TRANSPORTATION PLANNERS AND ENGINEERS

bunt & associates

## Cloverley Elementary Replacement School
## 970 Shavington St., North Vancouver, BC V7L 1K6

# Transportation Impact Assessment

Version 2

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Prepared for

North Vancouver School District

Date

April 29, 2024

Project No.

04-23-0312

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North Vancouver School District
2121 Lonsdale Avenue
North Vancouver, BC
V7M 2K6

[redacted]

**Re: Cloverley Elementary Replacement School, North Vancouver, BC**
**Transportation Impact Assessment**

Please find attached the Transportation Impact Assessment report for the Cloverley Replacement School located in the City of North Vancouver, BC.

The report provides a comprehensive review of the school's accessibility by walking, cycling, transit, and car use. To manage the school's new demands for the peak hours of operations, both a Mobility Plan and a Transportation Demand Management Plan have been developed with recommended initiatives and infrastructure changes that aim to reduce car dependency while prioritizing access for active modes and transit. This strategy will contribute to the new school achieving the City of North Vancouver's student travel mode share target of 50% or lower.

Please do not hesitate to contact us should you have any questions or comments.

Yours truly,
**Bunt & Associates**

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# EXECUTIVE SUMMARY

The Cloverley Elementary replacement school building will be located on the eastern portion of the school site, with a capacity for up to 525 students (Grades 1-7), 60 kindergarten students, 37-place Child Care use, and a Neighbourhood Learning Centre. The existing school building and hard-standing areas will be replaced by landscaping and sports-related uses, while the existing site access driveways will be removed.

City of North Vancouver transportation policy publications, including Mobility Strategy (2022) and Pedestrian Plan Framework, emphasize the City's priority to improve the environment for walking/rolling/cycling, through awareness events, infrastructure improvements and providing city-wide targets to reduce vehicle use. Complementing this, the North Vancouver School District has its own 'Safe & Active Travel' initiatives, while TransLink's 2050 Plan proposes extending the R2 Route to Metrotown together with Bus Rapid Transit service between Lynn Valley and Downtown/Lonsdale.

The school site fronts Cloverley Street to the north, Kennard Avenue to the east, Shavington Street to the south, and Hendry Avenue to the west, and is designated for 'School & Institutional' while the surrounding land uses are designated as Residential Level 1 (Low Density).

The street system surrounding the Cloverley School site generally forms a fine-grained interconnected network, with the closest arterial (connector) streets located on Keith Road East, Queensbury Avenue, and 3rd Street East. At Hendry Avenue, the street system changes from an east-west orientation to a southwest-northeast one, resulting in Shavington Street not being directly connected with 4th Street East, and similarly Cloverley Street with 5th Street East and 6th Street East.

More generally, the local street system creates a comfortable environment for pedestrians, although certain streets have missing sidewalks (Hendry Avenue (one side), Sutherland Avenue, Heywood Street (one side)), while sidewalk widths are generally below the City's current design standard. Controlled crossings on the arterial road network are located at Keith Road East's intersections with Cloverley Street and Hendry Avenue, along with 3rd Street East's intersection with Queensbury Avenue. The Spirit Trail and Kennard greenways are located within 400m of the school site, while Queensbury Avenue is being considered as a potential future greenway.

Bicycle routes located on 4th Street East, Queensbury Avenue, 3rd Street East and Keith Road East form part of the City of North Vancouver's 'Accessible for all Ages & Abilities (AAA)' network program, while Shavington Street and Hendry Avenue were identified as bicycle routes in the 2012 Bicycle Master Plan. More generally, the low vehicle volume local streets surrounding the school site provide for a comfortable cycling environment, although some north-south streets have sections with steep grades that make them challenging to cycle.

TransLink's bus routes operate on Keith Road East (#232, #255), Queensbury Avenue (#228) and 3rd Street East (#R2), with the nearest bus stops to the school site located on Keith Road East at Cloverley Street (300m), Queensbury Avenue at 4th Street East/5th Street East (600m) and 3rd Street East at Ridgeway Avenue (900-1000m), although the latter location is probably beyond reasonable walking distance.

Parking occupancy along the school site's two main street frontages, Cloverley Street (south side) and Shavington Street (north side), was observed at less than 10 vehicles parked (08:30-09:30 & 14:30-15;30), while there is capacity for up to 85 vehicles to park during the school's weekday morning and afternoon pick up/drop off activities. For the same periods, the surrounding streets of 4th Street East, 5th Street East and 6th Street East (Sutherland to Hendry) had a parking occupancy below 50%, as was the case for Heywood Street (park side).

The replacement elementary school's main entrance will be centrally located within the new building, with direct pedestrian access from Shavington Street, Cloverley Street and Kennard Avenue (although the latter will have no vehicle pick up/drop off permitted). Pathway and stairway alignments are being developed to address the site grade changes as Cloverley Street is on a higher elevation and Shavington Street is on a lower elevation relative to the new building. A Multi-Use Path (MUP) option is being explored to connect the school building with Hendry Avenue, taking into consideration site grades and tree retention.

The on-site parking lot for the new school will have the capacity for 38 vehicle spaces (including 2 accessible and 4 short-term accessible spaces) along with the provision for one service vehicle loading space that would be shared with the HandyDart. The driveway access to this parking lot is planned for Shavington Street.

Ten secure bicycle spaces are planned together with 40 short-term (visitor) spaces, with some short-term spaces recommended to be located close to the street frontages at Shavington Street and Cloverley Street (due to the site grades).

The Mobility Plan proposes a clockwise circulation system for vehicle pick up/drop off activities with Cloverley Street providing eastbound access (Hendry Avenue to Kennard Avenue) and Shavington Street providing westbound access (Kennard Avenue to Hendry Avenue). Pick up/drop off is planned at the school site frontages with Cloverley Street and Shavington Street and comprises 'no parking', '5-minute wait', and 'unlimited use' zones, while 'drive to five' locations are suggested on Hendry Avenue (school frontage) and Heywood Street (park side). Pick up/drop off activities would be supported by changes to intersection layouts, 30km/h speed limits, additional road bumps (closer spacing), and posted signage. For active modes and transit users, options to improve access from Hendry Avenue at 4th Street East & Shavington Street are being explored (e.g., closure or one-way vehicle traffic operation) together with the prioritizing sidewalk upgrades on 4th Street East, 5th Street East, Hendry Avenue, and Cloverley Street (latter including at the Keith Road East intersection).

A Transportation Demand Management Plan has been developed to manage the replacement school's future demands for students and staff, drawing upon best practices from neighbouring schools and Metro Vancouver. For staff, end-of-trip facilities, e-bicycle charging, carpooling (with priority parking) and an emergency ride home are expected to be the main features, and more generally, through promoting the benefits of walking/rolling/cycling to work. For students, the key initiatives will be the walking 'school' bus, bike-to-school events, promoting free transit (available for children aged 12 or younger), carpooling, locker storage for scooters/roller blades/skateboards, and 'drive-to-five', and complementing this will be engagement events within the school. A 'point of contact' would be selected amongst the school staff to be a champion of sustainable travel and responsible for managing the TDM Plan along and overseeing efficient and safe pick up/drop off operations along the fronting streets.

North Vancouver School District provided data on the origin of future students for the Cloverley Replacement School's catchment area, while student population growth was developed from the densification occurring in the western parts of the catchment area. This data identified that approximately 70% of students are expected to originate from zones west of the replacement school site (basically west of Hendry Avenue), while 25% would be from zones within 400 metres of the school site. **The data also highlighted that around 65% of the student school movements are already occurring on the street network and thus would be redirected to the Cloverley Replacement school once open.**

Projected mode share for students was developed by comparing mode share and travel distance data with the nearby Ridgeway Elementary and Queen Mary Elementary schools and recognizing the City of North Vancouver's expectation for 50% (or more) trips by active modes and transit. With this, the Cloverley Replacement School's student vehicle mode share is projected to be 46% (morning peak hour) and 40% (afternoon peak hour), with carpooling accounting for 3% to 4% of the trips. Walking is projected at 46% (morning peak hour) and 51% (afternoon peak hour), with cycling and transit contributing to 6% to 7% of the trips. Similarly, the staff mode share was developed from the same two elementary schools, indicating a higher car mode share of 71% (due primarily to the longer travel distances for staff).

Combined, the Elementary School and Child Care uses are projected to generate 270 inbound & 220 outbound vehicle movements along with 250 inbound & 165 outbound pedestrian movements during the AM peak hour period (08:15-09:15), while for the school PM peak hour (14:30 to 15:30), they would generate 170 inbound & 215 outbound vehicle movements along with 175 inbound & 275 outbound pedestrian movements. Cycling mode share would be appreciably lower with 25 to 30 movements (data was collected in November), although it is expected to be higher during the warmer/brighter months, while transit use would account for 27 to 40 movements during the peak hour periods.

All non-signalized study intersections were determined to operate within acceptable performance thresholds under future Background (without proposed development) and Total (with proposed development) 2026 conditions. Queensbury Avenue & Keith Road East intersection was determined to operate within acceptable performance thresholds in general. During the afternoon (school) peak hour period, the northbound left turn movement was determined to operate with moderately long delays (LOS E) and within capacity under future Background and Total conditions (irrespective of the school opening).

The Keith Road East/Mountain Highway/Brooksbank Avenue intersection exceeds acceptable capacity thresholds for all the study peak hour periods. Several vehicle movements experience long delays (LOS E or F) and are approaching/exceeding capacity (v/c ≥ 1.00), while optimization of the signal timing was only able to improve operations albeit only to a certain degree. Exploring further changes to this intersection is considered beyond the scope of this study, especially as the school's impact is only around 2% of the peak-hour demands.

A desktop review of the options to change vehicle flow on Hendry Avenue (between 4th Street East and 5th Street East), indicates that Hendry Avenue one-way southbound (Shavington Street to 4th Street East) provides the best balance for vehicle circulation; however, other options can be explored with the City of North Vancouver staff. For incident days on Highway 1, Cloverley Street is one of the local streets most impacted, i.e., 105 vehicles per hour observed eastbound; however, future shortcutting movements on school days are expected to incur reduced travel times given the school's pick up/drop off activities along with 30km/h speed limits and additional traffic calming measures.

Overall, the study provides a comprehensive analysis of accessing the school by walking, cycling, and transit, along with ensuring the vehicle demands on the study network can be managed during peak hour periods.

# 1. INTRODUCTION

## 1.1 Project Plan

North Vancouver School District 44 (SD44) proposes replacing the existing Cloverley Elementary School within the City of North Vancouver, with a planned opening date of 2026. The school site is on the city block bounded by Shavington Street, Hendry Avenue, Cloverley Street and Kennard Avenue, and its location in the context of the surrounding street is highlighted in **Exhibit 1.1**.

The new school building will be located on the eastern portion of the school site with a capacity for up to 525 students (Grades 1-7), 60 kindergarten students, 37-place Child Care use, and a Neighbourhood Learning Centre. The existing school building and hard-standing areas will be replaced by landscaping and sports-related uses, while the existing site access driveways will be removed. Pedestrian access to the replacement school building will be from Cloverley Street, Kennard Avenue, Hendry Avenue and Shavington Street, with the latter street also providing access to the car park and service vehicle loading zone.

Previously, Cloverley Elementary School operated at Hendry Avenue between 1961 and 1982, and from 1982 to 2010, the school building was leased out to various organizations. From 2010 to 2014, it acted as a 'swing school' to temporarily relocate students from Ridgeway Elementary and Queen Mary Elementary schools as part of the seismic upgrade and renovation work programs. Since then, the school site has been vacant and the existing building is now beyond its serviceable life.

## 1.2 Study Purpose & Objectives

This Transportation Impact Assessment will support the Cloverley Replacement Elementary School development with a particular focus on:

- Reviewing relevant local policies and plans.
- Articulating the replacement school's accessibility by active transportation and transit along with identifying locations where there are existing challenges.
- Review the planned replacement school site layout, including in the context of the Zoning Bylaw and relevant street design standards.
- Prepare management plans to ensure the immediate street network is sufficient to accommodate the school's projected demands together with supporting sustainable forms of transportation.
- Develop multimodal transportation projections for students and staff and assess their impact on the study street network.
- Analyze the operational performance of the study network intersections and, if needed, suggest mitigation measures.


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**Exhibit 1.1**
## Site Context

Cloverly Elementary School
04-23-0312 December 2023

bunt & associates

## 1.3 Study Scope & Area

A 'Terms of Reference' for the study was provided by the City of North Vancouver, attached in **Appendix A** for reference, while **Figure 1.1** shows the study network intersections in the context of the replacement school's catchment area and these are also summarized in **Table 1.1**.

**Table 1.1: Cloverley Replacement School Study Network**

| REF | INTERSECTION | CONTROL |
|---|---|---|
| 1 | Cloverley Street & Kennard Avenue | Minor Stop |
| 2 | Shavington Street & Kennard Avenue | Minor Stop |
| 3 | Hendry Avenue & Shavington Street | Minor Stop |
| 4 | Hendry Avenue & Cloverley Street | Minor Stop |
| 5 | Hendry Avenue & 5th Street East | Minor Stop |
| 6 | Hendry Avenue & 4th Street East | Minor Stop |
| 7 | Cloverley Street & Keith Road East | Minor Stop |
| 8 | Hendry Ave & Keith Road East | Traffic Signal |
| 9 | Grand Blvd East & Keith Road East | Traffic Signal |
| 10 | Queensbury Avenue & Keith Road East | Minor Stop |
| 11 | Queensbury Avenue & 4th Street East | Minor Stop |
| 12 | Queensbury Avenue & 3rd Street East | Traffic Signal |
| 13 | Keith Rd East & Mountain Hwy | Traffic Signal |
| | | |

The study will undertake an inventory of pedestrian and cycling facilities within 400 metres of the school site to identify gaps/deficiencies and develop strategies based on the City of North Vancouver's current priorities for walking/rolling/cycling. Similarly, transit services and bus stop locations within 800 metres, or a 10-minute walk, of the school site will be undertaken to identify potential upgrades, while future operational changes will be highlighted from TransLink's 2050 Plan for the school catchment area.

**Figure 1.1: School Catchment Area and Study Intersections**


A review of best-practice approaches to Transportation Demand Management at elementary schools will be undertaken to incorporate into the Cloverley Replacement School's plan. Complementing this will be the Mobility Plan, focused on improvements to the immediate street environment so that the replacement school will be accessible by all transportation modes while ensuring peak school pick up/drop off demands can be managed safely and conveniently.

## 1.4 Organization of Report

The study has been structured as follows:

- Section 2: Planning and Policy Context
- Section 3: Existing Conditions
- Section 4: Cloverley Replacement School Plan Review
- Section 5: School Management Plans
- Section 6: Multi-modal Trip Generation Projections
- Section 7: Operational Analysis
- Section 8: Summary and Conclusions

# 2. PLANNING AND POLICY CONTEXT

## 2.1 Introduction

A review of existing plans and policies is an important first step for the study as it will provide insight and guidance on the City of North Vancouver's current priorities for transportation, including within the school's catchment area. This section covers the City of North Vancouver's Mobility Strategy, Pedestrian Plan Framework, Safe & Active School Travel Program and Cloverley Traffic Management Plan, along with North Vancouver School District's Safe & Active Travel Initiatives and TransLink's 2050 Plan.

## 2.2 Mobility Strategy (Spring 2022) City of North Vancouver

The Mobility Strategy on Page 10 advises that it is *'…a new blueprint for a modern, well-balanced transportation system in the City of North Vancouver that provides real mobility choices, creates great and inclusive places, and supports climate action.'* Presented in the following paragraphs is a review of selected strategies and actions relevant to the Cloverley Replacement School site, together with Bunt's response on how these would be addressed in the study.

**Strategy 1 Action 1a (i)** (Page 30) advises: *'Provide a complete sidewalk network on both sides of the street of all streets within a reasonable walking distance (typically 400 metres) of all key pedestrian areas and destinations like schools, community centres and frequent transit corridors. Prioritize improving the quality and comfort of existing narrow sidewalks along and within a reasonable walking distance of the City's Main Streets.'*

**Bunt Response**: an inventory of pedestrian facilities within 400 metres of the school site has been undertaken to identify gaps/deficiencies along with improvements that would be incorporated into the Mobility Plan.

**Strategy 4 Part 4C** (Page 38) advises: *'Expand delivery of youth-oriented programs that support safe and active travel to school.*

i. *Develop and update school travel plans on a regular basis, in coordination with school staff and students.*
ii. *Work with schools and surrounding residents and businesses to pilot new pick-up and drop-off protocols that reduce vehicle congestion around schools.*
iii. *Enable new programs to support walking and rolling to/from school, especially for younger children.*
iv. *Bring youth into the design of transportation improvements around schools, such as by co-designing signage and creating murals to demarcate no-stopping zones.'*

Recent progress is presented on Page 38: *'Safe and Active School Travel Program: The City, in partnership with the North Vancouver School District, has worked with nine schools to encourage safe and healthy school travel habits through outreach and improvements to the transportation infrastructure around*

*schools. School Travel Planning Facilitators work with administration, students, and families at each school for one to two years to identify barriers to active travel, encourage walking and rolling, and develop maps and a tailored action plan.'*

**Bunt Response**: Bunt has been working with the North Vancouver School District to develop initiatives consistent with this strategy to incorporate in the Transportation Demand Management (TDM) Plan, as presented in this study.

**Strategy 5 Action 5B** (Page 42) states: '*Manage travel speeds and access to improve neighbourhood safety and livability'* and covers the following:

- *'Create a network of 30 km/h streets that includes Local Streets and streets around schools, parks, and community centres. Expand the network of Shared Streets, where vehicle traffic is limited to speeds of pedestrians.*
- *Decrease speed limits on other street types to improve safety and comfort for all travellers.*
- *Deliver design interventions to further encourage safe travel speeds, particularly on Local Streets, including road narrowing, speed bumps, raised crosswalks, and curb-bulges.*
- *Use access management interventions to manage through traffic on Local Streets that experience chronic traffic and shortcutting.'*

Local streets are defined on Page 68 as: *'low-speed, low-volume streets that provide access to residences and community destinations such as parks, schools, and gathering spaces.'* It continues by advising*:* '*Because Local Streets have lower traffic volumes, they can facilitate local street bikeways that still allow for safe and comfortable travel, as part of our broader AAA Mobility Lane Network. Some local streets may be appropriate for considering pilot design interventions. These could include traffic calming for improved livability, or creation of 'green streets'...'*

With the above context, the following design and mobility objectives are set out*:*

- *'Encourage vehicle speeds of approximately 30 km/h.*
- *Design streets that allow people to walk or roll safely and comfortably.*
- *Decrease vehicle speeds, volumes, and shortcutting.*
- *Make streets more family-friendly through traffic calming and greening.'*

**Bunt Response:** A response to each bullet point is presented below:

- Schools typically have 30km/h zones on the fronting streets, and in fact, 30km/h signage remains in place for the closed Cloverley Elementary School. For the replacement school site, it is anticipated that 30km/h zones are implemented on the four fronting streets and reinforced with additional street calming features.
- Bunt has identified gaps/deficiencies within 400 metres of the site and presented the priorities within the Mobility Plan.

- For shortcutting, the City of North Vancouver's Cloverley Traffic Calming Plan are covered later in this section.
- Recommendations are made in the Mobility Plan to improve the environment for walking, rolling, and cycling.

**Strategy 11 Action 11a** (Page 38) advises the following: '*Improve the infrastructure quality for sustainable modes first and pair this with TDM interventions to reduce impacts of new vehicle trips.'*

**Bunt Response**: TDM and Mobility plans have been developed in this study to support the replacement school.

## 2.3 Pedestrian Plan Framework (Walk CNV), City of North Vancouver

The following vision for a people-first City is covered on Page 2 of the Pedestrian Plan Framework:

> '*Walking will become the preferred way to move around the City of North Vancouver thanks to a strong culture of health and wellness and a commitment to great design, comfort, accessibility, and safety.*'

For the emerging pedestrian network, set out on Page 10, the City of North Vancouver identified the following connections of Queensbury Avenue, Spirit Trail, and Spirit Trail to Karen Magnussen Arena within the study area as their focus for improvement.

From the near-term action plan on Page 20, the following relevant actions have been identified:

*'Ongoing Actions*

- Integrate parks into the pedestrian network by enhancing pathways with wayfinding and pedestrian amenities.
- Reduce pedestrian road-crossing distances.
- Eliminate gaps in the sidewalk network.

*New Actions*

- Reduce speeds on local and collector streets through a combination of road design and speed limits.
- Ensure bus stops have pedestrian amenities such as shelters and benches and meet accessibility guidelines.'

**Bunt Response**: These actions have guided the review of the existing conditions and assisted in the development of the school's Mobility Plan.

## 2.4 Safe & Active School Travel Program (SASTP)

As per the City of North Vancouver's website, SASTP covers the following initiatives:

I. *Infrastructure Improvements and Action Plans*
II. *Adult Crossing Guards*
III. *Cycling Education*
IV. *Bike to School Week*
V. *Walking School Bus Pilot*
VI. *Best Routes to School Maps*

**Bunt Response:** These initiatives have been reviewed for the replacement school's planning work with the relevant ones forming part of the school's Mobility and TDM plans after consulting with the North Vancouver School District.

*The SASTP action plans for each school identify a range of infrastructure upgrades to improve safety for children, families, and neighbours using streets around schools through improved signage, crosswalk markings, curb bulges, and sightline improvements. Every year, the City prioritizes as many of these interventions as possible to deliver through the capital plan.*

**Bunt Response:** As covered earlier**,** an inventory of pedestrian facilities within 400 metres of the school site has been undertaken to identify gaps/deficiencies, while the Mobility Plan in Section 5 presents the proposed priorities.

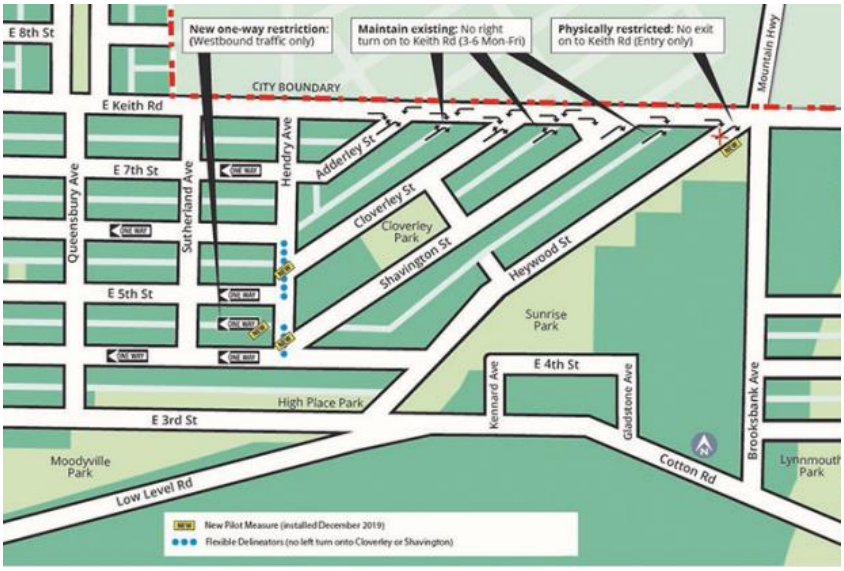
## 2.5 Cloverley Traffic Calming Plan: City of North Vancouver

The City of North Vancouver (CNV) has been working with the Cloverley community since 2016 to develop mitigation measures to discourage shortcutting through the neighbourhood when an incident occurs on the Second Narrows Bridge/Highway 1. Shortcutting through the neighbourhood typically occurs when the eastbound vehicle queue length on Keith Road East extends back from the Mountain Highway intersection towards Queensbury Avenue, and consequently, drivers use the local street network to 'jump the queue'. Also, shortcutting comes from vehicles originating from 3rd Street East and use 4th Street East (via Queensbury Avenue) to access Shavington Street and Cloverley Street.

The City of North Vancouver's 'Cloverley Traffic Calming Plan' entailed the installation of traffic calming measures and interventions from 2016 to 2018, as presented in **Figure 2.1**, including one-way streets, speed bumps and sign-based turn restrictions.

On April 28, 2021, the City of North Vancouver's Transportation Section provided an 'Information Report' to update the Mayor and Council on the traffic calming plan along with a recommendation to remove *'all traffic diverting features because of measured ineffectiveness due in large part to significant volumes of drivers using illegal maneuvers to bypass interventions and safety issues this creates*.'

**Figure 2.1: Summary of Neighbourhood Traffic Measures (Source: CNV)**

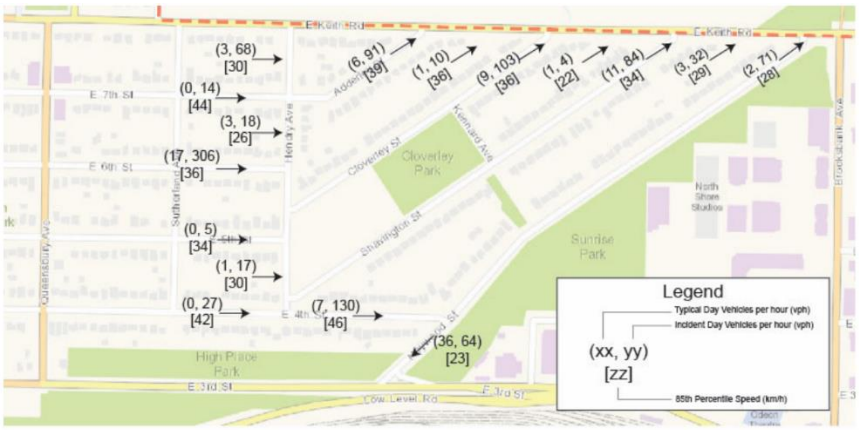



City of North Vancouver staff are now proposing to advance the following suite of actions and initiatives to improve the functionality of nearby arterial streets and improve safety by reducing vehicle speeds and increasing separation of road users in the neighbourhood moving forward:

- *Continue to explore signal optimization, lane reconfiguration, and other interventions to improve the capacity and traffic flow along Keith Rd and East 3rd Street ·*
- *Undertaking intersection analysis within the neighbourhood to explore needs for additional stop signs, crosswalk improvements, and sidewalk coverage ·*
- *Consider installation of additional speed bumps or reducing speed limits on local streets in the neighbourhood to 30 km/h*
- *Introducing street design changes like narrower travel lanes, dedicated cycling facilities, curb bulges, curb extensions, and diverters to focus on better separating different road users and reducing vehicle speeds in the neighbourhood.*
- *Explore opportunities with the Province for automated enforcement to increase compliance with sign-based turn restrictions.*

An extract from the City of North Vancouver's staff report to the Council showing the vehicle volume changes within the Cloverley Community for non-incident/incident days has been reproduced in **Figure 2.2**.

**Figure 2.2: Vehicle Volume Change Cloverley Community for Non-incident/Incident**




**Bunt Response:** Some of the City of North Vancouver's actions and initiatives are anticipated to overlap with the replacement school's Mobility Plan, while the operational analysis has reviewed and discussed the impact of non-incident/incident volumes on school days.

## 2.6 Safe & Active Travel - North Vancouver School District

North Vancouver School District has developed a *Safe & Active Travel* webpage focused on encouraging students to access schools *'in safe, active and sustainable ways'* with the following benefits highlighted:

- *'Improved physical and mental health and well-being, as students arrive to school energized, better rested and ready to learn.*
- *Safer and stronger communities, as connections and friendships are made while walking, rolling, biking or taking transit to and from school.*
- *Healthier communities, as reduced congestion around school zones is better for pedestrian safety and the environment.*
- *Increased confidence around independent travel, as families develop healthy long-term habits, together.'*

From the webpage, four distinct areas are set out to promote and support sustainable forms of movement:

- *Safe and active travel tips.*
- *Safe routes to school.*
- *Walk, cycle and roll initiatives.*
- *Transit, carpooling and drive-to-5.*

**Bunt Response**. these areas have formed the framework for the Transportation Demand Management Plan and Mobility Plan to manage the replacement school's future transportation movements in a sustainable manner.

## 2.7 TransLink 2050 - 10-Year Priorities for TransLink

From TransLink's 2050 Strategy, two major transit service changes are under development that should benefit the Cloverley Replacement School catchment area, namely the R2 RapidBus extension and Lynn Valley-Lonsdale BRT, with details presented in the following paragraphs.

### 2.7.1 R2 RapidBus Extension

As per TransLink's website, the following description for the R2 RapidBus has been provided:

> *The Metrotown – North Shore rapid transit corridor will connect major destinations, such as Park Royal, Capilano Mall, Lower Lonsdale, Lower Lynn, Burnaby Heights, Brentwood, BCIT, and Metrotown. It will also improve connections to SkyTrain at Brentwood Town Centre on the Millennium Line and Metrotown Station on the Expo Line.*
>
> *In the near term, the R2 Marine Drive RapidBus will be upgraded and extended from Phibbs Exchange to Metrotown, providing a direct express connection from Park Royal. At the same time, a longer-term rapid transit connection will be determined through the Burrard Inlet Rapid Transit Study, which will consider BRT and other rail alternatives.*

The closest R2 bus stops for the replacement school site are situated on 3rd Street East at Ridgeway Avenue, with their proximity to the replacement school site considered in the next section.

### 2.7.2 BRT Lynn Valley/Downtown Lonsdale

As per the Transport 2050 document, the following description is provided on Page 47:

> *Lynn Valley – Downtown/Lonsdale (BRT) Connect Lynn Valley centre in the District of North Vancouver with Lonsdale and potentially, if feasible, all the way to downtown Vancouver via the Lions Gate Bridge with a traffic-separated BRT line featuring dedicated bus lanes and transit signal priority.*

On page 38, this BRT is identified in Years 0 to 5 of the plan.

Routing of the BRT is anticipated to follow the existing Translink bus service #228, with the potential for bus stop locations at the Keith Road East & Queensbury Avenue and/or 3rd Street East & Queensbury Avenue intersections.

# 3. EXISTING CONDITIONS

## 3.1 Introduction

This section documents the existing conditions for pedestrians, cyclists, transit users and vehicles to assess the replacement school site's accessibility by each mode. It will start by presenting the site context, transportation data collection, and street/intersection configurations, and after this, it will consider the accessibility of each mode individually, including identifying gaps & deficiencies within 400 metres of the site that the City of North of Vancouver could prioritize for upgrades.

## 3.2 Site Context

Presented in **Figure 3.1** is the Replacement school's footprint (highlighted red), while the existing building and hardstanding area are located on the western portion of the site. The school site borders Cloverley Street (north side), Kennard Avenue (east side), Shavington Street (south side), and Hendry Avenue (west side). As per the City of North Vancouver's Land Use Designation Plan, the site is identified for 'School & Institutional' use, while the surrounding land uses are designated as Residential Level 1 (Low Density), and also form part of the replacement school's planned catchment area (see **Section 6**).

**Figure 3.1: Cloverley Replacement School Footprint**

On the school site's west boundary, Hendry Avenue is the transition point where the street grid changes from a general east-west orientation to one that is southwest-northeast (responding to the topography

changes in this part of the city). This transition has impacted the connectivity of the local street system adjacent to the school site, which will be covered later in this section.

## 3.3 Transportation Data Collection

Bunt collected multi-modal transportation data (pedestrians, cyclists, vehicles & trucks) for the weekday morning (07:00 to 10:00) and afternoon (14:00 to 17:00) peak periods, noting that the afternoon survey period covers the earlier school peak hour and later street peak hour periods. Data was collected consistent with the study scope provided by the City of North Vancouver. Summarized in **Table 3.1** is the vehicle volume data collection program for the study network, along with peak hour periods identified at each intersection.

**Table 3.1: Data Collection Summary and Peak-Hour Periods**

| # | INTERSECTION | DATE OF COUNT | WEEKDAY PEAK HOUR PERIODS | | |
|---|---|---|---|---|---|
| | | | STREET AM | SCHOOL PM | STREET PM |
| 1 | Queensbury Avenue & Keith Road East | Nov. 10, 2023 | 8:15 – 9:15 | 14:30 - 15:30 | 16:00 - 17:00 |
| 2 | Grand Blvd East & Keith Road East | Nov. 10, 2023 | 8:15 – 9:15 | 14:30 - 15:30 | 16:00 - 17:00 |
| 3 | Hendry Ave & Keith Road East | Nov. 1, 2023 | 8:00 – 9:00 | 15:15 - 16:15 | 15:15 - 16:15 |
| 4/5 | Cloverley Street & Keith Road East (1) | Nov. 10, 2023 | 8:15 – 9:15 | 14:30 - 15:30 | 16:00 - 17:00 |
| 7 | Mountain Hwy & Keith Rd East (2) | Feb. 3, 2021 | 8:00 – 9:00 | 16:15 - 17:15 | 16:15 - 17:15 |
| 8 | Hendry Avenue & Cloverley Street | Nov. 1, 2023 | 7:45 – 8:45 | 15:00 - 16:00 | 15:00 - 16:00 |
| 9 | Kennard Avenue & Cloverley Street | Nov. 1, 2023 | 7:45 – 8:45 | 15:00 - 16:00 | 15:00 - 16:00 |
| 10 | Queensbury Avenue & 5th Street East | Nov. 1, 2023 | 8:15 – 9:15 | 14:30 - 15:30 | 16:00 - 17:00 |
| 11 | Hendry Avenue & 5th Street East | Nov. 1, 2023 | 7:45 – 8:45 | 15:00 - 16:00 | 15:00 - 16:00 |
| 12 | Hendry Avenue & Shavington Street | Nov. 1, 2023 | 7:45 – 8:45 | 14:45 - 15:45 | 14:45 - 15:45 |
| 13 | Shavington Street & Kennard Avenue | Nov. 1, 2023 | 7:45 – 8:45 | 14:30 - 15:30 | 14:30 - 15:30 |
| 14 | Queensbury Avenue & 4th Street East | Nov. 1, 2023 | 8:15 – 9:15 | 16:00 - 17:00 | 16:00 - 17:00 |
| 15 | Hendry Avenue & 4th Street East | Nov. 1, 2023 | 8:15 – 9:15 | 14:45 - 15:45 | 14:45 – 15:45 |
| 16 | Queensbury Avenue & 3rd Street East | Nov. 1, 2023 | 8:15 – 9:15 | 16:00 - 17:00 | 16:00 - 17:00 |
| | | OVERALL STUDY AREA PEAK HOUR | 8:15 – 9:15 | 14:30 - 15:30 | 16:00 - 17:00 |

*Notes: (1) Treated as two separate 'T' intersections; (2) CNV Staff provided Mountain Hwy & Keith Rd East data*

For the operational analysis, the following three weekday peak hour periods will be applied:

- Weekday AM Peak Hour: 08:15 to 09:15
- Weekday PM Peak Hour: 14:30 to 15:30
- Weekday PM Peak Hour: 16:00 to 17:00

For the weekday AM period, the school peak hour and street peak hour will be combined for the analysis work. Vehicle turning volumes at the study network intersections are shown in **Exhibit 3.1**.

## 3.4 Streets & Intersections

### 3.4.1 Overview

The street system surrounding the Cloverley School site forms a fine-grained interconnected network, with the closest arterial (connector) streets located on Keith Road East, Queensbury Avenue, and 3rd Street East. A summary of street characteristics within 400 metres of the replacement school site is presented in **Table 3.2.**

**Table 3.2: Study Network Street Characteristics**

| STREET | CLASSIFI-CATION | TRAVEL LANES | POSTED SPEED | PERMITTED PARKING | ROADWAY WIDTH | SIDE-WALKS | BICYCLE ROUTE | TRAFFIC CALMING |
|---|---|---|---|---|---|---|---|---|
| Cloverley St. | Local | 2 | 50km/h (1) | Both Sides (2) | 8.5m | Both sides | - | Yes |
| Shavington St. | Local | 2 | 50km/h (1) | Both Sides (2) | 8.5m | Both sides | Yes | Yes |
| Kennard Avenue | Local | 2 | 50km/h | Both Sides | 8.5m | None | - | None |
| Hendry Avenue | Local | 2 | 50km/h (1) | Both Sides (2) | 9.0m | East side | Yes | Yes |
| 4th Street East | Local | 2 | 50km/h | Both Sides | 8.5m | Both sides | Yes | Yes |
| 5th Street East | Local | 2 | 50km/h | Both Sides | 8.9m | Both sides | - | Yes |
| Keith Road East | Major Arterial (3) | 2-4 | 50km/h | Limited | 12.5m | Both sides | Yes | n/a |
| Sutherland Ave. | Local | 2 | 50km/h | Both Sides | 9.4m | None | - | None |
| Queensbury Ave. | Minor Arterial (3) | 2 | 50km/h | Limited | 10.0m | Both sides | Yes | n/a |
| | | | | | | | | |

*Notes: (1) & (2) Posted Signage on the boundaries of the existing school for 30km/h on school days (8am-5pm) along with no parking/stopping signs; (3) Described as City or Neighbourhood Connectors in the Mobility Strategy (2022)*

Summarized below are the common street characteristics from this table:

- All streets have a 50km/h speed limit except for the school site fronting streets (Cloverley Street, Hendry Avenue, and Shavington Street, with a posted 30km/h limit on school days).
- Roadway widths on the local streets range between 8.5m to 9.0m, with street parking generally permitted on both sides of the street, except for short sections of Hendry Avenue, Cloverley Street, and Shavington Street, again all fronting the school site.
- Traffic calming in the form of road humps is present on most of the local streets except for the north-south streets of Kennard Avenue and Sutherland Avenue. The existing spacing of road humps will be covered in the Mobility Plan.

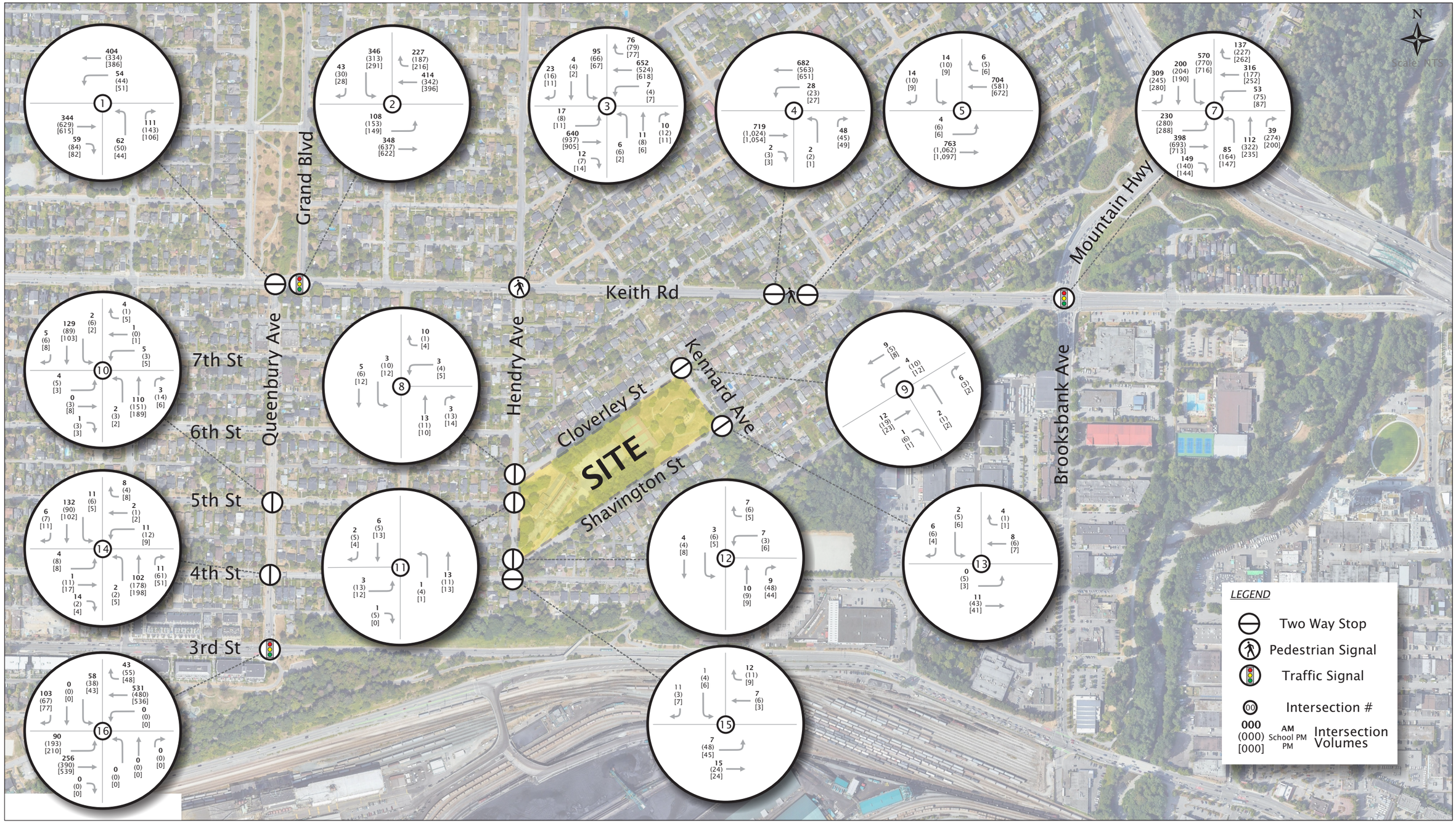



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**Exhibit 3.1**

## Existing Peak Hour Vehicle Traffic Volumes

04-23-0314

Cloverley School
December 2023

bunt & associates

Summarized in **Table 3.3** are the existing two-way vehicle volumes on the study street network, covering the three weekday peak hour periods.

**Table 3.3: Existing Street Volumes Peak Hours**

| STREET SECTION | STREET TYPE | WEEKDAY TWO-WAY VEHICLE VOLUMES PER HOUR | | |
|---|---|---|---|---|
| | | STREET/SCHOOL AM 8:15 - 9:15 | SCHOOL PM 14:30 - 15:30 | STREET PM 16:00 - 17:00 |
| Cloverley Street | Local | 80 | 75 | 80 |
| Shavington Street | Local | 25 | 65 | 60 |
| Kennard Avenue | Local | 15 | 20 | 15 |
| Hendry Avenue | Local | 50 | 65 | 65 |
| 4th Street East | Local | 45 | 95 | 90 |
| 5th Street East | Local | 15 | 25 | 25 |
| Keith Road East | Major Arterial (1) | 1,570 | 1,780 | 1,825 |
| Queensbury Avenue | Minor Arterial (1) | 295 | 355 | 380 |
| | | | | |

*Note: (1) Described as City and Neighbourhood Connectors in the Mobility Strategy (2022)*

As a major arterial route, Keith Road East exhibits the highest vehicle volume during peak hours, with the morning peak hour noticeably lower (by 200 to 300 vehicles per hour) compared to the two weekday PM peak hour periods. As context, the school AM peak hour vehicle volume is typically the higher period of the two, as will be covered in Section 6.

Along the replacement school site's frontages (Cloverley Street, Shavington Street, Kennard Avenue, and Hendry Avenue), the observed volumes were all below 300 vehicles per hour, which is typical for a local residential street. However, as covered in Section 2, vehicle volumes on these streets do increase noticeably when an issue occurs on Highway 1 (Upper levels or Ironworkers Memorial Bridge), and consequently results in extended vehicle queuing on Keith Road East on its approach to the Mountain Highway intersection along with shortcutting from 3rd Street East. This matter will be covered as part of the operational review in Section 7.

### 3.4.2 Intersections

A summary of the study network intersections is presented in **Table 3.4**, covering the form of control and notes on operational and layout features.

**Table 3.4: Study Network Intersection Review**

| # | LOCATION | CONTROL | NOTES ON OPERATIONS AND LAYOUT |
|---|---|---|---|
| 1 | Cloverley Street & Kennard Avenue | Minor Stop | South leg is a greenway |
| 2 | Shavington Street & Kennard Avenue | Minor Stop | Minor stop on Kennard |
| 3 | Hendry Avenue & Shavington Street | Minor Stop | 3-leg intersection offset from 4th Street East |
| 4 | Hendry Avenue & Cloverley Street | Minor Stop | 3-leg intersection offset from 5th & 6th Street East |
| 5 | Hendry Avenue & 4th Street East | Minor Stop | 3-leg intersection offset from Cloverley Street |
| 6 | Hendry Avenue & 5th Street East | Minor Stop | 3-leg intersection - midblock to the school site |
| 7 | Shavington Street & Keith Road East | Minor Stop | Left turn to Shavington St (s) not permitted |
| 8 | Cloverley Street & Keith Road East | Minor Stop | Adjacent to pedestrian-activated signal |
| 9 | Hendry Ave & Keith Road East | Activated Signal | Pedestrian-bicycle activated signal |
| 10 | Grand Boulevard E & Keith Road East | Traffic Signal | Offset from Queensbury Avenue |
| 11 | Keith Road East & Queensbury Avenue | Minor Stop | Straddled between two traffic signals |
| 12 | Queensbury Avenue & 4th Street East | Minor Stop | Minor stops on 4th Street East approaches |
| 13 | Queensbury Avenue & 3rd Street East | Traffic Signal | Greenway connection on south leg |
| 14 | Keith Rd East & Mountain Hwy & Brooksbank Ave | Traffic Signal | Impacted by delays on Highway 1 |
| | | | |

From this table, it is important to highlight the following characteristics:

- The following four intersections have offset alignments that could potentially result in challenges for pedestrian and cycling movements:
    - 4th Street East & Shavington Street.
    - 5th Street East & Cloverley Street.
    - 6th Street East & Cloverley Street.
    - Sections of Cloverley Street north and south of Keith Road East
- All intersections within a 5-minute walk of the replacement school site have minor stop controls, reflecting the low vehicle volume characteristics of the residential streets.
- Hendry Avenue at Keith Road East operates as a pedestrian/cycling activated signal, while a pedestrian signal is located between the offset sections of Cloverley Street on Keith Road East.
- As the Keith Road East/Mountain Highway/Brooksbank Avenue intersection is situated at the northeastern edge of the school's catchment area, its impact from the replacement school's new vehicle movements is not anticipated to be material, as will be clarified in Section 7.

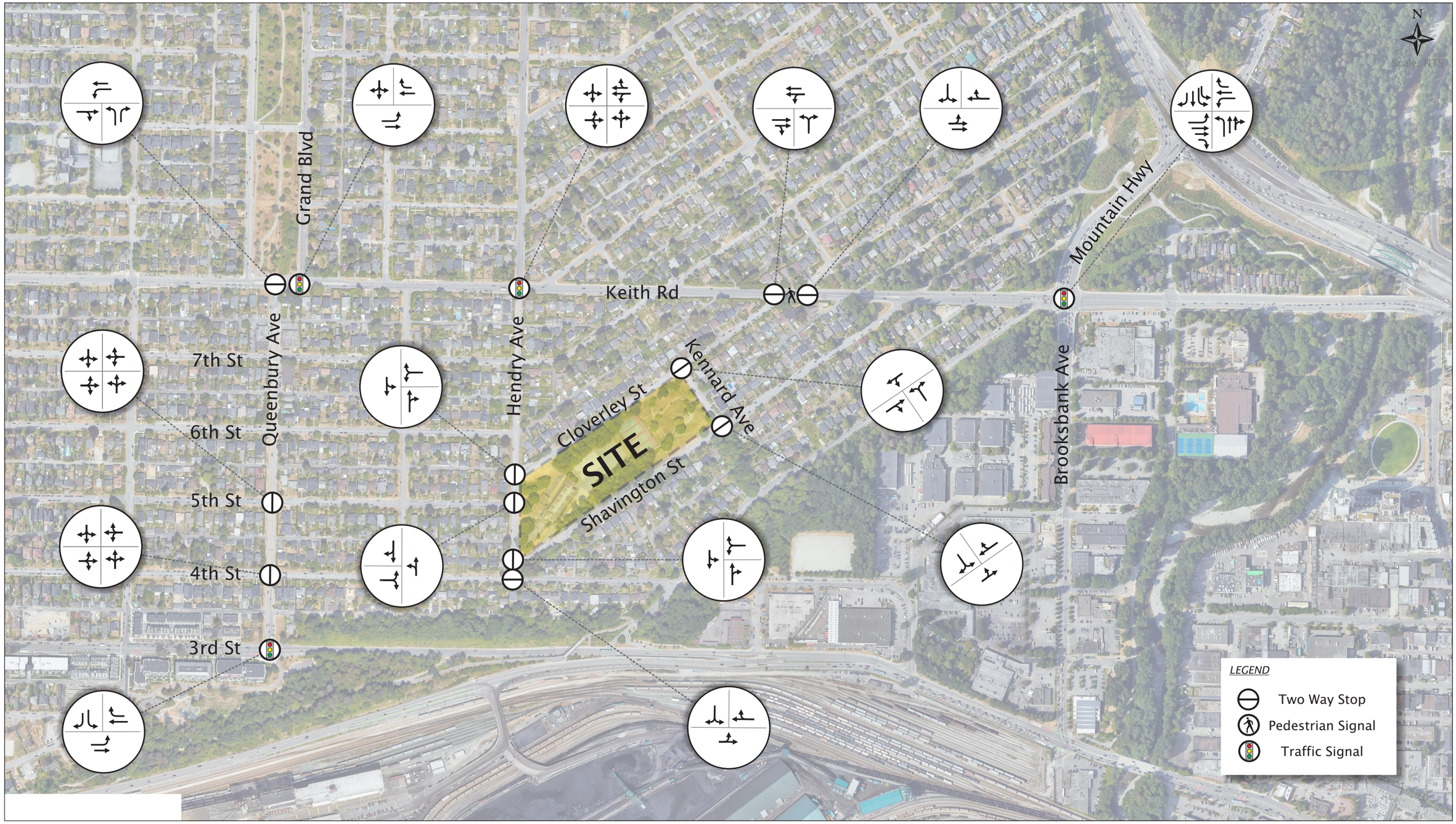


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**Exhibit 3.2**

## Existing Laning & Traffic Controls

04-23-0314

Cloverley School
December 2023

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## 3.5 Pedestrians

### 3.5.1 Overview

As the school's catchment area is predominantly west of Hendry Avenue, the east-west routes along 4th Street East and 5th Street East are anticipated to be the main pedestrian corridors for accessing the school site and, to a lesser extent, 6th Street East. From the north and east, Cloverley Street and Hendry Avenue are anticipated to be the main access routes, especially with the pedestrian-activated controlled crossing facilities available on Keith Road East.

An overview of pedestrian facilities and trails within 400 metres of the school site is summarized in **Table 3.5**, while **Exhibit 3.3** graphically shows the sidewalk coverage and street grades.

**Table 3.5: Pedestrian Facilities Overview**

| STREET | RIGHT OF WAY | ROADWAY WIDTH | GRADE | SIDEWALK LOCATIONS | SIDEWALK WIDTH | BOULE-VARD | SPEED HUMPS |
|---|---|---|---|---|---|---|---|
| Cloverley Street | 20m | 8.5m | 3%-6% | Both Sides | <1.8m | No | Yes |
| Shavington Street | 24.4m | 8.5m | 6%-9% | Both Sides | <1.8m | No | Yes |
| Kennard Avenue | 20m | 8.5m | 12% > | Both Sides | <1.8m | No | none |
| Hendry Avenue | 20m | 9.0m | 9%-12% | East Side | <1.8m | No | Yes |
| Heywood Street | 24.2m | 10.0m | 0%-3% | North Side | <1.8m | No | Yes |
| 4th Street East | 24.4m | 8.5m | 9%-12% | Both Sides | <1.8m | No | Yes |
| 5th Street East | 21.2m | 8.9m | 3%-6% | Both Sides | <1.8m | No | Yes |
| 6th Street East | 21.2m | 8.5m | 3%-6% | Both Sides | <1.8m | No | Yes |
| Sutherland Avenue | 20m | 9.0m | 6%-12% | None | <1.8m | n/a | none |
| Keith Road East | 24.3m | 12.5m | 3%-9% | Both Sides | <1.8m | No | n/a |
| Queensbury Avenue (1) | 20m | 10.0m | 6%-9% | Both Sides | <1.8m | varies | n/a |
| | | | | | | | |

*Note: (1) Described as City and Neighbourhood Connectors in the Mobility Strategy (2022)*

From this table, the following common characteristics have been summarized:

- Sidewalk widths on all streets do not comply with the City of North Vancouver's current local street standard, i.e., 1.8m sidewalk & 1.5m min. boulevard, or 2m sidewalk without boulevard, as per the C195 & C205 documents.
- Streets with the steepest grades are generally north-south orientated (e.g., Kennard Avenue, Hendry Avenue & Sutherland Avenue), and it should be noted that the steepest section of 4th Street East is situated east of Hendry Avenue.
- Kennard Avenue and Sutherland Avenue are the only two local streets with no road humps, while road hump spacing will be covered in the school's Mobility Plan.

The following two off-street trails/greenway are located within 400 metres of the school site:

*Kennard Greenway*. The route extends from Heywood Street (via laneway) to Shavington Street with switchbacks to negotiate the steep grade. Raised crosswalks are located at the greenway's interfaces with Heywood Street and Shavington Street. South of Heywood Avenue, there is a pathway through Sunrise Park that connects to the Industrial Units located at Kennard Avenue & 4th Street East.

*Spirit Trail*. The closest part of the Spirit Trail to the replacement school site is at 4th Street East and Heywood Street. Access to the school site from the Spirit Trail would either be via 4th Street East and Hendry Avenue or the Kennard Avenue greenway (pedestrians only).

The City of North Vancouver has identified Queensbury Avenue as a 'Corridor Special Study Area' in Section 2.8.2 of the Official Community Plan [2014], with the potential to have a greenway linking Ray Perrault Park and the Spirit Trail (over five city blocks). This greenway would also connect with the Green Necklace at Keith Road East and Grand Boulevard.

### 3.5.2 Gaps and Deficiencies

Presented in **Table 3.6** are gaps and deficiencies identified for pedestrian facilities within 400 metres of the school site, while selected photographs are provided in **Appendix C** for reference.

**Table 3.6: Pedestrian Facilities - Gaps and Deficiencies**

| REF | LOCATION | GAP/DEFICIENCY |
|---|---|---|
| Ped-1 | Hendry Avenue, Sutherland Avenue and Heywood Street | No sidewalks available on Hendry Avenue (west side), Sutherland Avenue (both sides) & Heywood Street (south side). |
| Ped-2 | Hendry Avenue, 4th Street East, Shavington Street & 5th Street East | Crosswalks and stop bar painted markings are generally faded/incomplete due to the deteriorated road surface condition. |
| Ped-3 | Shavington Street & Kennard Avenue. | Painted markings on the raised crosswalk are slightly faded. |
| Ped-4 | Heywood Street & Kennard Avenue. | Painted markings on the raised crosswalk are slightly faded, while there is no separation for pedestrians on the laneway section of the greenway. |
| Ped-5 | Cloverley Street & Keith Road East. | On the Cloverley Street northwest approach, the pedestrian crossing distance is excessively long at around 25m while there is no painted crosswalk. |
| Ped-6 | Keith Road East & Cloverley Street (pedestrian-activated signal and bus stops) | Crosswalk markings are faded; connecting sidewalks do not meet the City of North Vancouver's design standard |
| Ped-7 | 5th Street East & Sutherland Avenue. | There is no east-west crosswalk facility. |
| | | |

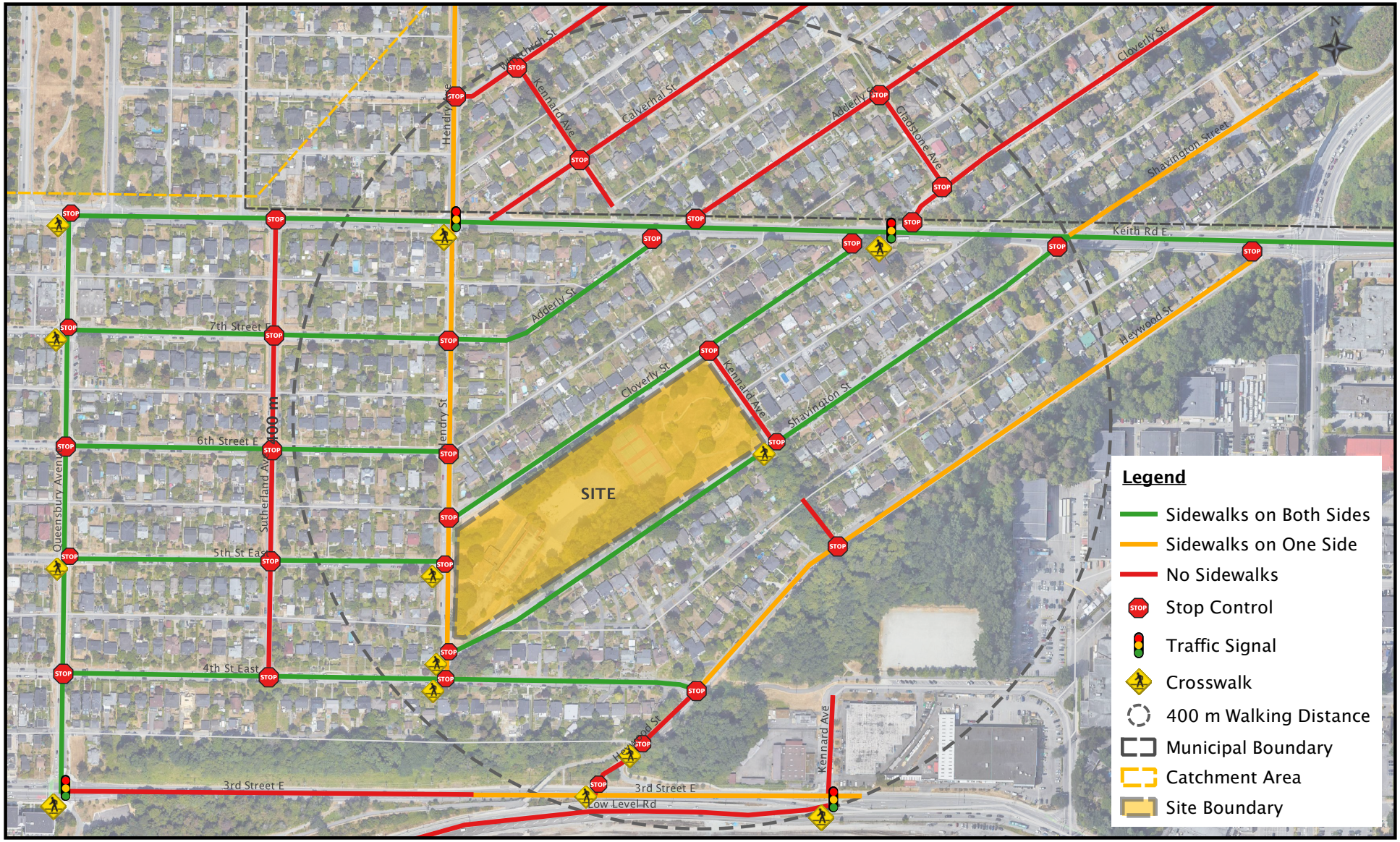


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**Exhibit 3.3**

# Existing Pedestrian Network

Cloverly Elementary School
04-23-0312 February 2024

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## 3.6 Bicycle Routes

### 3.6.1 Overview

The City of North Vancouver's Bicycle Master Plan (2012) was used to identify the bicycle routes and facilities to access the replacement school site together with the City's document 'Priority Corridors for All Ages and Abilities (AAA) Mobility Lanes (November 2019)'. Bicycle route facilities are shown in **Exhibit 3.4**, while details are summarized in **Table 3.7**, covering street type, AAA status, bicycle volume, street grade, and traffic calming.

**Table 3.7: Bicycle Network Overview**

| STREET | STREET TYPE | TYPE OF FACILITY | AAA STATUS [2] | PEAK HOUR BICYCLES [5] | STREET GRADE | TRAFFIC CALMING |
|---|---|---|---|---|---|---|
| Shavington Street [1] | Local | On-street | - | 5 < | 3%-9% | Yes |
| Hendry Avenue [1] | Local | On-street | - | 5 < | 9%-12% | no |
| Heywood Street | Local | On-street | Vision | n/a | 3%-6% | Yes |
| 4th Street East | Local | Sharrow | Vision | 5 < | 3%-6% | Yes |
| Queensbury Avenue | Minor Arterial | Bike Lanes | Vision | 10 | 6%-9% | n/a |
| Keith Road East | Major Arterial | Bike Lanes | Vision/AAA [3] | 5 < | 3%-9% | n/a |
| 3rd Street East | Major Arterial | Bike Lanes | Vision/AAA [4] | n/a | 9%-12% | n/a |
| Spirit Trail | n/a | Paved MUP | AAA | n/a | n/a | n/a |
| | | | | | | |

*Note: (1) identified in the 2012 Bicycle Master Plan; (2) Priority Corridors for All Ages and Abilities (AAA) Mobility Lanes (November 2019); (3) AAA section complete west of Grand Boulevard & Heywood Street to Brooksbank; (4) AAA for sections west of Queensbury and east of Heywood Street; (5) volume for the school AM peak Hour (8:15 to 9:15 AM).*

From this table, it is important to note the following:

- *AAA Network.* The City of North Vancouver's long-term AAA network vision identifies Heywood Street, 4th Street East, Queensbury Avenue, and Keith Road East (short sections complete) within the school catchment area as priority for future upgrades.
- The highest observed bicycle volume was on Queensbury Avenue, at 10 cyclists per hour, while all other streets had less than 5 cyclists per hour.
- The 4th Street East bicycle route (west of Hendry Avenue) is anticipated to be the most desirable for cyclists to access the school site, especially as the catchment area is predominantly to the west, while some cyclists may use 5th Street East and 6th Street as they are low-volume streets.
- As the Hendry Avenue northbound street grade ranges from 9% to 12% (4th Street E to 5th Street E), it will likely be challenging to use for most cyclists unless with an e-bike or other power-assisted devices.

### 3.6.2 Gaps and Deficiencies

Presented in **Table 3.8** are gaps and deficiencies identified for bicycle facilities within 400 metres of the school site, and where selected photographs are provided in Appendix C for reference.

**Table 3.8: Bicycle Facilities - Gaps and Deficiencies**

| REF | LOCATION | GAP/DEFICIENCY |
|---|---|---|
| Cyc-1 | Shavington Street & 4th Street East & Hendry Avenue. | Proximity of intersection spacing makes it challenging to negotiate between each of the streets, especially for less experienced cyclists. |
| Cyc-2 (1) | Queensbury Avenue & 4th Street East. | As the 2012 CNV Bicycle Master Plan identified, cyclists have difficulty travelling east-west on 4th Street East at this intersection. |
| Cyc-3 (1) | Queensbury Avenue & 3rd Street East. | No bicycle lanes on Queensbury Avenue (3rd Street East to rear laneway) |
| Cyc-4 | Hendry Avenue & Keith Road East | No formal bicycle connection to Calverhall Street (north side of Keith Road East), approx. 30m to the east - this would provide a more direct access to the local neighbourhood. |
| | | |

*Note: (1) outside 400m but included for completeness.*


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**Exhibit 3.4**

# Existing Bicycle Network

Cloverly Elementary School
04-23-0312 February 2024

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## 3.7 Transit Network

### 3.7.1 Routes and Bus Stops

TransLink's bus routes operate on Keith Road East (#232, #255), Queensbury Avenue (#228) and 3rd Street East (#R2) within the school catchment area and are shown graphically in **Exhibit 3.5**. Bus frequencies are summarized in **Table 3.9a**, while details on the closest bus stop locations are documented in **Table 3.9b**.

**Table 3.9a: Weekday Bus Service Frequency**

| # | ROUTE EXTENTS | HEADWAY (MIN.) | | | |
|---|---|---|---|---|---|
| | | AM | MID-DAY | PM | EVENING |
| R2 | Marine Dr - Phibbs Exchange | 10 | 15 | 10 | 15 |
| 228 | Lynn Valley – Lonsdale Quay | 15-20 | 30 | 15-20 | 30 |
| 232 | Grouse Mountain - Phibbs Exchange | 30 | 30 | 30 | 30 |
| 255 | Capilano University - Dundarave | 20 | 20 | 20 | 30 |
| | | | | | |

**Table 3.9b: Transit Stops within 800m Walking Distance of Site**

| STOP LOCATION | DIRECTION | STOP # | AMENITY | ROUTES SERVICED | WALKING DISTANCE |
|---|---|---|---|---|---|
| 3rd Street East at Ridgeway Avenue | Westbound | 54149 | No shelter | R2 | 1000m |
| 3rd Street East at Ridgeway Avenue | Eastbound | 53953 | No shelter, bench | R2 | 900m |
| Queensbury Avenue at 5th Avenue | Southbound | 54025 | No shelter, bench | 228 | 600m |
| Queensbury Avenue at 4th Avenue | Northbound | 54172 | No shelter | 228 | 600m |
| Keith Road East at Cloverley Street | Westbound | 54338 | No shelter | 232, 255 | 300m |
| Keith Road East at Cloverley Street | Eastbound | 54327 | No shelter | 232, 255 | 300m |
| | | | | | |

As mentioned in the previous section, TransLink's 2050 identifies the extension of the R2 Route to Metrotown and Bus Rapid Transit from Lynn Valley to Downtown Lonsdale (potentially operating on Queensbury Avenue).

### 3.7.2 Gaps and Deficiencies

Presented in **Table 3.10** are gaps and deficiencies identified for bus stop facilities with photographs provided in Appendix C for the Keith Road East location (Bus-3).

**Table 3.10: Bus Facilities - Gaps and Deficiencies**

| REF | ROUTE | LOCATION | GAP/DEFICIENCY |
|---|---|---|---|
| Bus-1 | R2 | 3rd Street East. | As closest bus stops are at Ridgeway Avenue, it results in a walking distance of over 800 metres to the replacement school site |
| Bus-2 | 228 | Queensbury Avenue | No bus shelter at waiting facilities, while the crossing of 4th Street East at Queensbury Avenue is difficult (highlighted earlier) |
| Bus-3 | 232, 255 | Keith Road East | Narrow sidewalks and limited width available to access the bus stop waiting areas along with no shelter provided |
| | | | |

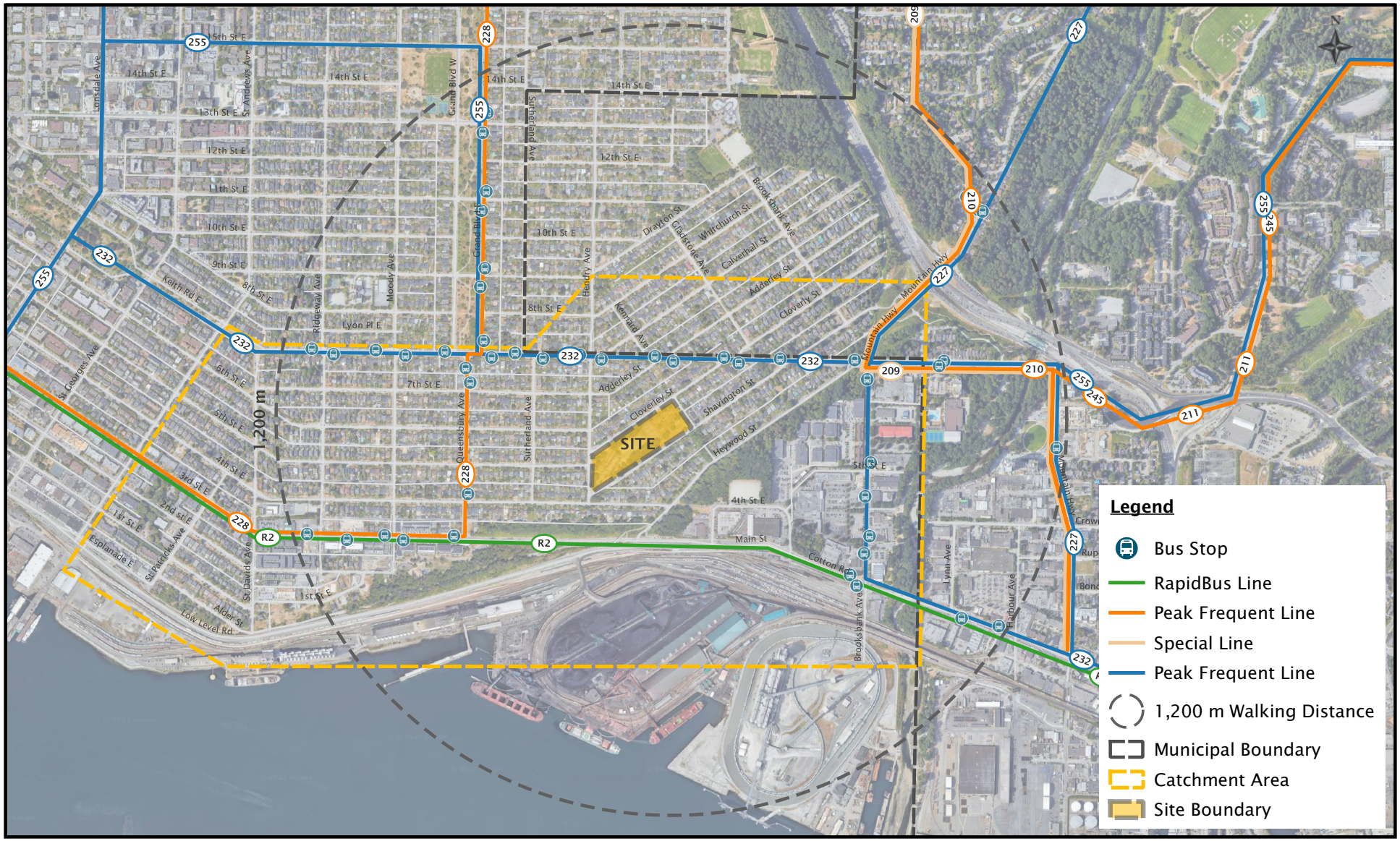


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**Exhibit 3.5**

# Existing Transit Network

Cloverly Elementary School
04-23-0312 December 2023

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## 3.8 Existing Parking Supply & Demand

Street parking demand data was collected for the weekday morning (07:30 to 08:30) and weekday afternoon (14:30 to 15:30) periods to estimate the supply available during the school's peak operations. Survey results are summarized in **Table 3.11** on the assumption that the existing restrictions (on school days) are removed on Cloverley Street, Shavington Street, and Hendry Avenue.

**Table 3.11: Parking Supply and Peak Demand**

| STREET | SECTION | POTENTIAL SPACES [1] | | AM PEAK DEMAND | | PM PEAK DEMAND | |
|---|---|---|---|---|---|---|---|
| **East-West Orientated Streets** | | N/Side | S/Side | N/Side | S/Side | N/Side | S/Side |
| Cloverley Street | Hendry-Kennard | 35 | 35 [2] | 14 | 1 | 9 | 1 |
| | Kennard-Keith Road E | 20 | 20 | 6 | 12 | 10 | 10 |
| Shavington Street | Hendry-Kennard | 50 [2] | 50 | 6 | 15 | 6 | 18 |
| | Kennard- Keith Road E. | 40 | 40 | 11 | 19 | 6 | 15 |
| Heywood Street | 4th Street E- Kennard | 13 | 60 | 12 | 13 | 2 | 6 |
| | Kennard- Keith Road E | 19 | 35 | 2 | 5 | 11 | 13 |
| 4th Street East | Sutherland-Hendry | 20 | 20 | 8 | 8 | 8 | 11 |
| | Hendry-Heywood | 30 | 30 | 8 | 15 | 7 | 11 |
| 5th Street East | Sutherland-Hendry | 20 | 20 | 8 | 3 | 6 | 4 |
| 6th Street East | Sutherland-Hendry | 20 | 20 | 9 | 7 | 6 | 5 |
| **North-South Orientated Streets** | | W/Side | E/Side | W/Side | E/Side | W/Side | E/Side |
| Kennard Avenue | Cloverley-Shavington | 10 | 10 | 1 | 1 | 1 | 1 |
| Hendry Avenue | Shavington- 5th Street E | 5 | 5 [2] | 2 | 0 | 2 | 0 |
| | 5th Street E – 6th Street E | 10 | 10 | 0 | 0 | 0 | 0 |
| | | | | | | | |

*Note: (1) Assumes 6.7m in length per parked vehicle while numbers were rounded down to be conservative; (2) Assumes the no stopping zones (school days only) are removed in the front of the existing school site.*

Summarized below are the key points of note from the parking survey:

- On the section of Cloverley Street (south side) between Hendry and Kennard, only 1 vehicle was observed parked during the survey periods, while there is parking capacity for up to 35 vehicles.
- On the section of Shavington Street (north side) between Hendry and Kennard, 6 vehicles were observed parked during the survey periods, while there is parking capacity for up to 50 vehicles.
- Parking occupancy on 4th Street East, 5th Street East and 6th Street East (Sutherland to Hendry) were all observed to be below 50% during the study periods.
- On the park side of Heywood Street (4th Street East to Kennard Avenue), 13 vehicles were observed parked while there is capacity for up to 35 vehicles.

# 4. REPLACEMENT SCHOOL SITE PLAN REVIEW

## 4.1 Introduction

This section reviews the Cloverley Replacement School site plan, covering the school location and program, multi-modal site access, and parking and loading requirements, while the next section will cover the proposed treatment of the street frontages with Cloverley Street, Kennard Avenue, Shavington Street, and Hendry Avenue as part of the Mobility Plan together with presenting the proposed Transportation Demand Management Plan initiatives to manage student and staff demands. Section 6 presents the multi-modal analysis of the school's projected peak hour demands based on the school's proposed catchment area.

## 4.2 School Location

Development of the existing school site will be challenging from a transportation perspective, particularly with the offset intersections at Hendry Avenue (as described in Section 2) along with the steep site grades at the Cloverley Street frontage. With the new school building located on the eastern part of the site, it will allow for the new school's pick up/drop off activities to occur away from Hendry Avenue's offset intersections along with the development of an advisory circulatory system to efficiently manage the arrival and departure of parents/guardians, as will be set out in Section 5.

## 4.3 School Program

Summarized in **Table 4.1** is the Cloverley Replacement School's program plan, as provided by DA Architects + Planners, while the school site layout is presented in **Exhibit 4.1**.

**Table 4.1: Cloverley Elementary Replacement School - Program Plan**

| COMPONENT | STUDENTS | ROOMS | FLOOR AREA | STAFF |
|---|---|---|---|---|
| Elementary Kindergarten (K1) | 60 | 3 | 4,120m² | 70 (1) |
| Elementary (Grades 1 to 7) | 525 | 21 | | |
| Child Care Use | 37 | n/a | 390m² | 4 |
| Neighbourhood Learning Centre | n/a | 2 | 330m² | - |
| **TOTALS** | **622** | | **4,840m²** | **74** |

*Note: (1) estimated by Bunt based on student/child to staff ratios at existing facilities although the School District has indicated that this number could be lower*

From a transportation demand perspective, the elementary school's 585 students (Kindergarten + Grades 1 to 7) are anticipated to generate the highest pick up/drop off demand, while the Child Care use (capacity for 37 children) would be modest in comparison along with having different peak operating times. As the Neighbourhood Learning Centre (NLC) is a relatively new Provincial requirement, no background data was available to assess its expected transportation demands; however, the preliminary guidance received indicates that its operations are not expected to overlap with the elementary school's peak pick up/drop off demand periods.

Consistent with other schools in the North Vancouver School District, the Elementary School's start and finish times adopted for the study are as follows:

- Start Time: 08:50
- Finish Time: 15:00

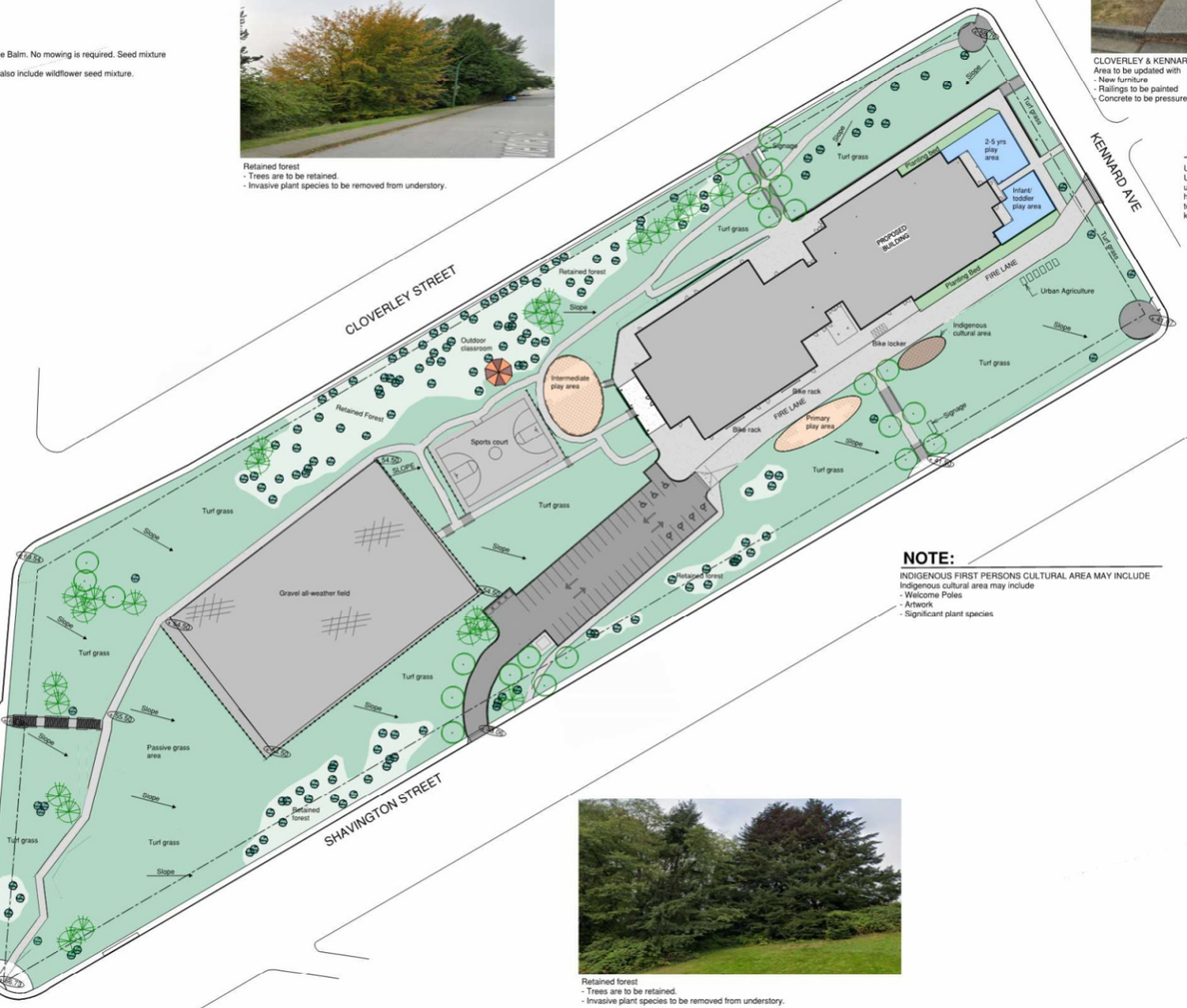
Operating times for a Child Care use are typically the weekday periods from 07:00 to 18:00, while pick up/drop off arrival and departure patterns would be more evenly spread compared to the elementary school, as will be demonstrated in Section 6.

## LEGEND

- Retained forest
  - All invasive species to be removed from understory plantings.
- **Turf grass**
  - Active play areas to be seeded with chafer beetle resistant seed mixture.
  - Slopes greater than 1:3 are to be seeded with alternative to turf mixture, i.e. Bee Balm. No mowing is required. Seed mixture contains early pollinator species.
  - Transition zones between retained forest and turf grass or within understory to also include wildflower seed mixture.
- Hard surface pathways
- Gravel all-weather field
- Child care play area
  - Fall surfacing to be poured-in-place rubber
- Children's play area
  - Fall surfacing to be engineered wood fibre
- Existing tree
- Proposed replacement deciduous tree
- Proposed replacement coniferous tree



Retained forest
- Trees are to be retained.
- Invasive plant species to be removed from understory.




CLOVERLEY & KENNARD
Area to be updated with
- New furniture
- Railings to be painted
- Concrete to be pressured washed

### NOTE:

Urban Agriculture
Urban agricultural opportunities connect children to the land and cultivate a greater understanding of environmental issues. By providing students opportunities to grow and harvest their own food (e.g., herbs, vegetables, berries, etc.), students will be encouraged to eat healthy food and make positive lifestyle changes. Students will also increase their knowledge around healthy eating and sustainable agricultural practices.

SHAVINGTON & KENNARD
Area to be updated with
- New furniture
- Railings to be painted
- Existing path will be closed
- Concrete to be pressured washed

### NOTE:

INDIGENOUS FIRST PERSONS CULTURAL AREA MAY INCLUDE
Indigenous cultural area may include
- Welcome Poles
- Artwork
- Significant plant species

### NOTE:

Passive grass area (potential uses may include)
- Children's play area
- Tennis
- Pickleball
- Skateboarding
- Bike track
- People watching



Retained forest
- Trees are to be retained.
- Invasive plant species to be removed from understory.

N

Scale: NTS

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**Exhibit 4.1**
# School Site Layout

04-23-0314

Cloverley School
February 2024

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## 4.4 Multi-Modal Site Access

### 4.4.1 Pedestrians and Cyclists

The elementary school's main entrance is centrally located within the new building with direct pedestrian access from Shavington Street, Cloverley Street or Kennard Avenue. The development of pathway and stairway alignments to the school's entrance will address site grade changes, particularly as Cloverley Street is on a higher elevation and Shavington Street is on a lower elevation, relative to the new building.

Sidewalk upgrades are being considered along the school site's frontages with the aim to meet the City of North Vancouver's standard; however, the site grades and tree retention needs make this challenging to achieve at certain sections of the site, and as such, it may not be feasible to provide.

Bunt will work with the project team to investigate the feasibility of providing a Multi-Use Path (MUP) for walking, rolling, and cycling between Hendry Avenue and the school building entrance, with the aim to have a grade change no higher than 5% to comply with universal accessibility requirements. This MUP will benefit parents/guardians/students arriving from 4th Street East, 5th Street East and 6th Street East, with a comfortable and convenient connection from Hendry Avenue to walk, roll, or cycle, to the school entrance.

However, like the sidewalk upgrade, there are several challenges which need to be addressed to see if a MUP is feasible, namely site grades, accommodating sports facilities, tree retention, etc. Should an MUP through the school site not be feasible, an alternative location to consider would be along the north side of Shavington Street, but even here, it will require careful consideration as site grades and tree retention remain design factors to address.

Consideration will also be given to providing a portion of the short-term bicycle parking at the Cloverley Street and Shavington Street site frontages, given the site grade changes relative to the building entrance. Bicycle parking at the street edge would allow parents/guardians to walk students to the school's entrance with their bicycles safely secured (the design should be sufficient to accommodate bicycle trailers).

### 4.4.2 Vehicles

Access to vehicle parking, HandyDart and service vehicle loading will be from Shavington Street, with the parking layout oriented to minimize the grade. The parking layout will be capable of accommodating all service vehicle turning movements on-site (i.e., without reversing onto a public street).

For fire truck access, vehicles would enter from Shavington Street via the car park to access the front of the school building and then exit to Kennard Avenue, or if needed, they can enter from Kennard Avenue and exit to Shavington Street. The provision of bollards, or similar treatment, would stop other vehicle types from accessing the pedestrian zone at the front of the school building that would function as a play area/gathering space.

## 4.5 Zoning Bylaw (No. 6800) Review

### 4.5.1 Vehicle Parking

Vehicle parking requirements for the elementary school program have been based on the City of North Vancouver's Zoning Bylaw, as set out in **Table 4.2**. For the Elementary school and Child Care uses, a minimum of 36 vehicle parking spaces will be required, while 38 spaces are provided, including 2 accessible and 4 accessible temporary spaces. Vehicle parking supply is considered in Section 6 in the context of the projected peak demand.

**Table 4.2: Vehicle Parking Minimum Zoning Bylaw (Figure 9-3)**

| COMPONENT | CLASSROOMS | FLOOR AREA | RATE | MINIMUM REQUIRED | PROVIDED |
|---|---|---|---|---|---|
| Elementary School<br>Kindergarten | 24 | 4120m² | 1.25 spaces per classroom | 30 | 38 |
| Child Care use | n/a | 390m² | 1 space per 115m² | 3 | |
| NLC | n/a | 330m² | 1 space per 115m² | 3 | |
| | | | TOTALS | 36 | 38 |

### 4.5.2 Bicycle Parking

Secure and short-stay bicycle parking rates from the Zoning Bylaw have been based on 'Civic and Assembly' use, as Elementary use is not covered. Civic use requirements are set out in **Table 4.3** for the school building's total 4,840m² gross floor area, confirming 48 bicycle spaces are required; however, the secure-to-short-term space ratio would be around 1.5 while the staff-to-student ratio would be much higher at around 8.5.

**Table 4.3: Bicycle Parking – Zoning Bylaw (Figure 10A-02)**

| TYPE | FLOOR AREA | CITY OF NORTH VANCOUVER ZONING BYLAW | | DISTRICT OF NORTH VANCOUVER POLICY | PROVIDED |
|---|---|---|---|---|---|
| Secure | 4,840 m² | 1 space per 250 m² GFA | 19 spaces | 5 spaces | 10 spaces |
| Short-Term | | 6 spaces per 1000 m² GFA | 29 spaces | 5 to 48* spaces | 40 spaces |
| | TOTALS | | 48 SPACES | | 50 SPACES |

Note (*): The rate for secondary schools is 1 space per 100 m² or 48 spaces.

To better understand the secure-to-short-term bicycle supply ratio, the District of North Vancouver's 'Bicycle Parking and End-of-Trip Facilities Policy' was considered with the requirements presented in Table 4.3, noting Class 1 is referred to as long-term/secure, and Class 2 as short-term/transient. The rate for secure bicycle parking is 1 space per 1,000 m² or 5 spaces, and short-term is the same for elementary schools but higher for secondary schools at 1 space per 100 m² or 48 spaces.

Given the above it is proposed, therefore, to rebalance the overall supply with 10 secure spaces and 40 short-term spaces, resulting in an overall provision of 50 spaces, or 2 above the City of North Vancouver's Zoning Bylaw total requirement. This balance of secure/short-term bicycle parking supply is anticipated to

be better aligned with the elementary school requirements, while the spaces can also be shared with the Child Care use (which has no specific requirement).

Secure bicycle parking is planned to be accommodated in bicycle storage lockers, while short-term spaces would be located close to the main entrance with weather protection along with a portion located at the street edges (as discussed earlier).

### 4.5.3 Service Vehicle Loading

Similarly, the 'civic use' land use in the Zoning Bylaw (Part 10) has been applied to determine the service vehicle loading requirement for the school, and this is presented in **Table 4.4.**

**Table 4.4: Service Vehicle Loading – Zoning Bylaw (Part 10)**

| VEHICLE TYPE | FLOOR AREA | BYLAW RATE | REQUIRED | PROVIDED |
|---|---|---|---|---|
| SU9 Sized Truck | 4,840 $m^2$ | 1 space per 1,393.5 $m^2$ GFA | 3 | 1 |
| | | | | |

Application of the civic use indicates a requirement for three service vehicle loading spaces; however, this is inconsistent with an elementary school's operational needs. It is planned, therefore, to provide one service vehicle loading space, and to support this position, a rationale has been presented in the following paragraphs.

Civic use from the Zoning Bylaw (Part 10) is described as *'an Industrial, Commercial or Civic Use [building] involving the movement of goods and materials by vehicles'*, and as such, it is not considered relevant for an elementary school's operation. Furthermore, Part 2 of the Zoning Bylaw broadens 'civic use' to *'federal, provincial, and municipal offices and yards, schools, colleges, public hospitals, community centres, recreational facilities, public theatres, libraries, museums*….'. Again, these uses are not considered an appropriate representation for an elementary school's service vehicle loading demands.

Based on feedback received on other school projects, an elementary school loading activity is generally low with the only regular demand coming from mail deliveries (FedEx or Purolator, typically once or twice per day), while school supply deliveries typically occur once or twice per year unless there is a specific delivery need.

As per the Zoning Bylaw, the planned service vehicle loading space will have the dimensions of 2.743m width (9 feet) and 9.144m length (30 feet), i.e., sufficient to accommodate a Single-Unit 9 truck size. This space would be shared with the HandyDART bus, with the times of use managed to avoid coinciding with service vehicle deliveries.

Garbage/recycling collection arrangements will be consistent with other sites in School District 44.

# 5. SCHOOL TRAFFIC MANAGEMENT PLANS

## 5.1 Introduction

This section presents the Cloverley Replacement School's following two management plans:

- The Mobility Plan is to manage the school's pick up/drop off peak demands and ensure sufficient infrastructure is in place to make sure it is accessible by all modes.
- The Transportation Demand Management (TDM) Plan will entail initiatives for staff and students to access the school by active modes and transit.

These plans will draw upon policy and planning guidance from Section 2, best-practice initiatives from other North Vancouver School District schools, and Bunt's experience from schools within the Metro Vancouver Area. They would be developed in partnership with the North Vancouver School District and the City of North Vancouver staff members to ensure they address the school's needs for the opening year, although implementing some of the local street infrastructure upgrades is expected to occur beyond the opening year.

## 5.2 Mobility Plan

The Mobility Plan (MP) presented in this section sets out the proposed management arrangements for the anticipated school demands on the fronting streets, covering student pick up/drop off circulation and parking, while priorities to upgrade to the local street and intersection network within 400 metres of the school site have been presented based on the existing conditions review from Section 2.

### 5.2.1 Student Pick Up/Drop Off Circulation

Pick up/drop off activity is planned to primarily occur on Shavington Street and Cloverley Street, while Kennard Avenue is proposed to have a 'no stopping' zone (school side), given its grade is greater than 12%. Hendry Avenue has limited space for pick up/drop off but could be used for 'drive to 5' parking.

To manage inbound and outbound pick up/drop off vehicle movements, an 'advisory' clockwise circulation pattern for parents/guardians is proposed, with Cloverley Street providing eastbound access (towards Kennard Avenue) and Shavington Street providing westbound access (towards Hendry Avenue). Summarized in **Table 5.1** are details of the proposed pick up/drop off vehicle access and circulation arrangements and which are shown graphically in **Exhibit 5.1**.

**Table 5.1: Proposed Pick Up/Drop Off Vehicle Access & Circulation**

| APPROACH DIRECTION | ADVISORY ACCESS ROUTE | ADVISORY EGRESS ROUTE |
|---|---|---|
| Keith Rd East (West of Hendry Ave) | Hendry Ave (south) to Cloverley St. | Shavington St to 4th Street |
| Keith Rd East (East of Hendry Ave) | Hendry Ave (south) to Cloverley St. | Cloverley Street |
| 3rd Street East/Queensbury Avenue | 5th Street East/6th Street East to Cloverley St. | Shavington St to 4th Street |
| | | |


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**Exhibit 5.1**
## Mobility Plan

04-23-0314

Cloverley School
December 2023

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The proposed advisory clockwise circulation system would focus pick up/drop off activity at the school site's frontages and discourage parking in front of residential properties. At the start of each school year, the school will communicate pick up/drop off protocols to parents/guardians to ensure compliance and remind them of the importance of being a 'good neighbour'.

### 5.2.2 Student Pick Up/Drop Off Parking

A provisional layout for pick up/drop off parking zones has been developed with the available capacity for each zone at the school site's frontages, as summarized in **Table 5.2.**

**Table 5.2: Provisional Pick Up/Drop Off Parking Zones at the School Site's Frontages**

| ZONE TYPE | STREET SECTION | PROPOSED ZONE LENGTH | PARKING CAPACITY (1) | DESCRIPTION |
|---|---|---|---|---|
| No Stopping | Kennard Avenue | n/a | n/a | Restricted due to grade greater than 12% |
| No Waiting | Cloverley Street | 50m | 6 spaces | Closest street section to stairway |
| | Shavington Street | 50m | 6 spaces | Closest street section to stairway |
| 5-minute Wait | Cloverley Street | 60m | 9 spaces | Either side of no waiting zones |
| | Shavington Street | 140m | 20 spaces | Either side of no waiting zones |
| Unrestricted | Cloverley Street | 250m | 20 spaces | Hendry Avenue to 5-min wait zone |
| | Shavington Street | 200m | 24 spaces | Hendry Avenue to 5-min wait zone |
| Drive to 5-min | Hendry Avenue | 55m | 4 spaces | Park on east side |
| | Heywood Street | 55m | 12 spaces | Park on south side - use Kennard Greenway |
| | | | | |

*Note: (1) 6.7m assumed for length of a parallel space, consistent with Zoning Bylaw Figure 9-2*

Shavington Street is anticipated to be the focus for pick up/drop off activity given its visual connectivity with the school entrance, although Cloverley Street may be more convenient for some parents/guardians to access the school. In addition, two 'drive to five' zones are proposed, one on Hendry Avenue (east side) and the other on Heywood Street (park side), to encourage parents/guardians to park and walk (consistent with the School District's policies). Covered in Section 6 will be the analysis of the school's projected pick up/drop off parking demand for the weekday AM start and PM finish times.

### 5.2.3 Fronting Street Intersections

Summarized in **Table 5.3** are preliminary suggested changes at each intersection fronting the school site to support pick up/drop off access.

**Table 5.3: Proposed Intersection Changes**

| INTERSECTION | PROPOSED CHANGES |
|---|---|
| Cloverley Street & Kennard Avenue | New Crosswalk on the Kennard Avenue leg |
| Shavington Street & Kennard Avenue | New Crosswalk on the Kennard Ave. leg, retain existing raised crosswalk on west leg |
| Hendry Avenue & Shavington Street | See discussion in Section 5.2.4 for options recommended to be considered |
| Hendry Avenue & 5th Street East | Provide crosswalks on all approaches, consider an all ways stop control |
| Hendry Avenue & Cloverley Street | New crosswalk on east leg (Cloverley Street) |
| | |

**Figure 5.1** presents an example of the treatment options (markings, posts) for the intersections fronting Cloverley School (the location shown is Moody Street & 9th Street East, Ridgeway Elementary School).

**Figure 5.1: Example of a School Intersection Treatment**

### 5.2.4 Hendry Avenue at 4th Street East & Shavington Street

The close spacing at Hendry Avenue's intersections with 4th Street East and Shavington Street (approximately 20 metres) results in a challenging environment for people to walk, roll or cycle, especially with the need to accommodate all the vehicle turning movements. To simplify the current intersection layouts, Bunt will explore with the City of North Vancouver staff the following options for Hendry Avenue:

A. Full Closure (4th Street E. to Shavington Street).

B. One-way southbound (Shavington Street to 4th Street E.).

C. One-way northbound (4th Street E to 5th Street E.).

An example of a full road closure can be seen in **Figure 5.2** for the treatment of Heather Street close to West 14th Avenue within the City of Vancouver. This closure is close to two intersections and a laneway, while Ecole Saint-Sacrament is located just to the south. As temporary barriers are installed in this example, they can be removed should it result in any unforeseen challenges.

Alternatively, and less impactful to vehicle circulation, would be to make Hendry Avenue one-way southbound (Shavington Street to 4th Street East) or one-way northbound, with the latter option potentially extended to 5th Street East.

**Figure 5.2: Heather Street & 14th Avenue, City of Vancouver**


Even though all these options will impact neighbourhood vehicle traffic circulation (quantified in Section 7), they do, however, provide the following potential benefits:

- Removes vehicle movements on the 4th Street East bicycle route, especially between Hendry Avenue and Sutherland Avenue.
- Reduces vehicle turning movements at these intersections to create a more comfortable environment for walking, rolling, and cycling.
- Additional space can be allocated to the sidewalk and cycling activities on Hendry Avenue, especially between 4th Street East and Shavington Street (limited space currently).
- Hendry Avenue could have a dedicated bicycle lane from 4th Street East to 5th Street East with the one-way northbound option, noting the street grade of 12%.

Preference at this stage is to have Hendry Avenue one-way southbound (Shavington Street to 4th Street East) as it allows drivers arriving from the west to access the pick up/drop off zones via 5th Street East, 6th Street East or Keith Road East and then exit via 4th Street East. This option would also reduce school vehicle movements at the 5th Street East and Hendry Avenue intersection, given that it is anticipated to be an important school crossing point for active modes.

### 5.2.5 Fronting Street Improvements

Outlined in the following paragraphs are school-specific treatments to support the school's multi-modal access arrangements.

#### Signage

Implementation of 'school warning' signs on Cloverley Street and Shavington Street, consistent with the approach applied at the neighbouring schools of Ridgeway Elementary and Queen Mary Elementary, along with perhaps the use of 'SLOW' markings.

#### Traffic Calming

As speed hump spacing on Cloverley Street and Shavington Street is approximately 120 metres, it is recommended that this be reduced to 45 to 75 metres. This spacing is consistent with that applied on Mahon Avenue (fronting St Edmunds Elementary School) along with the sections of 5th Street East, 6th Street East and 7th Street East (between Sutherland Avenue and Hendry Avenue).

Along with lowering vehicle speeds, the reduced speed hump spacing should assist in discouraging shortcut vehicle movements through the neighbourhood when there are queuing delays on Keith Road East (i.e., beyond Hendry Avenue).

#### 30 KM/H Speed Limit

Permanent 30km/h posted speed limits are recommended for the sections of Cloverley Street, Shavington Street, Kennard Avenue and Hendry Avenue that front the school site, consistent with the fronting streets at Ridgeway Elementary and Queen Mary Elementary schools. This approach is also consistent with the City of North Vancouver's Mobility Strategy (2022), see Section 2, which advocates the introduction of 30 km/h zones on local streets.

### 5.2.6 Options for Streets & Intersections within 400 metres of the School Site

As per Section 2 of the study, gaps and deficiencies were identified within 400 metres of the site and the following presents potential priorities:

#### Bus Stops on Keith Street East at Cloverley Street

Investigate the potential to provide a wider sidewalk (1.8m) plus a boulevard (1.5m min.) to improve access to the bus stops and pedestrian-activated signal. Reducing the crossing distance on Cloverley Street (north approach) would also increase the space allocated to pedestrians. Widening sidewalks at this location do present certain challenges due to trees, hedges, and grades, along with the extension of residential gardens into the right-of-way.

#### Sidewalk Upgrades

Several challenges exist (grades, tree retention, resident's extended gardens, etc.) to upgrade sidewalks to the City of North Vancouver's design standard and perhaps an interim option would be to have a 2.0m

wide sidewalk (without a boulevard) until fronting property redevelopment occurs. Priority should be given to upgrade the following sidewalks:

- North Sidewalk: 4th Street East (Queensbury Avenue to Hendry Avenue).
- South Sidewalk: 5th Street East from Queensbury Avenue to Hendry Avenue).
- East Sidewalk: Hendry Avenue (Cloverley Street to Keith Road East).
- South Sidewalk: Cloverley Street (Kennard Avenue to Keith Road East).

## 5.3 Transportation Demand Management

### 5.3.1 Introduction

The preliminary Cloverley Replacement School's Transportation Demand Management (TDM) Plan has been developed based on best-practice initiatives adopted within the North Vancouver School District's schools, including Ridgeway Elementary and Queen Mary Elementary. Bunt has also applied initiatives adopted by other schools within the Metro Vancouver area, although it is worth noting that the North Vancouver School District has one of the most proactive approaches to promoting and supporting active modes and transit use.

Even though the TDM initiatives presented in this section are high level, they hopefully provide a strong indication at this stage of the North Vancouver School District's commitment to encouraging sustainable forms of travel, for the well-being of students and staff, together with lowering the Cloverley Replacement School's future carbon footprint.

### 5.3.2 Staff

*Cycling to Work.* Actively promote the benefits for staff to cycle to work along with providing secure bicycle storage lockers for convenient access to the school and displaying a cycle map and guidance on the facilities available in a prominent location (e.g., staff room).

*Walk/roll/run/cycle to Work*. Actively encourage staff to walk/run/roll/cycle to work along with providing end-of-trip facilities, e.g., access to a shower, clothes locker space, a place to dry clothes, toolkit and bench, etc.

*Ride-share.* Develop an incentive program for staff to ride-share, such as preferential parking location for willing participants, along with the broader benefits of lowering commuting costs.

*e-bicycle charging facility*. As part of the secure bicycle parking facility, ensure electric power outlets are conveniently available.

*Car Charging Facilities.* Ensure all vehicle parking spaces (other than short-term use) will have the potential for future access to the Level 2 Charging facility, while two spaces are currently planned to have Level 2 charging (including one accessible).

*Emergency ride home*. for staff who walk, cycle, use transit, or ride share and need to return home for an emergency, put in place an emergency ride home system.

### 5.3.3 Students


*Walking School Bus*. brings students together to regularly walk to/from school under the supervision of a designated adult leader.

*Bike to School*. Engage HUB for their Bike to School program that offers courses and activities for Grades 3 and up.

*Locker Storage*. Provide lockers to allow students to store skateboards, scooters, rollerblades, etc.

*Promote Public transit*. Through the BC Province's Get on Board program, children aged 12 and under can use TransLink services free of charge.

*Drive to Five*. Encourage parents/guardians to park on either Heywood Street (park side) or Hendry Avenue (school side) to either walk or drop off school students with the benefit of enhancing social engagement and health benefits for the first, or last, 5 minutes of the journey.

*Carpooling*. Facilitate students from different family groups to travel to school together, reducing the cost and time burden for guardians/parents, along with lowering the pick up/drop off activity adjacent to the school. To support this initiative, the school can prepare a map each year of areas/blocks where students reside (focused on 1,200 metres or more from school) to identify opportunities for carpooling with neighbours.

### 5.3.4 Student Engagement & Events

*Cool routes to school program* (Ridgeway Elementary). It is recommended that the school undertake a similar type of engagement with student leaders to champion the benefits of active modes, ride sharing, and transit use, particularly for the social, physical, and mental health benefits.


*TravelSmart*. Invite TransLink's TravelSmart Group to the school (preferably early in the first year of operation) to explain the benefits of active transportation at the community and national level, with a particular focus on the environment and health benefits, and perhaps engage students with new innovative forms of sustainable transportation options, e.g., autonomous

electric vehicles, micro-mobility. call-on-demand services, etc. that are changing the way people move around.

*Bike to School Week.* Participate in Bike to School Week, which is an annual celebration to encourage students of all ages to bike, roll, or walk to school.

### 5.3.5 Communication & Monitoring

*School Start-up Messaging.* As a replacement school welcoming students to the site for the first time in over a decade, Safe and Active Travel messaging and resources will be embedded within the start-up/opening information provided to the school community.

*Point of Contact*. Cloverley School will identify a staff champion of safe and active travel as a point of contact for the school community to connect with and guide them through the school's TDM Plan each academic year. Responsibilities could entail reporting the condition of end-of-trip facilities, crosswalk/sidewalk facilities causing challenges for parents/students, pick up/drop off issues with neighbours and, more generally, promoting active forms of travel to reduce the number of vehicle movements generated on a typical school day. The City of North Vancouver staff can liaise as necessary with the point of contact should issues arise.

*Mode Survey.* Conduct an annual staff and student travel mode survey (for the first 3 years) to assess how it compares with the targets set at the planning stage and whether additional effort will be required.

*Webpage.* Cloverley Replacement School is planned to have a dedicated webpage on their site focused on sustainable transportation options, benefits of walking/rolling/cycling, pick up/drop off management, safe routes to school, etc., and it will also have links to other webpages to highlight best practices.

# 6. MULTI-MODAL TRIP GENERATION PROJECTIONS

## 6.1 Introduction

This section sets out the Cloverley Replacement School's multi-modal projections for walk, cycle, transit, carpool, and car trips, covering the study's three peak hour periods. It focuses on the elementary school and Child Care uses as the Neighbourhood Learning Facility's transportation demands are not anticipated to coincide with the elementary school's peak hour operations.

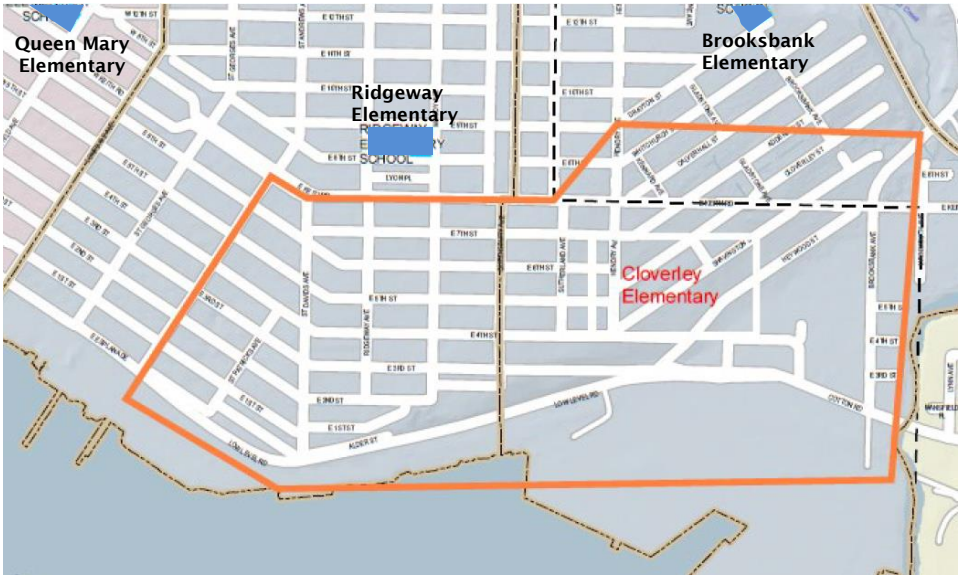
The first step for the projections is to understand the origin of students within the catchment area, as it will highlight the potential walking (rolling), cycling, and transit use, which can then be compared with patterns observed at neighbouring schools. The mode share will then be used to generate the transportation projections for the replacement school to assess street parking capacity and on-site parking supply for vehicles and bicycles, along with the operational review of the study network intersections, as covered in Section 7.

## 6.2 Elementary School

### 6.2.1 Catchment

Students within the Cloverley Replacement School's catchment area predominantly travel to Ridgeway Elementary and Brooksbank Elementary schools and, to a lesser extent, elementary schools such as Queen Mary, Larson, Queensbury, etc. The school catchment area is shown in **Figure 6.1**, along with the neighbouring catchment borders for Queen Mary, Ridgeway, and Brooksbank.

**Figure 6.1: Cloverley Replacement School Catchment**



The North Vancouver School District provided data on the location of existing elementary students within the Cloverley School's proposed catchment area, with **Exhibit 6.1** showing it aggregated into seven distinct zones. Each zone will help capture the direction and travel distance to the school site.

Anticipated student growth has been identified to occur in Zones A, B, C and D, and to a lesser extent in Zone E, based on the City of North Vancouver's Land Use Map, while it has been assumed that 12% of students would reside from outside the catchment (proportion estimated from travel distances at Queen Mary Elementary and Ridgeway Elementary schools).

Overall, approximately 70% of students are anticipated to originate from zones west of the replacement school site (i.e., west of Hendry Avenue), while 25% would be from zones within 400 metres of the school site. From this data, it was possible to estimate travel distances from each zone using 400-metre increments (equivalent to a 5-minute walk or 1 to 2-minute cycle), as summarized in **Table 6.1**.

**Table 6.1: Travel Distances by Zone**

| ZONE | STUDENTS | PROPORTION | 400m < | 400-800m | 800-1200m | 1200-1600m | 1600m > |
|---|---|---|---|---|---|---|---|
| A | 144 | 25% | 0 | 0 | 0 | 115 | 29 |
| B | 87 | 15% | 0 | 0 | 0 | 87 | 0 |
| C | 64 | 11% | 19 | 45 | 0 | 0 | 0 |
| D | 79 | 13% | 0 | 12 | 55 | 12 | 0 |
| E | 44 | 8% | 35 | 9 | 0 | 0 | 0 |
| F | 63 | 11% | 63 | 0 | 0 | 0 | 0 |
| G | 36 | 6% | 32 | 4 | 0 | 0 | 0 |
| External | 68 | 12% | 0 | 0 | 0 | 0 | 68 |
| TOTALS | 585 | 100% | 150 (26%) | 69 (12%) | 55 (9%) | 214 (36%) | 97 (17%) |

As can be seen, approximately 50% of students are projected to be within a 15-minute walk distance of the replacement school site, while **Table 6.2** presents a comparison of the travel distances with previously collected data at Ridgeway Elementary and Queen Mary Elementary schools.

**Table 6.2: Travel Distance Summary**

| SCHOOL | 400M < | 400m – 1600m | 1600M > |
|---|---|---|---|
| Cloverley | **26%** | 57% | 17% |
| Ridgeway | **28%** (1) | 43% | 20% |
| Queen Mary | **34%** (1) | 47% | 29% |
| | | | |

*Note: (1) Ridgeway and Queen Mary used 500m for this grouping*

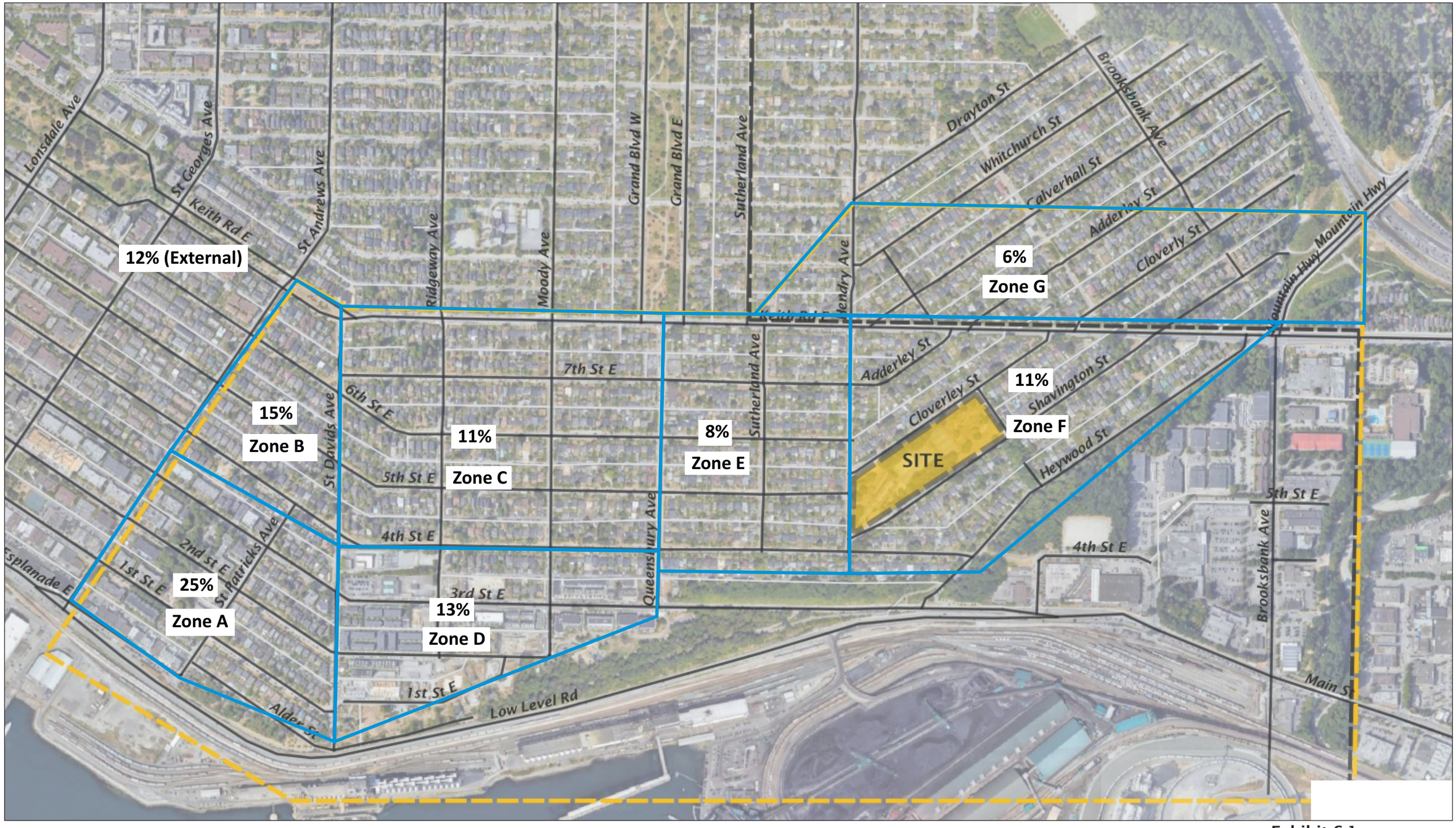



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**Exhibit 6.1**

## Catchment Area Zones

Cloverley School

04-23-0314 December 2023

bunt & associates

Cloverley Replacement School is anticipated to have a walk proportion closer to Queen Mary Elementary than Ridgeway Elementary as around 83% of students would be within 1600m, or 20-minute walk, while the equivalent cycling travel time would be less than 10 minutes. Conversely, a reduced travel distance could impact the Cloverley Replacement School's transit mode share as it would likely not be a practical option for journeys of less than 3 km, after bus wait times and time to/from bus stops are factored in.

### 6.2.2 Existing Trips

For the intersection operational analysis in the next section, it is worth noting that **approximately 65% of the students within the Cloverley catchment area** (based on the data provided) **are already travelling on the study network to North Vancouver School District schools**. This proportion will provide important context for the intersection operational analysis in the next section, especially at the Keith Road East & Mountain Highway & Brooksbank Avenue intersection.

## 6.3 Travel Mode

### 6.3.1 Elementary School

Travel mode share data was collected by the North Vancouver School District ('Hand Up' Survey in November 2023) at the Queen Mary Elementary and Ridgeway Elementary schools. A summary of the mode share data collected at each school has been summarized in **Table 6.3** along with the proposed projections for the Cloverley Replacement School.

**Table 6.3: Elementary Student Mode Share Projection**

| MODE OF TRAVEL | QUEEN MARY ELEMENTARY | | RIDGEWAY ELEMENTARY | | CLOVERLEY ELEMENTARY [1] | |
|---|---|---|---|---|---|---|
| | AM | PM | AM | PM | AM | PM |
| Car (Passenger) | 44% | 36% | 55% | 49% | 46% | 40% |
| Carpool | n/a | n/a | n/a | n/a | 4% | 3% |
| Walk | 52% | 58% | 37% | 45% | 43% | 51% |
| Cycle [2] | 4% | 5% | 1% | 1% | 3% | 3% |
| Transit | 1% | 1% | 7% | 4% | 4% | 3% |
| TOTAL | 100% | 100% | 100% | 100% | 100% | 100% |

*Note: (1) Projection falls within Queen Mary and Ridgeway Schools; (2) cycling participation is typically lower in November (time of survey) due to weather and light condition.*

For the replacement school, the travel mode share is anticipated to fall closer to Queen Mary Elementary School based on the expected travel distances for students (see Table 6.1), together with the strong east-west street connectivity to the school site, particularly along the residential streets of 4th Street East, 5th Street East and 6th Street East.

As noted in the table, the cycling mode share is probably low as the survey was conducted in November 2023, reflecting how students departed the school the day before and arrived on the morning of the survey. To gauge the influence of weather, St. Edmund's Elementary School's 'Safe and Active Routes to School Action Plan 2019' document included a survey showing 20% of the respondents indicated that

weather had an influence on their mode choice. It is, therefore, likely that cycling to/from school is probably higher during the months of September, October, March, April, May & June, but for the purposes of the study, the November mode share has been applied.

Car passenger and carpool travel modes have been separated for Cloverley Elementary School as this breakdown was not identified in the 'hands up' school survey (November 2023). The carpool proportion was, therefore, based on previously collected data within the North Vancouver School District (7 schools in the morning peak, 5 schools in the afternoon peak), which indicated carpooling typically accounts for 4% to 5% of school trips. Therefore, the proposed 3% to 4% carpooling for Cloverley Elementary School can be considered conservative.

Mode share projections for staff have been based on a similar approach, where staff survey data was collected at Queen Mary Elementary and Ridgeway Elementary schools (November 2023). This is presented in **Table 6.4**, along with Cloverley Elementary's projected mode share, which is anticipated to fall somewhere between the two schools and would be supported by the proposed TDM initiatives (see previous section). Please note the previous comment on the cycle mode share.

**Table 6.4: Elementary School Staff Mode Share**

| MODE OF TRAVEL | QUEEN MARY ELEMENTARY | | RIDGEWAY ELEMENTARY | | CLOVERLEY ELEMENTARY (1) | |
|---|---|---|---|---|---|---|
| | AM | PM | AM | PM | AM | PM |
| Car | 55% | 55% | 88% | 88% | 71% | 71% |
| Carpool | 7% | 7% | 4% | 2% | 6% | 5% |
| Transit | 5% | 2% | 2% | 0% | 3% | 1% |
| Cycle (2) | 2% | 2% | 2% | 2% | 2% | 2% |
| Walk | 31% | 33% | 4% | 8% | 17% | 21% |
| TOTAL | 100% | 100% | 100% | 100% | 100% | 100% |

*Note: (1) Projection falls within Queen Mary and Ridgeway Schools (2) cycling participation is typically lower in November (time of survey) due to weather and light condition.*

### 6.3.2 Child Care Use

For the Child Care use, Bunt reviewed travel mode data collected at facilities located in the City of Coquitlam, and from this data, it highlighted that the type of facility, size and location all had a noticeable influence on the mode share. **Table 6.5** shows the proposed child and staff travel mode for Child Care use, noting that the proportion of car use is appreciably higher when compared to the elementary school, and probably reflective of the reduced travel options for this age group.

**Table 6.5: Projected Mode Share Projections for the Child Care Use**

| MODE OF TRAVEL | CHILD | | STAFF | |
|---|---|---|---|---|
| | AM | PM | AM | PM |
| Car | 75% | 75% | 62% | 62% |
| Carpool | 5% | 5% | 5% | 5% |
| Transit | 4% | 4% | 5% | 5% |
| Cycle | 2% | 2% | 3% | 3% |
| Walk | 14% | 14% | 25% | 25% |
| TOTAL | 100% | 100% | 100% | 100% |

## 6.4 Trip Generation

### 6.4.1 Person Trip Rates

Person trip generation rates were obtained from the ITE Trip Generation Manual 11th Edition (ITE), where the elementary school land use Code #520 was applied, while for the Child Care land use Code #565 was applied.

The morning peak hour period was based on an 08:50 school start time, generally coinciding with the street peak hour period of 08:15 to 09:15 hours, while for the afternoon period, two peak hour periods were identified, one for the school peak period between 14:30 and 15:30 hours (based on a dismissal at 15:00), and the other for the street peak hour period between 16:00 and 17:00 hours.

Presented in **Table 6.6a** are elementary school person trip rates from the ITE Trip Generation Manual and then broken down by student and staff movements.

**Table 6.6a: Projected Person Trips (Two-way) Cloverley Replacement School (585 Students)**

| PEAK HOUR GENERATOR | ITE PERSON TRIP RATE | PERSON TRIPS | STAFF TRIPS | STUDENT TRIPS |
|---|---|---|---|---|
| Street/School Weekday AM | 1.68 | 983 | 56 | 927 |
| School Weekday PM | 1.56 | 913 | 56 | 857 |
| Street Weekday PM | 0.36 | 210 | 14 | 196 |
| | | | | |

Staff trip movements were calculated based on a 'first principle' approach on the assumption that 80% of these trips occur during the school peak hour periods while the other 20% of trips would occur outside the main pick up/drop off peak hour period. For the afternoon period, it was conservatively assumed that 20% of the staff trips would occur in the period 16:00 to 17:00 for the operational analysis.

As ITE currently has no person trip rates for Child Care use, the vehicle trip rates from Code #565 were applied instead and then converted to person trip rates based on the assumption that 90% of the observed movements are by car, as is typical for ITE's US-centric data (essentially covers suburban locations with limited infrastructure for active modes and transit). The Child Care use's person trip rate calculation is

presented in **Table 6.6b** with the same peak hour time periods adopted as the elementary school. For the school's weekday afternoon PM peak hour, the trip rate had to be estimated as no data was available given this period is outside the Child Care use's main operating periods.

**Table 6.6b: Total Person Trips (Two-way) Child Care Use**

| PEAK HOUR GENERATOR | VEHICLE RATE | PERSON TRIP RATE | PERSON TRIPS |
|---|---|---|---|
| Street/School Weekday AM | 0.79 | 0.88 | 32 |
| School Weekday PM | 0.08 (1) | 0.09 | 3 |
| Street Weekday PM | 0.81 | 0.90 | 33 |
| | | | |

*Note: (1) estimate to cover the elementary school finish afternoon peak hour*

### 6.4.2 Directional Profiles

As ITE Code #520 Land Use for an elementary school does not provide inbound/outbound directional split for person trips, this has therefore been derived from a 'first principle' approach using the ITE's vehicle directional split combined with estimates for carpool and active + transit trips along with using local data where possible. Summarized in **Table 6.7a** are the projected direction splits for the Elementary School pick up/drop off movements, grouped by car, carpool, and active + transit modes.

**Table 6.7a: Elementary School Pick Up/Drop Off Directional Movements**

| PEAK HOUR GENERATOR | CAR | | CARPOOL | | ACTIVE + TRANSIT | |
|---|---|---|---|---|---|---|
| | INBOUND | OUTBOUND | INBOUND | OUTBOUND | INBOUND | OUTBOUND |
| Street/School Weekday AM | 52% | 48% | 100% | 0% | 60% | 40% |
| School Weekday PM | 48% | 52% | 0% | 100% | 40% | 60% |
| Street Weekday PM | 48% | 52% | 0% | 100% | 40% | 60% |
| | | | | | | |

For carpool, there would be no return trip as 100% of occupants would be drop-off at the school as the vehicle trip would already be accounted for within the car mode share, while the active + transit mode accounts for some students travelling unaccompanied by a parent/guardian and hence the trip terminates at the school. Note, the morning outbound and afternoon inbound trips are essentially based on parent/guardian movements not entering the school building and, therefore, would continue their journey after the pick up/drop off activity is complete.

As the staff movements are predominately inbound in the morning and outbound in the afternoon peak hour periods, an inbound proportion of 90% was applied, while the 10% outbound trips could account for carpooling, staff members with external meetings and /or personnel appointments, etc.

**Table 6.7b: Elementary School Staff Directional Movements**

| PEAK HOUR GENERATOR | INBOUND (%) | OUTBOUND (%) |
|---|---|---|
| Street/School Weekday AM | 90% | 10% |
| School Weekday PM | 10% | 90% |
| Street Weekday PM | 10% | 90% |
| | | |

Directional movements for the Child Care use have been based on the ITE Land Use Code #565, with the breakdown summarized in **Table 6.7c**.

**Table 6.7c: Child Care Use Directional Movements**

| PEAK HOUR GENERATOR | INBOUND (%) | OUTBOUND (%) |
|---|---|---|
| Street/School Weekday AM | 53% | 47% |
| School Weekday PM | 47% | 53% |
| Street Weekday PM | 47% | 53% |
| | | |

### 6.4.3 Multi-Modal Trip Projections

Combining the planned mode share with the person trip projections and directional split, **Tables 6.8a**, **6.8b**, **6.8c** and **6.8d** summarize the projected transportation movements (by mode) for the elementary school pick up/drop off and staff movements, Child Care Use movements, and total projected movements, for each of the study peak hour periods.

**Table 6.8a: Elementary School Projected Pick Up/Drop Off Movements**

| MODE | AM SCHOOL PEAK HOUR | | | PM SCHOOL PEAK HOUR | | | PM STREET PEAK HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | In | Out | Total | In | Out | Total | In | Out | Total |
| Car | 222 | 205 | 426 | 164 | 178 | 343 | 38 | 41 | 78 |
| Carpool | 37 | 0 | 37 | 0 | 26 | 26 | 0 | 6 | 6 |
| Walk | 239 | 159 | 399 | 175 | 262 | 437 | 40 | 60 | 100 |
| Cycle | 17 | 11 | 28 | 10 | 15 | 26 | 2 | 4 | 6 |
| Transit | 22 | 15 | 37 | 10 | 15 | 26 | 2 | 4 | 6 |
| **Total** | **537** | **390** | **927** | **360** | **497** | **857** | **82** | **114** | **196** |

**Table 6.8b: Elementary School Projected Staff Movements**

| MODE | AM SCHOOL PEAK HOUR | | | PM SCHOOL PEAK HOUR | | | PM STREET PEAK HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | In | Out | Total | In | Out | Total | In | Out | Total |
| Car | 36 | 4 | 40 | 4 | 36 | 40 | 1 | 9 | 10 |
| Carpool | 3 | 0 | 3 | 0 | 3 | 3 | 0 | 1 | 1 |
| Walk | 9 | 1 | 10 | 1 | 11 | 12 | 0 | 3 | 3 |
| Cycle | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| Transit | 2 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 |
| **Total** | **50** | **6** | **56** | **6** | **50** | **56** | **1** | **13** | **14** |

**Table 6.8c: Child Care Use Projected Movements**

| MODE | AM SCHOOL PEAK HOUR | | | PM SCHOOL PEAK HOUR | | | PM STREET PEAK HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | In | Out | Total | In | Out | Total | In | Out | Total |
| Car | 13 | 11 | 24 | 1 | 1 | 2 | 12 | 13 | 25 |
| Carpool | 1 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 2 |
| Walk | 2 | 2 | 5 | 0 | 0 | 0 | 2 | 2 | 5 |
| Cycle | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Transit | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 |
| **Total** | **17** | **15** | **32** | **2** | **1** | **3** | **16** | **18** | **33** |

**Table 6.8d: Elementary School + Child Care Use Total Projected Movements**

| MODE | AM SCHOOL PEAK HOUR | | | PM SCHOOL PEAK HOUR | | | PM STREET PEAK HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | In | Out | Total | In | Out | Total | In | Out | Total |
| Car | 270 | 220 | 490 | 170 | 215 | 385 | 50 | 63 | 113 |
| Carpool | 41 | 1 | 42 | 0 | 28 | 29 | 1 | 7 | 8 |
| Walk | 251 | 163 | 413 | 176 | 273 | 449 | 42 | 65 | 107 |
| Cycle | 18 | 12 | 30 | 10 | 16 | 27 | 3 | 4 | 7 |
| Transit | 24 | 15 | 40 | 11 | 16 | 27 | 3 | 4 | 7 |
| **Total** | **604** | **411** | **1015** | **367** | **549** | **916** | **99** | **144** | **243** |

From these projections, it is important to note the following patterns:

- Car and walk pick-up/drop off movements are projected to be the dominant travel modes for the peak hour periods and, therefore, are reviewed in more detail in the next part of this section.
- As the PM street peak hour demand is projected to be lower than the school peak hour periods, the impact on the study network operations is expected to be less, as will be covered more in the following section.
- The projected Child Care Use movements are low compared to the elementary school's peak hour demands but have been included for completeness in the study.

### 6.4.4 Pick Up/Drop Off Profile Review

As school pick up/drop off demand peaks close to the start time in the morning AM period, and likewise for the finish time in the afternoon PM period, a more detailed analysis of the demand profile was conducted through the development of a 5-minute incremental profile during each of the school peak hour periods. To develop the 5-minute demand profile, the observed demand proportions from Vancouver College (K to Grade 12) in the City of Vancouver were applied to the hourly projections from Tables 6a and 6c.

**Figures 6.3a** and **6.3b** present the resultant weekday morning AM peak hour inbound profiles for vehicles and pedestrians, respectively, with school pick up/drop off, school staff, and Child Care use trips identified separately. Please note, the periods applied slightly differ from the school AM peak hour; however, the purpose of this exercise is to highlight how the demand changes over 5-minute increments.

**Figure 6.3a: AM Peak Hour School Vehicle Inbound Profile**

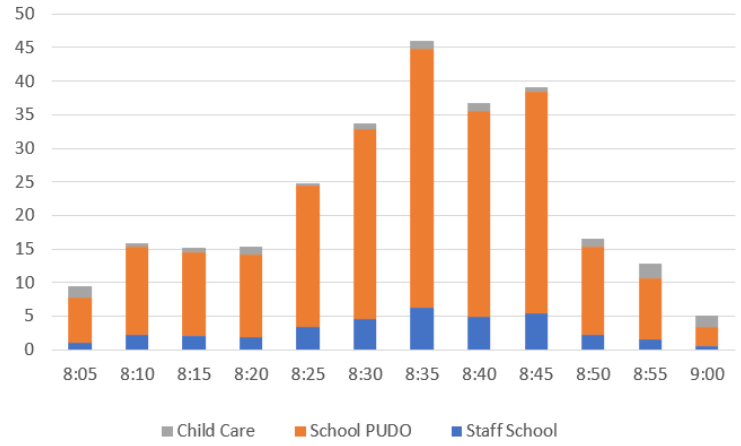
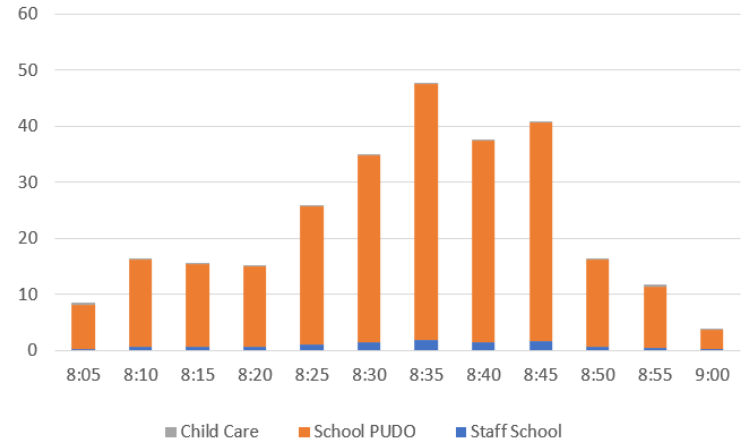



**Figure 6.3b: AM Peak Hour School Pedestrian Inbound Profile**




As evident, the peak 5-minute inbound demand is projected to be around 45 vehicles (08:35) while the peak 15-minute peak would be from 08:35 to 08:50 hours with around 45% of total demand occurring in that time frame. Note that the Child Care Use portion represents a conservatively high estimate during the peak hour period for the purpose of analysis, as School District 44 staff have indicated that the child care program and arrival of children would begin before 8:00 AM.

Similarly, **Figures 6.4a** and **6.4b** present the weekday afternoon peak hour outbound profiles for vehicles and pedestrians, respectively, identifying the school pick up/drop off, school staff, and Child Care use trips.

**Figure 6.4a: Weekday PM Peak Hour Outbound Vehicle School Profile**

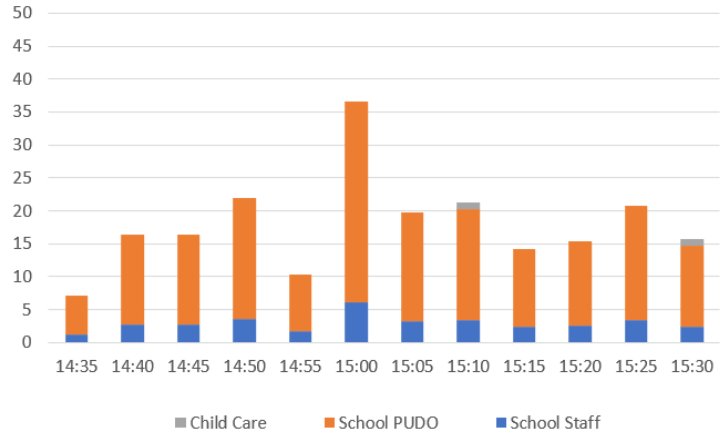
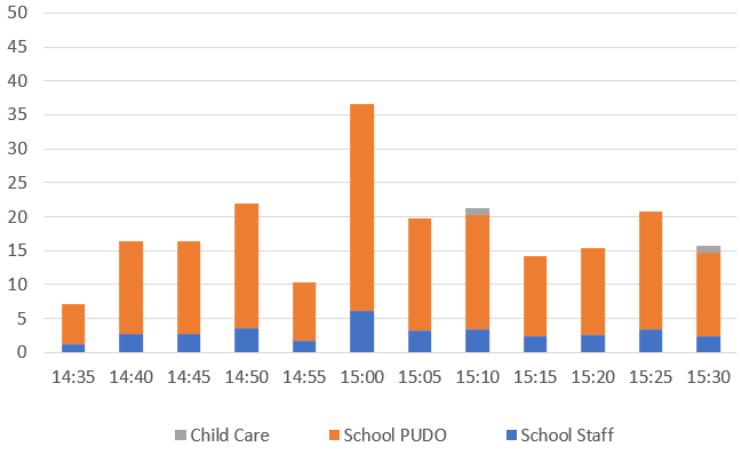



**Figure 6.4b: Weekday AM Peak Hour Inbound Vehicle School Profile**




As can be seen, the PM outbound demand profiles for vehicles and pedestrians are more evenly spread when compared to the morning AM inbound profile, and indeed, only one of the 5-minute periods (15:00) has a noticeably higher demand compared to the other periods. This reaffirms that the morning peak hour is projected to be the more critical period for the school's impact on the study network.

## 6.5 Parking Demand

### 6.5.1 Pick Up/Drop Off

Assessing pick up/drop off parking demand at schools is challenging as some parents/guardians only stop briefly to drop off a student, e.g., within the 'no parking' zone, or use the 5-minute wait zone, or park for longer to escort the student into the school and/or socialize with other parents/guardians. Each school has their own unique parking demand characteristics, depending on mode share, availability of pick up/drop off curbside space, school bus programs, etc.

Therefore, to estimate the peak parking demand for the Cloverley Replacement School, vehicle parking rates (per student) were developed from previously collected data at other schools within the North Vancouver School District. Resultant vehicle parking demand trip rates (per student) are presented in **Table 6.9** and were adjusted to account for school enrolment and car mode share.

**Table 6.9: Peak 15-minute Parking Demand Rates (Four Schools)**

| | CAPILANO | HIGHLANDS | CANYON HEIGHTS | LYNN VALLEY | AVERAGE |
|---|---|---|---|---|---|
| Car Driver | 42% | 40% | 30% | 50% | 41% |
| Students | 470 | 430 | 400 | 376 | 419 |
| SCHOOL AM PEAK HOUR | | | | | |
| 8:15 | 0.03 | 0.06 | 0.11 | 0.02 | 0.05 |
| 8:30 | 0.05 | 0.13 | 0.42 | 0.02 | 0.15 |
| 8;45 | 0.11 | 0.10 | 0.17 | 0.18 | 0.14 |
| 9:00 | 0.07 | 0.01 | 0.04 | 0.10 | 0.05 |
| SCHOOL PM PEAK HOUR | | | | | |
| 14;30 | 0.12 | 0.12 | 0.08 | 0.04 | 0.09 |
| 14:45 | 0.10 | 0.16 | 0.19 | 0.21 | 0.16 |
| 15:00 | 0.21 | 0.20 | 0.09 | 0.11 | 0.15 |
| 15:15 | 0.11 | 0.06 | 0.07 | 0.06 | 0.07 |
| | | | | | |

As shown, peak parking demand occurs in the school's PM peak hour period, with parking demand rates of up to 0.16 vehicles parking per student. For Cloverley Replacement School's 585 students, it would equate to a peak peaking demand of around **61 spaces** (383 vehicles [Table 6.8] x 0.16), while there would be sufficient capacity to accommodate up to 85 parked vehicles on Cloverley Street and Shavington Street (excludes Kennard Avenue & Hendry Avenue), while other opportunities to park can be provided, including on Heywood Street (park side) to encourage 'drive to five'.

Projected parking demand for each mode is summarized in **Table 6.10**, and this exercise confirms that the supply for vehicles and bicycles can accommodate the peak demands.

**Table 6.10: Projected Parking Demand for Vehicles and Bicycles**

| | PARKING TYPE | PROJECTED PEAK OCCUPANCY | SUPPLY | SOURCE |
|---|---|---|---|---|
| Students | Vehicle | 61 spaces | 85 spaces | 0.16 demand rate |
| | Bicycle | 6 to 17 [(1)] spaces | 40 spaces | Table 6.8a [(2)] |
| Staff | Vehicle | 36 spaces | 38 spaces | Table 6.8a [(2)] |
| | Bicycle | 1 to 3 spaces [(3)] | 10 spaces | Table 6.8a |
| | | | | |

*Notes: (1) includes parent/guardian short term parking; (2) estimate from subtracting AM Peak Hour arrival and departure volume. (3) data group small and could vary depending on participation/TDM*

For the vehicle pick up/drop off movements, the projected peak 15-minute demand is for 61 spaces occupied, which is well within the 85 parking spaces available on Cloverley Street and Shavington Street (see Table 3.11). For staff parking, the demand is indicated to be lower by 2 spaces than the supply; however, it should be noted that it includes 4 accessible temporary spaces.

As covered earlier, bicycle parking demand is from a November survey, with demand projected to be higher for warmer/brighter months during the school year. Therefore, the 40 short term spaces planned for student use would essentially accommodate more than double the November's observed demand. Similarly, there is sufficient secure bicycle storage capacity to accommodate three times the number of staff members commuting by bicycle.

# 7. OPERATIONAL ANALYSIS

## 7.1 Introduction

This section presents the traffic modelling analysis for the study network intersections to gauge whether there are existing operational challenges and, for future design years, to understand the incremental impact of the replacement school plan's new vehicle movements and whether mitigation measures are required. The modelling analysis will focus on the weekday AM morning and PM afternoon (school) peak hour periods with the following scenarios covered:

- Existing Conditions.
- Background (without school development) 2026 Conditions.
- Total (with school development) 2026 Conditions.

Before presenting and discussing the operational analysis results, it is important to first confirm the performance thresholds and analysis assumptions in the following paragraphs.

## 7.2 Performance Thresholds

The existing operations of study area intersections and access points were assessed using the methods outlined in the 2000 Highway Capacity Manual (HCM), using the Synchro 11 analysis software (Build 0). Compared to HCM 2010, HCM 2000 calculations generate operational results for a broader range of intersections, particularly those with non-standard signal timing. Bunt determined that HCM 2010 analysis would be unable to generate complete operational results for most of the signalized intersections within the study area. For the best evaluation of operational results, HCM 2000 was used as the preferred traffic modelling platform for the study.

The traffic operations were assessed using the performance measures of Level of Service (LOS) and volume-to-capacity (V/C) ratio. The LOS rating is based on average vehicle delay and ranges from "A" to "F" based on the quality of operation at the intersection. LOS "A" represents optimal, minimal delay conditions while a LOS "F" represents an over-capacity condition with considerable congestion and/or delay. Delay is calculated in seconds and is based on the average intersection delay per vehicle.

**Table 7.1** below summarizes the LOS thresholds for the six Levels of Service, for both signalized and unsignalized intersections.

**Table 7.1: Intersection Level of Service Thresholds**

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

*Source: Highway Capacity Manual*

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

As directed by the City of North Vancouver, 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 = 0.90 or less.
- Individual movement Level of Service = LOS D or better; and,
- Individual movement V/C ratio = 0.95 or less.

Unsignalized Intersections:

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

In interpreting of 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 2000 output for overall LOS and V/C as well as individual movement LOS and V/C is reported. 95th Percentile Queues are reported as estimated by Synchro or SimTraffic, the micro-simulation module of the Synchro software.

- For unsignalized two-way stop-controlled intersections: HCM 2000 LOS and V/C output is reported just for individual lanes as the HCM methodology does not report overall performance. SimTraffic estimated queues and delays have also been reported, as the HCM 2000 methodology does not directly consider the gaps afforded by adjacent signalized intersections.

The performance reporting conventions noted above have been consistently applied throughout this document and the detailed outputs are provided in **Appendix D**.

### 7.2.1 Existing Analysis Assumptions

*Signal Timing*

The City of North Vancouver provided signal timing plans for all the study traffic intersections with the signal operations coded as per these plans. For existing operations, the signal splits were not optimized to represent the conditions observed today, while optimization was applied to future conditions as part of the mitigation measures. Changes to signal timings, if required, will be documented for each individual intersection as part of the future conditions analysis.

*Synchro Parameters*

Key assumptions for the modelling work are summarised below:

- Overall intersection peak hour factors, pedestrian/cyclist volumes and heavy vehicles were from the observed volume data, if feasible, and applied to each intersection.
- For study intersections without available pedestrian volumes, 5 pedestrians were added to each crossing leg.
- Existing travel lane configurations were applied unless otherwise stated.
- As Synchro does not currently allow modelling of pedestrian-activated signals, Keith Road East & Hendry Avenue was modelled as a full signalized intersection, taking account of pedestrian and cycle activations.
- Keith Road East & Cloverley Street was modelled as a minor stop intersection without recognizing the influence of the adjacent pedestrian signal. This signal, when activated, should create longer gaps in vehicle flow on Keith Road East, thus improving capacity for vehicles entering or exiting Cloverley Street.

Aside from these assumptions, defaults from Synchro parameters were applied for the analysis.

## 7.3 Existing Conditions Analysis

Summarized in **Table 7.2a** are the operational performance results for non-signalized intersections during the existing weekday morning AM peak hour and school afternoon PM peak hour periods with movements highlighted red if they are over acceptable capacity parameters. This analysis confirms there is currently no operational challenges for the non-signalized intersections on the study network with typical Levels of Service (LOS) of A or B, while the Cloverley St (North-East) & Keith Road East was the only intersection with a LOS of C (southbound left-turn).

**Table 7.2a: Existing Traffic Operations – Non-Signalized Intersections**

| INTERSECTION (TRAFFIC CONTROL) | MOVEMENT | AM PEAK HOUR | | | PM PEAK HOUR (SCHOOL) | | |
|---|---|---|---|---|---|---|---|
| | | LOS | V/C | 95TH Q (M) | LOS | V/C | 95TH Q (M) |
| Cloverley St (South-West) & Keith Road East *(Minor Street Stop Control)* | EBT | - | 0.31 | 0 | - | 0.44 | 0 |
| | EBTR | - | 0.15 | 0 | - | 0.22 | 0 |
| | WBLT | A | 0.04 | 0 | A | 0.04 | 0 |
| | WBT | - | 0.29 | 0 | - | 0.24 | 0 |
| | NBLR | B | 0.10 | 5 | B | 0.12 | 5 |
| Cloverley St (North-East) & Keith Road East *(Minor Street Stop Control)* | EBLT | A | 0.00 | 0 | A | 0.01 | 0 |
| | EBT | - | 0.33 | 0 | - | 0.45 | 0 |
| | WBTR | - | 0.45 | 0 | - | 0.37 | 0 |
| | SBLR | C | 0.13 | 5 | C | 0.09 | 0 |
| Hendry Ave & Cloverley St *(Minor Street Stop Control)* | WBLR | A | 0.02 | 0 | A | 0.01 | 0 |
| | NBTR | - | 0.02 | 0 | - | 0.02 | 0 |
| | SBLT | A | 0.00 | 0 | A | 0.01 | 0 |
| Kennard Ave & Cloverley St *(Minor Street Stop Control)* | EBTR | - | 0.01 | 0 | - | 0.02 | 0 |
| | WBLT | A | 0.00 | 0 | A | 0.01 | 0 |
| | NBLR | A | 0.01 | 0 | A | 0.00 | 0 |
| Queensbury Ave & 5th St *(Minor Street Stop Control)* | EBLTR | B | 0.01 | 0 | B | 0.02 | 0 |
| | WBLTR | B | 0.02 | 0 | B | 0.01 | 0 |
| | NBLTR | A | 0.00 | 0 | A | 0.00 | 0 |
| | SBLTR | A | 0.00 | 0 | A | 0.01 | 0 |
| Hendry Ave & 5th St *(Minor Street Stop Control)* | EBLR | A | 0.01 | 0 | A | 0.03 | 0 |
| | NBLT | A | 0.00 | 0 | A | 0.00 | 0 |
| | SBTR | - | 0.01 | 0 | - | 0.01 | 0 |
| Hendry Ave & Shavington St *(Minor Street Stop Control)* | WBLR | A | 0.02 | 0 | A | 0.01 | 0 |
| | NBTR | - | 0.01 | 0 | - | 0.04 | 0 |
| | SBLT | A | 0.00 | 0 | A | 0.01 | 0 |
| Shavington St & Kennard Ave *(Minor Street Stop Control)* | EBLT | - | 0.00 | 0 | A | 0.00 | 0 |
| | WBTR | - | 0.01 | 0 | - | 0.01 | 0 |
| | SBLR | A | 0.01 | 0 | A | 0.01 | 0 |
| Queensbury Ave & 4th St *(Minor Street Stop Control)* | EBLTR | A | 0.03 | 0 | B | 0.04 | 0 |
| | WBLTR | B | 0.03 | 0 | B | 0.03 | 0 |
| | NBLTR | A | 0.00 | 0 | A | 0.00 | 0 |
| | SBLTR | A | 0.01 | 0 | A | 0.00 | 0 |
| 4th St & Hendry Ave *(Minor Street Stop Control)* | EBLT | A | 0.01 | 0 | A | 0.04 | 0 |
| | WBTR | - | 0.02 | 0 | - | 0.01 | 0 |
| | SBLR | A | 0.02 | 0 | A | 0.01 | 0 |

Summarized in **Table 7.2b** are the operational performance results for signalized intersections during the existing weekday morning AM peak hour and afternoon school PM peak hour periods with movements highlighted red if they are over acceptable capacity parameters.

**Table 7.2b: Existing Traffic Operations – Signalized Intersections**

| INTERSECTION (TRAFFIC CONTROL) | MOVEMENT | AM PEAK HOUR | | | PM PEAK HOUR (SCHOOL) | | |
|---|---|---|---|---|---|---|---|
| | | LOS | V/C | 95TH Q (M) | LOS | V/C | 95TH Q (M) |
| Keith Road East & Grand Boulevard *(Signalized)* | *OVERALL* | B | 0.72 | - | B | 0.81 | - |
| | EBL | A | 0.31 | 15 | A | 0.35 | 20 |
| | EBT | A | 0.38 | 50 | B | 0.68 | 110 |
| | WBT | B | 0.65 | 85 | B | 0.58 | 70 |
| | WBR | B | 0.21 | 20 | B | 0.14 | 15 |
| | SBLR | C | 0.78 | 110 | C | 0.74 | 80 |
| Hendry Avenue & Keith Road East *(Signalized)* | *OVERALL* | B | 0.61 | - | C | 0.81 | - |
| | EBLTR | B | 0.70 | 105 | D | 1.00 | 220 |
| | WBLTR | A | 0.42 | 40 | A | 0.35 | 35 |
| | NBLTR | B | 0.06 | 5 | C | 0.06 | 5 |
| | SBLTR | C | 0.38 | 25 | C | 0.29 | 20 |
| Brooksbank Avenue & Mountain Highway & Keith Road East *(Signalized)* | *OVERALL* | *F* | *0.81* | - | *F* | *0.92* | - |
| | EBL | F | >1.00 | **165** | F | >1.00 | **180** |
| | EBT | D | 0.58 | 85 | F | >1.00 | 155 |
| | EBR | D | 0.11 | 20 | D | 0.09 | 10 |
| | WBL | D | 0.28 | 25 | E | 0.61 | 35 |
| | WBT | D | 0.72 | 115 | D | 0.53 | 65 |
| | WBR | B | 0.09 | 10 | B | 0.23 | 30 |
| | NBL | D | 0.46 | 40 | D | 0.47 | 60 |
| | NBTR | D | 0.36 | 30 | D | 0.78 | 85 |
| | SBL | D | 0.71 | 100 | D | 0.80 | 120 |
| | SBT | D | 0.46 | 75 | D | 0.39 | 65 |
| | SBR | C | 0.21 | 10 | C | 0.16 | 10 |
| 3rd Street East & Queensbury Avenue (Signalized) | *OVERALL* | *B* | *0.54* | - | *A* | *0.57* | - |
| | EBL | A | 0.20 | 10 | A | 0.36 | 15 |
| | EBT | A | 0.21 | 20 | A | 0.31 | 30 |
| | WBT | B | 0.61 | 100 | B | 0.63 | 90 |
| | WBR | A | 0.05 | 10 | A | 0.07 | 10 |
| | SBL | C | 0.43 | 20 | C | 0.48 | 15 |
| | SBR | A | 0.07 | 10 | A | 0.05 | 5 |
| Queensbury Avenue & Keith Road *(Minor Street Stop Control)* (1) | EBTR | - | 0.26 | 0 | - | 0.46 | 0 |
| | WBL | A | 0.05 | 0 | A | 0.06 | 0 |
| | WBT | - | 0.26 | 0 | - | 0.21 | 0 |
| | NBL | C | 0.26 | 10 | D | 0.31 | 10 |
| | NBR | B | 0.19 | 5 | C | 0.37 | 15 |

*Note: (1) Included with the traffic signals given its proximity on Keith Road East to the Grand Boulevard signal*

For the signalized intersections, the vehicle turning movements above acceptable thresholds are discussed below for the Existing Conditions:

- *Brooksbank Avenue & Mountain Highway & Keith Road East*. This intersection exceeds the acceptable capacity threshold during the weekday AM peak hour and PM peak hour (school) periods. In the morning peak hour, the eastbound left turn movement exceeds capacity with a v/c of >1.00 and LOS F, resulting in a 95% percentile vehicle queue length of 165 metres. This movement also exceeds capacity in the afternoon peak hour period (school) with a v/c of >1.00 and LOS F, resulting in a 95% percentile vehicle queue length of 180 metres. In addition, the eastbound through movement is over capacity with a v/c of >1.00 and LOS F.

- *Hendry Avenue & Keith Road East*. This intersection exceeds the acceptable capacity threshold during the weekday PM peak hour (school) period with a v/c of 1.00 for eastbound movements and probably is a result of the peak hour volume on this movement (940 vehicles). Minor street approaches on Hendry Avenue both operate within acceptable operational parameters.

## 7.4 Traffic Forecasts

### 7.4.1 Background Growth Forecast

Background growth is traffic that would be present on the road network irrespective of the replacement school's new movements. For the study, a linear growth rate of 0.5% per annum to the Opening Year was applied.

### 7.4.2 Impact of School Movements at Arterial Road intersections

Before conducting future operational scenarios, it is important first to understand the impact of the additional school movements on the arterial road network with the percentage changes summarized in **Table 7.3**. Please note that projections assume these movements are new to the study network, but as identified in Section 6.2.2, approximately 65% of them would already be travelling to existing schools on the study network and divert to the new Cloverley Replacement School when it is operational. That said, it will account for short term (15-minute) peak surges which typically are associated with schools.

**Table 7.3: Site Vehicle Volumes 'Net Change' at the Arterial Road Intersections**

| INTERSECTION | AM PEAK HOUR VOLUMES | | | PM SCHOOL PEAK HOUR VOLUMES | | |
|---|---|---|---|---|---|---|
| | BACKGROUND 2026 | SITE | % CHANGE | BACKGROUND 2026 | SITE | % CHANGE |
| Mountain Hwy & Keith Rd East | 2,600 | 80 | +3% | 3,650 | 80 | +2% |
| Hendry Ave & Keith Road East | 1,600 | 170 | +11% | 1,700 | 130 | +8% |
| Grand Blvd East & Keith Road East | 1,500 | 120 | +8% | 1,700 | 100 | +6% |
| Queensbury Avenue & Keith Road East | 1,050 | 110 | +10% | 1,300 | 90 | +7% |
| Queensbury Avenue & 3rd Street East | 1,100 | 200 | +18% | 1,250 | 170 | +13% |
| | | | | | | |

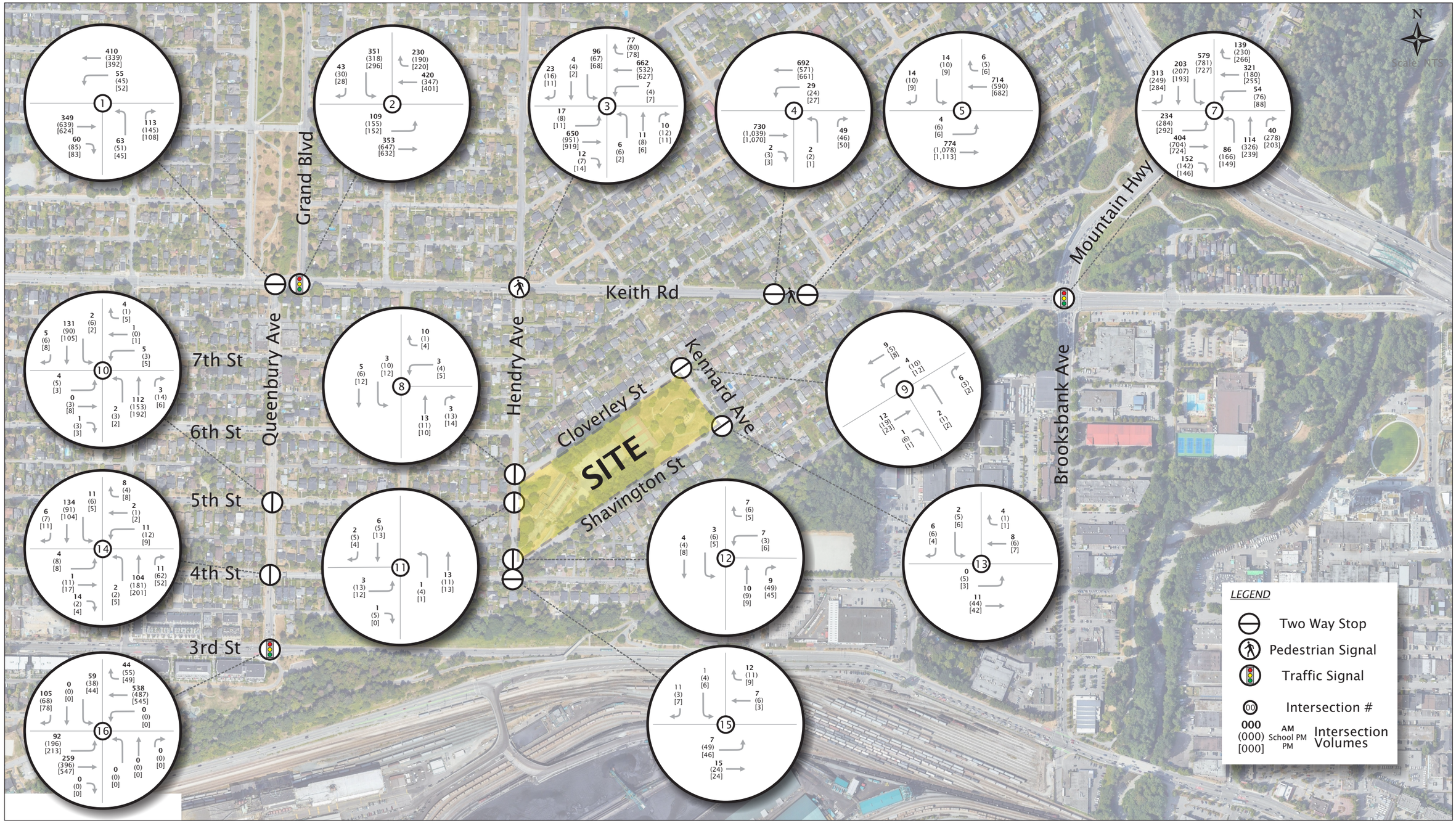



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**Exhibit 7.1**

## Opening Day Background Vehicle Traffic Forecasts

04-23-0314

Cloverley School
December 2023

bunt & associates

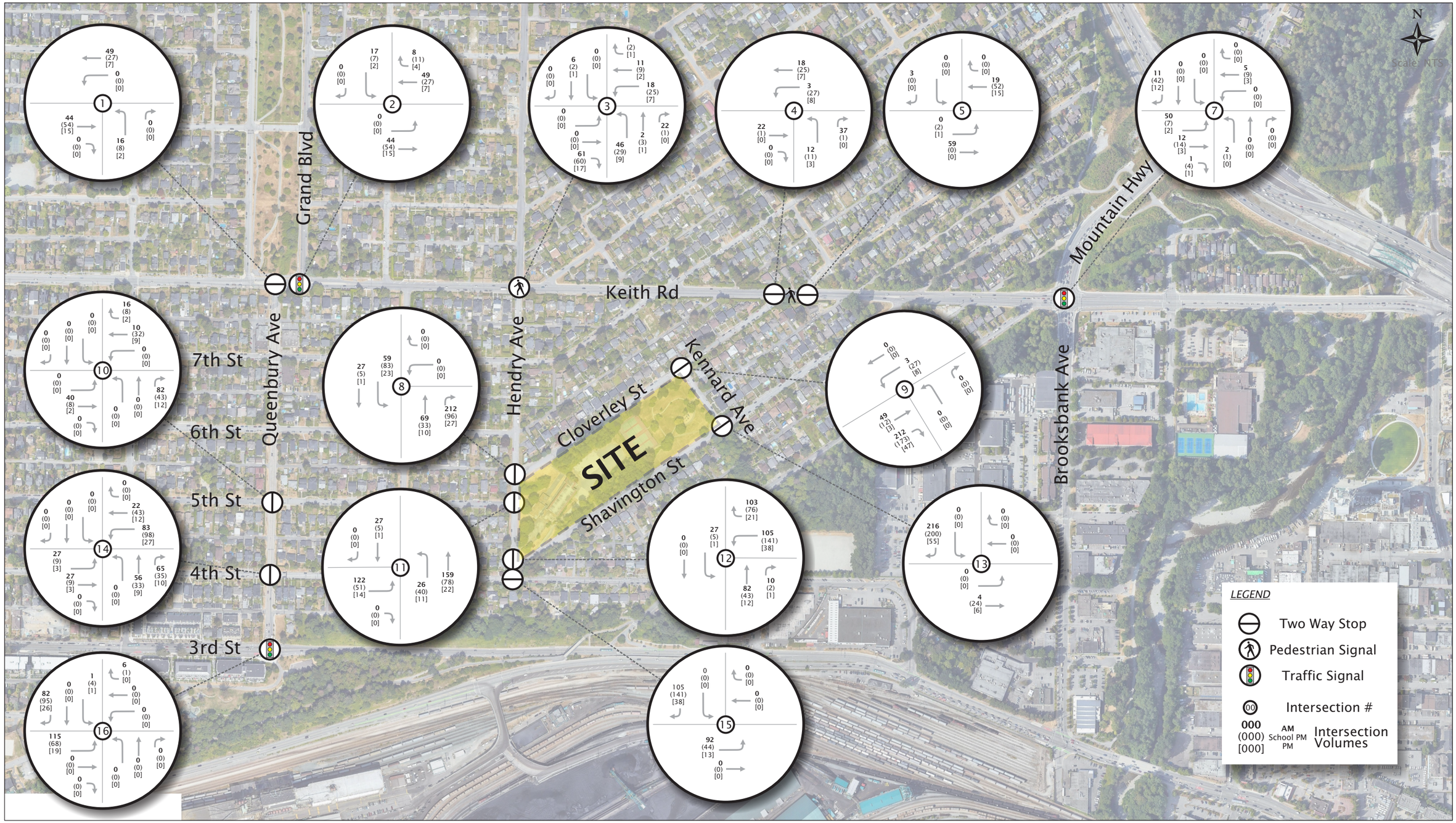


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**Exhibit 7.2**

## Site Generated Vehicle Trips

04-23-0314

Cloverley School
December 2023

bunt & associates

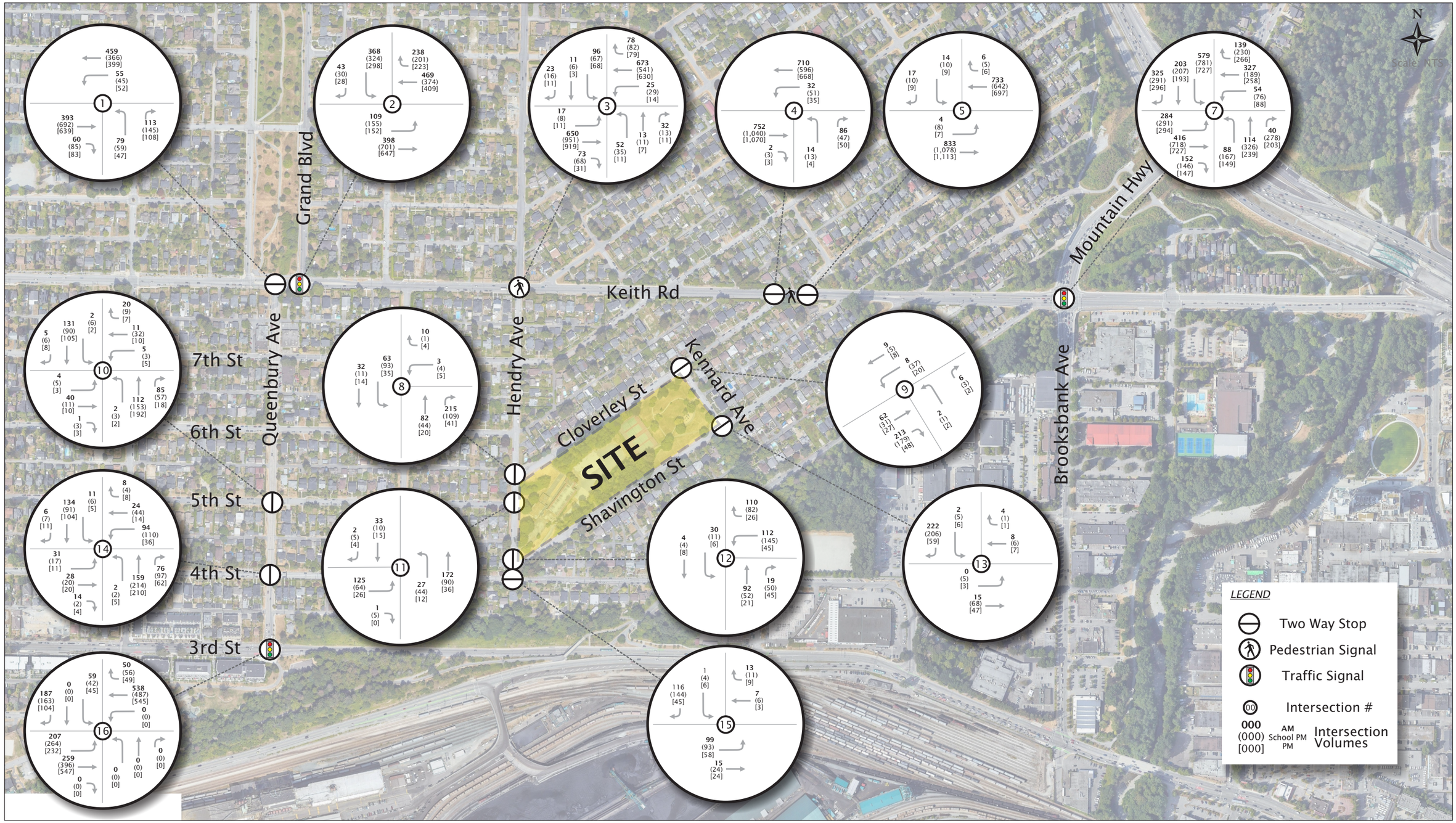


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**Exhibit 7.3**

## Opening Day Total Vehicle Traffic Forecasts

04-23-0314

Cloverley School
December 2023

bunt & associates

## 7.5 Future Traffic Operations

### 7.5.1 Future Conditions Analysis Assumptions

For the future conditions, signal splits were optimized together with the following specific changes:

- *Brooksbank Avenue/Mountain Highway & Keith Road*: cycle length was increased from 150 seconds to 155 seconds with the splits manually optimized for all Background and Total scenarios.
- *Keith Road East & Grand Boulevard*: the cycle length was optimized to 65 seconds (from 90.7 seconds in STP) for the Background AM and School PM periods as well as Total School PM scenarios and where the cycle length was optimized to 75 seconds for Total AM scenario.
- *Hendry Avenue & Keith Road East*: the cycle length was optimized to natural cycle 90 seconds for the Background and Total School PM scenarios. Note that this assumption was applied to facilitate acceptable traffic operations performance. Based on this assumption, and subject to a Signal Warrant Analysis, this intersection should be monitored and considered for potential future full signalization by 2026, with or without the proposed development of the school.

Other Synchro parameters applied to the analysis for the existing traffic conditions were also used for the future traffic operations analysis.

Pedestrian growth was added to the study intersections based on existing pedestrian volume plus new school walk trips (students & staff) with the directional of travel estimated from the school's catchment area (see Section 6).

### 7.5.2 Future Background (2026) Traffic Operations

Summarized in **Table 7.4a** are the operational performance results for non-signalized intersections during the weekday morning AM and afternoon school PM peak hour periods, with movements highlighted red if they are over acceptable capacity parameters. This analysis confirms there are currently no operational challenges at the non-signalized intersections on the study network with typical Levels of Service (LOS) of A or B, while the Cloverley St (North-East) & Keith Road East was the only intersection with a LOS of C (southbound left-turn).

**Table 7.4a: Background Traffic Operations (2026) – Non-Signalized Intersections**

| INTERSECTION (TRAFFIC CONTROL) | MOVEMENT | AM PEAK HOUR | | | PM PEAK HOUR (SCHOOL) | | |
|---|---|---|---|---|---|---|---|
| | | LOS | V/C | 95TH Q (M) | LOS | V/C | 95TH Q (M) |
| Cloverley St (South-West) & Keith Road East *(Minor Street Stop Control)* | EBT | - | 0.31 | 0 | - | 0.44 | 0 |
| | EBTR | - | 0.16 | 0 | - | 0.22 | 0 |
| | WBLT | A | 0.04 | 0 | A | 0.04 | 0 |
| | WBT | | 0.29 | 0 | | 0.24 | 0 |
| | NBLR | B | 0.10 | 5 | C | 0.13 | 5 |
| Cloverley St (North-East) & Keith Road East *(Minor Street Stop Control)* | EBLT | A | 0.00 | 0 | A | 0.01 | 0 |
| | EBT | - | 0.33 | 0 | - | 0.46 | 0 |
| | WBTR | - | 0.46 | 0 | - | 0.38 | 0 |
| | SBLR | C | 0.13 | 5 | C | 0.09 | 0 |
| Hendry Ave & Cloverley St *(Minor Street Stop Control)* | WBLR | A | 0.02 | 0 | A | 0.01 | 0 |
| | NBTR | - | 0.02 | 0 | - | 0.02 | 0 |
| | SBLT | A | 0.00 | 0 | A | 0.01 | 0 |
| Kennard Ave & Cloverley St *(Minor Street Stop Control)* | EBTR | - | 0.01 | 0 | - | 0.02 | 0 |
| | WBLT | A | 0.00 | 0 | A | 0.01 | 0 |
| | NBLR | A | 0.01 | 0 | A | 0.00 | 0 |
| Queensbury Ave & 5th St *(Minor Street Stop Control)* | EBLTR | B | 0.01 | 0 | B | 0.02 | 0 |
| | WBLTR | B | 0.02 | 0 | B | 0.01 | 0 |
| | NBLTR | A | 0.00 | 0 | A | 0.00 | 0 |
| | SBLTR | A | 0.00 | 0 | A | 0.01 | 0 |
| Hendry Ave & 5th St *(Minor Street Stop Control)* | EBLR | A | 0.01 | 0 | A | 0.03 | 0 |
| | NBLT | A | 0.00 | 0 | A | 0.00 | 0 |
| | SBTR | - | 0.01 | 0 | - | 0.01 | 0 |
| Hendry Ave & Shavington St *(Minor Street Stop Control)* | WBLR | A | 0.02 | 0 | A | 0.01 | 0 |
| | NBTR | - | 0.01 | 0 | - | 0.04 | 0 |
| | SBLT | A | 0.00 | 0 | A | 0.01 | 0 |
| Shavington St & Kennard Ave *(Minor Street Stop Control)* | EBLT | - | 0.00 | 0 | A | 0.00 | 0 |
| | WBTR | - | 0.01 | 0 | - | 0.01 | 0 |
| | SBLR | A | 0.01 | 0 | A | 0.01 | 0 |
| Queensbury Ave & 4th St *(Minor Street Stop Control)* | EBLTR | A | 0.03 | 0 | B | 0.04 | 0 |
| | WBLTR | B | 0.03 | 0 | B | 0.03 | 0 |
| | NBLTR | A | 0.00 | 0 | A | 0.00 | 0 |
| | SBLTR | A | 0.01 | 0 | A | 0.00 | 0 |
| 4th St & Hendry Ave *(Minor Street Stop Control)* | EBLT | A | 0.01 | 0 | A | 0.04 | 0 |
| | WBTR | - | 0.02 | 0 | - | 0.01 | 0 |
| | SBLR | A | 0.02 | 0 | A | 0.01 | 0 |

Summarized in **Table 7.4b** are the operational performance results for signalized intersections during the existing weekday school morning AM peak hour and afternoon PM peak hour periods with movements highlighted red if they are over acceptable capacity parameters.

**Table 7.4b: Background Traffic Operations (2026) – Signalized Intersections**

| INTERSECTION/ TRAFFIC CONTROL | MOVEMENT | AM PEAK HOUR | | | PM PEAK HOUR (SCHOOL) | | |
|---|---|---|---|---|---|---|---|
| | | LOS | V/C | 95TH Q (M) | LOS | V/C | 95TH Q (M) |
| Keith Road East & Grand Boulevard *(Signalized)* | *OVERALL* | B | 0.78 | - | B | 0.88 | - |
| | EBL | A | 0.36 | 15 | A | 0.41 | 20 |
| | EBT | A | 0.41 | 45 | B | 0.73 | 95 |
| | WBT | B | 0.70 | 85 | B | 0.57 | 60 |
| | WBR | B | 0.17 | 15 | B | 0.13 | 10 |
| | SBLR | C | 0.81 | 80 | C | 0.75 | 65 |
| Hendry Avenue & Keith Road East *(Signalized)* | *OVERALL* | B | 0.62 | - | B | 0.78 | - |
| | EBLTR | B | 0.71 | 105 | B | 0.87 | 245 |
| | WBLTR | A | 0.42 | 40 | A | 0.31 | 30 |
| | NBLTR | B | 0.06 | 5 | C | 0.07 | 10 |
| | SBLTR | C | 0.39 | 25 | C | 0.41 | 25 |
| Brooksbank Avenue & Mountain Highway & Keith Road East *(Signalized)* | *OVERALL* | D | 0.78 | - | E | 0.87 | - |
| | EBL | F | >1.00 | **140** | F | >1.00 | **180** |
| | EBT | D | 0.50 | 75 | D | 0.77 | 130 |
| | EBR | D | 0.12 | 20 | D | 0.09 | 10 |
| | WBL | D | 0.24 | 30 | F | 0.80 | 55 |
| | WBT | D | 0.77 | 135 | D | 0.52 | 75 |
| | WBR | B | 0.09 | 10 | C | 0.25 | 40 |
| | NBL | E | 0.51 | 40 | D | 0.45 | 70 |
| | NBTR | D | 0.39 | 30 | E | 0.75 | 100 |
| | SBL | D | 0.76 | 105 | E | 0.94 | 175 |
| | SBT | D | 0.49 | 80 | D | 0.46 | 85 |
| | SBR | C | 0.22 | 10 | C | 0.16 | 10 |
| 3rd Street East & Queensbury Avenue (Signalized) | *OVERALL* | B | 0.55 | - | B | 0.56 | - |
| | EBL | A | 0.21 | 10 | A | 0.39 | 15 |
| | EBT | A | 0.21 | 20 | A | 0.32 | 30 |
| | WBT | B | 0.61 | 100 | B | 0.65 | 95 |
| | WBR | A | 0.05 | 10 | B | 0.07 | 10 |
| | SBL | C | 0.44 | 20 | C | 0.29 | 15 |
| | SBR | A | 0.07 | 10 | B | 0.05 | 5 |
| Queensbury Avenue & Keith Road *(Minor Street Stop Control)* | EBTR | - | 0.26 | 0 | - | 0.46 | 0 |
| | WBL | A | 0.05 | 0 | A | 0.06 | 0 |
| | WBT | - | 0.26 | 0 | - | 0.22 | 0 |
| | NBL | C | 0.27 | 10 | E | 0.32 | 10 |
| | NBR | B | 0.19 | 5 | C | 0.38 | 15 |

For the signalized intersections, the vehicle turning movements above acceptable thresholds are discussed below for the Background 2026 Condition:

- *Brooksbank Avenue & Mountain Highway & Keith Road East*. This intersection continues to exceed the acceptable delay threshold during the weekday AM peak hour and PM peak hour (school) periods. In the morning peak hour, the northbound left turn movement operates with LOS E but within capacity (v/c = 0.51). The eastbound left turn movement was determined to operate over capacity with a v/c of >1.00 and LOS F, resulting in a 95% percentile vehicle queue length of 140 metres. This movement is also over capacity in the afternoon (school) peak hour period with a v/c of >1.00 and LOS F, resulting in a 95% percentile vehicle queue length of 180 metres. In addition, the southbound left turn movement in the PM peak hour (school) is approaching capacity with a v/c of 0.94, LOS E, and queue length (95$^{th}$ percentile) of 175 metres. The northbound through/right movement also operates with LOS E but within capacity (v/c = 0.75).

- *Queensbury Avenue & Keith Road East*. This minor-street stop-controlled intersection is projected to operate within capacity in general, however, during the afternoon (school) peak hour period, the northbound left turn movement was determined to operate with moderately long delays (LOS E) and within capacity (v/c = 0.32).

## 7.6 Future Total Traffic Operations

Summarized in **Table 7.5a** are the operational performance results for non-signalized intersections during the existing weekday school morning AM and afternoon PM peak hour periods, with movements highlighted red if they are over acceptable capacity parameters. For the five intersections fronting the school site, all are projected to operate well within acceptable capacity threshold with the 5$^{th}$ Street East's eastbound approach to Hendry Avenue's having the highest v/c at 0.41 along with a LOS C and vehicle queue length of 15m (equivalent to 2 to 3 vehicles). This analysis confirms that the only intersection projected to have a LOS D is the Cloverley Street approach to Keith Road East, and even with the higher LOS, the v/c is projected at only 0.29.

**Table 7.5a: Opening Day Total Traffic Operations (2026) – Non-Signalized Intersections**

| INTERSECTION/ TRAFFIC CONTROL | MOVEMENT | AM | | | SCHOOL PM | | |
|---|---|---|---|---|---|---|---|
| | | LOS | V/C | 95TH Q (M) | LOS | V/C | 95TH Q (M) |
| Cloverley St (South-West) & Keith Road East *(Minor Street Stop Control)* | EBT | - | 0.32 | 0 | - | 0.44 | 0 |
| | EBTR | - | 0.16 | 0 | - | 0.22 | 0 |
| | WBLT | A | 0.04 | 0 | A | 0.09 | 0 |
| | WBT | | 0.30 | 0 | | 0.25 | 0 |
| | NBLR | C | 0.29 | 10 | D | 0.29 | 10 |
| Cloverley St (North-East) & Keith Road East *(Minor Street Stop Control)* | EBLT | A | 0.01 | 0 | A | 0.01 | 0 |
| | EBT | - | 0.35 | 0 | - | 0.46 | 0 |
| | WBTR | - | 0.47 | 0 | - | 0.41 | 0 |
| | SBLR | D | 0.16 | 5 | D | 0.11 | 5 |
| Hendry Ave & Cloverley St *(Minor Street Stop Control)* | WBLR | B | 0.05 | 0 | B | 0.02 | 0 |
| | NBTR | - | 0.29 | 0 | - | 0.14 | 0 |
| | SBLT | A | 0.11 | 5 | A | 0.13 | 5 |
| Kennard Ave & Cloverley St *(Minor Street Stop Control)* | EBTR | - | 0.23 | 0 | - | 0.17 | 0 |
| | WBLT | A | 0.01 | 0 | A | 0.04 | 0 |
| | NBLR | B | 0.02 | 0 | B | 0.01 | 0 |
| Queensbury Ave & 5th St *(Minor Street Stop Control)* | EBLTR | B | 0.10 | 5 | B | 0.04 | 0 |
| | WBLTR | B | 0.06 | 0 | B | 0.08 | 0 |
| | NBLTR | A | 0.00 | 0 | A | 0.00 | 0 |
| | SBLTR | A | 0.00 | 0 | A | 0.01 | 0 |
| Hendry Ave & 5th St *(Minor Street Stop Control)* | EBLR | C | 0.41 | 15 | B | 0.18 | 5 |
| | NBLT | A | 0.03 | 0 | A | 0.05 | 0 |
| | SBTR | - | 0.03 | 0 | - | 0.01 | 0 |
| Hendry Ave & Shavington St *(Minor Street Stop Control)* | WBLR | C | 0.52 | 20 | B | 0.34 | 10 |
| | NBTR | - | 0.08 | 0 | - | 0.08 | 0 |
| | SBLT | A | 0.04 | 0 | A | 0.01 | 0 |
| Shavington St & Kennard Ave *(Minor Street Stop Control)* | EBLT | - | 0.00 | 0 | A | 0.00 | 0 |
| | WBTR | - | 0.01 | 0 | - | 0.01 | 0 |
| | SBLR | B | 0.33 | 10 | A | 0.27 | 10 |
| Queensbury Ave & 4th St *(Minor Street Stop Control)* | EBLTR | B | 0.16 | 5 | B | 0.09 | 0 |
| | WBLTR | C | 0.29 | 10 | C | 0.35 | 10 |
| | NBLTR | A | 0.00 | 0 | A | 0.00 | 0 |
| | SBLTR | A | 0.01 | 0 | A | 0.01 | 0 |
| 4th St & Hendry Ave *(Minor Street Stop Control)* | EBLT | A | 0.12 | 5 | A | 0.10 | 5 |
| | WBTR | - | 0.02 | 0 | - | 0.01 | 0 |
| | SBLR | B | 0.23 | 5 | B | 0.24 | 5 |
| | WBR | B | 0.06 | 10 | B | 0.07 | 10 |
| | SBL | C | 0.48 | 20 | C | 0.34 | 15 |
| | SBR | B | 0.13 | 10 | B | 0.11 | 10 |

Summarized in **Table 7.5b** are the operational performance results for signalized intersections during the weekday morning AM peak hour and afternoon school PM peak hour periods with movements highlighted red if they are over acceptable capacity parameters.

**Table 7.5b: Opening Day Total Traffic Operations (2026) – Signalized Intersections**

| INTERSECTION/ TRAFFIC CONTROL | MOVEMENT | AM | | | SCHOOL PM | | |
|---|---|---|---|---|---|---|---|
| | | LOS | V/C | 95TH Q (M) | LOS | V/C | 95TH Q (M) |
| Keith Rd & Grand Blvd *(Signalized)* | *OVERALL* | B | 0.82 | - | B | 0.89 | - |
| | EBL | B | 0.39 | 15 | B | 0.38 | 20 |
| | EBT | A | 0.45 | 50 | A | 0.75 | 110 |
| | WBT | C | 0.74 | 90 | C | 0.60 | 65 |
| | WBR | B | 0.21 | 15 | B | 0.14 | 10 |
| | SBLR | C | 0.84 | 95 | C | 0.79 | 85 |
| Hendry Ave & Keith Rd *(Signalized)* | *OVERALL* | B | 0.67 | - | B | 0.84 | - |
| | EBLTR | B | 0.76 | 145 | C | 0.93 | 270 |
| | WBLTR | A | 0.44 | 45 | A | 0.36 | 35 |
| | NBLTR | C | 0.25 | 15 | C | 0.25 | 20 |
| | SBLTR | C | 0.45 | 25 | C | 0.45 | 25 |
| Brooksbank Ave/Mountain Hwy & Keith Rd *(Signalized)* | *OVERALL* | E | 0.83 | - | E | 0.88 | - |
| | EBL | F | >1.00 | **175** | F | >1.00 | **185** |
| | EBT | D | 0.65 | 75 | D | 0.78 | 130 |
| | EBR | D | 0.12 | 20 | D | 0.10 | 15 |
| | WBL | D | 0.18 | 30 | F | 0.80 | 55 |
| | WBT | E | 0.82 | 140 | D | 0.54 | 80 |
| | WBR | B | 0.09 | 10 | C | 0.25 | 40 |
| | NBL | E | 0.51 | 45 | D | 0.46 | 70 |
| | NBTR | D | 0.38 | 30 | E | 0.75 | 100 |
| | SBL | D | 0.75 | 105 | E | 0.94 | 175 |
| | SBT | D | 0.49 | 80 | D | 0.46 | 85 |
| | SBR | C | 0.23 | 10 | C | 0.19 | 10 |
| 3rd St & Queensbury Ave (Signalized) | *OVERALL* | B | 0.60 | - | B | 0.59 | - |
| | EBL | A | 0.42 | 20 | A | 0.50 | 20 |
| | EBT | A | 0.21 | 20 | A | 0.32 | 30 |
| | WBT | B | 0.68 | 110 | B | 0.65 | 95 |
| | WBR | B | 0.06 | 10 | B | 0.07 | 10 |
| | SBL | C | 0.48 | 20 | C | 0.34 | 15 |
| | SBR | B | 0.13 | 10 | B | 0.11 | 10 |
| Queensbury Ave & Keith Rd *(Minor Street Stop Control)* | EBTR | - | 0.29 | 0 | - | 0.50 | 0 |
| | WBL | A | 0.06 | 0 | A | 0.06 | 0 |
| | WBT | - | 0.29 | 0 | - | 0.23 | 0 |
| | NBL | D | 0.42 | 15 | E | 0.44 | 15 |
| | NBR | B | 0.21 | 5 | C | 0.41 | 15 |

For the signalized intersections, the vehicle turning movements above acceptable thresholds are discussed below for the Opening Day 2026 Condition:

- *Brooksbank Avenue & Mountain Highway & Keith Road East*. This intersection continues to exceed the acceptable delay threshold during the weekday AM peak hour and PM peak hour (school) periods. In the morning peak hour, the westbound through and northbound left turn movements operate with LOS E but within capacity. The eastbound left turn movement is over capacity with a v/c of >1.00 and LOS F, resulting in a 95$^{th}$ percentile queue length of 175 metres. This movement is also over capacity in the afternoon peak hour period (school) with a v/c of >1.00 and LOS F, resulting in a 95$^{th}$ percentile queue length of 185 metres. Also, the southbound left turn movement in the PM peak hour (school) is approaching capacity with a v/c of 0.94 and queue length (95$^{th}$ percentile) of 175 metres. The westbound left turn movement was also determined to operate with LOS F but within capacity. Similarly, the northbound through/right movement was determined to operate with LOS E but within capacity.

- *Queensbury Avenue & Keith Road East*. This minor-street stop-controlled intersection is projected to operate within capacity in general, however, during the afternoon (school) peak hour period, the northbound left turn movement was determined to operate with moderately long delays (LOS E) and within capacity (v/c = 0.44).

## 7.7 Summary of Future Traffic Operations Results

Based on the future traffic operations analysis, the following key points summarize the results:

- All non-signalized study intersections were determined to operate within acceptable performance thresholds under future Background (without proposed development) and Total (with proposed development) 2026 conditions.

- The Hendry Avenue & Keith Road East intersection was determined to approach capacity (Background: v/c = 0.88; Total: v/c = 0.89) during the critical weekday PM peak hour (school) period, though all movements were determined to operate within acceptable parameters during the study peak hour periods. Note that the cycle length was optimized to the natural cycle (90 seconds) for the Background and Total School PM scenarios to facilitate acceptable traffic operations performance. Based on this assumption, and subject to a Signal Warrant Analysis, this intersection should be monitored and considered for potential future full signalization by 2026, with or without the proposed development of the school.

- As highlighted in the existing conditions analysis, the signalized Keith Road East & Mountain Highway & Brooksbank Avenue intersection continues to exceed acceptable capacity thresholds during the study peak hour periods. Several vehicle movements experience long delays (LOS F) and are approaching/exceeding capacity (v/c ≥ 1.00), while optimization of the signal timing was only able to improve operations to a certain degree. Beyond this, further mitigation was not explored at

this time. To further improve the intersection, significant infrastructure upgrades would be required; however, exploring the implications and feasibility of such changes is beyond the scope of this study.

## 7.8 Other Considerations

### 7.8.1 Hendry Avenue (4th Street East to 5th Street East)

Changes to Hendry Avenue are being explored between 4th Street East and 5th Street East, part of the school's Mobility Plan, with the following options under consideration:

A. Full Closure (4th Street East to Shavington Street)

B. One-way southbound (Shavington Street to 4th Street East).

C. One-way northbound (4th Street East to 5th Street East)

To understand the implications for street vehicle movements with each option, a desktop analysis for the school AM peak hour (highest volume period) has been conducted. The anticipated vehicle volume changes have been summarized in **Table 7.6**, covering 4th Street East, 5th Street East and Hendry Avenue.

**Table 7.6: Hendry Avenue Closure or One Way Options – Vehicle Volume Change Review**

| STREET SECTIONS | | NO CHANGE | | OPTION A CLOSED TO VEHICLES | | OPTION B ONE-WAY SOUTHBOUND | | OPTION C ONE-WAY NORTHBOUND | |
|---|---|---|---|---|---|---|---|---|---|
| **East-West Streets** | | W/B | E/B | W/B | E/B | W/B | E/B | W/B | E/B |
| 5th Street East | Sutherland to Hendry | 30 | 125 | 120 | 195 | 30 | 225 | 145 | 125 |
| 4th Street East | Sutherland to Hendry | 125 | 115 | 10 | 15 | 125 | 15 | 10 | 115 |
| Shavington St. | East of Hendry | 220 | 50 | 215 | 30 | 215 | 50 | 215 | 50 |
| **North-South Street** | | N/B | S/B | N/B | S/B | N/B | S/B | N/B | S/B |
| Hendry Avenue | North of Cloverley St | 95 | 95 | 120 | 125 | 95 | 95 | 125 | 95 |
| Hendry Avenue | South of Shavington St | 200 | 35 | 320 | 30 | 200 | 30 | 320 | 0 |
| | | | | | | | | | |

Basically, vehicle movements are expected to be redirected from 4th Street East to East 5th Street with the number depending on which option is considered (although other east-west streets could be used, i.e., 6th Street East or Keith Road East). Key outputs from this desktop exercise are highlighted below:

- For all options, the vehicle volume on 4th Street East (bicycle route) would be lower.
- For Hendry Avenue one-way southbound (Option B), the eastbound volume on 5th Street East is projected to increase from 125 to 225 vehicles, and given this, an all-way stop control may be required at the 5th Street East & Sutherland Avenue intersection.
- For Hendry Avenue one-way northbound (Option C), results in approximately 100 additional westbound vehicle movements on 5th Street East.

Preference at this stage would be to have Hendry Avenue one-way southbound as it better balances pick up/drop off movements between 4th Street East and 5th Street East, including lowering vehicle movements at the 5th Street East and Hendry Avenue intersection, which is anticipated to be an important access point for active modes to/from the school. All three options can be explored with the City of North Vancouver staff to understand what would function best for all modes, including addressing vehicle shortcutting through the community (covered in the following paragraphs).

### 7.8.2 Cloverley Community - Non-Incident/Incident Days

The following reviews the potential implications for the combined school peak hour and an incident day on Highway 1 (as covered in Section 2). For this exercise, vehicle volumes from the City of North Vancouver's Cloverley Community Traffic Management observations (see Figure 2.2) were combined with the school AM peak hour volumes on Cloverley Street and Shavington Street, as summarized in **Table 7.7**.

**Table 7.7: Weekday AM Peak Hour - Incident on School Days (numbers rounded)**

| STREET | DIRECTION | INCIDENT (VEHICLES/HOUR) | SCHOOL (VEHICLES/HOUR) | COMBINED (VEHICLES/HOUR) |
|---|---|---|---|---|
| Cloverley Street | Eastbound | 105 | 280 | 385 |
| Shavington Street | Westbound | 85 | 50 | 135 |
| | | | | |

On an incident day, Cloverley Street is projected to have the highest combined vehicle volume (eastbound), however, it is anticipated that many of the shortcutting movements would likely be discouraged as the school activity is expected to reduce travel times, including additional delays when exiting Cloverley Street to Keith Road East. Furthermore, the travel time would be reduced with the proposed 30km/h speed limit and additional traffic calming measures, as described in the Mobility Plan in Section 5.

# 8. CONCLUSIONS AND RECOMMENDATIONS

This Transportation Impact Assessment report has been prepared in accordance with the City of North Vancouver (CNV) Transportation Study Scope (August 2023) along with direction contained in the following documents:

- Mobility Strategy (CNV)
- Pedestrian Plan Framework (CNV)
- Safe & Active School Travel Program
- Cloverley Traffic Management Plan (CNV)
- Safe & Active Travel Initiatives (North Vancouver School District)
- TransLink's 2050 Plan.

With the above, a comprehensive review of existing street conditions was completed prior to quantifying the replacement school's projected multi-modal transportation demands, and from this, options were developed to improve local street operations for pick up/drop off activity along with providing measures and initiatives to lower car use to achieve a mode share target consistent with the City of North Vancouver's transportation objectives. Key conclusions and recommendations from the report are summarized below.

## *Existing Conditions*

Site Context & Data Collection

- The school site is designated as 'School & Institutional' in the City of North Vancouver's Land Use Plan
- Hendry Avenue is the transition point where the street grid changes from east-west to southwest-northeast orientation that also impacts street connectivity.
- Transportation Survey Data was collected for 16 intersections, including the traffic signals on Keith Road East and 3rd Street East, within 600 to 700m metres of the school site.

Streets & Intersections

- Streets within 400m of the school site are predominantly residential with common characteristics such as low volume (below 300 vehicles per hour), parking permitted both sides, road widths ranging between 8.5 and 9 metres, 50 km/h speeds limits, and road humps present (except for a few north-south streets).

- The existing school's parking and speed restrictions (school days only) are anticipated to be removed with the replacement school's opening.

- Changes in the street orientation at Hendry Avenue results in offset intersections (lost connectivity) between 4th Street East & Shavington Street and 5th Street East/6th Street East & Cloverley Street.

Pedestrians

- Sidewalk widths on all local streets do not comply with the City of North Vancouver's current design standard of a 1.8m sidewalk & 1.5m (min.) boulevard.
- Streets with the steepest grades are generally found in the north-south direction, e.g., Kennard Avenue, Hendry Avenue & Sutherland Avenue, while east-west local street grades are generally less than 6%.
- Kennard Avenue and Sutherland Avenue are the only two local streets without road humps.
- Kennard Greenway (Heywood Street to Shavington Street) and Spirit Trail (located at 4th Street East are located within 400m of the school site, while Queensbury Avenue is identified as a potential future greenway.
- Controlled crossings on the arterial road network are located on Keith Road East at its intersections with Cloverley Street and Hendry Avenue, along with the 3rd Street East and Queensbury Avenue intersection.

Bicycle Routes

- The City of North Vancouver's long-term AAA network vision identifies Heywood Street, 3rd Street East, 4th Street East, Queensbury Avenue, and Keith Road East (short sections completed) within the school's catchment.
- The 4th Street East bicycle route is anticipated to be the most used for cyclists to access the replacement school site as it is located on a low volume local street extending through most of the catchment area, i.e., Hendry Avenue to St Andrews Avenue.
- Hendry Avenue steep grade (9% to 12%) for the section fronting the school site is probably to challenging for most cyclists.
- The close intersection spacing on Hendry Avenue at 4th Street East and Shavington Street is expected to be challenging for cyclist to use (Hendry Avenue & Shavington Street are identified as bicycles routes - 2012 Bicycle Master Plan).

Transit Network

- TransLink's bus routes operate on Keith Road East (#232, #255), Queensbury Avenue (#228) and 3rd Street East (#R2).
- Nearest bus stops to the school site are located on Keith Road East at Cloverley Street (300m), Queensbury Avenue at 4th Street East/5th Street East (600m) and 3rd Street East at Ridgeway Avenue (900-1000m), with latter probably beyond reasonable walking distance.
- TransLink's 2050 identifies the extension of the R2 Route to Metrotown along with Bus Rapid Transit (BRT) from Lynn Valley to Downtown Lonsdale

Parking Supply & Demand

- Parking capacity for up to 85 vehicles is available on Cloverley Street (south side) & Shavington Street (north side) between Hendry Avenue and Kennard Avenue, while demand for 10 vehicles parked was observed for the expected school day morning and afternoon peak hours.

- Parking occupancy on 4th Street East, 5th Street East and 6th Street East (Sutherland Avenue to Hendry Avenue), along with Heywood Street (4th Street East to Kennard Avenue), were observed to be below 50% occupancy.

## *Replacement School Site Plan Review*

Overview

- School building opening year is planned for 2026.
- Locating the new school on the eastern part of the site allows for a more efficient circulatory system and access to the pick up/drop off parking, away from Hendry Avenue's offset intersections.
- School capacity is planned for up to 525 students (Grades 1-7), 60 students in kindergarten, Child Care use for 37 places and a Neighbourhood Learning Centre.
- The existing school building, hard standing areas and driveways will be removed.

Access

- Pathways are planned to address the building's elevation relative to the fronting streets.
- Sidewalks along the school frontages will be upgraded (where possible), taking into consideration the site grades and tree retention challenges.
- A Multi-Use Path option is being explored to connect the school building with Hendry Avenue.
- Emergency vehicles can access the front of the school building from either Shavington Street or Kennard Avenue.

Parking & Loading Review

- Ten secure bicycle spaces are planned together with 40 short-term (visitor) spaces, which is higher than the Zoning Bylaw and better balances the needs between secure/short term spaces.
- Secure and short-term bicycle parking is planned as part of the building's design along with allocating some short-term bicycle parking at the Cloverley Street & Shavington Street site frontages.
- Access to the school car park is planned from Shavington Street with 38 vehicle spaces provided, including 2 accessible and 4 short-term accessible spaces.
- One service vehicle loading space is planned (consistent with the school's expected needs) and can be shared with the HandyDart bus.

## *School Management Plans*

<u>The Mobility Plan</u>

- Pick up/drop off activity is planned to operate based on an advisory clockwise circulation pattern with Cloverley Street providing eastbound access (to Kennard Avenue) and Shavington Street providing westbound access (to Hendry Avenue).
- Drivers would be encouraged to enter from Hendry Avenue via Keith Road East or 5th Street East and exit to 4th Street East via Hendry Avenue.

- Pick up/drop off zones (no parking, 5-minute wait, unlimited) would be located on Cloverley Street and Shavington Street, while pick up/drop off would not be permitted on Kennard Avenue. Tow 'Drive to five' zones have been identified, with one on Hendry Avenue (school side) and the other on Heywood Street (park side).
- Pick up/drop off activities would be supported by changes to intersection layouts, 30km/h speed limits, road bumps (shorter spacing) and new road signage at the school site's frontages.
- Options to the improve pick up/drop off access on Hendry Avenue at 4th Street East and 5th Street East will require further study, e.g., closure or one-way.
- Sidewalk width upgrades should be prioritized on 4th Street East (north side), 5th Street East (south side), Hendry Avenue (east side), and Cloverley Street (south side), including at the intersection with Keith Road East.

Transportation Demand Management Plan

- Staff initiatives will include end-of-trip facilities, e-bicycle & vehicle charging facilities, carpooling (with priority parking) and emergency ride home.
- Student initiatives will include walking 'school' bus, bike to work, locker storage for skateboards/scooters/roller blades, free transit (available for children aged 12 or younger), carpool, and 'drive to five' zones along with engagement and events.
- A 'point of contact' amongst staff would be selected, who is a champion of sustainable travel, to manage the TDM Plan along with addressing pick up/drop off and safety concerns on the fronting streets.

### *Multi-modal Trip Generation Projections*

Catchment

- Details on the origin of future students for the Cloverley School's catchment area were provided by the School District and aggregated into zones (and adjusted for population growth) to assess mode share and direction of travel.
- Approximately 70% of students are anticipated to originate from zones west of the replacement school site or basically west of Hendry Avenue.
- 25% of students would be from zones within 400 metres of the school site.
- Within the Cloverley Replacement School's catchment area, around 65% of the student movements are projected to be already occurring on the study network.

Mode Share

- The Cloverley School mode share has been based transportation profiles at the nearby Ridgeway Elementary and Queen Mary Elementary schools and adjusted to reflect the accessibility of the new school's catchment area.
- Student car mode share in the morning peak hour is projected at 46% and the afternoon peak hour projected at 40%, with carpooling accounting for an additional 3% to 4% of the car-related trips.
- Walking is projected at 46% in the morning peak hour and 51% in the afternoon peak hour, with cycling and transit contributing to 6% to 7% of trips.

- Staff mode share car proportion is projected at 71%, reflecting the longer travelling distances expected compared to students.
- The student mode share projection is consistent with City of North Vancouver's target for 50% (or more) trips by active modes and transit.

Demand Projections

- The AM peak hour period (08:15-09:15) is projected to generate 270 inbound & 220 outbound vehicle movements along with 250 inbound & 165 outbound pedestrian movements.
- The PM peak hour (14:30 to 15:30) is projected to generate 170 inbound & 215 outbound vehicle movements along with 175 inbound & 275 outbound pedestrian movements.
- Cycling demand is projected at 25 to 30 movements per peak hour (November) but is likely to be higher for warmer/brighter months, while transit would account for 27 to 40 movements per peak hour period.

Parking Demand

- Pick up/drop off vehicle parking demand (15-minute) is projected to be 61 spaces occupied while 85 parking spaces would be available (from Cloverley Street & Shavington Street combined), while additional pick up/drop off parking would be located on Heywood Street for the 'drive to five' initiative.
- Staff parking demand is indicated to be lower by 2 spaces than that provided although the supply includes for 4 accessible temporary spaces.
- Short term bicycle parking demand (November) would be less than 50% of the capacity available, i.e., 40 spaces, providing flexibility for the warmer/brighter months.
- Secure bicycle (staff) parking demand November) is projected at 1 to 3 spaces while 10 spaces are provided.

## *Operational Review*

Operational Review

- All non-signalized study intersections were determined to operate within acceptable performance thresholds under future Background (without proposed development) and Total (with proposed development) 2026 conditions.
- Queensbury Avenue & Keith Road East intersection was determined to operate within acceptable performance thresholds in general. During the afternoon (school) peak hour period, the northbound left turn movement was determined to operate with moderately long delays (LOS E) and within capacity under future Background and Total conditions (irrespective of the school opening).
- Keith Road East, Mountain Highway & Brooksbank Avenue intersection exceeds acceptable capacity thresholds during the peak hours for the existing conditions along with future design years. Several vehicle movements experience long delays (LOS E or F) and approach/exceed capacity (v/c ≥ 1.00), while optimization of the signal timing improved operations to a certain degree. Further exploration of this intersection is considered beyond the scope of this study as the school is only

expected to result in 2% maximum additional movements in the AM morning and school PM afternoon peak hour periods.

Other Considerations

- A desktop review of the options to change vehicle flow on Hendry Avenue (between 4th Street East and 5th Street East), indicates that Hendry Avenue one-way southbound (Shavington Street to 4th Street East) provides for the best balance in distributing pick up/drop off vehicle movements; however, other options can be explored with the City of North Vancouver staff.
- For an incident day on Highway 1, Cloverley Street is one of the local streets most impacted by shortcutting (105 vehicle per hour eastbound); however, the new school movements would reduce travel times along with the 30km/h speed limit and additional traffic calming measures.

# APPENDIX A

## Terms of Reference

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# Cloverley Elementary Replacement:

# DRAFT Transportation Study Scope for review and discussion

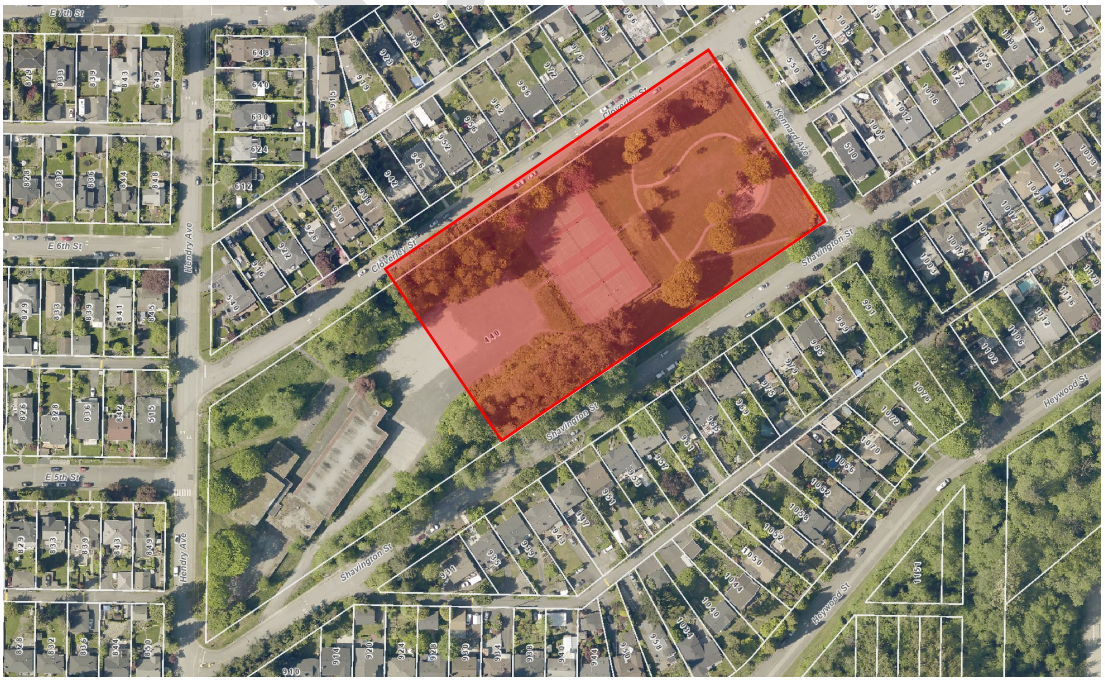
| | |
|---|---|
| **Date:** | August 3, 2023 |
| **Address:** | 440 Hendry Avenue |
| **CNV staff contact:** | [redacted] |
| **Prepared By:** | CNV Transportation Planning and Engineering staff |
| **Prepared For:** | [redacted]<br>North Vancouver School District Senior Leadership |

## Purpose:

This Study is to provide the City of North Vancouver (CNV) with information around the redevelopment of Cloverley Elementary School. The Study will provide North Vancouver School District (NVSD) with information about the City's future requirements for the multimodal transportation network surrounding the site.

## Subject Site:

The Cloverley Elementary site is defined for this Study per the following map. The existing school structure is located on the west side of the site, with the new school construction expected to take place on the east side of the site.



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The proposed catchment for the school is from St Andrews Ave (Esplanade to E Keith Rd) to Brooksbank Ave (Cotton Rd to Cloverley), extending across Keith Rd into the District of North Vancouver, though it is acknowledged that students may travel from well beyond this catchment area to access the school.


## Context:

In April 2022, CNV Council endorsed the Mobility Strategy, an update to the Long Term Transportation Plan. The vision of the strategy is “Healthy streets that work for everyone.”

NVSD’s Strategic Plan 2021-2031 has strategic goals around welcoming and inclusive culture, mental health and well-being, and environmental stewardship to “developing educated and responsible citizens of humanity.”

The BC Government is “aiming to have active transportation and public transit make up 30% of all trips taken in the province.” The Ministry of Education and Child Care’s 2023/24-2025/26 Service Plan notes that a key objective is to “create and maintain physical environments that promote healthy, sustainable, and effective learning.”

In June 2023, the Ministry of Education and Child Care announced funding for a new school in the Cloverley neighbourhood that will accommodate 585 students (60 Kindergarten and 525 elementary students) with occupancy planned for the 2026/27 school year. The site also includes a neighbourhood learning centre with services that benefit the broader community, such as child care.

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Per the above-stated policies – representative of shared goals and values across organizations - there is an opportunity to establish a school served by a safe and efficient multimodal transportation network that prioritizes transit and active modes of transportation. This study scope has been drafted with this in mind.

**Scope:**

Per the City of North Vancouver's land development requirements and involved organizations' shared goals, a multimodal transportation analysis and plan will need to be undertaken. The City has proposed the scope for this analysis in the following pages, based on NVSD's original outline and CNV's own transportation study goals and typical contents.

This Study should review and discuss how the Cloverley Elementary redevelopment project will align with and contribute to the advancement of the goals, strategies and actions outlined in the Mobility Strategy and the Province's transportation targets. One of the targets most important to the City in their Mobility Strategy is '*Increase transit and active mode share to 50% of our trips'* (p21). The Study should demonstrate how this project can help the City work toward meeting this target, and the goals and vision of the Mobility Strategy. www.cnv.org/mobilitystrategy.

The study must demonstrate the alignment of NVSD, CNV, and provincial planning/policy goals and how the proposed Cloverley Elementary School will reflect the transportation-related goals of these organizations.

## Task 1 – Project Initiation

The selected Transportation Consultant procured by NVSD should hold a startup meeting with NVSD and CNV staff to confirm the scope of the Study and propose a methodology and schedule to complete the work. It is anticipated that the consultant should meet with CNV and NVSD staff at key milestones throughout the Study in order to deliver an accurate and meaningful final report.

## Task 2 – Best Practices Review

The Consultant should undertake a brief best practices review, summarizing successful conditions/outcomes at 3 schools and summarizing lessons learned / reflections from 3 other schools. These best practices can include infrastructure, programming, and policy elements known to manage vehicle travel demand. The schools can be from the North Shore or elsewhere in the Lower Mainland.

## Task 3 – Multimodal Needs Assessment

Unlike typical transportation studies that focus on vehicle capacity analysis for new trips created by a development, this Study should focus on how the Cloverley Elementary site can integrate into CNV's current and future multimodal mobility vision and policy goals. A key deliverable would be a prioritized map of potential improvements including the frontages of the school site and a 400m radius (e.g., new or widened sidewalk, curb

extensions, RRFB, lighting, etc.) that are in line with best practices as outlined in the BC Active Transportation Design Guide, NACTO, and other relevant guides. The proponent will not necessarily be responsible for this whole suite of improvements beyond their identification. The Multimodal Needs Assessment should culminate in the development of a map and list of potential improvements, with the list organized by mode.

### Task 3a – Best Routes to School

Together with NVSD, the City's Safe and Active School Travel Program (SASTP) encourages safe and healthy school travel habits through outreach and improvements to the transportation infrastructure around schools. Each of the City's elementary schools has a School Travel Plan that has identified Best Routes to School maps and infrastructure improvements within 400m of the school site, which the Study should also develop. The Study should also identify possible locations for Drive to Five signage where parents can drop off students and walk the remaining five minutes to and from school, as well as locations for crossing guards.

### Task 3b – Pedestrian Network

Consider the pedestrian access to, around, and on the Cloverley Elementary site. The review should include all pedestrian access points (including where to restrict pedestrian access, if required), sidewalks (missing and substandard) and public realm infrastructure, and adjacent road crossings, especially as they relate to the Transit Network. The review should include consideration of the goals and strategies in the City's Walk CNV Pedestrian Plan – cnv.org/walking – as well as best practices in universal accessibility.

### Task 3c – Cyclist Network

Assess the existing and planned cyclist connections to the Cloverley Elementary site and on the adjacent road network. Consider the North Vancouver Bicycle Master Plan and the prioritized AAA Mobility Lane network – https://www.cnv.org/Streets-Transportation/Transportation-Planning/Mobility-Network

Contextualize City Zoning Bylaw requirements for short-term and secure bike parking with other bicycle parking provision best practices specific to school facilities to facilitate review by CNV. This could include parking options for scooters, skateboards, and other micromobility devices that are commonly seen at elementary schools. The Study should also assess if there are appropriate locations for bicycle pick up and drop off, including ample space for cargo bikes.

### Task 3d – Transit Network

Assess the existing and potential future transit network (as articulated in TransLink's T2050) to understand if bus stop balancing or other interventions are required to encourage use of transit. Best Routes should include consideration of

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student, parent, and staff access to and from transit and the supporting infrastructure required.

### Task 3e – Vehicle Network

The Cloverley neighbourhood experiences significant traffic volumes and congestion due to shortcutting to access the Ironworkers Memorial Bridge. With increased travel demand resultant of the Cloverley Elementary development, the Study should assess the existing and future demand on the road network and identify improvements such as traffic calming, traffic diversion, circulation, signage, new connections, etc. Review major intersections near the site to understand where vehicle access should be altered. The review should include considerations of the demand for and needs of taxis, HandyDart, Transportation Network Companies (e.g., Uber), car sharing programs (e.g., Evo, Modo) and other developing vehicle needs. (See the Appendix for further details on counts and capacity analysis).

The Study should also review the proposed Cloverley Elementary site layout, building siting, and access points and make recommendations on how the school can meet best practices for active travel design. As currently contemplated, the site is primarily vehicle oriented, and does not support meeting Mobility Strategy targets nor align with known best practices in school site design. The City has identified improvements on-site that could include:

- Removal of the current pick-up/drop-off driveway to encourage the use of sustainable modes and increase pedestrian comfort.
- Kennard Avenue - Locating parking access off another street, as Kennard has a steep grade, which is not suitable with a busy school entrance and pick-up drop-off.
- Increasing visibility of the pedestrian-primary entrance to the building

The consultant should demonstrate potential improvements to the site layout / access / circulation to enable the safe and efficient movement of vehicles, while prioritizing safe and efficient movement of active modes of transportation.

### Task 3f – Emergency and Truck Access

Consider the emergency (fire, ambulance) and truck (waste, deliveries) access needs of the Cloverley Elementary site and how these can be provided and maintained while allowing for active transportation-friendly frontages. Provide information on the expected frequency of truck deliveries/pick-ups and demonstrate safe and efficient emergency access.

### Task 3g – Parking, Loading and Curbside uses

Provide recommendations on vehicle and bicycle parking management, including pick up and drop off at Cloverley Elementary. This includes future parking

provision for on-site and on-street parking to work towards the goals of the Mobility Strategy, while providing for the necessary parking needs of the school. To do this the Study should:

- Compare existing (former school operations) parking provision with the City's zoning bylaw, and other parking provision best practices (e.g., ITE parking rates)
- Identify the location and regulations of parking in use and proposed in future plans
- Compare the future parking provision with the City's zoning bylaw, and other parking provision best practices (e.g., ITE parking rates), and provide recommendation on future parking provision rates
- Include new parking occupancy and turn over data for on-site and on-street parking
- Review the parking needs for staff in alignment with CNV's Zoning Bylaw
- Identify an under/oversupply of parking on-site
- Propose parking management tools to respond to on-site parking needs (infrastructure, program, and policy)
- Propose parking management tools to respond to the neighborhood street parking demands (infrastructure, program, and policy)

## Task 4 – Transportation Demand Management (TDM) Strategies

Provide recommendations on TDM measures for all trips to Cloverley Elementary to incent the use of public transit, active transportation, and car share in alignment with the Province's targets and the goals of the City's Mobility Strategy. This can include programming such as transit passes, Walking School Bus, bike share memberships and minutes, carshare membership and minutes, School Streets, skills and safety training, guaranteed ride home, on-demand shuttle services, carpool services and incentives, and more.

In addition to considering how to encourage students and parents to use sustainable modes, consideration should also be given to employee TDM including an understanding of who is making trips, stay lengths, and modes of transportation used. The TDM component of the study should contemplate how to decrease the share of employee trips made by single occupancy vehicle (SOV).

## Task 5 – Transportation Options Development and Recommendations

Work closely with the City to produce a conceptual design of the road network surrounding the Cloverley Elementary site, ensuring that the City's otherwise-planned multimodal network improvements are incorporated into the design. Demonstrate that the Cloverley Elementary site will not create adverse network-level impacts, and include information on known future activities that may create adverse network-level impacts.

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## Task 6 – Public Information Meeting

Work with the City to host two public information meetings for residents of the Cloverley neighbourhood to understand the proposed changes to the multimodal transportation network and have an opportunity to provide input. The second meeting will be to report back on whether and how feedback heard at the first meeting is reflected in the final design.

## Task 7 – Transportation Study Report

A final report should be compiled including recommendations on each item following the Transportation Study – Level 2 Guidelines. Note that the City is currently in the process of refining its Transportation Study Guidelines in alignment with the TDM Requirements refinements work, and that the scope of each of these requirements is subject to change.

An Executive Summary of the final report should be provided. Recommendations should be clearly presented, including information on the organization responsible and timing for implementation/consideration.

A presentation, including PowerPoint slides, should be made to senior City staff and may be required for presentation to City Council.

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## Appendix of available data

Multimodal Counts (as needed):

- The count schedule must take into consideration the times of day when volumes are highest – for both the surrounding road network (400m) and site. A review of recent daily/24-hour count data in the vicinity (which may be provided by the City, where available) will assist in establishing the appropriate hours for site collection. The final selection of time periods should be reviewed with the City prior to proceeding with the subsequent analysis.
- Counts should be undertaken in 15 minute intervals within the selected peak periods.
- All modes of transportation must be accounted for:
    - vehicle volumes (with trucks and buses distinguished);
    - bicycle volumes (whether on road, sidewalk, multi-use path, or being walked at crossings by pedestrian); and,
    - pedestrian crossing volumes.
- All count data must be displayed in a map format within the Transportation Study.

Operational Capacity Analysis (as needed):

- The operational performance of the transportation system from a vehicular perspective must be primarily expressed in terms of intersection level of service (LOS) and v/c ratio. For the purpose of capacity analysis, 2010 Highway Capacity Manual (HCM) methods must be adhered to. The City requires that consultants use Synchro software as their analysis tool when assessing capacity, with care taken to include the components listed below.
- Synchro summaries must be provided in tabular or graphical format, clearly identifying intersection performance indicators.
- The volume–to-capacity ratio (v/c) and LOS should be provided for each intersection overall, as well as per each movement. Intersections will be agreed with the City prior to the work commencing; intersections within 400m of the school are imagined to be included.
- Detailed output from Synchro must be provided in an attachment to the report, as well as electronically (upon finalization of the study).
- LOS D is the minimum accepted level of service for both signalized and unsignalized intersections in the CNV; and overall at signalized intersections the minimum acceptable v/c is 0.9, while the minimum v/c for individual movements is 0.95.
- The report should provide a brief summary in text regarding the analysis highlights, including identification of locations where existing operational issues exist.

Parking Counts:

- Counts should be conducted:

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- Weekday – Daytime ( 8-9am and 2-4pm to align with pickup/dropoff times)
- A record should be made of the parking restrictions on any surveyed blocks.

*The attached information is provided to support the agency's review process and shall not be distributed to other parties without written consent from Bunt & Associates Engineering Ltd.*

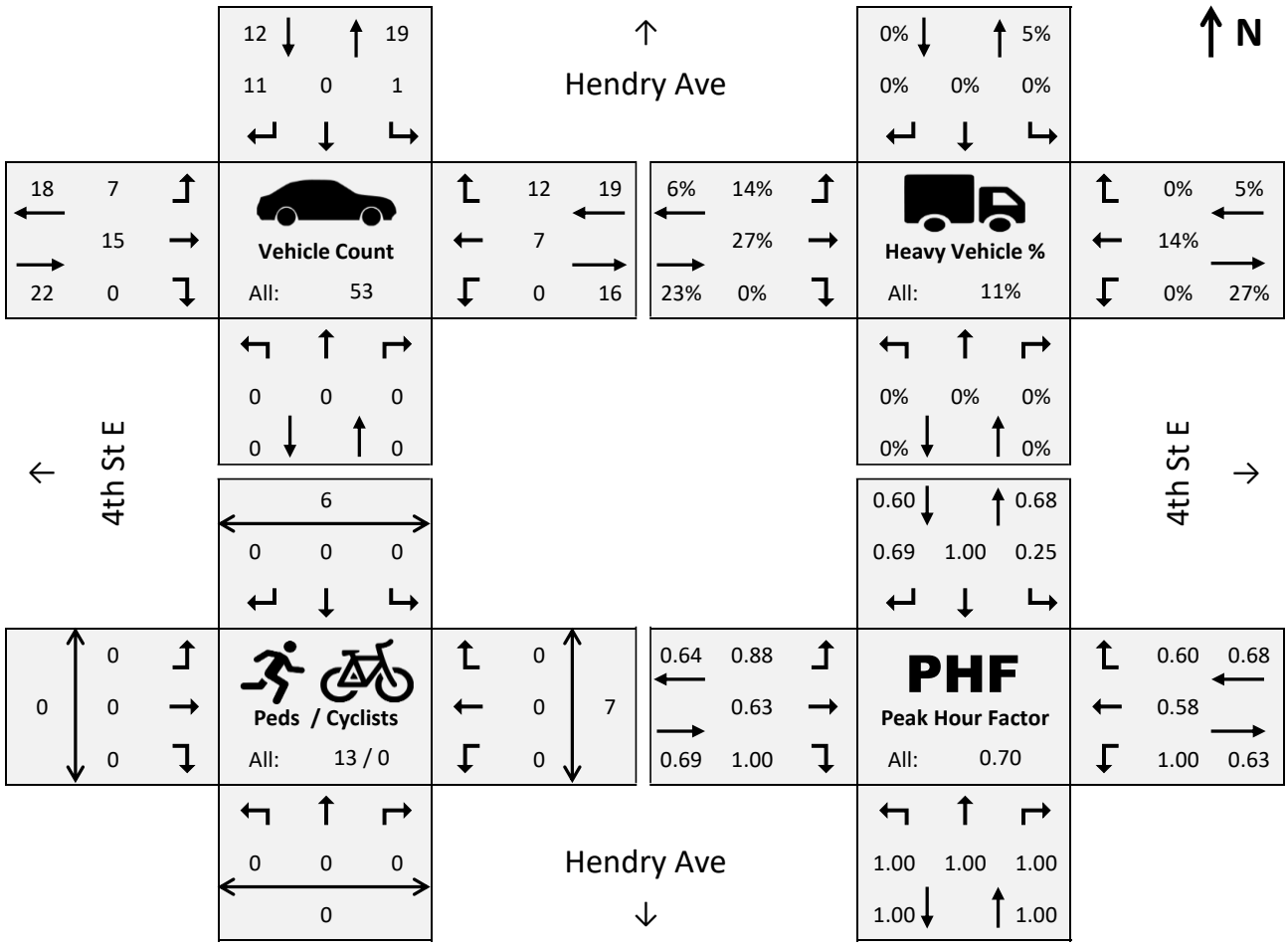
# APPENDIX B

## Traffic Data

# Hendry Ave @ 4th St E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 8:15 - 9:15 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 8:15 - 9:15 |
| **Notes:** | | | | | |

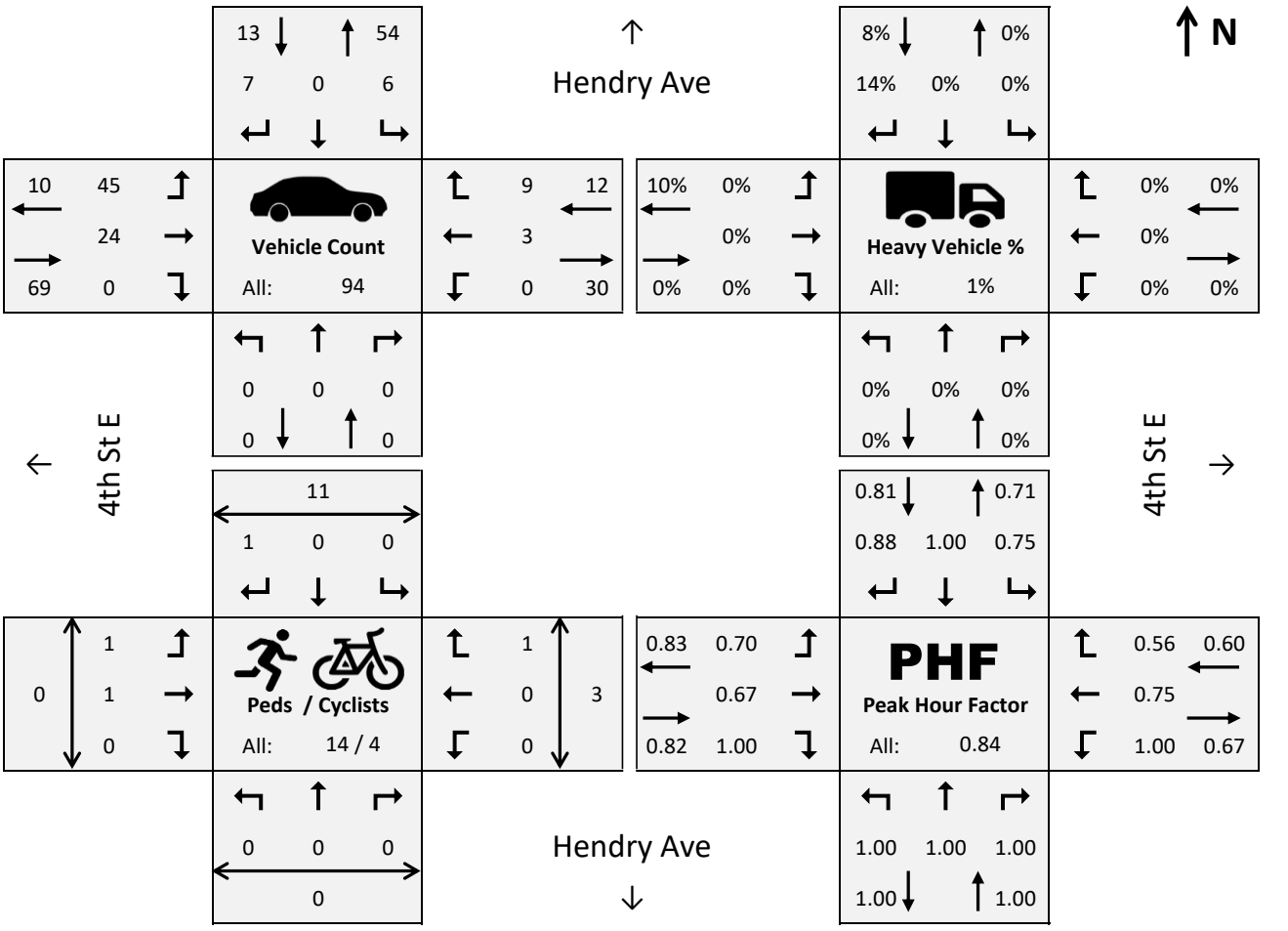
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 7:00 - 7:15 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 7:15 - 7:30 | 0 | 0 | 0 | 3 | 0 | 2 | 1 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 |
| 7:30 - 7:45 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 |
| 7:45 - 8:00 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 |
| 8:00 - 8:15 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 0 | 0 | 1 | 4 | 1 | 0 | 1 | 0 |
| 8:15 - 8:30 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 3 | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 |
| 8:30 - 8:45 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 2 | 5 | 1 | 0 | 3 | 0 |
| 8:45 - 9:00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 0 |
| 9:00 - 9:15 | 0 | 0 | 0 | 1 | 0 | 4 | 2 | 6 | 0 | 0 | 3 | 3 | 0 | 0 | 2 | 0 |
| 9:15 - 9:30 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 9:30 - 9:45 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 9:45 - 10:00 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ 4th St E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 16:00 - 17:00 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 14:45 - 15:45 |
| **Notes:** | | | | | |

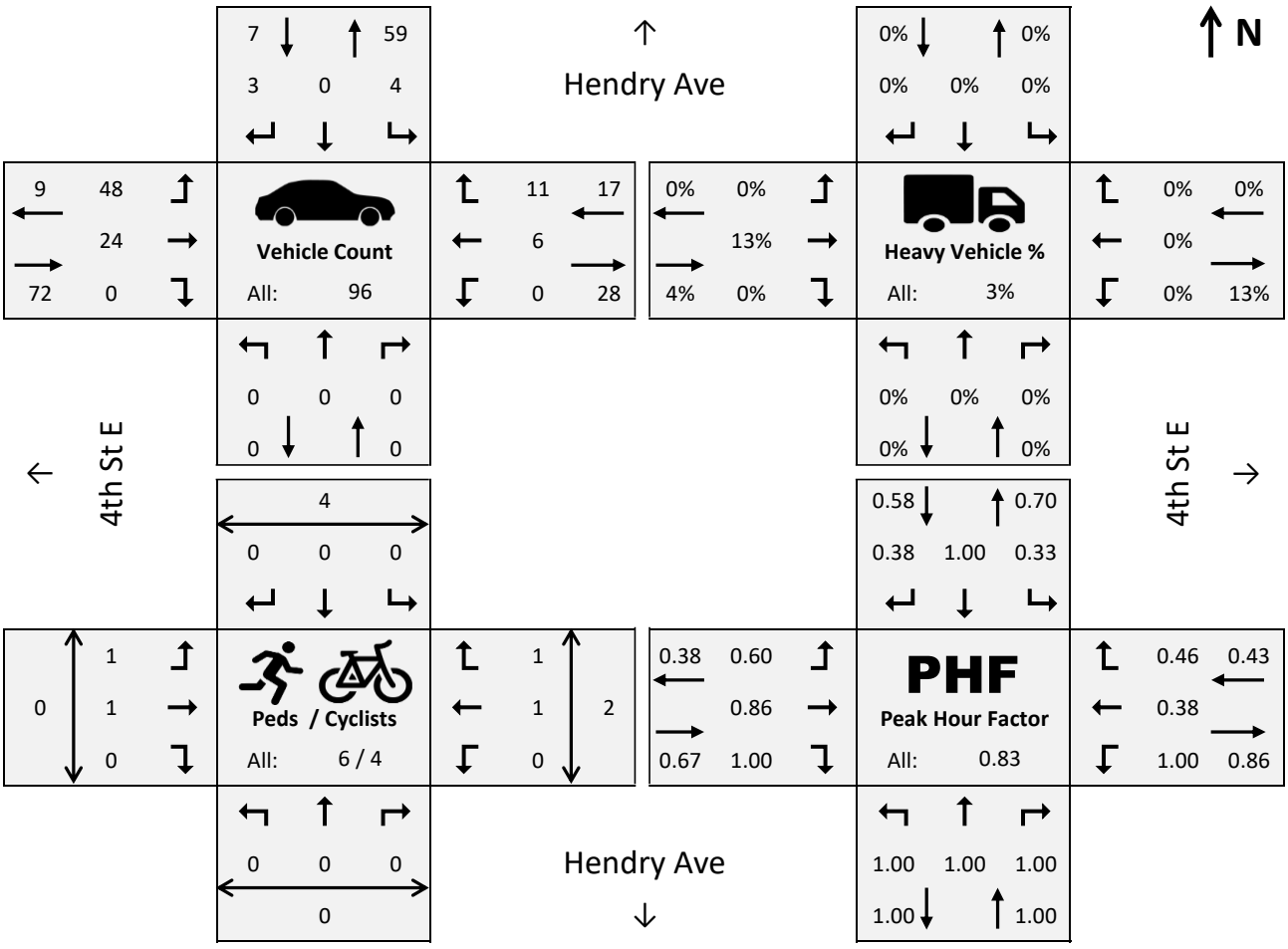
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 2 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 0 |
| 14:15 - 14:30 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 14:30 - 14:45 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 6 | 0 | 0 | 0 | 2 | 1 | 0 | 2 | 0 |
| 14:45 - 15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 7 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 15:00 - 15:15 | 0 | 0 | 0 | 1 | 0 | 2 | 11 | 5 | 0 | 0 | 4 | 6 | 0 | 0 | 0 | 0 |
| 15:15 - 15:30 | 0 | 0 | 0 | 3 | 0 | 0 | 9 | 6 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 |
| 15:30 - 15:45 | 0 | 0 | 0 | 3 | 0 | 1 | 10 | 6 | 0 | 0 | 3 | 8 | 3 | 0 | 2 | 0 |
| 15:45 - 16:00 | 0 | 0 | 0 | 2 | 0 | 2 | 9 | 8 | 0 | 0 | 0 | 6 | 0 | 0 | 1 | 0 |
| 16:00 - 16:15 | 0 | 0 | 0 | 1 | 0 | 1 | 6 | 4 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| 16:15 - 16:30 | 0 | 0 | 0 | 1 | 0 | 2 | 9 | 9 | 0 | 0 | 1 | 4 | 2 | 0 | 1 | 0 |
| 16:30 - 16:45 | 0 | 0 | 0 | 2 | 0 | 2 | 16 | 5 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 |
| 16:45 - 17:00 | 0 | 0 | 0 | 2 | 0 | 2 | 14 | 6 | 0 | 0 | 1 | 1 | 7 | 0 | 2 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ 4th St E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 14:30 - 15:30 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 14:45 - 15:45 |
| **Notes:** | | | | | |

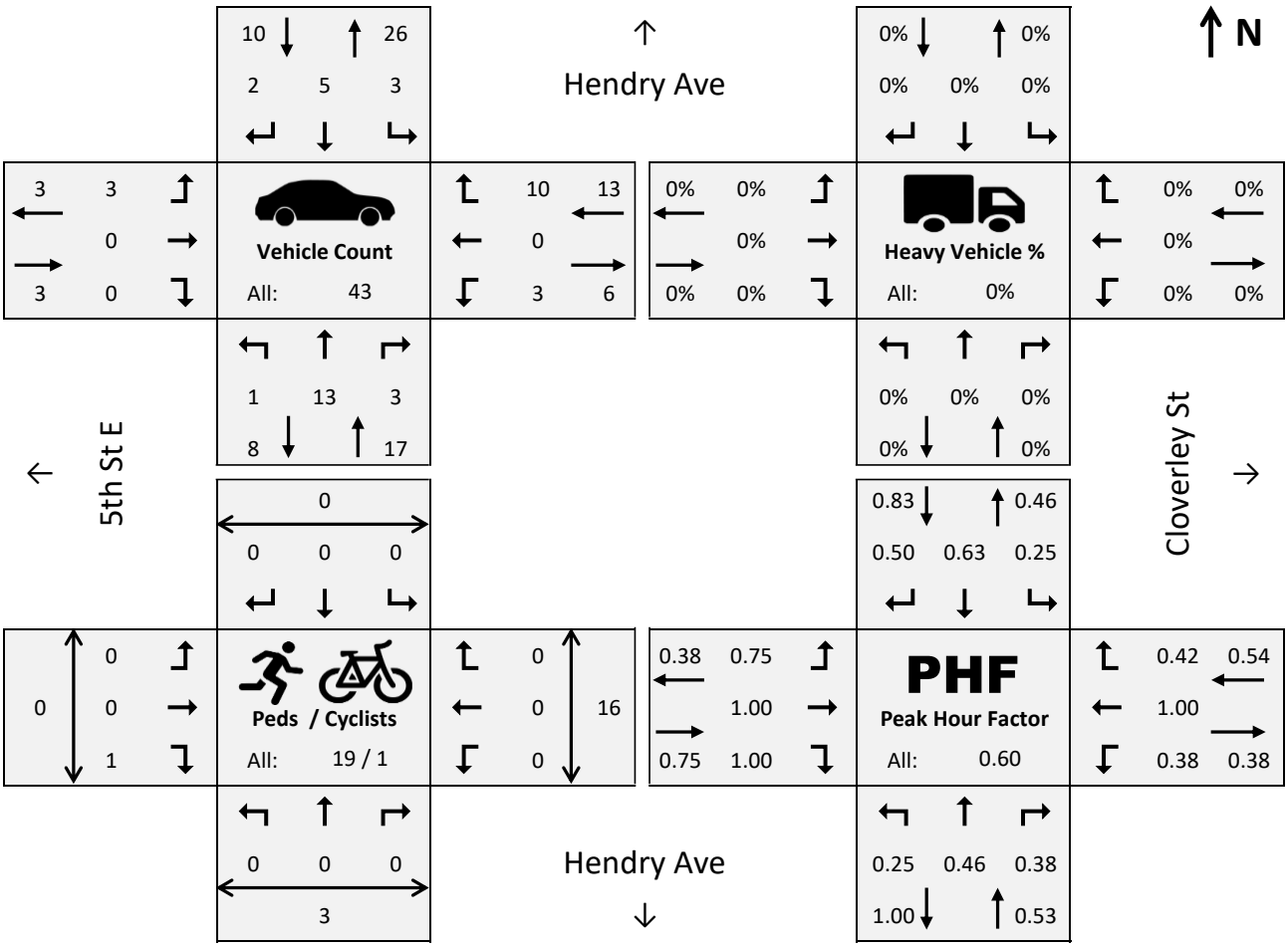
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 2 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 0 |
| 14:15 - 14:30 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 14:30 - 14:45 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 6 | 0 | 0 | 0 | 2 | 1 | 0 | 2 | 0 |
| 14:45 - 15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 7 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 15:00 - 15:15 | 0 | 0 | 0 | 1 | 0 | 2 | 11 | 5 | 0 | 0 | 4 | 6 | 0 | 0 | 0 | 0 |
| 15:15 - 15:30 | 0 | 0 | 0 | 3 | 0 | 0 | 9 | 6 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 |
| 15:30 - 15:45 | 0 | 0 | 0 | 3 | 0 | 1 | 10 | 6 | 0 | 0 | 3 | 8 | 3 | 0 | 2 | 0 |
| 15:45 - 16:00 | 0 | 0 | 0 | 2 | 0 | 2 | 9 | 8 | 0 | 0 | 0 | 6 | 0 | 0 | 1 | 0 |
| 16:00 - 16:15 | 0 | 0 | 0 | 1 | 0 | 1 | 6 | 4 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| 16:15 - 16:30 | 0 | 0 | 0 | 1 | 0 | 2 | 9 | 9 | 0 | 0 | 1 | 4 | 2 | 0 | 1 | 0 |
| 16:30 - 16:45 | 0 | 0 | 0 | 2 | 0 | 2 | 16 | 5 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 |
| 16:45 - 17:00 | 0 | 0 | 0 | 2 | 0 | 2 | 14 | 6 | 0 | 0 | 1 | 1 | 7 | 0 | 2 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ Cloverley St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 8:15 - 9:15 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 7:45 - 8:45 |
| **Notes:** | | | | | |

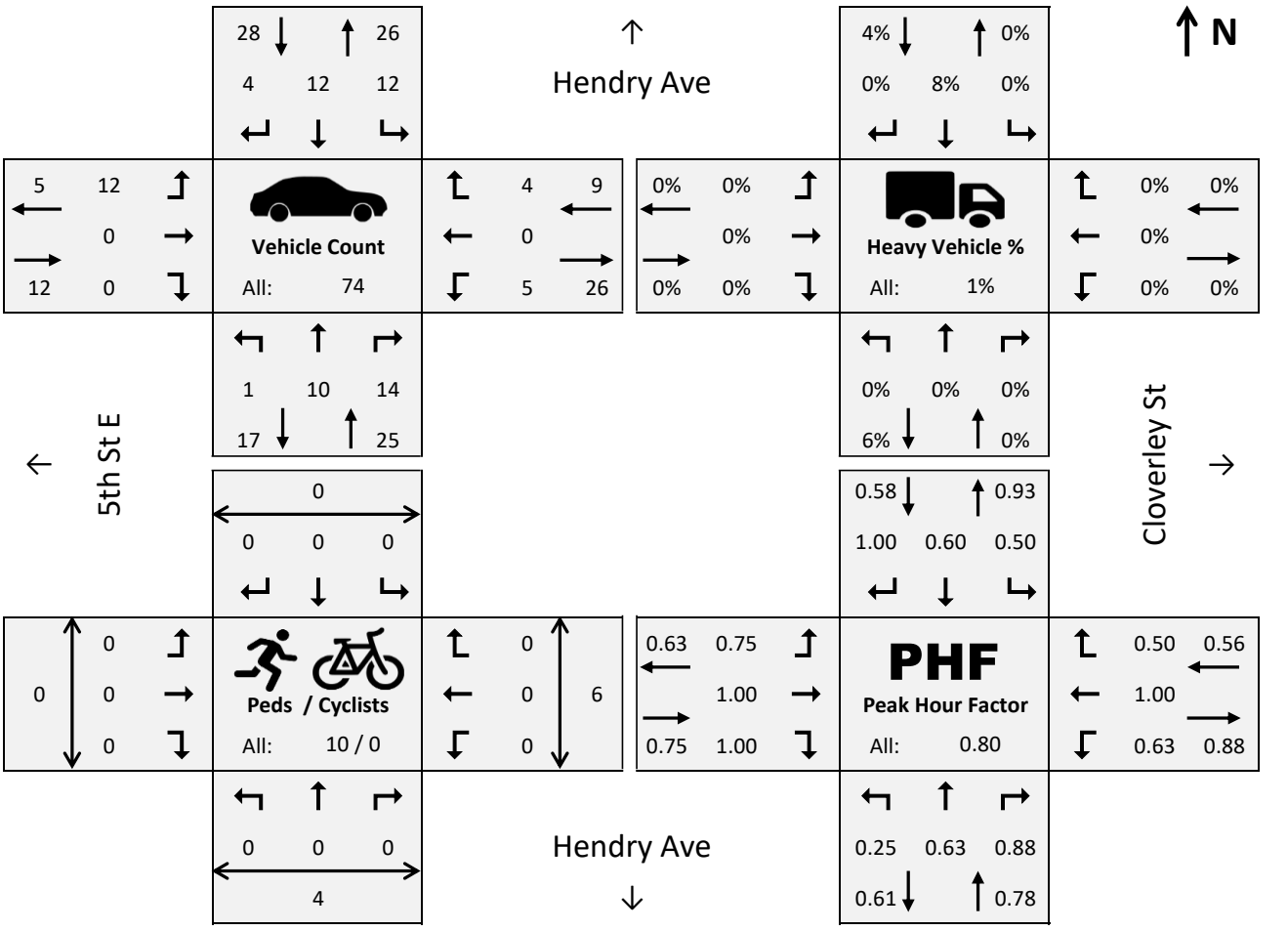
| TIME | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INTERVAL | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 7:00 - 7:15 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 - 7:30 | 0 | 1 | 1 | 0 | 4 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 - 7:45 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 7:45 - 8:00 | 1 | 4 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 - 8:15 | 1 | 3 | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 8:15 - 8:30 | 1 | 4 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 5 | 0 |
| 8:30 - 8:45 | 0 | 7 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 3 | 0 |
| 8:45 - 9:00 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 0 |
| 9:00 - 9:15 | 0 | 2 | 2 | 3 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 3 | 0 |
| 9:15 - 9:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 2 | 0 |
| 9:30 - 9:45 | 0 | 1 | 0 | 0 | 4 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:45 - 10:00 | 0 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ Cloverley St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 16:00 - 17:00 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 15:00 - 16:00 |
| **Notes:** | | | | | |

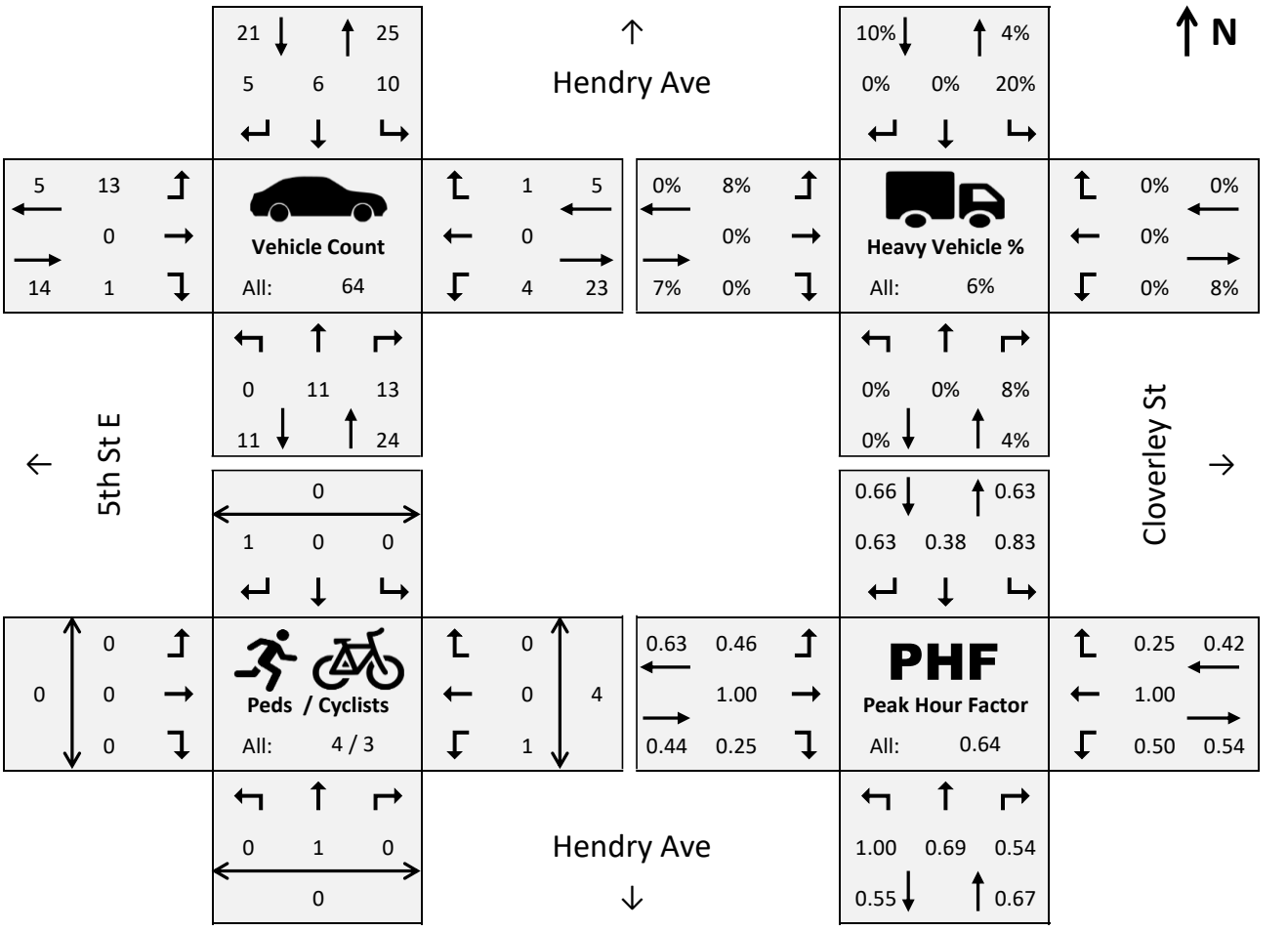
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 2 | 3 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 1 | 0 | 0 |
| 14:15 - 14:30 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 14:30 - 14:45 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 14:45 - 15:00 | 0 | 4 | 4 | 2 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 3 | 0 |
| 15:00 - 15:15 | 0 | 3 | 3 | 3 | 2 | 2 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 - 15:30 | 0 | 3 | 6 | 3 | 4 | 1 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 - 15:45 | 1 | 3 | 6 | 1 | 3 | 3 | 5 | 0 | 2 | 2 | 0 | 1 | 0 | 2 | 1 | 0 |
| 15:45 - 16:00 | 0 | 5 | 7 | 6 | 4 | 1 | 6 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 16:00 - 16:15 | 1 | 3 | 3 | 1 | 2 | 1 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 0 |
| 16:15 - 16:30 | 0 | 2 | 4 | 2 | 0 | 1 | 4 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 16:30 - 16:45 | 0 | 4 | 4 | 3 | 5 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 |
| 16:45 - 17:00 | 0 | 1 | 3 | 6 | 5 | 1 | 3 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 4 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ Cloverley St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 14:30 - 15:30 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 15:00 - 16:00 |
| **Notes:** | | | | | |

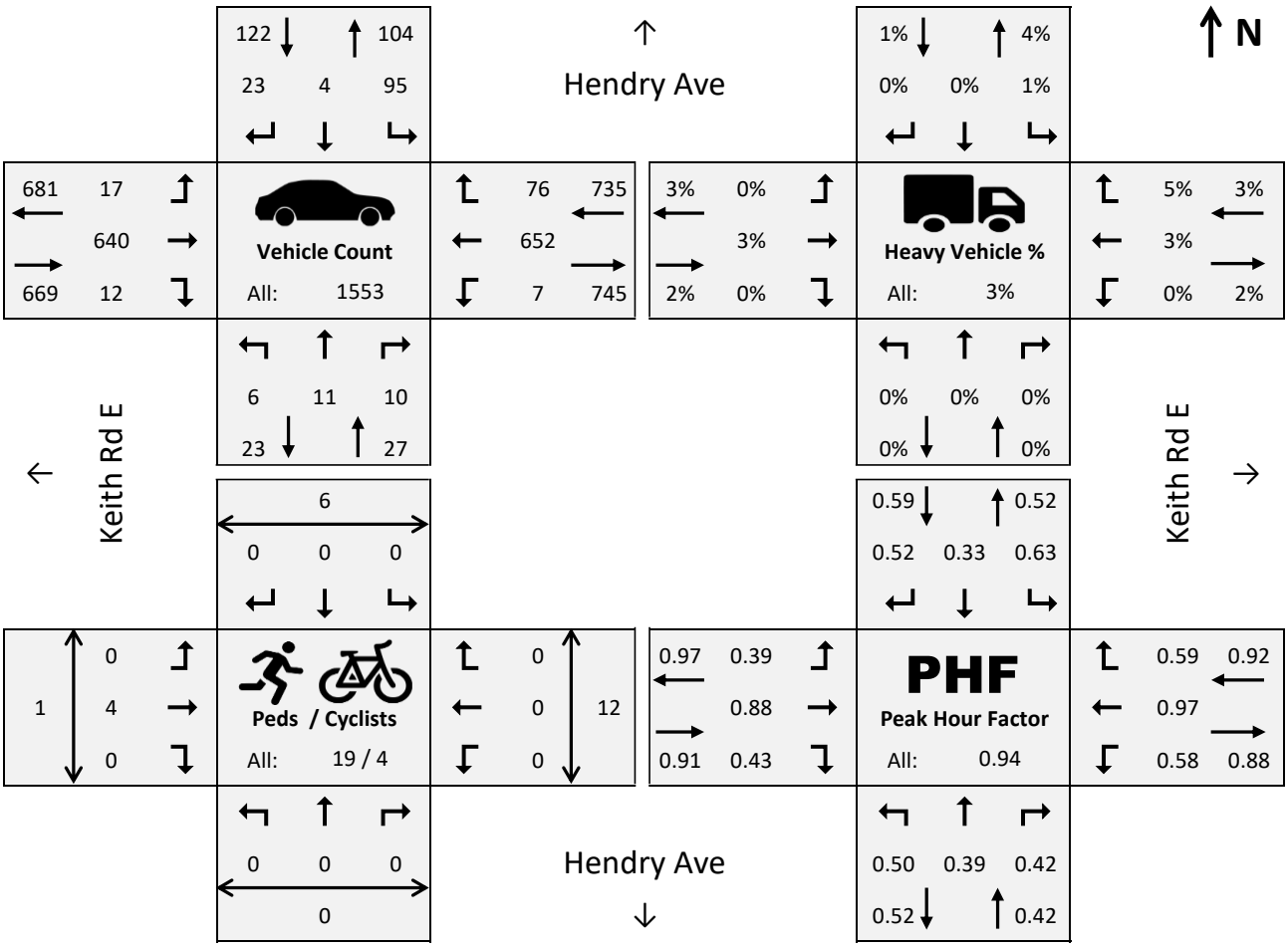
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 2 | 3 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 1 | 0 | 0 |
| 14:15 - 14:30 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 14:30 - 14:45 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 14:45 - 15:00 | 0 | 4 | 4 | 2 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 3 | 0 |
| 15:00 - 15:15 | 0 | 3 | 3 | 3 | 2 | 2 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 - 15:30 | 0 | 3 | 6 | 3 | 4 | 1 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 - 15:45 | 1 | 3 | 6 | 1 | 3 | 3 | 5 | 0 | 2 | 2 | 0 | 1 | 0 | 2 | 1 | 0 |
| 15:45 - 16:00 | 0 | 5 | 7 | 6 | 4 | 1 | 6 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 16:00 - 16:15 | 1 | 3 | 3 | 1 | 2 | 1 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 0 |
| 16:15 - 16:30 | 0 | 2 | 4 | 2 | 0 | 1 | 4 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 16:30 - 16:45 | 0 | 4 | 4 | 3 | 5 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 |
| 16:45 - 17:00 | 0 | 1 | 3 | 6 | 5 | 1 | 3 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 4 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ Keith Rd E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 8:15 - 9:15 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 8:00 - 9:00 |
| **Notes:** | | | | | |

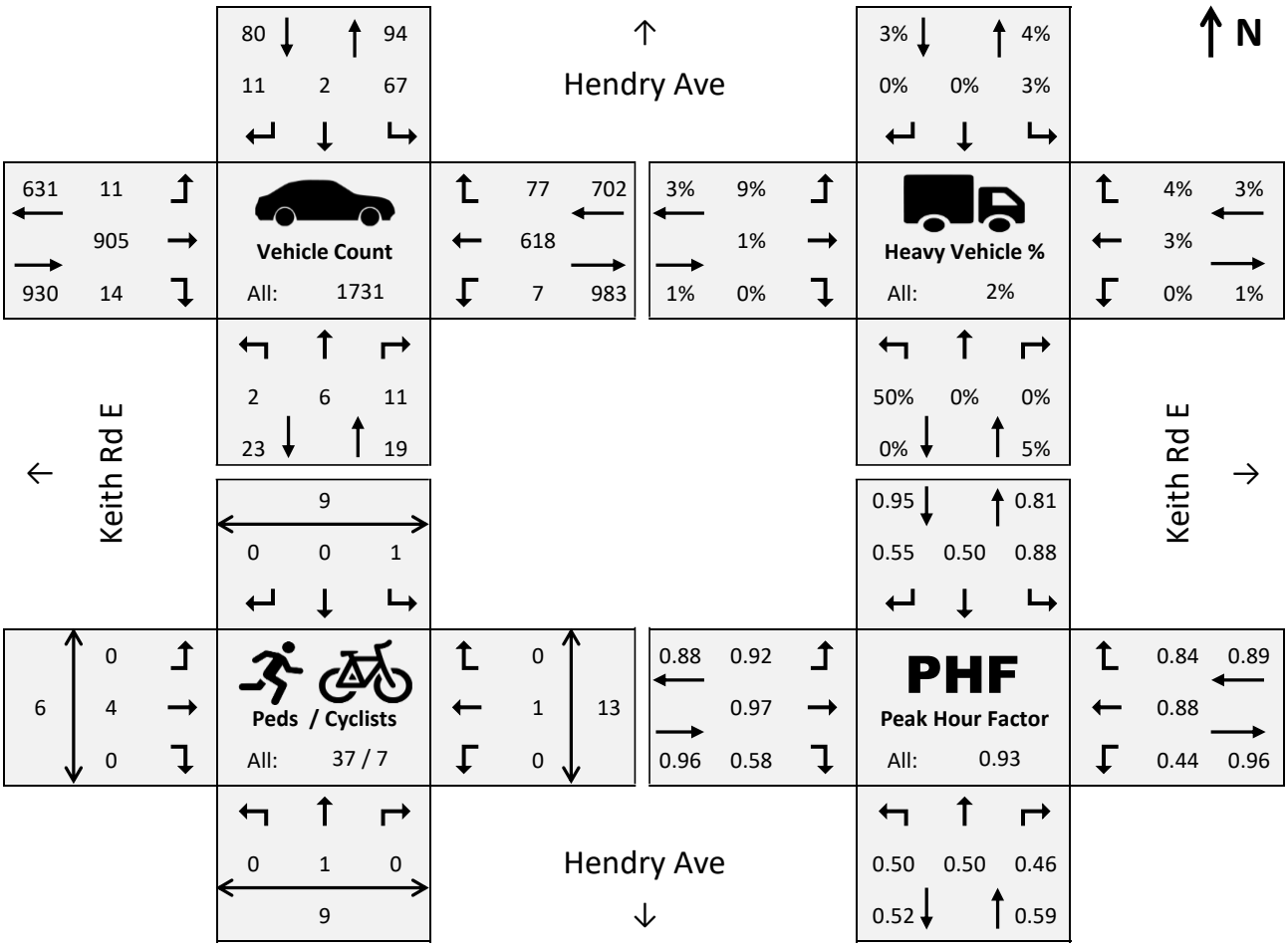
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 7:00 - 7:15 | 0 | 0 | 2 | 9 | 0 | 2 | 0 | 87 | 0 | 1 | 102 | 3 | 0 | 1 | 0 | 0 |
| 7:15 - 7:30 | 0 | 0 | 1 | 8 | 0 | 1 | 0 | 94 | 1 | 1 | 90 | 5 | 1 | 1 | 2 | 0 |
| 7:30 - 7:45 | 0 | 0 | 3 | 16 | 0 | 1 | 3 | 116 | 1 | 0 | 106 | 9 | 0 | 0 | 1 | 0 |
| 7:45 - 8:00 | 2 | 2 | 2 | 12 | 1 | 4 | 6 | 140 | 2 | 2 | 153 | 15 | 1 | 1 | 3 | 1 |
| 8:00 - 8:15 | 0 | 6 | 3 | 19 | 5 | 5 | 4 | 166 | 0 | 0 | 156 | 11 | 0 | 0 | 5 | 0 |
| 8:15 - 8:30 | 1 | 0 | 1 | 21 | 0 | 4 | 1 | 182 | 1 | 1 | 168 | 20 | 4 | 0 | 5 | 1 |
| 8:30 - 8:45 | 3 | 7 | 6 | 18 | 0 | 6 | 11 | 160 | 2 | 2 | 166 | 32 | 2 | 0 | 3 | 0 |
| 8:45 - 9:00 | 0 | 1 | 1 | 38 | 3 | 11 | 3 | 154 | 2 | 1 | 164 | 7 | 0 | 0 | 3 | 0 |
| 9:00 - 9:15 | 2 | 3 | 2 | 18 | 1 | 2 | 2 | 144 | 7 | 3 | 154 | 17 | 0 | 0 | 1 | 0 |
| 9:15 - 9:30 | 0 | 0 | 1 | 11 | 0 | 2 | 4 | 138 | 2 | 0 | 131 | 10 | 1 | 1 | 1 | 0 |
| 9:30 - 9:45 | 2 | 0 | 2 | 15 | 2 | 4 | 4 | 106 | 1 | 0 | 142 | 10 | 2 | 1 | 2 | 0 |
| 9:45 - 10:00 | 2 | 0 | 5 | 10 | 0 | 2 | 2 | 120 | 5 | 0 | 168 | 10 | 0 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ Keith Rd E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 16:00 - 17:00 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 15:15 - 16:15 |
| **Notes:** | | | | | |

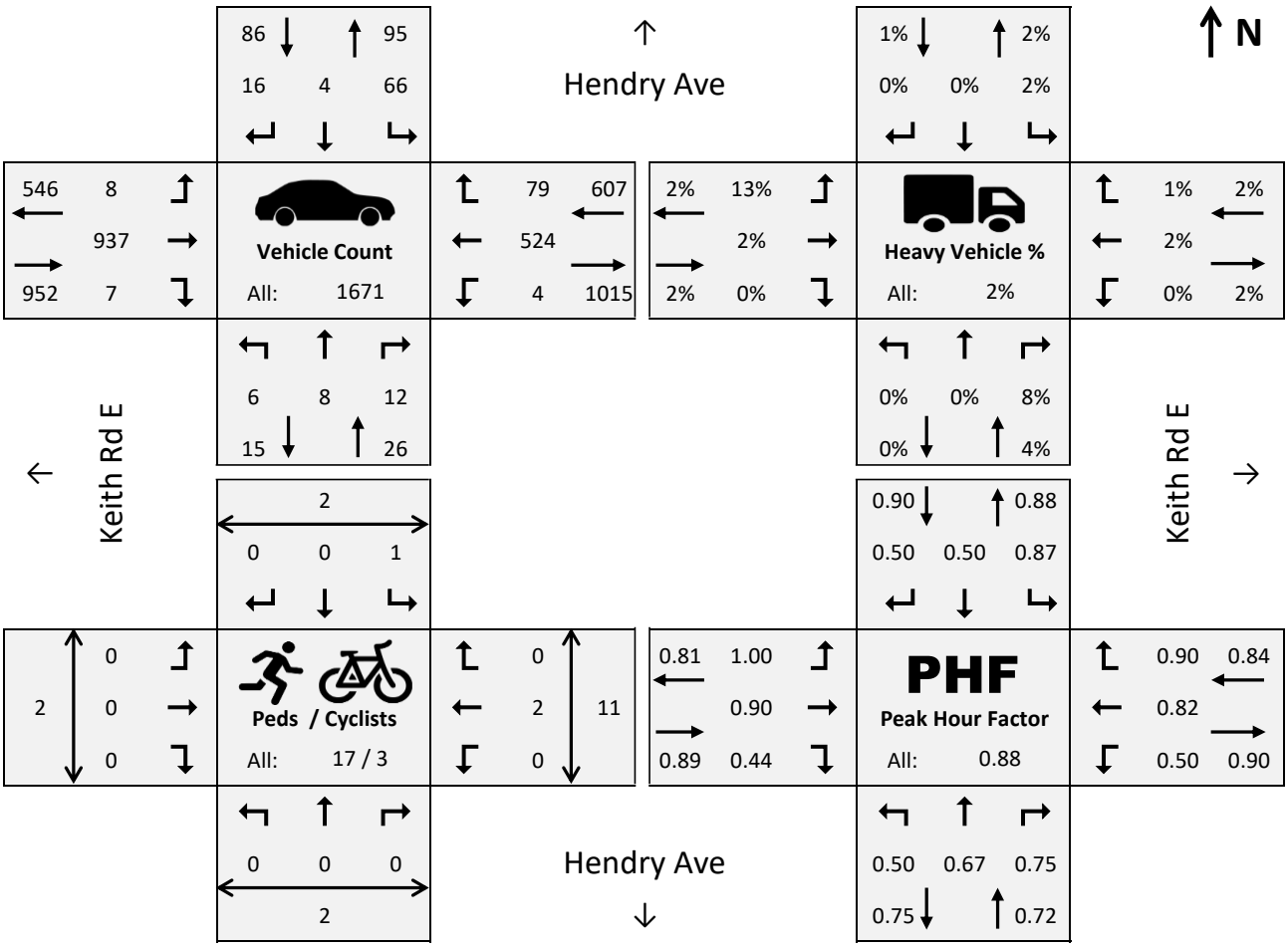
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 2 | 4 | 4 | 16 | 4 | 8 | 4 | 163 | 2 | 1 | 114 | 13 | 1 | 0 | 4 | 0 |
| 14:15 - 14:30 | 1 | 0 | 0 | 16 | 2 | 3 | 0 | 174 | 1 | 2 | 134 | 14 | 1 | 0 | 5 | 0 |
| 14:30 - 14:45 | 1 | 1 | 4 | 14 | 2 | 2 | 2 | 230 | 0 | 2 | 106 | 18 | 2 | 1 | 6 | 0 |
| 14:45 - 15:00 | 3 | 3 | 3 | 17 | 0 | 3 | 2 | 239 | 2 | 0 | 136 | 22 | 0 | 1 | 3 | 0 |
| 15:00 - 15:15 | 1 | 2 | 3 | 19 | 2 | 3 | 2 | 207 | 1 | 2 | 123 | 17 | 0 | 0 | 0 | 0 |
| 15:15 - 15:30 | 1 | 2 | 2 | 16 | 0 | 8 | 2 | 261 | 4 | 0 | 159 | 22 | 0 | 0 | 2 | 2 |
| 15:30 - 15:45 | 0 | 1 | 3 | 27 | 2 | 2 | 2 | 234 | 3 | 3 | 129 | 24 | 1 | 1 | 4 | 0 |
| 15:45 - 16:00 | 2 | 1 | 4 | 16 | 0 | 4 | 1 | 253 | 3 | 2 | 149 | 22 | 2 | 1 | 1 | 2 |
| 16:00 - 16:15 | 1 | 1 | 6 | 17 | 1 | 2 | 3 | 234 | 2 | 1 | 128 | 17 | 0 | 0 | 2 | 0 |
| 16:15 - 16:30 | 0 | 0 | 1 | 16 | 0 | 3 | 2 | 228 | 0 | 2 | 165 | 18 | 5 | 1 | 3 | 0 |
| 16:30 - 16:45 | 1 | 2 | 3 | 19 | 1 | 1 | 3 | 209 | 6 | 4 | 150 | 19 | 1 | 2 | 3 | 1 |
| 16:45 - 17:00 | 0 | 3 | 1 | 15 | 0 | 5 | 3 | 234 | 6 | 0 | 175 | 23 | 3 | 6 | 5 | 5 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ Keith Rd E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 14:30 - 15:30 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 15:15 - 16:15 |
| **Notes:** | | | | | |

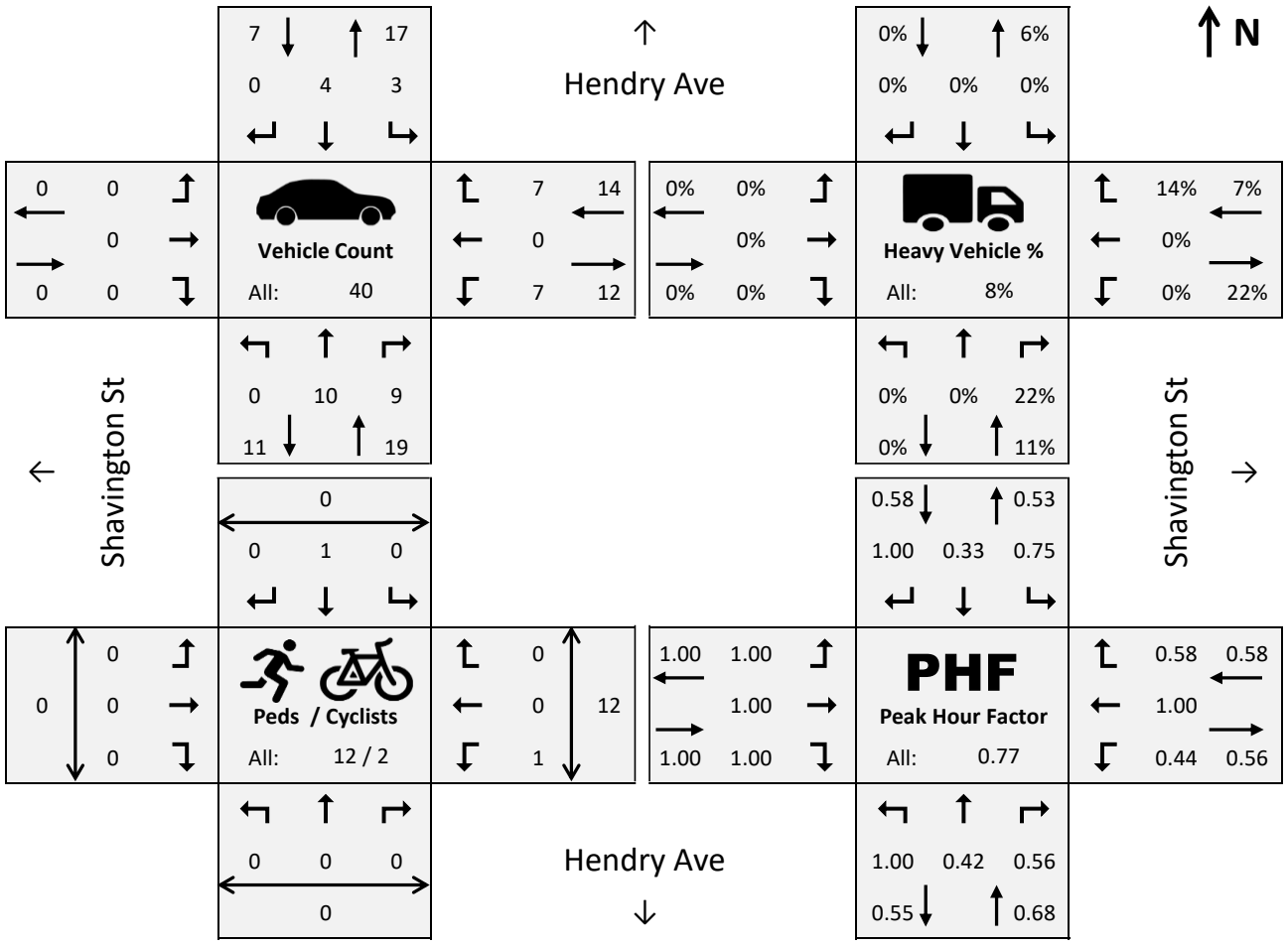
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 2 | 4 | 4 | 16 | 4 | 8 | 4 | 163 | 2 | 1 | 114 | 13 | 1 | 0 | 4 | 0 |
| 14:15 - 14:30 | 1 | 0 | 0 | 16 | 2 | 3 | 0 | 174 | 1 | 2 | 134 | 14 | 1 | 0 | 5 | 0 |
| 14:30 - 14:45 | 1 | 1 | 4 | 14 | 2 | 2 | 2 | 230 | 0 | 2 | 106 | 18 | 2 | 1 | 6 | 0 |
| 14:45 - 15:00 | 3 | 3 | 3 | 17 | 0 | 3 | 2 | 239 | 2 | 0 | 136 | 22 | 0 | 1 | 3 | 0 |
| 15:00 - 15:15 | 1 | 2 | 3 | 19 | 2 | 3 | 2 | 207 | 1 | 2 | 123 | 17 | 0 | 0 | 0 | 0 |
| 15:15 - 15:30 | 1 | 2 | 2 | 16 | 0 | 8 | 2 | 261 | 4 | 0 | 159 | 22 | 0 | 0 | 2 | 2 |
| 15:30 - 15:45 | 0 | 1 | 3 | 27 | 2 | 2 | 2 | 234 | 3 | 3 | 129 | 24 | 1 | 1 | 4 | 0 |
| 15:45 - 16:00 | 2 | 1 | 4 | 16 | 0 | 4 | 1 | 253 | 3 | 2 | 149 | 22 | 2 | 1 | 1 | 2 |
| 16:00 - 16:15 | 1 | 1 | 6 | 17 | 1 | 2 | 3 | 234 | 2 | 1 | 128 | 17 | 0 | 0 | 2 | 0 |
| 16:15 - 16:30 | 0 | 0 | 1 | 16 | 0 | 3 | 2 | 228 | 0 | 2 | 165 | 18 | 5 | 1 | 3 | 0 |
| 16:30 - 16:45 | 1 | 2 | 3 | 19 | 1 | 1 | 3 | 209 | 6 | 4 | 150 | 19 | 1 | 2 | 3 | 1 |
| 16:45 - 17:00 | 0 | 3 | 1 | 15 | 0 | 5 | 3 | 234 | 6 | 0 | 175 | 23 | 3 | 6 | 5 | 5 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ Shavington St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 8:15 - 9:15 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 7:45 - 8:45 |
| **Notes:** | | | | | |

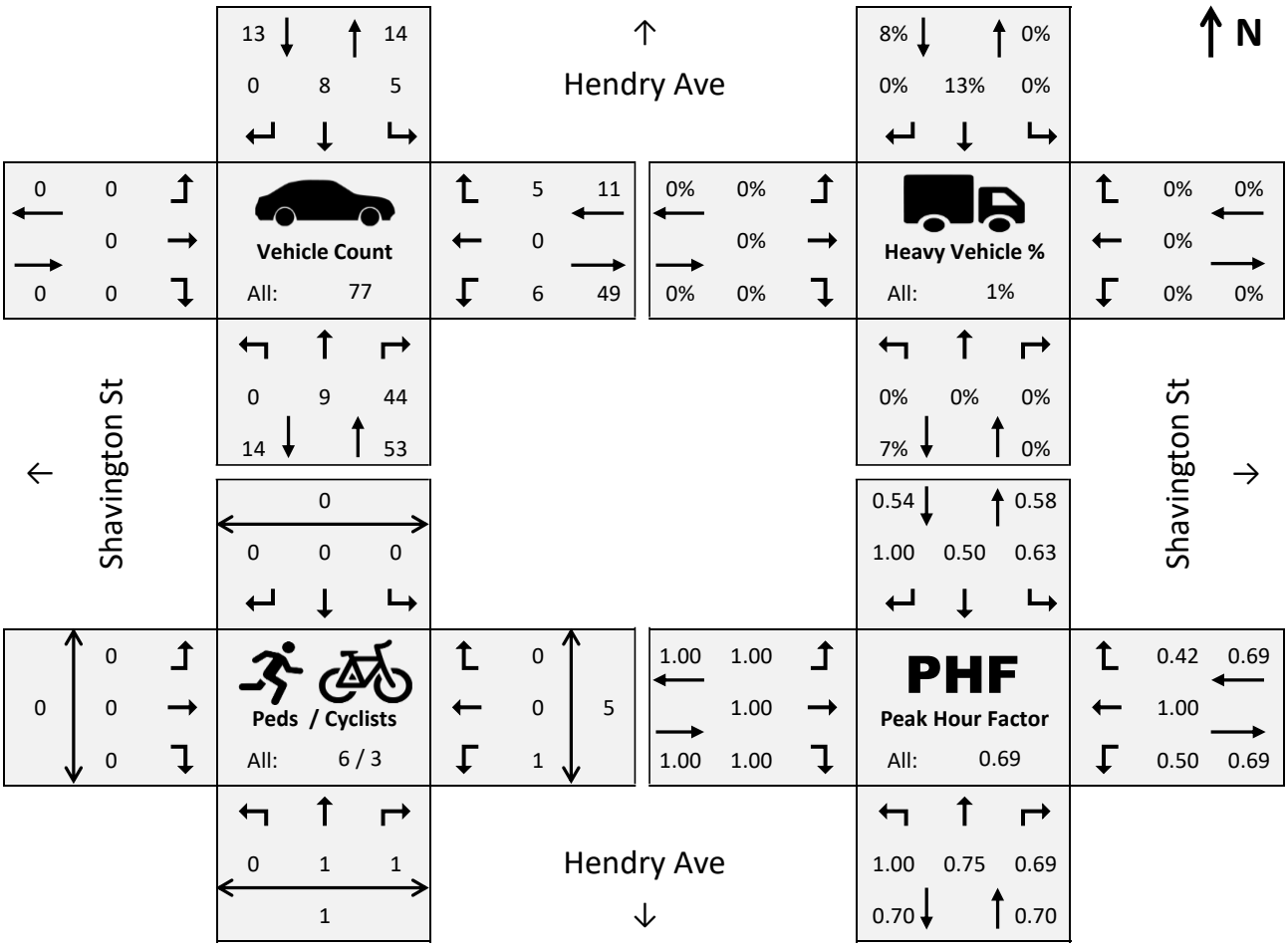
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 7:00 - 7:15 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 - 7:30 | 0 | 0 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 - 7:45 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 7:45 - 8:00 | 0 | 2 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 |
| 8:00 - 8:15 | 0 | 3 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 |
| 8:15 - 8:30 | 0 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 5 | 0 |
| 8:30 - 8:45 | 0 | 6 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 3 | 0 |
| 8:45 - 9:00 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 9:00 - 9:15 | 0 | 1 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 2 | 0 |
| 9:15 - 9:30 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 9:30 - 9:45 | 0 | 1 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:45 - 10:00 | 0 | 3 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ Shavington St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 16:00 - 17:00 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 14:45 - 15:45 |
| **Notes:** | | | | | |

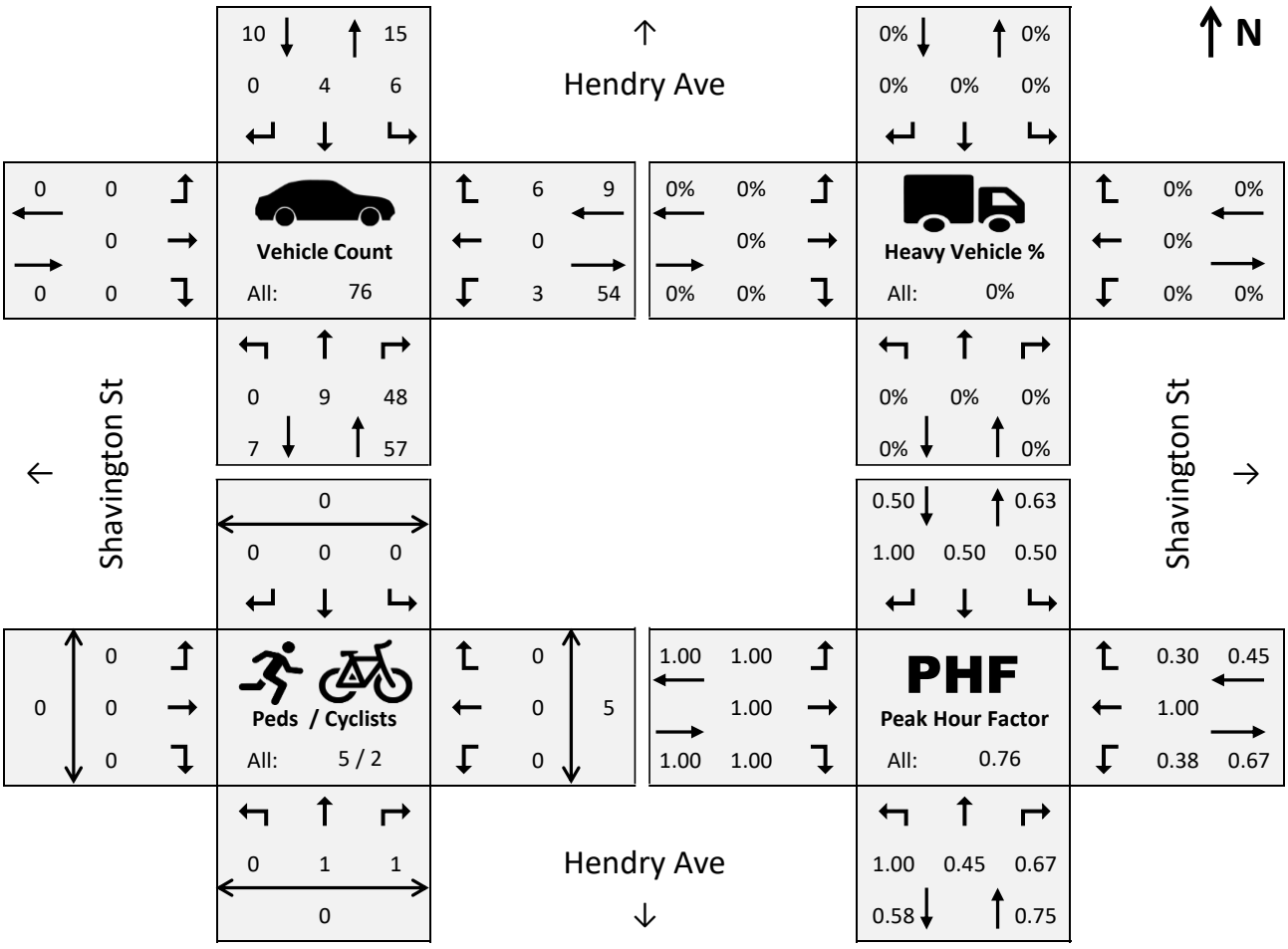
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 0 | 4 | 2 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 14:15 - 14:30 | 0 | 0 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30 - 14:45 | 0 | 1 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 14:45 - 15:00 | 0 | 1 | 18 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 3 | 0 |
| 15:00 - 15:15 | 0 | 5 | 12 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 - 15:30 | 0 | 2 | 9 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 15:30 - 15:45 | 0 | 5 | 13 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 |
| 15:45 - 16:00 | 0 | 5 | 10 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 |
| 16:00 - 16:15 | 0 | 3 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 |
| 16:15 - 16:30 | 0 | 2 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 4 | 0 |
| 16:30 - 16:45 | 0 | 3 | 16 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 1 | 0 |
| 16:45 - 17:00 | 0 | 1 | 13 | 2 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Hendry Ave @ Shavington St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 14:30 - 15:30 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 14:45 - 15:45 |
| **Notes:** | | | | | |

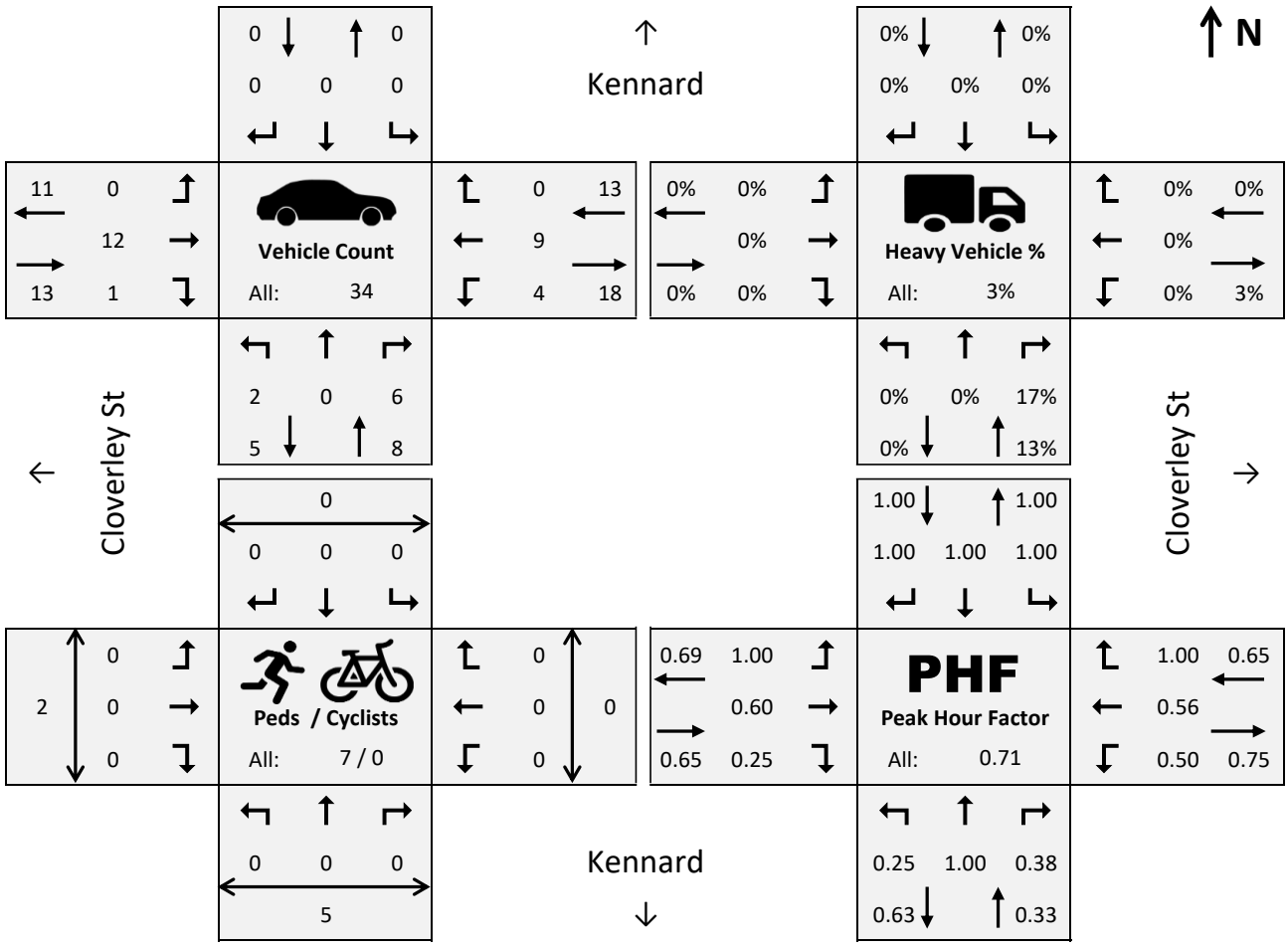
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 0 | 4 | 2 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 14:15 - 14:30 | 0 | 0 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30 - 14:45 | 0 | 1 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 14:45 - 15:00 | 0 | 1 | 18 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 3 | 0 |
| 15:00 - 15:15 | 0 | 5 | 12 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 - 15:30 | 0 | 2 | 9 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 15:30 - 15:45 | 0 | 5 | 13 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 |
| 15:45 - 16:00 | 0 | 5 | 10 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 |
| 16:00 - 16:15 | 0 | 3 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 |
| 16:15 - 16:30 | 0 | 2 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 4 | 0 |
| 16:30 - 16:45 | 0 | 3 | 16 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 1 | 0 |
| 16:45 - 17:00 | 0 | 1 | 13 | 2 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Kennard @ Cloverley St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 8:15 - 9:15 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 7:45 - 8:45 |
| **Notes:** | | | | | |

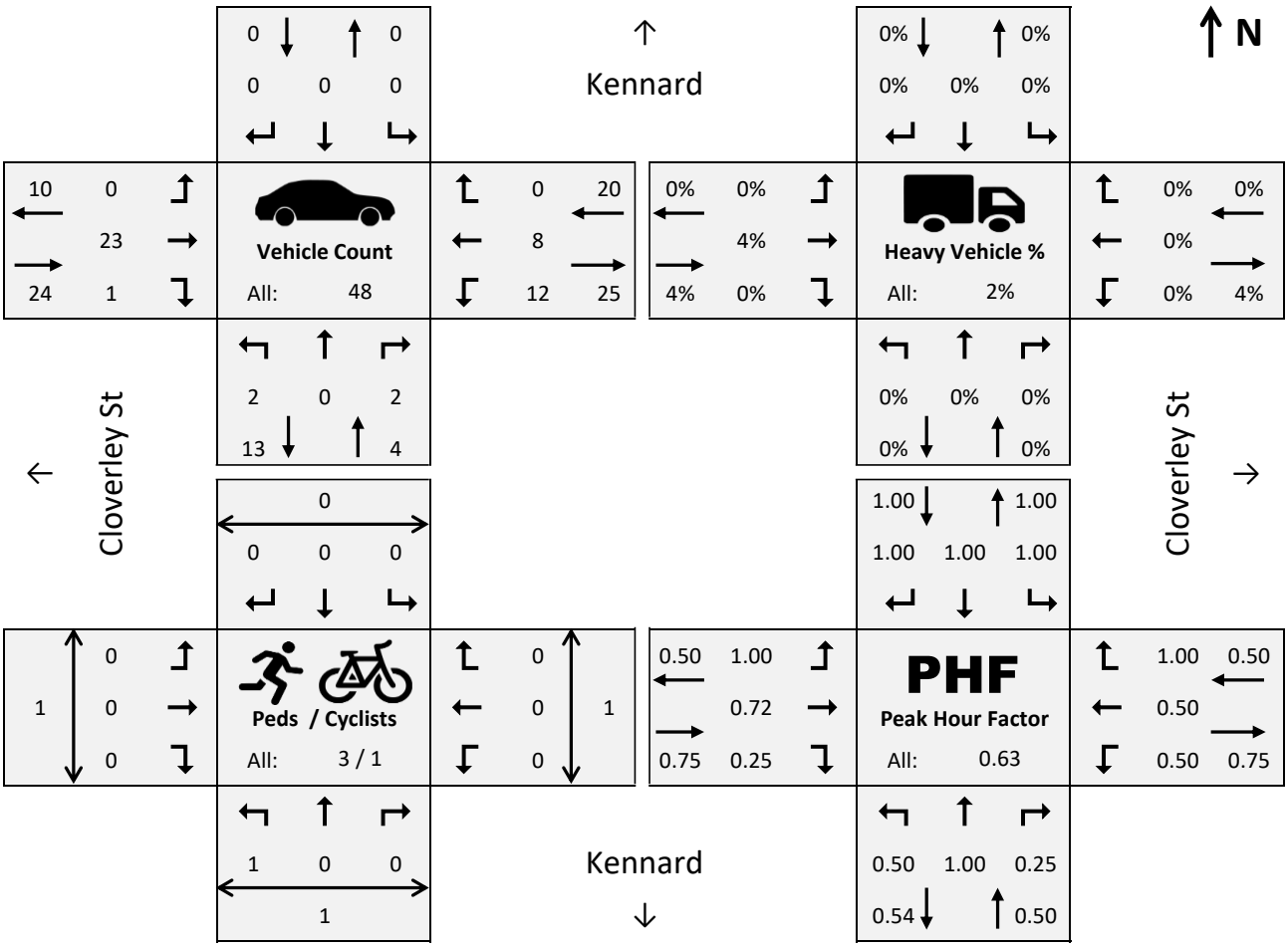
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 7:00 - 7:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 7:15 - 7:30 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 7:30 - 7:45 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| 7:45 - 8:00 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 1 | 3 | 1 | 0 | 0 | 2 | 0 | 2 |
| 8:00 - 8:15 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8:15 - 8:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 |
| 8:30 - 8:45 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 0 |
| 8:45 - 9:00 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 9:00 - 9:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 4 | 0 | 0 | 2 | 0 | 2 |
| 9:15 - 9:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 9:30 - 9:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 9:45 - 10:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Kennard @ Cloverley St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 16:00 - 17:00 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 15:00 - 16:00 |
| **Notes:** | | | | | |

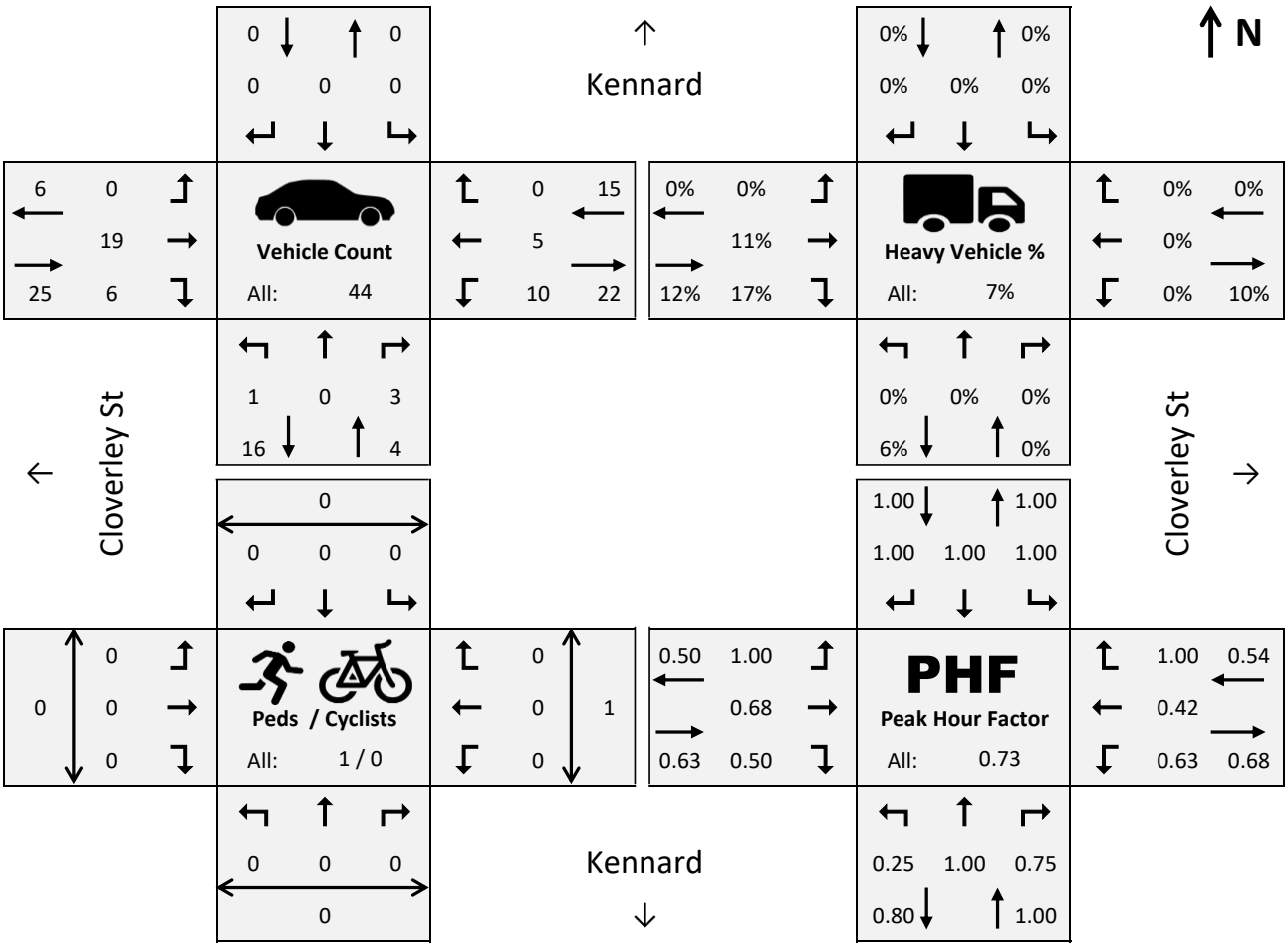
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 0 |
| 14:15 - 14:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 14:30 - 14:45 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 |
| 14:45 - 15:00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 1 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| 15:00 - 15:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| 15:15 - 15:30 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 15:30 - 15:45 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| 15:45 - 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 0 |
| 16:00 - 16:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| 16:15 - 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 16:30 - 16:45 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 7 | 0 | 3 | 2 | 0 | 0 | 1 | 1 | 1 |
| 16:45 - 17:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 6 | 4 | 0 | 0 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Kennard @ Cloverley St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 14:30 - 15:30 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 15:00 - 16:00 |
| **Notes:** | | | | | |

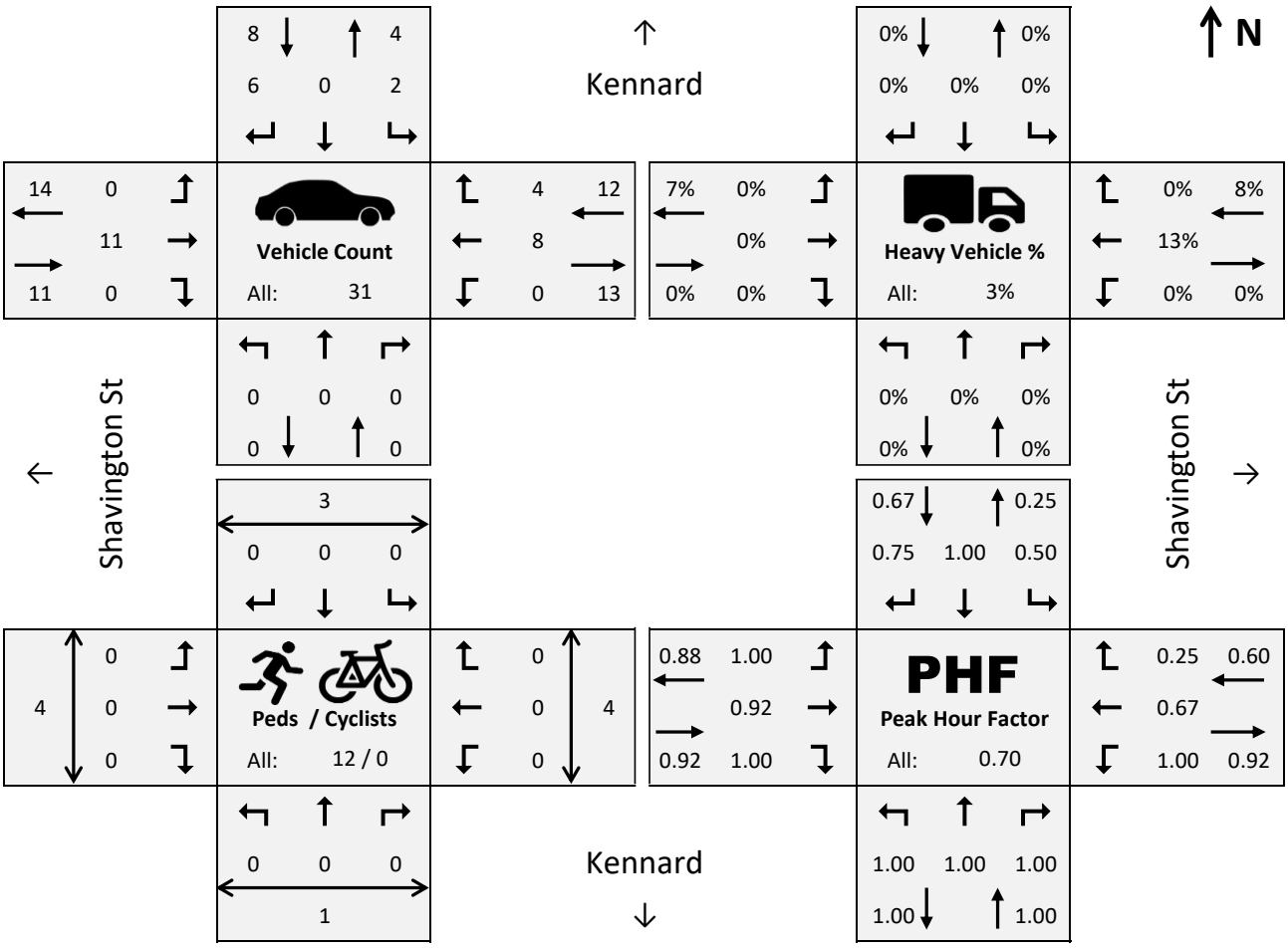
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 0 |
| 14:15 - 14:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 14:30 - 14:45 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 |
| 14:45 - 15:00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 1 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| 15:00 - 15:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| 15:15 - 15:30 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 15:30 - 15:45 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| 15:45 - 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 0 |
| 16:00 - 16:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| 16:15 - 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 16:30 - 16:45 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 7 | 0 | 3 | 2 | 0 | 0 | 1 | 1 | 1 |
| 16:45 - 17:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 6 | 4 | 0 | 0 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Kennard @ Shavington St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 8:15 - 9:15 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 7:45 - 8:45 |
| **Notes:** | | | | | |

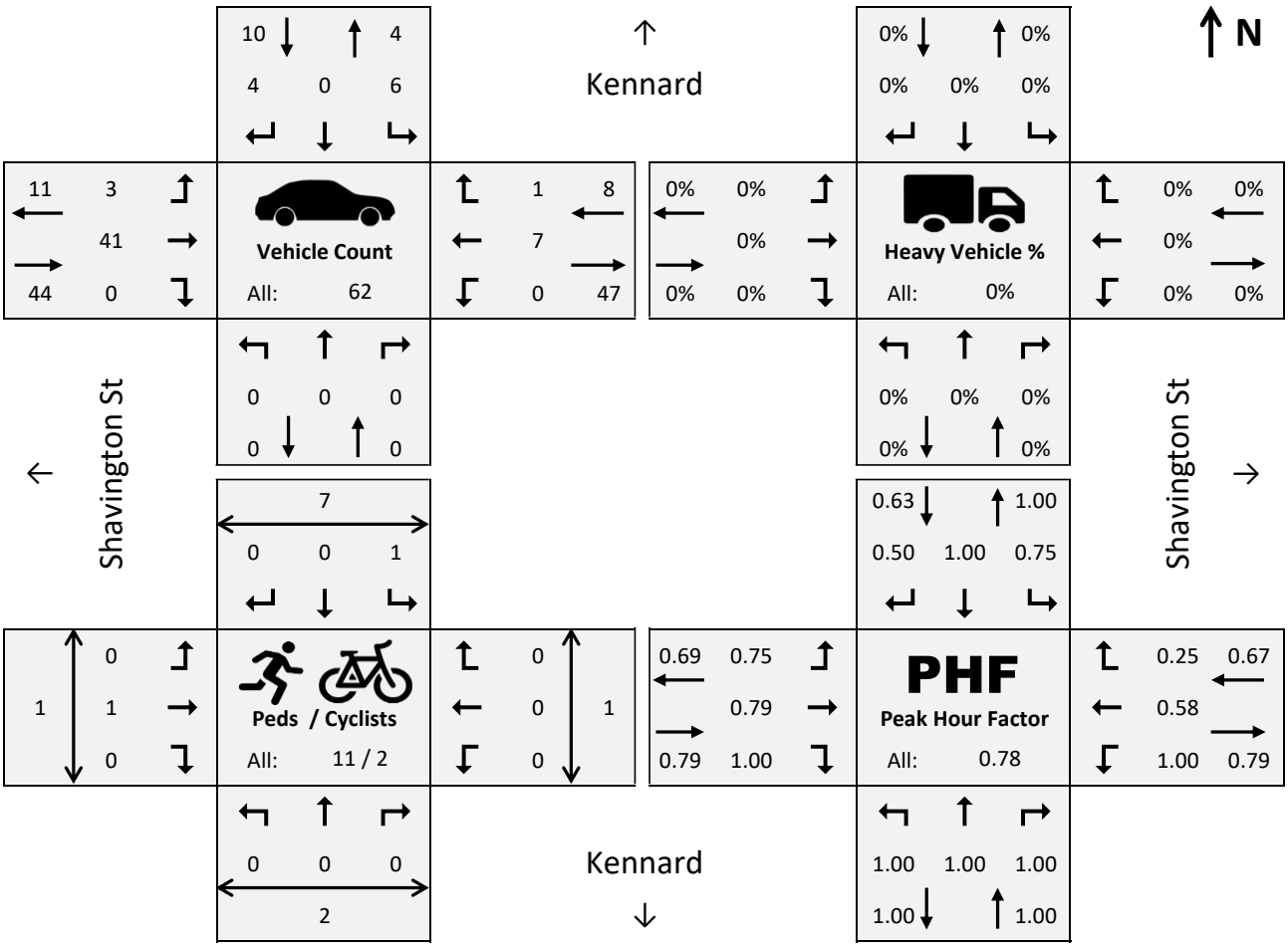
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 7:00 - 7:15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 - 7:30 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 7:30 - 7:45 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 7:45 - 8:00 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 8:00 - 8:15 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 5 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 8:15 - 8:30 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 3 | 0 | 2 | 0 | 1 | 2 |
| 8:30 - 8:45 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 2 | 1 |
| 8:45 - 9:00 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 |
| 9:00 - 9:15 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 |
| 9:15 - 9:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 9:30 - 9:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 9:45 - 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Kennard @ Shavington St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 16:00 - 17:00 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 14:30 - 15:30 |
| **Notes:** | | | | | |

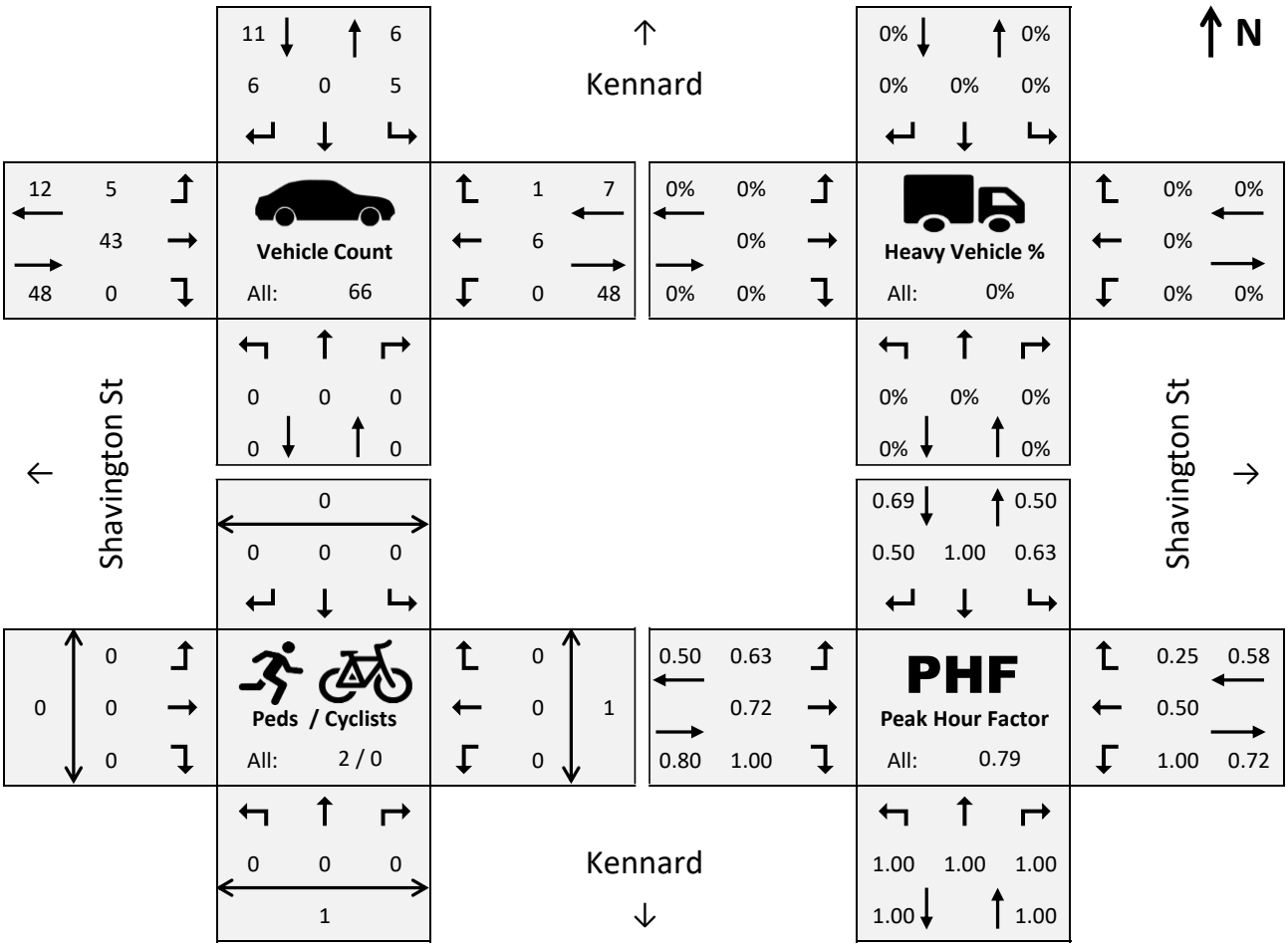
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15 - 14:30 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| 14:30 - 14:45 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 14:45 - 15:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 15 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 15:00 - 15:15 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 13 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 |
| 15:15 - 15:30 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 10 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 15:30 - 15:45 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 - 16:00 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 16:00 - 16:15 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 7 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 0 |
| 16:15 - 16:30 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 11 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 |
| 16:30 - 16:45 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 13 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 |
| 16:45 - 17:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 10 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Kennard @ Shavington St – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 14:30 - 15:30 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 14:30 - 15:30 |
| **Notes:** | | | | | |

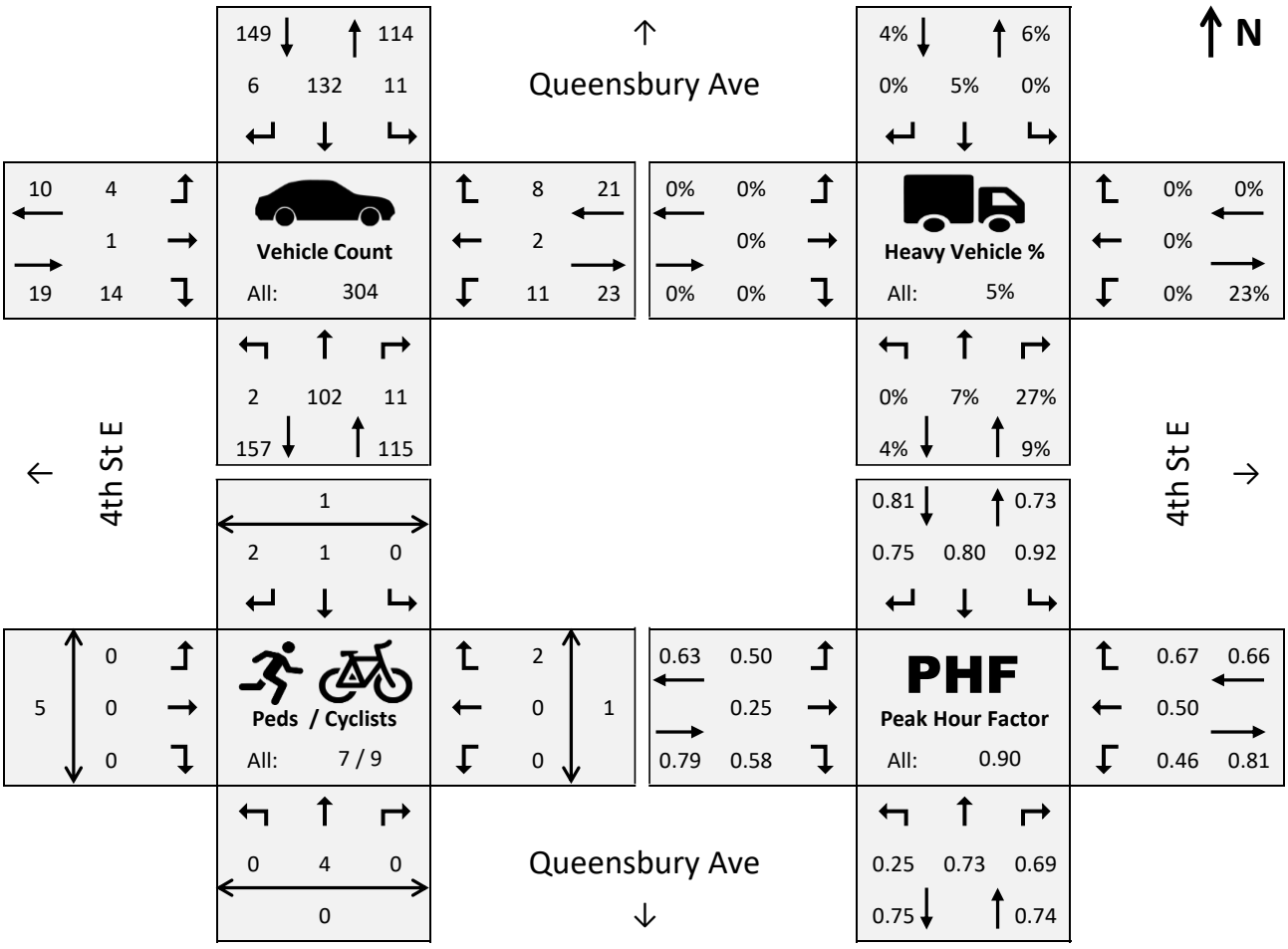
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15 - 14:30 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| 14:30 - 14:45 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 14:45 - 15:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 15 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 15:00 - 15:15 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 13 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 |
| 15:15 - 15:30 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 10 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 15:30 - 15:45 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 - 16:00 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 16:00 - 16:15 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 7 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 0 |
| 16:15 - 16:30 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 11 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 |
| 16:30 - 16:45 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 13 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 |
| 16:45 - 17:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 10 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Queensbury Ave @ 4th St E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 8:15 - 9:15 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 8:15 - 9:15 |
| **Notes:** | | | | | |

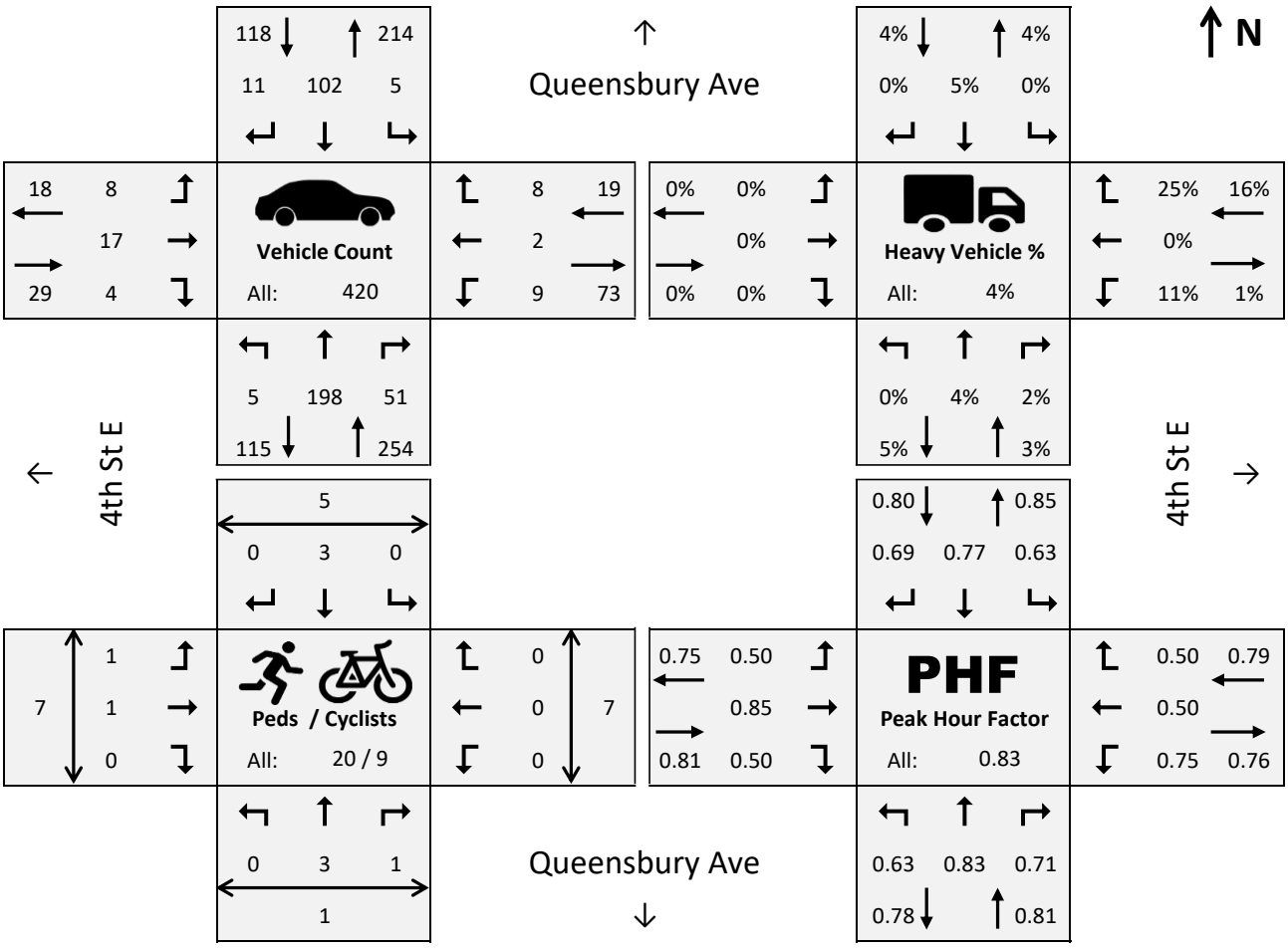
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 7:00 - 7:15 | 0 | 8 | 2 | 1 | 9 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 7:15 - 7:30 | 1 | 11 | 2 | 0 | 16 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 0 | 1 | 1 | 0 |
| 7:30 - 7:45 | 1 | 17 | 2 | 0 | 16 | 0 | 0 | 1 | 5 | 7 | 0 | 2 | 0 | 0 | 0 | 0 |
| 7:45 - 8:00 | 0 | 26 | 2 | 1 | 22 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 |
| 8:00 - 8:15 | 2 | 29 | 2 | 0 | 30 | 2 | 1 | 1 | 4 | 4 | 0 | 4 | 2 | 1 | 1 | 1 |
| 8:15 - 8:30 | 0 | 18 | 3 | 3 | 41 | 2 | 1 | 0 | 5 | 6 | 0 | 2 | 0 | 0 | 0 | 3 |
| 8:30 - 8:45 | 2 | 20 | 2 | 2 | 27 | 2 | 0 | 0 | 6 | 1 | 0 | 2 | 0 | 0 | 0 | 0 |
| 8:45 - 9:00 | 0 | 29 | 2 | 3 | 34 | 1 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 9:00 - 9:15 | 0 | 35 | 4 | 3 | 30 | 1 | 1 | 0 | 3 | 3 | 1 | 3 | 0 | 0 | 0 | 1 |
| 9:15 - 9:30 | 2 | 21 | 1 | 1 | 26 | 2 | 2 | 0 | 3 | 0 | 0 | 2 | 1 | 0 | 0 | 1 |
| 9:30 - 9:45 | 1 | 18 | 1 | 0 | 32 | 2 | 3 | 0 | 3 | 2 | 0 | 3 | 1 | 0 | 0 | 1 |
| 9:45 - 10:00 | 1 | 25 | 0 | 2 | 28 | 1 | 1 | 0 | 1 | 3 | 0 | 0 | 2 | 1 | 1 | 0 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Queensbury Ave @ 4th St E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 16:00 - 17:00 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 16:00 - 17:00 |
| **Notes:** | | | | | |

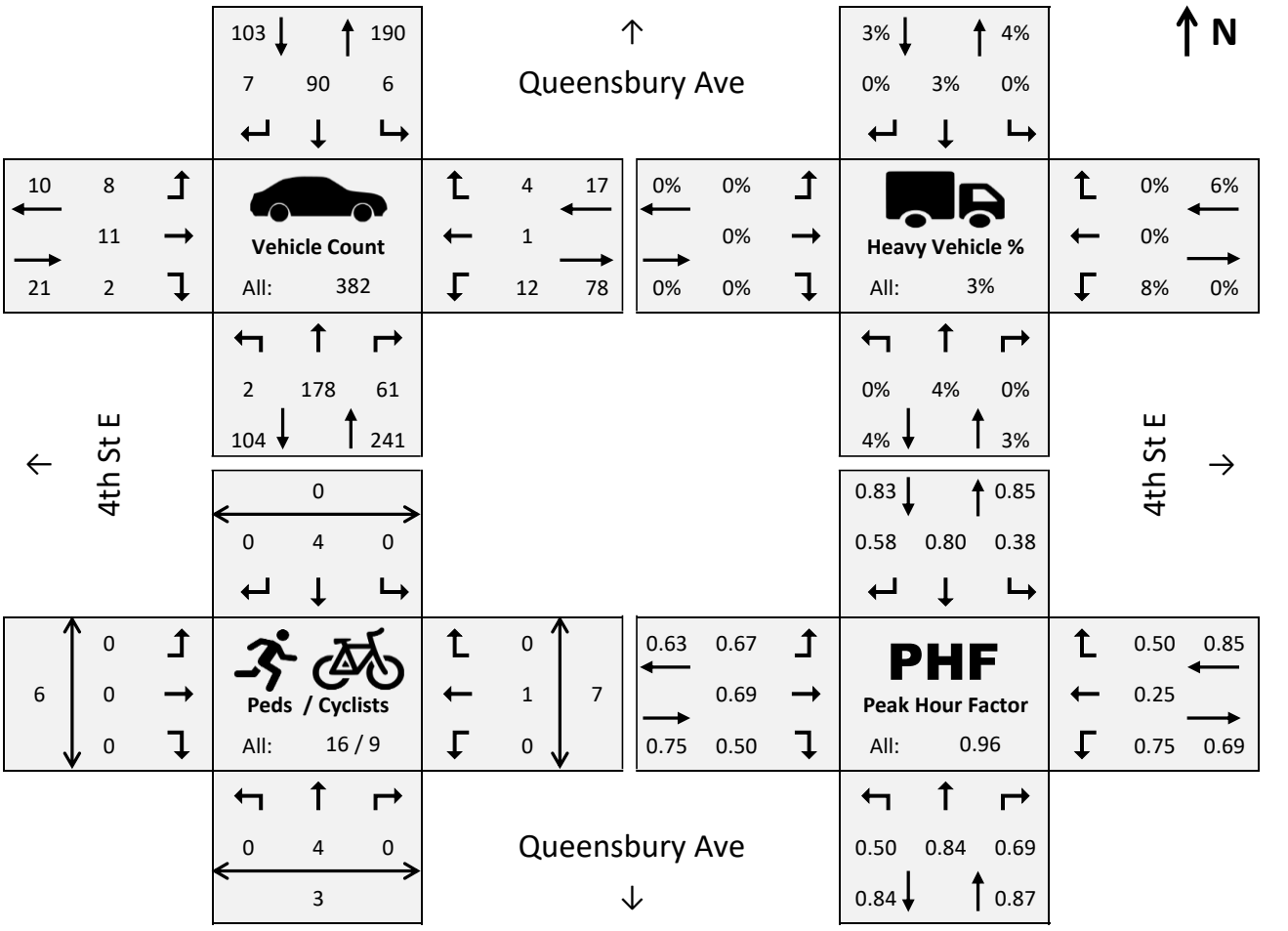
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 2 | 31 | 2 | 2 | 19 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 0 | 3 | 3 | 1 |
| 14:15 - 14:30 | 3 | 34 | 4 | 0 | 24 | 1 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 1 |
| 14:30 - 14:45 | 0 | 37 | 15 | 1 | 25 | 3 | 3 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 5 | 1 |
| 14:45 - 15:00 | 0 | 47 | 22 | 4 | 17 | 0 | 1 | 4 | 0 | 3 | 1 | 1 | 0 | 3 | 1 | 1 |
| 15:00 - 15:15 | 1 | 53 | 10 | 1 | 20 | 1 | 2 | 4 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 1 |
| 15:15 - 15:30 | 1 | 41 | 14 | 0 | 28 | 3 | 2 | 2 | 1 | 2 | 0 | 2 | 0 | 0 | 1 | 3 |
| 15:30 - 15:45 | 2 | 52 | 4 | 3 | 18 | 2 | 2 | 8 | 2 | 2 | 2 | 1 | 4 | 1 | 3 | 3 |
| 15:45 - 16:00 | 1 | 50 | 11 | 0 | 28 | 3 | 4 | 5 | 1 | 2 | 1 | 1 | 5 | 0 | 5 | 0 |
| 16:00 - 16:15 | 1 | 43 | 5 | 2 | 18 | 2 | 1 | 5 | 2 | 1 | 1 | 2 | 0 | 1 | 1 | 0 |
| 16:15 - 16:30 | 2 | 38 | 13 | 1 | 26 | 4 | 3 | 3 | 0 | 2 | 0 | 4 | 0 | 0 | 2 | 3 |
| 16:30 - 16:45 | 0 | 60 | 18 | 1 | 25 | 2 | 0 | 5 | 1 | 3 | 0 | 0 | 2 | 0 | 1 | 2 |
| 16:45 - 17:00 | 2 | 57 | 15 | 1 | 33 | 3 | 4 | 4 | 1 | 3 | 1 | 2 | 3 | 0 | 3 | 2 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Queensbury Ave @ 4th St E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 14:30 - 15:30 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 16:00 - 17:00 |
| **Notes:** | | | | | |

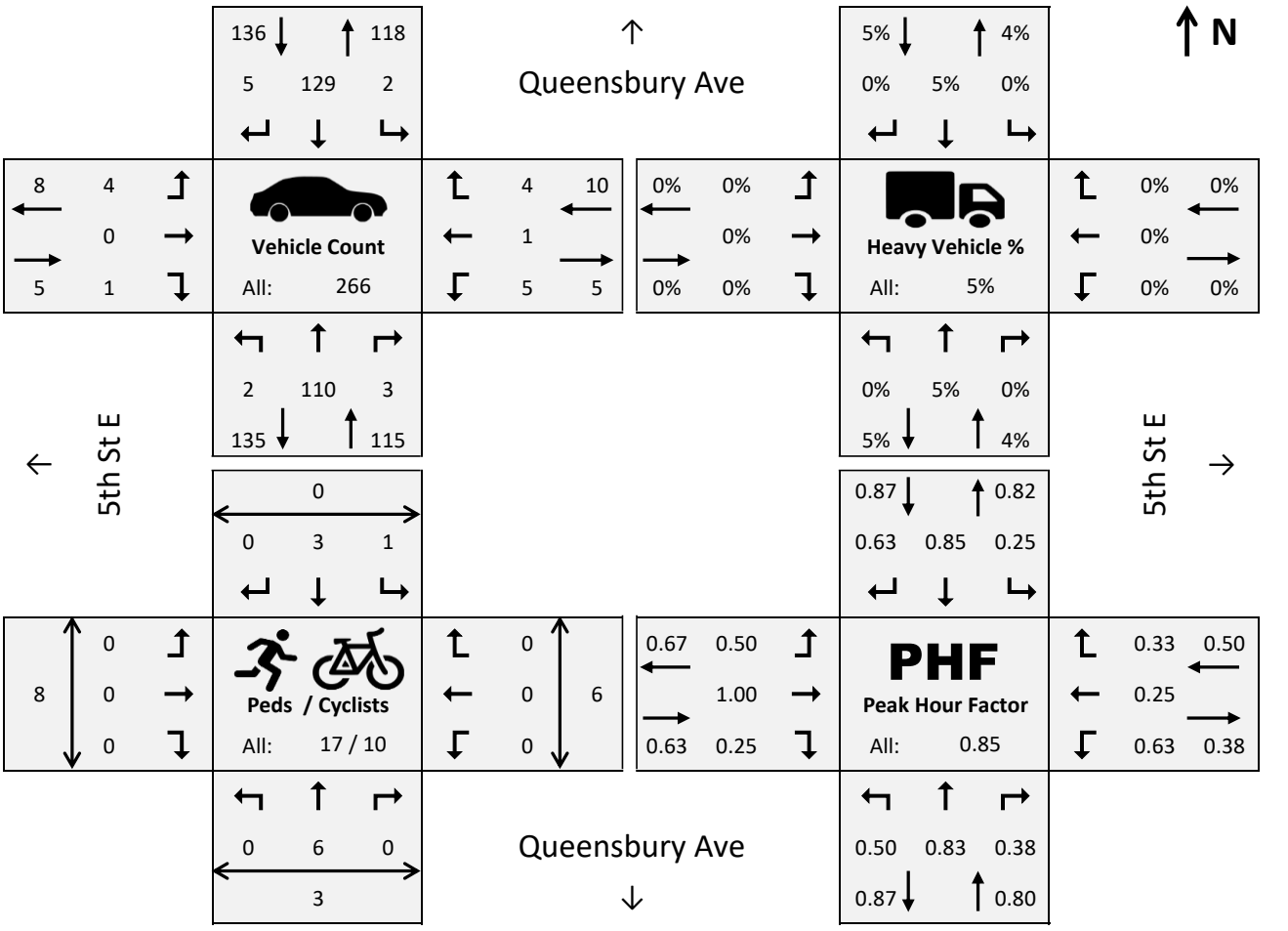
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 2 | 31 | 2 | 2 | 19 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 0 | 3 | 3 | 1 |
| 14:15 - 14:30 | 3 | 34 | 4 | 0 | 24 | 1 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 1 |
| 14:30 - 14:45 | 0 | 37 | 15 | 1 | 25 | 3 | 3 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 5 | 1 |
| 14:45 - 15:00 | 0 | 47 | 22 | 4 | 17 | 0 | 1 | 4 | 0 | 3 | 1 | 1 | 0 | 3 | 1 | 1 |
| 15:00 - 15:15 | 1 | 53 | 10 | 1 | 20 | 1 | 2 | 4 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 1 |
| 15:15 - 15:30 | 1 | 41 | 14 | 0 | 28 | 3 | 2 | 2 | 1 | 2 | 0 | 2 | 0 | 0 | 1 | 3 |
| 15:30 - 15:45 | 2 | 52 | 4 | 3 | 18 | 2 | 2 | 8 | 2 | 2 | 2 | 1 | 4 | 1 | 3 | 3 |
| 15:45 - 16:00 | 1 | 50 | 11 | 0 | 28 | 3 | 4 | 5 | 1 | 2 | 1 | 1 | 5 | 0 | 5 | 0 |
| 16:00 - 16:15 | 1 | 43 | 5 | 2 | 18 | 2 | 1 | 5 | 2 | 1 | 1 | 2 | 0 | 1 | 1 | 0 |
| 16:15 - 16:30 | 2 | 38 | 13 | 1 | 26 | 4 | 3 | 3 | 0 | 2 | 0 | 4 | 0 | 0 | 2 | 3 |
| 16:30 - 16:45 | 0 | 60 | 18 | 1 | 25 | 2 | 0 | 5 | 1 | 3 | 0 | 0 | 2 | 0 | 1 | 2 |
| 16:45 - 17:00 | 2 | 57 | 15 | 1 | 33 | 3 | 4 | 4 | 1 | 3 | 1 | 2 | 3 | 0 | 3 | 2 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Queensbury Ave @ 5th St E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 8:15 - 9:15 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 8:15 - 9:15 |
| **Notes:** | | | | | |

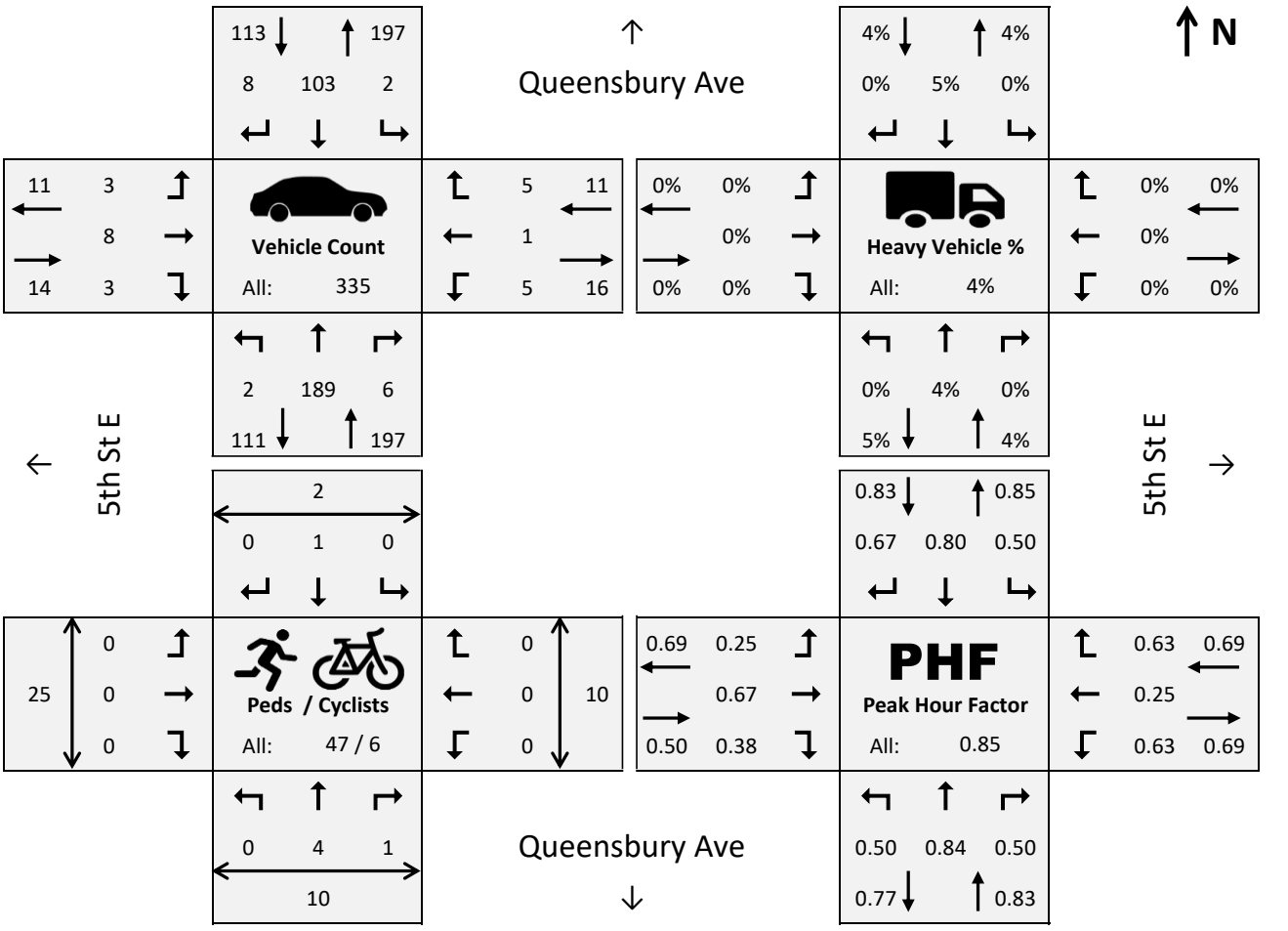
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 7:00 - 7:15 | 0 | 9 | 0 | 1 | 9 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 - 7:30 | 0 | 12 | 1 | 1 | 13 | 2 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 2 | 1 |
| 7:30 - 7:45 | 0 | 17 | 1 | 0 | 16 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 7:45 - 8:00 | 0 | 26 | 3 | 1 | 25 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 3 | 0 |
| 8:00 - 8:15 | 0 | 31 | 1 | 1 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 |
| 8:15 - 8:30 | 0 | 24 | 1 | 0 | 30 | 2 | 0 | 0 | 1 | 1 | 1 | 3 | 0 | 1 | 1 | 3 |
| 8:30 - 8:45 | 0 | 20 | 0 | 0 | 27 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 - 9:00 | 1 | 33 | 0 | 0 | 38 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 4 |
| 9:00 - 9:15 | 1 | 33 | 2 | 2 | 34 | 1 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 3 | 1 |
| 9:15 - 9:30 | 0 | 23 | 1 | 0 | 23 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 2 |
| 9:30 - 9:45 | 0 | 23 | 1 | 0 | 27 | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 0 | 1 | 0 | 1 |
| 9:45 - 10:00 | 1 | 22 | 1 | 0 | 27 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 1 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Queensbury Ave @ 5th St E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 16:00 - 17:00 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 16:00 - 17:00 |
| **Notes:** | | | | | |

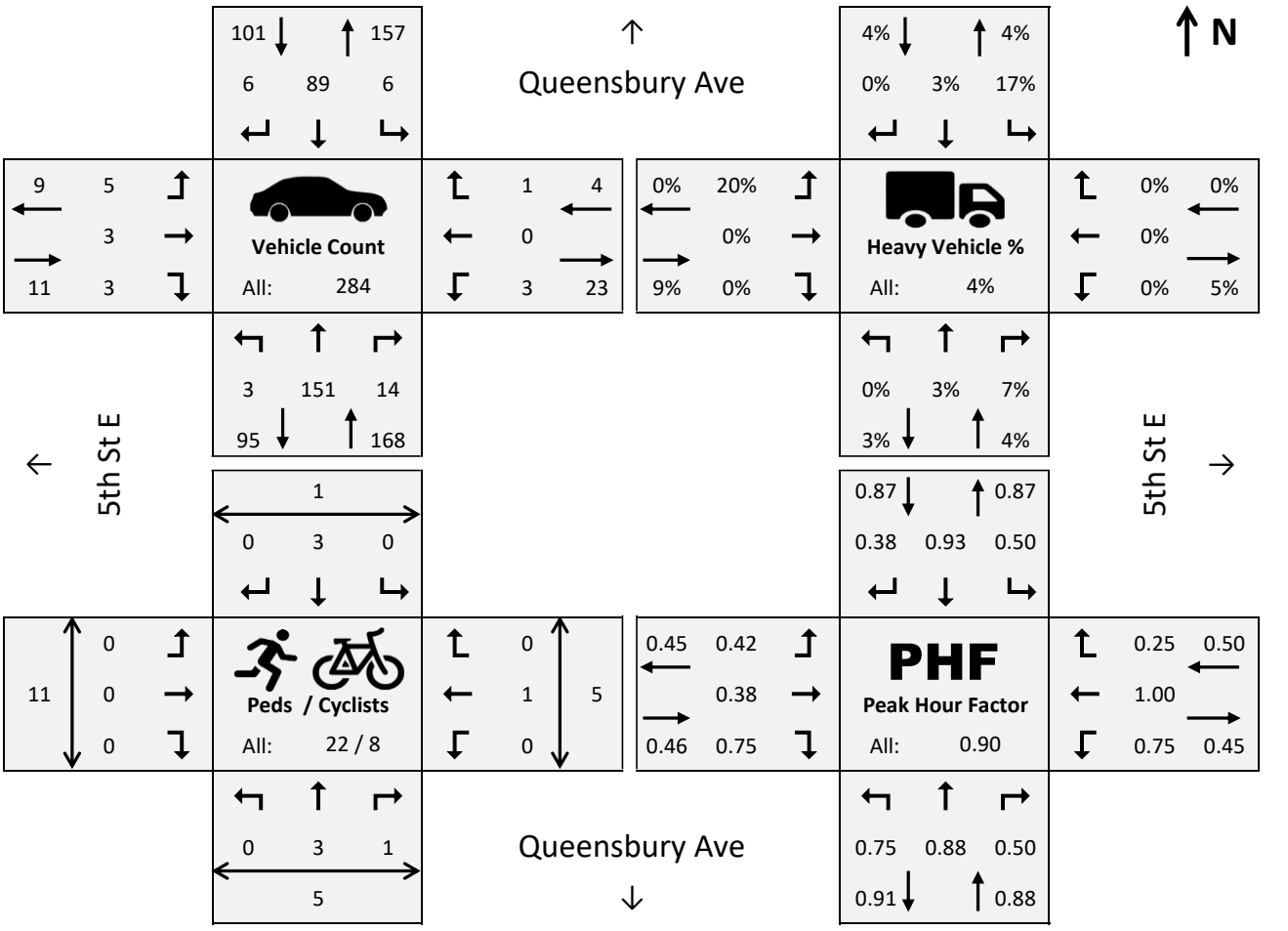
| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 0 | 32 | 0 | 1 | 22 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 1 |
| 14:15 - 14:30 | 0 | 30 | 0 | 2 | 20 | 3 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 |
| 14:30 - 14:45 | 1 | 30 | 0 | 3 | 22 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 14:45 - 15:00 | 0 | 43 | 3 | 0 | 23 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 15:00 - 15:15 | 1 | 43 | 4 | 2 | 20 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 1 | 3 |
| 15:15 - 15:30 | 1 | 35 | 7 | 1 | 24 | 4 | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 4 | 6 |
| 15:30 - 15:45 | 3 | 35 | 2 | 0 | 13 | 2 | 3 | 2 | 0 | 4 | 0 | 0 | 0 | 3 | 1 | 5 |
| 15:45 - 16:00 | 2 | 35 | 5 | 1 | 24 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 1 | 3 |
| 16:00 - 16:15 | 1 | 40 | 1 | 1 | 20 | 2 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 3 | 4 | 7 |
| 16:15 - 16:30 | 1 | 37 | 2 | 0 | 26 | 2 | 3 | 3 | 1 | 1 | 1 | 0 | 1 | 3 | 2 | 6 |
| 16:30 - 16:45 | 0 | 56 | 3 | 0 | 25 | 3 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 8 |
| 16:45 - 17:00 | 0 | 56 | 0 | 1 | 32 | 1 | 0 | 2 | 2 | 2 | 0 | 2 | 1 | 2 | 4 | 4 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Queensbury Ave @ 5th St E – North Vancouver, BC

| | | | | | |
|---|---|---|---|---|---|
| **Project#:** | 04-23-0312 | **Weather:** | Cloudy | **Analysis Period:** | 14:30 - 15:30 |
| **Date:** | Nov 01, 2023 (Wed) | **Road Cond:** | Dry | **Intersection Peak:** | 16:00 - 17:00 |
| **Notes:** | | | | | |

| TIME INTERVAL | AUTOMOBILE COUNT | | | | | | | | | | | | PEDESTRIANS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | N | S | E | W |
| 14:00 - 14:15 | 0 | 32 | 0 | 1 | 22 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 1 |
| 14:15 - 14:30 | 0 | 30 | 0 | 2 | 20 | 3 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 |
| 14:30 - 14:45 | 1 | 30 | 0 | 3 | 22 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 14:45 - 15:00 | 0 | 43 | 3 | 0 | 23 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 15:00 - 15:15 | 1 | 43 | 4 | 2 | 20 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 1 | 3 |
| 15:15 - 15:30 | 1 | 35 | 7 | 1 | 24 | 4 | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 4 | 6 |
| 15:30 - 15:45 | 3 | 35 | 2 | 0 | 13 | 2 | 3 | 2 | 0 | 4 | 0 | 0 | 0 | 3 | 1 | 5 |
| 15:45 - 16:00 | 2 | 35 | 5 | 1 | 24 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 1 | 3 |
| 16:00 - 16:15 | 1 | 40 | 1 | 1 | 20 | 2 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 3 | 4 | 7 |
| 16:15 - 16:30 | 1 | 37 | 2 | 0 | 26 | 2 | 3 | 3 | 1 | 1 | 1 | 0 | 1 | 3 | 2 | 6 |
| 16:30 - 16:45 | 0 | 56 | 3 | 0 | 25 | 3 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 8 |
| 16:45 - 17:00 | 0 | 56 | 0 | 1 | 32 | 1 | 0 | 2 | 2 | 2 | 0 | 2 | 1 | 2 | 4 | 4 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



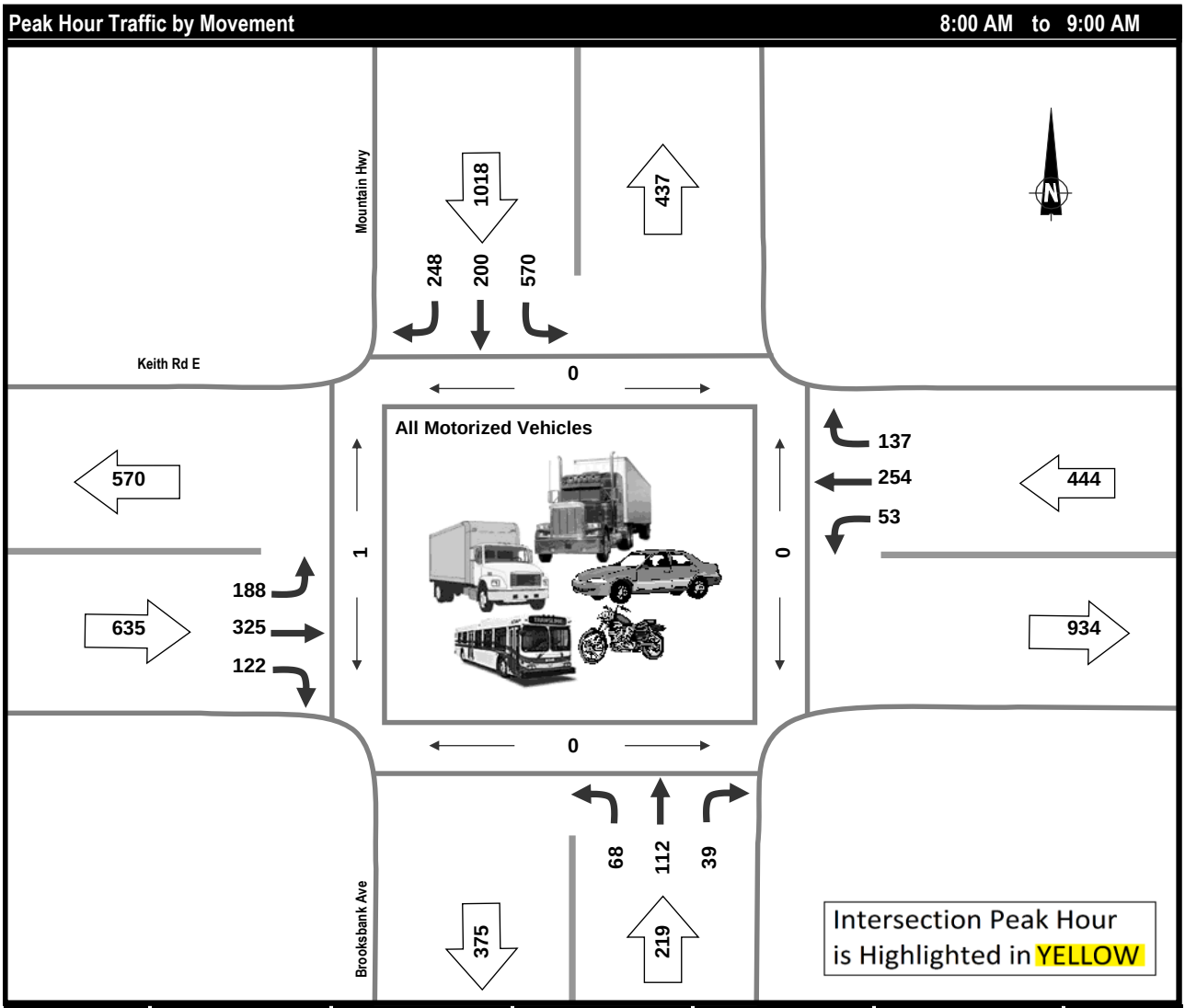
# Brooksbank Ave & Keith Rd E

**Wednesday, February 03, 2021**

## Morning Peak Period

**Project:** #7384: City of North Vancouver - 2021 As & When
**Municipality:** North Vancouver
**Weather:** Cloudy
**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** | **570** | **200** | **248** | **68** | **112** | **39** | **188** | **325** | **122** | **53** | **254** | **137** | **0** | **0** | **1** | **0** | **2,316** |
| **PHF** | 0.93 | 0.83 | 0.86 | 0.77 | 0.82 | 0.65 | 0.82 | 0.74 | 0.69 | 0.70 | 0.96 | 0.73 | 0.00 | 0.00 | 0.25 | 0.00 | 0.90 |
| **Peak 15 X 4** | 616 | 240 | 288 | 88 | 136 | 60 | 228 | 440 | 176 | 76 | 264 | 188 | 0 | 0 | 4 | 0 | 2,568 |
| **Average Hour** | 434 | 194 | 212 | 50 | 94 | 25 | 170 | 269 | 106 | 41 | 193 | 115 | 2 | 2 | 1 | 0 | 1,903 |
| **Survey Total** | 867 | 387 | 424 | 100 | 188 | 50 | 339 | 537 | 212 | 82 | 386 | 230 | 4 | 4 | 1 | 0 | 3,802 |
| 7:00 | 64 | 56 | 38 | 8 | 15 | 1 | 29 | 40 | 11 | 3 | 22 | 20 | 1 | 0 | 0 | 0 | 307 |
| 7:15 | 78 | 32 | 32 | 8 | 18 | 2 | 46 | 56 | 19 | 9 | 28 | 14 | 0 | 1 | 0 | 0 | 342 |
| 7:30 | 67 | 47 | 52 | 6 | 21 | 6 | 41 | 45 | 24 | 5 | 40 | 23 | 1 | 3 | 0 | 0 | 377 |
| 7:45 | 88 | 52 | 54 | 10 | 22 | 2 | 35 | 71 | 36 | 12 | 42 | 36 | 2 | 0 | 0 | 0 | 460 |
| 8:00 | 125 | 60 | 46 | 22 | 33 | 15 | 57 | 69 | 25 | 15 | 63 | 26 | 0 | 0 | 0 | 0 | 556 |
| 8:15 | 149 | 40 | 65 | 20 | 34 | 7 | 56 | 110 | 31 | 19 | 64 | 47 | 0 | 0 | 0 | 0 | 642 |
| 8:30 | 142 | 44 | 72 | 4 | 19 | 7 | 39 | 65 | 22 | 7 | 61 | 38 | 0 | 0 | 0 | 0 | 520 |
| 8:45 | 154 | 56 | 65 | 22 | 26 | 10 | 36 | 81 | 44 | 12 | 66 | 26 | 0 | 0 | 1 | 0 | 598 |

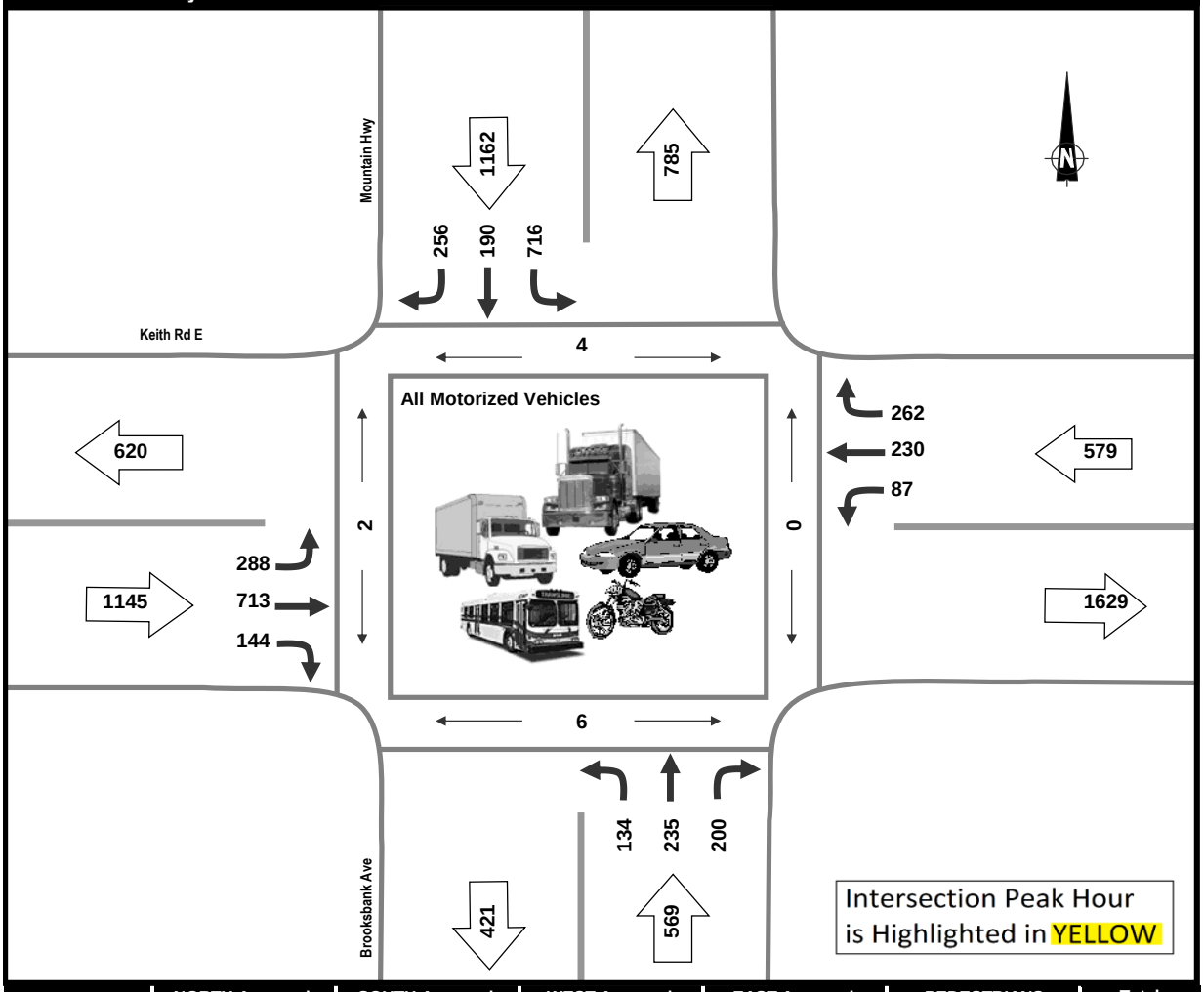
# Brooksbank Ave & Keith Rd E

**Wednesday, February 03, 2021**

## Afternoon Peak Period

**Project:** #7384: City of North Vancouver - 2021 As & When
**Municipality:** North Vancouver
**Weather:** Cloudy
**Vehicle Class:** All Motorized Vehicles

**Peak Hour Traffic by Movement** 4:15 PM to 5:15 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** | **716** | **190** | **256** | **134** | **235** | **200** | **288** | **713** | **144** | **87** | **230** | **262** | **4** | **6** | **2** | **0** | **3,455** |
| **PHF** | 0.90 | 0.88 | 0.90 | 0.82 | 0.92 | 0.89 | 0.86 | 0.96 | 0.88 | 0.84 | 0.86 | 0.98 | 0.33 | 0.50 | 0.25 | 0.00 | 0.97 |
| **Peak 15 X 4** | 792 | 216 | 284 | 164 | 256 | 224 | 336 | 740 | 164 | 104 | 268 | 268 | 12 | 12 | 8 | 0 | 3,576 |
| **Average Hour** | 694 | 200 | 247 | 136 | 230 | 173 | 271 | 667 | 142 | 87 | 250 | 254 | 4 | 9 | 8 | 2 | 3,351 |
| **Survey Total** | 2,083 | 599 | 742 | 407 | 690 | 520 | 812 | 2,000 | 426 | 260 | 749 | 761 | 11 | 28 | 23 | 6 | 10,049 |
| 14:30 | 166 | 60 | 49 | 33 | 59 | 36 | 67 | 113 | 30 | 18 | 46 | 59 | 0 | 2 | 4 | 0 | 736 |
| 14:45 | 197 | 53 | 54 | 32 | 66 | 28 | 46 | 137 | 35 | 29 | 48 | 62 | 0 | 2 | 1 | 0 | 787 |
| 15:00 | 154 | 55 | 42 | 67 | 64 | 48 | 92 | 180 | 45 | 19 | 76 | 43 | 3 | 1 | 8 | 0 | 885 |
| 15:15 | 184 | 64 | 57 | 21 | 37 | 36 | 54 | 125 | 31 | 25 | 76 | 76 | 0 | 0 | 3 | 5 | 786 |
| 15:30 | 193 | 50 | 82 | 37 | 55 | 40 | 68 | 162 | 20 | 26 | 84 | 79 | 3 | 3 | 2 | 1 | 896 |
| 15:45 | 144 | 42 | 61 | 25 | 56 | 25 | 77 | 202 | 33 | 16 | 66 | 48 | 0 | 0 | 1 | 0 | 795 |
| 16:00 | 154 | 45 | 64 | 30 | 51 | 48 | 68 | 186 | 43 | 17 | 68 | 71 | 0 | 13 | 2 | 0 | 845 |
| 16:15 | 181 | 46 | 71 | 33 | 58 | 49 | 84 | 180 | 37 | 26 | 63 | 66 | 0 | 3 | 0 | 0 | 894 |
| 16:30 | 171 | 43 | 59 | 31 | 64 | 39 | 64 | 185 | 41 | 23 | 67 | 67 | 0 | 1 | 0 | 0 | 854 |
| 16:45 | 166 | 47 | 65 | 41 | 52 | 56 | 67 | 172 | 29 | 23 | 51 | 66 | 1 | 1 | 2 | 0 | 835 |
| 17:00 | 198 | 54 | 61 | 29 | 61 | 56 | 73 | 176 | 37 | 15 | 49 | 63 | 3 | 1 | 0 | 0 | 872 |
| 17:15 | 175 | 40 | 77 | 28 | 67 | 59 | 52 | 182 | 45 | 23 | 55 | 61 | 1 | 1 | 0 | 0 | 864 |

# APPENDIX C

## Photographs

List of Photographs:

Figure C1: Hendry Avenue, looking south to Shavington Street & 4th Street East

Figure C2: Shavington Street looking east from Hendry Avenue

Figure C3: Hendry Avenue, looking north to 5th Street East

Figure C4: 5th Street East looking east to Hendry Avenue

Figure C5: Hendry Avenue at Cloverley Street (looking north)

Figure C6: Cloverley Street at Kennard Avenue (looking northeast)

Figure C7: Shavington Street & Kennard Avenue (looking northwest)

Figure C8: Keith Road East & Cloverley Street (looking east)

Figure C9: Keith Road East & Cloverley Street (looking northeast)

Figure C10: Heywood Street & Kennard Greenway (looking southeast)

Figure C11: North Sidewalk at 4th Street E (looking west) to Sutherland Ave.

Figure C12: South Sidewalk at 5th Street E (looking west) from Hendry Avenue

Figure C13: East Sidewalk at Hendry Avenue looking south to Adderly Street

**Figure C1: Hendry Avenue, looking south to Shavington Street & 4th Street East**


**Figure C2: Shavington Street looking east from Hendry Avenue**

**Figure C3: Hendry Avenue, looking north to 5th Street East**

**Figure C4: 5th Street East looking east to Hendry Avenue**

**Figure C5: Hendry Avenue at Cloverley Street (looking north)**

**Figure C6: Cloverley Street at Kennard Avenue (looking northeast)**

**Figure C7: Shavington Street & Kennard Avenue (looking northwest)**

**Figure C8: Keith Road East & Cloverley Street (looking east)**

**Figure C9: Keith Road East & Cloverley Street (looking northeast)**

**Figure C10: Heywood Street & Kennard Greenway (looking southeast)**

**Figure C11: North Sidewalk at 4th Street E (looking west) to Sutherland Ave.**

**Figure C12: South Sidewalk at 5th Street E (looking west) from Hendry Avenue**

**Figure C13: East Sidewalk at Hendry Avenue looking south to Adderly Street**

*The attached information is provided to support the agency's review process and shall not be distributed to other parties without written consent from Bunt & Associates Engineering Ltd.*

# APPENDIX D

## Synchro Reports

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 344 | 59 | 54 | 404 | 62 | 111 |
| Future Volume (Veh/h) | 344 | 59 | 54 | 404 | 62 | 111 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 374 | 64 | 59 | 439 | 67 | 121 |
| Pedestrians | | | | | 5 | |
| Lane Width (m) | | | | | 3.7 | |
| Walking Speed (m/s) | | | | | 1.1 | |
| Percent Blockage | | | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | 41 | | |
| pX, platoon unblocked | | | | | 0.81 | |
| vC, conflicting volume | | | 443 | | 968 | 411 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 443 | | 840 | 411 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 95 | | 74 | 81 |
| cM capacity (veh/h) | | | 1112 | | 255 | 638 |

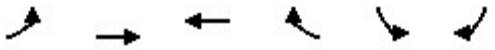
| Direction, Lane # | EB 1 | WB 1 | WB 2 | NB 1 | NB 2 |
|---|---|---|---|---|---|
| Volume Total | 438 | 59 | 439 | 67 | 121 |
| Volume Left | 0 | 59 | 0 | 67 | 0 |
| Volume Right | 64 | 0 | 0 | 0 | 121 |
| cSH | 1700 | 1112 | 1700 | 255 | 638 |
| Volume to Capacity | 0.26 | 0.05 | 0.26 | 0.26 | 0.19 |
| Queue Length 95th (m) | 0.0 | 1.3 | 0.0 | 7.8 | 5.3 |
| Control Delay (s) | 0.0 | 8.4 | 0.0 | 24.1 | 12.0 |
| Lane LOS | | A | | C | B |
| Approach Delay (s) | 0.0 | 1.0 | | 16.3 | |
| Approach LOS | | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 3.2 | | |
| Intersection Capacity Utilization | 38.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | WBT | WBR | SBL |
|---|---|---|---|---|---|
| Lane Group Flow (vph) | 117 | 378 | 450 | 247 | 423 |
| v/c Ratio | 0.29 | 0.39 | 0.64 | 0.35 | 0.78 |
| Control Delay | 10.2 | 11.5 | 24.1 | 6.2 | 34.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.2 | 11.5 | 24.1 | 6.2 | 34.7 |
| Queue Length 50th (m) | 7.3 | 28.3 | 50.3 | 4.2 | 47.5 |
| Queue Length 95th (m) | 14.9 | 47.5 | 85.1 | 18.6 | #109.3 |
| Internal Link Dist (m) | | 17.3 | 215.5 | | 241.1 |
| Turn Bay Length (m) | 20.0 | | | 35.0 | |
| Base Capacity (vph) | 475 | 1423 | 1052 | 953 | 711 |
| 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 | 0.25 | 0.27 | 0.43 | 0.26 | 0.59 |

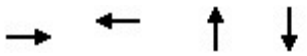
Intersection Summary

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



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 108 | 348 | 414 | 227 | 346 | 43 |
| Future Volume (vph) | 108 | 348 | 414 | 227 | 346 | 43 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 1788 | 1883 | 1883 | 1554 | 1773 | |
| Flt Permitted | 0.28 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 526 | 1883 | 1883 | 1554 | 1773 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 117 | 378 | 450 | 247 | 376 | 47 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 125 | 5 | 0 |
| Lane Group Flow (vph) | 117 | 378 | 450 | 122 | 418 | 0 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | |
| Protected Phases | 1 | 6 | 2 | | 8 | |
| Permitted Phases | 6 | | | 2 | | |
| Actuated Green, G (s) | 35.4 | 35.4 | 24.9 | 24.9 | 20.3 | |
| Effective Green, g (s) | 35.4 | 35.4 | 24.9 | 24.9 | 20.3 | |
| Actuated g/C Ratio | 0.53 | 0.53 | 0.37 | 0.37 | 0.30 | |
| Clearance Time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Vehicle Extension (s) | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | |
| Lane Grp Cap (vph) | 379 | 988 | 695 | 574 | 534 | |
| v/s Ratio Prot | 0.03 | c0.20 | c0.24 | | c0.24 | |
| v/s Ratio Perm | 0.14 | | | 0.08 | | |
| v/c Ratio | 0.31 | 0.38 | 0.65 | 0.21 | 0.78 | |
| Uniform Delay, d1 | 9.6 | 9.5 | 17.6 | 14.5 | 21.5 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | 0.2 | 2.1 | 0.2 | 6.8 | |
| Delay (s) | 9.8 | 9.8 | 19.7 | 14.7 | 28.4 | |
| Level of Service | A | A | B | B | C | |
| Approach Delay (s) | | 9.8 | 17.9 | | 28.4 | |
| Approach LOS | | A | B | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 18.2 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.72 | | |
| Actuated Cycle Length (s) | 67.4 | Sum of lost time (s) | 18.7 |
| Intersection Capacity Utilization | 63.5% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |



| Lane Group | EBT | WBT | NBT | SBT |
|---|---|---|---|---|
| Lane Group Flow (vph) | 712 | 782 | 29 | 129 |
| v/c Ratio | 0.65 | 0.39 | 0.06 | 0.31 |
| Control Delay | 15.6 | 9.6 | 14.0 | 19.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 15.6 | 9.6 | 14.0 | 19.1 |
| Queue Length 50th (m) | 63.8 | 28.2 | 1.5 | 9.8 |
| Queue Length 95th (m) | 104.5 | 40.3 | 7.0 | 24.1 |
| Internal Link Dist (m) | 66.7 | 378.6 | 270.3 | 230.5 |
| Turn Bay Length (m) | | | | |
| Base Capacity (vph) | 1152 | 2104 | 498 | 417 |
| 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 | 0.62 | 0.37 | 0.06 | 0.31 |

Intersection Summary

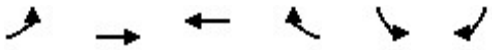
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 17 | 640 | 12 | 7 | 652 | 76 | 6 | 11 | 10 | 95 | 4 | 23 |
| Future Volume (vph) | 17 | 640 | 12 | 7 | 652 | 76 | 6 | 11 | 10 | 95 | 4 | 23 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Frt | | 1.00 | | | 0.98 | | | 0.95 | | | 0.97 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.96 | |
| Satd. Flow (prot) | | 1860 | | | 3472 | | | 1787 | | | 1767 | |
| Flt Permitted | | 0.97 | | | 0.95 | | | 0.92 | | | 0.75 | |
| Satd. Flow (perm) | | 1811 | | | 3296 | | | 1669 | | | 1383 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 18 | 681 | 13 | 7 | 694 | 81 | 6 | 12 | 11 | 101 | 4 | 24 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 12 | 0 | 0 | 9 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 0 | 711 | 0 | 0 | 770 | 0 | 0 | 20 | 0 | 0 | 116 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | 6 | 1 | | 12 | 12 | | 1 |
| Confl. Bikes (#/hr) | | | 4 | | | | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 0% | 3% | 5% | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Actuated Green, G (s) | | 35.7 | | | 35.7 | | | 13.9 | | | 13.9 | |
| Effective Green, g (s) | | 35.7 | | | 35.7 | | | 13.9 | | | 13.9 | |
| Actuated g/C Ratio | | 0.56 | | | 0.56 | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1018 | | | 1853 | | | 365 | | | 302 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.39 | | | 0.23 | | | 0.01 | | | c0.08 | |
| v/c Ratio | | 0.70 | | | 0.42 | | | 0.06 | | | 0.38 | |
| Uniform Delay, d1 | | 10.0 | | | 7.9 | | | 19.6 | | | 21.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 2.1 | | | 0.2 | | | 0.1 | | | 0.8 | |
| Delay (s) | | 12.1 | | | 8.1 | | | 19.7 | | | 22.0 | |
| Level of Service | | B | | | A | | | B | | | C | |
| Approach Delay (s) | | 12.1 | | | 8.1 | | | 19.7 | | | 22.0 | |
| Approach LOS | | B | | | A | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 11.1 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.61 | | |
| Actuated Cycle Length (s) | 63.5 | Sum of lost time (s) | 13.9 |
| Intersection Capacity Utilization | 74.7% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 719 | 2 | 28 | 682 | 2 | 48 |
| Future Volume (Veh/h) | 719 | 2 | 28 | 682 | 2 | 48 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 782 | 2 | 30 | 741 | 2 | 52 |
| Pedestrians | | | | 5 | 5 | |
| Lane Width (m) | | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | | | | 1.1 | 1.1 | |
| Percent Blockage | | | | 0 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 789 | | 1218 | 402 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 789 | | 1218 | 402 |
| tC, single (s) | | | 4.1 | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 96 | | 99 | 91 |
| cM capacity (veh/h) | | | 823 | | 166 | 592 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 |
|---|---|---|---|---|---|
| Volume Total | 521 | 263 | 277 | 494 | 54 |
| Volume Left | 0 | 0 | 30 | 0 | 2 |
| Volume Right | 0 | 2 | 0 | 0 | 52 |
| cSH | 1700 | 1700 | 823 | 1700 | 541 |
| Volume to Capacity | 0.31 | 0.15 | 0.04 | 0.29 | 0.10 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.9 | 0.0 | 2.5 |
| Control Delay (s) | 0.0 | 0.0 | 1.4 | 0.0 | 12.4 |
| Lane LOS | | | A | | B |
| Approach Delay (s) | 0.0 | | 0.5 | | 12.4 |
| Approach LOS | | | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.7 | | |
| Intersection Capacity Utilization | 51.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 4 | 763 | 704 | 6 | 14 | 14 |
| Future Volume (Veh/h) | 4 | 763 | 704 | 6 | 14 | 14 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 4 | 829 | 765 | 7 | 15 | 15 |
| Pedestrians | | 5 | | | 5 | |
| Lane Width (m) | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | |
| Percent Blockage | | 0 | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 777 | | | | 1196 | 778 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 777 | | | | 1196 | 778 |
| tC, single (s) | 4.1 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 92 | 96 |
| cM capacity (veh/h) | 831 | | | | 177 | 336 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 280 | 553 | 772 | 30 |
| Volume Left | 4 | 0 | 0 | 15 |
| Volume Right | 0 | 0 | 7 | 15 |
| cSH | 831 | 1700 | 1700 | 232 |
| Volume to Capacity | 0.00 | 0.33 | 0.45 | 0.13 |
| Queue Length 95th (m) | 0.1 | 0.0 | 0.0 | 3.3 |
| Control Delay (s) | 0.2 | 0.0 | 0.0 | 22.8 |
| Lane LOS | A | | | C |
| Approach Delay (s) | 0.1 | | 0.0 | 22.8 |
| Approach LOS | | | | C |

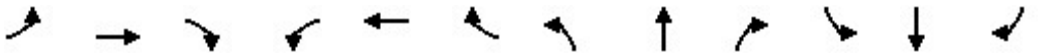
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.5 | | |
| Intersection Capacity Utilization | 49.0% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 256 | 442 | 166 | 59 | 351 | 152 | 94 | 167 | 633 | 222 | 343 |
| v/c Ratio | 2.15 | 0.58 | 0.36 | 0.25 | 0.77 | 0.18 | 0.46 | 0.39 | 0.70 | 0.46 | 0.46 |
| Control Delay | 567.5 | 47.0 | 9.3 | 46.3 | 51.9 | 2.2 | 55.9 | 42.1 | 42.6 | 39.1 | 3.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 567.5 | 47.0 | 9.3 | 46.3 | 51.9 | 2.2 | 55.9 | 42.1 | 42.6 | 39.1 | 3.8 |
| Queue Length 50th (m) | ~87.5 | 46.8 | 0.0 | 11.3 | 69.5 | 0.0 | 19.0 | 14.6 | 62.5 | 39.5 | 0.0 |
| Queue Length 95th (m) | #166.9 | #85.9 | 18.8 | 25.7 | 114.5 | 8.2 | 39.9 | 28.6 | 97.5 | 73.0 | 11.8 |
| Internal Link Dist (m) | | 220.1 | | | 134.2 | | | 297.9 | | 275.4 | |
| Turn Bay Length (m) | 130.0 | | 25.0 | 70.0 | | | 55.0 | | | | 85.0 |
| Base Capacity (vph) | 119 | 766 | 460 | 648 | 892 | 973 | 399 | 805 | 1163 | 631 | 741 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 2.15 | 0.58 | 0.36 | 0.09 | 0.39 | 0.16 | 0.24 | 0.21 | 0.54 | 0.35 | 0.46 |

Intersection Summary

~ 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.



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 230 | 398 | 149 | 53 | 316 | 137 | 85 | 112 | 39 | 570 | 200 | 309 |
| Future Volume (vph) | 230 | 398 | 149 | 53 | 316 | 137 | 85 | 112 | 39 | 570 | 200 | 309 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1825 | 3650 | 1564 | 1789 | 1902 | 1623 | 1772 | 3483 | | 3541 | 1921 | 1599 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1825 | 3650 | 1564 | 1789 | 1902 | 1623 | 1772 | 3483 | | 3541 | 1921 | 1599 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 256 | 442 | 166 | 59 | 351 | 152 | 94 | 124 | 43 | 633 | 222 | 343 |
| RTOR Reduction (vph) | 0 | 0 | 132 | 0 | 0 | 75 | 0 | 24 | 0 | 0 | 0 | 235 |
| Lane Group Flow (vph) | 256 | 442 | 34 | 59 | 351 | 77 | 94 | 143 | 0 | 633 | 222 | 108 |
| Confl. Peds. (#/hr) | | | | | | | 1 | | | | | 1 |
| Confl. Bikes (#/hr) | | | 7 | | | 1 | | | | | | 4 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 2% | 1% | 0% | 3% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Prot | NA | Perm | Prot | NA | pm+ov | Split | NA | | Split | NA | pm+ov |
| Protected Phases | 1 | 6 | | 5 | 2 | 4 | 3 | 3 | | 4 | 4 | 1 |
| Permitted Phases | | | 6 | | | 2 | | | | | | 4 |
| Actuated Green, G (s) | 7.2 | 22.9 | 22.9 | 13.1 | 28.2 | 55.9 | 12.7 | 12.7 | | 27.7 | 27.7 | 34.9 |
| Effective Green, g (s) | 7.2 | 22.9 | 22.9 | 13.1 | 28.2 | 55.9 | 12.7 | 12.7 | | 27.7 | 27.7 | 34.9 |
| Actuated g/C Ratio | 0.07 | 0.21 | 0.21 | 0.12 | 0.26 | 0.51 | 0.12 | 0.12 | | 0.25 | 0.25 | 0.32 |
| Clearance Time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Vehicle Extension (s) | 2.5 | 4.0 | 4.0 | 2.5 | 3.0 | 3.0 | 4.0 | 4.0 | | 3.0 | 3.0 | 2.5 |
| Lane Grp Cap (vph) | 119 | 757 | 324 | 212 | 485 | 821 | 203 | 400 | | 888 | 481 | 505 |
| v/s Ratio Prot | c0.14 | 0.12 | | 0.03 | c0.18 | 0.02 | c0.05 | 0.04 | | c0.18 | 0.12 | 0.01 |
| v/s Ratio Perm | | | 0.02 | | | 0.02 | | | | | | 0.05 |
| v/c Ratio | 2.15 | 0.58 | 0.11 | 0.28 | 0.72 | 0.09 | 0.46 | 0.36 | | 0.71 | 0.46 | 0.21 |
| Uniform Delay, d1 | 51.6 | 39.5 | 35.5 | 44.3 | 37.5 | 14.1 | 45.7 | 45.1 | | 37.7 | 35.0 | 27.7 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 544.9 | 1.4 | 0.2 | 0.5 | 5.3 | 0.0 | 2.3 | 0.8 | | 2.7 | 0.7 | 0.2 |
| Delay (s) | 596.5 | 40.8 | 35.7 | 44.9 | 42.8 | 14.2 | 47.9 | 45.8 | | 40.5 | 35.7 | 27.9 |
| Level of Service | F | D | D | D | D | B | D | D | | D | D | C |
| Approach Delay (s) | | 204.5 | | | 35.3 | | | 46.6 | | | 36.0 | |
| Approach LOS | | F | | | D | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 87.3 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 0.81 | | |
| Actuated Cycle Length (s) | 110.4 | Sum of lost time (s) | 34.6 |
| Intersection Capacity Utilization | 79.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 3 | 10 | 13 | 3 | 3 | 5 |
| Future Volume (Veh/h) | 3 | 10 | 13 | 3 | 3 | 5 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Hourly flow rate (vph) | 5 | 17 | 22 | 5 | 5 | 8 |
| Pedestrians | 16 | | 3 | | | |
| Lane Width (m) | 3.7 | | 3.7 | | | |
| Walking Speed (m/s) | 1.1 | | 1.1 | | | |
| Percent Blockage | 1 | | 0 | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | 294 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 62 | 40 | | | 43 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 62 | 40 | | | 43 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 99 | 98 | | | 100 | |
| cM capacity (veh/h) | 930 | 1021 | | | 1555 | |

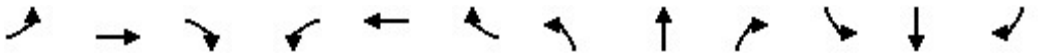
| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 22 | 27 | 13 |
| Volume Left | 5 | 0 | 5 |
| Volume Right | 17 | 5 | 0 |
| cSH | 999 | 1700 | 1555 |
| Volume to Capacity | 0.02 | 0.02 | 0.00 |
| Queue Length 95th (m) | 0.5 | 0.0 | 0.1 |
| Control Delay (s) | 8.7 | 0.0 | 2.8 |
| Lane LOS | A | | A |
| Approach Delay (s) | 8.7 | 0.0 | 2.8 |
| Approach LOS | A | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 3.7 | | |
| Intersection Capacity Utilization | 17.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 12 | 1 | 4 | 9 | 2 | 6 |
| Future Volume (Veh/h) | 12 | 1 | 4 | 9 | 2 | 6 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 |
| Hourly flow rate (vph) | 17 | 1 | 6 | 13 | 3 | 8 |
| Pedestrians | 2 | | | | 5 | |
| Lane Width (m) | 3.7 | | | | 3.7 | |
| Walking Speed (m/s) | 1.1 | | | | 1.1 | |
| Percent Blockage | 0 | | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 23 | | 50 | 22 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 23 | | 50 | 22 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.4 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.5 |
| p0 queue free % | | | 100 | | 100 | 99 |
| cM capacity (veh/h) | | | 1598 | | 955 | 1008 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 18 | 19 | 11 |
| Volume Left | 0 | 6 | 3 |
| Volume Right | 1 | 0 | 8 |
| cSH | 1700 | 1598 | 993 |
| Volume to Capacity | 0.01 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.0 | 0.1 | 0.3 |
| Control Delay (s) | 0.0 | 2.3 | 8.7 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 2.3 | 8.7 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.9 | | |
| Intersection Capacity Utilization | 14.9% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 4 | 0 | 1 | 5 | 1 | 4 | 2 | 110 | 3 | 2 | 129 | 5 |
| Future Volume (Veh/h) | 4 | 0 | 1 | 5 | 1 | 4 | 2 | 110 | 3 | 2 | 129 | 5 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 5 | 0 | 1 | 6 | 1 | 5 | 2 | 129 | 4 | 2 | 152 | 6 |
| Pedestrians | | 8 | | | 6 | | | 3 | | | | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | | |
| Percent Blockage | | 1 | | | 1 | | | 0 | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 230 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 308 | 310 | 166 | 304 | 311 | 137 | 166 | | | 139 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 308 | 310 | 166 | 304 | 311 | 137 | 166 | | | 139 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 99 | 100 | 100 | 99 | 100 | 99 | 100 | | | 100 | | |
| cM capacity (veh/h) | 632 | 598 | 875 | 638 | 597 | 912 | 1414 | | | 1449 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 6 | 12 | 135 | 160 |
| Volume Left | 5 | 6 | 2 | 2 |
| Volume Right | 1 | 5 | 4 | 6 |
| cSH | 663 | 725 | 1414 | 1449 |
| Volume to Capacity | 0.01 | 0.02 | 0.00 | 0.00 |
| Queue Length 95th (m) | 0.2 | 0.4 | 0.0 | 0.0 |
| Control Delay (s) | 10.5 | 10.1 | 0.1 | 0.1 |
| Lane LOS | B | B | A | A |
| Approach Delay (s) | 10.5 | 10.1 | 0.1 | 0.1 |
| Approach LOS | B | B | | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.7 | | | |
| Intersection Capacity Utilization | 20.3% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 3 | 1 | 1 | 13 | 6 | 2 |
| Future Volume (Veh/h) | 3 | 1 | 1 | 13 | 6 | 2 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Hourly flow rate (vph) | 5 | 2 | 2 | 22 | 10 | 3 |
| Pedestrians | | | | 3 | | |
| Lane Width (m) | | | | 3.7 | | |
| Walking Speed (m/s) | | | | 1.1 | | |
| Percent Blockage | | | | 0 | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | 334 | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 38 | 14 | 13 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 38 | 14 | 13 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 99 | 100 | 100 | | | |
| cM capacity (veh/h) | 979 | 1068 | 1619 | | | |

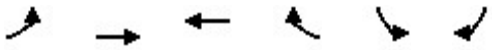
| Direction, Lane # | EB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 7 | 24 | 13 |
| Volume Left | 5 | 2 | 0 |
| Volume Right | 2 | 0 | 3 |
| cSH | 1003 | 1619 | 1700 |
| Volume to Capacity | 0.01 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.0 |
| Control Delay (s) | 8.6 | 0.6 | 0.0 |
| Lane LOS | A | A | |
| Approach Delay (s) | 8.6 | 0.6 | 0.0 |
| Approach LOS | A | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.7 | | |
| Intersection Capacity Utilization | 14.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 7 | 7 | 10 | 9 | 3 | 4 |
| Future Volume (Veh/h) | 7 | 7 | 10 | 9 | 3 | 4 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 |
| Hourly flow rate (vph) | 9 | 9 | 13 | 12 | 4 | 5 |
| Pedestrians | 12 | | | | | |
| Lane Width (m) | 3.7 | | | | | |
| Walking Speed (m/s) | 1.1 | | | | | |
| Percent Blockage | 1 | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 44 | 31 | | | 37 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 44 | 31 | | | 37 | |
| tC, single (s) | 6.4 | 6.3 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.4 | | | 2.2 | |
| p0 queue free % | 99 | 99 | | | 100 | |
| cM capacity (veh/h) | 958 | 998 | | | 1569 | |

| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 18 | 25 | 9 |
| Volume Left | 9 | 0 | 4 |
| Volume Right | 9 | 12 | 0 |
| cSH | 978 | 1700 | 1569 |
| Volume to Capacity | 0.02 | 0.01 | 0.00 |
| Queue Length 95th (m) | 0.4 | 0.0 | 0.1 |
| Control Delay (s) | 8.8 | 0.0 | 3.3 |
| Lane LOS | A | | A |
| Approach Delay (s) | 8.8 | 0.0 | 3.3 |
| Approach LOS | A | | |

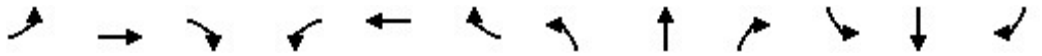
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 3.6 | | |
| Intersection Capacity Utilization | 16.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 11 | 8 | 4 | 2 | 6 |
| Future Volume (Veh/h) | 0 | 11 | 8 | 4 | 2 | 6 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 |
| Hourly flow rate (vph) | 0 | 16 | 11 | 6 | 3 | 9 |
| Pedestrians | | 4 | 4 | | 3 | |
| Lane Width (m) | | 3.7 | 3.7 | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | 1.1 | | 1.1 | |
| Percent Blockage | | 0 | 0 | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 20 | | | | 37 | 21 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 20 | | | | 37 | 21 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 100 | 99 |
| cM capacity (veh/h) | 1605 | | | | 974 | 1055 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 16 | 17 | 12 |
| Volume Left | 0 | 0 | 3 |
| Volume Right | 0 | 6 | 9 |
| cSH | 1605 | 1700 | 1034 |
| Volume to Capacity | 0.00 | 0.01 | 0.01 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.3 |
| Control Delay (s) | 0.0 | 0.0 | 8.5 |
| Lane LOS | | | A |
| Approach Delay (s) | 0.0 | 0.0 | 8.5 |
| Approach LOS | | | A |

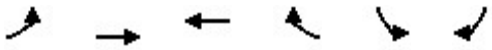
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.3 | | |
| Intersection Capacity Utilization | 15.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 4 | 1 | 14 | 11 | 2 | 8 | 2 | 102 | 11 | 11 | 132 | 6 |
| Future Volume (Veh/h) | 4 | 1 | 14 | 11 | 2 | 8 | 2 | 102 | 11 | 11 | 132 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 4 | 1 | 16 | 12 | 2 | 9 | 2 | 113 | 12 | 12 | 147 | 7 |
| Pedestrians | | 5 | | | 1 | | | | | | 1 | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | | | | 1.1 | |
| Percent Blockage | | 0 | | | 0 | | | | | | 0 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 119 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 314 | 310 | 156 | 315 | 307 | 121 | 159 | | | 126 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 314 | 310 | 156 | 315 | 307 | 121 | 159 | | | 126 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 99 | 100 | 98 | 98 | 100 | 99 | 100 | | | 99 | | |
| cM capacity (veh/h) | 624 | 599 | 891 | 621 | 601 | 934 | 1426 | | | 1472 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 21 | 23 | 127 | 166 |
| Volume Left | 4 | 12 | 2 | 12 |
| Volume Right | 16 | 9 | 12 | 7 |
| cSH | 807 | 713 | 1426 | 1472 |
| Volume to Capacity | 0.03 | 0.03 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.6 | 0.8 | 0.0 | 0.2 |
| Control Delay (s) | 9.6 | 10.2 | 0.1 | 0.6 |
| Lane LOS | A | B | A | A |
| Approach Delay (s) | 9.6 | 10.2 | 0.1 | 0.6 |
| Approach LOS | A | B | | |

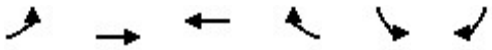
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 1.6 | | | |
| Intersection Capacity Utilization | 23.8% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 7 | 15 | 7 | 12 | 1 | 11 |
| Future Volume (Veh/h) | 7 | 15 | 7 | 12 | 1 | 11 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 |
| Hourly flow rate (vph) | 10 | 21 | 10 | 17 | 1 | 16 |
| Pedestrians | | | 7 | | 6 | |
| Lane Width (m) | | | 3.7 | | 3.7 | |
| Walking Speed (m/s) | | | 1.1 | | 1.1 | |
| Percent Blockage | | | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 33 | | | | 72 | 24 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 33 | | | | 72 | 24 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 99 | | | | 100 | 98 |
| cM capacity (veh/h) | 1496 | | | | 919 | 1052 |

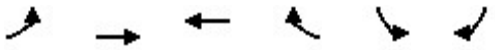
| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 31 | 27 | 17 |
| Volume Left | 10 | 0 | 1 |
| Volume Right | 0 | 17 | 16 |
| cSH | 1496 | 1700 | 1043 |
| Volume to Capacity | 0.01 | 0.02 | 0.02 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.4 |
| Control Delay (s) | 2.4 | 0.0 | 8.5 |
| Lane LOS | A | | A |
| Approach Delay (s) | 2.4 | 0.0 | 8.5 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.9 | | |
| Intersection Capacity Utilization | 17.0% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 98 | 278 | 577 | 47 | 63 | 112 |
| v/c Ratio | 0.18 | 0.19 | 0.54 | 0.05 | 0.20 | 0.12 |
| Control Delay | 4.9 | 4.1 | 15.9 | 8.9 | 29.3 | 3.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 4.9 | 4.1 | 15.9 | 8.9 | 29.3 | 3.2 |
| Queue Length 50th (m) | 4.1 | 12.2 | 56.8 | 2.2 | 6.6 | 0.0 |
| Queue Length 95th (m) | 8.6 | 21.0 | 98.7 | 7.8 | 20.2 | 7.6 |
| Internal Link Dist (m) | | 190.8 | 569.6 | | 94.5 | |
| Turn Bay Length (m) | 30.0 | | | 15.0 | | 25.0 |
| Base Capacity (vph) | 698 | 1791 | 1466 | 1207 | 619 | 1228 |
| 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 | 0.14 | 0.16 | 0.39 | 0.04 | 0.10 | 0.09 |

Intersection Summary



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 90 | 256 | 531 | 43 | 58 | 103 |
| Future Volume (vph) | 90 | 256 | 531 | 43 | 58 | 103 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1788 | 1883 | 1883 | 1552 | 1789 | 1552 |
| Flt Permitted | 0.27 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 501 | 1883 | 1883 | 1552 | 1789 | 1552 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 98 | 278 | 577 | 47 | 63 | 112 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 8 | 0 | 55 |
| Lane Group Flow (vph) | 98 | 278 | 577 | 39 | 63 | 57 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Confl. Bikes (#/hr) | | | | 5 | | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | Perm |
| Protected Phases | 5 | 2 | 6 | | 4 | |
| Permitted Phases | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 47.0 | 47.0 | 33.4 | 33.4 | 5.4 | 33.4 |
| Effective Green, g (s) | 47.0 | 47.0 | 33.4 | 33.4 | 5.4 | 33.4 |
| Actuated g/C Ratio | 0.71 | 0.71 | 0.51 | 0.51 | 0.08 | 0.51 |
| Clearance Time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 490 | 1338 | 951 | 784 | 146 | 784 |
| v/s Ratio Prot | 0.02 | c0.15 | c0.31 | | c0.04 | |
| v/s Ratio Perm | 0.12 | | | 0.03 | | 0.04 |
| v/c Ratio | 0.20 | 0.21 | 0.61 | 0.05 | 0.43 | 0.07 |
| Uniform Delay, d1 | 5.2 | 3.2 | 11.7 | 8.3 | 28.9 | 8.4 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.2 | 0.1 | 1.1 | 0.0 | 2.0 | 0.0 |
| Delay (s) | 5.4 | 3.3 | 12.8 | 8.3 | 30.9 | 8.4 |
| Level of Service | A | A | B | A | C | A |
| Approach Delay (s) | | 3.9 | 12.4 | | 16.5 | |
| Approach LOS | | A | B | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 10.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.54 | | |
| Actuated Cycle Length (s) | 66.1 | Sum of lost time (s) | 20.4 |
| Intersection Capacity Utilization | 59.7% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

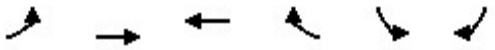
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 629 | 84 | 44 | 334 | 50 | 143 |
| Future Volume (Veh/h) | 629 | 84 | 44 | 334 | 50 | 143 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 684 | 91 | 48 | 363 | 54 | 155 |
| Pedestrians | | | | | 5 | |
| Lane Width (m) | | | | | 3.7 | |
| Walking Speed (m/s) | | | | | 1.1 | |
| Percent Blockage | | | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | 41 | | |
| pX, platoon unblocked | | | | | 0.84 | |
| vC, conflicting volume | | | 780 | | 1194 | 734 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 780 | | 1136 | 734 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 94 | | 69 | 63 |
| cM capacity (veh/h) | | | 833 | | 176 | 418 |

| Direction, Lane # | EB 1 | WB 1 | WB 2 | NB 1 | NB 2 |
|---|---|---|---|---|---|
| Volume Total | 775 | 48 | 363 | 54 | 155 |
| Volume Left | 0 | 48 | 0 | 54 | 0 |
| Volume Right | 91 | 0 | 0 | 0 | 155 |
| cSH | 1700 | 833 | 1700 | 176 | 418 |
| Volume to Capacity | 0.46 | 0.06 | 0.21 | 0.31 | 0.37 |
| Queue Length 95th (m) | 0.0 | 1.4 | 0.0 | 9.3 | 12.8 |
| Control Delay (s) | 0.0 | 9.6 | 0.0 | 34.2 | 18.6 |
| Lane LOS | | A | | D | C |
| Approach Delay (s) | 0.0 | 1.1 | | 22.6 | |
| Approach LOS | | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 3.7 | | |
| Intersection Capacity Utilization | 53.8% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

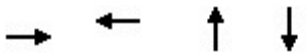
| Lane Group | EBL | EBT | WBT | WBR | SBL |
|---|---|---|---|---|---|
| Lane Group Flow (vph) | 166 | 692 | 372 | 203 | 373 |
| v/c Ratio | 0.34 | 0.69 | 0.59 | 0.31 | 0.75 |
| Control Delay | 10.1 | 16.0 | 23.4 | 4.7 | 32.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.1 | 16.0 | 23.4 | 4.7 | 32.1 |
| Queue Length 50th (m) | 8.8 | 54.6 | 35.7 | 0.4 | 36.8 |
| Queue Length 95th (m) | 20.5 | 107.7 | 70.2 | 13.1 | 78.5 |
| Internal Link Dist (m) | | 17.3 | 215.5 | | 241.1 |
| Turn Bay Length (m) | 20.0 | | | 35.0 | |
| Base Capacity (vph) | 530 | 1504 | 1053 | 953 | 712 |
| 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 | 0.31 | 0.46 | 0.35 | 0.21 | 0.52 |

Intersection Summary



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 153 | 637 | 342 | 187 | 313 | 30 |
| Future Volume (vph) | 153 | 637 | 342 | 187 | 313 | 30 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 1787 | 1883 | 1883 | 1555 | 1777 | |
| Flt Permitted | 0.33 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 630 | 1883 | 1883 | 1555 | 1777 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 166 | 692 | 372 | 203 | 340 | 33 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 131 | 4 | 0 |
| Lane Group Flow (vph) | 166 | 692 | 372 | 72 | 369 | 0 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | |
| Protected Phases | 1 | 6 | 2 | | 8 | |
| Permitted Phases | 6 | | | 2 | | |
| Actuated Green, G (s) | 34.5 | 34.5 | 21.7 | 21.7 | 17.9 | |
| Effective Green, g (s) | 34.5 | 34.5 | 21.7 | 21.7 | 17.9 | |
| Actuated g/C Ratio | 0.54 | 0.54 | 0.34 | 0.34 | 0.28 | |
| Clearance Time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Vehicle Extension (s) | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | |
| Lane Grp Cap (vph) | 479 | 1013 | 637 | 526 | 496 | |
| v/s Ratio Prot | 0.04 | c0.37 | 0.20 | | c0.21 | |
| v/s Ratio Perm | 0.14 | | | 0.05 | | |
| v/c Ratio | 0.35 | 0.68 | 0.58 | 0.14 | 0.74 | |
| Uniform Delay, d1 | 8.5 | 10.8 | 17.5 | 14.7 | 21.0 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | 1.9 | 1.4 | 0.1 | 5.3 | |
| Delay (s) | 8.7 | 12.7 | 18.8 | 14.8 | 26.3 | |
| Level of Service | A | B | B | B | C | |
| Approach Delay (s) | | 11.9 | 17.4 | | 26.3 | |
| Approach LOS | | B | B | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 16.7 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.81 | | |
| Actuated Cycle Length (s) | 64.1 | Sum of lost time (s) | 18.7 |
| Intersection Capacity Utilization | 62.5% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |



| Lane Group | EBT | WBT | NBT | SBT |
|---|---|---|---|---|
| Lane Group Flow (vph) | 1082 | 690 | 30 | 98 |
| v/c Ratio | 0.94 | 0.33 | 0.07 | 0.25 |
| Control Delay | 34.7 | 8.6 | 13.3 | 18.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 34.7 | 8.6 | 13.3 | 18.4 |
| Queue Length 50th (m) | ~158.4 | 23.4 | 1.5 | 7.8 |
| Queue Length 95th (m) | #218.7 | 33.0 | 6.6 | 18.1 |
| Internal Link Dist (m) | 66.7 | 378.6 | 270.3 | 230.5 |
| Turn Bay Length (m) | | | | |
| Base Capacity (vph) | 1156 | 2067 | 450 | 396 |
| 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 | 0.94 | 0.33 | 0.07 | 0.25 |

Intersection Summary

~ 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.

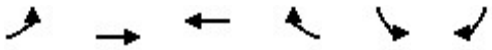
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 8 | 937 | 7 | 4 | 524 | 79 | 6 | 8 | 12 | 66 | 4 | 16 |
| Future Volume (vph) | 8 | 937 | 7 | 4 | 524 | 79 | 6 | 8 | 12 | 66 | 4 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Frt | | 1.00 | | | 0.98 | | | 0.94 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.96 | |
| Satd. Flow (prot) | | 1879 | | | 3502 | | | 1695 | | | 1757 | |
| Flt Permitted | | 0.99 | | | 0.95 | | | 0.92 | | | 0.76 | |
| Satd. Flow (perm) | | 1868 | | | 3320 | | | 1579 | | | 1380 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 9 | 1065 | 8 | 5 | 595 | 90 | 7 | 9 | 14 | 75 | 5 | 18 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 11 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 0 | 1082 | 0 | 0 | 674 | 0 | 0 | 19 | 0 | 0 | 85 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 2 | | 11 | 11 | | 2 |
| Confl. Bikes (#/hr) | | | 4 | | | | | | | | | |
| Heavy Vehicles (%) | 13% | 2% | 0% | 0% | 2% | 1% | 0% | 0% | 8% | 2% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Actuated Green, G (s) | | 38.6 | | | 38.6 | | | 14.0 | | | 14.0 | |
| Effective Green, g (s) | | 38.6 | | | 38.6 | | | 14.0 | | | 14.0 | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.21 | | | 0.21 | |
| Clearance Time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1084 | | | 1927 | | | 332 | | | 290 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.58 | | | 0.20 | | | 0.01 | | | c0.06 | |
| v/c Ratio | | 1.00 | | | 0.35 | | | 0.06 | | | 0.29 | |
| Uniform Delay, d1 | | 13.9 | | | 7.3 | | | 21.0 | | | 22.1 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 26.6 | | | 0.1 | | | 0.1 | | | 0.6 | |
| Delay (s) | | 40.5 | | | 7.5 | | | 21.0 | | | 22.6 | |
| Level of Service | | D | | | A | | | C | | | C | |
| Approach Delay (s) | | 40.5 | | | 7.5 | | | 21.0 | | | 22.6 | |
| Approach LOS | | D | | | A | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 27.3 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.81 | | |
| Actuated Cycle Length (s) | 66.5 | Sum of lost time (s) | 13.9 |
| Intersection Capacity Utilization | 82.7% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 1024 | 3 | 23 | 563 | 2 | 45 |
| Future Volume (Veh/h) | 1024 | 3 | 23 | 563 | 2 | 45 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1113 | 3 | 25 | 612 | 2 | 49 |
| Pedestrians | | | | 5 | 5 | |
| Lane Width (m) | | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | | | | 1.1 | 1.1 | |
| Percent Blockage | | | | 0 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 1121 | | 1476 | 568 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 1121 | | 1476 | 568 |
| tC, single (s) | | | 4.1 | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 96 | | 98 | 89 |
| cM capacity (veh/h) | | | 616 | | 112 | 462 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 |
|---|---|---|---|---|---|
| Volume Total | 742 | 374 | 229 | 408 | 51 |
| Volume Left | 0 | 0 | 25 | 0 | 2 |
| Volume Right | 0 | 3 | 0 | 0 | 49 |
| cSH | 1700 | 1700 | 616 | 1700 | 411 |
| Volume to Capacity | 0.44 | 0.22 | 0.04 | 0.24 | 0.12 |
| Queue Length 95th (m) | 0.0 | 0.0 | 1.0 | 0.0 | 3.2 |
| Control Delay (s) | 0.0 | 0.0 | 1.7 | 0.0 | 15.0 |
| Lane LOS | | | A | | B |
| Approach Delay (s) | 0.0 | | 0.6 | | 15.0 |
| Approach LOS | | | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.6 | | |
| Intersection Capacity Utilization | 44.0% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 6 | 1062 | 581 | 5 | 10 | 10 |
| Future Volume (Veh/h) | 6 | 1062 | 581 | 5 | 10 | 10 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 7 | 1154 | 632 | 5 | 11 | 11 |
| Pedestrians | | 5 | | | 5 | |
| Lane Width (m) | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | |
| Percent Blockage | | 0 | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 642 | | | | 1230 | 644 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 642 | | | | 1230 | 644 |
| tC, single (s) | 4.1 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 99 | | | | 93 | 97 |
| cM capacity (veh/h) | 934 | | | | 168 | 411 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 392 | 769 | 637 | 22 |
| Volume Left | 7 | 0 | 0 | 11 |
| Volume Right | 0 | 0 | 5 | 11 |
| cSH | 934 | 1700 | 1700 | 238 |
| Volume to Capacity | 0.01 | 0.45 | 0.37 | 0.09 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.0 | 2.3 |
| Control Delay (s) | 0.2 | 0.0 | 0.0 | 21.6 |
| Lane LOS | A | | | C |
| Approach Delay (s) | 0.1 | | 0.0 | 21.6 |
| Approach LOS | | | | C |

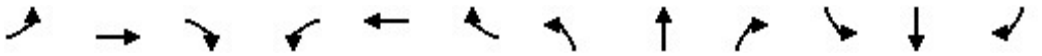
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.3 | | |
| Intersection Capacity Utilization | 45.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 289 | 714 | 144 | 77 | 182 | 234 | 169 | 614 | 794 | 210 | 253 |
| v/c Ratio | 2.75 | 1.13 | 0.35 | 0.51 | 0.57 | 0.30 | 0.47 | 0.80 | 0.79 | 0.39 | 0.35 |
| Control Delay | 831.3 | 122.3 | 6.6 | 65.4 | 53.5 | 9.2 | 48.4 | 45.8 | 46.7 | 37.7 | 3.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 831.3 | 122.3 | 6.6 | 65.4 | 53.5 | 9.2 | 48.4 | 45.8 | 46.7 | 37.7 | 3.2 |
| Queue Length 50th (m) | ~118.2 | ~112.7 | 0.0 | 18.0 | 40.2 | 14.6 | 36.2 | 60.6 | 90.5 | 40.4 | 0.0 |
| Queue Length 95th (m) | #177.5 | #156.7 | 12.2 | 33.7 | 63.0 | 28.7 | 60.0 | #86.0 | 118.3 | 64.6 | 8.3 |
| Internal Link Dist (m) | | 220.1 | | | 134.2 | | | 297.9 | | 275.4 | |
| Turn Bay Length (m) | 130.0 | | 25.0 | 70.0 | | | 55.0 | | | | 85.0 |
| Base Capacity (vph) | 105 | 632 | 407 | 589 | 803 | 790 | 366 | 775 | 1026 | 556 | 716 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 2.75 | 1.13 | 0.35 | 0.13 | 0.23 | 0.30 | 0.46 | 0.79 | 0.77 | 0.38 | 0.35 |

Intersection Summary

~ 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.



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 280 | 693 | 140 | 75 | 177 | 227 | 164 | 322 | 274 | 770 | 204 | 245 |
| Future Volume (vph) | 280 | 693 | 140 | 75 | 177 | 227 | 164 | 322 | 274 | 770 | 204 | 245 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.93 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1807 | 3650 | 1548 | 1825 | 1921 | 1623 | 1825 | 3383 | | 3506 | 1902 | 1601 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1807 | 3650 | 1548 | 1825 | 1921 | 1623 | 1825 | 3383 | | 3506 | 1902 | 1601 |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 289 | 714 | 144 | 77 | 182 | 234 | 169 | 332 | 282 | 794 | 210 | 253 |
| RTOR Reduction (vph) | 0 | 0 | 119 | 0 | 0 | 60 | 0 | 97 | 0 | 0 | 0 | 167 |
| Lane Group Flow (vph) | 289 | 714 | 25 | 77 | 182 | 174 | 169 | 517 | 0 | 794 | 210 | 86 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | | | 6 | | | | | | | | | |
| Heavy Vehicles (%) | 1% | 0% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 1% | 1% | 0% |
| Turn Type | Prot | NA | Perm | Prot | NA | pm+ov | Split | NA | | Split | NA | pm+ov |
| Protected Phases | 1 | 6 | | 5 | 2 | 4 | 3 | 3 | | 4 | 4 | 1 |
| Permitted Phases | | | 6 | | | 2 | | | | | | 4 |
| Actuated Green, G (s) | 7.0 | 20.8 | 20.8 | 8.5 | 21.7 | 56.1 | 23.9 | 23.9 | | 34.4 | 34.4 | 41.4 |
| Effective Green, g (s) | 7.0 | 20.8 | 20.8 | 8.5 | 21.7 | 56.1 | 23.9 | 23.9 | | 34.4 | 34.4 | 41.4 |
| Actuated g/C Ratio | 0.06 | 0.17 | 0.17 | 0.07 | 0.18 | 0.46 | 0.20 | 0.20 | | 0.28 | 0.28 | 0.34 |
| Clearance Time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Vehicle Extension (s) | 2.5 | 4.0 | 4.0 | 2.5 | 3.0 | 3.0 | 4.0 | 4.0 | | 3.0 | 3.0 | 2.5 |
| Lane Grp Cap (vph) | 104 | 624 | 264 | 127 | 342 | 748 | 358 | 664 | | 991 | 538 | 545 |
| v/s Ratio Prot | c0.16 | c0.20 | | 0.04 | c0.09 | 0.07 | 0.09 | c0.15 | | c0.23 | 0.11 | 0.01 |
| v/s Ratio Perm | | | 0.02 | | | 0.04 | | | | | | 0.04 |
| v/c Ratio | 2.78 | 1.14 | 0.09 | 0.61 | 0.53 | 0.23 | 0.47 | 0.78 | | 0.80 | 0.39 | 0.16 |
| Uniform Delay, d1 | 57.3 | 50.4 | 42.5 | 54.9 | 45.3 | 19.8 | 43.3 | 46.3 | | 40.4 | 35.1 | 28.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 826.7 | 82.8 | 0.2 | 6.7 | 1.6 | 0.2 | 1.3 | 6.1 | | 4.7 | 0.5 | 0.1 |
| Delay (s) | 884.0 | 133.2 | 42.7 | 61.7 | 46.9 | 19.9 | 44.6 | 52.4 | | 45.2 | 35.6 | 28.1 |
| Level of Service | F | F | D | E | D | B | D | D | | D | D | C |
| Approach Delay (s) | | 311.0 | | | 36.4 | | | 50.7 | | | 40.1 | |
| Approach LOS | | F | | | D | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 126.3 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 0.92 | | |
| Actuated Cycle Length (s) | 121.6 | Sum of lost time (s) | 34.6 |
| Intersection Capacity Utilization | 95.6% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 4 | 1 | 11 | 13 | 10 | 6 |
| Future Volume (Veh/h) | 4 | 1 | 11 | 13 | 10 | 6 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| Hourly flow rate (vph) | 6 | 2 | 17 | 20 | 16 | 9 |
| Pedestrians | 4 | | | | | |
| Lane Width (m) | 3.7 | | | | | |
| Walking Speed (m/s) | 1.1 | | | | | |
| Percent Blockage | 0 | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | 294 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 72 | 31 | | | 41 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 72 | 31 | | | 41 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.3 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.4 | |
| p0 queue free % | 99 | 100 | | | 99 | |
| cM capacity (veh/h) | 923 | 1045 | | | 1454 | |

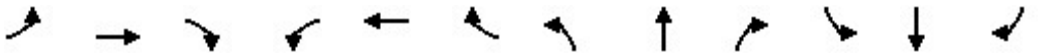
| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 8 | 37 | 25 |
| Volume Left | 6 | 0 | 16 |
| Volume Right | 2 | 20 | 0 |
| cSH | 951 | 1700 | 1454 |
| Volume to Capacity | 0.01 | 0.02 | 0.01 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.3 |
| Control Delay (s) | 8.8 | 0.0 | 4.8 |
| Lane LOS | A | | A |
| Approach Delay (s) | 8.8 | 0.0 | 4.8 |
| Approach LOS | A | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.7 | | |
| Intersection Capacity Utilization | 17.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 19 | 6 | 10 | 5 | 1 | 3 |
| Future Volume (Veh/h) | 19 | 6 | 10 | 5 | 1 | 3 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Hourly flow rate (vph) | 26 | 8 | 14 | 7 | 1 | 4 |
| Pedestrians | | | | 1 | | |
| Lane Width (m) | | | | 3.7 | | |
| Walking Speed (m/s) | | | | 1.1 | | |
| Percent Blockage | | | | 0 | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 34 | | 65 | 31 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 34 | | 65 | 31 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 99 | | 100 | 100 |
| cM capacity (veh/h) | | | 1591 | | 937 | 1048 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 34 | 21 | 5 |
| Volume Left | 0 | 14 | 1 |
| Volume Right | 8 | 0 | 4 |
| cSH | 1700 | 1591 | 1024 |
| Volume to Capacity | 0.02 | 0.01 | 0.00 |
| Queue Length 95th (m) | 0.0 | 0.2 | 0.1 |
| Control Delay (s) | 0.0 | 4.9 | 8.5 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 4.9 | 8.5 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.4 | | |
| Intersection Capacity Utilization | 17.8% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 3 | 3 | 3 | 0 | 1 | 3 | 151 | 14 | 6 | 89 | 6 |
| Future Volume (Veh/h) | 5 | 3 | 3 | 3 | 0 | 1 | 3 | 151 | 14 | 6 | 89 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 6 | 3 | 3 | 3 | 0 | 1 | 3 | 168 | 16 | 7 | 99 | 7 |
| Pedestrians | | 11 | | | 5 | | | 5 | | | 1 | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | 1.1 | |
| Percent Blockage | | 1 | | | 0 | | | 0 | | | 0 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 230 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 312 | 322 | 118 | 313 | 318 | 182 | 117 | | | 189 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 312 | 322 | 118 | 313 | 318 | 182 | 117 | | | 189 | | |
| tC, single (s) | 7.3 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.3 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.4 | | |
| p0 queue free % | 99 | 99 | 100 | 100 | 100 | 100 | 100 | | | 99 | | |
| cM capacity (veh/h) | 590 | 585 | 925 | 622 | 588 | 861 | 1469 | | | 1294 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 12 | 4 | 187 | 113 |
| Volume Left | 6 | 3 | 3 | 7 |
| Volume Right | 3 | 1 | 16 | 7 |
| cSH | 647 | 669 | 1469 | 1294 |
| Volume to Capacity | 0.02 | 0.01 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.4 | 0.1 | 0.0 | 0.1 |
| Control Delay (s) | 10.7 | 10.4 | 0.1 | 0.5 |
| Lane LOS | B | B | A | A |
| Approach Delay (s) | 10.7 | 10.4 | 0.1 | 0.5 |
| Approach LOS | B | B | | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.8 | | | |
| Intersection Capacity Utilization | 21.8% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 13 | 5 | 4 | 11 | 5 | 5 |
| Future Volume (Veh/h) | 13 | 5 | 4 | 11 | 5 | 5 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| Hourly flow rate (vph) | 20 | 8 | 6 | 17 | 8 | 8 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | 334 | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 41 | 12 | 16 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 41 | 12 | 16 | | | |
| tC, single (s) | 6.5 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.6 | 3.3 | 2.2 | | | |
| p0 queue free % | 98 | 99 | 100 | | | |
| cM capacity (veh/h) | 952 | 1074 | 1615 | | | |

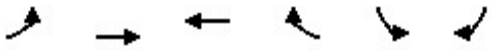
| Direction, Lane # | EB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 28 | 23 | 16 |
| Volume Left | 20 | 6 | 0 |
| Volume Right | 8 | 0 | 8 |
| cSH | 984 | 1615 | 1700 |
| Volume to Capacity | 0.03 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.7 | 0.1 | 0.0 |
| Control Delay (s) | 8.8 | 1.9 | 0.0 |
| Lane LOS | A | A | |
| Approach Delay (s) | 8.8 | 1.9 | 0.0 |
| Approach LOS | A | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 4.3 | | |
| Intersection Capacity Utilization | 14.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 3 | 6 | 9 | 48 | 6 | 4 |
| Future Volume (Veh/h) | 3 | 6 | 9 | 48 | 6 | 4 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| Hourly flow rate (vph) | 4 | 8 | 12 | 63 | 8 | 5 |
| Pedestrians | 5 | | | | | |
| Lane Width (m) | 3.7 | | | | | |
| Walking Speed (m/s) | 1.1 | | | | | |
| Percent Blockage | 0 | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 70 | 48 | | | 80 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 70 | 48 | | | 80 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 99 | | | 99 | |
| cM capacity (veh/h) | 931 | 1021 | | | 1524 | |

| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 12 | 75 | 13 |
| Volume Left | 4 | 0 | 8 |
| Volume Right | 8 | 63 | 0 |
| cSH | 989 | 1700 | 1524 |
| Volume to Capacity | 0.01 | 0.04 | 0.01 |
| Queue Length 95th (m) | 0.3 | 0.0 | 0.1 |
| Control Delay (s) | 8.7 | 0.0 | 4.6 |
| Lane LOS | A | | A |
| Approach Delay (s) | 8.7 | 0.0 | 4.6 |
| Approach LOS | A | | |

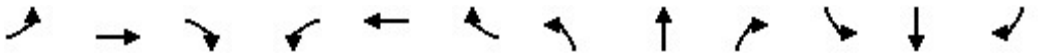
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.6 | | |
| Intersection Capacity Utilization | 15.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 5 | 43 | 6 | 1 | 5 | 6 |
| Future Volume (Veh/h) | 5 | 43 | 6 | 1 | 5 | 6 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 |
| Hourly flow rate (vph) | 6 | 54 | 8 | 1 | 6 | 8 |
| Pedestrians | | | 1 | | | |
| Lane Width (m) | | | 3.7 | | | |
| Walking Speed (m/s) | | | 1.1 | | | |
| Percent Blockage | | | 0 | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 9 | | | | 76 | 8 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 9 | | | | 76 | 8 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 99 | 99 |
| cM capacity (veh/h) | 1624 | | | | 928 | 1079 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 60 | 9 | 14 |
| Volume Left | 6 | 0 | 6 |
| Volume Right | 0 | 1 | 8 |
| cSH | 1624 | 1700 | 1009 |
| Volume to Capacity | 0.00 | 0.01 | 0.01 |
| Queue Length 95th (m) | 0.1 | 0.0 | 0.3 |
| Control Delay (s) | 0.7 | 0.0 | 8.6 |
| Lane LOS | A | | A |
| Approach Delay (s) | 0.7 | 0.0 | 8.6 |
| Approach LOS | | | A |

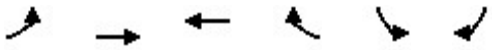
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.0 | | |
| Intersection Capacity Utilization | 16.4% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 8 | 11 | 2 | 12 | 1 | 4 | 2 | 178 | 61 | 6 | 90 | 7 |
| Future Volume (Veh/h) | 8 | 11 | 2 | 12 | 1 | 4 | 2 | 178 | 61 | 6 | 90 | 7 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Hourly flow rate (vph) | 8 | 11 | 2 | 12 | 1 | 4 | 2 | 185 | 64 | 6 | 94 | 7 |
| Pedestrians | | 6 | | | 7 | | | 3 | | | | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | | |
| Percent Blockage | | 1 | | | 1 | | | 0 | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 119 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 341 | 376 | 106 | 348 | 347 | 224 | 107 | | | 256 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 341 | 376 | 106 | 348 | 347 | 224 | 107 | | | 256 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.2 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.6 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 99 | 98 | 100 | 98 | 100 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 601 | 549 | 945 | 572 | 569 | 815 | 1488 | | | 1312 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 21 | 17 | 251 | 107 |
| Volume Left | 8 | 12 | 2 | 6 |
| Volume Right | 2 | 4 | 64 | 7 |
| cSH | 592 | 615 | 1488 | 1312 |
| Volume to Capacity | 0.04 | 0.03 | 0.00 | 0.00 |
| Queue Length 95th (m) | 0.8 | 0.6 | 0.0 | 0.1 |
| Control Delay (s) | 11.3 | 11.0 | 0.1 | 0.5 |
| Lane LOS | B | B | A | A |
| Approach Delay (s) | 11.3 | 11.0 | 0.1 | 0.5 |
| Approach LOS | B | B | | |

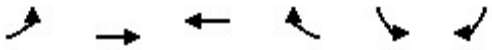
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 1.2 | | | |
| Intersection Capacity Utilization | 24.8% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 48 | 24 | 6 | 11 | 4 | 3 |
| Future Volume (Veh/h) | 48 | 24 | 6 | 11 | 4 | 3 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| Hourly flow rate (vph) | 58 | 29 | 7 | 13 | 5 | 4 |
| Pedestrians | | | 2 | | 4 | |
| Lane Width (m) | | | 3.7 | | 3.7 | |
| Walking Speed (m/s) | | | 1.1 | | 1.1 | |
| Percent Blockage | | | 0 | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 24 | | | | 164 | 18 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 24 | | | | 164 | 18 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 96 | | | | 99 | 100 |
| cM capacity (veh/h) | 1511 | | | | 794 | 1063 |

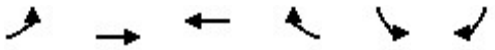
| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 87 | 20 | 9 |
| Volume Left | 58 | 0 | 5 |
| Volume Right | 0 | 13 | 4 |
| cSH | 1511 | 1700 | 895 |
| Volume to Capacity | 0.04 | 0.01 | 0.01 |
| Queue Length 95th (m) | 0.9 | 0.0 | 0.2 |
| Control Delay (s) | 5.1 | 0.0 | 9.1 |
| Lane LOS | A | | A |
| Approach Delay (s) | 5.1 | 0.0 | 9.1 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 4.5 | | |
| Intersection Capacity Utilization | 20.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 210 | 424 | 522 | 60 | 41 | 73 |
| v/c Ratio | 0.33 | 0.26 | 0.59 | 0.08 | 0.12 | 0.10 |
| Control Delay | 4.5 | 3.2 | 16.7 | 8.9 | 27.6 | 4.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 4.5 | 3.2 | 16.7 | 8.9 | 27.6 | 4.2 |
| Queue Length 50th (m) | 0.4 | 0.0 | 26.7 | 1.5 | 2.8 | 0.0 |
| Queue Length 95th (m) | 15.9 | 31.8 | 91.5 | 9.8 | 14.7 | 6.7 |
| Internal Link Dist (m) | | 190.8 | 569.6 | | 94.5 | |
| Turn Bay Length (m) | 30.0 | | | 15.0 | | 25.0 |
| Base Capacity (vph) | 767 | 1789 | 1555 | 1280 | 703 | 1289 |
| 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 | 0.27 | 0.24 | 0.34 | 0.05 | 0.06 | 0.06 |

Intersection Summary



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 193 | 390 | 480 | 55 | 38 | 67 |
| Future Volume (vph) | 193 | 390 | 480 | 55 | 38 | 67 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1788 | 1883 | 1883 | 1552 | 1789 | 1552 |
| Flt Permitted | 0.27 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 501 | 1883 | 1883 | 1552 | 1789 | 1552 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 210 | 424 | 522 | 60 | 41 | 73 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 41 |
| Lane Group Flow (vph) | 210 | 424 | 522 | 48 | 41 | 32 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Confl. Bikes (#/hr) | | | | 5 | | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | Perm |
| Protected Phases | 5 | 2 | 6 | | 4 | |
| Permitted Phases | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 44.1 | 44.1 | 26.9 | 26.9 | 2.9 | 26.9 |
| Effective Green, g (s) | 44.1 | 44.1 | 26.9 | 26.9 | 2.9 | 26.9 |
| Actuated g/C Ratio | 0.73 | 0.73 | 0.44 | 0.44 | 0.05 | 0.44 |
| Clearance Time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 586 | 1368 | 834 | 687 | 85 | 687 |
| v/s Ratio Prot | 0.06 | c0.23 | c0.28 | | c0.02 | |
| v/s Ratio Perm | 0.20 | | | 0.03 | | 0.02 |
| v/c Ratio | 0.36 | 0.31 | 0.63 | 0.07 | 0.48 | 0.05 |
| Uniform Delay, d1 | 4.9 | 2.9 | 13.0 | 9.7 | 28.2 | 9.6 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.4 | 0.1 | 1.5 | 0.0 | 4.3 | 0.0 |
| Delay (s) | 5.3 | 3.1 | 14.5 | 9.8 | 32.4 | 9.6 |
| Level of Service | A | A | B | A | C | A |
| Approach Delay (s) | | 3.8 | 14.0 | | 17.8 | |
| Approach LOS | | A | B | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 9.5 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.57 | | |
| Actuated Cycle Length (s) | 60.7 | Sum of lost time (s) | 20.4 |
| Intersection Capacity Utilization | 62.7% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 349 | 60 | 55 | 410 | 63 | 113 |
| Future Volume (Veh/h) | 349 | 60 | 55 | 410 | 63 | 113 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 379 | 65 | 60 | 446 | 68 | 123 |
| Pedestrians | | | | | 5 | |
| Lane Width (m) | | | | | 3.7 | |
| Walking Speed (m/s) | | | | | 1.1 | |
| Percent Blockage | | | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | 41 | | |
| pX, platoon unblocked | | | | | 0.79 | |
| vC, conflicting volume | | | 449 | | 982 | 416 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 449 | | 849 | 416 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 95 | | 73 | 81 |
| cM capacity (veh/h) | | | 1106 | | 248 | 633 |

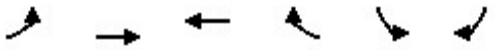
| Direction, Lane # | EB 1 | WB 1 | WB 2 | NB 1 | NB 2 |
|---|---|---|---|---|---|
| Volume Total | 444 | 60 | 446 | 68 | 123 |
| Volume Left | 0 | 60 | 0 | 68 | 0 |
| Volume Right | 65 | 0 | 0 | 0 | 123 |
| cSH | 1700 | 1106 | 1700 | 248 | 633 |
| Volume to Capacity | 0.26 | 0.05 | 0.26 | 0.27 | 0.19 |
| Queue Length 95th (m) | 0.0 | 1.3 | 0.0 | 8.2 | 5.4 |
| Control Delay (s) | 0.0 | 8.4 | 0.0 | 24.9 | 12.1 |
| Lane LOS | | A | | C | B |
| Approach Delay (s) | 0.0 | 1.0 | | 16.6 | |
| Approach LOS | | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 3.2 | | |
| Intersection Capacity Utilization | 38.9% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | WBT | WBR | SBL |
|---|---|---|---|---|---|
| Lane Group Flow (vph) | 118 | 384 | 457 | 250 | 429 |
| v/c Ratio | 0.32 | 0.42 | 0.69 | 0.35 | 0.80 |
| Control Delay | 10.3 | 11.3 | 24.3 | 4.3 | 32.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.3 | 11.3 | 24.3 | 4.3 | 32.0 |
| Queue Length 50th (m) | 6.4 | 25.4 | 44.5 | 0.3 | 41.7 |
| Queue Length 95th (m) | 13.4 | 42.8 | #82.8 | 13.1 | #81.4 |
| Internal Link Dist (m) | | 17.3 | 215.5 | | 241.1 |
| Turn Bay Length (m) | 20.0 | | | 35.0 | |
| Base Capacity (vph) | 367 | 1045 | 698 | 731 | 633 |
| 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 | 0.32 | 0.37 | 0.65 | 0.34 | 0.68 |

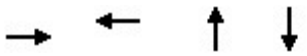
Intersection Summary

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



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 109 | 353 | 420 | 230 | 351 | 43 |
| Future Volume (vph) | 109 | 353 | 420 | 230 | 351 | 43 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 1788 | 1883 | 1883 | 1557 | 1773 | |
| Flt Permitted | 0.26 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 493 | 1883 | 1883 | 1557 | 1773 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 118 | 384 | 457 | 250 | 382 | 47 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 161 | 7 | 0 |
| Lane Group Flow (vph) | 118 | 384 | 457 | 89 | 422 | 0 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | |
| Protected Phases | 1 | 6 | 2 | | 8 | |
| Permitted Phases | 6 | | | 2 | | |
| Actuated Green, G (s) | 28.3 | 28.3 | 19.6 | 19.6 | 16.6 | |
| Effective Green, g (s) | 28.3 | 28.3 | 19.6 | 19.6 | 16.6 | |
| Actuated g/C Ratio | 0.50 | 0.50 | 0.35 | 0.35 | 0.29 | |
| Clearance Time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Vehicle Extension (s) | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | |
| Lane Grp Cap (vph) | 331 | 941 | 652 | 539 | 519 | |
| v/s Ratio Prot | 0.02 | c0.20 | c0.24 | | c0.24 | |
| v/s Ratio Perm | 0.15 | | | 0.06 | | |
| v/c Ratio | 0.36 | 0.41 | 0.70 | 0.17 | 0.81 | |
| Uniform Delay, d1 | 9.0 | 8.9 | 16.0 | 12.8 | 18.6 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | 0.3 | 3.4 | 0.1 | 9.0 | |
| Delay (s) | 9.2 | 9.2 | 19.4 | 13.0 | 27.5 | |
| Level of Service | A | A | B | B | C | |
| Approach Delay (s) | | 9.2 | 17.1 | | 27.5 | |
| Approach LOS | | A | B | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 17.4 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.78 | | |
| Actuated Cycle Length (s) | 56.6 | Sum of lost time (s) | 18.7 |
| Intersection Capacity Utilization | 64.2% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |



| Lane Group | EBT | WBT | NBT | SBT |
|---|---|---|---|---|
| Lane Group Flow (vph) | 722 | 793 | 29 | 130 |
| v/c Ratio | 0.66 | 0.40 | 0.06 | 0.31 |
| Control Delay | 15.8 | 9.6 | 14.0 | 19.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 15.8 | 9.6 | 14.0 | 19.2 |
| Queue Length 50th (m) | 65.5 | 28.7 | 1.5 | 10.0 |
| Queue Length 95th (m) | 106.8 | 41.1 | 7.0 | 24.3 |
| Internal Link Dist (m) | 66.7 | 378.6 | 270.3 | 230.5 |
| Turn Bay Length (m) | | | | |
| Base Capacity (vph) | 1150 | 2100 | 496 | 417 |
| 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 | 0.63 | 0.38 | 0.06 | 0.31 |

Intersection Summary

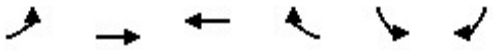
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 17 | 650 | 12 | 7 | 662 | 77 | 6 | 11 | 10 | 96 | 4 | 23 |
| Future Volume (vph) | 17 | 650 | 12 | 7 | 662 | 77 | 6 | 11 | 10 | 96 | 4 | 23 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Frt | | 1.00 | | | 0.98 | | | 0.95 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.96 | |
| Satd. Flow (prot) | | 1860 | | | 3472 | | | 1787 | | | 1767 | |
| Flt Permitted | | 0.97 | | | 0.95 | | | 0.92 | | | 0.75 | |
| Satd. Flow (perm) | | 1811 | | | 3296 | | | 1668 | | | 1382 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 18 | 691 | 13 | 7 | 704 | 82 | 6 | 12 | 11 | 102 | 4 | 24 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 12 | 0 | 0 | 9 | 0 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 0 | 721 | 0 | 0 | 781 | 0 | 0 | 20 | 0 | 0 | 117 | 0 |
| Confl. Peds. (#/hr) | 6 | | | | | 6 | 1 | | 12 | 12 | | 1 |
| Confl. Bikes (#/hr) | | | 4 | | | | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 0% | 3% | 5% | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Actuated Green, G (s) | | 35.8 | | | 35.8 | | | 13.8 | | | 13.8 | |
| Effective Green, g (s) | | 35.8 | | | 35.8 | | | 13.8 | | | 13.8 | |
| Actuated g/C Ratio | | 0.56 | | | 0.56 | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1021 | | | 1858 | | | 362 | | | 300 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.40 | | | 0.24 | | | 0.01 | | | c0.08 | |
| v/c Ratio | | 0.71 | | | 0.42 | | | 0.06 | | | 0.39 | |
| Uniform Delay, d1 | | 10.0 | | | 7.9 | | | 19.7 | | | 21.2 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 2.3 | | | 0.2 | | | 0.1 | | | 0.8 | |
| Delay (s) | | 12.3 | | | 8.1 | | | 19.8 | | | 22.1 | |
| Level of Service | | B | | | A | | | B | | | C | |
| Approach Delay (s) | | 12.3 | | | 8.1 | | | 19.8 | | | 22.1 | |
| Approach LOS | | B | | | A | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 11.2 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.62 | | |
| Actuated Cycle Length (s) | 63.5 | Sum of lost time (s) | 13.9 |
| Intersection Capacity Utilization | 75.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 730 | 2 | 29 | 692 | 2 | 49 |
| Future Volume (Veh/h) | 730 | 2 | 29 | 692 | 2 | 49 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 793 | 2 | 32 | 752 | 2 | 53 |
| Pedestrians | | | | 5 | 5 | |
| Lane Width (m) | | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | | | | 1.1 | 1.1 | |
| Percent Blockage | | | | 0 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 800 | | 1239 | 408 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 800 | | 1239 | 408 |
| tC, single (s) | | | 4.1 | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 96 | | 99 | 91 |
| cM capacity (veh/h) | | | 815 | | 160 | 587 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 |
|---|---|---|---|---|---|
| Volume Total | 529 | 266 | 283 | 501 | 55 |
| Volume Left | 0 | 0 | 32 | 0 | 2 |
| Volume Right | 0 | 2 | 0 | 0 | 53 |
| cSH | 1700 | 1700 | 815 | 1700 | 536 |
| Volume to Capacity | 0.31 | 0.16 | 0.04 | 0.29 | 0.10 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.9 | 0.0 | 2.6 |
| Control Delay (s) | 0.0 | 0.0 | 1.5 | 0.0 | 12.5 |
| Lane LOS | | | A | | B |
| Approach Delay (s) | 0.0 | | 0.5 | | 12.5 |
| Approach LOS | | | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.7 | | |
| Intersection Capacity Utilization | 52.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 4 | 774 | 714 | 6 | 14 | 14 |
| Future Volume (Veh/h) | 4 | 774 | 714 | 6 | 14 | 14 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 4 | 841 | 776 | 7 | 15 | 15 |
| Pedestrians | | 5 | | | 5 | |
| Lane Width (m) | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | |
| Percent Blockage | | 0 | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 788 | | | | 1213 | 790 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 788 | | | | 1213 | 790 |
| tC, single (s) | 4.1 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 91 | 95 |
| cM capacity (veh/h) | 823 | | | | 173 | 330 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 284 | 561 | 783 | 30 |
| Volume Left | 4 | 0 | 0 | 15 |
| Volume Right | 0 | 0 | 7 | 15 |
| cSH | 823 | 1700 | 1700 | 227 |
| Volume to Capacity | 0.00 | 0.33 | 0.46 | 0.13 |
| Queue Length 95th (m) | 0.1 | 0.0 | 0.0 | 3.4 |
| Control Delay (s) | 0.2 | 0.0 | 0.0 | 23.3 |
| Lane LOS | A | | | C |
| Approach Delay (s) | 0.1 | | 0.0 | 23.3 |
| Approach LOS | | | | C |

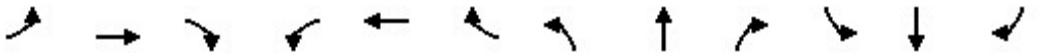
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.5 | | |
| Intersection Capacity Utilization | 49.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 260 | 449 | 169 | 60 | 357 | 154 | 96 | 171 | 643 | 226 | 348 |
| v/c Ratio | 1.02 | 0.50 | 0.33 | 0.22 | 0.82 | 0.18 | 0.51 | 0.43 | 0.75 | 0.49 | 0.42 |
| Control Delay | 114.1 | 46.6 | 8.8 | 50.0 | 62.3 | 2.8 | 64.2 | 47.8 | 50.9 | 45.8 | 3.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 114.1 | 46.6 | 8.8 | 50.0 | 62.3 | 2.8 | 64.2 | 47.8 | 50.9 | 45.8 | 3.1 |
| Queue Length 50th (m) | ~73.4 | 56.8 | 0.9 | 12.9 | 85.7 | 0.0 | 23.7 | 18.1 | 77.9 | 49.3 | 0.0 |
| Queue Length 95th (m) | #138.5 | 75.6 | 19.4 | 28.9 | #136.6 | 10.0 | 42.4 | 30.2 | 105.3 | 78.9 | 10.4 |
| Internal Link Dist (m) | | 220.1 | | | 134.2 | | | 297.9 | | 275.4 | |
| Turn Bay Length (m) | 130.0 | | 25.0 | 70.0 | | | 55.0 | | | | 85.0 |
| Base Capacity (vph) | 256 | 1291 | 661 | 286 | 507 | 896 | 501 | 1006 | 1002 | 544 | 826 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.02 | 0.35 | 0.26 | 0.21 | 0.70 | 0.17 | 0.19 | 0.17 | 0.64 | 0.42 | 0.42 |

Intersection Summary

~ 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.



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 234 | 404 | 152 | 54 | 321 | 139 | 86 | 114 | 40 | 579 | 203 | 313 |
| Future Volume (vph) | 234 | 404 | 152 | 54 | 321 | 139 | 86 | 114 | 40 | 579 | 203 | 313 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1825 | 3650 | 1567 | 1789 | 1902 | 1623 | 1772 | 3483 | | 3541 | 1921 | 1606 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1825 | 3650 | 1567 | 1789 | 1902 | 1623 | 1772 | 3483 | | 3541 | 1921 | 1606 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 260 | 449 | 169 | 60 | 357 | 154 | 96 | 127 | 44 | 643 | 226 | 348 |
| RTOR Reduction (vph) | 0 | 0 | 124 | 0 | 0 | 80 | 0 | 26 | 0 | 0 | 0 | 217 |
| Lane Group Flow (vph) | 260 | 449 | 45 | 60 | 357 | 74 | 96 | 145 | 0 | 643 | 226 | 131 |
| Confl. Peds. (#/hr) | | | | | | | 1 | | | | | 1 |
| Confl. Bikes (#/hr) | | | 7 | | | 1 | | | | | | 4 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 2% | 1% | 0% | 3% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Prot | NA | Perm | Prot | NA | pm+ov | Split | NA | | Split | NA | pm+ov |
| Protected Phases | 1 | 6 | | 5 | 2 | 4 | 3 | 3 | | 4 | 4 | 1 |
| Permitted Phases | | | 6 | | | 2 | | | | | | 4 |
| Actuated Green, G (s) | 17.6 | 31.1 | 31.1 | 18.0 | 30.9 | 61.1 | 13.4 | 13.4 | | 30.2 | 30.2 | 47.8 |
| Effective Green, g (s) | 17.6 | 31.1 | 31.1 | 18.0 | 30.9 | 61.1 | 13.4 | 13.4 | | 30.2 | 30.2 | 47.8 |
| Actuated g/C Ratio | 0.14 | 0.25 | 0.25 | 0.14 | 0.24 | 0.48 | 0.11 | 0.11 | | 0.24 | 0.24 | 0.38 |
| Clearance Time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Vehicle Extension (s) | 2.5 | 4.0 | 4.0 | 2.5 | 3.0 | 3.0 | 4.0 | 4.0 | | 3.0 | 3.0 | 2.5 |
| Lane Grp Cap (vph) | 253 | 895 | 384 | 254 | 463 | 782 | 187 | 368 | | 844 | 457 | 605 |
| v/s Ratio Prot | c0.14 | 0.12 | | 0.03 | c0.19 | 0.02 | c0.05 | 0.04 | | c0.18 | 0.12 | 0.03 |
| v/s Ratio Perm | | | 0.03 | | | 0.02 | | | | | | 0.05 |
| v/c Ratio | 1.03 | 0.50 | 0.12 | 0.24 | 0.77 | 0.09 | 0.51 | 0.39 | | 0.76 | 0.49 | 0.22 |
| Uniform Delay, d1 | 54.5 | 41.1 | 37.1 | 48.2 | 44.6 | 17.8 | 53.6 | 52.9 | | 44.9 | 41.7 | 26.8 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 63.9 | 0.6 | 0.2 | 0.4 | 7.8 | 0.1 | 3.1 | 1.0 | | 4.1 | 0.8 | 0.1 |
| Delay (s) | 118.5 | 41.7 | 37.3 | 48.6 | 52.4 | 17.9 | 56.7 | 53.8 | | 49.0 | 42.5 | 26.9 |
| Level of Service | F | D | D | D | D | B | E | D | | D | D | C |
| Approach Delay (s) | | 63.6 | | | 42.7 | | | 54.9 | | | 41.5 | |
| Approach LOS | | E | | | D | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 49.5 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.78 | | |
| Actuated Cycle Length (s) | 126.7 | Sum of lost time (s) | 34.6 |
| Intersection Capacity Utilization | 80.0% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 3 | 10 | 13 | 3 | 3 | 5 |
| Future Volume (Veh/h) | 3 | 10 | 13 | 3 | 3 | 5 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Hourly flow rate (vph) | 5 | 17 | 22 | 5 | 5 | 8 |
| Pedestrians | 16 | | 3 | | | |
| Lane Width (m) | 3.7 | | 3.7 | | | |
| Walking Speed (m/s) | 1.1 | | 1.1 | | | |
| Percent Blockage | 1 | | 0 | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | 294 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 62 | 40 | | | 43 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 62 | 40 | | | 43 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 99 | 98 | | | 100 | |
| cM capacity (veh/h) | 930 | 1021 | | | 1555 | |

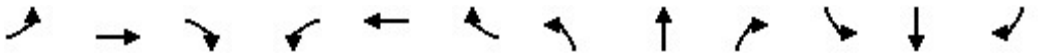
| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 22 | 27 | 13 |
| Volume Left | 5 | 0 | 5 |
| Volume Right | 17 | 5 | 0 |
| cSH | 999 | 1700 | 1555 |
| Volume to Capacity | 0.02 | 0.02 | 0.00 |
| Queue Length 95th (m) | 0.5 | 0.0 | 0.1 |
| Control Delay (s) | 8.7 | 0.0 | 2.8 |
| Lane LOS | A | | A |
| Approach Delay (s) | 8.7 | 0.0 | 2.8 |
| Approach LOS | A | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 3.7 | | |
| Intersection Capacity Utilization | 17.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 12 | 1 | 4 | 9 | 2 | 6 |
| Future Volume (Veh/h) | 12 | 1 | 4 | 9 | 2 | 6 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 |
| Hourly flow rate (vph) | 17 | 1 | 6 | 13 | 3 | 8 |
| Pedestrians | 2 | | | | 5 | |
| Lane Width (m) | 3.7 | | | | 3.7 | |
| Walking Speed (m/s) | 1.1 | | | | 1.1 | |
| Percent Blockage | 0 | | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 23 | | 50 | 22 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 23 | | 50 | 22 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.4 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.5 |
| p0 queue free % | | | 100 | | 100 | 99 |
| cM capacity (veh/h) | | | 1598 | | 955 | 1008 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 18 | 19 | 11 |
| Volume Left | 0 | 6 | 3 |
| Volume Right | 1 | 0 | 8 |
| cSH | 1700 | 1598 | 993 |
| Volume to Capacity | 0.01 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.0 | 0.1 | 0.3 |
| Control Delay (s) | 0.0 | 2.3 | 8.7 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 2.3 | 8.7 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.9 | | |
| Intersection Capacity Utilization | 14.9% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 4 | 0 | 1 | 5 | 1 | 4 | 2 | 112 | 3 | 2 | 131 | 5 |
| Future Volume (Veh/h) | 4 | 0 | 1 | 5 | 1 | 4 | 2 | 112 | 3 | 2 | 131 | 5 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 5 | 0 | 1 | 6 | 1 | 5 | 2 | 132 | 4 | 2 | 154 | 6 |
| Pedestrians | | 8 | | | 6 | | | 3 | | | | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | | |
| Percent Blockage | | 1 | | | 1 | | | 0 | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 230 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 312 | 315 | 168 | 309 | 316 | 140 | 168 | | | 142 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 312 | 315 | 168 | 309 | 316 | 140 | 168 | | | 142 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 99 | 100 | 100 | 99 | 100 | 99 | 100 | | | 100 | | |
| cM capacity (veh/h) | 627 | 594 | 872 | 633 | 594 | 908 | 1411 | | | 1445 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 6 | 12 | 138 | 162 |
| Volume Left | 5 | 6 | 2 | 2 |
| Volume Right | 1 | 5 | 4 | 6 |
| cSH | 658 | 720 | 1411 | 1445 |
| Volume to Capacity | 0.01 | 0.02 | 0.00 | 0.00 |
| Queue Length 95th (m) | 0.2 | 0.4 | 0.0 | 0.0 |
| Control Delay (s) | 10.5 | 10.1 | 0.1 | 0.1 |
| Lane LOS | B | B | A | A |
| Approach Delay (s) | 10.5 | 10.1 | 0.1 | 0.1 |
| Approach LOS | B | B | | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.7 | | | |
| Intersection Capacity Utilization | 20.4% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 3 | 1 | 1 | 13 | 6 | 2 |
| Future Volume (Veh/h) | 3 | 1 | 1 | 13 | 6 | 2 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Hourly flow rate (vph) | 5 | 2 | 2 | 22 | 10 | 3 |
| Pedestrians | | | | 3 | | |
| Lane Width (m) | | | | 3.7 | | |
| Walking Speed (m/s) | | | | 1.1 | | |
| Percent Blockage | | | | 0 | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | 334 | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 38 | 14 | 13 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 38 | 14 | 13 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 99 | 100 | 100 | | | |
| cM capacity (veh/h) | 979 | 1068 | 1619 | | | |

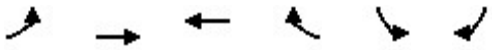
| Direction, Lane # | EB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 7 | 24 | 13 |
| Volume Left | 5 | 2 | 0 |
| Volume Right | 2 | 0 | 3 |
| cSH | 1003 | 1619 | 1700 |
| Volume to Capacity | 0.01 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.0 |
| Control Delay (s) | 8.6 | 0.6 | 0.0 |
| Lane LOS | A | A | |
| Approach Delay (s) | 8.6 | 0.6 | 0.0 |
| Approach LOS | A | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.7 | | |
| Intersection Capacity Utilization | 14.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 7 | 7 | 10 | 9 | 3 | 4 |
| Future Volume (Veh/h) | 7 | 7 | 10 | 9 | 3 | 4 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 |
| Hourly flow rate (vph) | 9 | 9 | 13 | 12 | 4 | 5 |
| Pedestrians | 12 | | | | | |
| Lane Width (m) | 3.7 | | | | | |
| Walking Speed (m/s) | 1.1 | | | | | |
| Percent Blockage | 1 | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 44 | 31 | | | 37 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 44 | 31 | | | 37 | |
| tC, single (s) | 6.4 | 6.3 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.4 | | | 2.2 | |
| p0 queue free % | 99 | 99 | | | 100 | |
| cM capacity (veh/h) | 958 | 998 | | | 1569 | |

| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 18 | 25 | 9 |
| Volume Left | 9 | 0 | 4 |
| Volume Right | 9 | 12 | 0 |
| cSH | 978 | 1700 | 1569 |
| Volume to Capacity | 0.02 | 0.01 | 0.00 |
| Queue Length 95th (m) | 0.4 | 0.0 | 0.1 |
| Control Delay (s) | 8.8 | 0.0 | 3.3 |
| Lane LOS | A | | A |
| Approach Delay (s) | 8.8 | 0.0 | 3.3 |
| Approach LOS | A | | |

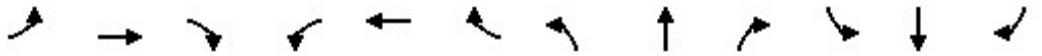
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | | 3.6 | |
| Intersection Capacity Utilization | | 16.6% | ICU Level of Service A |
| Analysis Period (min) | | 15 | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 11 | 8 | 4 | 2 | 6 |
| Future Volume (Veh/h) | 0 | 11 | 8 | 4 | 2 | 6 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 |
| Hourly flow rate (vph) | 0 | 16 | 11 | 6 | 3 | 9 |
| Pedestrians | | 4 | 4 | | 3 | |
| Lane Width (m) | | 3.7 | 3.7 | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | 1.1 | | 1.1 | |
| Percent Blockage | | 0 | 0 | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 20 | | | | 37 | 21 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 20 | | | | 37 | 21 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 100 | 99 |
| cM capacity (veh/h) | 1605 | | | | 974 | 1055 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 16 | 17 | 12 |
| Volume Left | 0 | 0 | 3 |
| Volume Right | 0 | 6 | 9 |
| cSH | 1605 | 1700 | 1034 |
| Volume to Capacity | 0.00 | 0.01 | 0.01 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.3 |
| Control Delay (s) | 0.0 | 0.0 | 8.5 |
| Lane LOS | | | A |
| Approach Delay (s) | 0.0 | 0.0 | 8.5 |
| Approach LOS | | | A |

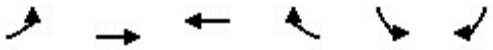
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.3 | | |
| Intersection Capacity Utilization | 15.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 4 | 1 | 14 | 11 | 2 | 8 | 2 | 104 | 11 | 11 | 134 | 6 |
| Future Volume (Veh/h) | 4 | 1 | 14 | 11 | 2 | 8 | 2 | 104 | 11 | 11 | 134 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 4 | 1 | 16 | 12 | 2 | 9 | 2 | 116 | 12 | 12 | 149 | 7 |
| Pedestrians | | 5 | | | 1 | | | | | | 1 | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | | | | 1.1 | |
| Percent Blockage | | 0 | | | 0 | | | | | | 0 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 119 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 318 | 314 | 158 | 320 | 312 | 124 | 161 | | | 129 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 318 | 314 | 158 | 320 | 312 | 124 | 161 | | | 129 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 99 | 100 | 98 | 98 | 100 | 99 | 100 | | | 99 | | |
| cM capacity (veh/h) | 620 | 595 | 889 | 617 | 597 | 930 | 1424 | | | 1468 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 21 | 23 | 130 | 168 |
| Volume Left | 4 | 12 | 2 | 12 |
| Volume Right | 16 | 9 | 12 | 7 |
| cSH | 804 | 708 | 1424 | 1468 |
| Volume to Capacity | 0.03 | 0.03 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.6 | 0.8 | 0.0 | 0.2 |
| Control Delay (s) | 9.6 | 10.3 | 0.1 | 0.6 |
| Lane LOS | A | B | A | A |
| Approach Delay (s) | 9.6 | 10.3 | 0.1 | 0.6 |
| Approach LOS | A | B | | |

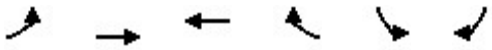
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 1.6 | | | |
| Intersection Capacity Utilization | 23.9% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 7 | 15 | 7 | 12 | 1 | 11 |
| Future Volume (Veh/h) | 7 | 15 | 7 | 12 | 1 | 11 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 |
| Hourly flow rate (vph) | 10 | 21 | 10 | 17 | 1 | 16 |
| Pedestrians | | | 7 | | 6 | |
| Lane Width (m) | | | 3.7 | | 3.7 | |
| Walking Speed (m/s) | | | 1.1 | | 1.1 | |
| Percent Blockage | | | 1 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 33 | | | | 72 | 24 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 33 | | | | 72 | 24 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 99 | | | | 100 | 98 |
| cM capacity (veh/h) | 1496 | | | | 919 | 1052 |

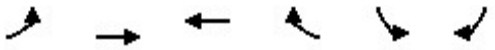
| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 31 | 27 | 17 |
| Volume Left | 10 | 0 | 1 |
| Volume Right | 0 | 17 | 16 |
| cSH | 1496 | 1700 | 1043 |
| Volume to Capacity | 0.01 | 0.02 | 0.02 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.4 |
| Control Delay (s) | 2.4 | 0.0 | 8.5 |
| Lane LOS | A | | A |
| Approach Delay (s) | 2.4 | 0.0 | 8.5 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.9 | | |
| Intersection Capacity Utilization | 17.0% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 100 | 282 | 585 | 48 | 64 | 114 |
| v/c Ratio | 0.19 | 0.19 | 0.55 | 0.05 | 0.21 | 0.12 |
| Control Delay | 4.9 | 4.1 | 15.9 | 8.8 | 29.7 | 3.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 4.9 | 4.1 | 15.9 | 8.8 | 29.7 | 3.1 |
| Queue Length 50th (m) | 4.2 | 12.4 | 57.9 | 2.2 | 6.7 | 0.0 |
| Queue Length 95th (m) | 8.7 | 21.4 | 100.7 | 8.0 | 20.6 | 7.7 |
| Internal Link Dist (m) | | 190.8 | 569.6 | | 94.5 | |
| Turn Bay Length (m) | 30.0 | | | 15.0 | | 25.0 |
| Base Capacity (vph) | 695 | 1785 | 1460 | 1202 | 615 | 1224 |
| 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 | 0.14 | 0.16 | 0.40 | 0.04 | 0.10 | 0.09 |

Intersection Summary



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 92 | 259 | 538 | 44 | 59 | 105 |
| Future Volume (vph) | 92 | 259 | 538 | 44 | 59 | 105 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1788 | 1883 | 1883 | 1552 | 1789 | 1552 |
| Flt Permitted | 0.26 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 493 | 1883 | 1883 | 1552 | 1789 | 1552 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 100 | 282 | 585 | 48 | 64 | 114 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 8 | 0 | 56 |
| Lane Group Flow (vph) | 100 | 282 | 585 | 40 | 64 | 58 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Confl. Bikes (#/hr) | | | | 5 | | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | Perm |
| Protected Phases | 5 | 2 | 6 | | 4 | |
| Permitted Phases | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 47.5 | 47.5 | 33.8 | 33.8 | 5.4 | 33.8 |
| Effective Green, g (s) | 47.5 | 47.5 | 33.8 | 33.8 | 5.4 | 33.8 |
| Actuated g/C Ratio | 0.71 | 0.71 | 0.51 | 0.51 | 0.08 | 0.51 |
| Clearance Time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 487 | 1342 | 955 | 787 | 145 | 787 |
| v/s Ratio Prot | 0.02 | c0.15 | c0.31 | | c0.04 | |
| v/s Ratio Perm | 0.12 | | | 0.03 | | 0.04 |
| v/c Ratio | 0.21 | 0.21 | 0.61 | 0.05 | 0.44 | 0.07 |
| Uniform Delay, d1 | 5.2 | 3.2 | 11.7 | 8.3 | 29.2 | 8.4 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.2 | 0.1 | 1.2 | 0.0 | 2.1 | 0.0 |
| Delay (s) | 5.5 | 3.3 | 12.9 | 8.3 | 31.3 | 8.4 |
| Level of Service | A | A | B | A | C | A |
| Approach Delay (s) | | 3.9 | 12.5 | | 16.7 | |
| Approach LOS | | A | B | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 10.4 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.55 | | |
| Actuated Cycle Length (s) | 66.6 | Sum of lost time (s) | 20.4 |
| Intersection Capacity Utilization | 60.2% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 639 | 85 | 45 | 339 | 51 | 145 |
| Future Volume (Veh/h) | 639 | 85 | 45 | 339 | 51 | 145 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 695 | 92 | 49 | 368 | 55 | 158 |
| Pedestrians | | | | | 5 | |
| Lane Width (m) | | | | | 3.7 | |
| Walking Speed (m/s) | | | | | 1.1 | |
| Percent Blockage | | | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | 41 | | |
| pX, platoon unblocked | | | | | 0.84 | |
| vC, conflicting volume | | | 792 | | 1212 | 746 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 792 | | 1158 | 746 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 94 | | 68 | 62 |
| cM capacity (veh/h) | | | 825 | | 171 | 412 |

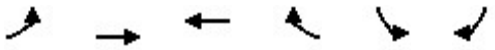
| Direction, Lane # | EB 1 | WB 1 | WB 2 | NB 1 | NB 2 |
|---|---|---|---|---|---|
| Volume Total | 787 | 49 | 368 | 55 | 158 |
| Volume Left | 0 | 49 | 0 | 55 | 0 |
| Volume Right | 92 | 0 | 0 | 0 | 158 |
| cSH | 1700 | 825 | 1700 | 171 | 412 |
| Volume to Capacity | 0.46 | 0.06 | 0.22 | 0.32 | 0.38 |
| Queue Length 95th (m) | 0.0 | 1.4 | 0.0 | 9.9 | 13.5 |
| Control Delay (s) | 0.0 | 9.6 | 0.0 | 35.7 | 19.1 |
| Lane LOS | | A | | E | C |
| Approach Delay (s) | 0.0 | 1.1 | | 23.4 | |
| Approach LOS | | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 3.9 | | |
| Intersection Capacity Utilization | 54.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | WBT | WBR | SBL |
|---|---|---|---|---|---|
| Lane Group Flow (vph) | 168 | 703 | 377 | 207 | 379 |
| v/c Ratio | 0.38 | 0.76 | 0.56 | 0.30 | 0.74 |
| Control Delay | 10.4 | 18.1 | 19.9 | 4.1 | 28.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.4 | 18.1 | 19.9 | 4.1 | 28.1 |
| Queue Length 50th (m) | 8.5 | 53.4 | 32.4 | 0.0 | 33.5 |
| Queue Length 95th (m) | 18.1 | 96.9 | 58.5 | 11.5 | #62.9 |
| Internal Link Dist (m) | | 17.3 | 215.5 | | 241.1 |
| Turn Bay Length (m) | 20.0 | | | 35.0 | |
| Base Capacity (vph) | 440 | 1079 | 723 | 724 | 643 |
| 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 | 0.38 | 0.65 | 0.52 | 0.29 | 0.59 |

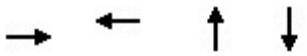
Intersection Summary

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



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 155 | 647 | 347 | 190 | 318 | 30 |
| Future Volume (vph) | 155 | 647 | 347 | 190 | 318 | 30 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 1787 | 1883 | 1883 | 1557 | 1778 | |
| Flt Permitted | 0.35 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 653 | 1883 | 1883 | 1557 | 1778 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 168 | 703 | 377 | 207 | 346 | 33 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 135 | 5 | 0 |
| Lane Group Flow (vph) | 168 | 703 | 377 | 72 | 374 | 0 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | |
| Protected Phases | 1 | 6 | 2 | | 8 | |
| Permitted Phases | 6 | | | 2 | | |
| Actuated Green, G (s) | 28.1 | 28.1 | 19.3 | 19.3 | 15.4 | |
| Effective Green, g (s) | 28.1 | 28.1 | 19.3 | 19.3 | 15.4 | |
| Actuated g/C Ratio | 0.51 | 0.51 | 0.35 | 0.35 | 0.28 | |
| Clearance Time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Vehicle Extension (s) | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | |
| Lane Grp Cap (vph) | 410 | 958 | 658 | 544 | 496 | |
| v/s Ratio Prot | 0.03 | c0.37 | 0.20 | | c0.21 | |
| v/s Ratio Perm | 0.18 | | | 0.05 | | |
| v/c Ratio | 0.41 | 0.73 | 0.57 | 0.13 | 0.75 | |
| Uniform Delay, d1 | 8.1 | 10.6 | 14.6 | 12.2 | 18.2 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | 2.9 | 1.2 | 0.1 | 5.7 | |
| Delay (s) | 8.4 | 13.6 | 15.8 | 12.4 | 23.9 | |
| Level of Service | A | B | B | B | C | |
| Approach Delay (s) | | 12.6 | 14.6 | | 23.9 | |
| Approach LOS | | B | B | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 15.5 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.88 | | |
| Actuated Cycle Length (s) | 55.2 | Sum of lost time (s) | 18.7 |
| Intersection Capacity Utilization | 63.3% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |



| Lane Group | EBT | WBT | NBT | SBT |
|---|---|---|---|---|
| Lane Group Flow (vph) | 1098 | 701 | 30 | 99 |
| v/c Ratio | 0.82 | 0.29 | 0.08 | 0.30 |
| Control Delay | 19.9 | 6.5 | 20.4 | 30.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 19.9 | 6.5 | 20.4 | 30.9 |
| Queue Length 50th (m) | 145.6 | 23.8 | 2.3 | 13.1 |
| Queue Length 95th (m) | #242.6 | 31.5 | 9.2 | 26.8 |
| Internal Link Dist (m) | 66.7 | 378.6 | 270.3 | 230.5 |
| Turn Bay Length (m) | | | | |
| Base Capacity (vph) | 1352 | 2414 | 373 | 326 |
| 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 | 0.81 | 0.29 | 0.08 | 0.30 |

Intersection Summary

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

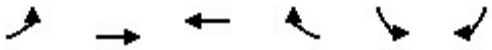
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 8 | 951 | 7 | 4 | 532 | 80 | 6 | 8 | 12 | 67 | 4 | 16 |
| Future Volume (vph) | 8 | 951 | 7 | 4 | 532 | 80 | 6 | 8 | 12 | 67 | 4 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.99 | |
| Frt | | 1.00 | | | 0.98 | | | 0.94 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | 0.96 | |
| Satd. Flow (prot) | | 1879 | | | 3503 | | | 1693 | | | 1753 | |
| Flt Permitted | | 0.99 | | | 0.95 | | | 0.91 | | | 0.76 | |
| Satd. Flow (perm) | | 1869 | | | 3323 | | | 1565 | | | 1376 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 9 | 1081 | 8 | 5 | 605 | 91 | 7 | 9 | 14 | 76 | 5 | 18 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 1098 | 0 | 0 | 689 | 0 | 0 | 18 | 0 | 0 | 90 | 0 |
| Confl. Peds. (#/hr) | 2 | | 2 | 2 | | 2 | 2 | | 11 | 11 | | 2 |
| Confl. Bikes (#/hr) | | | 4 | | | | | | | | | |
| Heavy Vehicles (%) | 13% | 2% | 0% | 0% | 2% | 1% | 0% | 0% | 8% | 2% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Actuated Green, G (s) | | 55.9 | | | 55.9 | | | 13.2 | | | 13.2 | |
| Effective Green, g (s) | | 55.9 | | | 55.9 | | | 13.2 | | | 13.2 | |
| Actuated g/C Ratio | | 0.67 | | | 0.67 | | | 0.16 | | | 0.16 | |
| Clearance Time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1258 | | | 2238 | | | 248 | | | 218 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.59 | | | 0.21 | | | 0.01 | | | c0.07 | |
| v/c Ratio | | 0.87 | | | 0.31 | | | 0.07 | | | 0.41 | |
| Uniform Delay, d1 | | 10.7 | | | 5.6 | | | 29.7 | | | 31.4 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 6.9 | | | 0.1 | | | 0.1 | | | 1.3 | |
| Delay (s) | | 17.7 | | | 5.7 | | | 29.8 | | | 32.7 | |
| Level of Service | | B | | | A | | | C | | | C | |
| Approach Delay (s) | | 17.7 | | | 5.7 | | | 29.8 | | | 32.7 | |
| Approach LOS | | B | | | A | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 14.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.78 | | |
| Actuated Cycle Length (s) | 83.0 | Sum of lost time (s) | 13.9 |
| Intersection Capacity Utilization | 83.4% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 1039 | 3 | 24 | 571 | 2 | 46 |
| Future Volume (Veh/h) | 1039 | 3 | 24 | 571 | 2 | 46 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1129 | 3 | 26 | 621 | 2 | 50 |
| Pedestrians | | | | 5 | 5 | |
| Lane Width (m) | | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | | | | 1.1 | 1.1 | |
| Percent Blockage | | | | 0 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 1137 | | 1498 | 576 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 1137 | | 1498 | 576 |
| tC, single (s) | | | 4.1 | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 96 | | 98 | 89 |
| cM capacity (veh/h) | | | 607 | | 108 | 456 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 |
|---|---|---|---|---|---|
| Volume Total | 753 | 379 | 233 | 414 | 52 |
| Volume Left | 0 | 0 | 26 | 0 | 2 |
| Volume Right | 0 | 3 | 0 | 0 | 50 |
| cSH | 1700 | 1700 | 607 | 1700 | 406 |
| Volume to Capacity | 0.44 | 0.22 | 0.04 | 0.24 | 0.13 |
| Queue Length 95th (m) | 0.0 | 0.0 | 1.0 | 0.0 | 3.3 |
| Control Delay (s) | 0.0 | 0.0 | 1.7 | 0.0 | 15.2 |
| Lane LOS | | | A | | C |
| Approach Delay (s) | 0.0 | | 0.6 | | 15.2 |
| Approach LOS | | | | | C |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.7 | | |
| Intersection Capacity Utilization | 45.0% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 6 | 1078 | 590 | 5 | 10 | 10 |
| Future Volume (Veh/h) | 6 | 1078 | 590 | 5 | 10 | 10 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 7 | 1172 | 641 | 5 | 11 | 11 |
| Pedestrians | | 5 | | | 5 | |
| Lane Width (m) | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | |
| Percent Blockage | | 0 | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 651 | | | | 1248 | 654 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 651 | | | | 1248 | 654 |
| tC, single (s) | 4.1 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 99 | | | | 93 | 97 |
| cM capacity (veh/h) | 927 | | | | 163 | 406 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 398 | 781 | 646 | 22 |
| Volume Left | 7 | 0 | 0 | 11 |
| Volume Right | 0 | 0 | 5 | 11 |
| cSH | 927 | 1700 | 1700 | 233 |
| Volume to Capacity | 0.01 | 0.46 | 0.38 | 0.09 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.0 | 2.4 |
| Control Delay (s) | 0.2 | 0.0 | 0.0 | 22.1 |
| Lane LOS | A | | | C |
| Approach Delay (s) | 0.1 | | 0.0 | 22.1 |
| Approach LOS | | | | C |

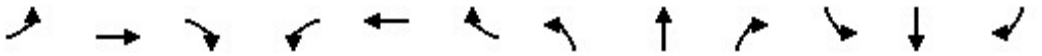
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.3 | | |
| Intersection Capacity Utilization | 45.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 293 | 726 | 146 | 78 | 186 | 237 | 171 | 623 | 805 | 213 | 257 |
| v/c Ratio | 1.34 | 0.77 | 0.28 | 0.80 | 0.52 | 0.32 | 0.45 | 0.78 | 0.94 | 0.46 | 0.34 |
| Control Delay | 226.1 | 56.0 | 5.3 | 116.5 | 58.9 | 12.8 | 54.9 | 50.6 | 73.1 | 52.3 | 3.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 226.1 | 56.0 | 5.3 | 116.5 | 58.9 | 12.8 | 54.9 | 50.6 | 73.1 | 52.3 | 3.2 |
| Queue Length 50th (m) | ~113.4 | 103.3 | 0.0 | 23.1 | 49.1 | 19.9 | 43.8 | 73.3 | 121.4 | 54.1 | 0.0 |
| Queue Length 95th (m) | #181.5 | 129.4 | 12.3 | #55.9 | 75.3 | 38.8 | 69.1 | 98.2 | #174.6 | 84.4 | 9.4 |
| Internal Link Dist (m) | | 220.1 | | | 134.2 | | | 297.9 | | 275.4 | |
| Turn Bay Length (m) | 130.0 | | 25.0 | 70.0 | | | 55.0 | | | | 85.0 |
| Base Capacity (vph) | 219 | 1104 | 584 | 98 | 442 | 750 | 446 | 922 | 857 | 464 | 748 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.34 | 0.66 | 0.25 | 0.80 | 0.42 | 0.32 | 0.38 | 0.68 | 0.94 | 0.46 | 0.34 |

Intersection Summary

~ 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.



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 284 | 704 | 142 | 76 | 180 | 230 | 166 | 326 | 278 | 781 | 207 | 249 |
| Future Volume (vph) | 284 | 704 | 142 | 76 | 180 | 230 | 166 | 326 | 278 | 781 | 207 | 249 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.93 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1807 | 3650 | 1553 | 1825 | 1921 | 1621 | 1825 | 3382 | | 3506 | 1902 | 1607 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1807 | 3650 | 1553 | 1825 | 1921 | 1621 | 1825 | 3382 | | 3506 | 1902 | 1607 |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 293 | 726 | 146 | 78 | 186 | 237 | 171 | 336 | 287 | 805 | 213 | 257 |
| RTOR Reduction (vph) | 0 | 0 | 108 | 0 | 0 | 64 | 0 | 100 | 0 | 0 | 0 | 163 |
| Lane Group Flow (vph) | 293 | 726 | 38 | 78 | 186 | 173 | 171 | 523 | 0 | 805 | 213 | 94 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | | | 6 | | | | | | | | | |
| Heavy Vehicles (%) | 1% | 0% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 1% | 1% | 0% |
| Turn Type | Prot | NA | Perm | Prot | NA | pm+ov | Split | NA | | Split | NA | pm+ov |
| Protected Phases | 1 | 6 | | 5 | 2 | 4 | 3 | 3 | | 4 | 4 | 1 |
| Permitted Phases | | | 6 | | | 2 | | | | | | 4 |
| Actuated Green, G (s) | 17.5 | 37.1 | 37.1 | 7.8 | 26.8 | 62.0 | 29.8 | 29.8 | | 35.2 | 35.2 | 52.7 |
| Effective Green, g (s) | 17.5 | 37.1 | 37.1 | 7.8 | 26.8 | 62.0 | 29.8 | 29.8 | | 35.2 | 35.2 | 52.7 |
| Actuated g/C Ratio | 0.12 | 0.26 | 0.26 | 0.05 | 0.19 | 0.43 | 0.21 | 0.21 | | 0.24 | 0.24 | 0.37 |
| Clearance Time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Vehicle Extension (s) | 2.5 | 4.0 | 4.0 | 2.5 | 3.0 | 3.0 | 4.0 | 4.0 | | 3.0 | 3.0 | 2.5 |
| Lane Grp Cap (vph) | 219 | 941 | 400 | 98 | 357 | 698 | 377 | 700 | | 857 | 465 | 588 |
| v/s Ratio Prot | c0.16 | c0.20 | | c0.04 | 0.10 | 0.06 | 0.09 | c0.15 | | c0.23 | 0.11 | 0.02 |
| v/s Ratio Perm | | | 0.02 | | | 0.05 | | | | | | 0.04 |
| v/c Ratio | 1.34 | 0.77 | 0.09 | 0.80 | 0.52 | 0.25 | 0.45 | 0.75 | | 0.94 | 0.46 | 0.16 |
| Uniform Delay, d1 | 63.2 | 49.5 | 40.6 | 67.3 | 52.8 | 26.1 | 49.9 | 53.5 | | 53.3 | 46.2 | 30.7 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 179.6 | 4.2 | 0.1 | 33.7 | 1.4 | 0.2 | 1.2 | 4.6 | | 17.6 | 0.7 | 0.1 |
| Delay (s) | 242.8 | 53.7 | 40.8 | 101.0 | 54.1 | 26.3 | 51.1 | 58.2 | | 70.9 | 47.0 | 30.8 |
| Level of Service | F | D | D | F | D | C | D | E | | E | D | C |
| Approach Delay (s) | | 99.6 | | | 48.3 | | | 56.6 | | | 58.8 | |
| Approach LOS | | F | | | D | | | E | | | E | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 69.7 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 0.87 | | |
| Actuated Cycle Length (s) | 143.9 | Sum of lost time (s) | 34.6 |
| Intersection Capacity Utilization | 96.5% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 4 | 1 | 11 | 13 | 10 | 6 |
| Future Volume (Veh/h) | 4 | 1 | 11 | 13 | 10 | 6 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| Hourly flow rate (vph) | 6 | 2 | 17 | 20 | 16 | 9 |
| Pedestrians | 4 | | | | | |
| Lane Width (m) | 3.7 | | | | | |
| Walking Speed (m/s) | 1.1 | | | | | |
| Percent Blockage | 0 | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | 294 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 72 | 31 | | | 41 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 72 | 31 | | | 41 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.3 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.4 | |
| p0 queue free % | 99 | 100 | | | 99 | |
| cM capacity (veh/h) | 923 | 1045 | | | 1454 | |

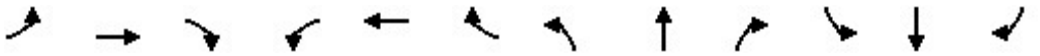
| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 8 | 37 | 25 |
| Volume Left | 6 | 0 | 16 |
| Volume Right | 2 | 20 | 0 |
| cSH | 951 | 1700 | 1454 |
| Volume to Capacity | 0.01 | 0.02 | 0.01 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.3 |
| Control Delay (s) | 8.8 | 0.0 | 4.8 |
| Lane LOS | A | | A |
| Approach Delay (s) | 8.8 | 0.0 | 4.8 |
| Approach LOS | A | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.7 | | |
| Intersection Capacity Utilization | 17.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 19 | 6 | 10 | 5 | 1 | 3 |
| Future Volume (Veh/h) | 19 | 6 | 10 | 5 | 1 | 3 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Hourly flow rate (vph) | 26 | 8 | 14 | 7 | 1 | 4 |
| Pedestrians | | | | 1 | | |
| Lane Width (m) | | | | 3.7 | | |
| Walking Speed (m/s) | | | | 1.1 | | |
| Percent Blockage | | | | 0 | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 34 | | 65 | 31 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 34 | | 65 | 31 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 99 | | 100 | 100 |
| cM capacity (veh/h) | | | 1591 | | 937 | 1048 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 34 | 21 | 5 |
| Volume Left | 0 | 14 | 1 |
| Volume Right | 8 | 0 | 4 |
| cSH | 1700 | 1591 | 1024 |
| Volume to Capacity | 0.02 | 0.01 | 0.00 |
| Queue Length 95th (m) | 0.0 | 0.2 | 0.1 |
| Control Delay (s) | 0.0 | 4.9 | 8.5 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 4.9 | 8.5 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.4 | | |
| Intersection Capacity Utilization | 17.8% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 3 | 3 | 3 | 0 | 1 | 3 | 153 | 14 | 6 | 90 | 6 |
| Future Volume (Veh/h) | 5 | 3 | 3 | 3 | 0 | 1 | 3 | 153 | 14 | 6 | 90 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 6 | 3 | 3 | 3 | 0 | 1 | 3 | 170 | 16 | 7 | 100 | 7 |
| Pedestrians | | 11 | | | 5 | | | 5 | | | 1 | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | 1.1 | |
| Percent Blockage | | 1 | | | 0 | | | 0 | | | 0 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 230 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 314 | 326 | 120 | 316 | 321 | 184 | 118 | | | 191 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 314 | 326 | 120 | 316 | 321 | 184 | 118 | | | 191 | | |
| tC, single (s) | 7.3 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.3 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.4 | | |
| p0 queue free % | 99 | 99 | 100 | 100 | 100 | 100 | 100 | | | 99 | | |
| cM capacity (veh/h) | 587 | 583 | 924 | 619 | 586 | 859 | 1468 | | | 1291 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 12 | 4 | 189 | 114 |
| Volume Left | 6 | 3 | 3 | 7 |
| Volume Right | 3 | 1 | 16 | 7 |
| cSH | 644 | 666 | 1468 | 1291 |
| Volume to Capacity | 0.02 | 0.01 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.4 | 0.1 | 0.0 | 0.1 |
| Control Delay (s) | 10.7 | 10.4 | 0.1 | 0.5 |
| Lane LOS | B | B | A | A |
| Approach Delay (s) | 10.7 | 10.4 | 0.1 | 0.5 |
| Approach LOS | B | B | | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.8 | | | |
| Intersection Capacity Utilization | 21.9% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 13 | 5 | 4 | 11 | 5 | 5 |
| Future Volume (Veh/h) | 13 | 5 | 4 | 11 | 5 | 5 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| Hourly flow rate (vph) | 20 | 8 | 6 | 17 | 8 | 8 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | 334 | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 41 | 12 | 16 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 41 | 12 | 16 | | | |
| tC, single (s) | 6.5 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.6 | 3.3 | 2.2 | | | |
| p0 queue free % | 98 | 99 | 100 | | | |
| cM capacity (veh/h) | 952 | 1074 | 1615 | | | |

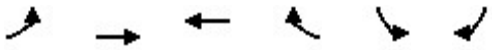
| Direction, Lane # | EB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 28 | 23 | 16 |
| Volume Left | 20 | 6 | 0 |
| Volume Right | 8 | 0 | 8 |
| cSH | 984 | 1615 | 1700 |
| Volume to Capacity | 0.03 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.7 | 0.1 | 0.0 |
| Control Delay (s) | 8.8 | 1.9 | 0.0 |
| Lane LOS | A | A | |
| Approach Delay (s) | 8.8 | 1.9 | 0.0 |
| Approach LOS | A | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 4.3 | | |
| Intersection Capacity Utilization | 14.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 3 | 6 | 9 | 49 | 6 | 4 |
| Future Volume (Veh/h) | 3 | 6 | 9 | 49 | 6 | 4 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| Hourly flow rate (vph) | 4 | 8 | 12 | 64 | 8 | 5 |
| Pedestrians | 5 | | | | | |
| Lane Width (m) | 3.7 | | | | | |
| Walking Speed (m/s) | 1.1 | | | | | |
| Percent Blockage | 0 | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 70 | 49 | | | 81 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 70 | 49 | | | 81 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 99 | | | 99 | |
| cM capacity (veh/h) | 930 | 1021 | | | 1522 | |

| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 12 | 76 | 13 |
| Volume Left | 4 | 0 | 8 |
| Volume Right | 8 | 64 | 0 |
| cSH | 989 | 1700 | 1522 |
| Volume to Capacity | 0.01 | 0.04 | 0.01 |
| Queue Length 95th (m) | 0.3 | 0.0 | 0.1 |
| Control Delay (s) | 8.7 | 0.0 | 4.6 |
| Lane LOS | A | | A |
| Approach Delay (s) | 8.7 | 0.0 | 4.6 |
| Approach LOS | A | | |

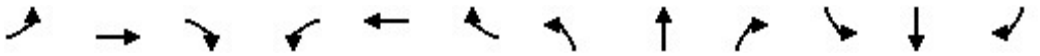
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.6 | | |
| Intersection Capacity Utilization | 15.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 5 | 44 | 6 | 1 | 5 | 6 |
| Future Volume (Veh/h) | 5 | 44 | 6 | 1 | 5 | 6 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 |
| Hourly flow rate (vph) | 6 | 56 | 8 | 1 | 6 | 8 |
| Pedestrians | | | 1 | | | |
| Lane Width (m) | | | 3.7 | | | |
| Walking Speed (m/s) | | | 1.1 | | | |
| Percent Blockage | | | 0 | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 9 | | | | 78 | 8 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 9 | | | | 78 | 8 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 99 | 99 |
| cM capacity (veh/h) | 1624 | | | | 926 | 1079 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 62 | 9 | 14 |
| Volume Left | 6 | 0 | 6 |
| Volume Right | 0 | 1 | 8 |
| cSH | 1624 | 1700 | 1008 |
| Volume to Capacity | 0.00 | 0.01 | 0.01 |
| Queue Length 95th (m) | 0.1 | 0.0 | 0.3 |
| Control Delay (s) | 0.7 | 0.0 | 8.6 |
| Lane LOS | A | | A |
| Approach Delay (s) | 0.7 | 0.0 | 8.6 |
| Approach LOS | | | A |

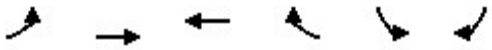
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.9 | | |
| Intersection Capacity Utilization | 16.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 8 | 11 | 2 | 12 | 1 | 4 | 2 | 181 | 62 | 6 | 91 | 7 |
| Future Volume (Veh/h) | 8 | 11 | 2 | 12 | 1 | 4 | 2 | 181 | 62 | 6 | 91 | 7 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Hourly flow rate (vph) | 8 | 11 | 2 | 12 | 1 | 4 | 2 | 189 | 65 | 6 | 95 | 7 |
| Pedestrians | | 6 | | | 7 | | | 3 | | | | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | | |
| Percent Blockage | | 1 | | | 1 | | | 0 | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 119 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 346 | 382 | 108 | 354 | 352 | 228 | 108 | | | 261 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 346 | 382 | 108 | 354 | 352 | 228 | 108 | | | 261 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.2 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.6 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 99 | 98 | 100 | 98 | 100 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 596 | 545 | 944 | 567 | 565 | 810 | 1487 | | | 1307 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 21 | 17 | 256 | 108 |
| Volume Left | 8 | 12 | 2 | 6 |
| Volume Right | 2 | 4 | 65 | 7 |
| cSH | 588 | 610 | 1487 | 1307 |
| Volume to Capacity | 0.04 | 0.03 | 0.00 | 0.00 |
| Queue Length 95th (m) | 0.8 | 0.7 | 0.0 | 0.1 |
| Control Delay (s) | 11.4 | 11.1 | 0.1 | 0.5 |
| Lane LOS | B | B | A | A |
| Approach Delay (s) | 11.4 | 11.1 | 0.1 | 0.5 |
| Approach LOS | B | B | | |

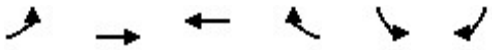
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 1.2 | | | |
| Intersection Capacity Utilization | 25.0% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 49 | 24 | 6 | 11 | 4 | 3 |
| Future Volume (Veh/h) | 49 | 24 | 6 | 11 | 4 | 3 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| Hourly flow rate (vph) | 59 | 29 | 7 | 13 | 5 | 4 |
| Pedestrians | | | 2 | | 4 | |
| Lane Width (m) | | | 3.7 | | 3.7 | |
| Walking Speed (m/s) | | | 1.1 | | 1.1 | |
| Percent Blockage | | | 0 | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 24 | | | | 166 | 18 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 24 | | | | 166 | 18 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 96 | | | | 99 | 100 |
| cM capacity (veh/h) | 1511 | | | | 792 | 1063 |

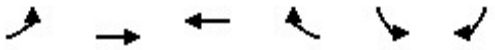
| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 88 | 20 | 9 |
| Volume Left | 59 | 0 | 5 |
| Volume Right | 0 | 13 | 4 |
| cSH | 1511 | 1700 | 893 |
| Volume to Capacity | 0.04 | 0.01 | 0.01 |
| Queue Length 95th (m) | 0.9 | 0.0 | 0.2 |
| Control Delay (s) | 5.1 | 0.0 | 9.1 |
| Lane LOS | A | | A |
| Approach Delay (s) | 5.1 | 0.0 | 9.1 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 4.5 | | |
| Intersection Capacity Utilization | 20.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 213 | 430 | 529 | 60 | 41 | 74 |
| v/c Ratio | 0.37 | 0.28 | 0.63 | 0.09 | 0.12 | 0.10 |
| Control Delay | 5.9 | 4.4 | 19.5 | 9.8 | 29.7 | 4.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.9 | 4.4 | 19.5 | 9.8 | 29.7 | 4.2 |
| Queue Length 50th (m) | 9.5 | 20.9 | 55.0 | 2.9 | 4.4 | 0.0 |
| Queue Length 95th (m) | 16.1 | 32.2 | 93.0 | 9.7 | 14.9 | 6.8 |
| Internal Link Dist (m) | | 190.8 | 569.6 | | 94.5 | |
| Turn Bay Length (m) | 30.0 | | | 15.0 | | 25.0 |
| Base Capacity (vph) | 709 | 1783 | 1452 | 1197 | 659 | 1209 |
| 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 | 0.30 | 0.24 | 0.36 | 0.05 | 0.06 | 0.06 |

Intersection Summary



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 196 | 396 | 487 | 55 | 38 | 68 |
| Future Volume (vph) | 196 | 396 | 487 | 55 | 38 | 68 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1788 | 1883 | 1883 | 1552 | 1789 | 1552 |
| Flt Permitted | 0.25 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 475 | 1883 | 1883 | 1552 | 1789 | 1552 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 213 | 430 | 529 | 60 | 41 | 74 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 42 |
| Lane Group Flow (vph) | 213 | 430 | 529 | 48 | 41 | 32 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Confl. Bikes (#/hr) | | | | 5 | | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | Perm |
| Protected Phases | 5 | 2 | 6 | | 4 | |
| Permitted Phases | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 44.4 | 44.4 | 27.3 | 27.3 | 4.9 | 27.3 |
| Effective Green, g (s) | 44.4 | 44.4 | 27.3 | 27.3 | 4.9 | 27.3 |
| Actuated g/C Ratio | 0.70 | 0.70 | 0.43 | 0.43 | 0.08 | 0.43 |
| Clearance Time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 551 | 1327 | 815 | 672 | 139 | 672 |
| v/s Ratio Prot | 0.06 | c0.23 | c0.28 | | c0.02 | |
| v/s Ratio Perm | 0.21 | | | 0.03 | | 0.02 |
| v/c Ratio | 0.39 | 0.32 | 0.65 | 0.07 | 0.29 | 0.05 |
| Uniform Delay, d1 | 5.7 | 3.6 | 14.1 | 10.4 | 27.4 | 10.3 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.5 | 0.1 | 1.8 | 0.0 | 1.2 | 0.0 |
| Delay (s) | 6.1 | 3.7 | 15.9 | 10.5 | 28.6 | 10.4 |
| Level of Service | A | A | B | B | C | B |
| Approach Delay (s) | | 4.5 | 15.3 | | 16.9 | |
| Approach LOS | | A | B | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 10.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.56 | | |
| Actuated Cycle Length (s) | 63.0 | Sum of lost time (s) | 20.4 |
| Intersection Capacity Utilization | 63.2% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 393 | 60 | 55 | 459 | 79 | 113 |
| Future Volume (Veh/h) | 393 | 60 | 55 | 459 | 79 | 113 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 427 | 65 | 60 | 499 | 86 | 123 |
| Pedestrians | | | | | 5 | |
| Lane Width (m) | | | | | 3.7 | |
| Walking Speed (m/s) | | | | | 1.1 | |
| Percent Blockage | | | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | 41 | | |
| pX, platoon unblocked | | | | | 0.77 | |
| vC, conflicting volume | | | 497 | | 1084 | 464 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 497 | | 957 | 464 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 94 | | 58 | 79 |
| cM capacity (veh/h) | | | 1062 | | 206 | 595 |

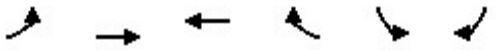
| Direction, Lane # | EB 1 | WB 1 | WB 2 | NB 1 | NB 2 |
|---|---|---|---|---|---|
| Volume Total | 492 | 60 | 499 | 86 | 123 |
| Volume Left | 0 | 60 | 0 | 86 | 0 |
| Volume Right | 65 | 0 | 0 | 0 | 123 |
| cSH | 1700 | 1062 | 1700 | 206 | 595 |
| Volume to Capacity | 0.29 | 0.06 | 0.29 | 0.42 | 0.21 |
| Queue Length 95th (m) | 0.0 | 1.4 | 0.0 | 14.5 | 5.9 |
| Control Delay (s) | 0.0 | 8.6 | 0.0 | 34.5 | 12.6 |
| Lane LOS | | A | | D | B |
| Approach Delay (s) | 0.0 | 0.9 | | 21.6 | |
| Approach LOS | | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 4.0 | | |
| Intersection Capacity Utilization | 42.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | WBT | WBR | SBL |
|---|---|---|---|---|---|
| Lane Group Flow (vph) | 118 | 433 | 510 | 259 | 447 |
| v/c Ratio | 0.35 | 0.46 | 0.73 | 0.36 | 0.83 |
| Control Delay | 10.8 | 11.9 | 25.1 | 5.2 | 35.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.8 | 11.9 | 25.1 | 5.2 | 35.8 |
| Queue Length 50th (m) | 6.7 | 30.8 | 53.0 | 2.8 | 49.2 |
| Queue Length 95th (m) | 13.6 | 50.2 | #89.4 | 16.1 | #94.2 |
| Internal Link Dist (m) | | 17.3 | 215.5 | | 241.1 |
| Turn Bay Length (m) | 20.0 | | | 35.0 | |
| Base Capacity (vph) | 337 | 1106 | 782 | 776 | 623 |
| 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 | 0.35 | 0.39 | 0.65 | 0.33 | 0.72 |

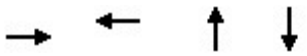
Intersection Summary

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



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 109 | 398 | 469 | 238 | 368 | 43 |
| Future Volume (vph) | 109 | 398 | 469 | 238 | 368 | 43 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 1788 | 1883 | 1883 | 1556 | 1774 | |
| Flt Permitted | 0.23 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 429 | 1883 | 1883 | 1556 | 1774 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 118 | 433 | 510 | 259 | 400 | 47 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 141 | 6 | 0 |
| Lane Group Flow (vph) | 118 | 433 | 510 | 118 | 441 | 0 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | |
| Protected Phases | 1 | 6 | 2 | | 8 | |
| Permitted Phases | 6 | | | 2 | | |
| Actuated Green, G (s) | 31.1 | 31.1 | 22.4 | 22.4 | 18.0 | |
| Effective Green, g (s) | 31.1 | 31.1 | 22.4 | 22.4 | 18.0 | |
| Actuated g/C Ratio | 0.51 | 0.51 | 0.37 | 0.37 | 0.30 | |
| Clearance Time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Vehicle Extension (s) | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | |
| Lane Grp Cap (vph) | 302 | 963 | 693 | 573 | 525 | |
| v/s Ratio Prot | 0.02 | c0.23 | c0.27 | | c0.25 | |
| v/s Ratio Perm | 0.18 | | | 0.08 | | |
| v/c Ratio | 0.39 | 0.45 | 0.74 | 0.21 | 0.84 | |
| Uniform Delay, d1 | 9.7 | 9.4 | 16.6 | 13.1 | 20.1 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 0.3 | 4.1 | 0.2 | 11.1 | |
| Delay (s) | 10.0 | 9.8 | 20.7 | 13.3 | 31.2 | |
| Level of Service | B | A | C | B | C | |
| Approach Delay (s) | | 9.8 | 18.2 | | 31.2 | |
| Approach LOS | | A | B | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 18.9 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.82 | | |
| Actuated Cycle Length (s) | 60.8 | Sum of lost time (s) | 18.7 |
| Intersection Capacity Utilization | 67.7% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |



| Lane Group | EBT | WBT | NBT | SBT |
|---|---|---|---|---|
| Lane Group Flow (vph) | 787 | 826 | 103 | 138 |
| v/c Ratio | 0.71 | 0.42 | 0.25 | 0.38 |
| Control Delay | 17.3 | 9.6 | 15.6 | 21.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 17.3 | 9.6 | 15.6 | 21.4 |
| Queue Length 50th (m) | 75.4 | 30.8 | 6.6 | 12.3 |
| Queue Length 95th (m) | #143.5 | 44.1 | 17.4 | 26.4 |
| Internal Link Dist (m) | 66.7 | 378.6 | 270.3 | 230.5 |
| Turn Bay Length (m) | | | | |
| Base Capacity (vph) | 1114 | 1975 | 406 | 360 |
| 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 | 0.71 | 0.42 | 0.25 | 0.38 |

Intersection Summary

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

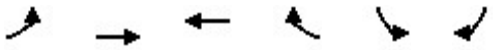
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 17 | 650 | 73 | 25 | 673 | 78 | 52 | 13 | 32 | 96 | 11 | 23 |
| Future Volume (vph) | 17 | 650 | 73 | 25 | 673 | 78 | 52 | 13 | 32 | 96 | 11 | 23 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.98 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | |
| Frt | | 0.99 | | | 0.98 | | | 0.96 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | 0.96 | |
| Satd. Flow (prot) | | 1840 | | | 3471 | | | 1753 | | | 1745 | |
| Flt Permitted | | 0.97 | | | 0.91 | | | 0.79 | | | 0.72 | |
| Satd. Flow (perm) | | 1794 | | | 3178 | | | 1418 | | | 1297 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 18 | 691 | 78 | 27 | 716 | 83 | 55 | 14 | 34 | 102 | 12 | 24 |
| RTOR Reduction (vph) | 0 | 5 | 0 | 0 | 11 | 0 | 0 | 27 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 0 | 782 | 0 | 0 | 815 | 0 | 0 | 76 | 0 | 0 | 126 | 0 |
| Confl. Peds. (#/hr) | 11 | | 5 | 5 | | 11 | 6 | | 35 | 35 | | 6 |
| Confl. Bikes (#/hr) | | | 4 | | | | | | | | | |
| Heavy Vehicles (%) | 0% | 3% | 0% | 0% | 3% | 5% | 0% | 0% | 0% | 1% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Actuated Green, G (s) | | 38.6 | | | 38.6 | | | 14.4 | | | 14.4 | |
| Effective Green, g (s) | | 38.6 | | | 38.6 | | | 14.4 | | | 14.4 | |
| Actuated g/C Ratio | | 0.58 | | | 0.58 | | | 0.22 | | | 0.22 | |
| Clearance Time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1035 | | | 1833 | | | 305 | | | 279 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.44 | | | 0.26 | | | 0.05 | | | c0.10 | |
| v/c Ratio | | 0.76 | | | 0.44 | | | 0.25 | | | 0.45 | |
| Uniform Delay, d1 | | 10.6 | | | 8.0 | | | 21.8 | | | 22.8 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 3.2 | | | 0.8 | | | 0.4 | | | 1.2 | |
| Delay (s) | | 13.8 | | | 8.8 | | | 22.2 | | | 24.0 | |
| Level of Service | | B | | | A | | | C | | | C | |
| Approach Delay (s) | | 13.8 | | | 8.8 | | | 22.2 | | | 24.0 | |
| Approach LOS | | B | | | A | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 12.8 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.67 | | |
| Actuated Cycle Length (s) | 66.9 | Sum of lost time (s) | 13.9 |
| Intersection Capacity Utilization | 79.1% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 752 | 2 | 32 | 710 | 14 | 86 |
| Future Volume (Veh/h) | 752 | 2 | 32 | 710 | 14 | 86 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 817 | 2 | 35 | 772 | 15 | 93 |
| Pedestrians | | | | 70 | 5 | |
| Lane Width (m) | | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | | | | 1.1 | 1.1 | |
| Percent Blockage | | | | 7 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 824 | | 1279 | 484 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 824 | | 1279 | 484 |
| tC, single (s) | | | 4.1 | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 96 | | 90 | 81 |
| cM capacity (veh/h) | | | 798 | | 150 | 492 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 |
|---|---|---|---|---|---|
| Volume Total | 545 | 274 | 292 | 515 | 108 |
| Volume Left | 0 | 0 | 35 | 0 | 15 |
| Volume Right | 0 | 2 | 0 | 0 | 93 |
| cSH | 1700 | 1700 | 798 | 1700 | 374 |
| Volume to Capacity | 0.32 | 0.16 | 0.04 | 0.30 | 0.29 |
| Queue Length 95th (m) | 0.0 | 0.0 | 1.0 | 0.0 | 9.0 |
| Control Delay (s) | 0.0 | 0.0 | 1.6 | 0.0 | 18.5 |
| Lane LOS | | | A | | C |
| Approach Delay (s) | 0.0 | | 0.6 | | 18.5 |
| Approach LOS | | | | | C |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.4 | | |
| Intersection Capacity Utilization | 62.9% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 4 | 833 | 733 | 6 | 14 | 17 |
| Future Volume (Veh/h) | 4 | 833 | 733 | 6 | 14 | 17 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 4 | 905 | 797 | 7 | 15 | 18 |
| Pedestrians | | 70 | | | 15 | |
| Lane Width (m) | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | |
| Percent Blockage | | 7 | | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 819 | | | | 1276 | 886 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 819 | | | | 1276 | 886 |
| tC, single (s) | 4.1 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 99 | | | | 90 | 93 |
| cM capacity (veh/h) | 794 | | | | 155 | 265 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 306 | 603 | 804 | 33 |
| Volume Left | 4 | 0 | 0 | 15 |
| Volume Right | 0 | 0 | 7 | 18 |
| cSH | 794 | 1700 | 1700 | 201 |
| Volume to Capacity | 0.01 | 0.35 | 0.47 | 0.16 |
| Queue Length 95th (m) | 0.1 | 0.0 | 0.0 | 4.4 |
| Control Delay (s) | 0.2 | 0.0 | 0.0 | 26.4 |
| Lane LOS | A | | | D |
| Approach Delay (s) | 0.1 | | 0.0 | 26.4 |
| Approach LOS | | | | D |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.5 | | |
| Intersection Capacity Utilization | 58.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 316 | 462 | 169 | 60 | 363 | 154 | 98 | 171 | 643 | 226 | 361 |
| v/c Ratio | 1.24 | 0.65 | 0.38 | 0.18 | 0.82 | 0.18 | 0.51 | 0.43 | 0.76 | 0.49 | 0.43 |
| Control Delay | 181.7 | 51.8 | 9.5 | 50.2 | 62.4 | 2.8 | 64.7 | 47.8 | 51.3 | 46.1 | 3.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 181.7 | 51.8 | 9.5 | 50.2 | 62.4 | 2.8 | 64.7 | 47.8 | 51.3 | 46.1 | 3.1 |
| Queue Length 50th (m) | ~104.6 | 59.0 | 0.9 | 13.0 | 87.6 | 0.0 | 24.4 | 18.3 | 78.8 | 49.8 | 0.0 |
| Queue Length 95th (m) | #174.7 | 77.0 | 19.1 | 29.3 | #140.2 | 10.0 | 43.2 | 30.2 | 105.4 | 78.9 | 10.5 |
| Internal Link Dist (m) | | 220.1 | | | 134.2 | | | 297.9 | | 275.4 | |
| Turn Bay Length (m) | 130.0 | | 25.0 | 70.0 | | | 55.0 | | | | 85.0 |
| Base Capacity (vph) | 255 | 1310 | 669 | 327 | 503 | 897 | 498 | 999 | 995 | 539 | 832 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.24 | 0.35 | 0.25 | 0.18 | 0.72 | 0.17 | 0.20 | 0.17 | 0.65 | 0.42 | 0.43 |

Intersection Summary

~ 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.

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 284 | 416 | 152 | 54 | 327 | 139 | 88 | 114 | 40 | 579 | 203 | 325 |
| Future Volume (vph) | 284 | 416 | 152 | 54 | 327 | 139 | 88 | 114 | 40 | 579 | 203 | 325 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1825 | 3650 | 1563 | 1789 | 1902 | 1623 | 1772 | 3483 | | 3541 | 1921 | 1606 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1825 | 3650 | 1563 | 1789 | 1902 | 1623 | 1772 | 3483 | | 3541 | 1921 | 1606 |
| Peak-hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Adj. Flow (vph) | 316 | 462 | 169 | 60 | 363 | 154 | 98 | 127 | 44 | 643 | 226 | 361 |
| RTOR Reduction (vph) | 0 | 0 | 133 | 0 | 0 | 81 | 0 | 26 | 0 | 0 | 0 | 223 |
| Lane Group Flow (vph) | 316 | 462 | 36 | 60 | 363 | 73 | 98 | 145 | 0 | 643 | 226 | 138 |
| Confl. Peds. (#/hr) | | | | | | | 1 | | | | | 1 |
| Confl. Bikes (#/hr) | | | 7 | | | 1 | | | | | | 4 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 2% | 1% | 0% | 3% | 1% | 0% | 0% | 0% | 0% |
| Turn Type | Prot | NA | Perm | Prot | NA | pm+ov | Split | NA | | Split | NA | pm+ov |
| Protected Phases | 1 | 6 | | 5 | 2 | 4 | 3 | 3 | | 4 | 4 | 1 |
| Permitted Phases | | | 6 | | | 2 | | | | | | 4 |
| Actuated Green, G (s) | 17.6 | 24.6 | 24.6 | 23.0 | 29.4 | 59.7 | 13.6 | 13.6 | | 30.3 | 30.3 | 47.9 |
| Effective Green, g (s) | 17.6 | 24.6 | 24.6 | 23.0 | 29.4 | 59.7 | 13.6 | 13.6 | | 30.3 | 30.3 | 47.9 |
| Actuated g/C Ratio | 0.14 | 0.20 | 0.20 | 0.18 | 0.23 | 0.48 | 0.11 | 0.11 | | 0.24 | 0.24 | 0.38 |
| Clearance Time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Vehicle Extension (s) | 2.5 | 4.0 | 4.0 | 2.5 | 3.0 | 3.0 | 4.0 | 4.0 | | 3.0 | 3.0 | 2.5 |
| Lane Grp Cap (vph) | 255 | 715 | 306 | 327 | 445 | 772 | 192 | 377 | | 854 | 463 | 612 |
| v/s Ratio Prot | c0.17 | 0.13 | | 0.03 | c0.19 | 0.02 | c0.06 | 0.04 | | c0.18 | 0.12 | 0.03 |
| v/s Ratio Perm | | | 0.02 | | | 0.02 | | | | | | 0.05 |
| v/c Ratio | 1.24 | 0.65 | 0.12 | 0.18 | 0.82 | 0.09 | 0.51 | 0.38 | | 0.75 | 0.49 | 0.23 |
| Uniform Delay, d1 | 54.0 | 46.4 | 41.5 | 43.3 | 45.5 | 18.1 | 52.8 | 52.1 | | 44.1 | 40.9 | 26.2 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 136.5 | 2.2 | 0.2 | 0.2 | 11.0 | 0.1 | 3.0 | 0.9 | | 3.8 | 0.8 | 0.1 |
| Delay (s) | 190.4 | 48.7 | 41.8 | 43.5 | 56.5 | 18.1 | 55.8 | 53.0 | | 47.9 | 41.7 | 26.4 |
| Level of Service | F | D | D | D | E | B | E | D | | D | D | C |
| Approach Delay (s) | | 94.8 | | | 44.9 | | | 54.0 | | | 40.5 | |
| Approach LOS | | F | | | D | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 59.5 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 0.83 | | |
| Actuated Cycle Length (s) | 125.5 | Sum of lost time (s) | 34.6 |
| Intersection Capacity Utilization | 83.0% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 3 | 10 | 82 | 215 | 63 | 32 |
| Future Volume (Veh/h) | 3 | 10 | 82 | 215 | 63 | 32 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Hourly flow rate (vph) | 5 | 17 | 137 | 358 | 105 | 53 |
| Pedestrians | 76 | | 3 | | | 60 |
| Lane Width (m) | 3.7 | | 3.7 | | | 3.7 |
| Walking Speed (m/s) | 1.1 | | 1.1 | | | 1.1 |
| Percent Blockage | 7 | | 0 | | | 6 |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | 294 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 658 | 452 | | | 571 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 658 | 452 | | | 571 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 99 | 97 | | | 89 | |
| cM capacity (veh/h) | 356 | 536 | | | 940 | |

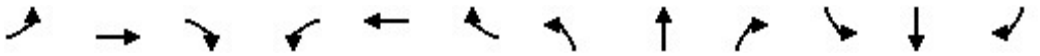
| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 22 | 495 | 158 |
| Volume Left | 5 | 0 | 105 |
| Volume Right | 17 | 358 | 0 |
| cSH | 481 | 1700 | 940 |
| Volume to Capacity | 0.05 | 0.29 | 0.11 |
| Queue Length 95th (m) | 1.1 | 0.0 | 2.9 |
| Control Delay (s) | 12.8 | 0.0 | 6.5 |
| Lane LOS | B | | A |
| Approach Delay (s) | 12.8 | 0.0 | 6.5 |
| Approach LOS | B | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | | 2.0 | |
| Intersection Capacity Utilization | | 48.6% | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 62 | 213 | 8 | 9 | 2 | 6 |
| Future Volume (Veh/h) | 62 | 213 | 8 | 9 | 2 | 6 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 |
| Hourly flow rate (vph) | 87 | 300 | 11 | 13 | 3 | 8 |
| Pedestrians | 2 | | | | 70 | |
| Lane Width (m) | 3.7 | | | | 3.7 | |
| Walking Speed (m/s) | 1.1 | | | | 1.1 | |
| Percent Blockage | 0 | | | | 7 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 457 | | 344 | 307 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 457 | | 344 | 307 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.4 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.5 |
| p0 queue free % | | | 99 | | 100 | 99 |
| cM capacity (veh/h) | | | 1042 | | 606 | 653 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 387 | 24 | 11 |
| Volume Left | 0 | 11 | 3 |
| Volume Right | 300 | 0 | 8 |
| cSH | 1700 | 1042 | 640 |
| Volume to Capacity | 0.23 | 0.01 | 0.02 |
| Queue Length 95th (m) | 0.0 | 0.2 | 0.4 |
| Control Delay (s) | 0.0 | 3.9 | 10.7 |
| Lane LOS | | A | B |
| Approach Delay (s) | 0.0 | 3.9 | 10.7 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.5 | | |
| Intersection Capacity Utilization | 30.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 4 | 40 | 1 | 5 | 11 | 20 | 2 | 112 | 85 | 2 | 131 | 5 |
| Future Volume (Veh/h) | 4 | 40 | 1 | 5 | 11 | 20 | 2 | 112 | 85 | 2 | 131 | 5 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 5 | 47 | 1 | 6 | 13 | 24 | 2 | 132 | 100 | 2 | 154 | 6 |
| Pedestrians | | 15 | | | 10 | | | 10 | | | 5 | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | 1.1 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 0 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 230 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 398 | 422 | 182 | 392 | 375 | 197 | 175 | | | 242 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 398 | 422 | 182 | 392 | 375 | 197 | 175 | | | 242 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 99 | 91 | 100 | 99 | 98 | 97 | 100 | | | 100 | | |
| cM capacity (veh/h) | 519 | 513 | 846 | 511 | 545 | 837 | 1394 | | | 1324 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 53 | 43 | 234 | 162 |
| Volume Left | 5 | 6 | 2 | 2 |
| Volume Right | 1 | 24 | 100 | 6 |
| cSH | 517 | 669 | 1394 | 1324 |
| Volume to Capacity | 0.10 | 0.06 | 0.00 | 0.00 |
| Queue Length 95th (m) | 2.6 | 1.6 | 0.0 | 0.0 |
| Control Delay (s) | 12.8 | 10.8 | 0.1 | 0.1 |
| Lane LOS | B | B | A | A |
| Approach Delay (s) | 12.8 | 10.8 | 0.1 | 0.1 |
| Approach LOS | B | B | | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 2.4 | | | |
| Intersection Capacity Utilization | 25.7% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 125 | 1 | 27 | 172 | 33 | 2 |
| Future Volume (Veh/h) | 125 | 1 | 27 | 172 | 33 | 2 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Hourly flow rate (vph) | 208 | 2 | 45 | 287 | 55 | 3 |
| Pedestrians | 45 | | | 90 | | |
| Lane Width (m) | 3.7 | | | 3.7 | | |
| Walking Speed (m/s) | 1.1 | | | 1.1 | | |
| Percent Blockage | 4 | | | 8 | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | 334 | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 478 | 192 | 103 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 478 | 192 | 103 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 59 | 100 | 97 | | | |
| cM capacity (veh/h) | 510 | 750 | 1438 | | | |

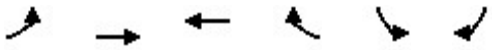
| Direction, Lane # | EB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 210 | 332 | 58 |
| Volume Left | 208 | 45 | 0 |
| Volume Right | 2 | 0 | 3 |
| cSH | 511 | 1438 | 1700 |
| Volume to Capacity | 0.41 | 0.03 | 0.03 |
| Queue Length 95th (m) | 15.1 | 0.7 | 0.0 |
| Control Delay (s) | 16.9 | 1.3 | 0.0 |
| Lane LOS | C | A | |
| Approach Delay (s) | 16.9 | 1.3 | 0.0 |
| Approach LOS | C | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 6.6 | | |
| Intersection Capacity Utilization | 36.9% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 112 | 110 | 92 | 19 | 30 | 4 |
| Future Volume (Veh/h) | 112 | 110 | 92 | 19 | 30 | 4 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 |
| Hourly flow rate (vph) | 145 | 143 | 119 | 25 | 39 | 5 |
| Pedestrians | 162 | | | | | |
| Lane Width (m) | 3.7 | | | | | |
| Walking Speed (m/s) | 1.1 | | | | | |
| Percent Blockage | 15 | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 376 | 294 | | | 306 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 376 | 294 | | | 306 | |
| tC, single (s) | 6.4 | 6.3 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.4 | | | 2.2 | |
| p0 queue free % | 72 | 77 | | | 96 | |
| cM capacity (veh/h) | 514 | 610 | | | 1075 | |

| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 288 | 144 | 44 |
| Volume Left | 145 | 0 | 39 |
| Volume Right | 143 | 25 | 0 |
| cSH | 558 | 1700 | 1075 |
| Volume to Capacity | 0.52 | 0.08 | 0.04 |
| Queue Length 95th (m) | 22.4 | 0.0 | 0.9 |
| Control Delay (s) | 18.1 | 0.0 | 7.5 |
| Lane LOS | C | | A |
| Approach Delay (s) | 18.1 | 0.0 | 7.5 |
| Approach LOS | C | | |

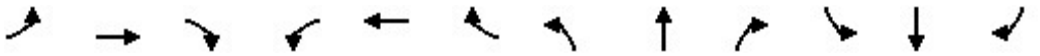
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 11.7 | | |
| Intersection Capacity Utilization | 32.9% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 15 | 8 | 4 | 2 | 222 |
| Future Volume (Veh/h) | 0 | 15 | 8 | 4 | 2 | 222 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 |
| Hourly flow rate (vph) | 0 | 21 | 11 | 6 | 3 | 317 |
| Pedestrians | | 20 | 4 | | 20 | |
| Lane Width (m) | | 3.7 | 3.7 | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | 1.1 | | 1.1 | |
| Percent Blockage | | 2 | 0 | | 2 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 37 | | | | 59 | 54 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 37 | | | | 59 | 54 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 100 | 68 |
| cM capacity (veh/h) | 1557 | | | | 932 | 981 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 21 | 17 | 320 |
| Volume Left | 0 | 0 | 3 |
| Volume Right | 0 | 6 | 317 |
| cSH | 1557 | 1700 | 981 |
| Volume to Capacity | 0.00 | 0.01 | 0.33 |
| Queue Length 95th (m) | 0.0 | 0.0 | 10.9 |
| Control Delay (s) | 0.0 | 0.0 | 10.4 |
| Lane LOS | | | B |
| Approach Delay (s) | 0.0 | 0.0 | 10.4 |
| Approach LOS | | | B |

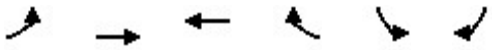
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 9.3 | | |
| Intersection Capacity Utilization | 30.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 31 | 28 | 14 | 94 | 24 | 8 | 2 | 159 | 76 | 11 | 134 | 6 |
| Future Volume (Veh/h) | 31 | 28 | 14 | 94 | 24 | 8 | 2 | 159 | 76 | 11 | 134 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 34 | 31 | 16 | 104 | 27 | 9 | 2 | 177 | 84 | 12 | 149 | 7 |
| Pedestrians | | 15 | | | 10 | | | 10 | | | 10 | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | 1.1 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 119 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 447 | 466 | 178 | 451 | 428 | 239 | 171 | | | 271 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 447 | 466 | 178 | 451 | 428 | 239 | 171 | | | 271 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 93 | 94 | 98 | 78 | 95 | 99 | 100 | | | 99 | | |
| cM capacity (veh/h) | 474 | 480 | 850 | 466 | 505 | 790 | 1399 | | | 1292 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 81 | 140 | 263 | 168 |
| Volume Left | 34 | 104 | 2 | 12 |
| Volume Right | 16 | 9 | 84 | 7 |
| cSH | 522 | 486 | 1399 | 1292 |
| Volume to Capacity | 0.16 | 0.29 | 0.00 | 0.01 |
| Queue Length 95th (m) | 4.1 | 9.0 | 0.0 | 0.2 |
| Control Delay (s) | 13.2 | 15.4 | 0.1 | 0.6 |
| Lane LOS | B | C | A | A |
| Approach Delay (s) | 13.2 | 15.4 | 0.1 | 0.6 |
| Approach LOS | B | C | | |

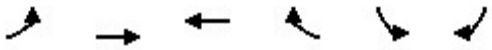
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 5.1 | | | |
| Intersection Capacity Utilization | 33.8% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 99 | 15 | 7 | 13 | 1 | 116 |
| Future Volume (Veh/h) | 99 | 15 | 7 | 13 | 1 | 116 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 |
| Hourly flow rate (vph) | 141 | 21 | 10 | 19 | 1 | 166 |
| Pedestrians | | | 40 | | 156 | |
| Lane Width (m) | | | 3.7 | | 3.7 | |
| Walking Speed (m/s) | | | 1.1 | | 1.1 | |
| Percent Blockage | | | 4 | | 15 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 185 | | | | 518 | 176 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 185 | | | | 518 | 176 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 88 | | | | 100 | 78 |
| cM capacity (veh/h) | 1128 | | | | 375 | 746 |

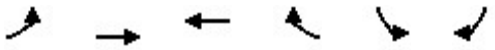
| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 162 | 29 | 167 |
| Volume Left | 141 | 0 | 1 |
| Volume Right | 0 | 19 | 166 |
| cSH | 1128 | 1700 | 741 |
| Volume to Capacity | 0.12 | 0.02 | 0.23 |
| Queue Length 95th (m) | 3.2 | 0.0 | 6.6 |
| Control Delay (s) | 7.7 | 0.0 | 11.3 |
| Lane LOS | A | | B |
| Approach Delay (s) | 7.7 | 0.0 | 11.3 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 8.7 | | |
| Intersection Capacity Utilization | 27.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 225 | 282 | 585 | 54 | 64 | 203 |
| v/c Ratio | 0.40 | 0.18 | 0.67 | 0.07 | 0.21 | 0.24 |
| Control Delay | 6.0 | 3.8 | 20.3 | 9.7 | 33.1 | 3.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 6.0 | 3.8 | 20.3 | 9.7 | 33.1 | 3.0 |
| Queue Length 50th (m) | 10.1 | 12.4 | 65.4 | 2.9 | 7.6 | 0.0 |
| Queue Length 95th (m) | 17.9 | 21.4 | 108.2 | 9.2 | 22.1 | 10.5 |
| Internal Link Dist (m) | | 190.8 | 569.6 | | 94.5 | |
| Turn Bay Length (m) | 30.0 | | | 15.0 | | 25.0 |
| Base Capacity (vph) | 665 | 1701 | 1388 | 1145 | 611 | 1193 |
| 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 | 0.34 | 0.17 | 0.42 | 0.05 | 0.10 | 0.17 |

Intersection Summary



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 207 | 259 | 538 | 50 | 59 | 187 |
| Future Volume (vph) | 207 | 259 | 538 | 50 | 59 | 187 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1789 | 1883 | 1883 | 1551 | 1789 | 1551 |
| Flt Permitted | 0.22 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 421 | 1883 | 1883 | 1551 | 1789 | 1551 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 225 | 282 | 585 | 54 | 64 | 203 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 10 | 0 | 111 |
| Lane Group Flow (vph) | 225 | 282 | 585 | 44 | 64 | 92 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Confl. Bikes (#/hr) | | | | 5 | | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | Perm |
| Protected Phases | 5 | 2 | 6 | | 4 | |
| Permitted Phases | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 49.6 | 49.6 | 31.1 | 31.1 | 5.1 | 31.1 |
| Effective Green, g (s) | 49.6 | 49.6 | 31.1 | 31.1 | 5.1 | 31.1 |
| Actuated g/C Ratio | 0.73 | 0.73 | 0.45 | 0.45 | 0.07 | 0.45 |
| Clearance Time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 541 | 1365 | 856 | 705 | 133 | 705 |
| v/s Ratio Prot | c0.07 | 0.15 | c0.31 | | c0.04 | |
| v/s Ratio Perm | 0.23 | | | 0.03 | | 0.06 |
| v/c Ratio | 0.42 | 0.21 | 0.68 | 0.06 | 0.48 | 0.13 |
| Uniform Delay, d1 | 6.5 | 3.0 | 14.8 | 10.5 | 30.4 | 10.8 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.5 | 0.1 | 2.3 | 0.0 | 2.7 | 0.1 |
| Delay (s) | 7.0 | 3.1 | 17.0 | 10.5 | 33.1 | 10.9 |
| Level of Service | A | A | B | B | C | B |
| Approach Delay (s) | | 4.8 | 16.5 | | 16.2 | |
| Approach LOS | | A | B | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 12.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.60 | | |
| Actuated Cycle Length (s) | 68.4 | Sum of lost time (s) | 20.4 |
| Intersection Capacity Utilization | 66.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 692 | 85 | 45 | 366 | 59 | 145 |
| Future Volume (Veh/h) | 692 | 85 | 45 | 366 | 59 | 145 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 752 | 92 | 49 | 398 | 64 | 158 |
| Pedestrians | | | | | 5 | |
| Lane Width (m) | | | | | 3.7 | |
| Walking Speed (m/s) | | | | | 1.1 | |
| Percent Blockage | | | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | 41 | | |
| pX, platoon unblocked | | | | | 0.83 | |
| vC, conflicting volume | | | 849 | | 1299 | 803 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 849 | | 1257 | 803 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 94 | | 56 | 59 |
| cM capacity (veh/h) | | | 785 | | 146 | 382 |

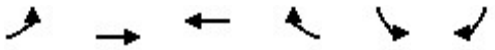
| Direction, Lane # | EB 1 | WB 1 | WB 2 | NB 1 | NB 2 |
|---|---|---|---|---|---|
| Volume Total | 844 | 49 | 398 | 64 | 158 |
| Volume Left | 0 | 49 | 0 | 64 | 0 |
| Volume Right | 92 | 0 | 0 | 0 | 158 |
| cSH | 1700 | 785 | 1700 | 146 | 382 |
| Volume to Capacity | 0.50 | 0.06 | 0.23 | 0.44 | 0.41 |
| Queue Length 95th (m) | 0.0 | 1.5 | 0.0 | 14.9 | 15.0 |
| Control Delay (s) | 0.0 | 9.9 | 0.0 | 47.7 | 20.9 |
| Lane LOS | | A | | E | C |
| Approach Delay (s) | 0.0 | 1.1 | | 28.6 | |
| Approach LOS | | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 4.5 | | |
| Intersection Capacity Utilization | 57.3% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | WBT | WBR | SBL |
|---|---|---|---|---|---|
| Lane Group Flow (vph) | 168 | 762 | 407 | 218 | 385 |
| v/c Ratio | 0.38 | 0.76 | 0.60 | 0.31 | 0.79 |
| Control Delay | 10.0 | 17.6 | 21.1 | 3.7 | 34.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.0 | 17.6 | 21.1 | 3.7 | 34.9 |
| Queue Length 50th (m) | 9.2 | 65.7 | 38.7 | 0.0 | 37.9 |
| Queue Length 95th (m) | 18.3 | 112.1 | 65.5 | 11.5 | #83.7 |
| Internal Link Dist (m) | | 17.3 | 215.5 | | 241.1 |
| Turn Bay Length (m) | 20.0 | | | 35.0 | |
| Base Capacity (vph) | 448 | 1205 | 864 | 830 | 600 |
| 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 | 0.38 | 0.63 | 0.47 | 0.26 | 0.64 |

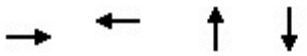
Intersection Summary

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



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 155 | 701 | 374 | 201 | 324 | 30 |
| Future Volume (vph) | 155 | 701 | 374 | 201 | 324 | 30 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (prot) | 1788 | 1883 | 1883 | 1555 | 1778 | |
| Flt Permitted | 0.32 | 1.00 | 1.00 | 1.00 | 0.96 | |
| Satd. Flow (perm) | 602 | 1883 | 1883 | 1555 | 1778 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 168 | 762 | 407 | 218 | 352 | 33 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 139 | 4 | 0 |
| Lane Group Flow (vph) | 168 | 762 | 407 | 79 | 381 | 0 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | |
| Protected Phases | 1 | 6 | 2 | | 8 | |
| Permitted Phases | 6 | | | 2 | | |
| Actuated Green, G (s) | 33.2 | 33.2 | 22.3 | 22.3 | 16.8 | |
| Effective Green, g (s) | 33.2 | 33.2 | 22.3 | 22.3 | 16.8 | |
| Actuated g/C Ratio | 0.54 | 0.54 | 0.36 | 0.36 | 0.27 | |
| Clearance Time (s) | 5.0 | 5.9 | 5.9 | 5.9 | 5.8 | |
| Vehicle Extension (s) | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | |
| Lane Grp Cap (vph) | 437 | 1013 | 680 | 562 | 484 | |
| v/s Ratio Prot | 0.04 | c0.40 | 0.22 | | c0.21 | |
| v/s Ratio Perm | 0.17 | | | 0.05 | | |
| v/c Ratio | 0.38 | 0.75 | 0.60 | 0.14 | 0.79 | |
| Uniform Delay, d1 | 8.4 | 11.1 | 16.1 | 13.3 | 20.8 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | 3.2 | 1.4 | 0.1 | 7.6 | |
| Delay (s) | 8.6 | 14.3 | 17.5 | 13.4 | 28.4 | |
| Level of Service | A | B | B | B | C | |
| Approach Delay (s) | | 13.2 | 16.0 | | 28.4 | |
| Approach LOS | | B | B | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 17.1 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.89 | | |
| Actuated Cycle Length (s) | 61.7 | Sum of lost time (s) | 18.7 |
| Intersection Capacity Utilization | 66.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |



| Lane Group | EBT | WBT | NBT | SBT |
|---|---|---|---|---|
| Lane Group Flow (vph) | 1167 | 741 | 68 | 101 |
| v/c Ratio | 0.88 | 0.34 | 0.20 | 0.33 |
| Control Delay | 23.8 | 6.8 | 27.0 | 32.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 23.8 | 6.8 | 27.0 | 32.0 |
| Queue Length 50th (m) | 171.1 | 26.6 | 7.8 | 13.5 |
| Queue Length 95th (m) | #269.3 | 35.2 | 18.6 | 27.4 |
| Internal Link Dist (m) | 66.7 | 378.6 | 270.3 | 230.5 |
| Turn Bay Length (m) | | | | |
| Base Capacity (vph) | 1330 | 2177 | 335 | 303 |
| 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 | 0.88 | 0.34 | 0.20 | 0.33 |

Intersection Summary

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

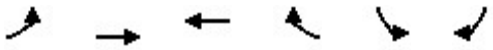
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 8 | 951 | 68 | 29 | 541 | 82 | 35 | 11 | 13 | 67 | 6 | 16 |
| Future Volume (vph) | 8 | 951 | 68 | 29 | 541 | 82 | 35 | 11 | 13 | 67 | 6 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Lane Util. Factor | | 1.00 | | | 0.95 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.96 | |
| Frt | | 0.99 | | | 0.98 | | | 0.97 | | | 0.98 | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.97 | | | 0.96 | |
| Satd. Flow (prot) | | 1863 | | | 3500 | | | 1744 | | | 1705 | |
| Flt Permitted | | 0.99 | | | 0.86 | | | 0.80 | | | 0.74 | |
| Satd. Flow (perm) | | 1853 | | | 3026 | | | 1430 | | | 1301 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 9 | 1081 | 77 | 33 | 615 | 93 | 40 | 12 | 15 | 76 | 7 | 18 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 11 | 0 | 0 | 12 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 0 | 1164 | 0 | 0 | 730 | 0 | 0 | 56 | 0 | 0 | 92 | 0 |
| Confl. Peds. (#/hr) | 7 | | 7 | 7 | | 7 | 7 | | 40 | 40 | | 7 |
| Confl. Bikes (#/hr) | | | 4 | | | | | | | | | |
| Heavy Vehicles (%) | 13% | 2% | 0% | 0% | 2% | 1% | 0% | 0% | 8% | 2% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Actuated Green, G (s) | | 57.2 | | | 57.2 | | | 13.2 | | | 13.2 | |
| Effective Green, g (s) | | 57.2 | | | 57.2 | | | 13.2 | | | 13.2 | |
| Actuated g/C Ratio | | 0.68 | | | 0.68 | | | 0.16 | | | 0.16 | |
| Clearance Time (s) | | 6.7 | | | 6.7 | | | 7.2 | | | 7.2 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 1257 | | | 2053 | | | 223 | | | 203 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.63 | | | 0.24 | | | 0.04 | | | c0.07 | |
| v/c Ratio | | 0.93 | | | 0.36 | | | 0.25 | | | 0.45 | |
| Uniform Delay, d1 | | 11.7 | | | 5.7 | | | 31.2 | | | 32.3 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 11.6 | | | 0.1 | | | 0.6 | | | 1.6 | |
| Delay (s) | | 23.4 | | | 5.8 | | | 31.8 | | | 33.9 | |
| Level of Service | | C | | | A | | | C | | | C | |
| Approach Delay (s) | | 23.4 | | | 5.8 | | | 31.8 | | | 33.9 | |
| Approach LOS | | C | | | A | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 17.9 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.84 | | |
| Actuated Cycle Length (s) | 84.3 | Sum of lost time (s) | 13.9 |
| Intersection Capacity Utilization | 87.2% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 1040 | 3 | 51 | 596 | 13 | 47 |
| Future Volume (Veh/h) | 1040 | 3 | 51 | 596 | 13 | 47 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1130 | 3 | 55 | 648 | 14 | 51 |
| Pedestrians | | | | 75 | 5 | |
| Lane Width (m) | | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | | | | 1.1 | 1.1 | |
| Percent Blockage | | | | 7 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 1138 | | 1570 | 646 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 1138 | | 1570 | 646 |
| tC, single (s) | | | 4.1 | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 91 | | 85 | 87 |
| cM capacity (veh/h) | | | 607 | | 92 | 383 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 |
|---|---|---|---|---|---|
| Volume Total | 753 | 380 | 271 | 432 | 65 |
| Volume Left | 0 | 0 | 55 | 0 | 14 |
| Volume Right | 0 | 3 | 0 | 0 | 51 |
| cSH | 1700 | 1700 | 607 | 1700 | 227 |
| Volume to Capacity | 0.44 | 0.22 | 0.09 | 0.25 | 0.29 |
| Queue Length 95th (m) | 0.0 | 0.0 | 2.3 | 0.0 | 8.6 |
| Control Delay (s) | 0.0 | 0.0 | 3.3 | 0.0 | 27.0 |
| Lane LOS | | | A | | D |
| Approach Delay (s) | 0.0 | | 1.3 | | 27.0 |
| Approach LOS | | | | | D |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.4 | | |
| Intersection Capacity Utilization | 69.7% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 8 | 1078 | 642 | 5 | 10 | 10 |
| Future Volume (Veh/h) | 8 | 1078 | 642 | 5 | 10 | 10 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 9 | 1172 | 698 | 5 | 11 | 11 |
| Pedestrians | | 75 | | | 20 | |
| Lane Width (m) | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | |
| Percent Blockage | | 7 | | | 2 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 723 | | | | 1324 | 796 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 723 | | | | 1324 | 796 |
| tC, single (s) | 4.1 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 99 | | | | 92 | 96 |
| cM capacity (veh/h) | 859 | | | | 143 | 301 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 400 | 781 | 703 | 22 |
| Volume Left | 9 | 0 | 0 | 11 |
| Volume Right | 0 | 0 | 5 | 11 |
| cSH | 859 | 1700 | 1700 | 194 |
| Volume to Capacity | 0.01 | 0.46 | 0.41 | 0.11 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.0 | 2.9 |
| Control Delay (s) | 0.3 | 0.0 | 0.0 | 25.9 |
| Lane LOS | A | | | D |
| Approach Delay (s) | 0.1 | | 0.0 | 25.9 |
| Approach LOS | | | | D |

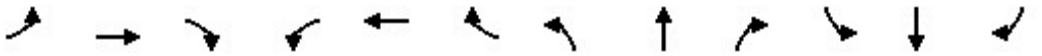
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 0.4 | | |
| Intersection Capacity Utilization | 54.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 300 | 740 | 151 | 78 | 195 | 237 | 172 | 623 | 805 | 213 | 300 |
| v/c Ratio | 1.38 | 0.78 | 0.29 | 0.80 | 0.54 | 0.32 | 0.46 | 0.78 | 0.94 | 0.46 | 0.39 |
| Control Delay | 240.2 | 56.5 | 5.8 | 117.0 | 59.4 | 12.9 | 55.0 | 50.8 | 73.7 | 52.5 | 3.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 240.2 | 56.5 | 5.8 | 117.0 | 59.4 | 12.9 | 55.0 | 50.8 | 73.7 | 52.5 | 3.3 |
| Queue Length 50th (m) | ~118.6 | 105.9 | 0.0 | 23.2 | 51.8 | 20.1 | 44.4 | 74.0 | 122.3 | 54.5 | 0.0 |
| Queue Length 95th (m) | #186.0 | 132.2 | 13.4 | #55.9 | 78.6 | 39.0 | 69.1 | 98.4 | #174.6 | 84.4 | 9.9 |
| Internal Link Dist (m) | | 220.1 | | | 134.2 | | | 297.9 | | 275.4 | |
| Turn Bay Length (m) | 130.0 | | 25.0 | 70.0 | | | 55.0 | | | | 85.0 |
| Base Capacity (vph) | 218 | 1100 | 583 | 97 | 441 | 751 | 444 | 919 | 854 | 463 | 774 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.38 | 0.67 | 0.26 | 0.80 | 0.44 | 0.32 | 0.39 | 0.68 | 0.94 | 0.46 | 0.39 |

Intersection Summary

~ 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.



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 291 | 718 | 146 | 76 | 189 | 230 | 167 | 326 | 278 | 781 | 207 | 291 |
| Future Volume (vph) | 291 | 718 | 146 | 76 | 189 | 230 | 167 | 326 | 278 | 781 | 207 | 291 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 0.97 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.93 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1807 | 3650 | 1553 | 1825 | 1921 | 1621 | 1825 | 3382 | | 3506 | 1902 | 1607 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1807 | 3650 | 1553 | 1825 | 1921 | 1621 | 1825 | 3382 | | 3506 | 1902 | 1607 |
| Peak-hour factor, PHF | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Adj. Flow (vph) | 300 | 740 | 151 | 78 | 195 | 237 | 172 | 336 | 287 | 805 | 213 | 300 |
| RTOR Reduction (vph) | 0 | 0 | 112 | 0 | 0 | 64 | 0 | 99 | 0 | 0 | 0 | 191 |
| Lane Group Flow (vph) | 300 | 740 | 39 | 78 | 195 | 173 | 172 | 524 | 0 | 805 | 213 | 109 |
| Confl. Peds. (#/hr) | 4 | | 6 | 6 | | 4 | 2 | | | | | 2 |
| Confl. Bikes (#/hr) | | | 6 | | | | | | | | | |
| Heavy Vehicles (%) | 1% | 0% | 1% | 0% | 0% | 0% | 0% | 0% | 1% | 1% | 1% | 0% |
| Turn Type | Prot | NA | Perm | Prot | NA | pm+ov | Split | NA | | Split | NA | pm+ov |
| Protected Phases | 1 | 6 | | 5 | 2 | 4 | 3 | 3 | | 4 | 4 | 1 |
| Permitted Phases | | | 6 | | | 2 | | | | | | 4 |
| Actuated Green, G (s) | 17.5 | 37.5 | 37.5 | 7.8 | 27.2 | 62.4 | 29.9 | 29.9 | | 35.2 | 35.2 | 52.7 |
| Effective Green, g (s) | 17.5 | 37.5 | 37.5 | 7.8 | 27.2 | 62.4 | 29.9 | 29.9 | | 35.2 | 35.2 | 52.7 |
| Actuated g/C Ratio | 0.12 | 0.26 | 0.26 | 0.05 | 0.19 | 0.43 | 0.21 | 0.21 | | 0.24 | 0.24 | 0.36 |
| Clearance Time (s) | 8.9 | 7.6 | 7.6 | 8.3 | 7.6 | 8.7 | 9.4 | 9.4 | | 8.7 | 8.7 | 8.9 |
| Vehicle Extension (s) | 2.5 | 4.0 | 4.0 | 2.5 | 3.0 | 3.0 | 4.0 | 4.0 | | 3.0 | 3.0 | 2.5 |
| Lane Grp Cap (vph) | 218 | 947 | 403 | 98 | 361 | 700 | 377 | 700 | | 854 | 463 | 586 |
| v/s Ratio Prot | c0.17 | c0.20 | | c0.04 | 0.10 | 0.06 | 0.09 | c0.15 | | c0.23 | 0.11 | 0.02 |
| v/s Ratio Perm | | | 0.03 | | | 0.05 | | | | | | 0.05 |
| v/c Ratio | 1.38 | 0.78 | 0.10 | 0.80 | 0.54 | 0.25 | 0.46 | 0.75 | | 0.94 | 0.46 | 0.19 |
| Uniform Delay, d1 | 63.5 | 49.6 | 40.6 | 67.5 | 52.9 | 26.1 | 50.1 | 53.7 | | 53.6 | 46.5 | 31.2 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 195.4 | 4.5 | 0.1 | 33.7 | 1.7 | 0.2 | 1.2 | 4.7 | | 18.3 | 0.7 | 0.1 |
| Delay (s) | 258.9 | 54.1 | 40.7 | 101.3 | 54.6 | 26.3 | 51.3 | 58.4 | | 71.9 | 47.2 | 31.4 |
| Level of Service | F | D | D | F | D | C | D | E | | E | D | C |
| Approach Delay (s) | | 104.0 | | | 48.6 | | | 56.9 | | | 58.7 | |
| Approach LOS | | F | | | D | | | E | | | E | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 71.1 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 0.88 | | |
| Actuated Cycle Length (s) | 144.4 | Sum of lost time (s) | 34.6 |
| Intersection Capacity Utilization | 97.3% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 4 | 1 | 44 | 109 | 93 | 11 |
| Future Volume (Veh/h) | 4 | 1 | 44 | 109 | 93 | 11 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| Hourly flow rate (vph) | 6 | 2 | 69 | 170 | 145 | 17 |
| Pedestrians | 70 | | | | | 65 |
| Lane Width (m) | 3.7 | | | | | 3.7 |
| Walking Speed (m/s) | 1.1 | | | | | 1.1 |
| Percent Blockage | 7 | | | | | 6 |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | 294 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 531 | 289 | | | 309 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 531 | 289 | | | 309 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.3 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.4 | |
| p0 queue free % | 99 | 100 | | | 87 | |
| cM capacity (veh/h) | 415 | 663 | | | 1081 | |

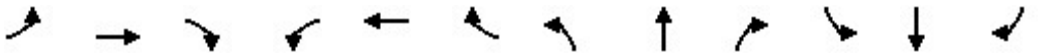
| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 8 | 239 | 162 |
| Volume Left | 6 | 0 | 145 |
| Volume Right | 2 | 170 | 0 |
| cSH | 457 | 1700 | 1081 |
| Volume to Capacity | 0.02 | 0.14 | 0.13 |
| Queue Length 95th (m) | 0.4 | 0.0 | 3.5 |
| Control Delay (s) | 13.0 | 0.0 | 8.0 |
| Lane LOS | B | | A |
| Approach Delay (s) | 13.0 | 0.0 | 8.0 |
| Approach LOS | B | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | | 3.4 | |
| Intersection Capacity Utilization | | 41.2% | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 31 | 179 | 37 | 5 | 1 | 3 |
| Future Volume (Veh/h) | 31 | 179 | 37 | 5 | 1 | 3 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Hourly flow rate (vph) | 42 | 245 | 51 | 7 | 1 | 4 |
| Pedestrians | | | | 1 | 70 | |
| Lane Width (m) | | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | | | | 1.1 | 1.1 | |
| Percent Blockage | | | | 0 | 7 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 357 | | 344 | 236 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 357 | | 344 | 236 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 96 | | 100 | 99 |
| cM capacity (veh/h) | | | 1134 | | 586 | 755 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 287 | 58 | 5 |
| Volume Left | 0 | 51 | 1 |
| Volume Right | 245 | 0 | 4 |
| cSH | 1700 | 1134 | 714 |
| Volume to Capacity | 0.17 | 0.04 | 0.01 |
| Queue Length 95th (m) | 0.0 | 1.1 | 0.2 |
| Control Delay (s) | 0.0 | 7.4 | 10.1 |
| Lane LOS | | A | B |
| Approach Delay (s) | 0.0 | 7.4 | 10.1 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.4 | | |
| Intersection Capacity Utilization | 33.9% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 5 | 11 | 3 | 3 | 32 | 9 | 3 | 153 | 57 | 6 | 90 | 6 |
| Future Volume (Veh/h) | 5 | 11 | 3 | 3 | 32 | 9 | 3 | 153 | 57 | 6 | 90 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 6 | 12 | 3 | 3 | 36 | 10 | 3 | 170 | 63 | 7 | 100 | 7 |
| Pedestrians | | 20 | | | 15 | | | 15 | | | 11 | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | 1.1 | |
| Percent Blockage | | 2 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 230 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 384 | 392 | 138 | 364 | 364 | 228 | 127 | | | 248 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 384 | 392 | 138 | 364 | 364 | 228 | 127 | | | 248 | | |
| tC, single (s) | 7.3 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.3 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.4 | | |
| p0 queue free % | 99 | 98 | 100 | 99 | 93 | 99 | 100 | | | 99 | | |
| cM capacity (veh/h) | 479 | 525 | 885 | 550 | 545 | 797 | 1444 | | | 1218 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 21 | 49 | 236 | 114 |
| Volume Left | 6 | 3 | 3 | 7 |
| Volume Right | 3 | 10 | 63 | 7 |
| cSH | 542 | 583 | 1444 | 1218 |
| Volume to Capacity | 0.04 | 0.08 | 0.00 | 0.01 |
| Queue Length 95th (m) | 0.9 | 2.1 | 0.0 | 0.1 |
| Control Delay (s) | 11.9 | 11.7 | 0.1 | 0.5 |
| Lane LOS | B | B | A | A |
| Approach Delay (s) | 11.9 | 11.7 | 0.1 | 0.5 |
| Approach LOS | B | B | | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 2.2 | | | |
| Intersection Capacity Utilization | 27.0% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 64 | 5 | 44 | 90 | 10 | 5 |
| Future Volume (Veh/h) | 64 | 5 | 44 | 90 | 10 | 5 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| Hourly flow rate (vph) | 100 | 8 | 69 | 141 | 16 | 8 |
| Pedestrians | 50 | | | 100 | | |
| Lane Width (m) | 3.7 | | | 3.7 | | |
| Walking Speed (m/s) | 1.1 | | | 1.1 | | |
| Percent Blockage | 5 | | | 9 | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | 334 | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 349 | 170 | 74 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 349 | 170 | 74 | | | |
| tC, single (s) | 6.5 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.6 | 3.3 | 2.2 | | | |
| p0 queue free % | 83 | 99 | 95 | | | |
| cM capacity (veh/h) | 578 | 760 | 1467 | | | |

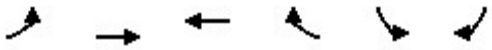
| Direction, Lane # | EB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 108 | 210 | 24 |
| Volume Left | 100 | 69 | 0 |
| Volume Right | 8 | 0 | 8 |
| cSH | 588 | 1467 | 1700 |
| Volume to Capacity | 0.18 | 0.05 | 0.01 |
| Queue Length 95th (m) | 5.1 | 1.1 | 0.0 |
| Control Delay (s) | 12.5 | 2.8 | 0.0 |
| Lane LOS | B | A | |
| Approach Delay (s) | 12.5 | 2.8 | 0.0 |
| Approach LOS | B | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 5.6 | | |
| Intersection Capacity Utilization | 33.5% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 145 | 82 | 52 | 50 | 11 | 4 |
| Future Volume (Veh/h) | 145 | 82 | 52 | 50 | 11 | 4 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| Hourly flow rate (vph) | 191 | 108 | 68 | 66 | 14 | 5 |
| Pedestrians | 5 | | | | | |
| Lane Width (m) | 3.7 | | | | | |
| Walking Speed (m/s) | 1.1 | | | | | |
| Percent Blockage | 0 | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 139 | 106 | | | 139 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 139 | 106 | | | 139 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 77 | 89 | | | 99 | |
| cM capacity (veh/h) | 847 | 949 | | | 1450 | |

| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 299 | 134 | 19 |
| Volume Left | 191 | 0 | 14 |
| Volume Right | 108 | 66 | 0 |
| cSH | 881 | 1700 | 1450 |
| Volume to Capacity | 0.34 | 0.08 | 0.01 |
| Queue Length 95th (m) | 11.5 | 0.0 | 0.2 |
| Control Delay (s) | 11.2 | 0.0 | 5.6 |
| Lane LOS | B | | A |
| Approach Delay (s) | 11.2 | 0.0 | 5.6 |
| Approach LOS | B | | |

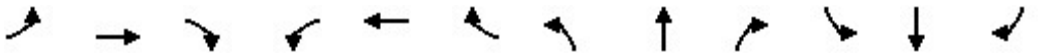
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 7.6 | | |
| Intersection Capacity Utilization | 27.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 5 | 68 | 6 | 1 | 5 | 206 |
| Future Volume (Veh/h) | 5 | 68 | 6 | 1 | 5 | 206 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 |
| Hourly flow rate (vph) | 6 | 86 | 8 | 1 | 6 | 261 |
| Pedestrians | | 20 | 1 | | 15 | |
| Lane Width (m) | | 3.7 | 3.7 | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | 1.1 | | 1.1 | |
| Percent Blockage | | 2 | 0 | | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 24 | | | | 122 | 44 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 24 | | | | 122 | 44 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 99 | 74 |
| cM capacity (veh/h) | 1581 | | | | 861 | 999 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 92 | 9 | 267 |
| Volume Left | 6 | 0 | 6 |
| Volume Right | 0 | 1 | 261 |
| cSH | 1581 | 1700 | 995 |
| Volume to Capacity | 0.00 | 0.01 | 0.27 |
| Queue Length 95th (m) | 0.1 | 0.0 | 8.3 |
| Control Delay (s) | 0.5 | 0.0 | 9.9 |
| Lane LOS | A | | A |
| Approach Delay (s) | 0.5 | 0.0 | 9.9 |
| Approach LOS | | | A |

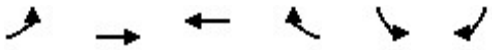
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 7.3 | | |
| Intersection Capacity Utilization | 29.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 17 | 20 | 2 | 110 | 44 | 4 | 2 | 214 | 97 | 6 | 91 | 7 |
| Future Volume (Veh/h) | 17 | 20 | 2 | 110 | 44 | 4 | 2 | 214 | 97 | 6 | 91 | 7 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Hourly flow rate (vph) | 18 | 21 | 2 | 115 | 46 | 4 | 2 | 223 | 101 | 6 | 95 | 7 |
| Pedestrians | | 20 | | | 25 | | | 20 | | | 15 | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | 1.1 | |
| Percent Blockage | | 2 | | | 2 | | | 2 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | 119 | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 450 | 484 | 138 | 446 | 436 | 314 | 122 | | | 349 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 450 | 484 | 138 | 446 | 436 | 314 | 122 | | | 349 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.2 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.6 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 96 | 95 | 100 | 75 | 91 | 99 | 100 | | | 99 | | |
| cM capacity (veh/h) | 450 | 463 | 881 | 456 | 492 | 704 | 1450 | | | 1193 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|---|---|---|---|---|
| Volume Total | 41 | 165 | 326 | 108 |
| Volume Left | 18 | 115 | 2 | 6 |
| Volume Right | 2 | 4 | 101 | 7 |
| cSH | 468 | 470 | 1450 | 1193 |
| Volume to Capacity | 0.09 | 0.35 | 0.00 | 0.01 |
| Queue Length 95th (m) | 2.2 | 11.9 | 0.0 | 0.1 |
| Control Delay (s) | 13.4 | 16.8 | 0.1 | 0.5 |
| Lane LOS | B | C | A | A |
| Approach Delay (s) | 13.4 | 16.8 | 0.1 | 0.5 |
| Approach LOS | B | C | | |

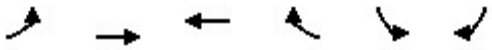
| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 5.3 | | | |
| Intersection Capacity Utilization | 39.0% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 93 | 24 | 6 | 11 | 4 | 144 |
| Future Volume (Veh/h) | 93 | 24 | 6 | 11 | 4 | 144 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| Hourly flow rate (vph) | 112 | 29 | 7 | 13 | 5 | 173 |
| Pedestrians | | | 40 | | 160 | |
| Lane Width (m) | | | 3.7 | | 3.7 | |
| Walking Speed (m/s) | | | 1.1 | | 1.1 | |
| Percent Blockage | | | 4 | | 15 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 180 | | | | 466 | 174 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 180 | | | | 466 | 174 |
| tC, single (s) | 4.2 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.3 | | | | 3.5 | 3.3 |
| p0 queue free % | 90 | | | | 99 | 77 |
| cM capacity (veh/h) | 1128 | | | | 412 | 744 |

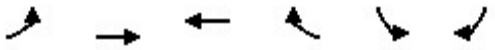
| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 141 | 20 | 178 |
| Volume Left | 112 | 0 | 5 |
| Volume Right | 0 | 13 | 173 |
| cSH | 1128 | 1700 | 728 |
| Volume to Capacity | 0.10 | 0.01 | 0.24 |
| Queue Length 95th (m) | 2.5 | 0.0 | 7.3 |
| Control Delay (s) | 7.0 | 0.0 | 11.5 |
| Lane LOS | A | | B |
| Approach Delay (s) | 7.0 | 0.0 | 11.5 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 9.0 | | |
| Intersection Capacity Utilization | 29.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 287 | 430 | 529 | 61 | 46 | 177 |
| v/c Ratio | 0.48 | 0.28 | 0.63 | 0.09 | 0.14 | 0.23 |
| Control Delay | 6.8 | 4.3 | 19.9 | 9.9 | 31.1 | 3.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 6.8 | 4.3 | 19.9 | 9.9 | 31.1 | 3.3 |
| Queue Length 50th (m) | 13.4 | 20.9 | 59.3 | 3.2 | 5.3 | 0.0 |
| Queue Length 95th (m) | 21.9 | 32.4 | 93.1 | 9.9 | 16.5 | 9.9 |
| Internal Link Dist (m) | | 190.8 | 569.6 | | 94.5 | |
| Turn Bay Length (m) | 30.0 | | | 15.0 | | 25.0 |
| Base Capacity (vph) | 702 | 1744 | 1421 | 1172 | 639 | 1210 |
| 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 | 0.41 | 0.25 | 0.37 | 0.05 | 0.07 | 0.15 |

Intersection Summary



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 264 | 396 | 487 | 56 | 42 | 163 |
| Future Volume (vph) | 264 | 396 | 487 | 56 | 42 | 163 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1788 | 1883 | 1883 | 1551 | 1789 | 1551 |
| Flt Permitted | 0.25 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 473 | 1883 | 1883 | 1551 | 1789 | 1551 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 287 | 430 | 529 | 61 | 46 | 177 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 12 | 0 | 100 |
| Lane Group Flow (vph) | 287 | 430 | 529 | 49 | 46 | 77 |
| Confl. Peds. (#/hr) | 5 | | | 5 | 5 | 5 |
| Confl. Bikes (#/hr) | | | | 5 | | 5 |
| Turn Type | pm+pt | NA | NA | Perm | Prot | Perm |
| Protected Phases | 5 | 2 | 6 | | 4 | |
| Permitted Phases | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | 46.7 | 46.7 | 28.3 | 28.3 | 4.9 | 28.3 |
| Effective Green, g (s) | 46.7 | 46.7 | 28.3 | 28.3 | 4.9 | 28.3 |
| Actuated g/C Ratio | 0.72 | 0.72 | 0.43 | 0.43 | 0.08 | 0.43 |
| Clearance Time (s) | 6.7 | 5.9 | 5.9 | 5.9 | 7.8 | 5.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 573 | 1346 | 816 | 672 | 134 | 672 |
| v/s Ratio Prot | c0.09 | 0.23 | c0.28 | | c0.03 | |
| v/s Ratio Perm | 0.27 | | | 0.03 | | 0.05 |
| v/c Ratio | 0.50 | 0.32 | 0.65 | 0.07 | 0.34 | 0.11 |
| Uniform Delay, d1 | 6.1 | 3.4 | 14.6 | 10.8 | 28.7 | 11.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.7 | 0.1 | 1.8 | 0.0 | 1.5 | 0.1 |
| Delay (s) | 6.8 | 3.6 | 16.4 | 10.9 | 30.2 | 11.1 |
| Level of Service | A | A | B | B | C | B |
| Approach Delay (s) | | 4.9 | 15.8 | | 15.0 | |
| Approach LOS | | A | B | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 10.6 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.59 | | |
| Actuated Cycle Length (s) | 65.3 | Sum of lost time (s) | 20.4 |
| Intersection Capacity Utilization | 67.0% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group