Council Agenda

Tuesday, November 10, 2020, 6:00 p.m.
Port Coquitlam Community Centre - Wilson Lounge
2150 Wilson Avenue, Port Coquitlam, BC

Pages

1. CALL TO ORDER

2. ADOPTION OF THE AGENDA

2.1. Adoption of the Agenda

Recommendation:
That the Tuesday, November 10, 2020, Council Meeting Agenda be adopted as circulated.

3. CONFIRMATION OF MINUTES

None.

4. PROCLAMATIONS

4.1. Veterans' Week - November 5 - 11, 2020 1

5. DELEGATIONS

5.1. Coquitlam River Watershed Roundtable

6. PUBLIC HEARINGS

6.1. OCP & Zoning Amendment Bylaws for 2455 Gately Avenue, 2428-2492 Kingsway Avenue, 2420 and 2450 Ticehurst Lane

See Council agenda items 7.1 and 7.2 for information.

7. BYLAWS

7.1. OCP Bylaw for 2455-2475 Gately Avenue, 2428-2492 Kingsway Avenue, 2420 and 2450 Ticehurst Lane - Third Reading and Adoption 2

Recommendation:
That Council give Official Community Plan Bylaw No. 4195 for 2455-2475 Gately Avenue, 2428-2492 Kingsway Avenue, 2420 and 2450 Ticehurst Lane third reading and adoption.

7.2. Zoning Amendment Bylaw for 2455-2475 Gately Avenue, 2428-2492 Kingsway Avenue, 2420 and 2450 Ticehurst Lane - Third Reading 285

See item 7.1 for information.

Recommendation:
That Council give Zoning Amendment Bylaw No. 4196 for 2455-2475 Gately Avenue, 2428-2492 Kingsway Avenue, 2420 and 2450 Ticehurst Lane third reading.

7.3. Zoning Amendment Bylaw for 1300 Dominion Avenue - First Two Readings 291

Recommendation:

1. *That Council give Zoning Amendment Bylaw No. 4199 first two readings for rezoning 1300 Dominion Avenue from A (Agricultural) to DC (District Commercial); and*
2. *That prior to adoption of the amending bylaw, the following conditions be met to the satisfaction of the Director of Development Services:*

    a. Demolition of existing structures.
    b. Submission of plans, securities and fees for off-site works and services.

7.4. Tree Amendment Bylaw - First Three Readings 313

Recommendation:
That Council give Tree Amendment Bylaw No. 4197 first three readings.

7.5. Bylaw Notice Enforcement Amendment Bylaw - First Three Readings 342

See item 7.4 for information.

Recommendation:
That Council give Bylaw Notice Enforcement Amendment Bylaw No. 4198 first three readings.

8. REPORTS

None.

9. NEW BUSINESS

10. OPEN QUESTION PERIOD

11. ADJOURNMENT

11.1. Adjournment of the Meeting

Recommendation:
That the Tuesday, November 10, 2020, Council Meeting be adjourned.

12. MEETING NOTES

CITY OF PORT COQUITLAM

PROCLAMATION

WHEREAS: In recognition of the achievements and sacrifices of Canadians through service overseas or on the home front; during military conflict or in peacetime; all Canadians who contributed their lives and their personal freedom and pleasures, in order that we, as a country, could play a major role in securing peace; and

WHEREAS: We celebrate the efforts of these Canadians and are committed to keeping the memories of these sacrifices alive through our children's eyes and their involvement in a civic commemoration event; and

WHEREAS: Canada's traditional period of commemoration of wartime sacrifice by Canadians has been expanded beyond Remembrance Day as the Government of Canada has designated a special period of commemoration called "Veterans' Week"; and

WHEREAS: All Canadians are encouraged to honour all veterans who served the cause of peace and freedom during both World Wars, the Korean War, the mission in Afghanistan and the international Peacekeeping Forces in all corners of the world; and

WHEREAS: We welcome all members of our community, including children & youth, to join their families at the Port Coquitlam Legion on Remembrance Day; and throughout the year during meal service hours.

NOW THEREFORE: I, Brad West, Mayor of the Corporation of the City of Port Coquitlam,

DO HEREBY PROCLAIM

November 5th to 11th, 2020 as

"VETERANS' WEEK
IN PORT COQUITLAM"

BW

Brad West
Mayor

OCP Amendment Bylaw for 2455-2475 Gately Avenue, 2428-2492 Kingsway Avenue and 2420 & 2450 Ticehurst Lane – Third Reading & Adoption

RECOMMENDATION:

That Council give Official Community Plan Amendment Bylaw No. 4195 for 2455-2475 Gately Avenue, 2428-2492 Kingsway Avenue and 2420 & 2450 Ticehurst Lane third reading and adoption.

OPTIONS (✓= Staff Recommendation)

	#	Description
✓	1	Give third reading and adoption to the bylaw.
	2	Delay third reading and request staff to provide additional information.
	3	Deny third reading of the bylaw.

CITY OF PORT COQUITLAM

OFFICIAL COMMUNITY PLAN AMENDMENT BYLAW, 2018

Bylaw No. 4195

Whereas an Official Community Plan was adopted by the "Official Community Plan Bylaw, 2013, No. 3838"

And whereas an amendment to the Official Community Plan has been prepared and after First Reading of this Bylaw the Council has:

(a) considered the amendment to the plan in conjunction with the City's financial plan;

(b) determined that no applicable waste management plan exists for consideration;

(c) determined that sufficient opportunities for consultation on the amendment to the plan have been provided;

(d) determined that the amendment to the plan does not affect the City of Coquitlam, District of Pitt Meadows, School District No. 43, Metro Vancouver Regional District, TransLink, the Kwikwetlem First Nation or the provincial or federal government or their agencies.

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

1. CITATION

This Bylaw may be cited as "Official Community Plan Bylaw, 2013, No. 3838, Amendment Bylaw, 2020, No. 4195.

2. ADMINISTRATION

2.1 That Section 8.2 of the "Official Community Plan Bylaw, 2013, No. 3838" be amended by replacing the description for the Comprehensive Residential land use designation with the following description:

Comprehensive Residential means the Comprehensive Residential designation allows for ground-oriented residential and apartment dwelling units and may include complementary community commercial uses such as child care facilities and medical services."

2.2 That Map 16 of the "Official Community Plan Bylaw, 2013, No. 3838" be amended by applying the land use designation Comprehensive Residential (RC) and Park Reserve (PR) to the areas of land as shown on Schedule 1, attached to and forming part of this Bylaw.

2.3 That subsection 9.5 (e)(iv) *Intensive Residential Location Specific Guidelines for Coquitlam River North* be augmented with the following clause:

"A comprehensive development restricted to affordable rental housing and a childcare facility may be located at 2471 Gately Avenue. Buildings with a height of up to 6 storeys may be located on the site. All buildings shall have a high quality architectural character but recessed upper floors are not required. Vehicle access

shall only be permitted from Gately Avenue and garbage and recycling storage must be located within in a building. Where parking is provided at street level, it shall not be located within any yard facing a street. Amenities including vehicle and bicycle washing facilities, children outdoor play areas, outdoor seating and garden plots are to be provided on the site. The site shall be designed to provide a high level of pedestrian accessibility connecting the buildings and ground floor unit entries to the streets. Where landscape retaining walls are proposed or underground structures protrude above grade, the use of brick or stone cladding is required. All signs and signage should be architecturally coordinated with the overall design of buildings and landscaping."

2.4 That subsection 9.6 (h)(ii), *Commercial Location Specific Guidelines for Coquitlam River North*, be augmented with the following clause:

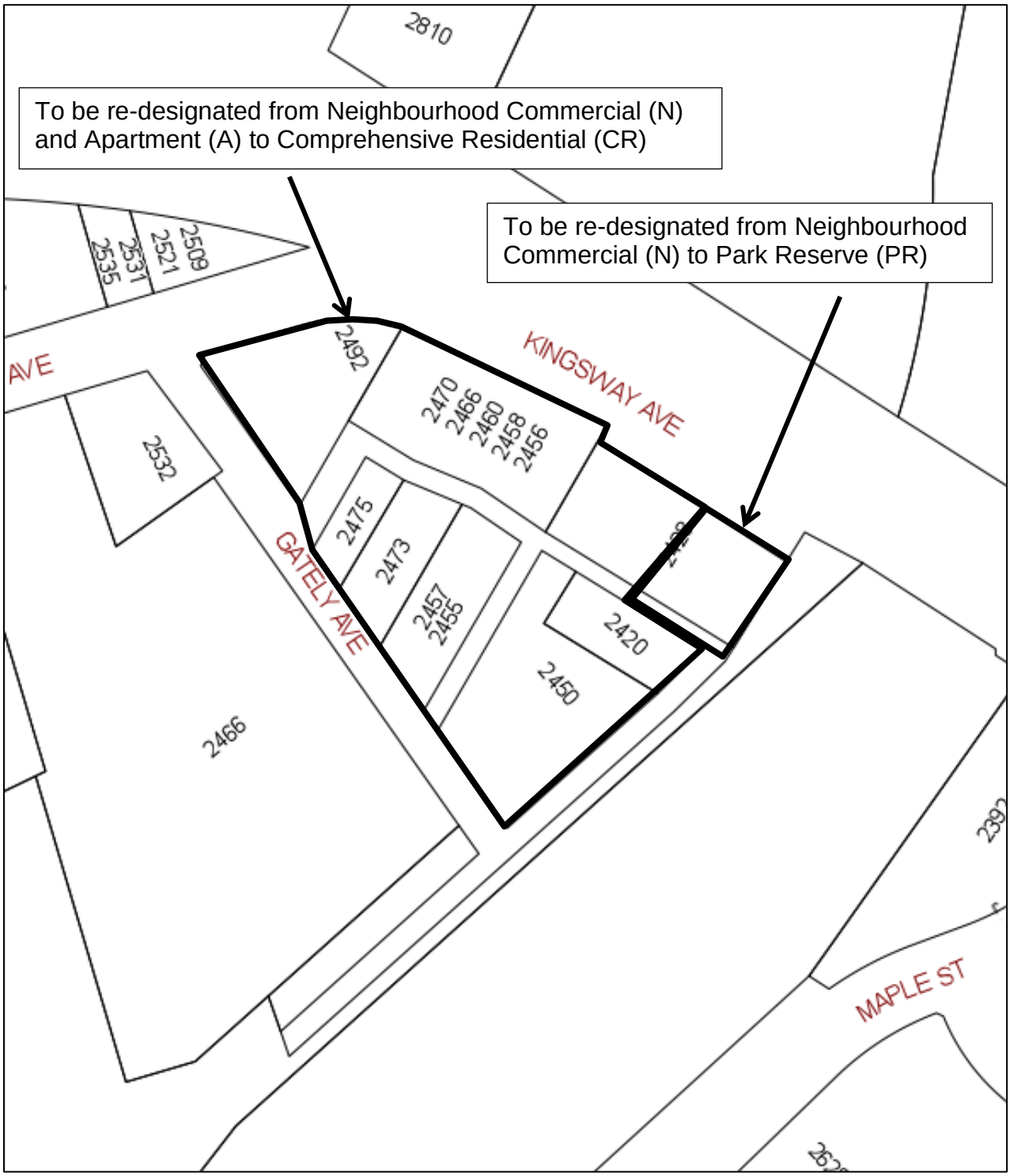
"The Intensive Residential Location Specific Guidelines for Coquitlam River North shall apply to commercial uses at 2471 Gately Avenue".

READ A FIRST TIME this	27th day of	October, 2020
READ A SECOND TIME this	27th day of	October, 2020

Mayor

Corporate Officer

SCHEDULE 1


To be re-designated from Neighbourhood Commercial (N) and Apartment (A) to Comprehensive Residential (CR)
To be re-designated from Neighbourhood Commercial (N) to Park Reserve (PR)
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MAPLE ST

RECOMMENDATIONS:

1. That Committee of Council, having given consideration to s.475 of the *Local Government Act*, confirm the following consultation for the proposed Official Community Plan amendment:
   a. on-site signage,
   b. the applicant's consultation with the community,
   c. staff communication with School District 43, and,
   d. consideration of the application by Committee of Council in open meetings.

2. That Committee of Council recommend to Council that:
   a. The Official Community Plan land use designation for the development site be amended from Neighbourhood Commercial and Apartment to Comprehensive Residential.
   b. The Official Community Plan land use designation for the remaining City portion of 2428 Kingsway Avenue be amended from Neighbourhood Commercial to Park Reserve.
   c. The Zoning be amended from RS1 (Residential Single Dwelling 1), RD (Residential Duplex) and M1 (General Industrial) to a Comprehensive Development Zone to provide for rental tenure apartment dwelling units and a 400m^2 childcare facility and P3 (Parks and Natural Areas) for the eastern portion of 2428 Kingsway Avenue.

3. Prior to adoption of the amending bylaws, the following conditions be met to the satisfaction of the Director of Development Services:
   a. Adoption of a Housing Agreement Bylaw that provides for 300 non-market rental housing units.
   b. Closure and sale of lanes within the development site and subdivision and sale of a portion of 2428 Kingsway Avenue.
   c. Demolition of existing structures and lot consolidation.
   d. Submission of a plan providing for road dedication along Kingsway and Gately Avenues.
   e. Submission of plans and securities and fees for off-site works and services including improvements to the intersection of Kingsway and Gately Avenues, construction of Gately Avenue and a 3m wide multi-use pathway along the Kingsway Avenue frontage and street trees.
   f. Submission of a plan and securities for riparian area enhancements and construction of the Coquitlam River Trail between Gately and Kingsway Avenues.
   g. Registration of legal agreement(s) to ensure:
      i) The development is designed and constructed in accordance with the recommendations of acoustic and vibration studies, and
      ii) The watercourse protection area is restricted to riparian vegetation and protected from future disturbance.

PREVIOUS COUNCIL/COMMITTEE ACTION

At the July 28, 2020 Committee of Council meeting, the following resolution was passed:

That in consideration of s.475 of the Local Government Act, Committee of Council direct the following consultation be undertaken for the proposed Official Community Plan amendment:

1. *On site signage and an advertised on-line public input process led by the applicant, with notification provided to residents, businesses and community services within the area;*
2. *Information posted on the City's website and considered in an open Committee of Council meeting; and*
3. *Staff communication with School District 43.*

REPORT SUMMARY

This report provides for Committee consideration of an application to rezone a 2.4-acre site to permit a 6 storey non-market rental apartment development with a childcare facility. This site is currently designated in the Official Community Plan (OCP) for commercial and low density apartment uses and amending the land use designation of the OCP would be required to facilitate rezoning for the proposed development. The report recommends a number of conditions be required prior to consideration of bylaw adoption, including closure and sale of City lanes, sale of a portion of 2428 Kingsway Avenue, dedication of road to allow for widening of Kingsway and Gately Avenues, a Housing Agreement to ensure adherence to the City's Affordable and Family Friendly Housing Policy, and legal agreements to ensure the development is constructed to adhere to acoustic and vibration standards.

The project is seen to offer an important opportunity to address affordable housing needs within the community and review of this application is being expedited in accordance with the City's policy for applications deemed to be in the public interest. Staff recommend Committee support the Official Community Plan and Zoning Bylaw amendments and that the applications proceed to Council for consideration of the bylaw amendments.

BACKGROUND

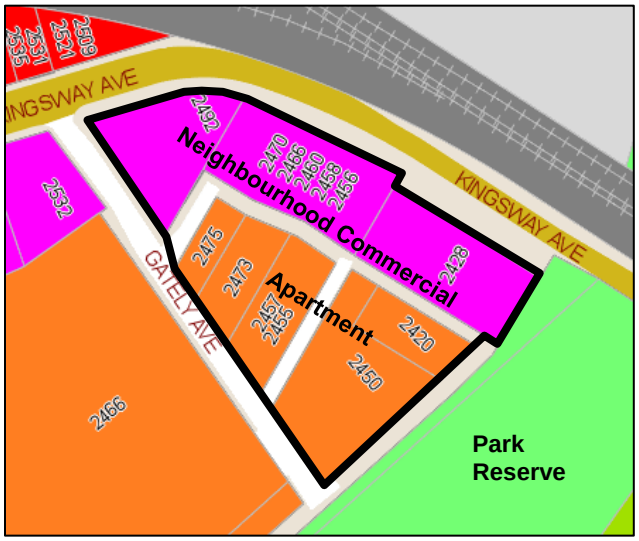
Proposal: Peak Towers Development Ltd. in partnership with the Affordable Housing Societies has submitted applications to develop a large non-market residential apartment complex with a childcare facility at 2455, 2473 and 2475 Gately Avenue, 2428, 2456 and 2492 Kingsway Avenue and 2420 and 2450 Ticehurst Lane.

Site Context: The proposed development site is approximately 2.4 acres in size and consists of eight properties bound by Kingsway Avenue, Gately Avenue, Ticehurst Lane and the Coquitlam River. Uses on the site currently include four houses, one duplex and two small scale industrial properties (one single tenant building and one two-storey multi-tenant building) and a vacant City owned parcel.

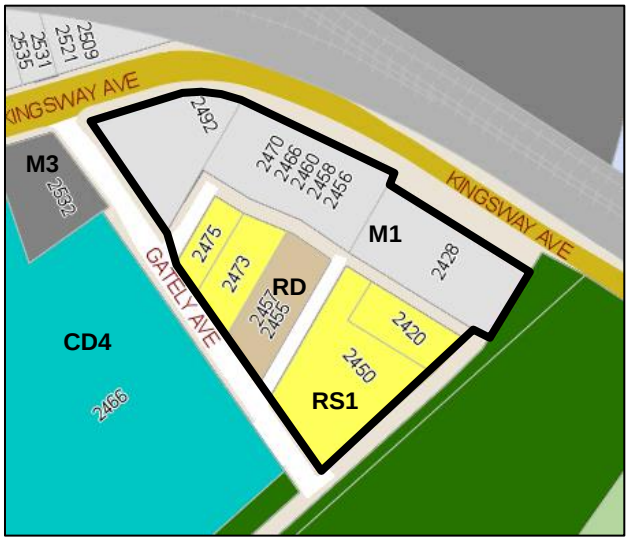
Location map

Surrounding land uses include the Canadian Pacific Railway corridor and small scale industrial uses north of Kingsway Avenue, a large multi-family residential complex and a small scale light industrial building west of Gately Avenue. An unopened road allowance (Ticehurst Lane) and Coquitlam River is to the east. The Downtown and Lions Park are within walking distance, directly east of the Coquitlam River.

Policy and Regulations: The site is currently zoned a mixture RS1 (Residential Single Dwelling 1), RD (Residential Duplex) and M1 (General Industrial), which reflect their current uses. The Official Community Plan land use designation for the properties along Kingsway Avenue is currently Neighbourhood Commercial (N) intended to provide for a mixed use development. The designation along Gately Avenue is Apartment (A) which would support low profile apartment uses to a maximum of 4 storeys. An amendment to the Comprehensive Residential (RC) OCP designation is proposed to better reflect the anticipated mix of uses.



Current OCP designations



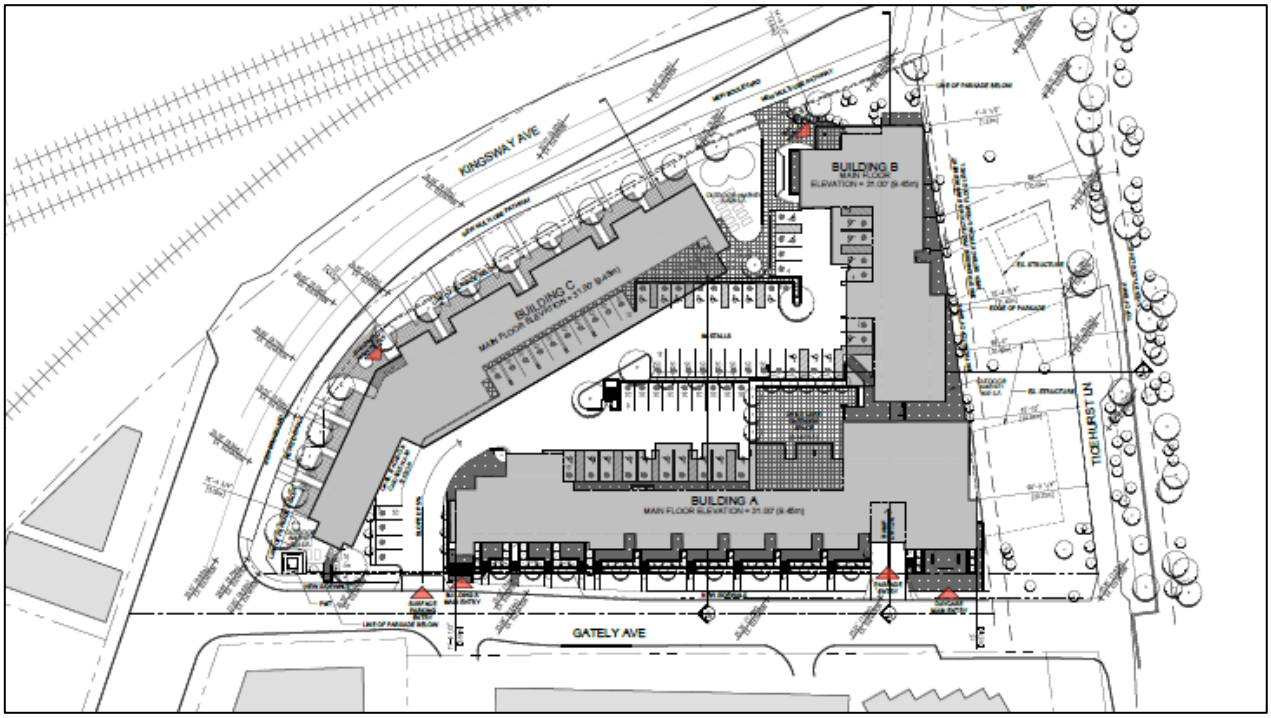
Current zoning

The policies of the Official Community Plan supports provision of housing that will meet a variety of needs, including affordable and non-market rental housing. The policies support new multifamily housing in areas close to the downtown, and encourage the creation of new childcare facilities. The policies also provide for the City to protect areas of environmental sensitivity through development and support improved pedestrian connections and trail networks.

This site will be subject to form and character, environmental conservation and watercourse protection development permit objectives and design guidelines. These applications would be considered after adoption of the Official Community Plan and Zoning Bylaw amendments.

The City's Density Bonus policy provides for the City to retain the additional land value achieved by the rezoning and Official Community Plan amendment and provides for consideration of that value to be offset by the provision of social housing and community amenities. The City's Affordable and Family Friendly Housing Policy requires that 10% of any additional residential density be secured as non-market rental housing. The City's Processing of Development Applications Policy provides for the City to fast-track public Interest applications through the various application review processes and process the applications at the City's cost.

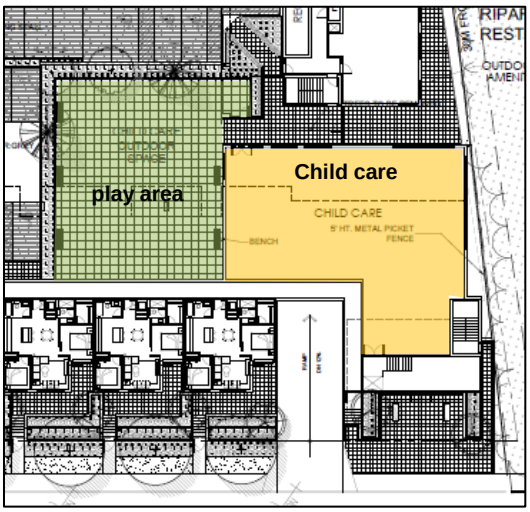
Project description: The proposed development consists of three 6-storey buildings with 302 apartment units and a 400m^2 (4,305 ft^2) childcare facility built over a common one-level parkade. The complex consists of three buildings fronting the periphery of the site clustered around a grade level interior parking court.



Proposed site plan

Each building is designed with its own prominent main entry providing pedestrian level access from the adjoining street. Apartment units at street level have individual front doors and landscaped walkways leading to the street to promote pedestrian access and eyes on the street. There are two vehicle access points to the site from Gately Avenue; one for access to the grade level parking court which will also serve as access to garbage and recycling rooms located to the interior of the site and a second for access to the underground parkade.

The residential portion of the development will consist of 129 one-bedroom, 123 two-bedroom and 48 three-bedroom apartment units ranging in size from 44m^2 (474 ft^2) to 80m^2 (861 ft^2). These units include 60 adaptable and 30 accessible units to help meet the needs of residents with disabilities. The proposal include common amenity space for the residents consisting of two outdoor amenity areas which provide a children's play area, raised gardening beds and seating and tables for outdoor gatherings. The indoor amenity spaces include a lounge/party room and meeting/study rooms. The proposed child care is to be located near the southeast corner of the site and includes outdoor play space located to the interior of the site. All units have private outdoor space in the form of a balcony or patio.



Child care and outdoor play area

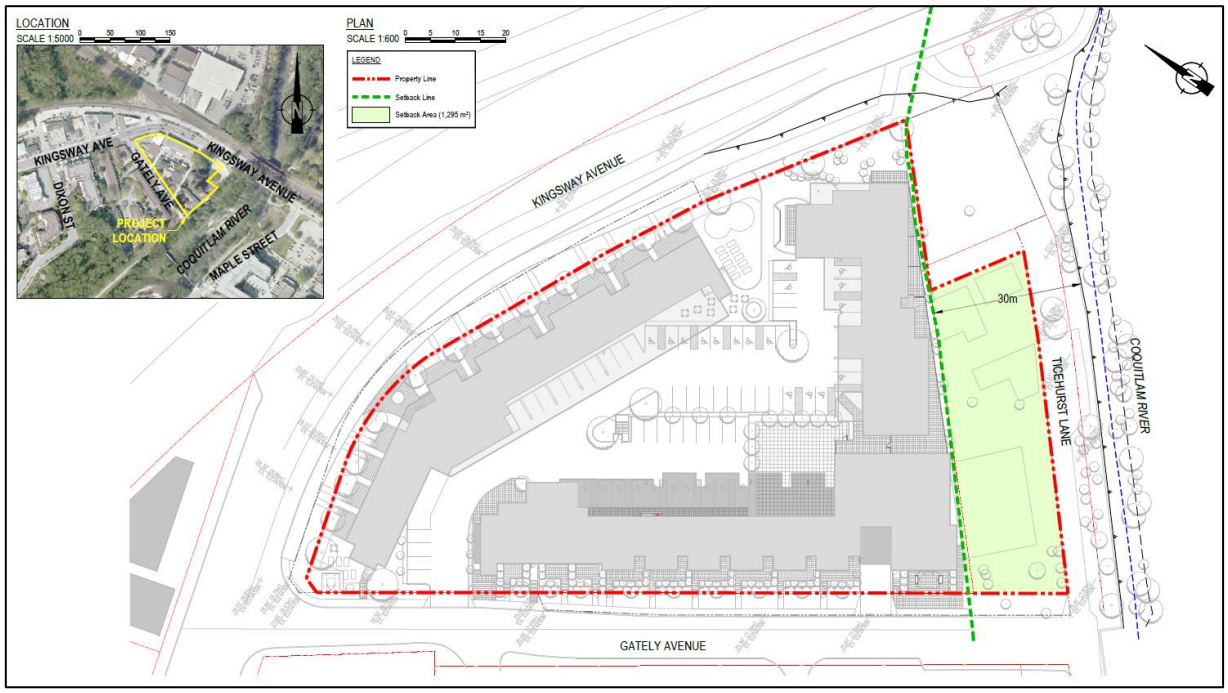
The developer proposes a contemporary architectural style that includes quality cladding materials in keeping with other recent development in Port Coquitlam including brick, fibre-cement panel, corrugated metal, standing seam metal, aluminum and glass balcony railing, and wood look metal soffits. Each building will utilize consistent materials but have its own unique colour palette to create a cohesive design while allowing each building to have its own personality.

Façade fronting Kingsway / Gately intersection

The landscape plan calls for a mixture of trees, shrubs, perennials and ground cover plants located throughout the periphery of the site in integrated landscape planters and tiered retaining walls to soften the building edges and define and beautify the apartment patios for the ground floor apartment units. The interior parking court is also to be landscaped and the parking areas interplanted with trees to add shading and architectural interest. The landscape surface materials include concrete and high quality unit pavers for patios and walkways, asphalt for the parking court driveways and unit pavers for the vehicles parking spaces.

The proposed development, in accordance with the building and plumbing bylaw, will also be constructed to meet Step 2 of the BC Energy Step Code which will provide at least a 15% reduction to the National Building Code for energy consumption. The applicant's preliminary stormwater management plan indicates a stormwater detention tank is to be installed to detain/delay stormwater flows from the development to aid in reducing impacts to the City stormsewer system. A thorough description of environmental conservation measures will be provided to Committee for consideration of development permit issuance.

Watercourse Protection: The proposed development is adjacent to the Coquitlam River and subject to the objectives and guidelines of the Watercourse Protection Development Permit (DP) Area. These guidelines would prescribe a 30m wide watercourse protection area measured from the Coquitlam River top-of-bank. The development is also subject to the Provincial Riparian Area Protection Regulation (RAPR).



Map showing the watercourse protection area

The applicant provided an environmental report which assessed the development proposal and its conformance with the City's Watercourse Protection DP guidelines. This report confirmed the project meets the prescribed 30 meter setback as shown on the image below. Through this development, the applicant would remove several existing structures (two houses, two accessory buildings and pavement) from the setback area and enhance it with riparian plantings. Further information on watercourse protection and the enhancement plans would be provided to Committee in consideration of a Watercourse Protection Development Permit should the application proceed.

Trees: The applicant submitted an arborist report (Attachment 2) assessing the 54 existing trees on the site, mostly located on the single residential and duplex properties and 6 street trees. The proposed concept requires 41 trees to be removed as they are within the footprint of the parkade; 7 of these trees meet the Tree Bylaw's definition of significant tree due to their size. 13 trees within the watercourse protection area and the 6 street trees would be retained.

The applicant is proposing to plant 91 new trees which includes 59 on the development site, 20 in the watercourse protection area and approximately 12 additional street trees. The robust landscape plan also proposes a mixture of 1,079 shrubs, 660 grasses, 467 perennials and 428 ground cover plants with an additional mixture of 775 shrubs, 127 perennials, and 325 ground cover plants in the watercourse protection area.

Parking: The Parking and Development Management Bylaw requires 305 parking spaces for the proposed development including 300 for the residents (1 parking space per dwelling unit) and 5 for the child care (1 parking space per 10 children). The applicant has proposed 294 parking spaces including 289 for the residents (0.96 parking spaces per dwelling unit) and 5 for the childcare facility. Over 10% (33) of the parking stalls will be accessible spaces that provide for wheelchair access; these stalls are 4 meters wide which is 1.3m wider than a standard parking space.

The transportation impact study (Attachment 3) provides an analysis of the proposed parking and concludes the proposed parking will meet the needs of the development. The Affordable Housing Societies has also provided a letter (Attachment 4) describing the typical parking needs of their residents and confirming that, based on their other housing projects, the proposed parking ratio is more than adequate to meet the needs of their tenants. The building will also provide storage for bicycles in a secure room in the underground parking structure.

Transportation: The applicant provided a transportation impact study that assessed the existing traffic conditions and the impact of the proposed development on the transportation network. In summary, the report found the proposal will add 153 new vehicle trips in the AM peak hour and 178 new vehicle trips in the PM peak hour and confirms the existing transportation network has adequate capacity to accommodate these trips. The report provides analysis and identified options for improvements to the Gately/Kingsway Avenue intersection. The recommended improvement is

to enhanced movements to/from Gately Avenue through the addition of a westbound left turn lane/receiving lane as shown on the image below. Road dedications along Kingsway and Gately Avenues would be required to meet the necessary road allowance widths to accommodate the required infrastructure.

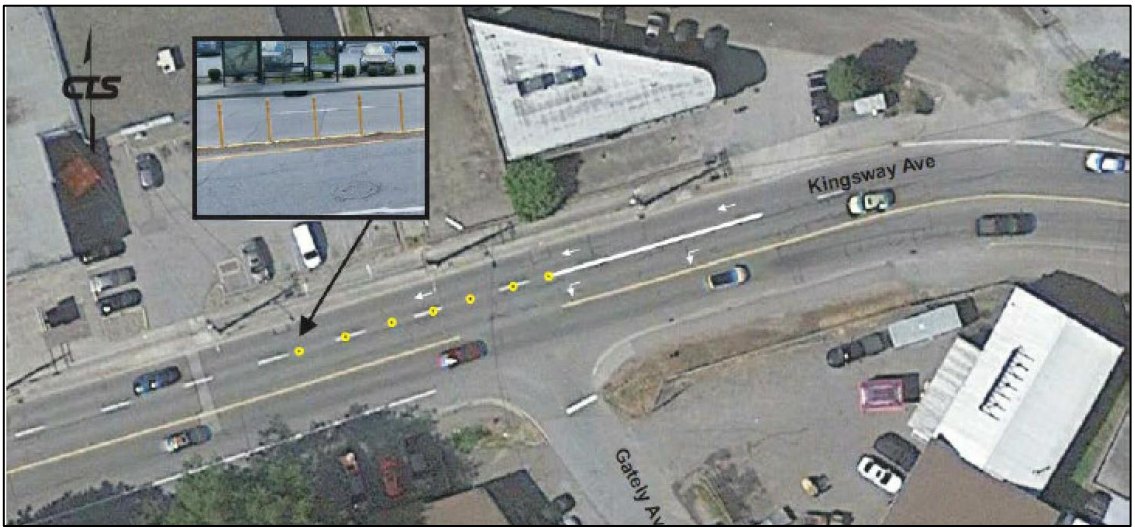


Illustration of proposed westbound left turn and receiving lane

The report also recommends improvements to pedestrian and bicycle infrastructure adjacent to the site including a construction of a 3m wide multi-use pathway (MUP) along Kingsway Avenue and connection of the Coquitlam River Trail between Gately and Kingsway Avenues.

Potential extension to Coquitlam River Trail

Finally, the report recommends consideration of a future connection between Gately and Chine Avenues to provide enhanced access from Gately Avenue to the fully signalized intersection at Dixon Street and Kingsway Avenue as shown on the image below. This connection would transect vacant municipal land adjacent to Dixon Street and the River Woods housing site at 2446 Gately Avenue (owned by the Affordable Housing Societies). Affordable Housing Societies has indicated intent to explore redevelopment 2446 Gately Avenue in the future and the potential to construct this connector will be explored at that time.

Potential future extension to Chine Avenue

Off-site Infrastructure and utilities: In addition the road network improvements identified by the traffic study, this project would require significant infrastructure and service upgrades to meet standards of the subdivision servicing bylaw and adequately service the proposed development. These include reconstruction of Kingsway Avenue ½ road plus one meter complete with curb and gutter, sidewalk, road drainage, street trees and street lighting; reconstruction of Gately Avenue full width complete with curb and gutter, sidewalk, road drainage, street trees and street lighting on the eastern side fronting the site. This development also requires extensive service upgrades including replacement of both the watermain and sanitary services on Gately Avenue. An assessment is being completed to determine if storm sewer upgrades are necessary.

Land Purchase and Road Closure: To facilitate the consolidation with adjacent properties, the applicant has requested to purchase a portion of a city owned parcel at 2428 Kingsway Avenue and the lanes within the 2400 block of Gately and Kingsway Avenue as illustrated in the image below. The total area of land to be purchased is approximately 2,184m^2.

Map showing proposed road closure, portion of 2428 Kingsway to be purchased and road dedications

Proximity to railway operations and Kingsway corridor: The site is located in proximity to the CP Rail corridor and adjacent to the Kingsway Avenue, which is an arterial route and truck corridor. In accordance with guidelines developed by FCM and the Railway Association of Canada, the applicant contacted CP for comments and retained technical studies to assess potential noise and vibration impacts and provide mitigation strategies. The guidelines also suggest maintaining a 30m setback from the rail corridor where possible; the proposed development is located approximately 25 to 29m from the Canadian Pacific Railway (CP) corridor and approximately 40m from the actual rail tracks.

The acoustic study (Attachment 5) found the noise level to be 69 dBA, which is on the high side of the CMHC recommended range of 55 to 75 dBA. The study recommends a number of measures be taken to provide adequate noise isolation in interior spaces including thickening exterior sheathing and interior drywall and using sound dampening windows and doors for suite walls fronting Kingsway Avenue. As the noise isolation can only be achieved when windows and doors are tightly closed, consideration will also need to be given to alternative forms of ventilation. The applicants are in the process of assessing the potential for vibrations and identifying if mitigation measures are necessary.

CP declined to comment on the development as it is not directly adjacent to the rail corridor.

Public Consultation: Consistent with the consultation plan presented to Committee July 28, 2020, the applicant provided an opportunity for community input beginning August 20th and ending September 13th. During this period the applicants received comments from 9 respondents on the proposed land use. The input received about the proposal included comments in support of the

project and the provision of non-market housing along with concerns about the additional density, traffic and environmental impacts. A summary is provided in attachment 6.

DISCUSSION

The OCP and additional City policies establishes how the community is intended to develop, designates lands for uses in keeping with these policies and provides guidance on the types of housing, services and community supports the City should encourage. An evaluation of the proposal with applicable policies and regulations indicates the following:

- The apartment uses on the site are reflective of the OCP's Apartment Residential designation for a large portion of the site and in keeping with policies to locate apartment buildings in urban centers close to community services and transit. The site is within walking distance from the Downtown, in close proximity to other multi-family developments, parks and trails and existing commercial uses.
- The proposal retains a portion of the commercial uses anticipated in the OCP by including a daycare facility. The location of this facility at the rear of the site provides for a superior site context and buffers this use from the traffic and rail corridor.
- The proposal for 300 non-market rental housing units aligns with the OCP and associated policies to explore and support the development of rental housing, encourage housing affordability and promote a range of housing options to meet the needs of our diverse community. The development provides for outdoor and indoor community amenity space and each unit will benefit from their own balcony or patio.
- The OCP policies for community facilities and services encourages the provision of additional childcare spaces to meet the needs of the community and the draft Child Care Action Plan supports this direction. The proposed 48 child facility will help support childcare need in the neighbourhood.
- The proposal is in keeping with the City's Affordable and Family Friendly Housing and Density Bonus Policies by providing 100% non-market rental units and community amenities in the form of the childcare facility in exchange for an increase in density. The additional density will translate into the provision of approximately 78 additional non-market units.
- The OCP provides that residential units should be buffered from negative impacts. The impact of traffic noise from Kingsway Avenue and the CP rail corridor can be reduced by implementing measures and recommendations of the technical studies prepared by acoustical and geotechnical engineering consultants.
- Information submitted by the applicant and their transportation consultants suggested the proposed parking ratio will more than adequately meet the needs of the residents given the mix of tenants and the affordability criteria. The site is also well located to promote alternative modes of transportation (walking and cycling) due to its proximity to the Downtown and access to public transit on Kingsway Avenue.

- The proposal meets the intent of the City's Watercourse Protection Development Permit Guidelines by maintaining the required setback to the Coquitlam River and enhancing the riparian landscape through removal of encroachments and appropriate plantings.
- The proposal will result in improvements to the Kingsway and Gately intersections and additional pedestrian connections through construction of the MUP on Kingsway and extension to the Coquitlam River Trail.

It is staff's opinion that the proposal provides substantial community benefit and is aligned with established direction in the OCP. Staff recommend the proposal be supported with the following provisions:

1) The site land use designations be amended to Comprehensive Residential (RC) and a Comprehensive Development (CD) zone be crafted that provides for the proposed mix of land uses, and confirms permitted density, built form, siting and parking requirements.
2) Registration of a housing agreement that restricts the site to the provision of rental non-market housing to ensure the continued community benefit of the project.
3) Closure, subdivision and sale of municipal lanes and land, dedication of road along Gately and Kingsway Avenues and consolidation of lands into one parcel.
4) Securing off-site works that include improvements to Kingsway and Gately Avenue intersection, construction of a multi-use path along Kingsway Avenue, extension of the Coquitlam River Trail along Ticehurst Lane, and riparian enhancements.
5) Registration of legal agreements to ensure the noise and vibration impacts from Kingsway Avenue and rail lines are mitigated in accordance with the recommendations of technical studies and the Watercourse Protection Area is restricted to riparian vegetation and protected from future disturbance in perpetuity.

The applicant has undertaken consultation in keeping with Committee's July 28th resolution and Section 475 of the *Local Government Act*. Comments on the proposal ranged from support to concerns about traffic, density, overall growth in the community and impacts to the environment. Staff further recommend Council confirm its consultation requirements by adoption of the recommended motion.

FINANCIAL IMPLICATIONS

In accordance with the Processing of Development Applications Policy, the City did not require Rezoning and Development Permit application fees, an approximate value of $57,000. The Affordable Housing Society may also apply to the City for a grant from the Special Needs Housing Reserve, previously provided at $1,000 per dwelling unit.

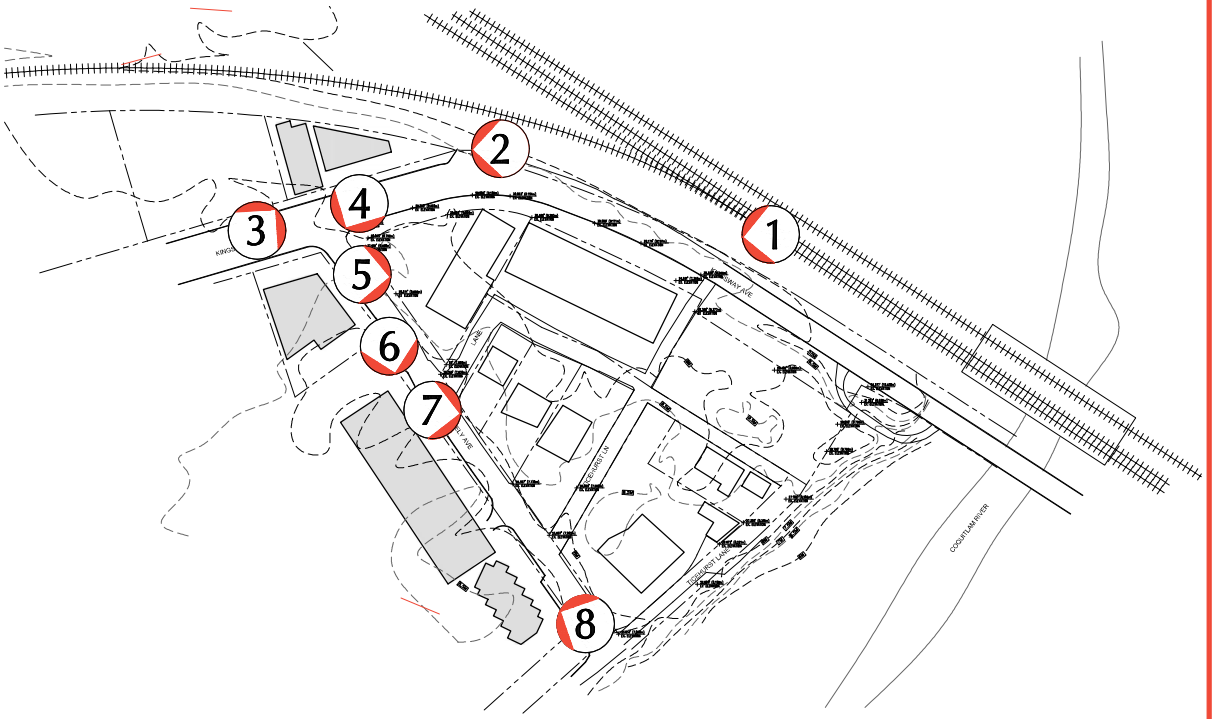
OPTIONS (✓= Staff Recommendation)

	#	Description
✓	1	Recommend to Council that the Official Community Plan and Zoning Bylaw amendments be considered for approval.
	2	Request additional information, amendments to the application, changes to recommended conditions of prior to forwarding the application to Council.
	3	Recommend to Council that the application be refused.

ATTACHMENTS

Attachment #1: Development concept drawings
Attachment #2: Arborist report
Attachment #3: Transportation impact report
Attachment #4: Affordable Housing Societies parking needs letter
Attachment #5: Acoustic study
Attachment #6: Consultation summary

Lead author(s): Bryan Sherrell and Jennifer Little



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NORTH ARROW:

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	08/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

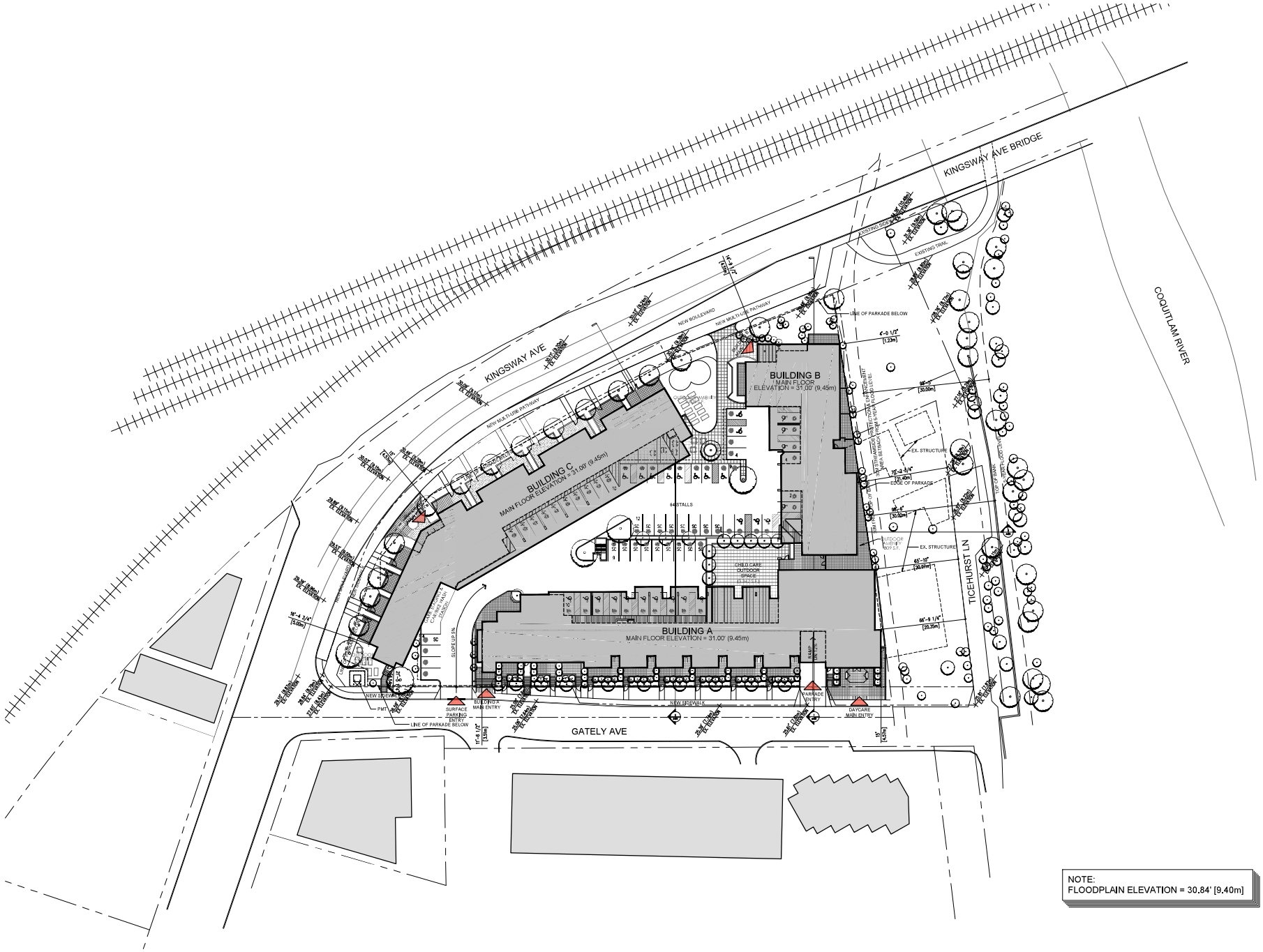
VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J5
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
CONTEXT PLAN
+ IMAGES

PROJECT NO: 19029
DRAWN BY: CSH
SCALE: ~~1/64"=1'-0"~~
REVIEW BY: BW
APRIL 2020
DWG NO: A0100



NOTE:
FLOODPLAIN ELEVATION = 30.84' [9.40m]

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NORTH ARROW:

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	09/08/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

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VIC 104 - 3212 Jacklin Road Victoria, V9B 5J5
604.885.3529 | office@wa-arch.ca | wa-arch.ca

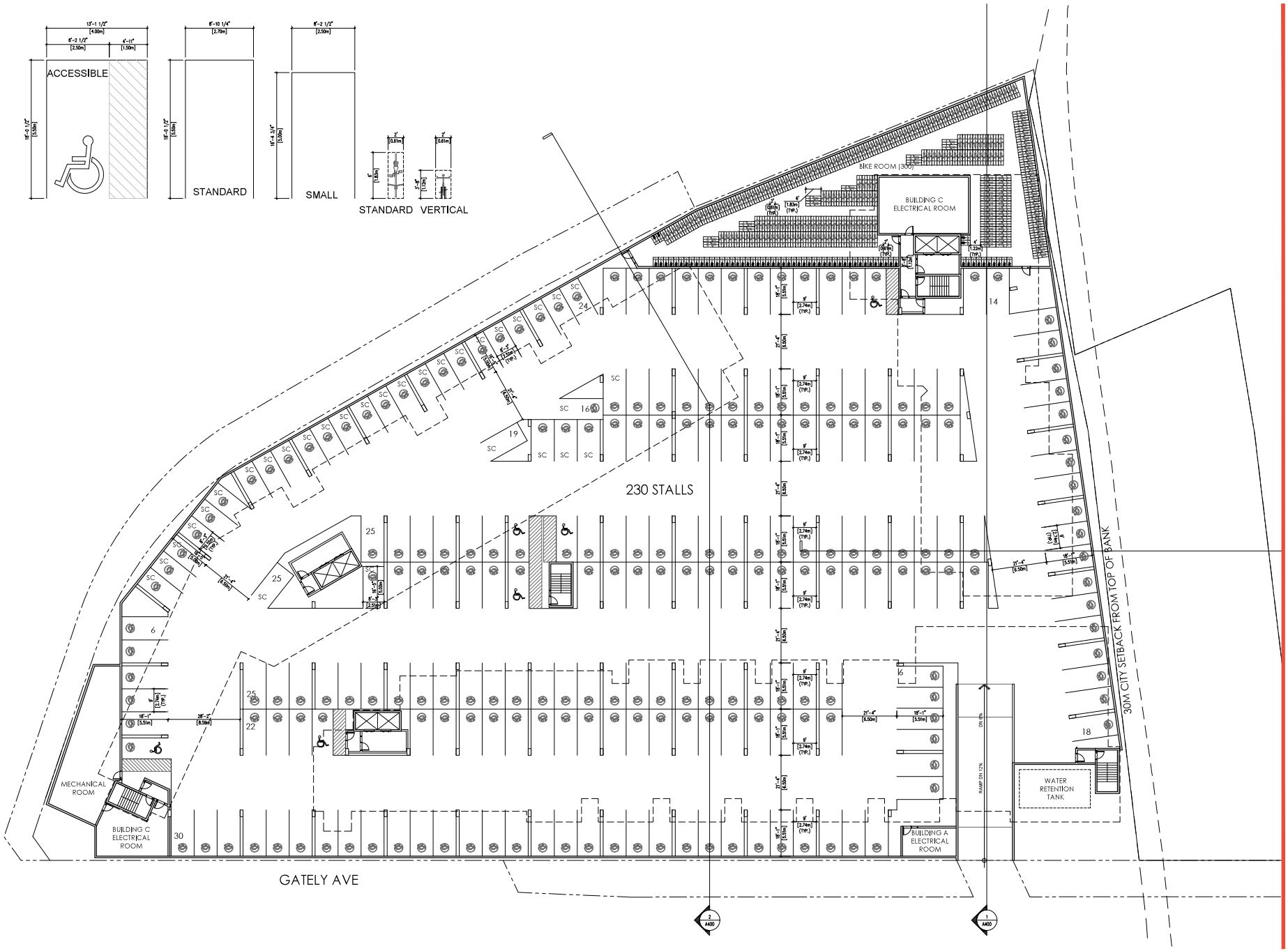
PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:

SITE PLAN

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: 1/32"=1'-0" REVIEW BY: BW
DWG NO: A0102 APRIL 2020



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NORTH ARROW:

PROJECT

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	09/09/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

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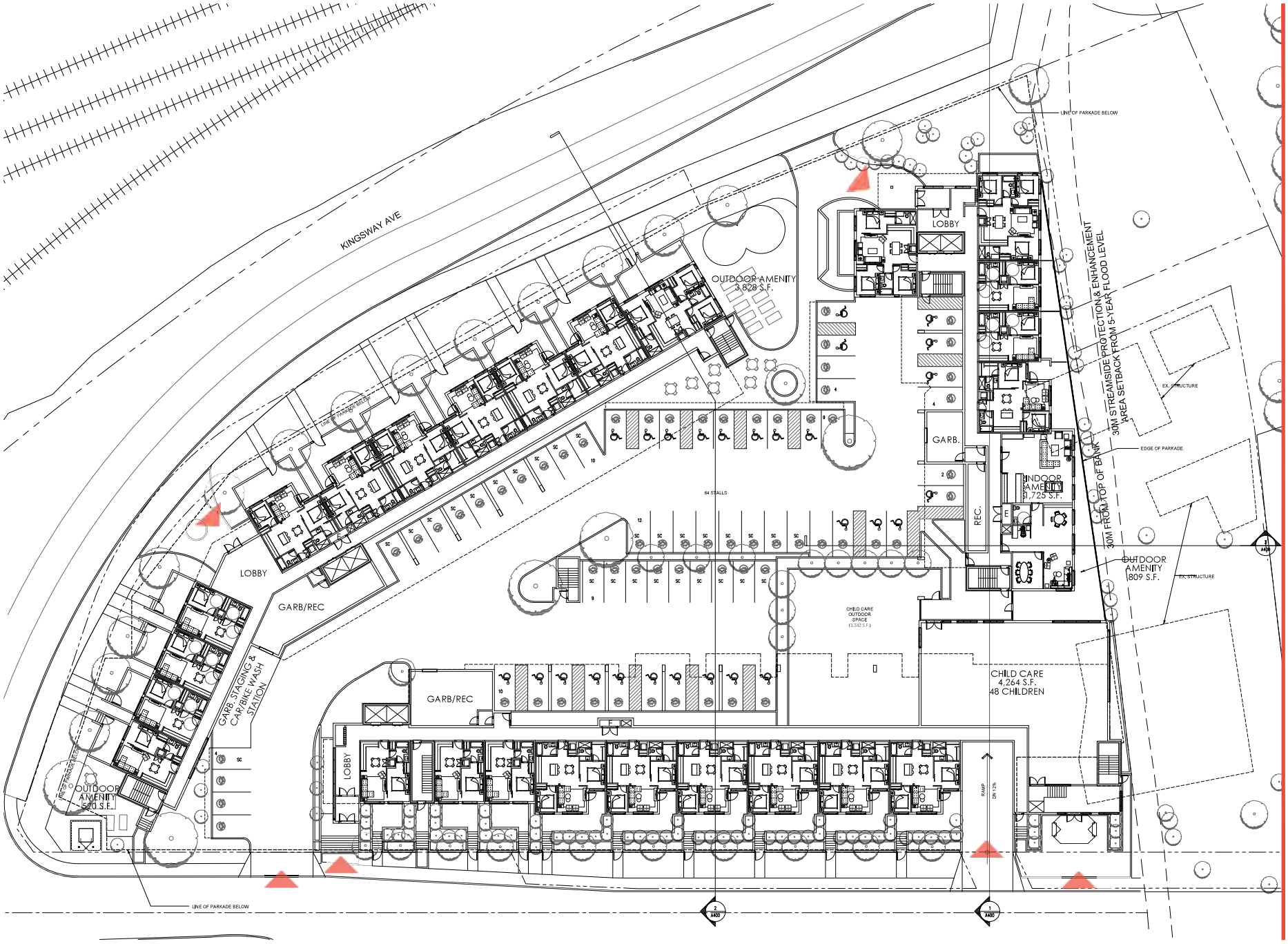
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J5
604.885.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
PARKADE FLOOR PLAN

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: 1/16"=1'-0" REVIEW BY: BW
DWG NO: A0200 APRIL 2020



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NORTH ARROW:

PROJECT

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	09/09/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

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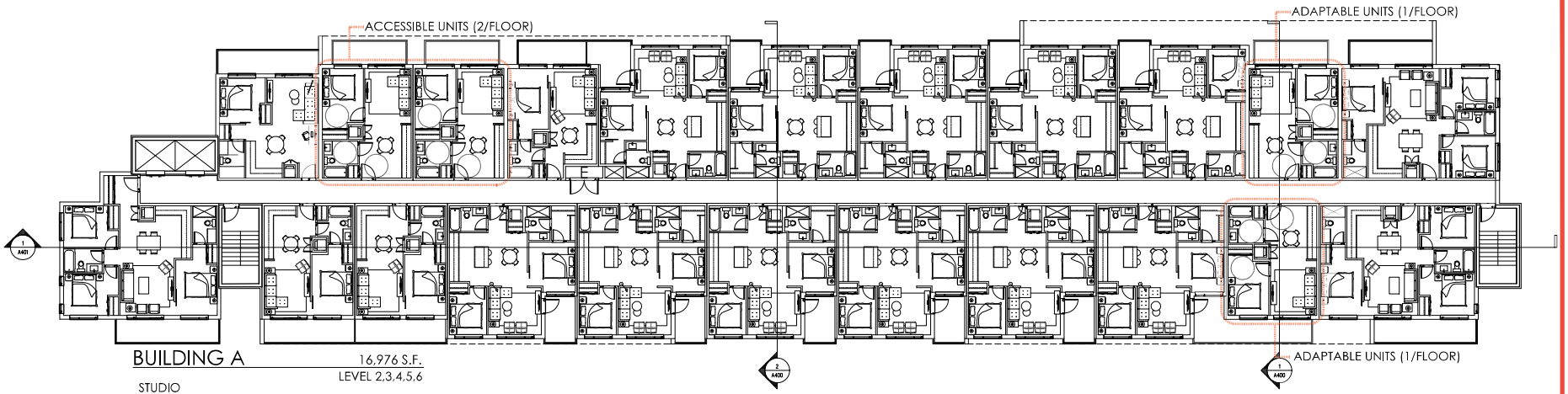
604.885.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

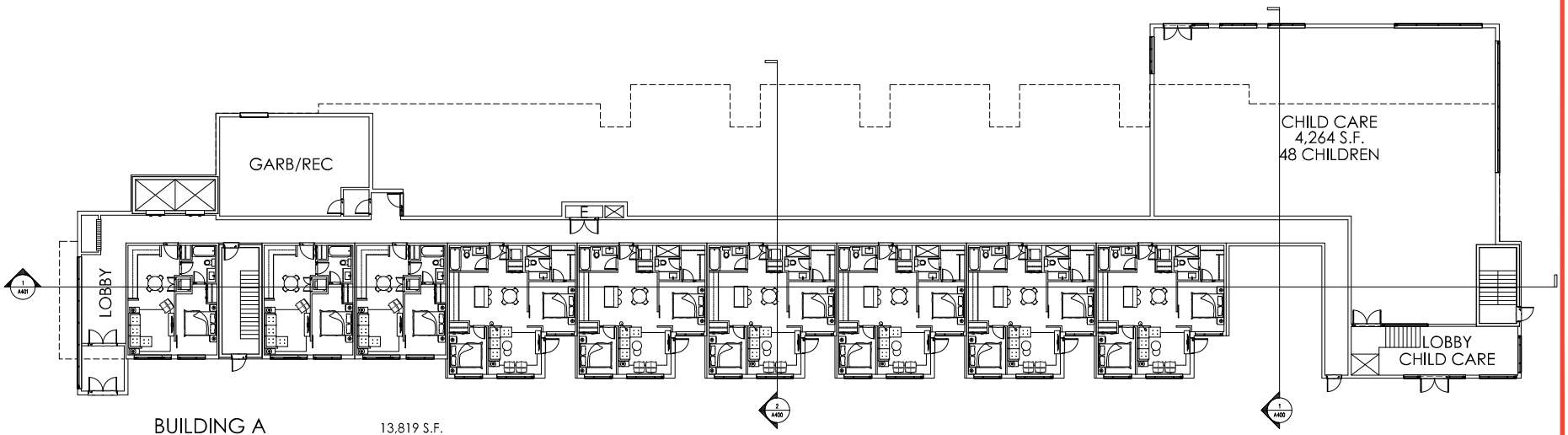
DRAWING TITLE:
GROUND FLOOR PLAN

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: 1/16"=1'-0" REVIEW BY: BW
DWG NO: **A0201** APRIL 2020



BUILDING A 16,976 S.F.
LEVEL 2,3,4,5,6

STUDIO	
1 BED	8
2 BED	11
3 BED	3
TOTAL	22 UNITS



BUILDING A 13,819 S.F.
LEVEL 1

STUDIO	
1 BED	3
2 BED	6
3 BED	
TOTAL	9 UNITS

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NORTH ARROW:

PROJECT

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	08/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

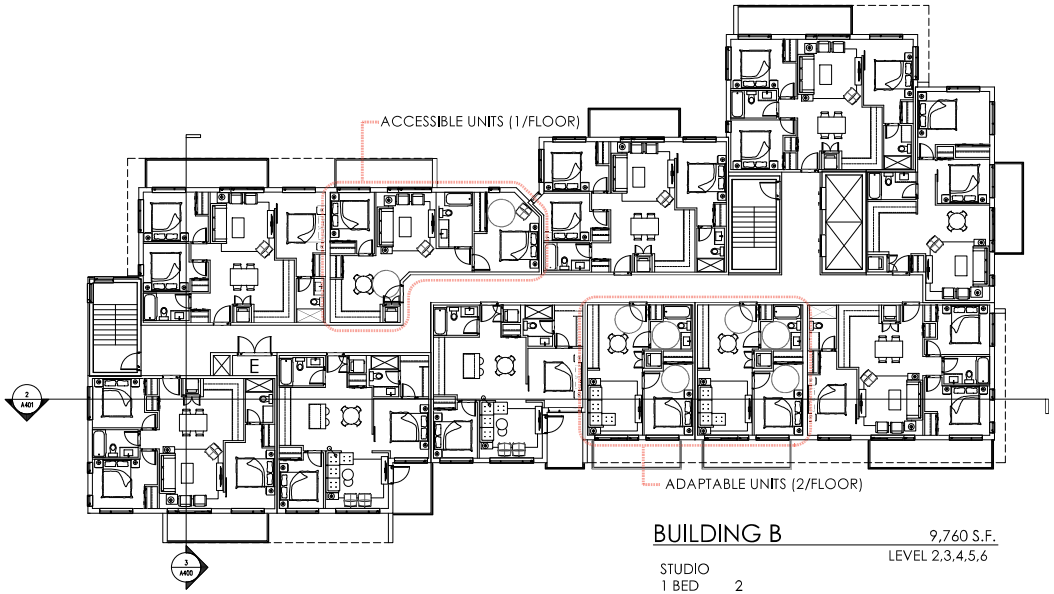
VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J5
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
BUILDING A
L01, L02–L06

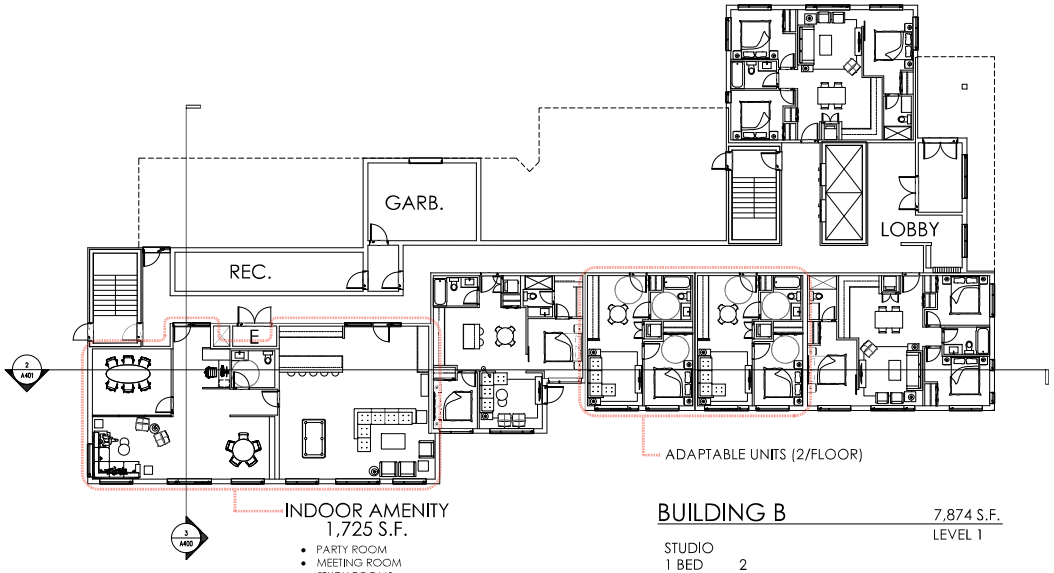
PROJECT NO: 19029 DRAWN BY: CSH
SCALE: 3/32"=1'-0" REVIEW BY: BW
DWG NO: A0202 APRIL 2020



BUILDING B

9,760 S.F.
LEVEL 2,3,4,5,6

STUDIO	
1 BED	2
2 BED	4
3 BED	5
TOTAL	11 UNITS



BUILDING B

7,874 S.F.
LEVEL 1

STUDIO	
1 BED	2
2 BED	1
3 BED	2

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NORTH ARROW:

PROJECT

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	08/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

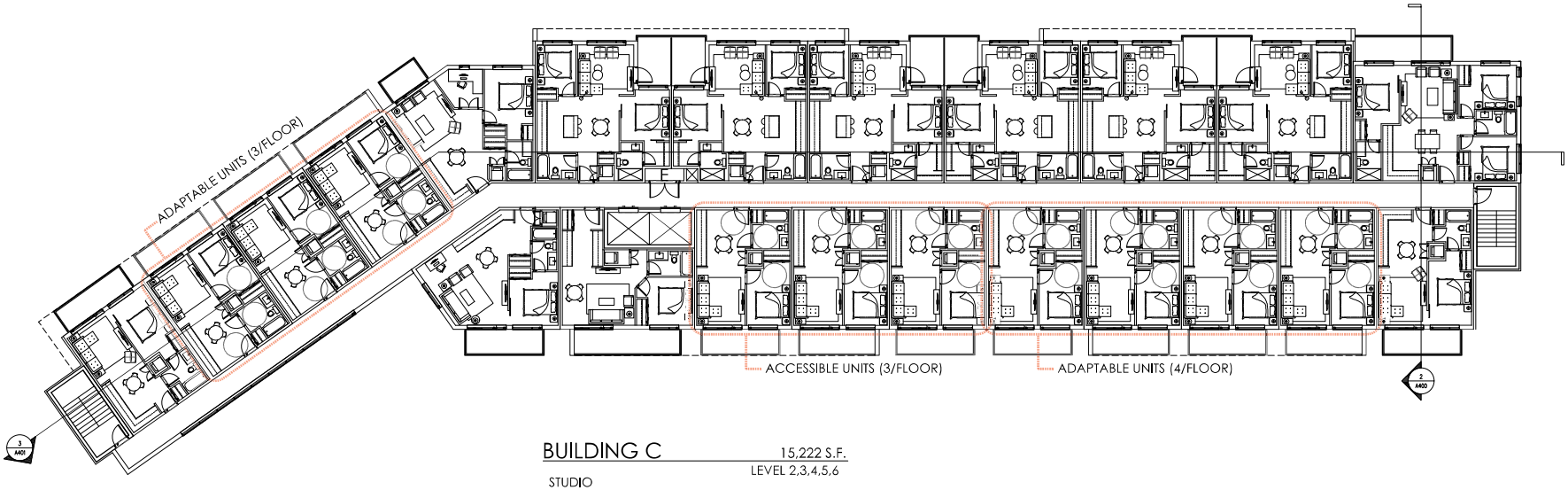
VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J5
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
BUILDING B
L01, L02–L06

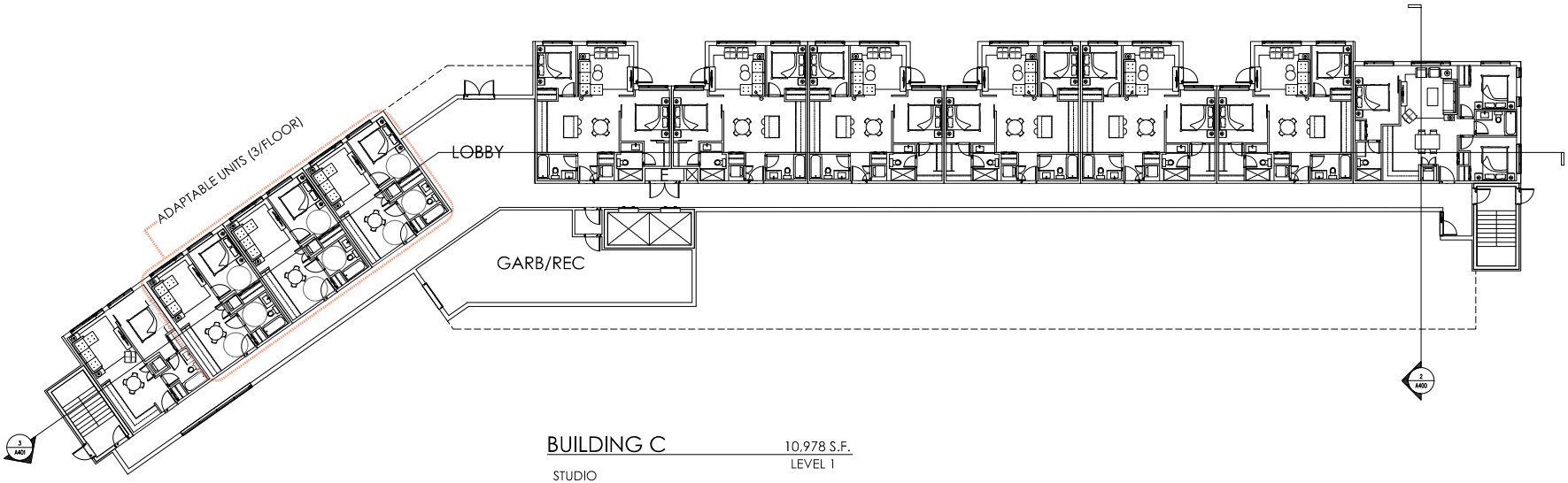
PROJECT NO: 19029
DRAWN BY: CSH
SCALE: 3/32"=1'-0"
REVIEW BY: BW
DWG NO: **A0203**
APRIL 2020



BUILDING C

15,222 S.F.
LEVEL 2,3,4,5,6

STUDIO	
1 BED	14
2 BED	7
3 BED	1
TOTAL	22 UNITS



BUILDING C

10,978 S.F.
LEVEL 1

STUDIO	
1 BED	4
2 BED	6
3 BED	1
TOTAL	11 UNITS

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NORTH ARROW:

PROJECT

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	08/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

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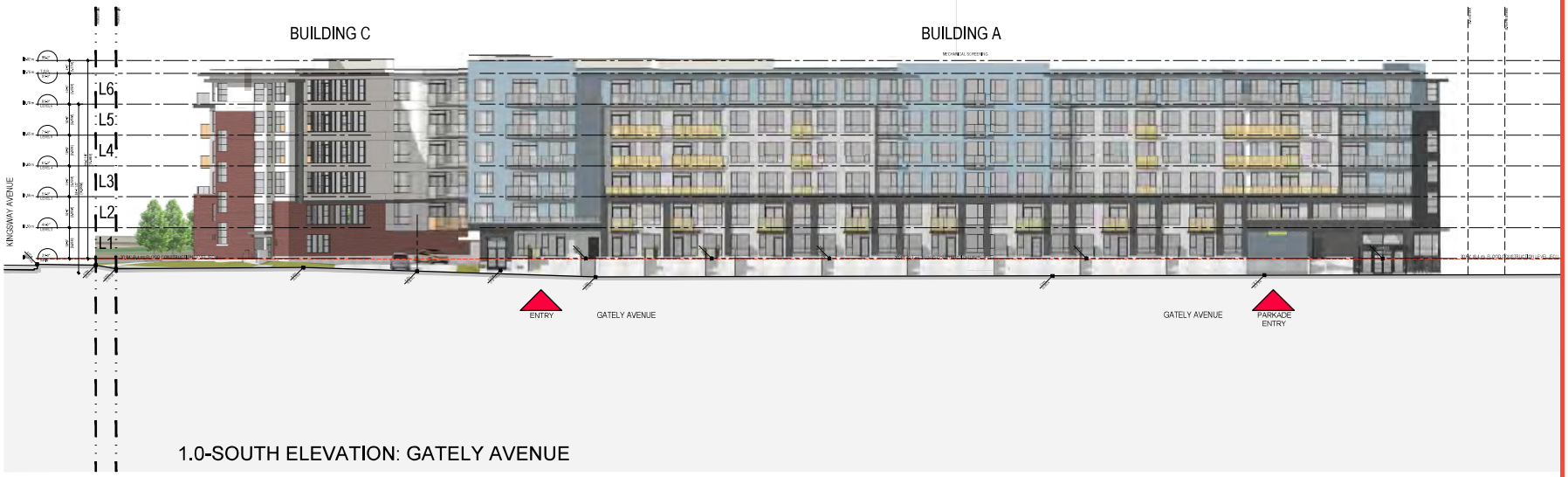
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
BUILDING C
L01, L02–L06

PROJECT NO: 19029
DRAWN BY: CSH
SCALE: 3/32"=1'-0"
REVIEW BY: BW
APRIL 2020
DWG NO: A0204



1.0-SOUTH ELEVATION: GATELY AVENUE

2.0-NORTH ELEVATION:

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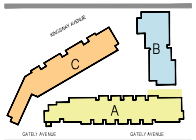
NORTH ARROW:

OWNER/CLIENT:

KEY PLAN:



NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	09/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

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VIC 104 - 3212 Lacoshin Road Victoria, V8R 6J5
604.685.3028 | office@wa-arch.ca | wa-arch.ca

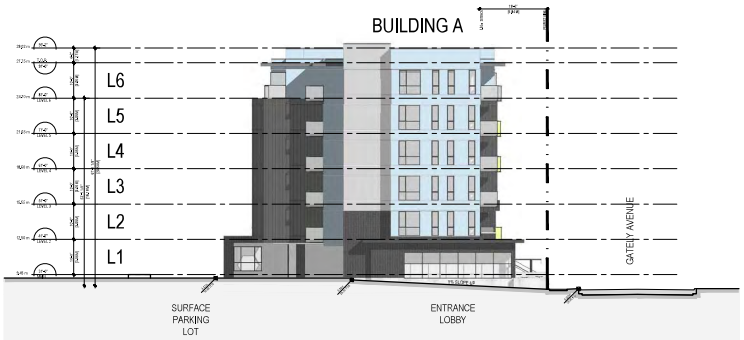
PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
BUILDING A
ELEVATIONS

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: 1/16"=1'-0" REVIEW BY: BW
APRIL 2020
DWG NO: A0300

3.0-EAST ELEVATION



4.0-WEST ELEVATION

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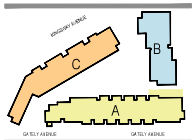
NORTH ARROW:

OWNER/CLIENT:

KEY PLAN:



NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	09/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

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VIC 104 - 3212 Jacklin Road Victoria, V8R 0J5
604.685.3028 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

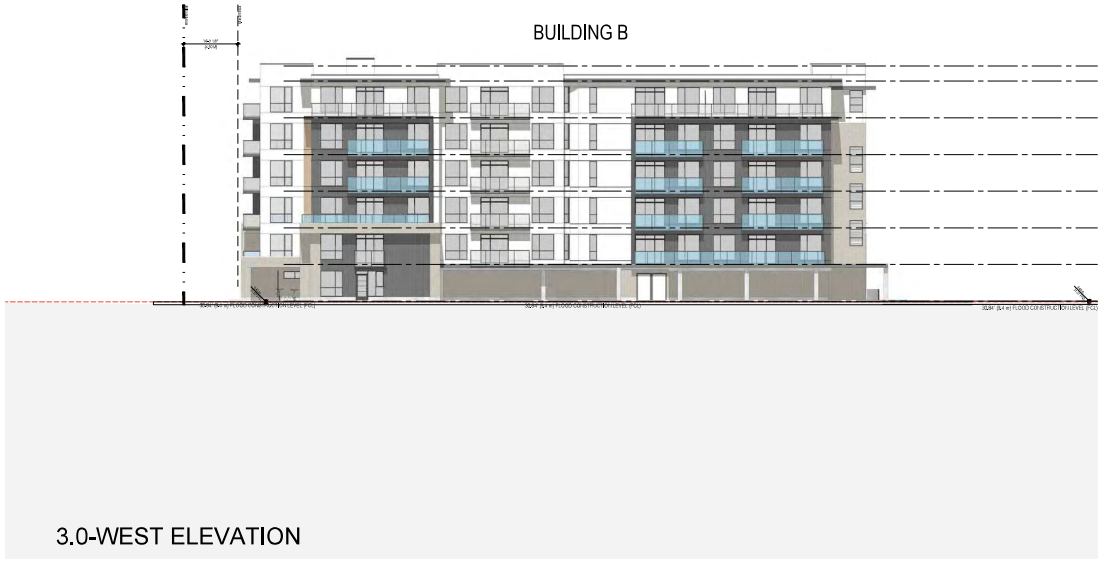
PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
BUILDING A ELEVATIONS

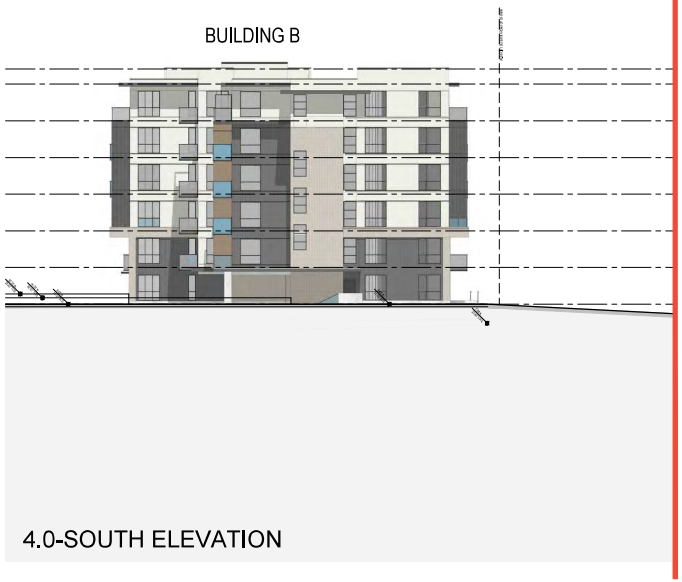
PROJECT NO: 19029
DRAWN BY: CSH
SCALE: 1/16"=1'-0"
REVIEW BY: BW
APRIL 2020
DWG NO: A0301

1.0-EAST ELEVATION

2.0-NORTH ELEVATION



3.0-WEST ELEVATION



4.0-SOUTH ELEVATION

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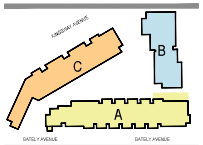
NORTH ARROW:

OWNER/CLIENT:

KEY PLAN:



NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	09/09/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

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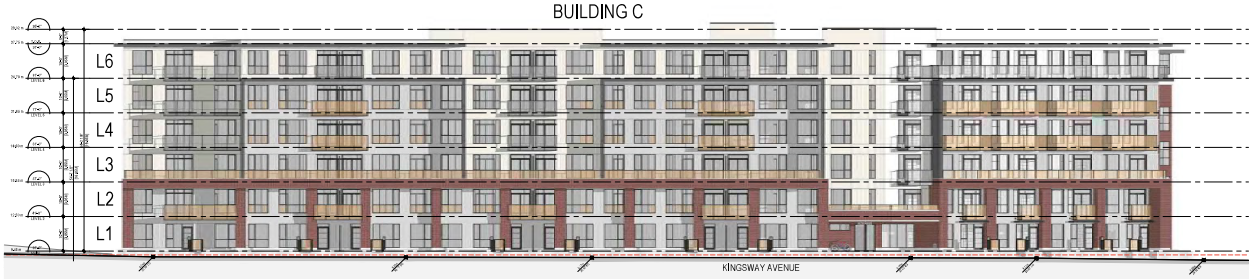
PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
BUILDING B ELEVATIONS

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: 1/16"=1'-0" REVIEW BY: BW
APRIL 2020
DWG NO: **A0302**



1.0-NORTH ELEVATION

2.0-SOUTH ELEVATION

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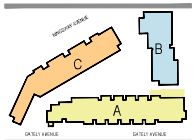
NORTH ARROW:

OWNER/CLIENT:

KEY PLAN:



NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	09/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

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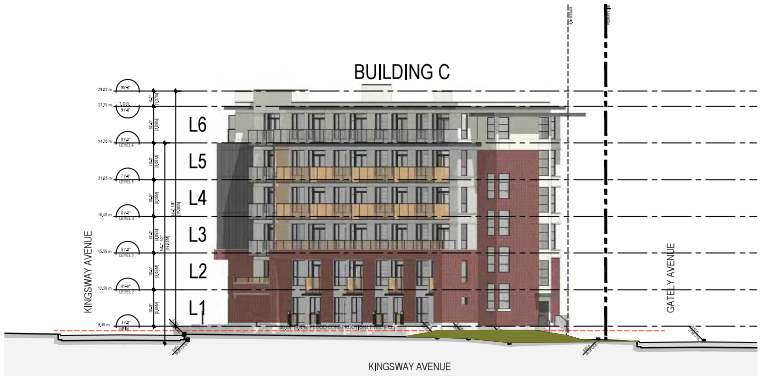
604.685.3028 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

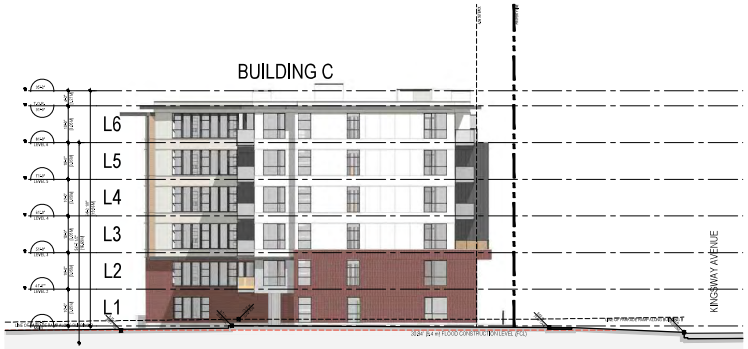
PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
BUILDING C ELEVATIONS

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: 1/16"=1'-0" REVIEW BY: BW
APRIL 2020
DWG NO: A0303



1.0-NORTH ELEVATION



2.0-SOUTH ELEVATION

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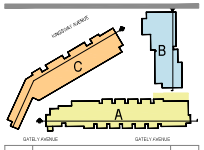
NORTH ARROW:

OWNER/CLIENT:

KEY PLAN:



NO.	ISSUE	M/D/Y
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01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

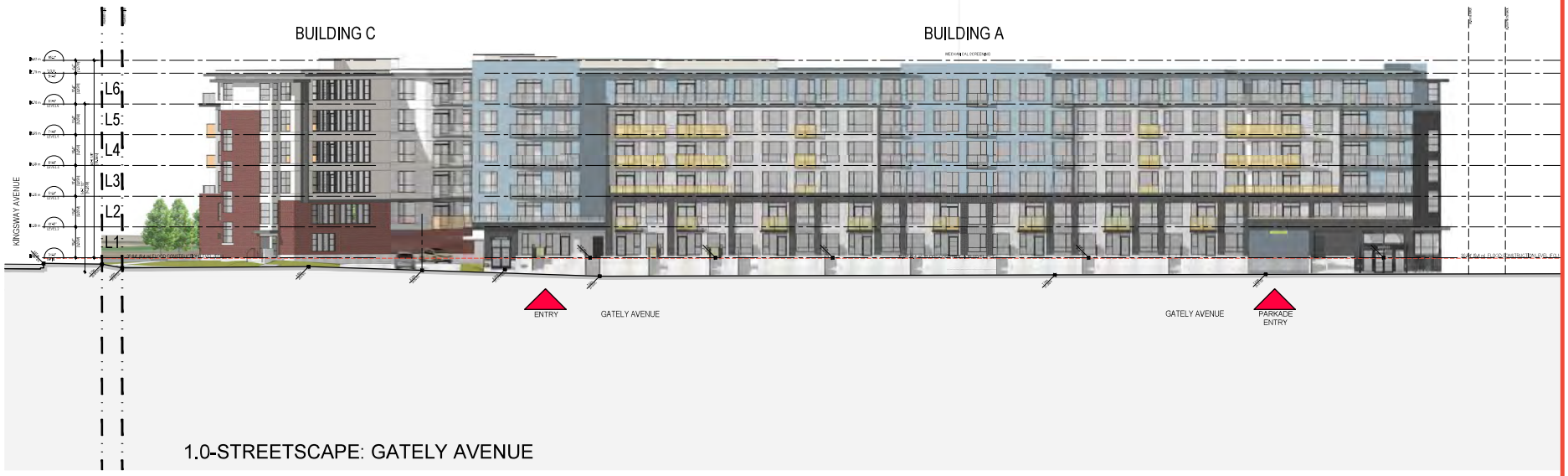
WA ARCHITECTS
VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J3
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

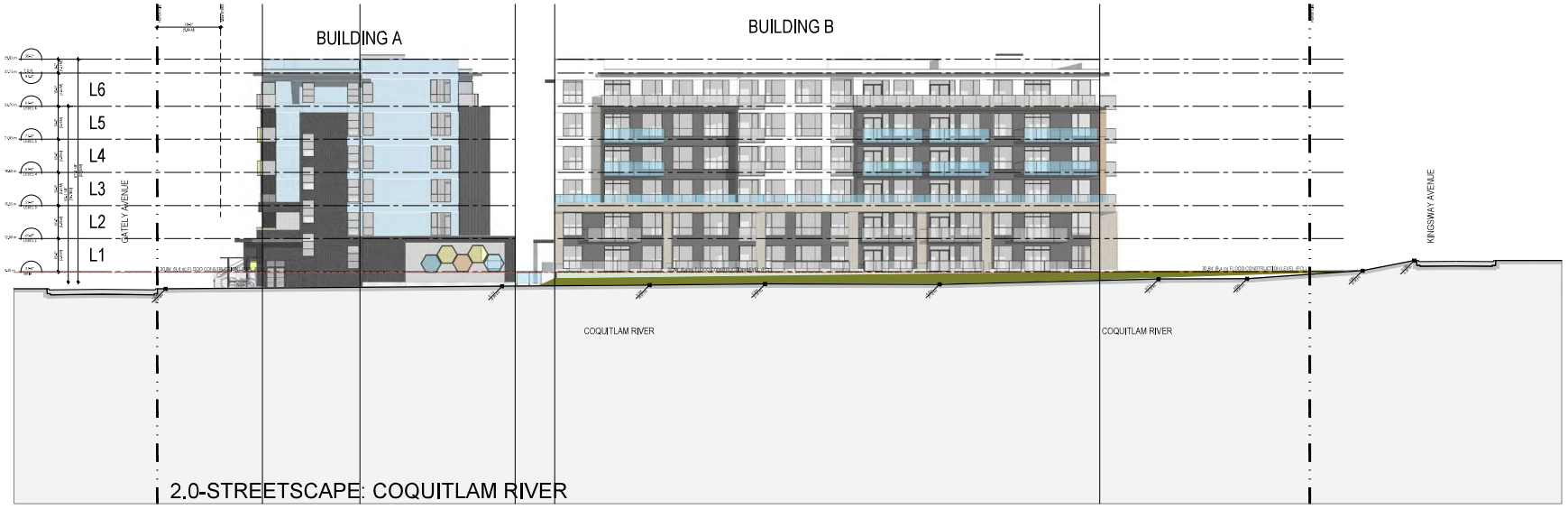
PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
BUILDING C ELEVATIONS

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: 1/8"=1'-0" REVIEW BY: BW
DWG NO: A0304 APRIL 2020



1.0-STREETSCAPE: GATELY AVENUE



2.0-STREETSCAPE: COQUITLAM RIVER

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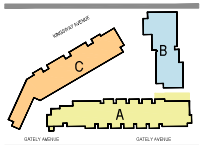
NORTH ARROW:

OWNER/CLIENT:

KEY PLAN:



NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	08/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

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VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J3
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
STREETSCAPES

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: VIS-1-0" REVIEW BY: BW
DWG NO: A0305 APRIL 2020

3.0-STREETSCAPE: KINGSWAY AVENUE

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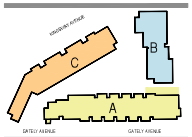
NORTH ARROW:

OWNER/CLIENT:

KEY PLAN:



NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	09/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 0J5
604.669.3828 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:

STREETSCAPE

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: 1/16"=1'-0" REVIEW BY: BW
DWG NO: A0306 APRIL 2020

1.0-MATERIALS: BUILDING "A"

2.0-MATERIALS: BUILDING "B"

3.0-MATERIALS: BUILDING "C"

BUILDING A: MATERIALS

- CEMENTITIOUS PANELS - BLUE
- 12" STANDING SEAM PANEL VERTICAL - CHARCOAL
- GALVALUME CORRUGATED SIDING VERTICAL-SILVER
- YELLOW GLASS ALUMINUM GUARDRAIL
- STACKED BRICK-CHARCOAL
- 6" METAL PERFORATED SOFFIT - WOOD GRAIN

BUILDING B: MATERIALS

- CEMENTITIOUS PANELS - BLUE
- 12" STANDING SEAM PANEL VERTICAL - CHARCOAL
- GALVALUME CORRUGATED SIDING VERTICAL-SILVER
- BLUE GLASS ALUMINUM GUARDRAIL
- STACKED BRICK-CREME
- 6" METAL PERFORATED SOFFIT - WOOD GRAIN

BUILDING C: MATERIALS

- CEMENTITIOUS PANELS - BLUE
- 12" STANDING SEAM PANEL VERTICAL - CHARCOAL
- GALVALUME CORRUGATED SIDING VERTICAL-SILVER
- ORANGE GLASS ALUMINUM GUARDRAIL
- STACKED BRICK-RED
- 6" METAL PERFORATED SOFFIT - WOOD GRAIN

MATERIAL LEGEND

MATERIALS	FINISH	COLORS	MATERIALS	FINISH	COLORS	MATERIALS	FINISH	COLORS	MATERIALS	FINISH	COLORS
WALLS AND EXPOSED STRUCTURE			DOORS , WINDOWS, + RAILINGS			DOORS , WINDOWS, + RAILINGS			DOORS , WINDOWS, + RAILINGS		
1 CEMENTITIOUS FIBRE PANELS	PREFINISHED	BLUE, CREME, BEIGE	6 VINYL WINDOW WITH CASEMENT OPENER	PREFINISHED	BLACK	10 ALUMINUM RAILING WITH TEMPERED CLEAR GLAZING + SIDE MOUNTED	PREFINISHED	BLACK	14 METAL EXIT DOORS	PREFINISHED	MATCH BACKGROUND
2 CORRUGATED SIDING	PREFINISHED	SILVER, CHARCOAL	7 ALUMINUM STOREFRONT WINDOW	PREFINISHED	BLACK	11 ALUMINUM RAILING WITH TEMPERED COLORED GLAZING + SIDE MOUNTED	PREFINISHED	BLACK RAIL: BLUE, ORANGE, YELLOW	15 OVERHEAD GARAGE DOOR	PREFINISHED	TBD
3 BRICK	PREFINISHED	CHARCOAL, CREME, RED	8 VINYL RESIDENTIAL DECK SLIDER-GLAZED	PREFINISHED	BLACK	12 ALUMINUM RAILING SIDE MOUNTED WITH TEMPERED CLEAR GLAZING ON UPSTAND	PREFINISHED	BLACK	16 6" METAL PERFORATED SOFFIT-WOOD GRAIN	PREFINISHED	LIGHT WOOD GRAIN
4 STANDING SEAM	PREFINISHED	CHARCOAL	9 VINYL HEXAGON FIXED WINDOW	PREFINISHED	BLACK W/ CLEAR, BLUE, ORANGE, YELLOW GLAZING	13 ALUMINUM RAILING SIDE MOUNTED WITH TEMPERED COLORED GLAZING ON UPSTAND	PREFINISHED	BLACK RAIL: BLUE, ORANGE, YELLOW	17 THROUGH WALL FLASHING	PREFINISHED	MATCH BACKGROUND
5 EXPOSED ARCHITECTURAL CONCRETE - SACKED	CLEAR SEALER	SINGLE COAT: FABRIKEM "FABRISHIELD 760"									

4.0-MATERIAL LEGEND

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NORTH ARROW:

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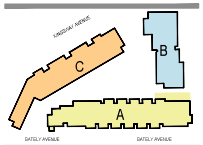
KEY PLAN:



NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	08/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

VAN 351 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J5
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:
MATERIAL BOARD

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: 3/16"=1'-0" REVIEW BY: BW
DWG NO: A0307 APRIL 2020

1.0-3D IMAGE: BUILDINGS B + C, KINGSWAY AVENUE

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NORTH ARROW:

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
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01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J3
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:

3D IMAGE 01

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: REVIEW BY: BW
DWG NO: **A0500** APRIL 2020

2.0-3D IMAGE: BUILDING C, KINGSWAY AVENUE ENTRY LOBBY

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NORTH ARROW:

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	09/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 0J5
604.669.3828 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:

3D IMAGE 02

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: REVIEW BY: BW
DWG NO: **A0501** APRIL 2020

3.0-3D IMAGE: BUILDING C, KINGSWAY AVENUE

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NORTH ARROW:

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	08/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

VAN 351 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J3
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:

3D IMAGE 03

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: REVIEW BY: BW
APRIL 2020
DWG NO: **A0502**

4.0-3D IMAGE: BUILDINGS C + A, CORNER OF KINGSWAY AVENUE + GATELY AVENUE

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NORTH ARROW:

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02	DP/REZONING RESUBMISSION	08/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

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VIC 104 - 3212 Jacklin Road Victoria, V9B 5J3
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:

3D IMAGE 04

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: REVIEW BY: BW
APRIL 2020
DWG NO: **A0503**

5.0-3D IMAGE: BUILDINGS A + B , COQUITLAM RIVER R.O.W.

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NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	08/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

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VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J3
604.685.3529 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:

3D IMAGE 05

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: REVIEW BY: BW
APRIL 2020
DWG NO: **A0504**

6.0-3D IMAGE: COURTYARD

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NORTH ARROW:

OWNER/CLIENT:

NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	08/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

VAN 351 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 5J3
604.685.3529 | office@wa-arch.ca | wa-arch.ca

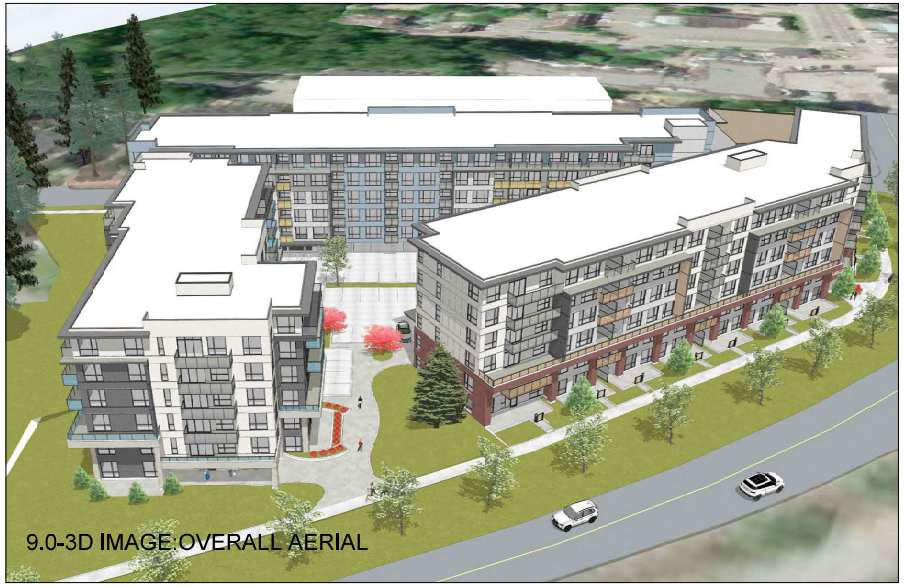
PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:

3D IMAGE 06

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: REVIEW BY: BW
APRIL 2020
DWG NO: **A0505**



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SEAL:

CONSULTANT:

WA ARCHITECTS

VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V9B 0J5
604.985.2928 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:

3D IMAGE 07

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: REVIEW BY: BW
APRIL 2020
DWG NO: **A0506**

11.0-3D IMAGE:OVERALL AERIAL

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NO.	ISSUE	M/D/Y
02	DP/REZONING RESUBMISSION	09/28/20
01	DP/REZONING SUBMISSION	04/01/20

SEAL:

CONSULTANT:

WA ARCHITECTS

VAN 301 - 1444 Alberni Street Vancouver, V6G 2Z4
VIC 104 - 3212 Jacklin Road Victoria, V8B 0Z5
604.985.3028 | office@wa-arch.ca | wa-arch.ca

PROJECT NAME:

PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC

DRAWING TITLE:

3D IMAGE 07

PROJECT NO: 19029 DRAWN BY: CSH
SCALE: REVIEW BY: BW
APRIL 2020
DWG NO: **A0506a**

Tree Evaluation Report for:
Kingsway Affordable Housing
Kingsway Avenue and Gately Avenue
Port Coquitlam, BC

Prepared by:

Mike Fadum and Associates Ltd.
#105, 8277-129 Street
Surrey, BC
Phone 778-593-0300
Fax 778-593-0302

Date: April 22, 2020
Revised: September 28, 2020

1.0 INTRODUCTION

We attended the site on April 8 and April 21, 2020 to evaluate the tree resource and to make recommendations for removal and preservation for the development application proposed for the properties southeast of the Kingsway Avenue and Gately Avenue intersection. The Coquitlam River riparian zone borders the site to the southeast. The application proposes rezoning for the purpose of constructing new multifamily buildings with underground parking. A plan showing the proposed building footprints, lot lines, riparian setbacks, and topographical survey was provided for our use and used as a resource for making recommendations pertaining to tree removal and retention. *The September 28, 2020 revision reflects the current plans.*

Figure 1. Aerial Photograph 2492 Kingsway Avenue (QtheMap, 2019).

2.0 FINDINGS

The onsite tree resource varies considerably across the site with the majority of trees located on 2450 and 2420 Ticehurst Lane. These two properties include a wide assortment of native and non native species that are typically well conditioned. Dominant trees to the north include a small group of mature black cottonwoods (*Populus balsamifera* ssp. balsamifera) and a mature Douglas-fir (*Pseudotsuga menziesii*). Dominant trees on the western lots include a well conditioned Colorado blue spruce (*Picea pungens* var. glauca) and row of flowering cherries (*Prunus sp*). We did not individually assess all trees below the top of bank but did walk the area to conduct a Level 1 Tree Risk Assessment. This area is dominated by red alder (*Alnus rubra*) and black cottonwood that range in diameter from approximately 15-65cm. Trees here are typically in good health and have forms of trees growing in this type of environment including limited stem tapers and phototropic sweeps.

Table 1 provides individual tree data. Specific information includes tree type, diameter at breast height (DBH), structure and health rating (poor (P), moderate (M), good (G) or a combination of two), live crown ratio (LCR) and structural observations. Health refers to the tree's overall health and vigor, while structure is a qualitative rating of a tree's shape and structure when compared to ideal trees of the same species and age class. Trees were evaluated for their preservation potential based on health, structure, location and species factors. Trees expected to be unsafe, conflicting with the proposed building plans, of poor health or of little long-term retentive value are recommended for removal and are shown on the attached Tree Preservation and Removal Plan. Smaller stature trees and shrubs are included on the plans with a Legend. Photographs are provided in Appendix A.

3.0 TREE PROTECTION

Tree protection fencing is to be installed as per municipal standards prior to construction with no excavation, grade alterations or materials storage within the tree protection zone. The consulting Arborist should be contacted prior to and be onsite for any construction within the recommended root protection zone which is approximately 6x the tree diameter. Grade alterations and other construction works required to provide drainage are not to occur within the root protection zone. Failure to comply with these recommendations may result in delays, stop work orders or fines imposed by the municipality.

4.0 TREE PRESERVATION SUMMARY

Our plans have been provided to the design team and it is expected that all consultants and contractors adhere to the recommendations in this report and ensure there is no conflict with Tree Protection Zones. No ground disturbance or grade alterations are permitted within the Tree Protection Zones unless preapproved by the project arborist. Mechanical injuries caused to trees below or above ground cannot be repaired. All parties must be aware that long-term success in tree preservation efforts depends greatly on minimizing the impact caused during and post construction. Best efforts must be made to ensure that soils remain undisturbed within the tree protection zones. Ongoing monitoring and implementation of mitigating works, such as watering, mulching, etc., is essential for success.

5.0 EDGE TREE ASSESSMENT

We recommend all edge trees undergo a Tree Risk Assessment to determine if they are at an increased risk of partial or complete failure when the surrounding trees are removed and the exposure to wind is increased. Trees considered to be of poor structure and / or condition, of species types prone to failure within striking distance of future targets of value should be removed or undergo crown modification treatments. We recommend that any trees to be removed near retained trees are cut to grade and their stumps left intact in order to prevent disturbance to the stability and negative impacts on the health of the adjacent trees. Crown modification treatments may include large limb removal and or retopping.

6.0 LIMITATIONS

This Arboricultural field review report is based on site observations on the dates noted. Effort has been made to ensure that the opinions expressed are a reasonable and accurate representation of the condition of the trees reviewed. All trees or groups of trees have the potential to fail. No guarantees are offered or implied by Mike Fadum and Associates Ltd. or its employees that the trees are safe given all conditions. The inspection is limited to visual examination of accessible items without dissection, excavation, probing, coring or climbing. Trees can be managed, but they cannot be controlled. To live, work or play near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

The findings and opinions expressed in this report are representative of the conditions found on the day of the review only. Any trees retained should be reviewed on a regular basis. The root crowns, and overall structure, of all the

trees to be retained must be reviewed immediately following land clearing, grade disturbance, significant weather events and prior to site usage changes.

Please contact the undersigned if you have any questions or concerns regarding this report.

On behalf of Mike Fadum and Associates Ltd.

Peter Mennel BSc
ISA Certified Arborist PN# 5611A
TRAQ

Table 1 - Tree Evaluation: Kingsway Avenue and Gately Avenue, Port Coquitlam, BC

Tree #	Type	DBH (cm)	Structure	Health	LCR (%)	Observations	Recommendation / Tree Protection Zone Radii
4530	Japanese Maple *(Acer palmatum)*	10/6/16/8 /16/8/17	G	G	NA	5m dripline.	**Remove. 4.0m**
4531	Dogwood *(Cornus florida)*	15/8/ 5/6	M	M	NA	All major leaders headed back previously. Growing under a soffit. Extensive sucker growth. 3m dripline.	**Remove. 2.5m**
4532	Japanese Maple *(Acer palmatum)*	12/14/4/5 /3/19/ 10	MG	MG	NA	Not identified at the time of survey. Location approximate. 4m dripline. Includes 4 unsurveyed rhododendrons between 3-4m tall in this area.	**Remove. 2.5m**
4533	Mountain Ash (*Sorbus americana)*	20/8/ 18/8/7	MG	MG	NA	Multi stemmed base. 3m dripline.	**Remove. 3.0m**
4534	Sawara Falsecypress (*Chamaecyparis pisifera*)	37/27/ 23/43	M	MG	80	4m dripline. Some stems topped previously for overhead utility line clearance. Multi stemmed base.	**Remove. 5.0m**
4535	Threadleaf Falsecypress (*Chamaecyparis pisifera*)	17	MG	MG	60	2m dripline. Canopy weighted to the south west. Slight pistol butt base.	**Remove. 2.0m**
4536	Deodar Cedar *(Cedrus deodara)*	75	MG	MG	70	Pistol butt base. Multi stemmed at 5m. Canopy weighted to the southwest. 7m dripline.	**Remove. 5.0m**
4537	Grand Fir *(Abies grandis)*	38	G	MG	90	3m dripline. No observed defects.	**Remove. 3.0m**
4538	Hiba *(Thujopsis dolabrata)*	28	MG	MG	80	3m dripline. No observed defects.	**Remove. 2.5m**

Table 1 - Tree Evaluation: Kingsway Avenue and Gately Avenue, Port Coquitlam, BC

Tree #	Type	DBH (cm)	Structure	Health	LCR (%)	Observations	Recommendation / Tree Protection Zone Radii
4539	Sawara Falsecypress *(Chamaecyparis pisifera)*	61/48	P	M	95	Significant lower stem phototropic sweep. Northern stem has been topped at 5m with no regrowth. Canopy weighted to the south. 4m dripline.	**Remove. 5.0m**
4540	Magnolia *(Magnolia sp.)*	15/10/8/16 /12/17/8	MG	M	NA	Shade suppressed. 4m dripline.	**Remove. 3.0m**
4541	Pine *(Pinus sp.)*	14/16/ 12/6	M	M	20	Leggy form. High canopy. Four stemmed coppice base. 2.5m dripline.	**Remove. 2.5m**
4542	Photinia (*Photinia sp*)	~14/ 14/6/9/ 8/6/5	MP	M	NA	Topped at 3m with multiple stem small diameter regrowth. 1.5m dripline.	**Retain. 2.5m**
4543	Flowering Cherry (*Prunus sp*)	43	M	MG	NA	Most major leaders and scaffold headed back at 4m. Open grown symmetrical canopy. Decay cavity at point of past leader failure. 4m dripline.	**Retain. 3.5m**
4544	Norway Maple (*Acer platanoides*)	42	M	M	NA	Well calloused rib on the north side. Leggy form. Canopy weighted to the west. 7m dripline.	**Retain. 3.5m**
4545	Flowering Cherry (*Prunus sp*)	48	MP?	MG	NA	Decay cavity at base with large conk. Leggy form. High canopy. 7m dripline.	**Retain. 3.5m**
4546	Katsura *(Cercidiphyllum japonicum)*	~35/36/ 28/35/ 20/15/19	MG	G	NA	8m dripline. No observed defects.	**Retain. 5.0m**
4547	Persian Ironwood (*Parrotia persica*)	3-17 X40	M	G	NA	Multi stemmed base. 6m dripline.	**Retain. 5.0m**

Table 1 - Tree Evaluation: Kingsway Avenue and Gately Avenue, Port Coquitlam, BC

Tree #	Type	DBH (cm)	Structure	Health	LCR (%)	Observations	Recommendation / Tree Protection Zone Radii
4548	Norway Spruce *(Picea abies)*	34	M	MG	40	Limited trunk taper. 3m dripline.	**Retain.** **3.0m**
4549	Japanese Maple *(Acer palmatum)*	8/5/9	M	M	NA	Dieback throughout canopy. Shade suppressed - leggy form. 3m dripline.	**Retain.** **2.0m**
4550	Mountain Ash (*Sorbus americana*)	31	MP	M	NA	Multiple stems cut or fail at 2-4m. Leggy form. 3.5m dripline.	**Retain.** **2.5m**
4551	Sycamore Maple (*Acer pseudoplatanus)*	42	M	MG	NA	Canopy weighted to the south. Large pile of debris and concrete at the base prevented a thorough assessment. 6m dripline.	**Retain.** **3.5m**
4552	Sycamore Maple (*Acer pseudoplatanus)*	40	M	MG	NA	Canopy weighted to the north. Phototropic sweep to the north. Large stem removed from the base with sucker growth. 5m dripline.	**Retain.** **3.0m**
4553	Sycamore Maple (*Acer pseudoplatanus)*	~60	M	M	NA	Heavy ivy growth. 6m dripline.	**Remove.** **4.5m**
4554	Cherry *(Prunus sp.)*	33	M	G	NA	Significant sweep to the west. Decay column at 1m. 8m dripline.	**Remove.** **2.5m**
4555	Spruce (*Picea sp.*)	47	M	MG	80	Sweep to the north. Old wound at 1m north side. 5m dripline.	**Remove.** **4.0m**
4556	Colorado Blue Spruce *(Picea pungens Glauca Group)*	41	M	M	NA	Dieback throughout. Codominant leader at 3m has failed at 8m.	**Remove.** **3.0m**
4557	Colorado Spruce *(Picea pungens)*	29	M	MP	75	Canopy weighted to the south. Pruned north side for utility line clearance. 3m dripline.	**Remove.** **2.5m**

Table 1 - Tree Evaluation: Kingsway Avenue and Gately Avenue, Port Coquitlam, BC

Tree #	Type	DBH (cm)	Structure	Health	LCR (%)	Observations	Recommendation / Tree Protection Zone Radii
4558	Colorado Spruce *(Picea pungens)*	29	MG	M	80	Pruned north side for utility line clearance. Canopy weighted to the south. 3m dripline.	**Remove. 2.5m**
4559	Black Cottonwood *(Populus trichocarpa)*	~20	G	G	NA	Typical.	**Retain. 2.0m**
4560	Black Cottonwood *(Populus trichocarpa)*	~60/50 /60	M	MG	NA	3 stems fused to the base with phototropic sweeps. Ivy across lower 10m and recently removed. 11m dripline.	**Remove. 7.5m**
4561	Black Cottonwood *(Populus trichocarpa)*	55	M	MG	NA	Tree grows to about 60 degrees angle to the south then corrects to vertical. Ivy across lower 10m recently removed. 10m dripline.	**Remove. 4.5m**
4562	Black Cottonwood *(Populus trichocarpa)*	56	M	MG	NA	Ivy recently removed. Significant sweep to the west. 10m dripline.	**Remove. 4.5m**
4563	Black Cottonwood *(Populus trichocarpa)*	53	M	MG	NA	Ivy across lower 10m and recently removed. 8m dripline.	**Remove. 4.0m**
4564	Black Cottonwood *(Populus trichocarpa)*	~100	M	MG	NA	2 stems fused across lower 2m. Ivy across lower 10m and recently removed. 8m dripline.	**Remove. 7.0m**
4565	Emerald Cedar *(Thuja occidentalis)* 'Smargd'	8/10/12 /8/5	MP	M	80	Tree leans to the south – possibly supported by the Douglas fir. Top has corrected to vertical. 2m dripline.	**Remove. 2.0m**
4566	Colorado Blue Spruce *(Picea pungens Glauca Group)*	36	M	M	50	Significant phototropic sweep to the west. Shade suppressed. 5m dripline.	**Remove. 2.5m**

Table 1 - Tree Evaluation: Kingsway Avenue and Gately Avenue, Port Coquitlam, BC

Tree #	Type	DBH (cm)	Structure	Health	LCR (%)	Observations	Recommendation / Tree Protection Zone Radii
4567	Douglas-fir *(Pseudotsuga menziesii)*	77	M	MG	80	Codominant attachment at 2m with angle of attachment. Limb locked. Some dieback across lower canopy and needle blight. 8m dripline.	**Remove.** **6.0m**
4568	Threadleaf Falsecypress (*Chamaecyparis pisifera*)	23/20	M	G	NA	2 stem base. Canopy weighted to the south. Pruned on north side to clear the house. 2m dripline.	**Remove.** **2.5m**
4569	Colorado Blue Spruce *(Picea pungens Glauca Group)*	42	MG	MG	80	4m dripline.	**Remove.** **3.0m**
4570	Cherry *(Prunus sp.)*	31/32/ 32/20	M	G	NA	Multi stemmed base. Large leader scaffolds pruned/cut on the west side. 7m dripline.	**Remove.** **5.0m**
4752	Cherry (*Prunus sp*)	44/15/17/1 7/26/27	M	MG	NA	Scaffolds pruned on west side. 7m dripline.	**Remove.** **5.0m**
4753	Threadleaf Falsecypress (*Chamaecyparis pisifera*)	31	M	G	50	Canopy weighted to the north. Aggressively pruned on the south side to clear the carport. 2.5m dripline.	**Remove.** **2.0m**
4754	Plum *(Prunus sp)*	~5-15 X13	M	M	NA	Not maintained. 2.0m	**Remove.** **2.5m**
4755	Mountain Ash (*Sorbus americana*)	~3-25 X25	P	M	NA	Large limb failure. Large cavity in the lower stem. Topped at 4-6m. Southern stem has failed.	**Remove.** **2.5m**

Table 1 - Tree Evaluation: Kingsway Avenue and Gately Avenue, Port Coquitlam, BC

Tree #	Type	DBH (cm)	Structure	Health	LCR (%)	Observations	Recommendation / Tree Protection Zone Radii
4756	Magnolia *(Magnolia sp.)*	15/12	MP	MG	NA	Leaders cut at 2m with multiple stem small diameter regrowth. Decay at points of cutting. 2m dripline.	**Remove. 2.0m**
4757	Cherry *(Prunus sp.)*	10/6/ 11	MP	M	NA	Dieback lower mid canopy. Shade suppressed. 1m dripline.	**Remove. 2.5m**
4758	Norway Maple (*Acer platanoides*)	58	M	MG	NA	Well calloused crack on the south side. Some leaders have been topped previously. 6m dripline.	**Remove. 4.5m**
4759	Apple (*Malus sp*)	10/10/ 13/17	M	MG	NA	3 stems fused at the base. 3m dripline.	**Remove. 2.5m**
4760	Laburnum (*Laburnum sp*)	12/5/ 4/2	MG	MG	NA	Multi stemmed. Canopy weighted to the north.	**Remove. 2.0m**
4761	Norway Spruce *(Picea abies)*	~25	MG	MG	70	Lack of access prevented thorough assessment. Possibly topped previously. 3m dripline.	**Remove. 2.5m**
4762	Apple (*Malus sp*)	10/15/10/ 10/10	M	M	NA	Open grown canopy. Lack of access prevented thorough assessment. 4m dripline.	**Remove. 2.5m**
4763	Atlas Cedar (*Cedrus atlantica*)	24/ ~45/35	MG	M	80	Canopy weighted to the south. Multi stemmed base. 8m dripline.	**Remove. 5.0m**
ROW1	Western Redcedar *(Thuja plicata)* X12	24,19,22,26 ,20,18,23, 22,20,11,8, 24	G	G	60	Many trees not surveyed. 3m dripline.	**Retain. 2.5m**

Table 1 - Tree Evaluation: Kingsway Avenue and Gately Avenue, Port Coquitlam, BC

Tree #	Type	DBH (cm)	Structure	Health	LCR (%)	Observations	Recommendation / Tree Protection Zone Radii
C1	European Hornbeam (*Carpinus betulus*)	22/15 /15/5	G	G	NA	Phototropic sweep to the west. Canopy weighted to the west. 5m dripline.	**Retain. 3.0m**
C2	European Hornbeam (*Carpinus betulus*)	5-15 x11	MG	G	NA	4m dripline. No observed defects.	**Retain. 3.0m**
C3	European Hornbeam (*Carpinus betulus*)	5-10 X12	M	MG	NA	Stems pruned on north side for sidewalk clearance. 2.5m dripline.	**Retain. 3.0m**
C4	European Hornbeam (*Carpinus betulus*)	3-6 X7	M	MG	NA	Stems pruned on north side for sidewalk clearance. 2m dripline.	**Retain. 3.0m**
C5	European Hornbeam (*Carpinus betulus*)	3-8 X11	MG	MG	NS	2.5m dripline. No observed defects.	**Retain. 3.0m**
C6	European Hornbeam (*Carpinus betulus*)	3-16 X22	MG	MG	NA	2.5m dripline. Typical.	**Retain. 3.0m**

ADDITIONAL RECOMMENDATIONS

- **In order to prevent root damage, which may adversely affect the health and or stability of the retained trees, any ground disturbance or grade alteration within the recommended Tree Protection Zone provided in the table above shall be under the direction of the project arborist if permissible.**

Note: 'OS' refers to Offsite trees and due to restricted access their diameters are approximate. An assessment of offsite trees does not imply they are safe as the restricted access prevented a thorough review. 'C' refers to trees on City property.

Figure 1. 4530 with rhododendrons.

Figure 2. 4533 with sumac in the foreground.

Figure 3. 4534

Figure 4. 4535 and 4763.

Figure 5. 4536 (left) and 4539.

Figure 6. 4537

Figure 7. 4538

Figure 8. 4545.

Figure 9. 4546

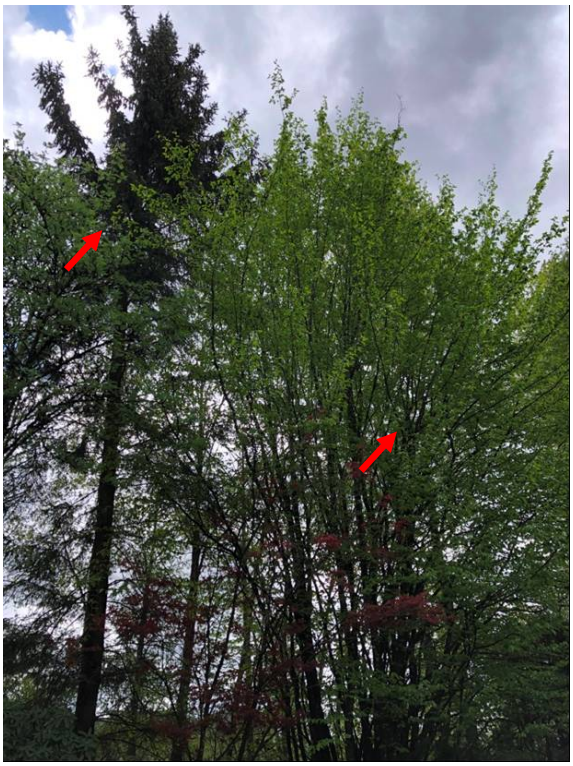


Figure 10. 4547 (right) and 4548.

Figure 11. Row 1.

Figure 12. 4552.

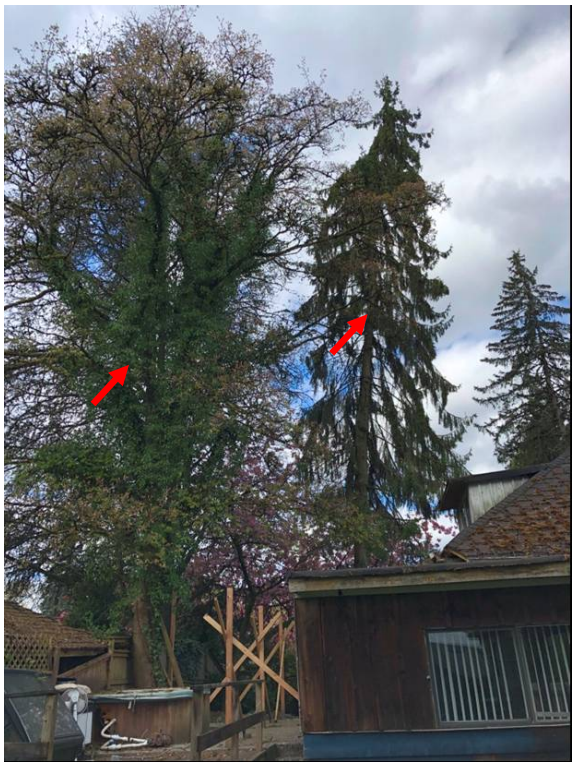


Figure 13. 4553 (left) and 4555.

Figure 14. Typical boulevard hornbeam.

Figure 15. 4560-4564.

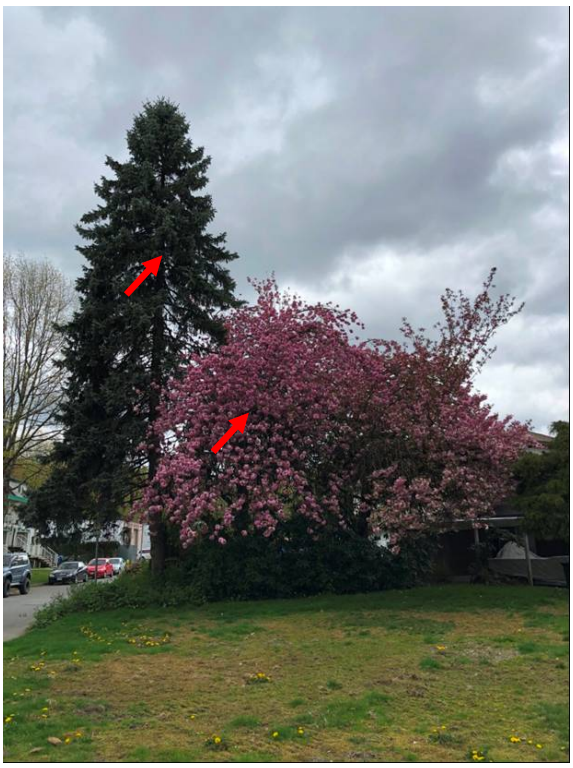


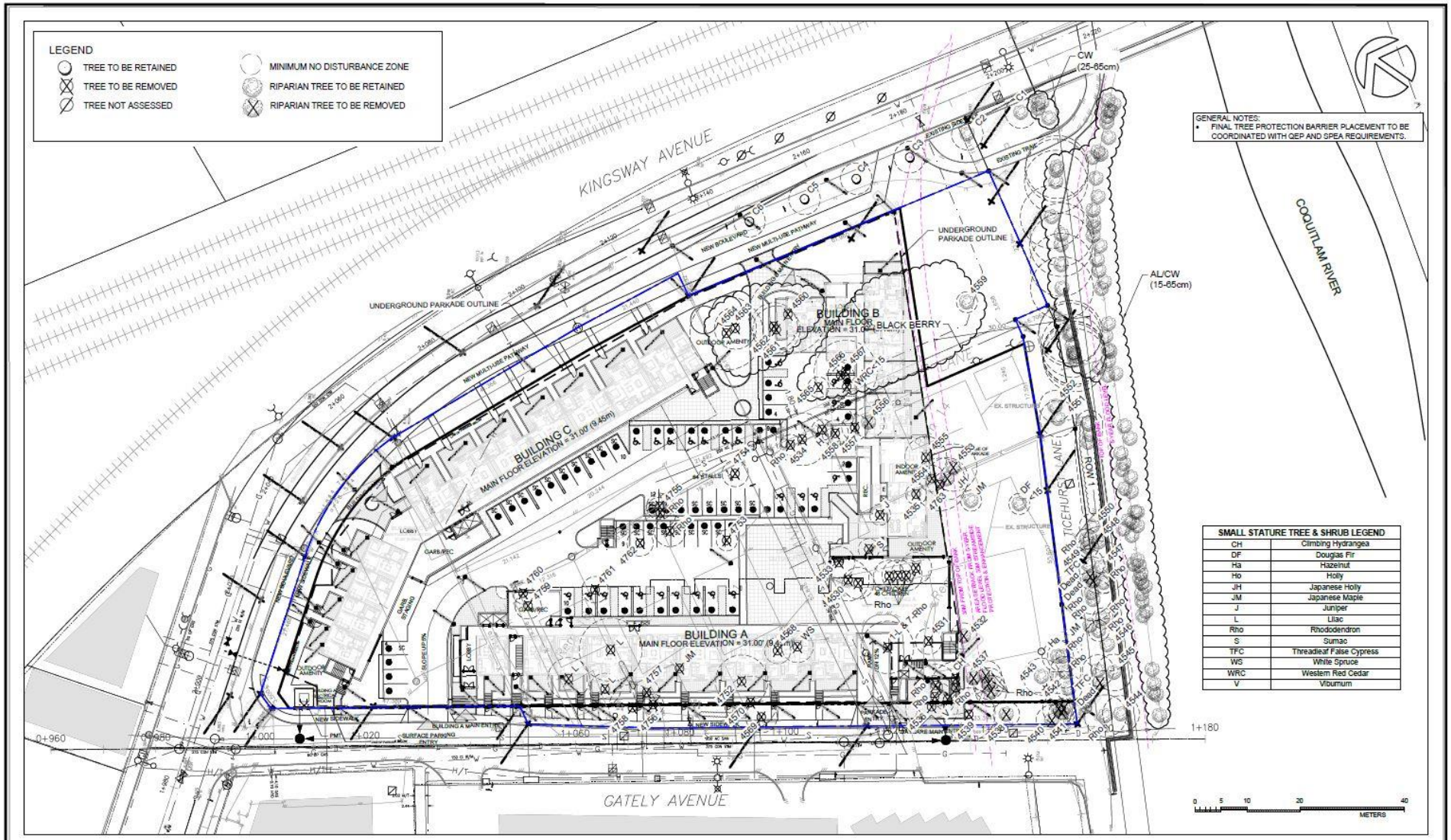
Figure 16. 4569 (left) and 4570.

Figure 17. 4578.

Figure 18. 4761.

Figure 19. Riparian are black cottonwoods at northeast corner.

Figure 20. Interior of riparian zone.



STAMP		NO.	DATE	BY	REVISION
		1	APR21/20	MK	SITE AND GRADING PLAN
		2	SEPT29/20	MK	SITE PLAN

MIKE FADUM AND ASSOCIATES LTD.
VEGETATION CONSULTANTS

#105, 8277 129 St.
Surrey, British Columbia
V3W 0A6
Ph: (778) 593-0300
Fax: (778) 593-0302
Email: mfadum@fadum.ca

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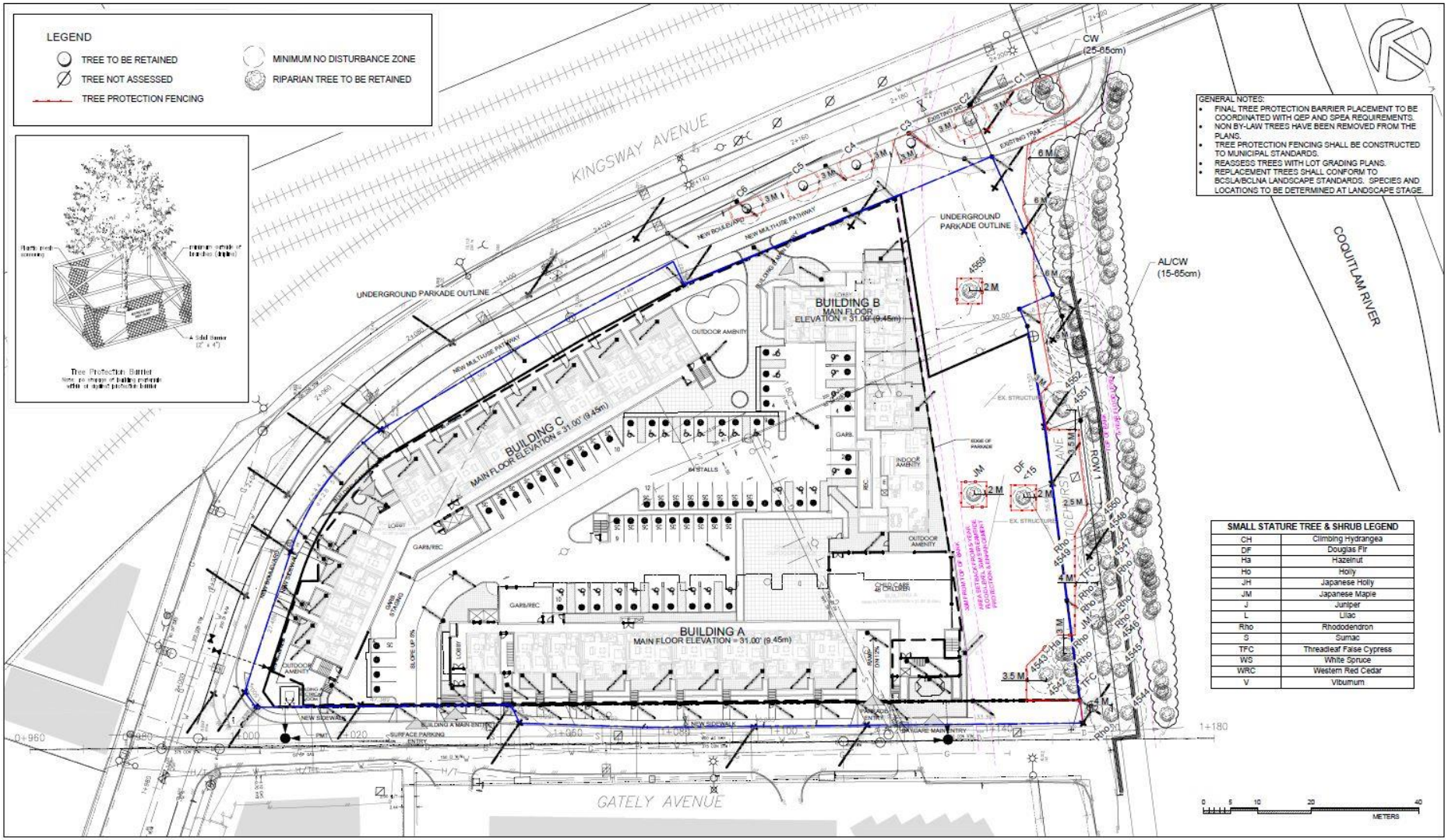
PROJECT TITLE: KINGSWAY & GATELY AVENUE
PORT COQUITLAM, B.C.

SHEET TITLE: T1 - TREE REMOVAL AND PRESERVATION PLAN

CLIENT:

DRAWN: MK
SCALE: AS SHOWN
DATE: APRIL 8, 2020

T-1
SHEET 1 OF 2



STAMP		NO.	DATE	BY	REVISION
		1	APR21/20	MK	SITE AND GRADING PLAN
		2	SEPT28/20	MK	SITE PLAN

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#105, 8277 129 St.
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V3W 0A6
Ph: (778) 593-0300
Fax: (778) 593-0302
Email: mfadum@fadum.ca

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PROJECT TITLE: KINGSWAY & GATELY AVENUE
PORT COQUITLAM, B.C.

SHEET TITLE: T2 - TREE PROTECTION AND PRESERVATION PLAN

CLIENT:

DRAWN: MK
SCALE: AS SHOWN
DATE: APRIL 8, 2020

T-2
SHEET 2 OF 2

Housing Development Traffic Impact Study

Prepared for:

Peak Tower Development

Prepared by:

CTS Traffic Engineering Specialists

84a moody street
port moody, bc
canada v3h 2p5

604.936.6190
FAX 604.936.6175
www.cts-bc.com

SEPTEMBER 2020

Traffic Engineering Specialists

101A - 1952 Kingsway Avenue
Port Coquitlam, British Columbia
Canada V3C 6C2

604.936.6190
604.936.6175
www.cts-bc.com

Date: September 28, 2020
File No: 7163-01

BY EMAIL

Peak Tower Development
c/o
Mr. Barry Weih
WA Architects Ltd.
#301, 1444 Alberni Street
Vancouver, BC
V6G 2Z4

Dear Mr. Weih,

Re: Housing Development, Port Coquitlam – Revised FINAL Traffic Impact Study

Creative Transportation Solutions Ltd. (CTS) is pleased to submit this Revised FINAL Traffic Impact Study for a proposed housing development located at the intersection of Gately Avenue at Kingsway Avenue in the City of Port Coquitlam. The primary objectives of this assignment were:

1. To conduct a traffic impact assessment for the proposed housing development based on the most recent project data, and
2. To document the site conditions, data, analyses, conclusions and recommendation (if any) in a report that meets the requirements of the City of Port Coquitlam.

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1.0 BACKGROUND

1.1 Study Site

The proposed housing development site is located in the south quadrant of the intersection of Gately Avenue at Kingsway Avenue in the City of Port Coquitlam. Phase 1 of the development will have 302 apartment units and 4,000 ft^2 of day care space on eleven properties:

- 2428, 2456, 2458, 2460, 2466, 2470, 2492 Kingsway Avenue;
- 2420, 2450 Ticehurst Lane; and
- 2455, 2473, 2475 Gately Avenue.

The legal descriptions are:

- Strata Lot B, Plan NWS1714, District Lot 379, New Westminster District;
- Strata Lot D, Plan NWS1714, District Lot 379, New Westminster District;
- Strata Lot C, Plan NWS1714, District Lot 379, New Westminster District;
- Strata Lot E, Plan NWS1714, District Lot 379, New Westminster District;
- Strata Lot F, Plan NWS1714, District Lot 379, New Westminster District;
- Lot 1, Plan LMP15261, District Lot 379, New Westminster District;
- Lot 14, Plan NWP3106, District Lot 379, New Westminster District;
- Lot A, Plan NWP3106, District Lot 379, New Westminster District;
- Lot 16, Plan NWP3106, District Lot 379, New Westminster District;
- Lot 2, Plan NWP8602, District Lot 379, New Westminster District; and
- Plan NWP8602, District Lot 367, New Westminster District.

Phase 2 of the housing development could have up to 450 apartment units on two properties:

- 2532 Kingsway Avenue; and
- 2466 Gately Avenue.

The legal descriptions are:

- Lot 22, Plan NWP3106, District Lot 379, New Westminster District; and
- Lot 125, Plan NWP63714, District Lot 379, New Westminster District.

1.2 Study Area

The study area is bounded by Dixon Street to the west, Kingsway Avenue to the north and the site property line to the south & east. **FIGURE 1** illustrates the study area and adjacent road network. A copy of the site plan referenced by this Traffic Impact Study is included as **APPENDIX A**.

The following intersections are included in the traffic impact assessment:

1) Gately Avenue at Kingsway Avenue (unsignalized);
2) Dixon Street at Kingsway Avenue (signalized);
3) Westwood Street at Kingsway Avenue (signalized); and
4) Maple Street at Kingsway Avenue (signalized).

FIGURE 1
STUDY AREA AND ADJACENT ROAD NETWORK

1.3 Road Network

A brief description of each study intersection follows:

Westwood Street at Kingsway Avenue

- Westwood Street intersects Kingsway Avenue at a signalized "**T**" intersection.
- On the north approach there is a left turn lane and through lane. On the south approach there is a through lane and right turn lane. On the east approach there is a left turn lane and right turn lane.
- The signal is coordinated with the CP Rail signal to the east.
- There are signalized pedestrian crosswalks and sidewalks on the north and east approaches.
- The intersection is illuminated.
- The posted speed is 50 km/h.
- On-street parking is prohibited on Westwood Street and Kingsway Avenue in proximity to the intersection.

Dixon Street at Kingsway Avenue

- Dixon Street intersects Kingsway Avenue at a signalized "**+**" intersection.
- On the north approach there is a shared left turn/through/right turn lane. On the south approach there is a shared left turn/through/right turn lane. On the east approach there is a shared left turn/through lane and shared through/right turn lane. On the west approach there a shared left turn/through lane and shared through/right turn lane.
- There are signalized pedestrian crosswalks and sidewalks on all approaches.
- The intersection is illuminated.
- The posted speed is 50 km/h.
- On-street parking is prohibited on Westwood Street and Kingsway Avenue in proximity to the intersection.
- On-street parking is controlled by time of day along Kingsway Avenue i.e. NO PARKING / 7AM–9AM / 3PM-7PM / MON-FRI and 1 HOUR PARKING / 9AM-3PM / MON-FRI.

Gately Avenue at Kingsway Avenue

- Gately Avenue intersects Kingsway Avenue at an unsignalized "**T**" intersection. Gately Avenue is STOP controlled.
- On the south approach there is a shared left turn/right turn lane. On the east approach there is a shared left turn/through lane and a through lane. On the west approach there a shared through/right turn lane.
- There are sidewalks on all approaches.
- The intersection is illuminated.
- The posted speed is 50 km/h.

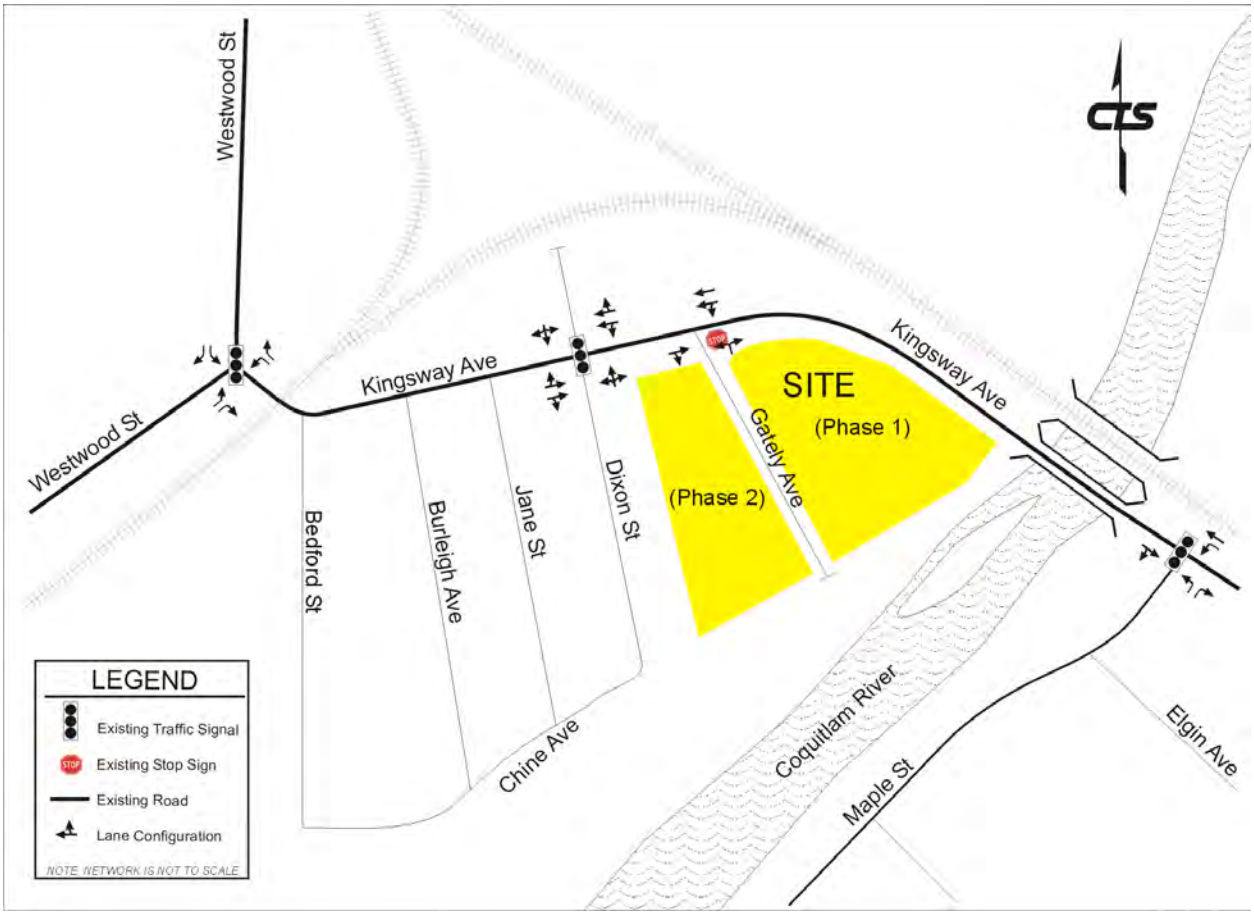
- On-street parking is prohibited on Westwood Street and Kingsway Avenue in proximity to the intersection.
- On-street parking is controlled by time of day along Kingsway Avenue i.e. NO PARKING / 7AM–9AM / 3PM-7PM / MON-FRI and 1 HOUR PARKING / 9AM-3PM / MON-FRI.

Maple Street at Kingsway Avenue

- Maple Street intersects Kingsway Avenue at a signalized "**T**" intersection.
- On the south approach there is a left turn lane and right turn lane. On the east approach there is a left turn lane and a through lane. On the west approach there a shared through/right turn lane.
- There are signalized pedestrian crosswalks and sidewalks on all approaches.
- The intersection is illuminated.
- The posted speed is 50 km/h.
- On-street parking is prohibited on Maple Street and Kingsway Avenue in proximity to the intersection.

The existing laning configuration for the study intersections is illustrated by **FIGURE 2**.

FIGURE 2
EXISTING LANING CONFIGURATION



1.4 Transport Modal Infrastructure

Pedestrian Network

There are concrete sidewalks on Kingsway Avenue. However, there are currently no sidewalks around the proposed housing development site on Gately Avenue.

Bicycle Network

Currently, there are no bicycle routes within the study area. However, with reference to the City of Port Coquitlam *2013 Master Transportation Plan*, there is a multi-use pathway proposed along Kingsway Avenue from Wilson Avenue to the Fraser River and a signed on-street bicycle route along Wilson Avenue linking the multi-use pathway along Kingsway Avenue with the existing multi-use pathway network along the Coquitlam River. There is a new signed on-street bicycle route along Bedford Street and Chine Avenue linking to the existing multi-use pathway network along the Coquitlam River. **FIGURE 3** illustrates the existing and proposed bicycle network within the study area.

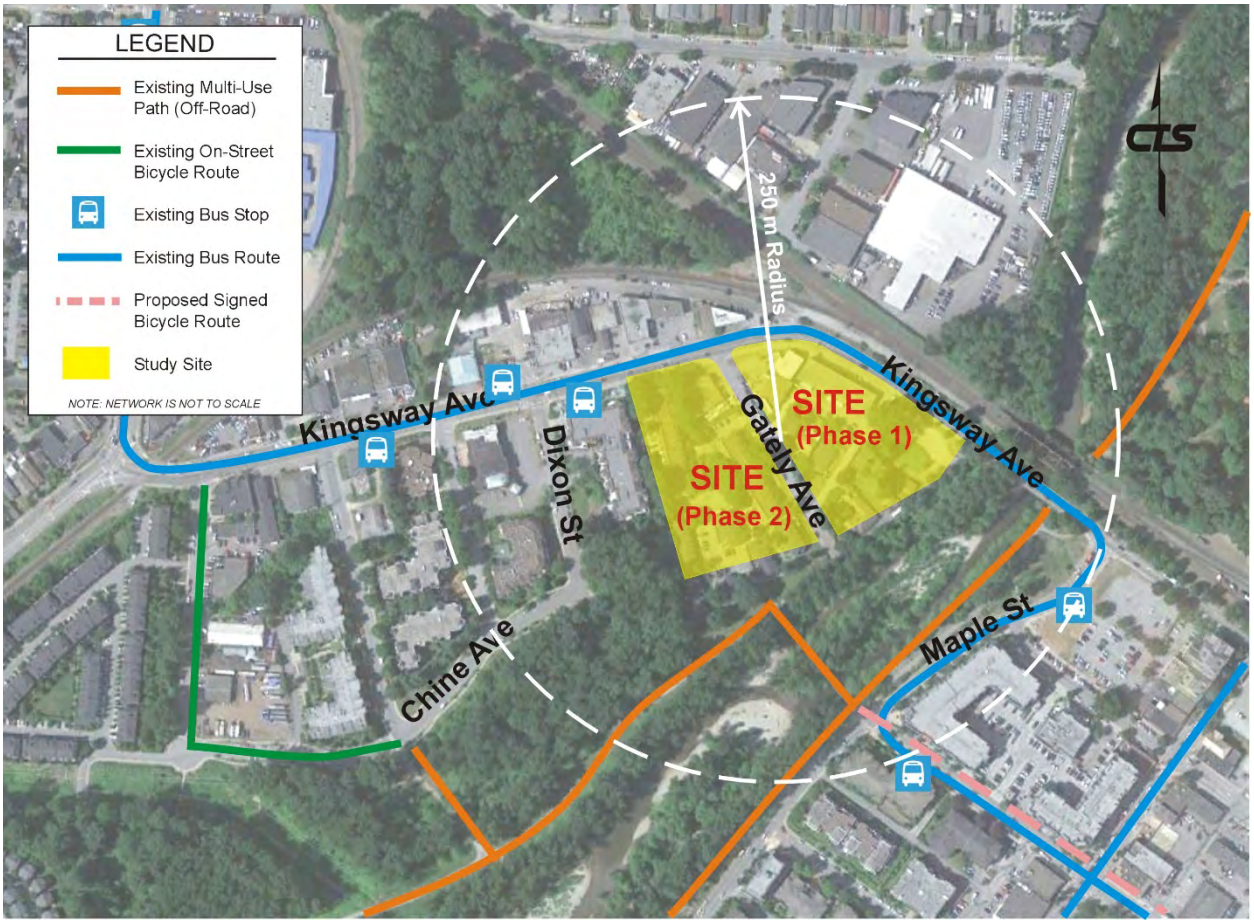
Public Transit

The site is well serviced by transit. The proposed housing development is located approximately 130 meters from bus stops on Kingsway Avenue. Bus stop locations are illustrated by **FIGURE 3**. The nearby bus stops are served by the following routes:

- Route #173 – Coquitlam Central Station/Cedar. Service is every 10 to 15 minutes Monday to Friday during peak periods.
- Route #174 – Coquitlam Central Station/Rocklin. Service is every 10 to 15 minutes Monday to Friday during peak periods.
- Route #175 - Coquitlam Central Station/Meridian. Service only in the morning and afternoon peak hours every 30 minutes.

A transit route diagram for each transit route is included as **APPENDIX B**.

FIGURE 3
EXISTING BUS STOP AND BICYCLE ROUTE LOCATIONS



1.5 Study Periods

The weekday AM and PM peak hours were selected as the design hours for this study.

- Weekday AM Peak Hour – 0745 to 0845
- Weekday PM Peak Hour – 1545 to 1645

The following horizon years were selected for this study:

- 2020 (existing base traffic conditions);
- 2022 (future base traffic conditions without the development);
- 2025 (future base traffic conditions without the development);
- 2030 (future base traffic conditions without the development);
- 2022 (future base traffic conditions + Phase 1 site generated traffic volume);
- 2025 (future base traffic conditions + Phase 1 & Phase 2 site generated traffic volume); and
- 2030 (5 years post build-out).

2.0 BASE TRAFFIC VOLUMES

2020 Base Traffic Volumes

CTS conducted intersection traffic turning movement counts on Tuesday, January 21, 2020 from 0700 to 0900 and 1500 to 1800 in order to capture both the AM and PM peak periods. The traffic turning movement count data was tabulated and reviewed to ensure data integrity and validity. The tabulated traffic turning movement count data sheets are included as **APPENDIX C**. **FIGURE 4** and **FIGURE 5** illustrate the weekday AM and PM peak hour traffic volumes, respectively.

The following design hours were selected based on the peak hours observed at the study intersections:

- Weekday AM Peak Hour – (0745 to 0845)
- Weekday PM Peak Hour – (1545 to 1645)

2022 Future Base Traffic Volumes

Year 2022 is anticipated to be the year of build-out for the proposed housing development – Phase 1. The 2020 base traffic volumes were factored up by a traffic volume growth rate of 2.0% per annum (simple straight line) to represent the future base year 2022 traffic volumes. **FIGURE 6** and **FIGURE 7** illustrate the 2022 weekday AM and PM peak hour traffic volume future base scenarios with no development traffic, respectively.

2025 Future Base Traffic Volumes

Year 2025 is anticipated to be the year for build-out for the proposed housing development – Phase 1 and Phase 2. The 2020 base traffic volumes were factored up by a traffic volume growth rate of 2.0% per annum (simple straight line) to represent the future base year 2025 traffic volumes. **FIGURE 8** and **FIGURE 9** illustrate the 2025 weekday AM and PM peak hour traffic volume future base scenarios with no development traffic, respectively.

2030 Future Base Traffic Volumes

Year 2030 is anticipated to be 5 years post build-out for the proposed housing development – Phase 1 and Phase 2. The 2020 base traffic volumes were factored up by a traffic volume growth rate of 2.0% per annum (simple straight line) to represent the future base year 2030 traffic volumes. **FIGURE 10** and **FIGURE 11** lustrate the 2030 weekday AM and PM peak hour traffic volume future base scenarios with no development traffic, respectively.

FIGURE 4
2020 WEEKDAY AM PEAK HOUR BASE TRAFFIC VOLUMES

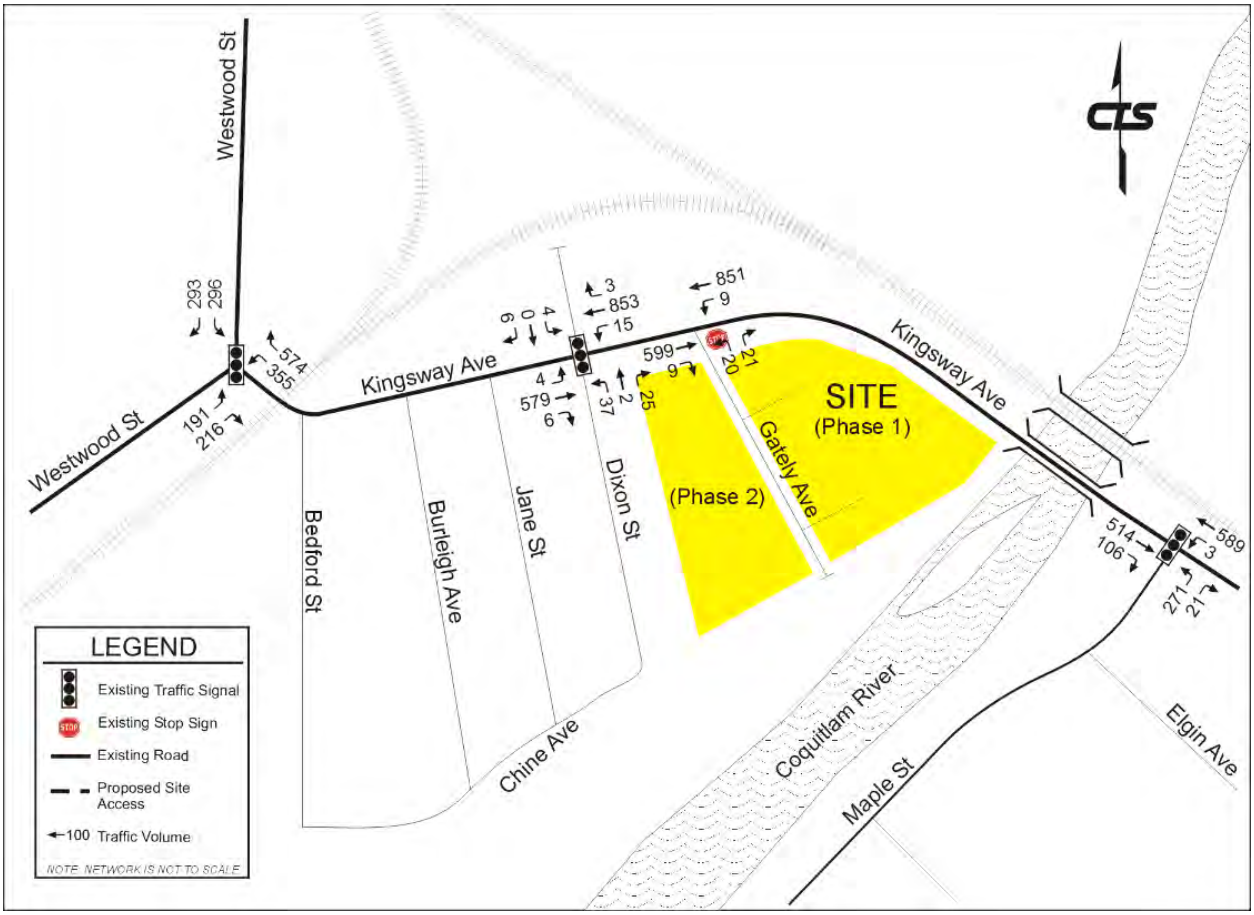


FIGURE 5
2020 WEEKDAY PM PEAK HOUR BASE TRAFFIC VOLUMES

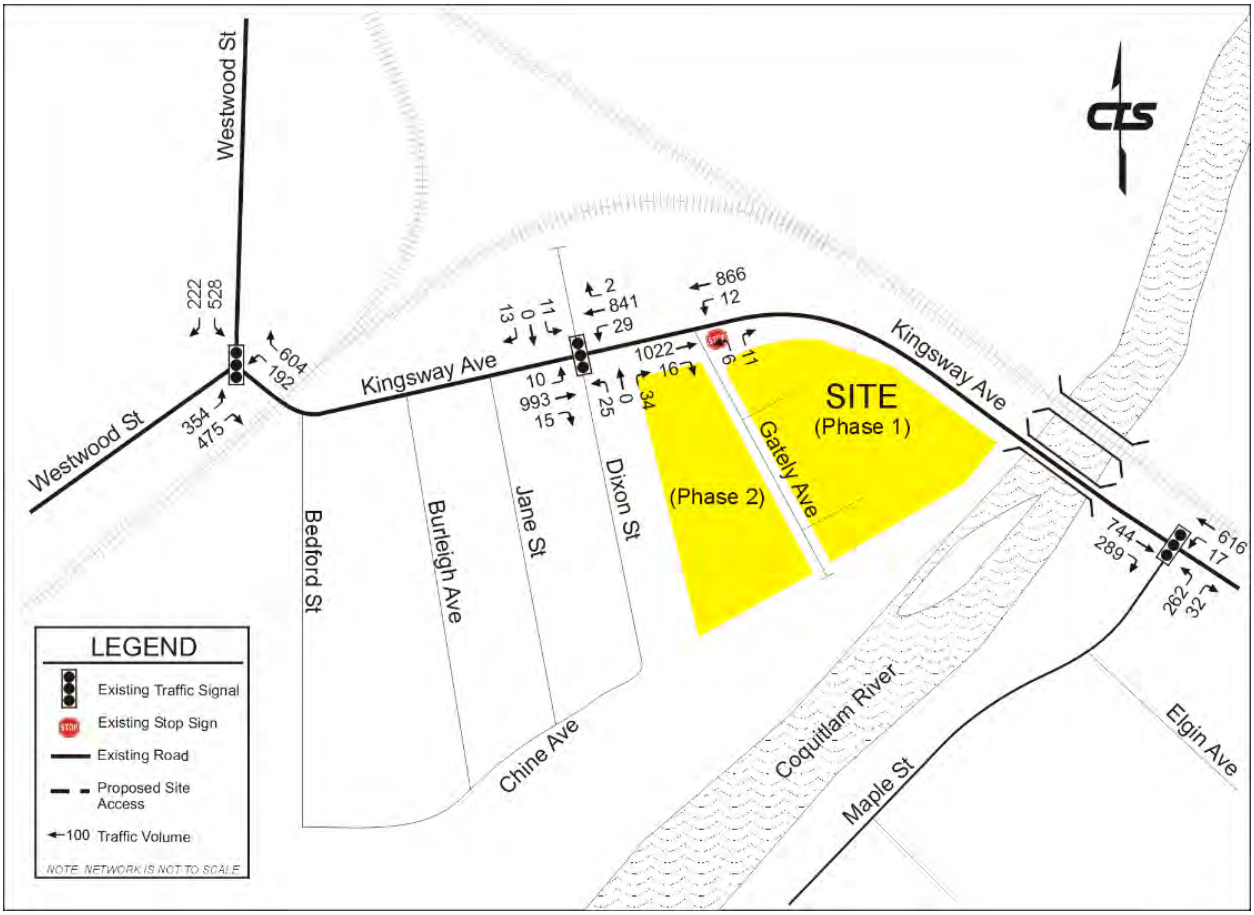


FIGURE 6
2022 WEEKDAY AM PEAK HOUR BASE TRAFFIC VOLUMES

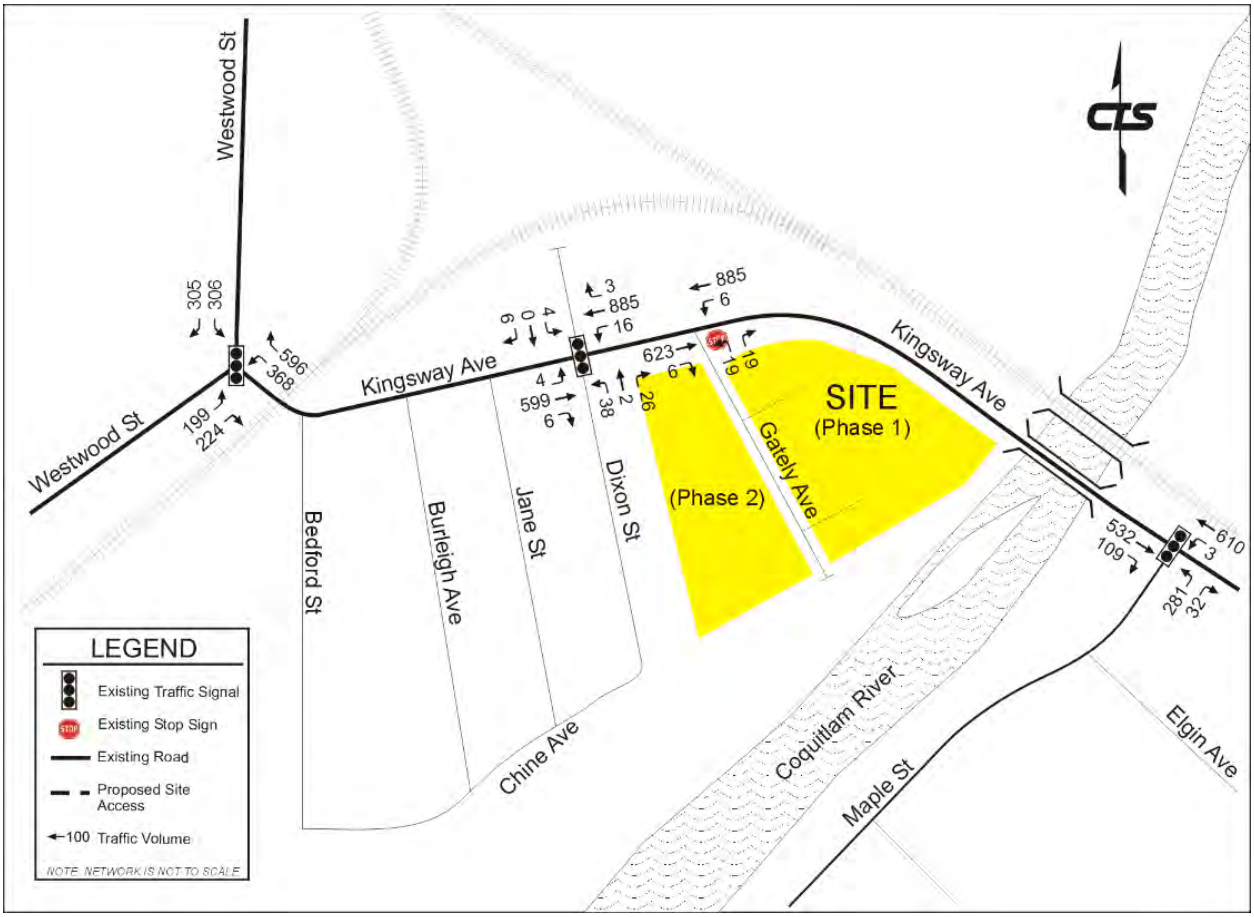


FIGURE 7
2022 WEEKDAY PM PEAK HOUR BASE TRAFFIC VOLUMES

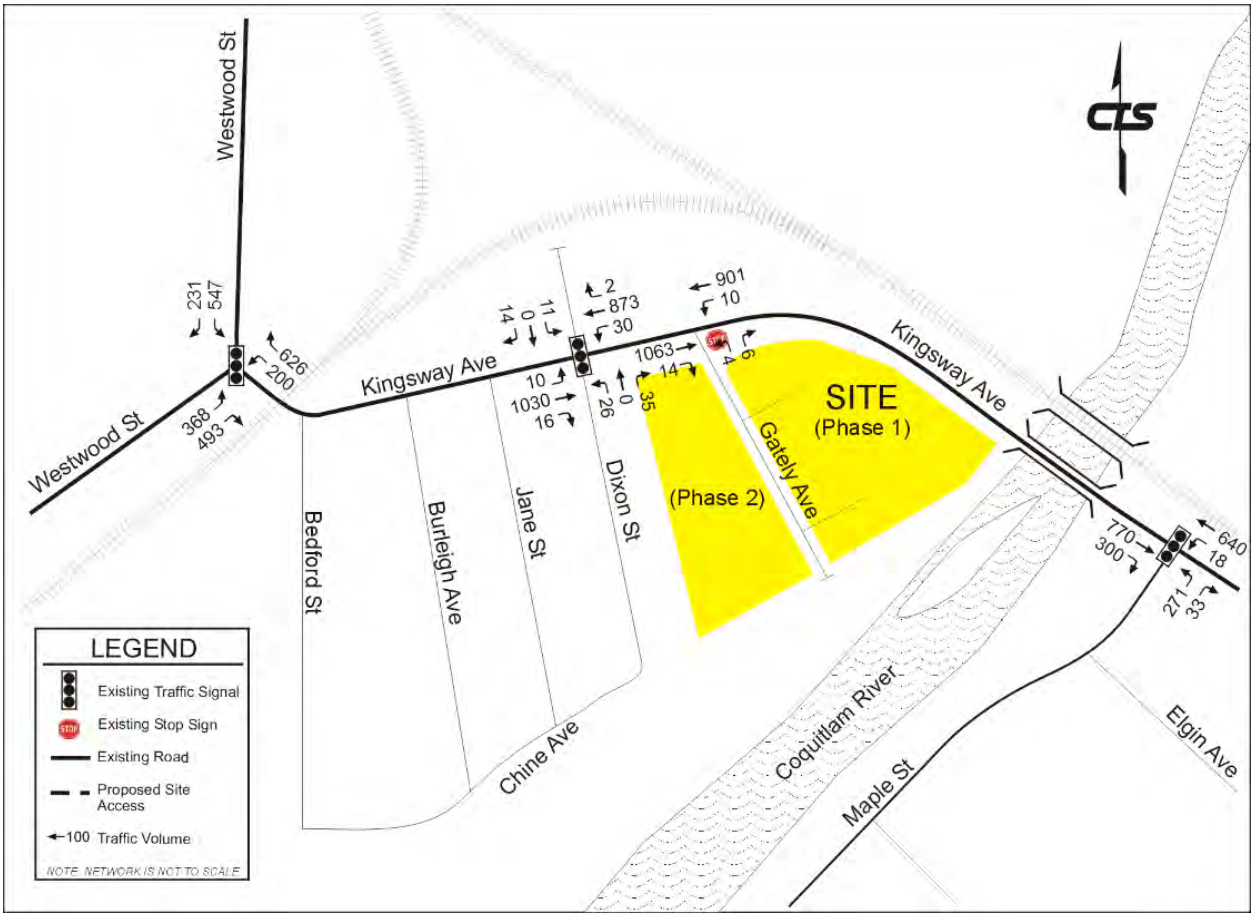


FIGURE 8
2025 WEEKDAY AM PEAK HOUR BASE TRAFFIC VOLUMES

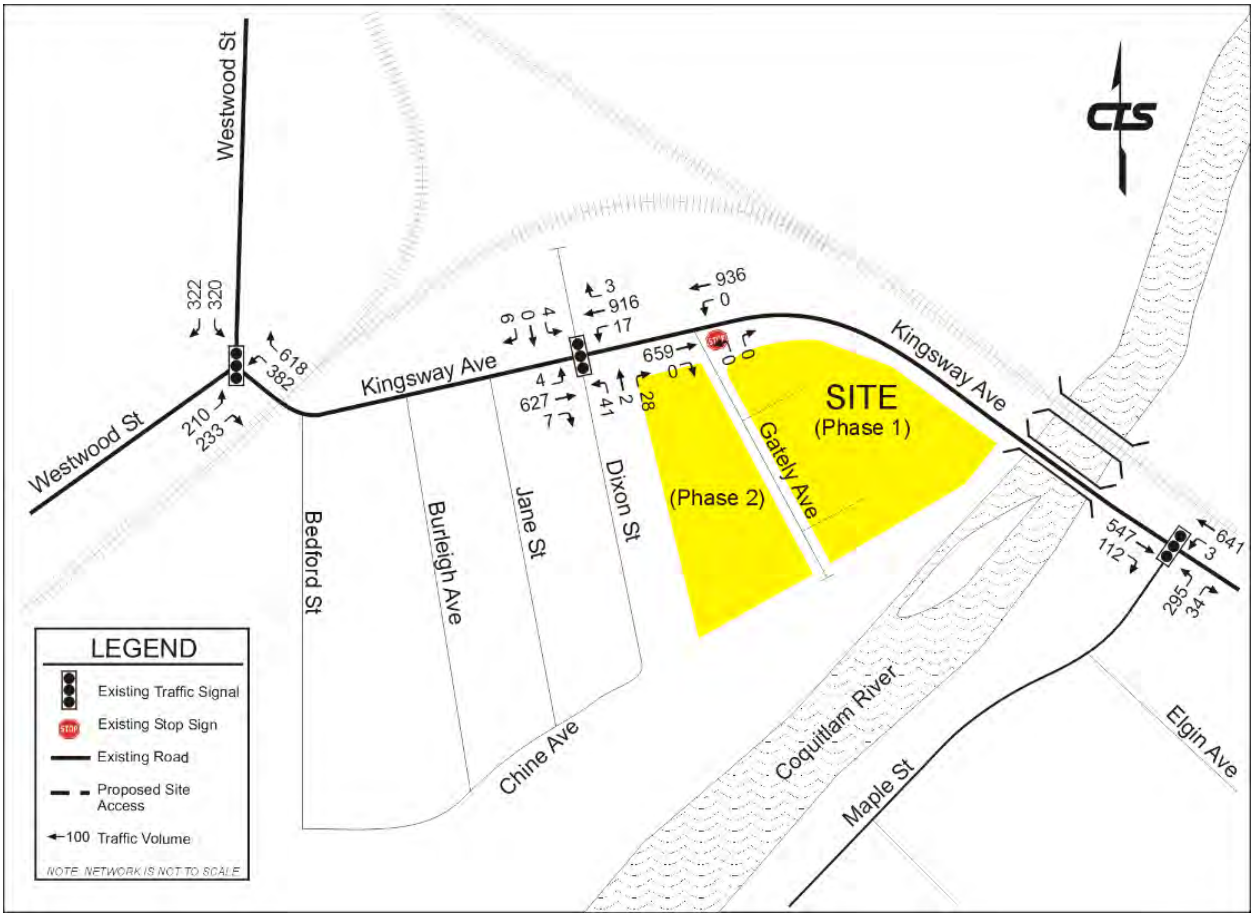


FIGURE 9
2025 WEEKDAY PM PEAK HOUR BASE TRAFFIC VOLUMES

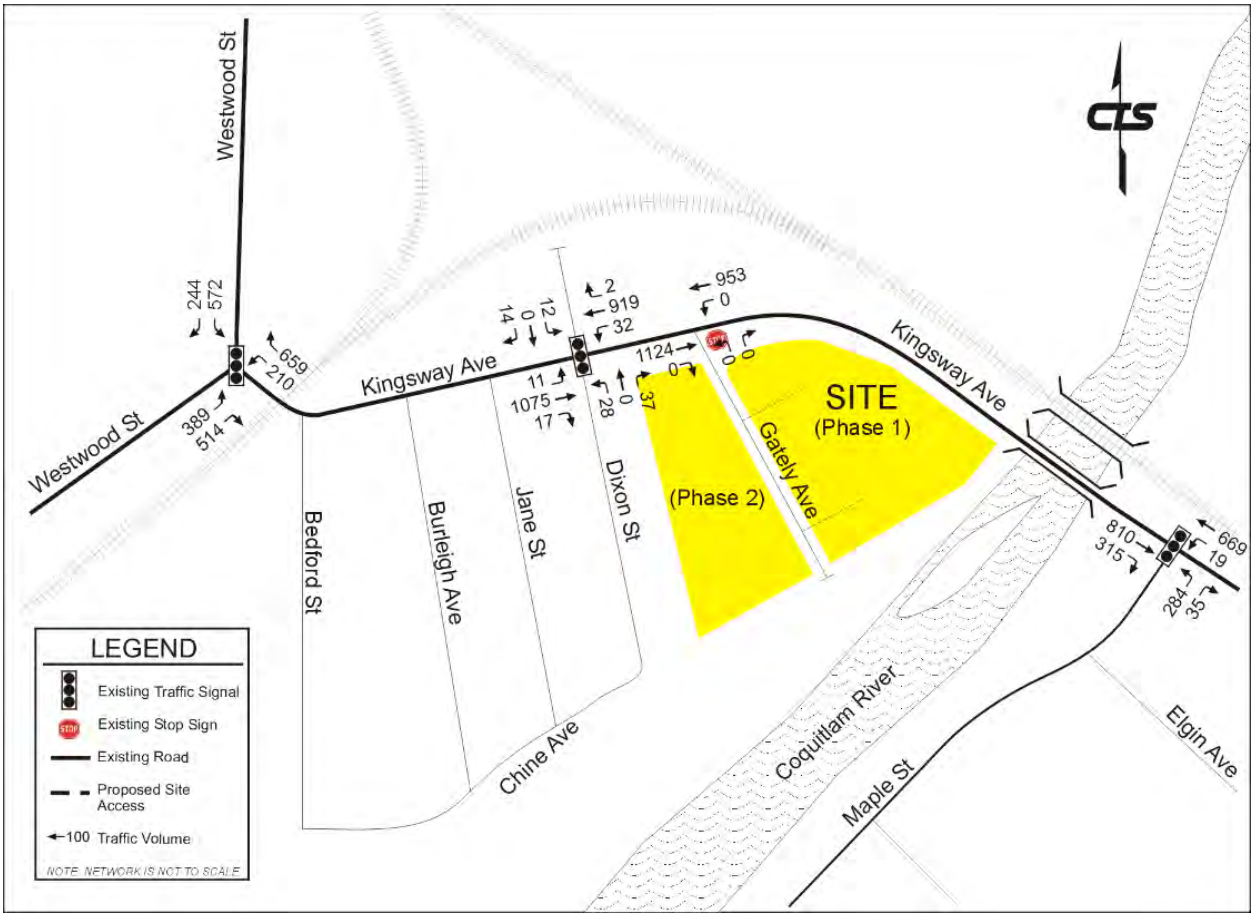


FIGURE 10
2030 WEEKDAY AM PEAK HOUR BASE TRAFFIC VOLUMES

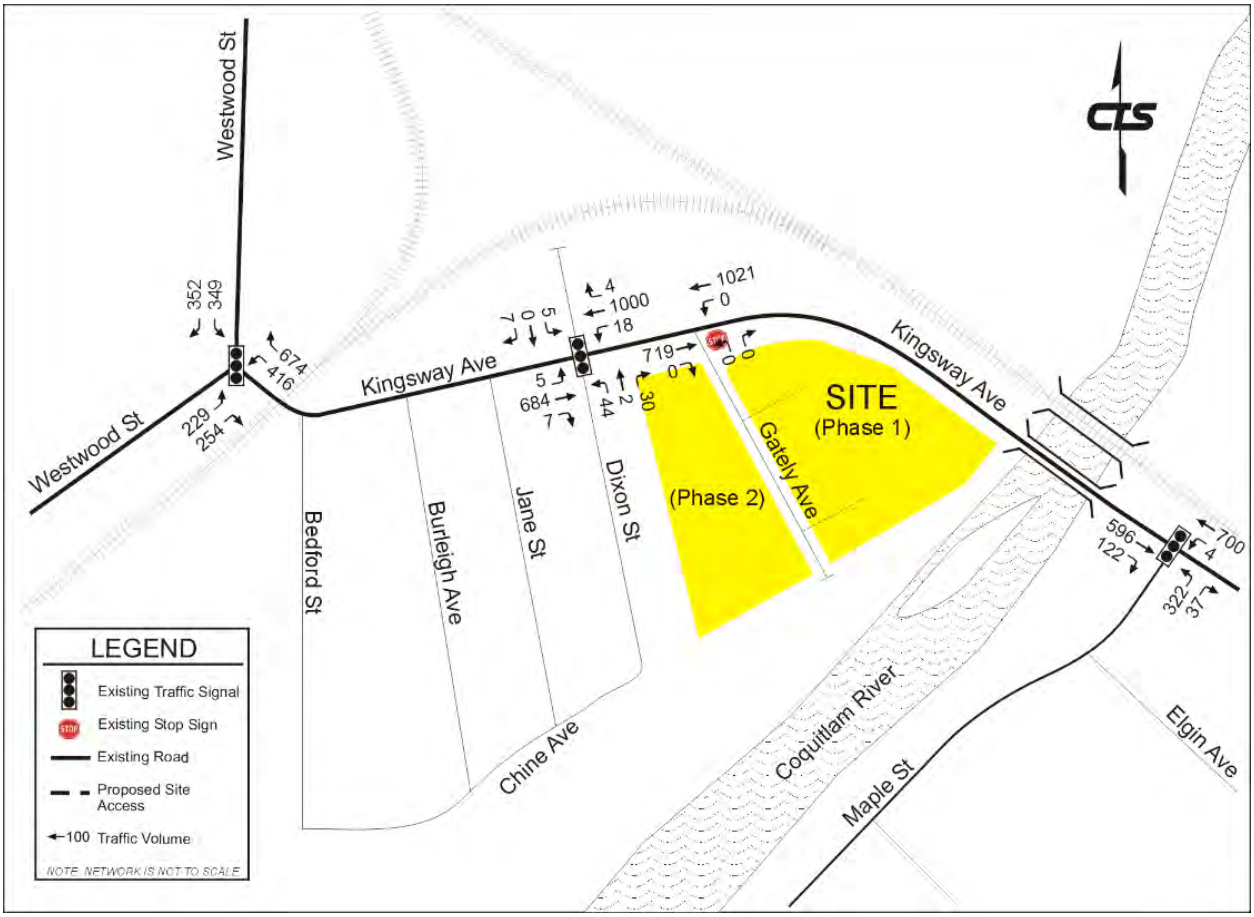
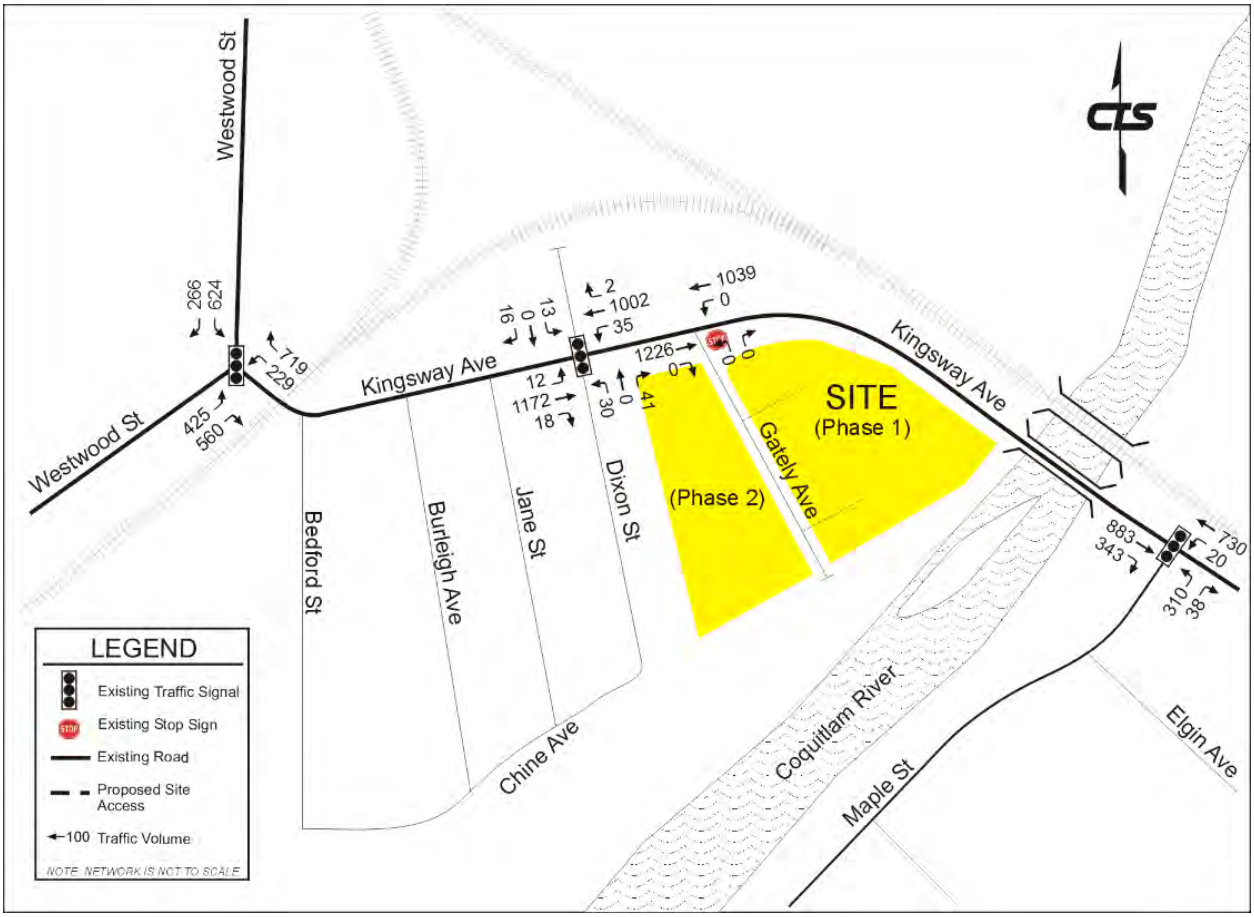


FIGURE 11
2030 WEEKDAY PM PEAK HOUR BASE TRAFFIC VOLUMES



3.0 SITE TRAFFIC VOLUMES

3.1 Trip Generation

The proposed housing development - Phase 1 will have 302 residential units and 4,000 ft^2 of day care space. The proposed housing development - Phase 2 will have up to 450 residential units. **TABLE 1** summarizes the projected site generated traffic with reference to the Institute of Transportation Engineers *Trip Generation Manual 10th Edition Code 221 – Multifamily Housing (Mid Rise)* and *Code 565 – Day Care*.

Note - Existing site generated traffic volumes were assumed to be zero so that the projected traffic volumes would represent the worst case scenario in that all traffic would be "new" traffic on the adjacent road network.

TABLE 1
SUMMARY OF SITE GENERATED VEHICLE TRIPS – PHASE 1 AND PHASE 2

Land Use			Peak Hour	Trip Generation Variable	Scope of Development	Vehicle Trip Generation Rate	Trip Rate Source	Directional Split		Peak Hour Volumes (vph)		
								% in	% out	in	out	total
Phase 1	Residential	Multi-Family (Mid-Rise)	Weekday Morning	Dwelling Units	302	0.36	ITE 10th Edition Code 221	26%	74%	28	81	109
			Weekday Afternoon		302	0.44	ITE 10th Edition Code 221	61%	39%	81	52	133
	Day Care		Weekday Morning	1,000 Sq. Ft. GFA	4.0	11.00	ITE 10th Edition Code 565	53%	47%	23	21	44
			Weekday Afternoon		4.0	11.12	ITE 10th Edition Code 565	47%	53%	21	24	45
	PHASE 1 TOTAL WEEKDAY MORNING PEAK HOUR									**51**	**102**	**153**
	PHASE 1 TOTAL WEEKDAY AFTERNOON PEAK HOUR									**102**	**76**	**178**
Phase 2	Residential	Multi-Family (Mid-Rise)	Weekday Morning	Dwelling Units	450	0.36	ITE 10th Edition Code 221	26%	74%	42	120	162
			Weekday Afternoon		450	0.44	ITE 10th Edition Code 221	61%	39%	121	77	198
	PHASE 2 TOTAL WEEKDAY MORNING PEAK HOUR									**42**	**120**	**162**
	PHASE 2 TOTAL WEEKDAY AFTERNOON PEAK HOUR									**121**	**77**	**198**
ALL TOTAL WEEKDAY MORNING PEAK HOUR										***93***	***222***	***315***
ALL TOTAL WEEKDAY AFTERNOON PEAK HOUR										***223***	***153***	***376***

From **TABLE 1**, the proposed housing development - Phase 1 is forecast to generate a total of 167 new vehicle trips (55 inbound, and 112 outbound) during the weekday AM peak hour and 195 vehicle trips (113 inbound and 82 outbound) during the weekday PM peak hour.

The proposed housing development - Phase 2 is forecast to generate a total of 162 new vehicle trips (42 inbound, and 120 outbound) during the weekday AM peak hour and 198 vehicle trips (121 inbound and 77 outbound) during the weekday PM peak hour.

3.2 Site Trip Distribution

Trip distribution percentages for site generated vehicle trips to/from for the proposed housing development - Phase 1 and Phase 2, were developed from existing traffic patterns entering and exiting the study area. The trip distribution percentages for the proposed housing development - Phase 1 and Phase 2 are summarized by **TABLE 2**.

TABLE 2
TRIP DISTRIBUTION PERCENTAGES
FOR PHASE 1 AND PHASE 2 SITE GENERATED TRAFFIC

FROM / TO	WEEKDAY MORNING PEAK HOUR		WEEKDAY AFTERNOON PEAK HOUR	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND
North - Westwood St	31.3%	37.2%	29.9%	39.0%
East - Kingsway Ave	31.5%	26.0%	25.3%	31.6%
South- Maple St	15.5%	5.3%	11.7%	12.5%
South- Westwood St	21.6%	31.5%	33.1%	16.9%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

The trip distribution percentages for the proposed housing development - Phase 1 and Phase 2 were used to calculate the trip distribution vehicle volumes for Phase 1 and Phase 2. The trip distribution vehicle volumes for the proposed housing development - Phase 1 and Phase 2 are summarized by **TABLE 3** and **TABLE 4**, respectively.

TABLE 3
TRIP DISTRIBUTION VEHICLE VOLUMES
FOR NEW SITE GENERATED TRAFFIC (PHASE 1)

FROM / TO	WEEKDAY MORNING PEAK HOUR		WEEKDAY AFTERNOON PEAK HOUR	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND
North - Westwood St	16	38	31	30
East - Kingsway Ave	16	26	26	24
South- Maple St	8	6	12	9
South- Westwood St	11	32	33	13
TOTAL	51	102	102	76
	153		178	

TABLE 4
TRIP DISTRIBUTION VEHICLE VOLUMES
FOR NEW SITE GENERATED TRAFFIC (PHASE 2)

FROM / TO	WEEKDAY MORNING PEAK HOUR		WEEKDAY AFTERNOON PEAK HOUR	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND
North - Westwood St	13	45	36	30
East - Kingsway Ave	13	31	31	24
South- Maple St	7	6	14	10
South- Westwood St	9	38	40	13
TOTAL	42	120	121	77
	162		198	

FIGURE 12 and **FIGURE 13** illustrate the new site generated traffic volumes for the proposed housing development - Phase 1 for the 2022 weekday AM and PM peak hours. Similarly, FIGURE **14** and **FIGURE 15** illustrate the new site generated traffic volumes for the proposed housing development - Phase 2 for the 2025 weekday AM and PM peak hours.

FIGURE 12
2022 WEEKDAY AM PEAK HOUR SITE GENERATED TRAFFIC VOLUMES (PHASE 1)

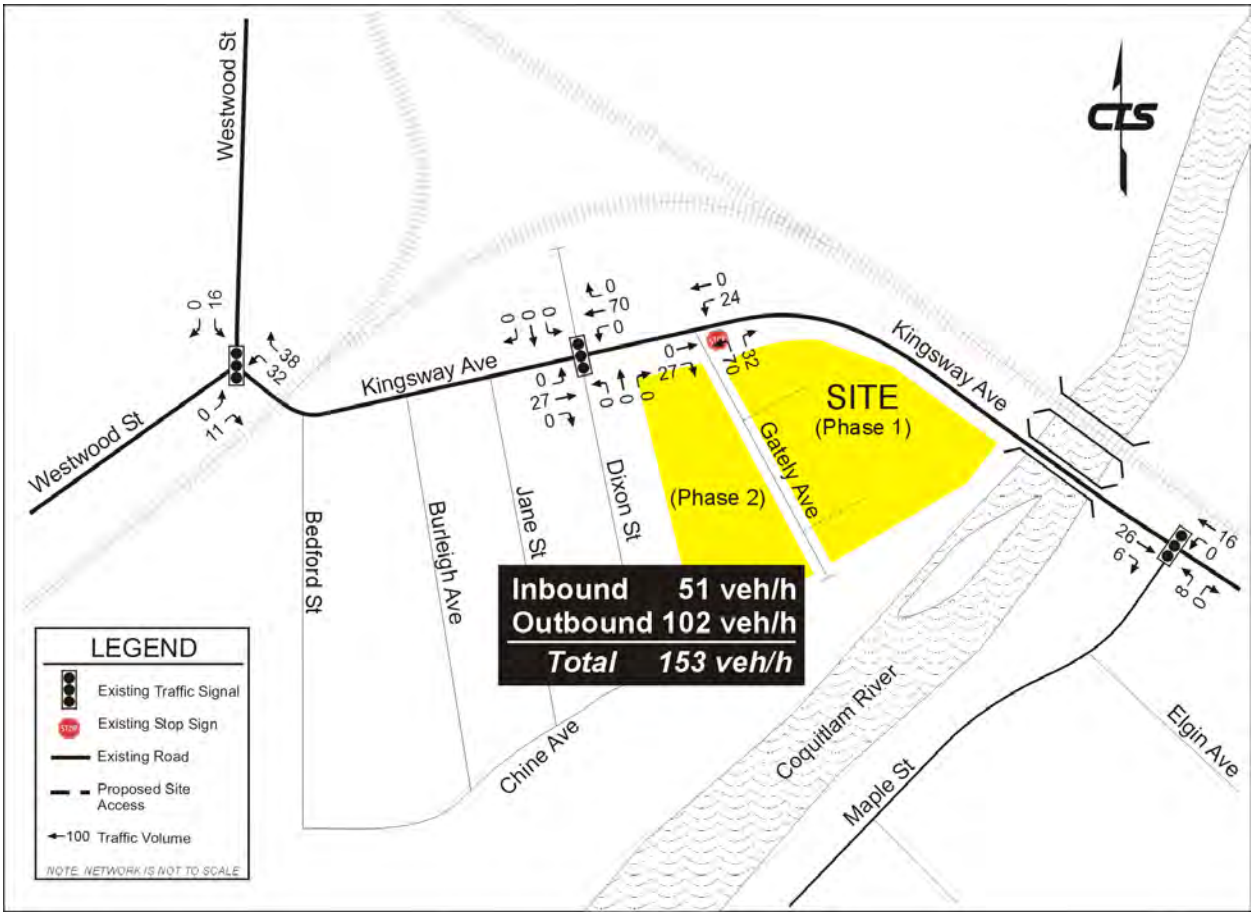


FIGURE 13
2022 WEEKDAY PM PEAK HOUR SITE GENERATED TRAFFIC VOLUMES (PHASE 1)

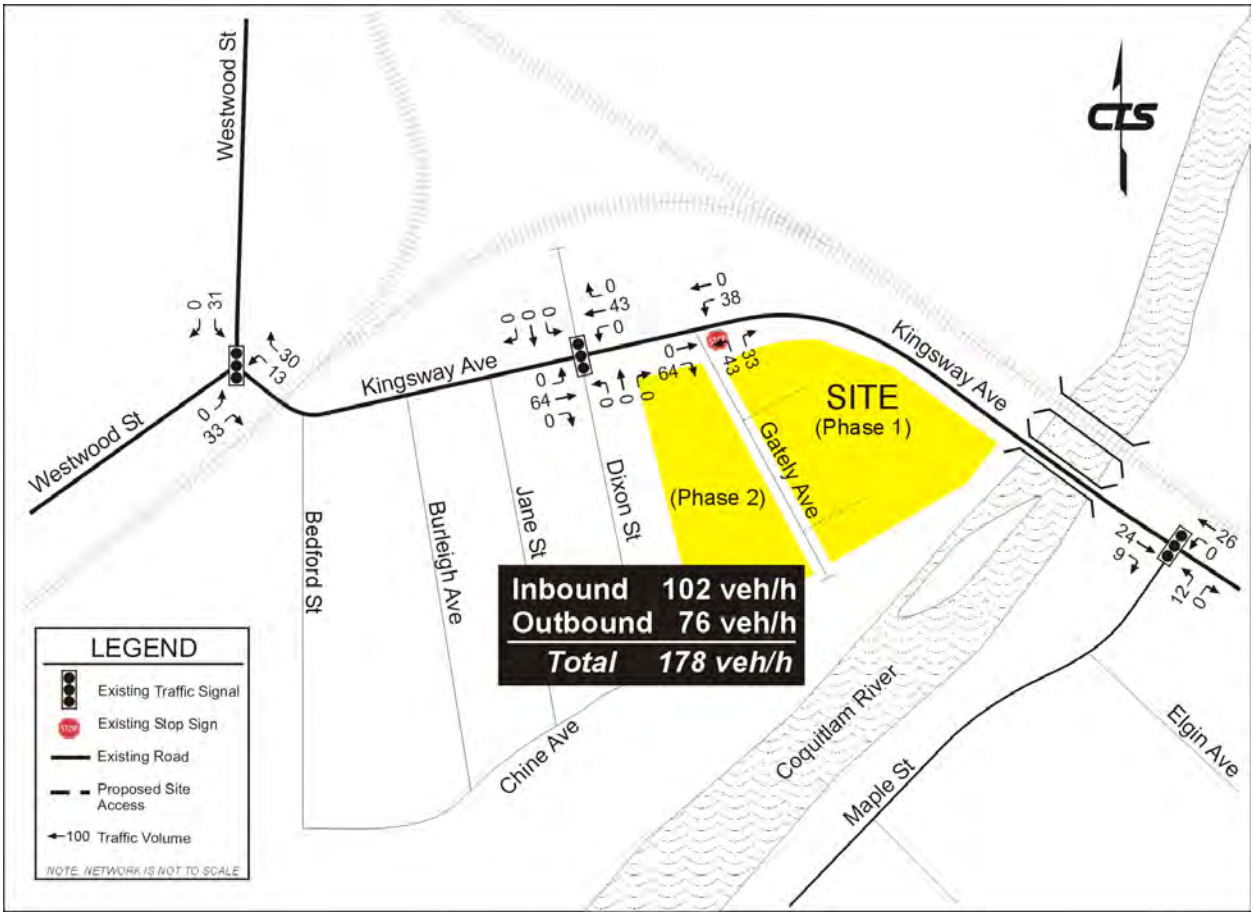


FIGURE 14
2025 WEEKDAY AM PEAK HOUR SITE GENERATION TRAFFIC VOLUMES (PHASE 2)

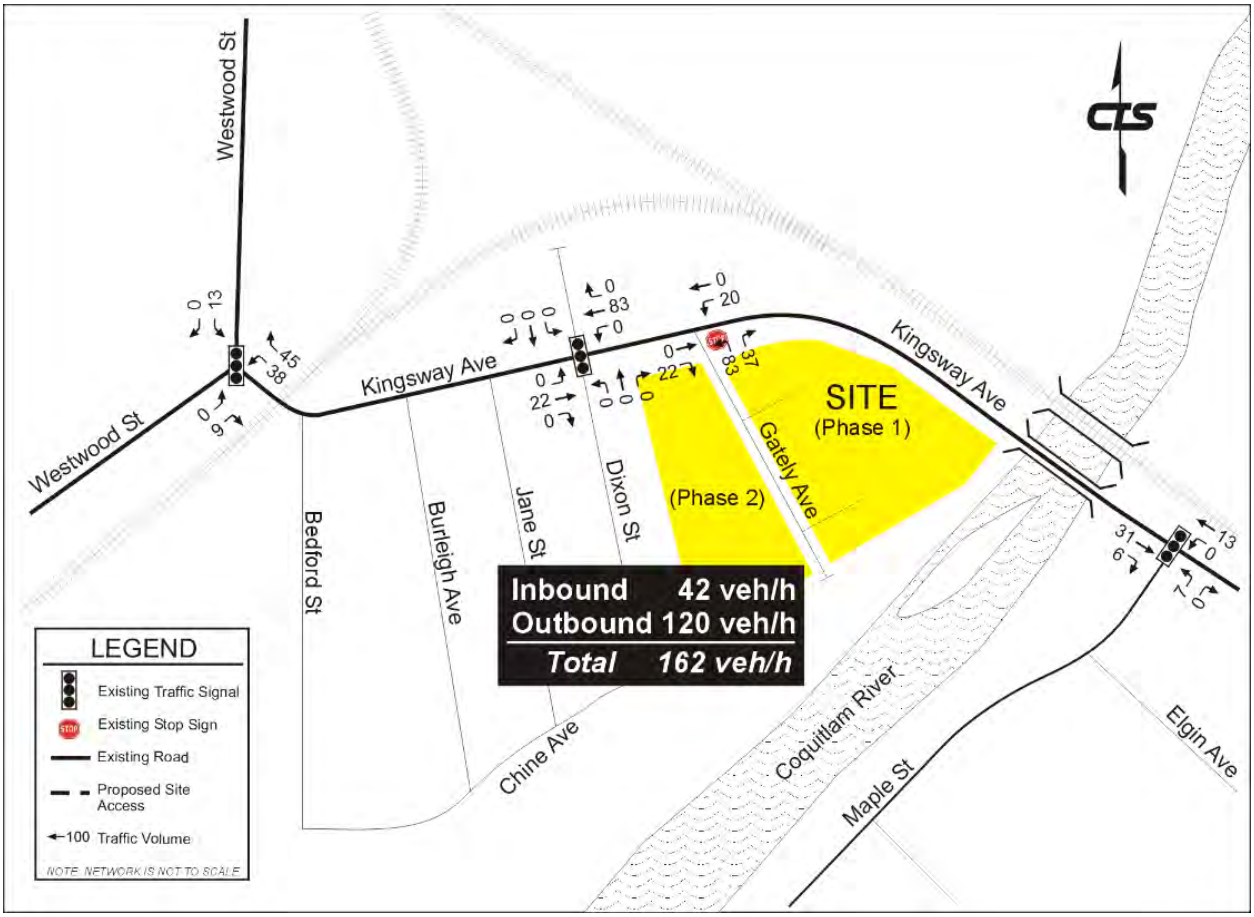
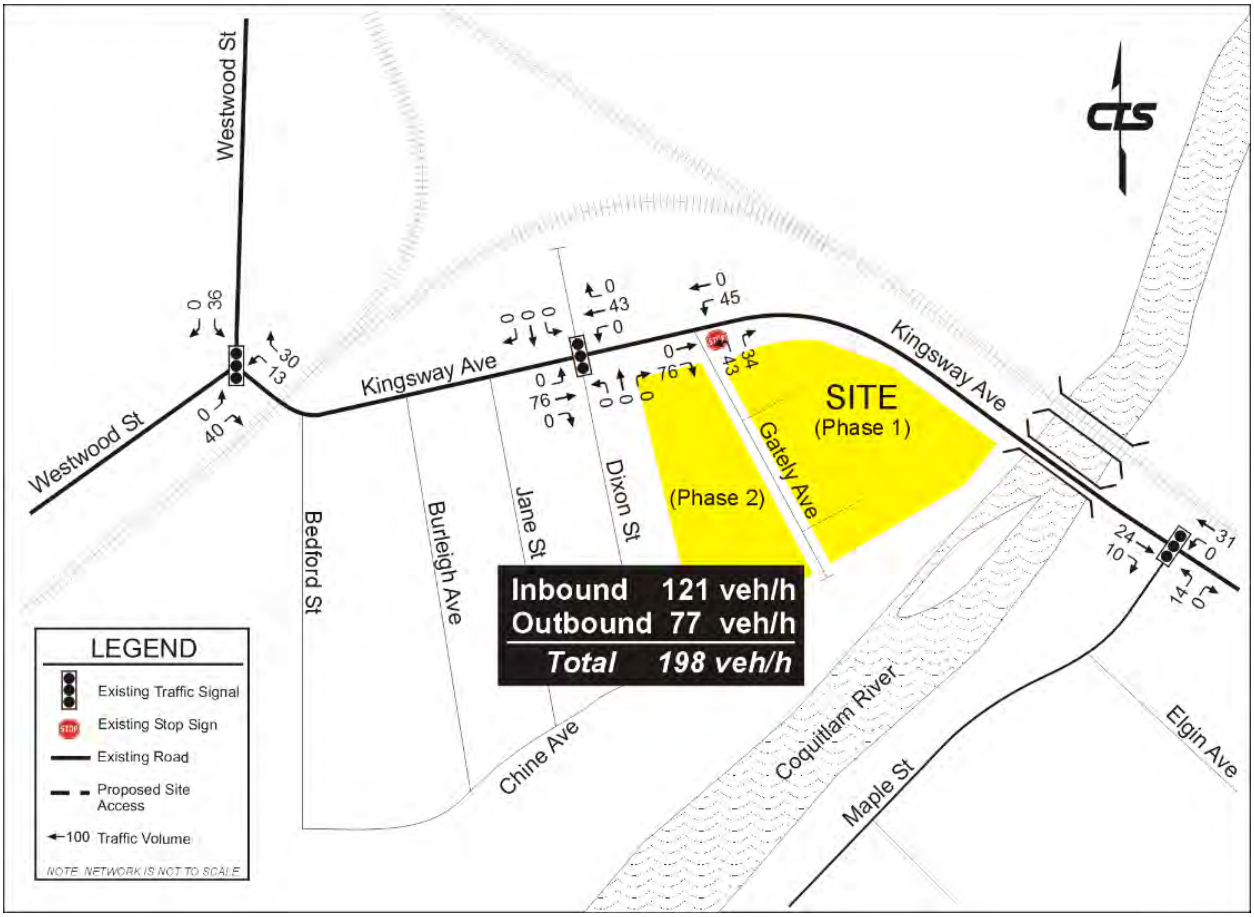


FIGURE 15
2025 WEEKDAY PM PEAK HOUR SITE GENERATION TRAFFIC VOLUMES (PHASE 2)



4.0 BASE + SITE TRAFFIC VOLUMES

FIGURE 16 and **FIGURE 17** illustrate the total projected traffic volumes for the future base and Phase 1 site generated traffic distributed to the adjacent street network for the year 2022.

FIGURE 18 and **FIGURE 19** illustrate the total projected traffic volumes for the future base and Phase 1 and Phase 2 site generated traffic distributed to the adjacent street network for the year 2025.

FIGURE 20 and **FIGURE 21** illustrate the total projected traffic volumes for the future base and Phase 1 and Phase 2 site generated traffic distributed to the adjacent street network for the year 2025 with a Chine Avenue connection.

FIGURE 22 and **FIGURE 23** illustrate the total projected traffic volumes for the future base and Phase 1 and Phase 2 site generated traffic distributed to the adjacent street network for the year 2030 with a Chine Avenue connection.

Note – Per the agreed upon Terms of Reference, the City of Port Coquitlam requires analyses of a Chine Avenue connection alternative to full movement access at the intersection of Gately Avenue and Kingsway Avenue. ***FIGURES 20-23*** *include a Chine Avenue connection for the 2025 and 2030 horizon years.*

FIGURE 16
2022 WEEKDAY AM PEAK HOUR BASE + PHASE 1 TRAFFIC VOLUMES

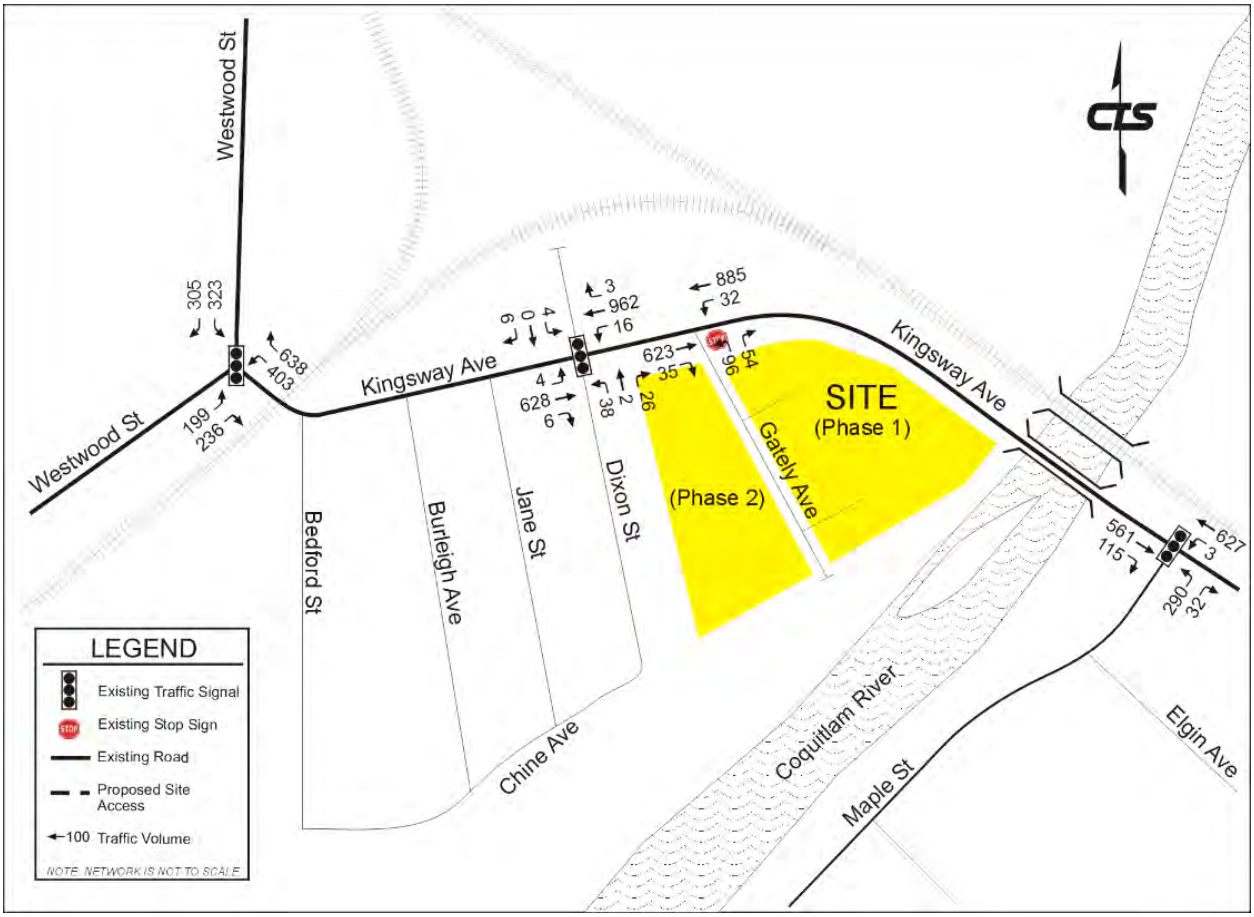


FIGURE 17
2022 WEEKDAY PM PEAK HOUR BASE + PHASE 1 TRAFFIC VOLUMES

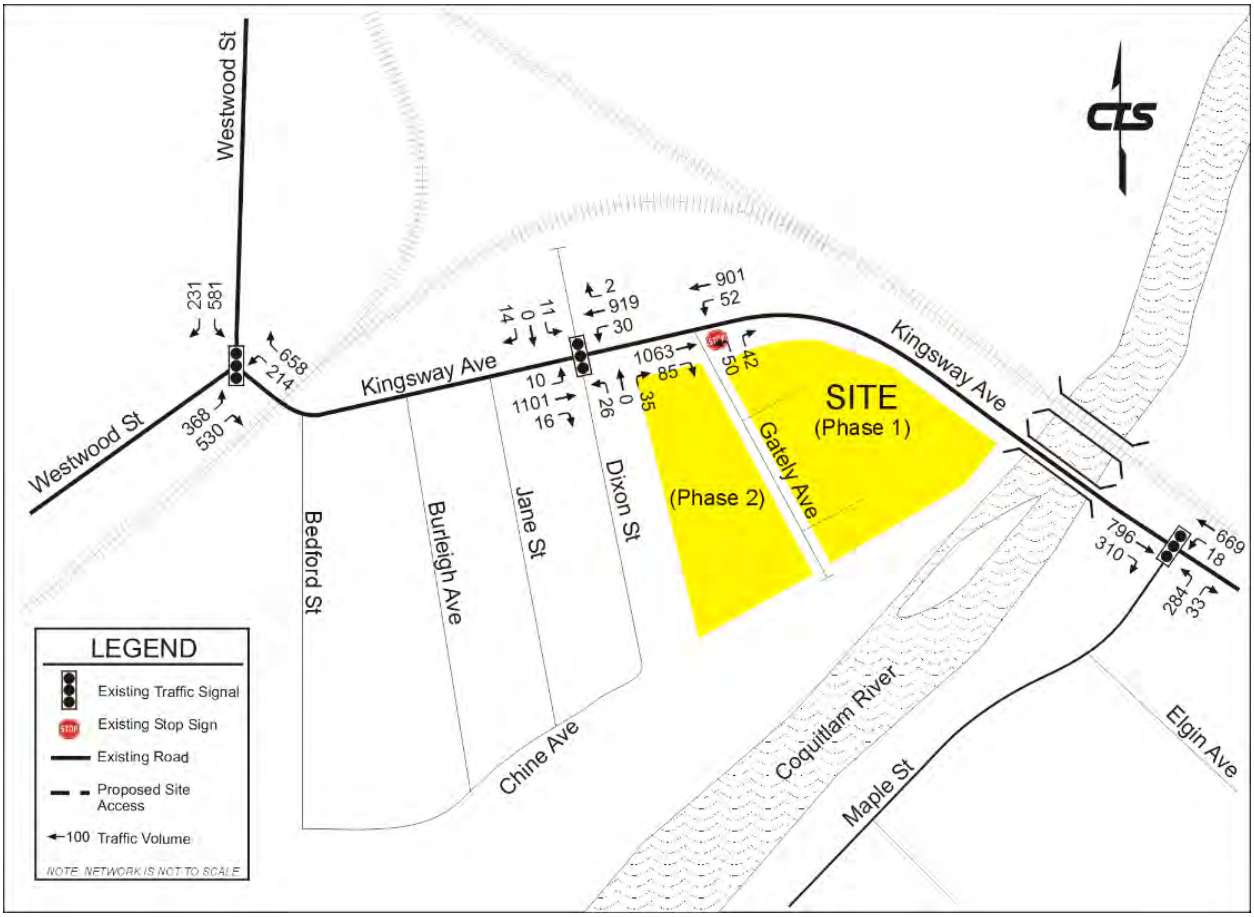


FIGURE 18
2025 WEEDAY AM PEAK HOUR BASE + PHASE 1 AND PHASE 2 TRAFFIC VOLUMES

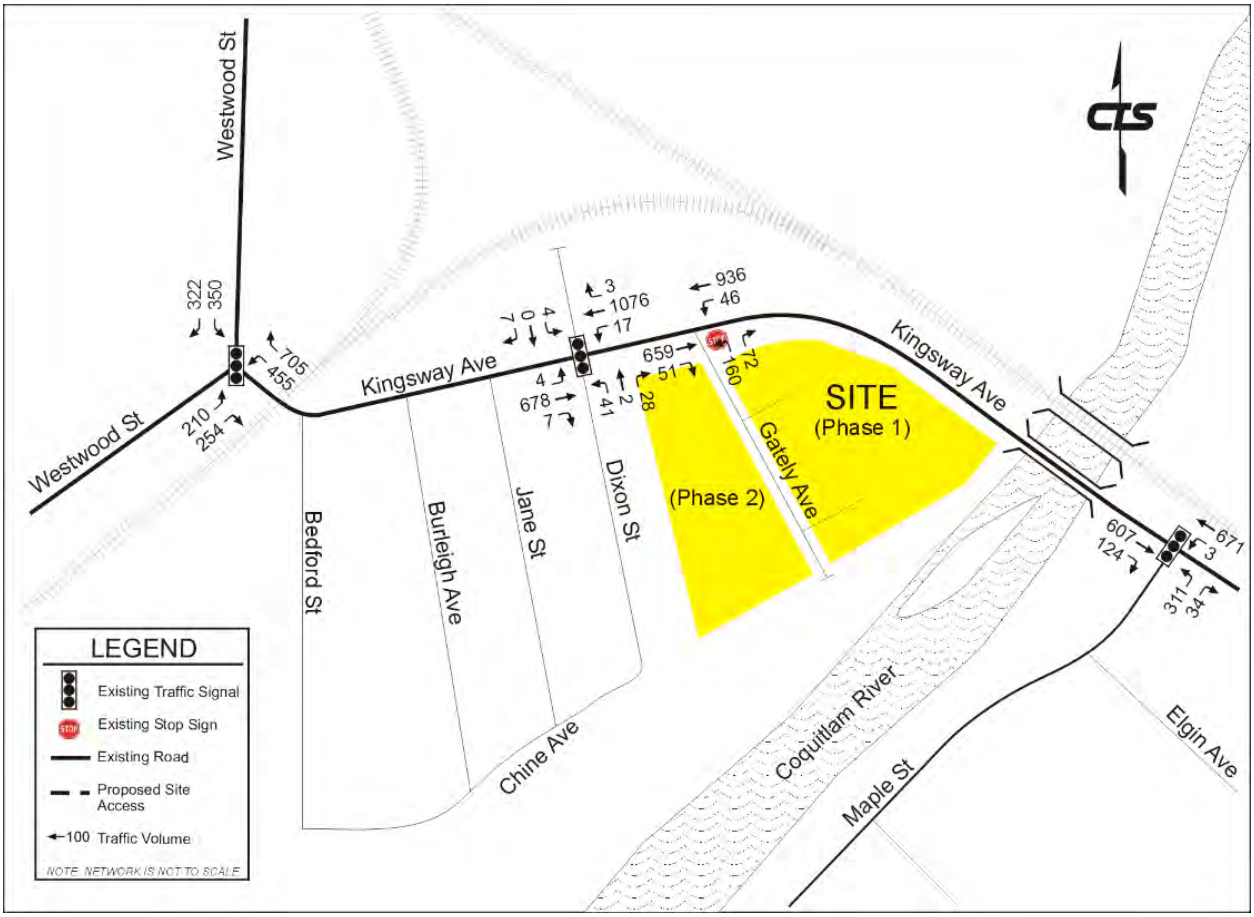


FIGURE 19
2025 WEEKDAY PM PEAK HOUR BASE + PHASE 1 AND PHASE 2 TRAFFIC VOLUMES

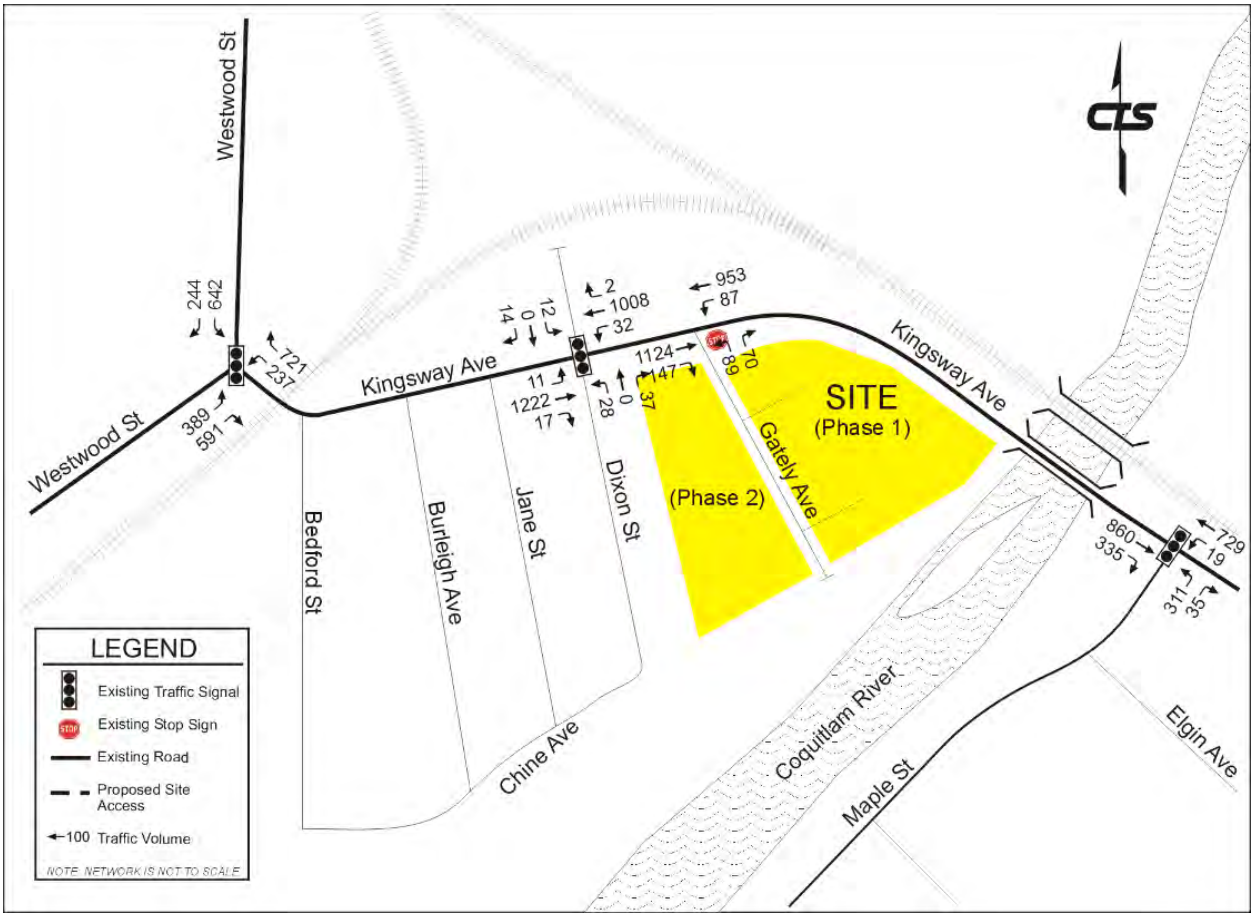


FIGURE 20
2025 WEEKDAY AM PEAK HOUR BASE + PHASE 1 AND PHASE 2 TRAFFIC VOLUMES WITH CHINE AVENUE CONNECTION

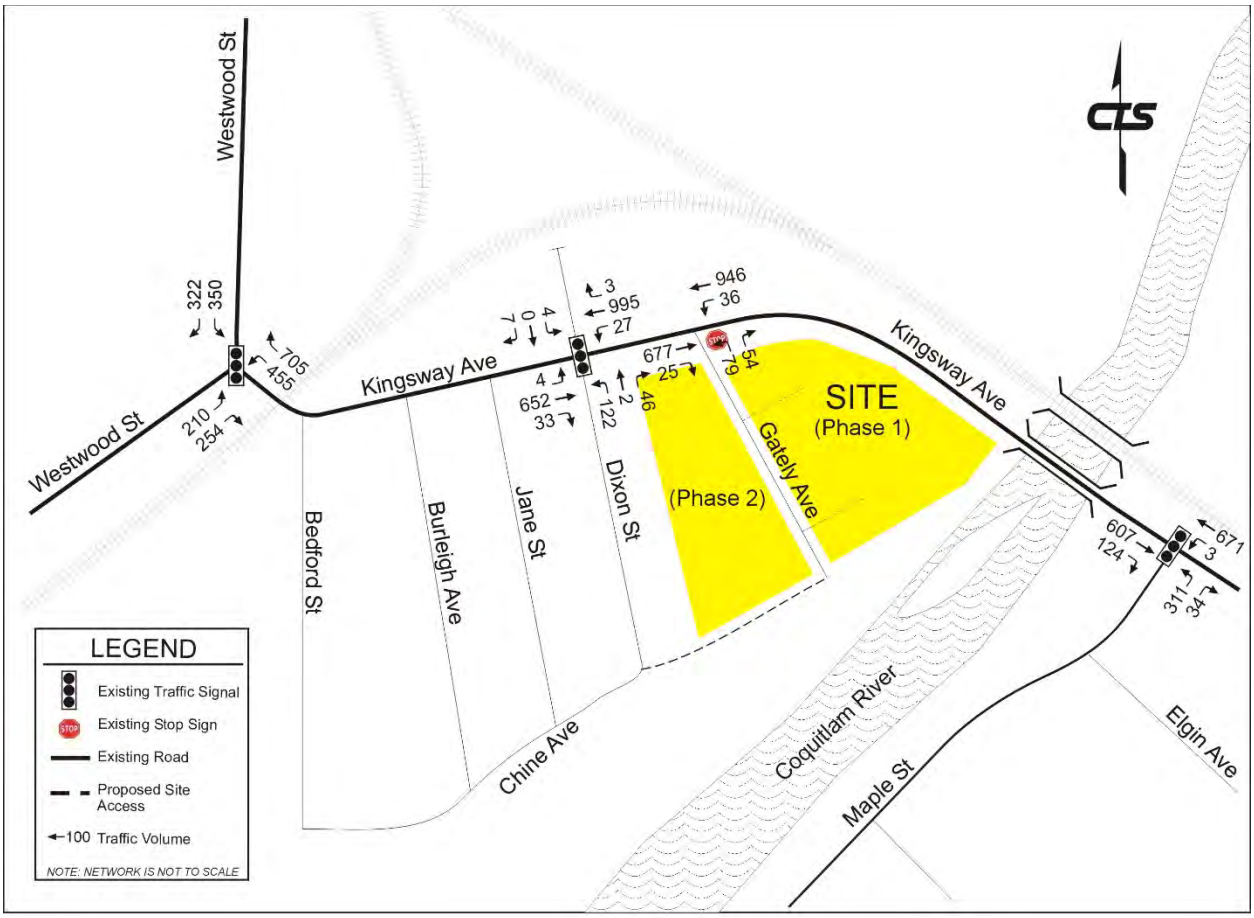


FIGURE 21
2025 WEEKDAY PM PEAK HOUR BASE + PHASE 1 AND PHASE 2 TRAFFIC VOLUMES WITH CHINE AVENUE CONNECTION

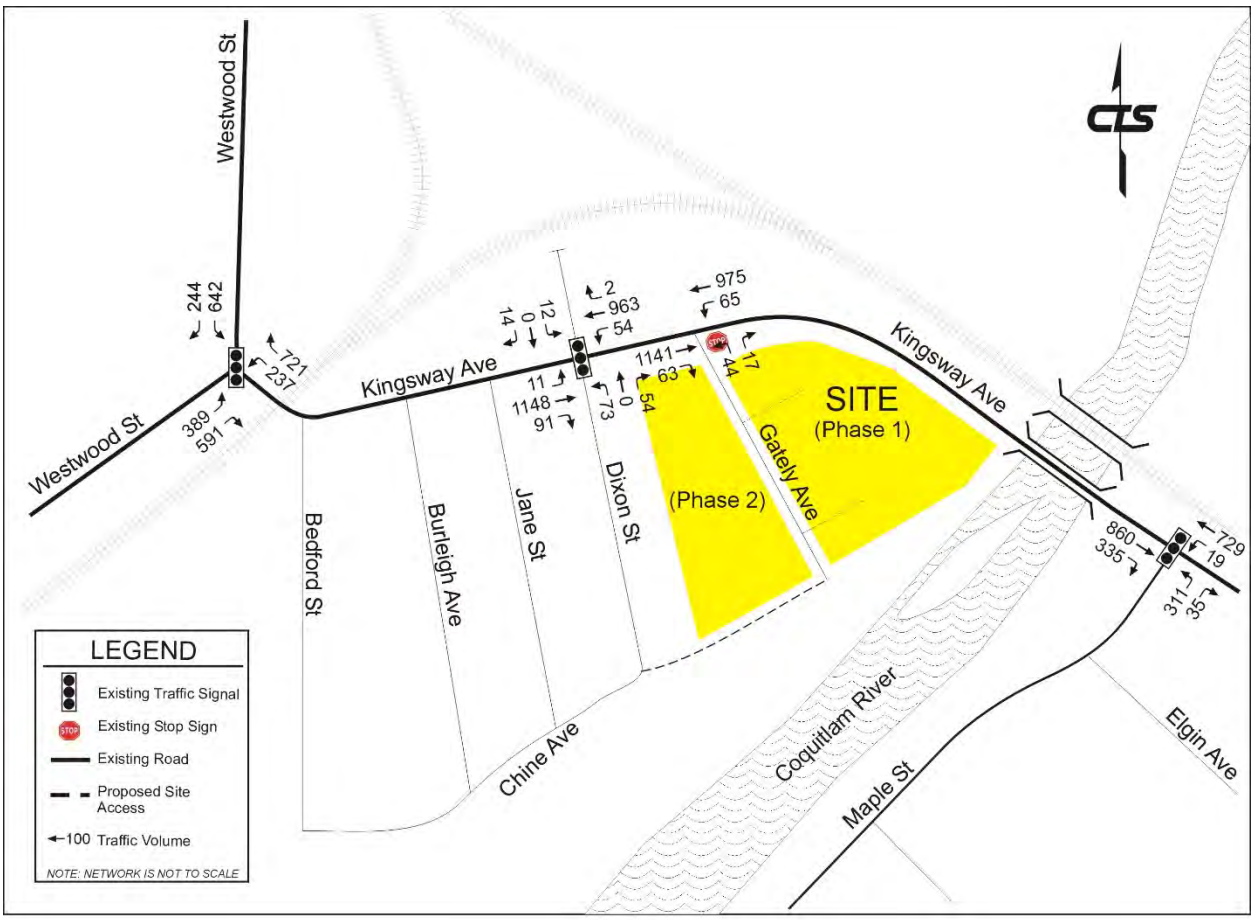


FIGURE 22
2030 WEEKDAY AM PEAK HOUR BASE + PHASE 1 AND PHASE 2 TRAFFIC VOLUMES WITH CHINE AVENUE CONNECTION

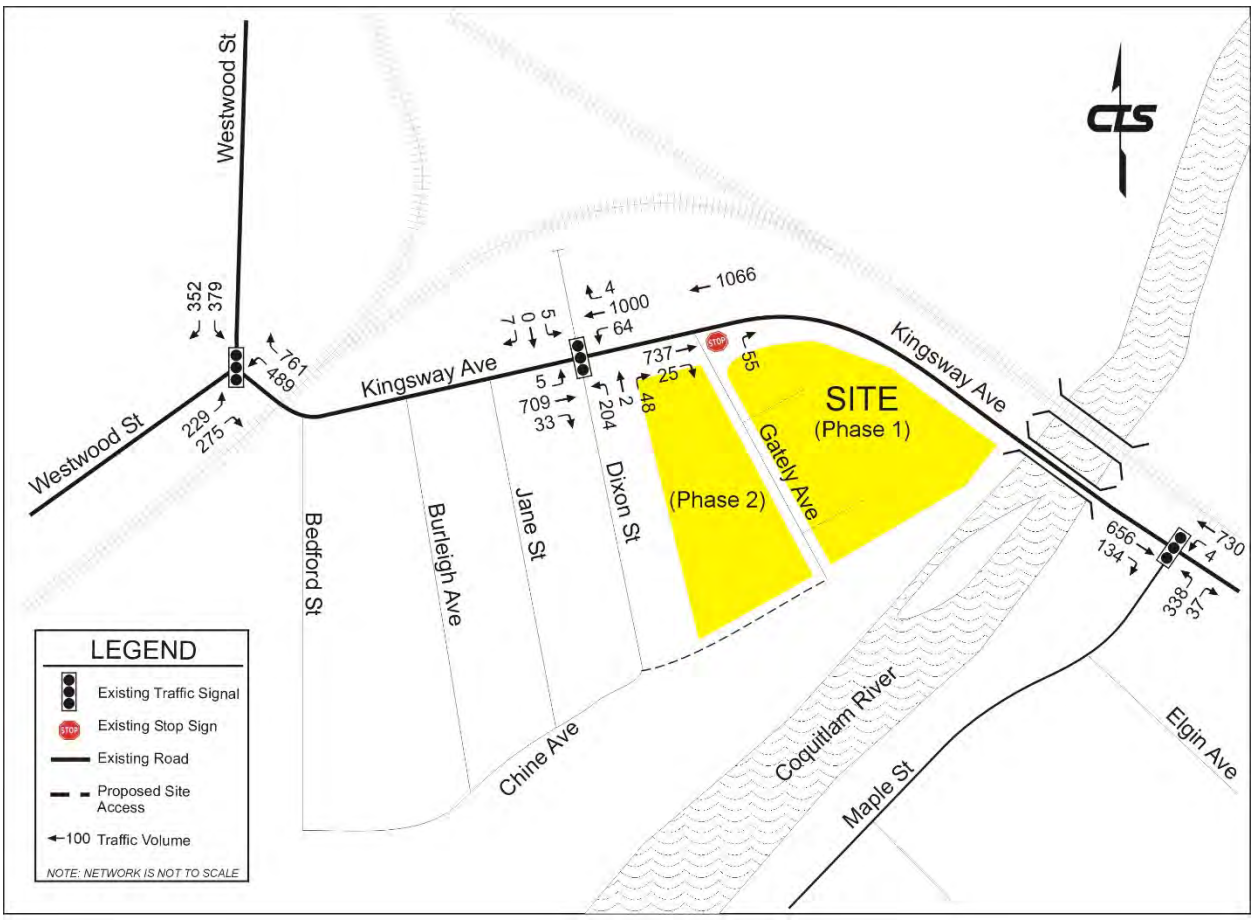
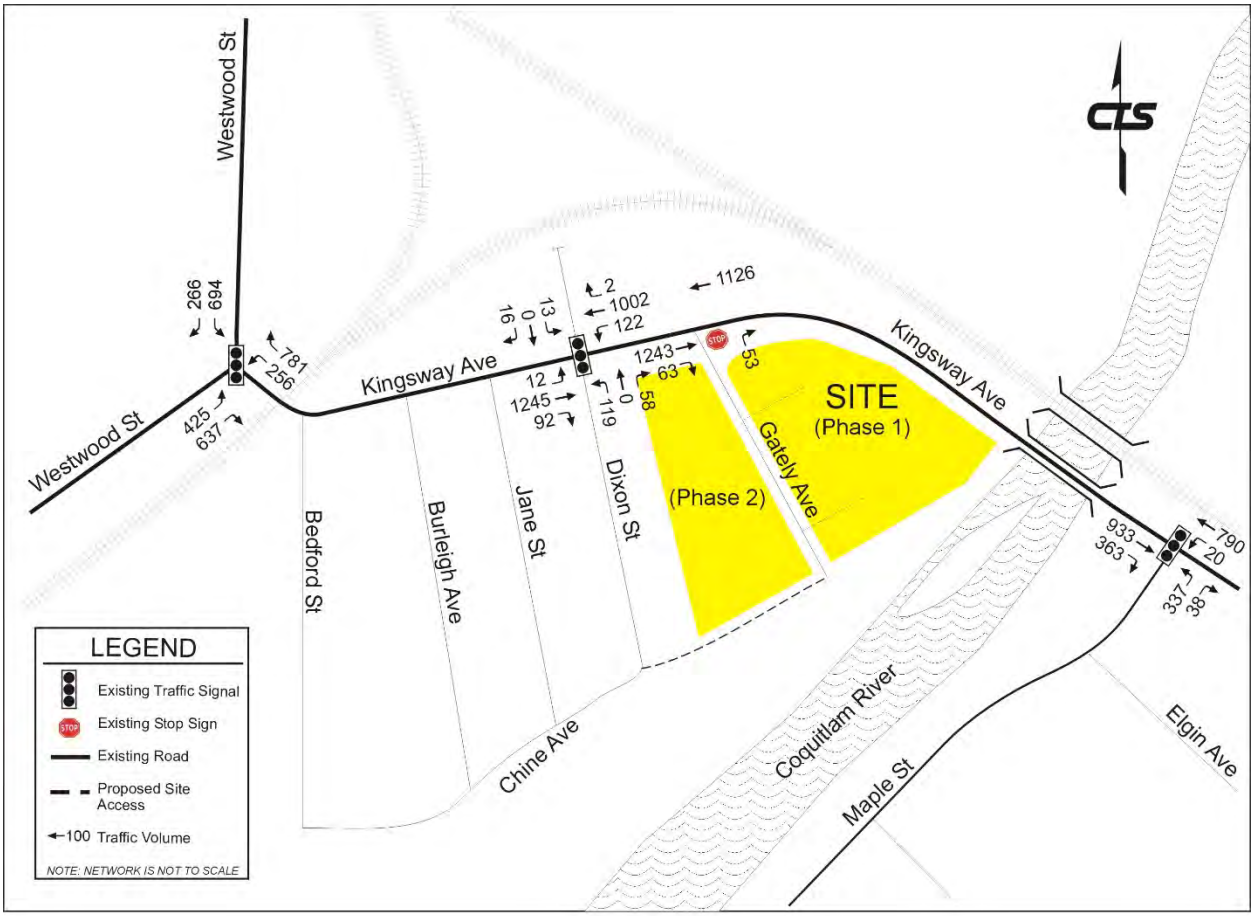


FIGURE 23
2030 WEEKDAY PM PEAK HOUR BASE + SITE TRAFFIC VOLUMES
2030 WEEKDAY PM PEAK HOUR BASE + PHASE 1 AND PHASE 2 TRAFFIC VOLUMES
WITH CHINE AVENUE CONNECTION



5.0 TRAFFIC ANALYSIS

5.1 Capacity Analysis

Capacity analysis was performed at each study intersection to determine the overall intersection and individual movement Level of Service (LOS) that is provided to motorists. The LOS for intersections and individual movements is defined in terms of delay (seconds per vehicle) which is a measure of driver discomfort and frustration, fuel consumption and lost travel time.

An intersection or movement LOS can range from "A" (Excellent) to "E" (Poor). A LOS of "F" (Fail) indicates that an intersection or individual movement is failing because the intersection or movement is over capacity and delays are excessive. A LOS of "D" (Fair) or better is considered acceptable by many public agencies for overall intersection, through and right turn movements and a LOS of "E" (Poor) or better is considered acceptable for left turn movements, at signalized intersections.

Synchro (Version 10.0) was used to analyze the intersection and individual movement level of service for signalized intersections. Highway Capacity Software (HCS 7) was used to analyze the intersection and individual movement level of service for unsignalized intersections.

With respect to the intersection and individual movement analysis, the following assumptions were made:

- Saturation flow rate → 1,800 passenger cars/hour of green/lane (pcphgpl).
- Truck percentage → 2% was used for all movements.
- Peak Hour Factor (PHF) → 0.93 for the weekday AM peak hour and 0.92 for the weekday PM peak hour which are an average of the PHF's from the traffic turning movement counts.

TABLE 5 summarizes and compares the delay in seconds and the 95th percentile queue in meters for each signalized intersection. **TABLE 6** summarizes and compares the delay in seconds and the 95th percentile queue for each unsignalized intersection. The capacity analysis summary sheets are included as **APPENDIX D**.

TABLE 5
SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection	Time of Day	Scenario	Performance Measure	Eastbound			Westbound			Northbound			Southbound			LOS	Notes
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Westwood Street (N/S) and Kingsway Avenue (E/W)	Weekday Morning Peak Hour	2020 Base	Volumes				355		574		191	216	296	293		B	OK. Existing signal timing.
			V/C				0.69		0.68		0.57	0.46	0.62	0.32			
			95% Queue (m)				113.2		28.3		70.9	20.9	98.0	17.4			
		2022 Base	Volumes				368		596		199	224	306	305		C	Optimized signal timing.
			V/C				0.70		0.69		0.60	0.25	0.64	0.25			
			95% Queue (m)				118.3		28.7		73.7	21.4	101.8	11.0			
		2022 Base + Phase 1	Volumes				403		638		199	236	323	305		C	Optimized signal timing.
			V/C				0.75		0.71		0.62	0.50	0.67	0.27			
			95% Queue (m)				130.1		30.0		74.8	22.2	108.3	13.9			
		2025 Base	Volumes				382		618		210	233	320	322		C	Optimized signal timing.
			V/C				0.73		0.70		0.63	0.48	0.66	0.36			
			95% Queue (m)				124.1		29.4		77.1	21.7	108.5	26.9			
		2025 Base + Phase 1 & Phase 2	Volumes				455		705		210	254	350	322		C	Optimized signal timing.
			V/C				0.80		0.74		0.67	0.53	0.73	0.38			
			95% Queue (m)				148.4		30.5		79.8	23.5	120.5	35.9			
		2030 Base	Volumes				416		674		229	254	349	352		C	Optimized signal timing.
			V/C				0.77		0.73		0.68	0.51	0.71	0.40			
			95% Queue (m)				135.3		31.9		85.0	22.8	118.3	37.6			
		2030 Base + Phase 1 & Phase 2	Volumes				489		761		229	275	379	352		C	Optimized signal timing.
			V/C				0.84		0.80		0.74	0.55	0.79	0.42			
			95% Queue (m)				174.7		66.7		86.9	24.5	140.6	47.2			
	Weekday Afternoon Peak Hour	2020 Base	Volumes				192		604		354	475	528	222		C	Existing signal timing. SBLT is near capacity.
			V/C				0.66		0.81		0.80	0.68	0.85	0.21			
			95% Queue (m)				73.8		42.9		134.9	41.8	193.8	6.6			
		2022 Base	Volumes				200		626		368	493	547	231		C	Optimized signal timing. SBLT is near cpacity.
			V/C				0.68		0.82		0.84	0.71	0.86	0.22			
			95% Queue (m)				76.7		44.8		145.7	53.3	203.2	6.7			
		2022 Base + Phase 1	Volumes				214		658		368	530	581	231		C	Optimized signal timing. NBTH & SNLT are near capacity.
			V/C				0.74		0.84		0.85	0.78	0.90	0.22			
			95% Queue (m)				83.4		47.7		146.8	78.8	218.6	9.1			
		2025 Base	Volumes				210		659		389	514	572	244		C	Optimized signal timing. WBRT, NBTH & SNLT are near capacity.
			V/C				0.71		0.85		0.87	0.74	0.91	0.23			
			95% Queue (m)				80.7		61.5		156.1	65.4	220.1	8.9			
		2025 Base + Phase 1 & Phase 2	Volumes				237		721		389	591	642	244		D	Optimized signal timing. WBRT, NB, SBLT are near capacity.
			V/C				0.81		0.91		0.92	0.90	0.96	0.23			
			95% Queue (m)				100.8		105.2		163.3	136.3	250.6	12.7			
		2030 Base	Volumes				229		719		425	560	624	266		D	Optimized signal timing. WBRT, NBTH & SNLT are near capacity.
			V/C				0.79		0.94		0.94	0.83	0.97	0.25			
			95% Queue (m)				95.1		115.4		179.0	105.9	246.8	13.9			
		2030 Base + Phase 1 & Phase 2	Volumes				256		781		425	637	694	266		E	Optimized signal timing. WBRT is near capacity. NB & SNLT are over capacity.
			V/C				0.83		0.98		1.05	1.00	1.05	0.26			
			95% Queue (m)				105.8		134.4		177.7	161.6	260.6	15.8			

Intersection approaching capacity (LOS 'D' or 'E'); or approach demand near capacity (v/c 0.85 to 0.99)

Intersection equals or exceeds capacity (LOS 'F'); or high approach demand over capacity (v/c => 1.0)

95% Queue length exceeds the capacity of existing storage bay.

TABLE 5 CONTINUED
SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection	Time of Day	Scenario	Performance Measure	Eastbound			Westbound			Northbound			Southbound			LOS	Notes
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Dixon Street (N/S) and Kingsway Avenue (E/W)	Weekday Morning Peak Hour	2020 Base	Volumes	4	579	6	15	853	3	37	2	25	4	0	6	A	OK. Existing signal timing.
			V/C	0.26	0.26	0.26	0.38	0.38	0.38	0.23			0.03				
			95% Queue (m)	18.3	18.3	18.3	30.0	30.0	30.0	10.6			0.0				
		2022 Base	Volumes	4	599	6	16	885	3	38	2	26	4	0	6	A	Optimized signal timing.
			V/C	0.26	0.26	0.26	0.39	0.39	0.39	0.24			0.03				
			95% Queue (m)	19.3	19.3	19.3	32.2	32.2	32.2	10.9			0.0				
		2022 Base + Phase 1	Volumes	4	628	6	16	962	3	38	2	26	4	0	6	A	Optimized signal timing.
			V/C	0.27	0.27	0.27	0.42	0.42	0.42	0.24			0.03				
			95% Queue (m)	20.4	20.4	20.4	36.2	36.2	36.2	11.6			0.0				
		2025 Base	Volumes	4	627	7	17	916	3	41	2	28	4	0	7	A	Optimized signal timing.
			V/C	0.28	0.28	0.28	0.41	0.41	0.41	0.25			0.03				
			95% Queue (m)	20.8	20.8	20.8	34.6	34.6	34.6	11.5			0.0				
		2025 Base + Phase 1 & Phase 2	Volumes	4	678	7	17	1076	3	41	2	28	4	0	7	A	Optimized signal timing.
			V/C	0.29	0.29	0.29	0.47	0.47	0.47	0.26			0.04				
			95% Queue (m)	23.1	23.1	23.1	44.1	44.1	44.1	13.2			0.0				
		2025 Base + Phase 1 & Phase 2 (with Chine Avenue Connection)	Volumes	4	652	22	27	995	3	122	2	46	4	0	7	A	Optimized signal timing.
			V/C	0.39	0.39	0.39	0.61	0.61	0.61	0.51			0.03				
			95% Queue (m)	35.5	35.5	35.5	63.0	63.0	63.0	34.1			0.0				
		2030 Base	Volumes	5	684	7	18	1000	4	44	2	30	5	0	7	A	Optimized signal timing.
			V/C	0.30	0.30	0.30	0.44	0.44	0.44	0.27			0.04				
			95% Queue (m)	23.5	23.5	23.5	40.0	40.0	40.0	12.9			0.0				
		2030 Base + Phase 1 & Phase 2 (with Chine Avenue Connection)	Volumes	5	709	33	64	1000	4	204	2	48	5	0	7	B	Optimized signal timing.
			V/C	0.46	0.46	0.46	0.74	0.74	0.74	0.72			0.02				
			95% Queue (m)	54.0	54.0	54.0	97.0	97.0	97.0	73.0			0.0				
	Weekday Afternoon Peak Hour	2020 Base	Volumes	10	993	15	29	841	2	25	0	34	11	0	13	A	OK. Existing signal timing.
			V/C	0.44	0.44	0.44	0.39	0.39	0.39	0.20			0.08				
			95% Queue (m)	31.8	31.8	31.8	26.2	26.2	26.2	5.5			0.3				
		2022 Base	Volumes	10	1030	16	30	873	2	26	0	35	11	0	14	A	Optimized signal splits
			V/C	0.45	0.45	0.45	0.41	0.41	0.41	0.21			0.09				
			95% Queue (m)	34.7	34.7	34.7	28.5	28.5	28.5	5.8			0.4				
		2022 Base + Phase 1	Volumes	10	1101	16	30	919	2	26	0	35	11	0	14	A	Optimized signal timing.
			V/C	0.48	0.48	0.48	0.43	0.43	0.43	0.22			0.09				
			95% Queue (m)	38.5	38.5	38.5	30.8	30.8	30.8	6.0			0.3				
		2025 Base	Volumes	11	1075	17	32	919	2	28	0	37	12	0	14	A	Optimized signal timing.
			V/C	0.47	0.47	0.47	0.43	0.43	0.43	0.23			0.09				
			95% Queue (m)	38.0	38.0	38.0	31.7	31.7	31.7	6.6			0.5				
		2025 Base + Phase 1 & Phase 2	Volumes	11	1222	17	32	1008	2	28	0	37	12	0	14	A	Optimized signal timing.
			V/C	0.56	0.56	0.56	0.50	0.50	0.50	0.25			0.10				
			95% Queue (m)	45.5	45.5	45.5	35.5	35.5	35.5	7.2			0.1				
		2025 Base + Phase 1 & Phase 2 (with Chine Avenue Connection)	Volumes	11	1148	91	54	963	2	73	0	54	12	0	14	A	Optimized signal timing.
			V/C	0.60	0.60	0.60	0.55	0.55	0.55	0.43			0.08				
			95% Queue (m)	65.7	65.7	65.7	53.0	53.0	53.0	19.8			0.0				
		2030 Base	Volumes	12	1172	18	35	1002	2	30	0	41	13	0	16	A	Optimized signal timing
			V/C	0.55	0.55	0.55	0.51	0.51	0.51	0.26			0.10				
			95% Queue (m)	45.3	45.3	45.3	37.7	37.7	37.7	8.1			0.7				
		2030 Base + Phase 1 & Phase 2 (with Chine Avenue Connection)	Volumes	12	1245	92	122	1002	2	119	0	58	13	0	16	B	Optimized signal timing
			V/C	0.65	0.65	0.65	0.83	0.83	0.83	0.64			0.10				
			95% Queue (m)	91.8	91.8	91.8	137.7	137.7	137.7	33.3			0.0				

Intersection approaching capacity (LOS 'D' or 'E'); or approach demand near capacity (v/c 0.85 to 0.99)

Intersection equals or exceeds capacity (LOS 'F'); or high approach demand over capacity (v/c => 1.0)

95% Queue length exceeds the capacity of existing storage bay.

TABLE 5 CONTINUED
SINGALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection	Time of Day	Scenario	Performance Measure	Eastbound			Westbound			Northbound			Southbound			LOS	Notes
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Maple Street (N/S) & Kingsway Avenue (E/W)	Weekday Morning Peak Hour	2020 Base	Volumes		514	106	3	589		271		31				B	OK. Existing signal timing.
			V/C		0.75		0.01	0.70		0.55		0.05					
			95% Queue (m)		99.9		1.3	92.2		51.5		4.3					
		2022 Base	Volumes		532	109	3	610		281		32				B	Optimized signal timing.
			V/C		0.75		0.01	0.70		0.60		0.07					
			95% Queue (m)		93.2		1.1	86.1		60.0		5.9					
		2022 Base + Phase 1	Volumes		561	115	3	627		290		32				B	Optimized signal timing.
			V/C		0.78		0.01	0.71		0.62		0.07					
			95% Queue (m)		102.8		1.1	90.3		62.0		5.9					
		2025 Base	Volumes		547	112	3	641		295		34				B	Optimized signal timing.
			V/C		0.77		0.01	0.73		0.63		0.08					
			95% Queue (m)		97.9		1.1	94.0		63.2		6.1					
		2025 Base + Phase 1 & Phase 2	Volumes		607	124	3	671		311		34				B	Optimized signal timing.
			V/C		0.81		0.02	0.74		0.68		0.08					
			95% Queue (m)		114.9		1.1	97.4		75.0		6.2					
		2030 Base	Volumes		596	122	4	700		322		37				B	Optimized signal timing.
			V/C		0.81		0.02	0.78		0.69		0.08					
			95% Queue (m)		115.8		1.4	109.9		71.2		6.4					
		2030 Base + Phase 1 & Phase 2	Volumes		656	134	4	730		338		37				C	Optimized signal timing. EB is near capacity.
			V/C		0.86		0.03	0.78		0.75		0.09					
			95% Queue (m)		161.2		1.3	114.1		85.0		6.6					
	Weekday Afternoon Peak Hour	2020 Base	Volumes		744	289	17	616		262		32				D	Existing signal timing. EB is over capacity.
			V/C		1.09		0.16	0.63		0.64		0.08					
			95% Queue (m)		258.7		5.2	99.6		50.4		5.3					
		2022 Base	Volumes		770	300	18	640		271		33				C	Optimized signal timing. EB & NBLT are near capacity.
			V/C		0.98		0.20	0.57		0.90		0.11					
			95% Queue (m)		239.6		4.3	65.5		83.0		7.0					
		2022 Base + Phase 1	Volumes		796	310	18	669		284		33				C	Optimized signal timing. EB & NBLT are near capacity.
			V/C		0.99		0.26	0.58		0.92		0.11					
			95% Queue (m)		305.3		6.0	82.9		15.3		7.9					
		2025 Base	Volumes		810	315	19	669		284		35				C	Optimized signal timing. EB & NBLT are near capacity.
			V/C		0.99		0.26	0.57		0.95		0.12					
			95% Queue (m)		337.2		6.0	86.3		115.9		8.8					
		2025 Base + Phase 1 & Phase 2	Volumes		860	335	19	729		311		35				D	Optimized signal timing. EB & NBLT are over capacity.
			V/C		1.05		0.37	0.61		1.01		0.12					
			95% Queue (m)		432.7		11.1	116.6		147.7		11.2					
		2030 Base	Volumes		883	343	20	730		310		38				D	Optimized signal timing. EB & NBLT are over capacity.
			V/C		1.07		0.38	0.61		1.02		0.13					
			95% Queue (m)		449.1		12.4	115.0		48.1		117.0					
		2030 Base + Phase 1 & Phase 2	Volumes		933	363	20	790		337		38				E	Optimized signal timing. EB & NBLT are over capacity.
			V/C		1.12		0.38	0.66		1.14		0.13					
			95% Queue (m)		486.7		12.1	131.5		166.8		12.4					

Intersection approaching capacity (LOS 'D' or 'E'); or approach demand near capacity (v/c 0.85 to 0.99)

Intersection equals or exceeds capacity (LOS 'F'); or high approach demand over capacity (v/c => 1.0)

95% Queue length exceeds the capacity of existing storage bay.

TABLE 6
UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection	Time of Day	Scenario	Performance Measure	Eastbound			Westbound			Northbound			Southbound			LOS	Notes
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Gately Avenue (N/S) and Kingsway Avenue (E/W)	Weekday Morning Peak Hour	2020 Base	Volumes		599	9	9	851		20		21				A	OK
			Delay		0.0	0.0	8.9	0.0		21.1							
			95% Queue (veh)		0.0	0.0	0.0	0.0		0.6							
		2022 Base	Volumes		623	6	6	885		19		19				A	OK
			Delay		0.0	0.0	9.0	0.0		22.0							
			95% Queue (veh)		0.0	0.0	0.0	0.0		0.6							
		2022 Base + Phase 1 (Existing Lane Configuration)	Volumes		623	33	30	885		89		51				A	NB movements are over capacity.
			Delay		0.0	0.0	9.2	0.0		59.7							
			95% Queue (veh)		0.0	0.0	0.1	0.0		4.8							
		2022 Base + Phase 1 (Right-in/Right-out Access	Volumes		623	63		934				140				A	OK
			Delay		0.0	0.0		0.0				19.4					
			95% Queue (veh)		0.0	0.0		0.0				1.7					
		2022 Base + Phase 1 (WBLT Lane & NBLT Receiving Lane)	Volumes		623	33	30	885		89		51				A	OK
			Delay		0.0	0.0	9.2	0.0		18.2							
			95% Queue (veh)		0.0	0.0	0.1	0.0		1.6							
		2025 Base	Volumes		659	0	0	936		0		0				A	OK
			Delay		0.0	0.0	0.0	0.0		0.0							
			95% Queue (veh)		0.0	0.0	0.0	0.0		0.0							
		2025 Base + Phase 1 & Phase 2 (Right-in/Right-out Access)	Volumes		659	93		980				222				A	NBRT is approaching capacity.
			Delay		0.0	0.0		0.0				29.8					
			95% Queue (veh)		0.0	0.0		0.0				4.2					
		2025 Base + Phase 1 & phase 2 (WBLT Lane & NBLT Receiving Lane)	Volumes		659	49	44	936		153		69				A	NB movements are approaching capacity.
			Delay		0.0	0.0	9.5	0.0		27.4							
			95% Queue (veh)		0.0	0.0	0.2	0.0		3.9							
		2025 Base + Phase 1 & Phase 2 (Right-in/Right-out with Chine Avenue Connection)	Volumes		677	38		980				51				A	OK
			Delay		0.0	0.0		0.0				16.6					
			95% Queue (veh)		0.0	0.0		0.0				0.5					
		2030 Base	Volumes		719	0	0	1021		0		0				A	OK
			Delay		0.0	0.0	0.0	0.0		0.0							
			95% Queue (veh)		0.0	0.0	0.0	0.0		0.0							
		2030 Base + Phase 1 & Phase 2 (Right-in/Right-out Access)	Volumes		719	93		1065				222				A	NBRT is approaching capacity.
			Delay		0.0	0.0		0.0				36.9					
			95% Queue (veh)		0.0	0.0		0.0				0.5					
		2030 Base + Phase 1 & Phase 2 (WBLT Lane & NBLT Receiving Lane)	Volumes		719	49	44	1021		153		69				A	NB movements are approaching capacity.
			Delay		0.0	0.0	9.8	0.0		32.8							
			95% Queue (veh)		0.0	0.0	0.2	0.0		4.6							
		2030 Base + Phase 1 & Phase 2 (Right-in/Right-out with Chine Avenue Connection)	Volumes		737	38		1065				51				A	OK
			Delay		0.0	0.0		0.0				18.0					
			95% Queue (veh)		0.0	0.0		0.0				0.6					

Delay = Average Delay (seconds/vehicle)

Intersection approaching capacity (LOS 'D' or 'E'); ; or medium approach delays (25sec to <50sec)

Intersection equals or exceeds capacity (LOS 'F'); or high approach delays (=> 50sec)

95% Queue = UNSIGNALIZED QUEUE IS PER VEHICLE

TABLE 6 CONTINUED
UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection	Time of Day	Scenario	Performance Measure	Eastbound			Westbound			Northbound			Southbound			LOS	Notes
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Gately Avenue (N/S) and Kingsway Avenue (E/W)	Weekday Afternoon Peak Hour	2020 Base	Volumes		1022	16	12	866		6		11				A	NB movements are approaching capacity.
			Delay		0.0	0.0	11.0	0.0		34.3							
			95% Queue (veh)		0.0	0.0	0.1	0.0		0.4							
		2022 Base	Volumes		1063	14	10	901		4		6				A	NB movements are approaching capacity.
			Delay		0.0	0.0	11.2	0.0		36.4							
			95% Queue (veh)		0.0	0.0	0.1	0.0		0.3							
		2022 Base + Phase 1 (Existing Lane Configuration)	Volumes		1063	78	48	901		47		39				A	NB movements are over capacity.
			Delay		0.0	0.0	12.1	0.0		202.2							
			95% Queue (veh)		0.0	0.0	0.3	0.0		6.3							
		2022 Base + Phase 1 (Right-in/Right-out Access)	Volumes		1063	126		953				86				A	NBRT is approaching capacity.
			Delay		0.0	0.0		0.0				41.2					
			95% Queue (veh)		0.0	0.0		0.0				2.4					
		2022 Base + Phase 1 (WBLT Lane & NBLT Receiving Lane)	Volumes		1063	78	48	901		47		39				A	NB movements are approaching capacity.
			Delay		0.0	0.0	12.1	0.0		34.3							
			95% Queue (veh)		0.0	0.0	0.3	0.0		2.1							
		2025 Base	Volumes		1124	0	0	953		0		0				A	OK
			Delay		0.0	0.0	0.0	0.0		0.0							
			95% Queue (veh)		0.0	0.0	0.0	0.0		0.0							
		2025 Base + Phase 1 & Phase 2 (Right-in/Right-out Access)	Volumes		1124	223		1036				153				A	NBRT is over capacity.
			Delay		0.0	0.0		0.0				116.0					
			95% Queue (veh)		0.0	0.0		0.0				7.6					
		2025 Base + Phase 1 & phase 2 (WBLT Lane & NBLT Receiving Lane)	Volumes		1124	140	83	953		86		67				A	NB movements are over capacity.
			Delay		0.0	0.0	13.8	0.0		96.8							
			95% Queue (veh)		0.0	0.0	0.7	0.0		6.9							
		2025 Base + Phase 1 & Phase 2 (Right-in/Right-out with Chine Avenue Connection)	Volumes		1141	102		1036				50				A	NBRT is approaching capacity.
			Delay		0.0	0.0		0.0				36.8					
			95% Queue (veh)		0.0	0.0		0.0				1.3					
		2030 Base	Volumes		1226	0	0	1039		0		0				A	OK
			Delay		0.0	0.0	0.0	0.0		0.0							
			95% Queue (veh)		0.0	0.0	0.0	0.0		0.0							
		2030 Base + Phase 1 & Phase 2 (Right-in/Right-out Access)	Volumes		1226	223		1122				153				B	NBRT is over capacity.
			Delay		0.0	0.0		0.0				184.2					
			95% Queue (veh)		0.0	0.0		0.0				9.4					
		2030 Base + Phase 1 & Phase 2 (WBLT Lane & NBLT Receiving Lane)	Volumes		1226	140	83	1039		86		67				A	NB movements are over capacity.
			Delay		0.0	0.0	14.9	0.0		153.4							
			95% Queue (veh)		0.0	0.0	0.7	0.0		8.7							
		2030 Base + Phase 1 & Phase 2 (Right-in/Right-out with Chine Avenue Connection)	Volumes		1243	102		1122				50				A	NBRT is approaching capacity.
			Delay		0.0	0.0		0.0				46.2					
			95% Queue (veh)		0.0	0.0		0.0				1.7					

Delay = Average Delay (seconds/vehicle)

Intersection approaching capacity (LOS 'D' or 'E'); ; or medium approach delays (25sec to <50sec)

Intersection equals or exceeds capacity (LOS 'F'); or high approach delays (=> 50sec)

95% Queue = UNSIGNALIZED QUEUE IS PER VEHICLE

Based on the capacity analyses summarized by **TABLE 5** and **TABLE 6**, the following observations can be made:

Westwood Street (N/S) at Kingsway Avenue (E/W)

- The signalized intersection currently operates at an overall LOS B (Very Good) and LOS C (good) during the existing AM and PM peak hours with existing traffic signal timing. The southbound left turn movement is approaching capacity during the AM peak hour.
- By the year 2022 under base traffic conditions and with optimized signal timing, the overall intersection level of service is LOS C (Good) during the AM and PM peak hours. The southbound left-turn movement is approaching capacity in the PM peak hour.
- Addition of Phase 1 site traffic to 2022 base traffic conditions results in no change to the overall intersection level of service. The overall intersection level of service remains at C (Good) during the AM and PM peak hours. The northbound through and the southbound left turn movements are approaching capacity.
- By the year 2025 under base traffic conditions and with optimized signal timing, the overall intersection level of service is LOS C (Good) during the AM and PM peak hours. The westbound right turn, the northbound through, and the southbound left turn movements are approaching capacity during the PM peak hour.
- Addition of Phase 1 and Phase 2 site traffic to base 2025 base traffic conditions results in change to the overall intersection level of service. The overall intersection level of service remains at C (good) during the AM peak hour however, the overall intersection level of service is LOS D (Fair) during the PM peak hour. The westbound right-turn, the northbound through and right turn, and the southbound left turn movements are approaching capacity.
- By the year 2030 under base traffic conditions and with optimized signal timing, the overall intersection level of service is LOS C (Good) during the AM peak hour and LOS D (Fair) during the PM peak hour. The westbound right-turn, the northbound through, and the southbound left-turn movements are approaching capacity during the PM peak hour.
- For the year 2030 the overall intersection level of service is LOS C (Good) during the AM peak hour. However, the overall intersection level of service is projected to decrease to LOS E (Poor) during the PM peak hour. The westbound right turn movement is approaching capacity and the northbound through and right turn, and the southbound left-turn movements are over capacity.

Dixon Street (N/S) at Kingsway Avenue (E/W)

- The signalized intersection currently operates at an overall LOS A (Excellent) with the existing traffic signal timing, for the existing AM and PM peak hours.
- By the years 2022, 2025 and 2030 under base traffic conditions and with optimized signal timing, the overall intersection level of service remains at LOS A (Excellent) during the AM and PM peak hours.
- Addition of Phase 1 site traffic to 2022 base traffic conditions does not result in a change to the overall intersection level of service. It remains at LOS A (Excellent) during the AM and PM peak hours.
- Addition of Phase 1 and Phase 2 site traffic to 2025 base traffic conditions does not result in change to the overall intersection level of service. It remains at LOS A (Excellent) without and with a Chine Avenue connection, during the AM and PM peak hours.
- By the year 2030, the overall intersection level of service is LOS B (Very Good) without and with a Chine Avenue connection, during the AM and PM peak hours.

Maple Street (N/S) at Kingsway Avenue (E/W)

- The signalized intersection currently operates at an overall LOS B (Very Good) during the AM peak hour and LOS D (Fair) during the PM peak hour with the existing traffic signal timing. The eastbound movements are over capacity.
- By the year 2022 and 2025 under base traffic conditions and with optimized signal timing, the overall intersection level of service is LOS B (Very Good) during the AM peak hour and LOS C (Good) in the PM peak hour. However, the eastbound and the northbound left turn movements are approaching capacity in the PM peak hour.
- By the year 2030 under base traffic conditions and with optimized signal timing, the overall intersection level of service is LOS B (Very Good) during the AM peak hour and LOS D (Fair) in the PM peak hour. The eastbound and northbound left turn movements are over capacity.
- Addition of Phase 1 site traffic to 2022 base traffic conditions does not result in a change to the overall intersection level of service. It remains at LOS B (Very Good) during the AM peak hour and LOS C (Good) during the PM peak hour. The eastbound and northbound left turn movements are approaching capacity.
- Addition of Phase 1 and Phase 2 site traffic to 2025 base traffic conditions results in an overall intersection level of service of LOS B (Very Good) during the AM peak hour and LOS D (Fair) during the PM peak hour. The eastbound and northbound left turn movements are over capacity.
- By the year 2030 the overall intersection level of service is LOS C (Good) during the AM peak hour and at LOS E (Poor) during the PM peak hour. The eastbound and northbound left-turn movements are over capacity.

Gately Avenue (N/S) at Kingsway Avenue (E/W)

- This location currently operates as an unsignalized intersection with STOP control on Gately Avenue. For the existing conditions, the intersection operates at LOS A (Excellent) during the AM and PM peak hours. The northbound movements are approaching capacity during the PM peak hour.
- By the year 2022 under base traffic conditions, the overall intersection level of service remains at LOS A (Excellent) during the AM and PM peak hours. The northbound movements are approaching capacity during the PM peak hour.
- By the year 2025 and year 2030 under base traffic conditions, the overall intersection level of service remains at LOS A (Excellent) during the AM and PM peak hours.
- Addition of Phase 1 site traffic to 2022 base traffic conditions does not result in a change to the overall intersection level of service during the AM and PM peak hours. It remains at LOS A (Excellent). The northbound movements are over capacity during the AM and PM peak hours.
- To improve safety and the level of service for Gately Avenue at Kingsway Avenue in 2022, CTS considered two options:
    - Right-In/Right-Out only at the intersection of Gately Avenue and Kingsway Avenue.
    - A westbound left turn lane mirrored by a receiving lane for the northbound left turn movement, on Kingsway Avenue at Gately Avenue.

  The overall intersection level of service is LOS A (Excellent) during the AM and PM peak hours however the northbound movements are approaching capacity for both options during the PM peak hour.
- By the year 2025 base traffic condition with Phase 1 and Phase 2 site traffic, the overall intersection level of service is LOS A (Excellent) during the AM and PM peak hours.
- To improve safety and the level of service for Gately Avenue at Kingsway Avenue in 2025, CTS considered three options:
    - Right-In/Right-Out only at the intersection of Gately Avenue and Kingsway Avenue.
    - A westbound left turn lane mirrored by a receiving lane for the northbound left turn movement, on Kingsway Avenue at Gately Avenue.
    - Right-In/Right-Out at the intersection of Gately Avenue and Kingsway Avenue with a Chine Avenue connection.

  The northbound right turn is approaching capacity in the AM peak hour and over capacity in the PM peak hour for the right-in/right-out only option.

  The northbound left turn/through/right turn movements are approaching capacity in the AM peak hour and over capacity in the PM peak hour for the westbound left turn lane/receiving lane option.

The northbound right turn is approaching capacity in the PM peak hour for the right-in/right-out with a Chine Avenue connection.

- For the year 2030 base traffic condition with Phase 1 and Phase 2 site traffic, the overall intersection level of service is LOS A (Excellent) during both the AM and PM peak hours.
- To improve safety and the level of service for Gately Avenue at Kingsway Avenue in 2030, CTS considered three options:
    - Right-In/Right-Out only at the intersection of Gately Avenue and Kingsway Avenue.
    - A westbound left turn lane mirrored by a receiving lane for the northbound left turn movement, on Kingsway Avenue at Gately Avenue.
    - Right-In/Right-Out at the intersection of Gately Avenue and Kingsway Avenue with a Chine Avenue connection.

  The northbound right turn is approaching capacity in the AM peak hour and over capacity in the PM peak hour for the right-in/right-out only option.

  The northbound left turn/through/right turn movements are approaching capacity in the AM peak hour and over capacity in the PM peak hour for the westbound left turn lane/receiving lane option.

  The northbound right turn is approaching capacity in the PM peak hour for the right-in/right-out with a Chine Avenue connection.

6.0 ACCESS AND SIGHT LINES

6.1 Sight Lines

CTS reviewed the sight lines to/from the intersection of Gately Avenue given the horizontal curve on Kingsway Avenue to the east is limiting for vehicles turning left on to Kingsway Avenue from Gately Avenue or turning left on to Gately Avenue from Kingsway Avenue.

With reference to the Transportation Association of Canada *Geometric Design Guide for Canadian Roads 2017, Table 2.5.2: Stopping Sight Distance*, the stopping sight distance for a road posted at 50 km/h is 65 meters. CTS measured the stopping sight distance from the STOP bar on Gately Avenue east to a point on Kingsway Avenue westbound at 70 meters. CTS also measured the stopping sight distance from the intersection with Gately Avenue east to a point on Kingsway Avenue westbound at 85 meters. The left turn from Gately Avenue to Kingsway Avenue is the critical manoeuver.

CTS also tested a scenario assuming a vehicle approaching the intersection of Gately Avenue and Kingsway Avenue from the east is approaching at 60 km/h, a typical operating speed. In this instance the stopping sight distance would be 85 meters.

6.2 Access

To more safely accommodate left turns at the intersection of Gately Avenue and Kingsway Avenue, CTS considered the creation of a left turn lane and a receiving lane on Kingsway Avenue at Gately Avenue. Creation of the left turn lane and receiving lane on Kingsway Avenue at Gately Avenue was considered for the 2022 base traffic condition with Phase 1 site traffic as well as the 2025 and 2030 base traffic condition with Phase 1 and Phase 2 site traffic, analysis. The proposed laning is illustrated by **FIGURE 24**.

CTS also considered right-in/right-out on Kingsway Avenue at Gately Avenue. Creation of the right-in/right-out only on Kingsway Avenue at Gately Avenue was considered for the 2022 base traffic condition with Phase 1 site traffic as well as the 2025 and 2030 base traffic condition with Phase 1 and Phase 2 site traffic, analysis. The proposed laning is illustrated by **FIGURE 25**.

CTS also considered a Chine Avenue connection with right-in/right-out only on Kingsway Avenue at Gately Avenue. Creation of a Chine Avenue connection with right-in/right-out only on Kingsway Avenue at Gately Avenue was considered for the 2025 and 2030 base traffic condition with Phase 1 and Phase 2 site traffic, analysis. The proposed connection is illustrated by **FIGURE 26**.

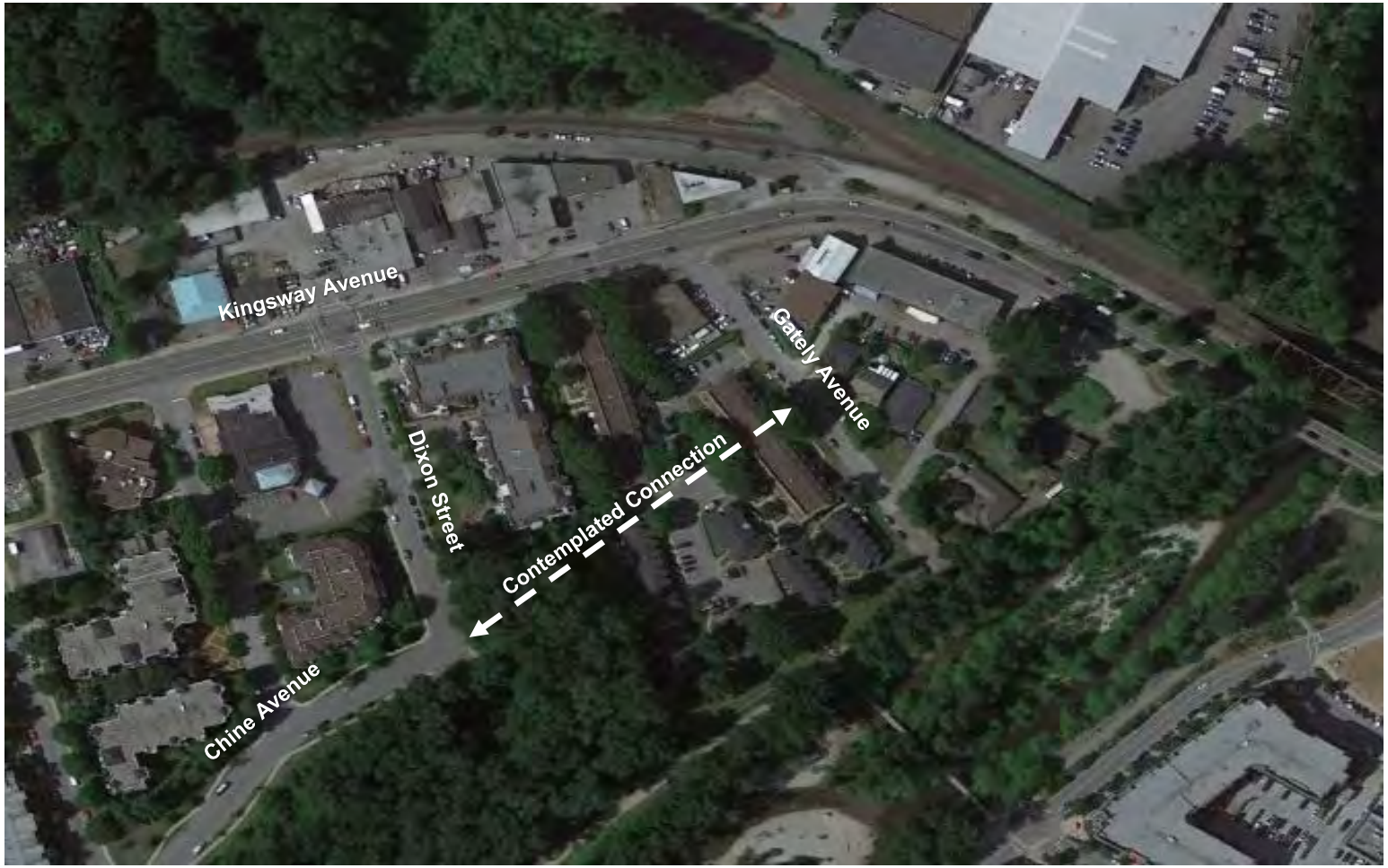
CTS did not consider signalization of the intersection of Kingsway Avenue at Gately Avenue given the following:

- The intersection spacing between Dixon Street and Gately Avenue does not meet the minimum with reference to the Transportation Association of Canada *Geometric Design Guide for Canadian Roads 2017, Section 9.4.2.1: Arterials*; and
- The turning sight distance does not meet the minimum with reference to the Transportation Association of Canada *Geometric Design Guide for Canadian Roads 2017, Table 9.9.4: Design Intersection Sight Distance*.

FIGURE 24
GATELY AVENUE AT KINGSWAY AVENUE – WESTBOUND LEFT TURN LANE/RECEIVING LANE

FIGURE 25
GATELY AVENUE AT KINGSWAY AVENUE – RIGHT-IN/RIGHT-OUT

FIGURE 26
CHINE AVENUE CONNECTION



7.0 PARKING AND LOADING

7.1 Vehicle Parking

With reference to the City of Port Coquitlam *Zoning Bylaw 4078 – Parking and Development Management,* 300 off-street vehicle parking spaces are required for the non-market housing and five (5) off-street parking spaces for a daycare. **TABLE 7** summarizes the vehicle parking requirement and provision.

TABLE 7
VEHICLE PARKING SUMMARY

USE	RATE (BYLAW)	SCOPE	REQUIRED	PROVIDED	DIFFERENCE
Phase 1 (Non-market Housing)	1 per dwelling unit	300	300	289	-11
Daycare	1 for each 10 children	50	5	5	

From **TABLE 7**, the development is proposing 294 off-street vehicle parking spaces. The proposed off-street vehicle parking requirement is therefore deficient and an eleven (11) vehicle parking space variance or a 0.96 parking space per unit rate, is being sought.

In support of a an eleven (11) vehicle parking space variance or a 0.96 parking space per unit rate, CTS referenced the Institute of Transportation Engineers (ITE) *Parking Generation Manual 5th Edition - Affordable Housing (Code 223)* wherein it notes that the parking space rate per unit can be as low as 0.32 parking spaces per unit for affordable non-market housing. It is also noted that the 85th percentile parking space rate can range between 0.86 and 1.33 parking spaces per unit and the 95% confidence interval parking space rate can range between 0.89 and 1.09 parking spaces per unit.

Given vehicle ownership amongst residents of affordable non-market housing is generally low, good access to transport modal infrastructure and with reference to the preceding statistics, it would be reasonable to accept an (11) vehicle parking space variance or a 0.96 parking space per unit parking space rate for this development site.

7.2 Bicycle Parking

With reference to the City of Port Coquitlam *Zoning Bylaw 4078 – Parking and Development Management,* there is no bicycle parking space requirement for the site.

7.3 Loading

With reference to the City of Port Coquitlam *Zoning Bylaw 4078 – Parking and Development Management,* there is no loading space requirement for the site.

8.0 SUMMARY & CONCLUSIONS

CTS conducted a Traffic Impact Study for a proposed housing development at the intersection of Gately Avenue at Kingsway Avenue in the City of Port Coquitlam. Based on the analysis documented, the following can be stated:

1) The proposed housing development is well serviced by the local street network.
2) Transport model infrastructure adjacent to the site provides localized access to walking, cycling and transit. There are opportunities for adding to the pedestrian and cycling network given the proximity to existing transport modal infrastructure.
3) The proposed housing development - Phase 1 is forecast to generate a total of 153 new vehicle trips (51 inbound, 102 outbound) during the weekday AM peak hour, and 178 new vehicle trips (102 inbound, 76 outbound) during the PM peak hour. The proposed housing development - Phase 2 is forecast to generate a total of 162 new vehicle trips (42 inbound, 120 outbound) during the weekday AM peak hour, and 198 new vehicle trips (121 inbound, 77 outbound) during the weekday PM peak hour.
4) CTS did not discount new vehicle trips generated by Phase 1 and Phase 2 by subtracting vehicle trips currently being generated by the existing land uses on the Phase 1 and Phase 2 housing development sites. Traffic volumes therefore represent the worst case scenario in that all traffic would be “new” traffic on the adjacent road network and the capacity analysis is considered conservative.
5) The signalized intersection at Westwood Street at Kingsway Avenue will operate well i.e. LOS C (Good) to LOS D (Fair) overall for all base condition scenarios though individual movements are nearing capacity. With the addition of Phase 1 and Phase 2 site traffic, the level of service remains okay i.e. LOS C (Good) to LOS E (Poor), overall for the year 2025 and 2030 scenarios. Individual movements however, are nearing or are over capacity.
6) The signalized intersection at Dixon Street at Kingsway Avenue will operate very well i.e. LOS A (Excellent) to LOS B (Very Good), overall for all scenarios without and with addition of Phase 1 and Phase 2 site traffic.
7) The signalized intersection at Maple Street at Kingsway Avenue will operate well i.e. LOS B (Very Good) to LOS D (Fair), overall for all base condition scenarios though individual movements are nearing capacity or over capacity. With the addition of Phase 1 and Phase 2 site traffic, the level of service remains okay i.e. LOS B (Very Good) to LOS E (Poor), overall for the year 2025 and 2030 scenarios. Individual movements however, are nearing or are over capacity.
8) The unsignalized intersection at Gately Avenue at Kingsway Avenue will operate well i.e. LOS A (Excellent) and LOS B (Very Good) overall, for all scenarios without and with the addition of Phase 1 and Phase 2 site traffic. However, the northbound movements experience significant delay, particularly in the PM peak hour.
9) To improve safety and the level of service for Gately Avenue at Kingsway Avenue, CTS considered two options for the 2022 base traffic condition and Phase 1 site

traffic:

- Right-In/Right-Out only at the intersection of Gately Avenue and Kingsway Avenue; and
- A westbound left turn lane mirrored by a receiving lane for the northbound left turn movement, on Kingsway Avenue at Gately Avenue.

Based on the capacity analysis, the overall level of service is acceptable for both options however, Gately Avenue northbound is approaching capacity in the PM peak hour with the right-in/right-out option and the westbound left turn lane/receiving lane option.

10) To improve safety and the level of service for Gately Avenue at Kingsway Avenue, CTS considered three options for the 2025 and 2030 base traffic condition and Phase 1 and Phase 2 site traffic:

- Right-In/Right-Out only at the intersection of Gately Avenue and Kingsway Avenue.
- A westbound left turn lane mirrored by a receiving lane for the northbound left turn movement, on Kingsway Avenue at Gately Avenue.
- Right-In/Right-Out at the intersection of Gately Avenue and Kingsway Avenue and a Chine Avenue Connection.

Based on the capacity analysis, the overall level of service is acceptable for all options however, Gately Avenue is approaching capacity in the AM peak hour and exceeding capacity in the PM peak hour with the right-in/right-out option and the westbound left turn lane/receiving lane option.

The level of service on Gately remains acceptable with the Right-In/Right-Out at the intersection of Gately Avenue and Kingsway Avenue and a Chine Avenue Connection.

11) As per the City of Port Coquitlam *Zoning Bylaw 40787 - Parking and Development Management*, an eleven (11) vehicle parking space variance is being sought. The bicycle parking and loading space requirements are met.

9.0 RECOMMENDATIONS

Based on the data, analysis and conclusions documented by this study, the following is recommended that:

1. The City of Port Coquitlam accept the data, analysis and conclusions documented by this study.
2. Sidewalks be provided along all frontages and that a multi-user pathway connection along Kingsway Avenue to the multi-user pathway network along the Coquitlam River, be provided.
3. For Phase 1 build-out:
    - That an interim westbound left turn lane mirrored by a receiving lane for the northbound left turn movement on Kingsway Avenue at Gately Avenue, be constructed; and
    - Signal timings be optimized.
4. For Phase 1 and Phase 2 build-out:
    - The Chine Avenue connection be constructed;
    - The intersection of Kingsway Avenue at Gately Avenue be right-in/right-out only; and
    - Signal timings be optimized.

    Note – The analysis by CTS was based on a general estimate of the potential density for Phase 2. Given the timing of the development of Phase 2 remains unclear at this point, CTS expects that the Chine Avenue connection or potentially signalizing Kingsway at Gately Avenue will be reviewed by the City of Port Coquitlam during the development application process for Phase 2.
5. For 5 years post Phase 1 and Phase 2 build-out:
    - Signal timings be optimized.
6. Given vehicle ownership amongst residents of affordable non-market housing is generally low, good access to transport modal infrastructure and with reference to Institute of Transportation Engineers (ITE) *Parking Generation Manual 5th Edition - Affordable Housing (Code 223)* wherein lower parking space rates are noted for affordable non-market housing, it would be reasonable to accept an (11) vehicle parking space variance or a 0.96 parking space per unit parking space rate for this development site.

In closing, CTS would like to thank Peak Tower Developments for the opportunity to assist you and your team with this unique assignment. Please call the undersigned should there be any questions and/or comments pertaining to this report or its contents.

Yours truly,

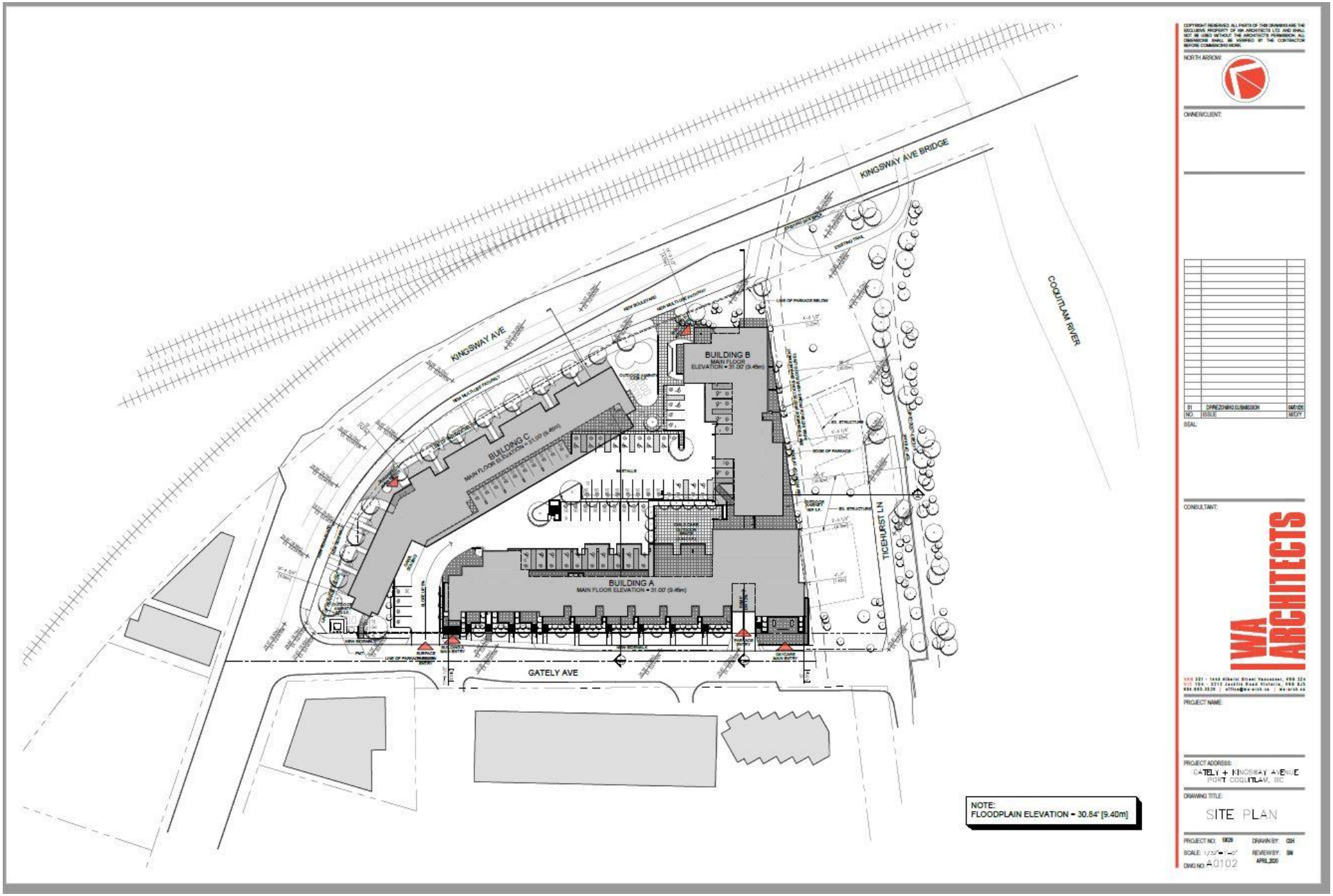
CREATIVE TRANSPORTATION SOLUTIONS LTD.

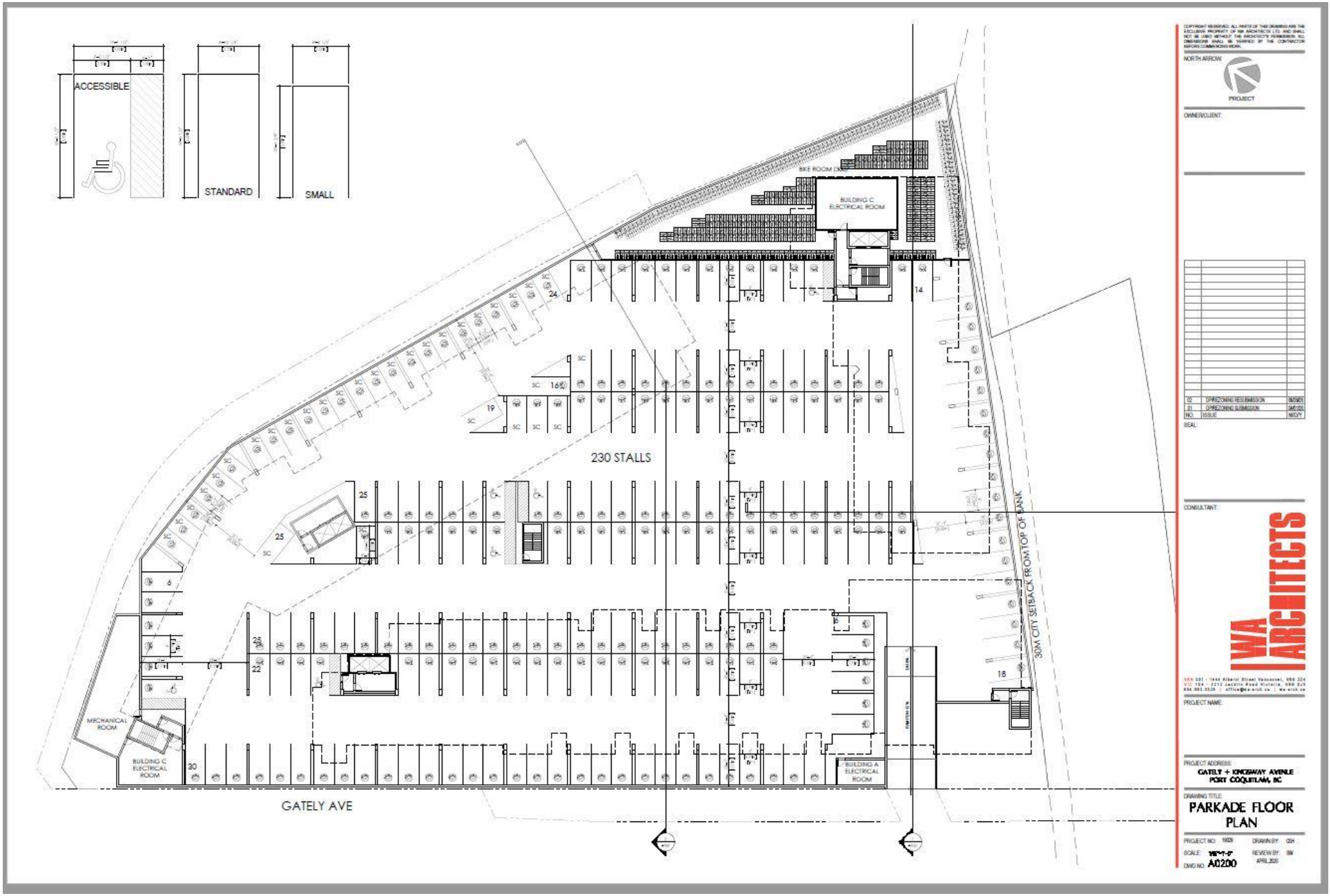
Brent A. Dozzi, P.Eng.
Senior Traffic Engineer

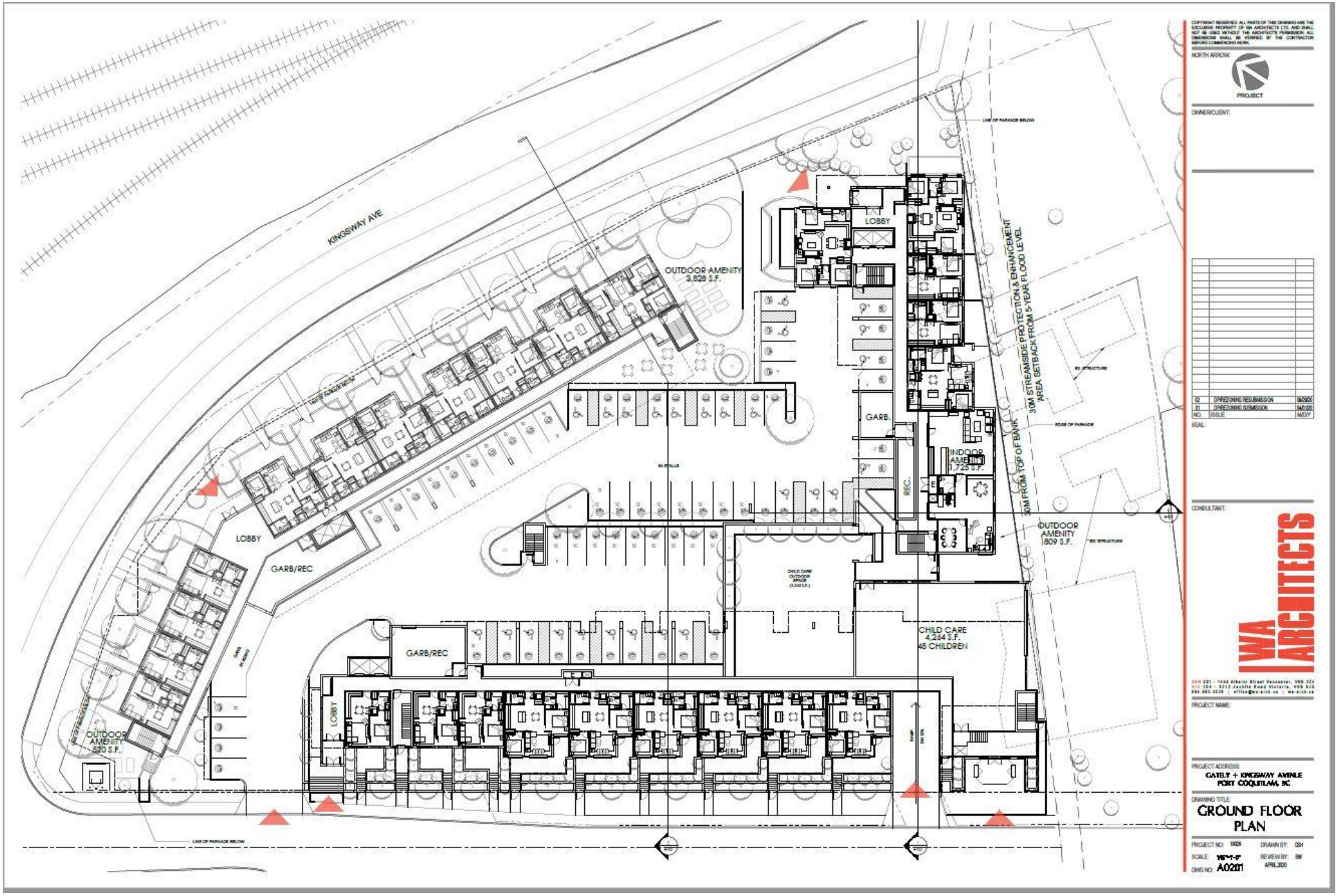
Phone: (604) 936-6190 x237
E-mail: bdozzi@cts-bc.com

APPENDICES

Appendix A
Site Plan

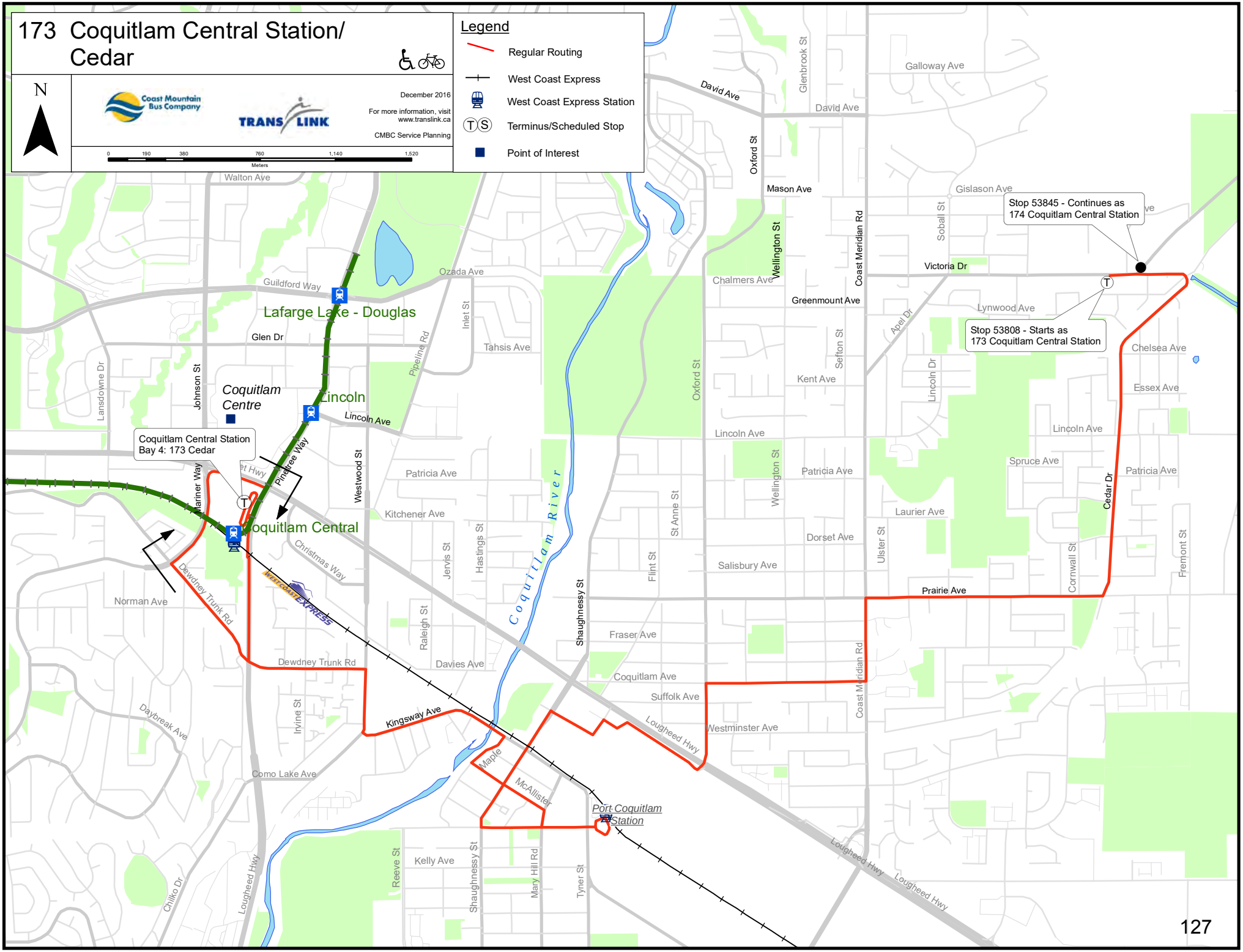

KINGSWAY AVE BRIDGE
KINGSWAY AVE
COQUITLAM RIVER
BUILDING B
MAIN FLOOR
ELEVATION = 31.00' (9.45m)
BUILDING C
MAIN FLOOR ELEVATION = 31.00' (9.45m)
BUILDING A
MAIN FLOOR ELEVATION = 31.00' (9.45m)
TICEHURST LN
GATELY AVE
NOTE:
FLOODPLAIN ELEVATION = 30.84' [9.40m]
NORTH ARROW:
OWNER/CLIENT:
01 DP/REZONING SUBMISSION 04/01/20
NO. ISSUE M/D/Y
SEAL:
CONSULTANT:
WA ARCHITECTS
PROJECT NAME:
PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC
DRAWING TITLE:
SITE PLAN
PROJECT NO: 19029
DRAWN BY: CSH
SCALE: 1/32"=1'-0"
REVIEW BY: BW
APRIL 2020
DWG NO: A0102


ACCESSIBLE
STANDARD
SMALL
BIKE ROOM
BUILDING C ELECTRICAL ROOM
230 STALLS
30M CITY SETBACK FROM TOP OF BANK
MECHANICAL ROOM
BUILDING C ELECTRICAL ROOM
BUILDING A ELECTRICAL ROOM
GATELY AVE
COPYRIGHT RESERVED. ALL PARTS OF THIS DRAWING ARE THE EXCLUSIVE PROPERTY OF WA ARCHITECTS LTD. AND SHALL NOT BE USED WITHOUT THE ARCHITECT'S PERMISSION. ALL DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR BEFORE COMMENCING WORK.
NORTH ARROW:
PROJECT
OWNER/CLIENT:
02 DP/REZONING RESUBMISSION 06/08
01 DP/REZONING SUBMISSION 04/20
NO. ISSUE M/D/Y
SEAL:
CONSULTANT:
WA ARCHITECTS
PROJECT NAME:
PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC
DRAWING TITLE:
PARKADE FLOOR PLAN
PROJECT NO: 19029
DRAWN BY: CZH
SCALE: 1/8"=1'-0"
REVIEW BY: BW
DWG NO: A0200
APRIL 2020

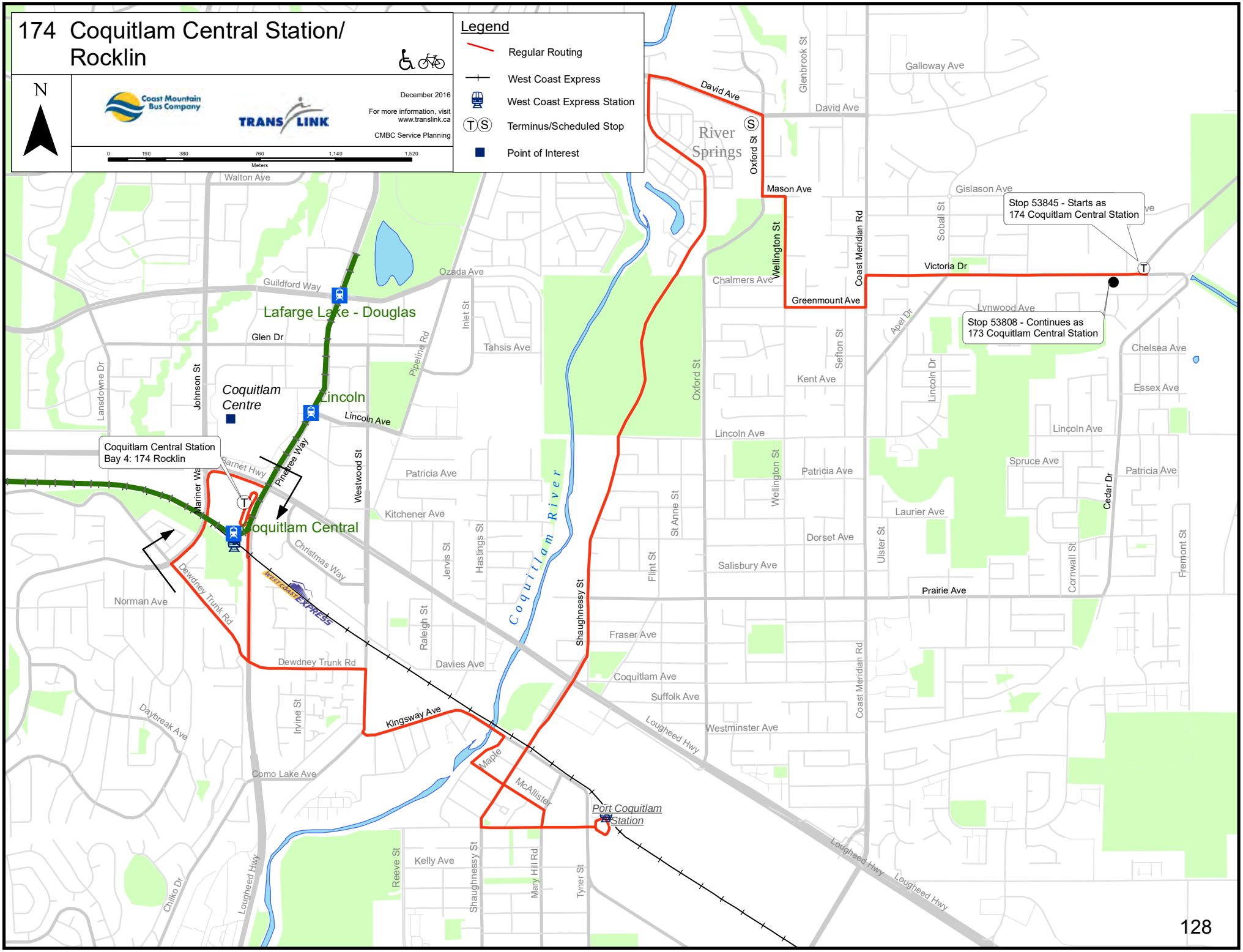

KINGSWAY AVE
OUTDOOR AMENITY
3,828 S.F.
LOBBY
GARB.
REC.
INDOOR AMENITY
1,725 S.F.
30M STREAMSIDE PROTECTION & ENHANCEMENT AREA SETBACK FROM 5-YEAR FLOOD LEVEL
30M FROM TOP OF BANK
OUTDOOR AMENITY
809 S.F.
CHILD CARE
4,264 S.F.
48 CHILDREN
GARB/REC
LOBBY
GARB/REC
OUTDOOR AMENITY
520 S.F.
LOBBY
LINE OF PARKADE BELOW
NORTH ARROW
PROJECT
OWNER/CLIENT:
02 DP/REZONING RESUBMISSION
01 DP/REZONING SUBMISSION
NO. ISSUE
SEAL:
CONSULTANT:
WA ARCHITECTS
PROJECT NAME:
PROJECT ADDRESS:
GATELY + KINGSWAY AVENUE
PORT COQUITLAM, BC
DRAWING TITLE:
GROUND FLOOR PLAN
PROJECT NO:
DRAWN BY:
SCALE:
REVIEW BY:
DWG NO: A02.01

Appendix B
Transit Route Diagrams

173 Coquitlam Central Station/ Cedar



174 Coquitlam Central Station/ Rocklin



175 Coquitlam Central Station/ Meridian

N

TRANSLINK

Coast Mountain Bus Company

January 2020

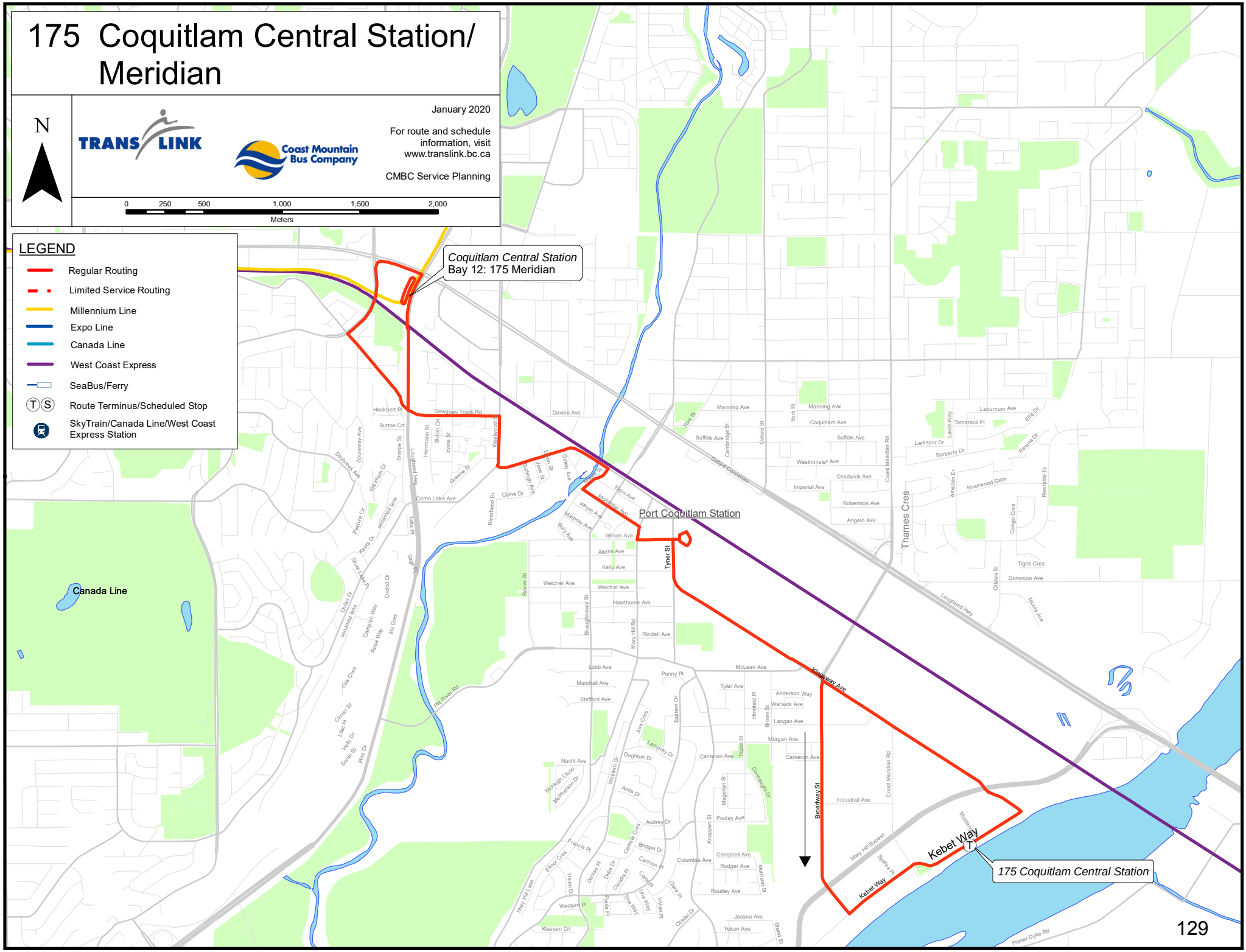
For route and schedule information, visit www.translink.bc.ca

CMBC Service Planning

0 250 500 1,000 1,500 2,000
Meters

LEGEND

- Regular Routing
- Limited Service Routing
- Millennium Line
- Expo Line
- Canada Line
- West Coast Express
- SeaBus/Ferry
- Route Terminus/Scheduled Stop
- SkyTrain/Canada Line/West Coast Express Station



Appendix C
Turning Movement Count Summary Sheets

Vehicle Classification Summary

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain

Time Period	Entering Intersection	Vehicle Classification					Total
		Passenger Cars	Heavy Vehicles (3 or more axles)				
Morning (07:00 - 09:00)	Volume	3,547	29				**3,576**
	%	99.2%	0.8%				**100.0%**
Midday (00:00 - 00:00)	Volume						
	%						
Afternoon (15:00 - 18:00)	Volume	6,940	11				**6,951**
	%	99.8%	0.2%				**100.0%**
Total (5 Hours)	**Volume**	**10,487**	**40**				**10,527**
	%	**99.6%**	**0.4%**				**100.0%**

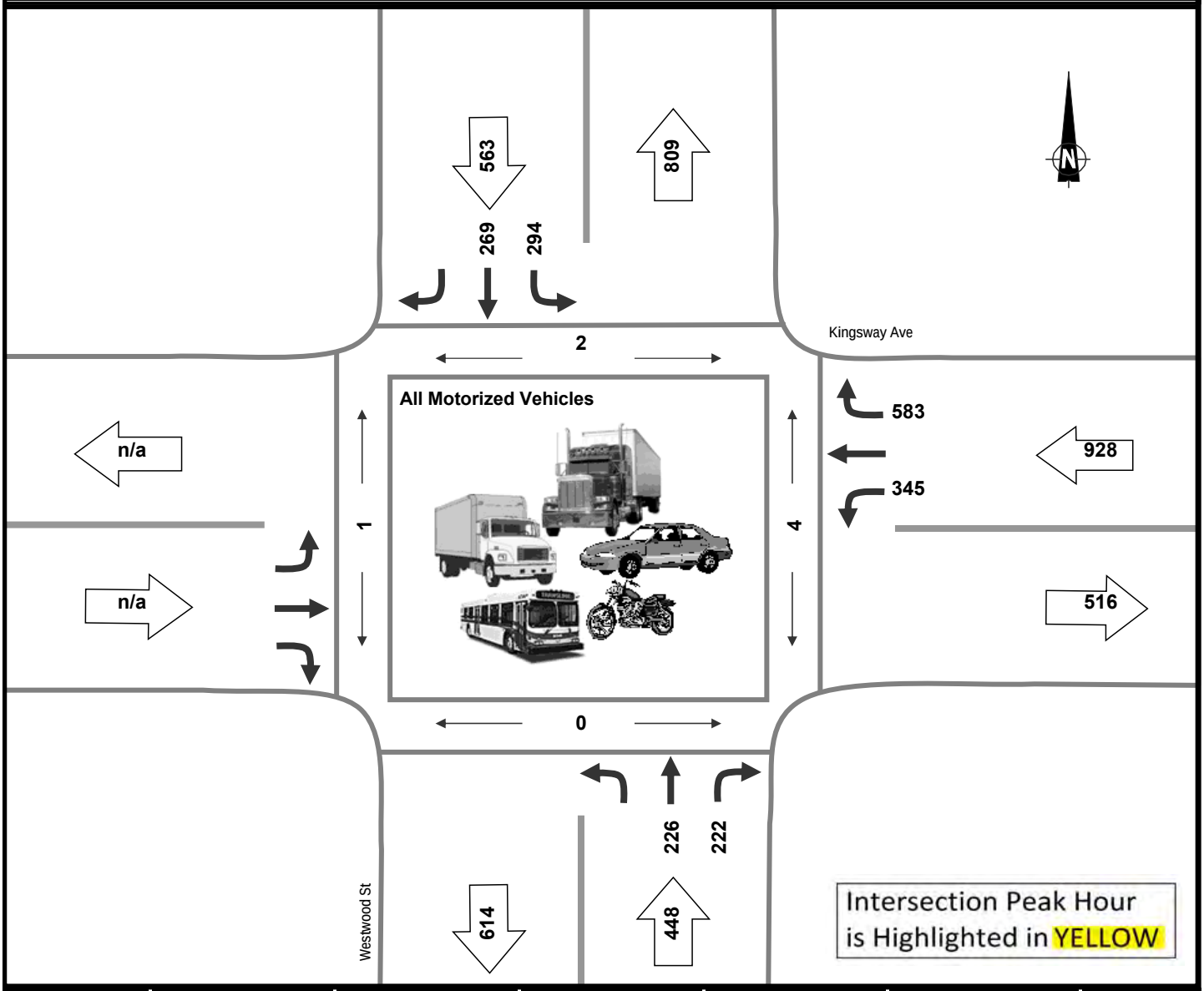
Westwood St & Kingsway Ave

Tuesday, January 21, 2020

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: All Motorized Vehicles

Peak Hour Traffic by Movement 8:00 AM to 9:00 AM

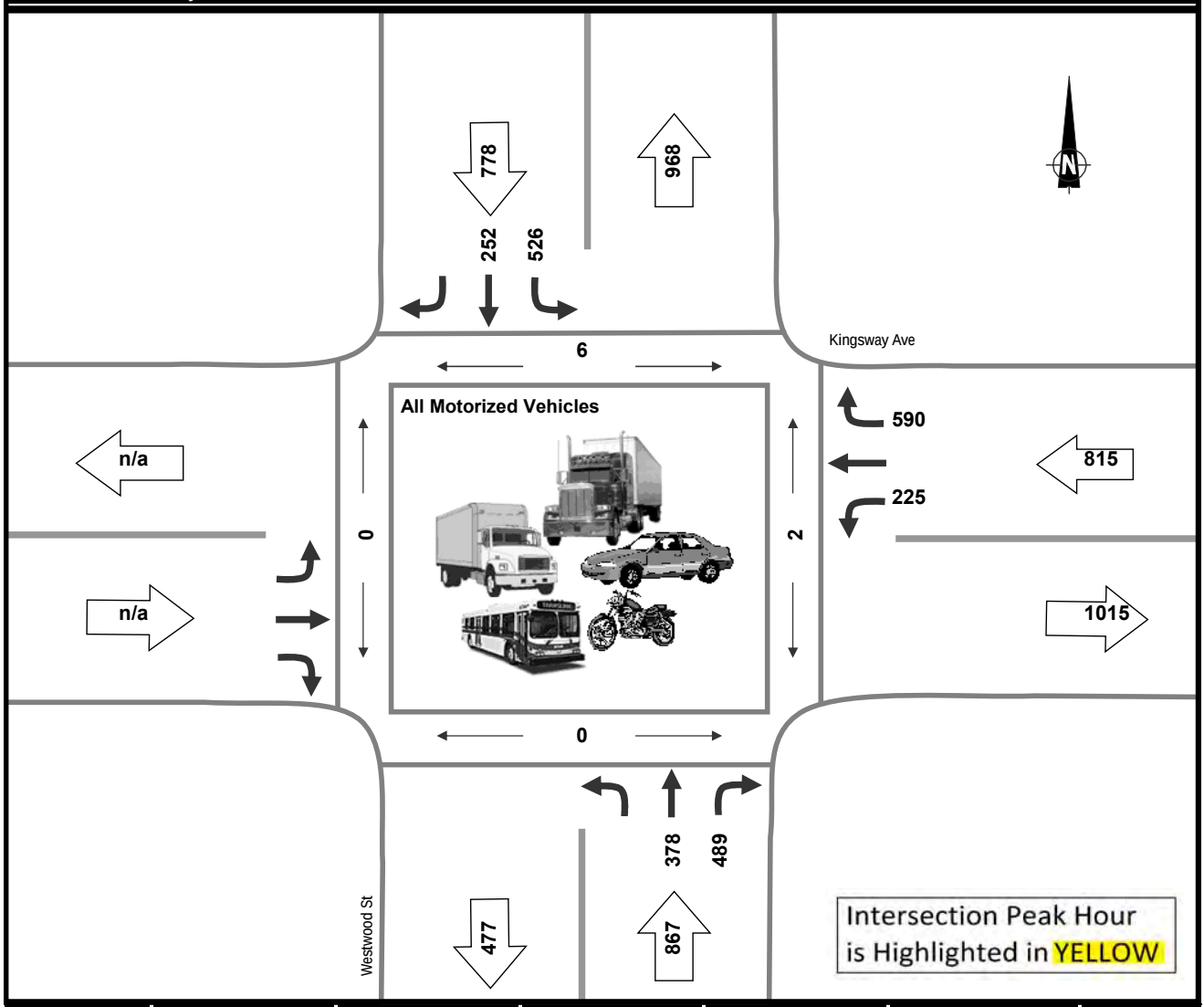


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	**294**	**269**			**226**	**222**				**345**		**583**	**2**	**0**	**1**	**4**	**1,939**
PHF	0.80	0.93			0.82	0.82				0.85		0.92	0.25	0.00	0.25	0.33	0.94
Peak 15 X 4	368	288			276	272				404		632	8	0	4	12	2,068
Average Hour	280	291			166	209				353		490	2	0	1	3	1,789
Survey Total	560	582			332	417				706		979	4	0	1	6	3,576
7:00	43	45			24	36				76		80	0	0	0	0	304
7:15	66	102			17	45				85		90	0	0	0	0	405
7:30	63	70			31	52				103		106	0	0	0	0	425
7:45	94	96			34	62				97		120	2	0	0	2	503
8:00	56	67			50	53				94		149	0	0	0	0	469
8:15	75	67			54	61				101		147	0	0	0	1	505
8:30	71	63			53	40				63		158	2	0	0	3	448
8:45	92	72			69	68				87		129	0	0	1	0	517

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: All Motorized Vehicles

Peak Hour Traffic by Movement 4:30 PM to 5:30 PM



Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	**526**	**252**			**378**	**489**				**225**		**590**	**6**	**0**	**0**	**2**	**2,460**
PHF	0.94	0.98			0.90	0.85				0.91		0.80	0.75	0.00	0.00	0.25	0.99
Peak 15 X 4	560	256			420	576				248		736	8	0	0	8	2,488
Average Hour	502	217			362	470				204		562	7	0	0	5	2,317
Survey Total	1,506	650			1,087	1,410				611		1,687	20	0	0	15	6,951
15:00	120	60			77	92				33		124	1	0	0	2	506
15:15	115	44			94	96				56		144	1	0	0	0	549
15:30	106	44			94	128				64		145	0	0	0	0	581
15:45	144	54			89	127				46		158	2	0	0	1	618
16:00	115	54			87	110				57		126	4	0	0	1	549
16:15	141	53			91	132				42		136	1	0	0	0	595
16:30	128	61			87	106				47		184	1	0	0	2	613
16:45	140	64			90	135				61		132	2	0	0	0	622
17:00	127	64			105	104				62		141	1	0	0	0	603
17:15	131	63			96	144				55		133	2	0	0	0	622
17:30	115	47			101	113				53		164	2	0	0	1	593
17:45	124	42			76	123				35		100	3	0	0	8	500

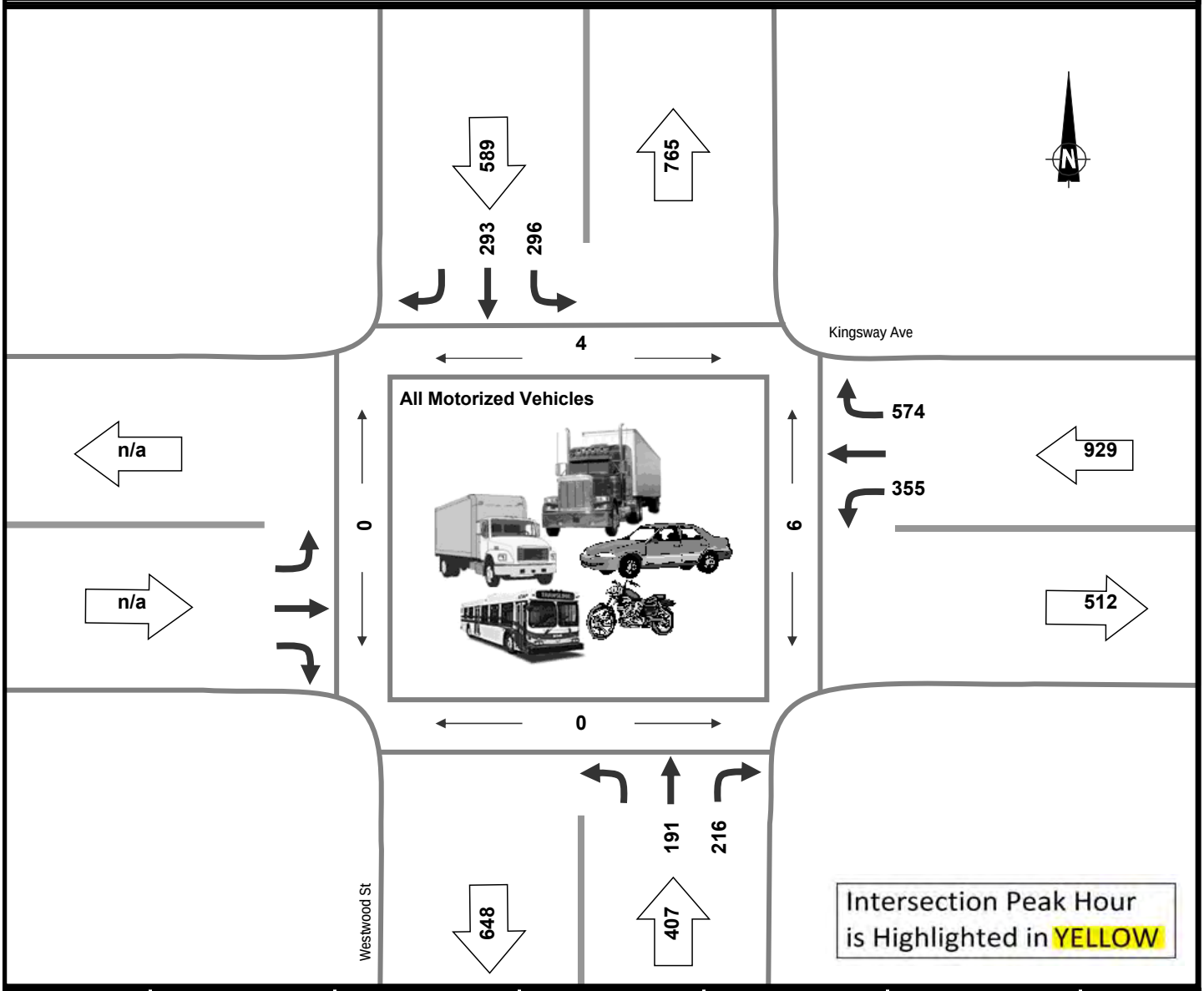
Westwood St & Kingsway Ave

Tuesday, January 21, 2020

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: All Motorized Vehicles
Note: Shifted Peak Hour

Peak Hour Traffic by Movement 7:45 AM to 8:45 AM

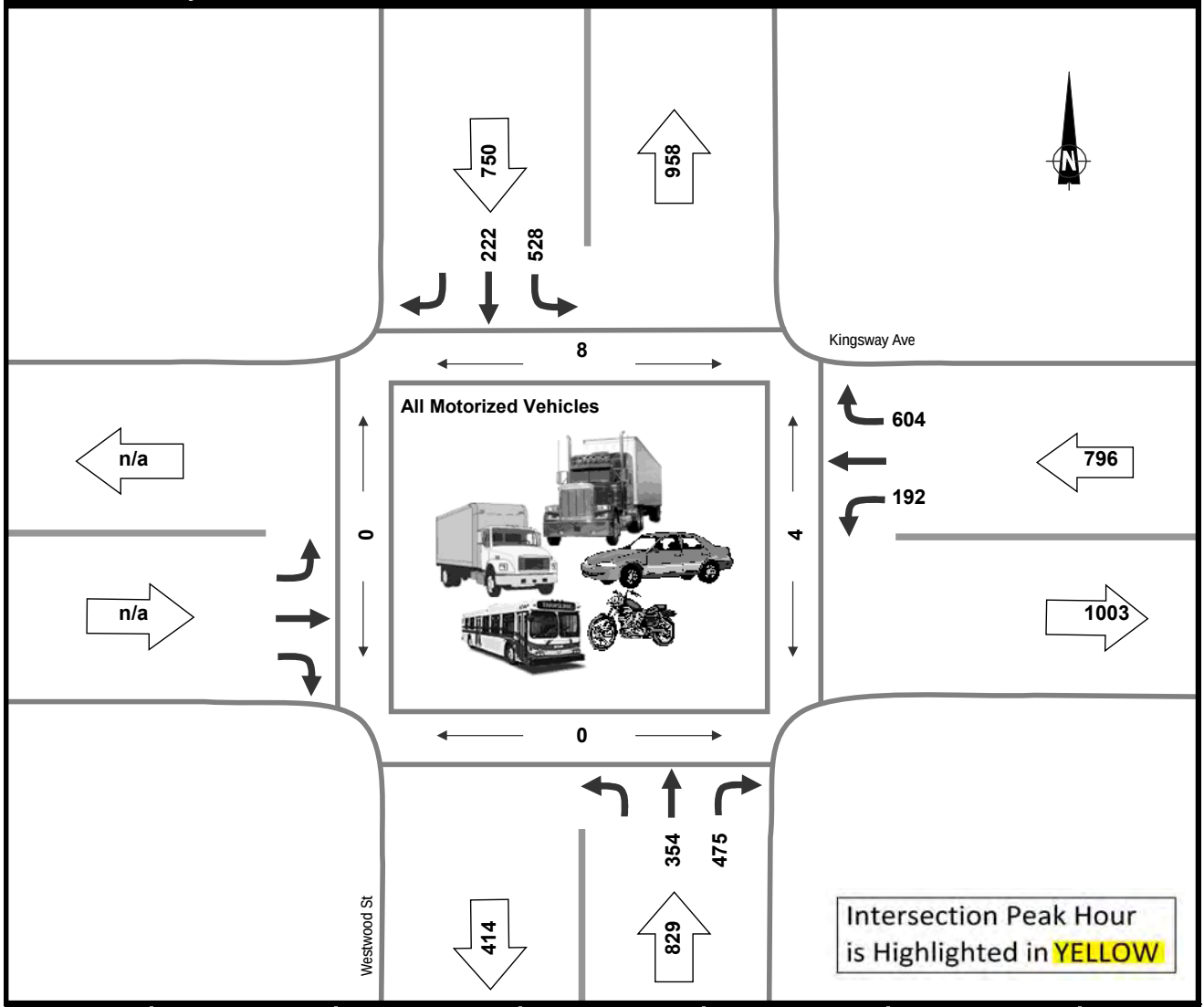


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	**296**	**293**			**191**	**216**				**355**		**574**	**4**	**0**	**0**	**6**	**1,925**
PHF	0.79	0.76			0.88	0.87				0.88		0.91	0.50	0.00	0.00	0.50	0.95
Peak 15 X 4	376	384			216	248				404		632	8	0	0	12	2,020
Average Hour	280	291			166	209				353		490	2	0	1	3	1,789
Survey Total	560	582			332	417				706		979	4	0	1	6	3,576
7:00	43	45			24	36				76		80	0	0	0	0	304
7:15	66	102			17	45				85		90	0	0	0	0	405
7:30	63	70			31	52				103		106	0	0	0	0	425
7:45	94	96			34	62				97		120	2	0	0	2	503
8:00	56	67			50	53				94		149	0	0	0	0	469
8:15	75	67			54	61				101		147	0	0	0	1	505
8:30	71	63			53	40				63		158	2	0	0	3	448
8:45	92	72			69	68				87		129	0	0	1	0	517

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: All Motorized Vehicles
Note: Shifted Peak Hour

Peak Hour Traffic by Movement 3:45 PM to 4:45 PM



Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	**528**	**222**			**354**	**475**				**192**		**604**	**8**	**0**	**0**	**4**	**2,375**
PHF	0.92	0.91			0.97	0.90				0.84		0.82	0.50	0.00	0.00	0.50	0.96
Peak 15 X 4	576	244			364	528				228		736	16	0	0	8	2,472
Average Hour	502	217			362	470				204		562	7	0	0	5	2,317
Survey Total	1,506	650			1,087	1,410				611		1,687	20	0	0	15	6,951
15:00	120	60			77	92				33		124	1	0	0	2	506
15:15	115	44			94	96				56		144	1	0	0	0	549
15:30	106	44			94	128				64		145	0	0	0	0	581
15:45	144	54			89	127				46		158	2	0	0	1	618
16:00	115	54			87	110				57		126	4	0	0	1	549
16:15	141	53			91	132				42		136	1	0	0	0	595
16:30	128	61			87	106				47		184	1	0	0	2	613
16:45	140	64			90	135				61		132	2	0	0	0	622
17:00	127	64			105	104				62		141	1	0	0	0	603
17:15	131	63			96	144				55		133	2	0	0	0	622
17:30	115	47			101	113				53		164	2	0	0	1	593
17:45	124	42			76	123				35		100	3	0	0	8	500

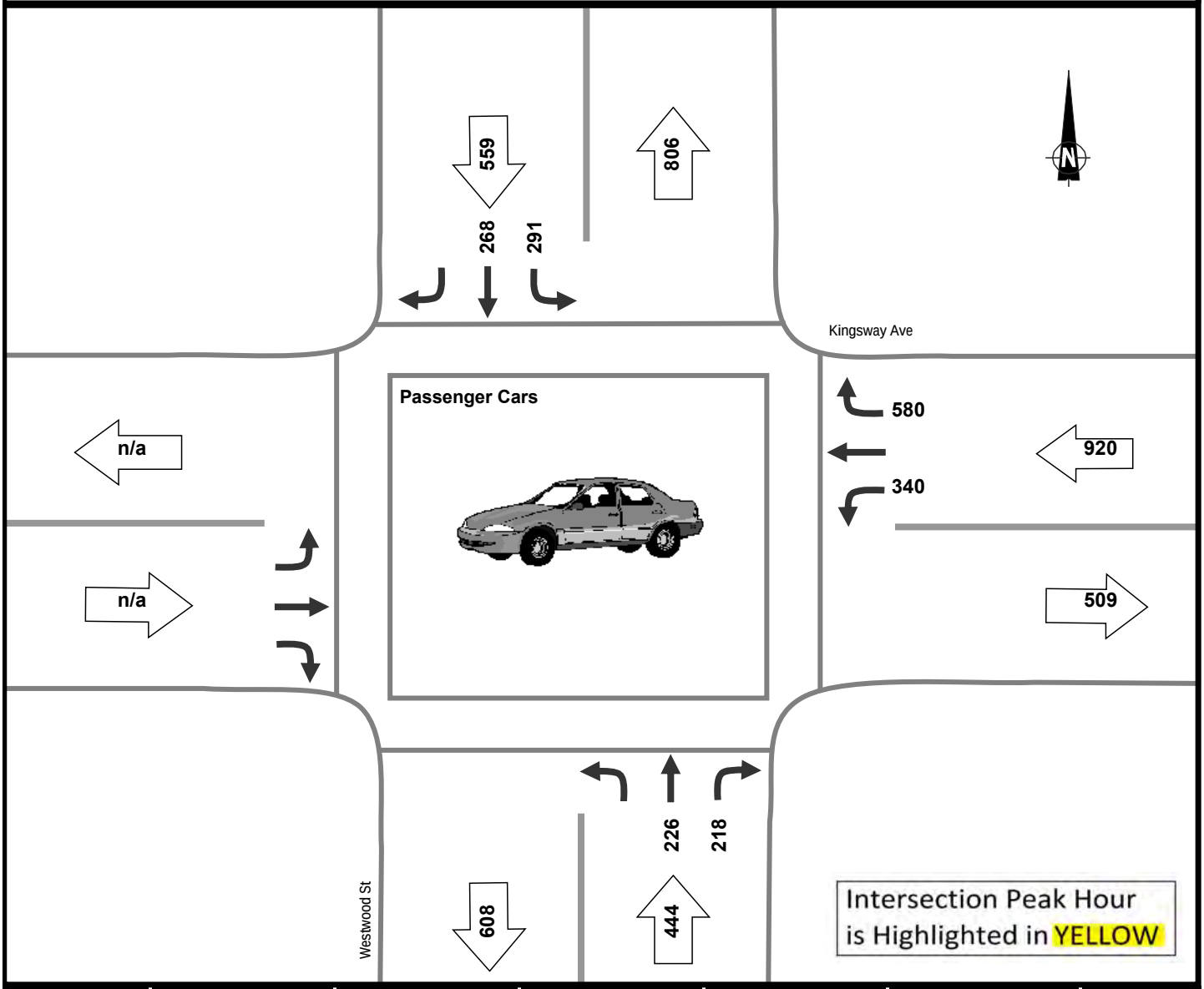
Westwood St & Kingsway Ave

Tuesday, January 21, 2020

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Passenger Cars

Peak Hour Traffic by Movement 8:00 AM to 9:00 AM



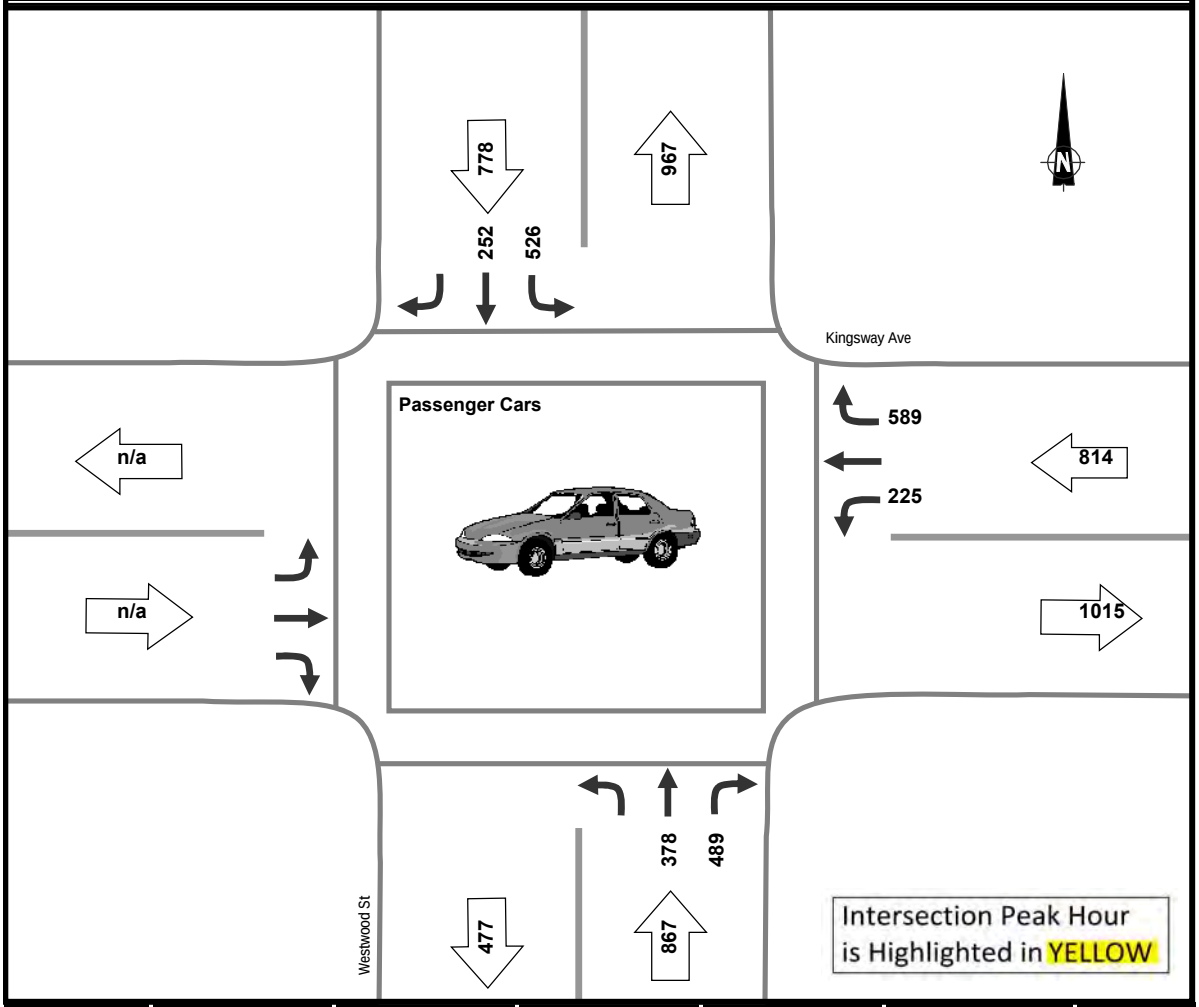
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	**291**	**268**			**226**	**218**				**340**		**580**					**1,923**
PHF	0.80	0.93			0.82	0.80				0.85		0.92					0.94
Peak 15 X 4	364	288			276	272				400		628					2,056
Average Hour	278	290			166	205				349		487					1,775
Survey Total	556	580			332	409				697		973					3,547
7:00	43	44			24	35				74		79					299
7:15	66	102			17	45				84		90					404
7:30	62	70			31	52				102		105					422
7:45	94	96			34	59				97		119					499
8:00	55	67			50	51				93		148					464
8:15	75	66			54	60				100		146					501
8:30	70	63			53	39				62		157					444
8:45	91	72			69	68				85		129					514

Westwood St & Kingsway Ave
Tuesday, January 21, 2020

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Passenger Cars

Peak Hour Traffic by Movement 4:30 PM to 5:30 PM

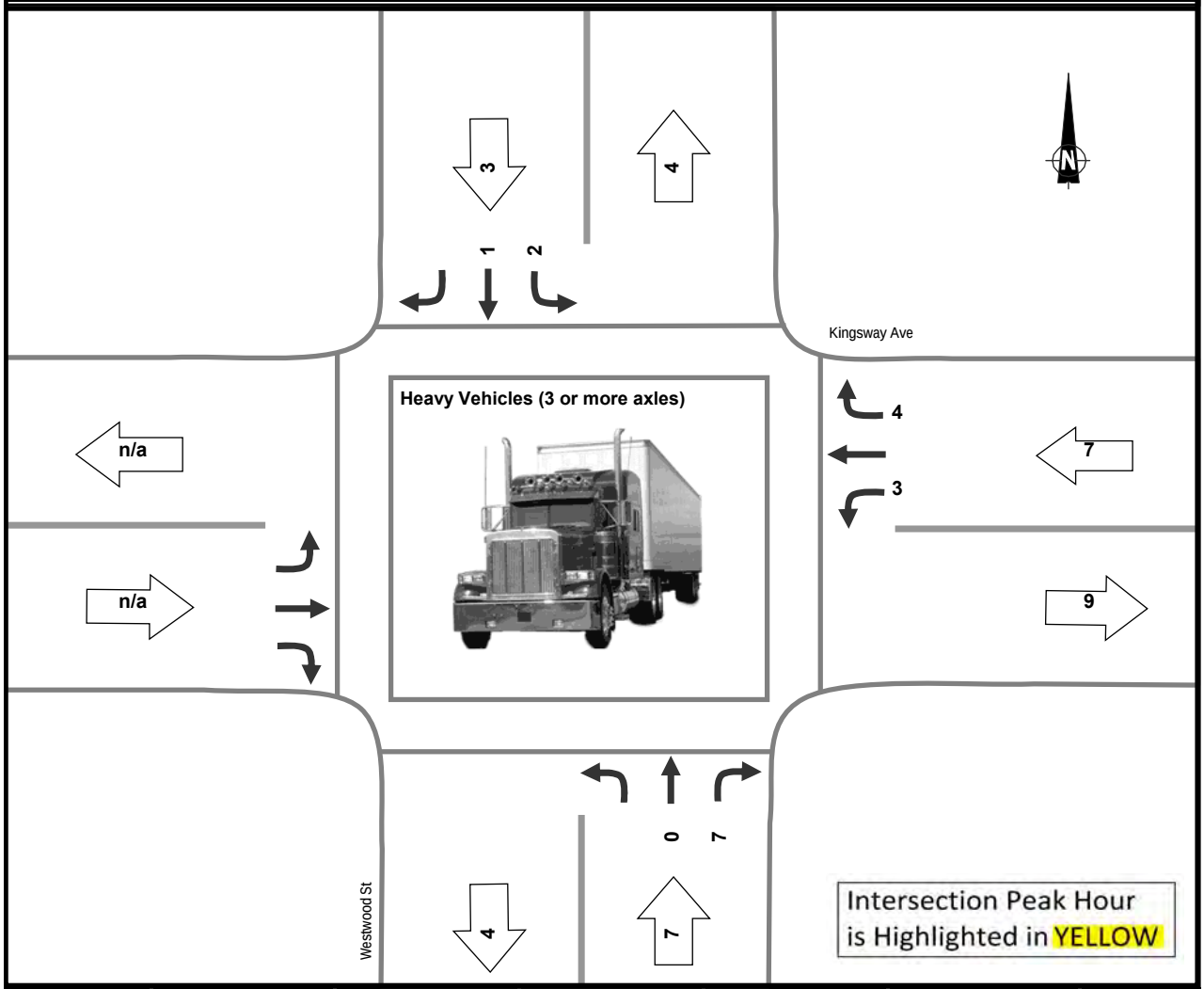


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	**526**	**252**			**378**	**489**				**225**		**589**					**2,459**
PHF	0.94	0.98			0.90	0.85				0.91		0.80					0.99
Peak 15 X 4	560	256			420	576				248		736					2,488
Average Hour	502	217			361	470				203		561					2,314
Survey Total	1,505	650			1,084	1,409				610		1,682					6,940
15:00	120	60			77	92				33		124					506
15:15	115	44			91	95				56		143					544
15:30	106	44			94	128				64		144					580
15:45	144	54			89	127				46		158					618
16:00	114	54			87	110				57		125					547
16:15	141	53			91	132				42		135					594
16:30	128	61			87	106				47		184					613
16:45	140	64			90	135				61		132					622
17:00	127	64			105	104				62		140					602
17:15	131	63			96	144				55		133					622
17:30	115	47			101	113				53		164					593
17:45	124	42			76	123				34		100					499

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Heavy Vehicles (3 or more axles)

Peak Hour Traffic by Movement 7:45 AM to 8:45 AM

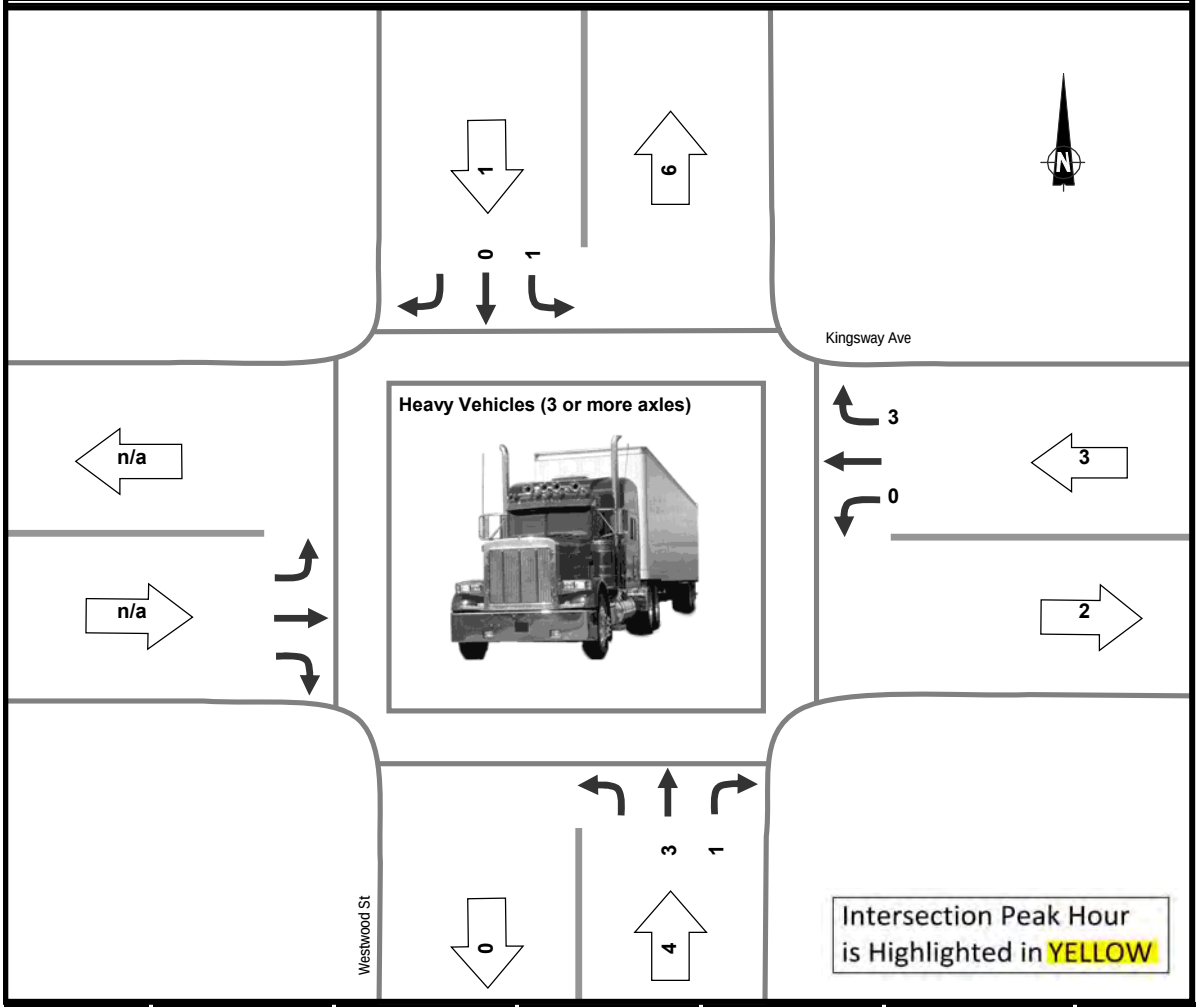


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	**2**	**1**			**0**	**7**				**3**		**4**					**17**
PHF	0.50	0.25			0.00	0.58				0.75		1.00					0.85
Peak 15 X 4	4	4			0	12				4		4					20
Average Hour	2	1			0	4				5		3					15
Survey Total	4	2			0	8				9		6					29
7:00	0	1			0	1				2		1					5
7:15	0	0			0	0				1		0					1
7:30	1	0			0	0				1		1					3
7:45	0	0			0	3				0		1					4
8:00	1	0			0	2				1		1					5
8:15	0	1			0	1				1		1					4
8:30	1	0			0	1				1		1					4
8:45	1	0			0	0				2		0					3

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Heavy Vehicles (3 or more axles)

Peak Hour Traffic by Movement 3:15 PM to 4:15 PM

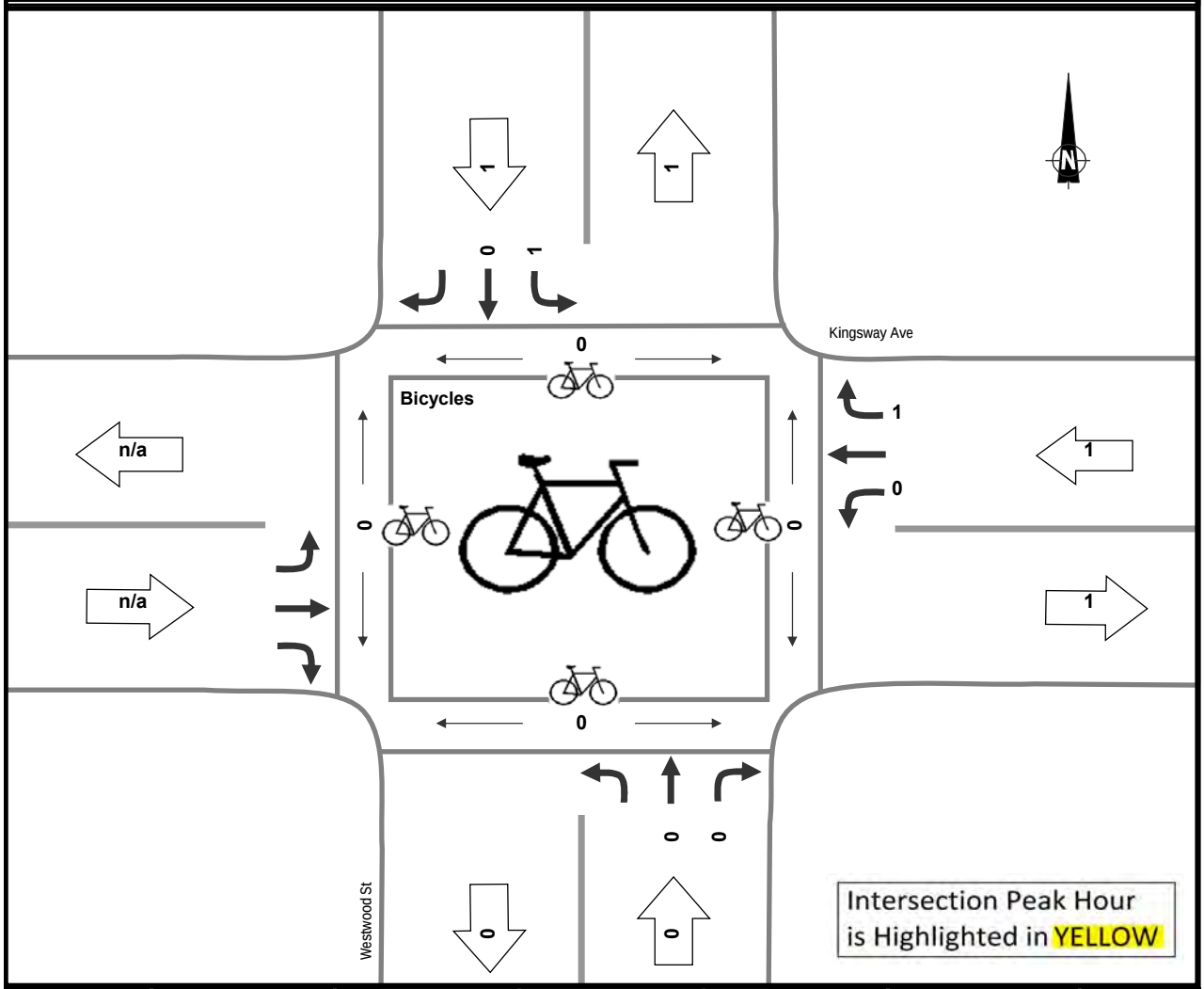


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	**1**	**0**			**3**	**1**				**0**		**3**					**8**
PHF	0.25	0.00			0.25	0.25				0.00		0.75					0.40
Peak 15 X 4	4	0			12	4				0		4					20
Average Hour	0	0			1	0				0		2					3
Survey Total	1	0			3	1				1		5					11
15:00	0	0			0	0				0		0					0
15:15	0	0			3	1				0		1					5
15:30	0	0			0	0				0		1					1
15:45	0	0			0	0				0		0					0
16:00	1	0			0	0				0		1					2
16:15	0	0			0	0				0		1					1
16:30	0	0			0	0				0		0					0
16:45	0	0			0	0				0		0					0
17:00	0	0			0	0				0		1					1
17:15	0	0			0	0				0		0					0
17:30	0	0			0	0				0		0					0
17:45	0	0			0	0				1		0					1

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Bicycles

Peak Hour Traffic by Movement 8:00 AM to 9:00 AM

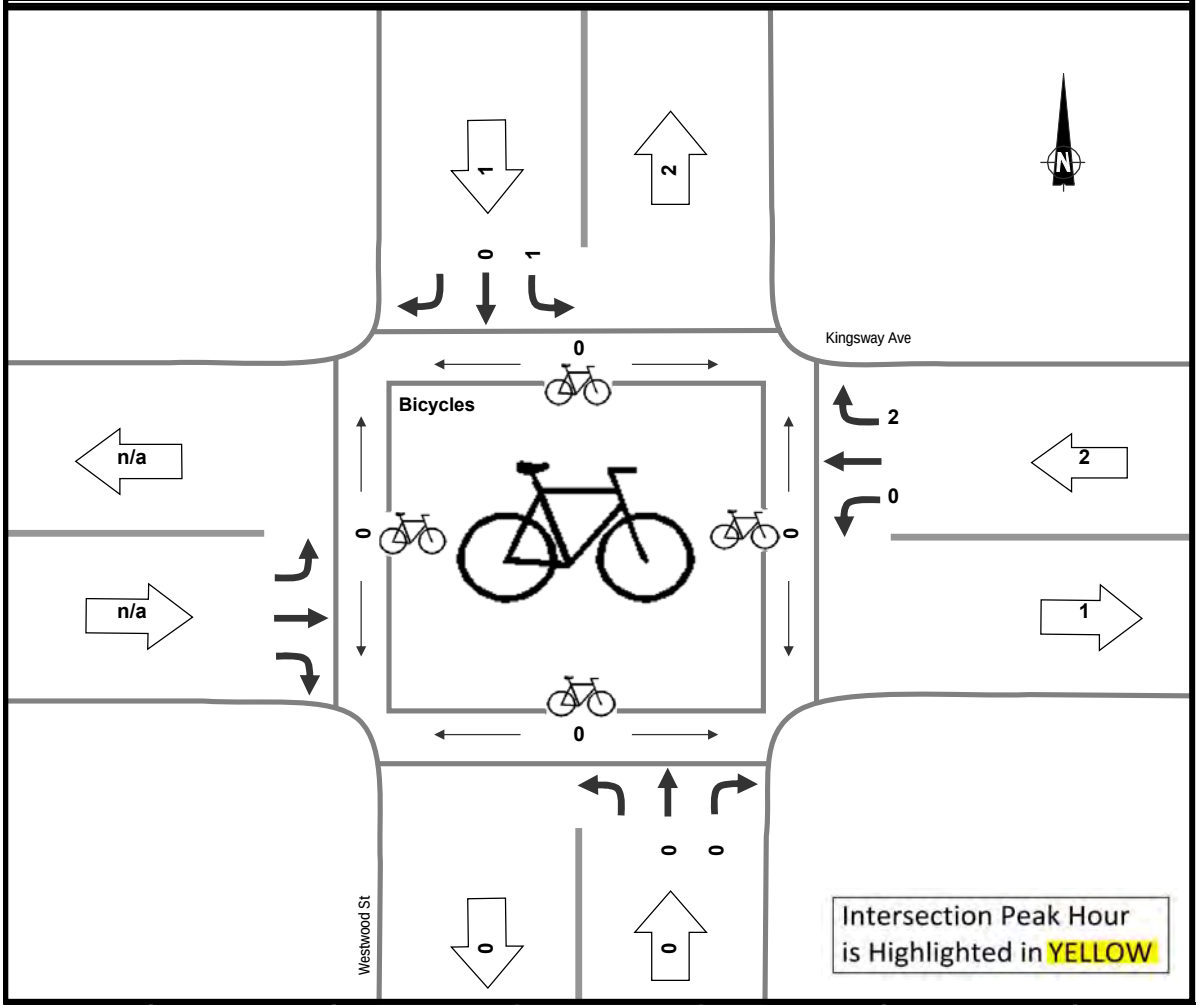


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			BIKES IN X-WALK				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	**1**	**0**			**0**	**0**				**0**		**1**	**0**	**0**	**0**	**0**	**2**
PHF	0.25	0.00			0.00	0.00				0.00		0.25	0.00	0.00	0.00	0.00	0.50
Peak 15 X 4	4	0			0	0				0		4	0	0	0	0	4
Average Hour	1	0			0	0				0		1	0	0	0	0	2
Survey Total	1	0			0	0				0		1	0	0	0	0	2
7:00	0	0			0	0				0		0	0	0	0	0	0
7:15	0	0			0	0				0		0	0	0	0	0	0
7:30	0	0			0	0				0		0	0	0	0	0	0
7:45	0	0			0	0				0		0	0	0	0	0	0
8:00	0	0			0	0				0		0	0	0	0	0	0
8:15	0	0			0	0				0		1	0	0	0	0	1
8:30	0	0			0	0				0		0	0	0	0	0	0
8:45	1	0			0	0				0		0	0	0	0	0	1

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Bicycles

Peak Hour Traffic by Movement 3:30 PM to 4:30 PM



Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			BIKES IN X-WALK				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	**1**	**0**			**0**	**0**				**0**		**2**	**0**	**0**	**0**	**0**	**3**
PHF	0.25	0.00			0.00	0.00				0.00		0.50	0.00	0.00	0.00	0.00	0.38
Peak 15 X 4	4	0			0	0				0		4	0	0	0	0	8
Average Hour	0	0			0	1				0		1	0	0	0	0	2
Survey Total	1	0			0	2				0		2	0	0	0	0	5
15:00	0	0			0	0				0		0	0	0	0	0	0
15:15	0	0			0	0				0		0	0	0	0	0	0
15:30	1	0			0	0				0		1	0	0	0	0	2
15:45	0	0			0	0				0		0	0	0	0	0	0
16:00	0	0			0	0				0		0	0	0	0	0	0
16:15	0	0			0	0				0		1	0	0	0	0	1
16:30	0	0			0	1				0		0	0	0	0	0	1
16:45	0	0			0	0				0		0	0	0	0	0	0
17:00	0	0			0	0				0		0	0	0	0	0	0
17:15	0	0			0	1				0		0	0	0	0	0	1
17:30	0	0			0	0				0		0	0	0	0	0	0
17:45	0	0			0	0				0		0	0	0	0	0	0

Vehicle Classification Summary

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain

Time Period	Entering Intersection	Vehicle Classification					Total
		Passenger Cars	Heavy Vehicles (3 or more axles)				
Morning (07:00 - 09:00)	Volume	2,669	29				**2,698**
	%	98.9%	1.1%				**100.0%**
Midday (00:00 - 00:00)	Volume						
	%						
Afternoon (15:00 - 18:00)	Volume	5,542	11				**5,553**
	%	99.8%	0.2%				**100.0%**
Total (5 Hours)	**Volume**	**8,211**	**40**				**8,251**
	%	**99.5%**	**0.5%**				**100.0%**

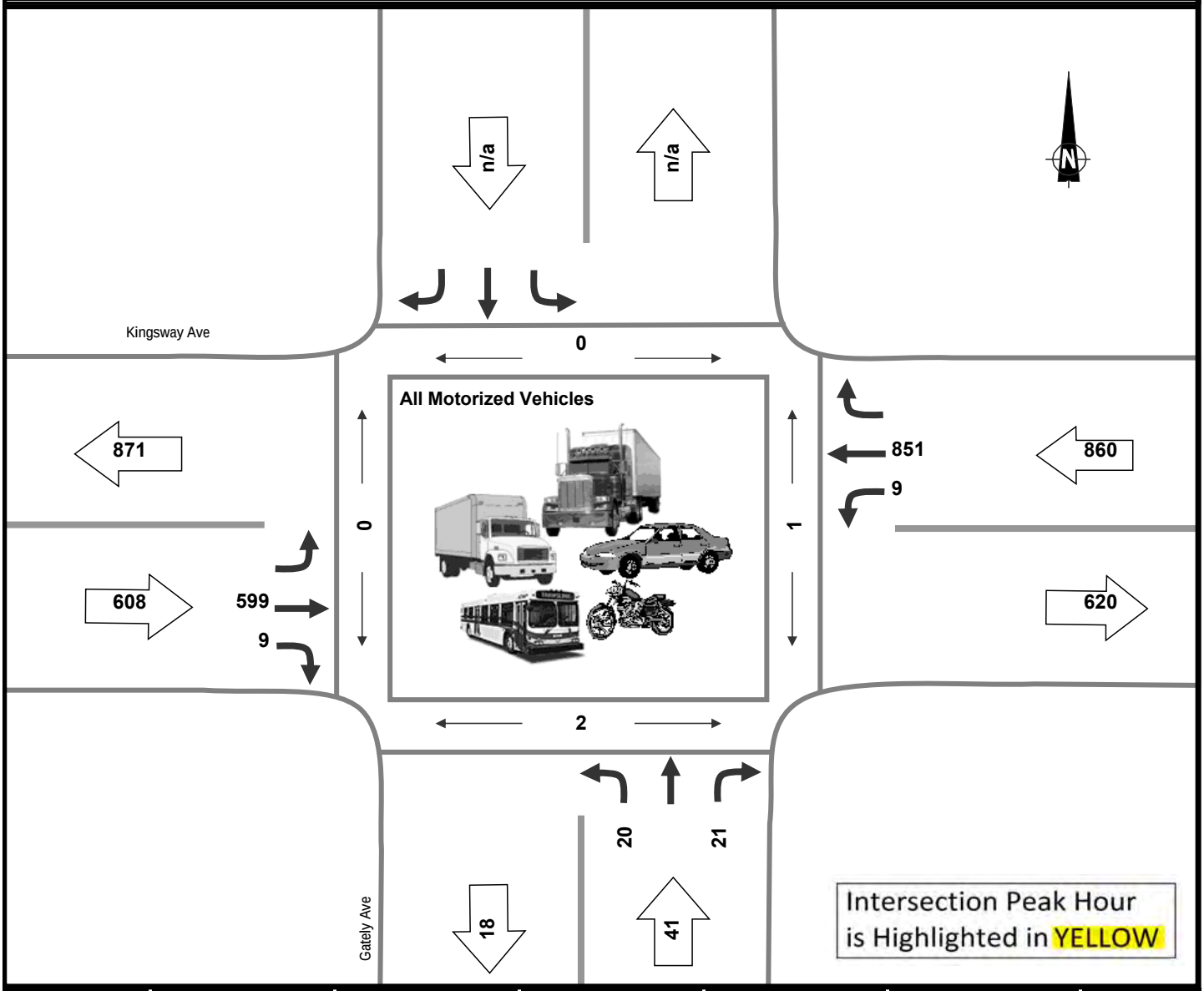
Gately Ave & Kingsway Ave

Tuesday, January 21, 2020

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: All Motorized Vehicles

Peak Hour Traffic by Movement 7:45 AM to 8:45 AM

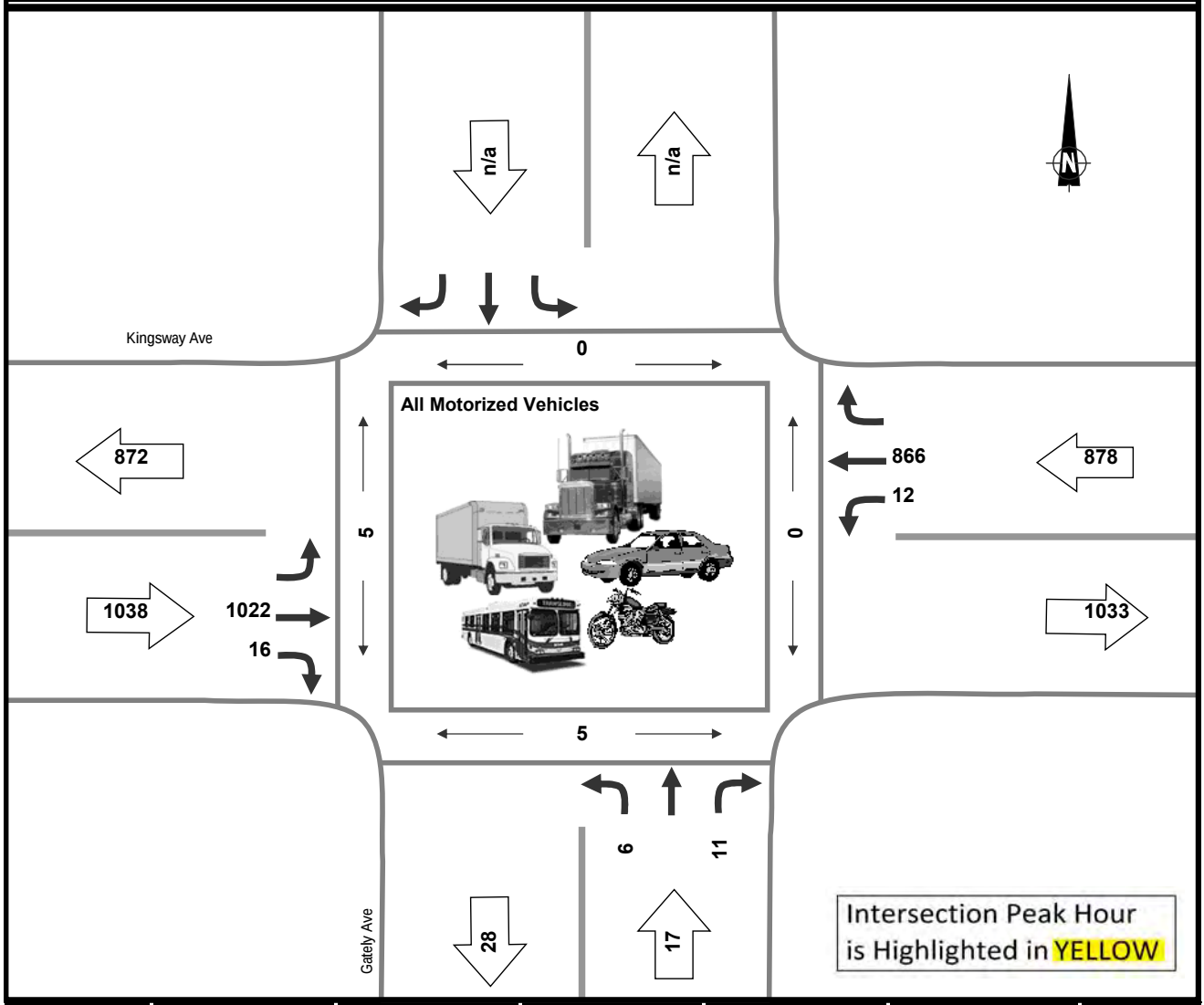


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**20**		**21**		**599**	**9**	**9**	**851**		**0**	**2**	**0**	**1**	**1,509**
PHF				0.83		0.75		0.83	0.75	0.75	0.97		0.00	0.50	0.00	0.25	0.92
Peak 15 X 4				24		28		724	12	12	880		0	4	0	4	1,640
Average Hour				15		16		541	9	10	761		1	3	1	1	1,352
Survey Total				29		31		1,081	17	19	1,521		1	6	1	1	2,698
7:00				2		1		79	2	3	134		0	1	0	0	221
7:15				3		4		116	5	2	145		0	1	0	0	275
7:30				1		3		117	0	4	185		1	0	0	0	310
7:45				6		7		181	3	3	210		0	1	0	0	410
8:00				3		6		118	1	1	220		0	0	0	0	349
8:15				5		1		157	2	3	202		0	0	0	0	370
8:30				6		7		143	3	2	219		0	1	0	1	380
8:45				3		2		170	1	1	206		0	2	1	0	383

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: All Motorized Vehicles

Peak Hour Traffic by Movement 3:45 PM to 4:45 PM

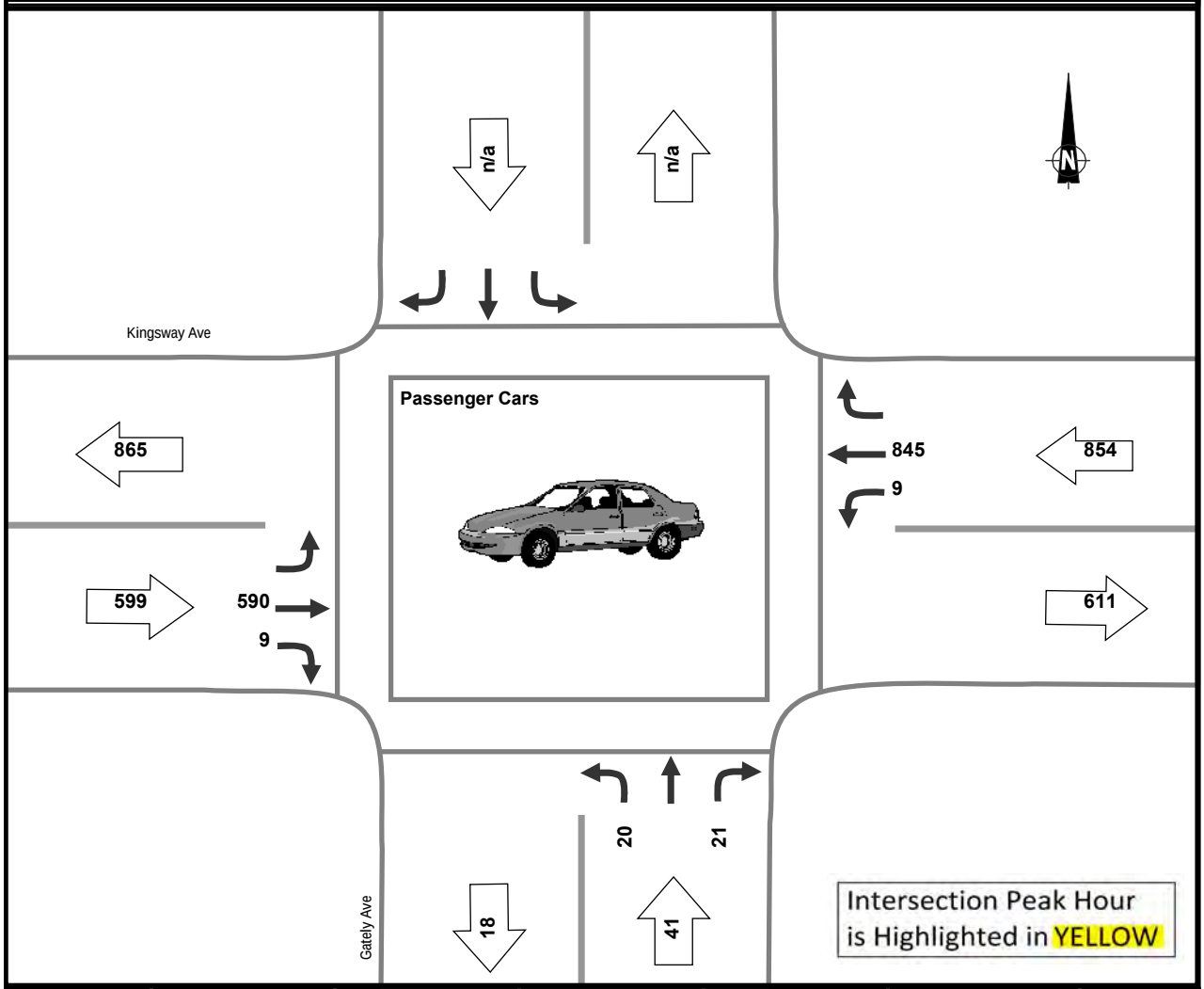


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**6**		**11**		**1022**	**16**	**12**	**866**		**0**	**5**	**5**	**0**	**1,933**
PHF				0.50		0.69		0.89	0.67	0.43	0.87		0.00	0.31	0.63	0.00	0.90
Peak 15 X 4				12		16		1,148	24	28	1,000		0	16	8	0	2,140
Average Hour				5		10		961	16	17	842		0	4	4	0	1,851
Survey Total				14		29		2,882	49	52	2,527		1	13	12	1	5,553
15:00				2		2		204	4	9	186		0	3	2	0	407
15:15				1		2		207	2	3	244		1	2	0	0	459
15:30				1		0		232	5	5	210		0	0	0	0	453
15:45				0		0		287	6	2	240		0	0	2	0	535
16:00				3		4		242	4	1	193		0	0	0	0	447
16:15				1		3		245	5	2	183		0	1	2	0	439
16:30				2		4		248	1	7	250		0	4	1	0	512
16:45				0		0		246	7	1	207		0	2	3	0	461
17:00				1		5		230	3	8	210		0	0	0	1	457
17:15				1		3		246	2	5	215		0	0	0	0	472
17:30				1		2		266	10	6	221		0	0	1	0	506
17:45				1		4		229	0	3	168		0	1	1	0	405

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Passenger Cars

Peak Hour Traffic by Movement 7:45 AM to 8:45 AM

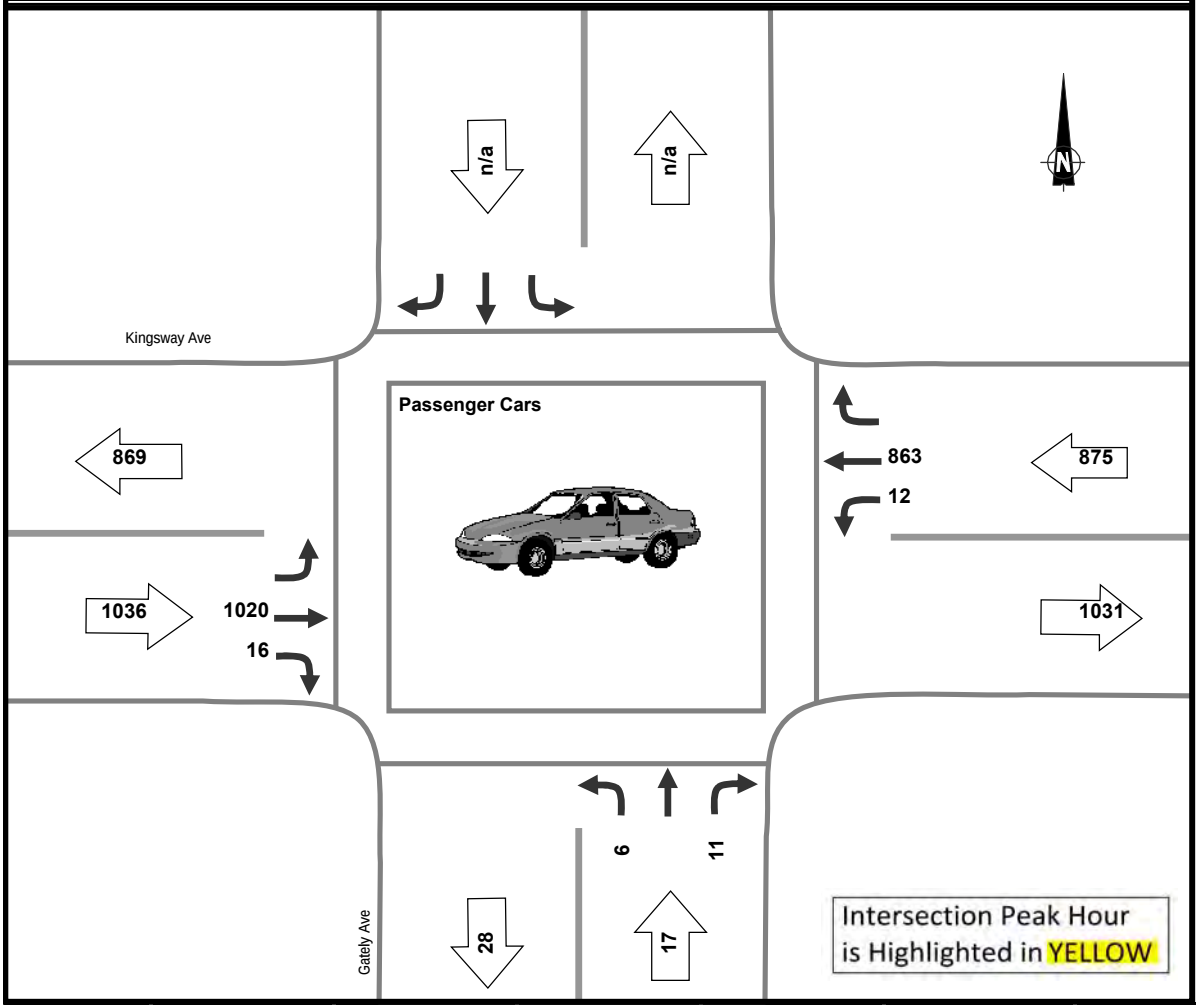


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**20**		**21**		**590**	**9**	**9**	**845**						**1,494**
PHF				0.83		0.75		0.83	0.75	0.75	0.96						0.92
Peak 15 X 4				24		28		708	12	12	876						1,620
Average Hour				15		16		534	9	10	753						1,337
Survey Total				29		31		1,067	17	19	1,506						2,669
7:00				2		1		79	2	3	130						217
7:15				3		4		114	5	2	143						271
7:30				1		3		116	0	4	183						307
7:45				6		7		177	3	3	209						405
8:00				3		6		115	1	1	219						345
8:15				5		1		156	2	3	200						367
8:30				6		7		142	3	2	217						377
8:45				3		2		168	1	1	205						380

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Passenger Cars

Peak Hour Traffic by Movement 3:45 PM to 4:45 PM

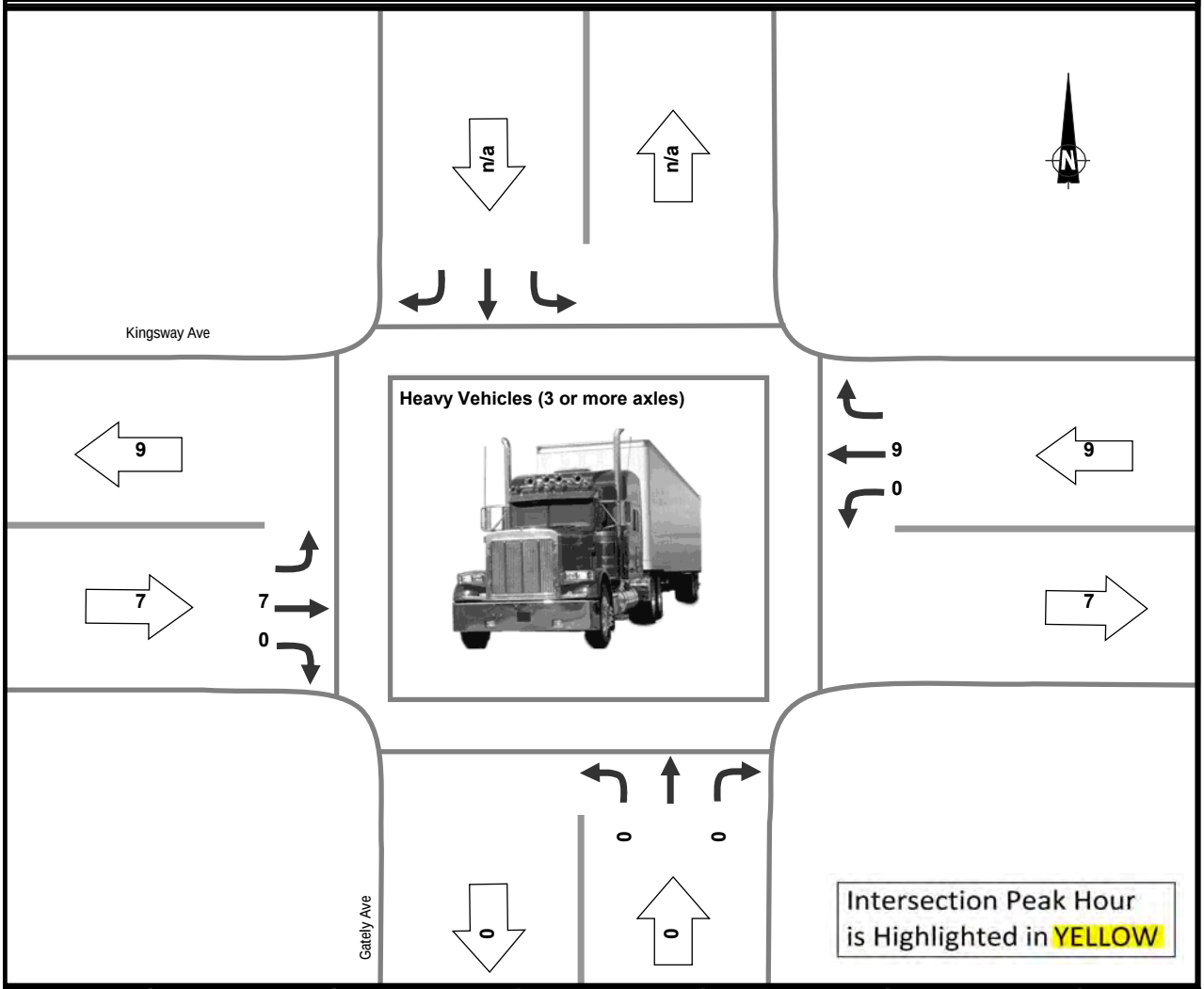


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**6**		**11**		**1020**	**16**	**12**	**863**						**1,928**
PHF				0.50		0.69		0.89	0.67	0.43	0.86						0.90
Peak 15 X 4				12		16		1,144	24	28	1,000						2,136
Average Hour				5		10		960	16	17	840						1,848
Survey Total				14		29		2,879	49	52	2,519						5,542
15:00				2		2		204	4	9	185						406
15:15				1		2		206	2	3	243						457
15:30				1		0		232	5	5	209						452
15:45				0		0		286	6	2	240						534
16:00				3		4		241	4	1	191						444
16:15				1		3		245	5	2	182						438
16:30				2		4		248	1	7	250						512
16:45				0		0		246	7	1	207						461
17:00				1		5		230	3	8	209						456
17:15				1		3		246	2	5	215						472
17:30				1		2		266	10	6	221						506
17:45				1		4		229	0	3	167						404

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Heavy Vehicles (3 or more axles)

Peak Hour Traffic by Movement 7:00 AM to 8:00 AM

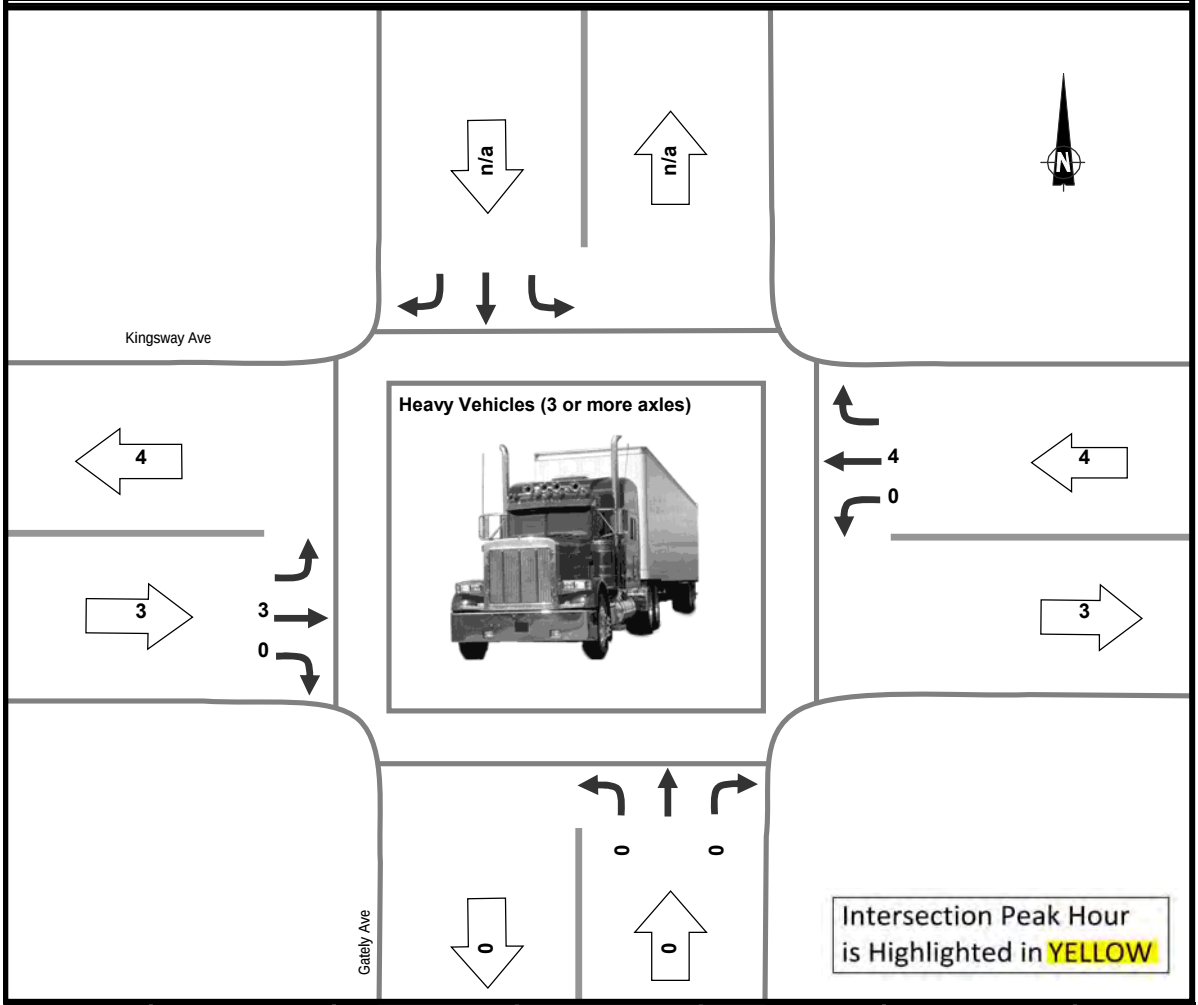


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**0**		**0**		**7**	**0**	**0**	**9**						**16**
PHF				0.00		0.00		0.44	0.00	0.00	0.56						0.80
Peak 15 X 4				0		0		16	0	0	16						20
Average Hour				0		0		7	0	0	8						15
Survey Total				0		0		14	0	0	15						29
7:00				0		0		0	0	0	4						4
7:15				0		0		2	0	0	2						4
7:30				0		0		1	0	0	2						3
7:45				0		0		4	0	0	1						5
8:00				0		0		3	0	0	1						4
8:15				0		0		1	0	0	2						3
8:30				0		0		1	0	0	2						3
8:45				0		0		2	0	0	1						3

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Heavy Vehicles (3 or more axles)

Peak Hour Traffic by Movement 3:15 PM to 4:15 PM

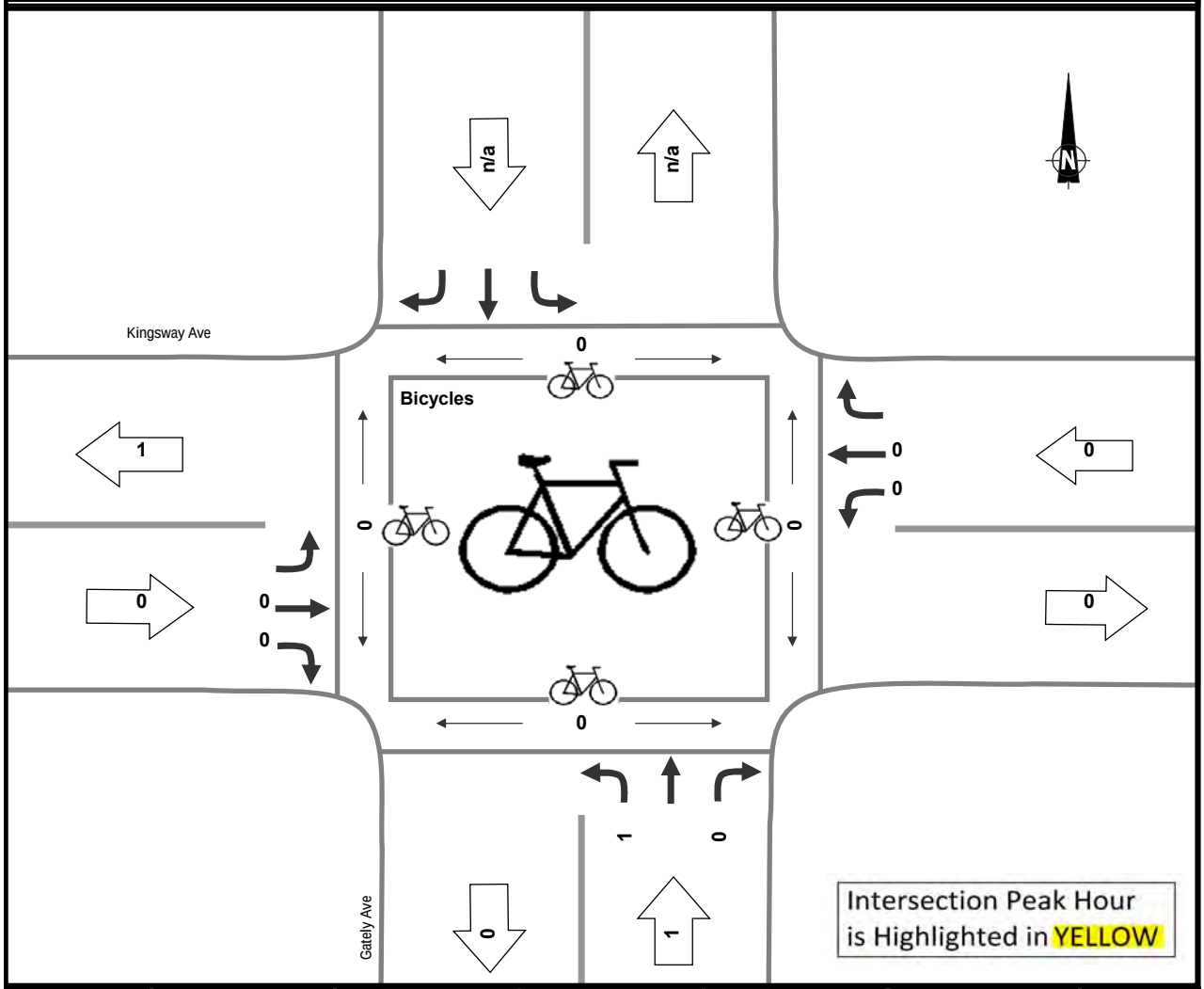


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**0**		**0**		**3**	**0**	**0**	**4**						**7**
PHF				0.00		0.00		0.75	0.00	0.00	0.50						0.58
Peak 15 X 4				0		0		4	0	0	8						12
Average Hour				0		0		1	0	0	3						4
Survey Total				0		0		3	0	0	8						11
15:00				0		0		0	0	0	1						1
15:15				0		0		1	0	0	1						2
15:30				0		0		0	0	0	1						1
15:45				0		0		1	0	0	0						1
16:00				0		0		1	0	0	2						3
16:15				0		0		0	0	0	1						1
16:30				0		0		0	0	0	0						0
16:45				0		0		0	0	0	0						0
17:00				0		0		0	0	0	1						1
17:15				0		0		0	0	0	0						0
17:30				0		0		0	0	0	0						0
17:45				0		0		0	0	0	1						1

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Bicycles

Peak Hour Traffic by Movement 7:30 AM to 8:30 AM

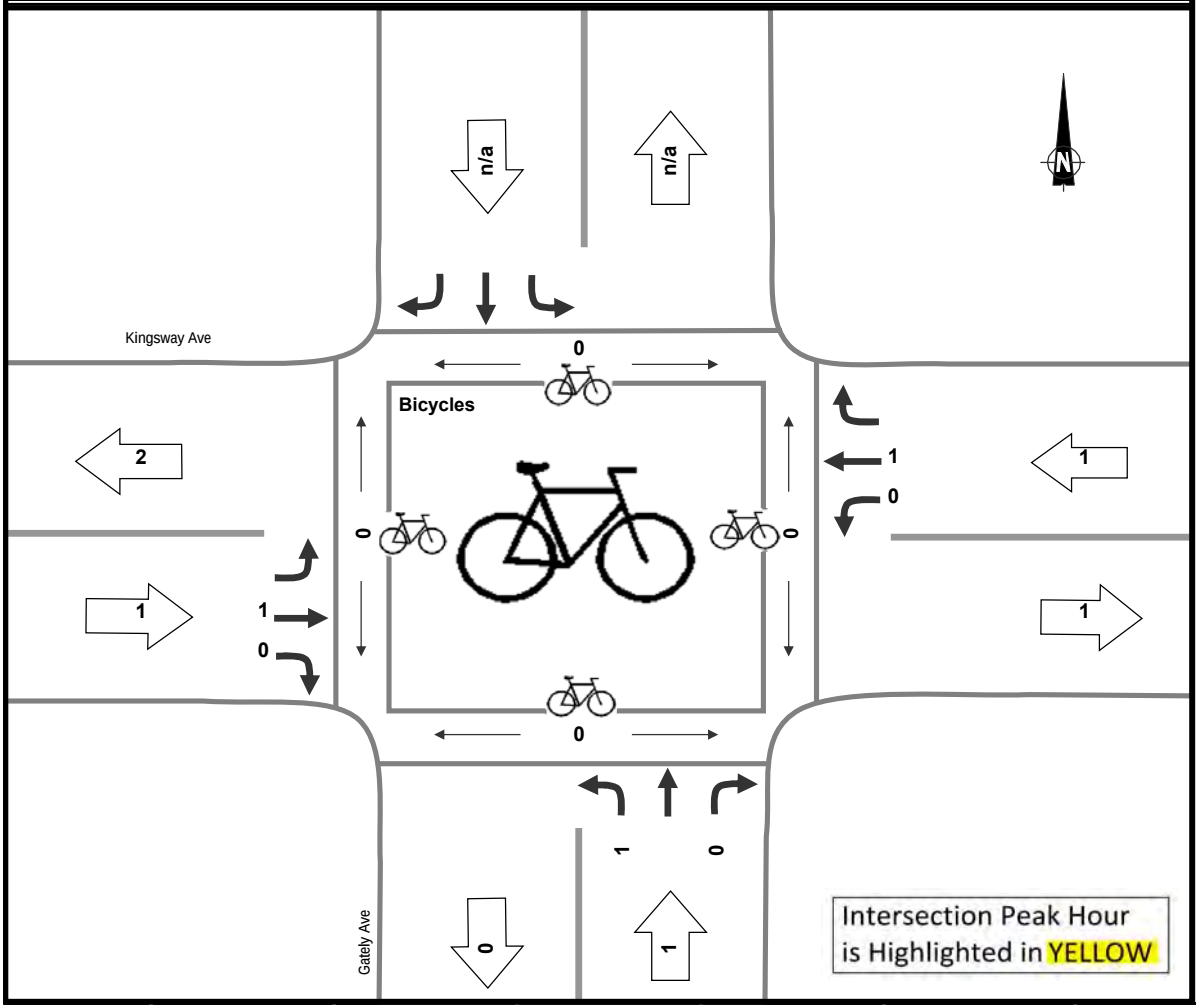


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			BIKES IN X-WALK				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**1**		**0**		**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**	**1**
PHF				0.25		0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.25
Peak 15 X 4				4		0		0	0	0	0		0	0	0	0	4
Average Hour				1		0		0	0	0	0		0	0	0	0	1
Survey Total				1		0		0	0	0	0		0	0	0	0	1
7:00				0		0		0	0	0	0		0	0	0	0	0
7:15				0		0		0	0	0	0		0	0	0	0	0
7:30				0		0		0	0	0	0		0	0	0	0	0
7:45				0		0		0	0	0	0		0	0	0	0	0
8:00				0		0		0	0	0	0		0	0	0	0	0
8:15				1		0		0	0	0	0		0	0	0	0	1
8:30				0		0		0	0	0	0		0	0	0	0	0
8:45				0		0		0	0	0	0		0	0	0	0	0

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Bicycles

Peak Hour Traffic by Movement 3:30 PM to 4:30 PM



Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			BIKES IN X-WALK				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**1**		**0**		**1**	**0**	**0**	**1**		**0**	**0**	**0**	**0**	**3**
PHF				0.25		0.00		0.25	0.00	0.00	0.25		0.00	0.00	0.00	0.00	0.38
Peak 15 X 4				4		0		4	0	0	4		0	0	0	0	8
Average Hour				1		0		1	0	0	1		0	0	0	0	3
Survey Total				2		0		2	0	0	2		0	0	0	0	6
15:00				0		0		0	0	0	0		0	0	0	0	0
15:15				0		0		0	0	0	0		0	0	0	0	0
15:30				0		0		1	0	0	0		0	0	0	0	1
15:45				0		0		0	0	0	0		0	0	0	0	0
16:00				0		0		0	0	0	0		0	0	0	0	0
16:15				1		0		0	0	0	1		0	0	0	0	2
16:30				1		0		0	0	0	0		0	0	0	0	1
16:45				0		0		0	0	0	0		0	0	0	0	0
17:00				0		0		0	0	0	0		0	0	0	0	0
17:15				0		0		1	0	0	0		0	0	0	0	1
17:30				0		0		0	0	0	0		0	0	0	0	0
17:45				0		0		0	0	0	1		0	0	0	0	1

Vehicle Classification Summary

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain

Time Period	Entering Intersection	Vehicle Classification					Total
		Passenger Cars	Heavy Vehicles (3 or more axles)				
Morning (07:00 - 09:00)	Volume	2,682	31				**2,713**
	%	98.9%	1.1%				**100.0%**
Midday (00:00 - 00:00)	Volume	0	0				**0**
	%	0.0%	0.0%				**#DIV/0!**
Afternoon (15:00 - 18:00)	Volume	5,617	11				**5,628**
	%	99.8%	0.2%				**100.0%**
Total (5 Hours)	**Volume**	**8,299**	**42**				**8,341**
	%	**99.5%**	**0.5%**				**100.0%**

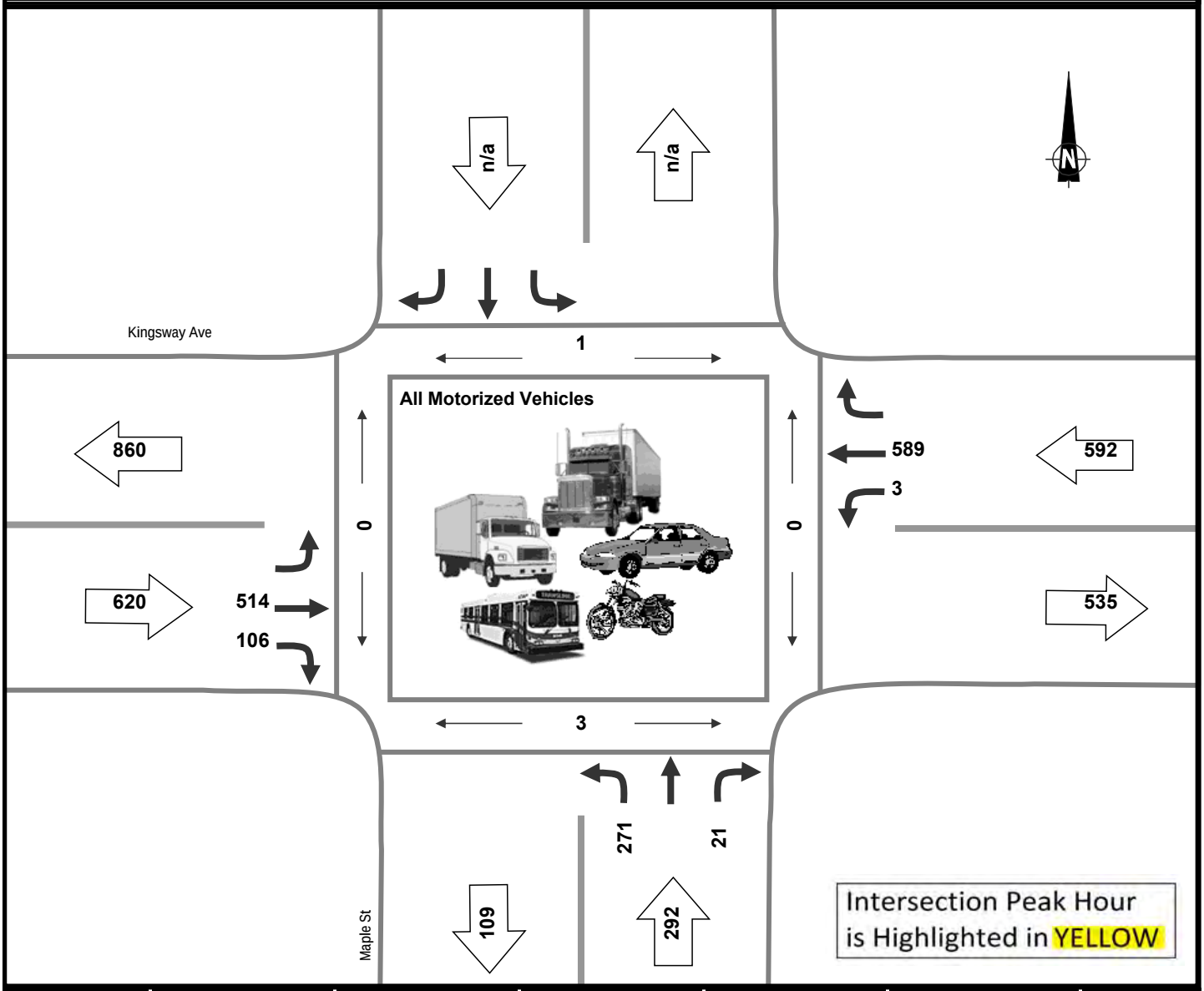
Maple St & Kingsway Ave

Tuesday, January 21, 2020

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: All Motorized Vehicles

Peak Hour Traffic by Movement 7:45 AM to 8:45 AM

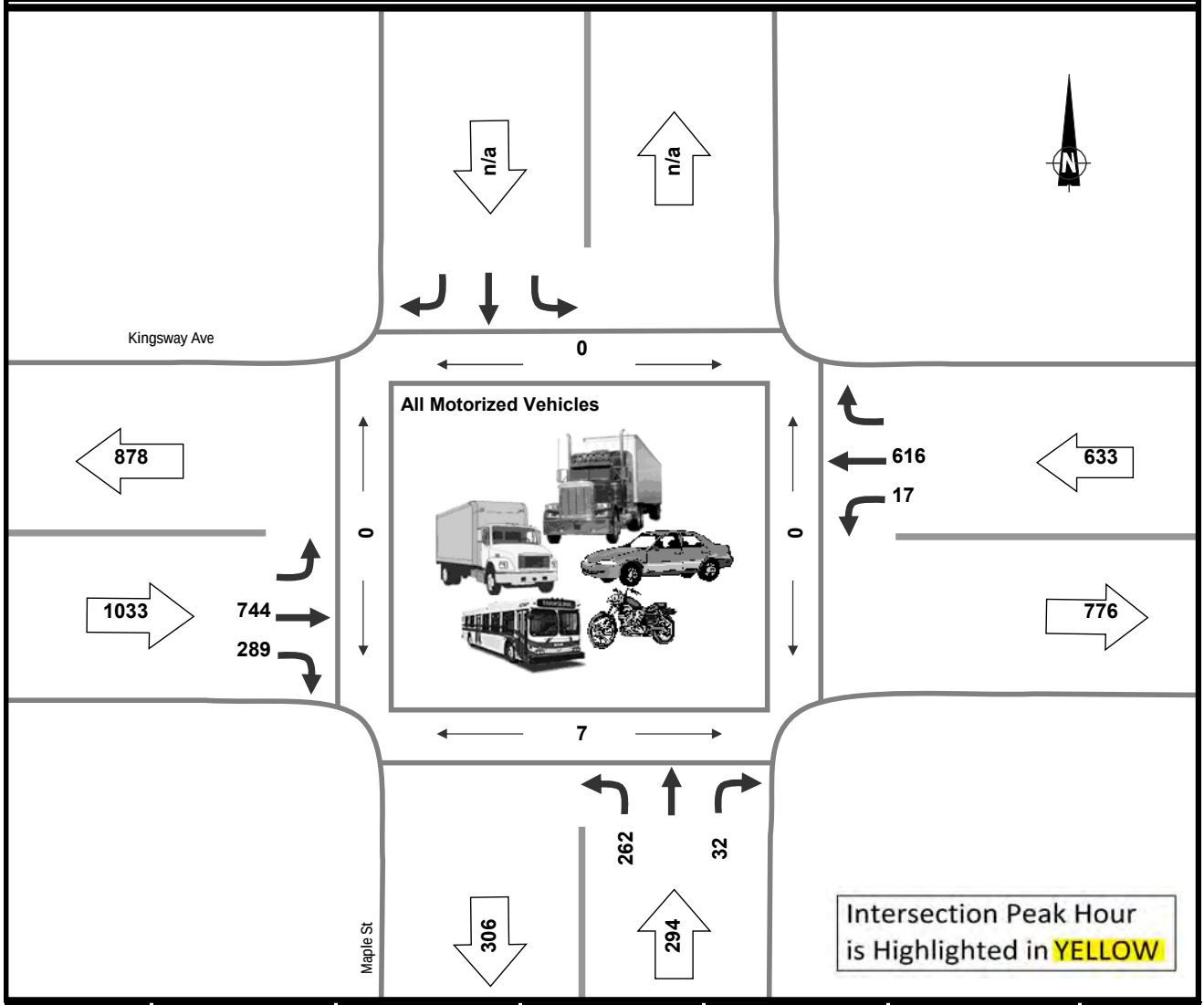


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**271**		**21**		**514**	**106**	**3**	**589**		**1**	**3**	**0**	**0**	**1,504**
PHF				0.89		0.53		0.76	0.60	0.75	0.93		0.25	0.75	0.00	0.00	0.91
Peak 15 X 4				304		40		672	176	4	636		4	4	0	0	1,648
Average Hour				262		24		460	96	7	509		1	4	0	0	1,358
Survey Total				523		48		920	192	13	1,017		1	8	0	0	2,713
7:00				49		2		66	14	2	88		0	0	0	0	221
7:15				63		8		105	15	2	84		0	3	0	0	277
7:30				68		6		100	20	4	121		0	1	0	0	319
7:45				54		10		168	20	1	159		1	1	0	0	412
8:00				74		1		107	17	0	147		0	1	0	0	346
8:15				67		6		133	25	1	138		0	0	0	0	370
8:30				76		4		106	44	1	145		0	1	0	0	376
8:45				72		11		135	37	2	135		0	1	0	0	392

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: All Motorized Vehicles

Peak Hour Traffic by Movement 3:45 PM to 4:45 PM

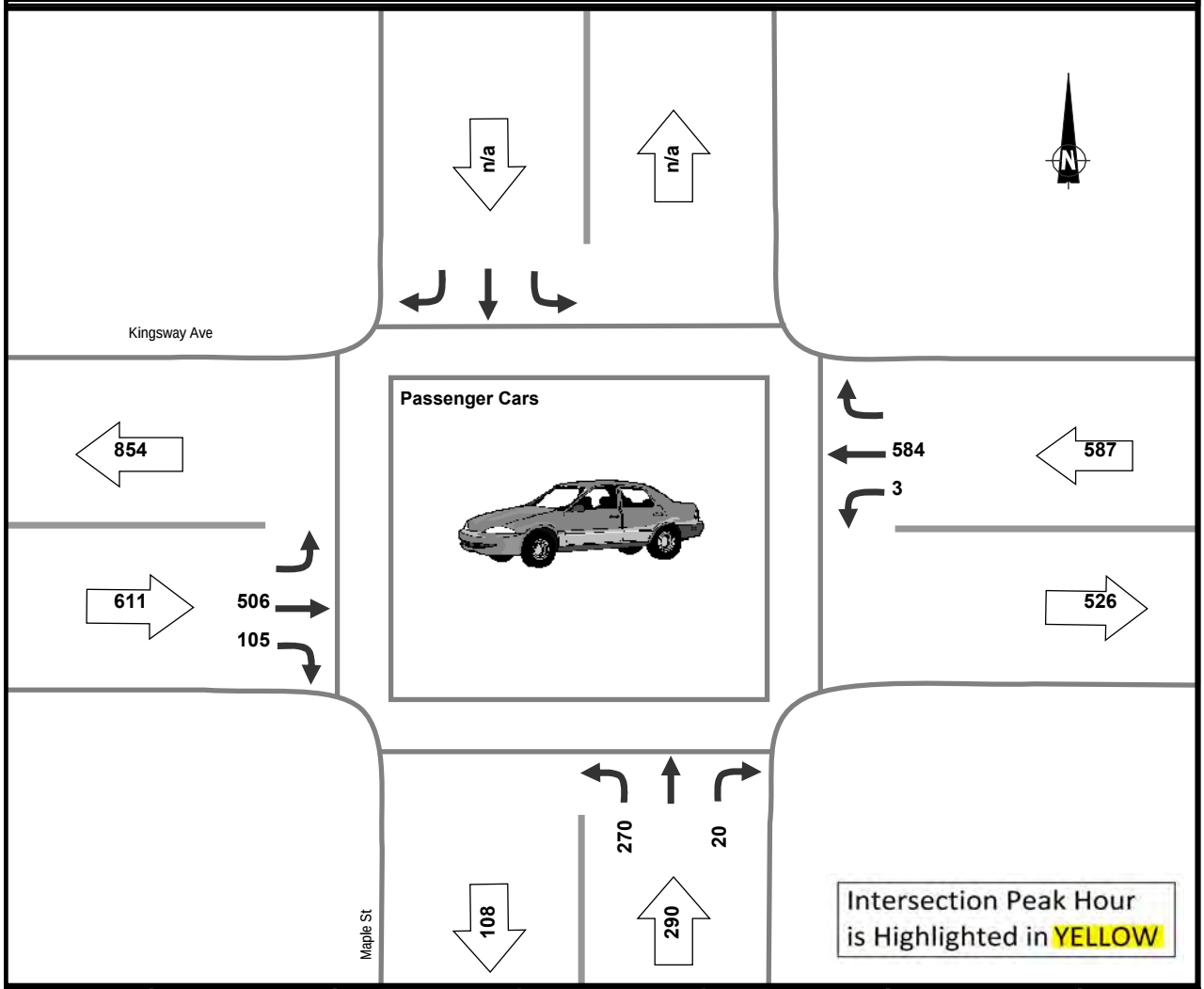


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**262**		**32**		**744**	**289**	**17**	**616**		**0**	**7**	**0**	**0**	**1,960**
PHF				0.81		0.73		0.85	0.94	0.53	0.88		0.00	0.44	0.00	0.00	0.91
Peak 15 X 4				324		44		872	308	32	704		0	16	0	0	2,160
Average Hour				277		32		689	282	14	583		1	6	0	0	1,877
Survey Total				832		96		2,066	845	41	1,748		2	18	0	1	5,628
15:00				55		11		156	50	2	140		1	2	0	0	414
15:15				76		6		153	56	2	171		0	1	0	0	464
15:30				71		9		180	52	2	144		0	1	0	0	458
15:45				76		7		218	69	4	166		0	4	0	0	540
16:00				42		11		171	75	2	152		0	0	0	0	453
16:15				63		5		171	77	3	122		0	2	0	0	441
16:30				81		9		184	68	8	176		0	1	0	0	526
16:45				79		11		155	91	2	129		0	3	0	0	467
17:00				74		6		163	72	1	144		0	2	0	0	460
17:15				68		12		171	78	2	153		1	0	0	1	484
17:30				77		3		188	80	8	150		0	1	0	0	506
17:45				70		6		156	77	5	101		0	1	0	0	415

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Passenger Cars

Peak Hour Traffic by Movement 7:45 AM to 8:45 AM



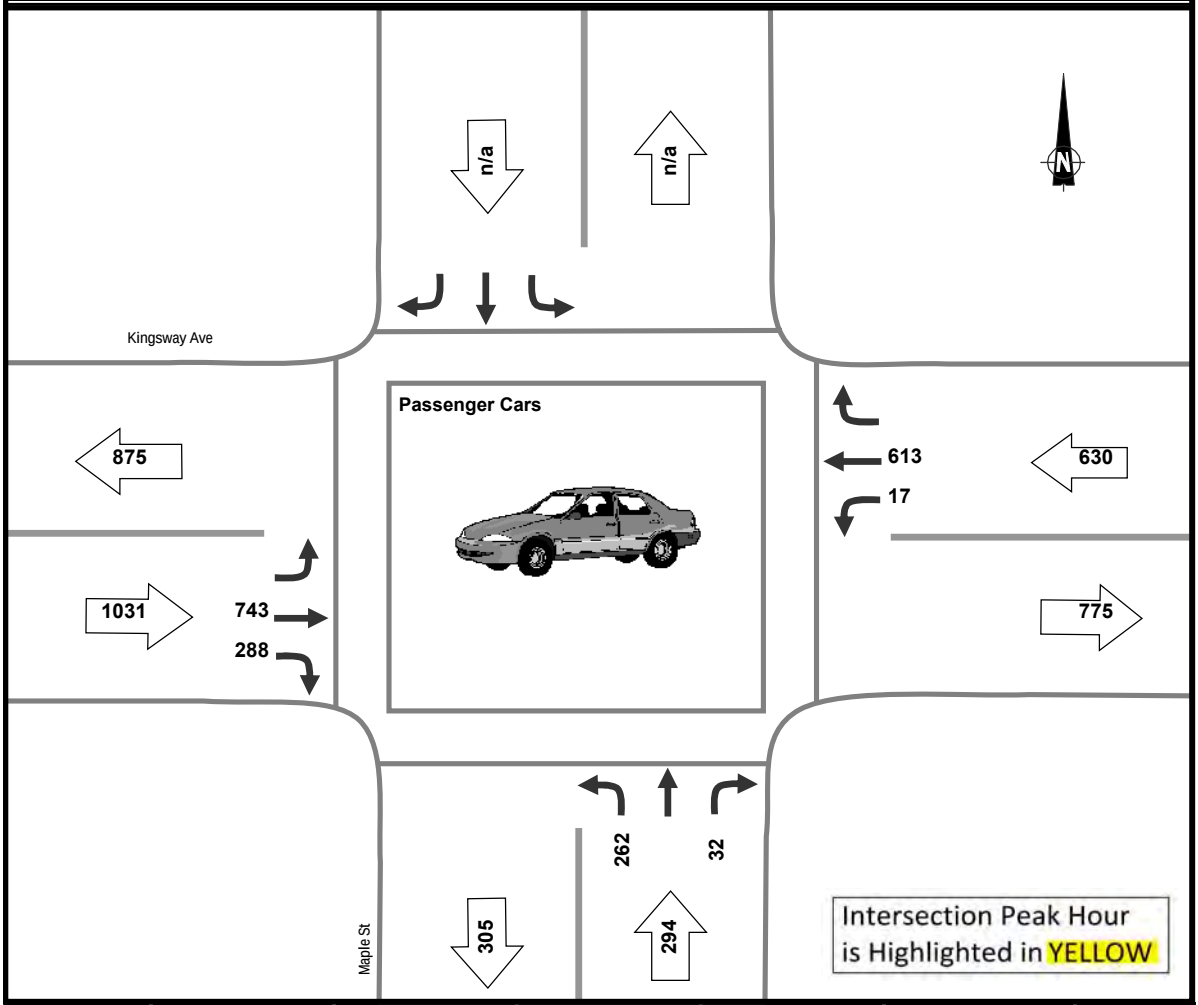
Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**270**		**20**		**506**	**105**	**3**	**584**						**1,488**
PHF				0.89		0.56		0.77	0.60	0.75	0.92						0.92
Peak 15 X 4				304		36		656	176	4	632						1,624
Average Hour				260		23		455	95	7	503						1,343
Survey Total				519		46		909	189	13	1,006						2,682
7:00				48		2		66	14	2	85						217
7:15				62		7		103	15	2	83						272
7:30				67		6		100	19	4	120						316
7:45				54		9		164	20	1	158						406
8:00				73		1		105	16	0	147						342
8:15				67		6		132	25	1	136						367
8:30				76		4		105	44	1	143						373
8:45				72		11		134	36	2	134						389

Maple St & Kingsway Ave
Tuesday, January 21, 2020

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Passenger Cars

Peak Hour Traffic by Movement 3:45 PM to 4:45 PM

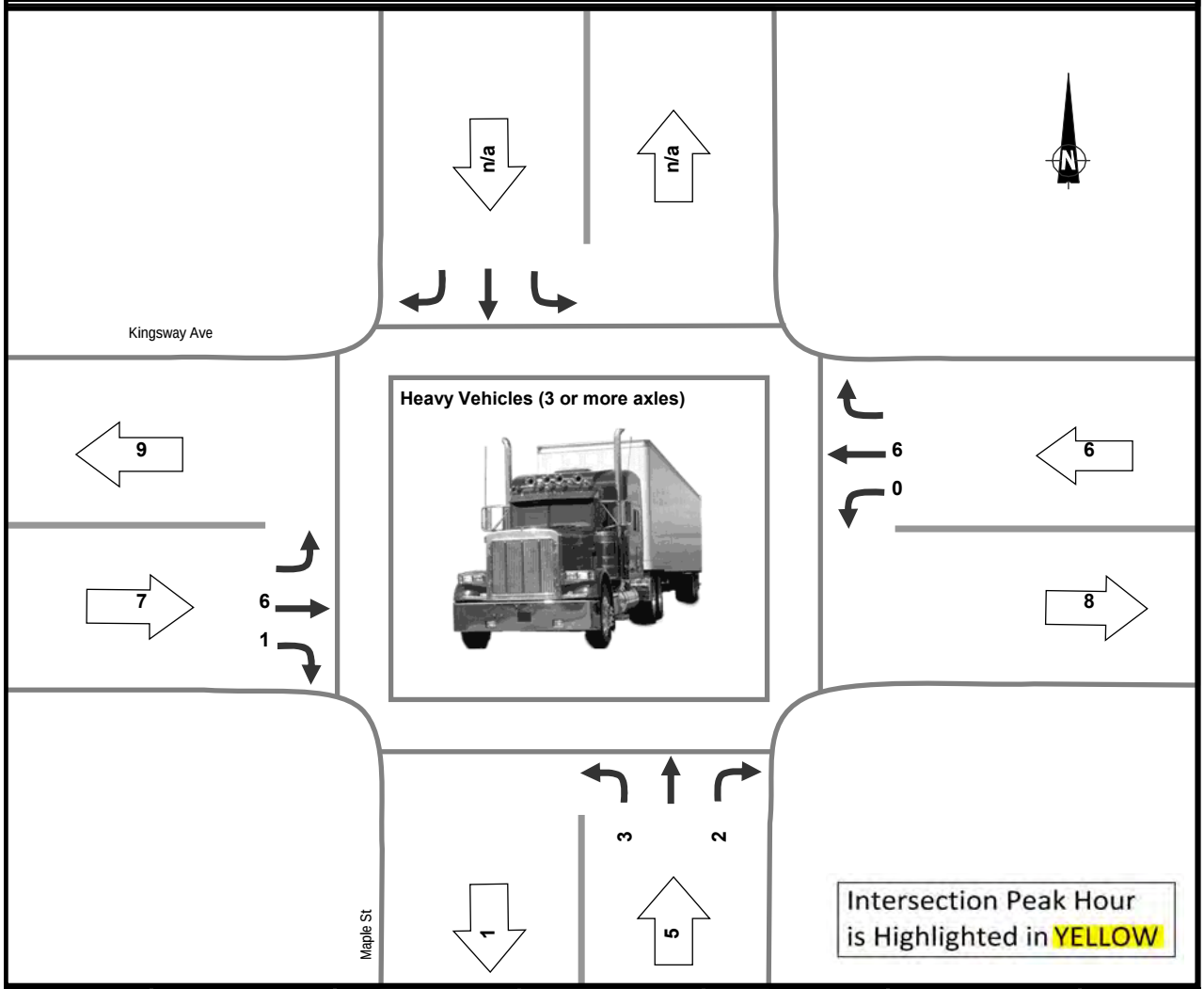


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**262**		**32**		**743**	**288**	**17**	**613**						**1,955**
PHF				0.81		0.73		0.86	0.94	0.53	0.87						0.91
Peak 15 X 4				324		44		868	308	32	704						2,156
Average Hour				277		32		688	281	14	580						1,872
Survey Total				832		96		2,064	844	41	1,740						5,617
15:00				55		11		156	50	2	139						413
15:15				76		6		152	56	2	170						462
15:30				71		9		180	52	2	143						457
15:45				76		7		217	69	4	166						539
16:00				42		11		171	74	2	150						450
16:15				63		5		171	77	3	121						440
16:30				81		9		184	68	8	176						526
16:45				79		11		155	91	2	129						467
17:00				74		6		163	72	1	143						459
17:15				68		12		171	78	2	153						484
17:30				77		3		188	80	8	150						506
17:45				70		6		156	77	5	100						414

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Heavy Vehicles (3 or more axles)

Peak Hour Traffic by Movement 7:00 AM to 8:00 AM

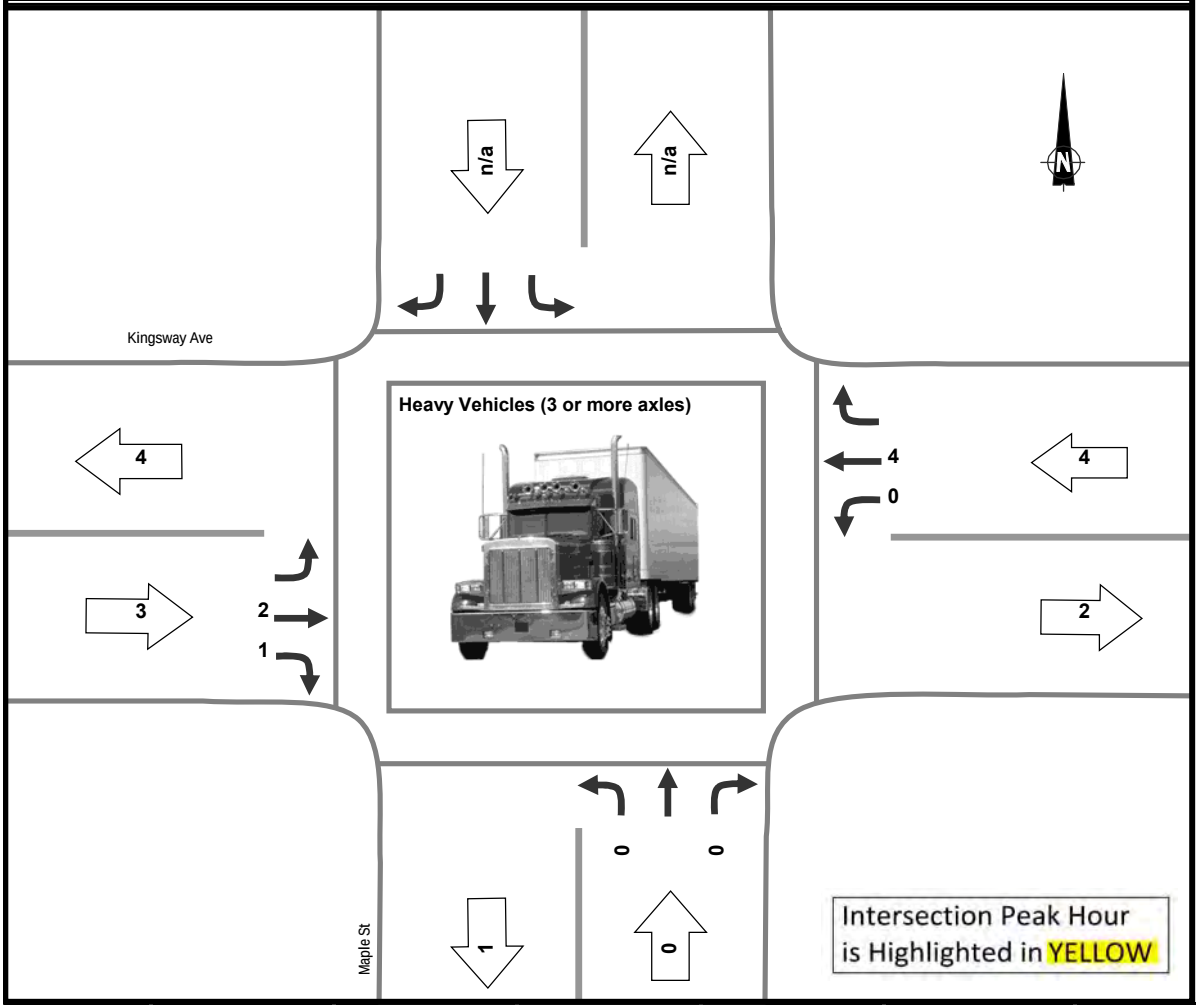


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**3**		**2**		**6**	**1**	**0**	**6**						**18**
PHF				0.75		0.50		0.38	0.25	0.00	0.50						0.75
Peak 15 X 4				4		4		16	4	0	12						24
Average Hour				2		1		6	2	0	6						17
Survey Total				4		2		11	3	0	11						31
7:00				1		0		0	0	0	3						4
7:15				1		1		2	0	0	1						5
7:30				1		0		0	1	0	1						3
7:45				0		1		4	0	0	1						6
8:00				1		0		2	1	0	0						4
8:15				0		0		1	0	0	2						3
8:30				0		0		1	0	0	2						3
8:45				0		0		1	1	0	1						3

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Heavy Vehicles (3 or more axles)

Peak Hour Traffic by Movement 3:15 PM to 4:15 PM

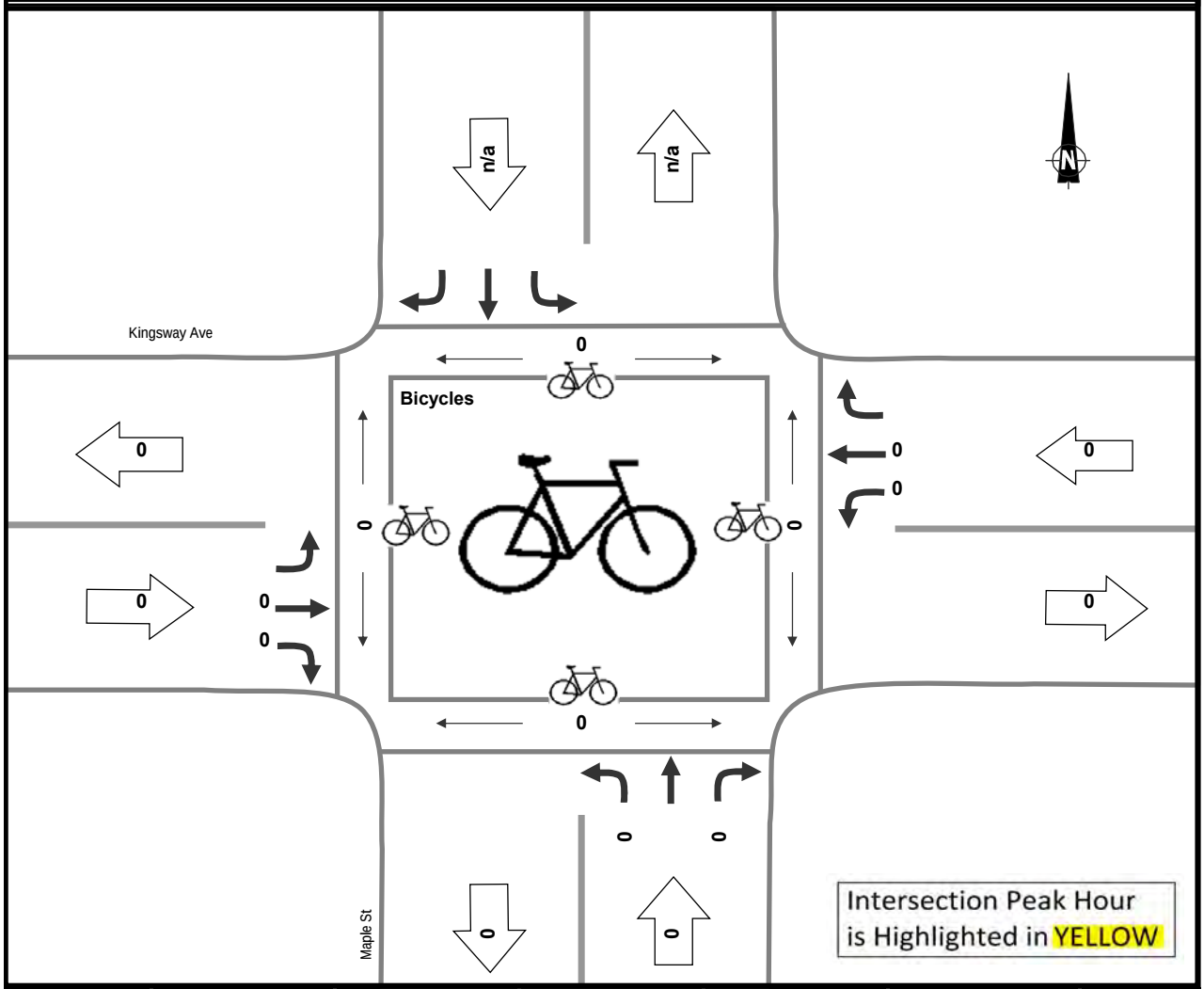


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**0**		**0**		**2**	**1**	**0**	**4**						**7**
PHF				0.00		0.00		0.50	0.25	0.00	0.50						0.58
Peak 15 X 4				0		0		4	4	0	8						12
Average Hour				0		0		1	0	0	3						4
Survey Total				0		0		2	1	0	8						11
15:00				0		0		0	0	0	1						1
15:15				0		0		1	0	0	1						2
15:30				0		0		0	0	0	1						1
15:45				0		0		1	0	0	0						1
16:00				0		0		0	1	0	2						3
16:15				0		0		0	0	0	1						1
16:30				0		0		0	0	0	0						0
16:45				0		0		0	0	0	0						0
17:00				0		0		0	0	0	1						1
17:15				0		0		0	0	0	0						0
17:30				0		0		0	0	0	0						0
17:45				0		0		0	0	0	1						1

Morning Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Bicycles

Peak Hour Traffic by Movement 7:00 AM to 8:00 AM

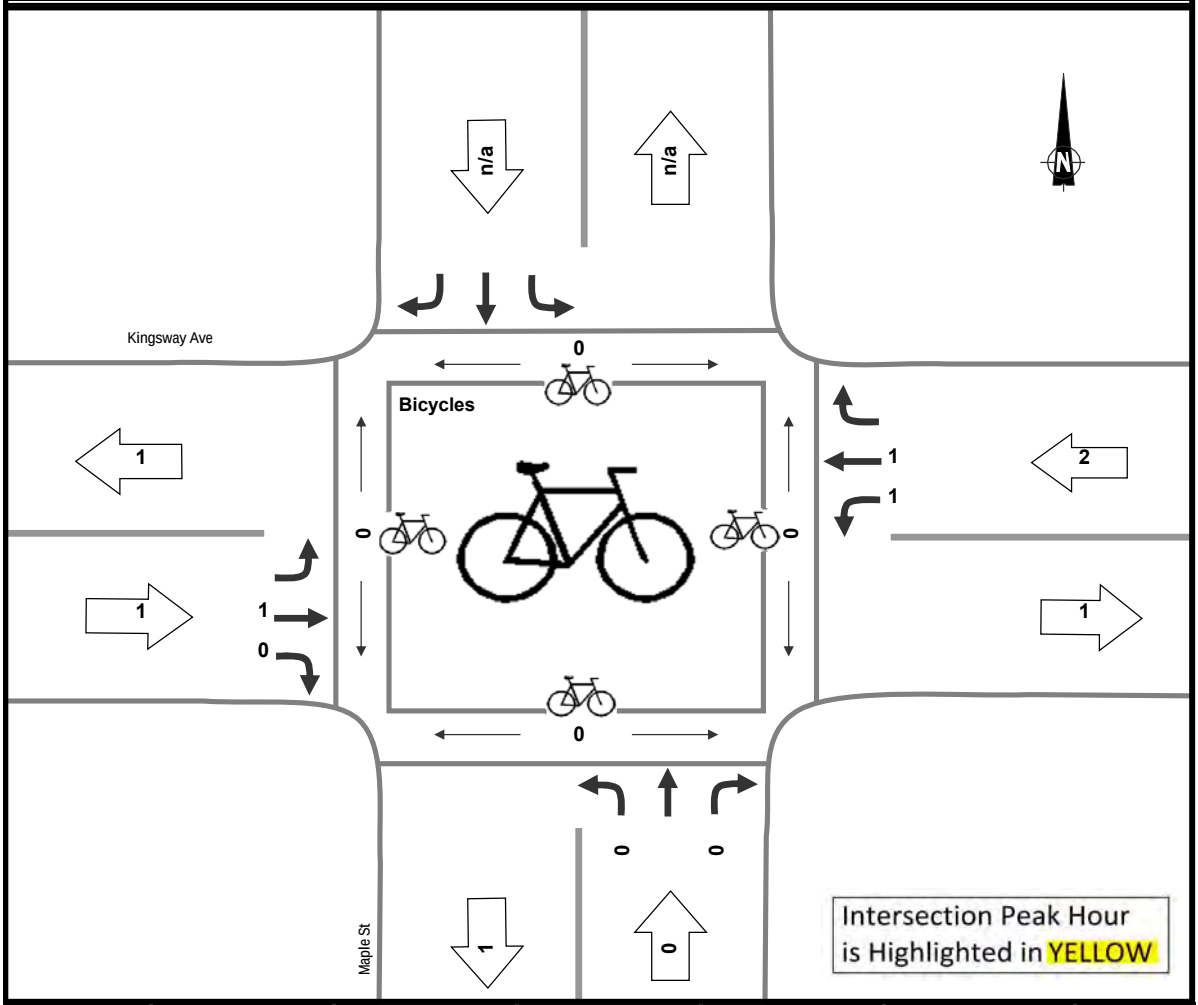


Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			BIKES IN X-WALK				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**0**		**0**		**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**	**0**
PHF				0.00		0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Peak 15 X 4				0		0		0	0	0	0		0	0	0	0	0
Average Hour				0		0		0	0	0	0		0	0	0	0	0
Survey Total				0		0		0	0	0	0		0	0	0	0	0
7:00				0		0		0	0	0	0		0	0	0	0	0
7:15				0		0		0	0	0	0		0	0	0	0	0
7:30				0		0		0	0	0	0		0	0	0	0	0
7:45				0		0		0	0	0	0		0	0	0	0	0
8:00				0		0		0	0	0	0		0	0	0	0	0
8:15				0		0		0	0	0	0		0	0	0	0	0
8:30				0		0		0	0	0	0		0	0	0	0	0
8:45				0		0		0	0	0	0		0	0	0	0	0

Afternoon Peak Period

Project: #7163: Affordable Housing Project Traffic Impact Study
Municipality: Port Coquitlam
Weather: Rain
Vehicle Class: Bicycles

Peak Hour Traffic by Movement 3:30 PM to 4:30 PM



Time	NORTH Approach			SOUTH Approach			WEST Approach			EAST Approach			BIKES IN X-WALK				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour				**0**		**0**		**1**	**0**	**1**	**1**		**0**	**0**	**0**	**0**	**3**
PHF				0.00		0.00		0.25	0.00	0.25	0.25		0.00	0.00	0.00	0.00	0.38
Peak 15 X 4				0		0		4	0	4	4		0	0	0	0	8
Average Hour				0		0		0	0	0	1		0	0	0	0	1
Survey Total				0		0		1	1	1	2		0	0	0	0	5
15:00				0		0		0	0	0	0		0	0	0	0	0
15:15				0		0		0	0	0	0		0	0	0	0	0
15:30				0		0		1	0	1	0		0	0	0	0	2
15:45				0		0		0	0	0	0		0	0	0	0	0
16:00				0		0		0	0	0	0		0	0	0	0	0
16:15				0		0		0	0	0	1		0	0	0	0	1
16:30				0		0		0	0	0	0		0	0	0	0	0
16:45				0		0		0	0	0	0		0	0	0	0	0
17:00				0		0		0	0	0	0		0	0	0	0	0
17:15				0		0		0	1	0	1		0	0	0	0	2
17:30				0		0		0	0	0	0		0	0	0	0	0
17:45				0		0		0	0	0	0		0	0	0	0	0

Appendix D
Capacity Analysis Summary Sheets

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	355	574	296	293	191	216
Future Volume (vph)	355	574	296	293	191	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1500	1676	1500	1676	1500
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		617		272		232
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	382	617	318	315	205	232
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4				2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	47.0	47.0	42.0		31.0	31.0
Total Split (%)	39.2%	39.2%	35.0%		25.8%	25.8%
Maximum Green (s)	42.0	42.0	36.6		26.0	26.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	28.8	28.8	26.9	49.9	18.6	18.6
Actuated g/C Ratio	0.33	0.33	0.31	0.57	0.21	0.21
v/c Ratio	0.69	0.68	0.62	0.32	0.57	0.46
Control Delay	34.7	6.5	34.2	3.2	41.5	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	6.5	34.2	3.2	41.5	8.3
LOS	C	A	C	A	D	A
Approach Delay	17.3		18.7		23.9	
Approach LOS	B		B		C	
Queue Length 50th (m)	56.5	0.0	46.0	3.0	31.8	0.0

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Queue Length 95th (m)	113.2	28.3	98.0	17.4	70.9	20.9
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	896	1089	792	1124	563	658
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	0.43	0.57	0.40	0.28	0.36	0.35

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 87.3	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 19.1	Intersection LOS: B
Intersection Capacity Utilization 59.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Westwood St & Kingsway Ave

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	368	596	306	224	199	224
Future Volume (vph)	368	596	306	224	199	224
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1500	1676	1500	1676	1500
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		641		241		241
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	396	641	329	241	214	241
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4				2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	48.0	48.0	40.2		31.8	31.8
Total Split (%)	40.0%	40.0%	33.5%		26.5%	26.5%
Maximum Green (s)	43.0	43.0	34.8		26.8	26.8
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	30.0	30.0	27.4	50.6	18.9	18.9
Actuated g/C Ratio	0.34	0.34	0.31	0.57	0.21	0.21
v/c Ratio	0.70	0.69	0.64	0.25	0.60	0.48
Control Delay	35.1	6.5	36.0	2.2	43.1	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	6.5	36.0	2.2	43.1	8.3
LOS	D	A	D	A	D	A
Approach Delay	17.5		21.7		24.6	
Approach LOS	B		C		C	
Queue Length 50th (m)	61.9	0.0	51.2	0.0	35.6	0.0

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Queue Length 95th (m)	116.7	28.1	104.2	11.2	73.2	21.2
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	894	1099	735	1105	565	665
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	0.44	0.58	0.45	0.22	0.38	0.36

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 89.3	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 20.2	Intersection LOS: C
Intersection Capacity Utilization 61.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Westwood St & Kingsway Ave

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	403	638	323	236	199	236
Future Volume (vph)	403	638	323	236	199	236
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1500	1676	1500	1676	1500
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		686		233		254
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	433	686	347	254	214	254
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4				2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	48.0	48.0	42.0		30.0	30.0
Total Split (%)	40.0%	40.0%	35.0%		25.0%	25.0%
Maximum Green (s)	43.0	43.0	36.6		25.0	25.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	32.6	32.6	29.1	52.7	19.3	19.3
Actuated g/C Ratio	0.35	0.35	0.31	0.56	0.21	0.21
v/c Ratio	0.75	0.71	0.67	0.27	0.62	0.50
Control Delay	37.7	6.7	37.9	2.9	46.3	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	6.7	37.9	2.9	46.3	8.7
LOS	D	A	D	A	D	A
Approach Delay	18.7		23.1		25.9	
Approach LOS	B		C		C	
Queue Length 50th (m)	73.2	0.0	58.4	1.7	38.4	0.0

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Queue Length 95th (m)	130.1	30.0	108.3	13.9	74.8	22.2
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	848	1098	733	1062	501	626
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	0.51	0.62	0.47	0.24	0.43	0.41

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 94	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 21.5	Intersection LOS: C
Intersection Capacity Utilization 64.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Westwood St & Kingsway Ave

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	382	618	320	322	210	233
Future Volume (vph)	382	618	320	322	210	233
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1500	1676	1500	1676	1500
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		665		244		251
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	411	665	344	346	226	251
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4				2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	47.0	47.0	41.0		32.0	32.0
Total Split (%)	39.2%	39.2%	34.2%		26.7%	26.7%
Maximum Green (s)	42.0	42.0	35.6		27.0	27.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	31.5	31.5	29.3	53.9	20.3	20.3
Actuated g/C Ratio	0.34	0.34	0.31	0.57	0.22	0.22
v/c Ratio	0.73	0.70	0.66	0.36	0.63	0.48
Control Delay	37.9	6.8	37.6	4.8	45.0	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	6.8	37.6	4.8	45.0	8.2
LOS	D	A	D	A	D	A
Approach Delay	18.7		21.1		25.6	
Approach LOS	B		C		C	
Queue Length 50th (m)	69.8	0.0	57.5	8.5	40.6	0.0

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Queue Length 95th (m)	124.1	29.4	108.5	26.9	77.1	21.7
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	824	1075	709	1095	537	651
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	0.50	0.62	0.49	0.32	0.42	0.39

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 94	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 20.9	Intersection LOS: C
Intersection Capacity Utilization 63.3%	ICU Level of Service B
Analysis Period (min) 15	

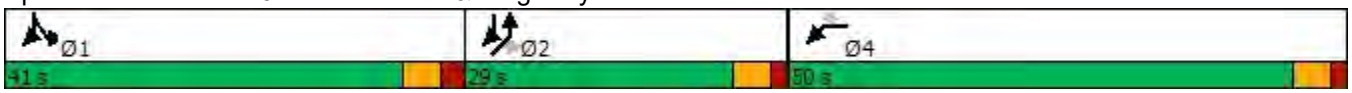
Splits and Phases: 3: Westwood St & Kingsway Ave

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	455	705	350	322	210	254
Future Volume (vph)	455	705	350	322	210	254
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1500	1676	1500	1676	1500
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		758		205		273
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	489	758	376	346	226	273
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4				2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	50.0	50.0	41.0		29.0	29.0
Total Split (%)	41.7%	41.7%	34.2%		24.2%	24.2%
Maximum Green (s)	45.0	45.0	35.6		24.0	24.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	37.2	37.2	31.3	55.8	20.3	20.3
Actuated g/C Ratio	0.37	0.37	0.31	0.55	0.20	0.20
v/c Ratio	0.80	0.74	0.73	0.38	0.67	0.53
Control Delay	40.9	6.8	42.8	6.8	51.4	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	6.8	42.8	6.8	51.4	8.9
LOS	D	A	D	A	D	A
Approach Delay	20.2		25.6		28.1	
Approach LOS	C		C		C	
Queue Length 50th (m)	99.5	0.0	76.6	15.2	48.5	0.0

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Queue Length 95th (m)	148.4	30.5	120.5	35.9	79.8	23.5
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	803	1113	645	989	436	592
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	0.61	0.68	0.58	0.35	0.52	0.46

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 101.4	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 23.4	Intersection LOS: C
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Westwood St & Kingsway Ave



Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	410	674	349	352	229	254
Future Volume (vph)	410	674	349	352	229	254
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1500	1676	1500	1676	1500
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		725		218		273
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	441	725	375	378	246	273
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4				2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	47.0	47.0	42.0		31.0	31.0
Total Split (%)	39.2%	39.2%	35.0%		25.8%	25.8%
Maximum Green (s)	42.0	42.0	36.6		26.0	26.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	33.8	33.8	31.3	57.0	21.4	21.4
Actuated g/C Ratio	0.34	0.34	0.32	0.57	0.22	0.22
v/c Ratio	0.77	0.73	0.71	0.40	0.68	0.51
Control Delay	41.2	7.2	40.8	6.4	49.2	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	7.2	40.8	6.4	49.2	8.3
LOS	D	A	D	A	D	A
Approach Delay	20.0		23.6		27.7	
Approach LOS	C		C		C	
Queue Length 50th (m)	86.1	0.0	72.0	15.6	49.8	0.0

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Queue Length 95th (m)	135.3	31.9	118.3	37.6	85.0	22.8
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	771	1081	681	1045	484	627
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	0.57	0.67	0.55	0.36	0.51	0.44

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 99.3	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 22.8	Intersection LOS: C
Intersection Capacity Utilization 67.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Westwood St & Kingsway Ave

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	489	761	379	352	229	275
Future Volume (vph)	489	761	379	352	229	275
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1500	1676	1500	1676	1500
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		746		180		296
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	526	818	408	378	246	296
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4				2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	50.0	50.0	41.0		29.0	29.0
Total Split (%)	41.7%	41.7%	34.2%		24.2%	24.2%
Maximum Green (s)	45.0	45.0	35.6		24.0	24.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	40.2	40.2	33.3	58.9	21.4	21.4
Actuated g/C Ratio	0.37	0.37	0.31	0.55	0.20	0.20
v/c Ratio	0.84	0.80	0.79	0.42	0.74	0.55
Control Delay	45.1	10.3	47.8	8.9	56.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.1	10.3	47.8	8.9	56.5	8.9
LOS	D	B	D	A	E	A
Approach Delay	23.9		29.1		30.5	
Approach LOS	C		C		C	
Queue Length 50th (m)	115.9	11.4	92.3	25.1	57.1	0.0

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Queue Length 95th (m)	#174.7	66.7	#140.6	47.2	86.9	24.5
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	744	1081	598	958	404	586
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	0.71	0.76	0.68	0.39	0.61	0.51

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 107.4	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 74.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 3: Westwood St & Kingsway Ave

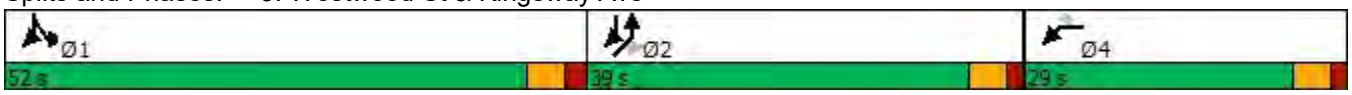
Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	192	604	528	222	354	475
Future Volume (vph)	192	604	528	222	354	475
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97	1.00		0.99	0.98
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1458	1669	1500	1657	1470
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		657		241		480
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Confl. Peds. (#/hr)		8	4		8	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	209	657	574	241	385	516
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4				2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	29.0	29.0	52.0		39.0	39.0
Total Split (%)	24.2%	24.2%	43.3%		32.5%	32.5%
Maximum Green (s)	24.0	24.0	46.6		34.0	34.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	20.0	20.0	42.8	77.4	30.4	30.4
Actuated g/C Ratio	0.19	0.19	0.40	0.73	0.29	0.29
v/c Ratio	0.66	0.81	0.85	0.21	0.80	0.68
Control Delay	52.6	12.4	43.3	1.0	50.2	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	12.4	43.3	1.0	50.2	9.4
LOS	D	B	D	A	D	A
Approach Delay	22.1		30.8		26.9	

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Approach LOS	C		C		C	
Queue Length 50th (m)	47.3	0.0	123.3	0.0	85.0	6.3
Queue Length 95th (m)	73.8	42.9	#193.8	6.6	#134.9	41.8
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	412	853	791	1233	576	820
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	0.51	0.77	0.73	0.20	0.67	0.63

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 105.8
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 26.5 Intersection LOS: C
Intersection Capacity Utilization 73.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Westwood St & Kingsway Ave



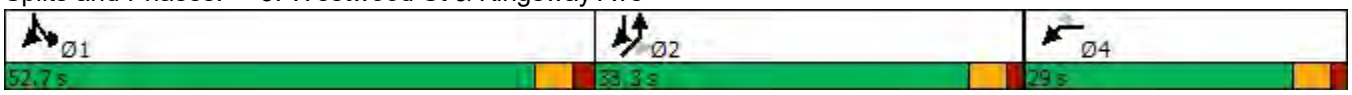
Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	200	626	547	231	368	493
Future Volume (vph)	200	626	547	231	368	493
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97	1.00		0.99	0.98
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1458	1669	1500	1658	1470
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		680		251		472
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Confl. Peds. (#/hr)		8	4		8	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	217	680	595	251	400	536
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4				2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	29.0	29.0	52.7		38.3	38.3
Total Split (%)	24.2%	24.2%	43.9%		31.9%	31.9%
Maximum Green (s)	24.0	24.0	47.3		33.3	33.3
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	20.8	20.8	44.6	79.7	31.0	31.0
Actuated g/C Ratio	0.19	0.19	0.41	0.73	0.29	0.29
v/c Ratio	0.68	0.82	0.86	0.22	0.84	0.71
Control Delay	54.0	12.6	45.0	1.0	54.6	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	12.6	45.0	1.0	54.6	11.5
LOS	D	B	D	A	D	B
Approach Delay	22.6		32.0		29.9	

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Approach LOS	C		C		C	
Queue Length 50th (m)	49.3	0.0	130.0	0.0	90.8	11.6
Queue Length 95th (m)	76.7	44.8	#203.2	6.7	#145.7	53.3
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	395	863	771	1214	543	795
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	0.55	0.79	0.77	0.21	0.74	0.67

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 108.7
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 28.1 Intersection LOS: C
Intersection Capacity Utilization 76.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Westwood St & Kingsway Ave



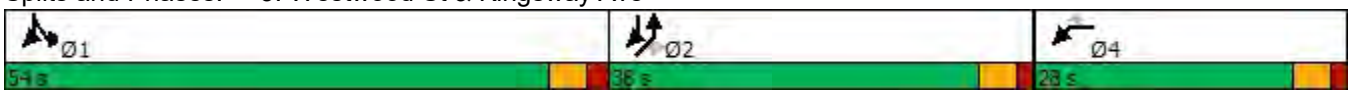
Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	214	658	581	231	368	530
Future Volume (vph)	214	658	581	231	368	530
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97	1.00		0.99	0.98
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1458	1669	1500	1658	1470
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		715		213		451
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Confl. Peds. (#/hr)		8	4		8	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	233	715	632	251	400	576
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4			2	2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	28.0	28.0	54.0		38.0	38.0
Total Split (%)	23.3%	23.3%	45.0%		31.7%	31.7%
Maximum Green (s)	23.0	23.0	48.6		33.0	33.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	21.1	21.1	47.2	82.6	31.3	31.3
Actuated g/C Ratio	0.19	0.19	0.42	0.74	0.28	0.28
v/c Ratio	0.74	0.84	0.90	0.22	0.85	0.78
Control Delay	58.8	13.2	48.1	1.5	57.5	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	13.2	48.1	1.5	57.5	17.3
LOS	E	B	D	A	E	B
Approach Delay	24.4		34.8		33.8	

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Approach LOS	C		C		C	
Queue Length 50th (m)	54.2	0.0	144.3	2.3	93.4	26.8
Queue Length 95th (m)	83.4	47.7	#218.6	9.1	#146.8	78.8
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	366	877	763	1200	518	766
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	0.64	0.82	0.83	0.21	0.77	0.75

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 111.9	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 31.0	Intersection LOS: C
Intersection Capacity Utilization 78.6%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 3: Westwood St & Kingsway Ave



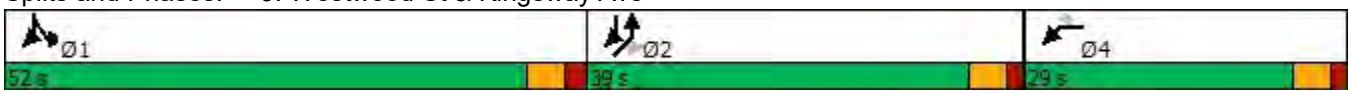
Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	210	659	572	244	389	514
Future Volume (vph)	210	659	572	244	389	514
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97	1.00		0.99	0.98
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1458	1669	1500	1658	1470
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		696		236		464
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Confl. Peds. (#/hr)		8	4		8	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	228	716	622	265	423	559
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4				2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	29.0	29.0	52.0		39.0	39.0
Total Split (%)	24.2%	24.2%	43.3%		32.5%	32.5%
Maximum Green (s)	24.0	24.0	46.6		34.0	34.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	21.4	21.4	45.9	82.7	32.8	32.8
Actuated g/C Ratio	0.19	0.19	0.41	0.74	0.29	0.29
v/c Ratio	0.71	0.85	0.91	0.23	0.87	0.74
Control Delay	56.9	15.0	51.1	1.4	57.6	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	15.0	51.1	1.4	57.6	13.7
LOS	E	B	D	A	E	B
Approach Delay	25.1		36.3		32.6	

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Approach LOS	C		D		C	
Queue Length 50th (m)	52.2	4.0	142.9	1.7	98.1	17.6
Queue Length 95th (m)	80.7	#61.5	#220.1	8.9	#156.1	65.4
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	378	868	727	1198	530	782
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	0.60	0.82	0.86	0.22	0.80	0.71

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 112.2
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 31.2 Intersection LOS: C
Intersection Capacity Utilization 79.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Westwood St & Kingsway Ave



Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	237	721	642	244	389	591
Future Volume (vph)	237	721	642	244	389	591
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97	1.00		0.99	0.98
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1458	1669	1500	1658	1470
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		717		180		431
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Confl. Peds. (#/hr)		8	4		8	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	258	784	698	265	423	642
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4			2	2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	28.0	28.0	55.0		37.0	37.0
Total Split (%)	23.3%	23.3%	45.8%		30.8%	30.8%
Maximum Green (s)	23.0	23.0	49.6		32.0	32.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	22.5	22.5	51.1	87.3	32.2	32.2
Actuated g/C Ratio	0.19	0.19	0.43	0.74	0.27	0.27
v/c Ratio	0.81	0.91	0.96	0.23	0.92	0.90
Control Delay	65.5	21.9	59.0	2.1	69.4	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.5	21.9	59.0	2.1	69.4	30.5
LOS	E	C	E	A	E	C
Approach Delay	32.7		43.3		45.9	

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Approach LOS	C		D		D	
Queue Length 50th (m)	61.0	14.1	167.6	5.2	101.9	57.3
Queue Length 95th (m)	#100.8	#105.2	#250.6	12.7	#163.3	#136.3
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	342	868	726	1167	469	722
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	0.75	0.90	0.96	0.23	0.90	0.89

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 117.8
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 40.6 Intersection LOS: D
Intersection Capacity Utilization 84.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Westwood St & Kingsway Ave

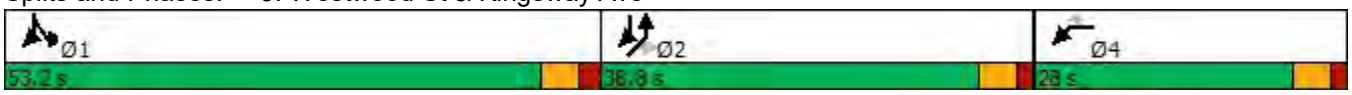
Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	229	719	624	266	425	560
Future Volume (vph)	229	719	624	266	425	560
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97	1.00		0.99	0.98
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1458	1669	1500	1659	1470
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		692		191		437
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Confl. Peds. (#/hr)		8	4		8	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	249	782	678	289	462	609
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4			2	2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	28.0	28.0	53.2		38.8	38.8
Total Split (%)	23.3%	23.3%	44.3%		32.3%	32.3%
Maximum Green (s)	23.0	23.0	47.8		33.8	33.8
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	22.3	22.3	49.2	87.7	34.5	34.5
Actuated g/C Ratio	0.19	0.19	0.42	0.74	0.29	0.29
v/c Ratio	0.79	0.94	0.97	0.25	0.94	0.83
Control Delay	64.1	26.0	62.3	2.2	70.6	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.1	26.0	62.3	2.2	70.6	21.6
LOS	E	C	E	A	E	C
Approach Delay	35.2		44.3		42.7	

Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Approach LOS	D		D		D	
Queue Length 50th (m)	58.5	19.2	163.9	6.1	112.3	41.8
Queue Length 95th (m)	#95.1	#115.4	#246.8	13.9	#179.0	#105.9
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	341	848	699	1167	495	741
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	0.73	0.92	0.97	0.25	0.93	0.82

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 118	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 40.7	Intersection LOS: D
Intersection Capacity Utilization 85.1%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 3: Westwood St & Kingsway Ave



Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	256	781	694	266	425	637
Future Volume (vph)	256	781	694	266	425	637
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.97	1.00		0.99	0.98
Frt		0.850		0.850		0.850
Flt Protected	0.950		0.950		0.950	
Satd. Flow (prot)	1676	1500	1676	1500	1676	1500
Flt Permitted	0.950		0.950		0.950	
Satd. Flow (perm)	1676	1460	1670	1500	1660	1471
Right Turn on Red		Yes		Yes		Yes
Satd. Flow (RTOR)		715		157		416
Link Speed (k/h)	50		50		50	
Link Distance (m)	144.0		193.8		222.3	
Travel Time (s)	10.4		14.0		16.0	
Confl. Peds. (#/hr)		8	4		8	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	278	849	754	289	462	692
Turn Type	Prot	Perm	Prot	pt+ov	Prot	Perm
Protected Phases	4		1	1 2	2	
Permitted Phases		4			2	2
Detector Phase	4	4	1	1 2	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	23.0	23.0	10.4		23.0	23.0
Total Split (s)	26.0	26.0	51.0		33.0	33.0
Total Split (%)	23.6%	23.6%	46.4%		30.0%	30.0%
Maximum Green (s)	21.0	21.0	45.6		28.0	28.0
Yellow Time (s)	3.4	3.4	3.4		3.4	3.4
All-Red Time (s)	1.6	1.6	2.0		1.6	1.6
Lost Time Adjust (s)	-1.0	-1.0	-1.4		-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	5.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	10.0	10.0			10.0	10.0
Flash Dont Walk (s)	8.0	8.0			8.0	8.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	22.0	22.0	47.0	80.0	29.0	29.0
Actuated g/C Ratio	0.20	0.20	0.43	0.73	0.26	0.26
v/c Ratio	0.83	0.98	1.05	0.26	1.05	1.00
Control Delay	63.8	35.4	80.3	2.7	96.1	50.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	35.4	80.3	2.7	96.1	50.7
LOS	E	D	F	A	F	D
Approach Delay	42.4		58.8		68.9	

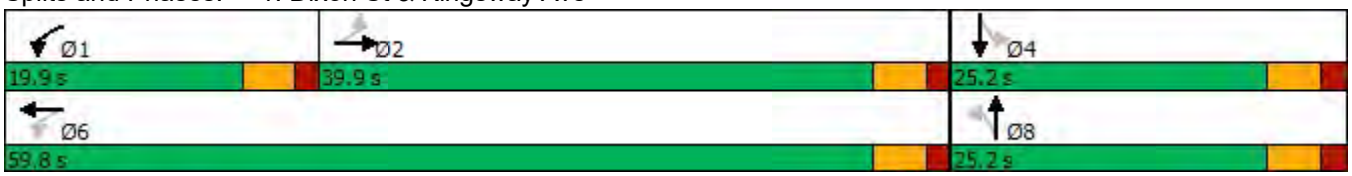
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	579	6	15	853	3	37	2	25	4	0	6
Future Volume (vph)	4	579	6	15	853	3	37	2	25	4	0	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.999						0.947			0.919	
Flt Protected					0.999			0.972			0.980	
Satd. Flow (prot)	0	3349	0	0	3349	0	0	1613	0	0	1574	0
Flt Permitted		0.951			0.944			0.816			0.839	
Satd. Flow (perm)	0	3185	0	0	3165	0	0	1351	0	0	1345	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1			27			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	2		3	3		2	3		4	4		3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	633	0	0	936	0	0	69	0	0	10	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.9	20.9		9.9	17.9		23.2	23.2		23.2	23.2	
Total Split (s)	39.9	39.9		19.9	59.8		25.2	25.2		25.2	25.2	
Total Split (%)	46.9%	46.9%		23.4%	70.4%		29.6%	29.6%		29.6%	29.6%	
Maximum Green (s)	35.0	35.0		15.0	54.9		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		31.6			31.6			8.4			8.3	
Actuated g/C Ratio		0.78			0.78			0.21			0.20	
v/c Ratio		0.26			0.38			0.23			0.03	
Control Delay		3.4			4.1			12.9			0.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.4			4.1			12.9			0.1	
LOS		A			A			B			A	
Approach Delay		3.4			4.1			12.9			0.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			B			A	
Queue Length 50th (m)		9.4			15.7			3.3			0.0	
Queue Length 95th (m)		18.3			30.0			10.6			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		2738			3165			747			771	
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		0.23			0.30			0.09			0.01	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 40.6
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.38
Intersection Signal Delay: 4.2 Intersection LOS: A
Intersection Capacity Utilization 50.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



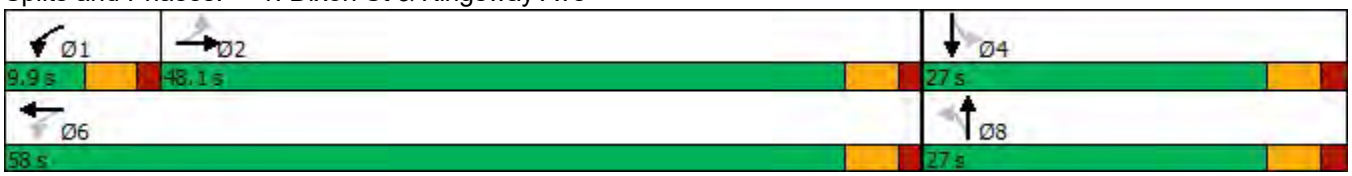
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	599	6	16	885	3	38	2	26	4	0	6
Future Volume (vph)	4	599	6	16	885	3	38	2	26	4	0	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.999						0.947			0.919	
Flt Protected					0.999			0.972			0.980	
Satd. Flow (prot)	0	3349	0	0	3349	0	0	1613	0	0	1574	0
Flt Permitted		0.951			0.943			0.816			0.838	
Satd. Flow (perm)	0	3185	0	0	3161	0	0	1351	0	0	1343	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			1			28			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	2		3	3		2	3		4	4		3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	654	0	0	972	0	0	71	0	0	10	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.9	20.9		9.9	17.9		23.2	23.2		23.2	23.2	
Total Split (s)	48.1	48.1		9.9	58.0		27.0	27.0		27.0	27.0	
Total Split (%)	56.6%	56.6%		11.6%	68.2%		31.8%	31.8%		31.8%	31.8%	
Maximum Green (s)	43.2	43.2		5.0	53.1		21.8	21.8		21.8	21.8	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		32.1			32.1			8.5			8.5	
Actuated g/C Ratio		0.78			0.78			0.21			0.21	
v/c Ratio		0.26			0.39			0.24			0.03	
Control Delay		3.5			4.2			13.0			0.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.5			4.2			13.0			0.1	
LOS		A			A			B			A	
Approach Delay		3.5			4.2			13.0			0.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			B			A	
Queue Length 50th (m)		9.8			17.0			3.4			0.0	
Queue Length 95th (m)		19.3			32.2			10.9			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		3047			3161			800			820	
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		0.21			0.31			0.09			0.01	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 41.2
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.39
Intersection Signal Delay: 4.3 — Intersection LOS: A
Intersection Capacity Utilization 52.0% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



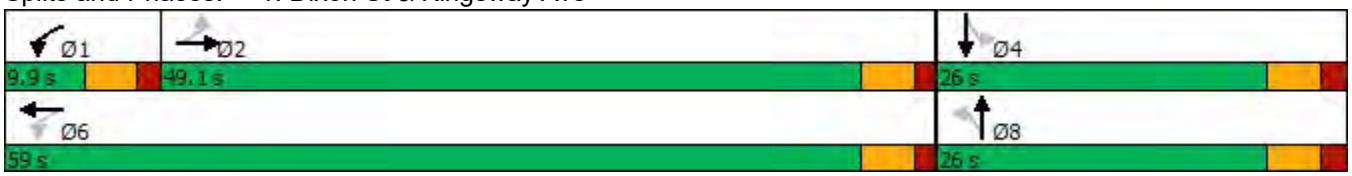
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	628	6	16	962	3	38	2	26	4	0	6
Future Volume (vph)	4	628	6	16	962	3	38	2	26	4	0	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.999						0.947			0.919	
Flt Protected					0.999			0.972			0.980	
Satd. Flow (prot)	0	3349	0	0	3349	0	0	1613	0	0	1574	0
Flt Permitted		0.950			0.943			0.816			0.838	
Satd. Flow (perm)	0	3181	0	0	3161	0	0	1351	0	0	1343	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			1			28			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	2		3	3		2	3		4	4		3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	685	0	0	1054	0	0	71	0	0	10	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.9	20.9		9.9	17.9		23.2	23.2		23.2	23.2	
Total Split (s)	49.1	49.1		9.9	59.0		26.0	26.0		26.0	26.0	
Total Split (%)	57.8%	57.8%		11.6%	69.4%		30.6%	30.6%		30.6%	30.6%	
Maximum Green (s)	44.2	44.2		5.0	54.1		20.8	20.8		20.8	20.8	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		33.7			33.7			8.6			8.5	
Actuated g/C Ratio		0.79			0.79			0.20			0.20	
v/c Ratio		0.27			0.42			0.24			0.03	
Control Delay		3.4			4.2			13.9			0.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.4			4.2			13.9			0.1	
LOS		A			A			B			A	
Approach Delay		3.4			4.2			13.9			0.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			B			A	
Queue Length 50th (m)		10.5			19.0			3.6			0.0	
Queue Length 95th (m)		20.4			36.2			11.6			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		2999			3161			743			766	
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		0.23			0.33			0.10			0.01	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 42.8
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.42
Intersection Signal Delay: 4.3 Intersection LOS: A
Intersection Capacity Utilization 54.2% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



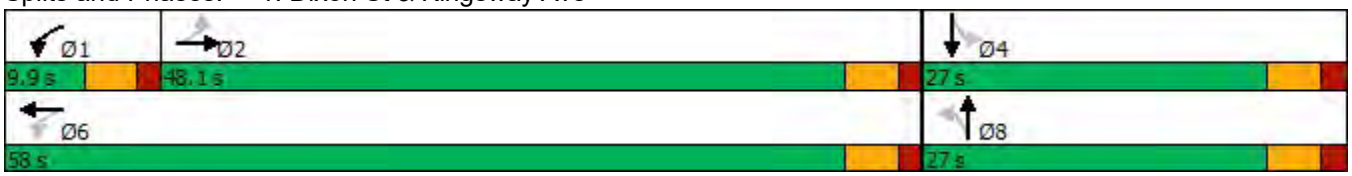
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	627	7	17	916	3	41	2	28	4	0	7
Future Volume (vph)	4	627	7	17	916	3	41	2	28	4	0	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.998						0.947			0.910	
Flt Protected					0.999			0.972			0.984	
Satd. Flow (prot)	0	3345	0	0	3349	0	0	1613	0	0	1563	0
Flt Permitted		0.951			0.941			0.815			0.861	
Satd. Flow (perm)	0	3181	0	0	3155	0	0	1349	0	0	1366	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			1			30			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	2		3	3		2	3		4	4		3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	686	0	0	1006	0	0	76	0	0	12	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.9	20.9		9.9	17.9		23.2	23.2		23.2	23.2	
Total Split (s)	48.1	48.1		9.9	58.0		27.0	27.0		27.0	27.0	
Total Split (%)	56.6%	56.6%		11.6%	68.2%		31.8%	31.8%		31.8%	31.8%	
Maximum Green (s)	43.2	43.2		5.0	53.1		21.8	21.8		21.8	21.8	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		32.2			32.2			8.7			8.5	
Actuated g/C Ratio		0.78			0.78			0.21			0.21	
v/c Ratio		0.28			0.41			0.25			0.03	
Control Delay		3.6			4.3			13.1			0.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.6			4.3			13.1			0.2	
LOS		A			A			B			A	
Approach Delay		3.6			4.3			13.1			0.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			B			A	
Queue Length 50th (m)		10.5			17.9			3.7			0.0	
Queue Length 95th (m)		20.8			34.6			11.5			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		3036			3155			795			829	
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		0.23			0.32			0.10			0.01	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 41.4
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.41
Intersection Signal Delay: 4.4 Intersection LOS: A
Intersection Capacity Utilization 54.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



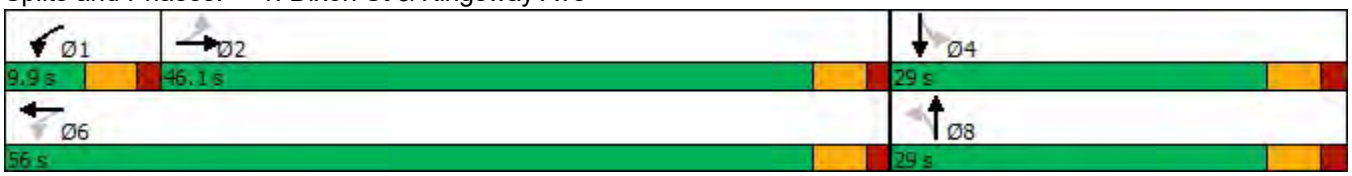
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	652	22	27	995	3	122	2	46	4	0	7
Future Volume (vph)	4	652	22	27	995	3	122	2	46	4	0	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.995						0.964			0.910	
Flt Protected					0.999			0.965			0.984	
Satd. Flow (prot)	0	3333	0	0	3349	0	0	1634	0	0	1563	0
Flt Permitted		0.950			0.927			0.780			0.907	
Satd. Flow (perm)	0	3166	0	0	3108	0	0	1317	0	0	1439	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			1			22			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	2		3	3		2	3		4	4		3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	729	0	0	1102	0	0	182	0	0	12	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.9	20.9		9.9	17.9		23.2	23.2		23.2	23.2	
Total Split (s)	46.1	46.1		9.9	56.0		29.0	29.0		29.0	29.0	
Total Split (%)	54.2%	54.2%		11.6%	65.9%		34.1%	34.1%		34.1%	34.1%	
Maximum Green (s)	41.2	41.2		5.0	51.1		23.8	23.8		23.8	23.8	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		30.2			30.2			13.3			13.3	
Actuated g/C Ratio		0.58			0.58			0.26			0.26	
v/c Ratio		0.39			0.61			0.51			0.03	
Control Delay		7.0			9.2			20.3			0.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.0			9.2			20.3			0.1	
LOS		A			A			C			A	
Approach Delay		7.0			9.2			20.3			0.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			C			A	
Queue Length 50th (m)		16.0			29.3			11.2			0.0	
Queue Length 95th (m)		35.5			63.0			34.1			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		2694			2952			663			756	
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		0.27			0.37			0.27			0.02	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 51.7
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 9.4 Intersection LOS: A
Intersection Capacity Utilization 73.3% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



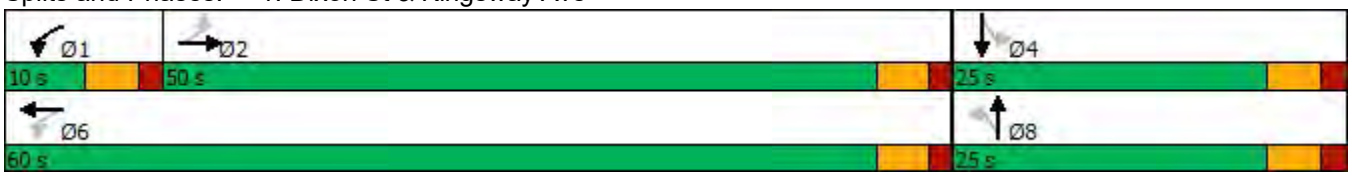
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	678	7	17	1076	3	41	2	28	4	0	7
Future Volume (vph)	4	678	7	17	1076	3	41	2	28	4	0	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.998						0.947			0.910	
Flt Protected					0.999			0.972			0.984	
Satd. Flow (prot)	0	3345	0	0	3349	0	0	1613	0	0	1563	0
Flt Permitted		0.950			0.942			0.815			0.889	
Satd. Flow (perm)	0	3178	0	0	3158	0	0	1349	0	0	1410	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			1			30			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	2		3	3		2	3		4	4		3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	741	0	0	1178	0	0	76	0	0	12	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.9	20.9		9.9	17.9		23.2	23.2		23.2	23.2	
Total Split (s)	50.0	50.0		10.0	60.0		25.0	25.0		25.0	25.0	
Total Split (%)	58.8%	58.8%		11.8%	70.6%		29.4%	29.4%		29.4%	29.4%	
Maximum Green (s)	45.1	45.1		5.1	55.1		19.8	19.8		19.8	19.8	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		36.2			36.2			8.9			8.7	
Actuated g/C Ratio		0.80			0.80			0.20			0.19	
v/c Ratio		0.29			0.47			0.26			0.04	
Control Delay		3.4			4.5			15.1			0.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.4			4.5			15.1			0.2	
LOS		A			A			B			A	
Approach Delay		3.4			4.5			15.1			0.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			B			A	
Queue Length 50th (m)		12.0			23.3			4.1			0.0	
Queue Length 95th (m)		23.1			44.1			13.2			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		2927			3158			670			729	
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		0.25			0.37			0.11			0.02	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 45.5
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 4.5 Intersection LOS: A
Intersection Capacity Utilization 59.0% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



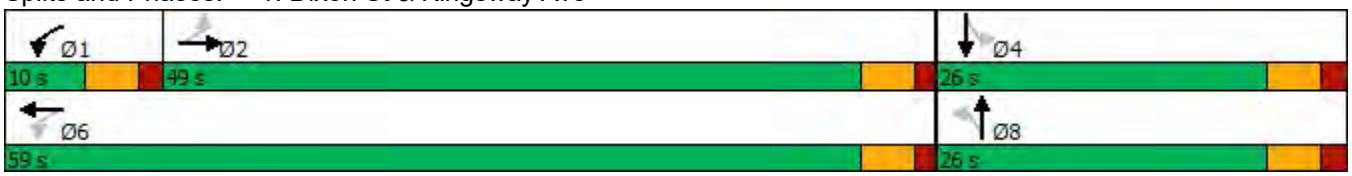
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	684	7	18	1000	4	44	2	30	5	0	7
Future Volume (vph)	5	684	7	18	1000	4	44	2	30	5	0	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.998			0.999			0.947			0.917	
Flt Protected					0.999			0.972			0.981	
Satd. Flow (prot)	0	3345	0	0	3346	0	0	1613	0	0	1572	0
Flt Permitted		0.949			0.940			0.814			0.876	
Satd. Flow (perm)	0	3175	0	0	3148	0	0	1348	0	0	1401	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			1			32			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	2		3	3		2	3		4	4		3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	748	0	0	1098	0	0	81	0	0	13	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.9	20.9		9.9	17.9		23.2	23.2		23.2	23.2	
Total Split (s)	49.0	49.0		10.0	59.0		26.0	26.0		26.0	26.0	
Total Split (%)	57.6%	57.6%		11.8%	69.4%		30.6%	30.6%		30.6%	30.6%	
Maximum Green (s)	44.1	44.1		5.1	54.1		20.8	20.8		20.8	20.8	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		34.1			34.1			8.9			8.7	
Actuated g/C Ratio		0.79			0.79			0.21			0.20	
v/c Ratio		0.30			0.44			0.27			0.04	
Control Delay		3.6			4.5			14.1			0.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.6			4.5			14.1			0.2	
LOS		A			A			B			A	
Approach Delay		3.6			4.5			14.1			0.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			B			A	
Queue Length 50th (m)		12.1			20.8			4.2			0.0	
Queue Length 95th (m)		23.5			40.0			12.9			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		2965			3148			734			788	
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		0.25			0.35			0.11			0.02	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 43.4
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 4.5 Intersection LOS: A
Intersection Capacity Utilization 57.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	709	33	64	1000	4	240	2	48	5	0	7
Future Volume (vph)	5	709	33	64	1000	4	240	2	48	5	0	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.993			0.999			0.977			0.917	
Flt Protected					0.997			0.960			0.981	
Satd. Flow (prot)	0	3325	0	0	3339	0	0	1650	0	0	1572	0
Flt Permitted		0.949			0.853			0.754			0.896	
Satd. Flow (perm)	0	3156	0	0	2857	0	0	1292	0	0	1434	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			1			13			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	2		3	3		2	3		4	4		3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	802	0	0	1148	0	0	312	0	0	13	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.9	20.9		9.9	17.9		23.2	23.2		23.2	23.2	
Total Split (s)	41.0	41.0		10.0	51.0		34.0	34.0		34.0	34.0	
Total Split (%)	48.2%	48.2%		11.8%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	36.1	36.1		5.1	46.1		28.8	28.8		28.8	28.8	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		36.7			36.7			22.0			22.0	
Actuated g/C Ratio		0.55			0.55			0.33			0.33	
v/c Ratio		0.46			0.74			0.72			0.02	
Control Delay		10.8			15.7			31.2			0.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		10.8			15.7			31.2			0.1	
LOS		B			B			C			A	
Approach Delay		10.8			15.7			31.2			0.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			B			C			A	
Queue Length 50th (m)		30.6			55.2			33.4			0.0	
Queue Length 95th (m)		54.0			97.0			73.0			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		1997			2096			619			725	
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		0.40			0.55			0.50			0.02	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 67.3
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 16.0 Intersection LOS: B
Intersection Capacity Utilization 87.2% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave

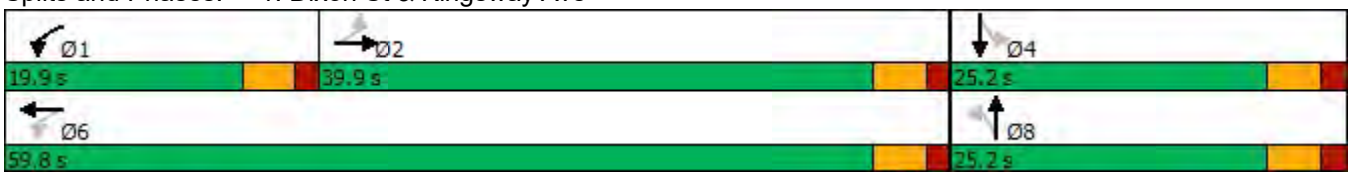
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	993	15	29	841	2	25	0	34	11	0	13
Future Volume (vph)	10	993	15	29	841	2	25	0	34	11	0	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.998						0.922			0.927	
Flt Protected					0.998			0.979			0.977	
Satd. Flow (prot)	0	3345	0	0	3346	0	0	1568	0	0	1583	0
Flt Permitted		0.946			0.902			0.851			0.821	
Satd. Flow (perm)	0	3164	0	0	3024	0	0	1360	0	0	1322	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2						87			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	9		5	5		9	4		11	11		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1106	0	0	948	0	0	64	0	0	26	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.9	22.9		9.9	24.5		23.2	23.2		23.2	23.2	
Total Split (s)	39.9	39.9		19.9	59.8		25.2	25.2		25.2	25.2	
Total Split (%)	46.9%	46.9%		23.4%	70.4%		29.6%	29.6%		29.6%	29.6%	
Maximum Green (s)	35.0	35.0		15.0	54.9		20.0	20.0		20.0	20.0	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		32.0			32.0			7.3			7.3	
Actuated g/C Ratio		0.80			0.80			0.18			0.18	
v/c Ratio		0.44			0.39			0.20			0.08	
Control Delay		3.7			3.5			5.2			0.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.7			3.5			5.2			0.5	
LOS		A			A			A			A	
Approach Delay		3.7			3.5			5.2			0.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (m)		17.2			14.1			0.0			0.0	
Queue Length 95th (m)		31.8			26.2			5.5			0.3	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		2747			3024			790			769	
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		0.40			0.31			0.08			0.03	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 40
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 3.6 Intersection LOS: A
Intersection Capacity Utilization 61.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



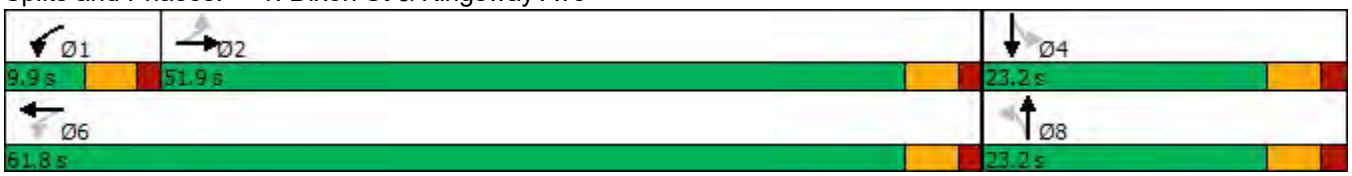
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1030	16	30	873	2	26	0	35	11	0	14
Future Volume (vph)	10	1030	16	30	873	2	26	0	35	11	0	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.998						0.922			0.925	
Flt Protected					0.998			0.979			0.978	
Satd. Flow (prot)	0	3345	0	0	3346	0	0	1568	0	0	1581	0
Flt Permitted		0.946			0.899			0.850			0.825	
Satd. Flow (perm)	0	3164	0	0	3014	0	0	1358	0	0	1325	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			1			87			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	9		5	5		9	4		11	11		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1148	0	0	984	0	0	66	0	0	27	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.9	22.9		9.9	24.5		23.2	23.2		23.2	23.2	
Total Split (s)	51.9	51.9		9.9	61.8		23.2	23.2		23.2	23.2	
Total Split (%)	61.1%	61.1%		11.6%	72.7%		27.3%	27.3%		27.3%	27.3%	
Maximum Green (s)	47.0	47.0		5.0	56.9		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		33.1			33.1			7.3			7.3	
Actuated g/C Ratio		0.80			0.80			0.18			0.18	
v/c Ratio		0.45			0.41			0.21			0.09	
Control Delay		3.8			3.6			5.6			0.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.8			3.6			5.6			0.6	
LOS		A			A			A			A	
Approach Delay		3.8			3.6			5.6			0.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (m)		18.2			14.8			0.0			0.0	
Queue Length 95th (m)		34.7			28.5			5.8			0.4	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		3145			3014			694			678	
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		0.37			0.33			0.10			0.04	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 41.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay: 3.7 Intersection LOS: A
Intersection Capacity Utilization 63.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



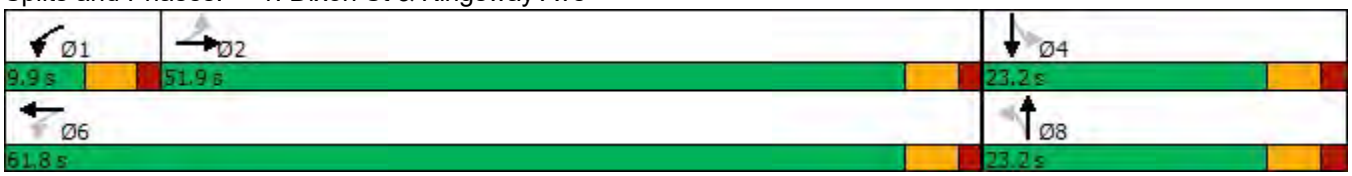
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1101	16	30	919	2	26	0	35	11	0	14
Future Volume (vph)	10	1101	16	30	919	2	26	0	35	11	0	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.998						0.922			0.925	
Flt Protected					0.998			0.979			0.978	
Satd. Flow (prot)	0	3345	0	0	3346	0	0	1568	0	0	1581	0
Flt Permitted		0.946			0.896			0.850			0.825	
Satd. Flow (perm)	0	3164	0	0	3004	0	0	1358	0	0	1325	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3						87			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	9		5	5		9	4		11	11		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1225	0	0	1034	0	0	66	0	0	27	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.9	22.9		9.9	24.5		23.2	23.2		23.2	23.2	
Total Split (s)	51.9	51.9		9.9	61.8		23.2	23.2		23.2	23.2	
Total Split (%)	61.1%	61.1%		11.6%	72.7%		27.3%	27.3%		27.3%	27.3%	
Maximum Green (s)	47.0	47.0		5.0	56.9		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		35.0			35.0			7.4			7.4	
Actuated g/C Ratio		0.81			0.81			0.17			0.17	
v/c Ratio		0.48			0.43			0.22			0.09	
Control Delay		3.9			3.6			5.8			0.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.9			3.6			5.8			0.6	
LOS		A			A			A			A	
Approach Delay		3.9			3.6			5.8			0.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (m)		20.3			16.1			0.0			0.0	
Queue Length 95th (m)		38.5			30.8			6.0			0.3	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		3104			3004			672			657	
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		0.39			0.34			0.10			0.04	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 43.2
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.48
Intersection Signal Delay: 3.8 Intersection LOS: A
Intersection Capacity Utilization 64.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave

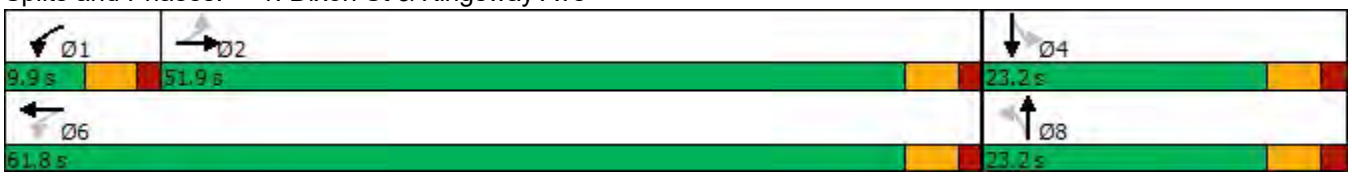


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1075	17	32	919	2	28	0	37	12	0	14
Future Volume (vph)	11	1075	17	32	919	2	28	0	37	12	0	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.998						0.923			0.928	
Flt Protected		0.999			0.998			0.979			0.977	
Satd. Flow (prot)	0	3341	0	0	3346	0	0	1570	0	0	1585	0
Flt Permitted		0.944			0.893			0.848			0.817	
Satd. Flow (perm)	0	3157	0	0	2994	0	0	1357	0	0	1317	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3						87			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	9		5	5		9	4		11	11		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1198	0	0	1036	0	0	70	0	0	28	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.9	22.9		9.9	24.5		23.2	23.2		23.2	23.2	
Total Split (s)	51.9	51.9		9.9	61.8		23.2	23.2		23.2	23.2	
Total Split (%)	61.1%	61.1%		11.6%	72.7%		27.3%	27.3%		27.3%	27.3%	
Maximum Green (s)	47.0	47.0		5.0	56.9		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		34.0			34.0			7.4			7.4	
Actuated g/C Ratio		0.80			0.80			0.17			0.17	
v/c Ratio		0.47			0.43			0.23			0.09	
Control Delay		4.0			3.7			6.1			0.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.0			3.7			6.1			0.6	
LOS		A			A			A			A	
Approach Delay		4.0			3.7			6.1			0.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (m)		19.6			16.1			0.0			0.0	
Queue Length 95th (m)		38.0			31.7			6.6			0.5	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		3121			2994			681			663	
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		0.38			0.35			0.10			0.04	

Intersection Summary	
Area Type: Other	
Cycle Length: 85	
Actuated Cycle Length: 42.4	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 3.9	Intersection LOS: A
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Dixon St & Kingsway Ave



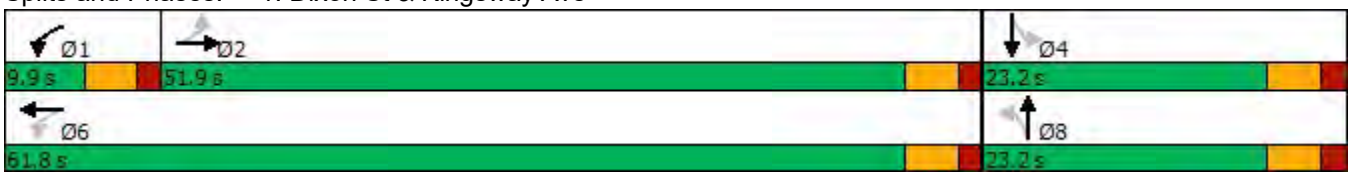
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1148	91	54	963	2	73	0	54	12	0	14
Future Volume (vph)	11	1148	91	54	963	2	73	0	54	12	0	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.989						0.942			0.928	
Flt Protected					0.997			0.972			0.977	
Satd. Flow (prot)	0	3308	0	0	3343	0	0	1597	0	0	1585	0
Flt Permitted		0.944			0.820			0.807			0.868	
Satd. Flow (perm)	0	3123	0	0	2749	0	0	1322	0	0	1401	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16						87			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	9		5	5		9	4		11	11		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1359	0	0	1108	0	0	138	0	0	28	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.9	22.9		9.9	24.5		23.2	23.2		23.2	23.2	
Total Split (s)	51.9	51.9		9.9	61.8		23.2	23.2		23.2	23.2	
Total Split (%)	61.1%	61.1%		11.6%	72.7%		27.3%	27.3%		27.3%	27.3%	
Maximum Green (s)	47.0	47.0		5.0	56.9		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		37.2			37.2			9.7			9.7	
Actuated g/C Ratio		0.73			0.73			0.19			0.19	
v/c Ratio		0.60			0.55			0.43			0.08	
Control Delay		6.5			6.3			14.1			0.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.5			6.3			14.1			0.5	
LOS		A			A			B			A	
Approach Delay		6.5			6.3			14.1			0.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			B			A	
Queue Length 50th (m)		30.7			24.1			3.9			0.0	
Queue Length 95th (m)		65.7			53.0			19.8			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		2858			2663			567			598	
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		0.48			0.42			0.24			0.05	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 51.2
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 6.8 Intersection LOS: A
Intersection Capacity Utilization 89.2% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



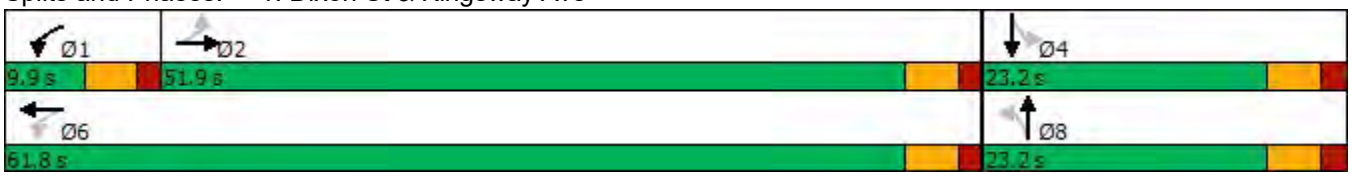
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1222	17	32	1008	2	28	0	37	12	0	14
Future Volume (vph)	11	1222	17	32	1008	2	28	0	37	12	0	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.998						0.923			0.928	
Flt Protected					0.998			0.979			0.977	
Satd. Flow (prot)	0	3345	0	0	3346	0	0	1570	0	0	1585	0
Flt Permitted		0.944			0.886			0.848			0.850	
Satd. Flow (perm)	0	3157	0	0	2970	0	0	1357	0	0	1370	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3						87			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	9		5	5		9	4		11	11		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1358	0	0	1133	0	0	70	0	0	28	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.9	22.9		9.9	24.5		23.2	23.2		23.2	23.2	
Total Split (s)	51.9	51.9		9.9	61.8		23.2	23.2		23.2	23.2	
Total Split (%)	61.1%	61.1%		11.6%	72.7%		27.3%	27.3%		27.3%	27.3%	
Maximum Green (s)	47.0	47.0		5.0	56.9		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		37.2			37.2			7.5			7.5	
Actuated g/C Ratio		0.77			0.77			0.15			0.15	
v/c Ratio		0.56			0.50			0.25			0.10	
Control Delay		4.8			4.3			7.0			0.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.8			4.3			7.0			0.7	
LOS		A			A			A			A	
Approach Delay		4.8			4.3			7.0			0.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (m)		24.3			18.7			0.0			0.0	
Queue Length 95th (m)		45.5			35.5			7.2			0.1	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		2933			2970			608			613	
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		0.46			0.38			0.12			0.05	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 48.6
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 4.6 Intersection LOS: A
Intersection Capacity Utilization 69.1% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



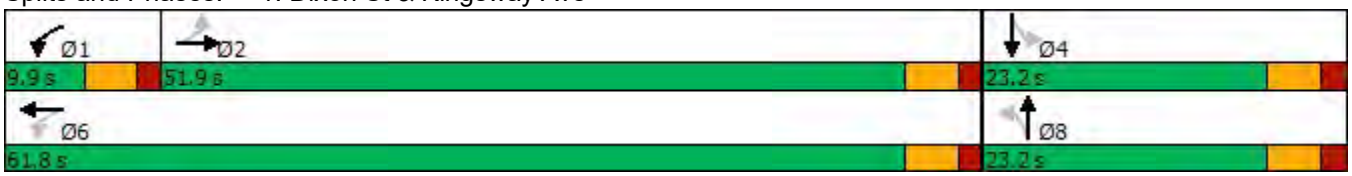
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1172	18	35	1002	2	30	0	41	13	0	16
Future Volume (vph)	12	1172	18	35	1002	2	30	0	41	13	0	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.98			0.98	
Frt		0.998						0.922			0.926	
Flt Protected					0.998			0.979			0.978	
Satd. Flow (prot)	0	3345	0	0	3346	0	0	1568	0	0	1583	0
Flt Permitted		0.942			0.882			0.849			0.864	
Satd. Flow (perm)	0	3150	0	0	2957	0	0	1357	0	0	1390	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3						87			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	9		5	5		9	4		11	11		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1307	0	0	1129	0	0	78	0	0	31	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.9	22.9		9.9	24.5		23.2	23.2		23.2	23.2	
Total Split (s)	51.9	51.9		9.9	61.8		23.2	23.2		23.2	23.2	
Total Split (%)	61.1%	61.1%		11.6%	72.7%		27.3%	27.3%		27.3%	27.3%	
Maximum Green (s)	47.0	47.0		5.0	56.9		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		34.9			34.9			7.7			7.7	
Actuated g/C Ratio		0.75			0.75			0.17			0.17	
v/c Ratio		0.55			0.51			0.26			0.10	
Control Delay		5.0			4.7			7.5			0.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.0			4.7			7.5			0.9	
LOS		A			A			A			A	
Approach Delay		5.0			4.7			7.5			0.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (m)		22.7			18.6			0.0			0.0	
Queue Length 95th (m)		45.3			37.7			8.1			0.7	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		3028			2957			631			645	
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		0.43			0.38			0.12			0.05	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 46.5
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 4.9 Intersection LOS: A
Intersection Capacity Utilization 71.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



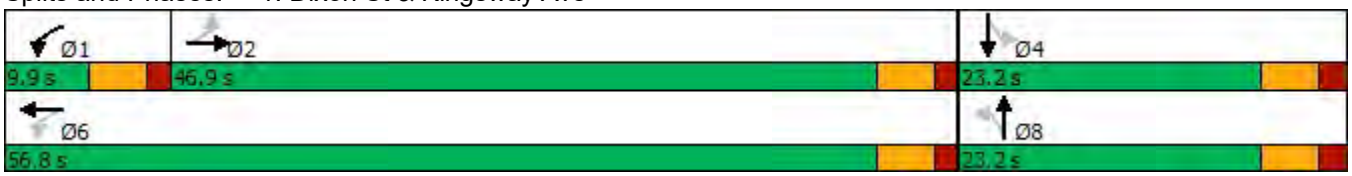
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1245	92	122	1002	2	119	0	58	13	0	16
Future Volume (vph)	12	1245	92	122	1002	2	119	0	58	13	0	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.990						0.956			0.926	
Flt Protected					0.995			0.967			0.978	
Satd. Flow (prot)	0	3312	0	0	3336	0	0	1617	0	0	1583	0
Flt Permitted		0.941			0.610			0.779			0.867	
Satd. Flow (perm)	0	3117	0	0	2045	0	0	1298	0	0	1398	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14						93			93	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	9		5	5		9	4		11	11		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1466	0	0	1224	0	0	192	0	0	31	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.9	22.9		9.9	24.5		23.2	23.2		23.2	23.2	
Total Split (s)	46.9	46.9		9.9	56.8		23.2	23.2		23.2	23.2	
Total Split (%)	58.6%	58.6%		12.4%	71.0%		29.0%	29.0%		29.0%	29.0%	
Maximum Green (s)	42.0	42.0		5.0	51.9		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		52.7			52.7			12.5			12.5	
Actuated g/C Ratio		0.72			0.72			0.17			0.17	
v/c Ratio		0.65			0.83			0.64			0.10	
Control Delay		7.9			15.5			25.4			0.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.9			15.5			25.4			0.6	
LOS		A			B			C			A	
Approach Delay		7.9			15.5			25.4			0.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			B			C			A	
Queue Length 50th (m)		46.0			51.6			13.1			0.0	
Queue Length 95th (m)		91.8			#137.7			33.3			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		2246			1494			411			437	
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		0.65			0.82			0.47			0.07	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 73.2
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 12.2 Intersection LOS: B
Intersection Capacity Utilization 99.6% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixon St & Kingsway Ave



Lane Group	WBL	WBR	SBL	SBR	NEL	NER
Approach LOS	D		E		E	
Queue Length 50th (m)	60.7	35.7	~186.6	7.7	~113.6	76.4
Queue Length 95th (m)	#105.8	#134.4	#260.6	15.8	#177.7	#161.6
Internal Link Dist (m)	120.0		169.8		198.3	
Turn Bay Length (m)						
Base Capacity (vph)	335	864	716	1133	441	694
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	0.83	0.98	1.05	0.26	1.05	1.00

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Natural Cycle: 110
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 56.7 Intersection LOS: E
Intersection Capacity Utilization 90.4% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

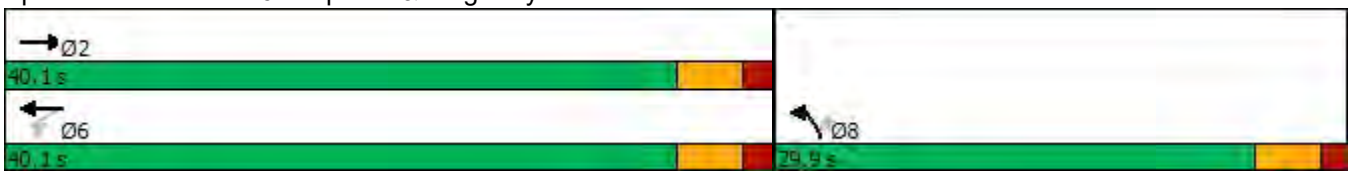
Splits and Phases: 3: Westwood St & Kingsway Ave

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	514	106	3	589	271	21
Future Volume (vph)	514	106	3	589	271	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			
Frt	0.977					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1717	0	1676	1765	1676	1500
Flt Permitted			0.251		0.950	
Satd. Flow (perm)	1717	0	442	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	22					23
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	667	0	3	633	291	23
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	40.1		40.1	40.1	29.9	29.9
Total Split (%)	57.3%		57.3%	57.3%	42.7%	42.7%
Maximum Green (s)	35.0		35.0	35.0	25.0	25.0
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	25.2		25.2	25.2	15.5	15.5
Actuated g/C Ratio	0.51		0.51	0.51	0.31	0.31
v/c Ratio	0.75		0.01	0.70	0.55	0.05
Control Delay	16.2		7.3	14.8	19.8	7.1
Queue Delay	0.0		0.0	0.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Delay	16.2		7.3	14.8	19.8	7.1
LOS	B		A	B	B	A
Approach Delay	16.2			14.8	18.9	
Approach LOS	B			B	B	
Queue Length 50th (m)	40.0		0.1	37.8	21.0	0.0
Queue Length 95th (m)	99.9		1.3	92.2	51.5	4.3
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1320		338	1352	940	851
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.51		0.01	0.47	0.31	0.03

Intersection Summary	
Area Type: Other	
Cycle Length: 70	
Actuated Cycle Length: 49.3	
Natural Cycle: 40	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 16.1	Intersection LOS: B
Intersection Capacity Utilization 57.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Maple St & Kingsway Ave

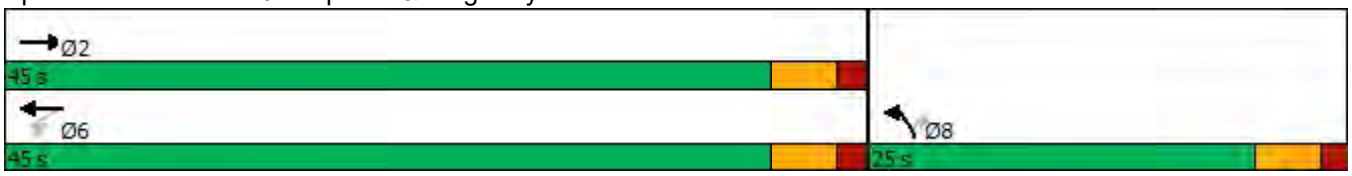


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	532	109	3	610	281	32
Future Volume (vph)	532	109	3	610	281	32
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			
Frt	0.977					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1717	0	1676	1765	1676	1500
Flt Permitted			0.248		0.950	
Satd. Flow (perm)	1717	0	437	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	25					34
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	689	0	3	656	302	34
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	45.0		45.0	45.0	25.0	25.0
Total Split (%)	64.3%		64.3%	64.3%	35.7%	35.7%
Maximum Green (s)	39.9		39.9	39.9	20.1	20.1
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	27.0		27.0	27.0	15.2	15.2
Actuated g/C Ratio	0.53		0.53	0.53	0.30	0.30
v/c Ratio	0.75		0.01	0.70	0.60	0.07
Control Delay	15.0		6.3	13.8	23.0	7.3
Queue Delay	0.0		0.0	0.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Delay	15.0		6.3	13.8	23.0	7.3
LOS	B		A	B	C	A
Approach Delay	15.0			13.8	21.4	
Approach LOS	B			B	C	
Queue Length 50th (m)	41.7		0.1	39.7	23.5	0.0
Queue Length 95th (m)	93.2		1.1	86.1	60.0	5.9
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1405		356	1439	748	688
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.49		0.01	0.46	0.40	0.05

Intersection Summary	
Area Type: Other	
Cycle Length: 70	
Actuated Cycle Length: 50.8	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 15.8	Intersection LOS: B
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Maple St & Kingsway Ave

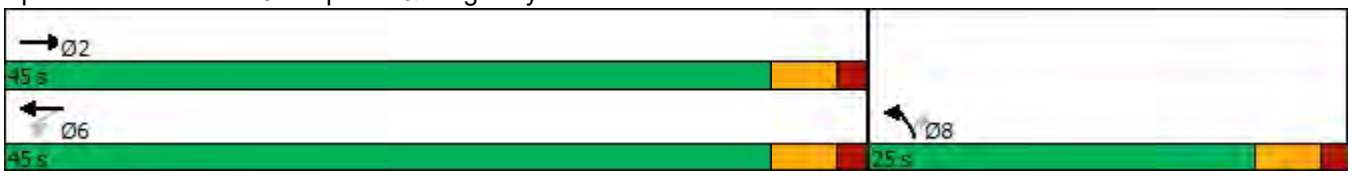


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	561	115	3	627	290	32
Future Volume (vph)	561	115	3	627	290	32
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			
Frt	0.977					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1717	0	1676	1765	1676	1500
Flt Permitted			0.223		0.950	
Satd. Flow (perm)	1717	0	393	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	26					34
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	727	0	3	674	312	34
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	45.0		45.0	45.0	25.0	25.0
Total Split (%)	64.3%		64.3%	64.3%	35.7%	35.7%
Maximum Green (s)	39.9		39.9	39.9	20.1	20.1
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	28.4		28.4	28.4	15.8	15.8
Actuated g/C Ratio	0.54		0.54	0.54	0.30	0.30
v/c Ratio	0.78		0.01	0.71	0.62	0.07
Control Delay	16.4		6.3	14.3	24.2	7.4
Queue Delay	0.0		0.0	0.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Delay	16.4		6.3	14.3	24.2	7.4
LOS	B		A	B	C	A
Approach Delay	16.4			14.2	22.5	
Approach LOS	B			B	C	
Queue Length 50th (m)	48.0		0.1	43.7	26.2	0.0
Queue Length 95th (m)	102.8		1.1	90.3	62.0	5.9
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1359		310	1391	719	663
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.53		0.01	0.48	0.43	0.05

Intersection Summary	
Area Type: Other	
Cycle Length: 70	
Actuated Cycle Length: 52.8	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 16.8	Intersection LOS: B
Intersection Capacity Utilization 62.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Maple St & Kingsway Ave

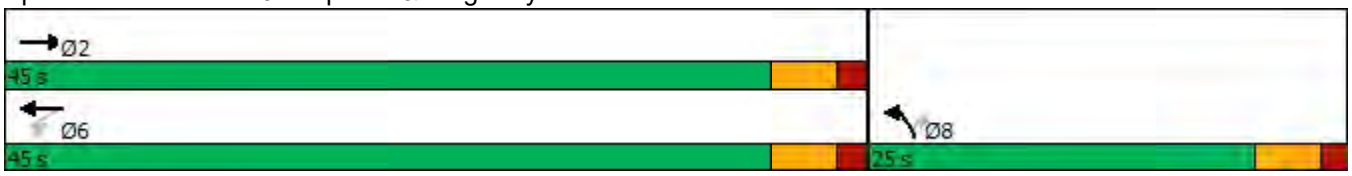


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	547	112	3	641	295	34
Future Volume (vph)	547	112	3	641	295	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			
Frt	0.977					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1717	0	1676	1765	1676	1500
Flt Permitted			0.233		0.950	
Satd. Flow (perm)	1717	0	411	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	25					37
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	708	0	3	689	317	37
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	45.0		45.0	45.0	25.0	25.0
Total Split (%)	64.3%		64.3%	64.3%	35.7%	35.7%
Maximum Green (s)	39.9		39.9	39.9	20.1	20.1
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	27.7		27.7	27.7	15.8	15.8
Actuated g/C Ratio	0.53		0.53	0.53	0.30	0.30
v/c Ratio	0.77		0.01	0.73	0.63	0.08
Control Delay	16.0		6.3	15.1	23.9	7.1
Queue Delay	0.0		0.0	0.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Delay	16.0		6.3	15.1	23.9	7.1
LOS	B		A	B	C	A
Approach Delay	16.0			15.0	22.2	
Approach LOS	B			B	C	
Queue Length 50th (m)	45.6		0.1	45.1	26.1	0.0
Queue Length 95th (m)	97.9		1.1	94.0	63.2	6.1
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1372		327	1405	730	674
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.52		0.01	0.49	0.43	0.05

Intersection Summary	
Area Type: Other	
Cycle Length: 70	
Actuated Cycle Length: 52.1	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 16.9	Intersection LOS: B
Intersection Capacity Utilization 61.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Maple St & Kingsway Ave



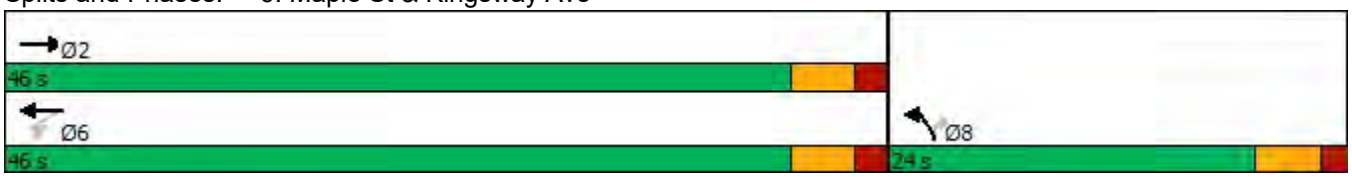
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	607	124	3	671	311	34
Future Volume (vph)	607	124	3	671	311	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			
Frt	0.977					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1717	0	1676	1765	1676	1500
Flt Permitted			0.193		0.950	
Satd. Flow (perm)	1717	0	340	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	26					37
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	786	0	3	722	334	37
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	46.0		46.0	46.0	24.0	24.0
Total Split (%)	65.7%		65.7%	65.7%	34.3%	34.3%
Maximum Green (s)	40.9		40.9	40.9	19.1	19.1
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	31.3		31.3	31.3	16.4	16.4
Actuated g/C Ratio	0.56		0.56	0.56	0.29	0.29
v/c Ratio	0.81		0.02	0.74	0.68	0.08
Control Delay	17.9		6.0	14.8	28.4	7.6
Queue Delay	0.0		0.0	0.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Delay	17.9		6.0	14.8	28.4	7.6
LOS	B		A	B	C	A
Approach Delay	17.9			14.7	26.4	
Approach LOS	B			B	C	
Queue Length 50th (m)	61.1		0.1	53.8	32.9	0.0
Queue Length 95th (m)	114.9		1.1	97.4	#75.0	6.2
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1309		258	1340	638	594
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.60		0.01	0.54	0.52	0.06

Intersection Summary	
Area Type: Other	
Cycle Length: 70	
Actuated Cycle Length: 56.3	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 18.3	Intersection LOS: B
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 6: Maple St & Kingsway Ave



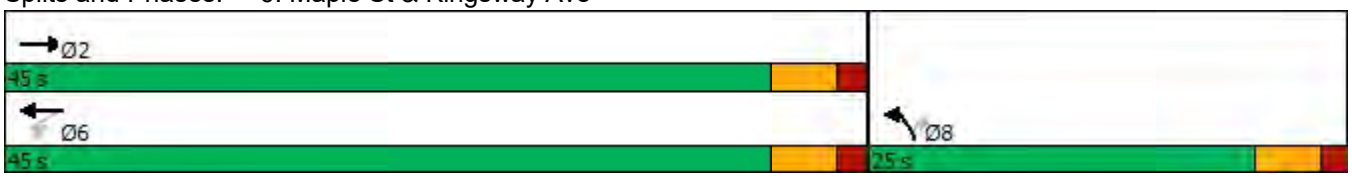
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	596	122	4	700	322	37
Future Volume (vph)	596	122	4	700	322	37
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		1.00			
Frt	0.977					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1717	0	1676	1765	1676	1500
Flt Permitted			0.195		0.950	
Satd. Flow (perm)	1717	0	344	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	25					40
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	772	0	4	753	346	40
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	45.0		45.0	45.0	25.0	25.0
Total Split (%)	64.3%		64.3%	64.3%	35.7%	35.7%
Maximum Green (s)	39.9		39.9	39.9	20.1	20.1
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	30.8		30.8	30.8	16.9	16.9
Actuated g/C Ratio	0.55		0.55	0.55	0.30	0.30
v/c Ratio	0.81		0.02	0.78	0.69	0.08
Control Delay	18.4		6.5	16.9	27.7	7.2
Queue Delay	0.0		0.0	0.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Delay	18.4		6.5	16.9	27.7	7.2
LOS	B		A	B	C	A
Approach Delay	18.4			16.9	25.6	
Approach LOS	B			B	C	
Queue Length 50th (m)	60.6		0.2	59.0	33.9	0.0
Queue Length 95th (m)	115.8		1.4	109.9	#71.2	6.4
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1287		256	1316	670	624
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.60		0.02	0.57	0.52	0.06

Intersection Summary	
Area Type: Other	
Cycle Length: 70	
Actuated Cycle Length: 56.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 66.5%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 6: Maple St & Kingsway Ave



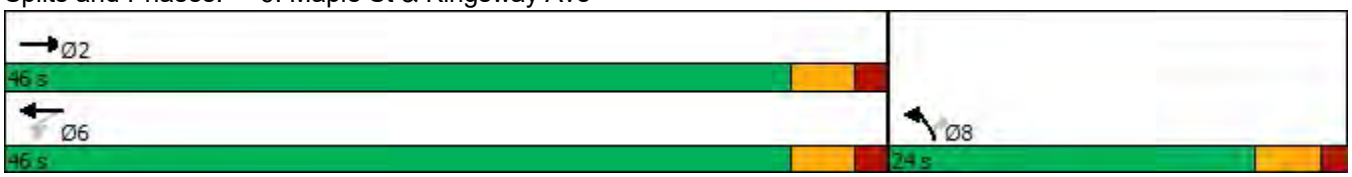
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	656	134	4	730	338	37
Future Volume (vph)	656	134	4	730	338	37
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.977					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1717	0	1676	1765	1676	1500
Flt Permitted			0.158		0.950	
Satd. Flow (perm)	1717	0	279	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	26					40
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	849	0	4	785	363	40
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	46.0		46.0	46.0	24.0	24.0
Total Split (%)	65.7%		65.7%	65.7%	34.3%	34.3%
Maximum Green (s)	40.9		40.9	40.9	19.1	19.1
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	34.6		34.6	34.6	17.5	17.5
Actuated g/C Ratio	0.57		0.57	0.57	0.29	0.29
v/c Ratio	0.86		0.03	0.78	0.75	0.09
Control Delay	21.3		6.2	16.6	33.0	7.4
Queue Delay	0.0		0.0	0.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Delay	21.3		6.2	16.6	33.0	7.4
LOS	C		A	B	C	A
Approach Delay	21.3			16.6	30.4	
Approach LOS	C			B	C	
Queue Length 50th (m)	79.0		0.2	69.2	43.4	0.0
Queue Length 95th (m)	#161.2		1.3	114.1	#85.0	6.6
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1237		200	1264	581	546
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.69		0.02	0.62	0.62	0.07

Intersection Summary	
Area Type: Other	
Cycle Length: 70	
Actuated Cycle Length: 60.5	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 21.3	Intersection LOS: C
Intersection Capacity Utilization 71.5%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 6: Maple St & Kingsway Ave



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	744	289	17	616	262	32
Future Volume (vph)	744	289	17	616	262	32
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99					
Frt	0.962					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1681	0	1676	1765	1676	1500
Flt Permitted			0.108		0.950	
Satd. Flow (perm)	1681	0	191	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	41					35
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		7	7			
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1123	0	18	670	285	35
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	40.1		40.1	40.1	29.9	29.9
Total Split (%)	57.3%		57.3%	57.3%	42.7%	42.7%
Maximum Green (s)	35.0		35.0	35.0	25.0	25.0
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	36.9		36.9	36.9	16.3	16.3
Actuated g/C Ratio	0.60		0.60	0.60	0.27	0.27
v/c Ratio	1.09		0.16	0.63	0.64	0.08
Control Delay	73.5		11.4	12.4	26.5	6.5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	73.5		11.4	12.4	26.5	6.5
LOS	E		B	B	C	A
Approach Delay	73.5			12.3	24.3	
Approach LOS	E			B	C	
Queue Length 50th (m)	~151.4		0.8	43.6	29.1	0.0
Queue Length 95th (m)	#258.7		5.2	99.6	50.4	5.3
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1029		115	1063	712	657
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	1.09		0.16	0.63	0.40	0.05

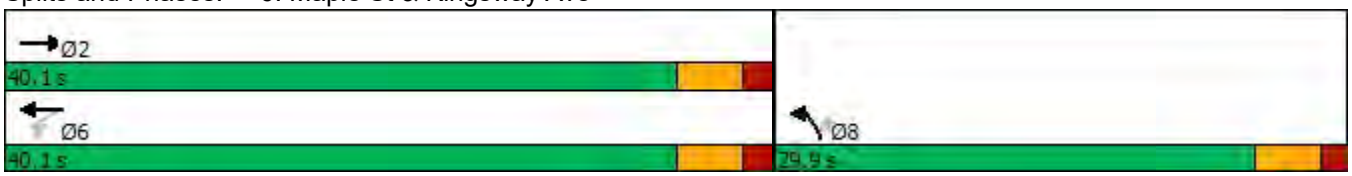
Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 61.2
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 46.4 Intersection LOS: D
Intersection Capacity Utilization 82.1% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Maple St & Kingsway Ave



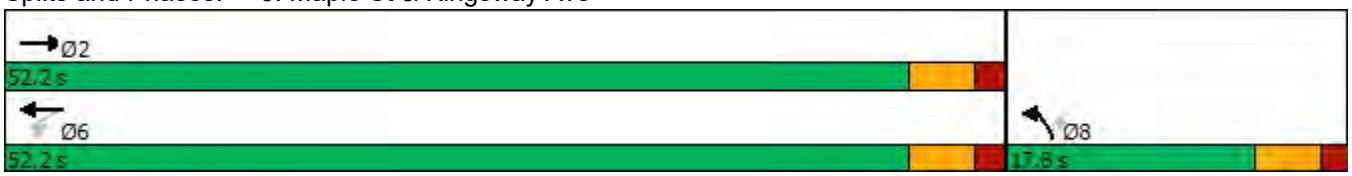
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	770	300	18	640	271	33
Future Volume (vph)	770	300	18	640	271	33
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99					
Frt	0.962					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1682	0	1676	1765	1676	1500
Flt Permitted			0.082		0.950	
Satd. Flow (perm)	1682	0	145	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	64					36
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		7	7			
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1163	0	20	696	295	36
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	52.2		52.2	52.2	17.8	17.8
Total Split (%)	74.6%		74.6%	74.6%	25.4%	25.4%
Maximum Green (s)	47.1		47.1	47.1	12.9	12.9
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	48.6		48.6	48.6	13.8	13.8
Actuated g/C Ratio	0.69		0.69	0.69	0.20	0.20
v/c Ratio	0.98		0.20	0.57	0.90	0.11
Control Delay	35.5		9.6	7.9	60.4	9.8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	35.5		9.6	7.9	60.4	9.8
LOS	D		A	A	E	A
Approach Delay	35.5			7.9	54.9	
Approach LOS	D			A	D	
Queue Length 50th (m)	122.6		0.8	40.5	40.0	0.0
Queue Length 95th (m)	#239.6		4.3	65.5	#83.0	7.0
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1181		99	1218	328	322
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.98		0.20	0.57	0.90	0.11

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70.4	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 29.5	Intersection LOS: C
Intersection Capacity Utilization 84.8%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 6: Maple St & Kingsway Ave



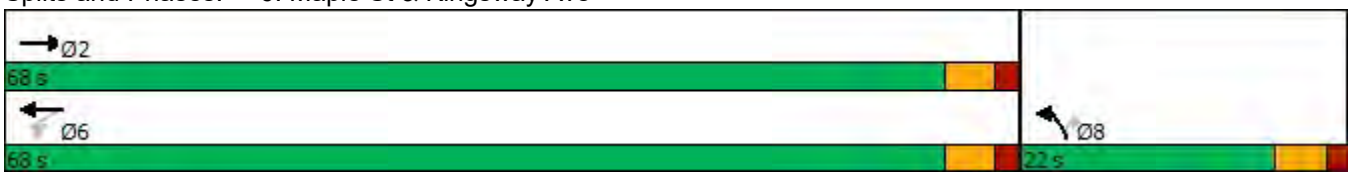
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	796	310	18	669	284	33
Future Volume (vph)	796	310	18	669	284	33
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99					
Frt	0.962					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1680	0	1676	1765	1676	1500
Flt Permitted			0.062		0.950	
Satd. Flow (perm)	1680	0	109	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	54					36
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		7	7			
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1202	0	20	727	309	36
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	68.0		68.0	68.0	22.0	22.0
Total Split (%)	75.6%		75.6%	75.6%	24.4%	24.4%
Maximum Green (s)	62.9		62.9	62.9	17.1	17.1
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	64.0		64.0	64.0	18.0	18.0
Actuated g/C Ratio	0.71		0.71	0.71	0.20	0.20
v/c Ratio	0.99		0.26	0.58	0.92	0.11
Control Delay	38.5		14.4	8.7	70.3	11.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	38.5		14.4	8.7	70.3	11.2
LOS	D		B	A	E	B
Approach Delay	38.5			8.8	64.1	
Approach LOS	D			A	E	
Queue Length 50th (m)	177.3		1.1	55.0	55.6	0.0
Queue Length 95th (m)	#305.3		6.0	82.9	#105.3	7.9
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1210		77	1255	335	328
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.99		0.26	0.58	0.92	0.11

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 32.7	Intersection LOS: C
Intersection Capacity Utilization 87.6%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 6: Maple St & Kingsway Ave



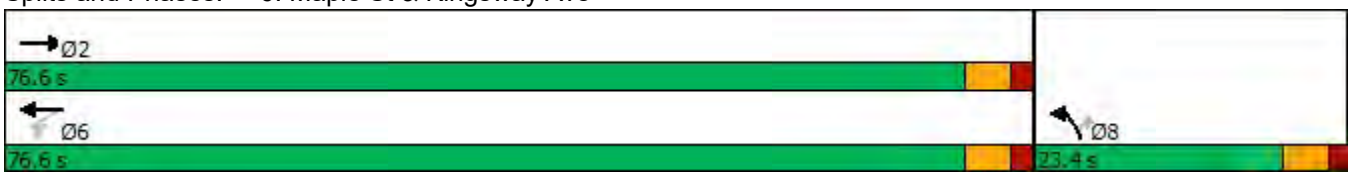
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	810	315	19	669	284	35
Future Volume (vph)	810	315	19	669	284	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99					
Frt	0.962					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1679	0	1676	1765	1676	1500
Flt Permitted			0.063		0.950	
Satd. Flow (perm)	1679	0	111	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	51					38
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		7	7			
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1222	0	21	727	309	38
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	76.6		76.6	76.6	23.4	23.4
Total Split (%)	76.6%		76.6%	76.6%	23.4%	23.4%
Maximum Green (s)	71.5		71.5	71.5	18.5	18.5
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	72.6		72.6	72.6	19.4	19.4
Actuated g/C Ratio	0.73		0.73	0.73	0.19	0.19
v/c Ratio	0.99		0.26	0.57	0.95	0.12
Control Delay	38.3		14.1	8.5	80.2	11.8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	38.3		14.1	8.5	80.2	11.8
LOS	D		B	A	F	B
Approach Delay	38.3			8.7	72.8	
Approach LOS	D			A	E	
Queue Length 50th (m)	202.9		1.2	58.7	62.9	0.0
Queue Length 95th (m)	#337.2		6.0	86.3	#115.9	8.8
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1232		80	1281	325	321
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.99		0.26	0.57	0.95	0.12

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Natural Cycle: 100
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 33.9 Intersection LOS: C
Intersection Capacity Utilization 88.7% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Maple St & Kingsway Ave



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	860	335	19	729	311	35
Future Volume (vph)	860	335	19	729	311	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99					
Frt	0.962					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1677	0	1676	1765	1676	1500
Flt Permitted			0.045		0.950	
Satd. Flow (perm)	1677	0	79	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	44					31
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		7	7			
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1299	0	21	792	338	38
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	92.0		92.0	92.0	28.0	28.0
Total Split (%)	76.7%		76.7%	76.7%	23.3%	23.3%
Maximum Green (s)	86.9		86.9	86.9	23.1	23.1
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	88.0		88.0	88.0	24.0	24.0
Actuated g/C Ratio	0.73		0.73	0.73	0.20	0.20
v/c Ratio	1.05		0.37	0.61	1.01	0.12
Control Delay	55.9		26.8	10.2	99.5	17.3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	55.9		26.8	10.2	99.5	17.3
LOS	E		C	B	F	B
Approach Delay	55.9			10.7	91.2	
Approach LOS	E			B	F	
Queue Length 50th (m)	~347.2		1.7	83.2	~85.6	1.4
Queue Length 95th (m)	#432.7		11.1	116.6	#147.7	11.2
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1241		57	1294	335	324
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	1.05		0.37	0.61	1.01	0.12

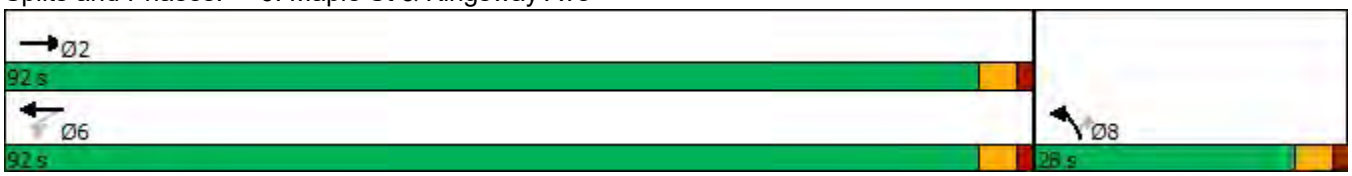
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 120
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 46.5 Intersection LOS: D
Intersection Capacity Utilization 94.4% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Maple St & Kingsway Ave



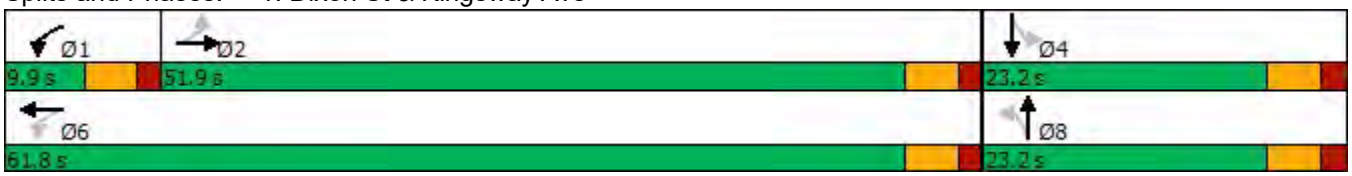
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1110	171	49	960	2	122	0	51	12	0	14
Future Volume (vph)	11	1110	171	49	960	2	122	0	51	12	0	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00			0.99			0.99	
Frt		0.980						0.961			0.928	
Flt Protected					0.998			0.966			0.977	
Satd. Flow (prot)	0	3272	0	0	3346	0	0	1625	0	0	1585	0
Flt Permitted		0.944			0.825			0.772			0.873	
Satd. Flow (perm)	0	3088	0	0	2766	0	0	1294	0	0	1410	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33						87			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		155.9			135.0			181.2			78.6	
Travel Time (s)		11.2			9.7			13.0			5.7	
Confl. Peds. (#/hr)	9		5	5		9	4		11	11		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1405	0	0	1098	0	0	188	0	0	28	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.9	22.9		9.9	24.5		23.2	23.2		23.2	23.2	
Total Split (s)	51.9	51.9		9.9	61.8		23.2	23.2		23.2	23.2	
Total Split (%)	61.1%	61.1%		11.6%	72.7%		27.3%	27.3%		27.3%	27.3%	
Maximum Green (s)	47.0	47.0		5.0	56.9		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.4	3.4		3.4	3.4		3.4	3.4		3.4	3.4	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.8	1.8		1.8	1.8	
Lost Time Adjust (s)		-0.9			-0.9			-1.2			-1.2	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	9.0	9.0			6.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		36.6			36.6			12.1			12.1	
Actuated g/C Ratio		0.64			0.64			0.21			0.21	
v/c Ratio		0.70			0.62			0.55			0.08	
Control Delay		9.4			8.4			18.6			0.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.4			8.4			18.6			0.4	
LOS		A			A			B			A	
Approach Delay		9.4			8.4			18.6			0.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			B			A	
Queue Length 50th (m)		40.4			29.4			8.2			0.0	
Queue Length 95th (m)		85.6			63.4			31.0			0.0	
Internal Link Dist (m)		131.9			111.0			157.2			54.6	
Turn Bay Length (m)												
Base Capacity (vph)		2675			2599			506			547	
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		0.53			0.42			0.37			0.05	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 56.9
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 9.6 Intersection LOS: A
Intersection Capacity Utilization 89.5% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Dixon St & Kingsway Ave



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	933	363	20	790	337	38
Future Volume (vph)	933	363	20	790	337	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		0.0	55.0		0.0	50.0
Storage Lanes		0	1		1	1
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99					
Frt	0.962					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1677	0	1676	1765	1676	1500
Flt Permitted			0.045		0.950	
Satd. Flow (perm)	1677	0	79	1765	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	45					30
Link Speed (k/h)	50			50	50	
Link Distance (m)	261.1			211.7	342.5	
Travel Time (s)	18.8			15.2	24.7	
Confl. Peds. (#/hr)		7	7			
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1409	0	22	859	366	41
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	7.0	7.0
Minimum Split (s)	23.1		15.1	15.1	11.9	11.9
Total Split (s)	93.0		93.0	93.0	27.0	27.0
Total Split (%)	77.5%		77.5%	77.5%	22.5%	22.5%
Maximum Green (s)	87.9		87.9	87.9	22.1	22.1
Yellow Time (s)	3.4		3.4	3.4	3.4	3.4
All-Red Time (s)	1.7		1.7	1.7	1.5	1.5
Lost Time Adjust (s)	-1.1		-1.1	-1.1	-0.9	-0.9
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	Min		Min	Min	None	None
Walk Time (s)	8.0					
Flash Dont Walk (s)	10.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	89.0		89.0	89.0	23.0	23.0
Actuated g/C Ratio	0.74		0.74	0.74	0.19	0.19
v/c Ratio	1.12		0.38	0.66	1.14	0.13
Control Delay	84.0		27.2	10.8	137.7	19.4

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	84.0		27.2	10.8	137.7	19.4
LOS	F		C	B	F	B
Approach Delay	84.0			11.2	125.8	
Approach LOS	F			B	F	
Queue Length 50th (m)	~401.2		1.7	92.9	~105.9	2.3
Queue Length 95th (m)	#486.7		12.1	131.5	#166.8	12.4
Internal Link Dist (m)	237.1			187.7	318.5	
Turn Bay Length (m)			55.0			50.0
Base Capacity (vph)	1255		58	1309	321	311
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	1.12		0.38	0.66	1.14	0.13

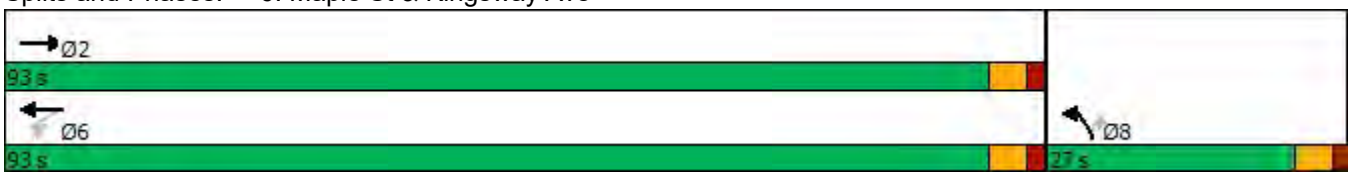
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 120
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 66.5 Intersection LOS: E
Intersection Capacity Utilization 101.7% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Maple St & Kingsway Ave



HCS7 Two-Way Stop-Control Report

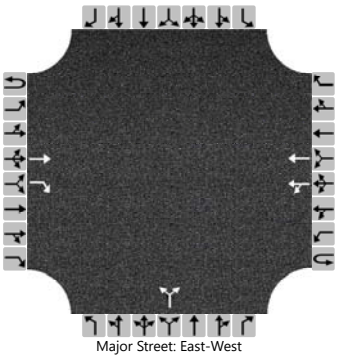
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	AM Peak Hr
Analysis Year	2020
Time Analyzed	Base
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	1	0		0	0	0
Configuration			T	R		LT	T				LR					
Volume (veh/h)			599	9		9	851			20		21				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.14				6.84		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						10					44					
Capacity, c (veh/h)						927					267					
v/c Ratio						0.01					0.17					
95% Queue Length, Q_{95} (veh)						0.0					0.6					
Control Delay (s/veh)						8.9					21.1					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)					0.2				21.1							
Approach LOS									C							

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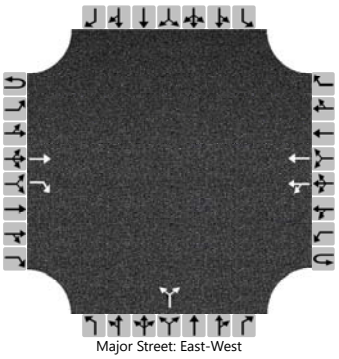
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RC	Intersection	Gately Ave & Kingsway Ave
Agency/Co.	CTS	Jurisdiction	Port Coquitlam, BC
Date Performed	AM Peak Hr	East/West Street	Kingsway Avenue
Analysis Year	2022	North/South Street	Gately Avenue
Time Analyzed	Base	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	7163 - Affordable Housing Project TIS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	1	0		0	0	0
Configuration			T	R		LT	T				LR					
Volume (veh/h)			623	6		6	885			19		19				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.14				6.84		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						6					41					
Capacity, c (veh/h)						909					253					
v/c Ratio						0.01					0.16					
95% Queue Length, Q_{95} (veh)						0.0					0.6					
Control Delay (s/veh)						9.0					22.0					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)					0.1				22.0							
Approach LOS									C							

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HCS7 Two-Way Stop-Control Report

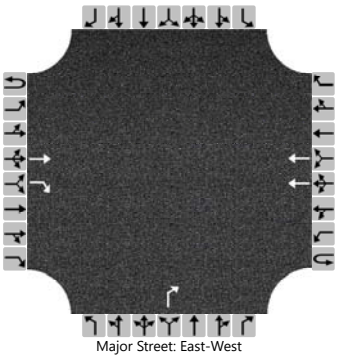
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	AM Peak Hr
Analysis Year	2022
Time Analyzed	Base+Site (RIRO & Dixon)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			623	39			934					51				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												55				
Capacity, c (veh/h)												399				
v/c Ratio												0.14				
95% Queue Length, Q_{95} (veh)												0.5				
Control Delay (s/veh)												15.5				
Level of Service (LOS)												C				
Approach Delay (s/veh)									15.5							
Approach LOS									C							

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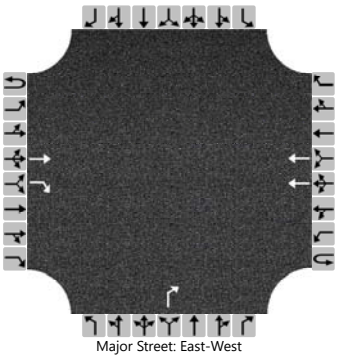
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RC	Intersection	Gately Ave & Kingsway Ave
Agency/Co.	CTS	Jurisdiction	Port Coquitlam, BC
Date Performed	AM Peak Hr	East/West Street	Kingsway Avenue
Analysis Year	2022	North/South Street	Gately Avenue
Time Analyzed	Base+Site (RIRO)	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	7163 - Affordable Housing Project TIS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			623	63			934					140				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												151				
Capacity, c (veh/h)												399				
v/c Ratio												0.38				
95% Queue Length, Q_{95} (veh)												1.7				
Control Delay (s/veh)												19.4				
Level of Service (LOS)												C				
Approach Delay (s/veh)									19.4							
Approach LOS									C							

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HCS7 Two-Way Stop-Control Report

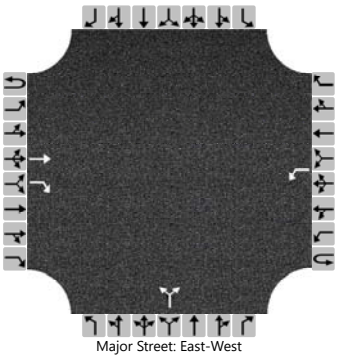
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	AM Peak Hr
Analysis Year	2022
Time Analyzed	Base+Site (WBLT & NBLT)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	0	0		0	1	0		0	0	0
Configuration			T	R		L					LR					
Volume (veh/h)			623	33		30				89		51				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized			No													
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						32					151					
Capacity, c (veh/h)						891					422					
v/c Ratio						0.04					0.36					
95% Queue Length, Q_{95} (veh)						0.1					1.6					
Control Delay (s/veh)						9.2					18.2					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)					9.2				18.2							
Approach LOS									C							

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HCS7 Two-Way Stop-Control Report

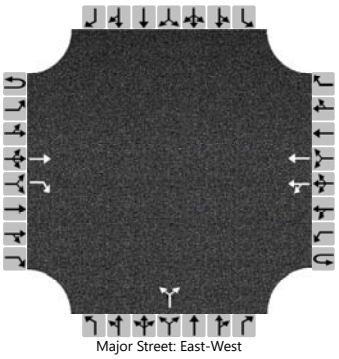
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	AM Peak Hr
Analysis Year	2022
Time Analyzed	Base+Site (Existing Lane)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	1	0		0	0	0
Configuration			T	R		LT	T				LR					
Volume (veh/h)			623	33		30	885			89		51				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.14				6.84		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						32					151					
Capacity, c (veh/h)						887					205					
v/c Ratio						0.04					0.73					
95% Queue Length, Q_{95} (veh)						0.1					4.8					
Control Delay (s/veh)						9.2					59.7					
Level of Service (LOS)						A					F					
Approach Delay (s/veh)					0.6				59.7							
Approach LOS									F							

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HCS7 Two-Way Stop-Control Report

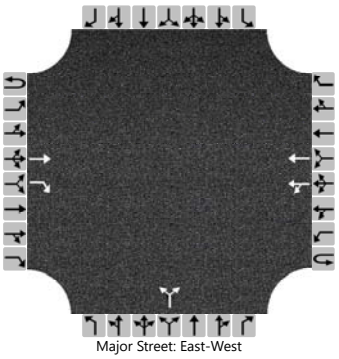
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	AM Peak Hr
Analysis Year	2025
Time Analyzed	Base
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	1	0		0	0	0
Configuration			T	R		LT	T				LR					
Volume (veh/h)			659	0		0	936			0		0				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized			No													
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.14				6.84		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0					0					
Capacity, c (veh/h)						884										
v/c Ratio						0.00										
95% Queue Length, Q_{95} (veh)						0.0										
Control Delay (s/veh)						9.1										
Level of Service (LOS)						A										
Approach Delay (s/veh)					0.0											
Approach LOS																

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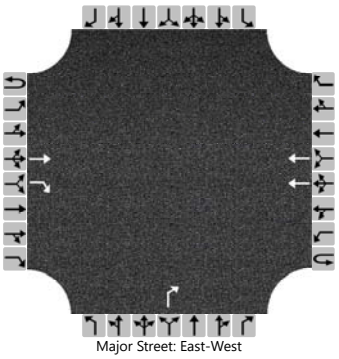
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RC	Intersection	Gately Ave & Kingsway Ave
Agency/Co.	CTS	Jurisdiction	Port Coquitlam, BC
Date Performed	AM Peak Hr	East/West Street	Kingsway Avenue
Analysis Year	2025	North/South Street	Gately Avenue
Time Analyzed	Base+Site (RIRO & Dixon)	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	7163 - Affordable Housing Project TIS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			677	38			980					51				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												55				
Capacity, c (veh/h)												365				
v/c Ratio												0.15				
95% Queue Length, Q_{95} (veh)												0.5				
Control Delay (s/veh)												16.6				
Level of Service (LOS)												C				
Approach Delay (s/veh)									16.6							
Approach LOS									C							

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HCS7 Two-Way Stop-Control Report

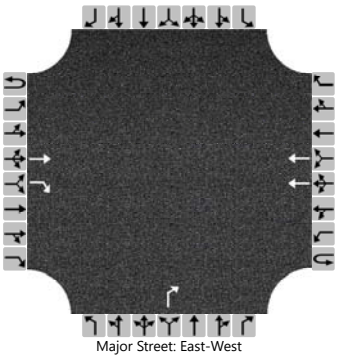
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	AM Peak Hr
Analysis Year	2025
Time Analyzed	Base+Site (RIRO)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			659	93			980					222				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												239				
Capacity, c (veh/h)												376				
v/c Ratio												0.64				
95% Queue Length, Q_{95} (veh)												4.2				
Control Delay (s/veh)												29.8				
Level of Service (LOS)												D				
Approach Delay (s/veh)									29.8							
Approach LOS									D							

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HCS7 Two-Way Stop-Control Report

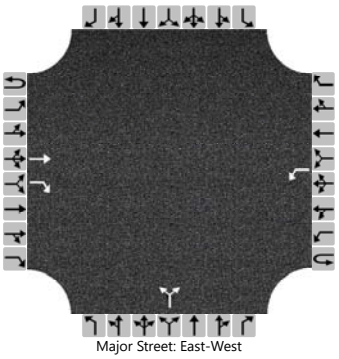
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	AM Peak Hr
Analysis Year	2025
Time Analyzed	Base+Site (WBLT & NBLT)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	0	0		0	1	0		0	0	0
Configuration			T	R		L					LR					
Volume (veh/h)			659	49		44				153		69				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized			No													
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						47					239					
Capacity, c (veh/h)						849					393					
v/c Ratio						0.06					0.61					
95% Queue Length, Q_{95} (veh)						0.2					3.9					
Control Delay (s/veh)						9.5					27.4					
Level of Service (LOS)						A					D					
Approach Delay (s/veh)					9.5				27.4							
Approach LOS									D							

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HCS7 Two-Way Stop-Control Report

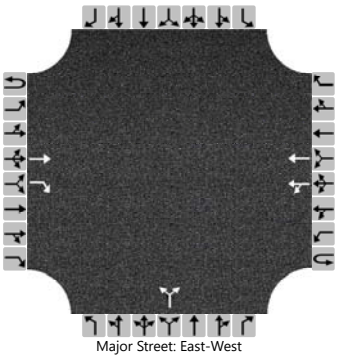
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	AM Peak Hr
Analysis Year	2030
Time Analyzed	Base
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	1	0		0	0	0
Configuration			T	R		LT	T				LR					
Volume (veh/h)			719	0		0	1021			0		0				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized			No													
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.14				6.84		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0					0					
Capacity, c (veh/h)						836										
v/c Ratio						0.00										
95% Queue Length, Q_{95} (veh)						0.0										
Control Delay (s/veh)						9.3										
Level of Service (LOS)						A										
Approach Delay (s/veh)					0.0											
Approach LOS																

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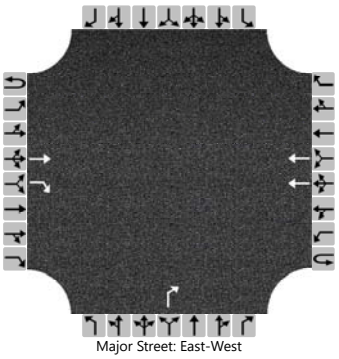
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RC	Intersection	Gately Ave & Kingsway Ave
Agency/Co.	CTS	Jurisdiction	Port Coquitlam, BC
Date Performed	AM Peak Hr	East/West Street	Kingsway Avenue
Analysis Year	2030	North/South Street	Gately Avenue
Time Analyzed	Base+Site (RIRO & Dixon)	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	7163 - Affordable Housing Project TIS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			737	38			1065					51				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												55				
Capacity, c (veh/h)												331				
v/c Ratio												0.17				
95% Queue Length, Q_{95} (veh)												0.6				
Control Delay (s/veh)												18.0				
Level of Service (LOS)												C				
Approach Delay (s/veh)									18.0							
Approach LOS									C							

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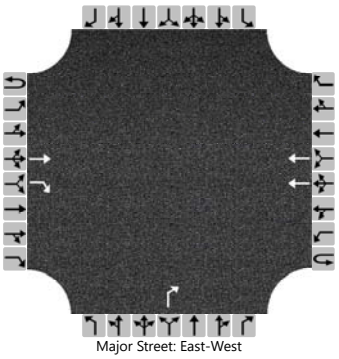
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RC	Intersection	Gately Ave & Kingsway Ave
Agency/Co.	CTS	Jurisdiction	Port Coquitlam, BC
Date Performed	AM Peak Hr	East/West Street	Kingsway Avenue
Analysis Year	2030	North/South Street	Gately Avenue
Time Analyzed	Base+Site (RIRO)	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	7163 - Affordable Housing Project TIS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			719	93			1021					222				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												239				
Capacity, c (veh/h)												341				
v/c Ratio												0.70				
95% Queue Length, Q_{95} (veh)												5.0				
Control Delay (s/veh)												36.9				
Level of Service (LOS)												E				
Approach Delay (s/veh)									36.9							
Approach LOS									E							

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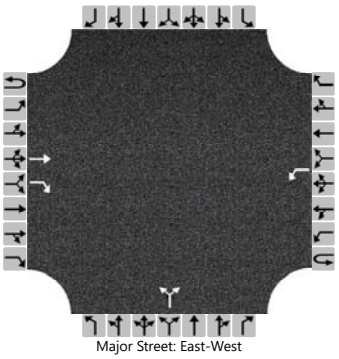
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RC	Intersection	Gately Ave & Kingsway Ave
Agency/Co.	CTS	Jurisdiction	Port Coquitlam, BC
Date Performed	AM Peak Hr	East/West Street	Kingsway Avenue
Analysis Year	2030	North/South Street	Gately Avenue
Time Analyzed	Base+Site (WBLT & NBLT)	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	7163 - Affordable Housing Project TIS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	0	0		0	1	0		0	0	0
Configuration			T	R		L					LR					
Volume (veh/h)			719	49		44				153		69				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						47					239					
Capacity, c (veh/h)						803					359					
v/c Ratio						0.06					0.66					
95% Queue Length, Q_{95} (veh)						0.2					4.6					
Control Delay (s/veh)						9.8					32.8					
Level of Service (LOS)						A					D					
Approach Delay (s/veh)					9.8				32.8							
Approach LOS									D							

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HCS7 Two-Way Stop-Control Report

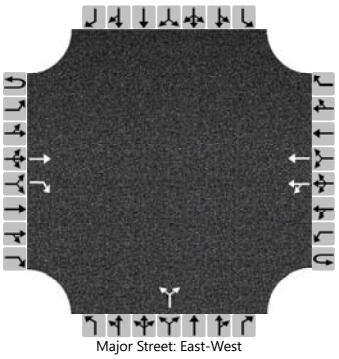
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	PM Peak Hr
Analysis Year	2020
Time Analyzed	Base
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	1	0		0	0	0
Configuration			T	R		LT	T				LR					
Volume (veh/h)			1022	16		12	866			6		11				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.14				6.84		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						13					18					
Capacity, c (veh/h)						614					141					
v/c Ratio						0.02					0.13					
95% Queue Length, Q_{95} (veh)						0.1					0.4					
Control Delay (s/veh)						11.0					34.3					
Level of Service (LOS)						B					D					
Approach Delay (s/veh)					0.4				34.3							
Approach LOS									D							

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HCS7 Two-Way Stop-Control Report

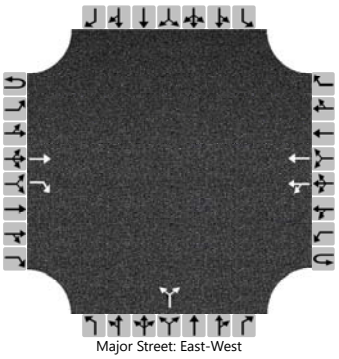
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	PM Peak Hr
Analysis Year	2022
Time Analyzed	Base
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	1	0		0	0	0
Configuration			T	R		LT	T				LR					
Volume (veh/h)			1063	14		10	901			4		6				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.14				6.84		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						11					11					
Capacity, c (veh/h)						591					125					
v/c Ratio						0.02					0.09					
95% Queue Length, Q_{95} (veh)						0.1					0.3					
Control Delay (s/veh)						11.2					36.4					
Level of Service (LOS)						B					E					
Approach Delay (s/veh)					0.3				36.4							
Approach LOS									E							

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HCS7 Two-Way Stop-Control Report

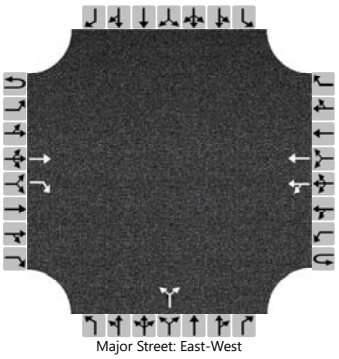
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	PM Peak Hr
Analysis Year	2022
Time Analyzed	Base+Site (No Change)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	1	0		0	0	0
Configuration			T	R		LT	T				LR					
Volume (veh/h)			1063	78		48	901			47		39				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.14				6.84		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						52					93					
Capacity, c (veh/h)						556					88					
v/c Ratio						0.09					1.07					
95% Queue Length, Q_{95} (veh)						0.3					6.3					
Control Delay (s/veh)						12.1					202.2					
Level of Service (LOS)						B					F					
Approach Delay (s/veh)					1.7				202.2							
Approach LOS									F							

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HCS7 Two-Way Stop-Control Report

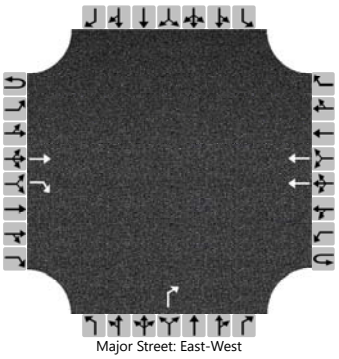
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	PM Peak Hr
Analysis Year	2022
Time Analyzed	Base+Site (RIRO & Dixon)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			1063	88			953					39				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												42				
Capacity, c (veh/h)												190				
v/c Ratio												0.22				
95% Queue Length, Q_{95} (veh)												0.8				
Control Delay (s/veh)												29.4				
Level of Service (LOS)												D				
Approach Delay (s/veh)									29.4							
Approach LOS									D							

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HCS7 Two-Way Stop-Control Report

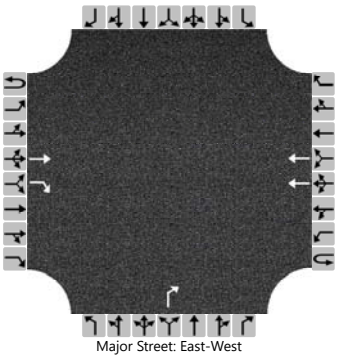
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	PM Peak Hr
Analysis Year	2022
Time Analyzed	Base+Site (RIRO)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			1063	126			953					86				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												93				
Capacity, c (veh/h)												190				
v/c Ratio												0.49				
95% Queue Length, Q_{95} (veh)												2.4				
Control Delay (s/veh)												41.2				
Level of Service (LOS)												E				
Approach Delay (s/veh)									41.2							
Approach LOS									E							

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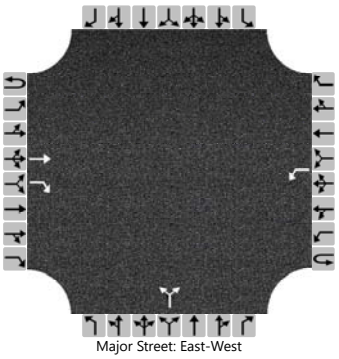
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RC	Intersection	Gately Ave & Kingsway Ave
Agency/Co.	CTS	Jurisdiction	Port Coquitlam, BC
Date Performed	PM Peak Hr	East/West Street	Kingsway Avenue
Analysis Year	2022	North/South Street	Gately Avenue
Time Analyzed	Base+Site (WBLT & NBLT)	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	7163 - Affordable Housing Project TIS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	0	0		0	1	0		0	0	0
Configuration			T	R		L					LR					
Volume (veh/h)			1063	78		48				47		39				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						52					93					
Capacity, c (veh/h)						560					214					
v/c Ratio						0.09					0.44					
95% Queue Length, Q_{95} (veh)						0.3					2.1					
Control Delay (s/veh)						12.1					34.3					
Level of Service (LOS)						B					D					
Approach Delay (s/veh)					12.1				34.3							
Approach LOS									D							

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HCS7 Two-Way Stop-Control Report

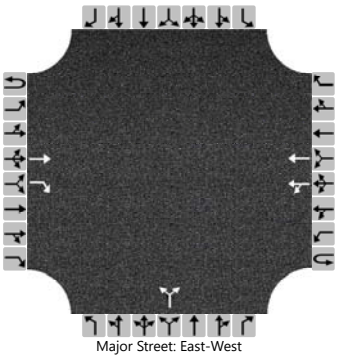
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	PM Peak Hr
Analysis Year	2025
Time Analyzed	Base
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	1	0		0	0	0
Configuration			T	R		LT	T				LR					
Volume (veh/h)			1124	0		0	953			0		0				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized			No													
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.14				6.84		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0					0					
Capacity, c (veh/h)						565										
v/c Ratio						0.00										
95% Queue Length, Q_{95} (veh)						0.0										
Control Delay (s/veh)						11.4										
Level of Service (LOS)						B										
Approach Delay (s/veh)					0.0											
Approach LOS																

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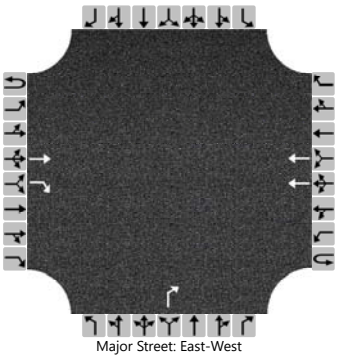
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RC	Intersection	Gately Ave & Kingsway Ave
Agency/Co.	CTS	Jurisdiction	Port Coquitlam, BC
Date Performed	PM Peak Hr	East/West Street	Kingsway Avenue
Analysis Year	2025	North/South Street	Gately Avenue
Time Analyzed	Base+Site (RIRO & Dixon)	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	7163 - Affordable Housing Project TIS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			1141	102			1036					50				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												54				
Capacity, c (veh/h)												166				
v/c Ratio												0.33				
95% Queue Length, Q_{95} (veh)												1.3				
Control Delay (s/veh)												36.8				
Level of Service (LOS)												E				
Approach Delay (s/veh)									36.8							
Approach LOS									E							

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HCS7 Two-Way Stop-Control Report

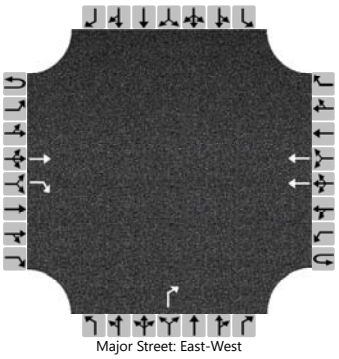
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	PM Peak Hr
Analysis Year	2025
Time Analyzed	Base+Site (RIRO)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			1124	223			1036					153				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												166				
Capacity, c (veh/h)												171				
v/c Ratio												0.97				
95% Queue Length, Q_{95} (veh)												7.6				
Control Delay (s/veh)												116.0				
Level of Service (LOS)												F				
Approach Delay (s/veh)									116.0							
Approach LOS									F							

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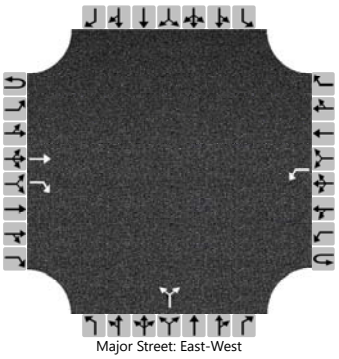
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RC	Intersection	Gately Ave & Kingsway Ave
Agency/Co.	CTS	Jurisdiction	Port Coquitlam, BC
Date Performed	PM Peak Hr	East/West Street	Kingsway Avenue
Analysis Year	2025	North/South Street	Gately Avenue
Time Analyzed	Base+Site (WBLT & NBLT)	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	7163 - Affordable Housing Project TIS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	0	0		0	1	0		0	0	0
Configuration			T	R		L					LR					
Volume (veh/h)			1124	140		83				86		67				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						90					166					
Capacity, c (veh/h)						498					183					
v/c Ratio						0.18					0.91					
95% Queue Length, Q_{95} (veh)						0.7					6.9					
Control Delay (s/veh)						13.8					96.8					
Level of Service (LOS)						B					F					
Approach Delay (s/veh)					13.8				96.8							
Approach LOS									F							

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HCS7 Two-Way Stop-Control Report

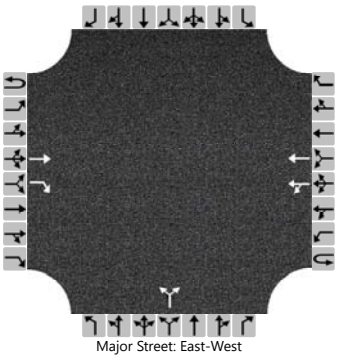
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	PM Peak Hr
Analysis Year	2030
Time Analyzed	Base
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	1	0		0	0	0
Configuration			T	R		LT	T				LR					
Volume (veh/h)			1226	0		0	1039			0		0				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.5		6.9				
Critical Headway (sec)						4.14				6.84		6.94				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0					0					
Capacity, c (veh/h)						513										
v/c Ratio						0.00										
95% Queue Length, Q_{95} (veh)						0.0										
Control Delay (s/veh)						12.0										
Level of Service (LOS)						B										
Approach Delay (s/veh)					0.0											
Approach LOS																

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HCS7 Two-Way Stop-Control Report

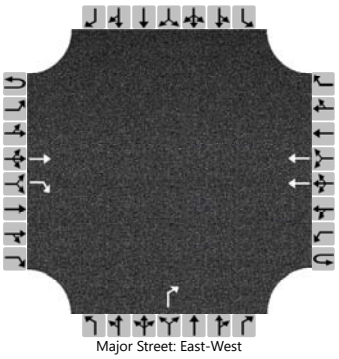
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	PM Peak Hr
Analysis Year	2030
Time Analyzed	Base+Site (RIRO & Dixon)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			1243	102			1122					50				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												54				
Capacity, c (veh/h)												140				
v/c Ratio												0.39				
95% Queue Length, Q_{95} (veh)												1.7				
Control Delay (s/veh)												46.2				
Level of Service (LOS)												E				
Approach Delay (s/veh)									46.2							
Approach LOS									E							

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HCS7 Two-Way Stop-Control Report

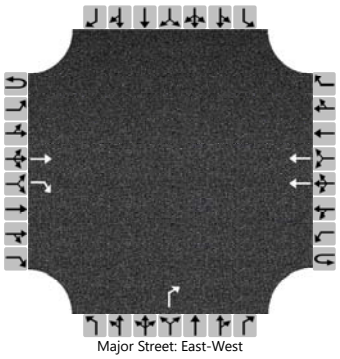
General Information

Analyst	RC
Agency/Co.	CTS
Date Performed	PM Peak Hr
Analysis Year	2030
Time Analyzed	Base+Site (RIRO)
Intersection Orientation	East-West
Project Description	7163 - Affordable Housing Project TIS

Site Information

Intersection	Gately Ave & Kingsway Ave
Jurisdiction	Port Coquitlam, BC
East/West Street	Kingsway Avenue
North/South Street	Gately Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	2	0		0	0	1		0	0	0
Configuration			T	R			T					R				
Volume (veh/h)			1226	223			1122					153				
Percent Heavy Vehicles (%)												2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No								No							
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)												6.9				
Critical Headway (sec)												6.94				
Base Follow-Up Headway (sec)												3.3				
Follow-Up Headway (sec)												3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)												166				
Capacity, c (veh/h)												144				
v/c Ratio												1.16				
95% Queue Length, Q_{95} (veh)												9.4				
Control Delay (s/veh)												184.2				
Level of Service (LOS)												F				
Approach Delay (s/veh)									184.2							
Approach LOS									F							

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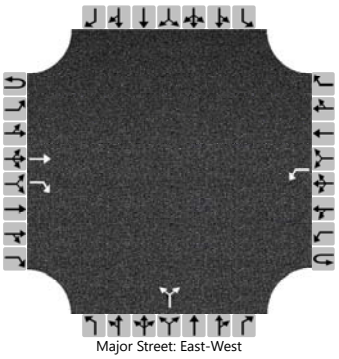
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RC	Intersection	Gately Ave & Kingsway Ave
Agency/Co.	CTS	Jurisdiction	Port Coquitlam, BC
Date Performed	PM Peak Hr	East/West Street	Kingsway Avenue
Analysis Year	2030	North/South Street	Gately Avenue
Time Analyzed	Base+Site (WBLT & NBLT)	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	7163 - Affordable Housing Project TIS		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	0	0		0	1	0		0	0	0
Configuration			T	R		L					LR					
Volume (veh/h)			1226	140		83				86		67				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No															
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						90					166					
Capacity, c (veh/h)						452					154					
v/c Ratio						0.20					1.08					
95% Queue Length, Q_{95} (veh)						0.7					8.7					
Control Delay (s/veh)						14.9					153.4					
Level of Service (LOS)						B					F					
Approach Delay (s/veh)					14.9				153.4							
Approach LOS									F							

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AFFORDABLE HOUSING SOCIETIES
SERVING THE LOWER MAINLAND SINCE 1983

www.affordablehousingsocieties.ca

September 28th, 2020

To: Barry Weih, Architect, WA Architects L:td.

Re: Parking Rationale for Proposed Kingsway and Gately Building

Dear Barry

The proposed Peak Towers/AHS development at Kingsway and Gately provides 294 parking stalls for 300 units of housing. While the proposed parking ratio comes a few spaces short of meeting the City of Port Coquitlam's recommended parking ratio for this type of building, the Affordable Housing Societies (AHS) is comfortable with this ratio and feels the number of parking stalls will exceed the needs of its tenants for the following reasons:

1. Across 63 properties and 3600 units of rental housing throughout the Lower Mainland, the parking ratio over the entire AHS portfolio is approximately 0.7. In many AHS buildings (especially those with walking distance access to public transit and amenities the parking spot usage is only 0.5).
2. The proposed building has excellent walking distance access to public transit, and the many amenities available in downtown Port Coquitlam. As such AHS will be marketing the property as one where certain tenants will be able to make a home without having to depend on a vehicle – and thus being able to make healthier and more environmentally friendly choices for them and their families.
3. AHS would expect that many of the bachelor and 1-bedroom units will be occupied by seniors who need an affordable rental option. AHS's experience in its current buildings suggests that seniors' units typically only require a 0.5 parking ratio. We would expect to experience a similar need in the proposed new building – especially as it provides such easy access to grocery stores, pharmacies, medical clinics, and many other amenities.
4. This building will provide an affordable rental option in Port Coquitlam for families and individuals whose income is less than the median income in Port Coquitlam. Our experience is that many of these individuals and families make economic choices not to have a vehicle – especially when they live in a building with excellent walkability and transit access.

Thank you,

Stephen Bennett, CEO

BKL

301 – 3999 Henning Drive, Burnaby, BC, Canada V5C 6P9
T 604-988-2508 W www.bkl.ca E sound@bkl.ca

September 24, 2020

File: 4054-20A

Peak Towers Development Ltd
c/o WA Architects Inc.
#228-237 Keefer Street
Vancouver, BC
V6A 1X6

Attention: Barry Weih

Dear Barry:

Re: Affordable Housing Project – 2492 Kingsway Avenue, Port Coquitlam, BC
Environmental Noise Study

As requested, BKL Consultants Ltd. (BKL) has undertaken an environmental noise study of the affordable housing development proposed for the above project site. The site spans the area between the intersections of Gately Avenue, Kingsway Avenue, and the Coquitlam river. We have determined that the most significant exterior noise sources for this project are road traffic on Kingsway avenue and rail noise from train movements on the CP railway corridor. The development includes three 6-story residential buildings, with the north facing facades of Building B and Building C having exposure to both road traffic on Kingsway Avenue and the rail corridor.

Our two-part analysis for this project first involved an assessment of the traffic noise exposure at the building facades. The second part was a review of the project design, including exterior facade construction. The interior noise levels were assessed according to ISO 12354.

Acoustical Criteria

We were provided with a list of comments from the City, which included the following note:

4. **Noise Mitigation:** In addition to the proximity of rail operations, Kingsway Avenue is an arterial road and a truck route which can have noise impacts to adjacent residential uses. Please submit a report from an acoustic consultant assessing the potential noise impacts to the future residents at the site along with proposed mitigation measures to address highway and train noise.

As you are aware, neither the City of Port Coquitlam noise or zoning bylaws currently include requirements for sound isolation of exterior building elements in residential developments (i.e., resulting indoor sound levels from exterior noise sources). While multiple internationally accepted standards for indoor sound levels exist, the Canada Mortgage and Housing Corporation (CMHC) indoor

noise level criteria would be most applicable, given their general acceptance within other municipalities in British Columbia. The interior sound level requirements are summarized below:

Table 1: CHMC Interior Noise Criteria

Portion of Dwelling Unit	Maximum Permissible Interior Noise Level ($L_{A,eq,24hr}$)
Bedrooms	35
Living, dining, recreation rooms, dens	40
Kitchen, bathrooms, hallways	45

Site Noise Exposure

A continuous 48-hour noise measurement was conducted at the site by BKL between September 8-10, 2020. A sound level meter was installed on the rooftop north east corner of an existing building at 2470 Kingsway Avenue (see attached site description and measurement locations). We observed, that 24-hour equivalent sound level ($L_{A,eq,24hr}$) moving averages over the full measurement period were mostly consistent at 70 dBA, when rounded to integer values. The measurements included shielding and reflection effects from surrounding buildings. When adjusting for the distance between the location of the proposed façade and the measurement position, the 24-hour noise impact for this development is **$L_{A,eq,24hr}$ = 69 dBA.**

According to Canada Mortgage and Housing Corporation (CMHC) criteria, an outdoor noise level between 55 dBA and 75 dBA is considered to be "normally unacceptable" for housing. This generally means that adequate acoustical measures are required to achieve acceptable indoor noise levels.

The following detailed review of the project design is based on the above stated indoor noise level criteria and on project drawings received. We offer the following comments to satisfy the development requirements of the City:

Sound Isolation of Exterior Elements

The sound isolation requirements for the exterior elements are subject to two main factors: floor area and glazing/exterior wall ratios. Given typical exterior wall assemblies, greater ratios of glazing result in increased sound isolation requirements. The most-affected dwelling units of the development have been identified and assessed to determine the required minimum Outdoor-to-Indoor Transmission Class (OITC) acoustic performance to meet the internal noise design criteria. The residential units facing the inner yard of the development are not expected to be significantly impacted by road traffic noise and, therefore, any practical window assembly is considered appropriate.

Exterior Walls

The drawing set under review did not contain information regarding the exterior wall construction assemblies, although based on subsequent email communications with the project architect, it was confirmed that the predominant exterior assembly facing Kingsway Avenue is proposed to be:

- 1/2” Plywood sheathing
- 2 X 6 Wood Studs, with batt insulation filling the cavity
- 1 Layer of 5/8” GWB,

which will provide adequate noise isolation to interior spaces, with the exception of the Kingsway Avenue facing suites in Buildings B and C, where the highest noise exposures are experienced and, as such, the façade treatments should be upgraded to include a second layer of 1/2" plywood (on the exterior side lining), as well as a second layer of 5/8” GWB (on the interior side) of bedrooms and/or living rooms.

Exterior Windows and Balcony/Patio Doors

A standard glazing detail, assumed to be two layers of 3 mm glass separated by a 13 mm airspace (OITC 25) will provide adequate noise isolation to all interior spaces with the exception of the Kingsway Avenue facing suite windows, which will require glazing assemblies capable of an OITC 30 rating. For residential living, dining, recreation rooms, and dens, the requirement is OITC 25.

The following table summarizes the required minimum OITC rating, including an *example* window glazing:

Table 2: Example Window Glazing for Required Minimum OITC Ratings

Minimum OITC Rating	Example Window Glazing
30	6_{Lam}-11-6_{Lam} (one pane of 6 mm laminated glass separated by a minimum 11 mm airspace)

Sliding and outswing glass doors typically have lower OITC ratings compared to casement windows with the same airspace and glazing thicknesses. Therefore, OITC ratings should be confirmed by measurements conforming to ASTM E90.

All of the windows and doors should be specified to meet the A3 performance rating for Air Tightness found in the CSA standard CAN/CSA-A440-08, or latest revision. Any other windows or doors meeting the required OITC ratings are acceptable. Note that the OITC rating varies with panel dimensions. As such, any test data or predicted OITC performance must reasonably reflect the panel dimensions adopted for this project. Any increase in glazing thickness or separating airspace thickness beyond that shown above is also acceptable. Effective weatherstripping should be installed in the exterior doorways.

Ventilation

The rated facade noise isolation can only be achieved when the windows are tightly closed. When exterior noise levels exceed 55 dBA (as indicated above), alternative forms of ventilation for occupied spaces is typically required. Please note that the design of the ventilation system is within the scope of the mechanical consultant.

Additional Considerations

Given its surroundings, the site can be considered as a moderately high noise exposure area. In such locations, the required envelope treatments for acoustic isolation can be technically challenging and costly to the project.

While the CMHC acoustical requirements should be consider desirable for residential living and targeted for all spaces within the project, for non-acoustical reasons the municipality may consider that the need for housing could outweigh the acoustical requirements. In such cases, the layout of the noise-sensitive rooms may enable a slight relaxation in the CMHC standards for a limited number of rooms.

Closing

This report completes our environmental noise study of this project. Please note that recommendations contained herein address only the acoustical requirements with respect to exterior noise ingress. Other requirements should be examined for compatibility with our recommendations. Please let us know if you have any questions regarding this report.

Sincerely,

BKL Consultants Ltd.

per:

Joonas Niinivaara, MSc
Project Consultant
niinivaara@bkl.ca

Enclosures: Site Notes

Residential Site - Gately + Kingsway Avenue, Port Coquitlam

Project ID:	4054-20A	Address:	2470 Kingsway Ave, Port Coquitlam
Start Date:	September 9, 2020	Instrument:	01dB DUO
Start Time:	12:00	Serial No:	11004
Duration:	24 hours	Measured by:	ES

Location Description

The microphone was located 8.5 m above the ground on the northwest rooftop corner of the 2470 Kingsway Ave existing building. The microphone position is 14 m from the Kingsway Ave and 45 m from the rail line centrelines, respectively.

Ambient Noise Description

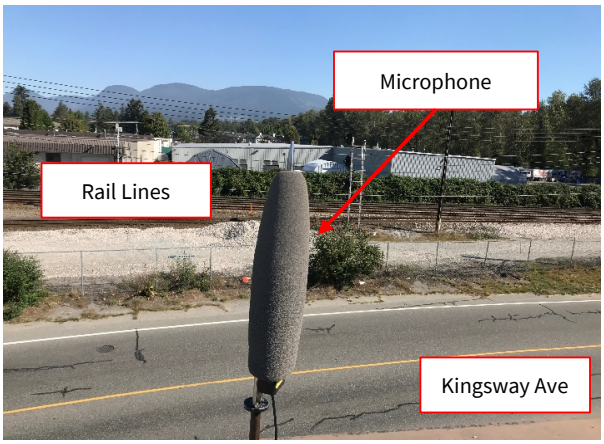
The dominant noise source was train and road traffic. Train whistles and emergency vehicle sirens can be heard.

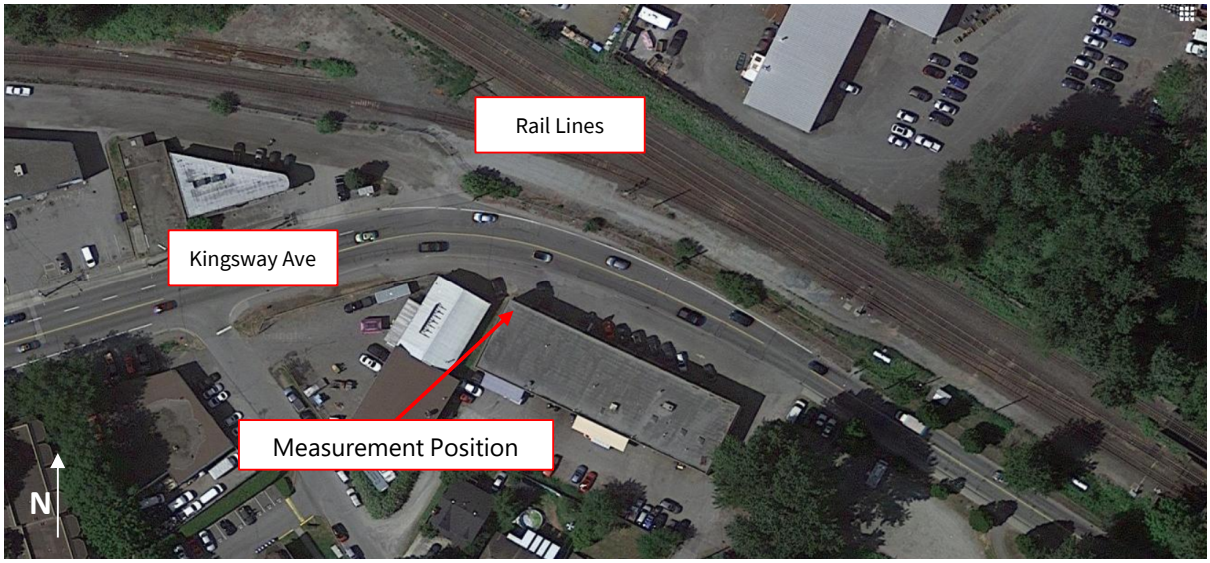
Environmental Conditions

The weather was sunny throughout the measurement period with calm winds.

Purpose of Monitoring Location

This monitoring location is representative of the current environmental noise condition near 2470 Kingsway Ave, Port Coquitlam.

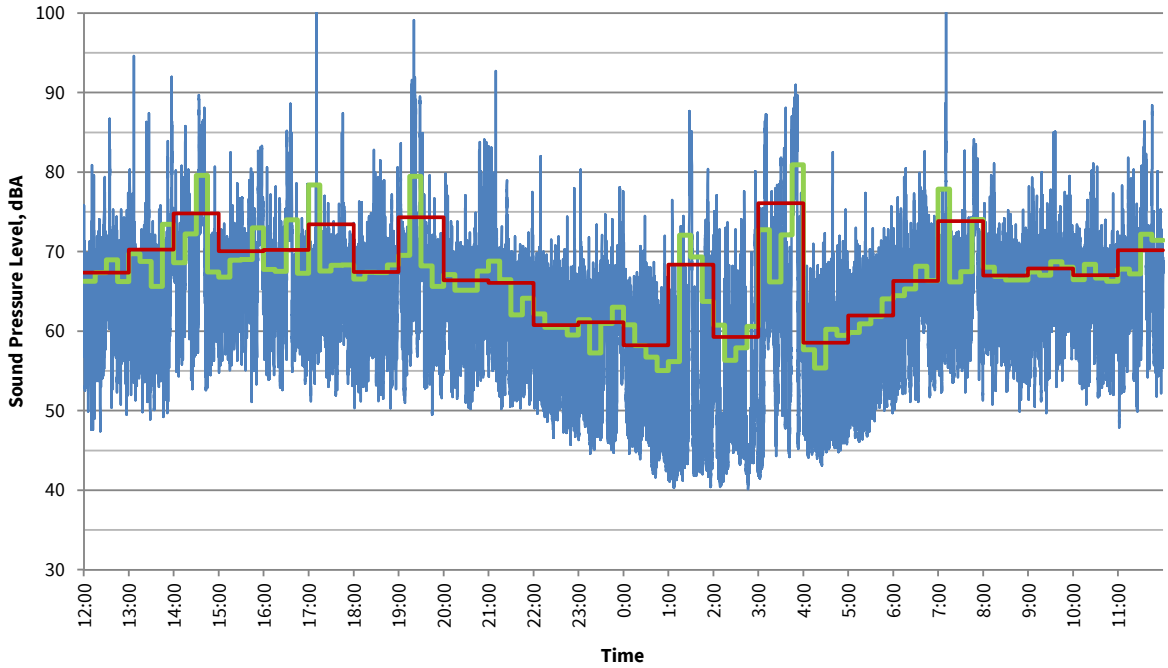




BKL Consultants Ltd.

Residential Site - Gately + Kingsway Avenue, Port Coquitlam

The graph below shows the measured, and calculated time histories beginning on September 9, 2020



1 second measured L_{eq}
15 minute calculated L_{eq}
1 hour calculated L_{eq}

Hourly Interval Report starting at September 9, 2020
All Sound Pressure Levels presented in dBA

Date	Time	Duration	L_{eq}	L_{max}	L_{min}	L_1	L_5	L_{10}	L_{50}	L_{90}	L_{99}
Total	-	24:00:00	70	105	40	82	73	70	64	48	43
Sep 9	12:00:00	1:00:00	67	87	47	75	71	70	66	58	51
Sep 9	13:00:00	1:00:00	70	95	49	83	72	70	65	58	51
Sep 9	14:00:00	1:00:00	75	90	53	86	83	78	68	61	55
Sep 9	15:00:00	1:00:00	70	83	51	81	75	73	68	62	56
Sep 9	16:00:00	1:00:00	70	89	53	80	75	74	67	61	55
Sep 9	17:00:00	1:00:00	73	105	51	76	72	70	67	60	54
Sep 9	18:00:00	1:00:00	67	83	50	77	72	70	66	58	52
Sep 9	19:00:00	1:00:00	74	99	50	87	80	74	67	59	52
Sep 9	20:00:00	1:00:00	66	84	50	75	71	69	64	57	52
Sep 9	21:00:00	1:00:00	66	93	50	76	71	69	61	53	51
Sep 9	22:00:00	1:00:00	61	82	46	69	67	65	56	50	47
Sep 9	23:00:00	1:00:00	61	80	45	70	67	65	55	47	45
Sep 10	0:00:00	1:00:00	58	75	41	68	66	64	49	45	43
Sep 10	1:00:00	1:00:00	68	88	40	80	78	69	47	43	41
Sep 10	2:00:00	1:00:00	59	80	40	72	66	62	47	43	41
Sep 10	3:00:00	1:00:00	76	91	42	87	85	82	63	45	42
Sep 10	4:00:00	1:00:00	59	83	43	69	65	62	48	46	44
Sep 10	5:00:00	1:00:00	62	77	46	71	68	67	56	49	47
Sep 10	6:00:00	1:00:00	66	83	50	75	71	70	64	55	51
Sep 10	7:00:00	1:00:00	74	104	51	82	77	74	66	58	53
Sep 10	8:00:00	1:00:00	67	81	50	74	71	70	66	59	53
Sep 10	9:00:00	1:00:00	68	85	50	76	72	70	66	59	53
Sep 10	10:00:00	1:00:00	67	81	51	75	71	69	66	59	53
Sep 10	11:00:00	1:00:00	70	88	48	80	74	72	67	59	52

BKL Consultants Ltd.

Consultation Summary

Input was received from 9 respondents over a 24 day consultation period beginning August 20th and ending September 13th. Thirteen issues were raised as noted below.

Issue	**Frequency** (number of respondents)
support for more non-market housing in the community	4
concern about the height of the buildings	1
concern about the density of the development	1
interest in opportunities for onsite gardening	1
concern about loss of tree canopy	1
support for the look of the project	2
desire to see social supports for low income families	1
concern about availability of on-street parking in the broader neighbourhood	1
concern about population growth on the neighbourhood/ecosystem/river	1
concern about parking impact of places of worship in the neighbourhood	1
concern about vehicle access to Kingsway Avenue	1
concern about homelessness and drug use in the neighbourhood	1
concern about resident behavior in the River Woods development	1

Zoning Amendment Bylaw for 2455-2475 Gately Avenue, 2428-2492 Kingsway Avenue and 2420 & 2450 Ticehurst Lane – Third Reading

RECOMMENDATION:

That Council give Zoning Amendment Bylaw No. 4196 for 2455-2475 Gately Avenue, 2428-2492 Kingsway Avenue and 2420 & 2450 Ticehurst Lane third reading.

OPTIONS (✓= Staff Recommendation)

	#	Description
✓	1	Give third reading to the bylaw.
	2	Delay third reading and request staff to provide additional information.
	3	Deny third reading of the bylaw.

CITY OF PORT COQUITLAM

ZONING AMENDMENT BYLAW, 2020

Bylaw No. 4196

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, 2020, No. 4196”.

2. ADMINISTRATION

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

Civic: 2455-2475 Gately Avenue, 2428-2492 Kingsway Avenue and 2420 and 2450 Ticehurst Lane

Legal: Lot 1, District Lot 379, New Westminster District, Plan NWP8602;
Lot 2 District Lot 379, New Westminster District, Plan NWP8602;
Lot 16, District Lot 379, Plan NWP3106, Group 1, Except Plan 29226;
Lot A, District Lot 379, New Westminster District, Plan LMP2211;
Lot 1, District Lot 379, New Westminster District, Plan LMP 15261;
Lot 14, District Lot 379, New Westminster District, Plan NWP3106, Except Plan 29226; and
Lot A, District Lot 379, New Westminster District, Plan NWP3106, Group 1, (See Ref Plan 62772).

From: RS1 (Residential Single Dwelling 1), RD (Residential Duplex) and M1 (General Industrial)

To: Comprehensive Development (CD) Zone and P3 (Parks and Natural Areas)

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

2.2 In subsection8.5 of Section 8, Child Care Regulations, by inserting “other than a child care facility in CD38” after, “Child care facilities in a CD zone”.

2.3 By inserting a new Comprehensive Development Zone CD38 as follows:

“CD38 Comprehensive Zone 38 (2471 Gately Avenue)
(currently 2455-2475 Gately Avenue, 2428-2492 Kingsway Avenue and 2420 & 2450 Ticehurst Lane)

Property Descriptions

Lot 1, District Lot 379, New Westminster District, Plan NWP8602;
Lot 2 District Lot 379, New Westminster District, Plan NWP8602;
Lot 16, District Lot 379, Plan NWP3106, Group 1, Except Plan 29226;
Lot A, District Lot 379, New Westminster District, Plan LMP2211;

Lot 1, District Lot 379, New Westminster District, Plan LMP 15261;
Lot 14, District Lot 379, New Westminster District, Plan NWP3106, Except Plan 29226; and
Lot A, District Lot 379, New Westminster District, Plan NWP3106, Group 1, (See Ref Plan 62772).

(All to be consolidated)

Table 6.38.1 Permitted Uses in CD38

Permitted Use	
Apartment restricted to residential rental tenure	
Child care facility	Note 1
Offices restricted to caretaker services, management of rental accommodation within this zone	
Accessory home business	
Accessory child care facility	Note 2

Notes to Table 6.38.1

Note 1. A child care facility shall be restricted to the ground floor of building containing rental apartment uses, must comply with the requirements of the B.C. Building Code for assembly uses, and must provide a separate entrance at the ground level connecting directly to a street or at-grade parking area. A maximum of 50 children may be cared for at one time in the child care facility.

Note 2. A maximum of 5 children may be cared for at one time in any dwelling unit. The dwelling unit in which the use is conducted must be occupied by a residential use. The child care facility must have access to the exterior of the building through areas directly controlled by the operator, and such access may not involve the use of a building common corridor or elevator. Child care is not permitted in a dwelling unit with an accessory home business.

6.38.2 Proposed Zoning Regulations

Lot area	9,500m2
Building height	20m
Lot coverage	50%
Floor Area Ratio	1.5/2.0 Note 1
Underground structure setback	1.2m Note 2
Building setbacks	
Front setback (Gately Ave)	3.5m
Rear setback (Kingsway Ave)	4.5m
Interior side setback (east)	0m
Outdoor amenity space	479m^2 Note 3
Indoor amenity space	160m^2 Note 4
Parking:	
Resident	0.96 per dwelling unit
Childcare	1 per 10 children

Notes to Table 6.38.2

Note 1. In the CD38 zone the maximum floor area ratio may be increased to 2.0 where the apartment use is restricted to non-market housing secured through a housing agreement.

In the calculation of floor area ratio the following may be excluded as floor area:

a. Floor area comprising entrances, elevator shafts, stairwells and hallways common to two or more dwelling units, electrical rooms and mechanical rooms;
b. Exterior balconies and decks;
c. Floor area within a basement or underground structure;
d. Floor area within the building used for required off street parking; and
e. 2m^2 of floor area in an adaptable dwelling unit.

Note 2. Any portion of an underground structure that is above finished grade must be sited at least 1.2m from any lot line.

Note 3. Outdoor amenity space is a common outdoor area available for recreation and leisure activity use by all residential occupants within this zone.

Note 4. Indoor amenity space is a common area within a building designed to accommodate meetings, fitness or recreational activities available for use by all residential occupants within this zone.

6.38.3 Additional Regulations

ELECTRIC VEHICLE INFRASTRUCTURE

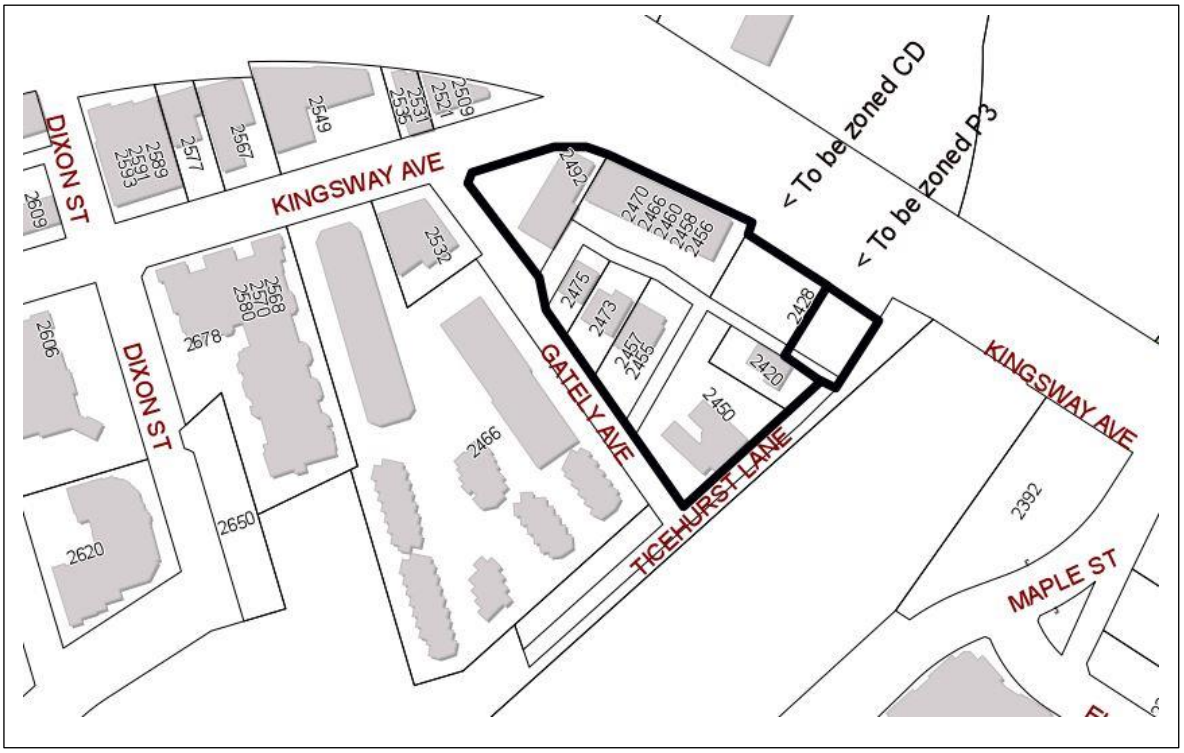
For a residential building with a common parking area, a separate single utility electrical meter and disconnect shall be provided in line with the electrical panel(s) intended to provide for charging of electric vehicles located within 3 metres of the unit's required parking space."

READ A FIRST TIME this	27th day of	October, 2020
READ A SECOND TIME this	27th day of	October, 2020

Mayor

Corporate Officer

SCHEDULE 1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KINGSWAY AVE
DIXON ST
GATELY AVE
TIGEHURST LANE
KINGSWAY AVE
MAPLE ST
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2589
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Zoning Amendment Bylaw for 1300 Dominion Avenue – First Two Readings

RECOMMENDATIONS:

1) *That Council give Zoning Amendment Bylaw No. 4199 first two readings for rezoning 1300 Dominion Avenue from A (Agricultural) to DC (District Commercial); and*

2) *That prior to adoption of the amending bylaw, the following conditions be met to the satisfaction of the Director of Development Services:*

   a. *Demolition of existing structures.*
   b. *Submission of plans, securities and fees for off-site works and services.*

<u>OPTIONS</u> (✓= Staff Recommendation)

	#	Description
✓	1	Give first two readings to the bylaw.
	2	Delay first two readings and request staff to provide additional information.
	3	Deny first two readings of the bylaw.

CITY OF PORT COQUITLAM

ZONING AMENDMENT BYLAW, 2020

Bylaw No. 4199

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, 2020, No. 4199”.

2. ADMINISTRATION

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

Civic: 1300 Dominion Avenue

Legal: PARCEL G, BLOCK 6 NORTH, SECTION 7, RANGE 1 EAST, NEW WEST DISTRICT, PLAN NWP1033, EXCEPT PLAN 9168, (S75682E), LOT 57 EXCEPT PART NOW ROAD ON SRW PL NWP 55863 & SECTION 8

From: A (Agricultural)

To: DC (District Commercial)

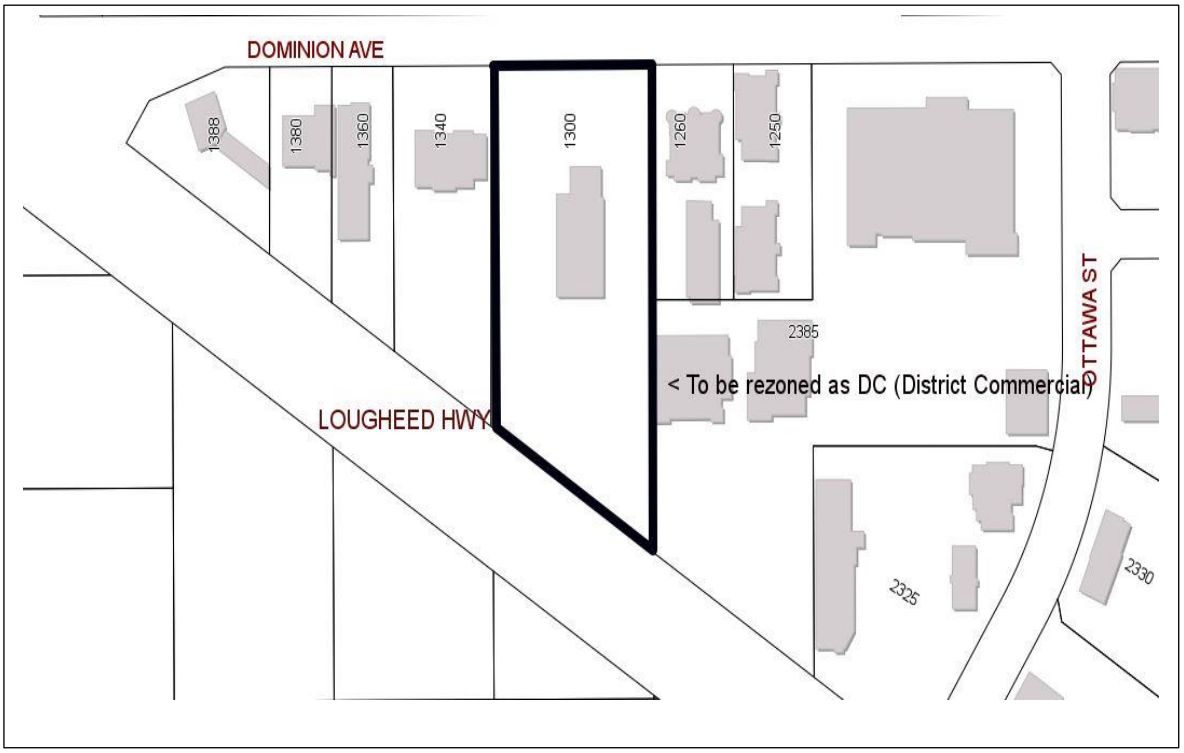
as shown on Schedule 1 attached to and forming part of this Bylaw.

READ A FIRST TIME this	th day of	, 2020
READ A SECOND TIME this	th day of	, 2020

Mayor

Corporate Officer

SCHEDULE 1


DOMINION AVE
1388
1380
1360
1340
1300
1260
1250
2385
< To be rezoned as DC (District Commercial)
OTTAWA ST
LOUGHEED HWY
2325
2330

1300 Dominion Avenue – Rezoning Application

RECOMMENDATIONS:

That Committee of Council recommend to Council that:

1. The zoning of 1300 Dominion Avenue be amended from A (Agricultural) to DC (District Commercial); and,
2. Prior to adoption of the amending bylaws, the following conditions be met to the satisfaction of the Director of Development Services:
   a. Demolition of existing structures.
   b. Submission of plans, securities and fees for off-site works and services.

PREVIOUS COUNCIL/COMMITTEE ACTION

December 11, 2018 – Council adopted a resolution to provide notice under Section 57 of the Community Charter related to work without permit and unsafe conditions.

REPORT SUMMARY

This report provides for Committee consideration of an application to rezone a large 3.3-acre site to permit a highway oriented commercial use. Rezoning to the District Commercial (DC) zone would be in keeping with the City's land use policies and the site's Highway Commercial land use designation in the Official Community Plan. The recommended conditions of approval are in keeping with the City's intent to ensure buildings are safe and properties are adequately serviced. Staff recommend approval.

BACKGROUND

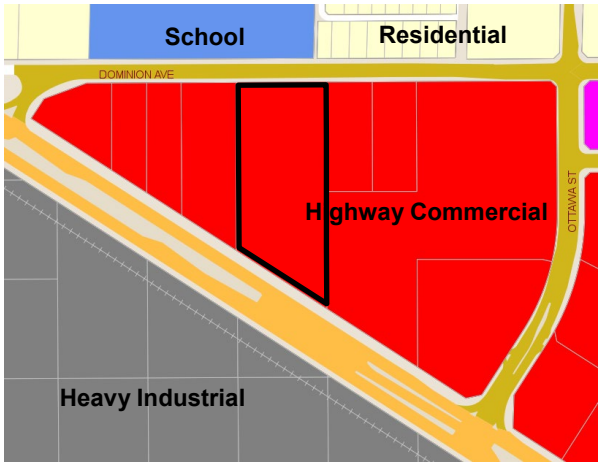
Proposal: Thinkspace Architecture has submitted rezoning and development permit applications for 1300 Dominion Avenue to facilitate the relocation of the Coquitlam Chrysler automobile dealership to Port Coquitlam.

Site Context: The site is approximately 3.3 acres in size, relatively flat and is currently used as a gardening centre. Current development includes a number of buildings, roof structures, pavement, and limited onsite landscaping consisting primarily of hedging at the periphery of the site. The City has been working with the current business owner to address issues of safety and work without building permits for a number of years resulting in the registration of a Section 57 notice on title. This notice would be discharged once the existing buildings are demolished.

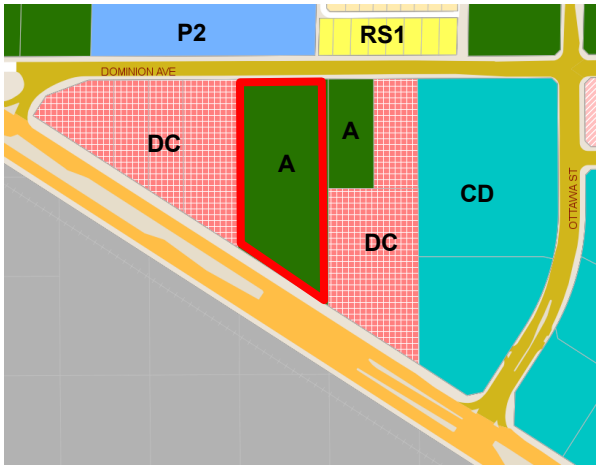
Location Map

Surrounding land uses include the Burkeview Chapel Funeral Home to the west, Jim Pattison Auto Dealers and an agricultural zoned property to the east, Archbishop Carney Secondary School and residential uses to the north of Dominion Avenue. The site, unlike its neighbours, has not been filled to meet flood construction levels and will require filling. Watercourses are also located on the west and south periphery of the site.

Policy and Regulations: The site is currently zoned A (Agricultural) and has been used for a garden centre for a number of decades. The Official Community Plan land use designation for the properties along the south side of Dominion Avenue is Highway Commercial (CH) which is intended to provide for auto-oriented commercial uses that attract a regional market and require more parking than local commercial uses.



Current OCP designations



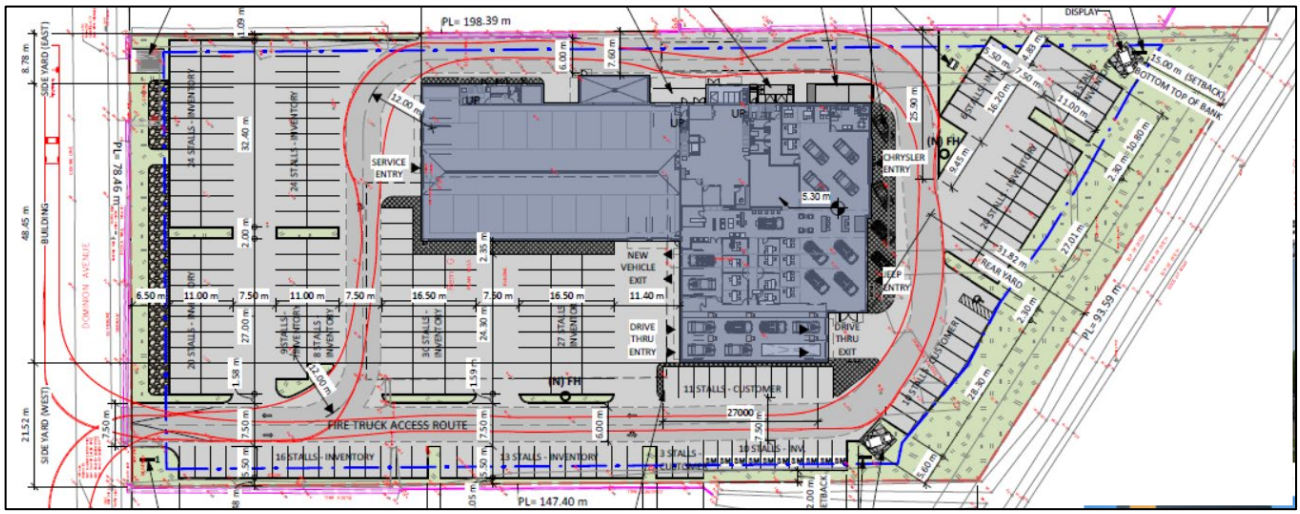
Current zoning

The policies of the Official Community Plan encourage a wide range of commercial businesses and associated employment generation in the community. The policies also provide for the City to protect areas of environmental sensitivity through development.

This site will be subject to form and character, environmental conservation and watercourse protection development permit objectives and design guidelines. These applications would be considered after adoption of the zoning bylaw amendment.

Project description: The site is the last remaining commercial property along this segment of Dominion Avenue needing to be filled to meet the flood construction level. The applicant has proposed adding approximately 2m of fill to raise the existing grade to be similar to adjacent properties and make the property more resilient to flooding. The proposed development consists of a commercial building with roof-top and grade level parking for customers and automobile display, landscaping and a landscaped riparian protection area. Vehicle access to the site will be limited to Dominion Avenue with an entrance located near the northwest corner of the site. The

access has been designed to enable transport trucks access. The proposed L-shaped building is approximately 3500m^2 (37,670 ft^2) in size and provides space for automobile servicing and parts storage, sales and administration and includes an indoor wash bay to minimize impact to adjacent property. The site plan provides for 323 parking spaces which will accommodate staff and visitors needs along with the display of vehicles for sale.



Proposed site plan

The applicant proposes a two-storey commercial building with a contemporary architectural style that includes quality cladding materials comprised of aluminum composite panels in varying colours (silver, charcoal, cedar plank and concrete grey), low-E insulated glazing in clear anodized aluminum storefront frames along with grey painted concrete in less prominent locations. The building is designed to look like two dealerships with their own distinct entryway and showroom. The Chrysler side includes grey cladding and Chryslers signature entry arch, while the Jeep side features dark grey cladding and strips of cedar plank metal cladding. A number of canopies have been included to provide weather protection and architectural interest to the design.

View from Lougheed Highway

Development concept: view from Dominion Avenue

The landscape plan calls for a mixture of trees, shrubs, perennials, grasses and ground cover plants located to the periphery of the site and interplanted throughout the parking field to soften the street edge, provide shade and architectural interest. Included in the landscaping are two sloped boulder display areas for vehicles facing Lougheed Highway.

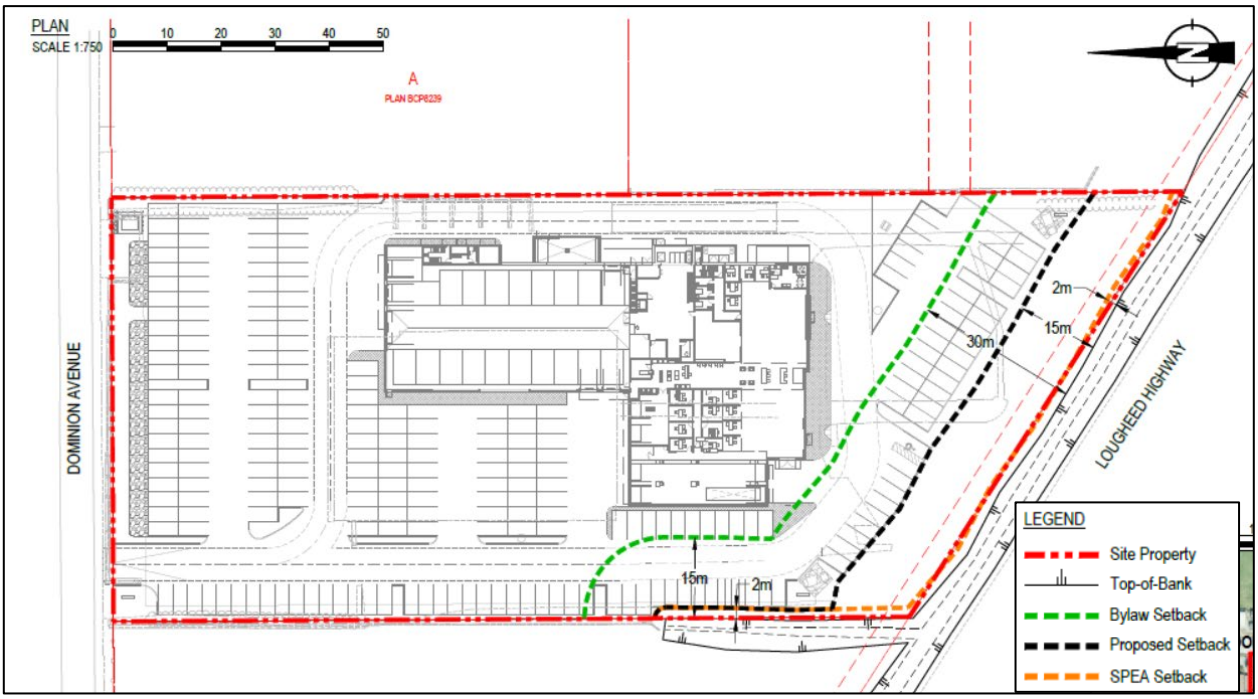
The proposed development, in accordance with the Building and Plumbing Bylaw, will also be constructed to meet Step 2 of the BC Energy Step Code which will reduce energy consumption compared to a typical commercial building. The applicant has indicated the development will also include the following environmental conservation measures; light coloured roofing materials, addition of trees to provide shading, riparian enhancement, timer-controlled lighting, a bioswale, recycling of existing concrete for fill on site, and two EV charging stations to promote electric vehicle use. A thorough description of environmental conservation measures will be provided to Committee for consideration of development permit issuance.

Watercourse Protection: The proposed development is adjacent to a class A(O) watercourse running along Lougheed Highway and small class B watercourse located along the southern portion of the western parcel line.

Lougheed Hwy Class A(O) watercourse

Class B watercourse

The Watercourse Protection Development Permit (DP) Area guidelines in the Official Community Plan prescribe a 30m wide watercourse protection area for the class A(O) and a 15m wide protection area for the class B watercourse measured from the watercourse top-of-bank. The development is also subject to the Provincial Riparian Area Protection Regulation (RAPR) which would potentially require a minimum 2m setback from the watercourse high watermark. The map below shows the prescribed watercourse protection area (green dashed line).



Map showing the watercourse protection area

The applicant provided an environmental report which assessed the development proposal and its conformance with the City's Watercourse Protection DP guidelines. This report proposes a 15m setback for the class A(O) and a 2m setback for the class B watercourse as shown on the image above (black dashed line). Through this development, the applicant would improve permeability in the setback area and enhance it with riparian planting. Further information on proposed watercourse protection and the enhancement plans would be provided to Committee in consideration of the Watercourse Protection Development Permit should the rezoning application proceed.

Trees: The applicant submitted an arborist report (Attachment 2) assessing the 51 existing trees on the site. These trees are primarily cypress hedges located along the periphery of the site along with 2 black cottonwoods, a vine maple, a birch and a sweet gum. None of these trees meet the Tree Bylaw's definition of significant tree. The proposed development requires removal of all onsite trees as they will be impacted by the filling of the site to meet the flood construction level.

The applicant is proposing to plant 89 new trees which includes 29 in or adjacent to the parking areas and 60 in the watercourse protection area. The landscape plan also proposes a mixture of 785 shrubs, 145 grasses, 114 perennials and 219 ground cover plants with an additional mixture of 717 shrubs and 366 ground cover plants in the watercourse protection area. The landscape plans will be confirmed and secured though issuance of the development permits.

Off-site Infrastructure and utilities: This project requires relatively minor infrastructure and service upgrades to meet standards of the subdivision servicing bylaw and adequately service the proposed development. These include new water, sanitary and storm sewer service connections, removing and repairing driveway letdowns, resurfacing Dominion Avenue ½ road, and confirmation street lighting meets bylaw standard.

DISCUSSION

The OCP and additional City policies establishes how the community is intended to develop, designates lands for uses in keeping with these policies and provides guidance on the types of land use the City should encourage. The site Highway Commercial OCP land use designation supports consideration of the proposed District Commercial zone and is in keeping with economic policy to support business and generate employment opportunities in the community. The proposed redevelopment of the site will also result in the demolition of the existing buildings removing the non-compliance with the building code resolving outstanding safety concerns.

The proposal also provides information in response to sites watercourse protection area designation and recommends improvements to enhance the riparian area in support of a proposed reduction to the watercourse setback. The proposed setback would be in keeping with others approved along the Lougheed Highway corridor and would be further considered by Committee if the rezoning is successful.

It is staff's opinion that the proposal is aligned with established direction in the OCP. Staff recommend the proposal be supported with the following provisions:

1) The site be rezoned to the District Commercial zone to permit highway oriented commercial land uses.
2) The existing buildings be demolished to allow for the Section 57 notice to be removed from title.
3) Securing off-site infrastructure works and services to service the new development.

FINANCIAL IMPLICATIONS

This property is currently assessed at just over $4 million due to its partial farm status. Once rezoned and new commercial development takes place, it is anticipated that there will be an increase in property tax revenue.

Public Consultation

Development signs have been posted to face both Dominion Avenue and Lougheed Highway and provide notification of the rezoning application. To date, no comments from the public have been received. The public hearing would provide a formal opportunity for Council to hear comment on the amendments.

OPTIONS (✓= Staff Recommendation)

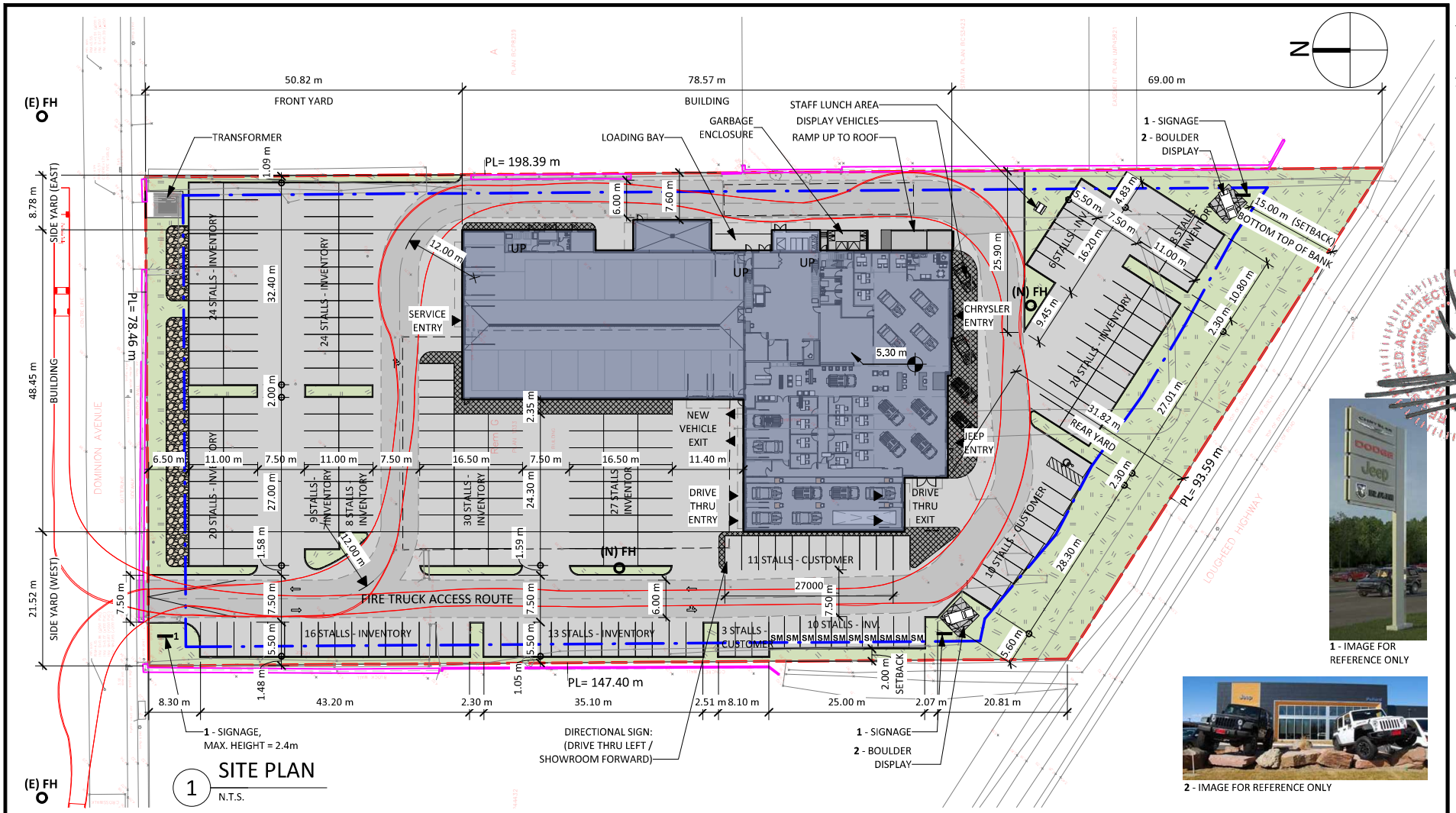
	#	Description
✓	1	Recommend to Council that the Zoning Bylaw amendment be considered for approval.
	2	Request additional information, amendments to the application, changes to recommended conditions of prior to forwarding the application to Council.
	3	Recommend to Council that the application be refused.

ATTACHMENTS

Attachment #1: Architectural concept drawings

Attachment #2: Landscape architectural concept drawings

Lead author: Bryan Sherrell



1 SITE PLAN
N.T.S.

1 - IMAGE FOR REFERENCE ONLY

2 - IMAGE FOR REFERENCE ONLY

SITE PLAN NOTES

1. **BUILDING AREA CALCULATIONS**

LEVEL 1	=	27,868.90 SF
LEVEL 2	=	10,726.50 SF
ROOF	=	439.10 SF
TOTAL	=	**39,034.50 SF**

2. **PARKING STALLS CALCULATIONS**

CUSTOMER (SITE)	=	33
OF WHICH 1 ACCESSIBLE		
STAFF (ROOFTOP)	=	36
INVENTORY (SITE)	=	205
INVENTORY (ROOFTOP)	=	50
TOTAL	=	**324**
LOADING	=	1 (see Note 1)

NOTES:
1. LOADING SPACE REQUIREMENTS CALCULATED ON THE AREA OF THE PARTS STORAGE (433.62m²)

SITE PLAN LEGEND

- PROPERTY LINE
- SETBACK (MIN. REQUIRED)
- EXISTING RETAINING BLOCK WALL
- VEHICLE DELIVERY ROUTE
- BUILDING
- LANDSCAPING
- INFILTRATION SWALE
- PARKING AREA
- PAVERS
- FIRE TRUCK ROUTE
- (E)/(N) FH — EXISTING/NEW FIRE HYDRANT
- 0.000 — GRADE
- BUILDING ACCESS

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Drawing	SITE PLAN

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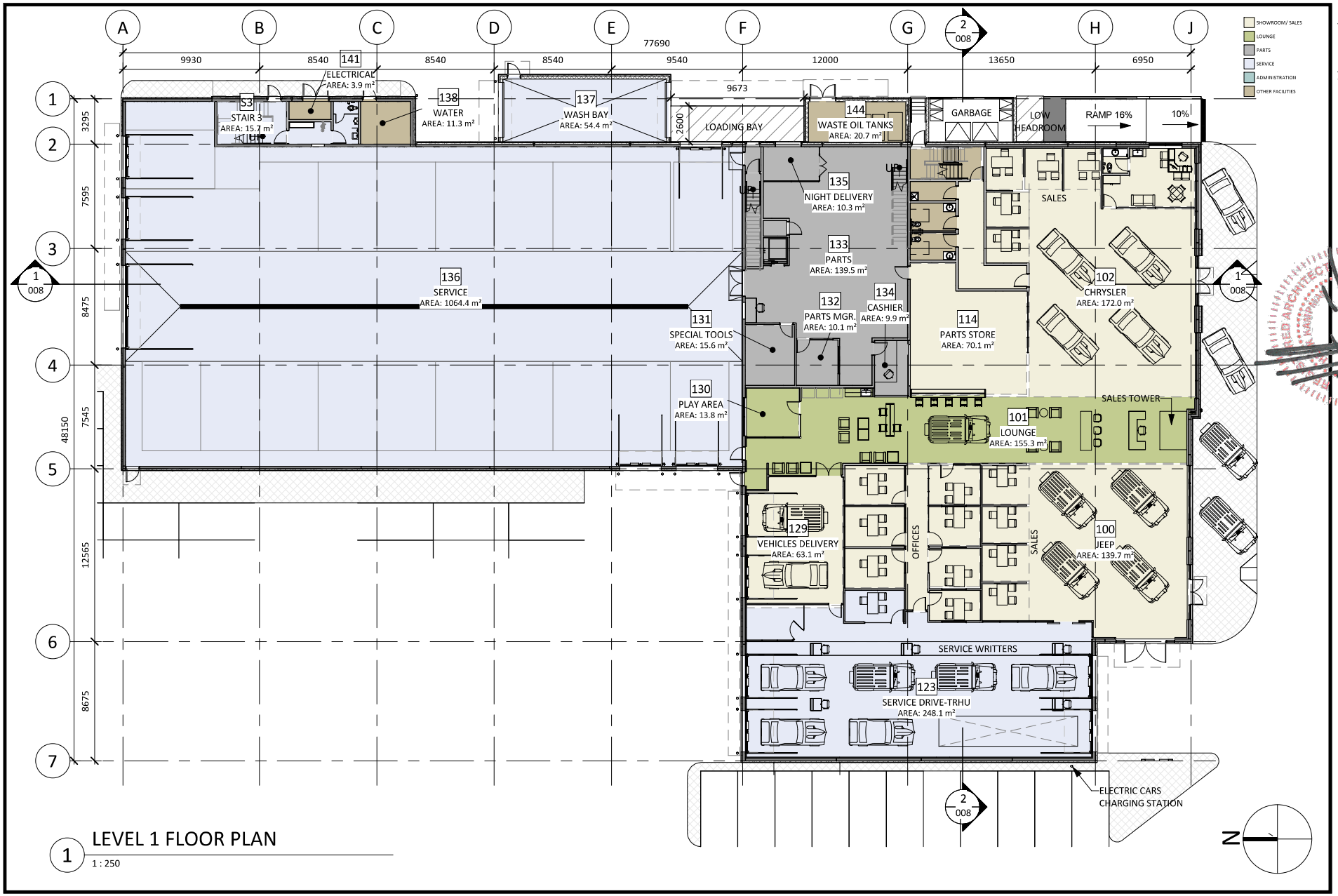

1 LEVEL 1 FLOOR PLAN

1 : 250

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Sheet Number	**Drawing**
09	LEVEL 1 FLOOR PLAN

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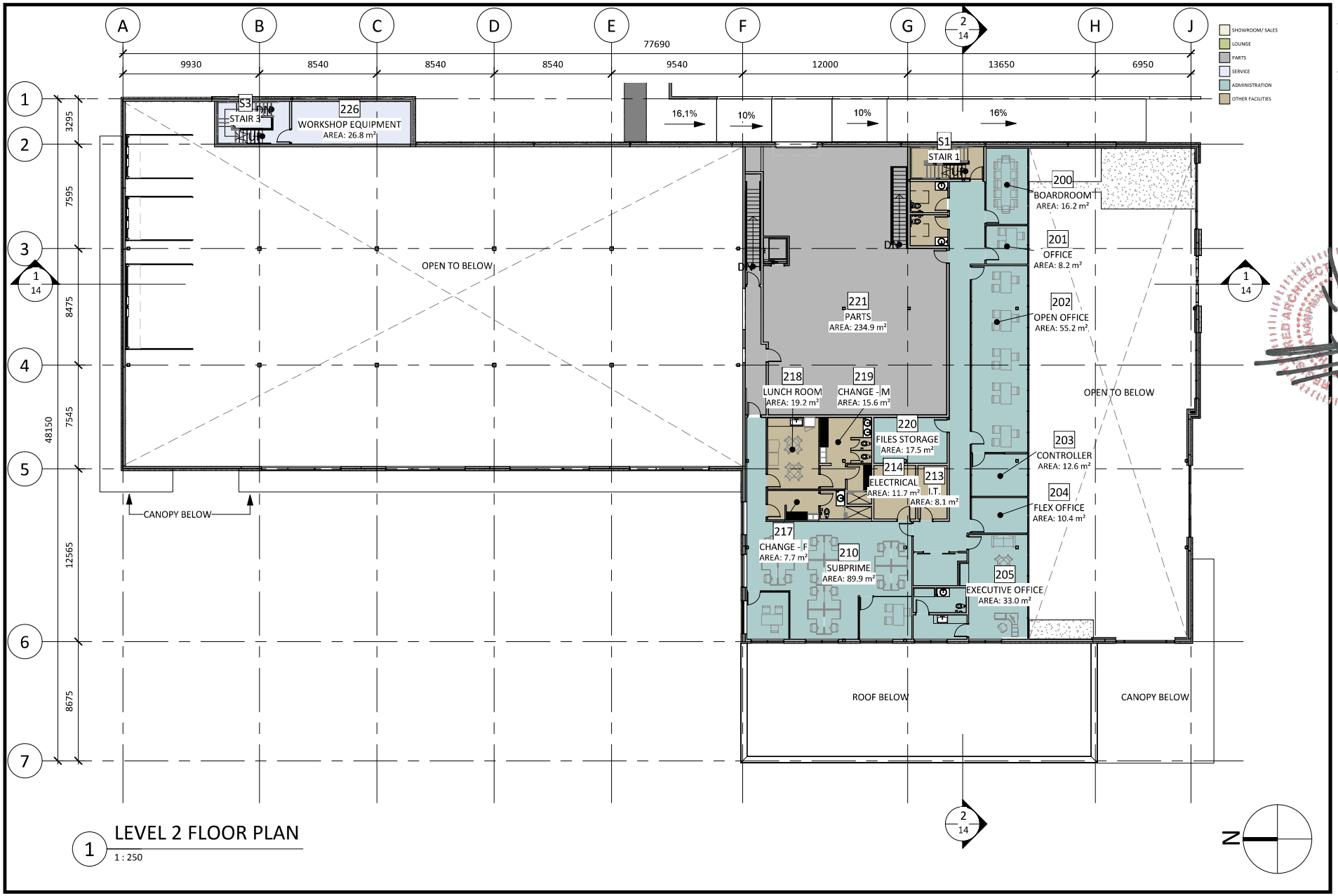

1 LEVEL 2 FLOOR PLAN

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Sheet Number	**Drawing**
10	LEVEL 2 FLOOR PLAN

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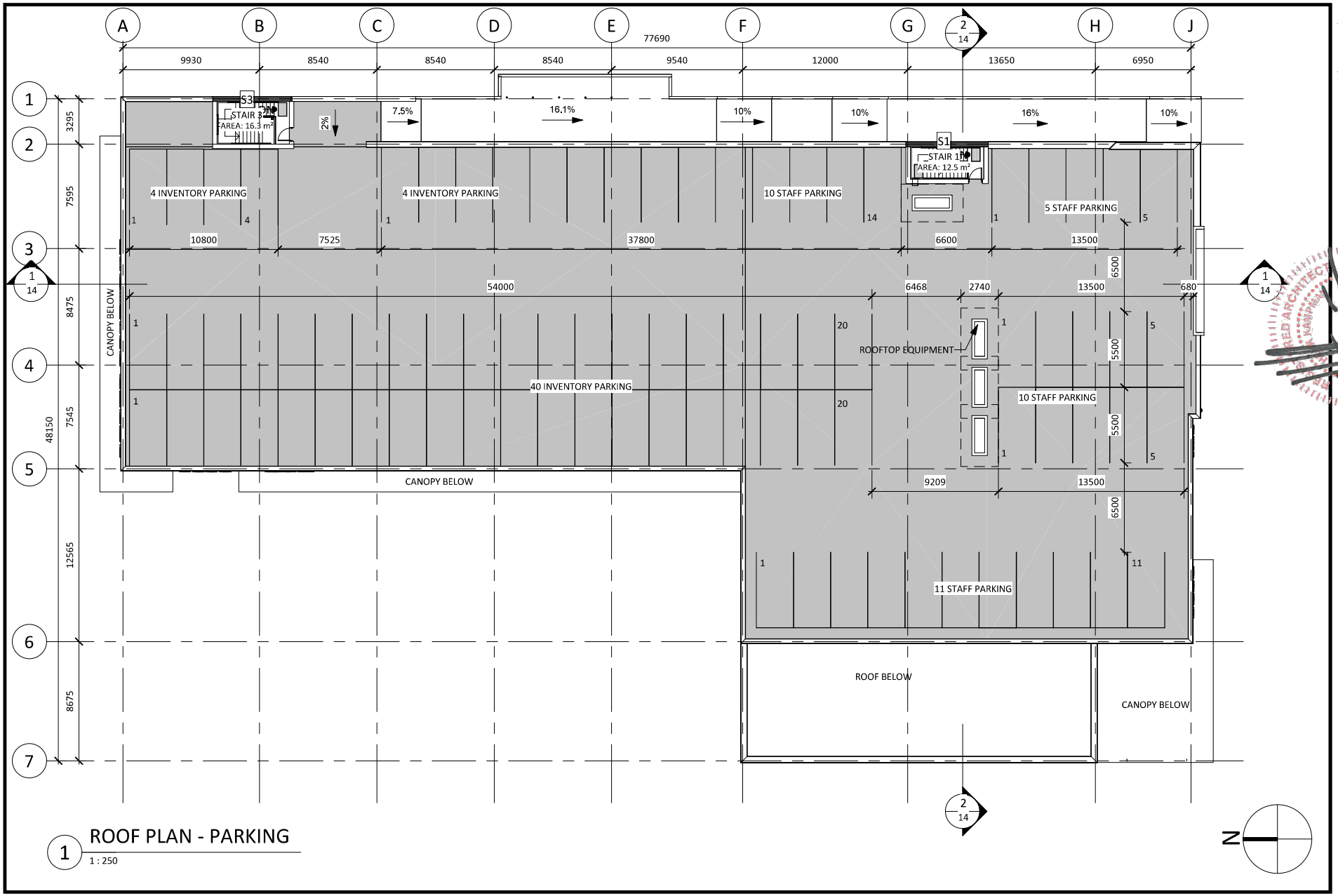

1 ROOF PLAN - PARKING

1 : 250

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Sheet Number	**Drawing**
11	ROOF PLAN - PARKING

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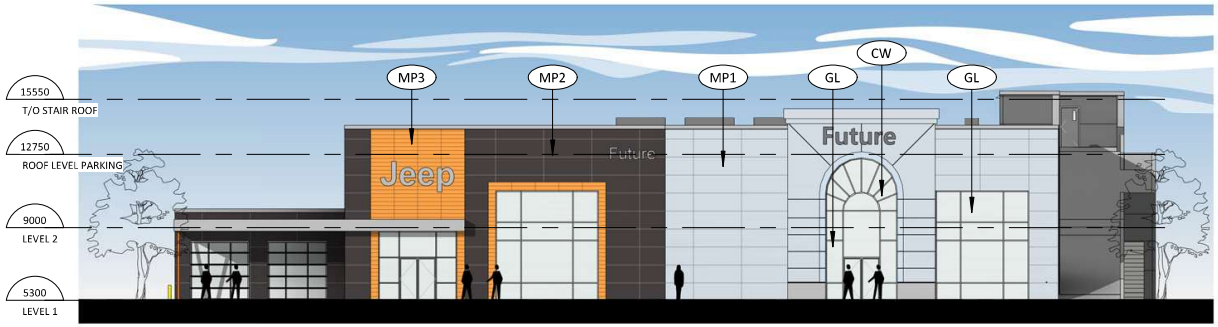
ELEVATION MATERIAL LEGEND

- MP1 — KINGSPAN METAL PANEL - SILVER
- MP2 — KINGSPAN METAL PANEL - CHARCOAL
- MP3 — KINGSPAN METAL PANEL - CEDAR
- MP4 — KINGSPAN METAL PANEL - CONCRETE GREY
- TC — TILT-UP CONCRETE SANDWICH PANEL
- GL — DOUBLE GLAZED WINDOW PANELS
- CW — ALUMINUM CURTAIN WALL KAWNEER



1 SOUTH ELEVATION

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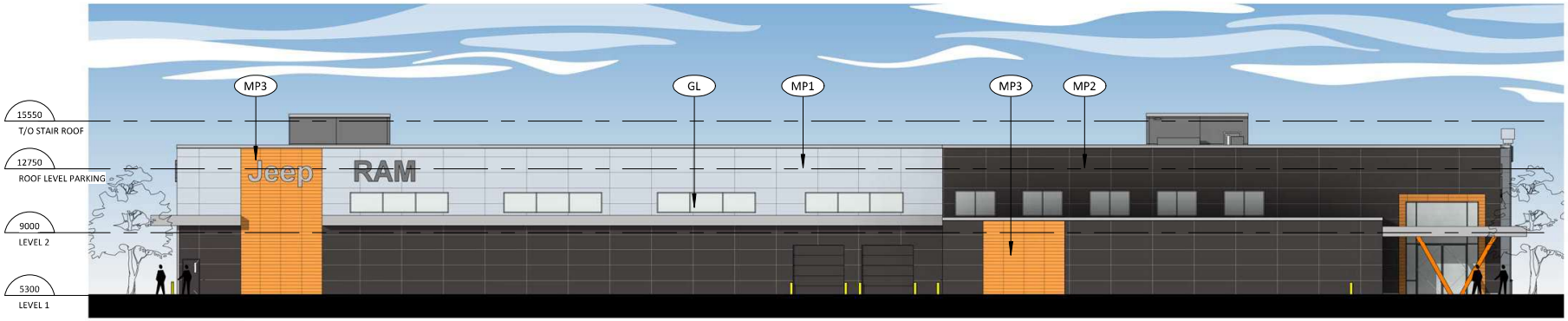

2 WEST ELEVATION

1 : 250

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200808	PORT COQUITLAM CHRYSLER 1300 DOMINION AVE PORT COQUITLAM, BC
Sheet Number	Drawing
12	ELEVATIONS

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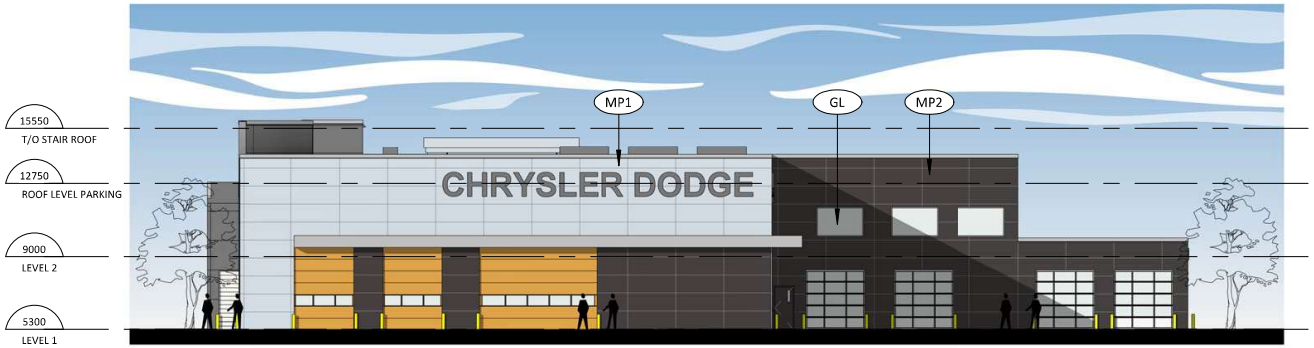
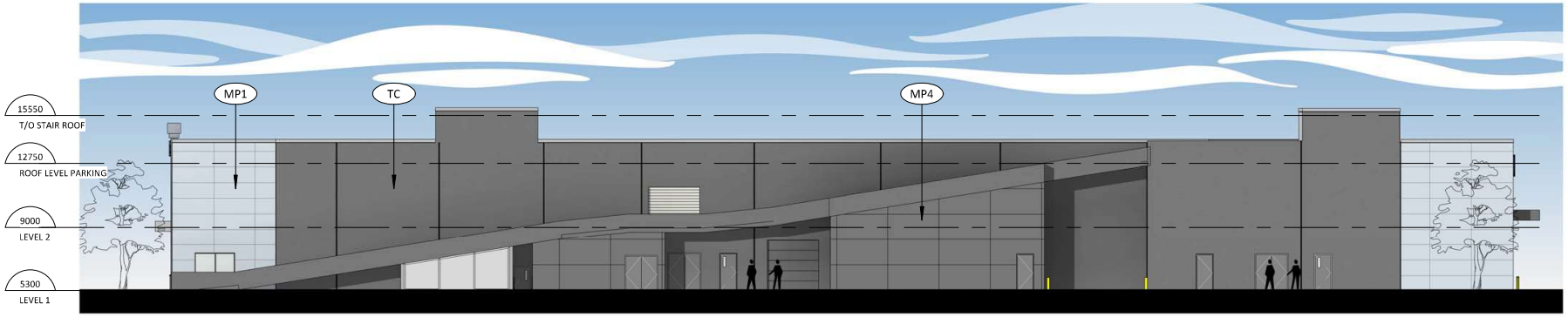
ELEVATION MATERIAL LEGEND

- MP1 — KINGSPAN METAL PANEL - SILVER
- MP2 — KINGSPAN METAL PANEL - CHARCOAL
- MP3 — KINGSPAN METAL PANEL - CEDAR
- MP4 — KINGSPAN METAL PANEL - CONCRETE GREY
- TC — TILT-UP CONCRETE SANDWICH PANEL
- GL — DOUBLE GLAZED WINDOW PANELS
- CW — ALUMINUM CURTAIN WALL KAWNEER



1 NORTH ELEVATION
1 : 250



2 EAST ELEVATION
1 : 250

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Project	PORT COQUITLAM CHRYSLER 1300 DOMINION AVE PORT COQUITLAM, BC
Sheet Number	13
Drawing	ELEVATIONS

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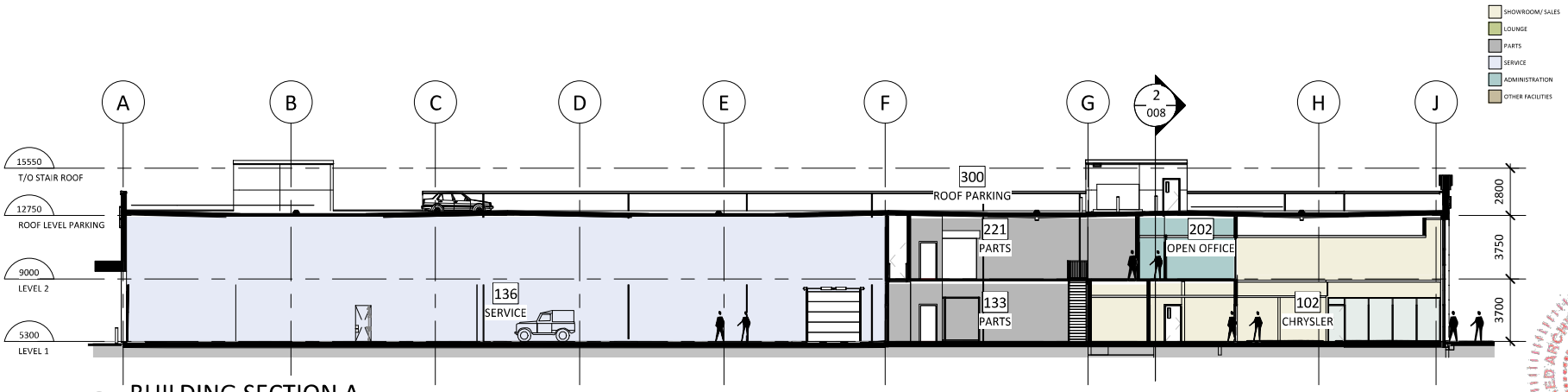

1 BUILDING SECTION A

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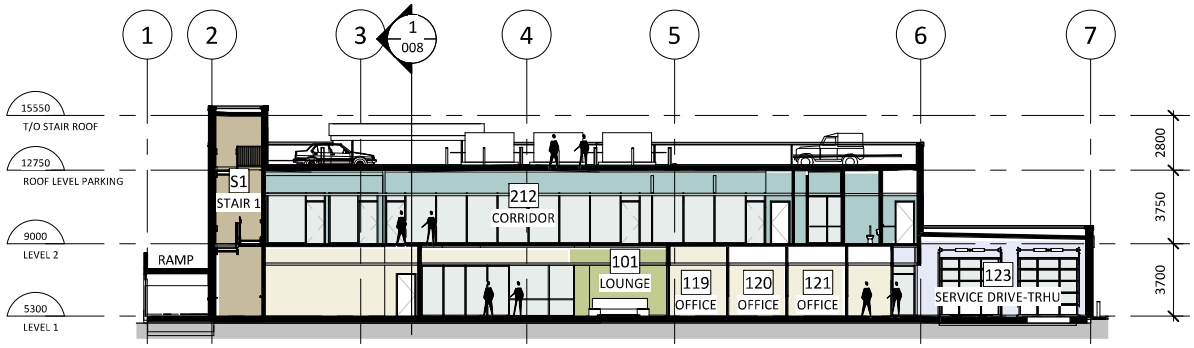

2 BUILDING SECTION B

1 : 250

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Sheet Number	Drawing
14	BUILDING SECTIONS

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VIEW FROM LOUGHEED HIGHWAY

VIEW FROM DOMINION AVE

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Sheet Number	Drawing
15	3D RENDERINGS

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MP2 - KINGSPAN METAL PANEL - CHARCOAL

1

MP3 - KINGSPAN METAL PANEL - CEDAR

2

REFLECTIVE METAL PANEL

3

MP1 - KINGSPAN METAL PANEL - SILVER

4

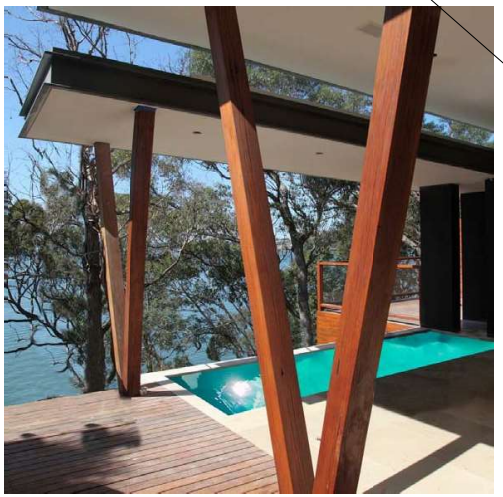
GL - CLEAR GLAZING

5

CW - ALUMINUM CURTAINWALL SYSTEM

6

JOHN AMATO CHRYSLER DODGE JEEP RAM OF MILWAUKEE
IMAGE FOR REFERENCE ONLY
SOURCE: https://www.yelp.com/



KANGAROO POINT HOUSE - DMJ DESIGN STUDIO
IMAGE FOR REFERENCE ONLY TO SHOW CANOPY DESIGN INTENT
SOURCE: https://www.archdaily.com/

JOHN AMATO CHRYSLER DODGE JEEP RAM OF MILWAUKEE
IMAGE FOR REFERENCE ONLY
SOURCE: https://www.yelp.com/

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200808	PORT COQUITLAM CHRYSLER 1300 DOMINION AVE PORT COQUITLAM, BC
Sheet Number	Drawing
16	MATERIALS

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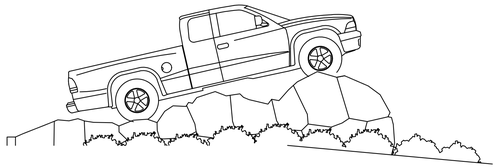
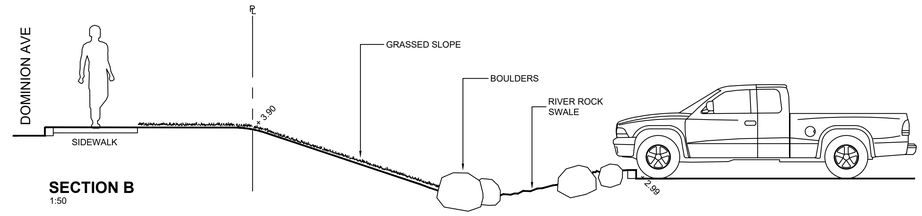


VEHICLE DISPLAY ELEVATION
SECTION A



SECTION B
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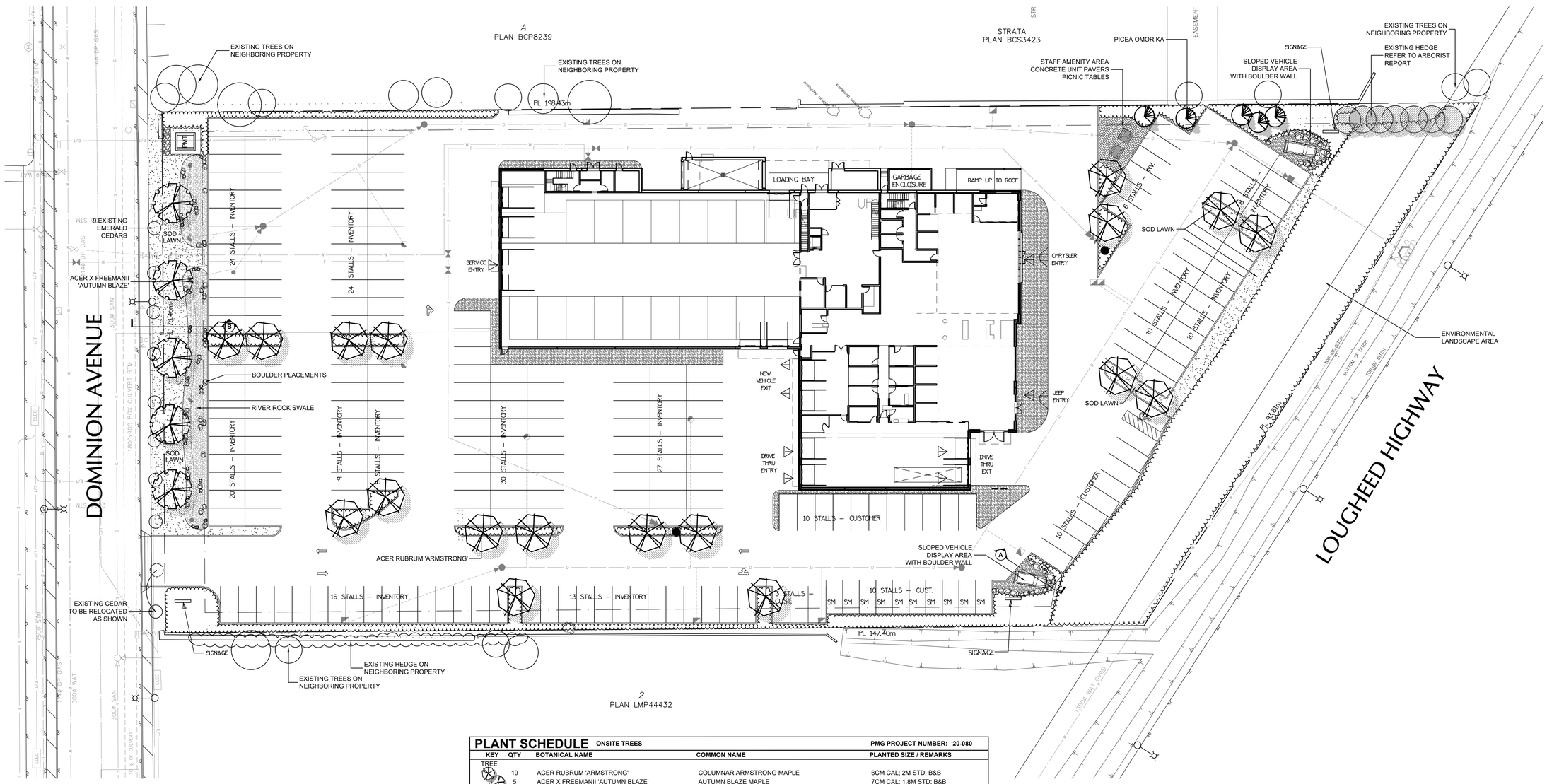

PLANT SCHEDULE

ONSITE TREES — PMG PROJECT NUMBER: 20-080

KEY	QTY	BOTANICAL NAME	COMMON NAME	PLANTED SIZE / REMARKS
TREE				
	19	ACER RUBRUM 'ARMSTRONG'	COLUMNAR ARMSTRONG MAPLE	6CM CAL; 2M STD; B&B
	5	ACER X FREEMANII 'AUTUMN BLAZE'	AUTUMN BLAZE MAPLE	7CM CAL; 1.8M STD; B&B
	5	PICEA OMORIKA	SERBIAN SPRUCE	2.5M HT; B&B

NOTES: * PLANT SIZES IN THIS LIST ARE SPECIFIED ACCORDING TO THE BC LANDSCAPE STANDARD AND CANADIAN LANDSCAPE STANDARD, LATEST EDITION. CONTAINER SIZES SPECIFIED AS PER CNLA STANDARD. BOTH PLANT SIZE AND CONTAINER SIZE ARE THE MINIMUM ACCEPTABLE SIZES. * REFER TO SPECIFICATIONS FOR DEFINED CONTAINER MEASUREMENTS AND OTHER PLANT MATERIAL REQUIREMENTS. * SEARCH AND REVIEW: MAKE PLANT MATERIAL AVAILABLE FOR OPTIONAL REVIEW BY LANDSCAPE ARCHITECT AT SOURCE OF SUPPLY. AREA OF SEARCH TO INCLUDE LOWER MAINLAND AND FRASER VALLEY. * SUBSTITUTIONS: OBTAIN WRITTEN APPROVAL FROM THE LANDSCAPE ARCHITECT PRIOR TO MAKING ANY SUBSTITUTIONS TO THE SPECIFIED MATERIAL. UNAPPROVED SUBSTITUTIONS WILL BE REJECTED. ALLOW A MINIMUM OF FIVE DAYS PRIOR TO DELIVERY FOR REQUEST TO SUBSTITUTE. SUBSTITUTIONS ARE SUBJECT TO BC LANDSCAPE STANDARD AND CANADIAN LANDSCAPE STANDARD - DEFINITION OF CONDITIONS OF AVAILABILITY. * ALL LANDSCAPE MATERIAL AND WORKMANSHIP MUST MEET OR EXCEED BC LANDSCAPE STANDARD AND CANADIAN LANDSCAPE STANDARD LATEST EDITION. * ALL PLANT MATERIAL MUST BE PROVIDED FROM CERTIFIED DISEASE FREE NURSERY. * BIO-SOLIDS NOT PERMITTED IN GROWING MEDIUM UNLESS AUTHORIZED BY LANDSCAPE ARCHITECT.

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Suite C100 - 4185 Still Creek Drive
Burnaby, British Columbia, V5C 6G9
p: 604 294-0011 ; f: 604 294-0022

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2	20.AUG.20	NEW SITE PLAN / CLIENT COMMENTS	DO
1	20.JUL.13	CLIENT COMMENTS	MM

CLIENT:

PROJECT:

POCO CHRYSLER

1300 DOMINION AVE
PORT COQUITLAM, BC

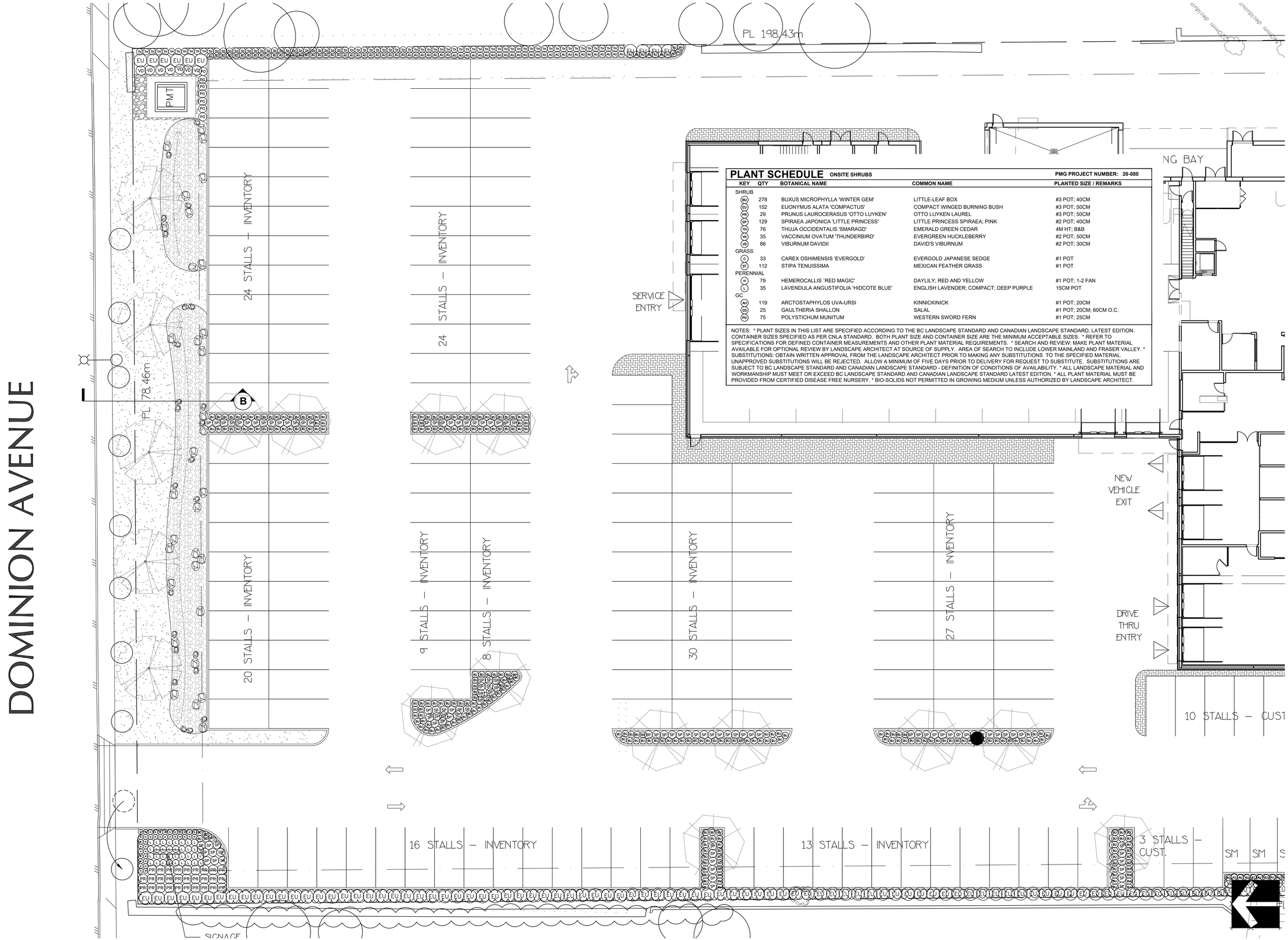
DRAWING TITLE:

LANDSCAPE PLAN

DATE:	20.JUL.02	DRAWING NUMBER:
SCALE:	1:300	**L1**
DRAWN:	DO	
DESIGN:	DO	
CHK'D:	MCY	**OF 3**

20080-4.ZIP

PMG PROJECT NUMBER: **20-080**



PLANT SCHEDULE ONSITE SHRUBS

PMG PROJECT NUMBER: 20-080

KEY	QTY	BOTANICAL NAME	COMMON NAME	PLANTED SIZE / REMARKS
SHRUB				
BU	278	BUXUS MICROPHYLLA 'WINTER GEM'	LITTLE-LEAF BOX	#3 POT; 40CM
EU	152	EUONYMUS ALATA 'COMPACTUS'	COMPACT WINGED BURNING BUSH	#3 POT; 50CM
PR	29	PRUNUS LAUROCERASUS 'OTTO LUYKEN'	OTTO LUYKEN LAUREL	#3 POT; 50CM
SP	129	SPIRAEA JAPONICA 'LITTLE PRINCESS'	LITTLE PRINCESS SPIRAEA; PINK	#2 POT; 40CM
TH	76	THUJA OCCIDENTALIS 'SMARAGD'	EMERALD GREEN CEDAR	4M HT; B&B
VA	35	VACCINIUM OVATUM 'THUNDERBIRD'	EVERGREEN HUCKLEBERRY	#2 POT; 50CM
VD	86	VIBURNUM DAVIDII	DAVID'S VIBURNUM	#2 POT; 30CM
GRASS				
C	33	CAREX OSHIMENSIS 'EVERGOLD'	EVERGOLD JAPANESE SEDGE	#1 POT
SM	112	STIPA TENUISSIMA	MEXICAN FEATHER GRASS	#1 POT
PERENNIAL				
H	79	HEMEROCALLIS 'RED MAGIC'	DAYLILY; RED AND YELLOW	#1 POT; 1-2 FAN
L	35	LAVENDULA ANGUSTIFOLIA 'HIDCOTE BLUE'	ENGLISH LAVENDER; COMPACT; DEEP PURPLE	15CM POT
GC				
AU	119	ARCTOSTAPHYLOS UVA-URSI	KINNICKINICK	#1 POT; 20CM
GS	25	GAULTHERIA SHALLON	SALAL	#1 POT; 20CM; 60CM O.C.
PO	75	POLYSTICHUM MUNITUM	WESTERN SWORD FERN	#1 POT; 25CM

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POCO CHRYSLER

1300 DOMINION AVE
PORT COQUITLAM, BC

DRAWING TITLE:

LANDSCAPE SHRUB PLAN

DATE:	20.JUL.02	DRAWING NUMBER:
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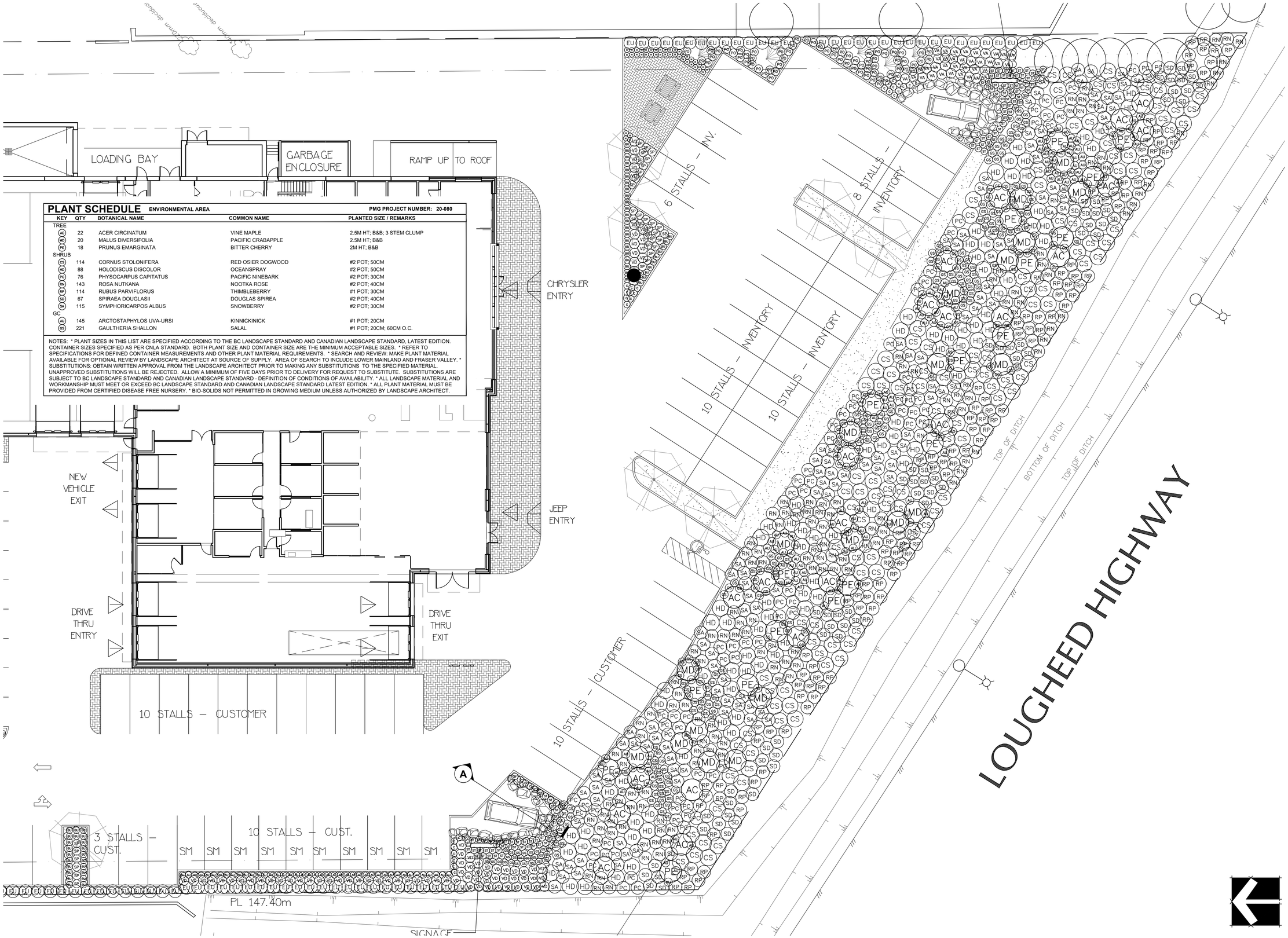
PMG PROJECT NUMBER: **20-080**

20080-4.ZIP



PLANT SCHEDULE

ENVIRONMENTAL AREA — **PMG PROJECT NUMBER: 20-080**

KEY	QTY	BOTANICAL NAME	COMMON NAME	PLANTED SIZE / REMARKS
TREE				
AC	22	ACER CIRCINATUM	VINE MAPLE	2.5M HT; B&B; 3 STEM CLUMP
MD	20	MALUS DIVERSIFOLIA	PACIFIC CRABAPPLE	2.5M HT; B&B
PE	18	PRUNUS EMARGINATA	BITTER CHERRY	2M HT; B&B
SHRUB				
CS	114	CORNUS STOLONIFERA	RED OSIER DOGWOOD	#2 POT; 50CM
HD	88	HOLODISCUS DISCOLOR	OCEANSPRAY	#2 POT; 50CM
PC	76	PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	#2 POT; 30CM
RN	143	ROSA NUTKANA	NOOTKA ROSE	#2 POT; 40CM
RP	114	RUBUS PARVIFLORUS	THIMBLEBERRY	#1 POT; 30CM
SD	67	SPIRAEA DOUGLASII	DOUGLAS SPIREA	#2 POT; 40CM
SA	115	SYMPHORICARPOS ALBUS	SNOWBERRY	#2 POT; 30CM
GC				
AU	145	ARCTOSTAPHYLOS UVA-URSI	KINNICKINICK	#1 POT; 20CM
SH	221	GAULTHERIA SHALLON	SALAL	#1 POT; 20CM; 60CM O.C.

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PMG PROJECT NUMBER: **20-080**

Tree Amendment Bylaw – First Two Readings

RECOMMENDATION:

That Council give Tree Amendment Bylaw No. 4197 first two readings.

OPTIONS (✓= Staff Recommendation)

	#	Description
✓	1	Give first two readings to the bylaw.
	2	Delay first two readings and request staff to provide additional information.
	3	Deny first two readings of the bylaw.

CITY OF PORT COQUITLAM

TREE BYLAW AMENDMENT BYLAW

Bylaw No. 4197

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

1. CITATION

This Bylaw is cited as "Tree Bylaw, 2019, No. 4108, Amendment Bylaw No. 4197, 2020".

2. ADMINISTRATION

2.1 That the Tree Bylaw, Definitions section be amended by:

a) adding the following definition in alphabetical order:

"**Hedge** means a set of trees, bushes, or shrubs grown closely together and pruned to form a fence or boundary. For the purposes of this bylaw, a hedge is not a tree."

b) amending the definition of **Tree** in section (dd) by adding the words "but does not include a hedge. For the purposes of this definitions, a tree" before the words "includes" and delete the word "and".

2.2 That the Tree Bylaw, be amended in section 6.2 by removing the existing section and replacing it with the following:

"6.2 No tree-cutting permit is required

(a) to prune a tree in accordance with ISA guidelines; or

(b) prior to tree cutting where a hazardous tree is in imminent danger of failing and injuring persons or property due to natural causes and it is not possible to obtain a tree cutting permit prior to the tree falling. The owner may cut the tree or have it cut but shall report the cutting of the tree to the Parks Section Manager the next business day along with a photograph of the tree prior to such cutting. Following reporting, the owner shall apply for a tree cutting permit within ten business days of the tree cutting. The owner shall not remove the tree from the lot until the City has attended at the site. If the Parks Section Manager determines that the tree was not in imminent danger of falling or was in imminent danger of falling due to reasons other than natural causes, the owner may be subject to the offences and penalties in section 11 of this bylaw."

2.3 That the Tree Bylaw, be amended in section 6.6 by removing the existing section and replacing it with the following:

"6.6 The Parks Section Manager may refuse to issue a tree cutting permit where:

a) the proposed tree cutting would take place during the active nesting season of any given year, except where:

(i) the applicant submits a biological survey prepared by a Qualified Environmental Professional identifying any active nests located upon or in the vicinity of the lot, the removal of any significant vegetation, and the disturbance of grassy areas for ground nesters; and

(ii) the applicant provides detailed measures to be taken for the protection of such nests in accordance with any requirements under the *Wildlife Act*, RSBC 1996, c.488, and other applicable legislation or regulation; or

b) the tree proposed to be cut is a significant tree, unless:

(i) the significant tree is a hazardous tree; or

(ii) the Parks Section Manager determines following review of engineering, architectural, or landscaping drawings and an arborist report that cutting is necessary for:

(A) the construction of or addition to a building;

(B) the construction of required off-street parking or an underground or above ground utility corridor; or

(C) the construction of required roads or services.

c) the removal would adversely affect property owned or held by the City; or

d) the tree is located in a Development Permit Area where hazardous conditions such as steep slopes are present, and the removal of the tree would impact site retention."

2.4 That the Tree Bylaw, be amended in section 6.9 by removing the existing section and replacing it with the following:

"6.9 Every person issued a tree cutting permit shall post a copy of the permit in a conspicuous place at the front of the lot to which the tree cutting permit relates for the duration of the activities permitted in the tree cutting permit and for one week following tree removal."

2.5 That the Tree Bylaw, be amended in section 7.3 by adding the words "60 cm DBH or greater" after the words "significant tree".

2.6 That the Tree Bylaw, be amended in section 7.4 by adding the words “on the subject property” after the words “another tree”.

2.7 That the Tree Bylaw, be amended in section 7.5 by removing the existing section and replacing it with the following:

“7.5 Every owner who is issued a tree cutting permit shall, in accordance with the associated tree replacement plan, plant replacement trees:

(a) Within six months of the date the permit was issued, except:

(i) when a tree is proposed to be cut for the purpose of a development where permitted construction on the site would adversely affect the health of the replacement tree planted.”

2.8 That the Tree Bylaw, be amended by adding the following new section 7.6 and re-numbering the remaining sections under 7. TREE REPLACEMENT:

“7.6 If the tree replacement plan is not carried out as approved and within the approved timeline, the owner will be issued a fine and the deposit shall be forfeited to the City as cash in lieu.”

2.9 That the Tree Bylaw, be amended in section 7.7 by removing the existing section and replacing it with the following:

“7.7 Where an owner submits an arborist report that demonstrates compliance with s. 7.4 and/or a report that indicates that the subject lot cannot accommodate a replacement tree or replacement trees, the Parks Section Manager will review the arborist report and the tree replacement plan in the context of the proposed development and the context of the lot.

(a) Upon review, the Parks Section Manager may require submission of a revised tree replacement plan that increases the retention or replacement of trees on the subject property.

(b) If the Parks Section Manager approves the tree management plan under this section, the owner shall be required to contribute $500 in lieu of each replacement tree not planted.”

2.10 That the Tree Bylaw, be amended in section 7.9 by replacing the words “section 7.7” with the words “section 7.8”.

2.11 That the Tree Bylaw, be amended in section 10.3 by removing the existing section and replacing it with the following:

“10.3 A Bylaw Enforcement Officer may issue a Stop Work Order if any tree is being cut or damaged in contravention of this bylaw or a tree cutting permit. A Bylaw Enforcement Officer may post the Stop Work Order in a conspicuous location near the front of the lot.

(a) The owner of a property on which a Stop Work Order has been posted, and every other person, shall cease all work regulated by this bylaw immediately and shall not do any work until all applicable provisions of this bylaw have been substantially complied with and the Stop Work Order has been rescinded in writing by a Bylaw Enforcement Officer."

2.12 That the Tree Bylaw be amended in section 10.5 by removing the existing section and replacing it with the following:

"10.5 Where a tree has been cut and removed from the lot without an investigation and assessment as per s. 10.4, the cutting shall be considered a contravention of this bylaw, and the fine for removing a significant tree shall apply."

READ A FIRST TIME this	day of	, 2020
READ A SECOND TIME this	day of	, 2020
READ A THIRD TIME this	day of	, 2020

Mayor

Corporate Officer

Tree Bylaw Amendments

RECOMMENDATIONS:

That Committee of Council direct staff to prepare amended bylaws to incorporate the changes outlined in the report.

PREVIOUS COUNCIL/COMMITTEE ACTION

On January 29, 2019, Committee of Council directed staff to provide a report outlining a strategy to achieve a tree canopy target of 30%, with a variety of options to achieve the target, including recommended changes to the tree bylaw and city budget, before making a decision on amending the Official Community Plan.

On February 26, 2019, Council rescinded Tree Bylaw 2005, No 3475 and adopted Tree Bylaw 2019, No. 4108.

REPORT SUMMARY

In order to ensure that the Tree Bylaw is functioning as intended and that any implementation challenges are addressed, a staff working group from the Parks, Planning and Environment divisions was assembled to conduct a review of the bylaw. This report summarizes issues identified by the working group and proposes changes in order to address gaps in the existing bylaws. Based on feedback given by the working group, and informal feedback provided by residents during the permitting process, this report recommends amendments to two bylaws: Tree Bylaw No. 4108 and Bylaw Notice Enforcement No. 3184. The report concludes with the next steps in tree preservation in the City of Port Coquitlam.

BACKGROUND

In 2017, the City embarked on a review of its tree regulations to respond to concerns raised by the public with respect to retention of the tree canopy, cutting of valued trees, and the City's management of its urban forest.

The review included an extensive public consultation program entitled 'Let's Talk Trees,' which sought to better understand public expectations for how the City manages its trees. The consultation outcomes indicated that the community would support more rigorous measures to protect trees and require additional tree planting. Therefore, Committee supported changes that would not only better retain existing trees, but also require more tree planting to increase the total number of trees. As a result of this direction, the new Tree Bylaw 2019 No. 4108 was developed and adopted as a regulatory tool February 26, 2019.

DISCUSSION

The new bylaw has now been in place for over a year, and staff involved in the administration of the bylaw have noted the success of the bylaw in clarifying the permitting process and expanding protections for the City's trees. Staff have also noted opportunities to improve the bylaw.

Successes of the Tree Bylaw

As a result of the bylaw, more trees in the City of Port Coquitlam have been protected, requiring replanting or cash-in-lieu when cut down. Larger trees, now considered "significant," cannot be cut down, except in certain circumstances. Because of these new restrictions for significant trees, we know that fewer trees with large canopies are being cut which helps to protect our existing tree canopy cover. Under the new bylaw, staff estimate that 25% of tree cutting permit applications are for trees with a diameter of 60cm or greater. These permit applications are now denied except for building and development purposes or if the tree is dead or dying as confirmed by an independent Arborist report. Additionally, since the implementation of the Tree Bylaw, the City has collected $24,000 in cash-in-lieu for replanting.

Challenges of the Tree Bylaw

Since the implementation of the Tree Bylaw, staff have identified several opportunities to refine the bylaw in a way that provides additional clarity around the tree cutting permit process and tree cutting restrictions, and further protects existing trees which will help the City retain tree canopy. The Bylaw updates reflect both staff observation and experience, as well as comments and concerns expressed to staff by residents going through the permitting process. The recommended changes to the bylaw include increasing clarity of regulations, addressing loopholes related to replanting requirements, and a more expansive significant tree definition.

Recommended Amendments to Tree Bylaw No. 4108

The main update proposed to the bylaw is to lower the minimum size of a significant tree from 60 cm diameter at breast height (DBH) to 45 cm DBH. This change is proposed in order to ensure that more trees meet the criteria for a significant tree and will thus require a rationale for removal before a tree cutting permit is issued. However, trees considered 'significant' but that are between 45 cm and 59 cm DBH are not proposed to be subject to the requirement to replant two trees for each significant tree removed; this provision would continue to only apply to significant trees 60 cm DBH or larger. This will help to keep the focus on retaining existing trees rather than replanting and will ensure homeowners are not overly burdened financially by being required to pay double the existing bond amount. In addition, trees of this size range may have very large canopies and the retention of these trees is important when considering the health of Port Coquitlam's tree canopy. Other updates to the bylaw are primarily intended to close gaps identified by staff.

The issues and proposed amendments are summarized in the Table 1 below and can be viewed in a redline of the updated Bylaw included as Attachment 1.

Table 1 - Recommended Amendments to Tree Bylaw No. 4108

Issue	Proposed Update(s)
1. The bylaw does not currently require property owners to provide specific rationale for cutting a tree that is smaller than 60 cm DBH (the current minimum size of a significant tree.) This results in certain tree species that may never reach 60 cm DBH being removed unnecessarily and reducing tree canopy coverage.	• Amend the threshold for significant tree outlined in Schedule A of the Bylaw to include trees that are greater than or equal to 45 cm DBH. This will make the Port Coquitlam Tree Bylaw one of the most inclusive in the region as far as defining what is considered a significant tree. However, it is recommended that significant trees between 45 cm and 59 cm not be subject to the requirement to replant two trees for each significant tree removed.
2. The current tree definition is ambiguous and can allow for undesirable situations such as using hedge species as replacement trees.	• Amend the definition of "tree" and include a new definition of "hedge" in order to reduce ambiguity and ensure hedge species are not used as a replacement tree.
3. The current wording of the bylaw creates ambiguity and confusion around the removal of hazardous trees by stating that a permit is not required to remove a hazardous tree, and then subsequently listing the process for applying for a permit for a hazardous tree.	• Amend bylaw language to clarify the process for applying for a permit for a hazardous tree.
4. Our current bylaw is inconsistent with provincial and federal regulations regarding nesting season.	• Refer to provincial and federal regulations in the bylaw
5. Staff have identified certain additional scenarios where a tree cutting permit should be refused by the Parks Section Manager.	• Update the bylaw to specify that a tree cutting permit may be denied if cutting the tree adversely affects property owned or held by the City or if the tree is located in a Development Permit Area where hazardous conditions such as steep slopes are present and the removal of the tree would impact slope stability.
6. Currently, a tree cutting permit can be issued for a significant tree when the	• Update the bylaw language to specify that removing a significant tree for construction

Issue	Proposed Update(s)
Parks Section manager determines that cutting is necessary for the construction of off-street parking or the construction of roads or services. This has been identified by staff as problematic since the off-street parking allowance is not restricted.	of off-street parking or roads and services only be considered as justification for tree removal if consistent with required off-street parking as per the Parking and Development Management Bylaw No. 4078 and required roads and services as per the Subdivision Servicing Bylaw No. 2241. (Ie. choosing to build parking in excess of the requirements should not be a reason to remove trees)
7. The bylaw requires that a copy of the tree cutting permit issued be posted in a visible place at the front of the lot but does not specify a duration of time for posting.	• Add a required posting period of two weeks following tree removal to the bylaw.
8. The bylaw states that no replacement tree is required where the tree removed is within 5 meters of another tree, but does not specify that the two trees need to be on the same property.	• Currently if a tree removal is within 5m of a tree on a neighboring property a replacement is not required. This provision requires both trees in question to be on the same property.
9. The current bylaw does not establish timelines for planting replacement trees. Staff have observed that about a third of applicants take more than 6 months to complete the replacement tree planting or do not do so at all while the City continues to hold the bond indefinitely.	• Amend the bylaw to establish a six-month period for owners to plant replacement trees, except in certain circumstances, and to create a mechanism for fining and forfeiting of the bond if timelines are not adhered to.
10. The process for rescinding a Stop Work Order where a tree has been cut or damaged in contravention of the bylaw is unclear.	• Update language in bylaw to provide more detail as to how a Stop Work Order would be issued and rescinded.
11. Where a tree has been cut without a permit and removed from the lot, it is impossible to determine the size or significance of the tree.	• Add a clause in the bylaw stating that any tree cut without a permit and removed from the lot will be treated as a significant tree and subject to the requirement to replant two trees for each significant tree removed.

In summary, the most significant change proposed is the lowering of the minimum significant tree size from 60 cm DBH to 45 cm DBH. This change makes the bylaw's definition of what constitutes

a ‘significant tree’ among the strongest in the region and would ensure more trees in the City of Port Coquitlam are protected. Trees that do not meet the current minimum significant tree threshold of 60 cm but are 45 cm or larger still contribute in a meaningful way to the City’s tree canopy. For this reason, it is important that these trees be recognized as significant and subject to additional considerations during the tree cutting permit application process. To get a better idea of how many more trees would be protected by including 45-59cm DBH trees as significant, staff analyzed a sample of 112 requests to remove trees. Of those 112 permit applications67 were requests pertaining to trees under 45 cm, 28 were trees over 60 cm, and 17 were trees between 45 cm and 59 cm. With the current 60cm significant classification 25% of the trees were protected as significant. With expanded significant classification to 45cm, 40% of the trees would have been protected as significant.

Although the public consultation in 2017 did not specifically ask about what size of tree should be considered significant, over 80% of respondents indicated that the age of the tree and the size of the tree were indications of a tree’s significance. Further, 59% of respondents believed that the City should offer incentives to encourage property owners to retain significant trees signalling to staff that a majority of residents would like to see additional efforts made to protect larger and older trees.

Expanding the definition of a significant tree will create additional barriers to tree removal, which will help retain existing canopy and supports policy 7.4 in the official community plan and strategic direction 5 of the Environmental Strategic Plan discussed in more detail below.

In addition to the amendments listed above, staff suggest that an update be made to the table in Schedule B of the bylaw in order that it be aligned with the current Tree Bylaw regarding the minimum protected tree diameter of 15 cm.

Recommended Amendments to Bylaw Notice Enforcement No. 3184

Based on staff feedback, the penalty structure for fines issued under the Tree Bylaw has been updated to mirror the penalty structure for other similar bylaws, with a reduced fine for early payment and a full payment should the fine not be collected within 14 days. Staff is recommending a universal discount rate of 20% be applied for prompt payment, rather the full payment amounts for most violations has been raised to $500 to reflect the significance of unlawfully damaging or removing trees. Increasing fines for damaging trees and moving to a full penalty of $500 for the majority of violations will help preserve the health of existing trees and deter the unlawful removal of trees.

The proposed amendments are outlined in the table below, and can be viewed in the context of the full Bylaw Enforcement Notice in Attachment 2. All other fines associated with the Bylaw, if paid within 14 days, have not changed.

Table 2 - Recommended Amendments to Bylaw Notice Enforcement No. 3184

Fine Description	Current Penalty	Proposed Penalty (discounted)	Proposed Penalty (no discount)	Rationale
1. Damaging or allowing a tree to be damaged without permit (tree other than a significant or heritage tree)	$200	$320	$400	Damaging a tree should have more significant fines to deter property owners from damaging trees. This protects the health of the tree and reduces the risk that the tree will become a hazard.
2. Damaging or allowing a tree to be damaged without permit (Significant tree other than a heritage tree)	$350	$400	$500	Same as above.
3. Failure to Comply with a Stop Work Order	-	$400	$500	The current bylaw does not have language that provides authority to fine owners for ignoring a Stop Work Order, reducing the effectiveness of this tool. A fine should encourage compliance with Stop Work Orders. The fine is set to the same amount as the equivalent fine in the Building and Plumbing Bylaw.

Official Community Plan

The OCP Environment & Parks policies (section 7.4) provide high-level direction to staff with respect to implementing programs that help the community achieve its environmental goals over the long term. Particularly, section 7.4 (Policy 8) states that the City will “promote the preservation and planting of trees through DPAs and development control, road infrastructure projects, and the Tree Protection Bylaw.” The recommended revisions to the Tree Bylaw will provide staff the tools

needed to more effectively preserve existing trees and plant replacements when trees are removed.

Environmental Strategic Plan

The Environmental Strategic Plan Green Strategic Direction 5 is to "protect and sustainably manage the urban forest". This statement recognizes the importance of trees; urban trees provide substantial value to the social, environmental, and economic imperatives of sustainability. The Plan recognizes many of the benefits of urban trees and increasing our ability to effectively protect trees from unnecessary harm and removal aligns with Green Strategic Direction 5.

NEXT STEPS

The following items have been identified as next steps for tree protection and tree management in the City of Port Coquitlam.

Policy Development

Staff have identified that some of the challenges with implementing the Tree Bylaw would be better addressed through an accompanying City policy. The policy will be a staff administrative policy and will provide additional tools for clarification and support of the bylaw to allow for consistent decision making. This policy will be developed in Q1 2021 will include, at minimum, the following tools and policy language:

- Guidance on what species and size of trees are acceptable as part of a replacement plan.
- How to consider the appropriateness of the tree species for the site and its relationship to the development.
- Guidelines for what needs to be included in an arborist report and how these reports are reviewed and considered by staff.
- An approach to managing city trees that impact private property.
- Factors to be considered by the Parks Section Manager when approving tree replacement plans that propose cash in lieu under Section 7.7 of the bylaw.

Updated Tree Canopy Analysis

Council have requested staff report back with updated and current tree canopy coverage and propose options to achieve a target of 30%. Staff are finalizing the analysis and anticipate a report to Committee in Q4 2020.

Urban Forest Management Plan

The Urban Forest Management Plan will build upon the above noted work, and will include: include:

- Practices to manage and maintain the City's trees, including a list of preferred tree species that will be more resilient in successive years of drought due to climate change
- A tree canopy target and timeframe with tangible actions to achieve the target

- Detailed, tangible actions to reach the identified canopy target
- An education and engagement plan for residents

As part of the Urban Forest Management Plan, resources will be developed to help end-users understand the expectations of the bylaw and how to be successful when accessing the program. These resources will likely be in the form of a Tree Handbook which will have both print and web-based formats. Accordingly, staff propose that PoCo branded communications form part of the scope of the upcoming Urban Forest Management Plan. This work is anticipated to begin in 2021.

FINANCIAL IMPLICATIONS

Between February 2018 and February 2019, before the current Tree Bylaw took effect, the City of Port Coquitlam collected $10,765 in fees for tree cutting permits. During the Period from March 2019 to March 2020, with the current Tree Bylaw in effect, the City collected $19,400 in fees for tree cutting and retained $44,000 in deposits for replacement trees to be planted. Since the Bylaw took effect, fines for bylaw violations have totalled $25,450. Fees and fine revenue will be used to offset the City's tree planting expenses and deposits are held separately to be reimbursed after replanting has occurred.

There are not expected to be any major financial impacts stemming from the updates proposed in this report. While penalties for bylaw violations are proposed to be increased, which may result in a small increase of revenue from fines, it is not the intent of the bylaw updates to increase overall revenue. The amendments proposed are intended to encourage compliance with the regulations and better protect existing trees.

OPTIONS

#	Description
1 ✓	Direct staff to prepare amended bylaws to incorporate the changes outlined in the report.
2	Request additional information be considered in the proposed amendments.
3	Determine that it does not wish to make any changes to current policies and regulations.

Lead Author: Meghan Woods
Contributors: Clarissa Huffman, Doug Rose, Mike Por, Jennifer Little

ATTACHMENTS

Attachment 1. Redline of Tree Bylaw No. 4108 Amendments

CITY OF PORT COQUITLAM

TREE BYLAW, 2019

Bylaw No. 4108

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

1. CITATION

1.1 This bylaw is cited as "Tree Bylaw, 2019, No. 4108 "

2. REPEAL

2.1 City of Port Coquitlam Tree Bylaw, 2005, NO. 3474, as amended, is repealed.

3. INTERPRETATION

3.1 In this bylaw, unless the context indicates otherwise:

(a) **Arborist Report** means a document indicating the location, species, diameter, height, habitat features, and condition, in addition to relevant site conditions (e.g. infrastructure, watercourses, floodplain, etc.) produced and signed by a certified arborist and/or qualified tree risk assessor, as applicable;

(b) **Bylaw Enforcement Officer** means an individual designated as a Bylaw Enforcement Officer;

(c) **Caliper diameter** means the width of the main stem of a juvenile tree, measured at a height of 15 cm above the root ball;

(d) **Certified Arborist** means a person certified by the International Societyof Arboriculture as an arborist;

(e) **City** means the City of Port Coquitlam;

(f) **Cut** or **Cutting** means the severing, or knowingly allow to be severed the trunk or stem of a tree;

(g) **Damage** means to conduct, or to knowingly allow to be conducted**:**

(i) severing or harming the roots growing inside the root protection zone of a tree;

(ii) placing fill, building materials or structure upon land inside the root protection zone of a tree;

(iii) operating trucks, backhoes, excavators or other heavy inside the root protection zone of a tree;

(iv) denting, gouging or harming the stem of a tree;

(v) removing bark from a tree;

(vi) depositing concrete washout or other liquid or chemical substances harmful to the health of a tree on land inside the root protection zone of a tree;

(vii) adding or removing soil from land inside the root protection zone of a tree which changes the original soil grade;

(viii) undermining the roots inside the root protection zone of a tree;

(ix) pruning a tree in such a way that may cause the instability or death of the tree; or

(x) topping a tree by removing the vertical stem and upper primary limbs of a tree;

(h) **Development** means any building modification requiring a building permit from the City;

(i) **Diameter** means the width of the stem(s) of a tree, such that:

(i) the diameter is the circumference of the stem of a tree measured 1.4 metres above natural grade, divided by 3.142;

(ii) where natural grade is sloped, diameter shall be measured 1.4 metres above the mid-point between high and low sides of the natural grade;

(iii) The diameter of a tree having multiple stems 1.4 metres above the natural grade shall be the sum of:

A. 100% of the diameter of the largest stem; and

B. 60% of the diameters of each additional stem;

(j) **Drip line** means perimeter of the area directly beneath the ends of the outermost branches of a tree;

(k) **Hazardous tree** means any tree which due to its condition, health or any other circumstances has been determined by a Qualified Tree Risk Assessor to present a hazard to the safety of persons, private property, or other tree(s);

(l) **Hedge** means a set of trees, bushes, or shrubs grown closely together and pruned to form a fence or boundary. For the purposes of this bylaw, a hedge is not a tree.

(m) **ISA** means International Society of Arboriculture;

(n) **Location** of a tree means the point at which the main stem of a tree meets the ground;

(o) **Lot** means a parcel of land registered in the Land Title Office and includes parcels created by bare land strata subdivision and common property shown on a strata plan;

(p) **Parks Section Manager** means the person appointed by the City as Parks Section Manager and any duly authorized delegate of the Parks Section Manager;

(q) **Owner** means in respect of a lot:

(i) the registered owner;

(ii) the holder of the last registered agreement for sale;

(iii) a strata corporation if the lot is common property; or

(iv) an agent authorized in writing by the owner to act on the owner's behalf;

(r) **Permit** means a permit issued by the City, including a building permit, demolition permit, development permit, development variance permit, heritage alteration permit, soil removal and deposit permit, temporary use permit, or any other permit deemed applicable by the City;

(s) **Protective barrier** means fencing constructed around a tree in accordance with Schedule "B" of this bylaw to protect the tree from damage during site work or construction;

(t) **Prune** or **Pruning** means the removal of living or dead parts of a tree, including branches, in order to maintain shape, health, flowering or to regulate growth;

(u) **Qualified Tree Risk Assessor** means any person possessing a valid Tree Risk Assessment Qualification from International Society of Arboriculture;

(v) **Remove** or **Removing** means to uproot, or cause or allow to be uprooted, or to move, or cause or allow to be taken off a lot;

(w) **Replacement tree** means a tree with a minimum caliper diameter of 5.0 cm if deciduous, or a minimum height of 2.0 m if coniferous, planted on a lot to replace a tree which has been cut down on the same lot;

(x) **Retained tree** means a tree on a lot in respect of which a tree cutting permit is issued that is not permitted to be cut;

(y) **Root protection zone** means a circular area extending outward from the stem of a tree, whose radius is equal to six times the diameter of the tree;

(z) **Shared tree** means a tree with any part of its trunk crossing a property line, including where the adjacent property is a highway, park, or other City-owned property;

(aa) **Significant tree** means a tree listed and identified in Schedule 'A';

(bb) **Snag** means any dead standing tree;

(cc) **Stem** means a main segment of a tree which grows upward from the ground;

(dd) **Tree** means a woody perennial plant having a single stem or group of stems with a diameter of at least 15 cm measured 1.4 metres above natural grade or a height of at least 5 metres, but does not include a hedge. For the purposes of this definition, a tree ~~and~~ includes:

(i) a replacement tree; or

(ii) a tree planted as a condition of a development permit.

(ee) **Tree Cutting Permit** means a permit issued by the Parks Section Manager in accordance with this bylaw, which shall permit the cutting and replacement of trees under the conditions stipulated in the permit;

(ff) **Tree Cutting Plan** means a plan based on the tree survey, which shows the trees proposed to be cut;

(gg) **Tree Replacement Plan** means a plan which shows the location, size (height and/or caliper diameter) and species of replacement trees to be planted upon a subject lot; and

(hh) **Tree Risk Assessment** means an analysis of tree hazard that includes documented assessment of site factors, tree health and species profile, load factors, tree defects and conditions affecting the likelihood of failure, risk categorization, and mitigation options.

3.2 A reference in this bylaw to an enactment is a reference to that enactment as amended or replaced from time to time.

3.3 Words used in the singular form in this bylaw include the plural and gender specific terms include all genders and corporations.

3.4 Headings in this bylaw are for convenience only and must not be construed as defining or in any way limiting the scope or intent of this bylaw.

3.5 A decision by a court that any part of this bylaw is illegal, void or unenforceable severs that part of this bylaw and does not affect the validity of the remainder of this bylaw.

4. APPLICATION OF BYLAW

4.1 This bylaw applies to all trees within the City except as provided in section 4.2.

4.2 This bylaw does not apply to:

(a) trees that are cut, removed, or damaged pursuant to the *Railway Safety Act*, SBC 2004, c.8, the *Hydro and Power Authority Act*, RSBC 1996, c.212, or the *Oil and Gas Activities Act*, SBC 2008, c.36; and

(b) trees on City-owned property or highways that are cut or removed by the City or its authorized agents in accordance with approved City operations.

5 PROHIBITIONS

5.1 (a) No person shall cut or remove a tree (tree other than a significant or heritage tree) without a tree cutting permit.

(b) No person shall damage or allow a tree (tree other than a significant or heritage tree) to be damaged without a permit

(c) No person shall cut or remove a tree (designated as a significant tree) without a tree cutting permit issued under this bylaw.

(d) No person shall damage or allow a tree (designated as a significant tree) to be damaged without permit

(e) No person shall cut or remove a tree (designated as a significant tree, further defined as a heritage tree) without a tree cutting permit.

(f) No person shall damage or allow a tree (designated as a significant tree, further defined as a heritage tree) to be damaged without permit.

(g) Failure to adhere to the terms or conditions of a permit.

6 TREE CUTTING PERMITS

6.1 An owner may apply to the Parks Section Manager for a tree cutting permit.

6.2 No tree cutting permit is required

(a) to prune a tree in accordance with ISA guidelines; or

(b) prior to tree cutting where a hazardous tree is in imminent danger of falling and injuring persons or property due to natural causes and it is not possible to obtain a tree cutting permit prior to the tree falling. The owner may cut the tree or have it cut but shall report the cutting of the tree to the Parks Section Manager the next business day along with a photograph of the tree prior to such cutting. Following reporting, the owner shall ~~and shall forthwith~~ apply for a tree cutting permit within ten (10) business days of the tree cutting. The owner shall not remove the tree from the lot until the City has attended at the site. If the Parks Section Manager determines that the tree was not in imminent danger of falling or was in imminent danger of falling due to reasons other than natural causes, the owner may be subject to the offences and penalties in section 11 of this bylaw.

6.3 An application for a tree cutting permit must be made in the form prescribed for that purpose from time to time by the Parks Section Manager and must include all of the following:

(a) the civic address and legal description of the lot or lots on which the trees proposed to be cut or removed are located;

(b) if the applicant is not the owner of the lot on which the tree proposed to be cut or removed is located, the written consent of all owners of that lot;

(c) a statement of purpose and rationale for the proposed tree cutting or removal;

(d) a non-refundable application fee set out in the *Fees and Charges Bylaw, 2015, No. 3892*;

(e) a tree replacement plan in accordance with section 7 of this bylaw;

(f) a security deposit in accordance with section 8 of this bylaw;

(g) details of the scale, methods, and timing of the proposed cutting or removal of trees;

(h) where the tree is a shared tree, a letter from the owners of the adjacent lot consenting to the cutting or removal of the shared tree, together with current contact information for each of those owners; and

6.4 In addition to the requirements in section 6.3, the Parks Section Manager may also require an applicant for a tree cutting permit to provide:

(a) an arborist report, a tree risk assessment, and a tree cutting plan;

(b) a title search for the lot or lots on which the trees proposed to be cut or removed are located, obtained from the Land Title Office, along with copies of any covenants or similar agreements registered against title to the lot and relating to the use of the lot or the cutting or removal of trees on the lot;

(c) where a tree is proposed to be cut for the purpose of a development, the permits associated with the property on which the tree is to be cut; and

(d) if the tree cutting permit is sought in respect of a lot in a development permit area identified in the *Official Community Plan, 2013, No. 3838*:

(i) where applicable, a report from an engineer assessing issues relating to slope stability, flooding, and erosion on the lot, certifying that the proposed cutting or removal of the tree(s) will not destabilize slopes or cause flooding or erosion, and specifying any conditions under which the proposed cutting or removal of the tree(s) may take place, including the appropriate extent, timing, and phasing of the cutting or removal to address public health and safety concerns, minimize impacts to adjacent properties, protect retained trees, and protect other environmental features or functions;

(i) where applicable, proof of approval from the Ministry of Environment & Climate Change Strategy, Fisheries and Oceans Canada, or both for areas protected for fish habitat or flood-proofing purposes; and

(ii) where applicable, adherence to the watercourse development permit area designation in the Official Community Plan.

6.5 The Parks Section Manager may:

(a) issue a tree cutting permit; or

(b) issue a tree cutting permit subject to terms and conditions with respect to the extent, timing and phasing of tree cutting, removal and replacement; the location of replacement trees to be planted; and proposed methods to access the site, control erosion, manage runoff, and protect retained trees.

6.6 The Parks Section Manager may refuse to issue a tree cutting permit where:

(a) the proposed tree cutting would take place during the active nesting season ~~(March 1 through July 31)~~ of any given year, except where:

(i) the applicant submits a biological survey prepared by a Qualified Environmental Professional identifying any active nests located upon or in the vicinity of the lot, the removal of any significant vegetation, and the disturbance of grassy areas for ground nesters; and

(i) the applicant provides detailed measures to be taken for the protection of such nests in accordance with any requirements under the *Wildlife Act*, RSBC 1996, c.488, and other applicable legislation or regulation; or

(b) the tree proposed to be cut is a significant tree, unless:

(i) the significant tree is a hazardous tree; or

(i) the Parks Section Manager determines following review of engineering, architectural, or landscaping drawings and an arborist report that cutting is necessary for:

A. the construction of or addition to a building;

B. the construction of required off-street parking or an underground or above ground utility corridor; or

C. the construction of required roads or services.

(c) the removal would adversely affect property owned or held by the City; or

(d) the tree is located in a Development Permit Area where hazardous conditions such as steep slopes are present and the removal of the tree would impact slope stability.

6.7 The Parks Section Manager may suspend or revoke a tree cutting permit at any time if the Parks Section Manager determines that:

(a) tree cutting and replacement is not being carried out in accordance with the terms of this bylaw, the tree cutting permit or both; or

(b) the information on which the issuance of the tree cutting permit was based is incorrect.

6.8 Unless otherwise specified in a tree cutting permit, a tree cutting permit shall expire

within one year after the date of issuance.

6.9 Every person issued a tree cutting permit shall post a copy of the permit in a conspicuous place at the front of the lot to which the tree cutting permit relates for the duration of the activities permitted in the tree cutting permit and for two weeks following tree removal.

6.10 A tree cutting permit only grants permission pursuant to this bylaw and does not relieve the owner from complying with all other laws, regulations and requirements of any public authority having jurisdiction, nor relieve the holder from complying with civil, common law or contractual obligations.

7. TREE REPLACEMENT

7.1 Every applicant for a tree cutting permit shall provide a tree replacement plan acceptable to the Parks Section Manager.

7.2 A tree replacement plan shall provide for one replacement tree to be planted for each tree proposed to be cut, except as provided in sections 7.3 and 7.4.

7.3 A tree replacement plan shall provide for two replacement trees to be planted for each significant tree 60 cm DBH or greater proposed to be cut.

7.4 No replacement tree shall be required where the largest stem of the tree to be replaced is within a 5 metre radius of the largest stem of another tree on the subject property.

7.5 Every owner who is issued a tree cutting permit shall, in accordance with the associated tree replacement plan, plant replacement trees:

(a) Within six months of the date the permit was issued, except:

(i) when a tree is proposed to be cut for the purpose of a development where permitted construction on the site would adversely affect the health of the replacement tree planted.

7.6 If the tree replacement plan is not carried out as approved and within the approved timeline, the owner will be issued a fine and the deposit shall be forfeited to the City as cash in lieu.

7.7 Where an owner submits an arborist report that demonstrates compliance with section 7.4 and/or a report that indicates that the subject lot cannot accommodate a replacement tree or replacement trees, the Parks Section Manager ~~may permit the owner~~ will review the arborist report and the tree replacement plan in the context of the proposed development and the context of the lot.

(a) Upon review, the Parks Section Manager may require submission of a revised tree replacement plan that increases the retention or replacement of trees on the subject property.

(b) If the Parks Section Manager approves the tree management plan under this section, the owner shall be required to contribute $500 in lieu of each replacement tree not planted.

7.8 Every owner shall maintain in good health in accordance with sound arboricultural practice every replacement tree planted pursuant to a tree replacement plan for a period of 1 year after planting.

7.9 Where a replacement tree does not survive for 1 year after planting, the owner shall, within 6 months, remove the deceased tree and provide a new replacement tree in a location satisfactory to the Parks Section Manager. The owner shall thereafter maintain the new replacement tree in accordance with section 7.8.

8. SECURITY DEPOSITS

8.1 Every applicant for a tree cutting permit shall submit with the application a security deposit, in the form of cash or irrevocable letter of credit drawn upon a chartered bank in a form acceptable to the Parks Section Manager, for full and proper compliance with all the terms in a tree cutting permit, including the planting and maintenance of all replacement trees.

8.2 The amount of security shall be $500 per required replacement tree.

8.3 If at any time an owner fails to comply with the provisions of this bylaw, a tree cutting permit or a tree replacement plan, the City may by its employees or contractors enter upon the lot that is the subject of the requirements and fulfill the requirements of the owner and, for such purposes, the City may draw upon the security provided and expend the funds to cover its costs and expenses of so doing.

8.4 The City shall release the security provided by an owner in respect of each replacement tree when the Parks Section Manager determines, in his or her sole discretion, that a replacement tree has been planted and maintained in good health for a period of 1 year. In the event that the Parks Section Manager determines an owner has not maintained a replacement tree in good health for 1 year, the City may retain the security until the Parks Section Manager is satisfied that the replacement tree, or a tree planted to replace a deceased replacement tree, is in good health and is expected to grow to maturity.

8.5 The Parks Section Manager may waive the requirement to post security under this section 8 if the owner has provided other security relating to a development on the

lot that permits the City to draw down on such security to fulfill the owner's obligations under a tree cutting permit, tree replacement plan and this bylaw.

8.6 The Parks Section Manager may waive the requirement to post security under this section 8 if the owner carries on an institutional or single residential use as set out in the Zoning Bylaw, 2008, No. 3630.

9. TREE PROTECTION DURING CONSTRUCTION AND DEMOLITION

9.1 Where the drip line of a tree is within 4 metres from any excavation, demolition, construction, fill or engineering works proposed on a lot, the owner shall install a protective barrier around the root protection zone of the tree.

9.2 Where the drip line of a tree on an adjacent lot is within 4 metres from any excavation, demolition, construction, fill or engineering works proposed on a lot, the owner shall, with the consent of the owner of the adjacent lot, install a protective barrier around the root protection zone of the tree. In the event that the owner cannot obtain such consent from the owner of the adjacent lot, the owner shall install a protective barrier around the tree to the property line of the owner's lot.

9.3 No demolition permit, building permit, or fill permit shall be issued before the installation of protective barriers has been satisfactorily demonstrated to the City, if such barriers are required in accordance with sections 9.1 and 9.2.

9.4 A protective barrier must remain in place for the duration of all excavation, construction, demolition, or fill activity on the lot until removal of the protective barrier is approved by the Parks Section Manager.

9.5 No person shall disturb the area within a root protection zone by site grading, deposition or storage of soil or any other material, disposal of any toxic material, access by any vehicular traffic or heavy equipment, use of the area as an amenity space during construction, use of tree trunks as a winch support, anchorage, or temporary power pole or in any other manner.

9.6 Notwithstanding sections 9.4 and 9.5, a protective barrier may be temporarily removed or relocated in order to allow work to be done within or near a root protection zone if the owner has, prior to such removal or relocation, provided the City with:

(a) a report from a certified arborist, satisfactory to the Parks Section Manager, setting out the reasons and proposed duration for such removal or relocation; and

(b) a signed letter of undertaking from a certified arborist, in the form prescribed for that purpose from time to time by the Parks Section Manager, confirming

that the certified arborist will be onsite and supervising all such work,

and thereafter the owner shall only remove or relocate the protective barrier in accordance with the approved report and at those times during which the certified arborist is onsite and supervising all such work.

10. INSPECTIONS AND STOP WORK ORDERS

10.1 Bylaw enforcement officers and any other employees or agents of the City authorized to administer or enforce this bylaw may, in accordance with section 16 of the *Community Charter*, enter any lot at all reasonable times without the consent of the owner to ascertain whether the requirements of this bylaw or a tree cutting permit are being observed.

10.2 No person shall obstruct or attempt to obstruct any bylaw enforcement officer, employee or agent of the City in the exercise of any of that person's duties under this bylaw.

10.3 A bylaw enforcement officer may issue a Stop Work Order if any tree is being cut or damaged in contravention of this bylaw or a tree cutting permit. A bylaw enforcement officer may post the Stop Work Order in a conspicuous location near the front of the lot. ~~Upon receipt of a Stop Work Order, the owner and owner's agents shall immediately cease all tree cutting or damaging activities and shall not resume unless authorized by the Parks Section Manager.~~

(a) The owner of a property on which a Stop Work Order has been posted, and every other person, shall cease all work regulated by this bylaw immediately and shall not do any work until all applicable provisions of this bylaw have been substantially complied with and the Stop Work Order has been rescinded in writing by a Bylaw Enforcement Officer.

10.4 Where a tree has been cut or damaged in contravention of this bylaw or a tree cutting permit, the trunk, limbs, roots and remains of the tree shall not be removed from the lot until an investigation and assessment is complete and the removal is expressly authorized by the Parks Section Manager.

10.5 Where a tree has been cut and removed from the lot without an investigation and assessment as per s. 10.4, the cutting shall be considered a contravention of this bylaw, and the fine for removing a significant tree shall apply.

11. OFFENCES AND PENALTIES

11.1 This bylaw may be enforced by the provisions of the *Bylaw Notice Enforcement Bylaw No. 3814, 2013*, and the *Ticket Information Utilization Bylaw*, 1992*, No. 2743*.

11.2 Any person who:

(a) contravenes or violates any provision of this bylaw or of a tree cutting permit issued under this bylaw;

(b) allows any act or thing to be done in contravention or violation of this bylaw or of a tree cutting permit issued under this bylaw; or

(c) fails or neglects to do anything required to be done by this bylaw or a tree cutting permit issued under this bylaw,

commits an offence, and where the offence is a continuing one, each day the offence is continued constitutes a separate offence.

11.3 Where one or more tree is cut, removed or damaged in contravention of this bylaw or a tree cutting permit or one or more tree is not replaced or maintained in accordance with a tree replacement plan, a separate offence is committed in respect of each tree.

11.4 Upon being convicted of an offence under this bylaw, a person shall be liable to pay penalties not exceeding the amounts provided for in the *Offence Act*, RSBC 1996, c.338.

11.5 In addition to any other penalty which may be imposed under this bylaw, where an owner cuts, removes or damages, or causes or allows any tree to be cut, removed or damaged in contravention of this bylaw or of any term or condition of a tree cutting permit issued under this bylaw, the owner shall, within 30 days of receiving notice of such requirement from the Parks Section Manager:

(a) submit for the Manager of Parks Service's approval a tree replacement plan prepared by a certified arborist providing for 3 replacement trees to be planted for each tree unlawfully cut and specifying the location of such replacement trees; and

(b) submit security in accordance with section 8 of this bylaw.

11.6 Every owner who submits a tree replacement plan and security under section 11.5 of this bylaw shall plant replacement trees in accordance with the approved tree replacement plan and sections 7.5, 7.6, 8.3 and 8.4 of this bylaw shall apply to the replacement trees and the security.

READ A FIRST TIME this 12th day of February, 2019

READ A SECOND TIME this	12th day of	February, 2019
READ A THIRD TIME this	12th day of	February, 2019
ADOPTED this	26th day of	February, 2019

Mayor

Corporate Officer

RECORD OF AMENDMENTS

Bylaw No.	Section	Date
4146	5.1	2019-10-22

DRAFT

SCHEDULE "A"

SIGNIFICANT TREES

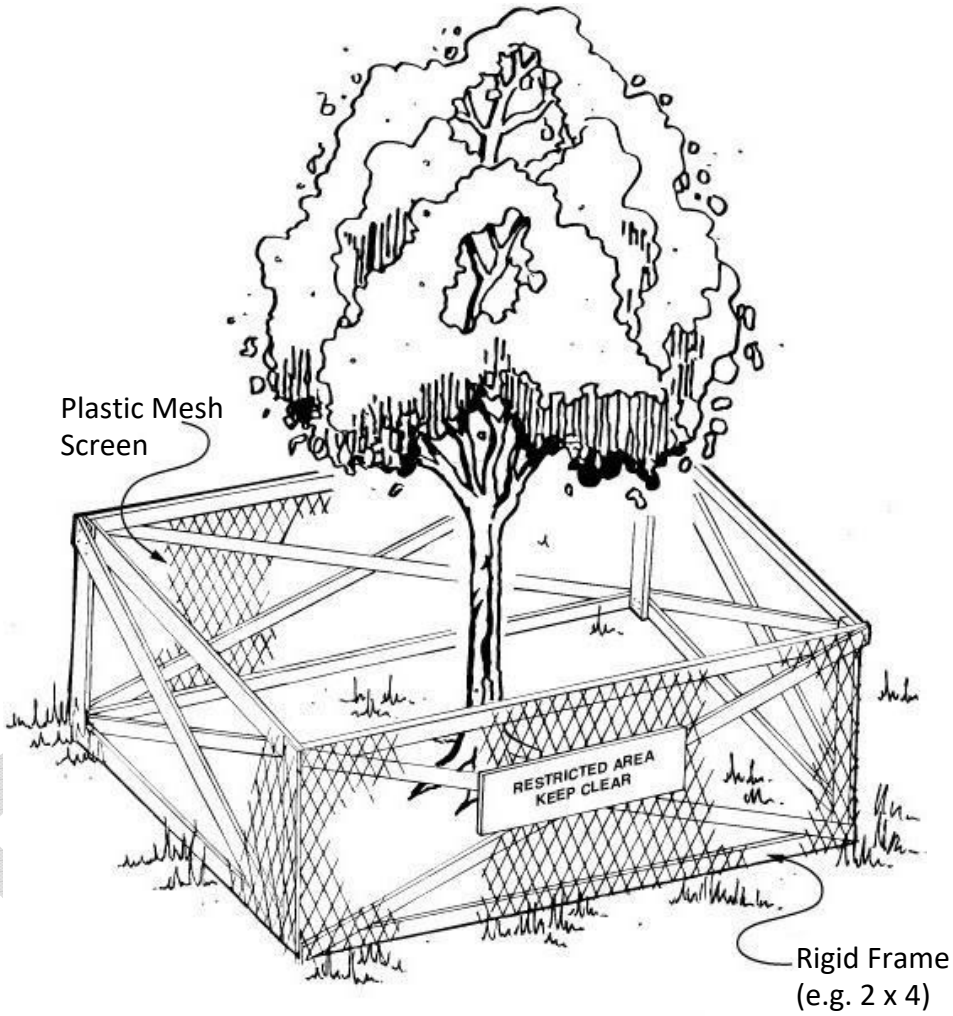
Type	Minimum Size
Rare Native Tree Species	
▪ Pacific Dogwood (Cornus nuttallii)	10 cm diameter
▪ Arbutus (Arbutus menziesii)	10 cm diameter
▪ Western Yew (Taxus brevifolia)	10 cm diameter
▪ Western white pine (Pinus monticola)	10 cm diameter
▪ Garry oak (Quercus garryana)	10 cm diameter
▪ Oregon ash (Fraxinus latifolia)	10 cm diameter
Wildlife Trees	
▪ Any dead, standing snag used as wildlife habitat.	
Heritage Trees	
▪ Any tree designated and registered by size, age or cultural significance that has been entered upon a list of heritage trees.	
Specimen Trees	
▪ Any tree with a diameter of 45 cm or greater, excluding Black cottonwood (*Populus balsamifera* ssp. Trichocarpa), Balsam poplar (*Populus balsamifera* ssp. Balsamifera), and Trembling aspen *(Populus tremuloides).*	

DRAFT

SCHEDULE "B"

BYLAW 4108

PROTECTIVE BARRIER



Tree Diameter (cm)	15	20	25	30	35	40	45	50	55	60	75	90	100
Minimum Distance from tree to Protective Barrier (m)	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	4.5	5.4	6.0

Bylaw Notice Enforcement Amendment Bylaw – First Three Readings

RECOMMENDATION:

That Council give Bylaw Notice Enforcement Amendment Bylaw No. 4198 first three readings.

OPTIONS (✓= Staff Recommendation)

	#	Description
✓	1	Give first three readings to the bylaw.
	2	Delay first three readings and request staff to provide additional information.
	3	Deny first three readings of the bylaw.

CITY OF PORT COQUITLAM

BYLAW NOTICE ENFORCEMENT AMENDMENT BYLAW, 2020

Bylaw No. 4198

1. CITATION

This Bylaw is cited as “Bylaw Notice Enforcement Bylaw, 2020, No. 3814, Amendment Bylaw, 2020, No. 4198”.

2. ADMINISTRATION

2.2 That Schedule “A” – Tree Bylaw No. 4108 be replaced with the Schedule “A” – Tree Bylaw No. 4108 attached hereto and forming part of this Bylaw.

READ A FIRST TIME this	th day of	, 2020
READ A SECOND TIME this	th day of	, 2020
READ A THIRD TIME this	th day of	, 2020

Mayor

Corporate Officer

SCHEDULE "A"
Designated Bylaw Contraventions and Penalties

Tree Bylaw No. 4108

DESCRIPTION	SECTION NO. IN BYLAW	DISCOUNTED PENALTY IN $ (within 14 days)	FULL PENALTY IN $ (after 14 days)	COMPLIANCE AGREEMENT DISCOUNT[1]
Tree other than a significant or heritage tree				
Cutting or removing tree no permit	5.1(a)	$400	$500	n/a
Damaging or allowing tree to be damaged no permit	5.1(b)	$320	$400	n/a
Significant tree other than a heritage tree				
Cutting or removing tree no permit	5.1(c), 10.5	$400	$500	n/a
Damaging, or allowing tree to be damaged no permit	5.1(d)	$400	$500	n/a
Significant tree further defined as a heritage tree				
Cutting or removing tree no permit	5.1(e)	$400	$500	n/a
Damaging, or allowing tree to be damaged no permit	5.1(f)	$400	$500	n/a
Actions related to Trees and Tree Permits				
Failure to adhere to the terms or conditions of a permit	5.1(g)	$400	$500	n/a
Permit not posted	6.9	$160	$200	n/a
Failure to maintain a protective barrier during tree cutting	9.1, 9.2, 9.4, 9.5	$160	$200	n/a
Failure to plant replacement tree as per approved replacement plan	7.5, 7.8	$400	$500	n/a
Obstructing City agent from inspecting site	10.2	$400	$500	n/a
Failure to comply with a Stop Work Order	10.3	$400	$500	n/a