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City of Lake Forest

Transportation Impact Analysis

ENCANTO RESIDENTIAL

Prepared for:
EPD Solutions, Inc.

April 2015

Prepared by:

transpogroup
WHAT TRANSPORTATION CAN BE.

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Executive Summary

This section provides an executive summary of the Transportation Impact Analysis through a set of frequently asked questions (FAQs).

Where is the project located and what would be developed?

The proposed project is south of Alton Parkway and west of Commercentre Drive in Lake Forest, California. Development would include the construction of 52 single-family dwelling units.

What existing public streets will serve the project and where is access proposed?

Alton Parkway, Commercentre Drive, and Bake Parkway are the three primary roadways within the surrounding area and would serve project traffic. Access to the site is provided via a private street that would form the fourth leg of the Commercentre Drive/Larkspur intersection.

Is the site currently served by public transit?

The site is not currently served directly by public transit, however bus stops are located approximately 1,500 feet to the southeast along Commercentre Drive and Bake Parkway.

How many daily vehicular trips would the project generate and when would peak traffic volumes occur?

The project would generate approximately 496 daily trips with approximately 39 occurring during the AM peak hour and 52 occurring during the PM peak hour.

What Transportation impacts are anticipated, if any?

No significant traffic impacts are anticipated.

What measures are proposed to reduce or control traffic impacts?

The project would not result in any significant traffic impacts, therefore no mitigation measures are proposed.

Chapter 1. Introduction

The purpose of this transportation impact analysis (TIA) is to identify potential traffic-related impacts associated with the proposed Encanto Residential development and any necessary mitigation measures that would offset or reduce significant impacts.

Project Description

Figure 1 illustrates the project site and the surrounding vicinity. The project is located south of Alton Parkway and west of Commercentre Drive in Lake Forest, California. The proposed project would construct 52 single-family homes. It is anticipated that the project would be completed and occupied by 2017. Figure 2 shows the preliminary site plan. Vehicular access is proposed via a private street that takes access from Commercentre Drive. The project driveway would remain at the location of the existing driveway to the site and would form the fourth leg of the Commercentre Drive/Larkspur intersection. The driveway would remain at a 90 degree angle to Commercenter Drive. Furthermore, there are no features on the project site plan, such as utility cabinets or landscaping that would hinder sight distance at the project driveway.

Study Area and Scope

The study area and scope were coordinated with the City of Lake Forest. The scope of work, as approved by the City, is provided as Appendix A. This analysis focuses on the weekday AM (7:00 to 9:00 a.m.) peak period and the PM (4:00 to 6:00 p.m.) peak period. These periods represent the highest cumulative total traffic for the adjacent street system. The study intersections include:

1. Commercentre Drive/Alton Parkway
2. Commercentre Drive/Larkspur (Site Access)
3. Commercentre Drive/Bake Parkway

The study area includes those intersections most likely to be used by vehicles traveling to and from the project and takes into account the trip generation of the project. Beyond the selected study area intersections, the project trips would add less than one percent to any critical movement at any intersection and would therefore not have a measureable effect beyond the selected study area. In this report, Commercentre Drive is considered the north-south roadway, while Alton Parkway, Larkspur and Bake Parkway are considered east-west roadways.

The study intersections were analyzed for the following four study scenarios:

- Existing Conditions
- Forecast Existing Conditions Plus Project Conditions
- Forecast Year 2030 Without-Project Conditions
- Forecast Year 2030 With-Project Conditions

The TIA includes a description of existing conditions in the site vicinity, including roadway network, existing and future (2030) weekday AM and PM peak hour traffic volumes, and traffic operations. Future (2030) conditions were forecast and evaluated by Stantec Consulting Services, Inc. using the Lake Forest Traffic Analysis Model (LFTAM). The traffic forecasts are provided in Appendix B.

The roadway network in the study area has been built out to its ultimate configuration. There are no planned improvements to any roadway or intersection within the project study area

that would be implemented in a short-term horizon. For this reason, a short-term interim (project opening year) analysis was not included in this study. Furthermore, Section 15130 of the California Environmental Quality Act (CEQA) guidelines which discusses the requirements for a cumulative analysis requires **either** use of a list of cumulative projects **or** a summary of projections, such as those in the LFTAM model. To analyze cumulative impacts of the project, the LFTAM model was used to forecast future Year 2030 conditions. The forecasts in the LFTAM model are based on a summary of land use projections, as allowed in Section 15130 of the CEQA guidelines. Therefore, the use of Existing and Future (year 2030) projections meets the requirements of CEQA.

Methodology

Signalized intersections The operational characteristics of an intersection are determined by calculating the intersection's level of service (LOS). The intersection as a whole and its individual turning movements can be described alphabetically with a range of levels of service (A through F), with LOS A indicating free-flow traffic and LOS F indicating extreme congestion and long vehicle delays. At signalized intersections, LOS was calculated using the *Intersection Capacity Utilization* methodology. LOS at signalized intersections is measured based on the sum of the volume to capacity ratio of the critical movements. Table 1 shows LOS Criteria for Signalized intersections.

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	V/C Ratio	General Description (Signalized Intersections)
A	≤0.60	Free Flow
B	0.61 to ≤ 0.70	Stable Flow (slight delays)
C	0.71 to ≤ 0.80	Stable flow (acceptable delays)
D	0.81 to ≤ 0.90	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	0.91 to ≤ 1.00	Unstable flow (intolerable delay)
F	>1.00	Forced flow (jammed)

Source: *Highway Capacity Manual*, Transportation Research Board, 1990.

Unsignalized intersections LOS at unsignalized intersection is classified by two intersection types: all-way stop-controlled and two-way stop-controlled. All-way, stop-controlled intersection LOS is expressed in terms of the average vehicle delay of all of the movements, much like that of a signalized intersection. Two-way, stop-controlled intersection LOS is defined in terms of the average vehicle delay of an individual movement(s). This is because the performance of a two-way, stop-controlled intersection is more closely reflected in terms of its individual movements, rather than its performance overall. For this reason, LOS for a two-way, stop-controlled intersection is defined in terms of its individual movements. With this in mind, total average vehicle delay (i.e., average delay of all movements) for a two-way, stop-controlled intersection should be viewed with discretion. Table 2 shows LOS criteria for unsignalized intersections (both all-way and two-way, stop-controlled).

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Source: *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 2000.

Future Traffic Forecasts Future (2030) forecast without-project traffic volumes were provided by Stantec Consulting Services, Inc. using the Lake Forest Traffic Analysis Model (LFTAM). The LFTAM model is a focused sub-area model that was developed using the Orange County Transportation Analysis Model (OCTAM). The LFTAM provides more detailed traffic forecasts within the City of Lake Forest than OCTAM. The LFTAM refines the traffic model output data based on methodology outlined in the National Cooperative Highway Research Program Report 255 (NCHRP 255), which refines and modifies model data based on existing counts.

Future (year 2030) conditions assume buildout and full occupancy of the surrounding land uses, including the Shea Baker Ranch Development. In addition, all of the industrial buildings along Commercentre are assumed to be fully occupied in the future (year 2030) forecasts. This includes the adjacent 84,000 square-foot industrial building which is currently vacant.

Site Vicinity & Study Intersections

FIGURE

1

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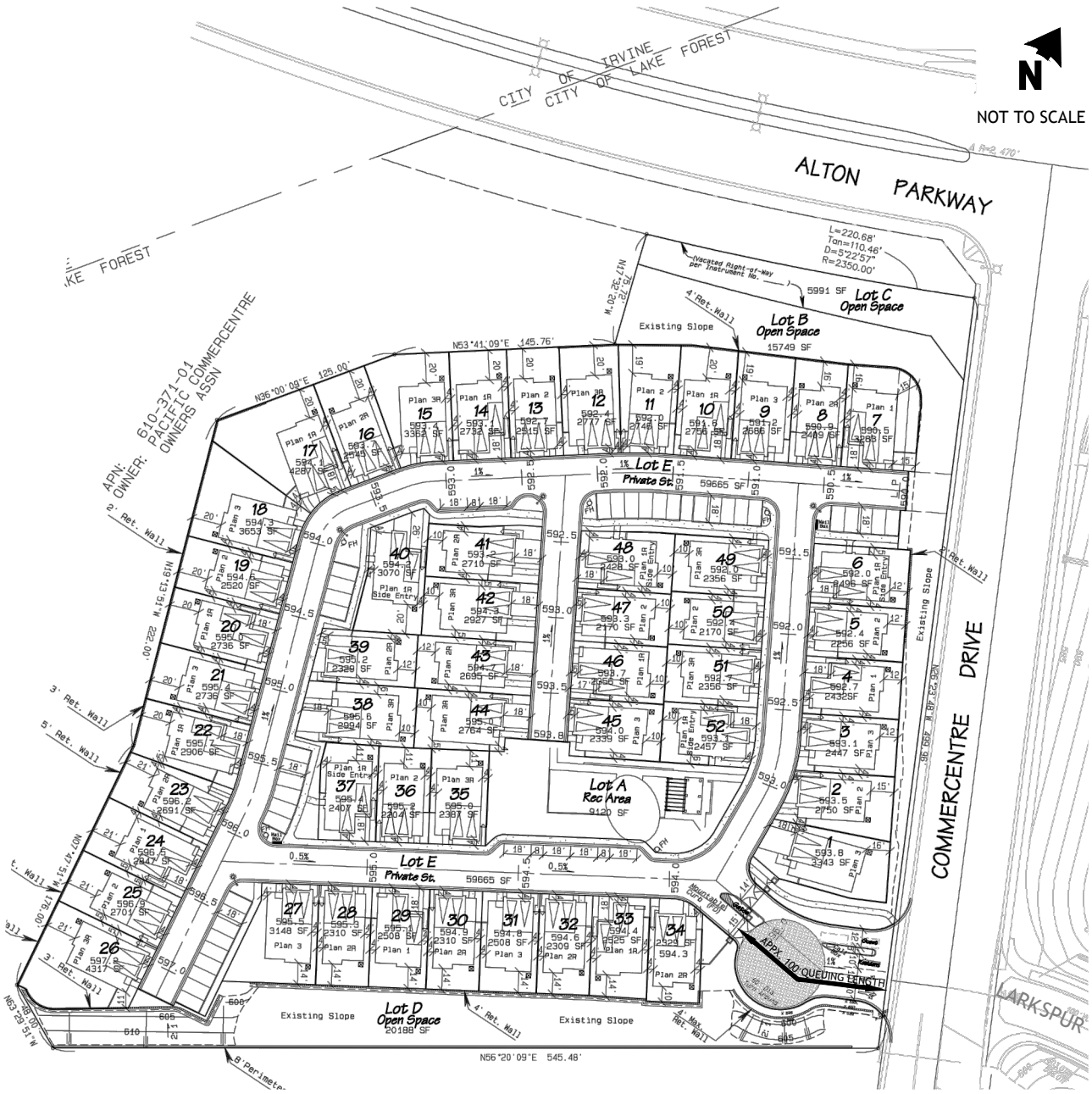

Preliminary Site Plan

FIGURE

2

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Chapter 2. Existing and Future Without-Project Conditions

This section describes existing and future (2030) without-project conditions within the identified study area. Characteristics are provided for the roadway network, peak hour traffic volumes, traffic operations, traffic safety, non-motorized facilities, and transit.

Street System

Characteristics of the existing street system in the proposed project vicinity are shown in Table 3. As discussed in Chapter 1, the study area includes those intersections most likely to be used by vehicles traveling to and from the project and takes into account the trip generation of the project. Beyond the selected study area intersections, the project trips would add less than one percent to any critical movement at any intersection and would therefore not have a measureable effect beyond the selected study area. As shown on Figure 1, access to the site is provided by a driveway along Commercentre Drive.

Table 3. Study Area Existing Street System Summary

Roadway	Street Classification	Posted Speed Limit	Number of Travel Lanes	Parking	Sidewalks	Bicycle Lanes
Alton Parkway	Major Arterial	55 mph	6	No	Yes	Yes
Commercentre Drive	Secondary	45 mph	5	No	Yes	No
Arctic Ocean Drive	Local Industrial	25 mph	3	No	Yes	No
Bake Parkway	Primary Arterial	50 mph	4	No	Yes	Yes

As discussed in Table 3, bicycle lanes are provided on Alton Parkway and Bake Parkway. There are currently sidewalks on all roadways in the study area. The project would not alter or remove any bicycle or pedestrian facility in the vicinity of the project. Furthermore, the project is not anticipated to result in a significant addition of bicycle and pedestrian trips. According to the 2013 American Communities Survey, in Orange County, approximately 3 percent of commute trips are made by walking or bicycle.

The concept of person trips, rather than vehicle trips, is an efficient way of accounting for trips made by various modes of travel. Person trips account for the trips that each resident makes. For example, one vehicle trip could be two person trips, if there are two persons in the car. Likewise, the same two person trips could be made by passenger vehicle and by bicycle. To convert vehicle trips to person trips, the p.m. peak hour trip generation of the project was multiplied by 1.4. This conversion factor is utilized in the Los Angeles County Congestion Management Program and is applied to the project because a similar guidance is not available for Orange County. The project would generate a maximum of 52 peak hour vehicle trips, equating to 73 person trips. If 3 percent of commute period person trips are made by walking or bicycle, then fewer than 3 commute trips would be made by walking or bicycle during the peak hour for the proposed project, which is unlikely to exceed the capacity of the existing bicycle or pedestrian network.

Traffic Volumes

Existing turning movement counts at the study intersections were conducted in October and December 2014. To ensure that the counts accurately reflect the existing conditions at the time of completion of the Initial Study/Mitigated Negative Declaration (IS/MND), a growth rate of one percent was added to the 2014 traffic counts to reflect 2015 conditions. It should be noted, that generally traffic counts are considered current when they are less than one year

old. As a result, it is not necessary to escalate the 2014 traffic counts. However, in order to present a conservative estimate of existing traffic volumes, a growth rate was selected in consultation with the City and applied to the 2014 traffic counts. The growth rate was selected to reflect average growth conditions within the study area. According to the traffic forecasts, traffic volumes on Commercentre Drive could increase by up to three percent per year. The LFTAM model was prepared prior to the economic recession, when overall traffic growth was estimated to be higher than experienced over the last several years. For this reason, a three percent growth on Commercentre Drive is unlikely. Rather, it is more likely that traffic growth on Commercentre would be less than shown in the model. Additionally, traffic volumes on Bake Parkway are forecast to decrease due to the opening of Alton Parkway. Therefore, a one percent growth was deemed to be a reasonable growth estimate to account for the approximately six month delay between the collection of counts and the publishing of the IS/MND. As noted previously, application of any growth rate to the counts represents a conservative approach to developing the baseline conditions for project analysis The existing counts reflect those land uses that were built and occupied at the time of the traffic counts. This includes some residential units on the Shea Baker Ranch site which take access to Commercentre from Larkspur. The existing counts would not include any trips for the adjacent 84,000 square foot industrial building, as it was vacant at the time the counts were taken. Intersection turning movement counts are provided in Appendix C. Existing (year 2015) weekday AM and PM peak hour traffic volumes, showing the one percent growth, are summarized on Figure 3 and were used to evaluate existing traffic conditions.

As noted previously, future forecast without-project traffic volumes were provided by Stantec Consulting Services, Inc. using the Lake Forest Traffic Analysis Model (LFTAM). The LFTAM refines the traffic model output data based on methodology outlined in the National Cooperative Highway Research Program Report 255 (NCHRP 255), which refines and modifies model data based on existing counts. Figure 4 illustrates the future (2030) without-project weekday AM and PM peak hour traffic volumes.

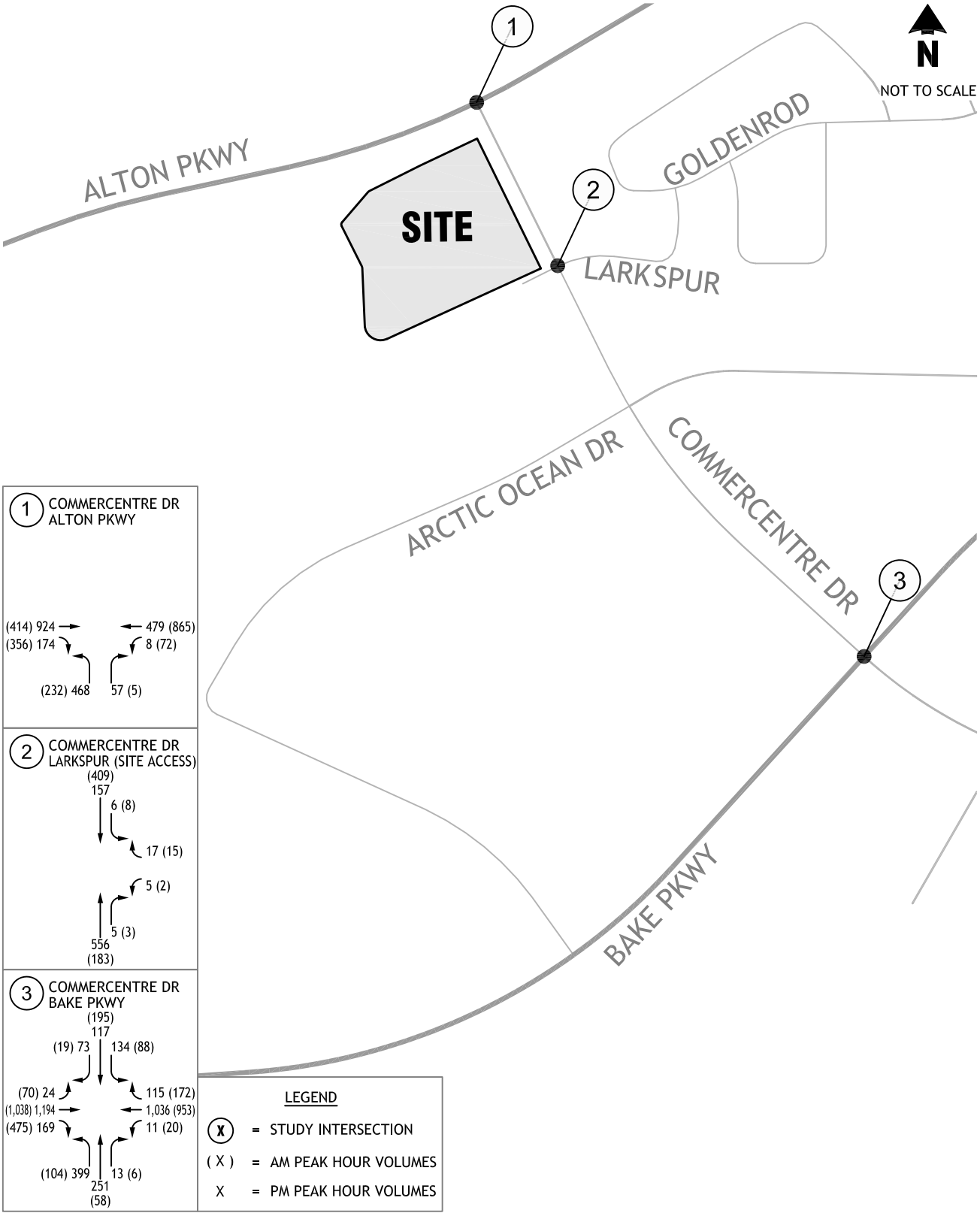
Traffic Operations

The study intersections are within the City of Lake Forest. The adopted LOS threshold found in Table C-3 of the General plan Circulation Element for the study locations is LOS D. As shown in Table 4, all of the study intersections are currently operating at LOS C or better during the weekday AM and PM peak hour under existing (2015) and future (2030) without project conditions.

Table 4. Existing (2015) and Future (2030) Without Project Weekday Peak Hour Intersection Level of Service

		Existing (2015) Without-Project		**Future (2030) Without-Project**	
Intersection	**Traffic Control**	**LOS[1]**	**Delay[2]/VC[3]**	LOS[1]	Delay[2]/VC[3]
AM Peak Hour					
1. Commercentre Drive/Alton Parkway	Signalized	A	0.40	B	0.65
2. Commercentre Drive/Larkspur (Site access)	Two-Way Stop	A	9.4	B	11.9
3. Commercentre Drive/Bake Parkway	Signalized	C	0.70	B	0.69
PM Peak Hour					
1. Commercentre Drive/Alton Parkway	Signalized	A	0.47	C	0.78
2. Commercentre Drive/Larkspur (Site access)	Two-Way Stop	B	13.2	C	16.1
3. Commercentre Drive/Bake Parkway	Signalized	C	0.76	C	0.79

1. Level of service (LOS)
2. Average delay is reported per vehicle in seconds for unsignalized intersections.
3. Volume to capacity ratio is reported for signalized intersections.



Existing (2015) Peak Hour Traffic Volumes

FIGURE **3**

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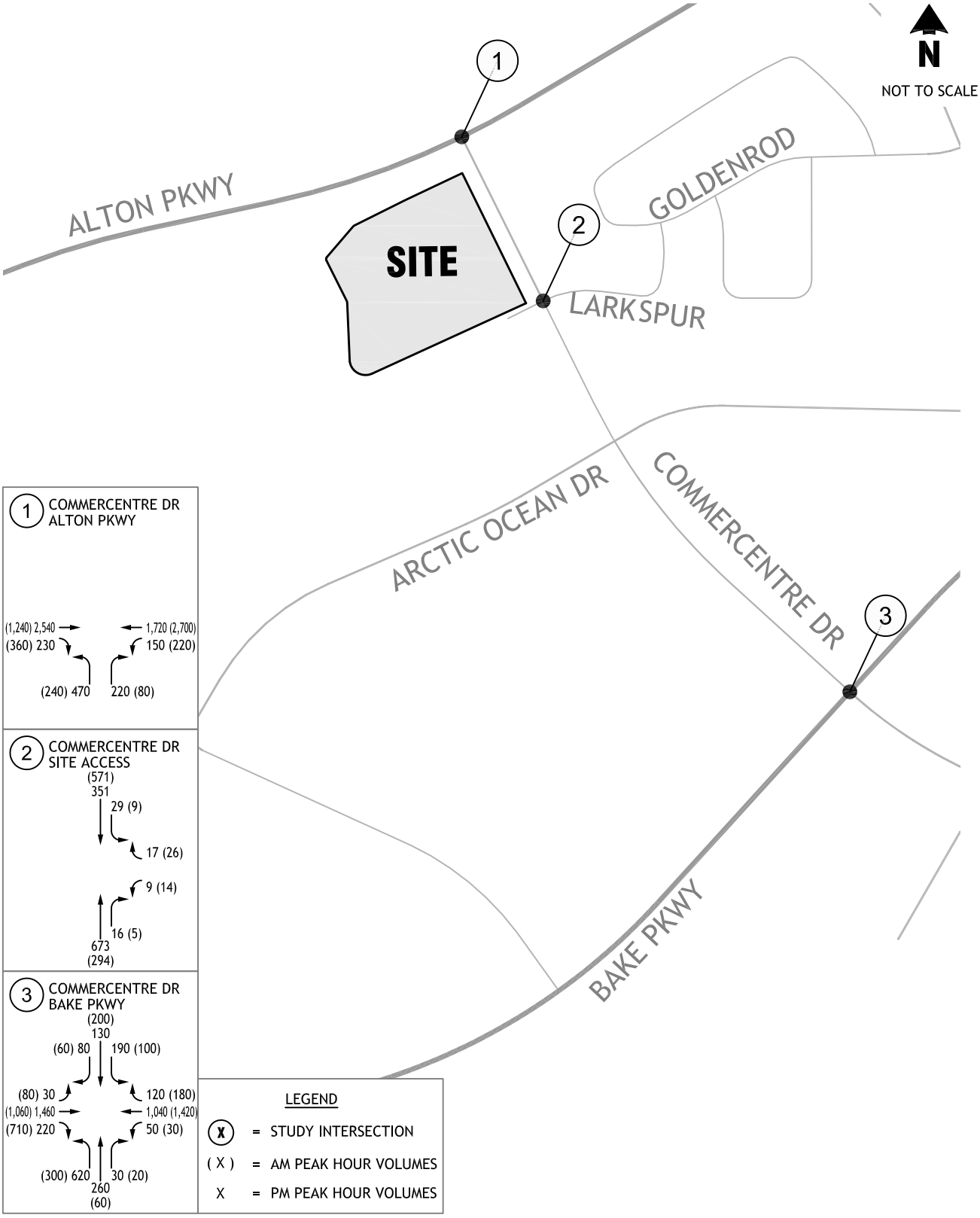

Future (2030) Without-Project Peak Hour Traffic Volumes

FIGURE **4**

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Chapter 3. Project Impacts

This section documents project-generated impacts on the surrounding transportation system and at the study intersections.

Significance Criteria

The City's significance criteria can be found in the General Plan Circulation Element as well as the City of Lake Forest CEQA Significance Thresholds Guide. Significance of traffic impacts is based on level of service calculations using the ICU method. Therefore, the significance criteria are only applicable to signalized intersections. The City has adopted a performance standard of LOS D (peak hour ICU less than or equal to 0.90) for all signalized intersections within the project study area. As noted in Table C-3 of the Lake Forest General Plan Circulation Element, at signalized intersections where the project causes an ICU greater than the acceptable LOS, mitigation of the project contribution is required to bring the intersection back to acceptable LOS or to no-project conditions, if the project contribution to the ICU is greater than 0.01.

According to Section 9.168.040 (Residential off-street parking requirements) of the City of Lake Forest Municipal Code, two covered parking spaces for each dwelling are required for each attached or detached single-family dwelling. Those dwellings having garages with less than a seventeen foot setback from the back of curb or sidewalk, whichever is closest to the garage or carport, shall provide one additional parking space within two hundred feet of the dwelling.

Trip Generation

The current General Plan and zoning of the site allows for light industrial or business park use. The project proposes a change to the General Plan and zoning designations to allow for 52 single family homes. The vehicle trip generation for the project was developed using rates from the Institute of Transportation Engineers (ITE) *Trip Generation* (9th Edition, 2012) for Land use #210 Single-Family Detached Housing. Table 5 shows the trip generation of the project during the AM and PM peak hours and on a daily basis.

Table 5. Project Trip Generation

			AM Peak Hour			PM Peak Hour		
Land Use	**Units**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trip Rates per DU								
Single Family Detached Housing	DU	9.52	0.19	0.56	0.75	0.63	0.37	1.0
General Light Industrial[1]	TSF	6.97	0.81	0.11	0.92	0.12	0.85	0.97
Proposed Project Trip Generation								
Proposed Project	52 DU	496	10	29	39	33	19	52
General Plan Land Use (Light Industrial) Trip Generation[1]								
Light Industrial – Max FAR 0.60	42 TSF	293	34	5	39	5	36	41
Light Industrial – Assumed FAR 0.35	24.5 TSF	171	20	3	23	3	21	24

DU = Dwelling Unit, TSF = Thousand Square Feet
[1] Light Industrial is the current land use designation for the site in the City's General Plan. The trip generation for Light Industrial is provided for comparison purposes only. The evaluation of project impacts is based on the total trips that would be generated by the project (52 single family homes)

As shown in Table 5, the project (52 single family homes) is anticipated to generate 39 trips during the AM peak hour, 52 trips during the PM peak hour, and 496 daily trips. The project impact analysis, presented later in this chapter, provides an analysis of the full project trip generation (i.e. 39 a.m. peak hour and 52 p.m. peak hour trips) without taking any credit for land uses shown in the General Plan.

For informational purposes only, the proposed project's trip generation was compared against the trips that could be generated if the land uses shown in the existing General Plan land use designation of Light Industrial were developed on the project site. Comparison of the assumed General Plan trip generation (light industrial) for the project site to the proposed project (single family homes) trip generation shows that the project would generate the same number of AM peak hour trips as the maximum intensity General Plan land use. However, the project would generate 11 more PM peak hour trips and 203 more daily trips than the maximum intensity General Plan land use. It should be noted that the comparison of the trips generated by the General Plan land use to the proposed project is provided at the request of the City and for information purposes only. As described above, the traffic impacts of the proposed project (52 single family dwelling units) are evaluated against existing conditions and future build-out conditions, without assuming any credit or reduction in trips for the existing General Plan land use or zoning. That evaluation determined that the proposed project's trips (39 at the AM peak hour, and 52 at the PM peak hour) constitute a less than significant impact.

Trip Distribution and Assignment

Project trips in the existing condition were distributed to the network based on the forecast trip distribution from the LFTAM model as shown in Figure 5. As shown on the figure, approximately 19 percent of trips are anticipated to the north along Alton Parkway and 6 percent to the south along Alton Parkway. Additionally approximately 42 percent of trips are anticipated to the south along Bake Parkway and 30 percent of trips to the north along Bake Parkway. One percent of trips would remain internal to the business park bounded by Alton Parkway and Bake Parkway and 2 percent would be destined east of Bake Parkway. Project

trips in the 2015 and 2030 conditions were assigned to the roadway network by Stantec using the LFTAM.

Traffic Volumes

Future with-project forecast volumes from the LFTAM were also provided by Stantec. For future with-project conditions, full buildout of the proposed project is assumed for each analysis period. Figure 6 shows the existing (2015) with-project weekday peak hour traffic volumes at the study intersections. Figure 7 shows the future (2030) with-project weekday peak hour traffic volumes.

Future (year 2030) conditions assume buildout and full occupancy of the surrounding land uses, including the Shea Baker Ranch Development. In addition, all of the industrial buildings along Commercentre Drive are assumed to be fully occupied in the future (year 2030) forecasts. This includes the adjacent 84,000 square-foot industrial building which is currently vacant.

With Project Traffic Operations

An intersection operations analysis was conducted in the study area to evaluate the existing (2015) and future (2030) weekday AM and PM peak hour conditions with the project. Intersection operations were calculated using the LOS methodology described previously. Table 6 provides a comparison between the existing (2015) without and with-project conditions, while Table 7 provides a comparison between future (2030) without and with-project conditions for the weekday AM and PM peak hour. Detailed LOS and ICU worksheets are included in Appendix E.

Table 6. Existing (2015) Weekday with Project Peak Hour Intersection Level of Service

		2015 Existing Without-Project		2015 Existing With-Project	
Intersection	**Traffic Control**	**LOS[1]**	**Delay[2]/VC[3]**	**LOS[1]**	**Delay[2]/VC[3]**
AM Peak Hour					
1. Commercentre Drive/Alton Parkway	Signalized	A	0.40	A	0.40
2. Commercentre Drive/Larkspur (Site access)	Two-Way Stop	A	9.4	B	11.0
3. Commercentre Drive/Bake Parkway	Signalized	C	0.70	C	0.70
PM Peak Hour					
1. Commercentre Drive/Alton Parkway	Signalized	A	0.47	A	0.47
2. Commercentre Drive/Larkspur (Site access)	Two-Way Stop	B	13.2	B	13.8
3. Commercentre Drive/Bake Parkway	Signalized	C	0.76	C	0.77

1. Level of service (LOS)
2. Average delay is reported per vehicle in seconds for unsignalized intersections.
3. Volume to capacity ratio is reported for signalized intersections.

Table 7. Future (2030) Weekday with Project Peak Hour Intersection Level of Service

Intersection	Traffic Control	2030 Without-Project LOS[1]	2030 Without-Project Delay[2]/VC[3]	2030 With-Project LOS[1]	2030 With-Project Delay[2]/VC[3]
AM Peak Hour					
1. Commercentre Drive/Alton Parkway	Signalized	B	0.65	B	0.65
2. Commercentre Drive/Larkspur (Site Access)	Two-Way Stop	B	11.9	B	13.4
3. Commercentre Drive/Bake Parkway	Signalized	B	0.69	B	0.69
PM Peak Hour					
1. Commercentre Drive/Alton Parkway	Signalized	C	0.78	C	0.77
2. Commercentre Drive/Larkspur (Site Access)	Two-Way Stop	C	16.1	C	16.8
3. Commercentre Drive/Bake Parkway	Signalized	C	0.79	C	0.79

1. Level of service (LOS)
2. Average delay is reported per vehicle in seconds for unsignalized intersections.
3. Volume to capacity ratio is reported for signalized intersections.

As shown in the tables, all study intersections continue to operate at LOS C or better during the weekday AM and PM peak hour in both the existing (2015) and future (2030) conditions. All study area intersections would meet the City's LOS D standard and no project impacts are anticipated.

The project is forecast to generate approximately 496 average daily trips (ADT). A comparison of the future (2030) with-project ADT for Alton Parkway, Commercentre Drive and Bake Parkway is provided in Table 8. Future (2030) traffic volumes were taken from the LFTAM traffic forecasts. The capacities of each roadway are taken from the City's General Plan and are based on the designation of each roadway.

Table 8. Future (2030) With Project ADT Analysis

Roadway	Street Classification	Capacity	Without Project ADT	Without Project V/C Ratio	With Project ADT	With Project V/C Ratio
Alton Parkway s/o Rancho	Major Arterial	56,000	54,000	0.964	54,094	0.966
Commercentre Drive	Secondary	25,000	8,000	0.320	8,496	0.340
Bake Parkway n/o Commercentre	Primary Arterial	37,500	33,000	0.880	33,149	0.884
Bake Parkway s/o Commercentre	Primary Arterial	37,500	38,000	1.013	38,208	1.018

As shown in Table 8, the forecast 2030 volume to capacity ratio on Alton Parkway is forecast to approach the capacity of the roadway, and on Bake Parkway south of Commercentre Drive, the volume would exceed the capacity of the roadway in the future (2030) condition. The project would not add more than one half of one percent to any of the roadways that approach or exceed their capacity. Although the volume approaches or exceeds the capacity on Alton Parkway and Bake Parkway on a daily basis, the peak hour LOS at any study area intersection on Alton Parkway or Bake Parkway would not exceed LOS C with the proposed project, which indicates that the roadway would operate with acceptable operations during the peak hours, when traffic volumes are highest.

Queuing Analysis

The project proposes to install security gates on the private road access from Commercentre drive. The security gates are shown on the project site plan (Figure 2) and are proposed to be located approximately 100 feet from Commercentre drive. The private entry street provides separate lanes for guests and residents, which would allow residents to proceed

past guests and through the gate. The City utilizes County of Orange Standard Plan 1107 for the design of private streets and entrances to private tracts. Standard Plan 1107 requires that one foot per dwelling unit, or 100 feet minimum, be provided behind guard gates at private entry driveways. The project site plan provides 100 feet of queuing distance between the entry gate and Commercentre Drive, and would therefore be in compliance with Standard Plan 1107.

To ensure that vehicle queuing at the gate would not exceed the available 100-foot queue storage, a queuing analysis was prepared using the methodology contained in *Entrance-Exit Design and Control for Major Parking Facilities*[1]. This methodology uses a ratio of the average arrival rate and the average service rate to determine the number of vehicles that would be queued behind the access gate.

The arrival rate would be the number of vehicles that enter through the gates during a typical peak hour. The arrival rate would be the same as the inbound trip generation of the project. The peak arrival rate for the project is 33 vehicles. The service rate is the number of vehicles per hour that can be served by the gate. For this analysis, a service rate of 340 vehicles per hour is utilized. This service rate corresponds to a card operated gate. A card operated gate was selected because it represents the highest service rate available in the Crommelin study, which was written in 1972. Since that time, newer gate technologies, such as transponders, have been developed. It is likely that the residents will use transponders to access the project, resulting in a higher service rate for the gate than analyzed in this queuing analysis. Because the actual model of the gate is unknown at this time, the actual queuing rate of a transponder-operated gate cannot be evaluated. However, a service rate of 340 vehicles per hour provides a conservative analysis of the capacity of the gate access because it assumes that number of vehicles that could enter per hour is lower than with a transponder-operated gate Assuming a lower rate of service means a higher (more conservative, worst-case) rate of queuing. The gate queuing analysis is shown in Table 9.

Table 9. Gate Arrival Rates

		Average Arrival Rate	Average Service Rate	Traffic Intensity[1]
PM Peak Hour (Hour of Highest Inbound Volume)				
Encanto Gated Access	Card-Operated	33	340	0.097

1. Traffic Intensity = Average Arrival Rate ÷ Average Service Rate.

To determine the potential queue, the Traffic Intensity is compared to the graph “Reservoir Needs vs. Traffic Intensity” from the Crommelin report as shown in Exhibit 1. The expected traffic intensity of 0.097 would correspond to a 99th percentile queue of less than one vehicle, or less than 25 feet. Therefore the available queuing area of 100 feet would be sufficient to accommodate the expected queue of less than one vehicle.

[1] *Entrance-Exit Design and Control for major Parking Facilities*, Robert W. Crommelin, P.E., October 5, 1972.

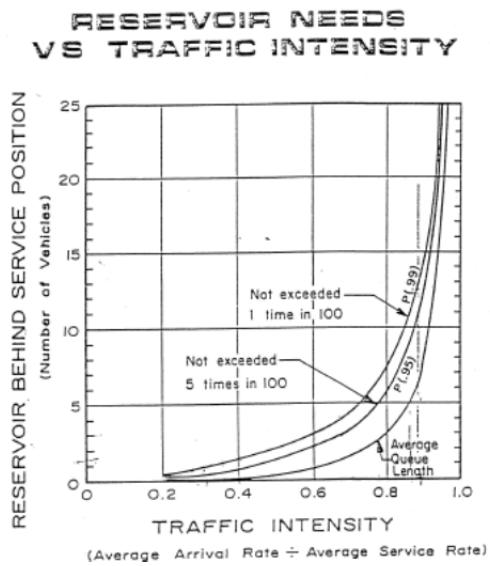


Exhibit 1 Reservoir Needs vs. Traffic Intensity

Construction Trip Generation

The project would be constructed in four phases: Phase 1 – Site Preparation; Phase 2 – Grading; Phase 3 – Construction and; Phase 4 – Paving. Heavy construction equipment would be moved on-site at the beginning of each construction phase and would remain on-site throughout that phase. Construction trips that would be generated on a daily basis throughout each phase would be comprised mostly of construction workers and delivery of construction materials. The construction trip generation is shown in Table 10 (provided at the end of this chapter) and has been calculated for total trips and for passenger car equivalent (PCE). A PCE factor is applied to truck trips to account for the fact that trucks utilize more capacity on the roadway than a passenger car due to larger size and slower acceleration. A PCE factor of 1.5 is recommended in the Highway Capacity Manual for heavy vehicle on level terrain. A more conservative PCE factor of 2.0 vehicles per truck has been applied to the trip generation analysis shown in Table 10. As shown in Table 10, the phase with the highest construction trip generation would be Phase 3 - Construction. During this phase, there would be 72 passenger car equivalent (PCE) construction trips generated on a daily basis with 24 trips occurring during the a.m. peak hour and 24 trips occurring during the p.m. peak hour. The trip generation was based on an estimate of 20 workers on site each day, as well as 8 round-trips per day for deliveries. Construction workers would arrive and depart during the peak hours, while delivery trucks would arrive and depart throughout the day. It was estimated that 10 percent of delivery trips would occur during each peak hour. The daily trip generation consists of peak hour trips, as well as trips that occur throughout the day. Therefore, the estimate of 72 daily trips is made up of 20 workers arriving in the morning and departing during the evening (40 trips total), plus 16 truck trips throughout the day (8 round trips, which is equivalent to 16 trips with a PCE factor of 2.0, for a total of 32 daily truck trips).

Construction Traffic Operations

Although the construction operations would generate fewer overall peak hour trips than operation of the project, the direction of the trips is different. During construction, most trips would be inbound during the AM peak hour and outbound during the PM peak hour. During project operation, the opposite condition would occur with most trips outbound during the AM peak hour and inbound during the PM peak hour. An intersection operations analysis was conducted to evaluate the existing (2015) weekday AM and PM peak hour conditions during

construction operations. Intersection operations were calculated using the LOS methodology described previously. Table 11 provides a comparison between the existing (2015) without and with-construction conditions. Detailed LOS and ICU worksheets are included in Appendix E. As noted in Table 11, the impact of construction on LOS would be less than significant.

Table 11. Existing (2015) Weekday with Construction Peak Hour Intersection Level of Service

		2015 Existing Without-Project		2015 Existing During Construction	
Intersection	**Traffic Control**	**LOS[1]**	**Delay[2]/VC[3]**	**LOS[1]**	**Delay[2]/VC[3]**
AM Peak Hour					
1. Commercentre Drive/Alton Parkway	Signalized	A	0.40	A	0.40
2. Commercentre Drive/Larkspur (Site access)	Two-Way Stop	A	9.4	B	11.0
3. Commercentre Drive/Bake Parkway	Signalized	C	0.70	C	0.70
PM Peak Hour					
1. Commercentre Drive/Alton Parkway	Signalized	A	0.47	A	0.47
2. Commercentre Drive/Larkspur (Site access)	Two-Way Stop	B	13.2	B	13.5
3. Commercentre Drive/Bake Parkway	Signalized	C	0.76	C	0.77

1. Level of service (LOS)
2. Average delay is reported per vehicle in seconds for unsignalized intersections.
3. Volume to capacity ratio is reported for signalized intersections.

During construction, the existing sidewalk adjacent to the site may be closed to ensure that pedestrians are not exposed to potentially hazardous interactions with construction vehicles or activity. The sidewalk on the opposite side of Commercentre Drive would not be affected by project construction and would still be available for use. The bicycle lanes on Alton Parkway would not be affected by construction of the project.

Because no significant impacts due to construction were identified in this analysis, no mitigation measures due to construction impacts are required. Although the project would not create any significant construction impacts, the project would comply with the City's standard conditions of approval, which require a construction traffic management plan. Project construction activities would also comply with the City's requirements for work hours, truck routes and other applicable regulations.

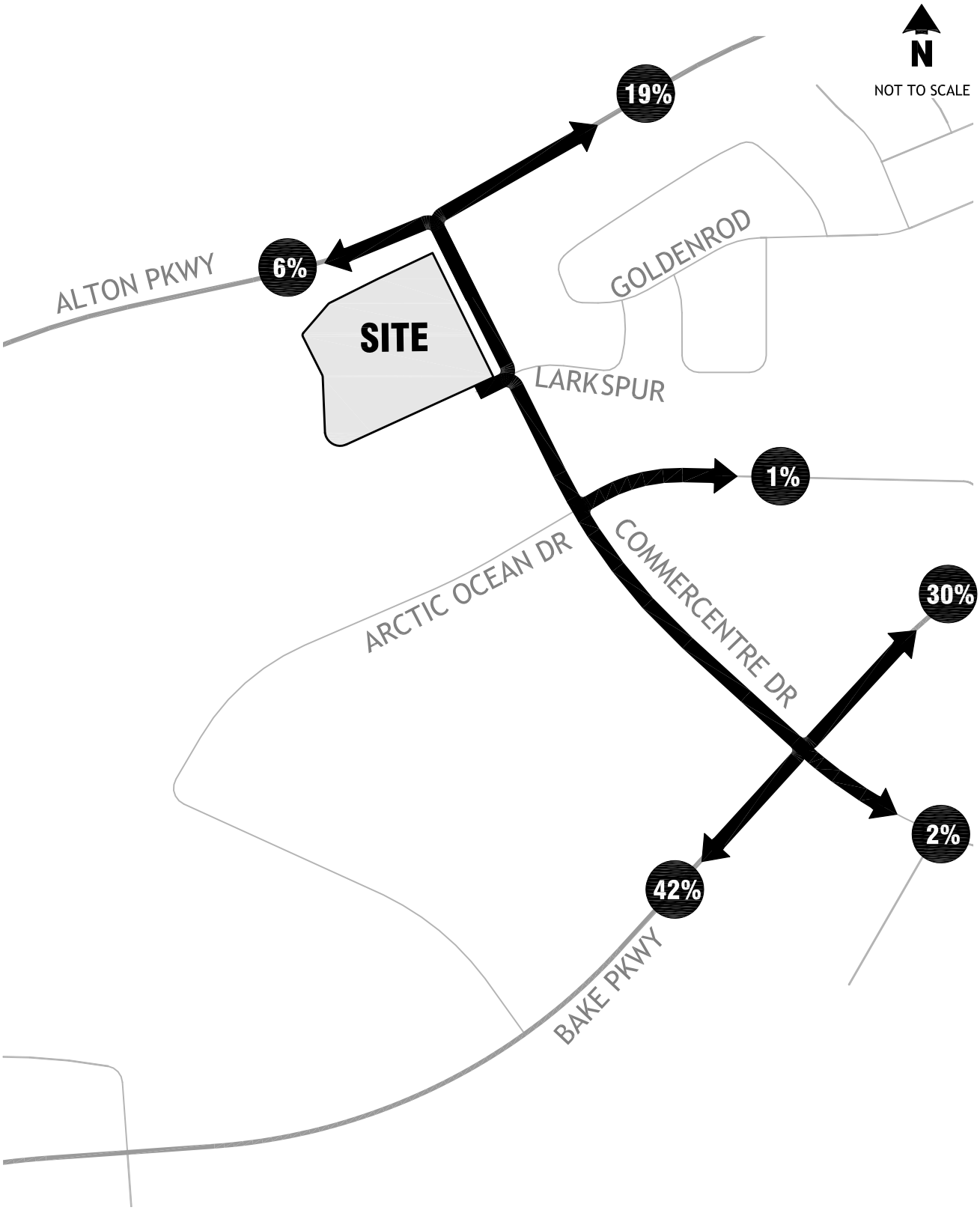
Parking

Based on the parking requirements in the City's Municipal Code, the project would be required to provide 167 parking spaces (2 garage spaces per unit, 1 open space per unit, and 0.2 guest spaces per unit). Figure 8 shows the location of parking spaces on the project site. As shown in Figure 8, the project would provide 104 garage parking spaces, 52 open spaces, 11 guest spaces, and 6 parking spaces in double driveways for a total of 173 parking spaces. Therefore, the project would provide more parking than required by the City's Municipal Code.

Table 10. Construction Trip Generation

Construction Vehicles					Vehicle Trip Generation							PCE Trip Generation						
						AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour		
Description	**Quantity**	**Roundtrips**	**Type**	**PCE**	**ADT**	**in**	**out**	**total**	**in**	**out**	**total**	**ADT**	**in**	**out**	**total**	**in**	**out**	**total**
Phase 1: Site Preparation (10 days)																		
Workers	20	1	Passenger	1	40	20	0	20	0	20	20	40	20	0	20	0	20	20
Total Phase 1					***40***	***20***	***0***	***20***	***0***	***20***	***20***	***40***	***20***	***0***	***20***	***0***	***20***	***20***
Dozer	3	1	Large Truck	2	6	3	0	3	0	3	3	12	6	0	6	0	6	6
Loader/Backhoe	4	1	Large Truck	2	8	4	0	4	0	4	4	16	8	0	8	0	8	8
Total Phase 1 (during start-up & completion only)					***54***	***27***	***0***	***27***	***0***	***27***	***27***	***68***	***34***	***0***	***34***	***0***	***34***	***34***
Phase 2: Grading (40 days)																		
Workers	20	1	Passenger	1	40	20	0	20	0	20	20	40	20	0	20	0	20	20
Total Phase 2					***40***	***20***	***0***	***20***	***0***	***20***	***20***	***40***	***20***	***0***	***20***	***0***	***20***	***20***
Excavators	2	1	Large Truck	2	4	2	0	2	0	2	2	8	4	0	4	0	4	4
Grader	1	1	Large Truck	2	2	1	0	1	0	1	1	4	2	0	2	0	2	2
Dozer	1	1	Large Truck	2	2	1	0	1	0	1	1	4	2	0	2	0	2	2
Scraper	2	1	Large Truck	2	4	2	0	2	0	2	2	8	4	0	4	0	4	4
Loader/Backhoe	2	1	Large Truck	2	4	2	0	2	0	2	2	8	4	0	4	0	4	4
Total Phase 2 (during start-up & completion only)					***56***	***28***	***0***	***28***	***0***	***28***	***28***	***72***	***36***	***0***	***36***	***0***	***36***	***36***
Phase 3: Construction (300 days)																		
Workers	20	1	Passenger	1	40	20	0	20	0	20	20	40	20	0	20	0	20	20
Delivery Truck[1]	8	1	Large Truck	2	16	1	1	2	1	1	2	32	2	2	4	2	2	4
Total Phase 3					***56***	***21***	***1***	***22***	***1***	***21***	***22***	***72***	***22***	***2***	***24***	***2***	***22***	***24***
Crane	1	1	Large Truck	2	2	1	0	1	0	1	1	4	2	0	2	0	2	2
Forklift	3	1	Large Truck	2	6	3	0	3	0	3	3	12	6	0	6	0	6	6
Generator	1	1	Large Truck	2	2	1	0	1	0	1	1	4	2	0	2	0	2	2
Loader/Backhoe	3	1	Large Truck	2	6	3	0	3	0	3	3	12	6	0	6	0	6	6
Welder	1	1	Large Truck	2	2	1	0	1	0	1	1	4	2	0	2	0	2	2
Total Phase 3 (during start-up & completion only)					***74***	***30***	***1***	***31***	***1***	***30***	***31***	***108***	***40***	***2***	***42***	***2***	***40***	***42***
Phase 4: Paving (20 days)																		
Workers	20	1	Passenger	1	40	20	0	20	0	20	20	40	20	0	20	0	20	20
Total Phase 4					***40***	***20***	***0***	***20***	***0***	***20***	***20***	***40***	***20***	***0***	***20***	***0***	***20***	***20***
Paver	2	1	Large Truck	2	4	2	0	2	0	2	2	8	4	0	4	0	4	4
Paving Equipment	2	1	Large Truck	2	4	2	0	2	0	2	2	8	4	0	4	0	4	4
Roller	2	1	Large Truck	2	4	2	0	2	0	2	2	8	4	0	4	0	4	4
Total Phase 4 (during start-up & completion only)					***52***	***26***	***0***	***26***	***0***	***26***	***26***	***64***	***32***	***0***	***32***	***0***	***32***	***32***

Notes:
PCE = passenger car equivalent. A large truck has a PCE of 2. All other vehicles have a PCE of 1.
ADT = average daily traffic
Equipment would remain on-site throughout each phase. However, the trips that would occur during the start up and completion of each phase are shown for disclosure purposes only.
[1] Deliveries would occur throughout the day. It is estimated that 10 percent of these trips would occur during the peak hours.



Project Trip Distribution

FIGURE **5**

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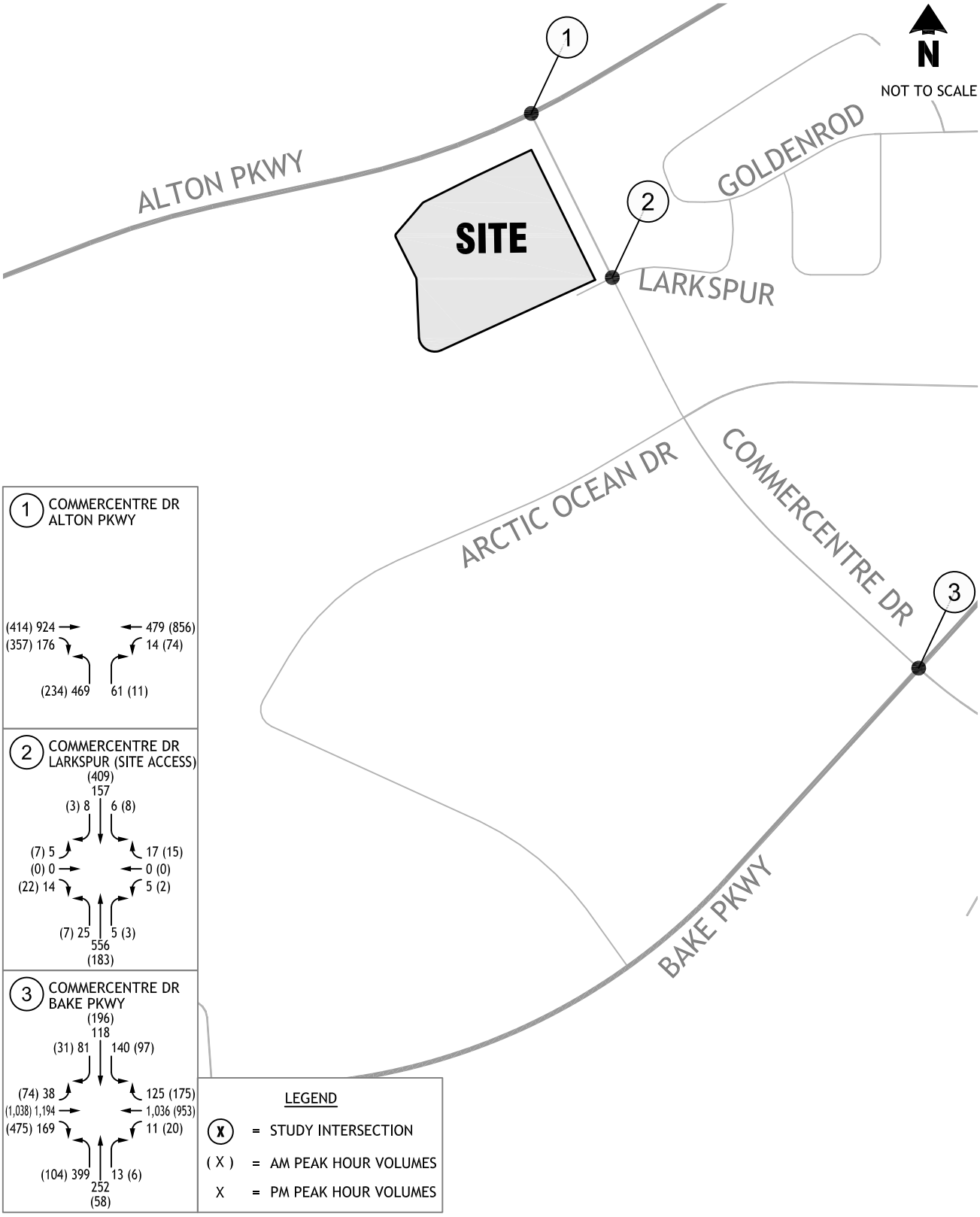

Existing (2015) With-Project Peak Hour Traffic Volumes

FIGURE 6

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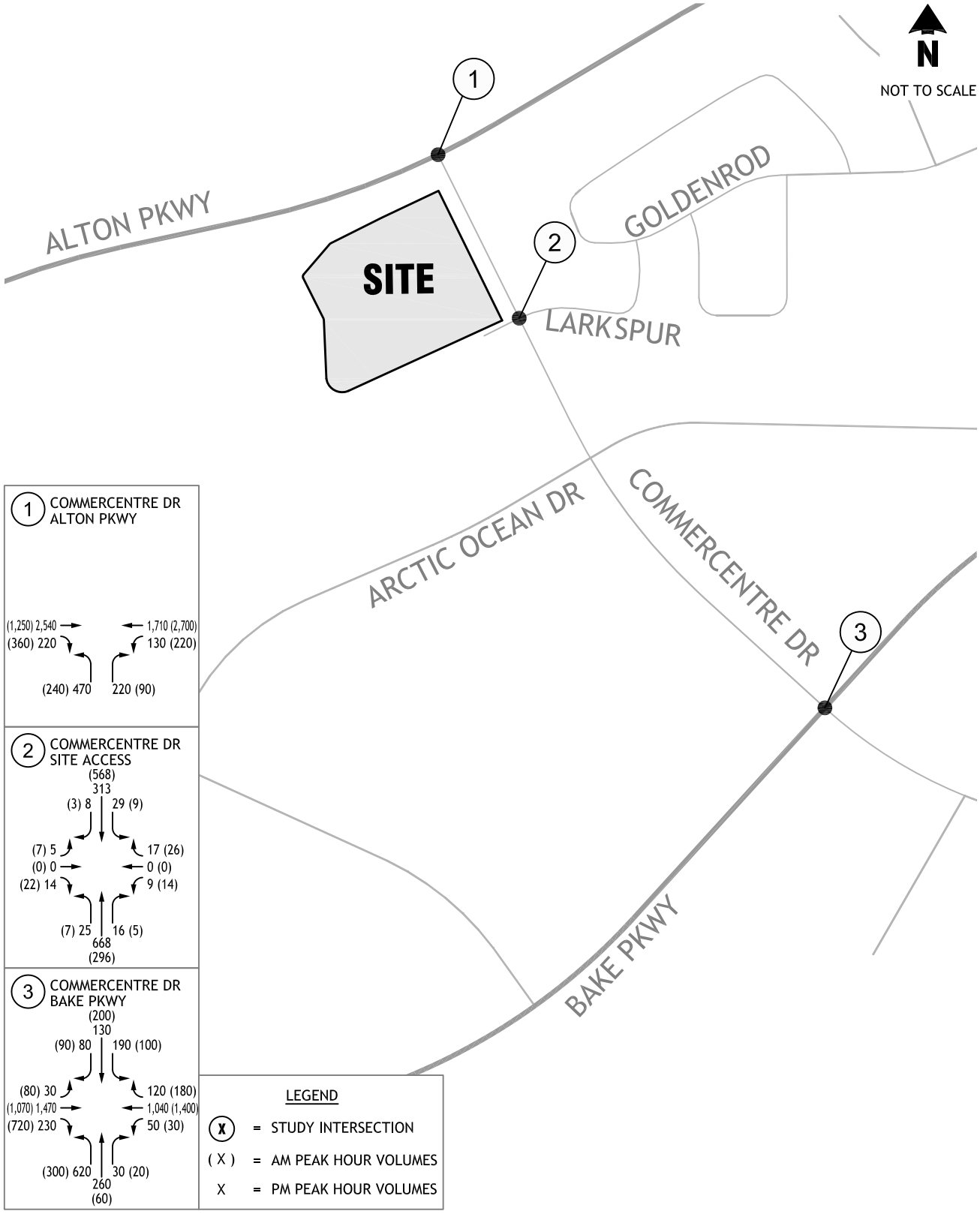

Future (2030) With-Project Peak Hour Traffic Volumes

FIGURE 7

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Note: This exhibit identifies one parking space for each dwelling unit, within 200 feet of that unit. Parking spaces will not be reserved. On-site parking will be regulated by CC&R's.
Parking Spaces Provided: Garage spaces 2 per unit x 52 = 104SP.
Open Spaces: 1 per unit x 52 = 52SP.
Guest Parking: 0.2 per unit x 52 = 11 SP.
Total Space Required= 167 (3.2 SP/unit)

Note: An additional 6 spaces are shown in widened driveways that are not included in parking totals (identified as "A" spaces.)
Total Parking Spaces Required: 167
Total Parking Spaces Provided: 173

Location of Parking Spaces

FIGURE
8

Encanto Residential

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Chapter 4. Findings and Recommendations

This transportation impact study summarizes the project traffic impacts of the proposed Encanto Residential development. General findings and recommendations include:

- The Encanto Residential project would develop 52 single family housing units.
- The proposed project is anticipated to generate 496 daily trips with 39 occurring during the AM peak hour and 52 occurring during the PM peak hour. The project would generate the same or fewer AM peak hour trips than the General Plan land use for the site. However, the project would generate 11 more PM peak hour trips than the maximum intensity use permitted by the current General Plan land use designation (Light Industrial). The comparison of project trip generation to the General Plan trip generation is for comparison purposes only. The full trip generation of the proposed project (i.e. 52 single family dwelling units) was evaluated in the traffic analysis.
- All intersections are anticipated to operate at an acceptable LOS during the AM and PM peak hour in the existing (2015) and future (2030) without or with-project conditions. The project would have a less than significant impact in the existing (2015) or future (2030) conditions.
- The project would not alter any sidewalks or bicycle lanes, nor would it generate a significant number of bicycle or pedestrian trips.
- Based on the parking requirements in the City's Municipal Code, the project would be required to provide 167 parking spaces. The project would provide a total of 173 parking spaces. Therefore, the project would provide more parking than required by the City's Municipal Code.
- The provided queuing area at the access gate meets the requirements of the County of Orange Standard Plan 1107 for the design of private streets and entrances to private tracts. The expected vehicle queue at the proposed access gate would be less than one vehicle, or approximately 25 feet. This can be accommodated within the 100-foot queuing area provided on the private entry street.
- No significant impacts are anticipated from the proposed development.

Appendix A: Scope of Work

MEMORANDUM

Date:	December 31, 2014	**TG:**	14239.00
To:	Doug Anderson - City of Lake Forest		
From:	Meghan Macias, TE - Transpo Group		
Subject:	Encanto Project (52-Unit Residential Project at Commercentre Dr/Alton Pkwy)		

Transpo Group is under contract to prepare a traffic study for a proposed 52-unit residential development at the southwest corner of Commercentre Dr/Alton Pkwy in the City of Lake Forest. The purpose of this memo is to outline the scope of the traffic analysis for your review and approval. Figure 1 illustrates the location of the project while Figure 2 (attached) shows the project site plan.

The traffic analysis will evaluate a.m. and p.m. peak hour traffic operations at the study intersections for the following scenarios:

- Existing (Year 2015) conditions;
- Existing (Year 2015) plus project conditions;
- Year 2030 conditions; and
- Year 2030 plus project conditions.

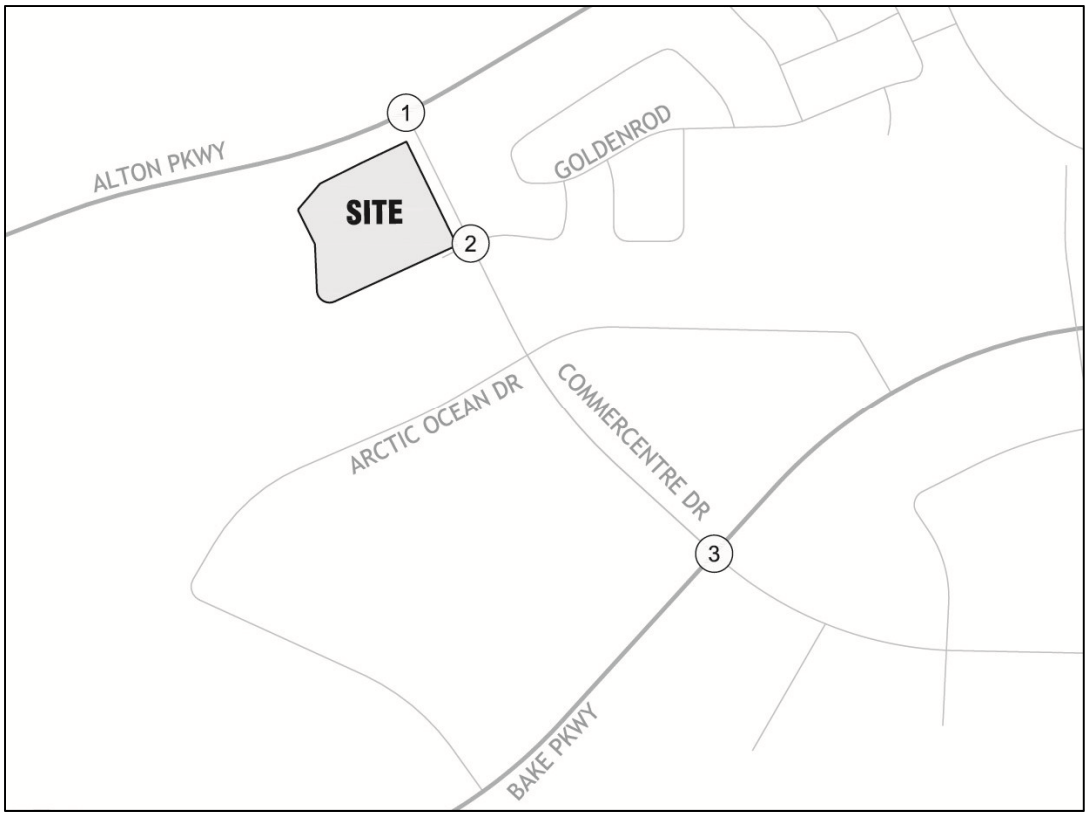

Figure 1: Project Location and Proposed Study Area

Project Trip Generation

The City's General Plan includes Light Industrial on the project site. *The* proposed project is a 52-unit single family residential development. The vehicle trip generation for the proposed project, as well as for Light Industrial on the project site was developed using rates from the Institute of Transportation Engineers (ITE) *Trip Generation* (9th Edition, 2012). Land uses 210 - "Single-Family Detached Housing" and 770 – "Business Park" were used in the trip generation analysis. Table 1 shows the trip generation of the project and a comparison of the trips that would be generated by the General Plan land use during the AM and PM peak hours and on a daily basis.

Table 1. Project Trip Generation

			AM Peak Hour			PM Peak Hour		
Land Use	**Units**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trip Rates per DU								
Single Family Detached Housing	DU	9.52	0.19	0.56	0.75	0.63	0.37	1.0
Business Park	TSF	6.97	0.81	0.11	0.92	0.12	0.85	0.97
Proposed Project Trip Generation								
Proposed Project	52 DU	496	10	29	39	33	19	52
General Plan Land Use (Light Industrial) Trip Generation								
Light Industrial – Max FAR 0.60	42 TSF	293	34	5	39	5	36	41
Light Industrial – Assumed FAR 0.35	24.5 TSF	171	20	3	23	3	21	24

DU = Dwelling Unit, TSF = Thousand Square Feet

As shown in Table 1, the project is anticipated to generate 39 trips during the AM peak hour, 52 trips during the PM peak hour, and 496 daily trips. Comparison of the assumed General Plan trip generation for the project site to the proposed project trip generation shows that the project would generate the same or fewer AM peak hour trips than the General Plan land Use. However, the project would generate 11 more PM peak hour trips than the maximum intensity General Plan Land use.

Project Trip Distribution

Project trips will be distributed using a select zone model run provided by Stantec Consulting. The select zone will be prepared using the Lake Forest Traffic Analysis Model (LFTAM). For purposes of developing a study area, a preliminary trip distribution analysis has been prepared using the following assumptions:

- 30 percent northeast on Alton Pkwy (towards SR-241)
- 30 percent southwest on Alton Pkwy (towards I-5)
- 20 percent northeast on Bake Pkwy (towards SR-241)
- 20 percent southwest on Bake Pkwy (towards I-5)

Application of these percentages to the project trip generation would result in approximately 10 project trips on an individual turn movement at the intersection of Commercentre Dr/Alton Pkwy. The greatest number of project trips would be added to this intersection. At intersections further from the site, the addition of project trips would be less than at Commercentre Dr/Alton Pkwy.

Based on the project trip generation and distribution, the following intersections are proposed to comprise the study area:

1. Commercentre Dr/Alton Pkwy
2. Commercentre Dr/Project Driveway
3. Commercentre Dr/Bake Pkwy

Traffic Volume Forecasts and Analysis Scenarios

Traffic volume forecasts will be prepared by Stantec Consulting using the LFTAM. Levels of service at study intersections will be calculated using the Intersection Capacity Utilization (ICU) methodology for signalized intersections and the Highway Capacity Manual 2010 (HCM 2010) methodology for unsignalized intersections. The traffic study will include the following analysis scenarios:

- Existing Conditions – This scenario will reflect existing (2015) weekday AM and PM peak-period intersection counts for the study intersections. Transpo recently collected counts at the study intersections. The counts were collected in October and December 2014. To ensure that the counts accurately reflect the conditions when the Notice of Preparation (NOP) is released (anticipated in early 2015), a growth rate of one percent will be added to the 2014 traffic counts to reflect 2015 conditions.
- Existing plus Project Conditions - Existing plus project traffic volumes will be developed by adding the project traffic assignment to the existing traffic conditions.
- Year 2030 conditions – Year 2030 conditions will be forecast using the LFTAM model with the current land use designation for the project site (i.e. approximately 70,000 square feet of light industrial).
- Year 2030 plus project conditions - Year 2030 plus project conditions will be forecast using the LFTAM. The model will be run with 52 dwelling units on the project site to develop the Year 2030 plus project condition.

A site plan review will be included as part of the project impact assessment. Issues that will be examined will include queuing at the proposed access gate, driveway spacing, and turn lane requirement. A discussion of transit serving the site as well as any other alternative transportation facilities (e.g., bicycle and/or pedestrian) in the vicinity of the project will be provided.

Mitigation Measures

At significantly affected intersections, as determined based on the LOS analysis, mitigation measures will be recommended and the LOS recalculated to verify that the required LOS has been achieved.

Please review the scope of the analysis outlined in this letter and let me know if it is acceptable, or if the City requests any changes to this proposed scope of work. If you have any questions, please do not hesitate to contact me at (949) 527-3590 or at meghan.macias@transpogroup.com.

Preliminary Site Plan

FIGURE

2

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Appendix B: Traffic Forecasts

Table 5 - 2030 Current General Plan Post-Processed Peak Hour Turning Movement Volumes

	NORTH LEG					EAST LEG					SOUTH LEG					WEST LEG				
LOCATION	**SBL**	**SBT**	**SBR**	**ENTOT**	**EXTOT**	**WBL**	**WBT**	**WBR**	**ENTOT**	**EXTOT**	**NBL**	**NBT**	**NBR**	**ENTOT**	**EXTOT**	**EBL**	**EBT**	**EBR**	**ENTOT**	**EXTOT**
13. Bake (N/S) & Commercentre (E/W)																				
AM																				
BASE YEAR COUNT	20	1,570	40	1,630	1,130	170	20	10	200	750	140	1,100	720	1,960	1,760	20	10	20	50	200
BASE YEAR MODELED	0	1,466	121	1,587	1,076	120	48	0	168	209	82	1,032	198	1,312	1,606	44	11	20	75	251
FUTURE MODELED	0	1,303	166	1,469	1,090	237	96	6	339	353	18	964	181	1,163	1,618	120	172	78	370	280
FUTURE FORECAST	30	1,420	80	1,530	1,140	300	60	20	380	900	80	1,060	710	1,850	1,780	60	160	60	280	220
2014 COUNT	20	944	170	1,134	1,121	103	57	6	166	683	69	1,028	470	1,567	1,066	87	193	19	299	296
ADJUSTED FOR 2014 COUNT	**30**	**1,420**	**180**	1,630	1,180	**300**	**60**	**20**	380	940	**80**	**1,060**	**710**	1,850	1,780	**100**	**200**	**60**	360	320
PM																				
BASE YEAR COUNT	20	1,080	10	1,110	1,670	660	10	10	680	230	20	1,590	190	1,800	1,860	70	20	120	210	40
BASE YEAR MODELED	0	1,186	106	1,292	1,506	270	10	4	284	240	42	1,383	190	1,615	1,552	119	50	96	265	158
FUTURE MODELED	0	990	358	1,348	1,516	283	132	9	424	364	61	1,293	235	1,589	1,362	214	129	89	432	551
FUTURE FORECAST	50	980	30	1,060	1,680	620	110	30	760	350	10	1,460	220	1,690	1,670	190	80	70	340	150
2014 COUNT	11	1,026	114	1,151	1,328	395	249	13	657	294	24	1,182	167	1,373	1,493	133	116	72	321	387
ADJUSTED FOR 2014 COUNT	**50**	**1,040**	**120**	1,210	1,680	**620**	**260**	**30**	910	400	**30**	**1,460**	**220**	1,710	1,740	**190**	**130**	**80**	400	410
42. Alton (N/S) & Commercentre (E/W)																				
AM																				
BASE YEAR COUNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASE YEAR MODELED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE MODELED	223	2,695	0	2,918	1,316	169	0	75	244	568	0	1,241	345	1,586	2,864	0	0	0	0	0
FUTURE FORECAST	220	2,700	0	2,920	1,320	170	0	80	250	560	0	1,240	340	1,580	2,870	0	0	0	0	0
2014 COUNT	71	856	0	927	415	230	0	5	235	423	0	410	352	762	1,086	0	0	0	0	0
ADJUSTED FOR 2014 COUNT	**220**	**2,700**	**0**	2,920	1,320	**240**	**0**	**80**	320	580	**0**	**1,240**	**360**	1,600	2,940	**0**	**0**	**0**	0	0
PM																				
BASE YEAR COUNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASE YEAR MODELED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE MODELED	146	1,719	0	1,865	2,763	427	0	225	652	373	0	2,538	227	2,765	2,146	0	0	0	0	0
FUTURE FORECAST	150	1,720	0	1,870	2,760	430	0	220	650	380	0	2,540	230	2,770	2,150	0	0	0	0	0
2014 COUNT	8	474	0	482	971	463	0	56	519	180	0	915	172	1,087	937	0	0	0	0	0
ADJUSTED FOR 2014 COUNT	**150**	**1,720**	**0**	1,870	2,760	**470**	**0**	**220**	690	380	**0**	**2,540**	**230**	2,770	2,190	**0**	**0**	**0**	0	0

Table 5 - 2030 Current General Plan Post-Processed Peak Hour Turning Movement Volumes

	NORTH LEG					EAST LEG					SOUTH LEG					WEST LEG				
LOCATION	**SBL**	**SBT**	**SBR**	**ENTOT**	**EXTOT**	**WBL**	**WBT**	**WBR**	**ENTOT**	**EXTOT**	**NBL**	**NBT**	**NBR**	**ENTOT**	**EXTOT**	**EBL**	**EBT**	**EBR**	**ENTOT**	**EXTOT**
47. Project Zone Centroid Connector (N/S) & Commercentre (E/W)																				
AM																				
BASE YEAR COUNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASE YEAR MODELED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE MODELED	70	2	78	150	69	137	130	12	279	370	36	3	2	41	354	54	298	215	567	244
FUTURE FORECAST	70	10	80	160	70	140	130	10	280	380	40	10	10	60	370	50	300	220	570	250
PM																				
BASE YEAR COUNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASE YEAR MODELED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE MODELED	65	3	55	123	144	108	394	49	551	432	204	4	154	362	180	91	213	69	373	653
FUTURE FORECAST	**60**	**10**	**60**	130	150	**110**	**390**	**50**	550	420	**200**	**10**	**150**	360	190	**90**	**210**	**70**	370	650

Table 6 - 2030 With-Project Post-Processed Peak Hour Turning Movement Volumes

	NORTH LEG					EAST LEG					SOUTH LEG					WEST LEG				
LOCATION	**SBL**	**SBT**	**SBR**	**ENTOT**	**EXTOT**	**WBL**	**WBT**	**WBR**	**ENTOT**	**EXTOT**	**NBL**	**NBT**	**NBR**	**ENTOT**	**EXTOT**	**EBL**	**EBT**	**EBR**	**ENTOT**	**EXTOT**
13. Bake (N/S) & Commercentre (E/W)																				
AM																				
BASE YEAR COUNT	20	1,570	40	1,630	1,130	170	20	10	200	750	140	1,100	720	1,960	1,760	20	10	20	50	200
BASE YEAR MODELED	0	1,466	121	1,587	1,076	120	48	0	168	209	82	1,032	198	1,312	1,606	44	11	20	75	251
FUTURE MODELED	0	1,289	160	1,449	1,083	235	97	6	338	357	16	972	186	1,174	1,606	105	171	82	358	273
FUTURE FORECAST	30	1,400	80	1,510	1,140	300	60	20	380	910	80	1,070	720	1,870	1,760	50	160	60	270	220
CENTROID CONNECTOR ADJUSTMENT												-2				+2		+26		
ADJUSTED FOR CENTROID CONNECTOR	30	1,400	80	1,510	1,140	300	60	20	380	910	80	1,070	720	1,870	1,790	50	160	90	300	220
2014 COUNT	20	944	170	1,134	1,121	103	57	6	166	683	69	1,028	470	1,567	1,066	87	193	19	299	296
ADJUSTED FOR 2014 COUNT	**30**	**1,400**	**180**	1,610	1,190	**300**	**60**	**20**	380	950	**80**	**1,070**	**720**	1,870	1,790	**100**	**200**	**90**	390	320
PM																				
BASE YEAR COUNT	20	1,080	10	1,110	1,670	660	10	10	680	230	20	1,590	190	1,800	1,860	70	20	120	210	40
BASE YEAR MODELED	0	1,186	106	1,292	1,506	270	10	4	284	240	42	1,383	190	1,615	1,552	119	50	96	265	158
FUTURE MODELED	0	989	358	1,347	1,521	289	118	9	416	366	57	1,302	241	1,600	1,360	210	125	82	417	533
FUTURE FORECAST	50	980	40	1,070	1,690	620	100	30	750	350	10	1,470	230	1,710	1,660	190	70	60	320	150
CENTROID CONNECTOR ADJUSTMENT		-1	+1								+2							+5		
ADJUSTED FOR CENTROID CONNECTOR	50	980	40	1,070	1,690	620	100	30	750	350	10	1,470	230	1,710	1,670	190	70	70	330	150
2014 COUNT	11	1,026	114	1,151	1,328	395	249	13	657	294	24	1,182	167	1,373	1,493	133	116	72	321	387
ADJUSTED FOR 2014 COUNT	**50**	**1,040**	**120**	1,210	1,690	**620**	**260**	**30**	910	410	**30**	**1,470**	**230**	1,730	1,740	**190**	**130**	**80**	400	410
42. Alton (N/S) & Commercentre (E/W)																				
AM																				
BASE YEAR COUNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASE YEAR MODELED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE MODELED	224	2,695	0	2,919	1,316	175	0	70	245	541	0	1,246	317	1,563	2,870	0	0	0	0	0
FUTURE FORECAST	220	2,700	0	2,920	1,320	180	0	70	250	540	0	1,250	320	1,570	2,880	0	0	0	0	0
2014 COUNT	71	856	0	927	415	230	0	5	235	423	0	410	352	762	1,086	0	0	0	0	0
ADJUSTED FOR 2014 COUNT	**220**	**2,700**	**0**	2,920	1,320	**240**	**0**	**70**	310	580	**0**	**1,250**	**360**	1,610	2,940	**0**	**0**	**0**	0	0
PM																				
BASE YEAR COUNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASE YEAR MODELED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE MODELED	129	1,712	0	1,841	2,759	402	0	221	623	352	0	2,538	223	2,761	2,114	0	0	0	0	0
FUTURE FORECAST	130	1,710	0	1,840	2,760	400	0	220	620	350	0	2,540	220	2,760	2,110	0	0	0	0	0
2014 COUNT	8	474	0	482	971	463	0	56	519	180	0	915	172	1,087	937	0	0	0	0	0
ADJUSTED FOR 2014 COUNT	**130**	**1,710**	**0**	1,840	2,760	**470**	**0**	**220**	690	350	**0**	**2,540**	**220**	2,760	2,180	**0**	**0**	**0**	0	0

Table 6 - 2030 With-Project Post-Processed Peak Hour Turning Movement Volumes

	NORTH LEG					EAST LEG					SOUTH LEG					WEST LEG				
LOCATION	**SBL**	**SBT**	**SBR**	**ENTOT**	**EXTOT**	**WBL**	**WBT**	**WBR**	**ENTOT**	**EXTOT**	**NBL**	**NBT**	**NBR**	**ENTOT**	**EXTOT**	**EBL**	**EBT**	**EBR**	**ENTOT**	**EXTOT**
47. Project Zone Centroid Connector (N/S) & Commercentre (E/W)																				
AM																				
BASE YEAR COUNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASE YEAR MODELED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE MODELED	73	1	74	148	62	130	134	9	273	359	37	0	2	39	334	53	284	203	540	245
FUTURE FORECAST	70	10	70	150	60	130	130	10	270	360	40	0	10	50	340	50	280	200	530	240
CENTROID CONNECTOR ADJUSTMENT													+28							
ADJUSTED FOR CENTROID CONNECTOR	**70**	**10**	**70**	150	60	**130**	**130**	**10**	270	390	**40**	**0**	**40**	80	340	**50**	**280**	**200**	530	240
PM																				
BASE YEAR COUNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASE YEAR MODELED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE MODELED	62	3	57	122	133	107	378	49	534	418	188	2	153	343	177	82	203	67	352	623
FUTURE FORECAST	60	10	60	130	140	110	380	50	540	410	190	10	150	350	190	80	200	70	350	630
CENTROID CONNECTOR ADJUSTMENT						+3							+5							
ADJUSTED FOR CENTROID CONNECTOR	**60**	**10**	**60**	130	140	**110**	**380**	**50**	540	420	**190**	**10**	**160**	360	190	**80**	**200**	**70**	350	630

Table 2 - Post-Processed ADT Volumes

LOCATION	BASE YEAR COUNT	BASE YEAR MODELED VOLUME	FUTURE MODELED VOLUME	ADJUSTED FUTURE VOLUME
2015 No-Build				
35. Alton s/o Rancho	0	0	41,546	42,000
36. Alton n/o Trabuco	0	0	43,824	44,000
38. Bake n/o Commercentre	36,000	33,427	25,924	28,000
39. Bake s/o Commercentre	43,000	43,949	36,931	36,000
71. Commercentre e/o Alton	0	4,135	7,085	7,000
2015 With-Project				
35. Alton s/o Rancho	0	0	41,583	42,000
36. Alton n/o Trabuco	0	0	43,967	44,000
38. Bake n/o Commercentre	36,000	33,427	25,915	28,000
39. Bake s/o Commercentre	43,000	43,949	36,929	36,000
71. Commercentre e/o Alton	0	4,135	7,310	7,000
2030 Current General Plan				
35. Alton s/o Rancho	0	0	54,203	54,000
36. Alton n/o Trabuco	0	0	55,234	55,000
38. Bake n/o Commercentre	36,000	33,427	30,496	33,000
39. Bake s/o Commercentre	43,000	43,949	39,314	38,000
71. Commercentre e/o Alton	0	4,135	7,799	8,000
2030 With-Project				
35. Alton s/o Rancho	0	0	53,959	54,000
36. Alton n/o Trabuco	0	0	55,103	55,000
38. Bake n/o Commercentre	36,000	33,427	30,414	33,000
39. Bake s/o Commercentre	43,000	43,949	39,332	38,000
71. Commercentre e/o Alton	0	4,135	7,521	8,000

Appendix C: Turning Movement Counts

ITM Peak Hour Summary

Prepared by:

NDS

Commercenter Dr and Alton Pkwy , Lake Forest

Date:	10/7/2014
Day:	Tuesday

Project #:	14-1257-001
City:	Lake Forest

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Peak Hour Summary

Southbound Approach (Commercenter Dr)

	Lanes	0	0	0		
AM		0	0	0	0	AM
NOON		0	0	0	0	NOON
PM		0	0	0	0	PM

Eastbound Approach (Alton Pkwy)

Lanes	AM	NOON	PM
	1086	0	937
0	0	0	0
3	410	0	915
0	352	0	172

Westbound Approach

Lanes	AM	NOON	PM
0	0	0	0
3	856	0	474
1	71	0	8
	415	0	971

Northbound Approach

AM	423	230	0	5	AM
NOON	0	0	0	0	NOON
PM	180	463	0	56	PM
		1.5	0	1.5	Lanes

CONTROL

Signalized

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		East Leg		West Leg		South Leg	
AM	0	0	927	0	482	1086	0	937
NOON	0	0	415	0	971	762	0	1087
PM	0	0	423	235		0	0	0
			0	0		180	519	

Total Volume Per Leg

	North Leg	East Leg	West Leg	South Leg
AM	0	1342	1848	658
NOON	0	0	0	0
PM	0	1453	2024	699

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Commercenter Dr and Larkspur , Lake Forest

Date:	12/4/2014
Day:	Thursday

Project #:	14-1317-001
City:	Lake Forest

AM Peak Hour	745 AM
NOON Peak Hour	
PM Peak Hour	430 PM

Peak Hour Summary

Southbound Approach (Commercenter Dr)

	Lanes 0	2	0		
AM	0	405	8	196	AM
NOON	0	0	0	0	NOON
PM	0	155	6	567	PM

Eastbound Approach (Larkspur)

Lanes	AM	NOON	PM
	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0

Westbound Approach

AM	NOON	PM	Lanes
15	0	17	0
0	0	0	1
2	0	5	0
11	0	11	

CONTROL: 1-Way Stop (WB)

Northbound Approach

AM	407	0	181	3	AM
NOON	0	0	0	0	NOON
PM	160	1	550	5	PM
		0	2	0	Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		
	413	196	AM
	0	0	NOON
	161	567	PM

West Leg AM	NOON	PM		East Leg AM	NOON	PM
0	0	1		17	0	22
0	0	0		11	0	11

	South Leg	
AM	407	184
NOON	0	0
PM	160	556

Total Volume Per Leg

North Leg	
609	AM
0	NOON
728	PM

West Leg AM	NOON	PM	East Leg AM	NOON	PM
0	0	1	28	0	33

	South Leg
AM	591
NOON	0
PM	716

ITM Peak Hour Summary

Prepared by:

NDS

Commercenter Dr and Bake Pkwy , Lake Forest

Date:	10/7/2014
Day:	Tuesday

Project #:	14-1257-003
City:	Lake Forest

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Peak Hour Summary

Southbound Approach

Commercenter Dr

Lanes	0	2	1		
AM	19	193	87	296	AM
NOON	0	0	0	0	NOON
PM	72	116	133	387	PM

Eastbound Approach

Bake Pkwy

Lanes	AM	NOON	PM
	1066	0	1493
1	69	0	24
2	1028	0	1182
0	470	0	167

Westbound Approach

Lanes	AM	NOON	PM
0	170	0	114
2	944	0	1026
1	20	0	11
	1121	0	1328

CONTROL

Signalized

Northbound Approach

AM	683	103	57	6	AM
NOON	0	0	0	0	NOON
PM	294	395	249	13	PM
		2	1	0	Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		East Leg			West Leg			South Leg	
AM	299	296	1134	0	1151	1066	0	1493	683	166
NOON	0	0	1121	0	1328	1567	0	1373	0	0
PM	321	387							294	657

Total Volume Per Leg

	North Leg	East Leg	West Leg	South Leg
AM	595	2255	2633	849
NOON	0	0	0	0
PM	708	2479	2866	951

Appendix D: LOS Worksheets

(Note: Commercentre Drive is an east-west roadway in the City's traffic model. In this study, Commercentre Drive is considered a north-south roadway. Year 2030 ICU worksheets indicate Commercentre Drive as the east-west roadway. The remaining worksheets utilize Commercentre as a north-south roadway.)

Encanto Project
Existing AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Commercentre Drive/Alton Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.399
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	20	Level Of Service:	A

Street Name:	Commercentre Drive						Alton Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lanes:	1	0	1! 0	1	0	0	0 0	0	0	2 1	0	1
Lanes:	0	3	0	0								
Volume Module:												
Base Vol:	230	0	5	0	0	0	0	410	352	71	856	0
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	232	0	5	0	0	0	0	414	356	72	865	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	232	0	5	0	0	0	0	414	356	72	865	0
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	254	0	6	0	0	0	0	452	388	78	944	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	254	0	6	0	0	0	0	452	388	78	944	0
PCE 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
MLF 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
FinalVolume:	254	0	6	0	0	0	0	452	388	78	944	0
Saturation Flow Module:												
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	3.00	0.00
Final Sat.:	3400	0	1700	0	0	0	0	3400	1700	1700	5100	0
Capacity Analysis Module:												
Vol/Sat:	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.23	0.05	0.19	0.00
Crit Moves:	****								****	****		

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	2	0	15	0	183	3	8	409	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	2	0	17	0	206	3	9	460	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	581	687	230	455	685	104	460	0	0	209	0	0
Stage 1	478	478	-	207	207	-	-	-	-	-	-	-
Stage 2	103	209	-	248	478	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	397	368	772	489	369	931	1097	-	-	1359	-	-
Stage 1	537	554	-	776	729	-	-	-	-	-	-	-
Stage 2	892	728	-	734	554	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	388	366	772	487	367	931	1097	-	-	1359	-	-
Mov Cap-2 Maneuver	388	366	-	487	367	-	-	-	-	-	-	-
Stage 1	537	550	-	776	729	-	-	-	-	-	-	-
Stage 2	876	728	-	729	550	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.4	0	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1097	-	-	-	-	841	1359	-	-
HCM Lane V/C Ratio	-	-	-	-	-	0.023	0.007	-	-
HCM Control Delay (s)	0	-	-	0	0	9.4	7.7	-	-
HCM Lane LOS	A	-	-	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1	0	-	-

Encanto Project
Existing AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Commercentre Drive/Bake Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.696
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	37	Level Of Service:	B

Street Name:	Commercentre Drive							Bake Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound			
Movement:	L	T	R	L	T	R	L	T	R	L	T	R	
Control:	Protected			Protected			Protected			Protected			
Rights:	Include			Include			Include			Include			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lanes:	2 0	0 1	0	1 0	1 1	0	1 0	1 1	0	1 0	1 1	0	
Volume Module:													
Base Vol:	103	57	6	87	193	19	69	1028	470	20	944	170	
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	
Initial Bse:	104	58	6	88	195	19	70	1038	475	20	953	172	
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	104	58	6	88	195	19	70	1038	475	20	953	172	
User 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	
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
PHF Volume:	122	68	7	103	229	23	82	1219	557	24	1119	202	
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	122	68	7	103	229	23	82	1219	557	24	1119	202	
PCE 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	
MLF 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	
FinalVolume:	122	68	7	103	229	23	82	1219	557	24	1119	202	
Saturation Flow Module:													
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lanes:	2.00	0.90	0.10	1.00	1.82	0.18	1.00	1.37	0.63	1.00	1.69	0.31	
Final Sat.:	3400	1538	162	1700	3095	305	1700	2333	1067	1700	2881	519	
Capacity Analysis Module:													
Vol/Sat:	0.04	0.04	0.04	0.06	0.07	0.07	0.05	0.52	0.52	0.01	0.39	0.39	
Crit Moves:	****				****			****		****			

Encanto Project
Existing PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Commercentre Drive/Alton Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.467
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	22	Level Of Service:	A

Street Name:	Commercentre Drive						Alton Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lanes:	1	0	1! 0	1	0	0	0	0	0	2	1	0
Lanes:	1	0	3	0	0							
Volume Module:												
Base Vol:	463	0	56	0	0	0	0	915	172	8	474	0
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	468	0	57	0	0	0	0	924	174	8	479	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	468	0	57	0	0	0	0	924	174	8	479	0
User 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
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	546	0	66	0	0	0	0	1078	203	9	559	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	546	0	66	0	0	0	0	1078	203	9	559	0
PCE 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
MLF 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
FinalVolume:	546	0	66	0	0	0	0	1078	203	9	559	0
Saturation Flow Module:												
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.53	0.47	1.00	3.00	0.00
Final Sat.:	3400	0	1700	0	0	0	0	4293	807	1700	5100	0
Capacity Analysis Module:												
Vol/Sat:	0.16	0.00	0.04	0.00	0.00	0.00	0.00	0.25	0.25	0.01	0.11	0.00
Crit Moves:	****							****		****		

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	5	0	17	0	556	5	6	157	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	7	0	22	0	732	7	8	207	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	588	960	103	854	957	369	207	0	0	738	0	0
Stage 1	222	222	-	735	735	-	-	-	-	-	-	-
Stage 2	366	738	-	119	222	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	392	255	932	252	256	628	1361	-	-	864	-	-
Stage 1	760	718	-	377	424	-	-	-	-	-	-	-
Stage 2	626	422	-	873	718	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	375	253	932	250	254	628	1361	-	-	864	-	-
Mov Cap-2 Maneuver	375	253	-	250	254	-	-	-	-	-	-	-
Stage 1	760	711	-	377	424	-	-	-	-	-	-	-
Stage 2	604	422	-	865	711	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	13.2	0	0.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1361	-	-	-	-	467	864	-	-
HCM Lane V/C Ratio	-	-	-	-	-	0.062	0.009	-	-
HCM Control Delay (s)	0	-	-	0	0	13.2	9.2	-	-
HCM Lane LOS	A	-	-	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0.2	0	-	-

Encanto Project
Existing PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Commercentre Drive/Bake Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.760
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	45	Level Of Service:	C

Street Name:	Commercentre Drive							Bake Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound			
Movement:	L	T	R	L	T	R	L	T	R	L	T	R	
Control:	Protected			Protected			Protected			Protected			
Rights:	Include			Include			Include			Include			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lanes:	2 0	0 1	0	1 0	1 1	0	1 0	1 1	0	1 0	1 1	0	
Volume Module:													
Base Vol:	395	249	13	133	116	72	24	1182	167	11	1026	114	
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	
Initial Bse:	399	251	13	134	117	73	24	1194	169	11	1036	115	
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	399	251	13	134	117	73	24	1194	169	11	1036	115	
User 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	
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
PHF Volume:	441	278	15	149	130	80	27	1321	187	12	1146	127	
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	441	278	15	149	130	80	27	1321	187	12	1146	127	
PCE 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	
MLF 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	
FinalVolume:	441	278	15	149	130	80	27	1321	187	12	1146	127	
Saturation Flow Module:													
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lanes:	2.00	0.95	0.05	1.00	1.23	0.77	1.00	1.75	0.25	1.00	1.80	0.20	
Final Sat.:	3400	1616	84	1700	2098	1302	1700	2979	421	1700	3060	340	
Capacity Analysis Module:													
Vol/Sat:	0.13	0.17	0.17	0.09	0.06	0.06	0.02	0.44	0.44	0.01	0.37	0.37	
Crit Moves:		****		****				****		****			

Encanto Project
Existing plus Project AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Commercentre Drive/Alton Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.402
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	20	Level Of Service:	A

Street Name:	Commercentre Drive						Alton Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lanes:	1	0	1! 0	1	0	0	0	0	0	0	2	1
Volume Module:												
Base Vol:	230	0	5	0	0	0	0	410	352	71	856	0
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	232	0	5	0	0	0	0	414	356	72	865	0
Added Vol:	2	0	6	0	0	0	0	0	1	2	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	234	0	11	0	0	0	0	414	357	74	865	0
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	256	0	12	0	0	0	0	452	389	80	944	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	256	0	12	0	0	0	0	452	389	80	944	0
PCE 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
MLF 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
FinalVolume:	256	0	12	0	0	0	0	452	389	80	944	0
Saturation Flow Module:												
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	3.00	0.00
Final Sat.:	3400	0	1700	0	0	0	0	3400	1700	1700	5100	0
Capacity Analysis Module:												
Vol/Sat:	0.08	0.00	0.01	0.00	0.00	0.00	0.00	0.13	0.23	0.05	0.19	0.00
Crit Moves:	****								****	****		

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	0	22	2	0	15	7	183	3	8	409	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	25	2	0	17	8	206	3	9	460	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	598	704	231	471	704	104	463	0	0	209	0	0
Stage 1	479	479	-	223	223	-	-	-	-	-	-	-
Stage 2	119	225	-	248	481	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	386	360	771	476	360	931	1095	-	-	1359	-	-
Stage 1	537	553	-	759	718	-	-	-	-	-	-	-
Stage 2	873	716	-	734	552	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	375	355	771	456	355	931	1095	-	-	1359	-	-
Mov Cap-2 Maneuver	375	355	-	456	355	-	-	-	-	-	-	-
Stage 1	533	549	-	753	713	-	-	-	-	-	-	-
Stage 2	851	711	-	706	548	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	9.4	0.3	0.1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1095	-	-	375	771	829	1359	-	-
HCM Lane V/C Ratio	0.007	-	-	0.021	0.032	0.023	0.007	-	-
HCM Control Delay (s)	8.3	-	-	14.8	9.8	9.4	7.7	-	-
HCM Lane LOS	A	-	-	B	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	0	-	-

Encanto Project
Existing plus Project AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Commercentre Drive/Bake Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.701
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	37	Level Of Service:	C

Street Name:	Commercentre Drive							Bake Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound			
Movement:	L	T	R	L	T	R	L	T	R	L	T	R	
Control:	Protected			Protected			Protected			Protected			
Rights:	Include			Include			Include			Include			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lanes:	2	0	0	1	0	1	0	1	1	0	1	0	1	1	0	1	0	1	1	0
Volume Module:													
Base Vol:	103	57	6	87	193	19	69	1028	470	20	944	170	
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	
Initial Bse:	104	58	6	88	195	19	70	1038	475	20	953	172	
Added Vol:	0	0	0	9	1	12	4	0	0	0	0	3	
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	104	58	6	97	196	31	74	1038	475	20	953	175	
User 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	
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
PHF Volume:	122	68	7	114	230	37	86	1219	557	24	1119	205	
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	122	68	7	114	230	37	86	1219	557	24	1119	205	
PCE 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	
MLF 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	
FinalVolume:	122	68	7	114	230	37	86	1219	557	24	1119	205	
Saturation Flow Module:													
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lanes:	2.00	0.90	0.10	1.00	1.73	0.27	1.00	1.37	0.63	1.00	1.69	0.31	
Final Sat.:	3400	1538	162	1700	2933	467	1700	2333	1067	1700	2873	527	
Capacity Analysis Module:													
Vol/Sat:	0.04	0.04	0.04	0.07	0.08	0.08	0.05	0.52	0.52	0.01	0.39	0.39	
Crit Moves:	****				****			****		****			

Encanto Project
Existing plus Project PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Commercentre Drive/Alton Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.472
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	22	Level Of Service:	A

Street Name:	Commercentre Drive							Alton Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound			
Movement:	L	T	R	L	T	R	L	T	R	L	T	R	
Control:	Protected			Protected			Protected			Protected			
Rights:	Include			Include			Include			Include			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lanes:	1	0	1! 0	1	0	0	0	0	0	0	2	1	0
	1	0	3	0	0								
Volume Module:													
Base Vol:	463	0	56	0	0	0	0	915	172	8	474	0	
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	
Initial Bse:	468	0	57	0	0	0	0	924	174	8	479	0	
Added Vol:	1	0	4	0	0	0	0	0	2	6	0	0	
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	469	0	61	0	0	0	0	924	176	14	479	0	
User 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	
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	
PHF Volume:	547	0	71	0	0	0	0	1078	205	16	559	0	
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	547	0	71	0	0	0	0	1078	205	16	559	0	
PCE 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	
MLF 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	
FinalVolume:	547	0	71	0	0	0	0	1078	205	16	559	0	
Saturation Flow Module:													
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.52	0.48	1.00	3.00	0.00	
Final Sat.:	3400	0	1700	0	0	0	0	4285	815	1700	5100	0	
Capacity Analysis Module:													
Vol/Sat:	0.16	0.00	0.04	0.00	0.00	0.00	0.00	0.25	0.25	0.01	0.11	0.00	
Crit Moves:	****							****		****			

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	0	14	5	0	17	25	556	5	6	157	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	18	7	0	22	33	732	7	8	207	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	660	1032	109	920	1034	369	217	0	0	738	0	0
Stage 1	228	228	-	801	801	-	-	-	-	-	-	-
Stage 2	432	804	-	119	233	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	348	231	924	226	231	628	1350	-	-	864	-	-
Stage 1	754	714	-	344	395	-	-	-	-	-	-	-
Stage 2	572	394	-	873	711	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	327	223	924	216	223	628	1350	-	-	864	-	-
Mov Cap-2 Maneuver	327	223	-	216	223	-	-	-	-	-	-	-
Stage 1	736	707	-	336	385	-	-	-	-	-	-	-
Stage 2	538	384	-	848	704	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	13.8	0.3	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1350	-	-	327	924	438	864	-	-
HCM Lane V/C Ratio	0.024	-	-	0.02	0.02	0.066	0.009	-	-
HCM Control Delay (s)	7.7	-	-	16.2	9	13.8	9.2	-	-
HCM Lane LOS	A	-	-	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0.2	0	-	-

Encanto Project
Existing plus Project PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Commercentre Drive/Bake Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.765
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	46	Level Of Service:	C

Street Name:	Commercentre Drive							Bake Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound			
Movement:	L	T	R	L	T	R	L	T	R	L	T	R	
Control:	Protected			Protected			Protected			Protected			
Rights:	Include			Include			Include			Include			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lanes:	2 0	0 1	0	1 0	1 1	0	1 0	1 1	0	1 0	1 1	0	
Volume Module:													
Base Vol:	395	249	13	133	116	72	24	1182	167	11	1026	114	
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	
Initial Bse:	399	251	13	134	117	73	24	1194	169	11	1036	115	
Added Vol:	0	1	0	6	1	8	14	0	0	0	0	10	
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	399	252	13	140	118	81	38	1194	169	11	1036	125	
User 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	
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
PHF Volume:	441	279	15	155	131	89	42	1321	187	12	1146	138	
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	441	279	15	155	131	89	42	1321	187	12	1146	138	
PCE 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	
MLF 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	
FinalVolume:	441	279	15	155	131	89	42	1321	187	12	1146	138	
Saturation Flow Module:													
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lanes:	2.00	0.95	0.05	1.00	1.19	0.81	1.00	1.75	0.25	1.00	1.78	0.22	
Final Sat.:	3400	1616	84	1700	2020	1380	1700	2979	421	1700	3034	366	
Capacity Analysis Module:													
Vol/Sat:	0.13	0.17	0.17	0.09	0.06	0.06	0.02	0.44	0.44	0.01	0.38	0.38	
Crit Moves:		****		****				****		****			

42. Alton & Commercentre

2015 No-Build

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	930	.18	1990	.39*
NBR	d	1700	360	.21	240	.14
SBL	1	1700	140	.08	100	.06*
SBT	3	5100	2250	.44*	1230	.24
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		240	.07*	470	.14*
WBT	0	5100	0		0	
WBR	1.5		60		140	.08
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.64**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	920	.18	1970	.39*
NBR	d	1700	360	.21	260	.15
SBL	1	1700	150	.09	110	.06*
SBT	3	5100	2240	.44*	1230	.24
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		240	.07*	470	.14*
WBT	0	5100	0		0	
WBR	1.5		50		160	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.56**		**.64**

2030 Current General Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1240	.24	2540	.50*
NBR	d	1700	360	.21	230	.14
SBL	1	1700	220	.13	150	.09*
SBT	3	5100	2700	.53*	1720	.34
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		240	.07*	470	.14*
WBT	0	5100	0		0	
WBR	1.5		80		220	.13
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.78**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	1250	.25	2540	.50*
NBR	d	1700	360	.21	220	.13
SBL	1	1700	220	.13	130	.08*
SBT	3	5100	2700	.53*	1710	.34
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1.5		240	.07*	470	.14*
WBT	0	5100	0		0	
WBR	1.5		70		220	.13
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.65**		**.77**

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	14	0	26	0	294	5	9	571	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	15	0	28	0	320	5	10	621	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	800	965	310	652	962	163	621	0	0	325	0	0
Stage 1	640	640	-	322	322	-	-	-	-	-	-	-
Stage 2	160	325	-	330	640	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	276	253	686	353	254	853	956	-	-	1231	-	-
Stage 1	430	468	-	664	650	-	-	-	-	-	-	-
Stage 2	826	648	-	657	468	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	265	251	686	351	252	853	956	-	-	1231	-	-
Mov Cap-2 Maneuver	265	251	-	351	252	-	-	-	-	-	-	-
Stage 1	430	464	-	664	650	-	-	-	-	-	-	-
Stage 2	799	648	-	652	464	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11.9	0	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	-	-	568	1231	-	-
HCM Lane V/C Ratio	-	-	-	-	-	0.077	0.008	-	-
HCM Control Delay (s)	0	-	-	0	0	11.9	7.9	-	-
HCM Lane LOS	A	-	-	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	9	0	17	0	673	16	29	351	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	10	0	18	0	732	17	32	382	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	811	1194	191	994	1185	374	382	0	0	749	0	0
Stage 1	445	445	-	740	740	-	-	-	-	-	-	-
Stage 2	366	749	-	254	445	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	271	185	818	199	188	623	1173	-	-	856	-	-
Stage 1	562	573	-	375	421	-	-	-	-	-	-	-
Stage 2	626	417	-	728	573	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	255	178	818	193	181	623	1173	-	-	856	-	-
Mov Cap-2 Maneuver	255	178	-	193	181	-	-	-	-	-	-	-
Stage 1	562	552	-	375	421	-	-	-	-	-	-	-
Stage 2	607	417	-	701	552	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	16.1	0	0.7
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1173	-	-	-	-	352	856	-	-
HCM Lane V/C Ratio	-	-	-	-	-	0.08	0.037	-	-
HCM Control Delay (s)	0	-	-	0	0	16.1	9.4	-	-
HCM Lane LOS	A	-	-	A	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	8	0	21	14	0	26	7	296	5	9	568	3
Conflicting Peds, #/hr	0	0	0	62	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	23	15	0	28	8	322	5	10	617	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	877	1043	310	730	1042	226	621	0	0	389	0	0
Stage 1	639	639	-	402	402	-	-	-	-	-	-	-
Stage 2	238	404	-	328	640	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	243	228	686	310	228	777	956	-	-	1166	-	-
Stage 1	431	469	-	596	599	-	-	-	-	-	-	-
Stage 2	744	598	-	659	468	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	231	213	686	281	213	737	956	-	-	1166	-	-
Mov Cap-2 Maneuver	231	213	-	281	213	-	-	-	-	-	-	-
Stage 1	427	465	-	560	563	-	-	-	-	-	-	-
Stage 2	709	562	-	632	464	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.4	13.4	0.2	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	231	686	470	1166	-	-
HCM Lane V/C Ratio	0.008	-	-	0.038	0.033	0.093	0.008	-	-
HCM Control Delay (s)	8.8	-	-	21.2	10.4	13.4	8.1	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	0	14	9	0	17	25	668	16	29	313	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	15	10	0	18	27	726	17	32	340	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	825	1206	174	1022	1201	372	349	0	0	743	0	0
Stage 1	408	408	-	789	789	-	-	-	-	-	-	-
Stage 2	417	798	-	233	412	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	265	182	839	190	184	625	1207	-	-	860	-	-
Stage 1	591	595	-	350	400	-	-	-	-	-	-	-
Stage 2	584	396	-	749	593	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	246	171	839	178	173	625	1207	-	-	860	-	-
Mov Cap-2 Maneuver	246	171	-	178	173	-	-	-	-	-	-	-
Stage 1	578	573	-	342	391	-	-	-	-	-	-	-
Stage 2	554	387	-	708	571	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	16.8	0.3	0.8
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1207	-	-	246	839	334	860	-	-
HCM Lane V/C Ratio	0.023	-	-	0.022	0.018	0.085	0.037	-	-
HCM Control Delay (s)	8.1	-	-	20	9.4	16.8	9.3	-	-
HCM Lane LOS	A	-	-	C	A	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0.3	0.1	-	-

13. Bake & Commercentre

2015 No-Build

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	70	.04*	30	.02
NBT	2	3400	1040	.31	1320	.39*
NBR	d	1700	780	.46	270	.16
SBL	1	1700	30	.02	50	.03*
SBT	2	3400	1230	.36*	1040	.31
SBR	d	1700	180	.11	120	.07
EBL	1	1700	100	.06	170	.10*
EBT	2	3400	200	.07*	130	.06
EBR	0	0	40		80	
WBL	2	3400	330	.10*	680	.20
WBT	1	1700	70	.05	260	.17*
WBR	0	0	20		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.62**		**.74**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	70	.04*	30	.02
NBT	2	3400	1040	.31	1320	.39*
NBR	d	1700	770	.45	270	.16
SBL	1	1700	30	.02	60	.04*
SBT	2	3400	1210	.36*	1040	.31
SBR	d	1700	180	.11	120	.07
EBL	1	1700	100	.06	180	.11*
EBT	2	3400	200	.08*	130	.06
EBR	0	0	70		80	
WBL	2	3400	330	.10*	670	.20
WBT	1	1700	70	.05	260	.17*
WBR	0	0	20		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.63**		**.76**

2030 Current General Plan

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	80	.05*	30	.02
NBT	2	3400	1060	.31	1460	.43*
NBR	d	1700	710	.42	220	.13
SBL	1	1700	30	.02	50	.03*
SBT	2	3400	1420	.42*	1040	.31
SBR	d	1700	180	.11	120	.07
EBL	1	1700	100	.06	190	.11*
EBT	2	3400	200	.08*	130	.06
EBR	0	0	60		80	
WBL	2	3400	300	.09*	620	.18
WBT	1	1700	60	.05	260	.17*
WBR	0	0	20		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.69**		**.79**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	80	.05*	30	.02
NBT	2	3400	1070	.31	1470	.43*
NBR	d	1700	720	.42	230	.14
SBL	1	1700	30	.02	50	.03*
SBT	2	3400	1400	.41*	1040	.31
SBR	d	1700	180	.11	120	.07
EBL	1	1700	100	.06	190	.11*
EBT	2	3400	200	.09*	130	.06
EBR	0	0	90		80	
WBL	2	3400	300	.09*	620	.18
WBT	1	1700	60	.05	260	.17*
WBR	0	0	20		30	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.69**		**.79**

Existing plus Construction AM

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Commercentre Drive/Alton Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.399
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	20	Level Of Service:	A

Street Name:	Commercentre Drive						Alton Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lanes:	1 0	1! 0	1	0 0	0 0	0	0 0	2 1	0	1 0	3 0	0
Volume Module:												
Base Vol:	230	0	5	0	0	0	0	410	352	71	856	0
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	232	0	5	0	0	0	0	414	356	72	865	0
Added Vol:	1	0	4	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	233	0	9	0	0	0	0	414	356	72	865	0
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	255	0	10	0	0	0	0	452	388	78	944	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	255	0	10	0	0	0	0	452	388	78	944	0
PCE 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
MLF 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
FinalVolume:	255	0	10	0	0	0	0	452	388	78	944	0
Saturation Flow Module:												
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	3.00	0.00
Final Sat.:	3400	0	1700	0	0	0	0	3400	1700	1700	5100	0
Capacity Analysis Module:												
Vol/Sat:	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.13	0.23	0.05	0.19	0.00
Crit Moves:	****								****	****		

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	0	17	2	0	15	2	183	3	8	409	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	19	2	0	17	2	206	3	9	460	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	585	691	230	460	691	104	461	0	0	209	0	0
Stage 1	478	478	-	212	212	-	-	-	-	-	-	-
Stage 2	107	213	-	248	479	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	394	366	772	485	366	931	1096	-	-	1359	-	-
Stage 1	537	554	-	770	726	-	-	-	-	-	-	-
Stage 2	887	725	-	734	553	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	384	363	772	470	363	931	1096	-	-	1359	-	-
Mov Cap-2 Maneuver	384	363	-	470	363	-	-	-	-	-	-	-
Stage 1	536	550	-	769	725	-	-	-	-	-	-	-
Stage 2	869	724	-	711	549	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	9.4	0.1	0.1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1096	-	-	384	772	835	1359	-	-
HCM Lane V/C Ratio	0.002	-	-	0.018	0.025	0.023	0.007	-	-
HCM Control Delay (s)	8.3	-	-	14.5	9.8	9.4	7.7	-	-
HCM Lane LOS	A	-	-	B	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	0	-	-

Existing plus Construction AM

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Commercentre Drive/Bake Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.700
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	37	Level Of Service:	B

Street Name:	Commercentre Drive						Bake Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lanes:	2 0	0 1	0	1 0	1 1	0	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	103	57	6	87	193	19	69	1028	470	20	944	170
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	104	58	6	88	195	19	70	1038	475	20	953	172
Added Vol:	0	0	0	7	1	9	1	0	0	0	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	104	58	6	95	196	28	71	1038	475	20	953	173
User 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
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
PHF Volume:	122	68	7	111	230	33	83	1219	557	24	1119	203
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	122	68	7	111	230	33	83	1219	557	24	1119	203
PCE 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
MLF 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
FinalVolume:	122	68	7	111	230	33	83	1219	557	24	1119	203
Saturation Flow Module:												
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	0.90	0.10	1.00	1.75	0.25	1.00	1.37	0.63	1.00	1.69	0.31
Final Sat.:	3400	1538	162	1700	2972	428	1700	2333	1067	1700	2879	521
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.07	0.08	0.08	0.05	0.52	0.52	0.01	0.39	0.39
Crit Moves:	****				****			****		****		

Existing plus Construction PM

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Commercentre Drive/Alton Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.468
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	22	Level Of Service:	A

Street Name:	Commercentre Drive						Alton Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lanes:	1 0	1! 0	1	0 0	0 0	0	0 0	2 1	0	1 0	3 0	0
Volume Module:												
Base Vol:	463	0	56	0	0	0	0	915	172	8	474	0
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	468	0	57	0	0	0	0	924	174	8	479	0
Added Vol:	1	0	4	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	469	0	61	0	0	0	0	924	174	8	479	0
User 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
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	547	0	71	0	0	0	0	1078	203	9	559	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	547	0	71	0	0	0	0	1078	203	9	559	0
PCE 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
MLF 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
FinalVolume:	547	0	71	0	0	0	0	1078	203	9	559	0
Saturation Flow Module:												
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.53	0.47	1.00	3.00	0.00
Final Sat.:	3400	0	1700	0	0	0	0	4293	807	1700	5100	0
Capacity Analysis Module:												
Vol/Sat:	0.16	0.00	0.04	0.00	0.00	0.00	0.00	0.25	0.25	0.01	0.11	0.00
Crit Moves:	****							****		****		

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	0	17	5	0	17	2	556	5	6	157	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	23	7	0	23	3	741	7	8	209	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	602	979	105	871	977	374	211	0	0	748	0	0
Stage 1	226	226	-	750	750	-	-	-	-	-	-	-
Stage 2	376	753	-	121	227	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	383	249	929	245	249	623	1357	-	-	856	-	-
Stage 1	756	716	-	369	417	-	-	-	-	-	-	-
Stage 2	617	416	-	870	715	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	366	246	929	237	246	623	1357	-	-	856	-	-
Mov Cap-2 Maneuver	366	246	-	237	246	-	-	-	-	-	-	-
Stage 1	754	709	-	368	416	-	-	-	-	-	-	-
Stage 2	593	415	-	841	708	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	13.5	0	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1357	-	-	366	929	455	856	-	-
HCM Lane V/C Ratio	0.002	-	-	0.022	0.024	0.064	0.009	-	-
HCM Control Delay (s)	7.7	-	-	15.1	9	13.5	9.2	-	-
HCM Lane LOS	A	-	-	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.2	0	-	-

Existing plus Construction PM

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Commercentre Drive/Bake Parkway

Cycle (sec):	100	Critical Vol./Cap.(X):	0.765
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	46	Level Of Service:	C

Street Name:	Commercentre Drive						Bake Parkway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lanes:	2 0	0 1	0	1 0	1 1	0	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	395	249	13	133	116	72	24	1182	167	11	1026	114
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	399	251	13	134	117	73	24	1194	169	11	1036	115
Added Vol:	0	0	0	7	1	9	1	0	0	0	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	399	251	13	141	118	82	25	1194	169	11	1036	116
User 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
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	441	278	15	156	131	90	28	1321	187	12	1146	128
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	441	278	15	156	131	90	28	1321	187	12	1146	128
PCE 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
MLF 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
FinalVolume:	441	278	15	156	131	90	28	1321	187	12	1146	128
Saturation Flow Module:												
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	0.95	0.05	1.00	1.18	0.82	1.00	1.75	0.25	1.00	1.80	0.20
Final Sat.:	3400	1616	84	1700	2010	1390	1700	2979	421	1700	3057	343
Capacity Analysis Module:												
Vol/Sat:	0.13	0.17	0.17	0.09	0.07	0.07	0.02	0.44	0.44	0.01	0.37	0.37
Crit Moves:		****		****				****		****		