

Report Committee of Adjustment

Filing Date: Hearing Date:	June 5, 2023 July 11, 2023
File:	A-2023-0185
Owner/ Applicant:	MONTEREY PARK HOLDING CORPORATION
Address:	1 Gateway Boulevard
Ward:	WARD 8
Contact:	Rajvi Patel, Assistant Development Planner

Recommendations:

That application A-2023-0185 is supportable, subject to the following conditions being imposed:

- 1. That the extent of the variances be limited to that shown on the sketch attached to the Notice of Decision;
- 2. That the motor vehicle repair shop use shall only be permitted in units 5, 6, 7, & 8 of Building C as identified on the attached sketch (Appendix A);
- 3. That the owner finalize site plan approval under City File SPA-2021-0011, execute a site plan agreement, and post any required financial securities and insurance to the satisfaction of the Director of Development Services;
- 4. That outdoor storage associated with the motor vehicle repair shop shall not be permitted;
- 5. That failure to comply with and maintain the conditions of the Committee shall render the approval null and void.

Background:

The Minor Variance application is submitted to facilitate the future development of three one-storey commercial buildings with a total gross floor area of 4,227.08 sq. m (45,499.91 sq. ft.) related to an ongoing Site Plan Approval application (SPA-2021-0011).

Existing Zoning:

The property is zoned 'Service Commercial (SC-199)', according to By-law 270-2004, as amended.

Requested Variances:

The applicant is requesting the following variances:

- 1. To permit a motor vehicle repair shop having a maximum gross floor area of 750 sq. m whereas the by-law does not permit the use;
- 2. To permit 541 parking spaces whereas the by-law requires 587 parking spaces.

Current Situation:

1. Maintains the General Intent and Purpose of the Official Plan

The subject property is designated 'Business Corridor' and identified within the 'Lester B. Pearson International Airport (LBPIA) Operating Area' in the Official Plan and 'Service Commercial' in the Airport Intermodal Secondary Plan (Area 4).

The 'Business Corridor' Official Plan designation permits a broad range of employment and employment-related uses. Certain lands within the Business Corridor designation are planned to accommodate a broad range of business, service, and institutional uses to serve the general public and adjacent employment areas. Section 4.4.1 provides that a number of uses shall be prohibited on lands designated Business Corridor including auto-body paint and repair, automobile repair, etc. Furthermore, Section 4.4.1.5 (viii) of the Official Plan states that "at the development review or Secondary Plan stage, the planning of Business Corridor designations shall satisfactorily address the following matters: (viii) The siting, massing and landscaping of development that will contribute to a unified and cohesive street edge".

Additionally, the subject lands are identified within the 'Lester B. Pearson International Airport (LBPIA) Operating Area' as per Schedule A of the Official Plan. Section 4.4.1 of the Official Plan states that the development, infill and redevelopment for supportive housing facilities and certain noise sensitive public and institutional uses such as day care centres, schools, nursing homes and hospitals will not be permitted within the LBPIA Operating Area.

The subject lands are further designated 'Service Commercial' in the Airport Intermodal Secondary Plan which permits service commercial uses such as small-scale retail and convenience stores, service uses, restaurants, recreation facilities, hotels, banquet halls, small offices and financial institutions.

The requested variance for a reduction in parking spaces is to facilitate the overall development of the site and will not affect the primary commercial function of the property. Although the Official Plan prohibits automobile repair use within lands designated Business Corridor, the intent of the Official Plan is to prohibit standalone automobile repair shops on major roads and to provide a desirable streetscape at prominent locations to maintain a positive business image of the City. The applicant is proposing the motor vehicle repair shop to occupy four units of the proposed one-storey commercial building located at the southwest corner of the site which fronts onto Summerlea Road. Staff

recommend a condition the applicant finalize site plan approval under City File SPA-2021-0011 to ensure the permissions requested as part of this Minor Variance application are in accordance with the approval of the related Site Plan. Subject to the recommended conditions of approval, the requested variances are not considered to have significant impacts within the context of the Official Plan and Secondary Plan policies and are considered to maintain the general intent and purpose of the Official Plan.

2. Maintains the General Intent and Purpose of the Zoning By-law

The subject property is currently zoned 'Service Commercial,' Special Section 199 (SC-199), according to By-law 270-2004, as amended.

Variance 1 is requested to permit a motor vehicle repair shop having a maximum gross floor area of 750 sq. m whereas the by-law does not permit a motor vehicle repair shop. The intent of the by-law in prohibiting motor vehicle repair shop use is to reflect the use of the subject lands as service commercial and that appropriate and compatible land uses are established on this site.

The subject lands are occupied by three existing buildings consisting of a number of uses including office uses, a banquet hall, a pharmacy, a nail salon, restaurant uses, etc. Through SPA-2021-0011, three additional commercial buildings are proposed on the western portion of the site. One of the proposed buildings at the southwest corner of the site will contain the motor vehicle repair shop.

Given the proposed location of the motor vehicle repair shop and its relation to the surrounding site context, it is not anticipated that the vehicle repair shop will adversely affect the functionality of the site. The vehicle repair shop will be located in the southwest corner of the site which is adjacent to industrial and commercial uses. Staff are of the opinion that the proposed motor vehicle repair shop is suitable for the site and location as it is not anticipated to detract from the commercial functions of the site. In order to ensure that there are no negative impacts deriving from the use on this site, a condition of approval is recommended that outdoor storage associated with the motor vehicle repair shop shall not be permitted. Staff also recommend that the owner finalize site plan approval under City File SPA-2021-0011, execute a site plan agreement, and post any required financial securities and insurance to the satisfaction of the Director of Development Services. Subject to these conditions, Variance 1 is considered to maintain the intent of the Zoning By-law.

Variance 2 is requested to provide 541 parking spaces whereas the by-law requires 587 parking spaces. The intent of regulating minimum parking requirements for service commercial properties is to ensure that the site can accommodate the parking demand generated by the permitted uses on the property.

A parking study prepared by Tranplan Associates, dated December 28, 2022, was submitted with the associated site plan application SPA-2021-0010 (Appendix C). City staff reviewed the parking study and found it to be satisfactory. The study concluded that 531 parking spaces adequately accommodate the parking demands of the proposed development. Furthermore, the proposed reduction represents approximately 8% of the overall parking requirement for the site and is not anticipated to negatively impact the function of the site. Therefore, subject to the recommended conditions of approval, Variance 2 is considered to maintain the intent of the Zoning By-law.

3. Desirable for the Appropriate Development of the Land

Variance 1 is requested to permit a motor vehicle repair shop use as the use is similar to other automobile related uses permitted in the surrounding area. A motor vehicle repair shop exists in relation to the car dealership located east of the property. The form and configuration of the proposed development will continue to contribute to the efficient use of the lands and will support an existing major employment use within the City. The proposed development is not anticipated to compromise the existing surrounding area which primarily consists of industrial and commercial uses as it maintains the general policies and provisions of the Official Plan and Zoning By-law. The use will be restricted to the four units within Building C as depicted in the sketch (Appendix A). Subject to the recommended conditions of approval, Variance 1 is considered to be desirable for the appropriate development of the land.

Variance 2 is requested to permit the proposed site conditions for 541 parking spaces whereas the by-law requires a minimum of 587 parking spaces for the subject property. The site design and proposed additional buildings to the northeast and northwest corners of the site results in a reduced number of parking spaces. Moreover, approximately 4,227 sq. m. of the building's gross floor area are proposed commercial buildings. Through the review of the site plan application and aforementioned parking study, staff are of the opinion that the vehicle parking for the users of the site (employees and guests) can be sufficiently accommodated with the 541 parking spaces shown on the provided site plan. A condition of approval is recommended that the owner finalize site plan approval under City File SPA-2021-0011, execute a site plan agreement, and post any required financial securities and insurance to the satisfaction of the Director of Development Services. Subject to the recommended conditions of approval, Variance 2 is appropriate for the development of the land.

4. Minor in Nature

The variance requested to permit a motor vehicle repair shop is in conjunction with the proposed commercial development. The variance to permit the vehicle repair use is not considered to significantly impact the use of the site and will continue to maintain the existing commercial and industrial area and employment function of the property. Subject to the recommended conditions of approval, Variance 1 is considered to be minor in nature.

The proposed parking reduction represents less than 10% of the overall parking requirement for the property. The proposed variance is not anticipated to negatively impact the daily function and operation of the subject property or adjacent properties. Through the review of the Traffic/ Parking study submitted by Tranplan Associates, City Traffic Staff find that sufficient parking will be provided for both staff and visitors for the commercial development. Subject to the recommended conditions of approval, Variance 2 is considered to be minor in nature.

Respectfully Submitted,

<u>Rajvi Patel</u>

Rajvi Patel, Assistant Development Planner



Appendix A – Proposed Motor Vehicle Repair Use



Appendix B – Existing Site Conditions









Appendix C – Parking Study prepared by Tranplan Associates, dated December 28, 2022





December 28, 2022

Mr. Sandro Soscia Soscia Professional Engineers Inc. 10376 Yonge St., Unit 307 Richmond Hill, Ontario L4C 3B8

Dear Mr. Soscia

Re: Addendum to Traffic/Parking Study, 1 Gateway Boulevard Commercial Development Revised Site Plan Retaining Existing Banquet Hall Building City of Brampton

1. INTRODUCTION

Tranplan Associates ("Tranplan") completed two studies for two different development concepts for the subject development site at 1 Gateway Boulevard in the City of Brampton (see **Exhibit 1.1** – *Key Map*). The first study was dated April 2017 and the proposed development plan consisted of a new banquet facility replacing an existing banquet hall, a *New Hotel* and the completion of the last phase of *Retail/Commercial Buildings*. Subsequently the study was updated in December 2020¹ to deal with revisions to the site plan that eliminated the proposed *Hotel* and *Banquet Facility* and replaced them with a series of commercial buildings.

At this time, the owners are proposing an interim site plan that retains the existing banquet hall until such time as it ceases to operate. The interim development plan for the site now includes the following (see **Exhibit 1.2** – *Proposed Site Plan*):

- Office building approximately 4,703.7 m² (existing)
- Office/Retail building, approximately 1,476 m² (existing)

¹ Updated Traffic and Parking Study Report dated December 2020 was submitted to the approving agencies and included in this addendum, for reference, in **Technical Appendix A**. Also contained in the updated report was the original Traffic and Parking Study Report prepared by Tranplan Associates "Gateway Commercial Development, SW Quadrant Queen Street East/Gateway Boulevard", prepared for Soscia Professional Engineers dated April 2017, (as Appendix A) was submitted to the approving agencies as part of the Development's First Submission.

Exhibit 1.1: Key Map



Exhibit 1.2: Proposed Site Plan





- Retail building, approximately 850.6 m² (existing)
- Banquet Hall, approximately 2,225 m² (existing)
- Mixed use building, approximately 961.9 m² (new)
- Mixed use building, approximately 924.2 m² (new)
- Mixed use building, approximately 2,066.34 m² (new)

The study site will continue to be served by existing driveways on Queen Street East and on Gateway Boulevard as well as the access driveways on Summerlea Road where three existing driveways will be consolidated into two driveways (see **Exhibit 1.2** – *Proposed Site Plan*).

The study team was advised by the City to update the December 2020 study to reflect the changes in the proposed development. This report provides updated trip generation forecasts for the study site and reviews the traffic and parking impacts due to the revised development plan.

2. TRAFFIC FORECASTS and OPERATIONS ANALYSIS

Traffic volume forecasts and the analysis of traffic impacts of the proposed development was documented in detail in the 2017 and 2020 study reports for the previous development plans. The December 2020 report entitled "*1 Gateway Boulevard Commercial Development, SW Quadrant Queen Street East/Gateway Boulevard, Updated Traffic and Parking Study*" contained the following:

- a description of the study are area road network and site context;
- the scope of the study including analysis scenarios, study area, analysis assumptions and methodology;
- traffic volume forecasts (including existing traffic, area growth, site traffic, and future total traffic volumes); and
- traffic operations analyses undertaken on the area road network.

The current interim development plan has a modest increase in the total gross floor area (approximately 50 sq. m.) compared to the 2020 plan. However, due to



the nature of the banquet hall's operation characteristics, with mainly evening and weekend activities, the actual site traffic forecast is modestly lower than the previous 2020 plan. The trip generation summary table (**Table 2.1**) provides the site-generated trips for the two development concepts.

Trip Generation for 5 Future Buildings (Removal of Exisiting Banquet Building)												
	WEEKDAY AM PEAK HOUR				WEEKDAY PM PEAK HOUR				SATURDAY MID-DAY PEAK HOUR			
LAND USE	Trip Generation Rate	١	/ehicle Trip	s	Trip Generation Rate	١	/ehicle Trip	s	Trip Generation Rate	Trip Generation Rate Vehicle Trips		s
	Description Total In Out Description Total In		In	Out	Description	Total	In	Out				
Mixed Use Building (3 Existing Buildings Total 75,680 ft ²)	Observed Rate 3.81 trips per 1,000 GFA	288	73% 210	27% 78	Observed Rate 3.99 trips per 1,000 GFA	302	50% 151	50% 151	Observed Rate 4.03 trips per 1,000 GFA	305	48% 147	52% 158
Mixed Use Building (5 Future Buildings Total 56,280 ft ²)	Observed Rate		73%	27%	Observed Rate		50%	50%	Observed Rate		48%	52%
	3.81 trips per 1,000 GFA	215	156	58	3.99 trips per 1,000 GFA	225	112	112	4.03 trips per 1,000 GFA	227	110	110
TOTAL		503	366	136		527	263	263		532	257	268
Trip Generation for 3 Future Buildings (Maintain Exisiting Banquet Building)												
	WEEKDAY AM PEAK HOUR			WEEKDA	Y PM PEAK	HOUR		SATURDAY MID-DAY PEAK HOUR				
LAND USE	Trip Generation Rate	١	/ehicle Trip	s	Trip Generation Rate	١	/ehicle Trip	s	Trip Generation Rate Vehicle Trips			s
	Description	Total	In	Out	Description	Total	In	Out	Description	Total	In	Out
Mixed Use Building	Observed Rate				Observed Rate				Observed Rate			
(3 Existing Buildings Total 75,680 ft ²)			73%	27%			50%	50%			48%	52%
	3.81 trips per 1,000 GFA	288	210	78	3.99 trips per 1,000 GFA	302	151	151	4.03 trips per 1,000 GFA	305	147	158
Banquet Hall Building (Existing Building Total	Observed Rate		67%	33%	Observed Rate		88%	12%	Observed Rate		79%	21%
24,000 ft)	0.12 trips per 1,000 GFA	3	2	1	1.48 trips per 1,000 GFA	36	32	4	2.17 trips per 1,000 GFA	53	42	11
Mixed Use Building	Observed Rate				Observed Rate				Observed Rate			
(3 Future Buildings Total 42,544 ft ²)	2 81 tring nov 1 000		73%	27%	2 00 tring nov 1 000		50%	50%	4 02 tring nov 1 000		48%	52%
	GFA	162	118	44	GFA	170	85	85	GFA	171	83	89
TOTAL		453	330	123		508	268	240		529	272	258
Difference		-50	-36	-13		-19	5	-23		-3	15	-10

Table 2.1: Projected Trip Generation by Proposed Development

Note: Numbers do not add up exactly due to rounding

The revised trip generation forecasts indicate that maintaining the existing banquet hall building will result in lower peak hour trips for the site. The changes in the proposed development will generate approximately 50 less trips in the AM peak hour, 19 less trips in the PM peak hour and 3 less trips in the Saturday Mid-day peak hour.

Given that the forecasts for the current development are lower than the December 2020 submission and the extensive traffic operations assessment undertaken as part of the earlier submissions (see **Appendix A**), it is concluded that the site traffic from the current interim development plan can be accommodated on the area road network based on the following findings from the previous analysis:



- The additional traffic from the study site added very little additional delay to the Queen Street East and Gateway Boulevard intersection. The intersection capacity analyses indicated that the additional site traffic will add approximately 2 seconds of delay at the intersection during the AM peak hour and less than one second of delay during the PM and Saturday peak hours. As well, there is only a very minor incremental increase in the volume/capacity ratio to the critical movements at the intersection.
- The impact of the additional site traffic on the adjacent road network is very minor and no mitigation measures are required to support the proposed additional commercial buildings on site.
- All movements at the site entrance driveways are forecast to operate at acceptable Levels of Service with minor additional delays. These results indicate there is residual capacity to accommodate traffic growth in the future. No mitigation measure will be required to support the additional traffic resulting from the proposed development.

3. PARKING REQUIREMENTS

The study site was initially required to provide 1 parking space per 19 m² of GFA for all uses on site. Subsequently, the study site was granted a revised parking rate of 1 parking space per 23 m² of GFA for all uses on site based on the latest Zoning update. The revised site plan with all existing buildings and the addition of three commercial buildings will result in a total GFA of 13,208.38 m². At 1 parking space per 23 m² of GFA, the site would require 574 parking spaces. The revised site plan shows 531 spaces, a shortfall of 43 spaces.

The previous studies' findings (see **Appendix A**), based on the observed normal peak parking demand and based on ITE's parking demand rates for the Shopping Centre land use for a suburban/urban location, indicated that the study site can operate well with the proposed 531 parking spaces for the study site. The following table provides a summary of the site's parking



requirements based on the observed peak demand rates (site surveys) supplemented by the parking rates published in the current ITE *Parking Generation Manual* (5th Edition) using the Shopping Centre (LU 820) land use.

		•
Source	Parking Rate	No. of Spaces Required for 13,208.38 m ² (142,175 ft ²) Commercial GFA
City of Brampton Approved Rate for Study Site	1 space per 23 m ²	574 spaces
Observed Peak (No Event) Demand Rate	0.49 space per 23 m ²	282 spaces
Observed Peak (Event) Demand Rate	0.74 space per 23 m ²	425 spaces
ITE Average Rate*	2.91	414 spaces
ITE 85 th Percentile Rate*	3.74	531 spaces
ITE Fitted Curve Equation Rate*	P=2.78(X) + 39.26	435 spaces
95% Confidence Interval*	2.72 - 3.10	387 spaces – 441 spaces

Table 3.1: Summary of Parking Requirements

*Rates provided are for Saturday, based on parking spaces per 1,000 ft2 GFA and may not add up due to rounding. For parking requirements, the rounding is to the higher number.

The ITE data indicates that with 531 parking spaces the proposed development would meet the 85th percentile rate of the 58 shopping centres included in the ITE data base.

Furthermore, the parking surveys conducted at the study site (as well as at the proxy sites) had indicated that sites with multiple uses that include retail/commercial and a banquet facility, show a lower peak demand for parking. The different uses tend to have different peak demand times. The retail peaks on Saturday during the day, while the office/commercial uses peak during a weekday afternoon and the banquet hall peaks on a Saturday evening. The combined peak during a weekday afternoon is lower than the peak that a single use would produce.

Based on this analysis, it is concluded the proposed 531 parking spaces are sufficient to support all uses proposed on site.



If you should require further information on the study, please do not hesitate to contact us at your convenience.

Yours truly,

Seo-Wook Im, B.E.S.

Senior Transportation Planner

TECHNICAL APPENDIX

APPENDIX A: Tranplan December 2020 Study



1 Gateway Boulevard Commercial Development

SW Quadrant Queen Street East/ Gateway Boulevard

City of Brampton

Updated Traffic Impact & Parking Study

Prepared by: **Tranplan Associates Inc.** Toronto 416-670-2005 Sudbury 705-522-0272 Peterborough 705-874-3638 www.tranplan.com

Prepared for: Monterey Park Holdings Inc.

December, 2020





December 7, 2020

Mr. Sandro Soscia Soscia Professional Engineers Inc. 10376 Yonge St., Unit 307 Richmond Hill, Ontario L4C 3B8

Dear Mr. Soscia

Re: Traffic/Parking Study for 1 Gateway Boulevard Commercial Development, City of Brampton

As requested, please find enclosed our updated report on the traffic and parking study for the proposed development at the property, 1 Gateway Boulevard, in the City of Brampton. In 2017, Tranplan Associates Inc. (Tranplan) was retained by Monterey Park Holdings Inc. through Soscia Professional Engineers Inc. to prepare a Traffic Impact/Parking Study dealing with the proposed replacement of the existing banquet hall with a new 2-storey banquet hall, along with a 5-storey hotel (80 rooms) and two 2-storey mixed use buildings. Due to a changing economy and further heightened by the uncertainties under COVID-19 travel and indoor gathering restrictions, the plans for a new banquet hall and hotel have been cancelled.

The property owner has revised the proposal to replace the existing banquet hall with a series of commercial buildings. A total of five new, multi-unit, single-storey commercial buildings are being proposed on the western portion of the property. The three existing two-storey and three-storey commercial buildings on the eastern half of the site are to remain.

This Study is an update of our Study dated April 26, 2017. The 2017 study dealt with traffic impacts and parking requirements for the previous development plan based on the City's Terms of Reference. The updated traffic study has assessed the impact of the new development plan in 2025 using the 2017 study's base traffic volumes and assumptions. The updated parking study developed site specific parking requirements based on parking survey results previously conducted at the study site and on ITE Parking Generation Manual rates for Shopping Centres. Due to COVID-19 travel and indoor gathering restrictions, new proxy site surveys could not be carried out.



We found that the additional traffic from the proposed development will have no significant impact on the delays and queuing at the study intersections, although some movements at the Queen/Gateway intersection are operating at capacity due to general growth in road network volumes. There is some room for improving the operation of the Queen/Gateway intersection by adjusting the signal timing plan, but any changes in the signal timing plan by the Region of Peel should be done by looking at the corridor, not just this one intersection.

Based on the parking demand analysis (observed peak demand on site and ITE Parking Generation Manual rates), the proposed 530 parking spaces (0.82 spaces per 19 m² GFA or approximately 1 space per 23 m² GFA) are sufficient to support the peak parking demands of all uses proposed on site.

If you should require further information on the study, please do not hesitate to contact us at your convenience.

Yours truly,

Seo-Woon Im, B.E.S. Senior Transportation Planner

Reviewed By



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1. INTRODUCTION and BACKGROUND

In 2017, the above noted application was filed to replace the existing banquet hall with a new 2-storey banquet hall, along with a 5-storey hotel (80 rooms) and two 2-storey mixed use buildings. Since then, due to a changing economy, and further hampered by the COVID-19 pandemic, the plans for a new banquet hall and hotel have been cancelled.

In coping with the changing economy, the property owner has revised the development proposal to replace the existing banquet hall with a series of commercial buildings. A total of five new, multi-unit commercial buildings are being proposed on the western portion of the property. The three existing two-storey and three-storey commercial buildings on the eastern half of the site are to remain.

Tranplan Associates ("Tranplan") provided traffic and parking assessments in a Traffic and Parking Study Report¹ (see **Appendix A**) for a development concept to replace the existing *Banquet Facility* with a *New Banquet Facility*, a *New Hotel* and complete the last phase of the *Retail/Commercial Buildings* to be located at 1 Gateway Boulevard, in the City of Brampton, Regional Municipality of Peel (see **Exhibit 1.1** – *Key Map*) in April 2017. Since then, the development concept has been revised to eliminate the proposed *Hotel* and *Banquet Facility* uses from the study site and now includes the following (see **Exhibit 1.2** – *Proposed Site Plan*):

- Office building approximately 4,703.7 m² (existing)
- Office/Retail building, approximately 1,476 m² (existing)
- Retail building, approximately 850.6 m² (existing)
- Mixed use building, approximately 961.9 m² (new)
- Mixed use building, approximately 924.2 m² (new)
- Mixed use building, approximately 860.0 m² (new)

¹ A Traffic and Parking Study Report prepared by Tranplan Associates "Gateway Commercial Development, SW Quadrant Queen Street East/Gateway Boulevard", prepared for Soscia Professional Engineers dated April 2017, was submitted to the approving agencies as part of the Development's First Submission.

Exhibit 1.1: Key Map



Exhibit 1.2: Proposed Site Plan



Williamster Updated Traffic Impact and Parking Study, Gateway Commercial Development, City of Brampton, December 2020



- Mixed use building, approximately 1,151.2 m² (new)
- Mixed use building, approximately 1,340.5 m² (new)

The study site will continue to be served by the driveways on Queen Street East and on Gateway Boulevard as well as the access driveways on Summerlea Road (three existing driveways will be consolidated into two driveways, see **Exhibit 1.2** – *Proposed Site Plan*).

The study team was advised by the City to update the April 2017 study to reflect the changes in the proposed development. This study provides updated intersection capacity analysis (based on existing lane configurations and traffic controls and baseline traffic volumes, see **Exhibit 2.1** and **Exhibit 2.2**) for 2025 planning horizon and updated the parking requirements for the study site based on the revised uses proposed on site.

Exhibit 2.1: Existing Traffic Control and Lane Configurations



Exhibit 2.2: Existing Traffic Volumes





2. TRAFFIC FORECASTS

2.1 Future Background Traffic Volume

Background traffic is defined as all traffic within the study area that is not related to the proposed development. For this updated study analyses, the study assumed a growth of 2.0% per annum to the 2025 planning horizon on Queen Street East and 1% per annum growth on Gateway Boulevard through the study area. The resulting 2025 peak hour background traffic are illustrated in **Exhibit 2.3**.

2.2 Site Traffic Generation

Trip generation summary table (**Table 2.1**) describes the forecasts of sitegenerated trips added to the existing traffic from the current uses taking place on the study site. The changes in the proposed development will generate approximately 503 two-way trips in the AM peak hour, 527 two-way trips in the PM peak hour and 532 two-way trips in the Saturday Mid-day peak hour.

Table 2.1: Projected	Trip Generation by	Proposed Develop	oment
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	WEEKDA	Y AM PEAK HOUR			WEEKDA	ҮРМ РЕАК	HOUR		SATURDAY MID-DAY PEAK HOUR			
LAND USE	Trip Generation Rate		Vehicle Trip	s	Trip Generation Rate	١	Vehicle Trips T		Trip Generation Rate	V	/ehicle Trip	s
	Description	Total	In	Out	Description	Total	In	Out	Description	Total	In	Out
Mixed Use Building	Observed Rate				Observed Rate				Observed Rate			
(3 Existing Buildings Total 75,680 ft ²)			73%	27%			50%	50%			48%	52%
	3.81 trips per 1,000 GFA	288	210	78	3.99 trips per 1,000 GFA	302	151	151	4.03 trips per 1,000 GFA	305	147	158
Mixed Use Building	Observed Rate				Observed Rate				Observed Rate			
(5 Future Buildings Total 56,380 ft ²)			73%	27%			50%	50%			48%	52%
	3.81 trips per 1,000 GFA	215	156	58	3.99 trips per 1,000 GFA	225	112	112	4.03 trips per 1,000 GFA	227	110	118
TOTAL		E03	266	126		F07	262	262		E22	257	276

Note: Numbers do not add up exactly due to rounding; While pass-by trips could have been considered, the future traffic forecast based on existing trip patterns include pass-by trips and thus not separated.

2.3 Future Total Traffic Volume

Future total peak hour traffic volumes were computed by adding the future increase in site-generated traffic from the proposed development, re-distribution of the existing traffic to the future background traffic volumes. The resulting peak hour volumes for the study intersections and at the site entrance

Exhibit 2.3: 2025 Background Traffic Volumes





driveways are illustrated in Exhibit 2.4, Exhibit 2.5 and in Exhibit 2.6.

2.4 Traffic Volume Analysis/Intersection Capacity Analysis

The future background and future total peak hour traffic volumes were assessed against the capacity of the study area intersections in terms of Level of Service² and volume/capacity ratios using the Highway Capacity Manual reports produced by *Trafficware Traffic Signal Timing Software - Synchro Version 9.0*. The results are summarized in **Table 2.2** Summary of Intersection Analysis: Background and in **Table 2.3** Summary of Intersection Analysis: Total. Detailed reports from the analysis are contained in **Appendix B:** *Synchro Intersection Capacity Analysis*.

2025 Future Background Conditions

Under the future background traffic levels, the Queen Street East/Gateway Boulevard signalized intersection is forecast to operate at an overall intersection average of LOS "D" with delay of approximately 43 seconds, LOS "E" with delay of approximately 57 seconds and LOS "C" with delay of approximately 32 seconds during AM, PM and Saturday Mid-Day peak hours, respectively.

The critical movements, the eastbound and westbound through movements are forecast to operate at or over capacity during AM and PM peak hours, respectively. The eastbound left turn lane is also forecast to operate at over capacity during the PM peak hour. The decline in the Level of Service for the critical movements are a result of the continued growth in the background traffic of the road network growth. The overall intersection average Level of Service indicates that the current signal timing plan provides acceptable Levels

² Level of Service is commonly used in traffic engineering to describe the level of congestion along a roadway or at an intersection. Levels from "A" to "F" denote increasing amounts of congestion with "F" representing a complete breakdown in traffic flow. Level of Service "C" and "D" are commonly used as design standards. However, many individual turning movements at TWSC intersections and commercial entrances along urban arterial corridor operate at LOS "F" during peak periods.

Exhibit 2.4: Site Traffic Distribution



Exhibit 2.5: New Site Traffic Volumes



Exhibit 2.6: 2025 Total Traffic Volumes





of Service for the intersection by balancing the green time required for the intersection to operate optimally.

The site entrance driveway on Gateway Boulevard is forecast to continue to operate well with the critical movements associated with the vehicles leaving the study site (eastbound traffic). It is forecast to operating at LOS "C" with delay of approximately 22 seconds and v/c ratio at 0.33 during the critical PM peak hour period. All movements at the site entrance driveways on Summerlea Road and the right-in right-out driveway on Queen Street East operate at acceptable Level of Service with minor delays.

	2025 Future Background												
Intersection		A	M Peak			PI	VI Peak			SAT Midday Peak			
Gateway Blvd/Chrysler Dr &	1.05	Dolay	95th	vlc	1.05	Dolay	95th	vlc	105	Dolay	95th	vlc	
Queen St E (Signalized)	103	Delay	Queue	v/t	103	Delay	Queue	v/t	103	Delay	Queue	v/c	
EB-L	D	44.3	#40.5	0.70	F	119.8	#62.9	1.04	D	36.2	36.0	0.66	
EB-T	E	57.3	#219.9	1.01	С	31.2	159.3	0.79	D	35.3	174.6	0.87	
EB-R	Α	7.3	20.5	0.25	Α	2.9	8.6	0.15	Α	0.2	0.0	0.06	
WB-L	E	62.4	#42.2	0.80	С	21.6	12.5	0.38	С	28.3	19.5	0.50	
WB-T	D	37.2	128.6	0.78	Е	89.8	#270.1	1.11	С	34.6	126.3	0.77	
WB-R	Α	5.1	14.5	0.27	Α	8.4	29.4	0.36	Α	0.6	0.0	0.18	
NB-L	С	26.8	23.1	0.32	D	44.4	#64.9	0.69	С	29.4	31.0	0.28	
NB-TR	В	15.2	11.5	0.09	С	32.9	89.0	0.64	В	12.1	16.4	0.20	
SB-L	D	49.9	#108.5	0.74	F	112.8	#88.8	0.99	D	48.2	63.6	0.59	
SB-T	С	33.5	66.0	0.42	С	34.8	29.3	0.20	С	33.8	11.0	0.06	
SB-R	В	14.3	34.6	0.41	Α	5.5	10.9	0.27	Α	1.0	0.0	0.22	
Overall	D	42.5			E	56.7			С	32.0			
Site Entrance & Queen St E	1.05	Delay	95th	vla	1.05	Delay	95th	/c	105	Delay	95th	vla	
(TWSC)	103	Delay	Queue	v/c	LUS	Delay	Queue	v/t	103	Delay	Queue	v/c	
NB - R	С	16.0	1.7	0.07	В	14.4	1.1	0.04	В	14.4	0.6	0.03	
Gateway Blvd & Site			OFth				OFth				0544		
Entrance/Commerical Driveway	LOS	Delay	950	v/c	LOS	Delay	950	v/c	LOS	Delay	950	v/c	
(TWSC)			Queue				Queue				Queue		
EB-LTR	В	14.5	4.1	0.15	С	21.8	11.4	0.33	В	12.5	6.4	0.21	
WB-LTR	В	10.3	1.0	0.04	С	15.6	3.2	0.12	Α	9.3	1.1	0.04	
NB-L	Α	1.6	0.3	0.01	Α	0.1	0.1	0.00	Α	0.4	0.1	0.00	
SB-L	Α	1.1	0.6	0.03	Α	1.0	0.4	0.02	Α	4.3	0.7	0.03	
Gateway Blvd & Summerlea	1.05	Delay	95th	vla	1.05	Delay	95th	/c	105	Delay	95th	vla	
Rd/Walker Dr (AWSC)	103	Delay	Queue	v/c	LUS	Delay	Queue	v/t	103	Delay	Queue	v/c	
EB - LTR	Α	9.3	-	0.11	В	12.9	-	0.42	Α	7.5	-	0.05	
WB - LTR	Α	8.9	-	0.16	С	21.7	-	0.77	Α	7.0	-	0.11	
NB-LTR	Α	8.4	-	0.01	Α	10.0	-	0.02	Α	7.4	-	0.00	
SB-LT	В	16.3	-	0.63	В	12.4	-	0.32	Α	7.3	-	0.04	
Summerlea Rd & Site Entrance	1.05	Deleu	95th		1.05	Dalau	95th		105	Dalau	95th		
EAST (TWSC)	LUS	Delay	Queue	V/C	LUS	Delay	Queue	V/C	LOS	Delay	Queue	v/c	
EB - LT	Α	0.2	0.0	0.00	Α	0.0	0.0	0.00	Α	0.7	0.0	0.00	
SB - LT	Α	10.0	1.3	0.05	В	11.3	1.7	0.07	Α	8.9	0.8	0.03	
Summerlea Rd & Site Entrance	1.05	Deleu	95th		1.05	Dalau	95th		105	Dalau	95th		
MID (TWSC)	LUS	Delay	Queue	V/C	LUS	Delay	Queue	V/C	LUS	Delay	Queue	v/c	
EB - LT	Α	0.2	0.0	0.00	Α	0.0	0.0	0.00	А	0.7	0.0	0.00	
SB - LT	Α	9.2	0.1	0.00	Α	9.7	0.1	0.00	А	8.6	0.0	0.00	
Summerlea Rd & Site Entrance	1.00	Dala	95th	1.	1.00	Dulu	95th	1.	1.00	Dulu	95th	1.	
WEST (TWSC)	LOS	Delay	Queue	v/c	LOS	Delay	Queue	v/c	LOS	Delay	Queue	v/c	
EB - LT	Α	0.2	0.0	0.00	Α	0.0	0.0	0.00	А	0.6	0.0	0.00	
SB - LT	Α	9.4	0.1	0.00	В	10.0	0.1	0.00	Α	8.6	0.0	0.00	

Table 2.2: Summar	y of Intersection Ar	nalysis: Background
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NOTE: Delay in seconds; 95th percentile queue in metres as provided in Synchro output, #95th percentile queue exceeds capacity, queue may be longer, see Appendix B


2025 Future Total Conditions

	2025 Total Conditions											
Intersection		A	M Peak		PM Peak			SAT Midday Peak				
Gateway Blvd/Chrysler Dr & Queen St E (Signalized)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB-L	D	44.1	#40.3	0.69	F	119.8	#62.9	1.04	С	34.6	34.7	0.65
EB-T	Е	58.4	#221.6	1.01	С	31.9	164.5	0.81	D	37.8	175.9	0.90
EB-R	Α	7.5	22.8	0.27	Α	3.8	11.5	0.17	Α	0.2	0.0	0.08
WB-L	F	99.6	#56.9	0.98	С	27.3	16.7	0.49	D	35.9	#29.0	0.60
WB-T	D	37.2	128.6	0.78	F	89.8	#270.1	1.11	С	33.4	126.3	0.73
WB-R	Α	5.1	14.5	0.27	Α	9.1	31.5	0.36	Α	0.6	0.0	0.18
NB-L	С	30.7	28.4	0.44	D	54.4	88.2	0.81	С	32.4	41.4	0.40
NB-TR	В	14.4	13.0	0.11	С	33.7	94.1	0.67	В	12.3	19.0	0.24
SB-L	Е	56.1	#110.5	0.80	F	134.7	#91.9	1.07	D	51.1	64.4	0.63
SB-T	С	35.5	72.3	0.48	D	35.2	33.3	0.23	С	34.0	15.3	0.09
SB-R	В	14.6	34.6	0.43	Α	5.5	10.9	0.27	A	1.1	0.0	0.22
Overall	D	44.2			E	57.4			С	32.8		
Site Entrance & Queen St E (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
NB - R	С	16.4	2.6	0.10	С	15.5	3.8	0.14	В	14.6	1.1	0.04
Gateway Blvd & Site Entrance/Commerical Driveway (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB-LTR	С	18.6	9.9	0.30	D	30.7	25.9	0.56	В	14.8	13.5	0.37
WB-LTR	В	10.2	1.0	0.04	С	15.7	3.3	0.12	Α	9.3	1.1	0.04
NB-LT	Α	2.0	0.4	0.02	Α	0.2	0.2	0.01	Α	0.8	0.1	0.01
SB-LT	Α	1.1	0.6	0.03	Α	1.0	0.4	0.02	Α	4.3	0.7	0.03
Gateway Blvd & Summerlea Rd/Walker Dr (AWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	Α	9.4	-	0.12	В	13.5	-	0.45	Α	7.7	-	0.09
WB - LTR	Α	9.3	-	0.20	С	24.4	-	0.81	Α	7.2	-	0.13
NB-LTR	Α	8.5	-	0.01	В	10.2	-	0.02	Α	7.5	-	0.00
SB-LT	В	17.0	-	0.64	В	12.7	-	0.34	Α	7.5	-	0.04
Summerlea Rd & Site Entrance EAST (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LT	Α	0.6	0.1	0.00	Α	0.1	0.1	0.00	Α	1.7	0.0	0.00
SB - LT	В	10.1	1.6	0.06	В	11.6	2.5	0.10	Α	9.1	1.9	0.07
Summerlea Rd & Site Entrance WEST (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LT	Α	0.2	0.0	0.00	Α	0.0	0.0	0.00	Α	0.5	0.0	0.00
SB - LT	Α	9.5	0.1	0.00	В	10.1	0.1	0.00	А	8.6	0.0	0.00

 Table 2.3:
 Summary of Intersection Analysis:
 Total

NOTE: Delay in seconds; 95th percentile queue in metres as provided in Synchro output, #95th percentile queue exceeds capacity, queue may be longer, see Appendix B

Under the future total traffic levels (proposed additional site traffic added to the forecast background traffic), the Queen Street East and Gateway Boulevard signalized intersection is forecast to operate at an overall intersection average of LOS "D" with delay of approximately 44 seconds, LOS "E" with delay of approximately 57 seconds and LOS "C" with delay of approximately 33 seconds during AM, PM and Sat Mid-Day peak hours, respectively. Similar to the 2025 background analysis, the critical movements, the eastbound and westbound through movements are forecast to continue to operate at poor LOS during AM and PM peak hours, respectively. The eastbound left turn lane



is also forecast to continue to operate at very poor LOS during the PM peak hour.

The proposed site traffic adds very little additional delay through the Queen Street East and Gateway Boulevard intersection. The intersection capacity analyses indicate that the additional site traffic will add approximately 2 seconds delay at the intersection during the AM peak hour and less than one second delay during PM and Saturday peak hours. As well, there is a minor incremental increase in the volume/capacity ratio to the critical movements at the intersection.

The site entrance on Gateway Boulevard is forecast to continue to operate well with the critical movements associated with the vehicles leaving the study site (eastbound traffic). It is forecast to operating at LOS "D" with delay of approximately 31 seconds and v/c ratio at 0.56 during the critical PM peak hour period. All movements at the site entrance driveways on Summerlea Road and the right-in right-out driveway on Queen Street East are forecast to operate at acceptable Level of Service with minor delays. These results indicate there is residual capacity to accommodate traffic growth in the future. No mitigation measure will be required to support the additional traffic resulting from the proposed development.



3. PARKING REQUIREMENTS

The study site is currently approved to provide 1 parking space for every 19 m² of GFA for all uses on site. There are 701 parking spaces currently provided for use on site for total of 9,955.9 m² of GFA distributed in four different buildings on site requiring 488 parking spaces. The revised site plan shows removal of the banquet facility building and additions of five one-storey commercial buildings, similar to the existing commercial buildings on site, for a total GFA of 12,268.74 m² (132,059.5 ft²) of floor spaces on site. Based on currently approved parking requirement, the study site would require 646 parking spaces. The revised site plan shows 530 spaces.

Determining the number of parking spaces for the study site could be done in several ways. The most common approach for selecting a minimum standard is to collect data on the peak daily parking demand for a number of sites or the same site for a number of days and plot the cumulative distribution and recommend selecting the parking ratio that corresponds to the 85th percentile accumulation. However, the COVID-19 Pandemic "Stay-At-Home" lock-down which began in March 2020 and the gradual easing and on-and-off travel restrictions, have impacted the operations of non-essential services, especially when and how the businesses could operate. Since the normal travel to a commercial plaza could not take place, an observation at any proxy site to determine a "normal" peak parking demand was not a realistic option for this update study.

The proposed development is proposing a new parking supply rate for the entire site. The new rate is developed based on the existing normal peak parking demand observed at the study site and adjusted by comparing it to the parking rates found in ITE *Parking Generation Manual* for the Shopping Centre land use (LU 820).



3.1 Analysis of Existing Parking Demand

Parking Survey at the Study Site

The amount of parking available at the study site and the actual usage was surveyed using video recording devices to record the parking lot activities on Friday December 9 and on Saturday December 10, 2016 for 24 hours each day. The data observed at the site is summarized in **Exhibit 3.1:** Observed Parking Lot Occupancy and detail tabulations of the survey data are provided in **Appendix C:** Parking Survey Data.

To determine the peak parking demand, the number of parked vehicles on site was observed every 30 minutes. The survey results indicate that existing uses on site have two distinct peak periods, a weekday PM peak period during nonevent day for the banquet facility and a Saturday evening peak period resulting from events taking place at the banquet facility. **Exhibit 3.1** illustrates that average weekday peak parking demand occurs between 11 AM and 4 PM (peak demand of 182 spaces at 3:00 PM) and the Saturday peak parking demand at the study site occurred during the evening between 6:00 PM and 10:00 PM (peak demand of 310 spaces at 8:00 PM). Since the banquet facility building will be removed from the site and be replaced with a non-banquet/event commercial/retail building (comparable to existing commercial/retail buildings on site), the parking analysis provided henceforth is based on parking survey observations/results based on non-banquet event period.

The **Table 3.1** describes the normal peak parking demand parking occupancy at the study site.

	1 Gateway Boulevard
Existing GFA (excluding Banquet Facility Building)	7,030.9 m² / 75,679.9 ft²
Observed Number of Peak Parking Spaces	182 spaces
Peak Demand Rate per 19 m ² /1,000 ft ²	0.49 per 19 m ² / 2.40 per 1,000 ft ²

Table 3.1: Observed Normal Peak Parking Demand





Existing Demand by ITE Parking Generation 5th Edition

The *ITE Parking Generation Manual* provides parking demand data for several commercial/retail land-uses, along with a shopping centre parking demand rate (see **Appendix D** for the relevant page from the ITE document for Shopping Centre land use). The parking generation relationships taken from the current ITE *Parking Generation Manual* using the Shopping Centre land use for General Urban/Suburban locations, is summarized in **Table 3.2**.

Parking Rate	Peak Demand per 1,000 ft ² GFA	No. of Spaces Required by 75,679.9 ft ² Commercial GFA
Average Rate (Saturday)	2.91	221 spaces
85 th Percentile Rate (Saturday)	3.74	283 spaces
Fitted Curve Equation Rate (Saturday)	P=2.78(X) + 39.26	250 spaces
95% Confidence Interval (Saturday)	2.72 – 3.10	206 spaces - 235 spaces

Table 3.2: ITE Parking Generation – Shopping Centre

*May not add up due to rounding. For parking requirements, the rounding is to the higher number.

In summary, it indicates that comparing the observed normal peak parking demand against the ITE peak parking demand rates for Shopping Centre land use, the observed rate falls below the average rate found in the ITE studied survey sites (28 studies).

3.2 Analysis of Future Parking Requirement

The projected parking demand at the study site as a result of the proposed additions will consist of the current demand (less demand from the banquet facility) plus from the proposed additional commercial buildings proposed at the study site. The future demand for the proposed additional buildings can be assessed by applying the current normal peak demand rate, supplemented by the ITE Parking Generation Shopping Centre land use rates to justify the number of parking spaces proposed at the study site. The **Table 3.3** provides a



summary of parking requirements for the study site.

Source	Parking Rate	No. of Spaces Required for 12,268.74 m ² / 132,059.9 ft ² Commercial GFA	
City of Brampton Approved Rate for	1 space per 19 m ²	646 spaces	
Study Site			
Observed Peak	0.49 per 19 m ² /	318 snaces	
Demand Rate	2.40 per 1,000 ft ²	510 spaces	
ITE Average Rate	2.91	385 spaces	
ITE 85 th Percentile	3 74	494 snaces	
Rate	5.7 4		
ITE Fitted Curve Equation Rate	P=2.78(X) + 39.26	407 spaces	
95% Confidence Interval	2.72 – 3.10	360 spaces - 410 spaces	

Table 3.3: Future Parking F	Requirement at the	Study Site
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*May not add up due to rounding. For parking requirements, the rounding is to the higher number.

Based on the observations of the existing commercial/retail activities taking place on site, it indicates that the study site operating additional commercial/retail buildings on site can meet the normal peak demand with parking supply of 318 spaces. The parking demand forecast based on the parking generation relationships taken from the current ITE *Parking Generation Manual* using the Shopping Centre land use indicates that the study site can provide between 360 spaces and 410 spaces to meet the normal peak demand. To account for peaking variations not observed during the parking survey, and for planning forecast to provide higher Levels of Service, 494 parking spaces on site would represent the 85th percentile rate the current ITE *Parking Generation Manual* using the Shopping Centre land use for General Urban/Suburban locations.

While the proposed 530 parking spaces provided for the study site is shortfall of 116 spaces from the currently approved parking supply rate for the study site, based on the observed normal peak parking demand and based on ITE's parking demand rates for the Shopping Centre land use for a suburban/urban location, the study parking demand analysis indicates that the study site can operate well with the proposed 530 parking spaces for the study site.



4. CONCLUSIONS AND RECOMMENDATIONS

This updated traffic impact and a parking justification study has been prepared for the *Monterey Park Inc. Gateway* to replace the existing banquet hall with a series of commercial buildings. A total of five new, multi-unit, single-storey commercial buildings are being proposed on the western portion of the property. The three existing two-storey and three-storey commercial buildings on the eastern half of the site are to remain. The updated traffic impact analysis described in this report have provided a detailed examination of the proposed development, represented by 2025 planning horizon. The updated parking study developed site specific parking requirements based on parking survey results previously conducted at the study site (due to COVID-19 travel and indoor gathering restrictions, proxy site survey was not sought and carried out) and using the ITE parking Generation Manual rates for Shopping Centres.

In general, the updated traffic analyses indicate that all study intersections are forecast to operate at acceptable Levels of Service and that no off-site mitigation measures are required to support the proposed development. Furthermore, the proposed 530 parking spaces will be able to meet the normal peak demand, from the additional commercial buildings, occurring at the study site, similar to the commercial/retail buildings currently operating on site.

The following are study principal findings and recommendations.

Traffic Analyses

- 4.1 The study considered the weekday AM, PM and Saturday Mid-Day peak hours and the existing volumes were projected ahead to 2025 planning horizon based on an average growth rate of 2.0% per annum for Queen Street East corridor and rate of 1% per annum for Gateway Boulevard to produce growth in the background traffic volumes.
- 4.2 The traffic that will be generated by the future uses on the study site was

developed using the observed traffic patterns at the existing site entrances. The following table provides the summary of total forecast site generated traffic during the study peak hour periods:

	<u>AM Pk Hr</u>	<u>PM Pk Hr</u>	<u>SAT Mid-Day</u>
Inbound	366	263	257
Outbound	136	263	276
Total	503	527	532

- 4.3 Directional distributions of the site future site traffic are based on the observed distribution patterns at the existing site entrances. Some of the existing site traffic has been re-distributed due to consolidation of two driveways on Summerlea Road.
- 4.4 The intersection capacity analyses for the 2025 background conditions indicate that the Queen Street East and Gateway Boulevard signalized intersection is forecast to operate at an acceptable overall intersection average for all three study peak hour periods. The critical movements, the eastbound left turn, southbound left turn, westbound and eastbound through movements are forecast to operate at or over capacity mainly during the PM peak hour (eastbound through movement operates at critical level during AM peak hour). The decline in the LOS for the critical movements are a result of the continued growth in the background traffic of the adjacent road network.

The overall intersection average LOS indicates that there could be some room for adjustments in the signal timing to provide additional "green time" for the critical movements at the expense of the overall intersection Levels of Service. However, the coordination and optimization should be carried out by Peel Region to improve the overall Queen Street East corridor and adjust the signal timing accordingly.

The existing site entrances are forecast to continue to operate well with no movements, entering or exiting the study site, at the critical levels.



4.5 The impact of the additional traffic to/from the study site can be measured by comparing the intersection capacity results of without future site traffic (2025 background scenario) and with future site traffic (2025 total scenario). It was found that the additional traffic from the study site adds very little additional delay through the Queen Street East and Gateway Boulevard intersection. The intersection capacity analyses indicate that the additional site traffic will add approximately 2 seconds delay at the intersection during the AM peak hour and less than one second delay during PM and Saturday peak hours. As well, there is only a very minor incremental increase in the volume/capacity ratio to the critical movements at the intersection. The impact of the additional site traffic on the adjacent road network is very minor and no mitigation measures are required to support the proposed additional commercial buildings on site.

All movements at the site entrance driveways are forecast to operate at acceptable Levels of Service with minor additional delays. These results indicate there is residual capacity to accommodate traffic growth in the future. No mitigation measure will be required to support the additional traffic resulting from the proposed development.

Parking Analyses

4.6 With the revised development proposal, the proponents are proposing a new parking supply rate for the entire site. The new rate is developed based on the existing normal peak parking demand observed at the study site and adjusted by comparing it to the parking rates found in ITE *Parking Generation Manual* for the Shopping Centre land use (LU 820).

In general, based on the currently approved parking supply rate for the study site (1 space per 19 m² GFA), 646 parking spaces are required for all commercial buildings proposed on site. The study site is proposing 530 parking spaces on site (0.82 spaces per 19 m² GFA or approximately 1 space per 23 m² GFA). While the proposed 530 parking spaces provided falls 116 spaces short of the currently approved requirement, based on the observed normal peak



parking demand and based on ITE's parking demand rates for the Shopping Centre land use for a suburban/urban location, the study site can operate well with the proposed 530 parking spaces for the study site.

The following table provides a summary of the study site's future parking requirements based on the observed normal peak demand rate supplemented by using the parking generation relationships taken from the current ITE *Parking Generation Manual* using the Shopping Centre land use. It indicates that the study site can operate with 410 spaces to meet the normal peak demand, taking into considerations of variances from the mean (95% Confidence Interval). Furthermore, the parking analysis indicates that 494 parking spaces are required to provide 85th percentile rate, based on number of ITE parking surveys (58 studies) of Shopping Centre land use.

Source	Parking Rate	No. of Spaces Required for 12,268.74 m ² / 132,059.9 ft ² Commercial GFA
City of Brampton Approved Rate for Study Site	1 space per 19 m ²	646 spaces
Observed Peak Demand Rate	0.49 per 19 m ² / 2.40 per 1,000 ft ²	318 spaces
ITE Average Rate	2.91	385 spaces
ITE 85 th Percentile Rate	3.74	494 spaces
ITE Fitted Curve Equation Rate	P=2.78(X) + 39.26	407 spaces
95% Confidence Interval	2.72 – 3.10	360 spaces - 410 spaces

*May not add up due to rounding. For parking requirements, the rounding is to the higher number.

The study concluded that the proposed 530 parking spaces (at a rate of 0.82 per 19 m² GFA or approximately 1 space per 23 m² GFA) are sufficient to support all uses proposed on site.

TECHNICAL APPENDIX

APPENDIX A: Tranplan April 2017 Study



Gateway Commercial Development

SW Quadrant Queen Street East/Gateway Boulevard

City of Brampton

Traffic Impact & Parking Study

Prepared by: Tranplan Associates, Toronto Toronto 416-670-2005 Sudbury 705 522 0272

Sudbury 705-522-0272 Peterborough 705-874-3638 www.tranplan.com Prepared for: Soscia Professional Engineers Inc.

April, 2017





April 26, 2017

Mr. Sandro Soscia Soscia Professional Engineers Inc. 10376 Yonge St., Unit 307 Richmond Hill, Ontario L4C 3B8

Dear Mr. Soscia

Re: Traffic/Parking Study for 1 Gateway Boulevard Commercial Development, City of Brampton

Enclosed please find our final report on the traffic and parking study for the proposed development at the property, 1 Gateway Boulevard, City of Brampton.

The study carried out two assessments, traffic impacts and parking requirements for the future full build-out of the proposed development. The traffic study carried out a detailed examination of the impacts of site-generated traffic on the future background traffic represented by 2023 planning horizon. The study found that all study intersections are projected to operate at an acceptable (under the urban commuter traffic conditions) Level of Service with no significant delay or queue as a result of the additional traffic from the study site. However, some movements at the study intersections are operating at capacity, but, the deterioration of the Level of Service at the study intersections are a result of continued growth of the road network volumes and largely not associated with the traffic from the study site.

The study found that the signal timing plan for the Queen Street East/Gateway Boulevard intersection can be improved by optimizing the cycle length and splits of the timing plan. The study recommended that this should be carried out by the Region of Peel and carried out and coordinated to improve the whole corridor, not just a single intersection.

The parking study developed site specific parking requirements based on parking survey results conducted at the study site and at the proxy site. The recommended parking supply for the study recognized the complementary nature of the tenant mix at the study site and developed two separate parking requirements, Event Peak Demand Rates (for the Banquet Hall/Hotel) and Non-Event Peak Demand Rates (for commercial/retail uses). The developed rates are considered "worst case" scenario where the parking rates were increased to



maximum rates to reflect the type of activity considered for the peak parking demand.

The study concluded that the parking requirements for the future uses proposed for the study site, based on the "worst case" scenario using maximized normal peak demand rates indicate that the proposed 517 parking spaces for the study site will be able to accommodate the normal peak parking demands occurring at the study site. In applying the 85% percentile rate to the parking forecast, the normal peak parking demand could range between approximately 300 spaces and 435 spaces for normal peak parking demand occurring at Non-Event Peak Demand and Event Peak Demand, respectively. The proposed 517 parking spaces provided for the study site (at full build-out) will be able to accommodate the normal peak parking demands occurring at the study site. The study proposed the following allocation of parking requirements:

	GFA m ² / Rooms	Capacity	Non-Event Peak Demand Period Rate Per 19m ² GFA	Event Peak Demand Period Rate Per 19m ² GFA
New Banquet Hall (Lot1)	3490.8	517	0.07 (13 spaces)	2.02 (371 spaces)
Existing Building (Lot 2)	4703.7	517	0.64 (158 spaces)	0.20 (50 spaces)
Existing Combined Buildings (Lot 3)	2327.2	517	0.64 (78 spaces)	0.20 (24 spaces)
New Com/Retail Two Buildings (Lot 4)	1840.0	517	0.64 (62 spaces)	0.20 (19 spaces)
New Hotel (Lot 4)	80 Rooms	517	0.50 (40 spaces)	0.60 (48 spaces)
Total* (85 th percentile)		517 Spaces	352 spaces (300 spaces)	512 spaces (436 spaces)

Projected Parking Demands for the Proposed Development

*Total may not add up due to rounding

Lastly, the study recommended the following supply of the parking spaces during its construction phases to accommodate the number of required parking spaces to meet the parking demands during each construction phase. The Phase 1 and 2 are critical phases with respect to the study site providing enough parking spaces for the existing businesses to maintain the number of parking spaces on site to meet the normal peak demand required for the businesses to operate successfully. The table below indicates that there will be enough parking spaces on site during each phase as not to disrupt the existing businesses and to support the future demands created by the new buildings on site.



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	J				

	Phase 1	Phase 2/3	Phase 3/4
Existing Banquet Hall (Lot1)	Operating	Demolished	Demolished
New Banquet Hall (Lot1)	Under Construction	Operating	Operating
Existing Building (Lot 2)	Operating	Operating	Operating
Existing Combined Buildings (Lot 3)	Operating	Operating	Operating
New Hotel (Lot 4)	Under Construction	Operating	Operating
Future Com/Retail Buildings (Lot 4)	Partial Parking Lot	Contingent Parking Lot	Under Construction
Total (Required*/Supply)	(245/311 spaces – 418 spaces provided)	(290/493 spaces – 517 spaces provided and 603 spaces with contingent parking lot)	(290/493 spaces – 517 spaces provide)

*Required (Non-Event Peak Demand/Event Peak Demand)

If you should require further information on the study, please do not hesitate to contact us at your convenience.

Yours truly,

Zn

Seo-Woon Im, B.E.S. Senior Transportation Planner

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1. INTRODUCTION

Tranplan Associates has been retained by the owners to carry out a traffic impact and a parking study for Monterey Park Inc. Gateway to replace the existing Banquet Facility with a New Banquet Facility and add a Hotel as well as complete the last phase of the Retail/Commercial Buildings to be located at the study site, a property with municipal address 1 Gateway Boulevard, in the City of Brampton, Regional Municipality of Peel (see Exhibit 1.1 – Key Map). Currently located on the property are three mixed used buildings approximately 50,630 ft² (Lot 2: Office/Retail), approximately 15,900 ft² (Lot 3: Office), and a 9,200 ft² one storey retail building along with approximately 24,500 ft² Chandni Convention Centre and Gateway building. The proposed development plan proposes to replace existing banquet facility building with a new building approximately 37,600 ft² facility connected to a 80 room hotel as well as building of two new one-storey mixed-use with approximately 9,900 ft² Gross Floor Area (GFA) in each building. The study site will continue to be served by the entrance driveways on Queen Street East and on Gateway Boulevard as well as the access driveways on Summerlea Road (three existing driveways will be consolidated into two driveways, see Exhibit 1.2 – Proposed Site Plan).

The objective of this study is to determine the increase in traffic volumes anticipated to be generated by the full build-out of the proposed development during the critical weekday morning (AM), afternoon (PM) and Saturday peak periods (Sat Mid-Day), to assess the impacts of this traffic on the nearby roadways as well as to determine the adequacy of the parking supply at the site to meet the peak demands at the study site; and if needed, to recommend improvements to accommodate the projected traffic and the parking demand. The study examined traffic impacts at a 5 year after the 2018 build-out of the site to planning horizon of 2023.

EXHIBIT 1.1: KEY MAP



EXHIBIT 1.2: PROPOSED SITE PLAN





2. EXISTING CONDITIONS

2.1 The Study Site

The study site is located at the southwest quadrant of Queen Street East and Gateway Boulevard intersection, in the City of Brampton. It has municipal address of 1 Gateway Boulevard and currently, the study site houses the following uses:

- Banquet Hall approximately 24,500 ft², Gross Floor Area (GFA)
- Mixed-Use Building approximately 50,630 ft² (Lot 2: Office/Retail)
- Mixed-Use Building approximately 15,900 ft² (Lot 3: Office/Retail)
- Retail Building approximately 9,200 ft² (Lot 3: Retail)

The following are proposed:

- New Banquet Hall (Replacing existing Banquet hall) approximately 37,600 ft², GFA
- New 80 Room Hotel
- Two Mixed-Use Building approximately 9,900 ft² GFA each

2.2 Access to the Study Site

The study area is bounded by Queen Street east to the North, Gateway Boulevard to the East and Summerlea Road to the South. Exhibit 2.1 – Existing Traffic Control and Lane Configurations shows the existing lane configurations and traffic control type at the study intersections.

Queen Street East is a six lane arterial road under the jurisdiction of the Region of Peel. At the study area, the road is divided with a raised median and auxiliary turning lanes are provided at the Gateway Boulevard intersection. It has a posted speed of 60 km/hr.

Exhibit 2.1: Existing Traffic Control and Lane Configurations



Gateway Boulevard is a north-south four lane collector road under the jurisdiction of the City of Brampton situated between Queen Street East and Summerlea Road. It has a posted speed of 50 km/hr.

Summerlea Road - is an east-west collector road under the jurisdiction of the City of Brampton. It has a two-lane cross section, and a posted speed of 50 km/hr.

2.3 Existing Traffic Conditions

The Region of Peel and the City of Brampton provided the study with their most recent Turning Movement Counts (TMCs) for the study intersections under their respective jurisdictions (see Appendix "A"). Tranplan Associates also collected spot counts at the study site entrance driveways during multiple site visits carried out during the month of December 2016. The existing baseline traffic volumes were determined by applying an 8% factor to all movements at the Queen Street East/Gateway Boulevard intersection. The rest of the study intersections were balanced using the Queen Street/Gateway Boulevard intersection to represent existing 2017 traffic conditions for the study analyses. Based on these volumes, the weekday AM, PM and Sat Mid-Day peak hours were determined for study analyses. The resulting volumes are provided in Exhibit 2.2.

2.4 Existing Site Traffic and Level of Service¹(LOS)

The current site generated traffic by existing uses on site are provided in Exhibit 2.2A. The existing peak hour traffic volumes were assessed against the capacity of the study area intersections in terms of Level of Service and volume/capacity ratios using the Highway Capacity Manual reports produced by Trafficware Traffic Signal Timing Software -Synchro Version 9.0. The results are

¹ Level of Service is commonly used in traffic engineering to describe the level of congestion along a roadway or at an intersection. Levels from "A" to "F" denote increasing amounts of congestion with "F" representing a complete breakdown in traffic flow. Level of Service "C" and "D" are commonly used as design standards. However, many individual turning movements at TWSC intersections and commercial entrances along urban arterial corridor operate at LOS "F" during peak periods.

EXHIBIT 2.2A: EXISTING TRAFFIC VOLUMES





summarized in Table 2.1: Summary of Intersection Analyses: Existing. Detailed reports from the analysis are contained in Appendix B Intersection Capacity Analyses.

Under the existing conditions, the Queen Street East/Gateway Boulevard signalized intersection currently operates at an overall intersection average of LOS "C" with delay of approximately 33 seconds, LOS "D" with delay of approximately 35 seconds and LOS "C" with delay of approximately 29 seconds during AM, PM and Sat Mid-Day peak hours, respectively. The critical movements are the eastbound and westbound through movements during AM and PM peak hours, respectively. The intersection capacity analyses indicate that the volume to capacity ratio are approaching critical levels some of the critical movements.

The site entrance driveway on Gateway Boulevard is currently operating well with the critical movements associated with the vehicles leaving the study site (eastbound traffic). It is operating at LOS "C" with delay of approximately 18 seconds and v/c ratio at 0.28 during the critical PM peak hour period.

All movements at the site entrance driveways on Summerlea Road and the right-in right-out driveway on Queen Street East operate at acceptable Level of Service with minor delays.

	Existing Conditions											
Intersection	AM Peak			PM Peak				SAT Midday Peak				
Gateway Blvd/Chrysler Dr & Queen St E (Signalized)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB-L	С	27.9	23.2	0.50	F	84.0	#51.3	0.90	С	24.1	22.8	0.54
EB-T	D	38.2	162.4	0.88	С	27.9	128.5	0.68	С	32.1	139.5	0.80
EB-R	А	3.4	9.3	0.17	А	1.8	5.4	0.13	А	0.2	0.0	0.06
WB-L	С	32.7	#17.3	0.54	В	18.4	11.1	0.30	С	22.2	14.7	0.41
WB-T	D	35.3	106.2	0.72	D	44.7	#210.6	0.96	С	32.3	103.3	0.70
WB-R	А	5.4	13.6	0.25	Α	3.8	14.2	0.30	А	0.6	0.0	0.16
NB-L	С	24.4	20.4	0.21	D	38.3	55.4	0.58	С	27.0	27.4	0.22
NB-TR	В	15.5	10.3	0.08	С	30.4	73.9	0.55	В	11.6	14.7	0.17
SB-L	D	41.5	83.9	0.60	E	63.0	#67.2	0.73	D	39.9	54.2	0.44
SB-T	С	30.4	44.4	0.27	С	34.4	25.6	0.17	С	32.2	9.8	0.04
SB-R	В	11.0	26.0	0.34	Α	3.7	7.0	0.23	А	0.7	0.0	0.17
Overall	с	32.7			D	35.3			С	29.0		
Site Entrance & Queen St E (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
NB - R	В	14.3	1.5	0.06	В	13.1	1.0	0.04	В	13.1	0.5	0.02
Gateway Blvd & Site Entrance/Commerical Driveway (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB-LTR	В	14.1	3.9	0.14	С	18.2	9.1	0.28	В	11.8	5.8	0.20
WB-LTR	В	10.3	1.0	0.04	В	13.7	2.7	0.10	А	9.1	1.0	0.04
NB-LT	А	1.8	0.3	0.01	А	0.1	0.1	0.00	А	0.5	0.1	0.00
SB-LT	А	1.2	0.0	0.03	А	1.1	0.3	0.01	А	5.2	0.6	0.03
Gateway Blvd & Summerlea Rd/Walker Dr (AWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	А	9.1	-	0.10	В	12.0	-	0.38	А	7.5	-	0.05
WB - LTR	А	8.7	-	0.15	С	17.6	-	0.70	A	7.0	-	0.10
NB-LTR	А	8.3	-	0.01	А	9.7	-	0.02	A	7.3	-	0.00
SB-LT	В	14.6	-	0.58	В	11.7	-	0.29	A	7.3	-	0.03
Summerlea Rd & Site Entrance EAST (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LT	А	0.3	0.0	0.00	А	0.0	0.0	0.00	А	0.9	0.0	0.00
SB - LT	А	9.8	1.3	0.05	В	11.0	1.6	0.06	А	8.8	0.8	0.03
Summerlea Rd & Site Entrance MID (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LT	А	0.3	0.0	0.00	А	0.0	0.0	0.00	А	0.9	0.0	0.00
SB - LT	А	9.3	0.1	0.00	Α	9.6	0.1	0.00	А	8.6	0.0	0.00
Summerlea Rd & Site Entrance WEST (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LT	А	0.3	0.0	0.00	A	0.3	0.0	0.00	A	0.8	0.0	0.00
SB - LT	А	9.3	0.1	0.00	А	9.9	0.1	0.00	А	8.6	0.0	0.00

Table 2.1: Summary of Intersection Capacity Analyses: Existing

m Volume for 95th percentile queue metered by upstream signal

95th percentile volume exceeds capacity, queue may be longer



3. TRAFFIC FORECASTS

3.1 Proposed Development

The following buildings will remain on site:

- Mixed-Use Building approximately 50,630 ft² (Lot 2: Office/Retail)
- Mixed-Use Building approximately 15,900 ft² (Lot 3: Office/Retail)
- Retail Building approximately 9,200 ft² (Lot 3: Retail)

and the following will be new additions to the study site:

- New Banquet Hall (replacing existing Chandni Convention Centre and Gateway) - approximately 37,600 ft² GFA
- New 80 Room Hotel
- Two Mixed-Use Buildings approximately 9,900 ft² GFA each
- 3.2 Traffic Generation by the Proposed Development

Trip generation summary table (Table 3.1) describes the forecasts of sitegenerated trips added to the existing traffic from the current uses taking place on the study site. The future forecasts were developed from the trip rates generated from the field observations at the existing site entrance driveways along with the trip generation relationships taken from the current Institute of Transportation Engineers (ITE) Trip Generation Manual ². The forecast vehicle trip generation for each of the planned site uses were developed as described in the following:

Mixed Use Buildings (Commercial/Retail/Office Uses)

When the observed traffic volumes were compared to the trip generation rates from the ITE land use category Shopping Centre (LU 820), it was found that the ITE

² The Institute of Transportation Engineers, based in the United States, is an international association for traffic engineers and transportation planners. The organization publishes a number of handbooks and manuals, including the Trip Generation Manual which is based on American and Canadian experiences. The ninth edition of this publication was used.

	WEEKD	ay am pe	WEEKDAY	(PM PEA	SATURDAY MID-DAY PEAK HOUR							
LAND USE	Trip Generation	Vehicle Trips			Trip Generation	Vehicle Trips			Trip	Vehicle Trips		
	Rate Description	Total	In	Out	Rate Description	Total	In	Out	Generation Rate Description	Total	In	Out
Hotel 80 Rooms ITE LU 310	ITE Trip Generation Manual - 9 th Ed. LU 310 0.53/Room	42	59% 25	41% 17	ITE Trip Generation Manual - 9 th Ed. LU 310 0.60/Room	48	51% 25	49% 24	ITE Trip Generation Manual - 9 th Ed. LU 310 0.60/Room	48	51% 25	49% 24
New Banquet	Observed Rate	5	67%	33%	Observed Rate	56	89% 49	11% 6	Observed Rate	82	79% 65	21%
Hall (37,575 ft ²)	0.12 trips per 1,000 GFA	5	5	2	1.48 trips per 1,000 GFA			0	2.17 trips per 1,000 GFA	02	00	.,
Mixed Use Building	Observed Rate		73%	27%	Observed Rate		50%	50%	Observed Rate		48%	52%
(Existing Total 75,680 ft ²)	3.81 trips per 1,000 GFA	288	210	78	3.99 trips per 1,000 GFA	302	151	151	4.03 trips per 1,000 GFA	305	147	158
Mixed Use Building	Observed Rate		73%	27%	Observed Rate		50%	50%	Observed Rate		48%	52%
(Future Total 19,806 ft²)	3.81 trips per 1,000 GFA	75	55	20	3.99 trips per 1,000 GFA	79	39	39	4.03 trips per 1,000 GFA	80	39	41
Total		410	293	117		485	264	220		515	275	240

Table 3.1: Projected Trip Generation by Proposed Development

Note: Numbers do not add up exactly due to rounding



rates were much higher, especially for the PM and Saturday peak hour periods, while the AM observed peak hour volumes were much higher than the ITE rates. It is likely due to the nature of the tenant mix in the buildings and the type of retail operation taking place at the study site. The observed volumes reflect the traffic patterns associated with office and work related trip patterns during the AM and PM peak hours rather than shopping trip patterns. As such, the study analyses used the observed following trip rates 3.81, 3.99 and 4.03 trips per 1,000 sq. ft. GFA for AM, PM and Sat Mid-Day Peak Hour, respectively, to forecast the proposed mixed use buildings.

Banquet Hall

The ITE Trip Generation Manual does not contain any trip forecasts for a Banquet Hall Land Use. The observations at the study site, specifically for the existing banquet hall indicates that the banquet hall land use peak at much later than the peak by other uses on site or peak hour that corresponds to the peaking of the traffic on the adjacent roads. The peak hour rates used for the banquet hall represents the observed peak hour volumes for the banquet hall which corresponds to existing site/adjacent road peak hours. The study used the observed rate of 0.12, 1.48 and 2.17 trips per 1,000 sq. ft. GFA for AM, PM and Sat Mid-Day Peak Hour, respectively, to forecast the proposed new banquet hall use.

<u>Hotel</u>

The trip generations for the Hotel use were derived from the ITE land use category Hotel (LU 310) with number of rooms as an independent variable.

Total Site Traffic

The total future site traffic was computed by adding the new trips generated by the planned development to the existing traffic generated by the study site. Even though the traffic generated by the retail component of the land use includes some pass-by (traffic attracted to the site from the adjacent traffic streams) and the mixed use development includes some linked trips which could have been subtracted from the total traffic, the pass-by and internal linked trips were included in the total driveway volumes to represent the "worst case" scenario for the study analysis.

The trip generation summary table below contains the forecast AM, PM and Sat Mid-Day peak hour trip generation for the proposed development (see Table 3.1).

	AM Pk Hr	<u>PM Pk Hr</u>	<u>SAT Mid-Day</u>
Inbound	293	264	275
Outbound	117	220	240
Total	410	485	515

3.3 Directional Orientation of Site Traffic

Directional distributions of the site future site traffic are based on the observed distribution patterns at the existing site entrances and described in Exhibit 3.1. Some of the existing site traffic has been re-distributed due to consolidation of the site traffic on Summerlea Road but the impact of this consolidation during the peak periods are minimal.

3.4 Future Background Traffic

Background traffic is defined as all traffic within the study area that is not related to the proposed development. For study analyses, the study assumed a growth of 2.0% per annum to the 2023 planning horizon on Queen Street East and 1% per annum growth on Gateway Boulevard through the study area. The resulting 2023 peak hour background traffic are illustrated in Exhibit 2.2.

3.5 Future Total Traffic Volumes

Future total peak hour traffic volumes were computed by adding the future increase in site-generated traffic from the proposed development, re-distribution

EXHIBIT 3.1: SITE TRAFFIC DISTRIBUTION





of the existing traffic to the future background traffic volumes. The resulting peak hour volumes for the study intersections and at the site entrance driveways are illustrated in Exhibit 3.2A and Exhibit 3.2B.

EXHIBIT 3.2A: SITE TRAFFIC VOLUMES



EXHIBIT 3.2B: 2023 TOTAL TRAFFIC VOLUMES





4. ANALYSIS OF TRAFFIC VOLUMES

4.1 Intersection Capacity Analysis

The future background and future total peak hour traffic volumes were assessed against the capacity of the study area intersections in terms of Level of Service and volume/capacity ratios using the Highway Capacity Manual reports produced by Trafficware Traffic Signal Timing Software -Synchro Version 9.0. The results are summarized in Table 4.1 Summary of Intersection Analyses: Background and in Table 4.2 Summary of Intersection Analyses: Total. Detailed reports from the analysis are contained in Appendix B Intersection Capacity Analyses.

2023 Future Background Conditions

Under the future background traffic levels, the Queen Street East/Gateway Boulevard signalized intersection is forecast to operate at an overall intersection average of LOS "D" with delay of approximately 39 seconds, LOS "D" with delay of approximately 50 seconds and LOS "C" with delay of approximately 31 seconds during AM, PM and sat Mid-Day peak hours, respectively. The critical movements, the eastbound and westbound through movements are forecast to operate at or over capacity during AM and PM peak hours, respectively. The eastbound left turn lane is also forecast to operate at over capacity during the PM peak hour. The decline in the Level of Service for the critical movements are a result of the continued growth in the background traffic of the road network growth. The overall intersection average Level of Service indicates that there are dome room to adjust the signal timing to optimize the intersection. However, the coordination and optimization should be carried out by the Region in their attempt to improve the overall Queen Street East corridor and adjust the signal timing accordingly.

The site entrance driveway on Gateway Boulevard is forecast to continue to operate well with the critical movements associated with the vehicles leaving the study site (eastbound traffic). It is forecast to operating at LOS "C" with delay of approximately 21 seconds and v/c ratio at 0.32 during the critical PM peak
	2023 Future Background											
Intersection		A	M Peak			PM Peak				SAT Mid	day Peak	
Gateway Blvd/Chrysler Dr & Queen St E (Signalized)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB-L	D	38.0	#34.1	0.65	F	111.0	#60.3	1.01	С	32.4	32.7	0.63
EB-T	D	49.6	#206.9	0.97	С	30.3	150.9	0.76	С	34.3	165.2	0.86
EB-R	А	7.0	19.5	0.24	А	2.5	7.7	0.15	А	0.2	0.0	0.06
WB-L	E	59.7	#40.5	0.79	С	21.1	12.1	0.37	С	26.4	18.1	0.48
WB-T	D	36.2	122.7	0.75	E	75.4	#255.3	1.07	С	33.8	120.5	0.75
WB-R	А	5.1	14.3	0.26	Α	7.0	25.2	0.34	А	0.6	0.0	0.18
NB-L	С	26.4	22.4	0.30	D	42.7	62.2	0.67	С	28.9	30.0	0.26
NB-TR	В	15.2	11.3	0.09	С	32.2	85.0	0.62	В	12.0	16.0	0.19
SB-L	D	48.1	#102.6	0.71	F	92.6	#83.0	0.92	D	46.2	60.9	0.56
SB-T	С	33.3	63.6	0.40	С	34.7	28.5	0.19	С	33.6	10.7	0.06
SB-R	В	13.5	32.3	0.40	А	5.1	9.9	0.26	А	1.0	0.0	0.21
Overall	D	38.8			D	49.9			С	31.1		
Site Entrance & Queen St E (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
NB - R	С	15.5	1.7	0.07	В	14.0	1.1	0.04	В	14.1	0.6	0.02
Gateway Blvd & Site Entrance/Commerical Driveway (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB-LTR	В	14.2	3.9	0.14	С	20.8	10.7	0.32	В	12.3	6.2	0.21
WB-LTR	В	10.2	1.0	0.04	С	15.1	3.1	0.11	А	9.2	1.0	0.04
NB-LT	А	1.6	0.3	0.01	А	0.1	0.1	0.00	А	0.4	0.1	0.00
SB-LT	А	1.1	0.6	0.03	А	1.0	0.4	0.02	А	4.5	0.7	0.03
Gateway Blvd & Summerlea Rd/Walker Dr (AWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	А	9.2	-	0.11	В	12.6	-	0.41	А	7.5	-	0.05
WB - LTR	A	8.9	-	0.16	С	20.7	-	0.76	A	7.0	-	0.11
NB-LTR	А	8.3	-	0.01	A	9.9	-	0.02	A	7.4	-	0.00
SB-LT	В	15.8	-	0.62	В	12.2	-	0.32	A	7.3	-	0.03
Summerlea Rd & Site Entrance EAST (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LT	А	0.2	0.0	0.00	А	0.0	0.0	0.00	А	0.7	0.0	0.00
SB - LT	A	9.9	1.3	0.05	В	11.2	1.7	0.06	A	8.8	0.8	0.03
Summerlea Rd & Site Entrance MID (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LT	А	0.2	0.0	0.00	А	0.0	0.0	0.00	А	0.7	0.0	0.00
SB - LT	А	9.9	1.3	0.05	Α	9.7	0.1	0.00	A	8.6	0.0	0.00
Summerlea Rd & Site Entrance WEST (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LT	А	0.2	0.0	0.00	А	0.3	0.0	0.00	Α	0.7	0.0	0.00
SB - LT	А	9.4	0.1	0.00	А	10.0	0.1	0.00	A	8.6	0.0	0.00

Table 4.1: Summary of Intersection Capacity Analyses: Background

m Volume for 95th percentile queue metered by upstream signal

95th percentile volume exceeds capacity, queue may be longer

		2023 Total Conditions										
Intersection		Α	M Peak			Р	M Peak			SAT Mid	day Peak	
Gateway Blvd/Chrysler Dr & Queen St E (Signalized)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB-L	С	29.4	27.6	0.59	F	141.1	#62.2	1.11	E	64.2	#40.8	0.85
EB-T	D	47.1	#203.1	0.95	С	33.4	163.4	0.84	D	38.0	170.1	0.89
EB-R	А	6.7	21.7	0.28	А	4.7	14.7	0.20	А	0.8	1.8	0.11
WB-L	E	76.5	#60.7	0.90	С	31.9	23.3	0.57	D	44.1	#39.1	0.71
WB-T	С	34.0	122.7	0.72	E	67.9	#251.6	1.05	С	27.4	106.3	0.64
WB-R	А	5.0	14.3	0.25	Α	8.3	28.7	0.34	А	2.4	6.8	0.16
NB-L	D	41.9	35.2	0.61	E	67.2	#106.7	0.90	С	33.5	49.3	0.48
NB-TR	В	15.3	15.2	0.15	С	33.6	94.3	0.67	В	17.6	26.3	0.27
SB-L	E	65.8	#115.1	0.87	F	125.3	#88.1	1.03	D	52.9	#63.2	0.64
SB-T	D	38.9	78.1	0.54	D	37.5	38.8	0.29	D	35.2	21.1	0.14
SB-R	В	15.1	33.7	0.44	Α	5.4	10.1	0.27	А	3.7	6.7	0.24
Overall	D	39.1			D	50.5			С	32.4		
Site Entrance & Queen St E (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
NB - R	С	16.4	3.2	0.12	С	16.3	6.6	0.22	В	14.6	1.5	0.06
Gateway Blvd & Site Entrance/Commerical Driveway (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB-LTR	С	22.6	17.6	0.44	E	47.3	48.0	0.77	С	17.8	22.8	0.51
WB-LTR	В	10.0	0.9	0.04	С	15.2	3.1	0.11	А	9.3	1.0	0.04
NB-LT	А	2.5	0.6	0.02	А	0.4	0.3	0.01	А	1.2	0.2	0.01
SB-LT	А	1.1	0.6	0.03	А	1.0	0.4	0.02	А	4.5	0.7	0.03
Gateway Blvd & Summerlea Rd/Walker Dr (AWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LTR	А	9.5	-	0.13	В	14.0	-	0.48	A	7.9	-	0.12
WB - LTR	А	9.5	-	0.22	D	26.2	-	0.83	A	7.5	-	0.16
NB-LTR	А	8.6	-	0.01	В	10.2	-	0.02	A	7.6	-	0.00
SB-LT	В	17.1	-	0.64	В	12.9	-	0.34	A	7.6	-	0.05
Summerlea Rd & Site Entrance EAST (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LT	А	1.1	0.0	0.00	Α	0.2	0.0	0.00	А	2.5	0.1	0.00
SB - LT	В	10.2	1.8	0.07	В	11.9	3.5	0.13	А	9.3	2.9	0.11
Summerlea Rd & Site Entrance WEST (TWSC)	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c	LOS	Delay	95th Queue	v/c
EB - LT	А	0.2	0.0	0.00	А	0.0	0.0	0.00	Α	0.5	0.0	0.00
SB - LT	А	9.2	0.1	0.00	В	10.1	0.1	0.01	А	8.6	0.0	0.00

Table 4.2: Summary of Intersection Capacity Analyses: Total

m Volume for 95th percentile queue metered by upstream signal

95th percentile volume exceeds capacity, queue may be longer



hour period.

All movements at the site entrance driveways on Summerlea Road and the right-in right-out driveway on Queen Street East operate at acceptable Level of Service with minor delays.

2023 Future Total Conditions

Under the future total traffic levels (proposed additional site traffic added to the forecast background traffic), the Queen Street East and Gateway Boulevard signalized intersection is forecast to operate at an overall intersection average of LOS "D" with delay of approximately 39 seconds, LOS "D" with delay of approximately 51 seconds and LOS "C" with delay of approximately 32 seconds during AM, PM and sat Mid-Day peak hours, respectively. Similar to the 2023 background analysis, the critical movements, the eastbound and westbound through movements are forecast to operate at or over capacity during AM and PM peak hours, respectively. The eastbound left turn lane is also forecast to operate at over capacity during the PM peak hour. However, the proposed site traffic adds very little additional delay through the Queen Street East and Gateway Boulevard intersection. The intersection capacity analyses indicate that the additional site traffic will add approximately 1 second delay at the intersection and very minor increase in volume/capacity ratio to these critical movements. It is further noted that the decline in the LOS for the critical movements are a result of the continued growth in the background traffic of the road network growth. The overall intersection average Level of Service indicates that there will be an opportunity to make the signal timing adjustments to optimize the intersection with respect to intersection cycle length and timing allowed for different movements. As already suggested, the coordination and optimization should be carried out by Peel Region in their attempt to improve the overall Queen Street East corridor and adjust the signal timing accordingly.

The site entrance on Gateway Boulevard is forecast to continue to operate well with the critical movements associated with the vehicles leaving the study site



(eastbound traffic). It is operating at LOS "E" with delay of approximately 47 seconds and v/c ratio at 0.77 during the critical PM peak hour period. All movements at the site entrance driveways on Summerlea Road and the right-in right-out driveway on Queen Street East are forecast to operate at acceptable Level of Service with minor delays. These results indicate there is residual capacity to accommodate traffic growth in the future. No mitigation measure will be required to support the additional traffic resulting from the proposed development.



5. PARKING REQUIREMENTS

The study site is currently approved to provide 1 parking space for every 19 m² of GFA for all uses on site. There are 701 parking spaces currently provided for use on site for total of 9,955.9 m² of GFA distributed in four different buildings on site requiring 488 parking spaces. It would suggest that the study site is currently over supplying the number of parking spaces. As a result, the western parking section (north of the Chandni Convention Centre in Lot 4) of the study site is rented out to a local car dealership. The observations indicated that the study could operate well with less than 50% of the parking spaces provided on site (including the spaces rented to an off-site business). It indicates that the current parking facility on site provided for the type of uses and associated density for those uses are not sized appropriately. It should be sized, as an example, City of Mississauga's approach to providing sufficient parking for the commercial developments:

"Parking is an essential part of the overall transportation and land development system, as well as a means to help realize other community development objectives such as land use efficiency, good urban design and economic vitality. An oversupply of parking is costly for business, visually unattractive, and may negatively impact urban design and streetscape. Conversely, an undersupply of spaces may compromise access and circulation, and create spillover problems for adjacent uses. It is, therefore, important for the supply of parking to strike a balance between oversupply and undersupply."

Furthermore, determining the number of parking spaces for future uses could be done in several ways. The most common approach for selecting a minimum standard is to collect data on the peak daily parking demand for a number of sites or the same site for a number of days and plot the cumulative distribution and (most references) recommend selecting the parking ratio that corresponds to the 85th percentile accumulation. Some argue that this approach results in an over-supply of parking because 85% of sites will be required to provide more parking than they require, even at the peak demand and have suggested that



50th percentile rate or lower should be used based on its location in relation to transit availability and non-auto modes due to high residential/commercial density in the vicinity of the site. Moreover, restaurants and commercial developments often provide more parking than the minimum to ensure that the building/site has sufficient parking supply. As a result, if standards are proposed using the 85th percentile method without the regard for the location of the site and its use, this common development practice may result in significant excess parking supply among new development.

The proposed development is proposing a new parking supply for the entire site based on the existing normal peak parking demand for the same/similar uses proposed on site using adjustment factors to increase the parking supply at appropriate peaking which occurs on site to consider the "worst case" scenario. This approach will ensure that the site maximizes the use of all its parking supply without over supplying the number of parking spaces just to meet the City's By-Law requirements. As part of the Planning Approval process, the City of Brampton requested the owners to conduct parking study in support of the proposed additional buildings to ensure that the study site has enough parking for its existing tenants and that it can also accommodate the new activities on site.

The parking study involved the following steps:

- i) Field inspection and parking inventory of the study.
- ii) Reviewed with the study team the existing operation and the proposed uses for the additional development on the study site.
- iii) Conducted parking surveys at the study site throughout the month of December, 2016 (full surveys were carried out on Friday December 9, Saturday December 10, and Saturday December 31, 2016) of parking usage at the study site; graphed and analysed the field survey data.
- iv) Conducted parking surveys at the proxy sites throughout the month of December, 2016 and selected the most appropriate proxy site to survey on Saturday December 31, 2016, of parking usage at the proxy site; graphed and analysed the field survey data.



- v) Assessed the adequacy of the future parking supply relative to observed demands at the study site and at the proxy site as well as the approved City By-Laws.
- vi) Projected future parking requirements based on the normal peak demand rate determined through the parking analyses of the existing operations at the study site and at the proxy site.
- vii) Conclusions and recommendations with respect to the parking requirements at Monterey Park Inc. Gateway study site.
- 5.1 Analyses of Existing Conditions

Parking Survey at the Study Site

The amount of parking available at the study site and the actual usage was surveyed using video recording devices to record the parking lot activities during the business hours between 6:00 am to 11:00 pm on Friday December 9, on Saturday December 10, and special counts on December 31 during the normal peak demand periods between 10 AM – 12 AM (midnight), 2016. The data observed at the site is summarized in Exhibit 5.1: Observed Parking Lot Occupancy and detail tabulations of the survey data are provided in Appendix "C" – Parking Survey Analyses.

To determine the peak parking demand, the number of parked vehicles on site was observed every 30 minutes. The survey results indicate that existing uses on site have two distinct peak periods, a weekday PM peak period (non-event day) and a Saturday evening peak period (event day). Exhibit 5.1 illustrates that average weekday peak parking demand occurs between 11 AM and 4 PM (peak demand of 182 spaces at 3:00 PM) and the Saturday peak parking demand at the study site occurred during the evening between 6:00 PM and 10:00 PM (peak demand of 310 spaces at 8:00 PM).

The parking surveys at the study site also indicate that the study site currently operates with use of only 26% and 44% of the available parking spaces on site to meet the normal weekday and Saturday peak demands, respectively. Table





5.1 describes the parking occupancy at the study site by allocated parking lots, Lot 1 – Lot 4 (see Exhibit 1.2: Proposed Site Plan for general area description of the lot locations) during the peak demand periods. Since there are no designated parking spaces reserved for each use or for each building, the number of occupied parking spaces are provided as a percent of the total parking supply to illustrate how much parking is available during the peak demand periods. The main reason for such surplus of the parking spaces available during the peak demand period is due to the study site using the undeveloped area of the study site is paved as a parking lot until the remaining site is developed/built-out. The secondary reason is due to the mix of uses on site having different peak demand characteristics. That is, the retail/office/ commercial uses peak demand occurs during a weekday afternoon and the banquet hall normal peak parking demand occurs on a Saturday evening when the hall is fully booked to operate at full capacity.

Table 5.1: Observed Number of	Occupied Parking	Spaces During F	Peak
Demand: Study Site			

	GFA m ²	Capacity	Wk Day Pk 3:00 PM (% of Total Capacity)	Saturday Pk 8:00 PM (% of Total Capacity)
Existing Banquet Hall (Lot1)	2225.0	701	11 (2%)	179 (26%)
Existing Building (Lot 2)	4703.7	701	54 (8%)	51 (7%)
Combined Buildings (Lot 3)	2327.2	701	40 (6%)	35 (5%)
Shared Vacant Lot (Lot 4*)		701	74 (11%)	45 (6%)
Total**	9255.9	701	179 (26%**)	310 (44%**)

*Some of the parking spaces on Lot 4 are leased to a local car dealership and used by commuters who are using transit by parking their vehicles at the study site

**Total May not add up due to rounding

Parking Survey at the Proxy Site

In consultation with the City staff, a site located at the Northwest quadrant of Queen Street East and The Gore Road intersection containing a Hotel (Hampton Inn), a Tim Horton's, a Banquet Hall (Embassy Grand Convention Centre), four



separate buildings with commercial/office/retail uses on site. The amount of parking available at the proxy site and the actual usage was surveyed using video recording devices to record the parking lot activities during the business hours on December 31 during the normal peak demand periods between 9 AM – 12 AM (midnight), 2016. Some of the business were closed for the Holiday Season and some businesses appear to open for limited hours (closed at 3:00 PM), Tim Horton's restaurant and the Gino's Pizza were opened for business during the survey time periods. The study's main focus was the parking requirements of the banquet hall, its peaking characteristics and its interaction with other uses on site sharing common parking lots. As such, the most important reason for conducting a parking survey on New Year's Eve was to observe the Convention Centre's parking activity when it was at full capacity/fully rented. The data observed at the proxy site is summarized in Exhibit 5.2: Proxy Site Parking Lot Occupancy and detail tabulations of the survey data are provided in Appendix "C" – Parking Survey Analyses.

The parking survey at the proxy site indicates that the study site currently operates with use of only 19% and 45% of the available parking spaces on site to meet the peak periods when Non-event and Event occurs at the site, respectively. Table 5.2 describes the parking occupancy at the proxy site, during the peak demand periods. Since there are no designated parking spaces reserved for each use or for each building, the number of occupied parking spaces are provided as a percent of the total parking supply to illustrate how much parking is available during the peak demand periods.

Similar to the study site, the proxy site survey results indicate that the different uses on site have its own unique peaking characteristics. That is, the retail/office/commercial uses peak demand occur during a mid-afternoon and the banquet hall normal peak parking demand occurs during the evening when a function is taking place at the Banquet Hall/Convention Centre. The proxy site didn't experience a sharp parking demand peak during the afternoon peak period (perhaps due to many businesses closed and or operating at reduced hours and staff) but the parking demands on site built gradually until it reached its peak demand for the site at around 7:00 PM.





Table 5.2: Observed Number of Occupied Parking Spaces During Peak Demand: Proxy Site

	GFA m ²	Capacity	Wk Day Pk 4:00 PM (% of Total Capacity)	Saturday Pk 12:00 AM (% of Total Capacity)
Office/Retail/Commercial Buildings	N/A	980	63 (6%)	43 (4%)
Hotel ¹	92 Rooms	980	29 (3%)	53 (5%)
Convention Centre	6131.6	980	39 (4%)	122 (12%)
Shared Lot	N/A	980	52 (5%)	223 (23%)
Total*		980	183 (19%*)	441 (45%*)

Note 1: GFA represents number of rooms

*Total May not add up due to rounding

5.2 Analyses of Future Parking Requirements

Total Requirement Using Observed Normal Peak Demand Rate

As the parking surveys conducted at the study site and at the proxy site indicate, there are two normal peak parking demand periods that occur at a site with a Banquet Hall/Convention Centre and Office/Commercial/Retail uses on the same site. Simple reason is that the two different uses operate differently and that the parking demands occur at different times. In most cases, when one use is operating at full capacity/demand, the other use is usually not in operation or operating with minimal parking demand. For study analysis, the two separate peak demand periods are classified as Non-Event Peak Demand and Event Peak Demand periods. The following Table 5.3 describes the "maximum adjusted rate" (peaking adjustments to increase the parking demand for specific use during the appropriate peak times related to each use), derived from the combined survey results from both the study site and the proxy site, to be used as the normal peak demand rate (rate based on parking space/19 m^2) for all uses represented in the full build-out of the study site. Furthermore, the parking rates used for the Event Peak Demand Period Rate is considered the "worst case" scenario for the future study site since most of the office/retail



buildings will be closed and no parking spaces will be required for those businesses that are not open for business (see Appendix "C" for the calculation of the adjustment factors applied to the observed parking rates).

Table 5.3: Adjusted Maximum Normal Peak Demand Rate by Use

	GFA m²/ Rooms	Capacity	Non-Event Peak Demand Period Rate Per 19m ² GFA	Event Peak Demand Period Rate Per 19m ² GFA
New Banquet Hall (Lot1)	3490.8	517	0.07 (13 spaces)	2.02 (371 spaces)
Existing Building (Lot 2)	4703.7	517	0.64 (158 spaces)	0.20 (50 spaces)
Existing Combined Buildings (Lot 3)	2327.2	517	0.64 (78 spaces)	0.20 (24 spaces)
New Com/Retail Two Buildings (Lot 4)	1840.0	517	0.64 (62 spaces)	0.20 (19 spaces)
New Hotel (Lot 4)	80 Rooms	517	0.50 (40 spaces)	0.60 (48 spaces)
Total* (85 th percentile)		517 Spaces	352 spaces (300 spaces)	512 spaces (436 spaces)

*Total may not add up due to rounding

The parking requirements for the future uses proposed for the study site, based on the "worst case" scenario Normal Peak Demand Rates indicate that the study site's normal peak parking demand will be approximately 350 spaces during the Non-Event Peak Demand period (weekday afternoon peak) and normal peak parking demand approximately 500 parking spaces during the Event Peak Demand period. In applying the 85% percentile rate to the parking forecast, the normal peak parking demand could range between approximately 300 spaces and 435 spaces for normal peak parking demand occurring at Non-Event Peak Demand and Event Peak Demand, respectively. The proposed 517 parking spaces provided for the study site (at full build-out) will be able to accommodate the normal peak parking demands occurring at the study site.



Requirements During Each Construction Phase Using Observed Normal Peak Demand Rates

The full build-out of the proposed site development will take place in the following four stages:

- Phase 1: demolish existing free standing electrical room. Excavate and build banquet hall, and hotel.
- Phase 2: demolish existing banquet hall, back fill banquet hall demolished area and grade Lot 1 and Lot 4. Create curbs and landscape the area. Also, relocate main north-south drive isle so that the Queen Street East driveway and the Summerlea Road driveways line up. Provide asphalt paving and provide parking lines. Plant trees as per landscape plan.
- Phase 3: demolish curbs and paving on lot 2 and 3. Provide new curbs and landscape area and asphalt paving and provide new parking lines. Plant trees as per landscape plan.
- Phase 4: future phase of construction of two new commercial buildings, A and B.

The Phase 1

The Phase 1 of site development will consist of existing buildings on site remaining at its current location, continuing to operate while the construction of the new buildings is taking place on site. The western portion of the study site will be fenced off for construction of the New Banquet Hall and the 80 Room Hotel (see Exhibit 5.3: Proposed Phasing Plan). The total number of parking available for use during Phase 1 is 418 parking spaces. The parking survey conducted at the study site indicated peak demand parking supply of 179 spaces and 310 spaces, during the Non-Event Period and Event Period, respectively. It indicates that the existing businesses' parking demands can be accommodated well within the parking supply of 418 spaces. Table 5.4 provides the "worst case" scenario using the Normal Peak Demand Rates applied to the existing land uses on site.

EXHIBIT 5.3: PROPOSED PHASING PLAN





Table 5.4: Number of Parking Spaces Required During Phase 1 of Construction

	GFA m2	Phase 1 Capacity	Non-Event Peak Demand Period Rate Per 19m ² GFA	Event Peak Demand Period Rate Per 19m ² GFA
Existing Banquet Hall (Lot1)	2225.0	418	0.07 (8 spaces)	2.02 (237 spaces)
Existing Building (Lot 2)	4703.7	418	0.64 (158 spaces)	0.20 (50 spaces)
Combined Buildings (Lot 3)	2327.2	418	0.64 (78 spaces)	0.20 (24 spaces)
Total**	9255.9	418 spaces	245 spaces	311 spaces

*Total May not add up due to rounding

The parking requirements based on the Normal Peak Demand Rates indicate the proposed 418 parking spaces during Phase 1 will be able to accommodate the normal peak parking demands occurring at the study site.

The Phase 2

The Phase 2 of the construction assumes that the New Banquet Hall and the 80 Room Hotel is completed. Upon completion, the existing Banquet Hall would have been demolished and the old building site will be turned into a parking lot to serve the new buildings. Furthermore, the two driveways on Summerlea Road will be combined into one driveway and line up with the driveway off the Queen Street East, providing a direct north-south drive-isle connecting Queen Street East and Summerlea Road. This process will involve re-allocation of parking spaces from one lot to another but it wouldn't amount to a significant loss of parking spaces for the overall site supply of parking spaces.

At the end of Phase 2, it is assumed that all 517 parking spaces proposed for the full build-out of the site will be provided. Temporary parking spaces, approximately 86 spaces can be marked for use as temporary/contingency parking in an area designated for the two commercial mixed-use buildings are to be constructed. The following Table 5.5 provides the "worst case" scenario using the Normal Peak Demand Rates applied to the future Phase 2 land uses



on site. The parking requirements based on the Normal Peak Demand Rates indicate the proposed 517 total parking spaces available when Phase 2 is completed will be sufficient to accommodate the "worst case" normal peak parking demands occurring at the study site. Furthermore, it indicates that if the contingent parking lot is made available, the site will have approximately 600 parking spaces.

	GFA m²/ Rooms	Phase 2 Capacity ¹	Non-Event Peak Demand Period Rate Per 19m ² GFA	Event Peak Demand Period Rate Per 19m ² GFA
New Banquet Hall (Lot1)	3490.8	517	0.07 (13 spaces)	2.02 (371 spaces)
Existing Building (Lot 2)	4703.7	517	0.64 (158 spaces)	0.20 (50 spaces)
Existing Combined Buildings (Lot 3)	2327.2	517	0.64 (78 spaces)	0.20 (24 spaces)
New Hotel (Lot 4)	80 Rooms	517	0.50 (40 spaces)	0.60 (48 spaces)
Temporary Parking Spaces at New Com/Retail Building Lot (Lot 4)		86	N/A	N/A
Total*		517 spaces	290 spaces	493 spaces

Table 5.5: Number of Parking Spaces Required During Phase 2 of Construction

¹ Phase 2 Capacity is 517 spaces without the temporary contingent parking lot (area designated for future commercial buildings).

*Total may not add up due to rounding and includes temporary parking spaces.

The Phase 3

The Phase 3 of the construction phase will consist of preparing the area designated for the future two commercial/retail buildings to be maintained and made be available as a parking lot until the two commercial buildings will be built. The exact timing of the construction of Phase 3 is unknown at this point. The timing is largely a function of market demands, and will be operating as a parking lot with 86 spaces, until such time the buildings can be constructed. As such, the total number of parking spaces provided during this Phase 3 of the development will be 603 spaces.



The Phase 4

The Phase 4 will complete the full build-out of the study site. However, the exact timing of start of the Phase 4 construction is unknown at this point as there are no market demands requiring the proposed commercial/retail buildings to be constructed. As described in Phase 3, until such time, it is expected that the Phase 4 construction area will be turned into a parking lot with 86 spaces, as a contingent parking area to meet the future changes in parking demands, if required. While it may be premature to plan for the Phase 4 as there are no definite plans other than the approximate size of the buildings and the general area where these buildings will be located, the study assumed that the study site will be able to maintain at least 517 parking spaces on site after the completion of the final Phase 4, full build-out of the study site.

The study analyses related to the study site parking requirements for the entire site concluded that the proposed 517 parking spaces will be sufficient to meet the future normal peak parking demand under the "worst case" scenario.



6. CONCLUSIONS AND RECOMMENDATIONS

This traffic impact and a parking justification study for a Monterey Park Inc. Gateway to replace the existing Banquet Facility with a New Banquet Facility and add a Hotel as well as complete the last phase of the Retail/Commercial Buildings to be located at the property with municipal address 1 Gateway Boulevard, in the City of Brampton, Regional Municipality of Peel. The traffic impact analysis described in this report have provided a detailed examination of the anticipated impacts of future background and site-generated traffic for the proposed development. The parking study included surveys of the study site with observation of the existing uses on site and a proxy site observation to determine a "worst case" normal peak demand period parking rate to be used for the study site. The following are study conclusions and recommendations.

Traffic Analyses

- 6.1 For traffic analyses, the study considered the weekday AM, PM and Saturday Mid-Day peak hours to represent the "worst case" scenario for the study site. Under the existing conditions (see Exhibit 2.2), all study intersections are operating at an acceptable Level of Service. Some movements at Queen Street East/Gateway Boulevard intersection are currently experiencing the volume/ capacity ratio at critical levels.
- 6.2 For planning purposes, the 2014 Region of Peel data for Queen Street East was expanded by 8% to represent the existing conditions. These volumes were than projected ahead to 2023 planning horizon based on an average growth rate of 2.0% per annum for Queen Street East corridor and rate of 1% per annum for Gateway Boulevard to produce growth in the background traffic volumes.
- 6.3 The traffic that will be generated by the future uses on the study site was developed using the observed traffic patterns at the existing site entrances as well as the trip generation relationships taken from the current ITE Trip Generation Manual. The trip generation summary Table 3.1 contains the detail description of trip generation methodology used to forecast AM, PM and

Saturday Mid-Day peak hour trip generation for the proposed new buildings on site and the following table provides the summary of total forecast site generated traffic during the study peak hour periods:

	AM Pk Hr	PM Pk Hr	<u>SAT Mid-Day</u>
Inbound	293	264	275
Outbound	117	220	240
Total	410	485	515

- 6.4 Directional distributions of the site future site traffic are based on the observed distribution patterns at the existing site entrances and described in Exhibit 3.1. Some of the existing site traffic has been re-distributed due to consolidation of two driveways on Summerlea Road. Exhibits 3.2 illustrates the total new and re-assigned existing site traffic.
- 6.5 The intersection capacity analyses for the 2023 background conditions indicate that the Queen Street East and Gateway Boulevard signalized intersection is forecast to operate at an overall intersection average of LOS "D" with delay of approximately 39 seconds, LOS "D" with delay of approximately 50 seconds and LOS "C" with delay of approximately 31 seconds during AM, PM and Sat Mid-Day peak hours, respectively. The critical movements, the eastbound and westbound through movements are forecast to operate at or over capacity during AM and PM peak hours, respectively. The eastbound left turn lane is also forecast to operate at over capacity during the PM peak hour. The decline in the LOS for the critical movements are a result of the continued growth in the background traffic of the road network growth.

The overall intersection average LOS indicates that there could be some room for adjustments in the signal timing to optimize the intersection. However, the coordination and optimization should be carried out by Peel Region to improve the overall Queen Street East corridor and adjust the signal timing accordingly.

The site entrance on Gateway Boulevard is forecast to continue to operate well with the critical movements associated with the vehicles leaving the study site



(eastbound traffic). It is operating at LOS "C" with delay of approximately 21 seconds and v/c ratio at 0.32 during the critical PM peak hour period. All movements at the site entrance driveways on Summerlea Road and the right-in right-out driveway on Queen Street East operate at acceptable Level of Service with minor delays.

6.6 Under the future 2023 total traffic levels (proposed additional site traffic added to the forecast background traffic), the Queen Street East and Gateway Boulevard signalized intersection is forecast to operate at an overall intersection average of LOS "D" with delay of approximately 39 seconds, LOS "D" with delay of approximately 51 seconds and LOS "C" with delay of approximately 32 seconds during AM, PM and Sat Mid-Day peak hours, respectively. As it was indicated under the 2023 background analyses, the critical movements, the eastbound and westbound through movements are forecast to operate at or over capacity during AM and PM peak hours, respectively. The eastbound left turn lane is also forecast to operate at over capacity during the PM peak hour.

However, the proposed site traffic adds very little additional delay through the Queen Street East and Gateway Boulevard intersection. The analyses indicate that the additional site traffic will add approximately 1 second delay at the intersection and very minor increase in volume/capacity ratio to these critical movements. It is further noted that the decline in the LOS for the critical movements are a result of the continued growth in the background traffic of the road network growth. The overall intersection average LOS indicates that there are opportunities for adjustments in the signal timing to optimize the intersection. As already suggested, the coordination and optimization should be carried out by the Peel Region to improve the overall Queen Street East corridor and adjust the signal timing accordingly.

The site entrance on Gateway Boulevard is forecast to continue to operate well with the critical movements associated with the vehicles leaving the study site (eastbound traffic). It is operating at LOS "E" with delay of approximately 47 seconds and v/c ratio at 0.77 during the critical PM peak hour period. All



movements at the site entrance driveways on Summerlea Road and the rightin right-out driveway on Queen Street East operate at acceptable Level of Service with minor delays. These results indicate there is residual capacity to accommodate traffic growth in the future. No mitigation measure will be required to support the additional traffic resulting from the proposed development.

Parking Analyses

- 6.7 In order to determine the normal peak parking demand for different land uses on the study site, parking surveys were conducted at the study site throughout the month of December, 2016 (full surveys were carried out on Friday December 9, Saturday December 10, and peak period surveys were collected on Saturday December 31, 2016) of parking usage at the study site. Also, parking surveys were conducted on Saturday December 31, 2016, at the proxy site, located at the Northwest quadrant of Queen Street East and The Gore Road intersection containing a Hotel (Hampton Inn), a Tim Horton's, a Banquet Hall (Embassy Grand Convention Centre), as well as, four separate buildings with commercial/office/retail uses on site.
- 6.8 The parking surveys indicated the following:
 - Both the study site and the proxy site currently over-supply number of parking spaces on site, based on observed parking occupancy during the normal peak demand period.
 - There are two distinct peak periods of parking demand associated with a site having a Banquet Hall/Convention Centre on a site mixed with normal commercial/retail uses on the same site. That is, the retail/office/ commercial uses' peak demand occur during a mid-afternoon and the banquet hall use's normal peak parking demand occurs during the evening when the hall is rented out and when an event is taking place.
- 6.9 The study developed the following parking rates to be used for the study site:



- Based on the observations, the study developed a "worst case" normal peak demand parking rates for two different peak demand periods occurring at the study site, during a Non-Event Peak Demand Period Rate and during an Event Peak Demand Period Rate.
- The "worst case" scenario is produced by applying peaking adjustments to increase the parking demand for specific use during the appropriate peak times related to each use. That is, the observed parking rate for office/retail/commercial uses during the Non-Event Peak Demand Period was doubled to account for any unforeseen circumstance. Moreover, the office/retail/commercial uses, during the Event Peak Demand Period was increase 700% from the observed rate at the peak demand period in the evening to account for possible overlapping of the retail/commercial activities with the events being held at the Banquet Hall.
- The following table provides the parking requirements based on the "worst case" scenario for two different peak demand periods for the future uses on the study site.

	GFA m ² / Rooms	Capacity	Non-Event Peak Demand Period Rate Per 19m ² GFA	Event Peak Demand Period Rate Per 19m ² GFA
New Banquet Hall (Lot1)	3490.8	517	0.07 (13 spaces)	2.02 (371 spaces)
Existing Building (Lot 2)	4703.7	517	0.64 (158 spaces)	0.20 (50 spaces)
Existing Combined Buildings (Lot 3)	2327.2	517	0.64 (78 spaces)	0.20 (24 spaces)
New Com/Retail Two Buildings (Lot 4)	1840.0	517	0.64 (62 spaces)	0.20 (19 spaces)
New Hotel (Lot 4)	80 Rooms	517	0.50 (40 spaces)	0.60 (48 spaces)
Total* (85 th percentile)		517 Spaces	352 spaces (300 spaces)	512 spaces (436 spaces)

^{*}Total may not add up due to rounding

6.10 The study concluded that the parking requirements for the future uses proposed for the study site, based on the "worst case" scenario using maximized normal peak demand rates indicate that the proposed 517 parking spaces for the study site will be able to accommodate the normal peak parking demands occurring at the study site. In applying the 85% percentile rate to the parking forecast, the normal peak parking demand could range between approximately 300 spaces



and 435 spaces for normal peak parking demand occurring at Non-Event Peak Demand and Event Peak Demand, respectively. The proposed 517 parking spaces provided for the study site (at full build-out) will be able to accommodate the normal peak parking demands occurring at the study site.

6.11 The construction of the new buildings on site will be carried out in four phases. The Phase 1 of the study will include building of the New Banquet Hall and the 80 Room Hotel while maintain the operations of the existing uses on site. The Phase 2 assumed construction of new parking area (by demolishing the old Banquet Hall) to serve the New Banquet Hall and the 80 Room Hotel. Also in Phase 2, the two driveways on Summerlea Road will be combined into one driveway and line up with the driveway off the Queen Street East, providing a direct north-south drive-isle connecting Queen Street East and Summerlea Road. When the Phase 2 is completed and the New Banquet Hall and the Hotel is in operation, the study site will be considered almost fully built-out.

The Phase 3 will consist of preparing the area for the future two commercial/retail buildings by installing curbs and building a temporary parking lot with 86 spaces until such time the construction of the two retail buildings can begin. The final Phase 4 will complete the full build-out of the study site. The timing of Phase 4 is unknown at this point as there are no urgent market demand requiring the proposed commercial/retail buildings to be constructed. Until such time, it is expected that the Phase 4 construction area will be a contingent parking area with 86 spaces. When Phase 4 is completed, the study site will be operating with 517 parking spaces on site.

6.12 The study recommended the following supply of the parking spaces during its construction phases to accommodate the number of required parking spaces to meet the parking demands during each construction phase. The Phase 1 and 2 are critical phases with respect to the study site providing enough parking spaces for the existing businesses to maintain the number of parking spaces on site to meet the normal peak demand required for the businesses to operate successfully. The table below indicates that there will be enough parking spaces



on site during each phase as not to disrupt the existing businesses and to support the future demands created by the new buildings on site.

	Phase 1	Phase 2/3	Phase 3/4
Existing Banquet Hall (Lot1)	Operating	Demolished	Demolished
New Banquet Hall (Lot1)	Under Construction	Operating	Operating
Existing Building (Lot 2)	Operating	Operating	Operating
Existing Combined Buildings (Lot 3)	Operating	Operating	Operating
New Hotel (Lot 4)	Under Construction	Operating	Operating
Future Com/Retail Buildings (Lot 4)	Partial Parking Lot	Contingent Parking Lot	Under Construction
Total (Required*/Supply)	(245/311 spaces – 418 spaces provided)	(290/493 spaces – 517 spaces provided and 603 spaces with contingent parking lot)	(290/493 spaces – 517 spaces provide)

*Required (Non-Event Peak Demand/Event Peak Demand)

6.13 No other mitigation measures will be required to support the proposed construction of the proposed new buildings on the study site.

TECHNICAL APPENDIX

TECHNICAL APPENDIX

APPENDIX A: Traffic Data

APPENDIX B: Intersection Analyses Summaries

APPENDIX C: Parking Survey Analyses

APPENDIX B: Intersection Analyses Summaries

Gateway Commercial Development 3: Gateway Blvd/Chrysler Dr & Queen St E

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	***	1	7	***	1	٦	1		7	**	1
Traffic Volume (vph)	107	1832	162	94	1253	150	72	64	32	262	438	188
Future Volume (vph)	107	1832	162	94	1253	150	72	64	32	262	438	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	120.0		200.0	60.0		0.0	140.0		15.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850			0.850		0.950				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1467	4848	1553	1656	4715	1357	1456	2796	0	1641	3505	1242
Flt Permitted	0.082			0.090			0.339			0.686		
Satd. Flow (perm)	127	4848	1553	157	4715	1357	519	2796	0	1185	3505	1242
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			163		35				136
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.0			132.2			133.9			123.4	
Travel Time (s)		9.2			9.5			9.6			8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	23%	7%	4%	9%	10%	19%	24%	16%	36%	10%	3%	30%
Adj. Flow (vph)	116	1991	176	102	1362	163	78	70	35	285	476	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	116	1991	176	102	1362	163	78	105	0	285	476	204
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	

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Synchro 9 Report

Gateway Commercial Development 3: Gateway Blvd/Chrysler Dr & Queen St E

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Permitted Phases	4		4	8		8	2			6		6	
Detector Phase	. 7	4	4	3	8	8	5	2		6	6	6	
Switch Phase			·		Ū	Ŭ	Ū	_		Ū			
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0		24.0	24.0	24.0	
Total Split (s)	16.0	55.0	55.0	11.0	50.0	50.0	11.0	54.0		43.0	43.0	43.0	
Total Split (%)	13.3%	45.8%	45.8%	9.2%	41.7%	41.7%	9.2%	45.0%		35.8%	35.8%	35.8%	
Maximum Green (s)	10.0	49.0	49.0	5.0	44.0	44.0	5.0	48.0		37.0	37.0	37.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	010		Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Max		Max	Max	Max	
Walk Time (s)	None	7.0	7.0	None	7.0	7.0	None	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0		0	0	0	
Act Effct Green (s)	58.4	49.0	49.0	49.6	44.6	44.6	48.0	48.0		39.2	39.2	39.2	
Actuated g/C Ratio	0.49	0.41	0.41	0.41	0.37	0.37	0.40	0.40		0 33	0 33	0 33	
v/c Ratio	0.47	1 01	0.41	0.80	0.37	0.37	0.40	0.40		0.33	0.33	0.33	
Control Delay	44.3	57.3	73	62.4	37.2	5.1	26.8	15.2		<u>19</u> 9	33.5	14 3	
Oueue Delay	0.0	0.0	0.0	02.4	0.0	0.0	20.0	0.0		0.0	0.0	0.0	
Total Delay	44.3	57.3	73	62.4	37.2	5.0	26.8	15.2		49.9	33.5	14.3	
105	D	57.5 F	Α	52.T	07.2 D	Δ	20.0 C.	B		D	с.	B	
Approach Delay	D	52.8	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-	35.6	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Ŭ	20.2		D	34 3	D	
Approach LOS		02.0 D			00.0 D			20.2 C.			C.		
Queue Length 50th (m)	15 1	~180.6	59	13.1	109 1	0.0	12.1	55		64.2	49.6	12 3	
Queue Length 95th (m)	#40.5	#219.9	20.5	#42.2	128.6	14 5	23.1	11 5		#108 5	66.0	34.6	
Internal Link Dist (m)	# 10.0	104.0	20.0	" 12.2	108.2	11.0	20.1	109.9		# 100.0	99.4	01.0	
Turn Bay Length (m)	120.0	104.0		120.0	100.2	200.0	60.0	107.7		140.0	77.4	15.0	
Base Capacity (vph)	120.0	1979	714	120.0	1752	606	246	1139		387	1144	497	
Starvation Cap Reductn	0	0	0	0	0	000	0	0		0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0	
Reduced v/c Ratio	0.67	1.01	0.25	0.80	0.78	0.27	0.32	0.09		0.74	0.42	0.41	
Intersection Summary													
Area Type:	Other												
Cycle Length: 120													
Actuated Cycle Length: 12	0												
Natural Cycle: 90													
Control Type: Actuated-Uncoordinated													
Maximum v/c Ratio: 1.01													
Intersection Signal Delay:		Intersection LOS: D											
Intersection Capacity Utilization 79.3%					ICU Level of Service D								
Analysis Period (min) 15													
 Volume exceeds capacity, queue is theoretically infinite. 													

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Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Gateway Blvd/Chrysler Dr & Queen St E



	-	7	1	-	1	1				
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	***	1		***		1				
Traffic Volume (veh/h)	2079	81	0	1513	0	22				
Future Volume (Veh/h)	2079	81	0	1513	0	22				
Sian Control	Free	01		Free	Stop					
Grade	0%			0%	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Hourly flow rate (vph)	2260	88	0	1645	0	24				
Pedestrians	2200				Ŭ					
Lane Width (m)										
Walking Speed (m/s)										
Percent Blockage										
Right turn flare (veh)										
Median type	None			None						
Median storage veh)	110110									
Upstream signal (m)				128						
pX, platoon unblocked				.20	0.75					
vC, conflicting volume			2348		2808	753				
vC1, stage 1 conf vol			2010		2000	100				
vC2, stage 2 conf vol										
vCu, unblocked vol			2348		2245	753				
tC, single (s)			4.1		6.8	6.9				
tC, 2 stage (s)										
tF (s)			2.2		3.5	3.3				
p0 queue free %			100		100	93				
cM capacity (veh/h)			206		27	352				
Direction Lane #	FR 1	FR 2	FR 3	FR /	W/R 1	W/R 2	W/B 3	NR 1		
Volume Total	752	752	752	00	510	E 10	E 10	24		
Volume Left	705	755	755	00	040	040	040	24		
Volume Pight	0	0	0	0	0	0	0	24		
	1700	1700	1700	00 1700	1700	1700	1700	24		
Volume to Canacity	0.44	0.44	0.44	0.05	0.22	0.22	0.22	0.07		
Ouque Length 95th (m)	0.44	0.44	0.44	0.05	0.32	0.32	0.32	0.07		
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7		
Lang LOS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0		
Approach Delay (s)	0.0				0.0			14.0		
Approach LOS	0.0				0.0			10.0		
Approach 203								U		
Intersection Summary										
Average Delay			0.1							
Intersection Capacity Utiliza	ation		50.2%	IC	CU Level o	of Service			А	
Analysis Period (min)			15							

Gateway Commercial Development

Future (2025) Background Traffic Volumes

8: Gateway Blvd & Site Entrance/Commercial Driveway

AM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			đ î b			a th	
Traffic Volume (veh/h)	36	0	24	12	0	14	12	118	10	35	558	102
Future Volume (Veh/h)	36	0	24	12	0	14	12	118	10	35	558	102
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	0	26	13	0	15	13	128	11	38	607	111
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											134	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	844	904	359	565	954	70	718			139		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598	665	59	288	721	70	459			139		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	97	98	100	98	99			97		
cM capacity (veh/h)	331	327	893	543	304	979	987			1442		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	65	28	77	75	342	414						
Volume Left	39	13	13	0	38	0						
Volume Right	26	15	0	11	0	111						
cSH	442	713	987	1700	1442	1700						
Volume to Capacity	0.15	0.04	0.01	0.04	0.03	0.24						
Queue Length 95th (m)	4.1	1.0	0.3	0.0	0.6	0.0						
Control Delay (s)	14.5	10.3	1.6	0.0	1.1	0.0						
Lane LOS	В	В	А		А							
Approach Delay (s)	14.5	10.3	0.8		0.5							
Approach LOS	В	В										
Intersection Summary												
Average Delay			1.7									
Intersection Capacity Utilization			38.5%	IC	U Level o	of Service			А			
Analysis Period (min)			15									
Gateway Commercial Development 11: Gateway Blvd & Summerlea Rd/Walker Dr

Future (2025) Background Traffic Volumes AM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			\$			đ þ	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	44	21	0	3	27	79	3	3	0	368	16	153
Future Volume (vph)	44	21	0	3	27	79	3	3	0	368	16	153
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	48	23	0	3	29	86	3	3	0	400	17	166
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	71	118	6	409	175							
Volume Left (vph)	48	3	3	400	0							
Volume Right (vph)	0	86	0	0	166							
Hadj (s)	0.17	-0.40	0.13	0.52	-0.63							
Departure Headway (s)	5.6	5.0	5.3	5.5	4.4							
Degree Utilization, x	0.11	0.16	0.01	0.63	0.21							
Capacity (veh/h)	595	670	633	636	801							
Control Delay (s)	9.3	8.9	8.4	16.3	7.4							
Approach Delay (s)	9.3	8.9	8.4	13.6								
Approach LOS	А	А	А	В								
Intersection Summary												
Delay			12.5									
Level of Service			В									
Intersection Capacity Utiliza	tion		43.9%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

Gateway Commercial Development 14: Summerlea Rd & Site Entrance East

	٠	-	-	•	1	~
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		÷.	ţ,		M	
Traffic Volume (veh/h)	1	30	165	19	35	2
Future Volume (Veh/h)	1	30	165	19	35	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	33	179	21	38	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	200				224	190
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	200				224	190
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	100
cM capacity (veh/h)	1372				763	852
Direction Lane #	FR 1	W/R 1	SR 1			
Volume Total	2/	200	40			
Volume Left	J4 1	200	40 20			
Volume Right	0	21	აი ე			
cSH	1272	1700	2 ۲۵٦			
Volume to Canacity	0.00	0.12	0.05			
Oueue Length 95th (m)	0.00	0.12	0.05			
Control Delay (s)	0.0	0.0	10.0			
	0.2	0.0	10.0			
Approach Delay (s)	A 0.2	0.0	10 0			
Approach LOS	0.2	0.0	10.0			
			А			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utiliz	ation		19.8%	IC	CU Level c	of Service
Analysis Period (min)			15			

Gateway Commercial Development 16: Summerlea Rd & Site Entrance Mid

	٨	-	+	•	4	∢
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		र्स	ţ,		M	
Traffic Volume (veh/h)	1	31	165	2	0	2
Future Volume (Veh/h)	1	31	165	2	0	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	34	179	2	0	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	181				216	180
vC1, stage 1 conf vol					2.0	
vC2, stage 2 conf vol						
vCu, unblocked vol	181				216	180
tC, single (s)	4.1				6.4	6.2
tC. 2 stage (s)					011	0.2
tF (s)	22				35	33
p0 queue free %	100				100	100
cM capacity (veh/h)	1394				772	863
Direction Lane #			CD 1			
Volumo Total			201			
	35	181	2			
Volume Dight		0	0			
	0	2	2			
LOFI Valuma ta Canasitu	1394	1/00	863			
	0.00	0.11	0.00			
Queue Lengin 95in (m)	0.0	0.0	0.1			
Control Delay (s)	0.2	0.0	9.2			
Lane LOS	A		А			
Approach Delay (s)	0.2	0.0	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utiliz	zation		18.8%	IC	CU Level c	of Service
Analysis Period (min)			15			

Gateway Commercial Development 18: Summerlea Rd & Site Entrance West

	٦	-	←	•	1	~
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		é.	ţ,		Y	
Traffic Volume (veh/h)	1	32	167	1	1	1
Future Volume (Veh/h)	1	32	167	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	35	182	1	1	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	183				220	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	183				220	182
tC, single (s)	4.1				6.4	6.2
tC. 2 stage (s)					011	0.2
tF (s)	22				35	33
p0 queue free %	100				100	100
cM capacity (veh/h)	1392				768	860
Direction Long #	FD 4				,	000
Direction, Lane #	EB I		2R I			
	36	183	2			
Volume Leit	1	0	1			
	0	1700	011			
LOFI Valuma ta Canaaitu	1392	1/00	811			
Volume to Capacity	0.00	0.11	0.00			
Queue Lengin 95in (m)	0.0	0.0	0.1			
Control Delay (S)	0.2	0.0	9.4			
Lane LUS	A	~ ~	A			
Approach Delay (s)	0.2	0.0	9.4			
Approach LOS			A			
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Util	ization		18.9%	IC	CU Level c	of Service
Analysis Period (min)			15			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	***	1	7	***	1	7	† 1 ₂		7	^	1
Traffic Volume (vph)	118	1625	110	49	2127	230	203	454	167	155	173	108
Future Volume (vph)	118	1625	110	49	2127	230	203	454	167	155	173	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	120.0		200.0	60.0		0.0	140.0		15.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850			0.850		0.960				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1467	4848	1553	1656	4715	1357	1456	2855	0	1641	3505	1242
Flt Permitted	0.072			0.074			0.533			0.368		
Satd. Flow (perm)	111	4848	1553	129	4715	1357	817	2855	0	636	3505	1242
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			175		49				136
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.0			132.2			133.9			123.4	
Travel Time (s)		9.2			9.5			9.6			8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	23%	7%	4%	9%	10%	19%	24%	16%	36%	10%	3%	30%
Adj. Flow (vph)	128	1766	120	53	2312	250	221	493	182	168	188	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	1766	120	53	2312	250	221	675	0	168	188	117
Enter Blocked Intersection	No	No	No	No	No							
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6	0		3.6	0		3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex							
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Tranplan Associates

Synchro 9 Report

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	. 7	4	4	3	8	8	5	2		6	6	6
Switch Phase				Ū	Ŭ	Ū		_		Ū	Ŭ	
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0		24.0	24.0	24.0
Total Split (s)	12.0	59.0	59.0	12.0	59.0	59.0	11.0	49.0		38.0	38.0	38.0
Total Split (%)	10.0%	49.2%	49.2%	10.0%	49.2%	49.2%	9.2%	40.8%		31.7%	31.7%	31.7%
Maximum Green (s)	6.0	53.0	53.0	6.0	53.0	53.0	5.0	43.0		32.0	32.0	32.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Мах		Мах	Max	Мах
Walk Time (s)	110110	7.0	7.0	110110	7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0		0	0	0
Act Effct Green (s)	60.2	55.4	55.4	58.9	53.0	53.0	43.0	43.0		32.0	32.0	32.0
Actuated g/C Ratio	0.50	0.46	0.46	0.49	0.44	0.44	0.36	0.36		0.27	0.27	0.27
v/c Ratio	1.04	0.79	0.15	0.38	1.11	0.36	0.69	0.64		0.99	0.20	0.27
Control Delay	119.8	31.2	2.9	21.6	89.8	8.4	44.4	32.9		112.8	34.8	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	119.8	31.2	2.9	21.6	89.8	8.4	44.4	32.9		112.8	34.8	5.5
LOS	F	С	A	С	F	A	D	С		F	С	A
Approach Delay		35.2			80.6			35.7			55.3	
Approach LOS		D			F			D			E	
Queue Length 50th (m)	~21.4	137.9	0.0	6.0	~240.1	10.8	41.1	67.6		41.6	19.0	0.0
Queue Length 95th (m)	#62.9	159.3	8.6	12.5	#270.1	29.4	#64.9	89.0		#88.8	29.3	10.9
Internal Link Dist (m)		104.0			108.2			109.9			99.4	
Turn Bay Length (m)	120.0			120.0		200.0	60.0			140.0		15.0
Base Capacity (vph)	123	2238	789	139	2082	697	319	1054		169	934	430
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.04	0.79	0.15	0.38	1.11	0.36	0.69	0.64		0.99	0.20	0.27
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 12	0											
Natural Cycle: 120												
Control Type: Actuated-Un	coordinated	l										
Maximum v/c Ratio: 1.11												
Intersection Signal Delay:	56.7			l	ntersectio	n LOS: E						
Intersection Capacity Utiliz	ation 94.1%)			CU Level	of Service	e F					
Analysis Period (min) 15												
~ Volume exceeds capac	city, queue i	s theoretic	cally infini	ite.								

Tranplan Associates

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

Splits and Phases: 3: Gateway Blvd/Chrysler Dr & Queen St E

d	✓ Ø3 → Ø4
49 s	12 s 59 s
▲ Ø5 ● Ø6	
11 s 38 s	12 s 59 s

		7	1	-	1	1				
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	***	1		***		1				
Traffic Volume (veh/h)	1836	52	0	2438	0	17				
Future Volume (Veh/h)	1836	52	0	2438	0	17				
Sign Control	Free		-	Free	Stop					
Grade	0%			0%	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Hourly flow rate (vph)	1996	57	0	2650	0	18				
Pedestrians	1770		Ŭ	2000	Ŭ					
Lane Width (m)										
Walking Speed (m/s)										
Percent Blockage										
Right turn flare (veh)										
Median type	None			None						
Median storage veh)	10110									
Upstream signal (m)				128						
pX, platoon unblocked					0.57					
vC, conflicting volume			2053		2879	665				
vC1, stage 1 conf vol			2000		2017					
vC2, stage 2 conf vol										
vCu, unblocked vol			2053		1637	665				
tC, single (s)			4.1		6.8	6.9				
tC, 2 stage (s)										
tF (s)			2.2		3.5	3.3				
p0 queue free %			100		100	96				
cM capacity (veh/h)			270		52	402				
Direction. Lane #	FB 1	FB 2	FB 3	FB 4	WB 1	WB 2	WB 3	NB 1		
Volume Total	665	665	665	57	883	883	883	18		
Volume Left	005	005	005	0	005	005	005	0		
Volume Right	0	0	0	57	0	0	0	18		
cSH	1700	1700	1700	1700	1700	1700	1700	402		
Volume to Capacity	0.39	0.39	0.39	0.03	0.52	0.52	0.52	0.04		
Queue Length 95th (m)	0.57	0.57	0.57	0.00	0.52	0.52	0.52	1 1		
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1		
Lane LOS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	R		
Approach Delay (s)	0.0				0.0			14.4		
Approach LOS	0.0				0.0			B		
Intersection Summarv										
Average Delay			0.1							
Intersection Capacity Utilizat	ion		50.4%	IC	CU Level o	of Service			А	
Analysis Period (min)			15		3 231010					

Gateway Commercial Development

Future (2025) Background Traffic Volumes

8: Gateway Blvd & Site Entrance/Commercial Driveway

PM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			đ î b			đ î b	
Traffic Volume (veh/h)	91	0	6	15	0	28	4	705	15	12	245	75
Future Volume (Veh/h)	91	0	6	15	0	28	4	705	15	12	245	75
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	99	0	7	16	0	30	4	766	16	13	266	82
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											134	
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	754	1123	174	948	1156	391	348			782		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	683	1064	85	883	1098	391	264			782		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	67	100	99	93	100	95	100			98		
cM capacity (veh/h)	305	211	928	228	201	608	1257			832		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	106	46	387	399	146	215						
Volume Left	99	16	4	0	13	0						
Volume Right	7	30	0	16	0	82						
cSH	319	385	1257	1700	832	1700						
Volume to Capacity	0.33	0.12	0.00	0.23	0.02	0.13						
Queue Length 95th (m)	11.4	3.2	0.1	0.0	0.4	0.0						
Control Delay (s)	21.8	15.6	0.1	0.0	1.0	0.0						
Lane LOS	С	С	А		А							
Approach Delay (s)	21.8	15.6	0.1		0.4							
Approach LOS	С	С										
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utiliza	ation		41.5%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

Gateway Commercial Development 11: Gateway Blvd & Summerlea Rd/Walker Dr

Future (2025) Background Traffic Volumes

PM Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			4			đ î ja	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	188	58	0	0	79	467	4	4	1	149	2	86
Future Volume (vph)	188	58	0	0	79	467	4	4	1	149	2	86
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	204	63	0	0	86	508	4	4	1	162	2	93
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	267	594	9	163	94							
Volume Left (vph)	204	0	4	162	0							
Volume Right (vph)	0	508	1	0	93							
Hadj (s)	0.19	-0.48	0.06	0.53	-0.66							
Departure Headway (s)	5.7	4.7	6.9	7.2	6.0							
Degree Utilization, x	0.42	0.77	0.02	0.32	0.16							
Capacity (veh/h)	596	753	449	463	552							
Control Delay (s)	12.9	21.7	10.0	12.4	8.8							
Approach Delay (s)	12.9	21.7	10.0	11.1								
Approach LOS	В	С	А	В								
Intersection Summary												
Delay			17.1									
Level of Service			С									
Intersection Capacity Utilizatio	n		71.3%	IC	U Level c	of Service			С			
Analysis Period (min)			15									

Gateway Commercial Development 14: Summerlea Rd & Site Entrance East

	•	-	-	•	1	~
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		र्स	ţ,		M	-
Traffic Volume (veh/h)	1	211	151	19	35	2
Future Volume (Veh/h)	1	211	151	19	35	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	229	164	21	38	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	185				406	174
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	185				406	174
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				94	100
cM capacity (veh/h)	1390				601	869
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	230	185	40			
Volume Left	1	0	38			
Volume Right	0	21	2			
cSH	1390	1700	610			
Volume to Capacity	0.00	0.11	0.07			
Queue Length 95th (m)	0.0	0.0	1.7			
Control Delay (s)	0.0	0.0	11.3			
Lane LOS	А		В			
Approach Delay (s)	0.0	0.0	11.3			
Approach LOS			В			
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utiliz	zation		21.9%	IC	U Level o	of Service
Analysis Period (min)			15			

Gateway Commercial Development 16: Summerlea Rd & Site Entrance Mid

	٦	-	←	•	1	~
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		ર્સ	Þ		Y	
Traffic Volume (veh/h)	1	212	151	2	1	2
Future Volume (Veh/h)	1	212	151	2	1	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	230	164	2	1	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	166				397	165
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	166				397	165
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1412				608	879
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	231	166	3			
Volume Left	1	0	1			
Volume Right	0	2	2			
c.SH	1412	1700	765			
Volume to Capacity	0.00	0.10	0.00			
Queue Length 95th (m)	0.00	0.10	0.00			
Control Delay (s)	0.0	0.0	9.7			
Lane LOS	0.0	0.0	λ.			
Approach Delay (s)	0.0	0.0	97			
Approach LOS	0.0	0.0	γ.γ			
			Π			
Intersection Summary			0.1			
Average Delay			0.1	10		f Com las
intersection Capacity Utili	ization		22.0%	IC	U Level o	or Service
Analysis Period (min)			15			

Gateway Commercial Development 18: Summerlea Rd & Site Entrance West

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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		÷.	f,		Y	
Traffic Volume (veh/h)	1	213	153	1	1	1
Future Volume (Veh/h)	1	213	153	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	232	166	1	1	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	167				400	166
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	167				400	166
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1411				605	878
Direction Lane #	FR 1	W/R 1	SR 1			
Volumo Total	122	147	<u> </u>			
Volume Left	233	107	2 1			
Volume Pight	1	0	1			
	1/11	1700	714			
Volume to Canacity	1411	0.10	0.00			
Ouque Length 95th (m)	0.00	0.10	0.00			
Control Dolay (s)	0.0	0.0	0.1			
	0.0	0.0	10.0 P			
Approach Dolay (c)	A	0.0	10 0			
Approach LOS	0.0	0.0	10.0 D			
Appilacii LUS			В			
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Util	ization		22.0%	IC	U Level c	of Service
Analysis Period (min)			15			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	***	1	7	***	1	7	† 1 ₂		٦	**	1
Traffic Volume (vph)	119	1724	44	72	1265	106	92	79	111	158	51	95
Future Volume (vph)	119	1724	44	72	1265	106	92	79	111	158	51	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	120.0		200.0	60.0		0.0	140.0		15.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850			0.850		0.912				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1467	4848	1553	1656	4715	1357	1456	2578	0	1641	3505	1242
Flt Permitted	0.086			0.088			0.604			0.622		
Satd. Flow (perm)	133	4848	1553	153	4715	1357	925	2578	0	1074	3505	1242
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			191		121				191
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.0			132.2			133.9			123.4	
Travel Time (s)		9.2			9.5			9.6			8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	23%	7%	4%	9%	10%	19%	24%	16%	36%	10%	3%	30%
Adj. Flow (vph)	129	1874	48	78	1375	115	100	86	121	172	55	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1874	48	78	1375	115	100	207	0	172	55	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Tranplan Associates

Synchro 9 Report

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	7	4	4	3	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0		24.0	24.0	24.0
Total Split (s)	20.0	59.0	59.0	13.0	52.0	52.0	11.0	48.0		37.0	37.0	37.0
Total Split (%)	16.7%	49.2%	49.2%	10.8%	43.3%	43.3%	9.2%	40.0%		30.8%	30.8%	30.8%
Maximum Green (s)	14.0	53.0	53.0	7.0	46.0	46.0	5.0	42.0		31.0	31.0	31.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Мах		Мах	Мах	Мах
Walk Time (s)		7.0	7.0		7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0		0	0	0
Act Effct Green (s)	59.9	51.0	51.0	50.7	43.9	43.9	42.3	42.3		31.2	31.2	31.2
Actuated g/C Ratio	0.52	0.44	0.44	0.44	0.38	0.38	0.37	0.37		0.27	0.27	0.27
v/c Ratio	0.66	0.87	0.06	0.50	0.77	0.18	0.28	0.20		0.59	0.06	0.22
Control Delay	36.2	35.3	0.2	28.3	34.6	0.6	29.4	12.1		48.2	33.8	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	36.2	35.3	0.2	28.3	34.6	0.6	29.4	12.1		48.2	33.8	1.0
LOS	D	D	А	С	С	А	С	В		D	С	А
Approach Delay		34.6			31.8			17.7			31.1	
Approach LOS		С			С			В			С	
Queue Length 50th (m)	15.2	151.7	0.0	8.7	102.8	0.0	17.2	7.5		37.8	5.4	0.0
Queue Length 95th (m)	36.0	174.6	0.0	19.5	126.3	0.0	31.0	16.4		63.6	11.0	0.0
Internal Link Dist (m)		104.0			108.2			109.9			99.4	
Turn Bay Length (m)	120.0			120.0		200.0	60.0			140.0		15.0
Base Capacity (vph)	233	2242	791	159	1947	672	361	1021		290	948	475
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.55	0.84	0.06	0.49	0.71	0.17	0.28	0.20		0.59	0.06	0.22
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 11	5.4											
Natural Cycle: 80												
Control Type: Actuated-Un	coordinated											
Maximum v/c Ratio: 0.87												
Intersection Signal Delay: 3	32.0			I	ntersectio	n LOS: C						
Intersection Capacity Utiliz	ation 72.0%			[(CU Level	of Service	еC					
Analysis Period (min) 15												

Splits and Phases: 3: Gateway Blvd/Chrysler Dr & Queen St E

<∎ ¶ø2	√ Ø3	
48 s	13 s	59 s
▲ Ø5 Ø6		Ø8
11s 37s	20 s	52 s

	-	7	1	+	1	1				
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	***	1		***		1				
Traffic Volume (veh/h)	1878	55	0	1452	0	9				
Future Volume (Veh/h)	1878	55	0	1452	0	9				
Sign Control	Free			Free	Stop					
Grade	0%			0%	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Hourly flow rate (vph)	2041	60	0	1578	0	10				
Pedestrians										
Lane Width (m)										
Walking Speed (m/s)										
Percent Blockage										
Right turn flare (veh)										
Median type	None			None						
Median storage veh)										
Upstream signal (m)				128						
pX, platoon unblocked					0.76					
vC, conflicting volume			2101		2567	680				
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol			2101		1941	680				
tC, single (s)			4.1		6.8	6.9				
tC, 2 stage (s)										
tF (s)			2.2		3.5	3.3				
p0 queue free %			100		100	97				
cM capacity (veh/h)			258		43	393				
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1		
Volume Total	680	680	680	60	526	526	526	10		
Volume Left	0	0	0	0	0	0	0	0		
Volume Right	0	0	0	60	0	0	0	10		
cSH	1700	1700	1700	1700	1700	1700	1700	393		
Volume to Capacity	0.40	0.40	0.40	0.04	0.31	0.31	0.31	0.03		
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6		
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4		
Lane LOS								В		
Approach Delay (s)	0.0				0.0			14.4		
Approach LOS								В		
Intersection Summary										
Average Delay			0.0							
Intersection Capacity Utiliza	ation		46.3%	IC	CU Level o	of Service			А	
Analysis Period (min)			15							

Gateway Commercial Development

Future (2025) Background Traffic Volumes

8: Gateway Blvd & Site Entrance/Commercial Driveway

Sat Mid-Day Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			đ þ			đ þ	
Traffic Volume (veh/h)	116	0	3	6	0	28	4	138	10	35	56	76
Future Volume (Veh/h)	116	0	3	6	0	28	4	138	10	35	56	76
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	126	0	3	7	0	30	4	150	11	38	61	83
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											134	
pX, platoon unblocked												
vC, conflicting volume	292	348	72	273	384	80	144			161		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	292	348	72	273	384	80	144			161		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	100	100	99	100	97	100			97		
cM capacity (veh/h)	604	558	975	641	532	963	1436			1416		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	129	37	79	86	68	114						
Volume Left	126	7	4	0	38	0						
Volume Right	3	30	0	11	0	83						
cSH	610	880	1436	1700	1416	1700						
Volume to Capacity	0.21	0.04	0.00	0.05	0.03	0.07						
Queue Length 95th (m)	6.4	1.1	0.1	0.0	0.7	0.0						
Control Delay (s)	12.5	9.3	0.4	0.0	4.3	0.0						
Lane LOS	В	А	А		А							
Approach Delay (s)	12.5	9.3	0.2		1.6							
Approach LOS	В	А										
Intersection Summary												
Average Delay			4.4									
Intersection Capacity Utiliza	ation		32.5%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

Gateway Commercial Development 11: Gateway Blvd & Summerlea Rd/Walker Dr

Future (2025) Background Traffic Volumes

Sat Mid-Day Peak Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		\$			\$			\$			đ þ	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	29	9	0	0	12	93	0	0	0	22	0	24
Future Volume (vph)	29	9	0	0	12	93	0	0	0	22	0	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	10	0	0	13	101	0	0	0	24	0	26
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	42	114	0	24	26							
Volume Left (vph)	32	0	0	24	0							
Volume Right (vph)	0	101	0	0	26							
Hadj (s)	0.19	-0.50	0.00	0.53	-0.67							
Departure Headway (s)	4.3	3.6	4.4	5.3	4.1							
Degree Utilization, x	0.05	0.11	0.00	0.04	0.03							
Capacity (veh/h)	818	990	799	645	830							
Control Delay (s)	7.5	7.0	7.4	7.3	6.1							
Approach Delay (s)	7.5	7.0	0.0	6.7								
Approach LOS	А	А	А	А								
Intersection Summary												
Delay			7.0									
Level of Service			А									
Intersection Capacity Utiliza	tion		18.7%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

Gateway Commercial Development 14: Summerlea Rd & Site Entrance East

	۶	→	+	*	1	~	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		र्स	ţ,		Y		
Traffic Volume (veh/h)	1	9	25	11	29	1	
Future Volume (Veh/h)	1	9	25	11	29	1	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	1	10	27	12	32	1	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	39				45	33	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	39				45	33	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				97	100	
cM capacity (veh/h)	1571				965	1041	
Direction, Lane #	<u>EB 1</u>	WB 1	SB 1				
Volume Total	11	39	33				
Volume Left	1	0	32				
Volume Right	0	12	1				
cSH	1571	1700	967				
Volume to Capacity	0.00	0.02	0.03				
Queue Length 95th (m)	0.0	0.0	0.8				
Control Delay (s)	0.7	0.0	8.9				
Lane LOS	А		А				
Approach Delay (s)	0.7	0.0	8.9				
Approach LOS			А				
Intersection Summary							
Average Delay			3.6				
Intersection Capacity Utilization	on		13.3%	IC	CU Level o	of Service	А
Analysis Period (min)			15				

Gateway Commercial Development 16: Summerlea Rd & Site Entrance Mid

	٠	→	+-	•	1	~	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		é.	et.		Y		
Traffic Volume (veh/h)	1	9	25	1	1	1	
Future Volume (Veh/h)	1	9	25	1	1	1	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	1	10	27	1	1	1	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	28				40	28	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	28				40	28	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	1585				972	1048	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	11	28	2				
Volume Left	1	0	1				
Volume Right	0	1	1				
cSH	1585	1700	1008				
Volume to Capacity	0.00	0.02	0.00				
Queue Length 95th (m)	0.0	0.0	0.0				
Control Delay (s)	0.7	0.0	8.6				
Lane LOS	А		А				
Approach Delay (s)	0.7	0.0	8.6				
Approach LOS			А				
Intersection Summarv							
Average Delay			0.6				
Intersection Capacity Utilization	on		13.3%	IC	U Level o	of Service	
Analysis Period (min)			15				

Gateway Commercial Development 18: Summerlea Rd & Site Entrance West

	٠	-	+	•	4	~	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		÷.	f,		Y		
Traffic Volume (veh/h)	1	10	26	1	1	1	
Future Volume (Veh/h)	1	10	26	1	1	1	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	1	11	28	1	1	1	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	29				42	28	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	29				42	28	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	1584				969	1046	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	12	29	2				
Volume Left	1	0	1				
Volume Right	0	1	1				
cSH	1584	1700	1006				
Volume to Capacity	0.00	0.02	0.00				
Oueue Length 95th (m)	0.0	0.02	0.00				
Control Delay (s)	0.6	0.0	8.6				
Lane LOS	A	0.0	A				
Approach Delay (s)	0.6	0.0	8.6				
Approach LOS	5.0	510	A				
Intersection Summary							
			0.6				
Intersection Canacity Litilization	n		0.0	10		f Sanvica	
Analysis Period (min)			15.570	iC			

Lane Group EBL EBL EBR WBL WBT WBR NBL NBT NBR SBL SBT SI Lane Configurations 1 <	Lane Group Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphpl) Storage Length (m) Storage Lanes Taper Length (m)
Lane Configurations Image: height of the image: heigh	Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphpl) Storage Length (m) Storage Lanes Taper Length (m)
Traffic Volume (vph)1071840182114125315092744326247814Future Volume (vph)1071840182114125315092744326247818Ideal Flow (vphpl)190019001900190019001900190019001900190019001900Storage Length (m)120.00.0120.0200.060.00.0140.015Storage Lanes111101	Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphpl) Storage Length (m) Storage Lanes Taper Length (m)
Future Volume (vph) 107 1840 182 114 1253 150 92 74 43 262 478 18 Ideal Flow (vphpl) 1900	Future Volume (vph) Ideal Flow (vphpl) Storage Length (m) Storage Lanes Taper Length (m)
Ideal Flow (vphpl) 1900 <td>Ideal Flow (vphpl) Storage Length (m) Storage Lanes Taper Length (m)</td>	Ideal Flow (vphpl) Storage Length (m) Storage Lanes Taper Length (m)
Storage Length (m) 120.0 0.0 120.0 200.0 60.0 0.0 140.0 15 Storage Lanes 1 1 1 1 0 1	Storage Length (m) Storage Lanes Taper Length (m)
Storage Lanes 1 1 1 1 0 1 Transformed Lanes 1 1 1 1 0 1	Storage Lanes
	Taper Length (m)
Taper Lengin (m) /.5 /.5 /.5	
Lane Util. Factor 1.00 0.91 1.00 1.00 0.91 1.00 1.00 0.95 0.95 1.00 0.95 1.0	Lane Util. Factor
Frt 0.850 0.850 0.944 0.85	Frt
Flt Protected 0.950 0.950 0.950 0.950	Flt Protected
Satd. Flow (prot) 1467 4848 1553 1656 4715 1357 1456 2762 0 1641 3505 124	Satd. Flow (prot)
Flt Permitted 0.083 0.090 0.301 0.671	Flt Permitted
Satd. Flow (perm) 128 4848 1553 157 4715 1357 461 2762 0 1159 3505 124	Satd. Flow (perm)
Right Turn on Red Yes Yes Yes Y	Right Turn on Red
Satd. Flow (RTOR) 151 163 47 1	Satd. Flow (RTOR)
Link Speed (k/h) 50 50 50 50	Link Speed (k/h)
Link Distance (m) 128.0 132.2 133.9 123.4	Link Distance (m)
Travel Time (s) 9.2 9.5 9.6 8.9	Travel Time (s)
Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Peak Hour Factor
Heavy Vehicles (%) 23% 7% 4% 9% 10% 19% 24% 16% 36% 10% 3% 30	Heavy Vehicles (%)
Adi. Flow (vph) 116 2000 198 124 1362 163 100 80 47 285 520 20	Adi, Flow (vph)
Shared Lane Traffic (%)	Shared Lane Traffic (%)
Lane Group Flow (vph) 116 2000 198 124 1362 163 100 127 0 285 520 20	Lane Group Flow (vph)
Enter Blocked Intersection No	Enter Blocked Intersection
Lane Alignment Left Left Right R	Lane Alignment
Median Width(m) 36 36 36 36 36	Median Width(m)
Link Offset(m) 0.0 0.0 0.0 0.0	Link Offset(m)
Crosswalk Width(m) 48 48 48 48	Crosswalk Width(m)
Two way Left Turn Lane	Two way Left Turn Lane
Headway Factor 100 100 100 100 100 100 100 100 100 10	Headway Factor
Turning Speed (k/h) 25 15 25 15 25 15 25	Turning Speed (k/h)
Number of Detectors 1 2 1 1 2 1 1 2 1	Number of Detectors
Detector Template Left Thru Right Left Thru Right Left Thru Left Thru Right	Detector Template
Leading Detector (m) 20 100 20 20 100 20 20 100 20 20 100 20	Leading Detector (m)
Trailing Detector (m) 0.0	Trailing Detector (m)
Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Position(m)
Detector 1 Size(m) 20 0.6 20 20 0.6 20 20 0.6 20 20 0.6 20	Detector 1 Size(m)
Detector 1 Type CI+Ex CI	Detector 1 Type
Detector 1 Channel	Detector 1 Channel
Detector 1 Extend (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Extend (s)
Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Oueue (s)
Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector 1 Delay (s)
Detector 2 Position(m) 9.4 9.4 9.4 9.4 9.4 9.4	Detector 2 Position(m)
Detector 2 Size(m) 0.6 0.6 0.6 0.6	Detector 2 Size(m)
Detector 2 Type CI+Fx CI+Fx CI+Fx CI+Fx	Detector 2 Type
Detector 2 Channel	Detector 2 Channel
Detector 2 Extend (s) 0.0 0.0 0.0	Detector 2 Extend (s)
Turn Type pm+pt NA Perm nm+nt NA Perm nm+nt NA Perm	Turn Type
Protected Phases 7 4 3 8 5 2 6	Protected Phases

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Synchro 9 Report

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	7	4	4	3	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0		24.0	24.0	24.0
Total Split (s)	16.0	55.0	55.0	11.0	50.0	50.0	11.0	54.0		43.0	43.0	43.0
Total Split (%)	13.3%	45.8%	45.8%	9.2%	41.7%	41.7%	9.2%	45.0%		35.8%	35.8%	35.8%
Maximum Green (s)	10.0	49.0	49.0	5.0	44.0	44.0	5.0	48.0		37.0	37.0	37.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Venicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		Max	Max	Max
Walk Time (S)		/.0	/.0		/.0	7.0		7.0		/.0	7.0	7.0
FIASH DOHL WAIK (S)		11.0	11.0		11.0	11.0		11.0		11.0	11.0	11.0
Act Effet Croop (c)	F0 4	10.0	10.0	40.7	0	0	40.0	10.0		0	0	0
Actuated a/C Datio	58.4	49.0	49.0	49.0	44.0	44.0	48.0	48.0		37.0	37.0	37.0
NC Datio	0.49	0.41	0.41	0.41	0.37	0.37	0.40	0.40		0.31	0.31	0.31
Control Delay	0.09	1.01 50 /	0.27	0.90	0.70	0.27 5 1	20.7	0.11		0.00 56 1	0.40 25 5	0.43
Oueue Delay	44.1	0.4	7.5	99.0 0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	<i>11</i> 1	58.4	7.5	99.6	27.2	5.1	30.7	1/L/		56.1	35.5	14.6
los	D	50.4 F	Α	77.0 F	57.2 D	Δ	50.7 C	B		50.1 F	00.0 D	R
Approach Delay	U	53.3	71	•	38.7	71	Ű	21.6		-	37.1	B
Approach LOS		D			D			С			D	
Queue Length 50th (m)	15.1	~183.4	7.0	16.1	109.1	0.0	15.8	6.3		64.7	55.0	12.3
Queue Length 95th (m)	#40.3	#221.6	22.8	#56.9	128.6	14.5	28.4	13.0		#110.5	72.3	34.6
Internal Link Dist (m)		104.0			108.2			109.9			99.4	
Turn Bay Length (m)	120.0			120.0		200.0	60.0			140.0		15.0
Base Capacity (vph)	174	1979	723	127	1752	606	225	1133		357	1080	477
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.67	1.01	0.27	0.98	0.78	0.27	0.44	0.11		0.80	0.48	0.43
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Natural Cycle: 90												
Control Type: Actuated-Unc	oordinated	t d										
Maximum v/c Ratio: 1.01												_
Intersection Signal Delay: 44	4.2	,		li	ntersectio	n LOS: D						
Intersection Capacity Utiliza	uon 80.5%	0		[(U Level	of Service	υ					
Analysis Period (min) 15	hu autoria !	ic theorem		to								
 volume exceeds capaci 	iy, queue l		cally IIIIIII	ເປ.								

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

Splits and Phases: 3: Gateway Blvd/Chrysler Dr & Queen St E



	-	7	1	-	1	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR					
Lane Configurations	^	1		† ††		1					
Traffic Volume (veh/h)	2098	136	0	1533	0	31					
Future Volume (Veh/h)	2098	136	0	1533	0	31					
Sign Control	Free			Free	Stop						
Grade	0%			0%	0%						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92					
Hourly flow rate (vph)	2280	148	0	1666	0	34					
Pedestrians											
Lane Width (m)											
Walking Speed (m/s)											
Percent Blockage											
Right turn flare (veh)											
Median type	None			None							
Median storage veh)											
Upstream signal (m)				128							
pX, platoon unblocked					0.75						
vC, conflicting volume			2428		2835	760					
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol			2428		2286	760					
tC, single (s)			4.1		6.8	6.9					
tC, 2 stage (s)											
tF (s)			2.2		3.5	3.3					
p0 queue free %			100		100	90					
cM capacity (veh/h)			192		25	349					
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1			
Volume Total	760	760	760	148	555	555	555	34			
Volume Left	0	0	0	0	000	000	000	0			
Volume Right	0	0	0	148	0	0	0	34			
cSH	1700	1700	1700	1700	1700	1700	1700	349			
Volume to Capacity	0.45	0.45	0.45	0.09	0.33	0.33	0.33	0.10			
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6			
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.4			
Lane LOS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	С			
Approach Delay (s)	0.0				0.0			16.4			
Approach LOS	0.0				0.0			C			
Intersection Summarv											
Average Delay			0.1								
Intersection Capacity Utilizat	tion		50.5%	10	CULevel	of Service			Δ		
Analysis Period (min)			15						/		

Gateway Commercial Development

8: Gateway Blvd & Site Entrance/Commercial Driveway

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		\$			\$			et îr			et îr	
Traffic Volume (veh/h)	77	0	27	12	0	14	16	118	10	35	558	180
Future Volume (Veh/h)	77	0	27	12	0	14	16	118	10	35	558	180
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	84	0	29	13	0	15	17	128	11	38	607	196
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											134	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	894	954	402	576	1046	70	803			139		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	616	684	58	256	789	70	513			139		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	73	100	97	98	100	98	98			97		
cM capacity (veh/h)	315	312	879	558	271	979	926			1442		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	113	28	81	75	342	500						
Volume Left	84	13	17	0	38	0						
Volume Right	29	15	0	11	0	196						
cSH	377	725	926	1700	1442	1700						
Volume to Capacity	0.30	0.04	0.02	0.04	0.03	0.29						
Queue Length 95th (m)	9.9	1.0	0.4	0.0	0.6	0.0						
Control Delay (s)	18.6	10.2	2.0	0.0	1.1	0.0						
Lane LOS	С	В	А		А							
Approach Delay (s)	18.6	10.2	1.0		0.4							
Approach LOS	С	В										
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utiliza	tion		45.6%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

Gateway Commercial Development 11: Gateway Blvd & Summerlea Rd/Walker Dr

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			\$			đ þ	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	45	25	0	3	44	82	3	3	0	371	16	154
Future Volume (vph)	45	25	0	3	44	82	3	3	0	371	16	154
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	27	0	3	48	89	3	3	0	403	17	167
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	76	140	6	412	176							
Volume Left (vph)	49	3	3	403	0							
Volume Right (vph)	0	89	0	0	167							
Hadj (s)	0.16	-0.34	0.13	0.52	-0.63							
Departure Headway (s)	5.6	5.0	5.4	5.6	4.5							
Degree Utilization, x	0.12	0.20	0.01	0.64	0.22							
Capacity (veh/h)	589	661	616	626	787							
Control Delay (s)	9.4	9.3	8.5	17.0	7.5							
Approach Delay (s)	9.4	9.3	8.5	14.1								
Approach LOS	А	А	А	В								
Intersection Summary												
Delay			12.8									
Level of Service			В									
Intersection Capacity Utilizat	ion		48.5%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

Gateway Commercial Development 14: Summerlea Rd & Site Entrance East

	٦	→	←	•	1	4	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		र्स	Þ		Y		
Traffic Volume (veh/h)	3	31	165	36	40	3	
Future Volume (Veh/h)	3	31	165	36	40	3	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	3	34	179	39	43	3	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	218				238	198	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	218				238	198	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				94	100	
cM capacity (veh/h)	1352				748	843	
Direction, Lane #	<u>EB 1</u>	WB 1	<u>SB 1</u>				
Volume Total	37	218	46				
Volume Left	3	0	43				
Volume Right	0	39	3				
cSH	1352	1700	754				
Volume to Capacity	0.00	0.13	0.06				
Queue Length 95th (m)	0.1	0.0	1.6				
Control Delay (s)	0.6	0.0	10.1				
Lane LOS	А		В				
Approach Delay (s)	0.6	0.0	10.1				
Approach LOS			В				
Intersection Summary							
Average Delay			1.6				
Intersection Capacity Utiliz	ation		20.9%	IC	CU Level c	of Service	А
Analysis Period (min)			15				

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Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		र्स	î,		¥		
Traffic Volume (veh/h)	1	34	168	1	1	1	
Future Volume (Veh/h)	1	34	168	1	1	1	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	1	37	183	1	1	1	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	184				222	184	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	184				222	184	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	1391				765	859	
Direction, Lane #	EB 1	WB 1	SB 1				
Volume Total	38	184	2				
Volume Left	1	0	1				
Volume Right		1	1				
cSH	1391	1700	809				
Volume to Capacity	0.00	0.11	0.00				
Queue Length 95th (m)	0.0	0.0	0.1				
Control Delay (s)	0.2	0.0	9.5				
Lane LOS	Α		A				
Approach Delay (s)	0.2	0.0	9.5				
Approach LOS			A				
Intersection Summarv							
Average Delay			0.1				
Intersection Capacity Utilization	n		18.9%	10	CU Level o	of Service	
Analysis Period (min)			15	i c			

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	***	1	7	***	1	7	† 1 ₂		٦	^	1
Traffic Volume (vph)	118	1659	124	63	2127	230	231	468	181	155	201	108
Future Volume (vph)	118	1659	124	63	2127	230	231	468	181	155	201	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	120.0		200.0	60.0		0.0	140.0		15.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850			0.850		0.958				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1467	4848	1553	1656	4715	1357	1456	2845	0	1641	3505	1242
Flt Permitted	0.072			0.074			0.517			0.343		
Satd. Flow (perm)	111	4848	1553	129	4715	1357	792	2845	0	592	3505	1242
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			165		53				136
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.0			132.2			133.9			123.4	
Travel Time (s)		9.2			9.5			9.6			8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	23%	7%	4%	9%	10%	19%	24%	16%	36%	10%	3%	30%
Adj. Flow (vph)	128	1803	135	68	2312	250	251	509	197	168	218	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	1803	135	68	2312	250	251	706	0	168	218	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Tranplan Associates

Synchro 9 Report

PM Peak Hour

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	7	4	4	3	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0		24.0	24.0	24.0
Total Split (s)	12.0	59.0	59.0	12.0	59.0	59.0	11.0	49.0		38.0	38.0	38.0
Total Split (%)	10.0%	49.2%	49.2%	10.0%	49.2%	49.2%	9.2%	40.8%		31.7%	31.7%	31.7%
Maximum Green (s)	6.0	53.0	53.0	6.0	53.0	53.0	5.0	43.0		32.0	32.0	32.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Мах		Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0		0	0	0
Act Effct Green (s)	60.2	55.4	55.4	59.0	53.0	53.0	43.0	43.0		32.0	32.0	32.0
Actuated g/C Ratio	0.50	0.46	0.46	0.49	0.44	0.44	0.36	0.36		0.27	0.27	0.27
v/c Ratio	1.04	0.81	0.17	0.49	1.11	0.36	0.81	0.67		1.07	0.23	0.27
Control Delay	119.8	31.9	3.8	27.3	89.8	9.1	54.4	33.7		134.7	35.2	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	119.8	31.9	3.8	27.3	89.8	9.1	54.4	33.7		134.7	35.2	5.5
LOS	F	С	А	С	+	A	D	C		F	D	A
Approach Delay		35.5			80.5			39.1			61.5	
Approach LUS	01.4	D	0.0		F	10.0	47.0	D		45.0	E	0.0
Queue Length 50th (m)	~21.4	142.6	0.0	1.1	~240.1	12.3	47.9	/1.0		~45.9	22.3	0.0
Queue Lengin 95in (m)	#62.9	104.5	11.5	16.7	#270.1	31.5	#88.2	94. I		#91.9	33.3	10.9
Turn Pay Longth (m)	120.0	104.0		120.0	108.2	200.0	60.0	109.9		140.0	99.4	15.0
Raso Canacity (unb)	120.0	2220	700	120.0	2002	200.0	00.0	1052		140.0	024	15.0
Starvation Can Reductn	123	2230	109	139	2002	091	511	1005		157	934	430
Snillback Can Reductin	0	0	0	0	0	0	0	0		0	0	0
Storage Can Reductin	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.04	0.81	0.17	0.49	1.11	0.36	0.81	0.67		1.07	0.23	0.27
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120)											
Natural Cycle: 120												
Control Type: Actuated-Une	coordinated											
Maximum v/c Ratio: 1.11												
Intersection Signal Delay: 5	57.4			l	ntersectio	n LOS: E						
Intersection Capacity Utilization	ation 94.9%				CU Level	of Service	e F					
Analysis Period (min) 15												
 Volume exceeds capac 	ity, queue i	s theoreti	cally infini	ite.								

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

Splits and Phases: 3: Gateway Blvd/Chrysler Dr & Queen St E

M [™] ø₂	√ Ø3	404
49 s	12 s	59 s
▲ ø5 🗰 ø6		₩ Ø8
11 s 38 s	12 s	59 s

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Movement	EBT	EBR	WBL	WBT	NBL	NBR					
Lane Configurations	***	1		***		1				 	
Traffic Volume (veh/h)	1850	91	0	2466	0	51					
Future Volume (Veh/h)	1850	91	0	2466	0	51					
Sign Control	Free			Free	Stop						
Grade	0%			0%	0%						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92					
Hourly flow rate (vph)	2011	99	0	2680	0	55					
Pedestrians											
Lane Width (m)											
Walking Speed (m/s)											
Percent Blockage											
Right turn flare (veh)											
Median type	None			None							
Median storage veh)											
Upstream signal (m)				128							
pX, platoon unblocked					0.57						
vC, conflicting volume			2110		2904	670					
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol			2110		1681	670					
tC, single (s)			4.1		6.8	6.9					
tC, 2 stage (s)											
tF (s)			2.2		3.5	3.3					
p0 queue free %			100		100	86					
cM capacity (veh/h)			256		48	399					
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1			
Volume Total	670	670	670	99	893	893	893	55			
Volume Left	0	0	0	0	0	0	0	0			
Volume Right	0	0	0	99	0	0	0	55			
cSH	1700	1700	1700	1700	1700	1700	1700	399			
Volume to Capacity	0.39	0.39	0.39	0.06	0.53	0.53	0.53	0.14			
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8			
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.5			
Lane LOS								С			
Approach Delay (s)	0.0				0.0			15.5			
Approach LOS								С			
Intersection Summary											
Average Delay			0.2								
Intersection Capacity Utilization	on		51.0%	IC	CU Level o	of Service			А		
Analysis Period (min)			15								

Gateway Commercial Development 8: Gateway Blvd & Site Entrance/Commercial Driveway

PM	Peak	Hour

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4.			4.			đ þ			đ þ	
Traffic Volume (veh/h)	147	0	12	15	0	28	7	705	15	12	245	131
Future Volume (Veh/h)	147	0	12	15	0	28	7	705	15	12	245	131
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	160	0	13	16	0	30	8	766	16	13	266	142
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											134	
pX, platoon unblocked	0.96	0.96	0.96	0.96	0.96		0.96					
vC, conflicting volume	792	1161	204	962	1224	391	408			782		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	702	1086	90	879	1151	391	302			782		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	45	100	99	93	100	95	99			98		
cM capacity (veh/h)	292	202	913	225	185	608	1207			832		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	173	46	391	399	146	275						
Volume Left	160	16	8	0	13	0						
Volume Right	13	30	0	16	0	142						
cSH	308	382	1207	1700	832	1700						
Volume to Capacity	0.56	0.12	0.01	0.23	0.02	0.16						
Queue Length 95th (m)	25.9	3.3	0.2	0.0	0.4	0.0						
Control Delay (s)	30.7	15.7	0.2	0.0	1.0	0.0						
Lane LOS	D	С	А		А							
Approach Delay (s)	30.7	15.7	0.1		0.3							
Approach LOS	D	С										
Intersection Summary												
Average Delay			4.4									
Intersection Capacity Utiliza	ation		47.1%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

Gateway Commercial Development 11: Gateway Blvd & Summerlea Rd/Walker Dr

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			\$			đ þ	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	188	73	0	0	91	469	4	4	1	154	2	88
Future Volume (vph)	188	73	0	0	91	469	4	4	1	154	2	88
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	204	79	0	0	99	510	4	4	1	167	2	96
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	283	609	9	168	97							
Volume Left (vph)	204	0	4	167	0							
Volume Right (vph)	0	510	1	0	96							
Hadj (s)	0.18	-0.47	0.06	0.53	-0.66							
Departure Headway (s)	5.8	4.8	7.0	7.3	6.0							
Degree Utilization, x	0.45	0.81	0.02	0.34	0.16							
Capacity (veh/h)	590	741	443	465	552							
Control Delay (s)	13.5	24.4	10.2	12.7	9.0							
Approach Delay (s)	13.5	24.4	10.2	11.4								
Approach LOS	В	С	В	В								
Intersection Summary												
Delay			18.7									
Level of Service			С									
Intersection Capacity Utilization		73.2%	IC	CU Level o	of Service			D				
Analysis Period (min)			15									
Gateway Commercial Development 14: Summerlea Rd & Site Entrance East

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Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		é.	¢Î,		Y		
Traffic Volume (veh/h)	3	212	152	31	50	4	
Future Volume (Veh/h)	3	212	152	31	50	4	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	3	230	165	34	54	4	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	199				418	182	
vC1, stage 1 conf vol	.,,				110		
vC2, stage 2 conf vol							
vCu, unblocked vol	199				418	182	
tC, single (s)	4.1				6.4	6.2	
tC, 2 stage (s)					011	0.12	
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				91	100	
cM capacity (veh/h)	1373				590	861	
Diroction Lano #	ED 1	\//D 1	CD 1		070		
Volumo Total	201 222	100					
Volume Left	233	199	DQ E 1				
Volume Pight	3	0	54 1				
rSH	U 1070	34 1700	4				
Volume to Canacity	13/3	0 12	003				
Oueue Length O5th (m)	0.00	0.12	0.10				
Control Delay (s)	0.1	0.0	2.0				
Lane LOS	U. 1	0.0	11.0 D				
Approach Delay (s)	A 0.1	0.0	D				
Approach LOS	0.1	0.0	11.0 D				
			В				
Intersection Summary							
Average Delay			1.4			(C	
intersection Capacity Utiliz	ation		23.6%	IC	U Level c	or Service	A
Analysis Period (min)			15				

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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		÷.	ţ,		Y	
Traffic Volume (veh/h)	1	215	156	1	1	1
Future Volume (Veh/h)	1	215	156	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	234	170	1	1	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	171				406	170
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	171				406	170
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1406				600	873
Direction Lane #	FR 1	\//R 1	SR 1			
Volume Total	LD_I	171	<u> </u>			
Volume Left	230	1/1	2 1			
Volume Lett	1	0	1			
	1406	1700	711			
Volumo to Canacity	1400	0.10	/11			
Ouque Longth 05th (m)	0.00	0.10	0.00			
Control Dolay (s)	0.0	0.0	0.1			
Long LOS	0.0	0.0	10.1			
Lane LUS Approach Dolay (c)	A	0.0	10 1			
Approach LOS	0.0	0.0	10.1			
			В			
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Uti	lization		22.1%	IC	CU Level c	of Service
Analysis Period (min)			15			

Gateway Commercial Development 3: Gateway Blvd/Chrysler Dr & Queen St E

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	2	***	1	2	***	1	2	† 1 ₂		7	^	1
Fraffic Volume (vph)	119	1731	58	86	1265	106	127	97	129	158	78	95
uture Volume (vph)	119	1731	58	86	1265	106	127	97	129	158	78	95
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	120.0		200.0	60.0		0.0	140.0		15.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
ane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850			0.850		0.914				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1467	4848	1553	1656	4715	1357	1456	2589	0	1641	3505	1242
Flt Permitted	0.092			0.085			0.586			0.600		
Satd. Flow (perm)	142	4848	1553	148	4715	1357	898	2589	0	1036	3505	1242
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			191		140				191
_ink Speed (k/h)		50			50			50			50	
ink Distance (m)		128.0			132.2			133.9			123.4	
Fravel Time (s)		9.2			9.5			9.6			8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	23%	7%	4%	9%	10%	19%	24%	16%	36%	10%	3%	30%
Adj. Flow (vph)	129	1882	63	93	1375	115	138	105	140	172	85	103
Shared Lane Traffic (%)												
ane Group Flow (vph)	129	1882	63	93	1375	115	138	245	0	172	85	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
ane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
vledian Width(m)		3.6			3.6			3.6			3.6	
₋ink Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Fwo way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Furning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
eading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Frailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Furn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	

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Synchro 9 Report

Gateway Commercial Development 3: Gateway Blvd/Chrysler Dr & Queen St E

Sat Mid-Day Peak Hour

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	7	4	4	3	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0		24.0	24.0	24.0
Total Split (s)	20.0	59.0	59.0	13.0	52.0	52.0	11.0	48.0		37.0	37.0	37.0
Total Split (%)	16.7%	49.2%	49.2%	10.8%	43.3%	43.3%	9.2%	40.0%		30.8%	30.8%	30.8%
Maximum Green (s)	14.0	53.0	53.0	7.0	46.0	46.0	5.0	42.0		31.0	31.0	31.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0		0	0	0
Act Effct Green (s)	61.7	51.0	51.0	53.8	46.9	46.9	42.1	42.1		31.0	31.0	31.0
Actuated g/C Ratio	0.52	0.43	0.43	0.46	0.40	0.40	0.36	0.36		0.26	0.26	0.26
v/c Ratio	0.65	0.90	0.08	0.60	0.73	0.18	0.40	0.24		0.63	0.09	0.22
Control Delay	34.6	37.8	0.2	35.9	33.4	0.6	32.4	12.3		51.1	34.0	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	34.6	37.8	0.2	35.9	33.4	0.6	32.4	12.3		51.1	34.0	1.1
LOS	С	D	Α	D	С	A	С	В		D	С	A
Approach Delay		36.5			31.1			19.5			32.8	
Approach LOS		D			С			В			С	
Queue Length 50th (m)	15.1	152.8	0.0	10.5	102.8	0.0	24.4	9.2		38.1	8.4	0.0
Queue Length 95th (m)	34.7	175.9	0.0	#29.0	126.3	0.0	41.4	19.0		64.4	15.3	0.0
Internal Link Dist (m)	400.0	104.0		400.0	108.2			109.9			99.4	45.0
Turn Bay Length (m)	120.0	0400	770	120.0	1007	200.0	60.0	1010		140.0		15.0
Base Capacity (Vpn)	234	2180	//2	157	1897	660	343	1012		2/2	922	467
Starvation Cap Reductin	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reducin	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductin	0	0	0	0	0	0 17	0	0.24		0 (2	0	0 22
	0.55	0.86	0.08	0.59	0.72	0.17	0.40	0.24		0.63	0.09	0.22
Intersection Summary												
Area Type:	Other											
Cycle Length: 120	_											
Actuated Cycle Length: 11	8											
Natural Cycle: 90												
Control Type: Actuated-Ur	ncoordinated											
iviaximum v/c Ratio: 0.90	Maximum v/c Ratio: 0.90											
Intersection Signal Delay:	32.8				nersectio	n LOS: C						
Intersection Capacity Utiliz	28/00/13.8%)		10	U Level	or Service	υ					
Analysis Period (Min) 15	ovocdo	noolty a		ho long-	-							
# 95th percentile volume	e exceeds ca	ipacity, qu	ieue may	ue ionge	Ι.							

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Queue shown is maximum after two cycles.

Splits and Phases: 3: Gateway Blvd/Chrysler Dr & Queen St E



	-	7	1	-	1	1				
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	^	1		111		1				
Traffic Volume (veh/h)	1892	93	0	1487	0	16				
Future Volume (Veh/h)	1892	93	0	1487	0	16				
Sign Control	Free			Free	Stop					
Grade	0%			0%	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Hourly flow rate (vph)	2057	101	0	1616	0	17				
Pedestrians										
Lane Width (m)										
Walking Speed (m/s)										
Percent Blockage										
Right turn flare (veh)										
Median type	None			None						
Median storage veh)										
Upstream signal (m)				128						
pX, platoon unblocked					0.76					
vC, conflicting volume			2158		2596	686				
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol			2158		1991	686				
tC, single (s)			4.1		6.8	6.9				
tC, 2 stage (s)										
tF (s)			2.2		3.5	3.3				
p0 queue free %			100		100	96				
cM capacity (veh/h)			245		40	390				
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1		
Volume Total	686	686	686	101	539	539	539	17		
Volume Left	0	0	0	0	0	0	0	0		
Volume Right	0	0	0	101	0	0	0	17		
cSH	1700	1700	1700	1700	1700	1700	1700	390		
Volume to Capacity	0.40	0.40	0.40	0.06	0.32	0.32	0.32	0.04		
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1		
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.6		
Lane LOS								В		
Approach Delay (s)	0.0				0.0			14.6		
Approach LOS								В		
Intersection Summary										
Average Delay			0.1							
Intersection Capacity Utiliza	ation		46.6%	IC	CU Level o	of Service			А	
Analysis Period (min)			15							

Gateway Commercial Development

8: Gateway Blvd & Site Entrance/Commercial Driveway

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4 Pr			ef îr	
Traffic Volume (veh/h)	187	0	9	6	0	28	7	138	10	35	56	131
Future Volume (Veh/h)	187	0	9	6	0	28	7	138	10	35	56	131
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	203	0	10	7	0	30	8	150	11	38	61	142
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											134	
pX, platoon unblocked												
vC, conflicting volume	329	385	102	288	450	80	203			161		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	329	385	102	288	450	80	203			161		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	100	99	99	100	97	99			97		
cM capacity (veh/h)	567	530	934	619	486	963	1366			1416		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	213	37	83	86	68	172						
Volume Left	203	7	8	0	38	0						
Volume Right	10	30	0	11	0	142						
cSH	578	872	1366	1700	1416	1700						
Volume to Capacity	0.37	0.04	0.01	0.05	0.03	0.10						
Queue Length 95th (m)	13.5	1.1	0.1	0.0	0.7	0.0						
Control Delay (s)	14.8	9.3	0.8	0.0	4.3	0.0						
Lane LOS	В	А	А		А							
Approach Delay (s)	14.8	9.3	0.4		1.2							
Approach LOS	В	А										
Intersection Summary												
Average Delay			5.9									
Intersection Capacity Utilization	n		38.7%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

Gateway Commercial Development

11: Gateway Blvd & Summerlea Rd/Walker Dr

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			đ þ	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	30	37	0	0	24	95	0	0	0	26	0	25
Future Volume (vph)	30	37	0	0	24	95	0	0	0	26	0	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	40	0	0	26	103	0	0	0	28	0	27
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	73	129	0	28	27							
Volume Left (vph)	33	0	0	28	0							
Volume Right (vph)	0	103	0	0	27							
Hadj (s)	0.12	-0.45	0.00	0.53	-0.67							
Departure Headway (s)	4.3	3.7	4.5	5.4	4.2							
Degree Utilization, x	0.09	0.13	0.00	0.04	0.03							
Capacity (veh/h)	823	962	774	628	803							
Control Delay (s)	7.7	7.2	7.5	7.5	6.2							
Approach Delay (s)	7.7	7.2	0.0	6.8								
Approach LOS	А	А	А	А								
Intersection Summary												
Delay			7.3									
Level of Service			А									
Intersection Capacity Utiliza	ition		20.3%	IC	CU Level o	of Service			А			
Analysis Period (min)			15									

Gateway Commercial Development 14: Summerlea Rd & Site Entrance East

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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		÷.	Þ		Y	
Traffic Volume (veh/h)	3	9	26	23	57	7
Future Volume (Veh/h)	3	9	26	23	57	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	10	28	25	62	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	53				56	40
vC1, stage 1 conf vol						10
vC2, stage 2 conf vol						
vCu, unblocked vol	53				56	40
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.1	2.2
tF (s)	2.2				3.5	3.3
p0 gueue free %	100				93	99
cM capacity (veh/h)	1553				949	1031
Direction Lane #			CD 1			
Volumo Total	EB I		28.1			
	13	53	/0			
Volume Left	3	0	62			
	0	25	8			
CSH	1553	1700	958			
Volume to Capacity	0.00	0.03	0.07			
Queue Length 95th (m)	0.0	0.0	1.9			
Control Delay (s)	1.7	0.0	9.1			
Lane LOS	А		А			
Approach Delay (s)	1.7	0.0	9.1			
Approach LOS			А			
Intersection Summary						
Average Delay			4.8			
Intersection Capacity Utiliz	ation		13.6%	IC	U Level o	of Service
Analysis Period (min)			15			

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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		र्स	Ţ.		Y	
Traffic Volume (veh/h)	1	12	33	1	1	1
Future Volume (Veh/h)	1	12	33	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	13	36	1	1	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	37				52	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	37				52	36
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1574				957	1036
Direction Lane #	FR 1	WR 1	SR 1			
Volume Total	1/	27	<u>່ 30 1</u> ງ			
Volume Left	14	ىن 0	2 1			
Volume Right	۱ ۵	1	1			
cSH	1574	1700	005			
Volume to Canacity	0.00	0.02	990			
Ouque Length 95th (m)	0.00	0.02	0.00			
Control Delay (s)	0.0	0.0	0.0			
	0.0	0.0	0.U			
Approach Dolay (s)	A	0.0	0 4			
Approach LOS	0.5	0.0	0.0 A			
			A			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Util	ization		13.3%	IC	CU Level o	of Service
Analysis Period (min)			15			

APPENDIX C: Parking Survey Data

Parking Usa	age Observations at 1 gateway B	oulevard
Time	Friday December 9, 2016	Saturday December 10, 2016
12:00 AM	50	75
12:30 AM	50	70
1:00 AM	50	70
1:30 AM	50	65
2:00 AM	50	60
2:30 AM	50	50
3:00 AM	50	50
3:30 AM	50	50
4:00 AM	50	50
4:30 AM	50	50
5:00 AM	50	50
5:30 AM	50	50
6:00 AM	50	50
6.30 AM	57	55
7:00 AM	62	63
7.30 AM	74	67
8.00 ΔM	86	73
8.30 VW	02	87
	108	97
9.00 AN	118	109
9.50 AN	121	108
10.00 AN	145	140
10:30 AIVI	145	149
11:00 AIVI	1/2	169
11:30 AIVI	109	170
12:00 PIVI	178	173
12:30 PIM	1/3	178
1:00 PIVI	181	172
1:30 PIVI	176	167
2:00 PM	176	140
2:30 PM	1/9	125
3:00 PM	182	121
3:30 PM	162	121
4:00 PM	151	130
4:30 PM	151	136
5:00 PM	150	164
5:30 PM	123	191
6:00 PM	109	212
6:30 PM	112	206
7:00 PM	114	229
7:30 PM	122	258
8:00 PM	132	310
8:30 PM	122	296
9:00 PM	116	262
9:30 PM	103	214
10:00 PM	90	189
10:30 PM	82	145
11:00 PM	50	97
11:30 PM	50	90