)
	T	29.4 (C)	35.0 (C)	24.0 (C)	27.2 (C)	23.3 (C)	14.4 (B)	27.6 (C)	24.3 (C)	14.4 (B)
	R	-	-	-	-	-	-	-	-	-
	Overall	31.4 (C)	*32.9 (C)*	*24.7 (C)*	40.3 (D)	*27.2 (C)*	*27.6 (C)*	41.0 (D)	*28.7 (C)*	*27.1 (C)*
Overall Intersection		**46.7 (D)**	**43.3 (D)**	**36.2 (D)**	**62.8 (E)**	**50.5 (D)**	**47.3 (D)**	**65.2 (E)**	**50.9 (D)**	**50.6 (D)**
3. Wade Hampton Drive/Lewis Street N and Maple Avenue (unsignalized)										
Northbound (Wade Hampton Drive/Lewis St North)	L	50.5 (F)	34.8 (D)	15.9 (C)	99.3 (F)	20.6 (C)	40.4 (E)	314.2 (F)	83.4 (F)	483.6 (F)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	12.6 (B)	10.5 (B)	13.2 (B)
	Overall	*50.5 (F)*	*34.8 (D)*	*15.9 (C)*	*99.3 (F)*	*20.6 (C)*	*40.4 (E)*	*168.8 (F)*	*31.9 (D)*	*172.4 (F)*

Table E1: Summary of 2020 Total Future Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)										
Intersection		Existing (2018)			Background (2020)			Total Future (2020)		
Approach	**Mvmnt**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
Southbound (Wade Hampton Drive/Lewis St North)	L	13.2 (B)	42.9 (E)	21.1 (C)	17.2 (C)	22.9 (C)	44.2 (E)	17.8 (C)	29.1 (D)	49.5 (E)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*13.2 (B)*	*42.9 (E)*	*21.1 (C)*	*17.2 (C)*	*22.9 (C)*	*44.2 (E)*	*17.8 (C)*	*29.1 (D)*	*49.5 (E)*
Eastbound (Maple Avenue West)	L	9.4 (A)	15.0 (C)	10.8 (B)	8.2 (A)	11.1 (B)	8.9 (A)	8.2 (A)	11.1 (B)	8.9 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*0.6 (A)*	*1.3 (A)*	*0.5 (A)*	*0.5 (A)*	*0.9 (A)*	*0.4 (A)*	*0.5 (A)*	*0.9 (A)*	*0.4 (A)*
Westbound (Maple Avenue West)	L	9.5 (A)	8.5 (A)	9.6 (A)	9.7 (A)	8.5 (A)	10.1 (B)	9.7 (A)	8.5 (A)	10.2 (B)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*0.1 (A)*	*0.0 (A)*	*0.2 (B)*	*0.1 (A)*	*0.0 (A)*	*0.2 (B)*	*0.1 (A)*	*0.1 (A)*	*0.3 (B)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**	-	**-**	**-**
4. Pleasant Street Northwest and Maple Avenue (unsignalized)										
Northbound (Pleasant Street Northwest)	L	588.1 (F)	39.7 (E)	75.0 (F)	26.9 (D)	22.6 (C)	328.6 (F)	18.6 (C)	24.8 (C)	372.8 (F)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*588.1 (F)*	*39.7 (E)*	*75.0 (F)*	*26.9 (D)*	*22.6 (C)*	*328.6 (F)*	*18.6 (C)*	*24.8 (C)*	*372.8 (F)*
Southbound (Pleasant Street Northwest)	L	63.7 (F)	17.1 (C)	30.9 (D)	20.4 (C)	16.3 (C)	56.4 (F)	14.2 (C)	16.4 (C)	61.0 (F)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*63.7 (F)*	*17.1 (C)*	*30.9 (D)*	*20.4 (C)*	*16.3 (C)*	*56.4 (F)*	*14.2 (C)*	*16.4 (C)*	*61.0 (F)*
Eastbound (Maple Avenue W)	L	8.9 (A)	10.1 (B)	8.8 (A)	8.7 (A)	10.6 (B)	9.1 (A)	8.3 (A)	10.6 (B)	9.1 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*1.0 (A)*	*0.3 (A)*	*0.3 (A)*	*0.9 (A)*	*0.3 (A)*	*0.3 (A)*	*0.3 (A)*	*0.3 (A)*	*0.3 (A)*
Westbound (Maple Avenue W)	L	12.0 (B)	10.0 (A)	11.4 (B)	9.1 (A)	8.4 (A)	9.5 (A)	9.1 (A)	8.4 (A)	9.5 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	0.2 (A)	*0.1 (A)*	*0.3 (A)*	0.2 (A)	*0.1 (A)*	*0.2 (A)*	0.2 (A)	*0.1 (A)*	*0.2 (A)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**	-	**-**	**-**
5. Glen Avenue SW and Courthouse Road SW (unsignalized)										
Northbound (Glen Avenue SW)	L	17.7 (C)	12.7 (B)	14.9 (B)	17.7 (C)	12.8 (B)	15.2 (C)	17.8 (C)	12.9 (B)	15.4 (C)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	17.7 (C)	*12.7 (B)*	*14.9 (B)*	17.7 (C)	*12.8 (B)*	*15.2 (C)*	*17.8 (C)*	*12.9 (B)*	*15.4 (C)*

Table E1: Summary of 2020 Total Future Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)										
Intersection		Existing (2018)			Background (2020)			Total Future (2020)		
Approach	**Mvmnt**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
Southbound (Glen Avenue SW)	L	14.2 (B)	15.6 (C)	15.8 (C)	14.2 (B)	15.8 (C)	16.2 (C)	14.3 (B)	16.0 (C)	16.5 (C)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	14.2 (B)	*15.6 (C)*	*15.8 (C)*	14.2 (B)	*15.8 (C)*	*16.2 (C)*	*14.3 (B)*	*16.0 (C)*	*16.5 (C)*
Eastbound (Courthouse Road SW)	L	7.7 (A)	8.4 (A)	8.0 (A)	7.7 (A)	8.5(A)	8.1 (A)	7.7 (A)	8.5 (A)	8.1 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-	-	-	-
	Overall	0.1 (A)	*0.3 (A)*	*0.3 (A)*	0.1 (A)	*0.3 (A)*	*0.3 (A)*	0.2 (A)	*0.4 (A)*	*0.4 (A)*
Westbound (Courthouse Road SW)	L	8.5 (A)	8.0 (A)	8.1 (A)	8.5 (A)	8.0 (A)	8.1 (A)	8.5 (A)	8.0 (A)	8.0 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-	-	-	-
	Overall	0.0 (A)	0.0 (A)	*0.0 (A)*	0.0 (A)	0.0 (A)	*0.0 (A)*	*0.0 (A)*	*0.0 (A)*	*0.0 (A)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**	-	**-**	**-**
6. Wade Hampton Drive SW and Glen Avenue SW/ Millwood Court (unsignalized)										
Northbound (Wade Hampton Drive SW)	L	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-	-	-	-
	Overall	0.3 (A)	0.2 (A)	0.5 (A)	0.3 (A)	0.2 (A)	0.5 (A)	0.3 (A)	0.2 (A)	0.5 (A)
Southbound (Wade Hampton Drive SW)	L	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-	-	-	-
	Overall	2.8 (A)	2.8 (A)	4.5 (A)	2.8 (A)	2.8 (A)	4.5 (A)	2.8 (A)	2.8 (A)	4.5 (A)
Eastbound (Glen Avenue SW/Millwood Court SW)	L	8.8 (A)	9.3 (A)	8.6 (A)	8.8 (A)	9.3 (A)	8.6 (A)	8.8 (A)	9.3 (A)	8.6 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	8.8 (A)	*9.3 (A)*	*8.6 (A)*	8.8 (A)	*9.3 (A)*	*8.6 (A)*	8.8 (A)	*9.3 (A)*	*8.6 (A)*
Westbound (Glen Avenue SW/Millwood Court SW)	L	8.5 (A)	8.8 (A)	8.6 (A)	8.4 (A)	8.8 (A)	8.6 (A)	8.4 (A)	8.8 (A)	8.6 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	8.5 (A)	*8.8 (A)*	*8.6 (A)*	8.4 (A)	*8.8 (A)*	*8.6 (A)*	8.4 (A)	*8.8 (A)*	*8.6 (A)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**	-	**-**	**-**
7. Wade Hampton Drive SW and Site DW (unsignalized)										
Northbound (Wade Hampton Drive SW)	L	-	-	-	-	-	-	-	-	-
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	-	-	-	-	-	-	*0.0 (A)*	*0.0 (A)*	*0.0 (A)*

Table E1: Summary of 2020 Total Future Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)										
Intersection		Existing (2018)			Background (2020)			Total Future (2020)		
Approach	**Mvmnt**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
Southbound (Wade Hampton Drive SW)	L	-	-	-	-	-	-	7.3 (A)	7.4 (A)	7.3 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	-	-	-	-	-	-	*5.5 (A)*	*4.9 (A)*	*3.7 (A)*
Westbound (Site Driveway)	L	-	-	-	-	-	-	-	-	-
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	8.6 (A)	8.8 (A)	8.6 (A)
	Overall	-	-	-	-	-	-	*8.6 (A)*	*8.8 (A)*	*8.6 (A)*
Overall Intersection		-	-	-	-	-	-	-	-	-

Table E2: Summary of 2020 Total Future 95TH Percentile Queues (Feet)											
Intersection			Existing (2018)			Background (2020)			Total Future (2020)		
Approach	Movement	Storage	AM	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
1. Nutley Street SW and Courthouse Road SW (signalized)											
Northbound (Nutley Street SW)	NBL	115	85	208	74	36	120	84	36	120	84
	NBTR	N/A	607	551	418	267	618	352	271	631	356
Southbound (Nutley Street SW)	SBL	45	38	20	38	13	13	26	13	13	26
	SBTR	N/A	330	287	252	188	385	273	193	386	275
Eastbound (Courthouse Road SW)	EBLT	225	386	224	205	347	218	199	347	218	199
	EBR	N/A	137	66	62	353	59	50	359	59	50
Westbound (Courthouse Road SW)	WBL	N/A	305	322	282	278	312	276	283	316	280
	WBTR	70	104	384	166	94	378	161	93	379	160
2. Nutley Street SW and Maple Avenue W (signalized)											
Northbound (Nutley Street SW)	NBL	220	314	353	162	384	448	142	384	448	142
	NBLT	n/a	280	382	209	237	451	158	237	451	158
	NBR	n/a	178	112	153	87	233	10	91	248	10
Southbound (Nutley Street SW)	SBL	200	111	116	104	152	152	146	153	159	151
	SBTR	n/a	444	333	215	502	384	234	502	384	234
Eastbound (Maple Avenue W)	EBL	90	25	31	39	32	39	54	32	39	54
	EBTR	N/A	632	355	590	722	424	783	726	433	793
Westbound (Maple Avenue W)	WBL	285	185	219	272	272	259	445	287	281	459
	WBTR	n/a	283	712	365	322	724	391	335	763	400
3. Wade Hampton Drive/Lewis Street N and Maple Avenue (unsignalized)											
Northbound (Wade Hampton Drive/Lewis St North)	NBLTR	N/A	20	23	8	35	13	23	-	-	-
	NBL	N/A	-	-	-	-	-	-	83	25	75
	NBR	67	-	-	-	-	-	-	5	5	8

Table E2: Summary of 2020 Total Future 95TH Percentile Queues (Feet)											
Intersection			Existing (2018)			Background (2020)			Total Future (2020)		
Approach	Movement	Storage	AM	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
Southbound (Wade Hampton Drive/Lewis St North)	SBLTR	N/A	13	30	13	18	15	28	20	20	30
Eastbound (Maple Avenue W)	EBL	120	8	20	8	5	13	5	5	13	5
	EBTR	N/A	0	0	0	0	0	0	0	0	0
Westbound (Maple Avenue W)	WBL	95	0	0	3	0	0	3	3	3	3
	WBTR	N/A	0	0	0	0	0	0	0	0	0
4. Pleasant Street Northwest and Maple Avenue (unsignalized)											
Northbound (Pleasant Street Northwest)	NBLTR	N/A	143	30	55	20	15	118	13	18	123
Southbound (Pleasant Street Northwest)	**SBLTR**	N/A	35	5	23	10	5	43	5	5	45
Eastbound (Maple Avenue W)	EBL	55	13	3	3	10	3	3	3	3	3
	EBTR	N/A	0	0	0	0	0	0	0	0	0
Westbound (Maple Avenue W)	WBL	70	3	3	3	3	3	3	3	3	3
	WBTR	N/A	0	0	0	0	0	0	0	0	0
5. Glen Avenue SW and Courthouse Road SW (unsignalized)											
Northbound (Glen Avenue SW)	NBLTR	N/A	3	5	8	3	3	3	3	8	3
Southbound (Glen Avenue SW)	**SBLTR**	N/A	5	3	8	5	3	5	5	8	5
Eastbound (Courthouse Road SW)	EBLTR	N/A	0	0	0	0	0	0	3	0	0
Westbound (Courthouse Road SW)	**WBLTR**	N/A	0	0	0	0	0	0	0	0	0
6. Wade Hampton Drive SW and Glen Avenue SW/ Millwood Court (unsignalized)											
Northbound (Wade Hampton Drive SW)	NBLTR	N/A	0	0	0	0	0	0	0	0	0
Southbound (Wade Hampton Drive SW)	**SBLTR**	N/A	0	0	0	0	0	0	0	0	0
Eastbound (Glen Avenue SW/Millwood Court SW)	EBLTR	N/A	0	0	0	0	0	0	0	0	0
Westbound (Glen Avenue SW/Millwood Court SW)	**WBLTR**	N/A	0	3	3	0	3	3	0	3	3
7. Wade Hampton Drive and Site Driveway (unsignalized)											
Northbound (Wade Hampton Drive)	**NBTR**	N/A	-	-	-	-	-	-	0	3	3
Southbound (Wade Hampton Drive)	**SBLT**	N/A	-	-	-	-	-	-	3	3	3
Westbound (Site Driveway)	**WBLR**	N/A	-	-	-	-	-	-	3	5	3

INTRODUCTION

This report presents the results of a traffic impact study to support a rezoning application for a proposed mixed-use development at 380 Maple Avenue West in the Town of Vienna, Virginia. The proposed development will be located on a 36,842-square foot site currently occupied by a 23,620-square foot office building.

The applicant proposes to rezone the site to the Maple Avenue Commercial (MAC) district and to redevelop with up to 8,500 square feet of retail and up to 42 multi-family residential units. Access to the site is planned to be provided by three access points, all along Wade Hampton Drive Southwest. Out of the three access points, the closest to Maple Avenue (VA 123) will allow for service vehicle loading/unloading access, while the other two access points will serve the retail and residential components on the site. The general site plan detail for the proposed development is included in **Appendix A**.

This study was prepared in accordance with scoping agreement with the Town of Vienna. A copy of this agreement is included in **Appendix B**. This study describes the area transportation system, existing traffic volumes and analysis, the calculation of background traffic volumes and analysis, traffic generated by the proposed development, calculation of total future volumes and analysis, and vehicle queuing patterns. It was determined that intersection capacity and queueing analyses be performed during the weekday AM and PM peak hours and Saturday midday peak hour at six study intersections. The build-out year for this project is 2020.

It is noted that since project scoping, the development program has matured, in large part due to collaboration and coordination with the community and Town staff. As such, the current residential unit count and retail square footage are slightly lower compared to the values described in the scoping document. The values in the scoping document were used as the basis for this study and result in a more conservative analysis of traffic impacts (i.e. this study considers slightly more trips and a slightly larger traffic impact than would likely be generated under the updated site plan).

SITE LOCATION AND STUDY AREA

The mixed-use development of 380 Maple Avenue West is located in the Town of Vienna, Virginia in the southeast quadrant of the intersection of Maple Avenue West and Wade Hampton Drive Southwest. The property is currently occupied by 23,620-square foot office building. The site is identified on Fairfax County Tax Maps as GPIN 0383-02-0147. The site is currently zoned Local Commercial (C-1). Access to the site is currently provided by three full movement driveways along Wade Hampton Drive Southwest and one full movement driveway along Maple Avenue. The proposed development will remove the access along Maple Avenue West and consolidate/relocate the accesses along Wade Hampton Drive Southwest.

EXISTING AREA ROADWAYS

The proposed site is located along Maple Avenue West. This is a principal arterial roadway that runs northeast-southwest through the study area. The speed limit is 30 mph and it carries approximately 30,000 vehicles per day between Nutley Street SW and Follin Lane, based on 2017 Virginia Department of Transportation Annual Average Daily Traffic (AADT) reports. The study area boundary streets are Pleasant Street Southwest, Nutley Street, Glen Avenue Southwest, and Maple Avenue West.

The following existing intersections were identified for study:

- Nutley Street Southwest and Courthouse Road Southwest (signalized)
- Maple Avenue West and Nutley Street Southwest (signalized)
- Maple Avenue West and Wade Hampton Drive Southwest (unsignalized)
- Maple Avenue West and Pleasant Street Southwest (unsignalized)
- Wade Hampton Drive Southwest and Glen Avenue/Millwood Court Southwest (unsignalized)
- Glen Avenue Southwest and Courthouse Road (unsignalized)

For the purposes of this report, Maple Avenue West and all streets parallel to Maple Avenue West will be referred to as running east-west (instead of northeast-southwest), while Nutley Street Southwest and all roads parallel to Nutley Street Southwest will be referred to as running north-south (instead of northwest-southeast). Study area streets are described:

- Maple Avenue West (VA Route 123) is a five-lane Urban Principal Arterial with two lanes in each direction and a center two way left turn lane (TWTL) east of Nutley Street Southwest. Maple Avenue West (VA Route 123) is a four-lane divided Urban Principal Arterial with two lanes in each direction and a center two way left turn lane (TWTL) west of Nutley Street Southwest. The posted speed limit adjacent to the site is 30 miles per hour (mph). Maple Avenue in the vicinity of the site carries 30,000 vehicles per day (vpd). The intersection of Maple Avenue West and Nutley Street Southwest is signalized.

- Nutley Street Southwest (VA Route 243) is a four-lane, divided, Urban Minor Arterial with two lanes in each direction, and a center raised median with a posted speed limit of 30 mph south of Maple Avenue West. This section of Nutley Street carries 17,000 vpd. Nutley Street Northwest is a two-lane, undivided. Urban Collector with a speed limit of 30 mph to the north of the Maple Avenue West. This section of Nutlet Street carries 5,700 vpd. The intersections of Maple Avenue West with Nutley Street Southwest and Nutley Street Southwest with Courthouse Road SW are signalized.

- Courthouse Road Southwest (VA Route 6648) is a two-lane, undivided, Urban Minor Arterial with one lane in each direction with a posted speed limit of 25 mph. Courthouse Road carries 7,500 vpd south of Maple Avenue West.

- Wade Hampton Drive Southwest is a two-lane, undivided, local street with a posted speed limit of 25 mph. AADTs are not reported for this street.

- Pleasant Street Southwest is a two-lane, undivided, local street with a posted speed limit of 25 mph. AADTs are not reported for this street.

- Glen Avenue/Millwood Court Southwest are two-lane, undivided, local streets with posted speed limits of 25 mph. AADTs are not reported for these streets.

The site location, study area, and study intersections are shown in **Figure 1**. The existing lane designations and traffic control at the study intersections are shown in **Figure 2**.

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Site Vicinity Map

380 Maple Avenue West, Town of Vienna, VA

Figure 1

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Existing Lane Designations and Traffic Control

380 Maple Avenue West, Town of Vienna, VA

Figure 2

TRANSIT FACILITIES

The proposed site is located approximately 1.15 miles from the Vienna/Fairfax- GMU Metrorail station. The station is the final stop of the Orange Line in Virginia. The station opens at 4:50 AM Monday – Friday, 6:50 AM Saturday, and 7:50 AM Sunday. The last trains depart for New Carrollton 10:48 PM Monday to Friday, 12:18 AM Saturday, and 10:18 PM Sunday.

The immediate area is served by Fairfax Connector bus routes 461 (Flint Hill-Vienna), 463 (Maple Avenue-Vienna), and 466 (Vienna-Oakton). Connector bus stops are currently located along the south sides Maple Avenue West and Nutley Street Southwest. **Figure 3** shows transit routes in the study area. A description of the transit routes serving the site and the surrounding area is provided below:

Fairfax Connector 461 (Flint Hill-Vienna). Fairfax Connector 461 provides weekday rush hour service circulating between Vienna Metro Station, Nutley Street, Flint Hill Road, James Madison High School, Park Street, and Tapawingo Road. Headways are typically 20 to 30 minutes. Additional route information is provided in **Appendix D.**

Fairfax Connector 463 (Maple Avenue - Vienna). Fairfax Connector 463 provides weekday, Saturday and Sunday service between Vienna Metro Station (north side) and Tysons Corner Metro Station (south side), circulating between Nutley Street, Maple Avenue, Chain Bridge Road, and Gosnell Road. Headways are typically 20 to 30 minutes. Additional route information is provided in **Appendix D.**

Fairfax Connector 466 (Vienna - Oakton). Fairfax Connector 466 provides weekday service circulating between Vienna Metro Station, Chain Bridge Road/James Madison Drive, Blake Lane, Nutley Street, and Oakton high School. Headways are typically 30 to 40 minutes. Additional route information is provided in **Appendix D.**

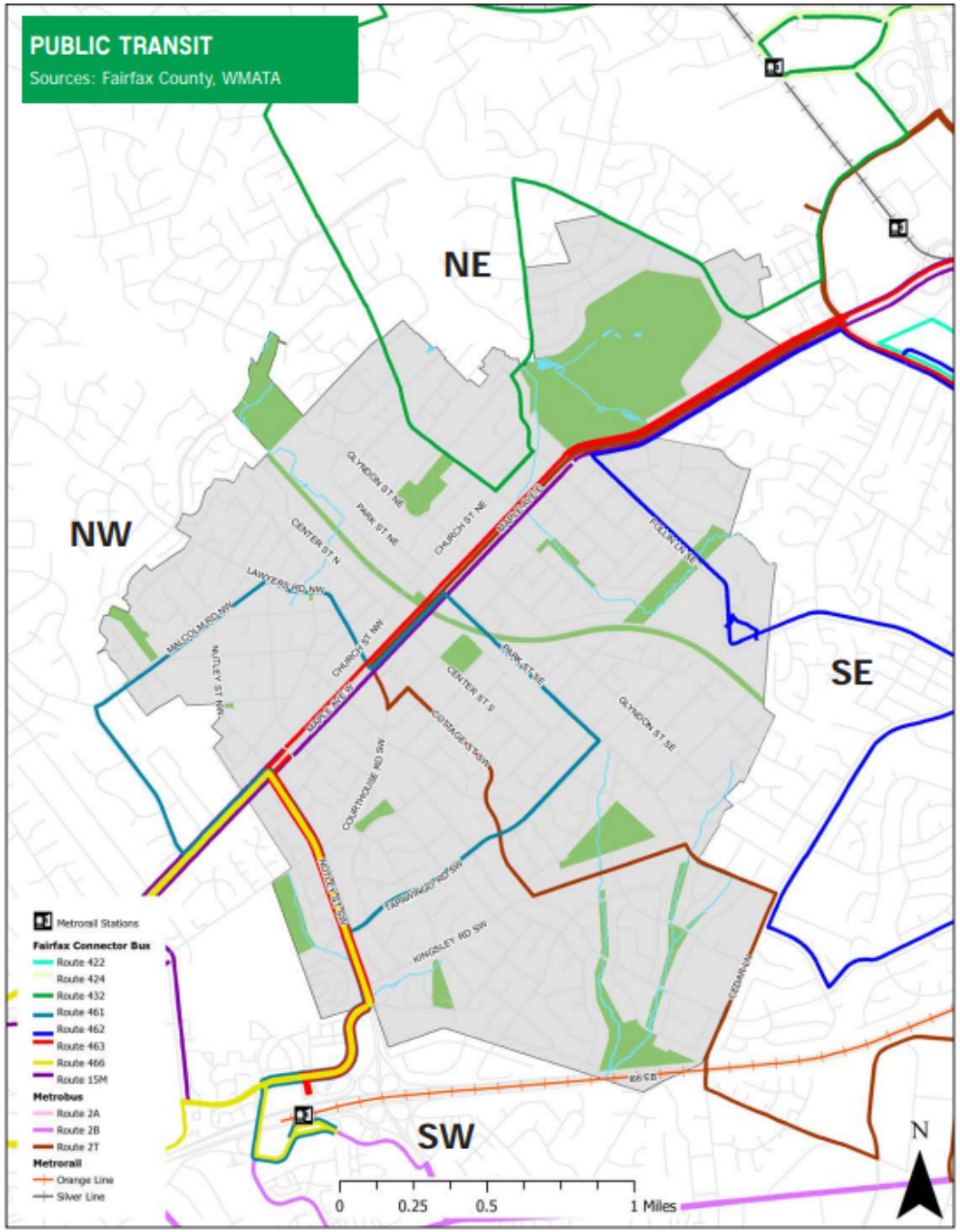
PEDESTRIAN AND BICYCLE FACILITIES

The study area generally has a well-defined pedestrian sidewalk network along both sides of most study area streets.

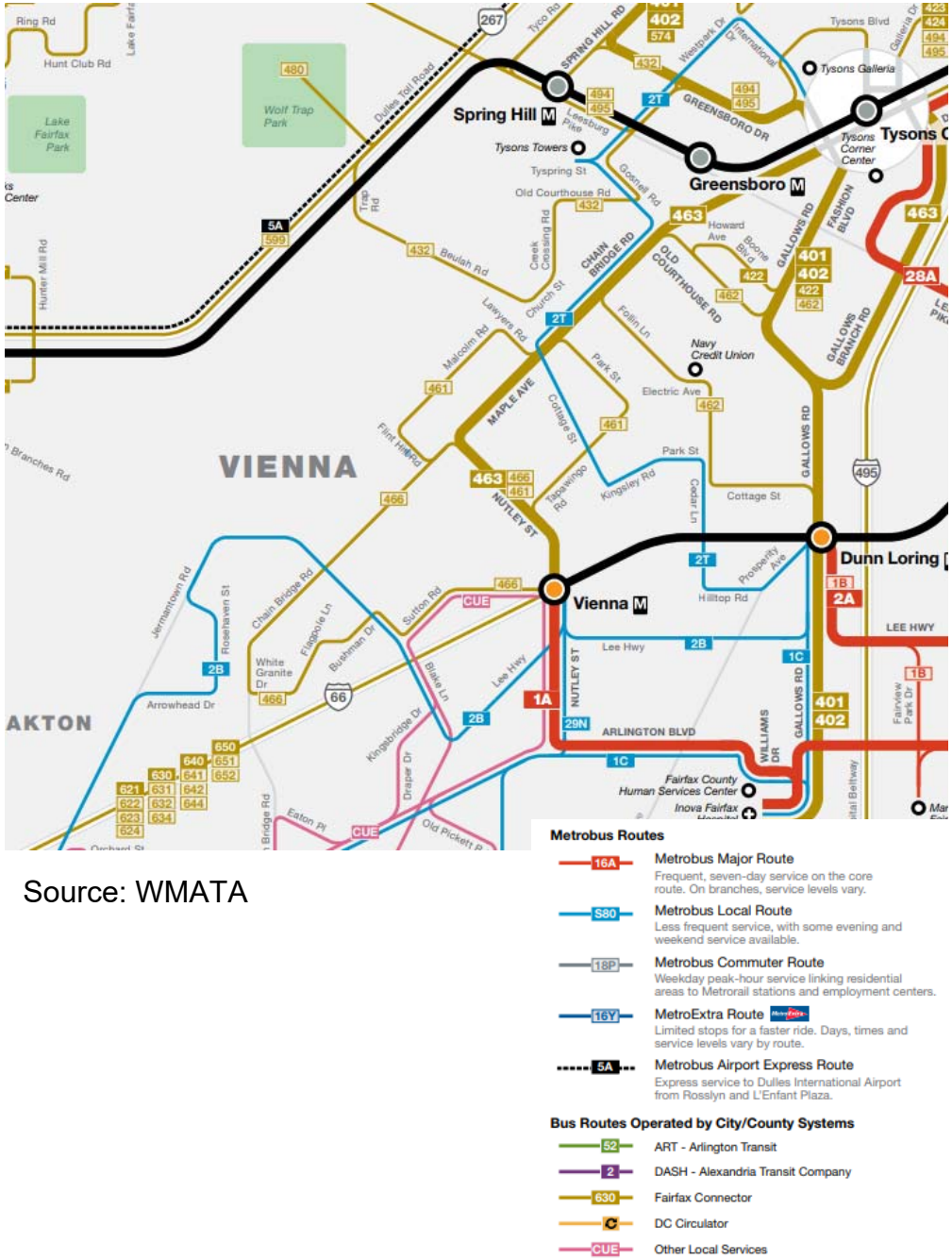
It is noted that there is a small gap in the sidewalk near the proposed site; there is no sidewalk infrastructure connecting the south sidewalk of Maple Avenue West to the east sidewalk of Wade Hampton Drive Southwest.

It is also noted that Glen Avenue SW lacks a sidewalk on either side of the street between Courthouse Road Southwest and Wade Hampton Drive Southwest. This is also true of the west side of Pleasant Street Southwest between Maple Avenue West and Courthouse Road Southwest

Pedestrian countdown signal heads and pushbuttons are provided on all legs of the signalized intersections. Courthouse Road, between Nutley Street and Locust Street is identified as a preferred bicycling route. The study area pedestrian and bicycle networks are shown **on Figure 4.**



Source: Town of Vienna Comprehensive Plan 2015 Update



Source: WMATA

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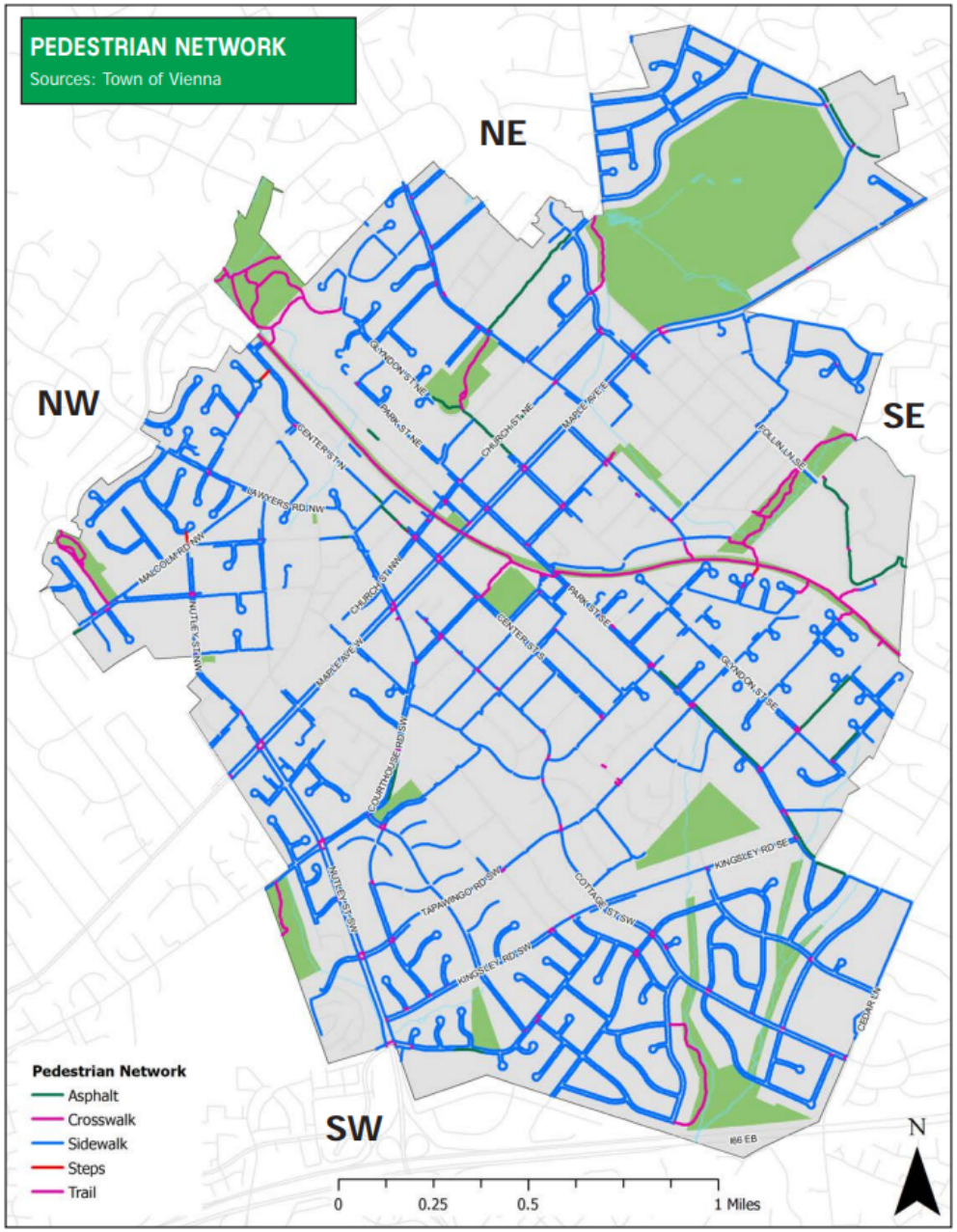
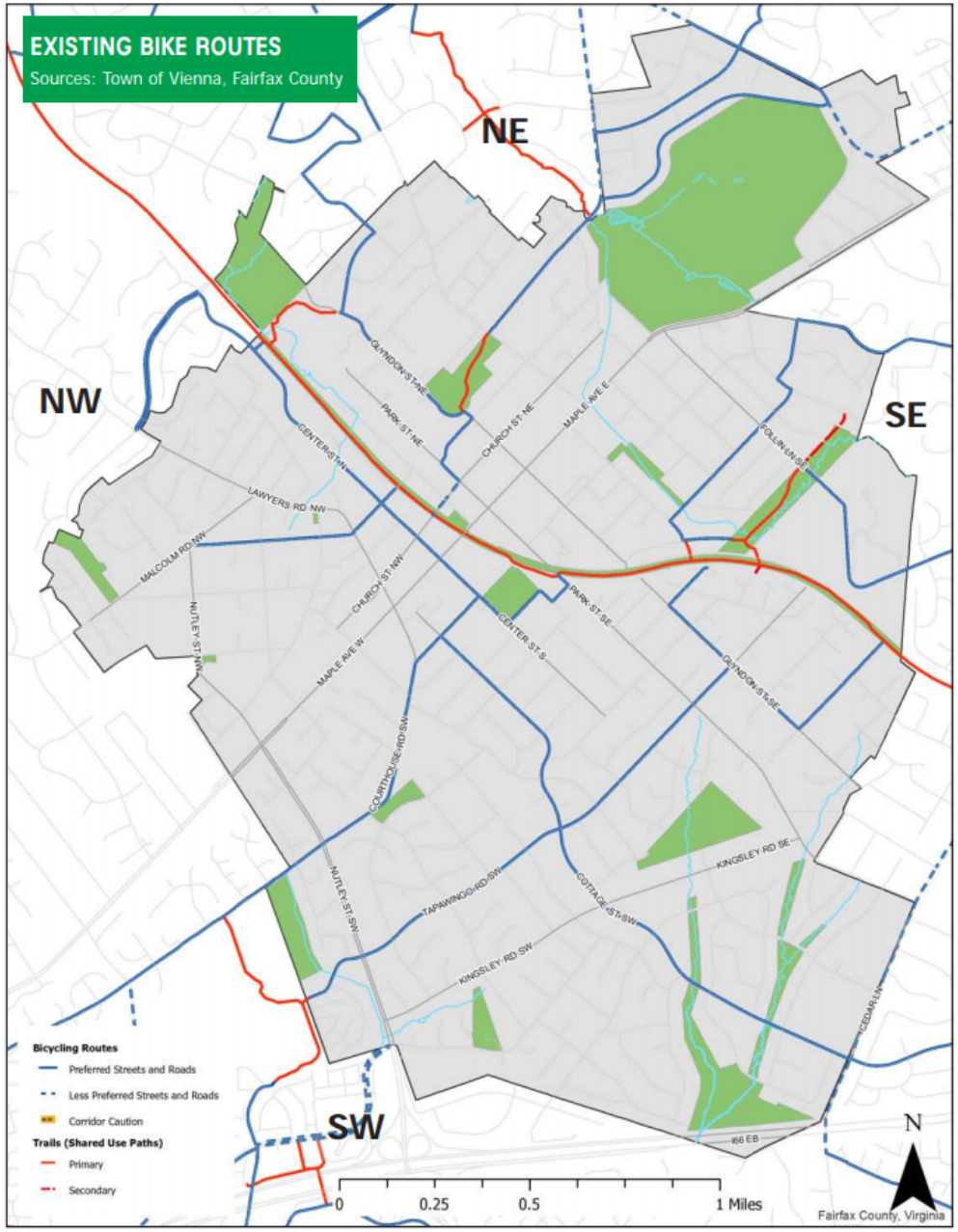
Area Transit Routes

380 Maple Avenue West, Town of Vienna, VA

Figure 3





Source: Town of Vienna Comprehensive Plan 2015 Update

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Pedestrian and Bicycle Facilities

380 Maple Avenue West, Town of Vienna, VA

Figure 4

EXISTING CONDITIONS

Intersection capacity analyses was performed for existing, background, and total future traffic volumes for the study area intersections during the AM and PM peak hours and Saturday midday peak hour. The analyses were performed using the Synchro Software Package (Version 10.0), which utilizes methodologies contained in the *Highway Capacity Manual 2010 (HCM 2010)* for signalized and unsignalized intersections. According to the HCM, capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a fixed time duration. The capacity is described by Level of Service (LOS) to indicate the operating characteristics of a road segment or intersection. LOS is defined as a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with A being the best and F being the worst. The level of service standard established as part of the scoping is LOS D.

The ranges of delay for each level of service are shown in **Table 1**.

Table 1: Level of Service Range of Delay

Level of Service (LOS)	Delay per Vehicle (seconds per vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤ 10
B	> 10 -20	> 10 -15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

Traffic signal timings were provided by the Town of Vienna via Synchro files used as part of the 444 Maple Avenue Multi-modal Transportation Impact Study. These synchro files were used for the existing, background, and total future conditions analyses.

EXISTING TRAFFIC VOLUMES

Traffic counts were collected on Saturday, August 25, 2018 from 11:00 AM to 2:00 PM and the week of September 10, 2018 from 6:00 AM to 9:00 AM and from 4:00 PM to 7:00 PM. The traffic count summary is included in **Appendix C**. Individual peak hour traffic volumes were calculated for each intersection. The existing 2018 AM and PM peak hours and Saturday midday peak hour traffic volumes are shown on **Figure 5 to Figure 7.**

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2018 Existing AM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 5

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2018 Existing PM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 6

Kimley»Horn

2018 Existing Saturday Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 7

2018 EXISTING CONDITIONS CAPACITY ANALYSIS

The existing conditions capacity analyses were based on the existing traffic volumes and existing lane uses and traffic controls at the study area intersections. The existing peak hour factors by intersection and existing heavy vehicle percentage by movements were calculated for this analysis. Peak hour factors are based on existing traffic counts with a range of 0.85 to 1.00. Heavy vehicle percentages are based on existing traffic counts with no upper or lower bounds. For the two-way stop controlled intersections on Maple Avenue West, the “include upstream intersection” Synchro setting was set to “yes” account for the effect of the adjacent signals along the corridor.

The results of the intersection capacity analyses are summarized in **Table 2**. Analysis results show overall level of service and corresponding delay information for each movement, approach, and overall intersection. The Synchro analysis reports are contained in **Appendix E**.

Under existing conditions, all signalized study intersections operate at or better than LOS D during the AM, PM, and Saturday midday peak hours.

It is noted that there are movements and approaches that operate at LOS E at signalized intersections during one or multiple peak hours. These movement and approaches are typically along the minor street approaches and operate at LOS E. They include:

- Eastbound and westbound approaches at Nutley Street Southwest and Courthouse Road Southwest during the AM peak hour
- Southbound approach at Nutley Street Southwest and Maple Avenue West during the AM and PM peak hours and Saturday midday peak hour
- Northbound at Nutley Street Southwest and Maple Avenue West during the PM peak hour

It is also noted that there are multiple minor street movements and approaches that operate at LOS E or F at unsignalized intersections, particularly those intersections along Maple Avenue West. Due the heavy east-west traffic flows along Maple Avenue West during the peak hours, additional delays are experienced for vehicles turning from the minor streets. It is noted that these delays are not uncommon or unexpected for unsignalized approaches to congested commuter-oriented corridors.

Table 2: Summary of 2018 Existing Intersection Capacity Analysis Results
Delay, Seconds per Vehicle (Level of Service)

Intersection		Existing (2018)		
Approach	**Movement**	**AM**	**PM**	**SAT**
1. Nutley Street SW and Courthouse Road SW (signalized)				
Northbound (Nutley Street SW)	L	26.1 (C)	17.7 (B)	14.3 (B)
	T	40.9 (D)	22.5 (C)	20.2 (C)
	R	41.9 (D)	23.1 (C)	21.0 (C)
	Overall	40.3 (D)	*21.8 (C)*	*20.0 (C)*
Southbound (Nutley Street SW)	L	30.7 (C)	20.5 (C)	16.1 (B)
	T	33.8 (C)	25.3 (C)	18.4 (B)
	R	33.9 (C)	25.6 (C)	18.5 (B)
	Overall	33.7 (C)	*25.4 (C)*	*18.3 (B)*
Eastbound (Courthouse Road SW)	L	43.1 (D)	53.5 (D)	47.4 (D)
	T	0.0	0.0	0.0

Table 2: Summary of 2018 Existing Intersection Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)				
Intersection		Existing (2018)		
Approach	**Movement**	**AM**	**PM**	**SAT**
	R	65.2 (E)	55.8 (E)	49.7 (D)
	Overall	*56.1 (E)*	*54.6 (D)*	*48.6 (D)*
Westbound (Courthouse Road SW)	L	63.1 (E)	49.7 (D)	48.3 (D)
	T	0.0	0.0	0.0
	R	56.5 (E)	52.5 (D)	43.9 (D)
	Overall	*61.2 (E)*	*51.1 (D)*	*46.6 (D)*
Overall Intersection		***45.3 (D)***	**31.4 (C)**	**27.8 (C)**
2. Nutley Street SW and Maple Avenue W (signalized)				
Northbound (Nutley Street SW)	L	62.0 (E)	73.1 (E)	53.7 (D)
	T	54.9 (D)	75.2 (E)	56.6 (E)
	R	37.7 (D)	38.0 (D)	32.5 (C)
	Overall	*49.1 (D)*	*58.9 (E)*	*41.7 (D)*
Southbound (Nutley Street SW)	L	47.9 (D)	59.1 (E)	52.7 (D)
	T	73.4 (E)	74.1 (E)	57.9 (E)
	R	-	-	-
	Overall	*68.4 (E)*	*70.6 (E)*	*56.4 (E)*
Eastbound (Maple Avenue W)	L	23.7 (C)	27.5 (C)	22.0 (C)
	T	48.3 (D)	36.2 (D)	40.1 (D)
	R	-	-	-
	Overall	*47.8 (D)*	35.9 (D)	39.4 (D)
Westbound (Maple Avenue W)	L	39.2 (D)	23.0 (C)	26.7 (C)
	T	29.4 (C)	35.0 (C)	24.0 (C)
	R	-	-	-
	Overall	31.4 (C)	*32.9 (C)*	*24.7 (C)*
Overall Intersection		**46.7 (D)**	**43.3 (D)**	**36.2 (D)**
3. Wade Hampton Drive/Lewis Street N and Maple Avenue (unsignalized)				
Northbound (Wade Hampton Drive/Lewis St North)	L	50.5 (F)	34.8 (D)	15.9 (C)
	T	-	-	-
	R	-	-	-
	Overall	*50.5 (F)*	*34.8 (D)*	*15.9 (C)*
Southbound (Wade Hampton Drive/Lewis St North)	L	13.2 (B)	42.9 (E)	21.1 (C)
	T	-	-	-
	R	-	-	-
	Overall	*13.2 (B)*	*42.9 (E)*	*21.1 (C)*
Eastbound (Maple Avenue W)	L	9.4 (A)	15.0 (C)	10.8 (B)
	T	-	-	-
	R	-	-	-
	Overall	*0.6 (A)*	*1.3 (A)*	*0.5 (A)*

Table 2: Summary of 2018 Existing Intersection Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)				
Intersection		Existing (2018)		
Approach	Movement	AM	PM	SAT
Westbound (Maple Avenue W)	L	9.5 (A)	8.5 (A)	9.6 (A)
	T	-	-	-
	R	-	-	-
	Overall	*0.1 (A)*	*0.0 (A)*	*0.2 (B)*
Overall Intersection		-	**-**	**-**
4. Pleasant Street Northwest and Maple Avenue (unsignalized)				
Northbound (Pleasant Street Northwest)	L	588.1 (F)	39.7 (E)	75.0 (F)
	T	-	-	-
	R	-	-	-
	Overall	*588.1 (F)*	*39.7 (E)*	*75.0 (F)*
Southbound (Pleasant Street Northwest)	L	63.7 (F)	17.1 (C)	30.9 (D)
	T	-	-	-
	R	-	-	-
	Overall	*63.7 (F)*	*17.1 (C)*	*30.9 (D)*
Eastbound (Maple Avenue W)	L	8.9 (A)	10.1 (B)	8.8 (A)
	T	-	-	-
	R	-	-	-
	Overall	*1.0 (A)*	*0.3 (A)*	*0.3 (A)*
Westbound (Maple Avenue W)	L	12.0 (B)	10.0 (A)	11.4 (B)
	T	-	-	-
	R	-	-	-
	Overall	0.2 (A)	*0.1 (A)*	*0.3 (A)*
Overall Intersection		-	**-**	**-**
5. Glen Avenue SW and Courthouse Road SW (unsignalized)				
Northbound (Glen Avenue SW)	L	17.7 (C)	12.7 (B)	14.9 (B)
	T	-	-	-
	R	-	-	-
	Overall	*17.7 (C)*	*12.7 (B)*	*14.9 (B)*
Southbound (Glen Avenue SW)	L	14.2 (B)	15.6 (C)	15.8 (C)
	T	-	-	-
	R	-	-	-
	Overall	*14.2 (B)*	*15.6 (C)*	*15.8 (C)*
Eastbound (Courthouse Road SW)	L	7.7 (A)	8.4 (A)	8.0 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-
	Overall	*0.1 (A)*	*0.3 (A)*	*0.3 (A)*

Table 2: Summary of 2018 Existing Intersection Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)				
Intersection		Existing (2018)		
Approach	Movement	AM	PM	SAT
Westbound (Courthouse Road SW)	L	8.5 (A)	8.0 (A)	8.1 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-
	Overall	*0.0 (A)*	*0.0 (A)*	*0.0 (A)*
Overall Intersection		-	**-**	**-**
6. Wade Hampton Drive SW and Glen Avenue SW/ Millwood Court (unsignalized)				
Northbound (Wade Hampton Drive SW)	L	7.2 (A)	7.2 (A)	7.2 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-
	Overall	*0.3 (A)*	*0.2 (A)*	*0.5 (A)*
Southbound (Wade Hampton Drive SW)	L	7.3 (A)	7.3 (A)	7.3 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-
	Overall	*2.8 (A)*	*2.8 (A)*	*4.5 (A)*
Eastbound (Glen Avenue SW/Millwood Court SW)	L	8.8 (A)	9.3 (A)	8.6 (A)
	T	-	-	-
	R	-	-	-
	Overall	*8.8 (A)*	*9.3 (A)*	*8.6 (A)*
Westbound (Glen Avenue SW/Millwood Court SW)	L	8.5 (A)	8.8 (A)	8.6 (A)
	T	-	-	-
	R	-	-	-
	Overall	*8.5 (A)*	*8.8 (A)*	*8.6 (A)*
Overall Intersection		-	**-**	**-**

2018 EXISTING CONDITIONS QUEUING ANALYSIS

Synchro 95th percentile queue analyses were performed at study area intersections under existing conditions as shown in **Table 3**. A 95th percentile queue length is the queue length that only has a 5 percent likelihood of being exceeded during the peak hour. The values shown below are based on an assumed queuing of 25 feet per vehicle in the queue, which is standard for Synchro queueing analyses. The effective storage of turn lanes, equal to the full-width length plus half the taper length, is shown for comparison. The Synchro analysis reports are contained in **Appendix F**. Under existing conditions, queuing at turning movements at the signalized intersections exceeds the available storage length under one or multiple peak periods at certain locations. These includes:

- NBL at Nutley Street Southwest and Courthouse Road Southwest during the PM peak hour
- EBTL at Nutley Street and Courthouse Road Southwest during the AM peak hour
- WBTR at Nutley Street Southwest and Courthouse Road Southwest during the AM, PM, and Saturday midday peak hours

- NBL at Nutley Street Southwest and Maple Avenue West during the AM and PM peak hours

Queuing at unsignalized intersections is generally minimal.

The queuing for the through movements along Maple Avenue W underscores the fact that it is a significant east-west corridor that supports peak direction commuter travel patterns. During the peak hours, this eastbound and westbound queuing and congestion creates challenges for turning movements from minor street approaches.

Table 3: Summary of 2018 Existing Intersection 95TH Percentile Queues (Feet)

Intersection Approach	Movement	Storage	Existing (2018) AM	PM	SAT
1. Nutley Street SW and Courthouse Road SW (signalized)					
Northbound (Nutley Street SW)	NBL	115	85	208	74
	NBTR	N/A	607	551	418
Southbound (Nutley Street SW)	SBL	45	38	20	38
	SBTR	N/A	330	287	252
Eastbound (Courthouse Road SW)	EBLT	225	386	224	205
	EBR	N/A	137	66	62
Westbound (Courthouse Road SW)	WBL	N/A	305	322	282
	WBTR	70	104	384	166
2. Nutley Street SW and Maple Avenue W (signalized)					
Northbound (Nutley Street SW)	NBL	220	314	353	162
	NBLT	n/a	280	382	209
	NBR	n/a	178	112	153
Southbound (Nutley Street SW)	SBL	200	111	116	104
	SBTR	n/a	444	333	215
Eastbound (Maple Avenue W)	EBL	90	25	31	39
	EBTR	N/A	632	355	590
Westbound (Maple Avenue W)	WBL	285	185	219	272
	WBTR	n/a	283	712	365
3. Wade Hampton Drive/Lewis Street N and Maple Avenue (unsignalized)					
Northbound (Wade Hampton Drive/Lewis St North)	NBLTR	N/A	38	33	20
Southbound (Wade Hampton Drive/Lewis St North)	**SBLTR**	N/A	30	35	25
Eastbound (Maple Avenue W)	EBL	120	8	20	8
	EBTR	N/A	0	0	0
Westbound (Maple Avenue W)	WBL	95	3	0	3
	WBTR	N/A	0	0	0
4. Pleasant Street Northwest and Maple Avenue (unsignalized)					
Northbound (Pleasant Street Northwest)	NBLTR	N/A	160	73	105
Southbound (Pleasant Street Northwest)	**SBLTR**	N/A	43	13	35
Eastbound (Maple Avenue W)	EBL	55	20	5	5

Table 3: Summary of 2018 Existing Intersection 95TH Percentile Queues (Feet)					
Intersection			Existing (2018)		
Approach	Movement	Storage	AM	**PM**	**SAT**
	EBTR	N/A	0	0	0
Westbound (Maple Avenue W)	WBL	70	3	3	3
	WBTR	N/A	0	0	0
5. Glen Avenue SW and Courthouse Road SW (unsignalized)					
Northbound (Glen Avenue SW)	NBLTR	N/A	3	5	8
Southbound (Glen Avenue SW)	**SBLTR**	N/A	5	3	8
Eastbound (Courthouse Road SW)	EBLTR	N/A	0	0	0
Westbound (Courthouse Road SW)	**WBLTR**	N/A	0	0	0
6. Wade Hampton Drive SW and Glen Avenue SW/ Millwood Court (unsignalized)					
Northbound (Wade Hampton Drive SW)	NBLTR	N/A	0	0	0
Southbound (Wade Hampton Drive SW)	**SBLTR**	N/A	0	0	0
Eastbound (Glen Avenue SW/Millwood Court SW)	EBLTR	N/A	0	0	0
Westbound (Glen Avenue SW/Millwood Court SW)	**WBLTR**	N/A	0	3	3

2020 FUTURE CONDITIONS WITHOUT DEVELOPMENT

BACKGROUND TRAFFIC VOLUMES

Background traffic volumes represent future traffic that would travel through the area intersections without the proposed development. *Table 4* and *Table 5* show the annual average daily traffic data along Maple Avenue West and along Nutley Street Southwest, respectively. The data in these tables generally shows declining traffic volumes. Therefore, a 1 percent annual growth rate represents a conservative estimate of growth based on the historical traffic data. This growth percentage was agreed to during project scoping.

Table 4: Annual Average Daily Traffic
Maple Avenue (SCL Vienna to Follin Lane)

Year	VDOT AADT	Growth to 2017
2017	31000	-
2016	30000	3%
2015	**34000**	**-9%**
2014	**33000**	**-6%**

Source: http://www.virginiadot.org/info/ct-TrafficCounts.asp

Table 5: Annual Average Daily Traffic
Nutley Street (Courthouse Road to Maple Avenue)

Year	VDOT AADT	Growth to 2017
2017	17000	-
2016	17000	0%
2015	**17000**	**0%**
2014	**18000**	**-6%**

Source: http://www.virginiadot.org/info/ct-TrafficCounts.asp

Based on the scoping document, the movements at the intersection of Nutley Street Southwest and Maple Avenue West were grown by 1 percent up to year 2020 traffic volumes. This growth was then distributed through the network as through volumes at up- and downstream intersections. This is consistent with the 444 Maple Avenue traffic study. The resulting 2020 traffic volumes resulting from regional growth are shown in **Figure 8 to Figure 10**.

In addition to regional growth, staff identified three nearby pipeline developments for consideration in this study:

- Flagship Carwash [Tax Map 38-3((2))115 and 38-3((2))152A], located at 540 Maple Avenue]. The development includes a car wash and 5,001 GSF fast-food restaurant
- Vienna Market/Maple Avenue Consolidation [Tax Map 38-4((4))2 & 4 and 38-4((2))15, 16 and 17], located at 245 Maple Avenue and 101, 107, 115 Pleasant Street. The development includes up to 8,200 GSF of retail use and up to 44 townhouse style units.
- 444 Maple Avenue [Tax Map 38-3 ((2)) 139, 140 & 141]. The development includes up to 160 multifamily dwelling units and up to 20,000 GSF of retail.

For the purposes of this study, and being consistent with the analyses performed as part of the 444 Maple Avenue traffic study, the trip generation for the Vienna Marketplace is based on the original proposed

retail square footage. The approved retail square footage is slightly lower. This results in a conservative analysis of background trip generation (i.e. this study considers more trips and a slightly larger traffic impact than if the approved square footage were used.)

It is noted that the 444 Maple Avenue development has not yet been approved. Typically, traffic studies only consider the traffic generated by unbuilt developments that have been approved. Given the recent town-wide discussion and scrutiny regarding the MAC and, specifically, the 444 Maple Avenue application, it is prudent and appropriate to consider the traffic generated by the proposed use. Excluding this use would result in a gap in the understanding of the impacts of the potential redevelopment of the area and call into question the validity of the results of this study in comparison to other recently submitted studies.

The pipeline developments are shown on **Figure 11**. Peak hour traffic volumes associated with each pipeline development are based on the assignments reported in the 444 Maple Avenue Multi-modal Transportation Impact Analysis. The peak hour traffic volumes generated by the pipeline developments are shown on **Figure 12 to Figure 14**.

Figure 15 to Figure 17 show the 2020 background peak hour traffic volumes, which represent the existing traffic volumes increased by applying the annual traffic growth factor to the year 2020 and adding in the traffic associated with pipeline developments.

Kimley»Horn

2020 Regional Growth AM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 8

Kimley»Horn

2020 Regional Traffic Growth PM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 9

Kimley»Horn

2020 Regional Traffic Growth Saturday Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 10

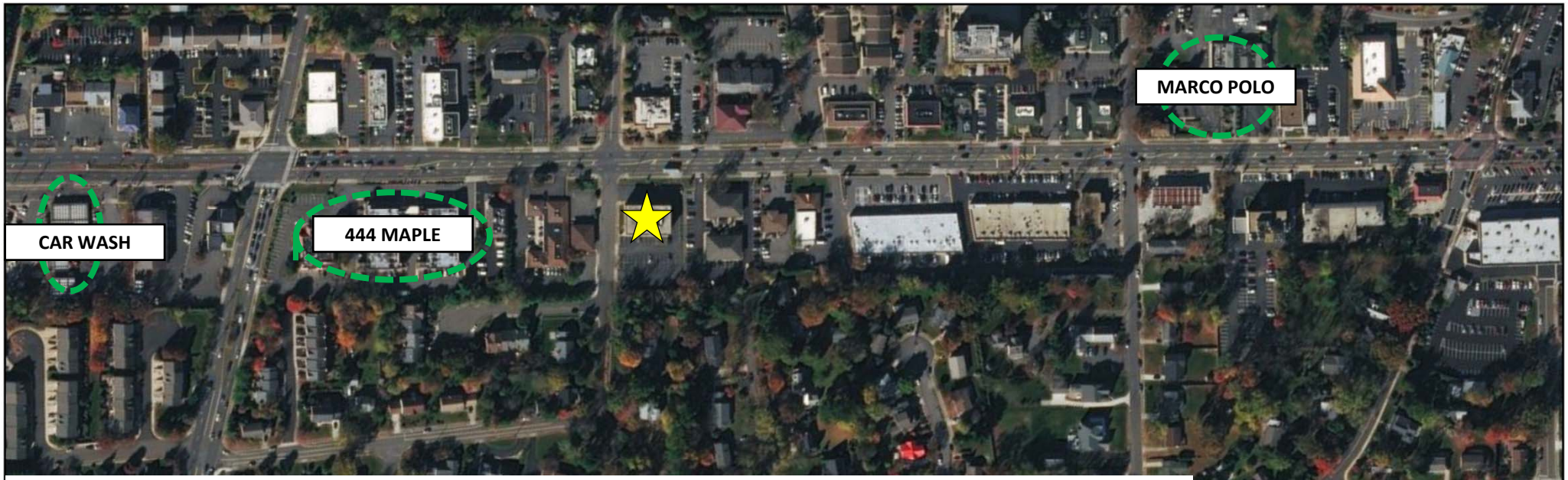


Table 4-1
444 Maple
Pipeline Trip Generation Analysis [1]

Land Use	Land Use Code	Size	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Weekday ADT	Saturday Peak Hour In	Saturday Peak Hour Out	Saturday Peak Hour Total
Marco Polo Site													
ITE - Shopping Center	820	26,000	SF	43	26	69	117	126	243	2,829	189	175	364
Internal Capture (5% AM, 10% PM, 15% ADT)				*(1)*	*0*	*(1)*	*(1)*	*(2)*	*(3)*	*(52)*	*(2)*	*(3)*	*(5)*
				42	26	68	116	124	240	2,777	187	172	359
Pass-by Reduction (25%)				*(11)*	*(7)*	*(17)*	*(29)*	*(31)*	*(60)*	*(694)*	*(47)*	*(43)*	*(90)*
Retail Subtotal				31	19	51	87	93	180	2,083	140	129	269
Townhouses	230	49	DU	5	24	29	22	11	33	346	28	23	51
Internal Capture (5% AM, 10% PM, 15% ADT)				0	(1)	(1)	(2)	(1)	(3)	(52)	(3)	(2)	(5)
Residential Subtotal				5	23	28	20	10	30	294	25	21	46
Total Trips				**36**	**42**	**79**	**107**	**103**	**210**	**2,377**	**165**	**150**	**315**
Flagship Car Wash & Restaurant													
Car Wash				1	0	1	31	32	63	630	84	90	174
Fast-food Restaurant with Drive-thru	934	5,001	SF	116	112	228	85	79	164	2,482	151	145	296
Pass-By Trip Reduction				*(59)*	*(57)*	*(116)*	*(40)*	*(37)*	*(77)*		*(71)*	*(68)*	*(139)*
Diverted Link Trip Reduction				*(32)*	*(31)*	*(63)*	*(20)*	*(18)*	*(38)*		*(35)*	*(33)*	*(68)*
Restaurant New Primary				24	24	48	26	24	48		45	44	48
Total Trips				**117**	**112**	**229**	**116**	**111**	**227**	**3,112**	**235**	**235**	**470**

Note(s):
1. Trip generation for Marco Polo Site consistent with TIA performed by Wells + Associates and dated March 17, 2016
2. Trip generation for Flagship Car Wash & Restaurant consistent with TIA performed by Wells + Associates and dated April 6, 2016

Legend

Site Location

Pipeline Development

FIGURE NOT TO SCALE

N

ics, CNES/Airbus DS, USDA, USGS, AeroGRID,

Kimley»Horn

Pipeline Development Locations

380 Maple Avenue West, Town of Vienna, VA

Figure 11

Kimley»Horn

Pipeline Development AM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 12

Kimley»Horn

Pipeline Development PM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 13

Kimley»Horn

Pipeline Development Saturday Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 14

Kimley»Horn

2020 Background AM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 15

Kimley»Horn

2020 Background PM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 16

Kimley»Horn

2020 Background Saturday Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 17

2020 BACKGROUND CONDITIONS CAPACITY ANALYSIS

The 2020 background conditions capacity analyses were based on the background traffic volumes with existing lane uses and traffic controls at the study area intersections. Peak hour factors were increased to 0.92 or remained consistent with those used in the existing conditions. Heavy vehicle percentages were the same as those used in the existing conditions analyses. Signal timings were based on the background Synchro files prepared as part of the 444 Maple Avenue Multi-modal Transportation Study.

The results of the intersection capacity analyses are summarized in Table 6. Results of the existing conditions analyses are also shown for comparison. Analysis results show overall level of service and corresponding delay information for each movement, approach, and overall intersection. The Synchro analysis reports are contained in **Appendix E**.

The following signalized intersections will operate with a lower overall LOS compared to existing conditions:

- Nutley Street Southwest and Courthouse Road Southwest changes from LOS D to E during the AM peak hour
- Nutley Street Southwest and Maple Avenue West changes from LOS D to E during the AM peak hour and LOS C to D during the Saturday Midday peak hour

In comparison to existing conditions, under background conditions, both the intersection of Nutley Street Southwest and Courthouse Road Southwest and the intersection of Maple Avenue West and Nutley Street Southwest will operate at LOS E during the AM peak hour, which is below the intersection operation standard identified in the scoping document.

It is noted that, compared to existing conditions, there will be more movements and approaches at signalized intersections that operate at LOS E or F. These movements and approaches are typically along the minor street. Approaches that will operate at LOS E or F include:

- Eastbound and westbound approaches at Nutley Street Southwest and Courthouse Road Southwest during the AM, PM, and Saturday midday peak hours
- Southbound approach at Nutley Street Southwest and Maple Avenue West during the AM, PM, and Saturday midday peak hours
- Northbound approach at Nutley Street Southwest and Maple Avenue West during the PM peak hour
- Eastbound approach at Nutley Street Southwest and Maple Avenue West during the AM and Saturday midday peak hours

Generally, most movements and approaches will also experience increased vehicle delays due to the increased amount of traffic that is forecasted in the area. Exceptions to this occur where optimized signal timings were used to reallocate the amount of green time to better serve congested approaches.

It is also noted that there will be multiple minor street movements and approaches that operate at LOS E or F at unsignalized intersections, particularly those along Maple Avenue West. Due the predominant east-west traffic flows along Maple Avenue W during the peak hours, additional delays are experienced by vehicles turning from the minor street. It is noted that these delays are not uncommon or unexpected for unsignalized approaches to congested corridors.

Table 6: Summary of 2020 Background Intersection Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)							
Intersection		Existing (2018)			Background (2020)		
Approach	Movement	AM	**PM**	**SAT**	AM	**PM**	**SAT**
1. Nutley Street SW and Courthouse Road SW							
Northbound (Nutley Street SW)	L	26.1 (C)	17.7 (B)	14.3 (B)	23.0 (C)	16.7 (B)	14.2 (B)
	T	40.9 (D)	22.5 (C)	20.2 (C)	36.9 (D)	24.6 (C)	1.5 (A)
	R	41.9 (D)	23.1 (C)	21.0 (C)	37.2 (D)	24.7 (C)	1.5 (A)
	Overall	40.3 (D)	*21.8 (C)*	*20.0 (C)*	36.1 (D)	*23.2 (C)*	*2.6 (A)*
Southbound (Nutley Street SW)	L	30.7 (C)	20.5 (C)	16.1 (B)	27.0 (C)	21.7 (C)	15.3 (B)
	T	33.8 (C)	25.3 (C)	18.4 (B)	23.3 (C)	2.4 (A)	0.9 (A)
	R	33.9 (C)	25.6 (C)	18.5 (B)	23.2 (C)	2.4 (A)	0.9 (A)
	Overall	33.7 (C)	*25.4 (C)*	*18.3 (B)*	23.4 (C)	*2.8 (A)*	*1.7 (A)*
Eastbound (Courthouse Road SW)	L	43.1 (D)	53.5 (D)	47.4 (D)	53.8 (D)	76.5 (E)	63.1 (E)
	T	0.0	0.0	0.0	0.0	0.0	0.0
	R	65.2 (E)	55.8 (E)	49.7 (D)	155.4 (F)	92.4 (F)	69.5 (E)
	Overall	*56.1 (E)*	*54.6 (D)*	*48.6 (D)*	*113.6 (F)*	*84.3 (F)*	*66.3 (E)*
Westbound (Courthouse Road SW)	L	63.1 (E)	49.7 (D)	48.3 (D)	73.8 (E)	72.6 (E)	69.7 (E)
	T	0.0	0.0	0.0	0.0	0.0	0.0
	R	56.5 (E)	52.5 (D)	43.9 (D)	56.4 (E)	86.9 (F)	57.0 (E)
	Overall	*61.2 (E)*	*51.1 (D)*	*46.6 (D)*	*68.7 (E)*	*80.5 (F)*	*64.9 (E)*
Overall Intersection		***45.3 (D)***	**31.4 (C)**	**27.8 (C)**	***56.4 (E)***	**34.3 (C)**	**20.1 (C)**
2. Nutley Street SW and Maple Avenue W							
Northbound (Nutley Street SW)	L	62.0 (E)	73.1 (E)	53.7 (D)	72.6 (E)	116.0 (F)	57.4 (E)
	T	54.9 (D)	75.2 (E)	56.6 (E)	56.0 (E)	111.9 (F)	59.6 (E)
	R	37.7 (D)	38.0 (D)	32.5 (C)	20.2 (C)	51.1 (D)	5.4 (A)
	Overall	*49.1 (D)*	*58.9 (E)*	*41.7 (D)*	*45.7 (D)*	*88.4 (F)*	*29.1 (C)*
Southbound (Nutley Street SW)	L	47.9 (D)	59.1 (E)	52.7 (D)	51.3 (D)	62.5 (E)	56.6 (E)
	T	73.4 (E)	74.1 (E)	57.9 (E)	99.6 (F)	89.8 (F)	65.7 (E)
	R	-	-	-	-	-	-
	Overall	*68.4 (E)*	*70.6 (E)*	*56.4 (E)*	*87.6 (F)*	*82.2 (F)*	*62.5 (E)*
Eastbound (Maple Avenue W)	L	23.7 (C)	27.5 (C)	22.0 (C)	30.6 (C)	35.5 (D)	30.8 (C)
	T	48.3 (D)	36.2 (D)	40.1 (D)	84.5 (F)	43.3 (D)	79.7 (E)
	R	-	-	-	-	-	-
	Overall	*47.8 (D)*	35.9 (D)	39.4 (D)	*83.2 (F)*	43.0 (D)	77.4 (E)
Westbound (Maple Avenue W)	L	39.2 (D)	23.0 (C)	26.7 (C)	89.5 (F)	45.2 (D)	64.2 (E)
	T	29.4 (C)	35.0 (C)	24.0 (C)	27.2 (C)	23.3 (C)	14.4 (B)
	R	-	-	-	-	-	-
	Overall	31.4 (C)	*32.9 (C)*	*25.7 (C)*	40.3 (D)	*27.2 (C)*	*27.6 (C)*
Overall Intersection		**46.7 (D)**	**43.3 (D)**	**26.2 (C)**	**62.8 (E)**	**50.5 (D)**	**47.3 (D)**
3. Wade Hampton Drive/Lewis Street N and Maple Avenue							
Northbound (Wade Hampton Drive/Lewis St North)	L	50.5 (F)	34.8 (D)	15.9 (C)	99.3 (F)	20.6 (C)	40.4 (E)
	T	-	-	-	-	-	-

Table 6: Summary of 2020 Background Intersection Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)							
Intersection		Existing (2018)			Background (2020)		
Approach	Movement	AM	**PM**	**SAT**	AM	**PM**	**SAT**
	R	-	-	-	-	-	-
	Overall	*50.5 (F)*	*34.8 (D)*	*15.9 (C)*	*99.3 (F)*	*20.6 (C)*	*40.4 (E)*
Southbound (Wade Hampton Drive/Lewis St North)	L	13.2 (B)	42.9 (E)	21.1 (C)	17.2 (C)	22.9 (C)	44.2 (E)
	T	-	-	-	-	-	-
	R	-	-	-	-	-	-
	Overall	*13.2 (B)*	*42.9 (E)*	*21.1 (C)*	*17.2 (C)*	*22.9 (C)*	*44.2 (E)*
Eastbound (Maple Avenue W)	L	9.4 (A)	15.0 (C)	10.8 (B)	8.2 (A)	11.1 (B)	8.9 (A)
	T	-	-	-	-	-	-
	R	-	-	-	-	-	-
	Overall	*0.6 (A)*	*1.3 (A)*	*0.5 (A)*	0.5 (A)	*0.9 (A)*	*0.4 (A)*
Westbound (Maple Avenue W)	L	9.5 (A)	8.5 (A)	9.6 (A)	9.7 (A)	8.5 (A)	10.1 (B)
	T	-	-	-	-	-	-
	R	-	-	-	-	-	-
	Overall	*0.1 (A)*	*0.0 (A)*	*0.2 (B)*	0.1 (A)	*0.0 (A)*	*0.2 (B)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**
4. Pleasant Street Northwest and Maple Avenue							
Northbound (Pleasant Street Northwest)	L	588.1 (F)	39.7 (E)	75.0 (F)	26.9 (D)	22.6 (C)	328.6 (F)
	T	-	-	-	-	-	-
	R	-	-	-	-	-	-
	Overall	*588.1 (F)*	*39.7 (E)*	*75.0 (F)*	*26.9 (D)*	*22.6 (C)*	*328.6 (F)*
Southbound (Pleasant Street Northwest)	L	63.7 (F)	17.1 (C)	30.9 (D)	20.4 (C)	16.3 (C)	56.4 (F)
	T	-	-	-	-	-	-
	R	-	-	-	-	-	-
	Overall	*63.7 (F)*	*17.1 (C)*	*30.9 (D)*	*20.4 (C)*	*16.3 (C)*	*56.4 (F)*
Eastbound (Maple Avenue W)	L	8.9 (A)	10.1 (B)	8.8 (A)	8.7 (A)	10.6 (B)	9.1 (A)
	T	-	-	-	-	-	-
	R	-	-	-	-	-	-
	Overall	*1.0 (A)*	*0.3 (A)*	*0.3 (A)*	*0.9 (A)*	*0.3 (A)*	*0.3 (A)*
Westbound (Maple Avenue W)	L	12.0 (B)	10.0 (A)	11.4 (B)	9.1 (A)	8.4 (A)	9.5 (A)
	T	-	-	-	-	-	-
	R	-	-	-	-	-	-
	Overall	0.2 (A)	*0.1 (A)*	*0.3 (A)*	0.2 (A)	*0.1 (A)*	*0.2 (A)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**
5. Glen Avenue SW and Courthouse Road SW							
Northbound (Glen Avenue SW)	L	17.7 (C)	12.7 (B)	14.9 (B)	17.7 (C)	12.8 (B)	15.2 (C)
	T	-	-	-	-	-	-

Table 6: Summary of 2020 Background Intersection Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)							
Intersection		Existing (2018)			Background (2020)		
Approach	Movement	AM	**PM**	**SAT**	AM	**PM**	**SAT**
	R	-	-	-	-	-	-
	Overall	17.7 (C)	*12.7 (B)*	*14.9 (B)*	17.7 (C)	*12.8 (B)*	*15.2 (C)*
Southbound (Glen Avenue SW)	L	14.2 (B)	15.6 (C)	15.8 (C)	14.2 (B)	15.8 (C)	16.2 (C)
	T	-	-	-	-	-	-
	R	-	-	-	-	-	-
	Overall	14.2 (B)	*15.6 (C)*	*15.8 (C)*	14.2 (B)	*15.8 (C)*	*16.2 (C)*
Eastbound (Courthouse Road SW)	L	7.7 (A)	8.4 (A)	8.0 (A)	7.7 (A)	8.45(A)	8.1 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-
	Overall	0.1 (A)	*0.3 (A)*	*0.3 (A)*	0.1 (A)	*0.3 (A)*	*0.3 (A)*
Westbound (Courthouse Road SW)	L	8.5 (A)	8.0 (A)	8.1 (A)	8.5 (A)	8.0 (A)	8.1 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-
	Overall	0.0 (A)	0.0 (A)	*0.0 (A)*	0.0 (A)	0.0 (A)	*0.0 (A)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**
6. Wade Hampton Drive SW and Glen Avenue SW/ Millwood Court							
Northbound (Wade Hampton Drive SW)	L	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-
	Overall	0.3 (A)	0.2 (A)	0.5 (A)	0.3 (A)	0.2 (A)	0.5 (A)
Southbound (Wade Hampton Drive SW)	L	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-
	Overall	2.8 (A)	2.8 (A)	4.5 (A)	2.8 (A)	2.8 (A)	4.5 (A)
Eastbound (Glen Avenue SW/Millwood Court SW)	L	8.8 (A)	9.3 (A)	8.6 (A)	8.8 (A)	9.3 (A)	8.6 (A)
	T	-	-	-	-	-	-
	R	-	-	-	-	-	-
	Overall	8.8 (A)	*9.3 (A)*	*8.6 (A)*	8.8 (A)	*9.3 (A)*	*8.6 (A)*
Westbound (Glen Avenue SW/Millwood Court SW)	L	8.5 (A)	8.8 (A)	8.6 (A)	8.4 (A)	8.8 (A)	8.6 (A)
	T	-	-	-	-	-	-
	R	-	-	-	-	-	-
	Overall	8.5 (A)	*8.8 (A)*	*8.6 (A)*	8.4 (A)	*8.8 (A)*	*8.6 (A)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**

2020 BACKGROUND CONDITIONS QUEUING ANALYSIS

Synchro 95th percentile queue analyses were performed at study area intersections under background conditions as shown in **Table 7**. A 95th percentile queue length is the queue length that only has a 5 percent likelihood of being exceeded during the peak hour. The values shown below are based on an assumed queuing of 25 feet per vehicle in the queue, which is standard for Synchro queueing analyses. The effective storage of turn lanes, equal to the full-width length plus half the taper length, is shown for comparison. Synchro reports are included in Appendix F.

Under background conditions, queuing at certain turning movements at the signalized intersections will exceed the available storage length under one or multiple peak periods. This includes:

- NBL at Nutley Street Southwest and Courthouse Road Southwest during the PM peak hour (consistent with existing conditions)
- EBTL at Nutley Street Southwest and Courthouse Road Southwest during the AM peak hour
- WBTR at Nutley Street Southwest and Courthouse Road Southwest during the AM and PM peak hours and Saturday peak hour (less queuing compared to existing conditions)
- NBL at Nutley Street Southwest and Maple Avenue West during the AM and PM peak hours (consistent with existing conditions)
- WBL at Nutley Street Southwest and Maple Avenue West during Saturday midday peak hours

Queuing at unsignalized intersections will remain insignificant with a maximum of six queued vehicles at the intersection of Maple Avenue West and Pleasant Street Southwest.

The queuing for the through movements along Maple Avenue West continue to underscore the fact that it is a significant east-west corridor that supports peak direction commuter travel patterns. During the peak hours, this amount of queuing and congestion creates challenges for turning movements from minor street approaches. This is more pronounced in the background conditions due to the growth of traffic volumes.

Table 7: Summary of 2018 Existing Intersection 95TH Percentile Queues (Feet)

Intersection			Existing (2018)			Background (2020)		
Approach	Movement	Storage	AM	**PM**	**SAT**	**AM**	**PM**	**SAT**
1. Nutley Street SW and Courthouse Road SW								
Northbound (Nutley Street SW)	NBL	115	85	208	74	36	120	84
	NBTR	N/A	607	551	418	267	618	352
Southbound (Nutley Street SW)	SBL	45	38	20	38	13	13	26
	SBTR	N/A	330	287	252	188	385	273
Eastbound (Courthouse Road SW)	EBLT	225	386	224	205	347	218	199
	EBR	N/A	137	66	62	353	59	50
Westbound (Courthouse Road SW)	WBL	N/A	305	322	282	278	312	276
	WBTR	70	104	384	166	94	378	161
2. Nutley Street SW and Maple Avenue W								
Northbound (Nutley Street SW)	NBL	220	314	353	162	384	448	142
	NBLT	N/A	280	382	209	237	451	158
	NBR	N/A	178	112	153	87	233	10
Southbound (Nutley Street SW)	SBL	200	111	116	104	152	152	146

Table 7: Summary of 2018 Existing Intersection 95TH Percentile Queues (Feet)								
Intersection			Existing (2018)			Background (2020)		
Approach	Movement	Storage	AM	**PM**	**SAT**	**AM**	**PM**	**SAT**
	SBTR	N/A	444	333	215	502	384	234
Eastbound (Maple Avenue W)	EBL	90	25	31	39	32	39	54
	EBTR	N/A	632	355	590	722	424	783
Westbound (Maple Avenue W)	WBL	285	185	219	272	272	259	445
	WBTR	N/A	283	712	365	322	724	391
3. Wade Hampton Drive/Lewis Street N and Maple Avenue								
Northbound (Wade Hampton Drive/Lewis St North)	NBLTR	N/A	20	23	8	35	13	23
Southbound (Wade Hampton Drive/Lewis St North)	SBLTR	N/A	13	30	13	18	15	28
Eastbound (Maple Avenue W)	EBL	120	8	20	8	5	13	5
	EBTR	N/A	0	0	0	0	0	0
Westbound (Maple Avenue W)	WBL	95	0	0	3	0	0	3
	WBTR	N/A	0	0	0	0	0	0
4. Pleasant Street Northwest and Maple Avenue								
Northbound (Pleasant Street Northwest)	NBLTR	N/A	143	30	55	20	15	118
Southbound (Pleasant Street Northwest)	SBLTR	N/A	35	5	23	10	5	43
Eastbound (Maple Avenue W)	EBL	55	13	3	3	10	3	3
	EBTR	N/A	0	0	0	0	0	0
Westbound (Maple Avenue W)	WBL	70	3	3	3	3	3	3
	WBTR	N/A	0	0	0	0	0	0
5. Glen Avenue SW and Courthouse Road SW								
Northbound (Glen Avenue SW)	NBLTR	N/A	3	5	8	3	3	8
Southbound (Glen Avenue SW)	**SBLTR**	N/A	5	3	8	5	3	8
Eastbound (Courthouse Road SW)	EBLTR	N/A	0	0	0	0	0	0
Westbound (Courthouse Road SW)	**WBLTR**	N/A	0	0	0	0	0	0
6. Wade Hampton Drive SW and Glen Avenue SW/ Millwood Court								
Northbound (Wade Hampton Drive SW)	NBLTR	N/A	0	0	0	0	0	0
Southbound (Wade Hampton Drive SW)	**SBLTR**	N/A	0	0	0	0	0	0
Eastbound (Glen Avenue SW/Millwood Court SW)	EBLTR	N/A	0	0	0	0	0	0
Westbound (Glen Avenue SW/Millwood Court SW)	**WBLTR**	N/A	0	3	3	0	3	3

2020 FUTURE CONDITIONS WITH DEVELOPMENT

DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development will be located on a 36,842-square foot property currently occupied by a 23,620-square foot office building. The applicant proposes to rezone the site to the Maple Avenue Commercial (MAC) district and to redevelop with approximately 8,500 square feet of retail and up to 42 multi-family residential units.

Access to the site is planned to be provided by three access points, all along Wade Hampton Drive Southwest. Out of the three access points, the closest to Maple Avenue (VA 123) will allow for service vehicle loading/unloading access, while the other two access points will serve the retail and residential components on the site. The site will include a total of 125 parking space split between above- and below-grade garage parking. To reduce the possibility of site traffic driving through neighborhood streets, left turns will be prohibited for vehicles exiting the access points.

As a part of the development, the northbound approach at the intersection of Wade Hampton Southwest at Maple Avenue West will be changed from a single, left-through-right lane to one left-through lane and one right-turn only lane.

Development of the property is recommended in accordance with the Maple Avenue Commercial ("MAC") Zone as outlined in the Town's Zoning Ordinance. The "MAC" Zone envisions compact, mixed-use and pedestrian oriented development.

Bicycle parking will be provided on-site. There are 12 short term and12 long term spaces provided for the residential component, and six spaces provided for the retail component.

The sidewalk along Maple Avenue West is being widened significantly in conformance with the "MAC" Zone. A connection from the sidewalk on the south side of Maple Avenue West to the east side of Wade Hampton Drive Southwest is being provided where there is currently a gap. A 5-foot sidewalk is being added to Glen Ave Southwest where there currently is none.

SITE TRIP GENERATION

Peak hour traffic volumes generated by the proposed development were calculated using the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition.* Trip generation for the existing and proposed uses on the property was calculated based on the peak hour of generator. **Table 8** shows the trip generation comparison for the existing and proposed uses on the site.

The net trip generation for this development is based on the proposed development with credit applied for the existing office building on the property.

Table 8: Existing and Proposed Trip Generation										
Land Use	AM			PM			Saturday Midday			ADT
	In	Out	Total	In	Out	Total	In	Out	Total	
Existing – 23,620 GSF General Office Building (LUC 710)	-31	-4	-35	-6	-28	-34	-7	-6	-13	-230
Proposed - 4,500 SF Shopping Center	8	6	14	10	9	19	10	10	20	170
Proposed - 4,000 SF High-Turnover (Sit-Down) Restaurant	32	24	56	36	34	70	23	22	45	449
Proposed – 42 DU Multifamily Housing (Mid -Rise)	4	9	13	10	7	17	9	9	18	228
Net Site Generated Trips	13	35	48	50	22	72	35	35	70	617

During the AM peak hour, the proposed use generates 48 additional trips compared to existing use. During the PM peak hour, the proposed use generates 72 additional trips compared to existing use. During the Saturday Midday peak hour, the proposed use generates 70 additional trips compared to the existing use.

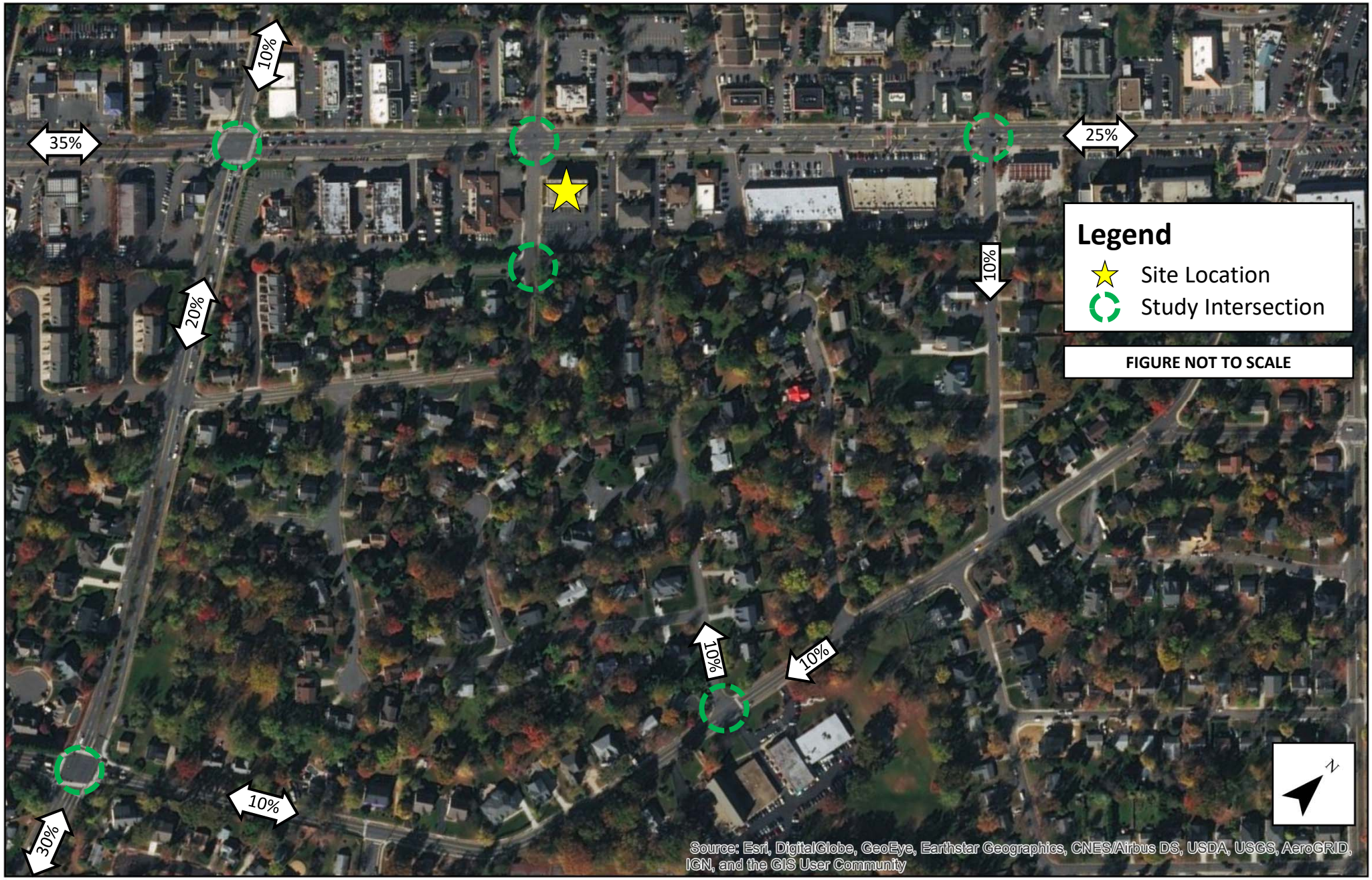
No pass-by or internal capture reductions were applied in this analysis. This results in a conservative analysis of traffic impacts as it is likely there would be double counting of retail trips that would originate from the on-site residents, as well as assuming there would be no existing motorists along Maple Avenue would be attracted to the shopping center or restaurant.

SITE TRIP DISTRIBUTION AND ASSIGNMENT

Existing trips were removed and site generated trips were assigned to the study area intersections based on the distributions agreed to as part of project scoping and summarized in **Table 9** below, and shown on **Figure 18**.

Table 9: Directional Distribution of Site Generated Traffic	
Direction To/From	Percentage
To/From East on Maple Avenue	35%
To/From West on Maple Avenue	25%
To/From South on Nutley Street	30%
To/From North on Nutley Street	10%
Total	**100%**

Figure 19 to Figure 21 show the removal of trips generated by the existing office. **Figure 22 to Figure 24** shows the assignment of site generated trips. **Figure 25 to Figure 27** shows the assignment of the net site generated trips onto study area intersections.



Kimley»Horn

Directional Distribution of Site Generated Trips

380 Maple Avenue West, Town of Vienna, VA

Figure 18

Kimley»Horn

Removal of AM Peak Hour Traffic Volumes Generated by Existing Office

380 Maple Avenue West, Town of Vienna, VA

Figure 19

Kimley»Horn

Removal of PM Peak Hour Traffic Volumes Generated by Existing Office

380 Maple Avenue West, Town of Vienna, VA

Figure 20

Removal of Saturday Peak Hour Traffic Volumes Generated by Existing Office

380 Maple Avenue West, Town of Vienna, VA

Figure 21

Kimley»Horn

Site Generated AM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 22

Kimley»Horn

Site Generated PM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 23

Kimley»Horn

Site Generated Saturday Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 24

Kimley»Horn

Net Site Generated AM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 25

Kimley»Horn

Net Site Generated PM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 26

Kimley»Horn

Net Site Generated Saturday Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 27

TOTAL FUTURE TRAFFIC VOLUMES

Total future volumes represent future traffic volumes with the full build-out of the proposed development. This was calculated by adding the trips generated by the net trips proposed to the background traffic volumes. Total future volumes were calculated for the build-out year of 2020. The resulting 2020 total future traffic volumes at the study intersections are shown on **Figure 28 to Figure 30.**

Kimley»Horn

Total Future 2020 AM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 28

Kimley»Horn

2020 Total Future PM Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 29

Kimley»Horn

2020 Total Future Saturday Peak Hour Traffic Volumes

380 Maple Avenue West, Town of Vienna, VA

Figure 30

2020 TOTAL FUTURE CONDITIONS CAPACITY ANALYSIS

The capacity analyses for 2020 total future traffic volumes were based on the total future traffic volumes with existing lane uses and traffic controls at the study area intersections. Peak hour factors and heavy vehicle percentages were the same as those used in the background conditions analyses. The background traffic signal timings were unchanged for the total future conditions analyses.

The results of the intersection capacity analyses are summarized in *Table 10*. Results of the background 2020 conditions and existing 2018 conditions results are also shown for comparison. Analysis results show overall level of service and corresponding delay information for each movement, approach, and overall intersection. The Synchro analysis reports are contained in **Appendix E**.

The delay at the signalized intersections will increase under the total future conditions. It is noted, however, that all signalized intersections will operate at the same LOS when comparing background and total future conditions. This indicates that the traffic impacts on congestion and delay associated with the proposed development will be minimal, especially when compared to the impacts of the assumed regional growth and the pipeline developments.

The intersection of Nutley Street Southwest and Courthouse Road Southwest and the intersection of Maple Avenue West and Nutley Street Southwest will continue to operate at LOS E during the AM peak hour, which is below the intersection operation standard identified in the scoping document. However, during the AM peak hour, the traffic generated by the proposed development only adds 0.2 seconds of overall intersection delay to the former intersection and only adds 2.4 seconds of overall intersection delay to the latter intersection.

It is noted that, compared to background conditions, the same movements and approaches at signalized intersections will operate at LOS E or F during one or multiple peak hours. The only significant change will be the eastbound approach of Maple Avenue West which changes from LOS E to LOS F during the Saturday midday peak period.

Generally, most movements and approaches will also experience increased vehicle delays due to the increased amount of traffic that is forecasted in the area. Exceptions to this occur where optimized signal timings were used to reallocate the amount of green time to better serve congested approaches.

It is also noted that there will be multiple minor street movements and approaches that operate at LOS E or F at unsignalized intersections, particularly those along Maple Avenue West. Due the heavy east-west traffic flows along Maple Avenue West during the peak hours, additional delays are experienced for vehicles turning from the minor street. It is noted that these delays are not uncommon or unexpected for unsignalized approaches to congested corridors.

Under total future conditions, a significant delay is anticipated at the northbound approach of Wade Hampton Drive Southwest at Maple Avenue West. Traffic exiting the proposed site is anticipated to experience delays accessing Maple Avenue (particularly for those vehicles that are turning left).

It is anticipated that motorists will find a balance between waiting out the delays at the northbound approach and the extra travel time required to identify and use an alternate route.

Realistically, there are not many mitigation options to reduce the delay at the minor street approach; the traffic volumes do not warrant a signal (which is also precluded by intersection spacing along Maple Avenue West) and the east-west travel traffic patterns along Maple Avenue are dependent on efficient intersection to intersection progression, which limits the number of gaps available for left turn movements

from the minor streets along Maple Avenue West. However, to mitigate the impacts at the intersection of Wade Hampton Southwest at Maple Avenue West, the project will change the northbound approach from a single, left-through-right lane to one left-through lane and one right-turn only lane. This improvement provides a significant benefit for the approach by allowing right-turning vehicles their own lane so that they are not blocked by left-turning or through vehicles which experience heavier delay. This also allows vehicles that would normally turn left onto Maple Avenue West the option to easily turn right if they determine that the delay for the left-turn movement is long than they would prefer to wait.

Should the Town determine that the existing or forecasted delays at this intersection are too large, potential mitigation options may include restricting certain turning movements during the peak hours or installing “do not block the intersection” signage and/or pavement markings to facilitate the creation of gaps in traffic during congested conditions.

Table 10: Summary of 2020 Total Future Capacity Analysis Results
Delay, Seconds per Vehicle (Level of Service)

Intersection		Existing (2018)			Background (2020)			Total Future (2020)		
Approach	**Mvmnt**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
1. Nutley Street Southwest and Courthouse Road Southwest (signalized)										
Northbound (Nutley Street Southwest)	L	26.1 (C)	17.7 (B)	14.3 (B)	23.0 (C)	16.7 (B)	14.2 (B)	23.2 (C)	16.7 (B)	14.3 (B)
	T	40.9 (D)	22.5 (C)	20.2 (C)	36.9 (D)	24.6 (C)	1.5 (A)	37.4 (D)	24.9 (C)	1.6 (A)
	R	41.9 (D)	23.1 (C)	21.0 (C)	37.2 (D)	24.7 (C)	1.5 (A)	37.7 (D)	25.0 (C)	1.6 (A)
	Overall	40.3 (D)	*21.8 (C)*	*20.0 (C)*	36.1 (D)	*23.2 (C)*	*2.6 (A)*	36.5 (D)	*23.4 (C)*	*2.7 (A)*
Southbound (Nutley Street Southwest)	L	30.7 (C)	20.5 (C)	16.1 (B)	27.0 (C)	21.7 (C)	15.3 (B)	27.3 (C)	21.8 (C)	15.4 (B)
	T	33.8 (C)	25.3 (C)	18.4 (B)	23.3 (C)	2.4 (A)	0.9 (A)	23.6 (C)	2.4 (A)	0.9 (A)
	R	33.9 (C)	25.6 (C)	18.5 (B)	23.2 (C)	2.4 (A)	0.9 (A)	23.5 (C)	2.4 (A)	0.9 (A)
	Overall	33.7 (C)	*25.4 (C)*	*18.3 (B)*	23.4 (C)	*2.8 (A)*	*1.7 (A)*	23.7 (C)	*2.8 (A)*	*1.7 (A)*
Eastbound (Courthouse Road Southwest)	L	43.1 (D)	53.5 (D)	47.4 (D)	53.8 (D)	76.5 (E)	63.1 (E)	53.8 (D)	76.5 (E)	63.1 (E)
	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	R	65.2 (E)	55.8 (E)	49.7 (D)	155.4 (F)	92.4 (F)	69.5 (E)	155.4 (F)	92.4 (F)	69.5 (E)
	Overall	*56.1 (E)*	*54.6 (D)*	*48.6 (D)*	*113.6 (F)*	*84.3 (F)*	*66.3 (E)*	*113.6 (F)*	*84.3 (F)*	*66.3 (E)*
Westbound (Courthouse Road Southwest)	L	63.1 (E)	49.7 (D)	48.3 (D)	73.8 (E)	72.6 (E)	69.7 (E)	74.3 (E)	73.1 (E)	70.0 (E)
	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	R	56.5 (E)	52.5 (D)	43.9 (D)	56.4 (E)	86.9 (F)	57.0 (E)	56.1 (E)	86.9 (F)	56.7 (E)
	Overall	*61.2 (E)*	*51.1 (D)*	*46.6 (D)*	*68.7 (E)*	*80.5 (F)*	*64.9 (E)*	*69.1 (E)*	*80.7 (F)*	*65.0 (E)*
Overall Intersection		***45.3 (D)***	**31.4 (C)**	**27.8 (C)**	***56.4 (E)***	**34.3 (C)**	**20.1 (C)**	***56.6 (E)***	**34.4 (C)**	**20.1 (C)**
2. Nutley Street Southwest and Maple Avenue West (signalized)										
Northbound (Nutley Street Southwest)	L	62.0 (E)	73.1 (E)	53.7 (D)	72.6 (E)	116.0 (F)	57.4 (E)	72.8 (E)	116.0 (F)	57.4 (E)
	T	54.9 (D)	75.2 (E)	56.6 (E)	56.0 (E)	111.9 (F)	59.6 (E)	56.3 (E)	112.0 (F)	59.7 (E)
	R	37.7 (D)	38.0 (D)	32.5 (C)	20.2 (C)	51.1 (D)	5.4 (A)	20.4 (C)	48.3 (D)	4.7 (A)
	Overall	*49.1 (D)*	*58.9 (E)*	*41.7 (D)*	*45.7 (D)*	*88.4 (F)*	*29.1 (C)*	*45.9 (D)*	*88.8 (F)*	*28.5 (C)*
Southbound (Nutley Street Southwest)	L	47.9 (D)	59.1 (E)	52.7 (D)	51.3 (D)	62.5 (E)	56.6 (E)	51.4 (D)	62.8 (E)	56.9 (E)
	T	73.4 (E)	74.1 (E)	57.9 (E)	99.6 (F)	89.8 (F)	65.7 (E)	99.6 (F)	89.8 (F)	65.7 (E)
	R	-	-	-	-	-	-	-	-	-
	Overall	*68.4 (E)*	*70.6 (E)*	*56.4 (E)*	*87.6 (F)*	*82.2 (F)*	*62.5 (E)*	*87.5 (F)*	*82.0 (F)*	*62.5 (E)*
Eastbound (Maple Avenue West)	L	23.7 (C)	27.5 (C)	22.0 (C)	30.6 (C)	35.5 (D)	30.8 (C)	31.1 (C)	35.8 (D)	31.5 (C)
	T	48.3 (D)	36.2 (D)	40.1 (D)	84.5 (F)	43.3 (D)	79.7 (E)	91.5 (F)	43.8 (D)	91.3 (F)
	R	-	-	-	-	-	-	-	-	-
	Overall	*47.8 (D)*	35.9 (D)	39.4 (D)	*83.2 (F)*	43.0 (D)	77.4 (E)	*90.1 (F)*	43.5 (D)	88.5 (F)

Table 10: Summary of 2020 Total Future Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)										
Intersection		Existing (2018)			Background (2020)			Total Future (2020)		
Approach	**Mvmnt**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
Westbound (Maple Avenue West)	L	39.2 (D)	23.0 (C)	26.7 (C)	89.5 (F)	45.2 (D)	64.2 (E)	90.0 (F)	49.1 (D)	62.2 (E)
	T	29.4 (C)	35.0 (C)	24.0 (C)	27.2 (C)	23.3 (C)	14.4 (B)	27.6 (C)	24.3 (C)	14.4 (B)
	R	-	-	-	-	-	-	-	-	-
	Overall	31.4 (C)	*32.9 (C)*	*24.7 (C)*	40.3 (D)	*27.2 (C)*	*27.6 (C)*	41.0 (D)	*28.7 (C)*	*27.1 (C)*
Overall Intersection		**46.7 (D)**	**43.3 (D)**	**36.2 (D)**	**62.8 (E)**	**50.5 (D)**	**47.3 (D)**	**65.2 (E)**	**50.9 (D)**	**50.6 (D)**
3. Wade Hampton Drive/Lewis Street N and Maple Avenue (unsignalized)										
Northbound (Wade Hampton Drive/Lewis St North)	L	50.5 (F)	34.8 (D)	15.9 (C)	99.3 (F)	20.6 (C)	40.4 (E)	314.2 (F)	83.4 (F)	483.6 (F)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	12.6 (B)	10.5 (B)	13.2 (B)
	Overall	*50.5 (F)*	*34.8 (D)*	*15.9 (C)*	*99.3 (F)*	*20.6 (C)*	*40.4 (E)*	*168.8 (F)*	*31.9 (D)*	*172.4 (F)*
Southbound (Wade Hampton Drive/Lewis St North)	L	13.2 (B)	42.9 (E)	21.1 (C)	17.2 (C)	22.9 (C)	44.2 (E)	17.8 (C)	29.1 (D)	49.5 (E)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*13.2 (B)*	*42.9 (E)*	*21.1 (C)*	*17.2 (C)*	*22.9 (C)*	*44.2 (E)*	*17.8 (C)*	*29.1 (D)*	*49.5 (E)*
Eastbound (Maple Avenue West)	L	9.4 (A)	15.0 (C)	10.8 (B)	8.2 (A)	11.1 (B)	8.9 (A)	8.2 (A)	11.1 (B)	8.9 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*0.6 (A)*	*1.3 (A)*	*0.5 (A)*	*0.5 (A)*	*0.9 (A)*	*0.4 (A)*	*0.5 (A)*	*0.9 (A)*	*0.4 (A)*
Westbound (Maple Avenue West)	L	9.5 (A)	8.5 (A)	9.6 (A)	9.7 (A)	8.5 (A)	10.1 (B)	9.7 (A)	8.5 (A)	10.2 (B)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*0.1 (A)*	*0.0 (A)*	*0.2 (B)*	*0.1 (A)*	*0.0 (A)*	*0.2 (B)*	*0.1 (A)*	*0.1 (A)*	*0.3 (B)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**	-	**-**	**-**
4. Pleasant Street Northwest and Maple Avenue (unsignalized)										
Northbound (Pleasant Street Northwest)	L	588.1 (F)	39.7 (E)	75.0 (F)	26.9 (D)	22.6 (C)	328.6 (F)	18.6 (C)	24.8 (C)	372.8 (F)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*588.1 (F)*	*39.7 (E)*	*75.0 (F)*	*26.9 (D)*	*22.6 (C)*	*328.6 (F)*	*18.6 (C)*	*24.8 (C)*	*372.8 (F)*
Southbound (Pleasant Street Northwest)	L	63.7 (F)	17.1 (C)	30.9 (D)	20.4 (C)	16.3 (C)	56.4 (F)	14.2 (C)	16.4 (C)	61.0 (F)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	*63.7 (F)*	*17.1 (C)*	*30.9 (D)*	*20.4 (C)*	*16.3 (C)*	*56.4 (F)*	*14.2 (C)*	*16.4 (C)*	*61.0 (F)*
Eastbound (Maple Avenue W)	L	8.9 (A)	10.1 (B)	8.8 (A)	8.7 (A)	10.6 (B)	9.1 (A)	8.3 (A)	10.6 (B)	9.1 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-

Table 10: Summary of 2020 Total Future Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)										
Intersection		Existing (2018)			Background (2020)			Total Future (2020)		
Approach	**Mvmnt**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
	Overall	*1.0 (A)*	*0.3 (A)*	*0.3 (A)*	*0.9 (A)*	*0.3 (A)*	*0.3 (A)*	*0.3 (A)*	*0.3 (A)*	*0.3 (A)*
Westbound (Maple Avenue W)	L	12.0 (B)	10.0 (A)	11.4 (B)	9.1 (A)	8.4 (A)	9.5 (A)	9.1 (A)	8.4 (A)	9.5 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	0.2 (A)	*0.1 (A)*	*0.3 (A)*	0.2 (A)	*0.1 (A)*	*0.2 (A)*	0.2 (A)	*0.1 (A)*	*0.2 (A)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**	-	**-**	**-**
5. Glen Avenue SW and Courthouse Road SW (unsignalized)										
Northbound (Glen Avenue SW)	L	17.7 (C)	12.7 (B)	14.9 (B)	17.7 (C)	12.8 (B)	15.2 (C)	17.8 (C)	12.9 (B)	15.4 (C)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	17.7 (C)	*12.7 (B)*	*14.9 (B)*	17.7 (C)	*12.8 (B)*	*15.2 (C)*	*17.8 (C)*	*12.9 (B)*	*15.4 (C)*
Southbound (Glen Avenue SW)	L	14.2 (B)	15.6 (C)	15.8 (C)	14.2 (B)	15.8 (C)	16.2 (C)	14.3 (B)	16.0 (C)	16.5 (C)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	14.2 (B)	*15.6 (C)*	*15.8 (C)*	14.2 (B)	*15.8 (C)*	*16.2 (C)*	*14.3 (B)*	*16.0 (C)*	*16.5 (C)*
Eastbound (Courthouse Road SW)	L	7.7 (A)	8.4 (A)	8.0 (A)	7.7 (A)	8.5(A)	8.1 (A)	7.7 (A)	8.5 (A)	8.1 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-	-	-	-
	Overall	0.1 (A)	*0.3 (A)*	*0.3 (A)*	0.1 (A)	*0.3 (A)*	*0.3 (A)*	0.2 (A)	*0.4 (A)*	*0.4 (A)*
Westbound (Courthouse Road SW)	L	8.5 (A)	8.0 (A)	8.1 (A)	8.5 (A)	8.0 (A)	8.1 (A)	8.5 (A)	8.0 (A)	8.0 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-	-	-	-
	Overall	0.0 (A)	0.0 (A)	*0.0 (A)*	0.0 (A)	0.0 (A)	*0.0 (A)*	*0.0 (A)*	*0.0 (A)*	*0.0 (A)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**	-	**-**	**-**
6. Wade Hampton Drive SW and Glen Avenue SW/ Millwood Court (unsignalized)										
Northbound (Wade Hampton Drive SW)	L	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-	-	-	-
	Overall	0.3 (A)	0.2 (A)	0.5 (A)	0.3 (A)	0.2 (A)	0.5 (A)	0.3 (A)	0.2 (A)	0.5 (A)
Southbound (Wade Hampton Drive SW)	L	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)	7.3 (A)
	T	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)	0.0 (A)
	R	-	-	-	-	-	-	-	-	-
	Overall	2.8 (A)	2.8 (A)	4.5 (A)	2.8 (A)	2.8 (A)	4.5 (A)	2.8 (A)	2.8 (A)	4.5 (A)
Eastbound (Glen Avenue SW/Millwood Court SW)	L	8.8 (A)	9.3 (A)	8.6 (A)	8.8 (A)	9.3 (A)	8.6 (A)	8.8 (A)	9.3 (A)	8.6 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-

Table 10: Summary of 2020 Total Future Capacity Analysis Results Delay, Seconds per Vehicle (Level of Service)										
Intersection		Existing (2018)			Background (2020)			Total Future (2020)		
Approach	**Mvmnt**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
	Overall	8.8 (A)	*9.3 (A)*	*8.6 (A)*	8.8 (A)	*9.3 (A)*	*8.6 (A)*	8.8 (A)	*9.3 (A)*	*8.6 (A)*
Westbound (Glen Avenue SW/Millwood Court SW)	L	8.5 (A)	8.8 (A)	8.6 (A)	8.4 (A)	8.8 (A)	8.6 (A)	8.4 (A)	8.8 (A)	8.6 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	8.5 (A)	*8.8 (A)*	*8.6 (A)*	8.4 (A)	*8.8 (A)*	*8.6 (A)*	8.4 (A)	*8.8 (A)*	*8.6 (A)*
Overall Intersection		-	**-**	**-**	-	**-**	**-**	-	**-**	**-**
7. Wade Hampton Drive SW and Site DW (unsignalized)										
Northbound (Wade Hampton Drive SW)	L	-	-	-	-	-	-	-	-	-
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	-	-	-	-	-	-	*0.0 (A)*	*0.0 (A)*	*0.0 (A)*
Southbound (Wade Hampton Drive SW)	L	-	-	-	-	-	-	7.3 (A)	7.4 (A)	7.3 (A)
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-
	Overall	-	-	-	-	-	-	*5.5 (A)*	*4.9 (A)*	*3.7 (A)*
Westbound (Site Driveway)	L	-	-	-	-	-	-	-	-	-
	T	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	8.6 (A)	8.8 (A)	8.6 (A)
	Overall	-	-	-	-	-	-	*8.6 (A)*	*8.8 (A)*	*8.6 (A)*
Overall Intersection		-	-	-	-	-	-	-	-	-

2020 TOTAL FUTURE CONDITIONS QUEUING ANALYSIS

Synchro 95th percentile queue analyses were performed at study area intersections under total future conditions as shown in **Table 11**. A 95th percentile queue length is the queue length that only has a 5 percent likelihood of being exceeded during the peak hour. The values shown below are based on an assumed queuing of 25 feet per vehicle in the queue, which is standard for Synchro queueing analyses. The effective storage of turn lanes, equal to the full-width length plus half the taper length, is shown for comparison. Synchro Reports are included in Appendix F.

Under total future conditions, queuing at certain turning movements at the signalized intersections will exceed the available storage length under one or multiple peak periods. These include:

- NBL at Nutley Street Southwest and Courthouse Road Southwest during the PM peak hour (consistent with background conditions)
- EBTL at Nutley Street Southwest and Courthouse Road Southwest during the AM peak hour (consistent with background conditions)
- WBTR at Nutley Street Southwest and Courthouse Road Southwest during the AM, PM and Saturday midday peak hours (consistent with background conditions)
- NBL at Nutley Street Southwest and Maple Avenue West during the AM and PM peak hours (consistent with background conditions)

- WBL at Nutley Street Southwest and Maple Avenue West during the AM and Saturday Midday peak hours (longer than background conditions during the AM and consistent with background conditions during the PM)

Queuing at unsignalized intersections will generally be insignificant with the exception of a queue of approximate 3.5 cars at the minor street northbound approach to Maple Avenue West from Wade Hampton Drive Southwest during the AM peak hour, and a queue of 5 vehicles at the minor street northbound approach to Maple Avenue West from Pleasant Street Northwest during the Saturday peak hour.

The queuing for the through movements along Maple Avenue W continue to underscore the fact that it is a significant east-west corridor that supports peak direction commuter travel patterns. During the peak hours, this amount of queuing and congestion creates challenges for turning movements from minor street approaches. This is more pronounced in the total future conditions, specifically at the adjacent street to the propose site (Wade Hampton Drive Southwest). However, the maximum northbound queueing at this location represents approximately 3.5 vehicles waiting to turn onto Maple Avenue West. This is not anticipated to negative impact access and egress to the proposed site or to impact the local neighborhood intersections and streets.

Table 11: Summary of 2020 Total Future 95TH Percentile Queues (Feet)

Intersection			Existing (2018)			Background (2020)			Total Future (2020)		
Approach	Movement	Storage	AM	**PM**	**SAT**	**AM**	**PM**	**SAT**	**AM**	**PM**	**SAT**
1. Nutley Street SW and Courthouse Road SW (signalized)											
Northbound (Nutley Street SW)	NBL	115	85	208	74	36	120	84	36	120	84
	NBTR	N/A	607	551	418	267	618	352	271	631	356
Southbound (Nutley Street SW)	SBL	45	38	20	38	13	13	26	13	13	26
	SBTR	N/A	330	287	252	188	385	273	193	386	275
Eastbound (Courthouse Road SW)	EBLT	225	386	224	205	347	218	199	347	218	199
	EBR	N/A	137	66	62	353	59	50	359	59	50
Westbound (Courthouse Road SW)	WBL	N/A	305	322	282	278	312	276	283	316	280
	WBTR	70	104	384	166	94	378	161	93	379	160
2. Nutley Street SW and Maple Avenue W (signalized)											
Northbound (Nutley Street SW)	NBL	220	314	353	162	384	448	142	384	448	142
	NBLT	n/a	280	382	209	237	451	158	237	451	158
	NBR	n/a	178	112	153	87	233	10	91	248	10
Southbound (Nutley Street SW)	SBL	200	111	116	104	152	152	146	153	159	151
	SBTR	n/a	444	333	215	502	384	234	502	384	234
Eastbound (Maple Avenue W)	EBL	90	25	31	39	32	39	54	32	39	54
	EBTR	N/A	632	355	590	722	424	783	726	433	793
Westbound (Maple Avenue W)	WBL	285	185	219	272	272	259	445	287	281	459
	WBTR	n/a	283	712	365	322	724	391	335	763	400
3. Wade Hampton Drive/Lewis Street N and Maple Avenue (unsignalized)											
Northbound (Wade Hampton Drive/Lewis St North)	NBLTR	N/A	20	23	8	35	13	23	-	-	-
	NBL	N/A	-	-	-	-	-	-	83	25	75

Table 11: Summary of 2020 Total Future 95TH Percentile Queues (Feet)											
Intersection			Existing (2018)			Background (2020)			Total Future (2020)		
Approach	Movement	Storage	AM	PM	SAT	AM	PM	SAT	AM	PM	SAT
	NBR	67	-	-	-	-	-	-	5	5	8
Southbound (Wade Hampton Drive/Lewis St North)	SBLTR	N/A	13	30	13	18	15	28	20	20	30
Eastbound (Maple Avenue W)	EBL	120	8	20	8	5	13	5	5	13	5
	EBTR	N/A	0	0	0	0	0	0	0	0	0
Westbound (Maple Avenue W)	WBL	95	0	0	3	0	0	3	3	3	3
	WBTR	N/A	0	0	0	0	0	0	0	0	0
4. Pleasant Street Northwest and Maple Avenue (unsignalized)											
Northbound (Pleasant Street Northwest)	NBLTR	N/A	143	30	55	20	15	118	13	18	123
Southbound (Pleasant Street Northwest)	**SBLTR**	N/A	35	5	23	10	5	43	5	5	45
Eastbound (Maple Avenue W)	EBL	55	13	3	3	10	3	3	3	3	3
	EBTR	N/A	0	0	0	0	0	0	0	0	0
Westbound (Maple Avenue W)	WBL	70	3	3	3	3	3	3	3	3	3
	WBTR	N/A	0	0	0	0	0	0	0	0	0
5. Glen Avenue SW and Courthouse Road SW (unsignalized)											
Northbound (Glen Avenue SW)	NBLTR	N/A	3	5	8	3	3	3	3	8	3
Southbound (Glen Avenue SW)	**SBLTR**	N/A	5	3	8	5	3	5	5	8	5
Eastbound (Courthouse Road SW)	EBLTR	N/A	0	0	0	0	0	0	3	0	0
Westbound (Courthouse Road SW)	**WBLTR**	N/A	0	0	0	0	0	0	0	0	0
6. Wade Hampton Drive SW and Glen Avenue SW/ Millwood Court (unsignalized)											
Northbound (Wade Hampton Drive SW)	NBLTR	N/A	0	0	0	0	0	0	0	0	0
Southbound (Wade Hampton Drive SW)	**SBLTR**	N/A	0	0	0	0	0	0	0	0	0
Eastbound (Glen Avenue SW/Millwood Court SW)	EBLTR	N/A	0	0	0	0	0	0	0	0	0
Westbound (Glen Avenue SW/Millwood Court SW)	**WBLTR**	N/A	0	3	3	0	3	3	0	3	3
7. Wade Hampton Drive and Site Driveway (unsignalized)											
Northbound (Wade Hampton Drive)	**NBTR**	N/A	-	-	-	-	-	-	0	3	3
Southbound (Wade Hampton Drive)	**SBLT**	N/A	-	-	-	-	-	-	3	3	3
Westbound (Site Driveway)	**WBLR**	N/A	-	-	-	-	-	-	3	5	3

TRANSPORTATION DEMAND MANGEMENT

The Town of Vienna encourages developers to consider strategies and measure to reduce the impacts of traffic on the site and the adjacent streets. Transportation demand management means the application of strategies and policies to reduce travel demand of single-occupancy private vehicles, or to redistribute this demand in space or in time. The Town suggests that applicants should consider developing a TDM plan that includes a minimum of three of the following transportation demand management activities:

- Establish a development-specific website that provides multi-modal transportation information such as real-time travel/traffic information, bus routes, bus schedules and maps and alternative commute log (bicycle, pedestrian, carpool, and vanpool).
- Disclose in writing to all employees transportation information and educational materials.
- Coordinate the formation of, but not limited to, carpooling, vanpooling, ridesharing, guaranteed ride home, teleworking, or shuttle service programs.
- Create a preferential parking management plan that specifically marks spaces for each registered carpool and/or vanpool vehicle and/or accommodates carshare designated-spaces located near building entrances or in other preferential locations.
- Institute and maintain off-peak work schedules, allowing employees to arrive and depart at times other than the peak commute period. The peak morning commuter period is defined as 7:00 AM to 9:00 AM, the peak mid-day commuter period is defined as 11:30 AM to 1:30 PM, and the peak evening commuter period is defined as 5:00 PM. and 7:00 PM.
- Establish an office location within the development, staffed by the transportation coordinator that makes transportation and ride-sharing information available to employees and residents.

While the applicant has not yet identified specific TDM strategies, they remain committed to working with the Town and the community to reduce traffic into the residential neighborhoods. This has factored into the building design which facilitates easy access to ride sharing companies and delivery trucks. The applicant will also discuss feasibility of installing equipment that displays NextBus information with the Town Department of Public Works.

PARKING DEMAND

The proposed site will include 125 parking spaces divided among above- and below-grade garage parking to accommodate the employees, visitors, patrons, and residents.

Article 16 of the Town Code of Vienna specifies the following off-street parking requirements for the proposed uses:

- Multiple Family, two or more Bedrooms: 2 spaces/dwelling unit
- Commercial Building: 1 space/200 SF of floor area

Based on the parking ratios and the actual dwelling units/square footage of the current development (40 units and 7,500 SF of retail), the proposed development is *required* to have 80 parking spaces to satisfy the residential component (assuming only two-bedroom units), and 38 parking spaces to satisfy the retail component for a total of 118 parking spaces. The site will contain a surplus of 7 spaces.

Based on the principles of shared parking, it is recognized that different uses in a mixed-use site have unique peak parking trends. As such the peak demand for residential parking may not overlap with the peak demand for retail parking.

Should the applicant seek to reduce the number of parking spaces, a shared parking analysis and parking demand study would be provided as justification.

CONCLUSIONS

Based on the intersection capacity analyses that were conducted, it is concluded that the proposed development will result in minimal traffic impacts to the area transportation network and that parking will be provided in accordance with the Town's Zoning Ordinance.

Under existing conditions, all signalized study intersections operate at or better than overall intersection LOS D during the AM, PM, and Saturday midday peak hours.

Under background conditions, both the intersection of Nutley Street Southwest and Courthouse Road Southwest and the intersection of Maple Avenue West and Nutley Street Southwest will operate at LOS E during the AM peak hour, which is below the intersection operation standard identified in the scoping document.

These results suggest that the background traffic associated with regional growth and pipeline developments impact signalized intersection operations.

The delays at the signalized intersections also increase under the total future conditions, i.e. with the proposed development in place. It is noted, however, that all signalized intersections operate at the same LOS when compared to background conditions. This confirms that the traffic impacts on congestion and delay associated with the proposed development will be minimal, specifically when compared to the traffic impacts of the regional growth and the traffic generated by pipeline developments.

The intersection of Nutley Street Southwest and Courthouse Road Southwest and the intersection of Maple Avenue West and Nutley Street Southwest continue to operate at LOS E during the AM peak hour; this is below the intersection operation standard identified in the scoping document. It is noted; however, that the proposed development only adds 0.2 seconds of overall intersection delay to the Nutley Street Southwest and Courthouse Road Southwest intersection and only 2.4 seconds of overall intersection delay to Maple Avenue West and Nutley Street Southwest intersection during the AM peak hour.

Under total future conditions, significant delays are anticipated at the northbound approach of Wade Hampton Drive Southwest at Maple Avenue West. Traffic exiting the proposed site is anticipated to experience delays accessing Maple Avenue (particularly for those vehicles that are turning left). Due the heavy east-west traffic flows along Maple Avenue West during the peak hours, additional delays are experienced for vehicles turning from the minor streets along Maple Avenue West. It is noted that these delays are not uncommon or unexpected for unsignalized approaches to congested corridors. It is anticipated that motorists will find a balance between waiting out the delays at the northbound approach of Wade Hampton Drive Southwest and the extra travel time required to use an alternate route.

To mitigate the impacts at the intersection of Wade Hampton Southwest at Maple Avenue West, the project will change the northbound approach from a single, left-through-right lane to one left-through lane and one right-turn only lane. This improvement provides a significant benefit for the approach by allowing right-turning vehicles their own lane so that they are not blocked by left-turning or through vehicles which experience heavier delay. This also allows vehicles that would normally turn left onto Maple Avenue West the option to easily turn right if they determine that the delay for the left-turn movement is long than they would prefer to wait.

The maximum northbound queueing at this location is approximately 3.5 vehicles waiting to turn onto Maple Avenue West. This is not anticipated to negatively impact access and egress to the proposed site or to impact the local neighborhood intersections and streets.

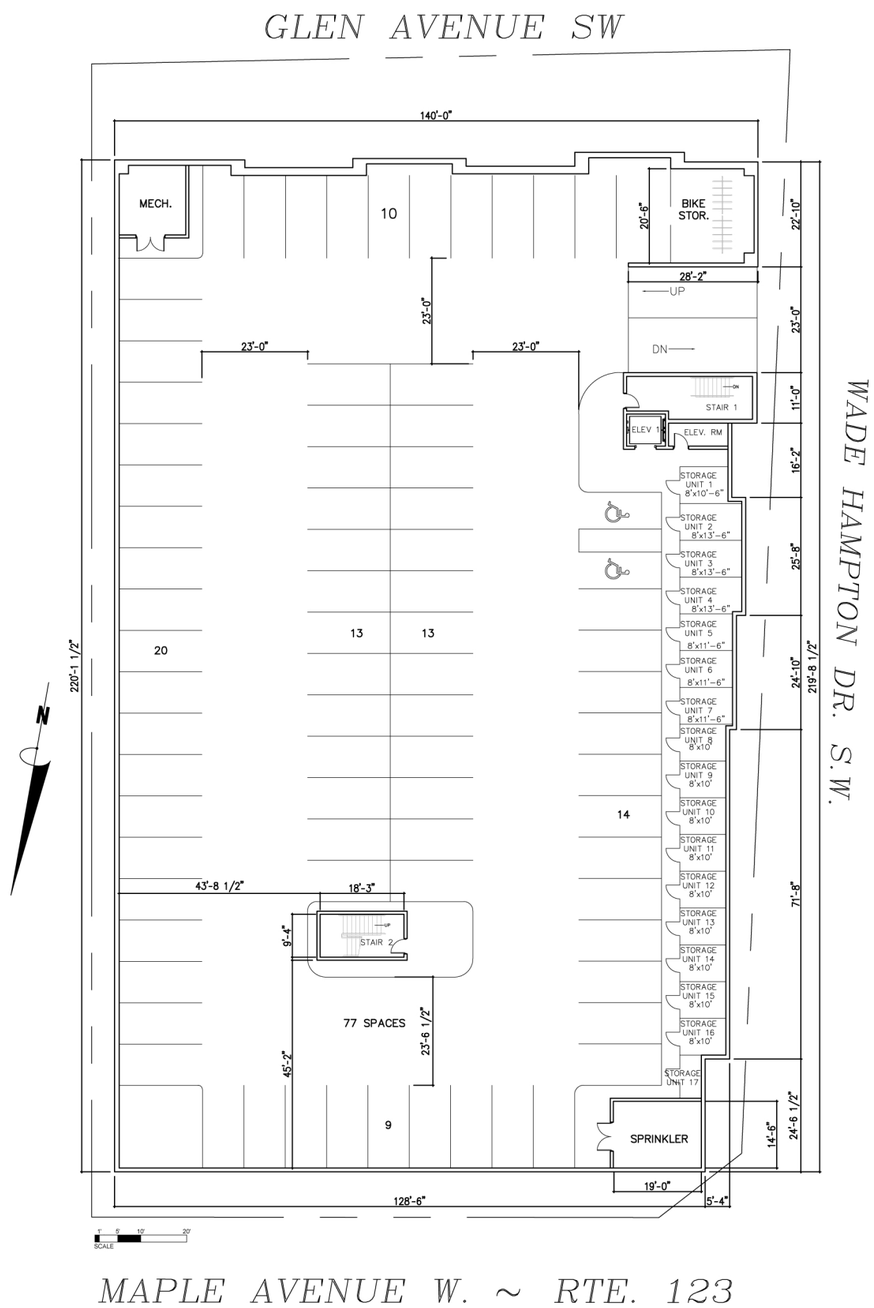
Realistically, there are few mitigation options to reduce the delay at the minor street approach; the traffic volumes do not warrant a signal (which is also precluded by intersection spacing along Maple Avenue West) and the east-west travel pattern along Maple Avenue is dependent on efficient intersection to intersection progression, which limits the number of gaps available for left turn movements from the minor streets. The separation of the northbound approach into a left-through lane and right-turn lane at this location provides a considerable benefit.

Should the Town determine that the real or forecasted delays at this intersection are too much to bear, potential mitigation options may include restricting certain turning movements during the peak hours or installing “do not block the intersection” signage and/or pavement markings to facilitate the creation of gaps in traffic during congested conditions. The developer has also expressed a desire to work with the Town and the community to develop strategies to minimize the impact of traffic on residential streets. One such strategy is the proposed prohibition of left turns exiting the site, which will reduce the possibility of site traffic driving through neighborhood streets.

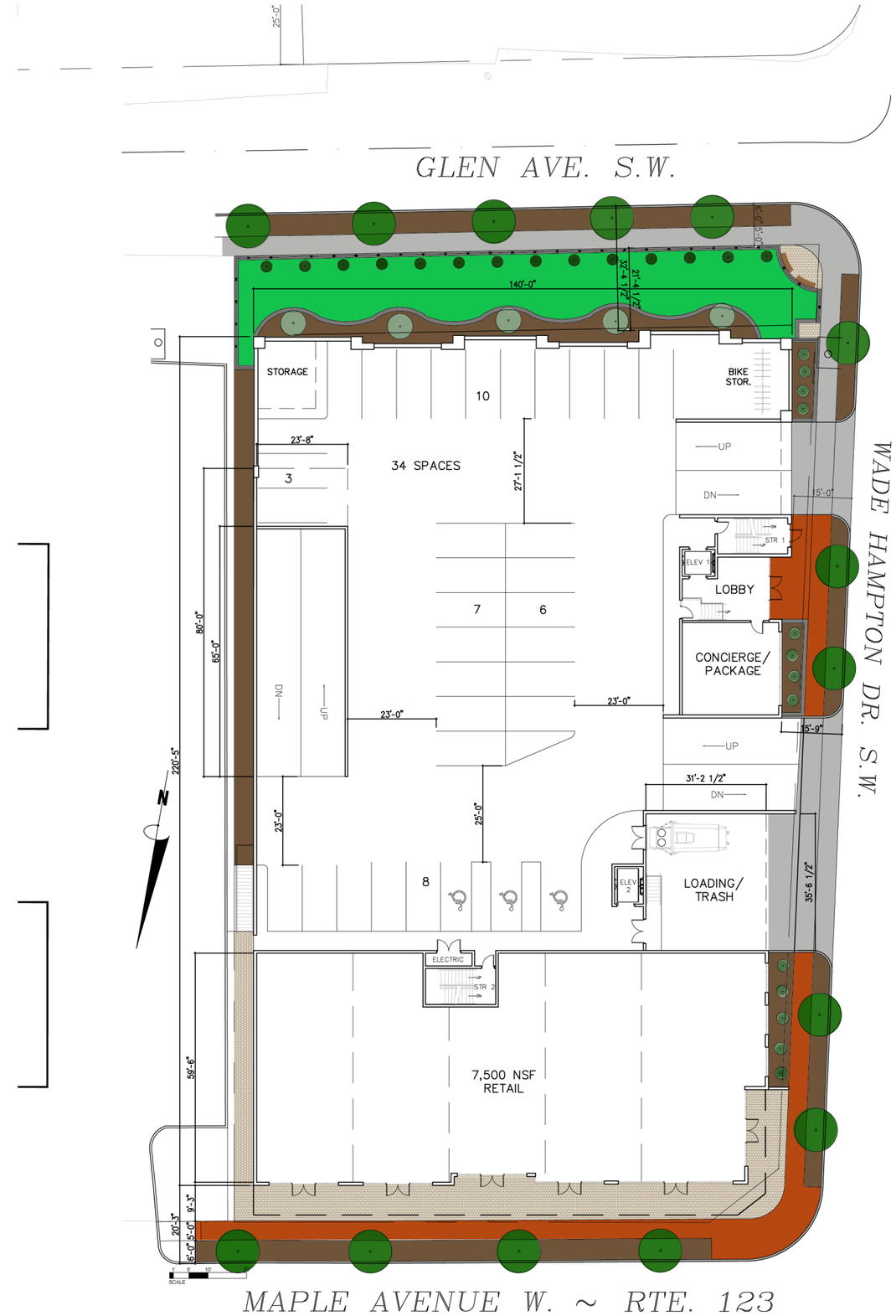
APPENDIX

APPENDIX A: SITE PLAN

For Conceptual Use within the Traffic Study only.
See Most Recent Site Plan for up to date drawings.



1/A1 **BELOW GRADE PARKING**
NTS



2/A1 **GROUND LEVEL PLAN**
NTS

KYLLO + PATTANA
ARCHITECTURE / INTERIORS
340 Mill Street, NE, Suite F
Vienna, VA 22180
Phone: 703.242.6603
Fax: 703.242.6604
Web: kyllopattana.com

DATE:	8-31-18
JOB NUMBER:	X
SCALE:	X
DRAWN BY:	X
CHECK BY:	X
REVISIONS:	

BELOW GRADE PARKING & GROUND LEVEL PLANS

380 MAPLE AVENUE MAC REZONING

380 MAPLE AVENUE WEST, VIENNA, VIRGINIA 22180

A1

APPENDIX B: SCOPING AGREEMENT

THIS IS NOT A CHAPTER 870 STUDY

VDOT Virginia Department of Transportation	PRE-SCOPE OF WORK MEETING FORM Information on the Project Traffic Impact Analysis Base Assumptions

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

Contact Information				
Consultant Name: Tele: E-mail:	Kevin D. Sitzman, Gorove/Slade Associates, Inc. 571-261-9718 kds@goroveslade.com			
Developer/Owner Name: Tele: E-mail:	Dennis Rice office@jdacustomhomes.com			
Project Information				
Project Name:	380 Maple Avenue West	Locality/County:	Town of Vienna	
Project Location: (Attach regional and site specific location map)	The site is located in the southeast corner of the intersection of Maple Avenue West (Rte. 123) and Wade Hampton Drive SW in the Town of Vienna, Virginia.			
Submission Type	Comp Plan ☐	Rezoning (SUP) ☒	Site Plan ☐	Subd Plat ☐
Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)	The proposed site located at 380 Maple Avenue West in the Town of Vienna, Virginia is approximately 36,842 square feet in area and can be identified on Fairfax County Tax Maps as GPIN 0383-02-0147. The site is currently zoned Local Commercial (C-1) and is occupied with an approximately 23,620 square feet office building. The applicant proposes to rezone the site to the Maple Avenue Commercial (MAC) district and re-develop with approximately 8,500 square feet of retail and up to 42 multi-family residential units. Access to the site is planned to be provided by three access points, all along Wade Hampton Drive SW. Out of the three access points, the closest to Maple Avenue will allow for loading truck access, while the other two access points will serve the retail and residential components on the site.			
Proposed Use(s): (Check all that apply; attach additional pages as necessary)	Residential ☒	Commercial ☒	Mixed Use ☐	Other ☐

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

	Residential Uses(s) Number of Units: 42 DU ITE LU Code(s): 221 (Multi-family Housing (Mid-Rise)) **Commercial Use(s)** ITE LU Code(s): 932 (High Turnover (sit-down) Restaurant) Square Ft or Other Variable: 8,500 sf	**Other Use(s)** ITE LU Code(s): Independent Variable(s):

Total Peak Hour Trip Projection:	Less than 100 ☐	100 – 499 ☒	500 – 999 ☐	1,000 or more ☐

Traffic Impact Analysis Assumptions

Study Period	Existing Year: 2018	Build-out Year: 2020	Design Year: N/A
Study Area Boundaries (Attach map)	North: Pleasant Street SW	South: Nutley Street NW	
	East: Glen Avenue SW	West: Maple Avenue West	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	None.		
Consistency with Comprehensive Plan (Land use, transportation plan)	Yes		
Available Traffic Data (Historical, forecasts)	VDOT Historical AADT Data		
Trip Distribution Residential / Commercial / Industrial (Please refer to attached Figure 2)	Road Name: Nutley St NW - 10% (from West)	Road Name: Nutley St SW – 30% (from East)	
	Road Name: Maple Avenue - 25% (from South)	Road Name: Maple Ave West - 35% (from North)	
Annual Vehicle Trip Growth Rate:	1.0% (Subject to change per COG Model projections)	Peak Period for Study (check all that apply)	☒ AM ☒ PM ☒ SAT
		Peak Hour of the Generator	69 (AM Peak Hour) 87 (PM Peak Hour) 63 (SAT Peak Hour)
Study Intersections and/or Road Segments (Attach additional sheets as necessary) Please refer to attached Figure 1	1. Nutley St and Courthouse Rd	6. Wade Hampton Dr SW and Glen Avenue SW/Millwood Ct. SW	
	2. Maple Ave and Nutley St	7. Wade Hampton Dr SW and Site Access	
	3. Maple Ave West and Wade Hampton Dr. SW		
	4. Maple Ave West and Pleasant St NW		

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

	5. Courthouse Rd and Glen Avenue SW	
Trip Adjustment Factors	Internal allowance Reduction: ☐ Yes ☒ No	Pass-by allowance Reduction: ☐ Yes ☒ No
Software Methodology	☒ Synchro ☐ HCS (v.2000/+) ☐ SIDRA ☐ CORSIM ☐ Other _____	
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	1. Nutley St and Courthouse Rd 2. Maple Avenue and Nutley Street Analysis Software: Synchro version 10 Results: HCM methodology	
Improvement(s) Assumed or to be Considered	None	
Background Traffic Studies Considered	444 Maple Avenue Mixed-use Development 540 Maple Avenue West Commercial Development Vienna Market (Marco Polo Site) Re-development	
Plan Submission	☐ Master Development Plan (MDP) ☒ Generalized Development Plan (GDP) ☐ Preliminary/Sketch Plan ☐ Other Plan type ( )	
Additional Issues to be Addressed	☒ Queuing analysis (95th %tile queues) ☐ Actuation/Coordination ☐ Weaving analysis ☐ Merge analysis ☒ Bike/Ped Accommodations ☒ Intersection(s) ☒ TDM Measures ☐ Other	

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

NOTES on ASSUMPTIONS:

1. The scenarios to be included in the study are Existing (2018), Future without Development (2020), Future with Development (2020).
2. To develop the future condition base volumes, a 1.0% annual growth (subject to change per COG model projections) will be applied to all the movements at the intersection Maple Avenue and Nutley Street and will be carried as through volumes along the Maple Avenue.
3. Existing peak hour factors in the range of 0.85 to 1.00 will be used for existing scenarios. The default peak hour factor of 0.92 will be used for all future scenarios unless the existing peak hour factor is found to be higher.
4. Heavy vehicle percentage will be determined from counts.
5. For any approach, LOS D or better would be considered as acceptable/desirable traffic operation condition. For all approaches, the projected future conditions without development LOS and delay will be maintained in the future with development condition. Will show intersection, approach, and movement LOS.
6. Will provide 95th percentile queues from Synchro analyzed locations.
7. The delay and level of service (LOS) would be provided from Synchro 10 using the HCM 2010 methodology. In case of any limitations in reporting the results using the HCM 2010 methodology, the results using HCM 2000 would be reported.
8. None of the study roadways fall under VDOT's Arterial Preservation Program.
9. A comparison table showing the trips and level of service (LOS) for existing, no-build and build conditions would be provided in the executive summary and conclusion section of the Traffic Impact Study report.

SIGNED: _____ DATE: 8/22/2018
Applicant or Consultant

PRINT NAME: Kevin D. Sitzman
Applicant or Consultant

SIGNED: _____ DATE: _____
VDOT Representative

PRINT NAME: _____
VDOT Representative

SIGNED: _____ DATE: _____
Local Government Representative

PRINT NAME: _____
Local Government Representative

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Table 1: Historic Growth

Road Segment	Route Number	From	To	VDOT ADT				Growth Rate		
				2014	2015	2016	2017	2014-2017	2015-2017	2016-2017
Maple Ave	123	SCL Vienna	Follin Lane	33000	34000	30000	31000	-6%	-9%	3%
Nutley Street	243	Courthouse Rd	Maple Ave	18000	17000	17000	17000	-6%	0%	0%

1.0% growth assumed

Figure 1: Existing Study Intersections

Figure 2: Direction of Approach
Note: DOA is proposed to be updated based on existing traffic counts collected at study intersections.

Table 2: Trip Generation

Peak Hour of Generator

Land Use	ITE Code	Size	Weekday AM Peak Hour In	Weekday AM Peak Hour Out	Weekday AM Peak Hour Total	Weekday PM Peak Hour In	Weekday PM Peak Hour Out	Weekday PM Peak Hour Total	Weekday Daily Total	Weekend Saturday Peak Hour In	Weekend Saturday Peak Hour Out	Weekend Saturday Peak Hour Total	Weekend Sat Daily Total
Proposed Development													
Shopping Center	820	4.5 ksf of GLA	8	6	14	10	9	19	170	10	10	20	208
High Turnover (Sit-Down) Restaurant	932	4 ksf of GLA	32	24	56	36	34	70	449	23	22	45	490
Multifamily Housing (Mid-Rise)	221	42 DU	4	9	13	10	7	17	228	9	9	18	206
Total Development Trips			**36**	**33**	**69**	**46**	**41**	**87**	**677**	**32**	**31**	**63**	**696**

Peak Hour of Adjacent Street

Land Use	ITE Code	Size	Weekday AM Peak Hour In	Weekday AM Peak Hour Out	Weekday AM Peak Hour Total	Weekday PM Peak Hour In	Weekday PM Peak Hour Out	Weekday PM Peak Hour Total	Weekday Daily Total	Weekend Saturday Peak Hour In	Weekend Saturday Peak Hour Out	Weekend Saturday Peak Hour Total	Weekend Sat Daily Total
Proposed Development													
Shopping Center	820	4.5 ksf of GLA	2	2	4	8	9	17	170	10	10	20	208
High Turnover (Sit-Down) Restaurant	932	4 ksf of GLA	22	18	40	24	15	39	449	23	22	45	490
Multifamily Housing (Mid-Rise)	221	42 DU	4	11	15	11	7	18	228	9	9	18	206
Total Development Trips			**26**	**29**	**55**	**35**	**22**	**57**	**677**	**32**	**31**	**63**	**696**

Note: ITE Trip Generation Manual, 10th Edition is used in the trip generation above.

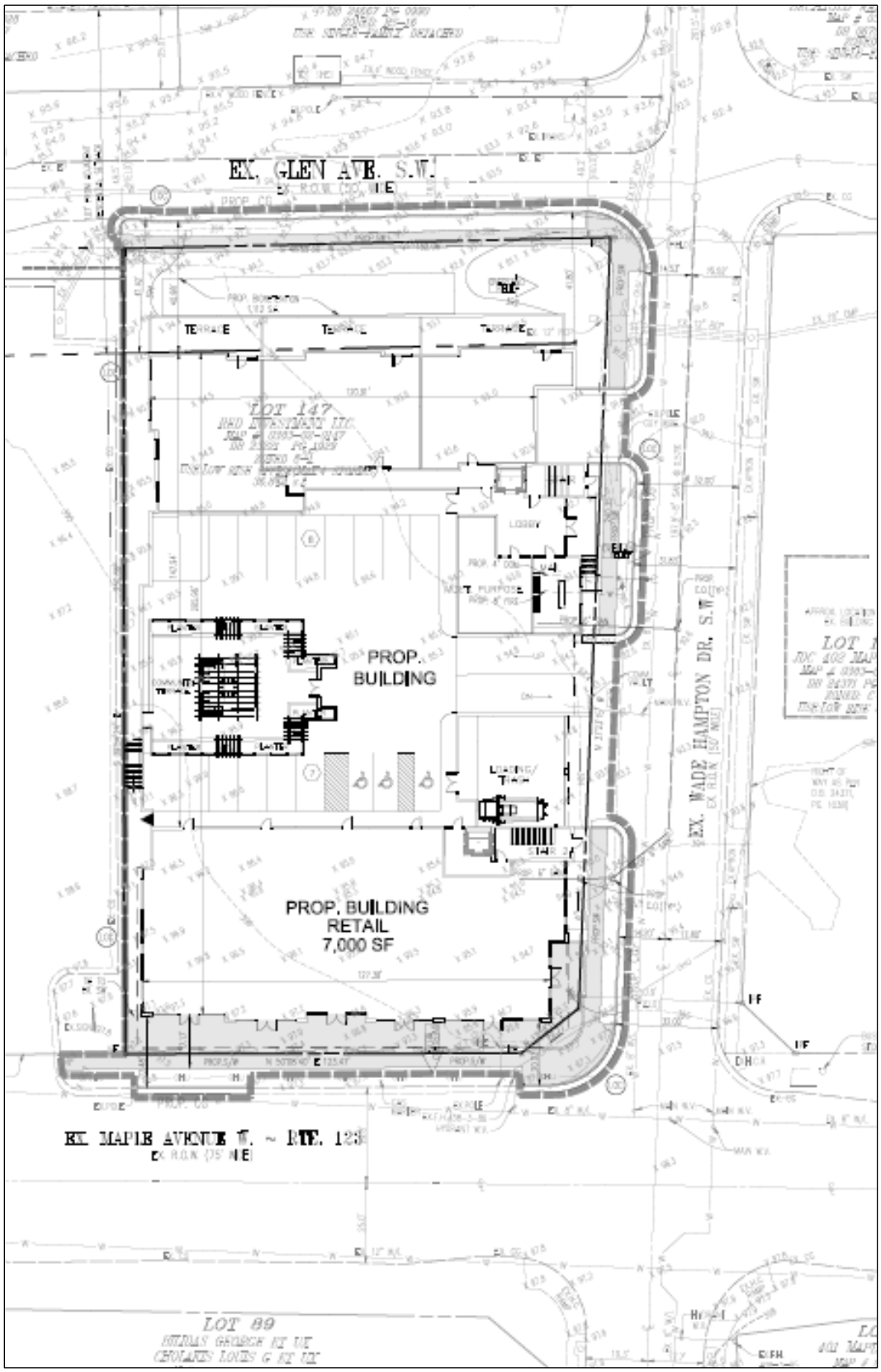


Figure 3: Concept Plan

APPENDIX C: TRAFFIC COUNTS

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Courthouse Rd SW
City: Vienna
Control: Signalized

Project ID: 18-11075-001
Date: 9/11/2018

Total

NS/EW Streets:	Nutley St SW				Nutley St SW				Courthouse Rd SW				Courthouse Rd SW				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	2	52	10	0	0	40	1	0	2	5	21	0	7	4	2	0	146
6:15 AM	7	56	7	0	1	57	0	0	2	5	13	0	15	2	1	0	166
6:30 AM	7	62	23	0	1	85	2	0	4	7	14	0	14	3	1	0	223
6:45 AM	5	88	32	1	2	79	2	0	0	15	37	0	21	7	0	0	289
7:00 AM	3	77	33	0	5	116	3	0	2	22	51	0	19	6	2	0	339
7:15 AM	14	148	35	0	2	125	1	0	3	28	47	0	40	6	6	0	455
7:30 AM	13	158	40	0	2	114	3	0	7	45	83	0	37	8	20	0	530
7:45 AM	19	189	73	2	7	133	2	0	11	53	101	0	35	10	24	0	659
8:00 AM	18	137	62	0	7	131	5	0	7	58	136	0	52	8	12	0	633
8:15 AM	15	185	48	1	4	139	6	0	5	56	77	0	61	10	9	0	616
8:30 AM	14	168	51	1	4	109	2	2	8	66	64	0	45	6	1	0	541
8:45 AM	12	143	51	0	4	113	8	0	6	69	60	0	32	13	5	0	516
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	129	1463	465	5	39	1241	35	2	57	429	704	0	378	83	83	0	5113
APPROACH %'s :	6.26%	70.95%	22.55%	0.24%	2.96%	94.23%	2.66%	0.15%	4.79%	36.05%	59.16%	0.00%	69.49%	15.26%	15.26%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	66	679	234	4	22	512	15	2	31	233	378	0	193	34	46	0	2449
PEAK HR FACTOR :	0.868	0.898	0.801	0.500	0.786	0.921	0.625	0.250	0.705	0.883	0.695	0.000	0.791	0.850	0.479	0.000	0.929
	0.868				0.924				0.799				0.853				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	146	37	0	6	118	5	0	0	15	26	0	52	29	7	0	457
4:15 PM	39	195	31	0	4	166	8	1	1	23	23	0	39	26	6	0	562
4:30 PM	69	182	44	0	4	132	7	0	7	17	24	0	51	37	9	0	583
4:45 PM	52	191	49	0	1	130	9	0	5	29	25	0	45	43	3	0	582
5:00 PM	56	189	49	0	4	168	14	0	12	25	43	0	65	50	9	0	684
5:15 PM	52	221	52	0	1	147	15	0	8	27	25	0	62	62	5	0	677
5:30 PM	60	198	53	0	3	142	14	0	5	26	33	0	36	57	7	0	634
5:45 PM	61	182	49	1	5	108	12	0	9	21	29	0	49	61	12	0	599
6:00 PM	65	205	58	0	6	180	13	0	4	17	28	0	46	55	7	0	684
6:15 PM	48	205	57	0	5	133	10	0	14	33	36	0	49	52	8	0	650
6:30 PM	38	146	43	0	4	136	9	0	16	37	36	0	58	51	10	0	584
6:45 PM	33	153	39	0	1	122	6	1	6	19	14	0	64	37	8	0	503
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	589	2213	561	1	44	1682	122	2	87	289	342	0	616	560	91	0	7199
APPROACH %'s :	17.51%	65.78%	16.68%	0.03%	2.38%	90.92%	6.59%	0.11%	12.12%	40.25%	47.63%	0.00%	48.62%	44.20%	7.18%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	229	790	203	1	13	565	55	0	34	99	130	0	212	230	33	0	2594
PEAK HR FACTOR :	0.939	0.894	0.958	0.250	0.650	0.841	0.917	0.000	0.708	0.917	0.756	0.000	0.815	0.927	0.688	0.000	0.948
	0.941				0.851				0.822				0.921				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Courthouse Rd SW
City: Vienna
Control: Signalized

Project ID: 18-11075-001
Date: 9/11/2018

Cars

AM

NS/EW Streets:	Nutley St SW				Nutley St SW				Courthouse Rd SW				Courthouse Rd SW				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	1	47	10	0	0	38	1	0	2	5	21	0	7	4	2	0	138
6:15 AM	6	50	7	0	1	56	0	0	2	5	13	0	15	2	1	0	158
6:30 AM	6	56	23	0	1	84	2	0	4	5	14	0	14	3	1	0	213
6:45 AM	5	84	31	1	2	76	1	0	0	15	32	0	19	6	0	0	272
7:00 AM	2	72	33	0	4	114	3	0	1	21	49	0	19	6	2	0	326
7:15 AM	14	142	34	0	2	120	1	0	2	28	46	0	40	4	6	0	439
7:30 AM	12	150	40	0	2	111	2	0	7	45	81	0	37	8	17	0	512
7:45 AM	19	182	72	2	7	131	2	0	11	53	100	0	35	10	23	0	647
8:00 AM	18	132	61	0	7	124	5	0	7	58	135	0	51	7	12	0	617
8:15 AM	15	180	47	1	3	134	6	0	5	55	76	0	60	10	8	0	600
8:30 AM	13	161	51	1	3	103	2	2	7	66	64	0	45	5	0	0	523
8:45 AM	11	136	51	0	4	112	7	0	5	69	57	0	31	11	4	0	498
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	122	1392	460	5	36	1203	32	2	53	425	688	0	373	76	76	0	4943
APPROACH %'s :	6.16%	70.34%	23.24%	0.25%	2.83%	94.50%	2.51%	0.16%	4.55%	36.45%	59.01%	0.00%	71.05%	14.48%	14.48%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	65	655	231	4	20	492	15	2	30	232	375	0	191	32	43	0	2387
PEAK HR FACTOR :	0.86	0.900	0.802	0.500	0.714	0.918	0.625	0.250	0.682	0.879	0.694	0.000	0.796	0.800	0.467	0.000	0.922
	0.868				0.925				0.796				0.853				

PM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	16	142	36	0	6	114	5	0	0	15	26	0	52	28	7	0	447
4:15 PM	39	191	30	0	4	158	8	1	1	23	23	0	39	26	4	0	547
4:30 PM	68	179	44	0	4	128	7	0	7	17	24	0	50	36	9	0	573
4:45 PM	51	184	49	0	1	126	9	0	5	28	25	0	45	43	3	0	569
5:00 PM	56	188	49	0	4	163	14	0	12	25	43	0	64	50	9	0	677
5:15 PM	52	219	51	0	1	145	15	0	8	27	25	0	62	62	5	0	672
5:30 PM	59	197	53	0	3	138	13	0	4	26	33	0	36	57	7	0	626
5:45 PM	61	180	49	1	5	106	12	0	9	21	28	0	49	61	12	0	594
6:00 PM	64	203	58	0	6	177	13	0	4	17	27	0	46	55	7	0	677
6:15 PM	48	203	56	0	5	132	10	0	14	33	36	0	49	52	8	0	646
6:30 PM	38	144	43	0	4	135	9	0	16	37	36	0	58	51	10	0	581
6:45 PM	32	152	39	0	1	120	6	1	6	19	14	0	64	37	8	0	499
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	584	2182	557	1	44	1642	121	2	86	288	340	0	614	558	89	0	7108
APPROACH %'s :	17.57%	65.64%	16.76%	0.03%	2.43%	90.77%	6.69%	0.11%	12.04%	40.34%	47.62%	0.00%	48.69%	44.25%	7.06%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	228	784	202	1	13	552	54	0	33	99	129	0	211	230	33	0	2569
PEAK HR FACTOR :	0.93	0.895	0.953	0.250	0.650	0.847	0.900	0.000	0.688	0.917	0.750	0.000	0.824	0.927	0.688	0.000	0.949
	0.943				0.855				0.816				0.919				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Courthouse Rd SW
City: Vienna
Control: Signalized

Project ID: 18-11075-001
Date: 9/11/2018

HT

NS/EW Streets:	Nutley St SW				Nutley St SW				Courthouse Rd SW				Courthouse Rd SW				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	1	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	8
6:15 AM	1	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	8
6:30 AM	1	6	0	0	0	1	0	0	0	2	0	0	0	0	0	0	10
6:45 AM	0	4	1	0	0	3	1	0	0	0	5	0	2	1	0	0	17
7:00 AM	1	5	0	0	1	2	0	0	1	1	2	0	0	0	0	0	13
7:15 AM	0	6	1	0	0	5	0	0	1	0	1	0	0	2	0	0	16
7:30 AM	1	8	0	0	0	3	1	0	0	0	2	0	0	0	3	0	18
7:45 AM	0	7	1	0	0	2	0	0	0	0	1	0	0	0	1	0	12
8:00 AM	0	5	1	0	0	7	0	0	0	0	1	0	1	1	0	0	16
8:15 AM	0	5	1	0	1	5	0	0	0	1	1	0	1	0	1	0	16
8:30 AM	1	7	0	0	1	6	0	0	1	0	0	0	0	1	1	0	18
8:45 AM	1	7	0	0	0	1	1	0	1	0	3	0	1	2	1	0	18
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	71	5	0	3	38	3	0	4	4	16	0	5	7	7	0	170
APPROACH %'s :	8.43%	85.54%	6.02%	0.00%	6.82%	86.36%	6.82%	0.00%	16.67%	16.67%	66.67%	0.00%	26.32%	36.84%	36.84%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	1	24	3	0	2	20	0	0	1	1	3	0	2	2	3	0	62
PEAK HR FACTOR :	0.250	0.857	0.750	0.000	0.500	0.714	0.000	0.000	0.250	0.250	0.750	0.000	0.500	0.500	0.750	0.000	0.861
	0.875				0.786				0.625				0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	4	1	0	0	4	0	0	0	0	0	0	0	1	0	0	10
4:15 PM	0	4	1	0	0	8	0	0	0	0	0	0	0	0	2	0	15
4:30 PM	1	3	0	0	0	4	0	0	0	0	0	0	1	1	0	0	10
4:45 PM	1	7	0	0	0	4	0	0	0	1	0	0	0	0	0	0	13
5:00 PM	0	1	0	0	0	5	0	0	0	0	0	0	1	0	0	0	7
5:15 PM	0	2	1	0	0	2	0	0	0	0	0	0	0	0	0	0	5
5:30 PM	1	1	0	0	0	4	1	0	1	0	0	0	0	0	0	0	8
5:45 PM	0	2	0	0	0	2	0	0	0	0	1	0	0	0	0	0	5
6:00 PM	1	2	0	0	0	3	0	0	0	0	1	0	0	0	0	0	7
6:15 PM	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
6:30 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
6:45 PM	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	31	4	0	0	40	1	0	1	1	2	0	2	2	2	0	91
APPROACH %'s :	12.50%	77.50%	10.00%	0.00%	0.00%	97.56%	2.44%	0.00%	25.00%	25.00%	50.00%	0.00%	33.33%	33.33%	33.33%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	1	6	1	0	0	13	1	0	1	0	1	0	1	0	0	0	25
PEAK HR FACTOR :	0.25	0.750	0.250	0.000	0.000	0.650	0.250	0.000	0.250	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.781
	0.667				0.700				0.500				0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Courthouse Rd SW
City: Vienna
Control: Signalized

Project ID: 18-11075-001
Date: 9/11/2018

Bikes

NS/EW Streets:	Nutley St SW				Nutley St SW				Courthouse Rd SW				Courthouse Rd SW				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	1	0	0	0	4	0	0	0	0	0	0	5
6:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
7:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
7:15 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	2	0	5
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	4	0	0	0	11	0	0	0	3	2	0	21
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	60.00%	40.00%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	1	0	0	0	2	0	0	0	1	0	0	5
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.625
	0.250				0.250				0.250				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
5:15 PM	0	0	0	0	0	3	0	0	1	0	0	0	0	2	1	0	7
5:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4
5:45 PM	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	4
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
6:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
6:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	4	0	0	0	4	0	0	1	9	0	0	0	11	1	0	31
APPROACH %'s :	20.00%	80.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	10.00%	90.00%	0.00%	0.00%	0.00%	91.67%	8.33%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	1	3	0	0	0	3	0	0	1	3	0	0	0	6	1	0	18
PEAK HR FACTOR :	0.25	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.375	0.000	0.000	0.000	0.750	0.250	0.000	0.643
	0.333				0.250				0.500				0.583				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Courthouse Rd SW
City: Vienna

Project ID: 18-11075-001
Date: 9/11/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Nutley St SW		Nutley St SW		Courthouse Rd SW		Courthouse Rd SW		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
6:00 AM	1	0	0	0	0	0	0	1	2
6:15 AM	1	0	4	0	0	1	2	1	9
6:30 AM	0	0	1	0	0	0	1	0	2
6:45 AM	0	1	0	3	0	0	0	1	5
7:00 AM	0	0	0	0	0	0	1	1	2
7:15 AM	0	0	1	1	0	0	0	0	2
7:30 AM	0	2	0	1	0	0	1	0	4
7:45 AM	0	0	2	0	2	1	1	2	8
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	1	0	1	1	0	3
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	2	0	0	0	2	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	3	8	8	2	3	7	8	41
APPROACH %'s :	40.00%	60.00%	50.00%	50.00%	40.00%	60.00%	46.67%	53.33%	
PEAK HR :	07:45 AM - 08:45 AM								TOTAL
PEAK HR VOL :	0	0	2	1	2	2	2	2	11
PEAK HR FACTOR :			0.250	0.250	0.250	0.500	0.500	0.250	0.344
			0.375		0.333		0.333		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	3	1	2	0	0	0	6
4:15 PM	0	0	10	0	0	0	1	0	11
4:30 PM	0	0	0	4	1	0	0	1	6
4:45 PM	1	0	1	0	0	0	1	0	3
5:00 PM	0	0	3	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	3	0	3
5:30 PM	0	0	0	0	0	1	2	0	3
5:45 PM	0	0	0	0	0	1	1	0	2
6:00 PM	0	0	3	0	0	0	0	0	3
6:15 PM	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	4	0	0	0	3	7
6:45 PM	0	1	0	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	1	20	9	3	2	8	4	48
APPROACH %'s :	50.00%	50.00%	68.97%	31.03%	60.00%	40.00%	66.67%	33.33%	
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	0	0	3	0	0	2	6	0	11
PEAK HR FACTOR :			0.250			0.500	0.500		0.917
			0.250		0.500		0.500		

Prepared by National Data & Surveying Services

Nutley St SW & Courthouse Rd SW

Peak Hour Turning Movement Count

ID: 18-11075-001
City: Vienna

Day: Tuesday
Date: 09/11/2018

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	06:00 AM - 10:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 07:00 PM

Nutley St SW — SOUTHBOUND

AM	15	512	22	2	758	AM
NOON	0	0	0	0	0	NOON
PM	55	565	13	0	857	PM
	0	3	0	0		

Courthouse Rd SW — EASTBOUND

AM	NOON	PM	
115	0	514	
0	0	0	0
31	0	34	0.5
233	0	99	0.5
378	0	130	1

Courthouse Rd SW — WESTBOUND

PM	NOON	AM	
33	0	46	0.5
230	0	34	0.5
212	0	193	1
0	0	0	0
315	0	489	

CONTROL

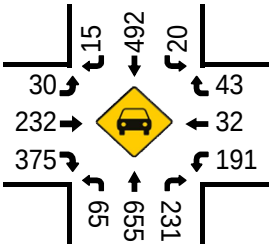
Signalized

	AM	NOON	PM
TEV	2449	0	2594
PHF	0.93		0.95

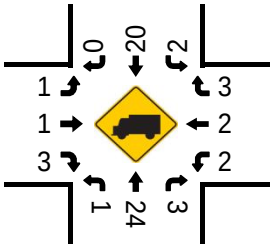
Nutley St SW — NORTHBOUND

	0	0	3	0		
PM	908	1	229	790	203	PM
NOON	0	0	0	0	0	NOON
AM	1087	4	66	679	234	AM

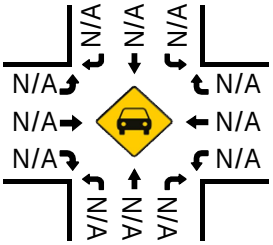
Cars (AM)



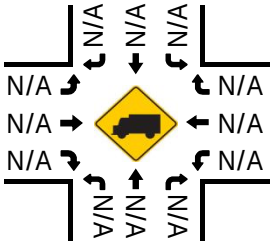
HT (AM)



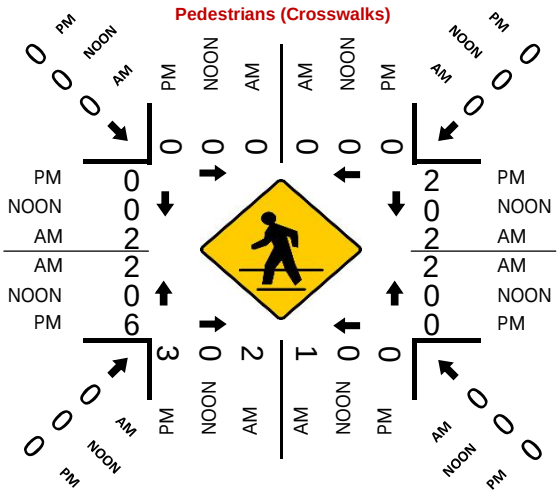
Cars (NOON)



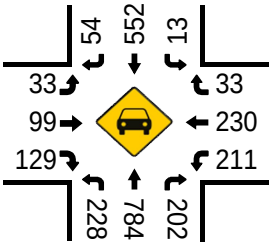
HT (NOON)



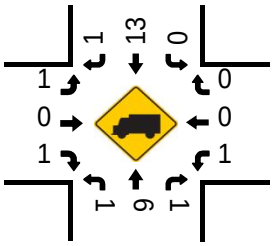
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Maple Ave W
City: Vienna
Control: Signalized

Project ID: 18-11075-002
Date: 9/11/2018

Total

NS/EW Streets:	Nutley St SW				Nutley St SW				Maple Ave W				Maple Ave W				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	18	5	26	0	1	7	0	0	2	114	21	0	11	26	0	0	231
6:15 AM	14	6	38	1	3	14	1	0	0	158	22	0	17	20	1	0	295
6:30 AM	24	7	33	0	1	29	3	0	1	192	29	0	28	48	3	0	398
6:45 AM	20	8	43	0	11	34	1	0	1	266	27	0	19	58	1	0	489
7:00 AM	42	8	45	1	8	52	3	0	0	220	30	0	33	50	1	0	493
7:15 AM	55	26	45	2	7	65	2	0	4	267	20	0	26	104	4	0	627
7:30 AM	87	33	74	0	19	80	1	0	2	212	25	0	29	170	7	0	739
7:45 AM	82	44	90	1	19	58	11	0	10	213	25	0	37	164	22	0	776
8:00 AM	40	31	87	2	22	80	9	0	4	221	37	0	39	92	17	0	681
8:15 AM	47	53	101	0	12	54	2	0	2	211	27	0	39	83	5	0	636
8:30 AM	31	35	92	0	15	58	3	0	2	243	26	0	32	85	8	0	630
8:45 AM	31	40	93	3	13	59	10	0	0	222	24	0	24	83	6	0	608
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	491	296	767	10	131	590	46	0	28	2539	313	0	334	983	75	0	6603
APPROACH %'s :	31.39%	18.93%	49.04%	0.64%	17.08%	76.92%	6.00%	0.00%	0.97%	88.16%	10.87%	0.00%	23.99%	70.62%	5.39%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	256	161	352	3	72	272	23	0	18	857	114	0	144	509	51	0	2832
PEAK HR FACTOR :	0.736	0.759	0.871	0.375	0.818	0.850	0.523	0.000	0.450	0.969	0.770	0.000	0.923	0.749	0.580	0.000	0.912
	0.889				0.827				0.944				0.789				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	59	43	67	0	26	39	12	0	11	87	40	0	59	222	10	0	675
4:15 PM	53	32	71	3	31	50	2	0	3	130	38	0	75	286	11	0	785
4:30 PM	77	50	78	1	13	44	7	0	8	129	37	0	56	279	7	0	786
4:45 PM	64	54	87	0	18	48	5	0	3	124	30	0	56	283	5	0	777
5:00 PM	71	37	73	2	19	64	5	0	6	139	42	0	75	308	19	0	860
5:15 PM	69	58	98	0	16	56	6	0	9	113	28	1	73	282	9	0	818
5:30 PM	65	48	79	0	20	50	4	0	8	118	43	0	58	276	11	0	780
5:45 PM	64	56	94	1	12	35	3	0	4	124	42	0	58	301	13	0	807
6:00 PM	62	51	80	0	13	77	3	0	8	95	49	0	62	271	6	0	777
6:15 PM	73	38	101	0	12	50	7	0	7	141	34	0	62	304	13	0	842
6:30 PM	60	52	83	1	17	39	3	0	9	131	40	0	60	302	12	0	809
6:45 PM	67	50	60	1	20	36	10	0	7	134	38	0	55	263	9	0	750
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	784	569	971	9	217	588	67	0	83	1465	461	1	749	3377	125	0	9466
APPROACH %'s :	33.60%	24.39%	41.62%	0.39%	24.89%	67.43%	7.68%	0.00%	4.13%	72.89%	22.94%	0.05%	17.62%	79.44%	2.94%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	269	199	344	3	67	205	18	0	27	494	155	1	264	1167	52	0	3265
PEAK HR FACTOR :	0.947	0.858	0.878	0.375	0.838	0.801	0.750	0.000	0.750	0.888	0.901	0.250	0.880	0.947	0.684	0.000	0.949
	0.906				0.824				0.905				0.922				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Maple Ave W
City: Vienna
Control: Signalized

Project ID: 18-11075-002
Date: 9/11/2018

Cars

AM

NS/EW Streets:	Nutley St SW				Nutley St SW				Maple Ave W				Maple Ave W				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	15	5	24	0	1	7	0	0	2	113	20	0	10	26	0	0	223
6:15 AM	12	6	35	1	3	14	1	0	0	154	21	0	17	20	1	0	285
6:30 AM	20	6	31	0	1	29	2	0	1	190	29	0	27	44	3	0	383
6:45 AM	19	8	41	0	11	32	1	0	1	265	25	0	18	54	1	0	476
7:00 AM	39	8	42	1	6	51	3	0	0	218	30	0	32	47	1	0	478
7:15 AM	50	26	43	2	7	64	2	0	4	262	19	0	24	100	4	0	607
7:30 AM	80	31	73	0	16	79	1	0	2	207	25	0	25	167	6	0	712
7:45 AM	78	44	88	1	16	57	11	0	10	207	25	0	37	152	21	0	747
8:00 AM	36	31	85	2	21	79	8	0	4	219	35	0	33	85	16	0	654
8:15 AM	46	50	97	0	12	52	2	0	2	204	26	0	37	80	4	0	612
8:30 AM	28	34	88	0	15	57	3	0	1	236	24	0	28	82	8	0	604
8:45 AM	30	40	86	3	12	58	9	0	0	218	23	0	24	80	6	0	589
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	453	289	733	10	121	579	43	0	27	2493	302	0	312	937	71	0	6370
APPROACH %'s :	30.51%	19.46%	49.36%	0.67%	16.29%	77.93%	5.79%	0.00%	0.96%	88.34%	10.70%	0.00%	23.64%	70.98%	5.38%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	240	156	343	3	65	267	22	0	18	837	111	0	132	484	47	0	2725
PEAK HR FACTOR :	0.75	0.780	0.884	0.375	0.774	0.845	0.500	0.000	0.450	0.955	0.793	0.000	0.892	0.725	0.560	0.000	0.912
	0.879				0.819				0.936				0.789				

PM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	56	43	66	0	24	39	11	0	11	84	40	0	56	219	10	0	659
4:15 PM	51	32	69	3	30	49	2	0	3	127	32	0	73	281	11	0	763
4:30 PM	76	50	75	1	13	44	7	0	8	129	35	0	54	277	6	0	775
4:45 PM	61	53	85	0	18	47	4	0	3	124	29	0	53	280	5	0	762
5:00 PM	70	36	73	2	19	63	5	0	6	136	41	0	72	305	19	0	847
5:15 PM	68	58	97	0	16	56	6	0	9	113	27	1	72	278	9	0	810
5:30 PM	64	48	79	0	20	49	4	0	8	117	40	0	57	274	11	0	771
5:45 PM	62	56	93	1	12	35	3	0	4	124	41	0	57	301	13	0	802
6:00 PM	62	51	80	0	13	77	3	0	8	94	48	0	60	270	6	0	772
6:15 PM	70	38	99	0	12	50	7	0	7	139	34	0	61	303	13	0	833
6:30 PM	60	52	82	1	17	39	3	0	9	131	39	0	60	301	12	0	806
6:45 PM	66	50	59	1	20	36	9	0	7	134	37	0	54	261	9	0	743
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	766	567	957	9	214	584	64	0	83	1452	443	1	729	3350	124	0	9343
APPROACH %'s :	33.32%	24.66%	41.63%	0.39%	24.83%	67.75%	7.42%	0.00%	4.19%	73.37%	22.39%	0.05%	17.34%	79.70%	2.95%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	264	198	342	3	67	203	18	0	27	490	149	1	258	1158	52	0	3230
PEAK HR FACTOR :	0.94	0.853	0.881	0.375	0.838	0.806	0.750	0.000	0.750	0.901	0.909	0.250	0.896	0.949	0.684	0.000	0.953
	0.905				0.828				0.911				0.927				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Maple Ave W
City: Vienna
Control: Signalized

Project ID: 18-11075-002
Date: 9/11/2018

HT

NS/EW Streets:	Nutley St SW				Nutley St SW				Maple Ave W				Maple Ave W				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	3	0	2	0	0	0	0	0	0	1	1	0	1	0	0	0	8
6:15 AM	2	0	3	0	0	0	0	0	0	4	1	0	0	0	0	0	10
6:30 AM	4	1	2	0	0	0	1	0	0	2	0	0	1	4	0	0	15
6:45 AM	1	0	2	0	0	2	0	0	0	1	2	0	1	4	0	0	13
7:00 AM	3	0	3	0	2	1	0	0	0	2	0	0	1	3	0	0	15
7:15 AM	5	0	2	0	0	1	0	0	0	5	1	0	2	4	0	0	20
7:30 AM	7	2	1	0	3	1	0	0	0	5	0	0	4	3	1	0	27
7:45 AM	4	0	2	0	3	1	0	0	0	6	0	0	0	12	1	0	29
8:00 AM	4	0	2	0	1	1	1	0	0	2	2	0	6	7	1	0	27
8:15 AM	1	3	4	0	0	2	0	0	0	7	1	0	2	3	1	0	24
8:30 AM	3	1	4	0	0	1	0	0	1	7	2	0	4	3	0	0	26
8:45 AM	1	0	7	0	1	1	1	0	0	4	1	0	0	3	0	0	19
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	38	7	34	0	10	11	3	0	1	46	11	0	22	46	4	0	233
APPROACH %'s :	48.10%	8.86%	43.04%	0.00%	41.67%	45.83%	12.50%	0.00%	1.72%	79.31%	18.97%	0.00%	30.56%	63.89%	5.56%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	16	5	9	0	7	5	1	0	0	20	3	0	12	25	4	0	107
PEAK HR FACTOR :	0.571	0.417	0.563	0.000	0.583	0.625	0.250	0.000	0.000	0.714	0.375	0.000	0.500	0.521	1.000	0.000	0.922
	0.750				0.813				0.719				0.732				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	0	1	0	2	0	1	0	0	3	0	0	3	3	0	0	16
4:15 PM	2	0	2	0	1	1	0	0	0	3	6	0	2	5	0	0	22
4:30 PM	1	0	3	0	0	0	0	0	0	0	2	0	2	2	1	0	11
4:45 PM	3	1	2	0	0	1	1	0	0	0	1	0	3	3	0	0	15
5:00 PM	1	1	0	0	0	1	0	0	0	3	1	0	3	3	0	0	13
5:15 PM	1	0	1	0	0	0	0	0	0	0	1	0	1	4	0	0	8
5:30 PM	1	0	0	0	0	1	0	0	0	1	3	0	1	2	0	0	9
5:45 PM	2	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	5
6:00 PM	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	5
6:15 PM	3	0	2	0	0	0	0	0	0	2	0	0	1	1	0	0	9
6:30 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	3
6:45 PM	1	0	1	0	0	0	1	0	0	0	1	0	1	2	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	18	2	14	0	3	4	3	0	0	13	18	0	20	27	1	0	123
APPROACH %'s :	52.94%	5.88%	41.18%	0.00%	30.00%	40.00%	30.00%	0.00%	0.00%	41.94%	58.06%	0.00%	41.67%	56.25%	2.08%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	5	1	2	0	0	2	0	0	0	4	6	0	6	9	0	0	35
PEAK HR FACTOR :	0.63	0.250	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.333	0.500	0.000	0.500	0.563	0.000	0.000	0.673
	0.667				0.500				0.625				0.625				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Maple Ave W
City: Vienna
Control: Signalized

Project ID: 18-11075-002
Date: 9/11/2018

Bikes

NS/EW Streets:	Nutley St SW				Nutley St SW				Maple Ave W				Maple Ave W				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
7:30 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
7:45 AM	1	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	3	0	0	0	3	0	0	0	5	1	0	0	4	0	0	17
APPROACH %'s :	25.00%	75.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	83.33%	16.67%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	3	0	0	0	1	0	0	0	3	0	0	0	2	0	0	10
PEAK HR FACTOR :	0.250	0.375	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.500	0.000	0.000	0.625
	0.500				0.250				0.375				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
5:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	0	0	0	1	0	0	0	1	0	0	3	7	0	0	16
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	30.00%	70.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	4	0	0	0	0	0	0	0	1	0	0	3	1	0	0	9
PEAK HR FACTOR :	0.00	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.375	0.250	0.000	0.000	0.750
	0.333								0.250				0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Maple Ave W
City: Vienna

Project ID: 18-11075-002
Date: 9/11/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Nutley St SW		Nutley St SW		Maple Ave W		Maple Ave W		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
6:00 AM	3	0	0	1	1	0	0	0	5
6:15 AM	0	0	0	0	0	0	0	0	0
6:30 AM	0	2	1	0	0	0	1	0	4
6:45 AM	2	0	0	0	0	2	0	1	5
7:00 AM	3	2	0	1	1	1	1	0	9
7:15 AM	5	1	1	0	0	1	0	2	10
7:30 AM	1	0	0	0	4	0	4	0	9
7:45 AM	4	0	0	0	12	0	3	1	20
8:00 AM	2	1	0	0	2	0	0	1	6
8:15 AM	1	0	0	0	0	0	0	0	1
8:30 AM	1	1	0	0	2	0	1	0	5
8:45 AM	2	0	1	0	0	1	0	3	7
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	24	7	3	2	22	5	10	8	81
APPROACH %'s :	77.42%	22.58%	60.00%	40.00%	81.48%	18.52%	55.56%	44.44%	
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	8	1	0	0	18	0	7	2	36
PEAK HR FACTOR :	0.500	0.250			0.375		0.438	0.500	0.450
	0.563				0.375		0.563		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	4	1	1	3	0	1	3	2	15
4:15 PM	4	0	0	0	0	1	0	0	5
4:30 PM	2	0	5	2	0	1	0	0	10
4:45 PM	2	5	0	0	4	0	0	1	12
5:00 PM	0	3	1	2	0	0	3	3	12
5:15 PM	2	2	1	0	0	1	2	2	10
5:30 PM	2	1	0	1	1	2	0	0	7
5:45 PM	2	2	2	0	0	0	0	0	6
6:00 PM	0	1	0	0	0	0	0	1	2
6:15 PM	0	1	0	0	0	0	0	0	1
6:30 PM	1	1	0	0	0	0	0	2	4
6:45 PM	2	1	0	0	0	1	0	0	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	21	18	10	8	5	7	8	11	88
APPROACH %'s :	53.85%	46.15%	55.56%	44.44%	41.67%	58.33%	42.11%	57.89%	
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	6	8	4	3	1	3	5	5	35
PEAK HR FACTOR :	0.750	0.667	0.500	0.375	0.250	0.375	0.417	0.417	0.729
	0.875		0.583		0.333		0.417		

Prepared by National Data & Surveying Services

Nutley St SW & Maple Ave W

Peak Hour Turning Movement Count

ID: 18-11075-002
City: Vienna

Day: Tuesday
Date: 09/11/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	06:00 AM - 10:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 07:00 PM

Nutley St SW — SOUTHBOUND

AM	23	272	72	0	230	AM
NOON	0	0	0	0	0	NOON
PM	18	205	67	0	278	PM
	0.5	0.5	1	0		

Maple Ave W — EASTBOUND

AM	NOON	PM	
788	0	1455	
0	0	1	0
18	0	27	1
857	0	494	2
114	0	155	0
AM	NOON	PM	

Maple Ave W — WESTBOUND

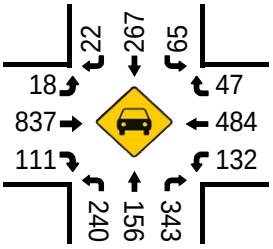
	PM	NOON	AM
0	52	0	51
2	1167	0	509
1	264	0	144
0	0	0	0
	905	0	1281
	PM	NOON	AM

Nutley St SW — NORTHBOUND

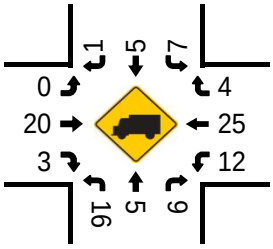
	0	1.5	0.5	1		
PM	627	3	269	199	344	PM
NOON	0	0	0	0	0	NOON
AM	533	3	256	161	352	AM

CONTROL			
Signalized			
TEV	2832	0	3265
	AM	NOON	PM
PHF	0.91		0.95

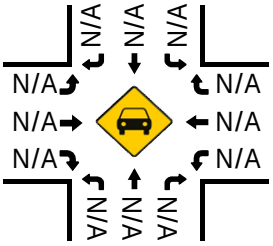
Cars (AM)



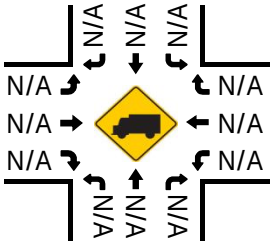
HT (AM)



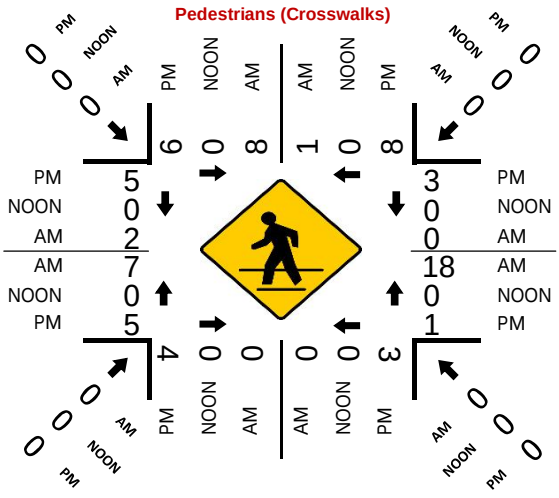
Cars (NOON)



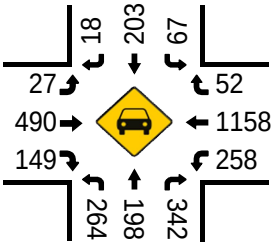
HT (NOON)



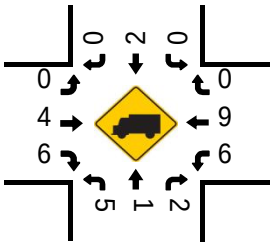
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW/Lewis St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-003
Date: 9/13/2018

Total

NS/EW Streets:	Wade Hampton Dr SW/Lewis St NW				Wade Hampton Dr SW/Lewis St NW				Maple Ave W				Maple Ave W				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	4	0	4	138	0	0	0	31	0	0	177
6:15 AM	0	0	1	0	0	1	3	0	3	163	1	0	1	39	0	0	212
6:30 AM	0	0	0	0	0	0	11	0	6	227	1	0	0	55	1	0	301
6:45 AM	1	0	1	0	1	0	5	0	6	343	0	0	0	66	3	0	426
7:00 AM	0	0	4	0	1	1	6	0	3	262	0	0	1	75	1	0	354
7:15 AM	0	1	4	0	2	1	11	0	11	320	1	0	2	132	4	0	489
7:30 AM	1	1	2	0	1	0	17	0	14	323	5	0	2	190	7	0	563
7:45 AM	1	4	0	0	3	0	14	0	29	305	2	0	2	192	10	0	562
8:00 AM	0	1	6	0	4	0	17	0	31	316	4	0	2	111	5	0	497
8:15 AM	1	2	3	0	5	2	19	0	19	285	2	0	3	115	2	0	458
8:30 AM	0	1	2	0	2	0	9	0	28	346	3	0	1	133	7	0	532
8:45 AM	0	2	3	0	0	0	8	0	30	297	7	0	5	115	10	0	477
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	12	26	0	19	5	124	0	184	3325	26	0	19	1254	50	0	5048
APPROACH %'s :	9.52%	28.57%	61.90%	0.00%	12.84%	3.38%	83.78%	0.00%	5.21%	94.06%	0.74%	0.00%	1.44%	94.78%	3.78%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	2	7	12	0	10	1	59	0	85	1264	12	0	8	625	26	0	2111
PEAK HR FACTOR :	0.500	0.438	0.500	0.000	0.625	0.250	0.868	0.000	0.685	0.978	0.600	0.000	1.000	0.814	0.650	0.000	0.937
	0.750				0.833				0.969				0.808				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	0	5	0	5	0	8	0	15	247	5	0	1	334	10	0	632
4:15 PM	1	0	10	0	0	0	15	0	9	239	4	0	3	302	4	0	587
4:30 PM	1	1	2	0	1	0	12	0	17	230	3	0	1	342	4	0	614
4:45 PM	2	0	4	0	2	0	13	0	12	234	2	0	2	330	7	0	608
5:00 PM	1	0	5	0	0	0	10	0	19	183	2	0	4	343	12	0	579
5:15 PM	1	0	9	0	2	0	5	0	19	244	2	0	2	365	6	1	656
5:30 PM	1	1	9	0	1	0	7	0	22	240	3	0	1	316	5	0	606
5:45 PM	0	0	7	0	0	0	11	0	18	209	2	0	2	379	3	0	631
6:00 PM	2	0	6	0	2	1	9	0	29	204	6	0	2	346	2	0	609
6:15 PM	0	0	2	0	3	0	15	0	15	210	1	0	2	327	1	0	576
6:30 PM	1	0	7	0	0	0	8	0	7	190	0	0	0	348	7	0	568
6:45 PM	1	0	8	0	2	0	7	0	13	185	0	0	3	343	2	0	564
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	13	2	74	0	18	1	120	0	195	2615	30	0	23	4075	63	1	7230
APPROACH %'s :	14.61%	2.25%	83.15%	0.00%	12.95%	0.72%	86.33%	0.00%	6.87%	92.08%	1.06%	0.00%	0.55%	97.91%	1.51%	0.02%	
PEAK HR :	05:15 PM - 06:15 PM																TOTAL
PEAK HR VOL :	4	1	31	0	5	1	32	0	88	897	13	0	7	1406	16	1	2502
PEAK HR FACTOR :	0.500	0.250	0.861	0.000	0.625	0.250	0.727	0.000	0.759	0.919	0.542	0.000	0.875	0.927	0.667	0.250	0.954
	0.818				0.792				0.942				0.931				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW/Lewis St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-003
Date: 9/13/2018

Cars

NS/EW Streets:	Wade Hampton Dr SW/Lewis St NW				Wade Hampton Dr SW/Lewis St NW				Maple Ave W				Maple Ave W				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	4	0	4	136	0	0	0	31	0	0	175
6:15 AM	0	0	1	0	0	1	3	0	3	158	0	0	1	34	0	0	201
6:30 AM	0	0	0	0	0	0	11	0	6	220	1	0	0	51	1	0	290
6:45 AM	1	0	1	0	1	0	5	0	6	332	0	0	0	63	3	0	412
7:00 AM	0	0	4	0	1	1	6	0	3	252	0	0	1	71	1	0	340
7:15 AM	0	1	3	0	2	1	11	0	11	311	1	0	2	127	4	0	474
7:30 AM	1	1	2	0	1	0	17	0	14	309	5	0	2	181	7	0	540
7:45 AM	1	4	0	0	3	0	14	0	29	295	2	0	2	182	10	0	542
8:00 AM	0	1	6	0	4	0	15	0	31	306	4	0	2	104	5	0	478
8:15 AM	1	2	3	0	5	2	19	0	19	282	2	0	3	111	2	0	451
8:30 AM	0	1	2	0	2	0	9	0	27	337	3	0	1	128	7	0	517
8:45 AM	0	2	3	0	0	0	7	0	30	284	7	0	5	110	8	0	456
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	12	25	0	19	5	121	0	183	3222	25	0	19	1193	48	0	4876
APPROACH %'s :	9.76%	29.27%	60.98%	0.00%	13.10%	3.45%	83.45%	0.00%	5.34%	93.94%	0.73%	0.00%	1.51%	94.68%	3.81%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	2	7	11	0	10	1	57	0	85	1221	12	0	8	594	26	0	2034
PEAK HR FACTOR :	0.50	0.438	0.458	0.000	0.625	0.250	0.838	0.000	0.685	0.982	0.600	0.000	1.000	0.816	0.650	0.000	0.938
	0.714				0.895				0.966				0.809				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	0	5	0	5	0	8	0	15	240	5	0	1	326	10	0	617
4:15 PM	1	0	10	0	0	0	15	0	9	237	4	0	3	299	4	0	582
4:30 PM	1	1	2	0	1	0	11	0	17	224	3	0	1	334	3	0	598
4:45 PM	2	0	4	0	2	0	12	0	12	228	2	0	2	328	7	0	599
5:00 PM	1	0	5	0	0	0	10	0	19	180	2	0	4	338	12	0	571
5:15 PM	1	0	9	0	2	0	5	0	19	241	2	0	2	363	6	1	651
5:30 PM	1	1	9	0	1	0	7	0	22	239	3	0	1	310	5	0	599
5:45 PM	0	0	7	0	0	0	11	0	18	208	2	0	2	375	3	0	626
6:00 PM	2	0	6	0	2	1	9	0	29	201	6	0	2	343	2	0	603
6:15 PM	0	0	2	0	3	0	15	0	15	209	1	0	2	323	1	0	571
6:30 PM	1	0	7	0	0	0	8	0	7	188	0	0	0	345	7	0	563
6:45 PM	1	0	7	0	2	0	7	0	13	182	0	0	2	339	2	0	555
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	13	2	73	0	18	1	118	0	195	2577	30	0	22	4023	62	1	7135
APPROACH %'s :	14.77%	2.27%	82.95%	0.00%	13.14%	0.73%	86.13%	0.00%	6.96%	91.97%	1.07%	0.00%	0.54%	97.93%	1.51%	0.02%	
PEAK HR :	05:15 PM - 06:15 PM																TOTAL
PEAK HR VOL :	4	1	31	0	5	1	32	0	88	889	13	0	7	1391	16	1	2479
PEAK HR FACTOR :	0.50	0.250	0.861	0.000	0.625	0.250	0.727	0.000	0.759	0.922	0.542	0.000	0.875	0.927	0.667	0.250	0.952
	0.818				0.792				0.938				0.931				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW/Lewis St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-003
Date: 9/13/2018

HT

NS/EW Streets:	Wade Hampton Dr SW/Lewis St NW				Wade Hampton Dr SW/Lewis St NW				Maple Ave W				Maple Ave W				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
6:15 AM	0	0	0	0	0	0	0	0	0	5	1	0	0	5	0	0	11
6:30 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	4	0	0	11
6:45 AM	0	0	0	0	0	0	0	0	0	11	0	0	0	3	0	0	14
7:00 AM	0	0	0	0	0	0	0	0	0	10	0	0	0	4	0	0	14
7:15 AM	0	0	1	0	0	0	0	0	0	9	0	0	0	5	0	0	15
7:30 AM	0	0	0	0	0	0	0	0	0	14	0	0	0	9	0	0	23
7:45 AM	0	0	0	0	0	0	0	0	0	10	0	0	0	10	0	0	20
8:00 AM	0	0	0	0	0	0	2	0	0	10	0	0	0	7	0	0	19
8:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	0	7
8:30 AM	0	0	0	0	0	0	0	0	1	9	0	0	0	5	0	0	15
8:45 AM	0	0	0	0	0	0	1	0	0	13	0	0	0	5	2	0	21
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	3	0	1	103	1	0	0	61	2	0	172
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.95%	98.10%	0.95%	0.00%	0.00%	96.83%	3.17%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	2	0	0	43	0	0	0	31	0	0	77
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.768	0.000	0.000	0.000	0.775	0.000	0.000	0.837
	0.250				0.250				0.768				0.775				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	8	0	0	15
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5
4:30 PM	0	0	0	0	0	0	1	0	0	6	0	0	0	8	1	0	16
4:45 PM	0	0	0	0	0	0	1	0	0	6	0	0	0	2	0	0	9
5:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0	0	8
5:15 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	6	0	0	7
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	5
6:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6
6:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	5
6:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5
6:45 PM	0	0	1	0	0	0	0	0	0	3	0	0	1	4	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	2	0	0	38	0	0	1	52	1	0	95
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	1.85%	96.30%	1.85%	0.00%	
PEAK HR :	05:15 PM - 06:15 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	8	0	0	0	15	0	0	23
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.625	0.000	0.000	0.821
									0.667				0.625				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW/Lewis St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-003
Date: 9/13/2018

Bikes

NS/EW Streets:	Wade Hampton Dr SW/Lewis St NW				Wade Hampton Dr SW/Lewis St NW				Maple Ave W				Maple Ave W				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	1	2	0	0	0	2	0	0	5
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	3	8	0	0	0	4	0	0	15
APPROACH %'s :									27.27%	72.73%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	2	4	0	0	0	4	0	0	10
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.500
									0.500				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	1	0	0	7	0	0	0	9	0	0	17
APPROACH %'s :					0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:15 PM - 06:15 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	3	0	0	0	6	0	0	9
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.750	0.000	0.000	0.563
									0.375				0.750				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW/Lewis St NW & Maple Ave W
City: Vienna

Project ID: 18-11075-003
Date: 9/13/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Wade Hampton Dr SW/Lewis St NW		Wade Hampton Dr SW/Lewis St NW		Maple Ave W		Maple Ave W		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
6:00 AM	1	1	0	0	0	0	0	0	2
6:15 AM	0	1	0	1	0	0	0	0	2
6:30 AM	0	0	1	0	0	0	0	0	1
6:45 AM	0	0	0	0	0	0	0	0	0
7:00 AM	1	0	0	1	0	0	0	0	2
7:15 AM	1	1	2	0	0	0	0	0	4
7:30 AM	1	0	0	3	0	0	0	0	4
7:45 AM	2	0	0	0	0	0	0	0	2
8:00 AM	2	0	0	0	0	0	0	0	2
8:15 AM	1	1	0	1	0	0	0	0	3
8:30 AM	0	1	2	0	0	0	0	0	3
8:45 AM	2	0	0	0	0	0	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	11	5	5	6	0	0	0	0	27
APPROACH %'s :	68.75%	31.25%	45.45%	54.55%					
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	6	1	2	3	0	0	0	0	12
PEAK HR FACTOR :	0.750	0.250	0.250	0.250					0.750
	0.875		0.417						

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	3	2	1	2	0	0	0	0	8
4:15 PM	4	0	2	0	0	0	0	0	6
4:30 PM	1	1	0	0	0	0	0	0	2
4:45 PM	4	1	0	1	0	0	0	0	6
5:00 PM	1	0	1	1	0	1	0	0	4
5:15 PM	0	3	0	0	0	0	0	0	3
5:30 PM	0	3	0	0	0	0	0	0	3
5:45 PM	0	2	1	0	0	0	0	0	3
6:00 PM	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	2	2	0	0	0	0	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	13	12	7	6	0	1	0	0	39
APPROACH %'s :	52.00%	48.00%	53.85%	46.15%	0.00%	100.00%			
PEAK HR :	05:15 PM - 06:15 PM								TOTAL
PEAK HR VOL :	0	8	1	0	0	0	0	0	9
PEAK HR FACTOR :		0.667	0.250						0.750
	0.667		0.250						

Prepared by National Data & Surveying Services

Wade Hampton Dr SW/ Lewis St NW & Maple Ave W

Peak Hour Turning Movement Count

ID: 18-11075-003
City: Vienna

Day: Thursday
Date: 09/13/2018

PEAK HOURS

07:15 AM - 08:15 AM	
NONE	
05:15 PM - 06:15 PM	

COUNT PERIODS

06:00 AM - 10:00 AM	
NONE	
04:00 PM - 07:00 PM	

SOUTHBOUND — Wade Hampton Dr SW/Lewis St NW

AM	59	1	10	0	118	AM
NOON	0	0	0	0	0	NOON
PM	32	1	5	0	105	PM
	0	1	0	0		

EASTBOUND — Maple Ave W

AM	NOON	PM	
686	0	1442	
0	0	0	0
85	0	88	1
1264	0	897	2
12	0	13	0
AM	NOON	PM	

WESTBOUND — Maple Ave W

PM	NOON	AM	
16	0	26	0
1406	0	625	2
7	0	8	1
1	0	0	0
934	0	1286	
PM	NOON	AM	

NORTHBOUND — Wade Hampton Dr SW/Lewis St NW

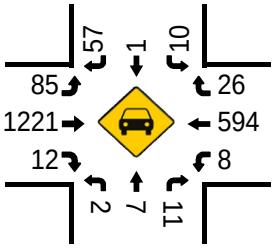
PM	21	0	4	1	31	PM
NOON	0	0	0	0	0	NOON
AM	21	0	2	7	12	AM
		0	0	1	0	

CONTROL

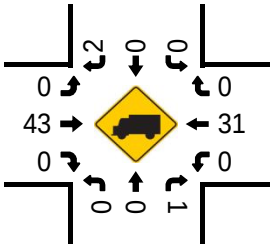
2-Way Stop(NB/SB)

TEV	2111	0	2502
	AM	NOON	PM
PHF	0.94		0.95

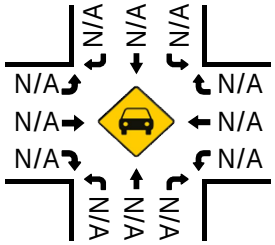
Cars (AM)



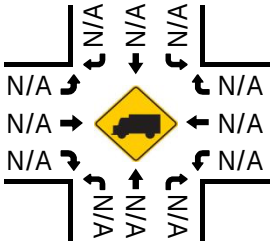
HT (AM)



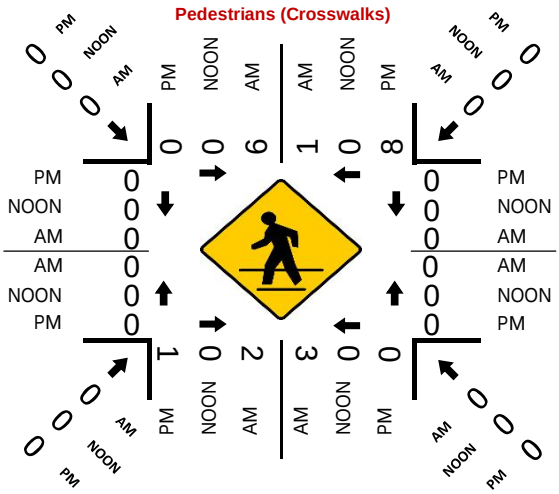
Cars (NOON)



HT (NOON)



Pedestrians (Crosswalks)


PM
NOON
AM
0
0
0
0

National Data & Surveying Services

Intersection Turning Movement Count

Location: Pleasant St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-004
Date: 9/14/2018

Total

NS/EW Streets:	Pleasant St NW				Pleasant St NW				Maple Ave W				Maple Ave W				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	3	0	2	0	0	0	0	0	2	128	0	0	0	40	4	0	179
6:15 AM	0	3	2	0	0	0	0	0	1	153	1	0	2	35	1	0	198
6:30 AM	1	0	1	0	1	0	3	0	4	207	6	0	2	60	1	0	286
6:45 AM	0	3	4	0	0	1	2	0	5	288	8	0	6	73	0	0	390
7:00 AM	1	0	4	0	3	0	3	0	4	297	7	0	3	120	0	0	442
7:15 AM	3	2	6	0	0	0	6	0	9	253	4	0	2	139	2	0	426
7:30 AM	11	2	4	0	0	0	2	0	9	233	8	1	0	201	2	0	473
7:45 AM	4	1	7	0	3	2	7	0	22	283	8	0	5	239	14	0	595
8:00 AM	3	2	5	0	1	1	7	0	8	290	10	0	5	149	7	0	488
8:15 AM	0	0	4	0	0	2	4	0	5	269	5	0	6	137	5	0	437
8:30 AM	2	1	3	0	2	0	5	0	8	285	10	0	3	144	6	0	469
8:45 AM	4	1	5	0	0	0	8	0	6	293	13	0	4	157	3	0	494
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	32	15	47	0	10	6	47	0	83	2979	80	1	38	1494	45	0	4877
APPROACH %'s :	34.04%	15.96%	50.00%	0.00%	15.87%	9.52%	74.60%	0.00%	2.64%	94.78%	2.55%	0.03%	2.41%	94.74%	2.85%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	18	5	20	0	4	5	20	0	44	1075	31	1	16	726	28	0	1993
PEAK HR FACTOR :	0.409	0.625	0.714	0.000	0.333	0.625	0.714	0.000	0.500	0.927	0.775	0.250	0.667	0.759	0.500	0.000	0.837
	0.632				0.604				0.919				0.746				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	1	7	0	2	1	4	0	2	186	11	0	10	336	9	0	570
4:15 PM	4	0	5	0	1	1	10	0	3	193	15	0	4	290	9	0	535
4:30 PM	1	0	10	0	1	0	4	0	6	211	9	0	9	350	16	0	617
4:45 PM	3	0	8	0	0	0	6	0	6	198	11	0	6	344	5	0	587
5:00 PM	5	3	3	0	1	0	5	0	8	214	18	0	2	335	7	0	601
5:15 PM	2	1	7	0	1	0	4	0	9	222	8	0	3	362	9	0	628
5:30 PM	3	2	4	0	4	1	5	0	6	220	11	0	3	332	5	0	596
5:45 PM	4	2	10	0	0	1	4	0	8	199	17	0	4	317	10	0	576
6:00 PM	3	4	17	0	2	1	2	0	4	185	11	0	7	289	5	0	530
6:15 PM	2	1	8	0	0	0	2	0	3	192	15	0	5	348	3	1	580
6:30 PM	5	0	9	0	2	2	6	0	6	193	10	0	5	377	7	0	622
6:45 PM	3	1	4	0	0	1	6	0	5	214	11	0	1	369	16	0	631
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	36	15	92	0	14	8	58	0	66	2427	147	0	59	4049	101	1	7073
APPROACH %'s :	25.17%	10.49%	64.34%	0.00%	17.50%	10.00%	72.50%	0.00%	2.50%	91.93%	5.57%	0.00%	1.40%	96.18%	2.40%	0.02%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	11	4	28	0	3	0	19	0	29	845	46	0	20	1391	37	0	2433
PEAK HR FACTOR :	0.550	0.333	0.700	0.000	0.750	0.000	0.792	0.000	0.806	0.952	0.639	0.000	0.556	0.961	0.578	0.000	0.969
	0.977				0.917				0.958				0.965				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Pleasant St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-004
Date: 9/14/2018

Cars

AM

NS/EW Streets:	Pleasant St NW				Pleasant St NW				Maple Ave W				Maple Ave W				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	3	0	2	0	0	0	0	0	2	120	0	0	0	38	4	0	169
6:15 AM	0	2	2	0	0	0	0	0	1	153	1	0	2	35	1	0	197
6:30 AM	1	0	1	0	1	0	3	0	3	199	6	0	1	57	1	0	273
6:45 AM	0	3	4	0	0	1	2	0	5	282	8	0	6	68	0	0	379
7:00 AM	1	0	4	0	3	0	3	0	3	287	7	0	3	117	0	0	428
7:15 AM	3	2	6	0	0	0	6	0	9	244	4	0	2	131	2	0	409
7:30 AM	11	2	4	0	0	0	2	0	9	226	8	1	0	189	2	0	454
7:45 AM	4	1	7	0	3	2	7	0	21	272	6	0	5	222	14	0	564
8:00 AM	3	2	5	0	1	1	7	0	7	283	9	0	5	139	7	0	469
8:15 AM	0	0	4	0	0	2	4	0	5	262	5	0	6	132	5	0	425
8:30 AM	2	1	3	0	2	0	5	0	8	274	9	0	3	138	3	0	448
8:45 AM	4	1	5	0	0	0	8	0	6	290	12	0	4	152	3	0	485
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	32	14	47	0	10	6	47	0	79	2892	75	1	37	1418	42	0	4700
APPROACH %'s :	34.41%	15.05%	50.54%	0.00%	15.87%	9.52%	74.60%	0.00%	2.59%	94.91%	2.46%	0.03%	2.47%	94.72%	2.81%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	18	5	20	0	4	5	20	0	42	1043	28	1	16	682	28	0	1912
PEAK HR FACTOR :	0.41	0.625	0.714	0.000	0.333	0.625	0.714	0.000	0.500	0.921	0.778	0.250	0.667	0.768	0.500	0.000	0.848
	0.632				0.604				0.931				0.753				

PM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	1	7	0	2	1	4	0	2	178	11	0	10	330	9	0	556
4:15 PM	4	0	5	0	1	1	10	0	3	189	15	0	4	289	9	0	530
4:30 PM	1	0	10	0	1	0	3	0	6	205	9	0	9	344	14	0	602
4:45 PM	3	0	7	0	0	0	6	0	6	194	11	0	6	343	5	0	581
5:00 PM	5	3	3	0	1	0	4	0	8	214	18	0	2	330	7	0	595
5:15 PM	2	1	7	0	1	0	4	0	8	219	8	0	3	358	9	0	620
5:30 PM	3	2	4	0	4	1	5	0	6	220	11	0	3	329	4	0	592
5:45 PM	4	2	10	0	0	1	4	0	8	197	17	0	4	316	10	0	573
6:00 PM	3	4	17	0	2	1	2	0	4	185	11	0	7	285	5	0	526
6:15 PM	2	1	8	0	0	0	2	0	3	191	15	0	5	346	2	1	576
6:30 PM	5	0	9	0	2	2	6	0	6	192	10	0	5	370	6	0	613
6:45 PM	3	1	4	0	0	1	6	0	5	213	11	0	1	364	16	0	625
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	36	15	91	0	14	8	56	0	65	2397	147	0	59	4004	96	1	6989
APPROACH %'s :	25.35%	10.56%	64.08%	0.00%	17.95%	10.26%	71.79%	0.00%	2.49%	91.87%	5.63%	0.00%	1.42%	96.25%	2.31%	0.02%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	11	4	27	0	3	0	17	0	28	832	46	0	20	1375	35	0	2398
PEAK HR FACTOR :	0.55	0.333	0.675	0.000	0.750	0.000	0.708	0.000	0.875	0.950	0.639	0.000	0.556	0.960	0.625	0.000	0.967
	0.955				0.833				0.944				0.966				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Pleasant St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-004
Date: 9/14/2018

HT

NS/EW Streets:	Pleasant St NW				Pleasant St NW				Maple Ave W				Maple Ave W				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	8	0	0	0	2	0	0	10
6:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:30 AM	0	0	0	0	0	0	0	0	1	8	0	0	1	3	0	0	13
6:45 AM	0	0	0	0	0	0	0	0	0	6	0	0	0	5	0	0	11
7:00 AM	0	0	0	0	0	0	0	0	1	10	0	0	0	3	0	0	14
7:15 AM	0	0	0	0	0	0	0	0	0	9	0	0	0	8	0	0	17
7:30 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	12	0	0	19
7:45 AM	0	0	0	0	0	0	0	0	1	11	2	0	0	17	0	0	31
8:00 AM	0	0	0	0	0	0	0	0	1	7	1	0	0	10	0	0	19
8:15 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	5	0	0	12
8:30 AM	0	0	0	0	0	0	0	0	0	11	1	0	0	6	3	0	21
8:45 AM	0	0	0	0	0	0	0	0	0	3	1	0	0	5	0	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	0	0	4	87	5	0	1	76	3	0	177
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%					4.17%	90.63%	5.21%	0.00%	1.25%	95.00%	3.75%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	2	32	3	0	0	44	0	0	81
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.727	0.375	0.000	0.000	0.647	0.000	0.000	0.653
										0.661				0.647			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	8	0	0	0	6	0	0	14
4:15 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	5
4:30 PM	0	0	0	0	0	0	1	0	0	6	0	0	0	6	2	0	15
4:45 PM	0	0	1	0	0	0	0	0	0	4	0	0	0	1	0	0	6
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	5	0	0	6
5:15 PM	0	0	0	0	0	0	0	0	1	3	0	0	0	4	0	0	8
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
6:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	4
6:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	7	1	0	9
6:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	2	0	1	30	0	0	0	45	5	0	84
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	3.23%	96.77%	0.00%	0.00%	0.00%	90.00%	10.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	2	0	1	13	0	0	0	16	2	0	35
PEAK HR FACTOR :	0.00	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.250	0.542	0.000	0.000	0.000	0.667	0.250	0.000	0.583
			0.250				0.500			0.583				0.563			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Pleasant St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-004
Date: 9/14/2018

Bikes

NS/EW Streets:	Pleasant St NW				Pleasant St NW				Maple Ave W				Maple Ave W				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0	6
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.375
	0.250				0.250				0.250								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	9	0	0	0	7	1	0	17
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	87.50%	12.50%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	6	0	0	0	1	0	0	7
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.250	0.000	0.000	0.875
									0.750				0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Pleasant St NW & Maple Ave W
City: Vienna

Project ID: 18-11075-004
Date: 9/14/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Pleasant St NW		Pleasant St NW		Maple Ave W		Maple Ave W		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
6:00 AM	2	0	0	0	0	0	0	0	2
6:15 AM	0	1	0	0	0	0	0	0	1
6:30 AM	1	1	2	0	1	0	0	0	5
6:45 AM	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	1	0	0	0	0	0	1
7:15 AM	2	1	0	0	0	0	0	0	3
7:30 AM	2	0	2	1	0	0	0	0	5
7:45 AM	0	0	1	0	0	0	0	0	1
8:00 AM	3	0	1	0	0	0	0	0	4
8:15 AM	1	0	0	2	0	0	0	0	3
8:30 AM	1	0	0	1	0	0	0	0	2
8:45 AM	1	0	0	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	13	3	7	4	1	0	0	0	28
APPROACH %'s :	81.25%	18.75%	63.64%	36.36%	100.00%	0.00%			
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	6	0	4	3	0	0	0	0	13
PEAK HR FACTOR :	0.500		0.500	0.375					0.650
	0.500		0.583						

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	2	0	0	0	1	0	0	0	3
4:15 PM	2	1	1	0	0	0	0	0	4
4:30 PM	2	2	3	1	0	0	0	0	8
4:45 PM	4	0	1	0	0	0	0	0	5
5:00 PM	0	0	1	3	0	0	0	0	4
5:15 PM	0	2	0	0	0	0	0	0	2
5:30 PM	1	3	2	3	0	0	0	0	9
5:45 PM	2	2	1	1	0	0	0	0	6
6:00 PM	0	0	1	1	0	0	0	0	2
6:15 PM	1	0	1	3	0	0	0	0	5
6:30 PM	0	2	1	2	0	0	0	0	5
6:45 PM	1	6	2	3	0	0	0	0	12
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	15	18	14	17	1	0	0	0	65
APPROACH %'s :	45.45%	54.55%	45.16%	54.84%	100.00%	0.00%			
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	6	4	5	4	0	0	0	0	19
PEAK HR FACTOR :	0.375	0.500	0.417	0.333					0.594
	0.625		0.563						

Prepared by National Data & Surveying Services

Pleasant St NW & Maple Ave W

Peak Hour Turning Movement Count

ID: 18-11075-004
City: Vienna

Day: Friday
Date: 09/14/2018

PEAK HOURS

07:30 AM - 08:30 AM	
NONE	
04:30 PM - 05:30 PM	

COUNT PERIODS

06:00 AM - 10:00 AM	
NONE	
04:00 PM - 07:00 PM	

Pleasant St NW — SOUTHBOUND

AM	20	5	4	0	77	AM
NOON	0	0	0	0	0	NOON
PM	19	0	3	0	70	PM
	0	1	0	0		

Maple Ave W — EASTBOUND

AM	NOON	PM	
765	0	1421	
1	0	0	0
44	0	29	1
1075	0	845	2
31	0	46	0
AM	NOON	PM	

Maple Ave W — WESTBOUND

PM	NOON	AM	
37	0	28	0
1391	0	726	2
20	0	16	1
0	0	0	0
876	0	1099	
PM	NOON	AM	

CONTROL

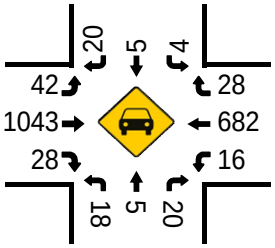
2-Way Stop(NB/SB)

TEV	1993	0	2433
	AM	NOON	PM
PHF	0.84		0.97

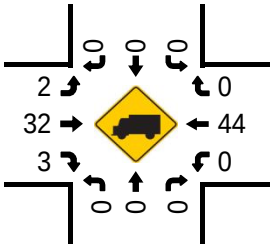
Pleasant St NW — NORTHBOUND

PM	66	0	11	4	28	PM
NOON	0	0	0	0	0	NOON
AM	52	0	18	5	20	AM
		0	0	1	0	

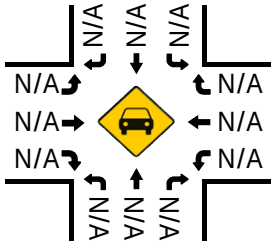
Cars (AM)



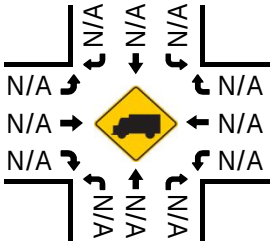
HT (AM)



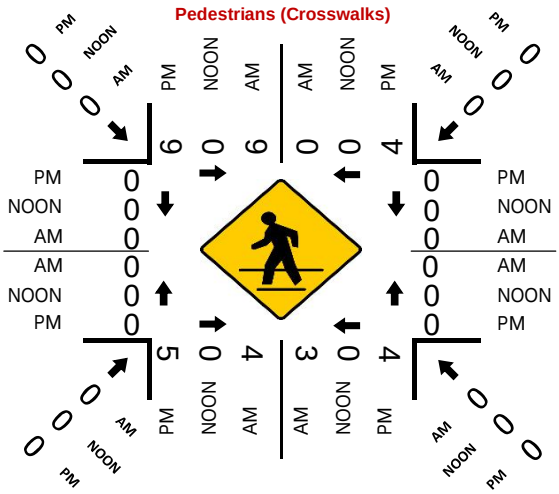
Cars (NOON)



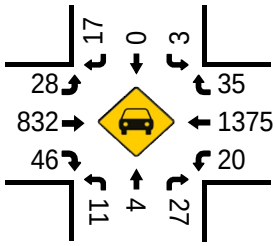
HT (NOON)



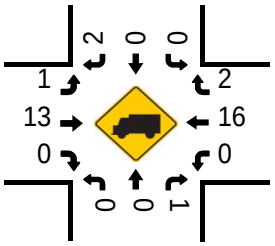
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Glen Ave SW & Courthouse Rd SW
City: Vienna
Control: 1-Way Stop(NB)

Project ID: 18-11075-005
Date: 9/13/2018

Total

NS/EW Streets:	Glen Ave SW				Glen Ave SW				Courthouse Rd SW				Courthouse Rd SW				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	17	1	0	0	15	0	0	33
6:15 AM	0	0	0	0	0	0	1	0	0	22	0	0	0	19	0	0	42
6:30 AM	1	0	0	0	1	0	0	0	0	24	0	0	1	12	0	0	39
6:45 AM	0	0	0	0	0	0	2	0	0	49	0	0	0	26	1	0	78
7:00 AM	3	1	2	0	2	0	1	0	0	65	0	0	1	36	0	0	111
7:15 AM	2	0	2	0	0	0	4	0	2	75	0	0	0	48	0	0	133
7:30 AM	3	0	1	0	7	0	4	0	2	104	0	0	0	60	2	0	183
7:45 AM	5	0	7	0	3	0	6	0	4	97	0	0	0	70	3	0	195
8:00 AM	6	0	0	0	6	0	4	0	2	130	1	0	1	53	5	0	208
8:15 AM	1	0	0	0	0	0	0	0	2	96	1	0	0	45	2	0	147
8:30 AM	1	0	0	0	5	0	4	0	3	134	0	0	0	51	2	0	200
8:45 AM	1	0	0	0	3	0	4	0	2	135	0	0	0	53	1	0	199
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	23	1	12	0	27	0	30	0	17	948	3	0	3	488	16	0	1568
APPROACH %'s :	63.89%	2.78%	33.33%	0.00%	47.37%	0.00%	52.63%	0.00%	1.76%	97.93%	0.31%	0.00%	0.59%	96.25%	3.16%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	9	0	0	0	14	0	12	0	9	495	2	0	1	202	10	0	754
PEAK HR FACTOR :	0.375	0.000	0.000	0.000	0.583	0.000	0.750	0.000	0.750	0.917	0.500	0.000	0.250	0.953	0.500	0.000	0.906
	0.375				0.650				0.923				0.903				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	0	0	4	0	2	0	1	66	0	0	0	91	4	0	169
4:15 PM	1	0	0	0	1	0	5	0	6	91	0	0	0	86	4	0	194
4:30 PM	0	0	0	0	1	0	3	0	2	65	0	0	0	78	3	0	152
4:45 PM	1	0	0	0	2	0	1	0	1	71	0	0	0	107	4	0	187
5:00 PM	1	0	5	0	6	0	3	0	2	57	2	0	1	130	7	0	214
5:15 PM	1	0	1	0	4	0	2	0	4	70	1	0	1	118	11	0	213
5:30 PM	1	0	8	0	1	0	3	0	3	81	1	0	1	118	4	0	221
5:45 PM	1	0	0	0	2	0	0	0	2	102	0	0	0	114	8	1	230
6:00 PM	1	0	3	0	2	0	2	0	3	85	0	0	0	130	5	0	231
6:15 PM	1	0	2	0	2	0	4	0	6	82	1	0	0	112	5	0	215
6:30 PM	0	0	1	0	0	0	4	0	2	77	0	0	0	107	3	0	194
6:45 PM	0	0	1	0	4	0	1	0	1	72	0	0	0	86	0	0	165
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	0	21	0	29	0	30	0	33	919	5	0	3	1277	58	1	2385
APPROACH %'s :	30.00%	0.00%	70.00%	0.00%	49.15%	0.00%	50.85%	0.00%	3.45%	96.03%	0.52%	0.00%	0.22%	95.37%	4.33%	0.07%	
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	4	0	13	0	7	0	9	0	14	350	2	0	1	474	22	1	897
PEAK HR FACTOR :	1.000	0.000	0.406	0.000	0.875	0.000	0.563	0.000	0.583	0.858	0.500	0.000	0.250	0.912	0.688	0.250	0.971
	0.472				0.667				0.880				0.922				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Glen Ave SW & Courthouse Rd SW
City: Vienna
Control: 1-Way Stop(NB)

Project ID: 18-11075-005
Date: 9/13/2018

Cars

AM

NS/EW Streets:	Glen Ave SW				Glen Ave SW				Courthouse Rd SW				Courthouse Rd SW				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	17	1	0	0	15	0	0	33
6:15 AM	0	0	0	0	0	0	1	0	0	22	0	0	0	18	0	0	41
6:30 AM	1	0	0	0	1	0	0	0	0	23	0	0	1	12	0	0	38
6:45 AM	0	0	0	0	0	0	1	0	0	48	0	0	0	26	1	0	76
7:00 AM	3	1	2	0	2	0	1	0	0	63	0	0	1	36	0	0	109
7:15 AM	2	0	2	0	0	0	4	0	2	75	0	0	0	46	0	0	131
7:30 AM	3	0	1	0	7	0	4	0	2	102	0	0	0	60	2	0	181
7:45 AM	5	0	7	0	3	0	6	0	4	96	0	0	0	69	3	0	193
8:00 AM	6	0	0	0	6	0	4	0	2	130	1	0	1	52	5	0	207
8:15 AM	1	0	0	0	0	0	0	0	2	93	1	0	0	44	2	0	143
8:30 AM	1	0	0	0	5	0	3	0	3	133	0	0	0	49	2	0	196
8:45 AM	1	0	0	0	3	0	3	0	2	132	0	0	0	49	1	0	191
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	23	1	12	0	27	0	27	0	17	934	3	0	3	476	16	0	1539
APPROACH %'s :	63.89%	2.78%	33.33%	0.00%	50.00%	0.00%	50.00%	0.00%	1.78%	97.90%	0.31%	0.00%	0.61%	96.16%	3.23%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	9	0	0	0	14	0	10	0	9	488	2	0	1	194	10	0	737
PEAK HR FACTOR :	0.38	0.000	0.000	0.000	0.583	0.000	0.625	0.000	0.750	0.917	0.500	0.000	0.250	0.933	0.500	0.000	0.890
	0.375				0.600				0.917				0.884				

PM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	0	0	4	0	2	0	1	66	0	0	0	89	4	0	167
4:15 PM	1	0	0	0	1	0	2	0	6	89	0	0	0	84	4	0	187
4:30 PM	0	0	0	0	1	0	3	0	2	64	0	0	0	78	3	0	151
4:45 PM	1	0	0	0	2	0	1	0	1	69	0	0	0	106	4	0	184
5:00 PM	1	0	5	0	6	0	3	0	2	57	2	0	1	130	7	0	214
5:15 PM	1	0	1	0	4	0	2	0	4	70	1	0	1	118	11	0	213
5:30 PM	1	0	8	0	1	0	3	0	3	81	1	0	1	117	4	0	220
5:45 PM	1	0	0	0	2	0	0	0	2	102	0	0	0	114	8	1	230
6:00 PM	1	0	3	0	2	0	1	0	3	85	0	0	0	130	5	0	230
6:15 PM	1	0	2	0	2	0	4	0	6	82	1	0	0	112	5	0	215
6:30 PM	0	0	1	0	0	0	4	0	2	77	0	0	0	107	2	0	193
6:45 PM	0	0	1	0	3	0	1	0	1	72	0	0	0	85	0	0	163
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	9	0	21	0	28	0	26	0	33	914	5	0	3	1270	57	1	2367
APPROACH %'s :	30.00%	0.00%	70.00%	0.00%	51.85%	0.00%	48.15%	0.00%	3.47%	96.01%	0.53%	0.00%	0.23%	95.42%	4.28%	0.08%	
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	4	0	13	0	7	0	8	0	14	350	2	0	1	473	22	1	895
PEAK HR FACTOR :	1.00	0.000	0.406	0.000	0.875	0.000	0.500	0.000	0.583	0.858	0.500	0.000	0.250	0.910	0.688	0.250	0.973
	0.472				0.625				0.880				0.920				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Glen Ave SW & Courthouse Rd SW
City: Vienna
Control: 1-Way Stop(NB)

Project ID: 18-11075-005
Date: 9/13/2018

HT

NS/EW Streets:	Glen Ave SW				Glen Ave SW				Courthouse Rd SW				Courthouse Rd SW				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
6:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
6:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4
8:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	4
8:45 AM	0	0	0	0	0	0	1	0	0	3	0	0	0	4	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	3	0	0	14	0	0	0	12	0	0	29
APPROACH %'s :					0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	2	0	0	7	0	0	0	8	0	0	17
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.583	0.000	0.000	0.000	0.500	0.000	0.000	0.531
					0.500				0.583				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
4:15 PM	0	0	0	0	0	0	3	0	0	2	0	0	0	2	0	0	7
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
6:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	4	0	0	5	0	0	0	7	1	0	18
APPROACH %'s :					20.00%	0.00%	80.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	87.50%	12.50%	0.00%	
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.500
					0.250								0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Glen Ave SW & Courthouse Rd SW
City: Vienna
Control: 1-Way Stop(NB)

Project ID: 18-11075-005
Date: 9/13/2018

Bikes

NS/EW Streets:	Glen Ave SW				Glen Ave SW				Courthouse Rd SW				Courthouse Rd SW				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
7:45 AM	0	0	0	0	1	0	0	0	0	2	0	0	0	3	0	0	6
8:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	2	0	0	0	0	9	0	0	0	8	1	0	20
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	88.89%	11.11%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.500
										0.250				0.500			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	2	0	0	0	0	2	0	0	0	1	0	0	5
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
6:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
6:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	3
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	2	0	0	0	0	6	0	0	0	12	2	0	22
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	85.71%	14.29%	0.00%	
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	7	0	0	8
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.583	0.000	0.000	0.667
										0.250				0.583			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Glen Ave SW & Courthouse Rd SW
City: Vienna

Project ID: 18-11075-005
Date: 9/13/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Glen Ave SW		Glen Ave SW		Courthouse Rd SW		Courthouse Rd SW		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
6:00 AM	0	0	0	1	0	0	0	0	1
6:15 AM	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	1	2	0	1	0	0	4
6:45 AM	2	2	0	0	0	0	0	0	4
7:00 AM	0	0	0	0	0	1	0	0	1
7:15 AM	1	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	2	0	0	0	0	2
8:00 AM	0	0	1	0	0	0	0	0	1
8:15 AM	0	1	1	2	1	0	0	0	5
8:30 AM	1	0	1	0	0	1	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	4	3	4	8	1	3	0	0	23
APPROACH %'s :	57.14%	42.86%	33.33%	66.67%	25.00%	75.00%			
PEAK HR :	08:00 AM - 09:00 AM								TOTAL
PEAK HR VOL :	1	1	3	2	1	1	0	0	9
PEAK HR FACTOR :	0.250	0.250	0.750	0.250	0.250	0.250			0.450
	0.500		0.417		0.500				

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	1	0	0	2	0	2	0	0	5
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	1	2
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	2	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0
6:00 PM	2	0	0	0	3	4	0	0	9
6:15 PM	0	0	0	1	0	0	0	0	1
6:30 PM	2	0	2	0	2	0	0	0	6
6:45 PM	0	1	0	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	5	2	2	3	5	8	0	1	26
APPROACH %'s :	71.43%	28.57%	40.00%	60.00%	38.46%	61.54%	0.00%	100.00%	
PEAK HR :	05:30 PM - 06:30 PM								TOTAL
PEAK HR VOL :	2	0	0	1	3	6	0	0	12
PEAK HR FACTOR :	0.250			0.250	0.250	0.375			0.333
	0.250		0.250		0.321				

Prepared by National Data & Surveying Services

Glen Ave SW & Courthouse Rd SW

Peak Hour Turning Movement Count

ID: 18-11075-005
City: Vienna

Day: Thursday
Date: 09/13/2018

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	06:00 AM - 10:00 AM
NONE	NONE
05:30 PM - 06:30 PM	04:00 PM - 07:00 PM

SOUTHBOUND (Glen Ave SW)

AM	12	0	14	0	19	AM
NOON	0	0	0	0	0	NOON
PM	9	0	7	0	36	PM
	0	1	0	0		

EASTBOUND (Courthouse Rd SW)

AM	NOON	PM	
223	0	487	
0	0	0	0
9	0	14	0
495	0	350	1
2	0	2	0

WESTBOUND (Courthouse Rd SW)

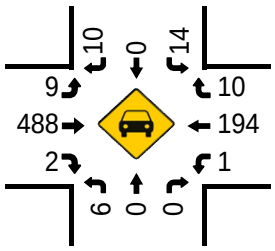
	PM	NOON	AM
0	22	0	10
1	474	0	202
0	1	0	1
0	1	0	0
	371	0	509

NORTHBOUND (Glen Ave SW)

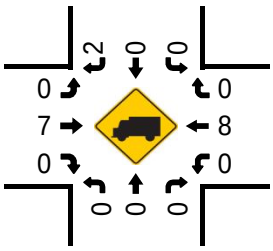
PM	3	0	4	0	13	PM
NOON	0	0	0	0	0	NOON
AM	3	0	9	0	0	AM
		0	0	1	0	

CONTROL			
1-Way Stop(NB)			
TEV	754	0	897
	AM	NOON	PM
PHF	0.91		0.97

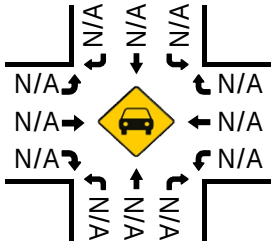
Cars (AM)



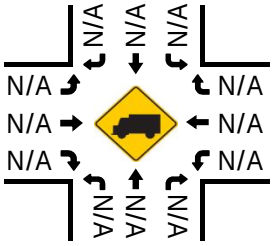
HT (AM)



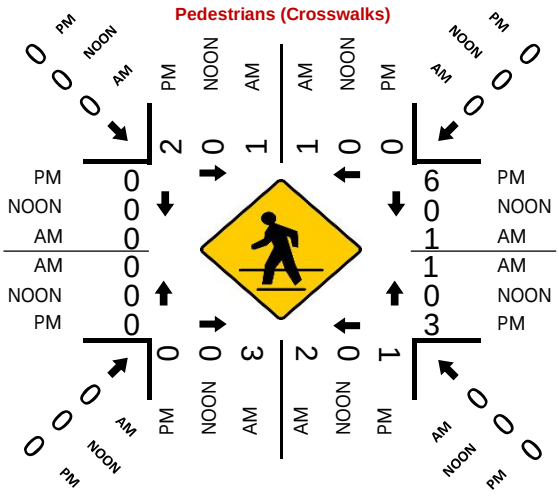
Cars (NOON)



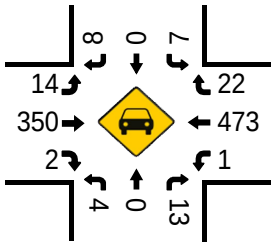
HT (NOON)



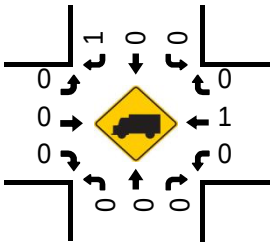
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW & Glen Ave SW/Millwood Ct SW
City: Vienna
Control: 2-Way Stop(EB/WB)

Project ID: 18-11075-006
Date: 9/11/2018

Total

NS/EW Streets:	Wade Hampton Dr SW				Wade Hampton Dr SW				Glen Ave SW/Millwood Ct SW				Glen Ave SW/Millwood Ct SW				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
6:15 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	4
6:30 AM	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	4
6:45 AM	1	0	1	0	1	0	0	0	2	0	0	0	0	0	0	0	5
7:00 AM	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	3
7:15 AM	0	2	0	0	0	4	0	0	0	0	1	0	0	0	2	0	9
7:30 AM	0	4	1	0	2	0	0	1	0	0	0	0	0	0	3	0	11
7:45 AM	0	0	0	0	4	3	0	0	1	0	1	0	0	0	6	0	15
8:00 AM	0	2	0	0	1	3	0	0	0	0	0	0	0	0	2	0	8
8:15 AM	0	4	1	0	3	0	1	0	0	0	0	0	0	0	4	0	13
8:30 AM	0	6	0	0	0	1	1	1	0	0	1	0	0	0	3	0	13
8:45 AM	1	8	3	0	0	2	0	0	0	1	0	0	0	0	2	0	17
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	30	6	0	11	17	3	4	3	1	4	0	0	0	24	0	105
APPROACH %'s :	5.26%	78.95%	15.79%	0.00%	31.43%	48.57%	8.57%	11.43%	37.50%	12.50%	50.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	1	20	4	0	4	6	2	1	0	1	1	0	0	0	11	0	51
PEAK HR FACTOR :	0.250	0.625	0.333	0.000	0.333	0.500	0.500	0.250	0.000	0.250	0.250	0.000	0.000	0.000	0.688	0.000	0.750
	0.521				0.813				0.500				0.688				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	4	1	0	2	1	0	0	1	1	0	0	3	1	3	0	17
4:15 PM	0	4	1	0	1	7	0	0	0	1	0	0	0	0	3	0	17
4:30 PM	0	1	0	0	1	2	1	0	3	0	0	0	1	1	1	0	11
4:45 PM	0	4	0	0	1	3	0	0	0	0	0	0	4	0	3	0	15
5:00 PM	0	1	1	0	0	6	1	0	0	1	1	0	0	0	3	0	14
5:15 PM	1	3	0	0	2	4	2	0	1	0	1	0	0	2	6	0	22
5:30 PM	0	6	0	0	5	6	1	0	0	0	0	0	2	0	2	0	22
5:45 PM	1	6	0	0	0	4	1	1	0	1	0	0	2	0	2	0	18
6:00 PM	0	5	0	0	3	1	0	0	0	0	0	0	1	1	4	0	15
6:15 PM	0	14	0	0	1	3	0	0	1	0	0	0	0	0	7	0	26
6:30 PM	0	2	4	0	3	4	1	0	0	0	0	0	0	0	4	0	18
6:45 PM	0	2	0	0	2	1	1	0	0	0	0	0	1	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	52	7	0	21	42	8	1	6	4	2	0	14	5	38	0	202
APPROACH %'s :	3.28%	85.25%	11.48%	0.00%	29.17%	58.33%	11.11%	1.39%	50.00%	33.33%	16.67%	0.00%	24.56%	8.77%	66.67%	0.00%	
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	1	31	0	0	9	14	2	1	1	1	0	0	5	1	15	0	81
PEAK HR FACTOR :	0.250	0.554	0.000	0.000	0.450	0.583	0.500	0.250	0.250	0.250	0.000	0.000	0.625	0.250	0.536	0.000	0.779
	0.571				0.542				0.500				0.750				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW & Glen Ave SW/Millwood Ct SW
City: Vienna
Control: 2-Way Stop(EB/WB)

Project ID: 18-11075-006
Date: 9/11/2018

Cars

AM

NS/EW Streets:	Wade Hampton Dr SW				Wade Hampton Dr SW				Glen Ave SW/Millwood Ct SW				Glen Ave SW/Millwood Ct SW				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
6:15 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	4
6:30 AM	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	4
6:45 AM	1	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	4
7:00 AM	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	3
7:15 AM	0	1	0	0	0	4	0	0	0	0	1	0	0	0	2	0	8
7:30 AM	0	4	1	0	2	0	0	1	0	0	0	0	0	0	3	0	11
7:45 AM	0	0	0	0	4	3	0	0	1	0	1	0	0	0	6	0	15
8:00 AM	0	2	0	0	1	3	0	0	0	0	0	0	0	0	2	0	8
8:15 AM	0	4	1	0	3	0	1	0	0	0	0	0	0	0	4	0	13
8:30 AM	0	6	0	0	0	1	1	1	0	0	1	0	0	0	3	0	13
8:45 AM	1	8	2	0	0	2	0	0	0	1	0	0	0	0	2	0	16
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	29	4	0	11	17	3	4	3	1	4	0	0	0	24	0	102
APPROACH %'s :	5.71%	82.86%	11.43%	0.00%	31.43%	48.57%	8.57%	11.43%	37.50%	12.50%	50.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	1	20	3	0	4	6	2	1	0	1	1	0	0	0	11	0	50
PEAK HR FACTOR :	0.25	0.625	0.375	0.000	0.333	0.500	0.500	0.250	0.000	0.250	0.250	0.000	0.000	0.000	0.688	0.000	0.781
	0.545				0.813				0.500				0.688				

PM

NS/EW Streets:	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	3	1	0	2	1	0	0	1	1	0	0	3	1	3	0	16
4:15 PM	0	4	0	0	1	7	0	0	0	1	0	0	0	0	3	0	16
4:30 PM	0	1	0	0	1	2	1	0	2	0	0	0	1	1	1	0	10
4:45 PM	0	4	0	0	1	3	0	0	0	0	0	0	4	0	3	0	15
5:00 PM	0	0	1	0	0	6	1	0	0	1	1	0	0	0	3	0	13
5:15 PM	1	3	0	0	2	4	2	0	1	0	1	0	0	2	6	0	22
5:30 PM	0	6	0	0	5	6	1	0	0	0	0	0	2	0	2	0	22
5:45 PM	1	6	0	0	0	4	1	1	0	1	0	0	2	0	2	0	18
6:00 PM	0	5	0	0	3	1	0	0	0	0	0	0	1	1	4	0	15
6:15 PM	0	14	0	0	1	3	0	0	1	0	0	0	0	0	6	0	25
6:30 PM	0	2	4	0	3	4	1	0	0	0	0	0	0	0	4	0	18
6:45 PM	0	2	0	0	2	1	1	0	0	0	0	0	1	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	50	6	0	21	42	8	1	5	4	2	0	14	5	37	0	197
APPROACH %'s :	3.45%	86.21%	10.34%	0.00%	29.17%	58.33%	11.11%	1.39%	45.45%	36.36%	18.18%	0.00%	25.00%	8.93%	66.07%	0.00%	
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	1	31	0	0	9	14	2	1	1	1	0	0	5	1	14	0	80
PEAK HR FACTOR :	0.25	0.554	0.000	0.000	0.450	0.583	0.500	0.250	0.250	0.250	0.000	0.000	0.625	0.250	0.583	0.000	0.800
	0.571				0.542				0.500				0.833				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW & Glen Ave SW/Millwood Ct SW
City: Vienna
Control: 2-Way Stop(EB/WB)

Project ID: 18-11075-006
Date: 9/11/2018

HT

NS/EW Streets:	Wade Hampton Dr SW				Wade Hampton Dr SW				Glen Ave SW/Millwood Ct SW				Glen Ave SW/Millwood Ct SW				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
APPROACH %'s :	0.00%	33.33%	66.67%	0.00%													
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
	0.250																

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	1	0	0	0	0	0	1	0	0	0	0	0	1	0	5
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%					100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250
													0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW & Glen Ave SW/Millwood Ct SW
City: Vienna
Control: 2-Way Stop(EB/WB)

Project ID: 18-11075-006
Date: 9/11/2018

Bikes

NS/EW Streets:	Wade Hampton Dr SW				Wade Hampton Dr SW				Glen Ave SW/Millwood Ct SW				Glen Ave SW/Millwood Ct SW				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%					0.00%	0.00%	100.00%	0.00%					
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%													
PEAK HR :	05:30 PM - 06:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW & Glen Ave SW/Millwood Ct SW
City: Vienna

Project ID: 18-11075-006
Date: 9/11/2018

Pedestrians (Crosswalks)

NS/EW Streets:	Wade Hampton Dr SW		Wade Hampton Dr SW		Glen Ave SW/Millwood Ct SW		Glen Ave SW/Millwood Ct SW		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	2	0	2
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	2	0	2
APPROACH %'s :							100.00%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	0	1
4:30 PM	0	1	0	1	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	1	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	0	0	0	1	1	0	3
6:00 PM	0	1	0	0	0	0	0	0	1
6:15 PM	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	2	0	1	1	1	2	0	8
APPROACH %'s :	33.33%	66.67%	0.00%	100.00%	50.00%	50.00%	100.00%	0.00%	
PEAK HR :	05:30 PM - 06:30 PM								TOTAL
PEAK HR VOL :	1	1	0	0	0	1	1	0	4
PEAK HR FACTOR :	0.250	0.250				0.250	0.250		0.333
	0.500				0.250		0.250		

Prepared by National Data & Surveying Services

Wade Hampton Dr SW & Glen Ave SW / Millwood Ct SW

Peak Hour Turning Movement Count

ID: 18-11075-006
City: Vienna

Day: Tuesday
Date: 09/11/2018

PEAK HOURS

AM	08:00 AM - 09:00 AM
NOON	NONE
PM	05:30 PM - 06:30 PM

COUNT PERIODS

AM	06:00 AM - 10:00 AM
NOON	NONE
PM	04:00 PM - 07:00 PM

Wade Hampton Dr SW — SOUTHBOUND

AM	2	6	4	1	32	AM
NOON	0	0	0	0	0	NOON
PM	2	14	9	1	48	PM

Glen Ave SW/Millwood Ct SW — EASTBOUND

AM	NOON	PM
3	0	4
0	0	0
0	0	1
1	0	1
1	0	0
AM	NOON	PM

Glen Ave SW/Millwood Ct SW — WESTBOUND

PM	NOON	AM
15	0	11
1	0	0
5	0	0
0	0	0
10	0	9
PM	NOON	AM

0	1	0	0
0	1	0	0
0	0	1	0

0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0

CONTROL

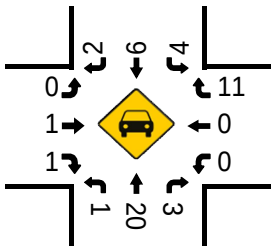
2-Way Stop(EB/WB)

TEV	51 AM	0 NOON	81 PM
PHF	0.75		0.78

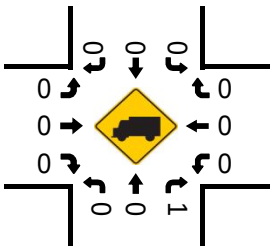
Wade Hampton Dr SW — NORTHBOUND

PM	19	0	1	31	0	PM
NOON	0	0	0	0	0	NOON
AM	7	0	1	20	4	AM

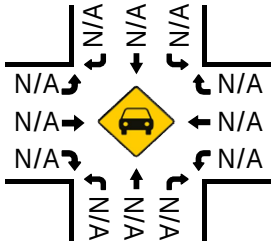
Cars (AM)



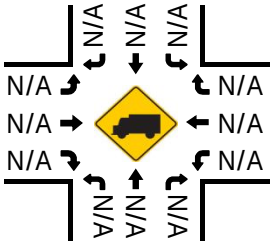
HT (AM)



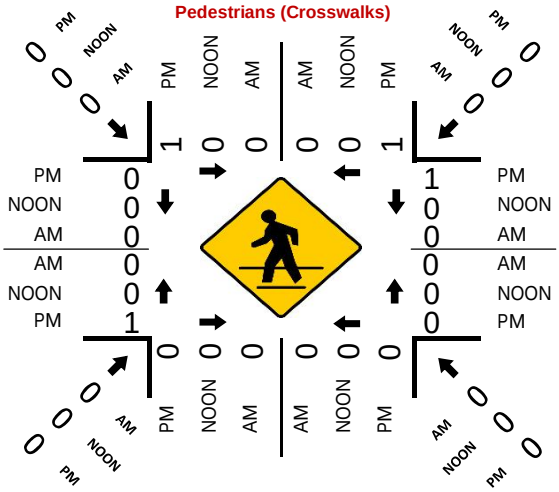
Cars (NOON)



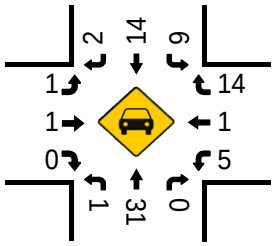
HT (NOON)



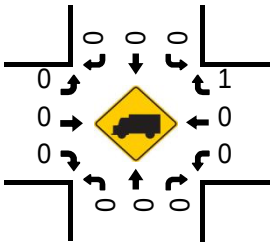
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Courthouse Rd SW
City: Vienna
Control: Signalized

Project ID: 18-11075-001
Date: 2018-08-25

Total

NS/EW Streets:	Nutley St SW				Nutley St SW				Courthouse Rd SW				Courthouse Rd SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	26	133	55	0	3	123	7	0	4	25	22	0	49	10	6	0	463
11:15 AM	20	112	50	1	3	88	6	1	7	28	29	0	53	13	3	0	414
11:30 AM	17	135	50	0	1	101	4	0	9	19	24	0	46	20	3	0	429
11:45 AM	25	184	65	0	9	102	9	0	6	23	27	0	33	12	6	0	501
12:00 PM	19	131	53	1	3	108	8	1	21	28	39	0	55	30	8	0	505
12:15 PM	19	160	42	0	13	146	8	1	9	19	37	0	62	25	9	0	550
12:30 PM	15	133	55	1	7	116	10	0	14	20	37	0	58	30	6	0	502
12:45 PM	21	134	60	1	5	112	7	1	9	28	28	0	41	37	6	0	490
1:00 PM	14	139	48	0	0	97	5	0	5	18	32	0	57	21	6	0	442
1:15 PM	20	127	45	1	4	115	3	0	7	21	28	0	43	22	5	0	441
1:30 PM	14	130	49	0	2	94	5	0	5	16	29	0	48	13	5	0	410
1:45 PM	16	122	36	1	3	133	7	1	3	22	25	0	47	21	4	0	441
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	226	1640	608	6	53	1335	79	5	99	267	357	0	592	254	67	0	5588
APPROACH %'s :	9.11%	66.13%	24.52%	0.24%	3.60%	90.69%	5.37%	0.34%	13.69%	36.93%	49.38%	0.00%	64.84%	27.82%	7.34%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	78	608	215	2	32	472	35	2	50	90	140	0	208	97	29	0	2058
PEAK HR FACTOR :	0.780	0.826	0.827	0.500	0.615	0.808	0.875	0.500	0.595	0.804	0.897	0.000	0.839	0.808	0.806	0.000	0.935
	0.824				0.805				0.795				0.870				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Courthouse Rd SW
City: Vienna
Control: Signalized

Project ID: 18-11075-001
Date: 2018-08-25

Cars

NS/EW Streets:	Nutley St SW				Nutley St SW				Courthouse Rd SW				Courthouse Rd SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	26	130	55	0	3	120	7	0	4	25	22	0	49	10	6	0	457
11:15 AM	20	111	50	1	3	88	6	0	7	28	29	0	52	13	3	0	411
11:30 AM	17	133	50	0	1	99	4	0	9	19	24	0	46	20	3	0	425
11:45 AM	25	184	64	0	9	101	9	0	6	23	26	0	33	12	6	0	498
12:00 PM	19	129	53	1	3	107	8	1	21	28	38	0	55	30	8	0	501
12:15 PM	19	159	42	0	13	145	8	1	9	19	37	0	62	25	9	0	548
12:30 PM	15	133	55	1	7	116	10	0	14	20	37	0	58	30	6	0	502
12:45 PM	21	134	59	1	5	110	7	1	9	28	28	0	40	37	6	0	486
1:00 PM	14	136	48	0	0	95	5	0	5	18	32	0	57	21	6	0	437
1:15 PM	20	126	45	1	4	114	3	0	7	21	28	0	43	22	5	0	439
1:30 PM	14	127	49	0	2	92	4	0	5	16	29	0	48	13	5	0	404
1:45 PM	16	121	35	1	3	132	7	1	3	22	24	0	47	21	4	0	437
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	226	1623	605	6	53	1319	78	4	99	267	354	0	590	254	67	0	5545
APPROACH %'s :	9.19%	65.98%	24.59%	0.24%	3.65%	90.72%	5.36%	0.28%	13.75%	37.08%	49.17%	0.00%	64.76%	27.88%	7.35%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	78	605	214	2	32	469	35	2	50	90	138	0	208	97	29	0	2049
PEAK HR FACTOR :	0.78	0.822	0.836	0.500	0.615	0.809	0.875	0.500	0.595	0.804	0.908	0.000	0.839	0.808	0.806	0.000	0.935
	0.823				0.805				0.799				0.870				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Courthouse Rd SW
City: Vienna
Control: Signalized

Project ID: 18-11075-001
Date: 2018-08-25

HT

NS/EW Streets:	Nutley St SW				Nutley St SW				Courthouse Rd SW				Courthouse Rd SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6
11:15 AM	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	3
11:30 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
11:45 AM	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	3
12:00 PM	0	2	0	0	0	1	0	0	0	0	1	0	0	0	0	0	4
12:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	1	0	0	2	0	0	0	0	0	0	1	0	0	0	4
1:00 PM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
1:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
1:30 PM	0	3	0	0	0	2	1	0	0	0	0	0	0	0	0	0	6
1:45 PM	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	17	3	0	0	16	1	1	0	0	3	0	2	0	0	0	43
APPROACH %'s :	0.00%	85.00%	15.00%	0.00%	0.00%	88.89%	5.56%	5.56%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	0	3	1	0	0	3	0	0	0	0	2	0	0	0	0	0	9
PEAK HR FACTOR :	0.00	0.375	0.250	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.563
	0.500				0.750				0.500								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Courthouse Rd SW
City: Vienna
Control: Signalized

Project ID: 18-11075-001
Date: 2018-08-25

Bikes

NS/EW Streets:	Nutley St SW				Nutley St SW				Courthouse Rd SW				Courthouse Rd SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	3	0	0	0	3	0	0	0.5	0.5	1	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	1	0	0	0	0	0	0	1	0	0	0	3	0	0	5
11:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
11:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	4
11:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	4	0	0	5
12:00 PM	0	0	0	0	0	3	0	0	0	2	0	0	0	2	0	0	7
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
12:30 PM	1	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	4
12:45 PM	0	0	0	0	0	0	1	0	1	2	0	0	0	1	0	0	5
1:00 PM	0	0	0	0	0	0	0	0	0	3	2	0	0	2	0	0	7
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
1:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	2	0	0	4	2	0	1	14	2	0	3	16	1	0	46
APPROACH %'s :	33.33%	0.00%	66.67%	0.00%	0.00%	66.67%	33.33%	0.00%	5.88%	82.35%	11.76%	0.00%	15.00%	80.00%	5.00%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	1	0	1	0	0	3	0	0	0	4	0	0	2	7	0	0	18
PEAK HR FACTOR :	0.25	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.438	0.000	0.000	0.643
	0.500				0.250				0.500				0.563				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Courthouse Rd SW
City: Vienna

Project ID: 18-11075-001
Date: 2018-08-25

Pedestrians (Crosswalks)

NS/EW Streets:	Nutley St SW		Nutley St SW		Courthouse Rd SW		Courthouse Rd SW		
NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	0	0	0	0	1	0	0	2	3
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	1	0	1	0	0	0	2
11:45 AM	0	0	0	0	0	0	0	0	0
12:00 PM	0	1	1	0	0	0	0	1	3
12:15 PM	0	2	0	0	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	1	0	1
12:45 PM	0	0	0	0	0	0	1	0	1
1:00 PM	0	0	1	0	0	0	0	0	1
1:15 PM	0	0	1	0	0	0	1	1	3
1:30 PM	0	0	0	0	0	0	0	1	1
1:45 PM	0	0	0	1	0	1	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	3	4	1	2	1	3	5	19
APPROACH %'s :	0.00%	100.00%	80.00%	20.00%	66.67%	33.33%	37.50%	62.50%	
PEAK HR :	11:45 AM - 12:45 PM								TOTAL
PEAK HR VOL :	0	3	1	0	0	0	1	1	6
PEAK HR FACTOR :		0.375	0.250				0.250	0.250	0.500
	0.375		0.250				0.500		

Prepared by National Data & Surveying Services

Nutley St SW & Courthouse Rd SW

Peak Hour Turning Movement Count

ID: 18-11075-001
City: Vienna

Day: Saturday
Date: 08/25/2018

PEAK HOURS	COUNT PERIODS
NONE	NONE
11:45 AM - 12:45 PM	11:00 AM - 02:00 PM
NONE	NONE

SOUTHBOUND (Nutley St SW)

AM	0	0	0	0	0	AM
NOON	35	472	32	2	689	NOON
PM	0	0	0	0	0	PM

Turning factors: 0 3 0 0

EASTBOUND (Courthouse Rd SW)

AM	NOON	PM		
0	210	0		
0	0	0	0	
0	50	0	0.5	
0	90	0	0.5	
0	140	0	1	
AM	NOON	PM		

WESTBOUND (Courthouse Rd SW)

PM	NOON	AM	
0	29	0	0.5
0	97	0	0.5
0	208	0	1
0	0	0	0
0	337	0	
PM	NOON	AM	

Turning factors: 0.5 0.5 1 0

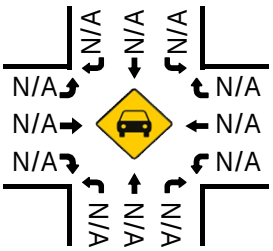
NORTHBOUND (Nutley St SW)

PM	0	0	0	0	0	PM
NOON	822	2	78	608	215	NOON
AM	0	0	0	0	0	AM

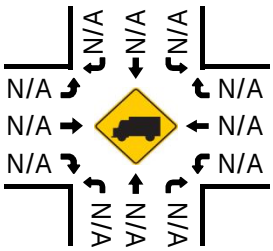
Turning factors: 0 0 3 0

CONTROL			
Signalized			
TEV	0	2058	0
	AM	NOON	PM
PHF		0.94	

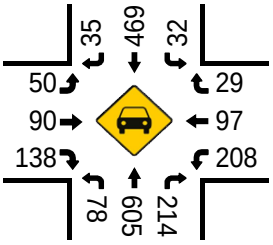
Cars (AM)



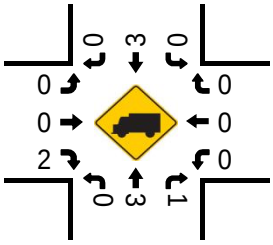
HT (AM)



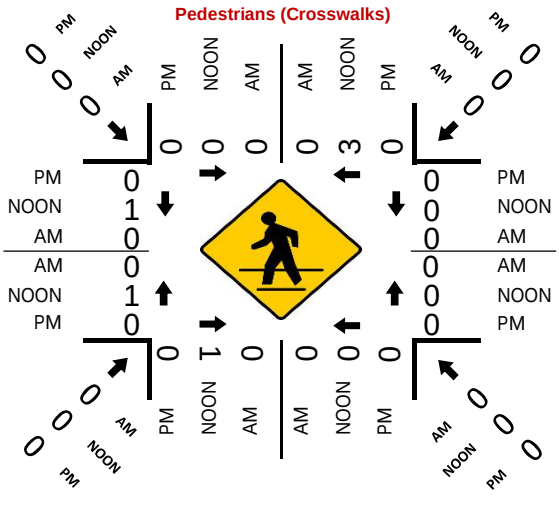
Cars (NOON)



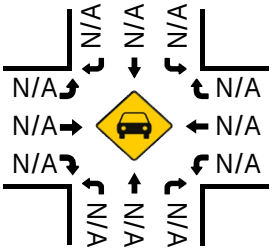
HT (NOON)



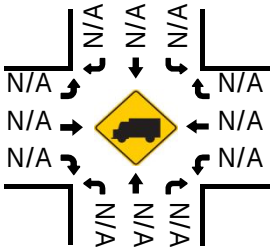
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Maple Ave W
City: Vienna
Control: Signalized

Project ID: 18-11075-002
Date: 2018-08-25

Total

NS/EW Streets:	Nutley St SW				Nutley St SW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	32	21	80	0	8	34	2	0	8	127	27	0	65	140	9	0	553
11:15 AM	26	17	90	0	9	22	4	0	2	149	21	0	59	151	12	0	562
11:30 AM	37	23	84	1	11	22	12	0	6	177	33	1	51	155	11	0	624
11:45 AM	40	29	123	0	13	33	11	0	11	176	17	0	60	157	10	0	680
12:00 PM	30	25	102	1	20	29	10	0	7	226	27	0	68	182	15	0	742
12:15 PM	40	43	97	2	23	41	5	0	6	162	31	0	71	146	15	0	682
12:30 PM	33	29	85	0	13	36	3	0	10	199	27	1	72	198	10	0	716
12:45 PM	41	22	86	4	17	24	9	0	13	154	30	2	60	171	11	0	644
1:00 PM	49	32	87	2	16	16	10	0	9	127	23	0	67	171	6	0	615
1:15 PM	35	25	71	1	16	31	4	0	9	161	28	0	57	170	9	0	617
1:30 PM	36	21	78	0	13	22	8	0	9	136	30	1	47	177	13	0	591
1:45 PM	30	25	76	0	12	27	5	0	7	148	37	1	82	180	9	0	639
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	429	312	1059	11	171	337	83	0	97	1942	331	6	759	1998	130	0	7665
APPROACH %'s :	23.69%	17.23%	58.48%	0.61%	28.93%	57.02%	14.04%	0.00%	4.08%	81.73%	13.93%	0.25%	26.29%	69.21%	4.50%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	143	126	407	3	69	139	29	0	34	763	102	1	271	683	50	0	2820
PEAK HR FACTOR :	0.894	0.733	0.827	0.375	0.750	0.848	0.659	0.000	0.773	0.844	0.823	0.250	0.941	0.862	0.833	0.000	0.950
	0.884				0.859				0.865				0.896				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Maple Ave W
City: Vienna
Control: Signalized

Project ID: 18-11075-002
Date: 2018-08-25

Cars

NS/EW Streets:	Nutley St SW				Nutley St SW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	31	21	78	0	8	33	2	0	7	127	27	0	64	139	9	0	546
11:15 AM	26	17	88	0	9	22	4	0	2	147	20	0	58	151	12	0	556
11:30 AM	37	23	82	1	11	22	12	0	6	176	32	1	50	154	11	0	618
11:45 AM	40	29	123	0	13	33	11	0	11	174	17	0	59	156	10	0	676
12:00 PM	30	24	101	1	20	29	10	0	7	226	27	0	67	180	15	0	737
12:15 PM	40	43	96	2	23	41	5	0	6	161	31	0	71	145	15	0	679
12:30 PM	33	29	85	0	13	36	3	0	10	196	27	1	72	196	10	0	711
12:45 PM	41	22	86	4	17	24	9	0	13	151	29	1	58	170	11	0	636
1:00 PM	49	31	85	2	16	16	10	0	9	127	23	0	66	170	6	0	610
1:15 PM	35	25	70	1	16	29	4	0	9	160	28	0	57	168	9	0	611
1:30 PM	34	21	77	0	13	21	8	0	9	136	29	1	47	176	13	0	585
1:45 PM	30	25	75	0	12	27	5	0	7	148	37	1	81	178	9	0	635
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	426	310	1046	11	171	333	83	0	96	1929	327	5	750	1983	130	0	7600
APPROACH %'s :	23.76%	17.29%	58.34%	0.61%	29.13%	56.73%	14.14%	0.00%	4.07%	81.84%	13.87%	0.21%	26.20%	69.26%	4.54%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	143	125	405	3	69	139	29	0	34	757	102	1	269	677	50	0	2803
PEAK HR FACTOR :	0.89	0.727	0.823	0.375	0.750	0.848	0.659	0.000	0.773	0.837	0.823	0.250	0.934	0.864	0.833	0.000	0.951
	0.880				0.859				0.860				0.896				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Maple Ave W
City: Vienna
Control: Signalized

Project ID: 18-11075-002
Date: 2018-08-25

HT

NS/EW Streets:	Nutley St SW				Nutley St SW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	1	0	2	0	0	1	0	0	1	0	0	0	1	1	0	0	7
11:15 AM	0	0	2	0	0	0	0	0	0	2	1	0	1	0	0	0	6
11:30 AM	0	0	2	0	0	0	0	0	0	1	1	0	1	1	0	0	6
11:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	4
12:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	2	0	0	5
12:15 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	3
12:30 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
12:45 PM	0	0	0	0	0	0	0	0	0	3	1	1	2	1	0	0	8
1:00 PM	0	1	2	0	0	0	0	0	0	0	0	0	1	1	0	0	5
1:15 PM	0	0	1	0	0	2	0	0	0	1	0	0	0	2	0	0	6
1:30 PM	2	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	6
1:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	2	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	2	13	0	0	4	0	0	1	13	4	1	9	15	0	0	65
APPROACH %'s :	16.67%	11.11%	72.22%	0.00%	0.00%	100.00%	0.00%	0.00%	5.26%	68.42%	21.05%	5.26%	37.50%	62.50%	0.00%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	0	1	2	0	0	0	0	0	0	6	0	0	2	6	0	0	17
PEAK HR FACTOR :	0.00	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.750	0.000	0.000	0.850
	0.375								0.500				0.667				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Maple Ave W
City: Vienna
Control: Signalized

Project ID: 18-11075-002
Date: 2018-08-25

Bikes

NS/EW Streets:	Nutley St SW				Nutley St SW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	1	0.5	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
11:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	1	0	0	0	5	3	0	0	6	1	0	17
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	62.50%	37.50%	0.00%	0.00%	85.71%	14.29%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	3	0	0	2	0	0	6
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.250	0.000	0.000	0.500
										0.333				0.250			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nutley St SW & Maple Ave W
City: Vienna

Project ID: 18-110763-002
Date: 2018-08-25

Pedestrians (Crosswalks)

NS/EW Streets:	Nutley St SW		Nutley St SW		Maple Ave W		Maple Ave W		
NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	1	1	0	1	1	0	0	0	4
11:15 AM	0	6	0	2	1	0	0	0	9
11:30 AM	1	0	0	0	0	0	0	1	2
11:45 AM	0	0	1	0	0	0	0	1	2
12:00 PM	2	1	5	1	1	0	1	1	12
12:15 PM	1	2	0	0	0	0	0	0	3
12:30 PM	0	2	0	0	2	0	0	0	4
12:45 PM	5	0	0	0	1	2	0	1	9
1:00 PM	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	1	3	0	0	1	1	1	0	7
1:45 PM	1	0	0	0	0	0	1	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	12	15	6	4	7	3	3	4	54
APPROACH %'s :	44.44%	55.56%	60.00%	40.00%	70.00%	30.00%	42.86%	57.14%	
PEAK HR :	11:45 AM - 12:45 PM								TOTAL
PEAK HR VOL :	3	5	6	1	3	0	1	2	21
PEAK HR FACTOR :	0.375	0.625	0.300	0.250	0.375		0.250	0.500	0.438
	0.667		0.292		0.375		0.375		

Prepared by National Data & Surveying Services

Nutley St SW & Maple Ave W

Peak Hour Turning Movement Count

ID: 18-11075-002
City: Vienna

Day: Saturday
Date: 08/25/2018

PEAK HOURS	COUNT PERIODS
NONE	NONE
11:45 AM - 12:45 PM	11:00 AM - 02:00 PM
NONE	NONE

Nutley St SW — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	29	139	69	0	210	NOON
PM	0	0	0	0	0	PM

0.5 0.5 1 0

Maple Ave W — EASTBOUND

AM	NOON	PM	
0	856	0	
0	1	0	0
0	34	0	1
0	763	0	2
0	102	0	0

Maple Ave W — WESTBOUND

	PM	NOON	AM
0	0	50	0
2	0	683	0
1	0	271	0
0	0	0	0
	0	1239	0

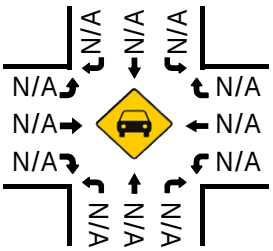
0 1.5 0.5 1

Nutley St SW — NORTHBOUND

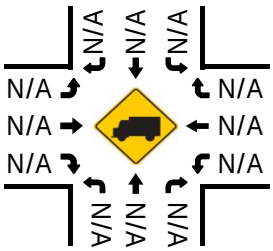
PM	0	0	0	0	0	PM
NOON	515	3	143	126	407	NOON
AM	0	0	0	0	0	AM

CONTROL			
Signalized			
TEV	0	2820	0
	AM	NOON	PM
PHF		0.95	

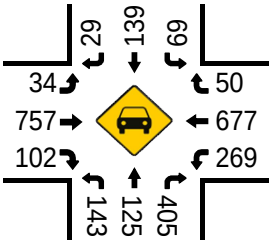
Cars (AM)



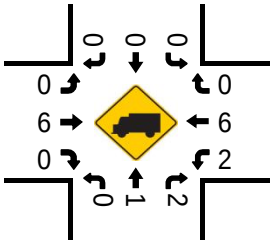
HT (AM)



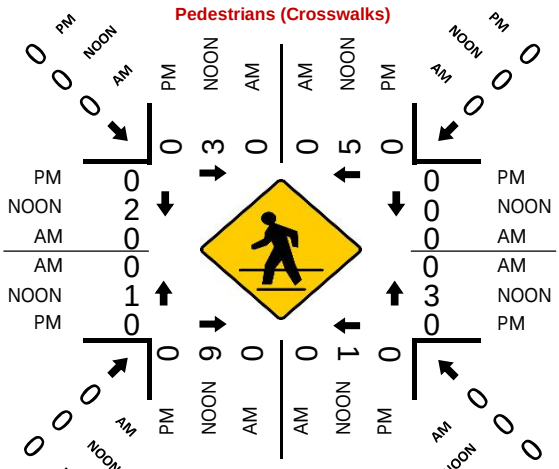
Cars (NOON)



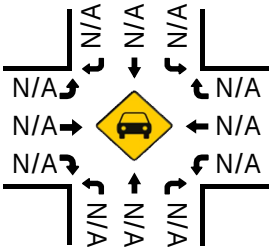
HT (NOON)



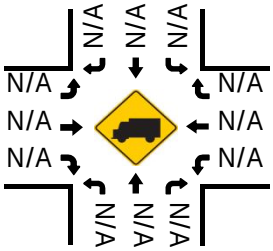
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW/Lewis St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-003
Date: 2018-08-25

Total

NS/EW Streets:	Wade Hampton Dr SW/Lewis St NW				Wade Hampton Dr SW/Lewis St NW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	1	0	0	0	1	1	8	0	8	211	2	1	1	214	5	1	454
11:15 AM	1	1	2	0	0	0	7	0	4	232	0	0	6	203	1	1	458
11:30 AM	3	0	5	0	1	0	3	0	6	267	1	2	2	208	2	0	500
11:45 AM	2	0	3	0	3	1	5	0	11	291	0	0	1	241	4	0	562
12:00 PM	1	0	4	0	0	0	7	0	16	318	8	1	3	232	7	0	597
12:15 PM	0	0	11	0	3	0	11	0	18	270	3	0	7	235	10	1	569
12:30 PM	1	0	8	0	1	1	3	0	15	276	2	1	8	264	2	0	582
12:45 PM	0	0	5	0	0	1	7	0	10	242	2	0	5	230	3	0	505
1:00 PM	4	0	2	0	2	0	6	0	12	220	1	0	0	257	7	0	511
1:15 PM	1	0	5	0	1	0	6	0	8	243	1	0	1	205	3	0	474
1:30 PM	1	1	4	0	1	0	6	0	11	216	1	0	6	253	0	0	500
1:45 PM	1	0	1	0	3	1	12	0	8	236	1	0	2	233	5	0	503
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	16	2	50	0	16	5	81	0	127	3022	22	5	42	2775	49	3	6215
APPROACH %'s :	23.53%	2.94%	73.53%	0.00%	15.69%	4.90%	79.41%	0.00%	4.00%	95.15%	0.69%	0.16%	1.46%	96.72%	1.71%	0.10%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	4	0	26	0	7	2	26	0	60	1155	13	2	19	972	23	1	2310
PEAK HR FACTOR :	0.500	0.000	0.591	0.000	0.583	0.500	0.591	0.000	0.833	0.908	0.406	0.500	0.594	0.920	0.575	0.250	0.967
	0.682				0.625				0.897				0.926				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW/Lewis St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-003
Date: 2018-08-25

Cars

NS/EW Streets:	Wade Hampton Dr SW/Lewis St NW				Wade Hampton Dr SW/Lewis St NW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	1	0	0	0	1	1	8	0	8	209	2	1	1	213	5	1	451
11:15 AM	1	1	2	0	0	0	7	0	4	228	0	0	6	203	1	1	454
11:30 AM	3	0	5	0	1	0	3	0	6	265	1	2	2	206	2	0	496
11:45 AM	2	0	3	0	3	1	5	0	11	289	0	0	1	238	4	0	557
12:00 PM	1	0	4	0	0	0	7	0	16	316	8	1	3	229	7	0	592
12:15 PM	0	0	10	0	3	0	11	0	18	268	3	0	6	234	10	1	564
12:30 PM	1	0	8	0	0	1	3	0	15	273	2	1	8	262	2	0	576
12:45 PM	0	0	5	0	0	1	6	0	10	239	2	0	5	228	3	0	499
1:00 PM	4	0	2	0	2	0	6	0	12	217	1	0	0	255	7	0	506
1:15 PM	1	0	5	0	1	0	6	0	8	241	1	0	1	202	2	0	468
1:30 PM	1	1	4	0	1	0	6	0	11	215	1	0	6	251	0	0	497
1:45 PM	1	0	1	0	3	0	12	0	8	235	1	0	2	231	5	0	499
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	16	2	49	0	15	4	80	0	127	2995	22	5	41	2752	48	3	6159
APPROACH %'s :	23.88%	2.99%	73.13%	0.00%	15.15%	4.04%	80.81%	0.00%	4.03%	95.11%	0.70%	0.16%	1.44%	96.77%	1.69%	0.11%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	4	0	25	0	6	2	26	0	60	1146	13	2	18	963	23	1	2289
PEAK HR FACTOR :	0.50	0.000	0.625	0.000	0.500	0.500	0.591	0.000	0.833	0.907	0.406	0.500	0.563	0.919	0.575	0.250	0.967
	0.725				0.607				0.895				0.924				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW/Lewis St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-003
Date: 2018-08-25

HT

NS/EW Streets:	Wade Hampton Dr SW/Lewis St NW				Wade Hampton Dr SW/Lewis St NW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
11:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4
11:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
11:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5
12:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5
12:15 PM	0	0	1	0	0	0	0	0	0	2	0	0	1	1	0	0	5
12:30 PM	0	0	0	0	1	0	0	0	0	3	0	0	0	2	0	0	6
12:45 PM	0	0	0	0	0	0	1	0	0	3	0	0	0	2	0	0	6
1:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
1:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	1	0	6
1:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
1:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	1	1	1	0	0	27	0	0	1	23	1	0	56
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	33.33%	33.33%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	4.00%	92.00%	4.00%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	0	0	1	0	1	0	0	0	0	9	0	0	1	9	0	0	21
PEAK HR FACTOR :	0.00	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.250	0.750	0.000	0.000	0.875
	0.250				0.250				0.750				0.833				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW/Lewis St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-003
Date: 2018-08-25

Bikes

NS/EW Streets:	Wade Hampton Dr SW/Lewis St NW				Wade Hampton Dr SW/Lewis St NW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	0	0	0	4	0	0	0	10	0	0	15
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	4
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.375	0.000	0.000	0.500
										0.250				0.375			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW/Lewis St NW & Maple Ave W
City: Vienna

Project ID: 18-110753-003
Date: 2018-08-25

Pedestrians (Crosswalks)

NS/EW Streets:	Wade Hampton Dr SW/Lewis St NW		Wade Hampton Dr SW/Lewis St NW		Maple Ave W		Maple Ave W		
NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	2	3	0	0	0	0	0	0	5
11:15 AM	0	6	0	1	0	0	0	0	7
11:30 AM	2	0	0	1	0	0	0	0	3
11:45 AM	0	0	1	0	0	0	0	0	1
12:00 PM	0	0	1	0	0	0	0	0	1
12:15 PM	5	0	1	0	0	0	0	0	6
12:30 PM	0	0	0	1	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	2	3	0	0	0	0	0	5
1:45 PM	1	1	0	0	0	0	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	10	12	6	3	0	0	0	0	31
APPROACH %'s :	45.45%	54.55%	66.67%	33.33%					
PEAK HR :	11:45 AM - 12:45 PM								TOTAL
PEAK HR VOL :	5	0	3	1	0	0	0	0	9
PEAK HR FACTOR :	0.250		0.750	0.250					0.375
	0.250		1.000						

Prepared by National Data & Surveying Services

Wade Hampton Dr SW/Lewis St NW & Maple Ave W

Peak Hour Turning Movement Count

ID: 18-11075-003
City: Vienna

Day: Saturday
Date: 08/25/2018

PEAK HOURS

NONE	
11:45 AM - 12:45 PM	
NONE	

COUNT PERIODS

NONE	
11:00 AM - 02:00 PM	
NONE	

Wade Hampton Dr SW/Lewis St NW

SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	26	2	7	0	83	NOON
PM	0	0	0	0	0	PM

EASTBOUND (Maple Ave W)

AM	NOON	PM	
0	1004	0	
0	2	0	0
0	60	0	1
0	1155	0	2
0	13	0	0
AM	NOON	PM	

WESTBOUND (Maple Ave W)

	PM	NOON	AM
0	0	23	0
2	0	972	0
1	0	19	0
0	0	1	0
	0	1189	0
	PM	NOON	AM

NORTHBOUND

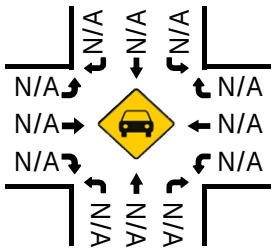
PM	0	0	0	0	0	PM
NOON	34	0	4	0	26	NOON
AM	0	0	0	0	0	AM

Wade Hampton Dr SW/Lewis St NW

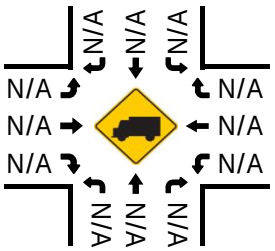
	SOUTH	EAST	WEST	NORTH
	0	1	0	0
	0	0	1	0

CONTROL			
2-Way Stop(NB/SB)			
TEV	0	2310	0
	AM	NOON	PM
PHF		0.97	

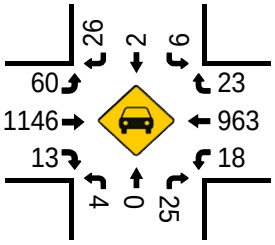
Cars (AM)



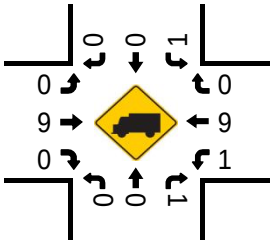
HT (AM)



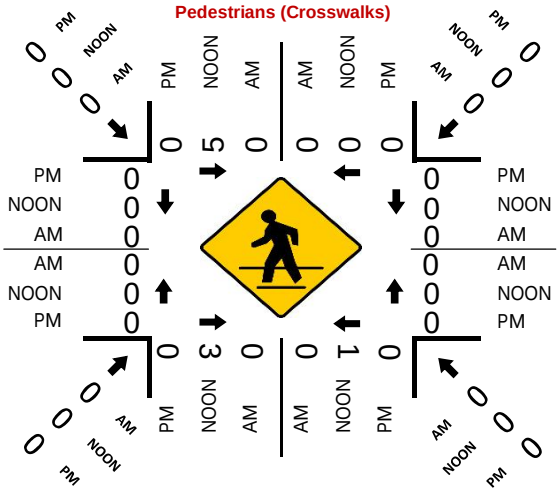
Cars (NOON)



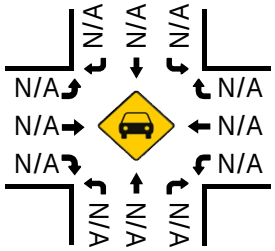
HT (NOON)



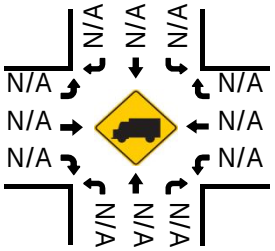
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Pleasant St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-004
Date: 2018-08-25

Total

NS/EW Streets:	Pleasant St NW				Pleasant St NW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	2	3	0	6	0	5	0	6	201	11	0	7	229	5	0	475
11:15 AM	4	1	9	0	11	0	8	0	6	219	8	0	11	211	7	0	495
11:30 AM	5	0	5	0	9	2	6	0	12	278	11	0	9	219	8	0	564
11:45 AM	1	0	8	0	2	1	5	0	3	291	5	0	6	260	6	0	588
12:00 PM	4	1	4	0	0	1	1	0	7	254	21	0	6	233	5	0	537
12:15 PM	5	2	8	0	0	1	7	1	15	261	18	0	8	268	8	0	602
12:30 PM	5	0	5	0	2	0	9	0	17	250	22	0	6	246	5	0	567
12:45 PM	3	1	5	0	1	1	6	0	9	270	12	0	4	240	9	0	561
1:00 PM	0	1	2	0	2	0	1	0	6	238	11	0	9	253	5	0	528
1:15 PM	0	1	3	0	3	0	3	0	4	250	5	0	4	235	3	0	511
1:30 PM	1	2	3	0	0	0	2	0	4	205	9	0	3	215	8	0	452
1:45 PM	1	1	7	0	1	0	6	0	9	193	3	0	2	256	9	0	488
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	29	12	62	0	37	6	59	1	98	2910	136	0	75	2865	78	0	6368
APPROACH %'s :	28.16%	11.65%	60.19%	0.00%	35.92%	5.83%	57.28%	0.97%	3.12%	92.56%	4.33%	0.00%	2.49%	94.93%	2.58%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	15	3	25	0	4	3	22	1	42	1056	66	0	26	1007	24	0	2294
PEAK HR FACTOR :	0.750	0.375	0.781	0.000	0.500	0.750	0.611	0.250	0.618	0.907	0.750	0.000	0.813	0.939	0.750	0.000	0.953
	0.717				0.682				0.973				0.930				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Pleasant St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-004
Date: 2018-08-25

Cars

NS/EW Streets:	Pleasant St NW				Pleasant St NW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	2	3	0	6	0	5	0	6	199	11	0	7	228	5	0	472
11:15 AM	4	1	9	0	11	0	8	0	5	217	8	0	11	211	7	0	492
11:30 AM	5	0	5	0	9	2	5	0	12	276	11	0	9	218	8	0	560
11:45 AM	1	0	8	0	2	1	5	0	3	289	5	0	6	255	6	0	581
12:00 PM	4	1	4	0	0	1	0	0	7	253	21	0	6	231	5	0	533
12:15 PM	5	2	8	0	0	1	7	1	15	259	18	0	8	266	8	0	598
12:30 PM	5	0	5	0	2	0	9	0	17	248	21	0	6	244	5	0	562
12:45 PM	3	1	5	0	1	1	6	0	9	267	12	0	4	238	9	0	556
1:00 PM	0	1	2	0	2	0	1	0	6	235	11	0	9	251	5	0	523
1:15 PM	0	1	3	0	3	0	3	0	2	249	5	0	4	232	3	0	505
1:30 PM	1	1	3	0	0	0	2	0	4	203	9	0	3	215	8	0	449
1:45 PM	1	1	7	0	1	0	6	0	9	192	3	0	2	253	9	0	484
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	29	11	62	0	37	6	57	1	95	2887	135	0	75	2842	78	0	6315
APPROACH %'s :	28.43%	10.78%	60.78%	0.00%	36.63%	5.94%	56.44%	0.99%	3.05%	92.62%	4.33%	0.00%	2.50%	94.89%	2.60%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	15	3	25	0	4	3	21	1	42	1049	65	0	26	996	24	0	2274
PEAK HR FACTOR :	0.75	0.375	0.781	0.000	0.500	0.750	0.583	0.250	0.618	0.907	0.774	0.000	0.813	0.936	0.750	0.000	0.951
	0.717				0.659				0.973				0.927				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Pleasant St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-004
Date: 2018-08-25

HT

NS/EW Streets:	Pleasant St NW				Pleasant St NW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
11:15 AM	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	3
11:30 AM	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	0	4
11:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0	0	7
12:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	4
12:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
12:30 PM	0	0	0	0	0	0	0	0	0	2	1	0	0	2	0	0	5
12:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
1:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
1:15 PM	0	0	0	0	0	0	0	0	2	1	0	0	0	3	0	0	6
1:30 PM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
1:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	2	0	3	23	1	0	0	23	0	0	53
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	11.11%	85.19%	3.70%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	0	0	7	1	0	0	11	0	0	20
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.875	0.250	0.000	0.000	0.550	0.000	0.000	0.714
						0.250				0.667				0.550			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Pleasant St NW & Maple Ave W
City: Vienna
Control: 2-Way Stop(NB/SB)

Project ID: 18-11075-004
Date: 2018-08-25

Bikes

NS/EW Streets:	Pleasant St NW				Pleasant St NW				Maple Ave W				Maple Ave W				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
1:30 PM	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	3
1:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	1	0	0	7	0	0	0	8	0	0	16
APPROACH %'s :					0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.375
										0.250				0.250			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Pleasant St NW & Maple Ave W
City: Vienna

Project ID: 18-110753-004
Date: 2018-08-25

Pedestrians (Crosswalks)

NS/EW Streets:	Pleasant St NW		Pleasant St NW		Maple Ave W		Maple Ave W		
NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	0	0	1	0	0	0	0	0	1
11:15 AM	0	4	0	1	1	1	0	0	7
11:30 AM	1	3	0	1	0	0	0	0	5
11:45 AM	0	0	1	1	0	0	1	0	3
12:00 PM	0	0	0	0	0	0	0	0	0
12:15 PM	1	0	2	0	0	0	0	0	3
12:30 PM	3	0	3	3	0	0	0	0	9
12:45 PM	1	0	0	0	0	0	0	0	1
1:00 PM	1	2	0	0	0	0	0	0	3
1:15 PM	0	1	1	2	0	0	0	0	4
1:30 PM	2	0	1	1	0	0	0	0	4
1:45 PM	0	1	0	0	1	0	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	9	11	9	9	2	1	1	0	42
APPROACH %'s :	45.00%	55.00%	50.00%	50.00%	66.67%	33.33%	100.00%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM								TOTAL
PEAK HR VOL :	4	0	6	4	0	0	1	0	15
PEAK HR FACTOR :	0.333		0.500	0.333			0.250		0.417
	0.333		0.417				0.250		

Prepared by National Data & Surveying Services

Pleasant St NW & Maple Ave W

Peak Hour Turning Movement Count

ID: 18-11075-004
City: Vienna

Day: Saturday
Date: 08/25/2018

PEAK HOURS	COUNT PERIODS
NONE	NONE
11:45 AM - 12:45 PM	11:00 AM - 02:00 PM
NONE	NONE

Pleasant St NW — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	22	3	4	1	70	NOON
PM	0	0	0	0	0	PM

Maple Ave W — EASTBOUND

AM	NOON	PM	
0	1044	0	
0	0	0	0
0	42	0	1
0	1056	0	2
0	66	0	0
AM	NOON	PM	

Maple Ave W — WESTBOUND

PM	NOON	AM	
0	24	0	0
0	1007	0	2
0	26	0	1
0	0	0	0
0	1085	0	
PM	NOON	AM	

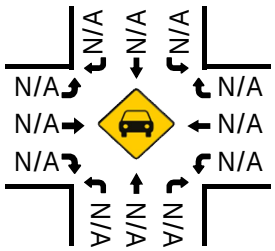
Pleasant St NW — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	95	0	15	3	25	NOON
AM	0	0	0	0	0	AM

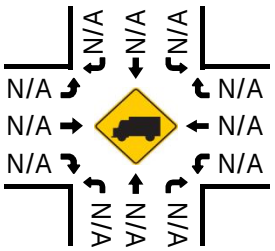
0	1	0	0	
0	0	1	0	

CONTROL			
2-Way Stop(NB/SB)			
TEV	0	2294	0
	AM	NOON	PM
PHF		0.95	

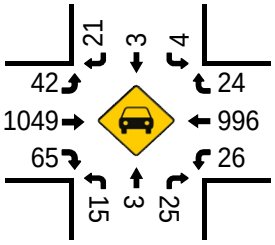
Cars (AM)



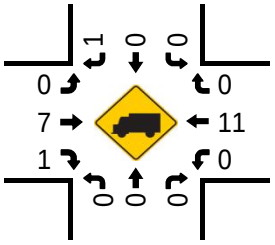
HT (AM)



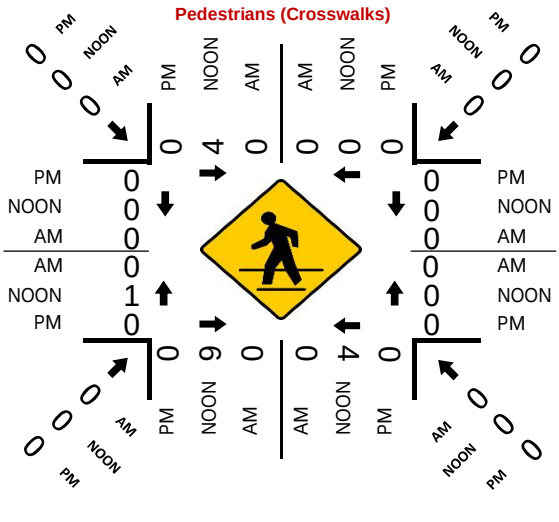
Cars (NOON)



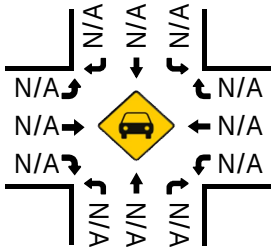
HT (NOON)



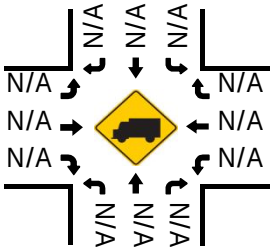
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Glen Ave SW & Courthouse Rd SW
City: Vienna
Control: 1-Way Stop(NB)

Project ID: 18-11075-005
Date: 2018-08-25

Total

NS/EW Streets:	Glen Ave SW				Glen Ave SW				Courthouse Rd SW				Courthouse Rd SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	1	0	3	0	0	0	0	69	1	0	6	67	0	0	147
11:15 AM	1	0	3	0	0	1	0	0	3	68	0	0	3	79	3	0	161
11:30 AM	0	0	0	0	4	0	0	0	0	68	0	1	1	77	1	0	152
11:45 AM	0	0	0	0	2	0	0	0	2	94	0	0	1	76	4	0	179
12:00 PM	14	0	7	0	7	1	1	0	1	86	1	1	0	80	3	0	202
12:15 PM	6	0	5	0	4	0	4	0	4	81	1	1	1	81	4	0	192
12:30 PM	2	0	4	0	6	0	2	0	6	82	0	0	1	89	2	0	194
12:45 PM	0	0	1	0	4	0	1	0	0	101	0	0	0	87	5	0	199
1:00 PM	3	0	3	0	5	0	3	0	2	68	1	0	0	83	7	0	175
1:15 PM	5	0	2	0	1	0	1	0	1	72	0	0	1	69	4	0	156
1:30 PM	2	0	0	0	1	0	1	0	1	64	0	0	0	59	3	0	131
1:45 PM	2	0	0	0	1	0	3	0	0	64	0	1	0	74	2	0	147
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	35	0	26	0	38	2	16	0	20	917	4	4	14	921	38	0	2035
APPROACH %'s :	57.38%	0.00%	42.62%	0.00%	67.86%	3.57%	28.57%	0.00%	2.12%	97.04%	0.42%	0.42%	1.44%	94.66%	3.91%	0.00%	
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	22	0	17	0	21	1	8	0	11	350	2	2	2	337	14	0	787
PEAK HR FACTOR :	0.393	0.000	0.607	0.000	0.750	0.250	0.500	0.000	0.458	0.866	0.500	0.500	0.500	0.947	0.700	0.000	0.974
	0.464				0.833				0.903				0.959				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Glen Ave SW & Courthouse Rd SW
City: Vienna
Control: 1-Way Stop(NB)

Project ID: 18-11075-005
Date: 2018-08-25

Cars

NS/EW Streets:	Glen Ave SW				Glen Ave SW				Courthouse Rd SW				Courthouse Rd SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	1	0	2	0	0	0	0	69	1	0	6	67	0	0	146
11:15 AM	1	0	3	0	0	1	0	0	3	68	0	0	3	78	3	0	160
11:30 AM	0	0	0	0	4	0	0	0	0	68	0	1	1	77	1	0	152
11:45 AM	0	0	0	0	2	0	0	0	2	93	0	0	1	76	4	0	178
12:00 PM	14	0	7	0	7	1	1	0	1	86	1	1	0	80	3	0	202
12:15 PM	6	0	5	0	4	0	4	0	4	81	1	1	1	81	4	0	192
12:30 PM	2	0	4	0	6	0	2	0	6	82	0	0	1	89	2	0	194
12:45 PM	0	0	1	0	4	0	1	0	0	99	0	0	0	86	5	0	196
1:00 PM	3	0	3	0	5	0	3	0	2	68	1	0	0	83	7	0	175
1:15 PM	5	0	2	0	1	0	1	0	1	72	0	0	1	69	4	0	156
1:30 PM	2	0	0	0	1	0	1	0	1	64	0	0	0	59	3	0	131
1:45 PM	2	0	0	0	0	0	3	0	0	63	0	1	0	74	2	0	145
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	35	0	26	0	36	2	16	0	20	913	4	4	14	919	38	0	2027
APPROACH %'s :	57.38%	0.00%	42.62%	0.00%	66.67%	3.70%	29.63%	0.00%	2.13%	97.02%	0.43%	0.43%	1.44%	94.64%	3.91%	0.00%	
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	22	0	17	0	21	1	8	0	11	348	2	2	2	336	14	0	784
PEAK HR FACTOR :	0.39	0.000	0.607	0.000	0.750	0.250	0.500	0.000	0.458	0.879	0.500	0.500	0.500	0.944	0.700	0.000	0.970
	0.464				0.833				0.917				0.957				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Glen Ave SW & Courthouse Rd SW
City: Vienna
Control: 1-Way Stop(NB)

Project ID: 18-11075-005
Date: 2018-08-25

HT

NS/EW Streets:	Glen Ave SW				Glen Ave SW				Courthouse Rd SW				Courthouse Rd SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	2	0	0	0	0	4	0	0	0	2	0	0	8
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.250
										0.250				0.250			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Glen Ave SW & Courthouse Rd SW
City: Vienna
Control: 1-Way Stop(NB)

Project ID: 18-11075-005
Date: 2018-08-25

Bikes

NS/EW Streets:	Glen Ave SW				Glen Ave SW				Courthouse Rd SW				Courthouse Rd SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	0	0	1	0	0	0	0	6	0	0	0	3	0	0	10
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3
11:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5
11:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	5
12:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
12:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
1:00 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	2	2	0	11
1:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	1	0	6
1:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	2	0	0	0	0	25	0	0	0	22	4	0	53
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	84.62%	15.38%	0.00%	
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0	0	9
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	1.000	0.000	0.000	0.750
										0.625				1.000			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Glen Ave SW & Courthouse Rd SW
City: Vienna

Project ID: 18-11075-005
Date: 2018-08-25

Pedestrians (Crosswalks)

NS/EW Streets:	Glen Ave SW		Glen Ave SW		Courthouse Rd SW		Courthouse Rd SW		
NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	0	0	1	0	0	0	0	0	1
11:15 AM	0	0	6	2	0	0	0	0	8
11:30 AM	0	0	1	2	0	0	0	0	3
11:45 AM	0	0	0	1	2	0	0	0	3
12:00 PM	1	2	0	2	1	2	0	0	8
12:15 PM	0	0	0	2	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	6	3	0	0	0	0	9
1:00 PM	0	0	0	1	0	0	0	0	1
1:15 PM	0	0	2	0	0	0	0	0	2
1:30 PM	0	0	2	0	1	0	0	0	3
1:45 PM	0	0	0	1	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	2	18	14	4	2	0	0	41
APPROACH %'s :	33.33%	66.67%	56.25%	43.75%	66.67%	33.33%			
PEAK HR :	12:00 PM - 01:00 PM								TOTAL
PEAK HR VOL :	1	2	6	7	1	2	0	0	19
PEAK HR FACTOR :	0.250	0.250	0.250	0.583	0.250	0.250			0.528
	0.250		0.361		0.250				

Prepared by National Data & Surveying Services

Glen Ave SW & Courthouse Rd SW

Peak Hour Turning Movement Count

ID: 18-11075-005
City: Vienna

Day: Saturday
Date: 08/25/2018

PEAK HOURS	COUNT PERIODS
NONE	NONE
12:00 PM - 01:00 PM	11:00 AM - 02:00 PM
NONE	NONE

Glen Ave SW — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	8	1	21	0	25	NOON
PM	0	0	0	0	0	PM

Courthouse Rd SW — EASTBOUND

AM	NOON	PM	
0	369	0	⇦
0	2	0	↶ 0
0	11	0	↱ 0
0	350	0	→ 1
0	2	0	↳ 0
AM	NOON	PM	

Courthouse Rd SW — WESTBOUND

PM	NOON	AM	
0	14	0	0 ↰
0	337	0	1 ←
0	2	0	0 ↶
0	0	0	0 ↶
0	388	0	⇨
PM	NOON	AM	

Glen Ave SW — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	5	0	22	0	17	NOON
AM	0	0	0	0	0	AM

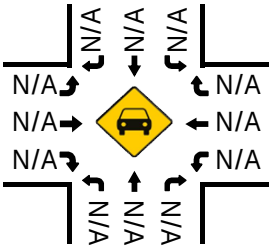
↲ 0	↓ 1	↳ 0	↳ 0	⇧
⇩	↶ 0	↰ 0	↑ 1	↱ 0

CONTROL

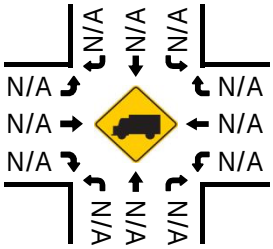
1-Way Stop(NB)

TEV	0	787	0
	AM	NOON	PM
PHF		0.97	

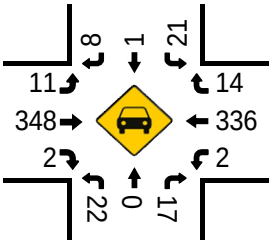
Cars (AM)



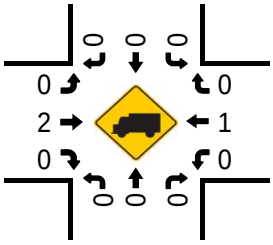
HT (AM)



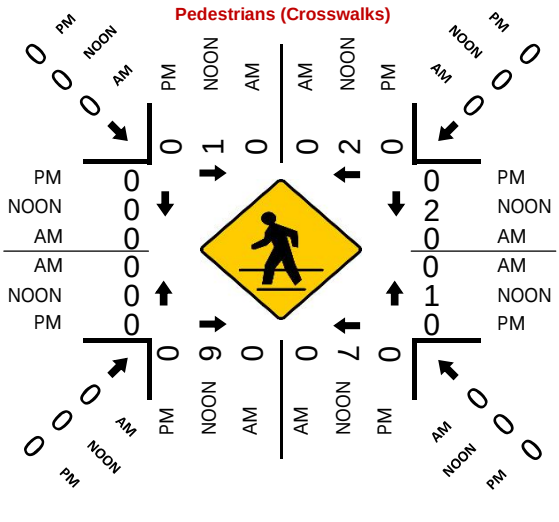
Cars (NOON)



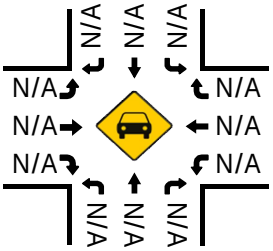
HT (NOON)



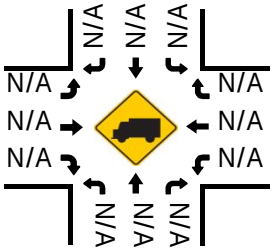
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW & Glen Ave SW/Millwood Ct SW
City: Vienna
Control: 2-Way Stop(EB/WB)

Project ID: 18-11075-006
Date: 2018-08-25

Total

NS/EW Streets:	Wade Hampton Dr SW				Wade Hampton Dr SW				Glen Ave SW/Millwood Ct SW				Glen Ave SW/Millwood Ct SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
11:15 AM	0	3	0	0	0	3	1	0	0	0	0	0	1	0	3	0	11
11:30 AM	0	5	2	0	1	1	0	0	2	0	0	0	0	0	0	0	11
11:45 AM	1	3	1	0	0	1	0	0	1	0	0	0	1	0	1	0	9
12:00 PM	0	1	1	0	9	1	1	0	1	0	0	0	1	0	4	0	19
12:15 PM	0	4	0	0	4	3	1	1	0	0	1	0	1	1	5	0	21
12:30 PM	0	2	1	0	6	2	0	1	0	0	1	0	0	0	5	0	18
12:45 PM	1	4	0	0	2	6	0	0	0	0	0	0	1	0	2	0	16
1:00 PM	1	2	0	0	1	1	0	0	0	0	1	0	2	0	5	0	13
1:15 PM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	2	0	7
1:30 PM	0	2	0	0	2	2	0	0	0	0	0	0	0	0	1	0	7
1:45 PM	0	2	0	0	2	1	0	0	0	0	0	0	2	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	32	5	0	27	25	3	2	4	0	3	0	9	1	28	0	142
APPROACH %'s :	7.50%	80.00%	12.50%	0.00%	47.37%	43.86%	5.26%	3.51%	57.14%	0.00%	42.86%	0.00%	23.68%	2.63%	73.68%	0.00%	
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	1	11	2	0	21	12	2	2	1	0	2	0	3	1	16	0	74
PEAK HR FACTOR :	0.250	0.688	0.500	0.000	0.583	0.500	0.500	0.500	0.250	0.000	0.500	0.000	0.750	0.250	0.800	0.000	0.881
	0.700				0.841				0.750				0.714				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW & Glen Ave SW/Millwood Ct SW
City: Vienna
Control: 2-Way Stop(EB/WB)

Project ID: 18-11075-006
Date: 2018-08-25

Cars

NS/EW Streets:	Wade Hampton Dr SW				Wade Hampton Dr SW				Glen Ave SW/Millwood Ct SW				Glen Ave SW/Millwood Ct SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
11:15 AM	0	3	0	0	0	3	1	0	0	0	0	0	1	0	3	0	11
11:30 AM	0	5	2	0	1	1	0	0	2	0	0	0	0	0	0	0	11
11:45 AM	1	3	1	0	0	1	0	0	1	0	0	0	1	0	1	0	9
12:00 PM	0	1	1	0	9	1	1	0	1	0	0	0	1	0	4	0	19
12:15 PM	0	4	0	0	4	3	1	0	0	0	1	0	1	1	5	0	20
12:30 PM	0	2	1	0	6	2	0	1	0	0	1	0	0	0	5	0	18
12:45 PM	1	4	0	0	2	6	0	0	0	0	0	0	1	0	2	0	16
1:00 PM	1	2	0	0	1	1	0	0	0	0	1	0	2	0	5	0	13
1:15 PM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	2	0	7
1:30 PM	0	2	0	0	2	2	0	0	0	0	0	0	0	0	1	0	7
1:45 PM	0	2	0	0	1	1	0	0	0	0	0	0	2	0	0	0	6
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	32	5	0	26	25	3	1	4	0	3	0	9	1	28	0	140
APPROACH %'s :	7.50%	80.00%	12.50%	0.00%	47.27%	45.45%	5.45%	1.82%	57.14%	0.00%	42.86%	0.00%	23.68%	2.63%	73.68%	0.00%	
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	1	11	2	0	21	12	2	1	1	0	2	0	3	1	16	0	73
PEAK HR FACTOR :	0.25	0.688	0.500	0.000	0.583	0.500	0.500	0.250	0.250	0.000	0.500	0.000	0.750	0.250	0.800	0.000	0.913
	0.700				0.818				0.750				0.714				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW & Glen Ave SW/Millwood Ct SW
City: Vienna
Control: 2-Way Stop(EB/WB)

Project ID: 18-11075-006
Date: 2018-08-25

HT

NS/EW Streets:	Wade Hampton Dr SW				Wade Hampton Dr SW				Glen Ave SW/Millwood Ct SW				Glen Ave SW/Millwood Ct SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2
APPROACH %'s :					50.00%	0.00%	0.00%	50.00%									
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
					0.250												

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW & Glen Ave SW/Millwood Ct SW
City: Vienna
Control: 2-Way Stop(EB/WB)

Project ID: 18-11075-006
Date: 2018-08-25

Bikes

NS/EW Streets:	Wade Hampton Dr SW				Wade Hampton Dr SW				Glen Ave SW/Millwood Ct SW				Glen Ave SW/Millwood Ct SW				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
1:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	1	0	0	0	0	0	0	0	0	0	2	0	2	1	7
APPROACH %'s :	0.00%	50.00%	50.00%	0.00%									40.00%	0.00%	40.00%	20.00%	
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250
													0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Wade Hampton Dr SW & Glen Ave SW/Millwood Ct SW
City: Vienna

Project ID: 18-110753-006
Date: 2018-08-25

Pedestrians (Crosswalks)

NS/EW Streets:	Wade Hampton Dr SW		Wade Hampton Dr SW		Glen Ave SW/Millwood Ct SW		Glen Ave SW/Millwood Ct SW		
NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	1	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	0	1
APPROACH %'s :					100.00%	0.00%			
PEAK HR :	12:00 PM - 01:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	1
PEAK HR FACTOR :					0.250				0.250
					0.250				

Prepared by National Data & Surveying Services

Wade Hampton Dr SW & Glen Ave SW / Millwood Ct SW

Peak Hour Turning Movement Count

ID: 18-11075-006
City: Vienna

Day: Saturday
Date: 08/25/2018

PEAK HOURS	COUNT PERIODS
NONE	NONE
12:00 PM - 01:00 PM	11:00 AM - 02:00 PM
NONE	NONE

Wade Hampton Dr SW — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	2	12	21	2	30	NOON
PM	0	0	0	0	0	PM

Glen Ave SW/Millwood Ct SW — EASTBOUND

AM	NOON	PM
0	4	0
0	0	0
0	1	0
0	0	0
0	2	0
AM	NOON	PM

Glen Ave SW/Millwood Ct SW — WESTBOUND

PM	NOON	AM
0	16	0
0	1	0
0	3	0
0	0	0
0	23	0
PM	NOON	AM

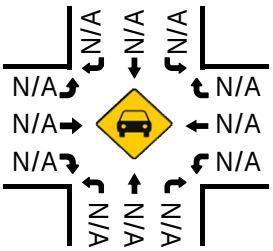
Wade Hampton Dr SW — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	17	0	1	11	2	NOON
AM	0	0	0	0	0	AM

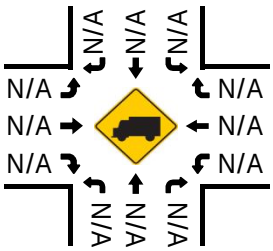
0	1	0	0	
0				0
0				0
1				0
0				0
	0	0	1	0

CONTROL			
2-Way Stop(EB/WB)			
TEV	0	74	0
	AM	NOON	PM
PHF		0.88	

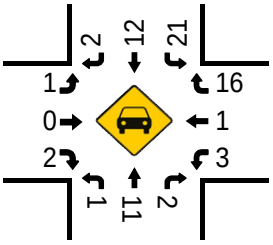
Cars (AM)



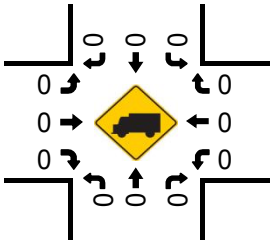
HT (AM)



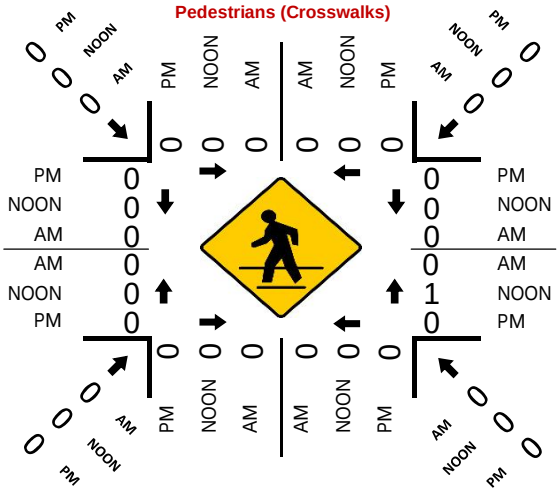
Cars (NOON)



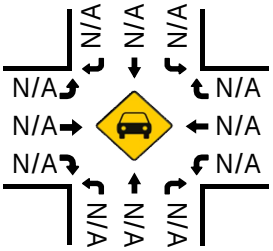
HT (NOON)



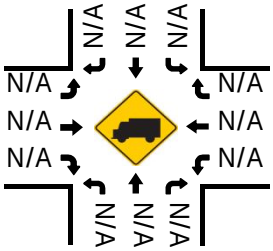
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



APPENDIX D: Transit Data

461

Effective March 18, 2017

Flint Hill – Vienna

Vienna Metro Station • Nutley St • Flint Hill Rd • James Madison High School • Park St • Tapawingo Rd

Weekday Rush Hour Service Only

Weekday – AM Rush Service

Vienna Metro Station (North side)	Chain Bridge Rd & James Madison Dr	Lawyers Rd & Lewis St	Park St & Elmar St	Vienna Metro Station (North side)
5:32	5:37	5:43	5:50	5:56
6:02	6:07	6:13	6:20	6:26
6:35	6:42	6:49	6:57	7:04
7:09	7:15	7:22	7:30	7:37
7:34	7:40	7:47	7:55	8:02
7:58	8:04	8:11	8:18	8:25
8:24	8:29	8:37	8:44	8:51
8:49	8:54	9:01	9:08	9:15

Weekday – PM Rush Service

Vienna Metro Station (North side)	Chain Bridge Rd & James Madison Dr	Lawyers Rd & Lewis St	Park St & Elmar St	Vienna Metro Station (North side)
4:00	4:10	4:16	4:22	4:31
4:30	4:40	4:46	4:52	5:01
4:55	5:04	5:12	5:18	5:26
5:20	5:29	5:37	5:43	5:51
5:45	5:54	6:02	6:08	6:16
6:10	6:19	6:27	6:33	6:41
6:35	6:43	6:50	6:57	7:05
7:00	7:08	7:14	7:21	7:29
7:31	7:39	7:45	7:52	8:00

- **Use exact fare; drivers do not carry change.**
- **Smoking, eating, drinking, and littering are strictly prohibited.**
- **Strollers must be folded.**
- **Use earphones with audio and video devices.**
- **Service animals are permitted on the bus. Other small animals are permitted only if transported in a closed pet carrier.**

All Fairfax Connector buses are wheelchair accessible.

FAIRFAX CONNECTOR

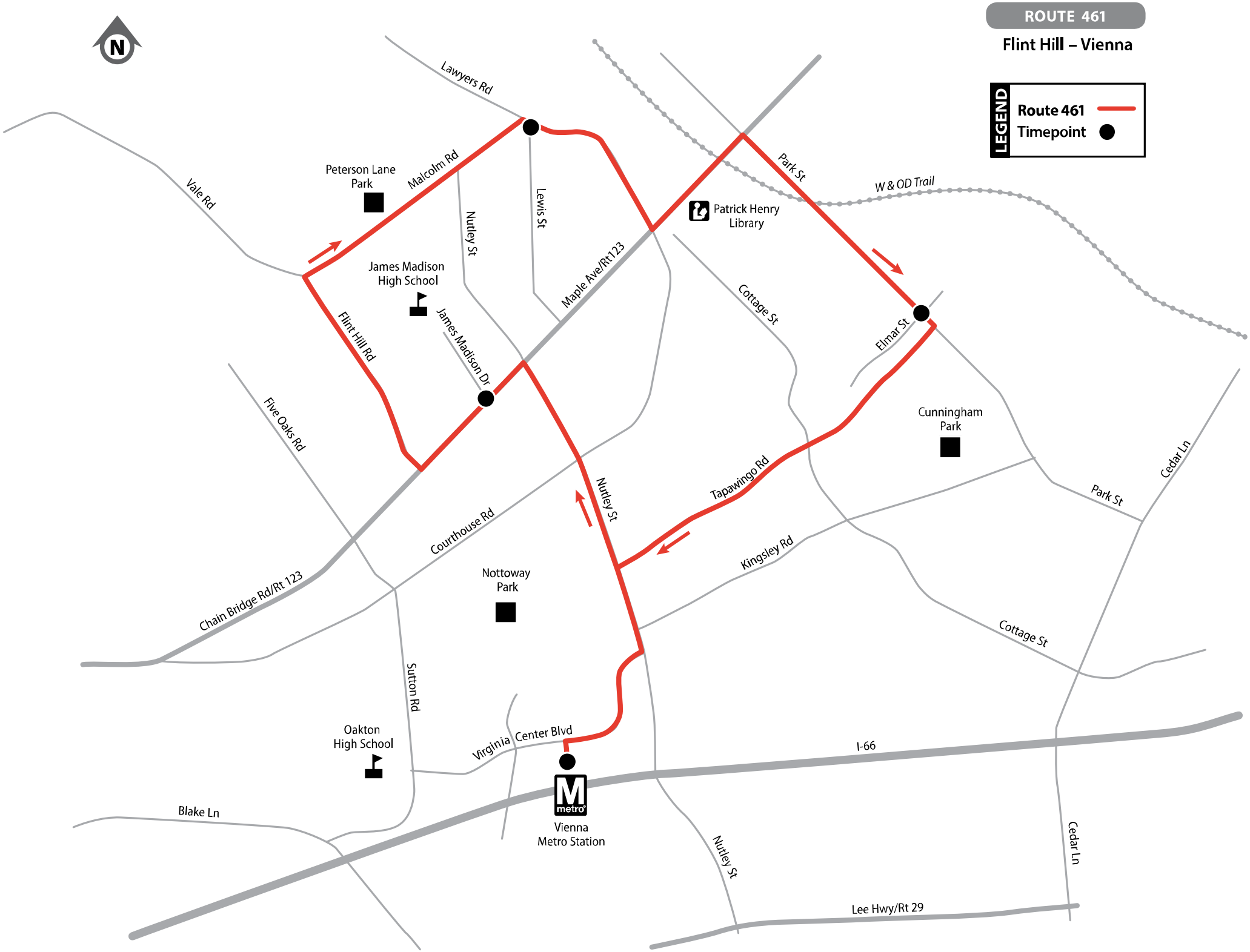
For fares and important information about the bus system, see the brochure:

Fares, Policies & General Information

FAIRFAX CONNECTOR **BusTracker**
REAL-TIME SERVICE INFORMATION
fairfaxconnector.com

703-339-7200 **TTY 703-339-1608**
@ffxconnector **/fairfaxconnector**

Fairfax County Department of Transportation (FCDOT) ensures nondiscrimination in all programs and activities in accordance with Title VI of the Civil Rights Act of 1964 and the Americans with Disabilities Act (ADA). To request this information in an alternate format, contact FCDOT at 703-877-5600, TTY 711.


ROUTE 461
Flint Hill – Vienna
LEGEND
Route 461
Timepoint
N
Lawyers Rd
Vale Rd
Peterson Lane Park
Malcolm Rd
Nutley St
Lewis St
Maple Ave/Rt123
Park St
W & OD Trail
Patrick Henry Library
James Madison High School
Flint Hill Rd
James Madison Dr
Cottage St
Elmar St
Five Oaks Rd
Cunningham Park
Cedar Ln
Park St
Tapawingo Rd
Nutley St
Courthouse Rd
Kingsley Rd
Nottoway Park
Chain Bridge Rd/Rt 123
Cottage St
Sutton Rd
Oakton High School
Virginia Center Blvd
I-66
Vienna Metro Station
Blake Ln
Nutley St
Cedar Ln
Lee Hwy/Rt 29

462 DUNN LORING – NAVY FEDERAL – TYSONS

Weekday – AM Northbound Service

Dunn Loring Metro Station	Cedar Ln & Park St	Navy Federal Credit Union	Old Courthouse Rd & Woodford Rd	Tysons Corner Metro Station (South side)
5:15	5:21	5:28	5:34	5:41
5:45	5:51	5:58	6:04	6:11
6:20	6:26	6:33	6:39	6:46
6:55	7:01	7:08	7:14	7:21
7:20	7:28	7:37	7:44	7:52
7:40	7:48	7:57	8:04	8:12
8:10	8:18	8:27	8:34	8:42
8:40	8:48	8:57	9:04	9:12

Weekday –PM Northbound Service

Dunn Loring Metro Station	Cedar Ln & Park St	Navy Federal Credit Union	Old Courthouse Rd & Woodford Rd	Tysons Corner Metro Station (South side)
4:00	4:08	4:17	4:24	4:32
4:30	4:38	4:47	4:54	5:02
5:00	5:08	5:17	5:24	5:32
5:30	5:38	5:47	5:54	6:02
6:00	6:08	6:17	6:24	6:32
6:30	6:37	6:45	6:51	6:58
7:00	7:07	7:15	7:21	7:28

Weekday – AM Southbound Service

Tysons Corner Metro Station (South side)	Old Courthouse Rd & Woodford Rd	Navy Federal Credit Union	Cedar Ln & Park St	Dunn Loring Metro Station
5:50	5:55	6:01	6:08	6:14
6:21	6:26	6:32	6:39	6:45
6:55	7:00	7:06	7:13	7:19
7:30	7:37	7:46	7:56	8:03
7:55	8:02	8:11	8:21	8:28
8:15	8:22	8:31	8:41	8:48
8:50	8:57	9:06	9:16	9:23

Weekday – PM Southbound Service

Tysons Corner Metro Station (South side)	Old Courthouse Rd & Woodford Rd	Navy Federal Credit Union	Cedar Ln & Park St	Dunn Loring Metro Station
3:50	3:57	4:06	4:16	4:23
4:10	4:17	4:26	4:36	4:43
4:40	4:47	4:56	5:06	5:13
5:10	5:17	5:26	5:36	5:43
5:45	5:52	6:01	6:11	6:18
6:10	6:17	6:26	6:36	6:43
6:45	6:50	6:57	7:06	7:13
7:10	7:15	7:22	7:31	7:38

- **Use exact fare; drivers do not carry change.**
- **Smoking, eating, drinking, and littering are strictly prohibited.**
- **Strollers must be folded.**
- **Use earphones with audio and video devices.**
- **Service animals are permitted on the bus. Other small animals are permitted only if transported in a closed pet carrier.**

All Fairfax Connector buses are wheelchair accessible.

462

Effective September 30, 2017

Dunn Loring – Navy Federal – Tysons

Dunn Loring Metro Station • Prosperity Ave • Hilltop Rd • Cedar Ln • Navy Federal Credit Union • Chain Bridge Rd • Tysons Corner Metro Station

Weekday Rush Hour Service Only

FAIRFAX CONNECTOR

For fares and important information about the bus system, see the brochure:

Fares, Policies & General Information

FAIRFAX CONNECTOR **BusTracker**
REAL-TIME SERVICE INFORMATION
fairfaxconnector.com

703-339-7200 **TTY 703-339-1608**
@ffxconnector **/fairfaxconnector**

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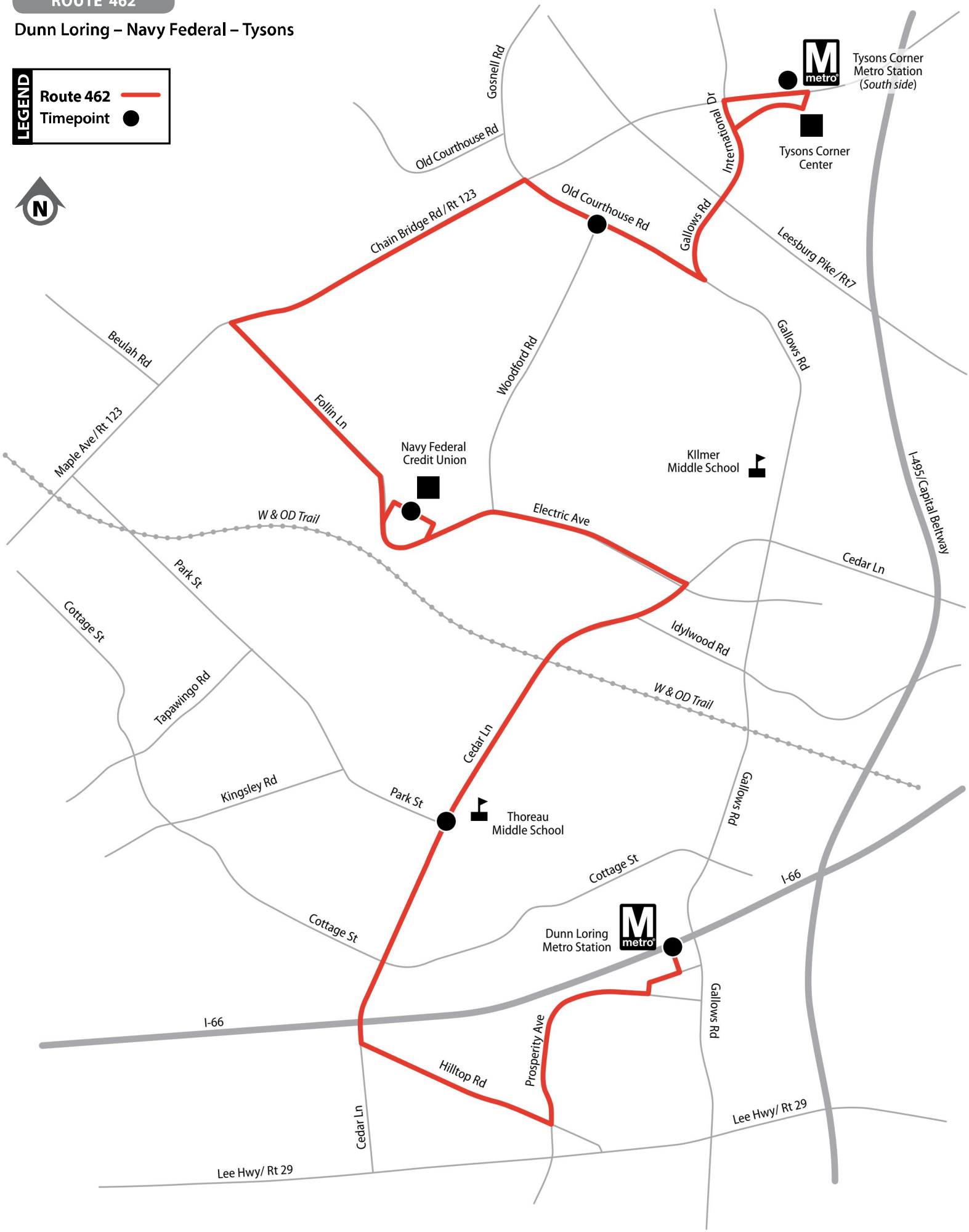
462_0917

ROUTE 462

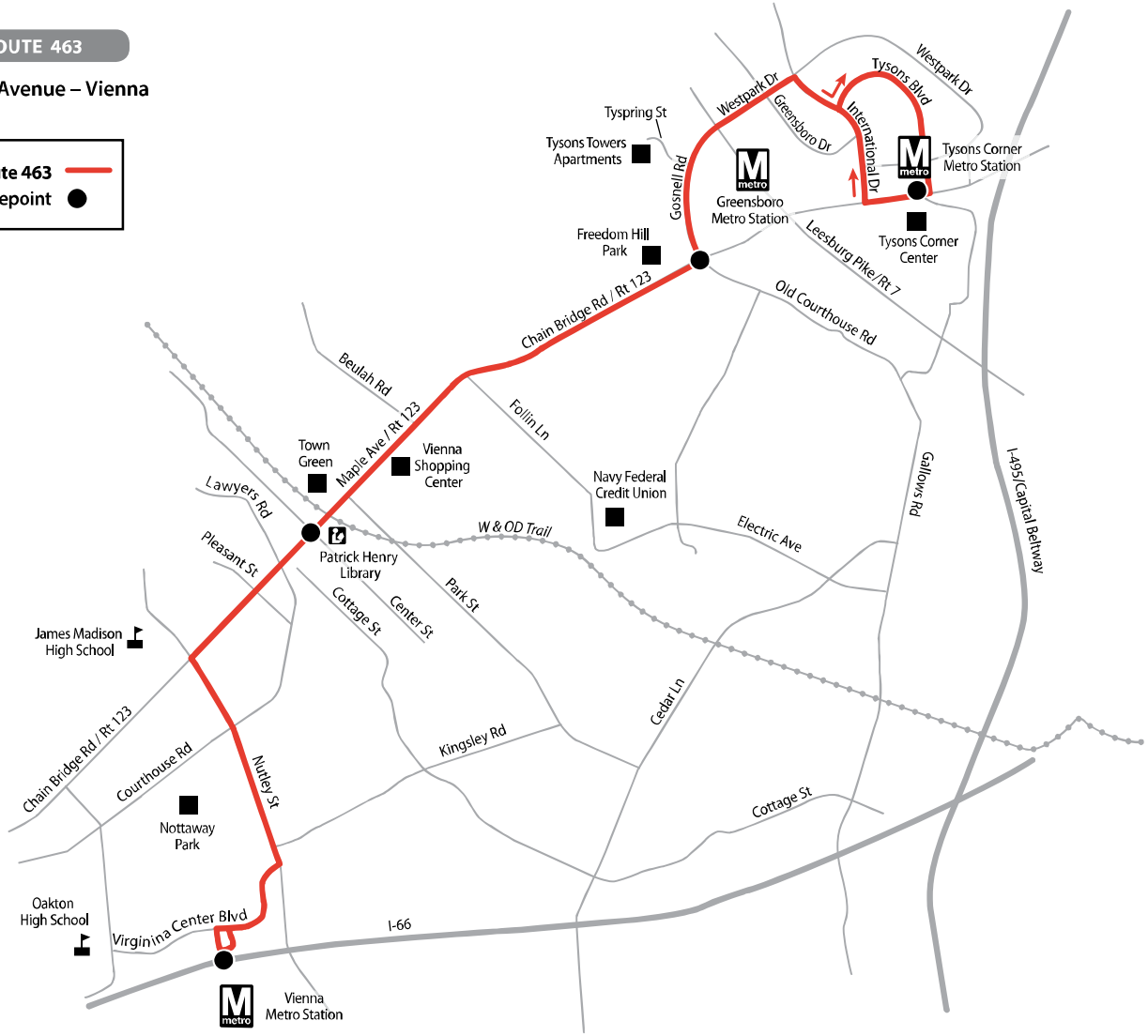
Dunn Loring – Navy Federal – Tysons



ROUTE 463

Maple Avenue – Vienna

LEGEND
Route 463
Timepoint



- Use exact fare; drivers do not carry change.
- Smoking, eating, drinking, and littering are strictly prohibited.
- Strollers must be folded.
- Use earphones with audio and video devices.
- Service animals are permitted on the bus. Other small animals are permitted only if transported in a closed pet carrier.

All Fairfax Connector buses are wheelchair accessible.

463

Effective December 2, 2017

Maple Avenue – Vienna

Vienna Metro Station • Nutley St • Maple Ave • Chain Bridge Rd • Gosnell Rd • Tysons Corner Metro Station

Weekday, Saturday & Sunday Service

FAIRFAX CONNECTOR

For fares and important information about the bus system, see the brochure:
Fares, Policies & General Information

FAIRFAX CONNECTOR
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463 MAPLE AVENUE – VIENNA

Weekday – AM Northbound Service

Vienna Metro Station (North side)	Maple Ave & Center St	Old Courthouse Rd & Chain Bridge Rd	Tysons Corner Metro Station (North side)
5:05	5:12	5:18	5:26
5:35	5:42	5:48	5:56
6:05	6:14	6:23	6:32
6:35	6:44	6:53	7:02
7:05	7:14	7:23	7:32
7:35	7:44	7:53	8:02
8:05	8:14	8:23	8:32
8:35	8:44	8:53	9:02
9:05	9:14	9:22	9:30
9:35	9:44	9:52	10:00
10:05	10:14	10:22	10:30
10:35	10:44	10:52	11:00
11:05	11:14	11:22	11:30
11:35	11:44	11:52	12:00 PM

Weekday – PM Northbound Service

Vienna Metro Station (North side)	Maple Ave & Center St	Old Courthouse Rd & Chain Bridge Rd	Tysons Corner Metro Station (North side)
12:05	12:14	12:22	12:30
12:35	12:44	12:52	1:00
1:05	1:14	1:22	1:30
1:35	1:44	1:52	2:00
2:05	2:14	2:22	2:30
2:35	2:44	2:52	3:00
3:05	3:15	3:24	3:33
3:35	3:45	3:54	4:03
4:00	4:10	4:19	4:28
4:25	4:35	4:44	4:53
4:50	5:00	5:09	5:18
5:15	5:25	5:34	5:48
5:40	5:50	5:59	6:13
6:05	6:15	6:23	6:29
6:30	6:40	6:48	6:54
7:00	7:10	7:18	7:24
7:30	7:40	7:48	7:54
8:00	8:10	8:18	8:24
8:30	8:40	8:48	8:54
9:05	9:12	9:18	9:25
9:30	9:37	9:43	9:50
10:00	10:07	10:13	10:20
10:30	10:37	10:43	10:50
11:00	11:07	11:13	11:20

Weekday – AM Southbound Service

Tysons Corner Metro Station (North side)	Chain Bridge Rd & Old Courthouse Rd	Maple Ave & Center St	Vienna Metro Station (North side)
5:45	5:51	5:55	6:00
6:15	6:24	6:30	6:38
6:45	6:54	7:00	7:08
7:15	7:24	7:30	7:38
7:45	7:54	8:00	8:08
8:15	8:24	8:30	8:38
8:45	8:54	9:00	9:08
9:15	9:23	9:30	9:38
9:45	9:53	10:00	10:08
10:15	10:23	10:30	10:38
10:35	10:43	10:50	10:58
11:05	11:13	11:20	11:28
11:35	11:43	11:50	11:58

Weekday – PM Southbound Service

Tysons Corner Metro Station (North side)	Chain Bridge Rd & Old Courthouse Rd	Maple Ave & Center St	Vienna Metro Station (North side)
12:05	12:13	12:20	12:28
12:35	12:43	12:50	12:58
1:05	1:13	1:20	1:28
1:35	1:43	1:50	1:58
2:05	2:13	2:20	2:28
2:35	2:43	2:50	2:58
3:05	3:17	3:29	3:38
3:40	3:52	4:04	4:13
4:10	4:22	4:34	4:48
4:35	4:47	4:59	5:20
5:00	5:12	5:24	5:45
5:25	5:37	5:49	6:10
5:55	6:07	6:19	6:40
6:20	6:29	6:37	6:46
6:45	6:54	7:02	7:11
7:10	7:19	7:27	7:36
7:35	7:44	7:52	8:01
8:00	8:09	8:17	8:26
8:30	8:39	8:47	8:56
9:00	9:07	9:12	9:18
9:30	9:37	9:42	9:48
10:00	10:07	10:12	10:18
10:30	10:37	10:42	10:48
11:00	11:07	11:12	11:18
11:30	11:37	11:42	11:48

Saturday – AM Northbound Service

Vienna Metro Station (North side)	Maple Ave & Center St	Old Courthouse Rd & Chain Bridge Rd	Tysons Corner Metro Station (North side)
6:00	6:07	6:15	6:26
7:00	7:07	7:15	7:26
8:00	8:07	8:15	8:26
9:00	9:07	9:15	9:26
10:00	10:07	10:15	10:26
11:00	11:07	11:15	11:26

Saturday – PM Northbound Service

Vienna Metro Station (North side)	Maple Ave & Center St	Old Courthouse Rd & Chain Bridge Rd	Tysons Corner Metro Station (North side)
12:00	12:07	12:15	12:26
1:00	1:07	1:15	1:26
2:00	2:07	2:15	2:26
3:00	3:07	3:15	3:26
4:00	4:07	4:15	4:26
5:00	5:07	5:15	5:26
6:00	6:07	6:15	6:26
7:00	7:07	7:15	7:26
8:00	8:07	8:15	8:26
9:00	9:07	9:15	9:26
10:00	10:07	10:15	10:26
11:00	11:07	11:15	11:26

Sunday – AM Northbound Service

Vienna Metro Station (North side)	Maple Ave & Center St	Old Courthouse Rd & Chain Bridge Rd	Tysons Corner Metro Station (North side)
8:00	8:07	8:15	8:26
9:00	9:07	9:15	9:26
10:00	10:07	10:15	10:26
11:00	11:07	11:15	11:26

Sunday – PM Northbound Service

Vienna Metro Station (North side)	Maple Ave & Center St	Old Courthouse Rd & Chain Bridge Rd	Tysons Corner Metro Station (North side)
12:00	12:07	12:15	12:26
1:00	1:07	1:15	1:26
2:00	2:07	2:15	2:26
3:00	3:07	3:15	3:26
4:00	4:07	4:15	4:26
5:00	5:07	5:15	5:26
6:00	6:07	6:15	6:26
7:00	7:07	7:15	7:26
8:00	8:07	8:15	8:26

Saturday – AM Southbound Service

Tysons Corner Metro Station (North side)	Chain Bridge Rd & Old Courthouse Rd	Maple Ave & Center St	Vienna Metro Station (North side)
6:30	6:40	6:46	6:54
7:30	7:40	7:46	7:54
8:30	8:40	8:46	8:54
9:30	9:40	9:46	9:54
10:30	10:40	10:46	10:54
11:30	11:40	11:46	11:54

Saturday – PM Southbound Service

Tysons Corner Metro Station (North side)	Chain Bridge Rd & Old Courthouse Rd	Maple Ave & Center St	Vienna Metro Station (North side)
12:30	12:40	12:46	12:54
1:30	1:40	1:46	1:54
2:30	2:40	2:46	2:54
3:30	3:40	3:46	3:54
4:30	4:40	4:46	4:54
5:30	5:40	5:46	5:54
6:30	6:40	6:46	6:54
7:30	7:40	7:46	7:54
8:30	8:40	8:46	8:54
9:30	9:40	9:46	9:54
10:30	10:40	10:46	10:54

Sunday – AM Southbound Service

Tysons Corner Metro Station (North side)	Chain Bridge Rd & Old Courthouse Rd	Maple Ave & Center St	Vienna Metro Station (North side)
8:30	8:40	8:46	8:54
9:30	9:40	9:46	9:54
10:30	10:40	10:46	10:54
11:30	11:40	11:46	11:54

Sunday – PM Southbound Service

Tysons Corner Metro Station (North side)	Chain Bridge Rd & Old Courthouse Rd	Maple Ave & Center St	Vienna Metro Station (North side)
12:30	12:40	12:46	12:54
1:30	1:40	1:46	1:54
2:30	2:40	2:46	2:54
3:30	3:40	3:46	3:54
4:30	4:40	4:46	4:54
5:30	5:40	5:46	5:54
6:30	6:40	6:46	6:54
7:30	7:40	7:46	7:54

APPENDIX E: SYNCHRO REPORTS (LOS)

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	857	114	144	509	51	259	161	352	72	272	23
Future Volume (vph)	18	857	114	144	509	51	259	161	352	72	272	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1800	3352		1671	3256		1548	1651	1563	1562	1871	
Flt Permitted	0.37	1.00		0.08	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	706	3352		134	3256		1548	1651	1563	1562	1871	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	20	942	125	158	559	56	285	177	387	79	299	25
RTOR Reduction (vph)	0	7	0	0	5	0	0	0	176	0	2	0
Lane Group Flow (vph)	20	1060	0	158	610	0	242	220	212	79	322	0
Confl. Peds. (#/hr)	9					9	9		18	18		9
Confl. Bikes (#/hr)			3			2			4			1
Heavy Vehicles (%)	0%	2%	3%	8%	5%	8%	6%	3%	3%	10%	2%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases	2			6					8			
Actuated Green, G (s)	52.4	48.3		67.8	56.2		26.5	26.5	38.5	24.7	24.7	
Effective Green, g (s)	59.4	51.8		71.3	59.7		29.0	29.0	45.5	27.7	27.7	
Actuated g/C Ratio	0.42	0.37		0.51	0.43		0.21	0.21	0.32	0.20	0.20	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0	4.0	3.0	3.0	
Lane Grp Cap (vph)	358	1240		238	1388		320	341	507	309	370	
v/s Ratio Prot	0.00	c0.32		c0.07	0.19		c0.16	0.13	0.05	0.05	c0.17	
v/s Ratio Perm	0.02			0.26					0.09			
v/c Ratio	0.06	0.85		0.66	0.44		0.76	0.65	0.42	0.26	0.87	
Uniform Delay, d1	23.6	40.6		31.8	28.3		52.2	50.8	36.9	47.4	54.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	7.7		7.5	1.0		9.8	4.2	0.8	0.4	19.0	
Delay (s)	23.7	48.3		39.2	29.4		62.0	54.9	37.7	47.9	73.4	
Level of Service	C	D		D	C		E	D	D	D	E	
Approach Delay (s)		47.8			31.4			49.1			68.4	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	46.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	233	378	193	34	46	70	679	234	24	512	15
Future Volume (veh/h)	31	233	378	193	34	46	70	679	234	24	512	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1837	1825	1881	1854	1900	1862	1822	1881	1689	1829	1900
Adj Flow Rate, veh/h	33	251	406	208	37	49	75	730	252	26	551	16
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	1	1	6	6	1	4	4	8	4	4
Cap, veh/h	64	483	457	276	110	146	349	1039	359	167	1350	39
Arrive On Green	0.30	0.30	0.30	0.15	0.15	0.13	0.05	0.41	0.39	0.02	0.39	0.37
Sat Flow, veh/h	212	1614	1526	1792	716	948	1774	2508	866	1608	3446	100
Grp Volume(v), veh/h	284	0	406	208	0	86	75	504	478	26	278	289
Grp Sat Flow(s),veh/h/ln	1826	0	1526	1792	0	1664	1774	1731	1642	1608	1737	1808
Q Serve(g_s), s	18.8	0.0	37.0	16.2	0.0	6.8	3.6	35.0	35.3	1.4	16.8	16.9
Cycle Q Clear(g_c), s	18.8	0.0	37.0	16.2	0.0	6.8	3.6	35.0	35.3	1.4	16.8	16.9
Prop In Lane	0.12		1.00	1.00		0.57	1.00		0.53	1.00		0.06
Lane Grp Cap(c), veh/h	547	0	457	276	0	256	349	717	680	167	681	708
V/C Ratio(X)	0.52	0.00	0.89	0.75	0.00	0.34	0.21	0.70	0.70	0.16	0.41	0.41
Avail Cap(c_a), veh/h	602	0	503	591	0	549	647	717	680	474	681	708
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	0.0	48.7	58.9	0.0	55.7	25.8	35.2	35.9	30.3	32.0	32.1
Incr Delay (d2), s/veh	0.8	0.0	16.5	4.2	0.0	0.8	0.3	5.7	6.0	0.4	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	0.0	17.7	8.4	0.0	3.2	1.8	17.8	17.2	0.6	8.4	8.8
LnGrp Delay(d),s/veh	43.1	0.0	65.2	63.1	0.0	56.5	26.1	40.9	41.9	30.7	33.8	33.9
LnGrp LOS	D		E	E		E	C	D	D	C	C	C
Approach Vol, veh/h		690			294			1057			593	
Approach Delay, s/veh		56.1			61.2			40.3			33.7	
Approach LOS		E			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.3	64.3		47.6	10.6	61.0		26.4
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	30.0	54.0		45.0	30.0	54.0		45.0
Max Q Clear Time (g_c+I1), s	3.4	37.3		39.0	5.6	18.9		18.2
Green Ext Time (p_c), s	0.0	5.7		1.6	0.2	6.8		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	45.3
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	495	2	1	202	10	9	0	0	14	0	12
Future Vol, veh/h	9	495	2	1	202	10	9	0	0	14	0	12
Conflicting Peds, #/hr	2	0	5	5	0	2	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	1	0	0	4	0	0	0	0	0	0	17
Mvmt Flow	10	544	2	1	222	11	10	0	0	15	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	235	0	0	551	0	0	806	807	552	799	803	229
Stage 1	-	-	-	-	-	-	570	570	-	232	232	-
Stage 2	-	-	-	-	-	-	236	237	-	567	571	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.453
Pot Cap-1 Maneuver	1344	-	-	1029	-	-	303	317	537	306	319	774
Stage 1	-	-	-	-	-	-	510	509	-	775	716	-
Stage 2	-	-	-	-	-	-	772	713	-	512	508	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1344	-	-	1027	-	-	294	311	534	302	313	773
Mov Cap-2 Maneuver	-	-	-	-	-	-	294	311	-	302	313	-
Stage 1	-	-	-	-	-	-	502	501	-	765	714	-
Stage 2	-	-	-	-	-	-	758	711	-	506	500	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	17.7	14.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	294	1344	-	-	1027	-	-	420
HCM Lane V/C Ratio	0.034	0.007	-	-	0.001	-	-	0.068
HCM Control Delay (s)	17.7	7.7	0	-	8.5	0	-	14.2
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	1	0	0	11	1	20	4	5	6	2
Future Vol, veh/h	0	1	1	0	0	11	1	20	4	5	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	25	0	0	0
Mvmt Flow	0	1	1	0	0	13	1	24	5	6	7	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	55	51	8	49	49	26	9	0	0	28	0	0
Stage 1	20	20	-	28	28	-	-	-	-	-	-	-
Stage 2	35	31	-	21	21	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	948	844	1080	956	846	1056	1624	-	-	1599	-	-
Stage 1	1004	883	-	994	876	-	-	-	-	-	-	-
Stage 2	986	873	-	1003	882	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	933	840	1080	950	842	1056	1624	-	-	1599	-	-
Mov Cap-2 Maneuver	933	840	-	950	842	-	-	-	-	-	-	-
Stage 1	1003	879	-	993	875	-	-	-	-	-	-	-
Stage 2	973	872	-	997	878	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	8.5	0.3	2.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1624	-	-	945	1056	1599	-	-
HCM Lane V/C Ratio	0.001	-	-	0.002	0.012	0.004	-	-
HCM Control Delay (s)	7.2	0	-	8.8	8.5	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	13.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1075	31	16	726	28	18	5	20	4	5	20
Future Vol, veh/h	45	1075	31	16	726	28	18	5	20	4	5	20
Conflicting Peds, #/hr	6	0	7	7	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	4	3	10	0	6	0	0	0	0	0	0	0
Mvmt Flow	159	1265	36	19	854	33	21	6	24	5	6	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	893	0	0	1308	0	0	2076	2539	658	1867	2540	450
Stage 1	-	-	-	-	-	-	1608	1608	-	914	914	-
Stage 2	-	-	-	-	-	-	468	931	-	953	1626	-
Critical Hdwy	4.18	-	-	4.1	-	-	8.3	7.3	7.3	7.1	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.24	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1074	-	-	536	-	-	*29	15	383	81	33	*791
Stage 1	-	-	-	-	-	-	*78	116	-	640	585	-
Stage 2	-	-	-	-	-	-	*746	545	-	314	194	-
Platoon blocked, %	1	-	-		-	-	1	1		1	1	1
Mov Cap-1 Maneuver	1074	-	-	536	-	-	*~ 20	12	380	41	27	*786
Mov Cap-2 Maneuver	-	-	-	-	-	-	*~ 20	12	-	41	27	-
Stage 1	-	-	-	-	-	-	*66	98	-	542	561	-
Stage 2	-	-	-	-	-	-	*690	523	-	236	164	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.2	$ 588.1	63.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	31	1074	-	-	536	-	-	94
HCM Lane V/C Ratio	1.632	0.148	-	-	0.035	-	-	0.363
HCM Control Delay (s)	$ 588.1	8.9	-	-	12	-	-	63.7
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	5.7	0.5	-	-	0.1	-	-	1.4

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	1264	12	8	625	26	2	7	12	10	1	59
Future Vol, veh/h	85	1264	12	8	625	26	2	7	12	10	1	59
Conflicting Peds, #/hr	7	0	5	5	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	3	0	0	5	0	0	0	8	0	0	3
Mvmt Flow	90	1345	13	9	665	28	2	7	13	11	1	63

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	700	0	0	1362	0	0	1887	2254	684	1560	2246	353
Stage 1	-	-	-	-	-	-	1537	1537	-	703	703	-
Stage 2	-	-	-	-	-	-	350	717	-	857	1543	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.1	7.1	7.36	7.1	6.1	6.76
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.38	3.5	4	3.33
Pot Cap-1 Maneuver	906	-	-	*816	-	-	129	47	*530	*433	74	653
Stage 1	-	-	-	-	-	-	464	416	-	*431	479	-
Stage 2	-	-	-	-	-	-	608	387	-	*512	419	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	906	-	-	*816	-	-	105	42	*528	*333	65	648
Mov Cap-2 Maneuver	-	-	-	-	-	-	105	42	-	*333	65	-
Stage 1	-	-	-	-	-	-	416	372	-	*385	470	-
Stage 2	-	-	-	-	-	-	542	380	-	*441	376	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.1	50.5	13.2
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	101	906	-	-	* 816	-	-	513
HCM Lane V/C Ratio	0.221	0.1	-	-	0.01	-	-	0.145
HCM Control Delay (s)	50.5	9.4	-	-	9.5	-	-	13.2
HCM Lane LOS	F	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0.3	-	-	0	-	-	0.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	494	155	264	1167	52	272	199	344	67	205	18
Future Volume (vph)	28	494	155	264	1167	52	272	199	344	67	205	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3289		1769	3425		1609	1691	1636	1701	1910	
Flt Permitted	0.12	1.00		0.26	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	225	3289		483	3425		1609	1691	1636	1701	1910	
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)	29	520	163	278	1228	55	286	209	362	71	216	19
RTOR Reduction (vph)	0	17	0	0	2	0	0	0	206	0	2	0
Lane Group Flow (vph)	29	666	0	278	1281	0	237	258	156	71	233	0
Confl. Peds. (#/hr)	14		7	7		14	10		4	4		10
Confl. Bikes (#/hr)			1			4			4			
Heavy Vehicles (%)	0%	1%	4%	2%	1%	0%	2%	1%	1%	1%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	8 1	4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	66.2	62.1		88.1	76.5		28.0	28.0	53.0	22.9	22.9	
Effective Green, g (s)	73.2	65.6		91.6	80.0		30.5	30.5	55.5	25.9	25.9	
Actuated g/C Ratio	0.46	0.41		0.57	0.50		0.19	0.19	0.35	0.16	0.16	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5		7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	177	1348		453	1712		306	322	567	275	309	
v/s Ratio Prot	0.01	0.20		c0.08	c0.37		0.15	c0.15	0.10	0.04	c0.12	
v/s Ratio Perm	0.07			0.27								
v/c Ratio	0.16	0.49		0.61	0.75		0.77	0.80	0.28	0.26	0.76	
Uniform Delay, d1	26.9	34.9		20.1	32.0		61.5	61.9	37.7	58.6	64.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	1.3		2.8	3.0		11.6	13.3	0.3	0.5	10.0	
Delay (s)	27.5	36.2		23.0	35.0		73.1	75.2	38.0	59.1	74.1	
Level of Service	C	D		C	C		E	E	D	E	E	
Approach Delay (s)		35.9			32.9			58.9			70.6	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	99	130	212	230	33	230	790	203	13	565	55
Future Volume (veh/h)	34	99	130	212	230	33	230	790	203	13	565	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1829	1825	1900	1976	1900	1881	1866	1881	1824	1863	1900
Adj Flow Rate, veh/h	36	104	137	223	242	35	242	832	214	14	595	58
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	0	0	1	1	0	2	2
Cap, veh/h	63	183	207	344	320	46	476	1472	378	250	1454	141
Arrive On Green	0.14	0.14	0.14	0.19	0.19	0.17	0.10	0.53	0.51	0.02	0.45	0.42
Sat Flow, veh/h	464	1341	1512	1810	1682	243	1791	2775	713	1737	3249	316
Grp Volume(v), veh/h	140	0	137	223	0	277	242	531	515	14	323	330
Grp Sat Flow(s),veh/h/ln	1806	0	1512	1810	0	1925	1791	1773	1715	1737	1770	1796
Q Serve(g_s), s	9.2	0.0	11.0	14.5	0.0	17.4	9.0	25.6	26.0	0.6	15.7	15.9
Cycle Q Clear(g_c), s	9.2	0.0	11.0	14.5	0.0	17.4	9.0	25.6	26.0	0.6	15.7	15.9
Prop In Lane	0.26		1.00	1.00		0.13	1.00		0.42	1.00		0.18
Lane Grp Cap(c), veh/h	247	0	207	344	0	366	476	940	910	250	792	804
V/C Ratio(X)	0.57	0.00	0.66	0.65	0.00	0.76	0.51	0.57	0.57	0.06	0.41	0.41
Avail Cap(c_a), veh/h	680	0	570	682	0	726	733	940	910	643	792	804
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.4	0.0	52.2	47.6	0.0	49.0	16.9	20.1	20.6	20.5	23.8	24.0
Incr Delay (d2), s/veh	2.0	0.0	3.6	2.1	0.0	3.2	0.8	2.5	2.5	0.1	1.6	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.0	4.8	7.4	0.0	9.6	4.5	13.2	12.9	0.3	8.0	8.3
LnGrp Delay(d),s/veh	53.5	0.0	55.8	49.7	0.0	52.2	17.7	22.5	23.1	20.5	25.3	25.6
LnGrp LOS	D		E	D		D	B	C	C	C	C	C
Approach Vol, veh/h		277			500			1288			667	
Approach Delay, s/veh		54.6			51.1			21.8			25.4	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.2	71.6		21.4	16.7	61.0		28.2
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	30.0	54.0		45.0	30.0	54.0		45.0
Max Q Clear Time (g_c+I1), s	12.6	28.0		13.0	11.0	17.9		19.4
Green Ext Time (p_c), s	0.0	7.3		1.0	0.7	7.8		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	350	2	2	474	22	4	0	13	7	0	9
Future Vol, veh/h	14	350	2	2	474	22	4	0	13	7	0	9
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	11
Mvmt Flow	14	361	2	2	489	23	4	0	13	7	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	513	0	0	364	0	0	901	909	372	912	899	502
Stage 1	-	-	-	-	-	-	392	392	-	506	506	-
Stage 2	-	-	-	-	-	-	509	517	-	406	393	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.399
Pot Cap-1 Maneuver	1063	-	-	1206	-	-	261	277	678	257	281	552
Stage 1	-	-	-	-	-	-	637	610	-	552	543	-
Stage 2	-	-	-	-	-	-	550	537	-	626	609	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1063	-	-	1197	-	-	253	271	672	246	275	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	253	271	-	246	275	-
Stage 1	-	-	-	-	-	-	626	599	-	542	541	-
Stage 2	-	-	-	-	-	-	540	535	-	599	598	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	12.7	15.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	484	1063	-	-	1197	-	-	357
HCM Lane V/C Ratio	0.036	0.014	-	-	0.002	-	-	0.046
HCM Control Delay (s)	12.7	8.4	0	-	8	0	-	15.6
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	0	5	1	15	1	31	0	10	14	2
Future Vol, veh/h	1	1	0	5	1	15	1	31	0	10	14	2
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	7	0	0	0	0	0	0
Mvmt Flow	1	1	0	6	1	18	1	36	0	12	16	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	92	82	19	82	83	39	20	0	0	37	0	0
Stage 1	42	42	-	40	40	-	-	-	-	-	-	-
Stage 2	50	40	-	42	43	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.27	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.363	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	897	812	1065	910	811	1019	1609	-	-	1587	-	-
Stage 1	978	864	-	980	866	-	-	-	-	-	-	-
Stage 2	968	866	-	978	863	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	872	803	1064	902	802	1016	1609	-	-	1584	-	-
Mov Cap-2 Maneuver	872	803	-	902	802	-	-	-	-	-	-	-
Stage 1	976	856	-	978	864	-	-	-	-	-	-	-
Stage 2	947	864	-	969	855	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	8.8	0.2	2.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1609	-	-	836	974	1584	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.025	0.007	-	-
HCM Control Delay (s)	7.2	0	-	9.3	8.8	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	845	46	20	1391	37	11	4	28	3	0	19
Future Vol, veh/h	29	845	46	20	1391	37	11	4	28	3	0	19
Conflicting Peds, #/hr	10	0	9	9	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	2	0	0	0	1	0	0	4	0	0	11
Mvmt Flow	30	871	47	21	1434	38	11	4	29	3	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1482	0	0	928	0	0	1722	2487	468	2001	2491	746
Stage 1	-	-	-	-	-	-	964	964	-	1504	1504	-
Stage 2	-	-	-	-	-	-	758	1523	-	497	987	-
Critical Hdwy	4.16	-	-	4.1	-	-	8.3	7.3	7.38	7.1	6.1	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.23	-	-	2.2	-	-	3.5	4	3.34	3.5	4	3.41
Pot Cap-1 Maneuver	*732	-	-	745	-	-	*334	*22	509	*139	*40	*478
Stage 1	-	-	-	-	-	-	*224	*271	-	*466	*408	-
Stage 2	-	-	-	-	-	-	*466	*408	-	*559	*366	-
Platoon blocked, %	1	-	-		-	-	1	1		1	1	1
Mov Cap-1 Maneuver	*732	-	-	745	-	-	*301	*20	504	*104	*37	*473
Mov Cap-2 Maneuver	-	-	-	-	-	-	*301	*20	-	*104	*37	-
Stage 1	-	-	-	-	-	-	*213	*257	-	*442	*392	-
Stage 2	-	-	-	-	-	-	*434	*392	-	*497	*347	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	39.7	17.1
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	147	* 732	-	-	745	-	-	319
HCM Lane V/C Ratio	0.302	0.041	-	-	0.028	-	-	0.071
HCM Control Delay (s)	39.7	10.1	-	-	10	-	-	17.1
HCM Lane LOS	E	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.1	-	-	0.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	88	897	13	8	1406	16	4	1	31	5	1	32
Future Vol, veh/h	88	897	13	8	1406	16	4	1	31	5	1	32
Conflicting Peds, #/hr	8	0	1	1	0	8	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	93	944	14	8	1480	17	4	1	33	5	1	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1505	0	0	959	0	0	1894	2659	480	2171	2657	756
Stage 1	-	-	-	-	-	-	1137	1137	-	1513	1513	-
Stage 2	-	-	-	-	-	-	757	1522	-	658	1144	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.1	7.1	7.2	7.1	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	451	-	-	*1046	-	-	66	13	*697	*47	26	370
Stage 1	-	-	-	-	-	-	577	520	-	*151	218	-
Stage 2	-	-	-	-	-	-	327	142	-	*657	529	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	451	-	-	*1046	-	-	48	10	*696	*34	20	367
Mov Cap-2 Maneuver	-	-	-	-	-	-	48	10	-	*34	20	-
Stage 1	-	-	-	-	-	-	458	413	-	*119	214	-
Stage 2	-	-	-	-	-	-	293	140	-	*496	419	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0	34.8	42.9
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	158	451	-	-	* 1046	-	-	134
HCM Lane V/C Ratio	0.24	0.205	-	-	0.008	-	-	0.299
HCM Control Delay (s)	34.8	15	-	-	8.5	-	-	42.9
HCM Lane LOS	D	C	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.9	0.8	-	-	0	-	-	1.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	763	102	271	683	50	146	126	407	69	139	29
Future Volume (vph)	35	763	102	271	683	50	146	126	407	69	139	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1801	3388		1787	3412		1641	1697	1652	1718	1881	
Flt Permitted	0.36	1.00		0.14	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	675	3388		263	3412		1641	1697	1652	1718	1881	
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)	37	803	107	285	719	53	154	133	428	73	146	31
RTOR Reduction (vph)	0	6	0	0	3	0	0	0	193	0	6	0
Lane Group Flow (vph)	37	904	0	285	769	0	123	164	235	73	171	0
Confl. Peds. (#/hr)	8		7	7		8	3		3	3		3
Confl. Bikes (#/hr)			4			2						
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	0%	1%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	8 1	4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	55.6	49.5		79.3	65.7		20.9	20.9	49.7	18.8	18.8	
Effective Green, g (s)	62.6	53.0		82.8	69.2		23.4	23.4	52.2	21.8	21.8	
Actuated g/C Ratio	0.45	0.38		0.59	0.49		0.17	0.17	0.37	0.16	0.16	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5		7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	379	1282		436	1686		274	283	615	267	292	
v/s Ratio Prot	0.01	c0.27		c0.12	0.23		0.07	c0.10	0.14	0.04	c0.09	
v/s Ratio Perm	0.04			0.27								
v/c Ratio	0.10	0.70		0.65	0.46		0.45	0.58	0.38	0.27	0.59	
Uniform Delay, d1	21.8	36.9		22.8	23.1		52.5	53.8	32.1	52.1	54.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	3.3		3.9	0.9		1.2	2.9	0.4	0.6	3.0	
Delay (s)	22.0	40.1		26.7	24.0		53.7	56.6	32.5	52.7	57.9	
Level of Service	C	D		C	C		D	E	C	D	E	
Approach Delay (s)		39.4			24.7			41.7			56.4	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	90	140	208	97	29	80	608	215	34	472	35
Future Volume (veh/h)	50	90	140	208	97	29	80	608	215	34	472	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1843	1825	1900	1976	1900	1881	1881	1881	1824	1900	1900
Adj Flow Rate, veh/h	53	96	149	221	103	31	85	647	229	36	502	37
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	0	0	0	0	0	0	0	0	0
Cap, veh/h	96	174	226	311	248	75	486	1319	466	314	1675	123
Arrive On Green	0.15	0.15	0.15	0.17	0.17	0.15	0.05	0.51	0.49	0.03	0.49	0.47
Sat Flow, veh/h	644	1167	1514	1810	1447	435	1791	2572	910	1737	3403	250
Grp Volume(v), veh/h	149	0	149	221	0	134	85	449	427	36	266	273
Grp Sat Flow(s),veh/h/ln	1811	0	1514	1810	0	1882	1791	1787	1695	1737	1805	1848
Q Serve(g_s), s	8.8	0.0	10.8	13.3	0.0	7.4	2.7	19.0	19.3	1.2	10.1	10.3
Cycle Q Clear(g_c), s	8.8	0.0	10.8	13.3	0.0	7.4	2.7	19.0	19.3	1.2	10.1	10.3
Prop In Lane	0.36		1.00	1.00		0.23	1.00		0.54	1.00		0.14
Lane Grp Cap(c), veh/h	270	0	226	311	0	323	486	916	869	314	889	910
V/C Ratio(X)	0.55	0.00	0.66	0.71	0.00	0.41	0.17	0.49	0.49	0.11	0.30	0.30
Avail Cap(c_a), veh/h	751	0	628	750	0	780	878	916	869	730	889	910
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	0.0	46.5	45.2	0.0	43.1	14.1	18.4	19.0	15.9	17.5	17.7
Incr Delay (d2), s/veh	1.8	0.0	3.3	3.0	0.0	0.8	0.2	1.9	2.0	0.2	0.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	4.7	7.0	0.0	3.9	1.3	9.8	9.5	0.6	5.2	5.4
LnGrp Delay(d),s/veh	47.4	0.0	49.7	48.3	0.0	43.9	14.3	20.2	21.0	16.1	18.4	18.5
LnGrp LOS	D		D	D		D	B	C	C	B	B	B
Approach Vol, veh/h		298			355			961			575	
Approach Delay, s/veh		48.6			46.6			20.0			18.3	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.3	63.4		21.3	9.6	61.0		23.9
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	30.0	54.0		45.0	30.0	54.0		45.0
Max Q Clear Time (g_c+I1), s	12.3	21.3		12.8	4.7	12.3		15.3
Green Ext Time (p_c), s	0.1	5.9		1.1	0.2	6.0		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	350	2	2	337	14	22	0	17	21	1	8
Future Vol, veh/h	13	350	2	2	337	14	22	0	17	21	1	8
Conflicting Peds, #/hr	3	0	13	13	0	3	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	361	2	2	347	14	23	0	18	22	1	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	365	0	0	376	0	0	765	771	378	762	765	358
Stage 1	-	-	-	-	-	-	402	402	-	362	362	-
Stage 2	-	-	-	-	-	-	363	369	-	400	403	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1205	-	-	1194	-	-	323	333	673	324	336	691
Stage 1	-	-	-	-	-	-	629	604	-	661	629	-
Stage 2	-	-	-	-	-	-	660	624	-	630	603	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1205	-	-	1191	-	-	311	323	664	310	326	689
Mov Cap-2 Maneuver	-	-	-	-	-	-	311	323	-	310	326	-
Stage 1	-	-	-	-	-	-	613	589	-	650	626	-
Stage 2	-	-	-	-	-	-	650	621	-	603	588	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	14.9	15.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	405	1205	-	-	1191	-	-	364
HCM Lane V/C Ratio	0.099	0.011	-	-	0.002	-	-	0.085
HCM Control Delay (s)	14.9	8	0	-	8	0	-	15.8
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	2	3	1	16	1	11	2	23	12	2
Future Vol, veh/h	1	0	2	3	1	16	1	11	2	23	12	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	0	2	3	1	18	1	13	2	26	14	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	93	85	15	85	85	15	16	0	0	16	0	0
Stage 1	67	67	-	17	17	-	-	-	-	-	-	-
Stage 2	26	18	-	68	68	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	895	809	1070	906	809	1070	1615	-	-	1615	-	-
Stage 1	948	843	-	1008	885	-	-	-	-	-	-	-
Stage 2	997	884	-	947	842	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	867	795	1070	892	795	1069	1615	-	-	1615	-	-
Mov Cap-2 Maneuver	867	795	-	892	795	-	-	-	-	-	-	-
Stage 1	947	830	-	1006	883	-	-	-	-	-	-	-
Stage 2	978	882	-	930	829	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	8.6	0.5	4.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1615	-	-	993	1021	1615	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.022	0.016	-	-
HCM Control Delay (s)	7.2	0	-	8.6	8.6	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	1056	66	26	1007	24	15	3	25	5	3	22
Future Vol, veh/h	42	1056	66	26	1007	24	15	3	25	5	3	22
Conflicting Peds, #/hr	4	0	10	10	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	95	95	95	93	93	93	88	88	88	67	67	67
Heavy Vehicles, %	0	1	2	0	1	0	0	0	0	0	0	5
Mvmt Flow	44	1112	69	28	1083	26	17	3	28	7	4	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1113	0	0	1191	0	0	1846	2414	601	1802	2435	559
Stage 1	-	-	-	-	-	-	1245	1245	-	1156	1156	-
Stage 2	-	-	-	-	-	-	601	1169	-	646	1279	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.3	7.3	7.3	7.1	6.1	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.35
Pot Cap-1 Maneuver	*996	-	-	593	-	-	*80	*22	419	*129	*42	*654
Stage 1	-	-	-	-	-	-	*142	*188	-	*626	*548	-
Stage 2	-	-	-	-	-	-	*626	*548	-	*464	*275	-
Platoon blocked, %	1	-	-		-	-	1	1		1	1	1
Mov Cap-1 Maneuver	*996	-	-	593	-	-	*64	*20	414	*97	*38	*651
Mov Cap-2 Maneuver	-	-	-	-	-	-	*64	*20	-	*97	*38	-
Stage 1	-	-	-	-	-	-	*134	*178	-	*596	*520	-
Stage 2	-	-	-	-	-	-	*561	*520	-	*405	*260	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.3	75	30.9
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	97	* 996	-	-	593	-	-	183
HCM Lane V/C Ratio	0.504	0.044	-	-	0.047	-	-	0.245
HCM Control Delay (s)	75	8.8	-	-	11.4	-	-	30.9
HCM Lane LOS	F	A	-	-	B	-	-	D
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0.1	-	-	0.9

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	1155	13	20	972	23	4	0	26	7	2	26
Future Vol, veh/h	62	1155	13	20	972	23	4	0	26	7	2	26
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	5	1	0	0	0	4	14	0	0
Mvmt Flow	64	1191	13	21	1002	24	4	0	27	7	2	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1031	0	0	1204	0	0	1868	2397	602	1783	2392	518
Stage 1	-	-	-	-	-	-	1325	1325	-	1060	1060	-
Stage 2	-	-	-	-	-	-	543	1072	-	723	1332	-
Critical Hdwy	4.1	-	-	4.2	-	-	8.1	7.1	7.28	7.38	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.38	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.38	5.1	-
Follow-up Hdwy	2.2	-	-	2.25	-	-	3.5	4	3.34	3.64	4	3.3
Pot Cap-1 Maneuver	682	-	-	*797	-	-	*139	*30	*536	*205	*50	523
Stage 1	-	-	-	-	-	-	*512	*448	-	*246	*341	-
Stage 2	-	-	-	-	-	-	*454	*250	-	*493	*448	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	682	-	-	*797	-	-	*115	*27	*536	*177	*44	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	*115	*27	-	*177	*44	-
Stage 1	-	-	-	-	-	-	*464	*406	-	*222	*330	-
Stage 2	-	-	-	-	-	-	*417	*242	-	*424	*406	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	15.9	21.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	360	682	-	-	* 797	-	-	259
HCM Lane V/C Ratio	0.086	0.094	-	-	0.026	-	-	0.139
HCM Control Delay (s)	15.9	10.8	-	-	9.6	-	-	21.1
HCM Lane LOS	C	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0.1	-	-	0.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	890	133	165	559	59	296	166	349	102	273	34
Future Volume (vph)	25	890	133	165	559	59	296	166	349	102	273	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1800	3344		1671	3253		1548	1649	1561	1562	1859	
Flt Permitted	0.36	1.00		0.08	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	673	3344		135	3253		1548	1649	1561	1562	1859	
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)	27	967	145	179	608	64	322	180	379	111	297	37
RTOR Reduction (vph)	0	8	0	0	6	0	0	0	137	0	3	0
Lane Group Flow (vph)	27	1104	0	179	666	0	274	228	242	111	331	0
Confl. Peds. (#/hr)	9					9	9		18	18		9
Confl. Bikes (#/hr)			3			2			4			1
Heavy Vehicles (%)	0%	2%	3%	8%	5%	8%	6%	3%	3%	10%	2%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases	2			6					8			
Actuated Green, G (s)	48.6	44.7		65.1	53.7		28.4	28.4	41.3	25.5	25.5	
Effective Green, g (s)	48.6	44.7		65.1	53.7		28.4	28.4	41.3	25.5	25.5	
Actuated g/C Ratio	0.35	0.32		0.46	0.38		0.20	0.20	0.29	0.18	0.18	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0	4.0	3.0	3.0	
Lane Grp Cap (vph)	265	1067		204	1247		314	334	460	284	338	
v/s Ratio Prot	0.00	c0.33		c0.08	0.20		c0.18	0.14	0.05	0.07	c0.18	
v/s Ratio Perm	0.03			0.33					0.11			
v/c Ratio	0.10	1.03		0.88	0.53		0.87	0.68	0.53	0.39	0.98	
Uniform Delay, d1	30.4	47.6		39.1	33.5		54.0	51.6	41.2	50.4	57.0	
Progression Factor	1.00	1.00		1.46	0.76		0.98	0.99	0.46	1.00	1.00	
Incremental Delay, d2	0.2	36.8		32.3	1.6		19.8	4.9	1.2	0.9	42.7	
Delay (s)	30.6	84.5		89.5	27.2		72.6	56.0	20.2	51.3	99.6	
Level of Service	C	F		F	C		E	E	C	D	F	
Approach Delay (s)		83.2			40.3			45.7			87.6	
Approach LOS		F			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	62.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.5
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	233	378	193	34	46	70	711	234	24	553	15
Future Volume (veh/h)	31	233	378	193	34	46	70	711	234	24	553	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1837	1825	1881	1854	1900	1862	1822	1881	1689	1829	1900
Adj Flow Rate, veh/h	33	251	406	208	37	49	75	765	252	26	595	16
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	1	1	6	6	1	4	4	8	4	4
Cap, veh/h	48	369	348	241	96	127	370	1109	365	172	1433	38
Arrive On Green	0.23	0.23	0.23	0.13	0.13	0.13	0.04	0.44	0.44	0.02	0.55	0.55
Sat Flow, veh/h	212	1614	1523	1792	716	948	1774	2542	837	1608	3454	93
Grp Volume(v), veh/h	284	0	406	208	0	86	75	521	496	26	299	312
Grp Sat Flow(s),veh/h/ln	1826	0	1523	1792	0	1664	1774	1731	1648	1608	1737	1810
Q Serve(g_s), s	19.9	0.0	32.0	15.9	0.0	6.6	3.4	34.0	34.0	1.3	14.0	14.0
Cycle Q Clear(g_c), s	19.9	0.0	32.0	15.9	0.0	6.6	3.4	34.0	34.0	1.3	14.0	14.0
Prop In Lane	0.12		1.00	1.00		0.57	1.00		0.51	1.00		0.05
Lane Grp Cap(c), veh/h	417	0	348	241	0	224	370	755	719	172	721	750
V/C Ratio(X)	0.68	0.00	1.17	0.86	0.00	0.38	0.20	0.69	0.69	0.15	0.42	0.42
Avail Cap(c_a), veh/h	417	0	348	346	0	321	394	755	719	183	721	750
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	0.0	54.0	59.3	0.0	55.3	22.8	31.8	31.8	26.6	21.5	21.5
Incr Delay (d2), s/veh	4.4	0.0	101.4	14.4	0.0	1.1	0.3	5.1	5.4	0.4	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	0.0	23.3	8.8	0.0	3.1	1.7	17.3	16.5	0.6	7.0	7.3
LnGrp Delay(d),s/veh	53.8	0.0	155.4	73.8	0.0	56.4	23.0	36.9	37.2	27.0	23.3	23.2
LnGrp LOS	D		F	E		E	C	D	D	C	C	C
Approach Vol, veh/h		690			294			1092			637	
Approach Delay, s/veh		113.6			68.7			36.1			23.4	
Approach LOS		F			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	68.1		39.0	10.1	65.1		25.8
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	3.0	52.0		32.0	7.0	48.0		27.0
Max Q Clear Time (g_c+I1), s	2.3	36.0		34.0	5.4	16.0		17.9
Green Ext Time (p_c), s	0.0	5.9		0.0	0.0	7.2		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	56.4
HCM 2010 LOS	E

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	495	2	1	211	10	9	0	0	14	0	12
Future Vol, veh/h	9	495	2	1	211	10	9	0	0	14	0	12
Conflicting Peds, #/hr	2	0	5	5	0	2	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	0	0	4	0	0	0	0	0	0	17
Mvmt Flow	10	538	2	1	229	11	10	0	0	15	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	242	0	0	545	0	0	807	808	546	800	804	237
Stage 1	-	-	-	-	-	-	564	564	-	239	239	-
Stage 2	-	-	-	-	-	-	243	244	-	561	565	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.453
Pot Cap-1 Maneuver	1336	-	-	1034	-	-	302	317	541	306	319	766
Stage 1	-	-	-	-	-	-	514	512	-	769	711	-
Stage 2	-	-	-	-	-	-	765	708	-	516	511	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1336	-	-	1032	-	-	293	311	538	302	313	765
Mov Cap-2 Maneuver	-	-	-	-	-	-	293	311	-	302	313	-
Stage 1	-	-	-	-	-	-	506	504	-	759	709	-
Stage 2	-	-	-	-	-	-	751	706	-	509	503	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	17.7	14.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	293	1336	-	-	1032	-	-	419
HCM Lane V/C Ratio	0.033	0.007	-	-	0.001	-	-	0.067
HCM Control Delay (s)	17.7	7.7	0	-	8.5	0	-	14.2
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	1	0	0	11	1	20	4	5	6	2
Future Vol, veh/h	0	1	1	0	0	11	1	20	4	5	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	25	0	0	0
Mvmt Flow	0	1	1	0	0	12	1	22	4	5	7	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	50	46	8	46	46	24	9	0	0	26	0	0
Stage 1	18	18	-	26	26	-	-	-	-	-	-	-
Stage 2	32	28	-	20	20	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	955	850	1080	961	850	1058	1624	-	-	1601	-	-
Stage 1	1006	884	-	997	878	-	-	-	-	-	-	-
Stage 2	990	876	-	1004	883	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	941	847	1080	956	847	1058	1624	-	-	1601	-	-
Mov Cap-2 Maneuver	941	847	-	956	847	-	-	-	-	-	-	-
Stage 1	1005	881	-	996	877	-	-	-	-	-	-	-
Stage 2	978	875	-	999	880	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	8.4	0.3	2.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1624	-	-	949	1058	1601	-	-
HCM Lane V/C Ratio	0.001	-	-	0.002	0.011	0.003	-	-
HCM Control Delay (s)	7.2	0	-	8.8	8.4	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1131	31	16	757	28	18	5	20	4	5	20
Future Vol, veh/h	45	1131	31	16	757	28	18	5	20	4	5	20
Conflicting Peds, #/hr	6	0	7	7	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	90
Heavy Vehicles, %	4	3	10	0	6	0	0	0	0	0	0	0
Mvmt Flow	147	1229	34	17	823	30	20	5	22	4	5	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	859	0	0	1270	0	0	1996	2441	639	1790	2443	433
Stage 1	-	-	-	-	-	-	1547	1547	-	879	879	-
Stage 2	-	-	-	-	-	-	449	894	-	911	1564	-
Critical Hdwy	4.18	-	-	4.1	-	-	8.3	7.3	7.3	7.1	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.24	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	*1133	-	-	*886	-	-	*254	73	*590	*254	*92	*768
Stage 1	-	-	-	-	-	-	*340	332	-	*724	*634	-
Stage 2	-	-	-	-	-	-	*724	624	-	*556	*359	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*1133	-	-	*886	-	-	*206	61	*585	*201	*78	*763
Mov Cap-2 Maneuver	-	-	-	-	-	-	*206	61	-	*201	*78	-
Stage 1	-	-	-	-	-	-	*293	286	-	*626	*618	-
Stage 2	-	-	-	-	-	-	*684	608	-	*457	*310	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.2	26.9	20.4
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	211	* 1133	-	-	* 886	-	-	266
HCM Lane V/C Ratio	0.222	0.13	-	-	0.02	-	-	0.12
HCM Control Delay (s)	26.9	8.7	-	-	9.1	-	-	20.4
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.8	0.4	-	-	0.1	-	-	0.4

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	1320	12	8	656	26	2	7	12	10	1	59
Future Vol, veh/h	85	1320	12	8	656	26	2	7	12	10	1	59
Conflicting Peds, #/hr	7	0	5	5	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	3	0	0	5	0	0	0	8	0	0	3
Mvmt Flow	90	1404	13	9	698	28	2	7	13	11	1	63

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	733	0	0	1422	0	0	1962	2346	714	1623	2339	370
Stage 1	-	-	-	-	-	-	1596	1596	-	736	736	-
Stage 2	-	-	-	-	-	-	366	750	-	887	1603	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.1	7.1	7.36	7.1	6.1	6.76
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.38	3.5	4	3.33
Pot Cap-1 Maneuver	*1221	-	-	*781	-	-	*46	*28	*508	*153	*50	*806
Stage 1	-	-	-	-	-	-	*449	*401	-	*767	*671	-
Stage 2	-	-	-	-	-	-	*767	*671	-	*490	*403	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*1221	-	-	*781	-	-	*39	*25	*505	*107	*45	*800
Mov Cap-2 Maneuver	-	-	-	-	-	-	*39	*25	-	*107	*45	-
Stage 1	-	-	-	-	-	-	*414	*370	-	*705	*658	-
Stage 2	-	-	-	-	-	-	*697	*658	-	*434	*371	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.1	99.3	17.2
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	59	* 1221	-	-	* 781	-	-	370
HCM Lane V/C Ratio	0.379	0.074	-	-	0.011	-	-	0.201
HCM Control Delay (s)	99.3	8.2	-	-	9.7	-	-	17.2
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0.2	-	-	0	-	-	0.7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	559	168	280	1238	57	299	204	345	91	208	26
Future Volume (vph)	34	559	168	280	1238	57	299	204	345	91	208	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	7.5	7.5		7.5	7.5		6.5	6.5	6.5	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3294		1770	3424		1609	1690	1636	1701	1900	
Flt Permitted	0.08	1.00		0.20	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	150	3294		381	3424		1609	1690	1636	1701	1900	
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)	36	588	177	295	1303	60	315	215	363	96	219	27
RTOR Reduction (vph)	0	17	0	0	2	0	0	0	152	0	3	0
Lane Group Flow (vph)	36	748	0	295	1361	0	261	269	211	96	243	0
Confl. Peds. (#/hr)	14		7	7		14	10		4	4		10
Confl. Bikes (#/hr)			1			4			4			
Heavy Vehicles (%)	0%	1%	4%	2%	1%	0%	2%	1%	1%	1%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	8 1	4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	64.7	59.3		86.3	73.4		29.0	29.0	55.0	23.7	23.7	
Effective Green, g (s)	64.7	59.3		86.3	73.4		29.0	29.0	55.0	23.7	23.7	
Actuated g/C Ratio	0.40	0.37		0.54	0.46		0.18	0.18	0.34	0.15	0.15	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5		7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	116	1220		374	1570		291	306	562	251	281	
v/s Ratio Prot	0.01	0.23		c0.10	c0.40		c0.16	0.16	0.13	0.06	c0.13	
v/s Ratio Perm	0.11			0.33								
v/c Ratio	0.31	0.61		0.79	0.87		0.90	0.88	0.38	0.38	0.87	
Uniform Delay, d1	33.4	41.0		25.1	38.9		64.0	63.8	39.6	61.5	66.6	
Progression Factor	1.00	1.00		1.38	0.43		1.42	1.42	1.28	1.00	1.00	
Incremental Delay, d2	2.1	2.3		10.7	6.5		25.0	21.1	0.4	1.0	23.2	
Delay (s)	35.5	43.3		45.2	23.3		116.0	111.9	51.1	62.5	89.8	
Level of Service	D	D		D	C		F	F	D	E	F	
Approach Delay (s)		43.0			27.2			88.4			82.2	
Approach LOS		D			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	50.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	28.5
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	99	130	212	230	33	230	836	203	13	597	55
Future Volume (veh/h)	34	99	130	212	230	33	230	836	203	13	597	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1829	1825	1900	1976	1900	1881	1866	1881	1824	1863	1900
Adj Flow Rate, veh/h	36	104	137	223	242	35	242	880	214	14	628	58
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	0	0	1	1	0	2	2
Cap, veh/h	50	144	161	290	270	39	557	1579	384	242	1593	147
Arrive On Green	0.11	0.11	0.11	0.16	0.16	0.16	0.08	0.56	0.56	0.02	0.98	0.98
Sat Flow, veh/h	464	1341	1507	1810	1682	243	1791	2812	683	1737	3268	301
Grp Volume(v), veh/h	140	0	137	223	0	277	242	555	539	14	340	346
Grp Sat Flow(s),veh/h/ln	1806	0	1507	1810	0	1925	1791	1773	1722	1737	1770	1799
Q Serve(g_s), s	12.0	0.0	14.3	18.9	0.0	22.6	10.4	31.9	32.0	0.7	1.2	1.2
Cycle Q Clear(g_c), s	12.0	0.0	14.3	18.9	0.0	22.6	10.4	31.9	32.0	0.7	1.2	1.2
Prop In Lane	0.26		1.00	1.00		0.13	1.00		0.40	1.00		0.17
Lane Grp Cap(c), veh/h	193	0	161	290	0	309	557	995	967	242	863	877
V/C Ratio(X)	0.72	0.00	0.85	0.77	0.00	0.90	0.43	0.56	0.56	0.06	0.39	0.39
Avail Cap(c_a), veh/h	248	0	207	351	0	373	823	995	967	292	863	877
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.2	0.0	70.2	64.3	0.0	65.9	16.2	22.4	22.4	21.6	1.0	1.0
Incr Delay (d2), s/veh	7.3	0.0	22.2	8.2	0.0	21.0	0.5	2.2	2.3	0.1	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	7.0	10.1	0.0	13.8	5.2	16.2	15.8	0.3	0.7	0.7
LnGrp Delay(d),s/veh	76.5	0.0	92.4	72.6	0.0	86.9	16.7	24.6	24.7	21.7	2.4	2.4
LnGrp LOS	E		F	E		F	B	C	C	C	A	A
Approach Vol, veh/h		277			500			1336			700	
Approach Delay, s/veh		84.3			80.5			23.2			2.8	
Approach LOS		F			F			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.4	96.8		24.1	18.2	85.0		32.6
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	6.0	75.0		22.0	37.0	44.0		31.0
Max Q Clear Time (g_c+I1), s	2.7	34.0		16.3	12.4	3.2		24.6
Green Ext Time (p_c), s	0.0	8.5		0.5	0.8	8.5		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	34.3
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	350	2	2	487	22	4	0	13	7	0	9
Future Vol, veh/h	14	350	2	2	487	22	4	0	13	7	0	9
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	11
Mvmt Flow	14	361	2	2	502	23	4	0	13	7	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	527	0	0	364	0	0	914	923	372	926	913	515
Stage 1	-	-	-	-	-	-	392	392	-	520	520	-
Stage 2	-	-	-	-	-	-	522	531	-	406	393	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.399
Pot Cap-1 Maneuver	1050	-	-	1206	-	-	256	272	678	251	276	542
Stage 1	-	-	-	-	-	-	637	610	-	543	535	-
Stage 2	-	-	-	-	-	-	542	529	-	626	609	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1050	-	-	1197	-	-	248	266	672	240	270	541
Mov Cap-2 Maneuver	-	-	-	-	-	-	248	266	-	240	270	-
Stage 1	-	-	-	-	-	-	626	599	-	533	533	-
Stage 2	-	-	-	-	-	-	532	527	-	599	598	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	12.8	15.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	479	1050	-	-	1197	-	-	349
HCM Lane V/C Ratio	0.037	0.014	-	-	0.002	-	-	0.047
HCM Control Delay (s)	12.8	8.5	0	-	8	0	-	15.8
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	0	5	1	15	1	31	0	10	14	2
Future Vol, veh/h	1	1	0	5	1	15	1	31	0	10	14	2
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	7	0	0	0	0	0	0
Mvmt Flow	1	1	0	5	1	16	1	34	0	11	15	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	86	76	17	76	77	37	18	0	0	35	0	0
Stage 1	39	39	-	37	37	-	-	-	-	-	-	-
Stage 2	47	37	-	39	40	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.27	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.363	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	905	818	1068	919	817	1021	1612	-	-	1589	-	-
Stage 1	981	866	-	984	868	-	-	-	-	-	-	-
Stage 2	972	868	-	981	866	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	882	810	1067	912	809	1018	1612	-	-	1586	-	-
Mov Cap-2 Maneuver	882	810	-	912	809	-	-	-	-	-	-	-
Stage 1	979	859	-	982	866	-	-	-	-	-	-	-
Stage 2	953	866	-	973	859	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	8.8	0.2	2.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1612	-	-	844	979	1586	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.023	0.007	-	-
HCM Control Delay (s)	7.2	0	-	9.3	8.8	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	885	46	20	1449	37	11	4	28	3	0	19
Future Vol, veh/h	29	885	46	20	1449	37	11	4	28	3	0	19
Conflicting Peds, #/hr	10	0	9	9	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	2	0	0	0	1	0	0	4	0	0	11
Mvmt Flow	30	912	47	21	1494	38	11	4	29	3	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1542	0	0	969	0	0	1793	2588	489	2082	2593	776
Stage 1	-	-	-	-	-	-	1005	1005	-	1564	1564	-
Stage 2	-	-	-	-	-	-	788	1583	-	518	1029	-
Critical Hdwy	4.16	-	-	4.1	-	-	8.3	7.3	7.38	7.1	6.1	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.23	-	-	2.2	-	-	3.5	4	3.34	3.5	4	3.41
Pot Cap-1 Maneuver	*672	-	-	*1077	-	-	*167	*73	*709	*167	*82	*439
Stage 1	-	-	-	-	-	-	*676	*592	-	*428	*374	-
Stage 2	-	-	-	-	-	-	*428	*374	-	*676	*589	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*672	-	-	*1077	-	-	*150	*67	*701	*144	*76	*434
Mov Cap-2 Maneuver	-	-	-	-	-	-	*150	*67	-	*144	*76	-
Stage 1	-	-	-	-	-	-	*640	*560	-	*404	*363	-
Stage 2	-	-	-	-	-	-	*400	*363	-	*615	*557	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	22.6	16.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	249	* 672	-	-	* 1077	-	-	340
HCM Lane V/C Ratio	0.178	0.044	-	-	0.019	-	-	0.067
HCM Control Delay (s)	22.6	10.6	-	-	8.4	-	-	16.3
HCM Lane LOS	C	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0.1	-	-	0.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	88	937	13	8	1464	16	4	1	31	5	1	32
Future Vol, veh/h	88	937	13	8	1464	16	4	1	31	5	1	32
Conflicting Peds, #/hr	8	0	1	1	0	8	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	93	986	14	8	1541	17	4	1	33	5	1	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1566	0	0	1001	0	0	1967	2762	501	2253	2760	787
Stage 1	-	-	-	-	-	-	1179	1179	-	1574	1574	-
Stage 2	-	-	-	-	-	-	788	1583	-	679	1186	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.1	7.1	7.2	7.1	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	*681	-	-	*1046	-	-	*125	*24	*697	*125	*32	*453
Stage 1	-	-	-	-	-	-	*523	*482	-	*428	*374	-
Stage 2	-	-	-	-	-	-	*428	*374	-	*657	*499	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*681	-	-	*1046	-	-	*100	*20	*696	*101	*27	*449
Mov Cap-2 Maneuver	-	-	-	-	-	-	*100	*20	-	*101	*27	-
Stage 1	-	-	-	-	-	-	*451	*416	-	*366	*368	-
Stage 2	-	-	-	-	-	-	*391	*368	-	*539	*430	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	20.6	22.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	268	* 681	-	-	* 1046	-	-	241
HCM Lane V/C Ratio	0.141	0.136	-	-	0.008	-	-	0.166
HCM Control Delay (s)	20.6	11.1	-	-	8.5	-	-	22.9
HCM Lane LOS	C	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0.5	-	-	0	-	-	0.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	879	125	303	783	60	192	133	404	102	137	44
Future Volume (vph)	50	879	125	303	783	60	192	133	404	102	137	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	7.5	7.5		7.5	7.5		6.5	6.5	6.5	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1802	3384		1787	3411		1641	1695	1652	1718	1860	
Flt Permitted	0.32	1.00		0.08	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	608	3384		149	3411		1641	1695	1652	1718	1860	
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)	53	925	132	319	824	63	202	140	425	107	144	46
RTOR Reduction (vph)	0	8	0	0	3	0	0	0	135	0	9	0
Lane Group Flow (vph)	53	1049	0	319	884	0	162	180	290	107	181	0
Confl. Peds. (#/hr)	8		7	7		8	3		3	3		3
Confl. Bikes (#/hr)			4			2						
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	0%	1%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pt+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	8 1	4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	49.3	42.9		77.8	63.9		21.7	21.7	55.6	19.5	19.5	
Effective Green, g (s)	49.3	42.9		77.8	63.9		21.7	21.7	55.6	19.5	19.5	
Actuated g/C Ratio	0.35	0.31		0.56	0.46		0.15	0.15	0.40	0.14	0.14	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5		7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	268	1036		403	1556		254	262	656	239	259	
v/s Ratio Prot	0.01	c0.31		c0.15	0.26		0.10	c0.11	0.18	0.06	c0.10	
v/s Ratio Perm	0.06			0.28								
v/c Ratio	0.20	1.01		0.79	0.57		0.64	0.69	0.44	0.45	0.70	
Uniform Delay, d1	30.3	48.5		40.4	27.9		55.5	55.9	30.9	55.3	57.5	
Progression Factor	1.00	1.00		1.33	0.46		0.95	0.95	0.14	1.00	1.00	
Incremental Delay, d2	0.5	31.2		10.5	1.5		4.8	6.7	0.4	1.3	8.3	
Delay (s)	30.8	79.7		64.2	14.4		57.4	59.6	4.7	56.6	65.7	
Level of Service	C	E		E	B		E	E	A	E	E	
Approach Delay (s)		77.4			27.6			28.7			62.5	
Approach LOS		E			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	47.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.5
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	90	140	208	97	29	80	674	215	34	525	35
Future Volume (veh/h)	50	90	140	208	97	29	80	674	215	34	525	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1843	1825	1900	1976	1900	1881	1881	1881	1824	1900	1900
Adj Flow Rate, veh/h	53	96	149	221	103	31	85	717	229	36	559	37
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	0	0	0	0	0	0	0	0	0
Cap, veh/h	77	139	180	257	205	62	543	1417	453	382	1773	117
Arrive On Green	0.12	0.12	0.12	0.14	0.14	0.14	0.07	1.00	1.00	0.04	1.00	1.00
Sat Flow, veh/h	644	1167	1510	1810	1447	435	1791	2649	846	1737	3432	227
Grp Volume(v), veh/h	149	0	149	221	0	134	85	484	462	36	294	302
Grp Sat Flow(s),veh/h/ln	1811	0	1510	1810	0	1882	1791	1787	1708	1737	1805	1853
Q Serve(g_s), s	11.1	0.0	13.5	16.7	0.0	9.2	3.2	0.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	11.1	0.0	13.5	16.7	0.0	9.2	3.2	0.0	0.0	1.4	0.0	0.0
Prop In Lane	0.36		1.00	1.00		0.23	1.00		0.50	1.00		0.12
Lane Grp Cap(c), veh/h	216	0	180	257	0	267	543	956	914	382	933	958
V/C Ratio(X)	0.69	0.00	0.83	0.86	0.00	0.50	0.16	0.51	0.51	0.09	0.31	0.32
Avail Cap(c_a), veh/h	362	0	302	401	0	417	683	956	914	387	933	958
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.2	0.0	60.2	58.7	0.0	55.5	14.1	0.0	0.0	15.2	0.0	0.0
Incr Delay (d2), s/veh	3.9	0.0	9.3	11.0	0.0	1.5	0.1	1.5	1.6	0.1	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	6.1	9.1	0.0	4.9	1.6	0.4	0.4	0.7	0.2	0.2
LnGrp Delay(d),s/veh	63.1	0.0	69.5	69.7	0.0	57.0	14.2	1.5	1.6	15.3	0.9	0.9
LnGrp LOS	E		E	E		E	B	A	A	B	A	A
Approach Vol, veh/h		298			355			1031			632	
Approach Delay, s/veh		66.3			64.9			2.6			1.7	
Approach LOS		E			E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	81.9		23.7	10.1	79.3		26.9
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	3.0	52.0		28.0	16.0	39.0		31.0
Max Q Clear Time (g_c+I1), s	3.4	2.0		15.5	5.2	2.0		18.7
Green Ext Time (p_c), s	0.0	6.8		0.9	0.1	6.7		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	350	2	2	358	14	22	0	17	21	1	8
Future Vol, veh/h	13	350	2	2	358	14	22	0	17	21	1	8
Conflicting Peds, #/hr	3	0	13	13	0	3	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	361	2	2	369	14	23	0	18	22	1	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	387	0	0	376	0	0	787	793	378	783	786	379
Stage 1	-	-	-	-	-	-	402	402	-	383	383	-
Stage 2	-	-	-	-	-	-	385	391	-	400	403	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1183	-	-	1194	-	-	312	323	673	314	326	672
Stage 1	-	-	-	-	-	-	629	604	-	644	616	-
Stage 2	-	-	-	-	-	-	642	611	-	630	603	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1183	-	-	1191	-	-	300	314	664	300	317	670
Mov Cap-2 Maneuver	-	-	-	-	-	-	300	314	-	300	317	-
Stage 1	-	-	-	-	-	-	613	589	-	633	613	-
Stage 2	-	-	-	-	-	-	632	608	-	603	588	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	15.2	16.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	394	1183	-	-	1191	-	-	353
HCM Lane V/C Ratio	0.102	0.011	-	-	0.002	-	-	0.088
HCM Control Delay (s)	15.2	8.1	0	-	8	0	-	16.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	2	3	1	16	1	11	2	23	12	2
Future Vol, veh/h	1	0	2	3	1	16	1	11	2	23	12	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	0	2	3	1	17	1	12	2	25	13	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	88	81	14	81	81	14	15	0	0	15	0	0
Stage 1	64	64	-	16	16	-	-	-	-	-	-	-
Stage 2	24	17	-	65	65	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	902	813	1072	912	813	1072	1616	-	-	1616	-	-
Stage 1	952	846	-	1009	886	-	-	-	-	-	-	-
Stage 2	999	885	-	951	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	875	799	1072	898	799	1071	1616	-	-	1616	-	-
Mov Cap-2 Maneuver	875	799	-	898	799	-	-	-	-	-	-	-
Stage 1	951	832	-	1007	884	-	-	-	-	-	-	-
Stage 2	981	883	-	934	831	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	8.6	0.5	4.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1616	-	-	997	1024	1616	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.021	0.015	-	-
HCM Control Delay (s)	7.2	0	-	8.6	8.6	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	1129	66	26	1076	24	15	3	25	5	3	22
Future Vol, veh/h	42	1129	66	26	1076	24	15	3	25	5	3	22
Conflicting Peds, #/hr	4	0	10	10	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	95	95	95	93	93	93	88	88	88	67	67	67
Heavy Vehicles, %	0	1	2	0	1	0	0	0	0	0	0	5
Mvmt Flow	44	1188	69	28	1157	26	17	3	28	7	4	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1187	0	0	1268	0	0	1960	2565	639	1914	2586	596
Stage 1	-	-	-	-	-	-	1322	1322	-	1230	1230	-
Stage 2	-	-	-	-	-	-	638	1243	-	684	1356	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.3	7.3	7.3	7.1	6.1	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.35
Pot Cap-1 Maneuver	*927	-	-	*832	-	-	*25	*15	*554	*52	*34	*608
Stage 1	-	-	-	-	-	-	*523	*458	-	*582	*510	-
Stage 2	-	-	-	-	-	-	*582	*510	-	*523	*458	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*926	-	-	*832	-	-	*20	*14	*548	*38	*31	*605
Mov Cap-2 Maneuver	-	-	-	-	-	-	*20	*14	-	*38	*31	-
Stage 1	-	-	-	-	-	-	*492	*431	-	*552	*490	-
Stage 2	-	-	-	-	-	-	*527	*490	-	*468	*431	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	$ 328.6	56.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	43	* 926	-	-	* 832	-	-	113
HCM Lane V/C Ratio	1.136	0.048	-	-	0.034	-	-	0.396
HCM Control Delay (s)	$ 328.6	9.1	-	-	9.5	-	-	56.4
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	4.7	0.1	-	-	0.1	-	-	1.7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	1228	13	20	1041	23	4	0	26	7	2	26
Future Vol, veh/h	62	1228	13	20	1041	23	4	0	26	7	2	26
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	5	1	0	0	0	4	14	0	0
Mvmt Flow	64	1266	13	21	1073	24	4	0	27	7	2	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1102	0	0	1279	0	0	1980	2544	640	1892	2538	553
Stage 1	-	-	-	-	-	-	1401	1401	-	1131	1131	-
Stage 2	-	-	-	-	-	-	579	1143	-	761	1407	-
Critical Hdwy	4.1	-	-	4.2	-	-	8.1	7.1	7.28	7.38	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.38	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.38	5.1	-
Follow-up Hdwy	2.2	-	-	2.25	-	-	3.5	4	3.34	3.64	4	3.3
Pot Cap-1 Maneuver	*983	-	-	*723	-	-	*27	*18	*486	*46	*37	*655
Stage 1	-	-	-	-	-	-	*464	*406	-	*594	*540	-
Stage 2	-	-	-	-	-	-	*617	*540	-	*447	*406	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*983	-	-	*723	-	-	*23	*16	*486	*40	*33	*651
Mov Cap-2 Maneuver	-	-	-	-	-	-	*23	*16	-	*40	*33	-
Stage 1	-	-	-	-	-	-	*434	*380	-	*552	*522	-
Stage 2	-	-	-	-	-	-	*573	*522	-	*394	*380	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.2	40.4	44.2
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	132	* 983	-	-	* 723	-	-	127
HCM Lane V/C Ratio	0.234	0.065	-	-	0.029	-	-	0.284
HCM Control Delay (s)	40.4	8.9	-	-	10.1	-	-	44.2
HCM Lane LOS	E	A	-	-	B	-	-	E
HCM 95th %tile Q(veh)	0.9	0.2	-	-	0.1	-	-	1.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	893	133	172	568	63	296	166	352	103	273	34
Future Volume (vph)	25	893	133	172	568	63	296	166	352	103	273	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1800	3344		1671	3250		1548	1649	1562	1562	1859	
Flt Permitted	0.35	1.00		0.08	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	667	3344		137	3250		1548	1649	1562	1562	1859	
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)	27	971	145	187	617	68	322	180	383	112	297	37
RTOR Reduction (vph)	0	8	0	0	6	0	0	0	134	0	3	0
Lane Group Flow (vph)	27	1108	0	187	679	0	274	228	249	112	331	0
Confl. Peds. (#/hr)	9					9	9		18	18		9
Confl. Bikes (#/hr)			3			2			4			1
Heavy Vehicles (%)	0%	2%	3%	8%	5%	8%	6%	3%	3%	10%	2%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases	2			6					8			
Actuated Green, G (s)	47.9	44.0		65.1	53.7		28.4	28.4	42.0	25.5	25.5	
Effective Green, g (s)	47.9	44.0		65.1	53.7		28.4	28.4	42.0	25.5	25.5	
Actuated g/C Ratio	0.34	0.31		0.46	0.38		0.20	0.20	0.30	0.18	0.18	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0	4.0	3.0	3.0	
Lane Grp Cap (vph)	259	1050		212	1246		314	334	468	284	338	
v/s Ratio Prot	0.00	c0.33		c0.09	0.21		c0.18	0.14	0.05	0.07	c0.18	
v/s Ratio Perm	0.03			0.32					0.11			
v/c Ratio	0.10	1.06		0.88	0.55		0.87	0.68	0.53	0.39	0.98	
Uniform Delay, d1	30.8	48.0		39.8	33.6		54.0	51.6	40.8	50.4	57.0	
Progression Factor	1.00	1.00		1.44	0.77		0.98	1.00	0.47	1.00	1.00	
Incremental Delay, d2	0.2	43.5		32.5	1.7		19.7	4.8	1.3	0.9	42.7	
Delay (s)	31.1	91.5		90.0	27.6		72.8	56.3	20.4	51.4	99.6	
Level of Service	C	F		F	C		E	E	C	D	F	
Approach Delay (s)		90.1			41.0			45.9			87.5	
Approach LOS		F			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	65.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.5
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	233	378	197	34	46	70	714	235	24	560	15
Future Volume (veh/h)	31	233	378	197	34	46	70	714	235	24	560	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1837	1825	1881	1854	1900	1862	1822	1881	1689	1829	1900
Adj Flow Rate, veh/h	33	251	406	212	37	49	75	768	253	26	602	16
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	1	1	6	6	1	4	4	8	4	4
Cap, veh/h	48	369	348	244	98	129	365	1104	363	170	1426	38
Arrive On Green	0.23	0.23	0.23	0.14	0.14	0.14	0.04	0.43	0.43	0.02	0.55	0.55
Sat Flow, veh/h	212	1614	1523	1792	716	948	1774	2542	837	1608	3455	92
Grp Volume(v), veh/h	284	0	406	212	0	86	75	523	498	26	302	316
Grp Sat Flow(s),veh/h/ln	1826	0	1523	1792	0	1664	1774	1731	1648	1608	1737	1810
Q Serve(g_s), s	19.9	0.0	32.0	16.2	0.0	6.6	3.4	34.3	34.3	1.3	14.3	14.3
Cycle Q Clear(g_c), s	19.9	0.0	32.0	16.2	0.0	6.6	3.4	34.3	34.3	1.3	14.3	14.3
Prop In Lane	0.12		1.00	1.00		0.57	1.00		0.51	1.00		0.05
Lane Grp Cap(c), veh/h	417	0	348	244	0	227	365	751	716	170	717	747
V/C Ratio(X)	0.68	0.00	1.17	0.87	0.00	0.38	0.21	0.70	0.70	0.15	0.42	0.42
Avail Cap(c_a), veh/h	417	0	348	346	0	321	389	751	716	180	717	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	0.0	54.0	59.2	0.0	55.0	23.0	32.1	32.1	26.9	21.8	21.8
Incr Delay (d2), s/veh	4.4	0.0	101.4	15.1	0.0	1.0	0.3	5.3	5.5	0.4	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	0.0	23.3	9.0	0.0	3.1	1.7	17.5	16.7	0.6	7.2	7.5
LnGrp Delay(d),s/veh	53.8	0.0	155.4	74.3	0.0	56.1	23.2	37.4	37.7	27.3	23.6	23.5
LnGrp LOS	D		F	E		E	C	D	D	C	C	C
Approach Vol, veh/h		690			298			1096			644	
Approach Delay, s/veh		113.6			69.1			36.5			23.7	
Approach LOS		F			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	67.8		39.0	10.1	64.8		26.1
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	3.0	52.0		32.0	7.0	48.0		27.0
Max Q Clear Time (g_c+I1), s	3.3	36.3		34.0	5.4	16.3		18.2
Green Ext Time (p_c), s	0.0	5.9		0.0	0.0	7.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	56.6
HCM 2010 LOS	E

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	495	2	1	215	10	9	0	0	14	0	12
Future Vol, veh/h	10	495	2	1	215	10	9	0	0	14	0	12
Conflicting Peds, #/hr	2	0	5	5	0	2	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	0	0	4	0	0	0	0	0	0	17
Mvmt Flow	11	538	2	1	234	11	10	0	0	15	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	247	0	0	545	0	0	814	815	546	806	810	241
Stage 1	-	-	-	-	-	-	566	566	-	243	243	-
Stage 2	-	-	-	-	-	-	248	249	-	563	567	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.453
Pot Cap-1 Maneuver	1331	-	-	1034	-	-	299	314	541	303	316	762
Stage 1	-	-	-	-	-	-	513	511	-	765	708	-
Stage 2	-	-	-	-	-	-	760	704	-	514	510	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1331	-	-	1032	-	-	290	308	538	299	310	761
Mov Cap-2 Maneuver	-	-	-	-	-	-	290	308	-	299	310	-
Stage 1	-	-	-	-	-	-	505	503	-	755	706	-
Stage 2	-	-	-	-	-	-	746	702	-	507	502	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	17.8	14.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	290	1331	-	-	1032	-	-	415
HCM Lane V/C Ratio	0.034	0.008	-	-	0.001	-	-	0.068
HCM Control Delay (s)	17.8	7.7	0	-	8.5	0	-	14.3
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	1	0	0	12	1	20	4	5	6	2
Future Vol, veh/h	0	1	1	0	0	12	1	20	4	5	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	25	0	0	0
Mvmt Flow	0	1	1	0	0	13	1	22	4	5	7	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	51	46	8	46	46	24	9	0	0	26	0	0
Stage 1	18	18	-	26	26	-	-	-	-	-	-	-
Stage 2	33	28	-	20	20	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	953	850	1080	961	850	1058	1624	-	-	1601	-	-
Stage 1	1006	884	-	997	878	-	-	-	-	-	-	-
Stage 2	988	876	-	1004	883	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	938	847	1080	956	847	1058	1624	-	-	1601	-	-
Mov Cap-2 Maneuver	938	847	-	956	847	-	-	-	-	-	-	-
Stage 1	1005	881	-	996	877	-	-	-	-	-	-	-
Stage 2	975	875	-	999	880	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	8.4	0.3	2.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1624	-	-	949	1058	1601	-	-
HCM Lane V/C Ratio	0.001	-	-	0.002	0.012	0.003	-	-
HCM Control Delay (s)	7.2	0	-	8.8	8.4	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	39	28	4	40	13
Future Vol, veh/h	0	39	28	4	40	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	3	-	-	-3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	42	30	4	43	14

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	134	33	0	0	35	0
Stage 1	33	-	-	-	-	-
Stage 2	101	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	860	1041	-	-	1576	-
Stage 1	989	-	-	-	-	-
Stage 2	923	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	836	1041	-	-	1576	-
Mov Cap-2 Maneuver	836	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	897	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	5.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1041	1576	-
HCM Lane V/C Ratio	-	-	0.041	0.028	-
HCM Control Delay (s)	-	-	8.6	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1142	35	16	762	28	18	5	20	4	5	20
Future Vol, veh/h	45	1142	35	16	762	28	18	5	20	4	5	20
Conflicting Peds, #/hr	6	0	7	7	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	90
Heavy Vehicles, %	4	3	10	0	6	0	0	0	0	0	0	0
Mvmt Flow	49	1241	38	17	828	30	20	5	22	4	5	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	865	0	0	1286	0	0	1817	2264	647	1605	2268	435
Stage 1	-	-	-	-	-	-	1365	1365	-	884	884	-
Stage 2	-	-	-	-	-	-	452	899	-	721	1384	-
Critical Hdwy	4.18	-	-	4.1	-	-	8.3	7.3	7.3	7.1	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.24	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	*1133	-	-	*886	-	-	*254	*215	*590	*254	213	*768
Stage 1	-	-	-	-	-	-	*556	*487	-	*725	635	-
Stage 2	-	-	-	-	-	-	*724	*619	-	*556	481	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*1133	-	-	*886	-	-	*228	*199	*585	*227	197	*763
Mov Cap-2 Maneuver	-	-	-	-	-	-	*228	*199	-	*227	197	-
Stage 1	-	-	-	-	-	-	*528	*462	-	*689	619	-
Stage 2	-	-	-	-	-	-	*684	*603	-	*507	456	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	18.6	14.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	311	* 1133	-	-	* 886	-	-	422
HCM Lane V/C Ratio	0.15	0.043	-	-	0.02	-	-	0.076
HCM Control Delay (s)	18.6	8.3	-	-	9.1	-	-	14.2
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0.1	-	-	0.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	1320	19	13	656	26	22	7	27	10	1	59
Future Vol, veh/h	85	1320	19	13	656	26	22	7	27	10	1	59
Conflicting Peds, #/hr	7	0	5	5	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	66	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	3	0	0	5	0	0	0	8	0	0	3
Mvmt Flow	90	1404	20	14	698	28	23	7	29	11	1	63

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	733	0	0	1429	0	0	1977	2360	717	1633	2356	370
Stage 1	-	-	-	-	-	-	1600	1600	-	746	746	-
Stage 2	-	-	-	-	-	-	377	760	-	887	1610	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.1	7.1	7.36	7.1	6.1	6.76
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.38	3.5	4	3.33
Pot Cap-1 Maneuver	*1221	-	-	*781	-	-	*45	*27	*508	*150	*48	*806
Stage 1	-	-	-	-	-	-	*444	*397	-	*767	*671	-
Stage 2	-	-	-	-	-	-	*767	*671	-	*490	*398	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*1221	-	-	*781	-	-	*38	*24	*505	*100	*43	*800
Mov Cap-2 Maneuver	-	-	-	-	-	-	*38	*24	-	*100	*43	-
Stage 1	-	-	-	-	-	-	*409	*366	-	*705	*654	-
Stage 2	-	-	-	-	-	-	*693	*654	-	*420	*367	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	168.8	17.8
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	33	505	* 1221	-	-	* 781	-	-	355
HCM Lane V/C Ratio	0.935	0.057	0.074	-	-	0.018	-	-	0.21
HCM Control Delay (s)	$ 314.2	12.6	8.2	-	-	9.7	-	-	17.8
HCM Lane LOS	F	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	3.3	0.2	0.2	-	-	0.1	-	-	0.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	571	168	284	1244	59	299	204	355	96	208	26
Future Volume (vph)	34	571	168	284	1244	59	299	204	355	96	208	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3296		1770	3423		1609	1690	1615	1701	1900	
Flt Permitted	0.08	1.00		0.20	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	146	3296		368	3423		1609	1690	1615	1701	1900	
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)	36	601	177	299	1309	62	315	215	374	101	219	27
RTOR Reduction (vph)	0	16	0	0	2	0	0	0	154	0	3	0
Lane Group Flow (vph)	36	762	0	299	1369	0	261	269	220	101	243	0
Confl. Peds. (#/hr)	14		7	7		14	10		4	4		10
Confl. Bikes (#/hr)			1			4			4			
Heavy Vehicles (%)	0%	1%	4%	2%	1%	0%	2%	1%	1%	1%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases	2			6					8			
Actuated Green, G (s)	64.5	59.1		86.3	73.4		29.0	29.0	48.7	23.7	23.7	
Effective Green, g (s)	64.5	59.1		86.3	73.4		29.0	29.0	48.7	23.7	23.7	
Actuated g/C Ratio	0.40	0.37		0.54	0.46		0.18	0.18	0.30	0.15	0.15	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0	4.0	3.0	3.0	
Lane Grp Cap (vph)	114	1217		371	1570		291	306	491	251	281	
v/s Ratio Prot	0.01	0.23		c0.10	c0.40		c0.16	0.16	0.05	0.06	c0.13	
v/s Ratio Perm	0.12			0.34					0.08			
v/c Ratio	0.32	0.63		0.81	0.87		0.90	0.88	0.45	0.40	0.87	
Uniform Delay, d1	33.6	41.4		25.4	39.1		64.0	63.8	44.8	61.7	66.6	
Progression Factor	1.00	1.00		1.45	0.45		1.42	1.43	1.25	1.00	1.00	
Incremental Delay, d2	2.2	2.4		12.2	6.7		24.8	21.0	0.8	1.1	23.2	
Delay (s)	35.8	43.8		49.1	24.3		116.0	112.0	56.8	62.8	89.8	
Level of Service	D	D		D	C		F	F	E	E	F	
Approach Delay (s)		43.5			28.7			90.3			82.0	
Approach LOS		D			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	51.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	28.5
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	99	130	214	230	33	230	846	208	13	601	55
Future Volume (veh/h)	34	99	130	214	230	33	230	846	208	13	601	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1829	1825	1900	1976	1900	1881	1866	1881	1824	1863	1900
Adj Flow Rate, veh/h	36	104	137	225	242	35	242	891	219	14	633	58
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	0	0	1	1	0	2	2
Cap, veh/h	50	144	161	290	270	39	555	1575	387	237	1594	146
Arrive On Green	0.11	0.11	0.11	0.16	0.16	0.16	0.08	0.56	0.56	0.02	0.98	0.98
Sat Flow, veh/h	464	1341	1507	1810	1682	243	1791	2805	689	1737	3270	299
Grp Volume(v), veh/h	140	0	137	225	0	277	242	563	547	14	342	349
Grp Sat Flow(s),veh/h/ln	1806	0	1507	1810	0	1925	1791	1773	1721	1737	1770	1800
Q Serve(g_s), s	12.0	0.0	14.3	19.1	0.0	22.6	10.4	32.6	32.7	0.7	1.3	1.3
Cycle Q Clear(g_c), s	12.0	0.0	14.3	19.1	0.0	22.6	10.4	32.6	32.7	0.7	1.3	1.3
Prop In Lane	0.26		1.00	1.00		0.13	1.00		0.40	1.00		0.17
Lane Grp Cap(c), veh/h	193	0	161	290	0	309	555	995	966	237	863	878
V/C Ratio(X)	0.72	0.00	0.85	0.78	0.00	0.90	0.44	0.57	0.57	0.06	0.40	0.40
Avail Cap(c_a), veh/h	248	0	207	351	0	373	822	995	966	287	863	878
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.2	0.0	70.2	64.4	0.0	65.9	16.2	22.5	22.6	21.7	1.0	1.0
Incr Delay (d2), s/veh	7.3	0.0	22.2	8.7	0.0	21.0	0.5	2.3	2.4	0.1	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	7.0	10.3	0.0	13.8	5.2	16.6	16.2	0.3	0.7	0.7
LnGrp Delay(d),s/veh	76.5	0.0	92.4	73.1	0.0	86.9	16.7	24.9	25.0	21.8	2.4	2.4
LnGrp LOS	E		F	E		F	B	C	C	C	A	A
Approach Vol, veh/h		277			502			1352			705	
Approach Delay, s/veh		84.3			80.7			23.4			2.8	
Approach LOS		F			F			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.4	96.8		24.1	18.2	85.0		32.6
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	6.0	75.0		22.0	37.0	44.0		31.0
Max Q Clear Time (g_c+I1), s	2.3	34.7		16.3	12.4	3.3		24.6
Green Ext Time (p_c), s	0.0	8.6		0.5	0.8	8.6		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	34.4
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	350	2	2	489	22	4	0	13	7	0	9
Future Vol, veh/h	19	350	2	2	489	22	4	0	13	7	0	9
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	11
Mvmt Flow	20	361	2	2	504	23	4	0	13	7	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	529	0	0	364	0	0	926	935	372	939	925	517
Stage 1	-	-	-	-	-	-	402	402	-	522	522	-
Stage 2	-	-	-	-	-	-	524	533	-	417	403	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.399
Pot Cap-1 Maneuver	1048	-	-	1206	-	-	251	267	678	246	271	541
Stage 1	-	-	-	-	-	-	629	604	-	542	534	-
Stage 2	-	-	-	-	-	-	540	528	-	617	603	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1048	-	-	1197	-	-	242	259	672	234	263	540
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	259	-	234	263	-
Stage 1	-	-	-	-	-	-	613	589	-	528	532	-
Stage 2	-	-	-	-	-	-	530	526	-	586	588	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	12.9	16
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	474	1048	-	-	1197	-	-	343
HCM Lane V/C Ratio	0.037	0.019	-	-	0.002	-	-	0.048
HCM Control Delay (s)	12.9	8.5	0	-	8	0	-	16
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	0	5	1	20	1	31	0	10	14	2
Future Vol, veh/h	1	1	0	5	1	20	1	31	0	10	14	2
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	7	0	0	0	0	0	0
Mvmt Flow	1	1	0	5	1	22	1	34	0	11	15	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	88	76	17	76	77	37	18	0	0	35	0	0
Stage 1	39	39	-	37	37	-	-	-	-	-	-	-
Stage 2	49	37	-	39	40	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.27	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.363	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	902	818	1068	919	817	1021	1612	-	-	1589	-	-
Stage 1	981	866	-	984	868	-	-	-	-	-	-	-
Stage 2	969	868	-	981	866	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	874	810	1067	912	809	1018	1612	-	-	1586	-	-
Mov Cap-2 Maneuver	874	810	-	912	809	-	-	-	-	-	-	-
Stage 1	979	859	-	982	866	-	-	-	-	-	-	-
Stage 2	945	866	-	973	859	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	8.8	0.2	2.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1612	-	-	841	986	1586	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.029	0.007	-	-
HCM Control Delay (s)	7.2	0	-	9.3	8.8	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	50	46	6	50	26
Future Vol, veh/h	0	50	46	6	50	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	3	-	-	-3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	54	50	7	54	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	190	53	0	0	57	0
Stage 1	53	-	-	-	-	-
Stage 2	137	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	799	1014	-	-	1547	-
Stage 1	970	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	771	1014	-	-	1547	-
Mov Cap-2 Maneuver	771	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	859	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	4.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1014	1547	-
HCM Lane V/C Ratio	-	-	0.054	0.035	-
HCM Control Delay (s)	-	-	8.8	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	893	48	20	1467	37	11	4	28	3	0	19
Future Vol, veh/h	29	893	48	20	1467	37	11	4	28	3	0	19
Conflicting Peds, #/hr	10	0	9	9	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	2	0	0	0	1	0	0	4	0	0	11
Mvmt Flow	30	921	49	21	1512	38	11	4	29	3	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1561	0	0	979	0	0	1811	2616	494	2105	2622	785
Stage 1	-	-	-	-	-	-	1014	1014	-	1583	1583	-
Stage 2	-	-	-	-	-	-	797	1602	-	522	1039	-
Critical Hdwy	4.16	-	-	4.1	-	-	8.3	7.3	7.38	7.1	6.1	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.23	-	-	2.2	-	-	3.5	4	3.34	3.5	4	3.41
Pot Cap-1 Maneuver	*672	-	-	*1077	-	-	*167	*56	*709	*167	*66	*439
Stage 1	-	-	-	-	-	-	*676	*592	-	*428	*374	-
Stage 2	-	-	-	-	-	-	*428	*374	-	*676	*581	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*672	-	-	*1077	-	-	*150	*52	*701	*142	*61	*434
Mov Cap-2 Maneuver	-	-	-	-	-	-	*150	*52	-	*142	*61	-
Stage 1	-	-	-	-	-	-	*640	*560	-	*404	*363	-
Stage 2	-	-	-	-	-	-	*400	*363	-	*615	*550	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	24.8	16.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	226	* 672	-	-	* 1077	-	-	339
HCM Lane V/C Ratio	0.196	0.044	-	-	0.019	-	-	0.067
HCM Control Delay (s)	24.8	10.6	-	-	8.4	-	-	16.4
HCM Lane LOS	C	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-	-	0.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	88	937	40	26	1464	16	16	1	41	5	1	32
Future Vol, veh/h	88	937	40	26	1464	16	16	1	41	5	1	32
Conflicting Peds, #/hr	8	0	1	1	0	8	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	66	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	93	986	42	27	1541	17	17	1	43	5	1	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1566	0	0	1029	0	0	2020	2815	515	2291	2827	787
Stage 1	-	-	-	-	-	-	1194	1194	-	1612	1612	-
Stage 2	-	-	-	-	-	-	826	1621	-	679	1215	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.1	7.1	7.2	7.1	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	*681	-	-	*1046	-	-	*125	*12	*697	*125	*16	*453
Stage 1	-	-	-	-	-	-	*505	*470	-	*428	*374	-
Stage 2	-	-	-	-	-	-	*428	*374	-	*657	*479	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*681	-	-	*1046	-	-	*95	*10	*696	*94	*13	*449
Mov Cap-2 Maneuver	-	-	-	-	-	-	*95	*10	-	*94	*13	-
Stage 1	-	-	-	-	-	-	*435	*405	-	*366	*361	-
Stage 2	-	-	-	-	-	-	*384	*361	-	*531	*413	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.1	31.9	29.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	63	696	* 681	-	-	* 1046	-	-	189
HCM Lane V/C Ratio	0.284	0.062	0.136	-	-	0.026	-	-	0.212
HCM Control Delay (s)	83.4	10.5	11.1	-	-	8.5	-	-	29.1
HCM Lane LOS	F	B	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1	0.2	0.5	-	-	0.1	-	-	0.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	888	125	310	791	63	192	133	411	105	137	44
Future Volume (vph)	50	888	125	310	791	63	192	133	411	105	137	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1802	3385		1787	3409		1641	1695	1641	1718	1860	
Flt Permitted	0.32	1.00		0.08	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	601	3385		153	3409		1641	1695	1641	1718	1860	
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)	53	935	132	326	833	66	202	140	433	111	144	46
RTOR Reduction (vph)	0	7	0	0	3	0	0	0	139	0	9	0
Lane Group Flow (vph)	53	1060	0	326	896	0	162	180	294	111	181	0
Confl. Peds. (#/hr)	8		7	7		8	3		3	3		3
Confl. Bikes (#/hr)			4			2						
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	0%	1%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases	2			6					8			
Actuated Green, G (s)	48.1	41.7		77.6	63.7		21.9	21.9	50.3	19.5	19.5	
Effective Green, g (s)	48.1	41.7		77.6	63.7		21.9	21.9	50.3	19.5	19.5	
Actuated g/C Ratio	0.34	0.30		0.55	0.46		0.16	0.16	0.36	0.14	0.14	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0	4.0	3.0	3.0	
Lane Grp Cap (vph)	261	1008		416	1551		256	265	589	239	259	
v/s Ratio Prot	0.01	c0.31		c0.16	0.26		0.10	c0.11	0.10	0.06	c0.10	
v/s Ratio Perm	0.06			0.28					0.08			
v/c Ratio	0.20	1.05		0.78	0.58		0.63	0.68	0.50	0.46	0.70	
Uniform Delay, d1	31.1	49.1		40.1	28.2		55.3	55.7	35.0	55.4	57.5	
Progression Factor	1.00	1.00		1.32	0.46		0.95	0.95	0.18	1.00	1.00	
Incremental Delay, d2	0.5	42.9		9.6	1.5		4.6	6.2	0.8	1.4	8.3	
Delay (s)	31.6	92.1		62.3	14.5		57.0	58.9	7.1	56.9	65.7	
Level of Service	C	F		E	B		E	E	A	E	E	
Approach Delay (s)		89.2			27.2			29.5			62.5	
Approach LOS		F			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	51.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.5
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	90	140	211	97	29	80	681	219	34	532	35
Future Volume (veh/h)	50	90	140	211	97	29	80	681	219	34	532	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1843	1825	1900	1976	1900	1881	1881	1881	1824	1900	1900
Adj Flow Rate, veh/h	53	96	149	224	103	31	85	724	233	36	566	37
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	0	0	0	0	0	0	0	0	0
Cap, veh/h	77	139	180	259	207	62	539	1410	454	378	1769	115
Arrive On Green	0.12	0.12	0.12	0.14	0.14	0.14	0.07	1.00	1.00	0.04	1.00	1.00
Sat Flow, veh/h	644	1167	1510	1810	1447	435	1791	2643	851	1737	3435	224
Grp Volume(v), veh/h	149	0	149	224	0	134	85	489	468	36	297	306
Grp Sat Flow(s),veh/h/ln	1811	0	1510	1810	0	1882	1791	1787	1707	1737	1805	1854
Q Serve(g_s), s	11.1	0.0	13.5	16.9	0.0	9.2	3.2	0.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	11.1	0.0	13.5	16.9	0.0	9.2	3.2	0.0	0.0	1.4	0.0	0.0
Prop In Lane	0.36		1.00	1.00		0.23	1.00		0.50	1.00		0.12
Lane Grp Cap(c), veh/h	216	0	180	259	0	270	539	953	911	378	930	955
V/C Ratio(X)	0.69	0.00	0.83	0.86	0.00	0.50	0.16	0.51	0.51	0.10	0.32	0.32
Avail Cap(c_a), veh/h	362	0	302	401	0	417	679	953	911	383	930	955
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.2	0.0	60.2	58.6	0.0	55.3	14.2	0.0	0.0	15.3	0.0	0.0
Incr Delay (d2), s/veh	3.9	0.0	9.3	11.4	0.0	1.4	0.1	1.6	1.7	0.1	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	6.1	9.3	0.0	4.9	1.5	0.4	0.4	0.7	0.2	0.2
LnGrp Delay(d),s/veh	63.1	0.0	69.5	70.0	0.0	56.7	14.3	1.6	1.7	15.4	0.9	0.9
LnGrp LOS	E		E	E		E	B	A	A	B	A	A
Approach Vol, veh/h		298			358			1042			639	
Approach Delay, s/veh		66.3			65.0			2.7			1.7	
Approach LOS		E			E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.6	81.7		23.7	10.1	79.1		27.1
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	3.6	52.0		28.0	16.0	39.0		31.0
Max Q Clear Time (g_c+I1), s	13.4	2.0		15.5	5.2	2.0		18.9
Green Ext Time (p_c), s	0.0	6.9		0.9	0.1	6.8		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	350	2	2	361	14	22	0	17	21	1	8
Future Vol, veh/h	17	350	2	2	361	14	22	0	17	21	1	8
Conflicting Peds, #/hr	3	0	13	13	0	3	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	18	361	2	2	372	14	23	0	18	22	1	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	390	0	0	376	0	0	798	804	378	796	798	382
Stage 1	-	-	-	-	-	-	410	410	-	387	387	-
Stage 2	-	-	-	-	-	-	388	394	-	409	411	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1180	-	-	1194	-	-	306	319	673	307	321	670
Stage 1	-	-	-	-	-	-	623	599	-	641	613	-
Stage 2	-	-	-	-	-	-	640	609	-	623	598	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1180	-	-	1191	-	-	293	308	664	293	310	668
Mov Cap-2 Maneuver	-	-	-	-	-	-	293	308	-	293	310	-
Stage 1	-	-	-	-	-	-	605	581	-	627	610	-
Stage 2	-	-	-	-	-	-	630	606	-	594	580	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	15.4	16.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	387	1180	-	-	1191	-	-	345
HCM Lane V/C Ratio	0.104	0.015	-	-	0.002	-	-	0.09
HCM Control Delay (s)	15.4	8.1	0	-	8	0	-	16.5
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	2	3	1	20	1	11	2	23	12	2
Future Vol, veh/h	1	0	2	3	1	20	1	11	2	23	12	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	0	2	3	1	22	1	12	2	25	13	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	91	81	14	81	81	14	15	0	0	15	0	0
Stage 1	64	64	-	16	16	-	-	-	-	-	-	-
Stage 2	27	17	-	65	65	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	898	813	1072	912	813	1072	1616	-	-	1616	-	-
Stage 1	952	846	-	1009	886	-	-	-	-	-	-	-
Stage 2	996	885	-	951	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	867	799	1072	898	799	1071	1616	-	-	1616	-	-
Mov Cap-2 Maneuver	867	799	-	898	799	-	-	-	-	-	-	-
Stage 1	951	832	-	1007	884	-	-	-	-	-	-	-
Stage 2	974	883	-	934	831	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	8.6	0.5	4.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1616	-	-	994	1032	1616	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.025	0.015	-	-
HCM Control Delay (s)	7.2	0	-	8.6	8.6	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	41	27	5	37	37
Future Vol, veh/h	0	41	27	5	37	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	3	-	-	-3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	29	5	40	40

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	153	32	0	0	35	0
Stage 1	32	-	-	-	-	-
Stage 2	121	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	839	1042	-	-	1576	-
Stage 1	991	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	817	1042	-	-	1576	-
Mov Cap-2 Maneuver	817	-	-	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	880	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1042	1576	-
HCM Lane V/C Ratio	-	-	0.043	0.026	-
HCM Control Delay (s)	-	-	8.6	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	1143	69	26	1088	24	15	3	25	5	3	22
Future Vol, veh/h	42	1143	69	26	1088	24	15	3	25	5	3	22
Conflicting Peds, #/hr	4	0	10	10	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	95	95	95	93	93	93	88	88	88	67	67	67
Heavy Vehicles, %	0	1	2	0	1	0	0	0	0	0	0	5
Mvmt Flow	44	1203	73	28	1170	26	17	3	28	7	4	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1200	0	0	1286	0	0	1982	2594	648	1935	2617	603
Stage 1	-	-	-	-	-	-	1338	1338	-	1243	1243	-
Stage 2	-	-	-	-	-	-	644	1256	-	692	1374	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.3	7.3	7.3	7.1	6.1	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.35
Pot Cap-1 Maneuver	*927	-	-	*832	-	-	*24	*14	*554	*50	*33	*608
Stage 1	-	-	-	-	-	-	*523	*458	-	*582	*510	-
Stage 2	-	-	-	-	-	-	*582	*510	-	*523	*458	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*926	-	-	*832	-	-	*19	*13	*548	*35	*30	*605
Mov Cap-2 Maneuver	-	-	-	-	-	-	*19	*13	-	*35	*30	-
Stage 1	-	-	-	-	-	-	*492	*431	-	*552	*490	-
Stage 2	-	-	-	-	-	-	*527	*490	-	*468	*431	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	$ 372.8	61
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	40	* 926	-	-	* 832	-	-	107
HCM Lane V/C Ratio	1.222	0.048	-	-	0.034	-	-	0.418
HCM Control Delay (s)	$ 372.8	9.1	-	-	9.5	-	-	61
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	4.9	0.1	-	-	0.1	-	-	1.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	1228	32	32	1041	23	22	0	43	7	2	26
Future Vol, veh/h	62	1228	32	32	1041	23	22	0	43	7	2	26
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	66	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	5	1	0	0	0	4	14	0	0
Mvmt Flow	64	1266	33	33	1073	24	23	0	44	7	2	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1102	0	0	1299	0	0	2014	2578	649	1917	2583	553
Stage 1	-	-	-	-	-	-	1410	1410	-	1156	1156	-
Stage 2	-	-	-	-	-	-	604	1168	-	761	1427	-
Critical Hdwy	4.1	-	-	4.2	-	-	8.1	7.1	7.28	7.38	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.38	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.38	5.1	-
Follow-up Hdwy	2.2	-	-	2.25	-	-	3.5	4	3.34	3.64	4	3.3
Pot Cap-1 Maneuver	*983	-	-	*723	-	-	*25	*17	*486	*44	*34	*655
Stage 1	-	-	-	-	-	-	*464	*406	-	*594	*540	-
Stage 2	-	-	-	-	-	-	*617	*540	-	*447	*406	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*983	-	-	*723	-	-	*~ 21	*15	*486	*36	*30	*651
Mov Cap-2 Maneuver	-	-	-	-	-	-	*~ 21	*15	-	*36	*30	-
Stage 1	-	-	-	-	-	-	*434	*380	-	*552	*513	-
Stage 2	-	-	-	-	-	-	*563	*513	-	*379	*380	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.3	172.4	49.5
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	21	486	* 983	-	-	* 723	-	-	116
HCM Lane V/C Ratio	1.08	0.091	0.065	-	-	0.046	-	-	0.311
HCM Control Delay (s)	$ 483.6	13.2	8.9	-	-	10.2	-	-	49.5
HCM Lane LOS	F	B	A	-	-	B	-	-	E
HCM 95th %tile Q(veh)	3	0.3	0.2	-	-	0.1	-	-	1.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

APPENDIX E: SYNCHRO REPORTS (Queuing)

Queues
1: Nutley St & Rt 123

03/17/2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	20	1067	158	615	242	220	387	79	324
v/c Ratio	0.05	0.86	0.67	0.42	0.76	0.64	0.57	0.26	0.87
Control Delay	19.9	49.3	43.5	29.3	67.0	59.2	14.3	49.6	76.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	49.3	43.5	29.3	67.0	59.2	14.3	49.6	76.9
Queue Length 50th (ft)	9	492	88	217	216	192	81	61	284
Queue Length 95th (ft)	25	#632	#185	283	314	280	178	111	#444
Internal Link Dist (ft)		544		163		251			434
Turn Bay Length (ft)	90		285		220			200	
Base Capacity (vph)	392	1246	242	1462	370	395	698	317	383
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.86	0.65	0.42	0.65	0.56	0.55	0.25	0.85

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	284	406	208	86	75	982	26	567
v/c Ratio	0.71	0.64	0.66	0.25	0.21	0.65	0.13	0.41
Control Delay	62.2	11.7	66.6	36.0	23.6	36.1	24.4	34.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	11.7	66.6	36.0	23.6	36.1	24.4	34.7
Queue Length 50th (ft)	244	25	181	43	35	383	12	196
Queue Length 95th (ft)	386	137	305	104	85	607	38	330
Internal Link Dist (ft)	891			1017		689		893
Turn Bay Length (ft)					130		75	
Base Capacity (vph)	596	758	583	621	518	1511	407	1386
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.54	0.36	0.14	0.14	0.65	0.06	0.41

Intersection Summary

Queues
1: Nutley St & Rt 123

03/17/2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	29	683	278	1283	237	258	362	71	235
v/c Ratio	0.14	0.50	0.62	0.72	0.77	0.80	0.47	0.26	0.76
Control Delay	19.6	36.6	24.8	35.0	78.8	80.5	7.6	60.3	79.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	36.6	24.8	35.0	78.8	80.5	7.6	60.3	79.3
Queue Length 50th (ft)	14	286	153	611	246	269	31	65	233
Queue Length 95th (ft)	31	355	219	712	353	382	112	116	333
Internal Link Dist (ft)		631		198		257			382
Turn Bay Length (ft)	90		285		220			200	
Base Capacity (vph)	209	1366	469	1779	336	354	781	302	341
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.50	0.59	0.72	0.71	0.73	0.46	0.24	0.69

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	137	223	277	242	1046	14	653
v/c Ratio	0.57	0.41	0.65	0.69	0.53	0.56	0.06	0.47
Control Delay	69.5	12.8	64.7	64.2	21.3	25.0	18.7	36.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.5	12.8	64.7	64.2	21.3	25.0	18.7	36.1
Queue Length 50th (ft)	125	0	196	243	107	294	5	236
Queue Length 95th (ft)	224	66	322	384	208	551	20	387
Internal Link Dist (ft)	891			1017		689		893
Turn Bay Length (ft)					130		75	
Base Capacity (vph)	585	599	585	688	534	1881	498	1389
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.23	0.38	0.40	0.45	0.56	0.03	0.47

Intersection Summary

Queues
1: Nutley St & Rt 123

03/17/2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	37	910	285	772	123	164	428	73	177
v/c Ratio	0.09	0.71	0.65	0.45	0.45	0.58	0.53	0.27	0.59
Control Delay	17.4	42.2	28.7	25.6	56.5	61.1	10.2	53.6	60.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	42.2	28.7	25.6	56.5	61.1	10.2	53.6	60.6
Queue Length 50th (ft)	13	367	127	233	108	148	74	60	147
Queue Length 95th (ft)	39	#590	272	365	162	209	155	104	215
Internal Link Dist (ft)		629		185		251			415
Turn Bay Length (ft)	90		285		220			200	
Base Capacity (vph)	395	1288	452	1726	392	406	822	349	388
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.71	0.63	0.45	0.31	0.40	0.52	0.21	0.46

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	149	149	221	134	85	876	36	539
v/c Ratio	0.55	0.41	0.65	0.34	0.20	0.53	0.13	0.34
Control Delay	60.0	11.2	58.4	45.7	16.9	26.6	17.2	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	11.2	58.4	45.7	16.9	26.6	17.2	26.1
Queue Length 50th (ft)	116	0	171	92	32	263	13	150
Queue Length 95th (ft)	205	62	282	166	74	418	38	252
Internal Link Dist (ft)	891			1017		1517		893
Turn Bay Length (ft)					130		75	
Base Capacity (vph)	654	662	652	753	598	1656	518	1584
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.23	0.34	0.18	0.14	0.53	0.07	0.34

Intersection Summary

Queues
1: Nutley St & Rt 123

03/17/2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	27	1112	179	672	274	228	379	111	334
v/c Ratio	0.09	1.04	0.88	0.51	0.87	0.68	0.64	0.39	0.98
Control Delay	23.0	82.9	86.8	26.5	76.4	60.2	12.8	55.1	99.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	82.9	86.8	26.5	76.4	60.2	12.8	55.1	99.7
Queue Length 50th (ft)	14	~582	111	246	160	128	17	90	303
Queue Length 95th (ft)	32	#722	#272	322	#384	237	87	152	#502
Internal Link Dist (ft)		544		163		251			434
Turn Bay Length (ft)	90		285		220			200	
Base Capacity (vph)	298	1074	203	1322	342	365	608	284	341
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	1.04	0.88	0.51	0.80	0.62	0.62	0.39	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	284	406	208	86	75	1017	26	611
v/c Ratio	0.83	0.89	0.78	0.28	0.22	0.66	0.15	0.43
Control Delay	73.6	49.1	71.1	29.4	13.1	22.1	13.2	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.6	49.1	71.1	29.4	13.1	22.1	13.2	19.3
Queue Length 50th (ft)	247	194	197	44	23	406	8	160
Queue Length 95th (ft)	347	#353	m278	m94	m36	267	m13	m188
Internal Link Dist (ft)	891			1017		689		893
Turn Bay Length (ft)					130		75	
Base Capacity (vph)	403	501	333	377	338	1535	176	1419
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.81	0.62	0.23	0.22	0.66	0.15	0.43

Intersection Summary

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

m Volume for 95th percentile queue is metered by upstream signal.

Queues
1: Nutley St & Rt 123

03/17/2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	36	765	295	1363	261	269	363	96	246
v/c Ratio	0.27	0.62	0.79	0.85	0.90	0.88	0.51	0.38	0.87
Control Delay	26.6	43.3	44.8	23.3	117.8	114.5	19.2	65.7	93.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	43.3	44.8	23.3	117.8	114.5	19.2	65.7	93.7
Queue Length 50th (ft)	18	348	115	512	243	250	22	91	249
Queue Length 95th (ft)	39	424	#259	#724	#448	#451	240	152	#384
Internal Link Dist (ft)		631		198		257			382
Turn Bay Length (ft)	90		285		220			200	
Base Capacity (vph)	131	1238	384	1605	311	327	713	271	305
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.62	0.77	0.85	0.84	0.82	0.51	0.35	0.81

Intersection Summary

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	137	223	277	242	1094	14	686
v/c Ratio	0.73	0.47	0.79	0.83	0.56	0.56	0.06	0.43
Control Delay	89.8	13.2	103.9	104.1	12.5	19.8	21.2	38.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.8	13.2	103.9	104.1	12.5	19.8	21.2	38.4
Queue Length 50th (ft)	144	0	240	296	100	463	7	311
Queue Length 95th (ft)	218	59	m312	m378	m120	618	m13	385
Internal Link Dist (ft)	891			1017		689		893
Turn Bay Length (ft)					130		75	
Base Capacity (vph)	239	331	338	399	579	1954	236	1598
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.41	0.66	0.69	0.42	0.56	0.06	0.43

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
1: Nutley St & Rt 123

03/17/2019

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	53	1057	319	887	162	180	425	107	190
v/c Ratio	0.19	1.01	0.79	0.56	0.64	0.69	0.54	0.45	0.71
Control Delay	21.8	77.7	62.1	15.1	62.4	64.6	4.2	60.5	68.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	77.7	62.1	15.1	62.4	64.6	4.2	60.5	68.9
Queue Length 50th (ft)	21	~556	186	145	127	146	6	91	160
Queue Length 95th (ft)	54	#783	#445	391	142	158	10	146	234
Internal Link Dist (ft)		629		185		251			415
Turn Bay Length (ft)	90		285		220			200	
Base Capacity (vph)	286	1045	403	1596	363	375	789	312	347
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	1.01	0.79	0.56	0.45	0.48	0.54	0.34	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	149	149	221	134	85	946	36	596
v/c Ratio	0.69	0.45	0.77	0.40	0.21	0.56	0.14	0.36
Control Delay	74.6	9.9	74.1	53.5	18.6	23.5	13.2	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.6	9.9	74.1	53.5	18.6	23.5	13.2	23.3
Queue Length 50th (ft)	132	0	212	117	23	140	15	177
Queue Length 95th (ft)	199	50	m276	m161	84	352	m26	m272
Internal Link Dist (ft)	891			1017		1517		893
Turn Bay Length (ft)					130		75	
Base Capacity (vph)	350	435	386	451	474	1704	259	1651
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.34	0.57	0.30	0.18	0.56	0.14	0.36

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	893	133	172	568	63	296	166	352	103	273	34
Future Volume (vph)	25	893	133	172	568	63	296	166	352	103	273	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1800	3344		1671	3250		1548	1649	1562	1562	1859	
Flt Permitted	0.35	1.00		0.08	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	667	3344		137	3250		1548	1649	1562	1562	1859	
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)	27	971	145	187	617	68	322	180	383	112	297	37
RTOR Reduction (vph)	0	8	0	0	6	0	0	0	134	0	3	0
Lane Group Flow (vph)	27	1108	0	187	679	0	274	228	249	112	331	0
Confl. Peds. (#/hr)	9					9	9		18	18		9
Confl. Bikes (#/hr)			3			2			4			1
Heavy Vehicles (%)	0%	2%	3%	8%	5%	8%	6%	3%	3%	10%	2%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases	2			6					8			
Actuated Green, G (s)	47.9	44.0		65.1	53.7		28.4	28.4	42.0	25.5	25.5	
Effective Green, g (s)	47.9	44.0		65.1	53.7		28.4	28.4	42.0	25.5	25.5	
Actuated g/C Ratio	0.34	0.31		0.46	0.38		0.20	0.20	0.30	0.18	0.18	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0	4.0	3.0	3.0	
Lane Grp Cap (vph)	259	1050		212	1246		314	334	468	284	338	
v/s Ratio Prot	0.00	c0.33		c0.09	0.21		c0.18	0.14	0.05	0.07	c0.18	
v/s Ratio Perm	0.03			0.32					0.11			
v/c Ratio	0.10	1.06		0.88	0.55		0.87	0.68	0.53	0.39	0.98	
Uniform Delay, d1	30.8	48.0		39.8	33.6		54.0	51.6	40.8	50.4	57.0	
Progression Factor	1.00	1.00		1.44	0.77		0.98	1.00	0.47	1.00	1.00	
Incremental Delay, d2	0.2	43.5		32.5	1.7		19.7	4.8	1.3	0.9	42.7	
Delay (s)	31.1	91.5		90.0	27.6		72.8	56.3	20.4	51.4	99.6	
Level of Service	C	F		F	C		E	E	C	D	F	
Approach Delay (s)		90.1			41.0			45.9			87.5	
Approach LOS		F			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	65.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.5
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	233	378	197	34	46	70	714	235	24	560	15
Future Volume (veh/h)	31	233	378	197	34	46	70	714	235	24	560	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1837	1825	1881	1854	1900	1862	1822	1881	1689	1829	1900
Adj Flow Rate, veh/h	33	251	406	212	37	49	75	768	253	26	602	16
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	1	1	6	6	1	4	4	8	4	4
Cap, veh/h	48	369	348	244	98	129	365	1104	363	170	1426	38
Arrive On Green	0.23	0.23	0.23	0.14	0.14	0.14	0.04	0.43	0.43	0.02	0.55	0.55
Sat Flow, veh/h	212	1614	1523	1792	716	948	1774	2542	837	1608	3455	92
Grp Volume(v), veh/h	284	0	406	212	0	86	75	523	498	26	302	316
Grp Sat Flow(s),veh/h/ln	1826	0	1523	1792	0	1664	1774	1731	1648	1608	1737	1810
Q Serve(g_s), s	19.9	0.0	32.0	16.2	0.0	6.6	3.4	34.3	34.3	1.3	14.3	14.3
Cycle Q Clear(g_c), s	19.9	0.0	32.0	16.2	0.0	6.6	3.4	34.3	34.3	1.3	14.3	14.3
Prop In Lane	0.12		1.00	1.00		0.57	1.00		0.51	1.00		0.05
Lane Grp Cap(c), veh/h	417	0	348	244	0	227	365	751	716	170	717	747
V/C Ratio(X)	0.68	0.00	1.17	0.87	0.00	0.38	0.21	0.70	0.70	0.15	0.42	0.42
Avail Cap(c_a), veh/h	417	0	348	346	0	321	389	751	716	180	717	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	0.0	54.0	59.2	0.0	55.0	23.0	32.1	32.1	26.9	21.8	21.8
Incr Delay (d2), s/veh	4.4	0.0	101.4	15.1	0.0	1.0	0.3	5.3	5.5	0.4	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	0.0	23.3	9.0	0.0	3.1	1.7	17.5	16.7	0.6	7.2	7.5
LnGrp Delay(d),s/veh	53.8	0.0	155.4	74.3	0.0	56.1	23.2	37.4	37.7	27.3	23.6	23.5
LnGrp LOS	D		F	E		E	C	D	D	C	C	C
Approach Vol, veh/h		690			298			1096			644	
Approach Delay, s/veh		113.6			69.1			36.5			23.7	
Approach LOS		F			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	67.8		39.0	10.1	64.8		26.1
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	3.0	52.0		32.0	7.0	48.0		27.0
Max Q Clear Time (g_c+I1), s	3.3	36.3		34.0	5.4	16.3		18.2
Green Ext Time (p_c), s	0.0	5.9		0.0	0.0	7.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	56.6
HCM 2010 LOS	E

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	495	2	1	215	10	9	0	0	14	0	12
Future Vol, veh/h	10	495	2	1	215	10	9	0	0	14	0	12
Conflicting Peds, #/hr	2	0	5	5	0	2	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	0	0	4	0	0	0	0	0	0	17
Mvmt Flow	11	538	2	1	234	11	10	0	0	15	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	247	0	0	545	0	0	814	815	546	806	810	241
Stage 1	-	-	-	-	-	-	566	566	-	243	243	-
Stage 2	-	-	-	-	-	-	248	249	-	563	567	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.453
Pot Cap-1 Maneuver	1331	-	-	1034	-	-	299	314	541	303	316	762
Stage 1	-	-	-	-	-	-	513	511	-	765	708	-
Stage 2	-	-	-	-	-	-	760	704	-	514	510	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1331	-	-	1032	-	-	290	308	538	299	310	761
Mov Cap-2 Maneuver	-	-	-	-	-	-	290	308	-	299	310	-
Stage 1	-	-	-	-	-	-	505	503	-	755	706	-
Stage 2	-	-	-	-	-	-	746	702	-	507	502	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	17.8	14.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	290	1331	-	-	1032	-	-	415
HCM Lane V/C Ratio	0.034	0.008	-	-	0.001	-	-	0.068
HCM Control Delay (s)	17.8	7.7	0	-	8.5	0	-	14.3
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	1	0	0	12	1	20	4	5	6	2
Future Vol, veh/h	0	1	1	0	0	12	1	20	4	5	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	25	0	0	0
Mvmt Flow	0	1	1	0	0	13	1	22	4	5	7	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	51	46	8	46	46	24	9	0	0	26	0	0
Stage 1	18	18	-	26	26	-	-	-	-	-	-	-
Stage 2	33	28	-	20	20	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	953	850	1080	961	850	1058	1624	-	-	1601	-	-
Stage 1	1006	884	-	997	878	-	-	-	-	-	-	-
Stage 2	988	876	-	1004	883	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	938	847	1080	956	847	1058	1624	-	-	1601	-	-
Mov Cap-2 Maneuver	938	847	-	956	847	-	-	-	-	-	-	-
Stage 1	1005	881	-	996	877	-	-	-	-	-	-	-
Stage 2	975	875	-	999	880	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	8.4	0.3	2.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1624	-	-	949	1058	1601	-	-
HCM Lane V/C Ratio	0.001	-	-	0.002	0.012	0.003	-	-
HCM Control Delay (s)	7.2	0	-	8.8	8.4	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	39	28	4	40	13
Future Vol, veh/h	0	39	28	4	40	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	3	-	-	-3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	42	30	4	43	14

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	134	33	0	0	35	0
Stage 1	33	-	-	-	-	-
Stage 2	101	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	860	1041	-	-	1576	-
Stage 1	989	-	-	-	-	-
Stage 2	923	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	836	1041	-	-	1576	-
Mov Cap-2 Maneuver	836	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	897	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	5.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1041	1576	-
HCM Lane V/C Ratio	-	-	0.041	0.028	-
HCM Control Delay (s)	-	-	8.6	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1142	35	16	762	28	18	5	20	4	5	20
Future Vol, veh/h	45	1142	35	16	762	28	18	5	20	4	5	20
Conflicting Peds, #/hr	6	0	7	7	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	90
Heavy Vehicles, %	4	3	10	0	6	0	0	0	0	0	0	0
Mvmt Flow	49	1241	38	17	828	30	20	5	22	4	5	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	865	0	0	1286	0	0	1817	2264	647	1605	2268	435
Stage 1	-	-	-	-	-	-	1365	1365	-	884	884	-
Stage 2	-	-	-	-	-	-	452	899	-	721	1384	-
Critical Hdwy	4.18	-	-	4.1	-	-	8.3	7.3	7.3	7.1	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.24	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	*1133	-	-	*886	-	-	*254	*215	*590	*254	213	*768
Stage 1	-	-	-	-	-	-	*556	*487	-	*725	635	-
Stage 2	-	-	-	-	-	-	*724	*619	-	*556	481	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*1133	-	-	*886	-	-	*228	*199	*585	*227	197	*763
Mov Cap-2 Maneuver	-	-	-	-	-	-	*228	*199	-	*227	197	-
Stage 1	-	-	-	-	-	-	*528	*462	-	*689	619	-
Stage 2	-	-	-	-	-	-	*684	*603	-	*507	456	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	18.6	14.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	311	* 1133	-	-	* 886	-	-	422
HCM Lane V/C Ratio	0.15	0.043	-	-	0.02	-	-	0.076
HCM Control Delay (s)	18.6	8.3	-	-	9.1	-	-	14.2
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0.1	-	-	0.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	1320	19	13	656	26	22	7	27	10	1	59
Future Vol, veh/h	85	1320	19	13	656	26	22	7	27	10	1	59
Conflicting Peds, #/hr	7	0	5	5	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	66	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	3	0	0	5	0	0	0	8	0	0	3
Mvmt Flow	90	1404	20	14	698	28	23	7	29	11	1	63

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	733	0	0	1429	0	0	1977	2360	717	1633	2356	370
Stage 1	-	-	-	-	-	-	1600	1600	-	746	746	-
Stage 2	-	-	-	-	-	-	377	760	-	887	1610	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.1	7.1	7.36	7.1	6.1	6.76
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.38	3.5	4	3.33
Pot Cap-1 Maneuver	*1221	-	-	*781	-	-	*45	*27	*508	*150	*48	*806
Stage 1	-	-	-	-	-	-	*444	*397	-	*767	*671	-
Stage 2	-	-	-	-	-	-	*767	*671	-	*490	*398	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*1221	-	-	*781	-	-	*38	*24	*505	*100	*43	*800
Mov Cap-2 Maneuver	-	-	-	-	-	-	*38	*24	-	*100	*43	-
Stage 1	-	-	-	-	-	-	*409	*366	-	*705	*654	-
Stage 2	-	-	-	-	-	-	*693	*654	-	*420	*367	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	168.8	17.8
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	33	505	* 1221	-	-	* 781	-	-	355
HCM Lane V/C Ratio	0.935	0.057	0.074	-	-	0.018	-	-	0.21
HCM Control Delay (s)	$ 314.2	12.6	8.2	-	-	9.7	-	-	17.8
HCM Lane LOS	F	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	3.3	0.2	0.2	-	-	0.1	-	-	0.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	571	168	284	1244	59	299	204	355	96	208	26
Future Volume (vph)	34	571	168	284	1244	59	299	204	355	96	208	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3296		1770	3423		1609	1690	1615	1701	1900	
Flt Permitted	0.08	1.00		0.20	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	146	3296		368	3423		1609	1690	1615	1701	1900	
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)	36	601	177	299	1309	62	315	215	374	101	219	27
RTOR Reduction (vph)	0	16	0	0	2	0	0	0	154	0	3	0
Lane Group Flow (vph)	36	762	0	299	1369	0	261	269	220	101	243	0
Confl. Peds. (#/hr)	14		7	7		14	10		4	4		10
Confl. Bikes (#/hr)			1			4			4			
Heavy Vehicles (%)	0%	1%	4%	2%	1%	0%	2%	1%	1%	1%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases	2			6					8			
Actuated Green, G (s)	64.5	59.1		86.3	73.4		29.0	29.0	48.7	23.7	23.7	
Effective Green, g (s)	64.5	59.1		86.3	73.4		29.0	29.0	48.7	23.7	23.7	
Actuated g/C Ratio	0.40	0.37		0.54	0.46		0.18	0.18	0.30	0.15	0.15	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0	4.0	3.0	3.0	
Lane Grp Cap (vph)	114	1217		371	1570		291	306	491	251	281	
v/s Ratio Prot	0.01	0.23		c0.10	c0.40		c0.16	0.16	0.05	0.06	c0.13	
v/s Ratio Perm	0.12			0.34					0.08			
v/c Ratio	0.32	0.63		0.81	0.87		0.90	0.88	0.45	0.40	0.87	
Uniform Delay, d1	33.6	41.4		25.4	39.1		64.0	63.8	44.8	61.7	66.6	
Progression Factor	1.00	1.00		1.45	0.45		1.42	1.43	1.25	1.00	1.00	
Incremental Delay, d2	2.2	2.4		12.2	6.7		24.8	21.0	0.8	1.1	23.2	
Delay (s)	35.8	43.8		49.1	24.3		116.0	112.0	56.8	62.8	89.8	
Level of Service	D	D		D	C		F	F	E	E	F	
Approach Delay (s)		43.5			28.7			90.3			82.0	
Approach LOS		D			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	51.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	28.5
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	99	130	214	230	33	230	846	208	13	601	55
Future Volume (veh/h)	34	99	130	214	230	33	230	846	208	13	601	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1829	1825	1900	1976	1900	1881	1866	1881	1824	1863	1900
Adj Flow Rate, veh/h	36	104	137	225	242	35	242	891	219	14	633	58
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	0	0	1	1	0	2	2
Cap, veh/h	50	144	161	290	270	39	555	1575	387	237	1594	146
Arrive On Green	0.11	0.11	0.11	0.16	0.16	0.16	0.08	0.56	0.56	0.02	0.98	0.98
Sat Flow, veh/h	464	1341	1507	1810	1682	243	1791	2805	689	1737	3270	299
Grp Volume(v), veh/h	140	0	137	225	0	277	242	563	547	14	342	349
Grp Sat Flow(s),veh/h/ln	1806	0	1507	1810	0	1925	1791	1773	1721	1737	1770	1800
Q Serve(g_s), s	12.0	0.0	14.3	19.1	0.0	22.6	10.4	32.6	32.7	0.7	1.3	1.3
Cycle Q Clear(g_c), s	12.0	0.0	14.3	19.1	0.0	22.6	10.4	32.6	32.7	0.7	1.3	1.3
Prop In Lane	0.26		1.00	1.00		0.13	1.00		0.40	1.00		0.17
Lane Grp Cap(c), veh/h	193	0	161	290	0	309	555	995	966	237	863	878
V/C Ratio(X)	0.72	0.00	0.85	0.78	0.00	0.90	0.44	0.57	0.57	0.06	0.40	0.40
Avail Cap(c_a), veh/h	248	0	207	351	0	373	822	995	966	287	863	878
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.2	0.0	70.2	64.4	0.0	65.9	16.2	22.5	22.6	21.7	1.0	1.0
Incr Delay (d2), s/veh	7.3	0.0	22.2	8.7	0.0	21.0	0.5	2.3	2.4	0.1	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	7.0	10.3	0.0	13.8	5.2	16.6	16.2	0.3	0.7	0.7
LnGrp Delay(d),s/veh	76.5	0.0	92.4	73.1	0.0	86.9	16.7	24.9	25.0	21.8	2.4	2.4
LnGrp LOS	E		F	E		F	B	C	C	C	A	A
Approach Vol, veh/h		277			502			1352			705	
Approach Delay, s/veh		84.3			80.7			23.4			2.8	
Approach LOS		F			F			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.4	96.8		24.1	18.2	85.0		32.6
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	6.0	75.0		22.0	37.0	44.0		31.0
Max Q Clear Time (g_c+I1), s	2.3	34.7		16.3	12.4	3.3		24.6
Green Ext Time (p_c), s	0.0	8.6		0.5	0.8	8.6		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	34.4
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	350	2	2	489	22	4	0	13	7	0	9
Future Vol, veh/h	19	350	2	2	489	22	4	0	13	7	0	9
Conflicting Peds, #/hr	2	0	1	1	0	2	0	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	11
Mvmt Flow	20	361	2	2	504	23	4	0	13	7	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	529	0	0	364	0	0	926	935	372	939	925	517
Stage 1	-	-	-	-	-	-	402	402	-	522	522	-
Stage 2	-	-	-	-	-	-	524	533	-	417	403	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.399
Pot Cap-1 Maneuver	1048	-	-	1206	-	-	251	267	678	246	271	541
Stage 1	-	-	-	-	-	-	629	604	-	542	534	-
Stage 2	-	-	-	-	-	-	540	528	-	617	603	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1048	-	-	1197	-	-	242	259	672	234	263	540
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	259	-	234	263	-
Stage 1	-	-	-	-	-	-	613	589	-	528	532	-
Stage 2	-	-	-	-	-	-	530	526	-	586	588	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	12.9	16
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	474	1048	-	-	1197	-	-	343
HCM Lane V/C Ratio	0.037	0.019	-	-	0.002	-	-	0.048
HCM Control Delay (s)	12.9	8.5	0	-	8	0	-	16
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	0	5	1	20	1	31	0	10	14	2
Future Vol, veh/h	1	1	0	5	1	20	1	31	0	10	14	2
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	7	0	0	0	0	0	0
Mvmt Flow	1	1	0	5	1	22	1	34	0	11	15	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	88	76	17	76	77	37	18	0	0	35	0	0
Stage 1	39	39	-	37	37	-	-	-	-	-	-	-
Stage 2	49	37	-	39	40	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.27	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.363	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	902	818	1068	919	817	1021	1612	-	-	1589	-	-
Stage 1	981	866	-	984	868	-	-	-	-	-	-	-
Stage 2	969	868	-	981	866	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	874	810	1067	912	809	1018	1612	-	-	1586	-	-
Mov Cap-2 Maneuver	874	810	-	912	809	-	-	-	-	-	-	-
Stage 1	979	859	-	982	866	-	-	-	-	-	-	-
Stage 2	945	866	-	973	859	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	8.8	0.2	2.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1612	-	-	841	986	1586	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.029	0.007	-	-
HCM Control Delay (s)	7.2	0	-	9.3	8.8	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	50	46	6	50	26
Future Vol, veh/h	0	50	46	6	50	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	3	-	-	-3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	54	50	7	54	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	190	53	0	0	57	0
Stage 1	53	-	-	-	-	-
Stage 2	137	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	799	1014	-	-	1547	-
Stage 1	970	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	771	1014	-	-	1547	-
Mov Cap-2 Maneuver	771	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	859	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	4.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1014	1547	-
HCM Lane V/C Ratio	-	-	0.054	0.035	-
HCM Control Delay (s)	-	-	8.8	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	893	48	20	1467	37	11	4	28	3	0	19
Future Vol, veh/h	29	893	48	20	1467	37	11	4	28	3	0	19
Conflicting Peds, #/hr	10	0	9	9	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	2	0	0	0	1	0	0	4	0	0	11
Mvmt Flow	30	921	49	21	1512	38	11	4	29	3	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1561	0	0	979	0	0	1811	2616	494	2105	2622	785
Stage 1	-	-	-	-	-	-	1014	1014	-	1583	1583	-
Stage 2	-	-	-	-	-	-	797	1602	-	522	1039	-
Critical Hdwy	4.16	-	-	4.1	-	-	8.3	7.3	7.38	7.1	6.1	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.23	-	-	2.2	-	-	3.5	4	3.34	3.5	4	3.41
Pot Cap-1 Maneuver	*672	-	-	*1077	-	-	*167	*56	*709	*167	*66	*439
Stage 1	-	-	-	-	-	-	*676	*592	-	*428	*374	-
Stage 2	-	-	-	-	-	-	*428	*374	-	*676	*581	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*672	-	-	*1077	-	-	*150	*52	*701	*142	*61	*434
Mov Cap-2 Maneuver	-	-	-	-	-	-	*150	*52	-	*142	*61	-
Stage 1	-	-	-	-	-	-	*640	*560	-	*404	*363	-
Stage 2	-	-	-	-	-	-	*400	*363	-	*615	*550	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	24.8	16.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	226	* 672	-	-	* 1077	-	-	339
HCM Lane V/C Ratio	0.196	0.044	-	-	0.019	-	-	0.067
HCM Control Delay (s)	24.8	10.6	-	-	8.4	-	-	16.4
HCM Lane LOS	C	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-	-	0.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	88	937	40	26	1464	16	16	1	41	5	1	32
Future Vol, veh/h	88	937	40	26	1464	16	16	1	41	5	1	32
Conflicting Peds, #/hr	8	0	1	1	0	8	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	66	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	93	986	42	27	1541	17	17	1	43	5	1	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1566	0	0	1029	0	0	2020	2815	515	2291	2827	787
Stage 1	-	-	-	-	-	-	1194	1194	-	1612	1612	-
Stage 2	-	-	-	-	-	-	826	1621	-	679	1215	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.1	7.1	7.2	7.1	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	*681	-	-	*1046	-	-	*125	*12	*697	*125	*16	*453
Stage 1	-	-	-	-	-	-	*505	*470	-	*428	*374	-
Stage 2	-	-	-	-	-	-	*428	*374	-	*657	*479	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*681	-	-	*1046	-	-	*95	*10	*696	*94	*13	*449
Mov Cap-2 Maneuver	-	-	-	-	-	-	*95	*10	-	*94	*13	-
Stage 1	-	-	-	-	-	-	*435	*405	-	*366	*361	-
Stage 2	-	-	-	-	-	-	*384	*361	-	*531	*413	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.1	31.9	29.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	63	696	* 681	-	-	* 1046	-	-	189
HCM Lane V/C Ratio	0.284	0.062	0.136	-	-	0.026	-	-	0.212
HCM Control Delay (s)	83.4	10.5	11.1	-	-	8.5	-	-	29.1
HCM Lane LOS	F	B	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1	0.2	0.5	-	-	0.1	-	-	0.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Nutley St & Rt 123

03/17/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	888	125	310	791	63	192	133	411	105	137	44
Future Volume (vph)	50	888	125	310	791	63	192	133	411	105	137	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	11	11	13	10	12	12
Grade (%)		0%			0%			2%			-4%	
Total Lost time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1802	3385		1787	3409		1641	1695	1641	1718	1860	
Flt Permitted	0.32	1.00		0.08	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	601	3385		153	3409		1641	1695	1641	1718	1860	
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)	53	935	132	326	833	66	202	140	433	111	144	46
RTOR Reduction (vph)	0	7	0	0	3	0	0	0	139	0	9	0
Lane Group Flow (vph)	53	1060	0	326	896	0	162	180	294	111	181	0
Confl. Peds. (#/hr)	8		7	7		8	3		3	3		3
Confl. Bikes (#/hr)			4			2						
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%	0%	1%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases	2			6					8			
Actuated Green, G (s)	48.1	41.7		77.6	63.7		21.9	21.9	50.3	19.5	19.5	
Effective Green, g (s)	48.1	41.7		77.6	63.7		21.9	21.9	50.3	19.5	19.5	
Actuated g/C Ratio	0.34	0.30		0.55	0.46		0.16	0.16	0.36	0.14	0.14	
Clearance Time (s)	7.5	7.5		7.5	7.5		6.5	6.5	7.5	7.0	7.0	
Vehicle Extension (s)	4.0	5.0		4.0	5.0		3.0	3.0	4.0	3.0	3.0	
Lane Grp Cap (vph)	261	1008		416	1551		256	265	589	239	259	
v/s Ratio Prot	0.01	c0.31		c0.16	0.26		0.10	c0.11	0.10	0.06	c0.10	
v/s Ratio Perm	0.06			0.28					0.08			
v/c Ratio	0.20	1.05		0.78	0.58		0.63	0.68	0.50	0.46	0.70	
Uniform Delay, d1	31.1	49.1		40.1	28.2		55.3	55.7	35.0	55.4	57.5	
Progression Factor	1.00	1.00		1.32	0.46		0.95	0.95	0.18	1.00	1.00	
Incremental Delay, d2	0.5	42.9		9.6	1.5		4.6	6.2	0.8	1.4	8.3	
Delay (s)	31.6	92.1		62.3	14.5		57.0	58.9	7.1	56.9	65.7	
Level of Service	C	F		E	B		E	E	A	E	E	
Approach Delay (s)		89.2			27.2			29.5			62.5	
Approach LOS		F			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	51.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	28.5
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	90	140	211	97	29	80	681	219	34	532	35
Future Volume (veh/h)	50	90	140	211	97	29	80	681	219	34	532	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1843	1843	1825	1900	1976	1900	1881	1881	1881	1824	1900	1900
Adj Flow Rate, veh/h	53	96	149	224	103	31	85	724	233	36	566	37
Adj No. of Lanes	0	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	0	0	0	0	0	0	0	0	0
Cap, veh/h	77	139	180	259	207	62	539	1410	454	378	1769	115
Arrive On Green	0.12	0.12	0.12	0.14	0.14	0.14	0.07	1.00	1.00	0.04	1.00	1.00
Sat Flow, veh/h	644	1167	1510	1810	1447	435	1791	2643	851	1737	3435	224
Grp Volume(v), veh/h	149	0	149	224	0	134	85	489	468	36	297	306
Grp Sat Flow(s),veh/h/ln	1811	0	1510	1810	0	1882	1791	1787	1707	1737	1805	1854
Q Serve(g_s), s	11.1	0.0	13.5	16.9	0.0	9.2	3.2	0.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	11.1	0.0	13.5	16.9	0.0	9.2	3.2	0.0	0.0	1.4	0.0	0.0
Prop In Lane	0.36		1.00	1.00		0.23	1.00		0.50	1.00		0.12
Lane Grp Cap(c), veh/h	216	0	180	259	0	270	539	953	911	378	930	955
V/C Ratio(X)	0.69	0.00	0.83	0.86	0.00	0.50	0.16	0.51	0.51	0.10	0.32	0.32
Avail Cap(c_a), veh/h	362	0	302	401	0	417	679	953	911	383	930	955
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.2	0.0	60.2	58.6	0.0	55.3	14.2	0.0	0.0	15.3	0.0	0.0
Incr Delay (d2), s/veh	3.9	0.0	9.3	11.4	0.0	1.4	0.1	1.6	1.7	0.1	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	6.1	9.3	0.0	4.9	1.5	0.4	0.4	0.7	0.2	0.2
LnGrp Delay(d),s/veh	63.1	0.0	69.5	70.0	0.0	56.7	14.3	1.6	1.7	15.4	0.9	0.9
LnGrp LOS	E		E	E		E	B	A	A	B	A	A
Approach Vol, veh/h		298			358			1042			639	
Approach Delay, s/veh		66.3			65.0			2.7			1.7	
Approach LOS		E			E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.6	81.7		23.7	10.1	79.1		27.1
Change Period (Y+Rc), s	5.0	7.0		7.0	5.0	7.0		7.0
Max Green Setting (Gmax), s	3.6	52.0		28.0	16.0	39.0		31.0
Max Q Clear Time (g_c+I1), s	13.4	2.0		15.5	5.2	2.0		18.9
Green Ext Time (p_c), s	0.0	6.9		0.9	0.1	6.8		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	350	2	2	361	14	22	0	17	21	1	8
Future Vol, veh/h	17	350	2	2	361	14	22	0	17	21	1	8
Conflicting Peds, #/hr	3	0	13	13	0	3	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	18	361	2	2	372	14	23	0	18	22	1	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	390	0	0	376	0	0	798	804	378	796	798	382
Stage 1	-	-	-	-	-	-	410	410	-	387	387	-
Stage 2	-	-	-	-	-	-	388	394	-	409	411	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1180	-	-	1194	-	-	306	319	673	307	321	670
Stage 1	-	-	-	-	-	-	623	599	-	641	613	-
Stage 2	-	-	-	-	-	-	640	609	-	623	598	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1180	-	-	1191	-	-	293	308	664	293	310	668
Mov Cap-2 Maneuver	-	-	-	-	-	-	293	308	-	293	310	-
Stage 1	-	-	-	-	-	-	605	581	-	627	610	-
Stage 2	-	-	-	-	-	-	630	606	-	594	580	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	15.4	16.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	387	1180	-	-	1191	-	-	345
HCM Lane V/C Ratio	0.104	0.015	-	-	0.002	-	-	0.09
HCM Control Delay (s)	15.4	8.1	0	-	8	0	-	16.5
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	2	3	1	20	1	11	2	23	12	2
Future Vol, veh/h	1	0	2	3	1	20	1	11	2	23	12	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	3	-	-	-3	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	0	2	3	1	22	1	12	2	25	13	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	91	81	14	81	81	14	15	0	0	15	0	0
Stage 1	64	64	-	16	16	-	-	-	-	-	-	-
Stage 2	27	17	-	65	65	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	898	813	1072	912	813	1072	1616	-	-	1616	-	-
Stage 1	952	846	-	1009	886	-	-	-	-	-	-	-
Stage 2	996	885	-	951	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	867	799	1072	898	799	1071	1616	-	-	1616	-	-
Mov Cap-2 Maneuver	867	799	-	898	799	-	-	-	-	-	-	-
Stage 1	951	832	-	1007	884	-	-	-	-	-	-	-
Stage 2	974	883	-	934	831	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	8.6	0.5	4.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1616	-	-	994	1032	1616	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.025	0.015	-	-
HCM Control Delay (s)	7.2	0	-	8.6	8.6	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	41	27	5	37	37
Future Vol, veh/h	0	41	27	5	37	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	3	-	-	-3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	29	5	40	40

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	153	32	0	0	35	0
Stage 1	32	-	-	-	-	-
Stage 2	121	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	839	1042	-	-	1576	-
Stage 1	991	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	817	1042	-	-	1576	-
Mov Cap-2 Maneuver	817	-	-	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	880	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1042	1576	-
HCM Lane V/C Ratio	-	-	0.043	0.026	-
HCM Control Delay (s)	-	-	8.6	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	1143	69	26	1088	24	15	3	25	5	3	22
Future Vol, veh/h	42	1143	69	26	1088	24	15	3	25	5	3	22
Conflicting Peds, #/hr	4	0	10	10	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	4	-	-	4	-	-	-2	-
Peak Hour Factor	95	95	95	93	93	93	88	88	88	67	67	67
Heavy Vehicles, %	0	1	2	0	1	0	0	0	0	0	0	5
Mvmt Flow	44	1203	73	28	1170	26	17	3	28	7	4	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1200	0	0	1286	0	0	1982	2594	648	1935	2617	603
Stage 1	-	-	-	-	-	-	1338	1338	-	1243	1243	-
Stage 2	-	-	-	-	-	-	644	1256	-	692	1374	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.3	7.3	7.3	7.1	6.1	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.3	6.3	-	6.1	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.35
Pot Cap-1 Maneuver	*927	-	-	*832	-	-	*24	*14	*554	*50	*33	*608
Stage 1	-	-	-	-	-	-	*523	*458	-	*582	*510	-
Stage 2	-	-	-	-	-	-	*582	*510	-	*523	*458	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*926	-	-	*832	-	-	*19	*13	*548	*35	*30	*605
Mov Cap-2 Maneuver	-	-	-	-	-	-	*19	*13	-	*35	*30	-
Stage 1	-	-	-	-	-	-	*492	*431	-	*552	*490	-
Stage 2	-	-	-	-	-	-	*527	*490	-	*468	*431	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	$ 372.8	61
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	40	* 926	-	-	* 832	-	-	107
HCM Lane V/C Ratio	1.222	0.048	-	-	0.034	-	-	0.418
HCM Control Delay (s)	$ 372.8	9.1	-	-	9.5	-	-	61
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	4.9	0.1	-	-	0.1	-	-	1.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	1228	32	32	1041	23	22	0	43	7	2	26
Future Vol, veh/h	62	1228	32	32	1041	23	22	0	43	7	2	26
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	95	-	-	50	-	-	-	-	66	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	3	-	-	-2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	5	1	0	0	0	4	14	0	0
Mvmt Flow	64	1266	33	33	1073	24	23	0	44	7	2	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1102	0	0	1299	0	0	2014	2578	649	1917	2583	553
Stage 1	-	-	-	-	-	-	1410	1410	-	1156	1156	-
Stage 2	-	-	-	-	-	-	604	1168	-	761	1427	-
Critical Hdwy	4.1	-	-	4.2	-	-	8.1	7.1	7.28	7.38	6.1	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.1	-	6.38	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.1	-	6.38	5.1	-
Follow-up Hdwy	2.2	-	-	2.25	-	-	3.5	4	3.34	3.64	4	3.3
Pot Cap-1 Maneuver	*983	-	-	*723	-	-	*25	*17	*486	*44	*34	*655
Stage 1	-	-	-	-	-	-	*464	*406	-	*594	*540	-
Stage 2	-	-	-	-	-	-	*617	*540	-	*447	*406	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*983	-	-	*723	-	-	*~ 21	*15	*486	*36	*30	*651
Mov Cap-2 Maneuver	-	-	-	-	-	-	*~ 21	*15	-	*36	*30	-
Stage 1	-	-	-	-	-	-	*434	*380	-	*552	*513	-
Stage 2	-	-	-	-	-	-	*563	*513	-	*379	*380	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.3	172.4	49.5
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	21	486	* 983	-	-	* 723	-	-	116
HCM Lane V/C Ratio	1.08	0.091	0.065	-	-	0.046	-	-	0.311
HCM Control Delay (s)	$ 483.6	13.2	8.9	-	-	10.2	-	-	49.5
HCM Lane LOS	F	B	A	-	-	B	-	-	E
HCM 95th %tile Q(veh)	3	0.3	0.2	-	-	0.1	-	-	1.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon