

Traffic Impact Analysis

WET RABBIT CAR WASH

Prepared for:
Wet Rabbit

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Prepared by:



12131 113th Avenue NE, Suite 203
Kirkland, WA 98034
Phone: 425-821-3665
Fax: 425-825-8434
www.transpogroup.com

1.23433.00

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Table of Contents

| | |
|---|-----------|
| Introduction | 1 |
| Project Description | 1 |
| Study Scope..... | 1 |
| Existing & Future Without-Project Conditions | 4 |
| Street System | 4 |
| Traffic Volumes | 5 |
| Traffic Operations | 9 |
| Traffic Safety..... | 9 |
| Project Impacts | 11 |
| Trip Generation | 11 |
| Trip Distribution & Assignment | 12 |
| Traffic Volume Impact..... | 14 |
| Traffic Operations | 16 |
| Site Access | 16 |
| Mitigation | 18 |
| Transportation Mitigation Fees | 18 |
| Findings and Conclusions | 19 |

Appendix

| |
|--|
| Appendix A: Traffic Counts |
| Appendix B: LOS Definitions |
| Appendix C: LOS Worksheets |
| Appendix D: Trip Generation and Pass-By Observations |
| Appendix E: Trip Generation Calculations |
| Appendix F: Carwash Queuing Calculations |

List of Figures

| | | |
|-----------|--|----|
| Figure 1. | Site Vicinity & Study Intersections | 2 |
| Figure 2. | Preliminary Site Plan | 3 |
| Figure 3. | Existing Weekday PM Peak Hour Traffic Volumes | 6 |
| Figure 4. | Future (2025) Without-Project Weekday PM Peak Hour Traffic Volumes | 8 |
| Figure 5. | Weekday PM Peak Hour Project Trip Distribution & Assignment | 13 |
| Figure 6. | Future (2025) With-Project Weekday PM Peak Hour Traffic Volumes | 15 |
| Figure 7. | On-Site Queue Capacity | 17 |

List of Tables

| | | |
|----------|--|----|
| Table 1. | Existing and Without-Project Weekday PM Peak Hour Intersection LOS Summary | 9 |
| Table 2. | Five-Year Collision Summary – 2018 to 2022..... | 10 |
| Table 3. | Estimated Weekday Daily and PM Peak Hour Vehicle Trip Generation..... | 12 |
| Table 4. | Future (2025) Weekday PM Peak Hour Traffic Volume Impacts at Study Intersections | 14 |
| Table 5. | Future (2025) Weekday PM Peak Hour Intersection LOS Summary..... | 16 |

Introduction

The purpose of this traffic impact analysis (TIA) is to identify potential transportation-related impacts to the surrounding street network associated with the development of the proposed Wet Rabbit car wash in Arlington, WA.

Project Description

The project site is located on the southeast corner of State Route [SR] 9/204th Street NE in Arlington (see Figure 1). The proposed project would construct a single carwash tunnel (4,920 square feet) with 13 vacuum stations on a lot currently occupied by a medical clinic use. Access to the site is proposed via an existing right-in right-out only driveway along 204th Street NE as well as a proposed full access driveway on 77th Avenue NE. Additionally, there is internal connectivity along the east side of the proposed carwash parcel to the future development parcel located east and south of the carwash site. Circulation for the carwash tunnel is proposed to be clockwise. Figure 2 illustrates the preliminary site plan. It is anticipated that the development would be constructed and operating by the end of 2025.

Study Scope

The scope of this analysis is based on coordination with City staff and is consistent with the City of Arlington's *Traffic Analysis Procedures & Checklist (Revised 10/2013)*. Based on anticipated travel patterns for project-generated vehicle traffic, the following intersections were selected for study during the weekday PM peak hour:

1. SR-9/204th Street NE
2. SR-9/Highland Drive
3. S Olympic Ave/Highland Drive

In addition to the off-site study intersections noted above, the two project site driveways, along 204th Street NE and 77th Avenue NE would be evaluated under future with-project conditions. The analysis includes a review of existing conditions in the vicinity of the project site, including the street network, non-motorized facilities, transit service, existing and future (2025) without-project peak hour traffic volumes, traffic operations, and traffic safety. Future (2025) with-project conditions are evaluated by adding site-generated traffic to future (2025) without-project volumes and were then compared to future (2025) without-project conditions to identify the relative impacts the proposed project has on the surrounding transportation system.



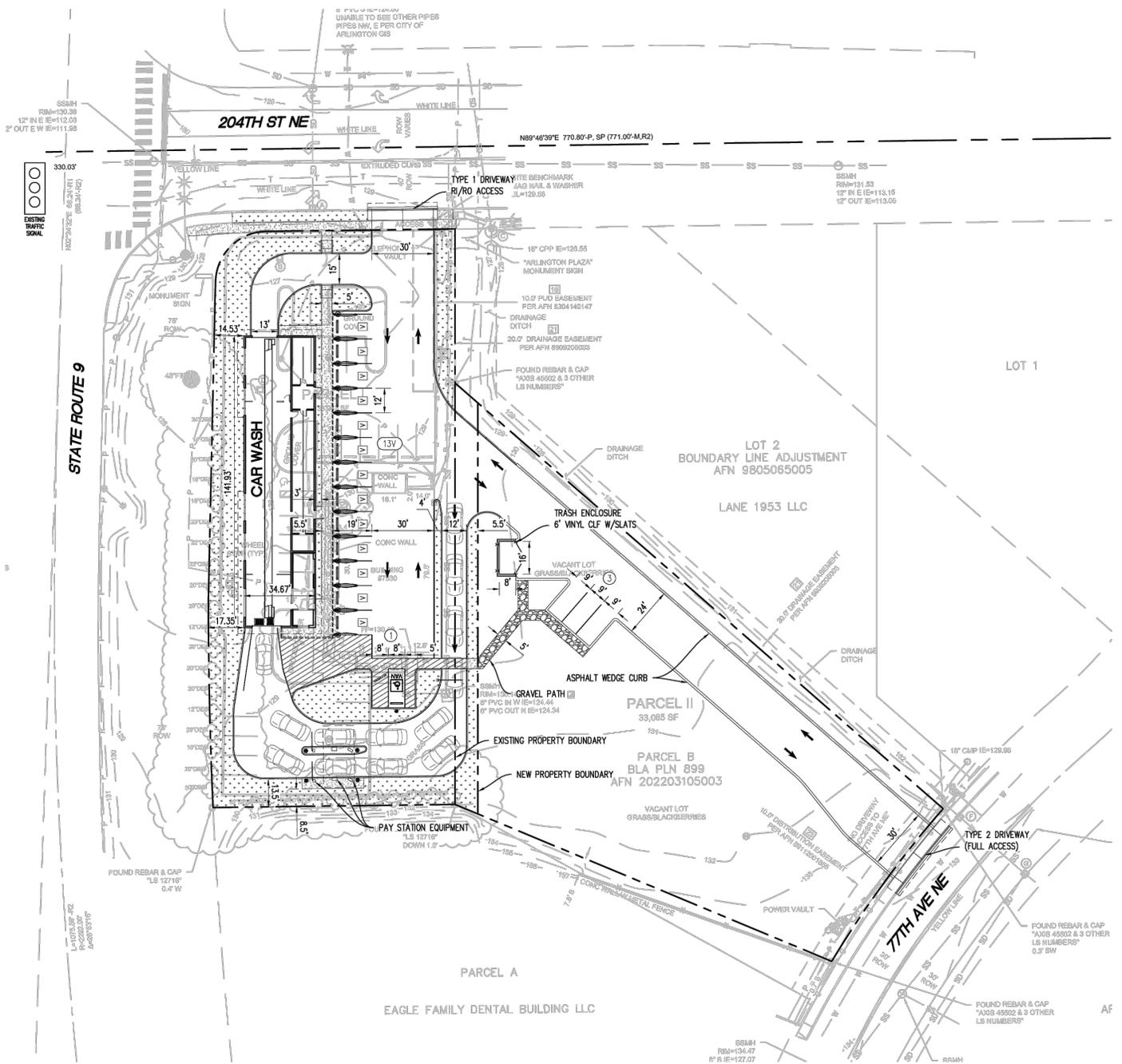
Site Vicinity & Study Intersections

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FIGURE

1





Preliminary Site Plan

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FIGURE

2



Existing & Future Without-Project Conditions

This section describes existing and future (2025) without-project conditions within the study area. Study area characteristics are provided for the existing street network, existing and future without-project peak hour traffic volumes, traffic operations, and traffic safety.

Street System

The following describes the existing street network within the vicinity of the proposed project and any anticipated changes resulting from planned improvements.

Existing Inventory

Existing characteristics of SR-9, 204th Street NE, 77th Avenue NE, Olympic Place, and Highland Drive, near the project site are described below.

SR-9 is a highway with a posted speed limit of 45 miles per hour close to the project site. Current channelization along SR-9 is predominantly 2 lanes with turn lanes at major intersections. This is the primary north/south roadway connection near the project site. Sidewalks or bike lanes are not available close to the site.

204th Street NE is classified as an arterial¹, and the primary access to the project site is proposed along 204th Street NE via an existing driveway. The posted speed limit is 20 mph east of SR-9 and 35 mph west of SR-9. Sidewalks are provided on both sides of the roadway. No bike lanes are available.

77th Avenue NE is classified as a local street, and a secondary access to the project site is proposed along 77th Avenue NE via a new driveway. The posted speed limit is 20 mph. Sidewalks are provided on both sides of the roadway. No bike lanes are available.

Olympic Place is classified as a local street with a posted speed limit of 25 mph. Sidewalks are provided along this roadway; however, no bike lanes are available.

Highland Drive is classified as an arterial with a posted speed limit of 25 mph. There are intermittent sidewalks provided along this roadway; however, no bike lanes are available.

Transit service in the study area is provided by Community Transit and is provided along 204th Street NE. The nearest bus stop to the project is located on 204th Street NE just west of Olympic Place and is served by routes 220 and 230. Route 220 provides service between the Smokey Point Transit Center and Broadway Street/E Gilman Avenue in the Old Town neighborhood of Arlington. Route 230 provides service between the Smokey Point Transit Center and the Town of Darrington approximately 30 miles east of the City. Transit service for route 220 is provided 7 days a week, between approximately 6:00 A.M. and 9:00 P.M. with AM and PM peak hour headways of approximately 60 minutes on weekdays. Route 230 operates on weekdays only with one morning and one afternoon service in both directions.

Planned Improvements

Based on a review of the *City of Arlington Comprehensive Plan's Six Year Transportation Improvement Plan* and DRAFT Washington Department of Transportation (WSDOT) 2024-2027 Statewide Transportation Program (STIP), one planned roadway and or intersection improvements were identified in the study area:

¹ Roadway classification per the 2017 Update to the Arlington Transportation 2035 Plan.

Highland Drive Corridor – SR-9 to Stillaguamish Avenue (Project #R-5 and #T4):

- Planning, design, and right-of-way needs assessment for future construction of improvements to Highland Drive corridor from SR-9 to Stillaguamish Avenue. Improvements to make corridor consistent with Arlington urbanized arterial roadway standards, provide pedestrian access ways, and improve SR-9 signalization at Highland Drive.

204th Street Corridor Improvements from 74th Avenue to 69th Avenue

- Design and construct improvements on 204th Street from 69th Avenue to 74th Avenue as Urban corridor with two through lanes, separated on-street reverse-angle parking, shared drop lanes, and bike lanes, planted median. Roadway is part of Arlington Freight Network and must be able to convey WB-67 trucks.

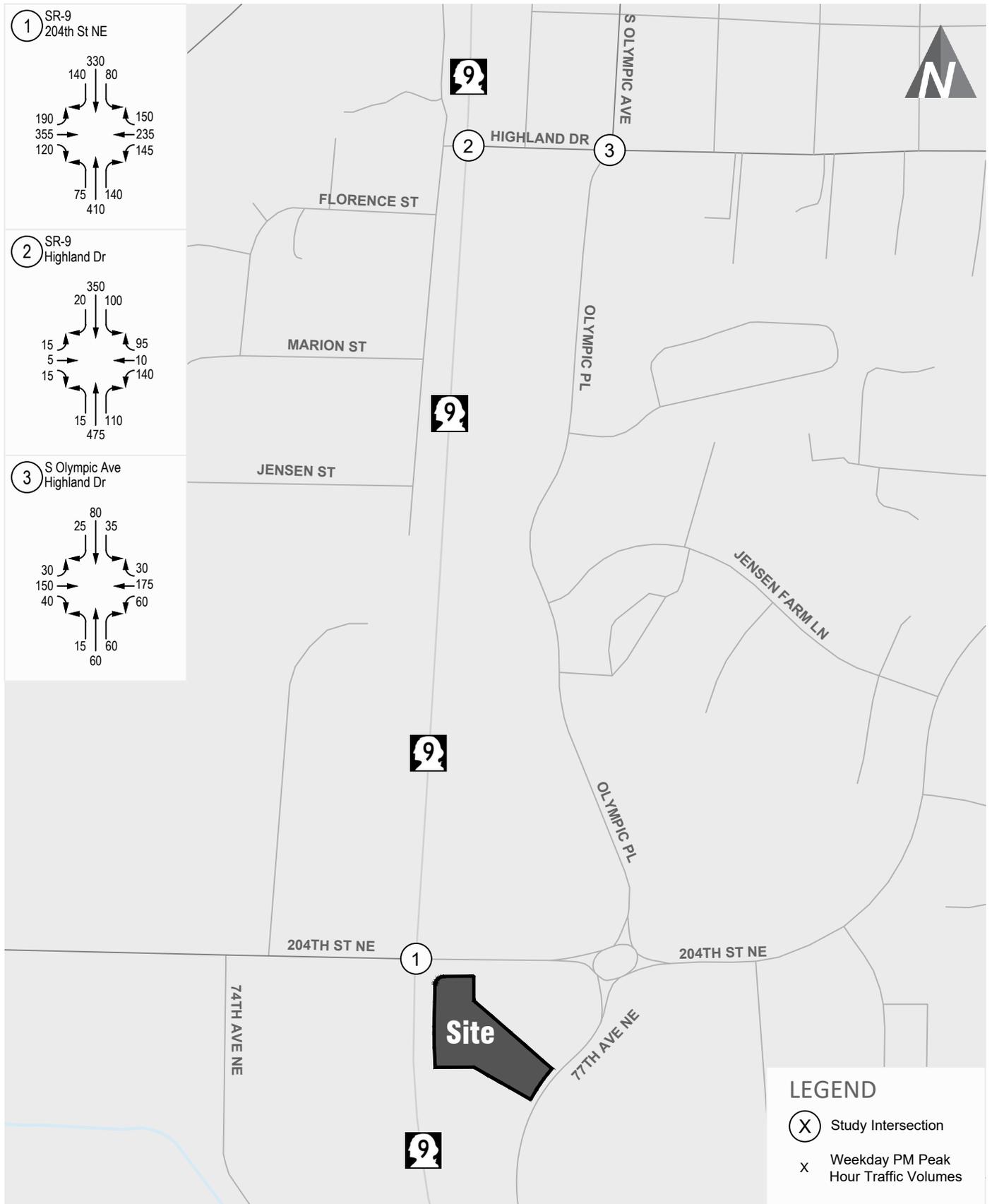
In addition, other non-motorized improvements are noted for the project study area in the City of Arlington's 2018 Bicycle Improvement Plan and Pedestrian Improvement Plan. However, these documents are intended as working documents to help shape development and improvements within the City, and the documents do not provide a timeline or funding for the improvement projects. Select non-motorized projects are highlighted in the City's Transportation Improvement Plan (TIP) that were mentioned above. For instance, the addition of bike lanes on the 204th Street and Highland Drive corridors and provision of pedestrian access ways on Highland Drive are examples of non-motorized projects listed in the City's TIP.

Traffic Volumes

The following summarizes the traffic volumes for existing and future without-project conditions.

Existing Traffic Volumes

Existing weekday PM peak period (4-6 p.m.) traffic counts were collected in November 2022 and December 2023. As noted previously, the site has a clinic land use; however, the clinic was not operational at the time traffic counts were collected. Traffic volumes data collected in 2022 were grown at an average annual growth rate of 3 percent to establish existing 2023 conditions. The annual growth rate of 3 percent was coordinated with City staff. Figure 3 illustrates the existing weekday peak hour traffic volumes at the study intersections. Volumes are rounded to the nearest 5 vehicles to account for the daily fluctuations in traffic volumes. Detailed traffic counts are provided in Appendix A.



Existing Weekday PM Peak Hour Traffic Volumes

FIGURE

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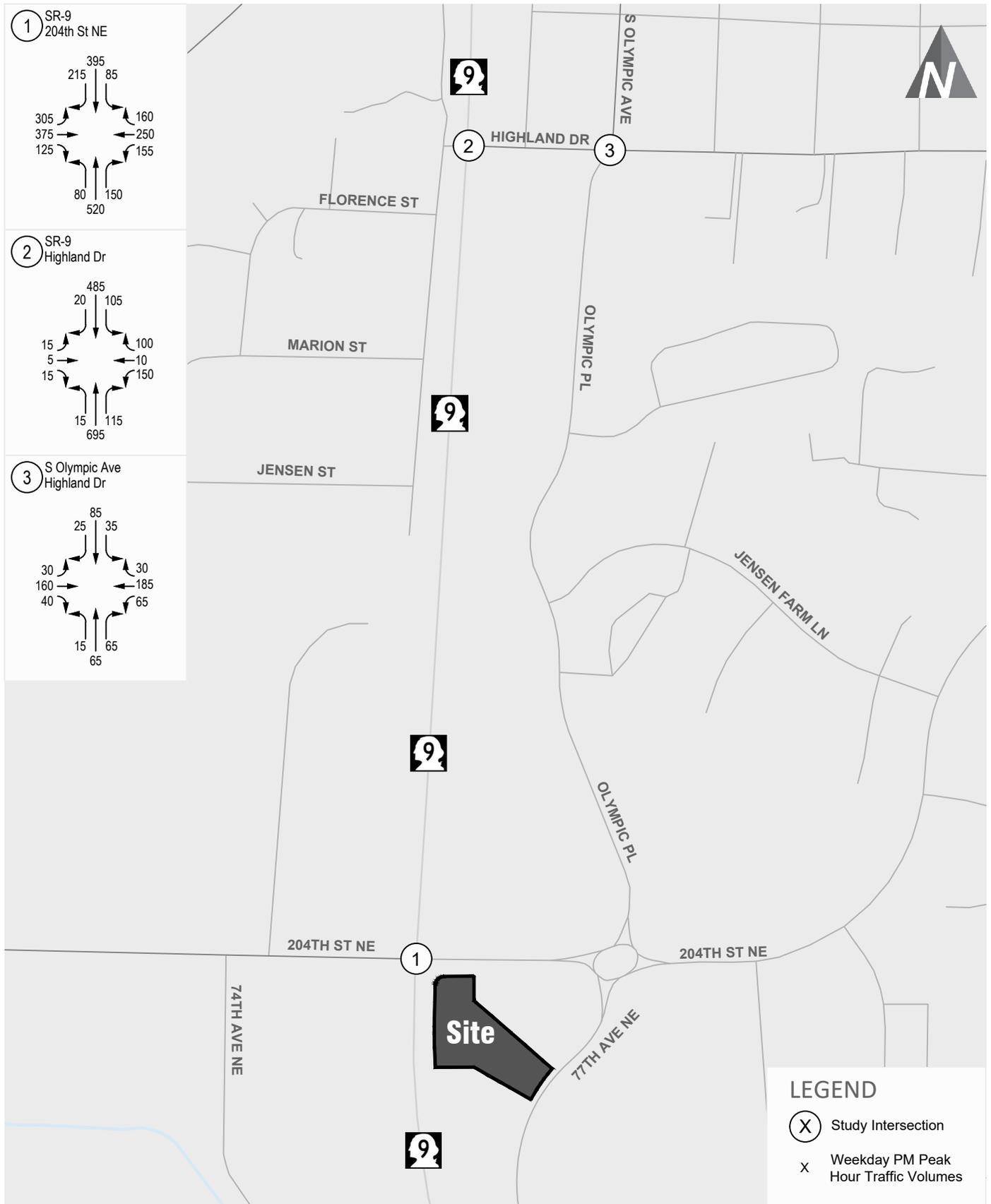
Future Without-Project Traffic Volumes

Future (2025) without-project PM peak hour traffic volumes were forecasted by applying an annual growth rate to existing traffic volumes and adding traffic from “pipeline” development projects that would also contribute traffic to study intersections. An annual growth rate of 3 percent was applied to existing study intersection traffic volumes to estimate 2025 horizon year background traffic growth, as coordinated with City of Arlington staff and consistent with the growth rate applied to the existing 2022 counts. Seven pipeline projects were identified by the City to be included in the analysis which include:

- **Project Roxy** would develop an approximately 2.82 million square foot fulfillment center warehouse located between 172nd Street NE (SR 531) and 169th Street NE, and 43rd Avenue NE and 51st Avenue NE in the City of Arlington.
- **The Outpost** would develop an approximately 500 unit multi-family residential development with 21,982 square feet of office space, 69,058 square feet of retail space and 16 live/work units. The project is located southwest of the 51st Street NE/168th Street NE intersection in Arlington.
- **The Cascade Commerce Center (CCC)** would develop approximately 4.15 million square feet of a mix of industrial uses anticipated to include a combination of industrial park, high-cube warehouse, and high-cube fulfillment center. The CCC is located in both the City of Arlington and the City of Marysville approximately south of 172nd Street NE (SR 531) and between 51st Avenue NE/59th Avenue NE and the railroad track to the east. The CCC is anticipated to be completed across 9 buildings which would be built and occupied separately. The full site is anticipated to be constructed by 2030; however, full buildout of the project has not been approved. Based on coordination with City staff only 250,000 square feet of warehouse space have been approved. As such, a 250,000 square foot warehouse was assumed under future 2025 without-project conditions.
- **The PacTrust Project** would develop approximately 745,250 sf of Industrial Park. The development includes areas north and south of 156th Street NE within the City of Marysville. Access to the development is provided by proposed driveways along 47th Avenue NE and 156th Street NE.
- **Williams Industrial (Marysville)** Development of up to 2,055,069 square feet of industrial park west of 51st Avenue NE between 156th Street NE to the south and Marysville’s northern city limits. It is anticipated that the development would be constructed and occupied by 2026.
- **Williams Industrial (Arlington)** development of up to 131,566 square feet of business park west of 51st Avenue NE between Arlington’s southern city limits and 168th Street NE to the north. It is anticipated that the development would be constructed and occupied by 2026.
- **Arlington Brown Bear Carwash** an automatic carwash with a single tunnel and 12 vacuum stations located west of 43rd Avenue NE and south of 172nd Street NE (SR-531) in Arlington.

In addition, due consideration was given to the closure of the existing use (i.e., clinic) when traffic counts were collected at some study intersections in December 2023. Trips from the clinic were added to the future without-project volumes for an effective comparison between the future without-project and with-project conditions. This approach is in alignment with the project trip generation that assumes trip credits from the existing use. The clinic trips were added to without-project volumes at SR9/Highland Drive and Olympic Ave/Highland Drive where data was collected in December 2023. Counts at SR-9/204th Street NE were collected in 2022 when the clinic was still open; therefore, no modifications to without-project volumes were needed at this location.

The forecast future 2025 without-project weekday PM peak hour traffic volumes are shown in Figure 4.



Future (2025) Without-Project Weekday PM Peak Hour Traffic Volumes **FIGURE**

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Traffic Operations

The operational characteristics of an intersection are determined by calculating the intersection level of service (LOS). At signalized and all-way stop-controlled intersections, LOS is measured in average control delay per vehicle and is typically reported using the intersection delay. At unsignalized side-street stop-controlled intersections, LOS is measured by the average delay on the worst-movement of the intersection. Traffic operations and average vehicle delay for an intersection can be described qualitatively with a range of levels of service (LOS A through LOS F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. Appendix B contains a detailed explanation of LOS criteria and definitions.

For the operations analysis of existing conditions at the signalized study intersections, signal timing and phasing information was obtained from the WSDOT. Future (2025) analysis parameters such as channelization and signal timing were maintained.

Weekday PM peak hour traffic operations for existing and future without-project conditions were evaluated at the study intersections based on the procedures identified in the *Highway Capacity Manual* 6th Edition, unless otherwise noted for signal timing constraints, and were evaluated using *Synchro 11*. *Synchro 11* is a software program that uses *HCM* methodology to evaluate intersection LOS and average vehicle delays. Results for the existing and future without-project operations analyses are summarized in Table 1. Detailed LOS worksheets for each intersection analysis are included in Appendix C. The City of Arlington and the WSDOT intersections have an LOS Standard of LOS D for the study area.

Table 1. Existing and Without-Project Weekday PM Peak Hour Intersection LOS Summary

| Intersection | Traffic Control | Existing | | Future 2025 Without-Project | |
|---------------------------------|-----------------|------------------|--------------------|-----------------------------|-------------|
| | | LOS ¹ | Delay ² | LOS | Delay |
| 1. SR-9/204th Street NE | Signal | D | 44.0 | E | 60.8 |
| 2. SR-9/Highland Drive | Signal | C | 26.4 | C | 26.8 |
| 3. S Olympic Ave/Highland Drive | AWSC | B | 10.9 | B | 11.4 |

Note: AWSC = all-way stop-controlled. **Bold** indicates the intersection is operating below standard.

1. Level of Service (A – F) as defined by the *Highway Capacity Manual* (HCM) 6th Edition (TRB).

2. Average delay per vehicle in seconds.

As shown in Table 1, under existing conditions, all intersections operate at LOS D or better during the PM peak hour, meeting the LOS standard. Under future (2025) without-project conditions, the study intersections of SR-9/Highland Drive and S Olympic Ave/Highland Drive will operate at the same level of service with respect to existing conditions with less than 1 second of additional delay. However, the intersection of SR-9/204th Street NE is forecast to degrade from LOS D under existing conditions to LOS E under future (2025) without-project conditions and will not meet the applicable LOS standard in the future.

Traffic Safety

Recent collision records were reviewed within the study area to identify existing traffic safety issues at the study intersections. The most recent complete five-year summary of accident data from the WSDOT is for the period between January 1, 2018 and December 31, 2022. This information is summarized in Table 2.

Table 2. Five-Year Collision Summary – 2018 to 2022

| Location | Number of Collisions | | | | | Total | Annual Average | Collisions per MEV ¹ |
|---|----------------------|------|------|------|------|-------|----------------|---------------------------------|
| | 2018 | 2019 | 2020 | 2021 | 2022 | | | |
| Intersections | | | | | | | | |
| 1. SR-9/204th Street NE | 2 | 7 | 6 | 4 | 6 | 25 | 5.0 | 0.60 |
| 2. SR-9/Highland Drive | 3 | 1 | 3 | 1 | 2 | 10 | 2.0 | 0.41 |
| 3. S Olympic Ave/Highland Drive | 0 | 3 | 0 | 1 | 2 | 6 | 1.2 | 0.43 |
| Roadway Segments | | | | | | | | |
| 4. 204th St NE Btwn SR-9 and 77th Ave NE | 1 | 2 | 0 | 0 | 0 | 3 | 0.6 | - |
| 5. 77th Ave NE Btwn 200th St NE and 204th St NE | 0 | 1 | 1 | 1 | 1 | 4 | 0.8 | - |

Source: WSDOT, 2023

Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

1. MEV = Million Entering Vehicles

As shown in Table 2, the study intersections along SR-9 at 204th Street NE and Highland Drive had 5 and 2 collisions on average annually, respectively. The higher number of collisions on 204th Street NE can be attributed partly to the higher traffic volumes. For the study intersection of S Olympic Ave/Highland Drive, approximately 1 average annual collision was reported.

The roadway segments along 204th Street NE and 77th Avenue NE where project driveways will be located were also examined, and an average annual collision of 1 or less was identified at these locations. These were mainly due to entering at an angle at a driveway or collision with an unoccupied parked vehicle.

Approximately 63 percent of all collisions in the study area were reported to result in property damage only, 31 percent in possible injury, and 4 percent (2 collisions) in suspected minor injuries. The collisions along the SR-9 study intersections were primarily rear end collisions and due to approach turn. Unfortunately, one incident resulting in two pedestrian fatalities was reported at the SR-9/204th Street NE intersection. The victims were pronounced dead on scene after being struck by a vehicle at 2:38 a.m. with a driver suspected to be under the influence of alcohol that was reported to disregard the traffic signal.

By incorporating the traffic volume at the intersection, the rate of collisions per million entering vehicles (MEV) allows a uniform standard for evaluating accident history. Generally, a collision rate at intersections greater than 1.0 to 1.5 collisions per MEV is considered higher than normal and further review should be conducted. All study intersections were found to have a collisions per MEV rate of less than 0.6. Overall, no existing safety issues needing further review were identified based on the data and no safety issues are identified at the driveway location.

Project Impacts

This section of the report documents the proposed project's impacts on the surrounding street network and study intersections. First, estimated traffic volumes generated by the proposed project are distributed and assigned to adjacent streets and intersections within the study area for the weekday PM peak hour study period. Next, project trips are added to future without-project traffic volumes and any potential impact to traffic operations. Site specific items are also discussed.

Trip Generation

The trip generation for the proposed project was estimated based on observations conducted at two existing Wet Rabbit sites with similar features to the proposed project. The study was done by Kimley-Horn and Associates, Inc.² The location and count details for each observed site are noted below:

- **Lake Stevens Wet Rabbit:** The site in the City of Lake Stevens is located in the southwest corner of SR-204/91st Avenue NE. The site is located along commuting corridors and has a mix of commercial and residential in the site vicinity. The site includes a single car wash tunnel and vacuum stations consistent with the proposed project. Data was collected at the Lake Stevens location on July 12 and 13 (Wednesday and Thursday), and August 8, 2023 (Tuesday). All days where data was collected were during the summer on sunny days to ensure sufficient data was collected to meet ITE minimum sample size guidelines. The detailed observations are included in Appendix D. Based on averaging the data for the 3 days, the average trip rate is 90 trips/hr with a pass-by rate of 59 percent.
- **Marysville Wet Rabbit:** The Marysville site is located along the west side of State Avenue, north of 72nd Street NE. The site includes a single car wash tunnel and vacuum stations consistent with the proposed project. Data was collected at the Marysville location on two separate Wednesdays on July 19 and August 16, 2023. The detailed observations are included in Appendix D. Based on averaging the data for the 2 days, the average trip rate is 57.5 trips/hr with a pass-by rate of 54 percent.

In combination, by averaging data over the 5 days data were collected, a trip rate of 77 trips/hr with a pass-by rate of 57 percent was identified in the study.² This rate aligned very close to the ITE trip rate Automated Car Wash (LU 948) that is 77.50 trips/hr.

Project trip generation estimates for the existing use are based on trip rates using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021). ITE's Clinic (LU #630) was used for the existing use. Table 3 summarizes the resulting weekday daily, PM peak hour pass-by, and PM peak hour primary vehicle trip generation for the proposed project. Detailed trip generation calculations are provided in Appendix E.

² Wet Rabbit Car Wash – Pass-By Study Analysis, Kimley-Horn and Associates, Inc., September 19, 2023

Table 3. Estimated Weekday Daily and PM Peak Hour Vehicle Trip Generation

| Land Use ¹ | Size | Daily Trips ² | PM Peak Hour Pass-By Trips | | | PM Peak Hour Primary Trips | | |
|--|----------|--------------------------|----------------------------|-----|-------|----------------------------|-----|-------|
| | | | In | Out | Total | In | Out | Total |
| <i>Proposed Use¹</i> | | | | | | | | |
| Automatic Carwash (<i>Based on count observations</i>) | 1 tunnel | 332 | 22 | 22 | 44 | 17 | 16 | 33 |
| <i>Existing Use²</i> | | | | | | | | |
| Clinic (LU 630) | 3,523 sf | 162 | 0 | 0 | 0 | 5 | 10 | 15 |
| <i>Net New</i> | | 170 | 22 | 22 | 44 | 12 | 6 | 18 |

Note: du = dwelling units.

1. PM peak hour trip rate and pass-by rate for Automatic Carwash from Kimley Horn & Associates Pass-By Study Analysis, Sep. 2023.

2. Equations from ITE *Trip Generation Manual*, 11th Edition (2021) used for existing clinic use.

3. No daily rate available for carwash in the ITE Trip Generation Manual, and no daily counts were collected in the Wet Rabbit carwash trip generation and pass-by study. Therefore, 10x the PM peak hour trip rate was considered for the daily trip rate, and the pass-by rate observed in the PM peak hour was applied to the daily rate.

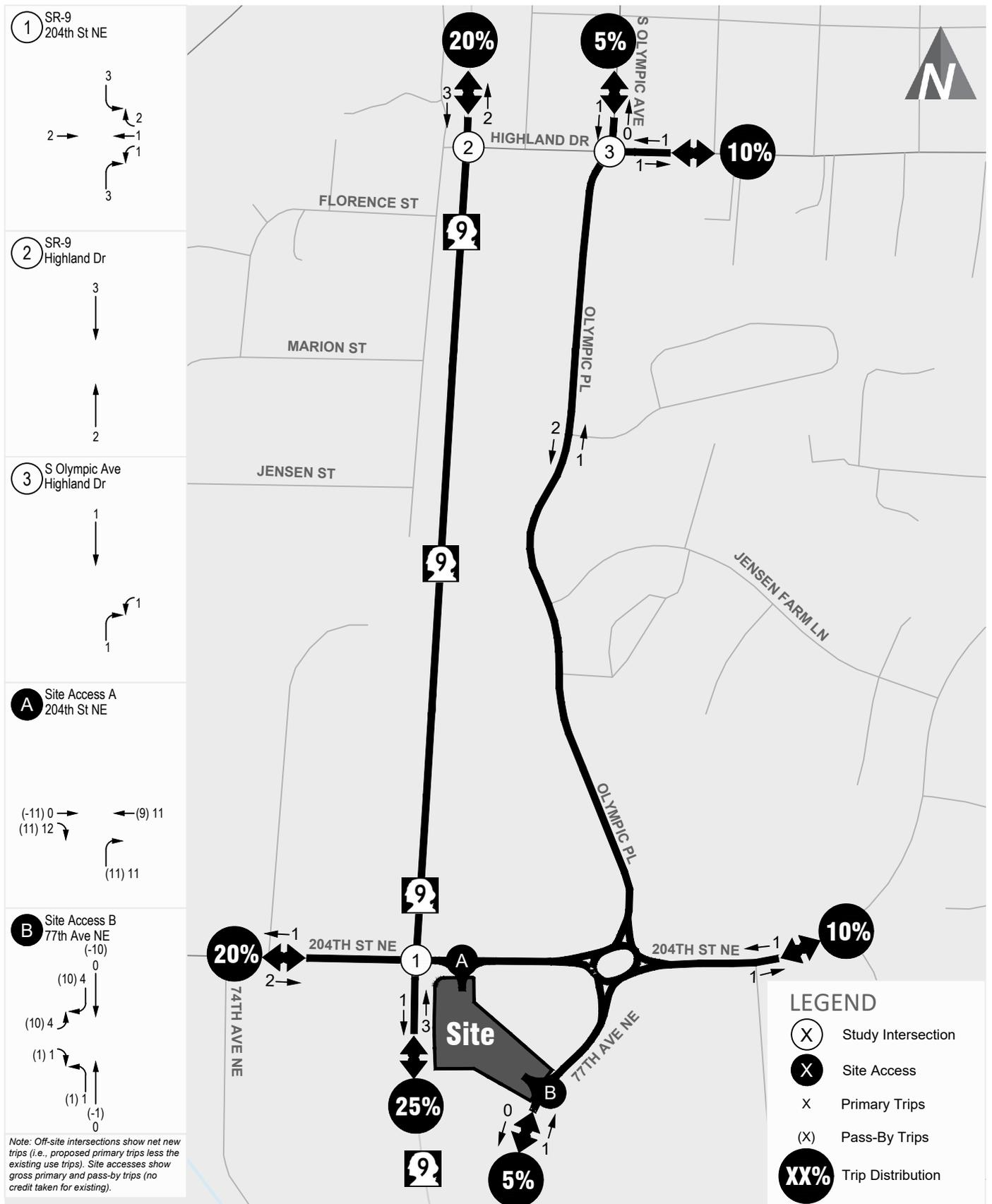
The proposed development is anticipated to generate 170 net new daily trips, 44 pass-by trips, and 18 net new primary trips.

Trip Distribution & Assignment

Trip distribution patterns developed for the project were based on the City’s travel demand model forecasts. Figure 5 illustrates the future (2025) vehicle trip distribution and assignment for the proposed project. Trips are distributed approximately 25 percent west along 204th Street NE, 20 percent north along SR-9, 25 percent south along SR-9, and the remaining 30 percent split northeast, east, and southeast of the project along Olympic Place, 204th Street NE, and 77th Avenue NE.

As explained under without-project conditions, clinic trips were added to off-site intersection volumes at locations with data collected in 2023 (when the clinic was closed). Therefore, all project trips assigned to off-site intersections reflect net new trips as the background conditions are inclusive of the clinic volumes.

Project trips at the site driveways shown on Figure 5 illustrate pass-by and gross primary trips. The inbound and outbound trips were split across both the 204th Street NE and 77th Avenue NE accesses, giving due consideration to the fact that the access along 204th Street NE is right-in right-out only. The roundabout at 77th Avenue NE/204th Street NE also helps facilitate movements exiting the 204th Street NE right-in right-out driveway that ultimately head west to the SR-9/204th Street NE intersection.



Weekday PM Peak Hour Project Trip Distribution & Assignment FIGURE

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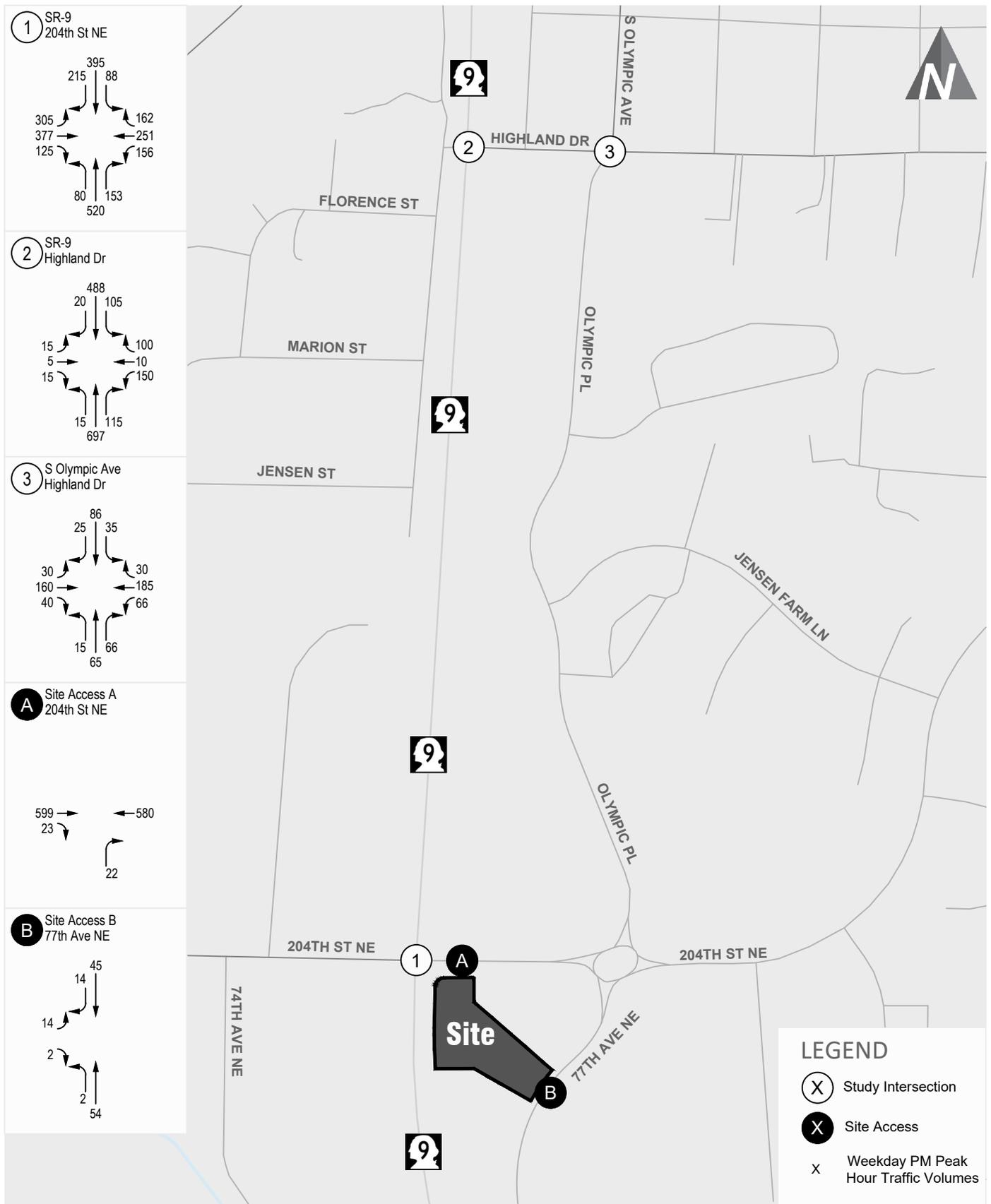
Traffic Volume Impact

The assigned project generated traffic was added to the future without-project weekday PM peak hour traffic volumes at the study intersections under future 2025 conditions. The future (2025) with-project weekday PM peak hour traffic volumes are shown in Figure 6. Table 4 summarizes the project share of traffic volumes at the study intersections during the weekday PM peak hour under the future 2025 conditions.

Table 4. Future (2025) Weekday PM Peak Hour Traffic Volume Impacts at Study Intersections

| Intersection | PM Peak Hour Total Entering Vehicles | | | Project Share |
|---------------------------------|--------------------------------------|---------------|-------------------|---------------|
| | 2025 Without-Project | Project Trips | 2025 With-Project | |
| 1. SR-9/204th Street NE | 2,815 | 12 | 2,827 | 0.4% |
| 2. SR-9/Highland Drive | 1,730 | 5 | 1,735 | 0.3% |
| 3. S Olympic Ave/Highland Drive | 800 | 3 | 803 | 0.4% |

As shown in Table 4, the proposed project is estimated to account for less than 0.5 percent of the total weekday PM peak hour traffic at all off-site study intersections. Traffic volumes fluctuate day-to-day and the anticipated traffic increase at study intersections are within the range of typical daily traffic fluctuations.



Future (2025) With-Project Weekday PM Peak Hour Traffic Volumes **FIGURE**

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Traffic Operations

The following section summarizes the future with-project LOS at the study intersections relative to the without-project conditions to identify project-related impacts. Intersection parameters such as channelization and intersection control applied to the future with-project analyses were consistent with those used in the evaluation of future without-project conditions. A comparison of the future (2025) without-project and with-project weekday PM peak hour traffic operations are summarized in Table 5. Detailed LOS worksheets are provided in Appendix C.

Table 5. Future (2025) Weekday PM Peak Hour Intersection LOS Summary

| Intersection | Traffic Control | Future 2025 Without-Project | | | Future 2025 With-Project | | |
|----------------------------------|-----------------|------------------------------|--------------------|-----------------|--------------------------|-------------|-----------------|
| | | LOS ¹ | Delay ² | WM ³ | LOS | Delay | WM ³ |
| 1. SR-9/204th Street NE | Signal | E | 60.8 | - | E | 62.1 | - |
| 2. SR-9/Highland Drive | Signal | C | 26.8 | - | C | 26.9 | - |
| 3. S Olympic Ave/Highland Drive | TWSC | B | 11.4 | - | B | 11.5 | - |
| A. 204th Street NE/Site Access A | TWSC | evaluated under With-Project | | | B | 10.6 | NB |
| B. 77th Ave NE/Site Access B | TWSC | evaluated under With-Project | | | A | 9.3 | EB |

Note: TWSC = two-way stop-controlled. **Bold** indicates the intersection is operating below standard.

1. Level of Service (A – F) as defined by the *Highway Capacity Manual* (HCM) 6th Edition (TRB)

2. Average delay per vehicle in seconds.

3. Worst movement reported for two-way stop-controlled intersections. NB = northbound movement, EB = eastbound movement.

As shown in Table 5, all study intersections remain at the same LOS under with-project conditions with increases in delay of approximately 1 second or less than a second. The SR-9/204th Street NE intersection is forecast to continue to operate below the LOS D standard at LOS E. As the added delay at this location is approximately 1 second with less than a 0.5 percent traffic volume impact with the addition of the project, the impact of the project is found to be negligible. All remaining study intersections meet the LOS D standard.

Site Access

Access to the site is proposed via an existing right-in right-out two-way stop-controlled driveway located approximately 130 feet east of the SR-9/204th Street NE as well as a proposed full access two-way stop-controlled driveway located on 77th Avenue NE. The future (2025) with-project weekday PM peak hour traffic volumes at the site access are shown in Figure 6 which are assumed for the analysis. The traffic operations at the proposed project's site driveways are summarized below along with the on-site queuing associated with the car wash.

Traffic Operations

The operations as summarized in Table 5 above show the driveways along 204th Street NE and 77th Avenue NE are forecast to operate at LOS B and LOS A, respectively, with minimal queuing (95th percentile of 1 vehicle or less northbound and eastbound from the driveways).

On-Site Queuing

A queuing analysis focusing on the carwash operations was conducted for the weekday PM peak hour based on the forecast trip generation. For the weekday PM peak hour, 77 gross trips are forecast for the carwash with a split of 39 ins and 38 outs. The queuing analysis considered the projected number of carwash trips, service times, and arrival patterns using a Poisson distribution. The Poisson queuing methodology forecasts queuing based on a random arrival pattern of vehicles, consistent with the arrival patterns associated with a carwash.

Based on data provided by Wet Rabbit, the average service time for the carwash is 3 minutes which is what is used in the analysis. The service rate is the average duration that was assumed between processing payment and exiting the carwash. Based on a service time of 3 minutes, the

Poisson queuing model forecasts a 95th percentile queue of 5 vehicles for the project with a peak hourly number of vehicles being 39 through the carwash. There are two lanes for payment processing per the site plan shown on Figure 7. However, as the system is limited by the single carwash tunnel, only one lane was assumed in the total service throughput of the system. As shown on Figure 7, a 95th percentile queue of 5 vehicles with reference to the point of sale, forecast per the Poisson Model, can easily be accommodated internally and without interference with internal roadways. The availability of two lanes also helps with managing the length of the queue. Based on this analysis, queuing from the carwash operations are not anticipated to impact City roads or internal circulation of the site. The detailed queuing worksheet is provided in Attachment F.

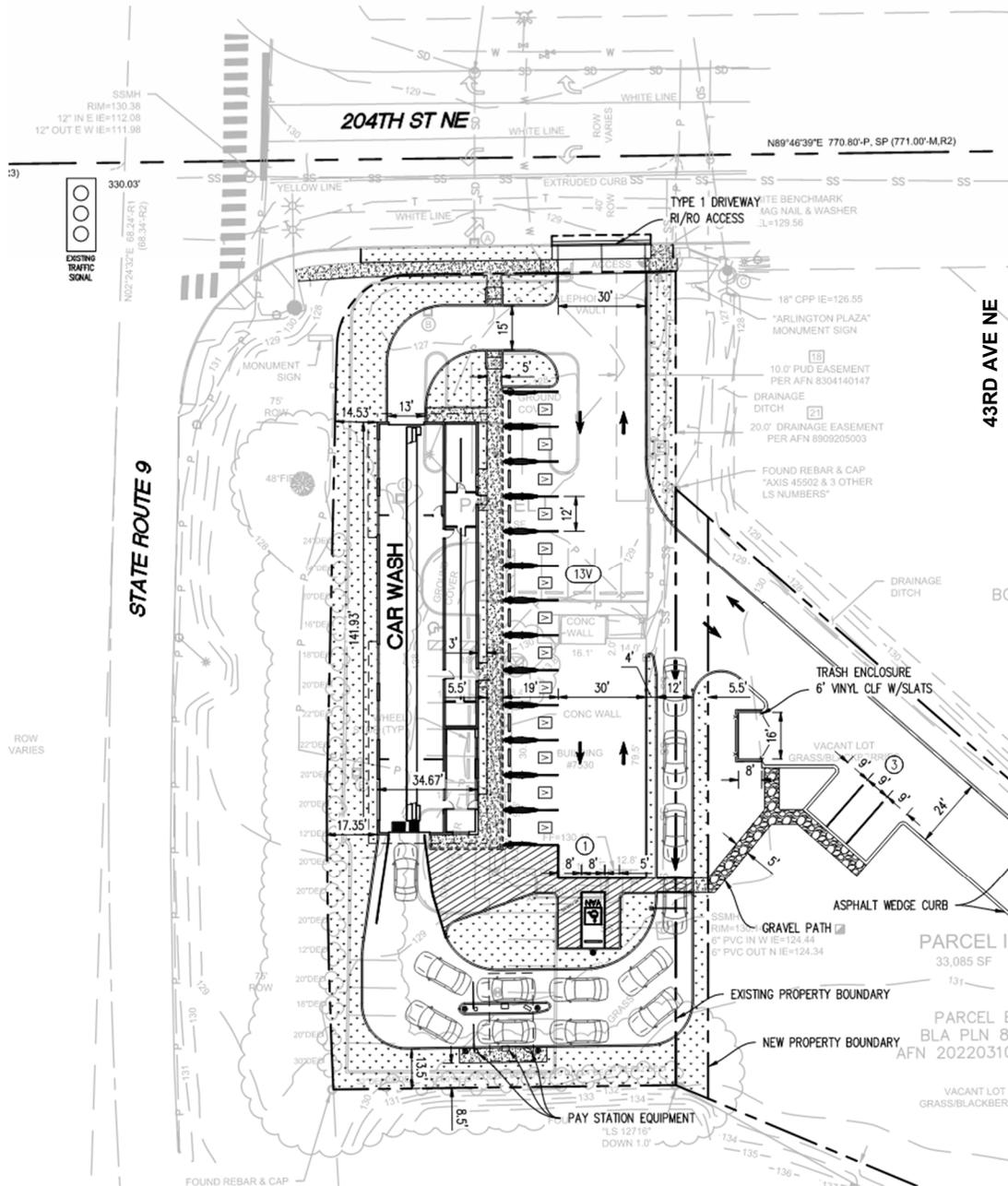


Figure 7. On-Site Queue Capacity

Mitigation

The project impacts to the surrounding transportation system would be mitigated through the City of Arlington, Snohomish County and WSDOT impact fee programs.

Transportation Mitigation Fees

To mitigate impacts of the proposal on the surrounding transportation system, the developer would be required to pay impact fees to three jurisdictions: the City of Arlington, Snohomish County, and WSDOT based on current interlocal agreements that have been established between these entities. The following provides an estimate only, the final fees will be calculated at time of permit issuance.

City of Arlington

The City of Arlington traffic mitigation fees are currently \$3,355 per PM peak hour trip. Based on the anticipated trip generation of 18 primary trips, the resulting City of Arlington impact fee would be **\$60,390** (\$3,355/trip x 18 trips). The fee rate is subject to annual increases and will be based on the adopted rates at the time of building permit issuance.

Snohomish County

Snohomish County has an interlocal agreement with the City of Arlington. Per the Snohomish County Traffic Mitigation Worksheet for City Developments Impacting County Streets, the percentage of trips impacting County Streets was determined to be 90 percent. Per SCC 30.66B.330 the fee for commercial uses within the urban growth area of TSA is \$157 per average daily trip (ADT). The resulting fee was estimated to be approximately **\$24,021.00** (90% x 170 ADT x \$157 per ADT). The fee rate is subject to annual increases and will be based on the adopted rates at the time of building permit issuance.

WSDOT

Per the interlocal agreement with WSDOT, project-related impacts can be mitigated through the payment of a flat fee of \$36 per ADT or a proportional share based on the WSDOT projects currently planned. Based on the project distribution, the project would impact the WSDOT projects on SR-9; however, those projects have been identified as funded. As such no impact fees would be paid to WSDOT.

Findings and Conclusions

This transportation impact analysis summarizes the transportation impacts associated with the proposed Wet Rabbit development in Arlington, WA.

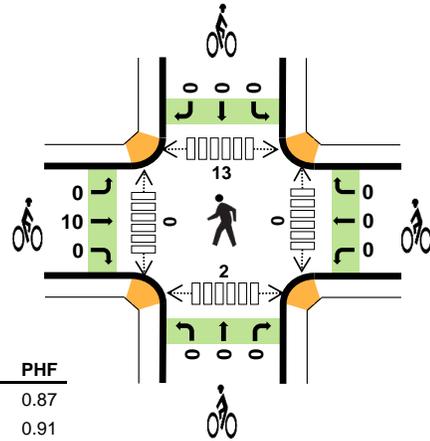
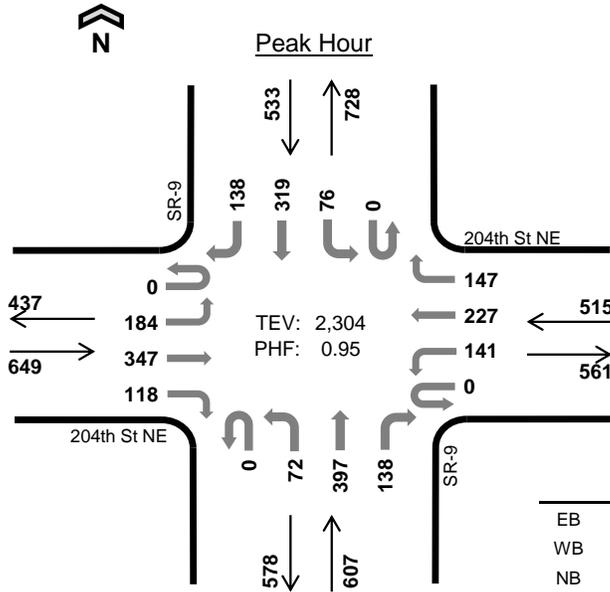
- The proposed single carwash tunnel (4,920 square feet) with 13 vacuum stations is estimated to generate 18 net new primary weekday PM peak hour trips.
- Under forecast (2025) with-project PM peak hour conditions, all study intersections remain at the same LOS with increases in delay of approximately 1 second or less. The SR-9/204th Street NE intersection is forecast to operate below the LOS D standard with approximately 1 second of added delay and with less than a 0.5 percent traffic volume impact with the addition of the project. The impact of the project at this location is found to be negligible. All remaining study intersections meet the LOS D standard.
- Access to the proposed development would be provided via the existing driveway along 204th Street NE, east of SR-9 as well as a proposed driveway on 77th Avenue NE. The respective driveways are forecast to operate at LOS B and LOS A with the project with limited queuing outbound from the driveways. Additionally, the site is anticipated to accommodate the peak queueing for the project.
- The developer would be required to pay transportation mitigation fees. The mitigation fees are estimated to total \$84,411.00 (including both Arlington and Snohomish County). The final fees are calculated at the time of building permit issuance.

Appendix A: Traffic Counts

SR-9 204th St NE



Date: 06/02/2022
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:00 PM to 5:00 PM



| | HV %: | PHF |
|-------|-------|------|
| EB | 2.8% | 0.87 |
| WB | 1.6% | 0.91 |
| NB | 2.3% | 0.91 |
| SB | 4.9% | 0.82 |
| TOTAL | 2.9% | 0.95 |

Two-Hour Count Summaries

| Interval Start | 204th St NE Eastbound | | | | 204th St NE Westbound | | | | SR-9 Northbound | | | | SR-9 Southbound | | | | 15-min Total | Rolling One Hour | |
|----------------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------------|-----|-----|-----|-----------------|-----|-----|-----|--------------|------------------|---|
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | | |
| 4:00 PM | 0 | 37 | 80 | 24 | 0 | 34 | 62 | 29 | 0 | 20 | 110 | 23 | 0 | 21 | 91 | 29 | 560 | 0 | |
| 4:15 PM | 0 | 44 | 85 | 29 | 0 | 49 | 53 | 39 | 0 | 20 | 95 | 33 | 0 | 16 | 58 | 38 | 559 | 0 | |
| 4:30 PM | 0 | 61 | 94 | 31 | 0 | 31 | 62 | 45 | 0 | 16 | 107 | 43 | 0 | 12 | 75 | 31 | 608 | 0 | |
| 4:45 PM | 0 | 42 | 88 | 34 | 0 | 27 | 50 | 34 | 0 | 16 | 85 | 39 | 0 | 27 | 95 | 40 | 577 | 2,304 | |
| 5:00 PM | 0 | 32 | 99 | 34 | 0 | 36 | 55 | 37 | 0 | 14 | 86 | 28 | 0 | 13 | 76 | 28 | 538 | 2,282 | |
| 5:15 PM | 0 | 34 | 74 | 16 | 0 | 28 | 53 | 45 | 0 | 13 | 60 | 22 | 0 | 16 | 52 | 24 | 437 | 2,160 | |
| 5:30 PM | 0 | 28 | 78 | 19 | 0 | 27 | 40 | 21 | 0 | 11 | 79 | 37 | 0 | 16 | 74 | 29 | 459 | 2,011 | |
| 5:45 PM | 0 | 30 | 60 | 23 | 0 | 28 | 57 | 33 | 0 | 9 | 100 | 35 | 0 | 28 | 78 | 26 | 507 | 1,941 | |
| Count Total | 0 | 308 | 658 | 210 | 0 | 260 | 432 | 283 | 0 | 119 | 722 | 260 | 0 | 149 | 599 | 245 | 4,245 | 0 | |
| Peak Hour | All | 0 | 184 | 347 | 118 | 0 | 141 | 227 | 147 | 0 | 72 | 397 | 138 | 0 | 76 | 319 | 138 | 2,304 | 0 |
| | HV | 0 | 14 | 3 | 1 | 0 | 2 | 5 | 1 | 0 | 3 | 11 | 0 | 0 | 4 | 12 | 10 | 66 | 0 |
| | HV% | - | 8% | 1% | 1% | - | 1% | 2% | 1% | - | 4% | 3% | 0% | - | 5% | 4% | 7% | 3% | 0 |

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

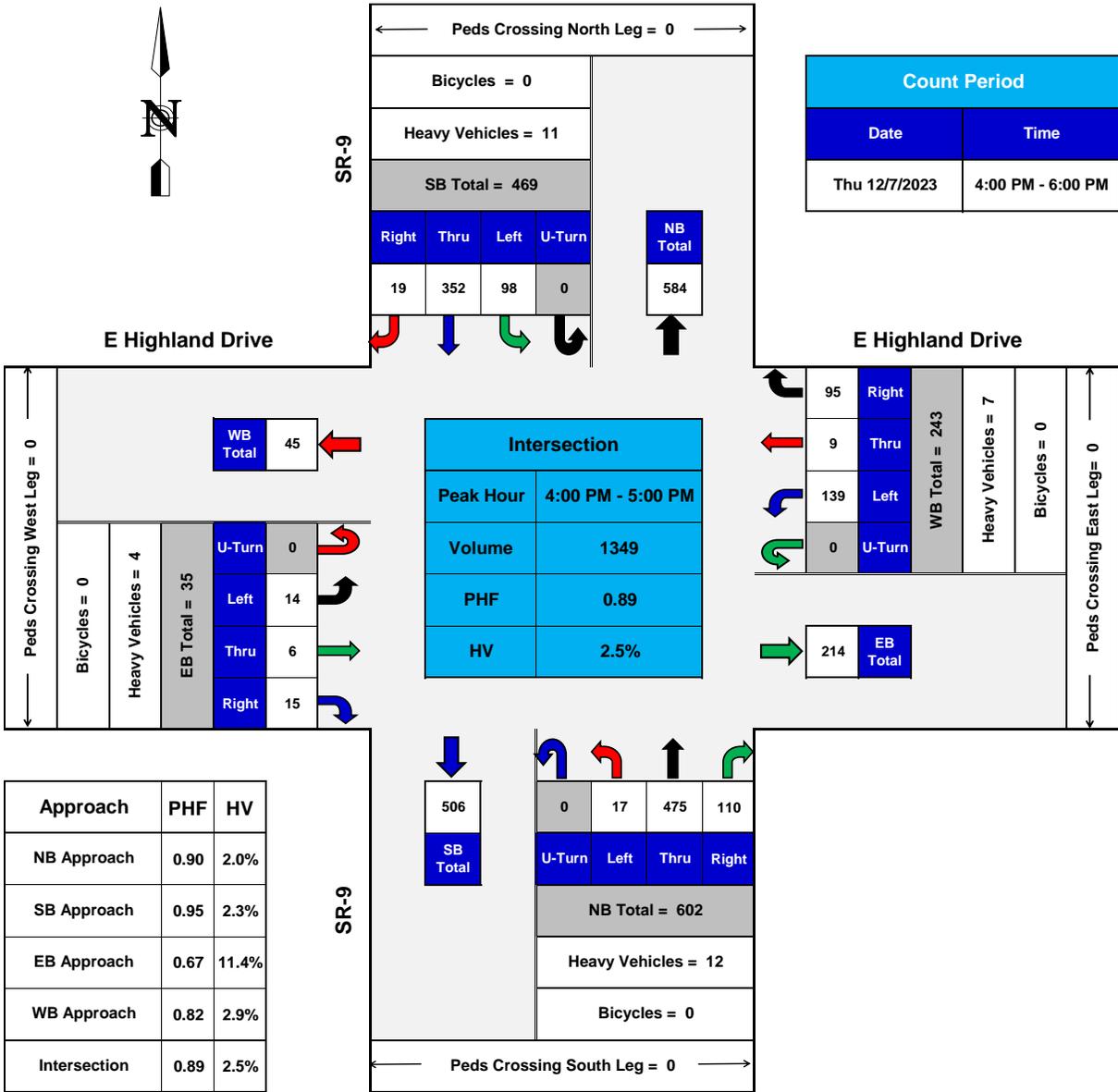
| Interval Start | Heavy Vehicle Totals | | | | | Bicycles | | | | | Pedestrians (Crossing Leg) | | | | |
|----------------|----------------------|----|----|----|-------|----------|----|----|----|-------|----------------------------|------|-------|-------|-------|
| | EB | WB | NB | SB | Total | EB | WB | NB | SB | Total | East | West | North | South | Total |
| 4:00 PM | 5 | 3 | 6 | 9 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 4:15 PM | 4 | 3 | 4 | 6 | 17 | 10 | 0 | 0 | 0 | 10 | 0 | 0 | 1 | 1 | 2 |
| 4:30 PM | 5 | 2 | 3 | 5 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 4 | 0 | 1 | 6 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 12 |
| 5:00 PM | 2 | 4 | 2 | 4 | 12 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 1 | 4 |
| 5:15 PM | 4 | 1 | 4 | 3 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 3 | 0 | 5 | 3 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 2 | 0 | 2 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Count Total | 29 | 13 | 27 | 37 | 106 | 11 | 0 | 0 | 0 | 11 | 0 | 0 | 16 | 4 | 20 |
| Peak Hour | 18 | 8 | 14 | 26 | 66 | 10 | 0 | 0 | 0 | 10 | 0 | 0 | 13 | 2 | 15 |

| Two-Hour Count Summaries - Heavy Vehicles | | | | | | | | | | | | | | | | | | |
|--|-------------|----|----|----|-------------|----|----|----|------------|----|----|----|------------|----|----|----|--------------|------------------|
| Interval Start | 204th St NE | | | | 204th St NE | | | | SR-9 | | | | SR-9 | | | | 15-min Total | Rolling One Hour |
| | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | | |
| | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | UT | LT | TH | RT | | |
| 4:00 PM | 0 | 4 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 6 | 0 | 0 | 1 | 2 | 6 | 23 | 0 |
| 4:15 PM | 0 | 4 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 2 | 3 | 17 | 0 |
| 4:30 PM | 0 | 2 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 4 | 1 | 15 | 0 |
| 4:45 PM | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 4 | 0 | 11 | 66 |
| 5:00 PM | 0 | 1 | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 4 | 0 | 12 | 55 |
| 5:15 PM | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 1 | 1 | 12 | 50 |
| 5:30 PM | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 2 | 11 | 46 |
| 5:45 PM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 5 | 40 |
| Count Total | 0 | 18 | 6 | 5 | 0 | 4 | 8 | 1 | 0 | 4 | 22 | 1 | 0 | 5 | 19 | 13 | 106 | 0 |
| Peak Hour | 0 | 14 | 3 | 1 | 0 | 2 | 5 | 1 | 0 | 3 | 11 | 0 | 0 | 4 | 12 | 10 | 66 | 0 |

| Two-Hour Count Summaries - Bikes | | | | | | | | | | | | | | | | | | |
|---|-------------|----|----|-------------|----|----|------------|----|----|------------|----|----|--------------|------------------|---|---|----|----|
| Interval Start | 204th St NE | | | 204th St NE | | | SR-9 | | | SR-9 | | | 15-min Total | Rolling One Hour | | | | |
| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | | | | | | | |
| | LT | TH | RT | LT | TH | RT | LT | TH | RT | LT | TH | RT | | | | | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 5:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Count Total | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 |
| Peak Hour | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

E Highland Drive @ SR-9 Arlington, WA



**TURNING MOVEMENTS DIAGRAM
PEAK HOUR SUMMARY**





INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: E Highland Drive @ SR-9
Arlington, WA

DATE OF COUNT: Thu. 12/7/2023
 START OF COUNT: 4:00 PM
 TIME OF COUNT: 4:00 PM - 6:00 PM

COUNTED BY: TDG
 DATE OF REDUCTION: 12/9/2023
 DURATION OF COUNT (Hrs): 2

| TIME INTERVAL ENDING AT | FROM NORTH ON SR-9 | | | | | | | FROM SOUTH ON SR-9 | | | | | | | FROM EAST ON E Highland Drive | | | | | | | FROM WEST ON E Highland Drive | | | | | | | INTERVAL TOTALS |
|-------------------------------|-----------------------|---------|----|--------|------|------|-------|-----------------------|---------|----|--------|------|------|-------|----------------------------------|---------|----|--------|------|------|-------|----------------------------------|---------|----|--------|------|------|-------|--------------------|
| | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | |
| 04:15 PM | 0 | 0 | 5 | 0 | 25 | 97 | 2 | 0 | 0 | 4 | 0 | 6 | 127 | 34 | 0 | 0 | 3 | 0 | 44 | 5 | 25 | 0 | 0 | 2 | 0 | 5 | 1 | 7 | 378 |
| 04:30 PM | 0 | 0 | 1 | 0 | 23 | 80 | 2 | 0 | 0 | 6 | 0 | 6 | 120 | 32 | 0 | 0 | 2 | 0 | 29 | 1 | 29 | 0 | 0 | 2 | 0 | 4 | 2 | 2 | 330 |
| 04:45 PM | 0 | 0 | 3 | 0 | 26 | 88 | 6 | 0 | 0 | 0 | 0 | 2 | 119 | 23 | 0 | 0 | 2 | 0 | 26 | 2 | 21 | 0 | 0 | 0 | 0 | 3 | 1 | 2 | 319 |
| 05:00 PM | 0 | 0 | 2 | 0 | 24 | 87 | 9 | 0 | 0 | 2 | 0 | 3 | 109 | 21 | 0 | 0 | 0 | 0 | 40 | 1 | 20 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 322 |
| 05:15 PM | 0 | 0 | 4 | 0 | 32 | 89 | 1 | 0 | 0 | 3 | 0 | 5 | 112 | 35 | 0 | 0 | 2 | 0 | 21 | 3 | 35 | 0 | 0 | 0 | 0 | 4 | 2 | 6 | 345 |
| 05:30 PM | 0 | 0 | 1 | 0 | 31 | 63 | 5 | 0 | 0 | 1 | 0 | 4 | 129 | 33 | 0 | 0 | 0 | 0 | 25 | 3 | 22 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 320 |
| 05:45 PM | 0 | 0 | 0 | 0 | 34 | 58 | 2 | 0 | 0 | 2 | 0 | 2 | 98 | 17 | 0 | 0 | 0 | 0 | 22 | 2 | 25 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 266 |
| 06:00 PM | 0 | 0 | 1 | 0 | 15 | 51 | 0 | 0 | 0 | 2 | 0 | 2 | 101 | 25 | 0 | 0 | 0 | 0 | 22 | 2 | 16 | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 242 |
| PEAK HOUR TOTALS | 0 | 0 | 11 | 0 | 98 | 352 | 19 | 0 | 0 | 12 | 0 | 17 | 475 | 110 | 0 | 0 | 7 | 0 | 139 | 9 | 95 | 0 | 0 | 4 | 0 | 14 | 6 | 15 | INTERSECTION |
| ALL MOVEMENTS | 469 | | | | | | | 602 | | | | | | | 243 | | | | | | | 35 | | | | | | | 1349 |
| % HV | 2.3% | | | | | | | 2.0% | | | | | | | 2.9% | | | | | | | 11.4% | | | | | | | 2.5% |
| PEAK HOUR FACTOR | 0.95 | | | | | | | 0.90 | | | | | | | 0.82 | | | | | | | 0.67 | | | | | | | 0.89 |

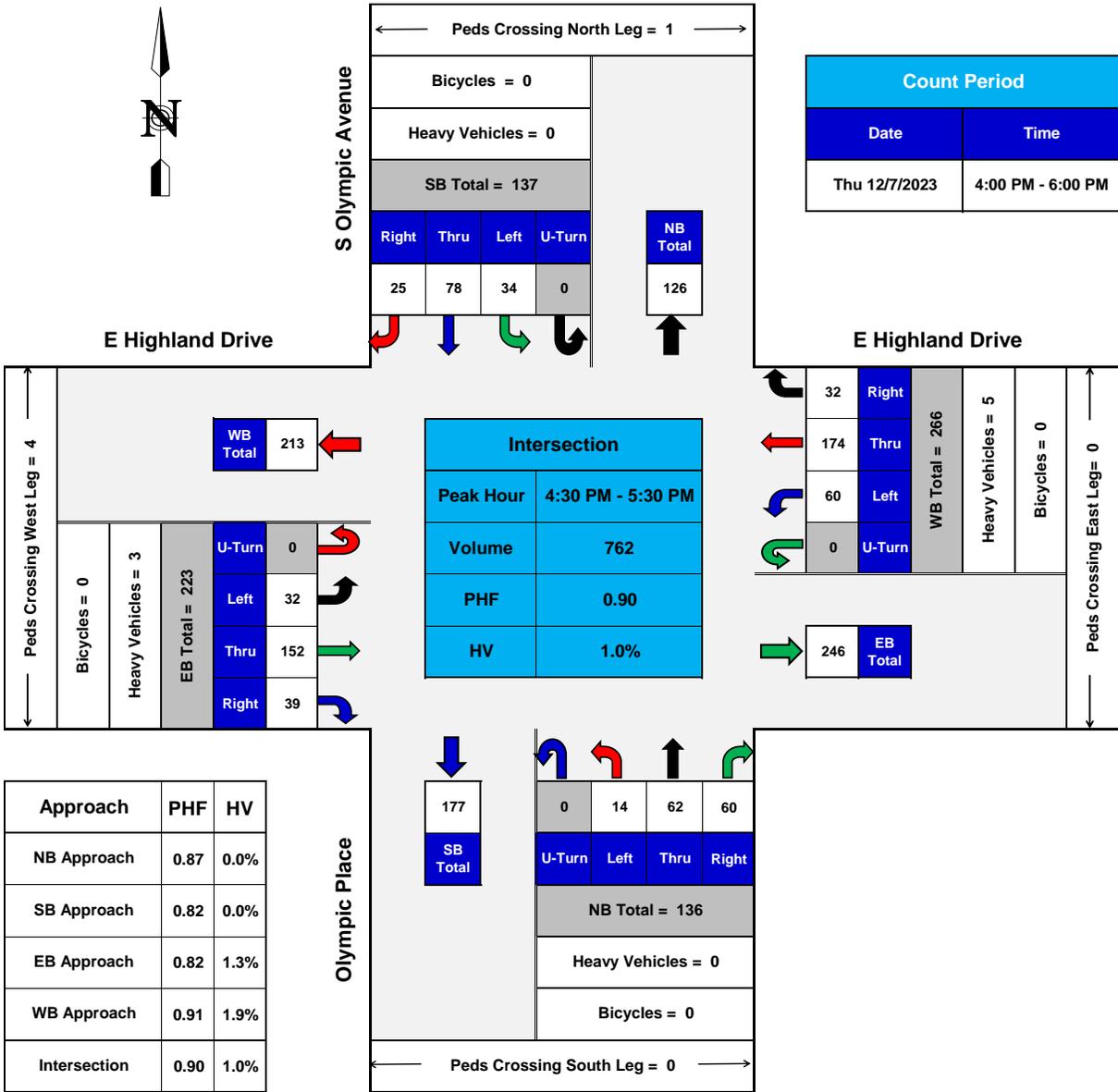
HV = Heavy Vehicle
 PHF = Peak Hour Factor

4:00 PM - 6:00 PM PEAK HOUR: 4:00 PM - 5:00 PM

ROLLING HOUR COUNT

| TIME INTERVAL | FROM NORTH ON SR-9 | | | | | | | FROM SOUTH ON SR-9 | | | | | | | FROM EAST ON E Highland Drive | | | | | | | FROM WEST ON E Highland Drive | | | | | | | INTERVAL TOTALS |
|--------------------------|-----------------------|---------|----|--------|------|------|-------|-----------------------|---------|----|--------|------|------|-------|----------------------------------|---------|----|--------|------|------|-------|----------------------------------|---------|----|--------|------|------|-------|--------------------|
| | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | |
| 4:00 PM - 5:00 PM | 0 | 0 | 11 | 0 | 98 | 352 | 19 | 0 | 0 | 12 | 0 | 17 | 475 | 110 | 0 | 0 | 7 | 0 | 139 | 9 | 95 | 0 | 0 | 4 | 0 | 14 | 6 | 15 | 1349 |
| 4:15 PM - 5:15 PM | 0 | 0 | 10 | 0 | 105 | 344 | 18 | 0 | 0 | 11 | 0 | 16 | 460 | 111 | 0 | 0 | 6 | 0 | 116 | 7 | 105 | 0 | 0 | 2 | 0 | 13 | 7 | 14 | 1316 |
| 4:30 PM - 5:30 PM | 0 | 0 | 10 | 0 | 113 | 327 | 21 | 0 | 0 | 6 | 0 | 14 | 469 | 112 | 0 | 0 | 4 | 0 | 112 | 9 | 98 | 0 | 0 | 0 | 0 | 10 | 6 | 15 | 1306 |
| 4:45 PM - 5:45 PM | 0 | 0 | 7 | 0 | 121 | 297 | 17 | 0 | 0 | 8 | 0 | 14 | 448 | 106 | 0 | 0 | 2 | 0 | 108 | 9 | 102 | 0 | 0 | 0 | 0 | 8 | 8 | 15 | 1253 |
| 5:00 PM - 6:00 PM | 0 | 0 | 6 | 0 | 112 | 261 | 8 | 0 | 0 | 8 | 0 | 13 | 440 | 110 | 0 | 0 | 2 | 0 | 90 | 10 | 98 | 0 | 0 | 0 | 0 | 8 | 9 | 14 | 1173 |
| 4:00 PM - 6:00 PM Total: | 0 | 0 | 17 | 0 | 210 | 613 | 27 | 0 | 0 | 20 | 0 | 30 | 915 | 220 | 0 | 0 | 9 | 0 | 229 | 19 | 193 | 0 | 0 | 4 | 0 | 22 | 15 | 29 | 2522 |

E Highland Drive @ S Olympic Avenue Arlington, WA



PHF = Peak Hour Factor
HV = Heavy Vehicles

TURNING MOVEMENTS DIAGRAM PEAK HOUR SUMMARY





INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: E Highland Drive @ S Olympic Avenue
Arlington, WA

DATE OF COUNT: Thu. 12/7/2023

COUNTED BY: TDG

START OF COUNT: 4:00 PM

DATE OF REDUCTION: 12/9/2023

TIME OF COUNT: 4:00 PM - 6:00 PM

DURATION OF COUNT (Hrs): 2

| TIME INTERVAL ENDING AT | FROM NORTH ON S Olympic Avenue | | | | | | | FROM SOUTH ON Olympic Place | | | | | | | FROM EAST ON E Highland Drive | | | | | | | FROM WEST ON E Highland Drive | | | | | | | INTERVAL TOTALS |
|-------------------------------|-----------------------------------|---------|----|--------|------|------|-------|--------------------------------|---------|----|--------|------|------|-------|----------------------------------|---------|----|--------|------|------|-------|----------------------------------|---------|----|--------|------|------|-------|--------------------|
| | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | |
| 04:15 PM | 0 | 0 | 0 | 0 | 7 | 20 | 10 | 0 | 0 | 0 | 0 | 4 | 21 | 16 | 0 | 0 | 1 | 0 | 11 | 50 | 5 | 0 | 0 | 2 | 0 | 9 | 39 | 10 | 202 |
| 04:30 PM | 0 | 0 | 0 | 0 | 3 | 18 | 9 | 0 | 0 | 1 | 0 | 5 | 24 | 13 | 0 | 0 | 3 | 0 | 13 | 42 | 7 | 0 | 0 | 3 | 0 | 10 | 34 | 8 | 186 |
| 04:45 PM | 1 | 0 | 0 | 0 | 8 | 13 | 6 | 0 | 0 | 0 | 0 | 3 | 15 | 16 | 0 | 0 | 2 | 0 | 21 | 42 | 10 | 2 | 0 | 2 | 0 | 5 | 33 | 8 | 180 |
| 05:00 PM | 0 | 0 | 0 | 0 | 11 | 22 | 6 | 0 | 0 | 0 | 0 | 4 | 16 | 19 | 0 | 0 | 0 | 0 | 12 | 42 | 4 | 0 | 0 | 1 | 0 | 7 | 34 | 5 | 182 |
| 05:15 PM | 0 | 0 | 0 | 0 | 8 | 25 | 9 | 0 | 0 | 0 | 0 | 3 | 17 | 13 | 0 | 0 | 3 | 0 | 14 | 51 | 8 | 0 | 0 | 0 | 0 | 10 | 38 | 15 | 211 |
| 05:30 PM | 0 | 0 | 0 | 0 | 7 | 18 | 4 | 0 | 0 | 0 | 0 | 4 | 14 | 12 | 0 | 0 | 0 | 0 | 13 | 39 | 10 | 2 | 0 | 0 | 0 | 10 | 47 | 11 | 189 |
| 05:45 PM | 0 | 0 | 0 | 0 | 8 | 12 | 6 | 0 | 0 | 0 | 0 | 7 | 12 | 17 | 0 | 0 | 0 | 0 | 4 | 35 | 2 | 0 | 0 | 0 | 0 | 5 | 37 | 7 | 152 |
| 06:00 PM | 0 | 0 | 0 | 0 | 6 | 13 | 4 | 0 | 0 | 0 | 0 | 5 | 26 | 10 | 2 | 0 | 0 | 0 | 6 | 25 | 9 | 0 | 0 | 0 | 0 | 1 | 40 | 5 | 150 |
| PEAK HOUR TOTALS | 1 | 0 | 0 | 0 | 34 | 78 | 25 | 0 | 0 | 0 | 0 | 14 | 62 | 60 | 0 | 0 | 5 | 0 | 60 | 174 | 32 | 4 | 0 | 3 | 0 | 32 | 152 | 39 | INTERSECTION |
| ALL MOVEMENTS | 137 | | | | | | | 136 | | | | | | | 266 | | | | | | | 223 | | | | | | | 762 |
| % HV | 0.0% | | | | | | | 0.0% | | | | | | | 1.9% | | | | | | | 1.3% | | | | | | | 1.0% |
| PEAK HOUR FACTOR | 0.82 | | | | | | | 0.87 | | | | | | | 0.91 | | | | | | | 0.82 | | | | | | | 0.90 |

HV = Heavy Vehicle

PHF = Peak Hour Factor

4:00 PM - 6:00 PM PEAK HOUR:

4:30 PM - 5:30 PM

ROLLING HOUR COUNT

| TIME INTERVAL | FROM NORTH ON S Olympic Avenue | | | | | | | FROM SOUTH ON Olympic Place | | | | | | | FROM EAST ON E Highland Drive | | | | | | | FROM WEST ON E Highland Drive | | | | | | | INTERVAL TOTALS |
|--------------------------|-----------------------------------|---------|----|--------|------|------|-------|--------------------------------|---------|----|--------|------|------|-------|----------------------------------|---------|----|--------|------|------|-------|----------------------------------|---------|----|--------|------|------|-------|--------------------|
| | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | Peds | Bicycle | HV | U-Turn | Left | Thru | Right | |
| 4:00 PM - 5:00 PM | 1 | 0 | 0 | 0 | 29 | 73 | 31 | 0 | 0 | 1 | 0 | 16 | 76 | 64 | 0 | 0 | 6 | 0 | 57 | 176 | 26 | 2 | 0 | 8 | 0 | 31 | 140 | 31 | 750 |
| 4:15 PM - 5:15 PM | 1 | 0 | 0 | 0 | 30 | 78 | 30 | 0 | 0 | 1 | 0 | 15 | 72 | 61 | 0 | 0 | 8 | 0 | 60 | 177 | 29 | 2 | 0 | 6 | 0 | 32 | 139 | 36 | 759 |
| 4:30 PM - 5:30 PM | 1 | 0 | 0 | 0 | 34 | 78 | 25 | 0 | 0 | 0 | 0 | 14 | 62 | 60 | 0 | 0 | 5 | 0 | 60 | 174 | 32 | 4 | 0 | 3 | 0 | 32 | 152 | 39 | 762 |
| 4:45 PM - 5:45 PM | 0 | 0 | 0 | 0 | 34 | 77 | 25 | 0 | 0 | 0 | 0 | 18 | 59 | 61 | 0 | 0 | 3 | 0 | 43 | 167 | 24 | 2 | 0 | 1 | 0 | 32 | 156 | 38 | 734 |
| 5:00 PM - 6:00 PM | 0 | 0 | 0 | 0 | 29 | 68 | 23 | 0 | 0 | 0 | 0 | 19 | 69 | 52 | 2 | 0 | 3 | 0 | 37 | 150 | 29 | 2 | 0 | 0 | 0 | 26 | 162 | 38 | 702 |
| 4:00 PM - 6:00 PM Total: | 1 | 0 | 0 | 0 | 58 | 141 | 54 | 0 | 0 | 1 | 0 | 35 | 145 | 116 | 2 | 0 | 9 | 0 | 94 | 326 | 55 | 4 | 0 | 8 | 0 | 57 | 302 | 69 | 1452 |



DTG TRAFFIC DATA GATHERING

LOCATION: 77th Avenue NE s/o Burger King Driveway
Arlington, WA

COUNTED BY: TDG

| TIME | Thu. 12/7/2023 | | | |
|--------------|----------------|----------|--------|----------|
| | NB | | SB | |
| | Trucks | Vehicles | Trucks | Vehicles |
| 04:00 PM | 1 | 21 | 0 | 13 |
| 04:15 PM | 0 | 8 | 0 | 11 |
| 04:30 PM | 0 | 11 | 0 | 14 |
| 04:45 PM | 0 | 11 | 0 | 13 |
| 05:00 PM | 0 | 10 | 0 | 10 |
| 05:15 PM | 0 | 13 | 0 | 10 |
| 05:30 PM | 0 | 11 | 0 | 11 |
| 05:45 PM | 0 | 14 | 0 | 10 |
| Total | 1 | 99 | 0 | 92 |

Appendix B: LOS Definitions

Highway Capacity Manual 2010/6th Edition

Signalized intersection level of service (LOS) is defined in terms of a weighted average control delay for the entire intersection. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control as well as provides a surrogate measure for driver discomfort and fuel consumption. Signalized intersection LOS is stated in terms of average control delay per vehicle (in seconds) during a specified time period (e.g., weekday PM peak hour). Control delay is a complex measure based on many variables, including signal phasing and coordination (i.e., progression of movements through the intersection and along the corridor), signal cycle length, and traffic volumes with respect to intersection capacity and resulting queues. Table 1 summarizes the LOS criteria for signalized intersections, as described in the *Highway Capacity Manual 2010* and 6th Edition (Transportation Research Board, 2010 and 2016, respectively).

Table 1. Level of Service Criteria for Signalized Intersections

| Level of Service | Average Control Delay (seconds/vehicle) | General Description |
|------------------|---|---|
| A | ≤10 | Free Flow |
| B | >10 – 20 | Stable Flow (slight delays) |
| C | >20 – 35 | Stable flow (acceptable delays) |
| D | >35 – 55 | Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding) |
| E | >55 – 80 | Unstable flow (intolerable delay) |
| F ¹ | >80 | Forced flow (congested and queues fail to clear) |

Source: *Highway Capacity Manual 2010 and 6th Edition*, Transportation Research Board, 2010 and 2016, respectively.

1. If the volume-to-capacity (v/c) ratio for a lane group exceeds 1.0 LOS F is assigned to the individual lane group. LOS for overall approach or intersection is determined solely by the control delay.

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop and two-way stop control. All-way stop control intersection LOS is expressed in terms of the weighted average control delay of the overall intersection or by approach. Two-way stop-controlled intersection LOS is defined in terms of the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns. This approach is because major-street through vehicles are assumed to experience zero delay, a weighted average of all movements results in very low overall average delay, and this calculated low delay could mask deficiencies of minor movements. Table 2 shows LOS criteria for unsignalized intersections.

Table 2. Level of Service Criteria for Unsignalized Intersections

| Level of Service | Average Control Delay (seconds/vehicle) |
|------------------|---|
| A | 0 – 10 |
| B | >10 – 15 |
| C | >15 – 25 |
| D | >25 – 35 |
| E | >35 – 50 |
| F ¹ | >50 |

Source: *Highway Capacity Manual 2010 and 6th Edition*, Transportation Research Board, 2010 and 2016, respectively.

1. If the volume-to-capacity (v/c) ratio exceeds 1.0, LOS F is assigned an individual lane group for all unsignalized intersections, or minor street approach at two-way stop-controlled intersections. Overall intersection LOS is determined solely by control delay.

Appendix C: LOS Worksheets

HCM 6th Signalized Intersection Summary
1: SR-9 & 204th St NE

Arlington Wet Rabbit
Existing PM Peak Hour

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|---|---|---|---|---|--|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  | |  |  |  |
| Traffic Volume (veh/h) | 190 | 355 | 120 | 145 | 235 | 150 | 75 | 410 | 140 | 80 | 330 | 140 |
| Future Volume (veh/h) | 190 | 355 | 120 | 145 | 235 | 150 | 75 | 410 | 140 | 80 | 330 | 140 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.93 | 0.99 | | 0.97 | 1.00 | | 1.00 | 1.00 | | 0.98 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1826 | 1826 | 1826 |
| Adj Flow Rate, veh/h | 200 | 374 | 126 | 153 | 247 | 158 | 79 | 432 | 147 | 84 | 347 | 147 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 5 | 5 |
| Cap, veh/h | 343 | 383 | 302 | 247 | 351 | 287 | 102 | 474 | 161 | 107 | 657 | 547 |
| Arrive On Green | 0.11 | 0.21 | 0.21 | 0.09 | 0.19 | 0.19 | 0.06 | 0.36 | 0.38 | 0.06 | 0.36 | 0.36 |
| Sat Flow, veh/h | 1767 | 1856 | 1465 | 1781 | 1870 | 1530 | 1781 | 1334 | 454 | 1739 | 1826 | 1519 |
| Grp Volume(v), veh/h | 200 | 374 | 126 | 153 | 247 | 158 | 79 | 0 | 579 | 84 | 347 | 147 |
| Grp Sat Flow(s),veh/h/ln | 1767 | 1856 | 1465 | 1781 | 1870 | 1530 | 1781 | 0 | 1787 | 1739 | 1826 | 1519 |
| Q Serve(g_s), s | 8.9 | 20.8 | 7.7 | 6.8 | 12.8 | 9.7 | 4.5 | 0.0 | 32.0 | 4.9 | 15.6 | 7.1 |
| Cycle Q Clear(g_c), s | 8.9 | 20.8 | 7.7 | 6.8 | 12.8 | 9.7 | 4.5 | 0.0 | 32.0 | 4.9 | 15.6 | 7.1 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.25 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 343 | 383 | 302 | 247 | 351 | 287 | 102 | 0 | 635 | 107 | 657 | 547 |
| V/C Ratio(X) | 0.58 | 0.98 | 0.42 | 0.62 | 0.70 | 0.55 | 0.77 | 0.00 | 0.91 | 0.78 | 0.53 | 0.27 |
| Avail Cap(c_a), veh/h | 574 | 392 | 310 | 513 | 381 | 311 | 249 | 0 | 947 | 243 | 967 | 805 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.7 | 40.9 | 35.7 | 29.7 | 39.4 | 38.1 | 48.2 | 0.0 | 31.5 | 47.9 | 26.2 | 23.5 |
| Incr Delay (d2), s/veh | 1.6 | 39.0 | 1.1 | 2.5 | 5.6 | 2.1 | 11.7 | 0.0 | 10.6 | 11.6 | 0.9 | 0.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.9 | 13.5 | 2.8 | 3.0 | 6.4 | 3.8 | 2.3 | 0.0 | 15.2 | 2.5 | 6.8 | 2.6 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 29.3 | 79.8 | 36.8 | 32.3 | 45.0 | 40.2 | 59.9 | 0.0 | 42.1 | 59.6 | 27.1 | 23.9 |
| LnGrp LOS | C | E | D | C | D | D | E | A | D | E | C | C |
| Approach Vol, veh/h | | 700 | | | 558 | | | 658 | | | 578 | |
| Approach Delay, s/veh | | 57.6 | | | 40.1 | | | 44.2 | | | 31.0 | |
| Approach LOS | | E | | | D | | | D | | | C | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 11.9 | 47.0 | 14.5 | 30.3 | 11.4 | 47.4 | 16.4 | 28.4 | | | | |
| Change Period (Y+Rc), s | 5.5 | 7.1 | 5.5 | * 5.9 | 5.5 | 7.1 | 5.1 | 5.9 | | | | |
| Max Green Setting (Gmax), s | 14.5 | 57.9 | 24.5 | * 25 | 14.5 | 57.9 | 24.9 | 24.1 | | | | |
| Max Q Clear Time (g_c+I1), s | 6.9 | 34.0 | 8.8 | 23.8 | 6.5 | 18.6 | 10.9 | 15.8 | | | | |
| Green Ext Time (p_c), s | 0.1 | 5.9 | 0.3 | 0.4 | 0.1 | 4.3 | 0.5 | 1.5 | | | | |

Intersection Summary

| | |
|--------------------|------|
| HCM 6th Ctrl Delay | 44.0 |
| HCM 6th LOS | D |

Notes

- User approved pedestrian interval to be less than phase max green.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: SR-9 & Highland Dr

Arlington Wet Rabbit
Existing PM Peak Hour



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | ↕ | ↕ | | ↕ | ↕ | |
| Traffic Volume (veh/h) | 15 | 5 | 15 | 140 | 10 | 95 | 15 | 475 | 110 | 100 | 350 | 20 |
| Future Volume (veh/h) | 15 | 5 | 15 | 140 | 10 | 95 | 15 | 475 | 110 | 100 | 350 | 20 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | No | | No | | No | | No | | No |
| Adj Sat Flow, veh/h/ln | 1737 | 1737 | 1737 | 1856 | 1856 | 1856 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 17 | 6 | 17 | 157 | 11 | 107 | 17 | 534 | 124 | 112 | 393 | 22 |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 11 | 11 | 11 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 152 | 60 | 121 | 227 | 15 | 120 | 20 | 808 | 188 | 141 | 1085 | 61 |
| Arrive On Green | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.01 | 0.55 | 0.55 | 0.08 | 0.62 | 0.62 |
| Sat Flow, veh/h | 499 | 290 | 583 | 840 | 74 | 582 | 1781 | 1468 | 341 | 1781 | 1754 | 98 |
| Grp Volume(v), veh/h | 40 | 0 | 0 | 275 | 0 | 0 | 17 | 0 | 658 | 112 | 0 | 415 |
| Grp Sat Flow(s),veh/h/ln | 1372 | 0 | 0 | 1495 | 0 | 0 | 1781 | 0 | 1809 | 1781 | 0 | 1853 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 16.7 | 0.0 | 0.0 | 1.0 | 0.0 | 27.2 | 6.5 | 0.0 | 11.7 |
| Cycle Q Clear(g_c), s | 2.1 | 0.0 | 0.0 | 18.8 | 0.0 | 0.0 | 1.0 | 0.0 | 27.2 | 6.5 | 0.0 | 11.7 |
| Prop In Lane | 0.42 | | 0.42 | 0.57 | | 0.39 | 1.00 | | 0.19 | 1.00 | | 0.05 |
| Lane Grp Cap(c), veh/h | 332 | 0 | 0 | 363 | 0 | 0 | 20 | 0 | 996 | 141 | 0 | 1146 |
| V/C Ratio(X) | 0.12 | 0.00 | 0.00 | 0.76 | 0.00 | 0.00 | 0.85 | 0.00 | 0.66 | 0.79 | 0.00 | 0.36 |
| Avail Cap(c_a), veh/h | 435 | 0 | 0 | 473 | 0 | 0 | 328 | 0 | 996 | 328 | 0 | 1146 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 34.2 | 0.0 | 0.0 | 40.6 | 0.0 | 0.0 | 52.3 | 0.0 | 16.8 | 47.9 | 0.0 | 9.9 |
| Incr Delay (d2), s/veh | 0.2 | 0.0 | 0.0 | 5.1 | 0.0 | 0.0 | 58.8 | 0.0 | 3.4 | 9.6 | 0.0 | 0.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.9 | 0.0 | 0.0 | 7.4 | 0.0 | 0.0 | 0.8 | 0.0 | 11.7 | 3.3 | 0.0 | 4.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 34.3 | 0.0 | 0.0 | 45.7 | 0.0 | 0.0 | 111.1 | 0.0 | 20.3 | 57.5 | 0.0 | 10.8 |
| LnGrp LOS | C | A | A | D | A | A | F | A | C | E | A | B |
| Approach Vol, veh/h | | 40 | | 275 | | | 675 | | 527 | | | |
| Approach Delay, s/veh | | 34.3 | | 45.7 | | | 22.5 | | 20.7 | | | |
| Approach LOS | | C | | D | | | C | | C | | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 3.9 | 65.0 | | 27.0 | 6.7 | 72.2 | | 27.0 | | | | |
| Change Period (Y+Rc), s | 5.5 | 6.7 | | 5.1 | 5.5 | 6.7 | | 5.1 | | | | |
| Max Green Setting (Gmax), s | 9.5 | 58.3 | | 29.9 | 19.5 | 58.3 | | 29.9 | | | | |
| Max Q Clear Time (g_c+1/3), s | 9.5 | 29.2 | | 4.1 | 3.0 | 13.7 | | 20.8 | | | | |
| Green Ext Time (p_c), s | 0.2 | 5.2 | | 0.2 | 0.0 | 2.9 | | 1.1 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | | 26.4 | | | | | | | | |
| HCM 6th LOS | | | | C | | | | | | | | |

Intersection

Intersection Delay, s/veh 10.9

Intersection LOS B

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 30 | 150 | 40 | 60 | 175 | 30 | 15 | 60 | 60 | 35 | 80 | 25 |
| Future Vol, veh/h | 30 | 150 | 40 | 60 | 175 | 30 | 15 | 60 | 60 | 35 | 80 | 25 |
| 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 |
| Heavy Vehicles, % | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 33 | 167 | 44 | 67 | 194 | 33 | 17 | 67 | 67 | 39 | 89 | 28 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|-----|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 10.9 | 11.8 | 9.9 | 10.2 |
| HCM LOS | B | B | A | B |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, % | 11% | 14% | 23% | 25% |
| Vol Thru, % | 44% | 68% | 66% | 57% |
| Vol Right, % | 44% | 18% | 11% | 18% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 135 | 220 | 265 | 140 |
| LT Vol | 15 | 30 | 60 | 35 |
| Through Vol | 60 | 150 | 175 | 80 |
| RT Vol | 60 | 40 | 30 | 25 |
| Lane Flow Rate | 150 | 244 | 294 | 156 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.222 | 0.348 | 0.419 | 0.237 |
| Departure Headway (Hd) | 5.326 | 5.119 | 5.121 | 5.495 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 674 | 702 | 704 | 653 |
| Service Time | 3.364 | 3.152 | 3.152 | 3.535 |
| HCM Lane V/C Ratio | 0.223 | 0.348 | 0.418 | 0.239 |
| HCM Control Delay | 9.9 | 10.9 | 11.8 | 10.2 |
| HCM Lane LOS | A | B | B | B |
| HCM 95th-tile Q | 0.8 | 1.6 | 2.1 | 0.9 |

HCM 6th Signalized Intersection Summary
1: SR-9 & 204th St NE

Arlington Wet Rabbit
Future (2025) Without-Project PM Peak Hour

| |  |  |  |  |  |  |  |  |  |  |  |  |
|--|---|---|---|---|---|--|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  | |  |  |  |
| Traffic Volume (veh/h) | 305 | 375 | 125 | 155 | 250 | 160 | 80 | 520 | 150 | 85 | 395 | 215 |
| Future Volume (veh/h) | 305 | 375 | 125 | 155 | 250 | 160 | 80 | 520 | 150 | 85 | 395 | 215 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.93 | 0.99 | | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.98 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1826 | 1826 | 1826 |
| Adj Flow Rate, veh/h | 321 | 395 | 132 | 163 | 263 | 168 | 84 | 547 | 158 | 89 | 416 | 226 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 5 | 5 |
| Cap, veh/h | 366 | 404 | 320 | 236 | 281 | 228 | 106 | 557 | 161 | 111 | 737 | 615 |
| Arrive On Green | 0.16 | 0.22 | 0.22 | 0.09 | 0.15 | 0.15 | 0.06 | 0.40 | 0.42 | 0.06 | 0.40 | 0.40 |
| Sat Flow, veh/h | 1767 | 1856 | 1469 | 1781 | 1870 | 1517 | 1781 | 1394 | 403 | 1739 | 1826 | 1522 |
| Grp Volume(v), veh/h | 321 | 395 | 132 | 163 | 263 | 168 | 84 | 0 | 705 | 89 | 416 | 226 |
| Grp Sat Flow(s),veh/h/ln | 1767 | 1856 | 1469 | 1781 | 1870 | 1517 | 1781 | 0 | 1797 | 1739 | 1826 | 1522 |
| Q Serve(g_s), s | 19.0 | 27.9 | 10.2 | 9.8 | 18.3 | 14.0 | 6.1 | 0.0 | 51.2 | 6.7 | 23.2 | 13.7 |
| Cycle Q Clear(g_c), s | 19.0 | 27.9 | 10.2 | 9.8 | 18.3 | 14.0 | 6.1 | 0.0 | 51.2 | 6.7 | 23.2 | 13.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.22 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 366 | 404 | 320 | 236 | 281 | 228 | 106 | 0 | 718 | 111 | 737 | 615 |
| V/C Ratio(X) | 0.88 | 0.98 | 0.41 | 0.69 | 0.94 | 0.74 | 0.79 | 0.00 | 0.98 | 0.80 | 0.56 | 0.37 |
| Avail Cap(c_a), veh/h | 413 | 404 | 320 | 404 | 299 | 243 | 196 | 0 | 748 | 191 | 760 | 634 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 36.2 | 51.2 | 44.3 | 41.1 | 55.4 | 53.6 | 61.2 | 0.0 | 38.8 | 60.9 | 30.4 | 27.5 |
| Incr Delay (d2), s/veh | 17.3 | 38.5 | 1.0 | 3.6 | 34.7 | 11.0 | 12.4 | 0.0 | 28.3 | 12.5 | 1.2 | 0.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 9.9 | 17.3 | 3.8 | 4.5 | 11.4 | 6.0 | 3.1 | 0.0 | 27.8 | 3.3 | 10.5 | 5.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 53.5 | 89.8 | 45.3 | 44.6 | 90.1 | 64.6 | 73.7 | 0.0 | 67.1 | 73.5 | 31.6 | 28.1 |
| LnGrp LOS | D | F | D | D | F | E | E | A | E | E | C | C |
| Approach Vol, veh/h | | 848 | | | 594 | | | 789 | | | 731 | |
| Approach Delay, s/veh | | 69.1 | | | 70.4 | | | 67.8 | | | 35.6 | |
| Approach LOS | | E | | | E | | | E | | | D | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 13.9 | 62.8 | 17.6 | 37.7 | 13.3 | 63.4 | 26.5 | 28.7 | | | | |
| Change Period (Y+Rc), s | 5.5 | 7.1 | 5.5 | * 5.9 | 5.5 | 7.1 | 5.1 | 5.9 | | | | |
| Max Green Setting (Gmax), s | 14.5 | 57.9 | 24.5 | * 25 | 14.5 | 57.9 | 24.9 | 24.1 | | | | |
| Max Q Clear Time (g_c+I1), s | 8.7 | 53.2 | 11.8 | 30.9 | 8.1 | 26.2 | 21.0 | 21.3 | | | | |
| Green Ext Time (p_c), s | 0.1 | 2.5 | 0.3 | 0.0 | 0.1 | 5.6 | 0.4 | 0.7 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 60.8 | | | | | | | | | |
| HCM 6th LOS | | | E | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved pedestrian interval to be less than phase max green. | | | | | | | | | | | | |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. | | | | | | | | | | | | |

HCM 6th Signalized Intersection Summary

2: SR-9 & Highland Dr

Arlington Wet Rabbit
Future (2025) Without-Project PM Peak Hour



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | ↗ | ↘ | | ↗ | ↘ | |
| Traffic Volume (veh/h) | 15 | 5 | 15 | 150 | 10 | 100 | 15 | 695 | 115 | 105 | 485 | 20 |
| Future Volume (veh/h) | 15 | 5 | 15 | 150 | 10 | 100 | 15 | 695 | 115 | 105 | 485 | 20 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1737 | 1737 | 1737 | 1856 | 1856 | 1856 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 17 | 6 | 17 | 169 | 11 | 112 | 17 | 781 | 129 | 118 | 545 | 22 |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 11 | 11 | 11 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 160 | 63 | 128 | 242 | 15 | 125 | 450 | 885 | 146 | 236 | 1074 | 43 |
| Arrive On Green | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.01 | 0.57 | 0.57 | 0.05 | 0.60 | 0.60 |
| Sat Flow, veh/h | 503 | 288 | 584 | 853 | 66 | 572 | 1781 | 1565 | 259 | 1781 | 1785 | 72 |
| Grp Volume(v), veh/h | 40 | 0 | 0 | 292 | 0 | 0 | 17 | 0 | 910 | 118 | 0 | 567 |
| Grp Sat Flow(s),veh/h/ln | 1375 | 0 | 0 | 1491 | 0 | 0 | 1781 | 0 | 1824 | 1781 | 0 | 1857 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 17.5 | 0.0 | 0.0 | 0.4 | 0.0 | 44.6 | 2.8 | 0.0 | 18.0 |
| Cycle Q Clear(g_c), s | 2.0 | 0.0 | 0.0 | 19.5 | 0.0 | 0.0 | 0.4 | 0.0 | 44.6 | 2.8 | 0.0 | 18.0 |
| Prop In Lane | 0.42 | | 0.42 | 0.58 | | 0.38 | 1.00 | | 0.14 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 351 | 0 | 0 | 382 | 0 | 0 | 450 | 0 | 1032 | 236 | 0 | 1118 |
| V/C Ratio(X) | 0.11 | 0.00 | 0.00 | 0.76 | 0.00 | 0.00 | 0.04 | 0.00 | 0.88 | 0.50 | 0.00 | 0.51 |
| Avail Cap(c_a), veh/h | 447 | 0 | 0 | 486 | 0 | 0 | 767 | 0 | 1032 | 488 | 0 | 1118 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 32.2 | 0.0 | 0.0 | 38.8 | 0.0 | 0.0 | 10.3 | 0.0 | 19.4 | 20.2 | 0.0 | 11.8 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.0 | 5.4 | 0.0 | 0.0 | 0.0 | 0.0 | 10.8 | 1.6 | 0.0 | 1.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.8 | 0.0 | 0.0 | 7.6 | 0.0 | 0.0 | 0.2 | 0.0 | 20.4 | 1.5 | 0.0 | 7.5 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 32.4 | 0.0 | 0.0 | 44.3 | 0.0 | 0.0 | 10.4 | 0.0 | 30.3 | 21.9 | 0.0 | 13.4 |
| LnGrp LOS | C | A | A | D | A | A | B | A | C | C | A | B |
| Approach Vol, veh/h | | 40 | | 292 | | | 927 | | | | 685 | |
| Approach Delay, s/veh | | 32.4 | | 44.3 | | | 29.9 | | | | 14.9 | |
| Approach LOS | | C | | D | | | C | | | | B | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 65.0 | | | 27.7 | 6.7 | 68.7 | | 27.7 | | | | |
| Change Period (Y+Rc), s | 5.5 | 6.7 | | 5.1 | 5.5 | 6.7 | | 5.1 | | | | |
| Max Green Setting (Gmax), s | 58.3 | | | 29.9 | 19.5 | 58.3 | | 29.9 | | | | |
| Max Q Clear Time (g_c+14), s | 46.6 | | | 4.0 | 2.4 | 20.0 | | 21.5 | | | | |
| Green Ext Time (p_c), s | 0.2 | 5.4 | | 0.2 | 0.0 | 4.3 | | 1.1 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | | 26.8 | | | | | | | | |
| HCM 6th LOS | | | | C | | | | | | | | |

Intersection

Intersection Delay, s/veh 11.4

Intersection LOS B

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 30 | 160 | 40 | 65 | 185 | 30 | 15 | 65 | 65 | 35 | 85 | 25 |
| Future Vol, veh/h | 30 | 160 | 40 | 65 | 185 | 30 | 15 | 65 | 65 | 35 | 85 | 25 |
| 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 |
| Heavy Vehicles, % | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 33 | 178 | 44 | 72 | 206 | 33 | 17 | 72 | 72 | 39 | 94 | 28 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 11.3 | 12.5 | 10.2 | 10.6 |
| HCM LOS | B | B | B | B |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, % | 10% | 13% | 23% | 24% |
| Vol Thru, % | 45% | 70% | 66% | 59% |
| Vol Right, % | 45% | 17% | 11% | 17% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 145 | 230 | 280 | 145 |
| LT Vol | 15 | 30 | 65 | 35 |
| Through Vol | 65 | 160 | 185 | 85 |
| RT Vol | 65 | 40 | 30 | 25 |
| Lane Flow Rate | 161 | 256 | 311 | 161 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.243 | 0.371 | 0.451 | 0.251 |
| Departure Headway (Hd) | 5.435 | 5.224 | 5.216 | 5.619 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 659 | 687 | 691 | 638 |
| Service Time | 3.482 | 3.263 | 3.253 | 3.668 |
| HCM Lane V/C Ratio | 0.244 | 0.373 | 0.45 | 0.252 |
| HCM Control Delay | 10.2 | 11.3 | 12.5 | 10.6 |
| HCM Lane LOS | B | B | B | B |
| HCM 95th-tile Q | 0.9 | 1.7 | 2.3 | 1 |

HCM 6th Signalized Intersection Summary
1: SR-9 & 204th St NE

Arlington Wet Rabbit
Future (2025) With-Project PM Peak Hour

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h) | 305 | 377 | 125 | 156 | 251 | 162 | 80 | 520 | 153 | 88 | 395 | 215 |
| Future Volume (veh/h) | 305 | 377 | 125 | 156 | 251 | 162 | 80 | 520 | 153 | 88 | 395 | 215 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.99 | | 0.93 | 0.99 | | 0.96 | 1.00 | | 1.00 | 1.00 | | 0.98 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1826 | 1826 | 1826 |
| Adj Flow Rate, veh/h | 321 | 397 | 132 | 164 | 264 | 171 | 84 | 547 | 161 | 93 | 416 | 226 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 5 | 5 |
| Cap, veh/h | 364 | 403 | 319 | 234 | 280 | 227 | 106 | 554 | 163 | 115 | 742 | 618 |
| Arrive On Green | 0.16 | 0.22 | 0.22 | 0.09 | 0.15 | 0.15 | 0.06 | 0.40 | 0.42 | 0.07 | 0.41 | 0.41 |
| Sat Flow, veh/h | 1767 | 1856 | 1469 | 1781 | 1870 | 1516 | 1781 | 1388 | 408 | 1739 | 1826 | 1523 |
| Grp Volume(v), veh/h | 321 | 397 | 132 | 164 | 264 | 171 | 84 | 0 | 708 | 93 | 416 | 226 |
| Grp Sat Flow(s),veh/h/ln | 1767 | 1856 | 1469 | 1781 | 1870 | 1516 | 1781 | 0 | 1796 | 1739 | 1826 | 1523 |
| Q Serve(g_s), s | 19.2 | 28.4 | 10.3 | 9.9 | 18.6 | 14.4 | 6.2 | 0.0 | 52.0 | 7.0 | 23.3 | 13.8 |
| Cycle Q Clear(g_c), s | 19.2 | 28.4 | 10.3 | 9.9 | 18.6 | 14.4 | 6.2 | 0.0 | 52.0 | 7.0 | 23.3 | 13.8 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.23 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 364 | 403 | 319 | 234 | 280 | 227 | 106 | 0 | 717 | 115 | 742 | 618 |
| V/C Ratio(X) | 0.88 | 0.99 | 0.41 | 0.70 | 0.94 | 0.75 | 0.79 | 0.00 | 0.99 | 0.81 | 0.56 | 0.37 |
| Avail Cap(c_a), veh/h | 408 | 403 | 319 | 399 | 297 | 240 | 194 | 0 | 741 | 189 | 753 | 628 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 36.6 | 51.9 | 44.8 | 41.5 | 56.0 | 54.2 | 61.8 | 0.0 | 39.3 | 61.3 | 30.4 | 27.6 |
| Incr Delay (d2), s/veh | 18.2 | 40.8 | 1.0 | 3.8 | 36.3 | 12.4 | 12.5 | 0.0 | 29.6 | 12.4 | 1.2 | 0.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 10.1 | 17.7 | 3.9 | 4.6 | 11.6 | 6.3 | 3.2 | 0.0 | 28.4 | 3.5 | 10.5 | 5.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 54.8 | 92.7 | 45.8 | 45.3 | 92.3 | 66.6 | 74.3 | 0.0 | 68.9 | 73.7 | 31.6 | 28.1 |
| LnGrp LOS | D | F | D | D | F | E | E | A | E | E | C | C |
| Approach Vol, veh/h | | 850 | | | 599 | | | 792 | | | 735 | |
| Approach Delay, s/veh | | 71.1 | | | 72.1 | | | 69.4 | | | 35.8 | |
| Approach LOS | | E | | | E | | | E | | | D | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 14.3 | 63.2 | 17.7 | 37.8 | 13.4 | 64.2 | 26.7 | 28.9 | | | | |
| Change Period (Y+Rc), s | 5.5 | 7.1 | 5.5 | * 5.9 | 5.5 | 7.1 | 5.1 | 5.9 | | | | |
| Max Green Setting (Gmax), s | 14.5 | 57.9 | 24.5 | * 25 | 14.5 | 57.9 | 24.9 | 24.1 | | | | |
| Max Q Clear Time (g_c+I1), s | 9.0 | 54.0 | 11.9 | 31.4 | 8.2 | 26.3 | 21.2 | 21.6 | | | | |
| Green Ext Time (p_c), s | 0.1 | 2.1 | 0.3 | 0.0 | 0.1 | 5.6 | 0.4 | 0.6 | | | | |

Intersection Summary

| | |
|--------------------|------|
| HCM 6th Ctrl Delay | 62.1 |
| HCM 6th LOS | E |

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: SR-9 & Highland Dr

Arlington Wet Rabbit
Future (2025) With-Project PM Peak Hour



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | ↕ | ↕ | | ↕ | ↕ | |
| Traffic Volume (veh/h) | 15 | 5 | 15 | 150 | 10 | 100 | 15 | 697 | 115 | 105 | 488 | 20 |
| Future Volume (veh/h) | 15 | 5 | 15 | 150 | 10 | 100 | 15 | 697 | 115 | 105 | 488 | 20 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1737 | 1737 | 1737 | 1856 | 1856 | 1856 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 17 | 6 | 17 | 169 | 11 | 112 | 17 | 783 | 129 | 118 | 548 | 22 |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 11 | 11 | 11 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 160 | 63 | 128 | 242 | 15 | 125 | 448 | 886 | 146 | 234 | 1074 | 43 |
| Arrive On Green | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.01 | 0.57 | 0.57 | 0.05 | 0.60 | 0.60 |
| Sat Flow, veh/h | 503 | 288 | 584 | 853 | 66 | 572 | 1781 | 1566 | 258 | 1781 | 1786 | 72 |
| Grp Volume(v), veh/h | 40 | 0 | 0 | 292 | 0 | 0 | 17 | 0 | 912 | 118 | 0 | 570 |
| Grp Sat Flow(s),veh/h/ln | 1375 | 0 | 0 | 1491 | 0 | 0 | 1781 | 0 | 1824 | 1781 | 0 | 1857 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 17.5 | 0.0 | 0.0 | 0.4 | 0.0 | 44.8 | 2.8 | 0.0 | 18.2 |
| Cycle Q Clear(g_c), s | 2.0 | 0.0 | 0.0 | 19.5 | 0.0 | 0.0 | 0.4 | 0.0 | 44.8 | 2.8 | 0.0 | 18.2 |
| Prop In Lane | 0.42 | | 0.42 | 0.58 | | 0.38 | 1.00 | | 0.14 | 1.00 | | 0.04 |
| Lane Grp Cap(c), veh/h | 351 | 0 | 0 | 382 | 0 | 0 | 448 | 0 | 1032 | 234 | 0 | 1118 |
| V/C Ratio(X) | 0.11 | 0.00 | 0.00 | 0.76 | 0.00 | 0.00 | 0.04 | 0.00 | 0.88 | 0.50 | 0.00 | 0.51 |
| Avail Cap(c_a), veh/h | 447 | 0 | 0 | 486 | 0 | 0 | 765 | 0 | 1032 | 487 | 0 | 1118 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 32.2 | 0.0 | 0.0 | 38.8 | 0.0 | 0.0 | 10.4 | 0.0 | 19.5 | 20.4 | 0.0 | 11.8 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.0 | 5.4 | 0.0 | 0.0 | 0.0 | 0.0 | 11.0 | 1.7 | 0.0 | 1.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.8 | 0.0 | 0.0 | 7.6 | 0.0 | 0.0 | 0.2 | 0.0 | 20.6 | 1.5 | 0.0 | 7.5 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 32.4 | 0.0 | 0.0 | 44.3 | 0.0 | 0.0 | 10.4 | 0.0 | 30.4 | 22.0 | 0.0 | 13.5 |
| LnGrp LOS | C | A | A | D | A | A | B | A | C | C | A | B |
| Approach Vol, veh/h | | 40 | | 292 | | | 929 | | | | 688 | |
| Approach Delay, s/veh | | 32.4 | | 44.3 | | | 30.1 | | | | 14.9 | |
| Approach LOS | | C | | D | | | C | | | | B | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 65.0 | | | 27.7 | 6.7 | 68.7 | | 27.7 | | | | |
| Change Period (Y+Rc), s | 5.5 | 6.7 | | 5.1 | 5.5 | 6.7 | | 5.1 | | | | |
| Max Green Setting (Gmax), s | 58.3 | | | 29.9 | 19.5 | 58.3 | | 29.9 | | | | |
| Max Q Clear Time (g_c+14.5), s | 46.8 | | | 4.0 | 2.4 | 20.2 | | 21.5 | | | | |
| Green Ext Time (p_c), s | 0.2 | 5.4 | | 0.2 | 0.0 | 4.3 | | 1.1 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | | 26.9 | | | | | | | | |
| HCM 6th LOS | | | | C | | | | | | | | |

Intersection

Intersection Delay, s/veh 11.5

Intersection LOS B

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 30 | 160 | 40 | 66 | 185 | 30 | 15 | 65 | 66 | 35 | 86 | 25 |
| Future Vol, veh/h | 30 | 160 | 40 | 66 | 185 | 30 | 15 | 65 | 66 | 35 | 86 | 25 |
| 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 |
| Heavy Vehicles, % | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 33 | 178 | 44 | 73 | 206 | 33 | 17 | 72 | 73 | 39 | 96 | 28 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|----------------------------|------|------|------|------|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay | 11.4 | 12.6 | 10.3 | 10.6 |
| HCM LOS | B | B | B | B |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, % | 10% | 13% | 23% | 24% |
| Vol Thru, % | 45% | 70% | 66% | 59% |
| Vol Right, % | 45% | 17% | 11% | 17% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 146 | 230 | 281 | 146 |
| LT Vol | 15 | 30 | 66 | 35 |
| Through Vol | 65 | 160 | 185 | 86 |
| RT Vol | 66 | 40 | 30 | 25 |
| Lane Flow Rate | 162 | 256 | 312 | 162 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.245 | 0.372 | 0.453 | 0.254 |
| Departure Headway (Hd) | 5.441 | 5.234 | 5.226 | 5.628 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 659 | 687 | 687 | 636 |
| Service Time | 3.49 | 3.276 | 3.265 | 3.677 |
| HCM Lane V/C Ratio | 0.246 | 0.373 | 0.454 | 0.255 |
| HCM Control Delay | 10.3 | 11.4 | 12.6 | 10.6 |
| HCM Lane LOS | B | B | B | B |
| HCM 95th-tile Q | 1 | 1.7 | 2.4 | 1 |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.2 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑↑ | | | ↑↑ | | ↑ |
| Traffic Vol, veh/h | 599 | 23 | 0 | 580 | 0 | 22 |
| Future Vol, veh/h | 599 | 23 | 0 | 580 | 0 | 22 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 1 | 1 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 637 | 24 | 0 | 617 | 0 | 23 |

| Major/Minor | Major1 | Major2 | Minor1 | | | |
|----------------------|--------|--------|--------|---|---|------|
| Conflicting Flow All | 0 | 0 | - | - | - | 331 |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | 3.32 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 0 | 665 |
| Stage 1 | - | - | 0 | - | 0 | - |
| Stage 2 | - | - | 0 | - | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | - | 665 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 10.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 665 | - | - | - |
| HCM Lane V/C Ratio | 0.035 | - | - | - |
| HCM Control Delay (s) | 10.6 | - | - | - |
| HCM Lane LOS | B | - | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.3 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 14 | 2 | 2 | 54 | 45 | 14 |
| Future Vol, veh/h | 14 | 2 | 2 | 54 | 45 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 74 | 74 | 74 | 74 | 74 | 74 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 0 | 0 |
| Mvmt Flow | 19 | 3 | 3 | 73 | 61 | 19 |

| Major/Minor | Minor2 | Major1 | | Major2 | |
|----------------------|--------|--------|-------|--------|---|
| Conflicting Flow All | 150 | 71 | 80 | 0 | 0 |
| Stage 1 | 71 | - | - | - | - |
| Stage 2 | 79 | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - |
| Pot Cap-1 Maneuver | 842 | 991 | 1518 | - | - |
| Stage 1 | 952 | - | - | - | - |
| Stage 2 | 944 | - | - | - | - |
| Platoon blocked, % | | | | - | - |
| Mov Cap-1 Maneuver | 840 | 991 | 1518 | - | - |
| Mov Cap-2 Maneuver | 840 | - | - | - | - |
| Stage 1 | 950 | - | - | - | - |
| Stage 2 | 944 | - | - | - | - |

| Approach | EB | NB | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.3 | 0.3 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1518 | - | 856 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | 0.025 | - | - |
| HCM Control Delay (s) | 7.4 | 0 | 9.3 | - | - |
| HCM Lane LOS | A | A | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - |

Appendix D: Trip Generation and Pass-By Observations

MEMORANDUM

To: Jon Pascal, PE, TranspoGroup
From: Joey Miller
Brad Lincoln, PE
Kimley-Horn and Associates, Inc.
Date: September 19, 2023
Subject: Wet Rabbit Car Wash – Pass-By Study Analysis



Kimley-Horn and Associates, Inc. has been retained to provide a memorandum for the proposed Wet Rabbit Development (Development). The purpose of this memorandum details the pass-by data collected on-site at two existing locations during the PM peak-hour (4:00 PM to 6:00pm) and documents a pass-by rate for Wet Rabbit locations since one is not published by the Institute of Transportation Engineers (ITE). The data was collected over various days of the week during the months of July and August at an existing site in the City of Lake Stevens and a site in the City of Marysville. The data was collected using the methodology outlined by the Institute of Transportation Engineers (ITE). The Lake Stevens location had data collected over three days, and the Marysville location had data collected over two days. The summaries of the pass-by data and overall pass-by rate are represented in the tables below. The calculations for each day at each location have been included in the attachments.

1. PASS-BY CALCULATIONS

1.1. Lake Stevens Site

The site in the City of Lake Stevens is located in the southwest corner of SR-204 at 91st Avenue NE. The site is located along commuting corridors and has a mix of commercial and residential in the site vicinity. The site includes one tunnel car wash and vacuum stations. There is major roadway construction that was completed just before the data was collected, but it is possible that the recently installed roundabout could have caused traffic to divert to Lundeen Parkway to the northwest, which could have reduced the pass-by rate since trips travel to/from Lundeen Parkway would be diverted link trips, as opposed to trips traveling along SR-204 being pass-by trips.

Pass-by data was collected at the Lake Steven location on July 12 and 13, and August 8, 2023. All days where data was collected were during the summer on sunny days to ensure sufficient data was collected to meet ITE minimum sample size guidelines. The data collected in the month of July was collected by the third-party agency Traffic Data Gathering (TDG) while the data collected in August was collected by Kimley-Horn and Associates staff. The data was collected by different parties, TDG staff vs Kimley-Horn and Associates, Inc staff, to ensure the data was collected correctly. The pass-by calculations are summarized in **Table 1**, **Table 2**, and **Table 3**, respectively, for each of the days.

Table 1: Pass-By Summary – July 12, 2023

| | Pass-By | Diverted | New | Total |
|------------|---------|----------|-----|-------|
| Trips | 45 | 20 | 9 | 74 |
| Percentage | 61% | 27% | 12% | 100% |

Table 2: Pass-By Summary – July 13, 2023

| | Pass-By | Diverted | New | Total |
|------------|---------|----------|-----|-------|
| Trips | 60 | 32 | 23 | 115 |
| Percentage | 52% | 28% | 20% | 100% |

Table 3: Pass-By Summary – August 8, 2023

| | Pass-By | Diverted | New | Total |
|------------|---------|----------|-----|-------|
| Trips | 53 | 19 | 9 | 81 |
| Percentage | 65% | 23% | 11% | 100% |

The pass-by data collected at the Lake Stevens location yielded 270 total surveys with 158 total pass-by trips, 71 total diverted trips, and 41 total new trips. This location generated a pass-by rating of 59% over the course of the three days when data was collected.

1.2. Marysville Site

The Marysville site is located along the west side of State Avenue, north of 72nd Street NE. The site includes one tunnel car wash and vacuum stations. Pass-by data was collected at the Marysville location on July 19 and August 16, 2023 during sunny days. The data collected in the month of July was collected by the third-party agency TDG while the data collected in August was collected by a combination of TDG and Kimley-Horn and Associates, Inc. staff. The pass-by calculations are summarized in **Table 4** and **Table 5**, respectively.

Table 4: Pass-By Summary – July 19, 2023

| | Pass-By | Diverted | New | Total |
|------------|---------|----------|-----|-------|
| Trips | 32 | 22 | 13 | 67 |
| Percentage | 48% | 33% | 19% | 100% |

Table 5: Pass-By Summary – August 16, 2023

| | Pass-By | Diverted | New | Total |
|------------|---------|----------|-----|-------|
| Trips | 30 | 12 | 6 | 48 |
| Percentage | 63% | 25% | 13% | 100% |

The pass-by data collected at the Marysville location yielded 115 total surveys with 62 total pass-by trips, 34 total diverted trips, and 19 total new trips. This location generated a pass-by rating of 54% over the course of the two days when data was collected. It is important to note that data was collected at the Marysville site on July 18, 2023. However, the data was not utilized due to inconsistencies in the survey methodology and results.

2. CONCLUSIONS

The total pass-by data collected at the two Wet Rabbit locations during in the months of July and August by teams from TDG and Kimley-Horn and Associates, Inc. has been summarized in **Table 6**.

Table 6: Pass-By Summary – 5-Day Total

| | Pass-By | Diverted | New | Total |
|------------|---------|----------|-----|-------|
| Trips | 220 | 105 | 60 | 385 |
| Percentage | 57% | 27% | 16% | 100% |

The data collected shows an average of 57% pass-by trips, 27% diverted trips, and 16% new trips over the total sample size. The total samples size, 385, is consistent with ITE methodology for a 95% confidence level, the highest level of confidence prescribed by ITE, with 5% maximum error in mean, the lowest error in mean prescribed by ITE. This data should therefore be considered acceptable for the application of a pass-by reduction to Wet Rabbit car wash sites consistent with the ITE methodology.

APPENDIX A
LOCATION CALCULATIONS

| 15-min | Time | # | Q1 | Q2 | Q3 | Q4 (Miles) |
|-----------|---------|----|----|----|----|------------|
| 4:00-4:15 | 4:00 PM | 1 | A | Y | | |
| 4:00-4:15 | 4:02 PM | 2 | B | N | Y | |
| 4:00-4:15 | 4:15 PM | 3 | A | N | Y | |
| 4:00-4:15 | 4:15 PM | 39 | B | N | N | 1 |
| 4:16-4:30 | 4:17 PM | 40 | C | N | Y | |
| 4:16-4:30 | 4:19 PM | 4 | A | Y | | |
| 4:16-4:30 | 4:20 PM | 5 | B | N | Y | |
| 4:16-4:30 | 4:21 PM | 41 | A | Y | N | 7 |
| 4:16-4:30 | 4:23 PM | 42 | C | N | N | 15 |
| 4:16-4:30 | 4:25 PM | 6 | B | N | Y | |
| 4:16-4:30 | 4:26 PM | 43 | C | N | N | 0.5 |
| 4:16-4:30 | 4:28 PM | 44 | B | N | Y | |
| 4:16-4:30 | 4:30 PM | 7 | B | N | N | 10 |
| 4:16-4:30 | 4:30 PM | 45 | B | N | Y | |
| 4:31-4:45 | 4:33 PM | 8 | A | N | N | 2 |
| 4:31-4:45 | 4:33 PM | 46 | A | Y | | |
| 4:31-4:45 | 4:35 PM | 47 | B | N | N | 10 |
| 4:31-4:45 | 4:37 PM | 48 | A | N | N | 5 |
| 4:31-4:45 | 4:39 PM | 9 | A | N | Y | |
| 4:31-4:45 | 4:39 PM | 49 | A | N | N | 15 |
| 4:46-5:00 | 4:48 PM | 50 | B | N | Y | |
| 4:46-5:00 | 4:51 PM | 51 | B | N | Y | |
| 4:46-5:00 | 4:52 PM | 10 | D | N | Y | |
| 4:46-5:00 | 4:53 PM | 11 | A | Y | | |
| 4:46-5:00 | 4:53 PM | 12 | B | N | Y | |
| 4:46-5:00 | 4:53 PM | 13 | B | N | Y | |
| 4:46-5:00 | 4:59 PM | 52 | B | N | Y | |
| 4:46-5:00 | 5:00 PM | 14 | B | N | Y | |
| 4:46-5:00 | 5:00 PM | 53 | A | N | Y | |
| 5:01-5:15 | 5:01 PM | 54 | B | N | Y | |
| 5:01-5:15 | 5:02 PM | 55 | D | N | N | 15 |
| 5:01-5:15 | 5:05 PM | 15 | B | N | Y | |
| 5:01-5:15 | 5:05 PM | 56 | A | Y | | |
| 5:01-5:15 | 5:06 PM | 16 | A | N | N | 2 |
| 5:01-5:15 | 5:06 PM | 57 | B | N | N | 5 |
| 5:01-5:15 | 5:07 PM | 17 | D | N | N | <1 |
| 5:01-5:15 | 5:07 PM | 18 | B | N | N | 3 |
| 5:01-5:15 | 5:07 PM | 19 | A | N | Y | |
| 5:01-5:15 | 5:08 PM | 58 | D | N | Y | |
| 5:01-5:15 | 5:09 PM | 59 | A | Y | | 12 |
| 5:01-5:15 | 5:12 PM | 20 | D | N | Y | |
| 5:01-5:15 | 5:12 PM | 60 | B | N | Y | |
| 5:01-5:15 | 5:13 PM | 61 | A | N | Y | |
| 5:01-5:15 | 5:15 PM | 21 | C | N | Y | |
| 5:16-5:30 | 5:16 PM | 22 | A | Y | | |
| 5:16-5:30 | 5:16 PM | 23 | A | N | Y | |
| 5:16-5:30 | 5:16 PM | 62 | C | N | Y | |
| 5:16-5:30 | 5:21 PM | 63 | C | N | Y | |
| 5:16-5:30 | 5:23 PM | 25 | D | N | Y | |
| 5:16-5:30 | 5:23 PM | 64 | C | N | N | 0.5 |
| 5:16-5:30 | 5:24 PM | 26 | B | N | N | 0.5 |
| 5:16-5:30 | 5:24 PM | 27 | C | N | Y | |
| 5:16-5:30 | 5:25 PM | 65 | B | N | Y | |
| 5:16-5:30 | 5:27 PM | 66 | A | Y | | |
| 5:16-5:30 | 5:28 PM | 67 | B | N | N | 1 |
| 5:31-5:45 | 5:31 PM | 68 | D | N | Y | |
| 5:31-5:45 | 5:33 PM | 69 | C | N | Y | |
| 5:31-5:45 | 5:34 PM | 28 | C | N | Y | |
| 5:31-5:45 | 5:36 PM | 29 | C | N | Y | |
| 5:31-5:45 | 5:36 PM | 70 | B | N | N | 2 |
| 5:31-5:45 | 5:37 PM | 30 | A | N | Y | |
| 5:31-5:45 | 5:37 PM | 71 | A | N | Y | |
| 5:31-5:45 | 5:38 PM | 31 | B | N | Y | |
| 5:31-5:45 | 5:41 PM | 72 | A | Y | | |
| 5:31-5:45 | 5:42 PM | 73 | A | N | Y | |
| 5:31-5:45 | 5:44 PM | 32 | A | Y | Y | |
| 5:31-5:45 | 5:45 PM | 33 | C | N | N | 1 |
| 5:31-5:45 | 5:45 PM | 34 | D | N | Y | |
| 5:46-6:00 | 5:50 PM | 74 | D | N | Y | |
| 5:46-6:00 | 5:53 PM | 35 | C | N | Y | |
| 5:46-6:00 | 5:54 PM | 36 | B | N | N | 15 |
| 5:46-6:00 | 5:55 PM | 37 | C | N | Y | |
| 5:46-6:00 | 5:57 PM | 75 | B | N | Y | |
| 5:46-6:00 | 5:58 PM | 38 | D | N | Y | |

| 15-min | Time | # | Q1 | Q2 | Q3 | Q4 |
|-----------|---------|-----|----|----|----|-----------|
| 4:00-4:15 | 4:00 PM | 1 | D | N | Y | |
| 4:00-4:15 | 4:01 PM | 2 | B | Y | | |
| 4:00-4:15 | 4:01 PM | 3 | B | N | Y | |
| 4:00-4:15 | 4:01 PM | 4 | A | Y | | |
| 4:00-4:15 | 4:01 PM | 5 | B | N | N | 1 |
| 4:00-4:15 | 4:01 PM | 6 | A | N | N | 2 |
| 4:00-4:15 | 4:01 PM | 7 | C | N | N | 0.25 |
| 4:00-4:15 | 4:04 PM | 62 | B | N | Y | |
| 4:00-4:15 | 4:05 PM | 63 | A | Y | | |
| 4:00-4:15 | 4:05 PM | 64 | A | Y | | |
| 4:00-4:15 | 4:11 PM | 65 | B | N | Y | |
| 4:00-4:15 | 4:12 PM | 66 | A | N | Y | |
| 4:16-4:30 | 4:16 PM | 67 | D | Y | | |
| 4:16-4:30 | 4:18 PM | 8 | C | N | Y | |
| 4:16-4:30 | 4:18 PM | 68 | A | N | Y | |
| 4:16-4:30 | 4:21 PM | 69 | A | N | Y | |
| 4:16-4:30 | 4:22 PM | 9 | B | N | Y | |
| 4:16-4:30 | 4:22 PM | 70 | A | N | Y | |
| 4:16-4:30 | 4:23 PM | 10 | A | N | Y | |
| 4:16-4:30 | 4:25 PM | 11 | A | N | Y | |
| 4:16-4:30 | 4:25 PM | 71 | C | Y | | |
| 4:16-4:30 | 4:26 PM | 12 | D | N | Y | |
| 4:16-4:30 | 4:27 PM | 13 | C | N | N | 5 |
| 4:16-4:30 | 4:28 PM | 14 | C | N | Y | |
| 4:16-4:30 | 4:28 PM | 15 | B | N | Y | |
| 4:16-4:30 | 4:30 PM | 72 | A | N | Y | |
| 4:31-4:45 | 4:31 PM | 73 | B | N | Y | |
| 4:31-4:45 | 4:40 PM | 74 | D | Y | Y | 100 Feet |
| 4:31-4:45 | 4:42 PM | 75 | B | N | N | 3-4 miles |
| 4:46-5:00 | 4:47 PM | 16 | A | Y | | |
| 4:46-5:00 | 4:47 PM | 17 | A | Y | | |
| 4:46-5:00 | 4:47 PM | 76 | C | Y | | |
| 4:46-5:00 | 4:50 PM | 18 | D | N | Y | |
| 4:46-5:00 | 4:50 PM | 77 | B | N | Y | |
| 4:46-5:00 | 4:51 PM | 19 | B | N | Y | |
| 4:46-5:00 | 4:51 PM | 78 | B | N | Y | |
| 4:46-5:00 | 4:52 PM | 20 | A | Y | | |
| 4:46-5:00 | 4:53 PM | 21 | A | N | Y | |
| 4:46-5:00 | 4:53 PM | 79 | A | N | Y | |
| 4:46-5:00 | 4:54 PM | 22 | A | Y | | |
| 4:46-5:00 | 4:54 PM | 80 | B | N | Y | |
| 4:46-5:00 | 4:55 PM | 23 | D | N | N | 10 |
| 4:46-5:00 | 4:55 PM | 24 | C | N | N | 0.5 |
| 4:46-5:00 | 4:57 PM | 81 | D | N | Y | |
| 5:01-5:15 | 5:01 PM | 82 | B | N | Y | |
| 5:01-5:15 | 5:03 PM | 25 | D | N | N | 0.5 |
| 5:01-5:15 | 5:03 PM | 83 | A | Y | | |
| 5:01-5:15 | 5:03 PM | 84 | A | Y | | |
| 5:01-5:15 | 5:04 PM | 26 | A | N | N | 15 |
| 5:01-5:15 | 5:04 PM | 27 | B | N | Y | |
| 5:01-5:15 | 5:04 PM | 85 | D | Y | | |
| 5:01-5:15 | 5:05 PM | 86 | A | Y | | |
| 5:01-5:15 | 5:06 PM | 28 | D | N | N | 1 |
| 5:01-5:15 | 5:06 PM | 87 | D | N | Y | |
| 5:01-5:15 | 5:09 PM | 29 | C | N | N | 1 |
| 5:01-5:15 | 5:09 PM | 88 | A | N | Y | |
| 5:01-5:15 | 5:10 PM | 30 | B | Y | | |
| 5:01-5:15 | 5:10 PM | 89 | B | N | Y | |
| 5:01-5:15 | 5:13 PM | 31 | D | N | N | 1 |
| 5:01-5:15 | 5:13 PM | 90 | A | Y | | |
| 5:01-5:15 | 5:14 PM | 32 | C | N | Y | |
| 5:01-5:15 | 5:14 PM | 91 | B | N | Y | |
| 5:01-5:15 | 5:15 PM | 33 | A | N | Y | |
| 5:01-5:15 | 5:15 PM | 92 | C | Y | | |
| 5:16-5:30 | 5:17 PM | 34 | A | Y | | |
| 5:16-5:30 | 5:18 PM | 93 | D | N | Y | |
| 5:16-5:30 | 5:19 PM | 35 | D | N | Y | |
| 5:16-5:30 | 5:20 PM | 36 | B | N | N | 2 |
| 5:16-5:30 | 5:20 PM | 94 | B | N | Y | |
| 5:16-5:30 | 5:21 PM | 37 | D | N | Y | |
| 5:16-5:30 | 5:22 PM | 38 | D | N | Y | |
| 5:16-5:30 | 5:25 PM | 39 | D | N | N | 1 |
| 5:16-5:30 | 5:27 PM | 40 | A | Y | | |
| 5:16-5:30 | 5:28 PM | 41 | A | N | N | 1 |
| 5:16-5:30 | 5:28 PM | 95 | A | N | Y | |
| 5:16-5:30 | 5:29 PM | 42 | B | N | N | 0.5 |
| 5:16-5:30 | 5:30 PM | 43 | C | N | Y | |
| 5:16-5:30 | 5:30 PM | 96 | A | Y | | |
| 5:16-5:30 | 5:30 PM | 97 | B | N | Y | |
| 5:31-5:45 | 5:31 PM | 48 | C | N | N | 1 |
| 5:31-5:45 | 5:31 PM | 98 | C | Y | Y | 200 Feet |
| 5:31-5:45 | 5:32 PM | 99 | B | N | Y | |
| 5:31-5:45 | 5:33 PM | 44 | B | N | N | 0.25 |
| 5:31-5:45 | 5:33 PM | 100 | D | Y | | |
| 5:31-5:45 | 5:34 PM | 45 | A | N | Y | |
| 5:31-5:45 | 5:35 PM | 46 | B | N | N | 1 |
| 5:31-5:45 | 5:35 PM | 101 | C | N | Y | |
| 5:31-5:45 | 5:36 PM | 47 | D | N | N | 10 |
| 5:31-5:45 | 5:37 PM | 102 | D | N | Y | |
| 5:31-5:45 | 5:38 PM | 103 | B | N | Y | |
| 5:31-5:45 | 5:40 PM | 49 | B | N | Y | |
| 5:31-5:45 | 5:40 PM | 104 | C | N | Y | |
| 5:31-5:45 | 5:41 PM | 105 | C | N | N | 19 |
| 5:31-5:45 | 5:42 PM | 106 | B | N | N | 5 |
| 5:31-5:45 | 5:44 PM | 50 | B | N | N | <1 |
| 5:46-6:00 | 5:46 PM | 51 | A | N | Y | |
| 5:46-6:00 | 5:50 PM | 52 | A | N | N | 3 |
| 5:46-6:00 | 5:50 PM | 107 | C | N | N | 2 |
| 5:46-6:00 | 5:51 PM | 53 | A | Y | | |
| 5:46-6:00 | 5:52 PM | 54 | B | N | N | 2 |
| 5:46-6:00 | 5:52 PM | 108 | A | N | N | 15-20 |
| 5:46-6:00 | 5:53 PM | 55 | B | N | N | 1 |
| 5:46-6:00 | 5:54 PM | 56 | C | N | Y | |
| 5:46-6:00 | 5:54 PM | 109 | D | N | Y | |
| 5:46-6:00 | 5:55 PM | 57 | D | N | N | 2 |
| 5:46-6:00 | 5:55 PM | 110 | A | N | Y | |
| 5:46-6:00 | 5:56 PM | 58 | A | N | N | 0.5 |
| 5:46-6:00 | 5:56 PM | 111 | C | N | Y | |
| 5:46-6:00 | 5:57 PM | 59 | B | N | N | 10 |
| 5:46-6:00 | 5:57 PM | 112 | D | N | N | |
| 5:46-6:00 | 5:58 PM | 60 | A | N | Y | |
| 5:46-6:00 | 5:58 PM | 113 | D | N | Y | |
| 5:46-6:00 | 5:59 PM | 61 | B | N | Y | |
| 5:46-6:00 | 5:59 PM | 114 | C | N | Y | |
| 5:46-6:00 | 6:01 PM | 115 | B | N | Y | |

| 15-min | Time | # | Q1 | Q2 | Q3 | Q4 | |
|-----------|---------|----|-----------|----|----|--------|------|
| 4:00-4:15 | 4:00 PM | 1 | A | N | N | | 5 |
| 4:00-4:15 | 4:01 PM | 2 | B | N | N | | 0.5 |
| 4:00-4:15 | 4:03 PM | 3 | A | N | Y | | 0.1 |
| 4:00-4:15 | 4:05 PM | 4 | A | N | N | | 5 |
| 4:00-4:15 | 4:05 PM | 5 | A | N | N | | 0.25 |
| 4:00-4:15 | 4:06 PM | 6 | B | N | Y | | |
| 4:00-4:15 | 4:06 PM | 7 | B | N | N | | 2 |
| 4:00-4:15 | 4:07 PM | 8 | A | Y | | | |
| 4:00-4:15 | 4:08 PM | 9 | D/ZOO | N | Y | | |
| 4:00-4:15 | 4:14 PM | 10 | B | N | Y | | |
| 4:16-4:30 | 4:16 PM | 11 | A | Y | | | |
| 4:16-4:30 | 4:17 PM | 12 | A | Y | | | |
| 4:16-4:30 | 4:18 PM | 13 | B | N | Y | | |
| 4:16-4:30 | 4:19 PM | 14 | B | N | Y | | |
| 4:16-4:30 | 4:20 PM | 15 | A | N | N | | 0.2 |
| 4:16-4:30 | 4:21 PM | 16 | A | N | Y | | |
| 4:16-4:30 | 4:22 PM | 17 | A | Y | | | |
| 4:16-4:30 | 4:24 PM | 18 | C | N | N | | 0.25 |
| 4:16-4:30 | 4:25 PM | 19 | B | N | N | | 1 |
| 4:16-4:30 | 4:25 PM | 20 | B | N | N | | 1 |
| 4:16-4:30 | 4:26 PM | 21 | B | N | Y | | |
| 4:16-4:30 | 4:27 PM | 22 | D/MEETING | N | Y | | 0.1 |
| 4:16-4:30 | 4:29 PM | 23 | A | Y | | | |
| 4:16-4:30 | 4:30 PM | 24 | A | N | Y | | |
| 4:31-4:45 | 4:31 PM | 25 | A | N | Y | | |
| 4:31-4:45 | 4:32 PM | 26 | C | N | Y | | |
| 4:31-4:45 | 4:34 PM | 27 | C | N | Y | | |
| 4:31-4:45 | 4:35 PM | 28 | B | N | Y | | |
| 4:31-4:45 | 4:35 PM | 29 | A | Y | | | |
| 4:31-4:45 | 4:36 PM | 30 | B | N | Y | | |
| 4:31-4:45 | 4:40 PM | 31 | B | Y | | | |
| 4:31-4:45 | 4:40 PM | 66 | A | N | Y | | |
| 4:31-4:45 | 4:41 PM | 32 | A | N | N | | 0.5 |
| 4:31-4:45 | 4:42 PM | 33 | B | N | Y | | |
| 4:31-4:45 | 4:42 PM | 34 | A | N | Y | | |
| 4:31-4:45 | 4:45 PM | 35 | A | N | N | SNOHO | |
| 4:46-5:00 | 4:46 PM | 36 | B | N | N | ARLING | |
| 4:46-5:00 | 4:48 PM | 37 | A | N | N | | 10 |
| 4:46-5:00 | 4:50 PM | 38 | B | N | Y | | |
| 4:46-5:00 | 4:55 PM | 40 | B | N | N | | 10 |
| 4:46-5:00 | 4:56 PM | 41 | A | N | Y | | |
| 4:46-5:00 | 4:58 PM | 42 | B | N | Y | | 0.1 |
| 5:01-5:15 | 5:03 PM | 43 | B | N | Y | | |
| 5:01-5:15 | 5:06 PM | 44 | A | N | Y | | |
| 5:01-5:15 | 5:07 PM | 45 | A | Y | | | |
| 5:01-5:15 | 5:10 PM | 46 | A | N | Y | | |
| 5:01-5:15 | 5:12 PM | 47 | C | N | Y | | |
| 5:01-5:15 | 5:14 PM | 48 | A | N | Y | | |
| 5:16-5:30 | 5:16 PM | 49 | A | N | Y | | |
| 5:16-5:30 | 5:17 PM | 50 | C | N | Y | | |
| 5:16-5:30 | 5:18 PM | 51 | C | N | Y | | |
| 5:16-5:30 | 5:20 PM | 52 | B | N | Y | | |
| 5:16-5:30 | 5:23 PM | 53 | C | N | Y | | |
| 5:16-5:30 | 5:24 PM | 54 | A | N | Y | | |
| 5:16-5:30 | 5:25 PM | 55 | B | N | Y | | |
| 5:16-5:30 | 5:26 PM | 56 | B | N | Y | | |
| 5:16-5:30 | 5:26 PM | 57 | B | N | Y | | |
| 5:16-5:30 | 5:30 PM | 58 | B | N | Y | | |
| 5:31-5:45 | 5:31 PM | 59 | A | N | Y | | |
| 5:31-5:45 | 5:32 PM | 60 | A | N | Y | | |
| 5:31-5:45 | 5:36 PM | 61 | B | N | Y | | |
| 5:31-5:45 | 5:37 PM | 62 | B | N | N | 5 MINS | |
| 5:31-5:45 | 5:38 PM | 63 | D/GYM | N | Y | | |
| 5:31-5:45 | 5:39 PM | 64 | A | N | N | 3 MINS | |
| 5:31-5:45 | 5:39 PM | 65 | A | Y | | | |
| 5:31-5:45 | 5:41 PM | 67 | A | N | Y | | |
| 5:31-5:45 | 5:42 PM | 68 | A | N | Y | | |
| 5:31-5:45 | 5:43 PM | 69 | A | N | Y | | |
| 5:31-5:45 | 5:43 PM | 70 | A | N | Y | | |
| 5:31-5:45 | 5:45 PM | 71 | A | N | N | MARYS | |
| 5:46-6:00 | 5:47 PM | 72 | C | N | N | 6 MINS | |
| 5:46-6:00 | 5:49 PM | 73 | A | N | Y | | |
| 5:46-6:00 | 5:49 PM | 74 | C | N | Y | | |
| 5:46-6:00 | 5:50 PM | 75 | B | N | Y | | |
| 5:46-6:00 | 5:54 PM | 39 | B | N | Y | | |
| 5:46-6:00 | 5:54 PM | 76 | C | N | Y | | |
| 5:46-6:00 | 5:55 PM | 77 | C | N | Y | | |
| 5:46-6:00 | 5:56 PM | 78 | B | N | Y | | |
| 5:46-6:00 | 5:58 PM | 79 | C | N | Y | | |
| 5:46-6:00 | 5:59 PM | 80 | C | N | Y | | |
| 5:46-6:00 | 6:00 PM | 81 | B | N | N | | 0.5 |

| 15-min | Time | # | Q1 | Q2 | Q3 | Q4 |
|-----------|---------|----|----|----|----|---------|
| 4:00-4:15 | 4:01 PM | 28 | A | Y | | |
| 4:00-4:15 | 4:03 PM | 1 | A | Y | | |
| 4:00-4:15 | 4:04 PM | 29 | B | N | Y | |
| 4:00-4:15 | 4:07 PM | 30 | A | N | N | 3 |
| 4:00-4:15 | 4:08 PM | 2 | B | N | N | 0.5 |
| 4:00-4:15 | 4:10 PM | 3 | D | N | Y | |
| 4:00-4:15 | 4:11 PM | 31 | A | N | N | 2 |
| 4:00-4:15 | 4:13 PM | 32 | A | N | N | 2 |
| 4:00-4:15 | 4:14 PM | 33 | B | N | Y | |
| 4:16-4:30 | 4:16 PM | 34 | A | N | Y | |
| 4:16-4:30 | 4:16 PM | 35 | A | Y | | |
| 4:16-4:30 | 4:17 PM | 36 | C | N | Y | |
| 4:16-4:30 | 4:22 PM | 37 | A | Y | | |
| 4:16-4:30 | 4:24 PM | 38 | C | N | Y | |
| 4:16-4:30 | 4:29 PM | 4 | D | N | N | 6 |
| 4:16-4:30 | 4:30 PM | 5 | D | N | Y | |
| 4:31-4:45 | 4:31 PM | 6 | D | N | N | 1 |
| 4:31-4:45 | 4:32 PM | 7 | B | N | Y | |
| 4:31-4:45 | 4:34 PM | 8 | B | N | N | 1 |
| 4:31-4:45 | 4:35 PM | 39 | A | N | N | 7 |
| 4:31-4:45 | 4:36 PM | 9 | C | N | Y | 0.5 |
| 4:31-4:45 | 4:39 PM | 10 | C | N | Y | |
| 4:31-4:45 | 4:40 PM | 40 | A | N | N | 1 |
| 4:31-4:45 | 4:42 PM | 11 | B | N | Y | |
| 4:31-4:45 | 4:45 PM | 41 | D | N | N | 2 |
| 4:46-5:00 | 4:46 PM | 12 | C | N | Y | |
| 4:46-5:00 | 4:48 PM | 13 | A | N | Y | |
| 4:46-5:00 | 4:52 PM | 42 | A | N | Y | |
| 4:46-5:00 | 4:53 PM | 43 | B | N | Y | |
| 4:46-5:00 | 4:54 PM | 14 | C | N | Y | |
| 4:46-5:00 | 4:54 PM | 44 | A | Y | | |
| 4:46-5:00 | 4:55 PM | 45 | D | N | Y | |
| 4:46-5:00 | 4:57 PM | 46 | C | N | N | 3 TO 4 |
| 4:46-5:00 | 4:58 PM | 47 | B | N | N | 3 |
| 4:46-5:00 | 4:59 PM | 48 | B | N | N | 2 |
| 4:46-5:00 | 5:00 PM | 49 | B | N | N | 2 |
| 4:46-5:00 | 5:00 PM | 50 | D | N | N | 1.5 |
| 4:46-5:00 | 5:00 PM | 51 | B | N | N | 2 |
| 5:01-5:15 | 5:01 PM | 52 | A | N | Y | |
| 5:01-5:15 | 5:03 PM | 15 | B | N | N | 1 |
| 5:01-5:15 | 5:08 PM | 16 | A | N | Y | |
| 5:01-5:15 | 5:08 PM | 53 | A | Y | | |
| 5:01-5:15 | 5:09 PM | 54 | B | N | N | 6 |
| 5:01-5:15 | 5:10 PM | 55 | A | N | N | 10 |
| 5:01-5:15 | 5:13 PM | 17 | C | N | Y | |
| 5:01-5:15 | 5:14 PM | 56 | C | N | Y | 3 TO 5 |
| 5:01-5:15 | 5:15 PM | 18 | D | Y | | |
| 5:16-5:30 | 5:17 PM | 57 | B | N | N | 8 TO 10 |
| 5:16-5:30 | 5:24 PM | 58 | B | N | Y | |
| 5:16-5:30 | 5:25 PM | 59 | A | N | Y | |
| 5:16-5:30 | 5:26 PM | 19 | B | Y | | |
| 5:16-5:30 | 5:26 PM | 60 | A | Y | | |
| 5:16-5:30 | 5:28 PM | 61 | A | Y | | |
| 5:16-5:30 | 5:30 PM | 20 | C | N | Y | |
| 5:31-5:45 | 5:40 PM | 21 | B | N | Y | |
| 5:31-5:45 | 5:40 PM | 62 | A | N | N | 2 TO 3 |
| 5:31-5:45 | 5:41 PM | 22 | B | N | N | 2 |
| 5:31-5:45 | 5:41 PM | 63 | A | N | Y | |
| 5:31-5:45 | 5:42 PM | 64 | D | N | Y | |
| 5:31-5:45 | 5:43 PM | 23 | C | Y | | |
| 5:31-5:45 | 5:43 PM | 65 | A | N | Y | |
| 5:31-5:45 | 5:44 PM | 66 | B | N | Y | |
| 5:31-5:45 | 5:45 PM | 24 | B | N | Y | |
| 5:46-6:00 | 5:46 PM | 67 | B | N | Y | |
| 5:46-6:00 | 5:49 PM | 25 | B | N | Y | |
| 5:46-6:00 | 6:00 PM | 26 | A | Y | | |
| 5:46-6:00 | 6:01 PM | 27 | B | Y | | |

| 15-min | Time | # | Q1 | Q2 | Q3 | Q4 |
|-----------|---------|----|--------------|----|----|---------------|
| 4:00-4:15 | 4:00 PM | 1 | A | Y | | |
| 4:00-4:15 | 4:06 PM | 2 | B | N | Y | |
| 4:00-4:15 | 4:07 PM | 36 | D/RESTAURANT | N | Y | |
| 4:00-4:15 | 4:08 PM | 37 | B | N | Y | |
| 4:00-4:15 | 4:09 PM | 3 | A | N | Y | |
| 4:00-4:15 | 4:11 PM | 4 | A | N | N | 0.5 |
| 4:00-4:15 | 4:12 PM | 5 | Y | | | |
| 4:16-4:30 | 4:16 PM | 6 | B | N | Y | |
| 4:16-4:30 | 4:20 PM | 38 | A | N | Y | |
| 4:16-4:30 | 4:24 PM | 7 | B | N | N | 6 |
| 4:16-4:30 | 4:25 PM | 39 | B | N | N | < 1 MILE |
| 4:16-4:30 | 4:26 PM | 8 | C | N | Y | |
| 4:16-4:30 | 4:27 PM | 40 | D/DOCTOR | N | Y | |
| 4:16-4:30 | 4:29 PM | 9 | A | N | Y | |
| 4:16-4:30 | 4:29 PM | 41 | A | N | Y | |
| 4:31-4:45 | 4:31 PM | 10 | A | Y | | |
| 4:31-4:45 | 4:36 PM | 11 | B | N | N | TULALIP |
| 4:31-4:45 | 4:39 PM | 12 | B | N | Y | |
| 4:31-4:45 | 4:42 PM | 13 | A | N | Y | |
| 4:31-4:45 | 4:44 PM | 14 | C | N | Y | |
| 4:46-5:00 | 4:46 PM | 15 | B | Y | | |
| 4:46-5:00 | 4:46 PM | 42 | A | N | N | 12 MILES |
| 4:46-5:00 | 4:49 PM | 16 | A | N | Y | |
| 4:46-5:00 | 4:50 PM | 17 | D/DAY CARE | N | Y | |
| 4:46-5:00 | 4:52 PM | 18 | B | N | N | 6 |
| 4:46-5:00 | 4:54 PM | 19 | C | N | Y | |
| 4:46-5:00 | 4:56 PM | 20 | B | N | Y | |
| 4:46-5:00 | 4:57 PM | 21 | B | N | N | 8 |
| 4:46-5:00 | 4:59 PM | 43 | A | N | N | 5 MILES |
| 5:01-5:15 | 5:01 PM | 22 | A | N | N | TULALIP |
| 5:01-5:15 | 5:04 PM | 23 | B | N | Y | |
| 5:01-5:15 | 5:08 PM | 24 | B | N | Y | |
| 5:01-5:15 | 5:15 PM | 25 | D/SALON | N | Y | |
| 5:16-5:30 | 5:16 PM | 26 | A | N | Y | |
| 5:16-5:30 | 5:19 PM | 27 | B | N | N | EVERETT |
| 5:16-5:30 | 5:20 PM | 44 | C | N | N | 5 MILES |
| 5:16-5:30 | 5:23 PM | 28 | C | N | Y | |
| 5:16-5:30 | 5:24 PM | 45 | A | N | Y | |
| 5:16-5:30 | 5:25 PM | 29 | A | N | Y | |
| 5:16-5:30 | 5:27 PM | 30 | B | N | Y | |
| 5:31-5:45 | 5:31 PM | 31 | D/CONFERENCE | Y | | |
| 5:46-6:00 | 5:46 PM | 32 | B | N | Y | |
| 5:46-6:00 | 5:49 PM | 33 | C | N | Y | |
| 5:46-6:00 | 5:50 PM | 46 | A | Y | | |
| 5:46-6:00 | 5:51 PM | 47 | B | N | Y | |
| 5:46-6:00 | 5:55 PM | 34 | D/GYM | N | N | GRANITE FALLS |
| 5:46-6:00 | 5:56 PM | 35 | A | N | Y | |
| 5:46-6:00 | 5:58 PM | 48 | B | N | Y | |

Appendix E: Trip Generation Calculations

1.23433.00 - Arlington Wet Rabbit

| Proposed Use | | | | | | | | | | | | | | | | | | | |
|--|------------------------|------|----------------|-------|-------------------|--------|-----------|-------------|----------|----------|---------------|-----|-----|---------------|---------|----------|-------|---|--|
| Land Use | Setting | Size | Units | Model | Equation | Rate | Inbound % | Gross Trips | | | Pass-By Trips | | | Primary Trips | | | | | |
| | | | | | | | | Inbound | Outbound | Subtotal | % | In | Out | Total | Inbound | Outbound | Total | | |
| Automated Car Wash² (Based on Wet Rabbit Observations) | | 1 | carwash tunnel | | | | | | | | | | | | | | | | |
| Daily | General Urban/Suburban | | | Rate | - | 770.00 | 50% | 385 | 385 | 770 | 57% | 219 | 219 | 438 | 166 | 166 | 332 | | |
| AM Peak Hour | General Urban/Suburban | | | | No Info Available | | | - | - | - | - | - | - | - | - | - | - | - | |
| PM Peak Hour | General Urban/Suburban | | | Rate | - | 77.00 | 50% | 39 | 38 | 77 | 57% | 22 | 22 | 44 | 17 | 16 | 33 | | |
| Subtotal | | | | | | | | | | | | | | | | | | | |
| Daily | | | | | | | | 385 | 385 | 770 | | 219 | 219 | 438 | 166 | 166 | 332 | | |
| AM Peak Hour | | | | | | | | - | - | - | | - | - | - | - | - | - | | |
| PM Peak Hour | | | | | | | | 39 | 38 | 77 | | 22 | 22 | 44 | 17 | 16 | 33 | | |

| Existing Use | | | | | | | | | | | | | | | | | | |
|------------------------|------------------------|-------|-------|----------------|------------------------|------|-----------|-------------|----------|----------|---------|----|-----|---------------|---------|----------|-------|--|
| Land Use | Setting | Size | Units | Model | Equation | Rate | Inbound % | Gross Trips | | | Pass-By | | | Total Net New | | | | |
| | | | | | | | | Inbound | Outbound | Subtotal | % | In | Out | Total | Inbound | Outbound | Total | |
| Clinic (LU 630) | | 3,523 | sf | | | | | | | | | | | | | | | |
| Daily | General Urban/Suburban | | | Equation (lin) | $T = 35.86(X) + 34.88$ | - | 50% | 81 | 81 | 162 | - | - | - | 81 | 81 | 162 | | |
| AM Peak Hour | General Urban/Suburban | | | Equation (lin) | $T = 2.19(X) + 8.68$ | - | 81% | 13 | 3 | 16 | - | - | - | 13 | 3 | 16 | | |
| PM Peak Hour | General Urban/Suburban | | | Equation (lin) | $T = 3.53(X) + 2.98$ | - | 30% | 5 | 10 | 15 | - | - | - | 5 | 10 | 15 | | |
| Subtotal | | | | | | | | | | | | | | | | | | |
| Daily | | | | | | | | 81 | 81 | 162 | | 0 | 0 | 0 | 81 | 81 | 162 | |
| AM Peak Hour | | | | | | | | - | - | - | | - | - | - | - | - | - | |
| PM Peak Hour | | | | | | | | 5 | 10 | 15 | | 0 | 0 | 0 | 5 | 10 | 15 | |

| Net New Trips | | | | | | | | | | | | | | | | | | |
|----------------------|--|--|--|--|--|--|--|-----|-----|-----|--|-----|-----|-----|----|----|-----|--|
| Daily | | | | | | | | 304 | 304 | 608 | | 219 | 219 | 438 | 85 | 85 | 170 | |
| AM Peak Hour | | | | | | | | - | - | - | | - | - | - | - | - | - | |
| PM Peak Hour | | | | | | | | 34 | 28 | 62 | | 22 | 22 | 44 | 12 | 6 | 18 | |

Notes:

1. Trip rates for Clinic (LU 630) based on Institute of Transportation Engineers' (ITE) *Trip Generation* 11th Edition equations as shown above.
2. PM peak hour trip rate and pass-by rate based on Kimley Horn & Associates Pass-By Study Analysis, September 2023. No data available for Daily and AM Peak Hour for Automated Car Wash land use.
3. No daily rate available for carwash in the ITE *Trip Generation* Manual, and no daily counts were collected in the Wet Rabbit carwash trip generation and pass-by study. Therefore, 10x the PM peak hour trip rate was considered for the daily trip rate and the pass-by rate observed in the PM peak hour was applied to the daily rate.

Appendix F: Carwash Queuing Calculations

1.23433.00 - Arlington Wet Rabbit Carwash Queuing

| | | |
|------------------------------------|------|-------------------|
| Number of Service Channels (lanes) | 1 | |
| Hourly Flow Rate (vph) | 39 | per channel |
| Total Hourly Flow Rate | 39 | vehicles per hour |
| Average Stopped Time | 3:00 | (mm:ss) |
| Average Service Rate (Total) | 20.0 | vehicles per hour |
| Average Vehicle Length | 20 | feet |

| Project's AM Peak Hour Trip Gen | | |
|---------------------------------|-----|-------|
| In | Out | Total |
| 39 | 39 | 78 |

| 50th Percentile Queue | |
|-----------------------|-------------|
| Number of Vehicles | Length (ft) |
| 3 | 60 |
| 95th Percentile Queue | |
| Number of Vehicles | Length (ft) |
| 5 | 100 |