

1. CALL TO ORDER

2. ADOPTION OF THE AGENDA

2.1 Adoption of the Agenda

Recommendation:

That the May 22, 2018, Regular Council Meeting Agenda be adopted as circulated.

3. PROCLAMTIONS

3.1 Public Works Week – May 20-26, 2018

4. DELEGATIONS

4.1 Evergreen Street Proposed Construction

5. CORRESPONDENCE

5.1 Petition - Evergreen Street

5.2 Petition - Smoking

6. BYLAWS

6.1 Zoning Amendment Bylaw No. 4062 for 2152-2166 Grant Avenue – First Two Readings

Recommendation:

That Council give Zoning Amendment Bylaw, 2018, No. 4062 1st and 2nd Reading.

6.2 Highway Use Bylaw No. 4033 – First Three Readings

Recommendation:

That Council give Highway Use Bylaw No. 4033 first three readings.

6.3 Boulevard Maintenance Bylaw No. 3965 – First Three Readings

See Item 6.2 for report.

Recommendation:

That Council give Boulevard Maintenance Bylaw No. 3965 first three readings.

6.4 Bylaw Notice Enforcement Amendment Bylaw No. 4064 (Boulevard Maintenance) – First Three Readings

Recommendation:

That Council give Bylaw Notice Enforcement Amendment Bylaw No. 4064 (Boulevard Maintenance) first three readings.

6.5 Bylaw Notice Enforcement Amendment Bylaw No. 4065 (Highway Use) – First Three Readings

Recommendation:

That Council give Bylaw Notice Enforcement Amendment Bylaw No. 4065 (Highway Use) first three readings.

- 6.6 Ticket Information Utilization Amendment Bylaw No. 4066 (Boulevard Maintenance) – First Three Readings**
Recommendation:
That Council give Ticket Information Utilization Amendment Bylaw No. 4066 (Boulevard Maintenance) first three readings.
- 6.7 Ticket Information Utilization Amendment Bylaw No. 4067 (Highway Use) – First Three Readings**
Recommendation:
That Council give Ticket Information Utilization Amendment Bylaw No. 4067 (Highway Use) first three readings.
- 6.8 Fees and Charges Amendment Bylaw No. 4063 (Recreation) – First Three Readings**
Recommendation:
That the amendment to Fees and Charges Bylaw - Schedule “C” (Parks & Recreation), 2018, No. 4063 be given first three readings.
- 6.9 Zoning Amendment Bylaw No. 4039 for 750 Dominion Avenue - Final Reading**
Recommendation:
That Council give Zoning Amendment Bylaw No. 4039 for 750 Dominion Avenue final reading.
- 6.10 Bylaw Notice Enforcement Bylaw No. 4058 (Smoking) - Final Reading**
Recommendation:
That Council give Bylaw Notice Enforcement Bylaw No. 4058 (Smoking) final reading.
- 6.11 Ticket Information Utilization Bylaw No. 4059 (Smoking) - Final Reading**
Recommendation:
That Council give Ticket Information Utilization Bylaw No. 4059 (Smoking) final reading.

7. RESOLUTIONS

- 7.1 Acting Mayor Draft Resolution for May 31 to June 4, 2018**
Recommendation:
That _____ be appointed as Acting Mayor for May 31 to June 4, 2018, inclusive.

8. REPORTS

- 8.1 Election Appointments and Remuneration**
Recommendation:
- 1) *That Council appoint Ms. Carolyn Deakin as the Chief Election Officer and Ms. Sharlie Eicker as the Deputy Chief Election Officer for the 2018 Local Government and School Trustee Election; and*
 - 2) *That the following daily rates of pay be authorized for Election staff at the polling stations:*
 - *Presiding Election Officials \$350*
 - *Alternate Presiding Official \$300*
 - *Registration Clerk \$250*
 - *Poll Clerk \$250*
 - *Election Official/Floater \$200*
 - *Training Session \$25*

8.2 Issuance of Policy No. 7.22.01 - Operating Costs of Capital

Recommendation:

That Council approve issuance of Policy No. 7.22.01 - Operating Costs of Capital.

9. STANDING COMMITTEE VERBAL UPDATES

9.1 Finance & Budget Committee

9.2 Smart Growth Committee

9.3 Transportation Solutions & Public Works Committee

10. NEW BUSINESS

11. OPEN QUESTION PERIOD

12. RESOLUTION TO CLOSE

12.1 Resolution to Close the May 22, 2018, Regular Council Meeting to the Public

Recommendation:

That the Regular Council Meeting of May 22, 2018, be closed to the public pursuant to the following subsection(s) of Section 90 of the Community Charter:

Item 3.1

- (1) a) personal information about an identifiable individual who holds or is being considered for a position as an officer, employee or agent of the municipality or another position appointed by the municipality;
- g) litigation or potential litigation affecting the municipality;
- i) the receipt of advice that is subject to solicitor-client privilege, including communications necessary for that purpose; and
- (2) b) the consideration of information received and held in confidence relating to negotiations between the municipality and a provincial government or the federal government or both, or between a provincial government or the federal government or both and a third party.

PROCLAMATION

WHEREAS: Public works infrastructure, facilities and services are vital to the health, safety and well-being of the residents of Port Coquitlam; and

WHEREAS: Such facilities and services could not be provided without the dedicated efforts of public works professionals, engineers and administrators who are responsible for building, operating and maintaining the public works systems that serve our citizens; and

WHEREAS: The Public Works Association instituted Public Works Week as a public education campaign “to inform communities and their leaders on the importance of our nation’s public infrastructure and public works services”; and

WHEREAS: It is in the public interest of citizens and civic leader to gain knowledge of the public works needs and programs of their respective communities; and

WHEREAS: Public Works Week also recognizes the contributions of public works professionals;

NOW THEREFORE: I, Greg B. Moore, Mayor of the Corporation of the City of Port Coquitlam,

DO HEREBY PROCLAIM

May 20 – 26, 2018, as

***“Public Works Week”
in the City of Port Coquitlam***

G. B. Moore
Mayor



No Sidewalk on Evergreen Street

We the homeowners of Evergreen Street, Port Coquitlam are opposed to the construction of a new sidewalk on the East side of Evergreen Street.

NAME & SIGNATURE		HOUSE #
EAST SIDE	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
WEST SIDE	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]



April 24, 2018

HIS WORSHIP MAYOR MOORE AND COUNCIL

May I present...

A petition to support a minority who support Mental Health, those Metis and others entitled to the legal product of tobacco and propose an amendment to Port Coquitlam Bylaw No.: 4037 to read:

By exemption, this designated area is reserved for the legal users of legal Canada Tobacco Brands of cigarettes.

...and thank the Corporation of the City of Port Coquitlam and its Members for their consideration?

It had been noted by those who signed the initial Petition that even canines are given a Park including fresh water tap for the persons who own dogs and doggy-defecation bags and disposal bins while the custom and traditon of smokers is rejected altogether with great effect on those who prefer to smoke and with much consternation for seniors, veterans and others, as above, who may indulge. Otherwise, we are attempting to abide by regulations and bylaws in all ways, be courteous of those who wheel or walk about with open oxygen containers for health reasons and to avoid smoking altogether on days where public events are scheduled and of course not encourage underage youth to follow our preferences. We leave that to parents. I might add, as an after-thought that we are already persecuted as grandparents and parents, with the threat of taking away our grandchildren and children used against our own as if we would intentionally harm them by being ourselves and cautious, as well as being banned from smoking on residential balconies.

Again, thank-you.

PETITION OF PROPOSED AMENDMENT TO PORT COQUITLAM BY-LAW NO. 4037

BY RESIDENTS AND TENANTS OF PORT COQUITLAM

WHO SIGNED THE DOCUMENT TUESDAY, APRIL 24, 2018 AT 11:20Hrs.

[illegible]

Tuesday, April 24, 2018 11:20am p.1

A Petition To Support
A Minority Who Support Mental
Health and Those Metis and Others
Entitled To The Legal Product of
Tobacco and propose an amendment
to Port Coquitlam Bylaw No. 4037
to read:

By exemption this designated area
is reserved for the legal
users of legal Tobacco Canadian
Brands of cigarettes.

Thank you.

SIGNATORS	ADDRESS	CONTACT
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[REDACTED]	[REDACTED]	[REDACTED]
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[REDACTED]	[REDACTED]	[REDACTED]
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[REDACTED]	[REDACTED]	[REDACTED]
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[REDACTED]	[REDACTED]	[REDACTED]
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Page 2

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Description	Page
Accounts Payable Cash	1
Accounts Receivable	2

Subject **PURCHASES** Name **311**



Smart Growth Committee Report

Rezoning Application RZ000156 – 2152-2166 Grant Avenue

RECOMMENDATION:

That Council give Zoning Amendment Bylaw, 2018, No. 4062 1st and 2nd Reading.

Committee Recommendation

At the May 15, 2018, Smart Growth Committee meeting, the Development Services Report, *Further Information Rezoning Application RZ000156 2152-2166 Grant Avenue* was considered, and the following motion was passed:

That the Smart Growth Committee recommend to Council:

1. *That the zoning of 2152-2166 Grant Avenue be amended from RS1 (Residential Single Dwelling 1) to RA1 (Residential Apartment 1);*
2. *That the amending bylaw provide that the required number of residential and visitor parking spaces may be reduced for this site by up to six spaces if a contribution of \$15,000 in lieu of each space is submitted to the City prior to building permit issuance.*
3. *That prior to adoption of the amending bylaw, the following conditions be met to the satisfaction of the Director of Development Services:*
 - a. *Installation of fencing to protect a hedge;*
 - b. *Demolition of existing buildings;*
 - c. *Consolidation of the lots;*
 - d. *Completion of design and submission of securities and fees for off-site works and services including installation of a storm sewer and paving of the lane to Flint Street;*
 - e. *Registration of a legal agreement to ensure design and construction of the apartment building is to a LEED® Silver standard or an equivalent per the Step Code and provide for a vehicle car wash station at a visitor stall;*
 - f. *Payment of \$7500 for the installation of traffic delineators to address impacts of traffic from the lane at Shaughnessy Street.*

ATTACHMENTS

Attachment 1: Zoning Amendment Bylaw No. 4062

Attachment 2: Further Information Rezoning Application RZ000156 2152-2166 Grant Avenue

CITY OF PORT COQUITLAM
ZONING AMENDMENT BYLAW, 2018

Bylaw No. 4062

The Council of the Corporation of the City of Port Coquitlam enacts as follows:

1. CITATION

This Bylaw may be cited as "Zoning Bylaw, 2008, No. 3630, Amendment Bylaw, 2018, No. 4062.

2. ADMINISTRATION

- 2.1 The Zoning Map of the "Zoning Bylaw, 2008, No. 3630" be amended to reflect the following rezoning:

Civic: 2152-2166 Grant Avenue

Legal: Lot 22, District Lot 464, New West District, Plan NWP21043
 Lot 21, District Lot 464, New West District, Plan NWP21043
 Lot 20, District Lot 464, New West District, Plan NWP21043
 Lot 19, District Lot 464, New West District, Plan NWP21043

From: RS1 (Residential Single Dwelling 1)

To: RA1 (Residential Apartment 1)

as shown on Schedule 1 attached to and forming part of this Bylaw.

- 2.2 That the Zoning Bylaw be amended in Section 2.5 Residential Zones – Additional Regulations by adding the following subsection 10:

10. An owner of a parcel of land situated at Lots 19, 20, 21 and 22 District Lot 64, New West District, Plan NWP21043 (2152-2166 Grant Avenue) who applies for a Building Permit for an apartment used may, subject to this Section 10, opt to pay the City a sum of \$15,000 per parking space in lieu of providing the off-street parking spaces. The maximum number of spaces in relations to which cash may be proved under this section is six spaces.

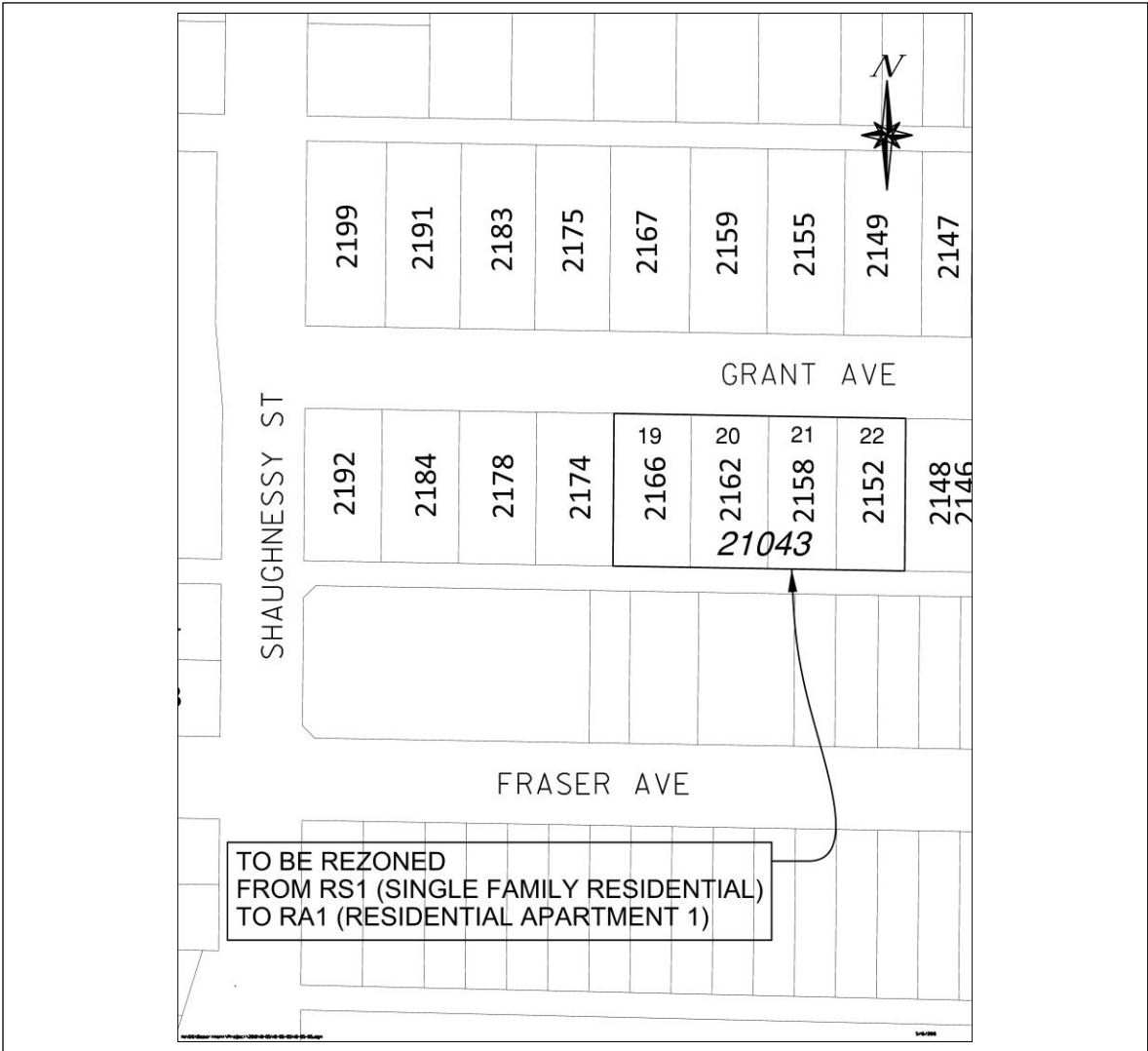
READ A FIRST TIME this	22 nd day of	May, 2018
READ A SECOND TIME this	22 nd day of	May, 2018
PUBLIC HEARING HELD this	12 th day of	June, 2018

Mayor

Corporate Officer

BYLAW 4062

Schedule 1



Further Information Rezoning Application RZ000156 2152-2166 Grant Avenue

RECOMMENDATIONS:

That the Smart Growth Committee amend the motion on the floor as follows:

- In 3, condition (d), add “including installation of a storm sewer and paving of the lane to Flint Street”;
- In 3, condition (e), add “and provide for a vehicle car wash station at a visitor stall”; and,
- In 3, add a new condition, “(f) Submission of \$7,500 for future measures as may be required by the Director of Engineering and Public Works to address impacts of traffic from the lane at Shaughnessy Street, such as the installation of delineators.”

PREVIOUS COUNCIL/COMMITTEE ACTION

At the May 1, 2018, Smart Growth Committee meeting, the Smart Growth Committee moved the following motion:

That the Smart Growth Committee recommend to Council:

1. *That the zoning of 2152-2166 Grant Avenue be amended from RS1 (Residential Single Dwelling 1) to RA1 (Residential Apartment 1);*
2. *That the amending bylaw provide that the required number of residential and visitor parking spaces may be reduced for this site by up to six spaces if a contribution of \$15,000 in lieu of each space is submitted to the City prior to building permit issuance.*
3. *That prior to adoption of the amending bylaw, the following conditions be met to the satisfaction of the Director of Development Services:*
 - a. *Installation of fencing to protect a hedge;*
 - b. *Demolition of existing buildings;*
 - c. *Consolidation of the lots;*
 - d. *Completion of design and submission of securities and fees for off-site works and services;*
 - e. *Registration of a legal agreement to ensure design and construction of the apartment building is to a LEED® Silver standard or an equivalent per the Step Code.*

Committee then passed the following motion:

That the motion on the floor be postponed subject to committee receiving a staff report addressing questions related to the transportation impacts and the parking variance for the 2152-2166 Grant Avenue rezoning application.

REPORT SUMMARY

This report responds to the questions raised by the Smart Growth Committee at its meeting held on May 1st, 2018. It recommends that the conditions to be met prior to adoption of the zoning bylaw amendment be augmented to increase off-site requirements to encourage vehicles to exit from the site via Flint Street by extending the lane paving to Flint and to address the potential impacts of traffic from the lane by providing funding for future improvements. It also provides further information related to the requested variance to parking regulations.

Further Information Rezoning Application RZ000156 2152-2166 Grant Avenue

BACKGROUND

The May 1, 2018 staff report considered is attached for reference (Attachment 1).

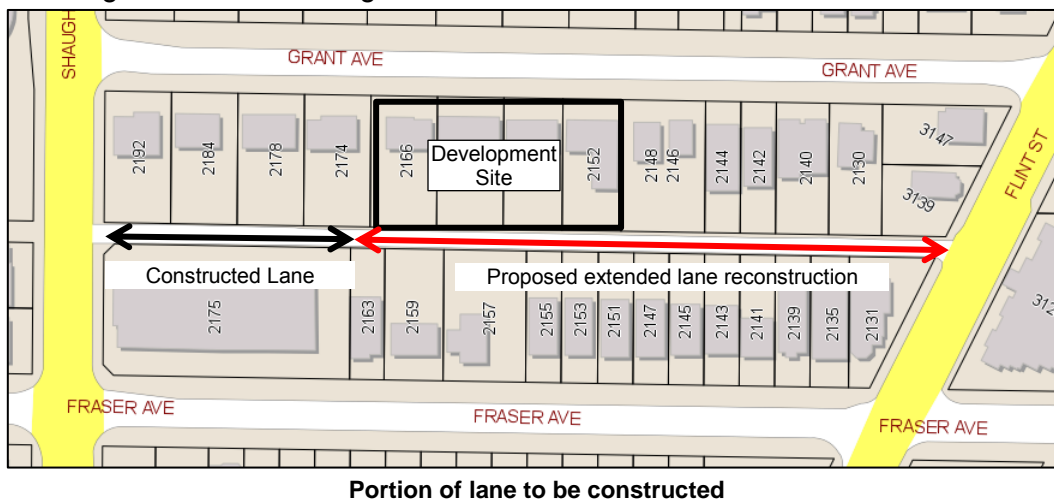
DISCUSSION

Transportation impacts: The applicant was requested to provide a transportation impact assessment report to the Engineering and Public Works Department as part of the application submission requirements. The 189-page report, Attachment 2, confirms the transportation network has the capacity to accommodate the future traffic volumes associated with this proposal without creating significant requirements for infrastructure improvements. Its assessment of the capacity of the rear lane for projected 2025 traffic volumes is summarized as follows:

The location where development traffic has the highest impact is the Shaughnessy Street and laneway intersection. It will be most difficult for vehicles to exit the laneway during the weekday PM peak hour when the average delay for left and right turning vehicles will reach 28 seconds (LOS¹ D) during the 2025 total traffic scenario which is still considered reasonable. The queue is not anticipated to exceed one vehicle.

The applicant has offered to provide a contribution of \$7500 to offset the potential traffic impacts on Shaughnessy Street and this action is recommended. This amount would be sufficient to pay for the installation of delineators along a segment of Shaughnessy Street that would restrict lane access to and from Shaughnessy Street to right-in/right-out movements should that be required to address traffic impacts in the future.

The applicant has also offered to improve the lane from the subject property to Flint Street. This work would include the installation of a storm sewer and repaving, to provide for better vehicular access for both existing and new residents. In particular, it would promote use of the lane for residents wishing to make left turning movements at a controlled intersection and is recommended.



¹ LOS = Level of Service

Further Information Rezoning Application RZ000156 2152-2166 Grant Avenue


Parking Impacts: Smart Growth Committee members expressed concern that the requested 6-stall variance may be insufficient to accommodate the number of vehicles associated with the apartment development and pointed to on-street parking problems within the downtown. It is expected that the proposed number of vehicles will be in keeping with the demand for parking for a number of reasons. As explained by the applicant, this site is well located to serve residents who wish to have good accessibility to shops and services as it is walking distance to the downtown, schools, places of worship and parks and close to a number of bus routes. It is also located in relatively close proximity to the B-Line rapid bus route set to begin operation in 2019. Staff observation is that areas with known on-street parking issues generally have higher numbers of family-oriented townhouse units where garages within these units are repurposed for storage or living purposes or older apartment buildings with inadequate onsite parking. Furthermore, there have been no complaints with respect to on-street parking related to the existing apartment building. With the increased cost of housing and the proposed unit mix, it is unlikely that the requested variance will create a significant issue and staff continue to support the variance.

Committee members also questioned the staff recommendation that \$15,000 per stall be collected. As explained at the meeting, this amount is that currently set in the parking bylaw to apply to cash-in-lieu of parking in the downtown. Staff also pointed out that legislation allowing for a cash-in-lieu program has been amended since the program was adopted, and it could be amended to allow for options to use the funds for purposes other than parking spaces such as sidewalks connecting to bus stops. Informal discussion with Council members has indicated a desire to review the cash-in-lieu program but this work is not part of the 2018 work program.

Car wash space: The applicant has offered to provide water and drainage to one of the visitor's parking stalls to provide for on-site car washing. It is recommended the covenant to ensure the building environmental standard is met also ensure this amenity is provided.

OPTIONS

(Check = Staff Recommendation)

#	Description
1 	Amend the recommended conditions to be met to require the extended lane improvements, provide for future Shaughnessy Street works at the lane, and on-site car washing
2	Not amend the recommended conditions to be met or request other amendments.

ATTACHMENTS

Attachment #1: May 1, 2018 Report to Smart Growth Committee

Attachment #2: Transportation Impact Assessment

RECOMMENDATIONS:

That the Smart Growth Committee recommend to Council:

1. That the zoning of 2152-2166 Grant Avenue be amended from RS1 (Residential Single Dwelling 1) to RA1 (Residential Apartment 1);
2. That the amending bylaw provide that the required number of residential and visitor parking spaces may be reduced for this site by up to six spaces if a contribution of \$15,000 in lieu of each space is submitted to the City prior to building permit issuance.
3. That prior to adoption of the amending bylaw, the following conditions be met to the satisfaction of the Director of Development Services:
 - (a) Installation of fencing to protect a hedge;
 - (b) Demolition of existing buildings;
 - (c) Consolidation of the lots;
 - (d) Completion of design and submission of securities and fees for off-site works and services; and,
 - (e) Registration of a legal agreement to ensure design and construction of the apartment building is to a LEED® Silver standard or an equivalent per the Step Code.

PREVIOUS COUNCIL/COMMITTEE ACTION

None.

REPORT SUMMARY

MacLean Homes proposes to redevelop four lots with a 60-unit apartment building, underground parking and landscaping on a mid-block site located east of Shaughnessy Street on Grant Avenue. This proposal is in keeping with the Official Community Plan's land use designation for the area as Apartment, and it would be the first apartment building to be located within the 2100 block of Grant Avenue. The report describes how the design and landscaping of the proposed project would be expected to comply with design and environmental objectives and guidelines established for this area. The report further describes the applicant's request to apply a cash-in-lieu provision to vary parking requirements and recommends approval of the request due to the site's accessibility to transit and services.

BACKGROUND

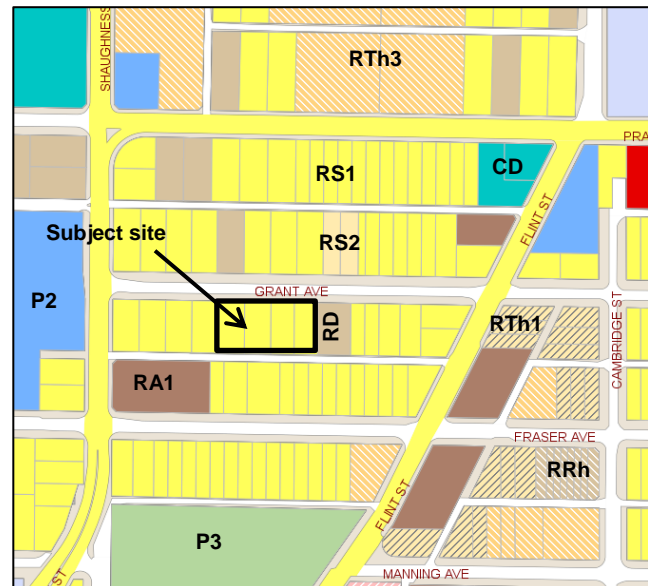
Official Community Plan Policy: As shown by the figure below, the site is located within an area designed A – Apartment Residential. Housing policies within this designation encourage housing variety in low to mid-rise buildings to accommodate the needs of Port Coquitlam's population and demand for multi-family housing.

Zoning Bylaw: The current zoning is RS1 – Residential Single Dwelling 1; the proposed zoning is RA1 - Residential Apartment 1.

Rezoning Application RZ000156 - 2152-2166 Grant Avenue



Official Community Plan Land Use Designations



Current Zoning

Development Permit Area Designation: If rezoned, the site would be subject to complying with the objectives and guidelines of the Intensive Residential and Environmental Conservation development permit area designations of the Official Community Plan as well as specific design guidelines set for the Aggie Park area. These guidelines promote coordinated siting and building design; use of high quality cladding materials; consideration of the relationship between buildings and open areas; and, the overall visual impact of buildings and landscaping. The environmental conservation objectives and guidelines encourage sustainable development and building design; efficient use of energy, water and other resources; and, reduction of waste and pollution.

Site Characteristics and Context: The 2,660m² (0.66 acre) site is located in a mid-block location on the south side of Grant Avenue between Shaughnessy and Flint Streets. It includes four relatively flat lots which are currently occupied by older houses. There are 11 trees on the combined lots and three on the boulevard in front of one of the lots. The area remains primarily developed with detached homes and duplexes with the exception of a 44-unit apartment development directly south of the adjacent lane. The Our Lady of the Assumption School and Parish are located to the west of Shaughnessy Street.

Proposed Development: The proposed four-storey building is to be comprised of 4 studio, 41 one-bedroom plus den, 14 two-bedroom and 1 three-bedroom apartment; units vary in size from 39m² (422 ft²) to 105m² (1131 ft²). Parking is to be located below the building with the exception that three at-grade visitors' parking spaces accessed from the lane.

Rezoning Application RZ000156 - 2152-2166 Grant Avenue



Project Profile

	Bylaw Regulations ¹	Proposed ²	Requested Variances
Site area	1,000 m ²	2,660 m ²	n/a
Floor area ratio	2.0	1.58	-
Dwelling units - total		60	n/a
Adaptable units	30%	32% (19 units)	
Building lot coverage	50%	54.1%	4.1%
Setbacks:			
Front (Grant Avenue)	4 m	4.2 m	-
Rear (south lane)	7.5 m	6.1 to 10 m	1.4 m
Interior side (west)	3 m	4.4 m	-
Interior side (east)	3 m	3 m	-
Building Height	15 m	14.7 m	-
Parking: Total	92	86	Variance
Resident	80	77	3
Visitor	12 (1 per 5 d.u.)	9	3
Small Car	23 (25% max)	22	-
Indoor Recreation Area	120 m ²	122 m ²	-
Outdoor Recreation Area	210 m ²	250 m ²	-
Bicycle Storage			
Long term (bike room)	60 (@1 per unit)	61	-
Short term (bike rack)	6	6	-

The building design meets the intent of the design guidelines by featuring a prominent front entrance along Grant Avenue and utilizing a generous amount of glazing with dark brick and warm coloured earth toned siding with red accents. Building articulation is to be achieved through varied setbacks and roof lines and through the use of cladding materials and colour. The building will be clad in a generous amount of brick, and high-quality fibre-cement board and panels in either a

¹ Refer to the Zoning, Parking and Development Management and Building and Plumbing bylaws for specific regulations

² Information provided by applicant

Rezoning Application RZ000156 - 2152-2166 Grant Avenue

lapped or board and baton arrangement. Decorative elements include a combination of heavy timber trellises and brackets as well as wood-toned soffits and aluminum picket guardrails.



Grant Avenue Facade

Street-fronting units on the ground floor will have direct access to the street via walkways; every unit will have a private balcony or patio. An indoor amenity room is to be located at the south side of the main floor with access to a common patio. The landscape plan includes a mixture of trees, shrubs, perennials and groundcover plants.

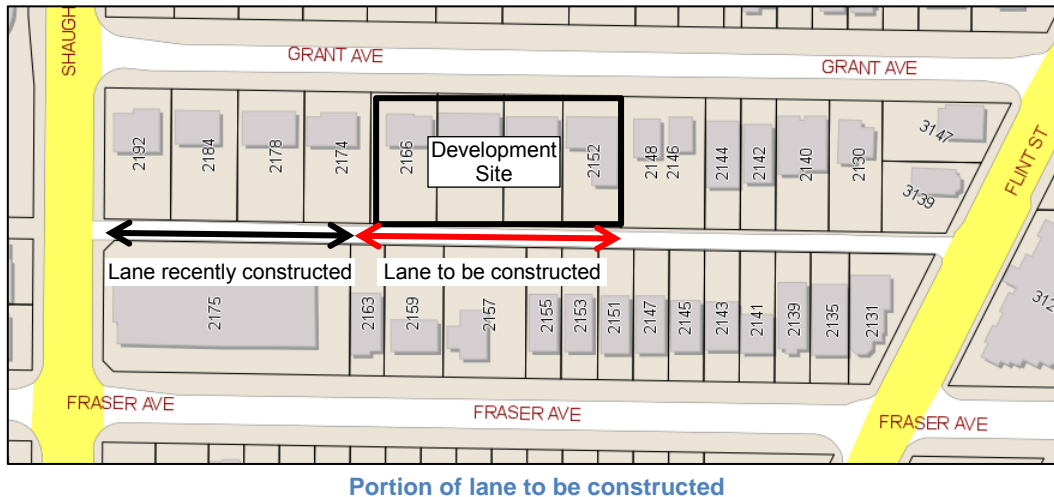
An arborist's report was submitted that identifies measures to protect a cedar hedge at 2174 Grant Avenue but the existing on-site trees must be cut due to either their poor condition or their location in the proposed building area. Efforts were made to explore retention of the boulevard trees but due to required works which include road widening and a low crown height (the trees would have been a hazard to vehicles and pedestrians), none were found to be suitable for retention. A total of 50 trees are proposed to replace the existing trees, including 2 large Serbian Spruce and 3 Weeping Nootka False Cypress, each to be more than 3 metres in height at time of planting. Installation of fencing to protect the hedge is recommended as a condition of rezoning.



Boulevard Character

Rezoning Application RZ000156 - 2152-2166 Grant Avenue

Transportation and Infrastructure: This development involves extensive off-site upgrades to meet the standards of the Subdivision Servicing Bylaw, including reconstructing portions of Grant Avenue abutting the site with curb and gutter, street lighting, street trees and a sidewalk. The watermain and storm sewer on Grant Avenue will also require upgrading.



A transportation impact assessment report was submitted for review by Engineering and Public Works staff. The report confirms the transportation network has the capacity to accommodate additional the future traffic volumes associated with this proposal without creating significant requirements for infrastructure improvements.

Compliance with the environmental conservation designation would be achieved by a requirement for the project to be designed to meet or exceed a green building standard of Leadership in Energy and Environmental Design (LEED®) to a Silver level. This program requires buildings to be energy and water efficient, promotes indoor air quality and efficient use of resources. The applicant is also exploring the provisions of the new Step Code and may utilize it as a means to achieve the equivalent environmental standard.

DISCUSSION

The application adheres to the land use and environmental policies of the Official Community Plan. Three variances to regulations are proposed:

- Rear yard setback:** A minor relaxation to the rear yard setback allows for a larger bicycle storage room on the ground floor. The rest of the building is set back 10 metres, well in excess of the 7.5 metre requirement.
- Lot coverage:** The minor variance to lot coverage is primarily due to the bicycle parking room and not expected to have a significant impact.
- Parking:** The proposal is to reduce the 80 spaces required for residents to 77 and reduce the 12 spaces required for visitors to 9, and to pay \$15,000 per parking space that is not provided within the project.

The parking required for this building is calculated as follows:

Rezoning Application RZ000156 - 2152-2166 Grant Avenue

Unit type	Number in project	Bylaw Requirement	Proposed
Studio units	4	1 per unit = 4	Allocate 1 per unit (60), offer the remaining 17 spaces for purchase
One-bedroom units	41	1.3 per unit = 53	
Two-bedroom units	14	1.5 per unit = 21	
Three-bedroom units	1	2.0 per unit = 2	
Visitor in building less than 6 storeys	1 per 5 units	12	9 (3 accessed from the lane; 6 secured space in the parking level)
Total	60	92	86

The applicant determined that the maximum number of spaces which could fit on the site is 86. A proposal conforming to the current parking bylaw with the same number of dwelling units could be achieved by increasing the number of studio and one-bedroom units and eliminating the 2 and 3-bedroom units. Alternatively, the total number of units could be reduced with the unit square footages increased (not bedrooms, as that would further impact parking) or the overall building massing could be decreased.

The applicant's traffic consultant supported the request for variance on the basis that the site is located in close proximity to transit as well as noted the City has a relatively high parking ratio.

The number of parking spaces being proposed would be permitted outright if the site was located in the Downtown but properties outside of the downtown are not eligible for the cash-in-lieu option. This site is walking distance to the downtown, schools, places of worship and parks and close to a number of bus routes. It is also located in relatively close proximity to the B-Line rapid bus route set to begin operation in 2019 (stop locations are not yet confirmed, but a stop at Shaughnessy is anticipated).

FINANCIAL IMPLICATIONS

The proposed redevelopment would provide for frontage and off-site improvements to Grant Avenue and the lane; if the requested parking variance is approved, it would also increase the amount of funds in the Parking Reserve by \$90,000.


PUBLIC CONSULTATION

A development notice sign is posted fronting Grant Avenue advising the community of the rezoning and development permit applications for the site. To date, no comments have been received.

Rezoning Application RZ000156 - 2152-2166 Grant Avenue

OPTIONS

(Check = Staff Recommendation)

#	Description
1 	Recommend to Council that the zoning of 2152-2166 Grant Avenue be amended from RS1 to RA1 and that the specified conditions be met prior to adoption of the rezoning.
2	Obtain additional information prior to making a decision on the application, such as by hosting an opportunity for the neighbourhood to comment on the application or requiring the applicant to provide such an opportunity.
3	Request that the project be amended such as to conform to zoning and/or parking regulations prior to making a decision on the application
4	Advise Council that Committee does not recommend the application to rezone 2152-2166 Grant Avenue for an apartment building be approved.

ATTACHMENTS

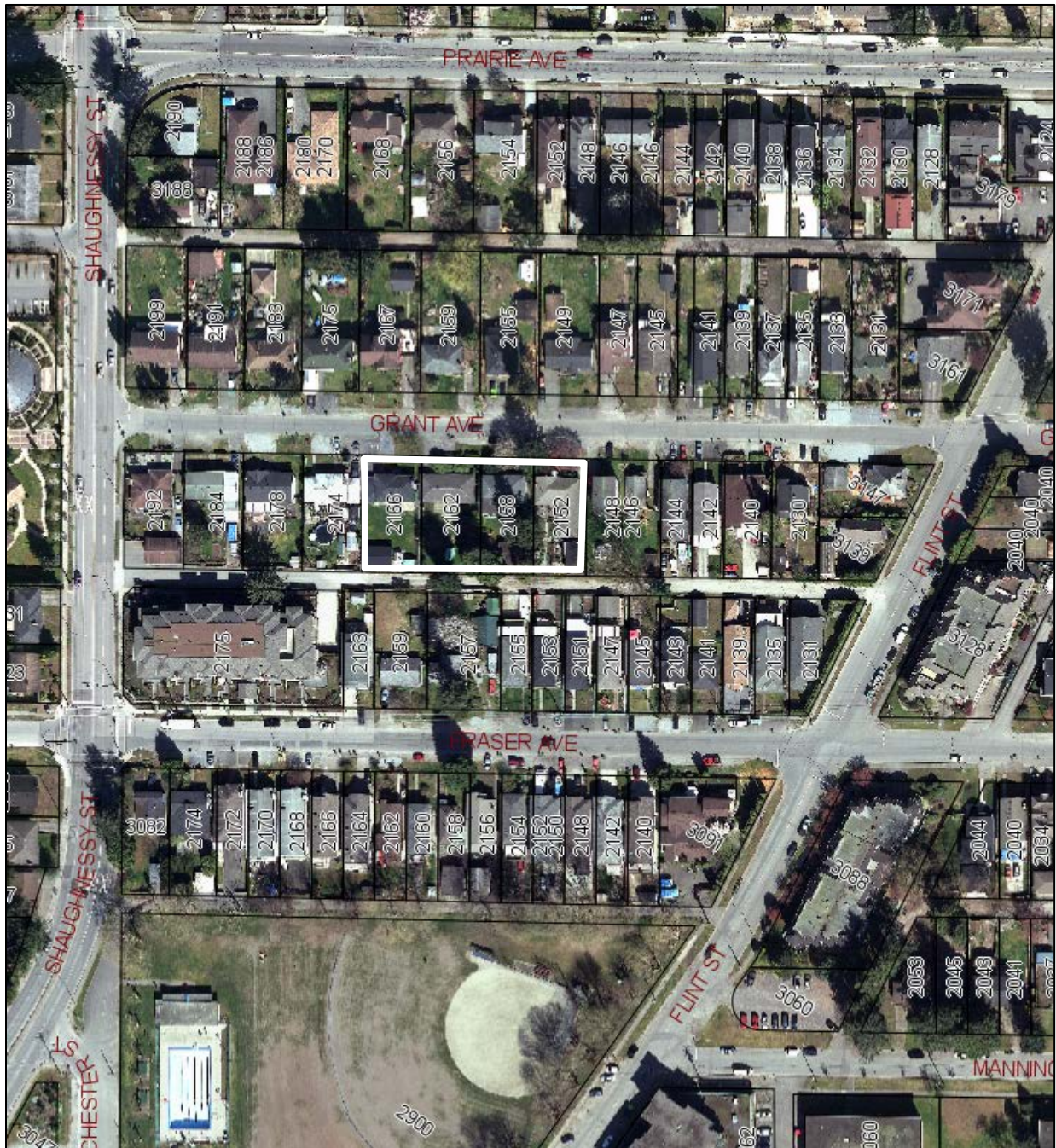
Attachment #1: Location Map

Attachment #2: Development Concept Drawings

CITY OF PORT COQUITLAM
DEVELOPMENT APPLICATION LOCATION MAP

PROJECT ADDRESS: 2152 – 2166 Grant Avenue

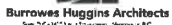
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Issues:	
2017-10-24	Issued for Rezoning/DP
2018-03-15	Reissued for Rezoning/DP



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project:
Grant Avenue
PROPOSED APARTMENT PROJECT
MACLEAN
Port Coquitlam, BC

consultant:

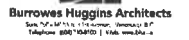
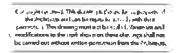
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scale:	NTS	project:	

sheet title:
Perspective Views

123

ATTACHMENT 2

Issues:
2017-10-24 Issued for Reasoning/DIP
2018-03-15 Released for Reasoning/DIP



project:
Grant Avenue
PROMISED APARTMENT PROJECT
MACLEAN
Port Coquitlam, BC

consultant:

cont.

1 BIRDSEYE VIEW ALONG THE LANE - LOOKING WEST
Scale: NTS

drawn: KB	date: August 2017
checked: NTS	project no.: P-435

sheet title:
Perspective Views

sheet no.1	P.435, Perspectives, 1975
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revisions:		
no.	date	description

issues:
 2017-10-24 Issued for Reporting/DP
 2018-03-15 Reissued for Reporting/DP



2 Grant Street Site Plan / Aerial
 Scale: 1:500



1 Grant Street Elevation
 Scale: 1:250

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project:
 Grant Avenue
 PROPOSED 3-UNIT RESIDENTIAL PROJECT
 MAQLEAN
 Port Moody, BC

consultant:

scale:

designed by	KB	date	August 2017
checked by			
scale	As Noted	project no.	P-435
sheet title:	Street Elevation - Grant Ave		

sheet no.:
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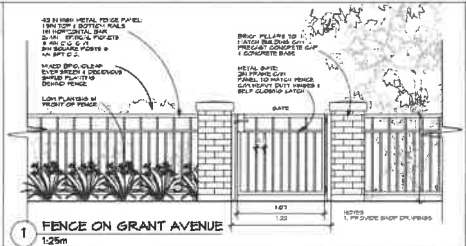
125

PLANT LIST: TREES & EDIBLE FRUITING SHRUBS

NO.	SYMBOL	PLANT NAME	COMMON NAME	SPACING	REMARKS
1	(Symbol)	Apple Tree	Malus domestica	12m x 12m	1st Year Plant
2	(Symbol)	Orange Tree	Citrus sinensis	12m x 12m	1st Year Plant
3	(Symbol)	Lemon Tree	Citrus limon	12m x 12m	1st Year Plant
4	(Symbol)	Guava Tree	Psidium guajava	12m x 12m	1st Year Plant
5	(Symbol)	Jackfruit Tree	Artocarpus heterophyllus	12m x 12m	1st Year Plant
6	(Symbol)	Coconut Tree	Cocos nucifera	12m x 12m	1st Year Plant
7	(Symbol)	Avocado Tree	Persea indica	12m x 12m	1st Year Plant
8	(Symbol)	Guava Tree	Psidium guajava	12m x 12m	1st Year Plant
9	(Symbol)	Jackfruit Tree	Artocarpus heterophyllus	12m x 12m	1st Year Plant
10	(Symbol)	Coconut Tree	Cocos nucifera	12m x 12m	1st Year Plant
11	(Symbol)	Avocado Tree	Persea indica	12m x 12m	1st Year Plant
12	(Symbol)	Guava Tree	Psidium guajava	12m x 12m	1st Year Plant
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15	(Symbol)	Avocado Tree	Persea indica	12m x 12m	1st Year Plant
16	(Symbol)	Guava Tree	Psidium guajava	12m x 12m	1st Year Plant
17	(Symbol)	Jackfruit Tree	Artocarpus heterophyllus	12m x 12m	1st Year Plant
18	(Symbol)	Coconut Tree	Cocos nucifera	12m x 12m	1st Year Plant
19	(Symbol)	Avocado Tree	Persea indica	12m x 12m	1st Year Plant
20	(Symbol)	Guava Tree	Psidium guajava	12m x 12m	1st Year Plant

SHRUBS, HEDGES, PERENNIALS & GRASSCOVERS

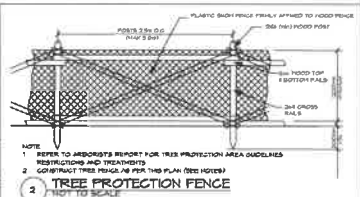
NO.	SYMBOL	PLANT NAME	COMMON NAME	SPACING	REMARKS
1	(Symbol)	Shrub	Shrub	12m x 12m	1st Year Plant
2	(Symbol)	Hedge	Hedge	12m x 12m	1st Year Plant
3	(Symbol)	Perennial	Perennial	12m x 12m	1st Year Plant
4	(Symbol)	Grasscover	Grasscover	12m x 12m	1st Year Plant
5	(Symbol)	Shrub	Shrub	12m x 12m	1st Year Plant
6	(Symbol)	Hedge	Hedge	12m x 12m	1st Year Plant
7	(Symbol)	Perennial	Perennial	12m x 12m	1st Year Plant
8	(Symbol)	Grasscover	Grasscover	12m x 12m	1st Year Plant
9	(Symbol)	Shrub	Shrub	12m x 12m	1st Year Plant
10	(Symbol)	Hedge	Hedge	12m x 12m	1st Year Plant
11	(Symbol)	Perennial	Perennial	12m x 12m	1st Year Plant
12	(Symbol)	Grasscover	Grasscover	12m x 12m	1st Year Plant
13	(Symbol)	Shrub	Shrub	12m x 12m	1st Year Plant
14	(Symbol)	Hedge	Hedge	12m x 12m	1st Year Plant
15	(Symbol)	Perennial	Perennial	12m x 12m	1st Year Plant
16	(Symbol)	Grasscover	Grasscover	12m x 12m	1st Year Plant
17	(Symbol)	Shrub	Shrub	12m x 12m	1st Year Plant
18	(Symbol)	Hedge	Hedge	12m x 12m	1st Year Plant
19	(Symbol)	Perennial	Perennial	12m x 12m	1st Year Plant
20	(Symbol)	Grasscover	Grasscover	12m x 12m	1st Year Plant



TREE PROTECTION NOTES:

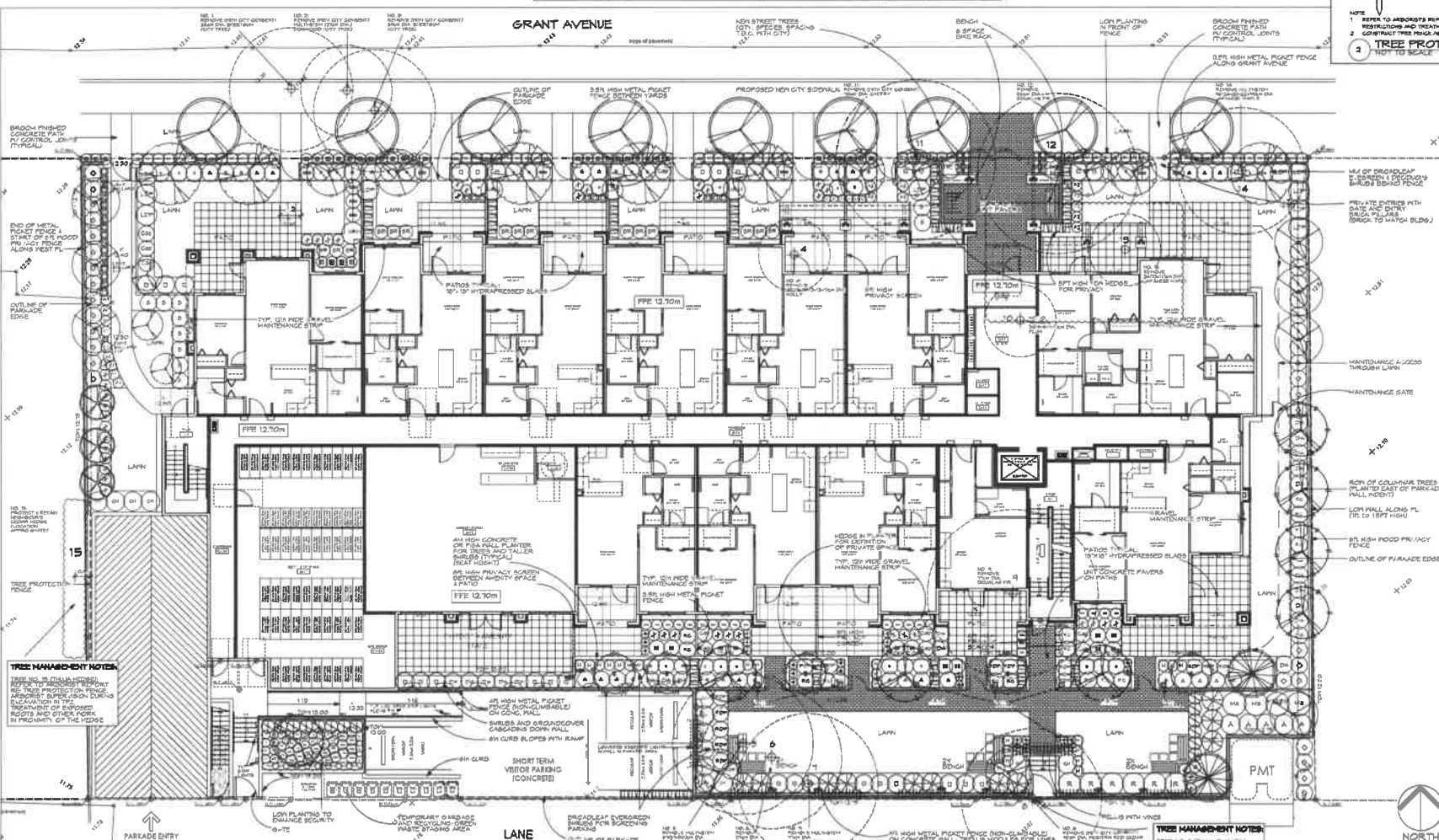
1. NO MORE THAN 1.2m OF ANY TREE PROTECTION AREA, INCLUDING PROTECTIVE FENCING, SHALL BE PLACED OVER ANY EXISTING OR PROPOSED DRIVEWAY OR PATHWAY.
2. TO PREVENT DAMAGE TO TREES, PROTECTIVE FENCING SHALL BE PLACED AT LEAST 1.2m FROM THE TRUNK OF ANY TREE TO BE PROTECTED.
3. PROTECTIVE FENCING SHALL BE PLACED AT LEAST 1.2m FROM THE TRUNK OF ANY TREE TO BE PROTECTED.
4. PROTECTIVE FENCING SHALL BE PLACED AT LEAST 1.2m FROM THE TRUNK OF ANY TREE TO BE PROTECTED.
5. PROTECTIVE FENCING SHALL BE PLACED AT LEAST 1.2m FROM THE TRUNK OF ANY TREE TO BE PROTECTED.
6. PROTECTIVE FENCING SHALL BE PLACED AT LEAST 1.2m FROM THE TRUNK OF ANY TREE TO BE PROTECTED.
7. PROTECTIVE FENCING SHALL BE PLACED AT LEAST 1.2m FROM THE TRUNK OF ANY TREE TO BE PROTECTED.
8. PROTECTIVE FENCING SHALL BE PLACED AT LEAST 1.2m FROM THE TRUNK OF ANY TREE TO BE PROTECTED.
9. PROTECTIVE FENCING SHALL BE PLACED AT LEAST 1.2m FROM THE TRUNK OF ANY TREE TO BE PROTECTED.
10. PROTECTIVE FENCING SHALL BE PLACED AT LEAST 1.2m FROM THE TRUNK OF ANY TREE TO BE PROTECTED.

1 FENCE ON GRANT AVENUE
1.2m



2 TREE PROTECTION FENCE
1.2m

GRANT AVENUE



PAVING MATERIALS KEY:

(Symbol)	CONCRETE SET PAVING
(Symbol)	GRAVEL
(Symbol)	ASPHALT
(Symbol)	BRICK
(Symbol)	STONE

VIEWPOINT LANDSCAPE ARCHITECTS
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Vancouver, BC V6C 2E5
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PROJECT:
APARTMENT PROJECT
GRANT AVENUE, PORT COQUITLAM, B.C.

DESIGNED BY:
MACLEAN HOMES

DATE:
12 MAR 2016

SCALE:
1:100

SHEET NO.:
L1 OF 1

2152 – 2166 Grant Avenue Transportation Impact Assessment

Draft Report

Prepared for

Maclean Homes (Grant) Ltd.

Date

March 26, 2018

Project No.

04-17-0247

March 26, 2018
04-17-0247

Josh Maclean
President
Maclean Homes
2415 Marine Drive
West Vancouver, BC
V7V 1L3

Dear Josh:

**Re: 2152 – 2166 Grant Avenue
Transportation Impact Assessment – Draft Report**

Please find attached our Transportation Impact Assessment draft report, for circulation to the City of Port Coquitlam. The purpose of this study was to assess the potential off-site impacts of the redevelopment of 2152 – 2166 Grant Avenue. We found that no road improvements are needed to accommodate the added traffic generated by the development. We have also included a vehicle parking variance rationale.

We trust that this study assists you in advancing your project.

Yours truly,
Bunt & Associates

Simon Button, P.Eng.
Transportation Engineer

CORPORATE AUTHORIZATION

Prepared By: Simon Button, P.Eng.

Bunt & Associates Engineering Ltd.
1550-1050 West Pender Street
Vancouver, BC V6E 3S7
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Reviewed By: Dan Ross, CPEng (NZ), MUP
Senior Transportation Planner

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Approved By: (Final Only)

Date: 2018-03-26
Project No. 04-17-0247
Status: Draft

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1. INTRODUCTION

1.1 Study Purpose & Objectives

Maclean Homes (Grant) Ltd. (Maclean) is seeking approval to redevelop the properties at 2152 - 2166 Grant Avenue in Port Coquitlam, BC. Currently, four single-family homes occupy the development site. Maclean wishes to remove the four existing homes and build 60 new residential units in a four-storey building.

As part of the Rezoning submission, the City of Port Coquitlam has requested a Transportation Impact Assessment (TIA) Study be prepared to review the current and future transportation conditions for the build-out of the project.

1.2 Study Scope & Area

The study area illustrated in the context of the transportation network is shown in **Exhibit 1.1**.

The intent of this study is to determine the level of new vehicle volumes that the proposed development could potentially generate on the adjacent street network to determine whether off-site roadway and/or intersection control upgrades are required to accommodate the incremental traffic associated with the proposed development. In addition to this, the report also reviews the proposed parking variance and the walking, cycling, and transit networks. The Terms of Reference for the study is attached in **Appendix A**.

1.3 Development Plan

The proposed development includes 60 residential units and the site plan is shown in **Exhibit 1.2**. The majority of the units (68%) will be one-bedrooms with a smaller number of studios (6%), 2-bedrooms (23%) and a single three-bedroom unit.

The primary pedestrian access will be on Grant Avenue as will the visitor bicycle parking. Resident bicycle parking will be provided on the ground floor with access from the front or rear of the building. A total of 83 vehicle parking stalls will be provided with access from the rear laneway; 80 stalls will be located the underground parkade and 3 stalls will be at-grade.

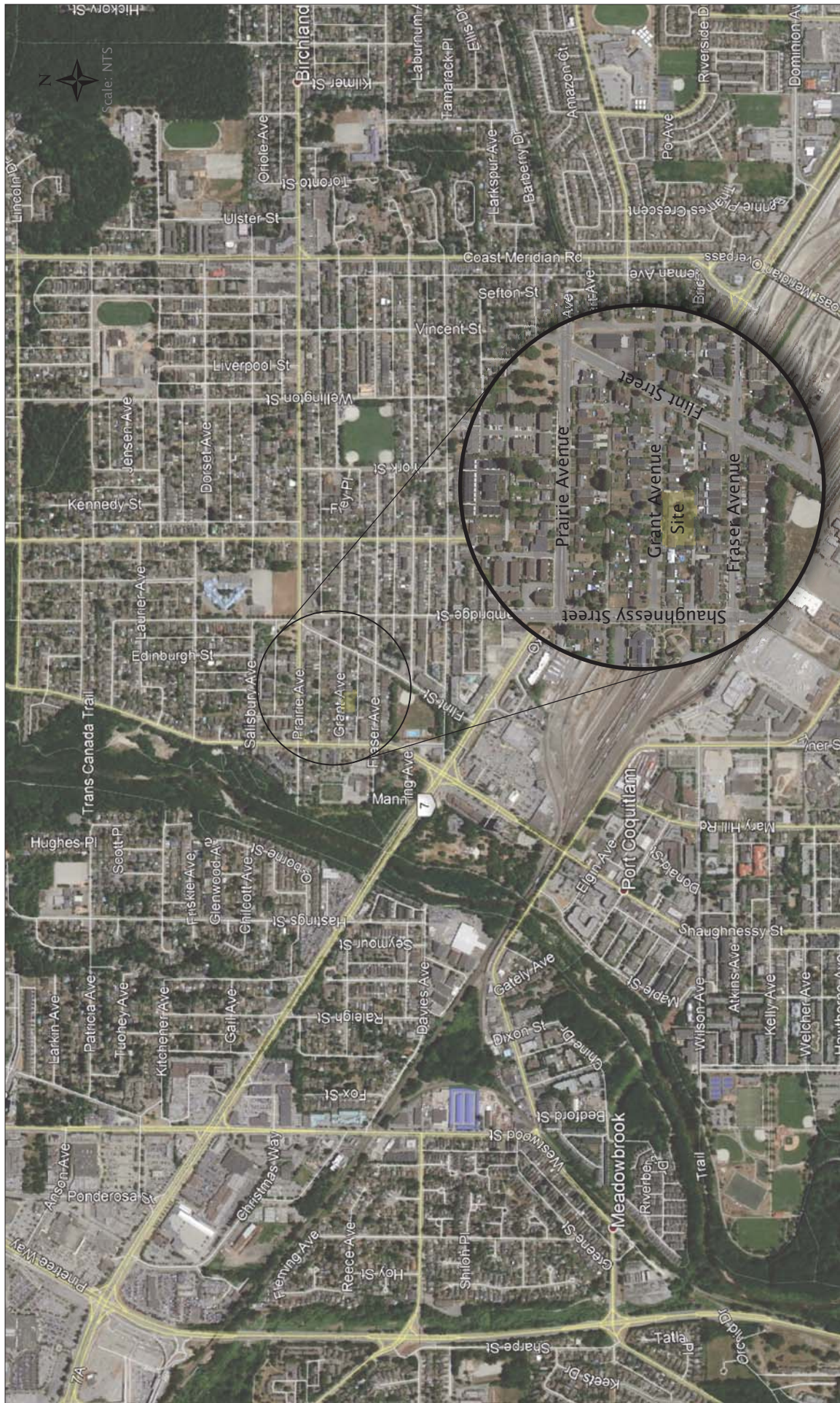


Exhibit 1.1 Site Context

Grant Avenue TIA
March 2018

04-17-0247

2. EXISTING CONDITIONS

2.1 Transportation Network

2.1.1 Road Network

The existing laning and traffic control is shown in **Exhibit 2.1**. The street characteristics are summarized in **Table 2.1**. Shaughnessy Street serves as an important north/south street, providing access to Lougheed Highway 200 metres south of Fraser Avenue.

Table 2.1: Existing Street Characteristics

STREET	CLASSIFICATION	NUMBER OF TRAVEL LANES	POSTED SPEED	PARKING FACILITIES
Shaughnessy Street	Arterial	4	No posted speed limits within the study area. 50 km/h speed limit assumed.	None
Flint Street	Collector	2		Parking on both sides; unrestricted
Prairie Avenue	Arterial	2		Parking on both sides; unrestricted
Grant Avenue	Local	2		Parking on both sides; unrestricted
Fraser Avenue	Local	2		Parking on both sides; unrestricted

2.1.2 Active Transportation

The study area generally has good walking facilities on busier streets but does not have an established grid of good cycling routes.

Shaughnessy Street, Flint Street, and Prairie Avenue all have sidewalks on both sides in the area surrounding the site. Fraser Avenue has sections of sidewalk fronting the newer developments. Grant Avenue does not currently have any sidewalks.

Within the study area, Port Coquitlam classifies Fraser Avenue as a bicycle route, however, it has minimal cycling amenities.

2.1.3 Transit Network

The site is within reasonable walking distance to bus routes #159, 160, 172, 174, and 701 as shown in **Table 2.2**, overleaf. These routes provide access to Coquitlam, Burnaby, Pitt Meadows, and Maple Ridge. Multiple routes provide connections to the SkyTrain system at Coquitlam Central Station.

Table 2.2: Transit Stops within 800m Walking Distance of Site

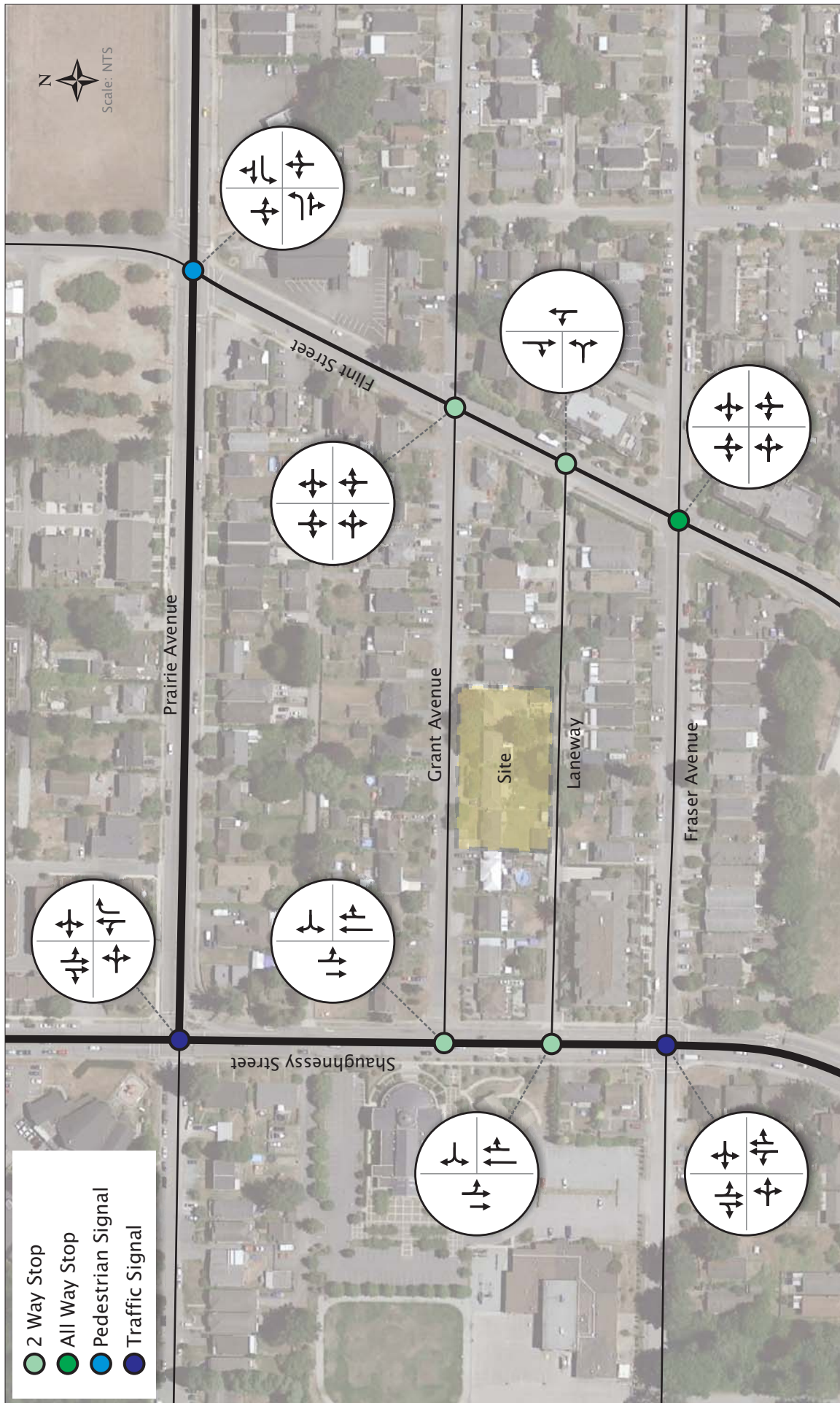
STOP LOCATION	DIRECTION	STOP #	AMENITY	ROUTES SERVICED	WALKING DISTANCE
NB Shaughnessy St FS Fraser Ave	North	53832	None	172, 174	150m
SB Shaughnessy St FS Prairie Ave	South	53829	Shelter, Bench	172, 174,	225m
SB Shaughnessy St FS Fraser Avenue	South	53830	Shelter, Bench	172, 174	250m
NB Shaughnessy St FS Prairie Ave	North	58775	None	172, 174	300m
WB Lougheed Hwy NS Shaughnessy St	West	59189	Bench	171, 701	450m
EB Lougheed Hwy FS Shaughnessy St	East	53786	Bench	171, 701	475m
SB Shaughnessy St NS Lions Way	South	59421	None	174	560m
SB Shaughnessy St at Lions Way	South	53024	Shelter, Bench	159, 160	560m
NB Shaughnessy St FS Dorset Ave	North	58811	None	172, 174	580m
EB Prairie Ave FS Oxford St	East	53835	Bench	172	590m
SB Shaughnessy St NS Dorset Ave	South	53828	None	172, 174	600m
NB Shaughnessy St NS Lions Way	North	53032	Shelter, Bench	159, 160, 174	600m
NB Oxford St FS Prairie Ave	North	58793	None	172	620m
WB Mall Access Rd NS Shaughnessy St	West	58805	None	173	700m
WB Oxford Connector at 2000 Block	West	58804	None	173	740m
EB Mall Access Rd FS Shaughnessy St	East	58589	None	173	750m
WB Prairie Ave FS York St	West	53819	None	172	750m
EB Prairie Ave FS York St	East	53836	None	172	790m

2.2 Vehicle Volumes

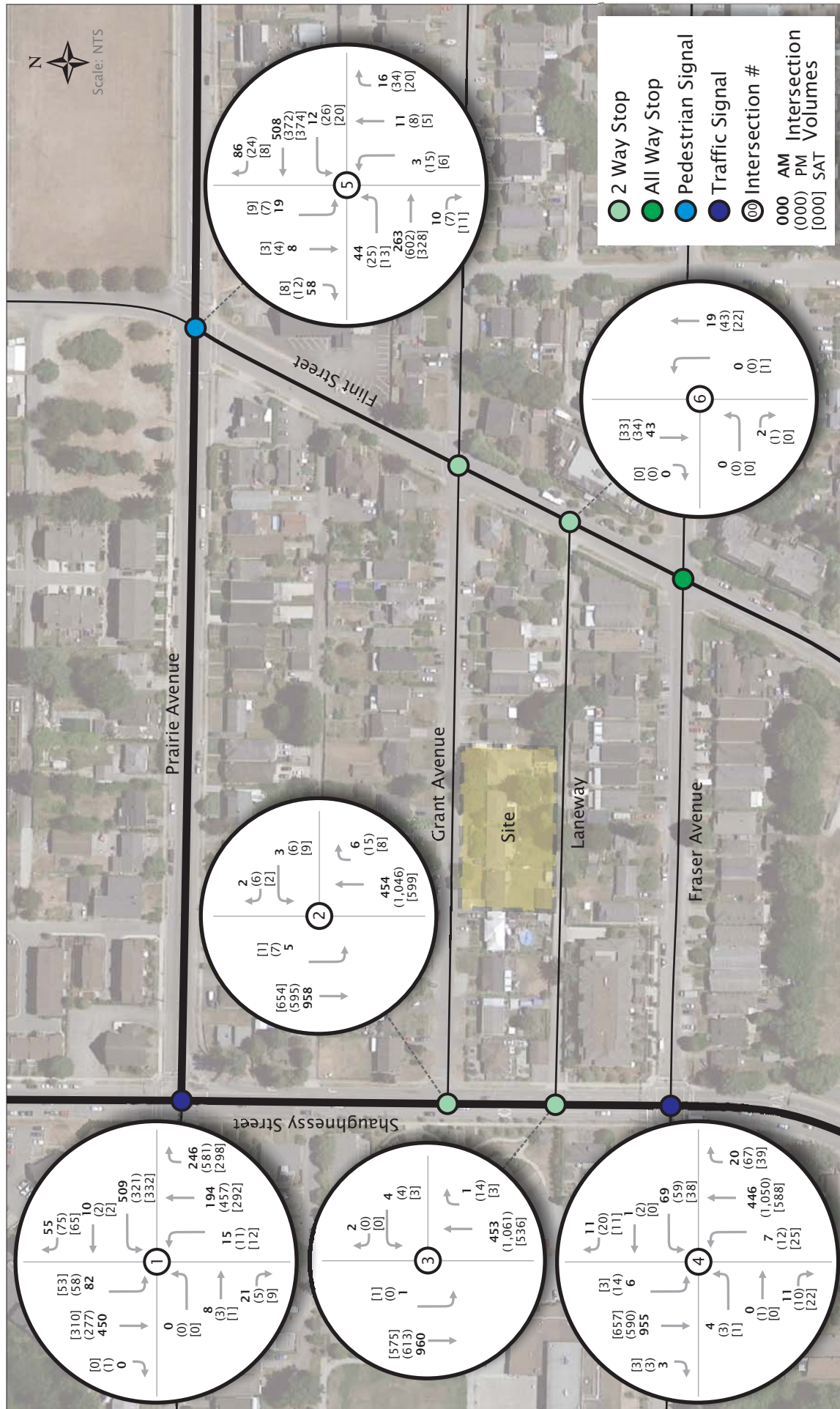
Bunt collected vehicle volumes at the study intersections agreed to in the Terms of Reference (Appendix A) on Thursday, March 15, 2018 (7-9am and 3-6pm) and Saturday, March 17, 2018 (12-3pm). The peak hours for the three peak periods are:

- Weekday AM: 8:00 AM;
- Weekday PM: 4:45 PM; and,
- Saturday: 12:45 PM.

The peak hour vehicle volumes are shown in **Exhibit 2.2**.



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2.3 Traffic Operations

2.3.1 Performance Thresholds

The existing operations of study area intersections and access points were assessed using the methods outlined in the 2010 Highway Capacity Manual (HCM), using the Synchro 9 analysis software. The traffic operations were assessed using the performance measures of Level of Service (LOS) and volume-to-capacity (V/C) ratio.

The LOS rating is based on average vehicle delay and ranges from “A” to “F” based on the quality of operation at the intersection. LOS “A” represents optimal, minimal delay conditions while a LOS “F” represents an over-capacity condition with considerable congestion and/or delay. Delay is calculated in seconds and is based on the average intersection delay per vehicle.

Table 2.7 below summarizes the LOS thresholds for the six Levels of Service, for both signalized and unsignalized intersections.

Table 2.7: Intersection Level of Service Thresholds

LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	
	SIGNALIZED	UNSIGNALIZED
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Source: Highway Capacity Manual

The volume to capacity (V/C) ratio of an intersection represents ratio between the demand volume and the available capacity. A V/C ratio less than 0.85 indicates that there is sufficient capacity to accommodate demands and generally represents reasonable traffic conditions in suburban settings. A V/C value between 0.85 and 0.95 indicates an intersection is approaching practical capacity; a V/C ratio over 0.95 indicates that traffic demands are close to exceeding the available capacity, resulting in saturated conditions. A V/C ratio over 1.0 indicates a very congested intersection where drivers may have to wait through several signal cycles. In downtown and Town Centre contexts, during peak demand periods, V/C ratios over 0.90 and even 1.0 are common.

As directed by the City, consideration of roadway or traffic control improvements will be identified where 95th percentile queue lengths exceed the available storage at major intersections or where V/C ratios of signalized intersections exceed 0.90.

The performance reporting conventions noted above have been consistently applied throughout this document. A graphical summary of the traffic operations are provided in **Appendix B** and the detailed outputs are provided in **Appendix C**.

2.3.2 Existing Conditions Analysis Assumptions

Signal timings for the three traffic signals in the study area were obtained from the City and incorporated into the Synchro model. The peak hour factors (PHF) and heavy vehicle percentages from Bunt's traffic data were reviewed and did not significantly defer from the Synchro default values: PHF = 0.92 and 2% heavy vehicles. As such, the Synchro default values were used for the analysis.

2.3.3 Existing Operational Analysis Results

The results from the existing traffic operations assessment can be seen in **Exhibits B.1 – B.3** (Appendix B). Overall, the study intersections operate well with all movements operating at a Level of Service (LOS) D or better. During the weekday PM peak hour, the northbound queue on Shaughnessy Street at Prairie Avenue can reach up to 145 metres which is 40 metres past Grant Avenue. The northbound movement could be given a greater share of the green time at the intersection to reduce the length of this queue.

3. FUTURE TRAFFIC CONDITIONS

3.1 Traffic Forecasts

3.1.1 Background Traffic Forecasts

Background traffic is traffic that would be present on the road network if the site did not redevelop. As approved by the City, the existing vehicle volumes were grown by 1% per annum to forecast the background vehicle volumes. The resulting background traffic forecasts are shown in **Exhibit 3.1** and **3.2** for the 2020 and 2025 horizon years.

3.1.2 Site Traffic

Trip Generation

The number of vehicle trips generated by the proposed development was estimated by using the Institute of Transportation Engineers (ITE) Trip Generation Manual 10th Edition. Trip rates were obtained for mid-rise multifamily housing (Land use code 221) which is for buildings with three or more dwelling units between three and ten levels. The 'general urban/suburban' location was chosen as the most applicable of the available locations. The trip rates and trip generation for the 60 residential units are shown in **Table 3.1**. As shown, the development is forecast to generate approximately 20 to 25 vehicle trips per peak hour.

Table 3.1: Peak Hour Vehicle Trip Generation

PEAK HOUR	TRIP RATE (TRIPS/UNIT)			TRIP GENERATION (TRIPS)		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Weekday AM	26%	74%	0.36	6	16	22
Weekday PM	61%	39%	0.44	16	10	26
Saturday	49%	51%	0.44	13	13	26

The number of walking, cycling, and transit trips were estimated by combining the vehicle trip forecasts (Table 3.1) with mode share results for Port Coquitlam from the 2011 Lower Mainland Trip Diary. The resulting multi-modal trip generation is shown in **Table 3.2**.

Table 3.2: Multi-modal Trip Generation

	MODE SHARE	PEAK HOUR TRIP GENERATION		
		WEEKDAY AM	WEEKDAY PM	SATURDAY
Walk	11%	4	5	5
Bicycle	2%	1	1	1
Transit	8%	3	3	3
Auto Driver	60%	22	26	26
Auto Passenger	19%	7	8	8

Trip Distribution & Assignment

The vehicle trips were distributed and assigned to the road network based on existing travel patterns. The assumed trip distribution is shown in Table 3.2 and the resulting site traffic forecast is shown in **Exhibit 3.3**.

Table 3.3: Estimated Trip Distribution

ORIGIN/DESTINATION	IN (%)	OUT (%)
Shaughnessy Street - North	17	28
Shaughnessy Street - South	58	34
Flint Street - North	1	3
Flint Street - South	2	2
Prairie Avenue - East	22	33
TOTAL	100%	100%

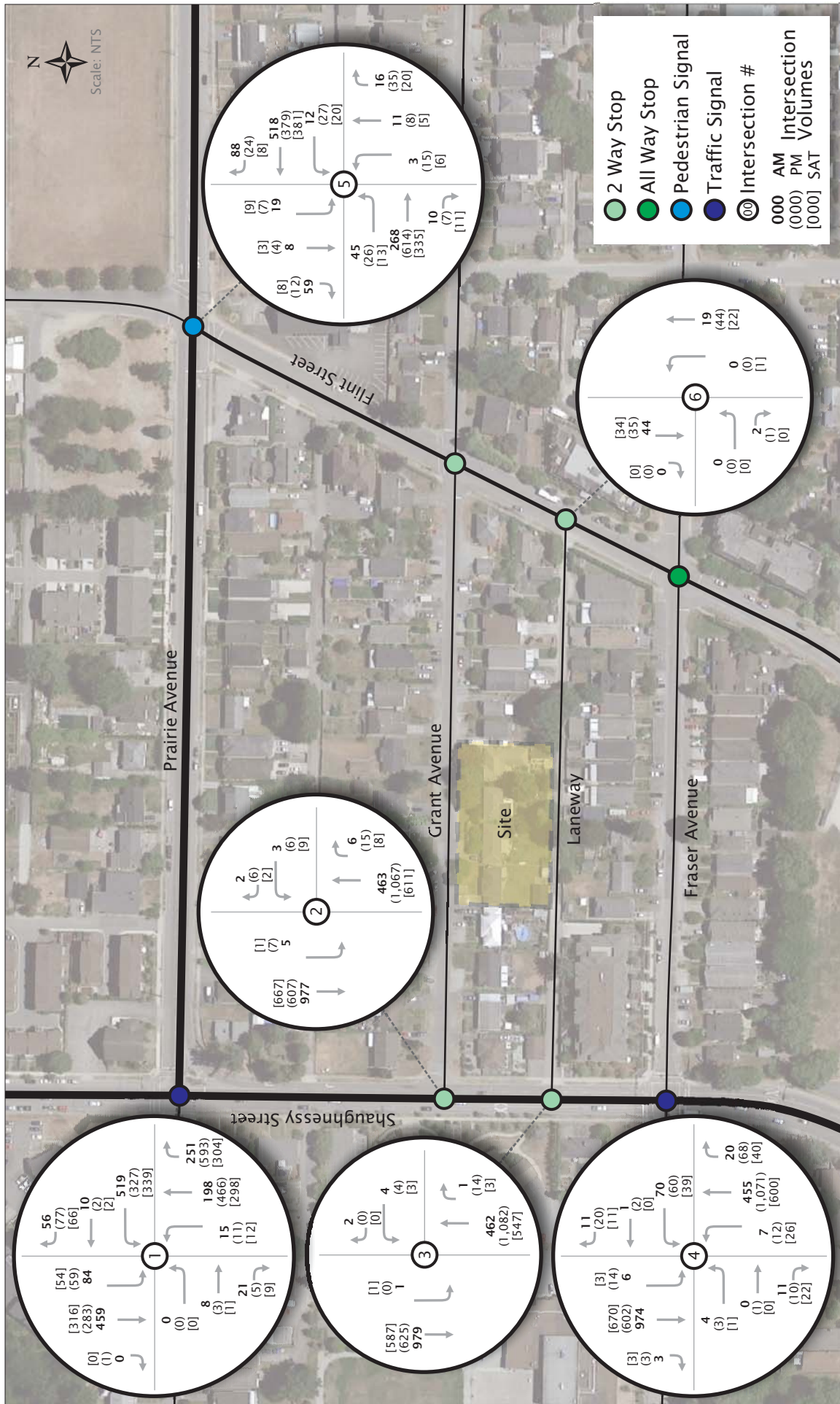
As shown in **Table 3.4**, the site is forecasted to add less than 1% to the 2025 background vehicle volumes at the study's three signalized intersections. This is a nominal amount and the site generated vehicle trips are not anticipated to have a significant operational or safety impact at these three intersections.

Table 3.4: Net Change in Future 2025 Intersection Vehicle Volumes with New Site Trips

INTERSECTION	AM PEAK HOUR		PM PEAK HOUR		SATURDAY PEAK HOUR	
	BACK-GROUND	% CHANGE	BACK-GROUND	% CHANGE	BACK-GROUND	% CHANGE
Shaughnessy Street & Prairie Avenue	1,701	0.3%	1,916	0.3%	1,470	0.4%
Shaughnessy Street & Fraser Avenue	1,640	0.5%	1,959	0.7%	1,484	0.8%
Flint Street & Prairie Avenue	1,111	0.6%	1,216	0.6%	861	0.9%

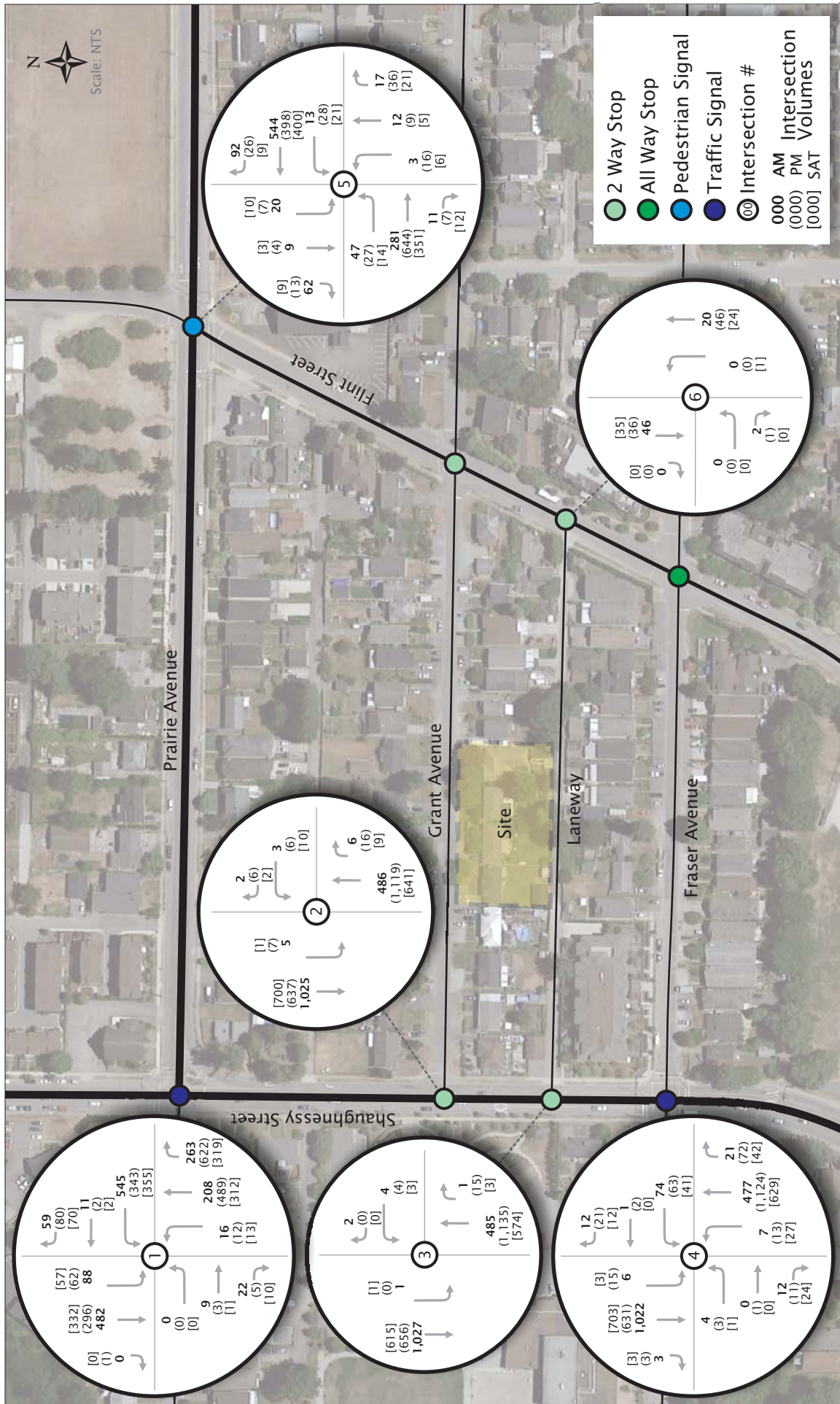
3.1.3 Total Traffic

Total traffic was estimated by summing the background and site traffic forecasts. To be conservative, the modest amount of traffic currently generated by the four single-family houses on the site was not subtracted. The vehicle traffic generated by the four single-family houses was estimated using (ITE) Trip Generation Manual 10th Edition which results in 3 vehicle trips in the weekday AM peak hour, 4 vehicle trips in the weekday PM and Saturday peak hours. The resulting total traffic forecasts are shown in **Exhibits 3.4 and 3.5**.

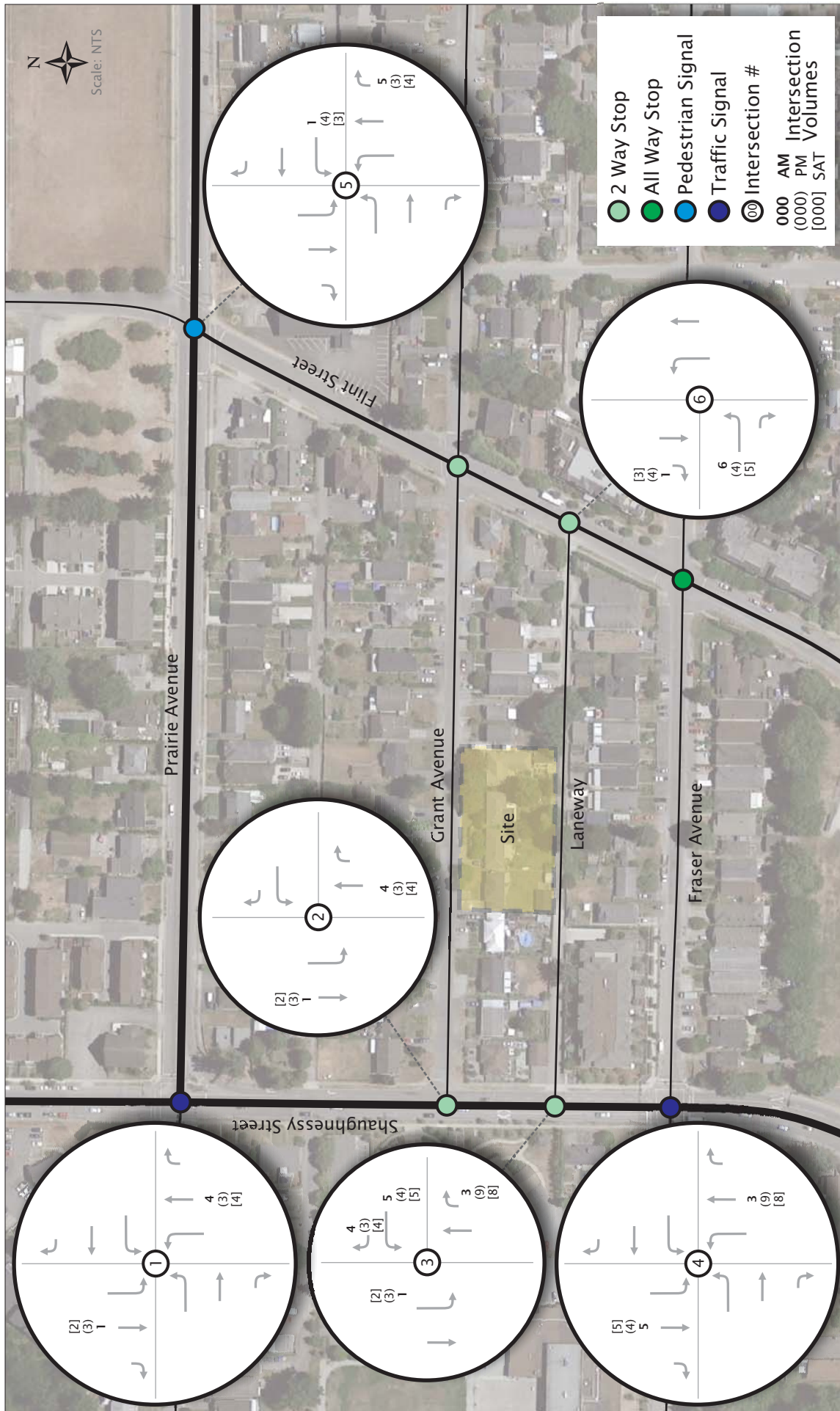


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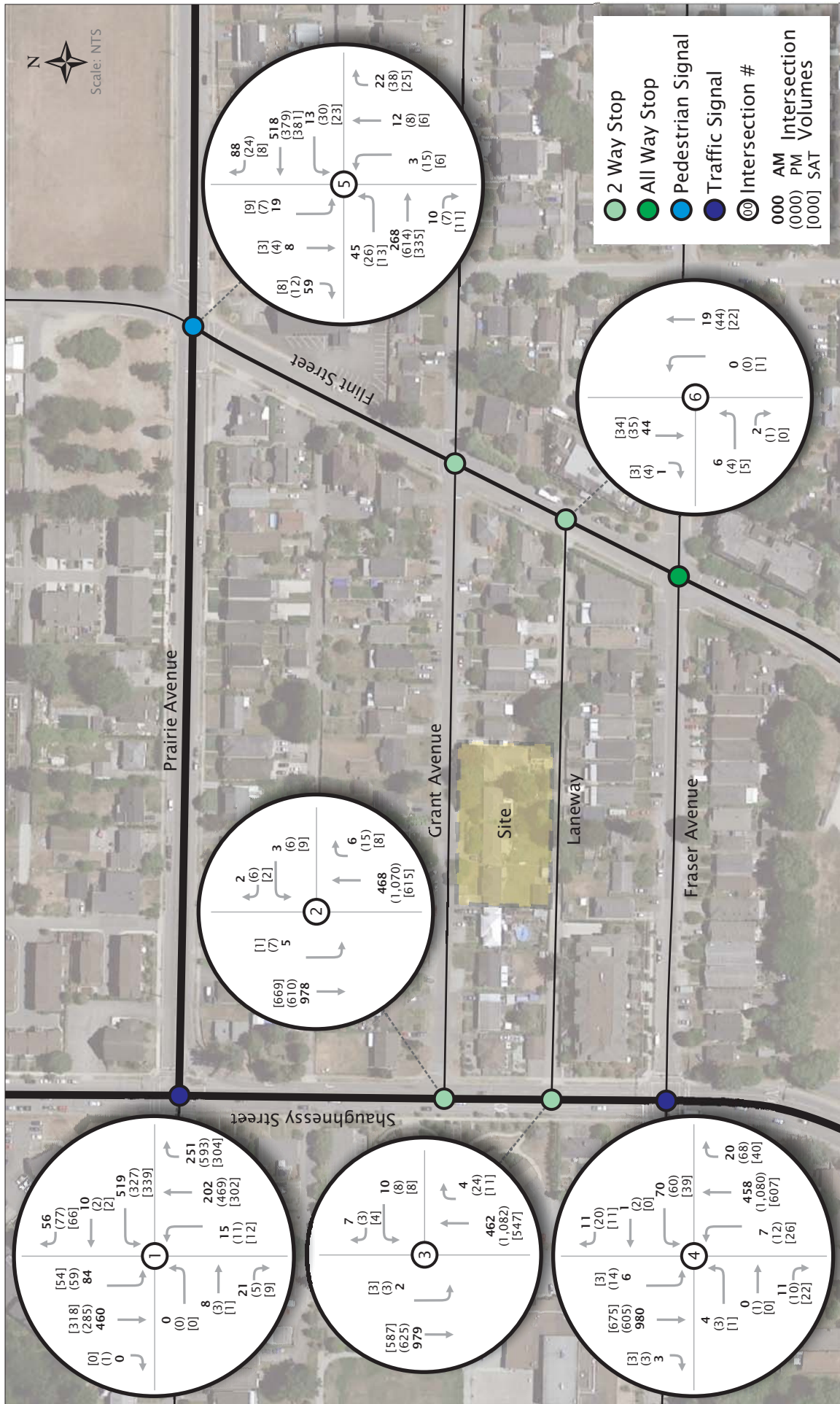
Exhibit 3.1 Opening Day (2020) Background Traffic Forecasts



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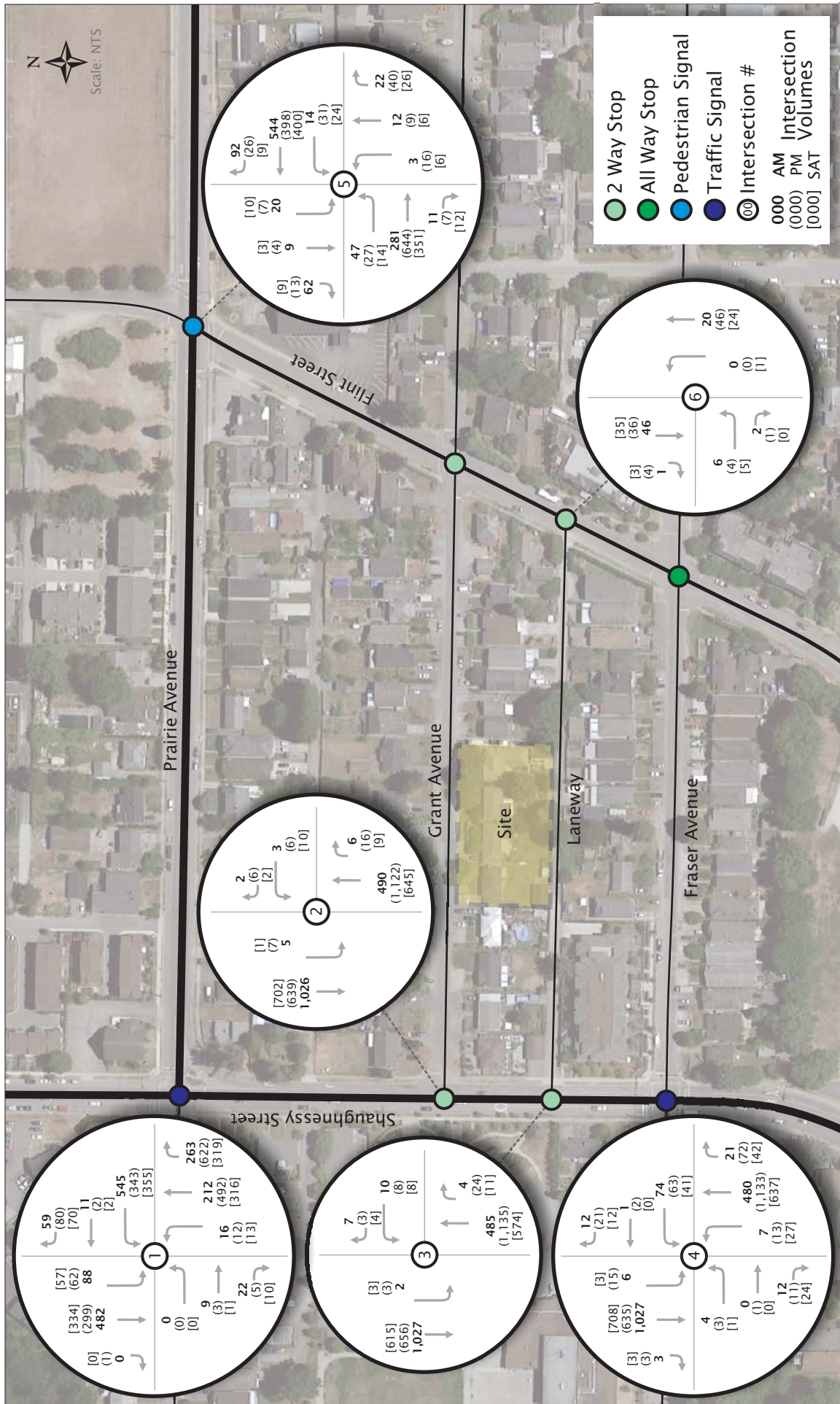


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Exhibit 3.4 Opening Day (2020) Total Traffic Forecasts

Grant Avenue TIA
March 2018

04-17-0247



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Exhibit 3.5 Opening Day + 5 (2025) Total Traffic Forecasts

3.2 Future Traffic Operations

For the future traffic operations assessment, the signal timings at the three signalized intersections were optimized for each scenario in order to account for occasional updating of the signal timing plans by the City.

The results from the background traffic operations assessment can be seen in **Exhibits B.4 – B.9** and the total traffic results are shown in **Exhibits B.10 – B.15**. Due to the modest vehicle trip generation, the total traffic operations are fairly similar to the background traffic operations.

The Shaughnessy Street & Prairie Avenue intersection is forecasted to have a moderate degree of congestion for the westbound through/left turn movement during the weekday AM peak hour. The 95th percentile westbound queue is forecasted to reach 105 metres in the 2025 total traffic scenario which is approximately one-third of the distance to the adjacent signalized intersection. Although the V/C is quite high (0.94), the delays are fairly reasonable at less than 40 seconds. The operations of this movement could be improved by providing this movement more green time during the weekday AM period. The proposed development will not add any vehicles to this movement.

The location where development traffic has the highest impact is the Shaughnessy Street & Laneway intersection. It will be most difficult for vehicles to exit the laneway during the weekday PM peak hour when the average delay for left and right turning vehicles will reach 28 seconds (LOS D) during the 2025 total traffic scenario which is still considered reasonable. The queue is not anticipated to exceed one vehicle.

4. PARKING ASSESSMENT

4.1 Bicycle Parking

Well managed, secure, accessible and covered bicycle parking will be provided as part of the development plan. The development will satisfy the City's bicycle parking requirements by supplying 61 long-term spaces (60 required) and 6 short-term spaces (6 required). The long-term parking spaces will be conveniently located on the ground floor with direct connections to the ground floor interior corridor and the rear laneway. A bicycle repair area will also be provided in the long-term bicycle storage room. The short-term parking will be provided under the awning at the front entrance which will provide protection from rainfall.

4.2 Vehicle Parking

As shown in **Table 4.1**, the City's Parking and Development Management Bylaw (No. 3525) requires a total of 92 vehicle parking stalls for the proposed 60 residential units. The bylaw requires 80 stalls for the residents and 12 for visitors. The development plans include a total of 86 stalls (74 for residents, 12 for visitors) which is a shortfall of 6 stalls from the bylaw requirement.

Table 4.1: Vehicle Parking Supply

DWELLING TYPE	QUANTITY	BYLAW RATE	BYLAW SUPPLY REQUIREMENT	PROPOSED RATE	PROPOSED SUPPLY
Studio	4	1.0 / unit	4	1.0 / unit	4
1 bedroom	41	1.3 / unit	53	1.3 / unit	53
2 bedroom	14	1.5 / unit	21	1.5 / unit	21
3 bedroom	1	2.0 / unit	2	2.0 / unit	2
Visitor	60 (sum of above)	0.2 / unit	12	0.1 / unit	6
	60		92		86

The supply of 86 vehicle parking stalls is appropriate for the proposed development. 80 stalls should be reserved for residents (matching the bylaw requirement) and 6 stalls should be reserved for visitors. Therefore, the parking relaxation requested is to provide 6 visitor stalls (0.1 per unit) instead of the 12 visitor stalls (0.2 per unit) as required in the bylaw.

This recommendation stems from the *Metro Vancouver Residential Apartment Parking Study* which found that visitor parking demand did not exceed 0.06 vehicles per dwelling unit during the study period in suburban Metro Vancouver areas¹. The supply of 6 visitor stalls (0.1 per unit) should, therefore, be able to accommodate typical visitor parking demands.

¹ The visitor parking demand results from the Metro Vancouver Residential Parking Study was obtained from suburban sites in Burnaby, Port Coquitlam and Richmond which had varying levels of transit service. The visitor parking demand was not correlated with proximity to the Frequent Transit Network; in fact the site with the worst transit service had the lowest peak visitor parking demand of 0.02 visitor vehicles per dwelling.

5. SUMMARY & RECOMMENDATIONS

1. The development includes 60 residential units.
2. The development is forecasted to generate 22 to 26 vehicle trips per peak hour. This is approximately 20 vehicles per hour (1 vehicle every 3 minutes) higher than the existing trip generation from the single-family homes occupying the site.
3. The development will not significantly impact the operations of the study intersections.
4. The Shaughnessy Street & Prairie Avenue intersection is forecasted to have a moderate degree of congestion for the westbound through/left turn movement during the weekday AM peak hour during the 2025 total traffic scenario, however it is not anticipated to exceed the City's performance thresholds. The operations of this movement could be improved by providing this movement more green time during the weekday AM period. The proposed development will not add any vehicles to this movement.
5. Vehicles exiting the laneway during the weekday PM peak hour will experience average delays up to 28 seconds (LOS D) during the 2025 total traffic scenario which is still considered reasonable. The queue is not anticipated to exceed one vehicle.
6. The development satisfies the bylaw bicycle parking requirements. The short- and long-term bicycle parking is positioned in their preferred location, with easy access to their users.
7. A six-vehicle parking stall variance is requested. Bunt recommends that the supply of 86 vehicle parking stalls is appropriate for the development. 80 stalls should be assigned to residents and 6 stalls reserved for visitors. This parking allocation is anticipated to manage the anticipated parking demand.

APPENDIX A

Terms of Reference

TRAFFIC IMPACT ASSESSMENTS

The potential trip generation associated with multi-family or ICI developments can have a significant impact on the transportation network. As such, a Traffic Impact Study (TIS) should be prepared based on the scope outlined below:

Development Description

- Address and location relative to major roadways of the existing network
- Existing and proposed land uses
- Proposed development size and location on site
- Estimated occupancy date
- Planned phasing of development: existing, full build out, full build + 5 years, horizon years
- Proposed number of parking spaces
- Proposed access points and type of access
- Key plan that shows the general location of the development in relation to the surrounding area
- Scaled site plan showing the development location and proposed access
- TIA study area

Existing Conditions

- Existing roads in the study area: classification, number of lanes, and posted speed limit
- Existing intersection type of control, laning, turning restrictions, and other relevant data (e.g., extra wide lane widths, grades, etc.)
- Existing access points to adjacent developments (both sides of all roads bordering the site)
- Existing transit system, including stations and stops
- Existing on- and off-road bicycle facilities and pedestrian sidewalks and pathway networks
- Existing system operations (V/C, LOS)
- Major trip generators/attractors within the Study Area

Demand Forecasting

- Background traffic
- Other study area developments
- Changes to the study area road network
- Future background system operations (V/C, LOS, queue lengths)
- Figures documenting future background travel demands by mode for each horizon year
- Trip generation rates, Study Trip rate vs ITE estimate rate
- Trip distribution, rationale justifying trip dist percentage from adjacent area
- Trip assignment including on site synergy
- Figures documenting forecasted site trip generation and assignment by mode
- Figures documenting total future travel demands by mode for each horizon year

Intersection Analysis

- Study will evaluate signalized and un-signalized intersections affected by site generated traffic volumes during weekday AM, PM peak periods and Saturday peak. The following intersections could be impacted by this development and should be assessed as part of the TIS: Grant at Shaughnessy, Fraser at Shaughnessy, Laneway at Shaughnessy, Laneway at Flint, Prairie at Shaughnessy and Flint at Prairie.
- Intersection performance should be summarized under existing, future background, and total future traffic conditions. Detailed software analysis output is to be provided in an appendix and all files should also be provided in digital format. The City of Port Coquitlam accepts Highway Capacity Software or Synchro as analysis tool.
- The Consultant will undertake a 7 hour Turning Movement Count observation during daily to determine for peak hour analysis. The consultant will undertake a 3 hour observation on Saturday to determine peak hour analysis. This is to verify that the traffic volumes through the intersections reflect existing demands and to identify unusual operating conditions. Timing of observations and conditions observed will be documented in writing in the report.
- Current ITE trip rates will be used for reference purpose in trip generation comparison.
- Queuing and Storing at Major Intersections: study will identify projected queue lengths and available storage for auxiliary and through lanes on all approaches. Mitigation measures such as additional lane capacity/signal timing/ phasing adjustments will be required where projected 95th percentile queue lengths exceed available storage.
- Mitigation measures such as addition of lane capacity/signal timing/ phasing adjustments will be required where V/C ratios for signalized intersections exceed 0.90.
- Traffic control device and relevant warrants are to be completed and documented in the TIS report, as required.

Impact Analysis

- Total future system operations (V/C, LOS, queue lengths)
- Signal and relevant lane warrants
- Storage review for closely spaced intersections
- Pedestrian and bicycle network connections and continuity; study should include an assessment for all transportation modes including cycling and Transit, consistent with City's OCP and Master Transportation Plan. The study should assess development impacts to existing connectivity of pedestrian and cyclist routes and applicable measures.
- On-site circulation and design: address the potential for on-site traffic operations to affect the safe and efficient operation of adjacent road. Focus will be on identifying proposed on-site circulation and provision for pedestrian and cycling movements, and potential for conflict/ spill-back from on-site intersections and parking aisles/ stalls to driveway intersections with the City's road network, and location of truck access and loading/ unloading facilities.
- Operations and Safety: evaluate the impact of development to adjacent road segments as potential to exacerbate existing operation issues such as : vehicle-pedestrian and vehicle-cycling conflicts, weaving, merging/diverging, corner clearances, sightline assessment, access conflicts and historical collision trends.
- Parking review, existing and full built demand versus total supply.
- Community Traffic Impacts: review the transportation network in the vicinity of the proposed development and identify potential neighbourhood infiltration routes. Particularly, the report

will identify site traffic impacts on potentially affected neighbourhood streets during peak periods/condition and identify appropriate mitigation strategy.

Mitigation Measures

The TIS should identify all mitigation measures required to offset network impacts from the development.

- Location and timing of proposed changes to existing traffic controls at intersections (new traffic signals, Stop signs, etc.)
- Location and timing of new intersections, including proposed traffic control measures (traffic signals, etc.)
- Requirements for new lanes
- New or modified elements of the bicycle and pedestrian network
- Community impact mitigation measures

APPENDIX B

Traffic Operations Results Summary

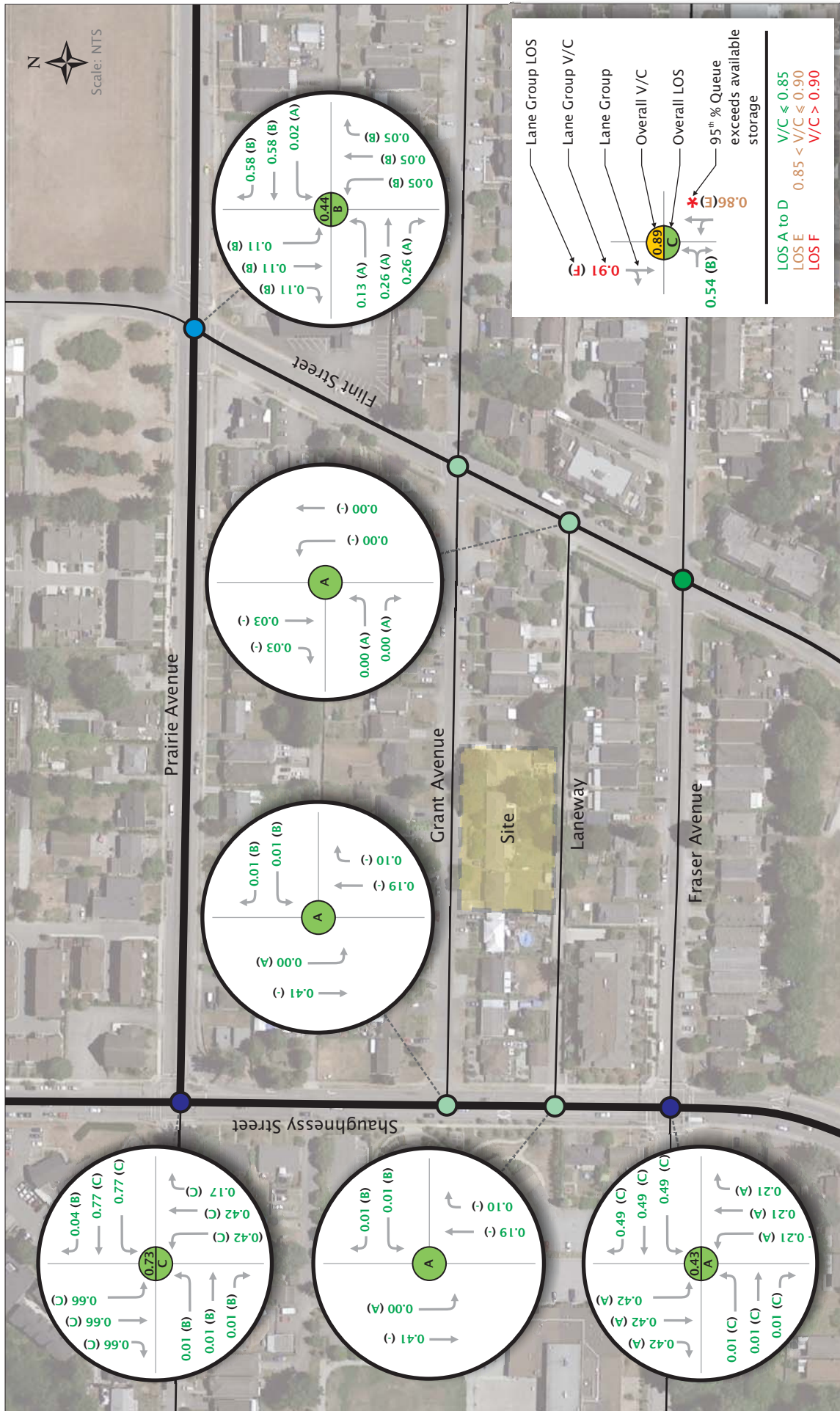
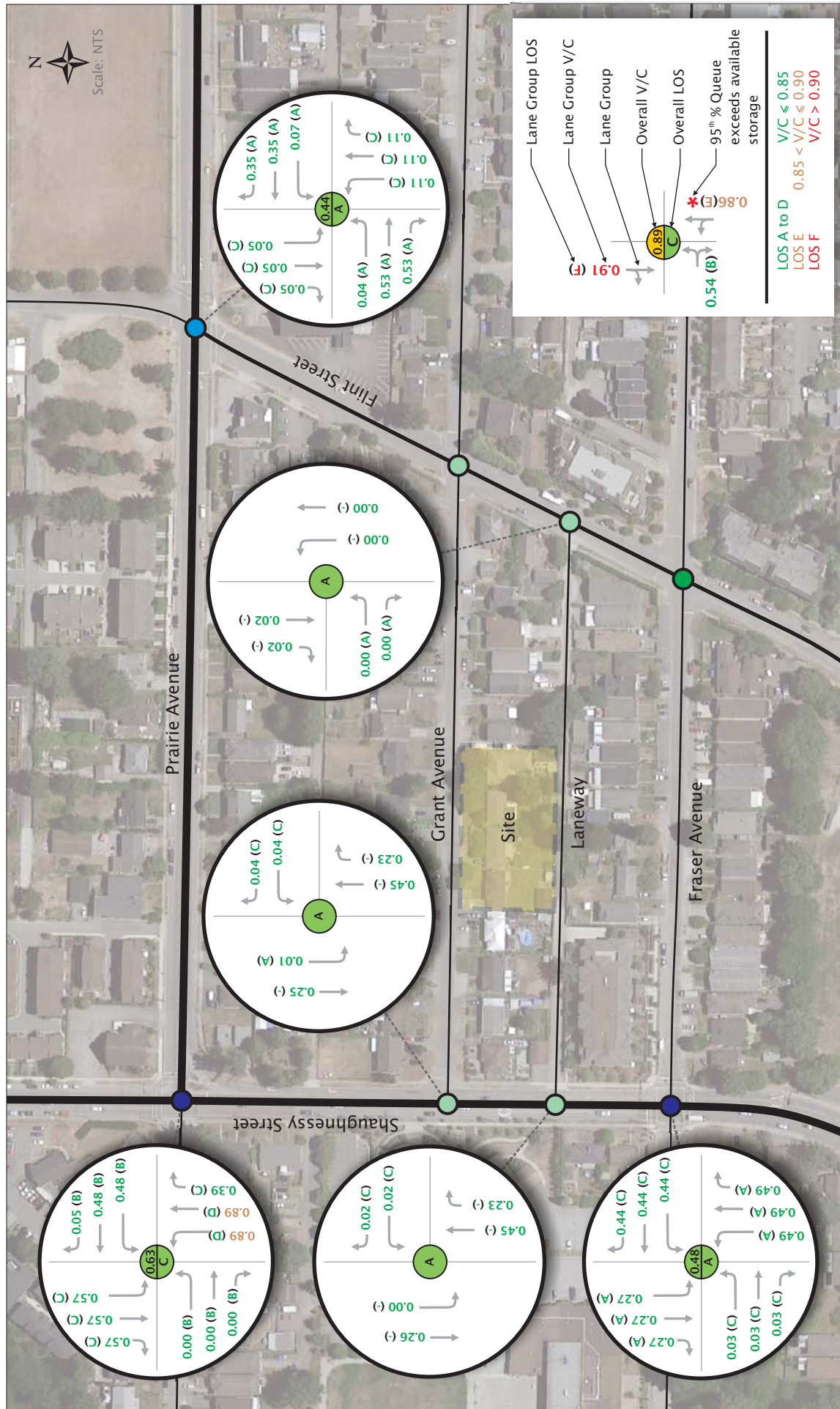


Exhibit B.1 Existing AM Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

04-17-0247

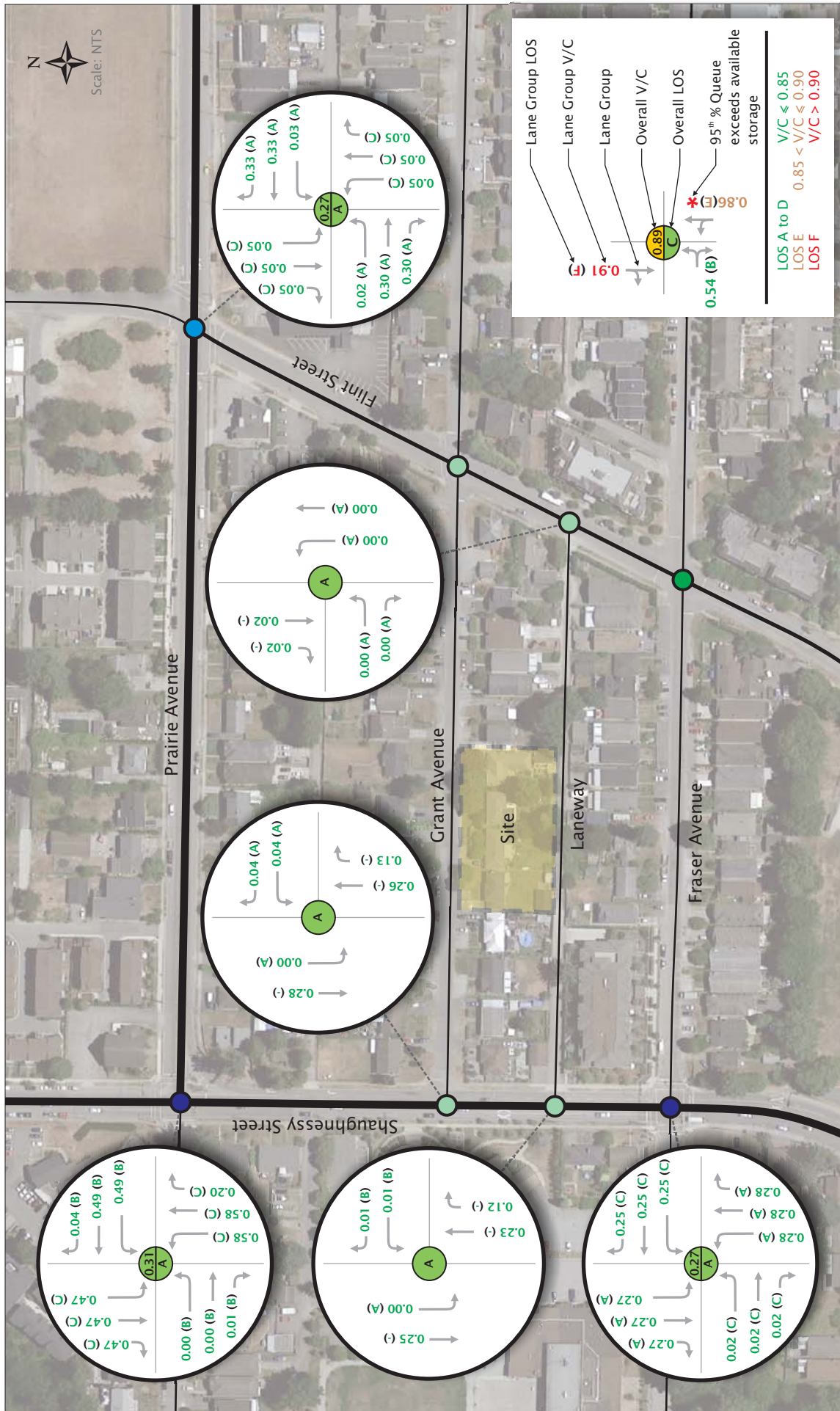


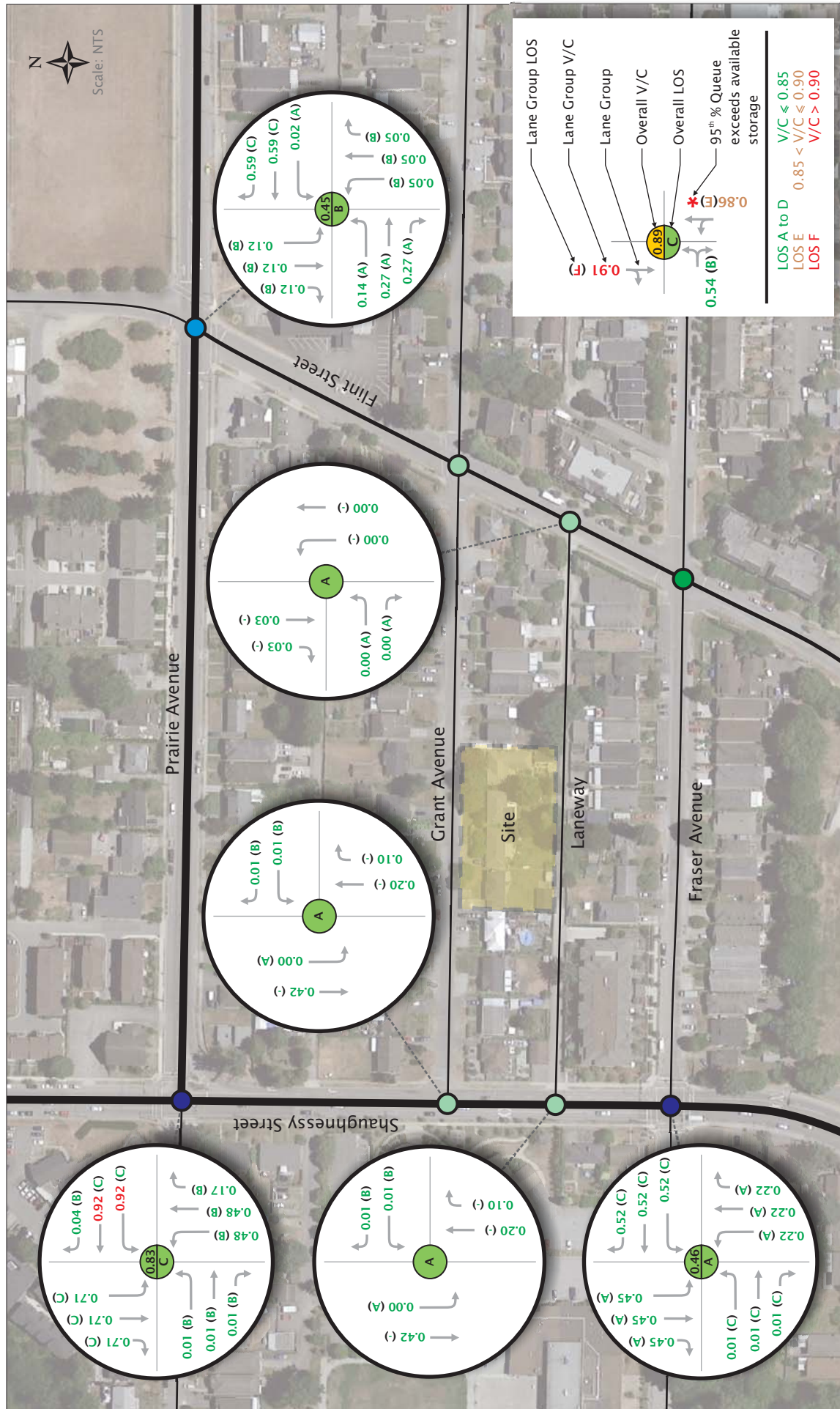
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Exhibit B.2 Existing PM Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

04-17-0247





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Exhibit B.4 Opening Day (2020) Background AM Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

04-17-0247

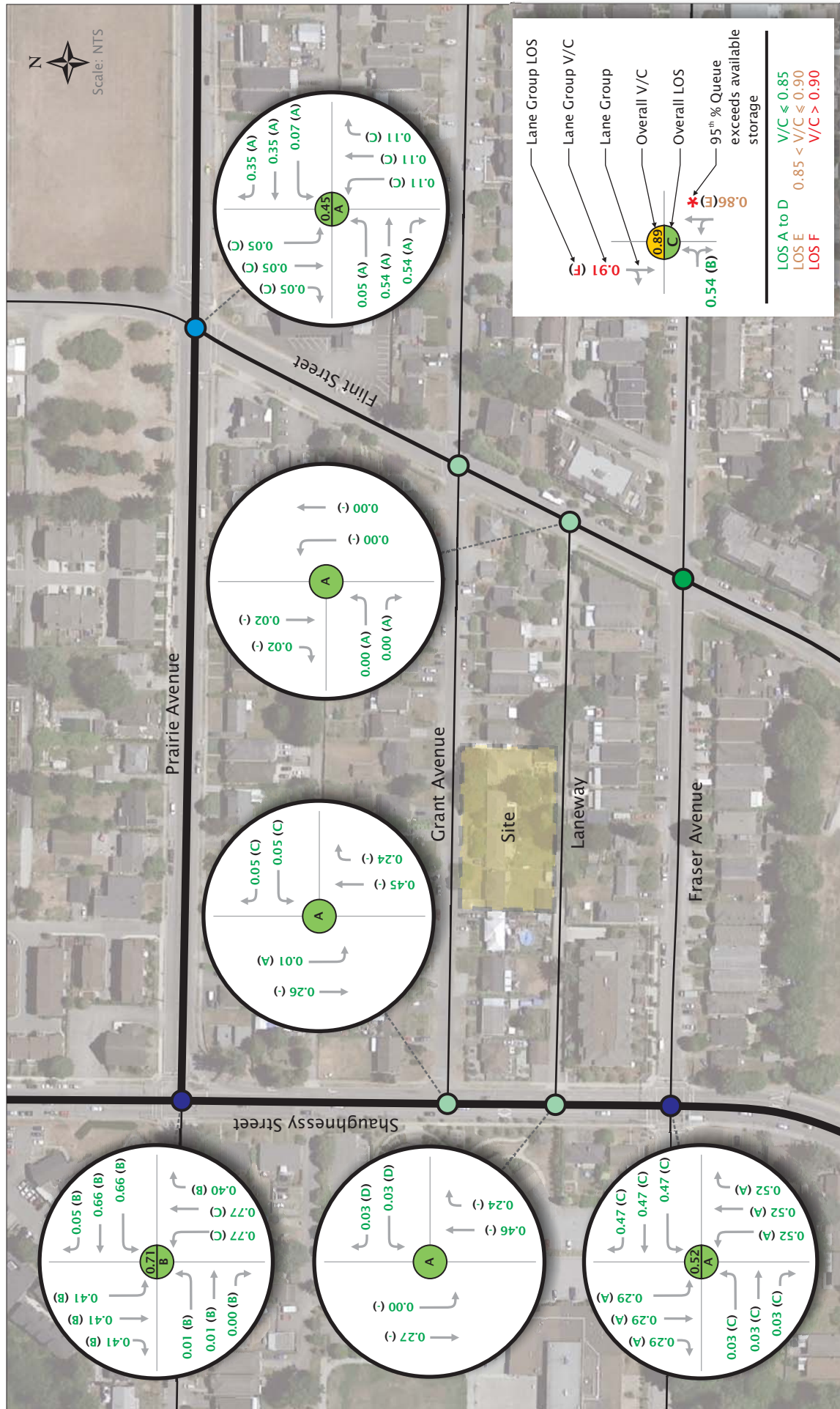
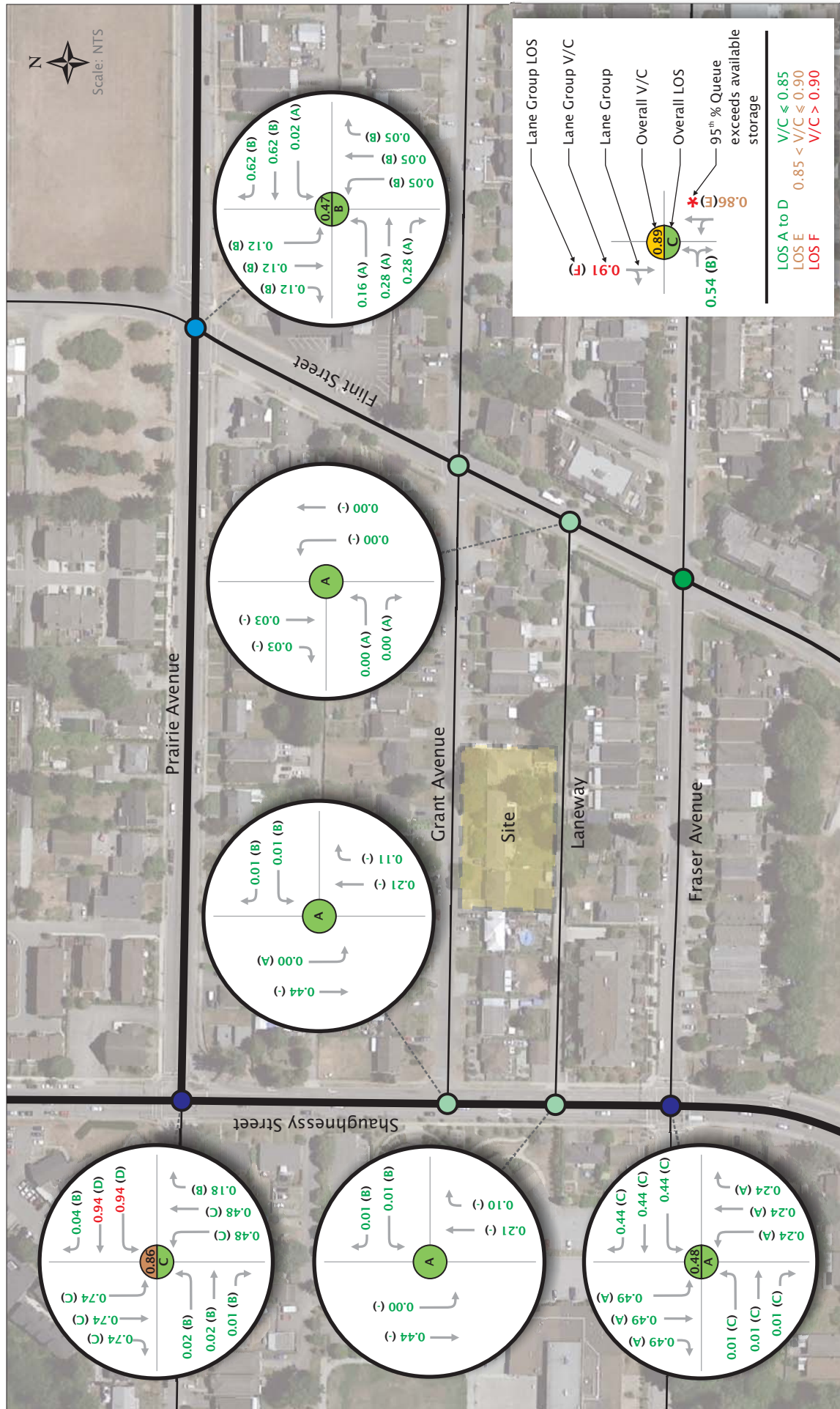




Exhibit B.6

Opening Day (2020) Background Saturday Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

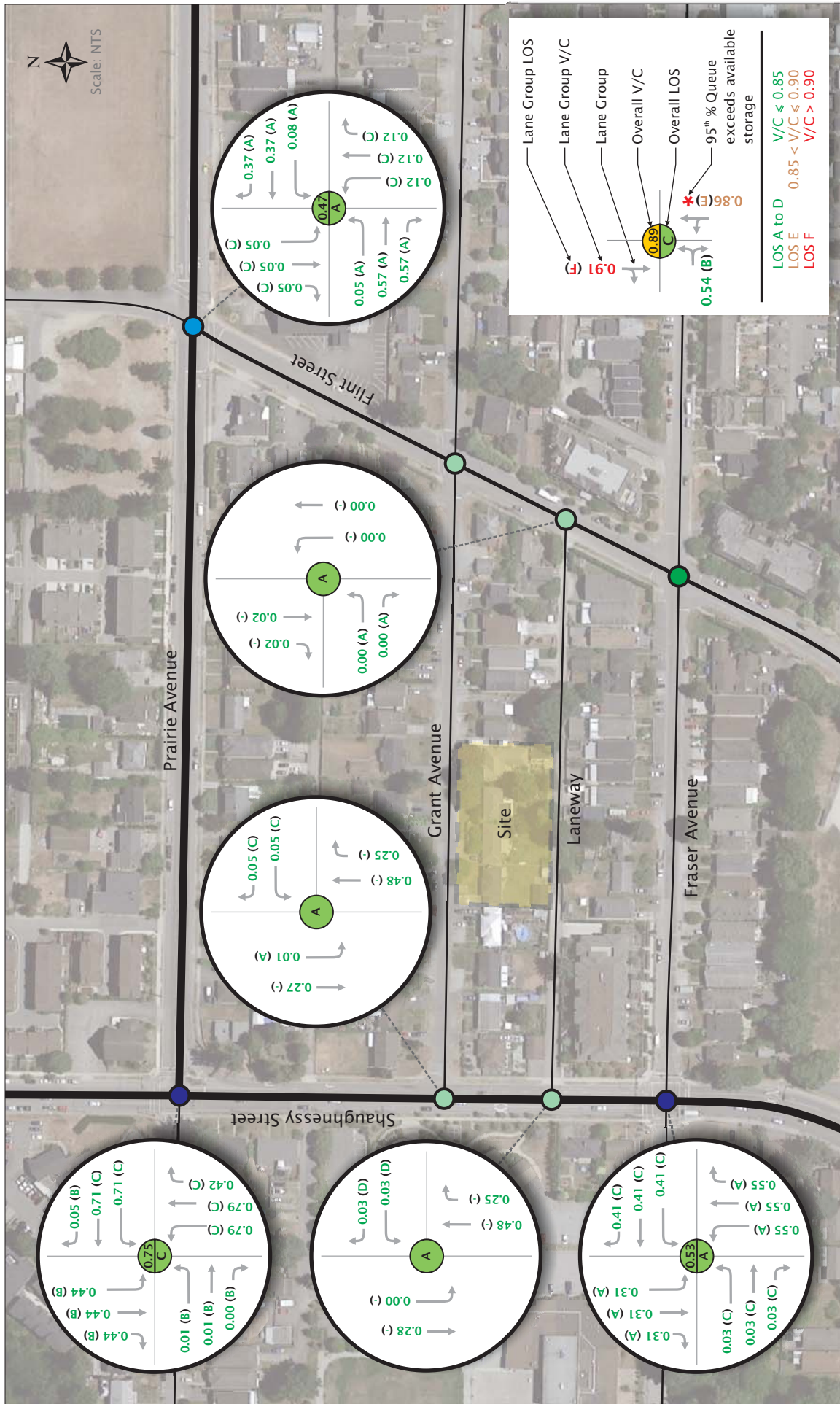


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Exhibit B.7 Opening Day + 5 (2025) Background AM Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

04-17-0247



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Exhibit B.8 Opening Day + 5 (2025) Background PM Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

04-17-0247

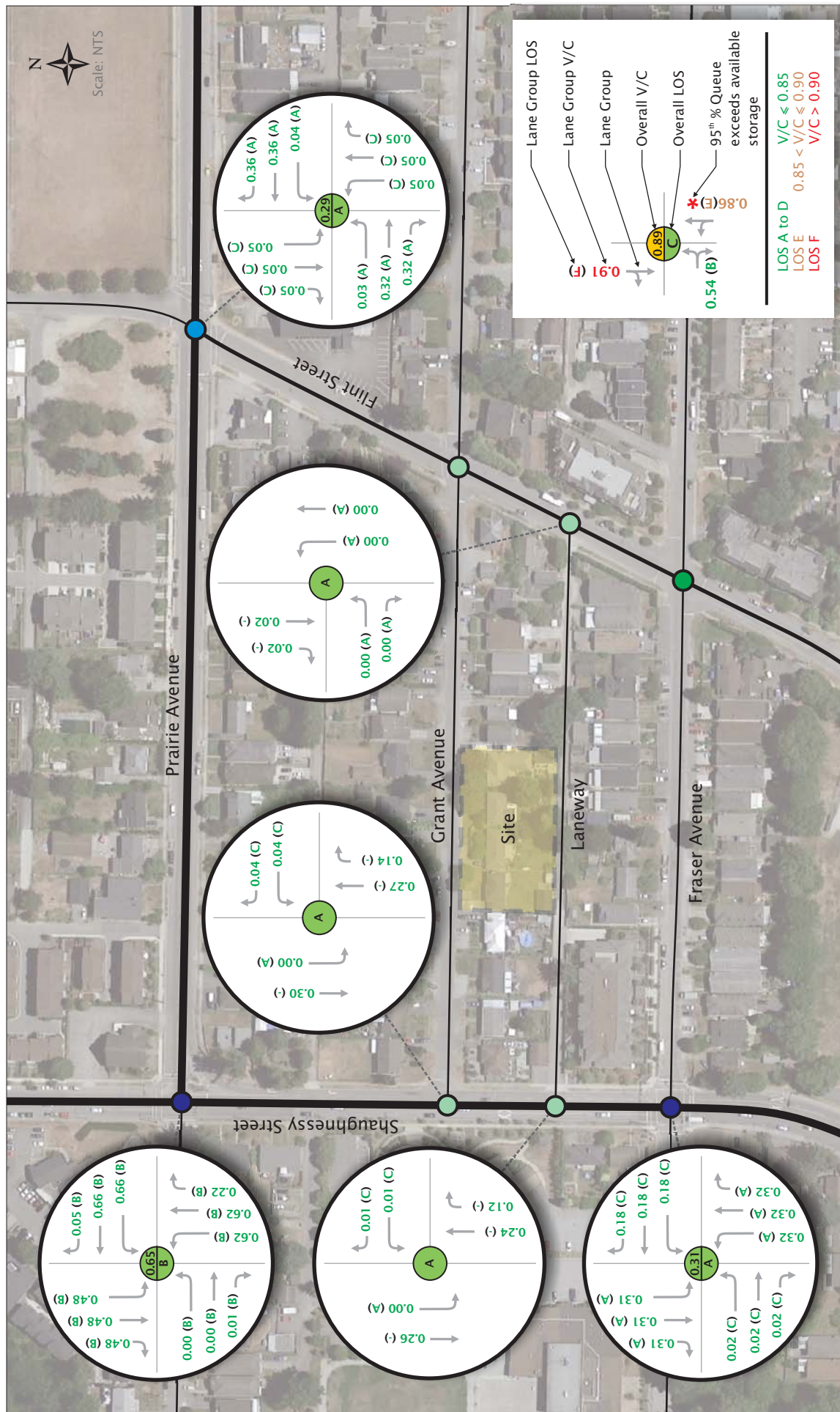


Exhibit B.9

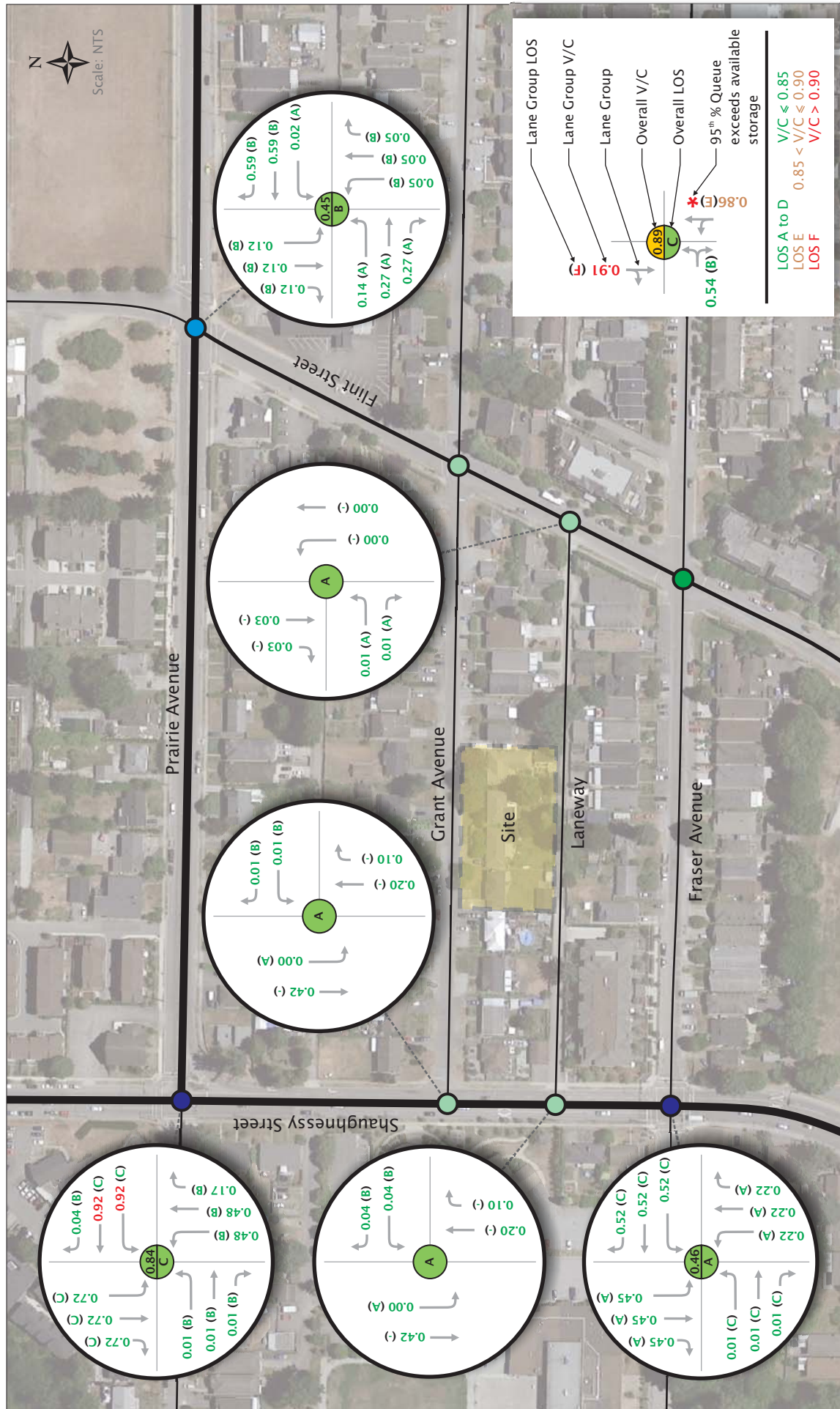
Opening Day + 5 (2025) Background Saturday Peak Hour Traffic Operations

The logo for bunt & associates features the word "bunt" in a white, lowercase, sans-serif font, positioned within a blue rectangular box. To the right of this box, the word "& associates" is written in a smaller, black, lowercase, sans-serif font. The ampersand is a stylized, red, cursive-like symbol.

Grant Avenue TIA
March 2018

04-17-0247

04-17-0247



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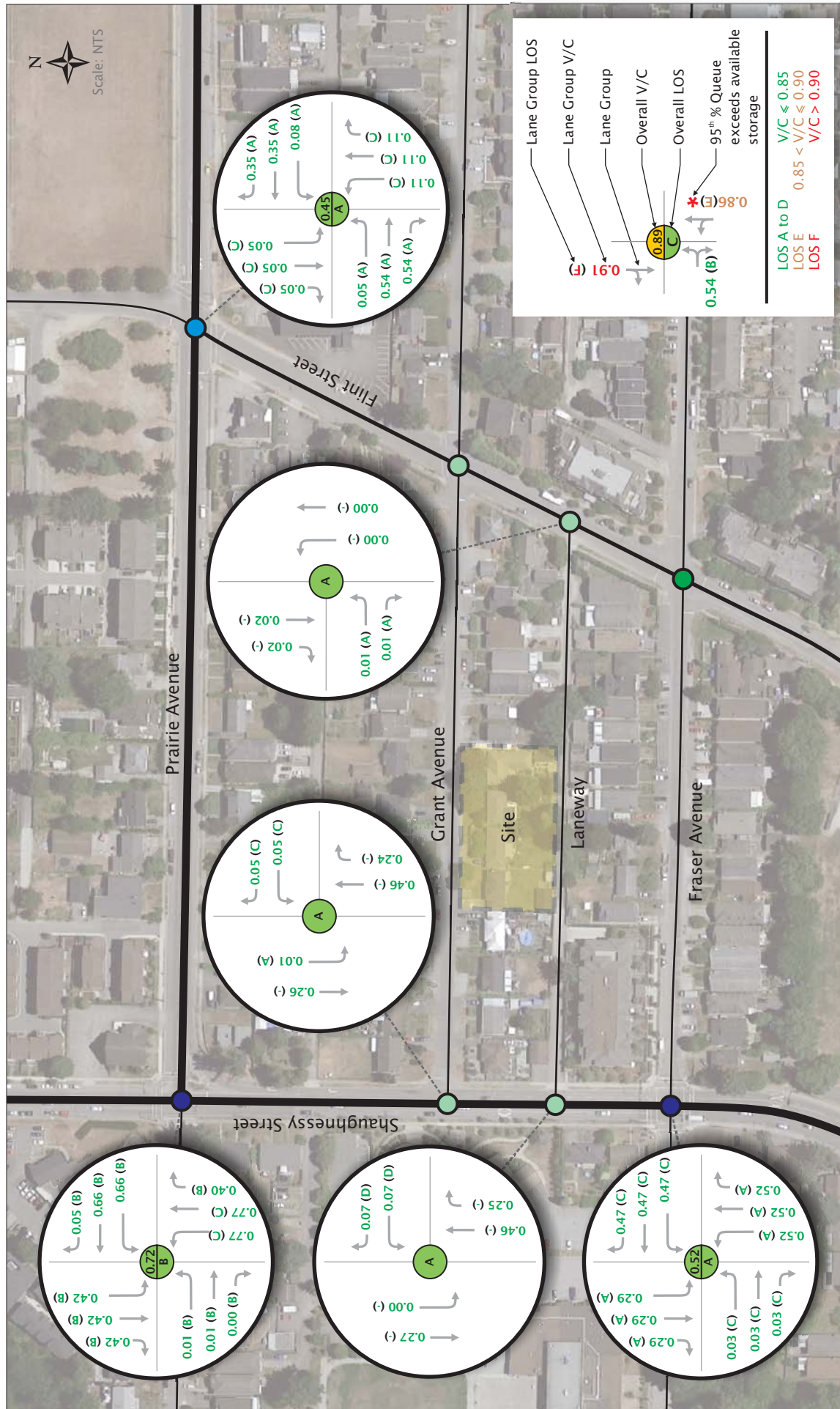
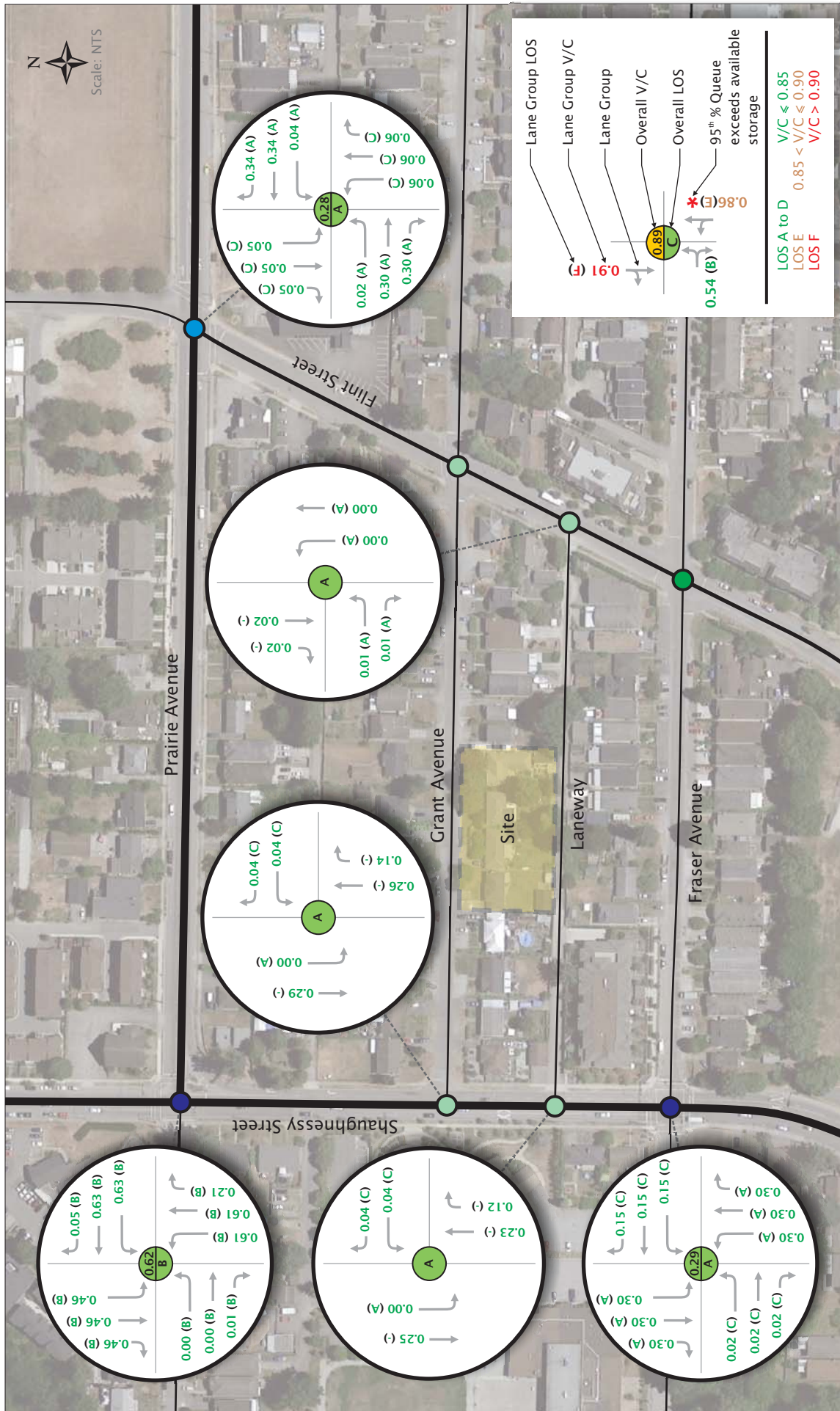


Exhibit B.1.1 Opening Day (2020) Total PM Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

04-17-0247

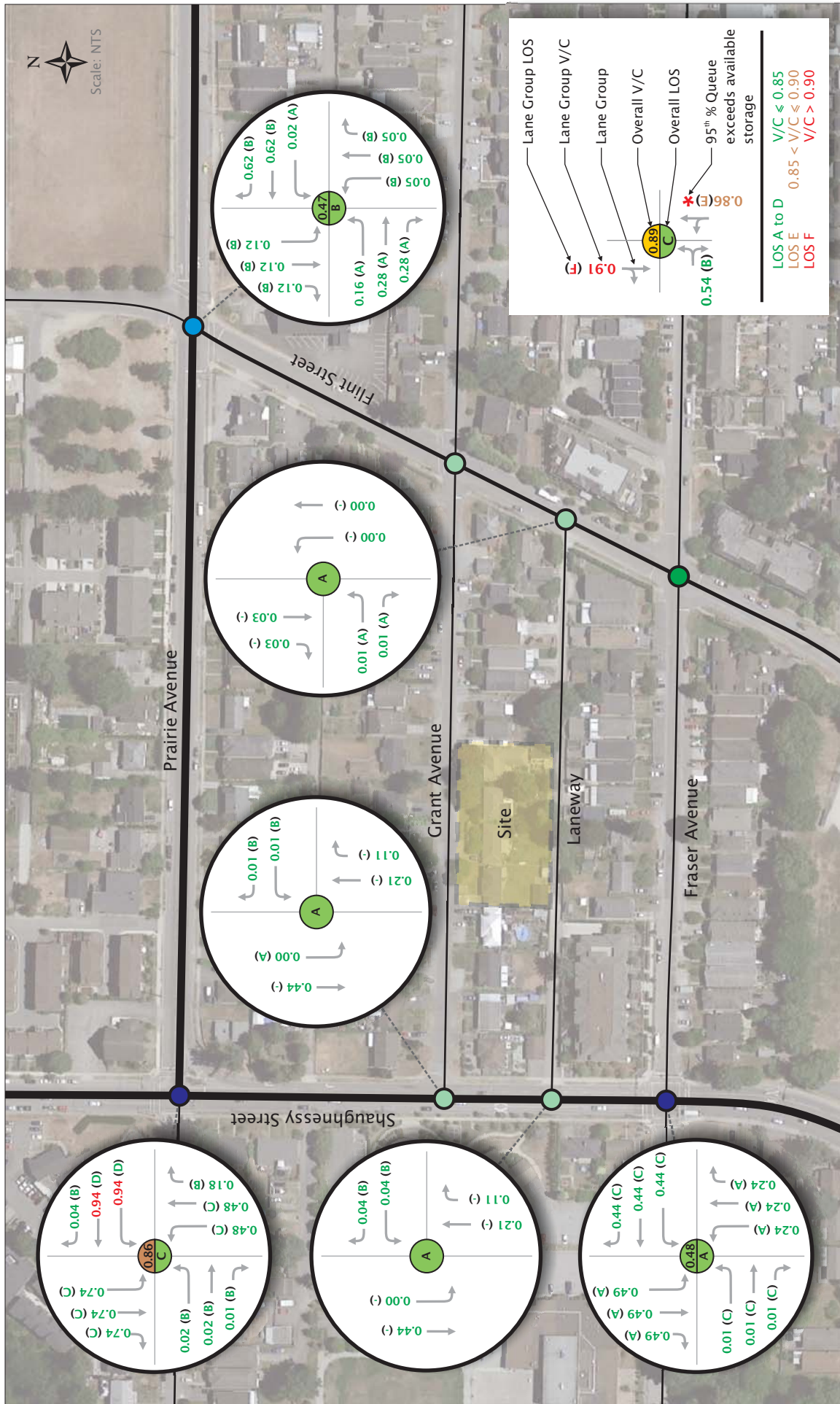


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Exhibit B.12 Opening Day (2020) Total Saturday Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

04-17-0247



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Exhibit B.13 Opening Day + 5 (2025) Total AM Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

04-17-0247

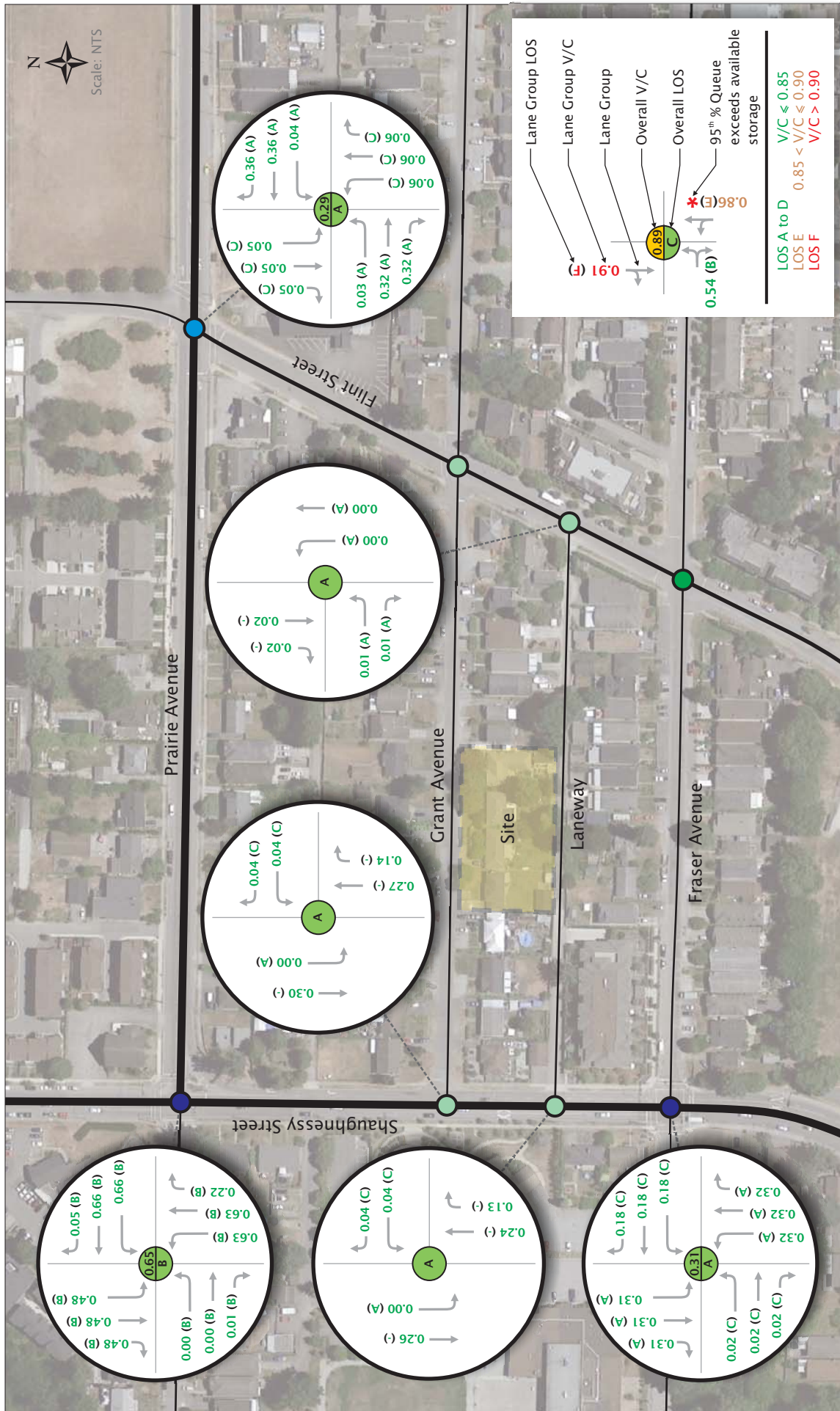


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Exhibit B.14 Opening Day + 5 (2025) Total PM Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

04-17-0247



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Exhibit B.15 Opening Day + 5 (2025) Total Saturday Peak Hour Traffic Operations

Grant Avenue TIA
March 2018

04-17-0247

APPENDIX C

Synchro Reports

Queues

Existing AM





















1: Shaughnessy Street & Prairie Avenue

	→	↘	←	↖	↑	↗	↓
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	9	23	564	60	227	267	578
v/c Ratio	0.01	0.03	0.77	0.08	0.42	0.39	0.66
Control Delay	13.9	0.0	24.9	1.6	29.0	5.1	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.9	0.0	24.9	1.6	29.0	5.1	33.0
Queue Length 50th (m)	0.9	0.0	59.1	0.0	32.9	0.0	48.2
Queue Length 95th (m)	3.4	0.0	87.2	3.3	53.5	16.7	66.4
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	874	791	737	791	545	677	873
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.03	0.77	0.08	0.42	0.39	0.66
Intersection Summary							

HCM Signalized Intersection Capacity Analysis










1: Shaughnessy Street & Prairie Avenue

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	8	21	509	10	55	15	194	246	82	450	0
Future Volume (vph)	0	8	21	509	10	55	15	194	246	82	450	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1795	1601		1877	1601		3551	
Flt Permitted		1.00	1.00		0.72	1.00		0.94	1.00		0.79	
Satd. Flow (perm)		1883	1601		1364	1601		1776	1601		2840	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	23	553	11	60	16	211	267	89	489	0
RTOR Reduction (vph)	0	0	12	0	0	32	0	0	185	0	0	0
Lane Group Flow (vph)	0	9	11	0	564	28	0	227	82	0	578	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		44.1	44.1		49.6	44.1		29.2	29.2		29.2	
Effective Green, g (s)		44.1	44.1		49.6	44.1		29.2	29.2		29.2	
Actuated g/C Ratio		0.46	0.46		0.52	0.46		0.31	0.31		0.31	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		874	743		737	743		545	492		872	
v/s Ratio Prot		0.00			c0.04							
v/s Ratio Perm			0.01		c0.36	0.02		0.13	0.05		c0.20	
v/c Ratio		0.01	0.01		0.77	0.04		0.42	0.17		0.66	
Uniform Delay, d1		13.7	13.7		18.1	13.9		26.1	24.0		28.6	
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		0.0	0.0		4.8	0.1		2.3	0.7		4.0	
Delay (s)		13.7	13.8		22.8	14.0		28.5	24.8		32.6	
Level of Service		B	B		C	B		C	C		C	
Approach Delay (s)		13.8			22.0			26.5			32.6	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			26.6									
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			95.0									
Intersection Capacity Utilization			74.8%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: Shaughnessy Street & Grant Avenue










Existing AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	2	454	6	5	958
Future Volume (Veh/h)	3	2	454	6	5	958
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	2	493	7	5	1041
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.89	0.98			0.98	
vC, conflicting volume	1027	250			500	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	689	193			448	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	338	800			1086	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	5	329	171	352	694	
Volume Left	3	0	0	5	0	
Volume Right	2	0	7	0	0	
cSH	439	1700	1700	1086	1700	
Volume to Capacity	0.01	0.19	0.10	0.00	0.41	
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0	
Control Delay (s)	13.3	0.0	0.0	0.2	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.3	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			40.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

Existing AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	2	453	1	1	960
Future Volume (Veh/h)	4	2	453	1	1	960
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	2	492	1	1	1043
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.91	0.96			0.96	
vC, conflicting volume	1016	246			493	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	644	146			401	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	368	844			1113	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	6	328	165	349	695	
Volume Left	4	0	0	1	0	
Volume Right	2	0	1	0	0	
cSH	454	1700	1700	1113	1700	
Volume to Capacity	0.01	0.19	0.10	0.00	0.41	
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	
Control Delay (s)	13.0	0.0	0.0	0.0	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.0	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			37.2%	ICU Level of Service		A
Analysis Period (min)			15			

















4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	16	88	515	1048
v/c Ratio	0.07	0.45	0.20	0.40
Control Delay	5.7	31.3	3.4	4.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.7	31.3	3.4	4.5
Queue Length 50th (m)	0.0	9.3	8.6	22.4
Queue Length 95th (m)	2.8	20.4	16.8	40.2
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	669	592	2581	2613
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.15	0.20	0.40
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue







Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	11	69	1	11	7	446	20	6	955	3
Future Volume (vph)	4	0	11	69	1	11	7	446	20	6	955	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.90			0.98			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1672			1773			3553			3576	
Flt Permitted		0.91			0.75			0.94			0.95	
Satd. Flow (perm)		1537			1380			3345			3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	0	12	75	1	12	8	485	22	7	1038	3
RTOR Reduction (vph)	0	14	0	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	77	0	0	513	0	0	1048	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.1			8.1			51.9			51.6	
Effective Green, g (s)		8.1			8.1			51.9			51.6	
Actuated g/C Ratio		0.12			0.12			0.74			0.74	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		177			159			2480			2510	
v/s Ratio Prot												
v/s Ratio Perm		0.00			0.06			0.15			0.31	
v/c Ratio		0.01			0.49			0.21			0.42	
Uniform Delay, d1		27.4			29.0			2.8			3.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			2.3			0.2			0.5	
Delay (s)		27.4			31.3			3.0			4.0	
Level of Service		C			C			A			A	
Approach Delay (s)		27.4			31.3			3.0			4.0	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		5.3			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.43										
Actuated Cycle Length (s)		70.0			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		50.5%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

Queues

Existing AM



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	48	297	13	645	32	93
v/c Ratio	0.13	0.25	0.02	0.55	0.06	0.17
Control Delay	8.8	8.2	7.2	11.6	10.9	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	8.2	7.2	11.6	10.9	8.5
Queue Length 50th (m)	2.7	17.5	0.7	48.4	1.3	2.5
Queue Length 95th (m)	7.6	30.2	2.7	79.5	6.4	11.4
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	376	1182	685	1169	538	538
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.25	0.02	0.55	0.06	0.17
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

Existing AM








												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	263	10	12	508	86	3	11	16	19	8	58
Future Volume (vph)	44	263	10	12	508	86	3	11	16	19	8	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.93			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1789	1873		1789	1843			1740			1692	
Flt Permitted	0.32	1.00		0.58	1.00			0.98			0.94	
Satd. Flow (perm)	598	1873		1086	1843			1713			1609	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	286	11	13	552	93	3	12	17	21	9	63
RTOR Reduction (vph)	0	2	0	0	8	0	0	13	0	0	47	0
Lane Group Flow (vph)	48	295	0	13	637	0	0	19	0	0	46	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	39.0	39.0		39.0	39.0			16.0			16.0	
Effective Green, g (s)	39.0	39.0		39.0	39.0			16.0			16.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.25			0.25	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	358	1123		651	1105			421			396	
v/s Ratio Prot		0.16			c0.35							
v/s Ratio Perm	0.08			0.01				0.01			c0.03	
v/c Ratio	0.13	0.26		0.02	0.58			0.05			0.11	
Uniform Delay, d1	5.7	6.2		5.3	7.9			18.7			19.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	0.6		0.1	2.2			0.0			0.1	
Delay (s)	6.4	6.7		5.3	10.1			18.7			19.1	
Level of Service	A	A		A	B			B			B	
Approach Delay (s)		6.7			10.0			18.7			19.1	
Approach LOS		A			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			10.0			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			61.6%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 6: Laneway & Flint Street

Existing AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	0	19	43	0
Future Volume (Veh/h)	0	2	0	19	43	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	0	21	47	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					190	
pX, platoon unblocked						
vC, conflicting volume	68	47	47			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	68	47	47			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	937	1022	1560			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	2	21	47			
Volume Left	0	0	0			
Volume Right	2	0	0			
cSH	1022	1560	1700			
Volume to Capacity	0.00	0.00	0.03			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.5	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.5	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

1: Shaughnessy Street & Prairie Avenue

							
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	9	23	575	61	231	273	590
v/c Ratio	0.01	0.04	0.92	0.10	0.48	0.43	0.71
Control Delay	12.6	0.1	36.4	0.3	17.4	4.5	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	0.1	36.4	0.3	17.4	4.5	23.6
Queue Length 50th (m)	0.6	0.0	35.9	0.0	10.7	0.0	27.6
Queue Length 95th (m)	3.0	0.0	#91.7	0.0	22.7	10.5	42.5
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	619	630	628	630	486	640	831
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.04	0.92	0.10	0.48	0.43	0.71

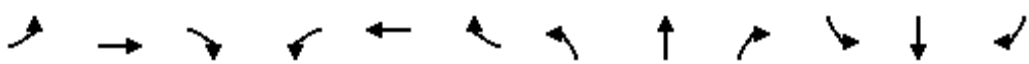
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis












1: Shaughnessy Street & Prairie Avenue

AM Background 2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰↱	
Traffic Volume (vph)	0	8	21	519	10	56	15	198	251	84	459	0
Future Volume (vph)	0	8	21	519	10	56	15	198	251	84	459	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1795	1601		1877	1601		3551	
Flt Permitted		1.00	1.00		0.72	1.00		0.94	1.00		0.84	
Satd. Flow (perm)		1883	1601		1364	1601		1761	1601		3010	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	23	564	11	61	16	215	273	91	499	0
RTOR Reduction (vph)	0	0	15	0	0	41	0	0	198	0	0	0
Lane Group Flow (vph)	0	9	8	0	575	20	0	231	75	0	590	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		18.1	18.1		23.6	18.1		15.2	15.2		15.2	
Effective Green, g (s)		18.1	18.1		23.6	18.1		15.2	15.2		15.2	
Actuated g/C Ratio		0.33	0.33		0.43	0.33		0.28	0.28		0.28	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		619	526		628	526		486	442		831	
v/s Ratio Prot		0.00			c0.09							
v/s Ratio Perm			0.00		c0.30	0.01		0.13	0.05		c0.20	
v/c Ratio		0.01	0.01		0.92	0.04		0.48	0.17		0.71	
Uniform Delay, d1		12.4	12.4		14.8	12.5		16.6	15.1		17.9	
Progression Factor		1.00	1.00		1.00	1.00		0.82	0.88		1.00	
Incremental Delay, d2		0.0	0.0		18.0	0.1		3.3	0.8		5.1	
Delay (s)		12.5	12.5		32.8	12.7		16.9	14.1		23.0	
Level of Service		B	B		C	B		B	B		C	
Approach Delay (s)		12.5			30.9			15.4			23.0	
Approach LOS		B			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			23.5									
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			55.0									
Intersection Capacity Utilization			75.8%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: Shaughnessy Street & Grant Avenue










AM Background 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	3	2	463	6	5	977
Future Volume (Veh/h)	3	2	463	6	5	977
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	2	503	7	5	1062
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.90	0.98			0.98	
vC, conflicting volume	1048	255			510	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	736	204			464	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	317	788			1074	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	5	335	175	359	708	
Volume Left	3	0	0	5	0	
Volume Right	2	0	7	0	0	
cSH	417	1700	1700	1074	1700	
Volume to Capacity	0.01	0.20	0.10	0.00	0.42	
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0	
Control Delay (s)	13.7	0.0	0.0	0.2	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.7	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			40.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

AM Background 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	2	462	1	1	979
Future Volume (Veh/h)	4	2	462	1	1	979
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	2	502	1	1	1064
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.93	0.96			0.96	
vC, conflicting volume	1036	252			503	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	695	141			402	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	349	848			1108	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	6	335	168	356	709	
Volume Left	4	0	0	1	0	
Volume Right	2	0	1	0	0	
cSH	434	1700	1700	1108	1700	
Volume to Capacity	0.01	0.20	0.10	0.00	0.42	
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	
Control Delay (s)	13.4	0.0	0.0	0.0	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.4	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			37.8%	ICU Level of Service		A
Analysis Period (min)			15			

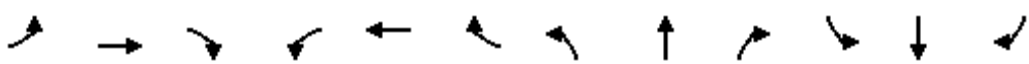
4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	16	89	525	1069
v/c Ratio	0.06	0.39	0.20	0.40
Control Delay	3.1	22.8	3.5	4.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.1	22.8	3.5	4.2
Queue Length 50th (m)	0.0	7.0	8.3	23.2
Queue Length 95th (m)	1.8	16.4	16.7	m27.3
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	552	484	2618	2651
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.18	0.20	0.40
Intersection Summary				
m Volume for 95th percentile queue is metered by upstream signal.				







HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue

AM Background 2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	4	0	11	70	1	11	7	455	20	6	974	3
Future Volume (vph)	4	0	11	70	1	11	7	455	20	6	974	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.90			0.98			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1672			1773			3553			3576	
Flt Permitted		0.90			0.75			0.94			0.95	
Satd. Flow (perm)		1523			1379			3346			3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	0	12	76	1	12	8	495	22	7	1059	3
RTOR Reduction (vph)	0	14	0	0	11	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	78	0	0	522	0	0	1069	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		6.0			6.0			39.0			38.7	
Effective Green, g (s)		6.0			6.0			39.0			38.7	
Actuated g/C Ratio		0.11			0.11			0.71			0.70	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		166			150			2372			2396	
v/s Ratio Prot												
v/s Ratio Perm		0.00			0.06			0.16			0.31	
v/c Ratio		0.01			0.52			0.22			0.45	
Uniform Delay, d1		21.9			23.1			2.8			3.5	
Progression Factor		1.00			1.00			1.00			0.94	
Incremental Delay, d2		0.0			3.3			0.2			0.3	
Delay (s)		21.9			26.4			3.0			3.6	
Level of Service		C			C			A			A	
Approach Delay (s)		21.9			26.4			3.0			3.6	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		4.8			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		55.0			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		51.1%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	49	302	13	659	32	94
v/c Ratio	0.13	0.26	0.02	0.56	0.06	0.17
Control Delay	8.9	8.2	7.2	11.9	10.9	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	8.2	7.2	11.9	10.9	8.5
Queue Length 50th (m)	2.7	17.9	0.7	50.1	1.3	2.5
Queue Length 95th (m)	7.8	30.9	2.7	82.2	6.4	11.5
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	366	1184	679	1169	538	539
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.26	0.02	0.56	0.06	0.17
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

AM Background 2020








												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	268	10	12	518	88	3	11	16	19	8	59
Future Volume (vph)	45	268	10	12	518	88	3	11	16	19	8	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.93			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1789	1873		1789	1842			1740			1691	
Flt Permitted	0.31	1.00		0.57	1.00			0.98			0.94	
Satd. Flow (perm)	580	1873		1078	1842			1713			1609	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	49	291	11	13	563	96	3	12	17	21	9	64
RTOR Reduction (vph)	0	2	0	0	8	0	0	13	0	0	48	0
Lane Group Flow (vph)	49	300	0	13	651	0	0	19	0	0	46	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	39.0	39.0		39.0	39.0			16.0			16.0	
Effective Green, g (s)	39.0	39.0		39.0	39.0			16.0			16.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.25			0.25	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	348	1123		646	1105			421			396	
v/s Ratio Prot		0.16			c0.35							
v/s Ratio Perm	0.08			0.01				0.01			c0.03	
v/c Ratio	0.14	0.27		0.02	0.59			0.05			0.12	
Uniform Delay, d1	5.7	6.2		5.3	8.0			18.7			19.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	0.6		0.1	2.3			0.0			0.1	
Delay (s)	6.5	6.8		5.3	10.4			18.7			19.1	
Level of Service	A	A		A	B			B			B	
Approach Delay (s)		6.7			10.3			18.7			19.1	
Approach LOS		A			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			10.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			62.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

AM Background 2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	0	19	44	0
Future Volume (Veh/h)	0	2	0	19	44	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	0	21	48	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					190	
pX, platoon unblocked						
vC, conflicting volume	69	48	48			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	69	48	48			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	936	1021	1559			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	2	21	48			
Volume Left	0	0	0			
Volume Right	2	0	0			
cSH	1021	1559	1700			
Volume to Capacity	0.00	0.00	0.03			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.5	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.5	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

1: Shaughnessy Street & Prairie Avenue

							
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	10	24	604	64	243	286	620
v/c Ratio	0.02	0.04	0.94	0.10	0.48	0.43	0.74
Control Delay	12.9	0.1	40.4	0.3	21.6	4.9	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	0.1	40.4	0.3	21.6	4.9	25.9
Queue Length 50th (m)	0.7	0.0	42.4	0.0	21.9	0.0	32.2
Queue Length 95th (m)	3.2	0.0	#106.3	0.5	40.0	14.3	#48.7
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	662	655	644	655	503	662	839
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.04	0.94	0.10	0.48	0.43	0.74





















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis












1: Shaughnessy Street & Prairie Avenue

AM Background 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	9	22	545	11	59	16	208	263	88	482	0
Future Volume (vph)	0	9	22	545	11	59	16	208	263	88	482	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1795	1601		1877	1601		3551	
Flt Permitted		1.00	1.00		0.72	1.00		0.93	1.00		0.82	
Satd. Flow (perm)		1883	1601		1363	1601		1758	1601		2926	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	10	24	592	12	64	17	226	286	96	524	0
RTOR Reduction (vph)	0	0	16	0	0	41	0	0	204	0	0	0
Lane Group Flow (vph)	0	10	8	0	604	23	0	243	82	0	620	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		21.1	21.1		26.6	21.1		17.2	17.2		17.2	
Effective Green, g (s)		21.1	21.1		26.6	21.1		17.2	17.2		17.2	
Actuated g/C Ratio		0.35	0.35		0.44	0.35		0.29	0.29		0.29	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		662	563		643	563		503	458		838	
v/s Ratio Prot		0.01			c0.09							
v/s Ratio Perm			0.01		c0.33	0.01		0.14	0.05		c0.21	
v/c Ratio		0.02	0.01		0.94	0.04		0.48	0.18		0.74	
Uniform Delay, d1		12.7	12.7		15.9	12.8		17.7	16.1		19.4	
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		0.0	0.0		21.5	0.1		3.3	0.9		5.8	
Delay (s)		12.7	12.7		37.5	12.9		21.0	16.9		25.2	
Level of Service		B	B		D	B		C	B		C	
Approach Delay (s)		12.7			35.1			18.8			25.2	
Approach LOS		B			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			26.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			16.2		
Intersection Capacity Utilization			78.6%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: Shaughnessy Street & Grant Avenue












AM Background 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	3	2	486	6	5	1025
Future Volume (Veh/h)	3	2	486	6	5	1025
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	2	528	7	5	1114
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.89	0.97			0.97	
vC, conflicting volume	1098	268			535	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	719	181			457	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	323	805			1066	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	5	352	183	376	743	
Volume Left	3	0	0	5	0	
Volume Right	2	0	7	0	0	
cSH	425	1700	1700	1066	1700	
Volume to Capacity	0.01	0.21	0.11	0.00	0.44	
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0	
Control Delay (s)	13.6	0.0	0.0	0.2	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.6	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			41.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

AM Background 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	4	2	485	1	1	1027
Future Volume (Veh/h)	4	2	485	1	1	1027
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	2	527	1	1	1116
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.92	0.95			0.95	
vC, conflicting volume	1088	264			528	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	681	125			402	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	352	859			1097	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	6	351	177	373	744	
Volume Left	4	0	0	1	0	
Volume Right	2	0	1	0	0	
cSH	439	1700	1700	1097	1700	
Volume to Capacity	0.01	0.21	0.10	0.00	0.44	
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	
Control Delay (s)	13.3	0.0	0.0	0.0	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.3	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			39.1%	ICU Level of Service		A
Analysis Period (min)			15			

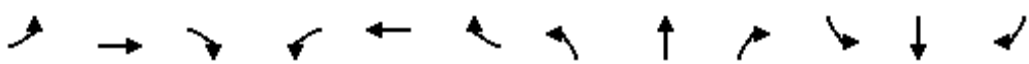
4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	17	94	549	1121
v/c Ratio	0.06	0.40	0.23	0.46
Control Delay	3.4	22.8	4.2	5.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.4	22.8	4.2	5.7
Queue Length 50th (m)	0.0	7.4	8.9	23.8
Queue Length 95th (m)	2.0	16.9	17.9	44.3
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	556	484	2401	2428
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.19	0.23	0.46
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue

AM Background 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	4	0	12	74	1	12	7	477	21	6	1022	3
Future Volume (vph)	4	0	12	74	1	12	7	477	21	6	1022	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.90			0.98			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1669			1773			3553			3576	
Flt Permitted		0.91			0.75			0.94			0.95	
Satd. Flow (perm)		1535			1379			3344			3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	0	13	80	1	13	8	518	23	7	1111	3
RTOR Reduction (vph)	0	15	0	0	11	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	83	0	0	545	0	0	1121	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.6			7.6			37.4			37.1	
Effective Green, g (s)		7.6			7.6			37.4			37.1	
Actuated g/C Ratio		0.14			0.14			0.68			0.67	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		212			190			2273			2297	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.06			0.16			c0.33	
v/c Ratio		0.01			0.44			0.24			0.49	
Uniform Delay, d1		20.5			21.7			3.4			4.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			1.6			0.2			0.7	
Delay (s)		20.5			23.3			3.6			5.1	
Level of Service		C			C			A			A	
Approach Delay (s)		20.5			23.3			3.6			5.1	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			5.7									
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			55.0									
Intersection Capacity Utilization			52.7%									
Analysis Period (min)			15									
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	51	317	14	691	34	99
v/c Ratio	0.15	0.27	0.02	0.59	0.06	0.18
Control Delay	9.2	8.3	7.2	12.4	10.8	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	8.3	7.2	12.4	10.8	8.5
Queue Length 50th (m)	2.9	19.0	0.7	54.1	1.3	2.7
Queue Length 95th (m)	8.2	32.5	2.9	88.9	6.7	11.9
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	341	1182	665	1169	540	541
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.27	0.02	0.59	0.06	0.18
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

AM Background 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	281	11	13	544	92	3	12	17	20	9	62
Future Volume (vph)	47	281	11	13	544	92	3	12	17	20	9	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.93			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1789	1873		1789	1843			1741			1693	
Flt Permitted	0.29	1.00		0.56	1.00			0.98			0.94	
Satd. Flow (perm)	540	1873		1055	1843			1714			1609	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	305	12	14	591	100	3	13	18	22	10	67
RTOR Reduction (vph)	0	2	0	0	8	0	0	14	0	0	51	0
Lane Group Flow (vph)	51	315	0	14	683	0	0	20	0	0	48	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	39.0	39.0		39.0	39.0			16.0			16.0	
Effective Green, g (s)	39.0	39.0		39.0	39.0			16.0			16.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.25			0.25	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	324	1123		633	1105			421			396	
v/s Ratio Prot		0.17			c0.37							
v/s Ratio Perm	0.09			0.01				0.01			c0.03	
v/c Ratio	0.16	0.28		0.02	0.62			0.05			0.12	
Uniform Delay, d1	5.7	6.3		5.3	8.3			18.7			19.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.0	0.6		0.1	2.6			0.0			0.1	
Delay (s)	6.8	6.9		5.3	10.9			18.7			19.2	
Level of Service	A	A		A	B			B			B	
Approach Delay (s)		6.9			10.8			18.7			19.2	
Approach LOS		A			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			10.5			HCM 2000 Level of Service					B	
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)				10.0		
Intersection Capacity Utilization			64.1%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

AM Background 2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	0	20	46	0
Future Volume (Veh/h)	0	2	0	20	46	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	0	22	50	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					190	
pX, platoon unblocked						
vC, conflicting volume	72	50	50			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72	50	50			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	932	1018	1557			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	2	22	50			
Volume Left	0	0	0			
Volume Right	2	0	0			
cSH	1018	1557	1700			
Volume to Capacity	0.00	0.00	0.03			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.5	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.5	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Queues

AM Total 2020

1: Shaughnessy Street & Prairie Avenue

	→	↘	←	↙	↑	↗	↓
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	9	23	575	61	236	273	591
v/c Ratio	0.01	0.04	0.92	0.10	0.48	0.43	0.72
Control Delay	12.6	0.1	36.4	0.3	17.7	4.5	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	0.1	36.4	0.3	17.7	4.5	23.8
Queue Length 50th (m)	0.6	0.0	35.9	0.0	11.2	0.0	27.6
Queue Length 95th (m)	3.0	0.0	#91.7	0.0	23.1	10.3	42.7
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	619	630	628	630	487	640	826
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.04	0.92	0.10	0.48	0.43	0.72


Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

AM Total 2020










1: Shaughnessy Street & Prairie Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰↱	
Traffic Volume (vph)	0	8	21	519	10	56	15	202	251	84	460	0
Future Volume (vph)	0	8	21	519	10	56	15	202	251	84	460	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1795	1601		1877	1601		3551	
Flt Permitted		1.00	1.00		0.72	1.00		0.94	1.00		0.84	
Satd. Flow (perm)		1883	1601		1364	1601		1763	1601		2992	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	23	564	11	61	16	220	273	91	500	0
RTOR Reduction (vph)	0	0	15	0	0	41	0	0	198	0	0	0
Lane Group Flow (vph)	0	9	8	0	575	20	0	236	75	0	591	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		18.1	18.1		23.6	18.1		15.2	15.2		15.2	
Effective Green, g (s)		18.1	18.1		23.6	18.1		15.2	15.2		15.2	
Actuated g/C Ratio		0.33	0.33		0.43	0.33		0.28	0.28		0.28	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		619	526		628	526		487	442		826	
v/s Ratio Prot		0.00			c0.09							
v/s Ratio Perm			0.00		c0.30	0.01		0.13	0.05		c0.20	
v/c Ratio		0.01	0.01		0.92	0.04		0.48	0.17		0.72	
Uniform Delay, d1		12.4	12.4		14.8	12.5		16.6	15.1		17.9	
Progression Factor		1.00	1.00		1.00	1.00		0.83	0.85		1.00	
Incremental Delay, d2		0.0	0.0		18.0	0.1		3.4	0.8		5.3	
Delay (s)		12.5	12.5		32.8	12.7		17.2	13.7		23.2	
Level of Service		B	B		C	B		B	B		C	
Approach Delay (s)		12.5			30.9			15.3			23.2	
Approach LOS		B			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			23.5									
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			55.0									
Intersection Capacity Utilization			76.1%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Shaughnessy Street & Grant Avenue










AM Total 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	2	468	6	5	978
Future Volume (Veh/h)	3	2	468	6	5	978
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	2	509	7	5	1063
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.90	0.98			0.98	
vC, conflicting volume	1054	258			516	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	742	208			470	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	314	784			1068	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	5	339	177	359	709	
Volume Left	3	0	0	5	0	
Volume Right	2	0	7	0	0	
cSH	413	1700	1700	1068	1700	
Volume to Capacity	0.01	0.20	0.10	0.00	0.42	
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0	
Control Delay (s)	13.8	0.0	0.0	0.2	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.8	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			40.5%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

AM Total 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	7	462	4	2	979
Future Volume (Veh/h)	10	7	462	4	2	979
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	8	502	4	2	1064
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.93	0.96			0.96	
vC, conflicting volume	1040	253			506	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	696	141			404	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			100	
cM capacity (veh/h)	348	847			1106	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	19	335	171	357	709	
Volume Left	11	0	0	2	0	
Volume Right	8	0	4	0	0	
cSH	463	1700	1700	1106	1700	
Volume to Capacity	0.04	0.20	0.10	0.00	0.42	
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	
Control Delay (s)	13.1	0.0	0.0	0.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.1	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			38.5%	ICU Level of Service		A
Analysis Period (min)			15			

4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	16	89	528	1075
v/c Ratio	0.06	0.39	0.20	0.41
Control Delay	3.1	22.8	3.5	4.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.1	22.8	3.5	4.2
Queue Length 50th (m)	0.0	7.0	8.3	23.4
Queue Length 95th (m)	1.8	16.4	16.8	m27.6
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	552	484	2618	2651
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.18	0.20	0.41


Intersection Summary

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







HCM Signalized Intersection Capacity Analysis

AM Total 2020

4: Shaughnessy Street & Fraser Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	4	0	11	70	1	11	7	458	20	6	980	3
Future Volume (vph)	4	0	11	70	1	11	7	458	20	6	980	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.90			0.98			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1672			1773			3553			3576	
Flt Permitted		0.90			0.75			0.94			0.95	
Satd. Flow (perm)		1523			1379			3346			3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	0	12	76	1	12	8	498	22	7	1065	3
RTOR Reduction (vph)	0	14	0	0	11	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	78	0	0	525	0	0	1075	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		6.0			6.0			39.0			38.7	
Effective Green, g (s)		6.0			6.0			39.0			38.7	
Actuated g/C Ratio		0.11			0.11			0.71			0.70	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		166			150			2372			2396	
v/s Ratio Prot												
v/s Ratio Perm		0.00			0.06			0.16			0.32	
v/c Ratio		0.01			0.52			0.22			0.45	
Uniform Delay, d1		21.9			23.1			2.8			3.5	
Progression Factor		1.00			1.00			1.00			0.93	
Incremental Delay, d2		0.0			3.3			0.2			0.4	
Delay (s)		21.9			26.4			3.0			3.6	
Level of Service		C			C			A			A	
Approach Delay (s)		21.9			26.4			3.0			3.6	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		4.8			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		55.0			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		51.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	49	302	14	659	40	94
v/c Ratio	0.13	0.26	0.02	0.56	0.07	0.17
Control Delay	8.9	8.2	7.2	11.9	10.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	8.2	7.2	11.9	10.0	8.5
Queue Length 50th (m)	2.7	17.9	0.7	50.1	1.3	2.5
Queue Length 95th (m)	7.8	30.9	2.9	82.2	7.0	11.5
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	366	1184	679	1169	540	538
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.26	0.02	0.56	0.07	0.17
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

AM Total 2020








												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	268	10	13	518	88	3	12	22	19	8	59
Future Volume (vph)	45	268	10	13	518	88	3	12	22	19	8	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.92			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1789	1873		1789	1842			1724			1691	
Flt Permitted	0.31	1.00		0.57	1.00			0.98			0.94	
Satd. Flow (perm)	580	1873		1078	1842			1702			1606	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	49	291	11	14	563	96	3	13	24	21	9	64
RTOR Reduction (vph)	0	2	0	0	8	0	0	18	0	0	48	0
Lane Group Flow (vph)	49	300	0	14	651	0	0	22	0	0	46	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	39.0	39.0		39.0	39.0			16.0			16.0	
Effective Green, g (s)	39.0	39.0		39.0	39.0			16.0			16.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.25			0.25	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	348	1123		646	1105			418			395	
v/s Ratio Prot		0.16			c0.35							
v/s Ratio Perm	0.08			0.01				0.01			c0.03	
v/c Ratio	0.14	0.27		0.02	0.59			0.05			0.12	
Uniform Delay, d1	5.7	6.2		5.3	8.0			18.7			19.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	0.6		0.1	2.3			0.1			0.1	
Delay (s)	6.5	6.8		5.3	10.4			18.8			19.1	
Level of Service	A	A		A	B			B			B	
Approach Delay (s)		6.7			10.2			18.8			19.1	
Approach LOS		A			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			10.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			62.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 6: Laneway & Flint Street

AM Total 2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	2	0	19	44	1
Future Volume (Veh/h)	6	2	0	19	44	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	2	0	21	48	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)					190	
pX, platoon unblocked						
vC, conflicting volume	70	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	70	48	49			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	935	1020	1558			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	9	21	49			
Volume Left	7	0	0			
Volume Right	2	0	1			
cSH	953	1558	1700			
Volume to Capacity	0.01	0.00	0.03			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.8	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.8	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		1.0				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

1: Shaughnessy Street & Prairie Avenue

							
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	10	24	604	64	247	286	620
v/c Ratio	0.02	0.04	0.94	0.10	0.49	0.43	0.74
Control Delay	12.9	0.1	40.4	0.3	21.8	4.9	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	0.1	40.4	0.3	21.8	4.9	26.1
Queue Length 50th (m)	0.7	0.0	42.4	0.0	22.3	0.0	32.2
Queue Length 95th (m)	3.2	0.0	#106.3	0.5	40.4	14.3	#49.2
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	662	655	644	655	504	662	835
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.04	0.94	0.10	0.49	0.43	0.74





















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

AM Total 2025












1: Shaughnessy Street & Prairie Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	9	22	545	11	59	16	212	263	88	482	0
Future Volume (vph)	0	9	22	545	11	59	16	212	263	88	482	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1795	1601		1877	1601		3551	
Flt Permitted		1.00	1.00		0.72	1.00		0.93	1.00		0.81	
Satd. Flow (perm)		1883	1601		1363	1601		1760	1601		2912	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	10	24	592	12	64	17	230	286	96	524	0
RTOR Reduction (vph)	0	0	16	0	0	41	0	0	204	0	0	0
Lane Group Flow (vph)	0	10	8	0	604	23	0	247	82	0	620	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		21.1	21.1		26.6	21.1		17.2	17.2		17.2	
Effective Green, g (s)		21.1	21.1		26.6	21.1		17.2	17.2		17.2	
Actuated g/C Ratio		0.35	0.35		0.44	0.35		0.29	0.29		0.29	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		662	563		643	563		504	458		834	
v/s Ratio Prot		0.01			c0.09							
v/s Ratio Perm			0.01		c0.33	0.01		0.14	0.05		c0.21	
v/c Ratio		0.02	0.01		0.94	0.04		0.49	0.18		0.74	
Uniform Delay, d1		12.7	12.7		15.9	12.8		17.8	16.1		19.4	
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		0.0	0.0		21.5	0.1		3.4	0.9		5.9	
Delay (s)		12.7	12.7		37.5	12.9		21.1	16.9		25.3	
Level of Service		B	B		D	B		C	B		C	
Approach Delay (s)		12.7			35.1			18.9			25.3	
Approach LOS		B			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			26.8									
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			60.0									
Intersection Capacity Utilization			78.9%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Shaughnessy Street & Grant Avenue










AM Total 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	3	2	490	6	5	1026
Future Volume (Veh/h)	3	2	490	6	5	1026
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	2	533	7	5	1115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			101			115
pX, platoon unblocked	0.89	0.97			0.97	
vC, conflicting volume	1104	270			540	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	725	184			462	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	320	802			1062	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	5	355	185	377	743	
Volume Left	3	0	0	5	0	
Volume Right	2	0	7	0	0	
cSH	421	1700	1700	1062	1700	
Volume to Capacity	0.01	0.21	0.11	0.00	0.44	
Queue Length 95th (m)	0.3	0.0	0.0	0.1	0.0	
Control Delay (s)	13.6	0.0	0.0	0.2	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.6	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			41.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

AM Total 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	7	485	4	2	1027
Future Volume (Veh/h)	10	7	485	4	2	1027
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	8	527	4	2	1116
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			49			167
pX, platoon unblocked	0.92	0.95			0.95	
vC, conflicting volume	1091	266			531	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	683	125			404	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			100	
cM capacity (veh/h)	351	858			1095	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	19	351	180	374	744	
Volume Left	11	0	0	2	0	
Volume Right	8	0	4	0	0	
cSH	468	1700	1700	1095	1700	
Volume to Capacity	0.04	0.21	0.11	0.00	0.44	
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	
Control Delay (s)	13.0	0.0	0.0	0.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.0	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			39.8%		ICU Level of Service	A
Analysis Period (min)			15			

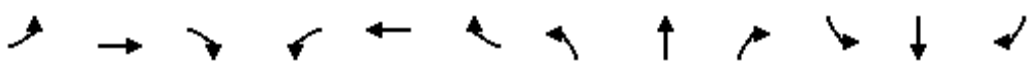
4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	17	94	553	1126
v/c Ratio	0.06	0.40	0.23	0.46
Control Delay	3.4	22.8	4.2	5.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.4	22.8	4.2	5.7
Queue Length 50th (m)	0.0	7.4	9.0	23.9
Queue Length 95th (m)	2.0	16.9	18.0	44.7
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	556	484	2401	2428
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.19	0.23	0.46
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue

AM Total 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	0	12	74	1	12	7	480	21	6	1027	3
Future Volume (vph)	4	0	12	74	1	12	7	480	21	6	1027	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.90			0.98			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1669			1773			3554			3576	
Flt Permitted		0.91			0.75			0.94			0.95	
Satd. Flow (perm)		1535			1379			3344			3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	0	13	80	1	13	8	522	23	7	1116	3
RTOR Reduction (vph)	0	15	0	0	11	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	83	0	0	549	0	0	1126	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.6			7.6			37.4			37.1	
Effective Green, g (s)		7.6			7.6			37.4			37.1	
Actuated g/C Ratio		0.14			0.14			0.68			0.67	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		212			190			2273			2297	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.06			0.16			c0.33	
v/c Ratio		0.01			0.44			0.24			0.49	
Uniform Delay, d1		20.5			21.7			3.4			4.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			1.6			0.3			0.8	
Delay (s)		20.5			23.3			3.6			5.1	
Level of Service		C			C			A			A	
Approach Delay (s)		20.5			23.3			3.6			5.1	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			5.7									
HCM 2000 Level of Service											A	
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			55.0								10.3	
Intersection Capacity Utilization			52.8%								A	
ICU Level of Service												
Analysis Period (min)			15									
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	51	317	15	691	40	99
v/c Ratio	0.15	0.27	0.02	0.59	0.07	0.18
Control Delay	9.2	8.3	7.2	12.4	10.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	8.3	7.2	12.4	10.0	8.5
Queue Length 50th (m)	2.9	19.0	0.8	54.1	1.3	2.7
Queue Length 95th (m)	8.2	32.5	3.0	88.9	7.0	11.9
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	341	1182	665	1169	540	541
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.27	0.02	0.59	0.07	0.18
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

AM Total 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	281	11	14	544	92	3	12	22	20	9	62
Future Volume (vph)	47	281	11	14	544	92	3	12	22	20	9	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.92			0.91	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1789	1873		1789	1843			1724			1693	
Flt Permitted	0.29	1.00		0.56	1.00			0.98			0.94	
Satd. Flow (perm)	540	1873		1055	1843			1702			1607	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	305	12	15	591	100	3	13	24	22	10	67
RTOR Reduction (vph)	0	2	0	0	8	0	0	18	0	0	51	0
Lane Group Flow (vph)	51	315	0	15	683	0	0	22	0	0	48	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	39.0	39.0		39.0	39.0			16.0			16.0	
Effective Green, g (s)	39.0	39.0		39.0	39.0			16.0			16.0	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.25			0.25	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	324	1123		633	1105			418			395	
v/s Ratio Prot		0.17			c0.37							
v/s Ratio Perm	0.09			0.01				0.01			c0.03	
v/c Ratio	0.16	0.28		0.02	0.62			0.05			0.12	
Uniform Delay, d1	5.7	6.3		5.3	8.3			18.7			19.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.0	0.6		0.1	2.6			0.1			0.1	
Delay (s)	6.8	6.9		5.3	10.9			18.8			19.2	
Level of Service	A	A		A	B			B			B	
Approach Delay (s)		6.9			10.7			18.8			19.2	
Approach LOS		A			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			10.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			64.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

AM Total 2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	2	0	20	46	1
Future Volume (Veh/h)	6	2	0	20	46	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	2	0	22	50	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)					190	
pX, platoon unblocked						
vC, conflicting volume	72	50	51			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72	50	51			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	931	1018	1555			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	9	22	51			
Volume Left	7	0	0			
Volume Right	2	0	1			
cSH	949	1555	1700			
Volume to Capacity	0.01	0.00	0.03			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.8	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.8	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		1.0				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

Queues

Existing PM

1: Shaughnessy Street & Prairie Avenue

	→	↘	←	↙	↑	↗	↓
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	3	5	351	82	509	632	365
v/c Ratio	0.00	0.01	0.48	0.10	0.89	0.68	0.57
Control Delay	13.7	0.0	14.9	3.2	51.4	6.4	31.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	0.0	14.9	3.2	51.4	6.4	31.8
Queue Length 50th (m)	0.3	0.0	31.4	0.0	88.6	0.0	29.4
Queue Length 95th (m)	1.8	0.0	48.0	6.6	#145.0	26.0	43.9
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	874	791	738	791	571	929	641
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.01	0.48	0.10	0.89	0.68	0.57

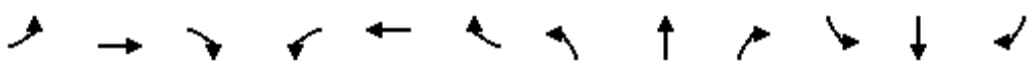
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: Shaughnessy Street & Prairie Avenue










Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰↱	
Traffic Volume (vph)	0	3	5	321	2	75	11	457	581	58	277	1
Future Volume (vph)	0	3	5	321	2	75	11	457	581	58	277	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1794	1601		1881	1601		3546	
Flt Permitted		1.00	1.00		0.73	1.00		0.99	1.00		0.58	
Satd. Flow (perm)		1883	1601		1367	1601		1860	1601		2087	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	3	5	349	2	82	12	497	632	63	301	1
RTOR Reduction (vph)	0	0	3	0	0	44	0	0	438	0	0	0
Lane Group Flow (vph)	0	3	2	0	351	38	0	509	194	0	365	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		44.1	44.1		49.6	44.1		29.2	29.2		29.2	
Effective Green, g (s)		44.1	44.1		49.6	44.1		29.2	29.2		29.2	
Actuated g/C Ratio		0.46	0.46		0.52	0.46		0.31	0.31		0.31	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		874	743		738	743		571	492		641	
v/s Ratio Prot		0.00			c0.03							
v/s Ratio Perm			0.00		c0.22	0.02		c0.27	0.12		0.17	
v/c Ratio		0.00	0.00		0.48	0.05		0.89	0.39		0.57	
Uniform Delay, d1		13.7	13.7		14.4	14.0		31.4	25.9		27.6	
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		0.0	0.0		0.5	0.1		18.7	2.4		3.6	
Delay (s)		13.7	13.7		14.9	14.1		50.1	28.3		31.3	
Level of Service		B	B		B	B		D	C		C	
Approach Delay (s)		13.7			14.8			38.0			31.3	
Approach LOS		B			B			D			C	
Intersection Summary												
HCM 2000 Control Delay			31.5									
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			95.0									
Intersection Capacity Utilization			72.1%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Shaughnessy Street & Grant Avenue










Existing PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	6	1046	15	7	595
Future Volume (Veh/h)	6	6	1046	15	7	595
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	7	1137	16	8	647
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.90	0.87			0.87	
vC, conflicting volume	1484	576			1153	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1022	212			875	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			99	
cM capacity (veh/h)	206	690			667	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	14	758	395	224	431	
Volume Left	7	0	0	8	0	
Volume Right	7	0	16	0	0	
cSH	317	1700	1700	667	1700	
Volume to Capacity	0.04	0.45	0.23	0.01	0.25	
Queue Length 95th (m)	1.0	0.0	0.0	0.3	0.0	
Control Delay (s)	16.9	0.0	0.0	0.5	0.0	
Lane LOS	C			A		
Approach Delay (s)	16.9	0.0		0.2		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			39.4%	ICU Level of Service		A
Analysis Period (min)			15			

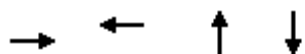
HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

Existing PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	0	1061	14	0	613
Future Volume (Veh/h)	4	0	1061	14	0	613
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	0	1153	15	0	666
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.89	0.87			0.87	
vC, conflicting volume	1494	584			1168	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1076	211			885	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	190	688			659	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	4	769	399	222	444	
Volume Left	4	0	0	0	0	
Volume Right	0	0	15	0	0	
cSH	190	1700	1700	659	1700	
Volume to Capacity	0.02	0.45	0.23	0.00	0.26	
Queue Length 95th (m)	0.5	0.0	0.0	0.0	0.0	
Control Delay (s)	24.3	0.0	0.0	0.0	0.0	
Lane LOS	C					
Approach Delay (s)	24.3	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			39.8%	ICU Level of Service		A
Analysis Period (min)			15			

4: Shaughnessy Street & Fraser Avenue



















Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	15	88	1227	659
v/c Ratio	0.07	0.44	0.47	0.26
Control Delay	16.9	28.5	4.7	3.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.9	28.5	4.7	3.6
Queue Length 50th (m)	0.5	8.1	26.5	11.7
Queue Length 95th (m)	4.9	19.2	48.1	22.0
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	671	611	2612	2545
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.14	0.47	0.26
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1	10	59	2	20	12	1050	67	14	590	3
Future Volume (vph)	3	1	10	59	2	20	12	1050	67	14	590	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.90			0.97			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1680			1756			3545			3572	
Flt Permitted		0.92			0.78			0.95			0.92	
Satd. Flow (perm)		1568			1412			3361			3292	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1	11	64	2	22	13	1141	73	15	641	3
RTOR Reduction (vph)	0	10	0	0	20	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	5	0	0	68	0	0	1224	0	0	659	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.7			7.7			52.3			52.0	
Effective Green, g (s)		7.7			7.7			52.3			52.0	
Actuated g/C Ratio		0.11			0.11			0.75			0.74	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		172			155			2511			2445	
v/s Ratio Prot												
v/s Ratio Perm		0.00			0.05			0.36			0.20	
v/c Ratio		0.03			0.44			0.49			0.27	
Uniform Delay, d1		27.8			29.1			3.5			2.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			2.0			0.7			0.3	
Delay (s)		27.9			31.1			4.2			3.2	
Level of Service		C			C			A			A	
Approach Delay (s)		27.9			31.1			4.2			3.2	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		5.2			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.48										
Actuated Cycle Length (s)		70.0			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		59.3%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	27	662	28	430	62	25
v/c Ratio	0.04	0.49	0.06	0.32	0.12	0.05
Control Delay	7.2	9.7	7.6	7.6	9.6	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	9.7	7.6	7.6	9.6	11.4
Queue Length 50th (m)	1.4	51.7	1.5	27.7	2.1	1.0
Queue Length 95th (m)	4.6	83.7	4.9	45.9	9.3	5.5
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	665	1359	461	1351	520	502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.49	0.06	0.32	0.12	0.05
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

Existing PM








												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	602	7	26	372	24	15	8	34	7	4	12
Future Volume (vph)	25	602	7	26	372	24	15	8	34	7	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1789	1880		1789	1866			1710			1724	
Flt Permitted	0.49	1.00		0.34	1.00			0.93			0.92	
Satd. Flow (perm)	922	1880		637	1866			1608			1605	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	654	8	28	404	26	16	9	37	8	4	13
RTOR Reduction (vph)	0	0	0	0	3	0	0	30	0	0	11	0
Lane Group Flow (vph)	27	662	0	28	427	0	0	32	0	0	14	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Effective Green, g (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	609	1243		421	1234			296			296	
v/s Ratio Prot		c0.35			0.23							
v/s Ratio Perm	0.03			0.04				c0.02			0.01	
v/c Ratio	0.04	0.53		0.07	0.35			0.11			0.05	
Uniform Delay, d1	3.8	5.7		3.9	4.8			22.0			21.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	1.6		0.3	0.8			0.2			0.1	
Delay (s)	4.0	7.4		4.2	5.6			22.2			21.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		7.2			5.5			22.2			21.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			7.7			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)				10.0		
Intersection Capacity Utilization			57.1%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

Existing PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1	0	43	34	0
Future Volume (Veh/h)	0	1	0	43	34	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	0	47	37	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					190	
pX, platoon unblocked						
vC, conflicting volume	84	37	37			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	84	37	37			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	918	1035	1574			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	1	47	37			
Volume Left	0	0	0			
Volume Right	1	0	0			
cSH	1035	1574	1700			
Volume to Capacity	0.00	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.5	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.5	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.1				
Intersection Capacity Utilization		13.3%	ICU Level of Service	A		
Analysis Period (min)		15				

1: Shaughnessy Street & Prairie Avenue

							
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	3	5	357	84	519	645	373
v/c Ratio	0.01	0.01	0.66	0.15	0.77	0.65	0.41
Control Delay	16.0	0.0	20.2	1.9	26.6	5.0	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	0.0	20.2	1.9	26.6	5.0	16.1
Queue Length 50th (m)	0.3	0.0	25.1	0.0	48.9	0.0	15.7
Queue Length 95th (m)	1.9	0.0	43.2	3.2	#92.3	18.0	25.7
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	517	543	540	543	676	992	902
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.66	0.15	0.77	0.65	0.41





















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis










1: Shaughnessy Street & Prairie Avenue

PM Background 2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	3	5	327	2	77	11	466	593	59	283	1
Future Volume (vph)	0	3	5	327	2	77	11	466	593	59	283	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1794	1601		1881	1601		3547	
Flt Permitted		1.00	1.00		0.73	1.00		0.99	1.00		0.69	
Satd. Flow (perm)		1883	1601		1367	1601		1860	1601		2484	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	3	5	355	2	84	12	507	645	64	308	1
RTOR Reduction (vph)	0	0	4	0	0	61	0	0	411	0	0	0
Lane Group Flow (vph)	0	3	1	0	357	23	0	519	234	0	373	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		16.5	16.5		22.0	16.5		21.8	21.8		21.8	
Effective Green, g (s)		16.5	16.5		22.0	16.5		21.8	21.8		21.8	
Actuated g/C Ratio		0.28	0.28		0.37	0.28		0.36	0.36		0.36	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		517	440		540	440		675	581		902	
v/s Ratio Prot		0.00			c0.06							
v/s Ratio Perm			0.00		c0.18	0.01		c0.28	0.15		0.15	
v/c Ratio		0.01	0.00		0.66	0.05		0.77	0.40		0.41	
Uniform Delay, d1		15.8	15.8		15.9	16.0		16.9	14.2		14.3	
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		0.0	0.0		3.0	0.2		8.2	2.1		1.4	
Delay (s)		15.8	15.8		18.9	16.2		25.1	16.3		15.7	
Level of Service		B	B		B	B		C	B		B	
Approach Delay (s)		15.8			18.4			20.2			15.7	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay			19.0									
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			60.0									
Intersection Capacity Utilization			73.1%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: Shaughnessy Street & Grant Avenue










PM Background 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	6	1067	15	7	607
Future Volume (Veh/h)	6	6	1067	15	7	607
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	7	1160	16	8	660
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.86	0.85			0.85	
vC, conflicting volume	1514	588			1176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1103	152			846	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	99			99	
cM capacity (veh/h)	175	734			666	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	14	773	403	228	440	
Volume Left	7	0	0	8	0	
Volume Right	7	0	16	0	0	
cSH	283	1700	1700	666	1700	
Volume to Capacity	0.05	0.45	0.24	0.01	0.26	
Queue Length 95th (m)	1.2	0.0	0.0	0.3	0.0	
Control Delay (s)	18.4	0.0	0.0	0.5	0.0	
Lane LOS	C			A		
Approach Delay (s)	18.4	0.0		0.2		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			40.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

PM Background 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	0	1082	14	0	625
Future Volume (Veh/h)	4	0	1082	14	0	625
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	0	1176	15	0	679
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.85	0.84			0.84	
vC, conflicting volume	1523	596			1191	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1219	148			855	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	146	735			658	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	4	784	407	226	453	
Volume Left	4	0	0	0	0	
Volume Right	0	0	15	0	0	
cSH	146	1700	1700	658	1700	
Volume to Capacity	0.03	0.46	0.24	0.00	0.27	
Queue Length 95th (m)	0.6	0.0	0.0	0.0	0.0	
Control Delay (s)	30.3	0.0	0.0	0.0	0.0	
Lane LOS	D					
Approach Delay (s)	30.3	0.0		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			40.4%	ICU Level of Service		A
Analysis Period (min)			15			

















4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	15	89	1251	672
v/c Ratio	0.06	0.37	0.47	0.26
Control Delay	12.7	20.8	4.9	3.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.7	20.8	4.9	3.8
Queue Length 50th (m)	0.4	6.1	25.8	11.4
Queue Length 95th (m)	4.0	15.5	48.9	22.2
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	546	501	2646	2580
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.18	0.47	0.26
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue

PM Background 2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1	10	60	2	20	12	1071	68	14	602	3
Future Volume (vph)	3	1	10	60	2	20	12	1071	68	14	602	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.90			0.97			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1680			1756			3545			3572	
Flt Permitted		0.92			0.78			0.95			0.92	
Satd. Flow (perm)		1560			1411			3362			3296	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1	11	65	2	22	13	1164	74	15	654	3
RTOR Reduction (vph)	0	10	0	0	20	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	5	0	0	69	0	0	1246	0	0	672	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.8			5.8			39.2			38.9	
Effective Green, g (s)		5.8			5.8			39.2			38.9	
Actuated g/C Ratio		0.11			0.11			0.71			0.71	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		164			148			2396			2331	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.05			c0.37			0.20	
v/c Ratio		0.03			0.47			0.52			0.29	
Uniform Delay, d1		22.1			23.1			3.6			3.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			2.3			0.8			0.3	
Delay (s)		22.2			25.5			4.4			3.3	
Level of Service		C			C			A			A	
Approach Delay (s)		22.2			25.5			4.4			3.3	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		5.1			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		55.0			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		59.9%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	28	675	29	438	63	25
v/c Ratio	0.04	0.50	0.06	0.32	0.12	0.05
Control Delay	7.2	9.9	7.6	7.6	9.6	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	9.9	7.6	7.6	9.6	11.4
Queue Length 50th (m)	1.5	53.3	1.5	28.4	2.1	1.0
Queue Length 95th (m)	4.7	86.3	5.1	46.9	9.4	5.5
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	659	1359	449	1351	521	502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.50	0.06	0.32	0.12	0.05
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

PM Background 2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	614	7	27	379	24	15	8	35	7	4	12
Future Volume (vph)	26	614	7	27	379	24	15	8	35	7	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1789	1880		1789	1867			1708			1724	
Flt Permitted	0.48	1.00		0.33	1.00			0.93			0.92	
Satd. Flow (perm)	911	1880		622	1867			1608			1604	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	667	8	29	412	26	16	9	38	8	4	13
RTOR Reduction (vph)	0	0	0	0	3	0	0	31	0	0	11	0
Lane Group Flow (vph)	28	675	0	29	435	0	0	32	0	0	14	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Effective Green, g (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	602	1243		411	1235			296			296	
v/s Ratio Prot		c0.36			0.23							
v/s Ratio Perm	0.03			0.05				c0.02			0.01	
v/c Ratio	0.05	0.54		0.07	0.35			0.11			0.05	
Uniform Delay, d1	3.8	5.8		3.9	4.9			22.0			21.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	1.7		0.3	0.8			0.2			0.1	
Delay (s)	4.0	7.5		4.2	5.6			22.2			21.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		7.4			5.6			22.2			21.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay		7.7			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.45										
Actuated Cycle Length (s)		65.0			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		57.7%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

PM Background 2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1	0	44	35	0
Future Volume (Veh/h)	0	1	0	44	35	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	0	48	38	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					190	
pX, platoon unblocked						
vC, conflicting volume	86	38	38			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86	38	38			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	915	1034	1572			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	1	48	38			
Volume Left	0	0	0			
Volume Right	1	0	0			
cSH	1034	1572	1700			
Volume to Capacity	0.00	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.5	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.5	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

1: Shaughnessy Street & Prairie Avenue

	→	↘	←	↖	↑	↗	↓
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	3	5	375	87	545	676	390
v/c Ratio	0.01	0.01	0.71	0.16	0.79	0.66	0.44
Control Delay	16.3	0.0	22.9	2.1	24.0	6.5	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	0.0	22.9	2.1	24.0	6.5	16.1
Queue Length 50th (m)	0.3	0.0	27.0	0.0	23.9	1.1	16.4
Queue Length 95th (m)	1.9	0.0	#50.8	3.5	#92.6	32.1	26.8
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	505	533	531	533	687	1018	893
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.71	0.16	0.79	0.66	0.44





















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis












1: Shaughnessy Street & Prairie Avenue

PM Background 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	3	5	343	2	80	12	489	622	62	296	1
Future Volume (vph)	0	3	5	343	2	80	12	489	622	62	296	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1794	1601		1881	1601		3547	
Flt Permitted		1.00	1.00		0.73	1.00		0.99	1.00		0.68	
Satd. Flow (perm)		1883	1601		1367	1601		1858	1601		2416	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	3	5	373	2	87	13	532	676	67	322	1
RTOR Reduction (vph)	0	0	4	0	0	64	0	0	426	0	0	0
Lane Group Flow (vph)	0	3	1	0	375	23	0	545	250	0	390	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		16.1	16.1		21.6	16.1		22.2	22.2		22.2	
Effective Green, g (s)		16.1	16.1		21.6	16.1		22.2	22.2		22.2	
Actuated g/C Ratio		0.27	0.27		0.36	0.27		0.37	0.37		0.37	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		505	429		531	429		687	592		893	
v/s Ratio Prot		0.00			c0.06							
v/s Ratio Perm			0.00		c0.19	0.01		c0.29	0.16		0.16	
v/c Ratio		0.01	0.00		0.71	0.05		0.79	0.42		0.44	
Uniform Delay, d1		16.1	16.1		16.5	16.3		16.9	14.1		14.2	
Progression Factor		1.00	1.00		1.00	1.00		0.84	2.11		1.00	
Incremental Delay, d2		0.0	0.0		4.3	0.2		8.0	1.9		1.6	
Delay (s)		16.1	16.1		20.7	16.5		22.2	31.7		15.8	
Level of Service		B	B		C	B		C	C		B	
Approach Delay (s)		16.1			19.9			27.5			15.8	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay			23.6				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			60.0				Sum of lost time (s)			16.2		
Intersection Capacity Utilization			75.7%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: Shaughnessy Street & Grant Avenue












PM Background 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	6	6	1119	16	7	637
Future Volume (Veh/h)	6	6	1119	16	7	637
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	7	1216	17	8	692
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.85	0.83			0.83	
vC, conflicting volume	1586	616			1233	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1133	126			869	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	99			99	
cM capacity (veh/h)	165	747			639	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	14	811	422	239	461	
Volume Left	7	0	0	8	0	
Volume Right	7	0	17	0	0	
cSH	270	1700	1700	639	1700	
Volume to Capacity	0.05	0.48	0.25	0.01	0.27	
Queue Length 95th (m)	1.2	0.0	0.0	0.3	0.0	
Control Delay (s)	19.1	0.0	0.0	0.5	0.0	
Lane LOS	C			A		
Approach Delay (s)	19.1	0.0		0.2		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			41.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

PM Background 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	4	0	1135	15	0	656
Future Volume (Veh/h)	4	0	1135	15	0	656
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	0	1234	16	0	713
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.83	0.83			0.83	
vC, conflicting volume	1598	625			1250	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1256	128			884	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	136	743			629	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	4	823	427	238	475	
Volume Left	4	0	0	0	0	
Volume Right	0	0	16	0	0	
cSH	136	1700	1700	629	1700	
Volume to Capacity	0.03	0.48	0.25	0.00	0.28	
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0	
Control Delay (s)	32.3	0.0	0.0	0.0	0.0	
Lane LOS	D					
Approach Delay (s)	32.3	0.0		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			41.9%		ICU Level of Service	A
Analysis Period (min)			15			

















4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	16	93	1314	705
v/c Ratio	0.07	0.41	0.53	0.29
Control Delay	13.7	23.4	5.7	3.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.7	23.4	5.7	3.0
Queue Length 50th (m)	0.4	7.1	29.1	4.5
Queue Length 95th (m)	4.4	17.2	54.2	14.1
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	505	462	2495	2419
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.53	0.29
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue

PM Background 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1	11	63	2	21	13	1124	72	15	631	3
Future Volume (vph)	3	1	11	63	2	21	13	1124	72	15	631	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.90			0.97			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1677			1756			3545			3572	
Flt Permitted		0.93			0.77			0.95			0.92	
Satd. Flow (perm)		1568			1409			3359			3280	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1	12	68	2	23	14	1222	78	16	686	3
RTOR Reduction (vph)	0	11	0	0	20	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	6	0	0	73	0	0	1309	0	0	705	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.5			7.5			42.5			42.2	
Effective Green, g (s)		7.5			7.5			42.5			42.2	
Actuated g/C Ratio		0.12			0.12			0.71			0.70	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		196			176			2379			2306	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.05			c0.39			0.21	
v/c Ratio		0.03			0.41			0.55			0.31	
Uniform Delay, d1		23.0			24.2			4.2			3.4	
Progression Factor		1.00			1.00			1.00			0.71	
Incremental Delay, d2		0.1			1.6			0.9			0.3	
Delay (s)		23.1			25.8			5.1			2.7	
Level of Service		C			C			A			A	
Approach Delay (s)		23.1			25.8			5.1			2.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		5.3			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.53										
Actuated Cycle Length (s)		60.0			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		62.5%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	29	708	30	461	66	26
v/c Ratio	0.05	0.52	0.07	0.34	0.13	0.05
Control Delay	7.2	10.3	7.7	7.8	9.7	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	10.3	7.7	7.8	9.7	11.2
Queue Length 50th (m)	1.5	57.4	1.6	30.4	2.3	1.0
Queue Length 95th (m)	4.8	93.4	5.2	50.1	9.7	5.6
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	637	1359	423	1351	521	502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.52	0.07	0.34	0.13	0.05
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

PM Background 2025








												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	644	7	28	398	26	16	9	36	7	4	13
Future Volume (vph)	27	644	7	28	398	26	16	9	36	7	4	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1789	1880		1789	1866			1711			1720	
Flt Permitted	0.47	1.00		0.31	1.00			0.93			0.92	
Satd. Flow (perm)	881	1880		585	1866			1608			1603	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	700	8	30	433	28	17	10	39	8	4	14
RTOR Reduction (vph)	0	0	0	0	3	0	0	32	0	0	11	0
Lane Group Flow (vph)	29	708	0	30	458	0	0	34	0	0	15	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Effective Green, g (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	582	1243		387	1234			296			295	
v/s Ratio Prot		c0.38			0.25							
v/s Ratio Perm	0.03			0.05				c0.02			0.01	
v/c Ratio	0.05	0.57		0.08	0.37			0.12			0.05	
Uniform Delay, d1	3.8	6.0		3.9	4.9			22.1			21.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.9		0.4	0.9			0.2			0.1	
Delay (s)	4.0	7.9		4.3	5.8			22.3			21.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		7.7			5.7			22.3			21.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			8.0			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			59.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

PM Background 2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1	0	46	36	0
Future Volume (Veh/h)	0	1	0	46	36	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	0	50	39	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					190	
pX, platoon unblocked						
vC, conflicting volume	89	39	39			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	89	39	39			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	912	1033	1571			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	1	50	39			
Volume Left	0	0	0			
Volume Right	1	0	0			
cSH	1033	1571	1700			
Volume to Capacity	0.00	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.5	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.5	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.1				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

1: Shaughnessy Street & Prairie Avenue

							
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	3	5	357	84	522	645	375
v/c Ratio	0.01	0.01	0.66	0.15	0.77	0.65	0.42
Control Delay	16.0	0.0	20.2	1.9	26.8	5.0	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	0.0	20.2	1.9	26.8	5.0	16.1
Queue Length 50th (m)	0.3	0.0	25.1	0.0	49.3	0.0	15.8
Queue Length 95th (m)	1.9	0.0	43.2	3.2	#93.2	18.0	25.8
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	517	543	540	543	676	992	899
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.66	0.15	0.77	0.65	0.42


Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

PM Total 2020










1: Shaughnessy Street & Prairie Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰↱	
Traffic Volume (vph)	0	3	5	327	2	77	11	469	593	59	285	1
Future Volume (vph)	0	3	5	327	2	77	11	469	593	59	285	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1794	1601		1881	1601		3547	
Flt Permitted		1.00	1.00		0.73	1.00		0.99	1.00		0.69	
Satd. Flow (perm)		1883	1601		1367	1601		1860	1601		2477	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	3	5	355	2	84	12	510	645	64	310	1
RTOR Reduction (vph)	0	0	4	0	0	61	0	0	411	0	0	0
Lane Group Flow (vph)	0	3	1	0	357	23	0	522	234	0	375	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		16.5	16.5		22.0	16.5		21.8	21.8		21.8	
Effective Green, g (s)		16.5	16.5		22.0	16.5		21.8	21.8		21.8	
Actuated g/C Ratio		0.28	0.28		0.37	0.28		0.36	0.36		0.36	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		517	440		540	440		675	581		899	
v/s Ratio Prot		0.00			c0.06							
v/s Ratio Perm			0.00		c0.18	0.01		c0.28	0.15		0.15	
v/c Ratio		0.01	0.00		0.66	0.05		0.77	0.40		0.42	
Uniform Delay, d1		15.8	15.8		15.9	16.0		16.9	14.2		14.3	
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		0.0	0.0		3.0	0.2		8.4	2.1		1.4	
Delay (s)		15.8	15.8		18.9	16.2		25.3	16.3		15.8	
Level of Service		B	B		B	B		C	B		B	
Approach Delay (s)		15.8			18.4			20.3			15.8	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay			19.0									
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			60.0									
Intersection Capacity Utilization			73.3%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Shaughnessy Street & Grant Avenue










PM Total 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	6	1070	15	7	610
Future Volume (Veh/h)	6	6	1070	15	7	610
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	7	1163	16	8	663
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.86	0.85			0.85	
vC, conflicting volume	1518	590			1179	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1103	151			847	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	99			99	
cM capacity (veh/h)	175	735			665	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	14	775	404	229	442	
Volume Left	7	0	0	8	0	
Volume Right	7	0	16	0	0	
cSH	283	1700	1700	665	1700	
Volume to Capacity	0.05	0.46	0.24	0.01	0.26	
Queue Length 95th (m)	1.2	0.0	0.0	0.3	0.0	
Control Delay (s)	18.4	0.0	0.0	0.5	0.0	
Lane LOS	C			A		
Approach Delay (s)	18.4	0.0		0.2		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			40.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

PM Total 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	3	1082	24	3	625
Future Volume (Veh/h)	8	3	1082	24	3	625
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	3	1176	26	3	679
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			49			167
pX, platoon unblocked	0.84	0.84			0.84	
vC, conflicting volume	1534	601			1202	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1224	147			862	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	100			100	
cM capacity (veh/h)	144	734			652	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	784	418	229	453	
Volume Left	9	0	0	3	0	
Volume Right	3	0	26	0	0	
cSH	180	1700	1700	652	1700	
Volume to Capacity	0.07	0.46	0.25	0.00	0.27	
Queue Length 95th (m)	1.6	0.0	0.0	0.1	0.0	
Control Delay (s)	26.4	0.0	0.0	0.2	0.0	
Lane LOS	D			A		
Approach Delay (s)	26.4	0.0		0.1		
Approach LOS	D					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			40.7%	ICU Level of Service		A
Analysis Period (min)			15			


4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	15	89	1261	676
v/c Ratio	0.06	0.37	0.48	0.26
Control Delay	12.7	20.8	4.9	3.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.7	20.8	4.9	3.8
Queue Length 50th (m)	0.4	6.1	26.2	11.5
Queue Length 95th (m)	4.0	15.5	49.4	22.4
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	546	501	2646	2580
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.18	0.48	0.26
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

PM Total 2020

4: Shaughnessy Street & Fraser Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	3	1	10	60	2	20	12	1080	68	14	605	3
Future Volume (vph)	3	1	10	60	2	20	12	1080	68	14	605	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.90			0.97			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1680			1756			3545			3572	
Flt Permitted		0.92			0.78			0.95			0.92	
Satd. Flow (perm)		1560			1411			3363			3296	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1	11	65	2	22	13	1174	74	15	658	3
RTOR Reduction (vph)	0	10	0	0	20	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	5	0	0	69	0	0	1256	0	0	676	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.8			5.8			39.2			38.9	
Effective Green, g (s)		5.8			5.8			39.2			38.9	
Actuated g/C Ratio		0.11			0.11			0.71			0.71	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		164			148			2396			2331	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.05			c0.37			0.21	
v/c Ratio		0.03			0.47			0.52			0.29	
Uniform Delay, d1		22.1			23.1			3.6			3.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			2.3			0.8			0.3	
Delay (s)		22.2			25.5			4.4			3.3	
Level of Service		C			C			A			A	
Approach Delay (s)		22.2			25.5			4.4			3.3	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		5.1			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		55.0			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		60.2%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	28	675	33	438	66	25
v/c Ratio	0.04	0.50	0.07	0.32	0.13	0.05
Control Delay	7.2	9.9	7.6	7.6	9.4	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	9.9	7.6	7.6	9.4	11.4
Queue Length 50th (m)	1.5	53.3	1.8	28.4	2.1	1.0
Queue Length 95th (m)	4.7	86.3	5.6	46.9	9.5	5.5
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	659	1359	449	1351	523	502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.50	0.07	0.32	0.13	0.05
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

PM Total 2020








												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	614	7	30	379	24	15	8	38	7	4	12
Future Volume (vph)	26	614	7	30	379	24	15	8	38	7	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1789	1880		1789	1867			1705			1724	
Flt Permitted	0.48	1.00		0.33	1.00			0.93			0.92	
Satd. Flow (perm)	911	1880		622	1867			1609			1603	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	667	8	33	412	26	16	9	41	8	4	13
RTOR Reduction (vph)	0	0	0	0	3	0	0	33	0	0	11	0
Lane Group Flow (vph)	28	675	0	33	435	0	0	33	0	0	14	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Effective Green, g (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	602	1243		411	1235			297			295	
v/s Ratio Prot		c0.36			0.23							
v/s Ratio Perm	0.03			0.05				c0.02			0.01	
v/c Ratio	0.05	0.54		0.08	0.35			0.11			0.05	
Uniform Delay, d1	3.8	5.8		3.9	4.9			22.1			21.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	1.7		0.4	0.8			0.2			0.1	
Delay (s)	4.0	7.5		4.3	5.6			22.2			21.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		7.4			5.6			22.2			21.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay		7.8			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.45										
Actuated Cycle Length (s)		65.0			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		57.7%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 6: Laneway & Flint Street

PM Total 2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	1	0	44	35	4
Future Volume (Veh/h)	4	1	0	44	35	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	1	0	48	38	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)					190	
pX, platoon unblocked						
vC, conflicting volume	88	40	42			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	88	40	42			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	913	1031	1567			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	5	48	42			
Volume Left	4	0	0			
Volume Right	1	0	4			
cSH	934	1567	1700			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.9	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.9	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

1: Shaughnessy Street & Prairie Avenue

							
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	3	5	375	87	548	676	393
v/c Ratio	0.01	0.01	0.71	0.16	0.80	0.66	0.44
Control Delay	16.3	0.0	22.9	2.1	24.3	6.5	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	0.0	22.9	2.1	24.3	6.5	16.2
Queue Length 50th (m)	0.3	0.0	27.0	0.0	24.3	1.0	16.5
Queue Length 95th (m)	1.9	0.0	#50.8	3.5	#93.4	31.8	27.1
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	505	533	531	533	687	1018	890
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.71	0.16	0.80	0.66	0.44


Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

PM Total 2025










1: Shaughnessy Street & Prairie Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰↱	
Traffic Volume (vph)	0	3	5	343	2	80	12	492	622	62	299	1
Future Volume (vph)	0	3	5	343	2	80	12	492	622	62	299	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1794	1601		1881	1601		3547	
Flt Permitted		1.00	1.00		0.73	1.00		0.99	1.00		0.67	
Satd. Flow (perm)		1883	1601		1367	1601		1858	1601		2409	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	3	5	373	2	87	13	535	676	67	325	1
RTOR Reduction (vph)	0	0	4	0	0	64	0	0	426	0	0	0
Lane Group Flow (vph)	0	3	1	0	375	23	0	548	250	0	393	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		16.1	16.1		21.6	16.1		22.2	22.2		22.2	
Effective Green, g (s)		16.1	16.1		21.6	16.1		22.2	22.2		22.2	
Actuated g/C Ratio		0.27	0.27		0.36	0.27		0.37	0.37		0.37	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		505	429		531	429		687	592		891	
v/s Ratio Prot		0.00			c0.06							
v/s Ratio Perm			0.00		c0.19	0.01		c0.29	0.16		0.16	
v/c Ratio		0.01	0.00		0.71	0.05		0.80	0.42		0.44	
Uniform Delay, d1		16.1	16.1		16.5	16.3		16.9	14.1		14.2	
Progression Factor		1.00	1.00		1.00	1.00		0.84	2.08		1.00	
Incremental Delay, d2		0.0	0.0		4.3	0.2		8.2	1.9		1.6	
Delay (s)		16.1	16.1		20.7	16.5		22.5	31.3		15.8	
Level of Service		B	B		C	B		C	C		B	
Approach Delay (s)		16.1			19.9			27.3			15.8	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay			23.5									
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			60.0									
Intersection Capacity Utilization			75.9%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Shaughnessy Street & Grant Avenue










PM Total 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	6	1122	16	7	639
Future Volume (Veh/h)	6	6	1122	16	7	639
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	7	1220	17	8	695
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.85	0.83			0.83	
vC, conflicting volume	1592	618			1237	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1132	123			870	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	99			99	
cM capacity (veh/h)	165	749			638	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	14	813	424	240	463	
Volume Left	7	0	0	8	0	
Volume Right	7	0	17	0	0	
cSH	270	1700	1700	638	1700	
Volume to Capacity	0.05	0.48	0.25	0.01	0.27	
Queue Length 95th (m)	1.2	0.0	0.0	0.3	0.0	
Control Delay (s)	19.1	0.0	0.0	0.5	0.0	
Lane LOS	C			A		
Approach Delay (s)	19.1	0.0		0.2		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			41.5%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

PM Total 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	3	1135	24	3	656
Future Volume (Veh/h)	8	3	1135	24	3	656
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	3	1234	26	3	713
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.83	0.82			0.82	
vC, conflicting volume	1610	630			1260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1258	126			890	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	100			100	
cM capacity (veh/h)	135	743			624	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	823	437	241	475	
Volume Left	9	0	0	3	0	
Volume Right	3	0	26	0	0	
cSH	169	1700	1700	624	1700	
Volume to Capacity	0.07	0.48	0.26	0.00	0.28	
Queue Length 95th (m)	1.7	0.0	0.0	0.1	0.0	
Control Delay (s)	27.9	0.0	0.0	0.2	0.0	
Lane LOS	D			A		
Approach Delay (s)	27.9	0.0		0.1		
Approach LOS	D					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			42.1%	ICU Level of Service		A
Analysis Period (min)			15			

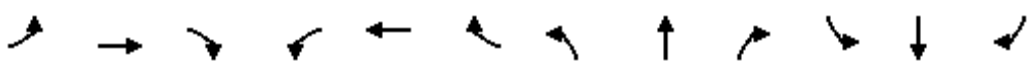
4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	16	93	1324	709
v/c Ratio	0.07	0.41	0.53	0.29
Control Delay	13.7	23.4	5.7	3.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.7	23.4	5.7	3.1
Queue Length 50th (m)	0.4	7.1	29.3	4.5
Queue Length 95th (m)	4.4	17.2	54.9	14.2
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	505	462	2495	2419
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.53	0.29
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue

PM Total 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	3	1	11	63	2	21	13	1133	72	15	635	3
Future Volume (vph)	3	1	11	63	2	21	13	1133	72	15	635	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.90			0.97			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1677			1756			3545			3572	
Flt Permitted		0.93			0.77			0.95			0.92	
Satd. Flow (perm)		1568			1409			3359			3279	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1	12	68	2	23	14	1232	78	16	690	3
RTOR Reduction (vph)	0	11	0	0	20	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	6	0	0	73	0	0	1319	0	0	709	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.5			7.5			42.5			42.2	
Effective Green, g (s)		7.5			7.5			42.5			42.2	
Actuated g/C Ratio		0.12			0.12			0.71			0.70	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		196			176			2379			2306	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.05			c0.39			0.22	
v/c Ratio		0.03			0.41			0.55			0.31	
Uniform Delay, d1		23.0			24.2			4.2			3.4	
Progression Factor		1.00			1.00			1.00			0.71	
Incremental Delay, d2		0.1			1.6			0.9			0.3	
Delay (s)		23.1			25.8			5.1			2.7	
Level of Service		C			C			A			A	
Approach Delay (s)		23.1			25.8			5.1			2.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			5.4									
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			60.0									
Intersection Capacity Utilization			62.7%									
Analysis Period (min)			15									
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	29	708	34	461	70	26
v/c Ratio	0.05	0.52	0.08	0.34	0.13	0.05
Control Delay	7.2	10.3	7.8	7.8	9.4	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	10.3	7.8	7.8	9.4	11.2
Queue Length 50th (m)	1.5	57.4	1.8	30.4	2.3	1.0
Queue Length 95th (m)	4.8	93.4	5.8	50.1	9.9	5.6
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	637	1359	423	1351	524	502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.52	0.08	0.34	0.13	0.05
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

PM Total 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	644	7	31	398	26	16	9	40	7	4	13
Future Volume (vph)	27	644	7	31	398	26	16	9	40	7	4	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.92			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1789	1880		1789	1866			1707			1720	
Flt Permitted	0.47	1.00		0.31	1.00			0.93			0.92	
Satd. Flow (perm)	881	1880		585	1866			1609			1602	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	700	8	34	433	28	17	10	43	8	4	14
RTOR Reduction (vph)	0	0	0	0	3	0	0	35	0	0	11	0
Lane Group Flow (vph)	29	708	0	34	458	0	0	35	0	0	15	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Effective Green, g (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	582	1243		387	1234			297			295	
v/s Ratio Prot		c0.38			0.25							
v/s Ratio Perm	0.03			0.06				c0.02			0.01	
v/c Ratio	0.05	0.57		0.09	0.37			0.12			0.05	
Uniform Delay, d1	3.8	6.0		4.0	4.9			22.1			21.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	1.9		0.4	0.9			0.2			0.1	
Delay (s)	4.0	7.9		4.4	5.8			22.3			21.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		7.7			5.7			22.3			21.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			8.0			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			59.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

PM Total 2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	1	0	46	36	4
Future Volume (Veh/h)	4	1	0	46	36	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	1	0	50	39	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)					190	
pX, platoon unblocked						
vC, conflicting volume	91	41	43			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	91	41	43			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	909	1030	1566			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	5	50	43			
Volume Left	4	0	0			
Volume Right	1	0	4			
cSH	931	1566	1700			
Volume to Capacity	0.01	0.00	0.03			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.9	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.9	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Queues

Existing SAT


1: Shaughnessy Street & Prairie Avenue

	→	↘	←	↖	↑	↗	↓
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	1	10	363	71	330	324	395
v/c Ratio	0.00	0.01	0.49	0.09	0.58	0.45	0.47
Control Delay	14.0	0.0	15.2	2.4	32.8	5.2	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	0.0	15.2	2.4	32.8	5.2	28.9
Queue Length 50th (m)	0.1	0.0	32.7	0.0	50.8	0.0	30.6
Queue Length 95th (m)	1.0	0.0	49.8	4.9	78.1	18.0	44.3
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	874	791	740	791	565	716	839
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.01	0.49	0.09	0.58	0.45	0.47
Intersection Summary							

HCM Signalized Intersection Capacity Analysis










Existing SAT

1: Shaughnessy Street & Prairie Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰↱	
Traffic Volume (vph)	0	1	9	332	2	65	12	292	298	53	310	0
Future Volume (vph)	0	1	9	332	2	65	12	292	298	53	310	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1794	1601		1880	1601		3552	
Flt Permitted		1.00	1.00		0.73	1.00		0.98	1.00		0.76	
Satd. Flow (perm)		1883	1601		1370	1601		1841	1601		2729	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1	10	361	2	71	13	317	324	58	337	0
RTOR Reduction (vph)	0	0	5	0	0	38	0	0	224	0	0	0
Lane Group Flow (vph)	0	1	5	0	363	33	0	330	100	0	395	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		44.1	44.1		49.6	44.1		29.2	29.2		29.2	
Effective Green, g (s)		44.1	44.1		49.6	44.1		29.2	29.2		29.2	
Actuated g/C Ratio		0.46	0.46		0.52	0.46		0.31	0.31		0.31	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		874	743		739	743		565	492		838	
v/s Ratio Prot		0.00			c0.03							
v/s Ratio Perm			0.00		c0.23	0.02		c0.18	0.06		0.14	
v/c Ratio		0.00	0.01		0.49	0.04		0.58	0.20		0.47	
Uniform Delay, d1		13.6	13.7		14.6	13.9		27.8	24.3		26.6	
Progression Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		0.0	0.0		0.5	0.1		4.4	0.9		1.9	
Delay (s)		13.6	13.7		15.1	14.0		32.1	25.2		28.5	
Level of Service		B	B		B	B		C	C		C	
Approach Delay (s)		13.7			14.9			28.7			28.5	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			24.6									
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			95.0									
Intersection Capacity Utilization			64.8%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: Shaughnessy Street & Grant Avenue










Existing SAT

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	2	599	8	1	654
Future Volume (Veh/h)	9	2	599	8	1	654
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	2	651	9	1	711
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.94	0.98			0.98	
vC, conflicting volume	1013	330			660	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	797	278			615	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	305	705			943	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	434	226	238	474	
Volume Left	10	0	0	1	0	
Volume Right	2	0	9	0	0	
cSH	336	1700	1700	943	1700	
Volume to Capacity	0.04	0.26	0.13	0.00	0.28	
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	
Control Delay (s)	16.1	0.0	0.0	0.0	0.0	
Lane LOS	C			A		
Approach Delay (s)	16.1	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			28.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

Existing SAT

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	0	536	3	1	575
Future Volume (Veh/h)	3	0	536	3	1	575
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	0	583	3	1	625
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.98	0.96			0.96	
vC, conflicting volume	899	293			586	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	680	186			491	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	376	793			1028	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	3	389	197	209	417	
Volume Left	3	0	0	1	0	
Volume Right	0	0	3	0	0	
cSH	376	1700	1700	1028	1700	
Volume to Capacity	0.01	0.23	0.12	0.00	0.25	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	
Control Delay (s)	14.6	0.0	0.0	0.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	14.6	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			26.6%	ICU Level of Service		A
Analysis Period (min)			15			

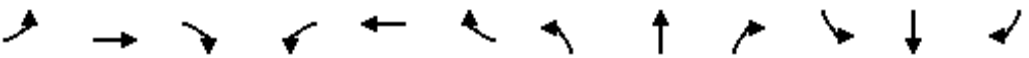
4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	25	53	708	720
v/c Ratio	0.12	0.30	0.26	0.25
Control Delay	11.0	20.4	2.4	2.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.0	20.4	2.4	2.5
Queue Length 50th (m)	0.0	2.7	10.8	11.4
Queue Length 95th (m)	5.3	11.6	19.1	19.8
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	700	604	2749	2870
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.04	0.09	0.26	0.25
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue

Existing SAT

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	1	0	22	38	0	11	25	588	39	3	657	3
Future Volume (vph)	1	0	22	38	0	11	25	588	39	3	657	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.87			0.97			0.99			1.00	
Flt Protected		1.00			0.96			1.00			1.00	
Satd. Flow (prot)		1636			1758			3540			3576	
Flt Permitted		0.98			0.76			0.92			0.95	
Satd. Flow (perm)		1610			1384			3251			3410	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	0	24	41	0	12	27	639	42	3	714	3
RTOR Reduction (vph)	0	23	0	0	29	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	24	0	0	705	0	0	720	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.9			4.9			55.1			54.8	
Effective Green, g (s)		4.9			4.9			55.1			54.8	
Actuated g/C Ratio		0.07			0.07			0.79			0.78	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		112			96			2559			2669	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.02			c0.22			0.21	
v/c Ratio		0.02			0.25			0.28			0.27	
Uniform Delay, d1		30.3			30.8			2.0			2.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			1.4			0.3			0.2	
Delay (s)		30.4			32.2			2.3			2.3	
Level of Service		C			C			A			A	
Approach Delay (s)		30.4			32.2			2.3			2.3	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		3.8			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.27										
Actuated Cycle Length (s)		70.0			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		53.7%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												








5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	14	369	22	416	34	22
v/c Ratio	0.02	0.27	0.03	0.31	0.07	0.04
Control Delay	7.2	7.3	7.2	7.6	9.9	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	7.3	7.2	7.6	9.9	12.4
Queue Length 50th (m)	0.7	23.0	1.1	26.8	1.0	1.1
Queue Length 95th (m)	2.9	38.5	3.9	44.3	6.3	5.3
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	680	1356	726	1358	518	494
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.27	0.03	0.31	0.07	0.04
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

Existing SAT

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	328	11	20	374	8	6	5	20	9	3	8
Future Volume (vph)	13	328	11	20	374	8	6	5	20	9	3	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1789	1874		1789	1877			1701			1740	
Flt Permitted	0.50	1.00		0.53	1.00			0.95			0.89	
Satd. Flow (perm)	940	1874		1004	1877			1636			1586	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	357	12	22	407	9	7	5	22	10	3	9
RTOR Reduction (vph)	0	1	0	0	1	0	0	18	0	0	7	0
Lane Group Flow (vph)	14	368	0	22	415	0	0	16	0	0	15	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Effective Green, g (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	621	1239		664	1241			302			292	
v/s Ratio Prot		0.20			c0.22							
v/s Ratio Perm	0.01			0.02				c0.01			0.01	
v/c Ratio	0.02	0.30		0.03	0.33			0.05			0.05	
Uniform Delay, d1	3.8	4.6		3.8	4.8			21.8			21.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.6		0.1	0.7			0.1			0.1	
Delay (s)	3.8	5.2		3.9	5.5			21.9			21.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		5.2			5.4			21.9			21.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			6.4			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.27									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			54.2%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

Existing SAT

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	1	22	33	0
Future Volume (Veh/h)	0	0	1	22	33	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1	24	36	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					190	
pX, platoon unblocked						
vC, conflicting volume	62	36	36			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	62	36	36			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	944	1037	1575			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	25	36			
Volume Left	0	1	0			
Volume Right	0	0	0			
cSH	1700	1575	1700			
Volume to Capacity	0.00	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	0.0	0.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.1				
Intersection Capacity Utilization		6.7%	ICU Level of Service	A		
Analysis Period (min)		15				





















1: Shaughnessy Street & Prairie Avenue

	→	↘	←	↖	↑	↗	↓
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	1	10	370	72	337	330	402
v/c Ratio	0.00	0.02	0.63	0.12	0.60	0.46	0.45
Control Delay	14.0	0.0	16.1	0.6	19.1	4.0	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	0.0	16.1	0.6	19.1	4.0	17.4
Queue Length 50th (m)	0.1	0.0	21.3	0.0	28.1	9.9	16.6
Queue Length 95th (m)	0.9	0.0	37.5	0.8	49.7	4.9	27.2
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	564	588	590	588	560	718	893
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.02	0.63	0.12	0.60	0.46	0.45
Intersection Summary							

HCM Signalized Intersection Capacity Analysis










SAT Background 2020

1: Shaughnessy Street & Prairie Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	9	339	2	66	12	298	304	54	316	0
Future Volume (vph)	0	1	9	339	2	66	12	298	304	54	316	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1794	1601		1880	1601		3552	
Flt Permitted		1.00	1.00		0.73	1.00		0.98	1.00		0.82	
Satd. Flow (perm)		1883	1601		1370	1601		1837	1601		2924	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1	10	368	2	72	13	324	330	59	343	0
RTOR Reduction (vph)	0	0	7	0	0	50	0	0	229	0	0	0
Lane Group Flow (vph)	0	1	3	0	370	22	0	337	101	0	402	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		16.5	16.5		22.0	16.5		16.8	16.8		16.8	
Effective Green, g (s)		16.5	16.5		22.0	16.5		16.8	16.8		16.8	
Actuated g/C Ratio		0.30	0.30		0.40	0.30		0.31	0.31		0.31	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		564	480		590	480		561	489		893	
v/s Ratio Prot		0.00			c0.06							
v/s Ratio Perm			0.00		c0.19	0.01		c0.18	0.06		0.14	
v/c Ratio		0.00	0.01		0.63	0.05		0.60	0.21		0.45	
Uniform Delay, d1		13.5	13.5		13.2	13.7		16.2	14.2		15.4	
Progression Factor		1.00	1.00		1.00	1.00		0.85	0.80		1.00	
Incremental Delay, d2		0.0	0.0		2.1	0.2		4.6	0.9		1.6	
Delay (s)		13.5	13.5		15.3	13.8		18.5	12.2		17.0	
Level of Service		B	B		B	B		B	B		B	
Approach Delay (s)		13.5			15.1			15.4			17.0	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			15.7									
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			55.0									
Intersection Capacity Utilization			65.7%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: Shaughnessy Street & Grant Avenue












SAT Background 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	2	611	8	1	667
Future Volume (Veh/h)	9	2	611	8	1	667
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	2	664	9	1	725
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.96	0.98			0.98	
vC, conflicting volume	1033	336			673	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	838	269			614	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	293	711			938	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	443	230	243	483	
Volume Left	10	0	0	1	0	
Volume Right	2	0	9	0	0	
cSH	325	1700	1700	938	1700	
Volume to Capacity	0.04	0.26	0.14	0.00	0.28	
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	
Control Delay (s)	16.5	0.0	0.0	0.0	0.0	
Lane LOS	C			A		
Approach Delay (s)	16.5	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			29.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

SAT Background 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	3	0	547	3	1	587
Future Volume (Veh/h)	3	0	547	3	1	587
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	0	595	3	1	638
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	918	299			598	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	811	161			475	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	302	814			1031	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	3	397	201	214	425	
Volume Left	3	0	0	1	0	
Volume Right	0	0	3	0	0	
cSH	302	1700	1700	1031	1700	
Volume to Capacity	0.01	0.23	0.12	0.00	0.25	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	
Control Delay (s)	17.1	0.0	0.0	0.0	0.0	
Lane LOS	C			A		
Approach Delay (s)	17.1	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			26.9%	ICU Level of Service		A
Analysis Period (min)			15			

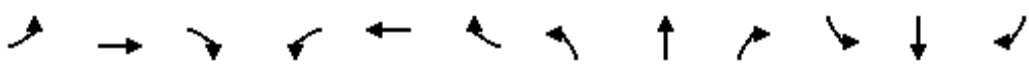
4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	25	54	723	734
v/c Ratio	0.10	0.24	0.27	0.27
Control Delay	6.5	13.3	3.0	4.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.5	13.3	3.0	4.5
Queue Length 50th (m)	0.0	1.3	11.0	18.3
Queue Length 95th (m)	3.8	8.9	19.2	21.6
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	582	513	2630	2742
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.04	0.11	0.27	0.27
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue

SAT Background 2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	1	0	22	39	0	11	26	600	40	3	670	3
Future Volume (vph)	1	0	22	39	0	11	26	600	40	3	670	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.87			0.97			0.99			1.00	
Flt Protected		1.00			0.96			1.00			1.00	
Satd. Flow (prot)		1636			1759			3540			3576	
Flt Permitted		0.98			0.77			0.92			0.95	
Satd. Flow (perm)		1610			1412			3254			3409	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	0	24	42	0	12	28	652	43	3	728	3
RTOR Reduction (vph)	0	23	0	0	37	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	17	0	0	719	0	0	734	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.6			4.6			40.4			40.1	
Effective Green, g (s)		4.6			4.6			40.4			40.1	
Actuated g/C Ratio		0.08			0.08			0.73			0.73	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		134			118			2390			2485	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.01			c0.22			0.22	
v/c Ratio		0.02			0.15			0.30			0.30	
Uniform Delay, d1		23.1			23.4			2.5			2.6	
Progression Factor		1.00			1.00			1.00			1.52	
Incremental Delay, d2		0.0			0.6			0.3			0.3	
Delay (s)		23.2			24.0			2.8			4.2	
Level of Service		C			C			A			A	
Approach Delay (s)		23.2			24.0			2.8			4.2	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			4.5									
HCM 2000 Volume to Capacity ratio			0.29									
Actuated Cycle Length (s)			55.0									
Intersection Capacity Utilization			54.9%									
Analysis Period (min)			15									
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	14	376	22	423	34	22
v/c Ratio	0.02	0.28	0.03	0.31	0.07	0.04
Control Delay	7.3	7.3	7.2	7.6	9.9	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	7.3	7.2	7.6	9.9	12.4
Queue Length 50th (m)	0.7	23.5	1.1	27.5	1.0	1.1
Queue Length 95th (m)	2.9	39.3	3.9	45.3	6.3	5.3
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	672	1356	719	1358	518	494
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.28	0.03	0.31	0.07	0.04
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

SAT Background 2020








												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	335	11	20	381	8	6	5	20	9	3	8
Future Volume (vph)	13	335	11	20	381	8	6	5	20	9	3	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1789	1874		1789	1877			1701			1740	
Flt Permitted	0.49	1.00		0.53	1.00			0.95			0.89	
Satd. Flow (perm)	931	1874		995	1877			1636			1586	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	364	12	22	414	9	7	5	22	10	3	9
RTOR Reduction (vph)	0	1	0	0	1	0	0	18	0	0	7	0
Lane Group Flow (vph)	14	375	0	22	422	0	0	16	0	0	15	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Effective Green, g (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	615	1239		658	1241			302			292	
v/s Ratio Prot		0.20			c0.22							
v/s Ratio Perm	0.02			0.02				c0.01			0.01	
v/c Ratio	0.02	0.30		0.03	0.34			0.05			0.05	
Uniform Delay, d1	3.8	4.7		3.8	4.8			21.8			21.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.6		0.1	0.7			0.1			0.1	
Delay (s)	3.8	5.3		3.9	5.5			21.9			21.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		5.2			5.5			21.9			21.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay		6.4			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.28										
Actuated Cycle Length (s)		65.0			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		54.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

SAT Background 2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	1	22	34	0
Future Volume (Veh/h)	0	0	1	22	34	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1	24	37	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					190	
pX, platoon unblocked						
vC, conflicting volume	63	37	37			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	63	37	37			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	942	1035	1574			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	25	37			
Volume Left	0	1	0			
Volume Right	0	0	0			
cSH	1700	1574	1700			
Volume to Capacity	0.00	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	0.0	0.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.1				
Intersection Capacity Utilization		6.7%		ICU Level of Service		A
Analysis Period (min)		15				


1: Shaughnessy Street & Prairie Avenue

							
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	1	11	388	76	353	347	423
v/c Ratio	0.00	0.02	0.66	0.13	0.62	0.47	0.48
Control Delay	14.0	0.1	17.6	0.8	19.4	3.9	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	0.1	17.6	0.8	19.4	3.9	17.6
Queue Length 50th (m)	0.1	0.0	22.8	0.0	29.6	10.4	17.6
Queue Length 95th (m)	0.9	0.0	40.1	1.3	41.8	5.6	28.5
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	558	583	585	583	566	734	883
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.02	0.66	0.13	0.62	0.47	0.48
Intersection Summary							

HCM Signalized Intersection Capacity Analysis










SAT Background 2025

1: Shaughnessy Street & Prairie Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰↱	
Traffic Volume (vph)	0	1	10	355	2	70	13	312	319	57	332	0
Future Volume (vph)	0	1	10	355	2	70	13	312	319	57	332	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1794	1601		1880	1601		3553	
Flt Permitted		1.00	1.00		0.73	1.00		0.97	1.00		0.80	
Satd. Flow (perm)		1883	1601		1370	1601		1833	1601		2859	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1	11	386	2	76	14	339	347	62	361	0
RTOR Reduction (vph)	0	0	8	0	0	53	0	0	240	0	0	0
Lane Group Flow (vph)	0	1	3	0	388	23	0	353	107	0	423	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		16.3	16.3		21.8	16.3		17.0	17.0		17.0	
Effective Green, g (s)		16.3	16.3		21.8	16.3		17.0	17.0		17.0	
Actuated g/C Ratio		0.30	0.30		0.40	0.30		0.31	0.31		0.31	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		558	474		585	474		566	494		883	
v/s Ratio Prot		0.00			c0.07							
v/s Ratio Perm			0.00		c0.20	0.01		c0.19	0.07		0.15	
v/c Ratio		0.00	0.01		0.66	0.05		0.62	0.22		0.48	
Uniform Delay, d1		13.6	13.6		13.6	13.8		16.3	14.1		15.4	
Progression Factor		1.00	1.00		1.00	1.00		0.85	0.74		1.00	
Incremental Delay, d2		0.0	0.0		2.8	0.2		5.0	1.0		1.9	
Delay (s)		13.6	13.7		16.4	14.0		18.8	11.4		17.3	
Level of Service		B	B		B	B		B	B		B	
Approach Delay (s)		13.7			16.0			15.2			17.3	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			16.0									
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			55.0									
Intersection Capacity Utilization			67.9%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: Shaughnessy Street & Grant Avenue












SAT Background 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	2	641	9	1	700
Future Volume (Veh/h)	10	2	641	9	1	700
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	2	697	10	1	761
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.96	0.97			0.97	
vC, conflicting volume	1084	354			707	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	856	269			634	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	284	707			916	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	13	465	242	255	507	
Volume Left	11	0	0	1	0	
Volume Right	2	0	10	0	0	
cSH	313	1700	1700	916	1700	
Volume to Capacity	0.04	0.27	0.14	0.00	0.30	
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	
Control Delay (s)	17.0	0.0	0.0	0.0	0.0	
Lane LOS	C			A		
Approach Delay (s)	17.0	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			30.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

SAT Background 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	3	0	574	3	1	615
Future Volume (Veh/h)	3	0	574	3	1	615
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	0	624	3	1	668
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	962	314			627	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	845	160			492	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	285	810			1010	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	3	416	211	224	445	
Volume Left	3	0	0	1	0	
Volume Right	0	0	3	0	0	
cSH	285	1700	1700	1010	1700	
Volume to Capacity	0.01	0.24	0.12	0.00	0.26	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	
Control Delay (s)	17.8	0.0	0.0	0.0	0.0	
Lane LOS	C			A		
Approach Delay (s)	17.8	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			27.7%	ICU Level of Service		A
Analysis Period (min)			15			

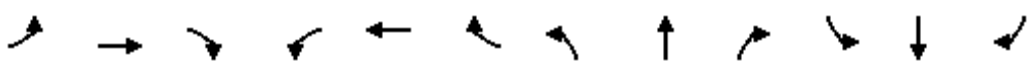
4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	27	58	759	770
v/c Ratio	0.11	0.26	0.29	0.28
Control Delay	7.0	14.0	3.1	4.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.0	14.0	3.1	4.4
Queue Length 50th (m)	0.0	1.6	11.7	19.2
Queue Length 95th (m)	4.0	9.4	20.7	20.7
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	582	503	2619	2735
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.05	0.12	0.29	0.28
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

4: Shaughnessy Street & Fraser Avenue

SAT Background 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	1	0	24	41	0	12	27	629	42	3	703	3
Future Volume (vph)	1	0	24	41	0	12	27	629	42	3	703	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.87			0.97			0.99			1.00	
Flt Protected		1.00			0.96			1.00			1.00	
Satd. Flow (prot)		1636			1758			3539			3576	
Flt Permitted		0.98			0.76			0.92			0.95	
Satd. Flow (perm)		1611			1381			3246			3409	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	0	26	45	0	13	29	684	46	3	764	3
RTOR Reduction (vph)	0	25	0	0	37	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	21	0	0	755	0	0	770	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.7			4.7			40.3			40.0	
Effective Green, g (s)		4.7			4.7			40.3			40.0	
Actuated g/C Ratio		0.09			0.09			0.73			0.73	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		137			118			2378			2479	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.02			c0.23			0.23	
v/c Ratio		0.02			0.18			0.32			0.31	
Uniform Delay, d1		23.0			23.4			2.6			2.6	
Progression Factor		1.00			1.00			1.00			1.44	
Incremental Delay, d2		0.0			0.7			0.4			0.3	
Delay (s)		23.1			24.1			2.9			4.1	
Level of Service		C			C			A			A	
Approach Delay (s)		23.1			24.1			2.9			4.1	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		4.6			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.31										
Actuated Cycle Length (s)		55.0			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		56.7%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	15	395	23	445	35	24
v/c Ratio	0.02	0.29	0.03	0.33	0.07	0.05
Control Delay	7.3	7.4	7.2	7.7	9.7	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	7.4	7.2	7.7	9.7	12.3
Queue Length 50th (m)	0.8	25.1	1.2	29.4	1.0	1.2
Queue Length 95th (m)	3.0	41.6	4.1	48.1	6.3	5.7
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	652	1356	700	1358	518	492
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.29	0.03	0.33	0.07	0.05
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










5: Flint Street & Prairie Avenue

SAT Background 2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	351	12	21	400	9	6	5	21	10	3	9
Future Volume (vph)	14	351	12	21	400	9	6	5	21	10	3	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1789	1874		1789	1877			1699			1738	
Flt Permitted	0.48	1.00		0.51	1.00			0.95			0.89	
Satd. Flow (perm)	902	1874		969	1877			1635			1578	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	382	13	23	435	10	7	5	23	11	3	10
RTOR Reduction (vph)	0	1	0	0	1	0	0	19	0	0	8	0
Lane Group Flow (vph)	15	394	0	23	444	0	0	16	0	0	16	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Effective Green, g (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	596	1239		641	1241			301			291	
v/s Ratio Prot		0.21			c0.24							
v/s Ratio Perm	0.02			0.02				0.01			c0.01	
v/c Ratio	0.03	0.32		0.04	0.36			0.05			0.05	
Uniform Delay, d1	3.8	4.7		3.8	4.9			21.8			21.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.7		0.1	0.8			0.1			0.1	
Delay (s)	3.9	5.4		3.9	5.7			21.9			21.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		5.3			5.6			21.9			21.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			6.5			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.29									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)				10.0		
Intersection Capacity Utilization			54.2%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

SAT Background 2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	1	24	35	0
Future Volume (Veh/h)	0	0	1	24	35	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1	26	38	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					190	
pX, platoon unblocked						
vC, conflicting volume	66	38	38			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	66	38	38			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	939	1034	1572			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	27	38			
Volume Left	0	1	0			
Volume Right	0	0	0			
cSH	1700	1572	1700			
Volume to Capacity	0.00	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	0.0	0.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.1				
Intersection Capacity Utilization		6.7%		ICU Level of Service		A
Analysis Period (min)		15				


1: Shaughnessy Street & Prairie Avenue

	→	↘	←	↖	↑	↗	↓
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	1	10	370	72	341	330	405
v/c Ratio	0.00	0.02	0.63	0.12	0.61	0.46	0.46
Control Delay	14.0	0.0	16.1	0.6	19.3	3.9	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	0.0	16.1	0.6	19.3	3.9	17.4
Queue Length 50th (m)	0.1	0.0	21.3	0.0	28.6	9.9	16.7
Queue Length 95th (m)	0.9	0.0	37.5	0.8	50.5	5.4	27.3
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	564	588	590	588	561	718	889
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.02	0.63	0.12	0.61	0.46	0.46
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

SAT Total 2020










1: Shaughnessy Street & Prairie Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰↱	
Traffic Volume (vph)	0	1	9	339	2	66	12	302	304	54	318	0
Future Volume (vph)	0	1	9	339	2	66	12	302	304	54	318	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1794	1601		1880	1601		3553	
Flt Permitted		1.00	1.00		0.73	1.00		0.98	1.00		0.81	
Satd. Flow (perm)		1883	1601		1370	1601		1837	1601		2912	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1	10	368	2	72	13	328	330	59	346	0
RTOR Reduction (vph)	0	0	7	0	0	50	0	0	229	0	0	0
Lane Group Flow (vph)	0	1	3	0	370	22	0	341	101	0	405	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		16.5	16.5		22.0	16.5		16.8	16.8		16.8	
Effective Green, g (s)		16.5	16.5		22.0	16.5		16.8	16.8		16.8	
Actuated g/C Ratio		0.30	0.30		0.40	0.30		0.31	0.31		0.31	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		564	480		590	480		561	489		889	
v/s Ratio Prot		0.00			c0.06							
v/s Ratio Perm			0.00		c0.19	0.01		c0.19	0.06		0.14	
v/c Ratio		0.00	0.01		0.63	0.05		0.61	0.21		0.46	
Uniform Delay, d1		13.5	13.5		13.2	13.7		16.3	14.2		15.4	
Progression Factor		1.00	1.00		1.00	1.00		0.86	0.77		1.00	
Incremental Delay, d2		0.0	0.0		2.1	0.2		4.8	0.9		1.7	
Delay (s)		13.5	13.5		15.3	13.8		18.7	11.8		17.1	
Level of Service		B	B		B	B		B	B		B	
Approach Delay (s)		13.5			15.1			15.3			17.1	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			15.7									
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			55.0									
Intersection Capacity Utilization			66.0%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Shaughnessy Street & Grant Avenue










SAT Total 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	2	615	8	1	669
Future Volume (Veh/h)	9	2	615	8	1	669
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	2	668	9	1	727
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.96	0.98			0.98	
vC, conflicting volume	1038	338			677	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	842	272			619	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	291	708			934	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	445	232	243	485	
Volume Left	10	0	0	1	0	
Volume Right	2	0	9	0	0	
cSH	322	1700	1700	934	1700	
Volume to Capacity	0.04	0.26	0.14	0.00	0.29	
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	
Control Delay (s)	16.6	0.0	0.0	0.0	0.0	
Lane LOS	C			A		
Approach Delay (s)	16.6	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			29.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

SAT Total 2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	4	547	11	3	587
Future Volume (Veh/h)	8	4	547	11	3	587
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	4	595	12	3	638
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	926	304			607	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	817	161			481	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	298	812			1024	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	13	397	210	216	425	
Volume Left	9	0	0	3	0	
Volume Right	4	0	12	0	0	
cSH	370	1700	1700	1024	1700	
Volume to Capacity	0.04	0.23	0.12	0.00	0.25	
Queue Length 95th (m)	0.8	0.0	0.0	0.1	0.0	
Control Delay (s)	15.1	0.0	0.0	0.1	0.0	
Lane LOS	C			A		
Approach Delay (s)	15.1	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			28.3%	ICU Level of Service		A
Analysis Period (min)			15			

















4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	25	54	731	740
v/c Ratio	0.10	0.24	0.28	0.27
Control Delay	6.5	13.3	3.0	4.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.5	13.3	3.0	4.4
Queue Length 50th (m)	0.0	1.3	11.2	18.4
Queue Length 95th (m)	3.8	8.9	19.4	19.5
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	582	513	2634	2742
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.04	0.11	0.28	0.27
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

SAT Total 2020



















4: Shaughnessy Street & Fraser Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	22	39	0	11	26	607	40	3	675	3
Future Volume (vph)	1	0	22	39	0	11	26	607	40	3	675	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.87			0.97			0.99			1.00	
Flt Protected		1.00			0.96			1.00			1.00	
Satd. Flow (prot)		1636			1759			3540			3576	
Flt Permitted		0.98			0.77			0.92			0.95	
Satd. Flow (perm)		1610			1412			3254			3409	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	0	24	42	0	12	28	660	43	3	734	3
RTOR Reduction (vph)	0	23	0	0	37	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	17	0	0	727	0	0	740	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.6			4.6			40.4			40.1	
Effective Green, g (s)		4.6			4.6			40.4			40.1	
Actuated g/C Ratio		0.08			0.08			0.73			0.73	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		134			118			2390			2485	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.01			c0.22			0.22	
v/c Ratio		0.02			0.15			0.30			0.30	
Uniform Delay, d1		23.1			23.4			2.5			2.6	
Progression Factor		1.00			1.00			1.00			1.47	
Incremental Delay, d2		0.0			0.6			0.3			0.3	
Delay (s)		23.2			24.0			2.8			4.1	
Level of Service		C			C			A			A	
Approach Delay (s)		23.2			24.0			2.8			4.1	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		4.5			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.29										
Actuated Cycle Length (s)		55.0			Sum of lost time (s)			10.3				
Intersection Capacity Utilization		55.1%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

5: Flint Street & Prairie Avenue










						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	14	376	25	423	41	22
v/c Ratio	0.02	0.28	0.03	0.31	0.08	0.04
Control Delay	7.3	7.3	7.2	7.6	9.5	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	7.3	7.2	7.6	9.5	12.4
Queue Length 50th (m)	0.7	23.5	1.3	27.5	1.2	1.1
Queue Length 95th (m)	2.9	39.3	4.2	45.3	6.9	5.3
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	672	1356	719	1358	524	493
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.28	0.03	0.31	0.08	0.04
Intersection Summary						

5: Flint Street & Prairie Avenue








												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	335	11	23	381	8	6	6	25	9	3	8
Future Volume (vph)	13	335	11	23	381	8	6	6	25	9	3	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1789	1874		1789	1877			1701			1740	
Flt Permitted	0.49	1.00		0.53	1.00			0.96			0.89	
Satd. Flow (perm)	931	1874		995	1877			1646			1582	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	364	12	25	414	9	7	7	27	10	3	9
RTOR Reduction (vph)	0	1	0	0	1	0	0	22	0	0	7	0
Lane Group Flow (vph)	14	375	0	25	422	0	0	19	0	0	15	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Effective Green, g (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	615	1239		658	1241			303			292	
v/s Ratio Prot		0.20			c0.22							
v/s Ratio Perm	0.02			0.03				c0.01			0.01	
v/c Ratio	0.02	0.30		0.04	0.34			0.06			0.05	
Uniform Delay, d1	3.8	4.7		3.8	4.8			21.9			21.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.6		0.1	0.7			0.1			0.1	
Delay (s)	3.8	5.3		3.9	5.5			21.9			21.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		5.2			5.5			21.9			21.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay		6.5			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.28										
Actuated Cycle Length (s)		65.0			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		54.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

SAT Total 2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	0	1	22	34	3
Future Volume (Veh/h)	5	0	1	22	34	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	1	24	37	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)					190	
pX, platoon unblocked						
vC, conflicting volume	64	38	40			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	64	38	40			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	941	1033	1570			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	5	25	40			
Volume Left	5	1	0			
Volume Right	0	0	3			
cSH	941	1570	1700			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.8	0.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.8	0.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.7				
Intersection Capacity Utilization		13.3%	ICU Level of Service		A	
Analysis Period (min)		15				


1: Shaughnessy Street & Prairie Avenue

							
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	1	11	388	76	357	347	425
v/c Ratio	0.00	0.02	0.66	0.13	0.63	0.47	0.48
Control Delay	14.0	0.1	17.6	0.8	19.6	3.9	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	0.1	17.6	0.8	19.6	3.9	17.7
Queue Length 50th (m)	0.1	0.0	22.8	0.0	30.0	0.0	17.7
Queue Length 95th (m)	0.9	0.0	40.1	1.3	40.4	5.6	28.6
Internal Link Dist (m)	174.9		317.5		91.2		162.8
Turn Bay Length (m)		25.0		25.0			
Base Capacity (vph)	558	583	585	583	566	734	880
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.02	0.66	0.13	0.63	0.47	0.48
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

SAT Total 2025










1: Shaughnessy Street & Prairie Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		↰	↱		↰↱	
Traffic Volume (vph)	0	1	10	355	2	70	13	316	319	57	334	0
Future Volume (vph)	0	1	10	355	2	70	13	316	319	57	334	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		0.95	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		0.95	1.00		1.00	1.00		0.99	
Satd. Flow (prot)		1883	1601		1794	1601		1880	1601		3553	
Flt Permitted		1.00	1.00		0.73	1.00		0.97	1.00		0.80	
Satd. Flow (perm)		1883	1601		1370	1601		1834	1601		2847	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1	11	386	2	76	14	343	347	62	363	0
RTOR Reduction (vph)	0	0	8	0	0	53	0	0	240	0	0	0
Lane Group Flow (vph)	0	1	3	0	388	23	0	357	107	0	425	0
Turn Type		NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4		4	4		4	2		2	2		
Actuated Green, G (s)		16.3	16.3		21.8	16.3		17.0	17.0		17.0	
Effective Green, g (s)		16.3	16.3		21.8	16.3		17.0	17.0		17.0	
Actuated g/C Ratio		0.30	0.30		0.40	0.30		0.31	0.31		0.31	
Clearance Time (s)		5.4	5.4		5.4	5.4		5.4	5.4		5.4	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		558	474		585	474		566	494		879	
v/s Ratio Prot		0.00			c0.07							
v/s Ratio Perm			0.00		c0.20	0.01		c0.19	0.07		0.15	
v/c Ratio		0.00	0.01		0.66	0.05		0.63	0.22		0.48	
Uniform Delay, d1		13.6	13.6		13.6	13.8		16.3	14.1		15.4	
Progression Factor		1.00	1.00		1.00	1.00		0.85	0.74		1.00	
Incremental Delay, d2		0.0	0.0		2.8	0.2		5.2	1.0		1.9	
Delay (s)		13.6	13.7		16.4	14.0		19.0	11.4		17.3	
Level of Service		B	B		B	B		B	B		B	
Approach Delay (s)		13.7			16.0			15.3			17.3	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			16.0									
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			55.0									
Intersection Capacity Utilization			68.2%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Shaughnessy Street & Grant Avenue










SAT Total 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	2	645	9	1	702
Future Volume (Veh/h)	10	2	645	9	1	702
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	2	701	10	1	763
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			101			115
pX, platoon unblocked	0.96	0.97			0.97	
vC, conflicting volume	1090	356			711	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	861	272			638	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	282	704			912	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	13	467	244	255	509	
Volume Left	11	0	0	1	0	
Volume Right	2	0	10	0	0	
cSH	311	1700	1700	912	1700	
Volume to Capacity	0.04	0.27	0.14	0.00	0.30	
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	
Control Delay (s)	17.1	0.0	0.0	0.0	0.0	
Lane LOS	C			A		
Approach Delay (s)	17.1	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			30.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaughnessy Street & Laneway

SAT Total 2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	4	574	11	3	615
Future Volume (Veh/h)	8	4	574	11	3	615
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	4	624	12	3	668
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)			49			167
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	970	318			636	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	849	161			497	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	283	808			1004	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	13	416	220	226	445	
Volume Left	9	0	0	3	0	
Volume Right	4	0	12	0	0	
cSH	353	1700	1700	1004	1700	
Volume to Capacity	0.04	0.24	0.13	0.00	0.26	
Queue Length 95th (m)	0.9	0.0	0.0	0.1	0.0	
Control Delay (s)	15.6	0.0	0.0	0.1	0.0	
Lane LOS	C			A		
Approach Delay (s)	15.6	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			29.1%	ICU Level of Service		A
Analysis Period (min)			15			


4: Shaughnessy Street & Fraser Avenue

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	27	58	767	776
v/c Ratio	0.11	0.26	0.29	0.28
Control Delay	7.0	14.0	3.1	4.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.0	14.0	3.1	4.4
Queue Length 50th (m)	0.0	1.6	12.0	19.4
Queue Length 95th (m)	4.0	9.4	21.0	21.3
Internal Link Dist (m)	176.1	96.9	140.9	24.9
Turn Bay Length (m)				
Base Capacity (vph)	582	503	2619	2735
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.05	0.12	0.29	0.28
Intersection Summary				







HCM Signalized Intersection Capacity Analysis

SAT Total 2025

4: Shaughnessy Street & Fraser Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	1	0	24	41	0	12	27	637	42	3	708	3
Future Volume (vph)	1	0	24	41	0	12	27	637	42	3	708	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3			4.7			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.87			0.97			0.99			1.00	
Flt Protected		1.00			0.96			1.00			1.00	
Satd. Flow (prot)		1636			1758			3540			3576	
Flt Permitted		0.98			0.76			0.92			0.95	
Satd. Flow (perm)		1611			1381			3246			3409	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	0	26	45	0	13	29	692	46	3	770	3
RTOR Reduction (vph)	0	25	0	0	37	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	2	0	0	21	0	0	763	0	0	776	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		4.7			4.7			40.3			40.0	
Effective Green, g (s)		4.7			4.7			40.3			40.0	
Actuated g/C Ratio		0.09			0.09			0.73			0.73	
Clearance Time (s)		5.3			5.3			4.7			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		137			118			2378			2479	
v/s Ratio Prot												
v/s Ratio Perm		0.00			c0.02			c0.23			0.23	
v/c Ratio		0.02			0.18			0.32			0.31	
Uniform Delay, d1		23.0			23.4			2.6			2.6	
Progression Factor		1.00			1.00			1.00			1.43	
Incremental Delay, d2		0.0			0.7			0.4			0.3	
Delay (s)		23.1			24.1			2.9			4.1	
Level of Service		C			C			A			A	
Approach Delay (s)		23.1			24.1			2.9			4.1	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			4.6									
HCM 2000 Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			55.0									
Intersection Capacity Utilization			56.9%									
Analysis Period (min)			15									
c Critical Lane Group												
<div> <div>HCM 2000 Level of Service</div> <div>A</div> </div> <div> <div>Sum of lost time (s)</div> <div>10.3</div> </div> <div> <div>ICU Level of Service</div> <div>B</div> </div>												



















5: Flint Street & Prairie Avenue

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	15	395	26	445	42	24
v/c Ratio	0.02	0.29	0.04	0.33	0.08	0.05
Control Delay	7.3	7.4	7.2	7.7	9.4	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	7.4	7.2	7.7	9.4	12.3
Queue Length 50th (m)	0.8	25.1	1.4	29.4	1.2	1.2
Queue Length 95th (m)	3.0	41.6	4.4	48.1	7.0	5.7
Internal Link Dist (m)		317.5		178.3	165.5	165.6
Turn Bay Length (m)	25.0		30.0			
Base Capacity (vph)	652	1356	700	1358	525	491
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.29	0.04	0.33	0.08	0.05
Intersection Summary						

HCM Signalized Intersection Capacity Analysis










SAT Total 2025

5: Flint Street & Prairie Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	351	12	24	400	9	6	6	26	10	3	9
Future Volume (vph)	14	351	12	24	400	9	6	6	26	10	3	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1789	1874		1789	1877			1700			1738	
Flt Permitted	0.48	1.00		0.51	1.00			0.96			0.89	
Satd. Flow (perm)	902	1874		969	1877			1645			1574	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	382	13	26	435	10	7	7	28	11	3	10
RTOR Reduction (vph)	0	1	0	0	1	0	0	23	0	0	8	0
Lane Group Flow (vph)	15	394	0	26	444	0	0	19	0	0	16	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Effective Green, g (s)	43.0	43.0		43.0	43.0			12.0			12.0	
Actuated g/C Ratio	0.66	0.66		0.66	0.66			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	596	1239		641	1241			303			290	
v/s Ratio Prot		0.21			c0.24							
v/s Ratio Perm	0.02			0.03				c0.01			0.01	
v/c Ratio	0.03	0.32		0.04	0.36			0.06			0.05	
Uniform Delay, d1	3.8	4.7		3.8	4.9			21.9			21.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.7		0.1	0.8			0.1			0.1	
Delay (s)	3.9	5.4		3.9	5.7			22.0			21.9	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		5.3			5.6			22.0			21.9	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay		6.6			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.29										
Actuated Cycle Length (s)		65.0			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		54.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis6: Laneway & Flint Street

SAT Total 2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	0	1	24	35	3
Future Volume (Veh/h)	5	0	1	24	35	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	1	26	38	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)					190	
pX, platoon unblocked						
vC, conflicting volume	68	40	41			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	68	40	41			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	937	1032	1568			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	5	27	41			
Volume Left	5	1	0			
Volume Right	0	0	3			
cSH	937	1568	1700			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.9	0.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.9	0.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.7				
Intersection Capacity Utilization		13.3%	ICU Level of Service	A		
Analysis Period (min)		15				

*A Bylaw to regulate and prohibit the use of highways within
the boundaries of the City of Port Coquitlam.*

WHEREAS the Council of the Corporation of the City of Port Coquitlam wishes to ensure the safe and orderly use of highways within the boundaries of the City;

WHEREAS pursuant to section 124 of the Motor Vehicle Act and section 36 of the Community Charter, Council of the Corporation of the City of Port Coquitlam is authorized to regulate traffic and the use of highways;

NOW THEREFORE the Council of the Corporation of the City of Port Coquitlam enacts as follows:

Citation

1. This bylaw may be cited for all purposes as the "Highway Use Bylaw, 2018, No. 4033

Repeal

2. The following bylaws passed and amendments thereto are repealed:
 - (1) City of Port Coquitlam Extraordinary Traffic Regulation Bylaw, 1971, No. 1119;
 - (2) Port Coquitlam Highway Bylaw, 1984, No. 2011;
 - (3) Highway Utilities Installation Bylaw, 1990, No. 2507;
 - (4) Highway and Pedestrian Ditch Crossings Bylaw, 1995, No. 2989;
 - (5) Encroachment Bylaw, 1996, No. 3023;
 - (6) Traffic Regulation Bylaw, 1998, No. 3155;
 - (7) Newspaper Box Regulation Bylaw No. 3534;

DIVISION 1 - INTERPRETATION

Severability

3. If a portion of this bylaw is held invalid by a Court of competent jurisdiction, then the invalid portion must be severed and the remainder of this bylaw is deemed to have been adopted without the severed section, subsection, paragraph, subparagraph, clause or phrase.

Definitions

4. In this bylaw, any reference to bylaws of the City refer to those bylaws, as amended or replaced from time to time.
5. In this bylaw, unless the context otherwise requires, words shall be as defined in the *Motor Vehicle Act*, R.S.B.C. 1996, c. 318.
6. In this bylaw, unless the context otherwise requires:

BOULEVARD

means any portion of the area from the edge of the pavement or curb of a highway, or where there is no pavement or curb from the edge of the traveled portion of the highway, to the property line; and on a street designated for the segregation of traffic traveling opposite directions by leaving a central portion thereof in an underdeveloped state or improved by paving or by the planting of grass or shrubs, then the portion of the street so left shall be included in the term boulevard, and includes the space below and above the surface of the land;

CITY

means The Corporation of the City of Port Coquitlam;

CITY CLERK

means the person appointed by Council to that position and includes anyone authorized by Council to act on behalf of the City Clerk;

COUNCIL

means the Municipal Council of The Corporation of the City of Port Coquitlam;

CONSTRUCTION

includes the original construction of a new highway and also the work of reconstructing or putting a highway or any section in repair by general and continuous regrading or remetalling of its surface, or by building, rebuilding or enlarging bridges, or by

executing other highway work of improvement or protection classified by the engineer as substantial;

CROSSWALK

means:

- (a) a portion of the roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by signs or by lines or other markings on the road the surface; or
- (b) the portion of a highway at an intersection that is included within the connection of the lateral lines of the sidewalks on the opposite sides of the highway, or within the extension of the lateral lines of the sidewalk on one side of the highway, measured from the curbs, or in absence of curbs, from the edges of the roadway;

CURB LINE

means the edge of a sidewalk or boulevard adjoining a roadway;

CYCLE

means a unicycle, bicycle or tricycle;

DISABLED PERSON

means a person whose mobility is limited as a result of a permanent or temporary disability that makes it impossible or difficult to walk;

DISABLED PERSONS' PARKING PERMIT

means a parking permit issued to a disabled person pursuant to the Regulations;

DISABLED ZONE

means a part of a highway or public place identified by a disabled parking sign as specified in the Regulations;

ENGINEER

means the Director of Engineering & Public Works or designate of the City;

FEES AND CHARGES BYLAW

means the City's Fees and Charges Bylaw No. 3892, 2015;

HIGHWAY

includes every highway within the meaning of the *Transportation Act*, S.B.C. 2004, c. 44 and amendments thereto, and every road, street, lane or right-of-way designed or intended for or used by the general public for the passage of vehicles, and every private

place or passage way to which the public, for the purpose of the parking or servicing of vehicles has access or is invited, and includes disabled zones and the roadway, shoulder, boulevard, ditch and sidewalk, and whatever lands lie between the property lines of the highway, and further includes every Off-Street Parking Facility;

LANE means a highway abutting the rear or side property lines of parcels of land and intended primarily to give access to the rear or side yards of such parcels of land;

MAINTENANCE means the work, subsequent to the construction of a highway, of preserving and keeping it in repair, including the making, cleaning and keeping open ditches, gutters, drains, and water courses, and the repairing of retaining walls, cribs, river protection works and other works necessary to keep open and maintain the highway for the use by the traffic for which it is required;

MOTOR VEHICLE or VEHICLE means a vehicle, not run on rails, that is designed to be to be self propelled or propelled by electric power obtained from overhead trolley wires or on board storage batteries, but does not include a motorized wheelchair (a “scooter”);

OFF-STREET PARKING FACILITY means any real property owned, leased, possessed or otherwise held by the City from time to time, for the purpose of providing off-street parking;

PARK, PARKING, OR PARKED means the standing of a vehicle, whether occupied or not, upon a highway except when standing temporarily for the purpose of and while actually engaged in loading or unloading of merchandise, discharging or taking on passengers, or in obedience to traffic regulations or traffic signs or signals;

PRIVATE ROAD OR DRIVEWAY means every road or driveway not owned or possessed by the Crown or the City;

REGULATIONS	means the regulations to the <i>Motor Vehicle Act</i> (British Columbia);
RESPONSIBLE OFFICIAL	means any person required by the terms of their employment, official duties or designated by Council to be responsible for the administration or enforcement of any provision of this bylaw;
SIDEWALK	means the area between the curb lines or lateral lines of a roadway and the adjacent property lines improved for use of pedestrians, or other uses authorized by this Bylaw;
STOP OR STAND	means: <ul style="list-style-type: none"> (a) When required, a complete cessation of movement, and (b) When prohibited, the stopping or standing of a vehicle whether occupied or not, except when necessary to avoid conflict with other traffic, or to comply with the directions of a peace officer or a traffic control device; and
TRAFFIC OFFICER	means any any official or employee of the City whose designated duties include the control of traffic or parking within the City, and includes peace officers and Bylaw Enforcement Officers, and every officer and member of the Fire Department of the City while attending upon any fire or emergency in the course of their duty.

Applicability

7. Unless the context otherwise requires, the provisions of this Bylaw do not apply to:
 - (1) persons, vehicles and other equipment while actually engaged in highway or public utility, construction or maintenance work, authorized and/or permitted by the City, on, under or over the surface of a highway while at the site of the work;
 - (2) the driver of an emergency vehicle,
 - i. while it is responding to an emergency call and sounding an audible signal, siren or bell and showing at least a flashing red light,
 - ii. while it is at the scene of an emergency and showing at least a flashing red light,
 - iii. who is a peace officer in immediate pursuit of an actual or suspected violator of the law, or
 - iv. who is a peace officer engaged in a police duty that would be unduly hampered by the sounding of an audible signal or siren,

- (3) a bylaw enforcement officer engaged in the performance of his or her duties on behalf of the City.
- 8. The provisions of this Bylaw relating to the stopping, standing or parking of vehicles do not apply to the stopping, standing or parking of vehicles by
 - (1) The driver of a vehicle owned, leased or otherwise under the control of the Government of Canada, the Province of British Columbia, a municipality, the RCMP or a public utility, while the driver is engaged in works that require him or her to stop, stand or park the vehicle in contravention of those provisions,
 - (2) The driver of a vehicle instructed by any lawful authority to stop, stand or park the vehicle in contravention of those provisions, or
 - (3) The driver of a vehicle designed for towing other vehicles, while the vehicle designed for towing is stopped, standing or parking for that purpose.
- 9. A person exercising a privilege conferred by section 7 or 8 must exercise that privilege with due regard for safety and in a manner that obstructs traffic as little as possible.

DIVISION 2 – GENERAL TRAFFIC REGULATIONS

Traffic Officers

- 10.
 - (1) All Traffic Officers, other than officers and members of the Fire Department of the City, are authorized to do all things necessary to control traffic in pursuance of this bylaw at all times and to ensure that the requirements of this bylaw are being carried out.
 - (2) All Traffic Officers are authorized to do such things as may be considered necessary to control traffic during any emergency requiring the attendance of emergency equipment.
 - (3) No person shall refuse to comply with any lawful direction made by any Traffic Officer.
 - (4) No person shall hinder, delay or obstruct in any manner, directly or indirectly, a Traffic Officer carrying out duties in accordance with this bylaw.

DIVISION 3 – TRAFFIC CONTROL DEVICES

- 11. All traffic control devices placed by the City prior to adoption of this bylaw are deemed to be authorized and placed in accordance with this bylaw.

12. Every person shall comply with the directions of every traffic control device, except as otherwise authorized or required pursuant to this bylaw.
13. The Engineer is authorized to order the placing of additional traffic control devices, excluding parking meters, as he or she deems appropriate, for the regulation of the following traffic matters and by those orders to exercise the following powers of the City under this bylaw:
 - (1) regulation, control or prohibition of pedestrian traffic and vehicle traffic on highways;
 - (2) regulation, control or prohibition of the stopping, standing or parking of vehicles;
 - (3) setting apart and allotting portions of highways adjacent to federal, provincial or municipal public buildings for the exclusive use of officials and officers engaged in them for the parking of vehicles and the regulation of such parking;
 - (4) regulation or prohibition of pedestrian traffic on highways other than at crosswalks;
 - (5) regulation, control or prohibition of persons using roller skates, sleighs, in-line skates, skateboards, skis or other similar means of conveyance on a highway;
 - (6) establishment and use of loading, commercial and passenger zones in the City and for their designation;
 - (7) regulation of the width, length and height of vehicles and the width, length, height, fastenings and distribution of loads on vehicles driven or operated on a highway;
 - (8) on highways where construction, reconstruction, widening, repair, marking or other work is being carried out, the erection or placement of traffic control devices indicating that persons or equipment are working on the highway and the regulation or prohibition of traffic in the vicinity of the work;
 - (9) establishment of school crossings in the City and the regulation and control of pedestrian and vehicular traffic with respect to them;
 - (10) regulation of traffic passing by or in the vicinity of schools through the use of traffic patrols, and for that purpose vesting in school children or other persons employed in traffic patrols power to require vehicles to stop at school crossings or other designated places on a highway;
 - (11) establishment and use of taxi stands in the City and their designation; and
 - (12) the places, conditions and circumstances for the use of sidewalks and crosswalks by persons riding cycles.
14. The Engineer may rescind, revoke, amend or vary an order made by the Engineer under Section 13.
15. Orders made by the Engineer under Sections 13 and 14 of this bylaw shall be in writing.
16. Temporary traffic control devices may from time to time be placed by a Traffic Officer or upon authority of the Engineer without an order under Section 15:

- (1) in the interest of public safety;
 - (2) to facilitate the fighting of any fire; or
 - (3) to enable work to be done on a highway.
17. No person shall establish, place, maintain, or display upon or in view of any highway, any traffic control device or other device which purports to be or resembles any traffic control device, or any device which attempts to divert the movement of traffic or the parking of vehicles within the City, except under the authority of this bylaw, or with the written permission of the Engineer.
18. No person shall obliterate, deface, damage, injure, move, obstruct or otherwise interfere with any traffic control device placed or maintained within the City pursuant to this bylaw.

DIVISION 4 - PEDESTRIAN TRAFFIC

19. At any intersection where crosswalks are marked, pedestrians shall use such crosswalks in crossing a highway.
20. Every pedestrian crossing a highway at any point, other than within a marked crosswalk, shall yield the right-of-way to all vehicles on the highway.
21. Pedestrians shall move, whenever practicable, upon the right half of a crosswalk.
22. No person shall stand on or adjacent to a highway for the purpose of soliciting a ride from the driver of any vehicle.
23. On the approach of an emergency vehicle, pedestrians shall proceed or return to the nearest sidewalk or boulevard and remain there until that vehicle has passed.
24. No pedestrian shall leave a curb or other place adjacent to a roadway and move into the path of a vehicle which is approaching such that it is not possible for the driver of the vehicle to yield the right-of-way.
25. No person who has emerged from a bus which has stopped shall start to cross to the opposite side of the highway until the bus has moved away from its stopping place, unless such crossing is made in compliance with traffic control signals or at the direction of a Traffic Officer.
26. No person shall form a part of a group of persons congregated on a highway in such manner as to obstruct the free passage of pedestrians or vehicles.
27. No person shall do anything which causes persons to congregate in a group upon any highway in such a manner as to unreasonably obstruct the free passage of pedestrians or vehicles, or in such a manner that the persons so congregated might be in danger of injury from traffic.

DIVISION 5 - VEHICLE TRAFFIC

No Animals

28. No person shall drive or herd animals on any highway in the City, except a City poundkeeper or a peace officer in the discharge of their duty.

Driving on Sidewalks

29. The driver of any motor vehicle shall not drive such motor vehicle upon any sidewalk or boulevard except on a driveway crossing provided for such purposes.

Refuse on Highways

30. No person shall throw, drop, deposit or leave, or let fall from or out of any motor vehicle or conveyance, any bottle or bottles, glass, crockery, nails, wood, sawdust, or refuse, or any other object or material, on or upon any highway and any person who has thrown, dropped, deposited or left any such objects or material shall forthwith remove the same from such highway.

Heavy Traffic

31. The following classes of vehicles are established:
- (1) Class 1 Vehicle - a motor vehicle having a licensed gross vehicle weight ("LGVW") of 11,794 kg or less; and
 - (2) Class 2 Vehicle - a motor vehicle with a licensed gross vehicle weight ("LGVW") over 11,794 kg.
32. Except as otherwise expressly provided in this bylaw and the Motor Vehicle Act:
- (1) Class 1 Vehicles may be operated on any highway in the City;
 - (2) Class 2 Vehicles may only be operated or present on arterial highways or portions of the following highways in the City:
 - i. Kingsway Avenue;
 - ii. Broadway Street;
 - iii. Coast Meridian Road; and
 - iv. Lougheed Highway.
33. Notwithstanding Section 32(2), a Class 2 Vehicle:
- (1) that is a public transit vehicle, an emergency vehicle, or is operated by a municipal, regional, provincial or federal government agency may be used or be present on any highway in the City;

(2) may be present on any highway in the City, except those listed in section 34, for the purpose of moving to or from a:

- i. loading or unloading destination on a highway in the City for the purpose of delivering materials to premises or collecting materials from premises;
- ii. lawful overnight or longer term parking or vehicle storage space in the City;
- iii. repair or maintenance garage in the City; or
- iv. highway construction or maintenance site in the City where that vehicle is engaged;

(3) shall proceed on a highway or portion of a highway listed in section 32 until reaching a point closest to the destination, and then proceed along the shortest route possible, by way of an arterial street where available.

34. No person shall operate or allow the presence of a Class 2 Vehicle:

- (1) on that portion of Tyner Street between Central Avenue and Pitt River Road; and
- (2) on those portions of Oxford Street and Wellington Street between Lincoln Avenue to the northern boundary of Port Coquitlam.

35. No person shall operate or use a vehicle or combination of vehicles which is overloaded or oversized as defined in the *Commercial Transport Act* (British Columbia) on a highway within the City unless:

- (1) the person has a valid and subsisting permit for operation of the vehicle under the *Commercial Transport Act* (British Columbia); and
- (2) the person has a valid and subsisting permit issued by the Engineer pursuant to this bylaw.

36. Every person wishing to operate a vehicle under section 35 of this bylaw, must make application for a permit in the form set by the Engineer from time to time to this bylaw, and pay the permit fee as specified in the Fees and Charges Bylaw in support of the application. Every person holding a permit under this section must comply with all requirements and restrictions set out in such permit, and must follow the route, if any, set out in such permit.

Speed Limits

37. No person shall operate a motor vehicle upon a Lane within the City at a greater rate of speed than 20 kilometres per hour, unless otherwise posted.

38. Except where the Minister of Transportation and Infrastructure has caused a sign to be erected or placed on a highway limiting the rate of speed of motor vehicles or a category of motor vehicles, no person shall operate a motor vehicle upon a highway within the City at a greater rate of speed than 50 km/h, unless otherwise posted.

DIVISION 6 - STATIONARY VEHICLES

Standing, Stopping and Parking Prohibitions

39. Except when necessary to comply with the law or the directions of a Traffic Officer, or where permitted by a traffic control device, no person shall stop or stand a vehicle so as to contravene the Motor Vehicle Act, a traffic control device, or this bylaw, and, without limiting the foregoing, no person shall stop a vehicle:

(1) where a traffic control device:

- i. prohibits stopping;
- ii. restricts stopping, except in accordance with that restriction;
- iii. abutting a school property prohibits stopping;
- iv. except in accordance with that restriction;

(2) on a sidewalk, or boulevard when a curb is present;

(3) within 6 metres of a flashing beacon or stop sign;

(4) within 6 metres of any street intersection or crosswalk;

(5) in or near any intersection of two highways in such a location as to reduce or impede the flow of traffic or the or reduce or impede the sight distance required for the safe operation of an intersection;

(6) within 5 metres of any fire hydrant, measured from a point on the Curb Line which is closest to the fire hydrant;

(7) in front of or within 1 metre of any non-commercial private or public Driveway, or in front of or within 5 metres of any multifamily dwelling, commercial, industrial or institutional Driveway or Lane;

(8) on a highway other than on the right side of the highway and with the right hand wheels parallel to that side, and where there is a curb, within 30 cm of that curb; unless the highway is designated for angle parking;

(9) on the highway side of any motor vehicle stopped or parked at the edge or curb of any highway;

(10) within 6 metres either side of the highway from or on either side of the entrance to or exit from a firehall;

(11) within 6 metres of an entrance or exit to any school property, on any day when school is in session;

(12) within 6 metres of any entrance to or exit from any playground or park;

- (13) within 5 metres of a Canada Post Super Mailbox for greater than 5 minutes;
- (14) in any Lane except when actually loading or unloading passengers or materials, or so as to prevent the free movement of motor vehicle traffic;
- (15) on any bridge, or other elevated structure on a highway;
- (16) on any portion of a highway indicated by traffic control device as reserved for any class of motor vehicle, other than a motor vehicle coming within such class;
- (17) within 15 metres of the nearest rail of a railroad crossing;
- (18) on any highway
 - i. for the principal purpose of storing, advertising, washing, maintaining, repairing, wrecking any vehicle unless repairs are necessitated by an emergency;
 - ii. for the purpose of displaying such motor vehicle for sale; or
 - iii. for the purpose of selling any commodities or articles;
- (19) on the paved portion of any highway where the pavement is 6 metres or less in width;
- (20) on any portion of a highway for a longer period of time than that indicated on any traffic control device applicable to that portion of the highway or City parking lot where such vehicle is stopped or parked;
- (21) on any portion of a highway where the curb or edge of the roadway is painted yellow, except in a signed loading and unloading zone;
- (22) that is unlicensed or uninsured on a highway;
- (23) where parking spaces for vehicles are designated by lines on a highway, except wholly within the parking space provided;
- (24) in a fire lane or bus zone, whether attended or unattended;
- (25) in a cul-de-sac other than parallel with the outside curb of the cul-de-sac;
- (26) on a highway for a period greater than 48 hours; or
- (27) in any off-street parking facility operated by the City in contravention of the length of time allowed for parking as indicated by a traffic control device where traffic control devices exist.

40. Except when necessary to comply with the law or the directions of a Traffic Officer, or where permitted by a traffic control device, no person shall park a vehicle so as to contravene the *Motor Vehicle Act*, a traffic control device, or this bylaw, and, without limiting the foregoing, no person shall park a vehicle:
- (1) where a traffic control device prohibits parking;
 - (2) where a traffic control device restricts parking, except in accordance with that restriction;
 - (3) where a traffic control device abutting a school property prohibits parking;

(4) where a traffic control device abutting a school property restricts parking, except in accordance with that restriction.

41. Vehicles over 4600kg and all vehicles with trailers of any type having a total length exceeding 6 metres are prohibited from parking on all highways except as listed below, where such vehicles may be parked after 4:30 p.m. and before 7:00 a.m. Monday to Friday, and at all times on Saturday, Sunday and statutory holidays:

(1) the west side of Broadway Street from Kingsway Avenue, south to the Mary Hill Bypass;

(2) the west side of Coast Meridian Road from Kingsway Avenue, south to Kebet Way;

(3) on the west side of Perkins from Holland Avenue to Kingsway Avenue;

(4) on the south side of Kebet Way from Broadway Street, east to Kingsway Avenue;

(5) on the south side of Kingsway Avenue from Mary Hill Bypass, east to Kebet Way;
and

(6) on the south side of Langan Avenue from Broadway Avenue, east to the intersection of Lot B, LMP6446 (1610 Langan Avenue) and Lot 54, Plan 64191 (1530 Kingsway Avenue).

42. All trailers of any type parked on highways at any time must have reflective tape that is at least 10 cm (4 inches) in height, affixed across the full width of the rear of the trailer.

43. Except when necessary to comply with the law or the directions of a Traffic Officer, no person shall stop or park a trailer of any type on a highway at any time if the trailer is not hitched to a vehicle.

44. When a traffic control device is displayed on any highway or off-street parking facility indicating that the length of time allowed for parking a vehicle thereon is limited, no person who has parked a vehicle on such highway or lot shall again park a vehicle on such highway (unless there is an intersection between the two parking spaces) or lot during the next sixty minutes following the expiry of such limited time.

Angle Parking

45. Upon a highway which has been marked or signed for angle parking, the driver of a motor vehicle shall park such motor vehicle at the angle to the curb indicated by such marks and within 50 cm of the curb. Where angle parking is indicated by signs only, the angle of parking shall be 45 degrees, and no person shall park a motor vehicle where the length of such motor vehicle and any trailer attached thereto exceeds 6 metres.

Safety Requirements

46. No person having control or charge of a motor vehicle shall permit it to stand unattended without first stopping the engine, locking the ignition, and removing the key, and, when standing upon any perceptible grade, without turning the front wheels to the curb or side of roadway.

Passenger Zones and Loading Zones

- 47.
- (1) All passenger and loading zones existing on the date of adoption of this bylaw are deemed to be authorized passenger and loading zones established under this bylaw.
 - (2) It is unlawful for any person to stop a motor vehicle in any passenger loading zone for any period of time longer than is necessary for the expeditious loading and unloading of passengers or materials, to a maximum of 15 minutes unless otherwise stated on a traffic control device.
 - (3) No person shall stop a motor vehicle in any passenger zone or loading zone except while actually engaged in the loading or unloading of passengers or materials.

Disabled Persons' Parking

48. The Engineer may make orders for the designation of Disabled Zones, and may rescind, revoke, amend and vary such orders.
- 49.
- (1) Council designates the Social Planning and Research Council of British Columbia as the organization responsible for issuing and cancelling Disabled Persons' Parking Permits pursuant to the Regulations.
 - (2) An application for a Disabled Persons' Parking Permit shall be made by or on behalf of a Disabled Person to the Social Planning and Research Council of British Columbia.
- 50.
- (1) All Disabled Zones existing on the date of adoption of this Bylaw are deemed to be authorized Disabled Zones established under this Bylaw.
 - (2) It is unlawful for any person to stop in a Disabled Zone:
 - i. a vehicle that does not display a Disabled Persons' Parking Permit or a permit of a similar nature issued by another jurisdiction,

- ii. a vehicle displaying a Disabled Persons' Parking Permit unless the vehicle is stopped, left standing or parked for the purpose of transporting a Disabled Person.

Mechanically Disabled Vehicles

- 51. The provisions of this bylaw relating to limited times of parking shall not apply to any vehicle so mechanically disabled such that the vehicle cannot be moved, until the vehicle has been parked or stopped in a manner contrary to the provisions of this bylaw for a period of 24 hours.

Parking Spaces

- 52. Where a parking space for vehicles is designated by lines on a highway, no person shall park a vehicle except wholly within the lines designating a parking space for one vehicle.

Obstruction by Motor Vehicles

- 53. No vehicle shall be left stopped:
 - (1) in a position that causes it to interfere with firefighting; or
 - (2) in a position that causes it to interfere with the normal flow of traffic on the highway;
 - (3) in a position that impedes or restricts the passage of vehicles beyond a road end or through any gate or barrier erected at a road end or other location; or
 - (4) in a position that causes it to interfere with the construction, improvement, maintenance, snow removal, alteration, extension, widening, marking, or repair of a highway.

Off-Street Parking Facilities

- 54.
 - (1) For the purposes of regulating parking in off-street parking facilities, the Engineer may erect and operate, or cause to be erected and operated, parking metres and/or electronic ticket dispensing machines as well as any other traffic control devices which the Engineer may deem necessary in the off-street parking facility;
 - (2) Parking permits may be issued for hourly, monthly, and annual parking in off-street parking facilities, in the discretion of the Engineer;
 - (3) If and where required by posted signage, no person shall stop, stand or park a vehicle in an off-street parking facility:

- i. Unless a valid parking permit is displayed on the dashboard or rear view mirror of the vehicle with the date, time and permit number clearly visible; and
 - ii. For a period of time in excess of the length of time indicated on the parking permit; and
- (4) Fees for the use of off-street parking facilities shall be prescribed by the Fees and Charges Bylaw.

DIVISION 7 - VEHICLE IMPOUNDMENT

- 55. Any chattel, obstruction or vehicle which is standing or parked contrary to any provision of this bylaw or which is otherwise unlawfully occupying a portion of a highway or public place may be removed, detained and impounded by a Traffic Officer or the Engineer, or by a contractor acting in accordance with the directions of the City.
- 56. The fees, costs and expenses assessed in accordance with the City of Port Coquitlam Business Bylaw No. 3725, 2010 for the removal, detention and impoundment of a chattel, obstruction or vehicle removed under this Division shall be paid by the owner of the vehicle prior to the release of the vehicle.
- 57. Any chattel, obstruction or vehicle removed, detained or impounded under this bylaw may be recovered by the owner between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday, except holidays, by paying the fees, costs and expenses levied in accordance with Section 68 to the tow truck company at its place of business.
- 58. If a vehicle, chattel or obstruction is removed, detained or impounded, and not claimed by its owner within thirty days from date of seizure, written notice shall be mailed to the registered owner at his address as shown on the records of the Registrar of Motor Vehicles advising of the seizure, and the sum payable to release the vehicle, chattel or obstruction and the date of advertising for sale by public auction, if unclaimed.
- 59. Any vehicle, chattel or obstruction not claimed by its owner within thirty days from the date of mailing of notice may be sold at a public auction, which auction shall be advertised at least once in a newspaper circulated in the City.
- 60. The proceeds of sale by public auction shall be applied first to the cost of the sale, second to the fees, cost and expenses of the City or its contractor as set out above and

the balance shall be held for the owner. If the balance remains unclaimed at the end of the calendar year, such balance shall be paid into the general revenue of the City.

61. Notwithstanding any other provision of this bylaw, where any garbage, rubbish or abandoned unlicensed motor vehicle with an apparent value of less than \$300.00 is left on any highway, such articles may be removed to a garbage dump and disposed of therein.

DIVISION 8 - CYCLE TRAFFIC

Duties of Operator of Cycle

62. A person operating a cycle shall at all times ride or operate a cycle in a safe manner, and without limiting the foregoing,
- (1) shall not ride upon the sidewalk of any highway or bridge, unless otherwise directed by traffic control device;
 - (2) shall not, for the purpose of crossing a highway, ride on sidewalk unless otherwise directed by a traffic control device; and
 - (3) shall not ride a cycle on a highway where a traffic control device prohibits their use.
63. In addition to the duties imposed by this Division, a person operating a cycle on a highway has the same rights and duties as the driver of a motor vehicle.

DIVISION 9 – HIGHWAY USE PROHIBITIONS AND PERMITS

Uses Requiring Engineer's Permission

64. Except, and to the extent only, as authorized by a permit issued by the Engineer pursuant to this Bylaw, no person shall:
- (1) dig up, break up or remove any part of a highway or cut down or remove trees or timber growing on a highway, or excavate in or under a highway;
 - (2) change the level of a highway in any manner whatsoever, or stop or impede the flow of water or through any ditch, drain sewer or culvert on or through a highway;
 - (3) place, construct, or maintain a loading platform, or skids, rails, mechanical devices, building, signs, containers, newspaper boxes, bus benches, or any other structure or thing, or any chattel or ware of any nature, on a highway, except

where an agreement with the City is in force for the placement, construction, or maintenance of the structure or thing;

- (4) construct or maintain a ditch, sewer or drain, the effluent from which causes damage, fouling, nuisance or injury to any portion of a highway;
- (5) ride, drive, lead, move or propel any animal or vehicle over or across a boulevard, including any curb, sidewalk or ditch unless such has been constructed or improved to form a suitable crossing in conformity with the provisions of this bylaw;
- (6) construct any works within a highway, including driveways, or any other boulevard crossing, including a curb, ditch or sidewalk crossing;
- (7) encumber, obstruct, or encroach in, on, or under a highway;
- (8) install or operate in a highway monitoring wells, vacuum holes, test pits, boreholes or other minor excavations;
- (9) obstruct or interfere with the free flow of traffic or attempt to control or detour traffic on any highway or lane, whether by use of signs or flagpersons or by barricades or other physical obstruction on the road, provided that this clause shall not apply to:
 - a. a Peace Officer, Bylaw Enforcement Officer or Fire Fighter acting in the normal course of his or her duties;
 - b. a student or adult school patrol acting under the authority of the Public Schools Act or authorized by the Chief of Police;
 - c. emergency vehicles or public utility or City crews while making emergency repairs within a highway or lane;
 - d. vehicles while legally parked on a highway or lane or while obeying the instructions of a traffic control device or Peace Officer.

65. For the purposes of sections 64, “construct” means new construction, repair, replacement and maintenance of any matter or thing.

Issuance of Permit

66. The Engineer may issue a permit to do any or all of those things otherwise prohibited by this Division , subject to the payment of the application fee prescribed by Fees and Charges Bylaw with each application therefore and subject to such other conditions contained in this Division, or as determined by the Engineer, as may be applicable to

each such application. Without limiting the foregoing, the Engineer may issue one or more of the following types of permits:

- (1) "Lane Closure Permit" – for the temporary closure of one or more lanes of a highway;
- (2) "Highway Use Permit" – for work in or on a highway, including work by utility companies. the construction or alteration of a ditch crossing, driveway, monitoring well, or off-site works and services, except for works and services contemplated by a written agreement with the City pursuant to the Subdivision Servicing Bylaw No. 2241;
- (3) "Highway Encroachment Permit" – for the use of a highway for private uses, including sidewalk cafes, newspaper boxes, temporary storage containers, construction trailers, and street furniture for up to 5 years; and other such forms of permits as determined by the Engineer.

67. The Engineer may, in issuing a permit under this Bylaw impose such terms and conditions as the Engineer considers reasonable or necessary for the purpose of:

- (1) avoiding undue damage to a highway,
- (2) protecting persons or property,
- (3) avoiding undue interference with traffic,
- (4) ensuring that damage done to a highway in connection with an activity undertaken pursuant to a permit is adequately repaired,
- (5) avoiding nuisances or other disturbances, or
- (6) otherwise protecting the public interest.

Temporary Closure of Highway

68. The Engineer is hereby authorized and empowered, at his discretion, to temporarily close a highway or any part thereof to traffic, or to control traffic thereon, during the time work is in progress.

Prerequisite to permit issuance

69. As a prerequisite to the issuance of a permit under this Division, the applicant shall:

- (1) apply for a permit in the form prescribed by the Engineer from time to time, including all plans, drawings and information as considered necessary or desirable by the Engineer, acting reasonably;

- (2) pay the applicable permit fees as set out in the Fees and Charges Bylaw;
- (3) deposit with the City, a sum of money, bond, or irrevocable Letter of Credit which is, in the opinion of the Engineer, sufficient to pay for the cost of repairing any damage likely to be done to the highway and as sufficient security that the obligations imposed by the permit shall be fulfilled within the time specified by such permit. The amount of each such deposit shall be:
 - i. not less than the cost of repairing such damage, as estimated by the Engineer, and without limiting the foregoing:
 - 1. for permits for the crossing of boulevards and the construction of boulevard crossings, not less than \$500.00 for each permit;
 - 2. for monitoring wells or boreholes, not less than \$5,000 for up to three wells or boreholes and \$2,000 for each additional well or borehole, which for amounts less than \$20,000 shall be in the form of cash, but otherwise shall be in the form of a Letter of Credit acceptable to the Engineer.
- (4) provide satisfactory plans of the work to be undertaken, sealed by a Professional Engineer if required by the Engineer, and when such plans are supplied and approved by the Engineer and the necessary permit issued, the work shall conform in every way to the approved plans and to the specifications contained in and to the minimum general requirements of the City of Port Coquitlam Subdivision Servicing Bylaw No. 2241 and this bylaw;
- (5) provide evidence of insurance for the works contemplated by the permit, to the satisfaction of the Engineer.

Refund of deposit

- 70. Where a deposit has been made in accordance with this Division and upon satisfactory compliance with the permit within the time specified therein, and submission of the appropriate record drawings, the deposit will be refunded to the applicant, less where applicable, the inspection fee prescribed by Fees and Charges Bylaw, 2006, No. 3540, or the actual cost of administration and inspection, whichever is greater, provided that a security deposit for maintenance has been deposited.

Maintenance of completed work

- 71. Where completed work is to be taken over by the City the permit holder shall maintain such work for a period of one year from the date of inspection and acceptance thereof by the Engineer and a maintenance security deposit in the amount of 10% of the original security deposit shall be required for the maintenance period.

72. Where alterations to completed works are required due to reconstruction of a highway during the maintenance period referred to in section 71 , the person holder shall pay for all costs of such alterations.

Indemnity

73. Each applicant for a permit under this section shall indemnify, protect, and save harmless the City from and against all claims demands and lien claims of every kind arising out of or in any way connected with the work or other things for which the permit has been issued.

Use of deposit

74. In the event that the permit holder fails to repair damage and/or fulfill such obligations as are set out in the permit within the time specified therein, the City may repair the damage or fulfil the obligations and deduct the cost of doing so from the deposit. If there are not sufficient funds on deposit to cover the costs, the City shall recovery any shortfall from the permit holder.

Revocation of permit

75. The Engineer may revoke a permit issued under this Bylaw if the permit holder fails to comply with a term or condition of the permit.

DIVISION 10- HIGHWAY USE GENERAL REGULATIONS

General Regulations

- 76.
- (1) The means of access to and from every highway for every parcel of land abutting thereon, shall be provided by means of a standard boulevard crossing constructed in accordance with the specifications contained in the City of Port Coquitlam Subdivision By-law at a location to be approved by the Engineer.
 - (2) Every owner of a private highway shall maintain the same in a clean, fit and safe state and shall affix suitable signs thereon indicating that such highway is a private thoroughfare.
 - (3) Every owner or occupier of real property shall prominently display in such a manner so as to be visible from the highway and in figures not less than 10 centimeters in height the civic address number assigned to such building or structures under the City's highway numbering system.
 - (4) For parcels of land which front arterial and collector highways, as defined in the City's Subdivision Servicing Bylaw No. 2241, and which have a lane available to

the rear of the parcel of land, access to and from the arterial/collector roadway will be limited to pedestrian and bicycle access only. Vehicle access for these parcels of land shall be from the lane or adjacent local highway only, except where approved by the Engineer, in writing.

DIVISION 11 - OFFENCE, PENALTIES AND ENFORCEMENT

77. The following acts, practices, matters and things in respect of a highway shall be deemed to be offences against this bylaw, namely:

- (1) throwing, depositing or causing to be deposited or to flow upon a highway any noxious, offensive or filthy water or substance, or any empty bottle, glass container or any other article, whether broken or intact;
- (2) leaving any glass or other debris at the scene of an accident by a person who has removed a wrecked or damaged vehicle;
- (3) leaving any excavation or other obstruction insufficiently fenced or barricaded and marked with warning lights;
- (4) place or permit to be placed any fuel, oil, lumber, merchandise, chattel or ware of any nature on a highway;
- (5) deposit or cause to be deposited, throw or cause to be thrown, or leave any earth, refuse, debris or any other thing on a highway;
- (6) failing of an owner or occupier of real property to prominently display in such a manner so as to be visible from the highway and in figures not less than 10 centimeters in height, the civic address number assigned to such building or structure under the City's highway numbering system;
- (7) to cause willful damage to:
 - i. grass, trees, shrubs, plants bushes and hedges on any part of a highway;
 - ii. a fence on any part of highway;
 - iii. anything erected or maintained on or adjacent to a highway for the purpose of lighting the highway;
 - iv. to any highway marker or traffic control sign, signal or other device placed on any highway for the guidance or control of traffic.
- (8) to place signs of any nature in any matter on a highway or upon any erected highway signs, City highway signs or City information signs, including traffic control devices and signals;
- (9) mark or imprint or deface in any manner whatsoever a highway or structure thereon; and
- (10) to impact or alter the drainage facilities on or adjacent to a highway, including by altering ditches or placing material in the curb and gutter.

78. Every person who:

- (1) violates a provision of this bylaw;
- (2) consents, allows or permits an act or thing to be done in violation of a provision of this bylaw or a permit issued pursuant to this bylaw;
- (3) neglects to or refrains from doing anything required to be done by a provision of this bylaw or a permit issued pursuant to this bylaw; or
- (4) fails to comply with an order of the Engineer given under this bylaw;

is guilty of an offence and is liable to the penalties imposed under this bylaw.

79. For certainty, in the case of offences involving the cutting or damaging of more than one tree, shrub, or plant, an offence is committed in respect of each individual specimen and the maximum penalties imposed under this bylaw apply to each such offence.

80. For certainty, in the case of offences of a continuing nature, an offence is committed on each day during which the offence continues, and the maximum penalties imposed under this bylaw apply to each such offence.

81. For certainty, where a driver has parked a vehicle in a parking space in violation of the provisions of this bylaw, a separate offence shall be deemed to be committed upon the expiry of each period of time during which the vehicle could have been lawfully parked as indicated by a traffic control device.

82. Any person who contravenes any of the provisions of this Bylaw commits an offence punishable upon summary conviction and is liable to a fine of not more than \$10,000.00 or to imprisonment for not more than six months, or to both. Each day that an offence continues shall constitute a separate offence.

83. Nothing in this Part precludes the City from seeking any civil remedy to which it is entitled in relation to trespass on City land.

Read the first time by the Municipal Council this 22nd day of May, 2018.

Read the second time by the Municipal Council this 22nd day of May, 2018.

Read the third time by the Municipal Council this 22nd day of May, 2018.

Mayor

Corporate Officer

Transportation Solutions and Public Works Committee

New Highway Use and Boulevard Maintenance Bylaws

Committee Recommendation

At the December 13, 2017, Transportation Solutions and Public Works Committee Meeting, the report, *New Highway Use and Boulevard Maintenance Bylaws* was considered, and the following motion was passed:

That Committee recommend to Council adoption of the attached Highway Use Bylaw, Boulevard Maintenance Bylaw, and the associated ticketing bylaws, subject to consideration by the Finance and Budget Committee of an exemption to the boulevard maintenance bylaw that would not require residents adjacent to major roads to be responsible for boulevards where there is a separate sidewalk.

At the March 20, 2018 Finance and Budget Committee meeting, the following motion failed:

That Finance and Budget Committee direct staff to maintain current boulevard maintenance practices when preparing a new bylaw for Council consideration.

However, at the April 24, 2018, Finance and Budget Committee meeting, the following motion was passed:

That the Finance and Budget Committee direct staff to:

- *Maintain current boulevard maintenance practices when preparing a new bylaw for Council consideration, except for the Fremont Street west boulevard, from Prairie Avenue to Riverwood Drive; and*
- *Amend the 2018 Financial Plan to fund the new service by \$6,300 from accumulated surplus in 2018, and be included in the 2019 operating budget.*

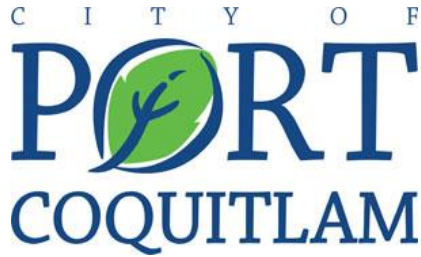
The recommended bylaws are now before Council.

ATTACHMENTS

Attachment#1: 2017-12-13 Staff Report - *New Highway Use and Boulevard Maintenance Bylaws*

Attachment#2: 2018-03-20 Staff Report - *Boulevard Maintenance Bylaw*

Attachment#3: 2018-04-24 Staff Report - *Boulevard Maintenance Bylaw Continued*



Report to Committee

DATE: November 9, 2017

TO: Transportation Solutions & Public Works Committee

FROM: Kristen Dixon, P.Eng, MBA
Director of Engineering and Public Works

SUBJECT: NEW HIGHWAY USE AND BOULEVARD MAINTENANCE BYLAWS

EXECUTIVE SUMMARY:

The City has a number of outdated and inter-related bylaws that regulate what can and cannot be done on road right-of-way. As part of the updating of the Traffic Regulation Bylaw, staff is recommending that eight of our current bylaws be consolidated in to two. These two bylaws are provided to Committee for comment and consideration, and are recommended to be brought forward to Council for adoption.

RECOMMENDATION:

That Committee recommend to Council adoption of the attached Highway Use Bylaw, Boulevard Maintenance Bylaw, and the associated ticketing bylaws.

BACKGROUND:

The work plan for TSPW, and the Engineering and Public Works Department, has included an update to the City's Traffic Bylaw 3155 for a number of years. The City currently has a number of bylaws that regulate what the public can and can't do within/on road right-of-way. There are many points of overlap within these bylaws, and thus as part of updating the Traffic Bylaw, staff completed a comprehensive review of all bylaws related to road right-of-way. This became a much larger task than originally envisioned, as many departments have influence in these areas, but was well overdue with many of the bylaws dating back to the 80's and 90's.

The following bylaws were included in our review, and have not been included as specific attachments to this report (to the volume of materials), but are all readily available on the City's website:

- City of Port Coquitlam Extraordinary Traffic Regulation Bylaw, 1971, No. 1119
- Port Coquitlam Highway Bylaw, 1984, No. 2011;
- Highway Utilities Installation Bylaw, 1990, No. 2507;
- Highway and Pedestrian Ditch Crossings Bylaw, 1995, No. 2989;
- Encroachment Bylaw, 1996, No. 3023;

- Traffic Regulation Bylaw, 1998, No. 3155;
- Newspaper Box Regulation Bylaw No. 3534;
- Boulevard Maintenance Bylaw, 1992, Bylaw No. 2646

Some of the bylaws are proposed to be repealed simply because they are no longer required, such as the Extraordinary Traffic Regulation Bylaw which is a very short bylaw that deals with animal powered vehicles (or vehicles propelled in other ways). Others, such as the Newspaper Box Bylaw, still contain relevant information, but can be addressed more consistently through general regulations about private infrastructure on road right-of-way.

One of the challenges under the current system is that you often have to search through many bylaws for guidance on what you can and cannot do on road right-of-way, and at times, these bylaws conflict. It quickly became clear through the staff review that all of these bylaws could be consolidated in to two main bylaws, and each of these bylaws will be discussed in more detail.

DISCUSSION:

There are two new bylaws proposed to replace the eight listed above; a new Boulevard Maintenance Bylaw, and a new Highway Use Bylaw.

Boulevard Maintenance Bylaw

In general, the new Boulevard Maintenance Bylaw is similar in content to the previous bylaw, and reflects the obligations of land owners/occupiers as it pertains to their fronting road right-of-way. This new bylaw also contains some language from the other bylaws which ought to have been included, such as the obligation to clear snow, which is currently in a different bylaw. The intent of this bylaw was to clarify and streamline all the obligations of adjacent owners/occupiers as it pertains to their boulevards.

Highway Use Bylaw

This bylaw was much more complex, in that it is intended to regulate everything that a member of the public or user of the road right of way can or cannot do on our roads. This new bylaw is split in to a number of categories to cover off a variety of users, but can be generally split in to two main areas. Regulation of traffic (including vehicles, pedestrians, cyclists, parking, traffic controls etc), and highway use (permits such as lane closures, alteration to the road, or various types of encroachments)

As with the Boulevard Maintenance Bylaw, there are very few new provisions in the Highway Use Bylaw that were not already contained in the other previous bylaws. However, the new bylaw does provide additional clarity (both to the public and for staff) about what types of permits are required and when. In addition, many of the old bylaws contained items that are regulated elsewhere (such as the Motor Vehicle Act), and were mostly removed from the new bylaws.

Similar to other City bylaw updates, the new bylaws have removed application forms and agreements from the bylaws themselves, so they can be updated from time to time as required.

They also remove all references to specific fees, and simply reference the City's Fees and Charges Bylaw.

There are a small number of content related changes/updates which fall outside the "updating" or "house-keeping" category, including:

- Heavy Traffic – Sections 31-36 – This area of the bylaw has been updated to provide standardized language within Metro Vancouver. The language has also been clarified to ensure that heavy traffic are using designated truck routes.
- Off-Street Parking Facilities – Section 54 – This is a new section of the bylaw which applies to City owned parking facilities which are not on dedicated road right-of-way, such as parks or facilities, and provides the City more flexibility in dealing with specific issues as required in each of our parking lots.
- Permits – Sections 66-67 – This area of the bylaw has been significantly changed compared to previous bylaws. It standardizes the types of permits that will be issued for a variety of works on the road right-of-way, including new opportunities for items such as sidewalk cafes and street furniture.

FINANCIAL IMPACT:

The associated ticketing bylaws must also be updated to reference the new sections for offenses, and to add new offenses where required. Draft schedules to the enforcement bylaws are provided as attachments to this report. All of the bylaws will come forward to Council for endorsement as one comprehensive package (the highway use bylaw, boulevard maintenance bylaw, and the enforcement/ticketing bylaws). No significant changes have been proposed to the value for the violations.

NEXT STEPS:

In addition to updating the other supporting bylaws, staff will also need to update all of the materials associated with permit processes such as the applications and forms. This can be done in conjunction with the bylaw adoption process over the next few months.



Kristen Dixon, P.Eng. MBA
Director of Engineering & Public Works

Attachments: Appendix A – Proposed Highway Use Bylaw
Appendix B – Proposed Boulevard Maintenance Bylaw
Appendix C – BEN Bylaw Schedules

Boulevard Maintenance Bylaws

RECOMMENDATION:

That Finance and Budget Committee direct staff to maintain current boulevard maintenance practices when preparing a new bylaw for Council consideration

PREVIOUS COUNCIL/COMMITTEE ACTION

At the December 13, 2017 Transportation Solutions and Public Works Committee meeting, the following motion was passed:

That Committee recommend to Council adoption of the attached Highway Use Bylaw, Boulevard Maintenance Bylaw, and the associated ticketing bylaws, subject to consideration by the Finance and Budget Committee of an exemption to the boulevard maintenance bylaw that would not require residents adjacent to major roads to be responsible for boulevards where there is a separate sidewalk.

REPORT SUMMARY

Two new bylaws have been prepared (Highway Use and Boulevard Maintenance) which will replace and consolidate eight existing, out-of-date bylaws. As part of the review of these two new bylaws, the Transportation Solutions and Public Works Committee requested the Finance and Budget Committee consider transferring the responsibility for boulevard maintenance along major roads where there is a separate sidewalk, from the adjacent home owner to the City. This report brings this request, and estimated budget impact, forward. The draft Boulevard Maintenance bylaw has also been updated since the TSPW meeting, to address our current practice for a number of exemptions, but contains the requirement for property owners to maintain the boulevard in all other circumstances.

BACKGROUND

At the December 13, 2017, Transportation Solutions and Public Works Committee (TSPW) meeting, a new boulevard maintenance bylaw and a new highway use bylaw were brought forward, which will consolidate eight existing bylaws. The details of the review and the proposed changes can be found in the report to TSPW, included in this report as Attachment 1. Committee was generally supportive of the new bylaws, aside for one key item.

The new boulevard bylaw requires adjacent property owners to maintain their boulevard, with a few minor exemptions (which will be discussed below). TSPW directed staff to bring information forward to the Finance and Budget Committee about the option to change this requirement, such that the City would be responsible for boulevard maintenance where the sidewalk was separated from the curb adjacent to arterial and/or collector roads, rather than the property owner. As this

Boulevard Maintenance Bylaws

would have a budget impact, Committee further indicated it wished to seek direction from the Finance and Budget Committee prior to the bylaws coming forward for Council's consideration.

DISCUSSION

The new/updated boulevard maintenance bylaw was not intended to add or reduce the current obligation on adjacent private property owners. However, it was intended to address a number of exemptions to the bylaw which the City has incorporated through practice, and it was also intended to provide clarity for owners who wish to change or improve their boulevard.

Current bylaw language:

The current boulevard maintenance bylaw from 1992 states:

The owner and occupier of real property shall maintain every boulevard adjacent to the real property and in particular shall:

- (a) remove all rubbish, discarded materials and hazardous objects from the boulevard;
 - (b) keep grassed areas trimmed and free of noxious weeds;
- except that where the real property adjoins an arterial highway the owner or occupier need not maintain the boulevard fronting the arterial highway.

This exception has been interpreted over the years to apply to property owners adjacent to the Lougheed Highway only. Note that areas that have median landscaping (between two sections of road) such as the Lougheed Highway or Oxford Connector are exempt from this bylaw, and are maintained by the City.

Current practice:

The current bylaw language includes an exception for the Lougheed Highway. Despite this exemption, the practice has been that the City maintains frontage for properties along the Lougheed Highway which do not have commercial businesses fronting the Highway, such as the section parallel to the CP rail yard. Commercial businesses along that corridor (such as Esso and Shaughnessy Station) maintain their frontages along with their other landscaping.

In addition, the City has taken ownership and maintenance for works that have improved a boulevard as part of a City initiated project or has defining characteristics which result in the boulevard not being directly attributed to the responsibility of the fronting property owner. For example, on Dominion Avenue where the road is at a significantly different elevation than a few remaining adjacent properties, the City maintains this separated boulevard. Another example of this would be boulevard tree planting (where we continue to own and maintain the trees), or along Coast Meridian where the sound attenuation fence and additional landscaping has been installed. While these are not separated boulevards, they are still maintained by the City due to their improvements.

Boulevard Maintenance Bylaws

Proposed language:

The language included in the draft bylaw taken to the TSPW was intended to formalize the current practices for boulevard maintenance including everything from snow clearing of sidewalks, vegetation removal and mowing, and litter collection. However, it was not clear on the exemptions that have been incorporated into practice over time. A revised draft bylaw which includes these exemptions is proposed and attached to this report.

TSPW proposal:

TSPW committee members commented that perhaps boulevards that had separated sidewalks (ie. where the sidewalk is separated from the road or curb by a strip of grass or other treatment) should be maintained by the City rather than the adjacent owners. The example provided was the Fremont Street boulevard, south of Prairie Avenue, which has a sidewalk separated from a large boulevard originally intended for a widened road in the future, as shown below. The street, and thus the boulevard, is generally the back yard of many of the fronting homes and is often overgrown. Another example given was Prairie Avenue, where litter in the boulevard can be problematic and TSPW did not feel that the property owners should be responsible for the litter collection.



The resolution from TSPW was specific to main roads, which staff interpreted as arterial and collector roads. Of note, Fremont Street is a local road, and thus is discussed separately in the financial analysis.

The City has just about 5 kilometres of arterial roads with separated sidewalks, with the largest being Prairie Avenue, and another 10 kilometres of collector roads, including large sections of Citadel Drive and Confederation Drive. The estimated cost to add the entire inventory to City maintenance would be approximately \$70k-\$80k (approximately 16 cuts per season). This cost reflects the difficulty to do this work efficiently as it would be quite spread out, with relatively small sections. The inventory is provided in Attachment 2.

Some home owners along these frontages may take it upon themselves to continue to maintain these areas even if the City were to take formal responsibility, because they are already doing their

Boulevard Maintenance Bylaws

own yard work which would further spread out the City's work. A sample below from Citadel Drive is shown where one owner has recently mowed their boulevard along with their yard, while the adjacent owner has not yet completed theirs.



For the most part, it is not onerous for property owners to look after the adjacent grass boulevard while maintaining their yard, and this is the current standard they expect. In addition, this requirement is consistent with how other municipalities handle this work. For these reasons, and given the cost associated with the City taking this work on, it is not recommended to change this requirement.

FINANCIAL IMPLICATIONS

There is no financial impact to continue with the current practice for boulevard maintenance. The estimated cost to maintain all separated boulevards along arterial and collector roads would be approximately \$70k-\$80k annually. The Fremont Street boulevard (a local road) would be an additional \$6,300 annually. Since the 2018 Financial Plan has already been approved by Committee, this increase in cost would be required to be funded by accumulated surplus in 2018.


PUBLIC CONSULTATION

None.

Boulevard Maintenance Bylaws

OPTIONS

(Check = Staff Recommendation)

#	Description
1 	Proceed with the revised bylaw that supports the current practice for boulevard maintenance
2	Amend the proposed new boulevard bylaw to exempt boulevard maintenance requirements for properties on arterial and/or collector roads and amend the 2018 Financial Plan to include \$70,000 in accumulated surplus.
3	Amend the proposed new boulevard bylaw to exempt specific areas, as directed by Committee and amend the 2018 Financial Plan accordingly.

ATTACHMENTS

Attachment #1: Report to TSPW dated December 13, 2017, including original draft Boulevard Maintenance Bylaw, dated November 2017

Attachment #2: Inventory of arterial/collector separated boulevards

Attachment #3: Draft - Boulevard Maintenance Bylaw updated March 2018

Attachment #4: Draft - BEN Amendment (Boulevard Maintenance)

Attachment #5: Draft - MTI Amendment (Boulevard Maintenance)

Boulevard Maintenance Bylaws Continued

RECOMMENDATION:

That the Finance and Budget Committee direct staff to maintain current boulevard maintenance practices when preparing a new bylaw for Council consideration, except for the Fremont Street west boulevard, from Prairie Avenue to Riverwood Drive.

PREVIOUS COUNCIL/COMMITTEE ACTION

At the December 13, 2017 Transportation Solutions and Public Works Committee meeting, the following motion was passed:

That Committee recommend to Council adoption of the attached Highway Use Bylaw, Boulevard Maintenance Bylaw, and the associated ticketing bylaws, subject to consideration by the Finance and Budget Committee of an exemption to the boulevard maintenance bylaw that would not require residents adjacent to major roads to be responsible for boulevards where there is a separate sidewalk.

At the March 20, 2018 Finance and Budget Committee meeting, the following motion failed:

That Finance and Budget Committee direct staff to maintain current boulevard maintenance practices when preparing a new bylaw for Council consideration

The motion failed, and no further direction from Committee was provided.

REPORT SUMMARY

This report seeks further direction from Committee in preparation of the new boulevard maintenance bylaw.

BACKGROUND / DISCUSSION

At the March 20, 2018 Finance and Budget Committee meeting, committee discussed a variety of challenges associated with boulevard maintenance standards. While some felt that it was not onerous to require adjacent home owners to maintain the small portion fronting their properties, others felt that it should be a City responsibility. If regular maintenance is a City responsibility, the question was also posed about the obligation for snow clearing of the boulevards.

While there was no overall consensus, there appeared to be general agreement around the desire to have the City maintain the large boulevard adjacent to Fremont Street, from Prairie Avenue to Riverwood Drive, recognizing that boulevard was particularly onerous for adjacent owners. However, no final direction was provided.

Boulevard Maintenance Bylaws Continued

FINANCIAL IMPLICATIONS

As outlined in the previous report, there is no financial impact to continue with the current practice for boulevard maintenance.

The estimated cost to maintain all separated boulevards along arterial and collector roads would be approximately \$70k-\$80k annually (for servicing approximately 16 times annually).

The Fremont Street west boulevard (a local road) would be an additional \$6,300 annually.


Since the 2018 Financial Plan has already been approved by Committee, this increase in cost for 2018 would be required to be funded by accumulated surplus, and would be included in the 2019 operating budget.

PUBLIC CONSULTATION

None.

OPTIONS

(Check = Staff Recommendation)

#	Description
1 	Proceed with the revised bylaw that supports the current practice for boulevard maintenance, with an exception for Fremont Street west boulevard, from Prairie Avenue to Riverwood Drive
2	Amend the proposed new boulevard bylaw to exempt boulevard maintenance requirements for properties on arterial and/or collector roads and amend the 2018 Financial Plan to include \$70,000 in accumulated surplus.
3	Amend the proposed new boulevard bylaw to exempt other specific areas, as directed by Committee and amend the 2018 Financial Plan accordingly.

ATTACHMENTS

Attachment #1: Report to FAB dated March 20, 2018

A Bylaw to regulate the use and maintenance of boulevards by owners and occupiers of adjacent lands in the City of Port Coquitlam.

WHEREAS the *Community Charter* prohibits a person from excavating in, causing a nuisance on, obstructing, fouling or damaging any part of a highway, except as permitted by a municipal bylaw;

WHEREAS the Council of the Corporation of the City of Port Coquitlam deems it expedient to provide for the use and occupation of highway boulevards by owners and occupiers of adjacent lands;

NOW THEREFORE the Council of the Corporation of the City of Port Coquitlam enacts as follows:

Citation

1. This bylaw may be cited for all purposes as the “Boulevard Maintenance Bylaw, 2018, No. 3965.”

Severability

2. If a portion of this bylaw is held invalid by a Court of competent jurisdiction, then the invalid portion must be severed and the remainder of this bylaw is deemed to have been adopted without the severed section, subsection, paragraph, subparagraph, clause or phrase.

Repeal

3. Boulevard Maintenance Bylaw, 1992, Bylaw No. 2646 and all amendments thereto, is repealed.

Definitions

In this bylaw:

- a. “Authorized person” means any officer, employee or agent of the City authorized by this or any other bylaw of the City to enforce this bylaw, and includes, those individuals holding the positions of Manager of Bylaw Services, the Director, and any person delegated by the Director as an authorized person for the purposes of this bylaw.

- b. "Boulevard" means any portion of the area from the edge of the pavement or curb of a highway, or where there is no pavement or curb from the edge of the traveled portion of the highway, to the property line, and includes the space below and above the surface of the land, but excludes the sidewalk.
- c. "City" means the City of Port Coquitlam.
- d. "DBH" means a diameter measured 1.4 metres above the highest immediately adjacent natural ground level.
- e. "Director" means the Director of Engineering and Public Works of the city and any person designated by the Director to administer this bylaw.
- f. "Ditch Crossing" means any bridge, culvert, or other construction spanning a highway ditch.
- g. "Highway Ditch" means a drainage ditch greater than 2.5 metres in width, located within the right of way of a highway in the possession and control of the city.
- h. "Highway" means
 - i. any public street, roadway, trail, lane, bridge, trestle and any other public way, pursuant to the definition in the *Transportation Act*; and
 - ii. every road, street, land or right-of-way designed or intended for or used by the general public for the passage of vehicles.
- i. "Noxious Weed" means any weed designated in the *Weed Control Act*, RSBC 1996, c. 487, as amended.
- j. "Occupier" means a person who:
 - i. is in physical possession of land, premises or property, or
 - ii. is responsible for, and has control over, the condition of, the activities conducted on and the persons allowed to enter or use, land, premises or property;
 but excludes the occupier of a unit in an apartment, hotel or community care institution.
- k. "Owner" means any person who is the registered owner, or owner under agreement, of real property, and includes any person in actual or apparent possession of real property under a lease, licence or agreement with another owner;
- l. "Rubbish" includes the following:
 - i. accumulations of soil, leaves, grass clippings, branches, twigs and other vegetation or landscape materials;
 - ii. litter of any kind;

- iii. garbage, other than that which is properly placed on the highway pursuant to the garbage collection requirements of the City;
 - iv. compost materials, where such materials may encroach onto the boulevard or sidewalk;
 - v. household objects including furniture, mattresses and bathroom fixtures; and
 - vi. any other object that could reasonably pose a hazard or nuisance to anyone using a sidewalk.
- m. "Sidewalk" means that part of a highway designed primarily for public pedestrian use, including, without limitation, a sidewalk, walkway, stairway, ramp or curb letdown, and any customarily travelled footpath, including without limitation, any footpath made of gravel, asphalt limestone, dirt or other material and the unpaved edge adjoining any asphalt road surface where no finished sidewalk exists, and for certainty does not include the boulevard.
 - n. "Tree" means a woody, perennial plant having one or more stems, with at least one stem having a DBH of 6 cm or more.
 - o. "Vehicle" means the same as in the *Motor Vehicle Act*, RSBC 1996, c. 318.

Sidewalk Snow and Ice Removal

- 4. Every owner or occupier of real property must remove or cause to be removed any snow or ice from any sidewalk bordering real property within 24 hours of the cessation of the event which resulted in the deposit of snow or ice, regardless of whether the snow or ice was deposited on the sidewalk by natural, human, mechanical or other means.

Rubbish Removal

- 5. Every owner or occupier of real property (with the exception of lands adjacent to the Lougheed Highway which do not have commercial frontage) must:
 - a. remove, within 48 hours, any rubbish from any sidewalk adjacent to the owner or occupier's real property; and
 - b. remove, within 48 hours, any rubbish from any part of the boulevard adjacent to the owner or occupier's real property.

Boulevard Maintenance

- 6. The owner or occupier of land adjacent to a boulevard may improve the portion of the boulevard directly adjacent to the owner or occupier's land by sodding or planting it with lawn and planting shrubs, ground covers, flowers, grasses or similar ornamental

landscaping materials, but in no case including any noxious weeds, and subject to Section 8;

7. No owner or occupier of real property adjacent to a boulevard shall:

- a. construct any structure on the boulevard, including, without limitation, any fence, wall, gate, retaining wall or rockery;
- b. erect any signage on the boulevard, except as permitted by the City's Election Signs Bylaw;
- c. plant any tree, hedge, bush or shrub on the boulevard which, when fully grown, will or is likely to have a height in excess of one metre or be likely to partially or wholly obstruct access to any sidewalk by pedestrians or prevent or inhibit the safe use of the highway by vehicular and cycle traffic;
- d. otherwise landscape or apply treatment to the boulevard in a manner that will, or will be likely to, obstruct access to any sidewalk by pedestrians, prevent or inhibit the safe use of the highway by vehicular and cycle traffic, or prevent or inhibit the use of the boulevard for the parking of vehicles, including by the placement of large rocks;
- e. place or install any impervious surface on any part of the boulevard, including but not limited to the installation of paved parking stalls;
- f. interfere with access to, bury, expose or damage any pipe, hydrant, valve box, service post, manhole or other utility infrastructure located on, in or adjacent to the boulevard;
- g. obstruct sight lines from driveways or sidewalks or, when located near an intersection, obstruct driver sight lines from intersecting streets;
- h. damage:
 - i. sidewalk, curb, gutter or other municipal infrastructure,
 - ii. trees, shrubs, plants, bushes and hedges,
 - iii. fences, or
 - iv. highway lighting,located on any boulevard;
- i. dispose of any vegetation cuttings, rubbish, discarded materials or any liquid or solid waste on any boulevard;
- j. cut down any tree, any portion of the trunk of which is located on a boulevard;

- k. otherwise undertake any activity or works which would alter the natural grade of the boulevard, or effect drainage patterns of the boulevard,
- without prior written consent of the Director, which consent is within the Director's sole discretion to issue or withhold.
- 8. It is a condition of using a boulevard under the authority of Section 6 that an owner or occupier, at the owner or occupier's sole expense, maintains the boulevard to a good and safe standard consistent with the standard that the property owner or occupier would use in the care of his or her landscaping on his or her own property, to the reasonable satisfaction of the Director.
 - 9. Without in any way restricting the standard of maintenance required by Section 8, an owner or occupier of real property adjacent to a boulevard will ensure that:
 - a. all trees, shrubs, bushes, hedges, grass or other vegetation, other than noxious weeds, on the boulevard receive such water as is necessary for the sustained growth and health of that vegetation;
 - b. no noxious weeds are permitted to grow on the boulevard;
 - c. any grass on the boulevard is not allowed to exceed 15 centimeters in height, with the exception of ornamental grasses;
 - d. no pesticides are used on the boulevard;
 - e. where the boulevard contains rocks, gravel, pebbles, bark mulch or other loose landscaping or surfacing materials, such materials shall be contained and none of those materials is allowed to escape from the placement within in boulevard to fall, roll, or otherwise encroach onto any sidewalk or highway; and
 - f. no hazardous or potentially hazardous situations are allowed to develop or remain.
 - 10. There are two exemptions to the requirements of this bylaw, as follows:
 - a. Owners or occupiers of real property adjacent to the Lougheed Highway, that do not have commercial operations fronting the highway, are exempt from all requirements of Section 9; and
 - b. Owners or occupiers of real property are not required to maintain boulevard improvements installed by the City, such as boulevard trees.
 - 11. The City may, with only such notice to the owner of the adjacent land as is in the opinion of the Director reasonably practicable in the circumstances, and without compensation of the owner, interfere with or remove any improvement made to or placed on a boulevard under the authority of Section 6 if the use of the boulevard is

required for any municipal purpose. The City has no obligation to replace or restore any such improvement.

12. Every ditch crossing shall be maintained and repaired by the owner of the land served by the ditch crossing, including but not limited to ensuring that there is no obstruction to the free flow of water under the ditch crossing, during the life of the installation of the ditch crossing.

Notice of Non-Compliance

13. An Authorized Person may, by written notice to an owner of real property, require the owner to comply with this Bylaw within the time specified in the notice.

City Effects Compliance

14. If the owner or occupier of real property fails to comply with a notice given pursuant to Section 13 of this Bylaw, the City, by its employees or other persons, at reasonable times, may enter on the real property and effect the compliance specified in the notice at the expense of the person who failed to comply, and to recover the cost of doing so as a debt.

No Interference

15. No person shall interfere with:
 - a. an Authorized Person in the performance of his or her duties under this Bylaw, or
 - b. any employee or other person directed by the City to carry out the terms of any notice pursuant to Section 13 of this bylaw.

Offences

16. Every person who:
 - a. violates a provision of this bylaw;
 - b. consents, allows or permits an act or thing to be done in violation of a provision of this bylaw or a permit issued pursuant to this bylaw; or
 - c. neglects to or refrains from doing anything required to be done by a provision of this bylaw or a permit issued pursuant to this bylaw;is guilty of an offence and is liable to the penalties imposed under this bylaw.
17. For certainty, in the case of offences involving the cutting or damaging of more than one tree, shrub, or plant, an offence is committed in respect of each individual specimen and the maximum penalties imposed under this bylaw apply to each such offence.

18. For certainty, in the case of offences of a continuing nature, an offence is committed on each day during which the offence continues, and the maximum penalties imposed under this bylaw apply to each such offence.
19. Every person who commits an offence is liable on summary conviction to a fine not exceeding \$10,000.00.
20. Nothing in this Part precludes the City from seeking any civil remedy to which it is entitled in relation to trespass on City land.

Read a first time by the Municipal Council this 22nd day of May, 2018.

Read a second time by the Municipal Council this 22nd day of May, 2018.

Read a third time by the Municipal Council this 22nd day of May, 2018.

Mayor

Corporate Officer

***A Bylaw to amend the Bylaw Notice Enforcement Bylaw to
include updated penalties related to boulevard maintenance.***

The Council of the Corporation of the City of Port Coquitlam enacts as follows:

Citation

1. This Bylaw may be cited for all purposes as "Bylaw Notice Enforcement Bylaw, No. 3814, 2013, Amendment Bylaw, 2018, No. 4064".

Administration

2. That the Bylaw Notice Enforcement Bylaw No. 3814, 2013 be amended by removing the existing Schedule A for the current Boulevard Maintenance Bylaw No. 2646 and replacing it with the Schedule A for Boulevard Maintenance Bylaw No. 3965 attached hereto and forming part of this Bylaw.

Read a first time by the Municipal Council this 22nd day of May, 2018.

Read a second time by the Municipal Council this 22nd day of May, 2018.

Read a third time by the Municipal Council this 22nd day of May, 2018.

Mayor

Corporate Officer

Schedule A

Designated Bylaw Contraventions and Penalties

Boulevard Maintenance Bylaw No. 3965

COLUMN 1 DESCRIPTION	COLUMN 2 SECTION NO. IN BYLAW	COLUMN 3 DISCOUNTED PENALTY IN \$ (within 14 days)	COLUMN 4 FULL PENALTY IN \$ (after 14 days)	COLUMN 5 COMPLIANCE AGREEMENT DISCOUNT ¹
Failure to Remove Snow or Ice	4	100.00	150.00	N/A
Failure to remove rubbish from sidewalk	5 (a)	100.00	150.00	N/A
Failure to remove rubbish from Boulevard	5 (b)	100.00	150.00	N/A
Construct fence/wall/structure on Boulevard	7 (a)	100.00	150.00	50%
Erect signage on Boulevard	7 (b)	100.00	150.00	50%
Plant tree/hedge/bush/shrub on Boulevard	7 (c)	100.00	150.00	50%
Obstruct Boulevard	7 (d)	100.00	150.00	N/A
Place/install impervious surface	7 (e)	150.00	200.00	50%
Interfere with access to Utilities	7 (f)	100.00	150.00	N/A
Obstruct sightlines	7 (g)	100.00	150.00	N/A
Damage Boulevard	7 (h)	100.00	150.00	N/A
Fail to Dispose of Vegetation/Rubbish on Boulevard	7 (i)	100.00	150.00	N/A
Cut down Tree	7 (j)	200.00	300.00	N/A
Altering natural grade/effect drainage	7 (k)	100.00	150.00	N/A
Failure to Trim Grassland	9 (c)	100.00	150.00	50%
Material on sidewalk/highway	9 (e)	100.00	150.00	50%
Failure to Maintain Ditch/ Obstruct Ditch Crossing	12	100.00	150.00	N/A

¹ Where Compliance Agreement Entered in Accordance With section 8(a)(v) of this bylaw.

*A Bylaw to amend the Bylaw Notice Enforcement Bylaw to
include updated penalties related to highway use.*

The Council of the Corporation of the City of Port Coquitlam enacts as follows:

Citation

1. This Bylaw may be cited for all purposes as "Bylaw Notice Enforcement Bylaw No. 3814, 2013, Amendment Bylaw, 2018, No. 4065".

Administration

2. That the Bylaw Notice Enforcement Bylaw No. 3814, 2013 be amended by removing the existing Schedule 12 for the current Highway Use Bylaw No. 2011 and replacing it with the Schedule 12 for the new Highway Use Bylaw No. 4033 attached hereto and forming part of this Bylaw.

Read a first time by the Municipal Council this 22nd day of May, 2018.

Read a second time by the Municipal Council this 22nd day of May, 2018.

Read a third time by the Municipal Council this 22nd day of May, 2018.

Mayor

Corporate Officer

Schedule "A"
Designated Bylaw Contraventions and Penalties

Highway Use Bylaw, 2018, No. 4033

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
DESCRIPTION	SECTION NO. IN BYLAW	DISCOUNTED PENALTY IN \$ (within 14 days)	FULL PENALTY IN \$ (after 14 days)	COMPLIANCE AGREEMENT DISCOUNT ¹
Illegal traffic control device	17	25.00	40.00	N/A
Interference with a traffic control device	18	25.00	40.00	N/A
Fail to use crosswalk	19	25.00	40.00	N/A
Fail to yield to motor vehicle	20	25.00	40.00	N/A
Fail to use right half of crosswalk	21	25.00	40.00	N/A
Standing on highway soliciting ride	22	25.00	40.00	N/A
Fail to yield to emergency	23	75.00	100.00	N/A
Pedestrian obstructing traffic	24	25.00	40.00	N/A
Crossing contrary to traffic control devices	25	25.00	40.00	N/A
Obstruct free passage of pedestrians	26	25.00	40.00	N/A
Congregate obstructing passage	27	25.00	40.00	N/A
Drive/herd animals on highway	28	25.00	40.00	N/A
Drive on sidewalk/boulevard	29	25.00	40.00	N/A
Littering on highway	30	75.00	100.00	N/A
No commercial transport permit	35 (1)	100.00	150.00	N/A
No valid permit	35 (2)	100.00	150.00	N/A
Stop where prohibited	39 (1) i	25.00	40.00	N/A
Stop where restricted	39 (1) ii	25.00	40.00	N/A
Stop contrary to traffic control device	39 (1) iv	25.00	40.00	N/A
Stopped on sidewalk/boulevard	39 (2)	25.00	40.00	N/A
Stop within 6 m of flashing beacon/stop sign	39 (3)	25.00	40.00	N/A
Stop within 6 m of intersection/crosswalk	39 (4)	25.00	40.00	N/A

Schedule "A"
Designated Bylaw Contraventions and Penalties

Highway Use Bylaw, 2018, No. 4033 (cont'd)

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
DESCRIPTION	SECTION NO. IN BYLAW	DISCOUNTED PENALTY IN \$ (within 14 days)	FULL PENALTY IN \$ (after 14 days)	COMPLIANCE AGREEMENT DISCOUNT ¹
Stop/impede/reduce traffic flow or sightlines	39 (5)	25.00	40.00	N/A
Stop within 5 m of fire hydrant	39 (6)	25.00	40.00	N/A
Stop in/within 1 m of driveway/5 m multifamily	39 (7)	25.00	40.00	N/A
Stop facing wrong way	39 (8)	25.00	40.00	N/A
Stop alongside motor vehicle	39 (9)	25.00	40.00	N/A
Stop within 6 m of firehall entrance	39 (10)	25.00	40.00	N/A
Stop within 6 m of school entrance	39 (11)	75.00	100.00	N/A
Stop within 6 m to entrance/exit of playground/park	39 (12)	25.00	40.00	N/A
Stop within 5 m of mailbox	39 (13)	25.00	40.00	N/A
Stop in lane	39 (14)	25.00	40.00	N/A
Stop on bridge	39 (15)	25.00	40.00	N/A
Prohibited Vehicle on City street	39 (16)	100.00	150.00	N/A
Stop within 15 m of railway crossing	39 (17)	25.00	40.00	N/A
Stop on highway prohibited use	39 (18) i	25.00	40.00	N/A
Stop for selling vehicle on highway	39 (18) ii	100.00	150.00	N/A
Stop for selling on highway	39 (18)iii	100.00	150.00	N/A
Stop on narrow highway	39 (19)	100.00	150.00	N/A
Overtime parking	39 (20)	25.00	40.00	N/A
Stop against yellow curb	39 (21)	25.00	40.00	N/A
Stop unlicensed/uninsured	39 (22)	25.00	40.00	N/A
Stop outside of lines	39 (23)	75.00	100.00	N/A
Stop in fire/bus lane	39 (24)	75.00	100.00	N/A

Schedule “A”
Designated Bylaw Contraventions and Penalties

Highway Use Bylaw, 2018, No. 4033 (cont’d)

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
DESCRIPTION	SECTION NO. IN BYLAW	DISCOUNTED PENALTY IN \$ (within 14 days)	FULL PENALTY IN \$ (after 14 days)	COMPLIANCE AGREEMENT DISCOUNT ¹
Stop not parallel to curb	39 (25)	25.00	40.00	N/A
Stop on highway over 48 hours	39 (26)	25.00	40.00	N/A
Park where restricted in City parking facility	39 (27)	25.00	40.00	N/A
Park where prohibited	40 (1)	25.00	40.00	N/A
Park where restricted	40 (2)	25.00	40.00	N/A
Park where prohibited in school zone	40 (3)	75.00	100.00	N/A
Park where restricted in school zone	40 (4)	75.00	100.00	N/A
Prohibited vehicles on City street	41	100.00	150.00	N/A
Park trailer without reflective tape	42	100.00	150.00	N/A
Unhitched trailer on City street	43	100.00	150.00	N/A
Parked incorrect angle	45	25.00	40.00	N/A
Stop without safety requirements	46	25.00	40.00	N/A
Stop in passenger loading zone	47 (2)	25.00	40.00	N/A
Stop in loading zone	47 (3)	25.00	40.00	N/A
Disabled permit not displayed	50 (2) i	75.00	100.00	N/A
Stop in disabled persons area	50 (2) ii	75.00	100.00	N/A
Obstruction of firefighting vehicle	53 (1)	75.00	100.00	N/A
Obstruction of traffic by motor vehicle	53 (2)	75.00	100.00	N/A
Obstruction of road end by motor vehicle	53 (3)	50.00	75.00	N/A
Obstruction of road work	53 (4)	50.00	75.00	N/A
Improper display of permit	54 (3) i	75.00	100.00	N/A
Park where restricted contrary to permit	54 (3) ii	75.00	100.00	N/A

Schedule "A"
Designated Bylaw Contraventions and Penalties

Highway Use Bylaw, 2018, No. 4033 (cont'd)

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
DESCRIPTION	SECTION NO. IN BYLAW	DISCOUNTED PENALTY IN \$ (within 14 days)	FULL PENALTY IN \$ (after 14 days)	COMPLIANCE AGREEMENT DISCOUNT ¹
Damage highway tree/timber	64 (1)	100.00	150.00	N/A
Alter highway level	64 (2)	100.00	150.00	N/A
Place/construct/ maintain encroachment on highway	64 (3)	100.00	150.00	N/A
Dig up/remove part of highway	64 (4)	100.00	150.00	N/A
Construction on highway	64 (6)	100.00	150.00	N/A
Encumber/obstruct/ encroach highway	64 (7)	100.00	150.00	N/A
Install/operate minor excavation on highway	64 (8)	100.00	150.00	N/A
Obstruct Officers in line of duty	64 (9) a	100.00	150.00	N/A
Obstruct school patrol	64 (9) b	100.00	150.00	N/A
Obstruct emergency/utility/City vehicles	64 (9) c	100.00	150.00	N/A
No permit/lane closure	66 (1)	100.00	150.00	N/A
No permit/highway use	66 (2)	100.00	150.00	N/A
No permit/highway encroachment	66 (3)	100.00	150.00	N/A
Accident debris on highway	77 (2)	75.00	100.00	N/A
Unmarked excavation site	77 (3)	100.00	150.00	NA
Placement of fuel/lumber/merchandise/c hattel/ware on highway	77 (4)	100.00	150.00	N/A
Incorrect/fail to address	77 (6)	100.00	150.00	N/A
Damage tree/shrub/plant/ bush hedge	77 (7) i	100.00	150.00	N/A
Damage fence on highway	77(7) ii	100.00	150.00	N/A
Damage lighting on highway	77 (7) iii	100.00	150.00	N/A
Damage traffic control device	77 (7) iv	100.00	150.00	N/A

Schedule "A"
Designated Bylaw Contraventions and Penalties

Highway Use Bylaw, 2018, No. 4033 (cont'd)

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
DESCRIPTION	SECTION NO. IN BYLAW	DISCOUNTED PENALTY IN \$ (within 14 days)	FULL PENALTY IN \$ (after 14 days)	COMPLIANCE AGREEMENT DISCOUNT ¹
Illegal sign	77(8)	100.00	150.00	N/A
Mark/imprint/deface highway structure	77 (9)	100.00	150.00	N/A
Impede/obstruct drainage/ditch	77 (10)	100.00	150.00	N/A

¹ Where Compliance Agreement entered into in accordance with Section 8 (a)(v) of this bylaw.

***A bylaw to amend the Ticket Information Utilization Bylaw to
include updated penalties related to boulevard maintenance.***

The Council of the Corporation of the City of Port Coquitlam enacts as follows:

Citation

1. This Bylaw may be cited for all purposes as "Ticket Information Utilization Bylaw, 1992, No. 2743, Amendment Bylaw, 2018, No. 4066."

Administration

2. That the Municipal Ticket Information Bylaw No. 2743 be amended by replacing Schedule 13 – "Boulevard Maintenance Bylaw, 1992, No. 2646" with the Schedule 13 for "Boulevard Maintenance Bylaw, 2018, No. 3965" attached hereto and forming part of this Bylaw.

Read a first time by the Municipal Council this 22nd day of May, 2018.

Read a second time by the Municipal Council this 22nd day of May, 2018.

Read a third time by the Municipal Council this 22nd day of May, 2018.

Mayor

Corporate Officer

**THE CORPORATION OF THE CITY OF PORT COQUITLAM
BYLAW 2743**

SCHEDULE 13

Boulevard Maintenance Bylaw No. 3965	SECTION	FINE	FINE (If paid within 30 days of service)
Column 1	Column 2	Column 3	Column 4
Failure to remove snow or Ice	5	\$150.00	\$100.00
Failure to remove rubbish from sidewalk	6 (a)	\$150.00	\$100.00
Failure to remove rubbish from blvd	6 (b)	\$150.00	\$100.00
Construct fence/wall/structure on blvd	7 (a)	\$150.00	\$100.00
Erect signage on boulevard	7 (b)	\$150.00	\$100.00
Plant tree/hedge/bush/shrub on blvd	7 (c)	\$150.00	\$100.00
Obstruct boulevard	7 (d)	\$150.00	\$100.00
Place/install impervious surface	7 (e)	\$200.00	\$150.00
Interfere with access to utilities	7 (f)	\$150.00	\$100.00
Obstruct sightlines	7 (g)	\$150.00	\$100.00
Damage boulevard	7 (h)	\$150.00	\$100.00
Dispose of vegetation/rubbish on boulevard	7 (i)	\$150.00	\$100.00
Cut down tree	7 (j)	\$300.00	\$200.00
Altering natural grade/effect drainage	7 (k)	\$150.00	\$100.00
Failure to trim grassland	9 (c)	\$150.00	\$100.00
Material on sidewalk/highway	9 (e)	\$150.00	\$100.00
Failure to maintain ditch/ obstruct ditch crossing	12	\$150.00	\$100.00

***A bylaw to amend the Ticket Information Utilization Bylaw to
include updated penalties related to highway use.***

The Council of the Corporation of the City of Port Coquitlam enacts as follows:

Citation

1. This Bylaw may be cited for all purposes as "Ticket Information Utilization Bylaw, 1992, No. 2743, Amendment Bylaw, 2018, No. 4067."

Administration

2. That the Municipal Ticket Information Bylaw No. 2743 be amended by replacing Schedule 12 – "Highway Use Bylaw, 1984, No. 2011" with the Schedule 12 for "Highway Use Bylaw, 2018, No. 4033" attached hereto and forming part of this Bylaw.

Read a first time by the Municipal Council this 22nd day of May, 2018.

Read a second time by the Municipal Council this 22nd day of May, 2018.

Read a third time by the Municipal Council this 22nd day of May, 2018.

Mayor

Corporate Officer

**THE CORPORATION OF THE CITY OF PORT COQUITLAM
BYLAW 2743**

SCHEDULE 12

Highway Use Bylaw No. 4033	SECTION	FINE	FINE (If paid within 30 days of service)
Column 1	Column 2	Column 3	Column 4
Illegal traffic control device	17	\$ 40.00	\$ 25.00
Interference with traffic control device	18	\$ 40.00	\$ 25.00
Fail to use crosswalk	19	\$ 40.00	\$ 25.00
Fail to yield to motor vehicle	20	\$ 40.00	\$ 25.00
Fail to use right half of crosswalk	21	\$ 40.00	\$ 25.00
Standing on Highway soliciting ride	22	\$ 40.00	\$ 25.00
Fail to yield to emergency	23	\$100.00	\$ 75.00
Pedestrian obstructing traffic	24	\$ 40.00	\$ 25.00
Crossing contrary to traffic control devices	25	\$ 40.00	\$ 25.00
Obstruct free passage of pedestrians	26	\$ 40.00	\$ 25.00
Congregate obstructing passage	27	\$ 40.00	\$ 25.00
Drive/herd animals on highway	28	\$ 40.00	\$ 25.00
Drive on sidewalk/boulevard	29	\$ 40.00	\$ 25.00
Littering on highway	30	\$100.00	\$ 75.00
No commercial transport permit	35 (1)	\$150.00	\$100.00
No valid permit	35 (2)	\$150.00	\$100.00
Stop where prohibited	39 (1) (i)	\$ 40.00	\$ 25.00
Stop where restricted	39 (2) (ii)	\$ 40.00	\$ 25.00
Stopped abutting school property	39 (1) (iii)	\$100.00	\$ 75.00
Stop contrary to traffic control device	39 (1) (iv)	\$ 40.00	\$ 25.00
Stopped on sidewalk/boulevard	39 (2)	\$ 40.00	\$ 25.00
Stop within 6 m of flashing beacon/stop sign	39 (3)	\$ 40.00	\$ 25.00
Stop within 6 m of intersection/ crosswalk	39 (4)	\$ 40.00	\$ 25.00
Stop/impede/reduce traffic flow or sightlines	39 (5)	\$ 40.00	\$ 25.00
Stop within 5 m of fire hydrant	39 (6)	\$ 40.00	\$ 25.00

**THE CORPORATION OF THE CITY OF PORT COQUITLAM
BYLAW 2743**

SCHEDULE 12 (cont'd)

Highway Use Bylaw No. 4033	SECTION	FINE	FINE (If paid within 30 days of service)
Stop in/within 1 m of driveway/ 5 m multi-family	39 (7)	\$ 40.00	\$ 25.00
Stop facing wrong way	39 (8)	\$ 40.00	\$ 25.00
Stop along motor vehicle	39 (9)	\$ 40.00	\$ 25.00
Stop within 6 m of firehall entrance	39 (10)	\$ 40.00	\$ 25.00
Stop within 6 m of school entrance	39 (11)	\$100.00	\$ 75.00
Stop within 6 m to entrance/exit of playground/park	39 (12)	\$ 40.00	\$ 25.00
Stop within 5 m of mailbox	39 (13)	\$ 40.00	\$ 25.00
Stop in lane	39 (14)	\$ 40.00	\$ 25.00
Stop on bridge	39 (15)	\$ 40.00	\$ 25.00
Prohibited vehicle on City street	39 (16)	\$150.00	\$100.00
Stop within 15 m of rail crossing	39 (17)	\$ 40.00	\$ 25.00
Stop on highway, prohibited use	39 (18)	\$ 40.00	\$ 25.00
Stop for selling vehicle on highway	39 (18) (ii)	\$150.00	\$100.00
Stop for selling on highway	39 (18)(iii)	\$150.00	\$100.00
Stop on narrow highway	39 (19)	\$150.00	\$100.00
Overtime parking	39 (20)	\$ 40.00	\$ 25.00
Stop against yellow curb	39 (21)	\$ 40.00	\$ 25.00
Stop unlicensed/uninsured	39 (22)	\$ 40.00	\$ 25.00
Stop outside of lines	39 (23)	\$100.00	\$ 75.00
Stop in fire/bus lane	39 (24)	\$100.00	\$ 75.00
Stop not parallel to curb	39 (25)	\$ 40.00	\$ 25.00
Stop on highway over 48 hours	39 (26)	\$ 40.00	\$ 25.00
Park where restricted in City parking lot	39 (27)	\$ 40.00	\$ 25.00
Park where prohibited	40 (1)	\$ 40.00	\$ 25.00
Park where restricted	40 (2)	\$ 40.00	\$ 25.00
Park where prohibited in school zone	40 (3)	\$100.00	\$ 75.00

**THE CORPORATION OF THE CITY OF PORT COQUITLAM
BYLAW 2743**

SCHEDULE 12 (cont'd)

Highway Use Bylaw No. 4033	SECTION	FINE	FINE (If paid within 30 days of service)
Park where restricted in school zone	40 (4)	\$100.00	\$ 75.00
Prohibited vehicles on City street	41	\$150.00	\$100.00
Park trailer without reflective tape	42	\$150.00	\$100.00
Unhitched trailer on City street	43	\$150.00	\$100.00
Parked incorrect angle	45	\$ 40.00	\$ 25.00
Stop without safety requirements	46	\$ 40.00	\$ 25.00
Stop in passenger loading zone	47 (2)	\$ 40.00	\$ 25.00
Stop in loading zone	47 (3)	\$ 40.00	\$ 25.00
Disabled permit not displayed	50 (1)	\$100.00	\$ 75.00
Stop in disabled persons area	50 (2)	\$100.00	\$ 75.00
Obstruction of firefighting vehicle	53 (1)	\$100.00	\$ 75.00
Obstruction of traffic by motor vehicle	53 (2)	\$100.00	\$ 75.00
Obstruction of road end by motor vehicle	53 (3)	\$ 75.00	\$ 50.00
Obstruction of road work	53 (4)	\$ 75.00	\$ 50.00
Improper display of permit	53 (3) (i)	\$100.00	\$ 75.00
Park where restricted contrary to permit	54 (3) (ii)	\$100.00	\$ 75.00
Damage highway tree/trees/timber	64 (1)	\$150.00	\$100.00
Alter highway level	64 (2)	\$150.00	\$100.00
Place/construct/maintain encroachment on highway	64 (3)	\$150.00	\$100.00
Dig up/removed part of highway	64 (4)	\$150.00	\$100.00
Construction on highway	64 (6)	\$150.00	\$100.00
Encumber/obstruct/encroach highway	64 (7)	\$150.00	\$100.00
Install/operate minor excavating on hwy	64 (8)	\$150.00	\$100.00
Obstruct Officer(s) in line of duty	64 (9)	\$150.00	\$100.00
Obstruct school patrol	64 (9) (b)	\$150.00	\$100.00
Obstruct emergency/utility/city vehicle	64 9 (c)	\$150.00	\$100.00

**THE CORPORATION OF THE CITY OF PORT COQUITLAM
BYLAW 2743**

SCHEDULE 12 (cont'd)

Highway Use Bylaw No. 4033	SECTION	FINE	FINE (If paid within 30 days of service)
No permit/lane closure	66 (1)	\$150.00	\$100.00
No permit/highway use	66 (2)	\$150.00	\$100.00
No permit/highway encroachment	66 (3)	\$150.00	\$100.00
Accident debris on highway	77 (2)	\$100.00	\$ 75.00
Unmarked excavation site	77 (3)	\$150.00	\$100.00
Placement of fuel/lumber/merchandise/ chattel/ware on highway	77 (4)	\$150.00	\$100.00
Incorrect/fail to address	77 (6)	\$150.00	\$100.00
Damage tree/shrub/plant/hedge	77 (7) (i)	\$150.00	\$100.00
Damage fence on highway	77 (7) (ii)	\$150.00	\$100.00
Damage lighting on highway	77 (7) (iii)	\$150.00	\$100.00
Damage traffic control device	77 (7) (iv)	\$150.00	\$100.00
Illegal sign	77 (8)	\$150.00	\$100.00
Mark/imprint/deface highway structure	77 (9)	\$150.00	\$100.00
Impede/obstruct drainage/ditch	77 (10)	\$150.00	\$100.00

***A Bylaw to amend "Fees and Charges Bylaw, 2015, No. 3892"
related to Parks and Recreation Fees.***

The Council of the Corporation of the City of Port Coquitlam enacts as follows:

Citation

1. This Bylaw may be cited for all purposes as "Fees and Charges Bylaw, 2015, No. 3892, Amendment Bylaw, 2017, No. 4063".

Administration

2. That the "Fees and Charges Bylaw, 2015, No. 3892", be amended by inserting a new Schedule "C", that is attached hereto and forms part of this Bylaw.

Read a first time by the Municipal Council this 22nd day of May, 2018.

Read a second time by the Municipal Council this 22nd day of May, 2018.

Read a third time by the Municipal Council this 22nd day of May, 2018.

Mayor

Corporate Officer

Schedule "C"
PARKS & RECREATION

Activity Room Rentals

(Hyde Creek Recreation Centre – Youth Centre, Sports Hall, Aerobics Studio, Kitchen,
Weight and Personal Training Rooms)
(Port Coquitlam Recreation Complex – Lobby, Lobby Activity Room and Lounge)
(Gathering Place – Community Room)
(Leigh Square – Bandshell)

Effective Date: September 1, 2018

<i>Category</i> <i>(per hour of rental with minimum 2 hour charge)</i>	<i>Fees & Charges</i> <i>for 2014</i>	<i>Fees & Charges</i> <i>for 2015</i>	<i>Fees & Charges for</i> <i>2018</i> <i>(HC, GP, LS / PRC)</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes. Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
Adult/Senior (includes local government, service agencies, clubs, religious groups and PCSA members)	\$15.40	\$16.20	\$16.70/ \$16.20	
Youth (includes PCSA members)	\$7.80	\$8.00	\$8.25/\$8.00	
Local Schools	\$7.80	\$8.00	\$8.25/\$8.00	
PRIVATE GROUPS				Adjusted to reflect operating, market and/or inflationary changes. Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
All Ages	\$19.40	\$20.20	\$20.80/ \$20.20	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Adjusted to reflect operating, market and/or inflationary changes. Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
All Ages	\$23.20	\$24.20	\$24.90/ \$24.20	

Note:

- Non-profit community groups can book a small meeting room at “no charge” for a maximum of two hours, once a week, up to a year in advance. Available rooms include the Hyde Creek’s Youth Centre, Port Coquitlam Recreation Complex’s Lounge and Lobby Room and the Gathering Place’s Community Room.
- All proposed fees are exclusive of tax, which will be added, if applicable.
- Daily rate is equal to 12 hours of the applicable hourly rate.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

Community Room Rentals

(Hyde Creek Recreation Centre – Conference, Lecture and Community Rooms #2, #3)
(Port Coquitlam Recreation Complex – Green Room)
(Gates Park – Meeting Room)
(Gathering Place – Loft)
(The Outlet – Artist in Residence)

Effective Date: September 1, 2018

<i>Category (per hour of rental with minimum 2 hour charge)</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018 (HC, Gates, GP, Outlet / PRC)</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes. Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
Adult/Senior (includes local government, service agencies, clubs, religious groups and PCSA members)	\$15.40	\$16.40	\$16.90/ \$16.40	
Youth (includes PCSA members)	\$7.80	\$8.20	\$8.40/ \$8.20	
Local Schools	\$7.80	\$8.20	\$8.40/ \$8.20	
PRIVATE GROUPS				Adjusted to reflect operating, market and/or inflationary changes. Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
All Ages	\$19.20	\$20.40	\$21.00/ \$20.40	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Adjusted to reflect operating, market and/or inflationary changes. Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
All Ages	\$23.00	\$24.60	\$25.30/ \$24.60	

Note:

- Non-profit community groups can book a small meeting room at "no charge" for a maximum of two hours, once a week, up to a year in advance. Available rooms include the Port Coquitlam Recreation Complex's Green Room and the Gates Park and Hyde Creek meeting rooms.
- All proposed fees are exclusive of tax, which will be added, if applicable.
- Daily rate is equal to 12 hours of applicable hourly rate.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

Multi-Purpose Hall Rentals

(Wilson Centre – Main Lounge)

(Outlet – Work Room)

(Gathering Place – Michael Wright Art Gallery)

(Hyde Creek Recreation Centre – Gym)

(Port Coquitlam Recreation Complex – Mabbett Room)

Effective Date: September 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014</i> (WC, LS, GP / HC & PRC)	<i>Fees & Charges for 2015</i> WC, LS, GP / HC & PRC)	<i>Fees & Charges for 2018</i> (WC, LS, GP / HC / PRC)	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes. Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
Adult/Senior (includes local government, service agencies, clubs, religious groups and PCSA members)	\$43.80/\$51.40	\$44.00/\$54.00	\$45.30/\$55.60/ \$54.00	
Youth/Local Schools (includes PCSA members)	\$21.80/\$25.80	\$22.00/\$27.00	\$22.70/\$27.80/ \$27.00	
PRIVATE GROUPS				Adjusted to reflect operating, market and/or inflationary changes. Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
All Ages	\$54.80/\$64.40	\$55.00/\$67.60	\$56.70/\$69.60/ \$67.60	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Adjusted to reflect operating, market and/or inflationary changes. Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
All Ages	\$65.80/\$77.20	\$66.00/\$81.00	\$68.00/\$83.40/ \$81.00	

Note:

- All proposed fees are exclusive of tax, which will be added, if applicable.
- Daily rate is equal to 12 hours of the applicable hourly rate.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

Ice Rentals
Port Coquitlam Recreation Complex

Effective Date: September 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Not adjusted due to Port Coquitlam Recreation Complex construction.
Adult/Senior (includes local government, service agencies, clubs, religious groups and PCSA members)	\$230.00	\$237.00	\$237.00	
Youth (includes PCSA members)	\$107.00	\$110.00	\$110.00	
Local Schools	\$107.00	\$110.00	\$110.00	
PRIVATE GROUPS				Not adjusted due to Port Coquitlam Recreation Complex construction.
All Ages	\$279.00	\$290.00	\$290.00	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Not adjusted due to Port Coquitlam Recreation Complex construction.
All Ages	\$305.00	\$314.00	\$314.00	

Note:

- All proposed fees are exclusive of tax, which will be added, if applicable.
- Ice rentals from August to Labor Day are available for \$110.00 per hour plus applicable tax for all user group categories.
- Ice rentals that require an Arena Attendant will be charged \$27.05 per hour (2018 rate) and subject to change.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

Dry Floor Rentals
Port Coquitlam Recreation Complex

Effective Date: September 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Not adjusted due to Port Coquitlam Recreation Complex construction.
Adult/Senior (includes local government, service agencies, clubs, religious groups, senior lacrosse and PCSA members)	\$78.60	\$82.00	\$82.00	
Youth (includes intermediate, junior lacrosse and PCSA members)	\$39.40	\$41.00	\$41.00	
Local Schools	\$39.40	\$41.00	\$41.00	
PRIVATE GROUPS				Not adjusted due to Port Coquitlam Recreation Complex construction.
All Ages	\$98.20	\$102.40	\$102.40	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Not adjusted due to Port Coquitlam Recreation Complex construction.
All Ages	\$117.80	\$123.00	\$123.00	

Note:

- All proposed fees are exclusive of tax, which will be added, if applicable.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

Artificial Turf Field Rentals
Gates Park

Effective Date: July 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
Adult/Senior (includes service agencies, clubs, religious groups and PCSA members)	\$43.00	\$44.80	\$46.10	
Youth (includes PCSA members)	\$22.00	\$22.40	\$23.10	
Local Schools	\$22.00	\$22.40	\$23.10	
PRIVATE GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$53.80	\$56.00	\$57.70	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$64.00	\$67.20	\$69.20	

Note:

- All proposed fees are exclusive of tax, which will be added, if applicable.
- From July 1 – August 31, turf rentals are \$23.10 per hour for all private and non-profit community groups.
- Daily Rate: Equal to 10 hours of the applicable hourly rate.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

Artificial Turf Warm-up Field Rentals
Gates Park

Effective Date: July 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
Adult/Senior (includes service agencies, clubs, religious groups and PCSA members)	\$12.40	\$13.00	\$13.40	
Youth (includes PCSA members)	\$6.20	\$6.40	\$6.60	
Local Schools	\$6.20	\$6.40	\$6.60	
PRIVATE GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$15.60	\$16.20	\$16.70	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$18.60	\$19.60	\$20.20	

Note:

- All proposed fees are exclusive of tax, which will be added, if applicable.
- Daily Rate: Equal to 10 hours of the applicable hourly rate.
- ½ hour "no charge" use available on the warm-up turf field, just prior to a group's booked time on a turf field.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

"A" Level Field Rentals

Effective Date: September 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
Adult/Senior (includes service agencies, clubs, religious groups and PCSA members)	\$15.60	\$16.40	\$16.90	
Adult Tournament	\$13.60	\$14.20	\$14.60	
Youth (includes PCSA members)	\$8.00	\$8.20	\$8.40	
Youth Tournament	\$6.90	\$7.20	\$7.40	
Local Schools	\$8.00	\$8.20	\$8.40	
PRIVATE GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$19.60	\$20.60	\$21.20	
Tournament	\$17.10	\$17.80	\$18.30	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$23.40	\$24.60	\$25.30	
Tournament	\$20.40	\$21.40	\$22.00	

Note:

- The following are categorized as "A" level fields: Aggie, Cedar, Thompson, Evergreen, Gates, Terry Fox and McLean Parks, Ecole des Pionniers, Terry Fox Secondary, Citadel and Minnekhada Middle Schools (oval field).
- All proposed fees are exclusive of tax, which will be added, if applicable.
- Daily Rate: Equal to 10 hours of the applicable hourly rate.
- Tournament Rate: Average of rates for Fields A and B.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

"B" Level Field Rentals

Effective Date: September 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
Adult/Senior (includes service agencies, clubs, religious groups and PCSA members)	\$11.60	\$12.20	\$12.60	
Adult Tournament	\$13.60	\$14.20	\$14.60	
Youth (includes PCSA members)	\$5.80	\$6.20	\$6.40	
Youth Tournament	\$6.90	\$7.20	\$7.40	
Local Schools	\$5.80	\$6.20	\$6.40	
PRIVATE GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$14.60	\$15.20	\$15.70	
Tournament	\$17.10	\$17.80	\$18.30	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$17.40	\$18.20	\$18.70	
Tournament	\$20.40	\$21.40	\$22.00	

Note:

- The following are categorized as "B" level fields: Pitt River Middle School (oval field) and Minnehada Middle School (junior field).
- All fees are exclusive of tax, which will be added, if applicable.
- Daily Rate: Equal to 10 hours of the applicable hourly rate.
- Tournament Rate: Average of rates for Fields A and B.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

"C" Level Field Rentals

Effective Date: September 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
Adult/Senior (includes service agencies, clubs, religious groups and PCSA members)	\$6.60	\$7.00	\$7.20	
Adult Tournament	\$13.60	\$14.20	\$14.60	
Youth (includes PCSA members)	\$3.40	\$3.60	\$3.70	
Youth Tournament	\$6.90	\$7.20	\$7.40	
Local Schools	\$3.40	\$3.60	\$3.70	
PRIVATE GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$8.40	\$8.80	\$9.10	
Tournament	\$17.10	\$17.80	\$18.30	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$10.00	\$10.40	\$10.70	
Tournament	\$20.40	\$21.40	\$22.00	

Note:

- The following are categorized as "C" level fields: Sun Valley and Central Parks, Minnehada Middle School (mini field) and Pitt River Middle School (junior field).
- All proposed fees are exclusive of tax, which will be added, if applicable.
- Daily Rate: Equal to 10 hours of the applicable hourly rate.
- Tournament Rate: Average of rates for Fields A and B.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

Outdoor Pool Admission/Passes

Effective Date: June 1, 2018

<i>Category</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
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SINGLE ADMISSION				Adjusted to reflect market changes.
Tots	Free	Free	Free	
Children	\$1.70	\$1.80	\$2.00	
Youth	\$2.60	\$2.80	\$2.00	
Adult	\$3.40	\$3.60	\$2.00	
Senior	\$2.60	\$2.80	\$2.00	
Super Senior (85 yrs+)	N/A	N/A	\$2.00	
Family	\$6.80	\$7.20	\$6.00	

ANNUAL MEMBERSHIP				Adjusted to reflect operating, market and/or inflationary changes.
Adult	\$76.50	\$81.00	\$45.00	
Senior	\$58.50	\$63.00	\$45.00	
Summer Pass for Children & Youth	\$20.00	\$20.00	\$20.00	

Note:

- All proposed fees include 5% GST.
- Family admission and membership fees are based on the cost of 2 children and one adult.
- Annual memberships are based on the cost of 22.5 single admissions

Schedule "C"
PARKS & RECREATION

Single Admissions
Hyde Creek Recreation Centre

Effective Date: September 1, 2018

<i>Category</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
ALL INCLUSIVE				This admission includes access to the following drop-in services: swimming, water aerobics, sauna room, steam room, swirl pool, aerobics, weight room, gym sports, spinning and racquet courts. Adjusted to reflect operating, market and/or inflationary changes.
Tots	Free	Free	Free	
Children	\$3.00	\$3.10	\$3.20	
Youth	\$4.50	\$4.60	\$4.70	
Adult	\$6.00	\$6.20	\$6.40	
Senior	\$4.50	\$4.60	\$4.70	
Super Senior (85 yrs+)	N/A	N/A	\$3.20	New for 2018.
Family	\$12.00	\$12.40	\$12.80	
POOL GROUP RATE				
More than 21 people	\$3.00 each	\$3.10 each	\$3.30 each	

Note:

- All proposed fees include 5% GST.
- Family admission and membership fees are based on the cost of two children and one adult.

Schedule "C"
PARKS & RECREATION

10 or 20 Visit Passes
Hyde Creek Recreation Centre

Effective Date: September 1, 2018

<i>Category</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
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ALL INCLUSIVE (10 visit pass)				Same services as single admission. Adjusted to reflect operating, market and/or inflationary changes.
Tots	Free	Free	Free	
Children	\$27.00	\$27.90	\$28.80	
Youth	\$40.50	\$41.40	\$42.30	
Adult	\$54.00	\$55.80	\$57.60	
Senior	\$40.50	\$41.40	\$42.30	
Super Senior (85 yrs+)	N/A	N/A	\$28.80	New for 2018.
Family	\$108.00	\$111.60	\$115.20	

ALL INCLUSIVE (20 visit pass)				Same services as single admission. Adjusted to reflect operating, market and/or inflationary changes.
Tots	Free	Free	Free	
Children	\$48.00	\$49.60	\$51.20	
Youth	\$72.00	\$73.60	\$75.20	
Adult	\$96.00	\$99.20	\$102.40	
Senior	\$72.00	\$73.60	\$75.20	
Super Senior (85 yrs+)	N/A	N/A	\$51.20	New for 2018.
Family	\$192.00	\$198.40	\$204.80	

Note:

- All proposed fees include 5% GST.
- All Inclusive 10 visit pass is based on the cost of 9 single admissions (10% discount)
- All Inclusive 20 visit pass is based on the cost of 16 single admissions (20% discount)

Schedule "C"
PARKS & RECREATION

1 Month Pass
Hyde Creek Recreation Centre

Effective Date: September 1, 2018

<i>Category</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
ALL INCLUSIVE				Same services as single admission. Adjusted to reflect operating, market and/or inflationary changes.
Tots	n/a	n/a	Free	
Children	\$27.00	\$27.90	\$28.80	
Youth	\$40.50	\$41.40	\$42.30	
Adult	\$54.00	\$55.80	\$57.60	
Senior	\$40.50	\$41.40	\$42.30	
Super Senior (85 yrs+)	N/A	N/A	\$28.80	New for 2018.
Family	\$108.00	\$111.60	\$115.20	

Note:

- One month memberships are based on 9 single admissions.
- Passes are inclusive of any required facility/amenity closures (eg. Shut down for annual maintenance).
- All proposed fees include 5% GST.

Schedule "C"
PARKS & RECREATION

3 Month Passes
Hyde Creek Recreation Centre

Effective Date: September 1, 2018

<i>Category</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
ALL INCLUSIVE				Same services as single admission. Adjusted to reflect operating, market and/or inflationary changes.
Tots	Free	Free	Free	
Children	\$78.00	\$80.60	\$83.20	
Youth	\$117.00	\$119.60	\$122.20	
Adult	\$156.00	\$161.20	\$166.40	
Senior	\$117.00	\$119.60	\$122.20	
Super Senior (85 yrs+)			\$83.20	New for 2018.
Family	\$312.00	\$322.40	\$332.80	

Note:

- 3 month memberships are based on 26 single admissions.
- 5% and 20% discount on 6 and annual memberships, respectively.
- Passes are inclusive of any required facility/amenity closures.
- All proposed fees include 5% GST.

Schedule "C"
PARKS & RECREATION

Port Coquitlam Recreation Complex Admission/Passes

Effective Date: September 1, 2018

<i>Category</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
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SINGLE ADMISSION				Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
Tots	Free	Free	Free	
Children	\$2.45	\$2.60	\$2.60	
Youth	\$3.65	\$3.80	\$3.80	
Adult	\$4.90	\$5.20	\$5.20	
Senior	\$3.65	\$3.80	\$3.80	
Family	\$9.80	\$10.40	\$10.40	

10 VISIT PASS				Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
Tot	Free	Free	Free	
Children	\$22.05	\$23.40	\$23.40	
Youth	\$32.85	\$34.20	\$34.20	
Adult	\$44.10	\$46.80	\$46.80	
Senior	\$32.85	\$34.20	\$34.20	
Family	\$88.20	\$93.60	\$93.60	

GROUP RATE				Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
More than 21 people	\$2.45 each	\$2.60 each	\$2.60 each	

ANNUAL MEMBERSHIP				Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
Tot	Free	Free	Free	
Children	\$53.90	\$57.20	\$57.20	
Youth	\$80.30	\$83.60	\$83.60	
Adult	\$107.80	\$114.40	\$114.40	
Senior	\$80.30	\$83.60	\$83.60	
Family	\$215.60	\$228.80	\$228.80	

Note:

- Annual membership includes access to public skate sessions. Based on 22 weeks of operation, 1 use per week.
- Skate and/or helmet rentals are not included with any single admission, visit pass or membership package.
- All proposed fees include 5% GST.

Schedule "C"
PARKS & RECREATION

Miscellaneous Items

Effective Date: September 1, 2018

<i>Category</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
PICNIC SHELTERS (Lions, Settlers, Castle & Peace Parks)	\$36.00/day or any portion thereof	\$38.00/day or any portion thereof	\$60.00/event (max. 4 hours)	Adjusted to reflect operating, market and/or inflationary changes.
BEER GARDEN	\$146.00/day, per location	\$152.00/day, per location	\$156.60/day, per location	Adjusted to reflect operating, market and/or inflationary changes.
BANNERS ON UNDERPASS				Adjusted to reflect operating, market and/or inflationary changes.
Registered, Non-Profit	\$53.00/week	\$55.00/week	\$56.70/week	
Commercial	\$104.00/week	\$108.00/week	\$111.20/week	
KITCHEN RENTAL Gathering Place	\$32.00/event	\$33.00/event	\$34.00/event	Adjusted to reflect operating, market and/or inflationary changes.
CLEAN-UP CHARGES	\$54.50/event	\$56.50/event	\$58.20/hr	Adjusted to reflect operating, market and/or inflationary changes. Fee changed from a per event to a per hour charge
DAMAGE DEPOSIT Refundable	Up to \$500.00/event	Up to \$500.00/event	Up to \$500.00/event	Fee not adjusted.
SET-UP CHARGES				Adjusted to reflect operating, market and/or inflationary changes.
Chairs and tables for up to 100 people	\$61.00/event	\$64.00/event	\$66.00/event	
Chairs and tables for 100- 199 people	\$115.00/event	\$119.00/event	\$123.00/event	
Chairs and tables for 200- 300 people	\$152.00/event	\$158.00/event	\$163.00/event	

... 2/

<i>Category</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
EQUIPMENT RENTALS				Adjusted to reflect operating, market and/or inflationary changes.
Flip Chart Easel (including one pad of paper)	\$27.00/event	\$28.00/event	\$28.80/event	
TV/VCR/DVD cart	\$28.00/event	\$28.00/event	\$28.80/event	
Stage	\$87.50/event	\$90.00/event	\$92.70/event	
Projection Screen	\$15.00/event	\$15.00/event	\$15.50/event	
SPORT EQUIPMENT RENTALS				Adjusted to reflect operating, market and/or inflationary changes.
Racquets	\$3.40	\$3.50	\$3.60	Adjusted to reflect operating, market and/or inflationary changes. Fees and Charges for Port Coquitlam Recreation Complex have not been adjusted due to construction.
Skate Rentals	\$3.60	\$3.70	\$3.70	
Skate Rentals (10 rental pass)	\$32.40	\$33.30	\$33.30	
Helmet Rentals	\$2.10	\$2.20	\$2.20	
Helmet Rentals (10 rental pass)	\$18.90	\$19.80	\$19.80	
Skate Sharpening	\$5.80	\$6.00	\$6.00	
Skate Sharpening (10 rental pass)	\$52.20	\$54.00	\$54.00	

Note:

- All proposed fees are exclusive of tax which will be added, if applicable.
- Sport equipment rentals are inclusive of the applicable taxes.
- At the discretion of staff, a damage deposit may be required for the rental of a facility, park or field up to the amount of \$500 per event.

Schedule "C"
PARKS & RECREATION

Indoor Pool Rentals

Effective Date: September 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014 (Lap/Leisure)</i>	<i>Fees & Charges for 2015 (Lap/Leisure)</i>	<i>Fees & Charges for 2018 (Lap/Leisure)</i>	<i>Comments</i>
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NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
Adult/Senior (includes local government, service agencies, clubs, religious groups and PCSA members)	\$134.00/\$123.00	\$139.00/\$128.00	\$143.20/\$131.80	
Youth/Local Schools (includes PCSA members)	\$91.20/\$86.60	\$97.00/\$91.50	\$99.90/\$94.20	
Local Swim Clubs (no guards)	\$37.80	\$42.00	\$43.30	

PRIVATE GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$150.80/\$141.00	\$160.00/\$146.00	\$164.80/\$150.40	

COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$175.00/\$158.60	\$181.00/\$164.60	\$186.40/\$169.50	

Note:

- Single lane rate is calculated at approximately 1/6 the applicable lap pool rate.
- Full pool rates are the combined total of the applicable hourly rate for the lap and leisure pools, including guarding costs (two aquatic leaders for a maximum of 60 users).
- All proposed fees are exclusive of tax, which will be added, if applicable.
- Additional aquatic leaders are charged out at \$28.70 per hour (2018 rate), subject to change.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

Outdoor Pool Rentals

Effective Date: September 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014 (CE&RH/Wading)</i>	<i>Fees & Charges for 2015 (CE&RH/Wading)</i>	<i>Fees & Charges for 2018 (CE&RH/Wading)</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
Adult/Senior (includes local government, service agencies, clubs, religious groups and PCSA members)	\$90.40/\$55.40	\$90.40/\$55.40	\$93.10/\$57.10	
Youth (includes PCSA members)	\$71.20/\$38.00	\$72.80/\$38.40	\$75.00/\$39.60	
Local Schools	\$68.00/\$38.00	\$72.80/\$38.40	\$75.00/\$39.60	
Local Swim Clubs (no guards)	\$17.80 (all rental hours)	\$17.80 (all rental hours)	\$18.30 (all rental hours)	
PRIVATE GROUPS				
All Ages	\$97.80/\$61.80	\$99.20/\$64.00	\$102.20/\$65.90	Adjusted to reflect operating, market and/or inflationary changes.
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				
All Ages	\$106.60/\$70.00	\$108.00/\$72.40	\$111.20/\$74.60	Adjusted to reflect operating, market and/or inflationary changes.

Note:

- All proposed fees are exclusive of tax, which will be added, if applicable.
- Fees at outdoor pools include two aquatic leaders for 60 users.
- Fees at wading pools include one aquatic attendant.
- Fees to open the outdoor pool early are negotiated separately with swim clubs.
- Additional aquatic leaders are charged out at \$28.70 per hour, subject to change.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

Outdoor Lacrosse Box Rentals
(Minnekhada, Terry Fox and Rowland Parks)

Effective Date: September 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
Adult/Senior (includes local government, service agencies, clubs, religious groups and PCSA members)	\$14.00	\$15.00	\$15.50	
Youth (includes PCSA members)	\$7.00	\$7.60	\$7.80	
Local Schools	\$7.00	\$7.60	\$7.80	
PRIVATE GROUPS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$17.60	\$18.80	\$19.40	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				Adjusted to reflect operating, market and/or inflationary changes.
All Ages	\$21.00	\$22.40	\$23.10	

Note:

- All proposed fees are exclusive of tax, which will be added, if applicable.
- Daily Rate: Equal to 10 hours of the applicable hourly rate.
- PCSA = Port Coquitlam Sports Alliance Society

Schedule "C"
PARKS & RECREATION

Tennis Court Rentals
(Gates & Terry Fox Tennis Courts)

Effective Date: July 1, 2018

<i>Category (per hour of rental)</i>	<i>Fees & Charges for 2014</i>	<i>Fees & Charges for 2015</i>	<i>Fees & Charges for 2018</i>	<i>Comments</i>
NON-PROFIT COMMUNITY GROUPS				New for 2018. Fee incorporated to account for maintenance and improvement costs.
Adult/Senior (includes local government, service agencies, clubs, religious groups)	N/A	N/A	\$5.00	
Youth (includes PCSA members)	N/A	N/A	\$2.50	
Local Schools	N/A	N/A	\$2.50	
Local Tennis Club (must be a PCSA member)	N/A	N/A	\$2.50	
PRIVATE GROUPS				New for 2018. Fee incorporated to account for maintenance and improvement costs.
All Ages	N/A	N/A	\$6.25	
COMMERCIAL/ POLITICAL/ NON-RESIDENTS				New for 2018. Fee incorporated to account for maintenance and improvement costs.
All Ages	N/A	N/A	\$7.50	

Note:

- All proposed fees are exclusive of tax, which will be added, if applicable.
- Daily Rate: Equal to 10 hours of the applicable hourly rate.
- PCSA = Port Coquitlam Sports Alliance Society

Amendment to Schedule “C” (Parks & Recreation) of the Fees & Charges Bylaw

RECOMMENDATION:

That the amendment to Fees and Charges Bylaw - Schedule “C” (Parks & Recreation), 2018, No. 4063 be given first three readings.

PREVIOUS COUNCIL/COMMITTEE ACTION

At its May 15th, 2018 meeting, the Finance and Budget Committee resolved

That the Finance and Budget Committee direct staff to prepare an amendment to the Fees and Charges Bylaw - Schedule “C” (Parks & Recreation), effective September 1, 2018, that incorporates a 3% inflationary increase to selected fees.

REPORT SUMMARY

The proposed amendment to Schedule “C” (Parks & Recreation) updates charges associated with recreation services to reflect changes in market trends and operating costs.


DISCUSSION

The Finance and Budget Committee considered the attached report (Attachment #1) at the May 15th, 2018 meeting, and supported proceeding with the bylaw amendments.

FINANCIAL IMPLICATIONS

As noted in the report to Committee, if the Bylaw is adopted the proposed amendments would ensure that fees for recreation services are in line with market trends and the Recreation Department’s operating budget.

OPTIONS

#	Description
1 	Give first three readings to the amended Fees and Charges Bylaw – Schedule “C” (Parks & Recreation), No. 4063
2	Refer the amending bylaw back to staff for revision
3	Take no action and leave the current bylaw in effect

ATTACHMENTS

1. 05-15-2018 Report to Finance and Budget Committee
2. Proposed Amendment to Fees and Charges Bylaw – Schedule “C” (Parks & Recreation), No. 4063

Update to Fees and Charges Bylaw - Schedule “C” (Parks & Recreation)

RECOMMENDATION:

That the Finance and Budget Committee direct staff to prepare an amendment to the Fees and Charges Bylaw to replace Schedule “C” (Parks & Recreation) with an updated schedule that incorporates a 3% increase.

PREVIOUS COUNCIL/COMMITTEE ACTION

This report represents a requirement of the approved 2017-2018 Recreation Department Business plan and satisfies one of the Registered Recreation Program CIA recommendations.

REPORT SUMMARY

This report recommends that Schedule “C” (Parks and Recreation) of the Fees and Charges Bylaw, 2015, No. 3892 be amended with updated fees to reflect changes in market trends and operating costs. An overview of the City’s current fees in comparison to market data and current operating costs is provided, and specific fee adjustments are recommended. Implementation of the recommended adjustments will support active participation and target the net budget outlined in the 2017-2018 Operating Budget. Providing low cost and no cost opportunities will continue to be a priority to enhance accessibility and reduce financial barriers to parks and recreation programs and services.

BACKGROUND

In 2000, City Council approved the Parks and Recreation Department Fees and Charges Policy which provides direction as to how fees are calculated for services offered. Staff follow this Policy to establish and implement fees on an annual basis.

The approach taken to determine fee adjustments considers the following:

- The local market including pricing, supply and demand;
- Pricing associated with similar services;
- Inflationary increases and other changes to facility operating costs; and
- The Fees and Charges Policy, as it relates to fees.

Program registrations are not addressed in this report as these fees are established, (as per the approved Fees & Charges Policy), on the basis of cost recovery.

DISCUSSION

The Fees and Charges Bylaw - "Schedule C" (Parks and Recreation) has not been amended since June 1, 2015. As noted in the previous section, fee adjustments are a balance between recognizing the increased costs of providing the service and remaining price competitive with our neighbouring municipalities. In the past three years, the cost of providing recreation services has been impacted by multiple factors including the increase in CUPE wages and inflationary increases in supplies, utilities and contract services. CUPE wages have increased by 1.5%, 1.5% and 2% over those three years. Similarly, the Vancouver Consumer Price Index increased by 5.6% (1.2% during 2015-2016, 2.2% for 2016-2017 and 2.2% for 2017-2018, respectively). At the same time, the majority of current fees are within the range of market rates. Attachment #1 provides a comparison of Port Coquitlam rates with other local Lower Mainland communities.

To offset rising costs, a 3% fee increase is recommended with exceptions being picnic shelter rentals and fees at the Port Coquitlam Recreation Complex. Current fees for picnic shelters are significantly below the market comparisons and are not recovering the costs related to ongoing park maintenance and clean up, thus a larger increase (from \$38 per event to \$60 per event), is being proposed. Conversely, it is recommended that admissions and facility rental fees for arena users (ice and dry floor), Wilson Centre memberships and drop-in fees for senior's services at the Port Coquitlam Recreation Complex, remain unchanged due to ongoing construction.

Attachment #2 lists the proposed changes to Schedule "C" (Parks & Recreation) of the Fees and Charges Bylaw. A summary is provided below:

- The non-profit community group rental rate (adult or youth), will apply to members in good standing with the Port Coquitlam Sports Alliance Society based on the Memorandum of Understanding between the City and the Sports Alliance, dated December 3, 2015 (housekeeping update).
- A new summer fee (valid for July and August only) for artificial turf fields and ice rentals has been added to encourage useage during non-peak periods of the year. Effective July 1, 2018, The non-profit community youth rate will be applied to all user group categories for summer use of these spaces.
- A clause to waive facility rental fees for the use of a small meeting room for a maximum of two hours per week by non-profit community groups has been included, based on the approved recommendation from the June 15, 2017 Healthy Community Committee Meeting (housekeeping update).
- The fee structure for outdoor pool single admissions has been adjusted to align with market trends, reduce financial barriers, encourage participation and simplify administrative processes. The new fee, effective June 1, 2018, will be \$2 for all age groups.
- A new Super Senior (85 years and older) category has been added to all admissions and membership passes to encourage active aging. This new fee will be equal to the children's rate.

Update to Fees and Charges Bylaw - Schedule "C" (Parks & Recreation)

- A new fee for tennis courts, effective July 1, 2018, has been created to recover costs related to operating and maintenance of this infrastructure.


Following consultation with neighbouring municipalities, it is anticipated that a 3% increase on admissions, memberships and facility rental fees as itemized above, will align with similar service fee increases. Implementing the new fees effective September 1, 2018 (with exceptions to outdoor pool admissions, artificial turf field rentals and tennis court rentals as noted above), will ensure that fee changes will be shown in the Fall Recreation Leisure Guide and other promotional materials as well as communicated with user groups well in advance.

FINANCIAL IMPLICATIONS

Based on 2017 year end revenue, a similar volume of admissions, membership passes and facility rental revenues, with the selected fees increased by 3%, is estimated to add \$45,700 in revenue annually. If a larger increase of 5% to selected fees is preferred (Option #2), revenue would increase by an estimated \$74,533 annually. We have continued to meet budget expectations for registered program revenue, but have seen a decline in net revenue associated with drop in and membership pass sales. This suggested increase in fees will allow us to better recover the amount budgeted for in membership and pass sales. The recommended fee adjustments support estimated revenue projections included in the 2018 Operating Budget and offset increased costs as described in this report, supporting the net budget for the Recreation Department while maintaining current service levels.

OPTIONS

(Check = Staff Recommendation)

#	Description
1 	Direct staff to prepare an amendment to the Fees and Charges Bylaw - Schedule "C" (Parks & Recreation), effective September 1, 2018, that incorporates a 3% inflationary increase.
2	Direct staff to prepare an amendment to the Fees and Charges Bylaw – Schedule "C" (Parks & Recreation), effective September 1, 2018, that incorporates a 5% inflationary increase.
3	Direct staff to make no changes to the Fees and Charges Bylaw – Schedule "C" (Parks & Recreation).

ATTACHMENTS

Update to Fees and Charges Bylaw - Schedule "C" (Parks & Recreation)

Attachment #1: Comparison Data Survey

Attachment #2: Fees and Charges Bylaw - Schedule "C" (Parks & Recreation)

Contributing author(s): Nathan Taylor

A Bylaw to amend "Zoning Bylaw, 2008, No. 3630"

The Council of the Corporation of the City of Port Coquitlam enacts as follows:

Citation

1. This Bylaw may be cited for all purposes as "Zoning Bylaw, 2008, No. 3630, Amendment Bylaw, 2018, No. 4039".

Administration

2. The Zoning Map of the "Zoning Bylaw, 2008, No. 3630" be amended to reflect the following rezoning:

Civic: 750 Dominion Avenue

Legal: Lot 39, Block 6 North, Section 8, Range 1 East, NWD, Plan NWP36149

From: Agriculture (A)

To: Light Industrial (M3)

as shown on Schedule 1 attached to and forming part of this Bylaw.

Read a first time by the Municipal Council this 9th day of January, 2018.

Read a second time by the Municipal Council this 9th day of January, 2018.

Public Hearing held this 23rd day of January, 2018.

Read a third time by the Municipal Council this 24th day of April, 2018.

Certified in accordance with the Bylaw authorizing the revision.

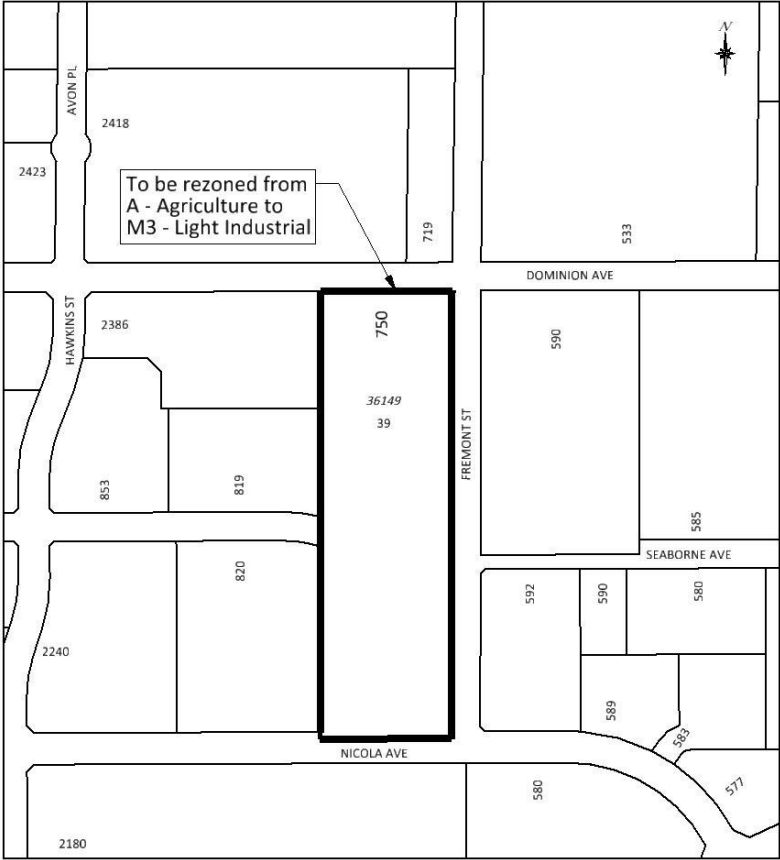
Adopted by the Municipal Council of the Corporation of the City of Port Coquitlam this 22nd day of May, 2018.

Mayor

Corporate Officer

BYLAW 4039

Schedule 1



CITY OF PORT COQUITLAM

BYLAW NOTICE ENFORCEMENT AMENDMENT BYLAW, 2018

Bylaw No. 4058

The Council of the Corporation of the City of Port Coquitlam enacts as follows:

CITATION

1. This Bylaw is cited as "Bylaw Notice Enforcement Bylaw, 2013, No. 3814, Amendment Bylaw, 2018, No. 4058".

ADMINISTRATION

2. That the "Bylaw Notice Enforcement Bylaw, 2013, No. 3814", be amended by replacing the existing Schedule "A" for Smoking Control Bylaw No. 4037, with Schedule "A" for Smoking Control Bylaw No. 4037, attached hereto and forming part of this Bylaw.

READ A FIRST TIME this	8 th day of	May, 2018
READ A SECOND TIME this	8 th day of	May, 2018
READ A THIRD TIME this	8 th day of	May, 2018
ADOPTED this	22 nd day of	May, 2018

Mayor

Corporate Officer

CITY OF PORT COQUITLAM

BYLAW NOTICE ENFORCEMENT AMENDMENT BYLAW, 2018

Bylaw No. 4058

Schedule "A"
Designated Bylaw Contraventions and Penalties

Smoking Control Bylaw, 2018, No. 4037

Column 1	Column 2	Column 3	Column 4	Column 5
DESCRIPTION	SECTION NO. IN BYLAW	DISCOUNTED PENALTY IN \$ (within 14 days)	FULL PENALTY IN \$ (after 14 days)	COMPLIANCE AGREEMENT DISCOUNT ⁽¹⁾
Smoke within 7.5 metres of an entrance	4.1	50.00	75.00	n/a
Smoke within 7.5 metres of a transit stop	4.2	50.00	75.00	n/a
Smoke in any City park or public space	4.3	50.00	75.00	n/a
Smoke on any City street as part of an event	4.4	50.00	75.00	n/a
Smoke in a customer service area	4.5	50.00	75.00	n/a
Smoke in a place of assembly	4.6	50.00	75.00	n/a

Notes:

1. Where Compliance Agreement Entered in accordance with section 8 (a)(v) of this bylaw.

CITY OF PORT COQUITLAM

TICKET INFORMATION UTILIZATION AMENDMENT BYLAW, 2018

Bylaw No. 4059

The Council of the Corporation of the City of Port Coquitlam enacts as follows:

CITATION

1. This Bylaw is cited as "Ticket Information Utilization Bylaw, 1992, No. 2743, Amendment Bylaw, 2018, No. 4059".

ADMINISTRATION

2. That the "Ticket Information Utilization Bylaw, 1992, No. 2743", be amended by replacing the existing "Schedule 14" for Smoking Control Bylaw, 2018, No. 4037, with the one attached hereto and forming part of this Bylaw.

READ A FIRST TIME this	8 th day of	May, 2018
READ A SECOND TIME this	8 th day of	May, 2018
READ A THIRD TIME this	8 th day of	May, 2018
ADOPTED this	22 nd day of	May, 2018

Mayor

Assistant Corporate Officer

CITY OF PORT COQUITLAM

TICKET INFORMATION UTILIZATION AMENDMENT BYLAW, 2018

Bylaw No. 4059

BYLAW NO. 2743

SCHEDULE 14

Smoking Control Bylaw, 2018, No. 4037

	SECTION	FINE IN \$	FINE IN \$ If paid within 30 days of service
Column 1	Column 2	Column 3	Column 4
Smoke within 7.5 metres of an entrance	4.1	75.00	50.00
Smoke within 7.5 metres of a transit stop	4.2	75.00	50.00
Smoke in any City park or public space	4.3	75.00	50.00
Smoke on any City street as part of an event	4.4	75.00	50.00
Smoke in a customer service area	4.5	75.00	50.00
Smoke in a place of assembly	4.6	75.00	50.00



THE CORPORATION OF THE CITY OF PORT COQUITLAM

DRAFT RESOLUTION

“That _____ be appointed as Acting Mayor for May 31 to June 4, 2018, inclusive.

Election Appointments and Remuneration

RECOMMENDATIONS:

- 1) That Council appoint Ms. Carolyn Deakin as the Chief Election Officer and Ms. Sharlie Eicker as the Deputy Chief Election Officer for the 2018 Local Government and School Trustee Election; and
- 2) That the following daily rates of pay be authorized for Election staff at the polling stations:
 - Presiding Election Officials \$350
 - Alternate Presiding Official \$300
 - Registration Clerk \$250
 - Poll Clerk \$250
 - Election Official/Floater \$200
 - Training Session \$25

PREVIOUS COUNCIL/COMMITTEE ACTION

At the May 4, 2011, Council Meeting, remuneration of Election staff was set for the 2011 and 2014 elections at the same rates as above with the exception of Election Official/Floater (to cover breaks and do perimeter inspections) and training session payment, which are new this year.

REPORT SUMMARY

Election staff remuneration needs to be set for the upcoming 2018 Local Government and School Trustee Election. The recommendation is to keep the rates the same as the 2014 Election rates but include a Floater position to supplement break times, as well as offering an additional \$25 payment for those who attend the training session. The training session is mandatory but the \$25 pays for the time that someone takes to attend the training. The base rates above are for an 8 -15 hour day on Election day or an Advance Poll day. Currently, we have an Election Work Application on our website for people who have previously worked an election for the City and well as new people who want to join the election team.

Neighbour Municipality Rates for Election Staff

Municipality	PEO	APEO	Reg Clerk	Poll Clerk	EO/Floater
Coquitlam	\$350	\$300	\$250	\$250	\$250
Port Moody*	\$350	\$300	\$250	\$250	\$250

* The City of Port Moody also offers a \$35 training session payment.


FINANCIAL IMPLICATIONS

The cost of staffing would be paid for out of the Election budget for 2018.

Election Appointments and Remuneration

OPTIONS

(Check = Staff Recommendation)

#	Description
1 	Approve the appointments of Chief Election Officer and Deputy Chief Election Officer and remuneration rates for the polling station staff.
2	Direct staff to choose other people for the Chief Election Officer and Deputy Election Officer but approve the remuneration rates for the staff hired to work in the polling stations.
3	Approve the appointments of Chief Election Officer and Deputy Election Officer but ask staff to review the remuneration rates for polling station staff.
4	Provide staff with direction on how Council would like to address appointments and remuneration rates for staff for the upcoming 2018 Local Government and School Trustee Election.

Lead author: Carolyn Deakin

Finance and Budget Committee Report

Operating Costs of Capital

Committee Recommendation

At the May 8, 2018, Finance and Budget Committee Meeting, the Finance Report, *Operating Costs of Capital* was considered, and the following motion was passed:

That Finance and Budget Committee direct staff to prepare a new policy to manage the operating costs of capital, to:

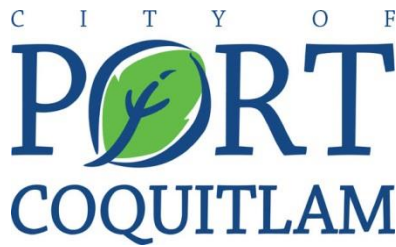
- *Continue to provide estimates of future operating costs as part of capital deliberations for decision-making purposes;*
- *Include only estimated contracted services costs in the operating budget the year the asset comes online; and*
- *Incorporate material, supplies, labour and/or equipment charges into the operating budget, only once the need can be demonstrated (e.g., the budget for the service level is exceeded); except as identified on a case-by-case basis through the capital budget, in which case the total estimated operating impact would be added in the year the asset comes online.*

This policy is now before Council for decision.

ATTACHMENTS

Attachment #1: Policy 7.22 Operating Costs of Capital

Attachment#2: May 8, 2018, Finance Report, *Operating Costs of Capital*



POLICY

Subject Area:	Finance	Policy #	7.22.01
Policy Title:	Operating Costs of Capital		
Authority:	Legislative	X	Effective Date: 2018-05-21
	Administrative		Review Date: 2020-05
Issued By:	Karen Grommada, Director of Finance	Finance	Issue Date: <YYYY-MM-DD>
			Manner Issued: E-mail to All Exempt Managers

Purpose:

To establish how operating costs of capital will be budgeted and accounted for.

Policy:

- Capital project proposals will include estimates of future operating costs as part of capital deliberations for decision-making purposes.
- Only estimated contracted services costs will be included in the operating budget the year the capital asset is in service.
- Material, supplies, labour and/or equipment charges will be incorporated into the operating budget only once the need can be demonstrated into the operating budget (e.g., the budget for the service level is exceeded); except as identified on a case-by-case basis through the capital budget, in which case the total estimated operating impact would be added in the year the asset comes online.

Related Policy:

This policy replaces:
Financial Management Policy 7.16.02, Capital Improvement Program, Section C.

Responsibility:

The Finance Department will ensure the policy is adhered here during the annual financial planning process.

Department Heads are responsible for reporting any operating variances to the Finance and Budget Committee during the quarterly variance process.

END OF POLICY

Record of Amendments:

Policy ##.##	Issue date	Reviewed	Replaced	Re-issue Date
<hr/>				

Operating Costs of Capital

RECOMMENDATION:

That Finance and Budget Committee direct staff to prepare a new policy to manage the operating costs of capital, as outlined in the April 10, 2018, staff report, Operating Costs of Capital.

PREVIOUS COUNCIL/COMMITTEE ACTION

At the December 12, 2017 Budget and Infrastructure Committee meeting, the following motion was passed:

That the 2018 operating increases for the prior year capital for increased staffing cost be removed and that in the 2019 budget include actual cost related to new 2018 capital; and

That in 2018 a new policy be created related to increases in operating costs due to new capital investments.

REPORT SUMMARY

The following report builds on the direction from Committee for the 2018 budget, and recommends a new approach for managing the operating costs of new capital investments.

BACKGROUND

The past practice for budgeting for the operating costs of new capital has been as per the Financial Management Policy 7.16.02:

“Capital project proposals will include an estimate of the impact of the proposed works on the future operating budget. Once a proposal is approved, future-operating costs will be included in operating budget forecasts.”

These estimates are typically prepared based on the unit costs for providing the similar level of service for similar assets. This method is used to provide for incremental increases to the City’s operating budget, rather than no impact for many years, and then a large impact once a critical volume of work has been reached. The estimates are prepared taking in to account the cost to provide existing services, and industry best practices for estimating life cycle costs.

The intent of the estimated operating cost being provided as part of the capital project proposal is to allow Council to make an informed decision as to whether the City should proceed with building the asset, as the capital cost is only a small portion of the life cycle cost of the asset.

In addition to City-constructed assets, there are assets that are constructed and provided by developers, which the City is then required to maintain. A similar system is used to prepare these operating impacts.

As part of the 2018 operating and capital budget deliberations, Committee expressed a desire to change this policy.

DISCUSSION

There are four main elements to new operating costs resulting from new assets:

- Labour
- Equipment
- Materials/Supplies
- Contracted Services

Two of these four elements, materials/supplies and contracted services, are more easily quantifiable. If a service is contracted out (such as line painting), and more inventory of roads is added, it is clear that the contract cost to paint will increase based on \$/m of paint. Alternatively, if new software is purchased and that results in new contract fees, additional costs are unavoidable. Similarly, where the new cost is driven by the requirement for new materials/supplies (such as a new planting bed), the materials and supplies costs are easier to quantify.

There can be some subjectivity with the labor and equipment estimates however. If just one more tree, or one more sign is added, is there really an impact to the operation? The reality is that the addition of one asset in isolation does not necessarily require more labour or equipment resources; however the cumulative impact of new additions over time will eventually reach a tipping point where additional resources are required. There are two ways to manage this situation:

1. Incorporate the estimated new costs as each asset is added (current practice); or
2. Provide estimates (for decision making purposes), but do not adjust the operating budget until there is a demonstrable impact on service levels.

For most of the incremental new assets, it would not be cost effective to track costs for individual assets (such as a handful of new street trees planted each year). Thus, for these assets, staff would focus on delivering the service levels (doing our best to work with our existing budget, but not reducing the service level to match the budget), and any actual expense increases could be captured the following year through the departmental adjustments.

For new large assets (such as Blakeburn Lagoons or the Community Recreation Complex), tracking the new costs to maintain them is more readily achievable (i.e., the costs are large enough to justify capturing the data). Further, these larger projects could have significant variances on the department's operating budget if additional operating budget is not added. For this reason, staff recommends that on a case-by-case basis these types of projects have additional operating costs added on a pro-rated basis in the budget year that they are put into service. These projects would be highlighted through the capital budget process.

Should Committee support this approach, the current section of the Financial Management Policy relating to the operating costs of capital would be removed, and a new stand-alone policy prepared. In summary, the new policy would:

- Continue to provide estimates of future operating costs as part of capital deliberations for decision making purposes;
- Include only estimated materials/supplies and contracted services costs in the operating budget the year the asset comes online;
- Incorporate labour or equipment charges into the operating budget, only once the need can be demonstrated (e.g., the budget for the service level is exceeded); except as identified on a case-by-case basis through the capital budget, in which case the total estimated operating impact would be added in the year the asset comes online.


FINANCIAL IMPLICATIONS

Not budgeting for additional operating costs when new capital assets are put into service may result in small overages to various service levels within a departmental budget, until the operating budgets are adjusted in the following year. These overages would be monitored and reported when significant during the quarterly budget variance process. However, budgeting for estimated additional operating costs for large projects on a case-by-case basis will reduce this risk.

Operating Costs of Capital

OPTIONS

(Check = Staff Recommendation)

#	Description
1 	Direct staff to prepare an amended policy as described in the report
2	Do not adjust the policy at this time
3	Direct staff to prepare an amended policy, as directed

ATTACHMENTS

Attachment #1: Financial Management Policy #7.16.02

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