Traffic Operations and Safety Study

MD 355 (Rockville Pike) at Tuckerman Lane and Grosvenor Lane Improvements

Bethesda, Maryland

BOA 1011774, Task No. 27

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Prepared for:

Montgomery County Department of Transportation

In Association With
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1. INTRODUCTION

This study presents results of traffic analysis conducted for the modifications along MD 355 (Rockville Pike) between Tuckerman Lane and Grosvenor Lane in Bethesda, Montgomery County, Maryland.

The project involves constructing a shared-use path to the east of MD 355 to connect with the existing path between Grosvenor Lane and Tuckerman Lane. Adding the shared-use path would require removal of the following lanes:

- The channelized right turn lane from westbound Grosvenor Lane to northbound MD 355
- The channelized right turn lane from northbound MD 355 to eastbound Tuckerman Lane

This study analyzes traffic operations at the intersections of MD 355 at Grosvenor Lane and MD 355 at Tuckerman Lane for the existing conditions and for the modified geometry.

T3 Design had prepared a traffic study for this project in September 2017. However, due to delays in project schedule and changes to the proposed geometry, Montgomery County has requested to update the previous traffic study for the latest traffic volumes design revisions. In addition, the County has also requested to evaluate the proposed design for the future traffic growth in the area.

The specific tasks for the revised traffic study include the following updates:

- Update existing traffic analysis for latest traffic counts from Strathmore Square traffic impact study
- Prepare projected traffic volumes for one future year
- Update future traffic analysis for the projected traffic volumes and modified roadway improvements
- Update level of service (LOS) results for both existing and future traffic conditions
- Update crash analysis for the most recent three-year crash data

Photographs and observations of the existing conditions were collected during field visits performed in May 2017 for the previous traffic study. Latest traffic volumes were obtained from the Strathmore Square development traffic study provided by County. A three-year crash history, from January 1, 2016 through December 31, 2018, was obtained from Montgomery County online Crash Reporting system.

2. EXISTING CONDITIONS

Roadways

MD 355 between Grosvenor Lane and Tuckerman Lane is located in Bethesda, in Montgomery County, Maryland. Within the study limits, MD 355 is a six-lane divided road that runs north - south as a principal arterial. The 2018 Average Annual Daily Traffic (AADT) on MD 355 is 55,190 vehicles per day (vpd) between I-495 and Tuckerman Lane. Within the study limits, the posted speed limit on MD 355 is 45 mph, further south of Grosvenor Lane, the speed limit on MD 355 reduces to 35 mph.

Grosvenor Lane is a local street with a 30-mph speed limit between MD 355 and Fleming Avenue and 25 mph between Fleming Avenue and Cheshire Drive. The 2018 average annual daily traffic (AADT) volume is 7,050 (vpd) to the west of MD 355.

Tuckerman Lane runs east - west as a minor arterial with a 30-mph posted speed limit. The 2018 AADT is 16,360 (vpd) from MD 187 to MD 355 and 10,955 (vpd) to the east of MD 355. The study location is shown in Figure 1.

Intersection Geometry

MD 355 at Grosvenor Lane

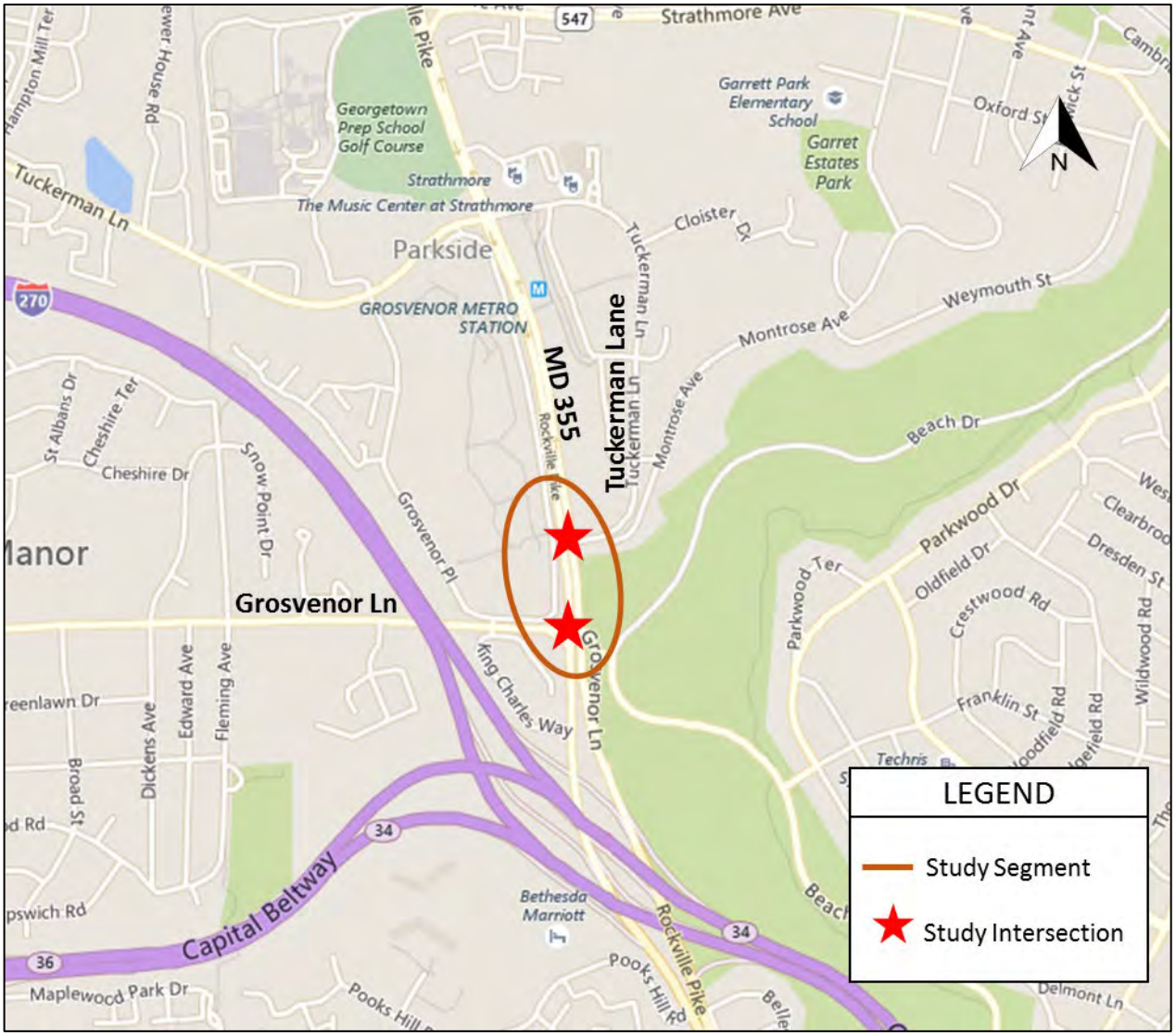
The intersection of MD 355 at Grosvenor Lane is a four-legged signalized intersection. The northbound approach has three through lanes only, the left and right turn movements are restricted from this approach. The southbound approach has three through lanes and a dedicated right turn lane. The eastbound approach on Grosvenor Lane has dual left turn lanes and a dedicated, channelized right turn lane. The eastbound right turns are stop-controlled at their entrance onto southbound MD 355. The westbound approach on MD 355 has dual left turn lanes and a shared through/right turn lane. The westbound approach widens at the intersection to provide a channelized right turn movement. The westbound right turn yields to northbound through traffic on MD 355. There are pedestrian crosswalks on the north side and west side of the intersection.

MD 355 at Tuckerman Lane

The intersection of MD 355 at Tuckerman Lane is a three-legged, signalized intersection. The northbound approach has three through lanes and a channelized right turn lane. The southbound approach has three through lanes and a dedicated left turn lane. The westbound approach on Tuckerman Lane has dual left turn lanes and a dedicated right turn lane. There are crosswalks on the north and east sides of the intersection.

The lane width on MD 355 and the side streets vary between 10 to 12 feet. There are continuous sidewalks on both sides of MD 355 between Tuckerman Lane and Grosvenor Lane. Figure 2 presents lane configuration at both intersections.

Figure 1: Location Map



Source: Google Maps

Figure 2: Intersections Geometry

Source: Google Maps

Existing Signing and Pavement Marking

MD 355 at Grosvenor Lane

On the northbound approach at the MD 355 at Grosvenor Lane intersection, there are ground mounted "No Turns" (R3-3) signs on the east and west sides of MD 355 and in the median past the intersection. Also, there is a "No Turns" sign on the traffic signal mast arm. There is a "Travelers Advisory 590 AM" sign on the traffic signal mast arm facing the northbound approach.

On southbound MD 355, there is a "Beltway East" sign combined with a "LEFT LANE" plaque (R3-5bP) in the median in advance of the intersection. There is a no parking (R7-2a) sign and a "WAYSIDE ELEMENTARY" guide sign with a right directional arrow (D1-1) on the east side of MD 355. Additionally, there is a ground mounted no left turn sign (R3-2) at the intersection and another on the mast arm of the traffic signal.

On eastbound Grosvenor Lane approach, there are no parking signs (R8-3) on the south side of the left turn lanes and on the south side of the channelized right turn lane. There is a pedestrian crossing sign (W11-2) with a diagonal downward arrow plaque (W16-7P) on the north side of the channelized right turn lane. At the intersection, there are two left turn only signs (R3-5) on the traffic signal mast arm.

On the westbound Grosvenor Lane approach, there is a "MD 355 South" sign with a left directional arrow sign. There are two left turn only signs (R3-5) on the traffic signal mast arm, there is also an object marker (OM1-3) on the island for the channelized right turn. There is a crosswalk at the channelized right turn lane.

The pavement markings and the pavement surface at the intersection are in fair condition. Intersection lighting is provided on utility poles in the northeast, southeast, and northwest quadrants.

MD 355 at Tuckerman Lane

On southbound MD 355, there is a slippery when wet (W8-5) sign in advance of the intersection. On the northbound approach, there is a yield sign (R1-1), a pedestrian crossing sign (W11-2) with a diagonal downward arrow plaque (W16-7P) and a no U-turn sign (R3-4). There is also a crosswalk at the channelized right turn. On the northbound approach, there is a bus stop sign on the east side of MD 355. There is also a crosswalk for pedestrians travelling across MD 355. On the westbound approach, there are two left turn only signs (R3-5) and one right turn only sign (R3-5R) on the traffic signal mast arm. There is also a no parking sign (R8-3) on the north side of Tuckerman Lane. On the westbound approach, there is a signal ahead warning sign (W3-3) combined with "250 feet" plaque in advance of the intersection.

The pavement markings are in fair to poor condition. At the southbound approach, the crosswalk has been moved north approximately 10 feet and the old crosswalk pavement markings are still visible. The pavement surface at the intersection is in fair condition. Intersection lighting is provided on utility poles in the northeast and southwest quadrants.

Land Use / Adjacent Development

The land use adjacent to the study segment is primarily residential with high rise condominium and apartment buildings. Grosvenor-Strathmore metro station is located to the north of the MD 355 at

Tuckerman Lane intersection and is accessible from Tuckerman Lane. The new Strathmore Square development is planned to be built on the east side of MD 355 to the north of Tuckerman Lane intersection.

Photographs of the study intersections collected in May 2017 can be found in **Appendix A**.

EXISTING TRAFFIC VOLUMES

The latest traffic volumes were obtained from the Strathmore Square development traffic study prepared by Wells Associates in December 2018 and revised in May 3, 2019. Existing counts were collected at the intersections of MD 355 at Grosvenor Lane and MD 355 at Tuckerman Lane on an average weekday in May 2018 when the County schools were in session.

Figure 3 and Figure 4 present the existing AM and PM peak hour volumes, respectively at the study intersections. The existing traffic volume figure from Strathmore Square report is provided in **Appendix B.**

Figure 3: Existing AM Peak Hour Traffic Volumes

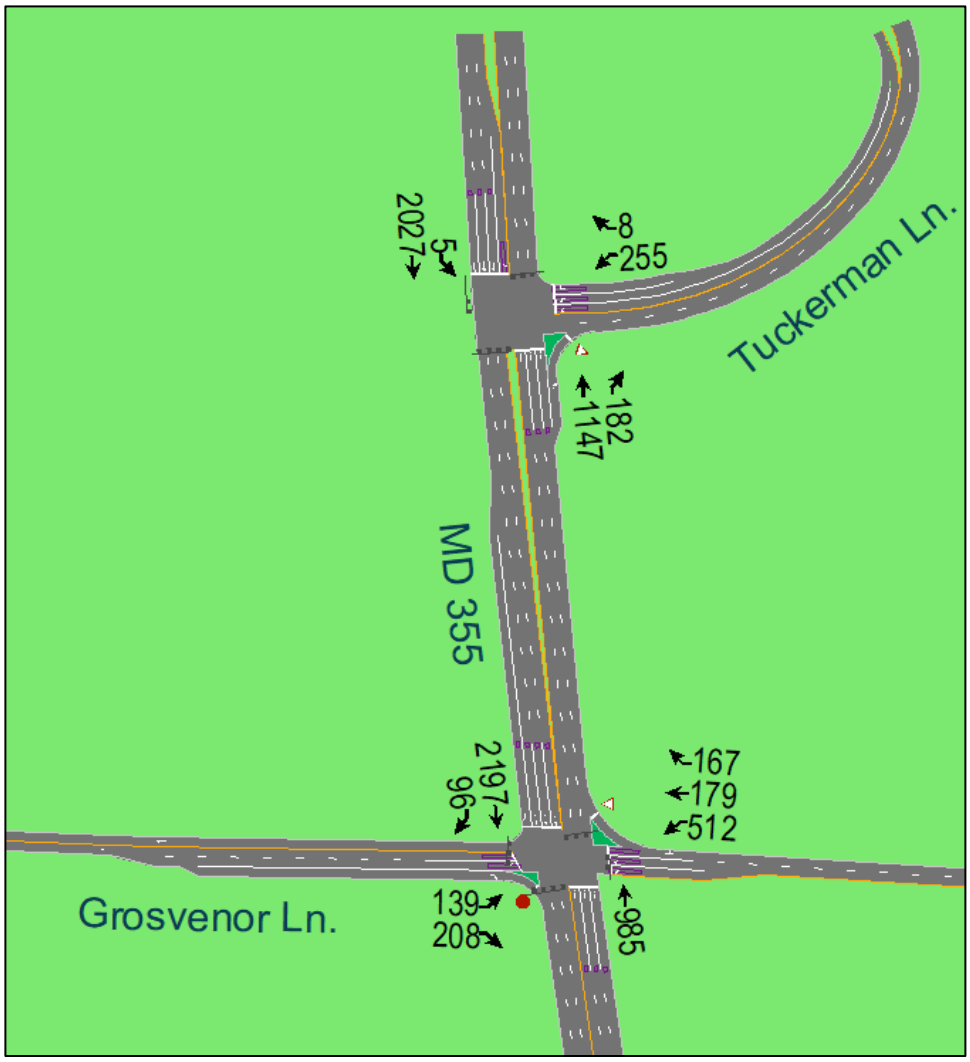
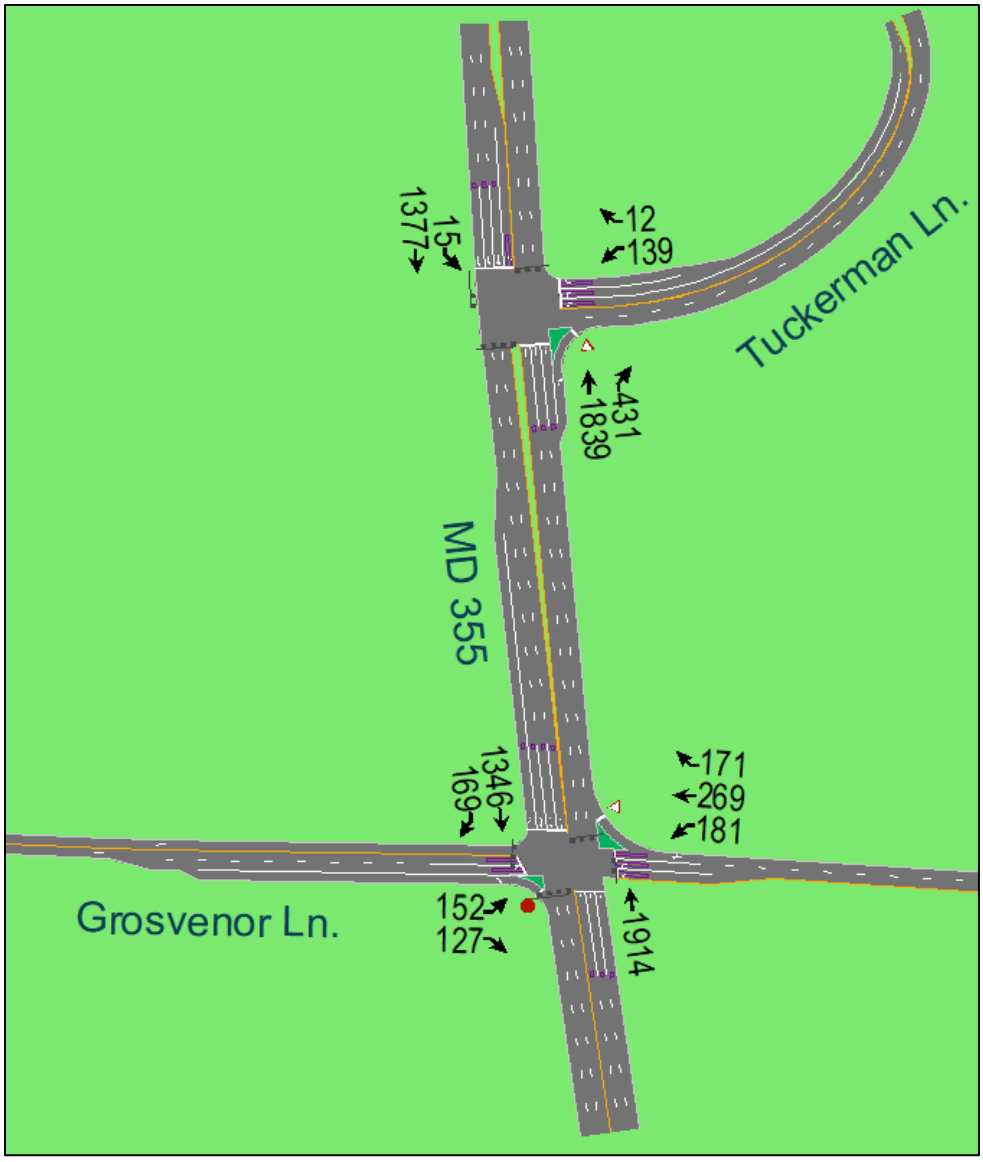


Figure 4: Existing PM Peak Hour Traffic Volumes



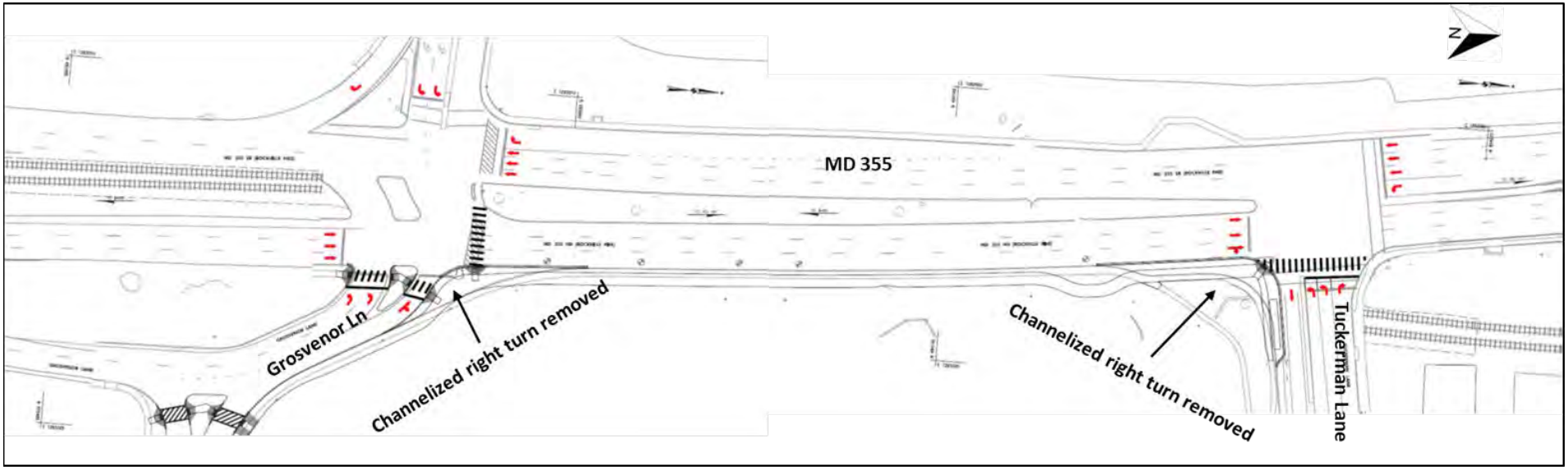
3. MODIFIED LANE CONFIGURATION

This project involves constructing the shared-use path on the east side of MD 355 between Tuckerman Lane and Grosvenor Lane. Addition of the shared-use path includes the following modifications to MD 355 and the study intersections.

- Remove the westbound channelized right turn from the Grosvenor Lane intersection to northbound MD 355
- Remove the channelized right turn lane from northbound MD 355 at the Tuckerman Lane intersection

Figure 5 presents concept sketch for the modified geometry at both intersections. The AutoTurn sketches for turn lanes are provided in **Appendix C**.

Figure 5: Modified Lane Geometry at the Intersection of MD 355 and Tuckerman Lane



Source: Stantec

4. PROJECTED TRAFFIC VOLUMES

The existing AM and PM peak hour traffic volume were projected for the future year analysis to incorporate new trips generated by the planned developments adjacent to the study intersections. Strathmore Square traffic impact study was referred to include background trips generated by the pipeline developments as well as the Strathmore Square development.

In addition, trips generated by the following four new developments were calculated and added to the study intersections that were not considered in Strathmore Square traffic study.

- VOB – Plan No. 120190160
- White Flint View – Plan No. 120070380
- The Goddard School – Plan No. 119960150
- Peace Palace – Plan No. 820060060

The trip generation calculations for three out of four developments were available on Montgomery County's online land use development database and were used for this study without any modifications. The trip generation calculations for The Goddard School were not available on the County's website and were calculated using the methodology defined in Montgomery Local Area Transportation Review (LATR) and Transportation Policy Area Review guidelines. The AM and PM peak hour trips were calculated for the adjacent street traffic for the Day Care Center land use for 200 students. Since Goddard School is planned to be a day care facility, the mode split assumptions as provided in Appendix Table 1b of LATR were not applied and all trips were assumed to be auto trips.

The trip generated by four additional developments were distributed to the study intersections based on Montgomery County's Local Area Transportation Review (LATR) Guidelines for commercial and residential uses to align with the methodology used in Strathmore Square traffic study.

The trip generation and distribution details for the four additional developments are provided in **Appendix D**. The total trip figure from Strathmore Square study is also provided in **Appendix D**.

Figure 6 and Figure 7 present the projected AM and PM peak hour volumes, respectively at the study intersections.

Figure 6: Projected AM Peak Hour Traffic Volumes

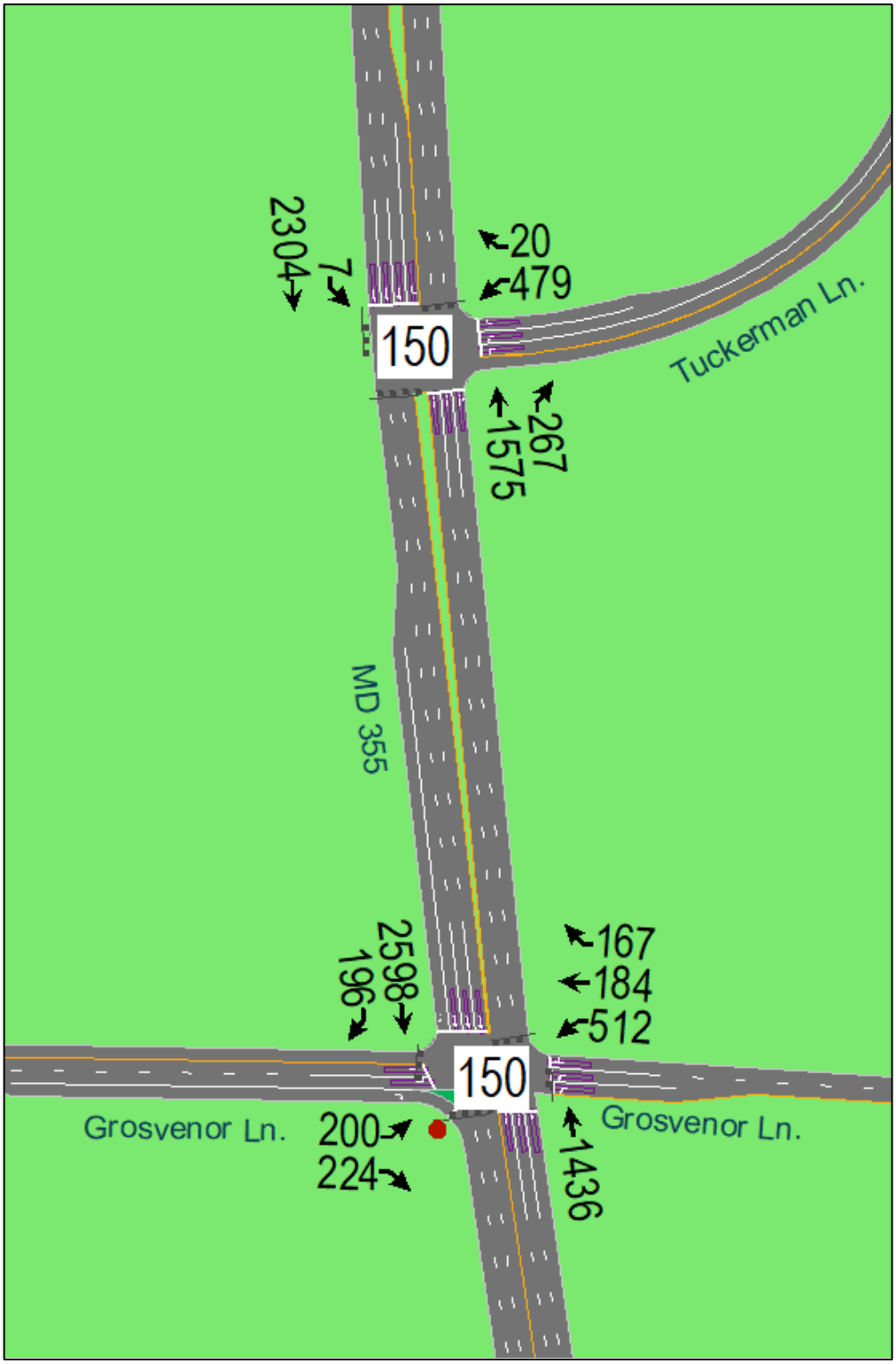
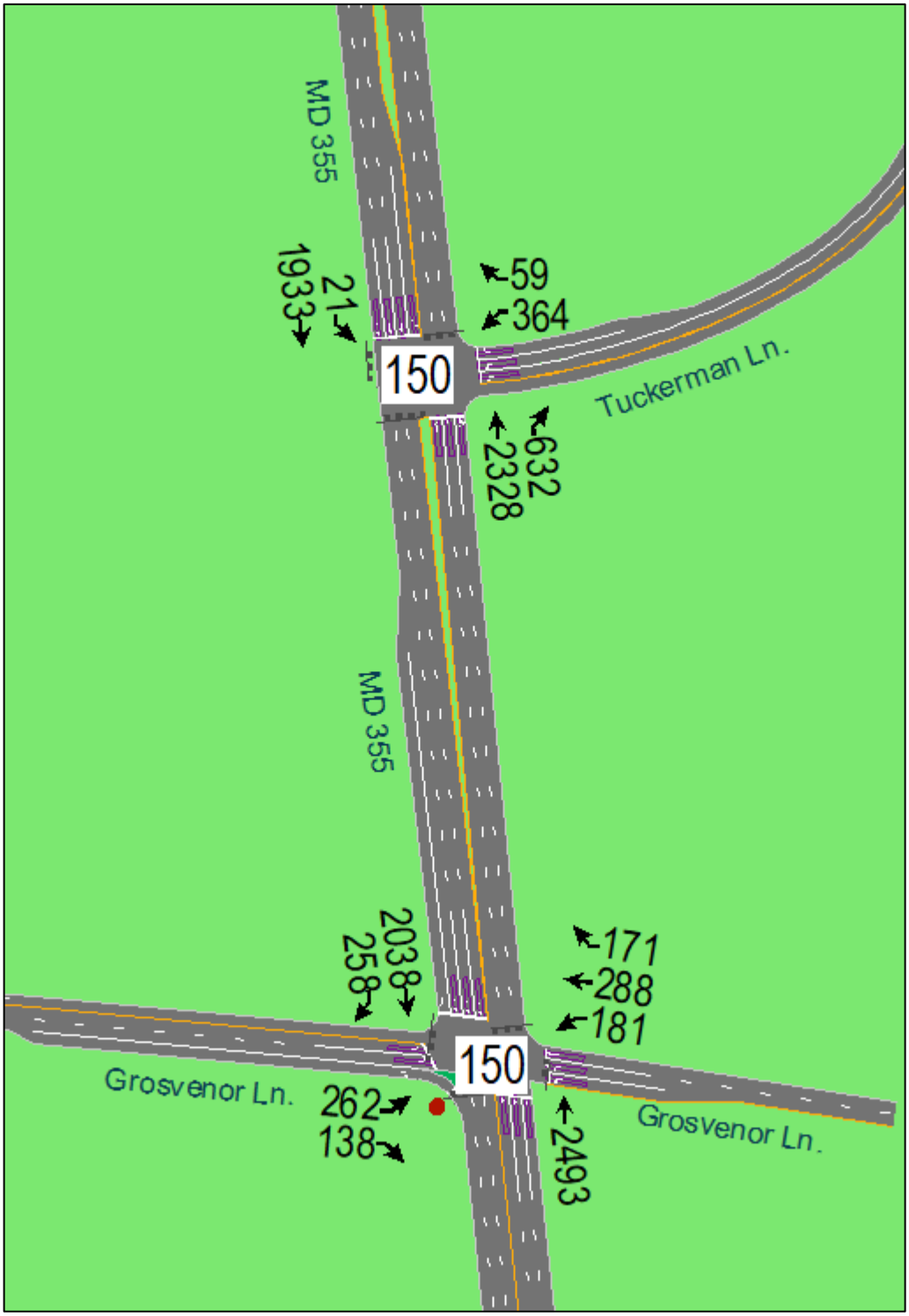


Figure 7: Projected PM Peak Hour Traffic Volumes



5. CAPACITY AND QUEUING ANALYSES

Capacity and queuing analyses were conducted for the AM and PM peak hours for existing, no-build and build conditions. The existing conditions analysis was performed for the current lane configuration and signal timings provided by the County. The no-build conditions analysis was performed for existing geometry and projected traffic volumes. No-build conditions analysis was performed as a baseline case to compare any increase in delay due to roadway modifications in the build conditions.

The build conditions analysis was performed for the modified geometry and projected traffic volumes. Pedestrian "Walk" and "Flash Don't Walk" timings were calculated based on the *SHA Traffic Signal Timings Guidelines and Training Manual* for modified crossing distances. Signal timings were optimized to improve traffic operations at both intersections for no-build and build conditions.

The analysis was conducted in accordance with the Highway Capacity Manual (HCM 2000) methodologies for a signalized intersection. Synchro software (Version 10) was used for the capacity analysis, and SimTraffic was used for the queueing analysis. Table 1 presents a comparison of the level of service (LOS) analysis for the existing, no-build and build conditions. The Synchro reports are provided in **Appendix E**.

Table 1: LOS Results

Intersection No.	Intersection	Control Type	Approach	Movement	Existing Conditions				No-Build Conditions (Optimized)				Build Conditions			
					AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
					Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
1	MD 355 & Grosvenor Ln.	Signalized	NB	NBT	22.9	C	41.0	D	27.5	C	75.2	E	27.5	C	75.2	E
				NB Approach	22.9	C	41.0	D	27.5	C	75.2	E	27.5	C	75.2	E
			SB	SBT	37.7	D	31.0	C	68.6	E	36.6	D	68.6	E	36.6	D
				SBR	16.9	B	25.9	C	10.0	A	16.1	B	10.0	A	16.1	B
				SB Approach	36.8	D	30.5	C	64.5	E	34.3	C	64.5	E	34.3	C
			EB	EBL	61.2	E	69.0	E	60.1	E	78.3	E	60.1	E	78.3	E
				EBR	76.7	E	63.7	E	80.0	E	61.2	E	80.0	E	61.2	E
				EB Approach	70.5	E	66.6	E	70.6	E	72.4	E	70.6	E	72.4	E
			WB	WBL	32.0	C	24.0	C	31.2	C	26.9	C	31.2	C	26.9	C
				WBTR	66.5	E	62.5	E	73.5	E	99.6	F	73.5	E	99.6	F
				WB Approach	45.9	D	51.3	D	48.5	D	79.0	E	48.5	D	79.0	E
			Intersection Overall		**38.2**	**D**	**40.7**	**D**	**52.6**	**D**	**59.5**	**E**	**52.6**	**D**	**59.5**	**E**
2	MD 355 & Tuckerman Ln.	Signalized	NB	NBT/NBTR	3.4	A	0.8	A	2.1	A	3.5	A	2.6	A	8.8	A
				NBR	2.8	A	0.4	A	0.5	A	2.4	A	-	-	-	-
				NB Approach	3.3	A	0.7	A	1.9	A	3.3	A	2.6	A	8.8	A
			SB	SBL	3.0	A	3.1	A	6.7	A	10.8	B	7.9	A	22.0	C
				SBT	5.0	A	2.8	A	10.4	B	6.9	A	10.4	B	6.9	A
				SB Approach	5.0	A	2.8	A	10.4	B	7.0	A	10.4	B	7.1	A
			WB	WBL	68.8	E	69.0	E	65.9	E	67.8	E	65.9	E	67.8	E
				WBR	58.9	E	63.1	E	50.3	D	54.5	D	50.3	D	54.5	D
				WB Approach	68.5	E	68.5	E	65.3	E	66.0	E	65.3	E	66.0	E
			Intersection Overall		**9.0**	**A**	**4.5**	**A**	**12.8**	**B**	**9.8**	**A**	**13.1**	**B**	**12.9**	**B**

The capacity analysis results indicate the following:

- At the intersection of MD 355 at Grosvenor Lane, there is no difference in delays with and without the roadway modifications for the future traffic conditions.
- At the intersection of MD 355 at Tuckerman Lane, due to the elimination of northbound right turn lane there is a minimal increase in delay of 5 sec/veh during the PM peak hour. Overall, there is no significant increase in delay with and without the roadway modifications for the future traffic conditions.
- There is an increase in delay and decline in LOS for several movements between the existing and future no-build and build conditions due to an increase in traffic volumes.

Table 2 presents a comparison of maximum queue lengths for the existing, no-build and build conditions analyses. SimTraffic reports are provided in **Appendix D**.

Table 2: Maximum Queue Lengths

Intersection No.	Intersection	Control Type	Approach	Movement	Existing Conditons		No-Build Conditions		Build Conditions	
					AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
					Max Queue Length (ft)		Max Queue Length (ft)		Max Queue Length (ft)	
1	MD 355 & Grosvenor Ln.	Signalized	NB	NBT	315	470	330	490	330	485
			SB	SBT	585	350	630	485	630	500
				SBR	400	120	435	170	435	300
			EB	EBL	255	130	535	185	535	200
				EBR	345	70	405	95	405	100
			WB	WBL	485	370	485	365	445	360
				WBTR	505	395	495	390	450	385
2	MD 355 & Tuckerman Ln.	Signalized	NB	NBR	75	115	120	125	-	-
				NBT/NBTR	130	155	250	400	195	400
			SB	SBL	55	75	100	155	160	130
				SBT	325	260	340	380	345	380
			WB	WBL	255	200	410	360	490	325
				WBR	100	55	230	225	225	225

Queueing analysis results do not indicate any significant difference in queue length between the no-build and build conditions at both intersections.

Critical Lane Volume (CLV) Analysis

CLV analysis was performed for both intersections for the existing, no-build and build traffic conditions. The analysis results are presented in Table 3. The detailed CLV analysis sheets are provided in **Appendix E.**

Table 3: CLV Analysis Results

Intersection No.	Intersection	Control Type	Existing Conditions				No-Build Conditions				Build Conditions			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			V/C	LOS	V/C	LOS	0	LOS	0	LOS	V/C	LOS	V/C	LOS
1	MD 355 & Grosvenor Ln.	Signalized	0.79	C	0.81	C	0.92	E	1.01	F	0.92	E	1.01	F
2	MD 355 & Tuckerman Ln.	Signalized	0.60	A	0.51	A	0.76	C	0.72	B	0.76	C	0.89	D

The CLV analysis results indicate the following:

- At the MD 355 at Grosvenor Lane intersection, there is no difference in v/c ratios between the no-build and build conditions
- At the MD 355 at Tuckerman Lane intersection, with the elimination of northbound right turn lane the intersection LOS declines from B in no-build to D in the build conditions during the PM peak hour.

6. CRASH HISTORY

Three-year (3-year) crash data was obtained from Montgomery County's Crash Reporting Database from January 1, 2016 through December 31, 2018 for the intersections of MD 355 at Tuckerman Lane and MD 355 at Grosvenor Lane. Table 4 presents crash frequency by year at the study intersections.

Table 4: Crashes by Year

	Total Crashes	
Year	MD 355 at Tuckerman Lane	MD 355 at Grosvenor Lane
2016	3	12
2017	4	13
2018	8	16
Total	**15**	**41**

A total of 41 crashes occurred at the MD 355 at Grosvenor Lane during the three-year period. The number of crashes increased from 12 in 2016 to 13 in 2017 (or by 8%) and then to 16 in 2018 (or by 23%). At the MD 355 at Tuckerman Lane intersection, a total of 15 crashes occurred at the intersection and the number of crashes increased from 3 in 2016 to 4 in 2017 (or by 33%) and then to 8 in 2018 (or by 50%). Table 5 presents crashes by type and severity at the study intersections.

Table 5: Crashes by Type and Severity

Location	Year	Collision Type							Crash Severity				Time of Day				Surface Conditions				Lighting			
		Rear End	Angle	Single Vehicle	Left Turn	Right Turn	Sideswipe - Same Direction	Total	PDO	Injury	Non-Injury	Fatal	AM Peak	PM Peak	Mid-day	Off Peak	Dry	Wet	Ice/Snow	N/A	Daylight	Dawn	Dark - Lights On	Dark - No Lights
MD 355 at Tuckerman Lane	2016	2	0	0	0	1	0	3	2	1	0	0	0	0	2	1	2	1	0	0	2	0	0	1
	2017	3	0	0	0	1	0	4	3	1	0	0	0	0	3	1	4	0	0	0	3	0	1	0
	2018	5	2	1	0	0	0	8	8	0	0	0	4	0	1	3	6	2	0	0	4	1	3	0
	Total	10	2	1	0	2	0	15	13	2	0	0	4	0	6	5	12	3	0	0	9	1	4	1
MD 355 at Grosvenor Lane	2016	6	4	0	0	0	2	12	6	6	0	0	1	3	4	4	7	4	1	0	7	0	3	2
	2017	4	2	3	2	0	2	13	7	6	0	0	1	3	3	6	7	5	0	1	6	0	6	1
	2018	6	5	1	3	0	1	16	13	3	0	0	3	2	3	8	9	5	0	2	9	1	5	1
	Total	16	11	4	5	0	5	41	26	15	0	0	5	8	10	18	23	14	1	3	22	1	14	4

MD 355 at Grosvenor Lane

The most prevalent crash types were rear-end crashes (16 out of 41 or 39%), followed by angle crashes (11 out of 41 or 27%). There were 15 injury crashes, along with 26 property damage only (PDO) crashes. There were no fatality crashes at the intersection during the time period examined. Thirteen out of 41 crashes occurred during the AM and PM peak periods. A majority of crashes occurred under dry surface conditions (23 out of 41 or 56%) and during daylight (22 out of 41 or 54%). It is worth noting that there was only one rear-end crash in westbound direction at this intersection.

MD 355 at Tuckerman Lane

A total of 15 crashes occurred at the MD 355 at Tuckerman Lane intersection during the three-year period. The most prevalent crash type was rear-end crash (10 out of 15 or 67%). There were 2 injury crashes, along with 13 property damage only (PDO) crashes. There were no fatality crashes at the intersection during the time period examined. Four out of 15 crashes occurred during the AM peak period. A majority of crashes occurred under the dry conditions (12 out of 15 or 80%) and during the daylight (9 out of 15 or 60%).

Rear-end crashes are typical at a signalized intersection when vehicles slowing down or stopping at the red light are struck by drivers following too closely or distracted.

The crash reports are provided in **Appendix F**.

7. CONCLUSION

Capacity and crash analyses were conducted for the intersections of MD 355 at Grosvenor Lane and MD 355 at Tuckerman Lane for the existing and future lane configurations and traffic conditions. Montgomery County Department of Transportation is planning to install a shared pedestrian/bike lane on the east side of MD 355 between Grosvenor Lane and Tuckerman Lane which includes elimination of the channelized right turn movement on the westbound approach of the Grosvenor Lane intersection and the northbound dedicated right turn lane at the MD 355 at Tuckerman Lane intersection.

For the future conditions, traffic volumes were projected for planned developments in the vicinity of the study intersections, including the Strathmore Square development.

The capacity and queueing analyses results with and without the lane modifications indicate the following:

- At the intersection of MD 355 at Grosvenor Lane, there is no difference in delay for any movement at the intersection between the no-build and build conditions for the future traffic volumes.
- In the build condition, at the intersection of MD 355 at Tuckerman Lane, the delay for the northbound approach increases slightly by 5 sec/veh due to the elimination of the right turn lane during the PM peak hour.
- There is no significant difference in queue length between the no-build and build conditions at both intersections.

Crash analysis was conducted for three-year period from January 2016 to December 2018. The crash analysis indicates the following results:

- At the MD 355 at Grosvenor intersection, a total of 41 crashes were reported. The most prevailing crash type was a rear-end collision, 16 out of 41 or 39 percent. There was only one crash in the westbound direction during the three years examined.

- At the MD 355 at Tuckerman Lane intersection, a total of 15 crashes were reported. Out of 15 crashes, 10 were rear-end collisions.

Appendix A – Intersection Photos

MD 355 at Grosvenor Lane Facing Northbound

MD 355 at Grosvenor Lane Facing Southbound

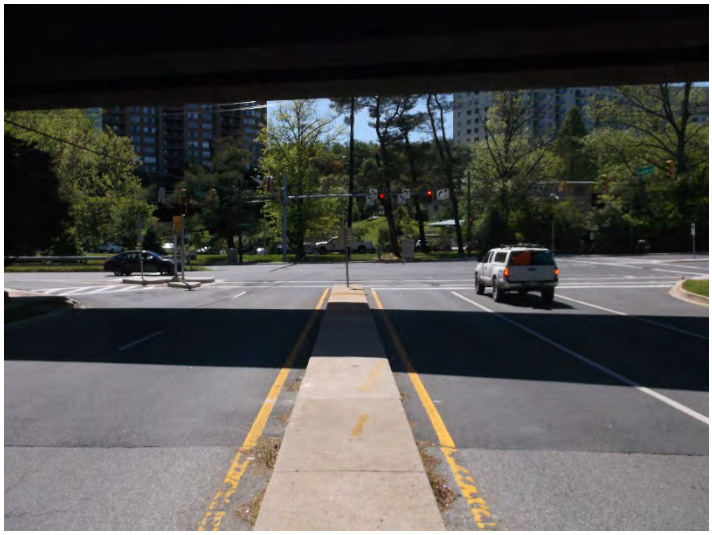
MD 355 at Grosvenor Lane Facing Eastbound

MD 355 at Grosvenor Lane Facing Westbound

MD 355 at Tuckerman Lane Facing Northbound

MD 355 at Tuckerman Lane Facing Southbound

MD 355 at Tuckerman Lane Facing Westbound



Appendix B – Existing Conditions Traffic Volumes

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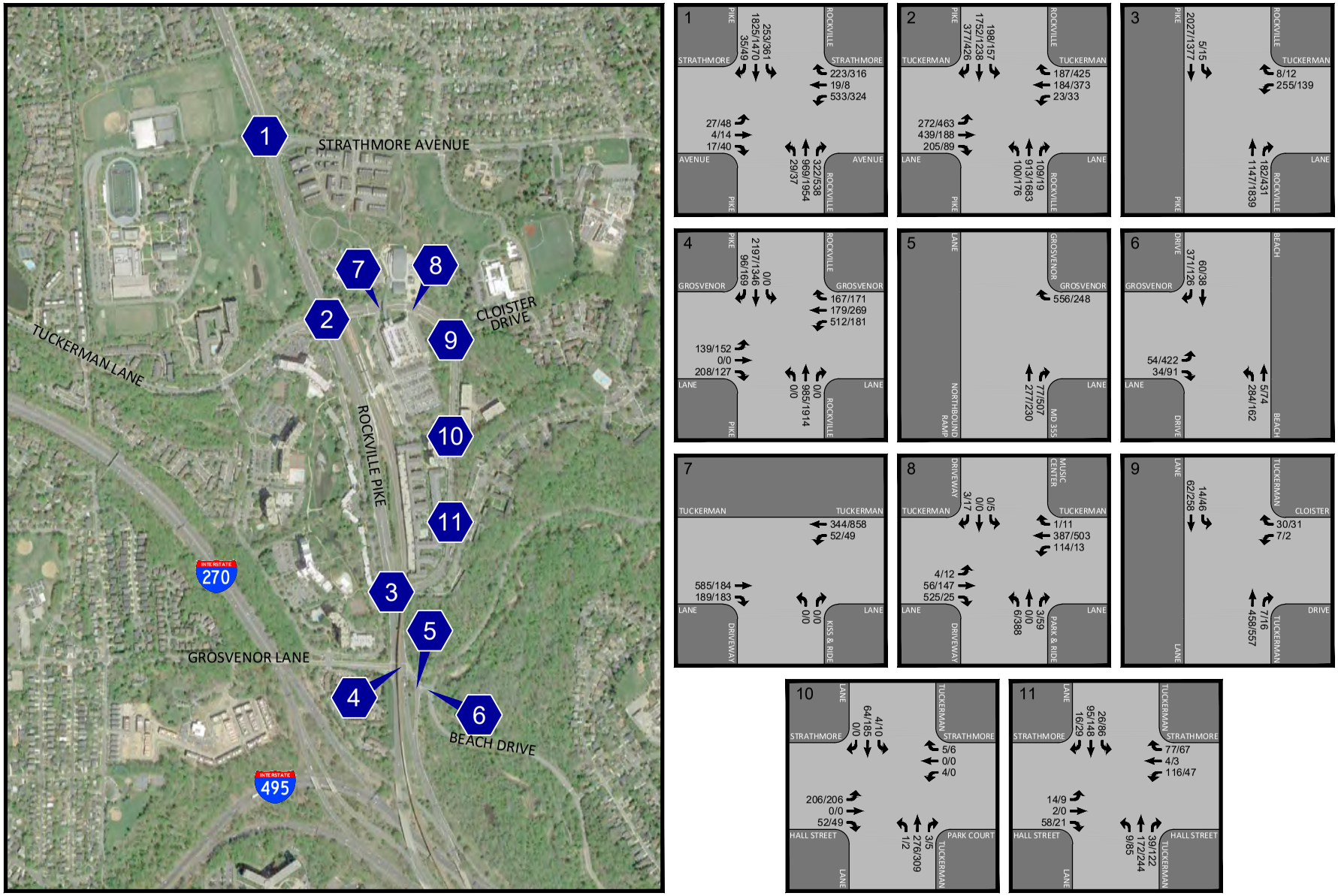


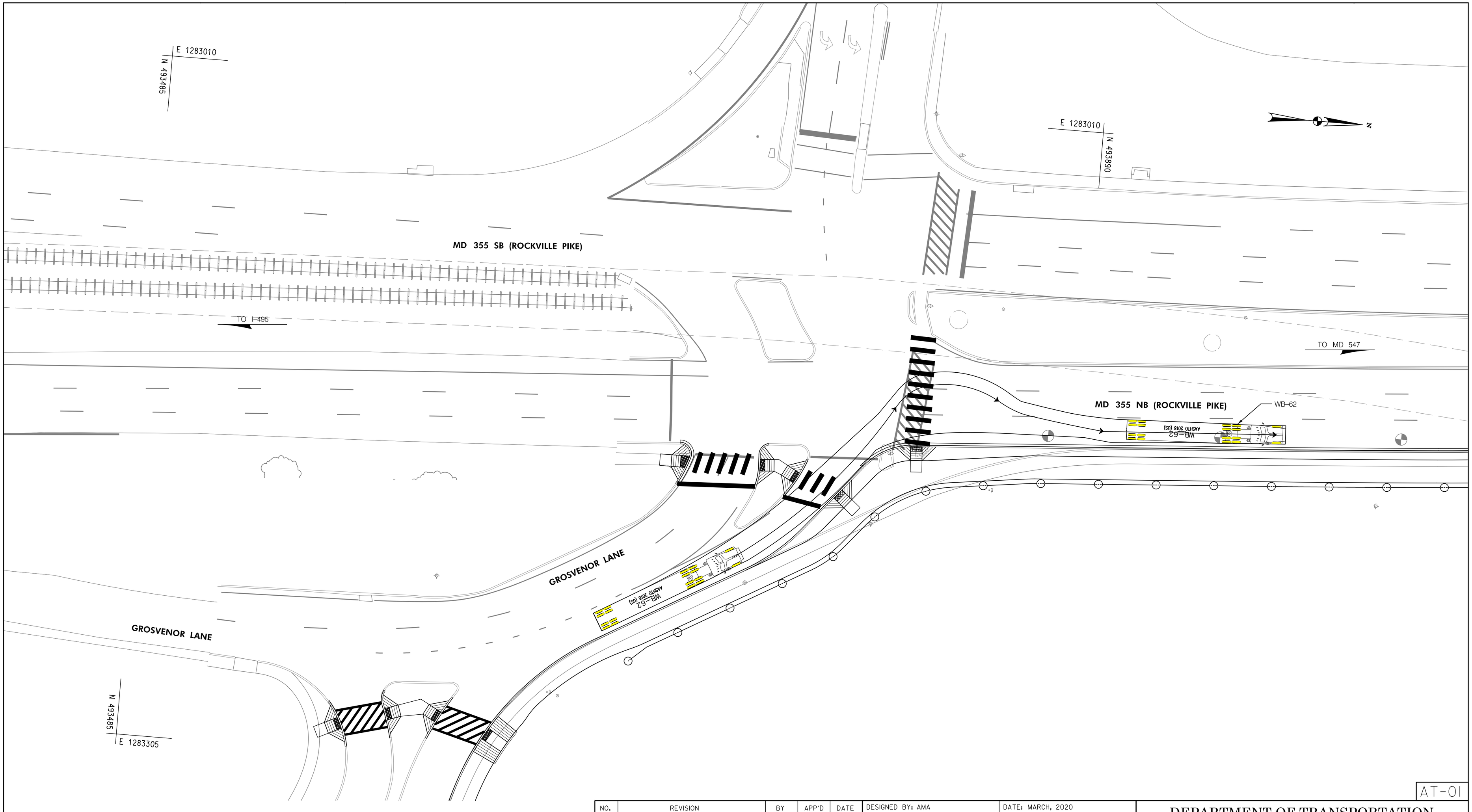
Figure 2-2
Existing Peak Hour Vehicular Volumes

AM PEAK HOUR
PM PEAK HOUR
000 / 000

NORTH

Strathmore Square
Montgomery County, Maryland

Appendix C: Autoturn Plans



AT-01

NO.	REVISION	BY	APP'D	DATE

DESIGNED BY: AMA	DATE: MARCH, 2020
DRAWN BY: AMA	DATE: MARCH, 2020
CHECKED BY: DHM III	DATE: MARCH, 2020
DRAWING NO.:	DATE:

RECOMMENDED FOR APPROVAL

Chief, Design Section — Date

APPROVED

Chief,
Division of Transportation Engineering — Date

DEPARTMENT OF TRANSPORTATION
DIVISION OF TRANSPORTATION ENGINEERING
MONTGOMERY COUNTY, MARYLAND

AUTOTURN PLAN
GROSVENOR IMPROVEMENTS

SCALE: 1"=20'

SHEET 1 of 5

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BiPPA Bicycle and Pedestrian Priority Areas

Thursday, January 30, 2020 AT 09:51 AM
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E 1282980
N 494145
E 1282980
N 494570
N
MD 355 SB (ROCKVILLE PIKE)
TO MD 547
TO I-495
MD 355 NB (ROCKVILLE PIKE)
WB-62
AASHTO 2018 (US)
N 494145
E 1283200
WB-62
AASHTO 2018 (US)
TUCKERMAN LANE
WB-60

AT-02

20' 0 20' 40'
SCALE: 1" = 20'

NO.	REVISION	BY	APP'D	DATE

DESIGNED BY: AMA	DATE: MARCH, 2020
DRAWN BY: AMA	DATE: MARCH, 2020
CHECKED BY: DHM III	DATE: MARCH, 2020
DRAWING NO.:	DATE:

RECOMMENDED FOR APPROVAL

Chief, Design Section — Date

APPROVED

Chief,
Division of Transportation Engineering — Date

DEPARTMENT OF TRANSPORTATION
DIVISION OF TRANSPORTATION ENGINEERING
MONTGOMERY COUNTY, MARYLAND

AUTOTURN PLAN
GROSVENOR IMPROVEMENTS

SCALE: 1"=20'

SHEET 2 of 5

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BiPPA Bicycle and Pedestrian Priority Areas

E 1282980
N 494145

N

E 1282980
N 494570

MD 355 SB (ROCKVILLE PIKE)

TO MD 547

TO I-495

MD 355 NB (ROCKVILLE PIKE)

WB-40
AASHTO 2018 (US)

N 494145
E 1283200

TUCKERMAN LANE

WB-40
AASHTO 2018 (US)

WB-40

AT-03

20' 0 20' 40'
SCALE: 1" = 20'

NO.	REVISION	BY	APP'D	DATE

DESIGNED BY: AMA	DATE: MARCH, 2020
DRAWN BY: AMA	DATE: MARCH, 2020
CHECKED BY: DHM III	DATE: MARCH, 2020
DRAWING NO.:	DATE:

RECOMMENDED FOR APPROVAL

Chief, Design Section — Date

APPROVED

Chief,
Division of Transportation Engineering — Date

DEPARTMENT OF TRANSPORTATION
DIVISION OF TRANSPORTATION ENGINEERING
MONTGOMERY COUNTY, MARYLAND

AUTOTURN PLAN
GROSVENOR IMPROVEMENTS

SCALE: 1"=20'

SHEET 3 of 5

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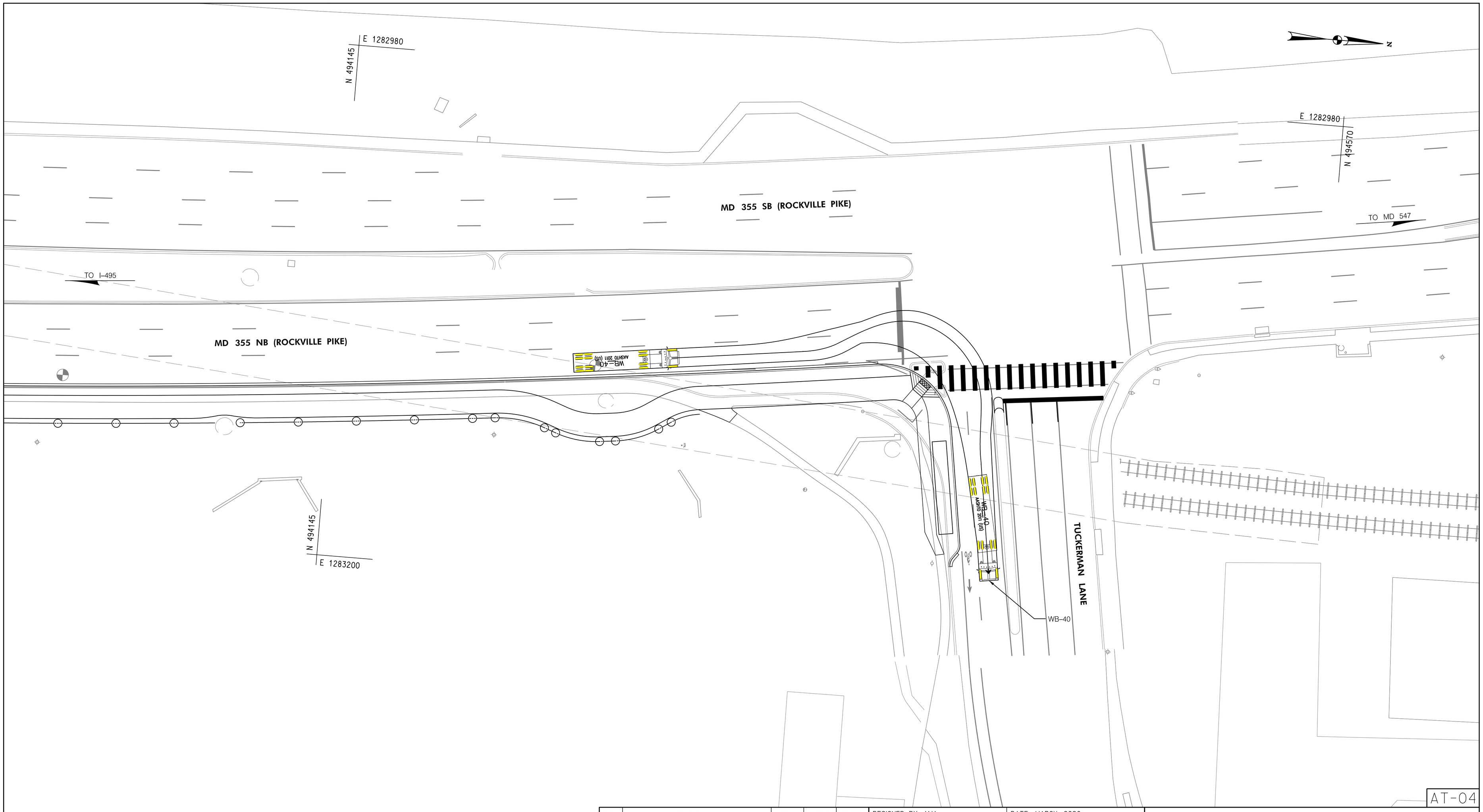
BiPPA Bicycle and Pedestrian Priority Areas



AT-04

20' 0 20' 40'
SCALE: 1" = 20'

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BiPPA Bicycle and Pedestrian Priority Areas

NO.	REVISION	BY	APP'D	DATE

DESIGNED BY: AMA	DATE: MARCH, 2020
DRAWN BY: AMA	DATE: MARCH, 2020
CHECKED BY: DHM III	DATE: MARCH, 2020
DRAWING NO.:	DATE:

RECOMMENDED FOR APPROVAL

Chief, Design Section — Date

APPROVED

Chief,
Division of Transportation Engineering — Date

DEPARTMENT OF TRANSPORTATION
DIVISION OF TRANSPORTATION ENGINEERING
MONTGOMERY COUNTY, MARYLAND

AUTOTURN PLAN
GROSVENOR IMPROVEMENTS

SCALE: 1"=20' SHEET 4 of 5

Monday, February 03, 2020 AT 11:33 AM
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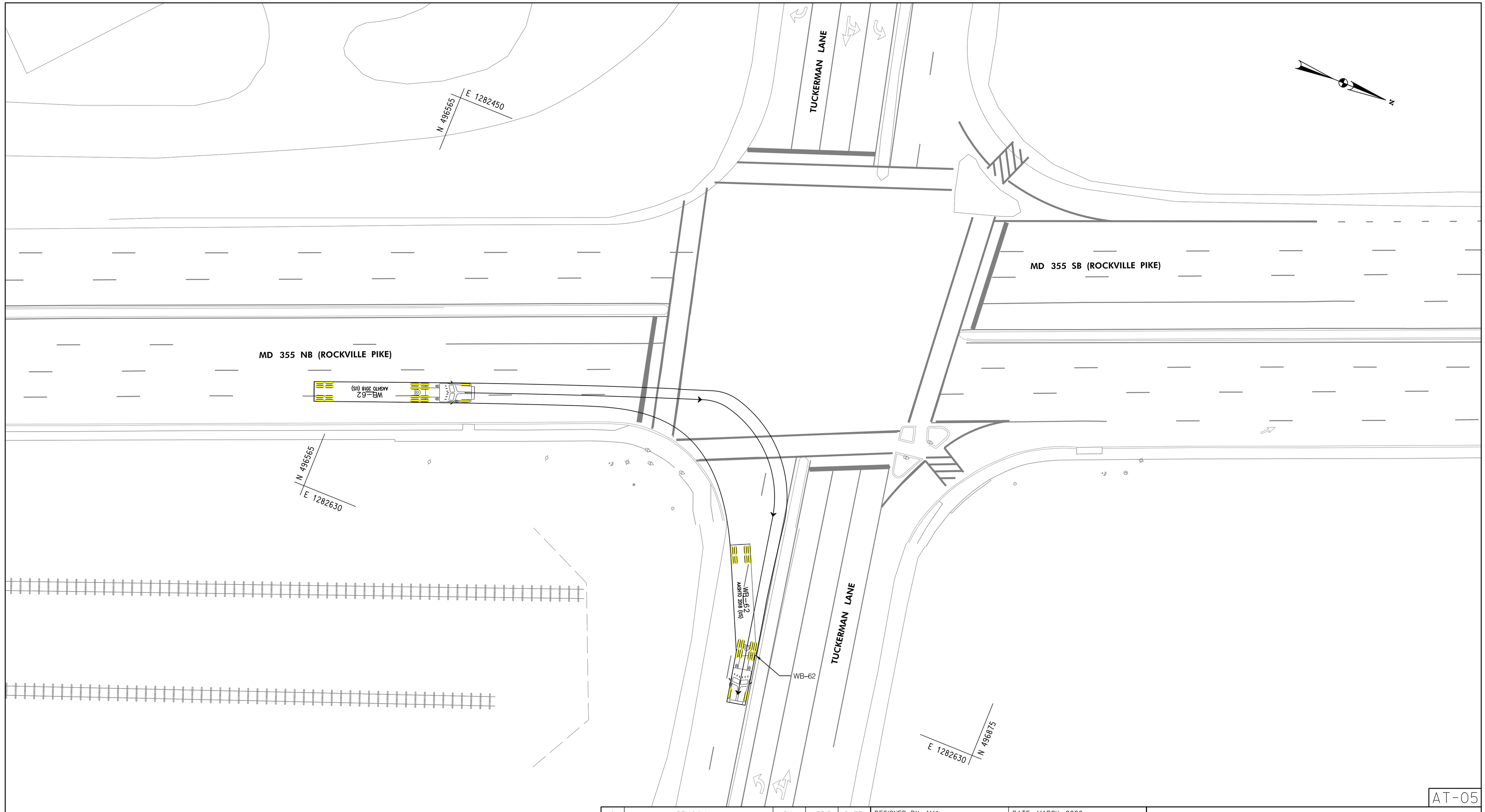

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BiPPA Bicycle and Pedestrian Priority Areas

NO.	REVISION	BY	APP'D	DATE

DESIGNED BY: AMA	DATE: MARCH, 2020
DRAWN BY: AMA	DATE: MARCH, 2020
CHECKED BY: DHM III	DATE: MARCH, 2020
DRAWING NO.:	DATE:

RECOMMENDED FOR APPROVAL

Chief, Design Section — Date

APPROVED

Chief,
Division of Transportation Engineering — Date

AT-05

DEPARTMENT OF TRANSPORTATION
DIVISION OF TRANSPORTATION ENGINEERING
MONTGOMERY COUNTY, MARYLAND

AUTOTURN PLAN
GROSVENOR IMPROVEMENTS

SCALE: 1"=20'

SHEET 5 of 5

Thursday, January 30, 2020 AT 09:55 AM
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Appendix D: Trip Assignments for New Developments

L:\PROJECTS\7001 - 7500\7463 - STRATHMORE SQUARE\GRAPHICS\19.0315 - 7463 - GRAPHICS.DWG

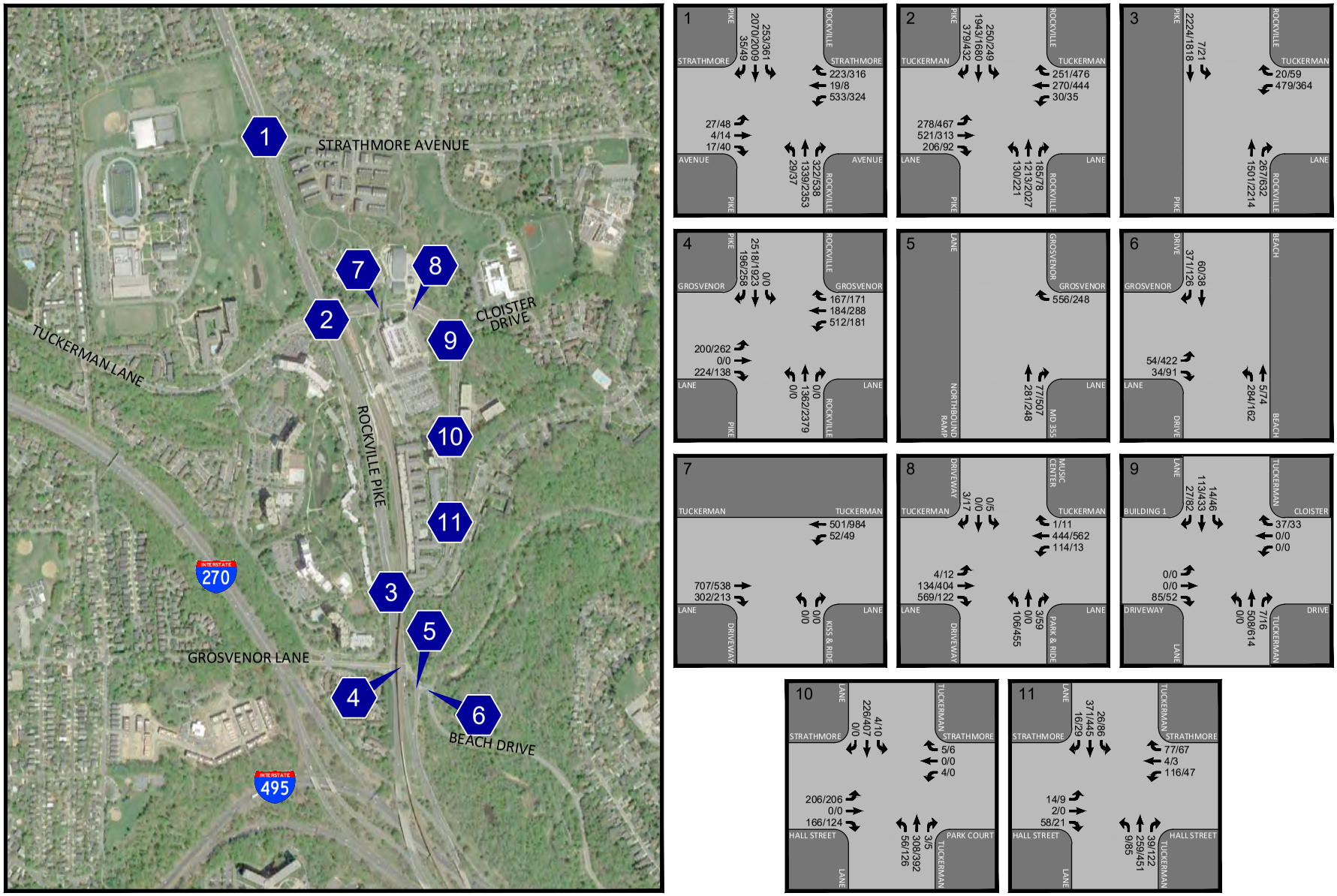


Figure 3-6A

Total Future Peak Hour Forecasts

AM PEAK HOUR
PM PEAK HOUR
000 / 000

NORTH

Strathmore Square
Montgomery County, Maryland

Traffic Statement

Kimley-Horn
and Associates, Inc.

MEMORANDUM

Suite 400
13221 Woodland Park Road
Herndon, Virginia
20171

To: Steven A. Robins, Esq.
Lerch, Early & Brewer

From: Edward Y. Papazian, PE EYP

Date: June 6, 2008

Subject: 5500 Edson Lane—Peace Palace
Amended Site Plan
Traffic Statement

This memorandum serves as a traffic statement for the amended site plan for the 5500 Edson Lane site in North Bethesda. The amended plan will consist of 8,371 square feet of office space and 4 tourist home units. The currently approved plan consists of 4800 square feet of office space, a school for 20 students, and 4 tourist home units.

This traffic statement shows that the proposed amendment will continue to result in fewer than 30 peak hour trips and the parking spaces provided will satisfy the zoning ordinance and the practical requirements of the property.

The trip generation rates utilized in this analysis are as follows.

Office—The trip rates contained in the Local Area Transportation and Policy Area Mobility Review (LATR and PAMR) Guidelines were utilized.

Tourist Home Units—Trip generation rates contained in the ITE Trip Generation Report for Land Use Code 311 (Suite Hotel) were utilized.

The resulting number of trips and parking demand are shown below.

5500 Edson Lane
Trip Generation and Parking Demand

	AM Peak Hour			PM Peak Hour			Parking Demand
	In	Out	Two-way	In	Out	Two-way	
Office 8,371 SF	10	2	12	3	16	19	23
Tourist Home 4 Units	1	1	2	1	1	2	4
Total	**11**	**3**	**14**	**4**	**17**	**21**	**27**

The resulting AM and PM peak hour figures of 14 and 21 trips respectively are less than the 30 trips needed to trigger the need for an LATR study. In addition, these trip figures are less than the peak hour trip generation for the approval site plan.

TEL 703 674 1300
FAX 703 674 1350

This project received site plan approval in April 2006, prior to the effective date of the PAMR requirements. On this basis, this amendment is exempt from the PMAR test.

The number of parking spaces needed to accommodate this development program is 27, which is the number of spaces that will be provided on the property for use by the Peace Palace. One additional parking space will be provided on the property for use by the Vedic Center—5504 Edson Lane. The increase in the onsite parking from 21 spaces shown on the approved plan to the proposed 27 spaces shown on the amended plan is due to the removal of the school use. This resulted in the elimination of the need for pick up and drop off areas for students. No additional paving will be needed to accommodate the additional parking spaces.

The vehicle circulation for this amended plan will be the same as the approved plan. Drivers will enter along the east edge of the property and will be directed along the east and north sides of the building. Drivers will exit by using a connector to reach the Vedic Center at 5504 Edson Lane and will use a one-way drive aisle along the east edge of the Vedic Center to reach Edson Lane.

This vehicle circulation system was found to operate in a safe and efficient manner at the time of review of the approved plan. The safe and efficient operation will continue with the proposed amended plan.

The approved plan called for the removal of the wall along Edson Lane at the edge of the property. The basis for the removal of the wall is existing sight distance deficiencies for drivers exiting the property. This condition has not changed. As a result, the amended plan continues to show the removal of this wall.

WELLS + ASSOCIATES

October 3, 2018

Mr. Ed Axler,
Transportation Planning Division, M-NCPPC
8787 Georgia Avenue
Silver Spring, Maryland 20910

Re: VOB – 11575 Old Georgetown Road - Traffic Statement for LATR Exemption

Dear Mr. Axler:

This letter serves as a traffic statement for the sketch plan application for the proposed VOB Development site at 11575 Old Georgetown Road development in White Flint.

The development program includes up to 1,000 residential high-rise units and up to 110,169 SF of total commercial space over a three-phase project. The commercial space is planned to include a mix of general retail, restaurant, and office. It is located in the eastern corner of the existing intersection of Old Georgetown Road and Executive Boulevard. The site is currently composed of automobile sales and an unoccupied bank, as well as existing right of way for the intersection of Old Georgetown Road and Executive Boulevard.

With the realignment of the intersection of Old Georgetown Road/Executive Boulevard, this development will be located in the southeast corner of the new intersection, west of the planned extension of Grand Park Avenue, north of Market Street, east of relocated Old Georgetown Road, and south of Old Georgetown Road. Vehicular access to the site will be provided via an internal alley which will extend from relocated Old Georgetown Road on the west to Grand Park Avenue to the east.

A summary of the projected trip generation based on this development program is found on Table 1. The development program may change as the project proceeds through the site plan review process, but these quantities represent the maximum expected development density at this time, with a reasonable approximation of the likely division of commercial space between retail, restaurant, and office space. Based on the 2017 Local Area Transportation Review (LATR) guidelines, projects located within the White Flint Metro Station Policy Area are exempt from the LATR requirements if the project/developers agree to participate in the White Flint Special Taxing District for transportation infrastructure improvements in lieu of satisfying the Adequate Public Facility tests for LATR. This application will be filed under this exemption.

Please use this letter as our formal LATR Exemption submittal. If you require any additional information to facilitate you review and approval, please call me at 301-971-3425 or email me at bjmosier@wellsandassociates.com.

Sincerely,

Barbara Mosier, P.E., PTOE
Senior Associate

Table 1
VOB Development
Trip Generation [1]

Land Use	LUC	Quantity	Units	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Proposed Development									
Residential - High-Rise	222	1,000	DU	70	223	293	213	136	349
Office	710	22,034	SF	40	7	47	4	23	27
Retail	820	55,085	SF	111	68	179	168	182	350
High Turnover Restaurant	932	23,135	SF	127	103	230	140	86	226
Quality Restaturant[2]	931	9,915	SF	6	1	7	52	25	77
Total				**354**	**402**	**756**	**577**	**452**	**1029**
Total 50 % Reduction				**177**	**201**	**378**	**289**	**226**	**515**

Notes:
1. Trip generation based on ITE Trip Generation Manual 10th Edition
2. ITE 10th edition does not provide a directional distribution for the AM peak hour of the generator for LUC #931. AM Peak hour of the Generator directional distribution was applied.

June 11, 2007

MEMORANDUM

TO: Dolores Kinney, Reviewer
Development Review Division

VIA: Shahriar Etemadi, Supervisor
Transportation Planning

FROM: Ed Axler, Planner/Coordinator EA
Transportation Planning

SUBJECT: Preliminary Plan No. 120070380
White Flint View, Parcel "A"
White Flint Policy Area

This memorandum is Transportation Planning staff's Adequate Public Facilities (APF) review of the subject preliminary plan and future site plan to redevelop this "Noland Bath & Idea Center" site into a mixed-use development in the C-2 zone.

RECOMMENDATIONS

We recommend the following conditions as part of the APF test for transportation requirements related to approval of the subject preliminary plan:

1. The development is limited to a maximum of 183 high-rise apartments and 29,500 square feet of general retail use including sit-down restaurant use.

2. The applicant must enter into a Traffic Mitigation Agreement (TMAg) with the Planning Board and the Montgomery County Department of Public Works and Transportation (DPWT) to participate in the North Bethesda Transportation Management Organization (TMO). The TMAg must be signed and executed by all parties prior to certified site plan.

3. The applicant must provide the missing handicapped ramps at the driveways along the sidewalk on the east side of Citadel Avenue.

4. The applicant must provide 14 bike lockers in the underground garage (with a minimum of 2 lockers for employees) and 3 inverted-U bike racks (i.e., storing 2 bicycles apiece) at the main entrance. The ultimate location of the lockers and

racks must be reviewed and approved by Transportation Planning staff prior to certified site plan.

DISCUSSION

Site Location and Vehicular Access Points

The proposed mixed-use development is located in the northeastern quadrant of Nicholson Lane and Citadel Avenue/Huff Court. Two vehicular access points into the underground garage are proposed from Citadel Avenue. The loading dock access point is from Nicholson Lane.

On-Going Transportation Project

DPWT Capital Improvements Program (CIP) Project No. 509337, Citadel Avenue Extended, is funded for construction of the missing roadway segment as a two-lane business district street from its current terminus south of Marinelli Road for 600 feet to Nicholson Lane. This project is anticipated to start construction in August 2007 and be completed in a year.

Available Transit Service

Ride-On route 38 and Metrobus routes C-8 and J-5 operate along this segment of Nicholson Lane between Rockville Pike (MD 355) and Boiling Brook Road. The White Flint Metrorail Station is located approximately 1,000 feet to the north of the subject site.

Pedestrian Facilities

Sidewalks exist along Nicholson Lane. Sidewalks will be built along the unimproved segment of Citadel Avenue as part of DPWT CIP project. Lead-in sidewalks and handicapped ramps will be provided as shown on the plan and include the missing handicapped ramps along the east side of Citadel Avenue as described in Recommendation No. 3.

Master-Planned Roadways and Bikeway

In accordance with the *North Bethesda/Garrett Park Master Plan*, the nearby master-planned roadway designation and bikeway facility are as follows:

1. Nicholson Lane is designated as an arterial, A-69, with a recommended 80-foot minimum right-of-way. The *Countywide Bikeways Functional Master Plan* designates this road segment as a shared signed roadway, SR-37.

2. Citadel Avenue is designated as a business district street, B-4, with a recommended 60-foot minimum right-of-way.

Transportation Demand Management

This mixed-use development of multi-family housing and retail uses is located within the boundary of the North Bethesda TMD. Therefore, the applicant is required to enter into a Traffic Mitigation Agreement to participate in the TMD to assist the County in achieving and maintaining the 39% non-auto-driver mode share for employees and 30% non-driver mode-share goal for multi-family residents. The applicant has submitted a draft Traffic Mitigation Agreement and it is currently under review by DPWT and Planning Board staff.

Local Area Transportation Review (LATR)

The proposed mixed-use development would generate the following peak-hour trips within the weekday morning peak period (6:30 to 9:30 a.m.) and the weekday evening peak period (4:00 to 7:00 p.m.):

Type of Land Use	Number of Units or Square Feet	Weekday Peak Hour	
		Morning	Evening
Proposed High-Rise Apartments	183	+ 65	+ 75
Proposed General Retail Uses including Sit-Down Restaurant Use	29,500 sq. ft.	+ 56	+222
Proposed Total Peak-Hour Trips		+121	+297
Existing Noland Bath & Idea Center Trips		- 36	- 25
Net Increase in Peak-Hour Trips		+ 85	+272

A traffic study was required to satisfy the LATR, because the proposed mixed-use development generates 30 or more total peak-hour trips during the weekday morning and evening peak hours. The following table shows the Critical Lane Volume (CLV) values at the analyzed intersections:

Traffic Condition	Weekday Peak Hour	Traffic Condition		
		Existing	Background	Total
Nicholson Lane and Rockville Pike	Morning	1,150	1,254	1,262
	Evening	1,478	1,636	1,660
Nicholson Lane and Citadel avenue/Huff Court	Morning	618	645	668
	Evening	854	890	917
Nicholson Lane and Nebel Street/ Nicholson Court	Morning	716	750	754
	Evening	1,148	1,179	1,193

The CLVs at all intersections are less than the 1,800 congestion standard for the White Flint (Metrorail Station) Policy Area.

EA: tc

cc: Barbara Kearney
Chuck Kines
Bill Kominers
Ed Papazian
Fiona Thomas

mmo to Kinney re White Flint View 120070380.doc

MD 355 (Rockville Pike)/Tuckerman Lane - South & Grosvenor Lane
AM Peak Hour

Traffic Component			Southbound Rockville Pike			Westbound Tuckerman Lane - South			Northbound Rockville Pike			Eastbound Tuckerman Lane - South		
			Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Pipeline Developments	IN	OUT												
VOB (Apartments)	35	112		23						7				
VOB (Office)	20	4		1						6				
VOB (Retail)	56	34		10						16				
VOB (High Turnover Restaurant)	64	52		14						18				
VOB (Quality Restaurant)	3	1		0						1				
White Flint View (Apartments)	8	57		12						2				
White Flint View (Retail)	12	8		2						3				
The Goddard School	59	53		15						17				
5500 Edson Lane (Office)	10	2		1						3				
5500 Edson Lane (School)	10	8		2						2				
5501 Edson Lane (Tousist House)	1	1		0						0				
Subtotal	**276.4**	**328.6**		**80**						**74**				

MD 355 (Rockville Pike)/Tuckerman Lane - South & Grosvenor Lane
PM Peak Hour

Traffic Component			Southbound Rockville Pike			Westbound Tuckerman Lane - South			Northbound Rockville Pike			Eastbound Tuckerman Lane - South		
			Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Pipeline Developments	IN	OUT												
VOB (Apartments)	107	68		14						22				
VOB (Office)	2	12		3						1				
VOB (Retail)	84	91		25						24				
VOB (High Turnover Restaurant)	70	43		12						20				
VOB (Quality Restaurant)	26	13		4						7				
White Flint View (Apartments)	46	29		6						10				
White Flint View (Retail)	95	102		29						20				
The Goddard School	50	57		16						11				
5500 Edson Lane (Office)	3	16		4						1				
5500 Edson Lane (School)	2	3		1						0				
5501 Edson Lane (Tousist House)	1	1		0						0				
Subtotal	**484**	**433**		**115**						**114**				

Appendix E – Synchro/SimTraffic/CLV Reports

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	255	8	1147	182	5	2027
Future Volume (vph)	255	8	1147	182	5	2027
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	6.0	4.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Frpb, ped/bikes	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
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	4988	1553	1735	4988
Flt Permitted	0.95	1.00	1.00	1.00	0.20	1.00
Satd. Flow (perm)	3433	1583	4988	1553	357	4988
Peak-hour factor, PHF	0.95	0.95	0.92	0.92	0.96	0.96
Adj. Flow (vph)	268	8	1247	198	5	2111
RTOR Reduction (vph)	0	7	0	24	0	0
Lane Group Flow (vph)	268	1	1247	174	5	2111
Confl. Peds. (#/hr)	7	7			8	
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot	NA	Perm	pm+pt	NA
Protected Phases	4	4	2		1	6
Permitted Phases				2	6	
Actuated Green, G (s)	17.1	17.1	116.7	116.7	121.9	121.9
Effective Green, g (s)	17.1	17.1	116.7	116.7	121.9	121.9
Actuated g/C Ratio	0.11	0.11	0.78	0.78	0.81	0.81
Clearance Time (s)	5.0	5.0	6.0	6.0	4.0	6.0
Vehicle Extension (s)	3.0	3.0	0.2	0.2	3.0	0.2
Lane Grp Cap (vph)	391	180	3880	1208	301	4053
v/s Ratio Prot	c0.08	0.00	0.25		0.00	c0.42
v/s Ratio Perm				0.11	0.01	
v/c Ratio	0.69	0.01	0.32	0.14	0.02	0.52
Uniform Delay, d1	63.9	58.9	4.9	4.2	2.9	4.6
Progression Factor	1.00	1.00	0.65	0.62	1.00	1.00
Incremental Delay, d2	4.9	0.0	0.2	0.2	0.0	0.5
Delay (s)	68.8	58.9	3.4	2.8	3.0	5.0
Level of Service	E	E	A	A	A	A
Approach Delay (s)	68.5		3.3			5.0
Approach LOS	E		A			A

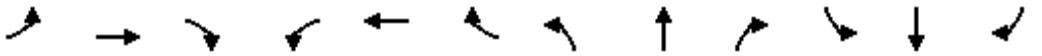
Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	139	12	1839	431	15	1377
Future Volume (vph)	139	12	1839	431	15	1377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	6.0	4.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Frpb, ped/bikes	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
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	4988	1553	1735	4988
Flt Permitted	0.95	1.00	1.00	1.00	0.09	1.00
Satd. Flow (perm)	3433	1583	4988	1553	168	4988
Peak-hour factor, PHF	0.85	0.85	0.97	0.97	0.94	0.94
Adj. Flow (vph)	164	14	1896	444	16	1465
RTOR Reduction (vph)	0	13	0	34	0	0
Lane Group Flow (vph)	164	1	1896	410	16	1465
Confl. Peds. (#/hr)	10	10			8	
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot	NA	Perm	pm+pt	NA
Protected Phases	4	4	2		1	6
Permitted Phases				2	6	
Actuated Green, G (s)	12.5	12.5	120.1	120.1	126.5	126.5
Effective Green, g (s)	12.5	12.5	120.1	120.1	126.5	126.5
Actuated g/C Ratio	0.08	0.08	0.80	0.80	0.84	0.84
Clearance Time (s)	5.0	5.0	6.0	6.0	4.0	6.0
Vehicle Extension (s)	3.0	3.0	0.2	0.2	3.0	0.2
Lane Grp Cap (vph)	286	131	3993	1243	166	4206
v/s Ratio Prot	c0.05	0.00	c0.38		0.00	c0.29
v/s Ratio Perm				0.26	0.08	
v/c Ratio	0.57	0.01	0.47	0.33	0.10	0.35
Uniform Delay, d1	66.2	63.1	4.8	4.0	2.9	2.6
Progression Factor	1.00	1.00	0.11	0.00	1.00	1.00
Incremental Delay, d2	2.8	0.0	0.2	0.4	0.3	0.2
Delay (s)	69.0	63.1	0.8	0.4	3.1	2.8
Level of Service	E	E	A	A	A	A
Approach Delay (s)	68.5		0.7			2.8
Approach LOS	E		A			A

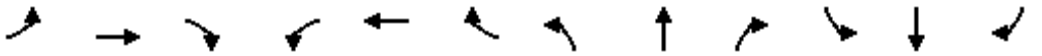
Intersection Summary			
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	0	208	512	179	167	0	985	0	0	2197	96
Future Volume (vph)	139	0	208	512	179	167	0	985	0	0	2197	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	0.97		1.00	0.97	1.00			0.91			0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.93			1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)	3433		1583	3433	1728			4988			4988	1498
Flt Permitted	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (perm)	3433		1583	3433	1728			4988			4988	1498
Peak-hour factor, PHF	0.86	0.86	0.86	0.96	0.96	0.96	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	162	0	242	533	186	174	0	1071	0	0	2289	100
RTOR Reduction (vph)	0	0	100	0	24	0	0	0	0	0	0	36
Lane Group Flow (vph)	162	0	142	533	336	0	0	1071	0	0	2289	64
Confl. Peds. (#/hr)										3		3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Perm	Prot	NA			NA			NA	Perm
Protected Phases	3			8	4			2			6	
Permitted Phases			3									6
Actuated Green, G (s)	18.4		18.4	60.6	36.2			77.4			77.4	77.4
Effective Green, g (s)	18.4		18.4	60.6	36.2			77.4			77.4	77.4
Actuated g/C Ratio	0.12		0.12	0.40	0.24			0.52			0.52	0.52
Clearance Time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0		3.0	6.0	6.0			0.2			0.2	0.2
Lane Grp Cap (vph)	421		194	1386	417			2573			2573	772
v/s Ratio Prot	0.05			0.16	c0.19			0.21			c0.46	
v/s Ratio Perm			c0.09									0.04
v/c Ratio	0.38		0.73	0.38	0.81			0.42			0.89	0.08
Uniform Delay, d1	60.6		63.4	31.5	53.6			22.4			32.5	18.4
Progression Factor	1.00		1.00	1.00	1.00			1.00			1.02	0.91
Incremental Delay, d2	0.6		13.3	0.5	12.9			0.5			4.6	0.2
Delay (s)	61.2		76.7	32.0	66.5			22.9			37.7	16.9
Level of Service	E		E	C	E			C			D	B
Approach Delay (s)		70.5			45.9			22.9			36.8	
Approach LOS		E			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.9%	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 (vph)	152	0	127	181	269	171	0	1914	0	0	1346	169
Future Volume (vph)	152	0	127	181	269	171	0	1914	0	0	1346	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	0.97		1.00	0.97	1.00			0.91			0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	0.95
Flpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.94			1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)	3433		1583	3433	1754			4988			4988	1476
Flt Permitted	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (perm)	3433		1583	3433	1754			4988			4988	1476
Peak-hour factor, PHF	0.91	0.91	0.91	0.85	0.85	0.85	0.94	0.94	0.94	0.95	0.95	0.95
Adj. Flow (vph)	167	0	140	213	316	201	0	2036	0	0	1417	178
RTOR Reduction (vph)	0	0	128	0	14	0	0	0	0	0	0	95
Lane Group Flow (vph)	167	0	12	213	503	0	0	2036	0	0	1417	83
Confl. Peds. (#/hr)										6		6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Perm	Prot	NA			NA			NA	Perm
Protected Phases	3			8	4			2			6	
Permitted Phases			3									6
Actuated Green, G (s)	12.6		12.6	68.0	49.4			70.0			70.0	70.0
Effective Green, g (s)	12.6		12.6	68.0	49.4			70.0			70.0	70.0
Actuated g/C Ratio	0.08		0.08	0.45	0.33			0.47			0.47	0.47
Clearance Time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0		3.0	6.0	6.0			0.2			0.2	0.2
Lane Grp Cap (vph)	288		132	1556	577			2327			2327	688
v/s Ratio Prot	c0.05			0.06	c0.29			c0.41			0.28	
v/s Ratio Perm			0.01									0.06
v/c Ratio	0.58		0.09	0.14	0.87			0.87			0.61	0.12
Uniform Delay, d1	66.2		63.4	23.9	47.3			36.1			29.8	22.6
Progression Factor	1.00		1.00	1.00	1.00			1.00			1.00	1.13
Incremental Delay, d2	2.8		0.3	0.1	15.2			5.0			1.1	0.3
Delay (s)	69.0		63.7	24.0	62.5			41.0			31.0	25.9
Level of Service	E		E	C	E			D			C	C
Approach Delay (s)		66.6			51.3			41.0			30.5	
Approach LOS		E			D			D			C	

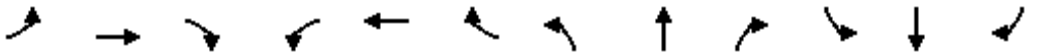
Intersection Summary			
HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	479	20	1575	267	7	2304
Future Volume (vph)	479	20	1575	267	7	2304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	6.0	4.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Frpb, ped/bikes	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
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	4988	1553	1735	4988
Flt Permitted	0.95	1.00	1.00	1.00	0.10	1.00
Satd. Flow (perm)	3433	1583	4988	1553	190	4988
Peak-hour factor, PHF	0.95	0.95	0.92	0.92	0.96	0.96
Adj. Flow (vph)	504	21	1712	290	7	2400
RTOR Reduction (vph)	0	15	0	38	0	0
Lane Group Flow (vph)	504	6	1712	252	7	2400
Confl. Peds. (#/hr)	7	7			8	
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot	NA	Perm	pm+pt	NA
Protected Phases	4	4	2		1	6
Permitted Phases				2	6	
Actuated Green, G (s)	27.5	27.5	106.3	106.3	111.5	111.5
Effective Green, g (s)	27.5	27.5	106.3	106.3	111.5	111.5
Actuated g/C Ratio	0.18	0.18	0.71	0.71	0.74	0.74
Clearance Time (s)	5.0	5.0	6.0	6.0	4.0	6.0
Vehicle Extension (s)	3.0	3.0	0.2	0.2	3.0	0.2
Lane Grp Cap (vph)	629	290	3534	1100	153	3707
v/s Ratio Prot	c0.15	0.00	0.34		0.00	c0.48
v/s Ratio Perm				0.16	0.03	
v/c Ratio	0.80	0.02	0.48	0.23	0.05	0.65
Uniform Delay, d1	58.6	50.2	9.7	7.6	6.5	9.5
Progression Factor	1.00	1.00	0.18	0.01	1.00	1.00
Incremental Delay, d2	7.3	0.0	0.4	0.4	0.1	0.9
Delay (s)	65.9	50.3	2.1	0.5	6.7	10.4
Level of Service	E	D	A	A	A	B
Approach Delay (s)	65.3		1.9			10.4
Approach LOS	E		A			B

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



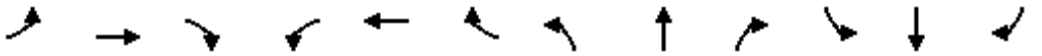
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	0	224	512	184	167	0	1436	0	0	2598	196
Future Volume (vph)	200	0	224	512	184	167	0	1436	0	0	2598	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	0.97		1.00	0.97	1.00			0.91			0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.93			1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)	3433		1583	3433	1730			4988			4988	1508
Flt Permitted	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (perm)	3433		1583	3433	1730			4988			4988	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	217	0	243	533	192	174	0	1561	0	0	2706	204
RTOR Reduction (vph)	0	0	70	0	21	0	0	0	0	0	0	69
Lane Group Flow (vph)	217	0	173	533	345	0	0	1561	0	0	2706	135
Confl. Peds. (#/hr)										3		3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Perm	Prot	NA			NA			NA	Perm
Protected Phases	3			8	4			2			6	
Permitted Phases			3									6
Actuated Green, G (s)	20.8		20.8	61.7	34.9			76.3			76.3	76.3
Effective Green, g (s)	20.8		20.8	61.7	34.9			76.3			76.3	76.3
Actuated g/C Ratio	0.14		0.14	0.41	0.23			0.51			0.51	0.51
Clearance Time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0		3.0	6.0	6.0			0.2			0.2	0.2
Lane Grp Cap (vph)	476		219	1412	402			2537			2537	767
v/s Ratio Prot	0.06			0.16	c0.20			0.31			c0.54	
v/s Ratio Perm			c0.11									0.09
v/c Ratio	0.46		0.79	0.38	0.86			0.62			1.07	0.18
Uniform Delay, d1	59.4		62.5	30.8	55.2			26.4			36.9	19.9
Progression Factor	1.00		1.00	1.00	1.00			1.00			0.86	0.48
Incremental Delay, d2	0.7		17.5	0.5	18.4			1.1			37.1	0.4
Delay (s)	60.1		80.0	31.2	73.5			27.5			68.6	10.0
Level of Service	E		E	C	E			C			E	A
Approach Delay (s)		70.6			48.5			27.5			64.5	
Approach LOS		E			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	364	59	2328	632	21	1933
Future Volume (vph)	364	59	2328	632	21	1933
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	6.0	4.0	6.0
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.91
Frpb, ped/bikes	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
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	4988	1553	1736	4988
Flt Permitted	0.95	1.00	1.00	1.00	0.04	1.00
Satd. Flow (perm)	3433	1583	4988	1553	75	4988
Peak-hour factor, PHF	0.92	0.92	0.97	0.97	0.94	0.94
Adj. Flow (vph)	396	64	2400	652	22	2056
RTOR Reduction (vph)	0	54	0	63	0	0
Lane Group Flow (vph)	396	10	2400	589	22	2056
Confl. Peds. (#/hr)	10	10			8	
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot	NA	Perm	pm+pt	NA
Protected Phases	4	4	2		1	6
Permitted Phases				2	6	
Actuated Green, G (s)	22.6	22.6	108.7	108.7	116.4	116.4
Effective Green, g (s)	22.6	22.6	108.7	108.7	116.4	116.4
Actuated g/C Ratio	0.15	0.15	0.72	0.72	0.78	0.78
Clearance Time (s)	5.0	5.0	6.0	6.0	4.0	6.0
Vehicle Extension (s)	3.0	3.0	0.2	0.2	3.0	0.2
Lane Grp Cap (vph)	517	238	3614	1125	99	3870
v/s Ratio Prot	c0.12	0.01	c0.48		0.01	c0.41
v/s Ratio Perm				0.38	0.17	
v/c Ratio	0.77	0.04	0.66	0.52	0.22	0.53
Uniform Delay, d1	61.2	54.4	11.0	9.2	9.6	6.4
Progression Factor	1.00	1.00	0.31	0.24	1.00	1.00
Incremental Delay, d2	6.7	0.1	0.1	0.2	1.1	0.5
Delay (s)	67.8	54.5	3.5	2.4	10.8	6.9
Level of Service	E	D	A	A	B	A
Approach Delay (s)	66.0		3.3			7.0
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
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 (vph)	262	0	138	181	288	171	0	2493	0	0	2038	258
Future Volume (vph)	262	0	138	181	288	171	0	2493	0	0	2038	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	0.97		1.00	0.97	1.00			0.91			0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.94			1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)	3433		1583	3433	1759			4988			4988	1495
Flt Permitted	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (perm)	3433		1583	3433	1759			4988			4988	1495
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95
Adj. Flow (vph)	285	0	150	197	313	186	0	2652	0	0	2145	272
RTOR Reduction (vph)	0	0	135	0	4	0	0	0	0	0	0	128
Lane Group Flow (vph)	285	0	16	197	495	0	0	2652	0	0	2145	144
Confl. Peds. (#/hr)										6		6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Perm	Prot	NA			NA			NA	Perm
Protected Phases	3			8	4			2			6	
Permitted Phases			3									6
Actuated Green, G (s)	15.5		15.5	63.0	41.5			75.0			75.0	75.0
Effective Green, g (s)	15.5		15.5	63.0	41.5			75.0			75.0	75.0
Actuated g/C Ratio	0.10		0.10	0.42	0.28			0.50			0.50	0.50
Clearance Time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0		3.0	6.0	6.0			0.2			0.2	0.2
Lane Grp Cap (vph)	354		163	1441	486			2494			2494	747
v/s Ratio Prot	c0.08			0.06	c0.28			c0.53			0.43	
v/s Ratio Perm			0.01									0.10
v/c Ratio	0.81		0.10	0.14	1.02			1.06			0.86	0.19
Uniform Delay, d1	65.8		60.9	26.8	54.2			37.5			32.9	20.8
Progression Factor	1.00		1.00	1.00	1.00			1.00			1.00	0.75
Incremental Delay, d2	12.5		0.3	0.1	45.4			37.7			3.6	0.5
Delay (s)	78.3		61.2	26.9	99.6			75.2			36.6	16.1
Level of Service	E		E	C	F			E			D	B
Approach Delay (s)		72.4			79.0			75.2			34.3	
Approach LOS		E			E			E			C	

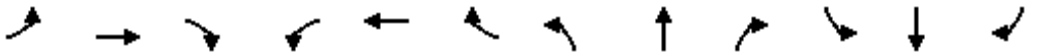
Intersection Summary			
HCM 2000 Control Delay	59.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	479	20	1575	267	7	2304
Future Volume (vph)	479	20	1575	267	7	2304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0		4.0	6.0
Lane Util. Factor	0.97	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1583	4879		1736	4988
Flt Permitted	0.95	1.00	1.00		0.07	1.00
Satd. Flow (perm)	3433	1583	4879		129	4988
Peak-hour factor, PHF	0.95	0.95	0.92	0.92	0.96	0.96
Adj. Flow (vph)	504	21	1712	290	7	2400
RTOR Reduction (vph)	0	15	11	0	0	0
Lane Group Flow (vph)	504	6	1991	0	7	2400
Confl. Peds. (#/hr)	7	7			8	
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot	NA		pm+pt	NA
Protected Phases	4	4	2		1	6
Permitted Phases					6	
Actuated Green, G (s)	27.5	27.5	106.3		111.5	111.5
Effective Green, g (s)	27.5	27.5	106.3		111.5	111.5
Actuated g/C Ratio	0.18	0.18	0.71		0.74	0.74
Clearance Time (s)	5.0	5.0	6.0		4.0	6.0
Vehicle Extension (s)	3.0	3.0	0.2		3.0	0.2
Lane Grp Cap (vph)	629	290	3457		108	3707
v/s Ratio Prot	c0.15	0.00	0.41		0.00	c0.48
v/s Ratio Perm					0.05	
v/c Ratio	0.80	0.02	0.58		0.06	0.65
Uniform Delay, d1	58.6	50.2	10.8		7.7	9.5
Progression Factor	1.00	1.00	0.19		1.00	1.00
Incremental Delay, d2	7.3	0.0	0.6		0.3	0.9
Delay (s)	65.9	50.3	2.6		7.9	10.4
Level of Service	E	D	A		A	B
Approach Delay (s)	65.3		2.6			10.4
Approach LOS	E		A			B

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



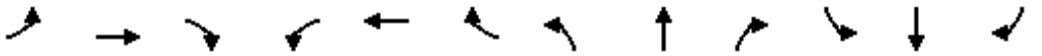
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	0	224	512	184	167	0	1436	0	0	2598	196
Future Volume (vph)	200	0	224	512	184	167	0	1436	0	0	2598	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	0.97		1.00	0.97	1.00			0.91			0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.93			1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)	3433		1583	3433	1730			4988			4988	1508
Flt Permitted	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (perm)	3433		1583	3433	1730			4988			4988	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	217	0	243	533	192	174	0	1561	0	0	2706	204
RTOR Reduction (vph)	0	0	70	0	21	0	0	0	0	0	0	69
Lane Group Flow (vph)	217	0	173	533	345	0	0	1561	0	0	2706	135
Confl. Peds. (#/hr)										3		3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Perm	Prot	NA			NA			NA	Perm
Protected Phases	3			8	4			2			6	
Permitted Phases			3									6
Actuated Green, G (s)	20.8		20.8	61.7	34.9			76.3			76.3	76.3
Effective Green, g (s)	20.8		20.8	61.7	34.9			76.3			76.3	76.3
Actuated g/C Ratio	0.14		0.14	0.41	0.23			0.51			0.51	0.51
Clearance Time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0		3.0	6.0	6.0			0.2			0.2	0.2
Lane Grp Cap (vph)	476		219	1412	402			2537			2537	767
v/s Ratio Prot	0.06			0.16	c0.20			0.31			c0.54	
v/s Ratio Perm			c0.11									0.09
v/c Ratio	0.46		0.79	0.38	0.86			0.62			1.07	0.18
Uniform Delay, d1	59.4		62.5	30.8	55.2			26.4			36.9	19.9
Progression Factor	1.00		1.00	1.00	1.00			1.00			0.86	0.48
Incremental Delay, d2	0.7		17.5	0.5	18.4			1.1			37.1	0.4
Delay (s)	60.1		80.0	31.2	73.5			27.5			68.6	10.0
Level of Service	E		E	C	E			C			E	A
Approach Delay (s)		70.6			48.5			27.5			64.5	
Approach LOS		E			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	364	59	2328	632	21	1933
Future Volume (vph)	364	59	2328	632	21	1933
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0		4.0	6.0
Lane Util. Factor	0.97	1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.97		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1583	4828		1736	4988
Flt Permitted	0.95	1.00	1.00		0.04	1.00
Satd. Flow (perm)	3433	1583	4828		65	4988
Peak-hour factor, PHF	0.92	0.92	0.97	0.97	0.94	0.94
Adj. Flow (vph)	396	64	2400	652	22	2056
RTOR Reduction (vph)	0	54	23	0	0	0
Lane Group Flow (vph)	396	10	3029	0	22	2056
Confl. Peds. (#/hr)	10	10			8	
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Turn Type	Prot	Prot	NA		pm+pt	NA
Protected Phases	4	4	2		1	6
Permitted Phases					6	
Actuated Green, G (s)	22.6	22.6	108.7		116.4	116.4
Effective Green, g (s)	22.6	22.6	108.7		116.4	116.4
Actuated g/C Ratio	0.15	0.15	0.72		0.78	0.78
Clearance Time (s)	5.0	5.0	6.0		4.0	6.0
Vehicle Extension (s)	3.0	3.0	0.2		3.0	0.2
Lane Grp Cap (vph)	517	238	3498		91	3870
v/s Ratio Prot	c0.12	0.01	c0.63		0.01	c0.41
v/s Ratio Perm					0.18	
v/c Ratio	0.77	0.04	0.87		0.24	0.53
Uniform Delay, d1	61.2	54.4	15.3		20.6	6.4
Progression Factor	1.00	1.00	0.56		1.00	1.00
Incremental Delay, d2	6.7	0.1	0.3		1.4	0.5
Delay (s)	67.8	54.5	8.8		22.0	6.9
Level of Service	E	D	A		C	A
Approach Delay (s)	66.0		8.8			7.1
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	82.1%	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 (vph)	262	0	138	181	288	171	0	2493	0	0	2038	258
Future Volume (vph)	262	0	138	181	288	171	0	2493	0	0	2038	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Lane Util. Factor	0.97		1.00	0.97	1.00			0.91			0.91	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	0.96
Flpb, ped/bikes	1.00		1.00	1.00	1.00			1.00			1.00	1.00
Frt	1.00		0.85	1.00	0.94			1.00			1.00	0.85
Flt Protected	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)	3433		1583	3433	1759			4988			4988	1495
Flt Permitted	0.95		1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (perm)	3433		1583	3433	1759			4988			4988	1495
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95
Adj. Flow (vph)	285	0	150	197	313	186	0	2652	0	0	2145	272
RTOR Reduction (vph)	0	0	135	0	4	0	0	0	0	0	0	128
Lane Group Flow (vph)	285	0	16	197	495	0	0	2652	0	0	2145	144
Confl. Peds. (#/hr)										6		6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	4%	4%	4%	4%	4%
Turn Type	Prot		Perm	Prot	NA			NA			NA	Perm
Protected Phases	3			8	4			2			6	
Permitted Phases			3									6
Actuated Green, G (s)	15.5		15.5	63.0	41.5			75.0			75.0	75.0
Effective Green, g (s)	15.5		15.5	63.0	41.5			75.0			75.0	75.0
Actuated g/C Ratio	0.10		0.10	0.42	0.28			0.50			0.50	0.50
Clearance Time (s)	6.0		6.0	6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0		3.0	6.0	6.0			0.2			0.2	0.2
Lane Grp Cap (vph)	354		163	1441	486			2494			2494	747
v/s Ratio Prot	c0.08			0.06	c0.28			c0.53			0.43	
v/s Ratio Perm			0.01									0.10
v/c Ratio	0.81		0.10	0.14	1.02			1.06			0.86	0.19
Uniform Delay, d1	65.8		60.9	26.8	54.2			37.5			32.9	20.8
Progression Factor	1.00		1.00	1.00	1.00			1.00			1.00	0.75
Incremental Delay, d2	12.5		0.3	0.1	45.4			37.7			3.6	0.5
Delay (s)	78.3		61.2	26.9	99.6			75.2			36.6	16.1
Level of Service	E		E	C	F			E			D	B
Approach Delay (s)		72.4			79.0			75.2			34.3	
Approach LOS		E			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	59.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	4496	4475	4592	4614	4427	4420	4551
Vehs Exited	4495	4471	4557	4580	4430	4435	4545
Starting Vehs	75	74	93	82	80	100	82
Ending Vehs	76	78	128	116	77	85	88
Travel Distance (mi)	1143	1144	1169	1170	1136	1125	1161
Travel Time (hr)	82.6	87.5	110.0	112.1	79.3	80.4	92.5
Total Delay (hr)	51.0	55.6	77.3	79.8	48.0	49.4	60.3
Total Stops	3158	3362	3723	3595	3069	3123	3429
Fuel Used (gal)	62.2	64.1	70.2	70.8	61.7	61.8	66.2

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	4577	4474	4603	4523
Vehs Exited	4542	4459	4572	4509
Starting Vehs	63	67	52	77
Ending Vehs	98	82	83	89
Travel Distance (mi)	1153	1141	1173	1151
Travel Time (hr)	91.9	86.2	90.3	91.3
Total Delay (hr)	59.8	54.6	57.8	59.3
Total Stops	3385	3419	3482	3373
Fuel Used (gal)	65.0	63.3	65.7	65.1

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1144	1117	1173	1167	1133	1078	1143
Vehs Exited	1133	1119	1173	1148	1137	1107	1153
Starting Vehs	75	74	93	82	80	100	82
Ending Vehs	86	72	93	101	76	71	72
Travel Distance (mi)	287	288	297	297	290	280	295
Travel Time (hr)	21.0	23.9	24.8	27.7	20.2	22.4	21.1
Total Delay (hr)	13.1	15.9	16.4	19.5	12.3	14.7	13.0
Total Stops	803	943	923	1002	795	786	868
Fuel Used (gal)	15.6	16.5	17.2	17.8	15.7	15.7	16.2

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1133	1174	1123	1137
Vehs Exited	1121	1146	1110	1135
Starting Vehs	63	67	52	77
Ending Vehs	75	95	65	79
Travel Distance (mi)	284	296	286	290
Travel Time (hr)	19.7	23.4	21.5	22.6
Total Delay (hr)	11.8	15.2	13.6	14.5
Total Stops	750	926	908	870
Fuel Used (gal)	15.3	16.8	15.8	16.3

Interval #2 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1151	1089	1127	1116	1034	1150	1150
Vehs Exited	1159	1084	1128	1135	1037	1149	1142
Starting Vehs	86	72	93	101	76	71	72
Ending Vehs	78	77	92	82	73	72	80
Travel Distance (mi)	295	276	285	288	265	291	289
Travel Time (hr)	21.8	21.2	24.4	24.6	17.7	19.9	21.7
Total Delay (hr)	13.6	13.4	16.4	16.7	10.4	11.9	13.8
Total Stops	786	797	879	805	677	773	777
Fuel Used (gal)	16.2	15.4	16.4	16.6	14.2	16.0	16.4

Interval #2 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1136	1084	1142	1118
Vehs Exited	1135	1110	1122	1120
Starting Vehs	75	95	65	79
Ending Vehs	76	69	85	79
Travel Distance (mi)	284	280	291	284
Travel Time (hr)	23.8	22.0	21.8	21.9
Total Delay (hr)	15.9	14.2	13.7	14.0
Total Stops	846	837	808	797
Fuel Used (gal)	16.2	15.8	16.3	16.0

Interval #3 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1081	1140	1111	1168	1138	1051	1094
Vehs Exited	1093	1140	1122	1122	1140	1060	1091
Starting Vehs	78	77	92	82	73	72	80
Ending Vehs	66	77	81	128	71	63	83
Travel Distance (mi)	278	291	289	289	293	267	279
Travel Time (hr)	20.6	19.8	26.6	25.0	20.9	17.3	24.0
Total Delay (hr)	12.8	11.9	18.5	17.1	12.8	9.9	16.3
Total Stops	757	761	878	818	763	702	801
Fuel Used (gal)	15.2	15.8	17.2	16.9	16.0	14.2	16.2

Interval #3 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1148	1090	1162	1120
Vehs Exited	1126	1069	1158	1112
Starting Vehs	76	69	85	79
Ending Vehs	98	90	89	85
Travel Distance (mi)	289	276	296	285
Travel Time (hr)	24.6	19.6	22.7	22.1
Total Delay (hr)	16.4	12.0	14.5	14.2
Total Stops	905	827	816	803
Fuel Used (gal)	16.7	14.9	16.4	16.0

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1120	1129	1181	1163	1122	1141	1164
Vehs Exited	1110	1128	1134	1175	1116	1119	1159
Starting Vehs	66	77	81	128	71	63	83
Ending Vehs	76	78	128	116	77	85	88
Travel Distance (mi)	283	289	297	297	288	287	297
Travel Time (hr)	19.3	22.6	34.2	34.8	20.5	20.9	25.7
Total Delay (hr)	11.5	14.5	26.0	26.6	12.5	13.0	17.2
Total Stops	812	861	1043	970	834	862	983
Fuel Used (gal)	15.2	16.4	19.4	19.5	15.7	16.0	17.4

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1160	1126	1176	1147
Vehs Exited	1160	1134	1182	1141
Starting Vehs	98	90	89	85
Ending Vehs	98	82	83	89
Travel Distance (mi)	296	288	300	292
Travel Time (hr)	23.8	21.2	24.4	24.7
Total Delay (hr)	15.6	13.2	16.0	16.6
Total Stops	884	829	950	902
Fuel Used (gal)	16.8	15.9	17.2	16.9

Intersection: 41: MD 355 & Tuckerman Ln.

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	T	T	T	R	L	T	T	T
Maximum Queue (ft)	219	251	98	117	126	113	72	52	324	292	231
Average Queue (ft)	106	164	10	54	59	29	4	4	225	149	86
95th Queue (ft)	214	237	53	101	116	85	37	33	364	282	192
Link Distance (ft)		606		598	598	598			299	299	299
Upstream Blk Time (%)									3	0	0
Queuing Penalty (veh)									0	0	0
Storage Bay Dist (ft)	550		151				99	170			
Storage Blk Time (%)		16				0	0		10		
Queuing Penalty (veh)		21				1	0		0		

Intersection: 42: Grosvenor Ln. & MD 355

Movement	EB	EB	EB	B8	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	R	T	L	L	TR	T	T	T	T	T
Maximum Queue (ft)	134	254	344	42	190	482	504	311	282	212	582	573
Average Queue (ft)	71	92	168	17	155	275	301	206	138	79	309	303
95th Queue (ft)	123	319	377	132	237	450	531	314	254	167	565	542
Link Distance (ft)	434	434		332		481	481	291	291	291	598	598
Upstream Blk Time (%)		7		2		2	7	2	0	0	0	0
Queuing Penalty (veh)		0		0		0	0	0	0	0	2	1
Storage Bay Dist (ft)			380		115							
Storage Blk Time (%)		0	9		10	45						
Queuing Penalty (veh)		0	6		26	115						

Intersection: 42: Grosvenor Ln. & MD 355

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	515	396
Average Queue (ft)	257	43
95th Queue (ft)	473	195
Link Distance (ft)	598	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		360
Storage Blk Time (%)	3	
Queuing Penalty (veh)	3	

Network Summary

Network wide Queuing Penalty: 176

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	4300	4202	4293	4369	4402	4218	4311
Vehs Exited	4312	4196	4301	4347	4396	4211	4321
Starting Vehs	70	69	70	66	64	73	67
Ending Vehs	58	75	62	88	70	80	57
Travel Distance (mi)	1293	1260	1289	1297	1312	1262	1290
Travel Time (hr)	183.9	173.6	136.0	94.3	112.6	113.7	125.3
Total Delay (hr)	150.0	140.1	102.1	60.2	77.7	80.4	91.1
Total Stops	2418	2371	2546	2730	2948	2605	2652
Fuel Used (gal)	87.7	84.6	77.9	69.2	74.3	71.8	75.6

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	4402	4313	4321	4312
Vehs Exited	4407	4311	4304	4312
Starting Vehs	69	69	61	65
Ending Vehs	64	71	78	71
Travel Distance (mi)	1315	1295	1293	1291
Travel Time (hr)	113.1	126.7	149.2	132.8
Total Delay (hr)	78.1	92.7	115.3	98.8
Total Stops	2825	2578	2581	2626
Fuel Used (gal)	73.7	76.0	80.6	77.1

Interval #0 Information Seeding

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

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1063	1057	1067	1065	1078	1009	1102
Vehs Exited	1074	1059	1057	1074	1058	1007	1097
Starting Vehs	70	69	70	66	64	73	67
Ending Vehs	59	67	80	57	84	75	72
Travel Distance (mi)	320	322	320	317	320	300	331
Travel Time (hr)	30.3	25.3	26.1	25.4	31.4	20.0	21.9
Total Delay (hr)	21.9	16.7	17.7	17.0	22.9	12.1	13.3
Total Stops	653	525	625	670	659	602	598
Fuel Used (gal)	18.4	16.9	17.7	17.4	18.8	15.3	16.8

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1127	1086	1073	1073
Vehs Exited	1128	1080	1055	1069
Starting Vehs	69	69	61	65
Ending Vehs	68	75	79	70
Travel Distance (mi)	340	325	316	321
Travel Time (hr)	24.8	22.2	23.0	25.0
Total Delay (hr)	15.8	13.8	14.8	16.6
Total Stops	738	695	631	641
Fuel Used (gal)	18.3	17.1	16.6	17.3

Interval #2 Information Recording

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1048	1055	1090	1120	1061	1101	1037
Vehs Exited	1055	1063	1106	1096	1088	1105	1050
Starting Vehs	59	67	80	57	84	75	72
Ending Vehs	52	59	64	81	57	71	59
Travel Distance (mi)	316	318	329	330	321	331	312
Travel Time (hr)	36.6	41.2	31.9	24.0	27.9	27.2	31.3
Total Delay (hr)	28.3	32.8	23.3	15.3	19.4	18.5	23.1
Total Stops	582	658	637	714	733	698	627
Fuel Used (gal)	19.5	20.8	19.3	17.7	18.4	18.6	18.5

Interval #2 Information Recording

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1067	1055	1088	1071
Vehs Exited	1066	1060	1105	1079
Starting Vehs	68	75	79	70
Ending Vehs	69	70	62	64
Travel Distance (mi)	318	320	331	322
Travel Time (hr)	31.3	29.7	32.3	31.4
Total Delay (hr)	22.9	21.2	23.6	22.8
Total Stops	636	577	678	655
Fuel Used (gal)	18.5	18.2	19.4	18.9

Interval #3 Information Recording

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1068	1049	1057	1094	1131	1073	1073
Vehs Exited	1061	1037	1040	1109	1103	1065	1072
Starting Vehs	52	59	64	81	57	71	59
Ending Vehs	59	71	81	66	85	79	60
Travel Distance (mi)	322	309	311	331	334	318	321
Travel Time (hr)	51.9	52.9	34.9	22.8	29.1	29.1	35.5
Total Delay (hr)	43.5	44.7	26.6	14.1	20.2	20.7	26.9
Total Stops	542	641	636	677	751	683	696
Fuel Used (gal)	23.1	23.3	19.2	17.4	19.0	18.3	19.7

Interval #3 Information Recording

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1124	1086	1099	1085
Vehs Exited	1124	1085	1083	1078
Starting Vehs	69	70	62	64
Ending Vehs	69	71	78	70
Travel Distance (mi)	331	326	329	323
Travel Time (hr)	29.5	38.9	45.7	37.0
Total Delay (hr)	20.6	30.4	37.1	28.5
Total Stops	751	685	678	671
Fuel Used (gal)	19.0	21.0	22.2	20.2

Interval #4 Information Recording

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1121	1041	1079	1090	1132	1035	1099
Vehs Exited	1122	1037	1098	1068	1147	1034	1102
Starting Vehs	59	71	81	66	85	79	60
Ending Vehs	58	75	62	88	70	80	57
Travel Distance (mi)	336	311	329	319	338	315	325
Travel Time (hr)	65.1	54.2	43.1	22.2	24.2	37.4	36.5
Total Delay (hr)	56.3	45.9	34.4	13.8	15.2	29.1	27.8
Total Stops	641	547	648	669	805	622	731
Fuel Used (gal)	26.8	23.7	21.6	16.7	18.0	19.6	20.6

Interval #4 Information Recording

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1084	1086	1061	1082
Vehs Exited	1089	1086	1061	1084
Starting Vehs	69	71	78	70
Ending Vehs	64	71	78	71
Travel Distance (mi)	325	325	317	324
Travel Time (hr)	27.5	35.9	48.2	39.4
Total Delay (hr)	18.9	27.4	40.0	30.9
Total Stops	700	621	594	656
Fuel Used (gal)	17.9	19.7	22.4	20.7

Intersection: 41: MD 355 & Tuckerman Ln.

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	T	T	T	R	L	T	T	T
Maximum Queue (ft)	167	199	53	150	153	126	114	73	258	207	134
Average Queue (ft)	32	106	12	27	29	28	10	13	120	73	44
95th Queue (ft)	112	170	39	99	104	83	59	48	228	168	108
Link Distance (ft)		693		592	592	592			413	413	413
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	550		151				99	170			
Storage Blk Time (%)		3				0	0		2		
Queuing Penalty (veh)		2				1	1		0		

Intersection: 42: MD 355 & Grosvenor Ln.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	L	TR	T	T	T	T	T	T
Maximum Queue (ft)	127	115	68	171	367	393	470	448	447	349	314	264
Average Queue (ft)	71	46	8	40	168	360	355	284	238	173	159	125
95th Queue (ft)	117	100	38	140	375	391	519	449	415	292	277	239
Link Distance (ft)	422	422			346	346	435	435	435	592	592	592
Upstream Blk Time (%)					7	76	5	1	1			
Queuing Penalty (veh)					0	0	0	0	0			
Storage Bay Dist (ft)			380	115								
Storage Blk Time (%)				1	17							
Queuing Penalty (veh)				1	16							

Intersection: 42: MD 355 & Grosvenor Ln.

Movement	SB
Directions Served	R
Maximum Queue (ft)	120
Average Queue (ft)	40
95th Queue (ft)	89
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	360
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 21

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	5453	5483	5553	5444	5381	5449	5409
Vehs Exited	5464	5465	5524	5414	5368	5417	5413
Starting Vehs	114	115	95	90	108	90	143
Ending Vehs	103	133	124	120	121	122	139
Travel Distance (mi)	1418	1419	1438	1416	1389	1416	1405
Travel Time (hr)	210.3	224.2	218.4	200.1	273.0	156.5	181.5
Total Delay (hr)	171.0	185.1	178.4	160.9	234.9	117.3	142.6
Total Stops	4560	4797	4879	4670	4339	4494	4760
Fuel Used (gal)	103.3	106.1	105.4	100.6	116.0	90.1	95.9

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	5414	5532	5515	5463
Vehs Exited	5363	5514	5490	5443
Starting Vehs	95	83	100	104
Ending Vehs	146	101	125	123
Travel Distance (mi)	1407	1440	1430	1418
Travel Time (hr)	179.3	206.2	172.0	202.2
Total Delay (hr)	140.4	165.9	132.4	162.9
Total Stops	4312	4703	4646	4617
Fuel Used (gal)	95.5	103.4	94.6	101.1

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1386	1453	1474	1384	1310	1365	1336
Vehs Exited	1380	1408	1394	1363	1278	1336	1343
Starting Vehs	114	115	95	90	108	90	143
Ending Vehs	120	160	175	111	140	119	136
Travel Distance (mi)	358	371	372	355	334	352	345
Travel Time (hr)	35.6	34.9	56.7	36.4	50.2	30.8	34.9
Total Delay (hr)	25.7	24.7	46.3	26.6	41.0	21.0	25.4
Total Stops	1052	1260	1429	1137	1023	1099	1199
Fuel Used (gal)	22.0	22.3	27.5	22.1	24.4	20.6	21.5

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1393	1476	1353	1393
Vehs Exited	1375	1371	1333	1358
Starting Vehs	95	83	100	104
Ending Vehs	113	188	120	138
Travel Distance (mi)	362	364	349	356
Travel Time (hr)	29.3	49.9	30.0	38.9
Total Delay (hr)	19.3	39.8	20.4	29.0
Total Stops	1048	1386	1005	1165
Fuel Used (gal)	20.7	25.7	20.2	22.7

Interval #2 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1413	1304	1370	1312	1326	1424	1362
Vehs Exited	1363	1348	1411	1305	1344	1385	1359
Starting Vehs	120	160	175	111	140	119	136
Ending Vehs	170	116	134	118	122	158	139
Travel Distance (mi)	361	342	362	343	346	365	353
Travel Time (hr)	50.4	50.1	51.1	46.1	59.1	38.2	39.3
Total Delay (hr)	40.3	40.6	41.0	36.6	49.6	28.0	29.4
Total Stops	1318	1261	1348	1168	1078	1379	996
Fuel Used (gal)	25.6	24.6	25.8	23.6	26.9	22.7	22.7

Interval #2 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1325	1346	1393	1356
Vehs Exited	1309	1395	1393	1362
Starting Vehs	113	188	120	138
Ending Vehs	129	139	120	133
Travel Distance (mi)	340	363	362	354
Travel Time (hr)	42.3	44.4	40.4	46.1
Total Delay (hr)	33.0	34.3	30.3	36.3
Total Stops	1289	1181	1234	1224
Fuel Used (gal)	22.9	24.1	23.3	24.2

Interval #3 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1340	1333	1331	1378	1390	1322	1340
Vehs Exited	1385	1322	1352	1366	1379	1376	1323
Starting Vehs	170	116	134	118	122	158	139
Ending Vehs	125	127	113	130	133	104	156
Travel Distance (mi)	353	342	348	357	357	353	350
Travel Time (hr)	61.5	63.9	47.0	55.1	74.1	39.9	46.5
Total Delay (hr)	51.8	54.4	37.4	45.3	64.3	30.1	36.7
Total Stops	1228	1106	935	1055	1213	1058	1249
Fuel Used (gal)	27.7	27.8	24.0	26.4	30.7	22.6	24.1

Interval #3 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1319	1376	1389	1350
Vehs Exited	1317	1383	1338	1354
Starting Vehs	129	139	120	133
Ending Vehs	131	132	171	133
Travel Distance (mi)	350	359	353	352
Travel Time (hr)	51.3	53.8	44.8	53.8
Total Delay (hr)	41.6	43.8	35.1	44.1
Total Stops	991	1032	1026	1090
Fuel Used (gal)	25.1	26.4	23.9	25.9

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1314	1393	1378	1370	1355	1338	1371
Vehs Exited	1336	1387	1367	1380	1367	1320	1388
Starting Vehs	125	127	113	130	133	104	156
Ending Vehs	103	133	124	120	121	122	139
Travel Distance (mi)	346	364	356	362	352	345	357
Travel Time (hr)	62.8	75.4	63.6	62.5	89.6	47.7	60.9
Total Delay (hr)	53.1	65.3	53.7	52.5	79.9	38.1	51.1
Total Stops	962	1170	1167	1310	1025	958	1316
Fuel Used (gal)	27.9	31.3	28.1	28.6	33.9	24.2	27.7

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1377	1334	1380	1360
Vehs Exited	1362	1365	1426	1369
Starting Vehs	131	132	171	133
Ending Vehs	146	101	125	123
Travel Distance (mi)	355	354	366	356
Travel Time (hr)	56.4	58.1	56.7	63.4
Total Delay (hr)	46.6	48.1	46.6	53.5
Total Stops	984	1104	1381	1138
Fuel Used (gal)	26.8	27.1	27.1	28.3

Intersection: 41: MD 355 & Tuckerman Ln.

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	T	T	T	R	L	T	T	T
Maximum Queue (ft)	360	410	226	247	248	197	119	98	338	333	327
Average Queue (ft)	214	266	51	44	56	68	15	10	297	245	183
95th Queue (ft)	321	371	181	147	153	140	78	70	366	366	331
Link Distance (ft)		606		598	598	598			299	299	299
Upstream Blk Time (%)		0							13	6	4
Queuing Penalty (veh)		0							0	0	0
Storage Bay Dist (ft)	550		151				99	170			
Storage Blk Time (%)	0	43				2	0		22		
Queuing Penalty (veh)	0	112				5	0		2		

Intersection: 42: Grosvenor Ln. & MD 355

Movement	EB	EB	EB	B8	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	R	T	L	L	TR	T	T	T	T	T
Maximum Queue (ft)	434	535	405	384	190	482	492	327	312	302	611	624
Average Queue (ft)	90	456	387	281	164	309	319	265	208	151	401	402
95th Queue (ft)	284	684	485	505	229	503	556	361	331	282	609	628
Link Distance (ft)	434	434		332		481	481	291	291	291	598	598
Upstream Blk Time (%)	0	83		71		7	14	9	2	1	1	1
Queuing Penalty (veh)	0	0		0		0	0	0	0	0	13	12
Storage Bay Dist (ft)			380		115							
Storage Blk Time (%)		3	86		13	46						
Queuing Penalty (veh)		6	86		34	119						

Intersection: 42: Grosvenor Ln. & MD 355

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	626	435
Average Queue (ft)	370	124
95th Queue (ft)	636	396
Link Distance (ft)	598	
Upstream Blk Time (%)	2	
Queuing Penalty (veh)	15	
Storage Bay Dist (ft)		360
Storage Blk Time (%)	11	
Queuing Penalty (veh)	21	

Network Summary

Network wide Queuing Penalty: 424

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	5843	5842	5959	5831	5792	5963	5896
Vehs Exited	5819	5865	5951	5854	5758	5944	5890
Starting Vehs	102	131	111	136	115	116	90
Ending Vehs	126	108	119	113	149	135	96
Travel Distance (mi)	1783	1791	1812	1788	1755	1805	1795
Travel Time (hr)	282.6	258.3	243.4	266.7	169.3	183.7	174.5
Total Delay (hr)	235.1	210.9	195.0	219.1	122.9	135.3	126.8
Total Stops	4607	4371	4817	4449	4458	4873	4477
Fuel Used (gal)	130.4	125.4	123.6	126.6	104.0	109.1	106.1

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	5847	5931	5914	5882
Vehs Exited	5793	5905	5933	5871
Starting Vehs	89	82	103	107
Ending Vehs	143	108	84	117
Travel Distance (mi)	1774	1807	1811	1792
Travel Time (hr)	254.2	206.7	240.9	228.0
Total Delay (hr)	206.9	158.7	192.7	180.4
Total Stops	4608	4559	4752	4597
Fuel Used (gal)	123.8	114.2	122.6	118.6

Interval #0 Information Seeding

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

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1440	1471	1498	1424	1431	1481	1520
Vehs Exited	1418	1491	1488	1479	1449	1474	1473
Starting Vehs	102	131	111	136	115	116	90
Ending Vehs	124	111	121	81	97	123	137
Travel Distance (mi)	438	453	457	447	439	446	450
Travel Time (hr)	54.0	44.4	52.6	52.2	30.5	42.1	40.8
Total Delay (hr)	42.4	32.5	40.3	40.4	18.8	30.1	28.8
Total Stops	1034	1108	1251	1173	1110	1192	1153
Fuel Used (gal)	28.2	26.9	29.2	28.8	23.3	26.0	25.9

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1476	1516	1499	1476
Vehs Exited	1426	1466	1478	1464
Starting Vehs	89	82	103	107
Ending Vehs	139	132	124	117
Travel Distance (mi)	441	454	452	448
Travel Time (hr)	45.2	47.8	49.0	45.9
Total Delay (hr)	33.4	35.7	37.0	33.9
Total Stops	1109	1207	1226	1157
Fuel Used (gal)	26.8	27.6	28.3	27.1

Interval #2 Information Recording

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1512	1494	1495	1443	1478	1524	1467
Vehs Exited	1518	1474	1481	1392	1441	1508	1483
Starting Vehs	124	111	121	81	97	123	137
Ending Vehs	118	131	135	132	134	139	121
Travel Distance (mi)	465	454	455	433	441	459	452
Travel Time (hr)	66.7	56.5	60.5	64.0	41.3	49.0	36.7
Total Delay (hr)	54.4	44.5	48.4	52.4	29.6	36.7	24.7
Total Stops	1303	1234	1236	1049	1215	1277	1134
Fuel Used (gal)	32.6	30.1	31.1	30.2	25.9	28.5	25.2

Interval #2 Information Recording

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1450	1484	1452	1480
Vehs Exited	1453	1514	1459	1473
Starting Vehs	139	132	124	117
Ending Vehs	136	102	117	125
Travel Distance (mi)	444	457	447	451
Travel Time (hr)	61.4	50.5	55.1	54.2
Total Delay (hr)	49.6	38.3	43.2	42.2
Total Stops	1128	1247	1122	1195
Fuel Used (gal)	30.2	28.7	29.1	29.2

Interval #3 Information Recording

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1409	1415	1447	1489	1429	1459	1454
Vehs Exited	1412	1443	1501	1486	1466	1486	1484
Starting Vehs	118	131	135	132	134	139	121
Ending Vehs	115	103	81	135	97	112	91
Travel Distance (mi)	432	440	446	456	445	448	453
Travel Time (hr)	75.0	72.6	60.4	75.4	40.8	46.6	44.2
Total Delay (hr)	63.6	61.0	48.5	63.2	29.1	34.6	32.3
Total Stops	1067	1018	1101	1117	976	1207	1048
Fuel Used (gal)	33.0	32.6	30.4	34.0	25.8	27.2	26.4

Interval #3 Information Recording

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1506	1439	1511	1454
Vehs Exited	1513	1470	1489	1476
Starting Vehs	136	102	117	125
Ending Vehs	129	71	139	108
Travel Distance (mi)	458	445	456	448
Travel Time (hr)	73.1	47.1	63.6	59.9
Total Delay (hr)	60.8	35.4	51.4	48.0
Total Stops	1321	996	1196	1106
Fuel Used (gal)	34.0	27.0	31.3	30.2

Interval #4 Information Recording

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1482	1462	1519	1475	1454	1499	1455
Vehs Exited	1471	1457	1481	1497	1402	1476	1450
Starting Vehs	115	103	81	135	97	112	91
Ending Vehs	126	108	119	113	149	135	96
Travel Distance (mi)	449	445	455	452	431	452	441
Travel Time (hr)	86.8	84.8	69.9	75.1	56.8	46.0	52.8
Total Delay (hr)	74.8	73.0	57.8	63.1	45.4	34.0	41.0
Total Stops	1203	1011	1229	1110	1157	1197	1142
Fuel Used (gal)	36.6	35.8	33.0	33.7	29.0	27.3	28.6

Interval #4 Information Recording

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1415	1492	1452	1471
Vehs Exited	1401	1455	1507	1459
Starting Vehs	129	71	139	108
Ending Vehs	143	108	84	117
Travel Distance (mi)	431	450	456	446
Travel Time (hr)	74.5	61.3	73.2	68.1
Total Delay (hr)	63.0	49.3	61.1	56.2
Total Stops	1050	1109	1208	1141
Fuel Used (gal)	32.8	31.0	33.9	32.2

Intersection: 41: MD 355 & Tuckerman Ln.

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	T	T	T	R	L	T	T	T
Maximum Queue (ft)	303	356	225	376	397	330	124	155	377	285	241
Average Queue (ft)	162	215	85	158	169	153	70	26	221	163	104
95th Queue (ft)	263	302	207	281	307	287	166	87	343	277	202
Link Distance (ft)		693		592	592	592			413	413	413
Upstream Blk Time (%)				0	0				0		
Queuing Penalty (veh)				0	0				0		
Storage Bay Dist (ft)	550		151				99	170			
Storage Blk Time (%)		31	0			11	1		9		
Queuing Penalty (veh)		75	1			71	11		2		

Intersection: 42: MD 355 & Grosvenor Ln.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	L	TR	T	T	T	T	T	T
Maximum Queue (ft)	181	176	92	171	361	386	480	474	488	482	483	425
Average Queue (ft)	112	98	19	30	162	360	414	387	405	263	267	240
95th Queue (ft)	169	162	62	124	371	393	528	523	554	432	435	398
Link Distance (ft)	422	422			346	346	435	435	435	592	592	592
Upstream Blk Time (%)					8	79	14	8	19			
Queuing Penalty (veh)					0	0	0	0	0			
Storage Bay Dist (ft)			380	115								
Storage Blk Time (%)				1	16							0
Queuing Penalty (veh)				1	14							1

Intersection: 42: MD 355 & Grosvenor Ln.

Movement	SB
Directions Served	R
Maximum Queue (ft)	168
Average Queue (ft)	57
95th Queue (ft)	133
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	360
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 177

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	5421	5278	5490	5501	5342	5377	5319
Vehs Exited	5384	5280	5483	5433	5361	5390	5279
Starting Vehs	108	134	152	132	149	152	142
Ending Vehs	145	132	159	200	130	139	182
Travel Distance (mi)	1400	1370	1432	1415	1384	1402	1380
Travel Time (hr)	254.7	241.2	265.1	267.0	280.8	229.4	229.9
Total Delay (hr)	215.9	203.4	225.4	228.1	242.5	190.8	191.7
Total Stops	4823	4252	5468	5624	5164	4559	5545
Fuel Used (gal)	112.0	108.2	115.7	115.9	118.1	106.2	106.4

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	5377	5327	5363	5382
Vehs Exited	5368	5343	5354	5368
Starting Vehs	125	218	123	145
Ending Vehs	134	202	132	155
Travel Distance (mi)	1399	1395	1384	1396
Travel Time (hr)	194.1	296.4	286.4	254.5
Total Delay (hr)	155.2	257.7	248.4	215.9
Total Stops	4667	5886	4931	5093
Fuel Used (gal)	98.3	122.4	118.9	112.2

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1411	1339	1417	1383	1389	1291	1312
Vehs Exited	1375	1324	1362	1361	1380	1321	1301
Starting Vehs	108	134	152	132	149	152	142
Ending Vehs	144	149	207	154	158	122	153
Travel Distance (mi)	361	343	355	355	357	339	342
Travel Time (hr)	37.2	44.5	52.5	49.9	47.0	46.4	43.6
Total Delay (hr)	27.1	35.0	42.7	40.2	37.1	37.1	34.1
Total Stops	1317	1201	1525	1495	1346	1315	1452
Fuel Used (gal)	22.3	23.6	26.2	25.2	24.8	23.7	23.3

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1351	1334	1346	1357
Vehs Exited	1332	1378	1306	1344
Starting Vehs	125	218	123	145
Ending Vehs	144	174	163	156
Travel Distance (mi)	349	357	339	350
Travel Time (hr)	32.7	62.2	49.8	46.6
Total Delay (hr)	22.9	52.4	40.5	36.9
Total Stops	1165	1379	1402	1359
Fuel Used (gal)	20.9	28.1	24.5	24.3

Interval #2 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1343	1294	1368	1351	1335	1387	1353
Vehs Exited	1370	1332	1386	1367	1355	1356	1370
Starting Vehs	144	149	207	154	158	122	153
Ending Vehs	117	111	189	138	138	153	136
Travel Distance (mi)	352	339	363	355	348	359	356
Travel Time (hr)	55.7	55.0	68.0	56.9	66.7	56.1	48.2
Total Delay (hr)	46.0	45.7	58.0	47.2	57.1	46.2	38.4
Total Stops	1265	1002	1377	1387	1444	1068	1305
Fuel Used (gal)	26.2	25.6	29.4	26.8	28.9	26.8	25.0

Interval #2 Information Recording

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1306	1299	1349	1339
Vehs Exited	1345	1299	1382	1356
Starting Vehs	144	174	163	156
Ending Vehs	105	174	130	137
Travel Distance (mi)	344	338	355	351
Travel Time (hr)	47.7	71.7	65.7	59.2
Total Delay (hr)	38.2	62.3	56.0	49.5
Total Stops	1340	1515	1292	1301
Fuel Used (gal)	24.4	29.8	28.6	27.1

Interval #3 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1326	1311	1297	1376	1322	1350	1345
Vehs Exited	1328	1298	1368	1353	1321	1388	1322
Starting Vehs	117	111	189	138	138	153	136
Ending Vehs	115	124	118	161	139	115	159
Travel Distance (mi)	343	340	354	352	343	358	348
Travel Time (hr)	70.4	62.7	67.2	67.7	77.8	61.3	60.9
Total Delay (hr)	60.9	53.3	57.3	58.0	68.4	51.4	51.2
Total Stops	1035	985	1315	1222	1297	1158	1338
Fuel Used (gal)	29.5	27.6	28.7	29.2	30.9	27.4	27.2

Interval #3 Information Recording

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1373	1358	1356	1341
Vehs Exited	1329	1335	1352	1340
Starting Vehs	105	174	130	137
Ending Vehs	149	197	134	140
Travel Distance (mi)	351	354	351	349
Travel Time (hr)	53.4	77.0	79.7	67.8
Total Delay (hr)	43.6	67.2	70.0	58.1
Total Stops	1089	1512	1205	1215
Fuel Used (gal)	25.6	31.4	31.7	28.9

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1341	1334	1408	1391	1296	1349	1309
Vehs Exited	1311	1326	1367	1352	1305	1325	1286
Starting Vehs	115	124	118	161	139	115	159
Ending Vehs	145	132	159	200	130	139	182
Travel Distance (mi)	344	349	360	352	336	345	334
Travel Time (hr)	91.4	79.1	77.5	92.5	89.2	65.6	77.2
Total Delay (hr)	81.9	69.4	67.4	82.7	79.9	56.1	68.0
Total Stops	1206	1064	1251	1520	1077	1018	1450
Fuel Used (gal)	34.1	31.5	31.4	34.8	33.4	28.3	30.8

Interval #4 Information Recording

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1347	1336	1312	1344
Vehs Exited	1362	1331	1314	1328
Starting Vehs	149	197	134	140
Ending Vehs	134	202	132	155
Travel Distance (mi)	355	345	339	346
Travel Time (hr)	60.4	85.4	91.2	80.9
Total Delay (hr)	50.5	75.8	82.0	71.4
Total Stops	1073	1480	1032	1215
Fuel Used (gal)	27.4	33.0	34.0	31.9

Intersection: 41: MD 355 & Tuckerman Ln.

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	T	T	TR	L	T	T	T
Maximum Queue (ft)	446	488	225	169	193	182	159	344	337	333
Average Queue (ft)	261	311	44	29	60	87	14	305	266	210
95th Queue (ft)	464	510	171	100	143	156	89	363	377	366
Link Distance (ft)		605		597	597	597		299	299	299
Upstream Blk Time (%)	0	4						19	11	9
Queuing Penalty (veh)	0	0						0	0	0
Storage Bay Dist (ft)	550		150				170			
Storage Blk Time (%)	2	53						28		
Queuing Penalty (veh)	4	138						2		

Intersection: 42: Grosvenor Ln. & MD 355

Movement	EB	EB	EB	B8	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	R	T	L	L	TR	T	T	T	T	T
Maximum Queue (ft)	462	534	405	376	190	441	447	329	317	312	614	629
Average Queue (ft)	94	495	402	323	159	252	234	280	223	176	490	495
95th Queue (ft)	329	608	427	467	229	383	394	355	339	305	685	696
Link Distance (ft)	434	434		332		481	481	291	291	291	597	597
Upstream Blk Time (%)	0	94		88		0	1	12	3	2	6	5
Queuing Penalty (veh)	0	0		0		0	0	0	0	0	57	50
Storage Bay Dist (ft)			380		115							
Storage Blk Time (%)		1	96		7	40						
Queuing Penalty (veh)		3	96		17	102						

Intersection: 42: Grosvenor Ln. & MD 355

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	628	435
Average Queue (ft)	482	196
95th Queue (ft)	717	515
Link Distance (ft)	597	
Upstream Blk Time (%)	6	
Queuing Penalty (veh)	57	
Storage Bay Dist (ft)		360
Storage Blk Time (%)	23	
Queuing Penalty (veh)	45	

Network Summary

Network wide Queuing Penalty: 572

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	5785	5825	5778	5857	5765	5818	5824
Vehs Exited	5788	5807	5764	5845	5763	5830	5814
Starting Vehs	129	132	114	130	122	135	133
Ending Vehs	126	150	128	142	124	123	143
Travel Distance (mi)	1758	1766	1756	1784	1756	1772	1768
Travel Time (hr)	292.1	203.7	187.8	206.0	281.0	178.7	264.0
Total Delay (hr)	244.7	156.1	140.4	158.0	233.7	131.1	216.3
Total Stops	5237	5255	5169	5285	5247	5076	5175
Fuel Used (gal)	132.3	112.8	109.1	114.1	129.6	107.5	126.5

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	5929	5908	5892	5839
Vehs Exited	5891	5913	5884	5830
Starting Vehs	113	122	134	127
Ending Vehs	151	117	142	137
Travel Distance (mi)	1800	1796	1788	1774
Travel Time (hr)	256.9	272.4	300.0	244.3
Total Delay (hr)	208.2	223.8	251.3	196.4
Total Stops	5429	5300	5414	5259
Fuel Used (gal)	125.9	129.7	135.4	122.3

Interval #0 Information Seeding

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

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1399	1459	1434	1451	1447	1475	1426
Vehs Exited	1403	1459	1423	1454	1455	1476	1412
Starting Vehs	129	132	114	130	122	135	133
Ending Vehs	125	132	125	127	114	134	147
Travel Distance (mi)	425	442	434	442	444	448	430
Travel Time (hr)	56.7	45.0	34.7	48.1	51.6	45.0	44.9
Total Delay (hr)	45.2	33.2	23.0	36.3	39.6	33.0	33.3
Total Stops	1269	1274	1272	1319	1297	1284	1253
Fuel Used (gal)	29.1	26.8	24.3	27.8	28.1	27.1	26.3

Interval #1 Information Recording

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

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1466	1482	1436	1447
Vehs Exited	1436	1464	1435	1441
Starting Vehs	113	122	134	127
Ending Vehs	143	140	135	132
Travel Distance (mi)	440	448	439	439
Travel Time (hr)	42.7	62.8	53.1	48.5
Total Delay (hr)	30.7	50.6	41.2	36.6
Total Stops	1323	1285	1305	1288
Fuel Used (gal)	26.1	31.0	28.5	27.5

Interval #2 Information Recording

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1475	1438	1461	1453	1399	1471	1442
Vehs Exited	1464	1446	1446	1448	1399	1469	1461
Starting Vehs	125	132	125	127	114	134	147
Ending Vehs	136	124	140	132	114	136	128
Travel Distance (mi)	444	440	439	442	427	446	443
Travel Time (hr)	67.5	45.1	39.0	42.0	66.2	42.9	61.5
Total Delay (hr)	55.5	33.3	27.1	30.1	54.8	30.9	49.5
Total Stops	1318	1309	1348	1278	1309	1298	1284
Fuel Used (gal)	32.0	26.9	25.6	26.0	30.9	26.6	30.8

Interval #2 Information Recording

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1497	1504	1416	1456
Vehs Exited	1509	1503	1432	1458
Starting Vehs	143	140	135	132
Ending Vehs	131	141	119	127
Travel Distance (mi)	455	455	433	442
Travel Time (hr)	58.7	68.5	68.0	55.9
Total Delay (hr)	46.3	56.2	56.1	44.0
Total Stops	1391	1358	1273	1318
Fuel Used (gal)	30.6	32.7	31.8	29.4

Interval #3 Information Recording

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1475	1453	1429	1460	1469	1445	1430
Vehs Exited	1480	1441	1433	1456	1444	1458	1436
Starting Vehs	136	124	140	132	114	136	128
Ending Vehs	131	136	136	136	139	123	122
Travel Distance (mi)	450	437	434	443	440	442	435
Travel Time (hr)	80.9	51.0	48.6	54.0	75.1	43.0	76.4
Total Delay (hr)	68.7	39.2	36.9	42.1	63.2	31.2	64.5
Total Stops	1337	1317	1244	1300	1278	1302	1264
Fuel Used (gal)	35.2	28.0	27.5	28.9	33.5	26.6	33.6

Interval #3 Information Recording

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1440	1470	1522	1459
Vehs Exited	1440	1468	1470	1452
Starting Vehs	131	141	119	127
Ending Vehs	131	143	171	137
Travel Distance (mi)	442	445	450	442
Travel Time (hr)	69.5	67.5	83.2	64.9
Total Delay (hr)	57.5	55.5	70.9	53.0
Total Stops	1320	1303	1379	1305
Fuel Used (gal)	32.3	32.4	35.6	31.3

Interval #4 Information Recording

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1436	1475	1454	1493	1450	1427	1526
Vehs Exited	1441	1461	1462	1487	1465	1427	1505
Starting Vehs	131	136	136	136	139	123	122
Ending Vehs	126	150	128	142	124	123	143
Travel Distance (mi)	438	448	449	457	445	437	460
Travel Time (hr)	87.1	62.6	65.6	61.8	88.1	47.7	81.2
Total Delay (hr)	75.3	50.5	53.4	49.5	76.1	36.0	68.9
Total Stops	1313	1355	1305	1388	1363	1192	1374
Fuel Used (gal)	36.1	31.0	31.7	31.4	37.0	27.2	35.9

Interval #4 Information Recording

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	1526	1452	1518	1475
Vehs Exited	1506	1478	1547	1478
Starting Vehs	131	143	171	137
Ending Vehs	151	117	142	137
Travel Distance (mi)	463	448	467	451
Travel Time (hr)	86.1	73.6	95.7	74.9
Total Delay (hr)	73.7	61.4	83.1	62.8
Total Stops	1395	1354	1457	1352
Fuel Used (gal)	36.9	33.6	39.6	34.0

Intersection: 41: MD 355 & Tuckerman Ln.

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	T	T	TR	L	T	T	T
Maximum Queue (ft)	282	321	225	313	396	369	129	377	295	201
Average Queue (ft)	162	210	84	188	207	229	25	211	156	95
95th Queue (ft)	253	292	208	282	302	318	84	331	272	185
Link Distance (ft)		692		591	591	591		413	413	413
Upstream Blk Time (%)								0		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	550		150				170			
Storage Blk Time (%)		31	0					9		
Queuing Penalty (veh)		75	0					2		

Intersection: 42: MD 355 & Grosvenor Ln.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	L	TR	T	T	T	T	T	T
Maximum Queue (ft)	197	195	96	165	360	383	478	480	484	500	486	461
Average Queue (ft)	117	105	23	34	142	354	442	451	454	317	318	290
95th Queue (ft)	177	176	75	131	315	405	486	478	475	459	449	412
Link Distance (ft)	422	422			346	346	435	435	435	591	591	591
Upstream Blk Time (%)					3	59	26	40	55			0
Queuing Penalty (veh)					0	0	0	0	0			0
Storage Bay Dist (ft)			380	115								
Storage Blk Time (%)				1	14							1
Queuing Penalty (veh)				1	13							3

Intersection: 42: MD 355 & Grosvenor Ln.

Movement	SB
Directions Served	R
Maximum Queue (ft)	296
Average Queue (ft)	71
95th Queue (ft)	177
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	360
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

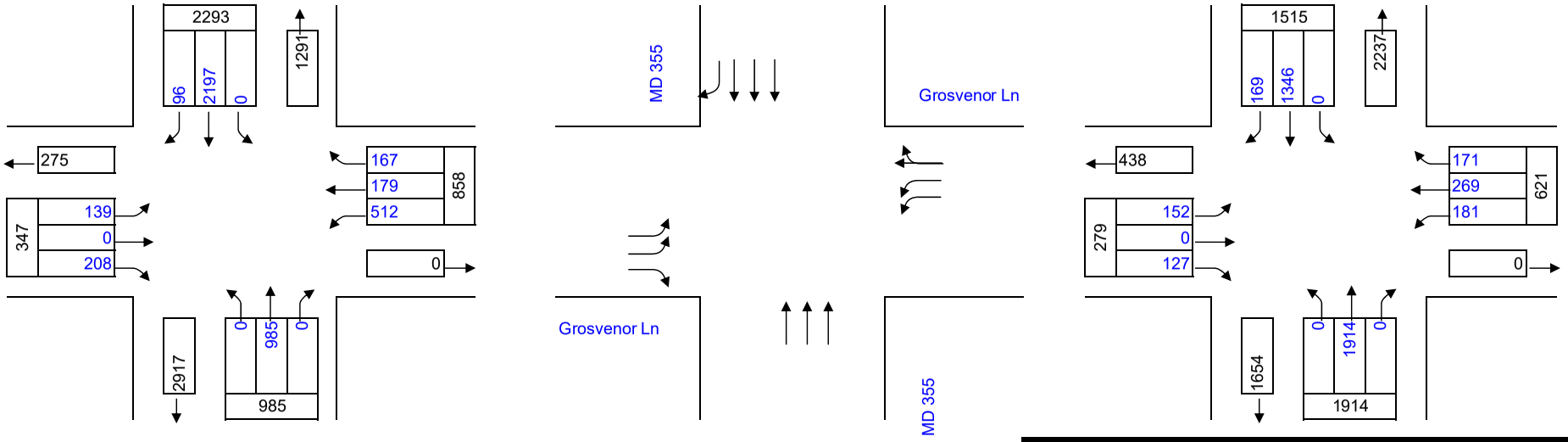
Network wide Queuing Penalty: 94

T3 design
Fairfax, VA 22030

TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

COUNT DATE:		LOCATION:	MD 355
CONDITIONS:	EXISTING		at Grosvenor Ln
DESIGN YEAR:	2019	7	
COMPUTED BY:	T3	DATE:	11/12/2019
CHECKED BY:	AA	DATE:	11/22/2019

AM PEAK HOUR: _____ **LANE CONFIGURATION** **PM PEAK HOUR:** _____



Intersection Control:
Signal x
Stop _____ Ways ___

No. of Lanes		Lane Use Factor
1	=	1.00
2	=	0.55
3	=	0.40
4	=	0.30
Dble. Left	=	0.60
Trpl. Left	=	0.45

Critical Lane Level of Service		Volumes Total
A	≤	1000
B	≤	1150
C	≤	1300
D	≤	1450
E	≤	1600
F	>	1600

Opposing Volume (vph)		PCE
≤ 199		1.1
≤ 599		2.0
≤ 799		3.0
≤ 999		4.0
> 1000		5.0

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EBL	139	0.60	83	512	0.60	307	390	
	WBL	512	0.60	307	139	0.60	83	390	*
	NBT	985	0.40	394	0	1.00	0	394	
	SBT	2197	0.40	879	0	1.00	0	879	*

REMARKS

* Critical Volume **AM TOTAL** **1269**

V/C = **0.79** **LEVEL OF SERVICE** **C**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EBL	152	0.60	91	181	0.60	109	200	
	WBTR	440	1.00	440	152	0.60	91	531	*
	NBT	1914	0.40	766	0	1.00	0	766	*
	SBT	1346	0.40	538	0	1.00	0	538	

REMARKS

* Critical Volume **PM TOTAL** **1297**

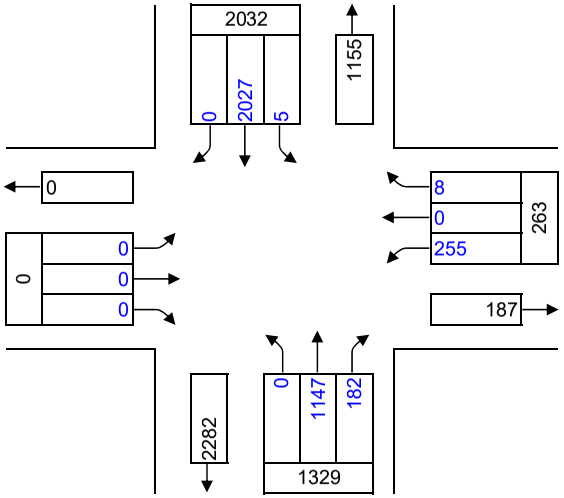
V/C = **0.81** **LEVEL OF SERVICE** **C**

T3 design
Fairfax, VA 22030

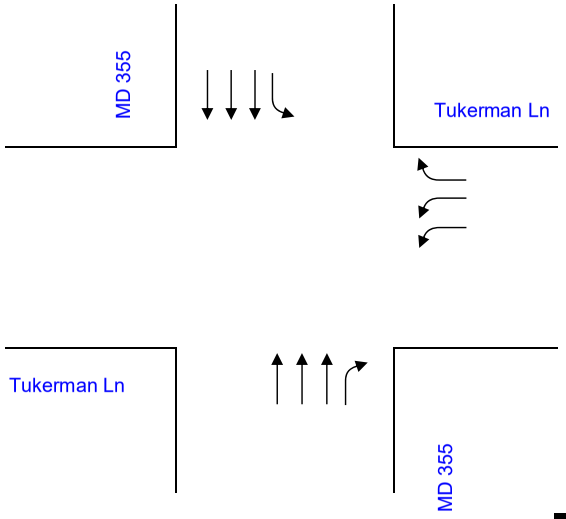
TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

COUNT DATE:		LOCATION:	MD 355
CONDITIONS:	EXISTING		at Tukerman Ln
DESIGN YEAR:	2019		
COMPUTED BY:	T3	DATE:	11/21/2019
CHECKED BY:	AA	DATE:	11/22/2019

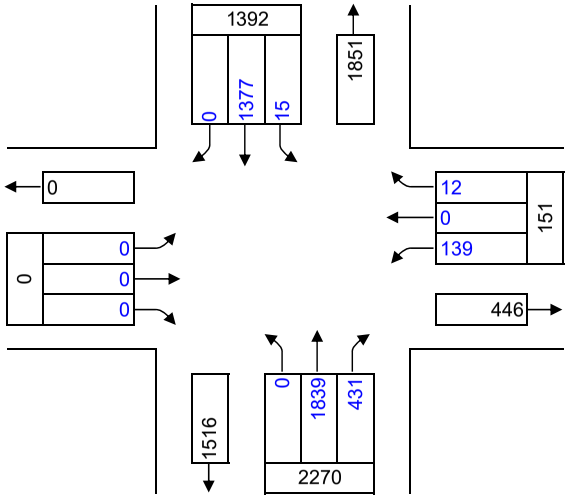
AM PEAK HOUR: _____



LANE CONFIGURATION



PM PEAK HOUR: _____



Intersection Control:
Signal x
Stop _____ Ways ___

	No. of Lanes		Lane Use Factor
1	=		1.00
2	=		0.55
3	=		0.40
4	=		0.30
Dble. Left	=		0.60
Trpl. Left	=		0.45

Critical Lane Level of Service	Volumes Total	Opposing Volume (vph)	PCE
A	≤ 1000	≤ 199	1.1
B	≤ 1150	≤ 599	2.0
C	≤ 1300	≤ 799	3.0
D	≤ 1450	≤ 999	4.0
E	≤ 1600	> 1000	5.0
F	> 1600		

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	WBL	255	0.60	153	0	1.00	0	153	*
	NBT	1147	0.40	459	0	1.00	0	459	
	SBT	2027	0.40	811	0	1.00	0	811	*

REMARKS

* Critical Volume **AM TOTAL** **964**

V/C = **0.60** **LEVEL OF SERVICE** **A**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	WBL	139	0.60	83	0	1.00	0	83	*
	NBT	1839	0.40	736	0	1.00	0	736	*
	SBT	1377	0.40	551	0	1.00	0	551	

REMARKS

* Critical Volume **PM TOTAL** **819**

V/C = **0.51** **LEVEL OF SERVICE** **A**

T3 design
Fairfax, VA 22030

TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

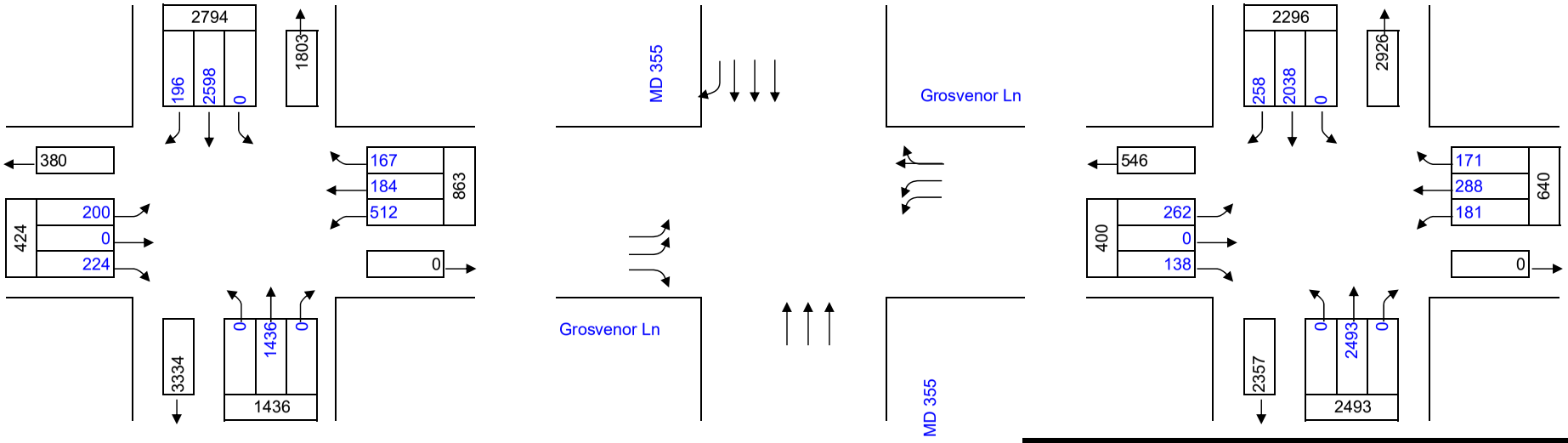
COUNT DATE:
CONDITIONS: Future No Build
DESIGN YEAR:
COMPUTED BY: T3 DATE: 2/6/2020
CHECKED BY: AA DATE: 2/6/2020

LOCATION: 7
MD 355 at Grosvenor Ln

AM PEAK HOUR: _____

LANE CONFIGURATION

PM PEAK HOUR: _____



Intersection Control:
Signal x
Stop ____ Ways ____

	No. of Lanes		Lane Use Factor
1	=		1.00
2	=		0.55
3	=		0.40
4	=		0.30
Dble. Left	=		0.60
Trpl. Left	=		0.45

Critical Lane Level of Service		Volumes Total
A	≤	1000
B	≤	1150
C	≤	1300
D	≤	1450
E	≤	1600
F	>	1600

Opposing Volume (vph)			PCE
	≤	199	1.1
	≤	599	2.0
	≤	799	3.0
	≤	999	4.0
	>	1000	5.0

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EBL	200	0.60	120	512	0.60	307	427	
	WBL	512	0.60	307	200	0.60	120	427	*
	NBT	1436	0.40	574	0	1.00	0	574	
	SBT	2598	0.40	1039	0	1.00	0	1039	*

REMARKS

* Critical Volume **AM TOTAL** **1466**

V/C = **0.92** **LEVEL OF SERVICE** **E**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EBL	262	0.60	157	181	0.60	109	266	
	WBTR	459	1.00	459	262	0.60	157	616	*
	NBT	2493	0.40	997	0	1.00	0	997	*
	SBT	2038	0.40	815	0	1.00	0	815	

REMARKS

* Critical Volume **PM TOTAL** **1613**

V/C = **1.01** **LEVEL OF SERVICE** **F**

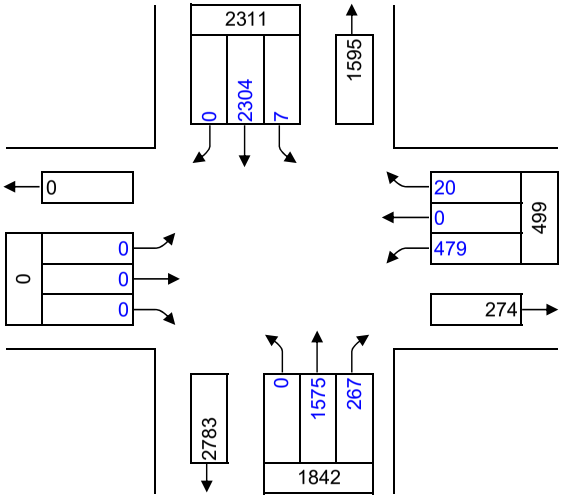
T3 design
Fairfax, VA 22030

TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

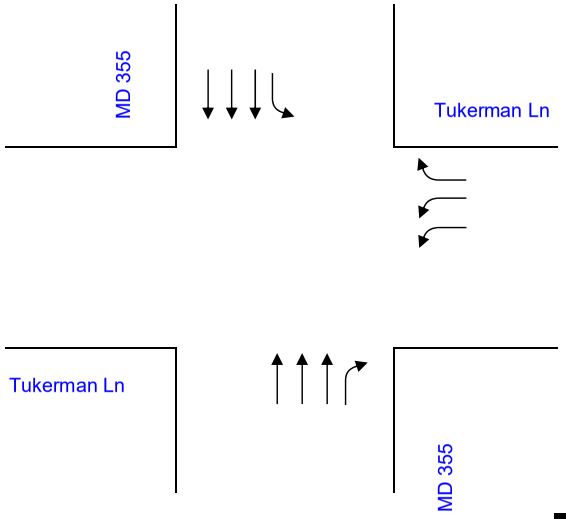
COUNT DATE:
CONDITIONS: Future No Build
DESIGN YEAR:
COMPUTED BY: T3 DATE: 2/6/2020
CHECKED BY: AA DATE: 2/6/2020

LOCATION: MD 355 at Tukerman Ln 7

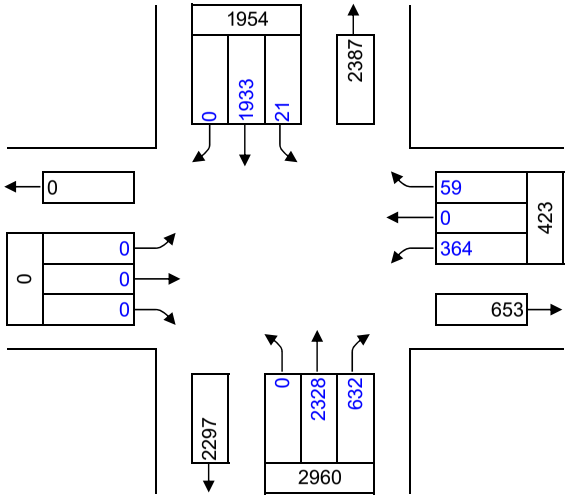
AM PEAK HOUR: _____



LANE CONFIGURATION



PM PEAK HOUR: _____



Intersection Control:
Signal x
Stop ____ Ways ____

	No. of Lanes		Lane Use Factor
1	=		1.00
2	=		0.55
3	=		0.40
4	=		0.30
Dble. Left	=		0.60
Trpl. Left	=		0.45

Critical Lane Level of Service		Volumes Total
A	≤	1000
B	≤	1150
C	≤	1300
D	≤	1450
E	≤	1600
F	>	1600

Opposing Volume (vph)			PCE
	≤	199	1.1
	≤	599	2.0
	≤	799	3.0
	≤	999	4.0
	>	1000	5.0

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	WBL	479	0.60	287	0	1.00	0	287	*
	NBT	1575	0.40	630	0	1.00	0	630	
	SBT	2304	0.40	922	0	1.00	0	922	*

REMARKS

* Critical Volume **AM TOTAL** **1209**

V/C = **0.76** **LEVEL OF SERVICE** **C**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	WBL	364	0.60	218	0	1.00	0	218	*
	NBT	2328	0.40	931	0	1.00	0	931	*
	SBT	1933	0.40	773	0	1.00	0	773	

REMARKS

* Critical Volume **PM TOTAL** **1149**

V/C = **0.72** **LEVEL OF SERVICE** **B**

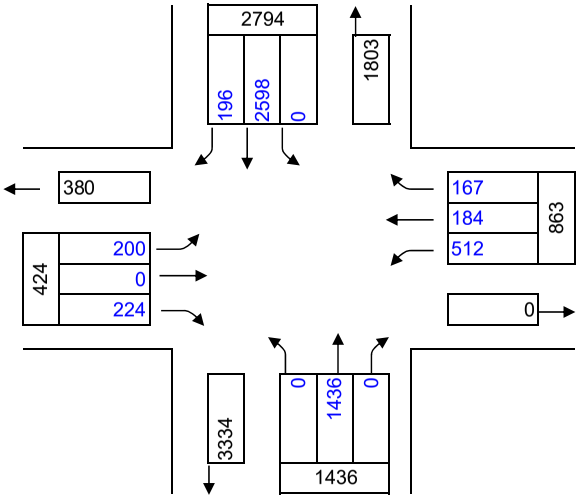
T3 design
Fairfax, VA 22030

TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

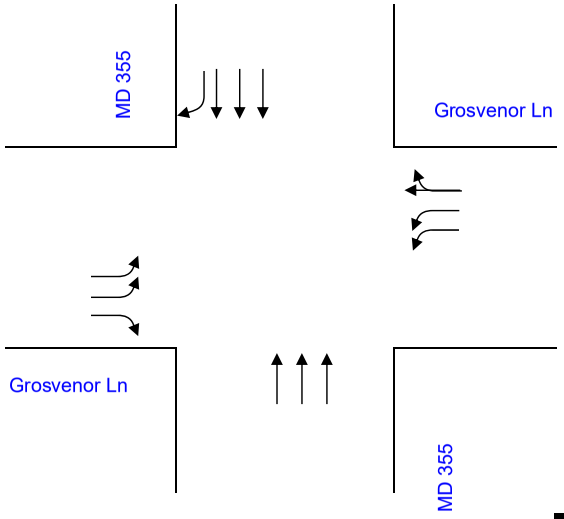
COUNT DATE:
CONDITIONS: Future Build
DESIGN YEAR:
COMPUTED BY: T3 DATE: 2/6/2020
CHECKED BY: AA DATE: 2/6/2020

LOCATION: MD 355 at Grosvenor Ln
7

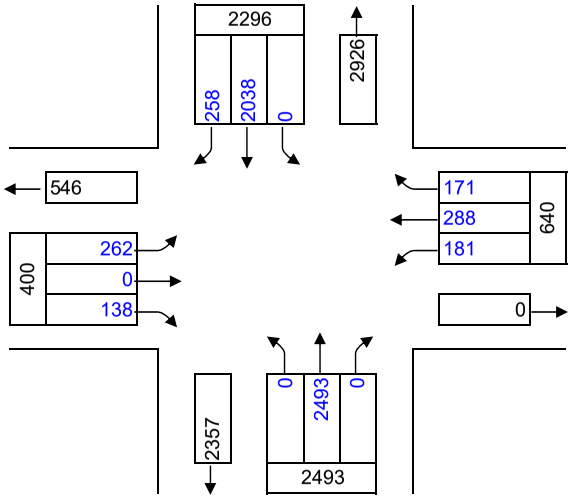
AM PEAK HOUR:



LANE CONFIGURATION



PM PEAK HOUR:



Intersection Control:
Signal x
Stop
Ways

	No. of Lanes		Lane Use Factor
1	=		1.00
2	=		0.55
3	=		0.40
4	=		0.30
Dble. Left	=		0.60
Trpl. Left	=		0.45

Critical Lane Level of Service		Volumes Total
A	≤	1000
B	≤	1150
C	≤	1300
D	≤	1450
E	≤	1600
F	>	1600

Opposing Volume (vph)			PCE
	≤	199	1.1
	≤	599	2.0
	≤	799	3.0
	≤	999	4.0
	>	1000	5.0

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EBL	200	0.60	120	512	0.60	307	427	
	WBL	512	0.60	307	200	0.60	120	427	*
	NBT	1436	0.40	574	0	1.00	0	574	
	SBT	2598	0.40	1039	0	1.00	0	1039	*

REMARKS

* Critical Volume **AM TOTAL** **1466**

V/C = **0.92** **LEVEL OF SERVICE** **E**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EBL	262	0.60	157	181	0.60	109	266	
	WBTR	459	1.00	459	262	0.60	157	616	*
	NBT	2493	0.40	997	0	1.00	0	997	*
	SBT	2038	0.40	815	0	1.00	0	815	

REMARKS

* Critical Volume **PM TOTAL** **1613**

V/C = **1.01** **LEVEL OF SERVICE** **F**

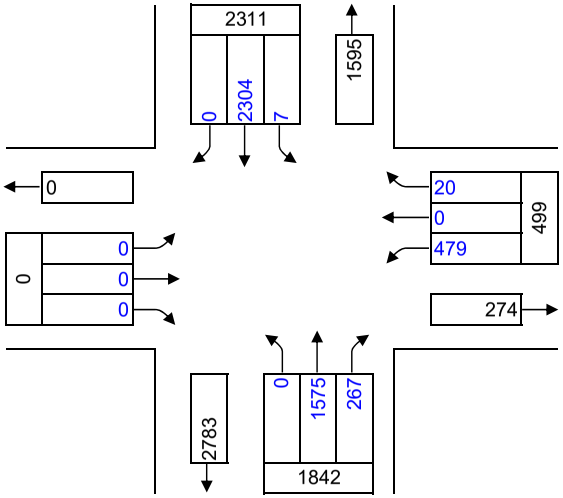
T3 design
Fairfax, VA 22030

TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

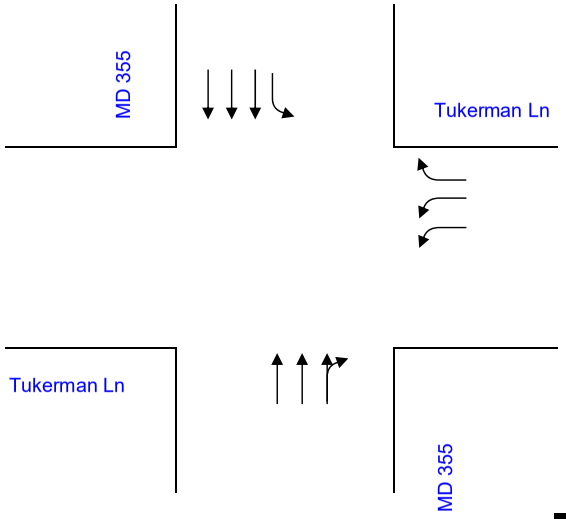
COUNT DATE:
CONDITIONS: Future Build
DESIGN YEAR:
COMPUTED BY: T3 DATE: 2/6/2020
CHECKED BY: AA DATE: 2/6/2020

LOCATION: MD 355 at Tukerman Ln
7

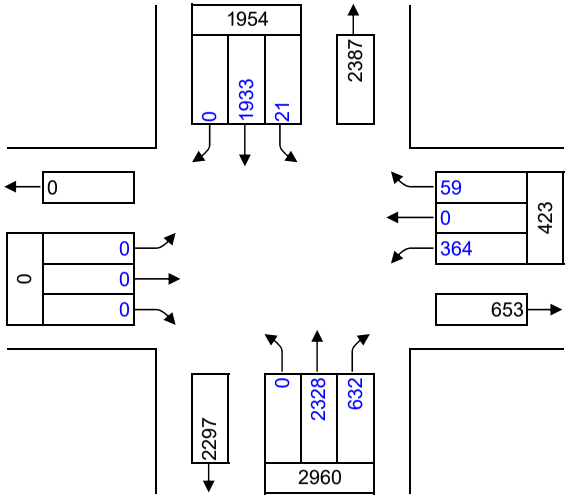
AM PEAK HOUR: _____



LANE CONFIGURATION



PM PEAK HOUR: _____



Intersection Control:
Signal x
Stop _____ Ways ___

No. of Lanes		Lane Use Factor
1	=	1.00
2	=	0.55
3	=	0.40
4	=	0.30
Dble. Left	=	0.60
Trpl. Left	=	0.45

Critical Lane Level of Service		Volumes Total
A	≤	1000
B	≤	1150
C	≤	1300
D	≤	1450
E	≤	1600
F	>	1600

Opposing Volume (vph)		PCE
≤ 199		1.1
≤ 599		2.0
≤ 799		3.0
≤ 999		4.0
> 1000		5.0

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	WBL	479	0.60	287	0	1.00	0	287	*
	NBTR	1842	0.40	737	7	1.00	7	744	
	SBT	2304	0.40	922	0	1.00	0	922	*

REMARKS

* Critical Volume **AM TOTAL** **1209**

V/C = **0.76** **LEVEL OF SERVICE** **C**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	WBL	364	0.60	218	0	1.00	0	218	*
	NBTR	2960	0.40	1184	21	1.00	21	1205	*
	SBT	1933	0.40	773	0	1.00	0	773	

REMARKS

* Critical Volume **PM TOTAL** **1423**

V/C = **0.89** **LEVEL OF SERVICE** **D**

Appendix F – Crash History

Crash Data at the MD 355 at Grosvenor Ln Intersectin (2016-2018)

Agency Name	ACRS Report Type	Crash Date/Time	Time of Day	Mile Point	Mile Point Di	Lane Directic	Distance	Distance Uni	Road Name	Cross-Street Name
Montgomery County Police	Property Damage Crash	1/5/2016 16:45	PM Peak	4.38	North	South	100	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	1/20/2016 17:57	PM Peak	4.38	North	North	100	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	2/7/2016 20:00	Off Peak	4.38	North	South	100	FEET	ROCKVILLE PIKE	GROSVENOR LA
MONTGOMERY	Injury Crash	3/11/2016 10:28	Mid-day	4.38	North	North	30	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	4/28/2016 10:54	Mid-day	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	5/22/2016 18:37	Off Peak	4.38	North	South	15	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	7/13/2016 21:48	Off Peak	4.38	North	North	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	8/31/2016 18:19	Off Peak	4.38	North	North	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	9/19/2016 6:41	AM Peak	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	9/19/2016 10:43	Mid-day	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	10/20/2016 13:46	Mid-day	4.38	North	North	0	MILE	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	12/21/2016 16:20	PM Peak	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	1/16/2017 14:01	Mid-day	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	2/1/2017 5:59	Off Peak	4.38	North	South	200	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	2/14/2017 9:16	Mid-day	4.38	North	South	50	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	2/17/2017 15:18	PM Peak	4.38	North	East	30	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	4/1/2017 1:24	Off Peak	4.38	North	North	0.5	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	4/24/2017 19:40	Off Peak	4.38	North	North	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	5/1/2017 4:58	Off Peak	4.38	North	North	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	7/6/2017 8:46	AM Peak	4.38	North	South	20	MILE	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	7/29/2017 10:25	Mid-day	4.38	North	North	5	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	8/12/2017 21:25	Off Peak	4.38	North	North	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	8/23/2017 4:41	Off Peak	4.38	North	North	500	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	9/26/2017 15:30	PM Peak	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	12/9/2017 17:33	PM Peak	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	1/2/2018 7:40	AM Peak	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	2/5/2018 7:15	AM Peak	4.38	North	North	100	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	2/12/2018 12:30	Mid-day	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	2/25/2018 18:49	Off Peak	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	2/28/2018 19:38	Off Peak	4.38	North	South	500	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Injury Crash	3/22/2018 16:00	PM Peak	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	4/20/2018 8:48	AM Peak	4.38	North	North	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	6/25/2018 11:57	Mid-day	4.38	North	North	100	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	8/4/2018 20:50	Off Peak	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	8/8/2018 15:25	PM Peak	4.38	North	South	300	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	8/14/2018 14:39	Mid-day	4.38	North	West	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	10/3/2018 18:28	Off Peak	4.38	North	South	5	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	10/11/2018 19:51	Off Peak	4.38	North	North	300	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	10/24/2018 18:32	Off Peak	4.38	North	North	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	11/27/2018 20:55	Off Peak	4.38	North	North	0	FEET	ROCKVILLE PIKE	GROSVENOR LA
Montgomery County Police	Property Damage Crash	12/3/2018 5:32	Off Peak	4.38	North	South	0	FEET	ROCKVILLE PIKE	GROSVENOR LA

Collision Type	Weather	Surface Conc	Light
SAME DIRECTION SIDESWIPE	CLEAR	DRY	DARK LIGHTS ON
SAME DIR REAR END	SNOW	SNOW	DARK LIGHTS ON
SAME DIR REAR END	CLEAR	DRY	DARK NO LIGHTS
SAME DIR REAR END	CLEAR	DRY	DAYLIGHT
STRAIGHT MOVEMENT ANGLE	RAINING	WET	DAYLIGHT
SAME DIR REAR END	RAINING	WET	DAYLIGHT
SAME DIR REAR END	CLEAR	DRY	DARK NO LIGHTS
SAME DIR REAR END	CLEAR	DRY	DAYLIGHT
STRAIGHT MOVEMENT ANGLE	CLOUDY	WET	DARK LIGHTS ON
STRAIGHT MOVEMENT ANGLE	RAINING	WET	DAYLIGHT
SAME DIRECTION SIDESWIPE	CLEAR	DRY	DAYLIGHT
STRAIGHT MOVEMENT ANGLE	CLEAR	DRY	DAYLIGHT
STRAIGHT MOVEMENT ANGLE	CLOUDY	DRY	DAYLIGHT
SAME DIRECTION SIDESWIPE	CLEAR	DRY	DARK LIGHTS ON
SAME DIR REAR END	CLEAR	DRY	DAYLIGHT
SINGLE VEHICLE	CLEAR	DRY	DAYLIGHT
SAME DIR REAR END	RAINING	WET	DARK NO LIGHTS
SINGLE VEHICLE	RAINING	WET	DARK LIGHTS ON
SAME DIR REAR END	CLEAR	DRY	DARK LIGHTS ON
SAME DIR REAR END	CLOUDY	WET	DAYLIGHT
SAME DIRECTION LEFT TURN	CLEAR	DRY	DAYLIGHT
SAME DIRECTION SIDESWIPE	CLOUDY	WET	DARK LIGHTS ON
SINGLE VEHICLE	RAINING	N/A	DARK LIGHTS ON
HEAD ON LEFT TURN	CLEAR	DRY	DAYLIGHT
STRAIGHT MOVEMENT ANGLE	SNOW	WET	DARK LIGHTS ON
SAME DIR REAR END	CLEAR	DRY	DAYLIGHT
SINGLE VEHICLE	CLEAR	WET	DAYLIGHT
SAME DIR REAR END	CLEAR	WET	DAYLIGHT
HEAD ON LEFT TURN	CLEAR	WET	DARK LIGHTS ON
SAME DIR REAR END	N/A	DRY	DARK LIGHTS ON
STRAIGHT MOVEMENT ANGLE	CLEAR	DRY	DAYLIGHT
STRAIGHT MOVEMENT ANGLE	CLEAR	DRY	DAYLIGHT
SAME DIR REAR END	N/A	N/A	DAYLIGHT
STRAIGHT MOVEMENT ANGLE	CLEAR	DRY	DARK LIGHTS ON
STRAIGHT MOVEMENT ANGLE	CLEAR	N/A	DAYLIGHT
SAME DIR REAR END	CLEAR	DRY	DAYLIGHT
SAME DIR REAR END	CLEAR	DRY	DAYLIGHT
SAME DIRECTION SIDESWIPE	RAINING	WET	DARK NO LIGHTS
OPPOSITE DIR BOTH LEFT TURN	CLEAR	DRY	DAWN
SAME DIRECTION LEFT TURN	CLEAR	DRY	DARK LIGHTS ON
STRAIGHT MOVEMENT ANGLE	RAINING	WET	DARK LIGHTS ON

Crash Data at the MD 355 at Tuckerman Ln Intersectin (2016-2018)

Agency Name	ACRS Report Type	Crash Date/Time	Time of Day	Hit/Run	Mile Point	Mile Point Di	Lane Directio	Direction	Distance	Distance Unit	Road Name
Montgomery County Police	Property Damage Crash	7/6/2016 11:44	Mid-day	No	4.5	North	North	North	0	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	8/31/2016 19:50	Off Peak	No	4.5	North	North	South	0	MILE	ROCKVILLE PIKE
Montgomery County Police	Injury Crash	9/29/2016 14:57	Mid-day	No	4.5	North	South	North	300	FEET	ROCKVILLE PIKE
Montgomery County Police	Injury Crash	2/25/2017 18:07	Off Peak	No	4.5	North	North	North	0	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	4/13/2017 13:03	Mid-day	No	4.5	North	South	North	2	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	10/17/2017 14:45	Mid-day	No	4.96	North	South	North	0	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	10/24/2017 9:58	Mid-day	No	4.5	North	North	North	0	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	1/26/2018 8:32	AM Peak	No	4.5	North	North	North	0	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	2/19/2018 7:00	AM Peak	No	4.5	North	South	South	0	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	9/6/2018 7:57	AM Peak	No	4.5	North	South	South	100	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	9/12/2018 14:35	Mid-day	No	4.5	North	South	North	75	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	10/20/2018 2:44	Off Peak	No	4.96	North	North	North	0	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	10/20/2018 21:00	Off Peak	No	4.5	North	South	North	50	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	11/14/2018 19:00	Off Peak	No	4.96	North	North	North	0	FEET	ROCKVILLE PIKE
Montgomery County Police	Property Damage Crash	12/12/2018 8:33	AM Peak	No	4.5	North	South	North	20	FEET	ROCKVILLE PIKE

Cross-Street Name	Collision Type	Weather	Surface Condition	Light
TUCKERMAN LA	SAME DIRECTION RIGHT TURN	CLEAR	DRY	DAYLIGHT
TUCKERMAN LA	SAME DIR REAR END	CLEAR	DRY	DARK NO LIGHTS
TUCKERMAN LA	SAME DIR REAR END	RAINING	WET	DAYLIGHT
TUCKERMAN LA	SAME DIR REAR END	CLEAR	DRY	DARK LIGHTS ON
TUCKERMAN LA	SAME DIR REAR END	CLEAR	DRY	DAYLIGHT
TUCKERMAN LA	SAME DIR REAR END	CLEAR	DRY	DAYLIGHT
TUCKERMAN LA	SAME DIRECTION RIGHT TURN	CLEAR	DRY	DAYLIGHT
TUCKERMAN LA	SINGLE VEHICLE	CLEAR	DRY	DAYLIGHT
TUCKERMAN LA	SAME DIR REAR END	RAINING	WET	DAWN
TUCKERMAN LA	SAME DIR REAR END	N/A	DRY	DAYLIGHT
TUCKERMAN LA	SAME DIR REAR END	CLEAR	DRY	DAYLIGHT
TUCKERMAN LA	STRAIGHT MOVEMENT ANGLE	RAINING	WET	DARK LIGHTS ON
TUCKERMAN LA	SAME DIR REAR END	CLEAR	DRY	DARK LIGHTS ON
TUCKERMAN LA	STRAIGHT MOVEMENT ANGLE	CLEAR	DRY	DARK LIGHTS ON
TUCKERMAN LA	SAME DIR REAR END	CLEAR	DRY	DAYLIGHT