

Broadway + Commercial Redevelopment Transportation Assessment & Management Study

Issued for Staff Referral for Public Hearing

Prepared for

Westbank Projects Corp. / Crombie REIT

Date

February 25, 2022

Project No.

04-21-0209

February 25, 2022
04-21-0209

Reh Nazerali
Westbank Projects Corp.
600-1067 West Cordova Street
Vancouver, BC
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Dear Reh:

**Re: Broadway + Commercial Redevelopment
 Transportation Assessment and Management Study (TAMS)**

As requested, Bunt has updated the attached Transportation Assessment & Management Study (TAMS) report to address the City of Vancouver Engineering Department's request of using more recent traffic count data for the traffic operation analyses. The TAMS was prepared based on an agreed Terms of Reference with the City of Vancouver Transportation Department.

The following TAMS report reviews existing and future opening-day traffic conditions for the proposed site and the surrounding street network as well as relevant City policies, proposed development content, site plan design review, and TDM and Active Modes.

Please do not hesitate to contact us should you have any questions regarding this report.

Yours truly,
Bunt & Associates

A handwritten signature in blue ink, appearing to read 'Christephen Cheng', with a stylized flourish at the end.

Christephen Cheng, P.Eng.
Principal

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Engineer's Stamp

This document represents an electronic version of the original hard copy document, sealed, signed and dated by Christephen Cheng and retained on file. The content of the electronically distributed document can be confirmed by referring to the original hard copy.

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EXECUTIVE SUMMARY

Westbank Projects Corp. and Crombie REIT are proposing to redevelop the property at 1780 East Broadway from the existing Safeway grocery store to a mixed-use development with three residential towers on top of a commercial/office podium. The site is immediately adjacent to the Broadway-Commercial Drive SkyTrain station, one of the busiest transit hubs in Vancouver. The opening day of the development is assumed to be 2026. The following report provides a detailed assessment of transportation impact and a summary of transportation demand management (TDM) plan.

The non-residential component of the development will include an on-site Safeway grocery store, commercial retail stores, restaurants, fitness centre, and office area. A full-movement signalized access from Broadway is planned to provide customer parking access for Safeway and retail stores. The loading access on Broadway will be restricted to right-in/right-out only for Safeway and retail loading activities. The vehicle access to residential and office parking and loading will be located off 10th Avenue.

The traffic operational analysis examined three different peak hours including Weekday AM, Weekday PM and Saturday peak, in both existing and future full-build out horizon years. The table below summarizes the estimated site vehicle trips generated by the development.

Table E.1: Estimated Peak Hour Site Vehicle Trips (Including Internal Capture)

LAND USE	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Safeway & Retail – Primary	86	74	160	178	161	339	164	170	334
Safeway & Retail – Pass-by	22	19	40	92	83	175	57	60	117
Residential	16	126	142	45	21	66	26	38	64
Fitness	2	2	4	7	5	12	5	7	12
Office	11	2	13	1	10	11	1	2	3
TOTAL	137	223	360	323	280	603	253	277	530

As shown, the site is estimated to generate approximately 360 to 600 vehicle trips (two-way) during the studied peak-hour periods, while the existing site generates approximately 180 to 400 vehicle trips during the same studied periods. Therefore, the development is anticipated to generate approximately 180 to 200 net new vehicle trips to the street network during the studied peak periods. In context, this is equivalent to approximately 3 vehicles per minute on average during peak hour periods.

Under the existing condition analyses, the eastbound left turn movement at Commercial Drive & 12th Avenue was assessed to operate with LOS "E" and have queues exceeding the left-turn storage length during peak hours. The queues of the eastbound and westbound left turns at Victoria Drive & Broadway were also assessed to exceed the left-turn storage lengths. It is recommended that the City of Vancouver to secure additional right-of-way (as appropriate) to provide additional left-turn storage length when future redevelopments occur at the land parcels directly adjacent to these intersections.

Overall, the net increase in traffic on the study road network does not have a material impact on traffic operational performance. The study intersections were found to continue operating with acceptable delays at the full build-out of the site. The eastbound left-turn movements at Commercial Drive & 12th Avenue and Victoria Drive & Broadway with operational issues continue to exist in the future conditions.

Because the location of the development is located within 100m walking distance of a SkyTrain station, the base parking reduction that can be obtained without providing a TDM plan is 20% for Rental and 10% for other Land Use. With the provision of a TDM Plan, additional reduction in parking may be obtained for up to 40% additional for Rental and 20% additional for other land uses. The project will seek the maximum parking reduction for all uses, except for the Safeway. The development is planning to provide a total of 444 parking stalls with the following breakdown:

- 238 parking stalls for the residential component, including residents and visitors;
- 149 stalls for Safeway; and
- 57 stalls for all other uses.

Given the proposed development comprises of over 45,000m² of floor area, it is subject to a mandatory provision of a TDM plan. The developer considers providing the following TDM strategies that are acceptable by the City to achieve the 30 TDM points for each land use:

- Car-share Membership
- Additional Class A Bicycle Parking
- Bike Maintenance Facilities
- Public Bike Share Space
- Shared Bicycle Fleet
- Walking Improvements
- Carshare Spaces
- Carshare Vehicles and Spaces
- Multi-modal Wayfinding Signage

1. INTRODUCTION

1.1 Study Purpose & Objectives

Westbank Projects Corp. and Crombie REIT (the Client) are proposing to redevelop the property at 1780 East Broadway, located at the southeast of the intersection of Broadway and Commercial Drive immediately east of the Broadway-Commercial Drive SkyTrain station. The site covers an area of 105,692ft² (approximately 2.43 acres) with a Safeway grocery store currently operating on-site. The site's driveway accesses are located on East Broadway and East 10th Avenue. Bunt & Associates Engineering Ltd. (Bunt) was commissioned by the Client to provide transportation consulting services to support their development application, including the preparation of a Transportation Assessment and Management Study (TAMS).

1.2 Study Scope & Area

A study scope has been confirmed with the City of Vancouver Engineering Department and it includes seven (7) intersections on the local street network adjacent to the development site. The approved Study Terms of Reference is included in **Appendix A**. The study intersections and their existing control and configuration are summarized in **Table 1.1** below. The site location and the study area boundary are also illustrated graphically in **Exhibit 1.1**.

Table 1.1: Study Intersections & Traffic Control

INTERSECTION	CONTROL
Commercial Drive & North Grandview Highway	Signalized
Commercial Drive & East Broadway	Signalized
Commercial Drive & East 10 th Avenue	Pedestrian/Cyclist Activated Signal with Stop Sign Control on East 10 th Ave
Commercial Drive & East 12 th Avenue	Signalized
Victoria Drive & East Broadway	Signalized
Victoria Drive & East 10 th Avenue	Three-leg unsignalized intersection with Stop Sign Control on East 10 th Avenue
Victoria Drive & East 12 th Avenue	Signalized

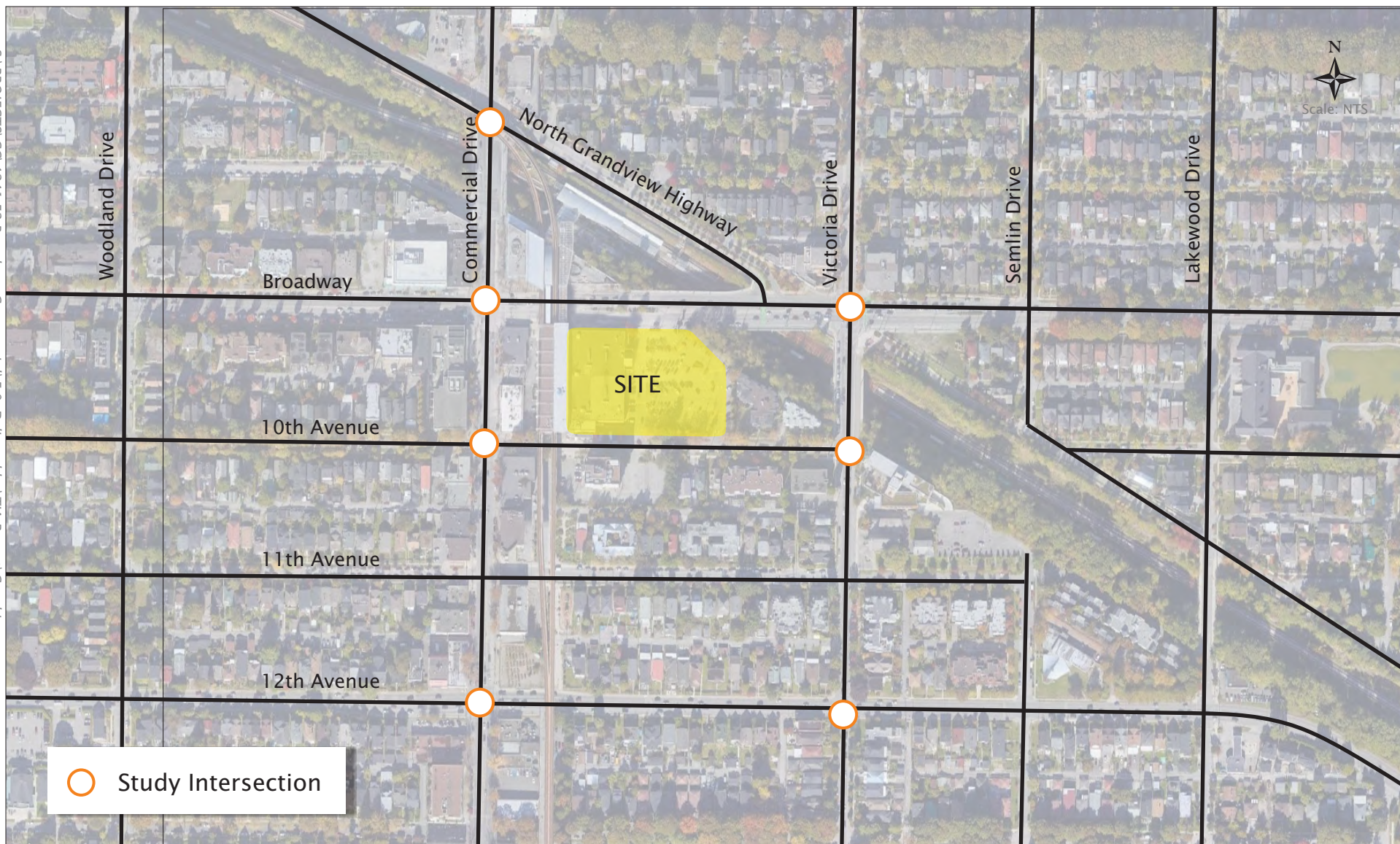


Exhibit 1.1 Site Location & Study Intersections

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1.3 Organization of Report

This report has been set out in the following manner:

- **Section 2** describes existing transportation system conditions, establishes the general scope for the planned study network, relevant policies and plans along with existing operational analysis;
- **Section 3** presents the background traffic forecasts, vehicle trip generation for the project and assesses the effect of the development traffic on the study road network;
- **Section 4** outlines the development and specifically the transportation aspects including design principles, street network design, parking and vehicle servicing;
- **Section 5** presents a Transportation Demand Management (TDM) Plan that is required as part of the rezoning submission requirements for Large Site rezoning application;
- **Section 6** concludes the report with a summary of the TAMS along with recommendations.

1.4 Proposed Development

The proposed redevelopment will be planned as a dense mixed-use community with both market condominium and market rental units. The non-residential uses will include an on-site Safeway grocery store, commercial retail stores, fitness centre, and office area. A full-movement signalized access from Broadway is planned mid-block (between Commercial Drive and Victoria Drive) to provide customer parking access for Safeway and other retail stores on-site. The loading access on Broadway will be restricted to right-in/right-out only for Safeway and other retail loading activities. Vehicle access to residential and office parking and loading will be located off 10th Avenue.

Table 1.2 summarizes the proposed land uses, based on the project statistics received from Perkins + Will on October 29, 2021. The development's site plan is included in **Exhibit 1.2**.

Table 1.2: Proposed Land Uses

LAND USE	FSR AREA	UNITS
Residential (Condo)	162,197 sq-ft	215 units
Residential (Market Rental)	265,520 sq-ft	345 units
Residential (Non-Market Rental)	58,084 sq-ft	93 units
Commercial (Safeway)	51,053 sq-ft	-
Retail (CRU)	1,288 sq-ft	-
Retail (Food & Beverage)	9,267 sq-ft	-
Commercial (Fitness)	7,248 sq-ft	-
Office	48,006 sq-ft	-
TOTAL	602,662 SQ-FT	653 UNITS

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2. EXISTING CONDITIONS

2.1 Land Use

The development site is located southeast of the intersection of Broadway and Commercial Drive – a vital place in the Grandview Woodland neighbourhood. The property also sits immediately adjacent to the Commercial-Broadway SkyTrain station, one of Metro Vancouver’s busiest transit hubs. The site currently has a 38,000 ft² Safeway store with 167 parking spaces provided in a surface parking lot.

The updated Grandview-Woodland Community Plan, released in July 2016, has allowed for larger building forms to come into the area to take advantage of the area’s proximity to rapid transit services and other amenities. Specifically for the location of this development site, the plan allows for 10+ storeys directly adjacent to the Commercial-Broadway SkyTrain station. **Exhibit 2.1** illustrates the existing land uses in the study area.

2.2 Existing Transportation Network

2.2.1 Road Network

Exhibit 2.2 illustrates the existing laning and traffic control within the study area road network. A brief description of each of the streets in the study network is provided below, along with **Table 2.1** summarizing the operating characteristics of each street.

Table 2.1: Existing Street Characteristics

STREET	CLASSIFICATION	NUMBER OF TRAVEL LANES	POSTED SPEED	PARKING FACILITIES
Broadway	Arterial	6	50 km/hr	No parking
Commercial Drive	Secondary Arterial	4	50 km/hr	Metered parking on both sides
Victoria Drive	Secondary Arterial	3	50 km/hr	On-street parking on the east side
E 10 th Avenue	Local	2	30 km/hr	On-street parking on the south side
E 12 th Avenue	Secondary Arterial	4	50 km/hr	No parking on both sides 7am-7pm
North Grandview Highway	Minor Arterial	1	50km/h	No parking

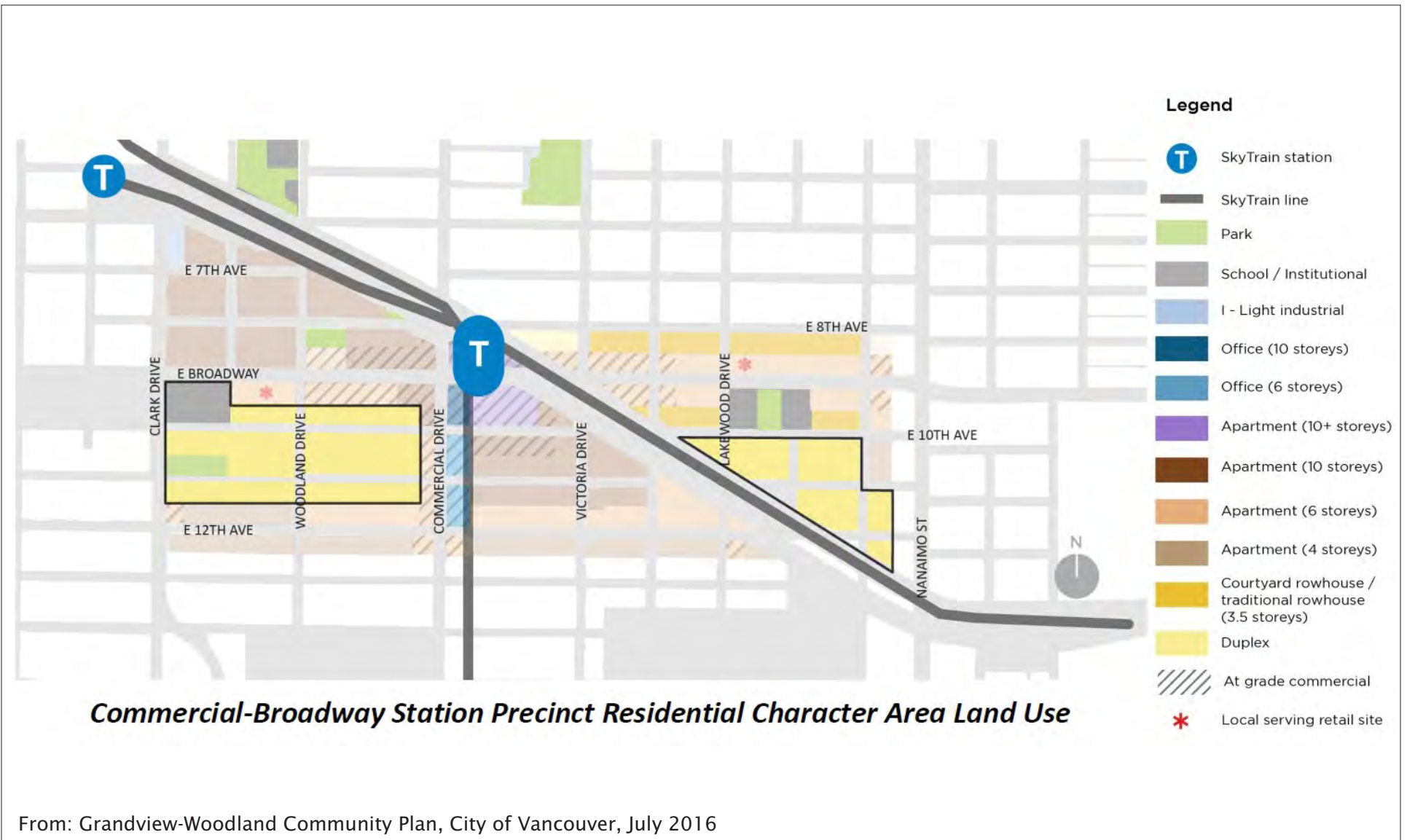


Exhibit 2.1 Existing Land Uses

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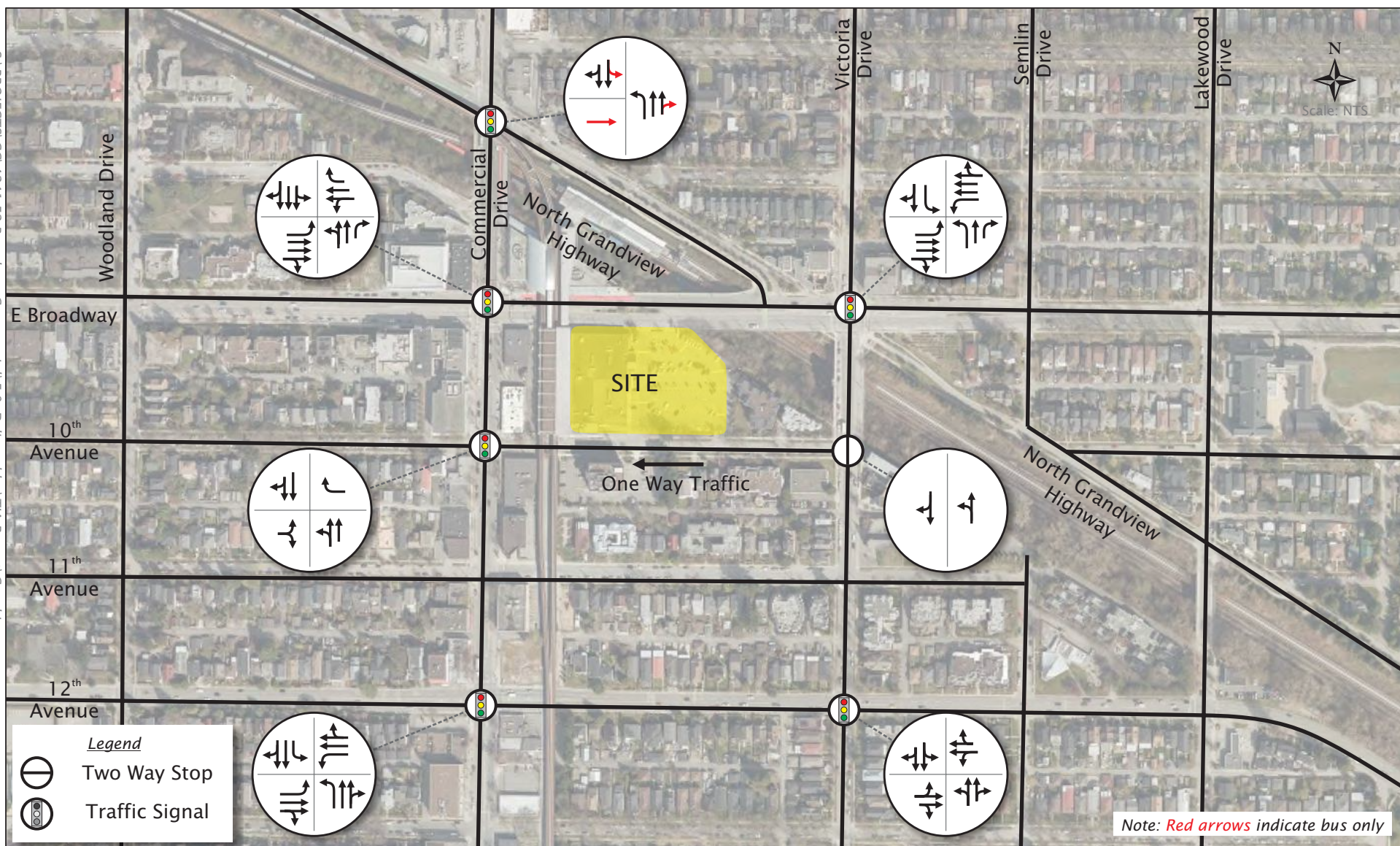


Exhibit 2.2 Existing Laning & Traffic Control

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Broadway

Broadway is classified as an east-west major arterial road in the City of Vancouver Transportation Plan. It is also part of TransLink's Major Road Network (MRN), which serves the 99 B-line and route 9. Broadway is also identified as a designated truck route in the City's street network.

For the section of Broadway between Commercial Drive and Victoria Drive, the two-way traffic volume is approximately 2,400 vehicles per hour (vph) and 3,000 vph during the Weekday Morning and Afternoon peak hour traffic periods respectively. During the Saturday Mid-day peak hour period, the traffic volume is approximately 2,400 vph. Broadway operates as a two-way road with three lanes per direction in the vicinity of the development site.

Commercial Drive

Commercial Drive is a north-south secondary arterial road with either two or three travel lanes in each direction. There are numerous retail stores and restaurants along the entire corridor. The two-way vehicle volumes are approximately 900 vph and 1,100 vph during the Weekday Morning and Afternoon peak hours, respectively. Saturday peak hour volume on Commercial Drive is approximately 1,000 vph two-way.

Victoria Drive

Victoria Drive runs parallel on the east side of Commercial Drive. It is also classified as a secondary arterial road in the city network. Victoria Drive has two southbound travel lanes and one northbound travel lanes, with on-street parking generally be permitted for the section within the study area. The two-way traffic volumes on the corridor within the study area are approximately 600 vph and 900 vph during the Weekday Morning and Afternoon peak hours, respectively. During Saturday peak hour, the two-way traffic volume would be lower to approximately 750 vph.

East 10th Avenue

East 10th Avenue is a local road with one travel lane travelling westbound. As part of the Transportation 2040 by the City of Vancouver, the 10th Avenue corridor is identified as an important local-street bikeway for people of all ages and abilities to walk and cycle. The vehicle traffic volumes on this corridor near the development site are moderate, with observed vehicle volumes to be around 80-120 vph during the Weekday Morning, Weekday Afternoon, and Saturday peak hour periods.

East 12th Avenue

East 12th Avenue runs parallel south of East 10th Avenue. It is classified as a secondary arterial road with two travel lanes in each direction. The westbound left turn currently is prohibited at East 12th Avenue and Victoria Drive from 7:30 AM to 9:30 AM on weekdays. The two-way vehicle traffic volumes on this corridor near the development site are approximately 2,600 vph and 2,900 vph during the Weekday Morning and Afternoon peak hours respectively. During Saturday peak hour, the two-way traffic volume is around 2,500 vph.

North Grandview Highway

North Grandview Highway stretches diagonally between Clark Drive and Nanaimo Street. Within the study network, it is classified as a minor arterial road with one travel lane westbound. At the intersection of Commercial Drive and North Grandview Highway, no eastbound through, southbound left, and northbound right movements are allowed, except for buses and bicycles. North Grandview Highway also has a bi-directional, separated bike lane along the south side of the street (between Commercial Drive and Clark Drive), which forms part of the Central Valley Greenway. Only buses and bicycles can travel eastbound through the section of North Grandview Highway east of Commercial Drive. Vehicle traffic for this section of North Grandview Highway is fairly modest, with peak hour volumes range between 110 to 190 vph.

2.2.2 Transit Network

Located at the southeast corner of Commercial Drive and Broadway, the development site provides immediate access to rapid transit facilities including the Expo Line, Millennium Line, and the 99 B-Line, making it one of the best connected locations in Metro Vancouver. Nearby transit stops also provide connections to the 20, N20, 9, and N9 bus lines. Such proximity to rapid transit and local bus network is also a key factor in determining parking supply later described in **Section 4**.

Exhibit 2.3 shows the existing transit stops in close proximity to the site and **Table 2.2** below summarizes the nearby transit stops and bus routes within walking distance of the site and their service frequency.

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

STOP LOCATION	DIRECTION	STOP #	AMENITY	ROUTES SERVICED	WALKING DISTANCE
Commercial-Broadway SkyTrain Station	-	-	-	Expo Line, Millennium Line	120m
E Broadway FS Commercial Dr	Eastbound	52102	-	9, 99, N9	50m
E Broadway FS Commercial Dr	Westbound	58182	-	9, N9	160m
Commercial Dr FS E Broadway	Southbound	50963	Bus Shelter	20, N20	90m
Commercial Dr FS E 10 th Ave	Northbound	51221	-	20, N20	70m

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Exhibit 2.3 Transit Routes & Stops

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Table 2.3: Existing Transit Service Frequency

ROUTE		WEEKDAY SERVICE SPAN		HEADWAY (MIN.)				
#	DIRECTION	START	END	AM	MID-DAY	PM	EVENING	WEEKEND
Expo Line	Waterfront / King George	5:32 am	1:16 am	2-5	6	2-5	6-8	6
	Waterfront / Production Way-University	5:37 am	1:11 am	6-7	6	6-7	6-8	6
Millennium Line	VCC-Clark/Lafarge Lake-Douglas	1:22 am	1:29 am	3-4	6	3-4	6-8	6
9	Granville / Alma / UBC	5:13 am	2:34 am	5-10	5-10	3-5	10	7-10
99 B-Line	UBC	5:47 am	2:23 am	3-5	4-5	3-5	5-10	5-10
N9	Coquitlam Central Station / Downtown	2:00 am	5:39 am	-	-	-	20 - 40	30-40
20	Downtown	4:43 am	2:29 am	3-8	8	7-9	7-15	8
N20	Victoria / Downtown	1:16 am	3:58 am	-	-	-	20-30	30

2.2.3 Cycling & Pedestrian Networks

The study network is well-connected for cyclists. For cyclists, the nearby 10th Avenue Bike Route and Central Valley Greenway provide east-west routes for cyclists. North-south connectivity is provided by the Woodland Drive bike route (400 meters to the west of this site), and the Lakewood Drive bike route (400 meters to the east of the site). The Commercial Drive Complete Street program currently underway will provide separated bicycle facilities along the corridor. This will allow for direct cyclist access to many of the shops and restaurants located along this street. In addition, the ongoing 10th Avenue Corridor Project also plans to upgrade 10th Avenue bikeway between Commercial Drive and Victoria Drive to be part of “AAA Network”, where people of all ages and abilities can cycle on.

Exhibit 2.4 illustrates the existing cycling facilities within the surrounding network.

For pedestrians, sidewalks are provided on both sides of the street along 12th Avenue, Commercial Drive, Victoria Drive, and Broadway and the other roads in the surrounding area. Many of the daily needs of people are located within an easy walking distance of the proposed development including supermarkets, restaurants, and parks.

Exhibit 2.5 presents the existing pedestrian facilities within the study area.



Exhibit 2.4 Cycling Facilities

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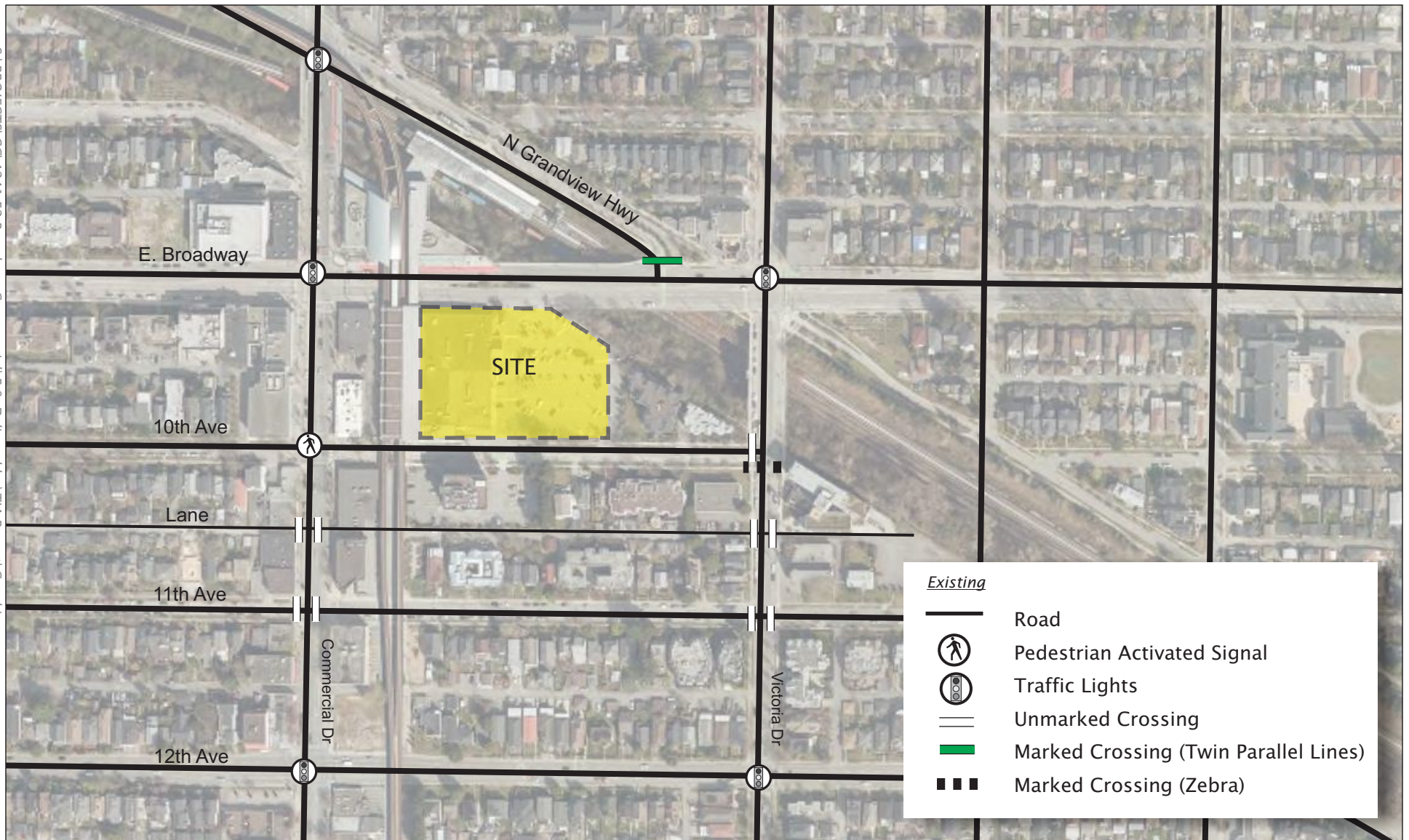


Exhibit 2.5 Pedestrian Facilities

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2.3 Current Relevant Policies & Plans

This section outlines the City's policies and plans that are relevant to the proposed Broadway + Commercial redevelopment project.

2.3.1 Grandview-Woodland Community Plan

Grandview-Woodland neighbourhood is an evolving community located east of downtown Vancouver along Commercial Drive. The Grandview-Woodland Community Plan (the Plan) was approved by the City Council in July 2016. The Neighbourhood Centre area (covered in the Plan) was bounded by Clark Drive to the west, Burrard Inlet to the north, Nanaimo Street to the east, and East 12th Avenue to the south.

Grandview-Woodland neighbourhood is filled with both local and regional destinations including one of the busiest transit hubs – Commercial-Broadway SkyTrain station. The Plan aims to design streets to prioritize sustainable transportation choices and accessibility for people of all ages and abilities (AAA) while accommodating core service and delivery functions. In particular, Commercial Drive is envisioned as a “complete street” to provide direct and convenient access for all modes of transportation. Although a conceptual complete street design for Commercial Drive has not yet been developed, the Plan first focused on the area south of Graveley Street in which the street is wider. Potential measures could include reallocating two motor vehicle travel lanes to provide space for AAA cycling and improving the pedestrian realm through raised crosswalks and curb bulges to shorten crossings.

The Plan outlined the following key transportation policies in the vicinity of Broadway & Commercial to address the challenge of continued growth without increasing road space and achieve sustainability goals:

- Create a new mixed-use civic plaza as part of a renewed Safeway site with ground-floor commercial uses and new housing in buildings ranging from 12- to 24-stories;
- Create a new office space close to the rapid transit station;
- Improve safety at collision hotspots including the entire Commercial Drive corridor and the 10th Avenue corridor, particularly intersections at Clark Drive, Commercial Drive and Victoria Drive;
- Support new and improved public spaces by bikeway enhancements (e.g. by removing car traffic on East 10th Avenue between Commercial Drive and Victoria Drive);
- Explore opportunities of AAA bike lanes on Commercial Drive to directly serve destinations by reallocating travel lanes south of Graveley and creating connections to existing network; and
- Reduce parking requirements, where appropriate, for new developments that are located near transit hubs. Consider the potential of shared parking as part of larger developments in key areas including Broadway and Commercial.

2.3.2 Greenest City 2020 Action Plan (2011)

City of Vancouver staff worked with Council, residents, businesses, other organizations, and all levels of government to implement the Greenest City 2020 Action Plan (GCAP) with the goal to become the greenest city in the world by 2020. The Action Plan is divided into 10 smaller plans, each with a long-term goal and 2020 targets. Combined, these 10 plans address three overarching areas of focus:

- Carbon
- Waste
- Ecosystems

In terms of Transportation, the two primary goals are:

1. Make the majority of trips (over 50%) in the City by foot, bicycle and public transit.
2. Reduce the average distance driven per resident by 20% from 2007 levels.

In order to achieve these goals, the highest priority actions outlined in the plan are:

- Complete a new Active Transportation Master Plan and update the Transportation Plan with direction from the GCAP.
- Improve pedestrian safety by developing and implementing a pedestrian safety study and action plan.
- Develop land use policies that enable the City to meet mobility and transportation targets.
- Work with partners to advocate for rapid transit for the Broadway Corridor.
- Pursue the development of a bike-share program in Vancouver's downtown and other high-potential cycling areas.

2.3.3 Transportation 2040 Action Plan (2012)

The Transportation 2040 Action Plan, adopted by Vancouver City Council in October 2012, is a long-term strategic vision for the City of Vancouver that will help guide transportation and land use decisions and public investments for the years ahead.

In relation to the Greenest City 2020 Action Plan, the Transportation 2040 Plan builds on the Greenest City's transportation goals by stating that its travel mode goal is to "make at least two-thirds (67%) of trips on foot, bike, and transit by 2040". In comparison, the Greenest City 2020 Action Plan aims to make at least 50% of trips on foot, bike, and transit by 2020.

Based on the Transportation 2040 Action Plan, the project site falls within a "Sidewalk Width Priority" zone, as it is located close to an existing rapid transit station (Commercial-Broadway station). The Plan calls for the development of standards for sidewalk widths and the public realm for streets in these areas. **Figure 2.1** illustrates the Sidewalk Width Priority Zones throughout the City.

In addition, the Transportation 2040 Action Plan identified a number of policies concerning parking for new development projects. Specifically, the plan indicates that off-street parking requirements should be used to support reduced auto ownership and use. Further, the cost of housing and parking should be separated to increase housing affordability. The proposed development is well in keeping with these policy directions identified in the Transportation 2040 Plan.

Figure 2.1: Sidewalk Width Priorities

2.3.4 City of Vancouver Parking By-law

The City of Vancouver's Parking By-law (By-law 6059) regulates the provision of off-street parking for the parking of motor vehicles and bicycles within the City of Vancouver. In addition, the bylaw facilitates the loading and unloading of motor vehicles. As a policy identified in the Transportation 2040 Plan, the City will be undertaking an exercise to clarify the parking by-law to reflect broader City transportation objectives and to actively encourage strategies that reduce parking demand.

On July 25, 2018, the City of Vancouver approved changes to its Parking By-law. The staff report emphasizes the importance of managing off-street parking for vehicles and bicycles and its influence to achieve long-term transportation goals. The City is investing significantly in transit, cycling and walking infrastructure along with a comprehensive housing strategy; this updated by-law helps ensure these elements align with the City's goals for Transportation 2040.

The amendment to this by-law will assist in advancing the Transportation 2040 actions by improving access to buildings, taking steps to address the needs of changing mobility, and driving investments in Transportation Demand Management (TDM) measures that encourage sustainability.

The most significant changes put forward in the staff report that would affect this project includes:

- Require the provision of passenger loading spaces for all land uses;
- Increase requirements for bicycle parking and end-of-trip facilities to better reflect current and future cycling mode share; and
- Provision of a mandatory TDM plan to achieve certain TDM points based on the scale of the development.

2.3.5 Climate Emergency Response (2019)

Vancouver is among one of the numerous cities around the world, and within the Metro Vancouver region declaring a climate emergency and committing to reduce pollution. On April 29, 2019, Vancouver City Council approved the Climate Emergency Response report that contains big shifts to reduce Vancouver's transportation related carbon pollution including:

- Walkable complete communities - By 2030, 90% of people live within an easy walk and roll of their daily needs;
- Safe and convenient active transportation and transit – By 2030, two thirds of trips in Vancouver will be by active transportation and transit;
- Pollution free cars, trucks and buses – By 2030, 50% of the kilometres driven on Vancouver's roads will be by zero emissions vehicles.

These were previously Vancouver's targets for its Transportation 2040 plan which are now set for 10 years earlier. The proposed development plan aligns with the City's Climate Emergency Response, particularly in light of its adjacency to the Broadway-Commercial SkyTrain station where future residents and commercial patrons can easily access the site without relying on private automobile use. A detailed TDM Plan has also been included as part of the development to future support non-private-automobile travel.

2.3.6 TransLink's Major Road Network (MRN)

Broadway is part of TransLink's Major Road Network (MRN), of which TransLink provides funding for the operations, maintenance and rehabilitation, as well as shares the cost of eligible capital improvements. As part of the MRN, it is required that "without TransLink approval, municipalities cannot take, authorize or permit any action that would reduce people moving capacity" within the MRN. In other words, any potential changes along Broadway would need to ensure traffic operations be maintained at its present level. This particular point has been taken into consideration as part of the site plan development process

2.3.7 Summary

The development site is situated within a Neighbourhood Centre Plan Area that has a vision to promote and support sustainable transportation modes ahead of private automobile uses. Transportation plans

and initiatives in the vicinity of the site are geared toward creating a lively and active streetscape along Commercial Drive and Broadway, as well as providing a safe and comfortable environment for pedestrians and cyclists.

2.4 Data Collection

2.4.1 Traffic Data Collection Program

In Bunt's database, original transportation surveys on the adjacent street network were conducted in both May & September 2016, March 2017, and September 2018, covering the weekday and Saturday peak traffic periods. After confirming with the City, Bunt was required to update traffic counts for our traffic analysis since the original data is over 5 years old. Bunt conducted new peak period traffic counts over the AM, PM, and Saturday peak periods at the study intersections and summarized traffic counts for analysis.

The new transportation surveys, including the counts of vehicle, pedestrian, and cyclist traffic volumes, were conducted on Thursday, February 3rd, 2022, over the morning (7:00am to 9:00am) and afternoon (3:00pm to 6:00pm) peak periods, and Saturday, February 5th, 2022, during the mid-day (11:00am to 2:00pm) peak traffic period.

Table 2.4 provides a summary of the sources of the traffic count data and details are attached in **Appendix B**.

Table 2.4: Summary of Available and Counted Traffic Data

INTERSECTION	SOURCE	DATE OF COUNT	PEAK HOURS		
			AM	PM	SAT
North Grandview Highway / Commercial Drive	Bunt	February 3 (Thursday) & 5 (Saturday), 2022	8:00 AM – 9:00 AM	4:30 PM – 5:30 PM	1:00 PM – 2:00 PM
Commercial Drive / East Broadway			8:00 AM – 9:00 AM	4:30 PM – 5:30 PM	1:00 PM – 2:00 PM
Safeway Entrance / East Broadway			8:00 AM – 9:00 AM	3:30 PM – 4:30 PM	12:30 PM – 1:30 PM
Victoria Drive / East Broadway			8:00 AM – 9:00 AM	4:30 PM – 5:30 PM	12:45 PM – 1:45 PM
Commercial Drive / East 10 th Avenue			8:00 AM – 9:00 AM	4:15 PM – 5:15 PM	12:30 PM – 1:30 PM
Safeway West Driveway / East 10th Avenue			7:30 AM – 8:30 AM	3:45 PM – 4:45 PM	11:15 AM – 12:15 PM
Safeway East Driveway / East 10th Avenue			7:45 AM – 8:45 AM	4:00 PM – 5:00 PM	11:00 AM – 12:00 PM
Victoria Drive / East 10th Avenue			8:00 AM – 9:00 AM	3:30 PM – 4:30 PM	12:00 PM – 1:00 PM
Commercial Drive / East 12 th Avenue			8:00 AM – 9:00 AM	5:00 PM – 6:00 PM	12:15 PM – 1:15 PM
Victoria Drive / East 12 th Avenue			7:45 AM – 8:45 AM	4:45 PM – 5:45 PM	12:15 PM – 1:15 PM
OVERALL STUDY AREA PEAK HOUR			8:00 AM – 9:00 AM	4:30 PM – 5:30 PM	12:15 PM – 1:15 PM

2.4.2 Peak Hour Traffic Volumes

Table 2.5 presents a summary of the two-way peak-hour vehicle movements for the streets in the study area. **Exhibit 2.6** and **Exhibit 2.7** present the vehicular traffic volume on the study network during Weekday and Saturday peak hours respectively.

Exhibit 2.8 and **Exhibit 2.9** show the pedestrian and cyclist volume at each study intersection during Weekday and Saturday peak hours.

Table 2.5: Existing Peak Hour Roadway Link Volumes

ROAD LINK	PEAK LINK VOLUMES (VEH/HR)		
	AM	PM	SAT
East Broadway	2,410	2,980	2,350
Commercial Drive	880	1,080	990
Victoria Drive	570	890	740
East 10 th Avenue	80	130	120
East 12 th Avenue	2,570	2,840	2,500
North Grandview Highway	190	110	110

2.4.3 Comparison with Pre-COVID Traffic Data

Since new traffic data for the study intersections were collected during the ongoing COVID-19 pandemic, Bunt has compared the new data with the data before the COVID-19 pandemic. The new counted weekday AM east-west traffic movements were found to be significantly lower (20-30%) than the old traffic volumes. From the City of Vancouver Transportation Snapshot (2019 & 2020), it is stated that the COVID-19 pandemic reduced the number of trips taken by approximately 31%.

However, traffic laning in the study network has also changed during the past few years during COVID-19. For example, at Grandview Highway & Commercial Drive, the eastbound traffic movements are now prohibited except for bikes and buses (buses are allowed to go eastbound straight only) after 2020. From Bunt's observation in 2022, the westbound movements are only permitted for bicycles. Northbound right-turn and southbound left-turn movements are only allowed for buses and bikes at this intersection. Besides, 10th Avenue (Victoria to Commercial) has been converted from two-way traffic lanes to one-way westbound with a new protected bi-directional bike lane on the south side of the street.

All these changes could result in the change of trip assignment and some of the reduction in traffic movements observed in the study area may not be directly related to COVID-19. Additionally, the ongoing City's efforts to encourage more people to choose biking, walking, and taking public transit would also reduce people's realinace on driving. Therefore, even though a general traffic reduction in the study area was found, especially for east-west directions, no COVID-19 impact adjustment was applied to the analysis since it is hard to determine if the traffic reduction is due to the COVID-19 pandemic alone.

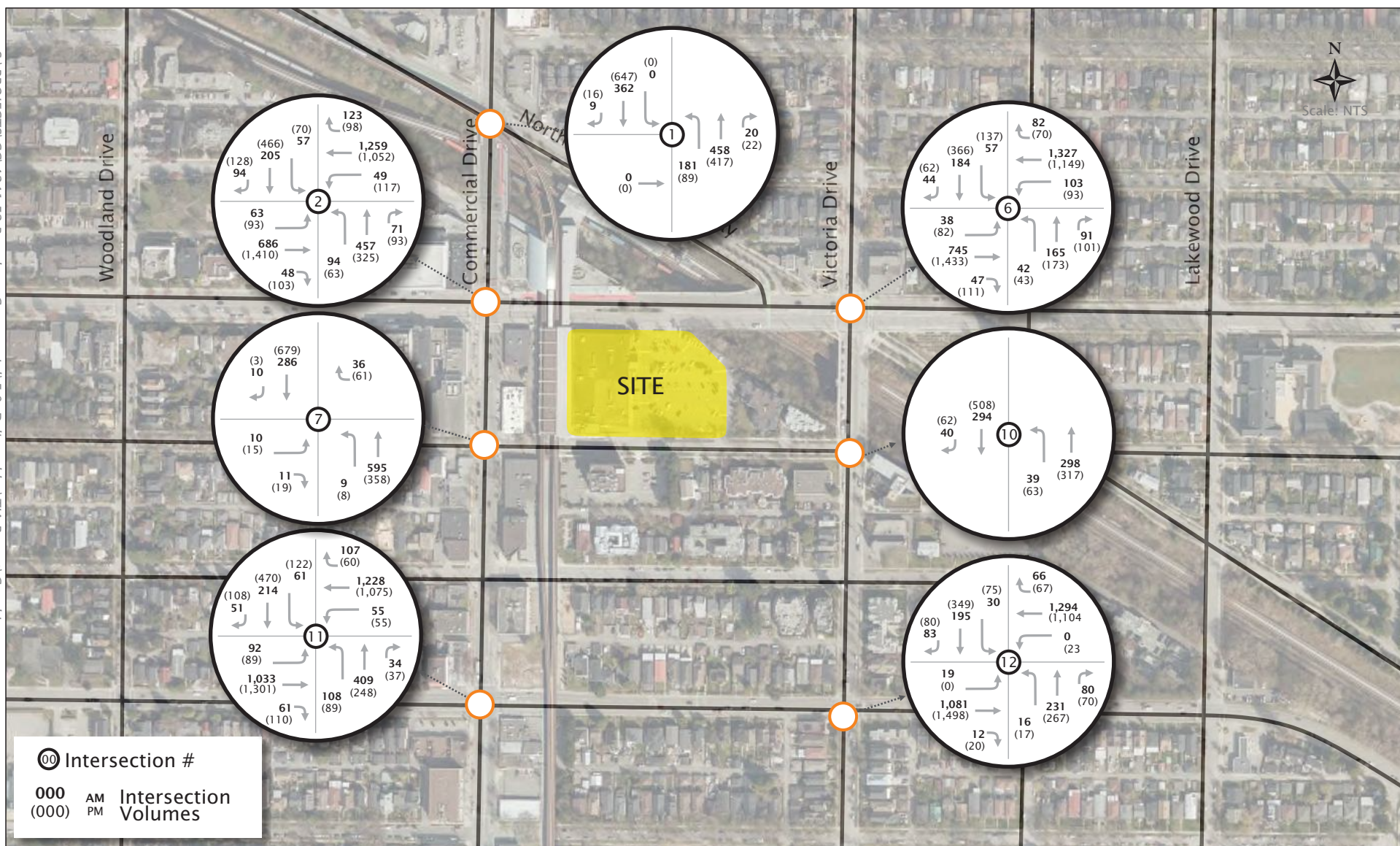


Exhibit 2.6 Existing Weekday Peak Hour Vehicle Traffic Volumes

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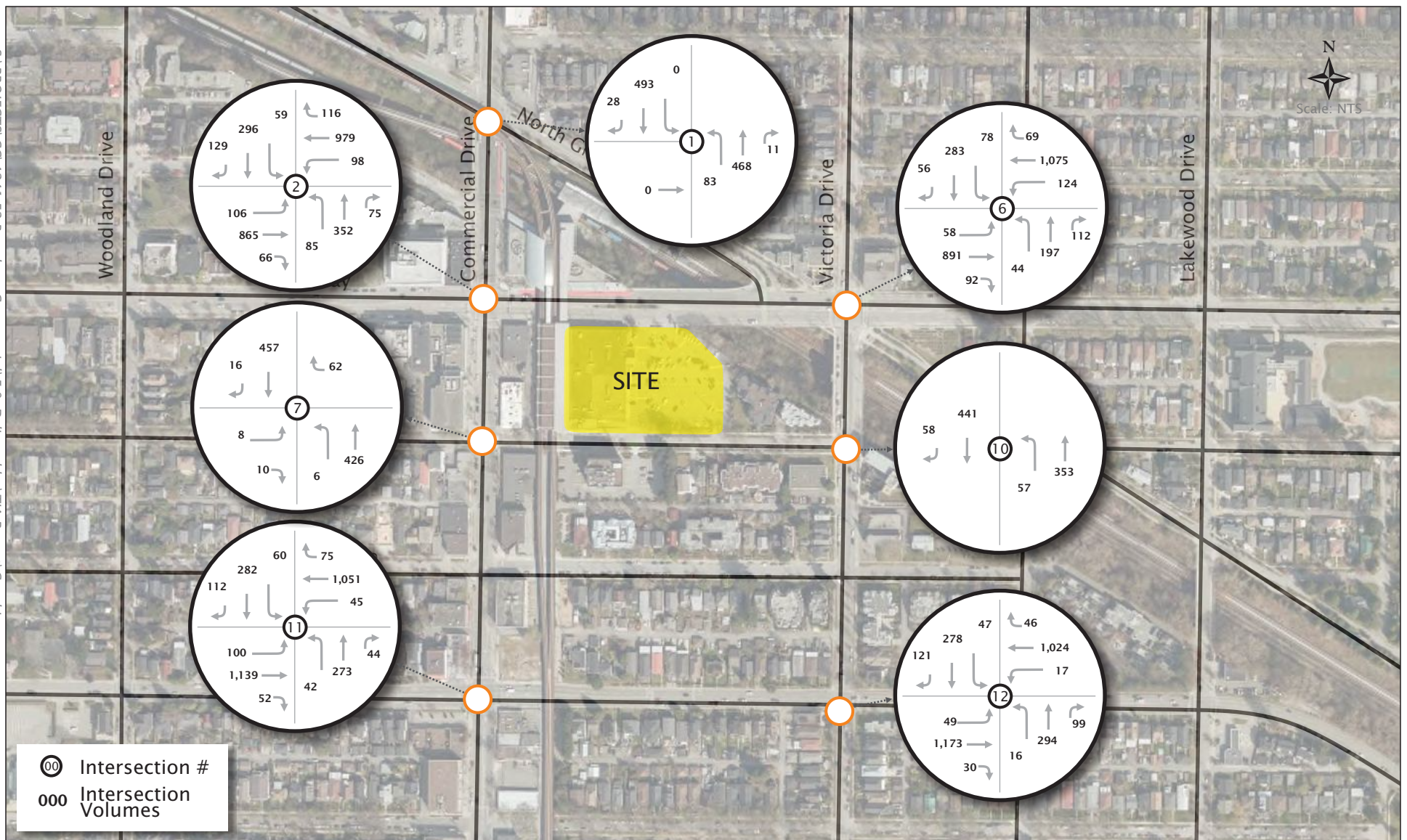


Exhibit 2.7
Existing Saturday Peak Hour Vehicle Traffic Volumes

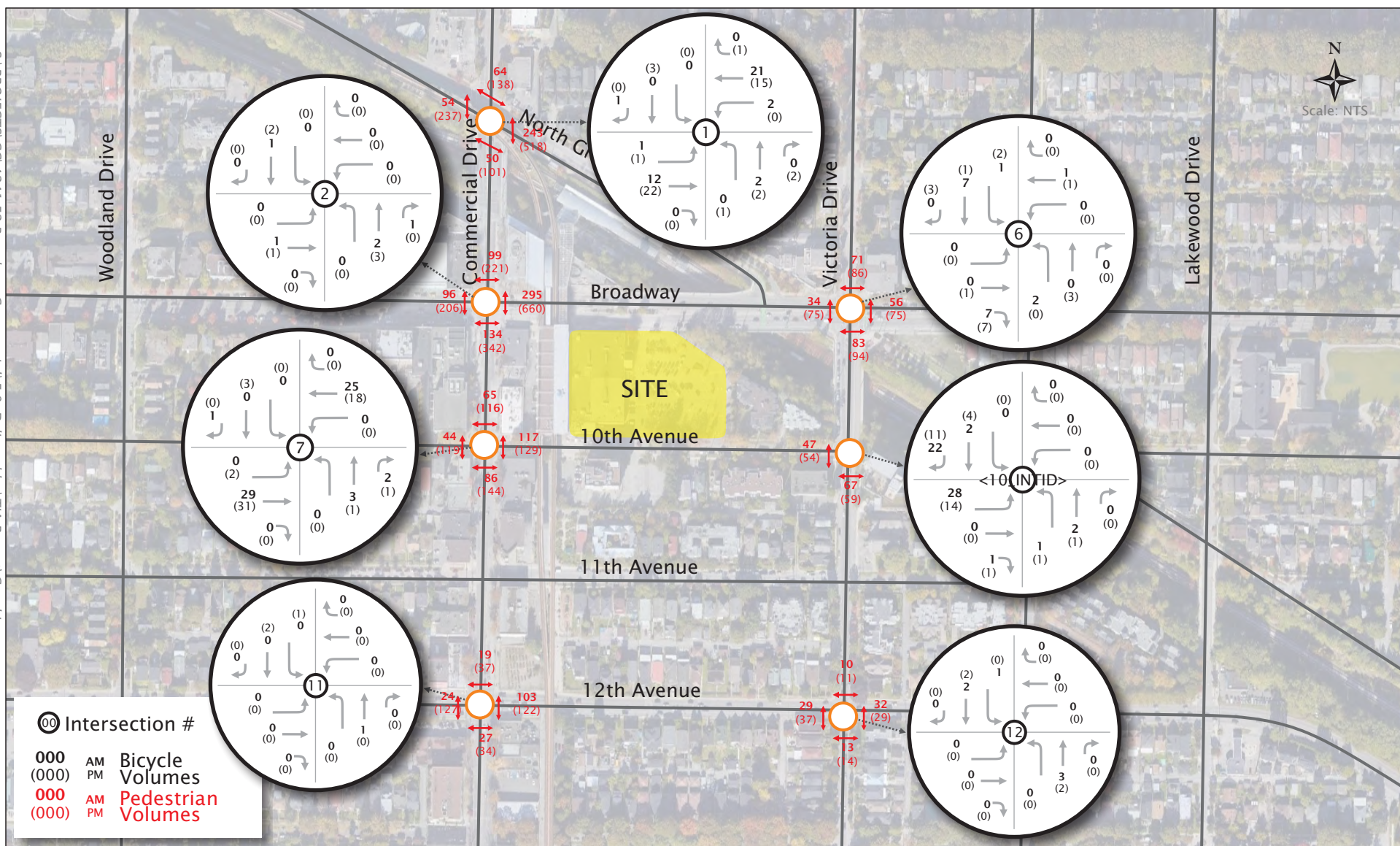


Exhibit 2.8 Existing Weekday Peak Hour Pedestrian & Cycling Traffic Volumes

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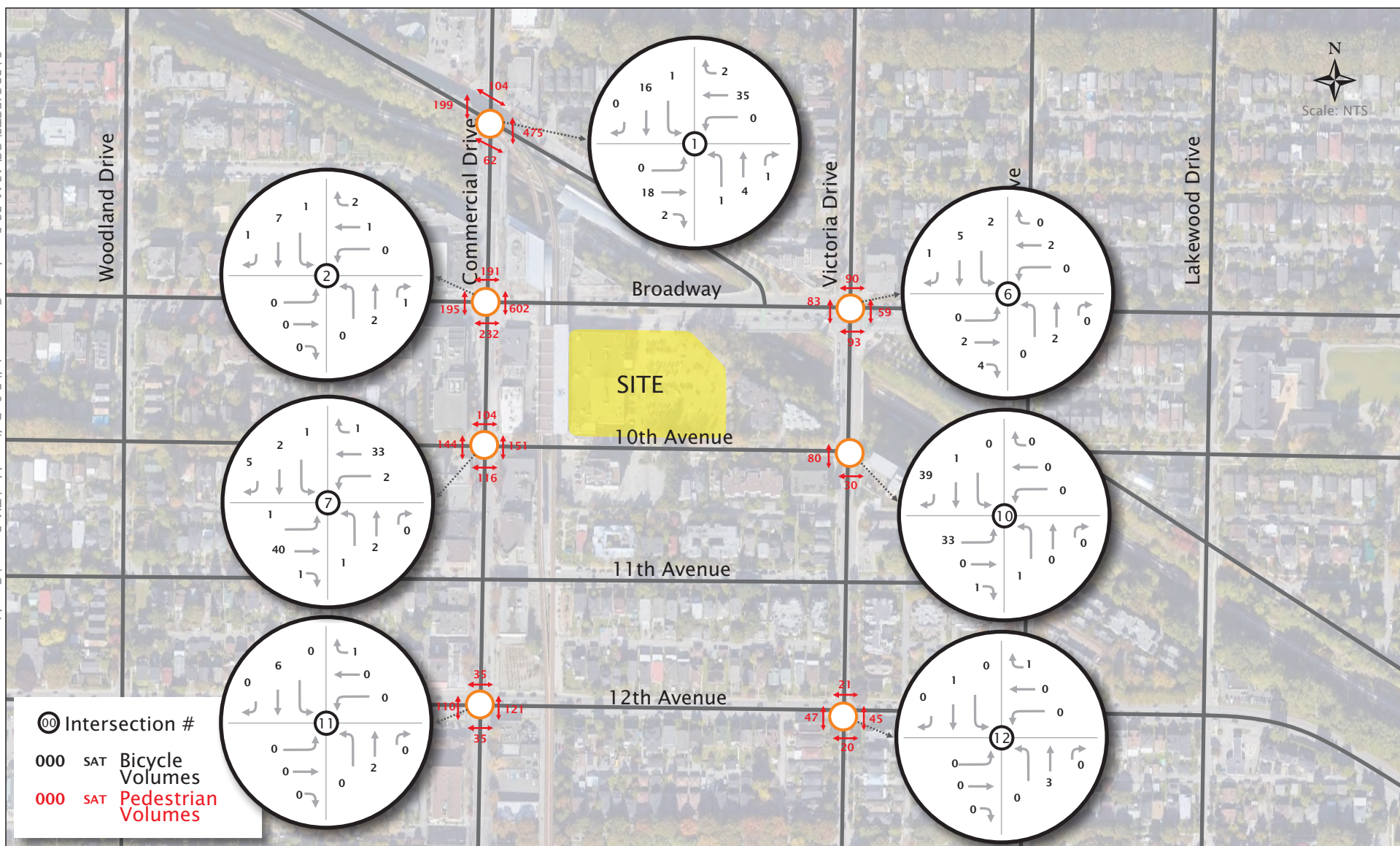


Exhibit 2.9 Existing Saturday Peak Hour Pedestrian & Cycling Traffic Volumes

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2.4.5 Existing Site Vehicle Trip Generation

Bunt has collected the vehicle trips at each existing driveway of Safeway. **Table 2.6** summarizes the existing site trip generation. The existing Safeway generates approximately 178, 400 and 342 vehicle trips during weekday AM, weekday PM and Saturday peak hours respectively.

Table 2.6: Existing Site Trip Generation

LAND USE	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Safeway	95	83	178	203	197	400	169	173	342

2.5 Existing Operations

2.5.1 Performance Thresholds

The existing operations of study area intersections and access points were assessed using the methods outlined in the latest version of Highway Capacity Manual (HCM), using the Synchro 10.2 analysis software (Build 0). The traffic operations were assessed using the performance measures of the Level of Service (LOS) and volume-to-capacity (V/C) ratio.

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

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

Table 2.7: Intersection Level of Service Thresholds

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

Source: Highway Capacity Manual

The volume to capacity (V/C) ratio of an intersection represents the ratio between the demand volume and the available capacity. A V/C ratio less than 0.85 indicates that there is sufficient capacity to

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

The performance thresholds that were used to trigger consideration of roadway or traffic control improvements to support roadway or traffic control improvements employed in this study are listed below:

Signalized Intersections:

- Overall intersection Level of Service = LOS D or better;
- Overall intersection V/C ratio = 0.85 or less;
- Individual movement Level of Service = LOS E or better; and,
- Individual movement V/C ratio = 0.90 or less.

Unsignalized Intersections and Roundabouts:

- Individual movement Level of Service = LOS E or better, unless the volume is very low in which case LOS F may be acceptable.

In interpreting the analysis results, note that the HCM methodology reports performance differently for various types of intersection traffic control. In this report, the performance reporting convention is as follows:

- For signalized intersections: HCM 6th Edition output for individual movement LOS is reported. HCM 6th Edition does not generate overall V/C ratios for intersections. For signalized three-legged intersection, the HCM 6th Edition methodology in Synchro 10 does not generate results, because it is not standard NEMA four-leg phasing. Therefore, for any intersections that do not generate HCM 6th results, please refer to the HCM 2000 reports.
- For unsignalized two-way stop-controlled intersections: HCM 6th Edition V/C output is reported just for individual lanes as the HCM methodology does not report overall performance. SimTraffic, the micro-simulation module of the Synchro software, estimated queues and delays have also been reported, as the HCM 6th Edition methodology does not directly take into account the gaps afforded by adjacent signalized intersections. The LOS and 95th Percentile Queues are reported as estimated by SimTraffic.

The performance reporting conventions noted above have been consistently applied throughout this document; the detailed SimTraffic outputs are provided in **Appendix C**. Detailed HCM6 reports are

provided in **Appendix D**. Where HCM6 does not generate outputs for certain intersections, please refer to the HCM 2000 reports provided in **Appendix E**.

2.5.2 Existing Conditions Analysis Assumptions

Signal Timing:

Signal Timings are entered as per the signal timing plans received from the City.

Synchro Parameters:

Conflicting pedestrian volumes, conflicting cyclist volumes and heavy vehicle percentage are entered as per the existing traffic counts. Peak hour factors (PHF) are entered as the overall PHF of each individual intersection. Also, the HOV lane on the westbound travel direction along Broadway is not coded in the Synchro model.

2.5.3 Existing Operational Analysis Results

Exhibit 2.10, **Exhibit 2.11**, and **Exhibit 2.12** present the Simtraffic operational analysis of existing traffic conditions during Weekday AM, Weekday PM and Saturday Mid-day peak hours respectively.

Weekday AM Peak Hour

During the AM peak hour period, the study area intersections were found to operate with short delays – LOS C or better. All movements in the study network operate with short delays and low V/C ratios, with the exception of the westbound through movement at Commercial Drive & Broadway. A LOS F and a high V/C ratio of 1.04 were found at this intersection. As mentioned, the westbound HOV lane starts between North Grandview Highway and Commercial Drive along Broadway was not coded in the Synchro model, so the westbound traffic lanes are reduced from 3 to 2 lanes along this section in the Synchro model. In reality, the HOV lane is used by a portion of vehicles, so the actual operation of the intersection should be better than the Synchro analysis results. At Commercial Drive & East 12th Avenue, because of the lack of advanced left-turn phasing, the 95th percentile queue of the eastbound left-turn movement was found to exceed the storage length slightly.

Weekday PM Peak Hour

During the PM peak hour period, all study intersections were found to operate with LOS C or better. Certain individual movements in the study network operate with overcapacity or queues exceeding the available left-turn storage. At Victoria Drive & Broadway, the 95th percentile queue of eastbound left-turn was found to exceed its available storage. At Commercial Drive & 12th Avenue, the eastbound through and right-turn movements were found to have high V/C ratios of 0.91 and 0.92 respectively.

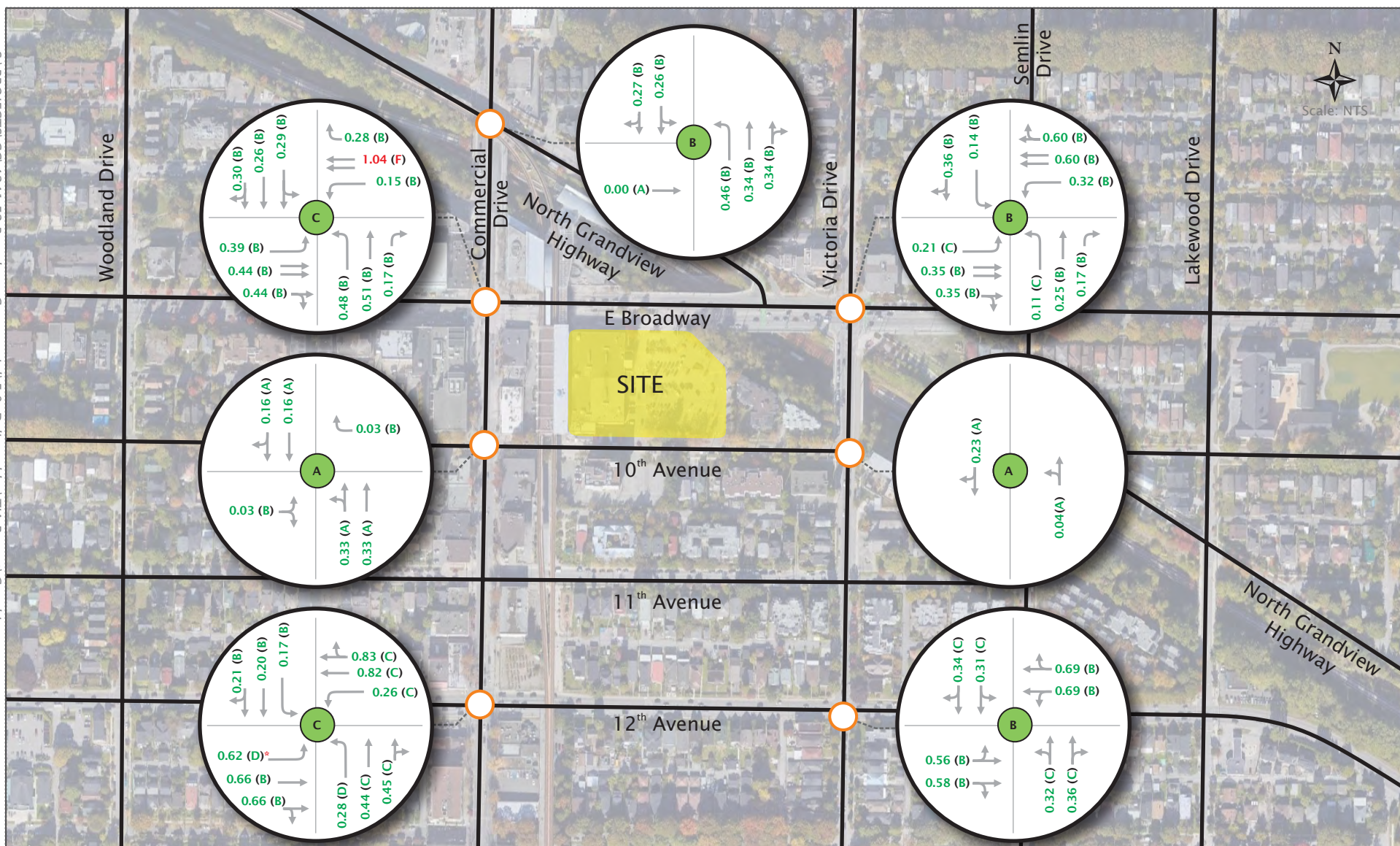


Exhibit 2.10 Existing AM Peak Hour Traffic Performance

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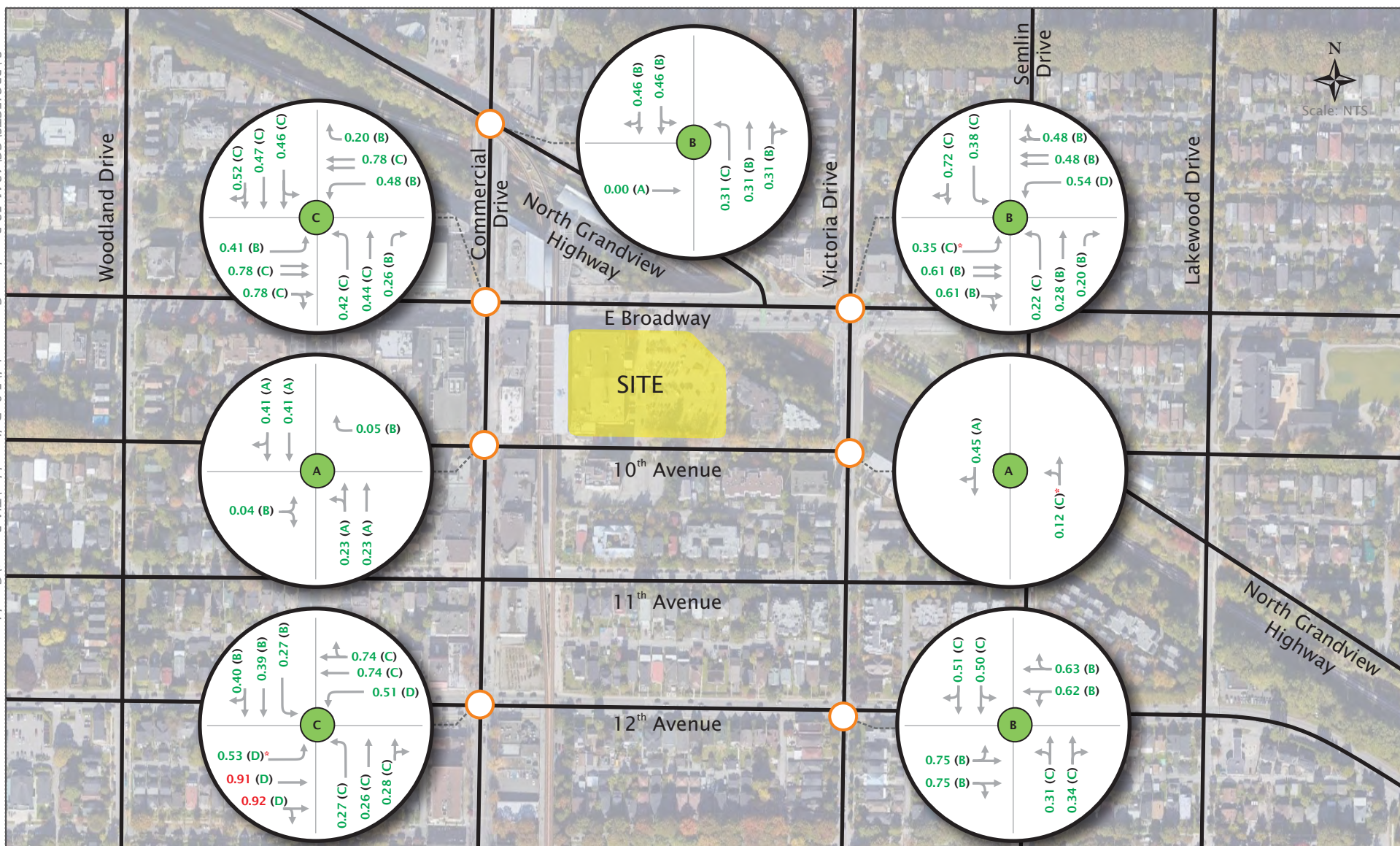


Exhibit 2.11 Existing PM Peak Hour Traffic Performance

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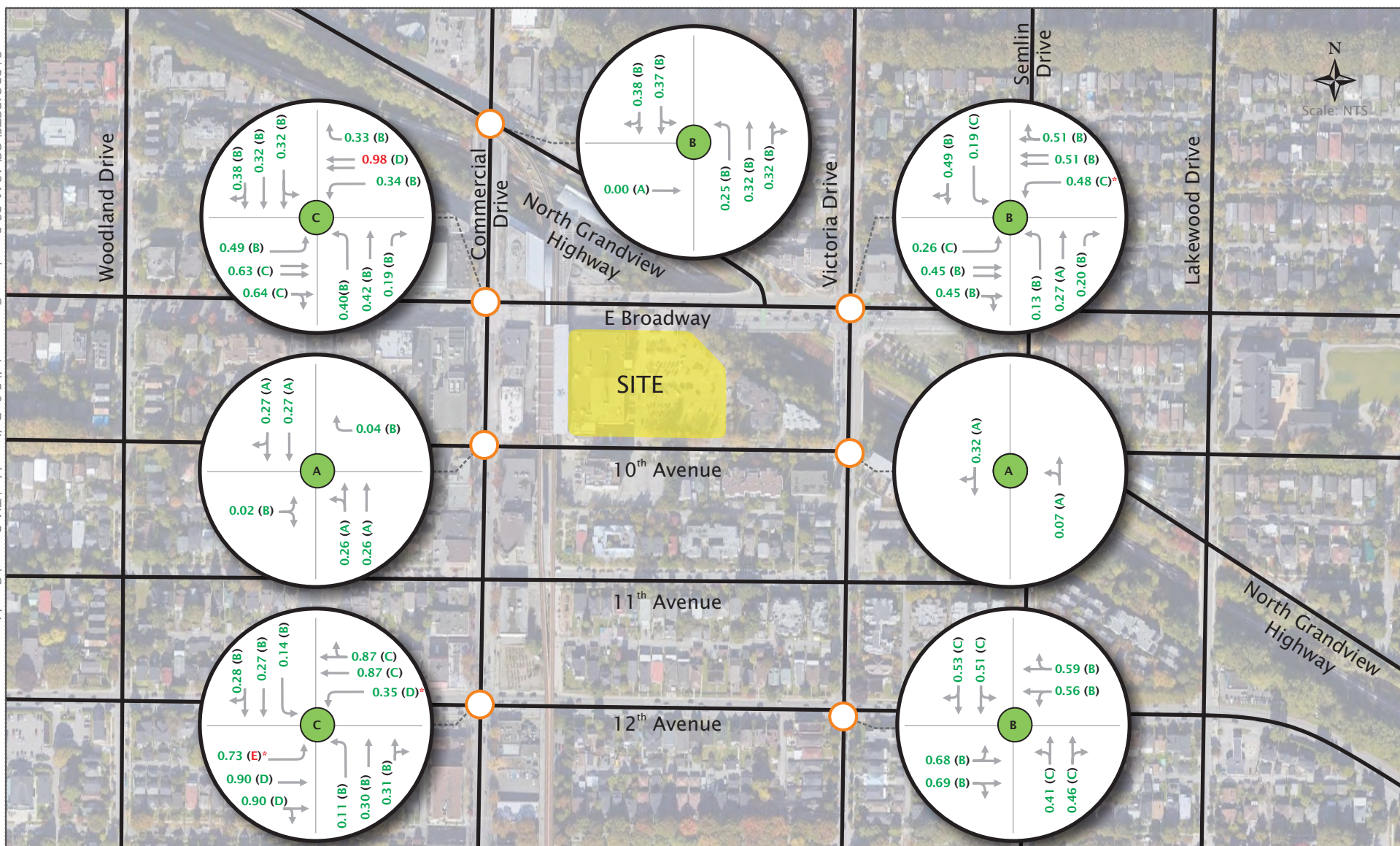


Exhibit 2.12
Existing Saturday Peak Hour Traffic Performance

Saturday Peak Hour

The study network was found to operate with short delays of LOS C or better. At Commercial Drive & Broadway, the westbound through movement was found to have a high V/C ratio of 0.98. Again, since the HOV lane was not coded in the Synchro model, the real situation should result in a lower V/C ratio. At Victoria Drive & Broadway, the eastbound left-turn movement's 95th percentile queue was found to exceed the available left-turn storage length. Capacity and delay issues exist at Commercial Drive and 12th Avenue. The eastbound left-turn movement was found to operate with LOS E, and the 95th percentile queue of eastbound left turn was found to exceed its available storage slightly.

3. FUTURE TRAFFIC CONDITIONS

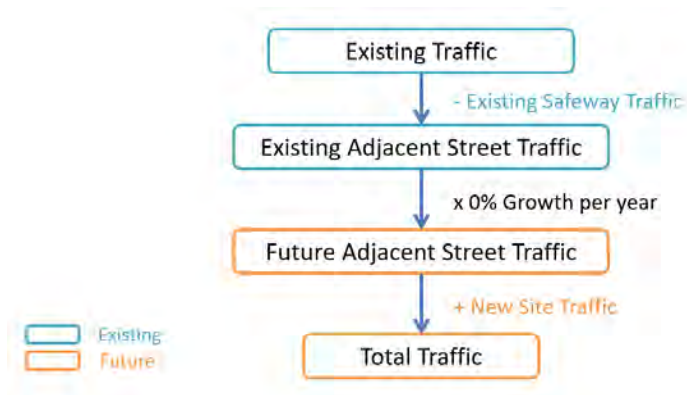
3.1 Traffic Forecasts

3.1.1 Traffic Forecast Methodology

Figure 3.1 illustrates the process of estimating both future background traffic and total traffic, based on existing traffic observations. Background traffic is traffic that would be present on the road network if the site did not redevelop. Total traffic is traffic with the full build out of the proposed development.

The forecast starts with stripping out the existing site traffic from existing traffic counts, then apply a growth rate on the remaining existing adjacent street traffic. For the future traffic conditions, it is assumed that no background traffic growth would apply to the study network, as traffic volumes were generally found to be stable along the arterial streets. To estimate future total traffic of full build-out (assumed 2026), the new site traffic is added to the future adjacent street traffic.

Figure 3.1: Traffic Forecast Methodology



3.1.2 Site Traffic

Trip Generation

Table 3.1 presents the base vehicle trip rates from Bunt's observations and ITE 11th Edition Trip Generation Manual. It is assumed that the future Safeway will operate similarly as existing, but with a gross floor area increasing from currently 38,000 sq-ft to 51,053 sq-ft. Based on the ITE trip rates for grocery centre, the fitted curve indicates that with a greater floor area, the trip rates in fact decrease. So in order to estimate future trip rates for the Safeway with a larger floor area, the ratio of reduction in trip rates based on ITE fitted curve is applied to existing observed Safeway trip rates. For other land uses, standard ITE trip rates are applied.

Table 3.1: Peak Hour Vehicle Trip Rates

LAND USE	SOURCE	MEASURE	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
			IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Safeway	Existing Counts adjusted for increased floor area	1,000 sq-ft	2.03	1.78	3.81	5.40	5.24	10.64	4.38	4.49	8.87
Residential - Strata	ITE 222	Unit	0.02	0.20	0.22	0.13	0.06	0.19	0.07	0.10	0.17
Residential - Rental	ITE 222	Unit	0.02	0.20	0.22	0.13	0.06	0.19	0.07	0.10	0.17
Retail (CRU & F&B)	ITE 820	1,000 sq-ft	0.52	0.32	0.84	1.63	1.77	3.40	2.29	2.11	4.40
Fitness	ITE 492	1,000 sq-ft	0.67	0.64	1.31	1.97	1.48	3.45	1.56	1.63	3.19
Office	ITE 710	1,000 sq-ft	0.73	0.11	0.84	0.14	0.73	0.87	0.01	0.16	0.17

Given the mixed-use nature of the proposed development, some of the trips generated by the site are expected to be internal trips that are contained within the site (i.e. residents going to the retail stores to shop, etc.). These internal trips have the same origin and destination as the site; they do not create additional trips on the road network outside of the site.

Based on the methodology outlined in the Trip Generation Handbook, 3rd Edition and NHCRP Report 684, at full build-out, internal capture percentage was estimated to be 10% during the AM peak period, 22% during the PM peak period, and 18% during the Saturday peak period.

In addition, the proposed land use of Safeway grocery store and retail stores will naturally generate an amount of pass-by traffic. A pass-by trip, by the definition from ITE, is made as an intermediate stop on the way from an origin to a primary trip destination without any route diversion. For example, a person may choose to pick up some groceries at Safeway on his or her way home. The remaining site-generated traffic is considered as "primary trips", which are made specifically to visit the proposed site. Based on the ITE database, the estimated average pass-by traffic percentage of retail trips is 34% in the weekday PM

peak hour and 26% in the Saturday peak hour. The weekday AM peak hour does not have any specific ITE data, for this analysis and based on engineering judgment, the pass-by percentage is assumed to be 20%.

Table 3.2 summarizes the anticipated future site generated vehicle trips after accounting internal capture for the proposed development based on the above rates.

Table 3.2: Estimated Peak Hour Site Vehicle Trips (Including Internal Capture)

LAND USE	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Safeway & Retail – Primary	86	74	161	178	161	339	164	170	334
Safeway & Retail – Pass-by	22	19	40	92	83	175	57	60	117
Residential	16	126	142	45	21	66	26	38	64
Fitness	2	2	4	7	5	12	5	7	12
Office	11	2	13	1	10	11	1	2	3
TOTAL	137	223	360	323	280	603	253	277	530

As shown, the site is estimated to generate approximately 360 to 600 vehicle trips during the studied peak hour periods. The outbound traffic during the AM peak hour almost double the inbound traffic, whereas the inbound and outbound traffic are almost evenly split during PM and Saturday peak hours.

Table 3.3 summarizes the amount of net new vehicle trips from the proposed development, after subtracting the existing vehicle trips at Safeway. The development is anticipated to generate approximately 182, 203 and 188 net new vehicle trips to the street network during weekday AM, weekday PM and Saturday peak hours respectively. In context, this is equivalent to approximately 3 vehicles per minute during peak hours.

Table 3.3: Net Increase of Peak Hour Site Vehicle Trips

LAND USE	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Mixed-use Development	137	223	360	323	280	603	253	277	530
- Existing Safeway	95	83	178	203	197	400	169	173	342
NET NEW TRIPS	42	140	182	120	83	203	84	104	188

Trip Distribution & Assignment

Trip distribution was based on an analysis of existing traffic flow patterns in the surrounding road network, taking into account observed directional at the gateways to the study area road network. The trip assignment was based on logical routings from site access points to the study area external gates. **Table 3.4** outlines the trip distribution used to assign the new traffic generated by the proposed development for all land use types.

Table 3.4: Estimated Trip Distribution

ORIGIN/DESTINATION	AM PEAK HOUR		PM PEAK HOUR		SAT PEAK HOUR	
	IN (%)	OUT (%)	IN (%)	OUT (%)	IN (%)	OUT (%)
Commercial Drive – North	6%	7%	9%	5%	8%	7%
North Grandview Hwy – West	0%	3%	0%	0%	0%	2%
Victoria Drive – North	4%	4%	7%	5%	7%	5%
Broadway – West	12%	23%	21%	17%	16%	19%
Broadway – East	24%	14%	17%	23%	20%	17%
12 th Avenue – West	19%	22%	20%	16%	20%	19%
12 th Avenue – East	21%	19%	16%	21%	17%	21%
Commercial Drive – South	9%	5%	5%	8%	6%	5%
Victoria Drive – South	5%	3%	5%	5%	6%	5%
TOTAL	100%	100%	100%	100%	100%	100%

Exhibit 3.1 and **Exhibit 3.2** present the resulted site traffic during weekday and Saturday peak hours respectively.

Table 3.5 summarizes the net change of vehicular traffic at each existing study intersection. As shown, the net increase of traffic ranges approximately 3% to 7% at most intersections, except an increase of 10%-19% at the intersections of 10th Avenue & Victoria Avenue and 10th Avenue & Commercial Drive.

Table 3.5: Net Change in Future Intersection Vehicle Volumes with New Site Trips

INTERSECTION	AM PEAK HOUR VOLUMES			PM PEAK HOUR VOLUMES			SAT PEAK HOUR VOLUMES		
	BACK-GROUND	SITE	% CHANGE	BACK-GROUND	SITE	% CHANGE	BACK-GROUND	SITE	% CHANGE
North Grandview Highway / East Broadway	1,030	27	3%	1,191	31	3%	1,083	35	3%
Commercial Drive / East Broadway	3,702	220	6%	4,017	224	6%	3,226	223	7%
Victoria Drive / East Broadway	2,925	176	6%	3,820	222	6%	3,079	212	7%
Commercial Drive / East 10 th Avenue	957	174	18%	1,143	117	10%	985	126	13%
Victoria Drive / East 10 th Avenue	671	129	19%	950	143	15%	909	132	15%
Commercial Drive / East 12 th Avenue	3,453	88	3%	3,764	105	3%	3,275	102	3%
Victoria Drive / East 12 th Avenue	3,107	117	4%	3,570	118	3%	3,194	118	4%

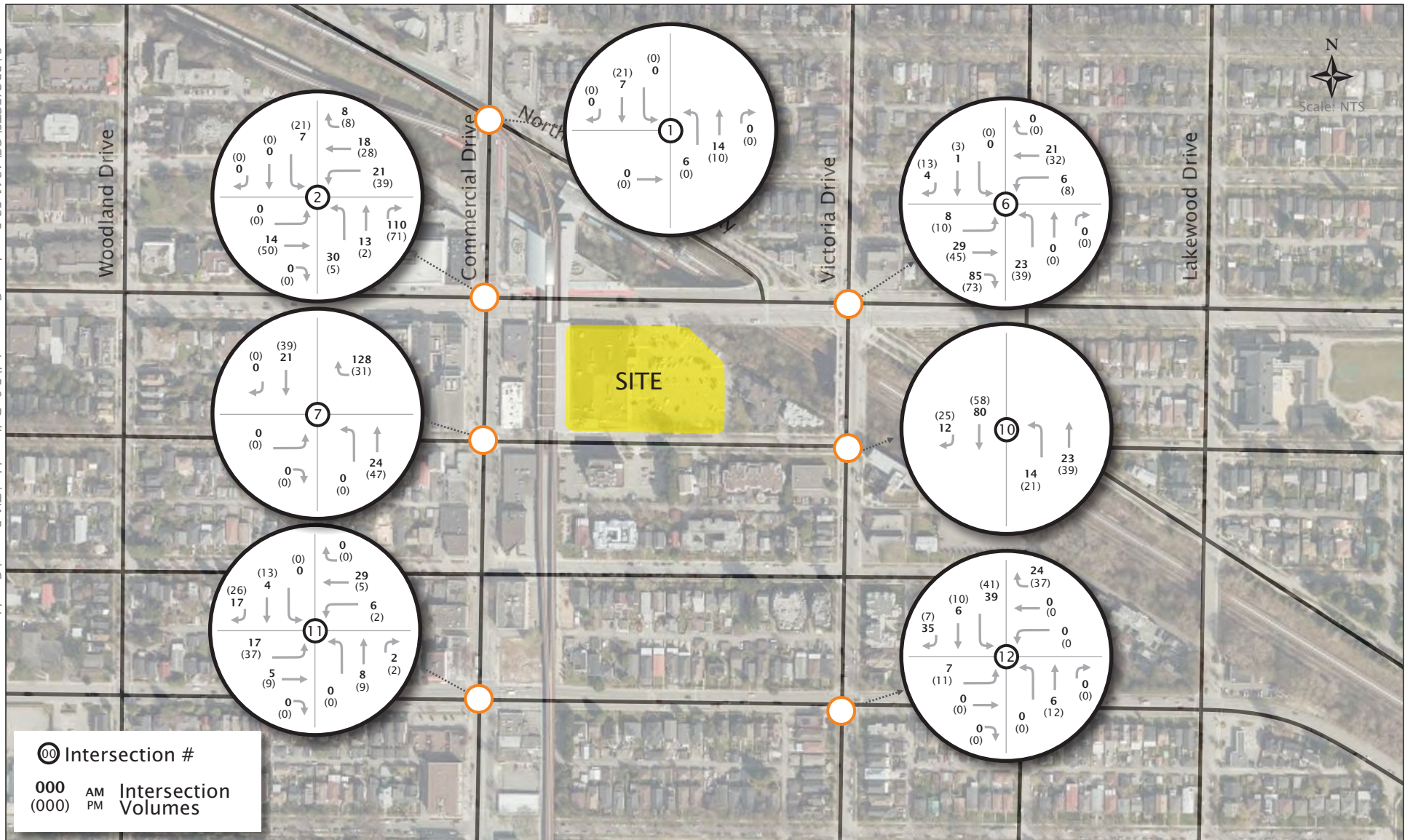


Exhibit 3.1 Weekday Peak Hour Site Traffic Forecasts

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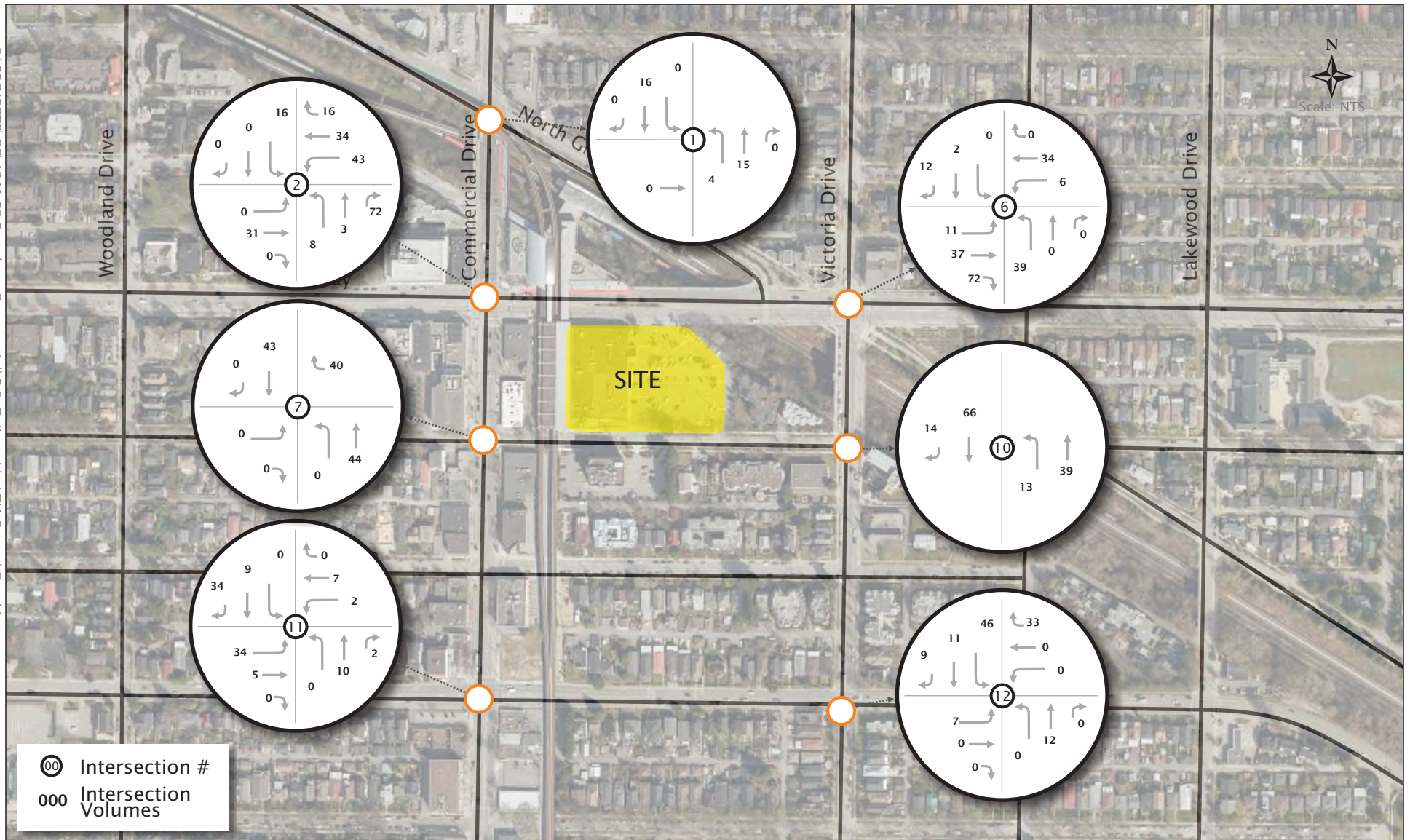


Exhibit 3.2 Saturday Peak Hour Site Traffic Forecasts

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3.1.3 Trip Generation by Mode

Based on the total external vehicle trips generated by the proposed development, site trips generated by pedestrians, cyclists, and transit can be estimated for each land use. Since the trip rates are observed near a transit station in Metro Vancouver, the person trips for all land uses are converted by dividing the Auto mode share as defined in the *McElhanney's 2019 Transportation Panel Survey (July 2020)*. After converting to person trips for each land use, the person trips are then multiplied by the split of each transportation mode to get the trips generated by each mode. **Figures 3.2 to 3.5** present the current local area mode shares for the proposed land use.

Table 3.6 to 3.9 presents the person trips generated by auto drivers, auto passengers, transit users, pedestrians, and cyclists, for each land use respectively: Residential, Safeway/CRU/F&B, Office, Fitness Centre.

Table 3.10 summarizes all person trips by each mode. As shown, during the weekday morning and afternoon peak hours, the proposed development is estimated to generate approximately 931 and 1,579 trips respectively. Among these trips, about 300 - 580 persons will be walking and about 95 to 160 persons will be cycling. During the Saturday peak hour, the site is estimated to generate 1,385 person trips, of which around 510 persons will be walking and 140 persons will be cycling.

Table 3.6: Residential Person Trips By Mode

MODE	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Auto Driver	16	126	142	45	21	66	26	38	64
Auto Passenger	2	19	22	7	3	10	4	6	10
Transit	8	63	71	23	11	33	13	19	32
Walk	9	73	82	26	12	38	15	22	37
Bike	4	32	36	11	5	17	7	10	16
TOTAL	39	313	353	112	52	164	65	95	159

Table 3.7: Safeway/CRU/F&B Person Trips By Mode

MODE	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Auto Driver	108	93	201	270	244	514	221	230	451
Auto Passenger	11	10	21	28	26	54	23	24	47
Transit	26	22	48	64	58	122	52	54	107
Walk	111	96	206	277	250	528	227	236	463
Bike	28	25	53	71	64	135	58	61	119
TOTAL	284	246	529	710	642	1,353	581	605	1,187

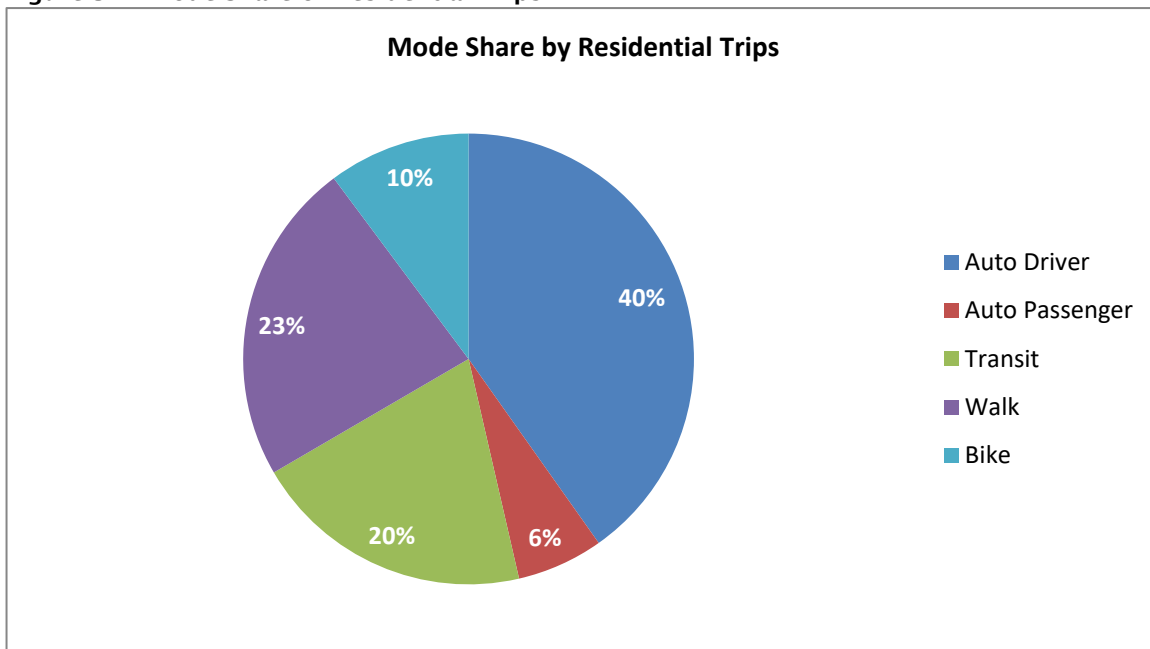
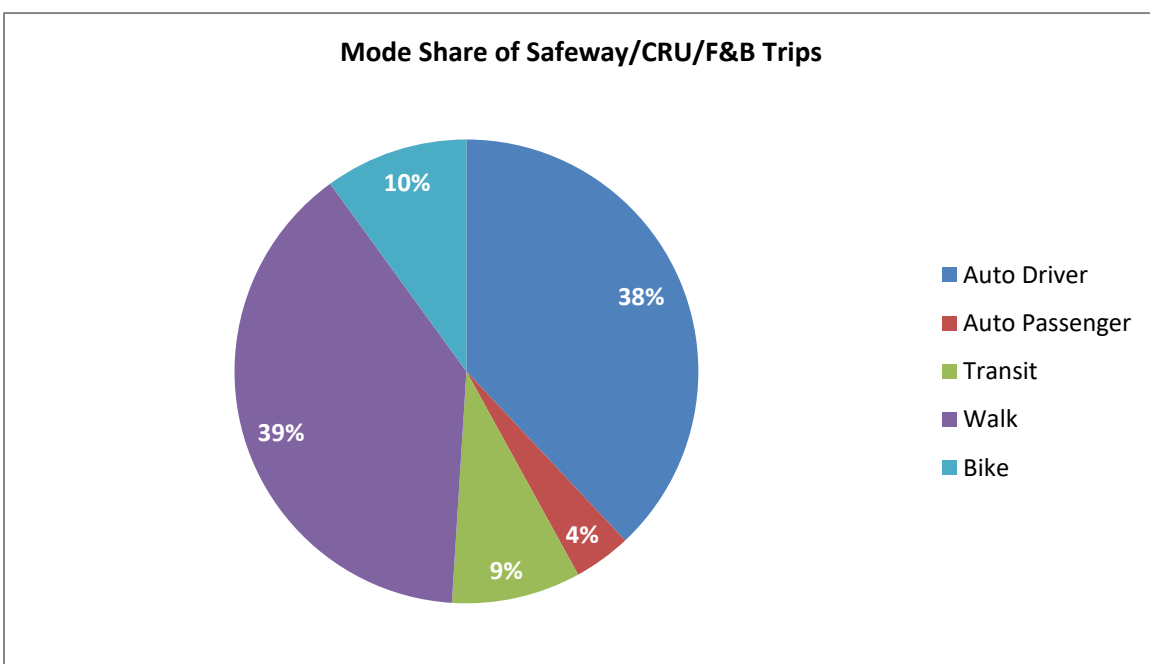
Figure 3.2: Mode Share of Residential Trips**Figure 3.3: Mode Share of Shopping (Safeway/CRU/F&B) Trips**

Figure 3.4: Mode Share of Office Trips

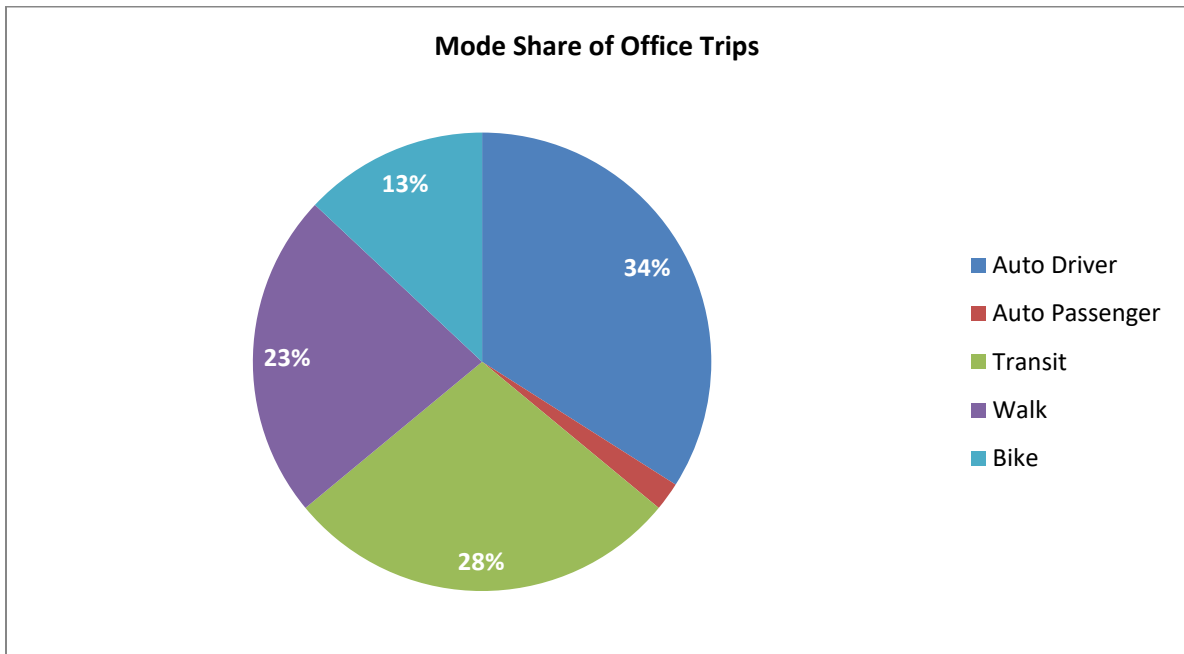


Figure 3.5: Mode Share of Community (Fitness) Trips

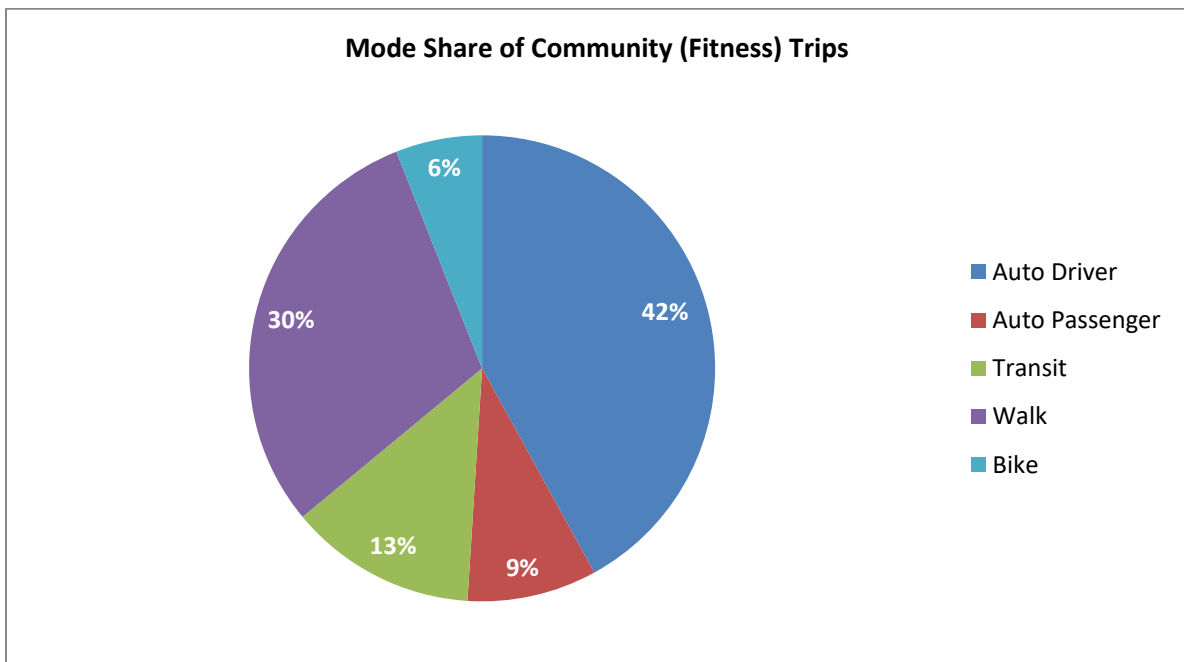


Table 3.8: Office Person Trips By Mode

MODE	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Auto Driver	11	2	13	2	10	11	1	2	3
Auto Passenger	1	0	1	0	1	1	0	0	0
Transit	9	2	11	1	8	9	1	2	3
Walk	7	1	9	1	7	7	1	1	2
Bike	4	1	5	0	4	4	0	1	1
TOTAL	32	6	39	4	30	32	3	6	9

Table 3.9: Fitness Person Trips By Mode

MODE	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Auto Driver	2	2	4	7	5	12	5	7	12
Auto Passenger	0	0	1	2	1	3	1	2	3
Transit	1	1	1	2	2	4	2	2	4
Walk	2	2	3	5	4	9	4	5	9
Bike	0	0	1	1	1	2	1	1	2
TOTAL	5	5	10	17	13	30	13	17	30

Table 3.10: Total Person Trips By Mode

MODE	AM PEAK HOUR			PM PEAK HOUR			SAT PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Auto Driver	137	223	360	324	280	603	253	277	530
Auto Passenger	14	29	45	37	31	68	28	32	60
Transit	44	88	131	90	79	168	68	77	146
Walk	129	172	300	309	273	582	247	264	511
Bike	36	58	95	83	74	158	66	73	138
TOTAL	360	570	931	843	737	1,579	662	723	1,385

3.1.4 Opening Day Total Traffic

Exhibit 3.3 and **Exhibit 3.4** present the total 2026 vehicular traffic at the study network with the future proposed development, during weekday and Saturday peak hours respectively.

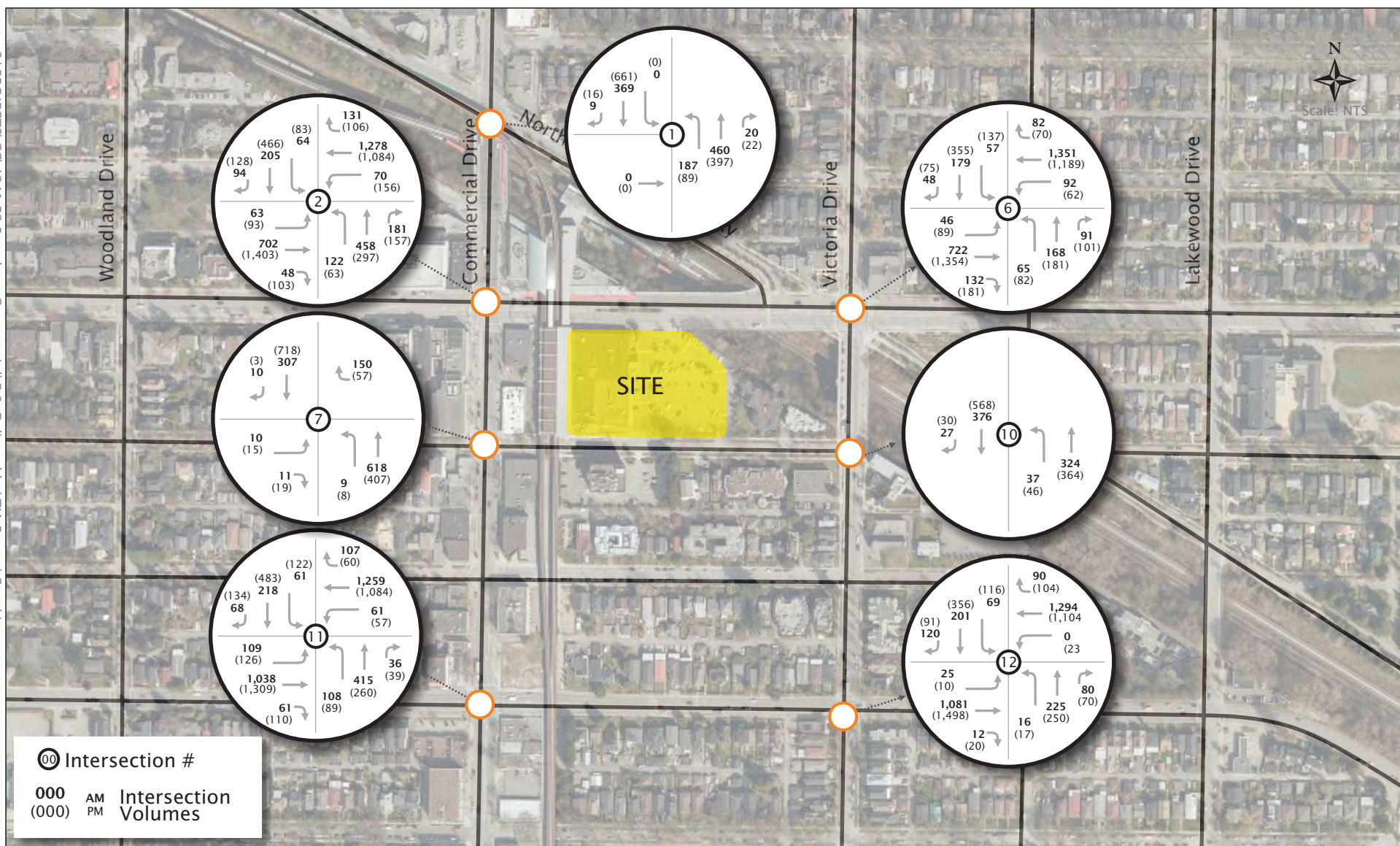


Exhibit 3.3 Opening Day (2026) Weekday Peak Hour Total Traffic Forecasts

04-21-0209

Broadway + Commercial
February 2022

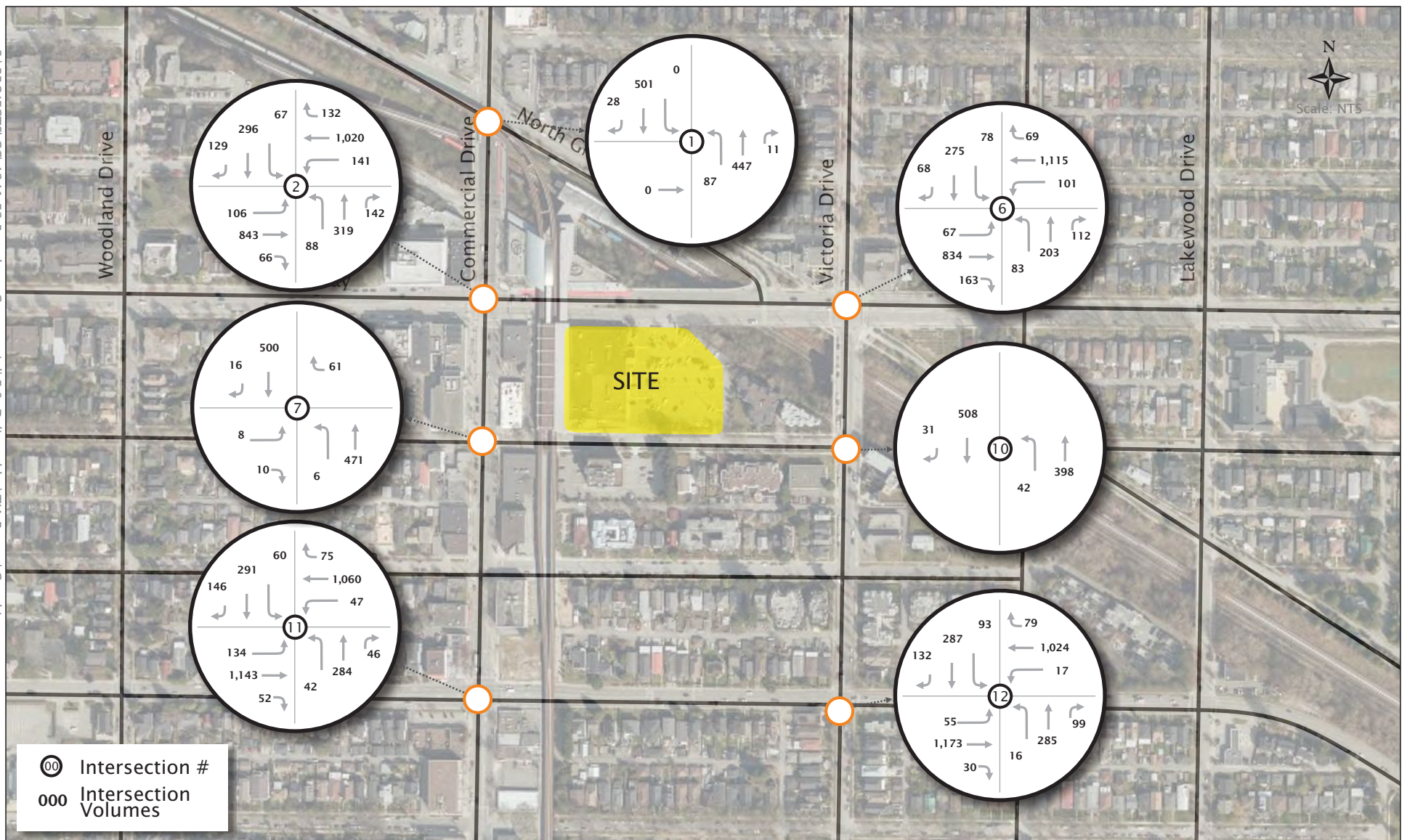


Exhibit 3.4 Opening Day (2026) Saturday Peak Hour Total Traffic Forecasts

04-21-0209

Broadway + Commercial
February 2022

3.2 Future Traffic Operations

3.2.1 Future Conditions Analysis Assumptions

For the future conditions analysis, it is assumed the new intersection for site access on Broadway would be signalized. For this intersection, the following Synchro parameters are applied:

- Conflicting pedestrian volumes of 100 pedestrians were coded for all available crosswalks, i.e. on the west, north and south side.
- Heavy vehicle percentages were zero at the turning movements in and out of the site and default 2% on the eastbound and westbound through movements, because loading activities would happen in a separate access point.
- Cycle lengths were 75 seconds, 80 seconds and 70 seconds at this intersection, which are consistent with the cycle length of the adjacent intersections.
- Westbound left movement was coded with a protected-permissive phase.

For other intersections, existing analysis assumptions are applied. Except that:

- For 2026 total AM traffic forecasts, the signal splits of two intersections, Commercial Drive & Broadway and Commercial Drive & 12th Avenue, were optimized;
- For 2026 total PM traffic forecasts, the signal split of Commercial Drive & 12th Avenue was optimized;
- For 2026 total Saturday traffic forecasts, the signal splits of Commercial Drive & Broadway and Commercial Drive & 12th Avenue were optimized.

3.2.2 Future Total Traffic Operations

Exhibit 3.5, Exhibit 3.6 and Exhibit 3.7 present the traffic operational results from SimTraffic and HCM 6th Edition, during weekday AM, weekday PM and Saturday peak hours respectively.

2026 Weekday AM Peak Hour

During the AM peak period, all study area intersections were still found to operate with short delays – LOS C or better. The eastbound left-turn movement at Commercial Drive and 12th Avenue was still found to operate with LOS E after optimizing the signal splits. The 95th percentile queue of the eastbound left-turn movement at this intersection was also found to exceed the storage length slightly.

At the new signalized access on Broadway, the intersection was found to perform with a LOS 'B' and short delays. No capacity or queuing issues were identified.

2026 Weekday PM Peak Hour

All study intersections were found to operate with acceptable delays of LOS C or better. The 95th percentile queue of the eastbound left-turn movement at Victoria Drive & Broadway was found to exceed the storage length slightly. The eastbound and westbound left-turn movements' 95th percentile queues at

Commercial & 12th Avenue were found to exceed the storage lengths slightly even after optimizing the signal splits.

The new signalized access on Broadway was found to perform with a LOS 'B' and short delays in the weekday PM peak hour. No capacity or queuing issues were identified.

2026 Saturday Peak Hour

The study network was found to operate with short delays – LOS C or better. The Commercial Drive & 12th Avenue has an intersection LOS C. However, similar delay, capacity, and queue issues from the existing conditions remained at this intersection: the eastbound movement was found to operate with a high V/C ratio of 0.91 and a LOS F, and the 95th percentile queue was found to exceed the available storage length. At Victoria Drive & Broadway, the 95th percentile queue of eastbound left-turn movement was also found to exceed the storage length slightly.

The new signalized access on Broadway was found to perform with a LOS 'B' and short delays in the weekday PM peak hour. No capacity or queuing issues were identified.

3.2.3 Summary of Traffic Impacts

Overall, the net increase in traffic on the study road network does not have a material impact on traffic operational performance. The study intersections were found to continue operating with acceptable delays in the full build-out of the site.

In the existing conditions, the eastbound left turn at Commercial Drive & 12th Avenue was found to operate with LOS "E", and the 95th percentile queues of westbound and eastbound left turns at Victoria Avenue & Broadway as well as the westbound left turn at Commercial Drive & 12th Avenue were found to exceed the provided storage lengths slightly. These left turns experience long delay or queues because they do not have protected-permissive left turn phasing.

The eastbound left turn movements at Victoria Avenue & Broadway and Commercial Drive & 12th Avenue continue to operate with long delay/queues in future conditions even with the optimization of the signal splits. The westbound left-turn traffic still cannot be accommodated with current storage lengths at these two intersections. Note that the operational issues identified at these two intersections are existing issues irrespective of development moves ahead or not. It is recommended that the City of Vancouver to secure additional right-of-way (as appropriate) to provide additional left-turn storage lengths when future redevelopments occur at the land parcels directly adjacent to these intersections.



Exhibit 3.5
Total 2026 AM Peak Hour Traffic Performance

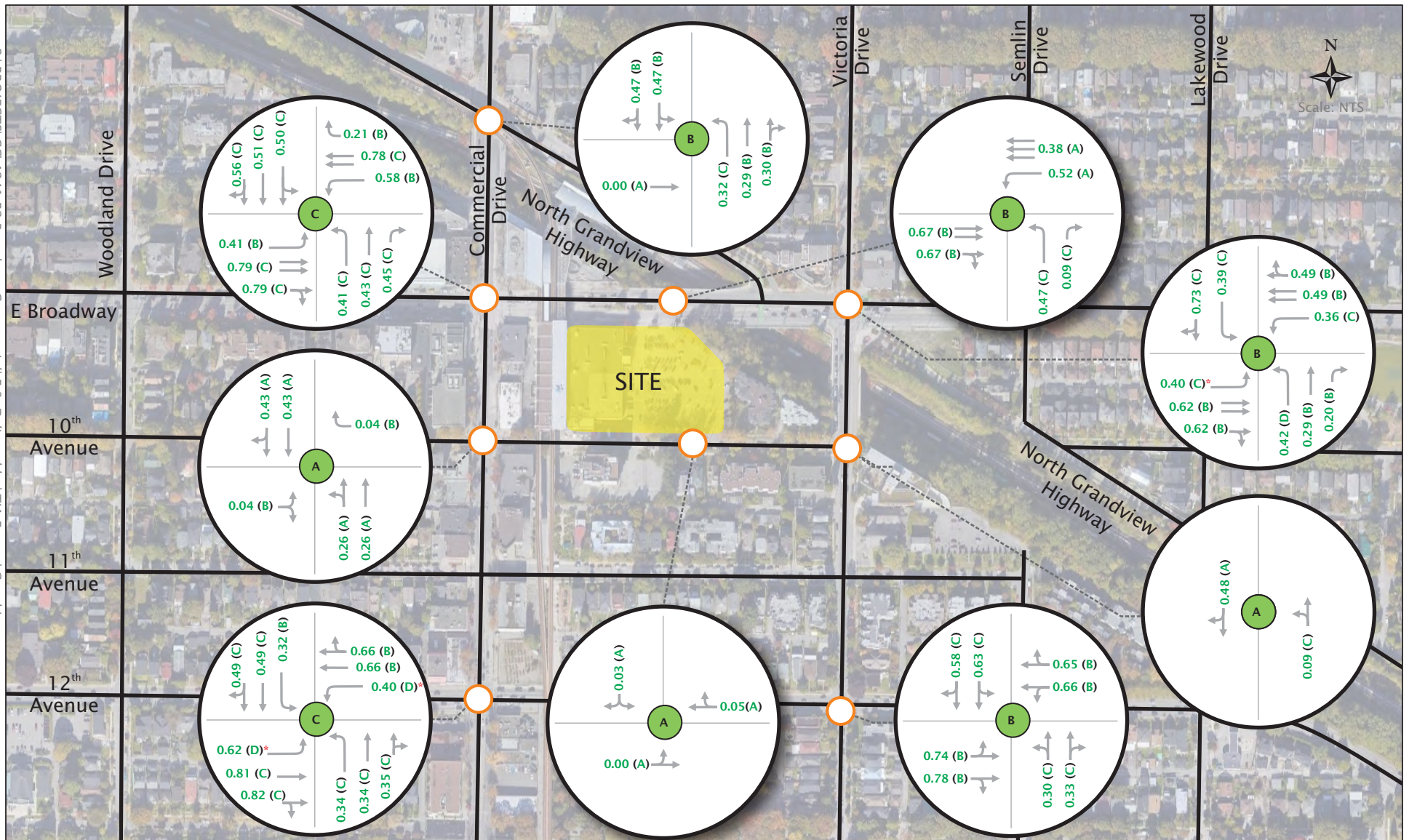


Exhibit 3.6
Total 2026 PM Peak Hour Traffic Performance

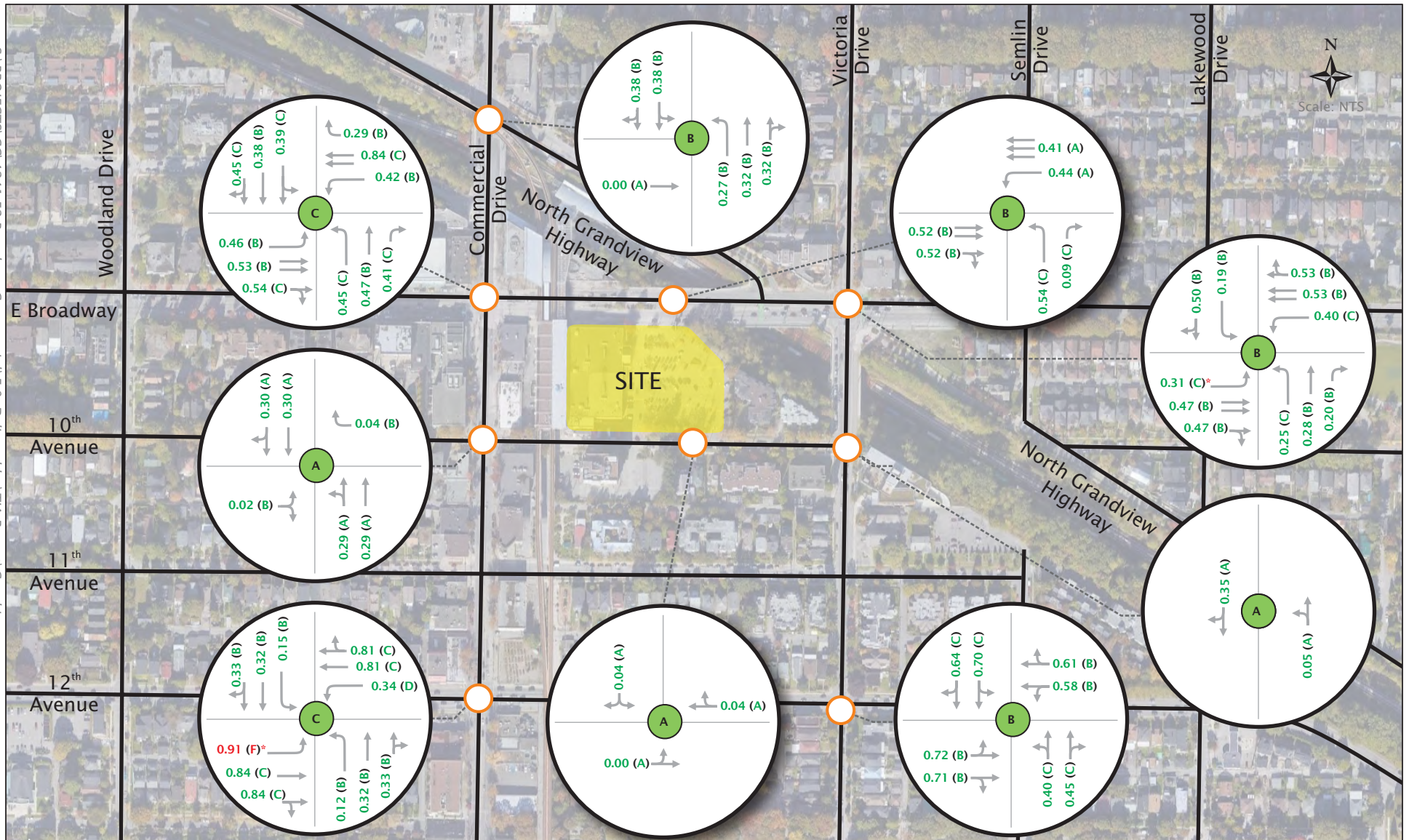


Exhibit 3.7
Total 2026 Saturday Peak Hour Traffic Performance

4. SITE PLAN DESIGN REVIEW

4.1 Site Access Design

Access to the development site has been considered carefully for various transportation modes.

4.1.1 Walking

As part of the development proposal, a public plaza will be provided along the western edge of the site, providing a north-south pedestrian connection between Broadway and East 10th Avenue. The public plaza will also link to the existing sidewalks on Broadway and East 10th Avenue, providing a direct connection to the Broadway SkyTrain station. A pedestrian crosswalk will also be available at the new signalized, full-movement access on Broadway, allowing future residents and commercial patrons to cross mid-block on Broadway to access to the 99 B-line and the Millenium Line SkyTrain service.

4.1.2 Cycling

Ample secured bicycle parking will be provided for the development. A couple of bicycle elevators are planned at the southern edge of the site along the East 10th Avenue frontage, providing access to the secured bicycle parking in the lower parkade level at P3.

4.1.3 Vehicle Access

Two access points are planned for general purpose vehicles, one located on Broadway (signalized, full movement access for retail and community use patrons), and one located on East 10th Avenue (unsignalized, for residents and office patrons only, as well as loading access for non-Safeway uses). In addition, a right-in/right-out access is also planned on Broadway to accommodate loading activities for the Safeway store.

4.2 Parking Supply

4.2.1 Vehicle Parking

The parking requirements are based on the updated City of Vancouver Parking By-law. According to the City's Parking Bylaw, a development can obtain a scaled parking reduction based on the site's proximity to high-quality transit. There are three different categories of transit accessibility, they are summarized as follows:

- **Level A, within:**
 - 100 m walking distance of any one (1) existing FTN route, including B-Line stops, or
 - 200 m walking distance of any intersection of two (2) existing FTN routes, including B-Line routes, or
 - 400 m walking distance of a SkyTrain station.

- **Level B, within:**
 - 101 m to 200 m walking distance to any one existing FTN route, including B-Line stops, or
 - 201 – 400 m walking distance of any intersection of two (2) existing FTN routes, including B-Line routes, or
 - 401 to 800 m walking distance of a SkyTrain station.
- **Level C, greater than:**
 - 200 m walking distance of any one (1) existing FTN route, including B-Line stops, or
 - 400 m walking distance of any intersection of two (2) existing FTN routes, including B-Line routes, or
 - 800 m walking distance of a SkyTrain station.

Given that the location of the development is located in an area within Level “A” Transit Accessibility, the base parking reduction that can be obtained without providing a TDM plan is 20% for Rental and 10% for other Land Use. With the provision of a TDM Plan, additional reduction in parking may be obtained for up to 40% additional for Rental and 20% additional for other land uses.

Table 4.1 summarizes the minimum vehicle parking supply requirement from the Parking By-law along with the parking reduction applied.

Table 4.1: Minimum Vehicle Parking Supply Requirement

LAND USE	QUANTITY	COV PARKING BY-LAW BASE RATE	BASE REQUIREMENT	TRANSIT ACCESSIBILITY REDUCTION - 20% RENTAL AND 10% FOR OTHER LAND USES	TDM PLAN REDUCTION - 40% RENTAL AND 20% FOR OTHER LAND USES	MINIMUM REQUIREMENT AFTER TRANSIT ACCESSIBILITY AND TDM REDUCTION	EQUIVALENT SUPPLY RATIO
Residential - Market Rental (345 units)	24,668 m ²	A minimum of 1 space for each 125 m ² of gross floor area	197	-39	-79	79	0.23 per unit
Residential - Non-Market Rental: Studio & 1-Bedroom (55 units)	5,396 m ²	A minimum of 0.3 spaces per unit for units with fewer than 2 bedrooms	23	-5	-9	9	0.12 per unit
Residential - Non-Market Rental: 2-Bedroom and above (30 units)		A minimum of 0.5 spaces per unit for units with 2 or more bedrooms.	8	-2	-3	3	0.19 per unit
Residential Strata: Units less than 50sqm	48 units (2,400 m ²)	A minimum of 0.5 space for every dwelling unit that has less than 50 m ² of gross floor area	24	-2	-5	17	0.35 per unit

LAND USE	QUANTITY	COV PARKING BY-LAW BASE RATE	BASE REQUIREMENT	TRANSIT ACCESSIBILITY REDUCTION - 20% RENTAL AND 10% FOR OTHER LAND USES	TDM PLAN REDUCTION - 40% RENTAL AND 20% FOR OTHER LAND USES	MINIMUM REQUIREMENT AFTER TRANSIT ACCESSIBILITY AND TDM REDUCTION	EQUIVALENT SUPPLY RATIO
Residential Strata: Units 50sqm - 180 sqm	167 units (12,669 m ²)	For every dwelling unit that has 50 m ² or more of gross floor area, at least 0.6 space for every dwelling unit plus one space for each 200m ² of gross floor area, except that, for every dwelling unit which has a gross floor area of 180 m ² or greater, there need be no more than 1.5 spaces for every dwelling unit.	164	-16	-33	115	0.69 per unit
Residential Visitor	653 units	A minimum of an additional 0.05 parking spaces for every dwelling unit and a maximum of an additional 0.1 spaces for every dwelling unit	33	0	0	33	0.05 per unit
Safeway	4,743 sqm	1 per 100 sq m up to 300 sq m GFA, and 1 additional space for each additional 70 sq m GFA, and a maximum of 1 space for each additional 46.5 sq m GFA.	142	-14	-28	100	0.91 per 1000 sq ft
CRU (General Retail)	120 sqm						
CRU (Food & Beverage Retail)	861 sqm						
Office	4,460 sqm						
Fitness	673 sqm	A minimum of one space for each 25 square metres of gross floor area.	27	-3	-5	19	2.62 per 1000 sq ft
<i>Residential (including Visitors) Subtotal</i>			449	-64	-129	256	
<i>Commercial Subtotal</i>			169	-17	-34	118	
PROJECT TOTAL			618	-81	-163	374	

4.2.2 Bicycle Parking

Well managed, secure, accessible and covered bicycle parking will be provided as part of the development plan. The development will supply at least 1,250 Class A spaces and 52 Class B spaces. The definition of Class A and Class B bicycle parking can be located in Section 6 "Off-Street Bicycle Space Regulations" of the Parking-By-law (May 2018). Additionally, the City of Vancouver's updated "Parking Bylaw Updates to Achieve Transportation 2040 Actions" includes a number of policy changes that are recommended and summarized below:

Class A Bicycle Parking Access

- Requirements for a minimum of 5% of bicycle parking spaces provided to accommodate non-standard bicycles such as recumbent, tandem, cargo bikes and trailers. This requires a larger space of 2.4 m x 0.9 m compared to a typical 1.8 m x 0.6 m bicycle parking space, as well as a wider access aisle of 1.5 m;
- Requirements for automatic openers on doors leading to and from bicycle parking;
- Allowances for stacked bicycle parking at up to 60% of the provided spaces;
- Adjustment of maximums for vertical spaces to accommodate the provision of stacked bicycle parking. A combined total of 60% of spaces may be vertical and stacked, with up to 30% of spaces being vertical; and,
- Adjustment to and minimums for lockers to 10% of the total number of spaces.

Class B Bicycle Parking Access

- Provided for the benefit of visitors to buildings and are typically located outside, on private property, in the form of bike racks; and,
- In order to improve the usability of Class B bicycle parking, increased spacing requirements and dimensions are recommended; currently sized at 0.3 m x 1.8 m.

Table 4.2 summarizes the bicycle parking requirements based on the City of Vancouver's updated bylaw.

Table 4.2: Bicycle Parking Supply Requirement

LAND USE	QUANTITY	REQUIRED RATE FOR CLASS A	REQUIRED RATE FOR CLASS B	REQUIRED NUMBER OF CLASS A	REQUIRED NUMBER OF CLASS B
Residential - Units less than 65m ²	429 units	A minimum of 1.5 spaces for every dwelling unit under 65 m ² .	A minimum of 2 spaces for any development containing at least 20 dwelling units, and one additional space for every additional 20 dwelling units.	644	34
Residential - Units 65m ² - 105m ²	224 units	A minimum of 2.5 spaces for every dwelling unit over 65m ² and under 105m ² .		560	
Residential Strata: Units over 105m ²	N/A	A minimum of 3 spaces for every dwelling unit over 105m ² .		0	
Safeway	4,743m ²	A minimum of 1 space for each 340m ² of gross floor area.	A minimum of 6 spaces for any development containing a minimum of 1,000 square metres of gross floor area.	17	6
CRU (General Retail)	120m ²				
CRU (Food & Beverage Retail)	861m ²				

LAND USE	QUANTITY	REQUIRED RATE FOR CLASS A	REQUIRED RATE FOR CLASS B	REQUIRED NUMBER OF CLASS A	REQUIRED NUMBER OF CLASS B
Office	4,460m ²	A minimum of 1 space for each 170m ² of gross floor area.	A minimum of 6 spaces for any development containing a minimum of 2,000 square metres of gross floor area.	26	6
Fitness	673m ²	A minimum of 1 space for each 250m ² of gross floor area.	A minimum of 6 spaces for any portion of each 500 square metres of gross floor area.	3	6
<i>Residential Subtotal</i>				<i>1,204</i>	<i>34</i>
<i>Non-Residential Subtotal</i>				<i>46</i>	<i>18</i>
PROJECT TOTAL				1,250	52

The By-law also has a requirement for the provision of clothing lockers, water closets, wash basins and showers along with the Class A bicycle spaces for the Office and Retail & Services land use categories. For the 48 Class A bicycle spaces required for the Non-Residential Use, a total of 4 water closets, 2 wash basins, and 4 showers are required to be provided for each gender.

4.3 Parking Layout & On-Site Vehicle Circulation

The manoeuvring of loading and passenger vehicles within the site plan was reviewed using Transoft AutoTurn software package. The turning swath paths were provided to the Project Architect (Perkins+Will) informing the site plan design. Detailed turning swath diagrams are also included in **Appendix F** and will be further refined as part of the Development Permit submission in the future.

4.4 Service Vehicle Operations

The City of Vancouver's Parking Bylaw (No. 6059) outlines loading requirements for different uses in new projects. **Table 4.3** summarizes the requirements that are relevant to the proposed development along with the required loading spaces.

Table 4.3: Loading Bylaw Rates

LAND USE	QUANTITY	CLASS A	CLASS B	CLASS C	CLASS A	CLASS B	CLASS C
Residential	653 units	No Requirement	At least one space for 100 to 299 units; a minimum of one additional space for 300 to 499 units; and at least one additional space for any portion of each additional 200 units.	No Requirement	0	3	0

LAND USE	QUANTITY	CLASS A	CLASS B	CLASS C	CLASS A	CLASS B	CLASS C
Commercial - Safeway	5,724m ²	No Requirement	A minimum of one space for the first 465m ² of gross floor area plus one space for any portion of the next 1,860m ² and one additional space for each additional 2,325m ² .	At least one space for 2,000m ² to 5,000 m ² of gross floor area for manufacturing use, retail use; and at least two spaces for more than 5,000m ² of gross floor area for any such use or combination of uses No requirement for less than 2 000 square metres of gross floor area.	0	6	1
Commercial - CRU							
Commercial - Restaurant							
Commercial - Office	4,460m ²	At least one space for 1 000 to 7,500m ²	At least one space for 500 to 5,000m ² ; at least two spaces for more than 5,000 to 10,000 m ² of gross floor area;	No Requirement	1	1	0
Commercial - Fitness	673m ²	No Requirement	No requirement for less than 100m ² of gross floor area. A minimum of one space for each 2,800m ² of gross floor area.	No requirement for less than 2,000m ² of gross floor area.	0	1	0
<i>Residential Subtotal</i>					0	3	0
<i>Commercial Subtotal</i>					1	8	1
PROJECT TOTAL					1	11	1

Based on the by-law, the development would require 3 Class B loading spaces for the residential component and 8 Class B loading spaces for the commercial component. In addition, 1 Class A and 1 Class C loading spaces would also be required to support the non-residential component of the project.

According to the City's By-law, the definitions of the various Classes of loading are summarized below:

- Class A: off-street loading space must be at least 5.5 m long, 2.7 m wide and 2.3 m high;
- Class B: must be at least 8.5 m long, 3.0 m wide and 3.9 m high; and
- Class C: must be at least 17.0 m long, 3.5 m wide and 4.3 m high.

The loading requirements shown above do not take into account the opportunity to share loading spaces among the residential and commercial uses, which could have different periods of peak loading activity.

The project currently proposes to provide 3 Class A and 3 Class B loading spaces at level P2 of the parkade to support the residential use (strata and rental), while 3 additional Class A and 1 Class B loading spaces will also be provided in level P2 to support the operation of the non-Safeway commercial use on-site. A dedicated loading area for Safeway will be provided at the building's mezzanine level with 2 Class B and 2 Class C loading spaces provided.

Altogether, a total of 14 (6 Class A, 6 Class B and 2 Class C) loading spaces are proposed to support the servicing operations for the project, which is one space more than the minimum requirements from the City's Parking By-law.

4.5 Passenger Spaces

Section 7 of the City's Parking Bylaw also outlines the minimum quantity of passenger spaces needed to support the development. For the 653 residential units proposed, a minimum of 5 Class A passenger spaces would be required. For the commercial component, a minimum of 2 Class A passenger spaces would be required.

5. TDM & ACTIVE MODES

5.1 Definition

Transportation Demand Management (TDM) is defined as the “application of strategies and policies to reduce travel demand (specifically that of single-occupancy private vehicles), or to redistribute this demand in space or in time”¹. A successful TDM program can influence travel behaviour away from Single Occupant Vehicle (SOV) travel during peak periods towards more sustainable modes such as High Occupancy Vehicle (HOV) travel, transit, cycling or walking. The responsibility for implementation of TDM measures can range across many groups, including regional and municipal governments, transit agencies, private developers, residents/resident associations or employers.

5.2 City of Vancouver’s New TDM Policy

The City of Vancouver has developed a TDM program (CoV TDM Program) using a framework modelled based on a “points menu”. It includes the requirement for a comprehensive TDM program for all new developments in the Downtown with potential opportunities as well for City-wide new developments. The purpose of this program is to provide clarity and guidance for developers on the creation of a TDM plan, and a basis for staff to easily evaluate the plans. Some of the key elements from the City’s updated Bylaw that are included in the program include the following:

- List of applicable TDM measures (the “TDM menu”) and assigned point values in the form of an administrative bulletin that outlines a variety of TDM opportunities for new developments;
- Requiring TDM plans for all new developments within the Downtown, with the exception of residential developments within the West End and Robson North residential Parking Permit areas;
- Requiring TDM plans for all new developments on large sites City-wide;
- Incentivizing provision of TDM plans for new developments outside of the Downtown and residential developments within the West End and Robson North residential Parking Permit areas through parking requirement reductions;
- Providing a reduction for developments that are in proximity to good transit, with higher reductions possible for rental housing; and,
- Monitoring of TDM plans to enable long-term assessment of TDM measure effectiveness.

Required TDM Projects

To determine if this development requires a TDM plan, the City has prescribed a list of thresholds regarding the development size and location. According to Section 3 of Appendix C of the updated by-law, the definitions for projects that require TDM plans are as follows:

¹ <http://ops.fhwa.dot.gov/tdm/index.htm> FHWA Travel Demand Management home page

- Projects in the Downtown, except for residential strata and non-social housing rental developments in the West End and Robson North Permit Area;
- Large Sites, as defined by the Rezoning Policy for Sustainable Large developments, involving a land parcel or parcels:
 - Having a total site size of 8,000 m² (1.98 acres) or more, or;
 - Containing 45,000 m² (484,375 ft²) or more new floor area.

For this development, the total new floor area is over 45,000 m². Therefore, the submission of a TDM Plan is mandatory as part of the development proposal. As a reference, **Appendix G** summarizes the TDM requirements flow chart.

5.3 Proposed TDM Plan

From the TDM measures outlined within the City of Vancouver Parking Bylaw, **Table 5.1** shows a summary of the TDM measures along with the maximum points each measure can achieve. According to the City's guidelines, a minimum of 30 points would need to be achieved for each component of uses proposed for the site.

Table 5.1: Proposed TDM Plan

CODE	DESCRIPTION	DETAILS	MAXIMUM POINTS ACHIEVED				NOTES
			RES. STRATA	RES. RENTAL	COMM. OFFICE	COMM. RETAIL	
FIN-01	Car Share Memberships	Provide a two-way car share membership for each dwelling unit with the purchase of that unit. The membership shall remain associated to that residential unit, regardless of owner, for a minimum of 20 years.	2	2	Not Used	n/a	Modo has a program that provides free memberships (@\$500 per unit) equivalent to the value of the car-share vehicles. Assuming \$36,750 per vehicle, the total # of memberships available is equal to $\$36,750 \times 9 / \$500 = 662$ units. Assign membership to all residential units.
ACT-01	Additional Class A Bike Parking	Provide additional Class A bicycle parking, up to a maximum of 40% above minimum requirements as defined by the Parking By-law.	Not Used	Not Used	Not Used	3	The project proposes to add at least 8 more Class A bicycle spaces to the required 19 Class A bicycle spaces for Retail to get 3 TDM points.
ACT-05	Bike Maintenance Facilities	Include bike maintenance facilities in a designated, secure area within the building with proper drainage, where sufficient workspace with bicycle maintenance tools and supplies are readily available on a permanent basis and offered in good condition to encourage bicycling.	2	2	2	2	The property owner shall include bike maintenance facilities in a designated, secure area within the building with proper drainage, where sufficient workspace with bicycle maintenance tools and supplies are readily available on a permanent basis and offered in good condition.

CODE	DESCRIPTION	DETAILS	MAXIMUM POINTS ACHIEVED				NOTES
			RES. STRATA	RES. RENTAL	COMM. OFFICE	COMM. RETAIL	
ACT-06	Improved End-of-Trip Amenities	Provide and maintain improved and/or additional end-of-trip amenities for employees, including but not limited to: clothes dryers (or hot air drying rack systems), permanent hair dryers, shower doors, secure facilities for charging bike lights and electric bike batteries, enhanced facility finishes.	Not Available	Not Available	2	2	To get 2 points for Office and Retail uses, provide clothes dryers (or hot air drying rack systems), permanent hair dryers, shower doors, secure facilities for charging bike lights and electric bike batteries, enhanced facility finishes.
ACT-07	Public Bike Share Space	Provide space for Public Bike Share (PBS). It is assumed this would still apply based on earlier conversations with the City.	8	8	8	8	
ACT-08	Shared Cycling Fleet	Provide a fleet of bicycles including proportion dedicated to specialty cycling equipment. 1 bicycle for every 10 units for a maximum of 4 points	Not Available	2	Not Used	Not Used	Provide a shared-bike fleet of a minimum 22 bicycles (at a rate of 1 shared bike for every 20 units) for future rental tenants.
ACT-09	Walking Improvements	Provide large scale improved and enhanced pedestrian facilities off-site. The project is providing a public plaza with pedestrian linkage to the SkyTrain station from the site.	2	2	2	2	Applicant to work with City to achieve at least 2 points (out of 6 possible points) for this measure.
COM-01	Car share Spaces	Provide dedicated publicly available parking spaces for car share vehicles (one-way or two-way), up to the following ratios: - Residential - Strata: one (1) car share parking space for every 20 units (12 required for 8 pts); - Residential - Rental: one (1) car share parking space for every 10 units (43 required for 16 pts); - Commercial - Office one (1) car share parking space for each 2,300m² GFA (2 required for 8 pts); - Commercial - Retail: one (1) car share parking space for each 930 m² GFA (7 required for 8 pts).	8	4	8	8	Provide 12 car-share spaces

CODE	DESCRIPTION	DETAILS	MAXIMUM POINTS ACHIEVED				NOTES
			RES. STRATA	RES. RENTAL	COMM. OFFICE	COMM. RETAIL	
COM-02	Car share Vehicles and Spaces	Provide publicly accessible two-way car share vehicle(s) and space(s) on-site for at least 3 years, up to the following ratios: - Residential - Strata: A minimum of one (1) car share vehicle and space for every 50 units (5 required for 8 pts); - Residential - Rental: A minimum of one (1) car share vehicle and space for every 25 units (17 required for 16 pts); - Commercial - Office: Up to one (1) car share vehicle and space for each 4,600m² GFA (1 required for 8 pts). - Commercial - Retail: Up to one (1) car share vehicle and space for each 4,600m² GFA (2 required for 3 pts).	8	8	8	3	9 car-share spaces and vehicles are proposed and will be available for all users on-site.
SUP-03	Multi-modal Wayfinding Signage	Provide multi-modal wayfinding signage - probably at the plaza	Not Available	2	2	2	
		TOTAL	30	30	32	30	

6. CONCLUSIONS

The existing Safeway grocery store at 1780 East Broadway is proposed to redevelop as a mixed-use residential development with a new on-site Safeway, retail, office, and fitness facilities. The site is well-served by transit, as it is located immediately adjacent to the Commercial-Broadway SkyTrain station. The site is also well-connected with pedestrian and cycling facilities on 10th Avenue and North Grandview Highway.

The opening day of the development is assumed to be 2026. A full-movement signalized access from Broadway is provided from Broadway to the customer parking access for Safeway and retail stores. The loading access on Broadway will be restricted to right-in/right-out only for Safeway and retail loading activities. The vehicle access to residential and office parking and loading will be located off 10th Avenue.

The traffic operational analysis examined three different peak hours including weekday AM, weekday PM and Saturday peak periods, in both existing and future full-build out horizon years.

In the existing conditions, the study network was found to operate with acceptable delays overall. However, one individual eastbound left turn movement at Commercial Drive & 12th Avenue was found to operate with long delay, with left-turn queue exceeding the available storage. It is recommended that the City of Vancouver to secure additional right-of-way (as appropriate) to provide additional left-turn storage length when future redevelopments occur at the land parcels directly adjacent to the intersection.

The existing Safeway generates approximately 180 to 400 vehicle trips during weekday AM, weekday PM and Saturday peak hours respectively. After accounting for internal trip capture due to the mixed-use nature, the proposed development is estimated to generate approximately 360 to 600 vehicle trips during the studied peak hour periods. Netting out the existing site traffic during each studied peak period, the development is anticipated to generate approximately 180 to 200 net new vehicle trips to the street network during the peak hours. In context, this is equivalent to approximately 3 vehicles per minute on average during the peak hours. Except the AM inbound traffic double the outbound traffic, the PM and Saturday inbound and outbound traffic are almost evenly split during the peak hours.

Overall, the net increase in traffic on the study road network does not have a material impact on traffic operational performance. The study intersections were found to continue operating with acceptable delays in the full build-out of the site. The eastbound left-turn movements with operational issues continue to exist in future conditions.

The existing 38,000 sq-ft Safeway provides 167 parking spaces. Because the location of the development is located in an area within 100m walking distance of a SkyTrain station, the base parking reduction that can be obtained without providing a TDM plan is 20% for Rental and 10% for other Land Use. With the provision of a TDM Plan, additional reduction in parking may be obtained for up to 40% additional for Rental and 20% additional for other land uses. The project will seek the maximum parking reduction for all uses, except for Safeway. The development is planning to provide a total of 444 parking stalls with the following breakdown:

- 238 parking stalls for the residential component, including residents and visitors;
- 149 stalls for Safeway; and
- 57 stalls for all other uses.

Given the site area is over 45,000m², the redevelopment is required to provide a TDM plan. The developer considers providing the following TDM strategies that are acceptable by the City to achieve the 30 TDM points for each land use:

- Car-share Membership
- Additional Class A Bicycle Parking
- Bike Maintenance Facilities
- Public Bike Share Space
- Shared Bicycle Fleet
- Walking Improvements
- Carshare Spaces
- Carshare Vehicles and Spaces
- Multi-modal Wayfinding Signage

*The attached information is provided to support the agency's review process
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Bunt & Associates Engineering Ltd.*

APPENDIX A

Terms of Reference



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APPENDIX B

Traffic Data



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APPENDIX C

SimTraffic Reports



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APPENDIX D

HCM6 Reports



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APPENDIX E

HCM2000 Reports

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APPENDIX F

Turning Swath Diagrams

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APPENDIX G

TDM Worksheets