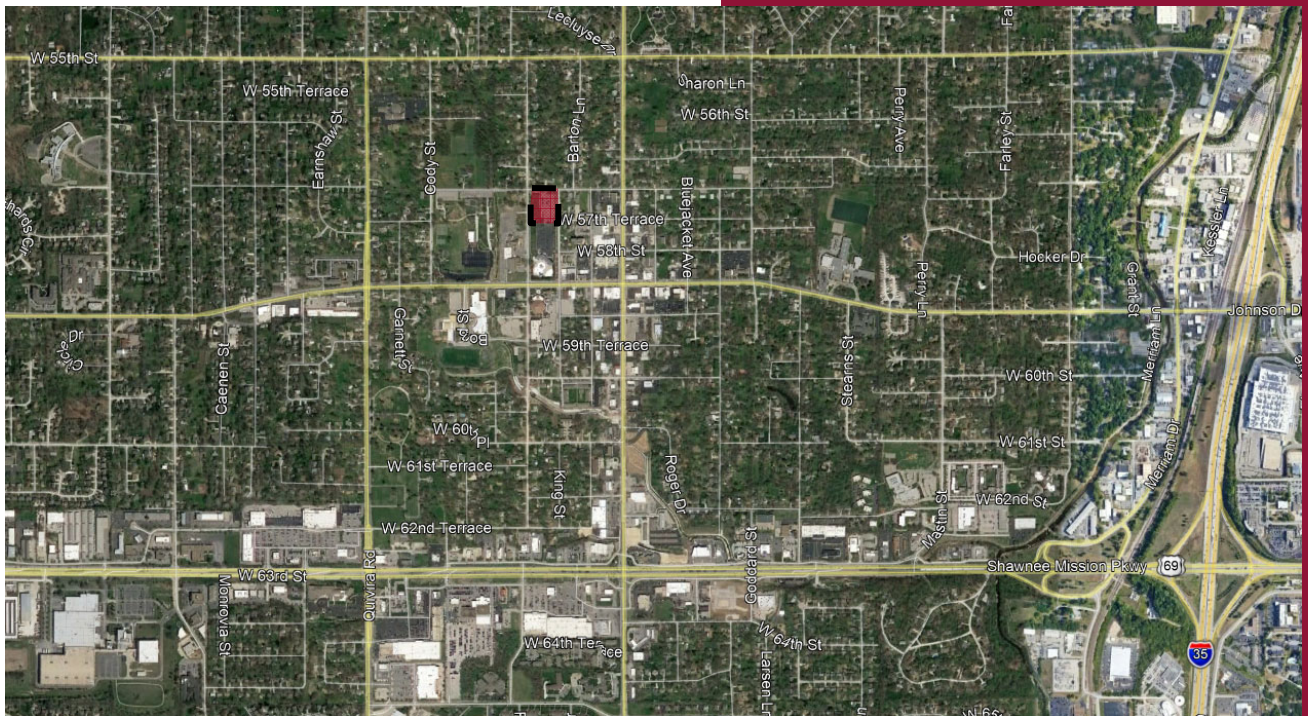


57th Street and King Street
Shawnee, Kansas



Prepared by TranSystems
March 2020



TranSystems
2400 Pershing Road
Suite 400
Kansas City, MO 64108
Tel 816 329 8600
Fax 816 329 8601
www.transystems.com

March 11, 2020

Mr. Jason Swords
Sunflower Shawnee, LLC
1125 Grand Street
Suite 202
Kansas City, Missouri 64106

**RE: 5700 King Traffic Impact Study
57th Street and King Street
Shawnee, Kansas**

Dear Mr. Swords:

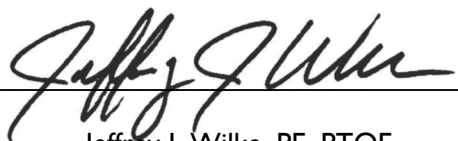
In response to your request and authorization, TranSystems has completed a traffic impact study for the proposed 5700 King development to be located generally in the southwest corner 57th Street and King Street in Shawnee, Kansas. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

Included in this study is a discussion of the anticipated impact of the proposed development on the adjacent street network and identified improvements to mitigate deficiencies for the following scenarios:

- ▶ Existing Conditions
- ▶ Existing plus Development Conditions

We trust that the enclosed information proves beneficial to you and the City of Shawnee in this phase of the development process. We appreciate the opportunity to be of service to you and will be available to review this study at your convenience.

Sincerely,
TRANSYSTEMS

By: 
Jeffrey J. Wilke, PE, PTOE

By: 
Emma H Martin, EIT

JJW:EHM/ehm/PI01200024
Enclosure

Introduction

TranSystems has completed a traffic impact study for the proposed 5700 King development to be located generally in the southwest corner of 57th Street and King Street in Shawnee, Kansas. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system. The location of the development site relative to the major streets in the area is shown on **Figure A-1** in **Appendix A**.

This study also contains a description of the proposed development and the surrounding transportation infrastructure along with trip generation estimates, trip distribution estimates, capacity analyses, and a summary of the findings. The scope of this study was developed in conjunction with Shawnee Public Works staff.

Proposed Development Plan

The proposed development is a five-story apartment building totaling 237,897 square feet. There are 188 proposed apartment units, ranging from studios to three bedroom apartments.

Access for the development will be provided from one full-access driveway that is in the same location as the existing conditions. The site drive will remain on King Street, adjacent to the 57th Terrace intersection. Parking will be provided within the proposed building's parking garage level. There will also be on-street angle parking constructed on Flint Street, 57th Street, and King Street surrounding the site. A copy of the proposed site plan showing the access points is included on **Figure A-2** in **Appendix A** for reference.

Study Area

To assess the impacts of the proposed development, the intersections listed below were identified for study during the A.M. and P.M. periods of a typical weekday.

- ▶ Johnson Drive and Nieman Road
- ▶ Johnson Drive and Flint Street
- ▶ 57th Terrace and King Street
- ▶ Site Driveways

Traffic Counts

The turning-movement traffic volume counts were collected at two of the three study intersections on Tuesday, January 28, 2020. The turning movement counts were collected from 7:00 to 9:00 A.M. and from 4:00 to 6:00 P.M. The turning movement counts at the intersection of Flint Street and Johnson Drive were provided from the Shawnee Public Works Department. The A.M. turning movement counts were collected on Friday, July 20, 2018 and the P.M. counts were collected on Tuesday, July 24, 2018.

The A.M. peak hour at the two Johnson Drive intersections occurred between 7:30 and 8:30 A.M., however the peak hour occurred between 8:00 and 9:00 A.M. at the intersection of King Avenue and 57th Terrace. The P.M. peak hour at each of the study intersections varied. The P.M. peak hour occurred between 4:45 and 5:45 P.M. at the intersection of Nieman Road and Johnson Drive. The P.M. counts at

Johnson Drive and Flint Street were adjusted to balance with the 2020 count volumes. The existing lane configurations, traffic control devices, and peak hour traffic volumes have been illustrated on **Figures A-3** and **A-4**.

Surrounding Land Uses and Street Network

The proposed development site exists consists of a museum and surface parking lot within a residential neighborhood. The development site is bounded on the north by 57th Street, the east by King Avenue, and the west by Flint Street. The south side of the property is bounded by a shared parking lot with a waterpark. The proposed site is near Downtown Shawnee.

Nieman Road is classified as a minor arterial roadway by the City of Shawnee Comprehensive Plan. The segment near the development site is a four-lane road with curb and gutter. Both sides of the street have sidewalks. The segment of Nieman Road that is adjacent to the proposed development is undergoing a road diet and will be reduced to three-lanes, including a continuous center two-way left-turn lane. The speed limit is 35 mph.

Johnson Drive is classified as a four-lane minor arterial roadway. The street has curb and gutter, sidewalk, and on-street parking on both sides of the street. The intersections with Nieman Road and Flint Street are signalized. The posted speed limit is 30 mph.

King Avenue is a two-lane local street with curbs and gutters on both sides. South of 58th Street, there is sidewalk and on-street angled parking on both sides of the street. There is sidewalk on the west side of the street between 57th and 58th Street. The speed limit is 25 mph. 57th Terrace is also a local road with a speed limit of 25 mph. There is some on-street angled parking adjacent to the development site.

Flint Street, adjacent to the proposed development, is a minor collector roadway. It is a two-lane street with curbs and gutters along each side of the road. The speed limit is 25 mph.

Analysis

The scope of analysis for the assessment of the proposed development's impact on the surrounding transportation system is largely based on the recommended practices of the Institute of Transportation Engineers (ITE), as outlined in their Traffic Engineering Handbook. ITE is a nationally-recognized organization of transportation professionals with members from both private and public sectors. The analysis of the proposed development's impact included development of trip generation and trip distribution estimates as well as a traffic operations assessment for each study scenario. Each of the analysis methodologies and findings are described in the subsequent sections.

Trip Generation

Trip generation estimates were prepared using the Institute of Transportation Engineer's Trip Generation, 10th Edition. **Table 1** on the following page shows the expected trips to be generated by the proposed development.

**Table 1
Trip Generation**

Land Use	Intensity	ITE Code	Average Weekday	A.M. Peak Hour			P.M. Peak Hour		
				Total	In	Out	Total	In	Out
Mid-Rise Multi-Family Housing	188 units	221	1,023	64	17	47	82	51	31

Trip Distribution

The estimated trips generated by the proposed development were distributed onto the street system based on the trip distributions summarized in **Table 2**. These distributions are based on existing traffic patterns and engineering judgment. The detailed distribution patterns through the study intersections are shown in **Appendix B**.

**Table 2
Trip Distribution**

Direction To/From	Percentage
North on Nieman Road	15%
South on Nieman Road	25%
East on Johnson Drive	35%
West on Johnson Drive	25%
Total	100%

Traffic Operation Assessment

An assessment of traffic operations was made for the scenarios listed below. These scenarios allowed for comparison of the before and after impacts of the proposed development on the street network.

- ▶ Existing Conditions
- ▶ Existing plus Development Conditions

The study intersections were evaluated using the Synchro traffic analysis software package. Calculations were performed based on the methodologies outlined in the Highway Capacity Manual (HCM), 6th Edition, which is published by the Transportation Research Board. The operating conditions at an intersection are graded by the “level of service” experienced by drivers. Level of service (LOS) describes the quality of traffic operating conditions and is rated from “A” to “F”. LOS A represents the least congested condition with free-flow movement of traffic and minimal delays. LOS F generally indicates severely congested conditions with excessive delays to motorists. Intermediate grades of B, C, D, and E reflect incremental increases in the average delay per stopped vehicle. Control delay is measured in seconds per vehicle. **Table 3** on the following page shows the upper limit of delay associated with each level of service for signalized and unsignalized intersections.

Table 3 Intersection Level of Service Delay Thresholds		
Level of Service (LOS)	Signalized	Unsignalized
A	≤ 10 Seconds	≤ 10 Seconds
B	≤ 20 Seconds	≤ 15 Seconds
C	≤ 35 Seconds	≤ 25 Seconds
D	≤ 55 Seconds	≤ 35 Seconds
E	≤ 80 Seconds	≤ 50 Seconds
F	> 80 Seconds	> 50 Seconds

While LOS measurements apply to both signalized and unsignalized intersections, there are significant differences between how these intersections operate and how they are evaluated. LOS for signalized intersections reflects the operation of the intersection as a whole.

Unsignalized intersections, in contrast, are evaluated based on the movement groupings which are required to yield to other traffic. Typically, these are the left turns off of the major street and the side-street approaches for two-way stop-controlled intersections. At unsignalized intersections lower LOS ratings (D, E and F) do not, in themselves, indicate the need for additional improvements. Many times there are convenient alternative routes to avoid the longer delays. Other times the volumes on the unsignalized approaches are relatively minor when compared to the major street traffic, and improvements such as traffic signal installation may increase the average delay to all users of the intersection.

The LOS rating deemed acceptable varies by community, facility type and traffic control device. Most communities in the region have identified LOS D as the minimum desirable goal for signalized intersections. However, at unsignalized intersections LOS D, E, or even F are often considered acceptable for low to moderate traffic volumes where the installation of a traffic signal is not warranted by the conditions at the intersection, or the location has been deemed undesirable for signalization.

The decision to install a traffic signal, which is often considered when lower LOS ratings are projected, should be based on engineering studies and the warrants for traffic signal installation as outlined in the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD). Signals are typically not recommended in locations where there are convenient alternative paths, or if the installation of a traffic signal would have negative impacts on the surrounding transportation system.

Traffic queues were also evaluated as part of the analyses. Long traffic queues which extend beyond the amount of storage available, either between intersections or within turn lanes, can have significant impacts on operations. The projected vehicular queues were analyzed to ensure the analyses are reflective of the physical constraints of the study intersections and to identify if additional storage is needed for turn lanes.

Existing Conditions

The segment of Nieman Road adjacent to the proposed development was under construction at the time of this study. The lane configuration at the intersection of Nieman Road and Johnson Drive will be affected, as Nieman Road will be a three-lane roadway. The lane configurations in the northbound and southbound directions will change into one right-turn, one left-turn, and one through lane. The lane configurations will remain the same on Johnson Drive at this intersection. These improvements are included in **Figure A-3**.

The results of the Existing Conditions intersection analyses are summarized below in **Table 4**. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on **Figures A-3** and **A-4**. The Synchro output files are included in **Appendix C**. The new lane configurations and traffic signal phasing at Johnson Drive and Nieman Road were used for the Existing Conditions analysis.

Table 4 Intersection Operational Analysis Existing Conditions					
Intersection	Movement	A.M. Peak Hour		P.M. Peak Hour	
		LOS ¹	Delay ²	LOS ¹	Delay ²
Johnson Drive and Nieman Road	Traffic Signal	C	26.5	C	29.8
Johnson Drive and Flint Street	Traffic Signal	A	4.0	A	3.6
57th Terrace and King Avenue	Eastbound	A	8.8	A	8.8
	Westbound	A	8.9	A	8.7
	Northbound Left-Turn	A	7.2	A	7.2
	Southbound Left-Turn	A	0.0	A	0.0

1 – Level of Service
2 – Delay in seconds per vehicle

The results in the table indicate that all study intersections currently operate at acceptable levels of service during the peak hours. All queues are contained within their respective lanes.

Existing plus Development Conditions

The results of the Existing plus Development Conditions intersection analyses are summarized in **Table 5**, on the following page. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on **Figures A-5** and **A-6**. The Synchro output files are included in **Appendix C**.

The results in **Table 5** indicate that all study intersections are projected to operate at acceptable levels of service during the peak hours with the addition of development traffic. All queues are contained within their respective lanes.

Table 5
Intersection Operational Analysis
Existing plus Development Conditions

Intersection	Movement	A.M. Peak Hour		P.M. Peak Hour	
		LOS ¹	Delay ²	LOS ¹	Delay ²
Johnson Drive and Nieman Road	<i>Traffic Signal</i>	C	26.7	C	30.0
Johnson Drive and Flint Street	<i>Traffic Signal</i>	A	4.4	A	3.8
57th Terrace and King Avenue	<i>Eastbound</i>	A	8.6	A	8.8
	<i>Westbound</i>	A	9.3	A	9.5
	<i>Northbound Left-Turn</i>	A	7.3	A	7.3
	<i>Southbound Left-Turn</i>	A	0.0	A	0.0

1 – Level of Service

2 – Delay in seconds per vehicle

Summary

TranSystems has completed a traffic impact study for the proposed 5700 King development to be located generally in the southwest corner of 57th Street and King Street in Shawnee, Kansas. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

The proposed development is projected to generate 64 vehicular trips in the A.M. peak hour and 82 vehicular trips in the P.M. peak hour. All study intersections are projected to continue operating at acceptable levels of service with the addition of development traffic. No improvements are necessary to mitigate the addition of the development traffic.



Appendix A - Figures

Figure A-1	Location Map
Figure A-2	Proposed Development Site Plan
Figure A-3	Existing Conditions Lane Configurations
Figure A-4	Existing Conditions Peak Hour Traffic Volumes
Figure A-5	Existing plus Development Conditions Lane Configurations
Figure A-6	Existing plus Development Conditions Peak Hour Traffic Volumes

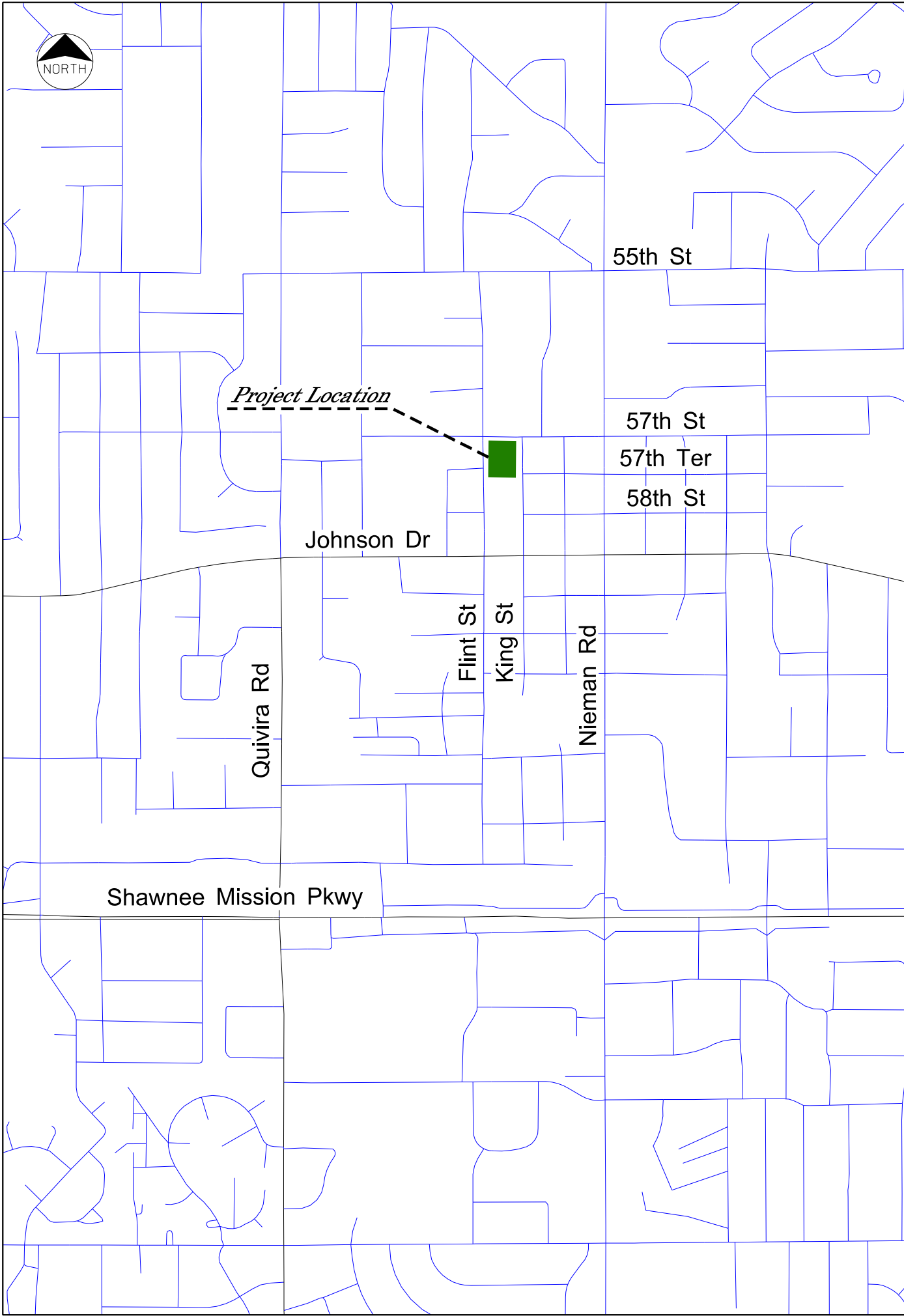


Figure A-1

March 2020
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5700 King
Traffic Impact Study
Shawnee, Kansas

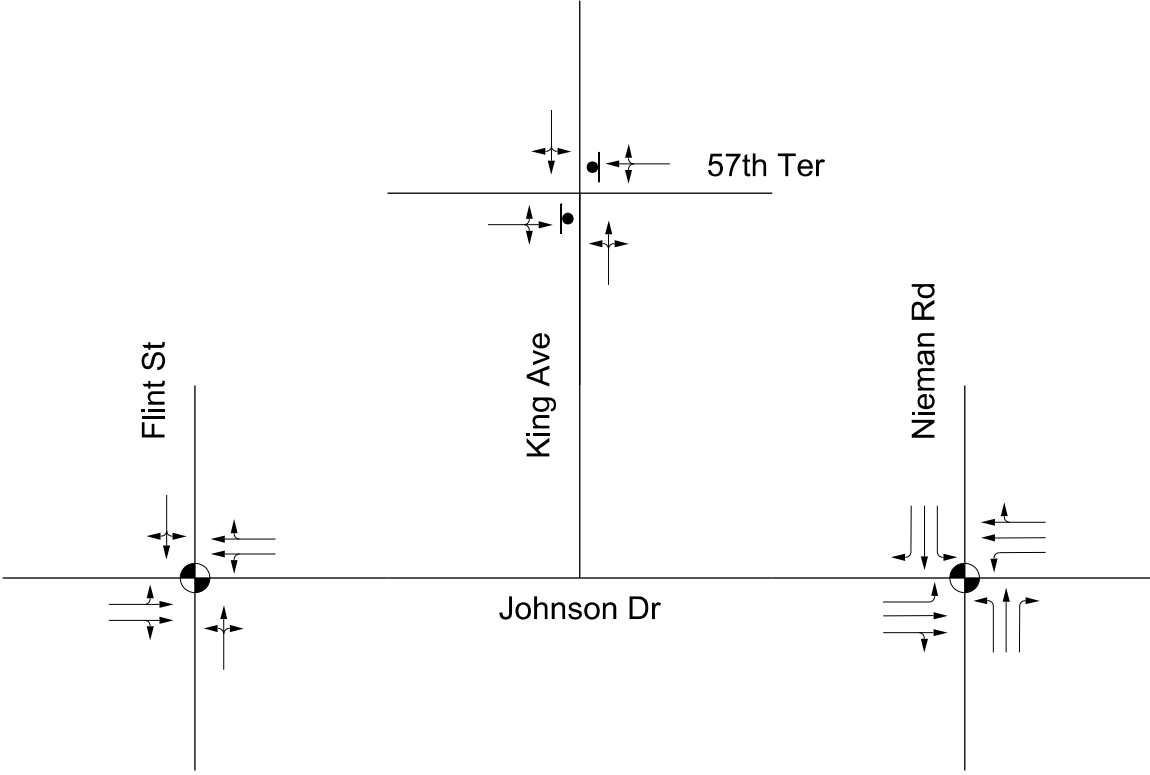
LOCATION MAP





Legend

-  - Traffic Signal
-  - Stop Sign
-  - Lane Configuration



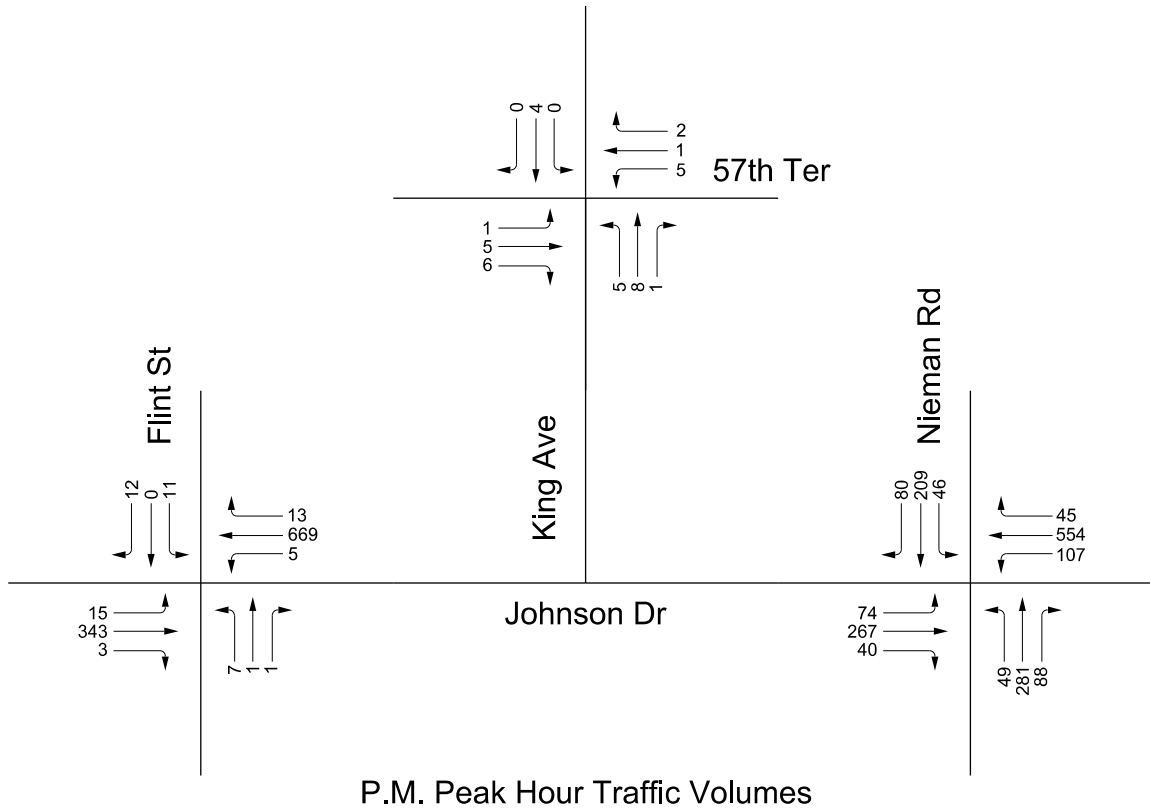
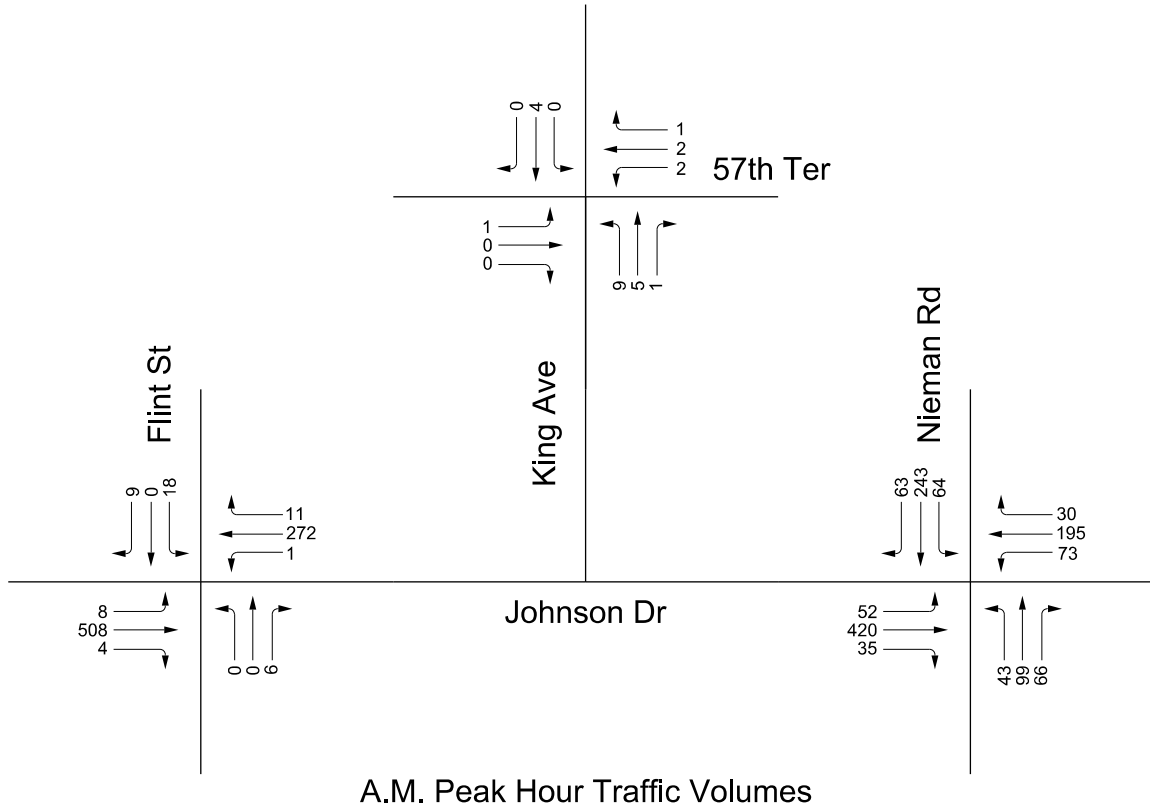
EXISTING CONDITIONS
LANE CONFIGURATIONS

5700 King
Traffic Impact Study
Shawnee, Kansas

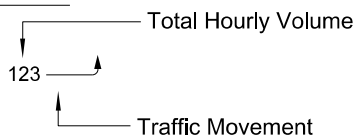
March 2020

No Scale

Figure A-3



Legend



EXISTING CONDITIONS PEAK HOUR TRAFFIC VOLUMES

5700 King
Traffic Impact Study
Shawnee, Kansas

March 2020

No Scale

Figure A-4



Legend

-  - Traffic Signal
-  - Stop Sign
-  - Lane Configuration

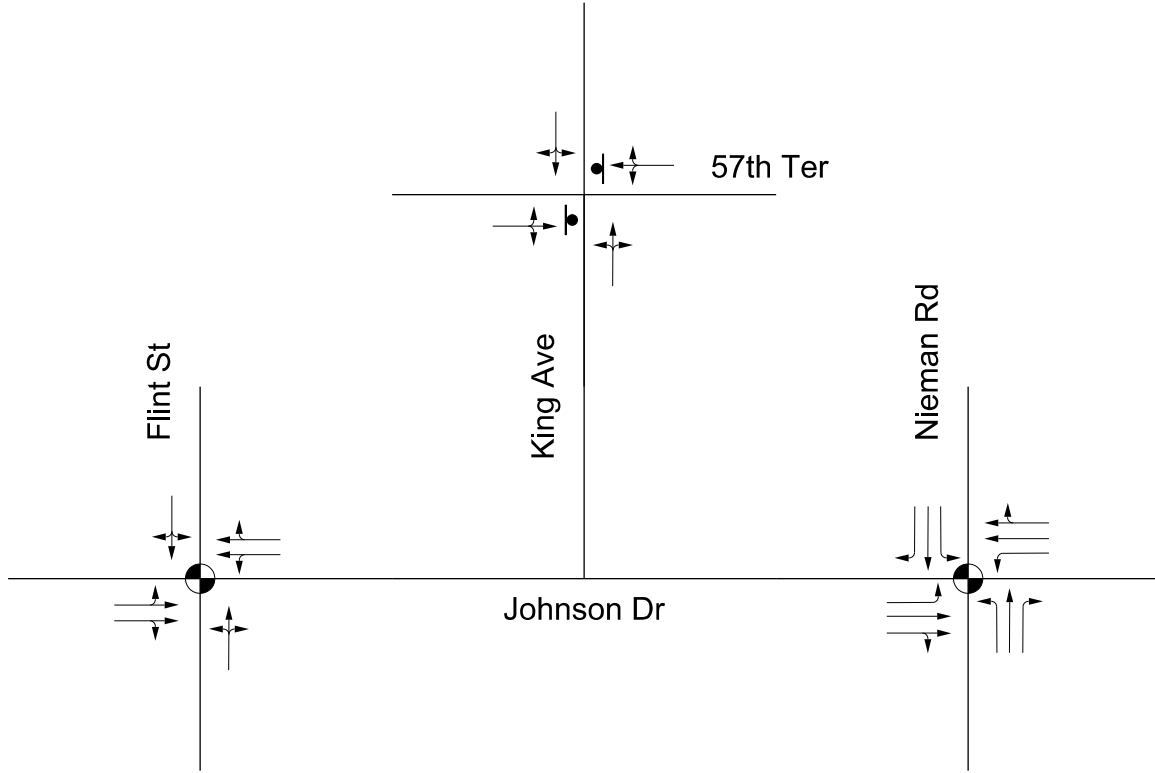


Figure A-5

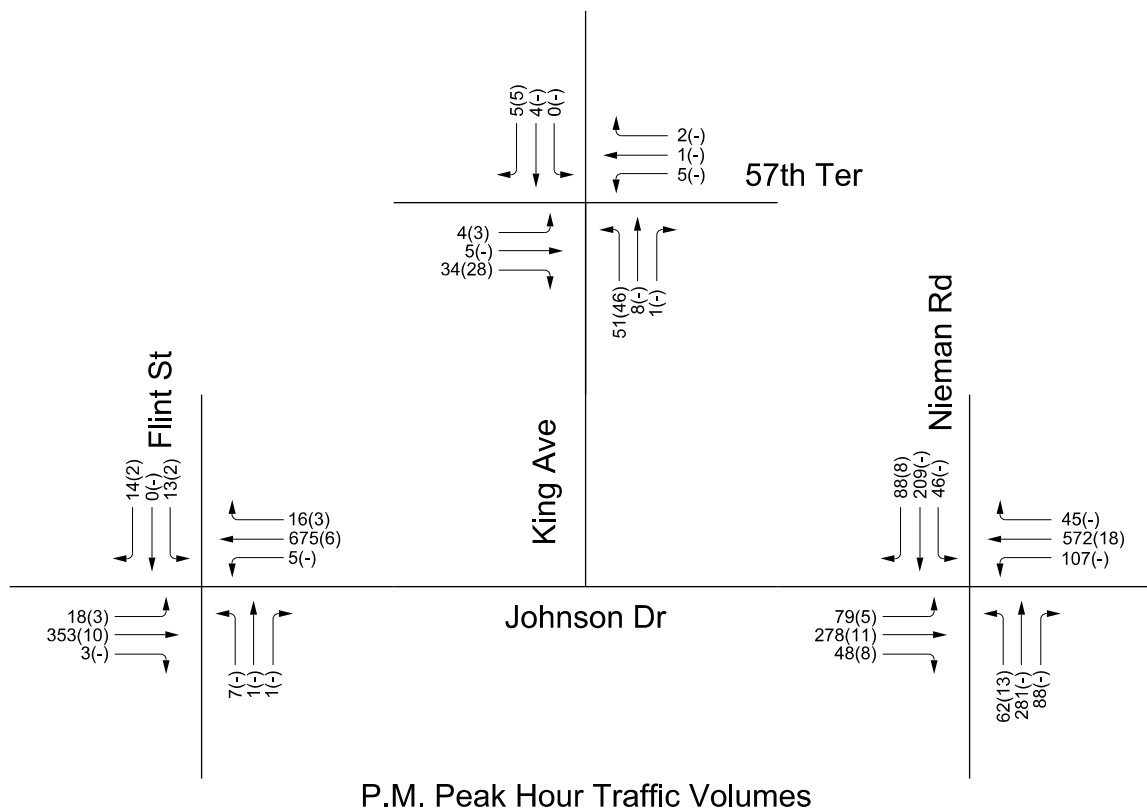
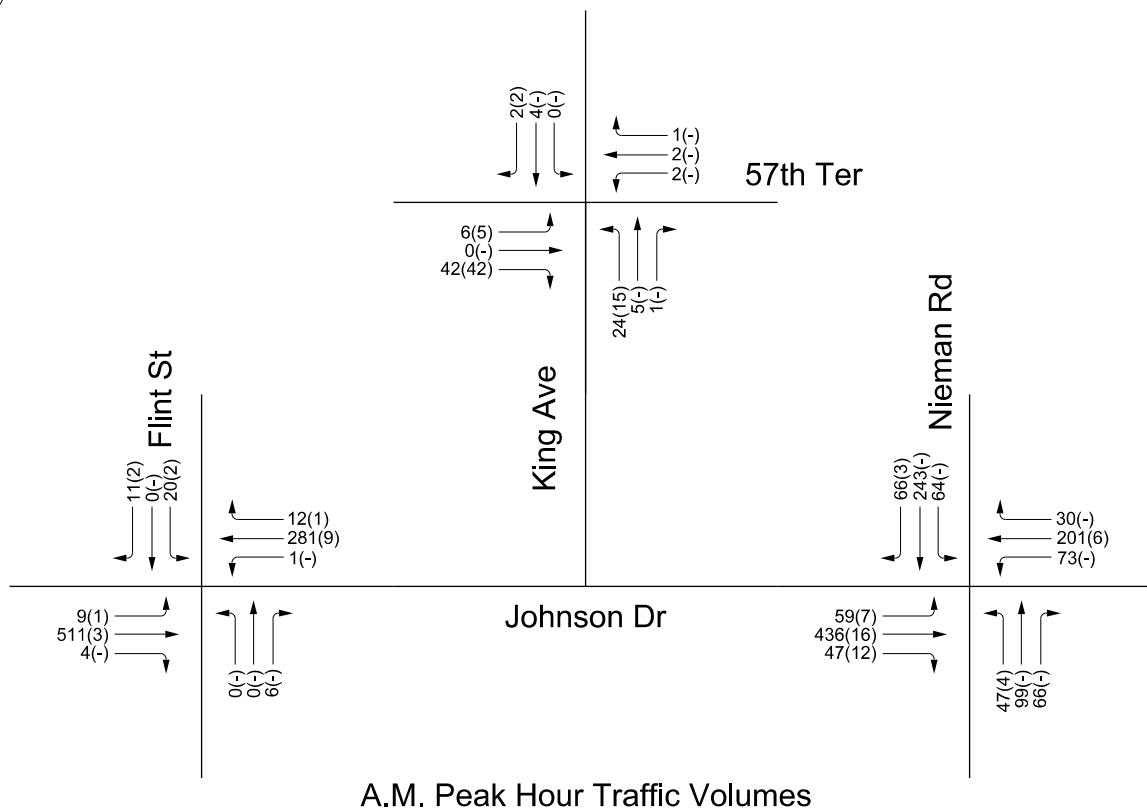
March 2020

No Scale

5700 King
Traffic Impact Study
Shawnee, Kansas

EXISTING PLUS FULL DEVELOPMENT CONDITIONS
LANE CONFIGURATIONS





Legend

- Total Hourly Volume
- Proposed Development Traffic



Appendix B –Trip Generation and Distribution

See attached worksheets.

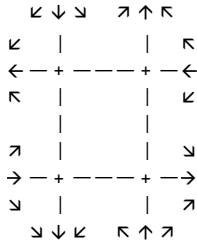
5700 King Shawnee, Kansas Trip Generation

Land Uses	Intensity	ITE Code	Daily	A.M. Peak Hour			P.M. Peak Hour		
				Total	% In	% Out	Total	% In	% Out
Multi-Family Housing (Mid-Rise)	188 units	221	1,023	64	26%	74%	17	47	51
Total Full Development Trips			1,023	64	17	47	82	51	31

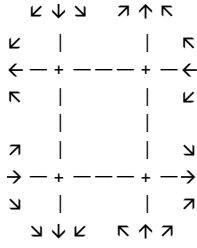
Trip generation estimates based on 10th edition

5700 King Shawnee, Kansas Existing Traffic Volumes A.M. Peak Hour

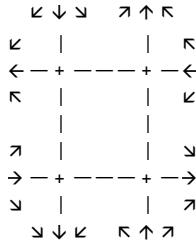
Flint Street and 57th Street



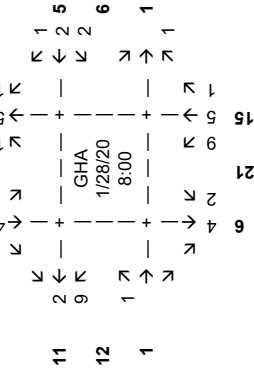
King Avenue and 57th Street



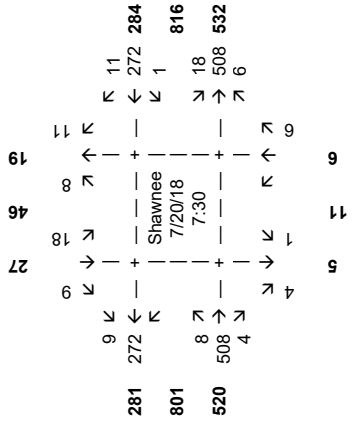
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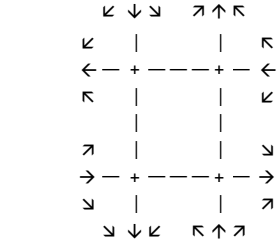
King Avenue and 57th Terrace



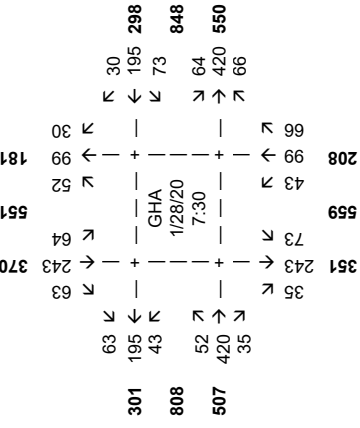
Flint Street and Johnson Drive



King Avenue and Johnson Drive



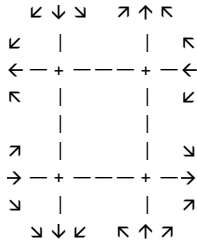
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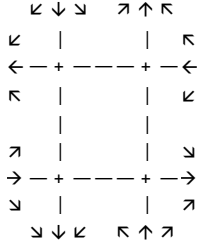
5700 King Shawnee, Kansas

Existing Traffic Volumes P.M. Peak Hour

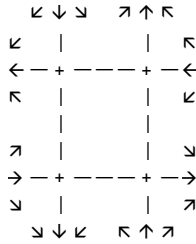
Flint Street and 57th Street



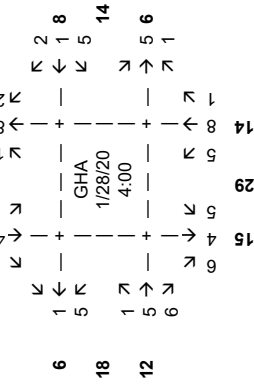
King Avenue and 57th Street



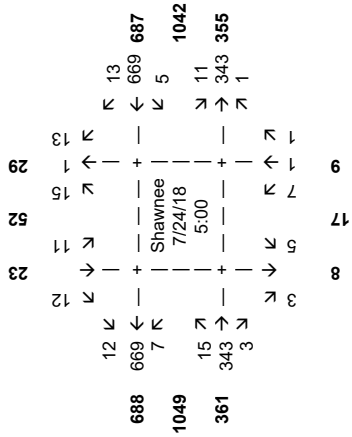
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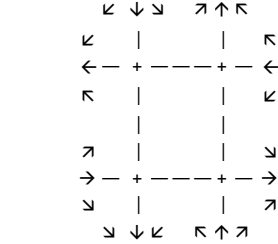
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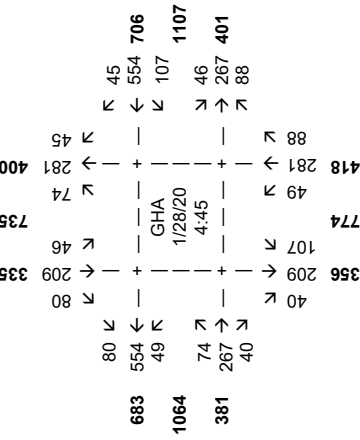
Flint Street and Johnson Drive



King Avenue and Johnson Drive



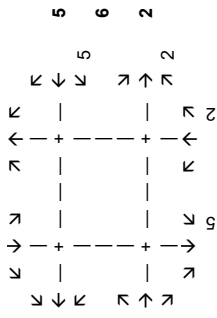
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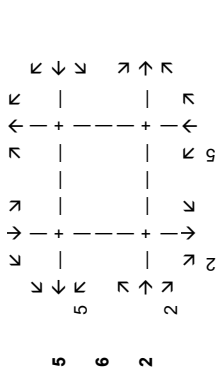
5700 King Shawnee, Kansas

Existing plus Development Traffic Volumes A.M. Peak Hour

Flint Street and 57th Street

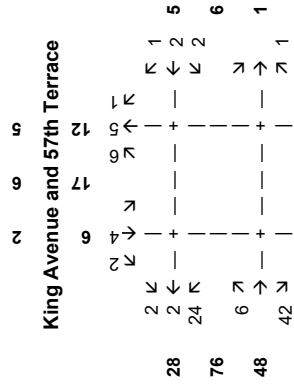


King Avenue and 57th Street

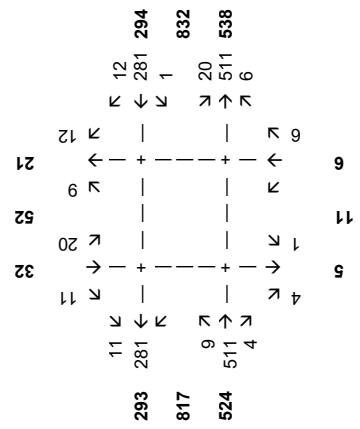


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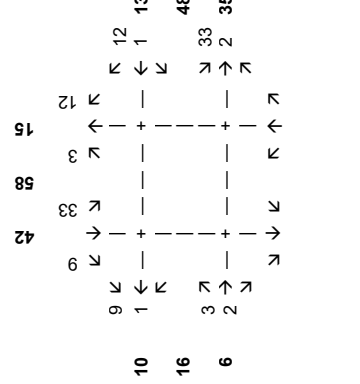
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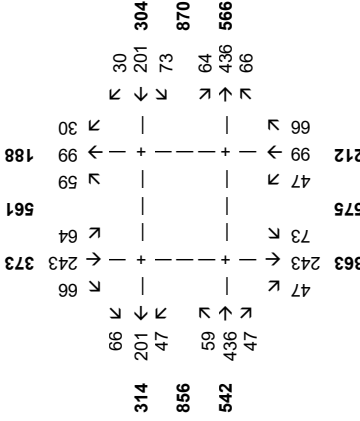
Flint Street and Johnson Drive



King Avenue and Johnson Drive



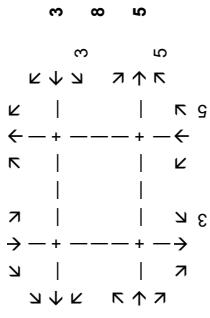
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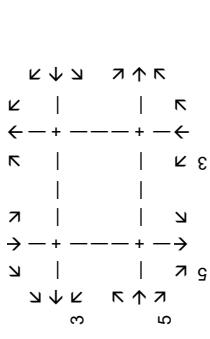
5700 King Shawnee, Kansas

Existing plus Development Traffic Volumes P.M. Peak Hour

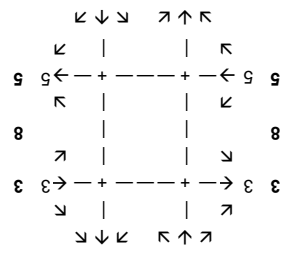
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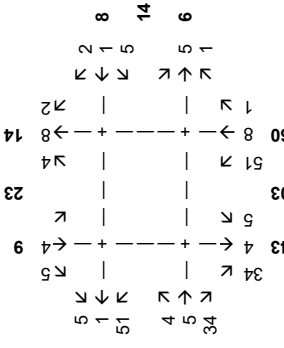
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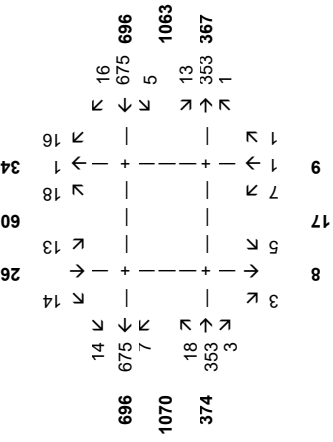
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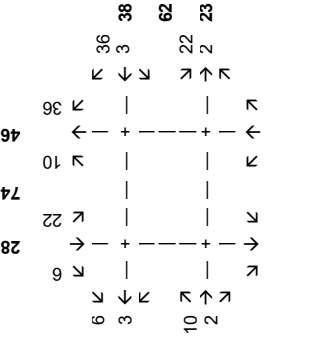
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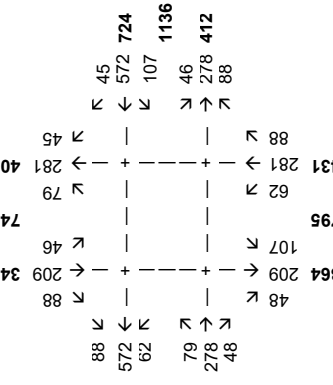
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King Avenue and Johnson Drive



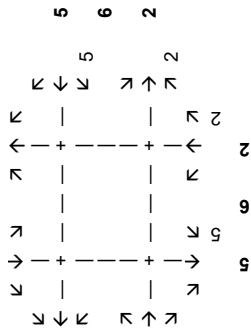
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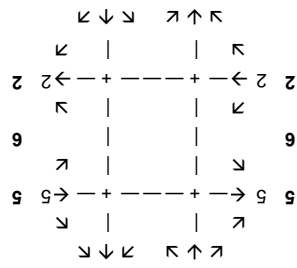
5700 King Shawnee, Kansas

Proposed Development Traffic Volumes A.M. Peak Hour

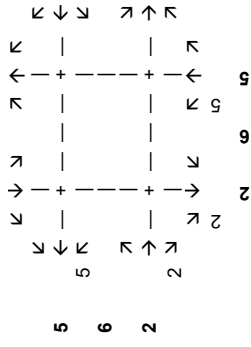
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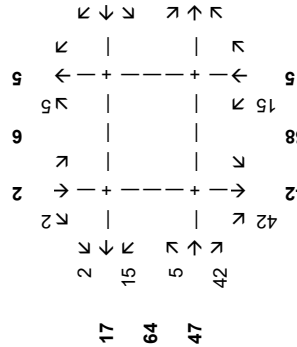
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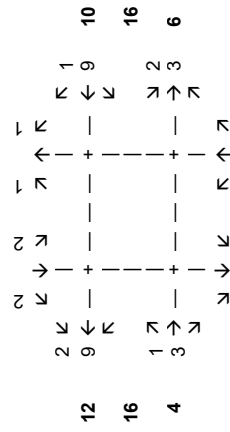
King Avenue and 57th Street



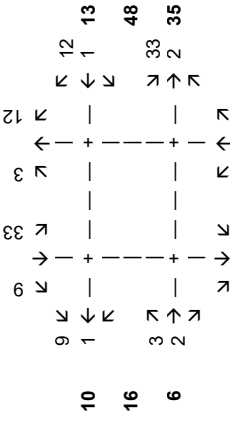
King Avenue and 57th Terrace



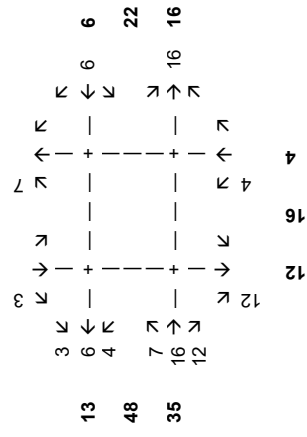
Flint Street and Johnson Drive



King Avenue and Johnson Drive



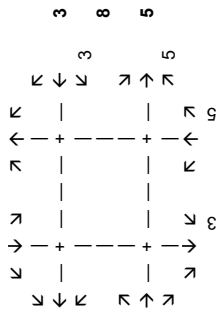
Nieman Road and Johnson Drive



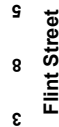
5700 King Shawnee, Kansas

Proposed Development Traffic Volumes P.M. Peak Hour

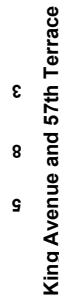
Flint Street and 57th Street



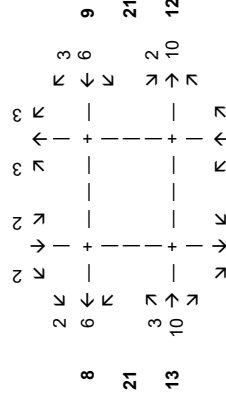
Flint Street



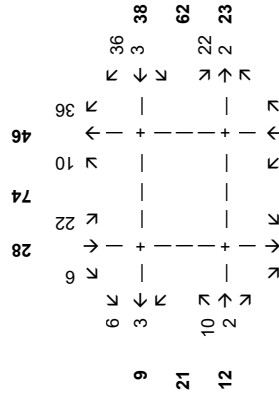
King Avenue and 57th Terrace



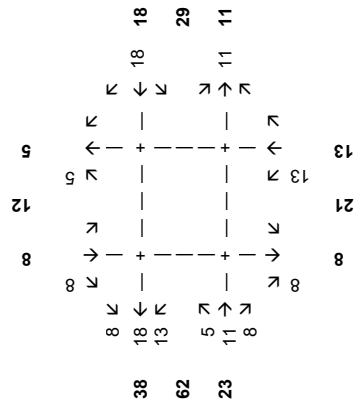
Flint Street and Johnson Drive



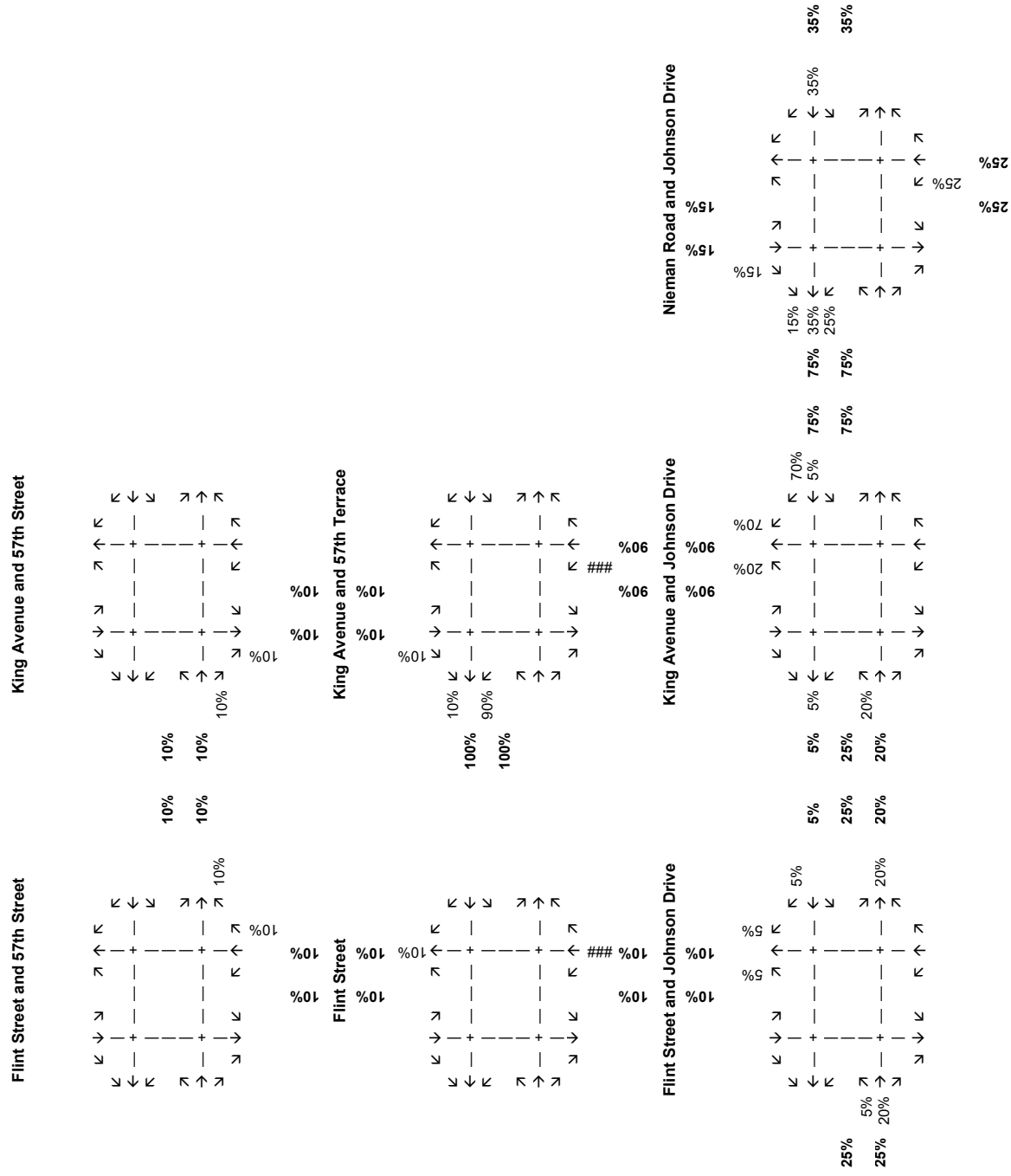
King Avenue and Johnson Drive



Nieman Road and Johnson Drive

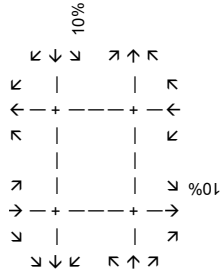


**5700 King
Shawnee, Kansas
Trip Distribution
Inbound**

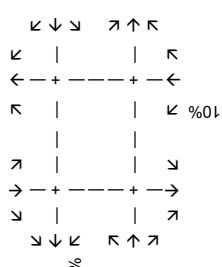


5700 King Shawnee, Kansas Trip Distribution Outbound

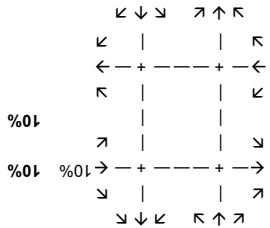
Flint Street and 57th Street



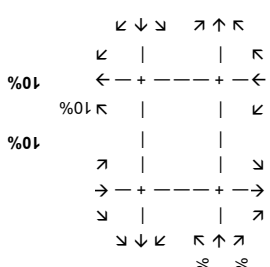
King Avenue and 57th Street



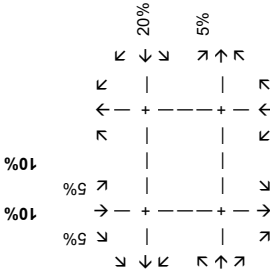
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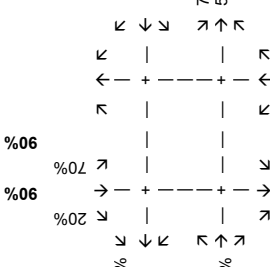
King Avenue and 57th Terrace



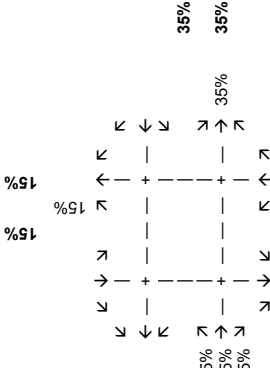
Flint Street and Johnson Drive



King Avenue and Johnson Drive



Nieman Road and Johnson Drive





Appendix C – Peak Hour Capacity Analysis Reports

See attached reports.

Queues

1: Nieman Rd & Johnson Dr

A.M. Peak Hour

Existing Conditions

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	64	562	81	250	51	118	79	73	276	72
v/c Ratio	0.10	0.44	0.20	0.27	0.18	0.31	0.17	0.19	0.72	0.15
Control Delay	13.5	24.3	15.8	28.0	20.7	33.2	0.8	20.5	44.6	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	24.3	15.8	28.0	20.7	33.2	0.8	20.5	44.6	0.7
Queue Length 50th (ft)	18	127	22	57	19	59	0	28	150	0
Queue Length 95th (ft)	42	181	56	104	40	100	0	55	233	0
Internal Link Dist (ft)		900		569		574			769	
Turn Bay Length (ft)	80		130		115		115	125		125
Base Capacity (vph)	656	1283	397	919	461	786	778	537	786	778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.44	0.20	0.27	0.11	0.15	0.10	0.14	0.35	0.09
Intersection Summary										

HCM 6th Signalized Intersection Summary

1: Nieman Rd & Johnson Dr

A.M. Peak Hour
Existing Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	420	35	73	195	30	43	99	66	64	243	63
Future Volume (veh/h)	52	420	35	73	195	30	43	99	66	64	243	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	64	519	43	81	217	33	51	118	79	73	276	72
Peak Hour Factor	0.81	0.81	0.81	0.90	0.90	0.90	0.84	0.84	0.84	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	695	1236	102	486	828	124	234	349	296	343	349	296
Arrive On Green	0.21	0.37	0.37	0.10	0.27	0.27	0.06	0.19	0.19	0.06	0.19	0.19
Sat Flow, veh/h	1781	3323	275	1781	3099	465	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	64	277	285	81	123	127	51	118	79	73	276	72
Grp Sat Flow(s),veh/h/ln	1781	1777	1821	1781	1777	1787	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.6	10.0	10.0	2.6	4.7	4.8	1.9	4.7	3.7	2.8	12.1	3.3
Cycle Q Clear(g_c), s	1.6	10.0	10.0	2.6	4.7	4.8	1.9	4.7	3.7	2.8	12.1	3.3
Prop In Lane	1.00		0.15	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	695	661	677	486	475	478	234	349	296	343	349	296
V/C Ratio(X)	0.09	0.42	0.42	0.17	0.26	0.27	0.22	0.34	0.27	0.21	0.79	0.24
Avail Cap(c_a), veh/h	695	661	677	486	475	478	503	804	682	612	804	682
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.5	20.1	20.1	17.8	24.8	24.9	26.2	30.4	30.0	25.7	33.4	29.8
Incr Delay (d2), s/veh	0.3	2.0	1.9	0.7	1.3	1.4	0.5	0.6	0.5	0.3	4.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.3	4.5	1.1	2.1	2.2	0.8	2.2	1.4	1.2	5.8	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.7	22.1	22.0	18.5	26.1	26.2	26.6	31.0	30.4	26.0	37.4	30.2
LnGrp LOS	B	C	C	B	C	C	C	C	C	C	D	C
Approach Vol, veh/h	626			331			248			421		
Approach Delay, s/veh	21.0			24.3			29.9			34.2		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	22.0	15.0	38.0	11.0	22.0	24.0	29.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	18.0	37.0	9.0	32.0	18.0	37.0	18.0	23.0				
Max Q Clear Time (g_c+I1), s	4.8	6.7	4.6	12.0	3.9	14.1	3.6	6.8				
Green Ext Time (p_c), s	0.1	1.0	0.1	3.3	0.1	1.9	0.1	1.2				
Intersection Summary												
HCM 6th Ctrl Delay	26.5											
HCM 6th LOS	C											

Queues
2: Flint St & Johnson Dr

A.M. Peak Hour
Existing Conditions

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	553	299	8	39
v/c Ratio	0.18	0.10	0.02	0.33
Control Delay	1.7	1.5	0.0	31.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	1.7	1.5	0.0	31.4
Queue Length 50th (ft)	30	14	0	8
Queue Length 95th (ft)	49	26	0	26
Internal Link Dist (ft)	250	900	255	903
Turn Bay Length (ft)				
Base Capacity (vph)	2993	2991	736	439
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.10	0.01	0.09
Intersection Summary				

HCM 6th Signalized Intersection Summary 2: Flint St & Johnson Dr

A.M. Peak Hour
Existing Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	508	4	1	272	11	0	0	6	18	0	9
Future Volume (veh/h)	8	508	4	1	272	11	0	0	6	18	0	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	9	540	4	1	286	12	0	0	8	26	0	13
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.75	0.75	0.75	0.68	0.68	0.68
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	61	2912	21	40	2831	118	0	0	61	97	0	16
Arrive On Green	0.83	0.83	0.83	0.83	0.83	0.83	0.00	0.00	0.04	0.04	0.00	0.04
Sat Flow, veh/h	25	3500	26	1	3402	142	0	0	1585	850	0	425
Grp Volume(v), veh/h	289	0	264	157	0	142	0	0	8	39	0	0
Grp Sat Flow(s),veh/h/ln	1852	0	1697	1869	0	1677	0	0	1585	1276	0	0
Q Serve(g_s), s	0.0	0.0	2.9	0.0	0.0	1.4	0.0	0.0	0.5	2.5	0.0	0.0
Cycle Q Clear(g_c), s	2.8	0.0	2.9	1.4	0.0	1.4	0.0	0.0	0.5	2.9	0.0	0.0
Prop In Lane	0.03		0.02	0.01		0.08	0.00		1.00	0.67		0.33
Lane Grp Cap(c), veh/h	1581	0	1412	1594	0	1395	0	0	61	114	0	0
V/C Ratio(X)	0.18	0.00	0.19	0.10	0.00	0.10	0.00	0.00	0.13	0.34	0.00	0.00
Avail Cap(c_a), veh/h	1581	0	1412	1594	0	1395	0	0	531	547	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.5	0.0	1.5	1.4	0.0	1.4	0.0	0.0	43.0	44.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.3	0.1	0.0	0.1	0.0	0.0	1.0	1.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.6	0.3	0.0	0.3	0.0	0.0	0.2	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.8	0.0	1.8	1.5	0.0	1.6	0.0	0.0	44.0	46.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	D	D	A	A
Approach Vol, veh/h		553			299			8			39	
Approach Delay, s/veh		1.8			1.6			44.0			46.2	
Approach LOS		A			A			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.5		83.0		9.5		83.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		31.0		77.0		31.0		77.0				
Max Q Clear Time (g_c+I1), s		2.5		4.9		4.9		3.4				
Green Ext Time (p_c), s		0.0		3.8		0.1		1.9				
Intersection Summary												
HCM 6th Ctrl Delay				4.0								
HCM 6th LOS				A								

HCM 6th TWSC
3: King Ave & Site Drive /57th Ter

A.M. Peak Hour
Existing Conditions

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	0	2	2	1	9	5	1	0	4	0
Future Vol, veh/h	1	0	0	2	2	1	9	5	1	0	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	3	3	1	12	6	1	0	5	0
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	38	36	5	36	36	7	5	0	0	7	0	0
Stage 1	5	5	-	31	31	-	-	-	-	-	-	-
Stage 2	33	31	-	5	5	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	967	856	1078	970	856	1075	1616	-	-	1614	-	-
Stage 1	1017	892	-	986	869	-	-	-	-	-	-	-
Stage 2	983	869	-	1017	892	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	958	850	1078	965	850	1075	1616	-	-	1614	-	-
Mov Cap-2 Maneuver	958	850	-	965	850	-	-	-	-	-	-	-
Stage 1	1010	892	-	979	863	-	-	-	-	-	-	-
Stage 2	972	863	-	1017	892	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	8.8		8.9			4.3			0			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1616	-	-	958	934	1614	-	-				
HCM Lane V/C Ratio	0.007	-	-	0.001	0.007	-	-	-				
HCM Control Delay (s)	7.2	0	-	8.8	8.9	0	-	-				
HCM Lane LOS	A	A	-	A	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-				

Queues

1: Nieman Rd & Johnson Dr

P.M. Peak Hour

Existing Conditions

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	333	119	666	54	312	98	49	222	85
v/c Ratio	0.16	0.21	0.26	0.56	0.20	0.76	0.20	0.24	0.54	0.17
Control Delay	13.0	18.5	15.2	31.1	25.5	49.6	0.9	26.6	40.1	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	18.5	15.2	31.1	25.5	49.6	0.9	26.6	40.1	0.7
Queue Length 50th (ft)	23	66	35	187	25	195	0	22	131	0
Queue Length 95th (ft)	56	115	78	284	52	289	0	49	204	0
Internal Link Dist (ft)		900		569		574			769	
Turn Bay Length (ft)	80		130		115		115	125		125
Base Capacity (vph)	490	1569	469	1187	272	722	730	203	722	730
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.21	0.25	0.56	0.20	0.43	0.13	0.24	0.31	0.12
Intersection Summary										

HCM 6th Signalized Intersection Summary

1: Nieman Rd & Johnson Dr

P.M. Peak Hour
Existing Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	267	40	107	554	45	49	281	88	46	209	80
Future Volume (veh/h)	74	267	40	107	554	45	49	281	88	46	209	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	290	43	119	616	50	54	312	98	49	222	85
Peak Hour Factor	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	539	1429	210	537	1133	92	241	378	320	180	375	318
Arrive On Green	0.18	0.46	0.46	0.06	0.34	0.34	0.04	0.20	0.20	0.04	0.20	0.20
Sat Flow, veh/h	1781	3109	456	1781	3329	270	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	80	164	169	119	328	338	54	312	98	49	222	85
Grp Sat Flow(s),veh/h/ln	1781	1777	1788	1781	1777	1822	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.2	5.5	5.6	4.3	14.9	15.0	2.4	16.0	5.3	2.2	10.8	4.5
Cycle Q Clear(g_c), s	2.2	5.5	5.6	4.3	14.9	15.0	2.4	16.0	5.3	2.2	10.8	4.5
Prop In Lane	1.00		0.25	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	539	817	822	537	605	620	241	378	320	180	375	318
V/C Ratio(X)	0.15	0.20	0.21	0.22	0.54	0.54	0.22	0.83	0.31	0.27	0.59	0.27
Avail Cap(c_a), veh/h	539	817	822	553	605	620	261	730	619	203	730	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.7	16.1	16.1	19.2	26.7	26.7	30.4	38.2	33.9	31.2	36.2	33.7
Incr Delay (d2), s/veh	0.6	0.6	0.6	0.2	3.5	3.4	0.5	4.6	0.5	0.8	1.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.3	2.4	1.8	6.8	7.0	1.1	7.8	2.1	1.0	5.1	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	16.6	16.7	19.4	30.2	30.1	30.9	42.8	34.4	32.0	37.7	34.2
LnGrp LOS	B	B	B	B	C	C	C	D	C	C	D	C
Approach Vol, veh/h	413			785			464			356		
Approach Delay, s/veh	16.0			28.5			39.6			36.1		
Approach LOS	B			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	26.2	12.1	51.9	9.9	26.0	24.0	40.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	39.0	7.0	45.0	5.0	39.0	18.0	34.0				
Max Q Clear Time (g_c+l1), s	4.2	18.0	6.3	7.6	4.4	12.8	4.2	17.0				
Green Ext Time (p_c), s	0.0	2.2	0.0	2.1	0.0	1.7	0.1	3.9				
Intersection Summary												
HCM 6th Ctrl Delay	29.8											
HCM 6th LOS	C											

Queues
2: Flint St & Johnson Dr

P.M. Peak Hour
Existing Conditions

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	401	781	11	36
v/c Ratio	0.14	0.26	0.11	0.31
Control Delay	1.5	1.8	47.8	30.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	1.5	1.8	47.8	30.1
Queue Length 50th (ft)	20	44	7	6
Queue Length 95th (ft)	34	68	20	22
Internal Link Dist (ft)	250	900	255	903
Turn Bay Length (ft)				
Base Capacity (vph)	2883	3007	408	402
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.26	0.03	0.09
Intersection Summary				

HCM 6th Signalized Intersection Summary 2: Flint St & Johnson Dr

P.M. Peak Hour
Existing Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	343	3	5	669	13	7	1	1	11	0	12
Future Volume (veh/h)	15	343	3	5	669	13	7	1	1	11	0	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	381	3	6	760	15	9	1	1	17	0	19
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.75	0.75	0.75	0.64	0.64	0.64
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	2739	22	44	2913	57	113	12	6	82	1	30
Arrive On Green	0.84	0.84	0.84	0.84	0.84	0.84	0.04	0.04	0.04	0.04	0.00	0.04
Sat Flow, veh/h	100	3272	26	7	3479	68	1180	330	151	704	26	817
Grp Volume(v), veh/h	204	0	197	410	0	371	11	0	0	36	0	0
Grp Sat Flow(s),veh/h/ln	1701	0	1697	1864	0	1690	1661	0	0	1547	0	0
Q Serve(g_s), s	0.0	0.0	2.0	0.0	0.0	4.4	0.0	0.0	0.0	1.6	0.0	0.0
Cycle Q Clear(g_c), s	1.9	0.0	2.0	4.4	0.0	4.4	0.6	0.0	0.0	2.1	0.0	0.0
Prop In Lane	0.08		0.02	0.01		0.04	0.82		0.09	0.47		0.53
Lane Grp Cap(c), veh/h	1465	0	1421	1599	0	1415	130	0	0	113	0	0
V/C Ratio(X)	0.14	0.00	0.14	0.26	0.00	0.26	0.08	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	1465	0	1421	1599	0	1415	499	0	0	497	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.4	0.0	1.4	1.6	0.0	1.6	44.6	0.0	0.0	45.3	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.2	0.4	0.0	0.5	0.3	0.0	0.0	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.4	0.9	0.0	0.9	0.3	0.0	0.0	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.6	0.0	1.6	2.0	0.0	2.1	44.8	0.0	0.0	46.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		401			781			11			36	
Approach Delay, s/veh		1.6			2.0			44.8			46.9	
Approach LOS		A			A			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.6		86.0		9.6		86.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		28.0		80.0		28.0		80.0				
Max Q Clear Time (g_c+I1), s		2.6		4.0		4.1		6.4				
Green Ext Time (p_c), s		0.0		2.7		0.1		5.9				
Intersection Summary												
HCM 6th Ctrl Delay			3.6									
HCM 6th LOS			A									

HCM 6th TWSC
3: King Ave & Site Drive /57th Ter

P.M. Peak Hour
Existing Conditions

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	5	6	5	1	2	5	8	1	0	4	0
Future Vol, veh/h	1	5	6	5	1	2	5	8	1	0	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	6	7	6	1	2	6	9	1	0	5	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	28	27	5	34	27	10	5	0	0	10	0	0
Stage 1	5	5	-	22	22	-	-	-	-	-	-	-
Stage 2	23	22	-	12	5	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	981	866	1078	973	866	1071	1616	-	-	1610	-	-
Stage 1	1017	892	-	996	877	-	-	-	-	-	-	-
Stage 2	995	877	-	1009	892	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	975	863	1078	959	863	1071	1616	-	-	1610	-	-
Mov Cap-2 Maneuver	975	863	-	959	863	-	-	-	-	-	-	-
Stage 1	1013	892	-	992	873	-	-	-	-	-	-	-
Stage 2	988	873	-	996	892	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		8.7		2.6		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1616	-	-	969 971	1610	-	-
HCM Lane V/C Ratio	0.004	-	-	0.014 0.009	-	-	-
HCM Control Delay (s)	7.2	0	-	8.8 8.7	0	-	-
HCM Lane LOS	A	A	-	A A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0 0	0	-	-

Queues

1: Nieman Rd & Johnson Dr

A.M. Peak Hour

Existing + Dev. Conditions

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	596	81	256	56	118	79	73	276	75
v/c Ratio	0.11	0.46	0.21	0.28	0.20	0.31	0.17	0.19	0.72	0.16
Control Delay	13.7	24.6	16.2	28.9	21.2	33.5	0.8	20.9	45.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	24.6	16.2	28.9	21.2	33.5	0.8	20.9	45.5	0.7
Queue Length 50th (ft)	20	137	23	61	22	60	0	29	153	0
Queue Length 95th (ft)	47	194	57	108	43	102	0	56	237	0
Internal Link Dist (ft)		900		569		574			769	
Turn Bay Length (ft)	80		130		115		115	125		125
Base Capacity (vph)	663	1297	384	906	454	753	753	536	753	753
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.46	0.21	0.28	0.12	0.16	0.10	0.14	0.37	0.10
Intersection Summary										

HCM 6th Signalized Intersection Summary

1: Nieman Rd & Johnson Dr

A.M. Peak Hour
Existing + Dev. Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	436	47	73	201	30	47	99	66	64	243	66
Future Volume (veh/h)	59	436	47	73	201	30	47	99	66	64	243	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	538	58	81	223	33	56	118	79	73	276	75
Peak Hour Factor	0.81	0.81	0.81	0.90	0.90	0.90	0.84	0.84	0.84	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	702	1225	132	475	821	120	231	348	295	340	348	295
Arrive On Green	0.22	0.38	0.38	0.10	0.26	0.26	0.06	0.19	0.19	0.06	0.19	0.19
Sat Flow, veh/h	1781	3237	348	1781	3111	454	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	73	295	301	81	126	130	56	118	79	73	276	75
Grp Sat Flow(s),veh/h/ln	1781	1777	1808	1781	1777	1789	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.8	10.8	10.8	2.6	4.9	5.0	2.1	4.8	3.7	2.8	12.3	3.5
Cycle Q Clear(g_c), s	1.8	10.8	10.8	2.6	4.9	5.0	2.1	4.8	3.7	2.8	12.3	3.5
Prop In Lane	1.00		0.19	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	702	672	684	475	469	472	231	348	295	340	348	295
V/C Ratio(X)	0.10	0.44	0.44	0.17	0.27	0.28	0.24	0.34	0.27	0.21	0.79	0.25
Avail Cap(c_a), veh/h	702	672	684	475	469	472	496	772	654	606	772	654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.5	20.2	20.2	18.3	25.4	25.5	26.7	30.9	30.4	26.2	33.9	30.3
Incr Delay (d2), s/veh	0.3	2.1	2.1	0.8	1.4	1.4	0.5	0.6	0.5	0.3	4.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	4.7	4.8	1.2	2.2	2.3	0.9	2.2	1.4	1.2	5.9	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.8	22.3	22.3	19.1	26.8	26.9	27.2	31.4	30.9	26.5	38.0	30.8
LnGrp LOS	B	C	C	B	C	C	C	C	C	C	D	C
Approach Vol, veh/h		669			337			253			424	
Approach Delay, s/veh		21.1			25.0			30.3			34.8	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	22.2	15.0	39.0	11.0	22.2	25.0	29.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	18.0	36.0	9.0	33.0	18.0	36.0	19.0	23.0				
Max Q Clear Time (g_c+I1), s	4.8	6.8	4.6	12.8	4.1	14.3	3.8	7.0				
Green Ext Time (p_c), s	0.1	0.9	0.1	3.6	0.1	1.9	0.1	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			26.7									
HCM 6th LOS			C									

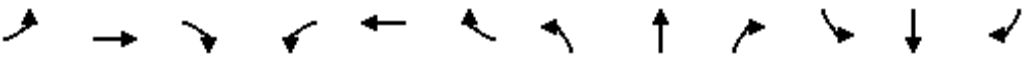
Queues
2: Flint St & Johnson Dr

A.M. Peak Hour
Existing + Dev. Conditions

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	558	310	8	45
v/c Ratio	0.19	0.10	0.02	0.37
Control Delay	1.8	1.6	0.0	33.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	1.8	1.6	0.0	33.9
Queue Length 50th (ft)	31	15	0	12
Queue Length 95th (ft)	52	28	0	30
Internal Link Dist (ft)	250	900	255	903
Turn Bay Length (ft)				
Base Capacity (vph)	2976	2980	734	441
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.10	0.01	0.10
Intersection Summary				

HCM 6th Signalized Intersection Summary 2: Flint St & Johnson Dr

A.M. Peak Hour
Existing + Dev. Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Volume (veh/h)	9	511	4	1	281	12	0	0	6	20	0	11
Future Volume (veh/h)	9	511	4	1	281	12	0	0	6	20	0	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	544	4	1	296	13	0	0	8	29	0	16
Peak Hour Factor	0.94	0.94	0.94	0.95	0.95	0.95	0.75	0.75	0.75	0.68	0.68	0.68
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	64	2889	21	40	2808	123	0	0	69	100	0	20
Arrive On Green	0.83	0.83	0.83	0.83	0.83	0.83	0.00	0.00	0.04	0.04	0.00	0.04
Sat Flow, veh/h	29	3492	25	1	3395	148	0	0	1585	840	0	463
Grp Volume(v), veh/h	291	0	267	163	0	147	0	0	8	45	0	0
Grp Sat Flow(s),veh/h/ln	1849	0	1697	1869	0	1675	0	0	1585	1303	0	0
Q Serve(g_s), s	0.0	0.0	3.0	0.0	0.0	1.5	0.0	0.0	0.5	2.8	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	3.0	1.5	0.0	1.5	0.0	0.0	0.5	3.3	0.0	0.0
Prop In Lane	0.03		0.01	0.01		0.09	0.00		1.00	0.64		0.36
Lane Grp Cap(c), veh/h	1569	0	1404	1585	0	1386	0	0	69	121	0	0
V/C Ratio(X)	0.19	0.00	0.19	0.10	0.00	0.11	0.00	0.00	0.12	0.37	0.00	0.00
Avail Cap(c_a), veh/h	1569	0	1404	1585	0	1386	0	0	528	545	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.6	0.0	1.6	1.5	0.0	1.5	0.0	0.0	42.8	44.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.3	0.1	0.0	0.2	0.0	0.0	0.7	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.6	0.3	0.0	0.3	0.0	0.0	0.2	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.9	0.0	1.9	1.7	0.0	1.7	0.0	0.0	43.5	46.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	D	D	A	A
Approach Vol, veh/h		558			310			8			45	
Approach Delay, s/veh		1.9			1.7			43.5			46.2	
Approach LOS		A			A			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		10.1		83.0		10.1		83.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		31.0		77.0		31.0		77.0				
Max Q Clear Time (g_c+I1), s		2.5		5.0		5.3		3.5				
Green Ext Time (p_c), s		0.0		3.8		0.2		2.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.4									
HCM 6th LOS			A									

HCM 6th TWSC
3: King Ave & Site Drive /57th Ter

A.M. Peak Hour
Existing + Dev. Conditions

Intersection												
Int Delay, s/veh	7.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	42	2	2	1	24	5	1	0	4	2
Future Vol, veh/h	6	0	42	2	2	1	24	5	1	0	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	54	3	3	1	31	6	1	0	5	3
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	78	76	7	103	77	7	8	0	0	7	0	0
Stage 1	7	7	-	69	69	-	-	-	-	-	-	-
Stage 2	71	69	-	34	8	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	911	814	1075	877	813	1075	1612	-	-	1614	-	-
Stage 1	1015	890	-	941	837	-	-	-	-	-	-	-
Stage 2	939	837	-	982	889	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	895	799	1075	821	798	1075	1612	-	-	1614	-	-
Mov Cap-2 Maneuver	895	799	-	821	798	-	-	-	-	-	-	-
Stage 1	996	890	-	923	821	-	-	-	-	-	-	-
Stage 2	917	821	-	933	889	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	8.6		9.3		5.8		0					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1612	-	-	1049	851	1614	-	-				
HCM Lane V/C Ratio	0.019	-	-	0.059	0.008	-	-	-				
HCM Control Delay (s)	7.3	0	-	8.6	9.3	0	-	-				
HCM Lane LOS	A	A	-	A	A	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0	0	-	-				

Queues

1: Nieman Rd & Johnson Dr

P.M. Peak Hour

Existing + Dev. Conditions

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	86	354	119	686	69	312	98	49	222	94
v/c Ratio	0.18	0.23	0.26	0.58	0.25	0.76	0.20	0.24	0.54	0.19
Control Delay	13.1	18.5	15.3	31.5	26.5	49.6	0.9	26.6	40.1	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	18.5	15.3	31.5	26.5	49.6	0.9	26.6	40.1	0.8
Queue Length 50th (ft)	25	70	35	194	32	195	0	22	131	0
Queue Length 95th (ft)	59	121	78	293	63	289	0	49	204	0
Internal Link Dist (ft)		900		569		574			769	
Turn Bay Length (ft)	80		130		115		115	125		125
Base Capacity (vph)	483	1565	463	1187	272	722	730	203	722	730
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.23	0.26	0.58	0.25	0.43	0.13	0.24	0.31	0.13
Intersection Summary										

HCM 6th Signalized Intersection Summary

1: Nieman Rd & Johnson Dr

P.M. Peak Hour
Existing + Dev. Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	278	48	107	572	45	62	281	88	46	209	88
Future Volume (veh/h)	79	278	48	107	572	45	62	281	88	46	209	88
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	302	52	119	636	50	69	312	98	49	222	94
Peak Hour Factor	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.90	0.90	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	533	1396	238	530	1136	89	243	378	320	180	367	311
Arrive On Green	0.18	0.46	0.46	0.06	0.34	0.34	0.04	0.20	0.20	0.04	0.20	0.20
Sat Flow, veh/h	1781	3037	517	1781	3338	262	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	86	175	179	119	338	348	69	312	98	49	222	94
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1781	1777	1823	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.3	5.9	6.0	4.3	15.5	15.5	3.1	16.0	5.3	2.2	10.8	5.1
Cycle Q Clear(g_c), s	2.3	5.9	6.0	4.3	15.5	15.5	3.1	16.0	5.3	2.2	10.8	5.1
Prop In Lane	1.00		0.29	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	533	817	817	530	605	620	243	378	320	180	367	311
V/C Ratio(X)	0.16	0.21	0.22	0.22	0.56	0.56	0.28	0.83	0.31	0.27	0.61	0.30
Avail Cap(c_a), veh/h	533	817	817	546	605	620	255	730	619	203	730	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.8	16.2	16.2	19.2	26.9	26.9	30.7	38.2	33.9	31.4	36.6	34.3
Incr Delay (d2), s/veh	0.6	0.6	0.6	0.2	3.7	3.6	0.6	4.6	0.5	0.8	1.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.5	2.5	1.8	7.1	7.3	1.4	7.8	2.1	1.0	5.1	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.5	16.8	16.8	19.4	30.6	30.5	31.3	42.8	34.4	32.2	38.2	34.9
LnGrp LOS	B	B	B	B	C	C	C	D	C	C	D	C
Approach Vol, veh/h		440			805			479			365	
Approach Delay, s/veh		16.2			28.9			39.4			36.6	
Approach LOS		B			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	26.2	12.1	51.9	10.3	25.6	24.0	40.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	39.0	7.0	45.0	5.0	39.0	18.0	34.0				
Max Q Clear Time (g_c+I1), s	4.2	18.0	6.3	8.0	5.1	12.8	4.3	17.5				
Green Ext Time (p_c), s	0.0	2.2	0.0	2.3	0.0	1.7	0.1	3.9				
Intersection Summary												
HCM 6th Ctrl Delay			30.0									
HCM 6th LOS			C									

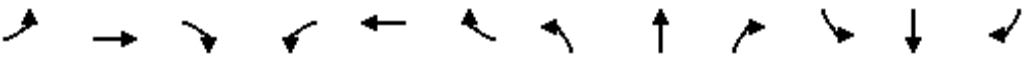
Queues
2: Flint St & Johnson Dr

P.M. Peak Hour
Existing + Dev. Conditions

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	409	791	11	42
v/c Ratio	0.14	0.26	0.12	0.35
Control Delay	1.6	1.9	47.4	32.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	1.6	1.9	47.4	32.9
Queue Length 50th (ft)	21	46	7	11
Queue Length 95th (ft)	37	73	20	26
Internal Link Dist (ft)	250	900	255	903
Turn Bay Length (ft)				
Base Capacity (vph)	2907	2996	373	401
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.26	0.03	0.10
Intersection Summary				

HCM 6th Signalized Intersection Summary 2: Flint St & Johnson Dr

P.M. Peak Hour
Existing + Dev. Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Volume (veh/h)	13	353	3	5	675	16	7	1	1	13	0	14
Future Volume (veh/h)	13	353	3	5	675	16	7	1	1	13	0	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	392	3	6	767	18	9	1	1	20	0	22
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.75	0.75	0.75	0.64	0.64	0.64
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	103	2788	21	44	2894	68	116	13	6	83	1	32
Arrive On Green	0.84	0.84	0.84	0.84	0.84	0.84	0.04	0.04	0.04	0.04	0.00	0.04
Sat Flow, veh/h	75	3338	26	7	3465	81	1208	323	153	709	26	809
Grp Volume(v), veh/h	210	0	199	415	0	376	11	0	0	42	0	0
Grp Sat Flow(s),veh/h/ln	1741	0	1697	1864	0	1687	1684	0	0	1544	0	0
Q Serve(g_s), s	0.0	0.0	2.1	0.0	0.0	4.5	0.0	0.0	0.0	2.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	2.1	4.5	0.0	4.5	0.6	0.0	0.0	2.5	0.0	0.0
Prop In Lane	0.07		0.02	0.01		0.05	0.82		0.09	0.48		0.52
Lane Grp Cap(c), veh/h	1494	0	1418	1595	0	1409	135	0	0	116	0	0
V/C Ratio(X)	0.14	0.00	0.14	0.26	0.00	0.27	0.08	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	1494	0	1418	1595	0	1409	499	0	0	496	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.5	0.0	1.5	1.7	0.0	1.7	44.5	0.0	0.0	45.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.2	0.4	0.0	0.5	0.3	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.4	1.0	0.0	0.9	0.3	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.7	0.0	1.7	2.1	0.0	2.1	44.7	0.0	0.0	47.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		409			791			11			42	
Approach Delay, s/veh		1.7			2.1			44.7			47.2	
Approach LOS		A			A			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.8		86.0		9.8		86.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		28.0		80.0		28.0		80.0				
Max Q Clear Time (g_c+I1), s		2.6		4.1		4.5		6.5				
Green Ext Time (p_c), s		0.0		2.8		0.2		6.0				
Intersection Summary												
HCM 6th Ctrl Delay			3.8									
HCM 6th LOS			A									

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	5	34	5	1	2	51	8	1	0	4	5
Future Vol, veh/h	4	5	34	5	1	2	51	8	1	0	4	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	6	39	6	1	2	58	9	1	0	5	6

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	135	134	8	157	137	10	11	0	0	10	0	0
Stage 1	8	8	-	126	126	-	-	-	-	-	-	-
Stage 2	127	126	-	31	11	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	836	757	1074	809	754	1071	1608	-	-	1610	-	-
Stage 1	1013	889	-	878	792	-	-	-	-	-	-	-
Stage 2	877	792	-	986	886	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	810	730	1074	754	727	1071	1608	-	-	1610	-	-
Mov Cap-2 Maneuver	810	730	-	754	727	-	-	-	-	-	-	-
Stage 1	977	889	-	846	763	-	-	-	-	-	-	-
Stage 2	842	763	-	944	886	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		9.5		6.2		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1608	-	-	990	810	1610	-
HCM Lane V/C Ratio	0.036	-	-	0.049	0.011	-	-
HCM Control Delay (s)	7.3	0	-	8.8	9.5	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0	0	-