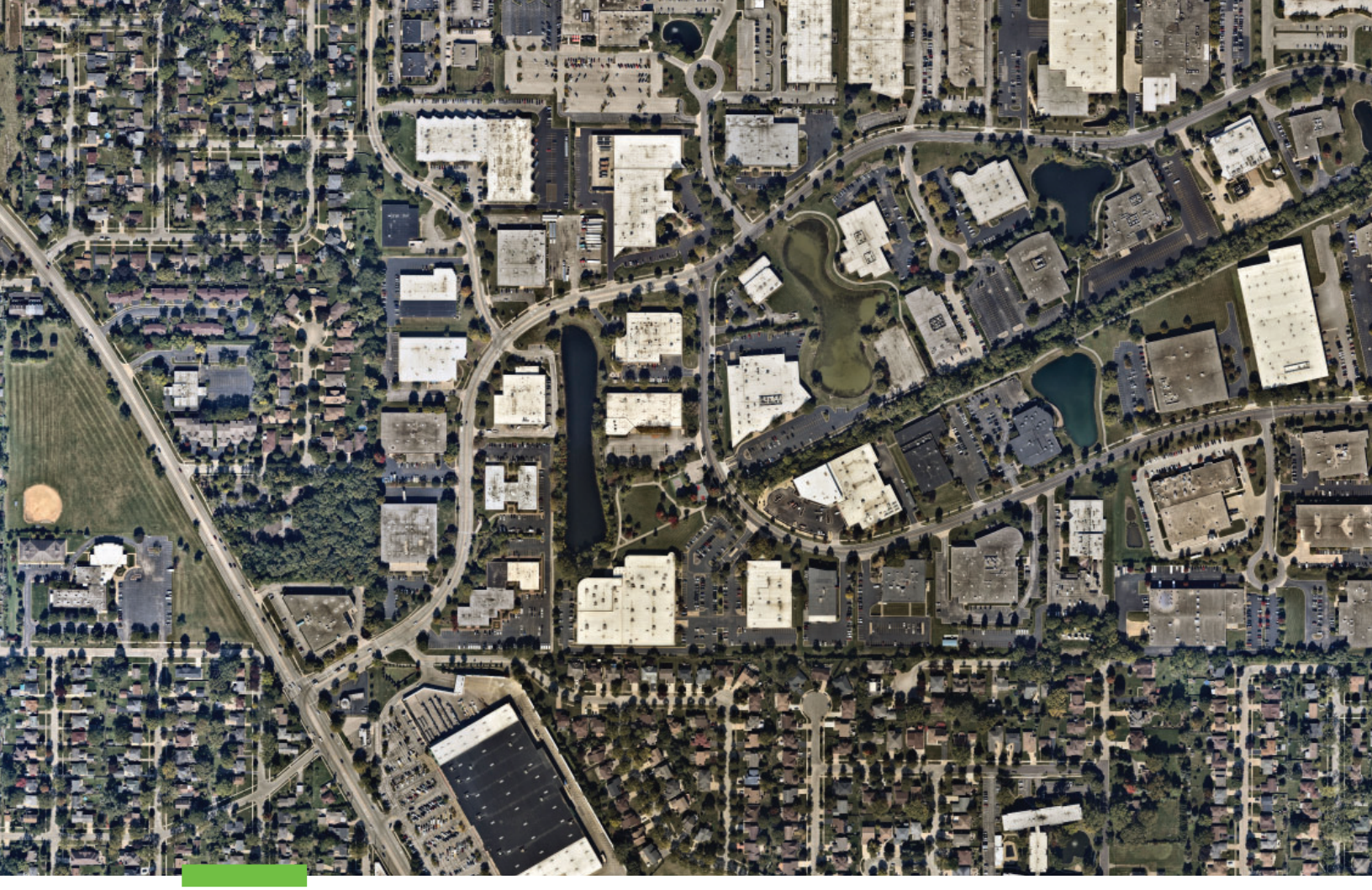


Traffic Study for
Business Center Drive - Mount Prospect, Illinois

Submitted to:

Mount Prospect

Traffic Study

Decmeber 02, 2022

Submitted by:

Sam Schwartz
A TYLin Company

Table of Contents

01. Introduction

Sam Schwartz Engineering, DPC, (Sam Schwartz) was retained by the Village of Mount Prospect to conduct a traffic study for Business Center Drive in Mount Prospect Illinois. The focus of the study would be on the segment of Business Center Drive between Rand Road and Wheeling Road. An aerial view of the study area can be seen on ***Figure 1***.

The Village of Mount Prospect Strategic Plan seeks opportunities to reconfigure existing roadways and incorporate multimodal transportation options. Business Center Drive is a village-maintained collector street which provides primary access to Kensington Business Park. The roadway is also strategically located between an existing shared-use path through the Business Park and other bike routes west of Rand Road. A primary focus of this study is to identify methods for safely connecting the existing bicycle infrastructure in the Business Park area.

Between Rand Road and Wheeling Road, Business Center Drive generally provides a four-lane cross section before transitioning to a two-lane cross section with dedicated bike lanes east of Wheeling Road. With these characteristics, Business Center Drive is a candidate for a geometric reconfiguration which could improve safety, connectivity, and efficiency for all roadway users, with particular emphasis on non-vehicular users.

The following report documents Sam Schwartz's methodology regarding data collection, traffic forecasting, and capacity analyses performed for this study. The preferred reconfiguration condition for Business Center Drive is documented with the goals of increasing non-vehicular safety and connectivity while maintaining efficient vehicular operations and the existing curb line in the study area.

Sam Schwartz
A TYLin Company

Figure 1
Study Area Map

02. Existing Conditions

Sam Schwartz conducted a field visit to collect relevant information pertaining to the site, the surrounding street network, traffic volumes, traffic controls, lane geometry, and infrastructure at the study intersections. Based on these characteristics, existing intersection capacity was evaluated to establish existing operational conditions for the study area, as described in the following sections.

2.1. Area Land Uses & Connectivity

The study area includes the approximately 1,500-foot segment of Business Center Drive between Rand Road to the west and Wheeling Road to the east. East of Wheeling Road, Business Center Drive continues and provides access to Kensington Business Park before terminating at Feehanville Drive, near Wolf Road. The subject segment of Business Center Drive provides direct access to multiple business park properties via ten private driveways, plus an intersection with Harvest Lane.

As previously noted, Business Center Drive terminates at its west end at Rand Road (US 12), a Principal Arterial that provides regional northwest to southeast connectivity. Indirect regional east-west connectivity is also provided by Kensington Road and Central Road, each located within a mile of Business Center Drive via Rand Road. Business Center Drive itself is considered a local street, with a full length of approximately 1.15 miles that terminates within the business park.

Business Center Drive also runs generally parallel to an off-street shared-use path that runs throughout Kensington Business Park. The path begins at its east end approximately 500 feet west of Wolf Road and runs to the west through the business park. At its eastern end, the path splits and provides two connection points: one to Business Center Drive approximately 450 feet north of Harvest Lane, and a second to Harvest Lane approximately 420 feet east of Business Center Drive. Additional signed bike routes are located immediately west of Business Center Drive's intersection with Rand Road, with pedestrian and bike signage already in place at the existing crosswalk across the northern leg of Rand Road.

Pace Suburban Bus provides regional connection to the study area during weekday morning and afternoon peak periods. Pace Route 221K is a fixed bus route connecting the Kensington Business Park to the Prospect Heights Metra Station and the Rosemont Chicago Transit Authority (CTA) Blue Line Station. Eastbound and westbound bus stops are provided within the study segment on Business Center Drive east of Rand Road and west of Wheeling Road.

2.2. Existing Street Characteristics

Field data collection was performed along the primary study roadways of Business Center Drive, Rand Road, Harvest Lane, and Wheeling Road. Unless otherwise noted, all roadways have a posted speed limit of 30 MPH, are under the jurisdiction of the Village of Mount Prospect, and do not permit on-street parking.

Business Center Drive is an east-west local roadway that generally provides a four-lane cross section between Rand Road and Wheeling Road. In this segment, the outside lanes in each direction are marked with shared bike arrows (sharrows). East of Wheeling Road, the section narrows to one-lane plus a dedicated bike lane in both directions. At its signalized intersection with Rand Road, Business Center Drive widens to provide dual left-turn lanes, a dedicated right-turn lane, and two receiving lanes. At its unsignalized intersection with Harvest Lane, a dedicated through lane and a shared through/right-turn lane are provided on the eastbound approach. In the westbound direction, a shared through/left-turn lane and two dedicated through lanes are provided. At its unsignalized intersection with Wheeling Road, the eastbound approach of Business Center Drive provides a dedicated left-turn lane and a shared through/right-turn lane, with a shared through/left-turn lane and a dedicated right-turn lane on the westbound approach. Business Center Drive also provides two-midblock crosswalks, one located approximately 95 feet south of Harvest Lane and another 450 north of Harvest Lane. In the study area, Business Center Drive provides sidewalk along the entirety of the north side of the street.

Rand Road (US 12) is a Principal Arterial that generally runs northwest to southeast and provides a four-lane section with median space for left-turn lanes at intersections. It is also designated by the Chicago Metropolitan Agency for Planning (CMAP) as a Strategic Regional Arterial (SRA). At its signalized intersection with Business Center Drive, Rand Road provides two dedicated through lanes and a dedicated turn lane on each of its northbound and southbound approaches. High-visibility crosswalks with pedestrian push buttons are provided on the north and east legs of the intersection. Rand Road has a posted speed limit of 40 MPH and is under the jurisdiction of the Illinois Department of Transportation (IDOT).

Harvest Lane is an east-west, two-lane local roadway that intersects with Business Center Drive approximately 415 feet east of Rand Road. Harvest Lane provides connection for local traffic to a residential area to the east and truck access to Menards. At its intersection with Business Center Drive, Harvest Lane operates under minor-leg stop control and provides a dedicated left-turn lane and a dedicated right-turn lane on the northbound approach. No crosswalks are provided at the intersection. Sidewalk is generally provided on the south side of Harvest Lane connecting to the midblock crosswalk on Business Center Drive. On the north side of the street, sidewalk is provided only to the east of the off-street path's connection. Harvest Lane has a posted speed limit of 25 MPH.

Wheeling Road is a north-south local roadway that generally provides a two-lane cross section and terminates at Business Center Drive approximately 1,600 feet east of Rand Road. At this all-way stop-controlled intersection, Wheeling Road provides a shared through/left-turn lane and a dedicated right-turn lane. A **Private Driveway** aligns opposite Wheeling Road at this intersection and provides a single shared outbound lane on its northbound approach. A standard crosswalk is provided across the north leg of this intersection. Beginning approximately 300 feet north of Business Center Drive, Wheeling Road provides sidewalk on the east side of the road and dedicated bike lanes in each direction. Nearer to the intersection, a dedicated bike lane is provided only in the northbound direction.

2.3. Existing Traffic Volumes

Sam Schwartz conducted intersection turning movement counts (TMCs) in September 2022 at the following locations in order to identify existing traffic volumes:

- Business Center Drive and Rand Road;
- Business Center Drive and Harvest Lane;
- Business Center Drive and Wheeling Road.

Counts were performed during the weekday morning, midday, and evening periods (6:30-9:30AM, 11:00AM-1:00PM and 3:00-6:00PM, respectively), to coincide with the peak activity on the area roadway network. Based on the resulting count data, peak hours occurred at the intersection of Rand Road and Business Center Drive from 7:15-8:15AM, from 11:45AM-12:45PM, and from 4:45-5:45PM during the weekday morning, midday, and evening peak periods, respectively.

An additional bi-directional roadway count was performed on Business Center Drive between Harvest Lane and Wheeling Road from Tuesday, September 20 to Thursday, September 22, 2022. The counts were averaged across the 72-hour period and are summarized in ***Exhibit 1***.

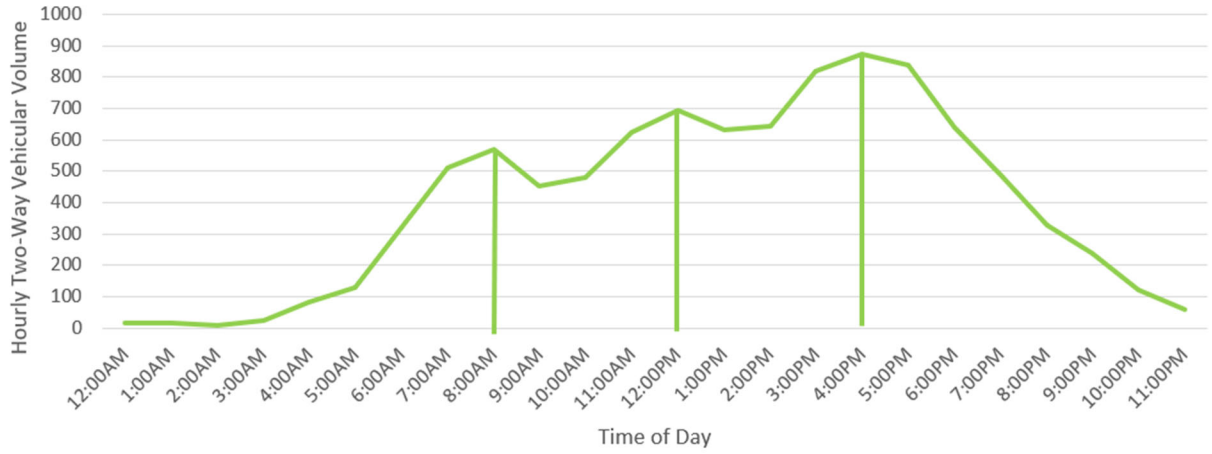
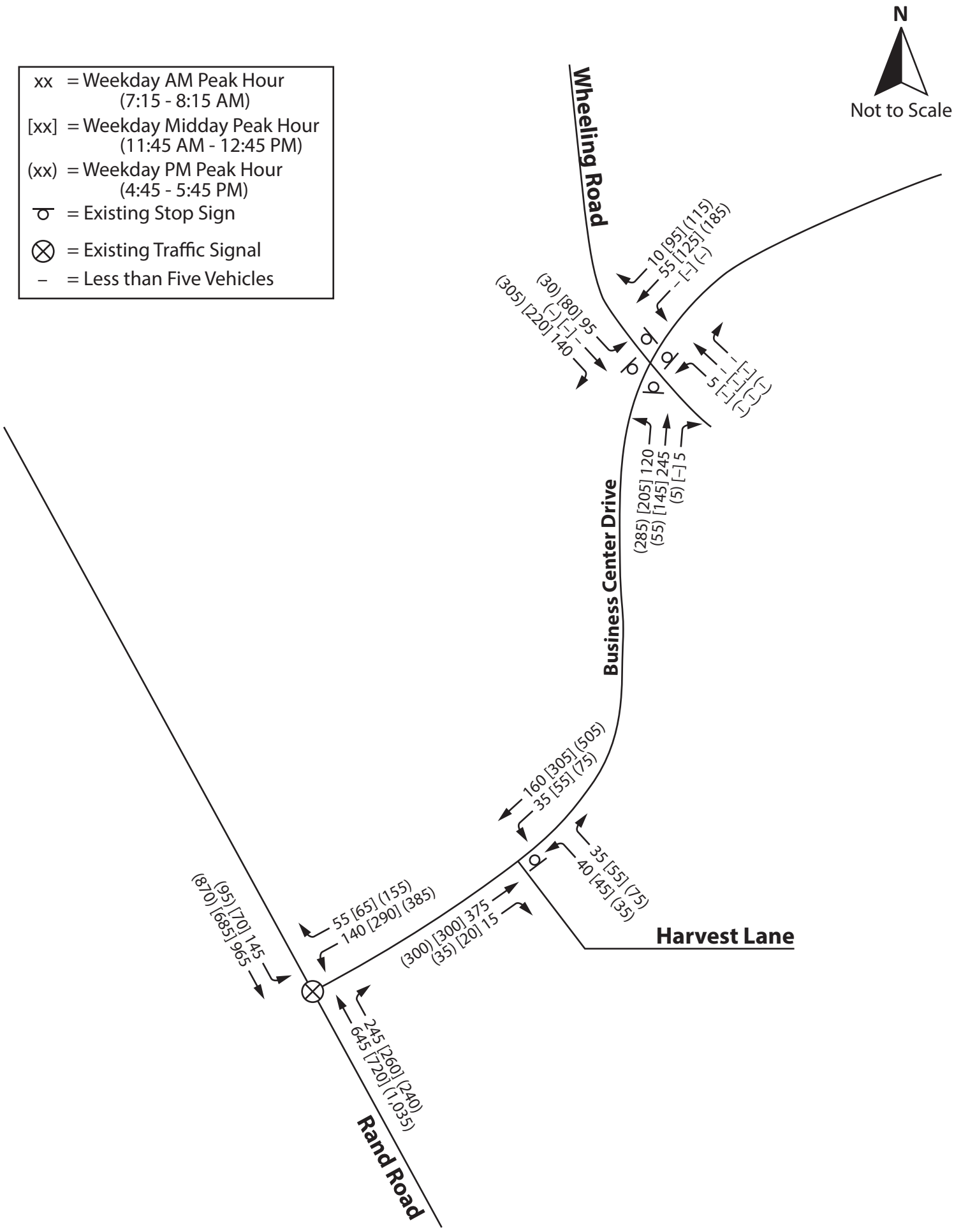


Exhibit 1: Business Center Drive Weekday Volume Profile

Based on these counts, Business Center Drive has an Average Daily Traffic (ADT) of approximately 9,600 vehicles. This profile also identifies local peak hours aligning with those captured in the TMCs. It should be noted that significant turning movements were recorded on Business Center Drive to/from Wheeling Road during all three peak periods. This is likely indicative of cut-through behavior for northbound/southbound travelers intending to avoid the intersections of Kensington Road/Main Street/Rand Road.

The resulting traffic volumes were summarized for the morning, midday, and evening peak hours, establishing an Existing Year 2022 volume network. The resulting traffic volumes are illustrated on ***Figure 2***. Summaries of the raw TMC and ADT counts are contained in the Appendix.



Sam Schwartz
A TYLin Company

Figure 2
Existing (2022) Traffic Volumes

2.4. Existing Intersection Operations

The operational effectiveness of transportation facilities is measured in terms of Level of Service (LOS). LOS ranges from LOS A to LOS F, with LOS A reflecting the lowest level of vehicular delay and LOS F being the highest. LOS A represents free-flow conditions where motorists experience a high level of comfort and convenience. LOS E represents saturated or at-capacity conditions, and LOS F represents oversaturated conditions.

LOS at a signalized intersection is defined in terms of average control delay (measured in seconds per vehicle), which is portion of total delay experienced by a motorist that is attributable to the traffic signal. LOS A describes operations with minimal delays (up to 10 seconds per vehicle), while LOS F describes operations with delays in excess of 80 seconds per vehicle. At intersections with long cycle lengths, the quantity of red time that is allocated to an approach or movement may near or exceed that 80-second threshold, increasing the likelihood of poor LOS. The LOS criteria for signalized intersections, as defined in the Highway Capacity Manual, Sixth Edition (HCM), are provided in ***Table 1.***

Table 1. LOS Criteria for Signalized Intersections

Level of Service (LOS)	Average Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 20.0 seconds
C	> 20.0 and ≤ 35.0 seconds
D	> 35.0 and ≤ 55.0 seconds
E	> 55.0 and ≤ 80.0 seconds
F	> 80.0 seconds

Transportation Research Board. Highway Capacity Manual, Sixth Edition.

For unsignalized intersections, total delay is defined as the total elapsed time from the moment a vehicle stops at the back of the queue until the vehicle departs from the stop bar on the stop sign-controlled approach. This includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The LOS thresholds for unsignalized intersections, which differ from those for signalized intersections, are summarized in ***Table 2***.

Table 2. LOS Criteria for Unsignalized Intersections

Level of Service (LOS)[1]	Average Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 15.0 seconds
C	> 15.0 and ≤ 25.0 seconds
D	> 25.0 and ≤ 35.0 seconds
E	> 35.0 and ≤ 50.0 seconds
F	> 50.0 seconds

Transportation Research Board. Highway Capacity Manual, Sixth Edition.
[1]LOS grades assume volume-to-capacity (v/c) ratio <1; LOS F is triggered when v/c ≥1

Capacity analysis was performed to analyze the study intersections for the weekday peak hours using Synchro 11 capacity analysis software to produce *Lane, Volumes, Timings (LVT)* and *HCM 6th Edition* reports. *LVT* reports were used to assess signalized intersections, and *HCM 6th Edition* reports were used to assess unsignalized intersections.

Summaries of the capacity analysis results for all study intersections under existing conditions are presented in ***Table 3*** and are discussed below. The Synchro worksheets containing the intersection analyses are included in the Appendix.

Table 3. Existing (Year 2022) Levels of Service

Approach	Lane Group[1]	Weekday Morning Peak Hour				Weekday Midday Peak Hour				Weekday Evening Peak Hour			
		Delay (s/veh)	LOS	v/c Ratio	Queue (ft)[4]	Delay (s/veh)	LOS	v/c Ratio	Queue (ft)[4]	Delay (s/veh)	LOS	v/c Ratio	Queue (ft)[4]
Business Center Drive & Rand Road[1]													
Westbound	L	43.4	D	0.44	75	43.7	D	0.61	137	44.8	D	0.67	179
	R	46.7	D	0.39	74	40.2	D	0.29	79	46.7	D	0.57	167
Northbound	T	9.3	A	0.31	147	10.5	B	0.34	177	14.6	B	0.50	314
	R	2.7	A	0.21	51	2.7	A	0.23	48	2.8	A	0.21	47
Southbound	L	4.0	A	0.26	39	4.8	A	0.15	26	7.0	A	0.28	39
	T	4.9	A	0.38	147	5.8	A	0.28	115	7.4	A	0.35	177
Intersection		*9.4*	*A*	–	–	*13.3*	*B*	–	–	*17.0*	*B*	–	–
Business Center Drive & Harvest Lane[2]													
Westbound	L	8.5	A	0.04	3	8.1	A	0.05	3	8.4	A	0.08	8
Northbound	L	14.7	B	0.11	10	14.1	B	0.11	10	18.3	C	0.14	13
	R	10.0	B	0.05	5	9.6	A	0.07	5	10.0	B	0.11	10
Business Center Drive & Wheeling Road[3]													
Eastbound	L	10.2	B	0.22	20	13.8	B	0.42	53	23.4	C	0.68	125
	TR	12.0	B	0.42	50	11.0	B	0.28	28	10.3	B	0.13	13
Westbound	LT	9.1	A	0.10	8	10.9	B	0.25	25	19.9	C	0.52	73
	R	8.1	A	0.02	0	9.4	A	0.17	15	10.4	B	0.23	23
Northbound	LTR	10.6	B	0.02	0	9.9	A	0.01	0	11.1	B	0.01	0
Southbound	LT	10.4	B	0.19	18	11.0	B	0.18	15	10.7	B	0.08	5
	R	9.2	A	0.22	20	11.8	B	0.39	45	19.0	C	0.64	110
Intersection		*10.6*	*B*	–	–	*11.7*	*B*	–	–	*18.6*	*C*	–	–

[1]Signalized Intersection
[2]Two-Way Stop-Controlled Intersection
[3]All-Way Stop-Controlled Intersection
[4]95th Percentile Queue

As shown, most of the lane groups within the study area perform at LOS C or better during the three peak hours analyzed. The only exceptions are the westbound left-turn and right-turn movements on Business Center Drive at Rand Road, which operate at LOS D during each peak hour. On this approach, the longest 95th percentile queue is 179 feet (for left turns during the PM peak hour). This queue would extend to approximately the location of the northernmost Parkway Bank driveway and would not conflict with Harvest Lane or the midblock crosswalk located just south of Harvest Lane.

03. Preferred Improvements

The Village of Mount Prospect has a stated goal of improving safety and efficiency for non-vehicular users of Business Center Drive while maintaining the existing curb line and operational efficiency for all roadway users. Given the roadway's existing configuration and recorded daily volume, Business Center Drive is a candidate for a "road diet", or the reduction from a four-lane section to a two-lane section. This change would leave room for on-street bike facilities and is the preferred configuration, as described further in this section.

3.1. Vehicle Lanes

A reduction from a four-lane section on Business Center Drive to a two-lane section would include both a reduction in capacity along the length of the roadway and at approaches at the study intersections. At Business Center Drive's intersections with Wheeling Road and Harvest Lane, each eastbound/westbound approach should be restriped to provide a single shared lane for all movements in each direction. At the Rand Road intersection, the storage and taper lengths for the westbound approach can be reduced to accommodate projected queues within the segment west of Harvest Lane. Lastly, the number of receiving lanes on Business Center Drive at Rand Road should be reduced from two to one eastbound lane while maintaining the existing westbound configuration of dual left-turn lanes and a dedicated right-turn lane at Rand Road. This reduction is considered feasible given the existing width of the throat and the presence of a median on the westbound approach of Business Center Drive at Rand Road.

3.2. Pedestrian & Bicycle Infrastructure

The feasibility of reducing the number of vehicle lanes on Business Center Drive allows for improved pedestrian and bicycle connectivity through the subject area, particularly for connecting the existing off-street bicycle infrastructure to the east and west.

Protected Bike Lanes

Currently, Business Center Drive provides an approximately 48-foot typical cross section curb-to-curb, or 24 feet in each direction. With the proposed road diet, this space would only need to accommodate a single lane of traffic in each direction, leaving room for on-street bike facilities. One potential cross section is proposed in the 2012 *Mount Prospect Bicycle Plan*, and includes a dedicated bike lane, a bicycle lane buffer, and a single travel lane in each direction, plus a center painted median. This configuration is shown in ***Exhibit 2***.

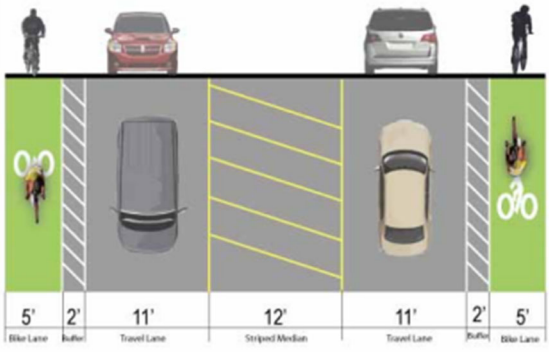


Exhibit 2: EXAMPLE Cross Section – Mount Prospect Bicycle Plan, 2012

Another configuration that would maintain the existing pavement width would include the same configuration without a center painted median, with the additional space used to provide wider bike lanes and/or buffer zones. This cross-section could be installed generally between Harvest Lane and Wheeling Road. West of Harvest Lane, this section could be matched on eastbound Business Center Drive in place of the outer receiving lane. This section could also be extended further to the east on Business Center Drive by reducing the existing travel lane width and providing a painted buffer for the existing dedicated bike lanes which helps to provide more protection for cyclists and slow traffic with a narrower lane. ***Exhibit 3*** shows a comparison between the existing and proposed cross-sections for Business Center Drive between Harvest Lane and Wheeling Road.

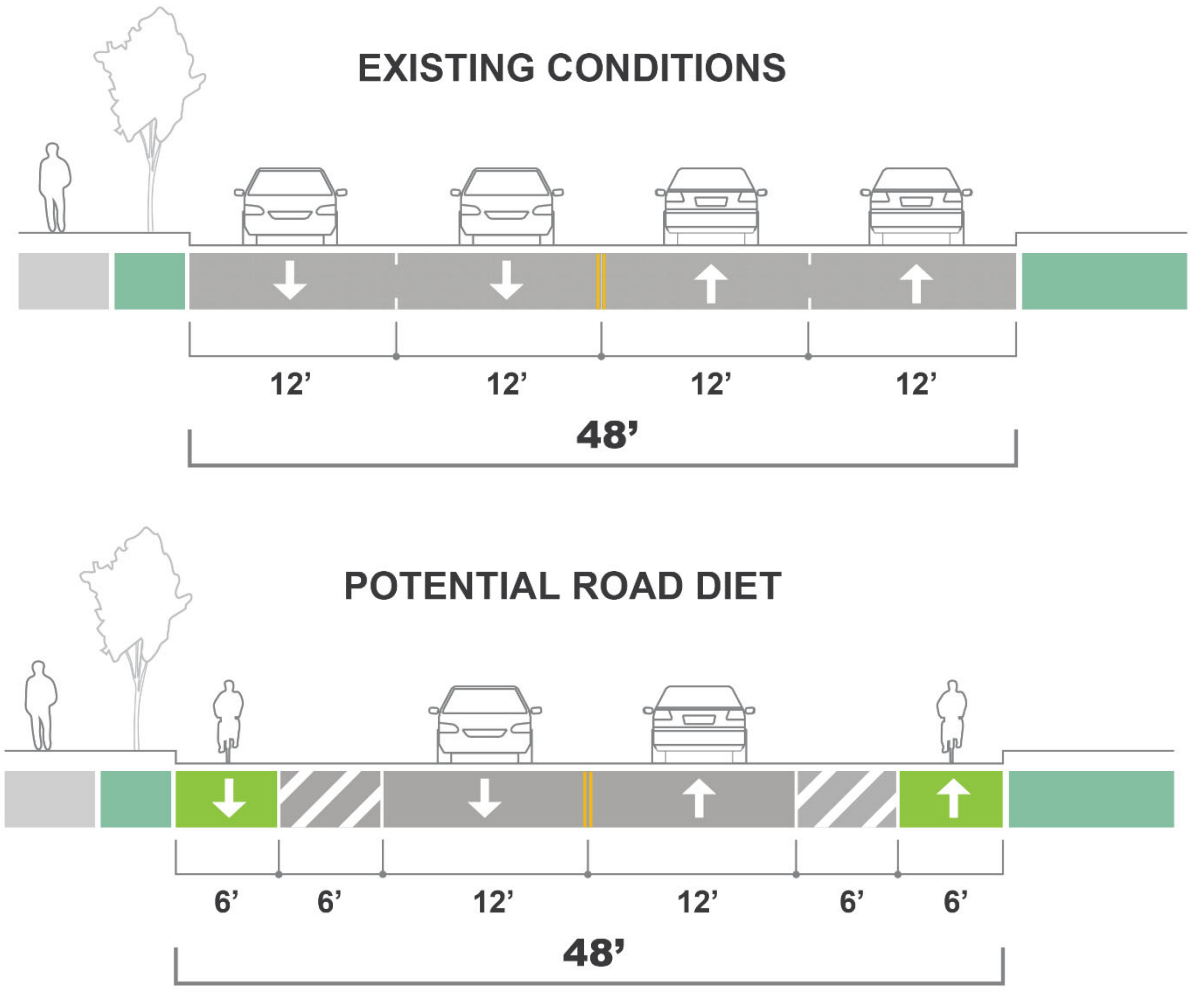


Exhibit 3: EXAMPLE Cross Section Comparison – Business Center Drive: Harvest Lane to Wheeling Drive

On-Street to Off-Street Bike Lane Transitions

West of Harvest Lane, the on-street bike lane configurations described above is not compatible with the westbound approach of Business Center Drive at Rand Road, which expands to accommodate dual left-turn lanes and a dedicated right-turn lane. An on-street bike lane to sidewalk transition could be installed immediately east of Harvest Lane, directing cyclists to the sidewalk on the north side of the road and to the signalized crosswalk at the Rand Road intersection. Given the existing width of sidewalk here, "Walk Bikes to Intersection" signage should be installed downstream of the transition ramp. An example transition is shown in ***Exhibit 4***.

Exhibit 4: Example Bike Lane to Sidewalk Transition

Shared-Use Path Connectivity

As previously noted, the existing shared-use path within the Kensington Business Park provides two western endpoints, one of which is at Harvest Lane. At this location, the shared-use path connects to sidewalk that extends to the east on Harvest Lane on the north side of the road but does not extend to the west. As a part of this project, sidewalk should be provided along the north side of Harvest Lane between the shared-use path connection and Business Center Drive. At this intersection, a high-visibility crosswalk should be installed on the Harvest Lane approach, along with sidewalk to connect to the existing midblock crosswalk. The existing stop bar and striping on the northbound approach of Harvest Lane at Business Center Drive should be adjusted to accommodate the proposed crosswalk. Where the shared-use path forks to the east of Business Center Drive, signage should be installed indicating that the paths connect to Business Center Drive and Harvest Lane, respectively.

3.3. Other Area Improvement Plans

In addition to the above recommended improvements to Business Center Drive, several background improvements at the intersection of Business Center Drive and Rand Road are anticipated independent from this project. As previously noted, Central Road runs east to west approximately one-half mile south of Business Center Drive's intersection with Rand Road. The intersection of Central Road and Rand Road is a part of a four-signal coordinated system along Rand Road that's northern terminus is the recently energized signal the Walmart access driveway. Based on coordination with IDOT, it is Sam Schwartz's understanding that it is the department's intent to add Business Center Drive to the coordinated system when funding allows. As such, several improvements to the Business Center Drive intersection were incorporated into future analysis, including the installation of a fixed cycle length, a westbound right-turn overlap phase and associated signal equipment, and optimized timing splits.

04. Future Analysis

To evaluate the feasibility of the changes to Business Center Drive outlined in the preceding section, Sam Schwartz performed capacity analysis for Future conditions. The following section details the methodologies utilized to estimate future traffic volumes and evaluate future traffic operations within the study area.

4.1. Future Traffic Projections

Future analysis was performed for Year 2033, reflecting Build-plus-ten conditions given the assumed project completion date in Year 2023. In order to estimate future background traffic for the Year 2033 design horizon, Year 2050 ADT projections were obtained from CMAP for Rand Road and Business Center Drive. CMAP provided projections for two scenarios: one with no geometric changes and one assuming a road diet on Business Center Drive in the subject area. Based on the projections provided, compounded annual growth rates were derived for each roadway, as summarized in ***Table 4***.

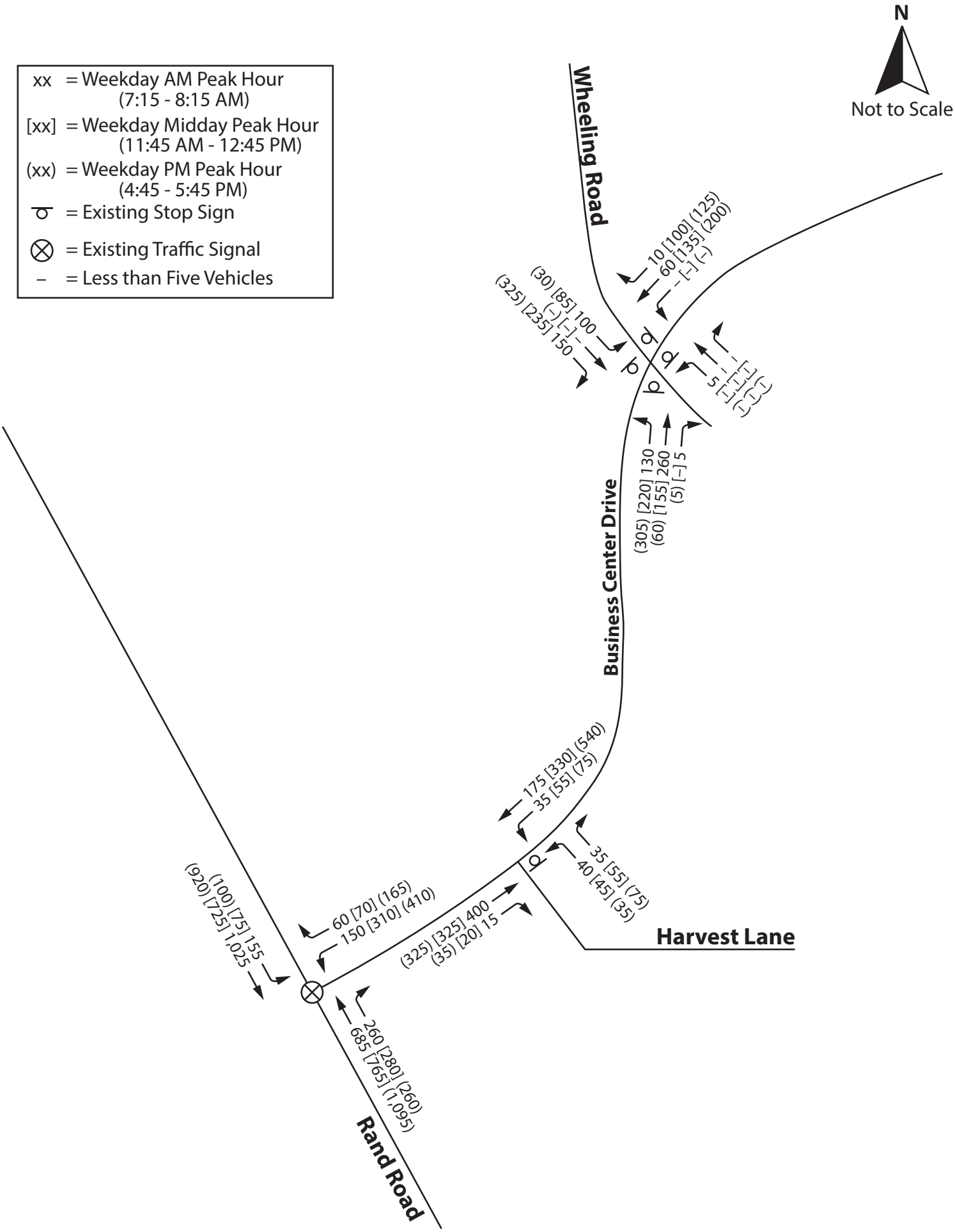
Table 4. CMAP Growth Rates

Roadway	Future Growth Rate[1]	
	No Road Diet	Road Diet
Rand Road	**0.50%**	0.70%
Business Center Drive	**0.60%**	-0.10%

[1]Full CMAP projections are included in the Appendix

As shown, with a road diet incorporated, CMAP's model projects volumes on Business Center Drive may potentially decline with the assumption that drivers would divert to roadways with more capacity. However, as previously noted, Business Center Drive primarily serves as an access roadway for local traffic associated with the Business Park and some cut-through movements. Its limited connectivity to the east and west make it an undesirable roadway for regional travel. As such, Sam Schwartz assumed travel patterns would remain similar to existing conditions after a road diet project to generate a conservative estimate of future traffic on Business Center Drive. As such, CMAP-provided growth rates without a road diet diversion were utilized.

These growth rates were applied to the existing (Year 2022) traffic volumes in the study area with the exception of Harvest Lane and the private driveway opposite Wheeling Road based on the assumption that the areas served by those roadways are largely fully developed. Area pedestrian and bicycle volumes were grown by two percent per year to account for background growth. Additionally, based on the understanding that the Kensington Business Park is currently approximately 96 percent occupied, no adjustments were made to account for vacant businesses that may be occupied in the future. The resulting volumes were added to existing volumes to yield Year 2033 Future Build traffic projections, illustrated on ***Figure 3***.



Sam Schwartz
A TYLin Company

Figure 3
Future (2033) Traffic Projections

4.2. Future Intersection Operations

To assess the impact of background traffic growth and geometric changes to Business Center Drive as described previously, capacity analyses were performed for the Year 2033 condition. In order to assess a conservative scenario, capacity analyses were performed for a condition without a center left-turn lane provided. As noted previously, the signalized intersection of Rand Road and Business Center Drive is expected to be interconnected with signals to the south on the Rand Road system. Apart from these adjustments and the assumed improvements to Business Center Drive, no other changes relative to the existing condition were incorporated into the Future scenario. Based on these assumptions, area traffic operations for this scenario are projected as shown in ***Table 5***.

Table 5. Future (Year 2033) Levels of Service

Approach	Lane Group[1]	Weekday Morning Peak Hour				Weekday Midday Peak Hour				Weekday Evening Peak Hour			
		Delay (s/veh)	LOS	v/c Ratio	Queue (ft)[4]	Delay (s/veh)	LOS	v/c Ratio	Queue (ft)[4]	Delay (s/veh)	LOS	v/c Ratio	Queue (ft)[4]
Business Center Drive & Rand Road[1]													
Westbound	L	57.8	E	0.53	95	55.4	E	0.67	165	54.3	D	0.73	209
	R	39.5	D	0.24	78	34.4	C	0.21	79	35.7	D	0.41	156
Northbound	T	8.0	A	0.30	156	10.5	B	0.34	202	14.4	B	0.50	350
	R	2.3	A	0.21	54	2.5	A	0.24	52	2.5	A	0.22	51
Southbound	L	3.8	A	0.28	41	4.9	A	0.17	30	7.5	A	0.31	42
	T	4.4	A	0.38	157	5.8	A	0.28	134	7.5	A	0.36	198
Intersection		*9.5*	*A*	–	–	*14.8*	*B*	–	–	*17.7*	*B*	–	–
Business Center Drive & Harvest Lane[2]													
Westbound	L	8.6	A	0.04	3	8.1	A	0.05	5	8.5	A	0.08	8
Northbound	L	17.3	C	0.14	13	18.1	C	0.15	13	33.2	D	0.25	23
	R	11.7	B	0.07	5	10.8	B	0.09	8	11.6	B	0.14	13
Business Center Drive & Wheeling Road[3]													
Eastbound	LTR	14.7	B	0.59	98	18.8	C	0.66	125	32.5	D	0.81	203
Westbound	LTR	8.8	A	0.11	10	12.1	B	0.41	50	42.8	E	0.86	220
Northbound	LTR	10.3	B	0.02	0	9.7	A	0.01	0	11.5	B	0.01	0
Southbound	LT	10.6	B	0.20	18	11.3	B	0.19	18	11.2	B	0.08	8
	R	9.4	A	0.24	23	12.6	B	0.43	53	24.8	C	0.72	150
Intersection		*12.4*	*B*	–	–	*14.8*	*B*	–	–	*32.6*	*D*	–	–

[1]Signalized Intersection
[2]Two-Way Stop-Controlled Intersection
[3]All-Way Stop-Controlled Intersection
[4]95th Percentile Queue

As shown, with the introduction of background traffic and geometric reconfiguration on Business Center Drive, delay is expected to increase for most intersection lane groups. At the intersection of Business Center Drive and Rand Road, the westbound left-turn lane group is expected to drop from LOS D to LOS E during the morning and midday peak hours. It should be reiterated that the lane configuration on this approach is not expected to be altered in the future condition. As such, increases in delay on this approach would likely be attributable to background growth and a fixed cycle length. It should be noted that at 57.8 and 55.4 seconds of delay (for the morning and midday peak hours, respectively), each approach very narrowly reaches the threshold of 55 seconds for LOS E established by the HCM. It should be noted that high delay on minor-leg approaches is not uncommon at intersections with major arterials, where long cycle lengths are expected to be installed along with the prioritization of mainline phasing on Rand Road. Additionally, the longest projected 95th percentile queue on this approach is projected to occur in the evening peak hour and reach a length of approximately 210 feet. This queue would be accommodated within the recommended storage on this approach, would not be expected to conflict with turning movements at Harvest Lane, and is projected to clear within a single cycle length.

At the intersection of Harvest Lane and Business Center Drive, the minor-leg stop-controlled approach of Harvest Lane is projected at LOS D or better during each peak hour. 95th percentile queues on this approach are projected at a maximum of approximately 25 feet, which would be accommodated within the existing storage provided.

At the all-way stop-controlled intersection of Business Center Drive with Wheeling Road, the reduced westbound approach is anticipated to drop to LOS E during the evening peak hour, with an average delay per vehicle of approximately 43 seconds. The average delay on the eastbound approach is projected at approximately 33 seconds per vehicle (LOS D). 95th percentile queues on the Business Center Drive approaches during this peak hour are projected at approximately eight to nine vehicles. While these anticipated delays and queues represent an increase relative to the existing condition at this intersection, these conditions would only be expected during the most critical 15-minute peak during the evening peak hour. It should also be noted that the intersection as a whole is expected to operate at LOS D or better during each peak hour. It should be noted that increases in vehicular delay are an expected trade-off associated with road diet projects, and should be considered against the benefits gained with additional bicycle and pedestrian infrastructure.

Alternate: At the request of the Village of Mount Prospect, Sam Schwartz also evaluated the three-lane configuration proposed in the Village Bike Plan. In addition to the background and proposed improvements at the intersection of Business Center Drive and Rand Road, this scenario includes the following adjustments relative to the preferred scenario:

- A three-lane section on Business Center Drive between Harvest Lane and Wheeling Road
- A dedicated westbound left-turn lane at Harvest Lane
- Dedicated eastbound and westbound left-turn lanes at Wheeling Road

A level-of-service table and discussion of future traffic operations under this scenario are included in the Appendix, along with supporting capacity analysis worksheets.

05. Conclusion & Recommendations

Based on the analyses detailed in this report and the generally acceptable level of performance shown during the study peak hours, a road diet configuration would be a feasible improvement to Business Center Drive between Rand Road and Wheeling Road. The following conclusions and recommendations were identified for the Village's use in implementation:

- At the intersection of Business Center Drive and Rand Road:
    - Reduce the number of receiving lanes on Business Center Drive from two to one eastbound lane.
    - Install a protected bike lane, including a striped buffer, on eastbound Business Center Drive between Rand Road and Harvest Lane.
    - Maintain three westbound lanes on Business Center Drive at the intersection and adjust lane striping to taper west of Harvest Lane.
    - Install a bike lane-to-sidewalk transition ramp on westbound Business Center Drive to divert bikes to sidewalk prior to the westbound right-turn taper.
    - Install "Walk Bikes to Intersection" signage on the sidewalk immediately downstream of the transition ramp.
- At the intersection of Business Center Drive and Harvest Lane:
    - Provide a single shared lane in each direction on the eastbound and westbound approaches of Business Center Drive.
    - Install sidewalk connecting to the midblock crosswalk on Business Center Drive to the west and to the shared-use path to the east.
    - Install a high-visibility crosswalk on the Harvest Lane approach and relocate the existing stop bar and storage lanes as appropriate.
- Along Business Center Drive between Harvest Lane and Wheeling Road, reduce the vehicle lanes to a single lane of travel in each direction and install protected bike lanes in each direction with a striped buffer.
- At the intersection of Business Center Drive and Wheeling Road, restripe the eastbound and westbound approaches of Business Center Drive to provide a single shared lane in each direction, with a single receiving lane.

It is expected that the above proposed road diet reconfiguration would adequately accommodate demand within the study area under Year 2033 conditions. Furthermore, as would be expected, the alternate capacity analysis results show implementing the three-lane section proposed in the 2012 Village Bicycle Plan that includes space for left-turn lanes at Harvest Lane and Wheeling Road is also a feasible improvement.

APPENDIX

2050 CMAP Traffic Projections

Three-Lane Section Scenario Analysis

Capacity Analysis Results

Raw Traffic Data

2050 CMAP Traffic Projections

Kyle Sant

From: Jose Rodriguez <JRodriguez@cmap.illinois.gov>
Sent: Monday, October 24, 2022 8:42 AM
To: Kyle Sant
Cc: Kelly Conolly
Subject: Preliminary Altered Network version of 2050 ADTs - Mount Prospect, Business Center Drive

Follow Up Flag: Follow up
Flag Status: Flagged

Kyle:

I ran the 3 alternate network assignments resulting in the following 2050 ADT results for no-change and road diet:

ROAD SEGMENT c21 q4 relocated centroid	Current ADT	No-Change 2050 ADT	Road Diet 2050 ADT
Rand Rd (US 12) north of Business Center Dr	20,000	**23,300**	**24,300**
Rand Rd (US 12) south of Business Center Dr	17,600	**20,500**	**21,400**
Business Center east of Rand Rd (US 12)	9,600	**11,200**	**9,300**

Please discuss with project team and reply whether these will be acceptable 2050 ADTs. The increase on the US 12 Rand Rd legs seems high, since it would be counterintuitive to use US 12 as an alternate unless these are longer length trips being discouraged from using a lower capacity Business Center Rd east of the Menards access areas; advise on whether to accept to higher ADT for Road Diet on Rand Rd or keep the same ADTs as with no build (assumption being that the lost volume from the road diet is straight through traffic from Business Center to the residential areas west of Rand Rd).

Thanks,

Jose

Jose Rodriguez, AICP, PTP
Senior Transportation Planner
Chicago Metropolitan Agency for Planning
433 West Van Buren Street
Suite 450
Chicago, IL 60607
jrodriguez@cmap.illinois.gov
voicemail: 312.386.8806
direct (cell): 708.334.1023

From: Kyle Sant <ksant@samschwartz.com>
Sent: Monday, October 17, 2022 3:11 PM

Three-Lane Section Scenario Analysis

Table A1. Future (Year 2033) Levels of Service (3-Lane Section)

Approach	Lane Group[1]	Weekday Morning Peak Hour				Weekday Midday Peak Hour				Weekday Evening Peak Hour			
		Delay (s/veh)	LOS	v/c Ratio	Queue (ft)[4]	Delay (s/veh)	LOS	v/c Ratio	Queue (ft)[4]	Delay (s/veh)	LOS	v/c Ratio	Queue (ft)[4]
Business Center Drive & Rand Road[1]													
Westbound	L	57.8	E	0.53	95	55.4	E	0.67	165	54.3	D	0.73	209
	R	39.5	D	0.24	78	34.4	C	0.21	79	35.7	D	0.41	156
Northbound	T	8.0	A	0.30	156	10.5	B	0.34	202	14.4	B	0.50	350
	R	2.3	A	0.21	54	2.5	A	0.24	52	2.5	A	0.22	51
Southbound	L	3.8	A	0.28	41	4.9	A	0.17	30	7.5	A	0.31	42
	T	4.4	A	0.38	157	5.8	A	0.28	134	7.5	A	0.36	198
Intersection		*9.5*	*A*	–	–	*14.8*	*B*	–	–	*17.7*	*B*	–	–
Business Center Drive & Harvest Lane[2]													
Westbound	L	8.6	A	0.04	3	8.1	A	0.05	5	8.5	A	0.08	8
Northbound	L	17.2	C	0.14	13	18.0	C	0.15	13	31.4	D	0.24	23
	R	11.7	B	0.07	5	10.8	B	0.09	8	11.6	B	0.14	13
Business Center Drive & Wheeling Road[3]													
Eastbound	L	10.5	B	0.24	23	14.9	B	0.46	60	28.5	D	0.75	158
	TR	12.6	B	0.45	58	11.5	B	0.30	33	10.7	B	0.15	13
Westbound	L	9.1	A	0.00	0	9.5	A	0.00	0	11.8	B	0.00	0
	TR	9.6	A	0.13	10	13.9	B	0.46	60	24.9	C	0.72	150
Northbound	LTR	10.8	B	0.02	3	10.2	B	0.01	0	11.6	B	0.01	0
Southbound	LT	10.7	B	0.20	18	11.3	B	0.19	18	11.0	B	0.08	8
	R	9.5	A	0.24	23	12.8	B	0.43	55	22.7	C	0.69	140
Intersection		*11.0*	*B*	–	–	*13.2*	*B*	–	–	*23.9*	*C*	–	–

[1]Signalized Intersection
[2]Two-Way Stop-Controlled Intersection
[3]All-Way Stop-Controlled Intersection
[4]95th Percentile Queue

As shown, with the three-lane section outlined in the Village Bicycle Plan, the intersections of Business Center Drive with Harvest Lane and Wheeling Road are expected to operate with less delay relative to the two-lane scenario. With the inclusion of dedicated left-turn lanes on the Business Center Drive approaches at these intersections, no approach is projected to operate at worse than LOS D.

Sam Schwartz
A TYLin Company

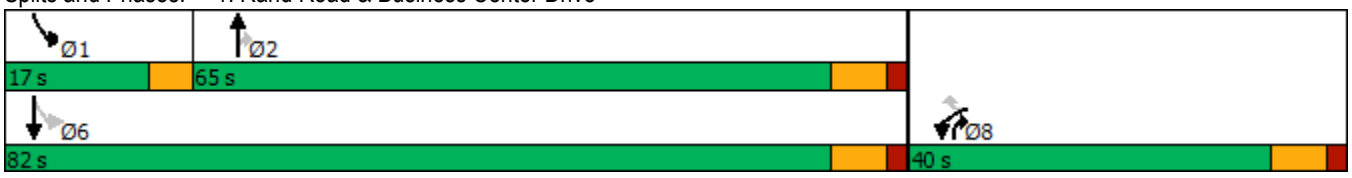
Capacity Analysis Results

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	140	55	645	245	145	965
Future Volume (vph)	140	55	645	245	145	965
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	0	0		185	275	
Storage Lanes	2	1		1	1	
Taper Length (ft)	0				140	
Satd. Flow (prot)	3213	1451	3619	1560	1752	3725
Flt Permitted	0.950				0.350	
Satd. Flow (perm)	3213	1423	3619	1560	646	3725
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		7				
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	9%	15%	5%	7%	3%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	151	59	694	263	156	1038
Turn Type	Prot	Perm	NA	pm+ov	pm+pt	NA
Protected Phases	8		2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	10.0	22.0	10.0	7.0	22.0
Total Split (s)	40.0	40.0	65.0	40.0	17.0	82.0
Total Split (%)	32.8%	32.8%	53.3%	32.8%	13.9%	67.2%
Maximum Green (s)	33.0	33.0	58.0	33.0	13.0	75.0
Yellow Time (s)	5.0	5.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	4.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	Max	None	None	None
Act Effct Green (s)	10.1	10.1	58.1	75.2	72.7	69.7
Actuated g/C Ratio	0.11	0.11	0.62	0.80	0.78	0.74
v/c Ratio	0.44	0.39	0.31	0.21	0.26	0.38
Control Delay	43.4	46.7	9.3	2.7	4.0	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.4	46.7	9.3	2.7	4.0	4.9
LOS	D	D	A	A	A	A
Approach Delay	44.3		7.5			4.8
Approach LOS	D		A			A
90th %ile Green (s)	14.2	14.2	58.0	14.2	9.5	71.5

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
70th %ile Green (s)	10.9	10.9	58.0	10.9	8.2	70.2
70th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
50th %ile Green (s)	9.8	9.8	58.0	9.8	7.5	69.5
50th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
30th %ile Green (s)	8.7	8.7	58.0	8.7	6.9	68.9
30th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
10th %ile Green (s)	7.2	7.2	58.0	7.2	6.2	68.2
10th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
Queue Length 50th (ft)	43	33	92	27	18	93
Queue Length 95th (ft)	75	74	147	51	39	147
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)				185	275	
Base Capacity (vph)	1131	501	2240	1555	654	2981
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	0.13	0.12	0.31	0.17	0.24	0.35

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 93.8			
Natural Cycle: 40			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 9.4		Intersection LOS: A	
Intersection Capacity Utilization 44.0%		ICU Level of Service A	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 99.7			
70th %ile Actuated Cycle: 95.1			
50th %ile Actuated Cycle: 93.3			
30th %ile Actuated Cycle: 91.6			
10th %ile Actuated Cycle: 89.4			

Splits and Phases: 1: Rand Road & Business Center Drive



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	375	15	35	160	40	35
Future Volume (vph)	375	15	35	160	40	35
Ideal Flow (vphpl)	2000	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	0		0	35
Storage Lanes		0	0		1	1
Taper Length (ft)			0		0	
Satd. Flow (prot)	3578	0	0	4812	1616	1568
Flt Permitted				0.991	0.950	
Satd. Flow (perm)	3578	0	0	4812	1616	1568
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Bikes (#/hr)		2				2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	5%	20%	6%	7%	8%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	464	0	0	232	48	42
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.9

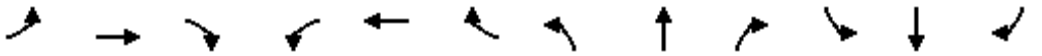
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	375	15	35	160	40	35
Future Vol, veh/h	375	15	35	160	40	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	5	20	6	7	8	3
Mvmt Flow	446	18	42	190	48	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	464	0	615	232
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	160	-
Critical Hdwy	-	-	4.22	-	6.41	6.96
Critical Hdwy Stg 1	-	-	-	-	5.96	-
Critical Hdwy Stg 2	-	-	-	-	6.16	-
Follow-up Hdwy	-	-	2.26	-	3.73	3.33
Pot Cap-1 Maneuver	-	-	1066	-	437	767
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	797	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1066	-	418	767
Mov Cap-2 Maneuver	-	-	-	-	418	-
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	762	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	418	767	-	-	1066	-
HCM Lane V/C Ratio	0.114	0.054	-	-	0.039	-
HCM Control Delay (s)	14.7	10	-	-	8.5	0.1
HCM Lane LOS	B	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0.1	-

Lanes, Volumes, Timings
3: Private Driveway/Wheeling Road & Business Center Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	245	5	1	55	10	5	1	1	95	1	140
Future Volume (vph)	120	245	5	1	55	10	5	1	1	95	1	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	12	12	12	10	10
Storage Length (ft)	0		0	0		120	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		1
Taper Length (ft)	0			0			0			0		
Satd. Flow (prot)	1694	1771	0	0	1627	1292	0	1152	0	0	1673	1507
Flt Permitted	0.950				0.999			0.964			0.953	
Satd. Flow (perm)	1694	1771	0	0	1627	1292	0	1152	0	0	1673	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	2		1	1		2			1	1		
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	6%	50%	0%	13%	25%	75%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	278	0	0	62	11	0	8	0	0	107	156
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	120	245	5	1	55	10	5	1	1	95	1	140
Future Vol, veh/h	120	245	5	1	55	10	5	1	1	95	1	140
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	6	50	0	13	25	75	0	0	1	0	0
Mvmt Flow	133	272	6	1	61	11	6	1	1	106	1	156
Number of Lanes	1	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	11.4	8.9	10.6	9.7
HCM LOS	B	A	B	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	71%	100%	0%	2%	0%	99%	0%
Vol Thru, %	14%	0%	98%	98%	0%	1%	0%
Vol Right, %	14%	0%	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	120	250	56	10	96	140
LT Vol	5	120	0	1	0	95	0
Through Vol	1	0	245	55	0	1	0
RT Vol	1	0	5	0	10	0	140
Lane Flow Rate	8	133	278	62	11	107	156
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.016	0.217	0.415	0.098	0.016	0.185	0.217
Departure Headway (Hd)	7.406	5.846	5.38	5.692	5.199	6.247	5.027
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	480	611	664	623	681	572	709
Service Time	5.504	3.613	3.146	3.483	2.989	4.013	2.793
HCM Lane V/C Ratio	0.017	0.218	0.419	0.1	0.016	0.187	0.22
HCM Control Delay	10.6	10.2	12	9.1	8.1	10.4	9.2
HCM Lane LOS	B	B	B	A	A	B	A
HCM 95th-tile Q	0	0.8	2	0.3	0	0.7	0.8

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	290	65	720	260	70	685
Future Volume (vph)	290	65	720	260	70	685
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	0	0		185	275	
Storage Lanes	2	1		1	1	
Taper Length (ft)	0				140	
Satd. Flow (prot)	3367	1589	3689	1589	1641	3689
Flt Permitted	0.950				0.319	
Satd. Flow (perm)	3367	1563	3689	1568	551	3689
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		4		3	3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	5%	3%	5%	10%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	305	68	758	274	74	721
Turn Type	Prot	Perm	NA	pm+ov	pm+pt	NA
Protected Phases	8		2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	10.0	22.0	10.0	7.0	22.0
Total Split (s)	40.0	40.0	65.0	40.0	17.0	82.0
Total Split (%)	32.8%	32.8%	53.3%	32.8%	13.9%	67.2%
Maximum Green (s)	33.0	33.0	58.0	33.0	13.0	75.0
Yellow Time (s)	5.0	5.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	4.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	Max	None	None	None
Act Effct Green (s)	14.2	14.2	58.4	72.6	70.0	67.0
Actuated g/C Ratio	0.15	0.15	0.61	0.76	0.73	0.70
v/c Ratio	0.61	0.29	0.34	0.23	0.15	0.28
Control Delay	43.7	40.2	10.5	2.7	4.8	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	40.2	10.5	2.7	4.8	5.8
LOS	D	D	B	A	A	A
Approach Delay	43.1		8.4			5.7
Approach LOS	D		A			A
90th %ile Green (s)	19.2	19.2	58.0	19.2	8.2	70.2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
70th %ile Green (s)	16.7	16.7	58.0	16.7	7.3	69.3
70th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
50th %ile Green (s)	14.0	14.0	58.0	14.0	6.7	68.7
50th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
30th %ile Green (s)	12.4	12.4	58.0	12.4	6.2	68.2
30th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
10th %ile Green (s)	9.7	9.7	58.0	9.7	0.0	58.0
10th %ile Term Code	Gap	Gap	MaxR	Gap	Skip	Hold
Queue Length 50th (ft)	92	38	114	27	10	72
Queue Length 95th (ft)	137	79	177	48	26	115
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)				185	275	
Base Capacity (vph)	1173	544	2260	1436	554	2922
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	0.26	0.13	0.34	0.19	0.13	0.25

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 95.3			
Natural Cycle: 40			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 46.1%		ICU Level of Service A	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 103.4			
70th %ile Actuated Cycle: 100			
50th %ile Actuated Cycle: 96.7			
30th %ile Actuated Cycle: 94.6			
10th %ile Actuated Cycle: 81.7			

Splits and Phases: 1: Rand Road & Business Center Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	300	20	55	305	45	55
Future Volume (vph)	300	20	55	305	45	55
Ideal Flow (vphpl)	2000	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	0		0	35
Storage Lanes		0	0		1	1
Taper Length (ft)			0		0	
Satd. Flow (prot)	3536	0	0	5018	1662	1538
Flt Permitted				0.992	0.950	
Satd. Flow (perm)	3536	0	0	5018	1662	1538
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	14%	0%	3%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	337	0	0	379	47	58
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.0%		ICU Level of Service A	
Analysis Period (min) 15			

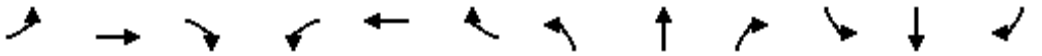
Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	300	20	55	305	45	55
Future Vol, veh/h	300	20	55	305	45	55
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	6	14	0	3	5	5
Mvmt Flow	316	21	58	321	47	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	338	0	572	170
Stage 1	-	-	-	-	328	-
Stage 2	-	-	-	-	244	-
Critical Hdwy	-	-	4.1	-	6.35	7
Critical Hdwy Stg 1	-	-	-	-	5.9	-
Critical Hdwy Stg 2	-	-	-	-	6.1	-
Follow-up Hdwy	-	-	2.2	-	3.7	3.35
Pot Cap-1 Maneuver	-	-	1232	-	469	835
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1231	-	442	834
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	669	-
Stage 2	-	-	-	-	687	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	442	834	-	-	1231	-
HCM Lane V/C Ratio	0.107	0.069	-	-	0.047	-
HCM Control Delay (s)	14.1	9.6	-	-	8.1	0.1
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	145	1	2	125	95	2	1	2	80	2	220
Future Volume (vph)	205	145	1	2	125	95	2	1	2	80	2	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	12	12	12	10	10
Storage Length (ft)	0		0	0		120	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		1
Taper Length (ft)	0			0			0			0		
Satd. Flow (prot)	1694	1791	0	0	1716	1615	0	1761	0	0	1690	1507
Flt Permitted	0.950				0.999			0.980			0.953	
Satd. Flow (perm)	1694	1791	0	0	1716	1615	0	1761	0	0	1690	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	2		1	1		2						
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	3%	6%	0%	0%	7%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	236	168	0	0	146	109	0	5	0	0	94	253
Sign Control		Stop			Stop			Stop			Stop	

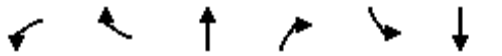
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	205	145	1	2	125	95	2	1	2	80	2	220
Future Vol, veh/h	205	145	1	2	125	95	2	1	2	80	2	220
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	6	0	0	7	0	0	0	0	0	0	0
Mvmt Flow	236	167	1	2	144	109	2	1	2	92	2	253
Number of Lanes	1	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	12.6	10.3	9.9	11.6
HCM LOS	B	B	A	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	40%	100%	0%	2%	0%	98%	0%
Vol Thru, %	20%	0%	99%	98%	0%	2%	0%
Vol Right, %	40%	0%	1%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	205	146	127	95	82	220
LT Vol	2	205	0	2	0	80	0
Through Vol	1	0	145	125	0	2	0
RT Vol	2	0	1	0	95	0	220
Lane Flow Rate	6	236	168	146	109	94	253
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.011	0.421	0.278	0.248	0.167	0.177	0.39
Departure Headway (Hd)	6.726	6.431	5.972	6.116	5.518	6.76	5.559
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	531	561	602	587	650	532	647
Service Time	4.779	4.164	3.704	3.854	3.256	4.496	3.294
HCM Lane V/C Ratio	0.011	0.421	0.279	0.249	0.168	0.177	0.391
HCM Control Delay	9.9	13.8	11	10.9	9.4	11	11.8
HCM Lane LOS	A	B	B	B	A	B	B
HCM 95th-tile Q	0	2.1	1.1	1	0.6	0.6	1.8



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	385	155	1035	240	95	870
Future Volume (vph)	385	155	1035	240	95	870
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	0	0		185	275	
Storage Lanes	2	1		1	1	
Taper Length (ft)	0				140	
Satd. Flow (prot)	3467	1669	3762	1620	1752	3762
Flt Permitted	0.950				0.190	
Satd. Flow (perm)	3467	1629	3762	1597	350	3762
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		11		4	4	
Confl. Bikes (#/hr)				3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	3%	3%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	405	163	1089	253	100	916
Turn Type	Prot	Perm	NA	pm+ov	pm+pt	NA
Protected Phases	8		2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	10.0	22.0	10.0	7.0	22.0
Total Split (s)	40.0	40.0	65.0	40.0	17.0	82.0
Total Split (%)	32.8%	32.8%	53.3%	32.8%	13.9%	67.2%
Maximum Green (s)	33.0	33.0	58.0	33.0	13.0	75.0
Yellow Time (s)	5.0	5.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	4.0	7.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	Max	None	None	None
Act Effct Green (s)	17.7	17.7	58.2	75.9	72.6	69.5
Actuated g/C Ratio	0.17	0.17	0.57	0.75	0.72	0.69
v/c Ratio	0.67	0.57	0.50	0.21	0.28	0.35
Control Delay	44.8	46.7	14.6	2.8	7.0	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	46.7	14.6	2.8	7.0	7.4
LOS	D	D	B	A	A	A
Approach Delay	45.3		12.4			7.4
Approach LOS	D		B			A

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Green (s)	24.0	24.0	58.0	24.0	9.3	71.3
90th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
70th %ile Green (s)	19.9	19.9	58.0	19.9	8.0	70.0
70th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
50th %ile Green (s)	17.9	17.9	58.0	17.9	7.2	69.2
50th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
30th %ile Green (s)	15.0	15.0	58.0	15.0	6.6	68.6
30th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
10th %ile Green (s)	12.5	12.5	58.0	12.5	5.9	67.9
10th %ile Term Code	Gap	Gap	MaxR	Gap	Gap	Hold
Queue Length 50th (ft)	126	97	207	25	17	114
Queue Length 95th (ft)	179	167	314	47	39	177
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)				185	275	
Base Capacity (vph)	1132	532	2160	1432	431	2793
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	0.36	0.31	0.50	0.18	0.23	0.33

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 101.3			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 58.4%		ICU Level of Service B	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 109.3			
70th %ile Actuated Cycle: 103.9			
50th %ile Actuated Cycle: 101.1			
30th %ile Actuated Cycle: 97.6			
10th %ile Actuated Cycle: 94.4			

Splits and Phases: 1: Rand Road & Business Center Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	300	35	75	505	35	75
Future Volume (vph)	300	35	75	505	35	75
Ideal Flow (vphpl)	2000	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	0		0	35
Storage Lanes		0	0		1	1
Taper Length (ft)			0		0	
Satd. Flow (prot)	3630	0	0	5105	1745	1599
Flt Permitted				0.994	0.950	
Satd. Flow (perm)	3630	0	0	5105	1745	1599
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Peds. (#/hr)		2	2			
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	403	0	0	698	42	90
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.9%		ICU Level of Service A	
Analysis Period (min) 15			

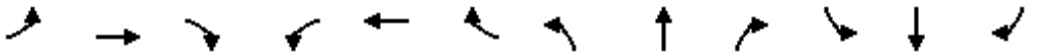
Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	300	35	75	505	35	75
Future Vol, veh/h	300	35	75	505	35	75
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	1	1	0	1
Mvmt Flow	361	42	90	608	42	90

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	405	0	807	204
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	423	-
Critical Hdwy	-	-	4.12	-	6.25	6.92
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	-	-	2.21	-	3.65	3.31
Pot Cap-1 Maneuver	-	-	1157	-	356	806
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1155	-	313	805
Mov Cap-2 Maneuver	-	-	-	-	313	-
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	528	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	313	805	-	-	1155	-
HCM Lane V/C Ratio	0.135	0.112	-	-	0.078	-
HCM Control Delay (s)	18.3	10	-	-	8.4	0.2
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	0.4	-	-	0.3	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	285	55	5	1	185	115	2	1	1	30	1	305
Future Volume (vph)	285	55	5	1	185	115	2	1	1	30	1	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	12	12	12	10	10
Storage Length (ft)	0		0	0		120	0		0	0		0
Storage Lanes	1		0	0		1	0		0	0		1
Taper Length (ft)	0			0			0			0		
Satd. Flow (prot)	1728	1695	0	0	1793	1615	0	1791	0	0	1692	1507
Flt Permitted	0.950							0.976			0.954	
Satd. Flow (perm)	1728	1695	0	0	1793	1615	0	1791	0	0	1692	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	10					10						
Confl. Bikes (#/hr)												3
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	5%	75%	100%	2%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	348	73	0	0	227	140	0	4	0	0	38	372
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	18.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	285	55	5	1	185	115	2	1	1	30	1	305
Future Vol, veh/h	285	55	5	1	185	115	2	1	1	30	1	305
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	1	5	75	100	2	0	0	0	0	0	0	0
Mvmt Flow	348	67	6	1	226	140	2	1	1	37	1	372
Number of Lanes	1	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	21.1	16.3	11.1	18.2
HCM LOS	C	C	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	50%	100%	0%	1%	0%	97%	0%
Vol Thru, %	25%	0%	92%	99%	0%	3%	0%
Vol Right, %	25%	0%	8%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	285	60	186	115	31	305
LT Vol	2	285	0	1	0	30	0
Through Vol	1	0	55	185	0	1	0
RT Vol	1	0	5	0	115	0	305
Lane Flow Rate	5	348	73	227	140	38	372
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.011	0.677	0.132	0.522	0.229	0.077	0.633
Departure Headway (Hd)	8.017	7.008	6.508	8.285	5.868	7.334	6.13
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	449	514	548	433	607	486	584
Service Time	6.017	4.787	4.286	6.07	3.651	5.115	3.91
HCM Lane V/C Ratio	0.011	0.677	0.133	0.524	0.231	0.078	0.637
HCM Control Delay	11.1	23.4	10.3	19.9	10.4	10.7	19
HCM Lane LOS	B	C	B	C	B	B	C
HCM 95th-tile Q	0	5	0.5	2.9	0.9	0.2	4.4

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	150	60	685	260	155	1025
Future Volume (vph)	150	60	685	260	155	1025
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	210	210		185	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	155				140	
Satd. Flow (prot)	3213	1451	3619	1560	1752	3725
Flt Permitted	0.950				0.341	
Satd. Flow (perm)	3213	1424	3619	1560	629	3725
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		9				
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	9%	15%	5%	7%	3%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	161	65	737	280	167	1102
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	7.0	22.0	10.0	7.0	22.0
Total Split (s)	31.0	25.0	64.0	31.0	25.0	89.0
Total Split (%)	25.8%	20.8%	53.3%	25.8%	20.8%	74.2%
Maximum Green (s)	24.0	21.0	57.0	24.0	21.0	82.0
Yellow Time (s)	5.0	4.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	0.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	7.0	7.0	4.0	7.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	C-Max	None	None	C-Max
Act Effct Green (s)	11.4	22.3	82.7	101.1	97.6	94.6
Actuated g/C Ratio	0.10	0.19	0.69	0.84	0.81	0.79
v/c Ratio	0.53	0.24	0.30	0.21	0.28	0.38
Control Delay	57.8	39.5	8.0	2.3	3.8	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.8	39.5	8.0	2.3	3.8	4.4
LOS	E	D	A	A	A	A
Approach Delay	52.6		6.4			4.3
Approach LOS	D		A			A
90th %ile Green (s)	14.6	9.9	77.5	14.6	9.9	91.4

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
70th %ile Green (s)	12.7	8.6	80.7	12.7	8.6	93.3
70th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
50th %ile Green (s)	11.4	7.8	82.8	11.4	7.8	94.6
50th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
30th %ile Green (s)	10.0	7.1	84.9	10.0	7.1	96.0
30th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
10th %ile Green (s)	8.1	6.3	87.6	8.1	6.3	97.9
10th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
Queue Length 50th (ft)	62	42	105	30	21	111
Queue Length 95th (ft)	95	78	156	54	41	157
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)	210	210		185	275	
Base Capacity (vph)	642	424	2494	1478	708	2937
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	0.25	0.15	0.30	0.19	0.24	0.38

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 25 (21%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Rand Road & Business Center Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	400	15	35	175	40	35
Future Volume (vph)	400	15	35	175	40	35
Ideal Flow (vphpl)	2000	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	0		0	35
Storage Lanes		0	0		1	1
Taper Length (ft)			0		0	
Satd. Flow (prot)	1885	0	0	1764	1616	1568
Flt Permitted				0.992	0.950	
Satd. Flow (perm)	1885	0	0	1764	1616	1568
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Bikes (#/hr)		2				2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	5%	20%	6%	7%	8%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	494	0	0	250	48	42
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.3%		ICU Level of Service A	
Analysis Period (min) 15			

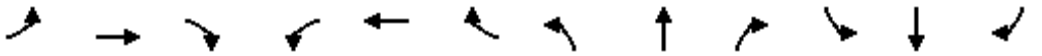
Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	400	15	35	175	40	35
Future Vol, veh/h	400	15	35	175	40	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	5	20	6	7	8	3
Mvmt Flow	476	18	42	208	48	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	494	0	777	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	292	-
Critical Hdwy	-	-	4.16	-	6.48	6.23
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	2.254	-	3.572	3.327
Pot Cap-1 Maneuver	-	-	1049	-	357	580
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	744	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1049	-	341	580
Mov Cap-2 Maneuver	-	-	-	-	341	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	711	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	14.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	341	580	-	-	1049	-
HCM Lane V/C Ratio	0.14	0.072	-	-	0.04	-
HCM Control Delay (s)	17.3	11.7	-	-	8.6	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	260	5	1	60	10	5	1	1	100	1	150
Future Volume (vph)	130	260	5	1	60	10	5	1	1	100	1	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	12	12	12	10	10
Storage Length (ft)	0		0	0		120	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	0			0			0			0		
Satd. Flow (prot)	0	1767	0	0	1572	0	0	1152	0	0	1673	1507
Flt Permitted		0.984			0.999			0.964			0.953	
Satd. Flow (perm)	0	1767	0	0	1572	0	0	1152	0	0	1673	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	2		1	1		2			1	1		
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	6%	50%	0%	13%	25%	75%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	439	0	0	79	0	0	8	0	0	112	167
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	260	5	1	60	10	5	1	1	100	1	150
Future Vol, veh/h	130	260	5	1	60	10	5	1	1	100	1	150
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	6	50	0	13	25	75	0	0	1	0	0
Mvmt Flow	144	289	6	1	67	11	6	1	1	111	1	167
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	14.7	8.8	10.3	9.9
HCM LOS	B	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	71%	33%	1%	99%	0%
Vol Thru, %	14%	66%	85%	1%	0%
Vol Right, %	14%	1%	14%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	395	71	101	150
LT Vol	5	130	1	100	0
Through Vol	1	260	60	1	0
RT Vol	1	5	10	0	150
Lane Flow Rate	8	439	79	112	167
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.015	0.589	0.112	0.196	0.234
Departure Headway (Hd)	7.157	4.835	5.098	6.284	5.058
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	503	742	695	567	702
Service Time	5.157	2.893	3.187	4.07	2.843
HCM Lane V/C Ratio	0.016	0.592	0.114	0.198	0.238
HCM Control Delay	10.3	14.7	8.8	10.6	9.4
HCM Lane LOS	B	B	A	B	A
HCM 95th-tile Q	0	3.9	0.4	0.7	0.9

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	310	70	765	280	75	725
Future Volume (vph)	310	70	765	280	75	725
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	210	210		185	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	155				140	
Satd. Flow (prot)	3367	1589	3689	1589	1641	3689
Flt Permitted	0.950				0.305	
Satd. Flow (perm)	3367	1564	3689	1553	526	3689
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		5		4	4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	5%	3%	5%	10%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	74	805	295	79	763
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	7.0	22.0	10.0	7.0	22.0
Total Split (s)	38.0	16.0	66.0	38.0	16.0	82.0
Total Split (%)	31.7%	13.3%	55.0%	31.7%	13.3%	68.3%
Maximum Green (s)	31.0	12.0	59.0	31.0	12.0	75.0
Yellow Time (s)	5.0	4.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	0.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	7.0	7.0	4.0	7.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	C-Max	None	None	C-Max
Act Effct Green (s)	17.3	27.3	77.7	95.0	91.7	88.7
Actuated g/C Ratio	0.14	0.23	0.65	0.79	0.76	0.74
v/c Ratio	0.67	0.21	0.34	0.24	0.17	0.28
Control Delay	55.4	34.4	10.5	2.5	4.9	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.4	34.4	10.5	2.5	4.9	5.8
LOS	E	C	B	A	A	A
Approach Delay	51.6		8.4			5.7
Approach LOS	D		A			A
90th %ile Green (s)	22.3	8.6	71.1	22.3	8.6	83.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
70th %ile Green (s)	19.7	7.5	74.8	19.7	7.5	86.3
70th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
50th %ile Green (s)	16.9	6.9	78.2	16.9	6.9	89.1
50th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
30th %ile Green (s)	15.1	6.3	80.6	15.1	6.3	90.9
30th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
10th %ile Green (s)	12.4	5.7	83.9	12.4	5.7	93.6
10th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
Queue Length 50th (ft)	125	45	134	30	13	87
Queue Length 95th (ft)	165	79	202	52	30	134
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)	210	210		185	275	
Base Capacity (vph)	869	423	2389	1411	513	2727
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	0.17	0.34	0.21	0.15	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 16 (13%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Rand Road & Business Center Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	325	20	55	330	45	55
Future Volume (vph)	325	20	55	330	45	55
Ideal Flow (vphpl)	2000	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	0		0	35
Storage Lanes		0	0		1	1
Taper Length (ft)			0		0	
Satd. Flow (prot)	1864	0	0	1839	1662	1538
Flt Permitted				0.993	0.950	
Satd. Flow (perm)	1864	0	0	1839	1662	1538
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	14%	0%	3%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	363	0	0	405	47	58
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.1%		ICU Level of Service A	
Analysis Period (min) 15			

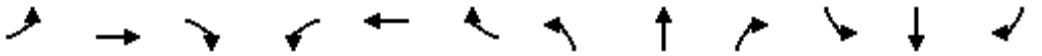
Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	325	20	55	330	45	55
Future Vol, veh/h	325	20	55	330	45	55
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	6	14	0	3	5	5
Mvmt Flow	342	21	58	347	47	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	364	0	817	354
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	463	-
Critical Hdwy	-	-	4.1	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.2	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	1206	-	342	683
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1205	-	321	682
Mov Cap-2 Maneuver	-	-	-	-	321	-
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	589	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	321	682	-	-	1205	-
HCM Lane V/C Ratio	0.148	0.085	-	-	0.048	-
HCM Control Delay (s)	18.1	10.8	-	-	8.1	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	0.3	-	-	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	155	1	2	135	100	2	1	2	85	2	235
Future Volume (vph)	220	155	1	2	135	100	2	1	2	85	2	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	12	12	12	10	10
Storage Length (ft)	0		0	0		120	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	0			0			0			0		
Satd. Flow (prot)	0	1772	0	0	1666	0	0	1761	0	0	1690	1507
Flt Permitted		0.972						0.980			0.953	
Satd. Flow (perm)	0	1772	0	0	1666	0	0	1761	0	0	1690	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	2		1	1		2						
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	3%	6%	0%	0%	7%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	432	0	0	272	0	0	5	0	0	100	270
Sign Control		Stop			Stop			Stop			Stop	

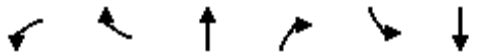
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	220	155	1	2	135	100	2	1	2	85	2	235
Future Vol, veh/h	220	155	1	2	135	100	2	1	2	85	2	235
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	6	0	0	7	0	0	0	0	0	0	0
Mvmt Flow	253	178	1	2	155	115	2	1	2	98	2	270
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	18.8	12.1	9.7	12.2
HCM LOS	C	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	40%	59%	1%	98%	0%
Vol Thru, %	20%	41%	57%	2%	0%
Vol Right, %	40%	0%	42%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	376	237	87	235
LT Vol	2	220	2	85	0
Through Vol	1	155	135	2	0
RT Vol	2	1	100	0	235
Lane Flow Rate	6	432	272	100	270
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.01	0.663	0.406	0.191	0.426
Departure Headway (Hd)	6.516	5.523	5.371	6.885	5.675
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	546	653	667	521	632
Service Time	4.595	3.563	3.418	4.631	3.421
HCM Lane V/C Ratio	0.011	0.662	0.408	0.192	0.427
HCM Control Delay	9.7	18.8	12.1	11.3	12.6
HCM Lane LOS	A	C	B	B	B
HCM 95th-tile Q	0	5	2	0.7	2.1

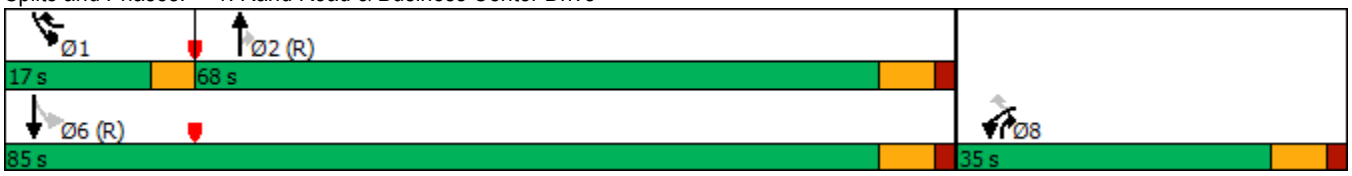


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	410	165	1095	260	100	920
Future Volume (vph)	410	165	1095	260	100	920
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	210	210		185	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	155				140	
Satd. Flow (prot)	3467	1669	3762	1620	1752	3762
Flt Permitted	0.950				0.181	
Satd. Flow (perm)	3467	1629	3762	1580	334	3762
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		14		5	5	
Confl. Bikes (#/hr)				3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	3%	3%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	174	1153	274	105	968
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	7.0	22.0	10.0	7.0	22.0
Total Split (s)	35.0	17.0	68.0	35.0	17.0	85.0
Total Split (%)	29.2%	14.2%	56.7%	29.2%	14.2%	70.8%
Maximum Green (s)	28.0	13.0	61.0	28.0	13.0	78.0
Yellow Time (s)	5.0	4.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	0.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	7.0	7.0	4.0	7.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	C-Max	None	None	C-Max
Act Effct Green (s)	20.5	31.1	73.9	94.4	88.5	85.5
Actuated g/C Ratio	0.17	0.26	0.62	0.79	0.74	0.71
v/c Ratio	0.73	0.41	0.50	0.22	0.31	0.36
Control Delay	54.3	35.7	14.4	2.5	7.5	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	35.7	14.4	2.5	7.5	7.5
LOS	D	D	B	A	A	A
Approach Delay	49.0		12.1			7.5
Approach LOS	D		B			A

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Green (s)	25.9	9.6	66.5	25.9	9.6	80.1
90th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
70th %ile Green (s)	23.1	8.3	70.6	23.1	8.3	82.9
70th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
50th %ile Green (s)	20.2	7.4	74.4	20.2	7.4	85.8
50th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
30th %ile Green (s)	18.2	6.8	77.0	18.2	6.8	87.8
30th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
10th %ile Green (s)	15.2	6.0	80.8	15.2	6.0	90.8
10th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
Queue Length 50th (ft)	165	107	241	28	20	134
Queue Length 95th (ft)	209	156	350	51	42	198
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)	210	210		185	275	
Base Capacity (vph)	808	500	2315	1350	399	2679
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	0.53	0.35	0.50	0.20	0.26	0.36

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 17 (14%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Rand Road & Business Center Drive



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	325	35	75	540	35	75
Future Volume (vph)	325	35	75	540	35	75
Ideal Flow (vphpl)	2000	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	0		0	35
Storage Lanes		0	0		1	1
Taper Length (ft)			0		0	
Satd. Flow (prot)	1917	0	0	1870	1745	1599
Flt Permitted				0.994	0.950	
Satd. Flow (perm)	1917	0	0	1870	1745	1599
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Peds. (#/hr)		2	2			
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	434	0	0	741	42	90
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	325	35	75	540	35	75
Future Vol, veh/h	325	35	75	540	35	75
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	1	1	0	1
Mvmt Flow	392	42	90	651	42	90

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	436	0	1246	415
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	831	-
Critical Hdwy	-	-	4.11	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1129	-	194	640
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1127	-	169	639
Mov Cap-2 Maneuver	-	-	-	-	169	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	377	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	18.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	169	639	-	-	1127	-
HCM Lane V/C Ratio	0.25	0.141	-	-	0.08	-
HCM Control Delay (s)	33.2	11.6	-	-	8.5	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	0.5	-	-	0.3	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	60	5	1	200	125	2	1	1	30	1	325
Future Volume (vph)	305	60	5	1	200	125	2	1	1	30	1	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	12	12	12	10	10
Storage Length (ft)	0		0	0		120	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	0			0			0			0		
Satd. Flow (prot)	0	1774	0	0	1716	0	0	1791	0	0	1692	1507
Flt Permitted		0.960						0.976			0.954	
Satd. Flow (perm)	0	1774	0	0	1716	0	0	1791	0	0	1692	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	12					12						
Confl. Bikes (#/hr)												4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	5%	75%	100%	2%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	451	0	0	397	0	0	4	0	0	38	396
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	32.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	305	60	5	1	200	125	2	1	1	30	1	325
Future Vol, veh/h	305	60	5	1	200	125	2	1	1	30	1	325
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	1	5	75	100	2	0	0	0	0	0	0	0
Mvmt Flow	372	73	6	1	244	152	2	1	1	37	1	396
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	32.5	42.8	11.5	23.6
HCM LOS	D	E	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	50%	82%	0%	97%	0%
Vol Thru, %	25%	16%	61%	3%	0%
Vol Right, %	25%	1%	38%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	370	326	31	325
LT Vol	2	305	1	30	0
Through Vol	1	60	200	1	0
RT Vol	1	5	125	0	325
Lane Flow Rate	5	451	398	38	396
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.011	0.817	0.86	0.082	0.724
Departure Headway (Hd)	8.353	6.515	7.789	7.794	6.577
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	426	555	465	460	551
Service Time	6.45	4.561	5.837	5.536	4.319
HCM Lane V/C Ratio	0.012	0.813	0.856	0.083	0.719
HCM Control Delay	11.5	32.5	42.8	11.2	24.8
HCM Lane LOS	B	D	E	B	C
HCM 95th-tile Q	0	8.1	8.8	0.3	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	150	60	685	260	155	1025
Future Volume (vph)	150	60	685	260	155	1025
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	210	210		185	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	155				140	
Satd. Flow (prot)	3213	1451	3619	1560	1752	3725
Flt Permitted	0.950				0.341	
Satd. Flow (perm)	3213	1424	3619	1560	629	3725
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		9				
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	9%	15%	5%	7%	3%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	161	65	737	280	167	1102
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	7.0	22.0	10.0	7.0	22.0
Total Split (s)	31.0	25.0	64.0	31.0	25.0	89.0
Total Split (%)	25.8%	20.8%	53.3%	25.8%	20.8%	74.2%
Maximum Green (s)	24.0	21.0	57.0	24.0	21.0	82.0
Yellow Time (s)	5.0	4.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	0.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	7.0	7.0	4.0	7.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	C-Max	None	None	C-Max
Act Effct Green (s)	11.4	22.3	82.7	101.1	97.6	94.6
Actuated g/C Ratio	0.10	0.19	0.69	0.84	0.81	0.79
v/c Ratio	0.53	0.24	0.30	0.21	0.28	0.38
Control Delay	57.8	39.5	8.0	2.3	3.8	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.8	39.5	8.0	2.3	3.8	4.4
LOS	E	D	A	A	A	A
Approach Delay	52.6		6.4			4.3
Approach LOS	D		A			A
90th %ile Green (s)	14.6	9.9	77.5	14.6	9.9	91.4

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
70th %ile Green (s)	12.7	8.6	80.7	12.7	8.6	93.3
70th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
50th %ile Green (s)	11.4	7.8	82.8	11.4	7.8	94.6
50th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
30th %ile Green (s)	10.0	7.1	84.9	10.0	7.1	96.0
30th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
10th %ile Green (s)	8.1	6.3	87.6	8.1	6.3	97.9
10th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
Queue Length 50th (ft)	62	42	105	30	21	111
Queue Length 95th (ft)	95	78	156	54	41	157
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)	210	210		185	275	
Base Capacity (vph)	642	424	2494	1478	708	2937
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	0.25	0.15	0.30	0.19	0.24	0.38

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 25 (21%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Rand Road & Business Center Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	400	15	35	175	40	35
Future Volume (vph)	400	15	35	175	40	35
Ideal Flow (vphpl)	1900	1900	1900	2000	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	125		0	35
Storage Lanes		0	1		1	1
Taper Length (ft)			155		0	
Satd. Flow (prot)	1791	0	1703	1869	1616	1568
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1791	0	1703	1869	1616	1568
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Bikes (#/hr)		2				2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	5%	20%	6%	7%	8%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	494	0	42	208	48	42
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.6%		ICU Level of Service A	
Analysis Period (min) 15			

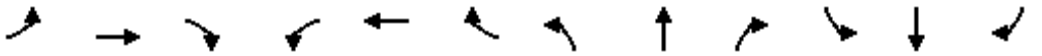
Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	400	15	35	175	40	35
Future Vol, veh/h	400	15	35	175	40	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	5	20	6	7	8	3
Mvmt Flow	476	18	42	208	48	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	494	0	777	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	292	-
Critical Hdwy	-	-	4.16	-	6.48	6.23
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	2.254	-	3.572	3.327
Pot Cap-1 Maneuver	-	-	1049	-	357	580
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	744	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1049	-	343	580
Mov Cap-2 Maneuver	-	-	-	-	343	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	714	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	343	580	-	-	1049	-
HCM Lane V/C Ratio	0.139	0.072	-	-	0.04	-
HCM Control Delay (s)	17.2	11.7	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	260	5	1	60	10	5	1	1	100	1	150
Future Volume (vph)	130	260	5	1	60	10	5	1	1	100	1	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	10	10
Storage Length (ft)	165		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	155			155			0			0		
Satd. Flow (prot)	1752	1772	0	1805	1622	0	0	1152	0	0	1673	1507
Flt Permitted	0.950			0.950				0.964			0.953	
Satd. Flow (perm)	1752	1772	0	1805	1622	0	0	1152	0	0	1673	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	2		1	1		2			1	1		
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	6%	50%	0%	13%	25%	75%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	295	0	1	78	0	0	8	0	0	112	167
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	260	5	1	60	10	5	1	1	100	1	150
Future Vol, veh/h	130	260	5	1	60	10	5	1	1	100	1	150
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	6	50	0	13	25	75	0	0	1	0	0
Mvmt Flow	144	289	6	1	67	11	6	1	1	111	1	167
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	11.9	9.6	10.8	10
HCM LOS	B	A	B	A

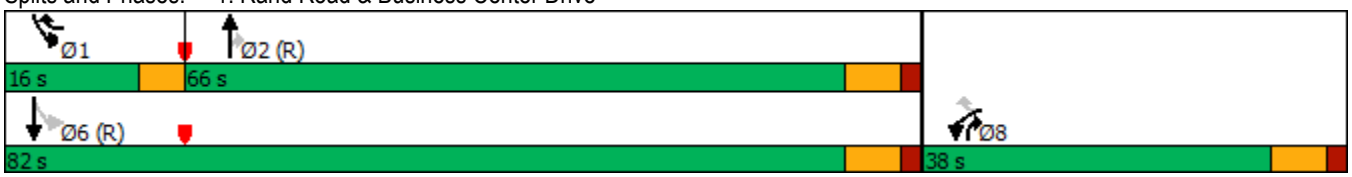
Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	71%	100%	0%	100%	0%	99%	0%
Vol Thru, %	14%	0%	98%	0%	86%	1%	0%
Vol Right, %	14%	0%	2%	0%	14%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	130	265	1	70	101	150
LT Vol	5	130	0	1	0	100	0
Through Vol	1	0	260	0	60	1	0
RT Vol	1	0	5	0	10	0	150
Lane Flow Rate	8	144	294	1	78	112	167
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.017	0.237	0.445	0.002	0.13	0.198	0.237
Departure Headway (Hd)	7.641	5.903	5.438	6.385	6.001	6.336	5.115
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	604	657	564	601	562	695
Service Time	5.647	3.687	3.221	4.087	3.703	4.119	2.898
HCM Lane V/C Ratio	0.017	0.238	0.447	0.002	0.13	0.199	0.24
HCM Control Delay	10.8	10.5	12.6	9.1	9.6	10.7	9.5
HCM Lane LOS	B	B	B	A	A	B	A
HCM 95th-tile Q	0.1	0.9	2.3	0	0.4	0.7	0.9

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	310	70	765	280	75	725
Future Volume (vph)	310	70	765	280	75	725
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	210	210		185	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	155				140	
Satd. Flow (prot)	3367	1589	3689	1589	1641	3689
Flt Permitted	0.950				0.305	
Satd. Flow (perm)	3367	1564	3689	1553	526	3689
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		5		4	4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	5%	3%	5%	10%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	74	805	295	79	763
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	7.0	22.0	10.0	7.0	22.0
Total Split (s)	38.0	16.0	66.0	38.0	16.0	82.0
Total Split (%)	31.7%	13.3%	55.0%	31.7%	13.3%	68.3%
Maximum Green (s)	31.0	12.0	59.0	31.0	12.0	75.0
Yellow Time (s)	5.0	4.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	0.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	7.0	7.0	4.0	7.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	C-Max	None	None	C-Max
Act Effct Green (s)	17.3	27.3	77.7	95.0	91.7	88.7
Actuated g/C Ratio	0.14	0.23	0.65	0.79	0.76	0.74
v/c Ratio	0.67	0.21	0.34	0.24	0.17	0.28
Control Delay	55.4	34.4	10.5	2.5	4.9	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.4	34.4	10.5	2.5	4.9	5.8
LOS	E	C	B	A	A	A
Approach Delay	51.6		8.4			5.7
Approach LOS	D		A			A
90th %ile Green (s)	22.3	8.6	71.1	22.3	8.6	83.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
70th %ile Green (s)	19.7	7.5	74.8	19.7	7.5	86.3
70th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
50th %ile Green (s)	16.9	6.9	78.2	16.9	6.9	89.1
50th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
30th %ile Green (s)	15.1	6.3	80.6	15.1	6.3	90.9
30th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
10th %ile Green (s)	12.4	5.7	83.9	12.4	5.7	93.6
10th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
Queue Length 50th (ft)	125	45	134	30	13	87
Queue Length 95th (ft)	165	79	202	52	30	134
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)	210	210		185	275	
Base Capacity (vph)	869	423	2389	1411	513	2727
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	0.17	0.34	0.21	0.15	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 16 (13%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Rand Road & Business Center Drive



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	325	20	55	330	45	55
Future Volume (vph)	325	20	55	330	45	55
Ideal Flow (vphpl)	1900	1900	1900	2000	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	125		0	35
Storage Lanes		0	1		1	1
Taper Length (ft)			155		0	
Satd. Flow (prot)	1770	0	1805	1942	1662	1538
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1770	0	1805	1942	1662	1538
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	14%	0%	3%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	363	0	58	347	47	58
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.0%		ICU Level of Service A	
Analysis Period (min) 15			

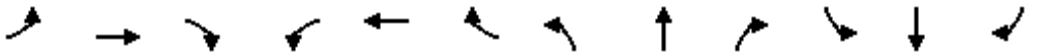
Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	325	20	55	330	45	55
Future Vol, veh/h	325	20	55	330	45	55
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	6	14	0	3	5	5
Mvmt Flow	342	21	58	347	47	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	364	0	817	354
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	463	-
Critical Hdwy	-	-	4.1	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.2	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	1206	-	342	683
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1205	-	325	682
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	597	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	325	682	-	-	1205	-
HCM Lane V/C Ratio	0.146	0.085	-	-	0.048	-
HCM Control Delay (s)	18	10.8	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.3	-	-	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	155	1	2	135	100	2	1	2	85	2	235
Future Volume (vph)	220	155	1	2	135	100	2	1	2	85	2	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	10	10
Storage Length (ft)	165		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	155			155			0			0		
Satd. Flow (prot)	1752	1791	0	1805	1710	0	0	1761	0	0	1690	1507
Flt Permitted	0.950			0.950				0.980			0.953	
Satd. Flow (perm)	1752	1791	0	1805	1710	0	0	1761	0	0	1690	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	2		1	1		2						
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	3%	6%	0%	0%	7%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	179	0	2	270	0	0	5	0	0	100	270
Sign Control		Stop			Stop			Stop			Stop	

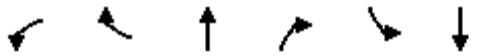
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	13.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	220	155	1	2	135	100	2	1	2	85	2	235
Future Vol, veh/h	220	155	1	2	135	100	2	1	2	85	2	235
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	6	0	0	7	0	0	0	0	0	0	0
Mvmt Flow	253	178	1	2	155	115	2	1	2	98	2	270
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	13.5	13.9	10.2	12.4
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	40%	100%	0%	100%	0%	98%	0%
Vol Thru, %	20%	0%	99%	0%	57%	2%	0%
Vol Right, %	40%	0%	1%	0%	43%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	220	156	2	235	87	235
LT Vol	2	220	0	2	0	85	0
Through Vol	1	0	155	0	135	2	0
RT Vol	2	0	1	0	100	0	235
Lane Flow Rate	6	253	179	2	270	100	270
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.011	0.462	0.304	0.004	0.456	0.193	0.43
Departure Headway (Hd)	7.036	6.571	6.111	6.768	6.077	6.939	5.735
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	506	549	588	528	592	517	627
Service Time	5.112	4.313	3.853	4.515	3.824	4.686	3.482
HCM Lane V/C Ratio	0.012	0.461	0.304	0.004	0.456	0.193	0.431
HCM Control Delay	10.2	14.9	11.5	9.5	13.9	11.3	12.8
HCM Lane LOS	B	B	B	A	B	B	B
HCM 95th-tile Q	0	2.4	1.3	0	2.4	0.7	2.2

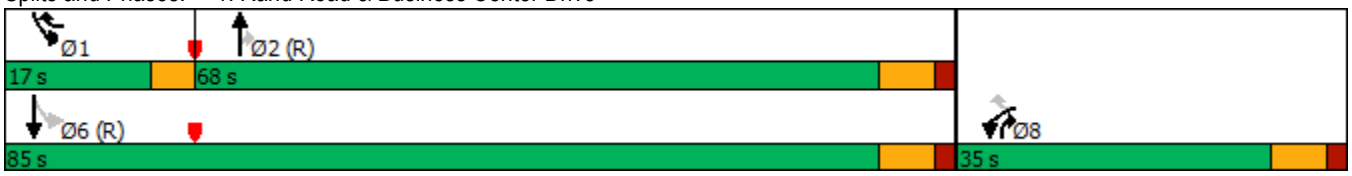


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	410	165	1095	260	100	920
Future Volume (vph)	410	165	1095	260	100	920
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	210	210		185	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	155				140	
Satd. Flow (prot)	3467	1669	3762	1620	1752	3762
Flt Permitted	0.950				0.181	
Satd. Flow (perm)	3467	1629	3762	1580	334	3762
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		14		5	5	
Confl. Bikes (#/hr)				3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	3%	3%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	174	1153	274	105	968
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	7.0	22.0	10.0	7.0	22.0
Total Split (s)	35.0	17.0	68.0	35.0	17.0	85.0
Total Split (%)	29.2%	14.2%	56.7%	29.2%	14.2%	70.8%
Maximum Green (s)	28.0	13.0	61.0	28.0	13.0	78.0
Yellow Time (s)	5.0	4.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	0.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	7.0	7.0	4.0	7.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	C-Max	None	None	C-Max
Act Effct Green (s)	20.5	31.1	73.9	94.4	88.5	85.5
Actuated g/C Ratio	0.17	0.26	0.62	0.79	0.74	0.71
v/c Ratio	0.73	0.41	0.50	0.22	0.31	0.36
Control Delay	54.3	35.7	14.4	2.5	7.5	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	35.7	14.4	2.5	7.5	7.5
LOS	D	D	B	A	A	A
Approach Delay	49.0		12.1			7.5
Approach LOS	D		B			A

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Green (s)	25.9	9.6	66.5	25.9	9.6	80.1
90th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
70th %ile Green (s)	23.1	8.3	70.6	23.1	8.3	82.9
70th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
50th %ile Green (s)	20.2	7.4	74.4	20.2	7.4	85.8
50th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
30th %ile Green (s)	18.2	6.8	77.0	18.2	6.8	87.8
30th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
10th %ile Green (s)	15.2	6.0	80.8	15.2	6.0	90.8
10th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
Queue Length 50th (ft)	165	107	241	28	20	134
Queue Length 95th (ft)	209	156	350	51	42	198
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)	210	210		185	275	
Base Capacity (vph)	808	500	2315	1350	399	2679
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	0.53	0.35	0.50	0.20	0.26	0.36

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 17 (14%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Rand Road & Business Center Drive



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	325	35	75	540	35	75
Future Volume (vph)	325	35	75	540	35	75
Ideal Flow (vphpl)	1900	1900	1900	2000	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	125		0	35
Storage Lanes		0	1		1	1
Taper Length (ft)			155		0	
Satd. Flow (prot)	1821	0	1787	1980	1745	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1821	0	1787	1980	1745	1599
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Peds. (#/hr)		2	2			
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	434	0	90	651	42	90
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.4

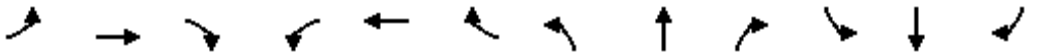
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	325	35	75	540	35	75
Future Vol, veh/h	325	35	75	540	35	75
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	1	1	0	1
Mvmt Flow	392	42	90	651	42	90

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	436	0	1246	415
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	831	-
Critical Hdwy	-	-	4.11	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1129	-	194	640
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1127	-	178	639
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	397	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	17.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	178	639	-	-	1127	-
HCM Lane V/C Ratio	0.237	0.141	-	-	0.08	-
HCM Control Delay (s)	31.4	11.6	-	-	8.5	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.5	-	-	0.3	-

Lanes, Volumes, Timings
3: Private Driveway/Wheeling Road & Business Center Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	60	5	1	200	125	2	1	1	30	1	325
Future Volume (vph)	305	60	5	1	200	125	2	1	1	30	1	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	10	10
Storage Length (ft)	165		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	155			155			0			0		
Satd. Flow (prot)	1787	1703	0	902	1768	0	0	1791	0	0	1692	1507
Flt Permitted	0.950			0.950				0.976			0.954	
Satd. Flow (perm)	1787	1703	0	902	1768	0	0	1791	0	0	1692	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	12					12						
Confl. Bikes (#/hr)												4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	5%	75%	100%	2%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	372	79	0	1	396	0	0	4	0	0	38	396
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	23.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	305	60	5	1	200	125	2	1	1	30	1	325
Future Vol, veh/h	305	60	5	1	200	125	2	1	1	30	1	325
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	1	5	75	100	2	0	0	0	0	0	0	0
Mvmt Flow	372	73	6	1	244	152	2	1	1	37	1	396
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	25.4	24.9	11.6	21.7
HCM LOS	D	C	B	C

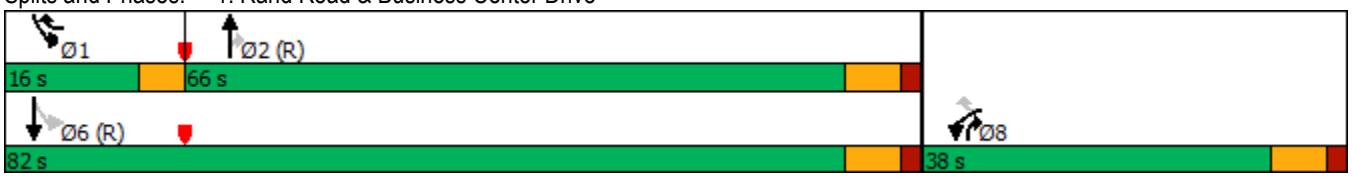
Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	50%	100%	0%	100%	0%	97%	0%
Vol Thru, %	25%	0%	92%	0%	62%	3%	0%
Vol Right, %	25%	0%	8%	0%	38%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	305	65	1	325	31	325
LT Vol	2	305	0	1	0	30	0
Through Vol	1	0	60	0	200	1	0
RT Vol	1	0	5	0	125	0	325
Lane Flow Rate	5	372	79	1	396	38	396
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.011	0.748	0.148	0.003	0.725	0.08	0.701
Departure Headway (Hd)	8.436	7.238	6.742	9.082	6.589	7.574	6.365
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	423	498	532	395	551	474	571
Service Time	6.506	4.978	4.481	6.822	4.328	5.305	4.096
HCM Lane V/C Ratio	0.012	0.747	0.148	0.003	0.719	0.08	0.694
HCM Control Delay	11.6	28.5	10.7	11.8	24.9	11	22.7
HCM Lane LOS	B	D	B	B	C	B	C
HCM 95th-tile Q	0	6.3	0.5	0	6	0.3	5.6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	310	70	765	280	75	725
Future Volume (vph)	310	70	765	280	75	725
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	210	210		185	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	155				140	
Satd. Flow (prot)	3367	1589	3689	1589	1641	3689
Flt Permitted	0.950				0.305	
Satd. Flow (perm)	3367	1564	3689	1553	526	3689
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		5		4	4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	5%	3%	5%	10%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	74	805	295	79	763
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	7.0	22.0	10.0	7.0	22.0
Total Split (s)	38.0	16.0	66.0	38.0	16.0	82.0
Total Split (%)	31.7%	13.3%	55.0%	31.7%	13.3%	68.3%
Maximum Green (s)	31.0	12.0	59.0	31.0	12.0	75.0
Yellow Time (s)	5.0	4.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	0.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	7.0	7.0	4.0	7.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	C-Max	None	None	C-Max
Act Effct Green (s)	17.3	27.3	77.7	95.0	91.7	88.7
Actuated g/C Ratio	0.14	0.23	0.65	0.79	0.76	0.74
v/c Ratio	0.67	0.21	0.34	0.24	0.17	0.28
Control Delay	55.4	34.4	10.5	2.5	4.9	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.4	34.4	10.5	2.5	4.9	5.8
LOS	E	C	B	A	A	A
Approach Delay	51.6		8.4			5.7
Approach LOS	D		A			A
90th %ile Green (s)	22.3	8.6	71.1	22.3	8.6	83.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
70th %ile Green (s)	19.7	7.5	74.8	19.7	7.5	86.3
70th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
50th %ile Green (s)	16.9	6.9	78.2	16.9	6.9	89.1
50th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
30th %ile Green (s)	15.1	6.3	80.6	15.1	6.3	90.9
30th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
10th %ile Green (s)	12.4	5.7	83.9	12.4	5.7	93.6
10th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
Queue Length 50th (ft)	125	45	134	30	13	87
Queue Length 95th (ft)	165	79	202	52	30	134
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)	210	210		185	275	
Base Capacity (vph)	869	423	2389	1411	513	2727
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	0.17	0.34	0.21	0.15	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 16 (13%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Rand Road & Business Center Drive



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	325	20	55	330	45	55
Future Volume (vph)	325	20	55	330	45	55
Ideal Flow (vphpl)	1900	1900	1900	2000	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	125		0	35
Storage Lanes		0	1		1	1
Taper Length (ft)			155		0	
Satd. Flow (prot)	1770	0	1805	1942	1662	1538
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1770	0	1805	1942	1662	1538
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	14%	0%	3%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	363	0	58	347	47	58
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.0%		ICU Level of Service A	
Analysis Period (min) 15			

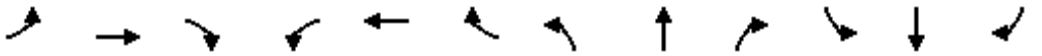
Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	325	20	55	330	45	55
Future Vol, veh/h	325	20	55	330	45	55
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	6	14	0	3	5	5
Mvmt Flow	342	21	58	347	47	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	364	0	817	354
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	463	-
Critical Hdwy	-	-	4.1	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.2	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	1206	-	342	683
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1205	-	325	682
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	597	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	325	682	-	-	1205	-
HCM Lane V/C Ratio	0.146	0.085	-	-	0.048	-
HCM Control Delay (s)	18	10.8	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.3	-	-	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	155	1	2	135	100	2	1	2	85	2	235
Future Volume (vph)	220	155	1	2	135	100	2	1	2	85	2	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	10	10
Storage Length (ft)	165		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	155			155			0			0		
Satd. Flow (prot)	1752	1791	0	1805	1710	0	0	1761	0	0	1690	1507
Flt Permitted	0.950			0.950				0.980			0.953	
Satd. Flow (perm)	1752	1791	0	1805	1710	0	0	1761	0	0	1690	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	2		1	1		2						
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	3%	6%	0%	0%	7%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	179	0	2	270	0	0	5	0	0	100	270
Sign Control		Stop			Stop			Stop			Stop	

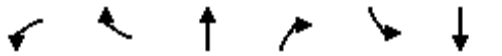
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	13.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	220	155	1	2	135	100	2	1	2	85	2	235
Future Vol, veh/h	220	155	1	2	135	100	2	1	2	85	2	235
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	6	0	0	7	0	0	0	0	0	0	0
Mvmt Flow	253	178	1	2	155	115	2	1	2	98	2	270
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	13.5	13.9	10.2	12.4
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	40%	100%	0%	100%	0%	98%	0%
Vol Thru, %	20%	0%	99%	0%	57%	2%	0%
Vol Right, %	40%	0%	1%	0%	43%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	220	156	2	235	87	235
LT Vol	2	220	0	2	0	85	0
Through Vol	1	0	155	0	135	2	0
RT Vol	2	0	1	0	100	0	235
Lane Flow Rate	6	253	179	2	270	100	270
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.011	0.462	0.304	0.004	0.456	0.193	0.43
Departure Headway (Hd)	7.036	6.571	6.111	6.768	6.077	6.939	5.735
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	506	549	588	528	592	517	627
Service Time	5.112	4.313	3.853	4.515	3.824	4.686	3.482
HCM Lane V/C Ratio	0.012	0.461	0.304	0.004	0.456	0.193	0.431
HCM Control Delay	10.2	14.9	11.5	9.5	13.9	11.3	12.8
HCM Lane LOS	B	B	B	A	B	B	B
HCM 95th-tile Q	0	2.4	1.3	0	2.4	0.7	2.2

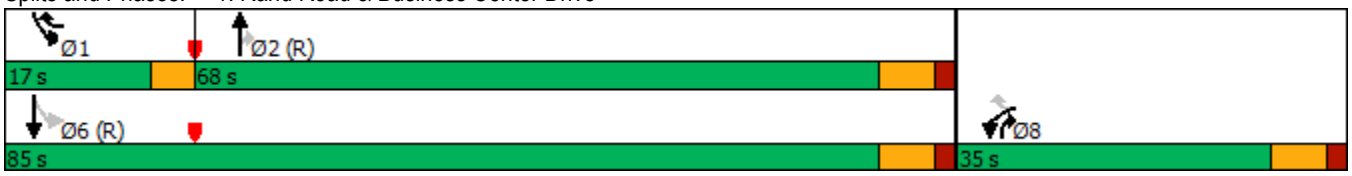


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	410	165	1095	260	100	920
Future Volume (vph)	410	165	1095	260	100	920
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	13	12	12
Storage Length (ft)	210	210		185	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	155				140	
Satd. Flow (prot)	3467	1669	3762	1620	1752	3762
Flt Permitted	0.950				0.181	
Satd. Flow (perm)	3467	1629	3762	1580	334	3762
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	30		40			40
Link Distance (ft)	398		1983			1471
Travel Time (s)	9.0		33.8			25.1
Confl. Peds. (#/hr)		14		5	5	
Confl. Bikes (#/hr)				3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	3%	3%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	174	1153	274	105	968
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2	6	
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	10.0	7.0	22.0	10.0	7.0	22.0
Total Split (s)	35.0	17.0	68.0	35.0	17.0	85.0
Total Split (%)	29.2%	14.2%	56.7%	29.2%	14.2%	70.8%
Maximum Green (s)	28.0	13.0	61.0	28.0	13.0	78.0
Yellow Time (s)	5.0	4.0	5.0	5.0	4.0	5.0
All-Red Time (s)	2.0	0.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	7.0	7.0	4.0	7.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	7.0	3.0	3.0	7.0
Recall Mode	None	None	C-Max	None	None	C-Max
Act Effct Green (s)	20.5	31.1	73.9	94.4	88.5	85.5
Actuated g/C Ratio	0.17	0.26	0.62	0.79	0.74	0.71
v/c Ratio	0.73	0.41	0.50	0.22	0.31	0.36
Control Delay	54.3	35.7	14.4	2.5	7.5	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	35.7	14.4	2.5	7.5	7.5
LOS	D	D	B	A	A	A
Approach Delay	49.0		12.1			7.5
Approach LOS	D		B			A

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
90th %ile Green (s)	25.9	9.6	66.5	25.9	9.6	80.1
90th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
70th %ile Green (s)	23.1	8.3	70.6	23.1	8.3	82.9
70th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
50th %ile Green (s)	20.2	7.4	74.4	20.2	7.4	85.8
50th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
30th %ile Green (s)	18.2	6.8	77.0	18.2	6.8	87.8
30th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
10th %ile Green (s)	15.2	6.0	80.8	15.2	6.0	90.8
10th %ile Term Code	Gap	Gap	Coord	Gap	Gap	Coord
Queue Length 50th (ft)	165	107	241	28	20	134
Queue Length 95th (ft)	209	156	350	51	42	198
Internal Link Dist (ft)	318		1903			1391
Turn Bay Length (ft)	210	210		185	275	
Base Capacity (vph)	808	500	2315	1350	399	2679
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	0.53	0.35	0.50	0.20	0.26	0.36

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 17 (14%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Rand Road & Business Center Drive



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	325	35	75	540	35	75
Future Volume (vph)	325	35	75	540	35	75
Ideal Flow (vphpl)	1900	1900	1900	2000	1900	1900
Lane Width (ft)	12	12	12	12	11	12
Storage Length (ft)		0	125		0	35
Storage Lanes		0	1		1	1
Taper Length (ft)			155		0	
Satd. Flow (prot)	1821	0	1787	1980	1745	1599
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1821	0	1787	1980	1745	1599
Link Speed (mph)	30			30	25	
Link Distance (ft)	398			1177	722	
Travel Time (s)	9.0			26.8	19.7	
Confl. Peds. (#/hr)		2	2			
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	3%	3%	1%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	434	0	90	651	42	90
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.4

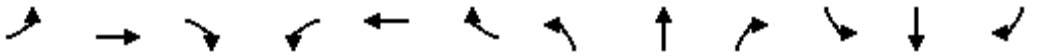
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	325	35	75	540	35	75
Future Vol, veh/h	325	35	75	540	35	75
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	35
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	1	1	0	1
Mvmt Flow	392	42	90	651	42	90

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	436	0	1246	415
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	831	-
Critical Hdwy	-	-	4.11	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1129	-	194	640
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1127	-	178	639
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	397	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	17.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	178	639	-	-	1127	-
HCM Lane V/C Ratio	0.237	0.141	-	-	0.08	-
HCM Control Delay (s)	31.4	11.6	-	-	8.5	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.5	-	-	0.3	-

Lanes, Volumes, Timings
3: Private Driveway/Wheeling Road & Business Center Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	60	5	1	200	125	2	1	1	30	1	325
Future Volume (vph)	305	60	5	1	200	125	2	1	1	30	1	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	10	10
Storage Length (ft)	165		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	155			155			0			0		
Satd. Flow (prot)	1787	1703	0	902	1768	0	0	1791	0	0	1692	1507
Flt Permitted	0.950			0.950				0.976			0.954	
Satd. Flow (perm)	1787	1703	0	902	1768	0	0	1791	0	0	1692	1507
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1177			698			314			347	
Travel Time (s)		26.8			15.9			8.6			7.9	
Confl. Peds. (#/hr)	12					12						
Confl. Bikes (#/hr)												4
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	5%	75%	100%	2%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	372	79	0	1	396	0	0	4	0	0	38	396
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	23.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	305	60	5	1	200	125	2	1	1	30	1	325
Future Vol, veh/h	305	60	5	1	200	125	2	1	1	30	1	325
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	1	5	75	100	2	0	0	0	0	0	0	0
Mvmt Flow	372	73	6	1	244	152	2	1	1	37	1	396
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	25.4	24.9	11.6	21.7
HCM LOS	D	C	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	50%	100%	0%	100%	0%	97%	0%
Vol Thru, %	25%	0%	92%	0%	62%	3%	0%
Vol Right, %	25%	0%	8%	0%	38%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	305	65	1	325	31	325
LT Vol	2	305	0	1	0	30	0
Through Vol	1	0	60	0	200	1	0
RT Vol	1	0	5	0	125	0	325
Lane Flow Rate	5	372	79	1	396	38	396
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.011	0.748	0.148	0.003	0.725	0.08	0.701
Departure Headway (Hd)	8.436	7.238	6.742	9.082	6.589	7.574	6.365
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	423	498	532	395	551	474	571
Service Time	6.506	4.978	4.481	6.822	4.328	5.305	4.096
HCM Lane V/C Ratio	0.012	0.747	0.148	0.003	0.719	0.08	0.694
HCM Control Delay	11.6	28.5	10.7	11.8	24.9	11	22.7
HCM Lane LOS	B	D	B	B	C	B	C
HCM 95th-tile Q	0	6.3	0.5	0	6	0.3	5.6

Sam Schwartz
A TYLin Company

Raw Traffic Data

Sam Schwartz

Sam Schwartz
223 W. Jackson Suite 1101

Chicago, Illinois, United States 60606
773.305.0800 ksant@samschwartz.com

Count Name: Business Center Drive & Rand Road
Site Code:
Start Date: 09/14/2022

Turning Movement Data

Start Time	Westbound Business Center Drive Westbound					Northbound Rand Road Northbound					Southbound Rand Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
6:30 AM	26	4	0	0	30	78	43	0	0	121	18	181	0	0	199	350
6:45 AM	18	6	0	1	24	104	80	0	0	184	43	232	0	2	275	483
Hourly Total	44	10	0	1	54	182	123	0	0	305	61	413	0	2	474	833
7:00 AM	40	7	0	1	47	120	44	0	0	164	26	192	0	1	218	429
7:15 AM	38	13	0	0	51	162	55	0	0	217	38	263	0	1	301	569
7:30 AM	24	7	0	0	31	152	57	0	0	209	26	230	0	2	256	496
7:45 AM	42	10	0	0	52	162	58	0	0	220	41	229	0	2	270	542
Hourly Total	144	37	0	1	181	596	214	0	0	810	131	914	0	6	1045	2036
8:00 AM	38	23	0	0	61	168	75	0	0	243	40	244	0	2	284	588
8:15 AM	54	7	0	0	61	149	60	0	0	209	33	233	0	1	266	536
8:30 AM	38	17	0	1	55	135	62	0	0	197	37	217	0	1	254	506
8:45 AM	34	14	0	2	48	152	49	0	0	201	37	166	0	1	203	452
Hourly Total	164	61	0	3	225	604	246	0	0	850	147	860	0	5	1007	2082
9:00 AM	59	6	0	1	65	142	42	0	0	184	26	182	0	2	208	457
9:15 AM	34	12	0	0	46	123	33	0	0	156	12	168	0	0	180	382
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	93	18	0	1	111	265	75	0	0	340	38	350	0	2	388	839
11:00 AM	56	14	0	0	70	153	54	0	0	207	12	165	0	0	177	454
11:15 AM	59	11	0	0	70	139	52	0	0	191	12	168	0	0	180	441
11:30 AM	62	17	0	1	79	170	47	0	0	217	7	161	0	1	168	464
11:45 AM	65	14	0	1	79	189	67	0	0	256	14	154	0	1	168	503
Hourly Total	242	56	0	2	298	651	220	0	0	871	45	648	0	2	693	1862
12:00 PM	73	23	0	2	96	180	63	0	0	243	16	188	0	1	204	543
12:15 PM	71	10	0	0	81	167	65	0	0	232	15	165	0	2	180	493
12:30 PM	83	17	0	0	100	185	64	0	0	249	24	179	0	0	203	552
12:45 PM	60	16	0	1	76	180	55	0	0	235	22	161	0	0	183	494
Hourly Total	287	66	0	3	353	712	247	0	0	959	77	693	0	3	770	2082
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
3:00 PM	86	22	0	0	108	218	57	0	0	275	14	188	0	2	202	585
3:15 PM	75	20	0	1	95	221	58	0	0	279	28	185	0	0	213	587
3:30 PM	116	39	0	1	155	216	62	0	0	278	37	186	0	3	223	656
3:45 PM	100	28	0	0	128	236	62	0	0	298	44	180	0	2	224	650
Hourly Total	377	109	0	2	486	891	239	0	0	1130	123	739	0	7	862	2478

4:00 PM	113	34	0	3	147	259	58	0	0	317	13	175	0	2	188	652
4:15 PM	79	26	0	0	105	236	47	0	0	283	18	190	0	0	208	596
4:30 PM	98	45	0	1	143	248	53	0	0	301	26	212	0	3	238	682
4:45 PM	84	28	0	3	112	256	60	0	0	316	30	221	0	2	251	679
Hourly Total	374	133	0	7	507	999	218	0	0	1217	87	798	0	7	885	2609
5:00 PM	146	51	0	0	197	257	62	0	0	319	14	206	0	4	220	736
5:15 PM	84	34	0	0	118	249	61	0	0	310	26	220	0	3	246	674
5:30 PM	72	43	0	1	115	276	57	0	0	333	27	224	0	2	251	699
5:45 PM	66	39	0	0	105	260	56	0	0	316	23	218	0	1	241	662
Hourly Total	368	167	0	1	535	1042	236	0	0	1278	90	868	0	10	958	2771
Grand Total	2093	658	0	21	2751	5942	1818	0	0	7760	799	6284	0	44	7083	17594
Approach %	76.1	23.9	0.0	-	-	76.6	23.4	0.0	-	-	11.3	88.7	0.0	-	-	-
Total %	11.9	3.7	0.0	-	15.6	33.8	10.3	0.0	-	44.1	4.5	35.7	0.0	-	40.3	-
Lights	2009	614	0	-	2623	5782	1729	0	-	7511	759	6138	0	-	6897	17031
% Lights	96.0	93.3	-	-	95.3	97.3	95.1	-	-	96.8	95.0	97.7	-	-	97.4	96.8
Mediums	67	33	0	-	100	115	65	0	-	180	28	96	0	-	124	404
% Mediums	3.2	5.0	-	-	3.6	1.9	3.6	-	-	2.3	3.5	1.5	-	-	1.8	2.3
Articulated Trucks	13	10	0	-	23	42	21	0	-	63	10	49	0	-	59	145
% Articulated Trucks	0.6	1.5	-	-	0.8	0.7	1.2	-	-	0.8	1.3	0.8	-	-	0.8	0.8
Bicycles on Road	4	1	0	-	5	3	3	0	-	6	2	1	0	-	3	14
% Bicycles on Road	0.2	0.2	-	-	0.2	0.1	0.2	-	-	0.1	0.3	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	7	-	-	-	-	0	-	-	-	-	31	-	-
% Bicycles on Crosswalk	-	-	-	33.3	-	-	-	-	-	-	-	-	-	70.5	-	-
Pedestrians	-	-	-	14	-	-	-	-	0	-	-	-	-	13	-	-
% Pedestrians	-	-	-	66.7	-	-	-	-	-	-	-	-	-	29.5	-	-

Sam Schwartz
223 W. Jackson Suite 1101

Chicago, Illinois, United States 60606
773.305.0800 ksant@samschwartz.com

Count Name: Business Center Drive & Harvest Lane
Site Code:
Start Date: 09/14/2022

Turning Movement Data

Start Time	EB Business Center Drive Eastbound					WB Business Center Drive Westbound					NB Harvest Lane Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
6:30 AM	60	1	0	0	61	3	21	1	0	25	5	6	0	0	11	97
6:45 AM	119	2	0	0	121	3	24	0	1	27	2	5	0	0	7	155
Hourly Total	179	3	0	0	182	6	45	1	1	52	7	11	0	0	18	252
7:00 AM	67	4	0	0	71	1	42	0	0	43	7	9	0	0	16	130
7:15 AM	88	4	0	0	92	7	45	0	0	52	8	2	0	0	10	154
7:30 AM	86	3	0	0	89	12	22	0	0	34	8	10	0	0	18	141
7:45 AM	92	3	0	0	95	8	43	0	0	51	9	16	0	0	25	171
Hourly Total	333	14	0	0	347	28	152	0	0	180	32	37	0	0	69	596
8:00 AM	110	5	0	0	115	7	52	0	0	59	14	10	0	0	24	198
8:15 AM	87	7	0	0	94	8	55	0	0	63	8	16	0	0	24	181
8:30 AM	94	3	0	0	97	13	42	0	0	55	11	11	0	0	22	174
8:45 AM	77	4	1	0	82	10	36	0	0	46	9	9	0	0	18	146
Hourly Total	368	19	1	0	388	38	185	0	0	223	42	46	0	0	88	699
9:00 AM	62	4	0	0	66	9	53	0	0	62	9	4	0	0	13	141
9:15 AM	42	3	0	0	45	10	36	0	0	46	10	7	0	0	17	108
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	104	7	0	0	111	19	89	0	0	108	19	11	0	0	30	249
11:00 AM	55	6	0	0	61	17	56	0	0	73	9	17	0	0	26	160
11:15 AM	57	6	0	0	63	10	63	0	0	73	8	24	0	0	32	168
11:30 AM	56	2	0	0	58	14	61	0	0	75	19	12	0	0	31	164
11:45 AM	77	4	0	0	81	14	62	0	0	76	14	13	0	1	27	184
Hourly Total	245	18	0	0	263	55	242	0	0	297	50	66	0	1	116	676
12:00 PM	71	4	0	0	75	18	80	0	0	98	12	20	0	0	32	205
12:15 PM	74	6	0	0	80	14	76	0	0	90	7	13	0	0	20	190
12:30 PM	78	8	0	0	86	11	86	0	0	97	10	9	0	0	19	202
12:45 PM	74	3	0	0	77	15	65	0	0	80	10	10	0	0	20	177
Hourly Total	297	21	0	0	318	58	307	0	0	365	39	52	0	0	91	774
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	66	6	0	0	72	8	93	0	0	101	17	10	0	0	27	200
3:15 PM	75	8	0	0	83	12	83	1	0	96	11	12	0	0	23	202
3:30 PM	93	6	0	0	99	20	158	0	0	178	8	18	0	0	26	303
3:45 PM	96	6	0	0	102	15	110	0	0	125	10	14	0	0	24	251
Hourly Total	330	26	0	0	356	55	444	1	0	500	46	54	0	0	100	956

4:00 PM	64	5	0	0	69	13	131	0	0	144	12	16	0	0	28	241
4:15 PM	60	12	0	0	72	18	97	1	0	116	8	16	0	0	24	212
4:30 PM	74	6	0	0	80	13	131	0	0	144	12	17	0	0	29	253
4:45 PM	80	6	0	0	86	18	109	0	0	127	6	17	0	0	23	236
Hourly Total	278	29	0	0	307	62	468	1	0	531	38	66	0	0	104	942
5:00 PM	68	8	0	0	76	20	181	0	0	201	13	18	0	0	31	308
5:15 PM	78	10	0	0	88	17	106	0	0	123	10	20	0	0	30	241
5:30 PM	74	11	0	0	85	18	112	0	0	130	7	20	0	2	27	242
5:45 PM	74	6	0	0	80	12	96	0	0	108	10	12	0	0	22	210
Hourly Total	294	35	0	0	329	67	495	0	0	562	40	70	0	2	110	1001
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2428	172	1	0	2601	388	2427	3	1	2818	313	413	0	3	726	6145
Approach %	93.3	6.6	0.0	-	-	13.8	86.1	0.1	-	-	43.1	56.9	0.0	-	-	-
Total %	39.5	2.8	0.0	-	42.3	6.3	39.5	0.0	-	45.9	5.1	6.7	0.0	-	11.8	-
Lights	2312	153	1	-	2466	378	2317	2	-	2697	290	396	0	-	686	5849
% Lights	95.2	89.0	100.0	-	94.8	97.4	95.5	66.7	-	95.7	92.7	95.9	-	-	94.5	95.2
Mediums	81	12	0	-	93	10	77	0	-	87	18	8	0	-	26	206
% Mediums	3.3	7.0	0.0	-	3.6	2.6	3.2	0.0	-	3.1	5.8	1.9	-	-	3.6	3.4
Articulated Trucks	26	6	0	-	32	0	18	1	-	19	3	4	0	-	7	58
% Articulated Trucks	1.1	3.5	0.0	-	1.2	0.0	0.7	33.3	-	0.7	1.0	1.0	-	-	1.0	0.9
Bicycles on Road	9	1	0	-	10	0	15	0	-	15	2	5	0	-	7	32
% Bicycles on Road	0.4	0.6	0.0	-	0.4	0.0	0.6	0.0	-	0.5	0.6	1.2	-	-	1.0	0.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Sam Schwartz
223 W. Jackson Suite 1101

Chicago, Illinois, United States 60606
773.305.0800 ksant@samschwartz.com

Count Name: Business Center Drive & Wheeling Road
Site Code:
Start Date: 09/14/2022

Turning Movement Data

Start Time	EB Business Center Drive Eastbound						WB Business Center Drive Westbound						NB Wheeling Road Northbound						SB Wheeling Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:30 AM	17	46	2	0	0	65	0	5	2	0	0	7	0	0	0	0	0	0	13	0	19	0	0	32	104
6:45 AM	26	90	4	0	0	120	0	7	1	0	0	8	0	0	0	0	0	0	24	0	13	0	1	37	165
Hourly Total	43	136	6	0	0	185	0	12	3	0	0	15	0	0	0	0	0	0	37	0	32	0	1	69	269
7:00 AM	31	38	3	0	0	72	1	12	0	0	0	13	0	0	0	0	0	0	15	0	35	0	0	50	135
7:15 AM	18	59	3	0	0	80	0	15	2	0	1	17	1	0	0	0	1	1	21	0	31	0	0	52	150
7:30 AM	28	55	3	0	0	86	0	11	6	0	0	17	1	0	0	0	0	1	22	0	24	0	1	46	150
7:45 AM	36	64	0	0	0	100	0	11	3	0	0	14	1	0	0	0	0	1	28	0	43	0	0	71	186
Hourly Total	113	216	9	0	0	338	1	49	11	0	1	61	3	0	0	0	1	3	86	0	133	0	1	219	621
8:00 AM	38	67	0	0	0	105	1	17	1	0	0	19	1	0	0	0	0	1	23	0	41	0	1	64	189
8:15 AM	36	57	0	0	0	93	0	14	1	0	0	15	1	0	0	0	0	1	19	0	50	0	0	69	178
8:30 AM	36	64	0	0	0	100	0	21	1	0	0	22	0	0	0	0	0	0	12	0	33	0	0	45	167
8:45 AM	31	42	0	0	0	73	0	13	4	0	1	17	0	0	0	0	1	0	18	0	27	0	0	45	135
Hourly Total	141	230	0	0	0	371	1	65	7	0	1	73	2	0	0	0	1	2	72	0	151	0	1	223	669
9:00 AM	26	32	0	0	0	58	0	18	3	0	0	21	0	0	0	0	0	0	6	0	44	0	1	50	129
9:15 AM	21	19	1	0	0	41	0	10	3	0	1	13	0	0	0	0	0	0	3	0	35	0	0	38	92
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	47	51	1	0	0	99	0	28	6	0	1	34	0	0	0	0	0	0	9	0	79	0	1	88	221
11:00 AM	54	15	0	0	0	69	0	18	5	0	0	23	0	0	0	0	0	0	6	0	55	0	0	61	153
11:15 AM	62	17	0	0	0	79	0	20	12	0	0	32	0	0	0	0	0	0	4	0	51	0	0	55	166
11:30 AM	58	10	0	0	0	68	0	25	21	0	0	46	0	1	0	0	0	1	8	0	49	0	0	57	172
11:45 AM	56	29	1	0	0	86	0	20	27	0	0	47	1	0	1	0	0	2	18	2	50	0	0	70	205
Hourly Total	230	71	1	0	0	302	0	83	65	0	0	148	1	1	1	0	0	3	36	2	205	0	0	243	696
12:00 PM	60	32	0	0	0	92	0	43	40	0	0	83	0	0	0	0	0	0	25	0	54	0	2	79	254
12:15 PM	45	40	0	0	0	85	1	31	15	0	0	47	1	0	0	0	1	1	16	0	57	0	0	73	206
12:30 PM	43	42	0	0	0	85	1	32	14	0	0	47	0	0	1	0	0	1	23	0	59	0	0	82	215
12:45 PM	34	35	0	0	0	69	0	19	8	0	0	27	0	0	0	0	0	0	25	0	58	0	0	83	179
Hourly Total	182	149	0	0	0	331	2	125	77	0	0	204	1	0	1	0	1	2	89	0	228	0	2	317	854
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	56	17	0	0	0	73	0	45	28	0	0	73	0	0	0	0	0	0	1	0	52	0	0	53	199
3:15 PM	60	20	0	0	0	80	0	41	12	0	0	53	0	0	1	0	0	1	10	0	56	0	0	66	200
3:30 PM	60	37	1	0	0	98	0	103	41	0	0	144	0	0	0	0	0	0	11	0	76	0	0	87	329
3:45 PM	58	22	0	0	0	80	0	36	15	0	0	51	0	1	0	0	0	1	7	0	90	0	0	97	229
Hourly Total	234	96	1	0	0	331	0	225	96	0	0	321	0	1	1	0	0	2	29	0	274	0	0	303	957
4:00 PM	63	22	0	0	0	85	0	53	26	0	0	79	0	0	0	0	0	0	3	2	81	0	1	86	250
4:15 PM	57	9	0	0	0	66	0	36	21	0	0	57	2	1	0	0	0	3	4	0	69	0	0	73	199

4:30 PM	59	17	0	0	0	76	0	78	39	0	0	117	1	0	0	0	0	1	15	0	57	0	0	72	266
4:45 PM	69	19	1	0	0	89	0	39	23	0	0	62	0	0	0	0	0	0	4	0	74	0	1	78	229
Hourly Total	248	67	1	0	0	316	0	206	109	0	0	315	3	1	0	0	0	4	26	2	281	0	2	309	944
5:00 PM	81	11	1	0	0	93	0	67	40	0	0	107	2	0	1	0	0	3	10	0	90	0	4	100	303
5:15 PM	73	12	1	0	0	86	1	42	18	0	0	61	0	0	0	0	0	0	7	0	72	0	1	79	226
5:30 PM	65	14	1	0	0	80	0	38	36	0	0	74	0	1	0	0	0	1	7	0	71	0	4	78	233
5:45 PM	69	16	0	0	0	85	0	32	24	0	0	56	3	0	0	0	0	3	7	0	60	0	2	67	211
Hourly Total	288	53	3	0	0	344	1	179	118	0	0	298	5	1	1	0	0	7	31	0	293	0	11	324	973
6:00 PM	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Grand Total	1528	1069	22	0	0	2619	5	972	492	0	3	1469	15	4	4	0	3	23	415	4	1676	0	19	2095	6206
Approach %	58.3	40.8	0.8	0.0	-	-	0.3	66.2	33.5	0.0	-	-	65.2	17.4	17.4	0.0	-	-	19.8	0.2	80.0	0.0	-	-	-
Total %	24.6	17.2	0.4	0.0	-	42.2	0.1	15.7	7.9	0.0	-	23.7	0.2	0.1	0.1	0.0	-	0.4	6.7	0.1	27.0	0.0	-	33.8	-
Lights	1493	1000	14	0	-	2507	4	906	480	0	-	1390	11	3	4	0	-	18	407	4	1645	0	-	2056	5971
% Lights	97.7	93.5	63.6	-	-	95.7	80.0	93.2	97.6	-	-	94.6	73.3	75.0	100.0	-	-	78.3	98.1	100.0	98.2	-	-	98.1	96.2
Mediums	23	49	8	0	-	80	1	46	10	0	-	57	4	1	0	0	-	5	7	0	19	0	-	26	168
% Mediums	1.5	4.6	36.4	-	-	3.1	20.0	4.7	2.0	-	-	3.9	26.7	25.0	0.0	-	-	21.7	1.7	0.0	1.1	-	-	1.2	2.7
Articulated Trucks	8	19	0	0	-	27	0	16	2	0	-	18	0	0	0	0	-	0	0	0	4	0	-	4	49
% Articulated Trucks	0.5	1.8	0.0	-	-	1.0	0.0	1.6	0.4	-	-	1.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.2	-	-	0.2	0.8
Bicycles on Road	4	1	0	0	-	5	0	4	0	0	-	4	0	0	0	0	-	0	1	0	8	0	-	9	18
% Bicycles on Road	0.3	0.1	0.0	-	-	0.2	0.0	0.4	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.2	0.0	0.5	-	-	0.4	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	9	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	47.4	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-	10	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	52.6	-	-

Business Center Drive - ATR

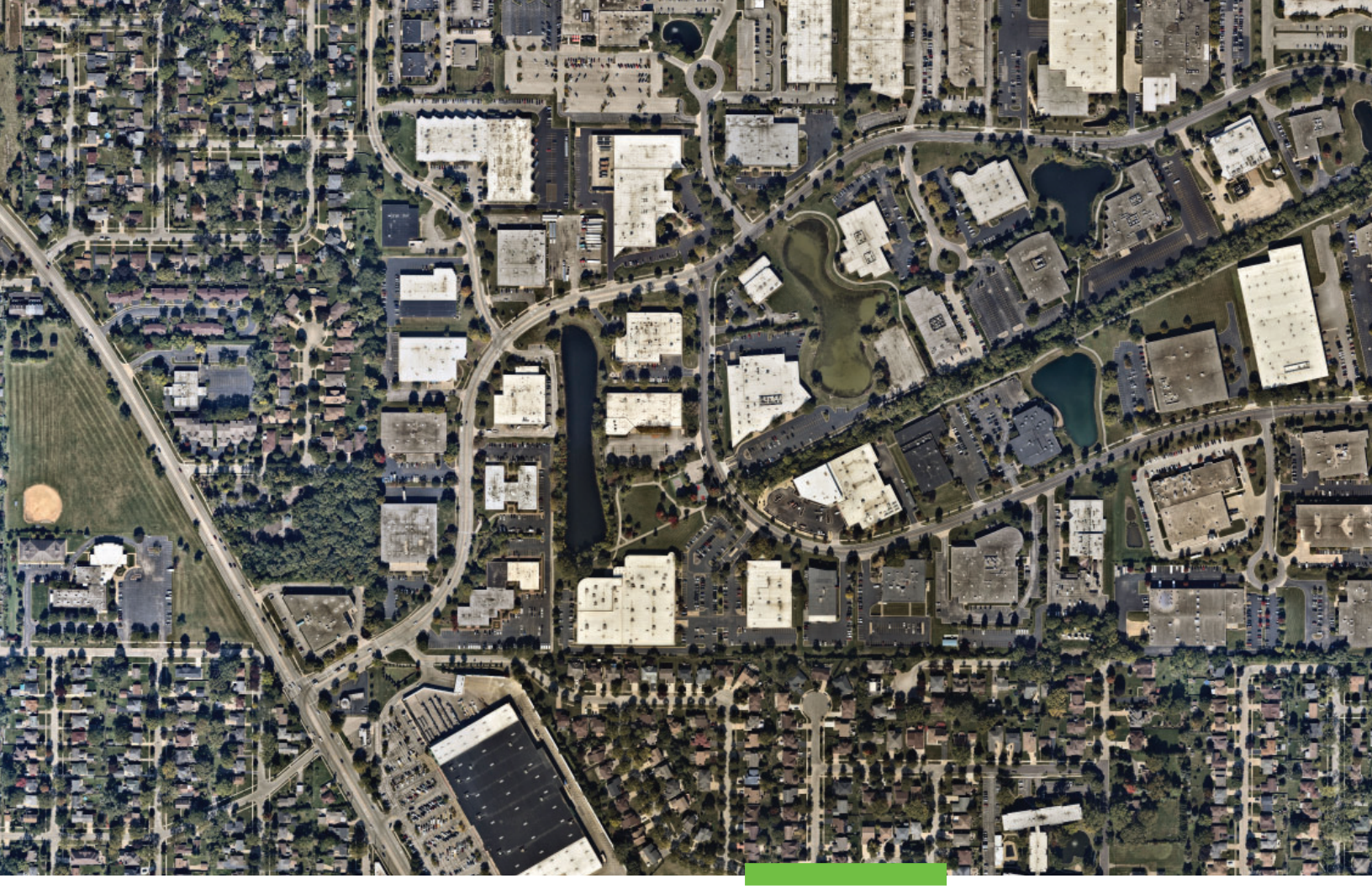
Tue Sep 20, 2022
Full Length (12 AM-12 AM (+3))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Bicycles on Road)
All Channels
ID: 995540, Location: 42.074732, -87.925901, Site Code: Business Center Drive

Provided by: Village of Mount Prospect (IL)
50 S. Emerson Street,
Mount Prospect, IL, 60056, US

Leg Direction	North Southbound		South Northbound		
Time	T	**App**	T	**App**	**Int**
2022-09-20 12:00AM	12	**12**	6	**6**	**18**
1:00AM	16	**16**	4	**4**	**20**
2:00AM	2	**2**	9	**9**	**11**
3:00AM	6	**6**	18	**18**	**24**
4:00AM	18	**18**	67	**67**	**85**
5:00AM	39	**39**	96	**96**	**135**
6:00AM	84	**84**	245	**245**	**329**
7:00AM	185	**185**	331	**331**	**516**
8:00AM	210	**210**	375	**375**	**585**
9:00AM	201	**201**	236	**236**	**437**
10:00AM	216	**216**	261	**261**	**477**
11:00AM	311	**311**	296	**296**	**607**
12:00PM	355	**355**	311	**311**	**666**
1:00PM	309	**309**	349	**349**	**658**
2:00PM	304	**304**	286	**286**	**590**
3:00PM	478	**478**	337	**337**	**815**
4:00PM	507	**507**	360	**360**	**867**
5:00PM	481	**481**	356	**356**	**837**
6:00PM	336	**336**	281	**281**	**617**
7:00PM	241	**241**	224	**224**	**465**
8:00PM	183	**183**	138	**138**	**321**
9:00PM	154	**154**	95	**95**	**249**
10:00PM	57	**57**	46	**46**	**103**
11:00PM	16	**16**	25	**25**	**41**
2022-09-21 12:00AM	10	**10**	5	**5**	**15**
1:00AM	8	**8**	4	**4**	**12**
2:00AM	0	**0**	9	**9**	**9**
3:00AM	7	**7**	19	**19**	**26**
4:00AM	14	**14**	62	**62**	**76**
5:00AM	47	**47**	88	**88**	**135**
6:00AM	89	**89**	229	**229**	**318**
7:00AM	167	**167**	350	**350**	**517**
8:00AM	214	**214**	364	**364**	**578**
9:00AM	218	**218**	261	**261**	**479**
10:00AM	242	**242**	242	**242**	**484**
11:00AM	322	**322**	338	**338**	**660**
12:00PM	351	**351**	354	**354**	**705**
1:00PM	293	**293**	326	**326**	**619**
2:00PM	341	**341**	314	**314**	**655**
3:00PM	467	**467**	364	**364**	**831**
4:00PM	536	**536**	332	**332**	**868**
5:00PM	494	**494**	360	**360**	**854**
6:00PM	327	**327**	273	**273**	**600**
7:00PM	289	**289**	208	**208**	**497**
8:00PM	168	**168**	147	**147**	**315**
9:00PM	123	**123**	94	**94**	**217**
10:00PM	72	**72**	43	**43**	**115**
11:00PM	35	**35**	19	**19**	**54**
2022-09-22 12:00AM	8	**8**	6	**6**	**14**
1:00AM	5	**5**	8	**8**	**13**
2:00AM	0	**0**	7	**7**	**7**
3:00AM	3	**3**	21	**21**	**24**
4:00AM	20	**20**	64	**64**	**84**

Leg Direction	North Southbound		South Northbound		
Time	T	**App**	T	**App**	**Int**
5:00AM	33	**33**	87	**87**	**120**
6:00AM	83	**83**	236	**236**	**319**
7:00AM	163	**163**	341	**341**	**504**
8:00AM	212	**212**	346	**346**	**558**
9:00AM	200	**200**	244	**244**	**444**
10:00AM	241	**241**	241	**241**	**482**
11:00AM	318	**318**	291	**291**	**609**
12:00PM	347	**347**	365	**365**	**712**
1:00PM	305	**305**	318	**318**	**623**
2:00PM	369	**369**	323	**323**	**692**
3:00PM	484	**484**	333	**333**	**817**
4:00PM	545	**545**	340	**340**	**885**
5:00PM	477	**477**	362	**362**	**839**
6:00PM	398	**398**	308	**308**	**706**
7:00PM	287	**287**	218	**218**	**505**
8:00PM	182	**182**	171	**171**	**353**
9:00PM	151	**151**	101	**101**	**252**
10:00PM	77	**77**	69	**69**	**146**
11:00PM	41	**41**	46	**46**	**87**
Total	14504	**14504**	14403	**14403**	**28907**
% Approach	100%	**-**	100%	**-**	-
% Total	50.2%	**50.2%**	49.8%	**49.8%**	-
Lights	13950	**13950**	13871	**13871**	27821
% Lights	96.2%	**96.2%**	96.3%	**96.3%**	96.2%
Articulated Trucks	115	**115**	131	**131**	246
% Articulated Trucks	0.8%	**0.8%**	0.9%	**0.9%**	0.9%
Buses and Single-Unit Trucks	402	**402**	371	**371**	773
% Buses and Single-Unit Trucks	2.8%	**2.8%**	2.6%	**2.6%**	2.7%
Bicycles on Road	37	**37**	30	**30**	67
% Bicycles on Road	0.3%	**0.3%**	0.2%	**0.2%**	0.2%

*T: Thru



Sam Schwartz
A TYLin Company

223 W. Jackson Blvd., Suite 1101
Chicago, IL 60606
773.305.0800
samschwartz.com