The Grove at Towne Center:

Development of Regional Impact Traffic Study

Snellville, Georgia

PREPARED FOR: State Road & Tollway Authority
WOLVERTON PROJECT NO. 19-LD-006

January 2020

WOLVERTON
A CHA Company

ENGINEERING SOLUTIONS YOU CAN TRUST

770.447.8999 | 6745 Sugarloaf Parkway, Suite 100 | Duluth, Georgia 30097 | www.wolvertoninc.com

TABLE OF CONTENTS

Table of Contents i
List of Tables ii
List of Figures ii
1. Introduction 1.1
1.1 Study Area 1.1
2. Existing Conditions 2.1
2.1 Roadways 2.1
2.2 Intersections 2.1
2.3 Existing Traffic Flow Patterns 2.2
3. Proposed Conditions 3.1
3.1 Proposed Development 3.1
3.2 Planned Transportation Improvements 3.1
4. Traffic Projections 4.1
4.1 Future Background Traffic 4.1
4.2 Trip Generation 4.1
4.3 Distribution of Project-Generated Trips 4.5
4.4 Assignment of Project-Generated Trips 4.5
5. Capacity Analysis 5.1
5.1 Existing Intersection Capacity Analysis 5.1
5.2 Future Intersection Capacity Analysis 5.2
5.3 Back of Queue Analysis 5.4
6. Recommendations 6.1
7. Conclusions 7.1
Appendix A : Traffic Counts A.1
Appendix B : Parcel Locations\Land Uses B.1
Appendix C : Capacity Analysis Reports C.1

LIST OF TABLES

Table 1.1 – Summary of Study Area Roadways 1.1
Table 2.1 – Summary of Study Area Roadways 2.1
Table 4.1 – Existing Trips (To Be Removed) 4.2
Table 4.2 – Trip Generation Table (Trips to be Added) 4.4
Table 4.3 – Trip Generation Results 4.5
Table 5.1 – Level of Service Criteria 5.1
Table 5.2 – Existing LOS and Delay at Study Intersections 5.2
Table 5.3 – Future Year 2023 Delay and LOS results 5.3
Table 5.4 – Back of Queue Results 5.5

LIST OF FIGURES

Figure 1.1 – Aerial View of Study Area 1.3
Figure 2.1 - Existing Intersection Geometries 2.3
Figure 2.2 - Existing 2019 Peak Hour Traffic 2.4
Figure 3.1 - Proposed Site Plan 3.2
Figure 3.2 - Proposed Study Intersection Geometries 3.3
Figure 4.1 - Future 2023 Background Peak Hour Traffic 4.6
Figure 4.2 – Project Peak Hour Trip Distribution of Trips 4.7
Figure 4.3 – Future 2023 With Project Peak Hour Traffic 4.8

EXECUTIVE SUMMARY

The Grove at Towne Center is a proposed 18-acre mixed-use development in the City of Snellville, Georgia. Phase 1 of the development is planned for a ten (10)-acre site bounded by North Road on the west, Oak Road on the south, Clower Street on the east, and Wisteria Drive on the north. Phase 2 of the development is planned for an eight (8)-acre site across from (on the north side of) Wisteria Drive, and slightly east of, Phase 1.

This development will blend a variety of commercial and residential land uses into a Towne Center with amenity areas. The development will provide for residential uses in close proximity to employment, shopping, entertainment, and civic uses to create a walkable community. In conjunction with the development, new streetscape upgrades are proposed including additional hardscape with increased sidewalk widths and additional parallel parking along Wisteria Drive, North Street, and Oak Road. Phase 1 will also include three new streets with angled parking. The project will enhance the connectivity between uses and will allow for a more pedestrian friendly area with walkability between the land uses.

This Development of Regional Impact Traffic Study analyzes the anticipated traffic impacts associated with the proposed Grove at Towne Center. While the study assumes future traffic volumes will increase based on demand for the proposed development and overall growth, the overall tenor of the area will change and likely encourage drivers to avoid using these roadways as a cut-through to avoid the US 78 at SR 124 intersection, particularly on Wisteria Drive and Oak Road. Recent improvements to the US 78 at SR 124 intersection have significantly reduced the friction previously experienced by drivers. The US 78 at SR 124 intersection was removed from the study area due to these improvements which were sufficient to handle 20 years of traffic growth in the area. As part of the traffic study, a trip generation analysis was performed to determine the volume of traffic that would be generated by the proposed development. The project is expected to generate a net of 8,162 new trips per day, with 203 new trips occurring during the morning peak hour, and 765 new trips occurring during the evening peak hour.

Capacity analysis was performed for the Future Background and Future With Project peak hour conditions. Level-of-service (LOS) D or better was considered adequate. Several intersections are projected to have inadequate LOS, including: SR 124 at Wisteria Drive, Wisteria Drive at North Road, Wisteria Drive at Clower Street, SR 124 at Oak Road, Oak Road at North Road, Oak Road at Street A, Oak Road at Clower Street, and US 78 at Wisteria Drive. A Back of Queue analysis indicated that several intersections have existing or potential queuing problems: SR 124 at Wisteria Drive, Wisteria Drive at North Road, Wisteria Drive at Clower Street, SR 124 at Oak Road, Oak Road at North Road, Oak Road at Street A, US 78 at Oak Road, and US 78 at Wisteria Drive.

Recommendations for changes to the intersection control or geometry include: improvements to SR 124 at Wisteria Drive, addition of a westbound left turn lane at Wisteria Drive at North Road, intersection control change at Wisteria Drive at Clower Street from all-way stop-control (AWSC) to a mini roundabout, addition of a southbound left turn lane at Oak Road at North Road, and intersection control change at Oak Road at Clower Street from two-way stop-control (TWSC) to either a mini roundabout or AWSC. While certain improvements proposed for the development show unacceptable LOS in some peak periods, the existing cut through traffic volumes are expected to be reduced by the development changing the nature of Wisteria Drive and Oak Road from cut through roads to more walkable, pedestrian friendly streets, where vehicles that do utilize the roadways are doing so at lower speeds.

1. INTRODUCTION

The Grove at Towne Center is a multi-use public/private partnership development to be located on the east side of SR 124 between Wisteria Drive and Oak Road in Snellville, Georgia. A traffic study tied to a Development of Regional Impact was performed to determine how much new traffic would be generated by the proposed development and how the new traffic would impact the existing roadway network.

1.1 STUDY AREA

The City of Snellville provided ten existing intersections and six proposed intersections they wanted analyzed as part of the report. In addition to these intersections, the GRTA DRI Technical Guidelines specify that the study area should include all segments that exceed 7% of the two-way, daily service volumes at the appropriate level of service standard. Additional segments that were analyzed for the 7% threshold include: Henry Clower Boulevard between SR 124 and US 78 (eastern intersection), Pinehurst Road between SR 124 and North Road, Dogwood Road between SR 124 and North Road, North Road between Dogwood Road and Pinehurst Road, and North Road between Dogwood Road and Wisteria Drive. As shown in Table 1.1, none of the segments meet the 7% threshold.

The US 78 at SR 124 intersection was not included in the study area due to recent improvements of that intersection. The Displaced Left Turn (DLT) that is almost complete with construction went through the Georgia Department of Transportation (GDOT) Planning process and the intersection is designed to handle traffic for 20 years from when the project is open to traffic, per the GDOT Planning process. The growth rate used to project future traffic for that project should more than account for any trips diverted from Wisteria Drive and Oak Road as a result of this development. Once this development is substantially complete, the traffic signal timing for the DLT and surrounding signalized intersections should be evaluated to determine if any adjustments can be made to benefit traffic flow throughout the area.

TABLE 1.1 – SUMMARY OF STUDY AREA ROADWAYS

Roadway Segment	Signals/ Mile	Facility Type	Facility LOS Standard	Facility Service Volume @ Standard	Adj. Facility Service Volume @ Standard	Project Traffic Distribution	Project Trips Assigned	% Service Volume Consumed	Presumptive Impact (>7%)
Henry Clower (SR 124 south to US 78 east)	5.1	4LD-3	D	27,800	27,800	3.2%	188	0.7%	No
Pinehurst Rd (SR 124 to North Rd)	9.2	2LU-3	D	12,100	12,100	1.6%	94	0.8%	No
Dogwood Rd (SR 124 to North Rd)	7.2	2LU-3	D	12,100	9,680	1.6%	94	1.0%	No
North Rd (Dogwood to Pinehurst)	2.7	2LU-3	D	12,100	9,680	1.6%	94	1.0%	No
North Rd (Wisteria to Dogwood)	2.7	2LU-3	D	12,100	9,680	3.2%	188	1.9%	No

Figure 1.1 presents the location of the project site and identifies the 16 study intersections, which include:

1. SR 124 at Wisteria Drive
2. Wisteria Drive at North Road
3. Wisteria Drive at Parking Deck (proposed intersection)
4. Wisteria Drive at Street B (proposed intersection)
5. Wisteria Drive at Clower Street
6. North Road at Parking Deck (proposed intersection)
7. Street B at Street C (proposed intersection)
8. Clower Street at City Hall Drive/Street C
9. SR 124 at Oak Road
10. North Road at Oak Road
11. Oak Road at Street A (proposed intersection)
12. Oak Road at Street B (proposed intersection)
13. Oak Road at Clower Street
14. Oak Road at City Hall Drive
15. US 78 at Oak Road
16. US 78 at Wisteria Drive

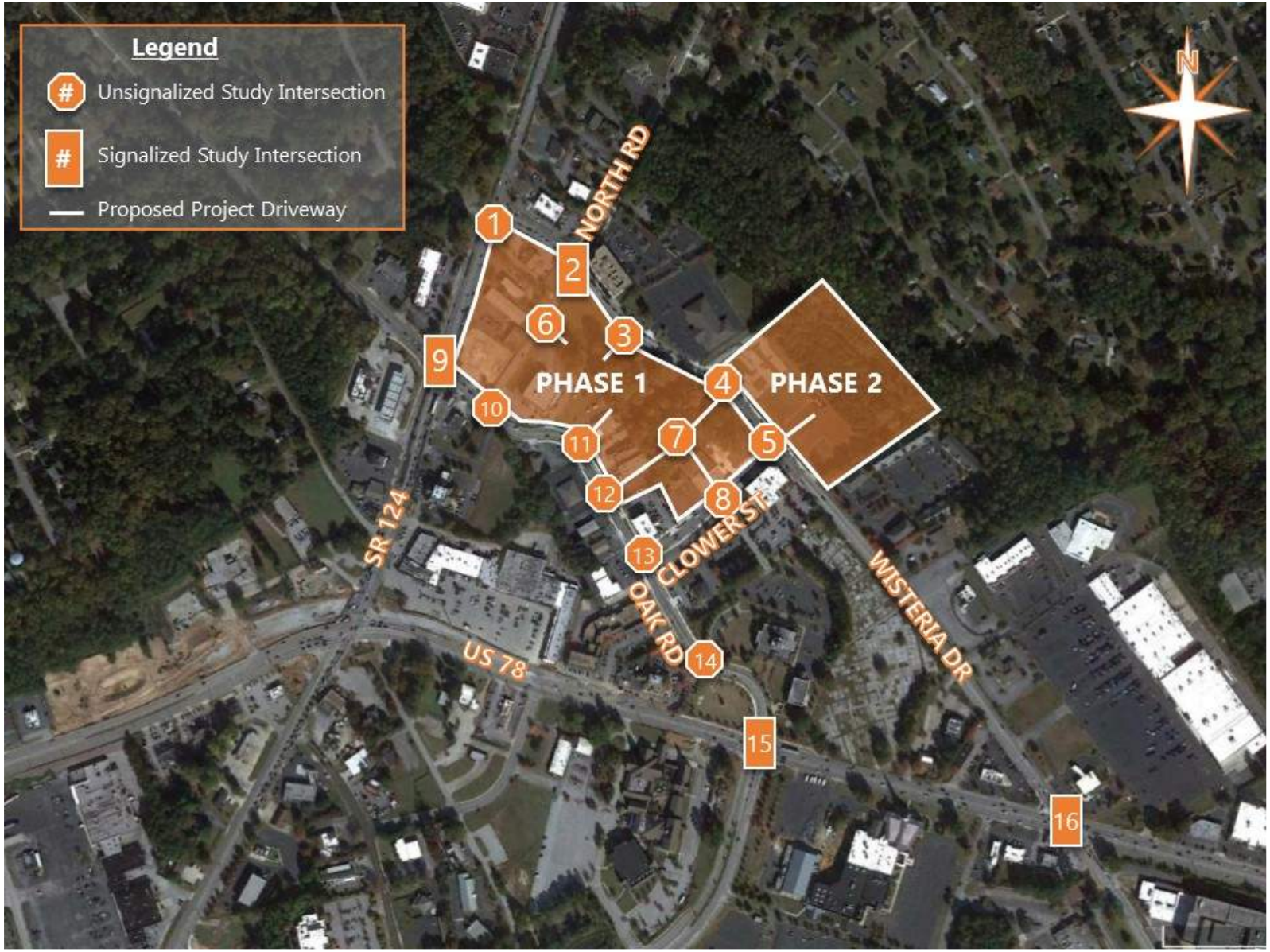


FIGURE 1.1 – AERIAL VIEW OF STUDY AREA

2. EXISTING CONDITIONS

2.1 ROADWAYS

SR 124 is a north-south route in the state highway system. SR 124 begins at an interchange with I-20 in DeKalb County and extends 51 miles north to its terminus at SR 11 in Jefferson County. Classified as a principal arterial according to GDOT's State Functional Classification Map, in the project area SR 124 has four travel lanes and a two-way left-turn (TWLT) lane.

US 78 is an east-west route in the national highway system. US 78 enters Georgia from Alabama in Haralson County and continues for 233 miles before exiting Georgia in Augusta and entering South Carolina. In the project area US 78 is classified as a principal arterial, has a 35-mph speed limit, and has four travel lanes and a TWLT lane.

The remaining roadways in the study area are local streets that serve traffic within the City of Snellville. Table 2.1 summarizes the existing conditions on each study area roadway.

TABLE 2.1 – SUMMARY OF STUDY AREA ROADWAYS

ROADWAY	FUNCTIONAL CLASSIFICATION	ORIENTATION (STUDY AREA)	NO. TRAVEL LANES	MEDIAN TYPE	SPEED LIMIT (MPH)	Non-Motorized Accommodations			ADJACENT LAND USES		
						Pedestrian	Bicycle	Transit	Residential	Commercial	Agricultural
US 78	Principal Arterial	East/West	4	TWLT Lane	35	●		●		●	
SR 124	Principal Arterial	North/South	2	TWLT Lane	45	●				●	
Wisteria Drive	Local Street	East/West*	2	TWLT Lane	35	●				●	
Oak Road	Local Street	East/West*	2	None	35	●				●	
North Road	Local Street	North/South	2	None	30	●				●	
Clower Street	Local Street	North/South	4	None	25	●				●	

**Wisteria Dr and Oak Rd are assumed to run north-south at SR 124*
Note - Functional Classifications were taken from GDOT Functional Classification Map Web Application

2.2 INTERSECTIONS

The existing lane geometries at each study intersection are shown in Figure 2.1. Pedestrian signals and marked crosswalks are provided at all signalized intersections and all streets have sidewalk. There are no bicycle facilities within the study area.

2.3 EXISTING TRAFFIC FLOW PATTERNS

Traffic counts were performed on Tuesday, October 1, 2019. The counts included 4-hour turning movement counts (TMCs) at the existing study intersections. 24-hour bi-directional tube counts were collected at the following locations:

1. Wisteria Drive west of Clower Street
2. Oak Road west of Clower Street
3. North Road between Wisteria Drive and Oak Road
4. Clower Street between Wisteria Drive and Oak Road

All traffic counts are included in **Appendix A**. Existing morning and evening peak hour traffic is shown in Figure 2.2.

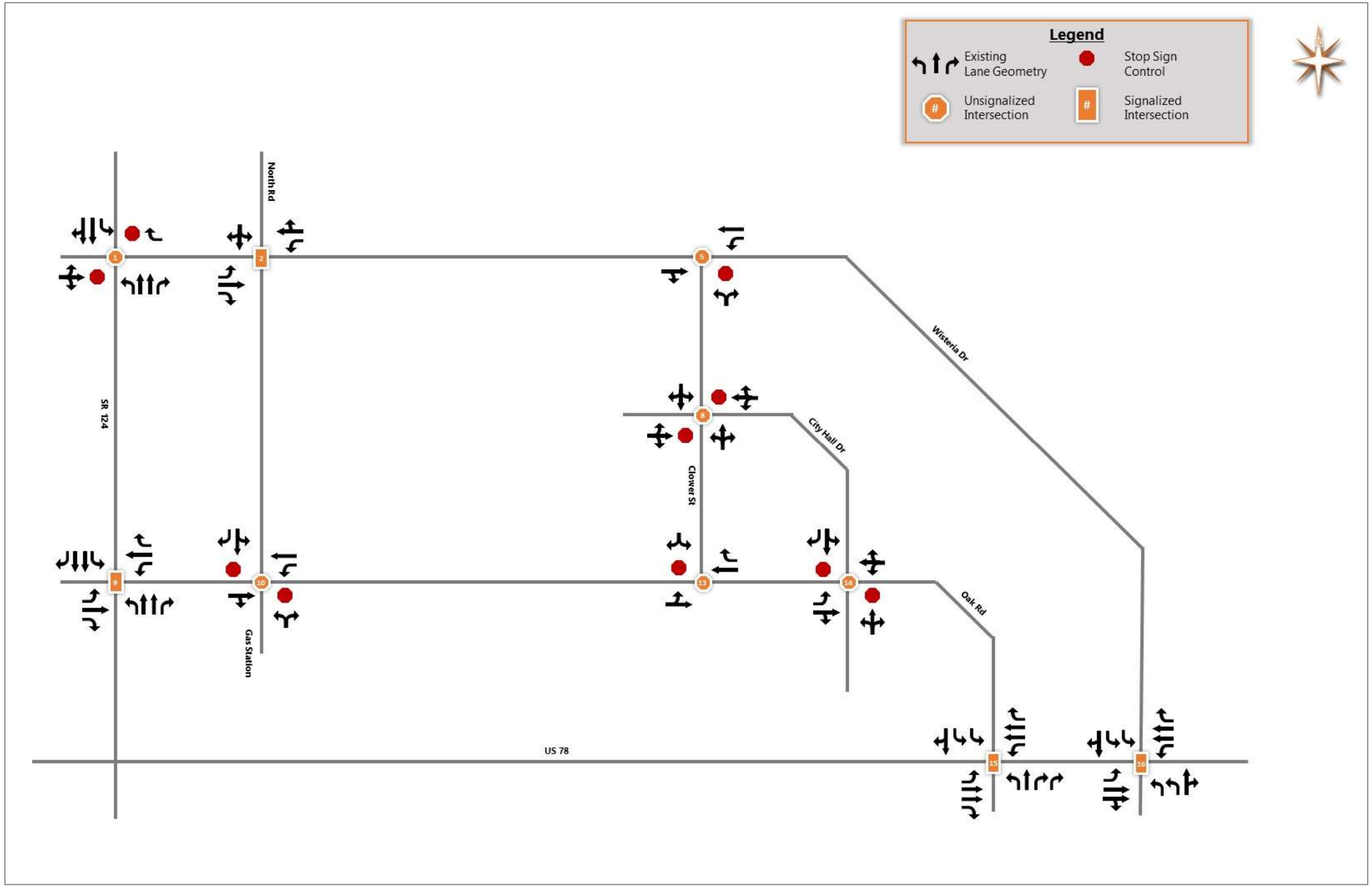


FIGURE 2.1 - EXISTING INTERSECTION GEOMETRIES

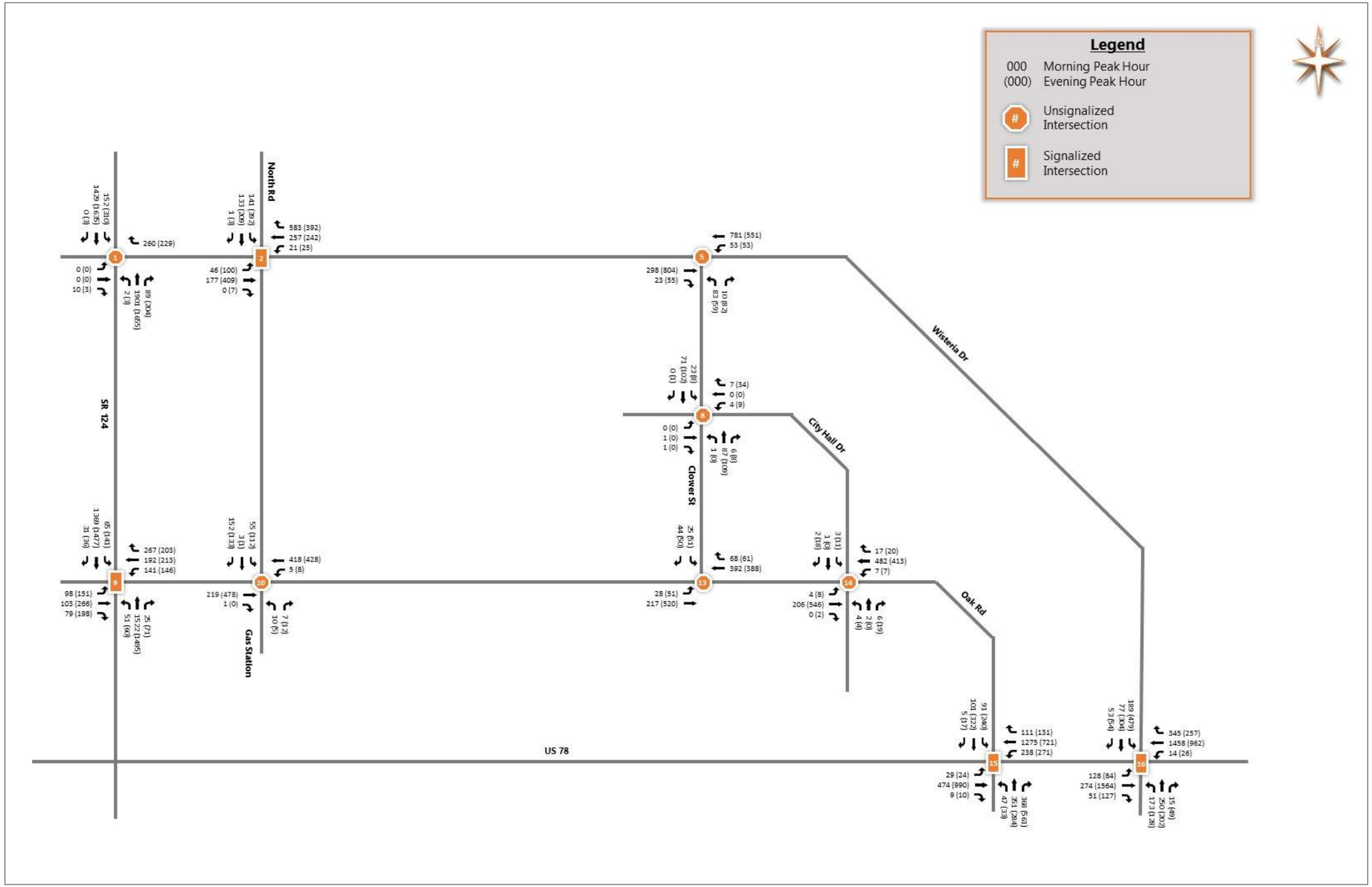


FIGURE 2.2 - EXISTING 2019 PEAK HOUR TRAFFIC

3. PROPOSED CONDITIONS

3.1 PROPOSED DEVELOPMENT

The proposed development is on approximately 18 total acres in the City of Snellville. Phase 1 of the project is planned for a site bounded by North Road on the west, Oak Road on the south, Clower Street on the east, and Wisteria Drive on the north. Phase 1 will also include three new streets with angled parking. Phase 2 is planned for a site across from (on the north side of) Wisteria Drive, and slightly east of, Phase 1. The overall project is proposed to consist of 429 multi-family residential units; 77,000 SF of commercial (a mix of retail and office) space; a 17,000 SF market with 17,000 SF of additional event space on the second floor, 8,200 SF of restaurant space; a 22,500 SF library with 22,500 SF of community space on the second floor; and a new town green. A site plan is shown in Figure 3.1, and the land uses by parcel are included in **Appendix B**.

As part of the project, several geometric changes are proposed in the study area. North Road is proposed to change from a one-way road to a two-way road between Wisteria Drive and Oak Road. North Road would have two lanes with no turn lanes. The existing TWLT lanes on Wisteria Drive and Oak Road are proposed to be eliminated and the right-of-way to be used for bulb-outs and street parking. Finally, there are two proposed all-way stop-controlled (AWSC) intersections in the study area. The existing Wisteria Drive at Clower Street intersection will be converted from two-way stop-control (TWSC) to AWSC, and the proposed Oak Road at Street A intersection will become an AWSC intersection.

3.2 PLANNED TRANSPORTATION IMPROVEMENTS

The US 78 at SR 124 Improvement Project, GDOT PI 0006439, is currently rebuilding the US 78 at SR 124 intersection into a Displaced Left Turn. In addition, GDOT PI 006921 is proposed to widen SR 124 from US 78 to SR 864/Ronald Reagan Parkway. For the purposes of this study, the US at SR 124 Improvement Project is assumed to be complete, while the widening of SR 124 is not assumed to be complete but may impact the recommendations.

Proposed study intersection geometries, which reflect both the project-related improvements and the planned GDOT intersection improvements, are shown in Figure 3.2.

FIGURE 3.1 - PROPOSED SITE PLAN

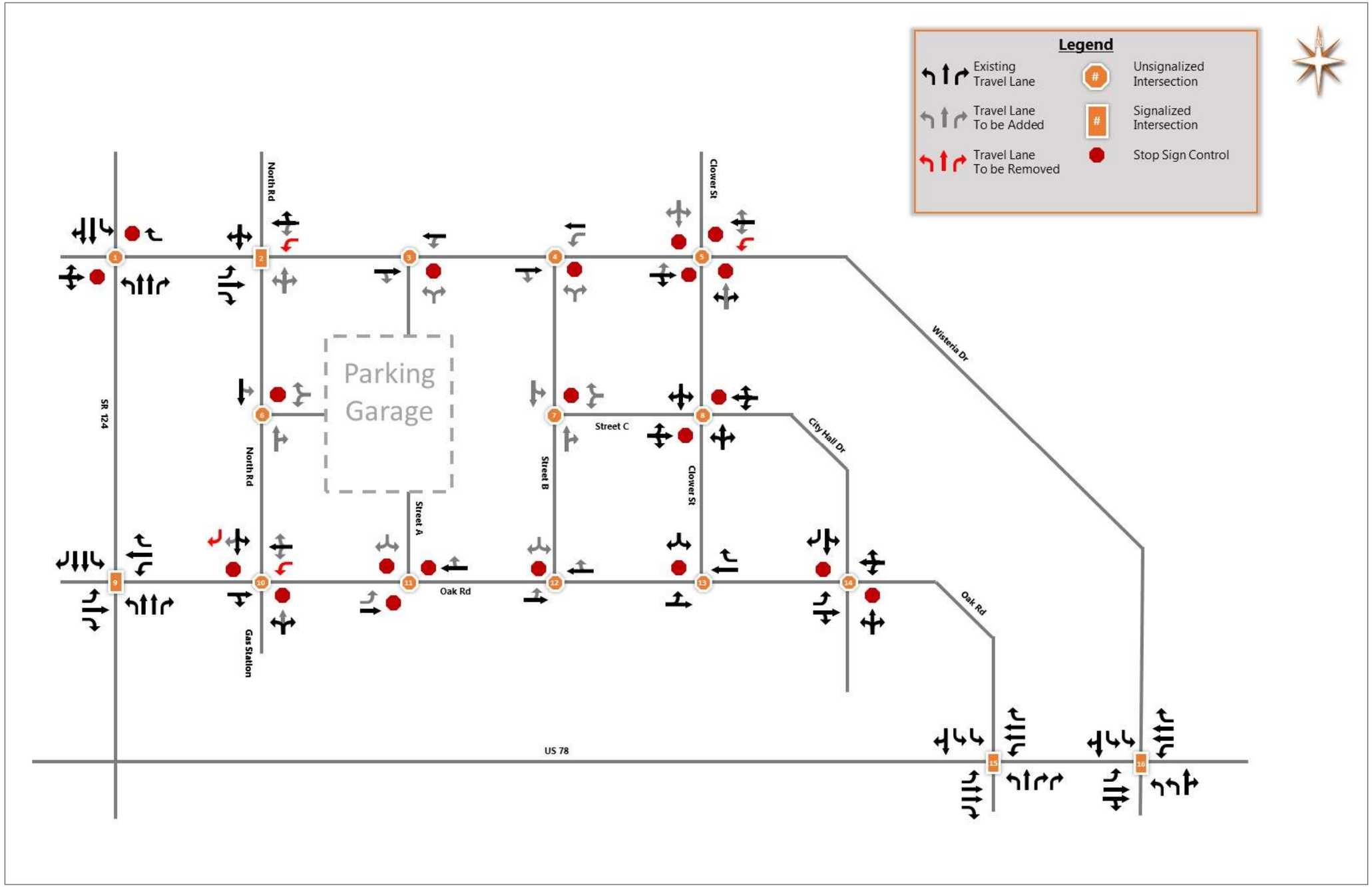


FIGURE 3.2 - PROPOSED STUDY INTERSECTION GEOMETRIES

4. TRAFFIC PROJECTIONS

4.1 FUTURE BACKGROUND TRAFFIC

A build-out year of 2023 was established for the project. An average annual growth rate was determined based on historic Average Annual Daily Traffic (AADT) counts recorded for nearby GDOT Count Stations. AADTs for Stations 135-0054 and 135-0187 were obtained from the Traffic Analysis and Data Application (TADA) website (gdottrafficdata.drakewell.com). An average annual growth rate of 2.0 percent per year was established for the study area.

The 2.0 percent average annual growth rate was applied to the 2019 traffic in the study area for a period of four years to establish the 2023 Background Traffic.

It is worth noting that future traffic volumes on Wisteria Drive and Oak Road may flatten or reduce due to the geometric changes on these streets and divert to US 78 or SR 124, and overall shift from cut through roads to development focused streets. Traffic counts from 2017 on SR 124 and US 78 showed volumes on US 78 near Oak Road and Wisteria Drive have decreased over time, possibly because recent construction at US 78 at SR 124 caused traffic to divert and use Oak Road and Wisteria Drive. For the purposes of this traffic study and to ensure a conservative estimate, it is assumed that traffic volumes in the study area will continue to increase at a 2% background growth rate in addition to the trips generated by the proposed development.

The Future 2023 Background peak hour traffic is shown in Figure 4.1.

4.2 TRIP GENERATION

The amount of traffic to be generated by the proposed development was estimated using trip rates observed at other similar developments. The Institute of Transportation Engineers' (ITE) *Trip Generation, 10th Edition (TGM)*, contains trip rates summarized by type of development. The ITE data provides trip rates which can be applied to the size of a development to derive trip generation projections.

Several existing businesses in the study are proposed to be removed due to the site development. These include a post office, a karate studio, and several stores. ITE Land Use Code 732 – Post Office was used for the post office and ITE Land Use Code 820 – Shopping Center was used for the remaining stores. The karate studio was not included with the existing trips because the participants typically arrive and depart by bus from the studio. These trips from the existing businesses will be subtracted from the proposed trips to estimate the final trips into and out of the proposed development.

A portion of the project-generated trips would be attracted to other land uses while on site. These trips are classified as internal trips. The Post Office does not fit the ITE Trip Generation categories for internal trip generation, so no internal trips are assumed for the existing condition. A portion of the project-generated trips would also be attracted into the site from traffic streams that are already passing by on an adjacent street. A pass-by rate of 34% applies to the shopping center in the PM peak hour.

The trips to be subtracted from the site are shown in Table 4.1.

TABLE 4.1 – EXISTING TRIPS (TO BE REMOVED)

Land Use/Size	Code	Size/ Unit	Trip Type	Weekday			AM Peak Hour			PM Peak Hour		
				Total	Entry	Exit	Total	Entry	Exit	Total	Entry	Exit
Post Office	732	11.4 KSF	Internal	0	0	0	0	0	0	0	0	0
			Pass-By	0	0	0	0	0	0	0	0	0
			Primary	1,182	591	591	168	87	81	127	65	62
			Total	1,182	591	591	168	87	81	127	65	62
Shopping Center	820	16.8 KSF	Internal	0	0	0	0	0	0	0	0	0
			Pass-By	304	152	152	0	0	0	49	23	26
			Primary	1,484	742	742	160	99	61	96	46	50
			Total	1,788	894	894	160	99	61	145	69	76
Total			Internal	0	0	0	0	0	0	0	0	0
			Pass-By	304	152	152	0	0	0	49	23	26
			Primary	2,666	1,333	1,333	328	186	142	223	111	112
			Total	2,970	1,485	1,485	328	186	142	272	134	138

The proposed development that will generate trips include two multi-family residential spaces over retail areas, a library, community space above the library, a market, event space above the market, a restaurant, and commercial space. ITE Land Use Code 221 – Multifamily Housing (Mid-Rise) will be used for all residential development on the site. This land use includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three (3) and ten (10) floors. ITE Land Use Code 495 – Recreational Community Center will be used for the community space above the library and the event space above the market. This land use is for stand-alone recreational community centers. ITE Land Use Code 590 – Library will be used for the library. ITE Land Use Code 820 will be used for the market and all commercial space, including commercial space underneath the residential areas. This land use includes an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. ITE Land Use Code 932 – High-Turnover (Sit-Down) Restaurant will be used for the proposed restaurant. This land use consists of sit-down, full service eating establishments with typical duration of stay of approximately one hour.

For the proposed development, the following assumptions were made:

- There are no vehicular trips between parcels. Any trips between parcels will involve pedestrians.
- The total area/dwelling units for each land was calculated as one larger area instead of calculated separately. For example, there are three parcels with ITE Land Use Code 221 – Multifamily Housing (Mid-Rise). Instead of calculating the number of trips generated by each parcel separately, the number of trips generated by the entire development for residential use was calculated. Once internal, pass-by, primary, and total trips had been calculated for the entire development, the number of trips for each parcel was calculated by dividing the total trips by the proportion of square footage. For example, the total number of weekday trips for residential land use is 2,219 trips. Parcel 1 has 64% of all residential square footage, so the number of weekday trips for residential use to/from Parcel 1 is 2,336 trips x 0.64 = 1,420 trips.

- The pass-by rates for each land use will only apply to external trips. For example, if the internal trip rate for a land use is 50% and the pass-by rate is also 50%, then the adjusted pass-by rate will be 25%.

- Pass-by rates have been checked to ensure the pass-by trips do not exceed 15% of the adjacent street volume. For this project, the 15% applies to US 78 and SR 124 rather than the local roads as these trips are assumed to be diverted off of these two roadways.

- The number of trips to/from the site was reduced by 5% to account for alternative methods of transportation such as walking, biking, or future transit options including proposed microbus facilities.

- Although future traffic volumes on Wisteria Drive and Oak Road may flatten or reduce due to the geometric changes on these streets and divert to US 78 or SR 124, it is assumed that volumes on these streets will continue to increase at a 2% background growth rate in addition to the trips generated by the proposed development.

Table 4.2 shows the trips to be generated by the proposed development. The total number of trips for each land use has been reduced by 5% to account for alternative methods of transportation.

TABLE 4.2 – TRIP GENERATION TABLE (TRIPS TO BE ADDED)

Land Use/Size	Code	Size/ Unit	Trip Type	Weekday			AM Peak Hour			PM Peak Hour		
				Total	Entry	Exit	Total	Entry	Exit	Total	Entry	Exit
Multifamily Housing (Mid-Rise)	221	429 Dwelling Units	Internal	626	313	313	11	2	9	82	52	31
			Pass-By	0	0	0	0	0	0	0	0	0
			Primary	1,593	797	797	125	33	92	88	52	36
			Total	2,219	1,110	1,110	136	35	101	170	104	67
Community Space/ Event Space	495	39.5 KSF	Internal	0	0	0	0	0	0	0	0	0
			Pass-By	0	0	0	0	0	0	0	0	0
			Primary	1,066	533	533	106	70	36	115	54	61
			Total	1,066	533	533	106	70	36	115	54	61
Library	590	22.5 KSF	Internal	0	0	0	0	0	0	0	0	0
			Pass-By	0	0	0	0	0	0	0	0	0
			Primary	1,497	749	749	22	17	7	183	88	95
			Total	1,497	749	749	22	17	7	183	88	95
Shopping Center	820	94 KSF	Internal	770	385	385	16	6	10	97	35	62
			Pass-By	748	374	374	0	0	0	135	68	66
			Primary	3,958	1,979	1,979	173	111	62	261	133	129
			Total	5,476	2,738	2,738	189	117	72	493	237	257
High-Turnover (Sit-Down) Restaurant	932	8.2 KSF	Internal	346	173	173	24	18	6	37	21	16
			Pass-By	96	48	48	0	0	0	17	11	5
			Primary	432	216	216	54	25	30	22	15	7
			Total	874	437	437	78	43	35	76	48	29
Total			Internal	1,742	871	871	50	26	25	217	108	108
			Pass-By	844	422	422	0	0	0	151	80	72
			Primary	8,547	4,273	4,273	481	257	226	669	342	327
			Total	11,132	5,566	5,566	531	282	251	1,037	530	507

The existing site trips were subtracted from the proposed development trips to obtain the net trips. Table 4.3 shows the net trips generated by the site.

TABLE 4.3 – TRIP GENERATION RESULTS

Existing or Proposed	Trip Type	Weekday			AM Peak Hour			PM Peak Hour		
		Total	Entry	Exit	Total	Entry	Exit	Total	Entry	Exit
Existing	Internal	0	0	0	0	0	0	0	0	0
	Pass-By	304	152	152	0	0	0	49	23	26
	Primary	2,666	1,333	1,333	328	186	142	223	111	112
	Total	2,970	1,485	1,485	328	186	142	272	134	138
Proposed	Internal	1,742	871	871	50	26	25	217	108	108
	Pass-By	844	422	422	0	0	0	151	80	72
	Primary	8,547	4,273	4,273	481	257	226	669	342	327
	Total	11,132	5,566	5,566	531	282	251	1,037	530	507
Net	Internal	1,742	871	871	50	26	25	217	108	108
	Pass-By	540	270	270	0	0	0	102	56	46
	Primary	5,881	2,940	2,940	153	71	84	447	232	215
	Total	8,162	4,081	4,081	203	96	109	765	396	369

The proposed site will generate a net of 8,162 weekday trips, 203 AM peak hour trips, and 765 PM peak hour trips.

4.3 DISTRIBUTION OF PROJECT-GENERATED TRIPS

The trips generated by the proposed Snellville Town Center were distributed to the surrounding roadway network based on volumes from nearby GDOT traffic count stations. 32% of the proposed development's trips are expected to be to/from the north on SR 124, 27% to/from the west on US 78, 16% to/from the south on SR 124, and 25% to/from the east on US 78. This distribution was used for the assignment of new trips for the proposed development.

One the trip distribution to the overall site was determined, micro distribution was used to determine trips to each of the parcels. It was assumed that vehicles would attempt to park close to their destination. Figure 4.2 presents the peak hour trip distribution for both new trips and pass-by trips.

4.4 ASSIGNMENT OF PROJECT-GENERATED TRIPS

The number of new and pass-by trips were distributed to the roadway network based on the trip distribution determined for the study area. The project-generated traffic was superimposed with the Future Background traffic to provide an estimate of traffic that would be present when the proposed development opens. Future With Project peak hour traffic is shown in Figure 4.3.

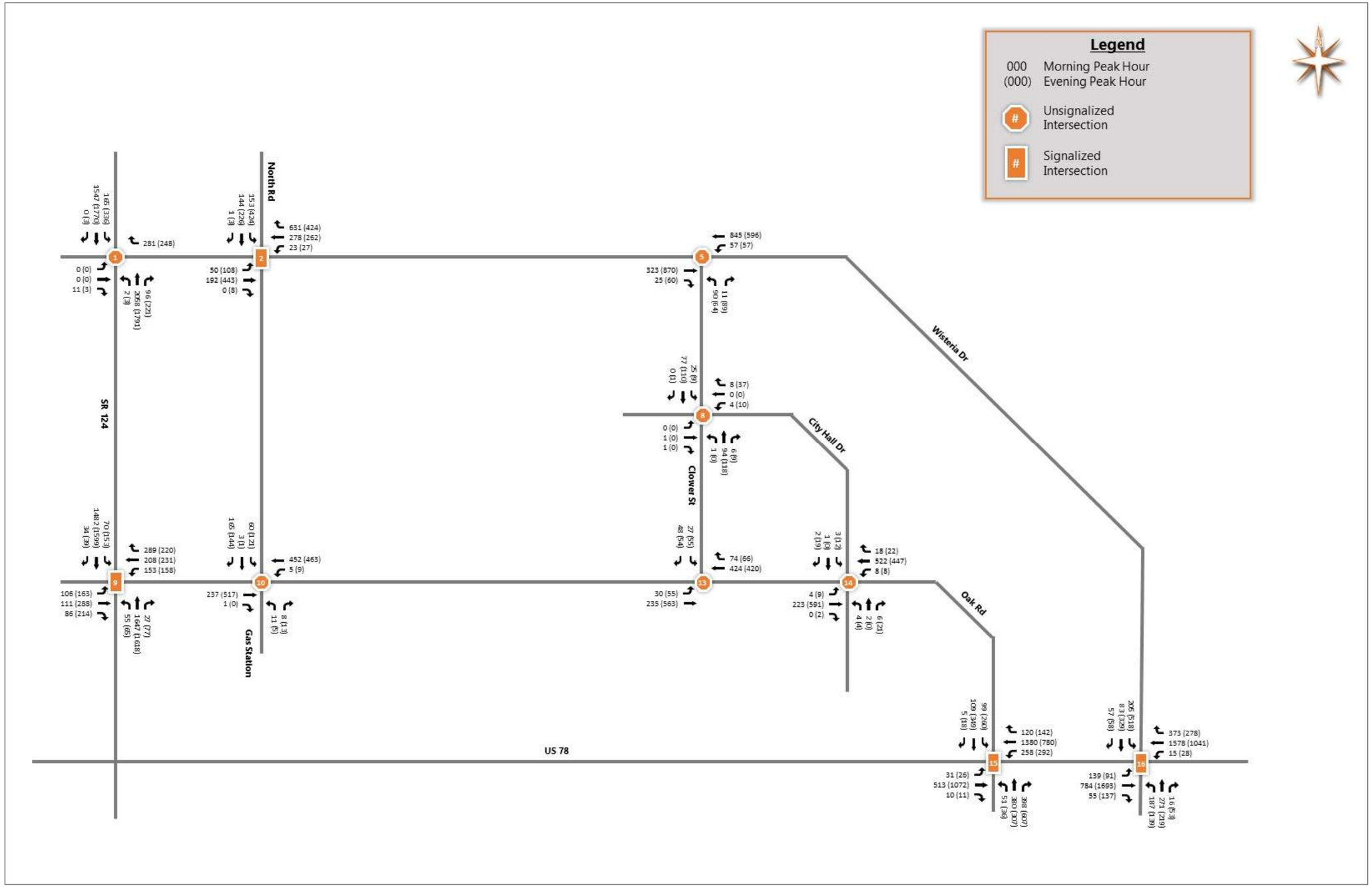


FIGURE 4.1 - FUTURE 2023 BACKGROUND PEAK HOUR TRAFFIC

FIGURE 4.2 – PROJECT PEAK HOUR TRIP DISTRIBUTION OF TRIPS

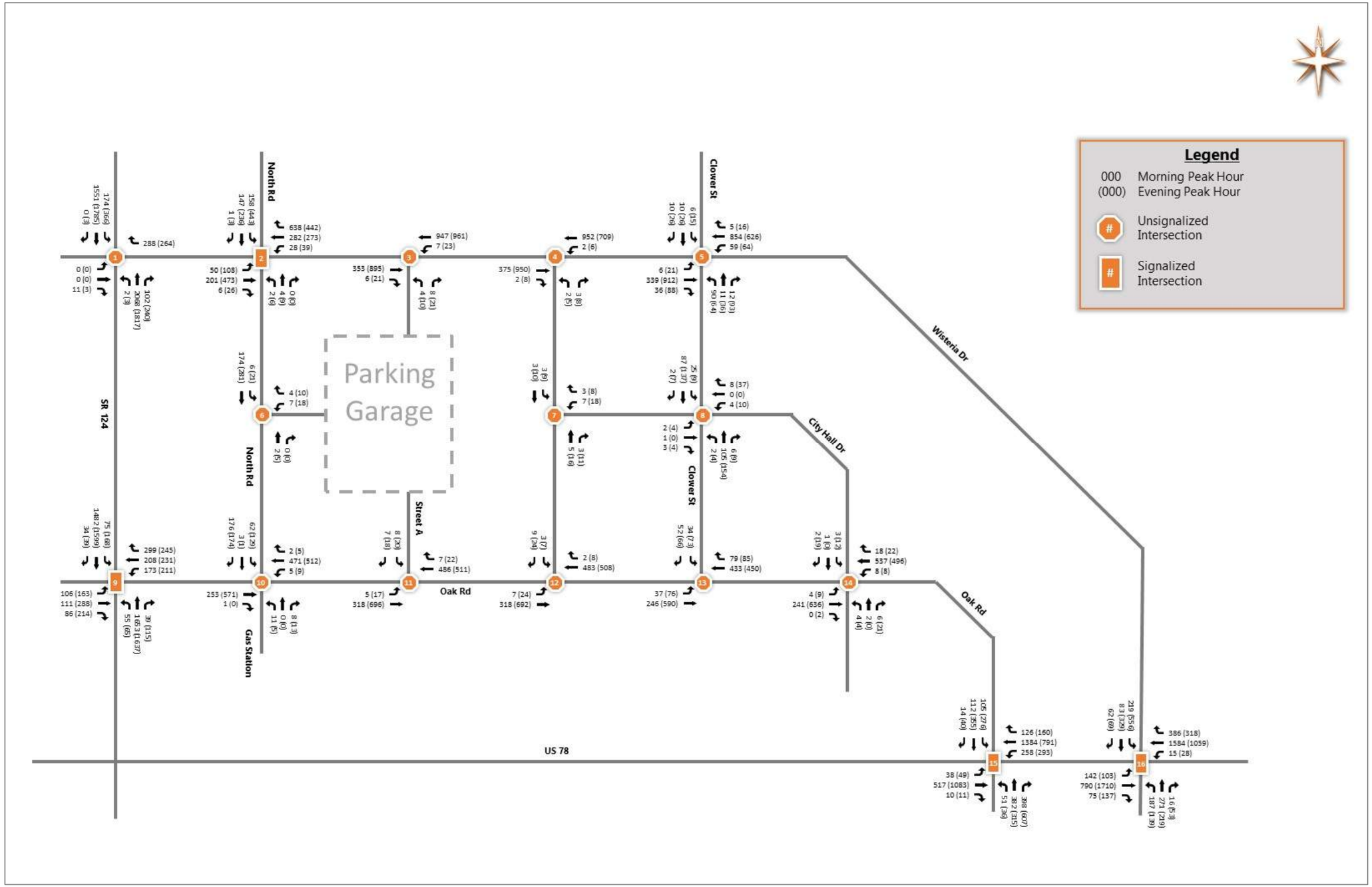


FIGURE 4.3 – FUTURE 2023 WITH PROJECT PEAK HOUR TRAFFIC

5. CAPACITY ANALYSIS

In order to quantify the impacts of additional traffic and to determine any needed roadway and/or operational improvements, a capacity analysis was performed for the Future Background and the Future With Project peak hour conditions based on the methodology outlined in the *Highway Capacity Manual* (*HCM*). Various computer programs are available which implement the *HCM* methodology. HCS7 software was used to analyze the unsignalized intersections and *Synchro 9* was used to analyze the signalized intersections.

HCM defines level of service (LOS) in terms of the amount of control delay, including initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The LOS categories range from A to F, with different thresholds specified according to the type of stop control at the intersection. The LOS criteria for both unsignalized and signalized intersections are listed in Table 5.1.

TABLE 5.1 – LEVEL OF SERVICE CRITERIA

Level of Service (LOS)	Unsignalized Control Delay per Vehicle (sec)	Signalized Control Delay per Vehicle (sec)
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

Rural, sparsely developed areas have a minimum LOS requirement of C based on rural residents' expectation for relatively uncongested conditions in combination with design flexibility associated with lower right of way costs. The minimum LOS for urban areas is D, reflecting the greater acceptance of delay and congestion by urban residents. Additionally, the increased density of developments makes right of way costs much higher in urban areas. The study area is in an urban location. A minimum LOS D is assumed for the study intersections.

5.1 EXISTING INTERSECTION CAPACITY ANALYSIS

Capacity analysis was performed for the Existing conditions in both the morning (AM) and evening (PM) peak hour conditions. The existing geometry was used for the existing analysis. Capacity analysis reports are included in **Appendix C**. The results of the analysis are listed in Table 5.2.

The results indicate that two signalized intersections currently have inadequate LOS: SR 124 at Oak Rd currently operates at LOS E in the AM peak hour and US 78 at Wisteria Drive currently operates at LOS F in the PM peak hour. Movements at unsignalized intersections with inadequate LOS include: the westbound right turn at SR 124 at Wisteria Drive in the AM and PM, the southbound left-turn at SR 124 at Wisteria Drive in the PM, the northbound left turn/right turn at Wisteria Drive at Clower Street in both peak hours, and the southbound left/through at Oak Road at North Road in the PM.

TABLE 5.2 – EXISTING LOS AND DELAY AT STUDY INTERSECTIONS

No.	Intersection	Intersection Control	Approach	Existing 2019			
				AM Peak		PM Peak	
				LOS	sec/ veh	LOS	sec/ veh
1	SR 124 @ Wisteria Dr	TWSC	EB L+T+R	C	15.4	C	16.8
			WB R	F	134.9	E	47.1
			NB L	B	13.2	B	14.7
			SB L	C	32.4	F	51.4
2	Wisteria Dr @ North Rd	Signal	Overall	D	38.2	D	43.1
5	Wisteria Dr @ Clower St	TWSC	WB L	A	8.1	B	10.1
			NB L+R	E	40.8	F	60.7
8	Clower St @ City Hall Dr/Street C	TWSC	EB L+T+R	A	9.7	A	5.0
			WB L+T+R	A	9.4	A	9.3
			NB L	A	7.4	A	7.4
			SB L	A	7.5	A	7.5
9	SR 124 @ Oak Rd	Signal	Overall	E	56.7	D	50.4
10	Oak Rd @ North Rd	TWSC	WB L	A	7.7	A	8.4
			NB L+R	C	16.8	C	16.4
			SB L+T	C	17.1	E	35.4
			SB R	B	12.9	B	12.5
13	Oak Rd @ Clower St	TWSC	EB L	A	8.5	A	8.5
			SB L+R	B	13.2	C	20.6
14	Oak Rd @ City Hall Dr	TWSC	EB L	A	8.6	A	8.3
			WB L	A	7.7	A	8.6
			NB L+T+R	B	13.2	B	14.3
			SB L+T	C	17.2	C	24.4
			SB R	B	11.7	B	11.0
15	US 78 @ Oak Rd	Signal	Overall	D	36.7	D	40.0
16	US 78 @ Wisteria Dr	Signal	Overall	D	52.7	F	84.7

5.2 FUTURE INTERSECTION CAPACITY ANALYSIS

Intersection capacity analysis was performed for the AM and PM peak hours in both the Future Background and the Future With Project conditions. The LOS and delay results are listed in Table 5.3. Capacity analysis reports for the analysis are included in **Appendix C**.

TABLE 5.3 – FUTURE YEAR 2023 DELAY AND LOS RESULTS

No.	Intersection	Intersection Control	Approach	Background 2023				Future with Project 2023			
				AM Peak		PM Peak		AM Peak		PM Peak	
				LOS	sec/ veh	LOS	sec/ veh	LOS	sec/ veh	LOS	sec/ veh
1	SR 124 @ Wisteria Dr	TWSC	EB L+T+R	C	16.5	C	18.1	C	16.6	C	18.3
			WB R	F	234.7	F	77.0	F	252.5	F	96.8
			NB L	B	14.1	C	15.9	B	14.2	C	16.1
			SB L	E	48.3	F	100.7	F	53.4	F	140.7
2	Wisteria Dr @ North Rd	Signal	Overall	E	61.4	E	61.1	E	63.4	E	78.0
3	Wisteria Dr @ Parking Deck	TWSC	WB L	--	--	--	--	A	8.1	B	10.4
			NB L+R	--	--	--	--	C	16.9	D	32.2
4	Wisteria Dr @ Street B	TWSC	WB L	--	--	--	--	A	8.2	B	10.5
			NB L+R	--	--	--	--	C	18.7	D	31.0
5	Wisteria Dr @ Clower St	Existing: TWSC Proposed: AWSC	WB L	A	8.2	B	10.4	F	121.4	F	223.7
			SB L+T+R	--	--	--	--				
			NB L+T+R	F	57.4	F	105.1				
6	North Rd @ Parking Deck	TWSC	WB L+R	--	--	--	--	A	9.3	B	10.1
			SB L	--	--	--	--	A	7.2	A	7.3
7	Street B @ Street C	TWSC	WB L+R	--	--	--	--	A	8.6	A	8.8
			SB L	--	--	--	--	A	7.2	A	7.3
8	Clower St @ City Hall Dr/Street C	TWSC	EB L+T+R	A	9.8	A	5.0	A	9.8	B	10.2
			WB L+T+R	A	9.5	A	9.4	A	9.6	A	9.8
			NB L	A	7.4	A	9.5	A	7.4	A	7.5
			SB L	A	7.5	A	7.5	A	7.6	A	7.6
9	SR 124 @ Oak Rd	Signal	Overall	E	61.1	E	55.6	E	63.6	E	63.7
10	Oak Rd @ North Rd	TWSC	WB L	A	7.8	A	8.5	--	--	--	--
			WB L+T+R	--	--	--	--	A	7.8	A	8.7
			NB L+T+R	C	18.4	C	17.7	C	19.9	C	21.1
			SB L+T	C	18.7	E	47.9	--	--	--	--
			SB R	B	13.7	B	13.2	--	--	--	--
			SB L+T+R	--	--	--	--	C	21.6	F	128.2
11	Oak Rd @ Street A	AWSC	EB L	--	--	--	--	B	13.1	E	43.4
			SB L+R	--	--	--	--				
12	Oak Rd @ Street B	TWSC	EB L	--	--	--	--	A	8.5	A	8.7
			SB L+R	--	--	--	--	B	12.9	C	16.7
13	Oak Rd @ Clower St	TWSC	EB L	A	8.6	A	8.7	A	8.7	A	8.9
			SB L+R	B	14.0	C	24.3	B	15.0	E	36.8
14	Oak Rd @ City Hall Dr	TWSC	EB L	A	8.3	A	8.7	A	8.8	A	8.5
			WB L	A	8.6	A	7.8	A	7.8	A	8.9
			NB L+T+R	B	14.3	B	13.8	B	14.3	C	16.2
			SB L+T	C	24.4	C	18.5	C	19.4	D	32.0
			SB R	B	11.0	B	12.2	B	12.3	B	11.8
15	US 78 @ Oak Rd	Signal	Overall	D	40.0	D	44.8	D	40.8	D	46.3
16	US 78 @ Wisteria Dr	Signal	Overall	E	59.3	F	101.7	E	61.7	F	107.0

The future delay and LOS results indicate that several intersections are expected to operate unacceptably during the year 2023:

1. SR 124 at Wisteria Drive: Two movements that currently operate with inadequate LOS in the Existing conditions are expected to further worsen by 2023. In both the Future Background and Future With Project conditions, the Wisteria Drive westbound right turn and the SR 124 southbound left turn are expected to operate at a LOS F.

2. Wisteria Drive at North Road: By the year 2023 this intersection is expected to operate at a LOS E. The Wisteria Drive westbound left turn lane is proposed to be removed as part of the development which will further worsen operations at this intersection.

5. Wisteria Drive at Clower Street: The Clower Street northbound approach currently operates with unacceptable LOS in the Existing conditions. While the conversion of this intersection from TWSC to AWSC is expected to reduce northbound delay, the overall

intersection delay is expected to significantly increase. In the 2023 Future With Project conditions, the AM peak is expected to have a LOS F with 121s of delay, while the PM peak is expected to have a LOS F with 224s of delay.

9. SR 124 at Oak Road: This intersection currently operates at a LOS E in the Existing conditions. In the Future Background conditions this intersection is expected to operate at a LOS E in both peak hours. In the Future With Project conditions, delay is expected to increase, although LOS is projected to remain at a LOS E.

10. Oak Road at North Road: The Oak Road southbound left turn movement currently operates at a LOS E in the Existing conditions. The southbound approach is proposed to be changed from two turn lanes (one left turn, one right turn) to one lane (one left/through lane). In the Future With Project conditions, the southbound approach is expected to operate at a LOS F with 128s of delay.

11. Oak Road at Street A: This proposed AWSC intersection is expected to operate at a LOS E in the 2023 Future With Project conditions in the PM peak hour. In the PM peak hour the Oak Road westbound and Street A southbound approaches are projected to operate acceptably; the Oak Road eastbound approach is projected to operate at a LOS F.

13. Oak Road at Clower Street: This intersection currently operates at an acceptable LOS and is projected to continue to operate at an acceptable LOS in the Future Background conditions. The additional traffic generated by the development is expected to worsen the Clower Street southbound approach LOS in the PM from a LOS C in the Future Background Conditions to a LOS E in the Future With Project Conditions.

15. US 78 at Wisteria Drive: This intersection currently operates at LOS F in the PM peak hour. By the year 2023 this intersection is expected to operate at a LOS E in the AM peak hour and a LOS F in the PM peak hour. The proposed development is expected to increase delay during both peak hours, although the LOS score will remain a LOS E in the AM peak hour and a LOS F in the PM peak hour.

5.3 BACK OF QUEUE ANALYSIS

Back of Queue (BOQ) analysis was used to analyze the storage needs for the existing and proposed turn lanes in the Future With Project conditions. The 95th percentile BOQ length was calculated for the turn lanes at each intersection. The queue is expected to be the reported length or shorter 95 percent of the time. The BOQ results were taken from the capacity analysis reports for each study intersection. Table 5.4 lists the BOQ lengths for each peak hour for the Existing, Future Background, and Future With Project conditions.

TABLE 5.4 – BACK OF QUEUE RESULTS

No.	Intersection	Intersection Control	Movement	Existing Storage (feet)	95th Percentile Back of Queue (feet)					
					Existing 2019		Background 2020		With Project 2020	
1	SR 124 @ Wisteria Dr	TWSC	EB L+T+R	--	25	0	25	0	25	0
			WB R	--	300	150	425	225	450	275
			NB L	--	0	0	0	0	0	0
			SB L	--	100	200	125	325	150	400
2	Wisteria Dr @ North Rd	Signal	EB L	115	25	51	25	55	25	55
			EB T	--	61	200	66	221	69	241
			EB R	--	0	25	0	25	0	12
			WB L	130	25	27	25	29	--	--
			WB T+R	--	608	538	687	606	--	--
			WB L+T+R	--	--	--	--	--	737	715
			NB L+T+R	--	--	--	--	--	25	25
			SB L+T+R	--	182	550	199	613	244	715
3	Wisteria Dr @ Parking Deck	TWSC	WB L	--	--	--	--	--	0	25
			NB L+R	--	--	--	--	--	25	25
4	Wisteria Dr @ Street B	TWSC	WB L	--	--	--	--	--	0	0
			NB L+R	110	--	--	--	--	25	25
5	Wisteria Dr @ Clower St	Existing: TWSC Proposed: AWSC	EB L+T+R	--	--	--	--	--	100	1525
			WB L	--	25	25	25	25	--	--
			WB L+T+R	--	--	--	--	--	1050	650
			NB L+T+R	--	75	125	100	175	25	50
			SB L+T+R	--	--	--	--	--	25	25
6	North Rd @ Parking Deck	TWSC	WB L+R	--	--	--	--	--	0	25
			SB L	--	--	--	--	--	0	0
7	Street B @ Street C	TWSC	WB L+T+R	--	--	--	--	--	0	25
			SB L+T+R	--	--	--	--	--	0	0
8	Clower St @ City Hall Dr/ Street C	TWSC	EB L+T+R	--	0	0	0	0	0	0
			WB L+T+R	--	25	25	25	25	25	25
			NB L+T+R	--	0	0	0	0	0	0
			SB L+T+R	--	25	0	25	0	25	0
9	SR 124 @ Oak Rd	Signal	EB L	230	150	215	156	246	156	246
			EB T	--	180	427	186	495	186	495
			EB R	100	25	172	25	195	25	195
			WB L	145	208	213	217	273	244	424
			WB T	--	314	346	329	375	329	375
			WB R	125	282	167	320	193	338	213
			NB L	240	41	45	47	53	47	61
			NB T	--	937	873	1094	1004	1103	1026
			NB R	140	0	25	0	25	0	47
			SB L	185	50	157	84	252	98	299
			SB T	--	743	801	901	897	901	921
			SB R	165	0	0	0	0	0	0
10	Oak Rd @ North Rd	TWSC	WB L	--	0	0	0	0	--	--
			WB L+T+R	--	--	--	--	--	0	0
			NB L+T+R	--	25	25	25	25	25	25
			SB L+T	--	25	75	25	100	--	--
			SB R	--	25	25	50	25	--	--
			SB L+T+R	--	--	--	--	--	100	325
11	Oak Rd @ Street A	AWSC	EB L+T	--	--	--	--	--	75	475
			WB T+R	--	--	--	--	--	125	200
			SB L+R	--	--	--	--	--	25	25
12	Oak Rd @ Street B	TWSC	EB L	--					0	25
			SB L+R	--					25	25
13	Oak Rd @ Clower St	TWSC	EB L	65	25	25	25	25	25	25
			SB L+R	--	25	50	25	50	25	100
14	Oak Rd @ City Hall Dr	TWSC	EB L	90	0	0	0	0	0	0
			WB L	--	0	0	0	0	0	0
			NB L+T+R	--	0	25	25	25	25	25
			SB L+T	--	25	25	0	25	0	25
			SB R	--	0	25	0	25	0	25
15	US 78 @ Oak Rd	Signal	EB L	150	31	27	33	28	38	46
			EB T	--	220	516	240	576	242	584
			EB R	95	0	0	0	0	0	0
			WB L	175	78	268	82	357	82	364
			WB T	--	193	123	22	132	222	136
			WB R	125	25	25	25	25	25	25
			NB L	140	87	70	95	77	96	78
			NB T	--	558	451	653	509	665	529
			NB R	0	224	920	277	1075	281	1083
			SB L	260 (2)	63	146	68	158	72	168
			SB T+R	--	147	456	157	501	169	546
16	US 78 @ Wisteria Dr	Signal	EB L	175	202	50	294	56	302	64
			EB T+R	--	268	1137	300	1204	304	1196
			WB L	115	25	33	25	35	25	35
			WB T	--	913	552	1050	613	1056	627
			WB R	240	200	120	230	142	241	164
			NB L	270 (2)	153	120	165	128	165	128
			NB T+R	--	406	374	433	401	433	401
			SB L	600 (2)	215	496	237	548	259	598
			SB T+R	--	190	510	204	554	209	573

The BOQ results indicate that several intersections have queues that exceed their storage length:

1. SR 124 at Wisteria Drive: The SR 124 southbound left turn queue is 200 feet in the Existing conditions; however, this queue is expected to increase to 400 feet in the Future With Project conditions. Although the left turn lane is a TWLT lane, this queue would extend past several access points on SR 124. Also, the Wisteria westbound right turn queue is currently 300 feet but is expected to be 450 feet in the Future With Project conditions. A queue of 450 feet would extend through the Wisteria Drive at North Road intersection and potentially disrupt operations at that signal.

2. Wisteria Drive at North Road: The North Road southbound queue is 550 feet long in PM during the Existing conditions. This southbound queue is expected to increase to 715 feet in the PM during the Future With Project conditions, partially due to the changing of North Street from a one-way to a two-way street. Also, the Wisteria westbound queue is expected to extend over 700 feet in the AM and PM peak hours during the Future With Project conditions. A westbound queue over 700 feet would extend close to the Wisteria Drive at Street B intersection.

5. Wisteria Drive at Clower Street: Existing and Future Background queues at this intersection are short - the longest Wisteria Drive queue is 25 feet for the westbound left turn, and the longest Clower Street queue is 175 for the northbound approach. The Future With Project queues are expected to increase substantially on Clower Street due to the changing in intersection control from TWSC to AWSC. The westbound approach queue is expected to be 1050 feet in the AM peak hour while the eastbound approach queue is expected to be 1525 feet in the PM peak hour which would extend to the SR 124 at Wisteria intersection.

9. SR 124 at Oak Road: Several existing turning queues are currently greater than the available storage. The queues that are expected to increase the most from Existing to Future With Project conditions are the Oak Road westbound left turn and right turn movements. The westbound left turn has a storage length of 145 feet with a queue of 213 feet in the PM peak during Existing conditions. This left turn queue is expected to increase to 424 feet during the Future With Project conditions. The westbound right turn has a storage length of 125 feet and a queue of 282 feet in the Existing conditions during the AM peak. This right turn queue is expected to increase to 388 feet during the Future With Project conditions.

10. Oak Road at North Road: No queues are projected to exceed their available storage at this intersection. However, it is worth noting that the southbound queue is expected to increase from 100 feet in the PM peak during the Future Background conditions to 325 feet during the Future With Project conditions. This change in queue length is due to an increase in traffic volume from the development and due to the removal of a southbound turning lane.

11. Oak Road at Street A: This proposed AWSC intersection is projected to have an Oak Road eastbound queue of 475 feet in the PM peak during the Future Background conditions. A 475-foot queue on Oak Road would extend past the Oak Road at North Road intersection.

15. US 78 at Oak Road: The US 78 westbound left turn has 175 feet of marked storage space while the Future With Project queue is expected to be 367 feet in the PM peak hour. However, this is a TWLT lane which extends to Wisteria Drive and has close to 900 feet of available storage.

16. US 78 at Wisteria Drive: The US 78 eastbound left turn has 175 feet of marked storage space while the Future With Project queue is expected to be 302 feet in the PM peak hour. However, this is a TWLT lane which extends to Oak Road and has close to 900 feet of available storage.

6. RECOMMENDATIONS

The results of the capacity analysis and the back of queue (BOQ) analysis indicate that several geometric and intersection control changes should be made to the proposed design. It is worth noting that the proposed improvements on Wisteria Drive and Oak Road are intended to increase walkability and reduce vehicle speeds which may reduce volumes on these two roadways as traffic potentially diverts to US 78 and SR 124. However, for the purposes of this study, it is assumed that traffic volumes on Wisteria Drive and Oak Road will continue to grow at a 2% rate in addition to the traffic generated by the proposed development.

1. SR 124 at Wisteria Drive: The Wisteria Drive westbound right turn and the SR 124 southbound left turn are expected to operate at a LOS F in the Future With Project conditions. In addition, the Wisteria westbound right turn queue is currently 300 feet but is expected to be 450 feet in the Future With Project conditions. A queue of 450 feet would extend through the Wisteria Drive at North Road intersection and potentially disrupt operations at that signal. Improvements at this intersection should be considered if the development is constructed. Gwinnett County has already begun studying improvements at this intersection. The City of Snellville is considering a traffic signal which would likely reduce the Wisteria westbound and SR 124 south left turn queues.

2. Wisteria Drive at North Road: The proposed removal of the Wisteria Drive westbound left turn lane is projected to worsen operations at this signal. The Future With Project conditions show worsening conditions due to the removal of this turn lane, although this likely underestimates the impact of removal of this turn lane. If a westbound left turning vehicle cannot find a gap to turn, then this stopped vehicle would disrupt all westbound traffic. Therefore, it is recommended to have a 75-foot westbound left turn lane. According to the 2023 Future With Project volumes, the westbound left turn would warrant a protected-permissive signal phase.

5. Wisteria Drive at Clower Street: The Clower Street northbound approach currently operates with unacceptable LOS in the Existing conditions. While the conversion of this intersection from TWSC to AWSC is expected to reduce northbound delay, the overall intersection delay is expected to significantly increase. In the 2023 Future With Project conditions, overall intersection delay is expected to be 121s and 224s in the AM and PM peak hours, respectively. In addition, the Wisteria Drive eastbound queue is expected to be 1525 feet in the PM peak hour. Based on the existing and proposed geometry of the intersection, an AWSC is not recommended.

   A mini roundabout is the recommended alternative at Wisteria Drive at Clower Street because it is projected to have improved LOS compared to an AWSC intersection while reducing vehicle speeds in the area. A mini roundabout is projected to have acceptable LOS on all approaches with two exceptions. In the AM, the westbound approach would have a LOS E with a queue of 413 feet. In the PM, the eastbound approach would have a LOS F with a queue of 538 feet. This projected delay and queuing will likely reduce if vehicles stop using Wisteria Drive as a cut-through for SR 124 and US 78.

10. Oak Road at North Road: The North Road southbound approach is proposed to be changed from two turn lanes (one left turn, one right turn) to one lane (one left/right lane). In the 2023 Future With Project conditions, the southbound approach is expected to operate at a LOS F with 128s of delay. If the southbound approach was changed to have two turn lanes, the average approach delay in the PM would be expected to decrease

from 128s to 42s. Therefore, it is recommended to have a left turn/through lane and a right turn lane on the southbound approach.

11. Oak Road at Street A: This proposed AWSC intersection is expected to operate at a LOS E in the 2023 Future With Project conditions in the PM peak hour. In addition, the Oak Road eastbound queue is expected to extend past the Oak Road at North Road intersection. However, future traffic on Oak Road might be reduced if this intersection has an all-way stop and more traffic stops using Oak Road as a cut-through and uses SR 124 and US 78 instead due to the added stop and slower speeds.

13. Oak Road at Clower Street: This intersection currently operates at an acceptable LOS and is projected to continue to operate at an acceptable LOS in the Future Background conditions. The additional traffic generated by the development is expected to worsen the Clower Street southbound approach LOS in the PM from a LOS C in the Future Background Conditions to a LOS E in the Future With Project Conditions.

    If a left turn lane was added on the Clower Road southbound approach, then the approach delay is projected to decrease from LOS E with 37s delay to LOS D with 28s delay. While a southbound left turn lane is preferred, geometric constraints make this left turn lane unfeasible.

    Converting this intersection to AWSC and also a mini roundabout were also analyzed for this intersection. In the AM peak hour an AWSC is projected to have acceptable LOS on all approaches. In the PM peak hour an AWSC is projected to have LOS F on the Oak Road eastbound approach with a 95th percentile queue of 400 feet. This projected delay and queuing will likely reduce if vehicles stop using Oak Road as a cut-through for SR 124 and US 78. A mini roundabout is projected to have LOS B or better on all approaches with minimal queues in both the AM and PM peak hours. However, a mini roundabout also has geometric constraints at this intersection that may make it unfeasible. It is recommended that the feasibility of the mini roundabout be pursed for this intersection and if deemed unfeasible, the improvement be an AWSC intersection.

7. CONCLUSIONS

The Grove at Towne Center is a multi-use private development to be located on the east side of SR 124 between Wisteria Drive and Oak Road in Snellville, Georgia. A Development of Regional Impact Traffic Study was performed to determine how much new traffic would be generated by the proposed development and how the new traffic would impact the existing roadway network.

The proposed development is on approximately 18 total acres in the City of Snellville. Phase 1 of the project is planned for a site bounded by Scenic Hwy (SR 124) on the west, Oak Road on the south, Clower Street on the east, and Wisteria Drive on the north. Phase 2 is planned for a site across from (on the north side of) Wisteria Drive, and slightly east of, Phase 1. The overall project is proposed to consist of 429 multi-family residential units; 77,000 SF of commercial (a mix of retail and office) space; a 17,000 SF market with 17,000 SF of additional event space on the second floor, 8,200 SF of restaurant space; a 22,500 SF library with 22,500 SF of community space on the second floor; and a new town green.

As part of the project, several geometric changes are proposed in the study area. North Road is proposed to change from a one-way road to a two-way road between Wisteria Drive and Oak Road. North Road would have two lanes with no turn lanes. The existing TWLT lanes on Wisteria Drive and Oak Road are proposed to be eliminated and the right-of-way to be used for bulb-outs and street parking. Finally, there are two proposed AWSC intersections in the study area. The existing Wisteria Drive at Clower Street intersection is proposed to be converted from TWSC to AWSC, and the new Oak Road at Street A intersection is proposed to become an AWSC intersection.

A Trip Generation analysis was performed to determine the volume of traffic that would be generated by the proposed development. The project is expected to generate a net of 8,162 new trips per day, with 203 new trips occurring during the morning peak hour, and 765 new trips occurring during the evening peak hour. While the study assumes future traffic volumes will increase based on demand for the proposed development and population growth, the overall tenor of the area will change and likely encourage drivers to avoid using these roadways as a cut-through, particularly on Wisteria Drive and Oak Road.

Capacity analysis was performed for the Future Background and Future With Project peak hour conditions. LOS D or better was considered adequate. Several intersections have inadequate LOS, including: SR 124 at Wisteria Drive, Wisteria Drive at North Road, Wisteria Drive at Clower Street, SR 124 at Oak Road, Oak Road at North Road, Oak Road at Street A, Oak Road at Clower Street, and US 78 at Wisteria Drive.

A Back of Queue analysis indicated that several intersections have existing or potential queuing problems: SR 124 at Wisteria Drive, Wisteria Drive at North Road, Wisteria Drive at Clower Street, SR 124 at Oak Road, Oak Road at North Road, Oak Road at Street A, US 78 at Oak Road, and US 78 at Wisteria Drive.

Recommendations for changes to the intersection control or geometry include: improvements to SR 124 at Wisteria Drive, addition of a westbound left turn lane at Wisteria Drive at North Road, intersection control change at Wisteria Drive at Clower Street from AWSC to a mini roundabout, addition of a southbound left turn lane at Oak Road at North Road, and intersection control change at Oak Road at Clower Street from TWSC to either a mini roundabout or AWSC.

References

1. Trip Generation, 10th Edition, Institute of Transportation Engineers, Washington, DC, 2017.

2. Trip Generation Handbook, 3rd Edition, Institute of Transportation Engineers, Washington, DC, 2014.

3. Highway Capacity Manual, 6th Edition, Transportation Research Board, Washington, DC, 2016.

4. Highway Capacity Software, Version 7.7, McTrans, Gainesville, FL, 2018.

5. Synchro, Version 9, Trafficware Ltd., Sugar Land, TX 2014.

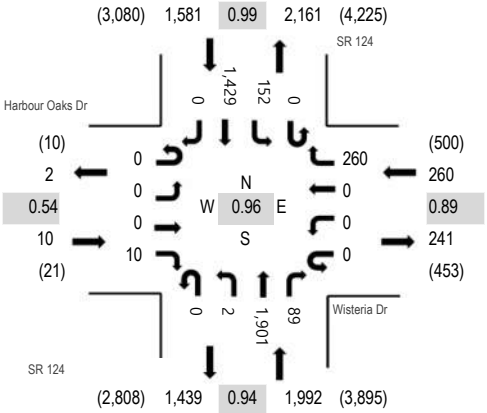
APPENDIX A :

TRAFFIC COUNTS

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

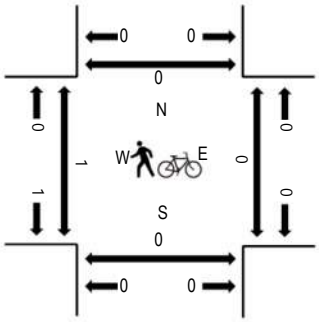
Location: #1 SR 124 & Wisteria Dr AM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Harbour Oaks Dr Eastbound				Wisteria Dr Westbound				SR 124 Northbound				SR 124 Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	6	0	0	0	78	0	0	469	12	0	34	317	2	918	3,841	1	0	0	0
7:15 AM	0	0	0	3	0	0	0	65	0	1	496	16	0	33	356	0	970	3,843	1	0	0	0
7:30 AM	0	0	0	2	0	0	0	70	0	0	508	25	0	39	361	0	1,005	3,777	0	0	0	0
7:45 AM	0	0	0	2	0	0	0	65	0	0	462	24	0	44	351	0	948	3,703	0	0	0	0
8:00 AM	0	0	0	3	0	0	0	60	0	1	435	24	0	36	361	0	920	3,655	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	55	0	0	428	20	0	32	368	1	904		0	0	0	0
8:30 AM	0	1	0	3	0	0	0	54	0	2	465	21	0	29	355	1	931		0	0	0	0
8:45 AM	0	0	0	1	0	0	0	53	0	0	461	25	0	39	319	2	900		0	0	0	0

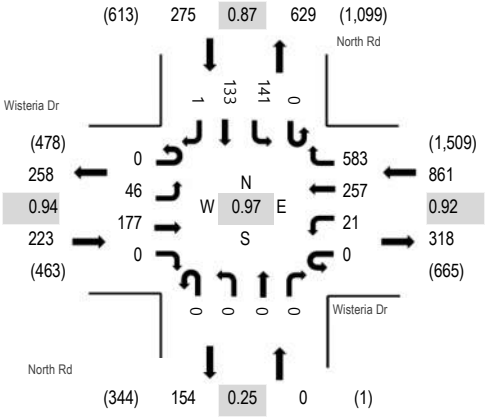
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	2	0	0	21	0	0	1	11	0	35
Lights	0	0	0	10	0	0	0	253	0	2	1,834	89	0	149	1,373	0	3,710
Mediums	0	0	0	0	0	0	0	5	0	0	46	0	0	2	45	0	98
Total	0	0	0	10	0	0	0	260	0	2	1,901	89	0	152	1,429	0	3,843

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

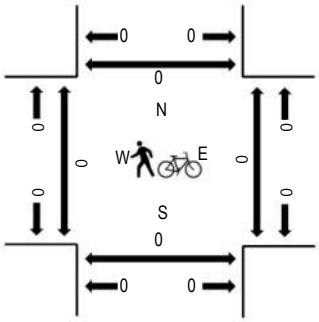
Location: #2 North Rd & Wisteria Dr AM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Wisteria Dr Eastbound				Wisteria Dr Westbound				North Rd Northbound				North Rd Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	8	43	0	0	2	70	163	0	0	0	0	0	25	34	1	346	1,359	0	0	0	0
7:15 AM	0	9	34	0	0	4	65	153	0	0	0	0	0	37	22	0	324	1,335	0	0	0	0
7:30 AM	0	19	47	0	0	6	60	126	0	0	0	0	0	38	43	0	339	1,306	0	0	0	0
7:45 AM	0	10	53	0	0	9	62	141	0	0	0	0	0	41	34	0	350	1,266	0	0	0	0
8:00 AM	0	15	47	0	0	6	58	123	0	0	0	0	0	35	37	1	322	1,227	0	0	0	0
8:15 AM	0	11	42	4	0	5	47	100	0	0	0	1	0	35	48	2	295		0	0	0	0
8:30 AM	0	9	45	2	0	4	53	103	0	0	0	0	0	42	38	3	299		0	0	0	0
8:45 AM	0	19	45	1	0	4	55	90	0	0	0	0	0	55	41	1	311		0	1	0	0

Peak Rolling Hour Flow Rates

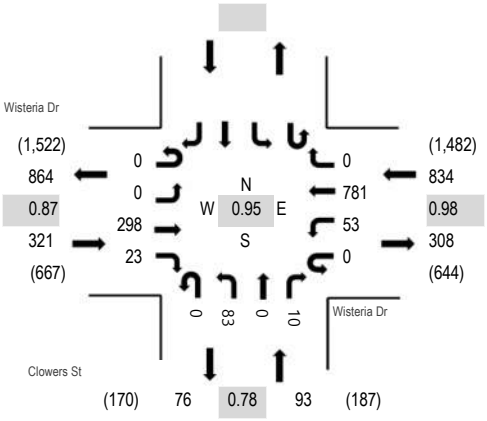
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Lights	0	45	173	0	0	21	254	573	0	0	0	0	0	139	132	1	1,338
Mediums	0	1	2	0	0	0	3	10	0	0	0	0	0	2	1	0	19
Total	0	46	177	0	0	21	257	583	0	0	0	0	0	141	133	1	1,359

All Traffic Data Services Inc.

(303) 216-2439
www.alltrafficdata.net

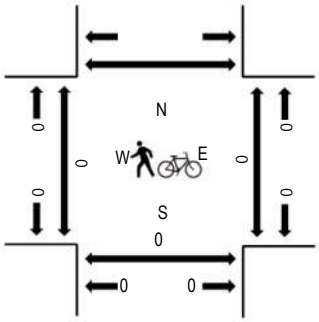
Location: #3 Clowers St & Wisteria Dr AM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Wisteria Dr Eastbound				Wisteria Dr Westbound				Clowers St Northbound				Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	58	3	0	6	207	0	0	24	0	0					298	1,248	0	0	0	
7:15 AM	0	0	77	3	0	15	196	0	0	24	0	4					319	1,238	0	0	0	
7:30 AM	0	0	72	9	0	15	185	0	0	19	0	3					303	1,171	0	0	0	
7:45 AM	0	0	91	8	0	17	193	0	0	16	0	3					328	1,132	0	0	0	
8:00 AM	0	0	79	6	0	10	173	0	0	13	0	7					288	1,088	0	0	0	
8:15 AM	0	0	73	8	0	11	140	0	0	17	0	3					252		0	0	0	
8:30 AM	0	0	64	16	0	13	147	0	0	17	0	7					264		0	0	0	
8:45 AM	0	0	88	12	0	18	136	0	0	15	0	15					284		0	0	0	

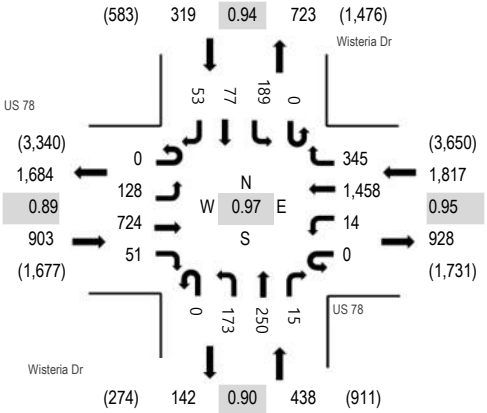
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	3	0	0	0	0	0	0	0	0	0					3
Lights	0	0	292	23	0	53	769	0	0	83	0	10					1,230
Mediums	0	0	3	0	0	0	12	0	0	0	0	0					15
Total	0	0	298	23	0	53	781	0	0	83	0	10					1,248

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

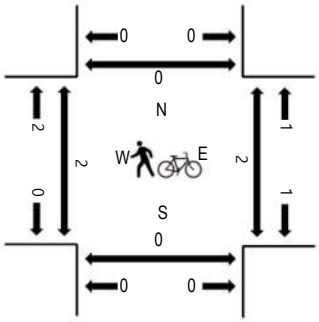
Location: #4 Wisteria Dr & US 78 AM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	US 78 Eastbound				US 78 Westbound				Wisteria Dr Northbound				Wisteria Dr Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	31	142	9	0	11	387	103	0	49	77	9	0	46	13	4	881	3,459	0	4	1	0
7:15 AM	0	33	125	7	0	6	388	102	0	44	76	4	0	37	21	9	852	3,434	0	2	1	0
7:30 AM	0	36	176	6	0	6	349	87	0	41	63	2	0	49	16	8	839	3,477	0	0	0	0
7:45 AM	0	30	183	11	0	3	360	95	0	40	75	7	0	54	17	12	887	3,450	2	1	0	0
8:00 AM	0	33	159	13	0	2	365	90	0	49	58	2	0	45	23	17	856	3,362	0	1	0	0
8:15 AM	0	29	206	21	0	3	384	73	0	43	54	4	0	41	21	16	895		0	0	0	0
8:30 AM	0	24	182	19	0	3	338	70	0	46	70	2	0	33	16	9	812		0	0	0	0
8:45 AM	0	29	163	10	0	2	339	84	0	34	54	8	0	52	15	9	799		0	0	0	0

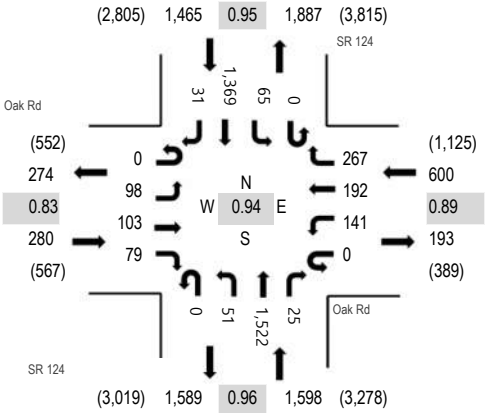
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	10	1	0	0	18	2	0	1	0	0	0	0	1	0	33
Lights	0	127	687	42	0	12	1,428	335	0	165	249	15	0	185	73	52	3,370
Mediums	0	1	27	8	0	2	12	8	0	7	1	0	0	4	3	1	74
Total	0	128	724	51	0	14	1,458	345	0	173	250	15	0	189	77	53	3,477

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

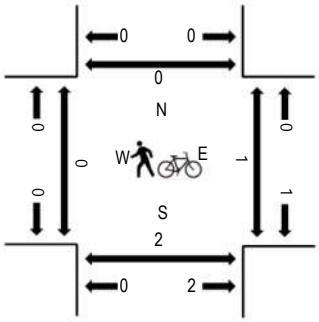
Location: #5 SR 124 & Oak Rd AM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Oak Rd Eastbound				Oak Rd Westbound				SR 124 Northbound				SR 124 Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	13	27	18	0	28	42	60	0	20	397	1	0	15	305	13	939	3,903	0	0	0	0
7:15 AM	0	22	18	31	0	22	39	60	0	19	411	3	0	10	309	16	960	3,917	1	0	0	0
7:30 AM	0	22	22	16	0	37	49	79	0	12	423	4	0	11	371	3	1,049	3,943	0	0	0	0
7:45 AM	0	30	24	19	0	32	46	56	0	16	372	6	0	17	331	6	955	3,859	0	0	2	0
8:00 AM	0	18	30	17	0	37	52	79	0	10	357	4	0	17	322	10	953	3,872	0	0	0	0
8:15 AM	0	28	27	27	0	35	45	53	0	13	370	11	0	20	345	12	986		0	0	0	0
8:30 AM	0	19	29	18	0	38	35	68	0	15	396	7	0	17	315	8	965		0	0	0	0
8:45 AM	0	31	39	22	0	24	51	58	0	10	393	8	0	22	300	10	968		0	0	0	0

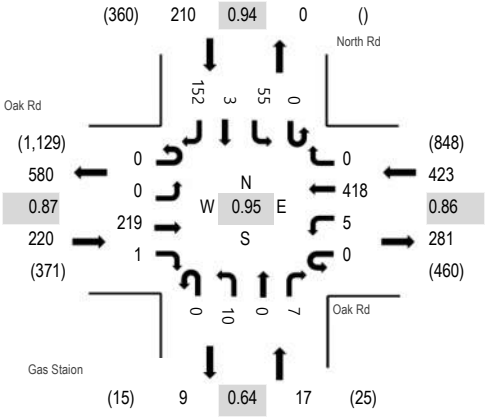
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	1	0	0	2	2	0	0	19	1	0	0	19	1	46
Lights	0	96	100	75	0	140	187	259	0	51	1,457	23	0	63	1,306	28	3,785
Mediums	0	2	2	3	0	1	3	6	0	0	46	1	0	2	44	2	112
Total	0	98	103	79	0	141	192	267	0	51	1,522	25	0	65	1,369	31	3,943

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

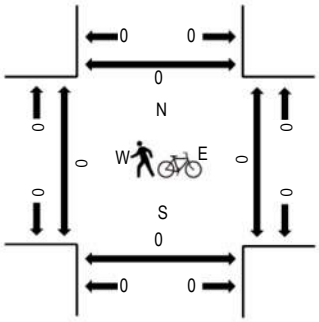
Location: #6 Gas Staion & Oak Rd AM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Oak Rd Eastbound				Oak Rd Westbound				Gas Staion Northbound				North Rd Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	34	0	0	0	97	0	0	2	0	1	0	3	2	31	170	734	0	0	0	0
7:15 AM	0	0	30	0	0	0	106	0	0	1	0	0	0	9	0	19	165	793	0	0	0	0
7:30 AM	0	0	38	0	0	0	134	0	0	0	0	0	0	10	2	35	219	842	0	0	0	0
7:45 AM	0	0	49	0	0	1	87	0	0	2	0	2	0	3	1	35	180	829	0	1	2	0
8:00 AM	0	0	49	0	0	0	132	0	0	1	0	3	0	6	1	37	229	870	0	0	0	0
8:15 AM	0	0	55	0	0	4	96	0	0	2	0	1	0	14	1	41	214		0	0	0	0
8:30 AM	0	0	52	1	0	1	89	0	0	5	0	2	0	16	1	39	206		0	0	0	0
8:45 AM	0	0	63	0	0	0	101	0	0	2	0	1	0	19	0	35	221		0	0	0	0

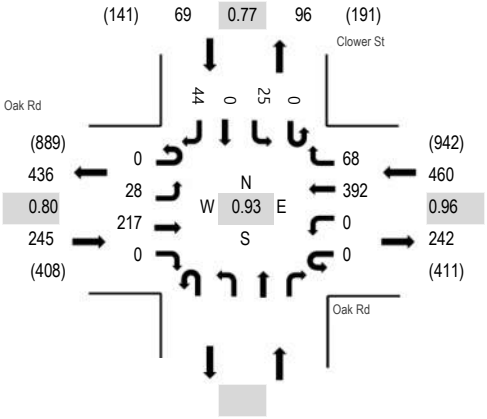
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Lights	0	0	215	0	0	5	412	0	0	9	0	7	0	54	3	149	854
Mediums	0	0	4	1	0	0	4	0	0	1	0	0	0	1	0	3	14
Total	0	0	219	1	0	5	418	0	0	10	0	7	0	55	3	152	870

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

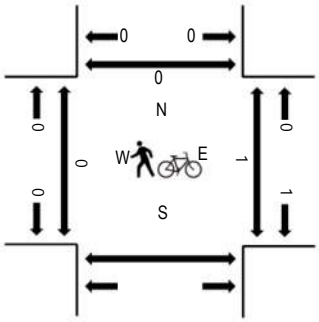
Location: #7 Clower St & Oak Rd AM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:45 AM - 09:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Oak Rd Eastbound				Oak Rd Westbound				Northbound				Clower St Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	2	42	0	0	0	90	25					0	3	0	5	167	717	0	0		0
7:15 AM	0	5	30	0	0	0	111	17					0	3	0	15	181	737	0	0		0
7:30 AM	0	3	37	0	0	0	94	28					0	9	0	13	184	737	0	0		0
7:45 AM	0	7	37	0	0	0	109	8					0	8	0	16	185	751	0	0		1
8:00 AM	0	5	46	0	0	0	113	13					0	3	0	7	187	774	0	0		0
8:15 AM	0	4	58	0	0	0	85	20					0	2	0	12	181		0	0		0
8:30 AM	0	6	49	0	0	0	104	15					0	10	0	14	198		0	1		0
8:45 AM	0	13	64	0	0	0	90	20					0	10	0	11	208		0	0		0

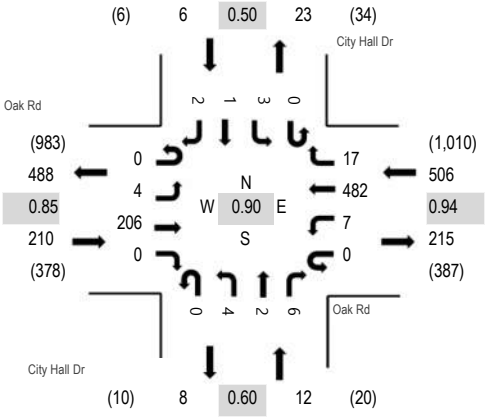
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0					0	0	0	0	1
Lights	0	28	211	0	0	0	384	68					0	24	0	42	757
Mediums	0	0	6	0	0	0	7	0					0	1	0	2	16
Total	0	28	217	0	0	0	392	68					0	25	0	44	774

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

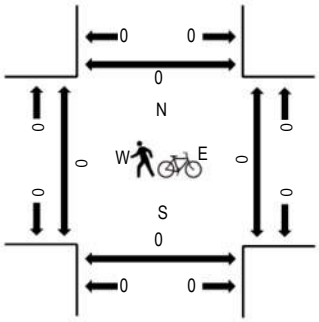
Location: #8 City Hall Dr & Oak Rd AM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:45 AM - 09:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Oak Rd Eastbound				Oak Rd Westbound				City Hall Dr Northbound				City Hall Dr Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	39	0	0	0	114	2	0	1	0	1	0	0	0	0	157	680	0	0	0	0
7:15 AM	0	0	34	0	0	1	136	2	0	1	0	0	0	0	0	0	174	705	0	0	0	0
7:30 AM	0	0	47	1	0	0	122	2	0	1	0	1	0	0	0	0	174	704	0	0	0	0
7:45 AM	0	0	47	0	0	0	120	5	0	0	0	3	0	0	0	0	175	705	0	0	0	1
8:00 AM	0	0	46	0	0	2	129	3	0	1	0	0	0	0	1	0	182	734	0	0	0	0
8:15 AM	0	0	52	0	0	0	114	3	0	1	1	1	0	1	0	0	173		0	0	0	0
8:30 AM	0	0	50	0	0	1	118	2	0	1	1	1	0	0	0	1	175		0	0	0	0
8:45 AM	0	4	58	0	0	4	121	9	0	1	0	4	0	2	0	1	204		0	0	0	0

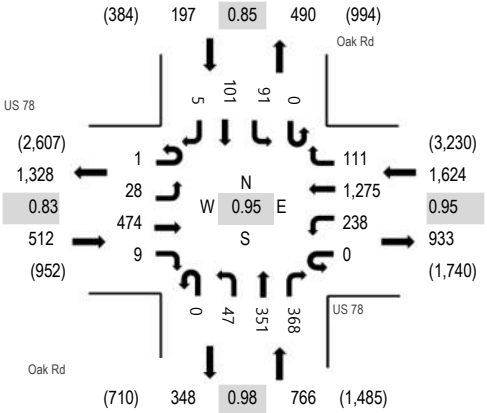
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Lights	0	4	201	0	0	7	475	16	0	4	2	6	0	3	1	2	721
Mediums	0	0	5	0	0	0	6	1	0	0	0	0	0	0	0	0	12
Total	0	4	206	0	0	7	482	17	0	4	2	6	0	3	1	2	734

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

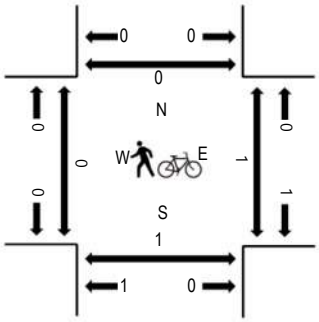
Location: #9 Oak Rd & US 78 AM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	US 78 Eastbound				US 78 Westbound				Oak Rd Northbound				Oak Rd Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	1	3	76	1	0	67	346	23	0	10	88	88	0	20	19	1	743	3,049	0	0	0	0
7:15 AM	1	7	109	3	0	52	316	32	0	20	94	75	0	12	21	1	743	3,054	0	0	0	0
7:30 AM	1	11	103	1	0	57	308	21	0	13	93	94	0	22	27	0	751	3,099	0	0	0	0
7:45 AM	0	8	128	2	0	55	346	28	0	9	89	98	0	25	22	2	812	3,083	0	1	0	0
8:00 AM	0	4	95	4	0	67	309	28	0	11	96	89	0	18	26	1	748	3,002	0	0	0	0
8:15 AM	0	5	148	2	0	59	312	34	0	14	73	87	0	26	26	2	788		0	0	1	0
8:30 AM	0	12	102	1	0	66	291	30	1	9	80	92	0	17	33	1	735		0	0	0	0
8:45 AM	1	13	107	3	0	63	274	46	0	6	76	80	0	29	32	1	731		0	0	0	0

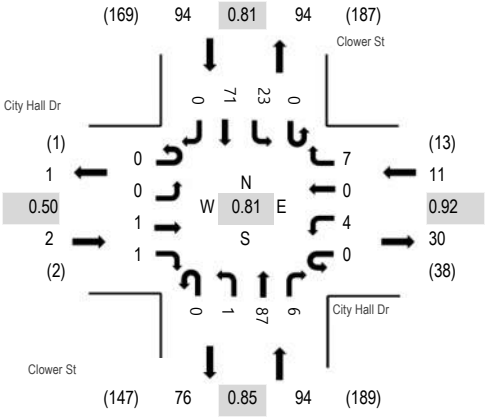
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	11	0	0	0	16	3	0	0	1	0	0	1	0	0	32
Lights	1	28	444	9	0	233	1,242	107	0	43	346	356	0	87	101	4	3,001
Mediums	0	0	19	0	0	5	17	1	0	4	4	12	0	3	0	1	66
Total	1	28	474	9	0	238	1,275	111	0	47	351	368	0	91	101	5	3,099

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

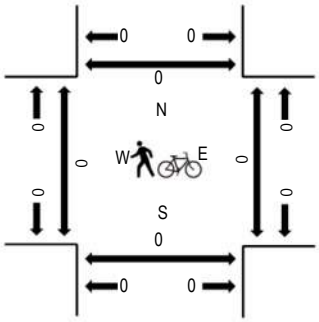
Location: #10 Clower St & City Hall Dr AM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:45 AM - 09:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	City Hall Dr Eastbound				City Hall Dr Westbound				Clower St Northbound				Clower St Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	0	0	0	0	0	24	1	0	0	9	0	34	172	0	0	0	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	28	0	0	1	16	0	46	178	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	22	0	0	2	23	0	47	174	0	0	0	0
7:45 AM	0	0	0	0	0	1	0	0	0	0	19	1	0	3	21	0	45	184	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	3	0	0	18	1	0	4	14	0	40	201	0	0	0	0
8:15 AM	0	0	0	1	0	1	0	1	0	0	18	2	0	7	12	0	42		0	0	0	0
8:30 AM	0	0	1	0	0	0	0	3	0	1	22	2	0	4	24	0	57		0	0	0	0
8:45 AM	0	0	0	0	0	3	0	0	0	0	29	1	0	8	21	0	62		0	0	0	0

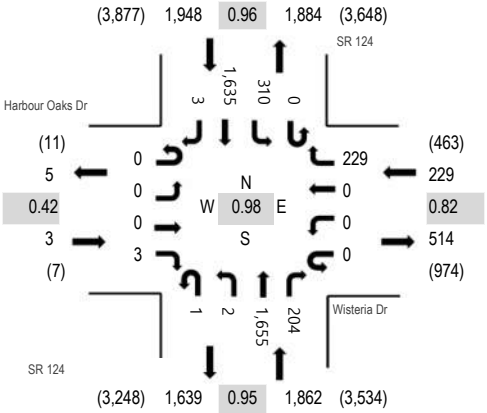
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	1	1	0	2	0	7	0	1	87	6	0	23	70	0	198
Mediums	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	3
Total	0	0	1	1	0	4	0	7	0	1	87	6	0	23	71	0	201

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

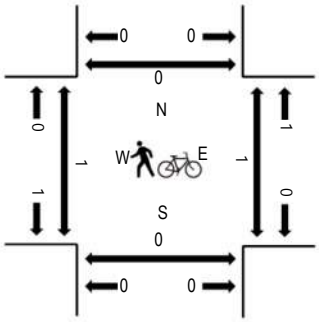
Location: #1 SR 124 & Wisteria Dr PM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Harbour Oaks Dr Eastbound				Wisteria Dr Westbound				SR 124 Northbound				SR 124 Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	0	0	53	0	0	371	33	0	83	410	2	952	3,866	0	0	0	0
4:15 PM	0	0	0	1	0	0	0	54	0	0	400	35	1	67	371	1	930	3,926	1	0	0	0
4:30 PM	0	0	0	3	0	0	0	77	0	0	373	34	0	84	429	1	1,001	4,016	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	61	0	0	393	45	0	84	399	1	983	4,042	0	1	0	0
5:00 PM	0	0	0	1	0	0	0	58	0	1	419	56	0	72	405	0	1,012	4,015	1	0	0	0
5:15 PM	0	0	0	1	0	0	0	58	0	0	401	56	0	79	424	1	1,020		0	0	0	0
5:30 PM	0	0	0	1	0	0	0	52	1	1	442	47	0	75	407	1	1,027		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	50	0	0	385	41	0	83	395	2	956		0	0	0	0

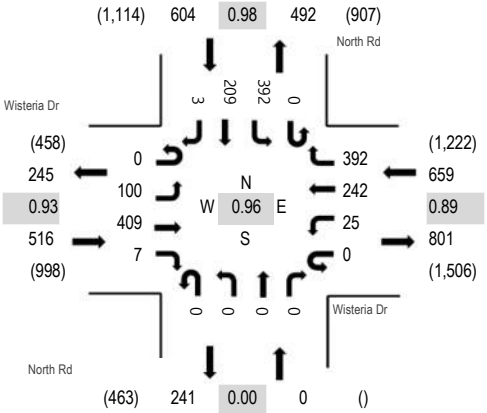
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	11	1	0	0	12	0	24
Lights	0	0	0	3	0	0	0	224	1	2	1,623	202	0	305	1,597	3	3,960
Mediums	0	0	0	0	0	0	0	5	0	0	21	1	0	5	26	0	58
Total	0	0	0	3	0	0	0	229	1	2	1,655	204	0	310	1,635	3	4,042

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

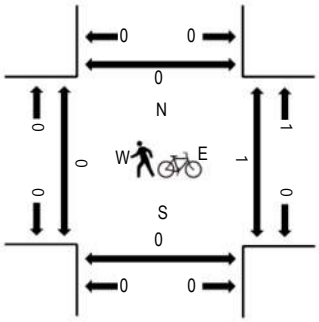
Location: #2 North Rd & Wisteria Dr PM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Wisteria Dr Eastbound				Wisteria Dr Westbound				North Rd Northbound				North Rd Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	19	108	2	0	9	50	81	0	0	0	0	0	72	45	3	389	1,656	0	0	0	0
4:15 PM	0	14	89	2	0	5	61	60	0	0	0	0	0	79	57	1	368	1,690	0	0	0	0
4:30 PM	0	22	100	5	0	10	64	83	0	0	0	0	0	108	45	0	437	1,779	0	0	0	0
4:45 PM	0	20	102	1	0	7	74	104	0	0	0	0	0	96	58	0	462	1,728	0	0	0	0
5:00 PM	0	26	102	0	0	5	46	98	0	0	0	0	0	89	56	1	423	1,678	0	1	0	0
5:15 PM	0	32	105	1	0	3	58	107	0	0	0	0	0	99	50	2	457		0	0	0	0
5:30 PM	0	28	92	3	0	5	51	99	0	0	0	0	0	73	35	0	386		0	1	0	0
5:45 PM	0	23	98	4	0	4	47	91	0	0	0	0	0	94	51	0	412		0	0	0	0

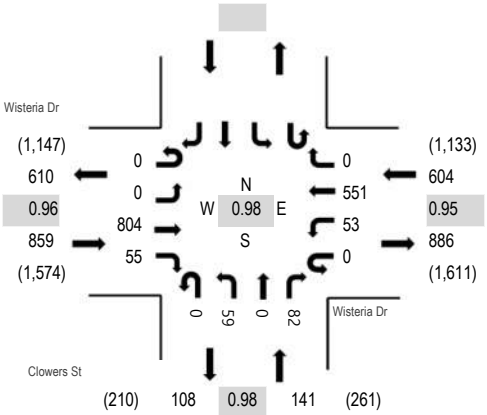
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lights	0	100	402	7	0	25	236	390	0	0	0	0	0	387	207	3	1,757
Mediums	0	0	6	0	0	0	6	2	0	0	0	0	0	5	2	0	21
Total	0	100	409	7	0	25	242	392	0	0	0	0	0	392	209	3	1,779

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

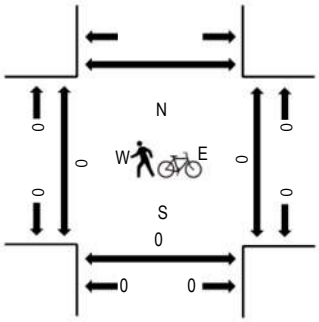
Location: #3 Clowers St & Wisteria Dr PM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Wisteria Dr Eastbound				Wisteria Dr Westbound				Clowers St Northbound				Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	172	15	0	9	116	0	0	15	0	20					347	1,476	0	0	0	
4:15 PM	0	0	158	13	0	12	111	0	0	7	0	21					322	1,532	0	0	0	
4:30 PM	0	0	208	15	0	13	127	0	0	17	0	19					399	1,604	0	0	0	
4:45 PM	0	0	197	13	0	10	152	0	0	19	0	17					408	1,551	0	0	0	
5:00 PM	0	0	201	19	0	16	134	0	0	14	0	19					403	1,492	0	0	0	
5:15 PM	0	0	198	8	0	14	138	0	0	9	0	27					394		0	0	0	
5:30 PM	0	0	151	14	0	19	135	0	0	15	0	12					346		0	0	0	
5:45 PM	0	0	178	14	0	6	121	0	0	17	0	13					349		0	0	0	

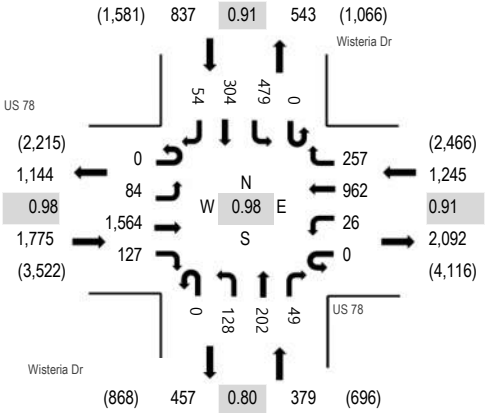
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	0	0	0	0	0	0					1
Lights	0	0	792	55	0	53	543	0	0	59	0	82					1,584
Mediums	0	0	11	0	0	0	8	0	0	0	0	0					19
Total	0	0	804	55	0	53	551	0	0	59	0	82					1,604

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

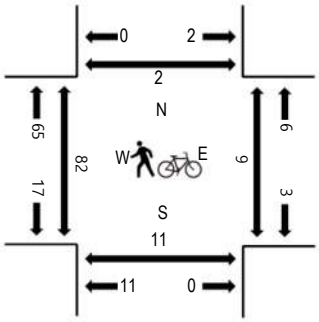
Location: #4 Wisteria Dr & US 78 PM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	US 78 Eastbound				US 78 Westbound				Wisteria Dr Northbound				Wisteria Dr Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	23	385	24	0	5	189	73	0	28	42	13	0	114	58	14	968	4,047	2	1	1	0
4:15 PM	0	19	399	27	0	7	229	63	0	28	35	13	0	106	46	10	982	4,120	8	3	0	1
4:30 PM	0	28	359	29	0	10	273	65	0	31	43	8	0	116	82	13	1,057	4,224	1	2	2	0
4:45 PM	0	24	356	30	0	15	225	76	0	19	52	8	0	124	90	21	1,040	4,236	6	3	0	0
5:00 PM	0	25	396	36	0	7	232	55	0	27	53	11	0	114	74	11	1,041	4,218	15	0	4	0
5:15 PM	0	18	393	33	0	2	250	62	0	49	51	18	0	124	78	8	1,086		42	2	4	2
5:30 PM	0	17	419	28	0	2	255	64	0	33	46	12	0	117	62	14	1,069		19	4	3	0
5:45 PM	0	21	394	39	0	6	229	72	0	23	39	14	0	103	78	4	1,022		9	1	0	1

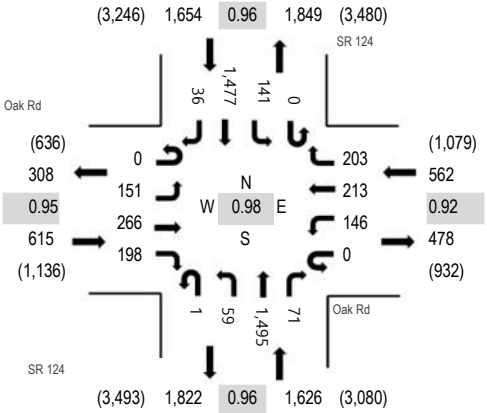
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	8	0	0	0	10	0	0	0	0	0	0	1	0	0	19
Lights	0	84	1,532	109	0	26	938	253	0	127	199	49	0	476	294	54	4,141
Mediums	0	0	24	18	0	0	14	4	0	1	3	0	0	2	10	0	76
Total	0	84	1,564	127	0	26	962	257	0	128	202	49	0	479	304	54	4,236

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

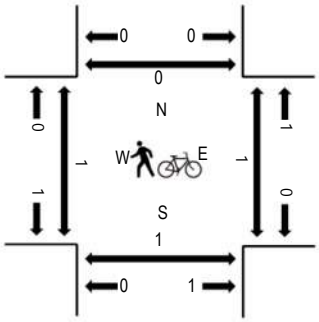
Location: #5 SR 124 & Oak Rd PM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Oak Rd Eastbound				Oak Rd Westbound				SR 124 Northbound				SR 124 Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	24	61	28	0	31	47	37	0	16	327	15	0	34	359	12	991	4,096	2	0	0	1
4:15 PM	0	29	54	41	0	30	47	58	0	27	326	14	0	33	308	6	973	4,235	0	0	1	0
4:30 PM	0	25	57	36	0	40	45	45	0	24	341	9	0	54	368	20	1,064	4,401	1	0	1	0
4:45 PM	0	40	63	44	0	47	42	50	1	12	350	18	0	34	356	11	1,068	4,457	1	0	0	0
5:00 PM	0	42	62	50	0	32	51	48	0	18	385	14	0	44	376	8	1,130	4,445	0	0	0	0
5:15 PM	0	34	70	56	0	33	54	52	0	16	362	27	0	35	391	9	1,139		0	0	0	0
5:30 PM	0	35	71	48	0	34	66	53	0	13	398	12	0	28	354	8	1,120		0	1	1	0
5:45 PM	0	38	71	57	0	26	48	63	0	18	318	19	0	33	347	18	1,056		0	0	0	0

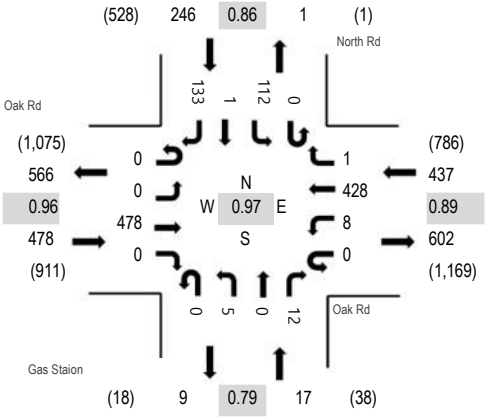
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	1	0	0	0	12	0	0	2	9	0	25
Lights	0	150	259	196	0	145	210	201	1	58	1,462	71	0	135	1,446	36	4,370
Mediums	0	1	6	2	0	1	2	2	0	1	21	0	0	4	22	0	62
Total	0	151	266	198	0	146	213	203	1	59	1,495	71	0	141	1,477	36	4,457

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

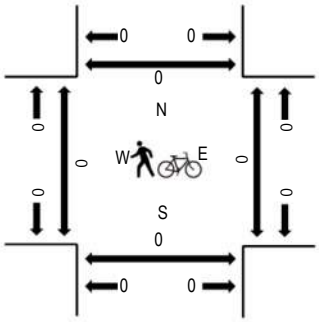
Location: #6 Gas Staion & Oak Rd PM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Oak Rd Eastbound				Oak Rd Westbound				Gas Staion Northbound				North Rd Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	107	0	0	0	68	0	0	3	0	3	0	29	0	39	249	1,085	0	0	0	0
4:15 PM	1	0	91	1	0	1	98	0	0	1	0	2	0	30	1	30	256	1,121	0	0	0	0
4:30 PM	0	0	117	1	0	0	95	0	0	3	0	4	0	32	2	36	290	1,169	0	0	0	0
4:45 PM	0	0	115	0	0	2	85	0	0	3	0	2	0	35	1	47	290	1,170	0	0	0	0
5:00 PM	0	0	116	0	0	3	96	1	0	1	0	3	0	25	1	39	285	1,178	0	0	0	0
5:15 PM	0	0	124	0	0	2	104	0	0	2	0	4	0	33	0	35	304		0	0	0	0
5:30 PM	0	0	114	0	0	1	122	0	0	1	0	1	0	24	0	28	291		0	0	0	0
5:45 PM	0	0	124	0	0	2	106	0	0	1	0	4	0	30	0	31	298		0	0	0	0

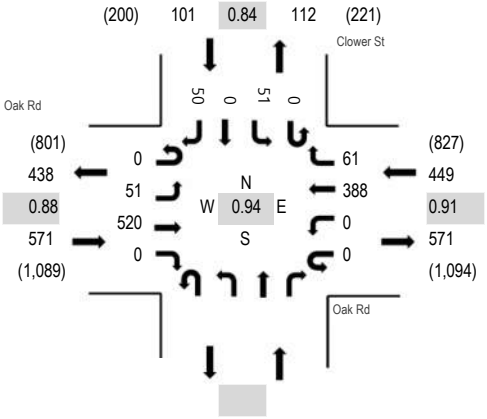
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4
Lights	0	0	465	0	0	8	421	1	0	5	0	12	0	111	1	133	1,157
Mediums	0	0	10	0	0	0	6	0	0	0	0	0	0	1	0	0	17
Total	0	0	478	0	0	8	428	1	0	5	0	12	0	112	1	133	1,178

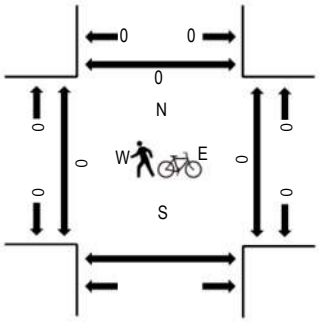
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

Location: #7 Clower St & Oak Rd PM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	Oak Rd Eastbound				Oak Rd Westbound				Northbound				Clower St Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	16	116	0	0	0	74	12					0	15	0	6	239	995	0	0		0
4:15 PM	0	19	98	0	0	0	102	9					0	12	0	11	251	1,025	0	0		0
4:30 PM	0	12	128	0	0	0	76	15					0	16	0	12	259	1,071	0	0		0
4:45 PM	0	10	119	0	0	0	74	16					0	19	0	8	246	1,103	0	0		0
5:00 PM	0	13	121	0	0	0	89	13					0	18	0	15	269	1,121	0	0		0
5:15 PM	0	18	145	0	0	0	97	18					0	7	0	12	297		0	0		0
5:30 PM	0	7	131	0	0	0	109	14					0	15	0	15	291		0	0		0
5:45 PM	0	13	123	0	0	0	93	16					0	11	0	8	264		0	0		0

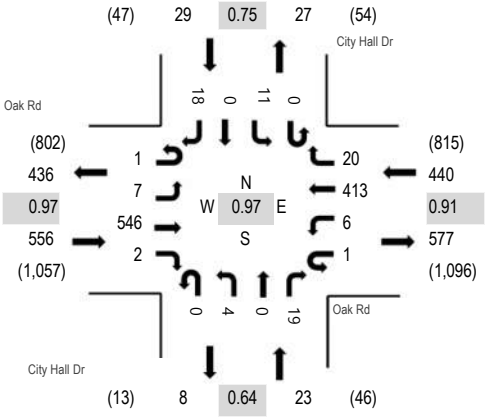
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	0	0	0	2	0					0	0	0	0	4
Lights	0	50	507	0	0	0	381	61					0	51	0	50	1,100
Mediums	0	1	11	0	0	0	5	0					0	0	0	0	17
Total	0	51	520	0	0	0	388	61					0	51	0	50	1,121

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

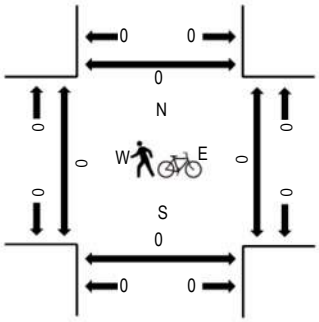
Location: #8 City Hall Dr & Oak Rd PM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Oak Rd Eastbound				Oak Rd Westbound				City Hall Dr Northbound				City Hall Dr Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	1	107	1	0	0	73	5	0	1	0	6	0	3	0	2	199	917	0	0	0	0
4:15 PM	0	1	116	0	0	3	103	6	0	2	0	3	0	2	0	2	238	971	0	0	0	0
4:30 PM	0	2	139	0	0	0	92	5	0	0	0	5	0	2	0	3	248	998	1	0	0	0
4:45 PM	0	3	130	1	0	0	84	4	0	2	0	4	0	2	0	2	232	1,021	0	0	0	0
5:00 PM	1	3	140	1	0	0	89	4	0	1	0	4	0	2	0	8	253	1,048	0	0	0	0
5:15 PM	0	2	137	1	1	2	106	4	0	1	0	4	0	2	0	5	265		0	0	0	0
5:30 PM	0	0	137	0	0	1	115	5	0	0	0	4	0	5	0	4	271		0	0	0	0
5:45 PM	0	2	132	0	0	3	103	7	0	2	0	7	0	2	0	1	259		0	0	0	0

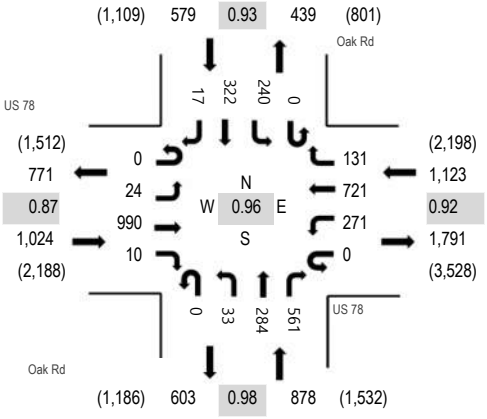
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Lights	1	7	536	2	1	6	405	20	0	4	0	19	0	11	0	18	1,030
Mediums	0	0	8	0	0	0	6	0	0	0	0	0	0	0	0	0	14
Total	1	7	546	2	1	6	413	20	0	4	0	19	0	11	0	18	1,048

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

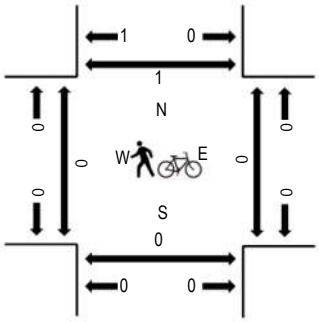
Location: #9 Oak Rd & US 78 PM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	US 78 Eastbound				US 78 Westbound				Oak Rd Northbound				Oak Rd Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	1	6	323	4	0	50	146	29	0	4	37	85	0	41	78	4	808	3,423	0	0	0	0
4:15 PM	2	3	300	8	0	69	170	41	0	8	63	108	0	50	66	4	892	3,510	0	0	0	0
4:30 PM	0	8	262	2	0	75	189	33	0	5	55	115	0	59	83	5	891	3,514	0	0	0	1
4:45 PM	0	6	235	4	0	66	190	17	0	9	64	101	0	58	78	4	832	3,564	0	0	0	0
5:00 PM	0	8	267	3	0	59	176	27	0	9	65	141	0	57	78	5	895	3,604	0	0	0	1
5:15 PM	0	3	223	4	0	71	204	35	0	11	68	139	0	58	77	3	896		0	0	0	0
5:30 PM	0	6	261	3	0	67	186	39	0	8	76	140	0	61	91	3	941		0	0	0	0
5:45 PM	0	7	239	0	0	74	155	30	0	5	75	141	0	64	76	6	872		0	0	0	0

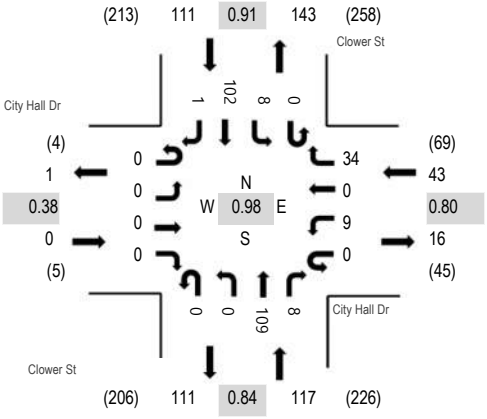
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	4	0	0	0	8	1	0	0	1	0	0	0	1	0	15
Lights	0	24	970	10	0	271	708	128	0	30	280	549	0	231	320	17	3,538
Mediums	0	0	16	0	0	0	5	2	0	3	3	12	0	9	1	0	51
Total	0	24	990	10	0	271	721	131	0	33	284	561	0	240	322	17	3,604

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

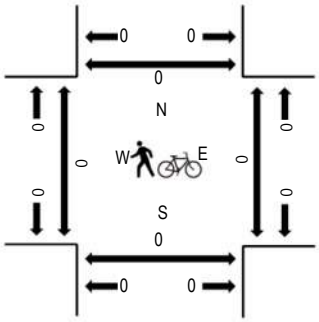
Location: #10 Clower St & City Hall Dr PM
Date and Start Time: Tuesday, October 1, 2019
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	City Hall Dr Eastbound				City Hall Dr Westbound				Clower St Northbound				Clower St Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	1	0	7	0	0	28	2	0	3	25	0	66	264	0	0	0	0
4:15 PM	0	0	2	0	0	4	1	5	0	1	22	4	0	7	16	0	62	264	0	0	0	0
4:30 PM	0	0	0	0	0	4	0	10	0	0	27	1	0	1	26	0	69	271	0	0	0	0
4:45 PM	0	0	0	0	0	3	0	7	0	0	28	2	0	3	24	0	67	267	0	0	0	0
5:00 PM	0	0	0	0	0	1	0	10	0	0	23	1	0	1	30	0	66	249	0	0	0	0
5:15 PM	0	0	0	0	0	1	0	7	0	0	31	4	0	3	22	1	69		0	0	0	0
5:30 PM	0	0	1	0	0	2	0	4	0	0	24	2	0	4	28	0	65		0	0	0	0
5:45 PM	0	1	1	0	0	1	0	1	0	1	23	2	0	1	18	0	49		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	9	0	34	0	0	109	8	0	8	102	1	271
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	9	0	34	0	0	109	8	0	8	102	1	271

All Traffic Data Services, Inc

alltrafficdata.net

Site Code: 1
Station ID: 1
WISTERIA DRIVE WEST OF CLOWER STREET

Start	01-Oct-19	EB		Hour Totals		WB		Hour Totals		Combined Totals	
Time	Tue	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		21	131			14	143				
12:15		15	150			11	147				
12:30		16	155			10	172				
12:45		16	138	68	574	8	158	43	620	111	1194
01:00		14	168			9	129				
01:15		7	136			9	169				
01:30		4	162			5	158				
01:45		6	123	31	589	9	137	32	593	63	1182
02:00		2	184			5	132				
02:15		5	186			6	139				
02:30		7	171			7	148				
02:45		4	179	18	720	10	116	28	535	46	1255
03:00		3	158			11	150				
03:15		2	163			7	143				
03:30		7	163			11	154				
03:45		9	196	21	680	13	132	42	579	63	1259
04:00		5	184			13	132				
04:15		8	169			23	112				
04:30		9	221			29	144				
04:45		6	209	28	783	45	165	110	553	138	1336
05:00		14	209			71	141				
05:15		18	194			96	139				
05:30		14	167			110	146				
05:45		25	192	71	762	134	138	411	564	482	1326
06:00		33	195			170	160				
06:15		45	206			144	144				
06:30		70	179			190	138				
06:45		65	158	213	738	179	135	683	577	896	1315
07:00		60	170			234	106				
07:15		80	158			210	107				
07:30		72	149			203	102				
07:45		103	152	315	629	200	109	847	424	1162	1053
08:00		84	145			189	96				
08:15		79	157			156	68				
08:30		83	140			162	82				
08:45		96	119	342	561	149	57	656	303	998	864
09:00		100	94			163	63				
09:15		93	98			172	43				
09:30		110	83			180	51				
09:45		111	82	414	357	176	41	691	198	1105	555
10:00		99	64			144	39				
10:15		105	56			145	36				
10:30		116	56			163	28				
10:45		96	44	416	220	150	14	602	117	1018	337
11:00		112	37			152	20				
11:15		115	35			170	25				
11:30		133	35			158	20				
11:45		142	21	502	128	160	12	640	77	1142	205
Total		2439	6741			4785	5140			7224	11881
Percent		26.6%	73.4%			48.2%	51.8%			37.8%	62.2%
Grand Total		2439	6741			4785	5140			7224	11881
Percent		26.6%	73.4%			48.2%	51.8%			37.8%	62.2%
ADT		ADT 19,105		AADT 19,105							

All Traffic Data Services, Inc

alltrafficdata.net

Site Code: 2
Station ID: 2
OAK ROAD WEST OF CLOWER STREET

Start Time	01-Oct-19 Tue	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		3	85			4	107				
12:15		9	130			6	88				
12:30		4	133			6	127				
12:45		5	109	21	457	0	103	16	425	37	882
01:00		0	118			3	83				
01:15		5	119			1	118				
01:30		2	111			2	115				
01:45		4	119	11	467	2	85	8	401	19	868
02:00		3	123			1	91				
02:15		1	110			1	86				
02:30		5	100			2	104				
02:45		0	104	9	437	2	105	6	386	15	823
03:00		2	98			0	116				
03:15		2	91			2	110				
03:30		1	106			3	110				
03:45		2	107	7	402	4	83	9	419	16	821
04:00		6	128			2	92				
04:15		5	122			5	109				
04:30		1	137			5	93				
04:45		3	137	15	524	4	82	16	376	31	900
05:00		10	132			6	94				
05:15		14	149			28	113				
05:30		13	131			37	121				
05:45		13	137	50	549	64	108	135	436	185	985
06:00		26	132			77	83				
06:15		27	127			112	101				
06:30		31	112			93	82				
06:45		36	99	120	470	114	79	396	345	516	815
07:00		38	84			97	84				
07:15		36	98			122	59				
07:30		43	73			120	76				
07:45		49	91	166	346	100	55	439	274	605	620
08:00		45	84			116	46				
08:15		58	72			103	35				
08:30		56	75			102	34				
08:45		77	48	236	279	107	33	428	148	664	427
09:00		88	55			110	34				
09:15		95	42			112	29				
09:30		70	42			100	27				
09:45		78	31	331	170	92	22	414	112	745	282
10:00		75	22			95	16				
10:15		82	21			100	19				
10:30		68	25			96	18				
10:45		66	14	291	82	95	13	386	66	677	148
11:00		79	6			75	13				
11:15		70	11			91	6				
11:30		92	11			90	3				
11:45		79	4	320	32	117	4	373	26	693	58
Total		1577	4215			2626	3414			4203	7629
Percent		27.2%	72.8%			43.5%	56.5%			35.5%	64.5%
Grand Total		1577	4215			2626	3414			4203	7629
Percent		27.2%	72.8%			43.5%	56.5%			35.5%	64.5%
ADT		ADT 11,832		AADT 11,832							

All Traffic Data Services, Inc

alltrafficdata.net

Site Code: 3
Station ID: 3
NORTH ROAD SOUTH OF WISTERIA DRIVE

Start Time	01-Oct-1 Tue	SB								
12:00 AM		7								
01:00		9								
02:00		0								
03:00		4								
04:00		17								
05:00		41								
06:00		114								
07:00		144								
08:00		182								
09:00		**193**								
10:00		167								
11:00		154								
12:00 PM		200								
01:00		193								
02:00		206								
03:00		216								
04:00		**253**								
05:00		228								
06:00		225								
07:00		141								
08:00		100								
09:00		53								
10:00		41								
11:00		23								
Total		2911								
AM Peak	-	09:00	-	-	-	-	-	-	-	-
Vol.	-	193	-	-	-	-	-	-	-	-
PM Peak	-	16:00	-	-	-	-	-	-	-	-
Vol.	-	253	-	-	-	-	-	-	-	-
Grand Total		2911								
ADT		ADT 2,911	AADT 2,911							

All Traffic Data Services, Inc

alltrafficdata.net

Site Code: 4
Station ID: 4
CLOWER STREET SOUTH OF WISTERIA DRIVE

Start	01-Oct-19	NB		Hour Totals		SB		Hour Totals		Combined Totals	
Time	Tue	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	24			0	33				
12:15		0	29			0	24				
12:30		0	33			1	33				
12:45		1	22	1	108	0	31	1	121	2	229
01:00		1	28			0	32				
01:15		1	39			0	33				
01:30		0	39			0	34				
01:45		1	31	3	137	0	30	0	129	3	266
02:00		1	24			0	27				
02:15		0	35			0	29				
02:30		0	32			0	43				
02:45		0	24	1	115	0	32	0	131	1	246
03:00		1	25			0	26				
03:15		0	29			0	32				
03:30		0	36			0	18				
03:45		0	32	1	122	0	38	0	114	1	236
04:00		0	36			0	29				
04:15		1	28			1	22				
04:30		1	37			0	26				
04:45		1	33	3	134	0	26	1	103	4	237
05:00		4	33			1	31				
05:15		8	37			3	27				
05:30		4	28			4	33				
05:45		7	25	23	123	8	17	16	108	39	231
06:00		7	33			18	25				
06:15		9	19			18	30				
06:30		25	19			16	12				
06:45		24	35	65	106	9	12	61	79	126	185
07:00		24	20			9	26				
07:15		28	19			15	9				
07:30		21	22			27	16				
07:45		20	24	93	85	24	13	75	64	168	149
08:00		18	16			17	12				
08:15		21	9			19	7				
08:30		25	11			28	13				
08:45		30	7	94	43	28	5	92	37	186	80
09:00		31	12			29	8				
09:15		25	1			28	4				
09:30		27	4			36	5				
09:45		19	5	102	22	18	3	111	20	213	42
10:00		21	4			22	1				
10:15		19	1			21	0				
10:30		22	3			24	3				
10:45		18	1	80	9	13	1	80	5	160	14
11:00		32	1			29	1				
11:15		17	1			26	0				
11:30		24	1			33	0				
11:45		23	1	96	4	34	1	122	2	218	6
Total		562	1008			559	913			1121	1921
Percent		35.8%	64.2%			38.0%	62.0%			36.9%	63.1%
Grand Total		562	1008			559	913			1121	1921
Percent		35.8%	64.2%			38.0%	62.0%			36.9%	63.1%
ADT		ADT 3,042		AADT 3,042							

APPENDIX B :

PARCEL LOCATIONS\LAND USES

Master Conceptual Plan

Key

1. Parking Garage
2. Multi-Family Residential
4a. Library/ Office/ Community Space
4b. 2 Story Market
6. Town Green
7a. Commercial
7b. Commercial
9. Commercial
10. Commercial
11. Future Development
12. Future Development

© 2017 Smallwood, Reynolds, Stewart, Stewart & Associates, Inc.

0' 75' 150' 300'

MIDCITY REAL ESTATE PARTNERS

CASTO

SMALLWOOD

The Grove at Towne Center

The Grove at Towne Center

Development Plan

9/10/19

Phase 1

Parcel 1	Residential - One Bedroom - 125 Units
	Residential - Two Bedroom - 130 Units
	Residential - Three Bedroom - 20 Units
Parcel 4A	Library 22,500 sf plus 2nd floor of 22,500 sf = 45,000 sf total
Parcel 4B	Market 17,000 sf plus 2nd floor of 17,000 sf = 34,000 sf total
Parcel 7A&B	Restaurant - 8,200 sf
Parcel 9	Commercial - 16,000 sf
Parcel 10	Commercial – 15,000 sf

Phase 2

Parcel 11	Residential - One Bedroom – 57 Units
	Residential - Two Bedroom - 57 Units
	Commercial - 36,000 sf
Parcel 12	Residential - Two Bedroom - 20 Units
	Residential - Three Bedroom - 20 Units
	Commercial - 10,000 sf

APPENDIX C :

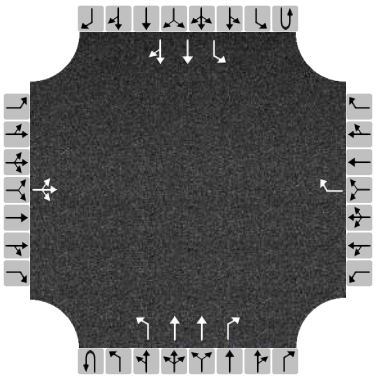
CAPACITY ANALYSIS REPORTS

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	SR 124 @ Wisteria
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/1/2019	East/West Street	Wisteria Dr
Analysis Year	2019	North/South Street	SR 124
Time Analyzed	Existing AM	Peak Hour Factor	0.96
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	1	0	1	2	1	0	1	2	0
Configuration			LTR					R		L	T	R		L	T	TR
Volume, V (veh/h)		0	0	10				260		2	1901	89		152	1429	0
Percent Heavy Vehicles (%)		3	3	3				3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes				Yes				No			
Median Type/Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			10					271		2				158		
Capacity, c (veh/h)			355					244		442				284		
v/c Ratio			0.03					1.11		0.00				0.56		
95% Queue Length, Q_{95} (veh)			0.1					11.9		0.0				3.1		
Control Delay (s/veh)			15.4					134.9		13.2				32.4		
Level of Service, LOS			C					F		B				D		
Approach Delay (s/veh)	15.4				134.9				0.0				3.1			
Approach LOS	C				F											

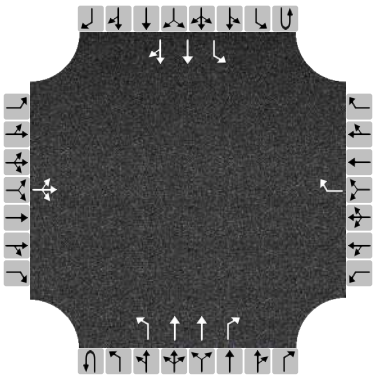
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	SR 124 @ Wisteria
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/1/2019	East/West Street	Wisteria Dr
Analysis Year	2019	North/South Street	SR 124
Time Analyzed	Existing PM	Peak Hour Factor	0.98
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	1	0	1	2	1	0	1	2	0
Configuration			LTR					R		L	T	R		L	T	TR
Volume, V (veh/h)		0	0	3				229		3	1655	204		310	1635	3
Percent Heavy Vehicles (%)		3	3	3				3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes				Yes				No			
Median Type/Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			3					234		3				316		
Capacity, c (veh/h)			308					305		376				370		
v/c Ratio			0.01					0.77		0.01				0.85		
95% Queue Length, Q_{95} (veh)			0.0					5.9		0.0				8.0		
Control Delay (s/veh)			16.8					47.1		14.7				51.4		
Level of Service, LOS			C					E		B				F		
Approach Delay (s/veh)	16.8				47.1				0.0				8.2			
Approach LOS	C				E											

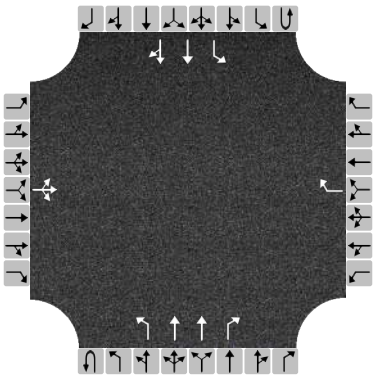
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	SR 124 @ Wisteria
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Wisteria Dr
Analysis Year	2023	North/South Street	SR 124
Time Analyzed	Background AM	Peak Hour Factor	0.96
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	1	0	1	2	1	0	1	2	0
Configuration			LTR					R		L	T	R		L	T	TR
Volume, V (veh/h)		0	0	11				281		2	2058	96		165	1547	0
Percent Heavy Vehicles (%)		3	3	3				3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes				Yes				No			
Median Type/Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9				6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96				6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3				3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33				3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11					293		2				172		
Capacity, c (veh/h)			323					215		397				245		
v/c Ratio			0.03					1.37		0.01				0.70		
95% Queue Length, Q_{95} (veh)			0.1					16.5		0.0				4.7		
Control Delay (s/veh)			16.5					234.7		14.1				48.3		
Level of Service, LOS			C					F		B				E		
Approach Delay (s/veh)	16.5				234.7				0.0				4.7			
Approach LOS	C				F											

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

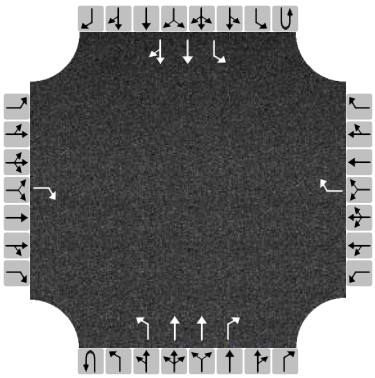
General Information

Analyst	MS
Agency/Co.	Wolverton
Date Performed	11/4/2019
Analysis Year	2023
Time Analyzed	Background PM
Intersection Orientation	North-South
Project Description	19-LD-006 Snellville Town Center

Site Information

Intersection	SR 124 @ Wisteria
Jurisdiction	City of Snellville
East/West Street	Wisteria Dr
North/South Street	SR 124
Peak Hour Factor	0.98
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	1	2	1	0	1	2	0
Configuration				R				R		L	T	R		L	T	TR
Volume, V (veh/h)				3				248		3	1791	221		336	1770	3
Percent Heavy Vehicles (%)				3				3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes				Yes				No			
Median Type/Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				3				253		3				343		
Capacity, c (veh/h)				278				274		332				326		
v/c Ratio				0.01				0.92		0.01				1.05		
95% Queue Length, Q_{95} (veh)				0.0				8.5		0.0				12.4		
Control Delay (s/veh)				18.1				77.0		15.9				100.7		
Level of Service, LOS				C				F		C				F		
Approach Delay (s/veh)	18.1				77.0				0.0				16.0			
Approach LOS	C				F											

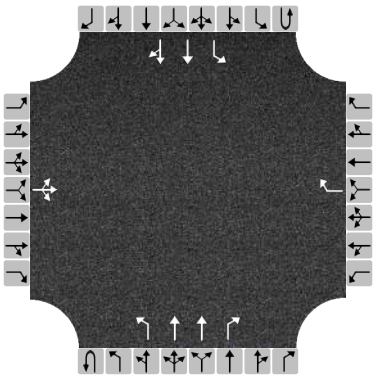
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	SR 124 @ Wisteria
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Wisteria Dr
Analysis Year	2023	North/South Street	SR 124
Time Analyzed	Project AM	Peak Hour Factor	0.96
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	1	0	1	2	1	0	1	2	0
Configuration			LTR					R		L	T	R		L	T	TR
Volume, V (veh/h)		0	0	11				288		2	2068	102		174	1551	0
Percent Heavy Vehicles (%)		3	3	3				3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes				Yes				No			
Median Type/Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11					300		2				181		
Capacity, c (veh/h)			322					213		395				243		
v/c Ratio			0.03					1.41		0.01				0.75		
95% Queue Length, Q_{95} (veh)			0.1					17.4		0.0				5.2		
Control Delay (s/veh)			16.6					252.5		14.2				53.4		
Level of Service, LOS			C					F		B				F		
Approach Delay (s/veh)	16.6				252.5				0.0				5.4			
Approach LOS	C				F											

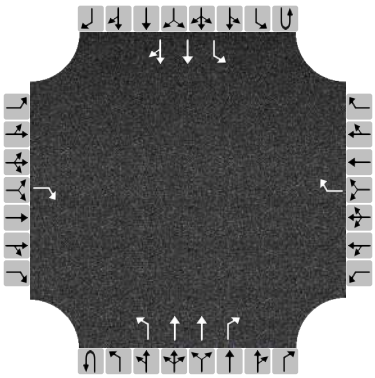
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	SR 124 @ Wisteria
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Wisteria Dr
Analysis Year	2023	North/South Street	SR 124
Time Analyzed	Project PM	Peak Hour Factor	0.98
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	1	2	1	0	1	2	0
Configuration				R				R		L	T	R		L	T	TR
Volume, V (veh/h)				3				264		3	1817	240		366	1785	3
Percent Heavy Vehicles (%)				3				3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes				Yes				No			
Median Type/Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				3				269		3				373		
Capacity, c (veh/h)				275				268		328				319		
v/c Ratio				0.01				1.00		0.01				1.17		
95% Queue Length, Q_{95} (veh)				0.0				10.1		0.0				15.7		
Control Delay (s/veh)				18.3				96.8		16.1				140.7		
Level of Service, LOS				C				F		C				F		
Approach Delay (s/veh)	18.3				96.8				0.0				23.9			
Approach LOS	C				F											

Copyright © 2019 University of Florida. All Rights Reserved.

Lane Group	EBL	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	47	182	22	866	283
v/c Ratio	0.17	0.16	0.04	0.94	0.67
Control Delay	7.2	6.5	12.2	35.1	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	6.5	12.2	35.1	30.8
Queue Length 50th (ft)	7	27	5	~302	105
Queue Length 95th (ft)	20	61	18	#608	182
Internal Link Dist (ft)		223		562	481
Turn Bay Length (ft)	115		130		
Base Capacity (vph)	382	1384	599	925	599
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.13	0.04	0.94	0.47

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	177	0	21	257	583	0	0	0	141	133	1
Future Volume (veh/h)	46	177	0	21	257	583	0	0	0	141	133	1
Number	1	6	16	5	2	12				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900				1900	1863	1900
Adj Flow Rate, veh/h	47	182	0	22	265	601				145	137	1
Adj No. of Lanes	1	1	1	1	1	0				0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	0
Cap, veh/h	187	1176	1000	733	259	587				185	174	1
Arrive On Green	0.04	0.63	0.00	0.51	0.51	0.51				0.20	0.20	0.20
Sat Flow, veh/h	1774	1863	1583	1197	508	1152				930	879	6
Grp Volume(v), veh/h	47	182	0	22	0	866				283	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1197	0	1660				1815	0	0
Q Serve(g_s), s	0.7	2.3	0.0	0.5	0.0	30.0				8.7	0.0	0.0
Cycle Q Clear(g_c), s	0.7	2.3	0.0	0.5	0.0	30.0				8.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.69				0.51		0.00
Lane Grp Cap(c), veh/h	187	1176	1000	733	0	846				360	0	0
V/C Ratio(X)	0.25	0.15	0.00	0.03	0.00	1.02				0.79	0.00	0.00
Avail Cap(c_a), veh/h	424	1425	1211	733	0	846				617	0	0
HCM Platoon Ratio	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	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	14.0	4.4	0.0	7.2	0.0	14.4				22.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.1	0.0	0.0	0.0	36.9				3.8	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
%ile BackOfQ(50%),veh/ln	0.5	1.2	0.0	0.2	0.0	22.1				4.7	0.0	0.0
LnGrp Delay(d),s/veh	14.7	4.5	0.0	7.2	0.0	51.3				26.2	0.0	0.0
LnGrp LOS	B	A		A		F				C		
Approach Vol, veh/h		229			888						283	
Approach Delay, s/veh		6.6			50.2						26.2	
Approach LOS		A			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	7.1	35.0		16.7		42.1		
Change Period (Y+Rc), s	* 5	* 5		* 5		* 5		
Max Green Setting (Gmax), s	* 10	* 30		* 20		* 45		
Max Q Clear Time (g_c+I1), s	2.7	32.0		10.7		4.3		
Green Ext Time (p_c), s	0.0	0.0		1.1		10.4		

Intersection Summary	
HCM 2010 Ctrl Delay	38.2
HCM 2010 LOS	D

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	104	426	7	26	660	629
v/c Ratio	0.40	0.45	0.01	0.07	0.95	0.94
Control Delay	15.0	14.6	0.6	18.8	46.7	50.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	14.6	0.6	18.8	46.7	50.0
Queue Length 50th (ft)	26	130	0	9	289	315
Queue Length 95th (ft)	51	200	1	27	#538	#550
Internal Link Dist (ft)		223			562	481
Turn Bay Length (ft)	115			130		
Base Capacity (vph)	300	1045	899	357	698	674
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.41	0.01	0.07	0.95	0.93

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	409	7	25	242	392	0	0	0	392	209	3
Future Volume (veh/h)	100	409	7	25	242	392	0	0	0	392	209	3
Number	1	6	16	5	2	12				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900				1900	1863	1900
Adj Flow Rate, veh/h	104	426	7	26	252	408				408	218	3
Adj No. of Lanes	1	1	1	1	1	0				0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	0
Cap, veh/h	188	933	793	428	246	398				434	232	3
Arrive On Green	0.05	0.50	0.50	0.38	0.38	0.38				0.37	0.37	0.37
Sat Flow, veh/h	1774	1863	1583	951	641	1038				1169	625	9
Grp Volume(v), veh/h	104	426	7	26	0	660				629	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	951	0	1680				1803	0	0
Q Serve(g_s), s	2.6	11.6	0.2	1.4	0.0	30.0				26.4	0.0	0.0
Cycle Q Clear(g_c), s	2.6	11.6	0.2	3.8	0.0	30.0				26.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.62				0.65		0.00
Lane Grp Cap(c), veh/h	188	933	793	428	0	643				670	0	0
V/C Ratio(X)	0.55	0.46	0.01	0.06	0.00	1.03				0.94	0.00	0.00
Avail Cap(c_a), veh/h	319	1070	910	428	0	643				691	0	0
HCM Platoon Ratio	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	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	18.5	12.6	9.8	16.9	0.0	24.2				23.8	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.3	0.0	0.1	0.0	42.2				20.5	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
%ile BackOfQ(50%),veh/ln	1.4	6.0	0.1	0.4	0.0	21.3				16.9	0.0	0.0
LnGrp Delay(d),s/veh	21.1	13.0	9.8	16.9	0.0	66.3				44.2	0.0	0.0
LnGrp LOS	C	B	A	B		F				D		
Approach Vol, veh/h		537			686						629	
Approach Delay, s/veh		14.5			64.5						44.2	
Approach LOS		B			E						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.2	35.0		34.1		44.2		
Change Period (Y+Rc), s	* 5	* 5		* 5		* 5		
Max Green Setting (Gmax), s	* 10	* 30		* 30		* 45		
Max Q Clear Time (g_c+I1), s	4.6	32.0		28.4		13.6		
Green Ext Time (p_c), s	0.1	0.0		0.7		9.0		

Intersection Summary	
HCM 2010 Ctrl Delay	43.1
HCM 2010 LOS	D

Notes

Lane Group	EBL	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	52	198	24	938	307
v/c Ratio	0.18	0.18	0.04	1.03	0.70
Control Delay	7.5	6.8	12.5	56.1	31.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	6.8	12.5	56.1	31.8
Queue Length 50th (ft)	8	31	5	~414	116
Queue Length 95th (ft)	22	66	20	#687	199
Internal Link Dist (ft)		223		562	481
Turn Bay Length (ft)	115		130		
Base Capacity (vph)	380	1376	580	913	596
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.14	0.14	0.04	1.03	0.52

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	192	0	23	278	631	0	0	0	153	144	1
Future Volume (veh/h)	50	192	0	23	278	631	0	0	0	153	144	1
Number	1	6	16	5	2	12				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900				1900	1863	1900
Adj Flow Rate, veh/h	52	198	0	24	287	651				158	148	1
Adj No. of Lanes	1	1	1	1	1	0				0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	0
Cap, veh/h	189	1159	985	710	254	576				197	185	1
Arrive On Green	0.04	0.62	0.00	0.50	0.50	0.50				0.21	0.21	0.21
Sat Flow, veh/h	1774	1863	1583	1180	508	1152				934	875	6
Grp Volume(v), veh/h	52	198	0	24	0	938				307	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1180	0	1659				1815	0	0
Q Serve(g_s), s	0.8	2.7	0.0	0.6	0.0	30.0				9.6	0.0	0.0
Cycle Q Clear(g_c), s	0.8	2.7	0.0	0.6	0.0	30.0				9.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.69				0.51		0.00
Lane Grp Cap(c), veh/h	189	1159	985	710	0	830				384	0	0
V/C Ratio(X)	0.28	0.17	0.00	0.03	0.00	1.13				0.80	0.00	0.00
Avail Cap(c_a), veh/h	416	1397	1188	710	0	830				605	0	0
HCM Platoon Ratio	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	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	14.2	4.8	0.0	7.7	0.0	15.0				22.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.1	0.0	0.0	0.0	73.7				4.1	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
%ile BackOfQ(50%),veh/ln	0.5	1.4	0.0	0.2	0.0	30.6				5.2	0.0	0.0
LnGrp Delay(d),s/veh	15.0	4.9	0.0	7.7	0.0	88.7				26.6	0.0	0.0
LnGrp LOS	B	A		A		F				C		
Approach Vol, veh/h		250			962						307	
Approach Delay, s/veh		7.0			86.6						26.6	
Approach LOS		A			F						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	7.3	35.0		17.7		42.3		
Change Period (Y+Rc), s	* 5	* 5		* 5		* 5		
Max Green Setting (Gmax), s	* 10	* 30		* 20		* 45		
Max Q Clear Time (g_c+I1), s	2.8	32.0		11.6		4.7		
Green Ext Time (p_c), s	0.0	0.0		1.1		12.0		

Intersection Summary	
HCM 2010 Ctrl Delay	61.4
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	113	461	8	28	715	680
v/c Ratio	0.43	0.49	0.01	0.08	1.03	1.01
Control Delay	15.6	15.2	1.0	19.0	66.1	66.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	15.2	1.0	19.0	66.1	66.7
Queue Length 50th (ft)	29	145	0	9	~376	~391
Queue Length 95th (ft)	55	221	2	29	#606	#613
Internal Link Dist (ft)		223			562	481
Turn Bay Length (ft)	115			130		
Base Capacity (vph)	300	1041	896	345	696	672
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.44	0.01	0.08	1.03	1.01

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	443	8	27	262	424	0	0	0	424	226	3
Future Volume (veh/h)	108	443	8	27	262	424	0	0	0	424	226	3
Number	1	6	16	5	2	12				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900				1900	1863	1900
Adj Flow Rate, veh/h	112	461	8	28	273	442				442	235	3
Adj No. of Lanes	1	1	1	1	1	0				0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	0
Cap, veh/h	193	926	787	396	242	391				442	235	3
Arrive On Green	0.06	0.50	0.50	0.38	0.38	0.38				0.38	0.38	0.38
Sat Flow, veh/h	1774	1863	1583	920	641	1038				1172	623	8
Grp Volume(v), veh/h	112	461	8	28	0	715				680	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	920	0	1680				1803	0	0
Q Serve(g_s), s	2.9	13.2	0.2	1.7	0.0	30.0				30.0	0.0	0.0
Cycle Q Clear(g_c), s	2.9	13.2	0.2	5.2	0.0	30.0				30.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.62				0.65		0.00
Lane Grp Cap(c), veh/h	193	926	787	396	0	633				680	0	0
V/C Ratio(X)	0.58	0.50	0.01	0.07	0.00	1.13				1.00	0.00	0.00
Avail Cap(c_a), veh/h	313	1053	895	396	0	633				680	0	0
HCM Platoon Ratio	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	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	18.8	13.4	10.1	18.3	0.0	24.8				24.8	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.4	0.0	0.1	0.0	76.9				34.7	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
%ile BackOfQ(50%),veh/ln	1.5	6.8	0.1	0.4	0.0	27.3				21.3	0.0	0.0
LnGrp Delay(d),s/veh	21.6	13.8	10.1	18.4	0.0	101.7				59.4	0.0	0.0
LnGrp LOS	C	B	B	B		F				F		
Approach Vol, veh/h		581			743						680	
Approach Delay, s/veh		15.2			98.6						59.4	
Approach LOS		B			F						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.6	35.0		35.0		44.6		
Change Period (Y+Rc), s	* 5	* 5		* 5		* 5		
Max Green Setting (Gmax), s	* 10	* 30		* 30		* 45		
Max Q Clear Time (g_c+I1), s	4.9	32.0		32.0		15.2		
Green Ext Time (p_c), s	0.1	0.0		0.0		10.0		

Intersection Summary	
HCM 2010 Ctrl Delay	61.1
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	52	207	6	978	6	316
v/c Ratio	0.16	0.19	0.01	1.11	0.01	0.77
Control Delay	7.5	7.4	0.0	83.6	19.2	37.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	7.4	0.0	83.6	19.2	37.4
Queue Length 50th (ft)	9	39	0	~500	2	125
Queue Length 95th (ft)	22	69	0	#737	10	#244
Internal Link Dist (ft)		223		562	489	481
Turn Bay Length (ft)	115					
Base Capacity (vph)	417	1335	1142	884	538	495
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.16	0.01	1.11	0.01	0.64

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	201	6	28	282	638	2	4	0	158	147	1
Future Volume (veh/h)	50	201	6	28	282	638	2	4	0	158	147	1
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	52	207	6	29	291	658	2	4	0	163	152	1
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	306	1126	957	72	251	539	169	296	0	270	193	1
Arrive On Green	0.04	0.60	0.60	0.49	0.49	0.49	0.23	0.23	0.00	0.23	0.23	0.23
Sat Flow, veh/h	1774	1863	1583	24	517	1112	390	1267	0	778	827	5
Grp Volume(v), veh/h	52	207	6	978	0	0	6	0	0	316	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1652	0	0	1657	0	0	1610	0	0
Q Serve(g_s), s	0.8	3.1	0.1	14.8	0.0	0.0	0.0	0.0	0.0	10.7	0.0	0.0
Cycle Q Clear(g_c), s	0.8	3.1	0.1	30.0	0.0	0.0	0.2	0.0	0.0	11.5	0.0	0.0
Prop In Lane	1.00		1.00	0.03		0.67	0.33		0.00	0.52		0.00
Lane Grp Cap(c), veh/h	306	1126	957	862	0	0	465	0	0	465	0	0
V/C Ratio(X)	0.17	0.18	0.01	1.13	0.00	0.00	0.01	0.00	0.00	0.68	0.00	0.00
Avail Cap(c_a), veh/h	525	1356	1153	862	0	0	608	0	0	608	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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.3	5.4	4.9	16.9	0.0	0.0	18.2	0.0	0.0	22.5	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.1	0.0	74.9	0.0	0.0	0.0	0.0	0.0	2.0	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	1.6	0.0	32.3	0.0	0.0	0.1	0.0	0.0	5.4	0.0	0.0
LnGrp Delay(d),s/veh	6.5	5.5	4.9	91.8	0.0	0.0	18.2	0.0	0.0	24.5	0.0	0.0
LnGrp LOS	A	A	A	F			B			C		
Approach Vol, veh/h		265			978			6			316	
Approach Delay, s/veh		5.7			91.8			18.2			24.5	
Approach LOS		A			F			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.4	35.0		19.5		42.4		19.5
Change Period (Y+Rc), s	* 5	* 5		* 5		* 5		* 5
Max Green Setting (Gmax), s	* 10	* 30		* 20		* 45		* 20
Max Q Clear Time (g_c+I1), s	2.8	32.0		13.5		5.1		2.2
Green Ext Time (p_c), s	0.0	0.0		1.0		12.9		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	63.4
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	52	207	6	29	949	6	316
v/c Ratio	0.19	0.19	0.01	0.05	1.07	0.01	0.77
Control Delay	8.0	7.4	0.0	12.9	68.6	19.2	37.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	7.4	0.0	12.9	68.6	19.2	37.4
Queue Length 50th (ft)	9	39	0	7	~463	2	125
Queue Length 95th (ft)	22	69	0	22	#698	10	#244
Internal Link Dist (ft)		223			562	489	481
Turn Bay Length (ft)	115			130			
Base Capacity (vph)	369	1335	1142	558	891	538	495
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.16	0.01	0.05	1.07	0.01	0.64

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	201	6	28	282	638	2	4	0	158	147	1
Future Volume (veh/h)	50	201	6	28	282	638	2	4	0	158	147	1
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	52	207	6	29	291	658	2	4	0	163	152	1
Adj No. of Lanes	1	1	1	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	1126	957	681	247	558	169	296	0	270	193	1
Arrive On Green	0.04	0.60	0.60	0.49	0.49	0.49	0.23	0.23	0.00	0.23	0.23	0.23
Sat Flow, veh/h	1774	1863	1583	1164	509	1151	390	1267	0	778	827	5
Grp Volume(v), veh/h	52	207	6	29	0	949	6	0	0	316	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1164	0	1660	1657	0	0	1610	0	0
Q Serve(g_s), s	0.8	3.1	0.1	0.8	0.0	30.0	0.0	0.0	0.0	10.7	0.0	0.0
Cycle Q Clear(g_c), s	0.8	3.1	0.1	0.8	0.0	30.0	0.2	0.0	0.0	11.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.69	0.33		0.00	0.52		0.00
Lane Grp Cap(c), veh/h	184	1126	957	681	0	805	465	0	0	465	0	0
V/C Ratio(X)	0.28	0.18	0.01	0.04	0.00	1.18	0.01	0.00	0.00	0.68	0.00	0.00
Avail Cap(c_a), veh/h	403	1356	1153	681	0	805	608	0	0	608	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	1.00	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	14.6	5.4	4.9	8.4	0.0	15.9	18.2	0.0	0.0	22.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.1	0.0	0.0	0.0	93.0	0.0	0.0	0.0	2.0	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	0.5	1.6	0.0	0.3	0.0	34.2	0.1	0.0	0.0	5.4	0.0	0.0
LnGrp Delay(d),s/veh	15.4	5.5	4.9	8.4	0.0	108.9	18.2	0.0	0.0	24.5	0.0	0.0
LnGrp LOS	B	A	A	A		F	B			C		
Approach Vol, veh/h		265			978			6			316	
Approach Delay, s/veh		7.4			105.9			18.2			24.5	
Approach LOS		A			F			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	7.4	35.0		19.5		42.4		19.5
Change Period (Y+Rc), s	* 5	* 5		* 5		* 5		* 5
Max Green Setting (Gmax), s	* 10	* 30		* 20		* 45		* 20
Max Q Clear Time (g_c+I1), s	2.8	32.0		13.5		5.1		2.2
Green Ext Time (p_c), s	0.0	0.0		1.0		12.4		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	72.5
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	113	493	27	785	15	710
v/c Ratio	0.38	0.53	0.03	1.18	0.03	1.29
Control Delay	14.1	15.7	4.0	119.0	18.0	169.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	15.7	4.0	119.0	18.0	169.9
Queue Length 50th (ft)	29	158	0	~476	5	~488
Queue Length 95th (ft)	55	241	12	#715	18	#715
Internal Link Dist (ft)		223		562	489	481
Turn Bay Length (ft)	115					
Base Capacity (vph)	332	1041	896	668	599	551
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.47	0.03	1.18	0.03	1.29

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	473	26	39	273	442	6	9	0	443	236	3
Future Volume (veh/h)	108	473	26	39	273	442	6	9	0	443	236	3
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	112	493	27	41	284	460	6	9	0	461	246	3
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	296	926	787	67	236	361	271	382	0	451	201	2
Arrive On Green	0.06	0.50	0.50	0.38	0.38	0.38	0.38	0.38	0.00	0.38	0.38	0.38
Sat Flow, veh/h	1774	1863	1583	52	625	958	552	1014	0	998	532	6
Grp Volume(v), veh/h	112	493	27	785	0	0	15	0	0	710	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1635	0	0	1565	0	0	1537	0	0
Q Serve(g_s), s	2.9	14.4	0.7	18.6	0.0	0.0	0.0	0.0	0.0	29.6	0.0	0.0
Cycle Q Clear(g_c), s	2.9	14.4	0.7	30.0	0.0	0.0	0.4	0.0	0.0	30.0	0.0	0.0
Prop In Lane	1.00		1.00	0.05		0.59	0.40		0.00	0.65		0.00
Lane Grp Cap(c), veh/h	296	926	787	664	0	0	653	0	0	654	0	0
V/C Ratio(X)	0.38	0.53	0.03	1.18	0.00	0.00	0.02	0.00	0.00	1.09	0.00	0.00
Avail Cap(c_a), veh/h	417	1053	895	664	0	0	653	0	0	654	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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.4	13.7	10.2	25.7	0.0	0.0	15.6	0.0	0.0	26.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.5	0.0	96.8	0.0	0.0	0.0	0.0	0.0	60.8	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	1.4	7.5	0.3	32.2	0.0	0.0	0.2	0.0	0.0	25.2	0.0	0.0
LnGrp Delay(d),s/veh	13.2	14.1	10.2	122.5	0.0	0.0	15.6	0.0	0.0	87.2	0.0	0.0
LnGrp LOS	B	B	B	F			B			F		
Approach Vol, veh/h		632			785			15			710	
Approach Delay, s/veh		13.8			122.5			15.6			87.2	
Approach LOS		B			F			B			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	9.6	35.0		35.0		44.6		35.0
Change Period (Y+Rc), s	* 5	* 5		* 5		* 5		* 5
Max Green Setting (Gmax), s	* 10	* 30		* 30		* 45		* 30
Max Q Clear Time (g_c+I1), s	4.9	32.0		32.0		16.4		2.4
Green Ext Time (p_c), s	0.1	0.0		0.0		11.2		5.7

Intersection Summary	
HCM 2010 Ctrl Delay	78.0
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	113	493	27	41	744	15	710
v/c Ratio	0.43	0.53	0.03	0.12	1.07	0.03	1.29
Control Delay	15.6	15.7	4.0	19.6	78.8	18.0	169.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	15.7	4.0	19.6	78.8	18.0	169.9
Queue Length 50th (ft)	29	158	0	14	~409	5	~488
Queue Length 95th (ft)	55	241	12	38	#642	18	#715
Internal Link Dist (ft)		223			562	489	481
Turn Bay Length (ft)	115			130			
Base Capacity (vph)	300	1041	896	335	696	599	551
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.47	0.03	0.12	1.07	0.03	1.29

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	473	26	39	273	442	6	9	0	443	236	3
Future Volume (veh/h)	108	473	26	39	273	442	6	9	0	443	236	3
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	112	493	27	41	284	460	6	9	0	461	246	3
Adj No. of Lanes	1	1	1	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	193	926	787	368	242	391	271	382	0	451	201	2
Arrive On Green	0.06	0.50	0.50	0.38	0.38	0.38	0.38	0.38	0.00	0.38	0.38	0.38
Sat Flow, veh/h	1774	1863	1583	878	641	1038	552	1014	0	998	532	6
Grp Volume(v), veh/h	112	493	27	41	0	744	15	0	0	710	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	878	0	1679	1565	0	0	1537	0	0
Q Serve(g_s), s	2.9	14.4	0.7	2.7	0.0	30.0	0.0	0.0	0.0	29.6	0.0	0.0
Cycle Q Clear(g_c), s	2.9	14.4	0.7	7.5	0.0	30.0	0.4	0.0	0.0	30.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.62	0.40		0.00	0.65		0.00
Lane Grp Cap(c), veh/h	193	926	787	368	0	633	653	0	0	654	0	0
V/C Ratio(X)	0.58	0.53	0.03	0.11	0.00	1.18	0.02	0.00	0.00	1.09	0.00	0.00
Avail Cap(c_a), veh/h	313	1053	895	368	0	633	653	0	0	654	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	1.00	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	18.8	13.7	10.2	19.5	0.0	24.8	15.6	0.0	0.0	26.5	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.5	0.0	0.1	0.0	94.7	0.0	0.0	0.0	60.8	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	1.5	7.5	0.3	0.7	0.0	30.4	0.2	0.0	0.0	25.2	0.0	0.0
LnGrp Delay(d),s/veh	21.6	14.1	10.2	19.6	0.0	119.4	15.6	0.0	0.0	87.2	0.0	0.0
LnGrp LOS	C	B	B	B		F	B			F		
Approach Vol, veh/h		632			785			15			710	
Approach Delay, s/veh		15.3			114.2			15.6			87.2	
Approach LOS		B			F			B			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	9.6	35.0		35.0		44.6		35.0
Change Period (Y+Rc), s	* 5	* 5		* 5		* 5		* 5
Max Green Setting (Gmax), s	* 10	* 30		* 30		* 45		* 30
Max Q Clear Time (g_c+I1), s	4.9	32.0		32.0		16.4		2.4
Green Ext Time (p_c), s	0.1	0.0		0.0		10.7		5.7

Intersection Summary	
HCM 2010 Ctrl Delay	75.4
HCM 2010 LOS	E

Notes

HCS7 Two-Way Stop-Control Report

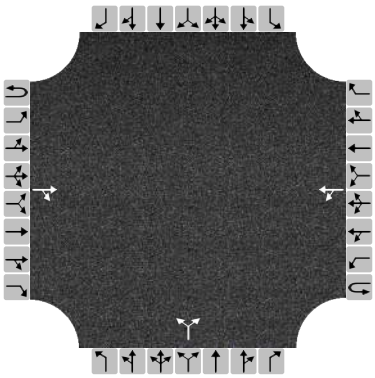
General Information

Analyst	MS
Agency/Co.	Wolverton
Date Performed	11/4/2019
Analysis Year	2023
Time Analyzed	Project AM
Intersection Orientation	East-West
Project Description	19-LD-006 Snellville Town Center

Site Information

Intersection	Wisteria @ Parking Deck
Jurisdiction	City of Snellville
East/West Street	Wisteria Dr
North/South Street	Parking Deck
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			353	6		7	947			4		8				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						8					13					
Capacity, c (veh/h)						1161					317					
v/c Ratio						0.01					0.04					
95% Queue Length, Q_{95} (veh)						0.0					0.1					
Control Delay (s/veh)						8.1					16.9					
Level of Service, LOS						A					C					
Approach Delay (s/veh)					0.2				16.9							
Approach LOS									C							

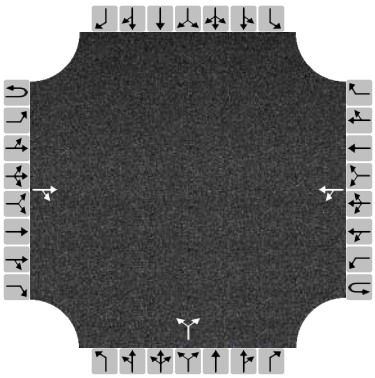
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Wisteria @ Parking Deck
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Wisteria Dr
Analysis Year	2023	North/South Street	Parking Deck
Time Analyzed	Project PM	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			895	21		23	691			10		21				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						25					34					
Capacity, c (veh/h)						690					166					
v/c Ratio						0.04					0.20					
95% Queue Length, Q_{95} (veh)						0.1					0.7					
Control Delay (s/veh)						10.4					32.2					
Level of Service, LOS						B					D					
Approach Delay (s/veh)					1.0				32.2							
Approach LOS									D							

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

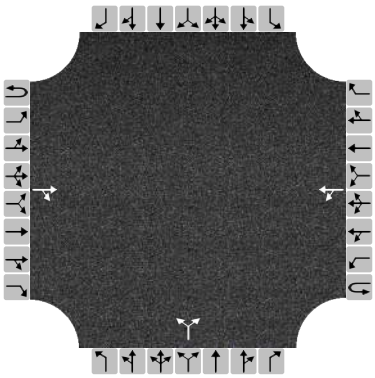
General Information

Analyst	MS
Agency/Co.	Wolverton
Date Performed	11/4/2019
Analysis Year	2023
Time Analyzed	Project AM
Intersection Orientation	East-West
Project Description	19-LD-006 Snellville Town Center

Site Information

Intersection	Wisteria @ Street B
Jurisdiction	City of Snellville
East/West Street	Wisteria Dr
North/South Street	Street B
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			375	2		2	952			2		3				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						2					5					
Capacity, c (veh/h)						1142					269					
v/c Ratio						0.00					0.02					
95% Queue Length, Q_{95} (veh)						0.0					0.1					
Control Delay (s/veh)						8.2					18.7					
Level of Service, LOS						A					C					
Approach Delay (s/veh)					0.0				18.7							
Approach LOS									C							

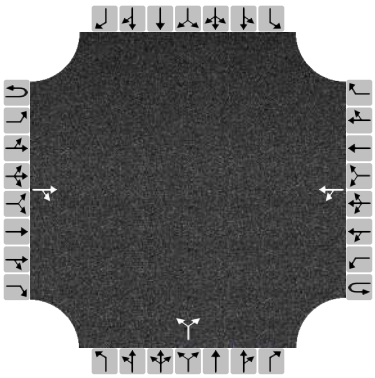
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Wisteria @ Street B
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Wisteria Dr
Analysis Year	2023	North/South Street	Street B
Time Analyzed	Project PM	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			950	8		6	709			5		8				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						7					14					
Capacity, c (veh/h)						663					152					
v/c Ratio						0.01					0.09					
95% Queue Length, Q_{95} (veh)						0.0					0.3					
Control Delay (s/veh)						10.5					31.0					
Level of Service, LOS						B					D					
Approach Delay (s/veh)					0.3				31.0							
Approach LOS									D							

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

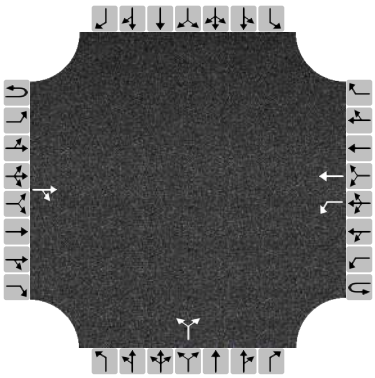
General Information

Analyst	MS
Agency/Co.	Wolverton
Date Performed	11/1/2019
Analysis Year	2019
Time Analyzed	Existing AM
Intersection Orientation	East-West
Project Description	19-LD-006 Snellville Town Center

Site Information

Intersection	Wisteria @ Clower
Jurisdiction	City of Snellville
East/West Street	Wisteria Dr
North/South Street	Clower St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			298	23		53	781			83		10				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						56					98					
Capacity, c (veh/h)						1214					195					
v/c Ratio						0.05					0.50					
95% Queue Length, Q_{95} (veh)						0.1					2.5					
Control Delay (s/veh)						8.1					40.8					
Level of Service, LOS						A					E					
Approach Delay (s/veh)					0.5				40.8							
Approach LOS									E							

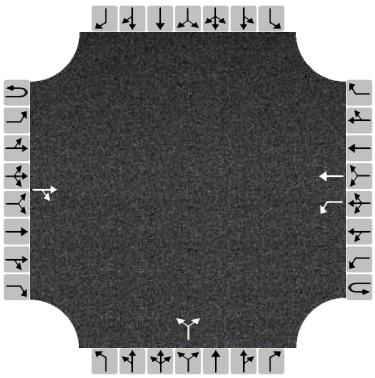
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Wisteria @ Clower
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/1/2019	East/West Street	Wisteria Dr
Analysis Year	2019	North/South Street	Clower St
Time Analyzed	Existing PM	Peak Hour Factor	0.98
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			804	55		53	551			59		82				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						54					144					
Capacity, c (veh/h)						766					198					
v/c Ratio						0.07					0.73					
95% Queue Length, Q_{95} (veh)						0.2					4.7					
Control Delay (s/veh)						10.1					60.7					
Level of Service, LOS						B					F					
Approach Delay (s/veh)					0.9				60.7							
Approach LOS									F							

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

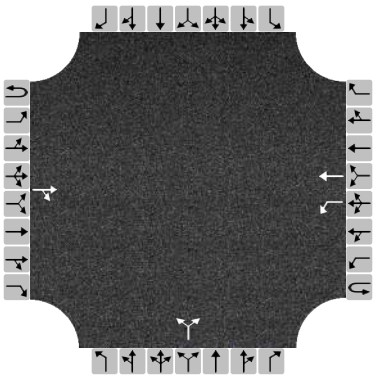
General Information

Analyst	MS
Agency/Co.	Wolverton
Date Performed	11/4/2019
Analysis Year	2023
Time Analyzed	Background AM
Intersection Orientation	East-West
Project Description	19-LD-006 Snellville Town Center

Site Information

Intersection	Wisteria @ Clower
Jurisdiction	City of Snellville
East/West Street	Wisteria Dr
North/South Street	Clower St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			323	25		57	845			90		11				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						60					107					
Capacity, c (veh/h)						1186					169					
v/c Ratio						0.05					0.63					
95% Queue Length, Q_{95} (veh)						0.2					3.6					
Control Delay (s/veh)						8.2					57.4					
Level of Service, LOS						A					F					
Approach Delay (s/veh)					0.5				57.4							
Approach LOS									F							

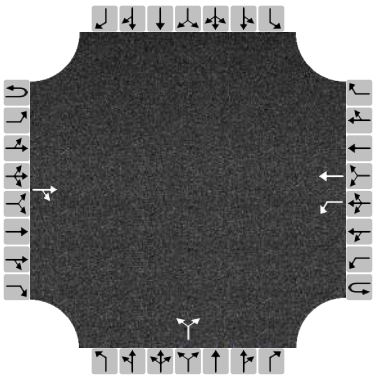
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Wisteria @ Clower
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Wisteria Dr
Analysis Year	2023	North/South Street	Clower St
Time Analyzed	Background PM	Peak Hour Factor	0.98
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			870	60		57	596			64		89				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						58					156					
Capacity, c (veh/h)						719					169					
v/c Ratio						0.08					0.92					
95% Queue Length, Q_{95} (veh)						0.3					6.9					
Control Delay (s/veh)						10.4					105.1					
Level of Service, LOS						B					F					
Approach Delay (s/veh)					0.9				105.1							
Approach LOS									F							

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 All-Way Stop Control Report

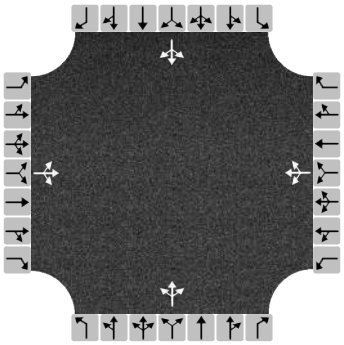
General Information

Analyst	MS
Agency/Co.	Wolverton
Date Performed	11/5/2019
Analysis Year	2023
Analysis Time Period (hrs)	0.25
Time Analyzed	Project AM
Project Description	19-LD-006 Snellville Town Center

Site Information

Intersection	Wisteria Dr @ Clower St
Jurisdiction	City of Snellville
East/West Street	Wisteria Dr
North/South Street	Clower St
Peak Hour Factor	0.95

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	6	339	36	59	854	5	90	11	12	6	10	10
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	401			966			119			27		
Percent Heavy Vehicles	2			2			2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.356			0.859			0.106			0.024		
Final Departure Headway, hd (s)	5.29			5.02			6.71			6.77		
Final Degree of Utilization, x	0.590			1.348			0.222			0.051		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, ts (s)	3.29			3.02			4.71			4.77		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	401			966			119			27		
Capacity	680			717			537			532		
95% Queue Length, Q_{95} (veh)	3.9			40.2			0.8			0.2		
Control Delay (s/veh)	15.6			182.0			11.6			10.1		
Level of Service, LOS	C			F			B			B		
Approach Delay (s/veh)	15.6			182.0			11.6			10.1		
Approach LOS	C			F			B			B		
Intersection Delay, s/veh | LOS	121.4						F					

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 All-Way Stop Control Report

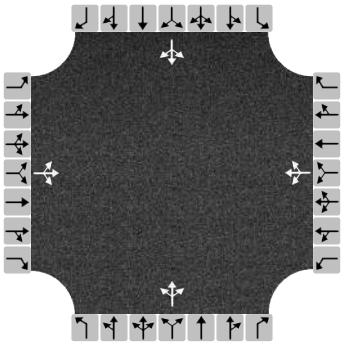
General Information

Analyst	MS
Agency/Co.	Wolverton
Date Performed	11/5/2019
Analysis Year	2023
Analysis Time Period (hrs)	0.25
Time Analyzed	Project PM
Project Description	19-LD-006 Snellville Town Center

Site Information

Intersection	Wisteria Dr @ Clower St
Jurisdiction	City of Snellville
East/West Street	Wisteria Dr
North/South Street	Clower St
Peak Hour Factor	0.98

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	21	912	88	64	626	16	64	36	93	15	26	26
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	1042			720			197			68		
Percent Heavy Vehicles	2			2			2			2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.926			0.640			0.175			0.061		
Final Departure Headway, hd (s)	5.93			5.98			7.18			7.84		
Final Degree of Utilization, x	1.717			1.197			0.393			0.149		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, ts (s)	3.93			3.98			5.18			5.84		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	1042			720			197			68		
Capacity	607			602			502			459		
95% Queue Length, Q_{95} (veh)	60.8			25.5			1.8			0.5		
Control Delay (s/veh)	345.0			125.5			14.7			12.2		
Level of Service, LOS	F			F			B			B		
Approach Delay (s/veh)	345.0			125.5			14.7			12.2		
Approach LOS	F			F			B			B		
Intersection Delay, s/veh | LOS	223.7						F					

Copyright © 2019 University of Florida. All Rights Reserved.

Georgia Department of Transportation

Roundabout Analysis Tool

v 4.1
5/19/17

Welcome to GDOT's Roundabout Analysis Tool. This tool is designed for the user to determine the functionality of a proposed roundabout. The analysis is based on the Highway Capacity Manual 2010 Edition and 6th Edition Methodologies, NCHRP Report 672, and FHWA's Roundabout Informational Guide. Please read the notes in the Instructions tab before using the spreadsheet.

Analyst:	MS
Agency/Company:	Wolverton
Date:	11/8/2019
Project Name or PI#:	19-LD-006: Snellville Town Center
Year, Peak Period:	2023 Project AM-Alt1
County/District:	City of Snellville
Intersection:	Wisteria @ Clower

Insert Project Information Here in the BLUE SPACE. This information is linked to the Mini, Single Lane and Multi Lane Worksheets.

Roundabout Considerations Worksheet

Roundabouts may not operate well if there is too much traffic entering the intersection or if the percentage of traffic on the major road is too high. Candidate intersections shall be analyzed to determine whether a roundabout will perform acceptably. Shown below are planning level thresholds. A capacity analysis should be performed to determine lane configuration based on traffic volumes.

# of circulatory lanes	ADTs (current/ build year)	Condition met?	% traffic on Major Road	Condition met?
Mini	less than 15,000		less than 90%	
Single Lane	less than 25,000	Yes	less than 90%	Yes
Multi-Lane	less than 45,000		less than 90%	

Other things to consider when evaluating roundabouts as an alternative are Right of Way, sight distance, environmental impacts, and access to adjacent properties.

Volume Information (for Analysis Time Period)

1 Enter the Major/Minor Street ADT Volumes in the Chart below:

	Volumes	Split
Major Street	19,105	86%
Minor Street	3,042	14%
Total volumes	22,147	

Proximity to Other Intersections

2 How close is the nearest signal (miles or feet)? 0 mi | 1000 '

3 Is the proposed intersection located within a coordinated signal network? No

Go up to next section...

Georgia Department of Transportation

Proposed Design Configuration Chart

Directions for this Section only: *(see **Instructions Tab** for other sections)*

1. Select the type of roundabout you are analyzing.
2. Key in the number of approaches and the street names at the proposed intersections.
3. Complete the Approach Characteristics Chart:
   a. Select the Street Name from the pulldown menu for each approach leg
   b. Select the Lane Type for each entry apporach lane
      **The first box is the inner lane, the second box is the outer lane*
   c. Select Yes or No if a right turn bypass will be added to each approach leg

Roundabout Characteristics

Roundabout Type:	Single Lane
# of Approaches:	4
Name of Streets:	Wisteria Dr
	Clower St

Chart Key:

Mini/Single Lane	Street Name	
	All	
	Bypass?	
Multi-lane	Street Name	
	Inner Ln	Outer Ln
	Bypass?	

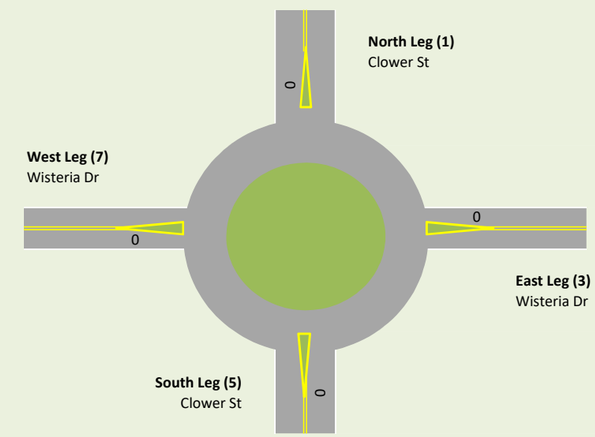
Approach Leg Characteristics:

	North Leg (1)	NE Leg (2)	East Leg (3)	SE Leg (4)
Street Name:	Clower St		Wisteria Dr	
Entry Lane Config				
Bypass to Adj Leg?				

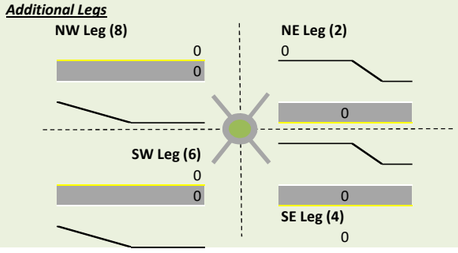
	South Leg (5)	SW Leg (6)	West Leg (7)	NW Leg (8)
Street Name:	Clower St		Wisteria Dr	
Entry Lane Config				
Bypass to Adj Leg?				

Georgia Department of Transportation

Preliminary Roundabout Rendering**



Additional Legs

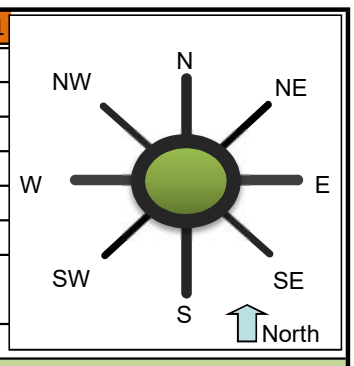


*****Note***
This roundabout sketch does not include the secondary cardinal direction legs due to restrictions in the Excel software. For complex roundabouts, a separate sketch is recommended by the designer.

General & Site Information

v 4.1

Analyst:	MS
Agency/Co:	Wolverton
Date:	11/8/2019
Project or PI#:	19-LD-006: Snellville Town Center
Year, Peak Hour:	2023 Project AM-Alt1
County/District:	City of Snellville
Intersection Name:	Wisteria @ Clower



Volumes

		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph			5		11		6	
	NE (2), vph								
	E (3), vph	6				12		339	
	SE (4), vph								
	S (5), vph	10		59				36	
	SW (6), vph								
	W (7), vph	10		854		90			
	NW (8), vph								
Output	Total Vehicles	26	0	918	0	113	0	381	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Heavy Vehicles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*
F_{HV}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	5	0	12	0	6	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	6	0	0	0	13	0	357	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	11	0	62	0	0	0	38	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	11	0	899	0	95	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	27	0	966	0	119	0	401	0
Conflicting flow, pcu/h	1056	0	113	0	369	0	79	0

Results: Approach Measures of Effectiveness

HCM 2010 Edition	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	393	NA	1010	NA	781	NA	1044	NA
Entry Flow Rates, vph	27	NA	966	NA	119	NA	401	NA
V/C ratio	**0.07**		**0.96**		**0.15**		**0.38**	
Control Delay, sec/pcu	**10**		**39**		**6**		**8**	
LOS	B		E		A		A	
95th % Queue (ft)	**6**		**413**		**13**		**46**	

Notes:

v 4.0

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F_{HV}						
F_{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Edition)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

Georgia Department of Transportation

Roundabout Analysis Tool

v 4.1
5/19/17

Welcome to GDOT's Roundabout Analysis Tool. This tool is designed for the user to determine the functionality of a proposed roundabout. The analysis is based on the Highway Capacity Manual 2010 Edition and 6th Edition Methodologies, NCHRP Report 672, and FHWA's Roundabout Informational Guide. Please read the notes in the Instructions tab before using the spreadsheet.

Analyst:	MS
Agency/Company:	Wolverton
Date:	11/8/2019
Project Name or PI#:	19-LD-006: Snellville Town Center
Year, Peak Period:	2023 Project PM-Alt1
County/District:	City of Snellville
Intersection:	Wisteria @ Clower

Insert Project Information Here in the BLUE SPACE. This information is linked to the Mini, Single Lane and Multi Lane Worksheets.

Roundabout Considerations Worksheet

Roundabouts may not operate well if there is too much traffic entering the intersection or if the percentage of traffic on the major road is too high. Candidate intersections shall be analyzed to determine whether a roundabout will perform acceptably. Shown below are planning level thresholds. A capacity analysis should be performed to determine lane configuration based on traffic volumes.

# of circulatory lanes	ADTs (current/ build year)	Condition met?	% traffic on Major Road	Condition met?
Mini	less than 15,000		less than 90%	
Single Lane	less than 25,000	Yes	less than 90%	Yes
Multi-Lane	less than 45,000		less than 90%	

Other things to consider when evaluating roundabouts as an alternative are Right of Way, sight distance, environmental impacts, and access to adjacent properties.

Volume Information (for Analysis Time Period)

1 Enter the Major/Minor Street ADT Volumes in the Chart below:

	Volumes	Split
Major Street	19,105	86%
Minor Street	3,042	14%
Total volumes	22,147	

Proximity to Other Intersections

2 How close is the nearest signal (miles or feet)? 0 mi | 1000 '

3 Is the proposed intersection located within a coordinated signal network? No

Go up to next section...

Georgia Department of Transportation

Proposed Design Configuration Chart

Directions for this Section only: *(see **Instructions Tab** for other sections)*

1. Select the type of roundabout you are analyzing.
2. Key in the number of approaches and the street names at the proposed intersections.
3. Complete the Approach Characteristics Chart:
   a. Select the Street Name from the pulldown menu for each approach leg
   b. Select the Lane Type for each entry apporach lane
      **The first box is the inner lane, the second box is the outer lane*
   c. Select Yes or No if a right turn bypass will be added to each approach leg

Roundabout Characteristics

Roundabout Type:	Single Lane
# of Approaches:	4
Name of Streets:	Wisteria Dr
	Clower St

Chart Key:

Mini/Single Lane	Street Name	
	All	
	Bypass?	
Multi-lane	Street Name	
	Inner Ln	Outer Ln
	Bypass?	

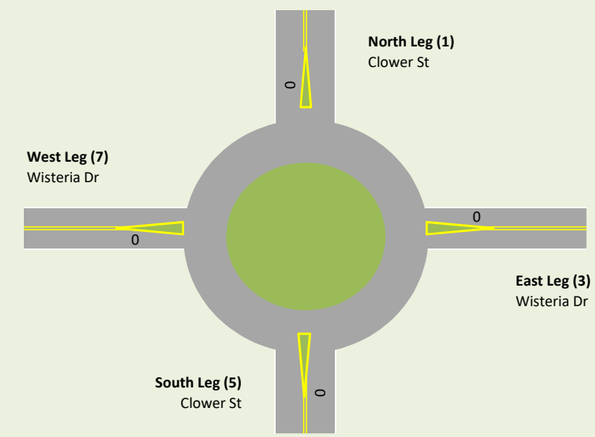
Approach Leg Characteristics:

	North Leg (1)	NE Leg (2)	East Leg (3)	SE Leg (4)
Street Name:	Clower St		Wisteria Dr	
Entry Lane Config				
Bypass to Adj Leg?				

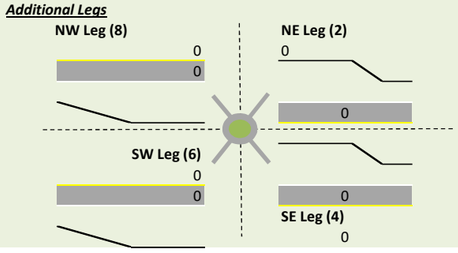
	South Leg (5)	SW Leg (6)	West Leg (7)	NW Leg (8)
Street Name:	Clower St		Wisteria Dr	
Entry Lane Config				
Bypass to Adj Leg?				

Georgia Department of Transportation

Preliminary Roundabout Rendering**



Additional Legs

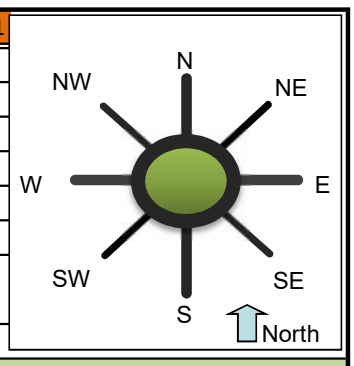


*****Note***
This roundabout sketch does not include the secondary cardinal direction legs due to restrictions in the Excel software. For complex roundabouts, a separate sketch is recommended by the designer.

General & Site Information

v 4.1

Analyst:	MS
Agency/Co:	Wolverton
Date:	11/8/2019
Project or PI#:	19-LD-006: Snellville Town Center
Year, Peak Hour:	2023 Project PM-Alt1
County/District:	City of Snellville
Intersection Name:	Wisteria @ Clower



Volumes		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph			16		36		21	
	NE (2), vph								
	E (3), vph	15				93		912	
	SE (4), vph								
	S (5), vph	26		64				88	
	SW (6), vph								
	W (7), vph	26		626		64			
	NW (8), vph								
Output	Total Vehicles	67	0	706	0	193	0	1021	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Heavy Vehicles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*
F_{HV}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	16	0	37	0	21	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	15	0	0	0	95	0	931	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	27	0	65	0	0	0	90	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	27	0	639	0	65	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	68	0	720	0	197	0	1042	0
Conflicting flow, pcu/h	769	0	123	0	967	0	107	0

Results: Approach Measures of Effectiveness

HCM 2010 Edition	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	524	NA	999	NA	430	NA	1015	NA
Entry Flow Rates, vph	68	NA	720	NA	197	NA	1042	NA
V/C ratio	**0.13**		**0.72**		**0.46**		**1.03**	
Control Delay, sec/pcu	**9**		**16**		**18**		**55**	
LOS	A		C		C		F	
95th % Queue (ft)	**11**		**163**		**59**		**538**	

Notes:

v 4.0

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

Bypass Lane Merge Point Analysis (if applicable)

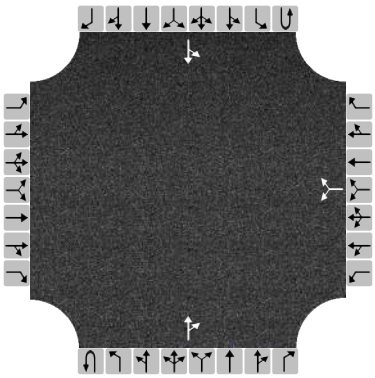
Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F_{HV}						
F_{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Edition)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	North @ Parking Deck
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	North Rd
Analysis Year	2023	North/South Street	Parking Deck
Time Analyzed	Project AM	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						7		4			2	0		6	174	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							12							7		
Capacity, c (veh/h)							857							1612		
v/c Ratio							0.01							0.00		
95% Queue Length, Q_{95} (veh)							0.0							0.0		
Control Delay (s/veh)							9.3							7.2		
Level of Service, LOS							A							A		
Approach Delay (s/veh)						9.3							0.3			
Approach LOS						A										

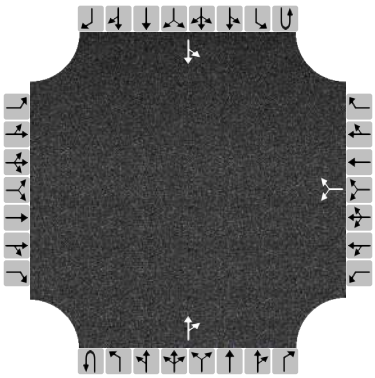
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	North @ Parking Deck
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	North Rd
Analysis Year	2023	North/South Street	Parking Deck
Time Analyzed	Project PM	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						18		10			5	0		21	281	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							31							23		
Capacity, c (veh/h)							739							1608		
v/c Ratio							0.04							0.01		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
Control Delay (s/veh)							10.1							7.3		
Level of Service, LOS							B							A		
Approach Delay (s/veh)					10.1								0.6			
Approach LOS					B											

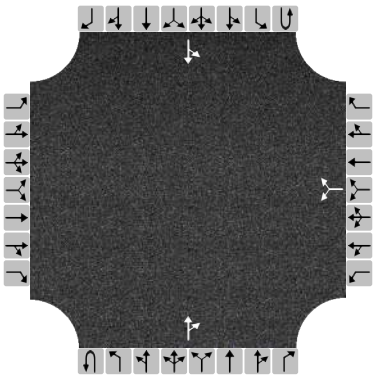
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Street B @ Street C
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Street C
Analysis Year	2023	North/South Street	Street B
Time Analyzed	Project AM	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						7		3			5	3		3	3	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							11							3		
Capacity, c (veh/h)							1017							1604		
v/c Ratio							0.01							0.00		
95% Queue Length, Q_{95} (veh)							0.0							0.0		
Control Delay (s/veh)							8.6							7.2		
Level of Service, LOS							A							A		
Approach Delay (s/veh)						8.6								3.6		
Approach LOS						A										

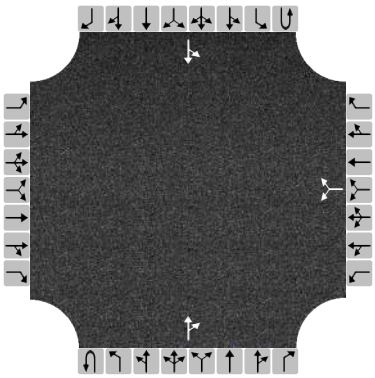
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Street B @ Street C
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Street C
Analysis Year	2023	North/South Street	Street B
Time Analyzed	Project PM	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						18		8			16	11		9	10	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							29							10		
Capacity, c (veh/h)							975							1576		
v/c Ratio							0.03							0.01		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
Control Delay (s/veh)							8.8							7.3		
Level of Service, LOS							A							A		
Approach Delay (s/veh)						8.8							3.5			
Approach LOS						A										

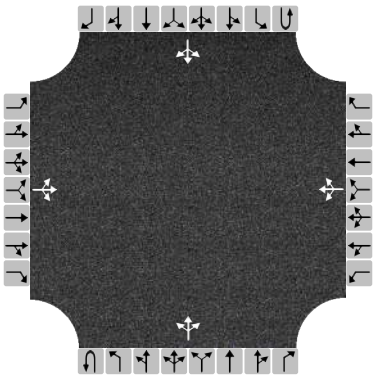
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Clower @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/1/2019	East/West Street	Clower St
Analysis Year	2019	North/South Street	City Hall Dr
Time Analyzed	Existing AM	Peak Hour Factor	0.81
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		0	1	1		4	0	7		1	87	6		23	71	0
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			2				14			1				28		
Capacity, c (veh/h)			762				827			1500				1467		
v/c Ratio			0.00				0.02			0.00				0.02		
95% Queue Length, Q_{95} (veh)			0.0				0.1			0.0				0.1		
Control Delay (s/veh)			9.7				9.4			7.4				7.5		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)	9.7				9.4				0.1				1.9			
Approach LOS	A				A											

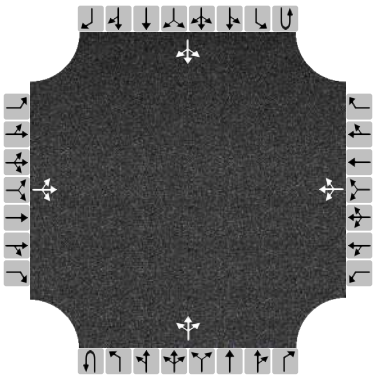
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Clower @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/1/2019	East/West Street	Clower St
Analysis Year	2019	North/South Street	City Hall Dr
Time Analyzed	Existing PM	Peak Hour Factor	0.98
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		0	0	0		9	0	34		0	109	8		8	102	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				44			0				8		
Capacity, c (veh/h)			0				888			1478				1461		
v/c Ratio							0.05			0.00				0.01		
95% Queue Length, Q_{95} (veh)							0.2			0.0				0.0		
Control Delay (s/veh)			5.0				9.3			7.4				7.5		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)	5.0				9.3				0.0				0.6			
Approach LOS	A				A											

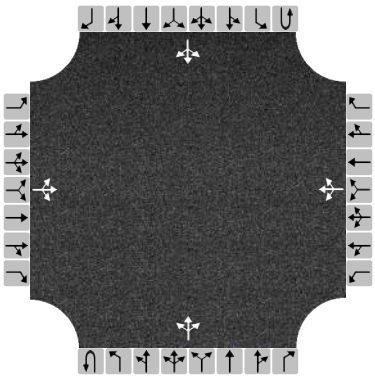
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Clower @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Clower St
Analysis Year	2023	North/South Street	City Hall Dr
Time Analyzed	Background AM	Peak Hour Factor	0.81
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		0	1	1		4	0	8		1	94	6		25	77	0
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			2				15			1				31		
Capacity, c (veh/h)			746				816			1491				1456		
v/c Ratio			0.00				0.02			0.00				0.02		
95% Queue Length, Q_{95} (veh)			0.0				0.1			0.0				0.1		
Control Delay (s/veh)			9.8				9.5			7.4				7.5		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)	9.8				9.5				0.1				2.0			
Approach LOS	A				A											

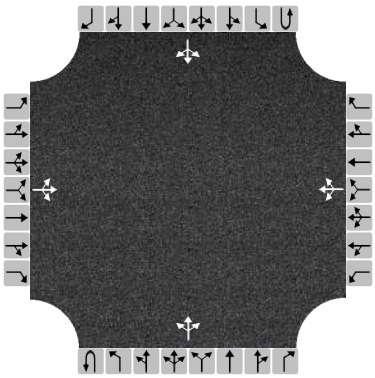
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Clower @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Clower St
Analysis Year	2023	North/South Street	City Hall Dr
Time Analyzed	Background PM	Peak Hour Factor	0.98
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		0	0	0		10	0	37		0	118	9		9	110	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		6.43	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			0				48			0				9		
Capacity, c (veh/h)			0				874			1468				1449		
v/c Ratio							0.05			0.00				0.01		
95% Queue Length, Q_{95} (veh)							0.2			0.0				0.0		
Control Delay (s/veh)			5.0				9.4			7.5				7.5		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)	5.0				9.4				0.0				0.6			
Approach LOS	A				A											

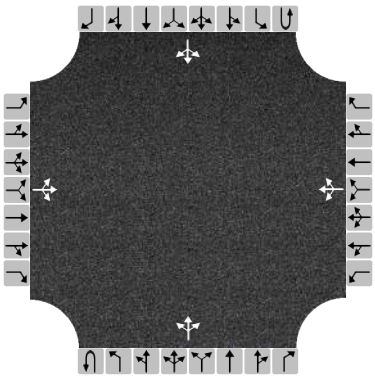
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Clower @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Clower St
Analysis Year	2023	North/South Street	City Hall Dr
Time Analyzed	Project AM	Peak Hour Factor	0.81
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		2	1	3		4	0	8		2	105	6		25	87	2
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.13	6.53	6.23		4.13				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			7				15			2				31		
Capacity, c (veh/h)			763				791			1473				1439		
v/c Ratio			0.01				0.02			0.00				0.02		
95% Queue Length, Q_{95} (veh)			0.0				0.1			0.0				0.1		
Control Delay (s/veh)			9.8				9.6			7.4				7.6		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)	9.8				9.6				0.1				1.8			
Approach LOS	A				A											

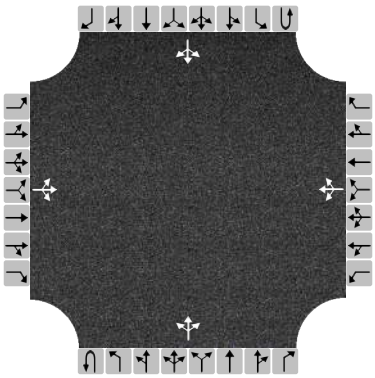
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Clower @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Clower St
Analysis Year	2023	North/South Street	City Hall Dr
Time Analyzed	Project PM	Peak Hour Factor	0.98
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		4	0	4		10	0	37		4	154	9		9	137	7
Percent Heavy Vehicles (%)		3	3	3		3	3	3		3				3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			8				48			4				9		
Capacity, c (veh/h)			700				806			1427				1404		
v/c Ratio			0.01				0.06			0.00				0.01		
95% Queue Length, Q_{95} (veh)			0.0				0.2			0.0				0.0		
Control Delay (s/veh)			10.2				9.8			7.5				7.6		
Level of Service, LOS			B				A			A				A		
Approach Delay (s/veh)	10.2				9.8				0.2				0.5			
Approach LOS	B				A											

Copyright © 2019 University of Florida. All Rights Reserved.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	104	110	84	150	204	284	54	1619	27	69	1456	33
v/c Ratio	0.57	0.45	0.26	0.56	0.77	0.83	0.25	0.74	0.03	0.40	0.65	0.03
Control Delay	67.8	76.3	3.7	65.9	91.9	57.9	17.6	28.2	0.0	16.8	23.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	76.3	3.7	65.9	91.9	57.9	17.6	28.2	0.0	16.8	23.8	0.1
Queue Length 50th (ft)	102	123	0	151	237	180	18	666	0	24	562	0
Queue Length 95th (ft)	150	180	11	208	314	282	41	937	0	50	743	0
Internal Link Dist (ft)		958			895			924			694	
Turn Bay Length (ft)	230		100	145		125	240		140	185		165
Base Capacity (vph)	183	392	431	268	412	456	218	2190	1016	183	2245	1039
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.28	0.19	0.56	0.50	0.62	0.25	0.74	0.03	0.38	0.65	0.03

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	103	79	141	192	267	51	1522	25	65	1369	31
Future Volume (veh/h)	98	103	79	141	192	267	51	1522	25	65	1369	31
Number	7	4	14	3	8	18	1	6	16	5	2	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	104	110	84	150	204	284	54	1619	0	69	1456	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	228	194	232	249	212	172	1910	855	137	1909	854
Arrive On Green	0.05	0.12	0.12	0.06	0.13	0.13	0.03	0.54	0.00	0.03	0.54	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	104	110	84	150	204	284	54	1619	0	69	1456	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.1	9.9	8.8	11.4	19.2	18.2	0.0	69.9	0.0	3.1	57.9	0.0
Cycle Q Clear(g_c), s	9.1	9.9	8.8	11.4	19.2	18.2	0.0	69.9	0.0	3.1	57.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	157	228	194	232	249	212	172	1910	855	137	1909	854
V/C Ratio(X)	0.66	0.48	0.43	0.65	0.82	1.34	0.31	0.85	0.00	0.51	0.76	0.00
Avail Cap(c_a), veh/h	157	392	333	232	413	351	209	1910	855	174	1909	854
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	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	64.5	73.6	73.2	67.0	75.9	44.6	59.9	35.1	0.0	34.9	32.4	0.0
Incr Delay (d2), s/veh	9.9	1.6	1.5	6.0	6.5	174.4	1.0	4.9	0.0	2.9	2.9	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	4.9	5.2	4.0	1.9	10.4	18.3	2.4	35.3	0.0	1.8	29.1	0.0
LnGrp Delay(d),s/veh	74.4	75.2	74.7	73.1	82.4	219.0	60.9	40.0	0.0	37.8	35.4	0.0
LnGrp LOS	E	E	E	E	F	F	E	D		D	D	
Approach Vol, veh/h		298			638			1673			1525	
Approach Delay, s/veh		74.8			141.0			40.7			35.5	
Approach LOS		E			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	103.0	17.0	29.2	11.2	103.0	15.0	31.2
Change Period (Y+Rc), s	* 5.9	5.9	5.6	7.1	* 6.2	* 5.9	5.6	7.1
Max Green Setting (Gmax), s	* 9.1	97.1	11.4	37.9	* 8.8	* 97	9.4	39.9
Max Q Clear Time (g_c+I1), s	2.0	59.9	13.4	11.9	5.1	71.9	11.1	21.2
Green Ext Time (p_c), s	3.9	13.6	0.0	3.1	0.0	13.5	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	56.7
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	154	271	202	149	217	207	61	1526	72	144	1507	37
v/c Ratio	0.70	0.87	0.55	0.88	0.77	0.58	0.31	0.76	0.08	0.70	0.74	0.04
Control Delay	71.1	99.7	31.0	98.4	91.4	30.2	27.2	34.2	1.6	44.1	31.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.1	99.7	31.0	98.4	91.4	30.2	27.2	34.2	1.6	44.1	31.3	0.1
Queue Length 50th (ft)	146	314	81	141	248	74	24	734	0	71	687	0
Queue Length 95th (ft)	215	#427	172	#213	346	167	45	873	14	157	801	0
Internal Link Dist (ft)		958			895			924			694	
Turn Bay Length (ft)	230		100	145		125	240		140	185		165
Base Capacity (vph)	222	350	399	170	319	386	198	2001	936	233	2044	954
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.77	0.51	0.88	0.68	0.54	0.31	0.76	0.08	0.62	0.74	0.04

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	266	198	146	213	203	60	1495	71	141	1477	36
Future Volume (veh/h)	151	266	198	146	213	203	60	1495	71	141	1477	36
Number	7	4	14	3	8	18	1	6	16	5	2	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	154	271	202	149	217	207	61	1526	0	144	1507	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	309	263	165	278	237	161	1872	838	186	1968	881
Arrive On Green	0.07	0.17	0.17	0.06	0.15	0.15	0.02	0.53	0.00	0.05	0.56	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	154	271	202	149	217	207	61	1526	0	144	1507	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	13.3	25.6	21.9	10.4	20.2	18.8	0.0	64.3	0.0	6.7	59.3	0.0
Cycle Q Clear(g_c), s	13.3	25.6	21.9	10.4	20.2	18.8	0.0	64.3	0.0	6.7	59.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	208	309	263	165	278	237	161	1872	838	186	1968	881
V/C Ratio(X)	0.74	0.88	0.77	0.90	0.78	0.87	0.38	0.82	0.00	0.77	0.77	0.00
Avail Cap(c_a), veh/h	208	351	298	165	320	272	228	1872	838	254	1968	881
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	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	60.7	73.2	71.7	65.5	73.7	49.9	61.3	35.1	0.0	36.3	30.9	0.0
Incr Delay (d2), s/veh	13.2	19.5	10.2	43.8	10.3	23.5	1.5	4.0	0.0	9.7	2.9	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	7.2	14.9	10.3	4.3	11.2	9.8	2.8	32.4	0.0	4.3	29.7	0.0
LnGrp Delay(d),s/veh	73.9	92.8	81.9	109.3	84.0	73.4	62.8	39.1	0.0	46.0	33.8	0.0
LnGrp LOS	E	F	F	F	F	E	E	D		D	C	
Approach Vol, veh/h		627			573			1587			1651	
Approach Delay, s/veh		84.7			86.7			40.0			34.9	
Approach LOS		F			F			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	106.0	16.0	37.0	15.1	101.1	19.0	34.0
Change Period (Y+Rc), s	* 5.9	5.9	5.6	7.1	* 6.2	* 5.9	5.6	7.1
Max Green Setting (Gmax), s	* 11	100.1	10.4	33.9	* 16	* 95	13.4	30.9
Max Q Clear Time (g_c+I1), s	2.0	61.3	12.4	27.6	8.7	66.3	15.3	22.2
Green Ext Time (p_c), s	2.7	14.6	0.0	2.3	0.2	13.4	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	50.4
HCM 2010 LOS	D

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	113	118	91	163	221	307	59	1752	29	74	1577	36
v/c Ratio	0.60	0.43	0.27	0.58	0.75	0.86	0.33	0.82	0.03	0.54	0.74	0.04
Control Delay	67.1	73.2	4.6	64.6	87.6	64.5	29.0	33.0	0.0	34.2	29.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	73.2	4.6	64.6	87.6	64.5	29.0	33.0	0.0	34.2	29.5	0.1
Queue Length 50th (ft)	109	130	0	162	255	219	21	818	0	27	672	0
Queue Length 95th (ft)	156	186	19	217	329	320	47	1094	0	85	901	0
Internal Link Dist (ft)		958			895			924			694	
Turn Bay Length (ft)	230		100	145		125	240		140	185		165
Base Capacity (vph)	188	392	431	281	412	450	178	2145	997	146	2135	992
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.30	0.21	0.58	0.54	0.68	0.33	0.82	0.03	0.51	0.74	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	111	86	153	208	289	55	1647	27	70	1482	34
Future Volume (veh/h)	106	111	86	153	208	289	55	1647	27	70	1482	34
Number	7	4	14	3	8	18	1	6	16	5	2	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	113	118	91	163	221	307	59	1752	0	74	1577	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	247	210	238	267	227	150	1910	855	116	1909	854
Arrive On Green	0.05	0.13	0.13	0.06	0.14	0.14	0.03	0.54	0.00	0.03	0.54	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	113	118	91	163	221	307	59	1752	0	74	1577	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.4	10.6	9.5	11.4	20.8	19.8	0.0	81.2	0.0	3.4	66.6	0.0
Cycle Q Clear(g_c), s	9.4	10.6	9.5	11.4	20.8	19.8	0.0	81.2	0.0	3.4	66.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	157	247	210	238	267	227	150	1910	855	116	1909	854
V/C Ratio(X)	0.72	0.48	0.43	0.68	0.83	1.35	0.39	0.92	0.00	0.64	0.83	0.00
Avail Cap(c_a), veh/h	157	392	333	238	413	351	184	1910	855	151	1909	854
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	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	64.4	72.3	71.9	66.8	74.9	45.2	70.3	37.8	0.0	41.1	34.4	0.0
Incr Delay (d2), s/veh	14.7	1.4	1.4	7.8	7.9	179.7	1.7	8.5	0.0	5.7	4.2	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	1.6	5.5	4.3	2.7	11.3	20.0	2.9	41.9	0.0	2.2	33.5	0.0
LnGrp Delay(d),s/veh	79.1	73.8	73.3	74.6	82.8	224.8	72.0	46.3	0.0	46.7	38.7	0.0
LnGrp LOS	E	E	E	E	F	F	E	D		D	D	
Approach Vol, veh/h		322			691			1811			1651	
Approach Delay, s/veh		75.5			144.0			47.1			39.0	
Approach LOS		E			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	103.0	17.0	30.9	11.5	103.0	15.0	32.9
Change Period (Y+Rc), s	* 5.9	5.9	5.6	7.1	* 6.2	* 5.9	5.6	7.1
Max Green Setting (Gmax), s	* 9.1	97.1	11.4	37.9	* 8.8	* 97	9.4	39.9
Max Q Clear Time (g_c+I1), s	2.0	68.6	13.4	12.6	5.4	83.2	11.4	22.8
Green Ext Time (p_c), s	4.0	13.7	0.0	3.4	0.0	9.8	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	61.1
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	166	294	218	161	236	224	66	1651	79	156	1609	40
v/c Ratio	0.77	0.90	0.57	0.99	0.80	0.61	0.38	0.85	0.09	0.84	0.80	0.04
Control Delay	76.7	102.3	34.2	122.8	92.9	33.5	41.5	40.6	2.2	81.9	34.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	102.3	34.2	122.8	92.9	33.5	41.5	40.6	2.2	81.9	34.9	0.1
Queue Length 50th (ft)	156	340	99	151	269	93	27	892	0	130	797	0
Queue Length 95th (ft)	#246	#495	195	#273	375	193	53	1004	19	#252	897	0
Internal Link Dist (ft)		958			895			924			694	
Turn Bay Length (ft)	230		100	145		125	240		140	185		165
Base Capacity (vph)	216	350	399	163	319	386	172	1941	911	199	2015	942
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.84	0.55	0.99	0.74	0.58	0.38	0.85	0.09	0.78	0.80	0.04

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	288	214	158	231	220	65	1618	77	153	1577	39
Future Volume (veh/h)	163	288	214	158	231	220	65	1618	77	153	1577	39
Number	7	4	14	3	8	18	1	6	16	5	2	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	166	294	218	161	236	224	66	1651	0	156	1609	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	327	278	161	296	252	153	1872	837	176	1968	881
Arrive On Green	0.07	0.18	0.18	0.06	0.16	0.16	0.03	0.53	0.00	0.06	0.56	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	166	294	218	161	236	224	66	1651	0	156	1609	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	13.4	27.8	23.7	10.4	22.0	20.6	0.0	74.1	0.0	8.0	66.6	0.0
Cycle Q Clear(g_c), s	13.4	27.8	23.7	10.4	22.0	20.6	0.0	74.1	0.0	8.0	66.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	206	327	278	161	296	252	153	1872	837	176	1968	881
V/C Ratio(X)	0.80	0.90	0.78	1.00	0.80	0.89	0.43	0.88	0.00	0.89	0.82	0.00
Avail Cap(c_a), veh/h	206	351	298	161	320	272	208	1872	837	231	1968	881
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	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	61.2	72.6	70.9	66.3	72.9	50.6	69.7	37.4	0.0	43.6	32.5	0.0
Incr Delay (d2), s/veh	20.1	23.8	12.0	70.2	12.3	27.0	1.9	6.4	0.0	26.4	3.9	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	2.8	16.5	11.3	6.0	12.4	10.9	3.3	37.9	0.0	9.0	33.5	0.0
LnGrp Delay(d),s/veh	81.3	96.4	82.9	136.5	85.2	77.5	71.6	43.9	0.0	70.0	36.4	0.0
LnGrp LOS	F	F	F	F	F	E	E	D		E	D	
Approach Vol, veh/h		678			621			1717			1765	
Approach Delay, s/veh		88.4			95.7			44.9			39.4	
Approach LOS		F			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	106.0	16.0	38.7	16.4	101.1	19.0	35.7
Change Period (Y+Rc), s	* 5.9	5.9	5.6	7.1	* 6.2	* 5.9	5.6	7.1
Max Green Setting (Gmax), s	* 11	100.1	10.4	33.9	* 16	* 95	13.4	30.9
Max Q Clear Time (g_c+I1), s	2.0	68.6	12.4	29.8	10.0	76.1	15.4	24.0
Green Ext Time (p_c), s	3.9	14.8	0.0	1.8	0.2	11.6	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	55.6
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	113	118	91	184	221	318	59	1759	41	80	1577	36
v/c Ratio	0.59	0.42	0.27	0.65	0.74	0.88	0.34	0.83	0.04	0.58	0.74	0.04
Control Delay	65.8	72.3	4.5	67.9	85.9	67.9	29.8	34.2	0.1	40.8	29.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	72.3	4.5	67.9	85.9	67.9	29.8	34.2	0.1	40.8	29.9	0.1
Queue Length 50th (ft)	108	129	0	183	253	233	22	850	0	30	685	0
Queue Length 95th (ft)	156	186	19	244	329	338	47	1103	0	98	901	0
Internal Link Dist (ft)		958			895			924			694	
Turn Bay Length (ft)	230		100	145		125	240		140	185		165
Base Capacity (vph)	192	392	431	285	412	450	176	2127	990	145	2125	988
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.30	0.21	0.65	0.54	0.71	0.34	0.83	0.04	0.55	0.74	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	111	86	173	208	299	55	1653	39	75	1482	34
Future Volume (veh/h)	106	111	86	173	208	299	55	1653	39	75	1482	34
Number	7	4	14	3	8	18	1	6	16	5	2	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	113	118	91	184	221	318	59	1759	0	80	1577	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	247	210	239	268	228	153	1910	854	118	1909	854
Arrive On Green	0.05	0.13	0.13	0.06	0.14	0.14	0.03	0.54	0.00	0.03	0.54	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	113	118	91	184	221	318	59	1759	0	80	1577	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.4	10.6	9.5	11.4	20.7	19.8	0.0	81.9	0.0	3.6	66.6	0.0
Cycle Q Clear(g_c), s	9.4	10.6	9.5	11.4	20.7	19.8	0.0	81.9	0.0	3.6	66.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	157	247	210	239	268	228	153	1910	854	118	1909	854
V/C Ratio(X)	0.72	0.48	0.43	0.77	0.83	1.40	0.39	0.92	0.00	0.68	0.83	0.00
Avail Cap(c_a), veh/h	157	392	333	239	413	351	184	1910	854	150	1909	854
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	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	64.4	72.3	71.8	68.9	74.9	45.2	70.0	37.9	0.0	41.4	34.4	0.0
Incr Delay (d2), s/veh	14.7	1.4	1.4	14.3	7.9	200.1	1.6	8.8	0.0	8.2	4.2	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	1.6	5.5	4.3	4.4	11.3	21.3	2.9	42.2	0.0	2.4	33.5	0.0
LnGrp Delay(d),s/veh	79.1	73.7	73.3	83.2	82.7	245.3	71.6	46.7	0.0	49.6	38.7	0.0
LnGrp LOS	E	E	E	F	F	F	E	D		D	D	
Approach Vol, veh/h		322			723			1818			1657	
Approach Delay, s/veh		75.5			154.4			47.5			39.2	
Approach LOS		E			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	103.0	17.0	31.0	11.8	103.0	15.0	33.0
Change Period (Y+Rc), s	* 5.9	5.9	5.6	7.1	* 6.2	* 5.9	5.6	7.1
Max Green Setting (Gmax), s	* 9.1	97.1	11.4	37.9	* 8.8	* 97	9.4	39.9
Max Q Clear Time (g_c+I1), s	2.0	68.6	13.4	12.6	5.6	83.9	11.4	22.7
Green Ext Time (p_c), s	4.3	13.7	0.0	3.4	0.0	9.5	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	63.6
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	166	294	218	215	236	250	66	1670	117	171	1632	40
v/c Ratio	0.77	0.90	0.57	1.32	0.80	0.66	0.40	0.87	0.13	0.89	0.81	0.04
Control Delay	76.7	102.3	34.2	224.2	92.9	35.4	45.2	42.2	5.7	92.3	35.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	102.3	34.2	224.2	92.9	35.4	45.2	42.2	5.7	92.3	35.6	0.1
Queue Length 50th (ft)	156	340	99	~239	269	107	27	912	12	153	817	0
Queue Length 95th (ft)	#246	#495	195	#424	375	213	61	1026	47	#299	921	0
Internal Link Dist (ft)		958			895			924			694	
Turn Bay Length (ft)	230		100	145		125	240		140	185		165
Base Capacity (vph)	216	350	399	163	319	398	166	1922	903	199	2015	942
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.84	0.55	1.32	0.74	0.63	0.40	0.87	0.13	0.86	0.81	0.04

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	288	214	211	231	245	65	1637	115	168	1599	39
Future Volume (veh/h)	163	288	214	211	231	245	65	1637	115	168	1599	39
Number	7	4	14	3	8	18	1	6	16	5	2	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	166	294	218	215	236	250	66	1670	0	171	1632	0
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	328	279	162	297	252	166	1871	837	190	1968	881
Arrive On Green	0.07	0.18	0.18	0.06	0.16	0.16	0.04	0.53	0.00	0.07	0.56	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	166	294	218	215	236	250	66	1670	0	171	1632	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	13.4	27.8	23.7	10.4	22.0	23.4	0.0	75.8	0.0	9.9	68.4	0.0
Cycle Q Clear(g_c), s	13.4	27.8	23.7	10.4	22.0	23.4	0.0	75.8	0.0	9.9	68.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	206	328	279	162	297	252	166	1871	837	190	1968	881
V/C Ratio(X)	0.81	0.90	0.78	1.33	0.80	0.99	0.40	0.89	0.00	0.90	0.83	0.00
Avail Cap(c_a), veh/h	206	351	298	162	320	272	203	1871	837	227	1968	881
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	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	61.2	72.6	70.9	66.4	72.8	51.5	69.8	37.9	0.0	48.6	32.9	0.0
Incr Delay (d2), s/veh	20.5	23.6	12.0	185.1	12.3	50.8	1.5	7.0	0.0	30.8	4.2	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	2.8	16.5	11.3	11.2	12.4	13.8	3.2	38.7	0.0	10.0	34.5	0.0
LnGrp Delay(d),s/veh	81.7	96.2	82.9	251.4	85.1	102.4	71.3	44.9	0.0	79.4	37.1	0.0
LnGrp LOS	F	F	F	F	F	F	E	D		E	D	
Approach Vol, veh/h		678			701			1736			1803	
Approach Delay, s/veh		88.4			142.3			45.9			41.1	
Approach LOS		F			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	106.0	16.0	38.8	18.2	101.0	19.0	35.8
Change Period (Y+Rc), s	* 5.9	5.9	5.6	7.1	* 6.2	* 5.9	5.6	7.1
Max Green Setting (Gmax), s	* 11	100.1	10.4	33.9	* 16	* 95	13.4	30.9
Max Q Clear Time (g_c+I1), s	2.0	70.4	12.4	29.8	11.9	77.8	15.4	25.4
Green Ext Time (p_c), s	5.7	14.7	0.0	1.9	0.1	11.1	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	63.7
HCM 2010 LOS	E

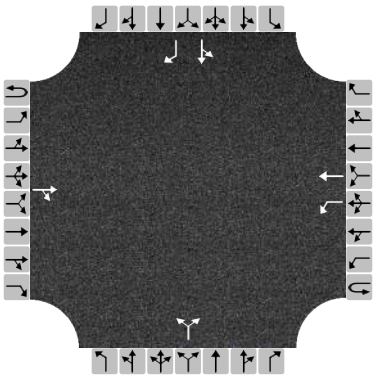
Notes

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ North
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/1/2019	East/West Street	Oak Rd
Analysis Year	2019	North/South Street	North Rd
Time Analyzed	Existing AM	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	1	1
Configuration				TR		L	T				LR			LT		R
Volume, V (veh/h)			219	1		5	418			10		7		55	3	152
Percent Heavy Vehicles (%)						3				3		3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						5					18			61		160
Capacity, c (veh/h)						1328					323			357		615
v/c Ratio						0.00					0.06			0.17		0.26
95% Queue Length, Q_{95} (veh)						0.0					0.2			0.6		1.0
Control Delay (s/veh)						7.7					16.8			17.1		12.9
Level of Service, LOS						A					C			C		B
Approach Delay (s/veh)					0.1				16.8				14.1			
Approach LOS									C				B			

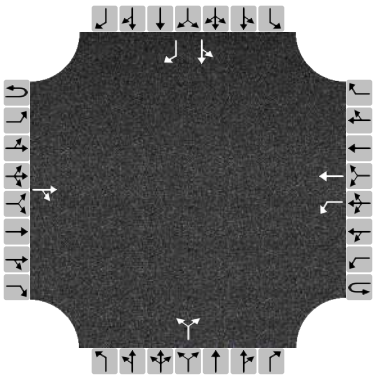
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ North
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/1/2019	East/West Street	Oak Rd
Analysis Year	2019	North/South Street	North Rd
Time Analyzed	Existing PM	Peak Hour Factor	0.97
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	1	1
Configuration				TR		L	T				LR			LT		R
Volume, V (veh/h)			478	0		8	428			5		12		112	1	133
Percent Heavy Vehicles (%)						3				3		3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2		7.1	6.5	6.2
Critical Headway (sec)						4.13				7.13		6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)						2.2				3.5		3.3		3.5	4.0	3.3
Follow-Up Headway (sec)						2.23				3.53		3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						8					17			116		137
Capacity, c (veh/h)						1064					332			231		614
v/c Ratio						0.01					0.05			0.50		0.22
95% Queue Length, Q_{95} (veh)						0.0					0.2			2.6		0.8
Control Delay (s/veh)						8.4					16.4			35.4		12.5
Level of Service, LOS						A					C			E		B
Approach Delay (s/veh)					0.1				16.4				23.0			
Approach LOS									C				C			

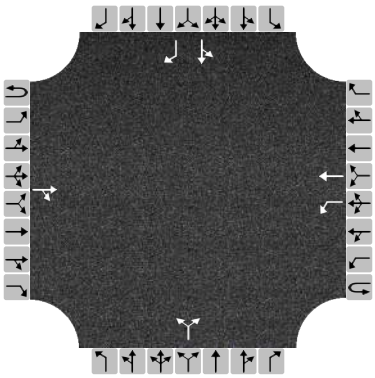
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ North
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	North Rd
Time Analyzed	Background AM	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	1	1
Configuration				TR		L	T				LR			LT		R
Volume, V (veh/h)			237	1		5	452			11		8		60	3	165
Percent Heavy Vehicles (%)						3				3		3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2		7.1	6.5	6.2
Critical Headway (sec)						4.13				7.13		6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)						2.2				3.5		3.3		3.5	4.0	3.3
Follow-Up Headway (sec)						2.23				3.53		3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						5					20			66		174
Capacity, c (veh/h)						1308					288			328		587
v/c Ratio						0.00					0.07			0.20		0.30
95% Queue Length, Q_{95} (veh)						0.0					0.2			0.7		1.2
Control Delay (s/veh)						7.8					18.4			18.7		13.7
Level of Service, LOS						A					C			C		B
Approach Delay (s/veh)					0.1				18.4				15.1			
Approach LOS									C				C			

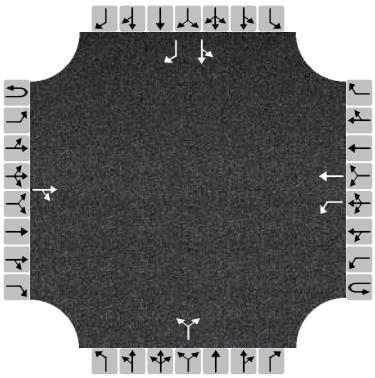
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ North
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	North Rd
Time Analyzed	Background PM	Peak Hour Factor	0.97
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	1	1
Configuration				TR		L	T				LR			LT		R
Volume, V (veh/h)			517	0		9	463			5		13		121	1	144
Percent Heavy Vehicles (%)						3				3		3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						9					18			126		148
Capacity, c (veh/h)						1029					301			203		586
v/c Ratio						0.01					0.06			0.62		0.25
95% Queue Length, Q_{95} (veh)						0.0					0.2			3.6		1.0
Control Delay (s/veh)						8.5					17.7			47.9		13.2
Level of Service, LOS						A					C			E		B
Approach Delay (s/veh)					0.2				17.7				29.2			
Approach LOS									C				D			

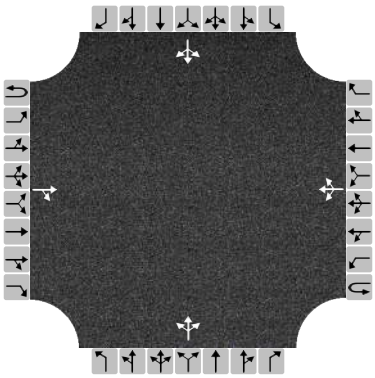
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ North
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	North Rd
Time Analyzed	Project AM	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration				TR			LTR				LTR				LTR	
Volume, V (veh/h)			253	1		5	471	2		11	0	8		62	3	176
Percent Heavy Vehicles (%)						3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)						4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)						2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)						2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						5					20				253	
Capacity, c (veh/h)						1290					261				465	
v/c Ratio						0.00					0.08				0.54	
95% Queue Length, Q_{95} (veh)						0.0					0.2				3.2	
Control Delay (s/veh)						7.8					19.9				21.6	
Level of Service, LOS						A					C				C	
Approach Delay (s/veh)					0.1				19.9				21.6			
Approach LOS									C				C			

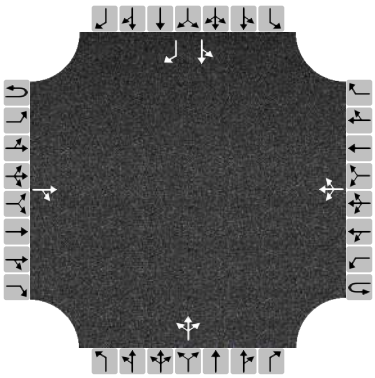
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ North
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	North Rd
Time Analyzed	Project AM-Alt 1	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration				TR			LTR				LTR			LT		R
Volume, V (veh/h)			253	1		5	471	2		11	0	8		62	3	176
Percent Heavy Vehicles (%)						3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						5					20			68		185
Capacity, c (veh/h)						1290					261			309		571
v/c Ratio						0.00					0.08			0.22		0.32
95% Queue Length, Q_{95} (veh)						0.0					0.2			0.8		1.4
Control Delay (s/veh)						7.8					19.9			19.9		14.3
Level of Service, LOS						A					C			C		B
Approach Delay (s/veh)					0.1				19.9				15.8			
Approach LOS									C				C			

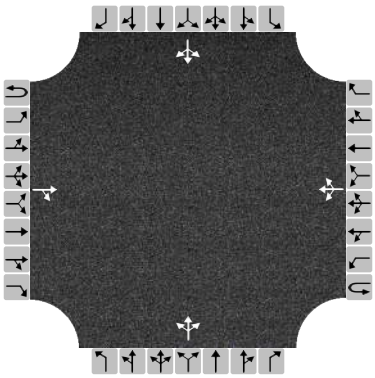
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ North
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	North Rd
Time Analyzed	Project PM	Peak Hour Factor	0.97
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration				TR			LTR				LTR				LTR	
Volume, V (veh/h)			571	0		9	512	5		5	0	13		129	1	174
Percent Heavy Vehicles (%)						3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						9					18				313	
Capacity, c (veh/h)						980					241				281	
v/c Ratio						0.01					0.07				1.12	
95% Queue Length, Q_{95} (veh)						0.0					0.2				13.0	
Control Delay (s/veh)						8.7					21.1				128.2	
Level of Service, LOS						A					C				F	
Approach Delay (s/veh)					0.3				21.1				128.2			
Approach LOS									C				F			

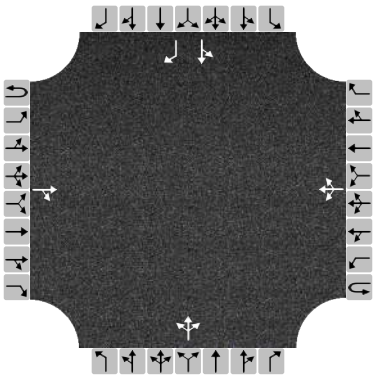
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ North
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	North Rd
Time Analyzed	Project PM-Alt 1	Peak Hour Factor	0.97
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	1
Configuration				TR			LTR				LTR			LT		R
Volume, V (veh/h)			571	0		9	512	5		5	0	13		129	1	174
Percent Heavy Vehicles (%)						3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)						4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)						2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)						2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

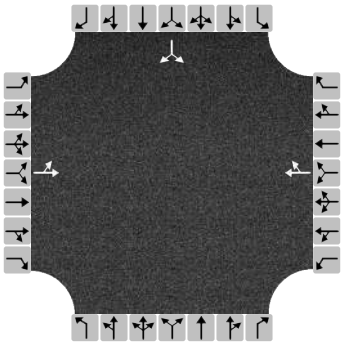
Flow Rate, v (veh/h)						9					18			134		179
Capacity, c (veh/h)						980					241			170		547
v/c Ratio						0.01					0.07			0.79		0.33
95% Queue Length, Q_{95} (veh)						0.0					0.2			5.2		1.4
Control Delay (s/veh)						8.7					21.1			77.4		14.8
Level of Service, LOS						A					C			F		B
Approach Delay (s/veh)					0.3				21.1				41.6			
Approach LOS									C				E			

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	MS	Intersection	Oak Rd @ Street A
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	Street A
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.92
Time Analyzed	Project AM		
Project Description	19-LD-006 Snellville Town Center		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	5	318			483	2				3		9
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LT			TR						LR		
Flow Rate, v (veh/h)	351			527						13		
Percent Heavy Vehicles	2			2						2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20						3.20		
Initial Degree of Utilization, x	0.312			0.469						0.012		
Final Departure Headway, hd (s)	4.50			4.33						5.41		
Final Degree of Utilization, x	0.439			0.635						0.020		
Move-Up Time, m (s)	2.0			2.0						2.0		
Service Time, ts (s)	2.50			2.33						3.41		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	351			527						13		
Capacity	800			831						665		
95% Queue Length, Q_{95} (veh)	2.3			4.6						0.1		
Control Delay (s/veh)	11.0			14.5						8.5		
Level of Service, LOS	B			B						A		
Approach Delay (s/veh)	11.0			14.5						8.5		
Approach LOS	B			B						A		
Intersection Delay, s/veh | LOS	13.1						B					

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 All-Way Stop Control Report

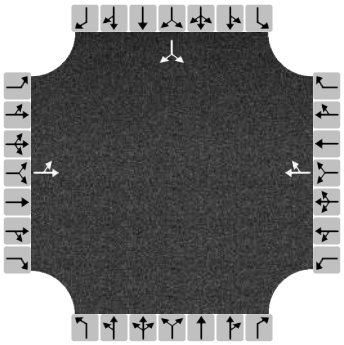
General Information

Analyst	MS
Agency/Co.	Wolverton
Date Performed	11/5/2019
Analysis Year	2023
Analysis Time Period (hrs)	0.25
Time Analyzed	Project PM
Project Description	19-LD-006 Snellville Town Center

Site Information

Intersection	Oak Rd @ Street A
Jurisdiction	City of Snellville
East/West Street	Oak Rd
North/South Street	Street A
Peak Hour Factor	0.92

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	17	696			511	22				20		18
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LT			TR						LR		
Flow Rate, v (veh/h)	775			579						41		
Percent Heavy Vehicles	2			2						2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20						3.20		
Initial Degree of Utilization, x	0.689			0.515						0.037		
Final Departure Headway, hd (s)	4.76			4.87						6.58		
Final Degree of Utilization, x	1.024			0.784						0.076		
Move-Up Time, m (s)	2.0			2.0						2.0		
Service Time, ts (s)	2.76			2.87						4.58		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	775			579						41		
Capacity	757			739						547		
95% Queue Length, Q_{95} (veh)	18.2			7.8						0.2		
Control Delay (s/veh)	60.3			23.1						10.1		
Level of Service, LOS	F			C						B		
Approach Delay (s/veh)	60.3			23.1						10.1		
Approach LOS	F			C						B		
Intersection Delay, s/veh | LOS	43.4						E					

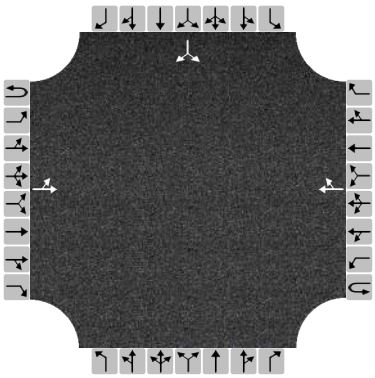
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak Rd @ Street B
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	Street B
Time Analyzed	Project AM	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		7	318				483	2						3		9
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		8													13	
Capacity, c (veh/h)		1034													467	
v/c Ratio		0.01													0.03	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		8.5													12.9	
Level of Service, LOS		A													B	
Approach Delay (s/veh)	0.3												12.9			
Approach LOS													B			

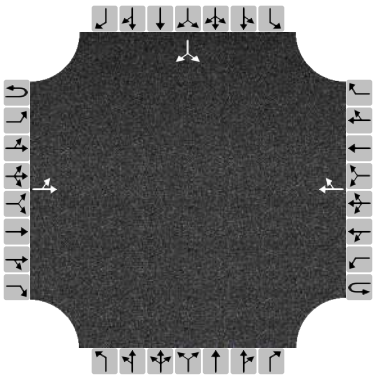
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak Rd @ Street B
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	Street B
Time Analyzed	Project PM	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		24	692				508	8						7		24
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		26													34	
Capacity, c (veh/h)		1004													341	
v/c Ratio		0.03													0.10	
95% Queue Length, Q_{95} (veh)		0.1													0.3	
Control Delay (s/veh)		8.7													16.7	
Level of Service, LOS		A													C	
Approach Delay (s/veh)	0.7												16.7			
Approach LOS													C			

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

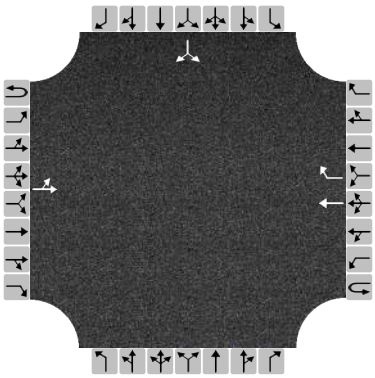
General Information

Analyst	MS
Agency/Co.	Wolverton
Date Performed	11/1/2019
Analysis Year	2019
Time Analyzed	Existing AM
Intersection Orientation	East-West
Project Description	19-LD-006 Snellville Town Center

Site Information

Intersection	Oak @ Clower
Jurisdiction	City of Snellville
East/West Street	Oak Rd
North/South Street	Clower St
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		0	1	0
Configuration		LT					T	R							LR	
Volume, V (veh/h)		28	217				392	68						25		44
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		30													74	
Capacity, c (veh/h)		1062													511	
v/c Ratio		0.03													0.14	
95% Queue Length, Q_{95} (veh)		0.1													0.5	
Control Delay (s/veh)		8.5													13.2	
Level of Service, LOS		A													B	
Approach Delay (s/veh)	1.2												13.2			
Approach LOS													B			

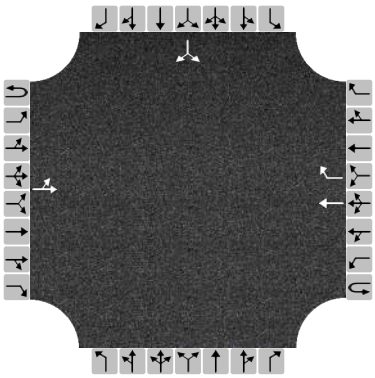
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ Clower
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/1/2019	East/West Street	Oak Rd
Analysis Year	2019	North/South Street	Clower St
Time Analyzed	Existing PM	Peak Hour Factor	0.94
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		0	1	0
Configuration		LT					T	R							LR	
Volume, V (veh/h)		51	520				388	61						51		50
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		54													107	
Capacity, c (veh/h)		1078													337	
v/c Ratio		0.05													0.32	
95% Queue Length, Q_{95} (veh)		0.2													1.3	
Control Delay (s/veh)		8.5													20.6	
Level of Service, LOS		A													C	
Approach Delay (s/veh)	1.3												20.6			
Approach LOS													C			

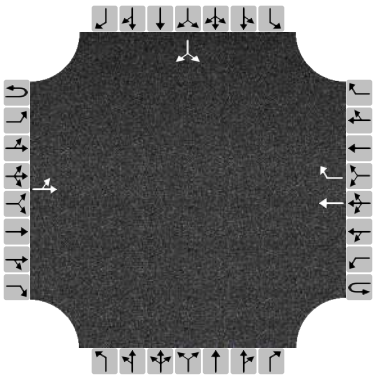
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ Clower
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	Clower St
Time Analyzed	Background AM	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		0	1	0
Configuration		LT					T	R							LR	
Volume, V (veh/h)		30	235				424	74						27		48
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		32													81	
Capacity, c (veh/h)		1026													482	
v/c Ratio		0.03													0.17	
95% Queue Length, Q_{95} (veh)		0.1													0.6	
Control Delay (s/veh)		8.6													14.0	
Level of Service, LOS		A													B	
Approach Delay (s/veh)	1.2												14.0			
Approach LOS													B			

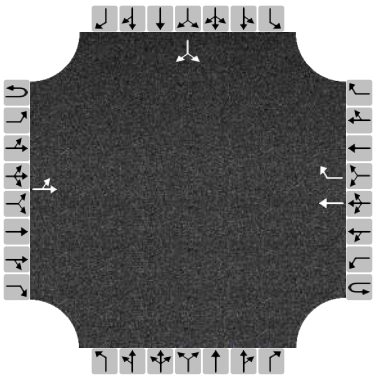
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ Clower
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	Clower St
Time Analyzed	Background PM	Peak Hour Factor	0.94
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		0	1	0
Configuration		LT					T	R							LR	
Volume, V (veh/h)		55	563				420	66						55		54
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		59													116	
Capacity, c (veh/h)		1043													301	
v/c Ratio		0.06													0.39	
95% Queue Length, Q_{95} (veh)		0.2													1.8	
Control Delay (s/veh)		8.7													24.3	
Level of Service, LOS		A													C	
Approach Delay (s/veh)	1.4												24.3			
Approach LOS													C			

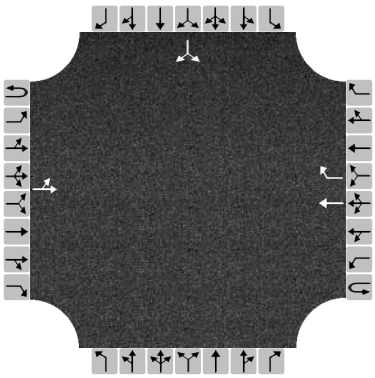
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ Clower
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	Clower St
Time Analyzed	Project AM	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		0	1	0
Configuration		LT					T	R							LR	
Volume, V (veh/h)		37	246				433	79						34		52
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		40													93	
Capacity, c (veh/h)		1013													453	
v/c Ratio		0.04													0.21	
95% Queue Length, Q_{95} (veh)		0.1													0.8	
Control Delay (s/veh)		8.7													15.0	
Level of Service, LOS		A													B	
Approach Delay (s/veh)	1.5												15.0			
Approach LOS													B			

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 All-Way Stop Control Report

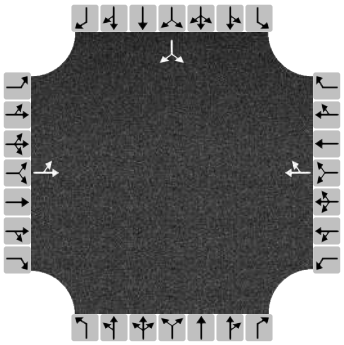
General Information

Analyst	MS
Agency/Co.	Wolverton
Date Performed	11/22/2019
Analysis Year	2023
Analysis Time Period (hrs)	0.25
Time Analyzed	Project AM-Alt1
Project Description	19-LD-006 Snellville Town Center

Site Information

Intersection	Oak Rd @ Clower St
Jurisdiction	City of Snellville
East/West Street	Oak Rd
North/South Street	Clower St
Peak Hour Factor	0.93

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	37	246			433	79				34		52
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LT			TR						LR		
Flow Rate, v (veh/h)	304			551						92		
Percent Heavy Vehicles	2			2						2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20						3.20		
Initial Degree of Utilization, x	0.270			0.489						0.082		
Final Departure Headway, hd (s)	4.84			4.48						5.56		
Final Degree of Utilization, x	0.409			0.685						0.143		
Move-Up Time, m (s)	2.0			2.0						2.0		
Service Time, ts (s)	2.84			2.48						3.56		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	304			551						92		
Capacity	744			804						648		
95% Queue Length, Q_{95} (veh)	2.0			5.5						0.5		
Control Delay (s/veh)	11.1			16.6						9.5		
Level of Service, LOS	B			C						A		
Approach Delay (s/veh)	11.1			16.6						9.5		
Approach LOS	B			C						A		
Intersection Delay, s/veh | LOS	14.2						B					

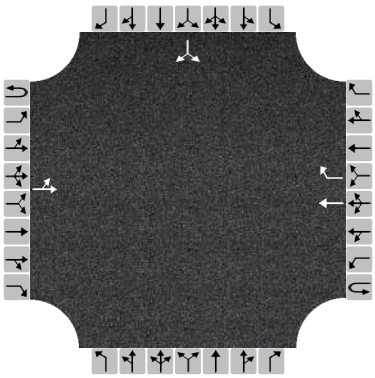
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ Clower
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	Clower St
Time Analyzed	Project PM	Peak Hour Factor	0.94
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		0	1	0
Configuration		LT					T	R							LR	
Volume, V (veh/h)		76	590				450	85						73		66
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

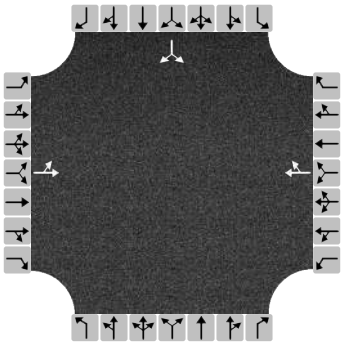
Flow Rate, v (veh/h)		81													148	
Capacity, c (veh/h)		997													256	
v/c Ratio		0.08													0.58	
95% Queue Length, Q_{95} (veh)		0.3													3.3	
Control Delay (s/veh)		8.9													36.8	
Level of Service, LOS		A													E	
Approach Delay (s/veh)	2.0												36.8			
Approach LOS													E			

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	MS	Intersection	Oak Rd @ Clower St
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/22/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	Clower St
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.98
Time Analyzed	Project PM-Alt1		
Project Description	19-LD-006 Snellville Town Center		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	76	590			450	85				73		66
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LT			TR						LR		
Flow Rate, v (veh/h)	680			546						142		
Percent Heavy Vehicles	2			2						2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20						3.20		
Initial Degree of Utilization, x	0.604			0.485						0.126		
Final Departure Headway, hd (s)	5.21			5.27						6.67		
Final Degree of Utilization, x	0.984			0.799						0.263		
Move-Up Time, m (s)	2.0			2.0						2.0		
Service Time, ts (s)	3.21			3.27						4.67		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	680			546						142		
Capacity	690			683						540		
95% Queue Length, Q_{95} (veh)	15.3			8.1						1.0		
Control Delay (s/veh)	52.9			25.8						12.0		
Level of Service, LOS	F			D						B		
Approach Delay (s/veh)	52.9			25.8						12.0		
Approach LOS	F			D						B		
Intersection Delay, s/veh | LOS	37.8						E					

Copyright © 2019 University of Florida. All Rights Reserved.

Georgia Department of Transportation

Roundabout Analysis Tool

v 4.1
5/19/17

Welcome to GDOT's Roundabout Analysis Tool. This tool is designed for the user to determine the functionality of a proposed roundabout. The analysis is based on the Highway Capacity Manual 2010 Edition and 6th Edition Methodologies, NCHRP Report 672, and FHWA's Roundabout Informational Guide. Please read the notes in the Instructions tab before using the spreadsheet.

Analyst:	MS
Agency/Company:	Wolverton
Date:	1/6/2020
Project Name or PI#:	19-LD-006: Snellville Town Center
Year, Peak Period:	2023 Project AM-Alt2
County/District:	City of Snellville
Intersection:	Oak @ Clower

Insert Project Information Here in the BLUE SPACE. This information is linked to the Mini, Single Lane and Multi Lane Worksheets.

Roundabout Considerations Worksheet

Roundabouts may not operate well if there is too much traffic entering the intersection or if the percentage of traffic on the major road is too high. Candidate intersections shall be analyzed to determine whether a roundabout will perform acceptably. Shown below are planning level thresholds. A capacity analysis should be performed to determine lane configuration based on traffic volumes.

# of circulatory lanes	ADTs (current/ build year)	Condition met?	% traffic on Major Road	Condition met?
Mini	less than 15,000	Yes	less than 90%	Yes
Single Lane	less than 25,000		less than 90%	
Multi-Lane	less than 45,000		less than 90%	

Other things to consider when evaluating roundabouts as an alternative are Right of Way, sight distance, environmental impacts, and access to adjacent properties.

Volume Information (for Analysis Time Period)

1 Enter the Major/Minor Street ADT Volumes in the Chart below:

	Volumes	Split
Major Street	11,832	80%
Minor Street	3,042	20%
Total volumes	14,874	

Proximity to Other Intersections

2 How close is the nearest signal (miles or feet)? 0 mi | 960 '

3 Is the proposed intersection located within a coordinated signal network? No

Go up to next section...

Proposed Design Configuration Chart

Directions for this Section only: *(see **Instructions Tab** for other sections)*

1. Select the type of roundabout you are analyzing.
2. Key in the number of approaches and the street names at the proposed intersections.
3. Complete the Approach Characteristics Chart:
   a. Select the Street Name from the pulldown menu for each approach leg
   b. Select the Lane Type for each entry apporach lane
      **The first box is the inner lane, the second box is the outer lane*
   c. Select Yes or No if a right turn bypass will be added to each approach leg

Roundabout Characteristics

Roundabout Type:	Mini
# of Approaches:	4
Name of Streets:	Oak Rd
	Clower St

Chart Key:

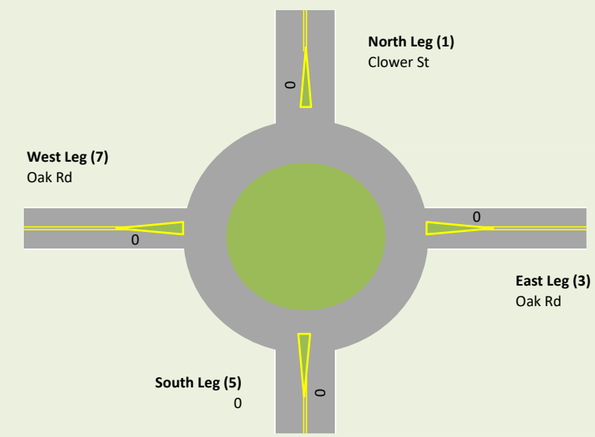
Mini/Single Lane	Street Name	
	All	
	Bypass?	
Multi-lane	Street Name	
	Inner Ln	Outer Ln
	Bypass?	

Approach Leg Characteristics:

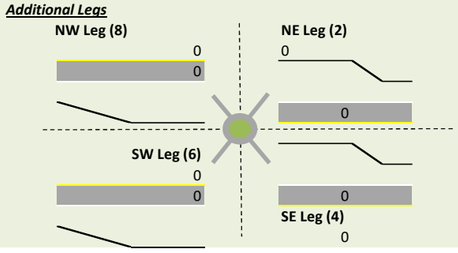
	North Leg (1)	NE Leg (2)	East Leg (3)	SE Leg (4)
Street Name:	Clower St		Oak Rd	
Entry Lane Config				
Bypass to Adj Leg?				

	South Leg (5)	SW Leg (6)	West Leg (7)	NW Leg (8)
Street Name:			Oak Rd	
Entry Lane Config				
Bypass to Adj Leg?				

Preliminary Roundabout Rendering**



Additional Legs

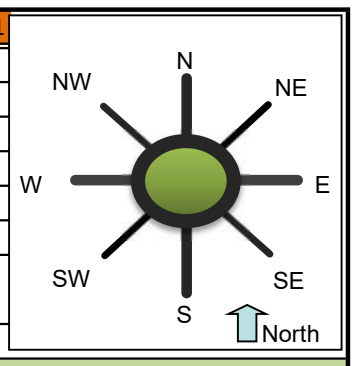


*****Note***
This roundabout sketch does not include the secondary cardinal direction legs due to restrictions in the Excel software. For complex roundabouts, a separate sketch is recommended by the designer.

General & Site Information

v 4.1

Analyst:	MS
Agency/Co:	Wolverton
Date:	1/6/2020
Project or PI#:	19-LD-006: Snellville Town Center
Year, Peak Hour:	2023 Project AM-Alt2
County/District:	City of Snellville
Intersection Name:	Oak @ Clower



Volumes		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph			79				37	
	NE (2), vph								
	E (3), vph	34						246	
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph	52		433					
	NW (8), vph								
Output	Total Vehicles	86	0	512	0	0	0	283	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Heavy Vehicles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
F_{HV}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	85	0	0	0	40	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	37	0	0	0	0	0	265	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	56	0	466	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	92	0	551	0	0	0	304	0
Conflicting flow, pcu/h	466	0	40	0	0	0	37	0

Results: Approach Measures of Effectiveness

HCM 2010 Edition	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	709	NA	1086	NA	NA	NA	1089	NA
Entry Flow Rates, vph	92	NA	551	NA	NA	NA	304	NA
V/C ratio	**0.13**		**0.51**				**0.28**	
Control Delay, sec/pcu	**6**		**9**				**6**	
LOS	A		A				A	
95th % Queue (ft)	**0**		**3**				**1**	

Notes:

v 4.0

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F_{HV}						
F_{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Edition)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

Georgia Department of Transportation

Roundabout Analysis Tool

v 4.1
5/19/17

Welcome to GDOT's Roundabout Analysis Tool. This tool is designed for the user to determine the functionality of a proposed roundabout. The analysis is based on the Highway Capacity Manual 2010 Edition and 6th Edition Methodologies, NCHRP Report 672, and FHWA's Roundabout Informational Guide. Please read the notes in the Instructions tab before using the spreadsheet.

Analyst:	MS
Agency/Company:	Wolverton
Date:	1/6/2020
Project Name or PI#:	19-LD-006: Snellville Town Center
Year, Peak Period:	2023 Project PM-Alt2
County/District:	City of Snellville
Intersection:	Oak @ Clower

Insert Project Information Here in the BLUE SPACE. This information is linked to the Mini, Single Lane and Multi Lane Worksheets.

Roundabout Considerations Worksheet

Roundabouts may not operate well if there is too much traffic entering the intersection or if the percentage of traffic on the major road is too high. Candidate intersections shall be analyzed to determine whether a roundabout will perform acceptably. Shown below are planning level thresholds. A capacity analysis should be performed to determine lane configuration based on traffic volumes.

# of circulatory lanes	ADTs (current/ build year)	Condition met?	% traffic on Major Road	Condition met?
Mini	less than 15,000	Yes	less than 90%	Yes
Single Lane	less than 25,000		less than 90%	
Multi-Lane	less than 45,000		less than 90%	

Other things to consider when evaluating roundabouts as an alternative are Right of Way, sight distance, environmental impacts, and access to adjacent properties.

Volume Information (for Analysis Time Period)

1 Enter the Major/Minor Street ADT Volumes in the Chart below:

	Volumes	Split
Major Street	11,832	80%
Minor Street	3,042	20%
Total volumes	14,874	

Proximity to Other Intersections

2 How close is the nearest signal (miles or feet)? 0 mi | 960 '

3 Is the proposed intersection located within a coordinated signal network? No

Go up to next section...

Georgia Department of Transportation

Proposed Design Configuration Chart

Directions for this Section only: *(see **Instructions Tab** for other sections)*

1. Select the type of roundabout you are analyzing.
2. Key in the number of approaches and the street names at the proposed intersections.
3. Complete the Approach Characteristics Chart:
   a. Select the Street Name from the pulldown menu for each approach leg
   b. Select the Lane Type for each entry apporach lane
      **The first box is the inner lane, the second box is the outer lane*
   c. Select Yes or No if a right turn bypass will be added to each approach leg

Roundabout Characteristics

Roundabout Type:	Mini
# of Approaches:	4
Name of Streets:	Oak Rd
	Clower St

Chart Key:

Mini/Single Lane	Street Name	
	All	
	Bypass?	
Multi-lane	Street Name	
	Inner Ln	Outer Ln
	Bypass?	

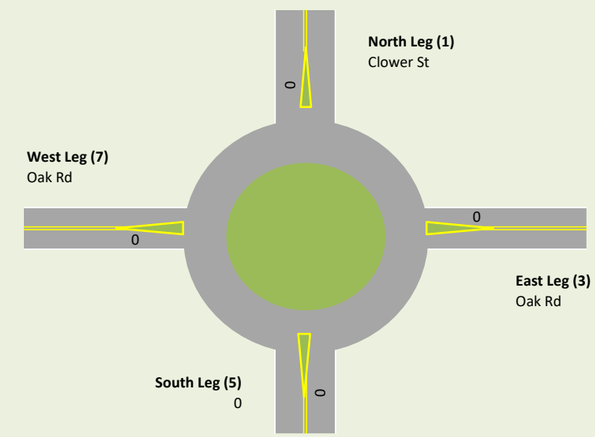
Approach Leg Characteristics:

	North Leg (1)	NE Leg (2)	East Leg (3)	SE Leg (4)
Street Name:	Clower St		Oak Rd	
Entry Lane Config				
Bypass to Adj Leg?				

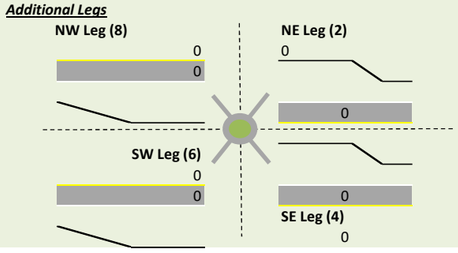
	South Leg (5)	SW Leg (6)	West Leg (7)	NW Leg (8)
Street Name:			Oak Rd	
Entry Lane Config				
Bypass to Adj Leg?				

Georgia Department of Transportation

Preliminary Roundabout Rendering**



Additional Legs

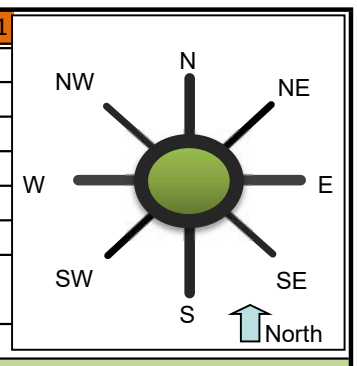


*****Note***
This roundabout sketch does not include the secondary cardinal direction legs due to restrictions in the Excel software. For complex roundabouts, a separate sketch is recommended by the designer.

General & Site Information

v 4.1

Analyst:	MS
Agency/Co:	Wolverton
Date:	1/6/2020
Project or PI#:	19-LD-006: Snellville Town Center
Year, Peak Hour:	2023 Project PM-Alt2
County/District:	City of Snellville
Intersection Name:	Oak @ Clower



Volumes		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph			85				76	
	NE (2), vph								
	E (3), vph	73						590	
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph	66		450					
	NW (8), vph								
Output	Total Vehicles	139	0	535	0	0	0	666	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Heavy Vehicles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*
F_{HV}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	90	0	0	0	81	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	78	0	0	0	0	0	628	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	70	0	479	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	148	0	569	0	0	0	709	0
Conflicting flow, pcu/h	479	0	81	0	0	0	78	0

Results: Approach Measures of Effectiveness

HCM 2010 Edition	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	700	NA	1042	NA	NA	NA	1046	NA
Entry Flow Rates, vph	148	NA	569	NA	NA	NA	709	NA
V/C ratio	**0.21**		**0.55**				**0.68**	
Control Delay, sec/pcu	**8**		**10**				**14**	
LOS	A		B				B	
95th % Queue (ft)	**1**		**3**				**5**	

Notes:

v 4.0

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

Bypass Lane Merge Point Analysis (if applicable)

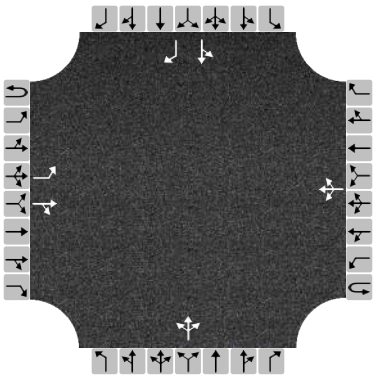
Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F_{HV}						
F_{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Edition)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/1/2019	East/West Street	Oak Rd
Analysis Year	2019	North/South Street	City Hall Dr
Time Analyzed	Existing AM	Peak Hour Factor	0.90
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	1
Configuration		L		TR			LTR				LTR			LT		R
Volume, V (veh/h)		4	206	0		7	482	17		4	2	6		3	1	2
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4				8					13			4		2
Capacity, c (veh/h)		1009				1332					455			298		535
v/c Ratio		0.00				0.01					0.03			0.01		0.00
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.1			0.0		0.0
Control Delay (s/veh)		8.6				7.7					13.2			17.2		11.7
Level of Service, LOS		A				A					B			C		B
Approach Delay (s/veh)	0.1				0.2				13.2				15.4			
Approach LOS									B				C			

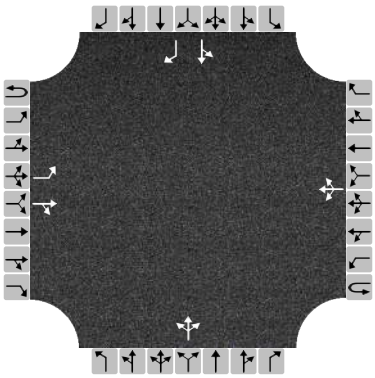
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/1/2019	East/West Street	Oak Rd
Analysis Year	2019	North/South Street	City Hall Dr
Time Analyzed	Existing PM	Peak Hour Factor	0.97
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	1
Configuration		L		TR			LTR				LTR			LT		R
Volume, V (veh/h)		8	546	2		7	413	20		4	0	19		11	0	18
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		8				7					24			11		19
Capacity, c (veh/h)		1107				1001					411			197		618
v/c Ratio		0.01				0.01					0.06			0.06		0.03
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2			0.2		0.1
Control Delay (s/veh)		8.3				8.6					14.3			24.4		11.0
Level of Service, LOS		A				A					B			C		B
Approach Delay (s/veh)	0.1				0.2				14.3				15.9			
Approach LOS									B				C			

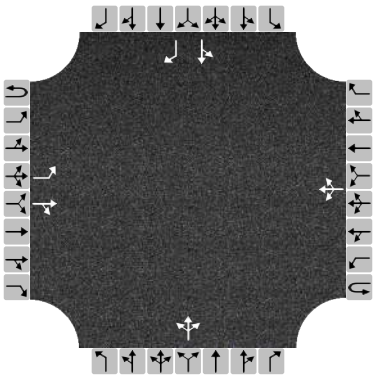
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	City Hall Dr
Time Analyzed	Background AM	Peak Hour Factor	0.90
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	1
Configuration		L		TR			LTR				LTR			LT		R
Volume, V (veh/h)		4	223	0		8	522	18		4	2	6		3	1	2
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4				9					13			4		2
Capacity, c (veh/h)		971				1310					421			270		505
v/c Ratio		0.00				0.01					0.03			0.01		0.00
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.1			0.0		0.0
Control Delay (s/veh)		8.7				7.8					13.8			18.5		12.2
Level of Service, LOS		A				A					B			C		B
Approach Delay (s/veh)	0.1				0.2				13.8				16.4			
Approach LOS									B				C			

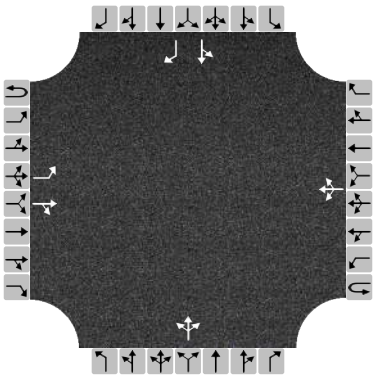
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/4/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	City Hall Dr
Time Analyzed	Background PM	Peak Hour Factor	0.97
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	1
Configuration		L		TR			LTR				LTR			LT		R
Volume, V (veh/h)		8	546	2		7	413	20		4	0	19		11	0	18
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		8				7					24			11		19
Capacity, c (veh/h)		1107				1001					411			197		618
v/c Ratio		0.01				0.01					0.06			0.06		0.03
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2			0.2		0.1
Control Delay (s/veh)		8.3				8.6					14.3			24.4		11.0
Level of Service, LOS		A				A					B			C		B
Approach Delay (s/veh)	0.1				0.2				14.3				15.9			
Approach LOS									B				C			

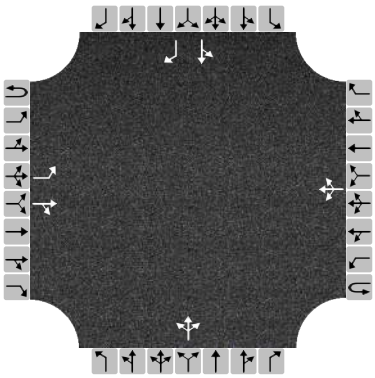
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	City Hall Dr
Time Analyzed	Project AM	Peak Hour Factor	0.90
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	1
Configuration		L		TR			LTR				LTR			LT		R
Volume, V (veh/h)		4	241	0		8	537	18		4	2	6		3	1	2
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4				9					13			4		2
Capacity, c (veh/h)		957				1288					402			255		494
v/c Ratio		0.00				0.01					0.03			0.02		0.00
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.1			0.0		0.0
Control Delay (s/veh)		8.8				7.8					14.3			19.4		12.3
Level of Service, LOS		A				A					B			C		B
Approach Delay (s/veh)	0.1				0.2				14.3				17.0			
Approach LOS									B				C			

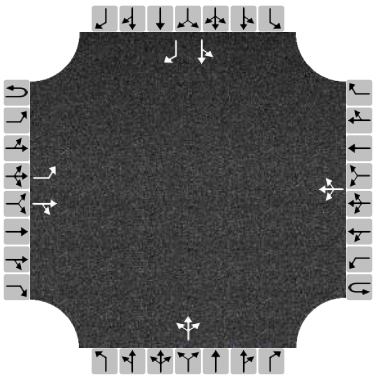
Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	MS	Intersection	Oak @ City Hall
Agency/Co.	Wolverton	Jurisdiction	City of Snellville
Date Performed	11/5/2019	East/West Street	Oak Rd
Analysis Year	2023	North/South Street	City Hall Dr
Time Analyzed	Project PM	Peak Hour Factor	0.97
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	19-LD-006 Snellville Town Center		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	1
Configuration		L		TR			LTR				LTR			LT		R
Volume, V (veh/h)		9	636	2		8	496	22		4	0	21		12	0	19
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		9				8					26			12		20
Capacity, c (veh/h)		1028				924					348			145		552
v/c Ratio		0.01				0.01					0.07			0.08		0.04
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2			0.3		0.1
Control Delay (s/veh)		8.5				8.9					16.2			32.0		11.8
Level of Service, LOS		A				A					C			D		B
Approach Delay (s/veh)	0.1				0.2				16.2				19.3			
Approach LOS									C				C			

Copyright © 2019 University of Florida. All Rights Reserved.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	31	499	9	251	1342	117	49	369	387	96	111
v/c Ratio	0.18	0.27	0.01	0.48	0.68	0.13	0.16	0.85	0.65	0.30	0.19
Control Delay	17.2	25.0	0.0	12.2	13.2	1.7	55.5	84.1	20.2	44.4	44.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.2	25.0	0.0	12.2	13.2	1.7	55.5	84.1	20.2	44.4	44.5
Queue Length 50th (ft)	15	176	0	54	153	3	46	411	95	40	93
Queue Length 95th (ft)	31	220	0	m78	193	m8	87	#558	224	63	147
Internal Link Dist (ft)		1337			1165			969			549
Turn Bay Length (ft)	150		95	175		125	140			260	
Base Capacity (vph)	180	1846	869	521	1980	926	303	442	599	451	621
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.27	0.01	0.48	0.68	0.13	0.16	0.83	0.65	0.21	0.18

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	474	9	238	1275	111	47	351	368	91	101	5
Future Volume (veh/h)	29	474	9	238	1275	111	47	351	368	91	101	5
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	31	499	9	251	1342	117	49	369	0	96	106	5
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	1770	792	630	2144	959	307	389	330	221	482	23
Arrive On Green	0.02	0.50	0.50	0.12	0.61	0.61	0.21	0.21	0.00	0.03	0.27	0.27
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1277	1863	1583	3442	1765	83
Grp Volume(v), veh/h	31	499	9	251	1342	117	49	369	0	96	0	111
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1277	1863	1583	1721	0	1848
Q Serve(g_s), s	1.2	14.8	0.4	0.0	43.3	5.7	5.7	35.2	0.0	3.9	0.0	8.4
Cycle Q Clear(g_c), s	1.2	14.8	0.4	0.0	43.3	5.7	5.7	35.2	0.0	3.9	0.0	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	203	1770	792	630	2144	959	307	389	330	221	0	505
V/C Ratio(X)	0.15	0.28	0.01	0.40	0.63	0.12	0.16	0.95	0.00	0.43	0.00	0.22
Avail Cap(c_a), veh/h	241	1770	792	630	2144	959	312	397	338	420	0	620
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	0.50	0.50	0.50	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.7	26.2	14.6	26.4	22.5	15.1	58.6	70.3	0.0	56.8	0.0	50.6
Incr Delay (d2), s/veh	0.3	0.4	0.0	0.2	0.7	0.1	0.2	32.0	0.0	1.3	0.0	0.2
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	7.3	0.2	8.0	21.3	2.5	2.0	21.6	0.0	1.9	0.0	4.3
LnGrp Delay(d),s/veh	19.0	26.6	14.7	26.6	23.2	15.2	58.8	102.2	0.0	58.1	0.0	50.8
LnGrp LOS	B	C	B	C	C	B	E	F		E		D
Approach Vol, veh/h		539			1710			418			207	
Approach Delay, s/veh		26.0			23.2			97.2			54.2	
Approach LOS		C			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	115.0		55.8	28.2	96.0	11.6	44.2
Change Period (Y+Rc), s	6.0	6.0		* 6.6	6.0	* 6	5.6	* 6.6
Max Green Setting (Gmax), s	7.0	94.0		* 60	11.1	* 90	16.4	* 38
Max Q Clear Time (g_c+I1), s	3.2	45.3		10.4	2.0	16.8	5.9	37.2
Green Ext Time (p_c), s	0.0	16.4		3.3	5.3	3.7	0.2	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	36.7
HCM 2010 LOS	D

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	25	1031	10	282	751	136	34	296	584	250	353
v/c Ratio	0.07	0.58	0.01	1.03	0.39	0.15	0.16	0.71	1.18	0.49	0.57
Control Delay	16.4	33.4	0.0	104.1	12.9	2.4	59.7	75.3	139.8	45.9	53.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	33.4	0.0	104.1	12.9	2.4	59.7	75.3	139.8	45.9	53.1
Queue Length 50th (ft)	12	446	0	~158	107	2	33	328	~654	108	342
Queue Length 95th (ft)	27	516	0	#268	123	m12	70	451	#920	146	456
Internal Link Dist (ft)		1337			1165			969			549
Turn Bay Length (ft)	150		95	175		125	140			260	
Base Capacity (vph)	369	1769	837	273	1950	913	215	418	494	545	621
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.58	0.01	1.03	0.39	0.15	0.16	0.71	1.18	0.46	0.57

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	990	10	271	721	131	33	284	561	240	322	17
Future Volume (veh/h)	24	990	10	271	721	131	33	284	561	240	322	17
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	25	1031	10	282	751	136	34	296	0	250	335	18
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	448	1956	875	348	1848	827	156	336	286	379	496	27
Arrive On Green	0.09	0.55	0.55	0.06	0.52	0.52	0.18	0.18	0.00	0.07	0.28	0.28
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1024	1863	1583	3442	1752	94
Grp Volume(v), veh/h	25	1031	10	282	751	136	34	296	0	250	0	353
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1024	1863	1583	1721	0	1846
Q Serve(g_s), s	0.0	33.1	0.5	11.1	23.2	8.1	5.5	27.9	0.0	10.5	0.0	30.5
Cycle Q Clear(g_c), s	0.0	33.1	0.5	11.1	23.2	8.1	17.6	27.9	0.0	10.5	0.0	30.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	448	1956	875	348	1848	827	156	336	286	379	0	522
V/C Ratio(X)	0.06	0.53	0.01	0.81	0.41	0.16	0.22	0.88	0.00	0.66	0.00	0.68
Avail Cap(c_a), veh/h	448	1956	875	348	1848	827	190	397	338	447	0	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	0.80	0.80	0.80	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.9	25.4	18.1	26.7	26.1	22.5	73.2	71.9	0.0	56.8	0.0	57.2
Incr Delay (d2), s/veh	0.1	1.0	0.0	11.0	0.5	0.3	0.7	17.8	0.0	2.8	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	16.5	0.2	8.1	11.4	3.6	1.6	16.1	0.0	5.1	0.0	15.9
LnGrp Delay(d),s/veh	24.9	26.4	18.1	37.6	26.6	22.8	73.9	89.7	0.0	59.6	0.0	59.5
LnGrp LOS	C	C	B	D	C	C	E	F		E		E
Approach Vol, veh/h		1066			1169			330			603	
Approach Delay, s/veh		26.3			28.8			88.1			59.6	
Approach LOS		C			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.5	100.0		57.5	17.0	105.5	18.4	39.1
Change Period (Y+Rc), s	6.0	6.0		* 6.6	5.9	6.0	5.6	* 6.6
Max Green Setting (Gmax), s	7.0	94.0		* 60	11.1	90.0	16.4	* 38
Max Q Clear Time (g_c+I1), s	2.0	25.2		32.5	13.1	35.1	12.5	29.9
Green Ext Time (p_c), s	2.9	6.6		4.3	0.0	9.5	0.3	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	40.0
HCM 2010 LOS	D

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	33	540	11	272	1453	126	54	400	419	104	120
v/c Ratio	0.24	0.30	0.01	0.57	0.76	0.14	0.17	0.86	0.68	0.33	0.19
Control Delay	19.3	26.9	0.0	14.0	15.0	2.4	54.9	82.3	23.7	43.4	43.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	26.9	0.0	14.0	15.0	2.4	54.9	82.3	23.7	43.4	43.4
Queue Length 50th (ft)	16	195	0	59	166	4	50	454	136	43	100
Queue Length 95th (ft)	33	240	0	m82	222	m9	95	#653	277	68	157
Internal Link Dist (ft)		1337			1165			969			549
Turn Bay Length (ft)	150		95	175		125	140			260	
Base Capacity (vph)	144	1778	841	479	1911	897	317	467	616	450	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.30	0.01	0.57	0.76	0.14	0.17	0.86	0.68	0.23	0.19

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	513	10	258	1380	120	51	380	398	99	109	5
Future Volume (veh/h)	31	513	10	258	1380	120	51	380	398	99	109	5
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	33	540	11	272	1453	126	54	400	0	104	115	5
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	1770	792	597	2120	948	310	397	338	202	496	22
Arrive On Green	0.02	0.50	0.50	0.12	0.60	0.60	0.21	0.21	0.00	0.04	0.28	0.28
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1266	1863	1583	3442	1772	77
Grp Volume(v), veh/h	33	540	11	272	1453	126	54	400	0	104	0	120
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1266	1863	1583	1721	0	1849
Q Serve(g_s), s	1.3	16.2	0.5	0.0	50.3	6.2	6.3	38.4	0.0	4.2	0.0	9.0
Cycle Q Clear(g_c), s	1.3	16.2	0.5	0.0	50.3	6.2	6.3	38.4	0.0	4.2	0.0	9.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	175	1770	792	597	2120	948	310	397	338	202	0	517
V/C Ratio(X)	0.19	0.31	0.01	0.46	0.69	0.13	0.17	1.01	0.00	0.52	0.00	0.23
Avail Cap(c_a), veh/h	212	1770	792	597	2120	948	310	397	338	394	0	620
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	0.33	0.33	0.33	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.3	26.6	14.5	29.6	24.6	15.7	58.2	70.8	0.0	56.5	0.0	49.9
Incr Delay (d2), s/veh	0.5	0.4	0.0	0.2	0.6	0.1	0.3	46.8	0.0	2.0	0.0	0.2
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	8.1	0.2	9.4	24.6	2.8	2.2	24.9	0.0	2.1	0.0	4.6
LnGrp Delay(d),s/veh	21.8	27.0	14.5	29.8	25.2	15.8	58.4	117.6	0.0	58.5	0.0	50.2
LnGrp LOS	C	C	B	C	C	B	E	F		E		D
Approach Vol, veh/h		584			1851			454			224	
Approach Delay, s/veh		26.5			25.2			110.6			54.0	
Approach LOS		C			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	113.8		57.0	27.0	96.0	12.0	45.0
Change Period (Y+Rc), s	6.0	6.0		* 6.6	6.0	* 6	5.6	* 6.6
Max Green Setting (Gmax), s	7.0	94.0		* 60	11.1	* 90	16.4	* 38
Max Q Clear Time (g_c+I1), s	3.3	52.3		11.0	2.0	18.2	6.2	40.4
Green Ext Time (p_c), s	0.0	17.9		3.6	5.4	4.1	0.2	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.0
HCM 2010 LOS	D

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	27	1117	11	305	813	148	38	320	632	271	383
v/c Ratio	0.08	0.63	0.01	1.23	0.43	0.17	0.20	0.77	1.32	0.57	0.62
Control Delay	16.7	34.9	0.0	174.0	13.9	2.7	61.2	79.7	197.1	47.8	55.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	34.9	0.0	174.0	13.9	2.7	61.2	79.7	197.1	47.8	55.0
Queue Length 50th (ft)	13	501	0	~285	116	3	37	362	~813	118	379
Queue Length 95th (ft)	28	576	0	#357	132	m15	77	#509	#1075	158	501
Internal Link Dist (ft)		1337			1165			969			549
Turn Bay Length (ft)	150		95	175		125	140			260	
Base Capacity (vph)	335	1769	837	247	1899	892	192	413	477	501	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.63	0.01	1.23	0.43	0.17	0.20	0.77	1.32	0.54	0.62

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1072	11	293	780	142	36	307	607	260	349	18
Future Volume (veh/h)	26	1072	11	293	780	142	36	307	607	260	349	18
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	27	1117	11	305	812	148	38	320	0	271	364	19
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	1903	851	311	1848	827	154	357	303	388	523	27
Arrive On Green	0.08	0.54	0.54	0.06	0.52	0.52	0.19	0.19	0.00	0.08	0.30	0.30
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	996	1863	1583	3442	1755	92
Grp Volume(v), veh/h	27	1117	11	305	812	148	38	320	0	271	0	383
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	996	1863	1583	1721	0	1847
Q Serve(g_s), s	0.0	38.4	0.6	11.1	25.6	8.9	6.3	30.2	0.0	11.3	0.0	33.1
Cycle Q Clear(g_c), s	0.0	38.4	0.6	11.1	25.6	8.9	20.2	30.2	0.0	11.3	0.0	33.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	397	1903	851	311	1848	827	154	357	303	388	0	550
V/C Ratio(X)	0.07	0.59	0.01	0.98	0.44	0.18	0.25	0.90	0.00	0.70	0.00	0.70
Avail Cap(c_a), veh/h	397	1903	851	311	1848	827	176	397	338	442	0	620
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	0.74	0.74	0.74	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.9	28.1	19.4	37.9	26.7	22.7	73.4	71.0	0.0	55.4	0.0	56.0
Incr Delay (d2), s/veh	0.1	1.3	0.0	39.1	0.6	0.4	0.8	21.0	0.0	4.1	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	19.1	0.3	13.1	12.7	3.9	1.8	17.6	0.0	5.6	0.0	17.4
LnGrp Delay(d),s/veh	28.0	29.5	19.4	77.0	27.2	23.0	74.2	92.0	0.0	59.5	0.0	58.9
LnGrp LOS	C	C	B	E	C	C	E	F		E		E
Approach Vol, veh/h		1155			1265			358			654	
Approach Delay, s/veh		29.3			38.7			90.2			59.2	
Approach LOS		C			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.8	100.0		60.2	17.0	102.8	19.2	41.1
Change Period (Y+Rc), s	6.0	6.0		* 6.6	5.9	6.0	5.6	* 6.6
Max Green Setting (Gmax), s	7.0	94.0		* 60	11.1	90.0	16.4	* 38
Max Q Clear Time (g_c+I1), s	2.0	27.6		35.1	13.1	40.4	13.3	32.2
Green Ext Time (p_c), s	3.1	7.4		4.6	0.0	10.7	0.3	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	44.8
HCM 2010 LOS	D

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	40	544	11	272	1457	133	54	402	419	111	133
v/c Ratio	0.29	0.31	0.01	0.57	0.76	0.15	0.17	0.86	0.68	0.35	0.22
Control Delay	20.7	27.1	0.0	14.1	15.2	2.7	55.2	82.8	24.2	43.7	42.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	27.1	0.0	14.1	15.2	2.7	55.2	82.8	24.2	43.7	42.7
Queue Length 50th (ft)	19	197	0	59	168	5	50	458	139	46	110
Queue Length 95th (ft)	38	242	0	m82	224	m10	96	#665	281	72	169
Internal Link Dist (ft)		1337			1165			969			549
Turn Bay Length (ft)	150		95	175		125	140			260	
Base Capacity (vph)	141	1774	839	475	1906	894	313	467	615	449	617
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.31	0.01	0.57	0.76	0.15	0.17	0.86	0.68	0.25	0.22

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	517	10	258	1384	126	51	382	398	105	112	14
Future Volume (veh/h)	38	517	10	258	1384	126	51	382	398	105	112	14
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	40	544	11	272	1457	133	54	402	0	111	118	15
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	174	1770	792	592	2109	944	307	397	338	207	456	58
Arrive On Green	0.02	0.50	0.50	0.12	0.60	0.60	0.21	0.21	0.00	0.04	0.28	0.28
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1252	1863	1583	3442	1620	206
Grp Volume(v), veh/h	40	544	11	272	1457	133	54	402	0	111	0	133
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1252	1863	1583	1721	0	1826
Q Serve(g_s), s	1.6	16.3	0.5	0.0	50.9	6.7	6.4	38.4	0.0	4.5	0.0	10.2
Cycle Q Clear(g_c), s	1.6	16.3	0.5	0.0	50.9	6.7	6.4	38.4	0.0	4.5	0.0	10.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	174	1770	792	592	2109	944	307	397	338	207	0	514
V/C Ratio(X)	0.23	0.31	0.01	0.46	0.69	0.14	0.18	1.01	0.00	0.54	0.00	0.26
Avail Cap(c_a), veh/h	209	1770	792	592	2109	944	307	397	338	394	0	613
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	0.31	0.31	0.31	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.9	26.6	14.4	29.9	25.0	16.0	58.2	70.8	0.0	56.4	0.0	50.1
Incr Delay (d2), s/veh	0.7	0.5	0.0	0.2	0.6	0.1	0.3	48.1	0.0	2.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	8.1	0.2	9.5	25.1	2.9	2.2	25.1	0.0	2.2	0.0	5.2
LnGrp Delay(d),s/veh	22.5	27.0	14.4	30.1	25.6	16.1	58.5	118.9	0.0	58.5	0.0	50.4
LnGrp LOS	C	C	B	C	C	B	E	F		E		D
Approach Vol, veh/h		595			1862			456			244	
Approach Delay, s/veh		26.5			25.6			111.8			54.1	
Approach LOS		C			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	113.3		57.3	26.7	96.0	12.3	45.0
Change Period (Y+Rc), s	6.0	6.0		* 6.6	6.0	* 6	5.6	* 6.6
Max Green Setting (Gmax), s	7.0	94.0		* 60	11.1	* 90	16.4	* 38
Max Q Clear Time (g_c+I1), s	3.6	52.9		12.2	2.0	18.3	6.5	40.4
Green Ext Time (p_c), s	0.0	17.9		3.7	5.6	4.1	0.2	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.4
HCM 2010 LOS	D

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	51	1128	11	305	824	167	38	328	632	288	412
v/c Ratio	0.16	0.64	0.01	1.25	0.43	0.19	0.22	0.80	1.34	0.62	0.67
Control Delay	18.2	35.1	0.0	179.4	13.9	3.0	62.7	82.2	204.3	49.2	57.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	35.1	0.0	179.4	13.9	3.0	62.7	82.2	204.3	49.2	57.1
Queue Length 50th (ft)	24	508	0	~290	121	4	38	375	~827	126	416
Queue Length 95th (ft)	46	584	0	#364	136	m18	78	#529	#1083	168	546
Internal Link Dist (ft)		1337			1165			969			549
Turn Bay Length (ft)	150		95	175		125	140			260	
Base Capacity (vph)	331	1769	837	244	1899	894	169	409	471	485	617
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.64	0.01	1.25	0.43	0.19	0.22	0.80	1.34	0.59	0.67

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	1083	11	293	791	160	36	315	607	276	355	40
Future Volume (veh/h)	49	1083	11	293	791	160	36	315	607	276	355	40
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	51	1128	11	305	824	167	38	328	0	288	370	42
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	2	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	376	1877	840	302	1848	827	140	364	309	398	501	57
Arrive On Green	0.07	0.53	0.53	0.06	0.52	0.52	0.20	0.20	0.00	0.08	0.31	0.31
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	970	1863	1583	3442	1643	187
Grp Volume(v), veh/h	51	1128	11	305	824	167	38	328	0	288	0	412
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	970	1863	1583	1721	0	1830
Q Serve(g_s), s	0.0	39.5	0.6	11.1	26.1	10.1	6.6	31.0	0.0	11.9	0.0	36.3
Cycle Q Clear(g_c), s	0.0	39.5	0.6	11.1	26.1	10.1	23.1	31.0	0.0	11.9	0.0	36.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	376	1877	840	302	1848	827	140	364	309	398	0	558
V/C Ratio(X)	0.14	0.60	0.01	1.01	0.45	0.20	0.27	0.90	0.00	0.72	0.00	0.74
Avail Cap(c_a), veh/h	376	1877	840	302	1848	827	158	397	338	441	0	614
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	0.72	0.72	0.72	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.3	29.1	20.0	39.3	26.8	23.0	75.3	70.7	0.0	54.9	0.0	56.1
Incr Delay (d2), s/veh	0.2	1.4	0.0	46.3	0.6	0.4	1.0	22.0	0.0	5.2	0.0	4.2
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	1.6	19.6	0.3	13.5	12.8	4.5	1.8	18.2	0.0	5.9	0.0	19.1
LnGrp Delay(d),s/veh	30.5	30.6	20.0	85.7	27.3	23.4	76.4	92.8	0.0	60.0	0.0	60.3
LnGrp LOS	C	C	C	F	C	C	E	F		E		E
Approach Vol, veh/h		1190			1296			366			700	
Approach Delay, s/veh		30.5			40.6			91.1			60.2	
Approach LOS		C			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.5	100.0		61.5	17.0	101.5	19.8	41.7
Change Period (Y+Rc), s	6.0	6.0		* 6.6	5.9	6.0	5.6	* 6.6
Max Green Setting (Gmax), s	7.0	94.0		* 60	11.1	90.0	16.4	* 38
Max Q Clear Time (g_c+I1), s	2.0	28.1		38.3	13.1	41.5	13.9	33.0
Green Ext Time (p_c), s	3.2	7.6		4.8	0.0	10.9	0.2	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	46.3
HCM 2010 LOS	D

Notes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	132	799	14	1503	356	178	273	195	134
v/c Ratio	0.64	0.37	0.04	0.81	0.39	0.71	0.83	1.01	0.45
Control Delay	53.9	13.0	13.5	40.7	13.1	97.7	91.9	147.1	62.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	13.0	13.5	40.7	13.1	97.7	91.9	147.1	62.1
Queue Length 50th (ft)	80	150	6	783	113	107	314	~121	126
Queue Length 95th (ft)	#202	268	18	913	200	153	406	#215	190
Internal Link Dist (ft)		1165		894			851		881
Turn Bay Length (ft)	175		115		240	270		250	
Base Capacity (vph)	207	2152	421	1855	919	265	439	194	399
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.37	0.03	0.81	0.39	0.67	0.62	1.01	0.34

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	724	51	14	1458	345	173	250	15	189	77	53
Future Volume (veh/h)	128	724	51	14	1458	345	173	250	15	189	77	53
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	132	746	53	14	1503	356	178	258	15	195	79	0
Adj No. of Lanes	1	2	0	1	2	1	2	1	0	2	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	1795	127	333	1756	786	217	288	17	195	303	0
Arrive On Green	0.05	0.54	0.54	0.01	0.50	0.50	0.06	0.17	0.17	0.06	0.16	0.00
Sat Flow, veh/h	1774	3352	238	1774	3539	1583	3442	1743	101	3442	1863	0
Grp Volume(v), veh/h	132	394	405	14	1503	356	178	0	273	195	79	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1821	1774	1770	1583	1721	0	1845	1721	1863	0
Q Serve(g_s), s	6.6	23.9	23.9	0.6	66.9	26.3	9.2	0.0	26.1	10.2	6.7	0.0
Cycle Q Clear(g_c), s	6.6	23.9	23.9	0.6	66.9	26.3	9.2	0.0	26.1	10.2	6.7	0.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	155	948	975	333	1756	786	217	0	305	195	303	0
V/C Ratio(X)	0.85	0.42	0.42	0.04	0.86	0.45	0.82	0.00	0.90	1.00	0.26	0.00
Avail Cap(c_a), veh/h	159	948	975	406	1756	786	266	0	438	195	411	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)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.8	25.0	25.0	20.3	39.7	29.5	83.3	0.0	73.6	84.9	65.9	0.0
Incr Delay (d2), s/veh	29.6	1.2	1.2	0.1	5.6	1.9	15.5	0.0	15.5	64.4	0.5	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	4.5	12.0	12.4	0.3	33.9	12.0	4.8	0.0	14.7	6.6	3.5	0.0
LnGrp Delay(d),s/veh	69.4	26.2	26.1	20.3	45.3	31.4	98.8	0.0	89.1	149.3	66.3	0.0
LnGrp LOS	E	C	C	C	D	C	F		F	F	E	
Approach Vol, veh/h		931			1873			451			274	
Approach Delay, s/veh		32.3			42.5			92.9			125.4	
Approach LOS		C			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	96.0	19.4	36.6	7.5	103.1	19.0	37.1
Change Period (Y+Rc), s	6.0	* 6.7	* 8.1	7.3	5.5	* 6.7	8.8	7.3
Max Green Setting (Gmax), s	9.0	* 89	* 14	39.7	9.5	* 89	10.2	42.7
Max Q Clear Time (g_c+I1), s	8.6	68.9	11.2	8.7	2.6	25.9	12.2	28.1
Green Ext Time (p_c), s	0.0	16.5	0.1	2.1	0.0	37.1	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	52.7
HCM 2010 LOS	D

Notes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	1726	27	982	262	131	256	489	365
v/c Ratio	0.31	0.92	0.25	0.55	0.29	0.66	0.81	1.27	0.86
Control Delay	15.1	33.2	23.3	33.5	9.0	99.1	87.9	199.9	84.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	33.2	23.3	33.5	9.0	99.1	87.9	199.9	84.6
Queue Length 50th (ft)	29	656	13	414	44	79	289	~373	415
Queue Length 95th (ft)	m50	m#1137	33	552	120	120	374	#496	510
Internal Link Dist (ft)		1165		894			851		881
Turn Bay Length (ft)	175		115		240	270		250	
Base Capacity (vph)	287	1866	109	1782	891	207	433	385	536
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.92	0.25	0.55	0.29	0.63	0.59	1.27	0.68

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	1564	127	26	962	257	128	202	49	479	304	54
Future Volume (veh/h)	84	1564	127	26	962	257	128	202	49	479	304	54
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	86	1596	130	27	982	262	131	206	50	489	310	0
Adj No. of Lanes	1	2	0	1	2	1	2	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	1523	123	69	1540	689	169	240	58	386	434	0
Arrive On Green	0.04	0.46	0.46	0.02	0.44	0.44	0.05	0.17	0.17	0.11	0.23	0.00
Sat Flow, veh/h	1774	3317	268	1774	3539	1583	3442	1449	352	3442	1863	0
Grp Volume(v), veh/h	86	845	881	27	982	262	131	0	256	489	310	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1815	1774	1770	1583	1721	0	1801	1721	1863	0
Q Serve(g_s), s	4.8	82.6	82.6	1.5	39.1	20.2	6.8	0.0	24.9	20.2	27.6	0.0
Cycle Q Clear(g_c), s	4.8	82.6	82.6	1.5	39.1	20.2	6.8	0.0	24.9	20.2	27.6	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		0.20	1.00		0.00
Lane Grp Cap(c), veh/h	204	812	833	69	1540	689	169	0	299	386	434	0
V/C Ratio(X)	0.42	1.04	1.06	0.39	0.64	0.38	0.78	0.00	0.86	1.27	0.71	0.00
Avail Cap(c_a), veh/h	236	812	833	104	1540	689	208	0	427	386	545	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)	0.45	0.45	0.45	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.5	48.7	48.7	44.1	39.8	34.4	84.6	0.0	73.0	79.9	63.5	0.0
Incr Delay (d2), s/veh	0.6	32.5	37.7	3.5	2.0	1.6	13.6	0.0	11.4	138.9	3.3	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	2.4	47.7	50.2	0.8	19.5	9.1	3.5	0.0	13.3	17.1	14.6	0.0
LnGrp Delay(d),s/veh	32.2	81.2	86.4	47.7	41.8	36.0	98.2	0.0	84.4	218.8	66.8	0.0
LnGrp LOS	C	F	F	D	D	D	F		F	F	E	
Approach Vol, veh/h		1812			1271			387			799	
Approach Delay, s/veh		81.4			40.7			89.1			159.8	
Approach LOS		F			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	85.0	16.9	49.2	8.5	89.3	29.0	37.1
Change Period (Y+Rc), s	6.0	* 6.7	* 8.1	7.3	5.5	* 6.7	8.8	7.3
Max Green Setting (Gmax), s	10.0	* 78	* 11	52.7	6.5	* 82	20.2	42.7
Max Q Clear Time (g_c+I1), s	6.8	41.1	8.8	29.6	3.5	84.6	22.2	26.9
Green Ext Time (p_c), s	0.0	30.4	0.1	3.4	0.0	0.0	0.0	3.0

Intersection Summary	
HCM 2010 Ctrl Delay	84.7
HCM 2010 LOS	F

Notes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	143	865	15	1627	385	193	295	211	145
v/c Ratio	0.71	0.42	0.04	0.91	0.43	0.76	0.85	1.09	0.46
Control Delay	70.4	14.6	14.3	49.6	15.2	100.4	91.6	164.1	61.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.4	14.6	14.3	49.6	15.2	100.4	91.6	164.1	61.8
Queue Length 50th (ft)	106	230	6	932	142	117	339	~143	137
Queue Length 95th (ft)	m#294	300	19	1050	230	#165	433	#237	204
Internal Link Dist (ft)		1165		894			851		881
Turn Bay Length (ft)	175		115		240	270		250	
Base Capacity (vph)	201	2067	380	1789	893	265	439	194	399
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.42	0.04	0.91	0.43	0.73	0.67	1.09	0.36

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	784	55	15	1578	373	187	271	16	205	83	57
Future Volume (veh/h)	139	784	55	15	1578	373	187	271	16	205	83	57
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	143	808	57	15	1627	385	193	279	16	211	86	0
Adj No. of Lanes	1	2	0	1	2	1	2	1	0	2	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	1802	127	309	1756	786	231	309	18	195	318	0
Arrive On Green	0.05	0.54	0.54	0.01	0.50	0.50	0.07	0.18	0.18	0.06	0.17	0.00
Sat Flow, veh/h	1774	3354	237	1774	3539	1583	3442	1745	100	3442	1863	0
Grp Volume(v), veh/h	143	426	439	15	1627	385	193	0	295	211	86	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1821	1774	1770	1583	1721	0	1845	1721	1863	0
Q Serve(g_s), s	9.0	26.4	26.4	0.7	77.2	29.1	10.0	0.0	28.2	10.2	7.2	0.0
Cycle Q Clear(g_c), s	9.0	26.4	26.4	0.7	77.2	29.1	10.0	0.0	28.2	10.2	7.2	0.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	143	951	978	309	1756	786	231	0	327	195	318	0
V/C Ratio(X)	1.00	0.45	0.45	0.05	0.93	0.49	0.84	0.00	0.90	1.08	0.27	0.00
Avail Cap(c_a), veh/h	143	951	978	382	1756	786	266	0	438	195	411	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)	0.86	0.86	0.86	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.2	25.4	25.4	20.5	42.3	30.2	83.0	0.0	72.5	84.9	64.9	0.0
Incr Delay (d2), s/veh	70.0	1.3	1.3	0.1	9.9	2.2	18.1	0.0	17.7	87.9	0.5	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	9.9	13.3	13.6	0.3	40.2	13.2	5.3	0.0	16.0	7.2	3.8	0.0
LnGrp Delay(d),s/veh	122.2	26.7	26.7	20.5	52.2	32.4	101.1	0.0	90.3	172.8	65.4	0.0
LnGrp LOS	F	C	C	C	D	C	F		F	F	E	
Approach Vol, veh/h		1008			2027			488			297	
Approach Delay, s/veh		40.3			48.2			94.5			141.7	
Approach LOS		D			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	96.0	20.2	38.0	7.6	103.4	19.0	39.2
Change Period (Y+Rc), s	6.0	* 6.7	* 8.1	7.3	5.5	* 6.7	8.8	7.3
Max Green Setting (Gmax), s	9.0	* 89	* 14	39.7	9.5	* 89	10.2	42.7
Max Q Clear Time (g_c+I1), s	11.0	79.2	12.0	9.2	2.7	28.4	12.2	30.2
Green Ext Time (p_c), s	0.0	9.2	0.1	2.3	0.0	40.8	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	59.3
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	93	1868	29	1062	284	142	277	529	395
v/c Ratio	0.39	1.02	0.28	0.61	0.33	0.71	0.81	1.37	0.88
Control Delay	17.6	51.6	25.1	36.6	10.7	102.1	86.3	238.2	85.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	51.6	25.1	36.6	10.7	102.1	86.3	238.2	85.7
Queue Length 50th (ft)	36	~1246	14	481	60	86	311	~424	449
Queue Length 95th (ft)	m56	m#1204	35	613	142	128	401	#548	554
Internal Link Dist (ft)		1165		894			851		881
Turn Bay Length (ft)	175		115		240	270		250	
Base Capacity (vph)	251	1824	107	1734	873	207	433	385	536
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	1.02	0.27	0.61	0.33	0.69	0.64	1.37	0.74

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	1693	137	28	1041	278	139	219	53	518	329	58
Future Volume (veh/h)	91	1693	137	28	1041	278	139	219	53	518	329	58
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	93	1728	140	29	1062	284	142	223	54	529	336	0
Adj No. of Lanes	1	2	0	1	2	1	2	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	189	1530	123	70	1540	689	180	258	62	386	450	0
Arrive On Green	0.04	0.46	0.46	0.02	0.44	0.44	0.05	0.18	0.18	0.11	0.24	0.00
Sat Flow, veh/h	1774	3320	266	1774	3539	1583	3442	1450	351	3442	1863	0
Grp Volume(v), veh/h	93	912	956	29	1062	284	142	0	277	529	336	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1816	1774	1770	1583	1721	0	1801	1721	1863	0
Q Serve(g_s), s	5.2	82.9	82.9	1.6	43.6	22.2	7.3	0.0	26.9	20.2	30.0	0.0
Cycle Q Clear(g_c), s	5.2	82.9	82.9	1.6	43.6	22.2	7.3	0.0	26.9	20.2	30.0	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		0.19	1.00		0.00
Lane Grp Cap(c), veh/h	189	815	837	70	1540	689	180	0	320	386	450	0
V/C Ratio(X)	0.49	1.12	1.14	0.41	0.69	0.41	0.79	0.00	0.87	1.37	0.75	0.00
Avail Cap(c_a), veh/h	216	815	837	104	1540	689	208	0	427	386	545	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)	0.27	0.27	0.27	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.0	48.5	48.5	44.1	41.0	35.0	84.3	0.0	71.9	79.9	63.2	0.0
Incr Delay (d2), s/veh	0.5	58.4	68.5	3.8	2.6	1.8	16.2	0.0	13.4	182.1	4.5	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	2.6	53.8	57.5	0.8	21.8	10.1	3.9	0.0	14.6	19.4	16.1	0.0
LnGrp Delay(d),s/veh	33.6	106.9	117.1	47.9	43.6	36.8	100.5	0.0	85.3	262.0	67.7	0.0
LnGrp LOS	C	F	F	D	D	D	F		F	F	E	
Approach Vol, veh/h		1961			1375			419			865	
Approach Delay, s/veh		108.4			42.3			90.4			186.5	
Approach LOS		F			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	85.0	17.5	50.8	8.6	89.6	29.0	39.3
Change Period (Y+Rc), s	6.0	* 6.7	* 8.1	7.3	5.5	* 6.7	8.8	7.3
Max Green Setting (Gmax), s	10.0	* 78	* 11	52.7	6.5	* 82	20.2	42.7
Max Q Clear Time (g_c+I1), s	7.2	45.6	9.3	32.0	3.6	84.9	22.2	28.9
Green Ext Time (p_c), s	0.0	28.8	0.1	3.6	0.0	0.0	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	101.7
HCM 2010 LOS	F

Notes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	146	871	15	1633	398	193	295	226	150
v/c Ratio	0.71	0.42	0.04	0.92	0.45	0.76	0.85	1.16	0.47
Control Delay	70.1	14.6	14.4	50.7	15.5	100.4	91.6	184.7	62.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.1	14.6	14.4	50.7	15.5	100.4	91.6	184.7	62.1
Queue Length 50th (ft)	108	234	6	938	149	117	339	~162	142
Queue Length 95th (ft)	m#302	304	19	1056	241	#165	433	#259	209
Internal Link Dist (ft)		1165		894			851		881
Turn Bay Length (ft)	175		115		240	270		250	
Base Capacity (vph)	206	2067	377	1780	893	265	439	194	399
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.42	0.04	0.92	0.45	0.73	0.67	1.16	0.38

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	142	790	55	15	1584	386	187	271	16	219	83	62
Future Volume (veh/h)	142	790	55	15	1584	386	187	271	16	219	83	62
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	146	814	57	15	1633	398	193	279	16	226	86	0
Adj No. of Lanes	1	2	0	1	2	1	2	1	0	2	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	1803	126	307	1756	786	231	309	18	195	318	0
Arrive On Green	0.05	0.54	0.54	0.01	0.50	0.50	0.07	0.18	0.18	0.06	0.17	0.00
Sat Flow, veh/h	1774	3356	235	1774	3539	1583	3442	1745	100	3442	1863	0
Grp Volume(v), veh/h	146	429	442	15	1633	398	193	0	295	226	86	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1821	1774	1770	1583	1721	0	1845	1721	1863	0
Q Serve(g_s), s	9.0	26.7	26.7	0.7	77.7	30.5	10.0	0.0	28.2	10.2	7.2	0.0
Cycle Q Clear(g_c), s	9.0	26.7	26.7	0.7	77.7	30.5	10.0	0.0	28.2	10.2	7.2	0.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	142	951	978	307	1756	786	231	0	327	195	318	0
V/C Ratio(X)	1.03	0.45	0.45	0.05	0.93	0.51	0.84	0.00	0.90	1.16	0.27	0.00
Avail Cap(c_a), veh/h	142	951	978	380	1756	786	266	0	438	195	411	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)	0.86	0.86	0.86	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.6	25.5	25.5	20.5	42.4	30.5	83.0	0.0	72.5	84.9	64.9	0.0
Incr Delay (d2), s/veh	77.4	1.3	1.3	0.1	10.3	2.3	18.1	0.0	17.7	113.8	0.5	0.0
Initial Q Delay(d3),s/veh	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	13.3	13.7	0.3	40.4	13.9	5.3	0.0	16.0	7.9	3.8	0.0
LnGrp Delay(d),s/veh	130.3	26.8	26.8	20.6	52.7	32.9	101.1	0.0	90.3	198.7	65.4	0.0
LnGrp LOS	F	C	C	C	D	C	F		F	F	E	
Approach Vol, veh/h		1017			2046			488			312	
Approach Delay, s/veh		41.6			48.6			94.5			161.9	
Approach LOS		D			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	96.0	20.2	38.0	7.6	103.4	19.0	39.2
Change Period (Y+Rc), s	6.0	* 6.7	* 8.1	7.3	5.5	* 6.7	8.8	7.3
Max Green Setting (Gmax), s	9.0	* 89	* 14	39.7	9.5	* 89	10.2	42.7
Max Q Clear Time (g_c+I1), s	11.0	79.7	12.0	9.2	2.7	28.7	12.2	30.2
Green Ext Time (p_c), s	0.0	8.8	0.1	2.3	0.0	41.1	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	61.7
HCM 2010 LOS	E

Notes

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	105	1885	29	1081	324	142	277	567	406
v/c Ratio	0.45	1.04	0.28	0.63	0.37	0.71	0.79	1.47	0.89
Control Delay	18.4	57.3	25.3	37.9	11.5	102.1	83.9	276.3	86.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	57.3	25.3	37.9	11.5	102.1	83.9	276.3	86.8
Queue Length 50th (ft)	43	~1283	15	504	74	86	308	~471	460
Queue Length 95th (ft)	m64	m#1196	35	627	164	128	401	#598	573
Internal Link Dist (ft)		1165		894			851		881
Turn Bay Length (ft)	175		115		240	270		250	
Base Capacity (vph)	242	1810	108	1711	875	207	433	385	535
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.04	0.27	0.63	0.37	0.69	0.64	1.47	0.76

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	1710	137	28	1059	318	139	219	53	556	329	69
Future Volume (veh/h)	103	1710	137	28	1059	318	139	219	53	556	329	69
Number	1	6	16	5	2	12	3	8	18	7	4	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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	105	1745	140	29	1081	324	142	223	54	567	336	0
Adj No. of Lanes	1	2	0	1	2	1	2	1	0	2	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	189	1544	122	70	1540	689	180	258	62	386	450	0
Arrive On Green	0.04	0.46	0.46	0.02	0.44	0.44	0.05	0.18	0.18	0.11	0.24	0.00
Sat Flow, veh/h	1774	3322	263	1774	3539	1583	3442	1450	351	3442	1863	0
Grp Volume(v), veh/h	105	920	965	29	1081	324	142	0	277	567	336	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1816	1774	1770	1583	1721	0	1801	1721	1863	0
Q Serve(g_s), s	5.9	83.6	83.6	1.6	44.7	26.2	7.3	0.0	26.9	20.2	30.0	0.0
Cycle Q Clear(g_c), s	5.9	83.6	83.6	1.6	44.7	26.2	7.3	0.0	26.9	20.2	30.0	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		0.19	1.00		0.00
Lane Grp Cap(c), veh/h	189	822	844	70	1540	689	180	0	320	386	450	0
V/C Ratio(X)	0.56	1.12	1.14	0.41	0.70	0.47	0.79	0.00	0.87	1.47	0.75	0.00
Avail Cap(c_a), veh/h	210	822	844	104	1540	689	208	0	427	386	545	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)	0.23	0.23	0.23	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.6	48.2	48.2	44.0	41.4	36.1	84.3	0.0	71.9	79.9	63.2	0.0
Incr Delay (d2), s/veh	0.6	57.7	68.3	3.8	2.7	2.3	16.2	0.0	13.4	224.3	4.5	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	2.9	54.1	58.0	0.8	22.3	11.8	3.9	0.0	14.6	21.6	16.1	0.0
LnGrp Delay(d),s/veh	34.2	105.9	116.5	47.9	44.1	38.4	100.5	0.0	85.3	304.2	67.7	0.0
LnGrp LOS	C	F	F	D	D	D	F		F	F	E	
Approach Vol, veh/h		1990			1434			419			903	
Approach Delay, s/veh		107.2			42.9			90.4			216.2	
Approach LOS		F			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	85.0	17.5	50.8	8.6	90.3	29.0	39.3
Change Period (Y+Rc), s	6.0	* 6.7	* 8.1	7.3	5.5	* 6.7	8.8	7.3
Max Green Setting (Gmax), s	10.0	* 78	* 11	52.7	6.5	* 82	20.2	42.7
Max Q Clear Time (g_c+I1), s	7.9	46.7	9.3	32.0	3.6	85.6	22.2	28.9
Green Ext Time (p_c), s	0.0	28.2	0.1	3.6	0.0	0.0	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	107.0
HCM 2010 LOS	F

Notes