Executive Summary

The proposed Station Avenue project would be located on a 32-acre site in central Rohnert Park, bounded by Rohnert Expressway, Enterprise Drive, State Farm Drive, and the SMART rail corridor and station. The project is proposed to include 140,000 square feet of commercial uses, 130,000 square feet of office uses, a 156-room hotel, and 460 multifamily residential units, and would construct several new streets in a grid pattern.

Peak hour traffic conditions at ten intersections surrounding the site were evaluated to determine the potential impacts associated with development of the project. All of the intersections that currently exist operate acceptably under existing conditions. Under existing plus approved conditions, which includes the development of a nearby projects under construction, the intersection at Rohnert Park Expressway/State Farm Drive is projected to operate unacceptably at LOS E during the p.m. peak hour. With the addition of project-generated trips, delays at this intersection are projected to further increase, though operation could be improved to acceptable levels by modifying the signal phasing and lane configuration. Operation at the newly-created intersection of State Farm Drive/Venture Avenue is projected to be an unacceptable LOS F, which could be alleviated through the installation of a traffic signal.

The anticipated trip generation of the project was compared to the assumptions included in the transportation analysis conducted for the Central Rohnert Park Priority Development Area Plan Environmental Impact Report (the PDA Plan EIR), and it was found that the proposed project would be expected to generate fewer daily and peak hour trips. The potential traffic impacts associated with the project beyond the street network abutting the site are therefore reflected in the analyses and findings of the PDA Plan EIR.

The project would include effective circulation facilities for pedestrians and bicyclists, though improvements to enhance connectivity to surrounding offsite facilities are recommended. These include the installation of a traffic signal or pedestrian hybrid beacon at the Rohnert Park Expressway/Lynne Conde Way-Quest Street intersection, and an active pedestrian warning system such as a rapid rectangular flashing beacon at the State Farm Drive/Station Avenue intersection. The project would be well-served by both bus and rail transit services, and with the recommended pedestrian enhancements, would include effective connections to transit.

As part of the project, a new one-way eastbound slip street would be established on the south side of Rohnert Park Expressway along the project frontage. The street is expected to effectively balance local access needs with the need to maintain traffic flow on Rohnert Park Expressway. A new westbound left-turn lane on Rohnert Park Expressway at the Lynne Conde Way-Quest Street would provide a new access into the site, and is projected to function acceptably.

The project would modify State Farm Drive along its frontage. Full access to State Farm Drive would be allowed at Venture Avenue, Station Avenue, and Spirit Avenue, but would be restricted to right turns in and out at Discovery Lane near the proposed hotel. State Farm Drive would operate acceptably with one lane in each direction, protected or buffered bike lanes, and new on-street parking spaces to the south of Venture Avenue. On the segment between Venture Avenue and Rohnert Park Expressway, two travel lanes in each direction would be retained, with no on-street parking allowed.

The segment of Enterprise Drive along the site's frontage would include three new intersections created by the project. The existing two-way left-turn lane on Enterprise Drive along this segment is anticipated to adequately serve the new project traffic as well as traffic entering and exiting existing driveways on the southern side of the street. The intersection at Enterprise Drive/Serenity Lane would be restricted to right turn in and out.

Introduction

This report presents an analysis of the anticipated traffic impacts that would be associated with development of a major mixed-use project on the former State Farm Insurance campus in central Rohnert Park. The traffic study was completed in accordance with the criteria established by the City of Rohnert Park, and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide City staff and policy makers with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required to mitigate these impacts to a level of insignificance as defined by the City's General Plan or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments. Impacts relative to access for pedestrians, bicyclists, and to transit are also addressed.

Project Profile

The proposed project can be characterized as an urban transit-oriented development, and the 32-acre site is bounded by Rohnert Expressway, Enterprise Drive, State Farm Drive, and the SMART rail corridor and station. The project is proposed to include 140,000 square feet of commercial uses, 130,000 square feet of office uses, a 156-room hotel, and 460 multifamily residential units.

The project includes an internal grid street network with several connections to the surrounding street system, and would modify the segments of Rohnert Park Expressway and State Farm Drive along its frontages. State Farm Drive would generally be reconfigured to add on-street parking, separated bike lanes, and one through vehicle lane in each direction. A new one-way eastbound "slip" or frontage road would be constructed parallel to Rohnert Park Expressway.

Transportation Setting

Operational Analysis

Study Area and Periods

The study area for the analysis focuses on the streets and intersections surrounding the project site, since cumulative impacts in adjacent areas (including the Rohnert Park Expressway intersections at Commerce Boulevard and the US 101 freeway ramps) were previously evaluated in the *Central Rohnert Park Priority Development Area Plan* and its accompanying EIR, which were approved in 2015 (referred to herein as the "PDA Plan"). Because the proposed Station Avenue project is consistent with the assumptions contained in the PDA Plan EIR, and would generate slightly less traffic than projected in that EIR, the analysis of potential traffic impacts includes ten intersections surrounding the site that are either existing or would be created upon development of the project.

The study includes the following intersections:

1. Rohnert Park Expressway/State Farm Drive
2. Rohnert Park Expressway/Lynne Conde Way-Quest Street
3. Rohnert Park Expressway/Grand Street
4. State Farm Drive/Venture Avenue
5. State Farm Drive/Station Avenue
6. State Farm Drive/Spirit Avenue
7. State Farm Drive/Enterprise Drive
8. Enterprise Drive/Quest Street
9. Enterprise Drive/Grand Street
10. Enterprise Drive/Seed Farm Drive

Operating conditions during the a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

Study Area

Adjacent Roadways

State Farm Drive is identified as a major collector in the Rohnert Park General Plan, and forms the western boundary of the project site. The corridor includes four lanes as well as left-turn lanes at most side streets and driveways, and sidewalks on both sides of the street. Landscaped medians as wide as 20 feet separate directions of travel in some areas. On-street bicycle lanes are provided. The posted speed limit is 30 mph.

Rohnert Park Expressway serves as the major east-west arterial for the City of Rohnert Park, connecting residences to the east to the commercial development in the west, as well as to US 101. The corridor forms the northern boundary of the project site and includes four lanes separated by a 20-foot wide landscaped median, on-street bicycle lanes, and sidewalks on both sides of the street. The posted speed limit is 35 mph to the west of State Farm Drive and 40 mph to the east.

Enterprise Drive is on the southern boundary of the project site, and is identified as a minor collector. East of State Farm Drive, Enterprise Drive includes two travel lanes, a two-way left-turn lane, on-street bicycle lanes, and sidewalks on both sides of the street. The street transitions to Seed Farm Drive at its eastern terminus. Enterprise Drive has a posted speed limit of 30 mph.

Study Intersections

Rohnert Park Expressway/State Farm Drive is signalized with protected left-turn phasing on Rohnert Park Expressway and split phasing on State Farm Drive. Marked crosswalks are provided on all legs of the intersection.

Rohnert Park Expressway/Lynne Conde Way is an unsignalized "tee" intersection with stop controls on the terminating southbound approach. Lynne Conde Way is restricted to right turns in and out.

Rohnert Park Expressway/Grand Street would be an unsignalized intersection created by the proposed project. The northbound Grand Street approach would be stop-controlled and restricted to outbound right turns.

State Farm Drive/Venture Avenue is an unsignalized intersection, with the eastbound approach comprised of the main driveway to the Town Centre/Raley's shopping center. The existing westbound driveway is the former driveway to the State Farm facility but would become Venture Drive as part of the proposed project.

State Farm Drive/Station Avenue is an unsignalized intersection, with the eastbound approach formed by a secondary driveway to the Town Centre/Raley's shopping center. The proposed project would construct a new street called Station Avenue that would form a new westbound approach.

State Farm Drive/Spirit Avenue is an unsignalized intersection, with the eastbound approach comprised of an apartment complex driveway. The proposed project would construct Spirit Avenue as a new westbound approach.

State Farm Drive/Enterprise Drive is an all-way stop-controlled tee intersection, with southbound State Farm Drive terminating at Enterprise Drive.

Enterprise Drive/Quest Street would be an unsignalized intersection created by the proposed project. The southbound Quest Street approach would be stop-controlled.

Enterprise Drive/Grand Street would also be an unsignalized intersection created by the project. The southbound Quest Street approach would be stop-controlled.

Enterprise Drive/Seed Farm Drive is an unsignalized tee intersection, with free-flowing traffic between the western (Enterprise Drive) and southern (Seed Farm Drive) legs. The Rohnert Park SMART Station parking lot entry/exit forms the north leg of the intersection, and is stop-controlled at the intersection.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a network of sidewalks, crosswalks, pedestrian signals, and curb ramps provide access for pedestrians near the proposed project site. In addition to pedestrian facilities along public streets, the SMART multi-use pathway runs along the east side of the rail corridor just east of the project site, with a signalized crossing at Rohnert Park Expressway. The SMART multi-use pathway

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Traffic Impact Study for Station Avenue

Figure 1 – Study Area and Existing Lane Configurations

currently extends the length of the City, with future plans for extensions to the north and south. To the south of the project site, multi-use pathways also exist along both sides of Copeland Creek through much of the City. A connection to the Copeland Creek paths exists on Enterprise Drive just south of the project site.

Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2017, classifies bikeways into four categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

In the project area, Class II bike lanes exist on all three streets bordering the site, including Rohnert Park Expressway, State Farm Drive, and Enterprise Drive. The SMART multi-use path and Copeland Creek trails near the project site also serve bicyclist travel.

Transit Facilities

Sonoma County Transit

Sonoma County Transit (SCT) is the principal transit service within Rohnert Park, providing daily local and intercity service. SCT local Routes 10, 12, and 14 generally operate on weekdays between 6:30 a.m. and 6:00 p.m. and on Saturday between 9:00 a.m. and 3:30 pm. These three routes provide access to State Farm Drive near the project site, major shopping centers throughout the City, downtown Cotati, Sonoma State University and several Rohnert Park and Cotati neighborhoods.

SCT Routes 44 and 48 provide intercity service to Petaluma and Santa Rosa. Routes 44 and 48 operate daily with approximately 40- to 120-minute headways between 6:30 a.m. and 8:30 p.m. on weekdays, and approximately two- to four-hour headways between 7:00 a.m. and 8:00 p.m. on weekends. The nearest stops to the project site are approximately 0.4 to 0.5 miles to the west on Commerce Boulevard. SCT Route 54 also provides intercity service between Petaluma and Santa Rosa, but stops near SMART rail stations including downtown Rohnert Park twice during the morning commute and twice during the evening commute. Route 54 stops on Rohnert Park Expressway along the project frontage.

All SCT buses are wheelchair lift-equipped and can transport two wheelchair passengers at a time. SCT allows bikes on all its buses. Buses are equipped with a front-loading bike rack that accommodates either two or three bicycles. When the front-loading rack is full, bus drivers may allow up to two bikes inside the bus.

Golden Gate Transit

Golden Gate Transit (GGT) provides daily interregional service along the US 101 corridor between Santa Rosa and San Francisco. GGT Route 101 stops on Commerce Boulevard, 0.4 to 0.5 miles from the project site. The route operates with approximately one-hour headways in each direction seven days a week. All GGT buses are handicap accessible and equipped with a front-loading bike rack that accommodates either two or three bicycles.

SMART Rail

The Sonoma-Marin Area Rail Transit (SMART) commuter rail system currently operates between San Rafael and the Sonoma County Airport. SMART includes stations at the major population and job centers of the North Bay, including the Rohnert Park station adjacent to the project site. Commuter rail service is provided by 17 round-trip trains on weekdays and five round-trip trains on weekends. Typical headways during the weekday morning and evening commute periods are 30 minutes, with longer headways during midday, late evening, and weekend periods. An extension of the SMART rail service to Larkspur is expected to open in 2019.

Dial-a-Ride

Dial-a-Ride, also known as paratransit or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. Sonoma County Paratransit is designed to serve the needs of individuals with disabilities within Sonoma County. Service days are Monday through Friday from 5:00 a.m. to 11:00 p.m., and Saturday and Sunday from 7:00 a.m. to 9:00 p.m.

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The Levels of Service for the intersections with side street stop controls, or those which are unsignalized and have one or two approaches stop-controlled, were analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

State Farm Drive/Enterprise Drive was analyzed using the "All-Way Stop-Controlled" Intersection methodology from the HCM for all plus Project scenarios. This methodology evaluates delay for each approach based on turning movements, opposing and conflicting traffic volumes, and the number of lanes. Average vehicle delay is computed for the intersection overall, which is then related to a Level of Service.

Rohnert Park Expressway/State Farm Drive was evaluated using the "Signalized" methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. Changes to the signal timing and coordination on Rohnert Park Expressway were implemented in May 2018, and are reflected in the calculations.

The ranges of delay associated with the various levels of service are indicated in Table 1.

Table 1 – Intersection Level of Service Criteria			
LOS	**Two-Way Stop-Controlled**	**All-Way Stop-Controlled**	**Signalized**
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Upon stopping, drivers are immediately able to proceed.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 15 seconds. Drivers may wait for one or two vehicles to clear the intersection before proceeding from a stop.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 15 to 25 seconds. Drivers will enter a queue of one or two vehicles on the same approach, and wait for vehicle to clear from one or more approaches prior to entering the intersection.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 25 to 35 seconds. Queues of more than two vehicles are encountered on one or more approaches.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 35 to 50 seconds. Longer queues are encountered on more than one approach to the intersection.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 50 seconds. Drivers enter long queues on all approaches.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual,* Transportation Research Board, 2010

City of Rohnert Park

The applied thresholds of significance for intersection impacts are based on those included in Policy TR-1 of the *Rohnert Park 2020 General Plan*, which stipulates that LOS C is the minimum acceptable standard. Policy TR-1 also indicates that intersections operating at LOS D or lower at the time a development application is submitted are allowable, so long as the development results in no further LOS reduction, and provided that no feasible improvements exist to improve the LOS.

Policy C-1.2 of the Central Rohnert Park PDA Plan also addresses vehicle level of service. The policy calls for allowing LOS D operation at the intersections of Rohnert Park Expressway/State Farm Drive and Enterprise Drive/State Farm Drive to help prioritize pedestrian and bicycle circulation.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the a.m. and p.m. peak periods. This condition does not include project-generated traffic volumes. Traffic volume data was collected in April 2018 while all local schools and Sonoma State University were in session.

Intersection Levels of Service

Under existing conditions, all existing study intersections are operating acceptably. A summary of the existing intersection level of service calculations is contained in Table 2, the existing traffic volumes are shown in Figure 2, and copies of the Level of Service calculations are provided in Appendix A.

Table 2 – Existing Peak Hour Intersection Levels of Service

Study Intersection *Approach*	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. RPX/State Farm Dr	33.7	C	43.2	D
2. RPX/Lynne Conde Wy-Quest St	0.0	A	0.2	A
Southbound (Lynne Conde) approach	*12.3*	*B*	*12.5*	*B*
3. RPX/Grand St (future intersection)	-	-	-	-
4. State Farm Dr/Venture Ave	1.6	A	4.8	A
Eastbound (Driveway) approach	*12.0*	*B*	*26.6*	*D*
5. State Farm Dr/Station Ave	1.0	A	2.9	A
Eastbound (Driveway) approach	*10.9*	*B*	*17.4*	*C*
6. State Farm Dr/Spirit Ave	0.3	A	0.3	A
Eastbound (Driveway) approach	*10.3*	*B*	*14.7*	*B*
7. State Farm Dr/Enterprise Dr	9.6	A	18.0	C
8. Enterprise Dr/Quest St (future intersection)	-	-	-	-
9. Enterprise Dr/Grand St (future intersection)	-	-	-	-
10. Enterprise Dr/Seed Farm Dr	0.1	A	0.4	A
Southbound (SMART) approach	*10.2*	*B*	*12.4*	*B*

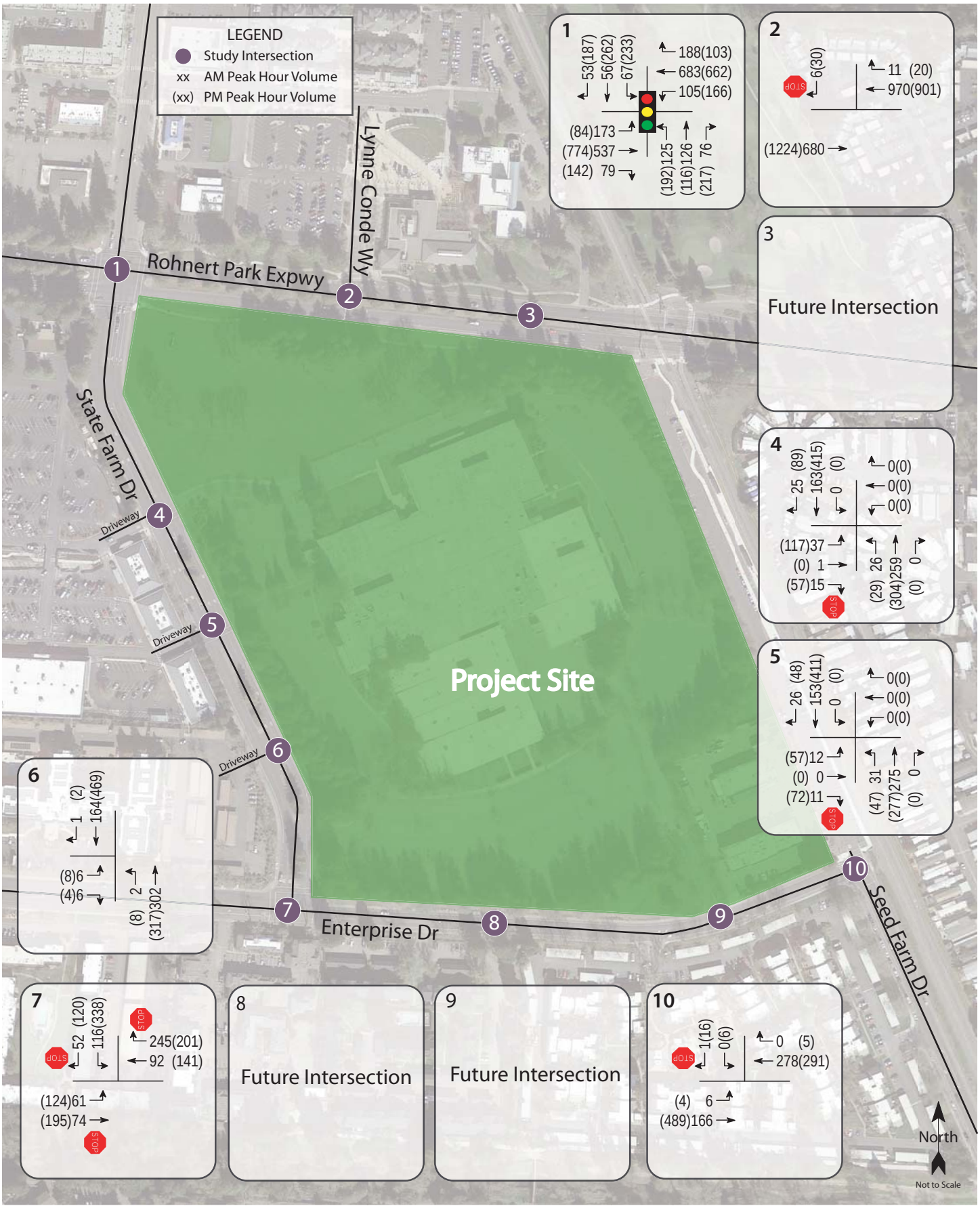
Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; RPX=Rohnert Park Expressway; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

Existing plus Approved Conditions

The Existing plus Approved traffic scenario reflects conditions with traffic from projects that City Staff deems likely to be constructed and generating traffic in a similar timeframe to opening of the proposed project, and would be expected to generate additional traffic volumes on the study intersections near the project site. There are two such projects that would affect traffic in the study area and were included in the Existing plus Approved scenario:

- Clearwater at Sonoma Hills Assisted Living – approved project at 1350 Rohnert Park Expressway, east of Snyder Lane, that includes 90 assisted living units containing 114 beds
- University District – approved project on Rohnert Park Expressway between Petaluma Hill Road and Snyder Lane including 100,000 square feet of retail space, 368 multifamily residential units, and 1,277 single family residential units

The traffic associated with these approved projects was added to existing traffic volumes to obtain the applied Existing plus Approved volumes. Under these conditions, all existing study intersections are expected to operate acceptably, except Rohnert Park Expressway/State Farm Drive, which is projected to operate unacceptably at LOS E during the p.m. peak hour. These results are summarized in Table 3, and Existing plus Approved volumes are shown in Figure 3.



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Traffic Impact Study for Station Avenue

Figure 2 – Existing Traffic Volumes

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Traffic Impact Study for Station Avenue

Figure 3 – Existing plus Approved Traffic Volumes

Table 3 – Existing plus Approved Peak Hour Intersection Levels of Service				
Study Intersection ***Approach***	**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**
1. RPX/State Farm Dr	35.4	D	**71.8**	**E**
2. RPX/Lynne Conde Wy-Quest St	0.0	A	0.2	A
Southbound (Lynne Conde) approach	*13.6*	*B*	*13.4*	*B*
3. RPX/Grand St (future intersection)	-	-	-	-
4. State Farm Dr/Venture Ave	1.6	A	5.5	A
Eastbound (Driveway) approach	*12.2*	*B*	*29.2*	*D*
5. State Farm Dr/Station Ave	1.0	A	2.9	A
Eastbound (Driveway) approach	*10.9*	*B*	*17.4*	*C*
6. State Farm Dr/Spirit Ave	0.3	A	0.3	A
Eastbound (Driveway) approach	*10.3*	*B*	*14.7*	*B*
7. State Farm Dr/Enterprise Dr	9.6	A	18.0	C
8. Enterprise Dr/Quest St (future intersection)	-	-	-	-
9. Enterprise Dr/Grand St (future intersection)	-	-	-	-
10. Enterprise Dr/Seed Farm Dr	0.1	A	0.4	A
Southbound (SMART) approach	*10.2*	*B*	*12.4*	*B*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; RPX=Rohnert Park Expressway; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* **Bold** text = operation below LOS standard

Project Description

Land Use

The 32-acre project site is located in central Rohnert Park, and is bounded by Rohnert Park Expressway, Enterprise Drive, State Farm Drive, and the SMART rail corridor and station. The proposed project has an urban transit-oriented design context and is intended to conform to the vision established in the Central Rohnert Park PDA Plan. The northern portion of the site including the buildings facing and to the north of Station Avenue would be mixed-use, consisting of 140,000 square feet of commercial, 130,000 square feet of office, 20 multifamily residential units, and a 156-room hotel. The southern portion of the site would be comprised of residential uses including 440 multifamily residential units. The project's site plan is shown in Figure 4.

Circulation

The project site plan depicts an internal grid street network with several connections to the surrounding street system. The project would also modify Rohnert Park Expressway and State Farm Drive along its frontages. Following is a description of the circulation system depicted on the project's site plan. The street network and study area lane configurations reflecting these changes are shown in Figure 5.

FIGURE 1, DEVELOPMENT PLAN

Source: Laulima Development 6/18

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Traffic Impact Study for Station Avenue

Figure 4 – Site Plan

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Traffic Impact Study for Station Avenue

Figure 5 – Streets and Lane Configurations with Project

Rohnert Park Expressway and State Farm Drive Modifications

The plan depicts a new one-way local street along the site's Rohnert Park Expressway frontage. This new roadway, which has been referred to by the applicant as a "slip street," would be one-way eastbound, accessed from Rohnert Park Expressway just east of State Farm Drive, with an exit back onto Rohnert Park Expressway near the project's eastern boundary. The street would connect to and terminate at the north side of the SMART station parking lot. The street would be low-speed and provide local auto, bicycle, and pedestrian circulation, and includes diagonal on-street parking.

The project would reconfigure State Farm Drive along its frontage to add areas of on-street parking and protected (Class IV) bike lanes, reducing the number of through lanes on State Farm Drive from two to one in each direction. The existing landscaped medians would be retained.

Internal Streets

New north-south streets running between Rohnert Park Expressway (RPX) and Enterprise Drive would include Grand Street in the eastern project area and Quest Street in the central part of the project site. Grand Street would connect to the new slip street where it re-enters the main eastbound travel lanes of Rohnert Park Expressway (the resulting intersection would be restricted to outbound right-turns only from Grand Street onto RPX). Quest Street would also connect to the new eastbound RPX slip street. Additionally, southbound Quest Street would be accessible from westbound Rohnert Park Expressway via a new inbound left-turn lane. This westbound-to-southbound movement would be the only one allowed between mainline RPX and Quest Street; eastbound and northbound right-turns would occur to and from the frontage road rather than mainline Rohnert Park Expressway.

Four new east-west streets extending eastward from State Farm Drive are shown on the plan. The northernmost is Discovery Lane, a short street connecting to the RPX slip street and providing access to the hotel and some retail uses. Venture Avenue is the next street to the south, and would provide access to several of the project's mixed-use areas, including a 400-space parking structure, several commercial buildings, and surface parking lots. Station Avenue is configured as the site's "Main Street" and passes through the core of the mixed-use area. The street includes a combination of diagonal and parallel on-street parking, and the eastern block of the street (in the area referred to as Station Square) is configured such that it can be closed for events. Spirit Avenue is the southernmost street extending eastward from State Farm Drive, and provides access to much the site's residential development and residential parking areas.

Other internal streets include Park Road and Abbey Road, each of which are one-block long connecting Quest Street to Grand Street, and include on-street parking. Serenity Lane is a short roadway with diagonal parking connecting Quest Street to Enterprise Drive in the southwest area of the site.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 10th Edition, 2017. Published rates for "Multifamily Housing (Mid-Rise)" (ITE LU #221) were applied to the project's multifamily uses, rates for "General Office" (ITE LU #710) were applied to office uses, rates for "Shopping Center" (ITE LU #820) were applied to retail uses, and rates for "Hotel" (ITE LU #310) were applied to the hotel use.

The expected trip generation potential for the proposed project is indicated in Table 4. In addition to showing the trip generation that would result from direct application of ITE rates, the table includes deductions taken for internally-captured trips and implementation of transportation demand management (TDM) measures that are proposed by the applicant. Further discussion on these two topics is provided below. In total, the project is expected to generate an average of 7,368 trips per day, including 405 trips during the a.m. peak hour and 620 during the p.m. peak hour.

Table 4 – Trip Generation Summary											
Land Use	**Units**	**Daily**		**AM Peak Hour**				**PM Peak Hour**			
		Rate	**Trips**	**Rate**	**Trips**	**In**	**Out**	**Rate**	**Trips**	**In**	**Out**
Mid-Rise Apartments	460 units	5.44	2,502	0.36	166	43	123	0.44	202	123	79
Retail	140.0 ksf	37.75	5,285	0.94	132	82	50	3.81	533	256	277
Office	130.0 ksf	9.74	1,266	1.16	151	130	21	1.15	150	24	126
Hotel	156 rooms	8.36	1,304	0.47	73	43	30	0.60	94	48	46
SUB-TOTAL			10,357		522	298	224		979	451	528
Internal Capture Trips			*-2,597*[1]		*-89*	*-46*	*-43*		*-324*	*-159*	*-165*
TDM Implementation			*-392*		*-28*	*-16*	*-12*		*-35*	*-14*	*-21*
Net New Trips			**7,368**		**405**	**236**	**169**		**620**	**278**	**342**

Notes: [1] Daily internal trips estimated using the averages percentage of a.m. and p.m. peak hour internal trips; ksf=1,000 square feet

Adjustments for Non-Auto Modes

Internal trips occur at mixed-use developments, and in the case of the Station Avenue project would consist of residents and employees patronizing the project's retail uses, residents who also work within the development, and hotel guests patronizing retail and office uses. Such trips are typically made by walking or biking rather than driving. The number of internal and external trips was calculated based upon data from the publication *NCHRP Report 684: Enhancing Internal Capture Estimation for Mixed-Use Developments*, Transportation Research Board (TRB), 2011; the methodologies have since been incorporated into the *Trip Generation Manual*. The same methodology was used to determine internal trips for the City Center and Station Center districts in the PDA Plan EIR. The methodology uses the standard ITE trip generation estimates for each land use, determines the potential for internally captured trips onsite, and produces an estimate of the adjusted number of external vehicle trips. The methodology also considers mode share, which was conservatively assumed to include five percent of trips made by bus and rail. For the Station Avenue project, the methodology estimates that approximately 17 percent of a.m. peak hour trips and 33 percent of p.m. peak hour trips would be internally captured. Copies of the NCHRP 684 methodology worksheets are contained in Appendix B.

Adjustments for Transportation Demand Management

Several transportation demand management (TDM) strategies would be implemented as part of the Station Avenue project. The Bay Area Air Quality Management District (BAAQMD) Transportation Demand Management Tool was used to assess the potential effects of TDM implementation at the project site, including quantifying the projected reductions in vehicular trip generation. The model's methodologies are based on the CAPCOA *Quantifying Greenhouse Gas Mitigation Measures* report with default values updated to reflect the transportation conditions of the San Francisco Bay Area. The California Emissions Estimator Model (CalEEMod, version 2016.3.1) utilizes the same methodologies to quantify the impact of TDM strategies. CalEEMod is a statewide land use emissions model used to quantify potential emissions impacts associated with a variety of land use projects. CalEEMod quantifies direct emissions, including vehicle use, and indirect emissions, including energy and water use. Both models quantify the impact of TDM strategies in terms of a reduction of vehicle miles traveled (VMT). VMT is a function of the number of trips generated and the average trip length. For this analysis, it was assumed that any reduction in VMT attributed to the TDM strategies would be expected to result in a proportional reduction in trips generated.

It is important to note that some measures typically associated with TDM have already been accounted for through the methodologies used to quantify internally-captured trips described above. Such measures include

increasing the density of development, developing a site with a diverse mix of uses, and locating development near a transit station.

Following is a description of the additional TDM components that the applicant is proposing, and the anticipated effects on vehicular trip generation.

Pedestrian Network

This TDM measure is related to provision of extensive pedestrian accommodations within a development site, including provision of sidewalks and paths in a pedestrian-oriented environment with convenient connectivity to the major attractors and destinations within the site. The project site plan is consistent with this description, and the resulting TDM reduction from the BAAQMD TDM Tool is 1.0 percent.

Car share Program

The applicant proposes to work with a vendor (such as ZipCar or similar service) to provide car share vehicles on the project site. Car share vehicles would be available 24 hours per day, with likely users including onsite residents who do not own cars, SMART riders who need a vehicle to reach "last mile" destinations, and those who generally rely on walking, bicycling, and transit for transportation but occasionally require use of a vehicle. The TDM reduction associated with provision of onsite car share is 0.8 percent.

Unbundle Parking Costs

The project would "unbundle" the costs associated with parking from the costs of rental fees at the 300 apartment units in buildings J1 and J3. In other words, residents in these 300 apartment units would lease parking spaces separately, only paying for the parking spaces that they actually need. This technique has the benefit of promoting an auto-free lifestyle (or ownership of fewer cars) by reducing monthly housing costs for those residents, while still providing an adequate parking supply to accommodate those who still need to park a vehicle(s). The BAAQMD TDM Tool accounts for the cost of parking; the applicants have indicated that the cost of leasing a parking space has not yet been determined, but that the monthly cost would be at least $50. The $50 rate was therefore used, and the TDM reduction was calculated to be 6.0 percent. This parking reduction only applies to trips associated with the 300 units in buildings J1 and J3.

Transit Network Enhancements

Currently, the SMART station platform adjacent to the site is located in what is essentially a cul-de-sac with parking, precluding buses from directly serving the station platform area. The street layout of Station Avenue would improve the ability for bus operators to more directly serve the SMART station, either by adjusting bus routes to use the new connection from the RPX slip street to the northern side of the SMART station, or circulating through the project site on Grand Street, stopping near the proposed station building that has direct pedestrian access to the SMART platform. The corresponding TDM reduction associated with these improvements to the transit network is 0.4 percent.

The applicant also proposes to support operation of a shuttle service to major destinations in the surrounding area such as Sonoma State University, SOMO Village, and the Spreckels Performing Arts Center. Such a service would be intended to complement existing transit services and reduce the need for the site's residents, guests, employees, and customers to use a private automobile for travel. The BAAQMD TDM Tool includes methodologies to quantify the effects of such shuttles on employee travel; for the purposes of this analysis, those reductions are applied to the entire site since the shuttles would serve all users, but in order to maintain a conservative approach it is also assumed that the level of implementation (including frequency of shuttle service) would be relatively low, likely coinciding only with the busiest SMART arrival/departure times. The resulting TDM reduction is projected to be 0.7 percent.

Commute Trip Reduction Program

Commute trip reduction (CTR) programs are multi-strategy programs which include a combination of TDM measures. The trip reductions outlined in the BAAQMD TDM Tool have been developed to prevent the double-counting of reductions for individual measures. A CTR program discourages single-occupancy vehicle trips and can either be voluntary or required; the proposed Station Avenue proposes to implement a voluntary CTR program. Station Avenue would provide an on-site TDM coordinator to implement and manage the program. Typical roles of a TDM coordinator would include carpooling encouragement, ride-matching assistance, working with employers to provide flexible work schedules, and new employee/resident orientation of trip reduction and alternative mode options. The TDM reduction associated with this type of voluntary CTR program is 3.8 percent. Because the BAAQMD methodology only quantifies this type of TDM as it applies to commute trips, the deduction is applied only to the proposed office uses at Station Avenue. Effects of peak hour commute trip reductions as they apply to residential and retail uses may still occur to some degree, though because they would be substantially lower than those achieved at employment-based land uses and are not quantified in the BAAQMD tool's methodology, they are not applied in this analysis.

The Station Avenue project would also include transportation marketing services, which are a form of CTR measure that would also be overseen by the TDM coordinator. Marketing strategies would include promotions to encourage non-auto modes targeting both existing and new residents, employees, and tenants. This type of TDM is categorized as CTR Marketing in the BAAQMD tool, and is projected to result in a 2.8 percent trip reduction. As with the voluntary CTR program, the deduction is applied only to the trip generated by the office components of Station Avenue.

Other Proposed TDM Measures

The Station Avenue applicant identifies several additional measures that would be implemented to help reduce traffic levels, but that do not have quantifiable trip reduction effects identified in the BAAQMD TDM tool. These include provision of bicycle parking, inclusion of shower and locker facilities in office restrooms, bicycle rentals, bicycle maintenance services, bicycle valet parking at events, delivery supportive amenities including temporary storage facilities for deliveries, multimodal wayfinding signage, real time transportation information, and provision of designated ride service pick-up/drop-off locations (such as Uber and Lyft). While each of these techniques considered independently would be expected to have a negligible influence in reducing peak hour vehicle trips, the combined measures would have a positive effect on making travel by non-auto modes more convenient. A modest TDM reduction of 0.5 percent was therefore conservatively applied in order to capture the effects of these combined additional measures.

Effect of Combined TDM Measures

The TDM strategies that are proposed to be implemented by the Station Avenue applicant would be expected to reduce trips by approximately 392 per day, including a reduction of 28 trips during the a.m. peak hour and 35 trips during the p.m. peak hour. These TDM deductions are applied only to the vehicular trips that are anticipated to occur *after* accounting for deductions associated with internally-captured trips. In the case of TDM measures associated with commute trip reduction programs, the deductions are applied only to the trips associated with the office land use, also after deducting the influences of internally-captured trips.

The expected trip generation reductions associated with the TDM measures are shown in Table 5.

Table 5 – Trip Reductions Associated with Implementation of TDM Measures								
	TDM	Daily	AM Peak Hour			PM Peak Hour		
Proposed TDM Measures	Reduction	Trips	Trips	In	Out	Trips	In	Out
Pedestrian Network within Site	1.0%	78	4	2	2	7	3	4
Onsite Car Share	0.7%	54	3	2	1	5	2	3
Unbundled Parking[1]	6.0%	73	5	1	4	5	3	2
Shuttle	0.7%	54	3	2	1	5	2	3
Transit Network Enhancements	0.4%	31	2	1	1	3	1	2
Voluntary CTR Program[2]	3.8%	36	5	4	1	4	1	3
CTR Marketing[2]	2.8%	27	4	3	1	3	1	2
Other TDM Measures	0.5%	39	2	1	1	3	1	2
Combined TDM Trip Reductions		**392**	**28**	**16**	**12**	**35**	**14**	**21**

Notes: [1] deduction applied only to 300 apartment units on Block J at an assumed minimum fee of $50/month
[2] deduction applied only to office trips

Comparison to PDA Plan EIR Trip Generation

The project site is represented as the "Station Center" district in the Central Rohnert Park PDA Plan. The traffic analysis prepared for the PDA Plan EIR, *Traffic Impact Study for the Central Rohnert Park PDA Plan*, W-Trans, 2015, assumed a total of 10,393 daily trips for the Station Center district, including 526 a.m. peak hour trips and 693 p.m. peak hour trips. These projections, which were used in the PDA Plan EIR, exceed the anticipated trip generation resulting from the proposed Station Avenue project with implementation of the proposed TDM measures. The long-range cumulative traffic impacts identified in the PDA Plan EIR would therefore adequately reflect, if not slightly overstate, the traffic impacts resulting from implementation of the Station Avenue project along with cumulative development in the City and region.

A comparison between the trip generation assumptions for the proposed project and those included in the PDA Plan EIR's traffic impact study is shown in Table 5.

Table 5 – Trip Generation Comparison to PDA Plan EIR							
	Daily	AM Peak Hour			PM Peak Hour		
	Trips	Trips	In	Out	Trips	In	Out
Station Avenue Project	7,368	405	236	169	620	278	342
PDA Plan Traffic Impact Study[1]	10,393	526	237	289	693	342	351
Net Difference	**-3,025**	**-121**	**-1**	**-120**	**-73**	**-64**	**-9**

Notes: [1] As identified for the Station Center district in Table 11 of the *Traffic Impact Study for the Central Rohnert Park PDA Plan*, W-Trans, 2015

Trip Distribution

The pattern used to allocate new project trips to the street network was based on distributions used in the PDA Plan EIR, local traffic patterns, and the street configuration shown on the proposed site plan. The applied distribution assumptions are shown in Table 6.

Table 6 – Trip Distribution Assumptions		
Route	**Residential Uses**	**Nonresidential Uses**
Rohnert Park Expressway – west of State Farm Drive	50%	60%
Rohnert Park Expressway – east of SMART	16%	15%
Seed Farm Drive – south of Enterprise Drive	12%	9%
Enterprise Drive – west of State Farm Drive	8%	6%
State Farm Drive – north of Rohnert Park Expressway	10%	8%
Town Centre	4%	2%
TOTAL	**100%**	**100%**

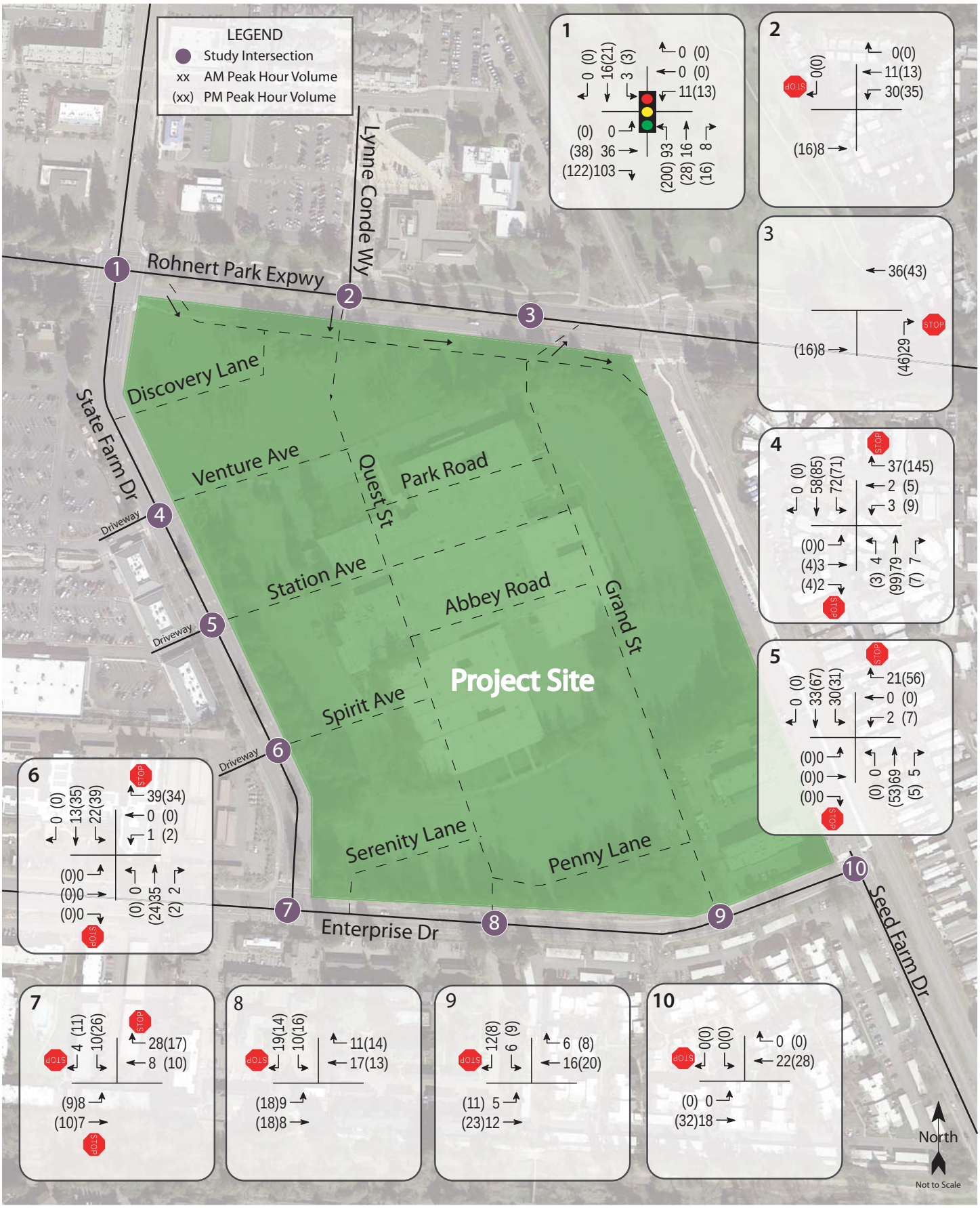
Intersection Operation

Existing plus Project Conditions

Upon the addition of project-related traffic to the Existing volumes, nine of the ten the study intersections are expected to operate acceptably. The intersection at State Farm Drive/Venture Avenue is projected to operate unacceptably at LOS F during the p.m. peak hour. It should be noted that the intersection at Rohnert Park Expressway/State Farm Drive is expected to drop from LOS C to LOS D during the a.m. peak hour, and continue operating at LOS D during the p.m. peak hour; LOS D operation is considered acceptable at this location per Policy C-1.2 of the Central Rohnert Park PDA Plan. Project traffic volumes are shown in Figure 6, and the Existing plus Project levels of service are summarized in Table 7.

Finding – The study intersections are expected to continue operating acceptably upon the addition of project-generated traffic, except for the intersection of State Farm Drive/Venture Avenue, which is projected to operate at LOS F during the p.m. peak hour.

Recommendation – A traffic signal should be installed at the intersection of State Farm Drive/Venture Avenue.



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Traffic Impact Study for Station Avenue

Figure 6 – Project Traffic Volumes

Table 7 – Existing and Existing plus Project Peak Hour Intersection Levels of Service

Study Intersection *Approach*	Existing Conditions				Existing plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. RPX/State Farm Dr	33.7	C	43.2	D	35.8	D	48.5	D
2. RPX/Lynne Conde Wy-Quest St	0.0	A	0.2	A	0.2	A	0.4	A
SB (Lynne Conde) approach	*12.3*	*B*	*12.5*	*B*	*12.4*	*B*	*12.6*	*B*
WB (RPX) left-turn	-	-	-	-	*9.3*	*A*	*12.7*	*B*
3. RPX/Grand St	-	-	-	-	0.2	A	0.3	A
NB (Grand St) approach	-	-	-	-	*11.0*	*B*	*15.3*	*C*
4. State Farm Dr/Venture Ave	1.6	A	4.8	A	3.4	A	**64.9**	**F**
EB (Driveway) approach	*12.0*	*B*	*26.6*	*D*	*23.6*	*C*	****	***F***
WB (Venture Ave) approach	-	-	-	-	*12.6*	*B*	*19.1*	*C*
Mitigated – signalize	-	-	-	-	8.9	A	13.2	B
5. State Farm Dr/Station Ave	1.0	A	2.9	A	1.6	A	5.8	A
EB (Driveway) approach	*10.9*	*B*	*17.4*	*C*	*14.7*	*B*	*38.4*	*E*[1]
WB (Station Ave) approach	-	-	-	-	*11.6*	*B*	*14.0*	*B*
6. State Farm Dr/Spirit Ave	0.3	A	0.3	A	1.3	A	1.1	A
EB (Driveway) approach	*10.3*	*B*	*14.7*	*B*	*13.0*	*B*	*21.9*	*C*
WB (Station Ave) approach	-	-	-	-	*11.1*	*B*	*11.6*	*B*
7. State Farm Dr/Enterprise Dr	9.6	A	18.0	C	10.0	A	21.3	C
8. Enterprise Dr/Quest St	-	-	-	-	0.7	A	0.6	A
SB (Quest St) approach	-	-	-	-	*11.3*	*B*	*13.5*	*B*
9. Enterprise Dr/Grand St	-	-	-	-	0.5	A	0.4	A
SB (Grand St) approach	-	-	-	-	*11.3*	*B*	*15.3*	*C*
10. Enterprise Dr/Seed Farm Dr	0.1	A	0.4	A	0.1	A	0.4	A
SB (SMART) approach	*10.2*	*B*	*12.4*	*B*	*10.4*	*B*	*13.0*	*B*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; RPX=Rohnert Park Expressway; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* **Bold** text = operation below LOS standard; ** Delay exceeds 120 seconds; [1]acceptable on minor approach since overall intersection operates at LOS A and peak hour signal warrant unmet

Existing plus Approved plus Project Conditions

With project-related traffic added to Existing plus Approved volumes, eight of the ten study intersections are expected to operate acceptably. The intersection at Rohnert Park Expressway/State Farm Drive is projected to continue operating unacceptably at LOS E during the p.m. peak hour, and the intersection at State Farm Drive/Venture Avenue is projected to operate unacceptably at LOS F during the p.m. peak hour. Note that the intersection at State Farm Drive/Station Avenue is projected to have LOS E operation on the eastbound driveway approach during the p.m. peak hour, though this is considered to be acceptable since the intersection is projected to have LOS A operation overall and the peak hour signalization warrant would be unmet. Additionally, some drivers exiting the shopping center at this location would be expected instead use the new Venture Avenue signal where delays would be lower, resulting in improved LOS D operation on the eastbound shopping center driveway approach. This potential change in exiting traffic patterns is reflected in the LOS calculations for the State Farm Drive/Venture Avenue signal.

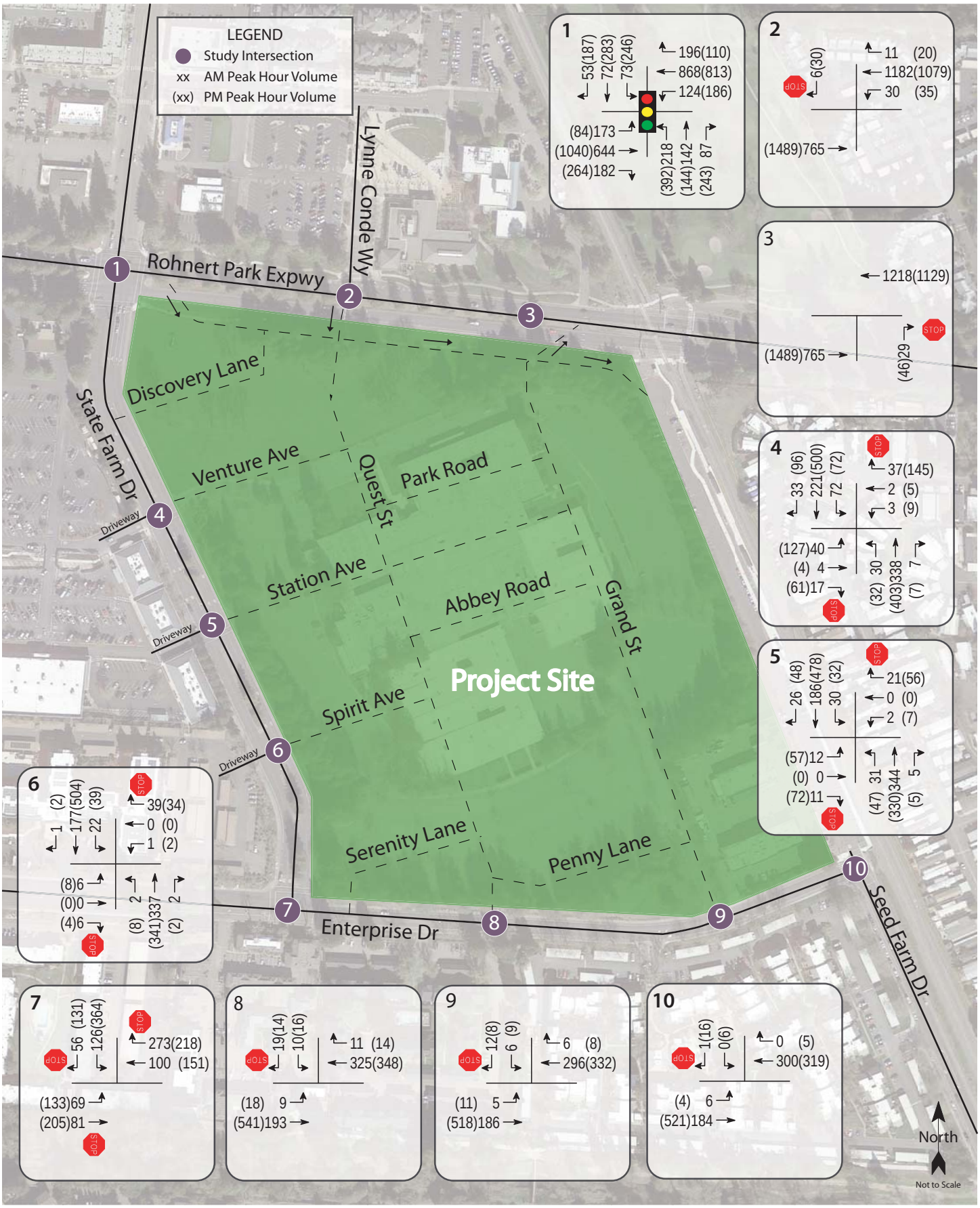
General Plan Policy TR-1 indicates that intersections operating at LOS D or lower at the time a development application is submitted are allowable, so long as the development results in no further LOS reduction. The intersection at Rohnert Park Expressway/State Farm Drive currently operates at LOS D, though with the addition of traffic from the proposed project along with other approved projects, operation would drop to LOS E, which is conflicts with General Plan Policy TR-1. As a result, it is recommended that improvements be made to this intersection to improve its operation to LOS D or better under Existing plus Approved plus Project conditions. Modifications to the intersection's signal phasing and lane configurations would improve operation to acceptable levels. It should be noted that the City is currently exploring implementation of an Advanced Traffic Management System (ATMS) on Rohnert Park Expressway, along with alternative modifications to the pedestrian signal phasing at the Rohnert Park Expressway/State Farm Drive intersection that could potentially improve operation to acceptable levels. As such, several options may exist to improve operation at the intersection to acceptable levels, and the ultimate configuration will be determined by City of Rohnert Park.

Finding – The study intersections at Rohnert Park Expressway/State Farm Drive and State Farm Drive/ Venture Avenue are projected to operate unacceptably under Existing plus Approved plus Project conditions.

Finding – The intersection of State Farm Drive/Venture Avenue would be expected to operate acceptably under Existing plus Approved plus Project conditions with the installation of a traffic signal, as recommended under Existing plus Project conditions.

Recommendation – The intersection at Rohnert Park Expressway/State Farm Drive should be converted to protected left-turn phasing on the northbound and southbound State Farm Drive approaches. The northbound lanes should be restriped to designate dual left-turn lanes, a through lane, and a right-turn lane, and the southbound lanes should be restriped to designate a left-turn lane, through lane, and through/right-turn lane. The City of Rohnert Park is considering additional or alternative modifications that may provide equivalent or better operations at the intersection, and will be responsible for determining the ultimate improvements to be implemented.

The intersection LOS results are summarized in Table 8, and the Existing plus Approved plus Project traffic volumes are shown in Figure 7.



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Traffic Impact Study for Station Avenue

Figure 7 – Existing plus Approved plus Project Traffic Volumes

Table 8 – Existing plus Approved plus Project Intersection Levels of Service

Study Intersection *Approach*	Existing plus Approved Conditions				Existing plus Approved plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. RPX/State Farm Dr	35.4	D	**71.8**	**E**	38.1	D	**79.4**	**E**
Mitigated – modify lane configuration and phasing	-	-	-	-	26.2	C	39.4	D
2. RPX/Lynne Conde Wy-Quest St	0.0	A	0.2	A	0.2	A	0.4	A
SB (Lynne Conde) approach	*13.6*	*B*	*13.4*	*B*	*13.7*	*B*	*13.8*	*B*
WB (RPX) left-turn	-	-	-	-	*9.6*	*A*	*15.0*	*B*
3. RPX/Grand St	-	-	-	-	0.2	A	0.3	A
NB (Grand St) approach	-	-	-	-	*11.4*	*B*	*18.0*	*C*
4. State Farm Dr/Venture Ave	1.6	A	5.5	A	3.5	A	**78.0**	**F**
EB (Driveway) approach	*12.2*	*B*	*29.2*	*D*	*24.3*	*C*	**	***F***
WB (Venture Ave) approach	-	-	-	-	*12.6*	*B*	*19.2*	*C*
Mitigated – signalize	-	-	-	-	8.9	A	13.4	B
5. State Farm Dr/Station Ave	1.0	A	2.9	A	1.6	A	5.8	A
EB (Driveway) approach	*10.9*	*B*	*17.4*	*C*	*14.7*	*B*	*38.4*	*E*[1]
WB (Station Ave) approach	-	-	-	-	*11.6*	*B*	*14.0*	*B*
6. State Farm Dr/Spirit Ave	0.3	A	0.3	A	1.3	A	1.1	A
EB (Driveway) approach	*10.3*	*B*	*14.7*	*B*	*13.0*	*B*	*21.9*	*C*
WB (Station Ave) approach	-	-	-	-	*11.1*	*B*	*11.6*	*B*
7. State Farm Dr/Enterprise Dr	9.6	A	18.0	C	10.0	A	21.3	C
8. Enterprise Dr/Quest St	-	-	-	-	0.7	A	0.6	A
SB (Quest St) approach	-	-	-	-	*11.3*	*B*	*13.5*	*B*
9. Enterprise Dr/Grand St	-	-	-	-	0.5	A	0.4	A
SB (Grand St) approach	-	-	-	-	*11.3*	*B*	*15.3*	*C*
10. Enterprise Dr/Seed Farm Dr	0.1	A	0.4	A	0.1	A	0.4	A
SB (SMART) approach	*10.2*	*B*	*12.4*	*B*	*10.4*	*B*	*13.0*	*B*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; RPX=Rohnert Park Expressway; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* **Bold** text = operation below LOS standard; ** Delay exceeds 120 seconds; Shaded cells reflect mitigated conditions; [1]acceptable on minor approach since overall intersection operates at LOS A and peak hour signal warrant unmet

Alternative Modes

Pedestrian Facilities

The project site includes sidewalks on its internal grid street system, as well as crosswalks with curb extensions (bulbouts) at most intersections. The onsite pedestrian network would effectively link to the SMART station via the eastern terminus of Station Avenue. Given the project's intended nature as a downtown activity hub, as well as its proximity to transit, adjacent shopping centers, and residential neighborhoods, it is reasonable to assume that pedestrian crossing activity will increase on the streets bordering the project site. Following is an assessment of how this additional pedestrian crossing demand would be accommodated.

Rohnert Park Expressway

Pedestrian crossings would exist at the signalized intersections on Rohnert Park Expressway at State Farm Drive and the SMART multi-use path crossing, which are roughly located on the eastern and western boundaries of the project site. The distance between these signalized crossings is approximately 1,250 feet. The adopted PDA Plan identifies a new signalized pedestrian crossing at the Lynne Conde Way intersection, which is also the location where the project proposes to include a new westbound left-turn lane on RPX serving inbound traffic to Quest Street. To improve pedestrian connectivity in the central Rohnert Park area by reducing the distance between signalized pedestrian crossings on RPX, it is recommended that a signal be installed at this intersection concurrently with development of the Station Avenue Project. The City of Rohnert Park shall determine whether a conventional traffic signal should be installed, incorporating both the new pedestrian phasing as well as the new westbound left-turn movement onto the project site, or whether an alternative device such a pedestrian hybrid beacon (PHB) should be implemented. Unlike a conventional traffic signal, a pedestrian hybrid beacon would only be activated by pedestrians wishing to cross RPX, and would not provide a separate signal phase for the new westbound left-turn movement. With either configuration, the crosswalk should be located on the west leg of the intersection in an offset alignment that causes pedestrians to face oncoming traffic within the RPX median, like the treatment used at the SMART path crossing to the east. The signal or PHB should also be interconnected to the existing coordinated signal system to minimize disruption to traffic flow on Rohnert Park Expressway. Either configuration would be expected to operate acceptably, and not generate queues that would extend to the SMART crossing or State Farm Drive.

State Farm Drive

Pedestrian crossings currently exist on State Farm Drive at the Rohnert Park Expressway signalized intersection and the Enterprise Drive all-way stop-controlled intersection. As indicated in the operational analysis above, a signalized intersection would be warranted at the Venture Avenue intersection. There is an existing crosswalk at the future location of Station Avenue, which is planned to remain a two-way stop-controlled intersection. Station Avenue is likely to become a primary pedestrian activity spine within the project site since it functions as the site's commercial "main street" and leads directly to the SMART station. As such, it is likely that there will be regular pedestrian crossing demand at this location. Based on information and methodologies contained in *NCHRP Report 562: Improving Pedestrian Safety at Unsignalized Crossings*, National Cooperative Highway Research Program, 2006, it is recommended that an active pedestrian warning system be installed at the intersection, such as a Rapid Rectangular Flashing Beacon (RRFB) or similar device.

With pedestrian crosswalks on State Farm Drive at RPX, Venture Avenue, Station Avenue, and Enterprise Drive, the resulting distances between crossings would be 600 feet or less, which would be expected to adequately accommodate the anticipated pedestrian crossing demand.

Enterprise Drive

Crosswalks currently exist on Enterprise Drive at the State Farm Drive and Seed Farm Drive intersections, which are approximately 1,160 feet apart. The southern portion of the Station Avenue project site and the areas to the south of Enterprise Drive are residential in nature, and would typically be expected to generate only modest amounts of pedestrian crossing activity on Enterprise Drive. However, a connection to the Copeland Creek trail system also exists directly across from the future Quest Street intersection. The PDA Plan identified an enhanced pedestrian crossing at this location to strengthen connectivity to the Copeland Creek trails, which are a major east-west pedestrian and bicycle facility through Rohnert Park. It is likely that residents of the project will become users of these trails. In order to serve this demand, the project site plan depicts that an enhanced pedestrian crossing would be constructed on the east side of the Enterprise Drive/Quest Street intersection, including marked crosswalks and a raised pedestrian refuge. With this enhancement, pedestrian and bicycle crossing facilities on Enterprise Drive and connectivity to surrounding facilities would be adequate.

Finding – The project's onsite pedestrian facilities are well-connected and anticipated to perform adequately.

Recommendation – A traffic signal or pedestrian hybrid beacon should be installed at the Rohnert Park Expressway/Lynne Conde Way-Quest Street intersection to accommodate pedestrian crossings. An offset pedestrian crossing should be established on the west intersection leg and the signal/PHB should be incorporated into the existing coordinated signal timing scheme on Rohnert Park Expressway.

Recommendation – An active pedestrian warning system such as a Rapid Rectangular Flashing Beacon crossing should be installed at the intersection of State Farm Drive/Station Avenue.

Bicycle Facilities

Existing bicycle facilities, including Class II bike lanes on Rohnert Park Expressway, State Farm Drive, and Enterprise Avenue as well as the nearby SMART multi-use path and Copeland Creek trails, form the bicycle circulation network surrounding the project site. Within the project site, new north-south bike lanes would be included on Grand Street, with new east-west bike lanes on Spirt Avenue and Abbey Road, creating effective linkages to surrounding bike facilities. The project would modify State Farm Drive to include a protected (Class IV) bike lane between Enterprise Drive and Rohnert Park Expressway. The cycle track would be physically separated from vehicle lanes by a landscaped buffer.

Bicyclists would encounter similar conditions to pedestrians when crossing Rohnert Park Expressway, State Farm Drive, and Enterprise Drive. With the recommendations identified above for pedestrian crossings, bicycle crossings of these streets would also be effectively served.

Finding – The project's onsite bicycle facilities would establish connections to nearby bike lanes and trails, and with incorporation of the recommended crossing enhancements for pedestrians, bicyclists would be able to effectively access the regional bicycle network.

Transit

The project site is well-served by both local and regional bus transit routes operated by Sonoma County Transit. With implementation of the recommended pedestrian improvements identified above, including signalization of the Rohnert Park Expressway/Quest Street and State Farm Drive/Venture Avenue intersections, effective linkages to transit would be established. The project would also create a new pedestrian linkage to the Rohnert Park SMART commuter rail station, creating a direct access for the project's residents, employees, and visitors, and also improving accessibility to the station from surrounding areas in Central Rohnert Park. The project's internal grid of streets, as well as its proposed connection of the Rohnert Park Expressway eastbound slip street to the SMART station's parking lot, also creates the potential for transit agencies to adapt bus routes over time to more directly serve SMART station users as well as users generated by the Station Avenue project.

Finding – The project would be well-served by both bus and rail transit, and would establish connections to transit stops that benefit both the project and surrounding areas. The project would be expected to increase both bus and rail transit ridership and reduce auto reliance, both of which are considered beneficial impacts.

Access and Circulation

Site Access

A new grid network of streets would be constructed on the project site. Following is a discussion and evaluation of the site's access to surrounding streets including Rohnert Park Expressway, State Farm Drive, and Enterprise Avenue.

Rohnert Park Expressway

Drivers on eastbound Rohnert Park Expressway would use the project's new one-way slip street when entering the site. From the slip street they could then turn right onto an internal driveway near the hotel, Quest Street, or Grand Street. Drivers exiting the site onto Rohnert Park Expressway would also turn right onto the slip street before entering mainline Rohnert Park Expressway at Grand Street. Drivers on westbound Rohnert Park Expressway could enter the site using the new left-turn lane to be constructed with the project at Quest Street. There would be no left-turn egress from the site directly onto Rohnert Park Expressway. The proposed one-way slip street is expected to effectively balance local access needs with the need to maintain traffic flow on mainline Rohnert Park Expressway.

The proposed westbound left-turn lane at the intersection at Rohnert Park Expressway/Lynne Conde Way-Quest Street is shown on the project site plan to have an approximate length of 180 feet, which would be sufficient to accommodate the projected vehicle storage and space for deceleration. The City will determine whether the intersection should include a full traffic signal or a pedestrian hybrid beacon. To reinforce the turning restrictions that would remain at the intersection, it is recommended that the following signs be installed.

- "No Turns" signs on the eastbound RPX approach
- "No Left Turn" sign on the southbound Lynne Conde Way approach
- "Do Not Enter" sign on the northbound Quest Street approach between the RPX mainline and frontage roads, with an accompanying "One Way" sign directing drivers exiting the site onto the eastbound frontage road

At the Rohnert Park Expressway (mainline)/Grand Street intersection, a STOP sign should be installed on the northbound Grand Street approach, along with "No Left Turn" signage.

At the RPX frontage road intersections of Quest Street and Grand Street, STOP signs should be installed on the northbound and eastbound approaches.

State Farm Drive

The project would include four intersections on State Farm Drive at Discovery Lane, Venture Avenue, Station Avenue, and Spirit Avenue. The site plan depicts a raised median on State Farm Drive extending through the Discovery Lane intersection, and full access maintained at the remaining three intersections, with breaks in the State Farm Drive median. The plan shows southbound left-turn pockets at the three full-access intersections.

Because traffic volumes on State Farm Drive would be higher to the north of Venture Avenue than to the south and have different characteristics, the northern and southern segments are evaluated separately below.

Northern Segment - Rohnert Park Expressway to Venture Avenue

Discovery Lane near the proposed hotel would be slightly offset from the northernmost driveway at the Town Centre shopping center. Given the proximity to Rohnert Park Expressway and projected traffic operations at the

RPX/State Farm Drive traffic signal, a raised median should be installed on State Farm Drive, as proposed, to eliminate left-turn movements in and out of both driveways. Alternative left-turn access would remain available to both the project site and Town Centre via the adjacent new signalized intersection at Venture Avenue.

As indicated on the project site plan, two southbound lanes would be maintained on State Farm Drive along this segment, merging to a single through lane north of the Venture Avenue intersection, with the outside through lane becoming a right-turn "trap" lane at the Venture Avenue signal. On northbound State Farm Drive, the site plan depicts two northbound lanes to the north of Venture Avenue. There would be no on-street parking on this segment of State Farm Drive. This configuration is anticipated to operate acceptably.

Southern Segment - Venture Avenue to Enterprise Drive

Northbound State Farm Drive on this segment is shown on the site plan to be reconfigured to include one through lane, parallel parking, and a protected bike lane. Southbound State Farm Drive would have a similar configuration, but with a painted buffer between the bike lane and travel lanes instead of a raised landscaped buffer. To the south of Venture Avenue, traffic volumes are projected to be in the range of 8,500 to 10,000 vehicles per day. The proposed street configuration with one through lane and parallel parking would be expected to function acceptably. The intersection at State Farm Drive/Station Avenue is projected to operate acceptably with stop-controls on the minor single-lane approaches, and left-turn pockets as proposed on State Farm Drive. The intersection at State Farm Drive/Spirit Avenue would also remain unsignalized, and would be modified to provide a new southbound left-turn pocket.

At the State Farm Drive/Enterprise Drive intersection, the existing all-way stop-controls would be maintained. A right-turn lane would be maintained on the southbound State Farm Drive approach, with no on-street parking provided in this area. It should be noted that the City is considering installation of a modern roundabout at this intersection, which would be expected to operate acceptably with lower delays than the existing all-way stop-controls, and also effectively accommodate pedestrians and bicyclists. With a roundabout, the southbound approach would remain a single lane rather than maintaining a right-turn lane as would be necessary with the all-way stop controls.

Enterprise Drive

The site plan shows three new intersections serving project traffic on Enterprise Drive at Serenity Lane, Quest Street, and Grand Street. Serenity Lane would intersect Enterprise Drive approximately 200 feet east of State Farm Drive, and should be restricted to right turns in and out as shown on the site plan. Further to the east, Enterprise Drive has an existing two-way left-turn lane that would accommodate full access and left-turns into and out of the project site.

The intersection at Quest Street would be located approximately 180 feet to the east of a driveway serving an apartment complex on the south side of Enterprise Drive. Similarly, the intersection at Grand Street would be located approximately 175 feet east of the driveway for a different apartment complex. Given the projected volumes at the project's two intersections, as well as observed volumes at the two apartment complex driveways, the potential for conflicts to occur within the two-way left-turn lane is negligible and consistent with that encountered on similarly-configured roadways. The street would be expected to function acceptably.

Site Access Findings and Recommendations

Following are the findings and recommendations pertaining to site access and the configuration of streets along the project frontage. The intersection lane configurations with the recommended changes are shown in Figure 8.

Finding – The segment of State Farm Drive between Venture Avenue and Enterprise Drive would operate acceptably with a single through lane adjacent to on-street parking spaces.

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Traffic Impact Study for Station Avenue

Figure 8 – Mitigated Lane Configurations

Recommendation – The Rohnert Park Expressway/Lynne Conde Way-Quest Street intersection should include a "No Turns" sign on the eastbound RPX approach, a "No Left Turn" sign on the southbound Lynne Conde Way approach, and a "Do Not Enter" sign on the northbound Quest Street approach between the RPX mainline and frontage roads, with an accompanying "One Way" sign directing drivers exiting the site onto the eastbound RPX frontage road.

Recommendation – The Rohnert Park Expressway/Grand Street intersection should include a STOP sign on the northbound Grand Street approach (at the RPX mainline), along with "NO Left Turn" signage.

Recommendation – STOP signs should be installed at the Rohnert Park Expressway frontage road intersections of Quest Street and Grand Street on the northbound and eastbound approaches.

Onsite Circulation

All the project's internal streets would include one vehicle travel lane in each direction, sidewalks, and on-street parking. On-street parking spaces would be parallel on most streets, with diagonal spaces provided on Station Avenue between State Farm Drive and Quest Street, and on Serenity Lane. Intersections within the site would be unsignalized, and would include curb extensions (bulbouts) at many locations to reduce pedestrian crossing distances and regulate vehicle turning speeds. Internal drive aisles would also be constructed to serve parking areas throughout the site. The site plan also depicts several designated ride service locations intended to consolidate activities associated with drop-off and pick-up activities. Given the anticipated traffic volumes, pedestrian activity, and context of the site, the onsite circulation system is anticipated to function acceptably.

Finding – The project's internal circulation system is anticipated to function acceptably.

Conclusions and Recommendations

Conclusions

- The proposed project is expected to generate an average of 7,368 daily trips, including 405 trips in the a.m. peak hour and 620 trips during the p.m. peak hour, and after accounting for the transportation demand management measures that would be implemented as part of the project.
- Compared to the trip generation estimates analyzed in the Central Rohnert Park PDA Plan EIR for the "Station Center" district, which has the same boundaries as Station Avenue, the project would generate fewer daily, a.m. peak hour, and p.m. peak hour trips.
- The study intersections are expected to continue operating acceptably under Existing plus Project conditions, except for the intersection of State Farm Drive/Venture Avenue, which is projected to operate at LOS F during the p.m. peak hour.
- The study intersections at Rohnert Park Expressway/State Farm Drive and State Farm Drive/Venture Avenue are projected to operate unacceptably under Existing plus Approved plus Project conditions.
- The intersection of State Farm Drive/Venture Avenue would be expected to operate acceptably under Existing plus Approved plus Project conditions with the installation of a traffic signal, as recommended under Existing plus Project conditions.
- The segment of State Farm Drive between Venture Avenue and Enterprise Drive would operate acceptably with a single through lane adjacent to on-street parking spaces.
- The project's internal circulation system is anticipated to function acceptably.
- The project's onsite pedestrian facilities are well-connected and anticipated to perform adequately.
- The project's onsite bicycle facilities would establish connections to nearby bike lanes and trails, and with incorporation of the recommended crossing enhancements for pedestrians, bicyclists would be able to effectively access the regional bicycle network.
- The project would be well-served by both bus and rail transit, and would establish connections to transit stops that benefit both the project and surrounding areas. The project would be expected to increase both bus and rail transit ridership and reduce auto reliance, both of which are considered beneficial impacts.

Recommendations

The recommendations provided below in Table 9 include those identified throughout the traffic impact study, summarized by location for ease of reference.

Table 9 – Summary of Recommendations

Location	Recommendation
Intersections	
1. Rohnert Park Expressway/State Farm Drive	• Convert to protected left-turn phasing on the northbound and southbound State Farm Drive approaches • Restripe the northbound lanes to designate dual left-turn lanes, a through lane, and a right-turn lane, and the southbound lanes to designate a left-turn lane, through lane, and through-right lane • The City of Rohnert Park is considering additional or alternative modifications that may provide equivalent or better operations at the intersection, and will be responsible for determining the ultimate improvements to be implemented
2. Rohnert Park Expressway/Lynne Conde Way-Quest Street	• Install a traffic signal or pedestrian hybrid beacon to accommodate pedestrian crossings • Establish an offset pedestrian crossing on the west intersection leg as proposed • Incorporate the new signal or PHB into the coordinated signal timing scheme on Rohnert Park Expressway • Continue to restrict Lynne Conde Way to right-turns in and out only • Restrict the short segment of Quest Street between the RPX mainline and frontage road to use by inbound traffic arriving from the new westbound left-turn lane • Install a STOP sign with accompanying "Right Turn Only" sign on the northbound Quest Street approach to the slip street • Include a "No Turns" sign on the eastbound RPX approach, a "No Left Turn" sign on the southbound Lynne Conde Way approach, and a "Do Not Enter" sign on the northbound Quest Street approach between the RPX mainline and frontage road, with an accompanying "One Way" sign directing drivers exiting the site onto the eastbound RPX frontage road
3. Rohnert Park Expressway/Grand Street	• Install STOP signs on the northbound Grand Street approach at both the RPX frontage road and RPX mainline, along with "NO Left Turn" signage
4. State Farm Drive/ Venture Avenue	• Install a traffic signal with protected left-turn phasing on State Farm Drive and permitted phasing on the Venture Avenue and Town Centre driveway approaches • Provide left-turn pockets on State Farm Drive and right-turn pockets on Venture Avenue and the Town Centre driveway as depicted on the project site plan
5. State Farm Drive/ Station Avenue	• Provide left-turn pockets on State Farm Drive as proposed • Install an active pedestrian warning system on the State Farm Drive crossings, such as a Rapid Rectangular Flashing Beacon

Table 9 – Summary of Recommendations	
6. State Farm Drive/ Spirit Avenue	• Install STOP signs on the eastbound and westbound approaches • Provide left-turn pockets on State Farm Drive as proposed
7. State Farm Drive/ Enterprise Drive	• Maintain a southbound right-turn pocket as proposed
8. Enterprise Drive/ Quest Street	• Install a STOP sign on the southbound Quest Street approach • As proposed, install a raised pedestrian refuge island with crosswalk on the east leg of the intersection
9. Enterprise Drive/ Grand Street	• Install a STOP sign on the southbound Quest Street approach • Stripe an eastbound left-turn pocket on Enterprise Drive within the current two-way left-turn lane area
10. Enterprise Drive/ Seed Farm Drive	• No modifications required
Road Segments	
State Farm Drive - RPX to Venture Avenue	• Install a raised median as proposed to restrict left-turn movements at the northernmost driveways serving the project site and Town Centre • Maintain two southbound lanes between RPX and Venture Avenue as proposed, with the outside through lane becoming a right-turn "trap" lane at the Venture Avenue signal
State Farm Drive - Venture Avenue to Enterprise Drive	• Provide one through vehicle lane with on-street parking in each direction as proposed, except southbound at Enterprise Drive where a right-turn lane should be maintained
Enterprise Drive - State Farm Drive to Seed Farm Drive	• Maintain the current two-way left-turn lane • The intersection at Enterprise Drive/Serenity Lane should be restricted to right turns in and out as proposed

Study Participants and References

Study Participants

Principal in Charge	Zack Matley, AICP
Graphics/Editing/Formatting	Alex Scrobonia
Report Review	Dalene J. Whitlock, PE, PTOE

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Appendix A

Intersection Level of Service Calculations

HCM 2010 Signalized Intersection Summary
1: State Farm Dr & Rohnert Park Expressway

09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	537	79	105	683	188	125	126	76	67	56	53
Future Volume (veh/h)	173	537	79	105	683	188	125	126	76	67	56	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	184	571	66	112	727	184	149	111	25	56	81	37
Adj No. of Lanes	1	2	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	839	368	762	2028	892	308	162	133	160	221	94
Arrive On Green	0.21	0.47	0.47	0.86	1.00	1.00	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1774	3539	1552	1774	3539	1557	3548	1863	1536	1774	2456	1042
Grp Volume(v), veh/h	184	571	66	112	727	184	149	111	25	56	60	58
Grp Sat Flow(s),veh/h/ln	1774	1770	1552	1774	1770	1557	1774	1863	1536	1774	1863	1636
Q Serve(g_s), s	15.0	18.3	3.6	1.5	0.0	0.0	5.8	8.4	2.2	4.3	4.4	4.9
Cycle Q Clear(g_c), s	15.0	18.3	3.6	1.5	0.0	0.0	5.8	8.4	2.2	4.3	4.4	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	182	839	368	762	2028	892	308	162	133	160	168	147
V/C Ratio(X)	1.01	0.68	0.18	0.15	0.36	0.21	0.48	0.69	0.19	0.35	0.36	0.39
Avail Cap(c_a), veh/h	182	839	368	762	2028	892	955	501	414	454	477	419
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	34.1	30.2	6.0	0.0	0.0	63.5	64.7	61.9	62.4	62.5	62.7
Incr Delay (d2), s/veh	67.1	4.2	1.0	0.0	0.5	0.5	0.4	1.9	0.2	0.5	0.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	9.4	1.6	0.7	0.1	0.1	2.9	4.4	0.9	2.2	2.3	2.2
LnGrp Delay(d),s/veh	125.2	38.3	31.2	6.0	0.5	0.5	64.0	66.6	62.1	62.9	62.9	63.3
LnGrp LOS	F	D	C	A	A	A	E	E	E	E	E	E
Approach Vol, veh/h		821			1023			285			174	
Approach Delay, s/veh		57.2			1.1			64.8			63.0	
Approach LOS		E			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	68.9	40.0		18.7	19.0	89.9		18.4
Change Period (Y+Rc), s	6.2	* 5.4		5.6	4.0	* 6.2		5.7
Max Green Setting (Gmax), s	14.0	* 35		37.4	15.0	* 33		39.3
Max Q Clear Time (g_c+I1), s	3.5	20.3		6.9	17.0	2.0		10.4
Green Ext Time (p_c), s	0.0	1.2		0.2	0.0	1.8		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.7
HCM 2010 LOS	C

Notes

HCM 2010 TWSC
2: Rohnert Park Expressway & Lynne Conde Ln

09/17/2018

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	680	970	11	0	6
Future Vol, veh/h	0	680	970	11	0	6
Conflicting Peds, #/hr	0	0	0	8	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	80	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	2	1	0	1
Mvmt Flow	0	723	1032	12	0	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	524
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.31
Pot Cap-1 Maneuver	0	-	-	-	0	501
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	498
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	498
HCM Lane V/C Ratio	-	-	-	0.013
HCM Control Delay (s)	-	-	-	12.3
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

HCM 2010 TWSC
4: State Farm Dr & Town Ctr Dwy/Venture Ave 09/17/2018

Intersection													
Int Delay, s/veh	1.6												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Vol, veh/h	37	1	15	0	0	0	26	259	0	0	163	25	
Future Vol, veh/h	37	1	15	0	0	0	26	259	0	0	163	25	
Conflicting Peds, #/hr	2	0	1	0	0	1	0	0	1	1	0	1	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	35	-	-	120	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84	
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1	
Mvmt Flow	44	1	18	0	0	0	31	308	0	0	194	30	

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	428	581	114	470	596	157	225	0	0	309	0	0
Stage 1	210	210	-	371	371	-	-	-	-	-	-	-
Stage 2	218	371	-	99	225	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	513	426	920	479	417	864	1348	-	-	1256	-	-
Stage 1	775	730	-	624	621	-	-	-	-	-	-	-
Stage 2	767	621	-	899	719	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	503	415	918	460	407	862	1347	-	-	1255	-	-
Mov Cap-2 Maneuver	503	415	-	460	407	-	-	-	-	-	-	-
Stage 1	756	729	-	609	606	-	-	-	-	-	-	-
Stage 2	748	606	-	879	718	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	0	0.7	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1347	-	-	574	-	1255	-	-
HCM Lane V/C Ratio	0.023	-	-	0.11	-	-	-	-
HCM Control Delay (s)	7.7	-	-	12	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	-	0	-	-

HCM 2010 TWSC
5: State Farm Dr & Town Ctr Dwy/Station Ave 09/17/2018

Intersection													
Int Delay, s/veh	1												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Vol, veh/h	12	0	11	0	0	0	31	275	0	0	153	26	
Future Vol, veh/h	12	0	11	0	0	0	31	275	0	0	153	26	
Conflicting Peds, #/hr	1	0	0	0	0	1	2	0	1	1	0	2	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	35	-	-	35	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84	
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1	
Mvmt Flow	14	0	13	0	0	0	37	327	0	0	182	31	

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	439	602	109	493	617	166	215	0	-	328	0	0
Stage 1	200	200	-	402	402	-	-	-	-	-	-	-
Stage 2	239	402	-	91	215	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	504	414	927	461	406	852	1360	-	0	1236	-	-
Stage 1	786	737	-	599	601	-	-	-	-	-	-	-
Stage 2	746	601	-	909	726	-	-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	492	402	925	445	394	851	1358	-	-	1235	-	-
Mov Cap-2 Maneuver	492	402	-	445	394	-	-	-	-	-	-	-
Stage 1	763	736	-	582	584	-	-	-	-	-	-	-
Stage 2	725	584	-	896	725	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	0	0.8	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1358	-	634	-	1235	-	-
HCM Lane V/C Ratio	0.027	-	0.043	-	-	-	-
HCM Control Delay (s)	7.7	-	10.9	0	0	-	-
HCM Lane LOS	A	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	0	-	-

HCM 2010 TWSC
6: State Farm Dr & Dwy/Spirit Ave 09/17/2018

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	6	0	0	0	2	302	0	0	164	1
Future Vol, veh/h	6	0	6	0	0	0	2	302	0	0	164	1
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	7	0	7	0	0	0	2	360	0	0	195	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	382	563	100	463	563	181	198	0	0	361	0	0
Stage 1	198	198	-	365	365	-	-	-	-	-	-	-
Stage 2	184	365	-	98	198	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	553	436	939	485	436	834	1379	-	-	1201	-	-
Stage 1	788	738	-	629	624	-	-	-	-	-	-	-
Stage 2	803	624	-	901	738	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	551	434	937	480	434	833	1377	-	-	1200	-	-
Mov Cap-2 Maneuver	551	434	-	480	434	-	-	-	-	-	-	-
Stage 1	786	737	-	628	623	-	-	-	-	-	-	-
Stage 2	802	623	-	894	737	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	0	0.1	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1377	-	-	694	-	1200	-	-
HCM Lane V/C Ratio	0.002	-	-	0.021	-	-	-	-
HCM Control Delay (s)	7.6	-	-	10.3	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

HCM 2010 AWSC
7: Enterprise Dr & State Farm Dr 09/17/2018

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	61	74	92	245	116	52
Future Vol, veh/h	61	74	92	245	116	52
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	78	97	258	122	55
Number of Lanes	1	1	2	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	9	9.7	9.8
HCM LOS	A	A	A

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	11%	0%	0%
Vol Right, %	0%	0%	0%	89%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	74	61	276	116	52
LT Vol	61	0	0	0	116	0
Through Vol	0	74	61	31	0	0
RT Vol	0	0	0	245	0	52
Lane Flow Rate	64	78	65	290	122	55
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.105	0.116	0.093	0.368	0.209	0.075
Departure Headway (Hd)	5.866	5.362	5.196	4.57	6.162	4.956
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	609	666	688	786	580	718
Service Time	3.62	3.115	2.937	2.311	3.927	2.719
HCM Lane V/C Ratio	0.105	0.117	0.094	0.369	0.21	0.077
HCM Control Delay	9.3	8.8	8.5	10	10.6	8.1
HCM Lane LOS	A	A	A	A	B	A
HCM 95th-tile Q	0.4	0.4	0.3	1.7	0.8	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	166	278	0	0	1
Future Vol, veh/h	6	166	278	0	0	1
Conflicting Peds, #/hr	4	0	0	3	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	198	331	0	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	335	0	-	0	547	340
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	212	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1224	-	-	-	498	702
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	823	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1220	-	-	-	492	697
Mov Cap-2 Maneuver	-	-	-	-	492	-
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	821	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1220	-	-	-	697
HCM Lane V/C Ratio	0.006	-	-	-	0.002
HCM Control Delay (s)	8	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	185	1	1	308	28	4
Future Vol, veh/h	185	1	1	308	28	4
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	220	1	1	367	33	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	223	0	592	223
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	369	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1358	-	472	822
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	704	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1356	-	471	821
Mov Cap-2 Maneuver	-	-	-	-	471	-
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	704	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	498	-	-	1356	-
HCM Lane V/C Ratio	0.076	-	-	0.001	-
HCM Control Delay (s)	12.8	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	171	10	4	277	30	6
Future Vol, veh/h	171	10	4	277	30	6
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	204	12	5	330	36	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	218	0	552	212
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	340	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1364	-	498	833
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1362	-	496	832
Mov Cap-2 Maneuver	-	-	-	-	574	-
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	605	-	-	1362	-
HCM Lane V/C Ratio	0.071	-	-	0.003	-
HCM Control Delay (s)	11.4	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 2010 Signalized Intersection Summary
1: State Farm Dr & Rohnert Park Expressway

09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	573	182	116	683	188	218	142	84	70	72	53
Future Volume (veh/h)	173	573	182	116	683	188	218	142	84	70	72	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	184	610	176	123	727	184	232	151	33	63	93	37
Adj No. of Lanes	1	2	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	839	368	728	1961	862	376	197	163	160	231	86
Arrive On Green	0.21	0.47	0.47	0.82	1.00	1.00	0.11	0.11	0.11	0.09	0.09	0.09
Sat Flow, veh/h	1774	3539	1552	1774	3539	1556	3548	1863	1541	1774	2561	957
Grp Volume(v), veh/h	184	610	176	123	727	184	232	151	33	63	66	64
Grp Sat Flow(s),veh/h/ln	1774	1770	1552	1774	1770	1556	1774	1863	1541	1774	1863	1654
Q Serve(g_s), s	15.0	20.2	11.3	2.1	0.0	0.0	9.1	11.5	2.9	4.9	4.9	5.3
Cycle Q Clear(g_c), s	15.0	20.2	11.3	2.1	0.0	0.0	9.1	11.5	2.9	4.9	4.9	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.58
Lane Grp Cap(c), veh/h	182	839	368	728	1961	862	376	197	163	160	168	149
V/C Ratio(X)	1.01	0.73	0.48	0.17	0.37	0.21	0.62	0.77	0.20	0.39	0.39	0.43
Avail Cap(c_a), veh/h	182	839	368	728	1961	862	955	501	415	454	477	424
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	34.6	32.3	7.9	0.0	0.0	62.4	63.5	59.6	62.7	62.7	62.9
Incr Delay (d2), s/veh	65.9	5.0	4.0	0.0	0.5	0.6	0.6	2.3	0.2	0.6	0.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	10.4	5.2	1.0	0.1	0.1	4.5	6.1	1.2	2.4	2.5	2.5
LnGrp Delay(d),s/veh	124.0	39.6	36.3	8.0	0.5	0.6	63.0	65.8	59.8	63.3	63.2	63.6
LnGrp LOS	F	D	D	A	A	A	E	E	E	E	E	E
Approach Vol, veh/h		970			1034			416			193	
Approach Delay, s/veh		55.0			1.4			63.8			63.4	
Approach LOS		D			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	66.1	40.0		18.7	19.0	87.1		21.2
Change Period (Y+Rc), s	6.2	* 5.4		5.6	4.0	* 6.2		5.7
Max Green Setting (Gmax), s	14.0	* 35		37.4	15.0	* 33		39.3
Max Q Clear Time (g_c+I1), s	4.1	22.2		7.3	17.0	2.0		13.5
Green Ext Time (p_c), s	0.0	1.3		0.2	0.0	1.8		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	35.8
HCM 2010 LOS	D

Notes

HCM 2010 TWSC
2: Rohnert Park Expressway & Lynne Conde Ln

09/17/2018

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	688	0	30	981	11	0	0	0	0	0	6
Future Vol, veh/h	0	688	0	30	981	11	0	0	0	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	8	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	80	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	92	92	94	94	92	92	92	94	92	94
Heavy Vehicles, %	0	2	2	2	2	1	2	2	2	0	2	1
Mvmt Flow	0	732	0	33	1044	12	0	0	0	0	0	6

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	732	0	0				-	-	530
Stage 1	-	-	-	-	-	-				-	-	-
Stage 2	-	-	-	-	-	-				-	-	-
Critical Hdwy	-	-	-	4.14	-	-				-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-				-	-	3.31
Pot Cap-1 Maneuver	0	-	0	868	-	-				0	0	496
Stage 1	0	-	0	-	-	-				0	0	-
Stage 2	0	-	0	-	-	-				0	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	-	-	-	868	-	-				-	0	493
Mov Cap-2 Maneuver	-	-	-	-	-	-				-	0	-
Stage 1	-	-	-	-	-	-				-	0	-
Stage 2	-	-	-	-	-	-				-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.3	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	868	-	-	493
HCM Lane V/C Ratio	-	0.038	-	-	0.013
HCM Control Delay (s)	-	9.3	-	-	12.4
HCM Lane LOS	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	688	0	0	1017	0	29
Future Vol, veh/h	688	0	0	1017	0	29
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
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	0	0	2	0	1
Mvmt Flow	732	0	0	1082	0	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	366
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.31
Pot Cap-1 Maneuver	-	0	0	-	0	634
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	634
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	634	-	-
HCM Lane V/C Ratio	0.049	-	-
HCM Control Delay (s)	11	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	4	17	3	2	37	30	338	7	72	221	25
Future Vol, veh/h	37	4	17	3	2	37	30	338	7	72	221	25
Conflicting Peds, #/hr	2	0	1	0	0	1	0	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	44	5	20	4	2	44	36	402	8	86	263	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	954	934	280	943	945	409	294	0	0	411	0	0
Stage 1	451	451	-	479	479	-	-	-	-	-	-	-
Stage 2	503	483	-	464	466	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	239	267	761	244	263	645	1273	-	-	1153	-	-
Stage 1	590	573	-	570	557	-	-	-	-	-	-	-
Stage 2	553	554	-	580	564	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	203	239	760	215	236	643	1272	-	-	1152	-	-
Mov Cap-2 Maneuver	203	239	-	215	236	-	-	-	-	-	-	-
Stage 1	573	529	-	553	541	-	-	-	-	-	-	-
Stage 2	498	538	-	517	521	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.6	12.6	0.6	1.9
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1272	-	-	262	525	1152	-	-
HCM Lane V/C Ratio	0.028	-	-	0.264	0.095	0.074	-	-
HCM Control Delay (s)	7.9	-	-	23.6	12.6	8.4	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1	0.3	0.2	-	-

HCM 2010 Signalized Intersection Summary
4: State Farm Dr & Town Ctr Dwy/Venture Ave

09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	4	17	3	2	37	36	329	7	72	221	25
Future Volume (veh/h)	76	4	17	3	2	37	36	329	7	72	221	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1882	1900	1900	1900	1881	1881	1863	1900	1881	1863	1881
Adj Flow Rate, veh/h	90	5	20	4	2	44	43	392	8	86	263	30
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	0	0	0	0	1	1	2	2	1	2	1
Cap, veh/h	457	9	196	348	109	194	74	561	11	130	633	526
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.04	0.31	0.31	0.07	0.34	0.34
Sat Flow, veh/h	1369	76	1605	815	897	1594	1792	1818	37	1792	1863	1547
Grp Volume(v), veh/h	95	0	20	6	0	44	43	0	400	86	263	30
Grp Sat Flow(s),veh/h/ln	1445	0	1605	1711	0	1594	1792	0	1855	1792	1863	1547
Q Serve(g_s), s	1.4	0.0	0.3	0.0	0.0	0.6	0.6	0.0	4.6	1.1	2.6	0.3
Cycle Q Clear(g_c), s	1.5	0.0	0.3	0.1	0.0	0.6	0.6	0.0	4.6	1.1	2.6	0.3
Prop In Lane	0.95		1.00	0.67		1.00	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	467	0	196	457	0	194	74	0	573	130	633	526
V/C Ratio(X)	0.20	0.00	0.10	0.01	0.00	0.23	0.58	0.00	0.70	0.66	0.42	0.06
Avail Cap(c_a), veh/h	2016	0	1927	2134	0	1914	467	0	2235	734	2522	2095
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	0.0	9.4	9.3	0.0	9.6	11.4	0.0	7.4	10.9	6.1	5.4
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.0	0.2	6.9	0.0	0.6	5.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.1	0.0	0.0	0.3	0.4	0.0	2.4	0.8	1.3	0.1
LnGrp Delay(d),s/veh	10.0	0.0	9.5	9.3	0.0	9.8	18.3	0.0	7.9	16.5	6.3	5.4
LnGrp LOS	B		A	A		A	B		A	B	A	A
Approach Vol, veh/h		115			50			443			379	
Approach Delay, s/veh		9.9			9.7			8.9			8.5	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.3	12.0		6.9	4.5	12.7		6.9
Change Period (Y+Rc), s	3.5	4.5		4.0	3.5	4.5		4.0
Max Green Setting (Gmax), s	9.9	29.1		29.0	6.3	32.7		29.0
Max Q Clear Time (g_c+I1), s	3.1	6.6		3.5	2.6	4.6		2.6
Green Ext Time (p_c), s	0.1	0.8		0.1	0.0	0.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

HCM 2010 TWSC
5: State Farm Dr & Town Ctr Dwy/Station Ave

09/17/2018

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	0	11	2	0	21	31	344	5	30	186	26
Future Vol, veh/h	12	0	11	2	0	21	31	344	5	30	186	26
Conflicting Peds, #/hr	1	0	0	0	0	1	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	35	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	14	0	13	2	0	25	37	410	6	36	221	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	812	802	239	803	814	415	254	0	0	417	0	0
Stage 1	311	311	-	488	488	-	-	-	-	-	-	-
Stage 2	501	491	-	315	326	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	299	318	802	303	313	640	1317	-	-	1147	-	-
Stage 1	702	660	-	563	552	-	-	-	-	-	-	-
Stage 2	554	550	-	698	650	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	274	299	801	285	294	639	1315	-	-	1146	-	-
Mov Cap-2 Maneuver	274	299	-	285	294	-	-	-	-	-	-	-
Stage 1	681	638	-	547	536	-	-	-	-	-	-	-
Stage 2	517	534	-	665	629	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	11.6	0.6	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1315	-	-	400	577	1146	-	-
HCM Lane V/C Ratio	0.028	-	-	0.068	0.047	0.031	-	-
HCM Control Delay (s)	7.8	-	-	14.7	11.6	8.2	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0.1	-	-

HCM 2010 TWSC

5: State Farm Dr & Town Ctr Dwy/Station Ave

09/17/2018

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	9	0	11	2	0	21	31	344	5	30	186	26
Future Vol, veh/h	9	0	11	2	0	21	31	344	5	30	186	26
Conflicting Peds, #/hr	1	0	0	0	0	1	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	11	0	13	2	0	25	37	410	6	36	221	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	812	802	239	803	814	415	254	0	0	417	0	0
Stage 1	311	311	-	488	488	-	-	-	-	-	-	-
Stage 2	501	491	-	315	326	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	300	320	805	304	315	642	1323	-	-	1153	-	-
Stage 1	704	662	-	565	553	-	-	-	-	-	-	-
Stage 2	556	552	-	700	652	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	275	300	804	285	296	641	1321	-	-	1152	-	-
Mov Cap-2 Maneuver	275	300	-	285	296	-	-	-	-	-	-	-
Stage 1	683	640	-	549	537	-	-	-	-	-	-	-
Stage 2	519	536	-	667	630	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	11.5	0.6	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1321	-	-	431	578	1152	-	-
HCM Lane V/C Ratio	0.028	-	-	0.055	0.047	0.031	-	-
HCM Control Delay (s)	7.8	-	-	13.8	11.5	8.2	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0.1	-	-

HCM 2010 TWSC

6: State Farm Dr & Dwy/Spirit Ave

09/17/2018

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱			↕	
Traffic Vol, veh/h	6	0	6	1	0	39	2	337	2	22	177	1
Future Vol, veh/h	6	0	6	1	0	39	2	337	2	22	177	1
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	7	0	7	1	0	46	2	401	2	26	211	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	695	674	214	674	673	403	214	0	0	404	0	0
Stage 1	266	266	-	407	407	-	-	-	-	-	-	-
Stage 2	429	408	-	267	266	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	358	377	829	370	378	650	1362	-	-	1160	-	-
Stage 1	742	691	-	623	599	-	-	-	-	-	-	-
Stage 2	606	598	-	741	691	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	325	366	828	359	367	649	1360	-	-	1159	-	-
Mov Cap-2 Maneuver	325	366	-	359	367	-	-	-	-	-	-	-
Stage 1	740	672	-	622	598	-	-	-	-	-	-	-
Stage 2	562	597	-	716	672	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	11.1	0	0.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1360	-	-	467	636	1159	-	-
HCM Lane V/C Ratio	0.002	-	-	0.031	0.075	0.023	-	-
HCM Control Delay (s)	7.7	-	-	13	11.1	8.2	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.1	-	-

HCM 2010 AWSC
7: Enterprise Dr & State Farm Dr 09/17/2018

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	69	81	100	273	126	56
Future Vol, veh/h	69	81	100	273	126	56
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	85	105	287	133	59
Number of Lanes	1	1	2	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	9.2	10.3	10.2
HCM LOS	A	B	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	11%	0%	0%
Vol Right, %	0%	0%	0%	89%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	81	67	306	126	56
LT Vol	69	0	0	0	126	0
Through Vol	0	81	67	33	0	0
RT Vol	0	0	0	273	0	56
Lane Flow Rate	73	85	70	322	133	59
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.12	0.129	0.103	0.416	0.232	0.083
Departure Headway (Hd)	5.961	5.457	5.269	4.641	6.285	5.078
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	598	653	678	771	568	699
Service Time	3.729	3.224	3.019	2.391	4.062	2.854
HCM Lane V/C Ratio	0.122	0.13	0.103	0.418	0.234	0.084
HCM Control Delay	9.5	9	8.6	10.7	11	8.3
HCM Lane LOS	A	A	A	B	B	A
HCM 95th-tile Q	0.4	0.4	0.3	2.1	0.9	0.3

HCM 2010 TWSC
8: Enterprise Dr & Quest St 09/17/2018

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	193	325	11	10	19
Future Vol, veh/h	9	193	325	11	10	19
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	80	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	11	230	387	13	12	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	402	0	-	0	648	396
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	252	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1168	-	-	-	438	658
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1166	-	-	-	432	657
Mov Cap-2 Maneuver	-	-	-	-	526	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1166	-	-	-	605
HCM Lane V/C Ratio	0.009	-	-	-	0.057
HCM Control Delay (s)	8.1	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 2010 TWSC
9: Enterprise Dr & Grand St 09/17/2018

Intersection						
Int Delay, s/veh	0.5					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	186	296	6	6	12
Future Vol, veh/h	5	186	296	6	6	12
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	6	221	352	7	7	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	591	358
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1209	-	-	-	473	691
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	810	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1207	-	-	-	469	690
Mov Cap-2 Maneuver	-	-	-	-	469	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	808	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1207	-	-	-	596
HCM Lane V/C Ratio	0.005	-	-	-	0.036
HCM Control Delay (s)	8	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 2010 TWSC
10: Enterprise Dr/Seed Farm Dr 09/17/2018

Intersection						
Int Delay, s/veh	0.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	184	300	0	0	1
Future Vol, veh/h	6	184	300	0	0	1
Conflicting Peds, #/hr	4	0	0	3	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	219	357	0	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	594	366
Stage 1	-	-	-	-	361	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1198	-	-	-	468	679
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	806	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1194	-	-	-	462	674
Mov Cap-2 Maneuver	-	-	-	-	462	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	804	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1194	-	-	-	674
HCM Lane V/C Ratio	0.006	-	-	-	0.002
HCM Control Delay (s)	8	0	-	-	10.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	202	1	1	345	28	4
Future Vol, veh/h	202	1	1	345	28	4
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	240	1	1	411	33	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	243	0	656	243
Stage 1	-	-	-	-	243	-
Stage 2	-	-	-	-	413	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1335	-	433	801
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	672	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1333	-	432	800
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	672	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	458	-	-	1333	-
HCM Lane V/C Ratio	0.083	-	-	0.001	-
HCM Control Delay (s)	13.6	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	188	10	4	305	30	6
Future Vol, veh/h	188	10	4	305	30	6
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	224	12	5	363	36	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	238	0	605	232
Stage 1	-	-	-	-	232	-
Stage 2	-	-	-	-	373	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1341	-	464	812
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	701	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1339	-	462	811
Mov Cap-2 Maneuver	-	-	-	-	549	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	701	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	580	-	-	1339	-
HCM Lane V/C Ratio	0.074	-	-	0.004	-
HCM Control Delay (s)	11.7	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 2010 Signalized Intersection Summary
1: State Farm Dr & Rohnert Park Expressway

09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	608	79	113	868	196	125	126	79	70	56	53
Future Volume (veh/h)	173	608	79	113	868	196	125	126	79	70	56	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	184	647	66	120	923	193	149	111	28	57	84	37
Adj No. of Lanes	1	2	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	839	368	762	2028	892	308	162	133	160	224	92
Arrive On Green	0.14	0.32	0.32	0.86	1.00	1.00	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1774	3539	1552	1774	3539	1557	3548	1863	1536	1774	2484	1019
Grp Volume(v), veh/h	184	647	66	120	923	193	149	111	28	57	61	60
Grp Sat Flow(s),veh/h/ln	1774	1770	1552	1774	1770	1557	1774	1863	1536	1774	1863	1641
Q Serve(g_s), s	15.0	24.1	4.5	1.6	0.0	0.0	5.8	8.4	2.5	4.4	4.5	5.0
Cycle Q Clear(g_c), s	15.0	24.1	4.5	1.6	0.0	0.0	5.8	8.4	2.5	4.4	4.5	5.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.62
Lane Grp Cap(c), veh/h	182	839	368	762	2028	892	308	162	133	160	168	148
V/C Ratio(X)	1.01	0.77	0.18	0.16	0.46	0.22	0.48	0.69	0.21	0.36	0.37	0.40
Avail Cap(c_a), veh/h	182	839	368	762	2028	892	955	501	414	454	477	420
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.0	46.4	39.7	6.0	0.0	0.0	63.5	64.7	62.0	62.5	62.5	62.7
Incr Delay (d2), s/veh	66.5	6.3	1.0	0.0	0.7	0.6	0.4	1.9	0.3	0.5	0.5	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	12.5	2.0	0.7	0.2	0.1	2.9	4.4	1.1	2.2	2.4	2.3
LnGrp Delay(d),s/veh	129.6	52.7	40.7	6.0	0.7	0.6	64.0	66.6	62.3	63.0	63.0	63.4
LnGrp LOS	F	D	D	A	A	A	E	E	E	E	E	E
Approach Vol, veh/h		897			1236			288			178	
Approach Delay, s/veh		67.6			1.2			64.8			63.1	
Approach LOS		E			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	68.9	40.0		18.7	19.0	89.9		18.4
Change Period (Y+Rc), s	6.2	* 5.4		5.6	4.0	* 6.2		5.7
Max Green Setting (Gmax), s	14.0	* 35		37.4	15.0	* 33		39.3
Max Q Clear Time (g_c+I1), s	3.6	26.1		7.0	17.0	2.0		10.4
Green Ext Time (p_c), s	0.0	1.2		0.2	0.0	2.3		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	35.4
HCM 2010 LOS	D

Notes

HCM 2010 TWSC
2: Rohnert Park Expressway & Lynne Conde Ln

09/17/2018

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	757	1171	11	0	6
Future Vol, veh/h	0	757	1171	11	0	6
Conflicting Peds, #/hr	0	0	0	8	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	80	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	2	2	1	0	1
Mvmt Flow	0	805	1246	12	0	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	631
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.31
Pot Cap-1 Maneuver	0	-	-	-	0	426
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	423
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	423
HCM Lane V/C Ratio	-	-	-	0.015
HCM Control Delay (s)	-	-	-	13.6
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

HCM 2010 TWSC
4: State Farm Dr & Town Ctr Dwy/Venture Ave 09/17/2018

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	1	15	0	0	0	26	259	0	0	163	33
Future Vol, veh/h	40	1	15	0	0	0	26	259	0	0	163	33
Conflicting Peds, #/hr	2	0	1	0	0	1	0	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	48	1	18	0	0	0	31	308	0	0	194	39

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	433	586	119	470	605	157	234	0	0	309	0	0
Stage 1	215	215	-	371	371	-	-	-	-	-	-	-
Stage 2	218	371	-	99	234	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	509	423	913	479	413	864	1338	-	-	1256	-	-
Stage 1	770	726	-	624	621	-	-	-	-	-	-	-
Stage 2	767	621	-	899	712	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	499	412	911	459	403	862	1337	-	-	1255	-	-
Mov Cap-2 Maneuver	499	412	-	459	403	-	-	-	-	-	-	-
Stage 1	752	725	-	609	606	-	-	-	-	-	-	-
Stage 2	748	606	-	879	711	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	0	0.7	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1337	-	-	565	-	1255	-	-
HCM Lane V/C Ratio	0.023	-	-	0.118	-	-	-	-
HCM Control Delay (s)	7.8	-	-	12.2	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	-	0	-	-

HCM 2010 TWSC
5: State Farm Dr & Town Ctr Dwy/Station Ave 09/17/2018

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	0	11	0	0	0	31	275	0	0	153	26
Future Vol, veh/h	12	0	11	0	0	0	31	275	0	0	153	26
Conflicting Peds, #/hr	1	0	0	0	0	1	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	35	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	14	0	13	0	0	0	37	327	0	0	182	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	439	602	109	493	617	166	215	0	-	328	0	0
Stage 1	200	200	-	402	402	-	-	-	-	-	-	-
Stage 2	239	402	-	91	215	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	504	414	927	461	406	852	1360	-	0	1236	-	-
Stage 1	786	737	-	599	601	-	-	-	-	0	-	-
Stage 2	746	601	-	909	726	-	-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	492	402	925	445	394	851	1358	-	-	1235	-	-
Mov Cap-2 Maneuver	492	402	-	445	394	-	-	-	-	-	-	-
Stage 1	763	736	-	582	584	-	-	-	-	-	-	-
Stage 2	725	584	-	896	725	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	0	0.8	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1358	-	634	-	1235	-	-
HCM Lane V/C Ratio	0.027	-	0.043	-	-	-	-
HCM Control Delay (s)	7.7	-	10.9	0	0	-	-
HCM Lane LOS	A	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	0	-	-

HCM 2010 TWSC
6: State Farm Dr & Dwy/Spirit Ave 09/17/2018

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	6	0	0	0	2	302	0	0	164	1
Future Vol, veh/h	6	0	6	0	0	0	2	302	0	0	164	1
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	7	0	7	0	0	0	2	360	0	0	195	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	382	563	100	463	563	181	198	0	0	361	0	0
Stage 1	198	198	-	365	365	-	-	-	-	-	-	-
Stage 2	184	365	-	98	198	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	553	436	939	485	436	834	1379	-	-	1201	-	-
Stage 1	788	738	-	629	624	-	-	-	-	-	-	-
Stage 2	803	624	-	901	738	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	551	434	937	480	434	833	1377	-	-	1200	-	-
Mov Cap-2 Maneuver	551	434	-	480	434	-	-	-	-	-	-	-
Stage 1	786	737	-	628	623	-	-	-	-	-	-	-
Stage 2	802	623	-	894	737	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	0	0.1	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1377	-	-	694	-	1200	-	-
HCM Lane V/C Ratio	0.002	-	-	0.021	-	-	-	-
HCM Control Delay (s)	7.6	-	-	10.3	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

HCM 2010 AWSC
7: Enterprise Dr & State Farm Dr 09/17/2018

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	61	74	92	245	116	52
Future Vol, veh/h	61	74	92	245	116	52
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	78	97	258	122	55
Number of Lanes	1	1	2	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	9	9.7	9.8
HCM LOS	A	A	A

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	11%	0%	0%
Vol Right, %	0%	0%	0%	89%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	74	61	276	116	52
LT Vol	61	0	0	0	116	0
Through Vol	0	74	61	31	0	0
RT Vol	0	0	0	245	0	52
Lane Flow Rate	64	78	65	290	122	55
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.105	0.116	0.093	0.368	0.209	0.075
Departure Headway (Hd)	5.866	5.362	5.196	4.57	6.162	4.956
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	609	666	688	786	580	718
Service Time	3.62	3.115	2.937	2.311	3.927	2.719
HCM Lane V/C Ratio	0.105	0.117	0.094	0.369	0.21	0.077
HCM Control Delay	9.3	8.8	8.5	10	10.6	8.1
HCM Lane LOS	A	A	A	A	B	A
HCM 95th-tile Q	0.4	0.4	0.3	1.7	0.8	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	166	278	0	0	1
Future Vol, veh/h	6	166	278	0	0	1
Conflicting Peds, #/hr	4	0	0	3	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	198	331	0	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	335	0	-	0	547	340
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	212	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1224	-	-	-	498	702
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	823	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1220	-	-	-	492	697
Mov Cap-2 Maneuver	-	-	-	-	492	-
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	821	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1220	-	-	-	697
HCM Lane V/C Ratio	0.006	-	-	-	0.002
HCM Control Delay (s)	8	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	185	1	1	308	28	4
Future Vol, veh/h	185	1	1	308	28	4
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	220	1	1	367	33	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	223	0	592	223
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	369	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1358	-	472	822
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	704	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1356	-	471	821
Mov Cap-2 Maneuver	-	-	-	-	471	-
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	704	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	498	-	-	1356	-
HCM Lane V/C Ratio	0.076	-	-	0.001	-
HCM Control Delay (s)	12.8	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	171	10	4	277	30	6
Future Vol, veh/h	171	10	4	277	30	6
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	204	12	5	330	36	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	218	0	552	212
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	340	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1364	-	498	833
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1362	-	496	832
Mov Cap-2 Maneuver	-	-	-	-	574	-
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	605	-	-	1362	-
HCM Lane V/C Ratio	0.071	-	-	0.003	-
HCM Control Delay (s)	11.4	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 2010 Signalized Intersection Summary
1: State Farm Dr & Rohnert Park Expressway 09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	644	182	124	868	196	218	142	87	73	72	53
Future Volume (veh/h)	173	644	182	124	868	196	218	142	87	73	72	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	184	685	176	132	923	193	232	151	37	64	97	37
Adj No. of Lanes	1	2	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	839	368	728	1961	862	376	197	163	160	233	84
Arrive On Green	0.14	0.32	0.32	0.82	1.00	1.00	0.11	0.11	0.11	0.09	0.09	0.09
Sat Flow, veh/h	1774	3539	1552	1774	3539	1556	3548	1863	1541	1774	2592	931
Grp Volume(v), veh/h	184	685	176	132	923	193	232	151	37	64	68	66
Grp Sat Flow(s),veh/h/ln	1774	1770	1552	1774	1770	1556	1774	1863	1541	1774	1863	1660
Q Serve(g_s), s	15.0	26.1	13.4	2.3	0.0	0.0	9.1	11.5	3.2	5.0	5.0	5.5
Cycle Q Clear(g_c), s	15.0	26.1	13.4	2.3	0.0	0.0	9.1	11.5	3.2	5.0	5.0	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.56
Lane Grp Cap(c), veh/h	182	839	368	728	1961	862	376	197	163	160	168	149
V/C Ratio(X)	1.01	0.82	0.48	0.18	0.47	0.22	0.62	0.76	0.23	0.40	0.41	0.44
Avail Cap(c_a), veh/h	182	839	368	728	1961	862	955	501	415	454	477	425
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.0	47.1	42.7	7.9	0.0	0.0	62.4	63.5	59.8	62.7	62.7	62.9
Incr Delay (d2), s/veh	65.9	7.9	4.0	0.0	0.8	0.6	0.6	2.3	0.3	0.6	0.6	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	13.7	6.1	1.1	0.2	0.1	4.5	6.1	1.4	2.5	2.6	2.6
LnGrp Delay(d),s/veh	129.0	55.0	46.7	8.0	0.8	0.6	63.0	65.8	60.0	63.3	63.3	63.7
LnGrp LOS	F	D	D	A	A	A	E	E	E	E	E	E
Approach Vol, veh/h		1045			1248			420			198	
Approach Delay, s/veh		66.6			1.5			63.8			63.4	
Approach LOS		E			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	66.1	40.0		18.7	19.0	87.1		21.2
Change Period (Y+Rc), s	6.2	* 5.4		5.6	4.0	* 6.2		5.7
Max Green Setting (Gmax), s	14.0	* 35		37.4	15.0	* 33		39.3
Max Q Clear Time (g_c+I1), s	4.3	28.1		7.5	17.0	2.0		13.5
Green Ext Time (p_c), s	0.0	1.2		0.3	0.0	2.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	38.1
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
1: State Farm Dr & Rohnert Park Expressway 09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	644	182	124	868	196	218	142	87	73	72	53
Future Volume (veh/h)	173	644	182	124	868	196	218	142	87	73	72	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	184	685	176	132	923	182	232	151	37	78	77	19
Adj No. of Lanes	1	2	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	521	2006	884	152	1217	534	364	229	189	146	282	67
Arrive On Green	0.59	1.00	1.00	0.17	0.69	0.69	0.11	0.12	0.12	0.08	0.10	0.10
Sat Flow, veh/h	1774	3539	1560	1774	3539	1552	3442	1863	1544	1774	2820	668
Grp Volume(v), veh/h	184	685	176	132	923	182	232	151	37	78	47	49
Grp Sat Flow(s),veh/h/ln	1774	1770	1560	1774	1770	1552	1721	1863	1544	1774	1770	1719
Q Serve(g_s), s	7.9	0.0	0.0	10.6	24.9	7.0	9.4	11.3	2.6	6.2	3.6	3.8
Cycle Q Clear(g_c), s	7.9	0.0	0.0	10.6	24.9	7.0	9.4	11.3	2.6	6.2	3.6	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	521	2006	884	152	1217	534	364	229	189	146	177	172
V/C Ratio(X)	0.35	0.34	0.20	0.87	0.76	0.34	0.64	0.66	0.20	0.53	0.27	0.28
Avail Cap(c_a), veh/h	521	2006	884	231	1217	534	364	503	417	157	448	436
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.9	0.0	0.0	59.6	18.8	16.1	62.6	61.1	39.3	64.3	60.8	60.9
Incr Delay (d2), s/veh	0.1	0.4	0.5	12.3	4.1	1.6	2.9	1.2	0.2	1.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.1	0.1	5.7	12.5	3.1	4.6	5.9	1.1	3.1	1.8	1.8
LnGrp Delay(d),s/veh	23.0	0.4	0.5	71.9	22.9	17.6	65.5	62.4	39.5	65.5	61.1	61.2
LnGrp LOS	C	A	A	E	C	B	E	E	D	E	E	E
Approach Vol, veh/h		1045			1237			420			174	
Approach Delay, s/veh		4.4			27.4			62.1			63.1	
Approach LOS		A			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.5	88.2	21.1	20.2	48.3	56.4	17.7	23.6
Change Period (Y+Rc), s	4.0	5.4	5.7	* 5.6	* 5.4	* 6.2	* 5.7	* 5.7
Max Green Setting (Gmax), s	19.0	54.0	15.3	* 37	* 22	* 50	* 13	* 39
Max Q Clear Time (g_c+I1), s	12.6	2.0	11.4	5.8	9.9	26.9	8.2	13.3
Green Ext Time (p_c), s	0.0	1.7	0.1	0.2	0.1	2.3	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C

Notes

HCM 2010 TWSC
2: Rohnert Park Expressway & Lynne Conde Ln
09/17/2018

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↰	↑↑	↱						↱
Traffic Vol, veh/h	0	765	0	30	1182	11	0	0	0	0	0	6
Future Vol, veh/h	0	765	0	30	1182	11	0	0	0	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	8	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized		-	None		-	None		-	None		-	None
Storage Length	-	-	-	150	-	80	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	92	92	94	94	92	92	92	94	92	94
Heavy Vehicles, %	0	2	2	2	2	1	2	2	2	0	2	1
Mvmt Flow	0	814	0	33	1257	12	0	0	0	0	0	6

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	814	0	0				-	-	637
Stage 1	-	-	-	-	-	-				-	-	-
Stage 2	-	-	-	-	-	-				-	-	-
Critical Hdwy	-	-	-	4.14	-	-				-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-				-	-	3.31
Pot Cap-1 Maneuver	0	-	0	809	-	-				0	0	422
Stage 1	0	-	0	-	-	-				0	0	-
Stage 2	0	-	0	-	-	-				0	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	-	-	-	809	-	-				-	0	419
Mov Cap-2 Maneuver	-	-	-	-	-	-				-	0	-
Stage 1	-	-	-	-	-	-				-	0	-
Stage 2	-	-	-	-	-	-				-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.2	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	809	-	-	419
HCM Lane V/C Ratio	-	0.04	-	-	0.015
HCM Control Delay (s)	-	9.6	-	-	13.7
HCM Lane LOS	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0.1	-	-	0

HCM 2010 TWSC
3: Grand St & Rohnert Park Expressway
09/17/2018

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	765	0	0	1218	0	29
Future Vol, veh/h	765	0	0	1218	0	29
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
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	0	0	2	0	1
Mvmt Flow	814	0	0	1296	0	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	407
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.31
Pot Cap-1 Maneuver	-	0	0	-	0	596
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	596
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	596	-	-
HCM Lane V/C Ratio	0.052	-	-
HCM Control Delay (s)	11.4	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-

HCM 2010 TWSC
4: State Farm Dr & Town Ctr Dwy/Venture Ave 09/17/2018

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	4	17	3	2	37	30	338	7	72	221	33
Future Vol, veh/h	40	4	17	3	2	37	30	338	7	72	221	33
Conflicting Peds, #/hr	2	0	1	0	0	1	0	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	48	5	20	4	2	44	36	402	8	86	263	39

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	959	939	285	947	954	409	303	0	0	411	0	0
Stage 1	456	456	-	479	479	-	-	-	-	-	-	-
Stage 2	503	483	-	468	475	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	238	265	756	242	260	645	1264	-	-	1153	-	-
Stage 1	586	570	-	570	557	-	-	-	-	-	-	-
Stage 2	553	554	-	577	559	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	203	237	755	214	233	643	1263	-	-	1152	-	-
Mov Cap-2 Maneuver	203	237	-	214	233	-	-	-	-	-	-	-
Stage 1	569	527	-	553	540	-	-	-	-	-	-	-
Stage 2	497	537	-	514	517	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.3	12.6	0.6	1.8
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1263	-	-	258	524	1152	-	-
HCM Lane V/C Ratio	0.028	-	-	0.281	0.095	0.074	-	-
HCM Control Delay (s)	7.9	-	-	24.3	12.6	8.4	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	0.3	0.2	-	-

HCM 2010 Signalized Intersection Summary
4: State Farm Dr & Town Ctr Dwy/Venture Ave 09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	4	17	3	2	37	36	329	7	72	221	33
Future Volume (veh/h)	79	4	17	3	2	37	36	329	7	72	221	33
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1882	1900	1900	1900	1881	1881	1863	1900	1881	1863	1881
Adj Flow Rate, veh/h	94	5	20	4	2	44	43	392	8	86	263	39
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	0	0	0	0	1	1	2	2	1	2	1
Cap, veh/h	459	9	198	347	112	197	74	561	11	130	633	525
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.04	0.31	0.31	0.07	0.34	0.34
Sat Flow, veh/h	1371	73	1605	807	909	1594	1792	1818	37	1792	1863	1547
Grp Volume(v), veh/h	99	0	20	6	0	44	43	0	400	86	263	39
Grp Sat Flow(s),veh/h/ln	1444	0	1605	1717	0	1594	1792	0	1855	1792	1863	1547
Q Serve(g_s), s	1.5	0.0	0.3	0.0	0.0	0.6	0.6	0.0	4.6	1.1	2.6	0.4
Cycle Q Clear(g_c), s	1.6	0.0	0.3	0.1	0.0	0.6	0.6	0.0	4.6	1.1	2.6	0.4
Prop In Lane	0.95		1.00	0.67		1.00	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	468	0	198	460	0	197	74	0	572	130	633	525
V/C Ratio(X)	0.21	0.00	0.10	0.01	0.00	0.22	0.58	0.00	0.70	0.66	0.42	0.07
Avail Cap(c_a), veh/h	2011	0	1923	2130	0	1909	466	0	2230	733	2516	2090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	0.0	9.4	9.3	0.0	9.6	11.4	0.0	7.4	10.9	6.1	5.4
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.0	0.2	6.9	0.0	0.6	5.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.1	0.0	0.0	0.3	0.4	0.0	2.4	0.8	1.3	0.2
LnGrp Delay(d),s/veh	10.1	0.0	9.5	9.3	0.0	9.8	18.3	0.0	8.0	16.6	6.3	5.4
LnGrp LOS	B		A	A		A	B		A	B	A	A
Approach Vol, veh/h		119			50			443			388	
Approach Delay, s/veh		10.0			9.7			9.0			8.5	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.3	12.0		7.0	4.5	12.7		7.0
Change Period (Y+Rc), s	3.5	4.5		4.0	3.5	4.5		4.0
Max Green Setting (Gmax), s	9.9	29.1		29.0	6.3	32.7		29.0
Max Q Clear Time (g_c+I1), s	3.1	6.6		3.6	2.6	4.6		2.6
Green Ext Time (p_c), s	0.1	0.8		0.1	0.0	0.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	12	0	11	2	0	21	31	344	5	30	186	26
Future Vol, veh/h	12	0	11	2	0	21	31	344	5	30	186	26
Conflicting Peds, #/hr	1	0	0	0	0	1	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	35	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	14	0	13	2	0	25	37	410	6	36	221	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	812	802	239	803	814	415	254	0	0	417	0	0
Stage 1	311	311	-	488	488	-	-	-	-	-	-	-
Stage 2	501	491	-	315	326	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	299	318	802	303	313	640	1317	-	-	1147	-	-
Stage 1	702	660	-	563	552	-	-	-	-	-	-	-
Stage 2	554	550	-	698	650	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	274	299	801	285	294	639	1315	-	-	1146	-	-
Mov Cap-2 Maneuver	274	299	-	285	294	-	-	-	-	-	-	-
Stage 1	681	638	-	547	536	-	-	-	-	-	-	-
Stage 2	517	534	-	665	629	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	11.6	0.6	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1315	-	-	400	577	1146	-	-
HCM Lane V/C Ratio	0.028	-	-	0.068	0.047	0.031	-	-
HCM Control Delay (s)	7.8	-	-	14.7	11.6	8.2	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	9	0	11	2	0	21	31	344	5	30	186	26
Future Vol, veh/h	9	0	11	2	0	21	31	344	5	30	186	26
Conflicting Peds, #/hr	1	0	0	0	0	1	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	11	0	13	2	0	25	37	410	6	36	221	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	812	802	239	803	814	415	254	0	0	417	0	0
Stage 1	311	311	-	488	488	-	-	-	-	-	-	-
Stage 2	501	491	-	315	326	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	300	320	805	304	315	642	1323	-	-	1153	-	-
Stage 1	704	662	-	565	553	-	-	-	-	-	-	-
Stage 2	556	552	-	700	652	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	275	300	804	285	296	641	1321	-	-	1152	-	-
Mov Cap-2 Maneuver	275	300	-	285	296	-	-	-	-	-	-	-
Stage 1	683	640	-	549	537	-	-	-	-	-	-	-
Stage 2	519	536	-	667	630	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	11.5	0.6	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1321	-	-	431	578	1152	-	-
HCM Lane V/C Ratio	0.028	-	-	0.055	0.047	0.031	-	-
HCM Control Delay (s)	7.8	-	-	13.8	11.5	8.2	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0.1	-	-

HCM 2010 TWSC
6: State Farm Dr & Dwy/Spirit Ave 09/17/2018

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	6	1	0	39	2	337	2	22	177	1
Future Vol, veh/h	6	0	6	1	0	39	2	337	2	22	177	1
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	1	1	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	7	0	7	1	0	46	2	401	2	26	211	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	695	674	214	674	673	403	214	0	0	404	0	0
Stage 1	266	266	-	407	407	-	-	-	-	-	-	-
Stage 2	429	408	-	267	266	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	358	377	829	370	378	650	1362	-	-	1160	-	-
Stage 1	742	691	-	623	599	-	-	-	-	-	-	-
Stage 2	606	598	-	741	691	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	325	366	828	359	367	649	1360	-	-	1159	-	-
Mov Cap-2 Maneuver	325	366	-	359	367	-	-	-	-	-	-	-
Stage 1	740	672	-	622	598	-	-	-	-	-	-	-
Stage 2	562	597	-	716	672	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	11.1	0	0.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1360	-	-	467	636	1159	-	-
HCM Lane V/C Ratio	0.002	-	-	0.031	0.075	0.023	-	-
HCM Control Delay (s)	7.7	-	-	13	11.1	8.2	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.1	-	-

HCM 2010 AWSC
7: Enterprise Dr & State Farm Dr 09/17/2018

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	69	81	100	273	126	56
Future Vol, veh/h	69	81	100	273	126	56
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	85	105	287	133	59
Number of Lanes	1	1	2	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	9.2	10.3	10.2
HCM LOS	A	B	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	11%	0%	0%
Vol Right, %	0%	0%	0%	89%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	81	67	306	126	56
LT Vol	69	0	0	0	126	0
Through Vol	0	81	67	33	0	0
RT Vol	0	0	0	273	0	56
Lane Flow Rate	73	85	70	322	133	59
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.12	0.129	0.103	0.416	0.232	0.083
Departure Headway (Hd)	5.961	5.457	5.269	4.641	6.285	5.078
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	598	653	678	771	568	699
Service Time	3.729	3.224	3.019	2.391	4.062	2.854
HCM Lane V/C Ratio	0.122	0.13	0.103	0.418	0.234	0.084
HCM Control Delay	9.5	9	8.6	10.7	11	8.3
HCM Lane LOS	A	A	A	B	B	A
HCM 95th-tile Q	0.4	0.4	0.3	2.1	0.9	0.3

HCM 2010 TWSC
8: Enterprise Dr & Quest St 09/17/2018

Intersection						
Int Delay, s/veh	0.7					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	193	325	11	10	19
Future Vol, veh/h	9	193	325	11	10	19
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	80	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	11	230	387	13	12	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	402	0	-	0	648	396
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	252	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1168	-	-	-	438	658
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1166	-	-	-	432	657
Mov Cap-2 Maneuver	-	-	-	-	526	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1166	-	-	-	605
HCM Lane V/C Ratio	0.009	-	-	-	0.057
HCM Control Delay (s)	8.1	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 2010 TWSC
9: Enterprise Dr & Grand St 09/17/2018

Intersection						
Int Delay, s/veh	0.5					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	186	296	6	6	12
Future Vol, veh/h	5	186	296	6	6	12
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	6	221	352	7	7	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	591	358
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1209	-	-	-	473	691
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	810	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1207	-	-	-	469	690
Mov Cap-2 Maneuver	-	-	-	-	469	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	808	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1207	-	-	-	596
HCM Lane V/C Ratio	0.005	-	-	-	0.036
HCM Control Delay (s)	8	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	184	300	0	0	1
Future Vol, veh/h	6	184	300	0	0	1
Conflicting Peds, #/hr	4	0	0	3	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	219	357	0	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	594	366
Stage 1	-	-	-	-	361	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1198	-	-	-	468	679
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	806	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1194	-	-	-	462	674
Mov Cap-2 Maneuver	-	-	-	-	462	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	804	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1194	-	-	-	674
HCM Lane V/C Ratio	0.006	-	-	-	0.002
HCM Control Delay (s)	8	0	-	-	10.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	202	1	1	345	28	4
Future Vol, veh/h	202	1	1	345	28	4
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	240	1	1	411	33	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	243	0	656	243
Stage 1	-	-	-	-	243	-
Stage 2	-	-	-	-	413	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1335	-	433	801
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	672	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1333	-	432	800
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	672	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	458	-	-	1333	-
HCM Lane V/C Ratio	0.083	-	-	0.001	-
HCM Control Delay (s)	13.6	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	188	10	4	305	30	6
Future Vol, veh/h	188	10	4	305	30	6
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	224	12	5	363	36	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	238	0	605	232
Stage 1	-	-	-	-	232	-
Stage 2	-	-	-	-	373	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1341	-	464	812
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	701	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1339	-	462	811
Mov Cap-2 Maneuver	-	-	-	-	549	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	701	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	580	-	-	1339	-
HCM Lane V/C Ratio	0.074	-	-	0.004	-
HCM Control Delay (s)	11.7	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 2010 Signalized Intersection Summary
1: State Farm Dr & Rohnert Park Expressway

09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	774	142	166	662	103	192	116	217	233	262	187
Future Volume (veh/h)	84	774	142	166	662	103	192	116	217	233	262	187
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	89	823	133	177	704	83	204	123	175	230	305	162
Adj No. of Lanes	1	2	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	839	365	512	1636	720	508	267	220	309	398	205
Arrive On Green	0.15	0.47	0.47	0.58	0.92	0.92	0.14	0.14	0.14	0.17	0.17	0.17
Sat Flow, veh/h	1774	3539	1539	1774	3539	1558	3548	1863	1538	1774	2290	1179
Grp Volume(v), veh/h	89	823	133	177	704	83	204	123	175	230	246	221
Grp Sat Flow(s),veh/h/ln	1774	1770	1539	1774	1770	1558	1774	1863	1538	1774	1863	1607
Q Serve(g_s), s	6.9	33.4	8.0	7.7	3.6	0.7	7.6	8.8	16.1	18.0	18.4	19.2
Cycle Q Clear(g_c), s	6.9	33.4	8.0	7.7	3.6	0.7	7.6	8.8	16.1	18.0	18.4	19.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.73
Lane Grp Cap(c), veh/h	130	839	365	512	1636	720	508	267	220	309	324	280
V/C Ratio(X)	0.68	0.98	0.36	0.35	0.43	0.12	0.40	0.46	0.79	0.75	0.76	0.79
Avail Cap(c_a), veh/h	194	839	365	512	1636	720	955	501	414	454	477	412
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.7	38.1	31.4	23.5	3.1	3.0	56.8	57.4	60.5	57.2	57.4	57.7
Incr Delay (d2), s/veh	1.7	22.5	2.1	0.1	0.8	0.3	0.2	0.5	2.5	1.5	1.9	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	18.6	3.6	3.8	1.7	0.3	3.8	4.6	7.0	8.9	9.6	8.8
LnGrp Delay(d),s/veh	62.4	60.6	33.5	23.7	3.9	3.3	57.0	57.8	62.9	58.8	59.3	61.2
LnGrp LOS	E	E	C	C	A	A	E	E	E	E	E	E
Approach Vol, veh/h		1045			964			502			697	
Approach Delay, s/veh		57.3			7.5			59.3			59.7	
Approach LOS		E			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	48.4	40.0		31.0	14.7	73.7		26.6
Change Period (Y+Rc), s	6.2	* 5.4		5.6	4.0	* 6.2		5.7
Max Green Setting (Gmax), s	14.0	* 35		37.4	16.0	* 32		39.3
Max Q Clear Time (g_c+I1), s	9.7	35.4		21.2	8.9	5.6		18.1
Green Ext Time (p_c), s	0.0	0.0		0.9	0.0	1.7		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	43.2
HCM 2010 LOS	D

Notes

HCM 2010 TWSC
2: Rohnert Park Expressway & Lynne Conde Ln

09/17/2018

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1224	901	20	0	30
Future Vol, veh/h	0	1224	901	20	0	30
Conflicting Peds, #/hr	0	0	0	12	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	80	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	1	0	1
Mvmt Flow	0	1330	979	22	0	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	502
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.31
Pot Cap-1 Maneuver	0	-	-	-	0	517
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	512
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	512
HCM Lane V/C Ratio	-	-	-	0.064
HCM Control Delay (s)	-	-	-	12.5
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.2

HCM 2010 TWSC
4: State Farm Dr & Town Ctr Dwy/Venture Ave 09/17/2018

Intersection													
Int Delay, s/veh	4.8												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Vol, veh/h	117	0	57	0	0	0	29	304	0	1	415	89	
Future Vol, veh/h	117	0	57	0	0	0	29	304	0	1	415	89	
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	1	0	5	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	35	-	-	120	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1	
Mvmt Flow	131	0	64	0	0	0	33	342	0	1	466	100	

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	762	932	288	644	982	174	571	0	0	343	0	0
Stage 1	523	523	-	409	409	-	-	-	-	-	-	-
Stage 2	239	409	-	235	573	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	296	267	712	360	249	842	1005	-	-	1220	-	-
Stage 1	508	531	-	593	597	-	-	-	-	-	-	-
Stage 2	746	597	-	750	504	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	287	257	709	319	239	840	1001	-	-	1219	-	-
Mov Cap-2 Maneuver	287	257	-	319	239	-	-	-	-	-	-	-
Stage 1	489	528	-	573	577	-	-	-	-	-	-	-
Stage 2	720	577	-	682	501	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.6	0	0.8	0
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1001	-	-	357	-	1219	-	-
HCM Lane V/C Ratio	0.033	-	-	0.548	-	0.001	-	-
HCM Control Delay (s)	8.7	-	-	26.6	0	8	-	-
HCM Lane LOS	A	-	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.1	-	0	-	-

HCM 2010 TWSC
5: State Farm Dr & Town Ctr Dwy/Station Ave 09/17/2018

Intersection													
Int Delay, s/veh	2.9												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Vol, veh/h	57	0	72	0	0	0	47	277	0	1	411	48	
Future Vol, veh/h	57	0	72	0	0	0	47	277	0	1	411	48	
Conflicting Peds, #/hr	1	0	0	0	0	1	4	0	1	1	0	4	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	35	-	-	35	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1	
Mvmt Flow	64	0	81	0	0	0	53	311	0	1	462	54	

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	758	913	262	651	940	158	520	0	-	312	0	0
Stage 1	495	495	-	418	418	-	-	-	-	-	-	-
Stage 2	263	418	-	233	522	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	298	274	740	356	264	862	1049	-	0	1252	-	-
Stage 1	528	547	-	586	592	-	-	-	0	-	-	-
Stage 2	722	592	-	752	532	-	-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	285	259	738	304	249	861	1046	-	-	1251	-	-
Mov Cap-2 Maneuver	285	259	-	304	249	-	-	-	-	-	-	-
Stage 1	499	545	-	556	561	-	-	-	-	-	-	-
Stage 2	685	561	-	669	530	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.4	0	1.3	0
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1046	-	434	-	1251	-	-
HCM Lane V/C Ratio	0.05	-	0.334	-	0.001	-	-
HCM Control Delay (s)	8.6	-	17.4	0	7.9	-	-
HCM Lane LOS	A	-	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	1.4	-	0	-	-

HCM 2010 TWSC

6: State Farm Dr & Dwy/Spirit Ave

09/17/2018

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	0	4	0	0	0	8	317	0	0	469	2
Future Vol, veh/h	8	0	4	0	0	0	8	317	0	0	469	2
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	1	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	9	0	4	0	0	0	9	356	0	0	527	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	727	906	268	639	907	179	532	0	0	357	0	0
Stage 1	531	531	-	375	375	-	-	-	-	-	-	-
Stage 2	196	375	-	264	532	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	314	276	733	363	276	836	1039	-	-	1206	-	-
Stage 1	502	527	-	621	618	-	-	-	-	-	-	-
Stage 2	790	618	-	721	526	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	311	273	731	358	273	835	1036	-	-	1205	-	-
Mov Cap-2 Maneuver	311	273	-	358	273	-	-	-	-	-	-	-
Stage 1	496	526	-	615	612	-	-	-	-	-	-	-
Stage 2	783	612	-	717	525	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	0	0.2	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1036	-	-	385	-	1205	-	-
HCM Lane V/C Ratio	0.009	-	-	0.035	-	-	-	-
HCM Control Delay (s)	8.5	-	-	14.7	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

HCM 2010 AWSC

7: Enterprise Dr & State Farm Dr

09/17/2018

Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	124	195	141	201	338	120
Future Vol, veh/h	124	195	141	201	338	120
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	139	219	158	226	380	135
Number of Lanes	1	1	2	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	14	13.9	23.8
HCM LOS	B	B	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	19%	0%	0%
Vol Right, %	0%	0%	0%	81%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	195	94	248	338	120
LT Vol	124	0	0	0	338	0
Through Vol	0	195	94	47	0	0
RT Vol	0	0	0	201	0	120
Lane Flow Rate	139	219	106	279	380	135
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.285	0.416	0.201	0.485	0.751	0.221
Departure Headway (Hd)	7.355	6.843	6.849	6.268	7.118	5.902
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	486	524	521	571	505	605
Service Time	5.138	4.626	4.632	4.051	4.883	3.666
HCM Lane V/C Ratio	0.286	0.418	0.203	0.489	0.752	0.223
HCM Control Delay	13.1	14.5	11.4	14.9	28.5	10.4
HCM Lane LOS	B	B	B	B	D	B
HCM 95th-tile Q	1.2	2	0.7	2.6	6.4	0.8

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	489	291	5	6	16
Future Vol, veh/h	4	489	291	5	6	16
Conflicting Peds, #/hr	3	0	0	3	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	562	334	6	7	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	343	0	-	0	912	346
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	572	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1216	-	-	-	304	697
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1213	-	-	-	301	692
Mov Cap-2 Maneuver	-	-	-	-	301	-
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	564	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1213	-	-	-	511
HCM Lane V/C Ratio	0.004	-	-	-	0.049
HCM Control Delay (s)	8	0	-	-	12.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	521	10	5	335	2	4
Future Vol, veh/h	521	10	5	335	2	4
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	599	11	6	385	2	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	612	0	1004	607
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	397	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	977	-	270	500
Stage 1	-	-	-	-	548	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	976	-	268	499
Mov Cap-2 Maneuver	-	-	-	-	268	-
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	388	-	-	976	-
HCM Lane V/C Ratio	0.018	-	-	0.006	-
HCM Control Delay (s)	14.4	-	-	8.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	491	30	3	314	16	6
Future Vol, veh/h	491	30	3	314	16	6
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	564	34	3	361	18	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	600	0	950	583
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	367	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	987	-	291	516
Stage 1	-	-	-	-	562	-
Stage 2	-	-	-	-	705	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	986	-	290	515
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	437	-	-	986	-
HCM Lane V/C Ratio	0.058	-	-	0.003	-
HCM Control Delay (s)	13.7	-	-	8.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 2010 Signalized Intersection Summary
1: State Farm Dr & Rohnert Park Expressway

09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	812	264	179	662	103	392	144	233	236	283	187
Future Volume (veh/h)	84	812	264	179	662	103	392	144	233	236	283	187
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	89	864	263	190	704	83	417	153	192	238	319	162
Adj No. of Lanes	1	2	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	839	365	488	1588	699	546	287	237	314	412	203
Arrive On Green	0.15	0.47	0.47	0.55	0.90	0.90	0.15	0.15	0.15	0.18	0.18	0.18
Sat Flow, veh/h	1774	3539	1539	1774	3539	1557	3548	1863	1539	1774	2327	1149
Grp Volume(v), veh/h	89	864	263	190	704	83	417	153	192	238	254	227
Grp Sat Flow(s),veh/h/ln	1774	1770	1539	1774	1770	1557	1774	1863	1539	1774	1863	1614
Q Serve(g_s), s	6.9	34.6	19.9	8.9	5.0	0.9	16.5	11.1	17.6	18.6	18.9	19.7
Cycle Q Clear(g_c), s	6.9	34.6	19.9	8.9	5.0	0.9	16.5	11.1	17.6	18.6	18.9	19.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.71
Lane Grp Cap(c), veh/h	130	839	365	488	1588	699	546	287	237	314	330	285
V/C Ratio(X)	0.68	1.03	0.72	0.39	0.44	0.12	0.76	0.53	0.81	0.76	0.77	0.80
Avail Cap(c_a), veh/h	194	839	365	488	1588	699	955	501	414	454	477	413
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.7	38.4	34.5	25.8	4.4	4.2	59.2	56.9	59.7	57.1	57.3	57.6
Incr Delay (d2), s/veh	1.7	34.7	8.8	0.2	0.9	0.3	0.8	0.6	2.5	2.2	2.5	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	20.8	9.2	4.3	2.3	0.4	8.1	5.7	7.7	9.3	9.9	9.1
LnGrp Delay(d),s/veh	62.4	73.1	43.3	26.0	5.3	4.5	60.1	57.5	62.2	59.3	59.7	61.7
LnGrp LOS	E	F	D	C	A	A	E	E	E	E	E	E
Approach Vol, veh/h		1216			977			762			719	
Approach Delay, s/veh		65.8			9.2			60.1			60.2	
Approach LOS		E			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	46.4	40.0		31.4	14.7	71.7		28.2
Change Period (Y+Rc), s	6.2	* 5.4		5.6	4.0	* 6.2		5.7
Max Green Setting (Gmax), s	14.0	* 35		37.4	16.0	* 32		39.3
Max Q Clear Time (g_c+I1), s	10.9	36.6		21.7	8.9	7.0		19.6
Green Ext Time (p_c), s	0.0	0.0		1.0	0.0	1.7		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	48.5
HCM 2010 LOS	D

Notes

HCM 2010 TWSC
2: Rohnert Park Expressway & Lynne Conde Ln

09/17/2018

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1240	0	35	914	20	0	0	0	0	0	30
Future Vol, veh/h	0	1240	0	35	914	20	0	0	0	0	0	30
Conflicting Peds, #/hr	0	0	0	0	0	12	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	80	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	2	2	1	2	2	2	0	2	1
Mvmt Flow	0	1348	0	38	993	22	0	0	0	0	0	33

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	1348	0	0			-	2429	509
Stage 1	-	-	-	-	-	-			-	1081	-
Stage 2	-	-	-	-	-	-			-	1348	-
Critical Hdwy	-	-	-	4.14	-	-			-	6.54	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-			-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-			-	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-			-	4.02	3.31
Pot Cap-1 Maneuver	0	-	0	507	-	-			0	32	512
Stage 1	0	-	0	-	-	-			0	292	-
Stage 2	0	-	0	-	-	-			0	218	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	-	-	-	507	-	-			-	0	507
Mov Cap-2 Maneuver	-	-	-	-	-	-			-	0	-
Stage 1	-	-	-	-	-	-			-	0	-
Stage 2	-	-	-	-	-	-			-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.5	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	507	-	-	507
HCM Lane V/C Ratio	-	0.075	-	-	0.064
HCM Control Delay (s)	-	12.7	-	-	12.6
HCM Lane LOS	-	B	-	-	B
HCM 95th %tile Q(veh)	-	0.2	-	-	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	1240	0	0	964	0	46
Future Vol, veh/h	1240	0	0	964	0	46
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
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	1
Mvmt Flow	1348	0	0	1048	0	50

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	674
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.31
Pot Cap-1 Maneuver	-	0	0	-	0	399
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	399
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	399	-	-
HCM Lane V/C Ratio	0.125	-	-
HCM Control Delay (s)	15.3	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-

Intersection	
Int Delay, s/veh	64.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	117	4	61	9	5	145	32	403	7	72	500	89
Future Vol, veh/h	117	4	61	9	5	145	32	403	7	72	500	89
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	1	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	131	4	69	10	6	163	36	453	8	81	562	100

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1395	1313	617	1341	1359	460	667	0	0	462	0	0
Stage 1	779	779	-	530	530	-	-	-	-	-	-	-
Stage 2	616	534	-	811	829	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	~ 119	159	492	130	149	603	927	-	-	1104	-	-
Stage 1	390	408	-	534	528	-	-	-	-	-	-	-
Stage 2	480	526	-	375	387	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 77	141	490	100	132	601	923	-	-	1103	-	-
Mov Cap-2 Maneuver	~ 77	141	-	100	132	-	-	-	-	-	-	-
Stage 1	373	377	-	513	507	-	-	-	-	-	-	-
Stage 2	332	505	-	295	357	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 493.5	19.1	0.7	0.9
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	923	-	-	109	431	1103	-	-
HCM Lane V/C Ratio	0.039	-	-	1.876	0.415	0.073	-	-
HCM Control Delay (s)	9.1	-	-	$ 493.5	19.1	8.5	-	-
HCM Lane LOS	A	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	16.6	2	0.2	-	-

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

HCM 2010 Signalized Intersection Summary
4: State Farm Dr & Town Ctr Dwy/Venture Ave

09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	253	4	61	9	5	145	50	371	7	72	500	89
Future Volume (veh/h)	253	4	61	9	5	145	50	371	7	72	500	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.99		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1900	1881	1900	1863	1900	1881	1863	1881
Adj Flow Rate, veh/h	284	4	69	10	6	163	56	417	8	81	562	100
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	1	0	2	2	1	2	1
Cap, veh/h	581	6	462	426	225	457	84	642	12	106	681	559
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.05	0.35	0.35	0.06	0.37	0.37
Sat Flow, veh/h	1387	20	1587	965	772	1572	1810	1820	35	1792	1863	1530
Grp Volume(v), veh/h	288	0	69	16	0	163	56	0	425	81	562	100
Grp Sat Flow(s),veh/h/ln	1407	0	1587	1738	0	1572	1810	0	1855	1792	1863	1530
Q Serve(g_s), s	7.1	0.0	1.3	0.0	0.0	3.3	1.2	0.0	7.8	1.8	11.1	1.8
Cycle Q Clear(g_c), s	7.3	0.0	1.3	0.2	0.0	3.3	1.2	0.0	7.8	1.8	11.1	1.8
Prop In Lane	0.99		1.00	0.62		1.00	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	587	0	462	651	0	457	84	0	654	106	681	559
V/C Ratio(X)	0.49	0.00	0.15	0.02	0.00	0.36	0.67	0.00	0.65	0.76	0.83	0.18
Avail Cap(c_a), veh/h	1184	0	1140	1320	0	1128	246	0	1447	333	1545	1269
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.7	0.0	10.6	10.2	0.0	11.3	19.0	0.0	11.0	18.7	11.6	8.7
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.0	0.0	0.2	8.9	0.0	0.4	10.8	1.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.6	0.1	0.0	1.5	0.8	0.0	4.0	1.2	5.8	0.8
LnGrp Delay(d),s/veh	13.0	0.0	10.7	10.2	0.0	11.5	27.9	0.0	11.4	29.6	12.6	8.8
LnGrp LOS	B		B	B		B	C		B	C	B	A
Approach Vol, veh/h		357			179			481			743	
Approach Delay, s/veh		12.5			11.4			13.3			13.9	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	18.7		15.8	5.4	19.3		15.8
Change Period (Y+Rc), s	3.5	4.5		4.0	3.5	4.5		4.0
Max Green Setting (Gmax), s	7.5	31.5		29.0	5.5	33.5		29.0
Max Q Clear Time (g_c+I1), s	3.8	9.8		9.3	3.2	13.1		5.3
Green Ext Time (p_c), s	0.0	0.9		0.3	0.0	1.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

HCM 2010 TWSC
5: State Farm Dr & Town Ctr Dwy/Station Ave

09/17/2018

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	0	72	7	0	56	47	330	5	32	478	48
Future Vol, veh/h	57	0	72	7	0	56	47	330	5	32	478	48
Conflicting Peds, #/hr	1	0	0	0	0	1	4	0	1	1	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	35	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	64	0	81	8	0	63	53	371	6	36	537	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1153	1124	568	1158	1148	376	595	0	0	378	0	0
Stage 1	640	640	-	481	481	-	-	-	-	-	-	-
Stage 2	513	484	-	677	667	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	175	206	524	174	200	673	986	-	-	1186	-	-
Stage 1	465	471	-	568	555	-	-	-	-	-	-	-
Stage 2	546	554	-	444	458	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	148	188	522	138	183	672	983	-	-	1185	-	-
Mov Cap-2 Maneuver	148	188	-	138	183	-	-	-	-	-	-	-
Stage 1	438	455	-	537	524	-	-	-	-	-	-	-
Stage 2	468	524	-	364	443	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.4	14	1.1	0.5
HCM LOS	E	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	983	-	-	247	470	1185	-	-
HCM Lane V/C Ratio	0.054	-	-	0.587	0.151	0.03	-	-
HCM Control Delay (s)	8.9	-	-	38.4	14	8.1	-	-
HCM Lane LOS	A	-	-	E	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	3.4	0.5	0.1	-	-

HCM 2010 TWSC
6: State Farm Dr & Dwy/Spirit Ave 09/17/2018

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	0	4	2	0	34	8	341	2	39	504	2
Future Vol, veh/h	8	0	4	2	0	34	8	341	2	39	504	2
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	1	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	9	0	4	2	0	38	9	383	2	44	566	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1079	1062	570	1060	1062	385	571	0	0	386	0	0
Stage 1	658	658	-	403	403	-	-	-	-	-	-	-
Stage 2	421	404	-	657	659	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	197	224	523	203	224	665	1007	-	-	1178	-	-
Stage 1	455	463	-	626	601	-	-	-	-	-	-	-
Stage 2	612	601	-	456	462	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	176	209	522	191	209	664	1004	-	-	1177	-	-
Mov Cap-2 Maneuver	176	209	-	191	209	-	-	-	-	-	-	-
Stage 1	450	437	-	620	595	-	-	-	-	-	-	-
Stage 2	572	595	-	427	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.9	11.6	0.2	0.6
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1004	-	-	226	584	1177	-	-
HCM Lane V/C Ratio	0.009	-	-	0.06	0.069	0.037	-	-
HCM Control Delay (s)	8.6	-	-	21.9	11.6	8.2	0	-
HCM Lane LOS	A	-	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.1	-	-

HCM 2010 AWSC
7: Enterprise Dr & State Farm Dr 09/17/2018

Intersection	
Intersection Delay, s/veh	21.3
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	133	205	151	218	364	131
Future Vol, veh/h	133	205	151	218	364	131
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	230	170	245	409	147
Number of Lanes	1	1	2	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	15.1	15.7	29.7
HCM LOS	C	C	D

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	19%	0%	0%
Vol Right, %	0%	0%	0%	81%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	133	205	101	268	364	131
LT Vol	133	0	0	0	364	0
Through Vol	0	205	101	50	0	0
RT Vol	0	0	0	218	0	131
Lane Flow Rate	149	230	113	301	409	147
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.319	0.459	0.225	0.551	0.827	0.248
Departure Headway (Hd)	7.682	7.169	7.169	6.585	7.381	6.162
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	504	503	552	495	586
Service Time	5.392	4.879	4.869	4.285	5.081	3.862
HCM Lane V/C Ratio	0.316	0.456	0.225	0.545	0.826	0.251
HCM Control Delay	14	15.8	11.9	17.1	36.4	10.9
HCM Lane LOS	B	C	B	C	E	B
HCM 95th-tile Q	1.4	2.4	0.9	3.3	8.1	1

HCM 2010 TWSC
8: Enterprise Dr & Quest St 09/17/2018

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	541	348	14	16	14
Future Vol, veh/h	18	541	348	14	16	14
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	80	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	21	622	400	16	18	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	418	0	-	0	1074	410
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	664	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1152	-	-	-	246	646
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	516	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1150	-	-	-	241	645
Mov Cap-2 Maneuver	-	-	-	-	364	-
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	515	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1150	-	-	-	457
HCM Lane V/C Ratio	0.018	-	-	-	0.075
HCM Control Delay (s)	8.2	-	-	-	13.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

HCM 2010 TWSC
9: Enterprise Dr & Grand St 09/17/2018

Intersection						
Int Delay, s/veh	0.4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	518	332	8	9	8
Future Vol, veh/h	11	518	332	8	9	8
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	13	595	382	9	10	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	393	0	-	0	1010	389
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	621	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1177	-	-	-	268	664
Stage 1	-	-	-	-	689	-
Stage 2	-	-	-	-	540	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1175	-	-	-	264	663
Mov Cap-2 Maneuver	-	-	-	-	264	-
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	539	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1175	-	-	-	368
HCM Lane V/C Ratio	0.011	-	-	-	0.053
HCM Control Delay (s)	8.1	-	-	-	15.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	521	319	5	6	16
Future Vol, veh/h	4	521	319	5	6	16
Conflicting Peds, #/hr	3	0	0	3	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	599	367	6	7	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	376	0	-	0	982	379
Stage 1	-	-	-	-	373	-
Stage 2	-	-	-	-	609	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1182	-	-	-	276	668
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	543	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1179	-	-	-	273	663
Mov Cap-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	542	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1179	-	-	-	477
HCM Lane V/C Ratio	0.004	-	-	-	0.053
HCM Control Delay (s)	8.1	0	-	-	13
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	557	10	5	363	2	4
Future Vol, veh/h	557	10	5	363	2	4
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	640	11	6	417	2	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	653	0	1077	648
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	429	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	943	-	245	474
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	661	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	942	-	243	473
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	661	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	360	-	-	942	-
HCM Lane V/C Ratio	0.019	-	-	0.006	-
HCM Control Delay (s)	15.2	-	-	8.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	525	30	3	341	16	6
Future Vol, veh/h	525	30	3	341	16	6
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	603	34	3	392	18	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	639	0	1020	622
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	955	-	264	490
Stage 1	-	-	-	-	539	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	954	-	263	489
Mov Cap-2 Maneuver	-	-	-	-	391	-
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	414	-	-	954	-
HCM Lane V/C Ratio	0.061	-	-	0.004	-
HCM Control Delay (s)	14.3	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 2010 Signalized Intersection Summary
1: State Farm Dr & Rohnert Park Expressway

09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	1002	142	173	813	110	192	116	227	243	262	187
Future Volume (veh/h)	84	1002	142	173	813	110	192	116	227	243	262	187
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	88	1055	131	182	856	90	202	122	183	231	311	160
Adj No. of Lanes	1	2	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	839	365	503	1618	712	524	275	227	310	405	202
Arrive On Green	0.15	0.47	0.47	0.57	0.91	0.91	0.15	0.15	0.15	0.17	0.17	0.17
Sat Flow, veh/h	1774	3539	1539	1774	3539	1557	3548	1863	1538	1774	2317	1157
Grp Volume(v), veh/h	88	1055	131	182	856	90	202	122	183	231	248	223
Grp Sat Flow(s),veh/h/ln	1774	1770	1539	1774	1770	1557	1774	1863	1538	1774	1863	1611
Q Serve(g_s), s	6.9	34.6	7.9	8.2	5.9	0.8	7.5	8.7	16.8	18.0	18.5	19.3
Cycle Q Clear(g_c), s	6.9	34.6	7.9	8.2	5.9	0.8	7.5	8.7	16.8	18.0	18.5	19.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.72
Lane Grp Cap(c), veh/h	130	839	365	503	1618	712	524	275	227	310	325	282
V/C Ratio(X)	0.68	1.26	0.36	0.36	0.53	0.13	0.39	0.44	0.81	0.75	0.76	0.79
Avail Cap(c_a), veh/h	194	839	365	503	1618	712	955	501	414	454	477	413
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.54	0.54	0.54	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.7	38.4	31.4	24.4	3.7	3.4	56.2	56.7	60.2	57.2	57.4	57.7
Incr Delay (d2), s/veh	1.3	121.4	1.5	0.2	1.2	0.4	0.2	0.4	2.5	1.6	2.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	30.9	3.5	4.0	2.9	0.4	3.7	4.5	7.3	9.0	9.7	8.9
LnGrp Delay(d),s/veh	61.9	159.8	32.9	24.5	4.9	3.8	56.4	57.2	62.7	58.8	59.4	61.3
LnGrp LOS	E	F	C	C	A	A	E	E	E	E	E	E
Approach Vol, veh/h		1274			1128			507			702	
Approach Delay, s/veh		140.0			8.0			58.9			59.8	
Approach LOS		F			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	47.6	40.0		31.1	14.7	72.9		27.3
Change Period (Y+Rc), s	6.2	* 5.4		5.6	4.0	* 6.2		5.7
Max Green Setting (Gmax), s	14.0	* 35		37.4	16.0	* 32		39.3
Max Q Clear Time (g_c+I1), s	10.2	36.6		21.3	8.9	7.9		18.8
Green Ext Time (p_c), s	0.0	0.0		0.9	0.0	2.1		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	71.8
HCM 2010 LOS	E

Notes

HCM 2010 TWSC
2: Rohnert Park Expressway & Lynne Conde Ln

09/17/2018

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1473	1066	20	0	30
Future Vol, veh/h	0	1473	1066	20	0	30
Conflicting Peds, #/hr	0	0	0	12	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	80	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	2	1	0	1
Mvmt Flow	0	1551	1122	21	0	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	573
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.31
Pot Cap-1 Maneuver	0	-	-	-	0	465
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	460
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	460
HCM Lane V/C Ratio	-	-	-	0.069
HCM Control Delay (s)	-	-	-	13.4
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.2

HCM 2010 TWSC
4: State Farm Dr & Town Ctr Dwy/Venture Ave 09/17/2018

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	127	0	57	0	0	0	29	304	0	1	415	96
Future Vol, veh/h	127	0	57	0	0	0	29	304	0	1	415	96
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	1	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	143	0	64	0	0	0	33	342	0	1	466	108

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	766	936	292	644	990	174	579	0	0	343	0	0
Stage 1	527	527	-	409	409	-	-	-	-	-	-	-
Stage 2	239	409	-	235	581	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	294	265	707	360	247	842	998	-	-	1220	-	-
Stage 1	505	529	-	593	597	-	-	-	-	-	-	-
Stage 2	746	597	-	750	500	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	285	255	704	319	237	840	994	-	-	1219	-	-
Mov Cap-2 Maneuver	285	255	-	319	237	-	-	-	-	-	-	-
Stage 1	486	526	-	573	577	-	-	-	-	-	-	-
Stage 2	720	577	-	681	498	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.2	0	0.8	0
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	994	-	-	349	-	1219	-	-
HCM Lane V/C Ratio	0.033	-	-	0.592	-	0.001	-	-
HCM Control Delay (s)	8.7	-	-	29.2	0	8	-	-
HCM Lane LOS	A	-	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.6	-	0	-	-

HCM 2010 TWSC
5: State Farm Dr & Town Ctr Dwy/Station Ave 09/17/2018

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	0	72	0	0	0	47	277	0	1	411	48
Future Vol, veh/h	57	0	72	0	0	0	47	277	0	1	411	48
Conflicting Peds, #/hr	1	0	0	0	0	1	4	0	1	1	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	35	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	64	0	81	0	0	0	53	311	0	1	462	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	758	913	262	651	940	158	520	0	-	312	0	0
Stage 1	495	495	-	418	418	-	-	-	-	-	-	-
Stage 2	263	418	-	233	522	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	298	274	740	356	264	862	1049	-	0	1252	-	-
Stage 1	528	547	-	586	592	-	-	-	0	-	-	-
Stage 2	722	592	-	752	532	-	-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	285	259	738	304	249	861	1046	-	-	1251	-	-
Mov Cap-2 Maneuver	285	259	-	304	249	-	-	-	-	-	-	-
Stage 1	499	545	-	556	561	-	-	-	-	-	-	-
Stage 2	685	561	-	669	530	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.4	0	1.3	0
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1046	-	434	-	1251	-	-
HCM Lane V/C Ratio	0.05	-	0.334	-	0.001	-	-
HCM Control Delay (s)	8.6	-	17.4	0	7.9	-	-
HCM Lane LOS	A	-	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	1.4	-	0	-	-

HCM 2010 TWSC
6: State Farm Dr & Dwy/Spirit Ave 09/17/2018

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	0	4	0	0	0	8	317	0	0	469	2
Future Vol, veh/h	8	0	4	0	0	0	8	317	0	0	469	2
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	1	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	9	0	4	0	0	0	9	356	0	0	527	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	727	906	268	639	907	179	532	0	0	357	0	0
Stage 1	531	531	-	375	375	-	-	-	-	-	-	-
Stage 2	196	375	-	264	532	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	314	276	733	363	276	836	1039	-	-	1206	-	-
Stage 1	502	527	-	621	618	-	-	-	-	-	-	-
Stage 2	790	618	-	721	526	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	311	273	731	358	273	835	1036	-	-	1205	-	-
Mov Cap-2 Maneuver	311	273	-	358	273	-	-	-	-	-	-	-
Stage 1	496	526	-	615	612	-	-	-	-	-	-	-
Stage 2	783	612	-	717	525	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	0	0.2	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1036	-	-	385	-	1205	-	-
HCM Lane V/C Ratio	0.009	-	-	0.035	-	-	-	-
HCM Control Delay (s)	8.5	-	-	14.7	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

HCM 2010 AWSC
7: Enterprise Dr & State Farm Dr 09/17/2018

Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	124	195	141	201	338	120
Future Vol, veh/h	124	195	141	201	338	120
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	139	219	158	226	380	135
Number of Lanes	1	1	2	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	14	13.9	23.8
HCM LOS	B	B	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	19%	0%	0%
Vol Right, %	0%	0%	0%	81%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	195	94	248	338	120
LT Vol	124	0	0	0	338	0
Through Vol	0	195	94	47	0	0
RT Vol	0	0	0	201	0	120
Lane Flow Rate	139	219	106	279	380	135
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.285	0.416	0.201	0.485	0.751	0.221
Departure Headway (Hd)	7.355	6.843	6.849	6.268	7.118	5.902
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	486	524	521	571	505	605
Service Time	5.138	4.626	4.632	4.051	4.883	3.666
HCM Lane V/C Ratio	0.286	0.418	0.203	0.489	0.752	0.223
HCM Control Delay	13.1	14.5	11.4	14.9	28.5	10.4
HCM Lane LOS	B	B	B	B	D	B
HCM 95th-tile Q	1.2	2	0.7	2.6	6.4	0.8

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	489	291	5	6	16
Future Vol, veh/h	4	489	291	5	6	16
Conflicting Peds, #/hr	3	0	0	3	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	562	334	6	7	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	343	0	-	0	912	346
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	572	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1216	-	-	-	304	697
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1213	-	-	-	301	692
Mov Cap-2 Maneuver	-	-	-	-	301	-
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	564	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1213	-	-	-	511
HCM Lane V/C Ratio	0.004	-	-	-	0.049
HCM Control Delay (s)	8	0	-	-	12.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	521	10	5	335	2	4
Future Vol, veh/h	521	10	5	335	2	4
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	599	11	6	385	2	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	612	0	1004	607
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	397	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	977	-	270	500
Stage 1	-	-	-	-	548	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	976	-	268	499
Mov Cap-2 Maneuver	-	-	-	-	268	-
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	388	-	-	976	-
HCM Lane V/C Ratio	0.018	-	-	0.006	-
HCM Control Delay (s)	14.4	-	-	8.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	491	30	3	314	16	6
Future Vol, veh/h	491	30	3	314	16	6
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	564	34	3	361	18	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	600	0	950	583
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	367	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	987	-	291	516
Stage 1	-	-	-	-	562	-
Stage 2	-	-	-	-	705	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	986	-	290	515
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	437	-	-	986	-
HCM Lane V/C Ratio	0.058	-	-	0.003	-
HCM Control Delay (s)	13.7	-	-	8.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 2010 Signalized Intersection Summary
1: State Farm Dr & Rohnert Park Expressway 09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	1040	264	186	813	110	392	144	243	246	283	187
Future Volume (veh/h)	84	1040	264	186	813	110	392	144	243	246	283	187
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	89	1106	263	198	865	90	417	153	203	242	330	162
Adj No. of Lanes	1	2	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	839	365	474	1558	685	568	298	247	318	422	202
Arrive On Green	0.15	0.47	0.47	0.53	0.88	0.88	0.16	0.16	0.16	0.18	0.18	0.18
Sat Flow, veh/h	1774	3539	1539	1774	3539	1557	3548	1863	1540	1774	2355	1127
Grp Volume(v), veh/h	89	1106	263	198	865	90	417	153	203	242	259	233
Grp Sat Flow(s),veh/h/ln	1774	1770	1539	1774	1770	1557	1774	1863	1540	1774	1863	1619
Q Serve(g_s), s	6.9	34.6	19.9	9.8	8.4	1.1	16.3	11.0	18.6	18.9	19.4	20.1
Cycle Q Clear(g_c), s	6.9	34.6	19.9	9.8	8.4	1.1	16.3	11.0	18.6	18.9	19.4	20.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.70
Lane Grp Cap(c), veh/h	130	839	365	474	1558	685	568	298	247	318	334	290
V/C Ratio(X)	0.68	1.32	0.72	0.42	0.56	0.13	0.73	0.51	0.82	0.76	0.78	0.80
Avail Cap(c_a), veh/h	194	839	365	474	1558	685	955	501	415	454	477	415
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.7	38.4	34.5	27.2	5.4	5.0	58.4	56.1	59.3	57.0	57.1	57.4
Incr Delay (d2), s/veh	1.7	149.6	8.8	0.2	1.4	0.4	0.7	0.5	2.6	2.5	2.9	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	34.2	9.2	4.8	4.1	0.5	8.0	5.7	8.1	9.5	10.3	9.4
LnGrp Delay(d),s/veh	62.4	188.0	43.3	27.4	6.8	5.4	59.1	56.6	61.9	59.4	60.1	62.1
LnGrp LOS	E	F	D	C	A	A	E	E	E	E	E	E
Approach Vol, veh/h		1458			1153			773			734	
Approach Delay, s/veh		154.3			10.2			59.3			60.5	
Approach LOS		F			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	45.2	40.0		31.8	14.7	70.5		29.1
Change Period (Y+Rc), s	6.2	* 5.4		5.6	4.0	* 6.2		5.7
Max Green Setting (Gmax), s	14.0	* 35		37.4	16.0	* 32		39.3
Max Q Clear Time (g_c+I1), s	11.8	36.6		22.1	8.9	10.4		20.6
Green Ext Time (p_c), s	0.0	0.0		1.0	0.0	2.1		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	79.4
HCM 2010 LOS	E

Notes

HCM 2010 Signalized Intersection Summary
1: State Farm Dr & Rohnert Park Expressway 09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	1040	264	186	813	110	392	144	243	246	283	187
Future Volume (veh/h)	84	1040	264	186	813	110	392	144	243	246	283	187
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	89	1106	263	198	865	90	417	153	203	262	301	162
Adj No. of Lanes	1	2	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	337	1501	658	207	1188	522	460	303	251	273	408	213
Arrive On Green	0.38	0.85	0.85	0.23	0.67	0.67	0.13	0.16	0.16	0.15	0.18	0.18
Sat Flow, veh/h	1774	3539	1550	1774	3539	1555	3442	1863	1541	1774	2221	1160
Grp Volume(v), veh/h	89	1106	263	198	865	90	417	153	203	262	238	225
Grp Sat Flow(s),veh/h/ln	1774	1770	1550	1774	1770	1555	1721	1863	1541	1774	1770	1612
Q Serve(g_s), s	5.0	18.5	3.6	16.1	22.9	3.1	17.4	10.9	14.5	21.4	18.5	19.3
Cycle Q Clear(g_c), s	5.0	18.5	3.6	16.1	22.9	3.1	17.4	10.9	14.5	21.4	18.5	19.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.72
Lane Grp Cap(c), veh/h	337	1501	658	207	1188	522	460	303	251	273	325	296
V/C Ratio(X)	0.26	0.74	0.40	0.96	0.73	0.17	0.91	0.50	0.81	0.96	0.73	0.76
Avail Cap(c_a), veh/h	337	1501	658	207	1188	522	504	498	412	273	486	443
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	7.8	2.8	55.7	19.7	16.5	62.3	55.7	36.0	61.3	56.2	56.5
Incr Delay (d2), s/veh	0.1	2.3	1.3	47.9	3.6	0.7	17.9	0.5	2.4	42.6	1.2	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	8.8	1.7	10.6	11.4	1.4	9.4	5.7	6.3	13.7	9.2	8.8
LnGrp Delay(d),s/veh	38.3	10.1	4.0	103.5	23.3	17.1	80.3	56.2	38.4	103.9	57.4	58.3
LnGrp LOS	D	B	A	F	C	B	F	E	D	F	E	E
Approach Vol, veh/h		1458			1153			773			725	
Approach Delay, s/veh		10.7			36.6			64.5			74.5	
Approach LOS		B			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	67.3	25.2	32.4	33.1	55.2	28.2	29.5
Change Period (Y+Rc), s	4.0	5.4	5.7	* 5.6	* 5.4	* 6.2	* 5.7	* 5.7
Max Green Setting (Gmax), s	17.0	46.8	21.4	* 40	* 14	* 49	* 23	* 39
Max Q Clear Time (g_c+I1), s	18.1	20.5	19.4	21.3	7.0	24.9	23.4	16.5
Green Ext Time (p_c), s	0.0	3.0	0.1	0.9	0.0	2.1	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.4
HCM 2010 LOS	D

Notes

HCM 2010 TWSC

2: Rohnert Park Expressway & Lynne Conde Ln

09/17/2018

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↰	↑↑	↱					↱	
Traffic Vol, veh/h	0	1489	0	35	1079	20	0	0	0	0	0	30
Future Vol, veh/h	0	1489	0	35	1079	20	0	0	0	0	0	30
Conflicting Peds, #/hr	0	0	0	0	0	12	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	80	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	2	2	1	2	2	2	0	2	1
Mvmt Flow	0	1618	0	38	1173	22	0	0	0	0	0	33

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	1618	0	0				-	2879	599
Stage 1	-	-	-	-	-	-				-	1261	-
Stage 2	-	-	-	-	-	-				-	1618	-
Critical Hdwy	-	-	-	4.14	-	-				-	6.54	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-				-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-				-	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-				-	4.02	3.31
Pot Cap-1 Maneuver	0	-	0	399	-	-				0	16	447
Stage 1	0	-	0	-	-	-				0	240	-
Stage 2	0	-	0	-	-	-				0	161	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	-	-	-	399	-	-				-	0	443
Mov Cap-2 Maneuver	-	-	-	-	-	-				-	0	-
Stage 1	-	-	-	-	-	-				-	0	-
Stage 2	-	-	-	-	-	-				-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.5	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	399	-	-	443
HCM Lane V/C Ratio	-	0.095	-	-	0.074
HCM Control Delay (s)	-	15	-	-	13.8
HCM Lane LOS	-	B	-	-	B
HCM 95th %tile Q(veh)	-	0.3	-	-	0.2

HCM 2010 TWSC

3: Grand St & Rohnert Park Expressway

09/17/2018

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	1489	0	0	1129	0	46
Future Vol, veh/h	1489	0	0	1129	0	46
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
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	1
Mvmt Flow	1618	0	0	1227	0	50

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	809
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.31
Pot Cap-1 Maneuver	-	0	0	-	0	326
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	326
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	326	-	-
HCM Lane V/C Ratio	0.153	-	-
HCM Control Delay (s)	18	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.5	-	-

HCM 2010 TWSC
4: State Farm Dr & Town Ctr Dwy/Venture Ave 09/17/2018

Intersection	
Int Delay, s/veh	78

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	127	4	61	9	5	145	32	403	7	72	500	96
Future Vol, veh/h	127	4	61	9	5	145	32	403	7	72	500	96
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	1	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	143	4	69	10	6	163	36	453	8	81	562	108

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1399	1317	621	1345	1367	460	675	0	0	462	0	0
Stage 1	783	783	-	530	530	-	-	-	-	-	-	-
Stage 2	616	534	-	815	837	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	~ 119	158	489	129	148	603	921	-	-	1104	-	-
Stage 1	388	406	-	534	528	-	-	-	-	-	-	-
Stage 2	480	526	-	373	383	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 76	140	487	99	131	601	917	-	-	1103	-	-
Mov Cap-2 Maneuver	~ 76	140	-	99	131	-	-	-	-	-	-	-
Stage 1	371	375	-	513	507	-	-	-	-	-	-	-
Stage 2	332	505	-	293	354	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 573.2	19.2	0.7	0.9
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	917	-	-	105	429	1103	-	-
HCM Lane V/C Ratio	0.039	-	-	2.055	0.416	0.073	-	-
HCM Control Delay (s)	9.1	-	-	$ 573.2	19.2	8.5	-	-
HCM Lane LOS	A	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	18.3	2	0.2	-	-

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

HCM 2010 Signalized Intersection Summary
4: State Farm Dr & Town Ctr Dwy/Venture Ave 09/17/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	263	4	61	9	5	145	50	371	7	72	500	96
Future Volume (veh/h)	263	4	61	9	5	145	50	371	7	72	500	96
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.99		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1900	1881	1900	1863	1900	1881	1863	1881
Adj Flow Rate, veh/h	296	4	69	10	6	163	56	417	8	81	562	108
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	1	0	2	2	1	2	1
Cap, veh/h	587	6	472	431	229	467	83	640	12	105	679	557
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.05	0.35	0.35	0.06	0.36	0.36
Sat Flow, veh/h	1388	19	1588	972	769	1572	1810	1820	35	1792	1863	1529
Grp Volume(v), veh/h	300	0	69	16	0	163	56	0	425	81	562	108
Grp Sat Flow(s),veh/h/ln	1407	0	1588	1741	0	1572	1810	0	1855	1792	1863	1529
Q Serve(g_s), s	7.5	0.0	1.3	0.0	0.0	3.3	1.3	0.0	7.9	1.8	11.3	2.0
Cycle Q Clear(g_c), s	7.8	0.0	1.3	0.2	0.0	3.3	1.3	0.0	7.9	1.8	11.3	2.0
Prop In Lane	0.99		1.00	0.62		1.00	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	593	0	472	660	0	467	83	0	652	105	679	557
V/C Ratio(X)	0.51	0.00	0.15	0.02	0.00	0.35	0.67	0.00	0.65	0.77	0.83	0.19
Avail Cap(c_a), veh/h	1165	0	1122	1302	0	1111	242	0	1424	327	1520	1248
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.8	0.0	10.6	10.2	0.0	11.3	19.3	0.0	11.2	19.0	11.9	8.9
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.0	0.0	0.2	9.1	0.0	0.4	11.1	1.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.6	0.1	0.0	1.5	0.8	0.0	4.1	1.2	5.8	0.8
LnGrp Delay(d),s/veh	13.1	0.0	10.6	10.2	0.0	11.5	28.3	0.0	11.6	30.2	12.9	9.0
LnGrp LOS	B		B	B		B	C		B	C	B	A
Approach Vol, veh/h		369			179			481			751	
Approach Delay, s/veh		12.6			11.4			13.6			14.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	18.9		16.2	5.4	19.5		16.2
Change Period (Y+Rc), s	3.5	4.5		4.0	3.5	4.5		4.0
Max Green Setting (Gmax), s	7.5	31.5		29.0	5.5	33.5		29.0
Max Q Clear Time (g_c+I1), s	3.8	9.9		9.8	3.3	13.3		5.3
Green Ext Time (p_c), s	0.0	0.9		0.4	0.0	1.3		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		13.4
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	57	0	72	7	0	56	47	330	5	32	478	48
Future Vol, veh/h	57	0	72	7	0	56	47	330	5	32	478	48
Conflicting Peds, #/hr	1	0	0	0	0	1	4	0	1	1	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	35	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	64	0	81	8	0	63	53	371	6	36	537	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1153	1124	568	1158	1148	376	595	0	0	378	0	0
Stage 1	640	640	-	481	481	-	-	-	-	-	-	-
Stage 2	513	484	-	677	667	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	175	206	524	174	200	673	986	-	-	1186	-	-
Stage 1	465	471	-	568	555	-	-	-	-	-	-	-
Stage 2	546	554	-	444	458	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	148	188	522	138	183	672	983	-	-	1185	-	-
Mov Cap-2 Maneuver	148	188	-	138	183	-	-	-	-	-	-	-
Stage 1	438	455	-	537	524	-	-	-	-	-	-	-
Stage 2	468	524	-	364	443	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.4	14	1.1	0.5
HCM LOS	E	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	983	-	-	247	470	1185	-	-
HCM Lane V/C Ratio	0.054	-	-	0.587	0.151	0.03	-	-
HCM Control Delay (s)	8.9	-	-	38.4	14	8.1	-	-
HCM Lane LOS	A	-	-	E	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	3.4	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	43	0	72	7	0	56	47	330	5	32	478	48
Future Vol, veh/h	43	0	72	7	0	56	47	330	5	32	478	48
Conflicting Peds, #/hr	1	0	0	0	0	1	4	0	1	1	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	48	0	81	8	0	63	53	371	6	36	537	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1153	1124	568	1158	1148	376	595	0	0	378	0	0
Stage 1	640	640	-	481	481	-	-	-	-	-	-	-
Stage 2	513	484	-	677	667	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	175	206	524	174	200	673	986	-	-	1186	-	-
Stage 1	465	471	-	568	555	-	-	-	-	-	-	-
Stage 2	546	554	-	444	458	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	148	188	522	138	183	672	983	-	-	1185	-	-
Mov Cap-2 Maneuver	148	188	-	138	183	-	-	-	-	-	-	-
Stage 1	438	455	-	537	524	-	-	-	-	-	-	-
Stage 2	468	524	-	364	443	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30.3	14	1.1	0.5
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	983	-	-	268	470	1185	-	-
HCM Lane V/C Ratio	0.054	-	-	0.482	0.151	0.03	-	-
HCM Control Delay (s)	8.9	-	-	30.3	14	8.1	-	-
HCM Lane LOS	A	-	-	D	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	2.4	0.5	0.1	-	-

HCM 2010 TWSC
6: State Farm Dr & Dwy/Spirit Ave 09/17/2018

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	0	4	2	0	34	8	341	2	39	504	2
Future Vol, veh/h	8	0	4	2	0	34	8	341	2	39	504	2
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	1	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1	1	2	1	1	2	1
Mvmt Flow	9	0	4	2	0	38	9	383	2	44	566	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1079	1062	570	1060	1062	385	571	0	0	386	0	0
Stage 1	658	658	-	403	403	-	-	-	-	-	-	-
Stage 2	421	404	-	657	659	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	197	224	523	203	224	665	1007	-	-	1178	-	-
Stage 1	455	463	-	626	601	-	-	-	-	-	-	-
Stage 2	612	601	-	456	462	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	176	209	522	191	209	664	1004	-	-	1177	-	-
Mov Cap-2 Maneuver	176	209	-	191	209	-	-	-	-	-	-	-
Stage 1	450	437	-	620	595	-	-	-	-	-	-	-
Stage 2	572	595	-	427	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.9	11.6	0.2	0.6
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1004	-	-	226	584	1177	-	-
HCM Lane V/C Ratio	0.009	-	-	0.06	0.069	0.037	-	-
HCM Control Delay (s)	8.6	-	-	21.9	11.6	8.2	0	-
HCM Lane LOS	A	-	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.1	-	-

HCM 2010 AWSC
7: Enterprise Dr & State Farm Dr 09/17/2018

Intersection	
Intersection Delay, s/veh	21.3
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	133	205	151	218	364	131
Future Vol, veh/h	133	205	151	218	364	131
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	230	170	245	409	147
Number of Lanes	1	1	2	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	15.1	15.7	29.7
HCM LOS	C	C	D

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	19%	0%	0%
Vol Right, %	0%	0%	0%	81%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	133	205	101	268	364	131
LT Vol	133	0	0	0	364	0
Through Vol	0	205	101	50	0	0
RT Vol	0	0	0	218	0	131
Lane Flow Rate	149	230	113	301	409	147
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.319	0.459	0.225	0.551	0.827	0.248
Departure Headway (Hd)	7.682	7.169	7.169	6.585	7.381	6.162
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	504	503	552	495	586
Service Time	5.392	4.879	4.869	4.285	5.081	3.862
HCM Lane V/C Ratio	0.316	0.456	0.225	0.545	0.826	0.251
HCM Control Delay	14	15.8	11.9	17.1	36.4	10.9
HCM Lane LOS	B	C	B	C	E	B
HCM 95th-tile Q	1.4	2.4	0.9	3.3	8.1	1

HCM 2010 TWSC
8: Enterprise Dr & Quest St 09/17/2018

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	541	348	14	16	14
Future Vol, veh/h	18	541	348	14	16	14
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	80	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	21	622	400	16	18	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	418	0	-	0	1074	410
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	664	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1152	-	-	-	246	646
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	516	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1150	-	-	-	241	645
Mov Cap-2 Maneuver	-	-	-	-	364	-
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	515	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1150	-	-	-	457
HCM Lane V/C Ratio	0.018	-	-	-	0.075
HCM Control Delay (s)	8.2	-	-	-	13.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

HCM 2010 TWSC
9: Enterprise Dr & Grand St 09/17/2018

Intersection						
Int Delay, s/veh	0.4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	518	332	8	9	8
Future Vol, veh/h	11	518	332	8	9	8
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	13	595	382	9	10	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	393	0	-	0	1010	389
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	621	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1177	-	-	-	268	664
Stage 1	-	-	-	-	689	-
Stage 2	-	-	-	-	540	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1175	-	-	-	264	663
Mov Cap-2 Maneuver	-	-	-	-	264	-
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	539	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1175	-	-	-	368
HCM Lane V/C Ratio	0.011	-	-	-	0.053
HCM Control Delay (s)	8.1	-	-	-	15.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	521	319	5	6	16
Future Vol, veh/h	4	521	319	5	6	16
Conflicting Peds, #/hr	3	0	0	3	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	599	367	6	7	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	376	0	-	0	982	379
Stage 1	-	-	-	-	373	-
Stage 2	-	-	-	-	609	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1182	-	-	-	276	668
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	543	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1179	-	-	-	273	663
Mov Cap-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	542	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1179	-	-	-	477
HCM Lane V/C Ratio	0.004	-	-	-	0.053
HCM Control Delay (s)	8.1	0	-	-	13
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	557	10	5	363	2	4
Future Vol, veh/h	557	10	5	363	2	4
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	640	11	6	417	2	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	653	0	1077	648
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	429	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	943	-	245	474
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	661	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	942	-	243	473
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	661	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	360	-	-	942	-
HCM Lane V/C Ratio	0.019	-	-	0.006	-
HCM Control Delay (s)	15.2	-	-	8.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	525	30	3	341	16	6
Future Vol, veh/h	525	30	3	341	16	6
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	603	34	3	392	18	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	639	0	1020	622
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	955	-	264	490
Stage 1	-	-	-	-	539	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	954	-	263	489
Mov Cap-2 Maneuver	-	-	-	-	391	-
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	414	-	-	954	-
HCM Lane V/C Ratio	0.061	-	-	0.004	-
HCM Control Delay (s)	14.3	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Appendix B

Internal Capture Calculation Worksheets

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Station Avenue	**Organization:**	W-Trans
Project Location:	Rohnert Park	**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	Sep-18

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	130	ksf	151	130	21
Retail	820	130	ksf	132	82	50
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	460	units	166	43	123
Hotel	310	156	rooms	73	43	30
All Other Land Uses[2]				0		
Total				522	298	224

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.06	5%	4%	1.06	5%	4%
Retail	1.16	5%	5%	1.16	5%	5%
Restaurant						
Cinema/Entertainment						
Residential	1.13	5%	4%	1.09	5%	4%
Hotel	1.26	5%	4%	1.26	5%	4%
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	0	0	0	0
Retail	6		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	1	0	0		0
Hotel	4	4	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	588	336	252
Internal Capture Percentage	9%	7%	10%
External Vehicle-Trips[3]	433	252	181
External Transit-Trips[4]	28	15	13
External Non-Motorized Trips[4]	23	13	10

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	9%	27%
Retail	12%	12%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	3%
Hotel	0%	21%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Station Avenue
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.06	130	138	1.06	21	22
Retail	1.16	82	95	1.16	50	58
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.13	43	49	1.09	123	134
Hotel	1.26	43	54	1.26	30	38

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	14	0	0	0
Retail	17		8	0	8	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	1	27	0		0
Hotel	29	5	3	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		30	0	0	0	0
Retail	6		0	0	1	0
Restaurant	19	8		0	2	2
Cinema/Entertainment	0	0	0		0	0
Residential	4	16	0	0		0
Hotel	4	4	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	13	125	138	108	6	5
Retail	11	84	95	66	4	4
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	48	49	39	2	2
Hotel	0	54	54	39	3	2
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	6	16	22	13	1	1
Retail	7	51	58	39	3	3
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	130	134	108	7	5
Hotel	8	30	38	21	2	1
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Station Avenue	**Organization:**	W-Trans
Project Location:	Rohnert Park	**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	Sep-18

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	130	ksf	150	24	126
Retail	820	130	ksf	533	256	277
Restaurant				0		
Cinema/Entertainment				0		
Residential	221	460	units	202	123	79
Hotel	310	156	rooms	94	48	46
All Other Land Uses[2]				0		
Total				979	451	528

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.11	5%	4%	1.07	5%	4%
Retail	1.21	5%	5%	1.18	5%	5%
Restaurant						
Cinema/Entertainment						
Residential	1.15	5%	4%	1.21	5%	4%
Hotel	1.31	5%	4%	1.30	5%	4%
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		500	500		500	
Retail					500	
Restaurant						
Cinema/Entertainment						
Residential		500	500			
Hotel					500	

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		23	0	0	3	0
Retail	7		0	0	65	11
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	28	0	0		3
Hotel	0	6	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,159	541	618
Internal Capture Percentage	26%	28%	24%
External Vehicle-Trips[3]	655	292	363
External Transit-Trips[4]	43	20	23
External Non-Motorized Trips[4]	39	19	20

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	41%	19%
Retail	18%	25%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	48%	36%
Hotel	22%	10%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Station Avenue
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.11	24	27	1.07	126	135
Retail	1.21	256	310	1.18	277	327
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.15	123	141	1.21	79	96
Hotel	1.31	48	63	1.30	46	60

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		25	5	0	3	0
Retail	7		95	13	85	16
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	37	18	0		3
Hotel	0	10	41	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		23	0	0	6	0
Retail	8		0	0	65	11
Restaurant	8	155		0	23	45
Cinema/Entertainment	2	12	0		6	1
Residential	15	28	0	0		8
Hotel	0	6	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	11	16	27	13	1	1
Retail	57	253	310	188	13	13
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	68	73	141	57	4	3
Hotel	14	49	63	34	2	2
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	26	109	135	93	5	4
Retail	83	244	327	186	12	12
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	35	61	96	46	3	2
Hotel	6	54	60	38	3	2
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.